



Bozig's \$1 Billion Crystal Palace

Robert Campbell: Why American Architecture Has Lost Its Boldness

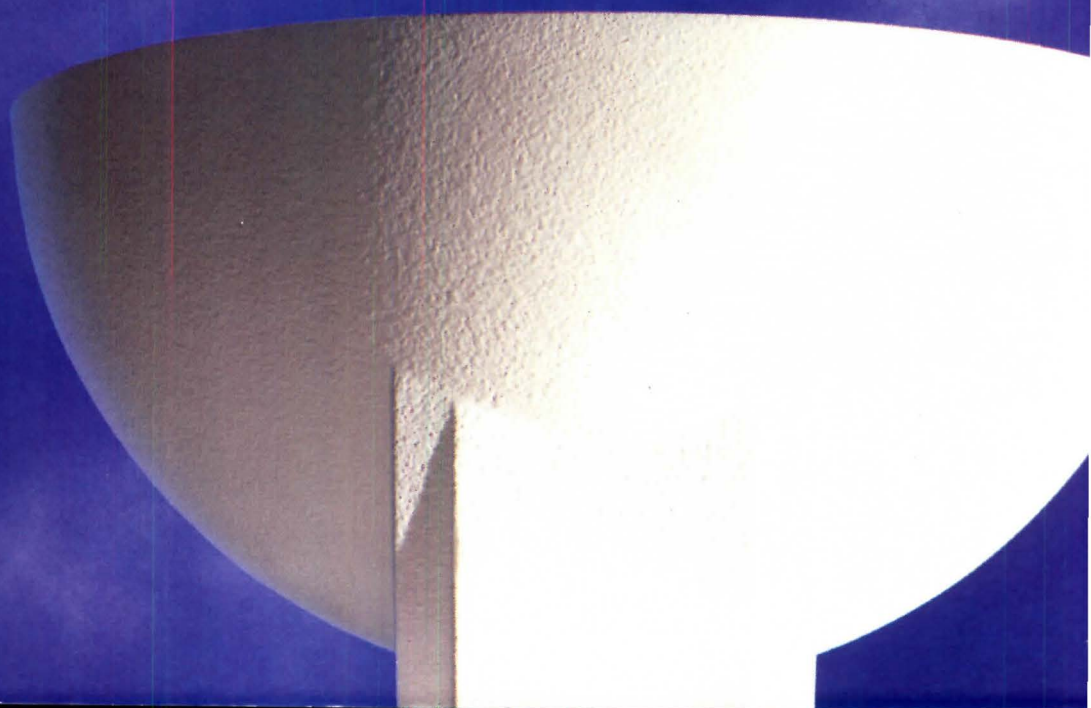
97 Market Forecast



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## From the Publisher

### New Editor-in-Chief Chosen for RECORD

The editor-in-chief is responsible for guiding the vision and the voice of the magazine. The successful individual in this role must combine wonderful journalism skills with the ability to manage staff and budgets. And for a publication like RECORD, the successful editor must have a keen feel for the interests and needs of our audience, must understand the subject matter fully, and must have the graphic judgment to insure delivery of our content in a way that will please our very discriminating constituency. In addition to all this, the successful editor must possess the skills to be a strong ambassador to our readers and to the construction industry. These are the criteria that were set for our editor-in-chief search. And we undertook this search with a strong commitment to find the person most capable of guiding RECORD into our very exciting future.

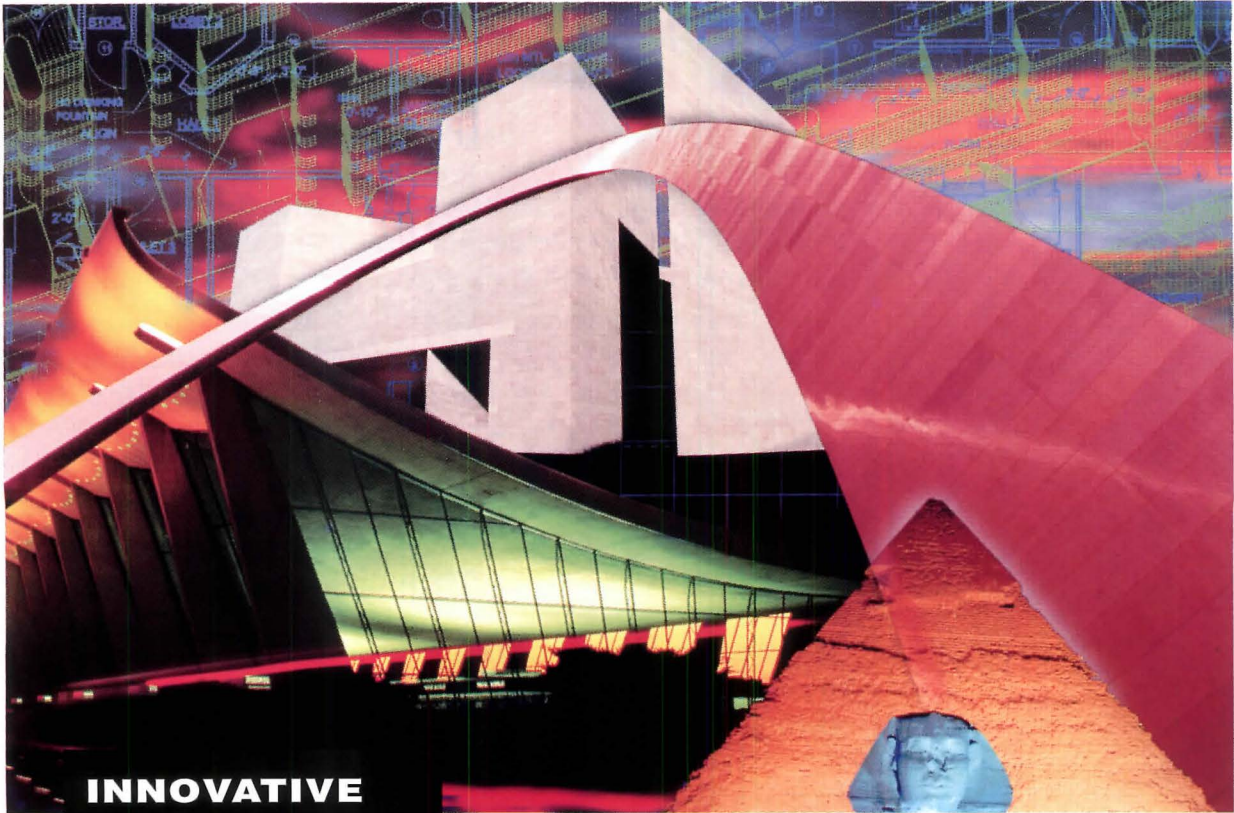
We interviewed so many talented people. One stood out. **I'm very pleased to announce that the new Editor-in-Chief of ARCHITECTURAL RECORD is Robert Ivy, FAIA.**

Here's a bit of an introduction. Then in future issues, you'll get to know Bob through his own words and actions. Bob has led a distinguished dual career in architecture and journalism. As a principal of one of the most successful firms in the mid-south and as a sole practitioner, he has been recognized for excellence in design and historic preservation. Bob is an accomplished journalist with two decades of experience on regional, national, and international publications, and is the author of the award-winning book *Fay Jones*. As an active member of The American Institute of Architects and other professional associations, and as a teacher at the university level, Bob has made significant contributions to his community and the profession.

Bob brings a depth of insight and knowledge that is certain to enrich the way we serve our diverse and demanding audience. Great things are ahead!

*Elaine Shusterman*





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## Practice

### Justice Department Sues Ellerbe Becket Over ADA Violations At Six New Sports Arenas

The Justice Department has sued the nation's largest architectural firm, Ellerbe Becket, for designing inaccessible sports arenas in Boston, Portland, Philadelphia, Buffalo, Washington, D.C., and Cleveland. The suit, filed after eight months of failed settlement negotiations, charged that the six arenas do not comply with the Americans with Disabilities Act's (ADA) architectural requirements for new facilities.

The suit, which alleges that the arenas fail to provide spectators with disabilities a line of sight to the playing surfaces comparable to that of other, non-disabled spectators, seeks an order preventing Ellerbe Becket from continuing to design stadiums and arenas that do not provide such lines of sight. The Justice Department is also asking the court to impose a civil penalty. Disability-rights advocates in Washington, D.C., Boston, Portland, Philadelphia, and Buffalo have also filed private suits raising the same issue.

Some architects claim that it's difficult to comply with the ADA requirements because guidelines are not clearly written. There is further confusion because states have their own disability guidelines, but only three states' regulations, to date, have been officially approved by the Justice Department.

An Ellerbe Becket spokesperson, in response to the suit, stated, "The Department of Justice, the Paralyzed Veterans Association, and Ellerbe Becket all are focused on exactly the same goal—to have wheelchair patrons in sports arenas have all of their needs met. The issue is focused on the exact interpretation of those needs. In reality, this is truly an industry-wide issue affecting all stadiums and arenas."

Randy Edwards, senior vice president of Ellerbe Becket in Kansas City, said the firm is assembling a forum of architects and engi-

neers who do sports work, sports team members, disability groups, and the Justice Department to analyze the ADA requirements and reach a consensus on how to best accommodate everyone. "We need to bring clarity to the issue," said Edwards. In the meantime, the firm has stated it will not stop any work in progress.

Under architectural standards incorporated into the law, stadiums must set aside at least one percent of all seating for wheelchair users, distribute the seating throughout the stadium, and provide lines of sight comparable to those of other spectators. "We believe architects—just like owners—are responsible for designing new facilities so that they are meaningfully accessible," said Deval L. Patrick, the assistant attorney general for civil rights. "In fact, architects are as well positioned as anyone to ensure that the new facilities are designed right, from the start." *Katherine Kai-sun Chia*

## E-Mail/Fax Back Poll

### Let Us Know Your Opinion.

Comments:

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May an editor contact you for further comments?

Yes.

Name:

Telephone:

### Would You Risk Profits On A User-Satisfaction Survey?

**A New York design/build team [Architectural Record, October, 1996, p.42] recently risked one-third of its profit on the outcome of a user-satisfaction survey conducted three months after the building was occupied. The 15 questions had been created jointly by the design/build team and a user committee.**

**Would you risk one-third of your profits based on a similar user-satisfaction survey?**

Yes  No

**Copy and fax to: 212/512-4256, or E-mail to: dewitt@mcgraw-hill.com**



## London

# Europe To Get Biggest Tower Yet

Sir Norman Foster has unveiled his plan for the 1,265-ft tall, 92-story London Millennium Tower, to be the highest in Europe, on the 1.4-acre site of the Baltic Exchange, a shipping and trading center bombed by the IRA in 1992. The building's curved glass facade will enclose retail stores, restaurants, offices, trading floors, garden atriums, and residential units. The free-form plan of the building is a continuous series of curves in different types of glass that will respond to changes in sunlight throughout the year. A public viewing gallery and restaurant located 1,000 ft above the street will open up to panoramic views of London. Developed by Trafalgar House, the 1.5-million-sq-ft project is scheduled to be reviewed by the Planning Commission and Department of the Environment for height and massing. The main tower at Canary Wharf, at 800 ft, is currently the highest office building in Britain. ■

## Licensing

# Computerized ARE Exams Begin

Next February, the National Council of Architectural Registration Boards (NCARB) will launch a fully computer-based Architect Registration Examination (ARE), one of the first of its kind for professional licensing. "[It's] the envy of the world, and with the implementation of the computer-based test next year, we will have a vast array of almost limitless opportunities available through electronic media and technology," said NCARB President Darrell L. Smith

NCARB enlisted 13 architects nationwide to complete the development of the computerized site- and building-design vignettes. The architects pretested and finalized enough versions to meet the anticipated usage of these divisions over the next year. The exam will also be graded by the computer.

The ARE will be administered by The Chauncey Group International and offered at 215 Sylvan Technology Centers throughout the U.S. For more information, contact NCARB on the Internet at <http://www.ncarb.org>. ■

## Tucson, Arizona

# Sonora Museum Building Saves Energy



© Michael Stocklos

Energy conservation was the focus for the new 20,000-sq-ft gallery, restaurant, and gift shop building at the Sonora Desert Museum. Nestled in the heart of the Saguro National Park near Tucson, Ariz., the museum showcases over 1,600 indigenous plants and animals of the region. To preserve the natural setting, Tucson architect Les Wallach of Line and Space used large overhangs for shading and 24 outdoor spot diffusers with air supplied from an evaporative cooler's exhaust, so that the facility can accommodate visitors outdoors, even during Arizona

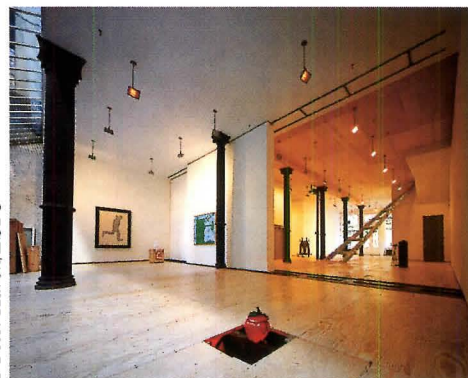
summers. Each day 600 gallons of gray water is harvested from the bleed-off of the air washer on the evaporative cooler and reused in the toilets.

Wallach, whose company also served as the general contractor, devised cost-saving measures to stay within the \$2.25-million budget. For example, native field stones used throughout the design were salvaged from a construction excavation at a local elementary school, saving the museum \$40,000.

*Danielle Beaugureau*

## New York City

# Koolhaas Works Small In The Big Apple



© Peter Aaroni/ESTO

Dutch architect and author Rem Koolhaas has completed his first project in the U.S., the Lehmann Maupin Gallery in New York City's SoHo district. Although Koolhaas is generally known for his large urban projects

that confront the chaos of modern cities, this project is a simple gesture of gypsum board and steel studs. One would hardly even suspect that it was designed by an architect, were it not for its moving mechanisms. Two 16-ft-tall wall sections on rollers allow the 3,500-sq-ft storefront warehouse space to be divided for exhibits of varying sizes.

Koolhaas expects artists to alter the color of walls, lighting, and surface of the space to suit their work. Gallery co-founder Rachel Lehmann noted, "By creating a space for more collaborative work between visual artists and architects, movie makers, and fashion people, among others, we encourage artistic collaboration and experimentation, new possibilities for traveling shows, and more work for artists." ■

*News continues*





## KAWNEER DOES JUSTICE TO HISTORIC CHARM.

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A downtown warehouse and one time department store in Savannah, Georgia, was selected to house the U.S. attorneys' offices, with one stipulation. Renovate.

The 1959 Altmayer Building needed a complete renovation and a totally new look. Savannah, a historical city, has a strict architectural review system, so Hansen Architects, had their work cut out for them.



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The verdict: the Altmayer Building would enjoy a long term with the newly remodeled exterior and Kawneer windows and doors. Kawneer Remodeling. It's what's going on.

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## Two New Projects by Adriaan Geuze Revitalize Dutch Cities

Over the past few years, Adriaan Geuze, an “engineer of the landscape,” has reinterpreted the profession of landscape architecture through his Rotterdam-based office, West 8. Two recent projects, an urban square in Rotterdam and an “urban strategy” for the redevelopment of two peninsulas on the eastern portion of the Amsterdam docks, are both currently under construction.

The Schowburgplein theater square in Rotterdam (model photo, right) is conceived as an urban stage, surrounded by theaters, cafes, restaurants, and cinemas. A mosaic of materials on the ground defines different zones of activity. A 210-ft-long wood bench is the ultimate theater piece and the lighting is to be manipulated directly by the users, via insertion of coins into one of the four, 105-ft-high, hydraulic lighting masts. The three large ventilation towers from the parking garage are other vertical accents that are meant to echo the nautical imagery of Rotterdam.

In Amsterdam, on the Borneo and Sporenburg peninsula docks, some 2,500 units of low-rise housing are juxtaposed with three immense sculptural blocks, which act both as landmarks and as connection nodes to the vast, flat landscape of the IJ-meer (construction photo, far right). Many developers as



© Peter de Ring

Adriaan Geuze’s project for the Schowburgplein square in Rotterdam.

well as private individuals own the property, and several architects are designing the buildings, including Van Berkel & Bos, Steven Holl, Herzog & de Meuron, J.L. Mateo, and OMA’s Rem Koolhaas. The goal for the project, however, is a unified diversity.

Geuze’s concern in these projects is “maintaining and processing the tradition of so-called functionalism. . . a functionalism effectively engaged in a campaign to promote the programmatic thought that architecture could directly influence the contents of a culture rooted in diversity, technology, and social instability.” He says urban space can no



In Amsterdam, on the Borneo and Sporenburg docks.

longer be thought of as static or closed, but instead as open-ended, dynamic—a flowing landscape.

According to Geuze, “New public space will manipulate its users to the extent that they will immediately be aware of their behavior; that they can no longer revert to programmed acts. . . This [type of] space transforms anonymity into exhibitionism, spectators into actors. It is not a matter of design, of the beauty of dimensions, materials and color; but of the sensation of a discrete culture created by the urbanite.”

Kelly Shannon

### Government Spending 1997

## Construction Budgets Are Up, But It’s Not All Good News

Most federal building programs will benefit from increased construction budgets in the fiscal 1997 round of appropriations. But funds to design new projects are in much shorter supply. In the omnibus spending bill that President Clinton signed on Sept. 30, the General Services Administration’s (GSA) new construction program climbs 21 percent, to \$658 million. That includes funds for 22 projects, mostly courthouses. Lawmakers provided design or site money for new starts in Fresno, Calif.; Denver; Orlando, Fla.; Erie, Pa.; and Portland, Ore. GSA’s repair and alterations account is getting \$639 million, about \$2 million more than in 1996, with no

new starts. GSA is encouraged by the numbers, says Robin G. Graf, controller of the agency’s Public Buildings Service. “The need for the program is recognized and is being supported by this Congress and the administration,” he says.

Congress continues to put pressure on courthouse costs, trimming 1997 court projects 10 percent from GSA’s proposed levels. Graf says the agency is assessing whether the cuts will pose problems. Seeking future economies, appropriators also requested a revised federal-court design guide by April 1, 1997. Other federal building programs are

going up in 1997. The Department of Veterans Affairs’ major construction account, which funds hospitals and clinics, will jump 85 percent, to \$251 million. The Federal Bureau of Prisons’ buildings account received an 18 percent increase, to \$396 million. The bureau, part of the Justice Department, is expected to get enough money to build two new prisons per year. The 1997 installment includes \$197 million for prisons in California and the mid-Atlantic region. Bureau officials were investigating sites in eastern Kentucky for the mid-Atlantic facility. The increases are welcome, but the focus will soon shift to fiscal 1998, said Graf. Tom Ichniowski



## New York City

### New Home for Research Center

The completed renovation of three floors of the Schermerhorn Extension at Columbia University will serve as the new 18,000-sq-ft core facility for the Center for Environmental Research and Conservation. The Center, designed by BNK Architects and The Stein Partnership Architects, houses offices, student areas, a library, a lounge, research laboratories, and a rooftop greenhouse. According to the architects, the project focused on being environmentally responsive at both local and global levels. The architects used locally obtained materials to reduce transportation energy, materials that require minimal energy for manufacture, water-borne finishes rather than solvent-based ones, and they avoided materials with adverse processing residue. Major operating savings will be captured by using daylighting and a low-level of ambient lighting supplemented by task lighting when necessary. The total lighting load, 1.3 watts per sq ft, is almost half of that allowable in the New York State Energy Code. ■

## Dallas

### Up a Tree With \$5,000



© David J. Sams

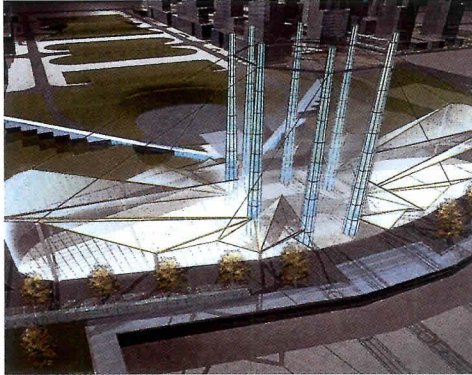
What do you get when you give an architect \$5,000 and a live tree? The Dallas Arboretum and Botanical Garden received some very unusual proposals in their tree-house competition, co-sponsored by the Dallas AIA Chapter. Ten winning entries were constructed without permanent attachment or damage to the trees. Jill Magnuson, director of public relations at the arboretum, said that each design team began with an identical set of requirements to serve as “a point of departure for exploring the formal, practical, and conceptual possibilities of a tree house.” The structures, although not inhabitable for liability reasons, enhanced the arboretum’s educational program for children and boosted summer attendance by more than 75 percent. Participating architects and artists included F/M Associates, Four Seasons Decorations, Good Fulton & Farrell Architects, artist David Hickman, The Hillier Group, HKS Inc., Lake Flato Architects, Lockwood Andrews & Newman Inc., Omniplan Architects (left), and RTKL Associates Inc. ■

*When color counts...*



Shenzhen, China

## Manhattan's Lee/Timchula Wins City Center Competition



The firm of John M.Y. Lee/Michael Timchula of New York City beat out five international finalists including B+H Architects of Canada, S.C.A.U. International of Paris, and Kenzo Tange Urban Architectural Design Research Institute of Tokyo, to design a 86.1-million-sq-ft multi-use development for Shenzhen, China, a metropolis of 3.5 million people neighboring Hong Kong's new territories. The 477-acre, 100-city-block area will support offices, hotel, commercial/service facilities, a convention center, cultural and sports facilities, and a city hall.

The jury selected Lee/Timchula's proposal because it creatively resolved program requirements in keeping with "feng shui," the Chinese art of placement.

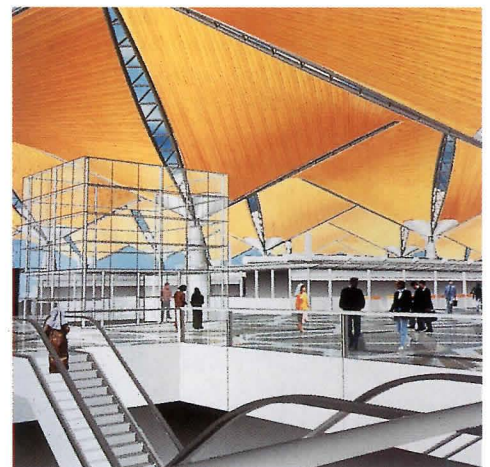
In addition, the proposal allowed for sustainable environments: The city hall and the covered pedestrian walkways will use photovoltaic roof panels to collect and store energy for lighting and heating. The firm has begun to codify the zoning requirements for the local government, and construction of the city hall is expected to occur after that. ■

Chicago

## "Building for Air Travel" Exhibit Will Tour Until 1999

The exhibit "Building for Air Travel: Architecture and Design for Commercial Aviation" at The Art Institute of Chicago until January 5, 1997, is the first in-depth look at the architecture and design of the airline industry. The exhibit will travel to museums and airports around the world through 1999. ■

*Interior designed by Walter Dorwin Teague. Boeing 377, Stratocruiser; interior with child in berth, 1946-1949 (right). Interiors of the New Kuala Lumpur International Airport, main terminal 1993-1998. Kisho Kurokawa, architect; with Akitek Jururancang (far right).*



Las Vegas

## Air Terminal at McCarran International Gets Its Wings



The use of pre-engineered space frames to serve as porte-cochères while simulating airplane wings was the key design element utilized by Las Vegas-based JMA Architecture Studios in the design of the 28,000-sq-ft Las Vegas Executive Air Terminal at McCarran International Airport.

The porte-cochères, located on both the pedestrian and flight approach, protect people from wind and summer heat. Made of translucent polyester fabric, the porte-cochère at the front entrance extends 76 feet,

providing a 40-ft high clearance. The canopy shading the tarmac is an abstracted eagle; two stanchion "legs" support a triangular "body," with the point representing the eagle's beak.

The new \$9-million terminal, constructed with tilt-up concrete and prefabricated embossed metal panels over a steel-frame structure, includes an office complex with conference rooms, sleeping quarters, a flight-planning room, maintenance facilities, and a 18,180-sq-ft hangar. *Danielle Beaugureau*

© Opulence Studios



## News Briefs

### Italians to redevelop gallery in Victoria, Australia

Milan's Mario Bellini, working with the Melbourne-based architectural firm Metier 3 Pty Limited, has been appointed to redevelop the National Gallery of Victoria, Australia. The \$80-million project, to be completed in 1999, is one of the Victoria government's major capital investments in the arts. Other architects considered included Pei Cobb Freed & Partners, Arata Isozaki, and Gae Aulenti.

### Chrysler award winners

Architects Craig Hodgetts and Ming Fung of Los Angeles, graphic/product designer and editor Tibor Kalman of New York City, and architects Mack Scogin and Merrill Elam of Atlanta-based Scogin Elam and Bray Architects were among the recipients of the \$10,000 Chrysler Award for Innovation in Design. Launched in 1993, the award is presented annually by the Chrysler Corporation to "socially responsible" individuals and companies reaching beyond the "traditional boundaries of design."

### Architectural photographer honored

Steve Rosenthal, a Boston-based architectural photographer, was presented the 1996 Architectural Photography Award by the American Society of Media Photographers at the Society's first biennial conference in Orlando, Fla. Trained as an architect, Rosenthal has specialized in architectural photography for over 25 years and has been widely published in books and magazines. He is currently collaborating with writer Michael Crosbie on a series of children's books on architecture to be published by Preservation Press.

### Winner of library competition

The Kansai-kan of the National Diet Library Competition awarded first prize and 50-million yen [over \$46,300] to Japanese architect Fumio Toki. The competition attracted 493 submissions from 42 countries. Toki's submission, chosen by the jury because it is "quietly distinctive in contrast to many works with highly assertive forms," placed stacks and a reading room below

ground and defined the entry approach with a sawtooth-roof garden. The project, sited on 10 acres, will be the core cultural facility for Kansai Science City.

### Bioclimatic houses ready to go

Twenty-five experimental houses were selected for construction in the International Design Competition for Bioclimatic Houses, Tenerife, Canary Islands, Spain. Sponsored by the Institute for Renewable Energy Sources, the Island Government of Tenerife, and The College of Architecture of the Canary Islands, the competition required entries to use "ecologically sound materials and methods." David Dobereiner, of Rockridge Design in Oakland, Calif., in association with Dan Chin, was the only winner from the U.S. His entry, consisting of three vaulted roof forms that channel the sun and wind through the house, solar roof panels, and a wind turbine, will be built in 1997. Scientists will live in the houses for one year to monitor and evaluate the designs. ■

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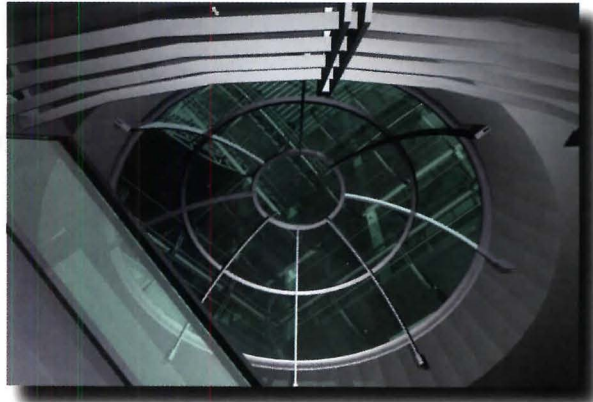
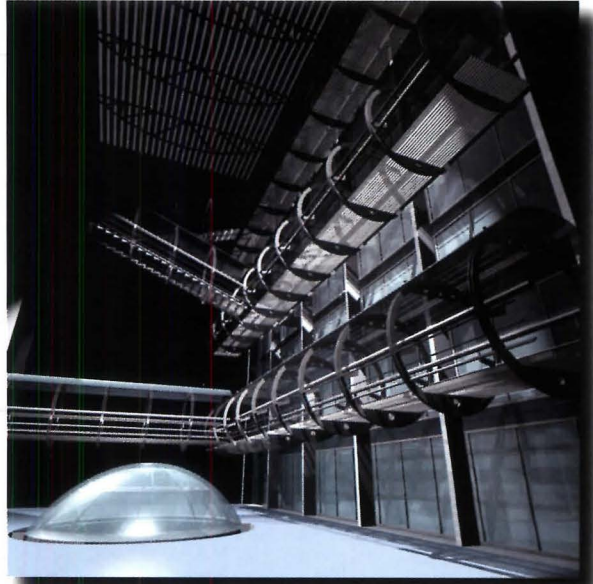
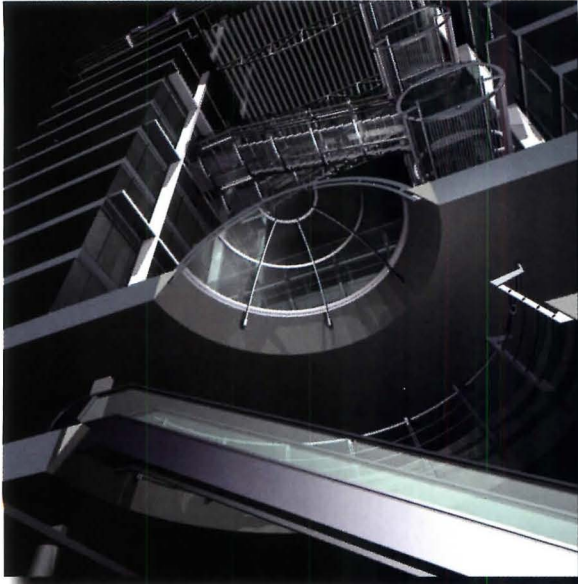
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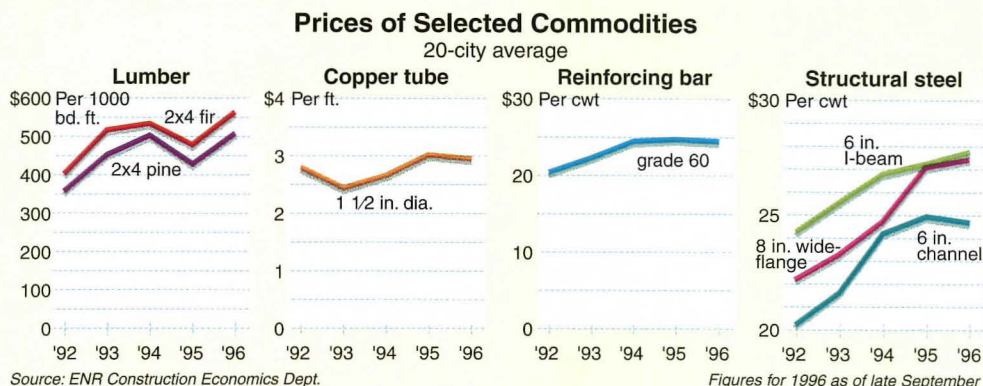




## Indicators

### Ups and downs in commodity prices

Over the last few years, many commodities gained pricing ground lost in the extended construction recession. With different construction types blowing hot and cold, commodity prices are today more mixed. Reinforcing bar, significantly affected by highway volume, is dipping even as some structural steel maintains pricing strength. Pricing in copper also reflects a slackening market. Analysts have been surprised at lumber's price strength as housing construction has recently gone flat. ■



### Big metro markets are pricier

The consensus of analysts is that both labor and commodity prices are under control. Still the building-cost index in almost every metro area tracked rose this year, whereas in recent years, some have risen while others have fallen. Only San Francisco and Los Angeles showed declines in 1996. Furthermore, price rises are substantial, especially in Midwest cities like Kansas City, St. Louis, and Chicago, which have enjoyed extended construction growth. Atlanta's gain may be temporary, reflecting last-minute Olympics' preparations. In the East, Baltimore and Pittsburgh show strength.

Labor shortages are now widely reported, but hourly rates have remained near the inflation rate so far. But with many building-construction types slated for growth next year (see architectural market forecast, following pages), labor rates may begin to show spot rises. Also, manufacturers have been reluctant to expand capacity, so spot shortages and price rises may develop more often in 1997. ■

### Building Cost Indexes

	12/91	12/92	12/93	12/94	12/95	5/96	10/96	% change from 5/96	% change from 12/95
Atlanta	2278.83	2404.75	2477.13	2480.55	2412.12	2470.10	2609.19	+5.6	+8.2
Baltimore	2508.06	2607.76	2673.24	2830.66	2818.21	2856.29	3023.54	+5.8	+7.3
Birmingham	2189.75	2279.26	2352.15	2439.28	2509.21	2533.69	2687.71	+6.1	+7.1
Boston	3102.31	3355.57	3539.63	3601.94	3549.18	3569.19	3633.62	+1.8	+2.4
Chicago	3034.72	3162.99	3325.70	3415.62	3446.51	3470.99	3691.07	+6.3	+7.1
Cincinnati	2674.15	2817.16	2920.20	3001.15	2942.02	2953.42	2962.92	+0.3	+0.7
Cleveland	2903.81	2903.1	3088.76	3218.65	3273.15	3305.79	3386.36	+2.4	+3.5
Dallas	2215.88	2278.21	2307.62	2448.62	2433.04	2474.70	2606.68	+5.3	+7.1
Denver	2375.26	2438.39	2501.00	2608.72	2661.49	2711.27	2921.38	+7.7	+9.8
Detroit	3046.92	3136.74	3278.20	3424.95	3459.88	3485.99	3705.84	+6.3	+7.1
Kansas City	2637.20	2677.21	2873.20	2916.25	2889.17	3013.84	3159.94	+4.8	+9.3
Los Angeles	3097.83	3198.66	3359.03	3420.42	3427.26	3412.81	3398.41	-0.4	-0.8
Minneapolis	2711.5	2811.14	2989.48	3131.05	3129.52	3145.84	3322.33	+5.6	+6.1
New Orleans	2260.52	2360.24	2330.86	2469.21	2499.08	2560.01	2649.12	+3.4	+6.0
New York	3997.91	4151.28	4343.76	4458.36	4557.44	4603.96	4685.72	+1.7	+2.8
Philadelphia	3169.81	3130.58	3532.34	3480.78	3563.18	3563.18	3641.74	+2.2	+2.2
Pittsburgh	2807.73	2954.64	3038.97	3218.37	3287.92	3326.02	3522.98	+5.9	+7.1
St. Louis	2686.93	2743.01	2840.58	3091.81	3089.59	3134.74	3314.49	+5.7	+7.3
San Francisco	3270.90	3298.09	3463.34	3519.17	3561.60	3534.30	3516.40	-0.5	-1.2
Seattle	2715.04	2787.74	2948.18	3024.48	3046.50	3088.93	3098.43	+0.3	+1.7
<b>20-City avg.</b>	<b>2751</b>	<b>2834</b>	<b>3009</b>	<b>3110</b>	<b>3128</b>	<b>3161</b>	<b>3277</b>	<b>+3.7</b>	<b>+4.8</b>

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 cut of standard structural steel shapes at the mill price, plus 22.56 cut (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) divided by the index for an earlier period (150) 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

### ◆ Project-management survey:

With skilled managers in short supply, analyses of their skills and duties have proliferated. Consulting firm Zweig White & Associates' contribution is the "1996 Project Management Survey," which includes coverage of organizational structure, project-manager duties, responsibilities, and compensation, as well as "challenges and complaints." It costs \$254 and is available at 800/466-6275 (phone) or 508/653-6522 (fax).

