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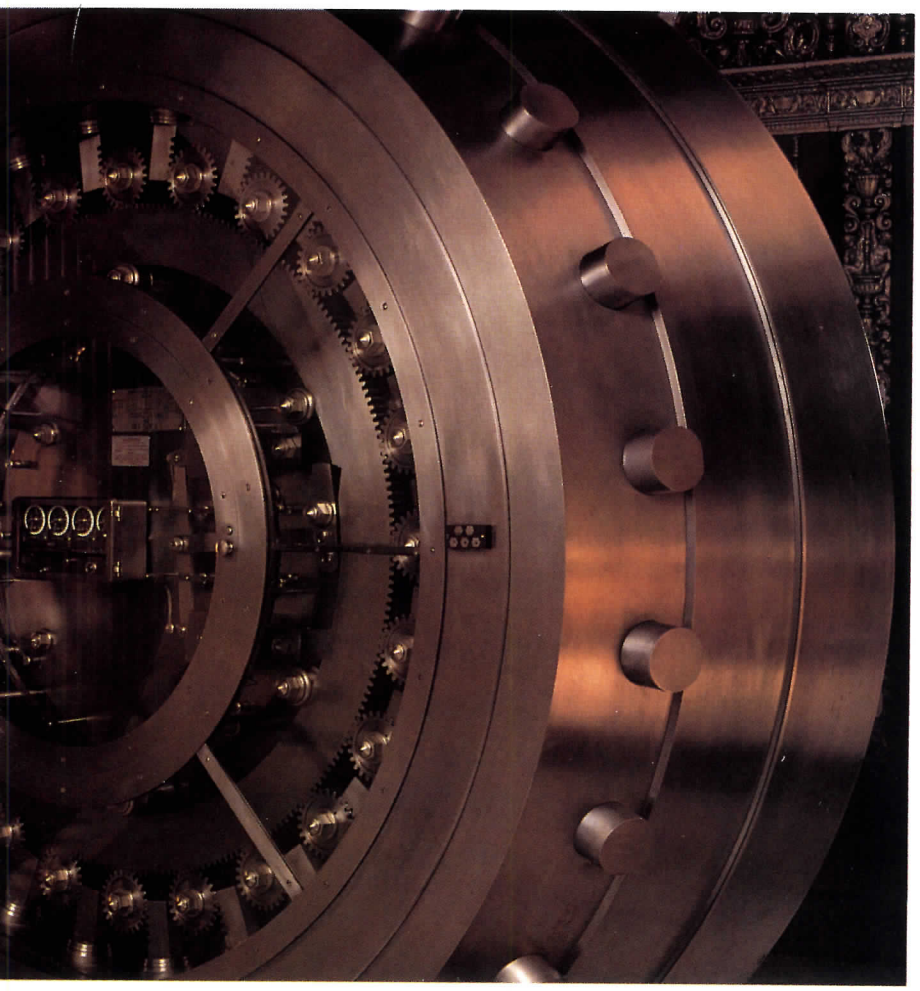
ession by breaking into banks. rom their example.



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Bouquet

Congratulations! In a time of political architectural one-liners, it was indeed refreshing to receive the October 1992 issue of ARCHITECTURAL RECORD. The timely and thoughtful "dialogue" between Carter Wiseman and Charles Gwathmey regarding the Guggenheim Museum revealed a fresh perspective on a much bandied-about topic. In addition, the interior photography of the Guggenheim as covered in your article was spectacular and revealed a wonderful sense of what has been accomplished. Aaron Betsky's piece on the "architectural politics" of Bush vs. Clinton and Robert Campbell's piece on "neighborhood houses" make for important reading on subjects more of us should be thinking about. And then there was the master, James Stirling, from plan to section to detail—a masterpiece!
Joseph A. Gonzalez, Partner
Skidmore, Owings & Merrill
Chicago, Illinois

Outlawed

I noted with interest your article "Showdown on Outlaw Street" [RECORD, October 1992, page 46]. How true and universal the unfortunate reality that the article describes. While it is difficult, if not impossible, to persuade municipalities to promote more humane and rational new neighborhoods (thank goodness Andres Duany and others are trying hard), it is possible to help preserve existing oases of the "Outlaw Street" type. Years ago, when Toronto City Council was contemplating ever more stringent bylaws threatening to make it impossible to preserve or improve neighborhood housing, the Toronto Home Builders' Association Renovators Council commissioned us (together with planner Bill Anderson) to study a typical downtown residential block, to see just how the zoning bylaw applied to the existing housing stock. To no one's surprise, we found and documented the fact that almost every house exceeded more than one bylaw provision in some way. In fact, every single house on the block exceeded at least one particular provision. What this meant was that even adding a dormer was an arduous, time-consuming, expensive, and unpredictable exercise. Building a new house similar to the existing stock was impossible without a long list of difficult-to-obtain exemptions. Even building maintenance was affected. As a result of our study, the municipality undertook a lengthy process involving all the stakeholders in the community to revise their bylaws to make it easier to renovate, repair, or build new complementary infill housing. The result was not perfect, and requires due diligence on the part of the building industry to ensure that the reforms are not diluted by NIMBY advocates, but for the first time, renovation and infill were recognized as requiring a different basis of control.
Peter A. Gabor, Partner
Gabor & Popper Architects Inc.
Toronto

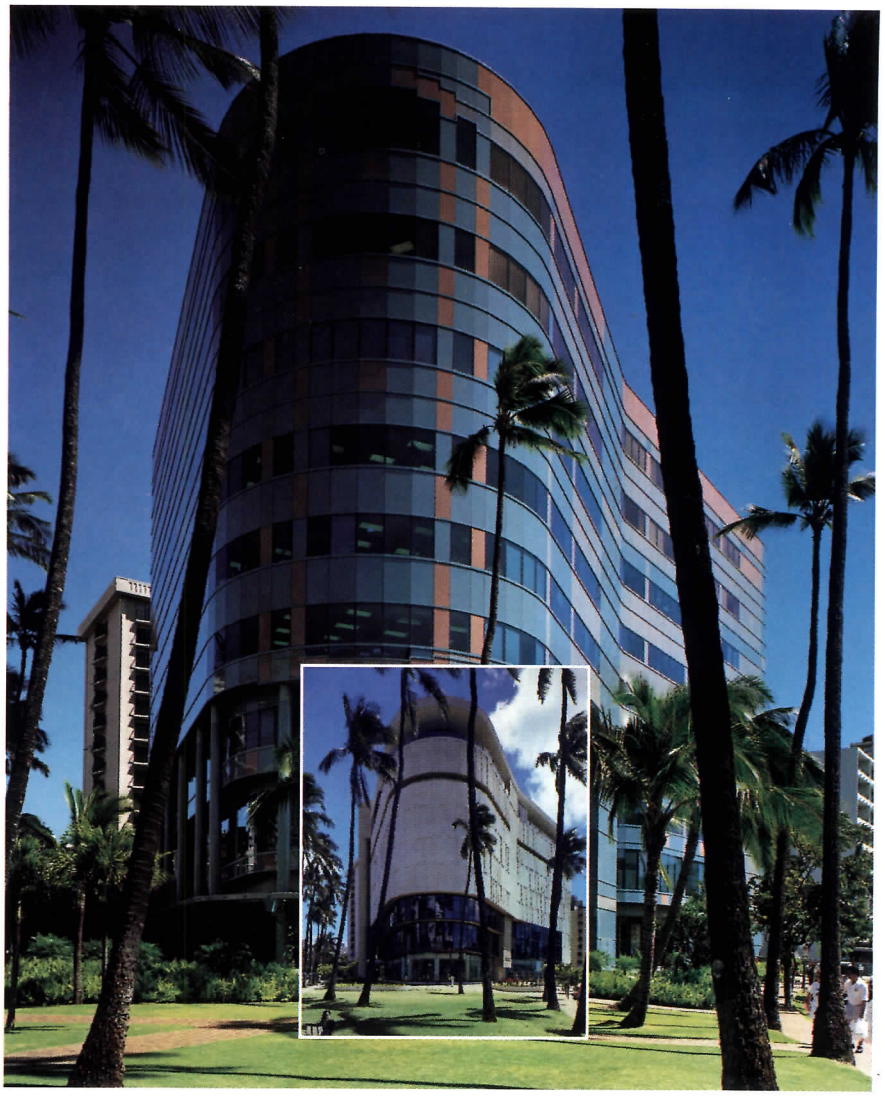
False Image

The issues the excellent article [RECORD, May 1992, page 34] raises about digitally altering images will have even more significance when it comes to deciding what degree of this is allowable in trade publications. As the technology for manipulating photographs becomes more sophisticated and less expensive, it will be relatively easy for architectural firms to retouch photographs on a desktop computer. Cars and telephone lines will disappear, grass and trees will be instantly planted, context, colors, and proportions easily changed. The only limitation will be the skill, imagination, and conscience of the operator. Unless firm guidelines are established, images appearing in the magazines previously thought of as accurate representatives will become the photographic equivalent of the fictionalized documentary. I think a lot of thought should be given to this by the publications and the AIA before we get too far down this slippery slope. The credibility of the profession is at stake.
Steve Rosenthal
Architectural Photographer
Auburndale, Massachusetts

A Many-Layered Thing

Steven Ross's columns on new computing technology are a unique source of information on the CAD revolution, and usually right on the mark. I have to differ with him, though, regarding the ease of developing multiscale drawings in AutoCAD [RECORD, September 1992, page 42]. To say that the details of a model need to be sent to and developed in a separate file seems to overlook the power of having unlimited numbers of layers and using viewports to present different assortments and display scales of layers at the same time. To help with this I use a standard short list of layer names and a level name prefix (xx-) to name different design levels. I also use a shareware layer manager (SIFT & PERM), and some simple SCRIPTS to change views and settings. I use different dimension and text STYLES and scales for different levels of a detail. Mastering layering also makes possible single project master files up through

Continued on page 5



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Kalakaua Center (top): CJS Architects, Honolulu, Hawaii • The Homer Building (lower left): Shalom Baranes Group, Washington, D.C. • One PPG Place (lower right): John Burgee Architects with Phillip Johnson

Circle 3 on inquiry card

Letters

Continued from page 4
schematic design. Then you can stretch everything at once, easily swap details from one level of the design to another, edit site conditions and do 3-D sketches, all in one file. To save file space I send hatch layers to separate files and XREF them for presentation plots.
Philip F. Henshaw, Architect
New York City

Steve Ross replies:
Mr. Henshaw's letter highlights the fact that modern CAD software allows you to do the same thing, any number of ways. I tend not to like the super-multilayer approach because it can lead to truly huge drawing files. And when you send some layers off to a third-party colleague (an hvac or structural engineer, for instance), you need to take special care to keep track of everything. Also, some heavy-duty CAD software does not allow as many layers as does AutoCAD. Nevertheless, Mr. Henshaw offers a textbook approach to handling drawings that are many, many layers deep.

Clarifications
A conflict has arisen over design attribution of the B. Braun Melsungen AG factory and distribution center [RECORD, October 1992, page 74], complicated by the untimely death of James Stirling while the story was in production. Walter Nägeli, the chief architect of Stirling Wilford's Berlin office, claims the design was largely conceived and executed in that office with minimal contributions from Stirling or the London office of Stirling Wilford. Wilford says the project was entirely a collaborative effort between both offices. RECORD has no independent way of confirming the validity of either claim, and the parties have yet to come to an agreement. Renzo Vallebuona was among the project's chief designers.—Ed.

In the November 1992 issue of RECORD, page 88, the first sentence in the fourth paragraph should have read: "In their choice and use of exterior materials and through skillful manipulation of proportions, the architects have made Burke distinctly contemporary, yet contextual with Dartmouth's older buildings."

Corrections
The architect for Stuyvesant High School, New York City ["Designing Against Malice," RECORD, November 1992, page 112] are Cooper Robertson & Partners, Architects and Gruzen Samton Steinglass, Associate Architects.

The New York Association of Architects was co-sponsor of the competition to develop a solar-powered canopy over a 19-acre parking lot [RECORD, October 1992, page 36].

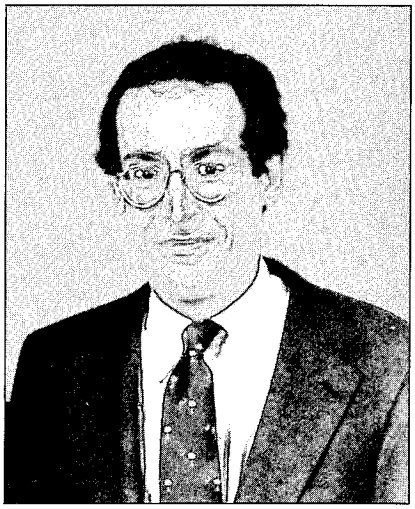
Craig D. Roney and Keith W. Campbell should have been included in the credits as part of the design team for the Bombay Connection project [RECORD LIGHTING, November 1992, page 36].

Stephen Cridland should have been credited for the photos of the Oregon Coast Aquarium in RECORD LIGHTING, November 1992, on page 40 (top and bottom photos on left); all the photos on page 41 should have been credited to Strode Eckert Photographic.

Calendar

Through January 29
An exhibition of waterfront, park, and subway projects for New York City will be displayed at the National Institute for Architectural Education, 6th floor, 30 W. 22nd St., New York, New York 10010. Contact: Mary Neibauer, 212/924-7000.
Through January 30
An exhibition of work by internationally renowned architect Renzo Piano at the Urban Center in midtown Manhattan. For more information call The Architectural League of New York at 212/753-1722.
January 29-31
International architectural critics will convene at the School of Architecture at the University of California, San Diego to participate in a public forum Search for Substance: Critical Reflections on the Architecture of the 1980s. For information call 619/534-5305.
February 12
The Architectural League of New York's 12th Annual Young Architects Competition.
For further information and competition theme contact The Architectural League of New York, 457 Madison Avenue, New York, New York 10022, 212/753-1722.
February 12-16
The 28th Annual National Precast Concrete Association (NPCA) Convention and Trade Exposition will be held in Tampa, Florida at the Hyatt Regency Hotel and Tampa Convention Center. For more information call 317/571-9500.
February 16-19
The National Roofing Contractors Association hosts its 106th annual convention and exhibit in Henry B. Gonzalez Convention Center, San Antonio, Tex. Contact: Alison LaValley, 708/299-9070.
February 17-20
2nd Interiors Conference and Exposition for Historic Buildings, Washington, D. C. 202/343-9578.
February 28-March 2
Masonry Expo, San Diego, Calif. For complete Exhibitor Prospectus, call Masonry Expo, 703/713-1900.
Through March 7
Miami Architecture of the Tropics. For more information call 305/375-1701 or write: Center for the Fine Arts, 101 West Flagler Street, Miami, Fla. 33130.
March 17-19
WestWeek 93, Pacific Design Center, 8687 Melrose Avenue, Los Angeles, 310/657-0800.
March 19-21
Monterey Design Conference. Contact conference coordinator Donalee Hallenbeck, 916/429-1414.
Through April 12
"Coop Himmelb(l)au." Exhibition at Centre Georges Pompidou, Paris. Models, drawings, sketches, photographs. Focal point of exhibit is the Object, a structure intended to exemplify firm's ideas on Open Architecture. Contact: Eric Otto in Los Angeles 310/838-8264.
April 22-23
"Problems: Issues and Answers" NRCA's 10th conference on roofing technology will be held at the National Institute of Standards and Technology, Gaithersburg, Md. Call Alison LaValley, 708/299-9070.
May 19-21
The 1993 Structural Concrete Conference, jointly sponsored by the Canadian Portland Cement Association, the Canadian Society for Civil Engineering, and the Network of Centres of Excellence. Hilton International Hotel, Toronto, Ontario, Canada. Contact Canadian Portland Cement Association, 613/236-9471.

