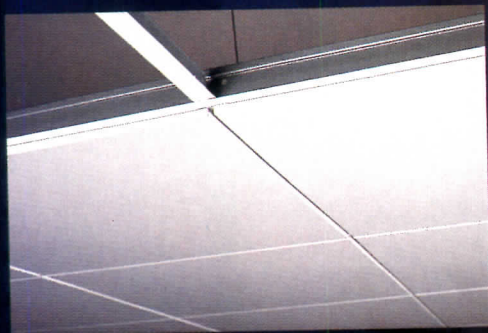


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An early conceptual sketch by Frank Gehry of the Center for the Visual Arts at the University of Toledo.

**Introduction 57**

**United States Holocaust Memorial Museum Washington, D. C. 58**

*Pei Cobb Freed & Partners, Architect  
Notter Finegold & Alexander, Associate Architect*

**Spiegel Corporate Headquarters Downers Grove, Illinois 68**

*Skidmore, Owings & Merrill, Architect*

**Environmental Sciences Centre Trent University Peterborough, Ontario 74**

*Richard Henriquez Architect with Nemeth Associates in joint venture*

**Center for the Visual Arts University of Toledo, Ohio 78**

*Frank O. Gehry & Associates, Design Architect  
The Collaborative, Executive Architect*

**French Institute and Cultural Center Mexico City, Mexico 86**

*T.E.N. Enrique Norten and Associates, Architects*

**Building Types Study 707/Housing**

**Using Housing to Build Communities 90**

*A look at the latest trends in housing.*

**Rue de Meaux Housing Paris, France 92**

*Renzo Piano Building Workshop*

**Manhattan Place Los Angeles, California 96**

*John V. Mutlow, Architect*

**Edison Terrace Miami, Florida 98**

*Arquitectonica, Architect*

**Practice 28**

*Gut Issues '93: Architects' Fees: Arresting the Downward Spiral/Costs/Finance/Specification Series: EIFS*

**Software Reviews 38**

*Generic 3-D, Release 2 for DOS/CalComp DesignMate Plotter/Primavera Project Planner 5.1/GTXRaster CAD and CAD plus*

**Editorial 9**

*Making Money for Your Client: Design as Strategic Weapon*

**Letters/Calendar 4  
Design News 25  
Product News 36  
Books 40  
Product Literature 101**

**Manufacturers' Sources 109  
Classified Advertising 117  
Advertising Index 120  
Reader Service Card 122**

**Next month:**

**Building Types Study 708 Educational Facilities**

An essay links rising demand for schools with enrollment diversity, novel financing, changes in philosophy, and new technology, offering fresh challenges to architects.

**Also in August**

**Membrane structures.  
ADA and the sight- and hearing-impaired.  
Computer report from A/E/C Systems.**

Cover: *United States Holocaust Memorial Museum, Washington, D. C. Pei Cobb Freed & Partners, Architect; Notter Finegold & Alexander, Associate Architect ©Jeff Goldberg/Esto photo*



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# WASHING

always muddied your creative vision. That is, until today. Introducing Kleen-Shield Glass.™ A revolutionary advance offered on Weather Shield wood windows and doors. Kleen-Shield is a factory-applied co-polymer coating that chemically bonds to the glass, creating a non-stick surface. With no loss of clarity, the

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**Staff Architect**

I enjoyed "Private Practice vs. The Staff Architect" [RECORD, May 1993, page 9]. I agree that it is time for reconciliation. However, the problems are not all economic. They also stem from the attitudes that some private practitioners express towards public sector and corporate architects. Having spent a high percentage of my career in the public sector, I occasionally experienced negative attitudes from my uninformed private sector counterparts. My very first experience with such attitudes came when I first applied for AIA membership in 1964. During the personal interview I was asked, "Why do you want to become a corporate member of AIA—you are a government architect?"

*Mortimer M. Marshall Jr.*  
FAIA, FCSI  
Herndon, Virginia

Many of the liaison personnel we deal with are not architects or designers but rather "managers," who in some cases have been trained to expedite projects and come in below budget. Many times these budgets are established without the input of the architect, whose in-house "influence" as you describe it is mostly nonexistent. In this economic climate, it's better to keep a low profile than risk being "right-sized" out of a job.

Establishing a fee is accomplished by sending out RFP's to 12-20 firms of all sizes and expertise and picking the low bidder. The contracts proposed are usually not standard AIA but all-inclusive documents that are "take it or leave it."

Furthermore, to worry about stiffer competition due to layoffs is narrow-minded. Perhaps

there is too much competition already and a natural weeding-out process would strengthen the industry. We must organize and educate our profession before the private sector disappears and only corporate departments are left.

*Alfonso S. D'Elia, AIA*  
New York City

As one who has worked in both corporate and private environments, I can tell you without equivocation that achieving a high standard of design is up to the individual. If dedication is lacking in the architect, both sides lose. My priorities have always been, in order of ranking, 1. the project, 2. my job.

*E. "Manny" Abraben, AIA*  
Cleveland, Ohio

**Overlooking the Poor?**

We are outraged at your April 1993 article [RECORD, page 29] reviewing the Yale Conference on Housing. Contrary to what you wrote, the Conference explicitly addressed the poor and issues of affordable housing. It sought to break from the architecture-centric view of the world, which has ignored the myriad social, economic and political forces/players involved in providing affordable housing. Your review effectively overlooked and silenced the voices of the Conference speakers, who are committed to providing housing and support programs and who are rightfully outraged.

*Louise Harpman and*  
*Evan Supcoff*  
New Haven, Connecticut

*Talk won't build affordable housing if the money dries up. When financing is combined with political grit and social savvy, fine results are possible [see RECORD, July 1992, pages 70-97].—Ed.*

**Through August 29**

"Chicago Architecture and Design, 1923-1993: Reconfiguration of an American Metropolis," The Art Institute of Chicago, Contact Eileen Harakal or Mary Minch at 312/443-7263.

**Through September 6**

"The Art of Design2: An Exhibition of American Design," Haggerty Museum of Art at Marquette University, N. 13th and W. Clybourn Sts., Milwaukee, Wis. Contact Obie Yadgar, 414/288-7553.

**Through September 30**

The Municipal Art Society's walking tours of New York City. The fee is \$10. For more information contact Suzanne Ford/The Zeisler Group at 212/807-6480.

**September 1-4**

38th Annual Convention of the National Association of Women in Construction at the Loews Anatole Hotel, Dallas, Texas. Write to the National Association of Women in Construction (NAWIC), 327 So. Adams, Ft. Worth, Tex., 76104. Attention: Paula D. Clements.

**Competitions**

The Contemporary Arts Center/AIA Cincinnati sponsors the National Architecture Competition to Design the Dream House of the next millennium. Deadline for registration has been extended to July 15 and submissions are due September 1. Write: Dream House Competition, AIA Cincinnati, Longworth Hall Design Center, 700 W. Pete Rose Way, Cincinnati, Ohio 45203 or call 513/421-4661.

1993 Commercial Architecture Stucco Awards. Competition open to architects and students alike. The deadline for this competition is August 1. Write: The Stucco Awards, 1644 South Clementine St., Anaheim, Calif. 92802 or call 714/778-5336. ■



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## Making Money for Your Client: Design as Strategic Weapon

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This past May a Fortune 200 company advertised for a staff architect. One qualification was that the candidate be interested in “the strategic use of design to accomplish both business goals and design excellence.”

Notice which came first—*business goals*. Typically, architects and designers learn in school that their task in life is to beautify the built environment, and, as a poor second, to make sure the building stands up, the roof doesn’t leak, and that it is finished on time and on budget. And, as a poor third, to recognize that the client has a more than passing interest in making money.

But these are different times. Many corporations, including McGraw-Hill (which owns RECORD), are beginning to see that part of their basic mission is not only to make money for their owners/stockholders, but above all to see that their *clients* and *customers* make money. There’s an incontestable logic about this: you can’t make money if your client doesn’t.

There’s other evidence that this mindset is picking up steam. Last year I took a workshop in upstate New York organized by a group known as the Corporate Design Foundation. Attending were about equal numbers of designers and B-school faculty types. A strong pitch was made to step up the meager curriculum fare that most business schools feed about design, and to stress that design is not the icing on the cake but essential dough. Good design can increase sales and market share, improve human productivity, open markets, reduce costs, and preserve the environment.

Our sister publication *Business Week* last month came out with its annual design awards issue under the heading “Hot Products; Smart Design is the Common Thread.” Showing an array of computers, cars, razors, radios for toddlers, sneakers, wrenches, prototype furniture showrooms, and furniture, the editors asserted that “leveraging the power of design is one of the hottest strategic games being played today.” And Chicago architect Jack Train is one of a growing group that calls for facility decisions to be made as business decisions.

Recession or no recession, the 1990s are going to be lean years for architects who fail to recognize and respect their clients’ basic *raison d’être*. For even those rare clients who consistently hire high-profile architects do so, after all is said and done, not so much as ego trips, but because it helps move the merchandise.

But what about public clients? They too are in the business to sell, if not products, then certainly services. Here too the architect’s business is to make the *client* look good, whether it’s an innovative school that raises graduates’ SAT scores; a voluntary hospital that draws patients away from a grim facility across town; or a museum that builds membership and giftshop sales.

So, architects, when you next recast your brochure, or respond to that RFP, or face your next selection committee, remember that unless your *parti* helps make money for the stockholders, or improves the county commissioner’s image with the voters, or the museum director’s with the big donors, it won’t matter much that your walls are covered with design awards from your peers. Nor is this a recipe for clients dictating design. It merely recognizes that one measure of good architecture is a thriving client. *Stephen A. Kliment*

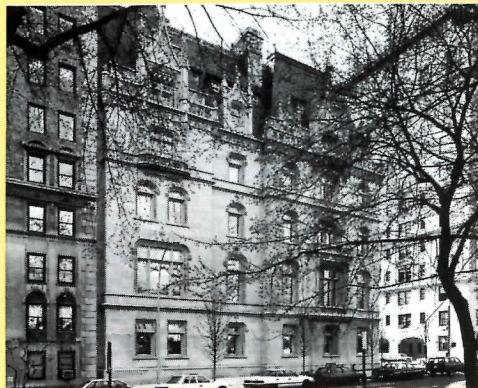


SEPARATELY,  
WE WERE  
RECOGNIZED FOR  
INNOVATION  
AND QUALITY.

TOGETHER,  
WE ARE SETTING  
A NEW  
STANDARD.

## New York City

### Jewish Museum Addition: Roche Achieves Seamless Link

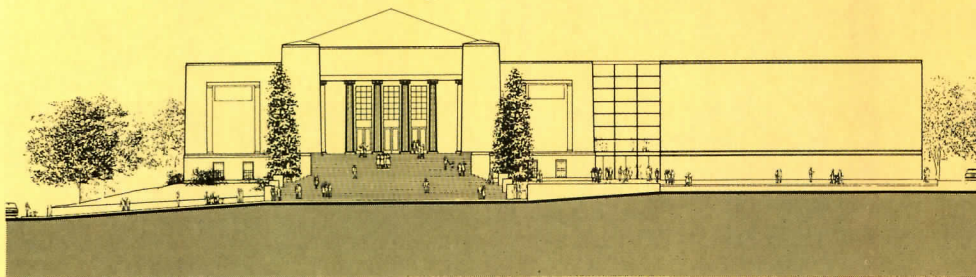


Most people walking along Manhattan's Fifth Avenue at 92nd Street have no idea the Jewish Museum just completed a 30,000-square-foot addition that doubles the institution's gallery space, provides new rooms for educational programs, and includes a new 232-seat auditorium. In restoring and extending the Fifth Avenue facade of the 1908 Warburg Mansion, the French Gothic chateau that has housed the Museum since 1947, Kevin Roche John Dinkeloo and Associates created a seamless work that blurs all distinctions between old and new. Although the addition's

facade doesn't duplicate that of the original building, it was designed to seem as "if the original architect, C. P. H. Gilbert, were asked to expand the Mansion," says Roche. Period moldings and other details are incorporated in some rooms, including the new auditorium, but new galleries are designed as neutral spaces. Defending his use of an older vocabulary, Roche says that since the addition is smaller than the original and the Warburg Mansion was so closely identified with the Museum, it was best to defer to the old. *C. A. P.*

## Omaha

### Foster's First Foray into U. S. Heartland



After designing buildings and winning prizes all over the world, Yale architecture school alumnus Sir Norman Foster is working on his first U. S. commission: the renovation and extension of Omaha's Joslyn Art Museum, scheduled to open late in 1994.

A 30-ft-wide, 210-ft-long glass atrium will link the the 1931 original to a two-level addition accomodating galleries for traveling exhibits as well as for the Joslyn's 20th-century painting and sculpture collection, technical and storage facilities, offices, shipping and storage areas, public restrooms and a kitchen. The atrium permits the enclosed original wall of the museum to remain intact and in view, and creates space for a restaurant and performing arts events. Site reorganization provides improved open space for outdoor events, returns the formal main entrance to its original prominence, and permits a certain processional dignity to the handicapped-accessible entrance through the atrium. Sir Norman Foster and Partners will be working on the \$15.95-million project with the local architectural and engineering firm of Henningson Durham & Richardson. ■



Richard Davies

## New York City

### Energy Is On View at JFK



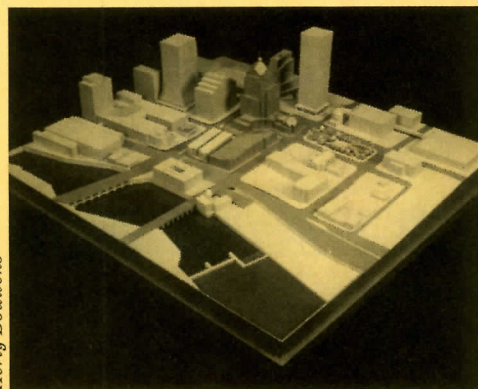
The most visible site at JFK International Airport contains a heating and refrigeration plant undergoing expansion into an efficient cogeneration plant that recycles its own waste energy to supply electricity and water to heat and cool the terminals. The Eggers Group chose to visually reinforce the highly engineered equipment by painting it in distinctive colors and displaying it behind glass walls, some vertical, some sloped. Massive outdoor equipment will be visible through transparent architectural screens of painted steel pipe and tube. ■



Rochester, N. Y.

## Clear Vision for Upstate Downtown

Bausch & Lomb's world headquarters by Fox & Fowle and Handler/Grosso slopes from 20 stories, where it encounters tall office buildings, to a two-story winter garden facing Olmsted's Washington Square Park in Rochester. The plan reconfigures an adjoining street to create a traffic circle leading to the park, which is surrounded by older low-scale religious and cultural institutions. To soften the building's verticality, and honor nearby early turn-of-the-century classics, the design incorporates setbacks, varied window forms, and a rotated pyramid cap. ■

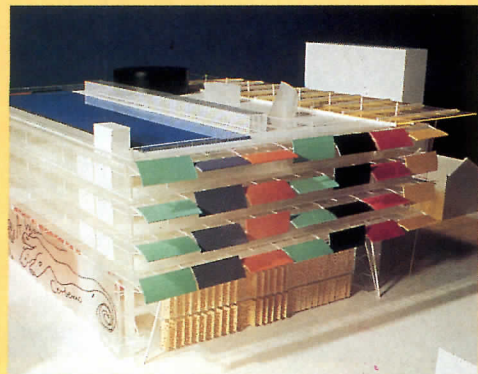


Herly Bouwens

Wales

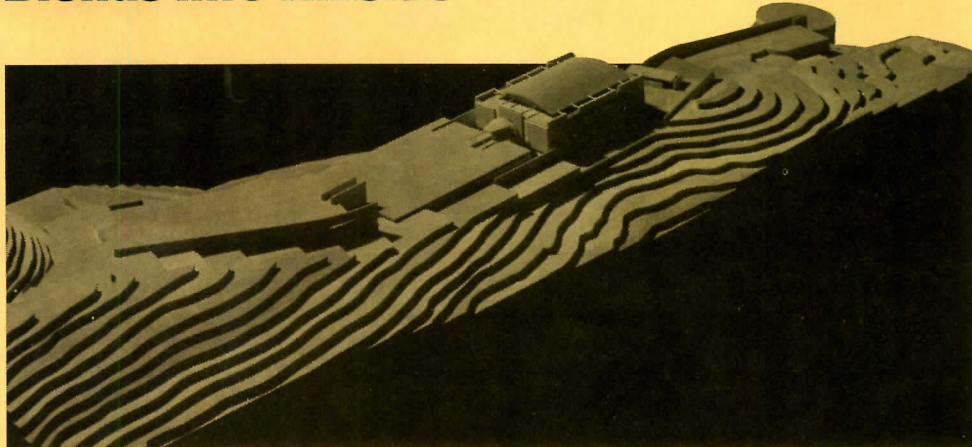
## A Home of Its Own For \$5 Million

Alsop & Sturmer's Swansea National Center for Literature opens March 1—patron St. David's Day—1995 to host Britain's Year of Literature and form a permanent public core for the cultural quarter of the city where Dylan Thomas was born. ■



Los Angeles

## Emergency Communications Bunker Blends into Hillside



Given the odds for natural and man-made disasters in these parts, L. A. County is building an emergency communications/coordination center designed by Bobrow/Thomas, with Daniel, Mann, Johnson and Mendenhall as executive architects. Blend-

ing unobtrusively into a hill overlooking East Los Angeles, the plan focuses on a two-story, tiered-floor "situation room," will be self-sustaining for at least a week and, with a base-isolated steel-braced frame, will resist quakes up to 8.3 on the Richter scale. ■

France

## Expanded Opera House Is a Performance Unto Itself

There was a bit of organized booing from the audience echoing through the Lyon Opera when Jean Nouvel took to the stage at the nationally televised premiere of his \$89-million enlargement, but the claque neglected to say exactly why it was upset. *The New York Times* European cultural correspondent found the theater, dubbed *Un Nouvel Opera* in publicity posters all over France, "distinctly user-unfriendly," citing a black entrance hall with floor-mounted spots providing glare but not much light, and security railings that cut off balcony views. The vast project plunges six stories down to a new basement and almost extrudes upward from the vise-like historically protected 1831 facade into an exaggerated 1930s Quonset Hut form of glass that dominates the skyline. The machined imagery extends to the acoustically improved auditorium, where 60 percent more seating is arranged in a traditional horse-shoe shape sheathed in metallic surfaces with suggestions of countersunk rivets. Corridors with ceilings and padded walls of brilliant red punctuate the dramatic black and metal statements. ■



S. Couturier/Archipress



## Briefs

**Quick Change**

Queries to the National Trust about potential traffic problems apparently has made Philip Johnson refocus the visitors' center planned for his Glass House estate [RECORD, April 1993, page 25] as a pottery gallery.

**Winners**

- American Academy of Arts and Letters architecture award goes to Frank Israel and its Brunner Prize to Rafael Moneo.
- North Dakota State teachers Don C. Faulkner and Jim W. Nelson and recent graduate Larry Carcoana won the *Chicago Tribune* redesign contest for the badly deteriorated Cabrini Green housing project. Belgian Lucien Kroll came in second, and local firm OWP&T third.
- The first Royal Oak architectural competition, conceived by Witold Rybczynski, has been won by Richard Wilson Cameron.

**Appointments**

*Bill Lacy* has been named president of the State University of New York at Purchase. *Cynthia Weese* is the new dean of the Washington University School of Architecture. The Federal Reserve has named *Frances Halsband* to its architectural review panel.

**Publications**

The 14-volume Part II of *The Mies van der Rohe Archive* cataloging more than 13,000 drawings owned by New York's Museum of Modern Art and documenting his U. S. work from 1938 to 1967, has been published by Garland. Cost is \$3,850.

**Competitions**

*July 21:* abstract deadline for proposed papers for the Sustainable Strategies symposium to be held in Seattle this fall. Call: COTE 202/626-7451 or 7569.

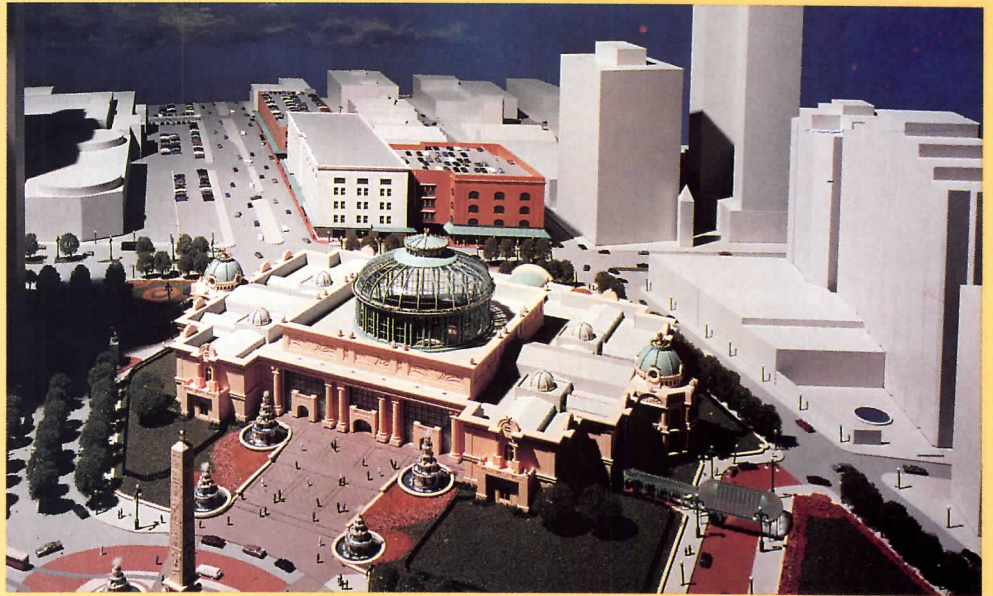
*August 15:* deadline for the New York City/Long Island Masonry competition. Contact: Masonry Institute, 445 Northern Blvd., Great Neck, N. Y. 11021 516/487-5400.

*September 30:* deadline for the Shinkenchiku Residential Design competition to be judged by Renzo Piano. Contact: Shinkenchiku-sha Co., 31-2, Yushima 2-chome, Bunkyo-ku, Tokyo 113, Japan.

**Remembered**

New York City architect Walker O. Cain, 78, died in June. He was a one-time associate with McKim Mead & White. James Murphy, long-time Profession and Industry editor of *Progressive Architecture*, died suddenly in May. ■

## Will Gambling Glitz Kill America's Favorite Sin City?



Now that Native Americans in Connecticut have proved that tourists will gamble huge sums in modest venues with picture-windowed woodland views, New Orleans is falling back on Las Vegas rules for its only legal land-based casino. Planned to be the world's largest, the Grand Palais by Projects International New Orleans and five local firms—Mathes Group, Hewitt Washington, I. William Sizeler, Biles Manning and Eskew Filson—encloses a comprehensive one-stop sanitized simulation of New Orleans that will draw money from the rest of the city's tour-

ist revenues. The interiors reproduce cobbled streets, typical facades, gas lamps, and a Mississippi that meanders around the gaming area carrying boats on 15-minute rides through a robot, laser, surround-sound history of the city whose one-time notorious reputation got gambling banned in the U. S. in the first place. The only naughtiness in the scheme is a state law limiting land-based gambling to the current site of the Rivergate Exhibition Center in a reviving warehouse area dating back to 1850. The local AIA has called for site-selection studies. ■

**National**

## RECORD's Charles Hoyt Becomes AIA Fellow



Senior editor Charles King Hoyt was inducted into the AIA College of Fellows at the national convention in Chicago. Since 1973, his contributions to training and practice have included pioneering RECORD articles on the Mideast and Eastern Europe, liability, and housing for the elderly, and a series he commissioned on marketing, law, and the future of education. He also headed the New York AIA Historical Buildings and Haskell Awards committees, and explored the impact of corporate building and retailing on the quality of life for Cooper-Hewitt publications.



## This Month

### Architects' Fees: Arresting the Downward Spiral. Page 28.

RECORD asks those in the trenches about getting profitable fees and reveals the results of a survey of current fee practices in a sampling of offices.

### Construction Costs. Page 32.

After jeopardizing a shaky construction recovery, fourth-quarter cost rises slowed down, ending the year at 0.11 percent.

### Construction Economy Finance. Page 33.

A pall hangs over the economy, but the patient is expected to revive beginning at midyear.

### Specifications Series: Exterior Insulation and Finish Systems. Page 34.

While architects may know the advantages of this type of wall cladding, they also should know what the different application methods mean to their specifications.

## Gut Issues '93: New Approaches to Practice

RECORD continues interviews with principals in varied firms around the country on topics of basic concern—asking what they're experiencing, how well they're coping in a flat market, and how they think the profession should mobilize for action in an increasingly diverse marketplace. This month, the editors get architects' ideas on what to do about low fees and sample current fee practices.

C. K. H.

## Architects' Fees: Arresting the Downward Spiral

*Low fees rival Byzantine selection procedures as major challenges facing today's architect. For a look at what some architects recommend to raise fee levels, RECORD polled over 100 firm principals from a cross section of firms around the nation. RECORD now reports on how these architects see the extent of the problem, approaches they would use to negotiate better fees, and ways they can better match their services to the value of their fees. Finally, these architects agreed, as one effective way to stop the current downward, cut-throat spiral, to share the terms of their current contracts so that RECORD readers may learn, at least on a limited basis, how other architects are pricing their services. And they point to a way that architects on a national basis can improve their lot.*

Architects' fees are often determined on a hodgepodge of misinformation and rumor about the amount the client is willing to pay and the degree of pain firms competing for a commission are willing to suffer. This is made worse by downward marketplace pressures, heavy competition [see *Jousting for Commissions* RECORD, January 1993, pages 30-33], and unreliable information on what the last similar project cost to produce. "Architects tend to have egos that defy less than sworn veracity," comments Los Angeles architect Frank Miller on the amount of accurate information others are willing to share on fees. Of course, egos are only part of it. Without standard fees, playing cards close to the chest can mean survival.

Is the current situation pressuring architects into lower fees than are profitable and fair for the scope, responsibility, and expertise involved in their tasks? Almost all of over 100 firm principals across the country recently polled by RECORD said yes. This was true of small and large firms. (For a breakdown of firm sizes, see overleaf.) "An architect spends six months designing a \$10-million building for a 4-percent fee and maximum liability," says Hal Craddock, a principal of Architectural Partners in Lynchburg, Virginia. "A real-estate agent sells it in two weeks and receives a 6-percent fee with minimum liability. The lawyer in the deal soaks everyone. Something's wrong!"

Do current fees make for a happy working climate? "There's no comfort zone—just pressure to perform," moans Raymond M. Rocker in Los Altos, California.

How much under a fee equal to their effort and responsibility do these polled architects think they are getting? Most say between 15 and 50 percent, meaning that their fees, to be considered fair, would have to be as much as half again the amounts they are getting. Some say as much as 100 percent, meaning that they should get twice what they are. Others say between 1 and 5 percent, meaning they should get that much more percentage of the cost of construction.

### Many ideas on how to achieve fair fees: The militant approach

"Architects in the U. S. need to form a union," says Mark Swanson of Mark Swanson Associates in Indianapolis. "How can the government set a prevailing-wage scale for labor and not consider it price fixing? Yet, when architects discuss fair fee rates, they are sued by the government for antitrust violation. I suggest employing a labor-law firm and forming a brotherhood to end our continual beating up of each other on fees and set up a system in which fair fees would be part of the code of ethics. Architect selection could go back to being based on merit and not money." Whether a new "brotherhood" would fare better with the Department of Justice than the AIA remains to be seen. "The federal government has nerve to say 'Do as I say, not as I do,'" adds a Whitehall, Pennsylvania, architect.

"Publish fees of others," says Jan Peterson in Fort Collins, Colorado, "i.e., real-estate agents receiving 7-percent fees for filling out an MLS report and shaking a few hands at an open house, and compare their fees with those an architect receives for 10 years of liability exposure." "Rewrite standard AIA owner-architect agreements to reduce services and liability," says a Seattle architect. "Then the public would understand that they cannot get everything for nothing." Clearly, this architect is looking for shock value.

"Start right now with a program that will, in two to four years, begin to drastically reduce the number of architects," recommends



*After the Department of Justice struck down recommended-fee schedules, the AIA's hands were tied in establishing uniform and profitable fees. But architects are free to charge as they wish.*

Frank Miller. "First, throw out all State Registration exams and let the universities grant the title architect. Let the schools weed out all but the competent, knowing that incompetence can come back to haunt them." He describes a nine-year program, including three years of practical experience in an office, followed by two years for a Masters Degree. How would the schools survive if they scared so many architects away? Miller recommends they offer minors in architecture to those majoring in other fields.

#### **Educating the public**

"Fees and respect for the profession go hand-in-hand," says W. E. Kline in Pennsylvania. "Stop unlicensed people from practicing and contractors from using architects as subcontractors, and we will restore honor to the profession."

"The popular press and possibly television needs to repeatedly send the message that better architectural fees *save money* now and in future maintenance by allowing experimentation and study of problems and solutions," suggests Giorgio Cavaglieri in New York City. "And it needs to point out, particularly to government agencies, that design by committees of bureaucrats over the architect is damaging, inefficient, costly, and draining on the practitioner's enthusiasm." A Santa Monica architect seconds this idea: "We need television programs that talk about the process of getting buildings built instead of waxing euphoric over the 'beauty' of buildings by famous people after they're built." "Publish articles on detriments to the public of low base fees," suggests a Cedarburg, Wisconsin, architect. "In the words of a New York City clothing store," concludes New Yorker Lester Q. Korzilius, "an educated consumer is our best customer."

#### **The practical approach**

"I discuss fees with my peers," says J. C. Aksmeier in Rancho Pales Verdes, California, who suggests an informal exchange of information to replace the missing standards. "[Local] AIA members charge similar fees," he notes. "Others charge cut-rate," implying that the community knows what it is getting. "We exchange information with one another," adds Lester Rosenwinkel in Philadelphia.

"Insurance companies set reasonable rates for doctors," points out an Easton, Massachusetts, architect. "Why can't liability carriers do it for architects?" Of course, the medical insurers set upper limits, but it would be in the liability-insurance companies' best interests to set low limits so they know they are insuring healthy practices.

"Standardize services by firms doing similar work," recommends Brian Brand in Bellevue, Washington. "Owners cannot measure the differences in service, but only in fee." One method: Perform all basic services described in the standard AIA architect-owner agreement (see *The argument for full-service contracts*).

"Itemize fees for each basic service as well as extra services, just as contractors itemize cost of work per line item," suggests the Seattle architect. These, like the contractors' charges, would include overhead factors, profit factors, and taxes, ending confusion over the total fee for the project. He feels that clients, who can see exactly where their total fee goes, will be more willing to pay it

*"The media need to repeatedly send the message that better architectural fees save money now and in future maintenance by allowing experimentation and study of problems and solutions." Giorgio Cavaglieri*

and that, in any case, this will end bickering over what is included in the contract.

"Make local authorities require architect-stamped construction drawings for buildings over 35,000 cubic feet, including houses," recommends architect Thomas Mailander.

#### **Best solution in shared information**

Like it or not, architects are going to have to get together and come clean on fees. But how? "Publish going rates drawn from surveys such as this," responds the Cedarburg architect. "Polls by a magazine such as yours would provide a helpful informal guideline," observes Honolulu architect

Frederick H. Furer. "Knowing what other professionals are charging can be *very* useful," he adds somewhat understatedly. Most of the polled firm principals expressed similar sentiments, but clearly a bigger sample than this one is needed to make architects really sure of their ground—a much bigger sample. (For the results of our limited sample of firm fees, see charts, page 31.)

For the moment though, architects will have to wrestle with competition on fees. "I'd rather go fishing than work for free," observes a North Carolina architect. If we are not to see the shores crowded with architects casting their lines, are there ways they can raise income without raising fees?