### ◆ Toilet score: women: 340; men: 55:

Women, long resentful of endless restroom lines at busy public facilities, may at last see—pardon the expression—relief. Ellerbe Becket, architect of a ballpark in Phoenix for the Arizona Diamondbacks, plans 340 toilets for women, compared to 55 for men. (Men do get 218 urinals.) The architect says toilet-room capacity should be enough for even sell-out crowds of 48,500.

### ◆ Source for used building materials:

A new association has formed to represent organizations and companies that salvage and

redistribute used building materials such as windows, doors, lumber, and plumbing fixtures. It offers guidance to materials sources and how to use them. Used Building Materials Association, 2-70 Albert Street, Winnipeg, Manitoba R3B 1E7, Canada; 204/947-0848 (phone), 204/942-4207 (fax). ■



# ARCHITECTURE MARKET OUTLOOK

## Find 1997 Growth in Niches

By Peter Slatin

Just as the nation experienced what economists called a rolling recession at the beginning of this decade—one that moved region by region—the four-year-old recovery is also “rolling.” In the building-construction industry, however, it is progressing unevenly through market sectors as well as geographic regions.

The recovery, which began in earnest in 1992 with single-family housing, has remained elusive in construction markets that were overbuilt in the 1980's. Thus, office construction remains the slowest gainer, although it is picking up speed as growth in other markets, such as multi-family housing and retail, begins to tail off.

That slackening, however, does not mean an imminent return to recession. Instead, it signals that the growth rates for certain markets have peaked and are beginning to flatten or decline. “Housing is starting to lose momentum in response to the higher cost of financing” in recent months, says Robert Murray, vice president, construction economics, at F.W. Dodge. “But some commercial categories are picking up.” (Murray prepares the charts, right and opposite, from the five-year outlook Dodge projects from its construction-project database.)

### Residential goes flat

The growth in single-family housing construction has generally exceeded expectations, even as interest rates ticked up in 1996. But slower overall economic growth as well as higher interest rates are taking their toll, and a nearly 8-percent increase in multi-family construction will do little to offset flat single-family construction. That's because the number units, square footage, and cost of multi-family housing is but a fraction of single-family.

Long term, though, demographic trends favor multi-family, and as recovery spreads to lagging high-cost cities like Los Angeles and New York City, as well as ever-costlier Seattle, multi-family growth should improve still further.

*Peter Slatin writes about real estate for the New York Post and Barrons.*

### 1997 National Estimates Dodge Construction Potentials October 1996

1996 Preliminary 1997 Forecast Percent Change 1997/96

#### Nonresidential Buildings

Floor Area (in millions of sq. ft.)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Office Buildings	125	140	+12
	Stores and Shopping Centers	230	235	+2
	Other Commercial	320	339	+6
	Manufacturing Buildings	138	144	+4
	<b>Total Commercial &amp; Manufacturing</b>	<b>813</b>	<b>858</b>	<b>+6</b>
	Educational	166	178	+7
	Hospital & Health	70	67	-4
	Other Nonresidential Buildings	166	177	+7
	<b>Total Institutional &amp; Other</b>	<b>402</b>	<b>422</b>	<b>+5</b>
	<b>TOTAL NONRESIDENTIAL BUILDINGS</b>	<b>1,215</b>	<b>1,280</b>	<b>+5</b>

Contract Value (millions of \$)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Office Buildings	\$15,500	\$17,975	+16
	Stores and Shopping Centers	15,550	16,250	+5
	Other Commercial	17,650	18,950	+7
	Manufacturing Buildings	11,725	12,825	+9
	<b>Total Commercial &amp; Manufacturing</b>	<b>\$60,425</b>	<b>\$66,000</b>	<b>+9</b>
	Educational	\$21,025	\$23,125	+10
	Hospital and Health	10,025	10,000	0
	Other Nonresidential Buildings	21,675	23,100	+7
	<b>Total Institutional &amp; Other</b>	<b>\$52,725</b>	<b>56,225</b>	<b>+7</b>
	<b>TOTAL NONRESIDENTIAL BUILDINGS</b>	<b>\$113,150</b>	<b>\$122,225</b>	<b>+8</b>

#### Residential Buildings

Dwelling Units* (thous. of units)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Single Family Houses	1,075	1,035	-4
	Multifamily Housing	265	275	+4
	<b>Total Residential Buildings</b>	<b>1,340</b>	<b>1,310</b>	<b>-2</b>

Floor Area (millions of sq. ft.)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Single Family Houses	2,141	2,052	-4
	Multifamily Housing	295	306	+4
	<b>Total Residential Buildings</b>	<b>2,436</b>	<b>2,358</b>	<b>-3</b>

Contract Value (millions of \$)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Single Family Houses	\$126,775	126,050	-1
	Multifamily Housing	17,475	18,825	+8
	<b>Total Residential Buildings</b>	<b>\$144,250</b>	<b>144,875</b>	<b>0</b>

#### Nonbuilding Construction

Contract Value (millions of \$)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	Transportation Construction	\$42,150	\$42,775	+1
	Environmental Construction	20,050	20,925	+4
	<b>Total Public Works</b>	<b>\$62,200</b>	<b>\$63,700</b>	<b>+2</b>
	Utilities	\$2,700	\$2,800	+4
	<b>TOTAL NONBUILDING CONSTRUCTION</b>	<b>\$64,900</b>	<b>\$66,500</b>	<b>+2</b>

#### All Construction

Contract Value (millions of \$)		1996 Preliminary	1997 Forecast	Percent Change 1997/96
	<b>Total Construction</b>	<b>\$322,300</b>	<b>\$333,600</b>	<b>+4</b>
	Dodge Index (1987=100)	124	129	

\*F.W. Dodge basis



*Don't expect growth in the huge single-family sector. But opportunity beckons for office buildings in strong markets, entertainment-oriented retail, consolidating health-care operations, and schools.*

**1997 Regional Estimates** Dodge Construction Potentials October 1996

Contract Value (millions of dollars)	1996 Preliminary	1997 Forecast	Percent Change 1997/96		1996 Preliminary	1997 Forecast	Percent Change 1997/96
<b>Northeast</b> CT, ME, MA, NH, NJ, NY, PA, RI, VT							
<b>Nonresidential Buildings</b>				<b>Residential Buildings</b>			
Commercial and Manufacturing	\$8,925	\$9,450	+6	Single Family Houses	\$12,025	\$12,675	+5
Institutional and Other	9,225	9,625	+4	Multifamily Housing	2,250	2,625	+17
<b>Total</b>	<b>\$18,150</b>	<b>\$19,075</b>	<b>+5</b>	<b>Total</b>	<b>\$14,275</b>	<b>\$15,300</b>	<b>+7</b>
<b>Nonbuilding Construction</b>	<b>\$12,025</b>	<b>\$12,425</b>	<b>+3</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$44,450</b>	<b>\$46,800</b>	<b>+5</b>
<b>North Central</b> IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI							
<b>Nonresidential Buildings</b>				<b>Residential Buildings</b>			
Commercial and Manufacturing	\$12,825	\$14,300	+12	Single Family Houses	\$27,900	\$26,125	-6
Institutional and Other	11,975	12,350	+3	Multifamily Housing	3,850	3,800	-1
<b>Total</b>	<b>\$24,800</b>	<b>\$26,650</b>	<b>+7</b>	<b>Total</b>	<b>\$31,750</b>	<b>\$29,925</b>	<b>-6</b>
<b>Nonbuilding Construction</b>	<b>\$14,600</b>	<b>\$14,550</b>	<b>0</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$71,150</b>	<b>\$71,125</b>	<b>0</b>
<b>South Atlantic</b> DE, DC, FL, GA, MD, NC, SC, VA, WV							
<b>Nonresidential Buildings</b>				<b>Residential Buildings</b>			
Commercial and Manufacturing	\$11,625	\$13,025	+12	Single Family Houses	\$31,325	\$31,400	+0
Institutional and Other	11,000	12,125	+10	Multifamily Housing	3,925	4,625	+18
<b>Total</b>	<b>\$22,625</b>	<b>\$25,150</b>	<b>+11</b>	<b>Total</b>	<b>\$35,250</b>	<b>\$36,025</b>	<b>+2</b>
<b>Nonbuilding Construction</b>	<b>\$11,775</b>	<b>\$11,850</b>	<b>+1</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$69,650</b>	<b>\$73,025</b>	<b>+5</b>
<b>South Central</b> AL, AR, KY, LA, MS, OK, TN, TX							
<b>Nonresidential Buildings</b>				<b>Residential Buildings</b>			
Commercial and Manufacturing	\$10,075	11,675	+16	Single Family Houses	\$22,025	\$21,075	-5
Institutional and Other	9,200	9,450	+3	Multifamily Housing	2,425	2,475	+2
<b>Total</b>	<b>\$19,275</b>	<b>\$21,125</b>	<b>+10</b>	<b>Total</b>	<b>\$24,500</b>	<b>\$23,550</b>	<b>-4</b>
<b>Nonbuilding Construction</b>	<b>\$10,950</b>	<b>\$11,000</b>	<b>0</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$54,725</b>	<b>\$55,675</b>	<b>+2</b>
<b>West</b> AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY							
<b>Nonresidential Buildings</b>				<b>Residential Buildings</b>			
Commercial and Manufacturing	\$16,975	\$17,550	+3	Single Family Houses	\$33,450	\$34,775	+4
Institutional and Other	11,325	12,675	+12	Multifamily Housing	5,025	5,300	+5
<b>Total</b>	<b>\$28,300</b>	<b>\$30,225</b>	<b>+7</b>	<b>Total</b>	<b>\$38,475</b>	<b>\$40,075</b>	<b>+4</b>
<b>Nonbuilding Construction</b>	<b>\$15,550</b>	<b>\$16,675</b>	<b>+7</b>	<b>TOTAL CONSTRUCTION</b>	<b>\$82,325</b>	<b>\$86,975</b>	<b>+6</b>

**Institutional: predictable strength**

The broad institutional category is relatively stable, although long-term declines could be in the offing. *School buildings* will continue to grow. *Academic buildings* and *cultural institutions* may only hold their own as pressure mounts to cut back on public capital expenditures. *Jail cells*, however, remain in demand.

Although the *health-care* industry is also in the cost-cutting spotlight, there is some construction-dollar spillover as institutions remodel to reap savings from consolidation driven by the managed-care juggernaut. Clinics, Murray notes, now account for almost twice as much square footage as hospitals in construction estimates.

**New office construction now a reality**

Rick Pederson, an analyst with Oncor International, a consortium of commercial real-estate firms, notes that office-building construction is slowly gaining as rents in key cities start to rise. In Boston, for example, major construction is likely to begin soon because office rents have skyrocketed in the past year to an average of \$38 per sq ft from \$28. That dramatic uptick, says a Boston-based market analyst, stems largely from the success of the Central Artery Tunnel project and other major infrastructure improvements.

Boston aside, says Pederson, "tightening markets are found particularly in the mountain states." Along with Denver, he cites Las Vegas and Phoenix as growth cities that will likely see new office construction. "Some cities are seeing single-digit vacancy for the first time in many years," agrees Murray.

In New York City, the nation's largest office market, construction has already begun on one major speculative skyscraper—a species that many thought was extinct—in midtown Manhattan, and there is a strong possibility that two or three more projects will begin in 1997. That is happening despite the city's flat job growth, analysts note. The low availability of large blocks of space means that corporations with strong space demand are looking beyond the existing stock.

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

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*Continued on page 116*



## Economy Won't Impede Growth

By Phillip E. Kidd

As the economic advance zipped along at over 3 percent growth in real gross domestic product (GDP) through 1996's first three quarters, jobs increased at a 2.5 million annual pace. That has been good news for income-property investors and architects, since it boosts the demand for space to work and live.

Unfortunately, several trends will cause growth to slacken toward a 2 percent real GDP rate in 1997, cutting employment gains to a 1.8 million annual pace. Although not the best news, slower economic growth will persuade the Federal Reserve to shift from restraint toward modest ease, allowing long-term Treasury rates to dip into the 6.25- to 6.75-percent range in the summer—good news for borrowers.

Consumers are the reason growth will slow. Their expenditures are the most significant part of the economy, accounting for two-thirds of GDP. Recently the household debt-to-income ratio surpassed its 1980's peak. Meanwhile consumer delinquencies, defaults, and bankruptcies are reaching new heights. Not surprisingly, financial institutions are tightening credit standards. Overloaded with debt, consumers will trim their rate of spending in 1997 from the strong pace of recent years, placing a drag on economic growth.

### Rising wages are no inflation threat

With unemployment hovering around a low 5 percent, businesses are reluctantly raising wages to attract workers, especially those with technical skills. Improved earnings will largely be funneled to pay debt down, rather than adding to expenditures. Consumers won't contribute much to growth again until 1998.

The financial markets and the Federal Reserve act as if the spread of higher wages will ignite inflation in the next 12 months. Better wages are not a threat. Domestic businesses face intense competition from foreign companies, so they cannot pass higher labor costs through to consumers. Unable to raise prices, business profits will erode, which will hurt stock performance but won't greatly impact inflation or the real economy.

Nor is the economic advance at risk because unemployment is too low. There are 7.3 million unemployed, 4.2 million part timers, and millions of underemployed workers looking for good jobs. The real peril is the lack of skilled labor. That is why wages are rising in such industries as aerospace, communications, technology, and healthcare. However, not all the skilled people are where the jobs are. Consequently, labor market rigidities will cut job growth to a 150,000 monthly average from its current 210,000 average.

Soon any fear of worker shortages will disappear. Twenty years ago, the number of births began a rise that surpassed 4 million in 1989 and remained near that level during the 1990s. These young people are now beginning to enter the job market.

Significantly, many have grown up with computers and the internet. Businesses will find them much more adaptable to the technology required to produce and sell goods and services in today's global economy. They should add to worker productivity, weakening one of the constraints on faster real GDP growth.

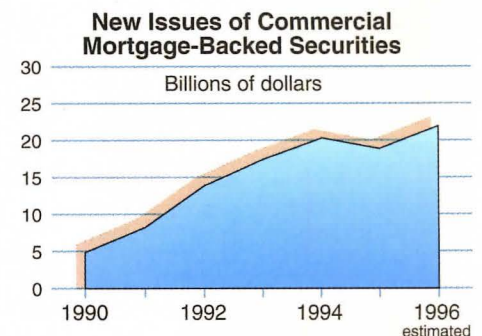
### Commercial overbuilding? Again?

Even with strong employment growth, real-estate professionals worry that another round of overbuilding in the commercial, industrial, and multi-family markets is in the making.

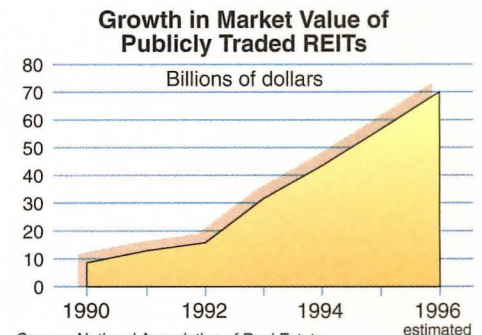
Analysts are concerned because cash-rich lenders continue to pour funds into real-estate investment. What should brake overbuilding is that experienced investors are becoming more selective about funding projects. Significantly, the emergence of real-estate-investment trusts (REITs) and commercial mortgage-backed securities (CMBs) as important sources of real-estate financing is bringing more objective investment criteria into these markets.

REITs and CMBs hold securities that back properties. They require developers and owners to provide current, reliable, monthly figures on income and expenses for each property held. Second, many REITs and CMBs contain only a single type of property, i.e., hotel or office. Consequently, sustained

*Slowing economic growth in 1997 might have meant slowing demand for construction. The good news? Lower interest rates will spur continued expansion.*



Source: Commercial Mortgage Alert And Lehman Brothers



Source: National Association of Real Estate Investment Trusts and Phillip E. Kidd Consulting

*The growing influence of real-estate-investment trusts (REITs) and mortgage-backed securities (CMBs) means that stricter underwriting requirements for commercial development are being put in place.*

changes in the valuations of such securities highlight swings in sentiment to or away from a particular property type.

In other words, investors now have the information to be more knowledgeable in deploying funds primarily for high-return properties in rapidly expanding local markets. Appropriate use of this information should minimize the tendency to overbuild, at least in the next 12 to 24 months.

### Growth ahead

Disciplined deployment of funds for commercial, industrial, and multi-family investment buildings in the near term will position the industry for a surge of activity in another two years. Excess space will be absorbed, and baby boomers' children will need housing—mostly multi-family—and they will need places to work and buy goods and services. ■



# Upward Momentum For Infrastructure

*Federal support for highways, transit, and airports is up. But uncertainties at the local level, and a pending attack on architect-designed highway "enhancements," cloud the outlook.*

Paced by strong federal funding, transportation markets look promising for 1997. That's good news for architects, particularly those aiming at airport and rail projects.

Despite stiff budgetary pressure, the trends for fiscal year 1997, which began Oct. 1, 1996, are upward. President Clinton signed a budget bill that increases the federal-aid highway program, transit formula and discretionary grants (which help finance new rail lines and bus facilities as well as upgrades to existing subways), and airport grants (table right). Local matching money adds to highway- and transit-construction figures.

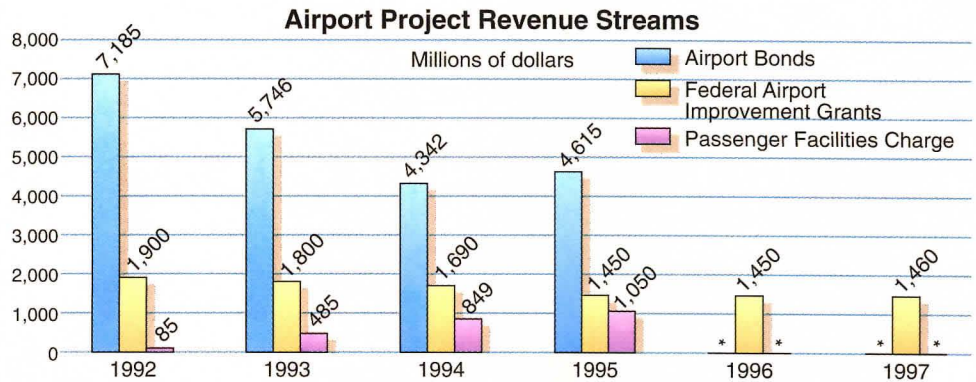
Transit spending is bolstered by a provision in the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), which allows local authorities to shift some road money to transit. Since ISTEA was enacted, some \$3.8 billion in highway funds has been transferred. Much of that has gone to buy buses, but some has been used for facilities work.

"ISTEA monies tend to [help] build a place—not just a rail line," says Greg Baldwin, partner with Zimmer Gunsul Frasca, Portland, Ore. "What it tends to do is make those transit projects real catalysts in community development." Among ZGF's transit projects are several in its home city, including a planned \$40-million streetcar line. Baldwin also sees "a tremendous amount of initiative at the local level seeking alternatives to federal funding."

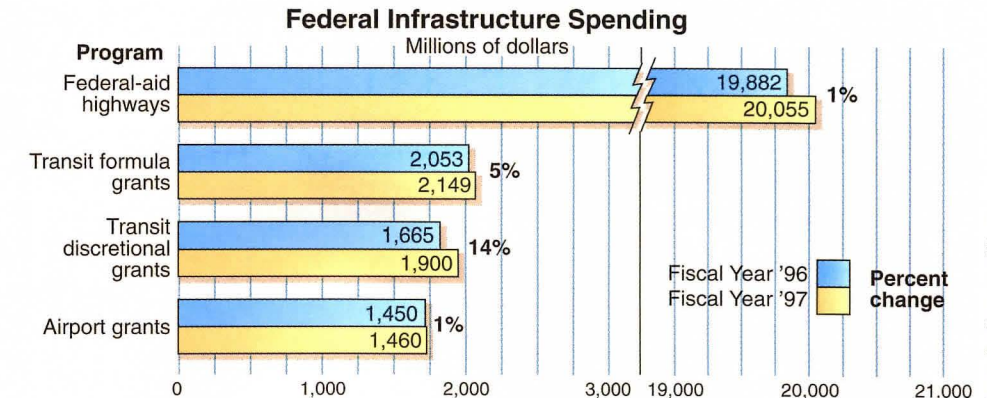
**"Enhancements" under fire**

Architects have benefited from a small ISTEA set-aside that created the "transportation enhancements" program. Through fiscal 1996, states had obligated \$1.3 billion for that effort, according to the General Accounting Office. The largest share has gone for bikeways and pedestrian paths. But 17 percent has been devoted to historic transportation facilities, such as the \$3-million restoration of an 85-year-old train station in Greensburg, Pa., assisted by \$1.4 million in enhancements funds. ISTEA is up for reauthorization in 1997. Its flexibility to shift

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



\* figures not yet available  
Source: Securities Data Co., Federal Aviation Administration, Appropriations Committees, budget requests



Source: Appropriations Committees

*Though federal grants and airport passenger charges are rising, they're not making up for declining airport bonds as a source of financing (top chart). Airlines have been reluctant to contribute to facilities growth, which has caused projects to be deferred. On the other hand, most federal transportation categories are seeing growth (above).*

funding to transit will likely remain. But enhancements, even though they are only 2 percent of ISTEA obligations, face a threat from highway interests, which want to see them abolished, or at least have funding capped and project-approval criteria more limited.

Defenders, which include the AIA, will lobby to retain the program. The Greensburg station project, on the National Register of Historic Places but vacant for more than a decade, typifies the validity of the program, according to William R. Hughes, secretary-treasurer of project architect, RWL Architects/Planners Inc., Greensburg. It will give a lift to downtown Greensburg, "which needs every single assist that it can get to

mitigate the loss of business to the periphery and the building of malls."

Critics see enhancements as pork. Advocates say states have been slow to move. Part of Pennsylvania's allocation of enhancements was approved for Greensburg in 1993. But William A. Roach, president of RWL, says it took 18 months to get the money moved to the local level. Ed Myslewicz, deputy press secretary of PennDOT, says that Greensburg was a "pilot project" with "many intricacies," and such transfers should now go more smoothly.

Stuart Binstock, AIA vice president for federal affairs, sees bi-partisan support for *Continued on page 127*

Charts by Leonor Glynn

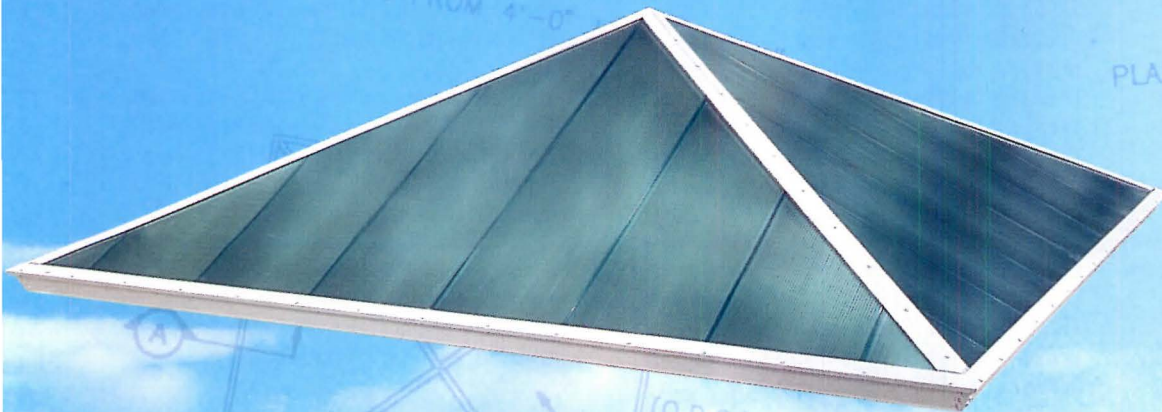
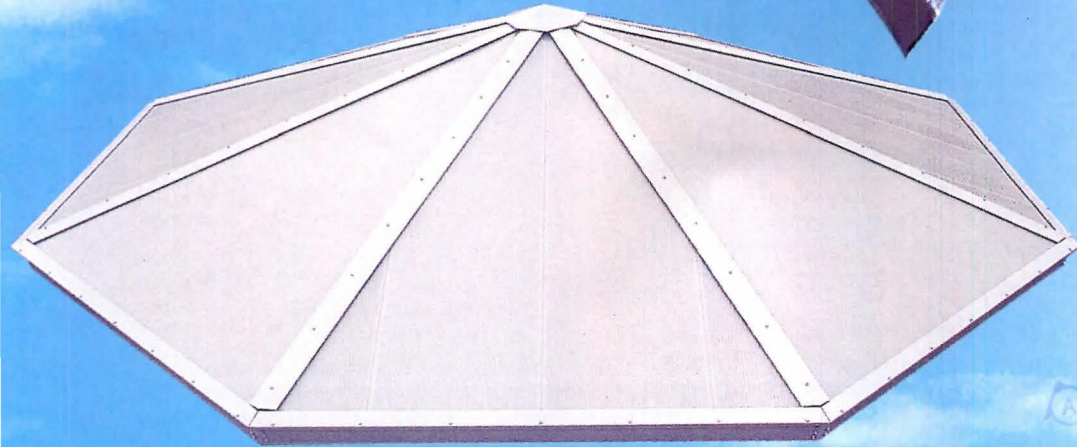
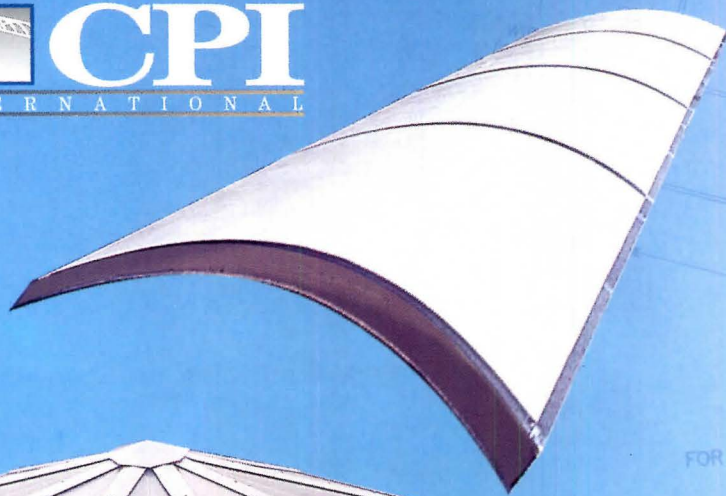
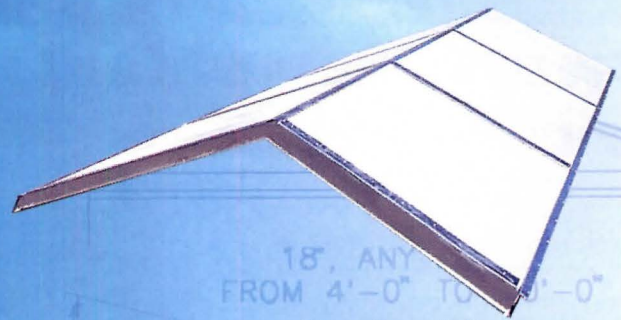


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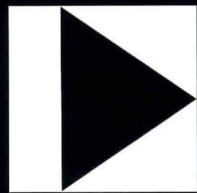


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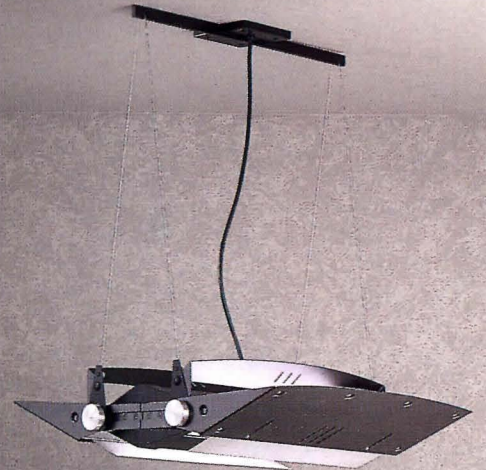
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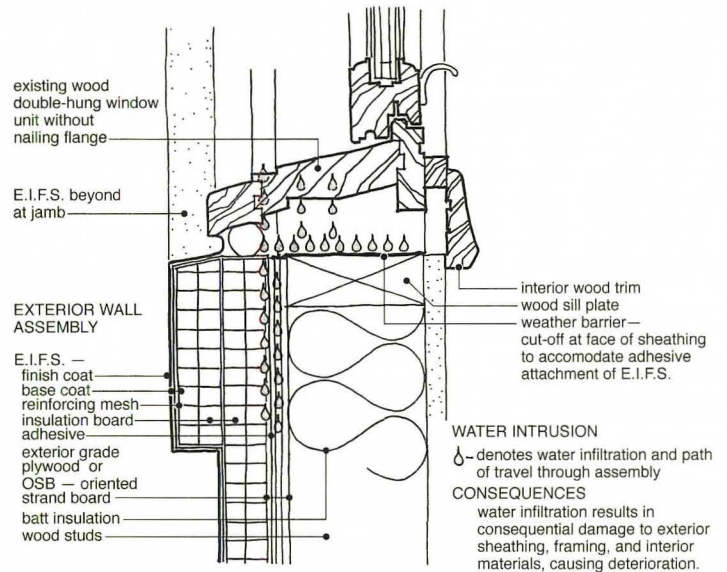
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# Detailing That Weathers Better



By Elena Marcheso Moreno

EIFS—exterior insulation and finish system—is an appealing, low-cost, stucco-like cladding that has proliferated in the marketplace. As use of EIFS expanded from small-scale commercial buildings to both larger projects and multiple residential applications, designers and manufacturers have begun to look beyond standard strategies for detailing and installation.

Part of the system's desirability lies in its unique combination of highly efficient thermal insulation and the wide possibilities it offers in colors, finish texture, and detail. Since many installations have suffered from water-penetration problems, however, architects, builders, and owners are concerned about the reliability of the American concept of EIFS [description opposite]. It relies on a face-sealed membrane to keep water out, and, critics say, fails too often at edges, penetrations, and for lack of backup drainage.

### What can go wrong?

EIFS can fail in two ways. Water can enter exterior walls through gaps around windows, doors, and other penetrations; at joints, and around flashings. And if no provision is made for water to drain, it remains trapped in the

*Elena Marcheso Moreno writes on architecture and architectural technology from McLean, Va.*

wall, even though the EIFS finish itself generally remains intact. Trapped water leaks into the interior and rots sheathing and wall components.

Investigations have shown that gaps in the barrier occur because of improper detailing, poor execution, and poor maintenance. Improperly designed and executed roof and sidewall flashings are particularly vulnerable. Moisture can also collect at lower window corner joints or mull connections.

Kent Stumpe of Synergy, who serves as the EIFS Industry Manufacturers Association (EIMA) marketing committee chairman, says that when standard EIFS is detailed and applied according to the manufacturer's directions the water stays out. A number of manufacturers, architects, and building envelope consultants agree with him, while others question whether such directions are fully adequate or require too-high a level of application expertise, especially in residential construction.

Gary Zwayer, senior consultant with Wiss, Janney, Elstner Associates, Northbrook, Ill., (an architectural, engineering and materials-science firm that has done many wall investigations) agrees with Stumpe that many moisture problems with EIFS occur because manufacturers' instructions aren't followed. Failure to leave proper space for the

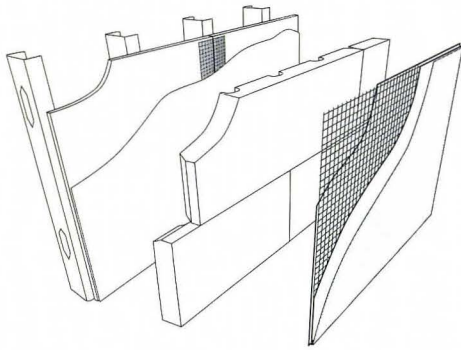
sealant joint is a common problem. Either joint configurations do not allow for proper installation of the sealant or don't allow the sealant to perform as intended during movement. This happens most often at windows, says Zwayer. Also, panel edges are often not back-wrapped correctly and spaces are left between insulation-board edges. While some designers want to use expansion joints where they don't need them, Zwayer often finds these joints missing where they are necessary—at changes in the substrate.

Articulated grooves for ornamentation are popular design strategies, but they have a propensity to crack, says Mark Williams, of Williams Building Diagnostics, Maple Glen, Pa. Grooves thin the EIFS coating, which may crack, says Williams. If designers want to use such details, they and installers must assure suitable thickness. In addition, says Williams, other ornamental features should be mounted atop the base coat to provide continuity of the lamina, rather than wrapping the coat over the decoration.

Steve Ruggiero, principal of building technology with the investigative-engineering firm Simpson, Gumpertz & Heger, Arlington, Mass., says the barrier concept itself is "conceptually flawed," and is in fact more prone to water penetration and leakage damage than widely believed. "Sealant joints and wall  
*Continued on page 44*



*Low-cost and versatile, EIFS have great appeal as an exterior cladding. But successful building envelopes demand that manufacturers, designers, and installers work together.*



*Photo, opposite left, shows the level of intricate decorative detail possible with an EIFS PB product, though designers should be aware of too thin coatings at fine articulations. The window-sill detail (opposite, right) demonstrates how water can infiltrate behind even correctly installed standard sealed and flashed EIFS, wetting the sill plate and the sheathing behind the insulation board. Mark Williams suggests that a remedial PB EIFS detail should include metal sill-pan flashing (with end dams) under the window sill and on top of the wood sill plate. This should extend at least 1 1/2 in. past the edge of the sheathing board. Illustration by E. Keith Stellabott*

*Axiometric (above) illustrates the elements incorporated in Dryvit Systems' moisture-drainage EIFS. The substrate is a fiberglass-faced gypsum board, coated with a moisture-proof membrane. Channels routed directly into the insulation board are designed to capture, control, and direct any incidental moisture to weeps. Reinforcing mesh embedded in a flexible base coat is said to resist impact; the decorative and weatherproof acrylic finish coating is the outer-most cladding component.*

## EIFS—The American System

Exterior insulation and finish systems (EIFS) were introduced to America from Europe, where they have been used extensively since the end of World War II. EIFS is a versatile, low-cost building envelope finish that offers designers a range of appearance options. By the 1970's they had gained popularity for commercial projects. By the mid-1980's EIFS also began appearing regularly on residential projects.

American EIFS shares with European EIFS a reinforced two-coat finish over insulation board. The chief difference is that EIFS in Europe is attached to masonry or concrete. In America, it is most commonly attached to sheathing over wood or metal studs.

### Five components

Insulation board is used to reduce heat flow through the wall and act as an interface between the wall and the exterior finish coat. Adhesives or mechanical fasteners attach the insulation board to a substrate, which can be masonry, plywood, gypsum board, and almost any existing wall surface. Most EIFS adhesives are water-based and contain some type of polymer (a plastic resin). A base coat applied to the outer surface of the insulation board provides structural stability to the finish and serves as a primary weather barrier. The base coat must be thick enough to hold reinforcing mesh, but not too thick to be supported by the insulation board. The glass-fiber mesh embedded in the base coat provides strength and impact resistance to the system. On top of this goes a thin protective finish coat made with an acrylic resin. This is the visible surface where color and texture are incorporated.