Paul Sachner (1950 - 1992)



Paul Sachner, executive editor of ARCHITECTURAL RECORD, was born on August 7, 1950 and died of an AIDS-related illness on December 15, 1992, in his forty-third year.

After graduating from Trinity College, Hartford, and Columbia University with degrees in art history, Paul worked as an assistant registrar in the painting department of Sotheby Parke Bernet. He moved on to the New York City Landmarks Preservation Commission as senior landmarks preservation specialist. While there, he took part in a key federally funded survey of New York architecture designed to support the Commission's assigned job of designating and preserving important city structures and historic districts. In 1979 he joined the New York State Council on the Arts' Architecture & Environmental Arts program. There he analyzed projects and budgets of some 200 applicants a year, adding recommendations, and later monitoring funded projects. Paul joined RECORD in 1983 as new products editor and, after several promotions, became executive editor in 1989.

Paul was a modest man, but he had little to be modest about. His tenures at Parke Bernet, the Landmarks Commission, and the New York State Council allowed him to hone what turned out to be two of his greatest skills: an infallible taste—his ability to recognize quality and to identify junk—and his astonishing nose for consensus, making everyone feel each had thought up the solution to the question at hand. Architects in firms all over the world liked to work with Paul, as he was honest in his dealings without being rude, a mentor to rising firms seeking a place in the media sun, and a sensitive guide once a building was selected for publication.

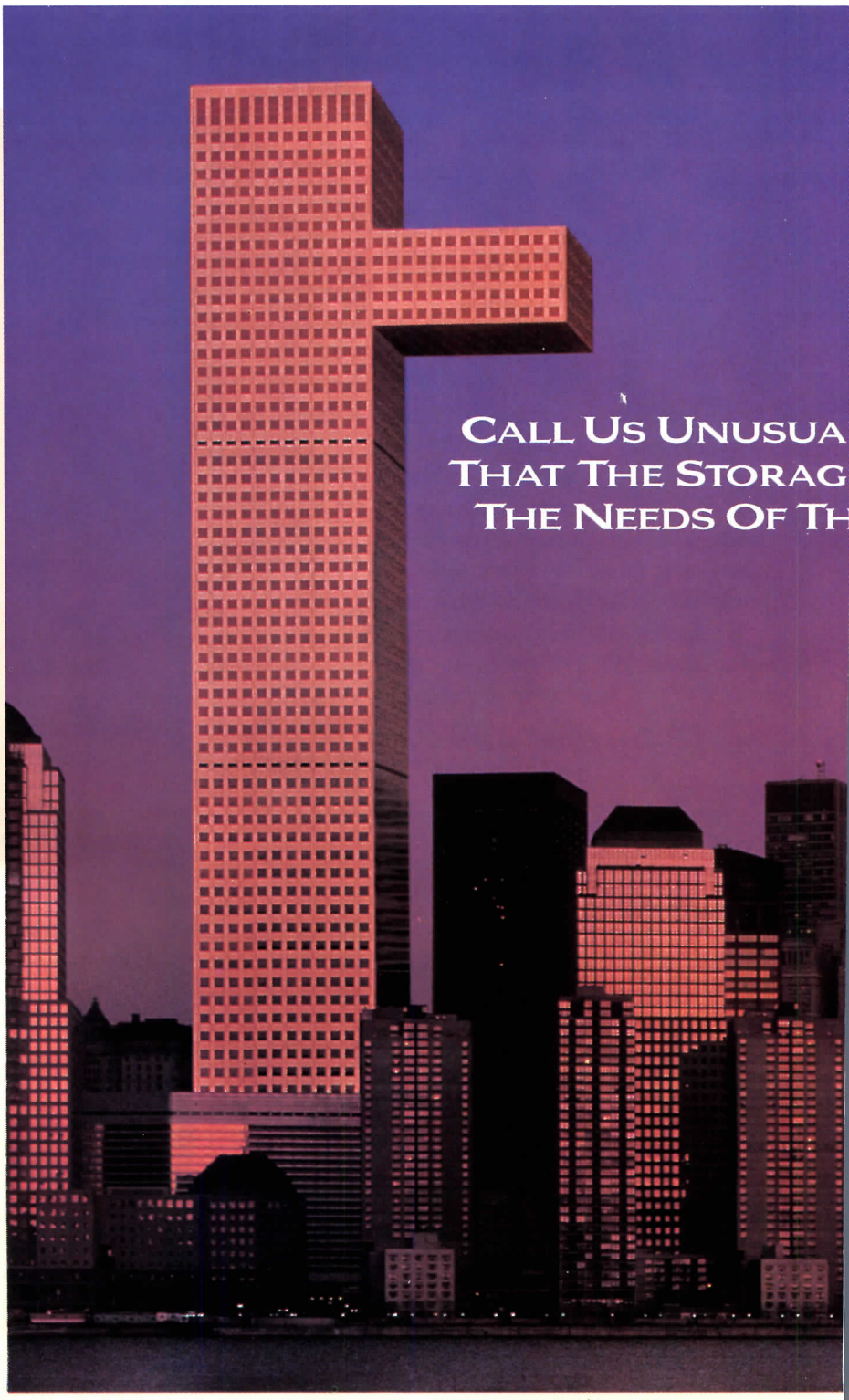
Paul was a man of many parts. Until weakened by illness, he used a trim six-foot physique to push his bicycle over great distances. He was a keen photographer of architecture, and is known to have used his camera with relentless frankness on his survey trips of candidate landmarks. He liked his restaurants simple and wholesome, joined by a few friends, and had no great love for the cocktail party circuit that is part of every editor's turf.

Around the office, he was a mild, friendly presence, lounging comfortably with feet on desk or sitting quietly around a conference table, putting in a key word here or a comment there to keep proceedings on track. These qualities served him well, since as executive editor his bailiwick was the "center of the book," the white pages where buildings are fully featured. He had a fine sense of balance, of knowing which choice and sequence of buildings would bring the reader the greatest sense of pleasure and learning.

Paul fought the good fight; he has now finished his course; he has kept the faith. And in his memory I want to invoke that lovely verse read in World War II to honor fallen fliers: "They shall not grow old as we who are left grow old/Age shall not wither them or the years decay/And at the going down of the sun and in the morning we shall remember them." *S. A. K.*

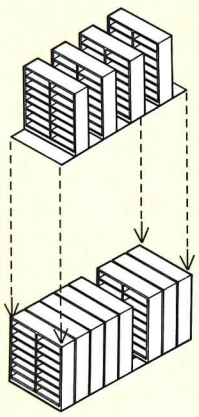
Contributions in Paul's memory may be sent to the meals delivery organization God's Love We Deliver, 895 Amsterdam Avenue, New York, New York 10025, or to the hospice Bread & Roses, Box 363, Georgetown, Connecticut 06829.

tradition. It has deep roots in every culture. When kicked out, it has a way of coming home to roost. *Stephen A. Kliment*



WHAT WAS IT THAT ALLOWED THE TAJ MAHAL, NOTRE DAME AND THE ACROPOLIS TO ALL BECOME ARCHITECTURAL ICONS?

WE'D LIKE TO SUGGEST THAT IT WAS SIMPLY THE FACT THAT THEIR DESIGNERS DIDN'T HAVE TO WORRY ABOUT WHERE TO PUT THINGS.



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Los Angeles

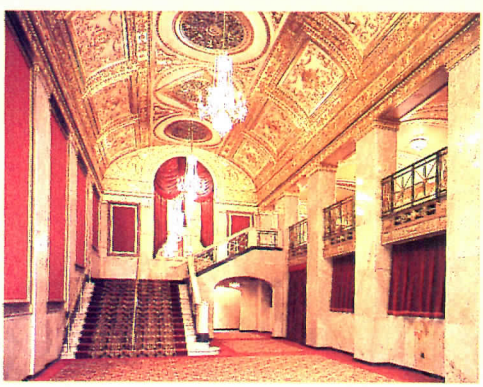
Landmarks to Anchor New Downtown District

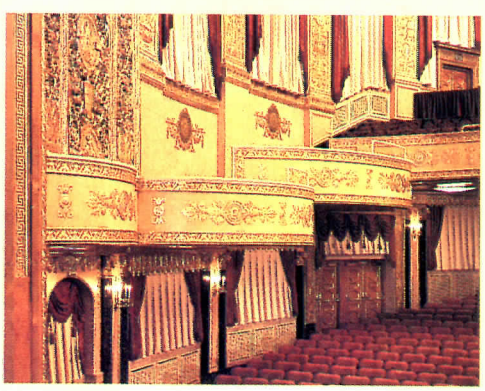
Aker Photography photos

Ehrenkrantz & Eckstut's Alameda District Plan for 70 acres surrounding a newly active Union Station ultimately handling up to 250,000 passengers a day is about to be realized. NBBJ is renovating the adjacent Terminal Annex, a 1938 Mission Revival structure with WPA murals, once the city's main post office. The first phase of new building is McLarand, Vasquez's 28-story Southern California Rapid Transit District office tower with an open plaza oriented toward the East L. A. community. Work on the 1939 Union Station itself currently is limited to cosmetic touch-ups guided by Hardy Holzman Pfeiffer's preservation study. The pedestrian-oriented 30-year plan envisions 11 million sq ft of commercial, residential, hotel, and retail space. ■

Washington, D. C.

68-Year-Old Theater Returns For Extended Engagement





David Patterson photos

One of the least camp and most elegant of historic U. S. film/stage-show venues, the Warner Theatre on Pennsylvania Avenue recently reopened following a three-year, $7-million restoration by Shalom Baranes. Work on the Washington, D. C., landmark also included tripling the number of dressing rooms, adding stage-wing space, improving loading facilities, creating 32 corporate boxes, and bringing sound and lighting systems up to date. The 1924 original, called the Earle Theatre, was designed by C. Howard Crane and Kenneth Franzheim. ■

Miami

Preservationists Break Historic Mold

The National Trust for Historic Preservation's annual conference stepped out of the traditional mold to deal with the difficult issues of poverty, racism, and the vast cultural and economic gaps in American life. The conference, entitled "Fostering Appreciation for Cultural Diversity," attracted over 1,400 preservationists to Miami.

For the first time, some of the attendees were on "scholarship": grants from a consortium of foundations enabled the Trust to bring in 120 students and minority community leaders. "We know all the different groups that helped to build America, and we're not telling the whole story if we don't include them," said Trust vice president Peter Brink. Thus, the conference embarked on a frank and surprisingly fearless tone.

"The population of our cities is becoming more brown, more black, more yellow," said former Charlotte, N. C., mayor Harvey Gantt, the conference's keynote speaker. Other speakers at the conference were the controversial Linda Chavez, former chairman of the U. S. Civil Rights Commission; John Lewis, congressman from Atlanta; and the environmentalist Bruce Babbitt, the former governor of Arizona. The conference also marked the public debut of the organization's newly named president, Washington, D. C., attorney Richard Moe.

Miami, with its multi-ethnic and ever-changing population, proved the ideal laboratory for the Trust's members who visited not just the requisite landmarks (the Biltmore, the Freedom Tower, Vizcaya) but participated in mobile workshops in historic neighborhoods that now are home to Cubans, Haitians, Nicaraguans, and other diverse cultural groups.

Although the conference was held in downtown Miami, the primary preservationist tourist draw was the Miami Beach Art Deco District. The Trust membership weighed into the longtime political battle to protect the mile-square district with a local preservation ordinance, passing a resolution in favor of the pending legislation.
Beth Dunlop

Wisconsin

Madison Votes for Frank Lloyd Wright—50 Years Later

Bill Fritsch

Buried in the results of the last national election was a vote by the citizens of Madison to build Monona Terrace, a convention center based on a design by Frank Lloyd Wright on a site the Wisconsin native himself chose more than 50 years ago. In 1938, Wright unveiled a public project he called Monona Terrace to link the capital area and downtown business district to Lake Monona; at the time of his death in 1959 he had revised the design to replace semicircular parking terraces with arch-windowed public spaces. The project includes a 42,300-sq-ft exhibit hall, a 15,000-sq-ft ballroom/banquet hall, a 900-seat multimedia auditorium, and a vast rooftop garden linked to the capital area by a pedestrian bridge. The combination of site and design is expected to attract not only conventions but also community-based events such as weddings. Taliesin Architects, the successor firm to Wright, will head the design team; project architect Anthony Puttnam says that Monona Terrace was the first design he worked on as a student at Taliesin. The center is scheduled to open in 1995. ■

Cleveland

"Emotional Landmark" for Indians Fans

Architectural Fotografics

HOK's Sports Facilities Group designed the new Indians baseball park to be an "emotional landmark" for the community and an animated foreground to the skyline. The scheme blends beloved aspects of old-time parks with echoes of local architecture—the administration building refers visually to the hard-edged Terminal Tower, while the park itself echoes the sculptural qualities of the dozen bridges spanning the Cuyahoga; overall motifs are drawn from the Cleveland Arcade atrium of 1893. An asymmetrical footprint acknowledges non-grid streets. ■

United Kingdom

Traditional Doctrine Marks London Urban-Design Parley

Traditional approaches to urban design carried the day at a one-day symposium co-sponsored by the Prince of Wales's Institute of Architecture and the Royal Academy of Arts. Tagged as New Practice in Urban Design, the symposium's tenor could be deduced early on from the choice of speakers. Christoph Sattler, partner in the Munich firm of Hilmer & Sattler, described his master plan for Berlin's Potsdamer Platz. The plan follows a traditional prototype of streets and squares while allowing the architects, who include Helmut Jahn and Renzo Piano, leeway to design highly modernist structures [RECORD, January 1992, page 20]. The plan calls for raising the former 80-ft roof line to 115-ft to accommodate financial pressures from private developers such as Sony and Daimler-Benz.

In his description of Windsor, Florida [RECORD, October 1991, page 114], a new town developed by Toronto magnate W. Galen Weston, Windsor's urban designer and architect Andres Duany took to task uncontrolled urban (and, one sensed, especially suburban) development where each house was designed for "curb appeal," where each house tries to stand out from the next, sometimes producing what he called the "architectural zoo" of such townships as East Hampton, New York. Duany pointed out that in controlled communities such as Seaside, Florida, traditional houses tended to fetch more on the market than houses of modern design—not exactly a surprise, given the milieu. He also lambasted the tendency to measure standards of living by such quantitative measures as autos-per-family as opposed to other, qualitative yardsticks.

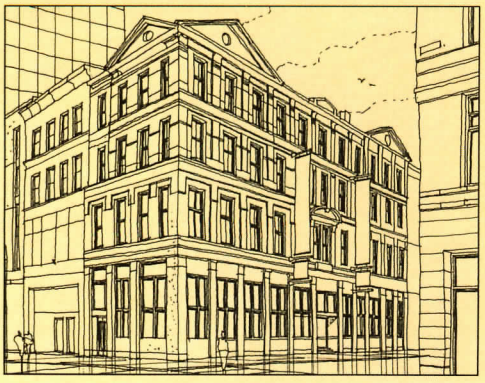
Built largely from scratch on rolling meadows a score miles west of London, virtually in the shadow of a different Windsor (there are a few 15th century half-timber buildings on the site), Belvedere Farm near Ascot (right) is a polo community owned by Windsor, Florida, developer Weston and made up of a dozen buildings to house visitors, grooms and, mainly, strings of magnificent polo ponies. Organized on the lines of a village, the spaces are arranged around three foci: a residential court containing a series of cottages and the estate office; a farm court anchored by a Wrightian dovecote tower; and the stable yard. Asked about the relevance of such a suave, urbane configuration to today's world, architect Demetri Porphyrios saw it as a prototype for newly created rural villages.