#### **Getting tough on scope of services**

"We tightly define the scope of our work," says an Indianapolis architect, "and extra the hell out of clients for additional inspections, changes, and other items. We're not proud of this, but it's a must to survive." The firm does not assist owners with contractor agreements or obtaining government approvals as part of basic contracts for its

mostly industrial and public-works projects, but does include quite a few often extra services in basic contracts, such as revising drawings for changes initiated by others. Says a Cleveland architect: "We aggressively pursue extras for additional services." Cautions Jan Peterson: "I do not believe in sneaking in extra charges because I was unable to negotiate more than a low basic fee." (For a list of what architects are doing to achieve decent returns, if not higher fees, see *Ways to Get Tough*, page 31.)

#### **The argument for full-service contracts**

Many architects see providing full services such as those listed in the standard AIA ar-



chitect-owner agreement as the only way to both build respect for what architects do and to assure that the fees they quote cover the same effort. "Firms have to stop abdicating responsibility for certain basic services," says James Timberlake of Kieran Timberlake Harris in Philadelphia, to those who would cut back on services. "We must take an inclusive view, not an exclusive view, i.e., [self-indulgent] design at the expense of preplanning and construction-phase services." His firm provides the full range of basic services for mostly college, university, and single-family-house commissions, but is strict about services not included in standard basic contracts such as evaluating contractors' proposed substitutions. "We include these in basic contracts only if requested and additionally compensated," he says. As we shall see, he is not typical.

Chicago architect William Hicks thinks that state licensing laws should require all architects to observe construction—that this will even the playing field with those who do not. Herbert Fritz of Fritz Baily Architects in Tulsa reports that his firm will provide full services for its mostly health-care and commercial clients for a fixed fee based on a pre-agreed construction budget, but reserves the right to renegotiate if that budget changes appreciably.

#### **Cafeteria approach to basic services**

"Cutting back on basic services often hurts the quality of the finished project," says John Field of Field Paoli Architects in San Francisco. Nonetheless, the firm does not give construction-cost estimates to its primarily retail clients whose smaller-scale projects fall within fairly predictable ranges. Says a Washington, D. C., architect specializing in houses: "I will assist in getting and evaluating cost estimates from the owner's consultant or contractors." The cafeteria approach is the most popular among our limited group of respondents (see graph) and may well be the most popular technique for many other firms faced with low-fee pressures.

#### **Some fees seen as profitable**

Some architects are not so sure that current fees are always unfair. "How do you define fair?" asks one in Philadelphia. "We have

seen the median fee drop from 10 to 8 percent to 6 to 8 percent for basic services. For some projects, 8 percent is profitable. For others, it's not." As a Guilford, Connecticut, architect puts it: "For larger projects, current fees are fair. For smaller ones, no." William Hicks of Zar-Hicks Architects, in Chicago, finds discrepancies between types of services: "For technical inspection work, fees are profitable. For typical design work, they're not."

James Boggs of Boggs Consultants in Corpus Christi, Texas, sees the situation a little differently: "The real question is: 'Do I take enough home?' The answer lies in whether or not I practice efficiently. If I do, then the answer is no." Clearly, he, like many architects, wonders if he always makes the best use of his time and, if he does, he thinks he is not getting enough for it. A Boston architect feels that he is fairly compensated for his work, but not the liability he incurs, which is typically higher for his specialty, renovation. He puts in 70-hour weeks.

A Charlotte, North Carolina, architect takes the positive approach: "I'm becoming more adept at negotiating fees equivalent to the work performed. Some are fair, some reasonable (especially negotiated services), and some are marginal."

#### **Hardliners**

"Develop a fee schedule, print it, and show it to clients. Explain it's office policy to prevent bargaining," says a Santa Monica architect. "Of course," he adds, "if the client finds a cheaper fee, I will not get the job." Ann Agnew in Los Angeles does this as well. It must be noted that both architects are in a high-competition locale.

A touch of humor is offered by Texan James Boggs: "1. Hire a business manager. Set annual budget, including my salary.

2. Hire a salesman. Set quota. Staff up. Develop work.
3. Hire another salesman. Staff up. Produce work.
4. Fire business manager. Scare hell out of everybody.
5. Start over until you get it right. But *never* accept a fee less than it will take to produce properly." *Charles K. Hoyt*

#### **How 100 Surveyed Firms Structure Their Contracts**

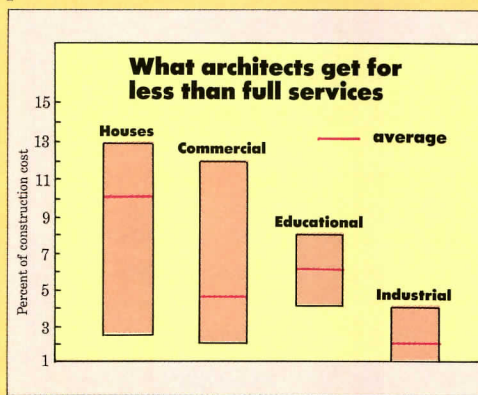
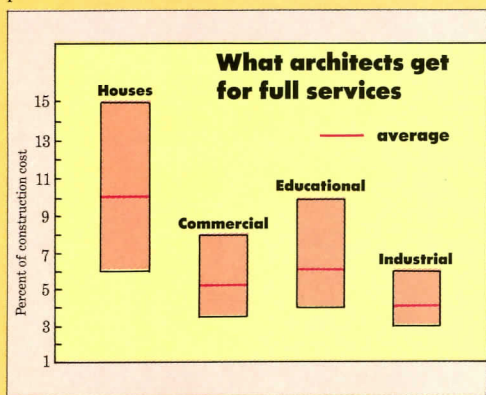
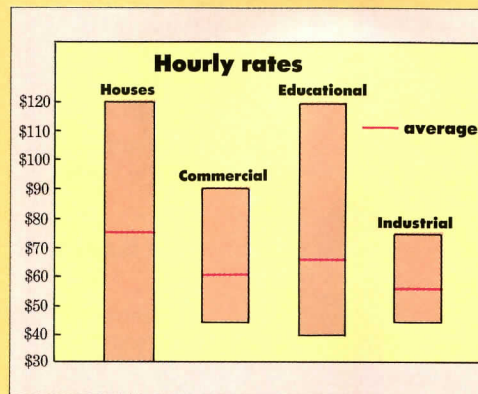
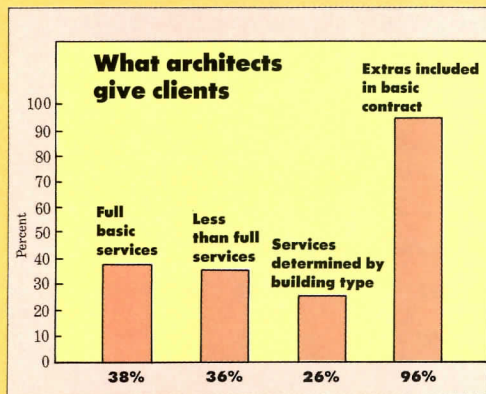
Randomly chosen to represent a cross section, most participating architects are in small firms. Two-thirds employ five or fewer professionals; the largest, 50. Over one-third are single practitioners.

Slightly less than half of these firms work only by percent of construction cost. Just under a quarter work only by percent on some project types and by the hour on others. Those generally charging by the hour note that commercial and government clients almost always require a percent-based fee, not wanting to risk the possibly higher costs of an open-ended hourly contract. Some firms see advantages to charging by the hour on custom houses, educational and industrial buildings, and apartments, while others see advantages to charging by percent.

The firms charging by the hour note that the costs of producing a thorough design job are going to be higher than clients will generally want to accept at the beginning of the contract. Those charging by percent are either responding to client demand or are planning on doing the job with high efficiency, if not high design. A few firms charge only by the hour on residential, interiors, or renovation work; these tend to be in the five-professional-or-fewer category.

Maximum fees, regardless of actual construction cost or production hours, are offered by several firms that work by percent and several that work by the hour; their policies range from offering this at no extra charge to charging 50-percent more. The remainder of firms work for fixed fees. How do they determine the amounts? Most will carefully estimate the time required for each phase of work by referring to past projects, add on a modest profit, and hope they are right. "Then we negotiate downward due to competition," says a Whitehall, Pennsylvania, architect. "After figuring the hours, I factor in how much I think the client is willing to pay," admits a Washington, D. C., architect, "thereby shooting myself in the foot." "We used to have an accountant figuring out all the wrong figures," says a Dallas architect. "Now, we just take a wild guess based on the job's complexity."





Only 38 percent of respondents include all services called for in the AIA's standard owner-architect agreement in their basic contracts (see chart 1). Slightly over a quarter of responding firms give all these services in contracts for some project types and not for others. This was true for large and small firms. Among usual project types for which these firms will give full-service are commercial, educational, health-care, and other institutional work. The usual project types for which they do not are houses, industrial, government, and interiors work. Instead, the owner's representatives on industrial and government work will typically evaluate the owner's program, assist with owner-contractor agreements and award of that contract, and filing for government approvals. On government work, the owner's representative will typically also provide all construction-phase services. On custom residential work and interiors work, it is typical not to provide adjusted cost estimates. Firms never giving full services usually specialize in houses, industrial, government, and interiors work.

There is little correlation between the amount of basic-fees and the number of services included in contracts (charts 3 and 4). Yet almost all firms will include many services in basic owner-architect agreements that, according to the AIA's standard agreement, should not be there (see list, right). And they will include different ones. For instance, one firm may analyze the owner's needs and not the site, and another firm do the opposite. Many will perform services more than 60 days after substantial completion. "We're trying to get out of this bad habit," says James Boggs. According to Bradford Perkins of Bradford Perkins Associates in New York: "The concept of extra services is obsolete; each job is different."

Hourly rates for extra services or hourly basic contracts in surveyed offices (chart 2) run a wide range due to the larger firms that use different hourly charges for principals and others. Larger firms' average multiplier is 2.5 with a high of 3.5 and a low of 1 1/4. Most smaller firms and sole practitioners tend to have lower rates.

## Ways to Get Tough

Slightly more than half the respondents here say they have found better ways to achieve better returns for their services without raising fees. They could be doing what many architects are doing. Among their methods, starting with the most popular:

- Cut back on basic services by more tightly defining those in the contract. The most popular target for elimination or reduction: some or all cost estimates.
- Charge hourly for all design-phase services and at a fixed rate (lump-sum or percent of construction cost) for contract documents, on which the hours required can be more easily estimated.
- Charge hourly with an estimated upset, but no guarantee.
- Limit liability by restricting responsibility in contract—a technique that has had mixed success when put to the test.
- Make the owner pay all consultants directly.
- Charge hourly for all meetings—especially with building departments and community groups.
- Bill CAD hours as reimbursables, a technique, which works less well than it did ten years ago.

## Extras in Basic Contracts

1. Evaluate contractor's substitutions.
2. Investigate existing conditions.
3. Work with owner's consultants.
4. Prepare documents for alternate, separate, or sequential bids.
5. Analyze owner's needs.
6. Design furniture for building or spaces.
7. Do as-built drawings.
8. Services more than 60 days after substantial completion.
9. Provide future-expansion studies.
10. Design tenant spaces.
11. Evaluate site.
12. Make revisions to approved drawings not initiated by architect.
13. Prepare reports for government approvals.
14. Coordinate separate contractors.
15. Produce detailed construction estimates.
16. Supply client-requested CAD system.
17. Provide extensive site representation.
18. Prepare financial-feasibility studies.
19. Advise on equipment operation.
20. Analyze operating costs. ■



## Costs Level off, Harbinger of Spurt in Construction

Following two quarters of accelerating cost rises that, if unchecked, could threaten the current spotty construction recovery, the rate of upturn suddenly leveled off in the final quarter of 1992 to a national pace of 0.11 percent—down from 0.60 percent in the previous period.

This was despite an alarming increase in lumber costs that began in that final quarter and has, by now, caused costs in some locations to soar by as much as 80 percent. Suppliers blamed it on the spotted owl [see RECORD, June 1993, page 25], citing sharp cuts in logging allowed in federal forests for the purpose of protecting this endangered bird. Others blame it on demand. House construction, which uses much lumber, has by far outpaced less lumber-intensive building types such as offices. Producers, who had held the line on costs earlier in the year, may have finally seen a chance to make up for lost ground.

Low overall construction-cost rises would have been even lower on a national basis if they had not been boosted by costs in the

western half of the country (table below). Two areas, metropolitan New York and New Jersey, and the Northeast states aside from New England had rises of only 0.01 percent. The Southeast states, having the greatest rise, continued to pull ahead of the other

states in the East, after starting the year with a lower-than-average cost rise.

Charles K. Hoyt

Data supplied by Dodge Cost Systems  
Marshall + Swift

After jeopardizing a shaky construction recovery, fourth-quarter cost rises slowed down, ending the year at 0.11 percent.

| U.S. Summary of Building Construction Costs (in per cent) |               |                    |                    |                  |
|-----------------------------------------------------------|---------------|--------------------|--------------------|------------------|
| DISTRICTS                                                 | # Metro Areas | 10/1992 TO 01/1993 | 01/1992 TO 01/1993 | 1977* TO 01/1993 |
| <b>EASTERN U.S.</b>                                       |               |                    |                    |                  |
| METRO NY-NJ .....                                         | 18            | 0.01               | 1.02               | 2043.64          |
| NEW ENGLAND STATES .....                                  | 33            | 0.04               | 1.01               | 1891.83          |
| NORTHEASTERN STATES ...                                   | 120           | 0.01               | 1.03               | 1777.60          |
| SOUTHEASTERN STATES....                                   | 106           | 0.07               | 1.02               | 1865.80          |
| <b>AVERAGE EASTERN U.S. ....</b>                          | <b>277</b>    | <b>0.04</b>        | <b>1.02</b>        | <b>1856.95</b>   |
| <b>WESTERN U.S.</b>                                       |               |                    |                    |                  |
| WEST CENTRAL STATES .....                                 | 122           | 0.14               | 1.03               | 1769.38          |
| PACIFIC COAST STATES .....                                | 106           | 0.11               | 1.02               | 1844.80          |
| <b>AVERAGE WESTERN U.S. ...</b>                           | <b>228</b>    | <b>0.13</b>        | <b>1.025</b>       | <b>1804.32</b>   |
| <b>UNITED STATES: AVERAGE</b>                             | <b>505</b>    | <b>0.11</b>        | <b>1.02</b>        | <b>1834.00</b>   |

\*USING ONLY CITIES WITH BASE YEAR OF 1977.

| Metropolitan area | Average of all Nonresidential Building Types, 21 Cities |        |        |        |        |        |        |        |        |        | 1977 average for each city = 1000.0 |          |          |          |
|-------------------|---------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------------------|----------|----------|----------|
|                   | 1982                                                    | 1983   | 1984   | 1985   | 1986   | 1987   | 1988   | 1989   | 1990   | 1991   | 1992 1 Q                            | 1992 2 Q | 1992 3 Q | 1992 4 Q |
| Atlanta           | 2360.6                                                  | 2456.7 | 2448.7 | 2518.3 | 2561.9 | 2580.9 | 2697.3 | 2740.4 | 2711.3 | 2740.2 | 2728.1                              | 2762.9   | 2792.6   | 2817.7   |
| Baltimore         | 1639.5                                                  | 1689.7 | 1703.7 | 1743.8 | 1765.2 | 1780.2 | 1849.1 | 1886.8 | 1895.2 | 1862.1 | 1867.6                              | 1861.7   | 1867.6   | 1867.6   |
| Birmingham        | 1468.1                                                  | 1535.7 | 1594.7 | 1565.7 | 1587.4 | 1542.6 | 1612.5 | 1643.0 | 1634.5 | 1650.2 | 1655.3                              | 1657.6   | 1674.3   | 1704.4   |
| Boston            | 1502.0                                                  | 1569.9 | 1646.0 | 1721.0 | 1773.6 | 1883.0 | 1921.6 | 1917.2 | 1918.4 | 1915.7 | 1924.3                              | 1928.5   | 1929.0   | 1934.8   |
| Chicago           | 1425.8                                                  | 1439.5 | 1476.7 | 1528.0 | 1599.9 | 1591.4 | 1636.5 | 1672.8 | 1690.9 | 1735.9 | 1735.6                              | 1766.0   | 1767.1   | 1779.5   |
| Cincinnati        | 1362.6                                                  | 1430.8 | 1484.5 | 1486.6 | 1499.4 | 1510.9 | 1526.8 | 1560.7 | 1552.3 | 1554.9 | 1552.9                              | 1563.2   | 1575.6   | 1618.1   |
| Cleveland         | 1511.4                                                  | 1475.9 | 1464.0 | 1474.1 | 1525.7 | 1541.8 | 1550.7 | 1556.3 | 1526.1 | 1517.3 | 1515.0                              | 1511.3   | 1521.4   | 1553.3   |
| Dallas            | 1834.3                                                  | 1925.9 | 1958.0 | 1963.3 | 1973.9 | 1947.2 | 1927.2 | 1877.3 | 1837.0 | 1828.5 | 1826.4                              | 1840.0   | 1867.6   | 1901.2   |
| Denver            | 1679.1                                                  | 1800.1 | 1824.3 | 1821.8 | 1795.8 | 1732.7 | 1725.3 | 1725.9 | 1663.7 | 1654.8 | 1668.2                              | 1675.7   | 1685.3   | 1698.8   |
| Detroit           | 1638.0                                                  | 1672.1 | 1697.9 | 1692.6 | 1696.6 | 1689.3 | 1734.4 | 1751.2 | 1737.4 | 1736.8 | 1725.8                              | 1727.9   | 1724.9   | 1769.7   |
| Kansas City       | 1381.8                                                  | 1407.5 | 1447.1 | 1472.5 | 1484.7 | 1493.7 | 1505.6 | 1518.8 | 1510.8 | 1525.6 | 1530.2                              | 1530.9   | 1546.2   | 1612.7   |
| Los Angeles       | 1503.3                                                  | 1523.9 | 1555.1 | 1571.0 | 1609.7 | 1675.1 | 1789.5 | 1813.7 | 1800.9 | 1749.2 | 1743.8                              | 1756.1   | 1768.6   | 1807.5   |
| Miami             | 1392.1                                                  | 1467.6 | 1522.2 | 1540.6 | 1566.2 | 1589.2 | 1625.2 | 1641.3 | 1638.8 | 1642.7 | 1644.3                              | 1645.9   | 1681.2   | 1730.0   |
| Minneapolis       | 1576.8                                                  | 1624.6 | 1640.4 | 1661.0 | 1674.0 | 1677.0 | 1690.6 | 1712.5 | 1676.0 | 1652.0 | 1654.8                              | 1683.1   | 1685.2   | 1708.8   |
| New Orleans       | 1616.9                                                  | 1650.5 | 1691.4 | 1762.5 | 1760.2 | 1699.8 | 1707.3 | 1685.0 | 1695.3 | 1726.3 | 1732.5                              | 1745.9   | 1799.6   | 1815.8   |
| New York          | 1491.8                                                  | 1672.5 | 1747.2 | 1806.7 | 1899.9 | 1980.9 | 2065.3 | 2157.2 | 2126.2 | 2105.5 | 2098.8                              | 2134.0   | 2130.2   | 2143.5   |
| Philadelphia      | 1769.4                                                  | 1819.5 | 1922.1 | 1967.9 | 1992.7 | 2023.5 | 2171.4 | 2244.3 | 2249.0 | 2217.3 | 2220.7                              | 2220.1   | 2214.1   | 2234.0   |
| Pittsburgh        | 1479.5                                                  | 1497.2 | 1576.1 | 1611.0 | 1665.8 | 1647.3 | 1700.3 | 1721.3 | 1688.7 | 1708.5 | 1709.8                              | 1735.0   | 1732.5   | 1732.5   |
| St. Louis         | 1451.2                                                  | 1524.9 | 1625.5 | 1641.8 | 1647.4 | 1653.5 | 1705.7 | 1761.1 | 1732.5 | 1769.5 | 1768.9                              | 1775.4   | 1798.9   | 1840.3   |
| San Francisco     | 1810.1                                                  | 1856.8 | 1935.3 | 1961.8 | 1995.5 | 1992.0 | 2090.9 | 2114.3 | 2156.0 | 2169.3 | 2151.3                              | 2157.6   | 2162.3   | 2155.8   |
| Seattle           | 1962.7                                                  | 1979.0 | 1948.9 | 1937.9 | 1925.3 | 1874.7 | 1968.0 | 1987.0 | 2017.6 | 2027.4 | 2042.4                              | 2077.4   | 2091.2   | 2130.9   |

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 divided by 200.0 = 75%) or they are 25% lower in the second period.



## Construction Economy: A Brighter Picture

After a bumpy first half, economic performance promises to be just as uneven in the second. But the year-end will show that the economy grew at a healthy 3.5-percent annual rate from July to December.

Only six months ago, the economic outlook was sunny. The economy had just finished 1992 with the largest quarterly gain in GDP in years. Inflation was not a problem, allowing monetary policy to be accommodating. And a new President was pledging to develop programs that would create jobs, rebuild the infrastructure, stimulate investment, and simultaneously reduce the deficit. Six months later, a pall hangs over the economy. Economic growth has slowed to less than 2 percent. Inflation seems to have reappeared. And missteps in Washington are eroding confidence in the government's ability to stimulate the economy and reduce the deficit.

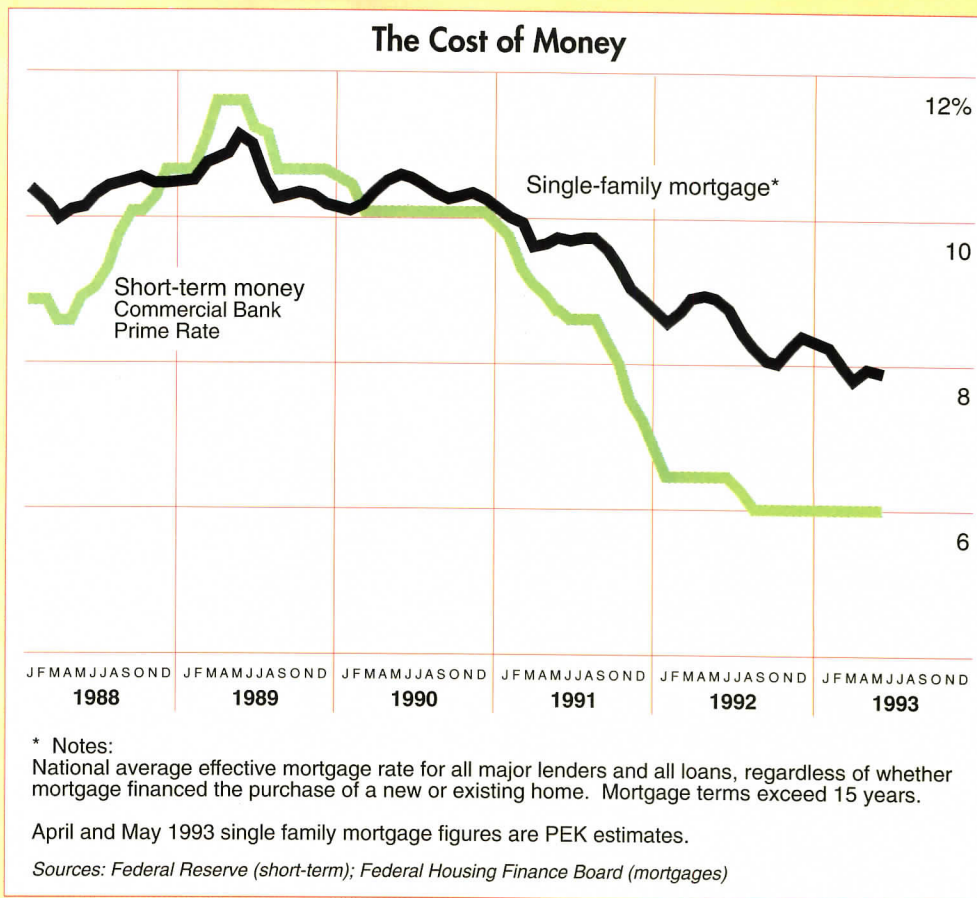
### Assessing the long-term

For more than a decade, international competition, inflation, technology, and the excesses of the 1980s have been forcing the U. S. to reshape the way it produces goods and services. In the manufacturing sector, producers fought to recapture domestic and worldwide market share through improved quality and greater productivity. When the economy eventually slid into recession, the revitalization process pushed aggressively into the service, financial, and retail sector as falling demand compelled companies to reduce employees, trim capacity, and improve efficiency.

Not surprisingly, the last holdout is the federal government. In the near term, it will be business as usual in Washington. Clinton's tax increases may pass, but spending cuts will not. Relying exclusively on tax hikes to reduce the deficit is a major negative for the economy. Higher taxes will siphon income away from consumers and businesses just when it is needed to fuel expansion.

Clearly what has been missing from this recovery is a sustained surge in employment. In recent years, a broad range of businesses have stressed equipment purchases, rather than hiring more workers to raise productivity and improve product and service quality.

*A pall hangs over the economy, but the patient is expected to revive beginning at midyear.*



But now more companies are also hiring new workers to operate those machines. After averaging only 55,000 per month in the second half of 1992, job gains climbed to nearly 140,000 per month in the first half of 1993.

As employment rises, so will income. Soon, accelerating earnings will stimulate consumer demand for more goods and services. Employers will respond with more investment in equipment and people, setting off another round of income gains. Significantly, this burst of activity will occur even as inflation subsides from the 4- to 4.5-percent pace of the first half. There simply are no shortages to support price advances above 3 percent. Labor is in ample supply, because of the sizeable pool of unemployed. Material prices are low because of lingering recessions in many major industrial nations. And production facilities, despite recent high-capacity utilization rates, can be used much more intensively because of substantial upgrading of equipment.

As the inflation threat passes, monetary policy will remain supportive of stronger economic growth. That stance is imperative to offset the fiscal drag on the economy from the imposition of higher taxes later this year. As a result, interest rates will continue within their current trading ranges of 3.00 to 3.75 percent for short-term rates and 7.50 to 8.50 percent for 30-year fixed-rate mortgages. In an environment of better growth and stable interest rates, housing starts and sales will flourish. In addition, other areas of real estate, which have been depressed for so long, will garner more attention from shrewd investors.

Already, existing rental units are much in demand. As store sales improve in the second half, investor demand for existing retail space is expected to revive. This does not mean much new building will occur, but it does suggest that the erosion of value in these two building types is ending.

*Phillip E. Kidd*



## Specifications Series: Exterior Insulation and Finish Systems

By Mark J. Kalin

An EIFS meets the conceptual requirements for the ideal exterior material: design flexibility; low cost; energy efficiency; and being well tested. (There are hundreds of thousands of projects already in place.) EIFS is attractive to both designers and owners. Product kits and sample items from EIFS manufacturers are well organized. New-construction and retrofit applications are common.

EIFS does require careful specifications and installation in order to ensure a watertight, enduring building exterior. Water penetration into EIFS keeps a large number of testing and inspection firms busy. This article focuses on definitions of systems, insulation boards, sheathing, reinforcing, and joints.

The short-form guide specifications (see opposite page) assume that an experienced

*EIFS does require careful specifications and installation in order to ensure a watertight, enduring building exterior.*

installer will rely on proper details, approved shop drawings, and the manufacturer's recommendations to ensure proper performance.

An EIFS functions as an exterior-insulation envelope. It typically consists of an integrally colored exterior finish coat over mesh reinforcing, a base coat, and insulation. EIMA, the Exterior Insulation Manufacturers Association, defines two types of EIFS:

### Class PB Systems

The base coat varies in thickness depending upon the number of layers or thickness of

*Mark Kalin is president of Kalin Associates, a specification consulting firm located in Newton, Massachusetts. He is author of the AIA Master Outline Specifications, and is currently chairman of the AIA MASTERSPEC Architectural Review Committee.*

reinforcing. The thickness can range from a nominal 1/16 inch to 1/4 inch. The reinforcing material is typically glass-fiber mesh, which is embedded in the base coat at the time of installation. Finish coats of various thickness in a variety of textures and colors are applied over the base coat.

### Class PM Systems

The base coat varies little in thickness regardless of reinforcing. The thickness can range from a nominal 1/16 inch to 1/4 inch. The reinforcing material is typically fiber mesh which is embedded in the base coat at the time of installation. Finish coats of various thicknesses in a variety of textures and colors are applied over the base coat.

### Insulation Boards

Class PB systems are generally installed over molded polystyrene insulation board and are considered to be more flexible than Class PM systems, which are typically

installed over extruded polystyrene insulation board. The extruded polystyrene is more resistant to water penetration because it is denser and less vapor permeable.

Because of this difference in flexibility, expansion joints in Class PB are generally required only over a building's basic expansion or control joints, while joints in Class PM systems follow the frequency used for stucco, with joints for every 100 square feet of wall area.

These generalizations are an effective way of differentiating between the systems, although many manufacturers have hybrids.

Insulation boards may be adhesively applied, mechanically fastened, or both. Molded polystyrene is typically adhesively applied, while extruded polystyrene is typically mechanically attached to the substrate.

### Sheathing

Selection of sheathing is critical. For adhesively attached systems, sheathing must be acceptable to both the EIFS manufacturer and the sheathing manufacturer. Manufacturers of gypsum sheathing caution that the paper face on the sheathing is not a suitable substrate for EIFS systems. Other sheathings, using a fiberglass or cementitious base, are more popular and more durable. Masonry and concrete surfaces are also acceptable substrates.

For mechanically fastened systems, fasteners should penetrate through the sheathing to a sound substrate. The pullout strength of fasteners in sheathing alone is insufficient for mechanical attachment of insulation. Many manufacturers use plastic tracks and special trim to support insulation, and provide special detailing or grooves which create the required design profiles.

### Reinforcing

Reinforcing fabric for Class PB systems is available in standard, intermediate, and impact-resistant weights, ranging from approximately 4.4 ounces for standard weight to 20 ounces for impact-resistant reinforcing.

Reinforcing fabric for Class PM systems is typically provided in a smaller range, with weights from 4.5 to 6.4 ounces. The hardcoat base of the Class PM systems is more impact-resistant than the base coat of the Class PB systems.

Impact-resistant reinforcing is required at areas accessible to pedestrians and areas subject to potential abuse from maintenance or playground activities. Multiple layers of reinforcing are recommended at certain types of joints such as corners of windows and other penetrations.

### Joints

Multipart nonsag urethane sealants are generally suitable for use with EIFS. Most EIFS manufacturers have tested specific sealants and only those sealants should be used. All areas where the system meets dissimilar materials, or in areas where the system has a joint through itself, needs a



*A look at EIF Systems includes Class PB Systems (variable thickness); Class PM Systems (same thickness); insulation boards; sheathing; and joints.*



*Installation involves a trowel-on technique. Photo, courtesy of Thoro System Products.*

sealant joint. Adhesion of the sealant to the base coat is critical to the success of the system, as the topcoat may soften over time and pull away from the finish coat. The finish coat should not be extended into joints. Sealant performance and proper design of sealant joints are a major concern. Colors are typically selected that blend with the field color.

#### **For more information**

EIMA publishes technical guidelines and additional information on manufacturers and suppliers. Contact the Exterior Insulation Manufacturers Association at 2759 State Road, Suite 112, Clearwater, Florida 813/726-6477.

## **EIFS Guide Specification**

### **PART 1. GENERAL**

#### **A. Summary**

1. Exterior insulation and finish system, with colors, patterns, and shapes as indicated over the following substrates:
  - a. Gypsum sheathing.
  - b. Cementitious sheathing.
  - c. Masonry.
  - d. Concrete.

#### **B. Submittals**

1. Manufacturer's product data.
2. Samples showing color and texture.
3. Shop drawings including adjacent construction.
4. Field-built mock-up.
5. Sealant compatibility and test reports.