### Two EIFS types for different purposes

The *Class PM* system (polymer modified) has a base coat of 1/4-in. to 3/8-in. thickness. It is applied to a heavy reinforcing mesh that is attached to an extruded-polystyrene insulation. *Class PM* EIFS, known as hard-coat, offers the greatest impact resistance, and with its high cement content, has properties similar to stucco.

The more commonly used *Class PB*, referred to as soft-coat, uses expanded polystyrene insulation board and has a minimum base-coat thickness of 1/16-in. Reinforcing mesh is embedded into this polymer-based material during installation. While it has less impact resistance, it is flexible and less prone to cracking. This system is the best choice for complicated building shapes and ornamental details. EIFS can also be plant fabricated into panels.

### Design considerations

"Think carefully when selecting colors for EIFS," says Carlos Buendia, an engineer and owner of Prime Coatings, Springfield, Va. Mold is likely to grow on any building products in heavy shade. A white house in the woods with a large north elevation is not going to stay white, he says. Instead select a darker color. And in his experience, certain colors deteriorate rapidly under ultra-violet light. "The dark yellows, reds, and browns can change a lot," he says.

"We are called in to repair many EIFS projects," says Buendia. "There really isn't anything wrong with EIFS; it is almost always a problem with details or installation. Architects should talk to the manufacturer before they design EIFS details. All the reputable manufacturers are willing to work with their customers." Details should show wall sections of all typical conditions, penetrations, and material transitions. "One of the most common problems we have on jobs is with mixed-up specifications," says Buendia. "A number of architects are used to working with stucco, or the more stucco-like older generation of EIFS. They want to use expansion joints or items that we don't use for *Class PB* EIFS, things like metal lath or metal accessories." Basically, he says, they get confused between the *Class PB* and *Class PM* systems. "Almost always they need the *PB* system because they have designed special shapes and molds, but they specify the thicker *PM* because they are concerned about impact resistance. They can't get both."  
*E. M. M.*



penetrations are problematic due to a lack of backup drainage in the system, and a lack of through-wall flashings," he says. "Building owners take on significant risks when using it in places with frequent rains."

#### Upgraded EIFS

Williams, whose firm specializes in building-envelope investigations, spends a good portion of his time working on EIFS-clad projects, both new designs and remediation. He disagrees with Rugeiro's condemnation of the barrier concept. "Whether commercial or residential buildings, where EIFS claddings are continuous, they generally perform well. The issue is at terminations, where the EIFS starts and stops," he says. He believes the reason for water penetration at these points is that manufacturers' details are not explicit enough and do not anticipate water intrusion from other building components and through-wall penetrations (detail, page 42)

Because EIFS has experienced numerous failures, especially in rainy and marine climates, architects and the industry are devising systems that have more room for error and are less sensitive to imperfect installations. Among ways to upgrade EIFS are:

- ◆ *Back-up barrier:* The architect may add a moisture-proof barrier over the sheathing to keep water that may have leaked from entering the wall.

- ◆ *Flashings and weep holes:* Manufacturers' details often don't take into account the removal of water that penetrates the face-sealed barrier. It is the architect's responsibility to detail flashings and weep holes that can carry out any trapped water. These, combined with a moisture barrier, are called a "drainage plane" solution.

- ◆ *Rainscreen system:* Some manufacturers are now offering systems that create a cavity behind the insulation board to drain water away. To work, it needs suitable weep holes and flashings.

There is no consensus yet on how such techniques should be deployed. North Carolina building officials are requiring that drainage pathways be added for EIFSs installed in the state, and most manufacturers are working to develop and test systems that the state will approve. *This situation evolved after*

numerous failures on houses spurred calls for remedial systems. At least one EIFS manufacturer has backed out of the barrier concept. US Gypsum, with the help of an independent testing laboratory, conducted a test of 30 houses in New Hanover County, N.C., that incorporated its traditional EIFS and determined that the systems failed because of design and construction errors.

Yet, the company found that the houses were built with the same level of care that could be expected for residential construction anywhere in the country. US Gypsum concluded it was unreasonable to expect the quality of standard installations to improve enough to guarantee reliability, so now the company markets what it calls "insulated stucco-look water-management finish systems" that incorporate flashing and weep details and a drainage plane.

"The barrier concept addresses EIFS as a sealed system and manufacturers pretty much deal with it from the outer face without enough consideration of the cross section," Williams says. He doesn't think drainage-plane EIFS is necessary behind all surface areas. "We have found that provisions for drainage are not needed everywhere, only at points where the continuity of the barrier is interrupted. At these terminations, discrete water collection and removal should be provided."

#### Upgraded details and sheathings

Few EIFS details have been developed specifically for standard residential construction, Williams says, so architects should take special care where EIFS meets other components. He points to self-flashing windows, which work well when installed in siding and masonry. However, the self-flashing attachment flange in residential windows is poorly placed for EIFS. In residential construction, the window rough openings are wrapped with materials like building paper. "Because EIFS adhesives don't stick to these surfaces, framing protection is not integrated," Williams points out. "Rough framing needs to be protected from incidental moisture." Also, "Some [EIFS makers' details] call for waterproof windows, which don't really exist."

Most common sheathings for EIFS include plywood, oriented-strand board (OSB) sheath-

ing, and gypsum board. Plywood and OSB are used most frequently for residential construction. Moisture-caused expansion of the sheathing can damage EIFS bonds and crack the finish.

Gypsum board is typically used in commercial buildings to help meet wall-assembly fire ratings. Adhesives usually fasten the insulation board to the sheathing, but paper-faced gypsum sheathing can delaminate in the presence of water, experts say. The U.S. Department of Housing and Urban Development and the U.S. Army Corps of Engineers have banned gypsum-based sheathing on their EIFS projects, depending instead on cement board or calcium-silicate board. Some manufacturers now require the use of fiberglass-faced gypsum sheathing.

#### Detail for high winds

For substrates such as masonry, concrete, and plywood, plastic and metal mechanical fasteners are used to attach EIFS. However, the attachment is not continuous as it is with adhesives, and it offers lower wind resistance. Williams suggests both adhesives and mechanical fasteners are needed in some applications.

Wind loads can cause wall deflection. When dealing with high-rise EIFS applications, Williams says it is critical to calculate wind-load pressures accurately or wind loads could cause EIFS to detach on higher levels, if fastening is not sufficient to keep fluttering insulation from breaking adhesive bonds or pulling out fasteners.

Metal-stud walls are particularly vulnerable in marine climates and merit careful attention to leakage, if used. "I have looked at too many problem metal-stud projects," says Zwyer. "It's not the EIFS per se, but any building assembly that flexes." Consequent leaking is exacerbated because movement scrapes protective galvanizing off the studs. "Salt air accelerates corrosion. Leaking buildings in coastal areas corrode more than buildings in other places." Zwyer says that metal studs are never used with EIFS in Europe. If a metal-stud system is to be used in these conditions, the architect should be sure it is suitably protected from moisture penetration. ■



# Remaking Bucharest: Are Ideas Enough?

*An ideas competition that could propel the urban plan of Bucharest into the 21st century.*

By Barry Bergdoll

"Can an international ideas competition rehabilitate at once a heavily-scarred urban center and a shell-shocked architectural profession?" That's the question posed by the "Bucharest 2000" competition, judged in early September. At the heart of the controversy is the gargantuan "House of the People" and the nearly one-mile-long Boulevard of the Victory of Socialism constructed by Nicolae Ceausecu, perhaps the last 20th-century European dictator to use monumental Classical architecture and urbanism to glorify his regime. Ceausecu diverted a terrifying percentage of Romania's annual budget in the 1980's to these projects. Their construction involved the demolition of 1,200 acres of the historic core, dating from the 17th to 19th centuries, and a daunting ensemble of late Byzantine and Neoclassical churches and monasteries, only two of which—haphazardly reerected behind the new boulevard's facades—were saved.

### A stage set left empty

This stage set was never to serve, for the uprisings of December 1989 and the televised trial and execution of Ceausecu and his wife took place against the backdrop of the older public squares of the city. Days later a stunned local public and probing television cameras entered the unfinished marble halls and wood inlaid chambers of this so-called House of the People for the first time. The "House" had by then employed most of Bucharest's architects, although few could examine plans of more than a portion of the building, which took shape as much through Ceausecu's evolving fancy as it did through the designs of his young architect Anca Petrescu.

This concrete white elephant with its vast surrounding void has been a political and architectural quandary since Ceausecu's fall. Construction cranes rust on the incomplete exterior, while inside workers busily hang chandeliers and unroll carpets, even though no one has proposed a program to fill the

*Barry Bergdoll teaches modern architectural history at Columbia University and was a member of the Bucharest 2000 competition jury.*

vast building (exceeded only by the Pentagon in floor area) and everyone is nervous over the symbolism of succession here. Romanian architects are all but unanimous in their disdain, but significant segments of the population harbor a sense of pride in its workmanship, not the least the members of the newly-formed Chamber of Deputies, who, earlier this fall, took up residence in one of its wings.

"Bucharest 2000," announced in late 1995, was the most ambitious of a series of efforts of the Union of Romanian Architects to reinvent a place for architects in the decision-making process about the future of Europe's ninth largest city. In 1990 the Union circulated an exhibition of photographs, many taken clandestinely, of the 1980's destruction. They then turned to studying Bucharest's astonishing International Style residential and commercial buildings, which line the 19th-century boulevards grafted onto the haphazard and low-scale traditional Balkan urban fabric of the city, where they see viable starting points for remaking the center.

### An ideas competition takes off

As early as 1992 the idea of a competition was discussed to take advantage of the slowly melting freeze-frame situation in Bucharest, where both architectural and economic voids created by Communist rule have yet to give rise to large-scale land speculation. Western investment has been sluggish compared to other former Communist capitals, hindered by doubts of the reality of political change and by the state's reluctance to resolve issues of land ownership. "Bucharest 2000" took place in a charged atmosphere since, for the first time the city and the press have been polarized over a series of speculative projects, most notably New York City-based architect (and Romanian exile) Vladimir Arsene's project for a tower addition to one of the historic center's hotels.

This transitional moment was reflected in the competition's open-ended brief. Little was specified beyond rough percentage of uses—governmental, commercial, residential, and public space—in the zone to be studied and no specific buildings were required. The ground rules were only that no major demoli-



*The almost one-mile long Boulevard of Victory, the heart of Nicolae Ceausecu's vision of Bucharest (top).*



*The boulevard's centerpiece, the "House of the People," designed by Ceausecu's architect Anca Petrescu.*

tion of either "House" or boulevard would be considered realistic; that contestants were to restore a lost urban coherence and provide for Bucharest's emergence on the European economic and political stage; and that the restoration of the famed 17th-century Mihai Voda monastery to its original location was favored.

### A flood of responses

The 235 solutions ranged from projects aimed at reconstructing the center with the imagery and strategies of low-scale neo-traditional urbanism associated with Leon Krier and the Prince of Wales to projects for office towers either scattered or grouped into a composition around the "House." A small group of competitors seized the invitation to design manifestoes either on the nature of the post-industrial city or, in the case of several contributions from exiled or disenfranchised Romanian architects, to vent their anger and frustration, but none of these approaches found sympathy with Romanian jurors, who were eager for realistic solutions.

© Barry Bergdoll photos



Such a solution might have a chance of fulfilling the competition's promise of a consultancy position for the winner.

### **International jury, international prize-winners**

In April, an international jury selected 15 projects for further study to be judged over the Labor Day weekend when five prizes and five honorable mentions were awarded. The 13 member jury included Kenneth Frampton (elected president of the jury), Dan Hanganu, Fumihiko Maki, Josep Martorell, Vittorio Gregotti, Claude Vasconi, Polish architect Krzysztof Chwalibog, and myself, Barry Bergdoll, as well as five Romanian members, including Alexandru Beldiman, organizer and driving force behind the competition, the City Architect and the Minister of Public Works.

First prize of \$100,000 was awarded to Meinhard von Gerkan of Hamburg, Germany; second prize to Franz and Marina Echeriu of Innsbruck, Austria; third to Adam Drisan and James Saywell of Florence, Italy; and equal fourth prizes to Domenico and Federico Fiorani of Pistoia, Italy and Pierre Sicard and Paul August Gilliot of Tarbes, France. The only American among the finalists was Amy Anderson of New York, awarded one mention, the other four going to Romanian teams either in Bucharest or in exile in Paris. Richard Roger's fantastical project for a series of high-tech towers of diverse forms ringing the House of the People was among the finalists but not premiated.

### **Jury support for von Gerkan**

Von Gerkan's scheme found rapid support among the jurors, who admired its juxtaposition of a flexible urban network of perimeter blocks of various dimensions with a corridor of high-rise office development, an approach adapted from his 1993 scheme for the redevelopment of the rail yards in the center of Stuttgart. His plan rationalizes the street network, creating a series of north-south connections through a zone whose isolation from the city has been furthered by the voids created by the monomaniacal east-west axis.

At the same time, von Gerkan envisions traces of "historical memory" for the sinewy and picturesque pre-1980 street network of the area by allowing the perimeter blocks to



*First prize of \$100,000 went to the scheme of the team led by Meinhard von Gerkan of Hamburg, Germany for the above scheme.*

be pierced by pedestrian paths weaving through on the lines of streets erased by Ceausecu's bulldozers. The urban grid interweaves a series of large scale green spaces and is played off subtly against a newly articulated course of the Dambovita River on the northern edge of the site. The commercial corridor forms a wide diagonal (roughly north-south) cut behind the House of the People, which nearly sideswipes one pavilion of the building and thus serves at once to destabilize the "House's" insistent axiality, to integrate it in dense urban fabric, and to offer significant competition to its dominant silhouette.

The jury admired the realism of this approach: while containing the towers in one part of the city, rather than allowing their haphazard proliferation in this low scale Balkan metropolis, the plan does not propose a high formal composition likely to be compromised by development lags or by individual architect/developer's projects.

### **A debate over Bucharest's future**

The unanimous enthusiasm for von Gerkan's

scheme was remarkable since all the other schemes occasioned a lively debate over Bucharest's future and quickly underscored not only the usual personal differences among jurors but also substantially different attitudes between architects from the former Communist countries and the jurors from non-Communist nations. Those only recently freed from the strictures of professional practice in Communist countries, and those witness to Ceausecu's operation were especially eager that the solution be not merely a reasonable path for the future, but , in addition, that it exercise some retribution for the past.

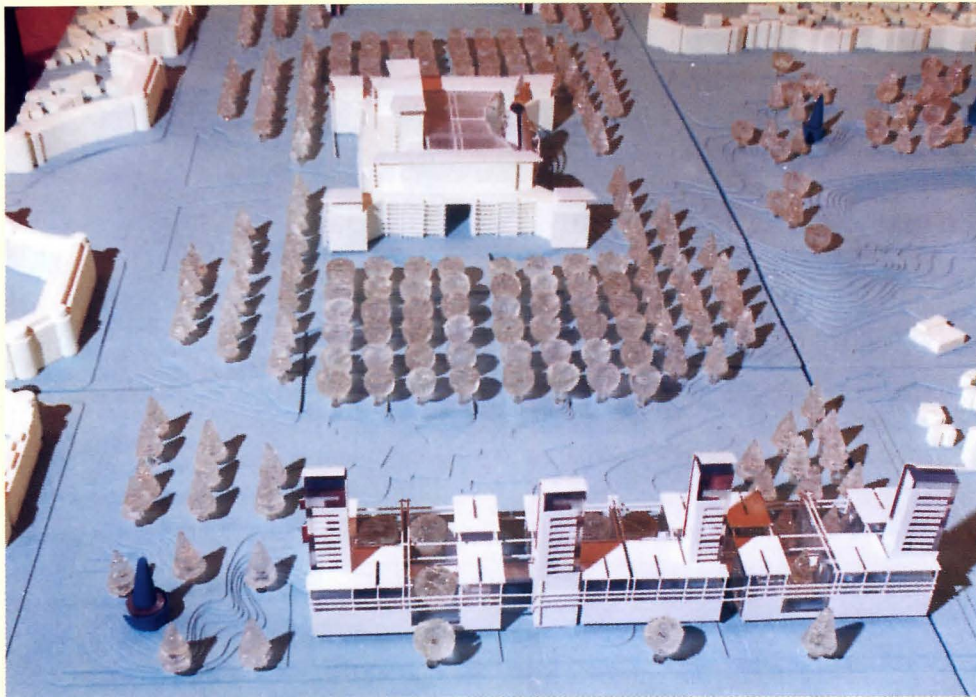
### **Rules open to interpretation**

Although the rules of the competition implied an acceptance that the recent past could not be denied in an effort to recuperate an older one, most Eastern European jurors were enthusiastic about proposals that cut or blocked the great axis of Ceausecu's boulevard in some way. Ironically, "Western" jurors were more leery of free-market high-rise development than their Romanian counterparts, who are eager to see business





*The entry by Richard Rogers Partnership was a finalist in the competition, but did not receive an award.*



*The scheme by Amy Anderson, of New York City, received honorable mention. It was the only American project among the finalists.*

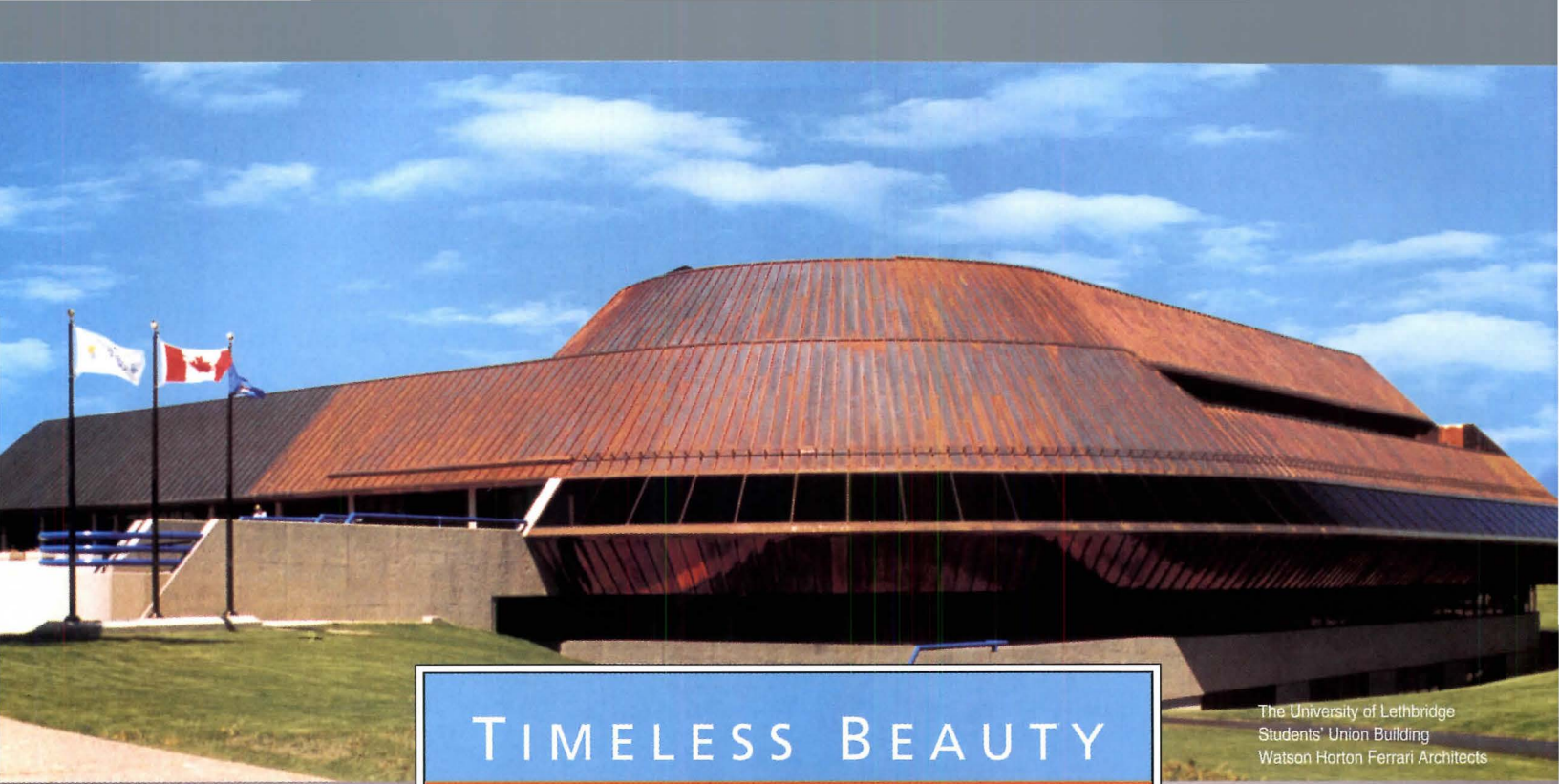
investment in this quarter even while they are suspicious of using the guiding hand of strong zoning or government incentives to attract it here from the periphery of the city where all signs indicate that an edge city might develop while Bucharest awaits the reconstruction of its heart.

The enthusiasm of some foreign jurors for landscape and ecological approaches as suitable responses for a post-industrial city, where the river, monuments, and pedestrian leisure might find their place alongside the concerns of modernizing the traffic network, met with a local sentiment that the city needed to “catch-up” rather than surpass Western European capitals.

In addition, the jurors viewed such radical projects as Amy Anderson’s landscape design, with minimal built intervention, as intriguing architecture but dangerous politics, fearful still that the Romanian state, where the old Communist class retains considerable power under new names, might find here an excuse simply to maintain the voids of the palace and negate the goals of the competition both in specific design terms and in a much hoped-for role for architects in an open, on-going debate about the city’s future form.

Excitement was palpably high in the local architectural community as the projects were put on exhibit in a cavernous hall of the “House.” Still, the Romanian presidential elections later this month and the as yet unannounced program of a recently appointed City Architect will reveal if von Gerkan’s plan will be married with a powerful administrative agency for future study and implementation, or if it will merely be the subtlest and one of the most realistic models of urbanism in the book the competition organizers have promised for next year. ■





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## Is There a Quiet Place in the Alternative Office?

By Dana Holbrook

The hushed, paneled confines of old-line Wall Street firms are nowhere in evidence at BEA Associates, a financial-management firm located in the Citicorp Center in New York City. Instead, there's a constant burble of activity in the open bullpen that holds 60 trading stations and support staff. Traders sit just 12 ft apart, phones glued to their ears. Time to remodel? No, the space has been renovated this way, by New York City-based Phillips Janson Group Architects, because BEA sees this acoustically calibrated commotion as energizing, not deafening.

Noise is a stimulant that, in the right amount, spurs productivity. But surveys show noise contributes more to workplace distractions than poor lighting or air quality. And offices are becoming noisier—often unintentionally—as printers, speakerphones, and

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sound-emitting Web pages become more prevalent. Also, more work is today done in teams, and more interaction is expected. But when boisterous teams are placed next to individuals needing either speech privacy or intense concentration, conflicts arise that are not always solvable by traditional means.

### Open office distractions

In the 1970's, when open-office plans first caught on, walls came down and cubicles were spread in vast office "landscapes." Throwing everyone into one giant, open pot, it was believed, would eliminate the boundaries imposed by private offices, improve communication, and foster creativity. The pioneering open-office plans had generous space standards and irregular layouts to offer lots of casual opportunities to meet. But today, cost-driven companies have tightened the standards, lining cubicles up like railroad cars, often 10 ft apart or less. Workers became unwitting eavesdroppers, barraged with conversations from all sides. (An average office conversation is audible within 50 ft of the talker.) Managers increasingly found themselves fielding complaints about too little privacy and too many distractions.

It is specifically the human voice that halts workers mid-thought and prevents them from concentrating. "It's practically impossible to tune out another person's voice. We can't help but listen," says Dennis Milsom, a

principal at Shen Milsom Wilkie, acoustical engineers based in New York City.

### Acoustics for the "alternative" office

Now that the team spaces and non-hierarchical arrangements of the so-called "alternative office" are driving designers to pull down walls again, the acoustical qualities of these new kinds of spaces must be tailored to their occupants. "After our early enthusiasm for cavernous spaces, we realized that boundaries can be established in a variety of ways," says Garth Rockcastle, a principal at Meyer, Scherer & Rockcastle, a Minneapolis architectural firm that has been at the vanguard of new-office trends. "There is no one right way to configure office landscapes."

The firm is completing a project that defines the new challenges designers face. SEI Corp. provides financial services to banks and high-net-worth individuals. Because employees work in very fluid teams, private offices would have impeded the high-speed interaction needed, and even conventional systems furniture was not flexible enough.

Instead, Meyer, Scherer & Rockcastle designed a long, narrow building that resembles nothing so much as the old mills that once dotted the countryside of its suburban Philadelphia location. The 180,000-sq-ft interior is completely open except for conference areas and meeting rooms. Desks and filing

*David Sabalvaro, a principal at Studios Architecture in San Francisco, suspended acoustic clouds—faceted, geometric shapes made of metal studs and acoustical batt insulation wrapped in wire mesh—over groups of workstations in an 80,000-sq-ft warehouse converted to open offices for Silicon Graphics. The "clouds" not only delineate the space, they mitigate the clatter without installing a ceiling over the entire area. A lab at Charles Salter Associates simulates for clients the sound qualities of various assemblies, shown on computer screens, opposite.*



© M.S. Joel O'Callahan



*Higher noise levels may be desirable in today's more collaborative office environments. Whether or not this is the case, acousticians and architects more often find themselves negotiating acoustics to match office work styles.*

cabinets are on wheels; staff simply roll them into whatever arrangement is needed at any given time. Computer and electrical hookups descend like coiled umbilical cords from a power and data grid in the ceiling. There are no cubicles; freestanding folding partitions are available for employees who need temporary privacy. "The company wanted to eliminate status distinctions among the 700 employees and create a setup that was flexible. We had to reflect that egalitarian attitude in the architecture of the space," says project manager John Cook.

How all that open space will work acoustically is "a good question," Cook says. "It may be a case of a lot of noise creating privacy." No one can overhear a conversation in a crowded diner or on a busy street.

#### Masking makes privacy

Although an acoustical engineer was involved in the project, about the only acoustical concession the client agreed to make involved lowering the population density: there is about 25 percent more space per person than conventional offices. While the hvac was designed to produce a steady whooshing noise that masks sound, SEI didn't want to spend a lot of money on noise mitigation, a spokesman for the company says. A bustling environment is more stimulating to workers, he says, and the money saved can be re-invested in employee and client services.

In large open areas, such as those at SEI, background chatter can often mask individual conversations. But in smaller spaces, office noise isn't consistent; during quiet interludes privacy evaporates. That's why Phillips Janson used a sound-masking system to make BEA's bullpen lively but not overwhelmingly noisy and to take the edge off the traders' voices.

Sound masking is a sort of glorified stereo that generates broad-band, low-level white noise and broadcasts it at a constant volume. The sound produced is uniform to within two decibels throughout the space, according to Tom Koenig, marketing director for Dynasound, Inc., a maker of the systems.

Speakers are set on 14- to 16-ft centers, depending upon the number of offices and people and the square footage of the space. They hang from the structural deck above the ceiling and broadcast upward, diffusing the white noise to prevent hot spots. Sound-masking systems sound like air conditioners. Milsom says he once turned off a system and watched 50 or 60 employees simultaneously stand up and take off their jackets.

Sound-masking technology has progressed considerably in the past decade. While most acousticians wouldn't have considered it previously, sound masking is now "one of the fundamental parts of open-plan design," says

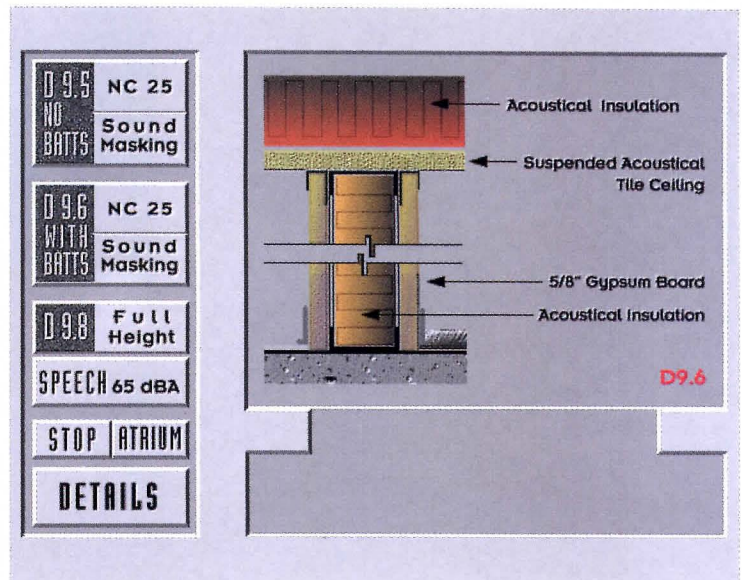
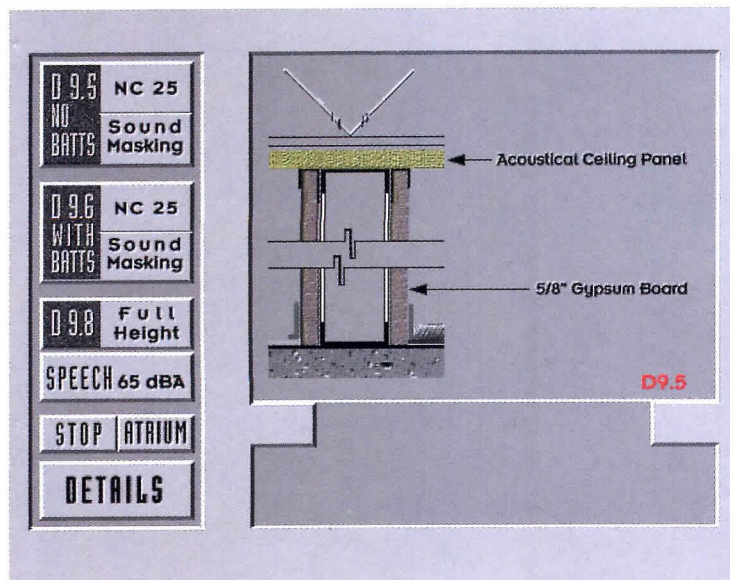
Ken Graven, principal consultant for Charles M. Salter Associates, an acoustical consulting firm in San Francisco.

#### Openness versus noise

In general, open plans include three types of acoustical classes: Class V for loud, interactive group areas; semi-private or Class IV areas are for small groups. Class III is reserved for private offices or partition systems that provide audio and visual seclusion. Classes I and II offer confidential privacy and are hard to achieve in an open area. Systems furniture, screens, changes in floor level, or even different ceiling treatments can be used to create different classes.

Some individuals thrive in noisy or semi-private atmospheres: televisions and video games blare in trendy new-media offices. But other people need quiet. And corporate culture can clash with individual need.

Open cubicles are de rigueur for most employees at Apple Computer. But software engineers balked when the company planned a new facility for them in Cupertino, Calif., that would force them out of private offices. Many older engineers are used to having private offices and like the status that goes with it. But more important, because of the nature of the work—writing computer code—they need uninterrupted time to concentrate, say company officials.





*"It's essential that the needs of the interior designer, the acoustical engineer and the client be balanced with those of the architect."*

—Dennis Milsom

The four architects that designed the interiors of the complex (Gensler, John Holey, Backen Arrigoni and Ross, Studios) tried an increasingly common tack: the "cave and commons," in which clusters of private offices surround open casual meeting areas furnished with lots of soft seating and white boards. The offices are quiet: not only are walls sound deadened, but specially absorptive ceiling panels keep sound from traveling over the partitions, which extend to the panels, but not to the structural deck above.

The private offices are popular. Since completion in 1993, Bill Tagg, senior manager with development, design, and construction for Apple, says more cubicles have been turned into private offices. While there's plenty of activity in the common areas, some of the common space has been "backfilled" with private offices, says Tagg.

Sometimes designers limit their acoustical options. "To architects who insist on white plaster walls, hard ceilings, and wood floors, acoustically rated materials are the architectural equivalent of orthopedic shoes. It's essential that the needs of the interior designer, the acoustical engineer, and the client be balanced with those of the architect," Milsom says.

It is possible to accommodate almost all types of employees in a single open layout, but it

requires carefully balancing furnishings, mechanical systems, office layout, floors, ceilings, and walls—the components that make up what Milsom calls "an acoustical system."

### Improving sound measurement

Until recently, designers depended on the combined sound-transmission class (STC) and noise-reduction coefficient (NRC) ratings of components to calculate the acoustical qualities of office space. These ratings were increasingly recognized as inadequate for open-office plans, because so much sound bounces off ceilings and passes over and around partitions.

ASTM Committee E-33 is charged with setting office acoustic standards and product-testing procedures that are truer to real-world conditions. ASTM standards for open offices were first introduced in 1993, and are to be updated every few years to keep pace with the range of products and materials available. Manufacturers must test according to a new set of standards to earn ratings. ASTM introduced a new measurement, the articulation-class index, to reflect the speech privacy likely to be offered by the tested assembly. For a quiet environment, designers select products with high NRC ratings—a rating of 1 is perfect, .8 is very good. Articulation class ratings work in reverse—1 indicates a noisy area, .2 is normal privacy, and .05 is total privacy. In

theory, office acoustics are measurable during the design stages by averaging out the NRC ratings of the various materials used or looking at the articulation class. But most architects have found from experience that it's practically impossible to know what a space will sound like until you get in it.

Acoustical consultant Charles M. Salter Associates has a simulation lab that uses a combination of computers and broadcast systems to test different construction assemblies for their acoustic qualities. Architects can invite clients into the lab to hear how an open office will sound using mockups made from the actual materials that are specified.

"Computer-generated trials are helpful but having the real things gives clients a much better sense of what they're getting," says Salter's Graven. "It's a good way to fend off employee complaints." (The computer-screen images, previous pages, show clients the kinds of assemblies being demonstrated.)

### Coping with cubicles

Open offices have meant a huge increase in the popularity of the cubicle—viewed by many architects as a mixed blessing. Like sound masking, the range and quality of furnishings has improved dramatically, says Gary Wheeler, an interior designer and president of The Wheeler Group in Minneapolis. "Systems furniture is more flexible and more



*Team work spaces, such as Apple Computer's "user-defined areas" (left) need to be calibrated to the acoustical needs of clients. (The one shown was designed by Studios.) In these, intentionally formed as eddies in the complex's circulation spine, noise levels can be high. But adjacent private offices need heavily sound-insulated walls to encourage concentrated individual work. BEA Associates, opposite, wanted a hubbub—but not too much of one. Acoustical consultants Shen Milsom Wilkie added sound masking. (Speakers, above the ceiling, are invisible.)*



effective acoustically than ever," he says. Panels, for example, are gasketed at the joints to prevent noise from migrating through cracks. They're available in wood, stone, and other materials, as well as fabric—all with sound-absorptive qualities.