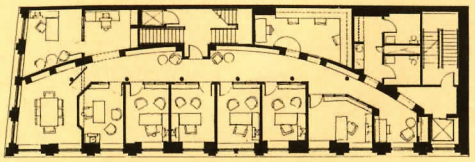
Leon Krier completed the quartet of traditionalist urban designers with a progress report on the new town of Poundbury, set on a Dorsetshire site owned by Prince Charles [RECORD, January 1992, page 21]. Krier's master plan champions a return to pre-industrial models. In a written text, he charges that private developers and foundations "however well-meaning, are not able to build and maintain a public realm of a quality that we find in European historic centers."

One of the two venues for the symposium, the Prince of Wales's Institute of Architecture, currently has 31 students on a one-year program, to be expanded to 100 students and a three-year program. One out of five applicants makes it. There are some 70 adjunct faculty, and the teaching staff is headed by Dr. Brian Hanson and Keith Critchlow. Wrapping up the proceedings, Dr. Hanson cited a key challenge from a series listed in the institute's propectus: "How to build for a technological age in a way that protects and enhances vulnerable urban and rural character." *S. A. K.*

Boston

A $700,000 Renovation Rescues The Old, Saves Energy, too





"We wanted to show that old buildings can be made more energy-efficient without destroying what is beautiful in them," says Conservation Law Foundation comptroller Margaret Benson of Keith Moskow's renovation of the group's 1874 building. ■

Houston

Texas Facelift

The winner of the Rice Design Alliance "Heart of the Park" competition is Melton Henry/Maurice Robison Architects with Peter Brown, Scott Slaney and Steve Harding. The scheme for a $4-million improvement project in Hermann Park includes a grand waterway with pool and fountains, rows of oak trees, plantings of Italian cypress at the Sam Houston Monument, and a side garden dedicated to O. Jack Mitchell, former dean of the Rice School of Architecture. The park is bordered by Rice, the museum district, and Texas Medical Center. ■

This Month

Jousting for Commissions: Ways to Win

Jousting for Commissions. *Page 30.*
On the architectural playing fields, some firms are being driven to desperate measures to get work. Initiating a new series on the most meaningful issues for architects, RECORD found that some practitioners run full tilt into the fray; others prefer appeasement.

Construction Costs Heat Up. *Page 34.*
Perhaps it's a blip—just a sign of the building business picking up, but construction costs have zipped ahead, setting a pace that hasn't been seen in some time.

Construction Costs: Interest Rates Under President Clinton. *Page 35.*
While the economic markets fret that spending on promised federal programs will drive inflation and interest rates up, those effects may be a way off and may not even occur in the next four years.

"Architects are acting like used-car salesmen," says Steven Izenour of Venturi, Scott Brown and Associates. He refers to free trial runs in the form of unpaid schematics (even revisions to these schematics, report other architects), volumes of qualification statements and proposals, and such up-front warranties as code research and program analysis. One small firm of three professionals says it spends $5,000 to $10,000 per prospect on all of this. "Clients think they are kicking the tires," adds Denise Scott Brown, "but all they are really doing [with free schematics] is getting off-the-cuff, often unrealistic musings—designs the client has had no input into whatsoever. More experienced clients realize that good architecture is the result of clients and architects working closely together over time to arrive at a solution neither side could envision before they started."

As River Forest, Illinois, architect Steven Saunders puts it: "I find it deplorable that a profession that carries such enormous liabilities and risks, a profession that requires talent and technical expertise, continues to allow itself to be exploited this way by [clients]." Included in another architect's list of special services is "prostitution."

"The key issue is *cost* to firms that are already suffering in a tight economy," says a Berkeley, California architect with a firm of 50 professionals and above-average billings. "But," he adds, reflecting the resigned view of many others, "we do what it takes."

"Competition is good for architects," says Joseph Fournier Jr. in Waltham, Massachusetts. "We have to be accountable to our clients and show them we are willing to work with others." He wins 90 percent of the mostly residential commissions he goes after, spending relatively modest amounts of money to do so.

"Architects are their own worst enemy here," observes Walter Vick III in Fayetteville, North Carolina. "As long as competition exists and we're willing to go to any lengths for a job, the clients will continue to up the ante. Soon we'll be paying for the privilege. How can we continue to evolve to the benefit of the profession?"

Competition is getting worse

More than twice the number of architects participating in this RECORD survey said competition is getting worse than did not (see graphs overleaf). "We are faced with a surplus of some building types that must be absorbed before we see any further activity [in them]," observes Barry Donaldson of the Donaldson Group Architects in Boca Raton, Florida. Indeed he agrees with Dodge/Sweet's Outlook, (see RECORD, November 1992, pages 26-34), which sees growth in office and multifamily residential buildings and some other types as being several years away. Because most immediate growth in construction will be in types that architects have limited involvement with, such as developer housing, architects are going after a smaller market. Especially the small firms complain of big firms moving down into their once-stable specialties—like "sharks around our small institutional clients" says the principal of one small firm—bringing vast resources for glittering presentations and "knocking us out of the water," says the principal of another small firm. "Professional standards and courtesies are forgotten in times like these," says the architect in Berkeley.

Architects see more basic problems within the profession: "How can we ask clients to value are services when we regularly give them away?" asks Vick. On competitive tactics that architects use: "It appears that *seeming* to be is just as valid as *being* when it comes to representing capabilities," he adds. "The profession is radically changing with architects in a more and more shrinking role both in responsibility and fees," says William McMahon in St. Louis. "The AIA should be protecting the profession, but is not doing so," he adds. "The profession is increasingly absurd," says a New Orleans architect. "We kill ourselves and our employees to make survival wages."

But most architects see the rise in competition as part of a normal cycle that will end. "It's an extended cycle," says Nick Jones, whose small firm in Clermont, Florida specializes in churches and schools. "It's just like 1982," says the architect in Berkeley, even though he sees this latest dip as being "structural" and abnormal. "This time, there

Instead of resorting to throat-cutting techniques to get work, some architects have found a better way to compete. RECORD asked over 100 principals in varied firms around the country how they're fighting back—and how some of them are winning the battle.

are no loans." Those who said this was a normal cycle tended to be in relatively recession-proof building types—single-family houses, renovation-restoration, institutional buildings, or a diverse mix.

"We are small enough to weather swings," says Allen Davis of Davis & Will in Deerfield Beach, Florida, reflecting the view of many small firms. But a large architectural and engineering firm with 1,800 professionals and above-average billings in South Carolina sees the current situation as part of a normal cycle, too. Some firms see work picking up. Venturi has recently acquired several new commissions following a long dearth, reports Izenour after his initial conversation with RECORD. Still, for many architects, the profession is becoming increasingly cut-throat.

What architects will do to get a job

"We don't do free schematics, but many here do and they're taking our work," complains another California architect. "Clients don't ask for it, but we'll throw in a nice study model as a surprise," says an architect on the East Coast." Many architects we asked in all sized firms do free schematics—as well as write growing reams of proposals, qualification reports, verification statements, and even site, feasibility, and code analyses. They will also give elaborate video presentations and multiple interviews.

The large South Carolina architectural-engineering firm will spend $100,000 on a prospect and get 15 to 20 percent of the commissions it goes after—meaning that it spends over $500,000 for each success. Another architectural-engineering firm in San Francisco with 3,000 professionals reports spending only $10,000 to $25,000 per proposal and has a hit rate of 30 to 40 percent.

The discrepancies were more remarkable among the smaller firms. A 10-professional firm in North Dakota spends up to $36,000 per prospect in mostly government work. It does get 75 percent of the projects for which it is short listed. More typical is the 10-professional firm in Wisconsin that spends between $1,000 and $1,500 and lands between 25 and 30 percent of its private-sector prospects. For this, the client gets a brochure of past work, a slide show tailored to the client and building type during an interview, and a proposal. Period. Another similar-sized firm in Pittsburgh claimed to spend only $50 per proposal in commercial and local-government work by only filling out RFPs.

Firms with under five professionals spent amounts ranging from under $100 (hitting 80 percent of its targets) to $15,000, hitting 20 percent. One two-professional office in highly compeitive New York City listed $8 per resume as its total costs and claimed to hit 80 percent in its small interiors field.

Indeed, the same number of firms say they do *not* go to extensive lengths to get commissions as those who say they do. "I do not compete at the [low] level you imply," responded one architect with a 10-professional office and above-average billings. Quite a few said they still rely on referrals and past clients for new work.

These architects tended to be in locations or specialized building types in which they ruled the roost. Many designed houses, others designed golf clubs or laboratories for specialized types of research. Richard Burke in Glen Head, New York prefers to downsize, relax, and wait out the storm. Still his two-professional firm with a mix of residential and commercial clients gets 50 percent of the work it pursues. Another architect, when asked if he is planning to diversify," responds "into a new career." But, for the rest of architects, the question becomes how to deal with growing demands from clients and competition from aggressive firms.

Gut Issues '93: New Approaches to Practice

Starting with this issue, our editors will be interviewing professionals from varied firms around the country—asking what they're experiencing, how they're coping in a flat market, and how they think the profession should mobilize for action in an increasingly diverse marketplace. Each month, we will cover a topic of basic concern—this month, the explosive rise in competition for commissions—and come up with answers that you can put into play on your own private battleground. C. K. H.

Meeting prospects' "ridiculous" demands

"We just do it," says Dale Crawford, owner of a firm of 10 professionals in Albuquerque. He cites elaborate proposals with color photographs and charts, and audio-visual presentations (but no schematics) for which his firm will spend up to $5,000 per project for its mostly government work.

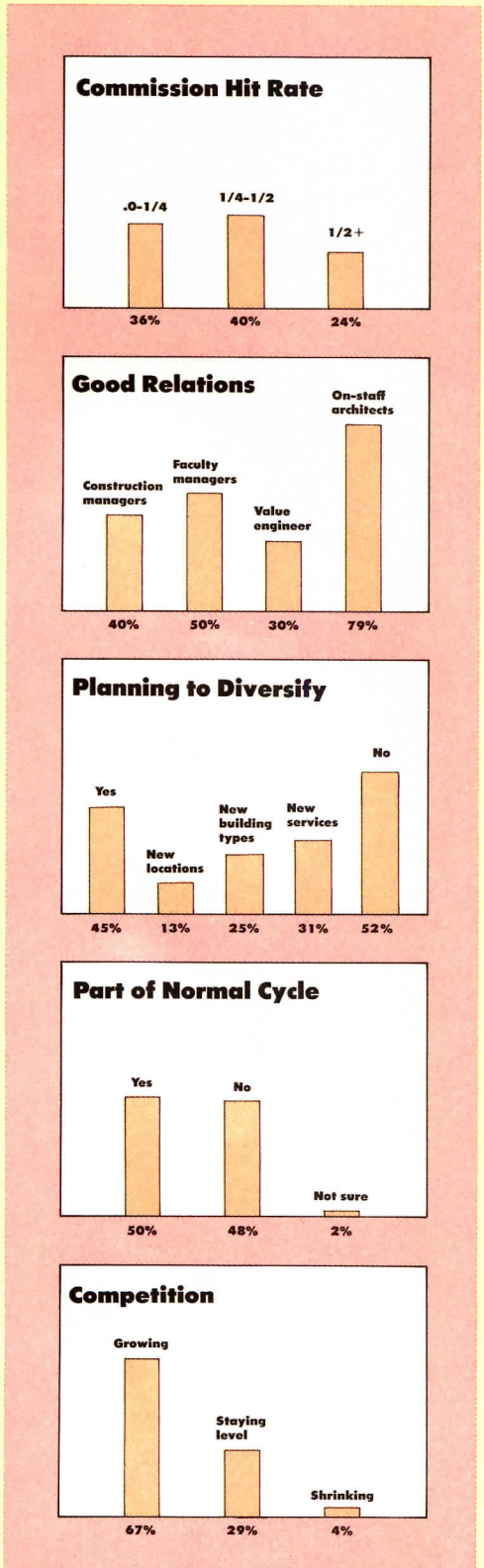
"I'm not pleased with it, but if you want to play the game, you have to do it by the rules or be left behind," says the president of a similar-size firm in Phoenix. It spends up to $5,000 to court each civic and government project, but spends it on audio-visual presentations and schematics, getting eight out of 10 commissions for which it is short-listed.

"Due to the high cost and competition to get public-sector work, we avoid it unless it's a project for which we have a unique advantage in experience or familiarity with the client's problems," responds Barry Donaldson of the five-professional Barry Donaldson Group Architects in Boca Raton. He reflects the view of some one in 10 of those questioned here. "Why is it that architects doing government work go broke so often?" asks a New Orleans architect. "This is a constant problem, not a cyclical one." Proposals for government work were often cited as costing twice those for private.

Paying for those qualification costs

"Work them into the overall project budget," recommends Joseph Fournier. "We depend heavily on 3-D computer graphics," says J. R. Stutzman, owner of BRDA Architects in Indianapolis. "Our staff time is less than 16 hours for major presentations in stills or 48 hours in animation." (He usually does not follow the required format on RFPs, but his two-person firm wins 75 percent of the commissions it pursues because "it shows clients sizzle that big firms can't.")

"We are selective on who we submit proposals to," says Jack Nelson of his four-professional firm R. G. Nelson Architect in Coeur d'Alene, Idaho, specializing in hotels, some student housing, and houses. His firm will walk away from a project even after being short-listed if he finds the odds presented by typically four to six competing



firms not worth the $5,000 to $10,000 it will spend to go further. His firm is by no means unique in this. "Do you have a chance or is this a cattle call?" asks David Hauseman in Atlanta when deciding whether to pursue a commission. "Learn to walk away from bad deals."

Other firms are not so successful in dealing with the high cost of qualification materials and services. "The two principals of this firm haven't drawn a salary since March 1992," reports a Venice, California architect. "We spent $68,000 on one large commission and didn't get it." Consider the quandary of the firm of two professionals in Florida that spends $3,000 on free schematics for each prospect, yet lands only one in 10. "Schematics can be lethal," observes another architect. "You have more of a chance of giving the wrong answers than the right ones."

More typical are firms that even now give only an interview and brochure and spend a maximum of $500 to do it. One firm with four professionals following this time-tested format on mostly residential work in Vero Beach lands 95 percent of its potential clients and has billings of $600,000 per year. "Do little free work," advises a St. Paul architect, whose 25-person firm even so manages to do mostly government and educational projects. "We have never done free work," says a Marina del Rey, California, architect designing mainly schools.

"Pre-selection materials and services are very unprofessional," says Robert Broward in Jacksonville. "Life is too short; I refuse to do any of it." Still, he gets approximately 80 percent of his targeted mix of residences, churches, and office buildings. (His response to questioning on special services he offers is: "All my services are special.") Move to another segment of the market, advises Wayne Batteu of Batteu Architects in Bethlehem, Pennsylvania. He seems to have found a kinder, gentler one; his work is 75 percent churches.

Some ways to beat unprofessional competition

"Get together and agree to minimum fees—antitrust or no antitrust," exclaims one fed-

up architect. "Enforce the laws on the use of architects to design structures," asserts a Colorado Springs architect. "Outlaw out-of-state architects." As Rodney Axtman in Port Saint Lucie, Florida puts it: "Architects need ethics above giving away free work." His three-person firm spends no more than $500 to pursue its equal mix of commercial and residential clients, and gets 35 percent of them anyway. "No one should engage in competition without a fee. Ultimately, it undermines all fee structures and the very image and opinion of the profession."

"Clients should [be made to] state in requests for proposals that design solutions are not acceptable for selection unless they conduct a design competition," says Dale Crawford. "And clients should have to compensate those short-listed, but not selected," says Michael Bausch in Dallas. "What profession is so stupid as to give away free work? Doctors, lawyers, and accountants don't do it," points out William McMahon.