#### **C. Quality assurance**

1. Installer acceptable to EIFS manufacturer.
2. Fire tests and performance as required by applicable codes, ASTM E108, ASTM E119, ULC-S101, UBC 17-6 multi-story test.
3. Maximum deflection of supporting structures, L/240.

#### **D. Delivery, storage, and handling**

1. Stack insulation boards flat and off the ground.
2. Keep material dry and protected.

### **PART 2 PRODUCTS**

#### **A. Manufacturers:** (list)

#### **B. Finish over molded polystyrene board.**

1. Type: EIMA Class PB.
2. Base coat: Portland cement and polymer additive.
3. Finish coat: Polymer emulsion.
4. Thermal insulation: Molded rigid cellular polystyrene.
5. Insulation attachment: Adhesive (or) mechanical fasteners, corrosion resistant.
6. Reinforcing fabric: Standard weight; high-impact type at areas subject to damage.

#### **C. Finish coating over extruded polystyrene board.**

1. Type: EIMA Class PM.
2. Base coat: Portland cement, glass fibers, and polymer emulsion.

3. Top coat: Polymer-modified portland cement (or) acrylic emulsion.
4. Thermal insulation: Extruded rigid cellular polystyrene.
5. Insulation attachment: Mechanical fasteners, corrosion-resistant.
6. Reinforcing fabric: Standard weight.

### **PART 3 EXECUTION**

#### **A. Examination.**

1. Inspect substrate and report unsatisfactory conditions in writing; beginning work means acceptance of substrate.

#### **B. Installation.**

1. Comply with system manufacturer's instructions and recommendations.
2. Do not use admixtures.
3. Install insulation without gaps. Rasp to level surface where required.
4. Install all coats to provide uniform appearance.
5. Reinforce corners to prevent cracking.
6. Seal joints to base coat, not finish coat.
7. Install areas of special patterns and textures where indicated on the drawings.

*Literature from EIFS suppliers is featured on page 101.*



**Water Features**

*Nothing humdrum about plumbing designs from three German manufacturers: strong shapes in chrome, brass, and china.*

**300. Tactile**

Manufactured by Aloys F. Dornbracht and designed by Dieter and Michael Sieger, beautiful lavatory hardware is shown in two lever-handle versions. Delphini (Dolphin) fittings (300a) appear to frolic (well, not quite), launching themselves from the edge of the basin. Available in chrome and silver-nickel finishes as well as the Durabrass option pictured, the collection includes tub and shower faucets, towel bars, shelves, and other bath accessories. Fino (300b) is a more geometric style, with its interrupted-circle handle poised over a severely straight spout. Five finish options include matte black and chrome, all-black, and black handle with brass faucet. Santile International Corp., Atlanta.



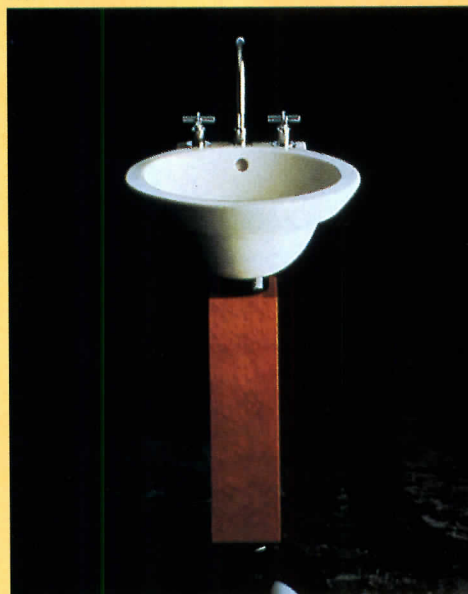
300a



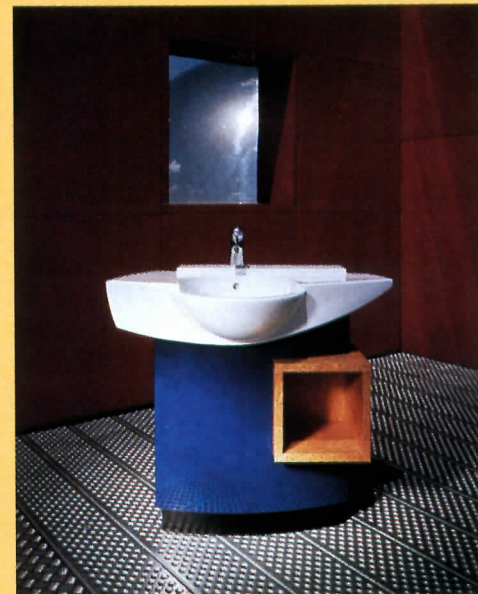
300b

**301. Vitreous**

Also styled by Design-Büro Seiger, lavatories by Duravit AG combine chinaware, laminates, and wood-veneer components in both formal and deconstructivist configurations. One of a four-model washbasin collection called (appropriately) Bagnella, Vito Bagnella (301a) has a pedestal of Canadian bird's-eye maple set between a black-ceramic cap and base. Seiger's newest basin (301b) is named for (and photographed at) Paris' Parc de la Villette, site of Bernard Tschumi's brilliantly colored follies, and it incorporates similar circular, rectangular, and asymmetric wedge elements. Storage compartment and base are waterproofed with a melamine finish. Santile International Corp., Atlanta.



301a



301b

**302. Thrifty**

A manufacturer known for luxury bath fittings based in Rodermark, Germany, Jado is now marketing a line of contemporary-style faucets for the kitchen at "competitive" prices. Called Watermaster, the range combines a pull-out hose that goes from spray to stream at the push of a button, with ANSI-compliant 2.2 gallon-per-minute performance. Features include check valves that prevent backflow siphonage, flow control via ceramic-disc cartridge, and a matching 10-in. coverplate for retrofit installations. Finish options include the all-chrome shown, white, and white and chrome. Groupe Jado, Camarillo, Calif.



302a



302b

*300a. Dolphin faucets in solid brass; Dornbracht.  
300b. Chrome and matte black Fino faucet; Dornbracht.  
301a. Vito Bagnella wash stand; Duravit.*

*301b. Lavillette basin and lavatory; Duravit.  
302a, 302b. Single-handle kitchen faucets; Groupe Jado.*



## Building Blocks

*New shapes, colors, and a broader range of acoustic performance update the cinder block.*

### 303. Architectural-concrete masonry

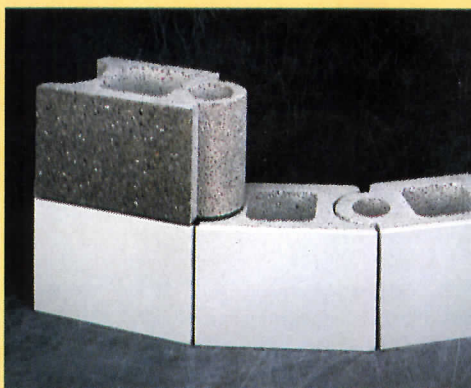
A 30-year-old company with sales representation throughout the U. S., Canada, and Mexico as well as overseas, Trenwyth Industries makes glazed-, ground-, and aggregate-faced block and sound-absorbing masonry units in Illinois and Pennsylvania, primarily for institutional and academic applications. In addition to glazed-faced units offered in 80 colors, the firm recently introduced new shapes and acoustic configurations said to offer the architect a larger number of design and noise-control options.

### Curving facades

Radial blocks (a, b), available in 4-, 7 3/8-, and 12-in. thicknesses, permit any radius greater than 3 ft 6 in., without cutting. The hub at one end of the block fits into the socket of the next; alternate courses are laid in opposite directions so that the hubs overlap in a modified running bond and align the hub holes for vertical reinforcement. Standard 3/8-in. joints are maintained on the convex surface. Radial blocks may be specified in glazed-, ground-, and aggregate-face surfaces. New Apollo ground-face units (c), available in a selected color range, are priced to reflect the economies of an on-site aggregate deposit; and pastel colorations such as pink and light green are now offered in terrazzo-like filled and polished Trendstone Plus block (d).

### Sound-absorbing masonry

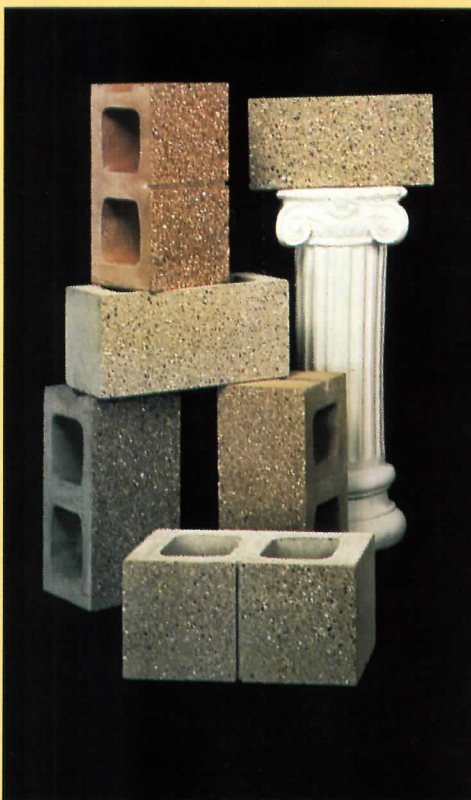
Closed-top Acousta-Wal CMUs (e) come in an expanded range of slot and plenum configurations designed to absorb sound frequencies from 125 to 4000 Hertz, and are particularly effective in control of lower-frequency energy. New plenum designs, Type IS and Type III, do a better job of capturing, and dissipating, higher-frequency sounds as well. Reflected by the metal septum, high-frequency sounds resonate within the smaller chamber which the septum creates, and disappear harmlessly as heat. Selecting for slot style (whether wide, narrow, or funnel-shaped), septum type (bare metal or fiberglass-backed), and unit size lets the designer build precise reverberation- and sound-transmission control into a structural wall. (Type IIRF allows for vertical reinforcement, conduits, or pipes). Trenwyth Industries, Inc., Emigsville, Pa.



303a



303b

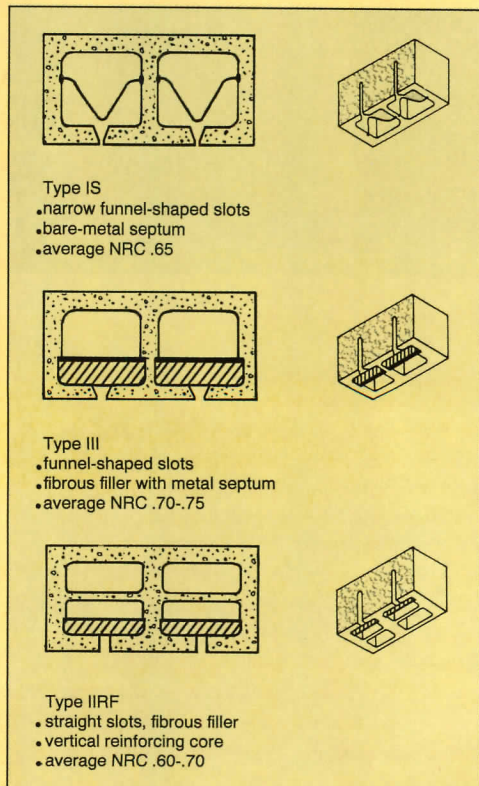


303c



303d

- a, b. Radial blocks with aggregate and glazed faces interlock like a hinge to create large-scale curves.*
- c. Ground-face Apollo units.*
- d. Filled and polished Trendstone Plus pastel blocks have a non-porous, terrazzo finish.*
- e. Sound-absorbing structural masonry units, with average NRC ratings.*



303e



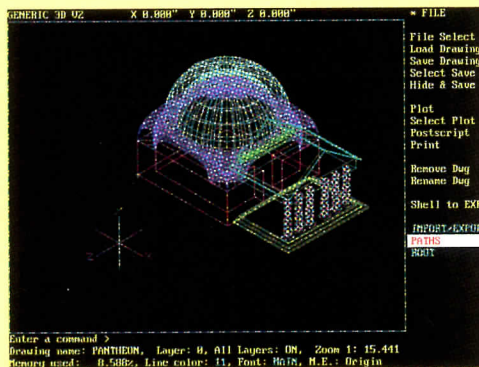
## Generic 3-D, Release 2 for DOS

By Steven S. Ross

This 3-D package from Autodesk, the same company that produces AutoCAD, is cheap to buy, runs well on inexpensive equipment, and is easy to use. You do all your editing in 3-D; if you want to work in 2-D, you simply switch to "single plane" mode (but the translation from 3-D to 2-D screen can take some getting used to in all 3-D CAD software. You can extrude or rotate objects later to move them to 3-D. Rendering is also built in.

Thus, you can use Generic 3-D to rough-model a project, render it, and then use the underlying wireframe drawing as a basis for hard-line drafting.

There's also automatic dimensioning, easy text entry, and some symbols (about two-thirds of them architectural) from KETIV and others. It's too bad there's no macro language. Polygons in 3-D are limited to 256 vertices—enough for most purposes.

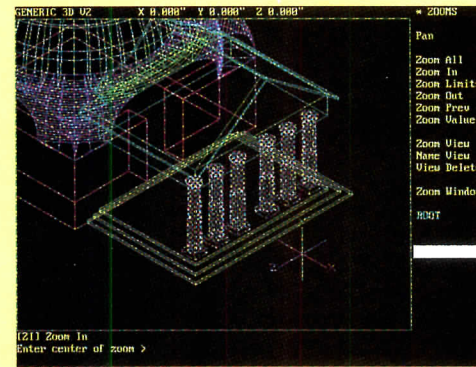


You can import and export DXF files, but you can only import AutoCAD DWG files. AutoCAD formats up to Release 12 are supported. Unfortunately, older versions of Generic CADD used the DWG file extension for Generic's 2-D binary files; you'll get an error message if you try to import them as AutoCAD files.

Why use Generic CAD 3-D? It will run on a small machine, even a small laptop. So it is useful for work-at-home or on the road. The learning curve does not seem to be steep, so it can be used in offices where temporary drafters are needed.

But, frankly, the latest version of the 2-D product, Generic CADD 6.1, due to be released this summer, will allow two-way DWG transfer. There's also a good macro language for the 2-D product, making it the choice for production drafting where AutoCAD compatibility is a must.

Circle number 304



## CalComp DesignMate Plotter

When this D-size (24 by 34 inch) plotter was released last fall, it was among the few (others include plotters from EnCAD and Houston Instruments) to offer a large format, reasonable plotting speed, and price low enough to attract individual practices rather than service bureaus.

But is a plotter worth the trouble, even if you can afford it? To answer that question, we started playing with the DesignMate this winter, using it with many CAD and modeling packages. Usually, we ran DesignMate in HPGL mode, emulating a Hewlett-Packard plotter.

Good plotting quality is a given with almost all plotters these days. For in-office use, there has to be more. A plotter must be as reliable and easy to use as a laser printer. This one is. There's a straightforward, well-illustrated manual, toll-free number support, a simple control panel, and a good selection of available plotting languages. It is a bit noisy—distracting if it is placed only a few feet from a workstation. Plotting speed and acceleration are less than half that of a top-of-the-line plotter, but more than adequate to support small task groups working on a specific project; fairly detailed D-size plots come off the system about one every 20 to 30 minutes.

In short: This is a good first plotter for small offices; use it for presentations and for checkplots. Continue to use a service bureau for heavy-duty end-of-project work.

Circle number 305

## CalComp Plotter summary

**Specifications:** 20 inches per second on 45-degree diagonal; 14 ips on axis, 2g acceleration on 45 degree diagonal, 1.4g on axis; 0.1 percent accuracy, 0.008 inch maximum deviation pen-to-pen, 0.004 in maximum single pen. Maximum plot area 23.6 by 34.5 inches. Can plot using CDCL and HPGL, HPGL/2, large and small formats.

**Vendor:** CalComp, 2411 West La Palma Ave., P.O. Box 3250, Anaheim, Calif. 92803. 714/821-2000, 800-451-7568. \$1,992 for base unit; stand and 1 MB buffer are optional. ■

### Generic 3-D summary

**Equipment required:** Any DOS computer with at least 640K (tight fit—you need 540K of free memory); 2 MB and 80386SX or better CPU running at 25 MHz or faster recommended; standard 640 by 480 color VGA or better recommended. Mouse or digitizer required.

**Vendor:** Autodesk Retail Products, 11911 North Creek Parkway South, Bothell, Wash. 98011. 800/228-3601; 206/487-2233, fax 206/486-1636. \$399; upgrade \$75.

**Manuals:** User guide, reference, tutorials, and installation guide—first-rate.

**Ease-of-use:** Access to the menu bar is

through the right mouse button; it takes a few hours to get used to. 3-D will read files from 3-D Drafting and 3-D Concepts for Windows. We had trouble with the Install program.

**Error-trapping:** Don't install into the same directory as earlier versions of the product, or of the 2-D versions (Generic CADD 6.1 and earlier). Generic 3-D will run on a network, but depends on the network software to lock files that are in use. The "undo" command allows the previous 25 steps to be undone; "redo" will put them back. Rotating the 3-D cursor sometimes can confuse you on object placement; the translation from 3-D to the 2-D screen can take some getting used to in all 3-D CAD software. ■







# The Man Behind the Legend: The Words and Life of Wright

**Frank Lloyd Wright: Collected Writings, Volume 1 1894-1930**, edited by Bruce Brooks Pfeiffer. New York: Rizzoli, 352 pages, \$60 (hard), \$40 (paper).

*Reviewed by Julie Iovine*

The first of a projected six volumes that will encompass all of Frank Lloyd Wright's articles, lectures, essays, and books (but not his personal letters), this collection covers the formative years during which the Prairie Houses, the Larkin Building, and the Imperial Hotel in Tokyo were built.

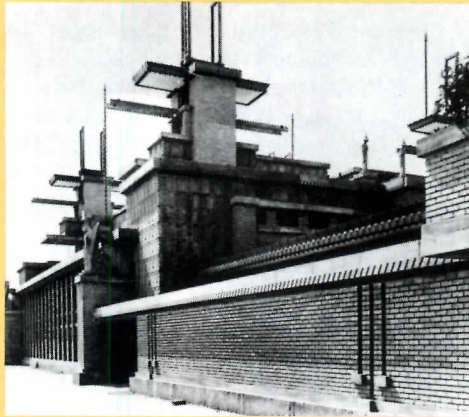
Here lie the seeds of Wright's most ardently held beliefs. The prose often gushes. Wright was no writer, following instead the ornate conventions made popular by 19th-century art critic John Ruskin. His judgments against anyone who disagreed with him were extreme and he despised the International Style as a barren dead-end for architecture. And yet, Wright was also capable of remarkable clarity and rationality in the service of his vision for an organic architecture derived from natural forms.

Whether addressing the perfection of a Japanese print or the career of his master Louis Sullivan, there's a marvelous consistency in his voice that becomes more confident with each passing year.

The energy of Wright's ambition and opinions radiates from every page of this book. "Queen Anne! What murder!" he shouts in a piece about craftsmanship and woodworking. The book also includes landmark essays such as "The Art and Craft of the Machine" from 1901 and the series on the nature of materials for *RECORD* in 1928.

Through the years, Wright remained steadfast in his agenda—the natural house, integrated decoration, the machine as "the tool of our time" ("whether we like it or not"), and the potential for Americans (read followers of Wright) to lead the world in residential architecture. His spontaneous appreciation for nature and its potential for educating architects seem more relevant today than ever.

*Julie Iovine writes on design for The New York Times Magazine.*



*Midway Gardens in Chicago.*

**Frank Lloyd Wright: A Biography**, by Meryle Secrest. New York: Knopf, 1992, 688 pages, \$30.

**Frank Lloyd Wright: Collected Writings, Volume 2, 1930-1932, including The Autobiography**, edited by Bruce Brooks Pfeiffer. New York: Rizzoli, 352 pages, \$60 (hard), \$40 (paper).

*Reviewed by Thomas H. Beeby*

The barrage of recent literature about Frank Lloyd Wright has reached such dizzying proportions that it has become nearly impossible to absorb all the information, unless, of course, you are a Wright scholar. But on a personal note, the renewed interest in Wright's life has invaded a province of my mind that previously had been private: memories of my childhood, living next to a Wright house and looking down on its mysterious darkness from my bedroom window, memories of my father and grandfather (who had done engineering work for Wright) speaking of him with an awkward mixture of admiration and disapproval, and finally memories as a young practitioner roaming the valleys of southwestern Wisconsin to understand the power of the landscape that Taliesin was drawn from. I suppose it is the fate of the gifted, such as Wright, to be personally exposed first by their admirers, then by historians, and finally by biographers.

Meryle Secrest's biography lays open the life of Wright in a generalized way that allows us to grasp Wright as an individual. It is interesting to see him examined in this way—by a biographer rather than a historian

or architect. I am not qualified to judge the book in detail for its absolute accuracy; however, I sense there is an overlap between proven data and personal anecdotes that might cloud the experience of reading this book if one were a Wright scholar.

But in an overall sense, the book rings true in its portrait of Wright as an architect and human being, rather than either the Father of Abstraction or the last Representational Master. Written by a biographer who has tackled Bernard Berenson, Kenneth Clark, and Salvadore Dali in the past, the *Secrest* book is free of ideological myopia.

However, the book does suffer from the inclusion of numerous passages of formal and visual analysis that are based on earlier writings about Wright. There is no doubt that the author has read the available literature and criticism related to the buildings.

The problem lies in the lack of an overriding critical mind that would guide the eye through a body of work as vast as Wright's. The differences between Wright's early work (which, if anything, is overstudied) and his later work (which, in many instances, is not fully understood) are not made clear, and the varied primary sources for artistic opinions are often not in concert.

*Frank Lloyd Wright: Collected Writings, Volume 2*, on the other hand, contains Wright at his best. The Kahn lectures given at Princeton in 1930, *The Autobiography*, and an unpublished essay titled "Poor Little American Architecture" form an interesting primer on Wright. Although these remain some of his most elegant, persuasive, and poignant writings, one wonders why they are repackaged in this format, since they have been for the most part readily available in previous publications.

These two new books by chance make an interesting pair and used together will save nonhistorians from random reading adventures in the vast and rapidly expanding literature that has appeared recently on Wright and his work.

*Thomas Beeby is a principal of Hammond Beeby and Babka in Chicago.*



**Building in a New Spain: Contemporary Spanish Architecture**, edited by Pauline Saliga and Martha Thorne. Barcelona: Gustavo Gili, 1992, 185 pages, \$45.

**The New Spanish Architecture**, by Anaxtu Zabalbeascoa. New York: Rizzoli, 1992, \$50 (hard), \$35 (paper).

Reviewed by David Cohn

One of the first books to bring the new Spanish architecture to the United States was the catalog for a show in 1986 titled "Contemporary Spanish Architecture: An Eclectic Panorama." It included essays by Spanish critics Ignasi de Solà-Morales and Antón Capitel, an introduction by Kenneth Frampton, and a survey of the key works of post-war Spanish architecture.

*Building in the New Spain* is the logical sequel to that book, an essential introduction to Spain's architectural renaissance. It too is the catalog of an exhibition, this one organized last year by the Art Institute of Chicago and Spain's Ministry of Public Works and Transportation. It includes essays by Solà-Morales, Capitel, and others, with a historical/critical overview by Frampton and a portfolio of 12 recent projects. While the 1986 book had many flaws, *Building in the New Spain* is an exemplary study, well-documented and presented, with its Spanish text clearly translated by Kathryn J. Deiss.

Projects shown include many that received

David Cohn is a freelance writer based in Madrid.



Calatrava's Stadelhofen Station, Zurich.

Palo Roselli

international attention during the Barcelona Olympics and Seville Expo last year: works by Rafael Moneo, Antonio Cruz & Antonio Oriz, and Guillermo Vázquez Consuegra in Seville, and by Esteve Bonnell, Enric Miralles, and Albert Viaplana & Helio Piñon in Barcelona. Also shown are works of equal quality by less famous names such as Manuel de la Casas and Juan Navarro.

Victor López Escolano contributes an interesting article describing the political developments that have allowed Spanish architecture to flourish, the process of democratization, and the decentralization of power in favor of regional governments.

The contributions by Capitel and Solà-Morales reflect views from a more limited perspective. Capitel sketches the historic background, constructing an elaborate Charles Jencks-type structure of "isms." Solà-Morales offers a short meditation on a favorite local anxiety—relations between center and periphery.

An informed outsider, Kenneth Frampton offers a balanced overview of Spanish design. His essay is the centerpiece of the book, a generous and complete analysis that traces the sources of contemporary work in Spain's postwar Modern masters—J. A. Coderch, Alejandro de la Sota, and others. Frampton shows how Modern Spanish architecture's strength and originality derive from a short but remarkable local tradition.

Anaxtu Zabalbeascoa's *The New Spanish Architecture* is no match for *Building in the New Spain*—either in scholarship or graphic quality. But it does offer a selection of lesser-known works, which for patient readers could be a useful supplement to the first book. Zabalbeascoa, an architectural journalist based in Barcelona, worked without the benefit of good translators or a sufficient budget for photographs. So she has opted to include many unbuilt projects and works by young architects in an incomplete survey. Sevillian architecture is absent from the survey and the author's background in the world of Barcelona interiors is evident. But when read along with *Building in the New Spain*, this book can serve as a useful guide.

**High Rise: How 1,000 Men and Women Worked Around the Clock for Five Years and Lost \$200 Million Building a Skyscraper**, by Jerry Adler. New York: HarperCollins, 1993, 384 pages, \$25.

The high rise in question, in this fascinating tale of high-stakes real-estate speculation, is 1540 Broadway, an office tower designed by Skidmore, Owings & Merrill in Times Square. Author Jerry Adler, an editor at *Newsweek*, follows the genesis, evolution, and realization of a project that seemed like a good bet in 1985, but turned out to be a financial disaster when the office market collapsed in the early 1990s.

Invited by developer Bruce Eichner to witness the process of creating a skyscraper, Adler got behind the scenes and was given access to many private meetings. The result is an entertaining recounting of the intricate choreography necessary to assemble the site, program the building, pull together financing, select an architect, develop a design, oversee construction, and try to lease 868,000 square feet of office space. Adler does a good job of showing how all the pieces in this puzzle come together and his gee-whiz attitude toward the size of steel beams, pounds of explosives, number of teamsters, and millions of dollars needed to build a skyscraper is actually refreshing.

The author spends considerable time examining the evolution of the building's design and the different roles played by members of SOM's team and the developer's own staff. While the book's portraits of SOM design principal David Childs and Eichner himself seem sketchy, those of SOM associate Audrey Matlock and the developer's in-house architect Luk Sun Wong are as sharp and engaging as the two people themselves. In fact, one of the best things about this book is the amount of attention it gives to these two "supporting" players, both of whom are shown to be pugnacious and dedicated individuals. The author, though, pulls his punches with Eichner—failing to address questions raised by the developer's brokering the sale of the building to publishing giant Bertelsmann A. G. and then accepting a million-dollar consulting contract from that company. C. A. P.



**Looking Around, a Journey Through Architecture**, by Witold Rybczynski. New York: Viking, 1992, 288 pages, \$22.

Reviewed by Felix Drury

Readers who know Witold Rybczynski's previous books, particularly *Home* and *The Most Beautiful House in the World*, will hear a familiar and friendly voice exposing the flanks of architecture in his new book, *Looking Around*. New readers have the chance to meet a rare soul, an architect who writes about architecture simply and engagingly without the pedantic stress we get from most contemporary critics.

*Looking Around* is a collection of 35 articles that ran in various publications over the last six years. This gives it both its strength and its weakness. The articles fall into three sections: Homes and Houses, Special Places, and the Art of Building.

In Homes and Houses, Rybczynski has as-

*Felix Drury is a New Haven architect.*

sembled 13 articles dealing with topics ranging from upholstery to Seaside, Fla. In between, the author touches down in suburbia, revisits Moshe Safdie's Habitat, and analyzes the marketing of tract houses. He writes about porches, the idealization of rural life, the flourishing of the "villa," and Ruskin's declaration of the home as a "sacred place." Rybczynski keeps coming back to the relationships between the design of houses and furnishings and the mores of modern and pre-modern life, raising issues that are vital to residential design.

The second section, Special Places, which one expects to be an extension into the public realm of concerns examined in Homes and Houses, turns out instead to be nine disjointed articles—a kind of fruitcake of architectural experiences. Rybczynski begins with a review of the architecture of the McGill University campus, then explores the idea of the art museum and its accommodation of the marketplace. He slips in a curious piece on airports, then goes to the mall. He ends the section by returning to the home/house theme and questioning the untouch-

able character of houses by famous architects.

The third section is called the Art of Building, which suggests an investigation of the materials and methods of construction. Not so. It begins with a brief history of building toys and their significance to children, but spends most of its time on questions of style, the role of the client, the limited role of the architect, and the excesses of Postmodernism (there are seven). He ends with the lament that architects and patrons cannot agree on what constitutes good architecture and that the architects of the '90s are likely to be more self-indulgent than ever.

*Looking Around* is well named. Reading it is like meeting the author every afternoon for coffee and chatting about whatever comes up. It is a very pleasant experience. You have to endure a little repetition and put up with the author's neoclassic bias. You have to excuse his failure to understand the importance of the iconoclast. But why care? *Looking Around* is informative and delightful: *utilitas* and *venustas*, if not *firmitas*.

## Briefly Noted

**ReBuilding**, by Daniel Solomon. New York: Princeton Architectural Press, 1992, 144 pages, \$25 (paper).

"This book is a journal, a monograph, and a polemic," states the author on the very first page. *ReBuilding* succeeds on all three levels and in the process offers insights on infill housing, town planning, and the relationship between old and new. The journal occupies the first half of the book, entitled "Words," and offers personal observations and anecdotes on such topics as the client-architect relationship, bungalows, taste, courts and alleys, and technology. The monograph section presents 18 projects designed by the author. The polemic, though, suffuses every page and every project; its message is one of responsible town planning that accommodates the future while applying lessons from the past. C. A. P.

**Designing the Office of the Future: The Japanese Approach to Tomorrow's Workplace**, by Volker Hartkopf, Vivian Loftness, Pleasantine Drake, Fred Dubin, Peter A. D. Mill, George R. Ziga. New York: Wiley, 1993, 280 pages, \$60.

This book is the work of a multidisciplinary team that examined the use of innovative technologies in a number of Japanese office buildings. Lots of charts, no color photos.

**On Weathering: The Life of Buildings in Time**, by Mohsen Mostafavi and David Leatherbarrow. Cambridge: MIT Press, 1993, 144 pages, \$30 (cloth), \$15 (paper).

A fascinating essay supported with photographs and drawings of old and new architecture, this handsome book looks at both the physical and philosophical effects of weathering on buildings.

**Spiritual Space: The Religious Architecture of Pietro Belluschi**, by Meredith L. Clausen. Seattle: University of Washington Press, 1992, 208 pages, \$50.

Covering designs spanning more than half a century, this book includes a comprehensive introductory essay and a portfolio of 43 churches and synagogues by one of the Modern movement's innovators in structure and space.

**No Way to Build a Ballpark and other Irreverent Essays on Architecture**, by Allan Temko. San Francisco: Chronicle Books, 1993, 271 pages, \$15 (paper).