Perhaps the best way to guarantee the success of an open office is to give employees the illusion of acoustical privacy. "Taller panels, even when they function only as visual screens, make people feel like their space is quieter," Wheeler says. Soft colors, rich wallcoverings and subdued lighting also make the office more peaceful. A luxurious setting has the effect of making people speak more quietly. But cubicles are still claustrophobic. Workers perceive them as a cheap way to provide a "private" office. And the closed-in spaces prevent light and fresh air from entering the work area.

The lowered partitions, the team-work areas, and the higher noise level of today's alternate office take getting used to—sort of like sleeping in the roar of the city when you're used to the quiet of the country. "In a new facility, the managers may get nothing but complaints for the first month. But by the second month everyone is used to it," Rockcastle says. "Then, walking into a building with nothing but private offices is stultifying. It's as if all the energy was sucked out." ■

## Untangling Acoustics Acronyms

**Measurements:** Decibels (Dba) measure sound intensity. To effectively reduce airborne noise, the designer needs to take into account several frequencies, measured in hertz (Hz).

**Sound-Transmission Class (STC):** A number that represents the ability of a barrier to reduce the intensity of sound as it passes through. Individual products are tested and given STC ratings. Many assemblies (such as stud walls or doors) are also rated, but the rating of a door with even a small glass light will likely fall closer to the low rating of the window, even if the door itself is highly rated.

**Noise-Reduction Coefficient (NRC):** Measures a material's absorption of sound. The difference between this measure and STC is that the more absorbent the material, the less sound it will *reflect* back into the room. Typically such measurements are obtainable for products or acoustical materials. Additionally, a publication of the American Society of Interior Designers recommends that systems furniture panels provide a Speech Frequency Sound Absorption average at .80 or greater.

**Articulation Class (AC):** Another single-digit rating, this is supposed to overcome flaws in the NRC and STC ratings, since neither accurately takes into account the environment of open-office or cubicle plans. These classes are also focused on measuring absorption or attenuation of the human voice and take into consideration the passage of sound over and around partitions and ceiling plenums.

**Articulation Index (AI):** The shortcoming of all the previous measures is that they rate only the performance of components. The index, derived from testing under ASTM standard E 1130, "Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index," duplicates conditions that actually occur in real-world, open-office environments. *J.S.R.*



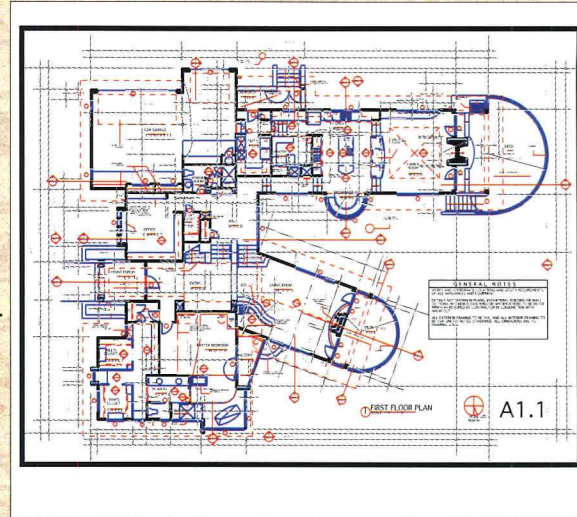




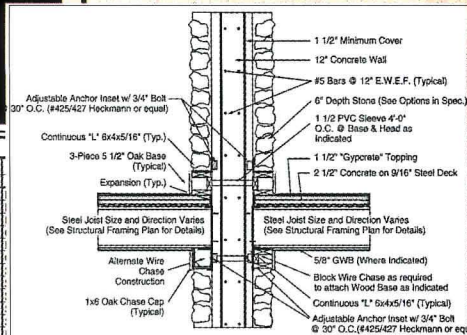
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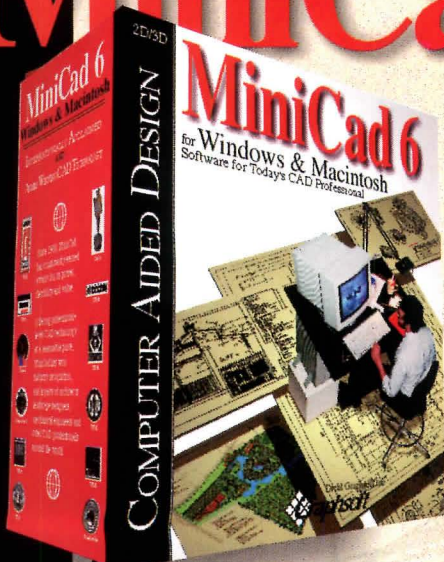
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\*Image 1 - Courtesy of Francois Levy, Dick Clark Architects, Austin, TX  
\*Image 2 - Courtesy of Cameron Lacy, DCL Architects, Wayne, PA  
\*Image 3 - Courtesy of David Brunke, Herring & Trowbridge Architects, Herndon, VA

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**MACINTOSH WINDOWS**



## Architriion Tries a Comeback; Lightscape Reviewed

Here are two programs that take different points of view toward visualization problems: Architriion VI and Lightscape 2.01.

By Steven S. Ross

It's been a long time since we looked at Architriion, once king of the hill among high-end 3D Macintosh CAD software. The reason is simple: There wasn't all that much to look at. Architriion stored 3D information in simple entities—cubes, essentially. That was a terrific idea for the slow computers of the 1980's. But it limited flexibility. For instance, Architriion had trouble drawing sloping walls and roofs.

As faster computers came available, Architriion remained long overdue for an upgrade. But its ownership changed, and Architriion missed its best window of opportunity. ArchiCAD filled the void, along with MiniCAD and others.

To catch up, BAGH had to release a total rewrite this summer. The rewrite had bugs; fixes should be out now. The overall package seems well-conceived and easy to use.

The lesson: Architects cannot expect a risk-free environment when it comes to software. Vendors on top don't always stay on top. Mitigating the risk, however, is the trend toward more standard file formats and toward specialized software modules (rendering, drafting, and so forth) that work together. All the packages we looked at for this month's reviews can handle DXF well, for instance.

### Architriion VI

**Vendor:** BAGH Technologies, 4446 Boulevard St-Laurent #300, Montreal, Quebec, H2W 1Z5, Canada. 514/285-1717, 800/561-0522, fax 514/285-1365, <http://www.architriion.com>.

Equipment required: Macintosh (PowerMac 6100 or higher, System 7.5 or higher, 40MB RAM recommended), Windows NT or 95 (40MB of RAM recommended), Silicon Graphics. You can run a reduced version (without ACIS solid modeling) in a Macintosh with as little as 24MB of RAM running a 68K-class CPU with math coprocessor, or on a 486-class Windows 95 computer with 32MB.

**Cost:** \$3,595 (\$4,950 Canadian) until Dec. 31, regular price \$4,495 (in Canada \$6,300). Includes one year toll-free support.

Competitive-upgrade pricing available; contact BAGH at 800/561-0522.

This long-awaited upgrade of what was once one of the most advanced 2D/3D drafting and modeling programs for the Macintosh still has some rough edges—edges that are due to be smoothed in further upgrades promised for this month and January. Architriion VI now also runs on Windows and Silicon Graphics Unix computers. We intensively reviewed in Windows 95 but have worked with the software on the Mac as well.

The Architriion interface is somewhat familiar as it has been copied by others—you are always editing in 3D; even when you place an object in 2D, it has 3D attributes. But the suite of drawing tools beats most others. You can create a complex 3D profile by sweeping a complex 2D shape through space, or combine primitives such as spheres and cylinders to make complex forms.

In a sense, Architriion combines good drafting tools with good boolean modeling tools, such as splines and fillets, and allows rendering as well. Those who do complex interior design will find it particularly useful—it runs fast and has outputting tools that are good for working with less-sophisticated clients. But it is certainly suitable for full-blown CAD duties as well.

All that being so, should you invest? That's a tough call; the company has fallen behind many of its competitors just in terms of marketing power and current market share. If you have been using Architriion V, the upgrade will not be seamless; the internal file structure has changed quite a bit in this upgrade. This makes switching to an entirely new system less difficult to contemplate.

If you are using a Macintosh, any new upgrade will probably run more slowly than older existing software—but this version of Architriion will run faster on the Mac than the new versions of ArchiCAD and MicroStation for the Mac.

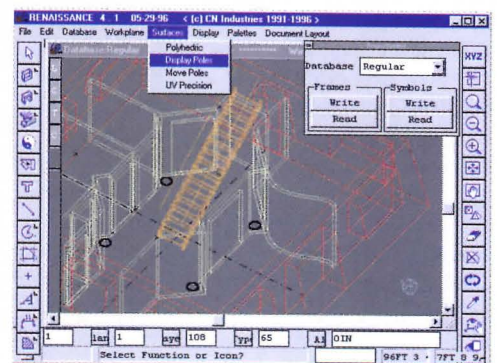
Architriion certainly can co-exist with AutoCAD (it imports and exports DWG and DXF) and in offices with multiple computer types. Thus, if speed is important to you, and the specific modeling tools available on Architriion are particularly important as well, you owe yourself a close look.

**Manuals:** Two large looseleaf binders; 278-page tutorial and installation guide and 380-page reference.

**Ease of use:** The quick response time makes up for a lot of rough spots in the interface. The software comes with numerous symbols and textures.



Architriion lets you put four views on-screen at once. They can be set up in a grid or resized to overlap one another randomly.



You can draft in one window and check the database of symbols and frames (symbols on windows, doors, etc.) with Architriion.

**Error-trapping:** There's undo and good on-screen prompting if you plan to do anything that might overwrite data. There's also autosave and a recovery file. You can display the history of an element, even from the beginning of a project.

**150 on Reader Service Card**  
Software Reviews continue



## Lightscape 2.01

**Vendor:** Lightscape Technologies, Inc., 1054 Saratoga-Sunnyvale Rd., Suite 200, San Jose, Calif. 95129, 800/343-0073, 408/342-1900, fax 408/342-1910; <http://www.lightscape.com>.

**Equipment required:** Intel-CPU computer running Windows NT with 32MB of RAM. A display card capable of OpenGL acceleration will speed work. We reviewed with NT 3.51.

**Cost:** Windows NT version is \$2,995; SGI is \$4,995; 90 days free support. Resellers are buzzing about significant price drops due soon. For retailer nearest you, contact the company.

This fast, stable, and feature-laden 3D rendering package can turn almost any 3D image into a photo-realistic scene. It requires Windows NT and 32MB of RAM—about average resources for this class of software. Still it does not require a degree in rocket science to use. And because it does not depend on slow ray tracing, but uses radiosity (light energy) calculations by default instead, it won't tie up your computer for a day at a time while it calculates how the final rendering will look.

The final results are, nonetheless, extremely pleasing to the eye. Why? Calculating the radiosity of a surface is easier for the computer than "ray tracing" every beam of light from the eyepoint back to a source. And the final results are quite similar as long as the light sources are diffuse—as they almost always are.

On the other hand, if you have a scene with lots of reflections, or with mainly point light sources—a candle-lit dinner party, for example—ray tracing will be more accurate although radiosity might capture the "mood" adequately. (Shadows will be more diffuse than they would appear in real life with radiosity processing, for example.) Lightscape has ray tracing if you need it; this is also faster than you might expect because Lightscape calculates "rays" from primary light sources in the first radiosity iteration anyway.

In doing the calculations, the computer checks the brightest source first, calculates its contribution to each surface's brightness, goes to the next source, and so forth. When it

is done, it calculates the interactions between light sources. It can do multiple iterations of those interactions (each reflecting surface becomes a new light source to be added to the next iteration). Depending on your scene, you may find 10 to 20 iterations adequate; that's great for working fast. Once you have an image you want to refine further, you can always let the computer run all night. You'll be sure of a usable drawing in the morning, barring hardware failure.

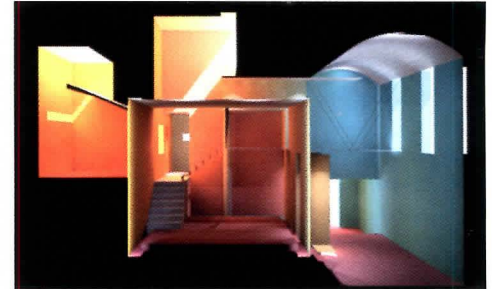
The biggest trick, it seems, is to carefully define light sources that are internal to the scene—lights that will be visible in the final rendering. Surface texture and properties may also be critical, depending on their placement and composition. Lightscape provides plenty of sample starting points you can modify to match your precise situation.

You define such attributes in the "preparation" stage, where you can edit the model you will be rendering. Next, the resulting file is altered by Lightscape to optimize it for radiosity processing. You won't see the changes directly, but Lightscape does. It saves them in a separate file, apart from the preparation model. Lightscape turned out to be quite forgiving about minor errors in the original drawing files—walls that don't quite meet ceilings, and light sources that float off the walls, for example.

Blocks that give off light are called "luminaires" in Lightscape. You take a block and associate it with photometric gradient data (there's a large library for standard fixtures, and you can make your own). If the light gradients are asymmetrical (and they almost always are, of course), you orient the block to match your scene's needs.

Lightscape is certainly not a full-featured modeling system. That is, the scenes you render will almost always be imported from CAD or modeling software. But it has some ability to import and manipulate 3D symbols (blocks) such as chairs and tables. It comes with some symbols of this type.

Because Lightscape must import files from other software, we checked import filters carefully. The import filter most architects will use is DXF. The error that this is most



*"Housing Study" by David Hileman, with a subtlety and warmth in Lightscape image.*



*"Bar" interior by Agata/Andrzej Wojaczec. Note reflections and transparency.*

likely to cause is one of scale. If you are off when you select the scale of the incoming DXF, the scene will not match the scale of the luminosity gradients you've inputted for the light sources. You can also import from 3D Studio.

DXF files from other than AutoCAD may not share the default color mapping AutoCAD and Lightscape both use; check that, too. Lightscape also has a packaging deal with Graphisoft for ArchiCAD.

**Manuals:** Three paperbacks: A superb 125-page tutorial (heavy on time-saving techniques and why they work), 300-page user's guide, and a "getting started" booklet. **Ease of use:** Good on a capacious machine. With large scenes, we found it runs better on a slow 75 MHz Pentium with 48MB of RAM than on a 166 MHz Pentium with 32MB. **Error-trapping:** There's no undo. Save early and often. Changes the system makes to the preparation model do not overwrite the model's file; they always stay separate.

**151** on Reader Service Card



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## Slip-Resistant Flooring

Slip resistance in flooring proves highly elusive. In our litigious society, what is too slippery for some may be fine for most. While other factors contribute to falls, such as poor lighting, uneven or loose surfaces, and unexpected obstacles, the measured coefficient of friction (COF) of a surface is the most reliable indicator of its inherent slip resistance. The higher the number (by tests such as those cited below) the more slip-resistant the surface. While there are currently differing test protocols (such as ASTM C-1028 for ceramic tile and ASTM D 1047 for resilient flooring) there are several unofficial standards of recommended coefficients for flooring in different situations. OSHA recommends a value of .5 for walkway surfaces. The ADA guidelines suggest at least .6 for flat surfaces and .8 for inclines.

There are several kinds of tests performed to obtain a coefficient of friction rating for flooring. A static test used in America places a 3-in. square of a usual heel material on a test sample with a 50-pound weight on top and drags it horizontally with a pull gauge. A dynamic test used in Europe moves a test "sole" of leather or Neolite material over the floor sample, precisely measuring the amount of force necessary to make the sample skid. For Germany, the DIN standard test is an almost Rube Goldberg-like procedure. Wearing a ceiling-hung safety harness, the test operator dons a pair of rubber-soled boots and tramps on a treadmill surfaced with the floor material being tested. As he marches along, the treadmill is inclined to the point where the boots slip. All of these friction tests are done under both dry and wet conditions.

Slip-resistance shouldn't be the specifier's only concern. A surface that is highly textured or covered with diamond-hard grit can be difficult to clean. A floor can be too tactile, causing persons with a shuffling or impaired gait to stumble. And a floor's installation and ongoing maintenance should be considered. Architects must be careful not to specify adhesives, cleaning solutions, and finishing systems that violate state laws on toxicity. Check that products are registered in the state where the work is to be done and comply with that state's safety and hazardous-materials laws.—Joan F. Blatterman



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154

**153. Colorful granite-look tile**  
Terra Granite commercial ceramics have a slightly textured, slip-resistant finish that meets ADA guidelines. Suitable for retail spaces, malls, and lobbies, the floor comes in 11 colors—from Coal to Linen—that coordinate with other Olean products. Sample Express: 215/822-7300. American Olean, Dallas.

**154. Slip-resistant porcelain**  
A flooring option developed for very-heavy-traffic locations that require a higher-than-usual coefficient of friction, Cross-Plus tiles have Carborundum grit fired into a vitrified surface. Said to be easy to clean, no waxes, sealers, or other topical applications are required. Fourteen colors are stocked; custom colors and an architectural sample program are available. 800/221-9093. Crossville Ceramics, Crossville, Tenn.



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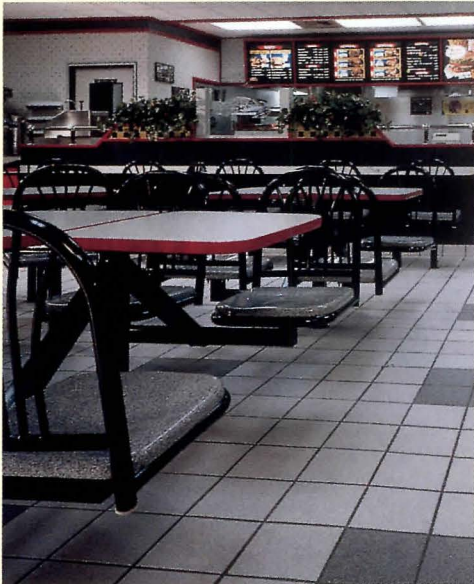
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**155. Light-colored rubber flooring**  
The newest Noraplan design, Effect has a smooth, matte surface with a three-dimensional appearance and random-chip design. The nine "brighter" colorways were selected specifically to improve the esthetics of school and health-care environments. 800/332-NORA. Freudenberg Building Systems, Inc., Lawrence, Mass.

**156. High-style "safety" floor**  
Altro vinyl, developed for applications such as pharmaceutical plants where both slip-resistance and cleanability are vital, incorporates aluminum-oxide granules throughout the material for a long lasting, high level of traction. Designer 25 colors include decorative, soil-hiding patterns for heavy-traffic areas; *Architectural Guide* is offered. 800/382-0333. Altro Floors, S. San Francisco, Calif.



*Preventing slip-and-fall accidents should be a high priority when specifying flooring for public spaces. The materials shown here address this issue in effective ways.*



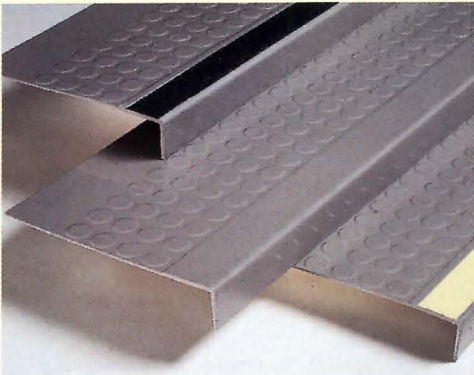
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158

**157. Slip- and stain-resistant tile**

A rugged commercial ceramic tile suitable for stain-prone applications such as fast-food restaurants, supermarkets, and malls, Granite Plus meets ADA accessible-route criteria when either wet or dry. Tile comes in six neutral stone colorations, and 8- and 12-in. sizes. 800/FLA-TILE. Florida Tile Industries, Lakeland, Fla.

**158. ADA-compliant stair treads**

Part of a complete line of resilient products, a redesigned version of the Roundel rubber tread meets both federal and California disabled-access requirements. The 2-in. hinged nose fits a number of stair-pan profiles; the tread allows for insertion of a 2-in.-wide contrast-color grit tape without cutting into the raised-disk pattern of the rubber. 800/899-8916. Johnsonite, Chagrin Falls, Ohio.



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**159. Monolithic flooring**

A two-part epoxy resin surface made for use on damp as well as dry concrete, Floor-Gard systems combine a high-gloss polyurethane surface with slip-resistant aggregates. Suitable for medium- to heavy-duty industrial and institutional spaces, the floor comes in five standard colors. 214/353-1689. Neogard, a Division of Jones-Blair, Dallas.

**160. Fiberglass floor plate**

From a line of aggregate-surfaced floors and gratings, Chemplate is a solid, non-slip flooring made of corrosion-resistant fiberglass with embedded silica particles. It insures slip protection even in sites where oil or grease may be present. When integrally molded to a structural-fiberglass grating, plates can be used to create a weatherproof ramp. 800/345-5636. Chemgrate Corp., Addison, Tex.



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**161. Anti-slip floor treatment**

A transparent coating, Safety Surface Plus is said to impart a reassuring level of slip resistance to existing vinyl, tile, stone, and terrazzo floors, even under wet conditions. While no special maintenance is required, the coating will wear off under normal traffic, and needs to be reapplied at least every six months. Treatments are formulated to suit different floor surfaces. 800/544-1443. Aegis Floorsystems, Inc., Dallas.

**162. Polyurethane/rubber coating**

Developed as a protective and skid-resistant surface for loading docks, Durabak meets the ADA contrast-color and non-slip requirements for curb ramps. A single-component coating made with rubber from recycled tires, it bonds to most surfaces. 800/766-1669. Cote-L Industries, Teaneck, N.J. ■





### 163. Cast-iron pavilion

Created for this year's Atlanta Olympics, the Woodruff Park Pavilion incorporates historic details in a custom-designed open-work strut cornice that supports an impact-resistant frit-glass dome. CAD-based solids-modeling methods let the designer view customized site amenities assembled from component castings. 800/824-2157. Robinson Iron, Alexander City, Ala.



### 164. Curvable cladding panel

A new simulated-block pattern, the Stenni panel is a composite glass-fiber-reinforced, aggregate-faced panel that can be formed to a 36-in. radius without heat or special equipment. Described as impact resistant and weatherproof, the panel is shown here used as a wainscot on Texaco Oil's new Global Image service station prototype. 800/933-8700. United Panel, Inc., Mount Bethel, Pa.



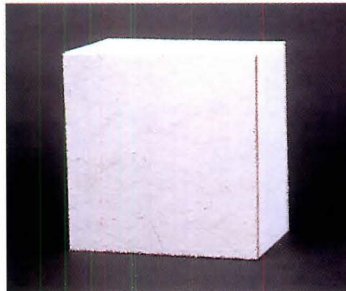
### 165. Paint with a 50's feel.

The exuberant hues of Eisenhower-era suburbia are replacing Southwestern teal, peach, and coral, according to this maker's retro-influenced Preservation color palette. Line includes shades such as Chantreuse, Pink Flamingo, and Radiant Lilac, as well as Roycroft Arts & Crafts colors like Studio Blue Green, shown. Samples: 800/552-7579. The Sherwin-Williams Co., Cleveland.



### 166. Under-cabinet light

A new low-profile fluorescent fixture designed for workplace illumination, the Finesse light has a smooth, solid-metal front that makes it less obtrusive when mounted close to the rear wall under storage cabinets. Housing comes in lengths up to 60-in. (for a 40W T8 lamp); a snap-in lens supposedly provides even, shadowless light distribution. 770/922-9000. Lithonia Lighting, Conyers, Ga.



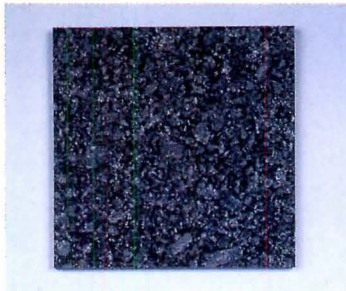
### 167. Fire-tested structural panel

The new Firefinish version of R-Control's structural panel with an expanded-polystyrene core offers a fire-resistant, ready-to-paint interior face. This configuration eliminates the need for an additional gypsum board layer, and meets code requirements as a 15-minute thermal barrier. Finish options include a fine texture for walls. 800/255-0176. AFM Corp., Excelsior, Minn.



### 168. Tubular-frame lounge

Designed by Swedish architect Gunilla Allard, the Cinema armchair has a Modernist appearance with subtly curved, leather-wrapped arms. Style is available as a two-seat sofa, an ottoman, or as the armchair pictured. Finish options include chromed or powder-coat metal and leather or fabric upholstery. List price as shown: \$1,690. 800/237-1625. ICF/Nienkamper, Norwood, N.J.



### 169. Green granite

A medium-grained, gray-green stone, Lake Superior Green granite is mined from a newly opened quarry in northern Minnesota. The stone is described as having a consistent grain structure with exceptional contrast characteristics. Full ASTM test data are available. 800/328-5040. Cold Spring Granite Co., USA, Cold Spring, Minn.



### 170. Upgraded casements

Casement windows now come in more sizes and with a heavier-duty crank operator capable of handling units up to 3-ft wide by 6-ft high. Hardware options include a tuck-away handle colored stone or white. Casements are rated a Performance Grade 60 under National Wood Window & Door Association specs. 800/426-7691. Andersen Windows, Inc., Bayport, Minn. ■

## Short Takes

**New name.** A-T-I (Alucobond Technologies, Inc.), is now Alusuisse Composites, Inc., to better communicate its status as part of Zurich-based Alusuisse-Lonza Group.

**Prison construction forecasts.** A statistical digest published monthly, *Corrections Compendium* prepares forecasts of prison construction and renovation projects nationwide, reporting budget and funding status.

Tables outline specific facility construction plans. \$60 for 12 issues. CEGA Publishing, PO Box 81826, Lincoln, NE 68501; 402/464-0602.

**Mergers & Acquisitions.** Franke, Inc., North Wales, Pa., the American subsidiary of The Franke Group, Aarburg, Switzerland, has acquired the assets of UNR Industries' Home Products Division, also a manufacturer of stainless-steel and com-

posite-material kitchen sinks. The acquired lines, to be marketed as the Federal Home Products Division of Franke, Inc., will be headquartered in Ruston, La. In another building-product takeover, RPM, Medina, Ohio, a billion-dollar manufacturer of waterproofing coatings and sealants, bought Okura Holdings, Inc., Dallas, maker of Fibergrate and Chemgrate brand fiberglass-reinforced plastic gratings and structural products. ■



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# The Boldness Gap: Why America Is Falling Behind Other Countries

*What's needed is a national argument. An angry, noisy, impertinent, informed, caring, responsible argument.*



Rafael Moneo's buildings exhibit a boldness that some say is lacking in American architecture. Two of his buildings are cited as examples: the Atocha Railroad Station in Madrid (above left and right), and the Museum of Roman Antiquities in Merida (far right).

By Robert Campbell

Architecture in other countries is different. It's bolder. More intense, more daring.

I'm thinking of East Asia and Europe especially. It's not only the architecture, either. It's the urban design as well. American stuff, today, looks weak and confused in comparison. Compromised. Visionless.

I was struck by this thought recently when I happened to spend a week in Spain, where I'd been sent by the Pritzker people to look at the work of the prize-winning Spanish architect Rafael Moneo. Moneo's work is strong in a way we're not used to here. There's a clarity of intention. You get the impression that somebody was fully in command. Moneo's buildings don't look like the work of the famous committee that set out to design a horse and instead created a camel. They look like thoroughbreds.

Moneo's clients were enlightening, too. Without exception, they were proud of their buildings. At the same time, like clients anywhere, they weren't always ecstatic about every aspect. But it clearly hadn't occurred to them to interfere with the architecture. One client pointed out some minor problems of cost and practicality, then said: "We hired too good an architect for an organization our size." He said

*Contributing Editor Robert Campbell was awarded the 1996 Pulitzer Prize for criticism.*

it with a sort of rueful admiration—as if he'd bought a Porsche he loved, but couldn't quite afford. Architects in the U.S. would kill for that kind of standing. No wonder his buildings are powerful. As I went from Moneo's vast, inventive Atocha railroad station in Madrid [RECORD, July 1991, pages 222-229] to the amazing San Pablo airport in Seville (in which, with memorable panache, he marries a modern transit facility with an allusion to Spain's Moorish past), to his great and unforgettable Museum of Roman Antiquities in Merida, I kept asking myself what U.S. architect today is allowed this kind of scope for his talents? And it's not only the buildings that are impressive. It's the public world in general. Part of the time, I was traveling on the Spanish bullet train, the AVI, relaxing in my sofa-sized seat while attendants plied me with drinks and meals.

Boldness, freedom, invention, excitement—they're not the whole of architecture. They can lead to arrogance. But they're among the necessary ingredients in any memorable art. Surely you've got to have them if you hope to gain the attention and support of the general public. And, surely, they're more visible at the moment in other parts of the world. One thinks immediately of such astonishments as Renzo Piano's Kansai airport. Or the Babe Ruthian charge for the title of World's Tallest Skyscraper in East Asia. Or the grands projets in Paris. Or the bold gateways at each end of the Channel Tunnel, by Nicholas Grimshaw in England and by Rem Koolhaas and others in France [RECORD, January 1993, page 27]. Or the Chunnel itself: a public work on a scale we Americans have forgotten how to accomplish.

© Pritzker Architecture photos except as noted



### Who's the top gun in town?

In the last year I've also happened to visit Berlin, where everybody seems to be arguing constantly about the right way to rebuild the city. And Barcelona, where the reconstruction for the Olympics—including, for starters, a whole new waterfront, with major improvements to the street and sewer systems—[RECORD, August 1992, pages 98-118] makes our recent efforts in Atlanta look Little League. When did we stop being the top gun in town?

When I got back from Spain, I thought I'd check out these impressions. I called up some friends. They're all creative architects or educators, usually both, who've worked and observed in the U.S. and abroad. Since they don't want to offend their American clients, I



*Boldness, freedom, invention, excitement are among the necessary ingredients in any memorable art, says Campbell. "One thinks immediately of such astonishments ... as the Babe Ruthian charge for the title of World's Tallest Skyscraper in East Asia" (left). The Petronas Twin Towers in Kuala Lumpur, Malaysia by Cesar Pelli & Associates.*

*The argument in Berlin is all about politics—about whether the new architecture and urbanism looks too fascist, or too American, or too whatever.*

promised not to embarrass them by naming them, and some I have disguised. Without a single exception, they agreed with my premise. "Korea is radically different from the U.S.," said one. "I'm going to do my best work. They want my best work. They ask me if I'm happy. There's an artistic tradition there, that an architect is connected to a broader artistic social and cultural world. I'm the expert."

Another: "They don't mess around with my design in Austria. It's really amazing. They needed a radical amount of change in the floor layout, yet they never suggested touching the architectural envelope. That was our territory—sacred territory—it was just assumed that's our work and not to be tampered with. We had to be the one to suggest changing it. It's a completely different world."

Another: "Here in the U.S., I've got so many brakes on me, so many governors operating, you literally can't work, can't think, can't have your own basic process."

Maybe these guys are being fair. Maybe not. Let's assume they are. We might learn something. I'm trying to start an argument, not preach a sermon. What's wrong? What could be creating a richer soil for architecture in other countries?

### Since this is a magazine, let's start with the press

I'm in Madrid. There are two major papers. Each of them, like U.S. papers, puts out a weekly guide to culture and recreation. The difference is that in Madrid, each guide devotes a full page every week to architecture. And they give you serious, controversial stuff, not celebrity furnishings. The week I happen to be there, one paper is telling us all about Daniel Libeskind's addition to the Victoria and

*It's hard to imagine an American politician staking his claim to immortality on a legacy of architecture, as François Mitterand did in France.*

Albert Museum in London. The other presents the runner-up proposal in a competition to expand the Prado Museum in Madrid. Both proposals are seen as proper subjects for general public debate, as much so as, say, the question of abortion in the U.S.

Or take Vienna. Another of my interlocutors says, "We'll go to Vienna, do a housing project, and it's in six papers, two radio interviews, TV. The cab driver says to me, 'Did you hear, there's a project at the edge of town, the first one with architects from outside the country?'" That's the popular press. There's also the professional press. In the U.S., it is—we are—mealy mouthed, at least compared to what you read abroad. It took me only five minutes of idly leafing through British publications to put together the following little garden of vituperative quotations. "For the average user or passerby, at least in England, any new building is likely to be at best a disappointment and at worst a monstrous affront." "Charles Jencks is a kindly, charming, often intentionally funny man." (You have to love "often intentionally funny.") "Peter Eisenman heads for the hills again, to the renewed thunder of a thousand word-processors."

Last summer, the Harvard Graduate School of Design devoted an issue of its magazine to the topic of American design publishing. Nobody thought very highly of the category. Typical was Alan Balfour, the British-born dean of Rensselaer Polytechnic Institute, who wrote: "U.S. design publishing, particularly in architecture, may be the weakest in the developed world. This is not, in my view, the fault of the publishers, but a result of a dramatic decline in interest in architecture as a significant element in a broad culture." Balfour did, incidentally, draw a distinction between the strength of European journalism and the weakness of Asian journalism: "Asia has no tradition of critical discourse but revels in spectacular picture presentations." We can all probably agree that you aren't going to get bold architecture without a lively discourse in the press. Why does the press seem more vital in other countries?

### Architecture broadcasts social and political messages

Politics, for one thing. Architecture is perceived as an important expression of politics. The argument in Berlin is all about politics—



about whether the new architecture and urbanism looks too Fascist, or too American, or too whatever. "Architecture in Europe has always been very strongly associated with politics," notes one architect. "Communist mayors hire Communist architects. Christian Democrats hire Christian Democrats. Architecture has a real tie with political aspiration." One result can be coziness and corruption, of course. Nevertheless, it's important to notice the value of the fact that at least architecture means something. It broadcasts social and political messages. The messages generate passion, generate debate. People start to care. The architecture gets bolder, more confident. It knows it has something important to tell us. It's hard to imagine an American politician staking his claim to immortality on a legacy of architecture, as François Mitterand did in France.

*The schools are rising from their long, blissful immersion in the warm bath of arcane theorizing.*

way, you gained status. Today, perhaps, we're more likely to measure our status by other means: by our possessions, by our choice of neighborhoods certainly, but seldom by our creative use of architecture.

There are other reasons why architecture, and the public discourse about architecture, seems nearer the center of culture in other

*A Senate subcommittee attacked Pei Cobb Freed and Partners for seeking to create "an architectural masterwork" with their design of the Boston Federal Courthouse. "How is any kind of public architecture supposed to thrive in a world in which you get your knuckles rapped for trying to be 'above-standard?'" the author asks.*



© Eric Schaller photo

Sometimes, architecture's political meaning is simply that it's telling us how big and strong a country is. U.S. architecture used to do that. Now Asian does. "In Asia, if they hire good architects, it's for flash and prestige," one friend commented. "In East Asia there's not that much that's exciting. It's Chicago and New York City redux, as they were in the 1920s and 1930s. It's all about real estate and status. It's much worse than what we did. There are not a lot of important civic buildings built in East Asia except in Japan, where architecture plays a very large role, where they have a long tradition of caring how things look and feel." "Undoubtedly," echoed another commentator, "Asia's enthusiasm for architecture is due to its ability to serve as a recognizable symbol of progress and wealth."