"In the same way that insurance companies regulate the medical profession, federal legislation should regulate fees and services of architects as well as define 'reasonable' liabilities," declares Steve Saunders. Neil Jones: "Architects need to band together and say no to clients who seek free services." Some feel the problem can be solved by higher fees: "Attorneys would charge six to eight times what we charge for the work we do," says a New Orleans architect. "Cut-rate equals cut-throat." Others find solutions in more consistent selection practices: "The 254 and 255 forms are misused by public clients. Most require both forms for each proposal," says Barry Donaldson. "Other agencies have abandoned them in favor of their own forms that require special documentation."

Finally, there are architects who feel that a better business environment for clients will make a better environment for the profession. "State and local government should give incentives to developers and freeze small-business taxes," says Richard Burke.

Others creep into the field

"Value engineers are just a fancy term for people who substitute cheap materials on the job!" asserts a Phoenix architect. "They tend to have a very narrow vision on design," states J. R. Stutzman. "They often come into the picture too late in the game and the changes they suggest cannot be incorporated," says David Alsop. Many who work with them in this group seem to be down on value engineers. What about other consultants owners may bring on board? "We have a major problem with one client's vice president of development," says a hospital specialist. "He's a cost-cutting fool." Another architect is more blunt: "We will not work with any of them." The Phoenix architect was not much kinder about construction managers: "I have had nothing but bad experiences. Their only interest is the schedule. To hell with quality, craftsmanship, human relations, etc. They should all be shot." Still, architects as a whole were about evenly split between "good" and "satisfactory" in their relationships with construction managers, facility managers, and others.

"We set the tone of professionalism for the project," asserts a particularly confident practitioner in Nashville. "People treating each other with respect as professionals would go a long way toward improving the situation," says another architect. "Owners' consultants justify their salaries by beating up on architects, and showing how smart they are and how stupid we are."

"Consultants want to earn their fee, so some do, at times, pit us against them—maybe necessarily," says Rodney Axtman. "We have mixed results with construction managers. They are sometimes very good and contribute a lot," says Barry Donaldson. "Fortunately, Arizona is realizing that we are doing the same services they offer," says the Phoenix architect. "They're just wasting the owner's money."

Winning on the battlefield

"Nothing beats human chemistry," says Neil Jones, picking out the singlemost popular technique recommended here—even by those pursuing government work. "Use connections," advises another architect who sheds a little light on the latter group. "Politics on a level playing field," is the route used by Walter Vick.

For those who prefer to stick to their merits: "Get involved at the programming stage," advises Jack Nelson. "The effort spent on a commission with a private-sector client can lead to additional projects for which your competition is basically shut out," says Barry Donaldson. "This makes it easier to spend more time on projects and less on preparing brochures." David Hauseman recommends getting a partner firm for big work: "A piece of something is better than 100 percent of nothing."

"Be armed at interviews with background information using pre-interview conferences and site visits to get it," advises V. J. Shute Jr. of Schute Larson Architects in La Crosse, Wisconsin, who uses these techniques even when the clients have not requested them. His firm of nine professionals spends moderate amounts of money on qualifications brochures and sends both partners to interviews, but indulges in none of the other popular techniques discussed here. Still, it wins some 30 percent of the mix of libraries, churches, commercial structures, and houses it pursues. Dale Crawford agrees with this approach and adds "discussing specific design-approach methods" (not designs per se) at interviews. "Never go to an interview without your consultants. This strengthens the team concept," says Samuel Mathau. Rodney Axtman: "Don't overdo the verbiage but tell them the truth about costs, time schedules, and their major concerns."

"Prepare two alternate schemes to show," says one architect who epitomizes the aggressive view. "While other firms are showing what they did, we show what we can do." Robert Broward takes the diametrically opposed view: "I don't like the term 'win' commissions," he said in response to our questions on how to do that. And he, without jumping through any of the hoops, gets a much higher percentage of projects he wants than does the aggressive firm.

Where does this all wind up? Will architects who bend over backward too far to capture clients get their way or will—they simply self destruct?
Charles K. Hoyt

Construction Costs on the Upswing

After lying virtually dormant for over two years, third-quarter results show construction costs are starting the long climb back.

While price rises have remained moderate in the economy as a whole, construction costs are beginning to take off. Is this a blip or is the price being paid in advance for the prospective construction upswing? Following a period of up-and-down price swings since 1990 that resulted in a three-point loss on the national index, costs in the second quarter of 1992 rose 0.40 percent (the greatest rise since 1989) and 0.60 percent in the third quarter—the steepest rise since third quarter, 1988.

In fact, both material and labor price rises still trail inflation, but experts see some catching up now that construction is showing some life. Materials producers have been trimming expenses to the bone; now they are poised to get their return. The rises are not universal. Lumber, for instance, which had been going up for some time due to the healthy single-family housing market, has peaked and is falling off, according to Marshall + Swift vice president Robert Crine. This leaves a wide range of other building products such as glass, steel, and masonry, more commonly used in other building types, as the vehicles bringing overall highercosts. Crine notes that the *Marshall Valuation Service* has just been updated to cover the costs of conforming with the ADA and is available from Marshall + Swift, 1200 Route 22, Bridgewater, N. J. (1-800/451-2367). *Charles K. Hoyt*

Data supplied by Dodge Cost Systems Marshall + Swift

U.S. Summary of Building Construction Costs (in per cent)

DISTRICTS	# Metro Areas	7/1992 TO 10/1992	10/1991 TO 10/1992	1977* TO 10/1992
EASTERN U.S.				
METRO NY–NJ	18	0.26	1.89	2045.69
NEW ENGLAND STATES	33	0.22	1.47	1884.29
NORTHEASTERN STATES	120	0.32	1.35	1786.53
SOUTHEASTERN STATES	106	0.80	1.19	1852.83
AVERAGE EASTERN U.S.	277	0.49	1.34	1840.39
WESTERN U.S.				
WEST CENTRAL STATES	122	0.96	2.48	1744.95
PACIFIC COAST STATES	106	0.49	1.03	1824.73
AVERAGE WESTERN U.S.	228	0.74	1.81	1782.04
UNITED STATES: AVERAGE	505	0.60	1.55	1814.05

*USING ONLY CITIES WITH BASE YEAR OF 1977.

Historical Building Costs Indexes

Average of all Nonresidential Building Types, 21 Cities

1977 average for each city = 1000.0

Metropolitan area	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992 1 Q	1992 2 Q	1992 3 Q
Atlanta	2078.0	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
Baltimore	1544.9	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
Birmingham	1469.9	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
Boston	1432.5	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
Chicago	1344.7	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
Cincinnati	1350.4	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
Cleveland	1459.5	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
Dallas	1750.6	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
Denver	1632.2	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
Detroit	1580.3	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
Kansas City	1323.4	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
Los Angeles	1474.3	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
Miami	1369.1	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
Minneapolis	1442.6	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
New Orleans	1572.7	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
New York	1419.2	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
Philadelphia	1660.7	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
Pittsburgh	1493.2	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
St. Louis	1397.3	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
San Francisco	1776.4	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
Seattle	1814.9	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

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 Finance: Interest Rates in Clinton's Administration

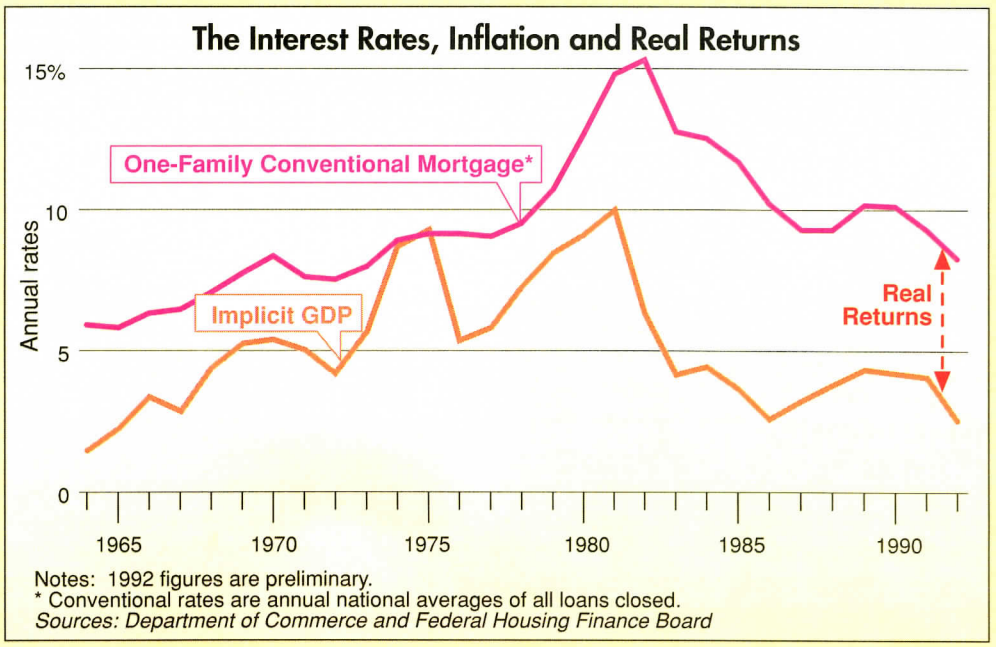
Government spending is unlikely to drive interest rates up quickly.

By Phillip E. Kidd

Jobs! That's what the economy needs. And that's what the new President has promised to produce quickly. At this point, the details of his plans are sketchy. Talk abounds of more spending on infrastructure and education, including retraining underemployed workers; targeted tax credits to bolster equipment and research and development expenditures; and tax cuts for lower- and middle-income persons. Particulars on paying for these proposals are also vague, but higher taxes on the rich and bigger cuts in defense spending are often mentioned.

As a Clinton victory became more apparent this past fall, money managers and other investors became increasingly alarmed that a Democratic spending spree in 1993 would raise inflation by enormously expanding the federal deficit. Long-term rates began inching up as a precaution. But it will take six to nine months to design, propose, legislate, and implement any stimulative actions. The new Administration will announce details of its most important jobs initiatives in February and March, at the earliest. Congress has promised speedy action on these proposals. *If* (a BIG word with Congress) that happens, major legislation could be passed and signed by the President in June. Any delay in this timetable would push larger government expenditures further out in the year. Thus, the earliest to expect any effect is well into the second half of 1993.

Will a budget deficit that exceeds the present projections of $280 billion to $300 billion set off an inflationary binge? Probably not if, as expected, the stimulus is injected for only a short period—12 to 18 months. Currently, inflation, is headed downward. It will open 1993 nearer 2.5 than 3 percent, a significant drop from the 4 percent range of 1991. More importantly, the economy has considerable room to expand before it runs into inflationary pressures. Production capacity is abundant, with utilization rates between 77 to 78 percent. Material prices are low. And labor, is plentiful due to high unemployment. Given these factors, the economy could sustain a 4- to 5-percent real expansion rate for many months without heating up inflation. No one is projecting those kinds of growth rates, even with an additional $40 billion to $60 billion of federal spending starting in the second half of 1993.



Notes: 1992 figures are preliminary.
* Conventional rates are annual national averages of all loans closed.
Sources: Department of Commerce and Federal Housing Finance Board

Nevertheless, investors are likely to watch nervously as interest rates, especially long-term rates, trend slightly higher in 1993. This upward tilt will occur more because of the fundamentals of supply and demand than because of a re-emergence of inflation. As a nation, we do not save enough. Currently, our savings rate is drifting below 5 percent of personal income. In contrast, we have massive investment demands, ranging from modernizing public works to technology; from improvement of private-goods and services production to education.

When demand for funds is persistently greater than the supply, interest rates rise (see graph). In the current situtation, the advance has not been so much in nominal rates, but rather in real rates (i.e., nominal rates minus inflation). When inflation fell in the mid-1980s, real rates declined. Even so, foreigners bought our assets to fund our excessive consumption. In the late 1980s, that ended as they invested their savings at home. Our real rates stopped falling, turned higher, and will continue that way until our economy expands at a rate faster than its present 1 1/2-percent real growth.

What will change the situation? Jobs!

When employment grows, so do incomes. Rising earnings means more spending. That encourages employers to hire more workers, setting off another round of income gains. As earnings expand, people will not spend all of it. Some will pay down debt or buy financial assets. Both actions will enlarge the pool of funds for investment and lead to even more job formations. The Clinton Administration has promised to use the tax code and federal outlays to direct more public and private dollars into expenditures for infrastructure, productive equipment, technological development, and education to jolt job creation out of its current doldrums.

Single-family-house construction will benefit. There is still a number of younger "boomers"—ages 28 to 34—trying to buy that first home. Better employment prospects coupled with relatively attractive fixed-rate mortgages (8.5 to 9.25 percent in the early spring) will entice these buyers into the existing-house market and sellers to acquire others, many of them new. These purchases will re-invigorate the current upward trend in single-family housing starts. ■

Mr. Kidd is an economic consultant and former director of research for McGraw-Hill Information Services Company.

Wetlands Dilemma

Even apparently dry sites may be defined as wetlands—with important design consequences. Here's an update on the regulatory morass.

Wetlands are the most polarized environmental issue that affects architects today. Landowner groups and development interests typically want as few restrictions as possible on the way property is used. Environmental groups want to minimize the loss of natural areas—which often means halting development. And wetlands are hard to avoid, covering, for instance, more than 25 percent of the areas of Alaska, Louisiana, and Florida. In most communities, a site next to a wetland raises property values: it assures privacy, and the everchanging view often includes dozens of varieties of birds, from cackling red-winged blackbirds to stately great blue herons. Once declared a wetland, the value of a piece of apparently developable land usually plummets, however, and this allocation of costs and obligations poses a dilemma.

As we've learned more about them, marshes, lakes, and other wetlands have become more prized. Trees, reeds, and rushes in marshes slow rainfall runoff, reducing flooding. Wetlands shelter an enormous variety of plant and animal species, and are often essential for fisheries. (Loss of coastal marshes due to insensitive oil and gas drilling activity is blamed for declining shrimp catches off Louisiana's gulf coast.) Lately, as scientists have begun to understand the mechanics of marshes, they have learned that these ecosystems are efficient filters of pollutants. (Already, marshlands are used to "polish" sewer effluent in Hillsborough, Ore., Denham Springs, La., and Myrtle Beach, S. C.) And marshes have become increasingly valued for recreational uses such as boating and fishing.

Defining a wetland

Most people think they know a wetland when they see one (water, cattails, soil that squishes underfoot), but the "delineation" of wetlands for the purpose of granting permits has proven enormously controversial. Regardless of local regulations, you have to find out whether the federal government, specifically the U. S. Army Corps of Engineers and the Environmental Protection Agency (EPA), consider a given development site a wetland. (Federal permits, however, are usually not required for developments of less than one acre.) Federal jurisdiction derives from Section 404 of the Clean Water Act, which regulates dredging and filling of the "waters of the United States." (The Army Corps is involved because of its traditional role in regulating navigation.)

The Army Corps, the EPA, the Fish and Wildlife Service (FWS), and the Soil Conservation Service (SWS) issued a "Federal Manual" for the delineation of wetlands in 1987 and revised it in 1989. An area was defined as a wetland when a combination of three technical criteria was met:

- *Wetland hydrology.* Land that is inundated or saturated within 18 in. of the surface for more than seven days per year (even if completely dry for other seasons) indicates a wetland-type hydrology.
- *Hydrophytic vegetation.* The federal government maintains a list of plants that thrive in wet areas. To complicate matters, the majority of species that grow in wetlands also grows in drier or upland areas.
- *Hydric soil.* Typically mucky and peat-based, hydric soils are officially defined in a list created by the National Technical Committee for Hydric Soils.