This collection of 59 articles by the Pulitzer-Prize-winning architecture critic for *The San Francisco Chronicle* spans four decades of writing and a range of both local and universal topics. ■



**In This Issue**

One of the architect's great challenges is going beyond a building's function to discover its true purpose and express it through form. Somewhere during the complex process of planning circulation, allocating spaces, and calculating structure, the architect must uncover the underlying spirit of a project. For SOM, that meant comprehending the modern corporate culture behind catalog merchandising giant Spiegel and then reflecting that culture in the company's suburban headquarters outside of Chicago (page 68). For Canadian architect Richard Henriquez, it meant exploring the relationship between the natural and the manmade at a new environmental sciences center at Trent University (page 74). Asked to design a new facility for an expanding art department at the University of Toledo, Frank Gehry assembled a glittering academic village of lead-coated copper forms (page 78). In Mexico City, Enrique Norten took traditional elements such as a courtyard and shading devices and modernized them for the French Institute and Cultural Center (page 86). Understanding that one of the essential elements in good housing is a sense of community, the architects of the projects in *Building Types Study 707: Housing* (page 90) also show how much can be done on tight budgets. For James Freed of Pei Cobb Freed & Partners, the challenge was to find expression for the unthinkable: the systematic murder of six million Jews and other innocent people at the hands of the Nazis (page 58). That Freed was able to forge meaning from the Holocaust and bear witness through stone, brick, and glass bespeaks the power of architecture. *C. A. P.*

*Manufacturers' Sources  
listed on page 109*







# Permanent Witness

*United States Holocaust  
Memorial Museum  
Washington, D. C.  
Pei Cobb Freed & Partners, Architect  
Notter Finegold & Alexander,  
Associate Architect*

An early visitor to the United States Holocaust Memorial Museum commented, "I never thought I could be so affected by architecture." If others share this view, James Ingo Freed, partner at Pei Cobb Freed, will have succeeded in a daring strategy. He sought nothing less than to use the very fabric of a building to convey the criminality of the systematic, industrialized extermination of some six million Jews and other so-called enemies of the Nazi state. Freed had other options. He could have designed a dignified, neutral container, suited to its site adjacent to the Washington Mall. Others worried that architecture could only prettify this searing historical event. Don't risk trivializing the memory, they argued. They said Freed should at best put the museum underground, perhaps marking it with some greenery.

Freed shared many of these misgivings, but after a visit to some of the death camps, he began to feel that the architecture of the Memorial could embody the deliberateness and frightening efficiency with which the "final solution" was carried out. The building's external form hints at this strategy, while respecting its surroundings. The apparently deferential yet disconcerting monumentality of the 14th Street entrance "gives you a premonition of loss," says Freed. In the Hall of Witness, the central space around which the museum is organized, the architecture metaphorically moves the visitor from the idealistic precincts of the Mall to the horror of the Holocaust.

Freed, a man used to turning technology to good ends, was particularly affected by the Nazi's twisting of the instruments of modern life—medicine, law, engineering—to the manufacture of annihilation. Visitors see in the exhibits what Freed saw: the handsome yet chilling wood trusswork of a bridge meant to separate Jew from gentile; an ordinary boxcar once used for death-camp transports; the manufacturer's trademark on oven doors that cremated thousands. As the visitor repeatedly encounters the Hall of Witness in the process of passing from one side of the building to the other on disturbing yet beautiful glass bridges, one sees in Freed's brick and steel a permanent reminder of industry's collusion. For all its apparent success (visitors seem enormously moved, and linger at each display), this approach has pitfalls. The menacing imagery is sometimes at war with the elegance of Pei Cobb Freed's flawless detailing. (Some argued, according to exhibit designer Ralph Appelbaum, that the museum should have been much rougher, even creating physical discomfort among visitors.) Freed's most literal symbolism risks being theatrical or trivializing: *Stalag 17* light-fixture louvers or an armor-plated information desk.

Placing the museum facing the tidal basin in the heart of monumental Washington was a controversial decision (see page 66 and RECORD, April 1988, page 65). Freed wanted his building to live up to the site and the nation's commitment, even cause people to take action. At the Memorial's dedication, survivor and Nobel Laureate Elie Wiesel pleaded with President Clinton—sitting only a few feet away—to "do something to stop the bloodshed in [former Yugoslavia]." This moment, broadcast around the world, held the power it did because Wiesel was standing in front of this 285,000-square-foot mass of brick, steel, and limestone. *James S. Russell*

© Jeff Goldberg/Esto photos

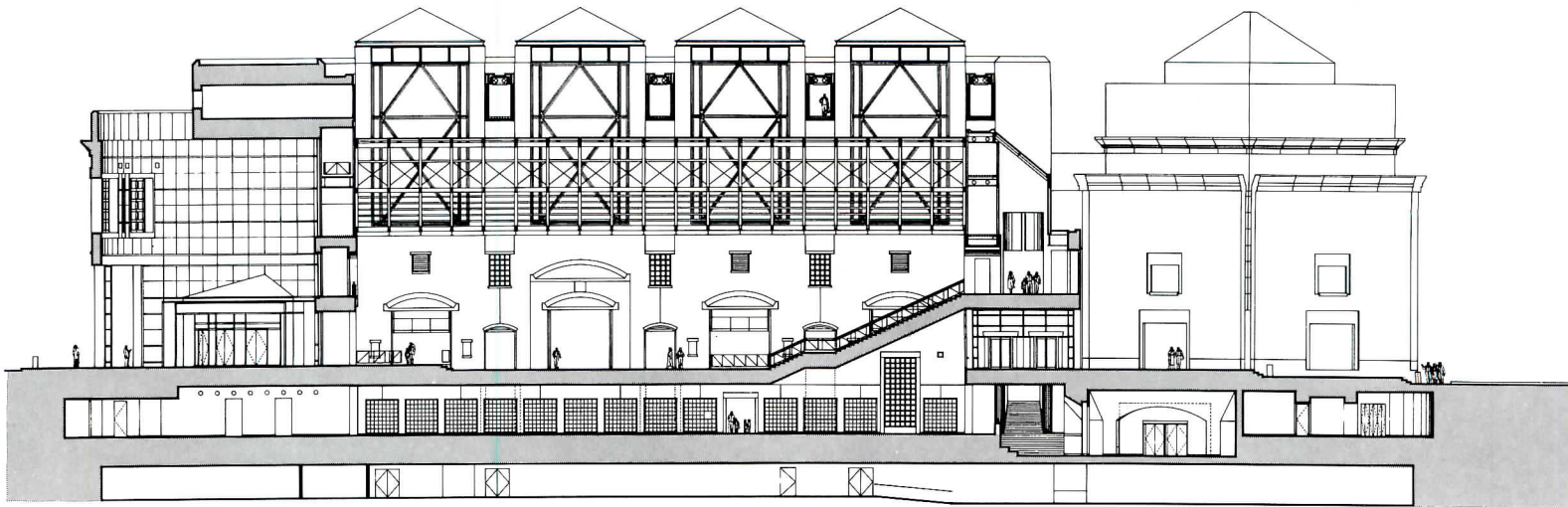


*The six-sided Hall of Remembrance, next to the Bureau of Engraving, faces the Mall (top). The 14th Street facade (middle) displays a disturbing Neoclassicism. 1,500 photographs document prewar life in the Polish shtetl of Ejszyszki (opposite).*

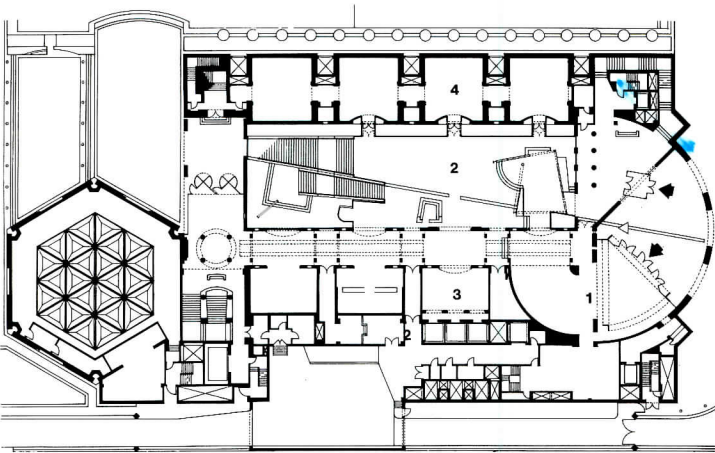




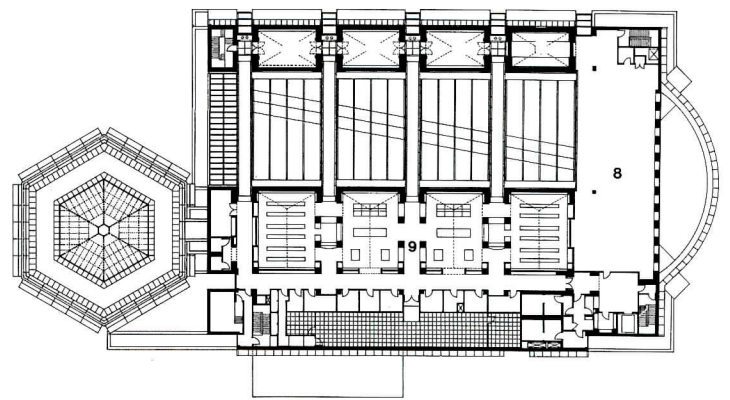




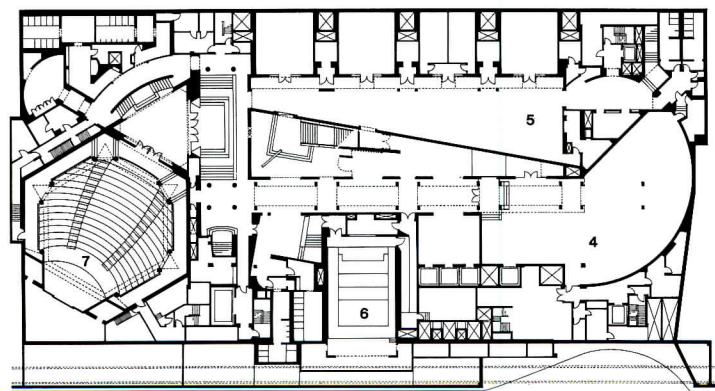
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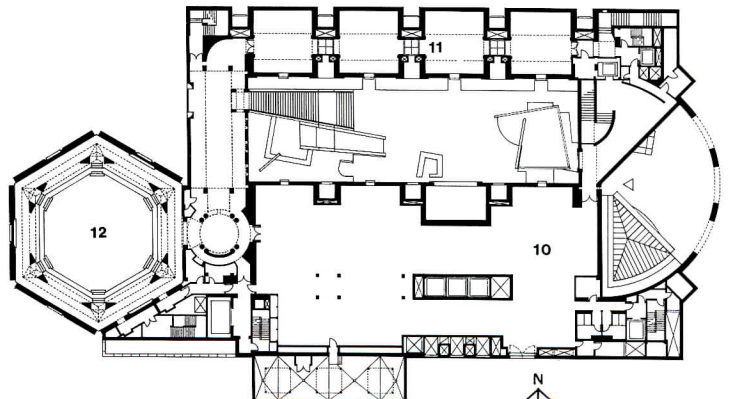
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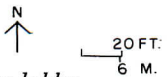
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CONCOURSE LEVEL



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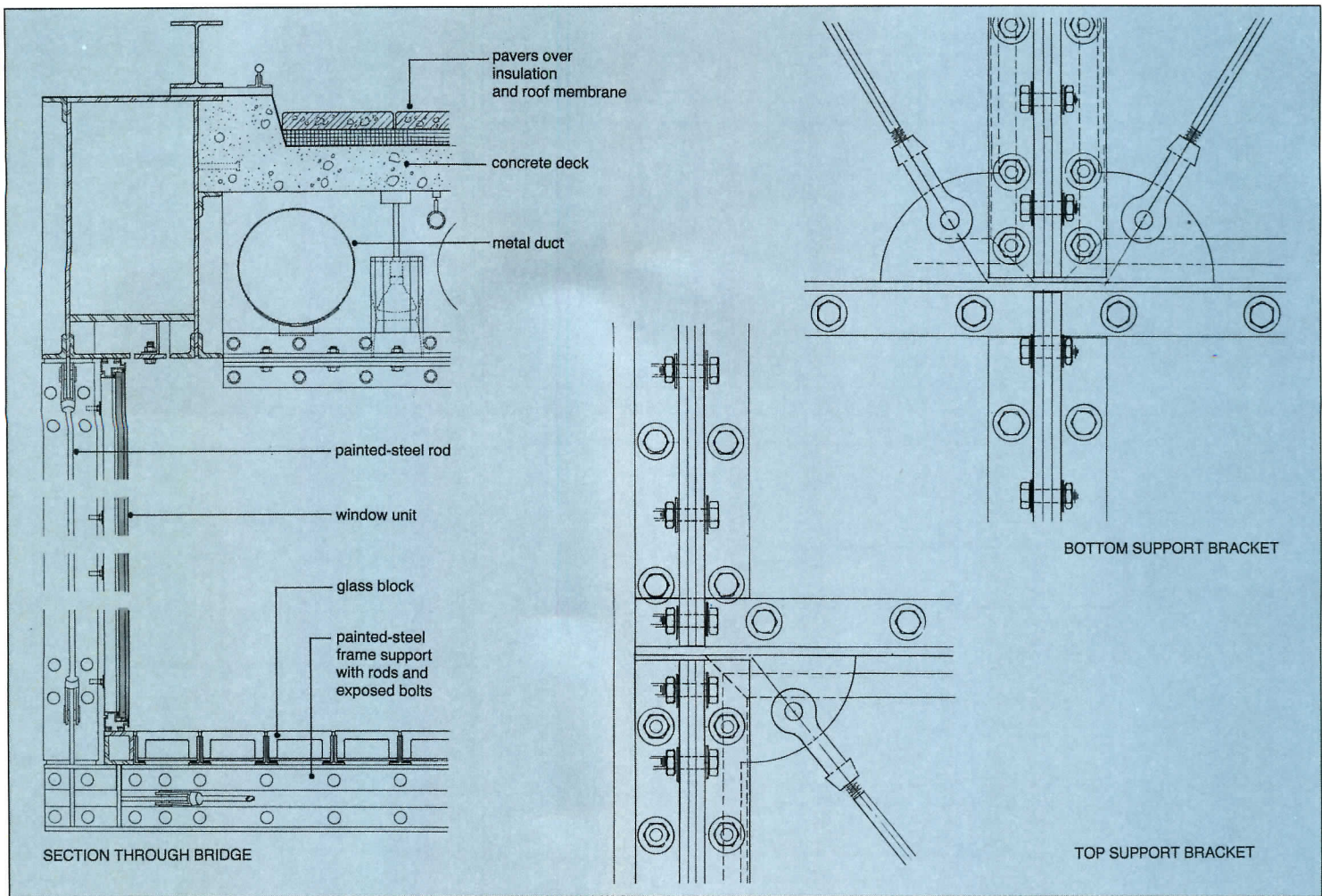
1. Entrance lobby
2. Hall of Witness
3. Elevators to exhibits
4. Temporary exhibits
5. Education center
6. Cinema
7. Meyerhoff Theater
8. Administration
9. Library/archive
10. Permanent exhibit
11. Learning center
12. Hall of Remembrance

*In the Hall of Witness (opposite), rough brick suggests the camps; metal strapping resembles that of the crematorium ovens, and all is crowned by a skewed skylight. Exhibits begin on the fourth floor (not shown;*

*it and the third floor are similar to the second, above), and glass bridges carry visitors around the Hall of Witness to towerlike galleries laid enfilade. After pausing in the contemplative Hall of Remem-*

*brance, a monumental stair returns visitors to the Hall of Witness (opposite bottom left). Another stair descends past a Richard Serra sculpture (Gravity, opposite bottom right) to concourse level.*



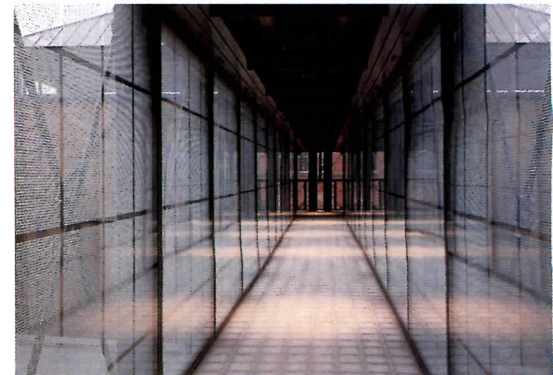


**The bridges**

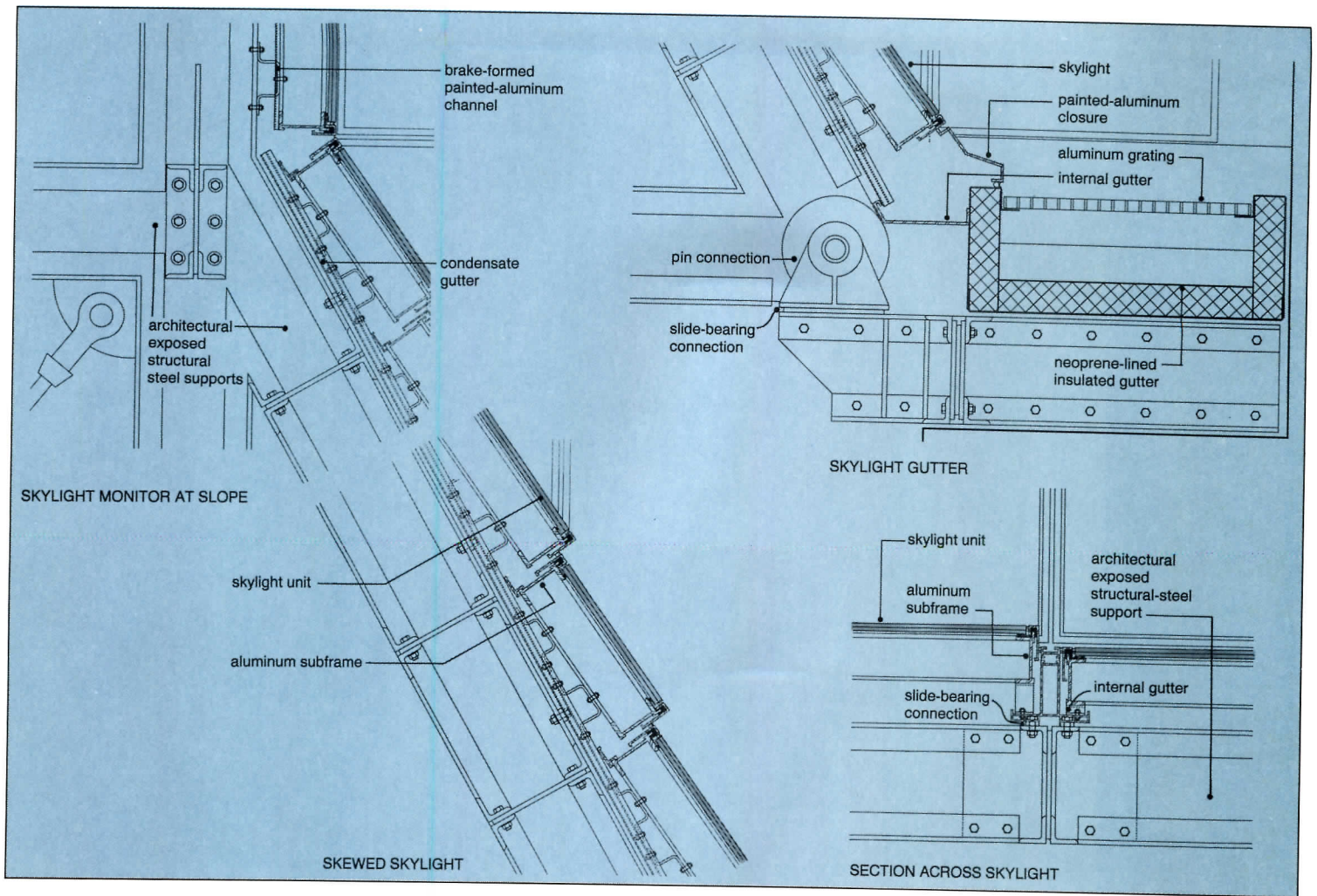
To the architect, the building's power derives from its permanence and the thoroughness of its detailing. "So much of the museum is documentary or photographic," says Freed, "you want to put the person in touch with real materiality." To him, among the chief horrors of the Holocaust was the industrialized methods it employed. With engineers Weiskopf & Pickworth, the firm designed "architectural" structural steel as framing for bridges and a giant skylight. Rather than use today's large welded-steel sections, the architect and engineer built up bars and angles into large, exposed framing members fastened with bolts and tensioned with tie rods. These techniques are rarely used now, but recall the railroads and other industrial infrastructure that made kill-

ing on the scale of millions possible. Even if visitors don't read the specific metaphors that drove the design, Freed feels that they will recognize that this is "an emotion-driven building."

Within the bridges, light fixtures, sprinkler pipes, and ducts run exposed under a visible concrete-slab roof. As visitors exit a segment of the museum devoted to suppression and ghettoization, they encounter the first names of victims fused into the bridge's glass walls using ceramic frit. The places of origin of those who went to the death camps are emblazoned on another bridge. Glass block floors convey a disquieting fragility to those walking across while casting shadows on those passing below.







**The skylight**

*Drawn at an angle across the rectangular Hall of Witness the glass roof resolves its geometries through warped surfaces (far left). According to Jack Greenberg of subcontractor Architectural Glazing, "we had to calculate the elevation at every corner of every panel while making a constant increment of [elevation] difference between each unit." The depth of aluminum supporting channels varies to position the glazing. The channels are isolated from steel framing by Teflon bearing pads. Structural butt-glazing holds laminated glass to aluminum subframes. The glass units are capped by an extruded ring, and weather-sealed. A similar technique was used to bridge the gap between units.*









*Advised by a committee of both survivors and scholars, curators and designers divided the exhibits into three segments, 1933-1939, 1939-1945, and 1945-present—each occupying one floor. These dispel any preconceived notion that the visitor will be exposed only to the Holocaust's most horrific aspects. Instead, the exhibits persuade largely through photos and films of faces—faces in the ghettos, faces on identity cards, faces of people forced to flee or march. The few actual artifacts ("the contents of people's pockets," says interpretive designer Ralph Appelbaum) thus take on unexpected power. The exhibits unflinchingly remind us that humankind's obligations are not just historical: The debate over whether to bomb the death camps resonates as if it were occurring today. On the third floor (top right) curators have reassembled parts of a barracks from Auschwitz-Birkenau. Low walls surrounding a kiosk permit visitors to choose whether to view films showing the museum's most grisly images.*

*A brick portal (opposite) leads visitors exiting exhibits back to the Hall of Witness. Framed in stainless steel and faced with limestone, a blind "window" (above) gives visitors only glimpses of the Mall outside. Right: the Meyerhoff Theater.*



## Interview

*Excerpts from an interview with Edward T. Linenthal, a professor of religion and American culture at the University of Wisconsin, Oshkosh, who is completing a history of the U. S. Holocaust Memorial Museum.*

**RECORD:** Some said that America was not the place for this Memorial . . .

**EL:** Having a memorial on American soil was for many survivors a final affirmation by the U. S. government that the Holocaust happened, that it is recognized. I think there is an element of America doing penance for not recognizing the event while it was happening. Where it is has a tremendous impact on the stature of the memory.

**RECORD:** Critics said the Memorial should have had a wider focus.

**EL:** The big question was, is this about the six million Jews or the Jews plus the five million others? Elie Wiesel saw European memorials which remembered "Polish" victims and "socialist" victims, but didn't mention Jewish victims. Distinctions are important here. Some unresolved tension remains, but clearly the argument made by the Memorial is that the six million Jews are at the center of the story. It becomes universal in understanding the particularity of the six million with reference to other victim groups.

**RECORD:** Wasn't Pei Cobb Freed's design controversial?

**EL:** Freed wanted the building to be a good neighbor, but believed it couldn't just exist as squeezed between its site lines, so the Hall of Remembrance protruded a few feet [toward the Mall]. The Fine Arts Commission forced it back to the line. Freed had bricked-up windows in the Hall of Remembrance, reminiscent of the Warsaw ghetto.

Some commissioners opposed that because it didn't offer a hopeful story on the Holocaust. The essential conflict was whether you need to have a redemptive message. Freed wants to displace visitors from Washington; he wants to immerse them in the world of the Holocaust, and return them changed. He says he didn't know how to design for hope. Some commissioners asked for what Lawrence Langer, a professor of English who analyzes Holocaust literature, calls preferred narratives—you make it more acceptable. In a kind of compromise, Freed took out the brick and installed limestone. It's still a blank window, but it doesn't evoke the ghetto.

**RECORD:** Is architecture an appropriate medium for a statement on the Holocaust?

**EL:** You don't have here an empty or neutral shell, but two embodied statements about the Holocaust: Freed's statement and the permanent exhibition. Some have said there is a danger that people will get swept up in the excellence of the building, that it is a magnificent cathedral-like building. Is this problematic in its own way? There had been suggestions that no building could be appropriate, that no design would be an eloquent enough statement.

I was surprised at how I responded to the camps esthetically. Auschwitz is this camp of old red brick buildings and this dingy, ordinary military-looking stuff. At Birkenau, the killing center at Auschwitz, there is an incredibly vast area of barracks and the remains of four crematoriums. Many barracks have collapsed, so all that's left is chimneys and foundations—like the bones of the Nazis. I was struck by the awesomeness of that scene and the ordinariness of Auschwitz. There's a question of the very newness and monumental power of Freed's building. Some say it does not express that sense of banalization that maybe the old red brick buildings did. Freed's is not at all a banal building. What's also interesting is that the building could be seen as an evocation of the universe of the perpetrator and the exhibits an evocation of the world of the victim—an interesting accommodation. The proof of the pudding is how people react, what they come away with. ■



*After viewing the exhibits, patrons linger in the six-sided Hall of Remembrance (above). They may stroll an ambulatory (opposite) or pause to light candles in niches set into the limestone walls.*

## Credits

*The United States Holocaust Memorial Museum  
Washington, D. C.*

**Architects:** Pei Cobb Freed & Partners—James Ingo Freed, partner-in-charge/design; Werner Wandelmaier, Michael D. Flynn, partners; Craig Dumas, Beatrice Lehman, associate partners; Michael Vissicelli, Harry Barone, Wendy Evans Joseph, Marek Zamdmer, senior associates; Jean-Pierre Mutin, Stephen Ohnemus, Alissa Bucher, Abby Suckle, Deborah Campbell, associates; Jou Min Lin, Anne Lewison, Jeff Stumacher, Steven Valentine, Jeffrey Rosenberg, Leslie Neblett, Ray Lee, Howard Settles, Fritz Sulzer, Gianni Neri, Christine Mahoney, Jennifer Adler, Paul Albrecht, Marcos Alvarez, Giovanna Brancaccio, Quin Chen, John Coburn, Monica Coe, Karen Cox, Steven Derasmo, Paul Drago, Richard Dunham, Richard Gorman, Rossana Gutierrez, David Harmon, Reginald Hough, Kevin Johns, Jennifer Nadler, Michael Ngu, Camillo Rosales, Amiel Savaldi, Emily Sidorsky, Mercedes Stadthagen, Deborah Taylor, Hieu Vuong

**Associate Architect:** Notter Finegold & Alexander—George Notter, partner-in-charge; Manuel Almagro, project manager

**Engineers:** Weiskopf & Pickworth—J. Richard Savignano, associate (structural); Cosentini Associates (mechanical/electrical);

**Consultants:** Rolf Jensen & Associates (life safety); Jules Fisher/Paul Marantz (lighting); Jaffe Acoustics

**General Contractor:** Blake Construction Company







# Two Faces Forward

*Spiegel Corporate  
Headquarters  
Downers Grove, Illinois  
Skidmore, Owings & Merrill,  
Architect*





*The form and colors of Spiegel's new headquarters by SOM are context derived. They build a powerful corporate image while reaching out to acknowledge both a nearby forest and Chicago's architectural heritage.*

The new corporate headquarters building outside Chicago for the catalog-merchandising giant Spiegel is striking, and intended to be so. "Spiegel's management team wanted a building that would clearly demonstrate that Spiegel is on the leading edge, not formal or staid, but dynamic, energetic, and positive," says Skidmore, Owings & Merrill design partner Joseph Gonzalez. SOM delivered what they wanted: a vertically layered 13-story building which delivers that strong corporate image, but goes beyond.

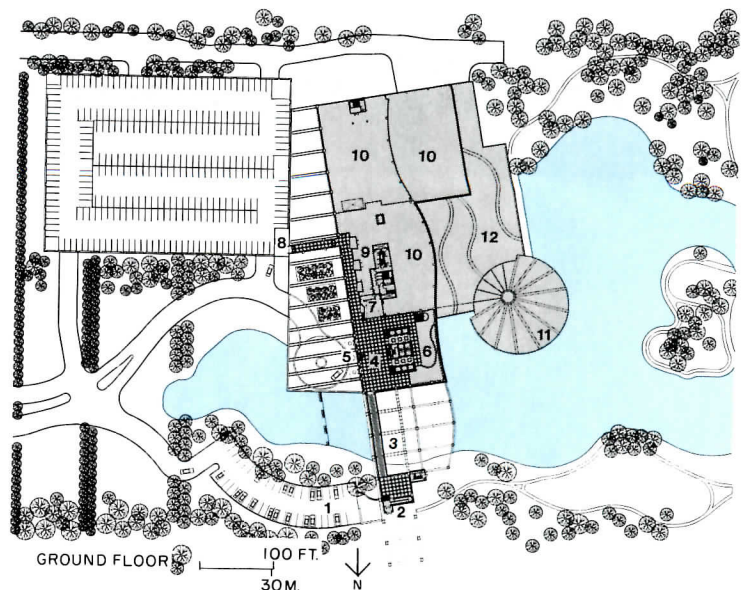
"The building has three layers," continues Gonzalez, "office layers on the east and west, separated by a service layer." All are distinctly different in plan and elevation; all are oriented along a north-south axis. Because the east layer faces two major expressways heading to and from Chicago, "I wanted it to be a tribute to the 'Chicago Frame,' Chicago's strong tradition of structural expression," he says. Gonzalez used sandblasted, white precast concrete framed by polished, gray granite to outline the formal grid, which in turn frames reflective glass. The service layer behind it is expressed as a "bar" of reflective glass. Out of the top of this bar rises a pair of spires, used as installation points for telecommunications antennas.

The west layer of the building is much less formal. Its elevation (opposite page) is oriented toward the Hidden Lakes Forest Preserve, so the structural grid that dominates the east face of the building is replaced here by a light grid of mullions, and alternating horizontal bands of green vision glass and darker green glass ceramic spandrel (actually reminiscent of SOM's Lever House, built in 1952). In plan, this side of the building takes a naturalistic, shallow wave form, similar to the site's own gently rolling topography.

A storm-water retention pond flows from the access road and visitors' parking in front of the building, under the building itself, and around the circular-shaped cafeteria. Even the landscaping echoes the formal and informal nature of the site: short grasses are planted toward the expressway, and maintained in a traditional manner. On the other side, an informal meadow of tall grasses links the building with the forest preserve.