Crass, maybe. But when did Americans last perceive architecture as being a recognizable symbol of anything that mattered to them? You'd probably have to go back to the arrival of Modernism in the 1950s and 1960s. That was a turn-on for the press, for example in the flamboyant work of an architect like Eero Saarinen. Today the buzz is lacking. "In the U.S., perhaps the culture at large is simply uninterested in the high-art elitism of the profession's most influential figures, and bored by the others," is one comment. In the past architecture was often a means to status. You got status by building impressively. Usually you did that by reference either to the past or the future. You demonstrated your aristocracy by building a Newport mansion, or you displayed your cool by building something avant-garde. Either

countries. For one thing, people grow up surrounded by architecture, in cities built over a thousand years. They can't help noticing it. And, the environment gives them a lot of venues to get together and argue, places like cafes and taverns. As well, there's the manner in which architects get selected. Which brings us to competitions.

#### **Competitions give the young and unheralded a chance**

In Europe especially, an enormous slice of the market for architectural services is awarded by competition. In the case of public work—of which there's a great deal more in any case—competitions are often required by law. If a competition is a big public one, like that for the Prado, it generates a sporting interest, rather like that of a political election. Competitions are very rare in the United States, so we lose that chance to get people interested in architecture. And, of course, any kind of competition offers an opportunity for a young and unheralded architect to break through to a big commission. "Young architects in Europe literally start their first serious commissions at 30 years old," says an American in his early 50s who's just starting to get major work. "By way of contrast, an American friend of mine—an avant-garde architect whose name is familiar to everyone who knows anything about architecture—is now getting teased by his European friends, because he just got his first elevator building at the age of 53." Because U.S. commissions tend not to be awarded by competition, they're likely to go to old, safe, established firms. "U.S. firms have gone corporate," says the same architect. "The smaller,



personal firm, what I have here, is one of the last. The way work is given out favors the corporate firm." Like any living culture, the culture of architecture needs regular infusions of youth at an influential level. Speaking of youth brings up the topic of education. As usual, my colleagues were nothing if not outspoken. An architecture

## *More than anything else, the boldness gap is the result of a loss of faith in the ability of architecture to make a better life.*

school dean: "Our high school students are lazy and ill prepared." An architect: "In American schools, except elite East Coast private schools, there is no interest in any artistic activity. It's all marginalized." The view is that there's been a general dumbing down, especially at the national level, in recent years. A good example is the incredible attack, by a Senate subcommittee, on the Federal courthouse in Boston by Pei Cobb Freed and Partners. The committee chided the client and the architect for seeking to create "an architectural masterwork." The committee recommended, for example, "regular rather than above-standard ceiling lights." How is any kind of public architecture supposed to thrive in a world in which you get your knuckles rapped for trying to be "above-standard?"

The flip side of the dumbing down, of course, is the retreat of the academies into monastic seclusion. "Architecture schools have become part of a more formal world of academics, driven by academic concerns in the narrow sense of that term," said a writer and teacher. "They're full of debates. I have nothing against that, but it's turned people away from architecture as a material reality. Architecture comes to be seen not as environment but as poetry or semiotics. Getting published becomes the valued activity. We should be asking, why have the American academies turned in on themselves and left off being politically engaged?"

### **Our schools are getting better**

But at least this is one area where everybody thinks things are getting better rather than worse. The schools are rising from their long, blissful immersion in the warm bath of arcane theorizing. Architecture is again being understood as the art of making actual places.

More than anything else, perhaps, the boldness gap is the result of a loss of faith in the ability of architecture to make a better life. "Here in Vienna"—another U.S. architect is talking—"there is a belief in the transformative role of government and what it can produce." If the current election is any guide, it's clear no such belief exists in the United States. That may be good or bad for the country. Almost certainly, it's bad for architecture. Oddly enough, my colleagues seem to believe active government is good for the quality of public life and architecture, regardless of whether the government in question happens to be liberal or conservative. Says one: "There's a greater commitment to public architecture in places like Finland, Spain, France. There's a social democratic tradition. A respect for public life and investment. In Europe, as much as 80 percent of all housing may be created by the public sector. There is an expectation of value added by architecture. This is especially true on the municipal side." By contrast, another claims: "Public life was the legacy of autocratic history. Autocratic paternalism. Architecture thrives very much better under authority—big gods, big money, big kings. That's all

been taken away. I doubt that you can ever recover." Both speakers are saying that what's been lost in the U.S. is a strong sense of public life. And what socialism and monarchism have in common is an interest in creating a public world, even if they do so for very different purposes. Both create public spaces, public monuments. Public architecture. Bold architecture.

On the other hand, as recently as the 1960s, architects in America did get a chance to do public work. It was called urban renewal. "We blew it last time," says an architect. "As a result, we now see fuzzy therapies replacing a belief in science and problem-solving. We see comfy retro-architecture. But if the choice is only going to be between Disney and urban renewal, then there's no choice." I freely admit I've probably overstated the case in almost every paragraph. As all the great architectural propagandists have understood, from Pugin to Le Corbusier to Leon Krier, overstatement is a way of making a point.

I'm not out to knock the U.S., either. As one architect accurately put it, "Don't forget, in other parts of the world, architecture is often the

## *Except maybe for Boeing, Americans seldom make the world's hardware anymore. And architecture is hardware. It's time-specific, place-specific.*

only creative game in town." We still have lots of creative games. America is astonishingly inventive in the cyberworld, in the pop-culture world, in the world of scientific research, in a zillion others. In a very real sense we now create the software for the entire rest of the world—software in the largest sense, software as the invention of culture. But except maybe for Boeing, we seldom make the world's hardware any more. And architecture belongs to the physical world. It's hardware. It's time-specific, place-specific. Maybe we've temporarily lost interest.

What's needed is a national argument. An angry, noisy, impertinent, informed, caring, responsible argument. The kind you hear in those other countries. An argument that isn't afraid to talk about politics or money, or about idiots in Senate subcommittees.

We need to regenerate a debate—in the academy, in the newspapers, in the streets—about what our public life should be. And about the important role architecture and urban design should play in creating that public life. It's the responsibility of publications, above all, to trumpet the truth that architecture is important to people. That it matters. That by structuring the world we inhabit, it either helps or impedes everything we wish to accomplish. When we get that debate raging, I don't think we'll be looking to the rest of the world for bold, inventive architecture. ■

*If you have something angry, noisy, impertinent, informed, caring, and/or responsible to add to the argument, fax 212/512-4256 or E-mail: dewitte@mcgraw-hill.com.*



# Crystal Palace for Reborn Trade Center



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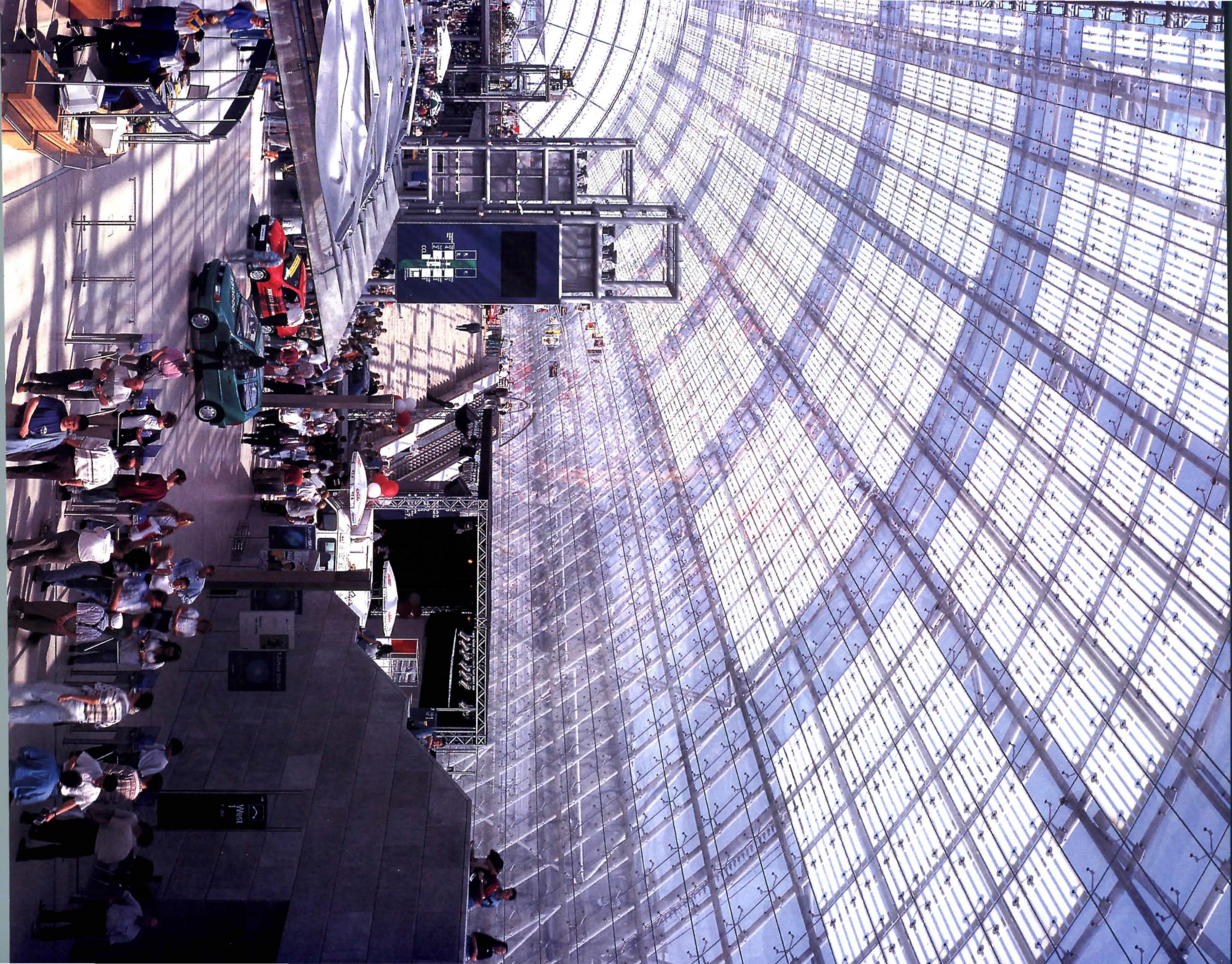
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Wie passt  
die moderne  
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mit der  
alten Struktur  
zusammen?







*The bravura technology that greets visitors to a new convention center signals the transformation of this revitalizing city in former East Germany.*

By Mary Pepchinski

**A**pproaching Leipzig from the autobahn or the train, a slender tower of pipes and tension rods, two lines of low-slung pavilions clad in a lattice of glass louvers, and a vault of glass supported by a filagree of arches rise above the garish commercial sprawl emblematic of unified Germany. This is the Neue Messe Leipzig, which not only signals a transformation of the formerly state-owned Messe Gesellschaft (Convention and Trade Fair Corporation), it provides a striking new symbol for this city's post-Communist revitalization.

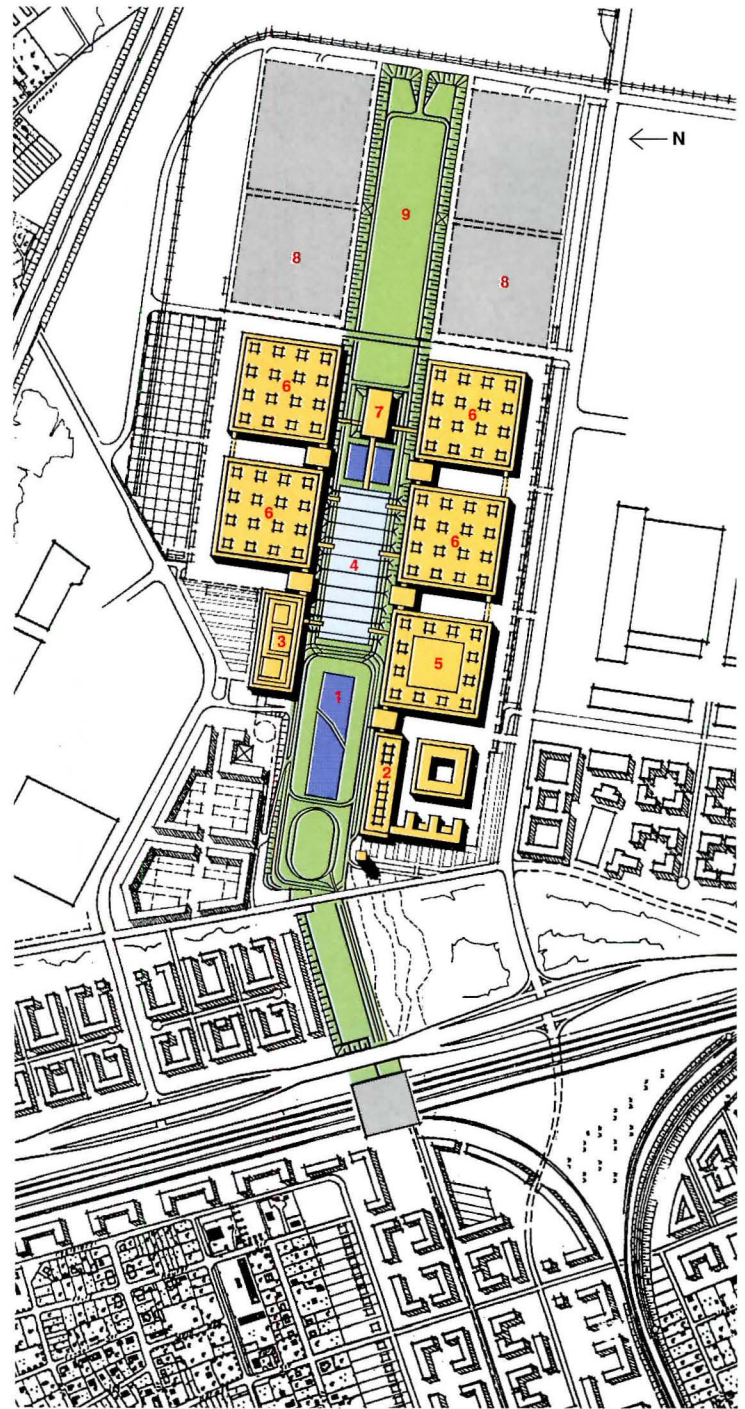
Leipzig has sponsored trade fairs since the Middle Ages. After 1989, the Messe's continued viability was deemed crucial to the city's renewal. However, Leipzig's existing fairgrounds proved to be poorly accessible, and were outdated compared to similar facilities in former West Germany. Thus, the re-privatized Messe's management—owned by the City of Leipzig and the Federal State of Saxony—decided in 1991 to construct a vast new 272,300 sq m (about 2.9 million sq ft) complex to hold trade fairs and conventions.

First, a location on the city's northern periphery, near surface transportation and a 20-minute drive from Leipzig's center, was acquired. A DM 300 million (US \$200 million) gift was obtained from the Federal Finance Ministry's "Recovery East" program to secure financing. An invited competition was organized, drawing entries from Rem Koolhaas, Richard Rogers, and Günther Behnisch, among the 15 participants, with von Gerkan Marg and Partner (GMP) emerging as winner in April, 1992. The foundation ceremony was held in August, 1993; fast-track construction took 28 months, and the center began operating in April, 1996. The final cost, including building, equipment, site work, and most project expenses was DM 1.3 billion (US \$999 million).

GMP's scheme won not only because it tightly organized the sprawling program, but because of the park-like setting it creates. GMP formed a landscaped axial valley, oriented west-east, which funnels transportation into the grounds from the west, locates a spectacular Glass Hall in its center, and ends in landscaped parking. Unlike American all-under-one-roof convention centers, the Neue Messe is divided into pavilions, accommodating several small gatherings or one large convention. Two service roads flank the valley and pass between the Glass Hall and the raised pavilions. The Glass Hall not only functions as symbolic entrance and meeting place, it links the other three structures that form the Messe (site plan, right, and aerial view, opposite): the east entry pavilion; the south wing, housing two exhibition halls, a multi-purpose hall (each 20,500 sq m), restaurants and offices; and the north wing, containing two more halls and a congress center.

The Neue Messe offers a spectacular alternative to the blank-wall monoliths typical of convention centers. Indeed, attendance has dramatically increased, reports Messe management. For Leipzigers used to the crumbling old buildings of the city center and anxious about market-driven Western sprawl at the urban periphery, it has become a vital public place. They join guided tours, attend public events, or simply stroll, bicycle, or skateboard through the site. It is one of the few successes of the building boom in former East Germany.

*Mary Pepchinski teaches and practices architecture in Berlin.*



- |                           |                             |
|---------------------------|-----------------------------|
| 1. West entrance and pond | 6. Exhibition pavilion      |
| 2. Administration         | 7. East entry pavilion      |
| 3. Congress center        | 8. Parking/future expansion |
| 4. Glass Hall             | 9. Park                     |
| 5. Multi-purpose          |                             |





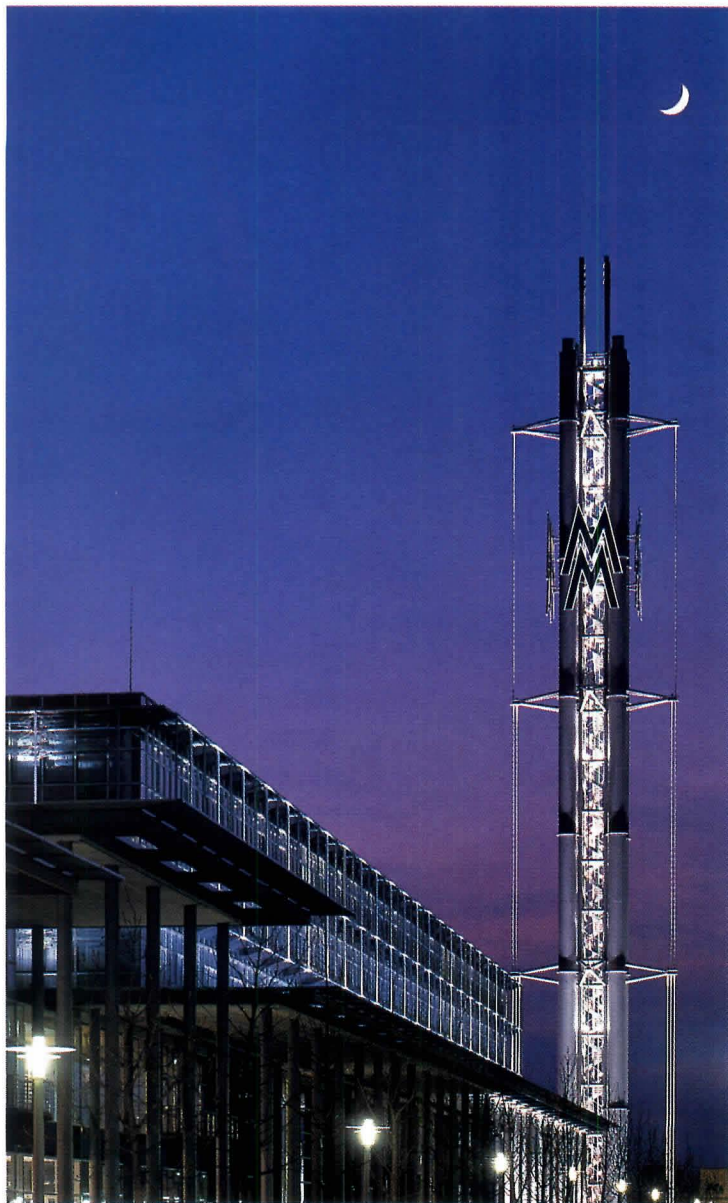
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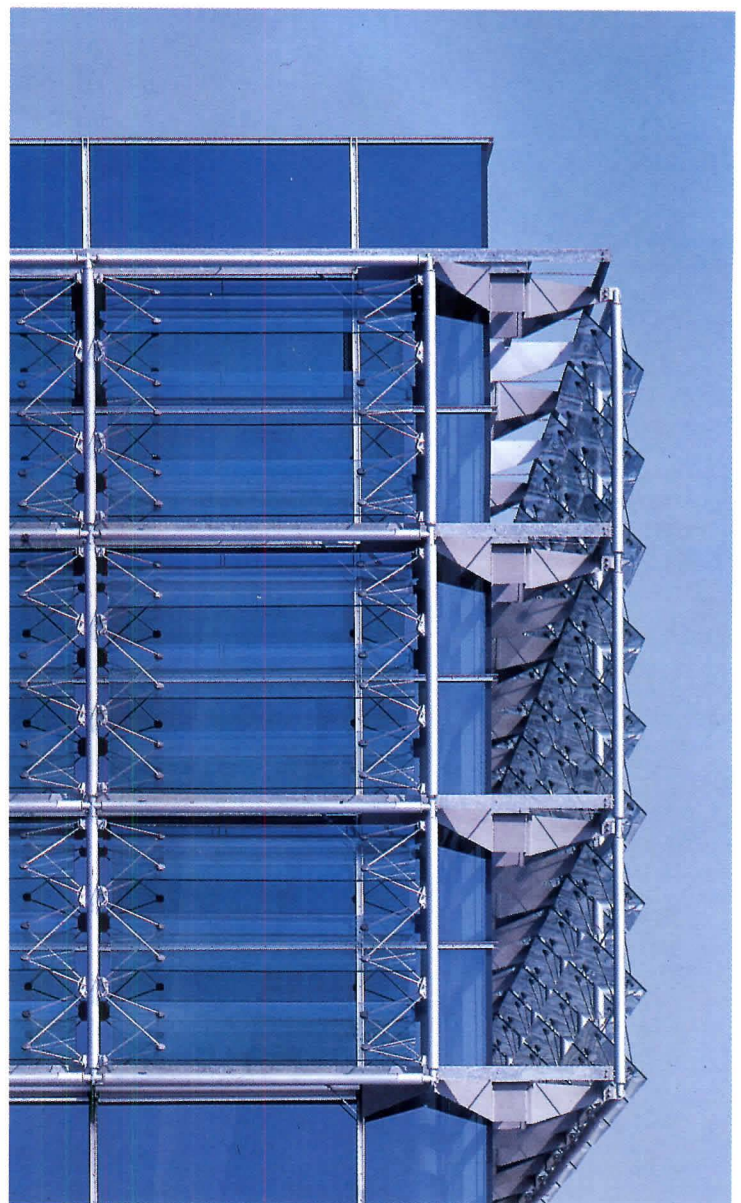
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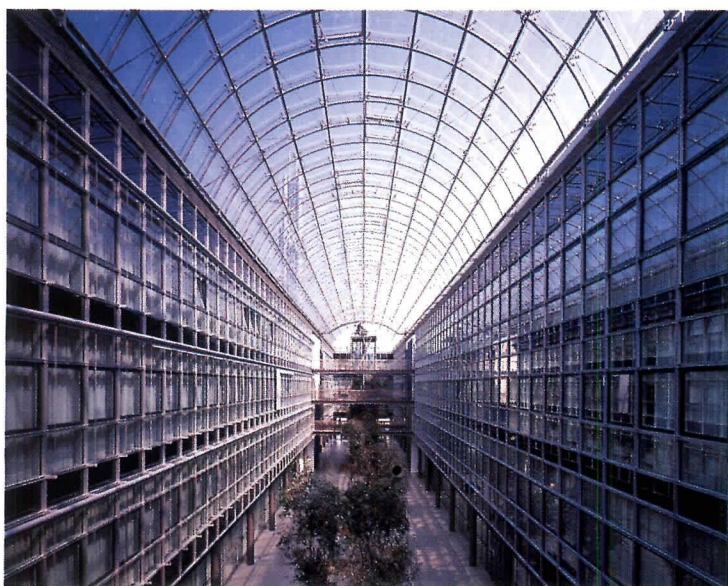




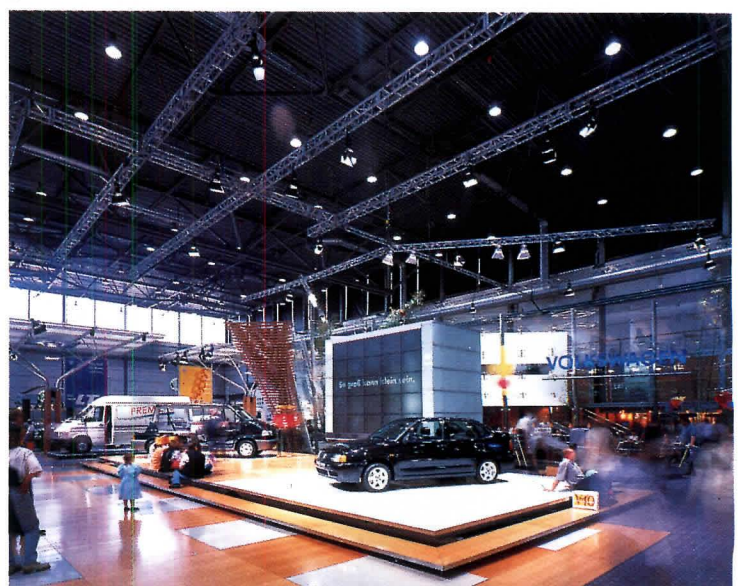
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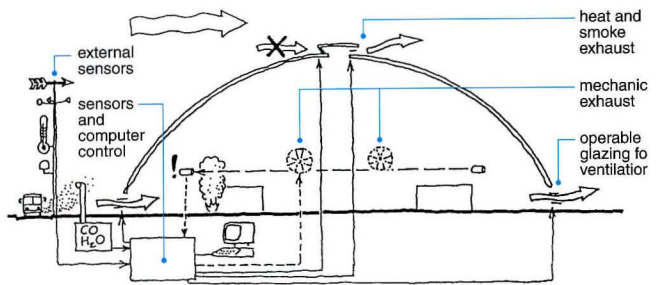


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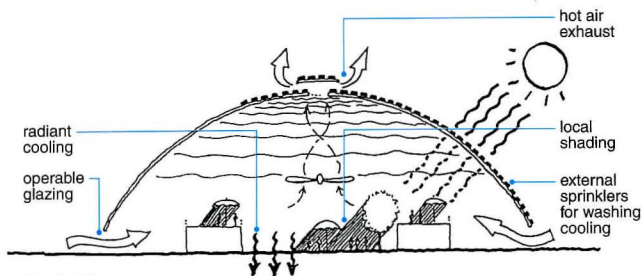


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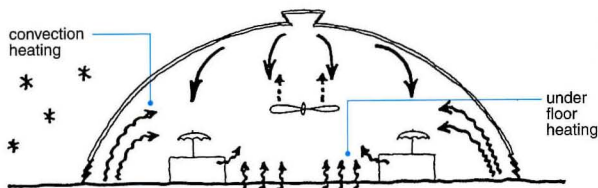




ENVIRONMENTAL CONTROL



SUMMER



WINTER

**Glass and steel bring form to light and air:**

According to project partner Volkwin Marg, light was "used as a chance for architectural staging" throughout the design. Night lighting (1) picks out the historic "MM" logo and cable outriggers that help the 80m-high sign tower resist lateral loads.

Glass-bladed lowers mediate solar glare at office areas (2). The skylight in the atrium of the administration building (3, plan and section right) is framed from within by welded steel tubes stiffened by a nearly invisible truss of tension rods.

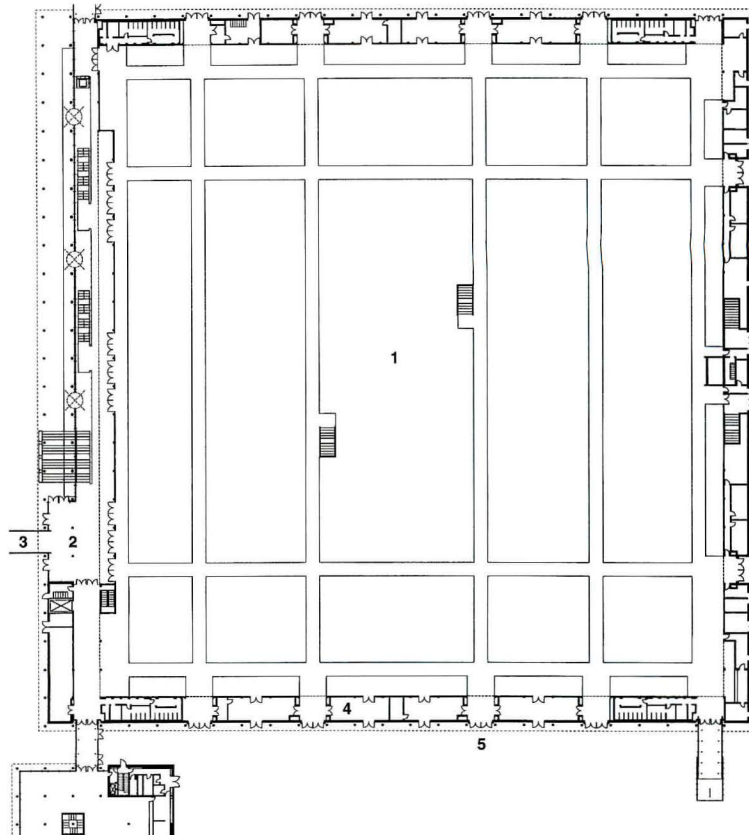
Though exhibitors often prefer "black box" spaces (4), panels within clerestories centered over bays can be opened to admit natural light (section top right). The multi-purpose space (top

plan) is divisible and has retractable bleachers. Exhibition pavilions are otherwise similar.

The Glass Hall's potential for excessive glare and heat gain was inventively considered (top diagram, above). Smoke and ventilation systems are computer controlled. Operable glazing at the top of the vault exhausts hot air while low-level louvers draw in cooler air for summer natural ventilation (middle diagram). Local shading is also added, and sprinklers mounted in the external structure can spray water on the glass, assisting cooling without mechanical air conditioning. Radiant cooling in the floor lowers the temperature at the occupied stratum. In winter, the Hall is regarded as a vestibule to be only minimally radiantly heated (bottom diagram).



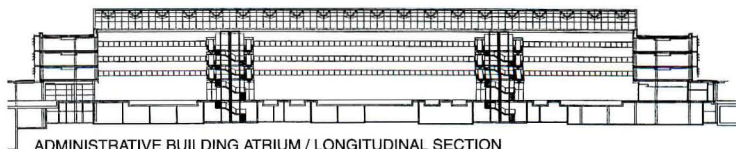
MULTI-PURPOSE HALL SECTION



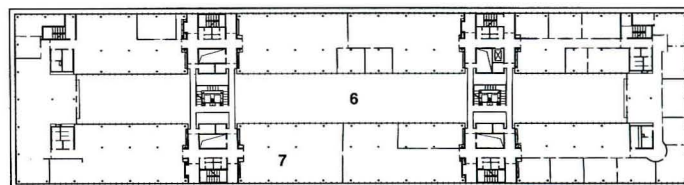
MULTI-PURPOSE HALL



- 1. Hall
- 2. Lobby
- 3. Bridge to Glass Hall
- 4. Services
- 5. Truck access
- 6. Atrium
- 7. Offices



ADMINISTRATIVE BUILDING ATRIUM / LONGITUDINAL SECTION



ADMINISTRATIVE BUILDING / SECOND FLOOR

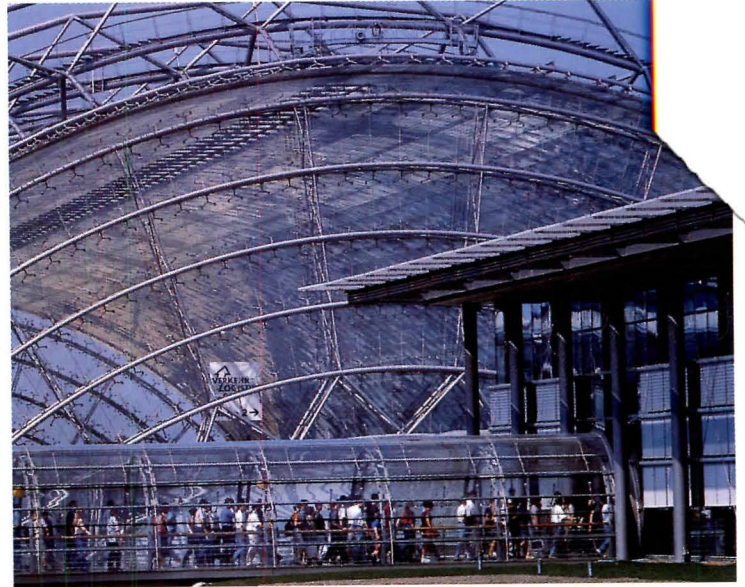


**Melding distinct construction cultures:**

To build the ambitious Messe shortly after unification, construction contracts were allotted mainly to German companies; they then subcontracted work to European and Turkish firms. Such a multi-national work force is typical of building projects today. The project was run akin to American fast-track delivery. With construction underway early, the architects and their collaborators needed to "exert discipline on their choices," observed Hubert Nienhoff, GMP's project manager. They selected a modest palette of neutral finishes readily obtainable in the large quantities needed: grey-finished structural steel; unpainted concrete; solid maple or maple veneer for stairs, doors, and handrails; limestone paving. While Westerners have criticized East German construction quality, Nienhoff was pleased to find the local craft skills "first class" and subcontractors more "inventive" than former West Germans.

After GMP won the competition for the Neue Messe in 1992, they invited London-based Ian Ritchie to design the central Glass Hall. His scheme saved money because it reduced the internal volume by suspending the glass vault within the structure rather than vice versa. And it offered fewer internal impediments. Esthetically, it created a transparent rather than reflective surface both inside and out. The east entrance pavilion fronts the Hall (5); a stabilizing truss crosses a service road, (6).

In the West, much of the metal structure might have been shop-assembled. In Leipzig skilled labor was able to bolt it together economically on site. Because local building officials had little experience evaluating the technologies used for the Hall, mockups were tested of its structure, glazing, and smoke-exhaust system. Officials still insisted on protective metal mesh under the curved laminated glass of connecting bridges (7), but the mesh adds sun control.



5



6



7







## A 1990's Crystal Palace

At Volkwin Marg's request, Ian Ritchie detailed the Glass Hall to evoke an updated version of the great metal-and-glass exhibition halls of the 19th century. Ritchie developed a system in which the structural hierarchy is expressed (drawing opposite). The outer primary trusses, as blade-like in cross-section as possible, according to Ritchie, are spaced at 25m centers, creating a structural rhythm similar to that of Leipzig's landmark main train station of 1912—another inspiration for Marg. Their purpose is only to stabilize the vaulting, metal-tube grid. Metal armatures attached to the grid actually suspend the through-bolt fittings that hold the glazing in place (9 and details below). To maintain visual clarity, variable loads are handled by varying the thickness of the tube walls, which are identical in outer dimension. Although the structure was bolted together on site, most of the connections are concealed.