Farmers, oil and mining interests, and development groups found these criteria too restrictive, and lobbied for changes. In August of 1991, the Army Corps and the EPA issued proposed revisions to the manual requiring specific evidence of all three technical criteria (before, one or more could be inferred from inspection). To meet hydrological criteria, the revision extended the period of time ground would have to be saturated from one week to 15 consecutive days (21 for the growing season), and required that half the plant species in a given location be wetland types for the vegetation to be considered hydrophytic. Environmental groups attacked the revisions [RECORD, October 1991 page 32], claiming they were based on politics, not science. (The EPA received over 100,000 responses during the rules comment period.)

When the sponsoring federal agencies looked again at the revisions, they found that as much as 50 percent of the land covered by the 1989 regulations would be outside the proposed revisions, even parts of the Everglades. The revisions are now being reviewed by a committee of the National Academy of Sciences. Its report is due in a year. In the meantime, the Corps has reverted to using the 1987 manual. According to Douglas Rader, a senior scientist at the North Carolina Environmental Defense Fund, the 1987 manual is being used due to a Congressional mandate. "The principal problem with the 1987 manual is that it's very ambiguous," he says. "The 1989 manual represented a consensus among the agencies, each of which had interpreted the 1987 manual differently."

As architects who have gotten caught up in a wetlands-definition crossfire know, neither manual, nor any revisions yet proposed, are going to make coping with wetlands easier. Wetlands come in enormous variety, from visible-to-the-eye marshes, streams, bays, and lakes to highly specific environments—many of which seem "dry"—like bottomland hardwoods, prairie potholes, and vernal pools. If you haven't done your homework, a ready-for-construction project may be halted because (on application from the Army Corps for a section 404 dredge-and-fill permit) you learn that your proposal would compromise a protected wetland. Furthermore, some local regulations are stricter than federal ones—or simply different, requiring interpretation. And how well local and federal officials work together varies widely. One typical horror story: An owner filled in a damp, unused logging road; the local authorities considered it filling a wetland.

Finding the expertise

The agriculture department's Soil Conservation Service and the Fish and Wildlife Service are supposed to map wetlands under their respective jurisdictions. The Army Corps and the EPA may still consider a site a wetland, though, even if it is not on the SCS or FWS maps. The EPA can veto an Army Corps determination (though the Army Corps claims that this rarely happens). "Under the present system there is no accountability," reports a task force of the Urban Land Institute, a nonprofit land-use research group. How do you get through this daunting maze? "We suggest that you find a local consultant who does regulatory permitting," comments Judith T. Wall, se-

nior environmental planner, whose firm, Fugro-McClelland, does such work. "Though some scientists are certified within their fields, wetlands scientists are not yet certified as such. So the main thing is to find a firm with a good reputation that has the personnel to look at all the wetland issues." An extraordinary variety of experts may be needed to assess a given site: a geologist, a soils hydrologist, a specialist in plants and wildlife, even an ichthiologist for fisheries.

Designing to meet wetland criteria

Eyes firmly planted on the bureaucratic burden, architects sometimes don't see the design opportunities in wetlands preservation. If you haven't acquired a taste for the variety and richness of wetlands, a cattail-filled marsh is more likely to be viewed as an obstacle than an amenity. Unprepossessing and apparently dead, a winter swamp can come alive in spring, and fill the air with sound. Once you spend a little time in a marsh, you begin to see spiky-crowned mergansers paddling amidst the rushes, hawks posing on dead snags, and herons roosting in the crowns of scrubby trees.

Whereas a lake or stream is an obvious (and saleable) amenity, wetland-sensitive design challenges notions common to clients and architects. Instead of a bulkhead, beach, and expansive dock, officials may require a lakeside home to be set well back from the shore, demand the maintenance of a cattail verge dividing water from lawn, and permit only a narrow passage to the water. If proposed today, it's questionable whether Frank Lloyd Wright's Fallingwater would be approved, hovering as it does over a stream.

Acceptable design means (where possible) erecting buildings away from wetlands, not in them or on their edge. Landscape architects Carol R. Johnson & Associates, for example, assisted HMFH Architects in the siting of a new grammar school in Methuen, Mass., not only placing it to avoid wetlands, but creating bridges and trails (even a curriculum) so that the wetlands became a teaching tool.

Where siting within a wetland is unavoidable, techniques that minimize dredging and filling are most likely to be approved. Set-

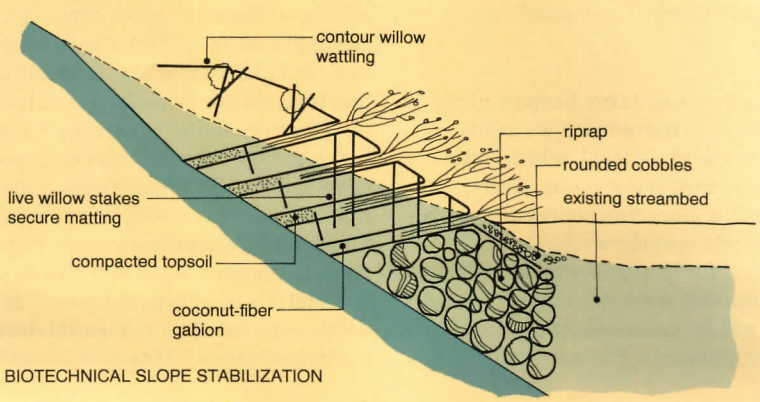
How to restore a wetland

Ecologists regard the track record for creating wetlands where none had previously existed as poor. There is, however, gathering expertise in the restoration of damaged wetlands, and a consensus that well-implemented "bioengineering" can enhance natural values while meeting utilitarian needs, such as flood control. The Watershed Company, an environmental consulting firm, specializes in the evalution and rehabilitation of rivers, streams, and wetlands. "Our job is to take natural processes into account so that these systems don't have to be perpetually maintained," says A. William Way, the company's president.

Soils geologists in the firm might ascertain the stability of existing or proposed streambed material, while a wildlife specialist might propose introduction of plant species to encourage nesting by birds. Placing what appears to be a fallen log might be in part an esthetic decision, but, says Way, "It could house mouse runs and provide bird perches." A typical project is stabilization of the banks of Issaquah Creek, which flows behind a shopping center in Issaquah, Washington (condition before work began, above left). Installing concrete or stone riprap to maintain the stream's course is the traditional engineered solution. Because of its effect on the fishery, this was not permitted. The streambed was armored by riprap, but this was faced with smaller, rounded river rocks (drawing below).

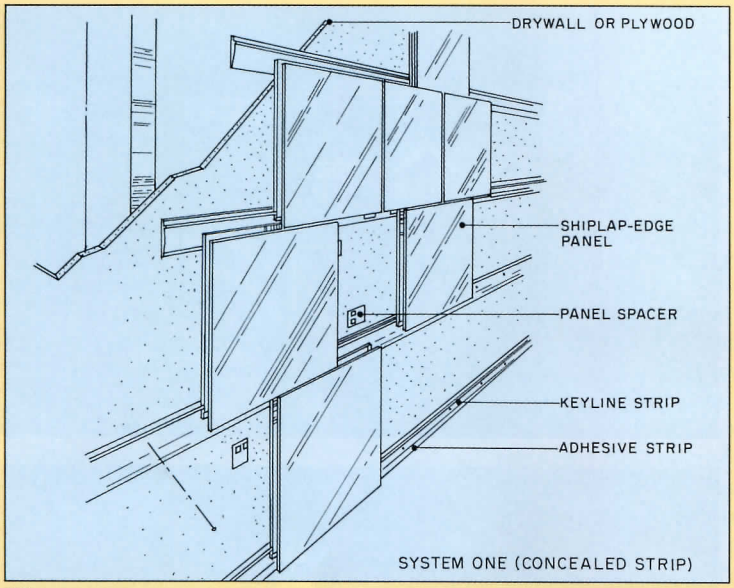
"Soft" gabions hold soil and form a structural framework for streamside plants that not only anchor the banks but provide shade for fish and shelter for wildlife. "You end up increasing the integrity of the bank with the use of root structures," says Way. The wattles provide a transition to conventional replanting at the top of the stream bank (photo after completion, top right).

In another project, a short stretch of creek (once a drainage ditch) was relocated during construction of Newcastle Beach Park [RECORD, November 1989, page 124]. The creek now runs along a more natural course, accompanied by a trail. *J. S. R.*

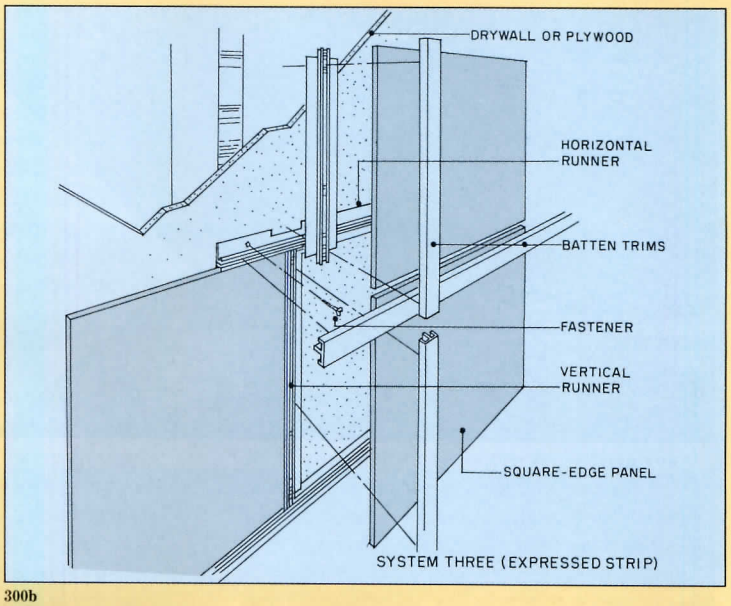


BIOTECHNICAL SLOPE STABILIZATION

Wall choices



300a



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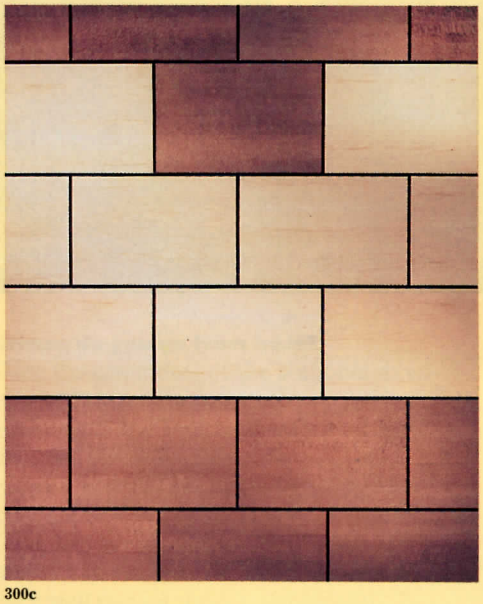

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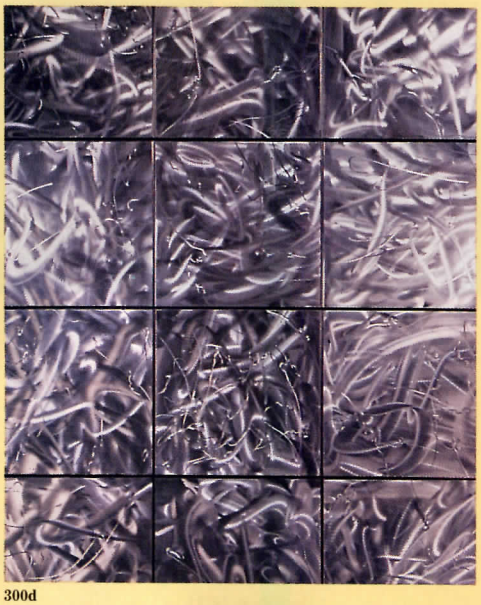

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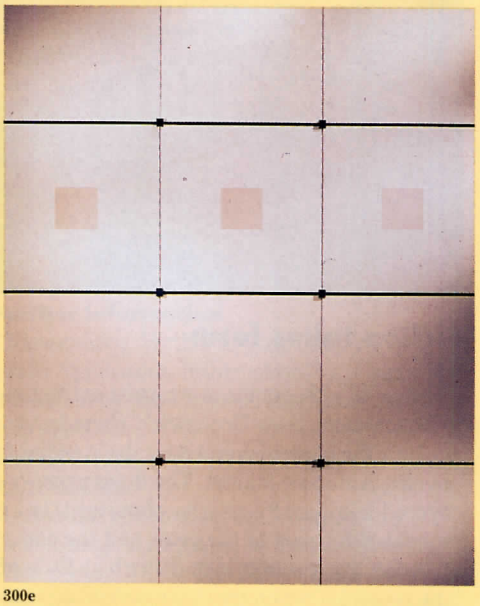


300e

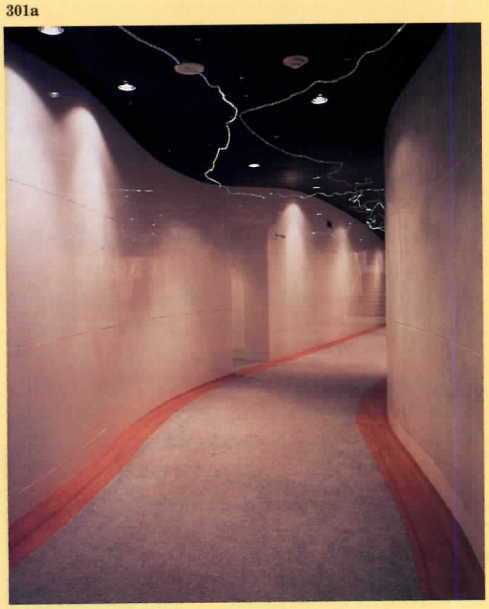
300. Custom design/standard system
Using the experience gained making panelized walls for such demanding applications as abuse-prone retail displays and sanitary walls for fast-food restaurants and commercial kitchens, Marlite has developed a new architectural wall treatment capable of a very broad range of decorative choices, from rugged strandboard and laminate panels to natural-wood and solid-metal veneers.

Called Surface Systems, the product was developed for uncomplicated installation by carpenters over any smooth, straight interior wall, using an extruded-aluminum grid that aligns the panels and provides an additional design element. System One grid (300a) carries modified-shiplap-edge panels that conceal the metal strips when installed. System Two (not shown) has a horizontal structure; System Three (300b) defines the panels both vertically and horizontally, with a choice of expressed batten profiles and any of four decorative inserts. Panels come in standard sizes of 16- by 24- and 24- by 24-in., with custom dimensions of up to 16 sq. ft. each. Finishes, many on a wood-fiber substrate, include exotic tactile materials such as flat-cut maple and quartered lacewood veneers (300c), moiré brushed stainless steel (300d), and natural-color phosphate cement with screen-printed graphic (300e), as well as any high-pressure laminate in faux prints, patterns, solid colors, and custom logos. Many finishes are available in Class A. Main and cross-runners can be painted to match or contrast; decorative and perimeter trim comes in flat, radius, chamfered, and shadow-line profiles. Marlite, Dover, Ohio.