"The floor plate of the building is quite large—46,000 square feet—in response to the client's desire to keep the building as horizontal as possible and limit the number of floors," says Gonzalez. "This also allows sweeping views of the forest preserve." *Charles D. Linn*

1. Visitor parking
2. Visitor entry
3. Bridge
4. East lobby
5. Main entry
6. West lobby garden
7. Reception
8. Employee entry
9. Display cases
10. Sample room
11. Cafeteria roof
12. Sample room roof





*The east facade of the Spiegel building (below) faces two major expressways, and acts as the entry side of the building as well. The formal, structural grid is precast concrete, outlined by polished granite. The reflective glass skin of the service layer of the building, visible in the upper left corner of this facade, also sprouts telecommunications antennas. The landscaping on this side of*

*the building is very formal, in keeping with the rigidly formal character of the facade.*

*The west facade of the building (top, opposite page) faces a forest preserve, and is more informal. Its structural grid is barely expressed behind a curtain wall of gently curving green vision glass and spandrel. A storm-water retention pond extends from the entry*

*Jon Miller, Hedrich-Blessing photos*





*drive in front of the building, beneath the building and into a larger pool that surrounds the circular employee cafeteria (below). In order to extend the atmosphere of the nearby forest onto the grounds, landscaping on the west side of the building is far less formal than on the east side, using native plant materials.*







*Interior Spaces International was Spiegel's original consultant on the building, and was involved from the project's inception. ISI assisted Spiegel in making key decisions, from site selection to choosing SOM as the architect, according to ISI design team member Mark Demsky.*

*The airy, daylit public lobby and interior spaces designed by ISI (left and opposite right) are richly detailed, using black and green terrazzo flooring, anigré wood strips with pear wall panels, chrome, and drawn glass. A video wall (top left), consisting of 36 monitors, displays products and services offered by Spiegel.*

**Credits**

*Spiegel Corporate Headquarters*

*Downers Grove, Illinois*

**Owner:** *Hamilton Partners*

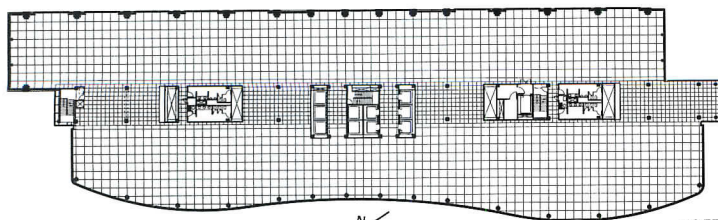
**Architect:** *Skidmore, Owings & Merrill—Joseph Gonzalez, partner-in-charge; Alan D. Hinklin, project director; Peter Brinkerhoff, senior designer; William Larson, project manager; Bernie Gandras, technical coordinator*

**Interior Designer:** *Interior Space International—Gary Lee, principal-in-charge; Scott Thomas, project manager; Tim Salisbury, project technical*

**Engineers:** *Skidmore, Owings & Merrill—Srinivasa Iyengar/William Baker (structural); Raymond Clark (mechanical)*

**Consultant:** *Horton Lees (lighting)*

**General Contractor:** *Pepper Construction*



TYPICAL FLOOR



50 FT.  
+  
15 M.







# Science + History

*The architects instilled this new teaching laboratory with a unique sense of historical continuity.*





*Environmental Sciences Centre  
Trent University  
Peterborough, Ontario  
Richard Henriquez Architect with  
Nemeth Associates in joint venture*





**A**rchitect Richard Henriquez views his firm's work as part of an historic continuum with meaning in both natural and man-made phenomena that have occurred in the past and will recur in the future. For this reason, this design for an environmental-sciences teaching and research building at the 3,600-student Trent University in Ontario incorporates many unexpected elements and seems, at first glance, to be unusually complex.

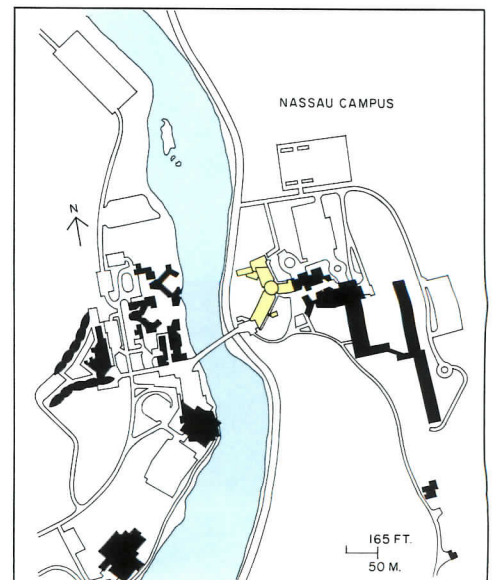
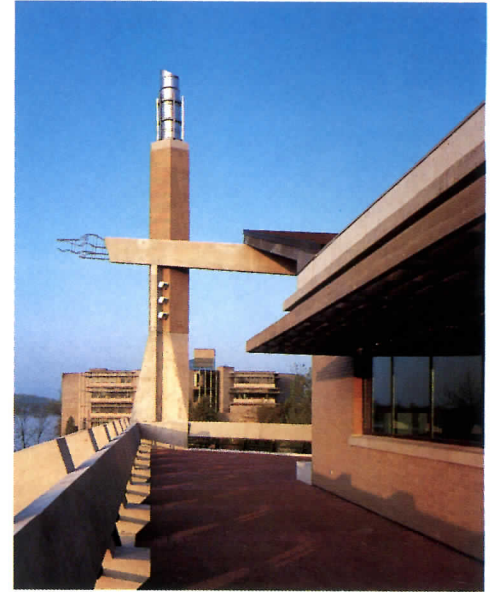
A second look reveals that, on a functional basis, the planning and construction of this \$18-million, 80,000-square-foot, concrete-frame and brick-faced, concrete-block structure is far more straightforward than its elements would indicate. Most spaces are logically arranged in two basically rectangular wings. At ground level (plans, opposite), offices against exterior walls surround interior research labs, where light, ventilation, and other working conditions can be best controlled. Multiple fume-hood types required for different laboratories result in the many stacks or "spires" that sprout from the roof. Easily maintainable finishes include paint on concrete-block walls and liquid-applied epoxy on concrete floors. Corridor ceilings between offices and labs carry ducts and other mechanical equipment, exposed overhead for ease of servicing. Mechanical rooms and storage are also located at this level.

On the concourse level, rooms are larger and have generous windows, with most spaces looking outside. They include classrooms for the various disciplines of biology, physiology, geography, and environmental-research studies, along with support spaces and offices for the dean and respective chairpersons of the various departments. These offices are grouped around the rotunda and along the corridor leading east from it toward an older science complex (top of floor plans).

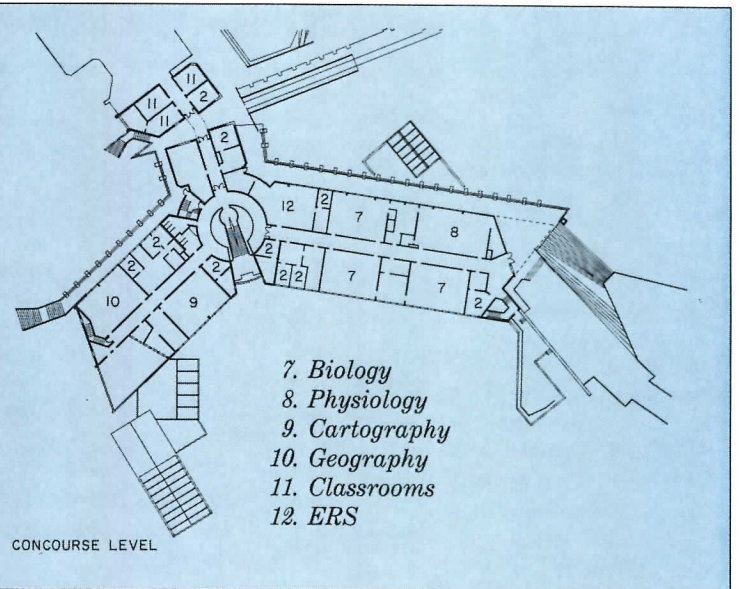
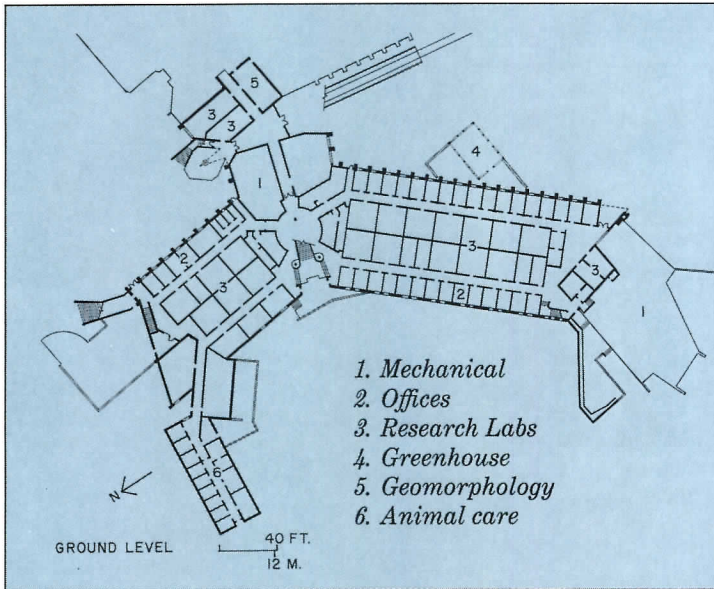
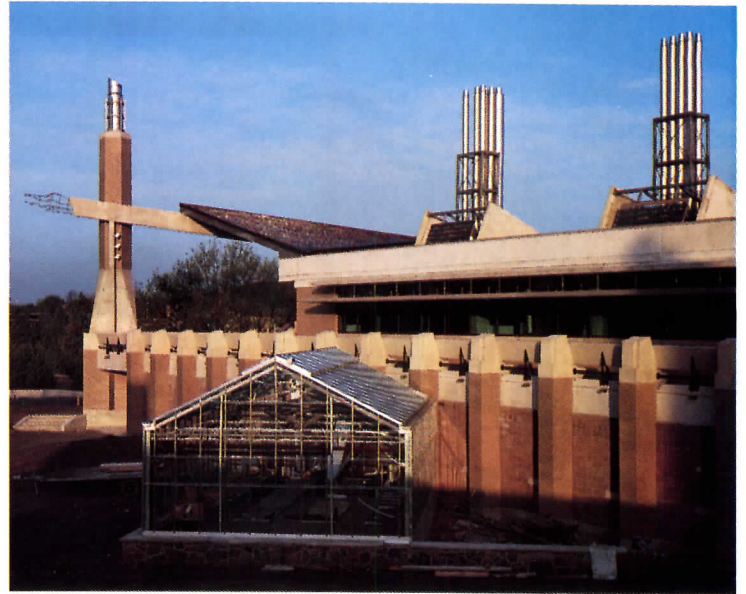
In a larger context, the new building not only extends the science complex, but also completes an elevated pedestrian passage between the older buildings and a bridge (foreground of photo, previous page; right in plans) across the Otonabee River to the rest of Trent University's "communities." These are grouped according to a 1963 master plan by architect Ron Thom, who went on to design many of the campus buildings in a vocabulary of massive-appearing masonry walls separated by deep-set recesses. The master plan, which mixed housing, research, and academic facilities together, seemed revolutionary after World War II when the race was on to build innovative new campuses appropriate for forward-looking times.

Henriquez's interest in historic context is so strong that, if lacking, he reportedly invents it. This was unnecessary at Trent. He had rich, raw material including Thom's master plan and early buildings. While Henriquez and joint-venture architects Nemeth Associates "reinterpreted" both that plan and Thom's design language, they have used specific literal elements from Thom's sketches such as the sloped walls at the end of the bridge (photo opposite, left). These contain bermed earth leading to a sod roof above the concourse level. It replaces the original field on the site—once inhabited by groundhogs, who may one day climb the berms to occupy the new "field." Henriquez says this design expresses, "humanity's need to abdicate to the domination of nature." A salvaged section of track from a railroad line that ran through the site (top of floor plan, right) expresses its original course in a wedge-shaped split between the new building and existing ones. It is in the rotunda (bottom photo, right) that Henriquez's ideas of historic continuity are most strongly asserted. It is roofed above by a "ceremonial sphere" representing his conception of finite global resources. *Charles K. Hoyt*

© Steven Evans





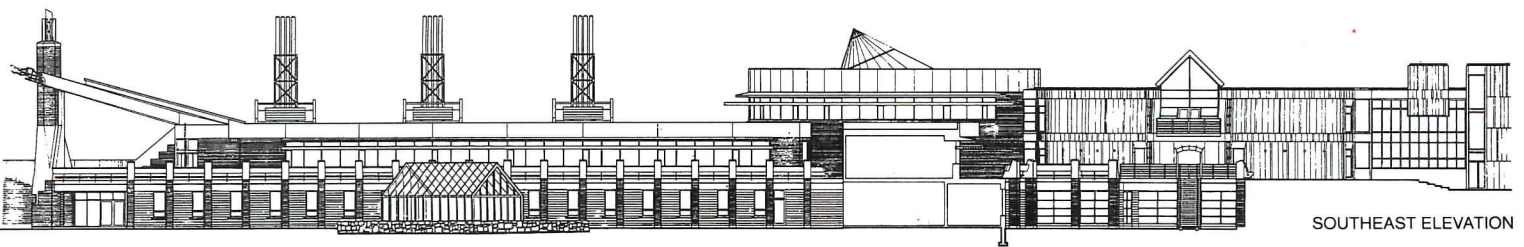


"Green" elements include wood sunshades and a sod roof for added thermal protection. A pointed skylight tops the rotunda (top left) and is tipped to align with the earth's axis. Exposed reinforcing rods mimic a dragon's head (top right) on a beam forming a campus gateway.

**Credits**  
*Environmental Sciences Centre, Trent University, Peterborough, Ontario*  
**Owner:** Trent University  
**Architects:** Richard Henriquez Architect/Laszlo Nemeth Associates in joint venture—Richard Henriquez, Laszlo Nemeth, Ivo Taller, Madgi

Tawadros, Glen Gallagher, Guillaume Asselin, Andrew Baczynski, Cameron Halkier, Gregory Henriquez, Katalin Horvath, Jim Nicholls, Bill Pechet, Helen Quan, Doug Ramsay, Frank Stebner, Tony Griffin, Stuart Roy, Craig Higham, David Harding, Michael Kothke, project team

**Engineers:** M. S. Yolles & Partners (structural); The Mitchell Partnership (mechanical); Mulvey & Banani International (electrical)  
**Consultant:** Cornelia Hahn Oberlander (landscape)  
**Contractor:** Ellis-Don





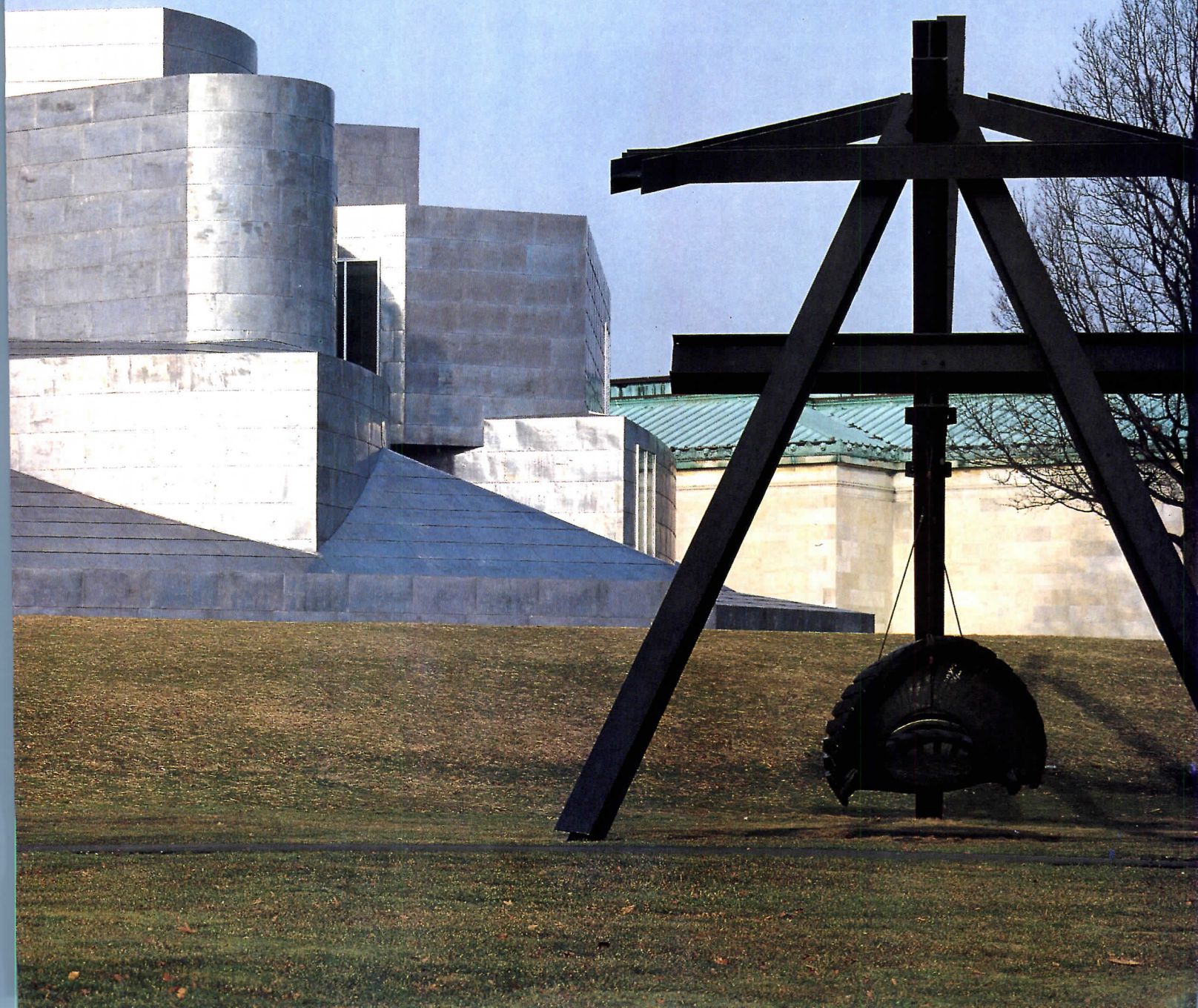
# A Separate Piece





*An art department's first real home is a miniature cityscape of lead-coated copper forms in a suburban historic district.*

*Center for the Visual Arts  
University of Toledo  
Toledo, Ohio  
Frank O. Gehry & Associates,  
Design Architect  
The Collaborative,  
Executive Architect*



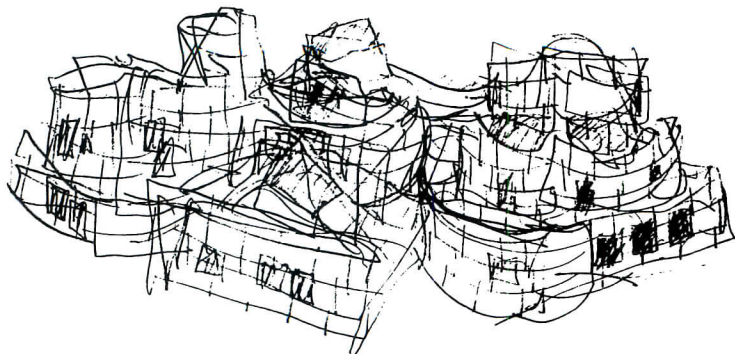


**A**fter more than 70 years, the University of Toledo's Department of Art finally has a home in Frank Gehry's new Center for the Visual Arts. The Toledo Museum of Art, a private institution, actually founded the department in 1921 while UT was concentrating its resources elsewhere. UT students were given credit for classes and studio spaces were housed in the basement of the museum, a Neo-classical structure designed by Edward B. Green in phases between 1912 and 1933. The art department was bursting at the seams when UT took over its full funding in 1987. While the "educational partnership" between UT and the Museum continued, both institutions decided that, at last, the art department deserved its own building and that it should not emulate its neighbor. As museum director David Steadman says of the partnership's plan for a new structure "it was *not* going to be Museum junior."

A joint search committee hired consultant Bill Lacy to help select an architect. After interviews with several candidates, Gehry was awarded the commission. "He clearly understood that what students need in a teaching facility is inspiration," recalls Department of Art Chairperson, Liz Cole. The building's program, developed by space planners Maurice W. Perreault & Associates, guided Gehry in defining the proper mix of spaces within the \$10-million budget.

The "spring," as Gehry calls his design, seeks to embody the architect's, and the students', creative energy in built form. For easy access between studios and galleries, Gehry rejected a site across the street and attached his 51,000-square-foot building to the museum. "Any three paintings in this collection could change a student's career," he explains. To gain approval in the Old West End, a historic district, the design was slightly modified so that only one story of Gehry's building touches the museum. He stacked spaces requiring daylight—offices, studios, and the library—on top of an underground photography lab and mechanical room, creating a dense cityscape of shapes. Gehry wanted his structure "to appear as compressed as possible," unlike its expansive neighbor. "You could draw this building forever," says Paul Hollenbeck, of The Collaborative, executive architect of the project, about the complex forms—a result of Gehry's model-driven design process.

Gehry shaped the flat east lawn into a grassy berm. From the north, the building appears to sit on a plinth, similar to the way the museum sits atop its base of stairs. On the east side, the berm and its retaining wall shield the library from street noise. The entry facade is a curtain wall, a nod to Toledo's reputation as the glass capital of the U. S. (pages 82-83). Green-tinted panes echo the patinaed copper of the museum's roof. The building's most arresting feature is 30,000-square-feet of lead-coated copper cladding, which glistens even in Toledo's often overcast sky. Says Cole of the overall effect: "The building is a great advertisement for art." *Karen D. Stein*



*As cladding, Frank Gehry chose lead-coated copper, a material commonly used for roof flashing, to contrast with the white marble of the Toledo Museum of Art (above). On vertical surfaces, metal cleats secure 55- by 29-inch sheets to the plywood substructure; the panels clip together to form a flexible sheath that expands and contracts with temperature changes. On sloped surfaces, 55- by 23 1/4-inch sheets are soldered together to keep out water. The skin has the iridescence of fish scales (opposite). Over time, the copper beneath will bleed through the lead finish in marble-like veins; the mint-green cast will echo the museum's patinaed copper roof. Near the entrance, a glass fence, an excerpt of the curtain wall, surrounds a gravel courtyard used to display student sculpture (following pages).*



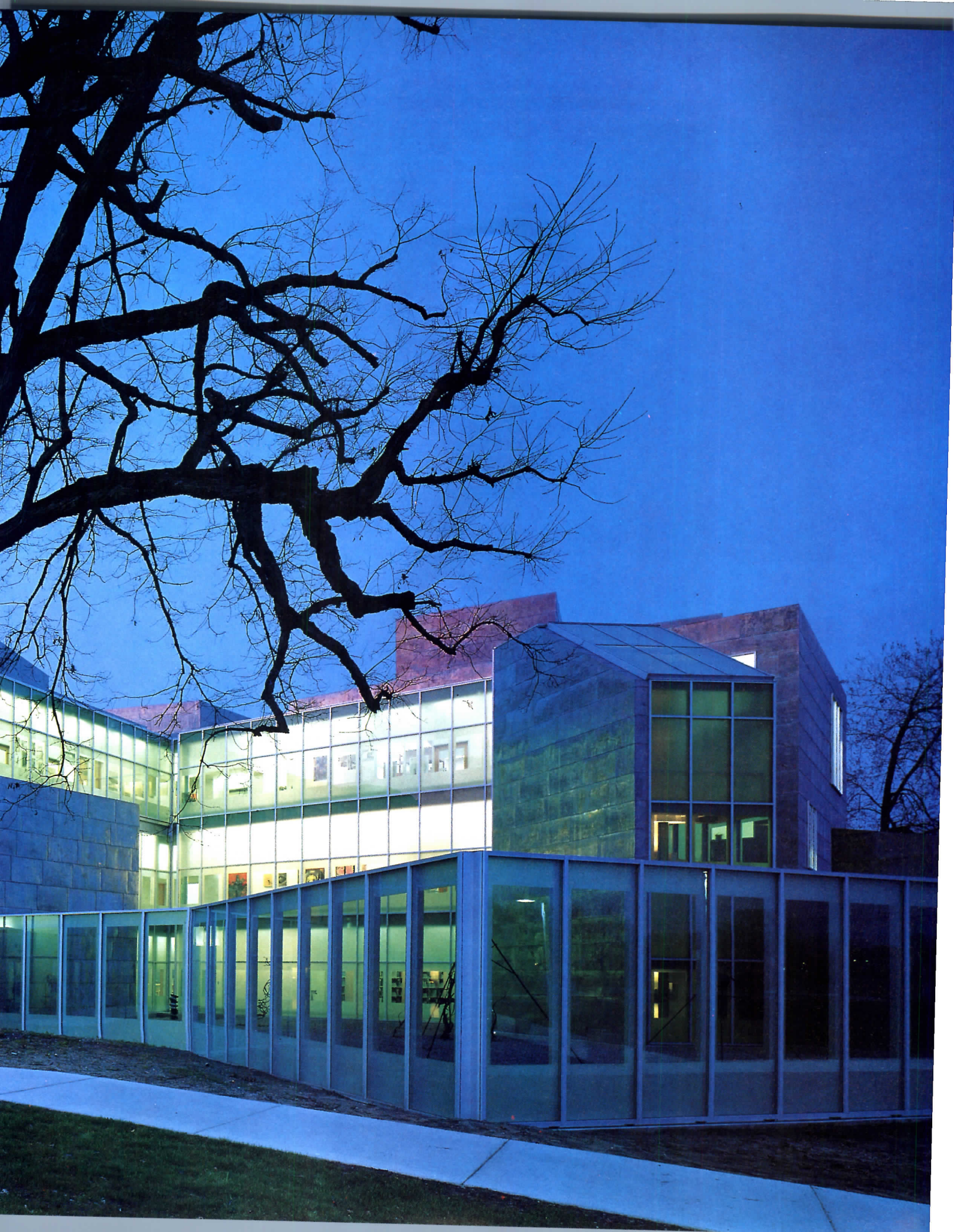






CENTER FOR THE VISUAL ARTS  
THE UNIVERSITY OF TOLDO









Courtyard windows consist of two layers of green-tinted glass. The outer pane is partially sandblasted in the shape of a frame (left). Daylight fills stair towers and corridors where student work is on display (opposite). Third-floor studios are skylit (section below). Fluorescent fixtures hung from the exposed-steel roof decking provide additional lighting (bottom).

**Credits**

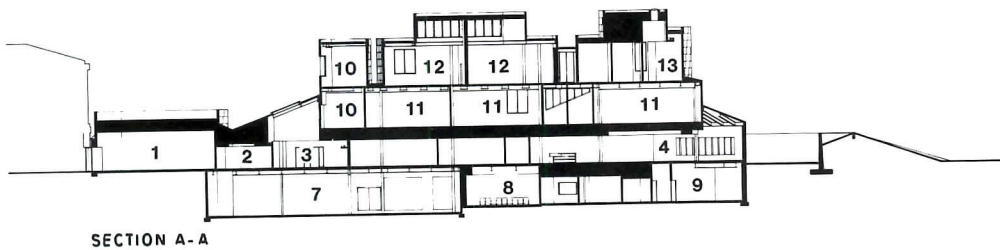
*Center for the Visual Arts  
University of Toledo  
Toledo, Ohio*

**Design Architects:** *Frank O. Gehry & Associates—Frank O. Gehry, principal-in-charge; James Glymph, project principal; Peter Locke, Randall Stout, project architects; C. Gregory Walsh, Andrew Alper, Michael Maltzan, project designers; David Denton, Jon Drezner, Michael Resnic, Hiroshi Tokumaru, Tami Wedekind, project team*

**Executive Architect:** *The Collaborative—Paul R. Hollenbeck, principal-in-charge; Jim Williams, Rich Livecchi, Ray Defrain, Cynthia Schlagheck, production team; Richard Meyers, Philip Enderle, landscape architects*

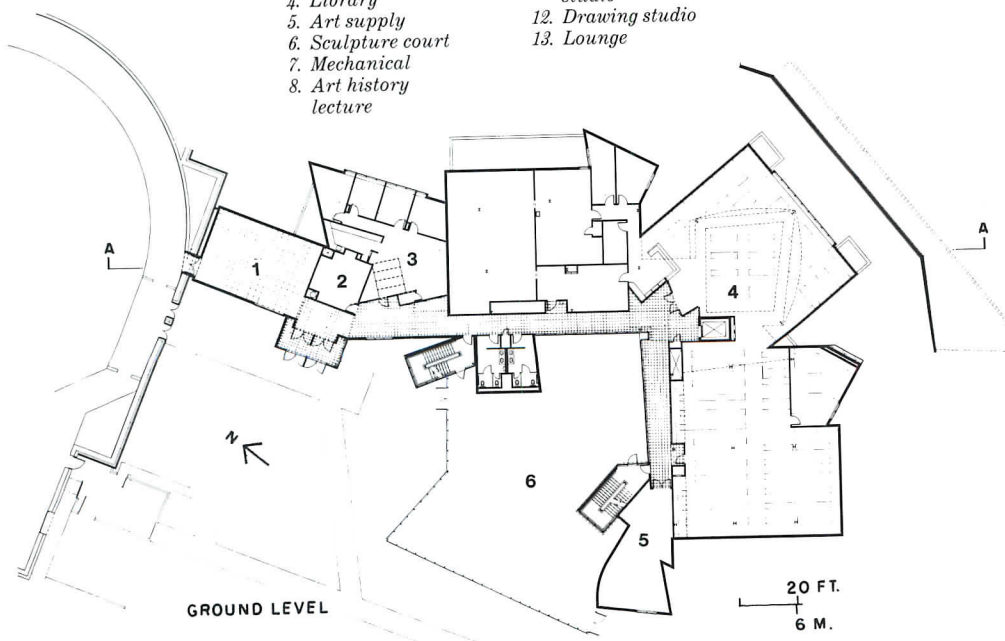
**Engineers:** *Leonhardt, Kreps & Lefevre (structural); Dansard Grohne Long Ltd. (civil); Rightmyer Johnson & Associates (mechanical); Nelson Gibson & Associates (electrical)*

**Construction Manager:** *Ruddolph/Libbe, Inc.*



SECTION A-A

- |                        |                              |
|------------------------|------------------------------|
| 1. Student gallery     | 9. Art education             |
| 2. Conference room     | 10. Office                   |
| 3. Administration      | 11. Design/foundation studio |
| 4. Library             | 12. Drawing studio           |
| 5. Art supply          | 13. Lounge                   |
| 6. Sculpture court     |                              |
| 7. Mechanical          |                              |
| 8. Art history lecture |                              |









# Modernist Courtyard





**B**uildings that pack a lot onto a small site yet still manage to feel open and spacious are rare. But that's certainly the case with the low-budget French Institute and Cultural Center in Mexico City, designed by Enrique Norten. The school and event space follows a traditional Spanish-inspired courtyard plan that is gridded off by a Modernist system of concrete and steel posts, and animated by staircase and shading devices.

The French Institute, located in a middle-class neighborhood, is split into two buildings separated by a courtyard covered with polycarbonate plastic panels. The street-side building contains public amenities, an auditorium that seats 100 people, and a small caretaker's apartment; the rear building is a stack of 12 classrooms on top of a small library and office area. Both structures are four stories tall, and together fill their 6,000-square-foot lot almost completely.