The glass was selected specifically for its transparency, though some areas were fired with ceramic frit to reduce solar gain. Each tempered, laminated-glass panel is about 5 ft by 10 ft. Special silicone extrusions join and seal the panels. These joints take up anticipated deflections from snow or wind that are not parallel to the plane of the glass as well as dimension changes due to temperature fluctuations. The glass fittings take up much of the in-plane deflections caused by wind or snow loads. They can rotate one or two degrees where they attach to the support arm. And the fittings themselves contain a spherical bearing at the plane of the glass that eliminates transfer of bending stresses from the support structure.

The end walls of the Glass Hall are structurally separate to avoid conveying lateral loads to the roof's supporting grid. External arches (11, opposite) support the end-wall glazing (interior view, 10). The simplicity of the curving glazed interior (pages 80-81) belies some underlying complexity. At midpoints between corners of glass panel joints, special fittings have been inserted that allow the external tubular grid to support ceiling-hung exhibition items. Uplighting is set in the floor (as is radiant heating and cooling and supply air), though external lighting on the grid adds sparkle. Low-level speakers located in the bridges and mezzanines overcome the naturally reverberant acoustics. Glazed louvers at the high point of the roof and at the base open for natural ventilation; counterweighted upward-sliding glazed sections open automatically in an emergency for exit.

### Credits

*Neue Messe Leipzig*

*Leipzig, Germany*

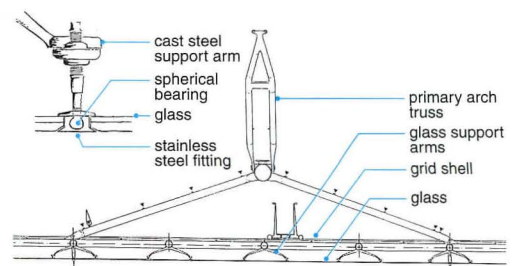
**Owner:** *Leipziger Messegesellschaft mbH*

**Architect:** *von Gerkan, Marg and Partner—Volkwin Marg, partner-in-charge; Hubert Nienhoff, Kemal Akay, project managers*

**Engineers:** *Polonyi + Partner, H. Haringer (building structural); Schlaich, Bergermann + Partner (sign tower); Obermeyer Albis-Bauplan, RWTH (civil)*

**Consultants:** *Ian Ritchie Architects (Glass Hall glazing); Wehrberg, Eppinger, Schmidtke (landscape); PBI, Klaus Glass, Wronn Engineers (facade); von Rekowski-Wolff (insulation, humidity control)*

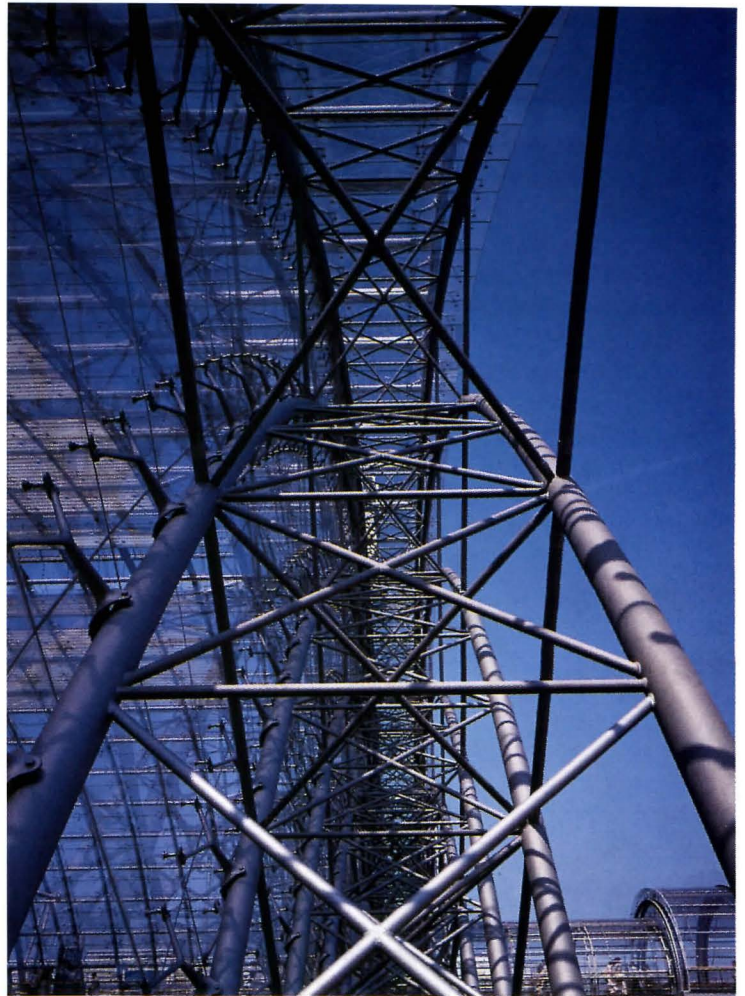
**Project Manager:** *Ingenieurbüro Rauch and Wiese*





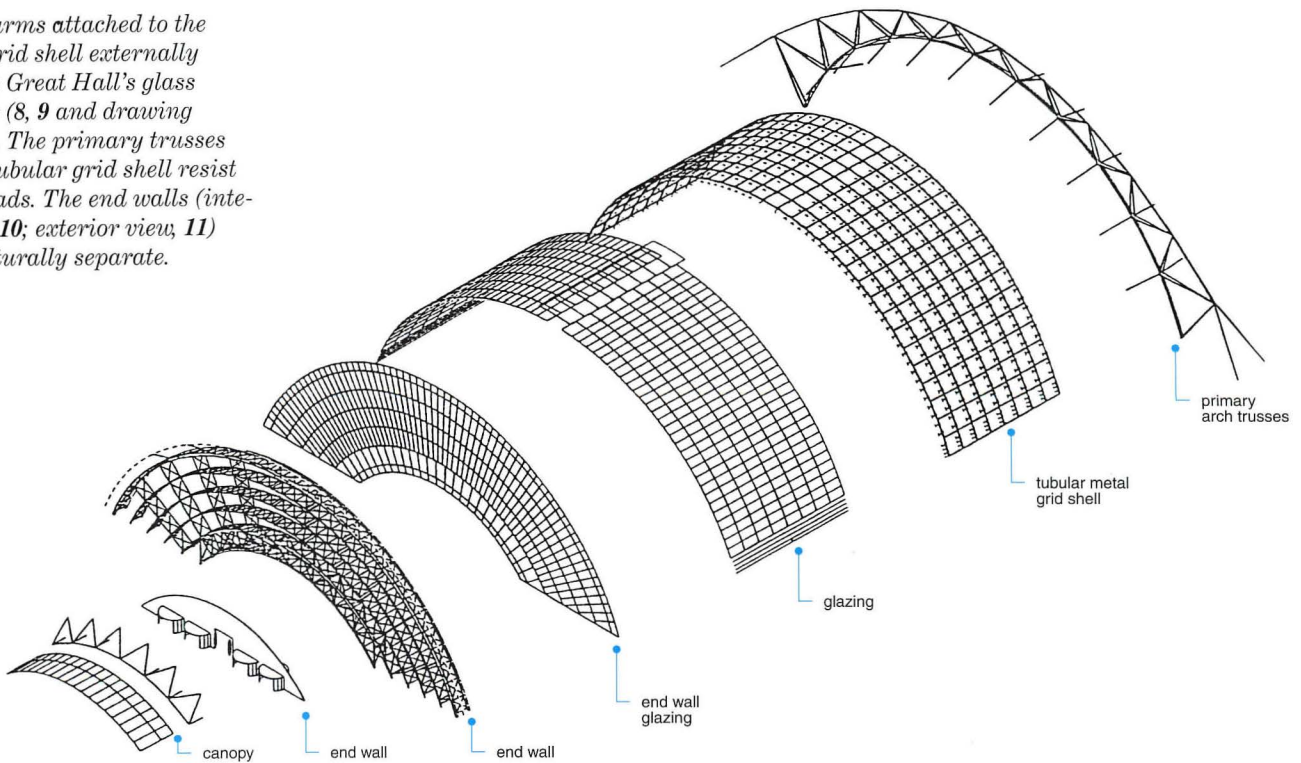


10



11

*Support arms attached to the tubular grid shell externally fasten the Great Hall's glass enclosure (8, 9 and drawing opposite). The primary trusses help the tubular grid shell resist lateral loads. The end walls (interior view, 10; exterior view, 11) are structurally separate.*





# A True Community College

Olympic College Shelton  
Shelton, Washington  
The Miller/Hull Partnership,  
Architect

*Under an oversized roof, Miller/Hull gathered together the ingenuity of a small timber town to create a bold new satellite college.*

By Sheri Olson

Only through donations of cedar siding and glu-lam beams from one timber company, a free wooded 27-acre site from another company, and services from several local businesses, was the western Washington town of Shelton able to build a much-needed community college. Of the \$1.4-million construction budget, \$500,000 was raised by the town and matched by Olympic College, while the balance came from donations of services and products. The challenge for the Miller/Hull Partnership was to weave these disparate resources together into a coherent whole. "It was more difficult—impacting material selection, bidding, and construction sequencing—but ultimately more rewarding," recalls project architect Scott Wolf. Miller/Hull used its talent for freshly interpreting regional style and transformed the modest project into a dynamic building that plays a large community role.

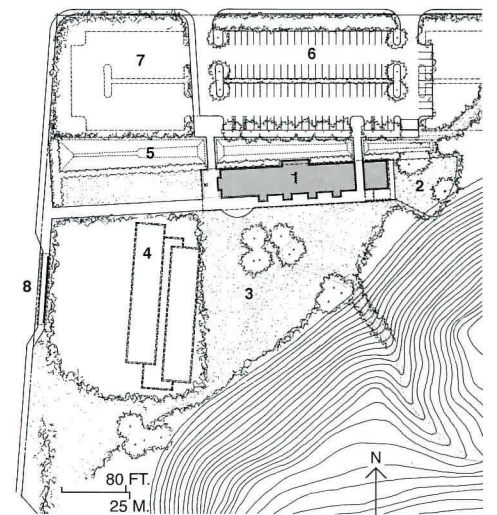
"Economy was key in the development of a masterplan," says principal Robert Hull. Budget and environmental concerns determined the buildings' locations and their compact footprints. The site's natural features—heavy timberland and a steep hill—were used to maximum advantage. Located on a flat swath, the long, narrow form of phase I cuts the site, organizing it in one simple step. To the north, a bio-filtration swale treats run-off from the parking lot and creates a formal landscape buffer between building and cars. On the south, an informal campus "quadrangle" is made by the building, hill, and woods.

"The roof is the big move for the building; it implies shelter as well as rain protection," explains Hull. While the limited budget dictated a modest form, the oversized roof gives the project a larger presence than its 8,000 sq ft. The roof culminates in a dramatic double-height covered entry. It will provide a transition from phase I's smaller scale to the two-story volume planned for phase II. "We were trying to avoid a potential 'Mutt-and-Jeff' situation," says Wolf. Along the quad on the south side of the building, the roof overhangs 14 ft, covering exterior circulation. Faculty offices puncture the classroom wall to articulate this elevation and provide a more intimate scale. Over the daycare center at the rear of the building, the roof slopes in the opposite direction, giving it a separate identity. Where the two roofs meet is an oversized scupper, with chains salvaged from a local naval yard hanging down into a welded-steel catch basin below. Rainwater collects, then flows down the chains like a waterfall.

Interior spaces are as compact and flexible as a ship's. "Our goal was to get as much program in as little space as possible," says Hull. Classrooms also accommodate community functions. The main lobby contains offices, the student lounge, and a resource center. At dusk the lobby's large windows, combined with up lighting on the underside of the roof, make the building glow like a camp lantern in the woods.

*Sheri Olson is an architect and writer based in Seattle.*

© Chris Eden/Eden Arts photos



"Conceptually our idea was to create the greatest impact with a limited material palette," says project architect Scott Wolf. Stained horizontal beveled wood siding is at the building's base.

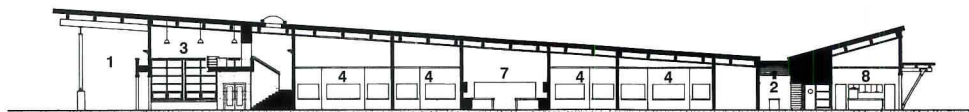
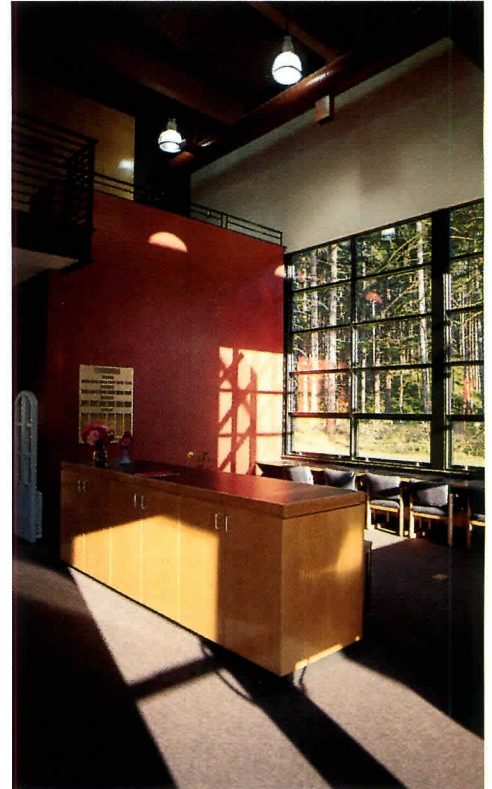
Above are manufactured wood panels. Joints between panels are wood battens 4-ft on-center for vertical rhythm. Panel fasteners were left unpainted for added texture.

1. Phase 1 (built)
2. Daycare play area
3. Park
4. Phase 2 (unbuilt)
5. Filtration pond
6. Parking
7. Phase 2 parking
8. Public transit stop

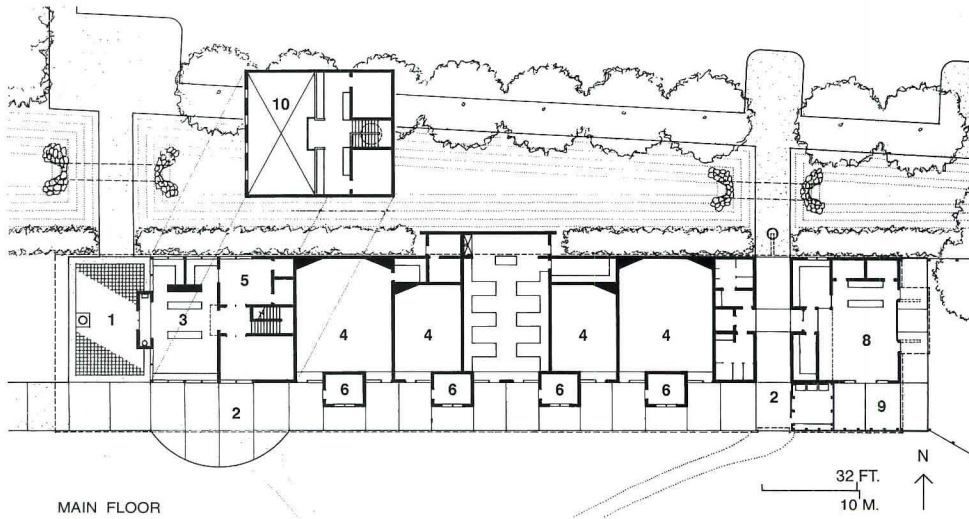








LONGITUDINAL SECTION



MAIN FLOOR

- |                    |                      |
|--------------------|----------------------|
| 1. Covered entry   | 9. Covered play area |
| 2. Covered walkway | 10. Open to below    |
| 3. Lobby           | 11. Lounge           |
| 4. Classroom       |                      |
| 5. Conference room |                      |
| 6. Office          |                      |
| 7. Laboratory      |                      |
| 8. Daycare         |                      |

A common theme in Miller/Hull's work is the integration of interior spaces with the extraordinary natural setting of the Northwest. In the daycare center at Shelton College (opposite), a brightly colored overhead door rolls up and out of the way, extending the classroom into the playground. In the lobby (above right), the woods are drawn in through large windows. To minimize glare, daylight is limited in the classrooms and laboratory space (above left).

**Credits**

Olympic College Shelton  
Shelton, Washington

**Architect:** Miller/Hull  
Partnership—Robert Hull,  
partner-in-charge; Scott Wolf,  
project architect; Norm Strong,  
partner-in-charge of quality  
control; Sian Roberts, Dan  
Mihaljo, team

**Engineers:** AKB (structural);  
Greenbusch Group (mechanical);  
Sparling (electrical); SvR Design  
Co. (civil)

**Consultants:** SvR Design Co.  
(landscape); C3MG (costing)

**General Contractor:**  
Construction Enterprises &  
Contractors, Inc.





EXIT



# Medical Campus Gets A Meeting Place

*Eric P. Newman Education Center  
St. Louis, Missouri  
Cannon, Architect*

*Projects at medical centers all too often mean solving problems created by willy-nilly growth. An animated and dramatically daylighted classroom building ties together two levels of circulation.*

*By Cheryl Kent*

**U**niversities and hospitals have a common architectural problem—accretion. Driven by institutional growth, new technology, and funding availability, these facilities expand as they will in ways that are not so much rational for the whole as appropriate to the moment. The Washington University Medical Center in St. Louis has begun to bring order to this chaos by consolidating the 30 or so scattered and independently scheduled meeting facilities into a single, technologically sophisticated, centrally controlled and schedule-monitored building, the Eric P. Newman Education Center.

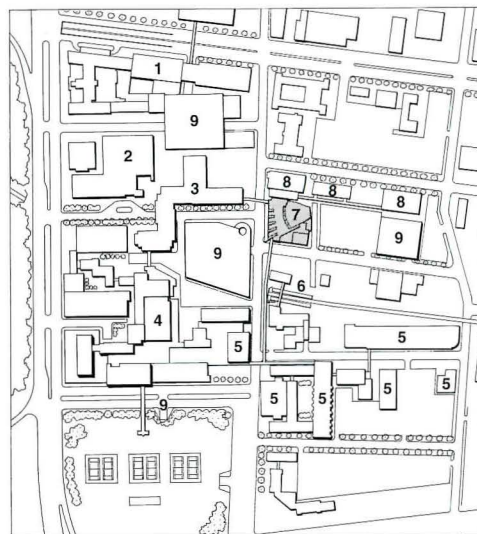
The medical campus's unplanned jumble created site-planning obstacles for St. Louis architect Cannon (formerly Cannon/Pearce Turner Nikolajevich). One site Cannon analyzed was at the heart of the complex, but straddled a street and below-grade commuter train. It called for the Education Center to be erected above a second-story elevated walkway system that runs throughout the medical center. The site ultimately chosen borders the treatment and research sections of the medical complex. It faces parking lots on three sides, which are to be replaced in future expansion. The elevated walkway had to be accommodated on this site, too.

In early conversations, the clients emphasized eliminating redundant services and upgrading conference tools. They didn't think the building needed a strong architectural presence. Working within these boundaries, the architect strove to distinguish the building. Cannon's principal-in-charge of design, George Nikolajevich, says, "Everything relies on movement and functions, not secondary details." A materials palette of light brick, silver aluminum, and tinted green glass together with a subtly animated facade of overlapping planes and alternating voids also recalls the work of the early Modernists, whom Nikolajevich admires.

When the architects received the commission, one of the first things they did was to have a look at competing facilities at Duke University, the Mayo Foundation Medical Center, and Johns Hopkins University to be sure the St. Louis facility would measure up. Thus the 450-seat auditorium is fitted with satellite links and audio/visual equipment for projecting real-time videos of remote surgical procedures, X-rays, computer screens, or conventional slides. Powerful rear-projection means that ambient lighting for note-taking can be maintained. All of this sophistication pushed the cost of the 45,400-sq-ft building to \$8.6 million, for a per-sq-ft cost of nearly \$190. The building may lack architectural frills, but it has a richness and complexity suited to the Medical Center's need to accommodate prestigious programs and continuing education.

*Cheryl Kent is a former correspondent with Progressive Architecture and writes about design from Chicago.*

© Timothy Hursley photos.



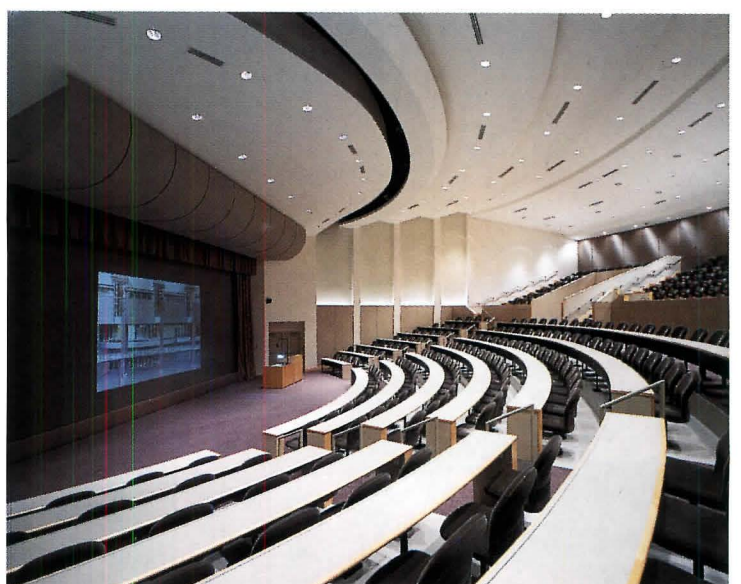
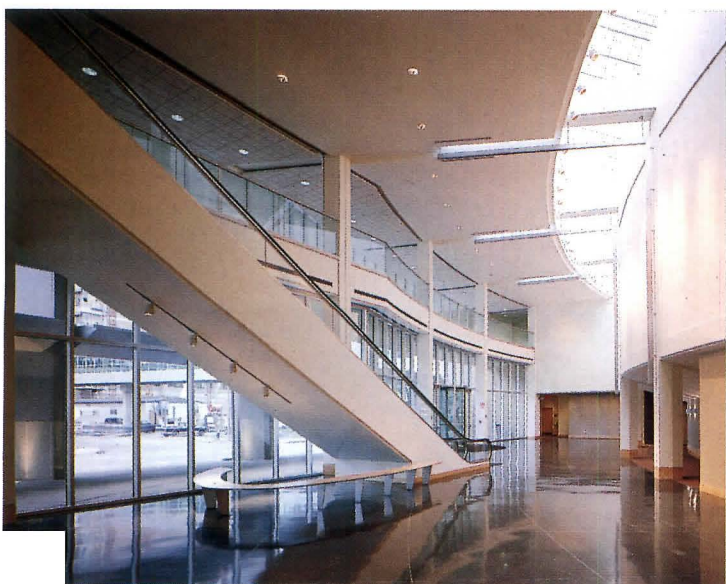
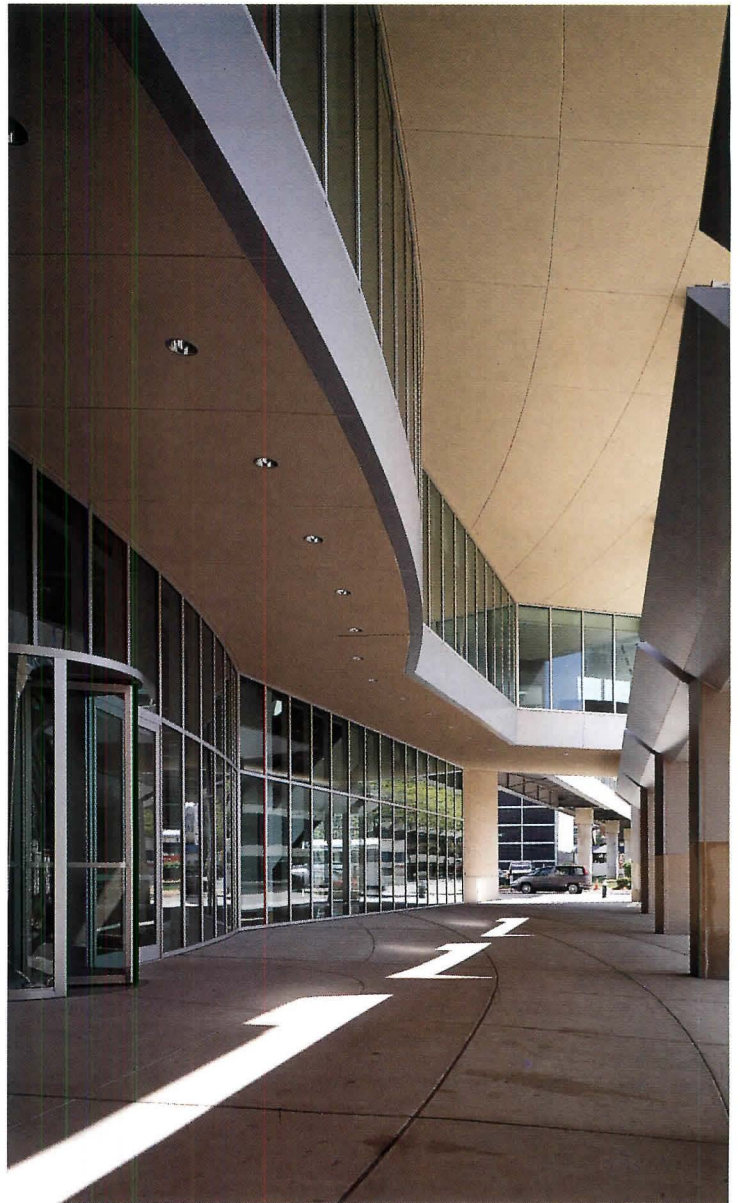
*The technically sophisticated classrooms, meeting rooms, and auditorium of the Education Center serve a sprawling medical and teaching complex (site plan). Passersby make use of the Euclid Street canopy as much as those actually using the Medical Center (opposite).*

1. Jewish Hospital
2. Childrens Hospital
3. Clinical Sciences Research Building
4. Barnes Hospital
5. Medical school
6. Light-rail station
7. Eric P. Newman Education Center
8. College of Pharmacy
9. Parking garage











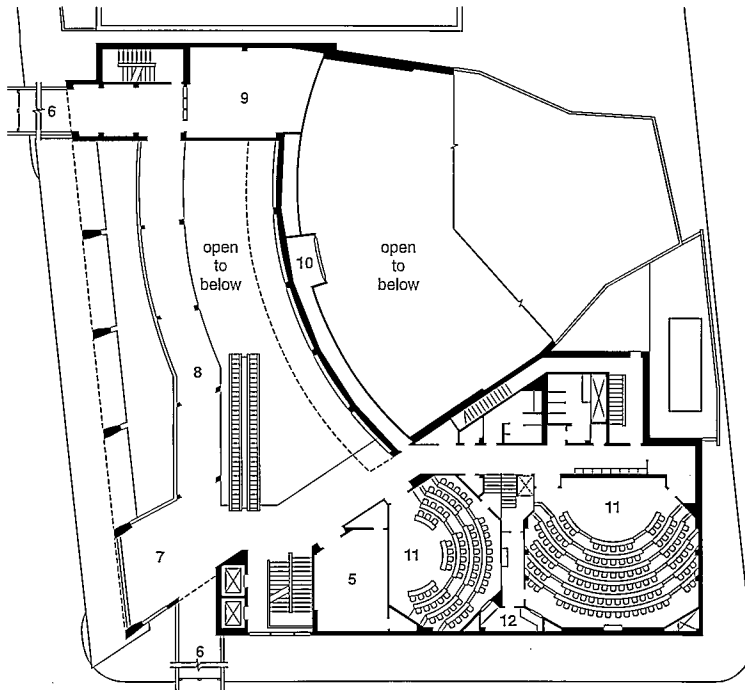
Placing the auditorium at the first-story northeast corner adjacent to the only existing neighboring building was the primary move from which the rest of the plan logically unfolded (plans and opposite bottom right). That gesture permitted the architects to open the lobby and meeting rooms to sunlight and the fronting street, Euclid.

The outer curtain wall is pulled back from the street. A canopy protrudes to the site boundary, creating a grand entry for a relatively small building and alleviating any sense of being crowded by the street's close proximity (top photos opposite). The atrium lobby (opposite bottom left) becomes a break-out area between sessions; larger crowds can spill into adjacent meeting rooms which overlook a side street.

On the second level, meeting rooms open to the atrium; the corridor doubles as the elevated-walkway connector. (A screen secures the building when closed from the walkway.) On the third level, what would have been conventional, even dismal, meeting rooms are saved by clerestories (section) which create an abstracted sculptural effect when viewed from the interior:

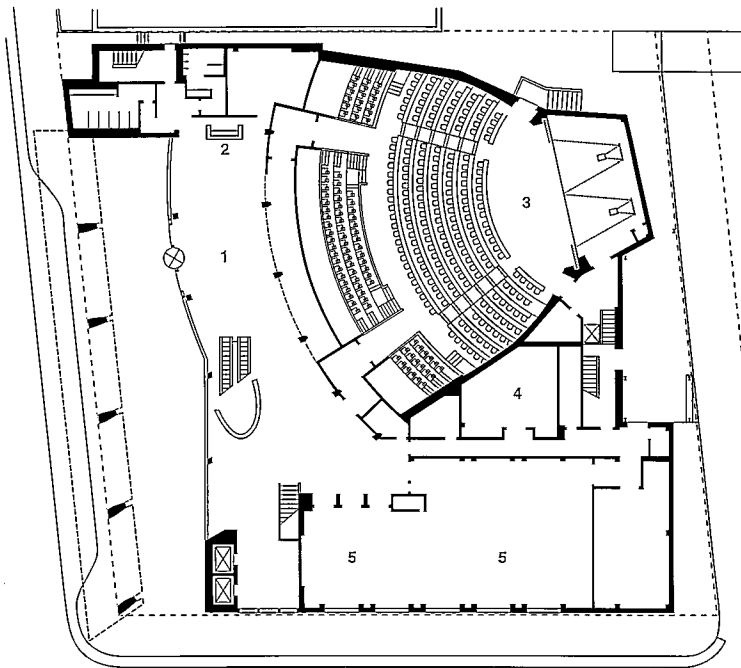
**Credits**

- Eric P. Newman*  
Education Center  
St. Louis, Missouri
- Owner:** Washington University  
Medical Center
- Architect:** Cannon—*M. Kent Turner*, project principal; *George Z. Nikolajevich*, design principal; *Mark R. Bamholzer*; *Michael T. Felton*, *P. Kirk Warden*, project team
- Engineers:** *Siebold, Sydow & Elfanbaum* (structural); Cannon (mechanical, electrical, plumbing)
- Consultants:** *Randy Burkett* Lighting Design; *Osterdaard Acoustical*; *Boyce Nemece Designs* (audio/visual)
- Contractor:** *McCarthy*



SECOND FLOOR

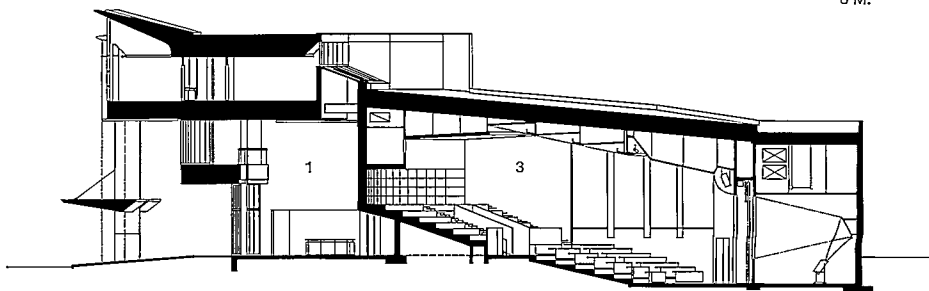
1. Lobby
2. Information
3. Auditorium
4. Kitchen
5. Meeting room
6. Elevated-walkway bridge
7. Lounge
8. Balcony/concourse
9. Staff office
10. Control/front projection
11. Lecture
12. Control room



FIRST FLOOR

CHILDREN'S PLACE

0 20 FT.  
6 M.



SECTION LOOKING NORTH



# Opportunities for Architects

*Eighty-six-million Baby Boomers are growing old, and their parents and grandparents are living longer. Consider this: life expectancy in the United States is 79 for women and 73 for men. Back in 1850, the figures were 40 and 38, respectively. Just as they turned rock 'n roll into a world industry in the 1950's and 1960's, the Boomers—who represent 31 percent of the American population—are on the brink of making aging a very hot business. With age comes disability. So it is no surprise that special facilities for the*



© Gary Knight & Associates photos

## **H. J. C. Bowden Center for Seniors**

*East Point, Georgia  
Stanley Beaman & Sears,  
Architecture*

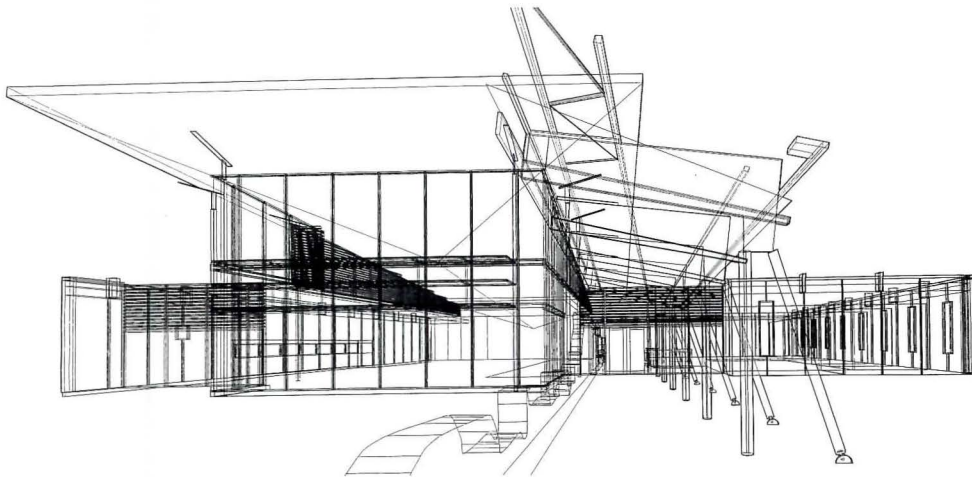
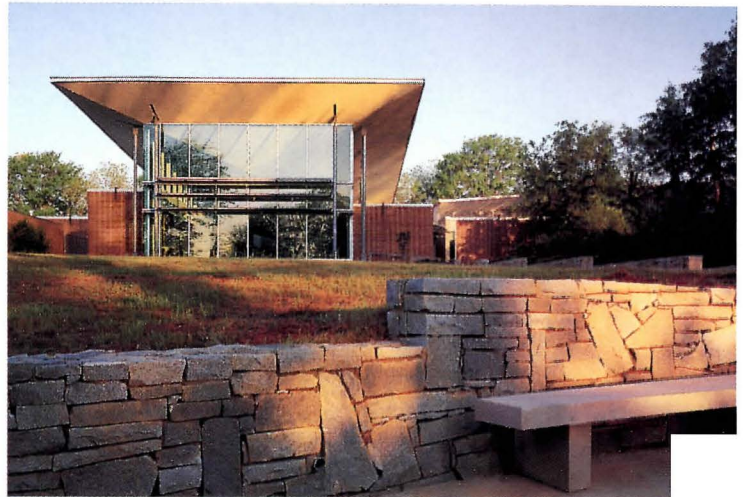
The site of the H.J.C. Bowden Center had been a vacant lot where a school once stood in East Point, a long-established suburb of Atlanta. The facility is the first of five planned by Fulton County to provide health, social, nutritional, and recreational activities all in one place, says county project manager Michael Katzin. To establish a program, architects Stanley Beaman & Sears worked in concert with the

operating agency, the county Department of Human Services, to conduct many brainstorming sessions with a local group of active seniors before and during design.