Innovative products expand the options for renovating commercial space

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

301a



301b

302a

302b

Curtis Pearson

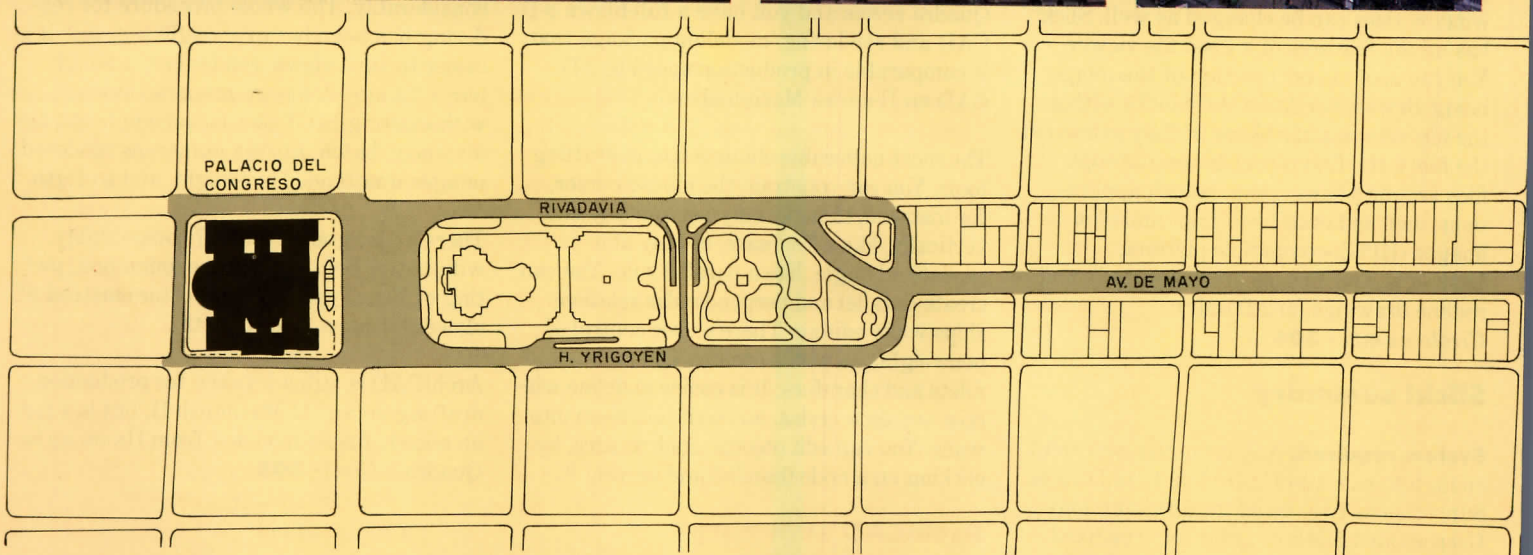
302c

Curtis Pearson

301. Vitreous cladding.
NeoClad is a relatively lightweight material (under 4 psf) with many of the physical characteristics of heavier, crystalized-glass Neopariès. [RECORD, June 1987, page 173]. A homogeneous glass/ceramic casting, it can be cut on-site and installed by glazing techniques. Since it doesn't absorb water, the high-gloss cladding needs little maintenance and cannot be stained by rust, acid, or other contaminants. Panels come in six solid and blended colors, and can be bent into compound curves. N E. G. America, Itaska, Ill.

302. Reclusive fire wall
An accumulation of performance standards, independent-test data, and fail-safe electronics has expanded applications for horizontal sliding doors as a means of egress under model building codes. Permitted uses now include health-care and educational facilities and elevator-lobby separation without restriction as to occupant load. The accordion-type partitions function as both exit door and fire- and smoke-separation wall, allowing the architect to protect large open spaces where codes formerly might have mandated a solid barrier. As the doors are out of sight until needed in an emergency, they can fit unobtrusively into older structures. The Beverly Hills (Calif.) City Hall (302a, b), a landmarked public building, was renovated to code with doors concealed behind the Moorish stone arches that open on a central well. Motorized operation lets even tall doors navigate large curves; only the recessed header shows in a pre-war San Francisco store (302c) where accordion fire doors let the original between-floor circular stair remain open. Won-Door Corp., Salt Lake City.

Argentine Renaissance



By Joe Goldman

Known as one of the most beautiful cities in South America, Buenos Aires has gone through a series of boom-and-gloom cycles that has established a legacy of grand buildings left to decay when the chips are down. But the renovation of Avenida de Mayo, the oldest boulevard cutting through downtown Buenos Aires, has created high expectations for the future renaissance of this once-thriving port city.

Bringing back the luster to Avenida de Mayo would be a feather in the cap of still-emerging preservation groups in Argentina. Although the historic-preservation movement in South America dates back to a conference in Quito, Ecuador, in the 1960s, Argentina has done less to preserve its architectural heritage than countries such as Chile, Colombia, Brazil, and Uruguay, says Liliana Aslan, an architect who directs Buenos Aires' integral development plan.

Joe Goldman is a journalist who has lived in Buenos Aires for nine years.

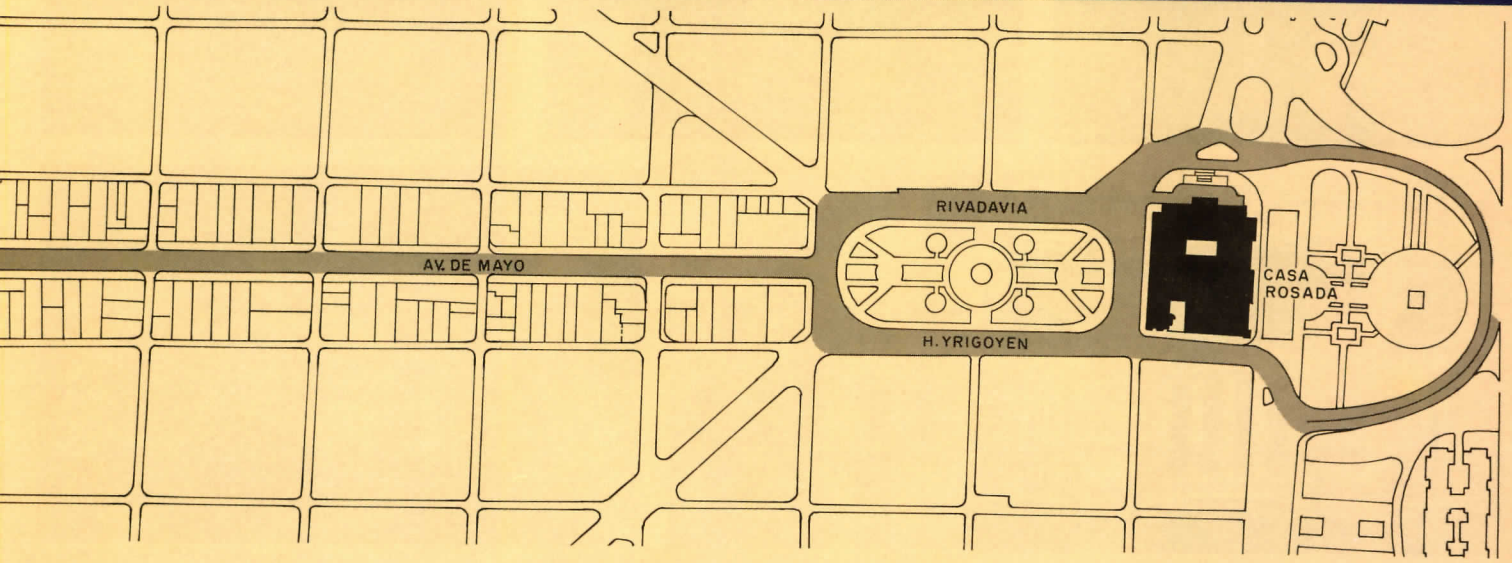
Work on Avenida de Mayo began with a November 1990 agreement between the Buenos Aires municipal government and a Spanish group organized to fund projects in Latin America in honor of the 500th anniversary of Columbus's expedition to America. To oversee the effort, the Buenos Aires government and the Spanish authorities established the Revitalization Program for the Avenida de Mayo (PRAM in Spanish).

Avenida de Mayo has always been a good gauge of the economic health of the country. When constructed in the 1880s, it was a symbol of the modern, dynamic Argentina then emerging as a world power. Over the next few decades, Beaux Arts structures of five, six, and seven stories sprang up along the avenue, sporting eclectic touches in their balconies, roofs, and window detailing. The boulevard was one of the first projects seeking to turn Buenos Aires' downtown into an ornate hub on par with Paris or Milan. A wave of immigrants from Europe in the first two decades of the 20th century propelled growth of the Argentine industrial sector. The grand Avenida de Mayo symbolized this growth and became home to the world's first motorized bus line and the first subway system in the Western hemisphere.

Beginning in the 1950s, Argentina went into a rapid decline fueled by military coups, po-

An international renovation program is bringing new life to a once-grand boulevard in downtown Buenos Aires.

The Avenida de Mayo, which runs from the Palace of Congress (far left, opposite) to Government House (below right), is undergoing a $35-million renovation that so far includes 43 separate buildings.



litical corruption, and general economic malaise. At the same time, the buildings along the 14-block length of Avenida de Mayo—connecting the Congress building with the presidential palace—began showing signs of decay. The short boom of the late '70s only accentuated the collapse in the '80s and Avenida de Mayo became one of the only areas in the city where tourists were warned about walking at night. Broken sidewalks, boarded-up buildings, homeless people, wild dogs, and rats turned the once-magnificent street into a depressed zone.

"The boulevard divides the city north-south," says Aslan, "and we needed to breathe life into the southern end, the most deteriorated area of Buenos Aires."

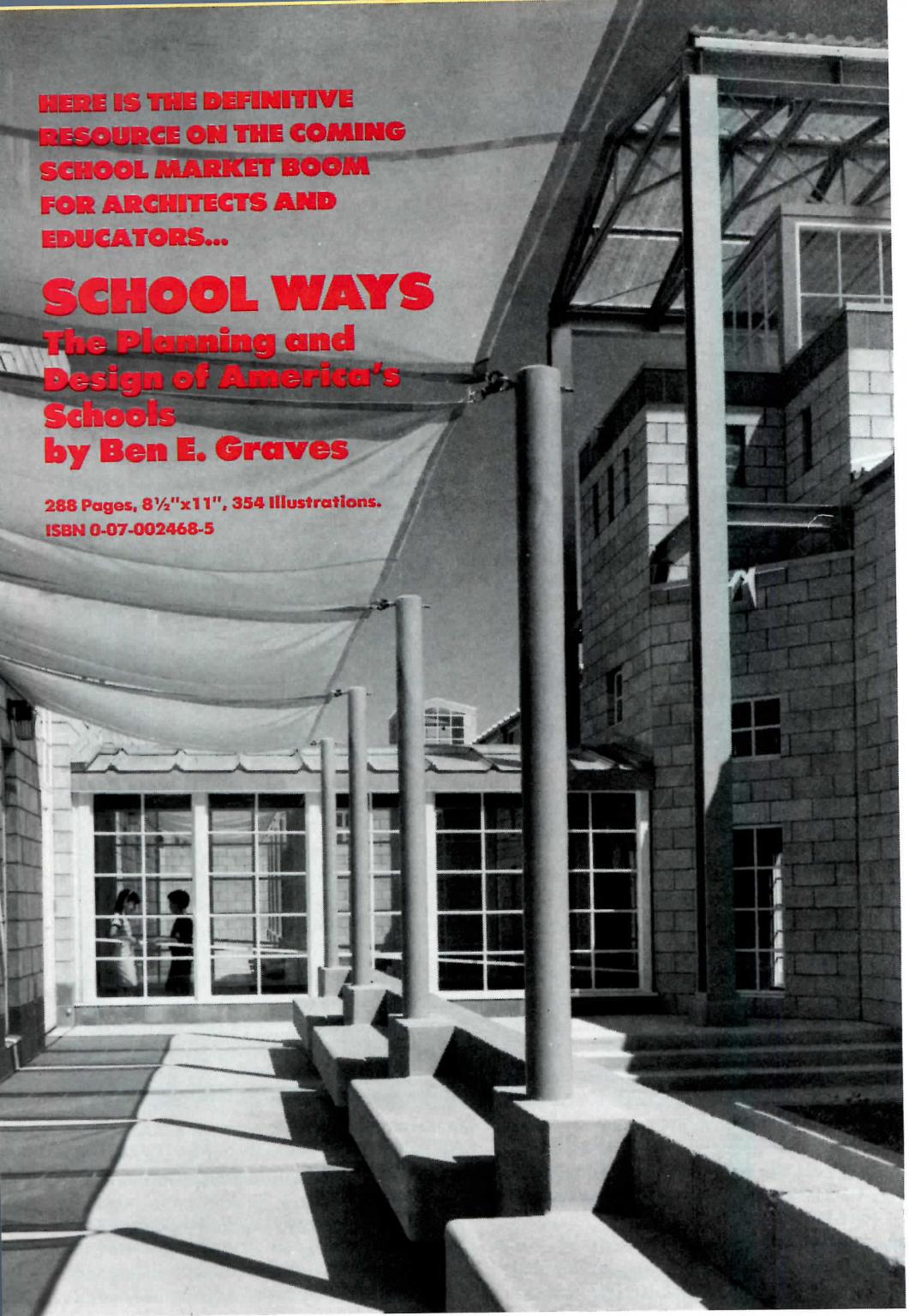
The southern barrio of San Telmo had attempted to renovate broken-down apartments and decaying warehouses on its own in the 1980s and turn them into upscale lofts. After some initial success, though, the San Telmo facelift failed.

"The problem with the San Telmo residential rehab," says Aslan, "was the lack of an integrated approach. There was still the frontier, the Avenida de Mayo, which was like a no-man's land between the financial center and the rich residential barrios of the north and San Telmo to the south."

PRAM hopes to do better, in part by involving the private sector. In fact, for the program's first 20 months, private businesses have invested $11.6 million in rehabilitation work, while the Spanish and Argentine authorities spent just $2.7 million. PRAM estimates final costs will be at least $35 million and may go up to $70 million.

The entire project covers an area that includes 104 parcels of land, 86 of which are eligible for PRAM funding. So far, the owners of 43 buildings have agreed to join the renovation effort. Rehabilitation has already been completed in 21 buildings, with 7 under renovation and 15 others scheduled for work to begin in the coming months.

Storefronts and street facades have been renovated using materials and colors in keeping with the original buildings. Prior to starting the project, the city passed a new series of ordinances regulating storefront displays—limiting the size of signs and restricting them to business names only. While there is no uniform code governing graphics,



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Building Types Study 701/Renovation

Renovation as a percentage of all building construction keeps climbing, with no end in sight. It isn't just the recession and the glut of office buildings, two conditions that encourage makeover at the expense of new construction. The cause lies in the far longer-term demographic trends (a lower birthrate) and in emerging social attitudes (sustainable environments as opposed to endless new building on virgin land). The essay (next page) tracks the impact of these factors on architecture and on the architect. Based on in-depth interviews with key figures on today's design and construction stage, the report, entitled "Renovation Scoreboard," hints at enticing futures for the preservation movement and especially for the architect's own practice. Renovation itself has now outgrown the ability of a magazine to cover every subtopic in the confines of a single issue. Accordingly, RECORD's editors concentrated their search for projects on those which achieved a successful impact on their immediate surroundings, neighborhood, or community. In the case of the Greenwich Teen Center (page 92) and in the rejuvenation of the old Hamilton Fish Park on New York's Lower East Side (page 96), we saw, too, a strong added social benefit. Other stories feature the magnificent Bradbury Building in old Los Angeles (page 108), a seismically correct restoration that adds a strong boost to a neighborhood working to renew itself; a sensitive addition to a landmark library on the Mount Holyoke campus that ends up making for a strong new sense of place (page 74); the brilliant remake of an old Army base and ranch in West Texas cow country into a vast indoor and outdoor art "museum" (page 82); and a critical assessment of redevelopment in Philadelphia, the first big city to undergo renewal—over a generation ago (page 102).
S. A. K.

As a step in recognizing America's slow but inevitable move to metric, RECORD as of this month provides drawings with a metric scale alongside feet and inches.