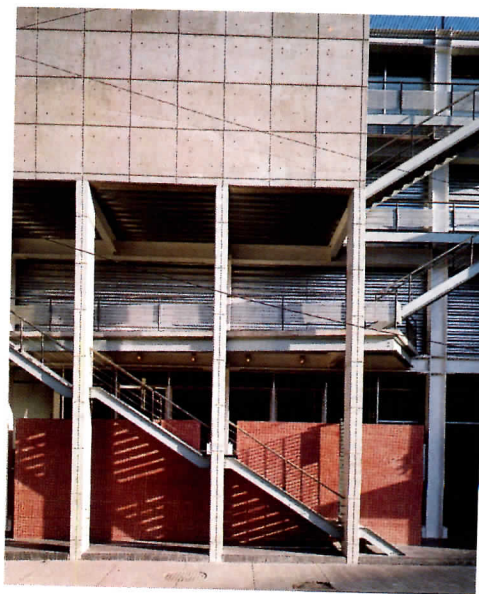
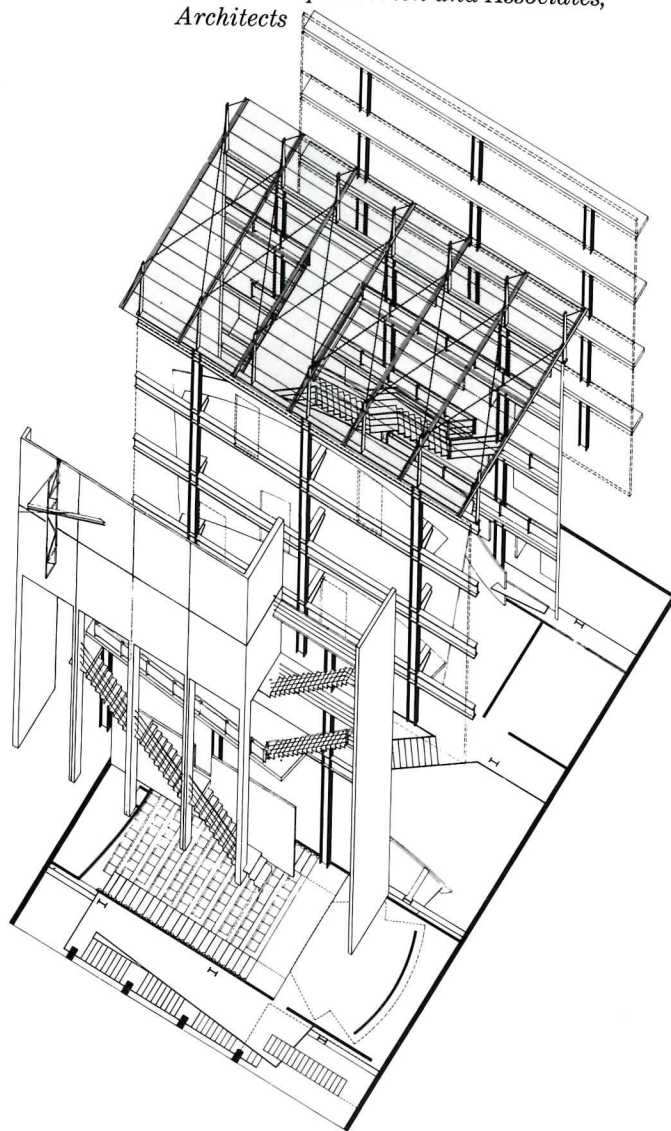
The logic of the Center, says Norten, is derived from the basics: program and site. "The front facade condenses the dense, low buildings all around it, while the diagonal staircases inside pick up on the street geometries around the site. The building is split in two because there are two uses: there is the public part of the program at the front, then the courtyard, and then the school proper." The split lets the second-floor lecture hall and ground-floor café operate even when the school is not in session, while isolating the classrooms in the quieter, rear portion of the site.

What fleshes out this simple concept is a response to the local geology and climate. The two side party walls are massive poured-in-place shear walls that work with columns spaced 20 feet apart to provide seismic stability. The west, or street facade is closed at the top to shade the building from the sun, and the courtyard acts as passive solar storage, collecting heat throughout the day and then distributing it slowly throughout the open structure. Norten stretched a tensile-fabric shield over the east wall of the front building to protect it against the morning sun. As a result, the building has no mechanical heating or cooling devices other than in the lecture hall.

The architecture of the institute creates an expansive space within the urban compaction of Mexico City. "I started off with a grand order meant to ennoble the simple programmatic decisions," says Norten, "and layered on more spontaneous responses to the site." These include the shading "sail" and the internal staircases, which Norten says respond to the natural circulation of people through the building. Moving through all of these structural layers is a journey from the density of Mexico City into what Norten calls a "space experiment." It all unfolds in a thoroughly sensual yet logical way.  
*Aaron Betsky*

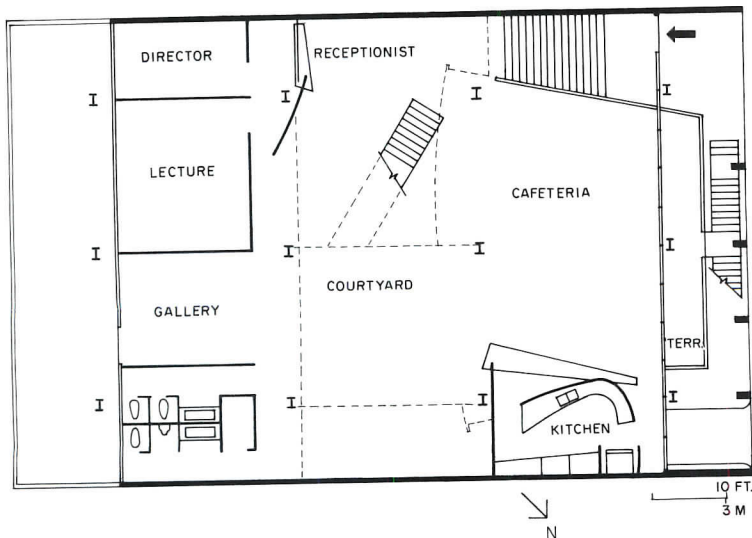
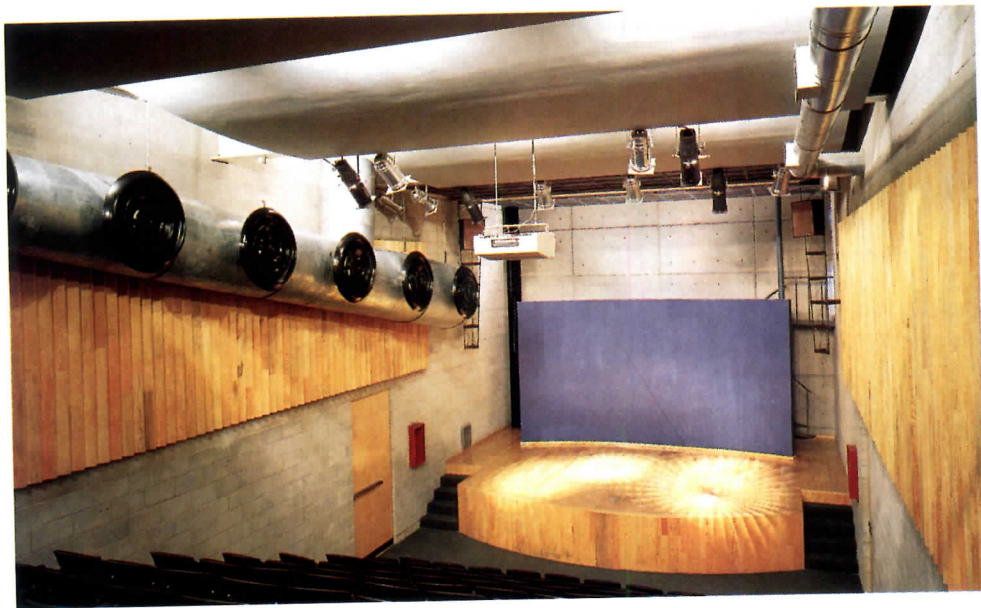
*The front of the French Institute lifts a blank facade up to the sun, but invites entry (and air) through a porous street-level space of porches, ramps, and stairs. The building extends the height, materials, and density of its neighbors, but separates these elements into a clear order, which is revealed in the courtyard.*

*French Institute and Cultural Center  
Mexico City, Mexico  
T.E.N. Enrique Norten and Associates,  
Architects*



*Luis Gordoa photos*





Norten's first concern was meeting Mexico's rigorous new seismic code, instituted after the 1985 earthquake, followed by a concern for cost. This led him to use a simple, rigid structure to define the courtyard (this page, top left and right). The building is more like an open cage than an enclosed space. Norton consciously played secondary design elements against this order. The fabric sunshade (opposite) stretches over the railings and openings mitigating strong sunlight and creating playful shadows. It provided a visual but not physical separation between the two halves of the building. The stairs continue the simple material language of metal and concrete, but add angles and wood to respond to human movement and touch.

The auditorium (left center) is spare, with exposed ducts, lighting, and masonry, and is completely isolated from the rest of the building.

**Credits**

*Centro Cultural Lindavista  
Mexico City, Mexico*

**Owner:** Alianza Francesca de Mexico A.C.

**Architect:** T.E.N.—Taller de Enrique Norton and Associates—Enrique Norton, Bernardo Gomez-Pimienta, principals

**Engineers:** Ing. Raul Izquierdo (structural); ESISA, Ing. Jorge Polanco (electrical); Instalaciones Cumbre, Ing. Javier Aguerrebere (mechanical)

**Construction Coordination:** Aditeco, Ing. Enrique Ross  
**General Contractor:** Robertson Mexicana







# Using Housing to Build Communities

**W**hile the supply of certain building types—most notably office buildings—far outstrips current demand, the need for affordable housing is beyond question. The U. S. Department of Housing and Urban Development today assists 4.5 million families, providing them with either public housing or some kind of housing subsidy. Unfortunately, HUD estimates show that 13 million additional families qualify for government assistance but aren't getting it due to budget limitations.

In the past, the federal government was a major player in the construction of affordable housing. Today, it has largely relinquished that role, preferring to act as a guarantor of low-interest mortgages and a source of housing subsidies. Picking up the slack have been some city and state governments, as well as a host of diverse nonprofit and private developers. In addition, a handful of nationwide "umbrella" organizations has emerged to provide local nonprofits with help in financing, building, and managing housing projects. This shift from the federal government to local groups, along with changing approaches to housing design, have caused important changes in the size, scale, and type of subsidized housing being built today. Instead of putting up new high-rise apartment blocks split off from their urban settings by ill-conceived parks, local organizations have spent most of their resources renovating low- and mid-rise buildings that reinforce the existing urban fabric.

Making almost all of this work possible has been the low-income-housing tax credit, which arrived in 1986 as part of the Tax Reform Act and expired at the end of 1992. In those six years, the tax credit helped finance more than 600,000 dwelling units throughout the country. The Clinton Administration has called for permanently reauthorizing the program and most experts expect this to happen.

Market-rate multifamily housing, though, remains a weak spot in the construction market. Since tax-law changes in 1986 eliminated much of this building type's appeal to investors, multifamily-housing starts have tumbled from a peak of 856,000 units in 1985 to just 159,000 units in 1992. While McGraw-Hill's F. W. Dodge Division says that multifamily construction will finally pick up in 1993 after seven years of decreasing activity, it estimates that only 175,000 units will be started this year. F. W. Dodge sees moderate increases each year until 1997 when starts should finally push beyond the 300,000 mark.

"One of our big problems," says Ron Shiffman, director of the Pratt Center for Community and Environmental Development and a member of New York City's Planning Commission, "is that over the last decade the whole mechanism for producing housing on the national level has been decimated." While Shiffman applauds the emergence

of local nonprofit housing organizations, he states, "They need more funding and other kinds of support." Shiffman also notes that "Not enough proper planning is being done. We're not examining where housing is being placed, how it fits in with the community or with the local transit system."

Too often housing has been seen as a problem unto itself and the typical response has been to build as much as resources would allow. Many experts today, though, recommend looking at housing as part of a larger picture. "We need to build communities," says Shiffman, "places where housing is integrated with retail, daycare, health care, and transit." The National Community Development Initiative (NCDI), a consortium of seven private foundations and the Prudential Insurance Company, was established in 1991 to help fund local community-development corporations (CDCs) and its program secretary, James Pickman, advocates a similar approach. Working with the Local Initiatives Support Corporation (LISC) and the Enterprise Foundation to administer the program, NCDI has helped finance nearly 4,000 units of housing nationwide—of which 800 are completed and the rest either under construction or in the pipeline. But Pickman states, "We're not a housing program. Our mission is to support community development."

A different kind of nonprofit organization that has chartered a new course is Habitat for Humanity, which defines itself as a home ownership program. Begun in 1976, Habitat for Humanity has built more than 20,000 houses worldwide and now ranks as the 22nd largest home builder in the United States, according to *Builder* magazine. Using private donations, volunteer labor, sweat equity, and internally generated revenues, the group builds houses for low-income people—mostly families—and then transfers ownership to them. By requiring recipients of aid to participate in the building of their homes, the organization helps give impoverished people a sense of personal investment in their housing, says David Snell, the group's director of education ministries.

Although Habitat doesn't use prototype plans, most of its houses share many characteristics. For example, almost all are single-family houses of between 900 and 1,100 square feet. Habitat has also built townhouses in Orange County, California, and renovated some apartment buildings in cities such as New York. But Snell admits that the group has been more successful in rural areas than urban ones. "There's a different set of problems in urban areas and we're still figuring out the best ways of addressing them." Habitat is currently working hard in the Sandtown area of Baltimore and will start a project on a Sioux reservation in South Dakota, where "the situation is very similar to that in the inner city," says Snell.



*Having learned from the mistakes of the past, developers of affordable housing are designing their projects to reinforce the existing urban fabric and create a sense of community.*

Learning from the mistakes of the past, architects are balancing community with privacy, and integration with security. While a housing project should fit in with its neighborhood and promote interaction between residents, it should also have its own identity and establish itself as a safe haven. "One of the goals of good housing is creating a sense of community," says Amie Gross, a New York City architect specializing in housing and economic development. "But residents should be able to participate or not, as they please."

Grouping common facilities such as laundry, mailboxes, and playgrounds together allows parents to socialize while doing chores and supervising children. Open spaces where kids can play are essential, and not just amenities, says Gross. In the apartments themselves, a balance between family and privacy must also be established. Living and dining rooms can work with kitchens to encourage family activities, but bedrooms for adults and children should be separated by more than just a common wall to maintain privacy. Although figures vary depending on the constraints of each project, subsidized apartments have gotten larger in the past few decades. According to Aaron Lewit, director of construction for the New York office of the Enterprise Foundation, studio apartments run between 400 and 500 square feet, while one-bedroom units are about 700 square feet and two-bedroom units are about 900 square feet.

In the last few years, some groups have been so successful in renovating the existing housing stock that in places such as New York and Seattle there are few abandoned apartment buildings left in many areas. As a result, a greater effort is underway to fit new construction into existing neighborhoods. In Seattle, GGLO Architecture and Interior Design rehabilitated 14 apartments in an old building just outside the central business district and then added 107 units in two new wings next door. The final project, called the Graham-Terry Avenue Apartments, shows how new and old can work together in helping revive an area that had hit hard times.

The Enterprise Foundation, which developer James Rouse started 10 years ago, is representative of the changes that have swept over the housing field. Although a national organization, Enterprise works through local groups—providing financing and technical expertise, but requiring community groups to program, build, and manage the projects. In the six years the New York office has been around, it has helped raise \$200 million in low-income tax credits for the renovation or construction of 3,300 apartments in 200 buildings. As a major element in the city's effort to rehabilitate abandoned housing property, Enterprise has been "successful in reviving whole neighborhoods," says Lewit. Quoting James Rouse, Lewit says, "Housing is the platform people use to build their lives." *Clifford A. Pearson*

## Answers from Andrew Cuomo

*Andrew Cuomo is the designated assistant secretary for community planning and development at the U. S. Department of Housing and Urban Development. Cuomo had been president of H. E. L. P., a nonprofit developer of housing in New York.*

**RECORD:** What are some of the key policies under study by the Clinton Administration and H. U. D. Secretary Henry Cisneros?

**Cuomo:** Restore economic growth of the nation's cities, thereby contributing to the restoration of national economic growth. The Administration has submitted draft legislation on empowerment zones to Congress to help achieve this goal. Tie in human development with economic development. H. U. D. hopes to help residents of public and assisted housing, the homeless, and other poor persons climb the ladder of opportunity to take advantage of jobs created. Combat racism and anti-social behavior, and reduce the concentration of the poor and minorities in low-income ghettos. Promote good civic design and amenities to create attractive sustainable communities. Encourage community-based planning and citizen participation in a "bottom up" rather than "top down" strategy.

**RECORD:** How will you promote housing that fits its context?

**Cuomo:** I believe that community-based planning will go a long way toward ensuring that housing fits in with existing neighborhoods. On the other hand, citizen participation should not be used to segregate the poor in low-income areas and exclude them from attractive neighborhoods near good schools and jobs.

**RECORD:** How can H. U. D. create housing projects that work as communities and not just warehouses for the poor?

**Cuomo:** Large public housing projects that concentrate large numbers of the poor in one location are no longer being built. Family Self-Sufficiency and other programs encourage residents in public and assisted housing to enroll in programs of improvement toward self-sufficiency. To reduce crime and fear in existing housing projects, a new anti-crime bill is being proposed to Congress. We advocate a continuum of care for the homeless, where homeless persons move from shelters, to transitional housing, to permanent housing, all with adequate social services.

**RECORD:** Will you enact changes at H. U. D. to provide more on-site social services at housing projects?

**Cuomo:** Supportive Housing, Shelter Plus Care, and other homeless programs combine both facilities and services; however, for the most part, public housing services have to be obtained from other agencies. A large increase in funding for the Supportive Housing program has been requested for FY 1994. Under this program, grants may include a portion of annual operating costs, child care, employment assistance programs, and other supportive services. ■



# Rue de Meaux Housing

Paris, France

Renzo Piano Building Workshop

Michel Denance photos

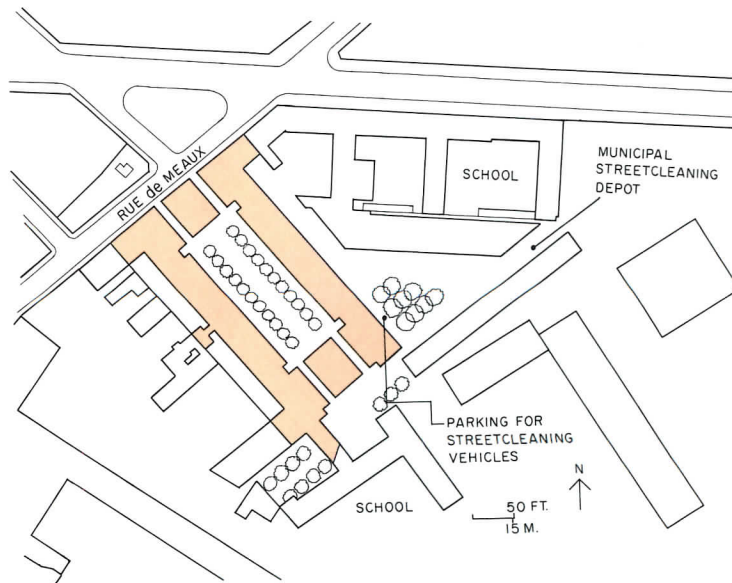


In his 1925 Plan Voisin for Paris, Le Corbusier imagined tearing down much of the Right Bank and building apartment-blocks in a park. More than six decades later, the Renzo Piano Building Workshop turned this idea inside out, putting the park within the buildings. And rather than wiping the urban slate clean, the Piano firm carefully inserted a 220-unit housing complex in a

working-class neighborhood by reinforcing the existing street-wall and accepting the scale of adjacent buildings. In some ways, the Rue de Meaux housing in the city's 19th arrondissement looks back to 19th-century Parisian apartment buildings—mid-rise structures that help define the city's streets while wrapping around a central court. The court at the Rue de



*With shops on the ground floor and a building line that maintains the street-wall of the Rue de Meaux, the housing project attaches itself to the existing urban fabric of Paris's 19th arrondissement (above). Short alleys between the new buildings offer glimpses into the central garden (above right). Because the project has service roads on three sides of the site and a narrow floor plate (plan, right), it was unnecessary to provide access for fire trucks to the garden.*

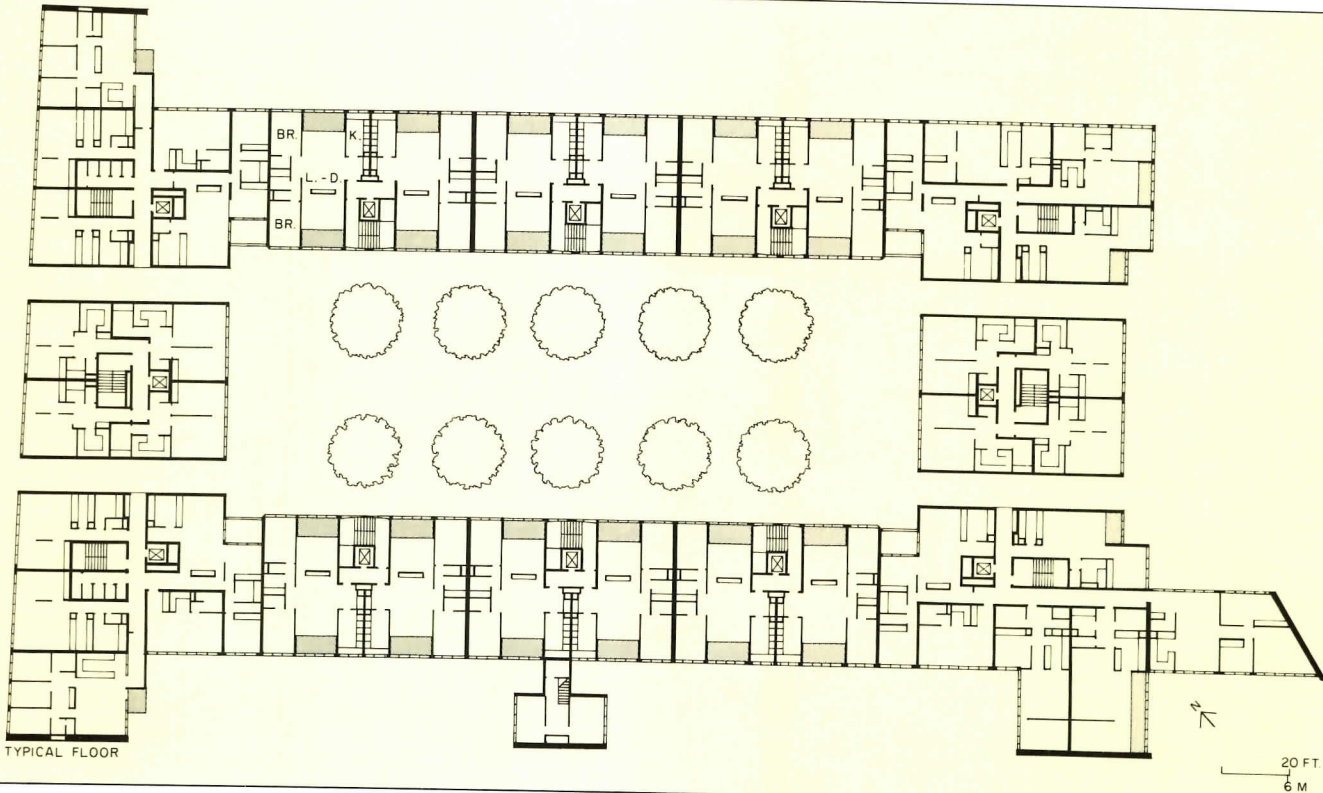




Meaux, however, is a serene garden filled with silver birch trees, instead of the paved plazas found within most 19th-century apartment buildings. Built by the City of Paris and then sold to an insurance company, the project provides rent-controlled apartments for middle-income residents. The site was originally used as a city depot for street-cleaning vehicles and the new

housing development, in fact, incorporates a smaller such depot at its eastern edge. According to the architects, three primary ideas drove the project's design: creating a central garden in a densely populated part of the city, investing the project with a diversity of apartment types, and designing three different facades to reflect existing edge conditions. With one of its short

sides facing the Rue de Meaux, the project's impact on the neighborhood is limited; the other three sides of the complex look onto serviceways rather than true public streets. Two alleys divide the Rue de Meaux facade into three sections, further reducing its scale and offering glimpses into the central courtyard. This frontage also serves as an introduction to



*By lining the central garden with buildings just one unit deep, the architects provided most apartments with twin orientations—to the garden and to the surrounding neighborhood (floor plan, above). The project includes nearly 40 different apartment layouts, ranging from studios with lofts to duplexes on upper floors. Measuring 216 feet by 82 feet, the central garden serves as a peaceful outdoor room for the entire project (left).*



the project's distinctive facade system, which features varying combinations of glazing, fixed louvers, concrete panels, and orange terra-cotta tile attached to glass-fiber-reinforced concrete panels. The composition of facade elements is determined by the layout of the apartments inside and the solar orientation, and provides a rich variety of visual effects set within a strict

concrete grid. Along perimeter serviceways, the facade elements are kept flush with the building's envelope. On other sides, the elements project nearly a foot (30 centimeters) beyond the primary structure. The purpose of these variations was to create calmer elevations along the tight serviceway edges and more active compositions on the more open sides. Although the

crisp geometry of the project's street-side and the two alleys' views into the center of the block alert pedestrians that this is no ordinary apartment complex, the central garden still comes as a pleasant surprise. Measuring 216 feet by 82 feet (66 meters by 25 meters), the garden allows surrounding apartments plenty of daylight. The architects originally planned

two rows of chestnut trees running the length of the garden, but eventually decided the space needed a less rigidly arranged landscaping plan. The silver birches that now grace the court provide visual privacy between apartments without ever becoming a solid canopy of leaves. The trees are planted directly in the ground because there is no parking or other structure below the





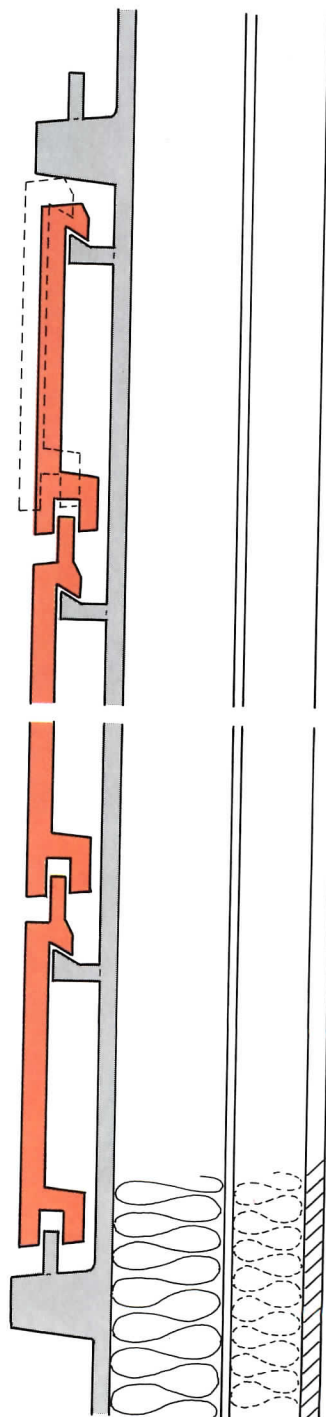
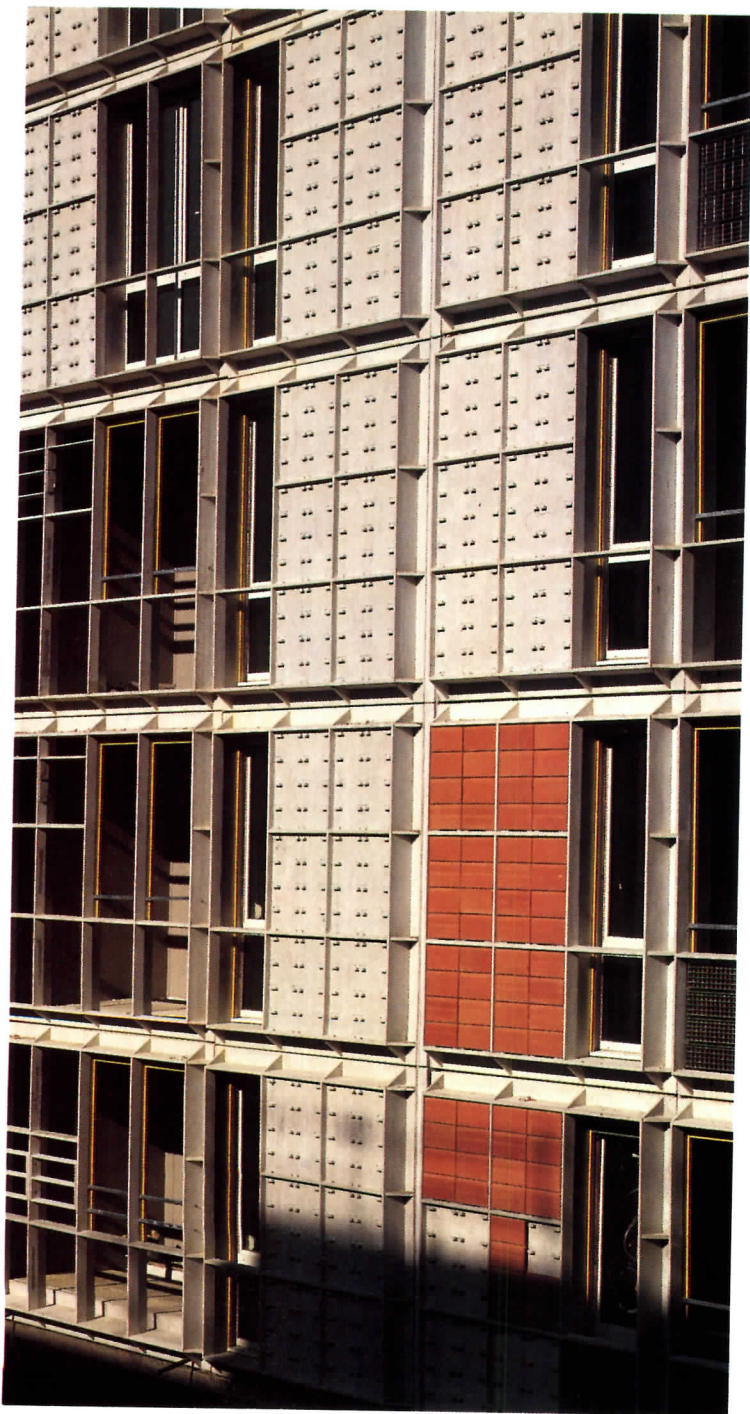
courtyard. Two levels of parking, however, occupy space below the buildings themselves. The project offers a variety of dwelling-unit layouts, ranging from studios with mezzanines on the ground floor to duplex apartments with roof terraces on the top floors. Most apartments occupy the full width of the building, providing balconies and views to both the garden and the

outside neighborhood. Studios on the first two floors have double-glazing running their full height, so more sunlight is brought inside. To maintain privacy, though, one layer of most of the glass is sandblasted to make it translucent. C. A. P.