One of the interviewers' first findings was that the healthy active elderly do not like being around the frail. Robust seniors' perception of when they are "old" is always sometime in the future.



*elderly, the blind, the deaf, and the physically disabled represent a growing opportunity for architects. None of these special populations, though, wants to be stigmatized or set apart from the rest of society. They may need facilities with particular design and programmatic features, but they don't want these buildings to look different from all of the others around them. Integrating the elderly and people with disabilities into the mainstream of society is a major goal today and architecture has a role to play. While*



*Stone walls around the site symbolize continuity while the building's structure generates energy.*

And they do not like being reminded that they too may fail. But they have the ability to inspire by example healthier attitudes in those who are not coping as well as they are. To make sure that seniors of all ages and conditions do mingle, design-lead Betsy Beaman's project team created an open floor plan where all users cannot help but meet. A second finding was that seniors on the advisory group felt that

the general public held them in low esteem because they lacked vitality. The members used terms like "tired" and "washed up" to describe younger people's attitudes toward them. And they hoped that the new center would counter such perceptions by conveying youthful energy through a forward-looking design. The architects' response was to expose the lively activities within, including regular dances and

receptions, to the neighborhood through large glass walls of social-function rooms that reach out toward surrounding streets. (For protection, a security system is hooked into the county's central-monitoring station.)

The architects also used selected elements of the steel structure to express energy as powerfully as possible. The first impression vis-

itors and users get as they arrive at the drive-up entrance is created by a long sheltering canopy, dynamically sculptured of exposed beams and struts topped with translucent-plastic panels (opposite, above left, and concept sketch).

The dining hall roof (above right and following pages) slopes toward its center in a bird-wing profile, suggesting it is about to



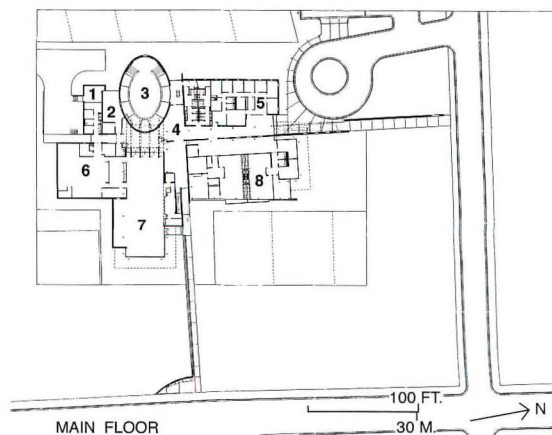
take flight. To produce a further kinetic effect, the stationary tops of the exterior steel columns are shaped to appear like moving pistons (top left in photo opposite). They pass through slots in the soffit to support a spanning system of inverted triangular King trusses on slip-bolted joints. Most of the rest of the center has flat roofs built with economical bar-joists. One other exception to the straightforward

steel framing is the exposed poured-concrete structure of the therapeutic pool (below) where a class in arthritis-relieving exercises is shown in progress. Initially, the pool was in question by the programmers. But the seniors' committee was adamant. Most of them had seen the movie "Cocoon," in which oldsters were rejuvenated as they swam. Further, the pool had to be oval and be called a "spa" like the one

in the film. The pool and an adjacent exercise room have turned out to be among the center's most popular attractions, notes Katzin. Another is the free dental care and monitoring of medications and blood pressure in a clinic to the right of the entrance.

Two program factors tended to drive up construction costs beyond those for a normal senior center. One was the pool and the

other was the full-blown commercial kitchen designed to supply meals not only to the dining room, but to a local Meals On Wheels program. In addition, the user committee was vitally interested in durable materials that would last and express confidence in the future. "We're building this for you some day," one committee member told the architects. Hence, the heavy-duty, barrier-free hardware and



*The dining hall (opposite) serves prepared meals at nominal cost and also holds large social functions. Wood pivot doors close it off.*

1. Service
2. Exercise
3. Pool
4. Lobby
5. Office/clinic
6. Kitchen
7. Dining
8. Activity rooms



slate floors. But the architects did not stop there. They commissioned local mason Danny Clack to build a rubble stone wall running from outdoors through the vehicular entrance and down the center of the lobby, symbolizing permanence and ending in a free-standing boulder, "the rock of ages," recessed into the floor outside the dining hall. Clack also built stone walls all along the street frontages. Considering the

amenities and quality, the construction and equipment cost of \$100 per sq ft seems low. "We were lucky," explains Beaman. "We put the project out for bids just before demands for construction of the Olympics' facilities drove prices sky high." *Charles K. Hoyt*

**Credits**

*H.J.C. Bowden Multi-Purpose Senior Center  
East Point, Georgia*

**Owner:** *Fulton County*

**Architect:** *Stanley Beaman & Sears, Architecture—Kimberly Stanley, Betsy Beaman, Burn Sears, Chris Domin, Portia Gubatan, Veronique Pryor, Kimball Robinson, Nelson Weeks, project team*

**Engineers:** *Harrington Engineers (civil and structural); Khafra Engineering Consultants (MEP and fire protection)*

**Consultants:** *Jones-Worley Design (graphics); Judy Ford Stokes (kitchen); Rodger Construction Consultants (costs)*

**General Contractor:** *Nix-Fowler Constructors, Inc.*





# Northeast Valley Multipurpose Senior Center

Pacoima, California  
*R.L. Binder Architecture & Planning*

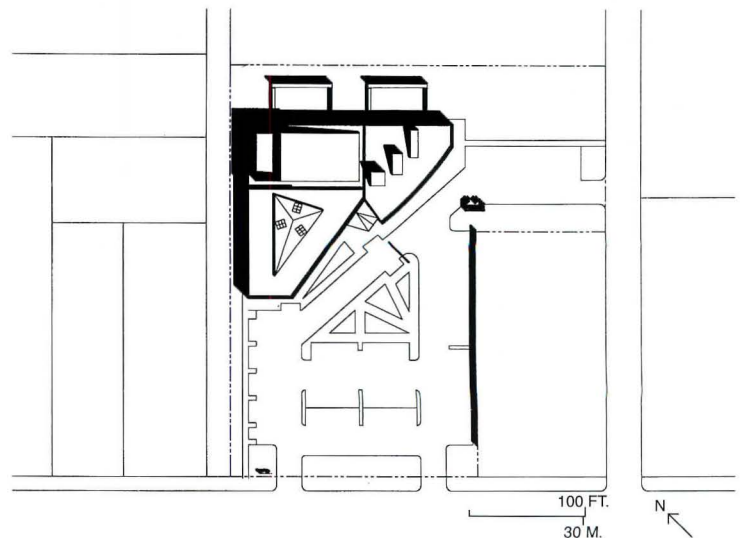
It's a tough neighborhood and security was a major concern. Design guidelines set by the client, the Los Angeles Department of Recreation and Parks, reflected these conditions: no windows, no hiding places in facade nooks or niches, no corners that obstruct views. Fencing around courtyards had to be open-rail and parking had to be upfront so nothing sinister could happen out of sight. Start-

ing with such unpromising ground rules, Rebecca Binder and her project team designed a 16,000-sq-ft senior center that has been welcomed by the surrounding community and the people who use it. And despite its lack of fenestration and the concrete block that is its main construction material, the building is anything but a bunker. One way the architects softened its appearance was to vary the finish



© Tom Bonner photos

*Originally planned to be built in two phases, the entire 16,000-sq-ft senior center was built at one time. The design allows the center to work either as one large facility or two smaller ones. The component for active seniors is to the left of the main entry (photo above), while the facility for seniors with Alzheimer's Disease is to the right.*





of the concrete block, using split-face and smooth blocks, as well as two different colors of blocks. Angular copper canopies at the main entrance and at irregular intervals along the facade also provide visual relief to what is essentially a solid front.

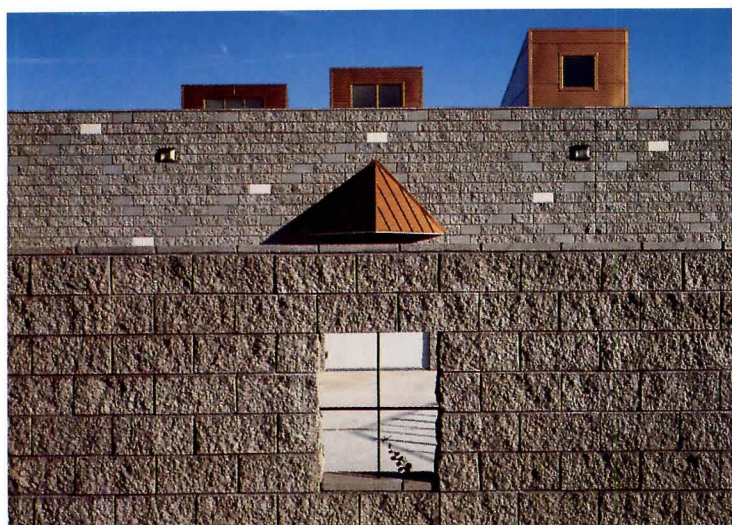
The key to the building's success, though, lies with its roof and the large copper-clad monitors and skylights that flood interior

spaces with daylight. From a distance, the sharply pitched monitors inject a few high notes to the low-key massing of the rest of the building. Inside the senior center, the roof elements are revealed as rising open volumes washed with sunlight. "This is one of my favorite buildings," exclaims Armando Delao, a project manager with the Department of Recreation and Parks, who worked on the senior

center. "The interiors are just unbelievable with all the light coming in."

The building is really two facilities that can operate either together or independently: a social center for active seniors and an adult-daycare center for people with Alzheimer's Disease. Although they share one entry canopy, separate doors provide access to the two components.

Inside, one set of doors can either open or close the two halves of the building to each other. Since many of the people using the building have trouble remembering directions and orienting themselves, the architecture has to make wayfinding simple. "We eliminated all corridors by creating open spaces where people can socialize and easily spot each other," explains Binder, referring to the



*On the back of the building (above), two terraces provide outdoor areas where Alzheimer's patients can be supervised. Copper-clad light monitors and canopies provide visual accents to the masonry building.*

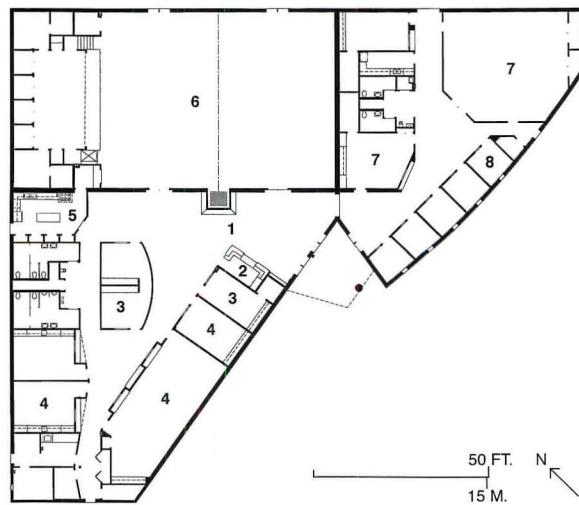
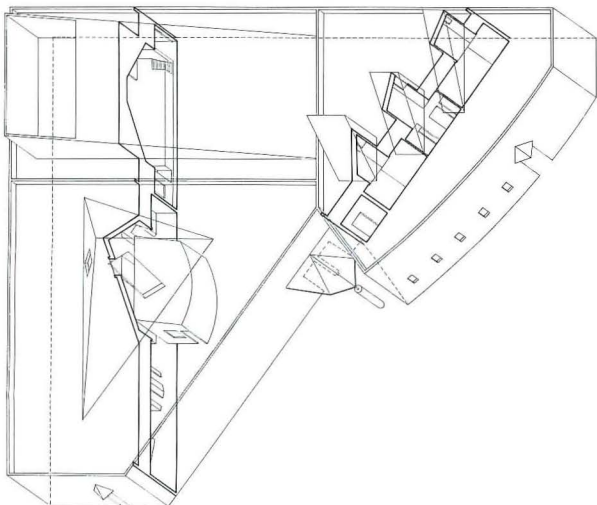


central lobbies for each of the two program components. Designed almost like the central plaza of a small town, the lobby to the regular senior center has benches built along its perimeter and a pavilion housing restrooms in the center. Storefront windows let people look into activity rooms from the central lobby, giving them the chance to see if they want to go in or not. Wood floors add warmth to the interi-

ors and because they're resilient, they're more comfortable for seniors to walk on. "The scale is very comfortable," says Binder, "so it seems more like a house than an institutional space." The facility includes adjacent multipurpose rooms with a movable partition separating them, a billiards room, craft rooms, a warm-up kitchen, consulting rooms for Alzheimer's patients, and two outdoor areas off the

Alzheimer's facility. The function rooms were designed, though, so interior partitions can be moved if the facility's program changes. The center, which was built for \$2.1 million (about \$130 per sq ft), has been so successful that a city councilman from a different part of L.A. has asked for a similar one for his district. As a result, Binder's firm will adapt the design to a new site. *Clifford A. Pearson*

**Credits**  
*Northeast Valley Multipurpose Senior Center*  
*Pacoima, California*  
**Architect:** *R.L. Binder, Architecture & Planning—Rebecca L. Binder, Kim A. Walsh, Joseph Sion, Chilin Huang, project team*  
**Engineers:** *Grossman & Speer (structural); M.B. & A (mechanical); Mirahmadi & Associates (electrical)*



*A central space (opposite) makes wayfinding easy. In the Alzheimer's area (above), wood floors are easy on people's feet.*

- 1. Lobby
- 2. Reception
- 3. Office
- 4. Kitchen
- 5. Kitchen
- 6. Multipurpose
- 7. Meeting
- 8. Consultation







# Kellogg Conference Center

Gallaudet University  
Washington, D.C.

Einhorn Yaffee Prescott, Architecture and  
Engineering

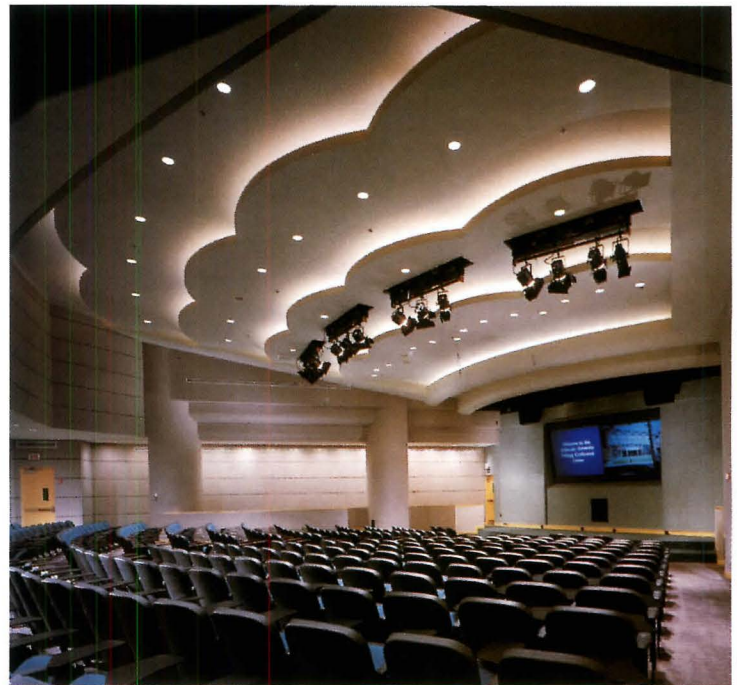
Einhorn Yaffee Prescott's mission was to create a state-of-the-art conference facility to meet the training and continuing-education needs of the deaf. The biggest challenge, according to EPY principal Hugh Latimer, was creating a building that would fit into Gallaudet's Frederick Law Olmsted-designed campus and its Victorian buildings, and still be comfortable and modern on the interior for both

those who can hear and the hearing impaired. "A neo-Victorian interior wouldn't do for this building."

The resulting building (1) fits the campus, while the inside includes all of the amenities that make buildings usable by the deaf, including "visual music," in the form of daylight supplied in abundance in the cafe (5) and other public spaces, and a lighted



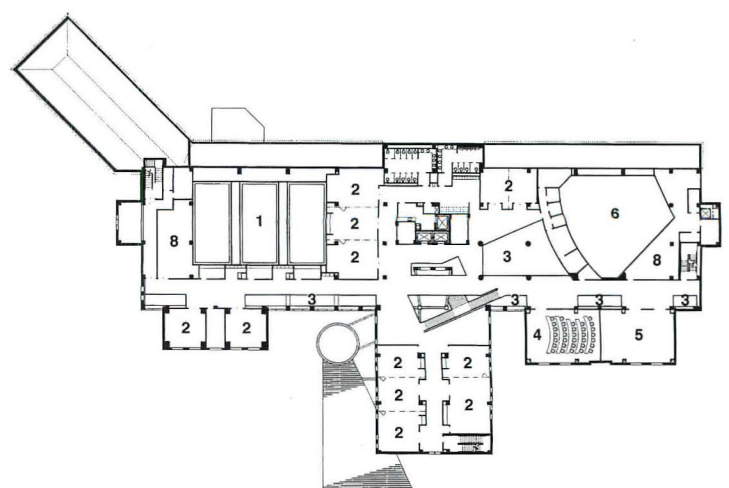
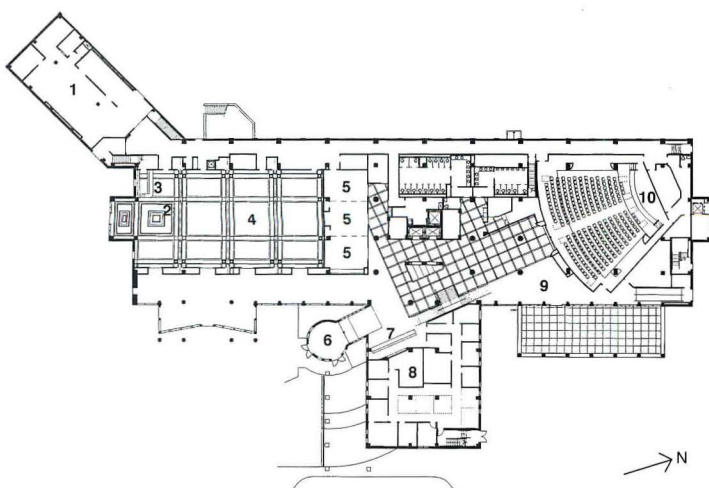
© Michael Dersin



© Durston Saylor photos except as noted

- 1. Kitchen
- 2. Dining room
- 3. Bar
- 4. Ballroom
- 5. Meeting rooms
- 6. Entrance
- 7. Front desk
- 8. Back of house
- 9. Public lobby
- 10. Auditorium

- 1. Ballroom below
- 2. Meeting rooms
- 3. Open to below
- 4. Meeting room
- 5. Board room
- 6. Auditorium below
- 7. Control room
- 8. Storage





fountain in the lobby. Background colors are muted and illumination bright so that sign language can easily be seen. Even ductwork was insulated to eliminate noise distracting to a person who is hearing impaired.

The two floors of guest rooms (6) have been equipped with computer links because the deaf rely heavily on electronic mail. Strobe lights are used as emergency

warnings and "doorbells." For guests who are deaf and blind, beds vibrate in case of a fire emergency, or to give a morning wake-up call.

The conference center can broadcast meetings worldwide. The auditorium (2) has broadcast-quality lighting, rear-screen projection video monitors, translation rooms for international video conferences, assisted lis-

tening devices at each seat, plus unobstructed views of the stage, so no nuance of the signing is missed. A smaller conference room (3) can receive and transmit conferences, and has instant teletype translation of verbal information coming from the control room (4). This room is equipped with wireless infrared headphones for use as assisted listening devices. *Charles Linn*

**Credits**

*Kellogg Conference Center  
Gallaudet University  
Washington, D.C.*

**Architect:** *Einhorn Yaffee Prescott Architecture and Engineering—Hugh Latimer, principal-in-charge; Tom Fisher, designer; Antonio Yau, interiors; Kevin Eskandry, mechanical; Steve Maskell, electrical*

**Structural:** *James Madison Cutts, Consulting Engineers*



3



4



5



6



# Christopher Place

London

*Troughton McAslan, Architect*

"We wandered into the project," says John McAslan of how his firm, London-based Troughton McAslan, got involved with the design of Christopher Place, a speech, language, and hearing center for children under 5 years of age. Though the commissioning process may have taken some unexpected turns—in 1989 the architects designed an office building on the site for a developer, who in 1992 donated the

parcel to his daughter's tutor, Angela Harding, who founded the school—the design is anything but circuitous. Pleased by the charitable turn of events, the local authorities permitted construction of a building nearly 40 percent larger than the intended office-building scheme, in order to provide for therapy programs for 60 children and a staff of eight. The additional space is barely enough. "It's a tight site,"



© Peter Cook photos



admits McAslan. The firms' reputation for architectural rigor served them well. The architects shoe-horned a three-story circulation and service block into the site's rear and, at the front, a main volume based on a 3.7-meter structural grid with four reading rooms, two acoustically sealed audiology rooms for hearing tests, and staff areas. The architects were inspired by Louis Kahn's Esherick House in

Philadelphia of the late 1950s, and its model of served and servant-spaces and its contrasting facades. Likewise, the center presents a glazed front to the street and a screened back. Inside, particular attention to detail was paid at children's height: window bays have built-in seating and clever storage shelves. "Our architecture is [basically] white," says McAslan, so artist Alison Turnbull was

brought in to enliven the color palette. Trevor Shearer, another artist, collaborated on custom furnishings. "We wanted a clear aesthetic," explains McAslan of the overall approach. "A clarity of language allows the children's education to be the focus."

**Credits**

**Architect:** Troughton McAslan—John McAslan, principal-in-charge; Piers

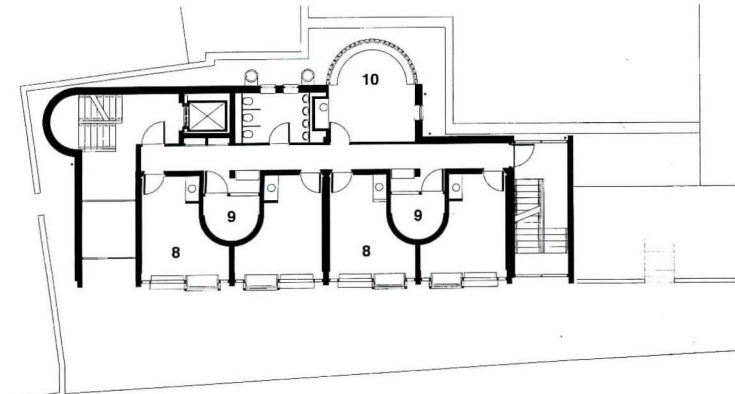
Smerin, project architect; Murray Smith, Kevin Lloyd, project team

**Engineers:** Ove Arup and Partners (structural and services)

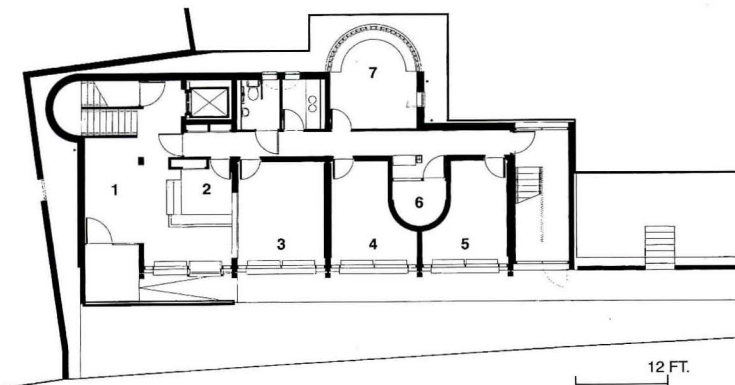
**Consultants:** Boyden and Company (quantity surveyors); Arup Acoustics (acoustics)

**Project Artists:** Alison Turnbull, Trevor Shearer

**Contractor:** Overbury Southern Limited



FIRST FLOOR



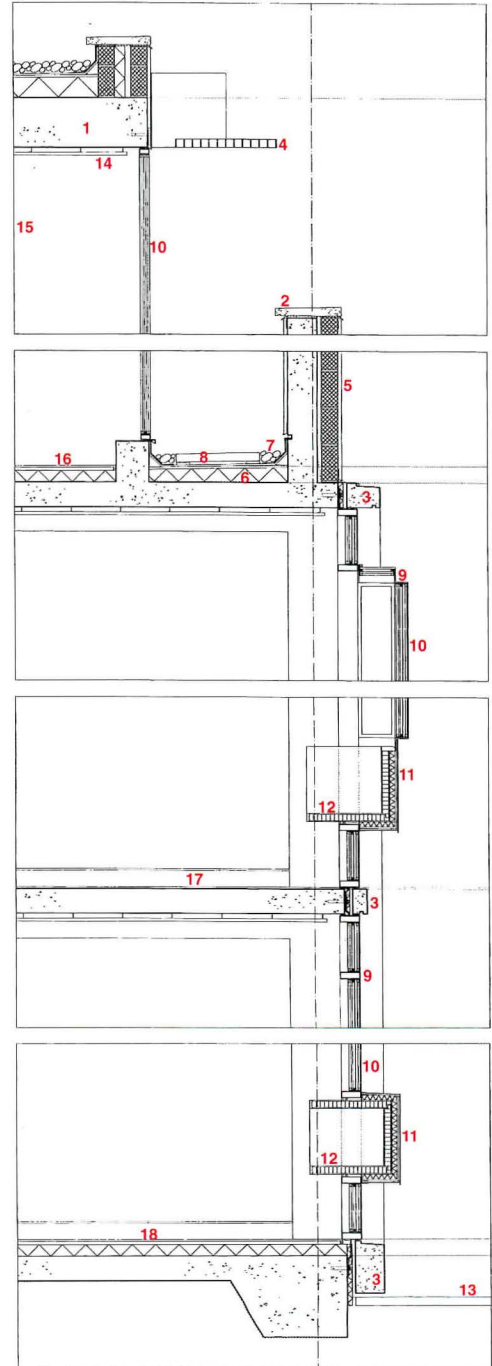
GROUND FLOOR

12 FT.  
3.7 M.

Services and circulation are tucked into the back of the site (above), allowing a more open front facade (left). Inside, the concrete frame is exposed (opposite left). Beech boxes for seating and storage are built into classroom partitions (opposite right).

- 1. Entry
- 2. Reception
- 3. Director's office
- 4. Speech therapy
- 5. Assessment
- 6. Audiology
- 7. Staff
- 8. Group therapy
- 9. Therapy
- 10. Family room

- 1. In situ concrete
- 2. Concrete coping
- 3. Concrete cladding
- 4. Steel lower
- 5. Painted stucco
- 6. Felt membrane
- 7. Rock ballast
- 8. Concrete pavers
- 9. Steel frames
- 10. Laminated glazing
- 11. Zinc cladding
- 12. Beech shelving
- 13. Paving
- 14. Acoustic boarding
- 15. Plasterboard
- 16. Rubber sheeting on chipboard
- 17. Rubber sheeting on concrete
- 18. Carpet



SECTIONAL DETAIL



# The Training Resource and Assistive Technology Center

University of New Orleans  
*Errol Barron/Michael Toups Architects*

A vocational training center primarily for the blind, this 29,000-sq-ft facility at the University of New Orleans is part of a movement to "mainstream" people with disabilities. Reflecting its mission of giving people with vision, hearing, and physical impairments the skills to succeed in the world at large, the center's new building fits into the school's Lakefront campus. Connected to an existing dining hall, the new

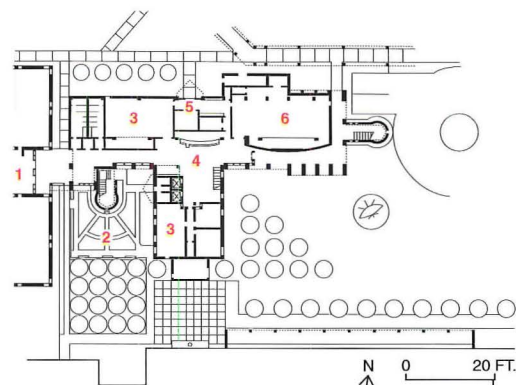
training center acts as a link between a hulking 12-story engineering building and a more modestly scaled dormitory. Nothing about the architecture of the new building screams out "facility for the handicapped." But guided by Oliver St. Pe, a blind man who was the Center's colorful director until his death earlier this year, and Naomi Moore, a coordinator at the Center, architect Errol Barron



© Alan Karchmer photos

The new building (above) connects with an existing dining hall (site plan, opposite) so it could be funded as an addition and could

provide food service for conferences. The large white structure behind the new facility is an engineering building.



1. Dining hall (existing)
2. Sensory garden
3. Lecture
4. Lobby
5. Service entry
6. Conference center



has made the building a textbook on how to design for the blind. Most importantly, Barron used a straightforward, easily recognizable T-shaped floor plan. "It's easy to give verbal directions," explains Moore. The building also has a simple organization: conference facilities and major public spaces are on the first floor, classrooms and offices on the second, and short-term housing on the third. The archi-

tecture calls attention to the intersection of the building's two wings and key places such as stairwells by bringing in daylight, which the blind can feel. Since many of the building's users have some sight, strong contrasts in color as well as in light and shade can provide them with wayfinding cues. The building's exterior has a deeply carved arcade that directs visitors to the entry. Inside, door frames are

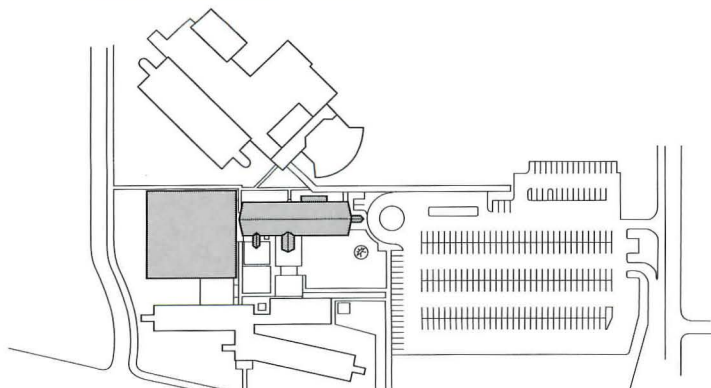
painted a deep teal that contrasts with the walls' neutral color. Changes in floor textures and light fixtures (from cool fluorescent to warm incandescent) alert users to the location of walls and doors. "The idea was to manipulate architecture to tell people what's going on," says Barron. A sensory garden that is still on the boards will help clients use smell, sound, and texture as wayfinding cues. *Clifford A. Pearson*

**Credits**

*The Training Resource and Assistive Technology Center University of New Orleans*

**Architect:** *Errol Barron/Michael Toups Architects—Errol Barron, partner-in-charge-of-design; Michael Toups, Steve Olson, Dennis Cowart, Cindy Garbutt, project team*

**Engineers:** *Zehner/Bouchon (structural)*



*The \$3-million building opened in September at a cost of about \$107 per sq ft. The first two floors of the building are a concrete-frame structure, while the third floor is framed in steel.*

5



# Union Rescue Mission

Los Angeles, California  
Nadel Architects

"Our old facility was like a one-lane road out of Skid Row," says Warren Currie, president of the 70-year-old Union Rescue Mission, which was until recently housed in a converted stable. "This new building is a major highway."

Between 1,700 and 2,000 homeless people a day get food in the new structure's massive dining room served by a high-efficiency

kitchen on the first floor. They can bathe, and get clean clothes and even a haircut in adjacent separate hygiene areas for men and a smaller-but-growing contingent of women (plan opposite).

Those who join the mission's rehabilitation program ascend through four upper floors housing some 860 beds, medical facilities staffed by UCLA doctors and nurses, detoxification



*As the transient homeless enter the courtyards—women to the right and men to the left—they pass by a central two-story-high reception area offering both a*

*welcome to those seeking counseling and control of the unruly. The stair towers project out from the building to emphasize its solid character. Eventual plans call for them to be topped with lighted symbolic beacons.*

© John Ford photos



and recovery assistance, and vocational training, until participants reach semi-independent living quarters on the top level of the 235,000-sq-ft building.

The second floor holds dormitories for 450 people, who receive essential medical treatment in an adjacent clinic. Advanced recovery programs for another 282 people take place on the third and fourth floors. Participants

sleep in six-bunk rooms and share their own dining facilities.