Tax incentives, too, remain on the agenda. The 1986 tax-code revisions both reduced the investment tax credit for historic renovation and limited the use of historic rehab as a tax shelter. As a result, private investment in renovation has declined dramatically. (In 1985,

Tom Poo

Antwerp's Central Station (1895-1905) was recently restored.

the tax program's peak year, over $2.4 billion was invested; in 1991, just over $600 million.) While acknowledging the recession's role in the decline, many preservationists call for reinstatement of the pre-1986 credits. Moreover, they argue that the credits, now available only for substantial renovations of income-producing property, should be made available for small-scaled projects and for owner-occupied buildings.

Property rights revisited. Over the past decade, property-rights activists have become increasingly vocal and organized, and preservation lawyers are girding themselves for major courtroom challenges. One such challenge has already succeeded: in 1991 the Pennsylvania Supreme Court ruled that the designation of a movie theater in Philadelphia was a "taking" of property that required compensation. Although the Court is now reconsidering its decision, this case has nonetheless shocked and alarmed the preservation community. "It has opened the Pandora's box of property rights," says Dennis. "States can't do less than the federal Supreme Court to protect property rights, but they can do more."
The designation of private interiors raises especially sensitive property-rights issues; for this reason it occurs much less frequently than exterior designation. As Ellen Lipsey, executive director of the Boston Preservation Alliance, points out, "This is a very complicated and controversial subject, and a great many questions remain unresolved."

Renovation of the recent past. Preservation has devoted most of its energies—and affixed most of its bronze plaques—to 19th- and early 20th-century buildings. The design challenges of the Victorian and Beaux-Arts—of heavy masonry buildings with big-scaled interiors—have thus been recognized and explored. The renovation of post-World War II buildings—of lighter buildings with less structural reserve, with curtain walls, low floor-to-floor heights, flat roofs, and energy-intensive mechanical systems—raises very different technical and esthetic problems, most of which remain unexplored. It poses also an interesting dilemma for preservationists who acknowledge the human tendency to disdain the recent past. "Many buildings we now admire were once considered abominations," says Lynch. "We need to develop a preservation ethic for mid-century buildings, or we'll alter them irreversibly before we learn to appreciate them."
Renovation and urban revitalization. Preservationists argue that any effective agenda for urban revitalization must address, in Philadelphia planner Edmund Bacon's words, "the vast sections of our cities that have been neglected, misunderstood, and maltreated, and the vast number of buildings that have been discarded." They argue specifically that such an agenda should encourage the reuse of existing buildings. Their reasoning is partly practical. "Renovating a building is often cheaper than building a new one—you've got a shell, structure, and services in place," says Kate Ottavino, director of preservation at Ehrenkrantz & Eckstut Architects in New York City; most of the architects we interviewed agreed on this point. And it is also sentimental and historical. "Cities badly need to preserve their physical memory," says Mayor Joseph Riley of Charleston, South Carolina. Like many mayors, Riley endorses a 1991 Policy Resolution of the U. S. Conference of Mayors, which recommends integrating preservation into "planning for land use, economic development, housing for all income levels, and transportation." Project economics and sentiment notwithstanding, most preservationists emphasize that cities and their buildings will not be revived without economic incentives, e.g., direct support for renovation of derelict buildings, tax and mortage incentives which stimulate investment in poor neighborhoods, and middle-class resettlement of cities.

Renovation and the environment. In the environmental view, buildings are more than commodities representing financial value to their owners or cultural artifacts possessing art historical significance. They are concentrations of "embodied energy," i.e., the energy needed to extract, process, transport, and assemble a building's components. "All parts of a building—brick, glass, masonry, steel and so on—represent resources that have been pulled out of the earth, and pollution and waste which have occurred during their manufacture," says Croxton. "This is one of the most fundamental arguments for reusing buildings." There is, in addition, another environmental argument for reusing buildings: that the efficient use of existing buildings eases pressure to develop open space, and thus contains suburban sprawl.

Offices may need to adapt their standard contracts to allow more time for pre-design survey and research.

Although preservationists have been aware of the concept of embodied energy since its development in the '70s, they have so far not pursued a "green" agenda. In the '80s, the heyday of the tax credits, the movement concentrated on renovation economics. Also, as Lynch points out, preservation practice can be environmentally incorrect. "[Preservationists] favor lead-paint-removal methods that use toxic chemicals, and I suspect some of the decay-resistant woods we specify are rain-forest species." This may soon change, however, for preservationists call increasingly for closer ties with both environmental and growth-management groups.

The profession: new opportunities
How might a future "era of renovation" affect the architectural profession? It will likely force a variety of changes in practice. Offices may need to adapt their standard contracts to allow more time for pre-design survey and research, and for post-design construction supervision. They may have to adjust to complying with performance-

New regulations, such as the Americans with Disabilities Act, pose intriguing renovation problems for architects.

based rehab codes, a process which can require much negotiation with code officials. And they may want to expand their technical staff and services to meet increased demand for existing-conditions surveys and documentation, renovation master plans, and so on.

An era of renovation is likely also to pose a more difficult challenge: it may force architects to revise long-held assumptions and aspirations. "No doubt it will be painful, but architects will have to learn to be more the curators, rather than the creators, of the built environment," says Fitch. The AIA's new president, Susan Maxman, of Susan Maxman Architects in Philadelphia, is no less insistent on this point. "The profession pays far too much attention to little gems of new buildings," she says. "If we are to survive, let alone prosper, we must fundamentally retool. We must equip ourselves with new kinds of knowledge, skills, and attitudes which will support our work as renovators." Maxman's blueprint for retooling emphasizes expertise in sustainable design—in leading-edge energy technology and recycled and non-toxic materials—and a larger architectural presence in civic and advocacy organizations; it includes acknowledging, on the part of design schools and journals, the increasing significance of renovation. Other architects we interviewed didn't hesitate to enlarge this blueprint for change, with suggestions that architects learn more about the technical properties of historic and modern materials (especially about how they decay), and cultivate a richer understanding of both architectural and building history and its implications.

An era of renovation will provide architects with expanded or emerging opportunities. Among those are:

Commercial renovation. Many architects spent the 1980s designing high-rise office buildings; many will probably spend the 1990s renovating them. This is due in part to real-estate economics. As Jacques Gordon, of Baring Realty in New York City, notes, "In an overbuilt market, owners must frequently renovate, not only to attract new tenants but to keep existing ones." And it is due also to the rapidity with which workplace technology changes. Technological obsolescence now motivates many office renovations, and in this Randolph Croxtom sees evidence of an historical shift. "At one time a building's value was determined mainly by its shell. Today, with our complex data and communications networks, it is a building's interior that is massively capital intensive."

Environmental rehabilitation. "Indoor air quality is certainly a neglected specialty," says George M. Notter, of Notter + Associates in Washington, D. C., who notes that the profession has largely ignored the topic of "healthy" buildings. Yet clients today are keenly aware of sick-building syndrome caused by faulty ventilation—in some offices the coffee break has given way to the aspirin break—and of the range of discomfort caused by synthetic furnishings. This awareness suggests a growing market for environmentally sensitive renovation, ranging from replacement of finishes to major changes in building systems.

Renovation of newer buildings. Postwar buildings of all types have begun to need large-scale repair. An observation by Albany, N. Y., architect John Mesick—whose firm, Mesick Cohen Waite Architects, is restoring both the Octagon and Monticello—underscores the potential of this market. "In the United States we built superbly from about 1880 to about 1930. The overall quality of later construction is simply not that high, and many of our newer buildings will need major work." Another Albany office, Einhorn Yaffee Prescott, has found ample evidence of this in its work on college campuses. "One major emerging market is the rehab of campus buildings from the 1950s, '60s, and '70s," says Steven L. Einhorn. "In the '80s schools tended to focus on new construction, and there's now a large backlog of buildings suffering from deferred maintenance."

Technical services. For some designers, renovation has spurred development of new technical expertise. Wiss Janney Elstner, for instance, has schooled itself in the forensics of curtain-wall construction; the Chicago-based engineering firm, perhaps best known for recladding that city's Amoco Building, has added architects to expand its preservation expertise. And Ehrenkrantz & Eckstut's Ottavino, an expert on the chemistry of building materials, is currently monitoring field samples of stone consolidants. "Understanding how materials behave makes us more valuable to clients," she says. "It also enables us to work with manufacturers to develop better products." New York-based Building Conservation Associates provides testing and analyses of historic and not-so-historic building materials and systems. A key challenge is translating lab experience to the field, according to BCA president Raymond Pepi.

New regulations, such as the Americans with Disabilities Act, pose intriguing renovation problems for architects. And changing demographics, too, suggest potential renovation opportunities: the redesign, for instance, of single-family houses, or whole subdivisions, to accommodate new family sizes and structures. But perhaps the richest opportunity is offered not by any specific market but by the prospect of developing and refining approaches to renovation. Boston architect Ann Beha, of Ann Beha Associates, believes the time is right for a reassessment of contextualism. "We need to look hard at how we reclaim landmark and existing structures, and at how we express our design within their context," she says. George Notter also underscores the unrecognized scope of renovation design. "Renovation is too often dismissed as paint-up and fix-up. First-rate renovations explore new ways to invigorate a building—everything from new systems to new spatial configurations. I'd like to think that architects will embrace these challenges, so that we will be not only master builders, but master renovators."

And the emphasis on renovation has inspired New York City architect William McDonough, of William McDonough Architects, to rethink his approach to new construction. He has persuaded Walmart to alter its standard bargain warehouse so it could be easily converted to housing. "It won't do, anymore, to think in terms of cradle to grave," says McDonough. "From now on we should think of our buildings in terms of cradle to reincarnation." *Nancy Levinson*

Like many marriages, this one brought together individuals of different ages and seemed a bit farfetched when first proposed. But now that the 1905 Williston Library at Mount Holyoke College has been joined to an adjacent 1901 classroom building, the coupling seems inspired. Bridging the gap between the two buildings is a new structure that recalls the Collegiate Gothic style of its older partners without resorting to direct imitation.

As designed by Graham Gund Architects, the expanded and renovated facility is an architectural collage that continues a process of accretion encompassing additions built in 1935 and 1968. While crenellation, recessed vertical windows, and an engaged tower evoke the look of its older neighbors, the new 32,000-square-foot component (named the Miles-Smith Science Library) sets itself apart by using brick instead of stone and betraying a slightly whimsical combination of forms. The result is a collection of structures that revels in the way its pieces come together, rather than a unified building concerned with hiding its seams. In fact, the project's most memorable element is a fanciful bridge that allows people to walk underneath and see how the architects solved the programmatic jigsaw puzzle.

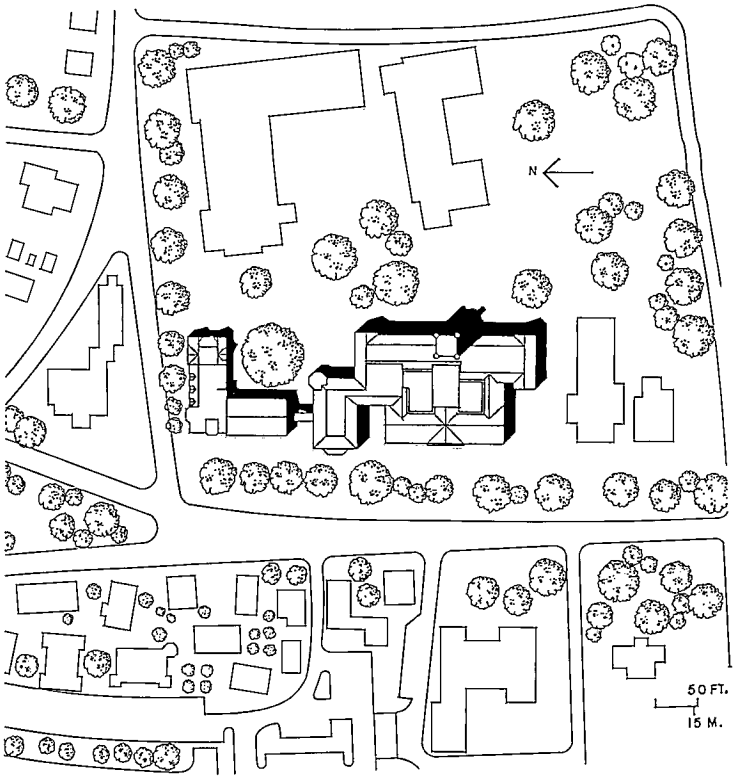
The new building complex solves some of the college's most critical library needs: accommodating growth in its collection from 305,000 to 590,000 volumes, consolidating isolated science libraries at a central facility, and expanding its computer services. While meeting these needs, the architects moved offices out of the center of the library and turned it into a skylit atrium, shifted the circulation desk to the ground floor, and simplified access within the building. The college's president Elizabeth Kennan, as well as faculty and student groups, were consulted during the building process, but the key contact was college librarian Anne Edmonds, who insisted that the library be more than just a warehouse for books.

Located across College Street from the South Hadley Village Commons—a mixed-use complex designed by Gund a few years ago—the library sits on the oldest edge of the Mount Holyoke campus. Over the years, though, the college has expanded in other directions. Now the new library helps stitch the campus together. "People used to think of Dwight as being at the far end of the campus," says Edmonds, refering to the old classroom building now attached to the library. "Today it seems to be right in the middle of things."

Because the Williston Library had been added to and changed several times over the years, an important part of Gund's job was to bring order to the existing building. He did this by carving out a three-story atrium from the center of the building. What had once been a black hole filled with several floors of offices and administrative areas is now a skylit indoor court that brings light to the heart of the building and helps orient visitors as they move through the facility. To provide some relief from the Collegiate Gothic of the old library and the new Miles-Smith section, Gund designed the court as a Neoclassic space anchored by a double stair at one end.

The new Miles-Smith building is a steel-frame structure that goes down four levels below grade and up three. Connected to the existing library by a corridor on axis with the atrium court, the new building echoes the Gothic styling of its neighbors in a two-story octagonal reading room ringed by a set of engaged columns. In the old classroom building, Dwight Hall, the architects created new interior spaces for computer workrooms, audio-visual laboratories, the college archives collection, and a 100-seat auditorium, while respecting the turn-of-the-century building envelope. *Clifford A. Pearson*

Warren Jagger photo previous pages



Set in the oldest corner of the campus, the new science library connects Williston Library (far right in photo, opposite) with Dwight Hall (far left in photo, opposite). The new copper-clad bridge (opposite) ties together different architectural styles and allows foot traffic to move from the campus to the town of South Hadley across College Street (site plan, above). Seen from the east, the campus side of the site, the new library presents its own interpretation of Collegiate Gothic (previous pages).