**Credits**

*Rue de Meaux Housing  
Paris, France*

**Architect:** *Renzo Piano Building Workshop—Renzo Piano, principal; Bernard Plattner, associate architect; Florence Canal, Catherine Clarisse, Tom Hartman, Ulrike Hautch, Robert Jan Van Santen, Johanna Lohse, Jean François Schmit, project team*



*Although parking is under the apartment buildings, the garden has no structure below it; as a result, trees could be planted in deep soil, increasing their chances for long-term survival. One of the project's most important features is its facade system of terra-cotta tiles attached to glass-reinforced concrete panels (photo and section, left). The combination of terra-cotta, exposed concrete panels, aluminum louvers, and glazing helps animate the buildings' facades.*



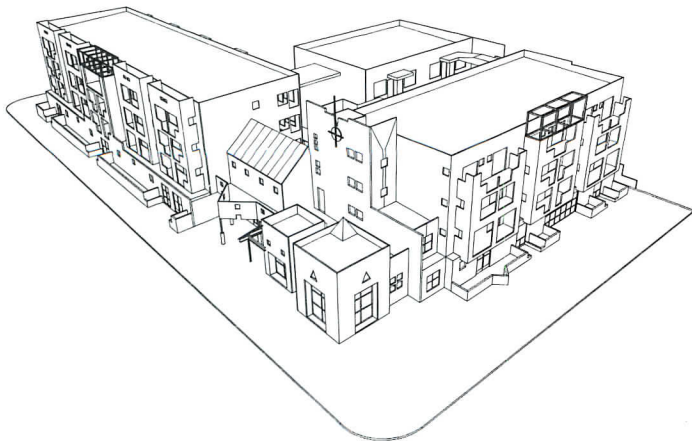
# Manhattan Place

Los Angeles, California  
John V. Mutlow, Architect

Although the Koreatown neighborhood of Los Angeles is a far cry from Paris's 19th arrondissement, Manhattan Place shares two important similarities to Renzo Piano's Rue de Meaux project (preceding pages): a reliance on courtyards as an organizing element and single-loaded apartments with through-plans. As in the Paris project, these two elements bring day-

light into the apartments and help connect indoors with outdoors. Built by a small private developer for elderly residents who are almost all Korean, Manhattan Place took advantage of financing from the California Housing Finance Agency and the Los Angeles Community Development Department. Due to a storm drain crossing the site, architect John Mutlow put

Dean Pappas photos, except as noted



Ford Lowcock



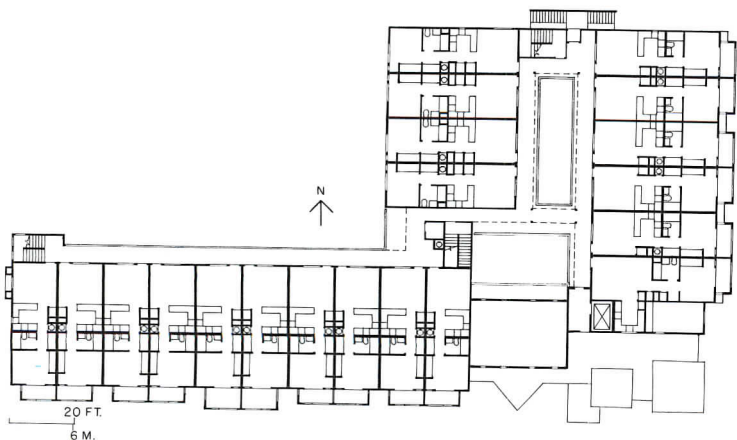
parking on-grade and dwelling units on three floors above. The parking portion of the building is concrete block with a concrete-deck slab, while the housing above is wood-framed. By limiting the building to three habitable floors, the architect reduced costs by not having to install sprinklers. The project comprises three major building elements—two wings of housing

set perpendicular to each other and joined at the corner by a community center that also serves as the main entrance. Two interior courtyards help open up the building to the outdoors—one that services the community center and the other in the east wing of apartments. Mutlow broke up the street-side facades by organizing dwellings into vertical clusters of six units,

each with its own balcony treatment and identity. "With Los Angeles apartment buildings, you get to play with balconies and openings," says Mutlow. The project's 60 apartments are all one-bedroom units with balconies on one side and outdoor walkways on the other. Being through-units, they benefit from cross-ventilation and lots of light. C. A. P.

#### Credits

**Owners:** Theodore and Soo Ng  
**Architect:** John V. Mutlow, A. I. A.—John V. Mutlow, Brian Emerson, John Neel, Don Dimster, project team  
**Engineer:** Jitu Mehta & Associates (structural)  
**Landscape Architect:** Barrio Planners  
**General Contractor:** Alpha Construction



Built for \$2.75 million, Manhattan Place aligns its two housing blocks with neighboring buildings to the north and west. The stucco-clad structure offers a variety of balcony treatments, which helps break up the length of the building (opposite top). The community center (above) anchors the corner of the site and includes a two-story space used as a chapel and a smaller room used mostly by male residents. The larger of the project's two

courtyards (opposite bottom) serves as a gathering space for apartments around it. All apartments are one-bedroom units, 58 are 540 square feet, and two are 650-square-foot handicap units. Twelve other apartments can be converted into handicap units. A split-air system on the roof provides heat and air-conditioning.



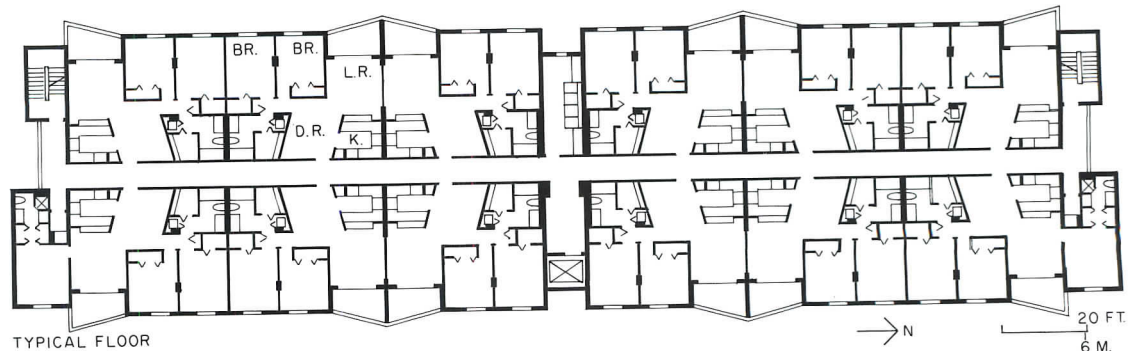
# Edison Terrace

Miami, Florida  
*Arquitectonica, Architect*

Located in Liberty City, a Miami neighborhood hit by riots in 1989, Edison Terrace is a 60-unit building in which color, crisp geometry, and a few architectural touches go a long way toward breaking stereotyped images of subsidized housing. "We felt that people in this neighborhood should get the same kind of architectural services that wealthier people get," says

Bernardo Fort-Brescia, the Arquitectonica partner-in-charge. For all its pop, the project cost just \$38 a square foot to build. Fifty of the apartments at Edison Terrace are reserved for low-income families, while the other 10 are available to anyone. "We wanted to mix income levels to create diversity and help revitalize the entire area," says developer Otis

© Dan Forer photos





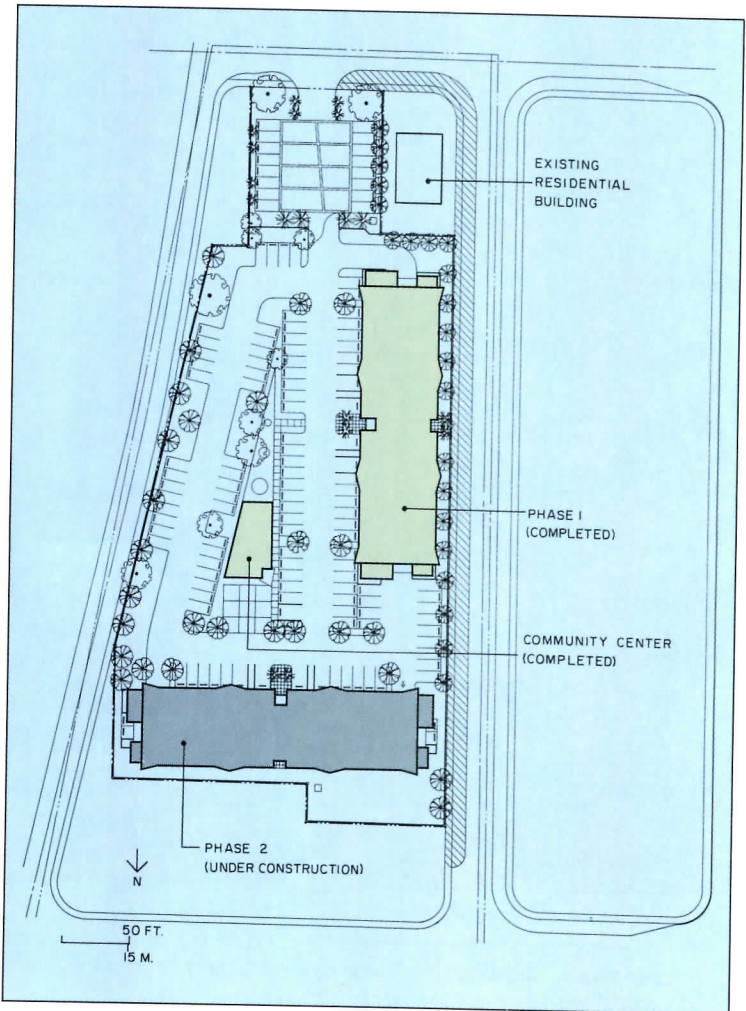
Pitts, who pulled together low-income housing tax credits, as well as public and private financing for the project. Set on a trapezoidal site along *Interstate 95*, the first phase of the project includes a poured-concrete-frame building pushed back from the highway and a 1,700-square-foot community center. The second phase, which will start construction this summer,

will add an identical 60-unit building perpendicular to the highway. To keep costs down, the architects used a simple structure with a 24-foot grid based on the *piloti* forming parking bays on the ground floor. Careful design eliminated the need for drop-beams and load transfers, cutting costs even further. Post-tensioned slabs just seven inches thick serve as both

floors and ceilings, except in bathrooms and kitchens where dropped ceilings are needed to provide space for vents. Using color and angled balconies, Arquitectonica brought the building's exterior alive. But these facades disguise the fact that only two kinds of fenestration were used: a window 4 feet 6 inches square and a sliding glass door 8 feet square. C. A. P.

**Credits**

**Owner:** Edison Terraces, Ltd.  
**Architect:** Arquitectonica—Bernardo Fort-Brescia, Laurinda Spear, principals; Dan Zabowski, project manager; Amauri Chacon, Todd Sweet, Suchi Reddy, Juan Carlos David, David Trautman, Eduardo Luaces, design team  
**General contractor:** Beauchamp Construction



*Built on an abandoned block, Edison Terrace shows that passed-over sites can be successfully developed, says Fort-Brescia. "We don't have to keep going farther into the Everglades for future growth," says the architect. The one-story community center and bus-stop canopy (above) sit on a grassy oasis that helps break up the expanse of surface parking. Double-loaded corridors*

*and simple floor plans help make the building 90 percent efficient in terms of net-to-gross area (plan opposite). By placing entrance doors off-axis from balconies, Arquitectonica opened up the apartments with angled views outside. Each floor has 10 two-bedroom apartments, two three-bedroom units, and a common laundry room opposite the elevator so residents can screen visitors.*



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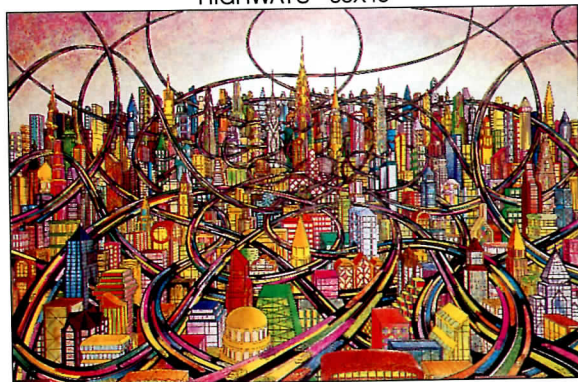
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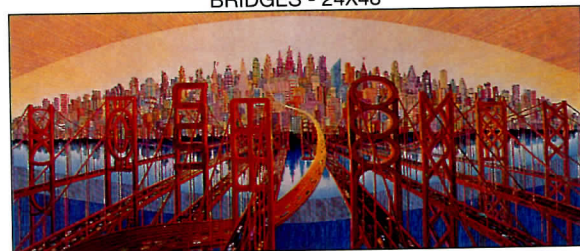


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**Product Literature/EIFS**

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**400. CAD-format details**

DOS-based CAD-NET software offers ASCII-format specifications for Senerflex, Senerthik, and QR exterior-insulation and finish systems, as well as three-dimensional detail drawings such as window surrounds, parapets, and quoins. Both specs and drawings can be modified under AutoCAD to suit site conditions. Senergy, Inc., Cranston, R. I.\*

**401. Residential EIFS**

A technical guide provides a standard specification for System R cladding, covering all common ways of incorporating the material in a residential application. Includes pertinent test data, such as vertical fire spread and accelerated weathering. Parrex, Redan, Ga.

**GRANSTONE**  
Finish System



**402. Multicoat finish**

A brochure illustrates how closely aggregate-based Granstone finish resembles natural stone, showing how the coating can be worked to mimic honed, rubbed, stippled, shot-ground, or sawn granite. Suitable substrates include Thorowall EIFS, concrete, and CMU walls. Twelve stone colorations offered. Thoro System Products, Miami.

**403. EIFS substrate**

A glass-mat-faced exterior sheathing, Dens-Glass Gold has a water-resistive core and an alkali-resistant exterior coating said to provide a superior bonding surface for EIFS adhesives. Free product sample and instructional video available to specifiers. Georgia-Pacific Corp., Atlanta.

**Vij** Elastomeric Waterproofing Systems



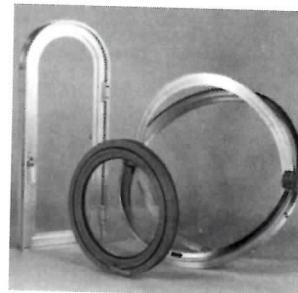
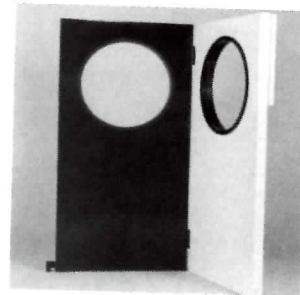
**404. Flexible waterproofing**

A catalog matches an exterior wall's anticipated structural flex with waterproofing products capable of adequate elongation. These colored coatings are described as ideal for stucco and exterior-insulation finish systems which might tend to develop shrinkage and movement cracks. VIP Div., Flood Co., Hudson, Ohio. \*Product data on CAD disk

**405. Standard specs for EIFS**

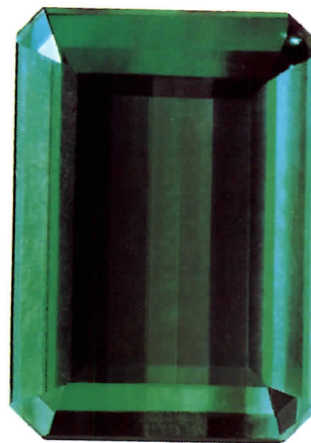
Part of an expanding body of generic test, installation, and performance standards developed with ASTM, free Guide Specifications are offered for polymer-based and polymer-modified finishes, recommended underlayments, and correct joint techniques. Exterior Insulation Manufacturers Assn., Clearwater, Fla. Continued on page 103

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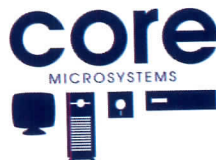
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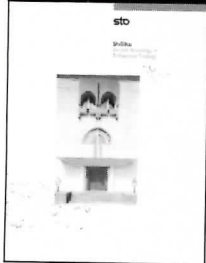
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**Product Literature/EIFS**



**406. Silicone emulsions**

A video training session introduces StoSilco, a new European water-proofing technology based on silicone emulsions, said to eliminate blisters, fading, and mildew damage while providing an attractive, vapor permeable exterior finish. Sto Industries, Atlanta.\*



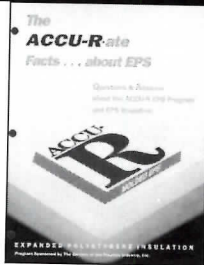
**407. Wall-surfacing systems**

A Finestone brochure highlights the finish's appearance options, illustrating eight different pebbled or aggregate textures that resemble troweled plaster, stucco, limestone, and travertine. System comes in 20 standard shades, with custom colors available. Simplex Products Div., Adrian, Mich.



**408. Acrylic-modified stucco**

Catalog on the Pleko Structure System explains how the material is said to outperform conventional cement stucco, to be easy to install over wire mesh, and to have long-term resistance to freeze/thaw cycles, UV, and chemicals. Test data listed; standard colors and textures shown. Pleko Products, Columbus, Ohio.



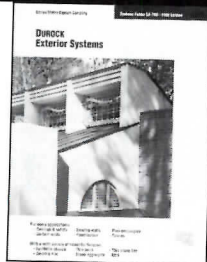
**409. Standardized insulation**

A brochure lists the thermal and environmental benefits of expanded polystyrene produced and tested to the Accu-R industry standard. Currently applied to non-CFC/HCFC board used for roofs, the program is expanding to include EPS sidewall and other insulations. The Society of the Plastics Industry, Inc., Washington, D. C.



**410. Residential finish**

A colorful brochure highlights the flexible design options possible with Dryvit residential-siding systems for new homes or remodeling applications, stressing energy-efficiency and low-maintenance characteristics of each product. Dryvit Systems, Inc., West Warwick, R. I.\*



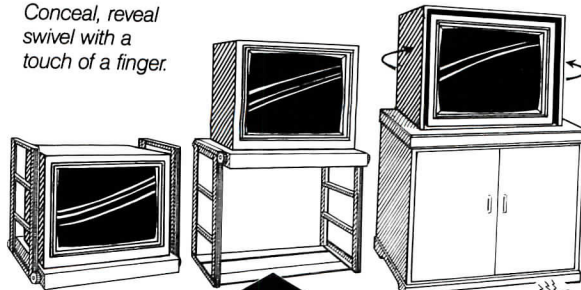
**411. Exterior systems**

A 20-page architectural catalog presents the Durock Exterior System—lightweight, fire-resistant assemblies for steel- and wood-framed walls, soffits, and other enclosures. Includes photos and details of tile, thin brick, epoxy-matrix stone aggregate, and EIFS finishes. United States Gypsum Co., Chicago.\*  
Continued on page 105

\*Product data on CAD disk

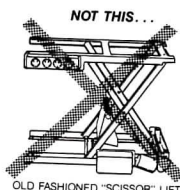
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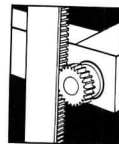


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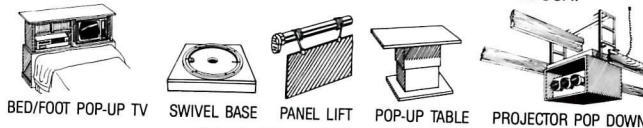
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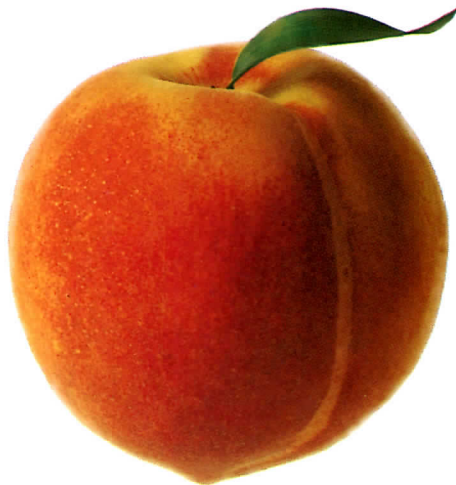
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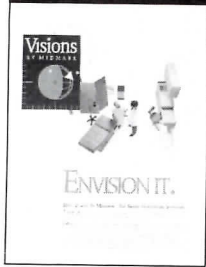
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## Product Literature



### 412. Casework CAD

A healthcare-facilities 3-D design program, Visions is described as an intelligent, parametric CAD system made for quick and easy layout of casework and equipment in medical offices, hospitals, and clinics. It includes an electronic product/price database. Service registration charge. Midmark Corp., Versailles, Ohio.\*



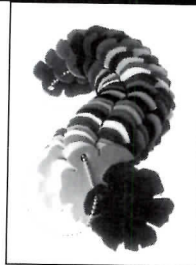
### 413. Spiral-stair kits

Interior and exterior stairs come in kit form for on-site assembly (tread spacers stack up the center support pole). Brochures show oak, steel, and mock-cast-iron Victorian One spirals as installed. The Iron Shop, Broomall, Pa.



### 414. Mineral-fiber lay-in ceilings

Newly published abstracts cover seven styles of architectural ceilings, including Fissuretone II; Baroque Customline (a modular, scored look); and Variegated Everest, cast panels in terrazzo colors. Test and performance data given for each ceiling style. Celotex Corp., Tampa.



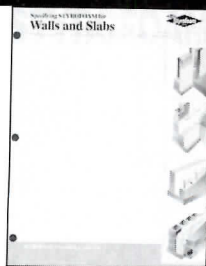
### 415. Flooring accessory

Chain kits hold petal-shaped samples of all 32 Wallflowers colors. A new molded-rubber wall base offered in three heights and a seamless, 120-ft length, the flexible trim conceals wall irregularities, matches or contrasts with the flooring, and gives a finished look to a space. Flexco Co., Tuscumbia, Ala.



### 416. Case-type shelving

A color brochure describes a double-wall shelving system for offices and institutions that is said to protect stored materials, exceed ANSI standards, and to be easy to adapt to local seismic requirements. Spacesaver Corp., Fort Atkinson, Wis.



### 417. Styrofoam specs

A Wallmaster Guide covers 25 installations of Styrofoam brand extruded-foam products on walls, foundations, and under slabs-on-grade; specifications are given in long, short, proprietary, and non-proprietary versions. Tutorials explain the fine points of each installation. Dow Chemical Co., Midland, Mich. ■

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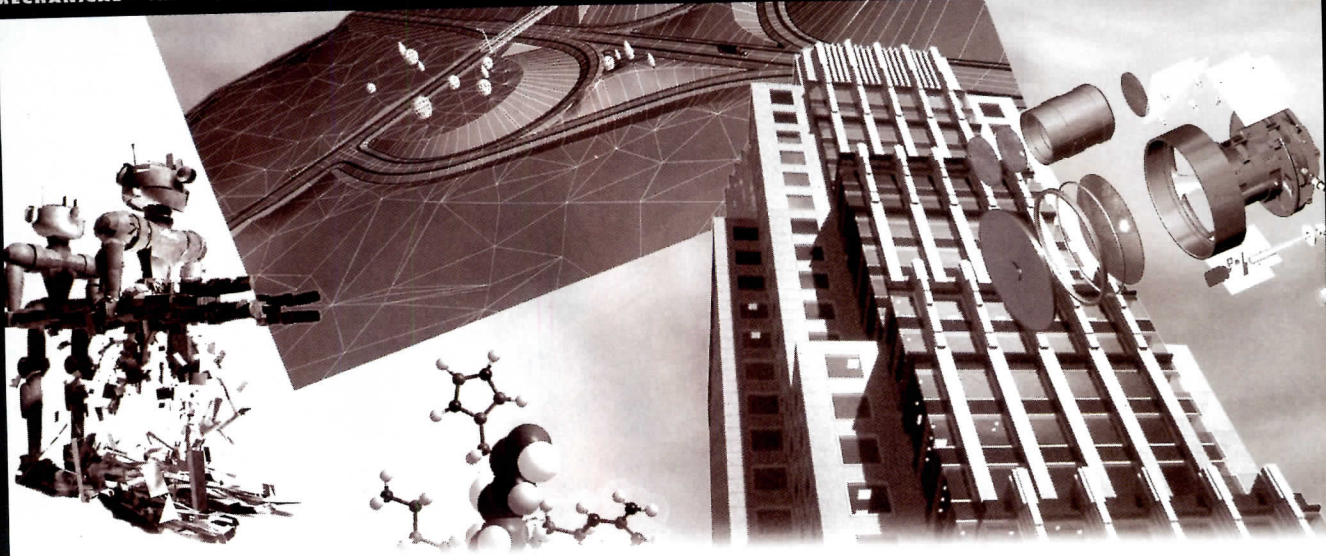
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Circle 31 on inquiry card

## Manufacturer Sources

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

### Pages 58-67

United States Holocaust Memorial Museum  
Pei Cobb Freed & Partners Architects  
Structural steelwork: Rome Iron Group. Skylights: The Architectural Glazing Corp. UV control: 3M Co. Brick: G&A Masonry; Glen-Gery Corp. Limestone coping: Harding & Cogswell Corp. Precast concrete: Bogert Precast, Inc. Ornamental metal: Giehner Iron Works. Architectural concrete: White Medusa. Curtain-wall framing system: Columbia Architectural Metals Co. Metal roofing: The Mathy Co., Inc.; MJC Corp. Granite paving: Sopromat. Glass block: L. E. Smith. Direct-to-metal paints: Tnemec. Other paint: Glidden Co. Tile: American Olean Tile Co. Auditorium seating: Irwin Seating Co. Carpeting: The Harbinger Co., Inc. Acoustic panels: Novawall. Lighting: Edison Price, Inc.; Sterner Lighting Systems; Lightron of Cornwall.

### Pages 68-73

Spiegel Corporate Headquarters  
Skidmore, Owings & Merrill, Architect  
Curtain wall: Cupples Div., H. H. Robertson. Silver-coated clear, green tinted, and fritted glass, vision and spandrel lights: Spectrum. Architectural concrete: Advance Cast Stone. Synthetic stucco: Pleko. Stainless-steel revolving doors: Horton Automatics; Crane Fulview. Swinging doors: Dawson Metal Co. Terrazzo: Metropolitan Terrazzo. Elevators: Schindler. Glazed security screen: Rudy Art Glass.

### Pages 78-85

Center for the Visual Arts, University of Toledo  
Design architect: Frank O. Gehry & Associates  
Executive Architect: The Collaborative  
Skylights and curtain wall: Custom Fabricators, Inc. Glazing: H. G. P.; Libbey-Owens-Ford Co. Lead-coated copper sheet cladding: Cambridge Lee Co./Hussey Copper Ltd. Fabricated by Midland Engineering Co., Inc. Entrances and pulls: Kawneer Co., Inc. Suspended fixtures: DayBrite. Cement-floor finish: Hydrozo (Enviro Seal). Paints: Sherwin-Williams. Railings: Art Iron, Inc.

### Pages 86-89

Alliance Francaise  
Taller de Enrique Norton Y Asociados, Architect  
Skylight: Robertson Mexicana. Polycarbonate glazing: Polygal. Sunscreen: Casa Planas.

### Pages 96-97

Manhattan Place  
John V. Mutlow, Architect  
Stucco color: Ad Mixtures, Inc. Metal roofing: Berridge. Built-up roofing: G.A.F. Sliding doors and windows: Century Window, Inc. Narrow-stile entrances: U. S. Aluminum Corp. Paints: Dunn-Edwards; Sinclair. Mailboxes: Jensen. Outdoor fixtures: PrescoLite; Regent.

### Pages 98-99

Edison Terrace I and II  
Arquitectonica, Architect  
Stucco color: Pro-line Paints. Modified-bitumen roofing: GS Roofing Products. Windows, entrance doors: Wells Aluminium Moultrie, Inc.

# What's Next

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New Cirrus Borders™ are available in 18 carved designs, from classic to contemporary. Options are for either 1/8" or 1/16" exposed tee grid. Call 1 800 233-3823 and ask for Cirrus Borders.



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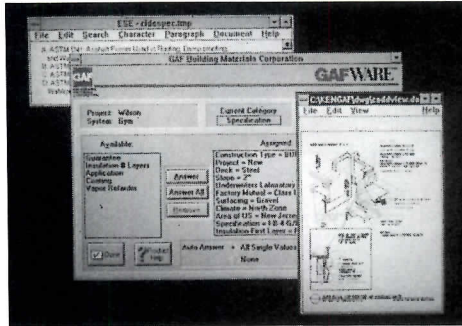
Circle 32 on inquiry card



## New Products

### 308. Windows-format roof details

GAFware software covers shingles as well as commercial low-slope roofing, working within Microsoft Windows. Project-specific design criteria is entered using a point-and-click interface to produce specs and detail drawings of the recommended roof system. Over 140 drawings can be exported under AutoCAD for incorporation in working documents. Program and installation free of charge. GAF Building Materials Corp., Wayne, N. J.

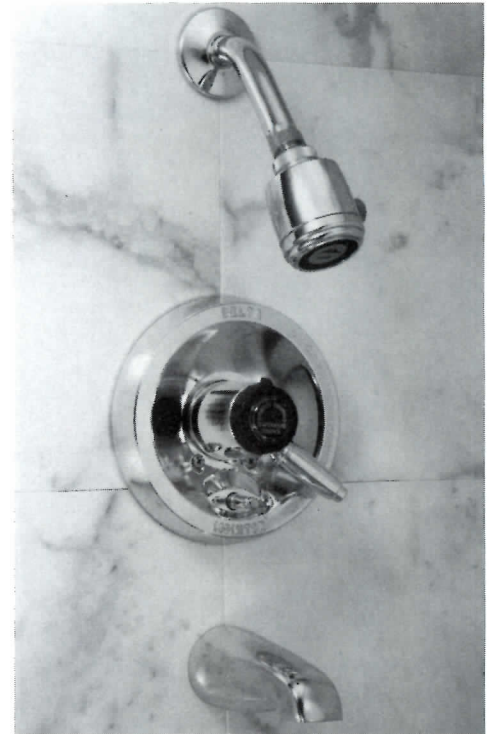


### 309. Unobtrusive sprinkler head

A new extended-coverage, quick-response sprinkler is said to have the smallest cover plate (2 3/4-in. dia) at the lowest profile (5/32-in.). A push-on, thread-off design places it flush to the ceiling, while allowing one-half inch of vertical adjustment. Concealment plates come in three standard shades and 500 custom colors. Viking Corp., Hastings, Mich.

### 310. Pressure-balance shower controls

Offered in three models for a range of budgets, Monitor faucets compensate for fluctuations in water pressure and meet all anti-scald codes. A notched temperature indicator simplifies correct installation. Delta Faucet Co., Indianapolis.



## Computer Backup Solutions Priced To Open Your Eyes.

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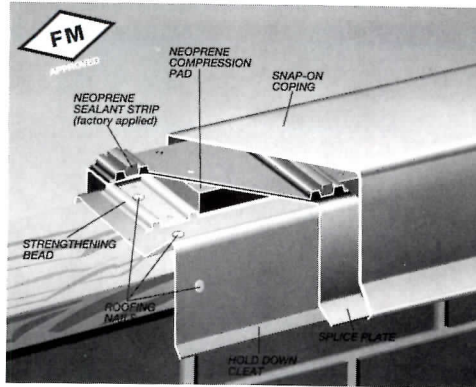
**3M** Reliability





### 311. Structural glass walls

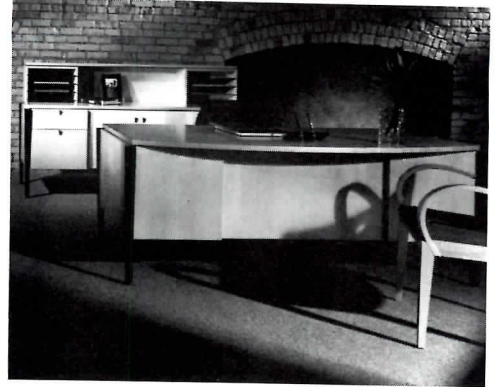
A meditation center in the Catskills (Frank d'Autilia, architect) required 11,000 sq ft of glass enclosure without view-blocking metal framing. Custom countersunk flush fasteners connect 200-ft-long runs (in 20-ft heights), sloped-glass roof sections, and free-standing, vertical-fin walls in a totally flush exterior envelope. W&W Sales, Spring Valley, N. Y.



### 312. Wind-rated coping system

The Tite-Loc roof edge is now available with a reinforced hold-down cleat where FM I-90 approval is required. A new positive-sealing splice plate supplies additional rigidity. The system comes in several gauges of aluminum as well as 24-ga. steel, for walls 6- to 16-in. thick. Finish options include Kynar 500, acrylic paint, and anodized. Petersen Aluminum Corp., Elk Grove Village, Ill.

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



### 313. Image of efficiency

A new mid-price office suite for mid-level management, Marlowe Series casegoods achieve a visual lightness through upward-tapering solid-hardwood legs, a reverse-bevel edge on work and storage surfaces, and drawer pulls set at an angle. Cherry and maple pieces include desks, VDT-compatible credenzas, and storage units. Customizing options include bow-front tops, inlaid reveals, and etched-metal surfaces. Lunstead, a Haworth Co., Holland, Mich. ■



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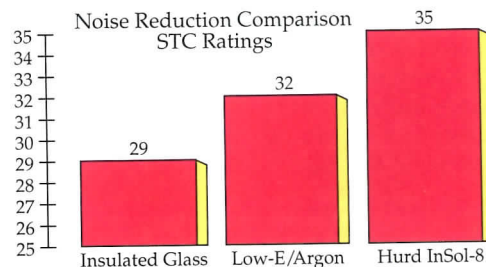
Circle 34 on inquiry card



**Problem:** Your client wants lots of windows to enjoy a stunning view—on a site that's within earshot of a noisy freeway.