Entry from the main street, San Pedro, is limited to staff and program members in a concession to adjacent businesses already worried about a high concentration of shelters and subsidized housing in the neighborhood. The large group of transient homeless enter from San Julian Street through courtyards screened

from public view by piers of preglazed masonry block (opposite)—a material extending around the base of the concrete-frame building that was substituted for the originally proposed granite in a series of cost cuts to meet the \$17.5-million budget.  
*Charles K. Hoyt*

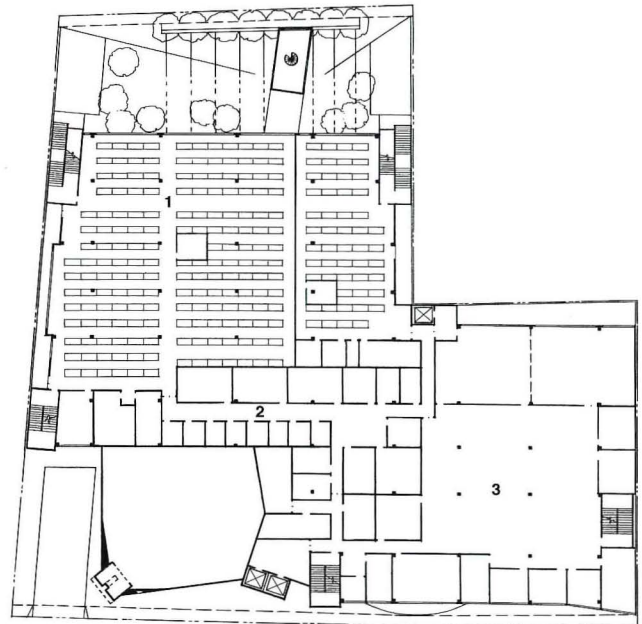
**Credits:**  
*Union Rescue Mission  
Los Angeles, California*

**Owner:** *Union Rescue Mission*  
**Architect:** *Nadel Architects, Inc.—Jerry Allmand, director of design*

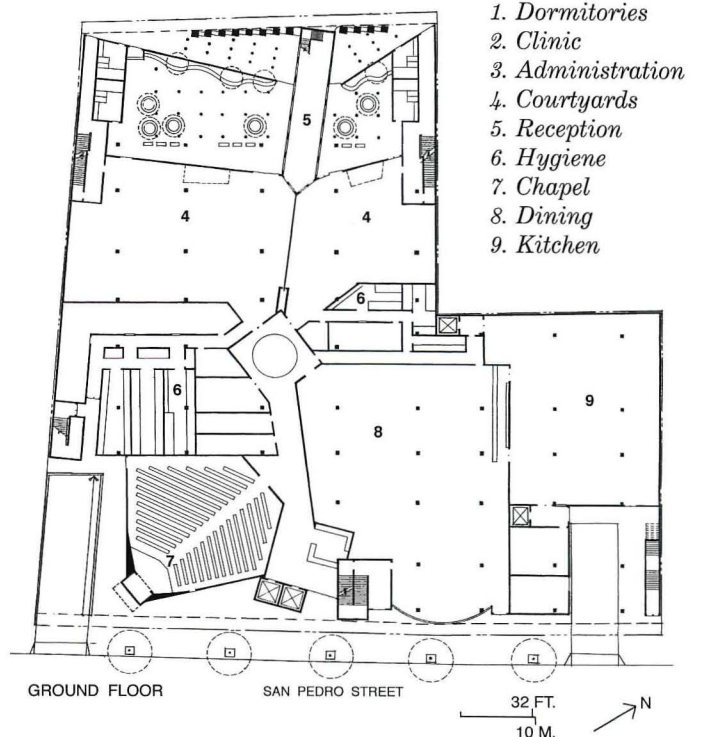
**Engineers:** *Robert Englekirk Consulting Engineers (structural); Dalan Engineering (electrical); Helfman-Haloosim & Associates (hvac)*

**Consultant:** *Calvin R. Abe & Associates (landscape)*

**General Contractor:** *Keeler Construction Company, Ltd.*



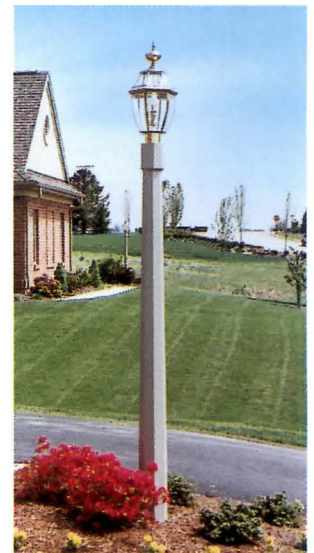
SECOND FLOOR



1. Dormitories
2. Clinic
3. Administration
4. Courtyards
5. Reception
6. Hygiene
7. Chapel
8. Dining
9. Kitchen



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**Outlook** continued from page 37

The trend should be repeated around the country, Murray says. "Given the improvement in office markets and a national vacancy rate down to 13 percent, we see a stronger percentage increase in office construction in 1997." Still, Pederson says, the majority of such projects will be smaller and in suburban settings rather than skyscrapers in central business districts.

There is still plenty of space available; it's just not what tenants want. Suddenly trendy is large-scale conversion of older and historic commercial properties to new uses, especially housing [RECORD, February 1995, pages 30-35]. Already, in downtowns across the

country, such adaptive re-use has expanded well beyond what began decades ago as an artists' housing movement replacing a dying manufacturing base.

**Slipping retail**

In Denver, for example, several redeveloped older manufacturing and office buildings have created a critical retail mass, featuring crowd-attracting brew pubs and other entertainment-oriented retail. In Manhattan's Wall Street district, city and state tax incentives have spurred heavy interest in the area. Retail grew enormously during the recovery, last year falling just shy of its highest mid-80's volume. Much of the expansion had been

in so-called big-box discount super stores for chains like Wal-Mart or Circuit City. But that area is softening.

One emerging area of growth is in the combination under one roof of multiplex theaters and theme restaurants. Successful projects in Dallas and New York City have caught the eye of developers everywhere. Sony Theaters and Planet Hollywood are working on one such project in Michigan, and are looking at other sites. Sony also has an inner-city cinema development program with Magic Johnson that is involved in sites in Los Angeles, Houston, Atlanta, Chicago, and New York. Multiplexes have also been touted as salvation for sagging malls. But since theater attendance is flat, it is hard to imagine that this trend will spread widely.

Indeed, the new interest in once-ignored inner-city neighborhoods by leading retailers suggest that these places are the last under-retailed areas left. Harlem USA, for example, is a 270,000-sq-ft entertainment and retail complex that will house Disney, Gap, and other major retailers.

Such projects may have high impact locally, but they won't offset larger retail trends. "The store market is in a downward pattern," says Murray. "We've already seen this decade's highest level of construction."

**Mixed performance for hotels**

In 1995 and 1996, hotels showed impressive growth, but it should now flatten considerably over the next two years. Destination resorts, theme parks, and casinos should be the exception to this rule. Regions that were slow to turn around, such as the Northeast, are now coming on strong, notes Murray. Construction should boom in Atlantic City, where some \$3 billion in new casino-hotel development is expected through the end of the decade.

There is another important change that is affecting construction spending: the eagerness of lenders to get into the market. After years of freezing out developers, banks and other traditional lenders are doling out dollars, albeit with more caution than they did in the 80's [see market spotlight, page 38.] Although the pace of construction remains dependent on the nation's overall economic performance and health, it is exactly such trends—also linked to real-estate cycles—that alternately cushion and devour investors. ■

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## Calendar

Continued from page 6

Denver Design-build Committee. The conference will focus on how architects can better serve their clients in over 30 seminars, workshops, and programs on design-build, construction and risk management, alternative futures in the profession, and information technology and communications. For information, call 202/626-7482.

### March 19-21, 1997

WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Ann Videriksen at 310/657-0800, or fax 310/652-8576 for information.

### Competitions

◆ Submissions to the biannual Rudy Bruner Award for Excellence in Urban Environment are due Dec. 13. First-prize winner receives \$50,000; honorariums of \$1,000 go to each of four additional finalists. Contact Bruner/Cott & Associates for an application or more information at 130 Prospect St., Cambridge, MA 02139; phone 617/492-8400 or fax 617/876-4002.

◆ The Gypsum Association is holding an Excellence in Gypsum Board Design and Construction competition; entries are due Dec. 31. Top awards of \$3,000 go to each of the winning teams in non-residential and residential construction using gypsum board. Call 202/289-5440 for entry blanks.

◆ The town of Vail, Colo., is holding a juried competition for the design, renovation, and integration of a public-art project in a centrally located plaza. Project budget is \$300,000. Deadline for submissions is Jan. 6. Call 970/479-8900 for details.

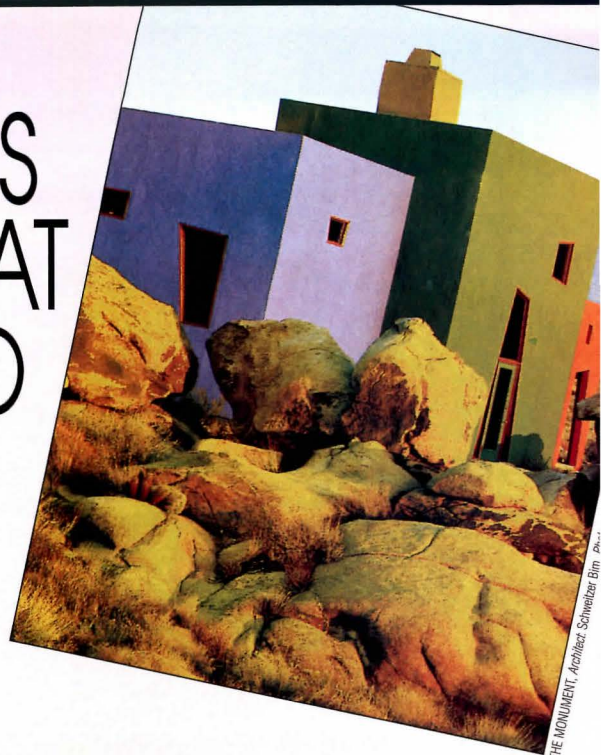
◆ Entries to the Spectrum International design competition, sponsored by the Tile Promotion Board, are due by Jan. 31. Designers, architects, ceramic-tile manufacturers, and others who have influenced the use of ceramic tile are eligible to enter. There is a grand prize of \$2,500 for the most outstanding project, and first prizes (\$1,500) and awards of merit (\$1,000) in residential and commercial categories. Call 800/495-5900 or fax 561/743-3160 for entry forms.

### Correction

The name of the architecture-engineering firm that worked with HLW International on the Ciba-Geigy Laboratory in Tarrytown, NY [ARCHITECTURAL RECORD, October 1996, pages 42-43, 121] was misspelled. The company's name is Sordoni Skanska. ■

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## Manufacturers' Sources

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

### Pages 90-93

Olympic College, Shelton, Washington  
The Miller/Hull Partnership, Architect  
Standing-seam Zincalume roof: BHP Steel Building Products. Bubble skylights: Plasticrafts.  
Black-anodized storefront: Herzog Aluminum.  
Exterior "porthole" doors: Puget Sound Mfg. Co.  
Upward-acting doors: Overhead Door Co.  
Glulam roof beams: Manke Lumber Co.  
Resilient flooring: Armstrong. Pendant incandescents: Holophane. Suspended fluorescents: Linear Lighting (Quietlite 87).

### Pages 94-97

Eric P. Newman Education Center  
Washington University, St. Louis, Mo.  
Cannon-St. Louis, Architect  
Composite-metal cladding: A-T-I (Alucobond).  
EIFS walls and soffits: Senergy. Brick: Taylor Clay.  
BUR: GAF Building Materials. Curtainwall: Kawneer Co., Inc. Lobby skylight: Kalwall.  
Entrance: International Steel Co. Ceilings: Armstrong World Industries (Cirrus). Grid: USG Interiors (Donn). Paint: Sherwin-Williams. Fabric wallcovering, stage curtain: DesignTex. Modular carpeting: Interface. Auditorium seating: KI (Piretti). Downlighting: Lithonia. Controls: Lutron. Exterior fixtures: Visa Lighting Corp.

### Pages 98-101

H.J.C. Bowden Center for Seniors, East Point, Ga.  
Stanley Beaman & Sears, Architecture  
Structural steel: Smith Ironworks. Stacked-bond brick veneer: The Belden Brick Co. Curtainwall and storefronts: Vistawall Architectural Products.  
EIFS soffits: Sto Corp. Single-ply roofing: JPS Elastomerics. Canopy glazing: GE Plastics (Lexan). Tinted and sandblasted glass: AFGD Glass Mfg. Operable partitions: Hufcor. Pavers: Vermont Structural Slate Co. Wood floor: Robbins.  
Uplights: Elliptipar. Corridor downlights: George Kovacs Lighting. Exterior luminaires: Staff.  
Dimming: Lutron. Air diffusers: Seiho. Elberton Blue rubble-stone wall: Built by Danny Clack.

### Pages 102-105

Northeast Valley Multipurpose Senior Center, Pacoima, Calif.  
R. L. Binder Architecture & Planning, Architect  
Modified-bitumen roofing: Schuller International.  
Metal panels: ASC Pacific. Glass block: Pittsburgh-Corning. Skylight glazing: GE Plastics (Lexan).  
Locksets: Best. Ceilings: Armstrong. Grid: USG Interiors (Donn). Paints: Dunn-Edwards. Downlights: Lithonia. Exterior fixtures: McGraw Edison.  
Chair lift: American Stair-Glide Corp.

### Pages 106-107

Kellogg Conference Center, Gallaudet University, Washington, D.C.  
Einhorn Yaffee Prescott Architecture and Engineering, Architect  
Over-size brick: Palmetto. BUR: Schuller International. Shingles: CertainTeed (Grand Manor).

Windows and skylights: Wasco. Acoustical ceiling and FR grid: USG Interiors. Paints: Glidden. Wallcoverings: Knoll Group. Raised floor: Tate; Nevamar surface. Resilient flooring: Forbo. Fluorescent lighting and dimming controls: Lithonia. Wall washers: Kurt Versen. Exterior lighting: Hydrel.

### Pages 110-111

The Training, Resource, and Assistive Technology Center of the University of New Orleans, New Orleans, La.  
Errol Barron/Michael Toups Architects  
Wood-mold brick: St. Joe. Aluminum windows and storefronts: Kawneer Co. EIFS (third floor): Pleko Products. Modified-bitumen roof: Schuller International. Painted Galvalume roofing: Berridge Mfg. Tinted glazing: Libbey-Owens-Ford. Automatic entrance: Besam, Inc. Locksets, closers, and exits: Yale. Ceilings: Armstrong. Paints: Devco & Reynolds. Lobby floor: Graniti Fiandre. Resilient flooring: Azrock Industries. Downlighting: Prescolite. Exterior fixtures: Kim Lighting.

### Pages 112-113

Union Rescue Mission, Los Angeles  
Nadel Architects, Inc., Architect  
Glazed block: The Burns & Russell Co. EIFS: Sto Corp. Skylights: O'Keeffe's, Inc. ■

### Correction

Sloan Valve's water-management subsidiary, cited in *RECORD* [October 1996, page 58] should have been published as Sloan Hydronomics. Sloane Valve Co. is located in Franklin Park, Ill. ■

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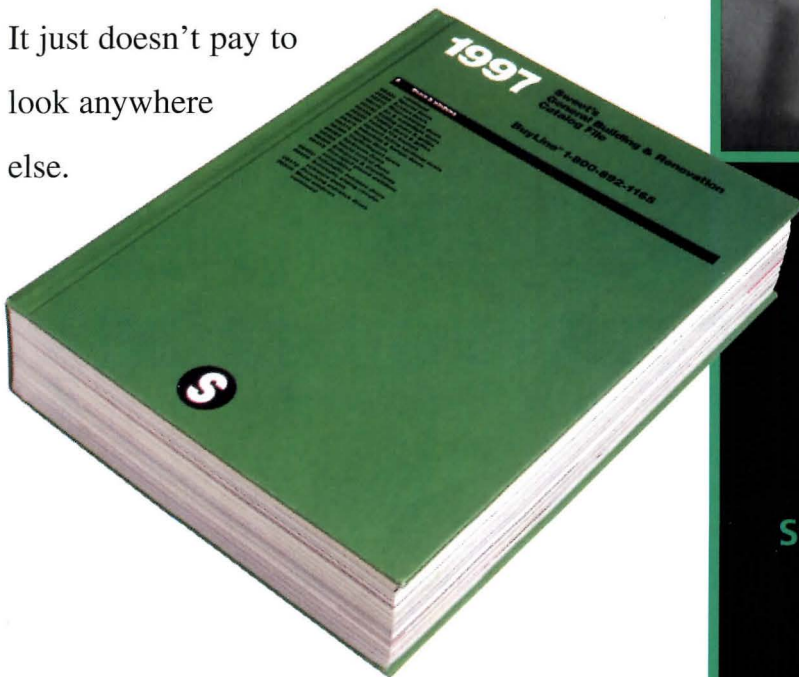
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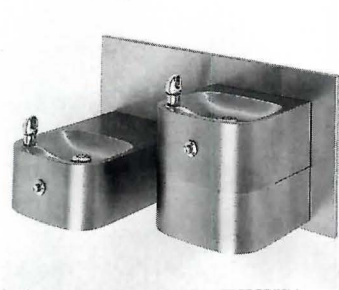


## New Products



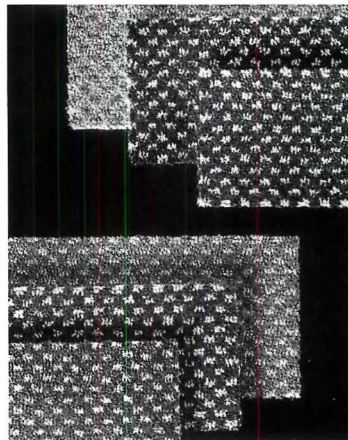
### 171. Thin-stone cladding panels

Ultra-Lite panels are made with a face of thinly sliced natural stone—granite, marbles, or limestone—bonded to a lightweight aluminum-honeycomb panel using fiber-reinforced epoxy. Cladding has been tested for freeze-thaw resistance, hurricane-force wind loads and impact, and seismic loadings as per rack shear tests; impact-, fire-, and flexural-test data is available from the manufacturer. Weighing about 3.3 pounds psf, panels are said to be particularly suitable for exterior renovation over an existing structure; for elevator cabs; and for marine and aviation interiors. Panels come in large sizes, and can be cut using standard carpentry tools. 800/328-6275. Stone Panels, Inc., Carrollton, Texas.



### 172. Accessible for all

A new design, Model 1108 drinking fountain combines two one-piece units placed at wheelchair- and walking-height levels. Each component has rounded corners and a curved, smooth skirt attachment that meets ADA "protruding objects" guidelines. Made of No. 4 satin-finish stainless steel, Model 1108 has zero lead in all waterway parts, exceeding the requirements of the Safe Drinking Water Act. Other fountains available in this ADA-compliant "Hi-Lo" configuration offer a Brushed Sterling Vinyl finish option, a new material said to virtually eliminate typical "wear and tear" problems. ADA-compliance data available for all products. 510/525-5801. Haws Drinking Faucet Co., Berkeley, Calif.



### 173. Wool-blend carpeting

A pattern of light-colored abstract markings set on a solid ground, Prado is a cut-pile construction made of an 80/20 blend of wool and nylon. Durable enough for office and hospitality applications, the broadloom can also be used residentially. Ground-color options include crimson, cornflower blue, sand, spruce green, bark brown, and medium gray. Complete product specification data and sample program offered to design professionals. 800/523-0731. Eurotex, Philadelphia.



### 174. Adjustable lectern

Part of an extensive, Canadian-made line of visual communication and conference equipment, the ADA Friendly Lectern is ergonomically designed to adjust at the touch of a button to suit a diminutive speaker or a Lincoln-esque one; a seated speaker or one in a wheelchair. There is a 22-in. deep clear inside space; hydraulic pistons and an electric pump move the top surface from 34 to 44 inches high. Other features: a built-in clock/timer; subtle lighting for note reading; and microphone cut-outs. Finish options include over 100 lacquer colors or wood veneer. Custom logos, such as the one for the City of Phoenix, shown, may be specified. 905/851-3426. Egan Visual, Inc., Woodbridge, Ont. ■

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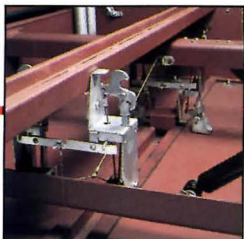
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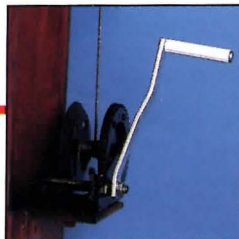
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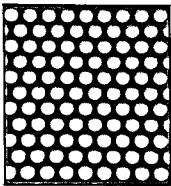
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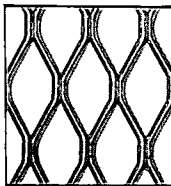
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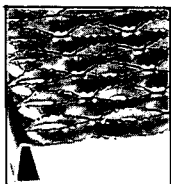
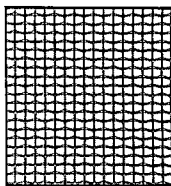
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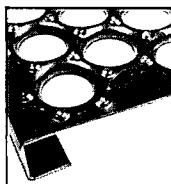
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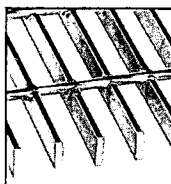
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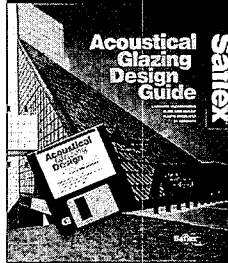
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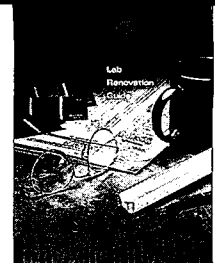
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### Product Literature



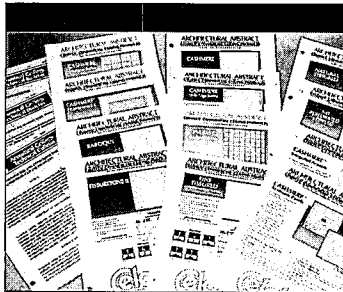
#### 200. Acoustical glazing design

An updated design guide includes a free Windows-compatible diskette to assist in the selection of an appropriate glazing configuration to meet a specific interior noise criterion. Text explains how laminated glass with Saflex interlayer reduces the level of exterior noise passing through windows. 800/248-6844. Monsanto Co., St. Louis, Mo. \*



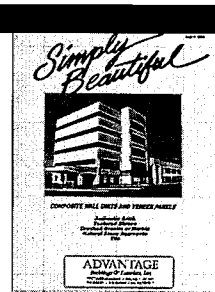
#### 201. Laboratory renovation

Covering concept, plan, purchase, and installation, a 12-page brochure helps facilities managers set up ground rules for upgrading industrial and institutional laboratory spaces. A chart gives pertinent dimensions for equipment such as fume hoods, sinks, and casework. 414/798-1121. Fisher Hamilton, Inc., Two Rivers, Wis.



#### 202. Acoustical ceilings

Product guides, offered without charge to architects and designers, include new *Technical Bulletins for Acoustical Ceilings*, and revised *Architectural Abstracts for Commercial Ceiling Products*. Individual data sheets detail each ceiling product; the *Bulletins* cover fire resistance, light reflectance, and installation. 813/873-4230. Celotex Corp., Tampa, Fla.



#### 203. Prefabricated cladding

A catalog describes Advantage composite wall units and veneer panels, which offer customized cladding faced with crushed granites, kiln-fired clay brick, textured stucco, and polymer concrete. Delivered to the job site ready to install, the wall can be designed for both curtain-wall or load-bearing use. 800/322-9257. Advantage Buildings & Exteriors, Tulsa, Okla.

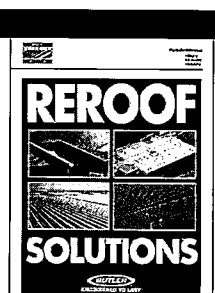


#### 204. Solid-surface directions

A 12-page design guide to Swanstone reinforced material shows it used in commercial, institutional, and residential applications, and details installations such as reception counters, showerwalls, baseboards, restroom partitions, and food-prep surfaces. All pertinent test results and code approvals are listed. 314/231-8148. Swanstone, St. Louis, Mo.

\* Product Data on CAD disk

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



#### 205. Reroofing with metal

A brochure explains the life-cycle advantages to reroofing facilities with standing-seam metal systems. Also covered: improved esthetics, energy savings, and reliability. Case studies illustrated include a health clinic, assembly plant, and school gymnasium. Project cost analysis offered at no charge. 800/998-7663. Butler Mfg. Co., Kansas City, Mo. ■



### Infrastructure *continued from page 39*

infrastructure enhancements. And Jane F. Garvey, deputy federal highway administrator, says the U.S. Dept. of Transportation feels enhancements should continue in some form. In focus groups on ISTEA, she says, "Almost to a person, everyone says they'd like to see the program continue." She says the debate is now whether a specific funding amount is set aside for enhancements or whether enhancements are simply defined as "eligible" for funds transfer. DOT hasn't taken a position.

### Airports ready for takeoff

Airport work long has been an active field for architects. Now, with continued passenger growth and a need to upgrade aging facilities, "It seems like the next wave, if you will, of fairly significant projects is on its way" in the United States and overseas, says Pat Askew, senior vice president and director of aviation facilities for Hellmuth, Obata & Kassabaum (HOK), St. Louis. Paul Reinerman, a principal at Spillis Candela & Partners, Coral Gables, Fla., says, "We see continued expansion, particularly at the larger airports." For example, Spillis Candela is working on elements of Miami International Airport's \$3-billion-plus capital program. That plan will

include expanding the 3.75-million-sq-ft terminal and concourses to 8.75 million sq ft. Askew rattles off cities like Anchorage, San Diego, Salt Lake City, and Fort Lauderdale that have airport improvement plans in the works.

The largest airport-funding source is the bond market. Last year, aviation-bond issues totaled \$4.6 billion, up 6 percent from 1994, but below the recent high of \$7.2 billion in 1992 (chart page 39). Federal Airport Improvement Program grants also contribute. Congress recently lifted a cloud over those grants, but only temporarily. It reinstated taxes that flow into the Airport and Airway Trust Fund, which finances the grants and other Federal Aviation Administration programs. The taxes expired at the end of 1995 and the fund's surplus had been falling. However, the renewal only lasts through the end of December. The new Congress will have to revisit the issue.

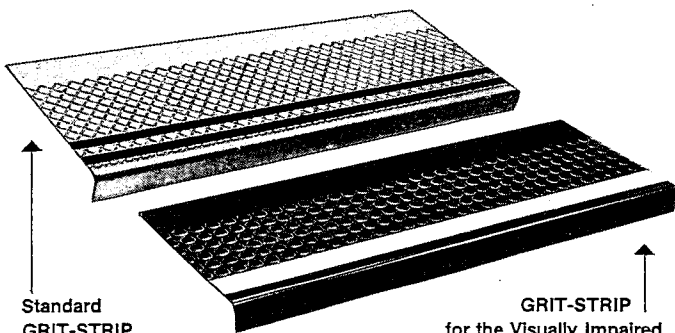
The key for airport-terminal projects, Askew says, is revenue from the passenger facility charge (PFC). These \$3-per-trip fees that many airports tack on to travelers' air fares brought in more than \$1 billion last year.

PFCs have "added an element of stability" to those projects, which otherwise would have to rely on fees charged to air carriers.

Still, the airline business in the deregulated era has been volatile: even big names like Eastern are no more. Future changes in the industry lineup could affect airport infrastructure plans. But Askew thinks aviation planners are more realistic now than in the past. "It's not: build it and they'll come," he says. "It's build it . . . after they've decided to come." ■

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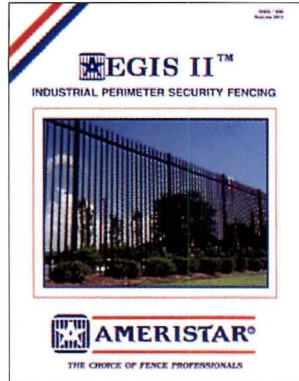
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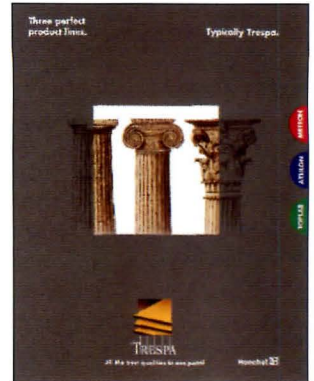
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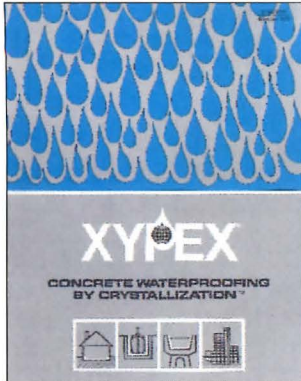


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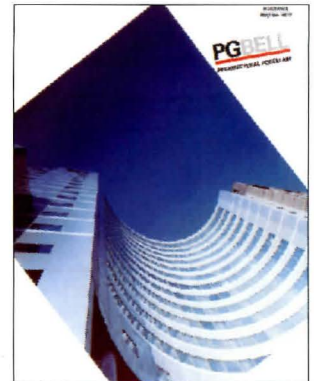
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## New Anchoring Systems from Strong-Tie®



This brand new 36-page reference for architects and structural engineers combines Epoxy-Tie™ adhesive and retrofit bolts with Strong-Tie®'s line of load-rated mechanical anchors, including Wedge-All™, Sleeve-All™, and Mascru™ products. Complete load specifications are included, plus recommended anchor spacing, edge distance, hole sizing and embedment depth.

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Atlas Door "ADA Panic Release Device" is engineered to allow emergency egress control on Atlas motor-operated rolling products. The panic release device is equipped with a pull handle on the outside of the box, making it easily accessible to handicapped individuals. Call 800-959-9559

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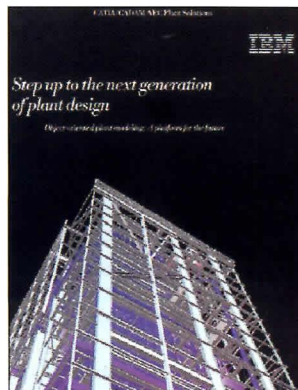


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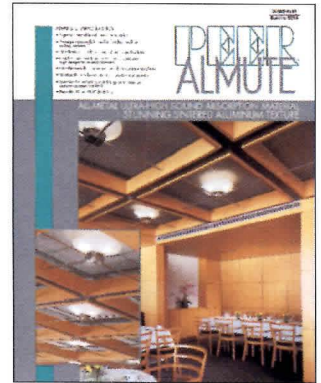
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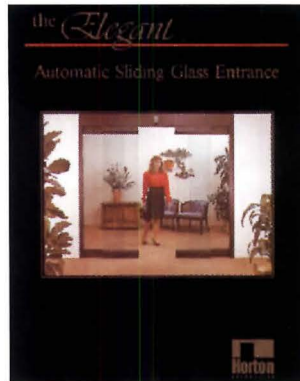


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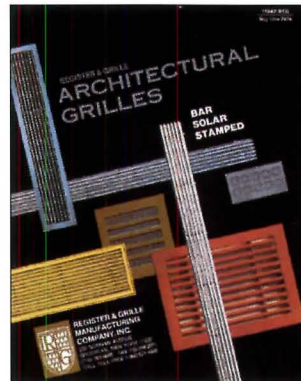


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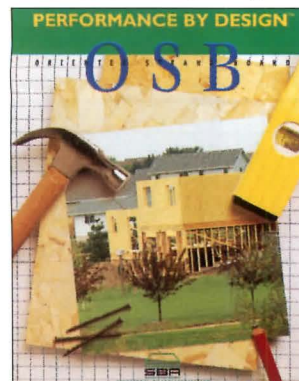
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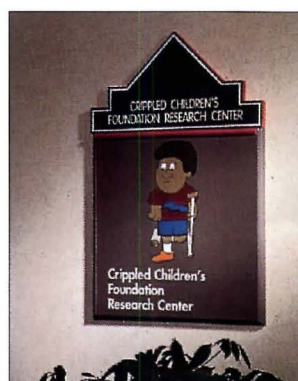


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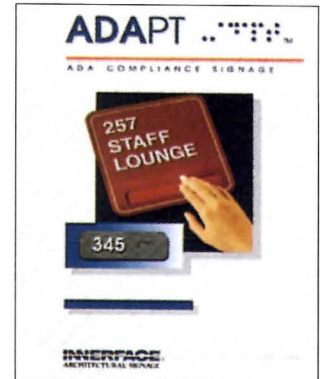


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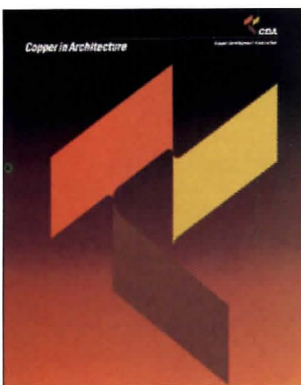


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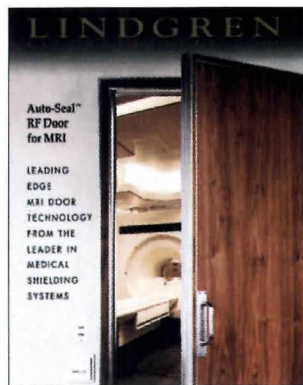


More information than ever assembled on the copper metals in architecture and building construction. Contains designs, details and specifications in hard copy and on CAD diskettes. Provides abundant, practical information on physical and mechanical properties, historical applications. Includes maintenance procedures, copper product sources, fabricator and installer lists. Copper Development Association Handbook; \$85.00 Disks (4): \$40.00. Copper Development Assoc. 260 Madison Avenue, New York, NY 10016, 800-CDA-DATA - 212-251-7200

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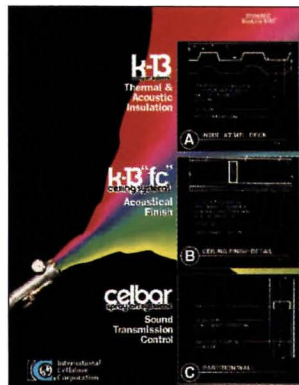


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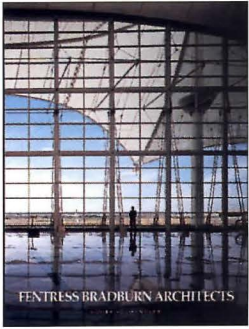
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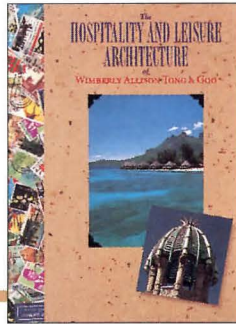
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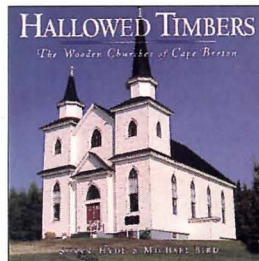
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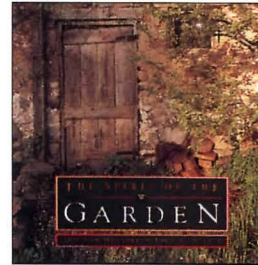
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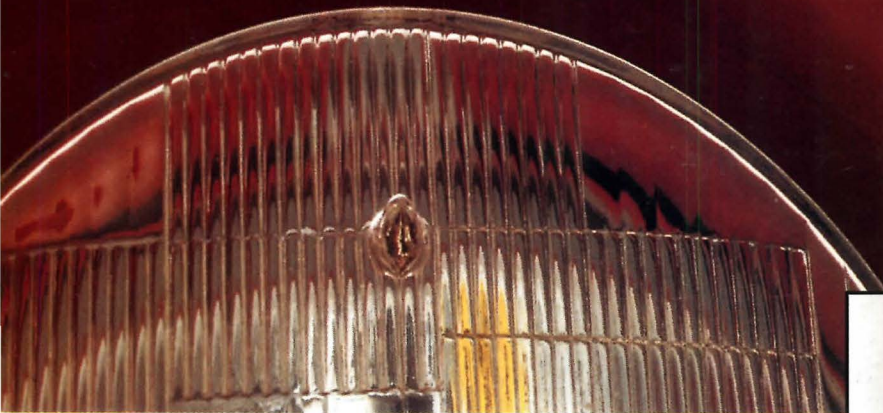
Winning design team shown above (l to r): John Adams, Peter Wormser and Joseph Krupczynski. Photography © Peter Aaron/Esto (installation) and Don Rank (product).

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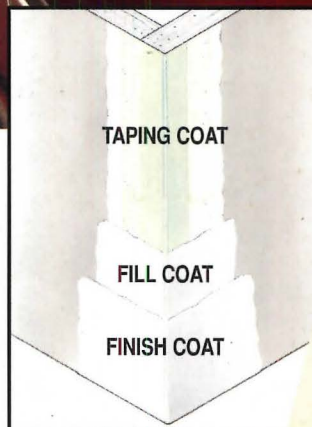


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