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Hurd InSol-8® windows reduce most outside noise by up to 95%. That's 53% better than double pane and 24% better than Low-E/Argon. The result? You can create a comfortable and quiet environment for your clients.

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Hurd windows look good in line print and even better up close. See for yourself. Noise comparison data were based on independent testing by Riverbank Acoustical Laboratories. InSol-8 is a registered trademark of Hurd Millwork Co. Hurd InSol-8 windows use the Superglass System with Heat Mirror Film. Superglass System® Heat Mirror™ and Heat Mirror Film are trademarks of Southwall Technologies. ©1993 Hurd Millwork Company Medford, Wisconsin 54451.

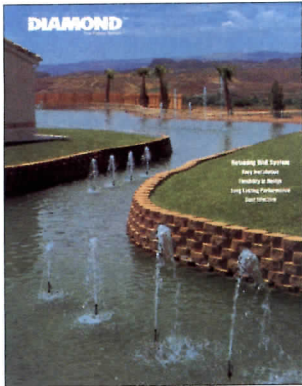
**When You're Serious  
About Windows.™**



Circle 35 on inquiry card



## Diamond® Retaining Wall System

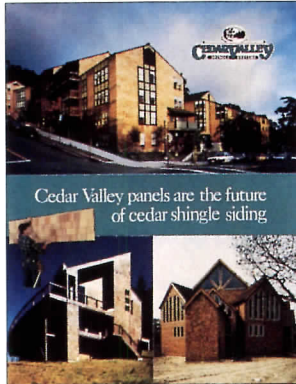


Anchor Wall Systems offers a complete full-color catalog with product specification information, installation guidelines & reinforcement usage for its pinless & mortarless segmented retaining wall system that is flexible in design, easily installed, long lasting & a cost effective choice for any commercial or residential retaining wall need. Call (800) 473-4452 for a free catalog and manufacturer's name.

### Anchor Wall Systems

Circle 36 on the inquiry card

## The Future of Cedar Shingle Siding



Cedar Valley's new 8-page color brochure details the panelized exterior siding system. Included are specifications, product descriptions & illustrations, finishing & application information, & nearly four pages of color photos of significant projects by leading architects throughout the U.S. who used conventional & Decorator shingle panels. Cedar Valley. Call: 800-521-9523. FAX 408-636-9035.

### Cedar Valley Shingle Systems

Circle 37 on the inquiry card

## HEAT-N-GLO Fireplace Products



Looking for quality fireplaces that combine efficiency and aesthetics? Call for our brochure on energy-saving built-in gas or woodburning fireplaces. Including see-thru, three and four sided glass fireplaces, inserts for pre-existing fireplaces or our direct-vent (no chimney) gas fireplace available with remote control.

Call: 612-890-8367.

### Heat-N-Glo

Circle 38 on the inquiry card

## Barrier-Free Entrances with Swing Door Operator



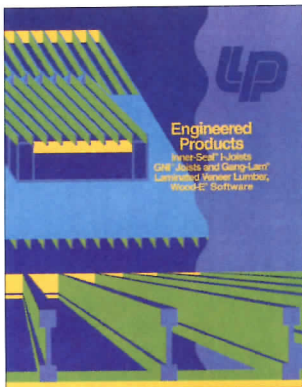
An Automatic Solution For Readily Achieving ADA Compliance For Barrier-free Entrance Mandate . . .

Our *EasyAccess*™ swing door operator makes complying with the ADA 1990 mandate "readily achievable". ADA defines this as "easily accomplishable ... without much difficulty or expense". The *EasyAccess* operator, installed without structural modifications, creates an affordably priced, barrier-free entrance for the physically disabled. Automatic operation with a push of a button.

### Horton Automatics

Circle 39 on the inquiry card

## Engineered Wood Products

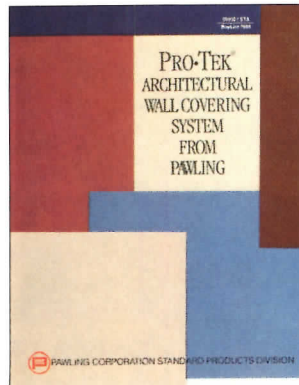


Engineered wood products are designed to eliminate the common problems of solid sawn lumber. Gang-Lam LVL, LPI-Joists and GNI Joists are stronger, more stable and easier to handle than solid sawn lumber. Catalog includes span and uniform load charts, and information on new Wood-E® Cut and Wood-E® CAD engineering software also available.

### Louisiana-Pacific

Circle 40 on the inquiry card

## Pawling's PRO-TEK® Vinyl Wall Covering Systems



Pro-Tek® architectural wall covering products for most stringent design/color requirements. Standard 4'x8' vinyl sheets in various thicknesses, complete with color matched trim moldings. NEW pre-laminated 4'x8' vinyl wall panels are mounted sturdy wall materials & matching trim accessories. NEW mail wall renovation panels, 24" or 32" squares by 3" thick, optional customized embossed company logos. Available in 40 NEW COLORS, carry a Class I fire rating & are UL & ULC approved. Call Toll Free 800-431-3456.

### Pawling Corp.

Circle 41 on the inquiry card

## Cedar Panel Roof System by Shakertown

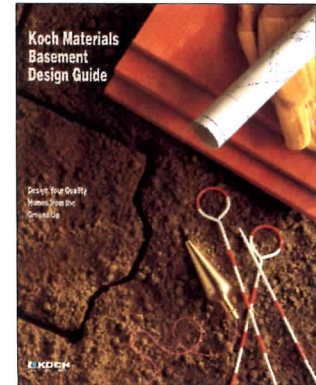


Genuine cedar shakes and shingles are applied quick and easy with Shakertown's new Cedar Panel Roof System. The 40-inch long panels have an ASTM type 30 felt pre-attached that makes application simple for any roofer. The product is backed by a 20/25 year limited warranty. 1200 Kerron St. Winlock, WA 98596. Call: 800-426-8970

### Shakertown

Circle 42 on the inquiry card

## Discover The Value In Basements



The Basement Design Guide from Koch Materials Company can help you discover new ideas in designing warm, dry, comfortable living spaces in below grade areas. This 20-page brochure highlights construction techniques and design considerations that help make the basement a value to you and your buyers. Includes information on a 10-year limited warranty against exterior foundation leaks.

### Koch

Circle 43 on the inquiry card



# Product Literature Showcase

## Open & Private Offices A Single Source



Transwall combines these two basic wall requirements for today's high tech office with its Soundivider open plan system and the full height Corporate series. The two systems offer complete interchangeability of wall mount components, as well as compatibility in design and appearance. Modular furniture blends with panel mounted work surfaces. Electrical and electronic support is system integrated.

**Transwall Corp.**

Circle 44 on the inquiry card.

## VIXEN HILL MFG.



Tired of imitation shutters made from a mold? Unhappy with shutters held together by staples? Give yourself a surprise: traditional working shutters made of clear, old-growth western red cedar. Constructed with authentic teak-pegged mortise & tenon joints, Vixen Hill manufactures 8 classic panel & louver styles in standard & custom sizes. Cedar shutters feature heavy stiles & cross-rails as well as separate interlocking trim & extra thick louvers for extended product life. For brochure call 1-800-423-2766.

**Vixen Hill Manufacturing**

Circle 45 on the inquiry card.

## Waterproof Underlayment Membrane



Protect floors and decks from water, vapor transmission and substrate cracks with COMPOSEAL GOLD. Bonds direct to concrete, cementitious backer units, mortar and plywood. Thin-set your ceramic tile or natural stone on top. Listed by Ceramic Tile Institute and UPC-IAPMO. Call Compotite for new catalog. (800) 221-1056.

**Compotite Corp.**

Circle 46 on the inquiry card.

## Interceramic Tile



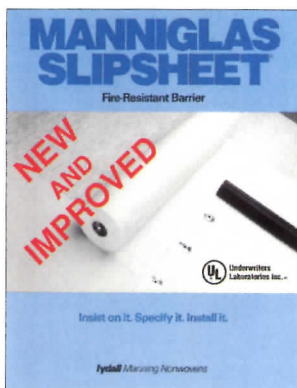
The Best The World Has To Offer Interceramic, Inc.

We provide tile to enhance any environment - both commercial and residential. From exceptional floor tile and graceful mosaics to glistening marble and natural granite. Whatever your design, Interceramic tile will add that distinctive touch of beauty. Call today for a free brochure: 1-800-365-6733.

**Interceramic, USA**

Circle 47 on the inquiry card.

## Manniglas Slipsheet® Fire Resistant Barrier



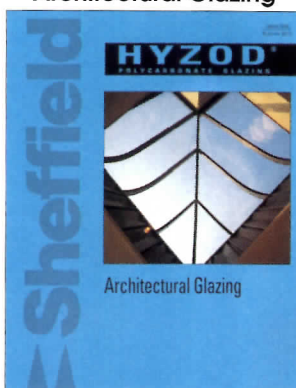
Roofing system brochure highlights company's new Manniglas 1208 Slipsheet & popular Manniglas 1200 Series Slipsheet for UL Class A & B single-ply roofing systems. A cost-effective alternative to gypsum board, Manniglas Slipsheet is a lightweight easy-to-apply flame barrier rolled out over both combustible & non-combustible roof decks to prevent penetration & spread of flame in both re-roofing & new construction applications.

Call: 518-273-6320.

**Lydall Manning Nonwovens**

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## The Superior Architectural Glazing



HYZOD Polycarbonate Sheet is a tough, versatile glazing combining superior breakage protection and broad design latitude. With impact strength 250 times that of flat glass, HYZOD sheet provides lasting protection with the freedom to design and construct curved architectural glazing at a considerable cost savings compared to glass and acrylic. Sheffield Plastics (800) 628-5084.

**Sheffield Plastics**

Circle 49 on the inquiry card.

## Jacuzzi Whirlpool Bath



Jacuzzi Whirlpool Bath offers a 40-page, color catalog featuring the International Designer Collection of whirlpool baths, faucetry and the J-Dream family of shower systems. Jacuzzi® offers a variety of styles and features. Literature is also available on the Builder Group of whirlpool baths, the faucetry collection and shower bases. Call: (800) 678-6889.

**Jacuzzi Whirlpool Bath**

Circle 50 on the inquiry card.

## Duraflake FR Fire-Rated Particleboard



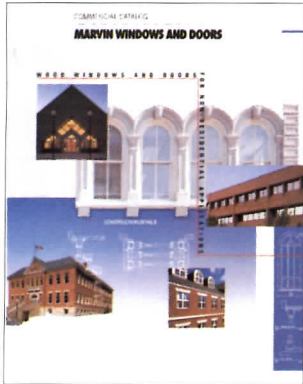
DURAFLAKE FR is a smooth, grain-free, class 1 fire-rated particleboard panel designed to meet fire code regulations. It is an excellent substrate for fine wood veneers, high and low pressure laminates and vinyls in all wall systems, furniture and fixture applications where fire codes and public safety are critical. Contact Willamette Industries, Inc., P.O. Box 428, Albany, OR 97321 or call (503) 928-3341.

**Duraflake**

Circle 51 on the inquiry card.



### Marvin Windows' New Commercial Catalog



Marvin Windows' new commercial catalog describes the commercial capabilities of Marvin's entire line of wood and clad wood windows and doors. The catalog provides information on product styles, performance and design capabilities, as well as Marvin's Architectural Support Department and other non-residential services.

### Marvin Windows

Circle 52 on the inquiry card

### Inner-Seal T&G Flooring

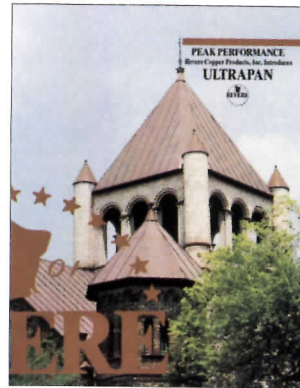


Inner-Seal T&G Flooring - A more stable and durable OSB subflooring. New improvements for greater moisture resistance include notches in tongue to aid water run-off. Made primarily from small-diameter, fast-growing trees - reducing dependence on old growth forests. APA approved.

### Louisiana-Pacific

Circle 53 on the inquiry card

### Revere Copper Roofing - Ultrapan



Ultrapan is lightweight. That means less extensive - & less expensive - framing & sheathing are required. When roof coverings require certain decks, venting or other special construction, copper does not. Ultrapan can be installed over almost any substrate, does not require underside venting & can be used in conjunction with most other materials. Revere Copper Products, Inc. is today the world's leading producer of roofing copper. Call 800-448-1776 for more information.

### Revere Copper Products, Inc.

Circle 54 on the inquiry card

### Not Just Another LED Exit Sign



High-Lites CLED Series exits utilize a unique, indirect high-intensity LED illumination design. The unsightly exposed LED hot spots and multi-faceted designs are eliminated. Down lighting is standard in our heavy Die Cast ultra slim non-emergency and emergency models. High-energy-saving. Only 4 watts per panel. Call: (203) 575-2044.

### High-Lites Emergency Lighting

Circle 55 on the inquiry card

### SPIRAL STAIRS



Stairs built by Stairways, Inc., are distinctively styled, combined with the highest standards of craftsmanship. Stairs are built to your exact specifications into commercial, industrial, or residential projects. Stairs can be fabricated in steel, wood, stainless, brass, aluminum, bronze, with other materials available. You have the option of stairs, both wood & steel, completely fabricated for installation or kit form. For more info: Call: 800-231-0793 or FAX 713-680-2571.

### Stairways, Inc.

Circle 56 on the inquiry card

### Custom Vinyl Windows

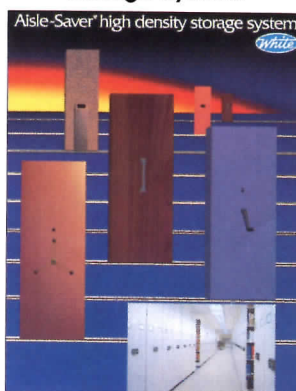


Louisiana-Pacific's vinyl windows and patio doors meet the most demanding new energy codes and are a perfect fit for new construction as well as replacement. Made with a new generation of stronger, modified unplasticized PVC, they resist rust, rot, scratches and dents. And they're available in a wide range of sizes and styles, including a large variety of custom shapes.

### Louisiana-Pacific

Circle 57 on the inquiry card

### Aisle-Saver High Density Storage System



Aisle-Saver® high density mobile shelving systems save space by eliminating unnecessary aisles. Opens an aisle where you want it, when you want it. Doubles the capacity of fillrooms, defers expansions and moves, reduces overheads. Utilizes existing shelving or cabinets. Brochure discusses applications, system layouts, safety & aesthetics. Call: 908-272-8888 or FAX: 908-272-7081.

### White Office Systems

Circle 58 on the inquiry card

### Rainhandler™ gutter alternative



RAINHANDLER - Patented maintenance-free rain dispersal system. On thousands of homes worldwide. Converts roof runoff back to rain and disperses it gently. Rainhandler Plus™ disperses up to 30% more than best prior model. No clogging, no cleaning, no trenching, ever. Virtually invisible. Rugged aluminum - white, brown, natural. 25 year warranty. Free information. Call: 800-942-3004.

### RainhandlerR™

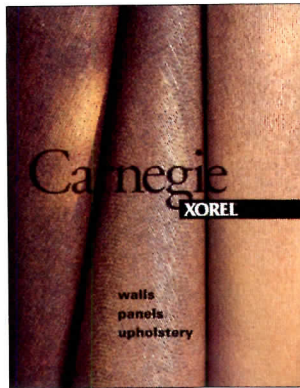
Circle 59 on the inquiry card



# Sports & Recreational Focus

Here are some products, catalogs, brochures and technical literature available in the architectural market today. To receive your copy of any of them, just fill out and return the Reader Service Card.

## Xorel Fabrics



Stain resistant, durable, flame retardant, easy to maintain and available in 1600 colors. Xorel is ideal for use on walls, panels and upholstery in sports and recreational facilities where performance and aesthetics count. For a brochure, sample folder and test results, contact Carnegie at 1-800-727-6770.

### Carnegie

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## The Disappearing Glass Wall



Skytech manufactures the Mirage folding glass wall for exterior applications. Closed, the wall appears to be a progression of standard windows. To open, a flip of the finger unlocks a few flush bolts & the Mirage accordion style glass panels can be effortlessly folded to provide an unbelievable 92% opening. The Mirage is perfect for pressboxes, restaurants, pool enclosures, residential settings & more. Imagine what you can do with Mirage. Call: 800-447-4938.

### Skytech Systems

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## Glassform® Duraform® "Stacking Cot"



Almost indestructible the "Stacking Cot" is a one piece, molded fiberglass bed structure that withstands the abuse of rough handling & stacking in institutional environments. Stacking Cots are in use at major correctional institutions. It provides immediate, temporary, or permanent bed capacity additions. Cots are approx. 80" x 35" x 20" high, are available in an assortment of colors & can be used with a variety of mattresses.

### Glassform® Duraform®

Circle 62 on the inquiry card

## 18 Colors

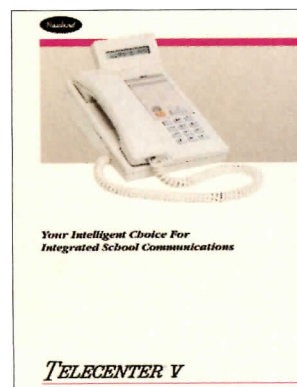


Tuflex 3/8" resilient flooring for areas where carpet requires replacement every six months. Design is bright and fresh, even after 10 years with proper maintenance, in golf shops, weight rooms and locker rooms. Benefits: superior safety features, of highest quality recycled materials. Recent installations: Japan's Abyama Golf Course and St. Luke Hospital. Tuflex Rubber Products Flooring, 4521 West Crest Ave., Tampa, FL 33614. 1-800-543-0390.

### Tuflex Rubber Products

Circle 63 on the inquiry card

## Telecenter® V-School Communications

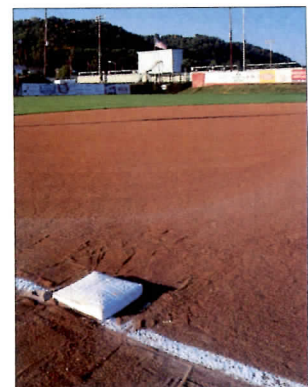


The Telecenter V Communication System is designed to help administrators work smarter instead of harder. It satisfies school telephone system requirements, it performs an extensive range of internal communications functions plus, it offers control of media resources by teachers. Rauland-Borg Corp., 3450 West Oakton Street, Skokie, Illinois 60076: (800) 752-7725.

### Rauland-Borg Corp.

Circle 64 on the inquiry card

## Sports Trak



Colleges, universities and community centers throughout the country are discovering Sports Trak, the granular brick surface mix from General Shale Brick that can be used on stadium infields and warning tracks, jogging paths, park trails and other recreational areas. For more information, including a current list of Sports Trak installations, write: General Shale Brick, P.O. Box 3547, Johnson City, TN 37602.

### General Shale Brick

Circle 65 on the inquiry card



# Classified Advertising

To Advertise Call  
801-972-4400  
FAX 801-972-9409

## POSITIONS VACANT

**Structural Designer for an architectural** structural engineering firm. Duties include consultant to architect for structural design of buildings including: hospitals, university libraries, restaurants, and housing; conceptual design and calculations; contract drawings & specifications; construction inspection; and structural and design by computerization. Requires a Master of Architecture in Structures with a thesis or project in structural design. Applicant to have the following courses: Advanced Structural Design II, and Aesthetic Structures. Requires six months experience in the job offered or six months experience as an architectural designer. Salary is \$13.00 per hour. Hours are from 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit, MI 48202. Ref. #21493. Employer paid ad.

**Marketing Director. Young medium-sized** Austin architecture/interior design firm seeks self-starting marketing director. Responsibilities: Direct client marketing, development of strategic plan, management and organization of marketing resources. Ability to "close" a must. Minimum 5 years experience and architectural registration. Send resume to P.O. Box 161383, Austin, Texas 78716-1383.

**Director of Healthcare Architecture** Midtown Manhattan architecture/planning firm seeks Director of Healthcare Architecture. Responsibilities include marketing, design, production and financial management. Seeking individual with a minimum of 10 years project management experience and knowledge of NY/NJ/East Coast healthcare market. For confidential consideration forward resume detailing experience, professional registration, references, salary history to: P-7236, AR.

## OFFICIAL PROPOSAL

### State of Connecticut Department of Transportation

**Legal Notice: The Connecticut Department of Transportation** is seeking to engage a consulting firm to develop a conservation and restoration plan for a group of approximately sixty-five rigid-frame concrete bridges on the Merritt Parkway with a wide variety of ornamental detail, built between 1937 and 1942.

The firm must have experience in dealing with aged and deteriorated concrete structures and should have specific experience with the conservation of historic concrete. This experience shall include rehabilitation intended to restore or maintain the structural integrity of such structures as well as that intended for historic preservation purposes. The firm must have the ability to sample and carry out scientific tests and analyses that will determine the nature of the specific materials used, the contaminants involved and processes of deterioration that are occurring. All tests must be carried out to the highest current national and international professional conservation practices. All tests must be performed in such a way as to avoid causing any structural distress to the bridges.

The scope of the work is to include the inspection of all resources and the preparation

of a report on materials, conditions, conservation priorities and recommended actions. Written specifications must also be provided for the conservation work recommended and the in situ rehabilitation of exposed concrete. The inspection shall include an in-depth structural inspection, and recommendations shall include those to address any structural deficiencies noted.

Firms responding to this request should be of adequate size and sufficiently staffed to perform the assignment described above. The proposed staffing of the office providing the services must be identified. Also, successful applicants to this request shall provide plans, design, environmental data or other supporting data in an Intergraph Digital CADD compatible format.

A letter of interest, together with general information on the firm and proposed subconsultants, the firm's brochure, current Federal GAS Forms 254 and 255, experience of the firm and a resume of key personnel should be addressed to Mr. Bradley J. Smith, Manager of State Design, Department of Transportation, 24 Wolcott Hill Road, Wethersfield, Connecticut 06109. All interested firms must submit a detailed statement indicating the organizational structure under which the firm proposes to conduct business. Proposed subconsultants should be clearly identified. The relationship to any "parent" firm or subsidiary firm, with any of the parties concerned, must be clearly defined. Four copies of this submittal must be included.

The selected firm will be required to have Department approved audit and affirmative action plan and current corporate registration with the Secretary of State (partnership excluded). Proof of Professional Liability Insurance Coverage will be required prior to the start of the negotiation process.

The firm shall provide a statement of any and all contracts with either the Department of Transportation or the Department of Administrative Services which are currently being performed, and a statement as to whether the design professional consultant, or firm, performed services under any name other than the one appearing in the response. Personnel in responsible charge of the work will be required to possess and maintain a valid license for the practice of architecture and professional engineering in the State of Connecticut.

All letters of interest must be postmarked by the U.S. Post Office (if mailed) or (if hand delivered) no later than 4:30 p.m. on July 26, 1993. Responses hand carried or postmarked after this date will not be considered.

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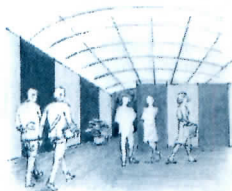
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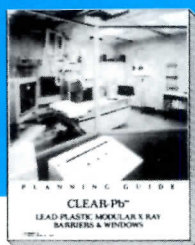
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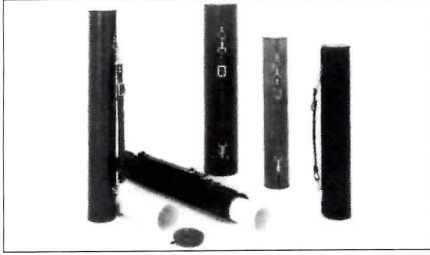
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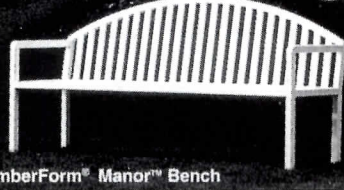
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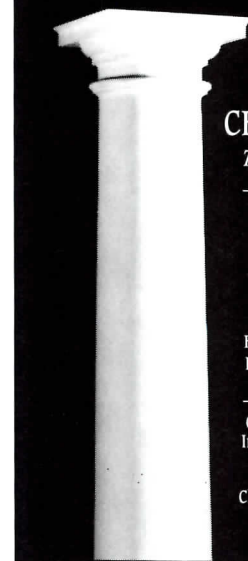
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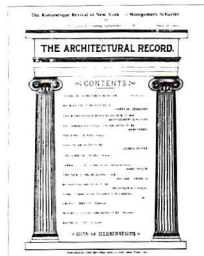
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Bold face—page number  
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**A**  
Alucobond Technologies, Inc., **16**; *9*  
[G]  
(800) 626-3365  
Armstrong World Industries, Inc.,  
**Cov. II-1**; *1*, **109**; *132* [G-E]  
(800) 233-3823

Autodesk University, **106**  
(415) 905-2354  
Auton Co., **103**; *26*  
(818) 367-4340

**B**  
Baudisson Concept Window  
Corp., **101**; *23*  
(617) 569-2927  
BEGA/FS, **24**; *14*  
(805) 684-0533

**C**  
Clear Plastics International, Inc.,  
**111**; *34* [G]  
(800) 759-6985  
Compaq Computer Corp., **23**; *13*  
(800) 345-1518  
Consultant's Directory, **105**  
Core Microsystems, **102**; *25*  
(800) 886-2752

**D**  
DuPont Co.-Textile Fibers, **12-13**; *7*  
[D]  
(800) 4-DUPONT

**E**  
Efco Corp., **Cov. III**; *84* [G]  
(800) 221-4169  
ENR Collectors Series, **100**  
(800) 458-3842

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manufacturers listed below are available  
in your 1993 Sweet's Catalog File as  
follows:

**F**  
Formica Corp., **Cov. IV**; *85* [G-L-D]  
Forms + Surfaces, **8**; *5*  
(805) 684-8626

**G**  
Georgia-Pacific Corp., **51 to 53**; *20*  
[G-I-L]  
(800) 447-2882  
Glen Raven Mills, Inc., **54-55**; *21* [G]  
(919) 227-6211

**H**  
Hurd Millwork Co., **112**; *35* [G-L]  
(800) 2BE-HURD

**I**  
Intergraph, **14-15**; *8*  
(800) 345-4856

**K**  
Kim Lighting, **43**; *15*  
(818) 968-5666

**L**  
Leviton Mfg. Co., **22**; *12*  
(800) 824-3005  
Louisiana-Pacific, **6**; *4* [G-I-L]  
(800) 223-5647

**M**  
Marlite, **108-109**; *31* [G]  
Marvin Windows, **44-45**; *16* [G]  
(800) 346-5128  
MBCI, **50**; *19* [G]  
(713) 445-8555  
Monsanto Chemical Co.-Saflex Sound  
Control, **101, 103, 105, 107**; *24*  
[G-E-I]

**(G) General Building & Renovation**  
**(E) Engineering & Retrofit**  
**(I) Industrial Construction &  
Renovation**  
**(L) Homebuilding & Remodeling**  
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**O**  
OSRAM SYLVANIA, **10-11**; *6*  
(800) 338-2542

**P**  
Pella Rolscreen Co., **17 to 19**; *10*  
[G-L]  
(800) 524-3700  
Portland Cement Association, **104**; *27*  
(708) 966-6200  
Poulsen Lighting, Inc., **5**; *3*  
(800) 342-2310  
Product/Literature Showcase, **113 to  
116**

**S**  
Steel Joist Institute, **46**; *17*  
Sweet's Group, McGraw-Hill, Inc., **47  
to 49**; *18*

**T**  
Tamko Asphalt Products, **20-21**; *11*  
[G-I]  
(800) 641-4691  
The Marketplace, **118-119**  
3M Data Storage, **110**; *33*  
(800) 889-1889

**V**  
Vistawall Architectural Products,  
**56**; *22* [G]

**W**  
Weather Shield Mfg., Inc., **2-3**; *2* [G]  
(800) 477-6808

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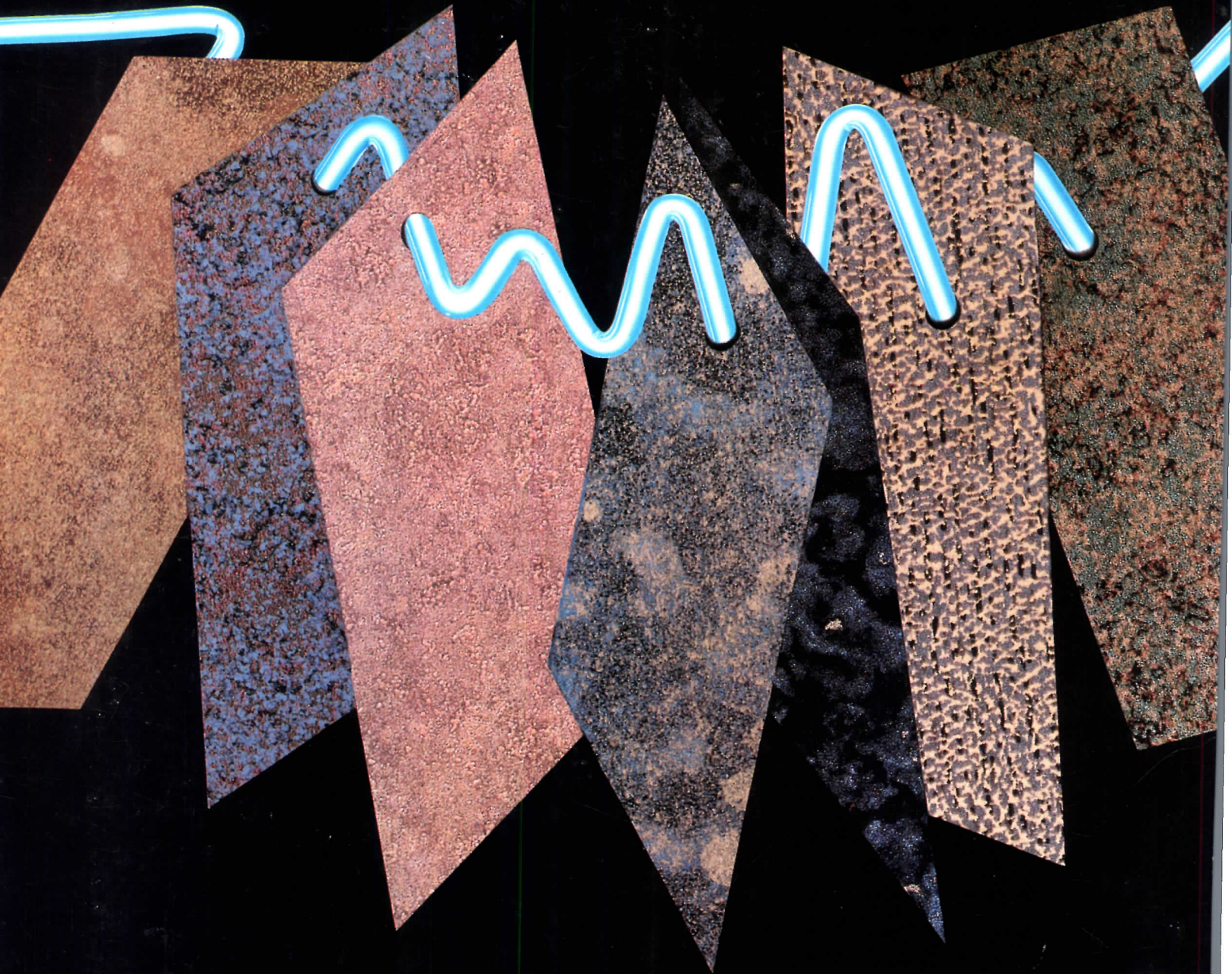


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