1. *Lobby*
2. *Court*
3. *Stacks*
4. *Cataloging*
5. *Office*
6. *Main reference/ reading*
7. *Science reference/ reading*
8. *Reading*
9. *Computer*
10. *Special projects*
11. *Auditorium*
12. *Seminar*

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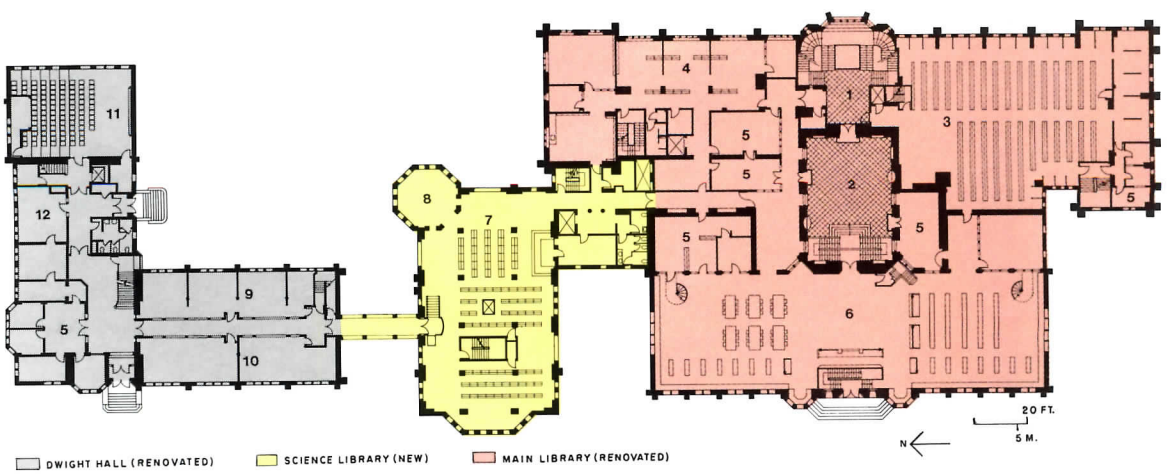

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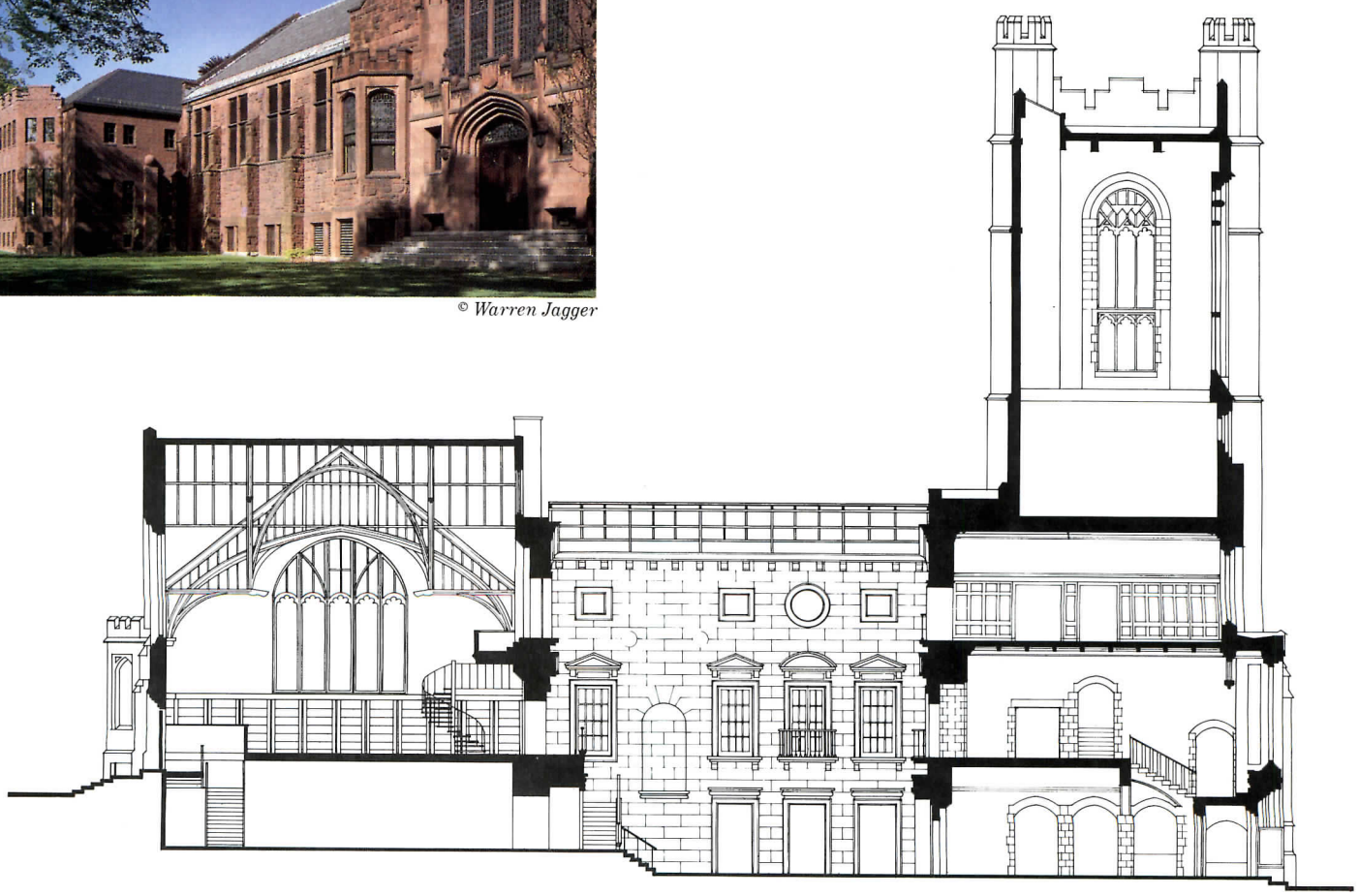
The project included cleaning and some repointing on the eastern and western facades of Williston Library (left, top and bottom, respectively) and reorganizing functions such as book circulation and offices. Gund and his associates kept the main entrance in Williston's central tower and established a dramatic sequence of spaces—from the tower to a central courtyard and then the main reading room (section below). New mechanical equipment, including a chiller and fan room, fits in a 30-foot-tall space in the old tower. A hot-water system heats the building. In the Ludington Reading Room (opposite top) in the old library, carved wooden trusses were cleaned and restained. A new computer center (opposite bottom) is in the renovated classroom building.



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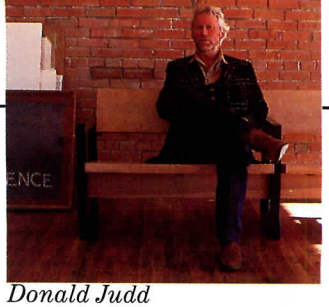
Remaking Marfa



Donald Judd

For some time, artist Donald Judd has considered himself a de facto architect. Three years ago he made his "practice" official by opening an architecture office. "It was a boast," he now says. Yet for the past two decades Judd has been remaking the West Texas town of Marfa, his adopted home, building by building. And he's done it all without ever obtaining a license to practice architecture.

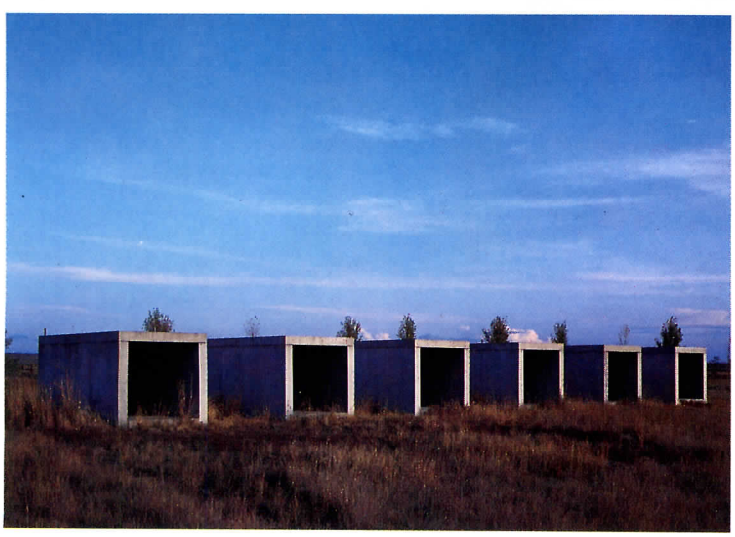
Judd came to Marfa in 1971 looking for a summer house for himself and his two children, and a refuge from the machinations of the New York City art scene. By 1975 Judd was a full-time Texan, comfortably ensconced in this derelict "cow town," as he calls it, some 60 miles from the Mexican border. With its flagging local economy and a dwindling population of ranchers, what was Marfa's allure for an international art luminary? "The absence of people," is Judd's deadpan response.

Judd's practice of integrating art into architecture—or subsuming architecture into art—is typical of his work, especially his sculpture. He alternately gangs or stacks metal boxes (at times unfinished, at times painted, and at times anodized brilliant car-finish tones) on the wall or floor. He has made giant, immaculately crafted containers that beckon viewers inside their pure geometries. Labeled a "Minimalist" by art critics, Judd calls himself an "empiricist" as if to emphasize his interest in distilling art and architecture to its essence. Nowhere is that assessment more palpable than in his architecture at Marfa.

Judd's professional involvement in architecture began unexpectedly in 1947. At the time, he had given himself the assignment to choose between a career in art or architecture. "Back then, being an architect was much like being a dentist or doctor. And being an artist was hopeless. So I picked hopeless," he recalls. But the United States army had other plans. Drafted, Judd was sent to Korea and made, to his surprise, chief engineer at the base in Seoul. He was assigned a construction crew with whom he spent most of a year designing and building base facilities. Although he went to art school after his discharge, the experience in Korea was one that he would eventually replicate in Texas, though toward entirely different ends.

The Dia Art Foundation (now The Dia Center for the Arts), a New York City-based patron of avante-garde artists, joined Judd in Marfa in 1979 when it purchased Fort D. A. Russell, located on the outskirts of town, with the intention of remaking it into a public museum. It was to be an unlikely museum in many ways. Not only did the venue consist largely of abandoned artillery sheds and dilapidated army barracks dating from the 1930s, the purpose was not to present a broad anthology of contemporary artists (pages 84-85). Only the work of a select few, including Judd, John Chamberlain, and Dan Flavin, would be shown, as Judd wrote later in the collection catalog, "in a space suitable to it."

Dia purchased Fort Russell while Judd gradually acquired abandoned buildings in town (pages 88-91) and, 50 miles away, a vast ranch overlooking the Rio Grande (pages 86-87), all for the purpose of displaying and producing art. (Judd subsequently split with Dia following a legal battle and renamed the museum the Chinati Foundation in 1986.) It was in searching for an acceptable environment for his work that Judd began to look more closely at the architecture of the buildings themselves. "Most of the art was made



Part of a Donald Judd installation at the former Fort D. A. Russell, now the Chinati Foundation, in Marfa, Texas.

A lineup of lacquered plywood chairs designed by Judd. Judd has also designed tables and desks in wood and metal.

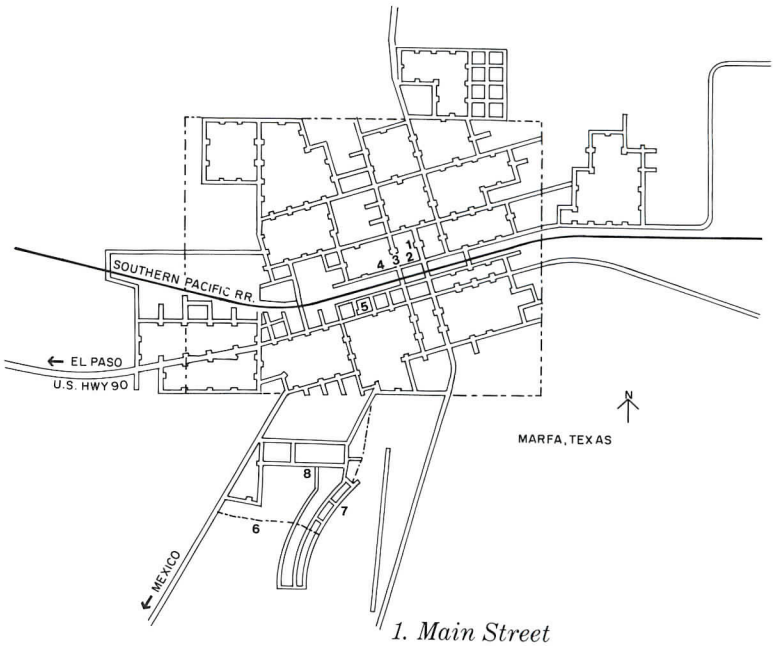
Since moving to Marfa, Texas, Donald Judd has remade downtown, an army base, and a 45,000-acre ranch, all in the service of his art.

for the existing buildings," he explains in the Chinati Foundation catalog. "The buildings were adjusted to the art as much as possible. New ones would have been better. Nevertheless, in reworking the old buildings, I've turned them into architecture."

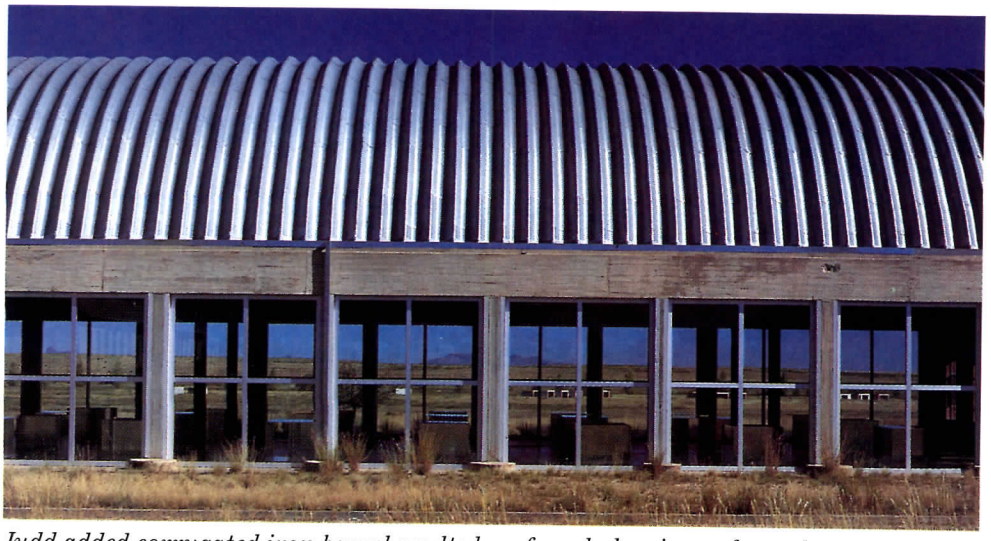
When you visit the renovated buildings, the impression is simply that they have been cleaned up. But Judd's work goes deeper. In remaking the giant artillery sheds that dominate former Fort Russell, for example, he replaced the structures' existing flat roofs, which were leaking, with barrel vaults of corrugated iron. He made the curve of the vaults equal in height to the brick facades, giving the new profiles a powerful, symmetrical proportion. Old garage doors were removed in favor of square windows arranged in rows along the long sides. Within the immense interior space—65 feet by 285 feet—Judd placed rows of milled-aluminum boxes (50 boxes in each of the two sheds) at equal intervals matching the concrete structural bays.

Inside, as in all of Judd's structures, one is struck by the grandeur of the space and the quality of light—space and light are his most striking tools. Aloof and self-possessed, the boxes glisten beguilingly in the sun.

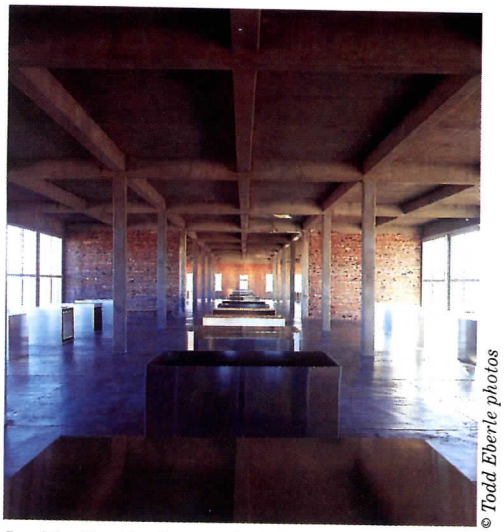
As with all of Judd's architecture, the buildings are transformed by their new use. Is this preservation? "Some of it *is* preservation," claims Judd, "but not in the style of Williamsburg. Generally, I think old buildings should be kept. They should be used, but what you do with them should be in accordance with how they work. [Now] to try to keep Marfa as a 1930s cow town would be silly and unnecessary."
Karen D. Stein



1. *Main Street*
2. *Marfa National Bank*
3. *Sculpture studio*
4. *Cobb House*
5. *Block House*
6. *Chinati Foundation*
7. *Artillery sheds/Judd installation*
8. *Arena*



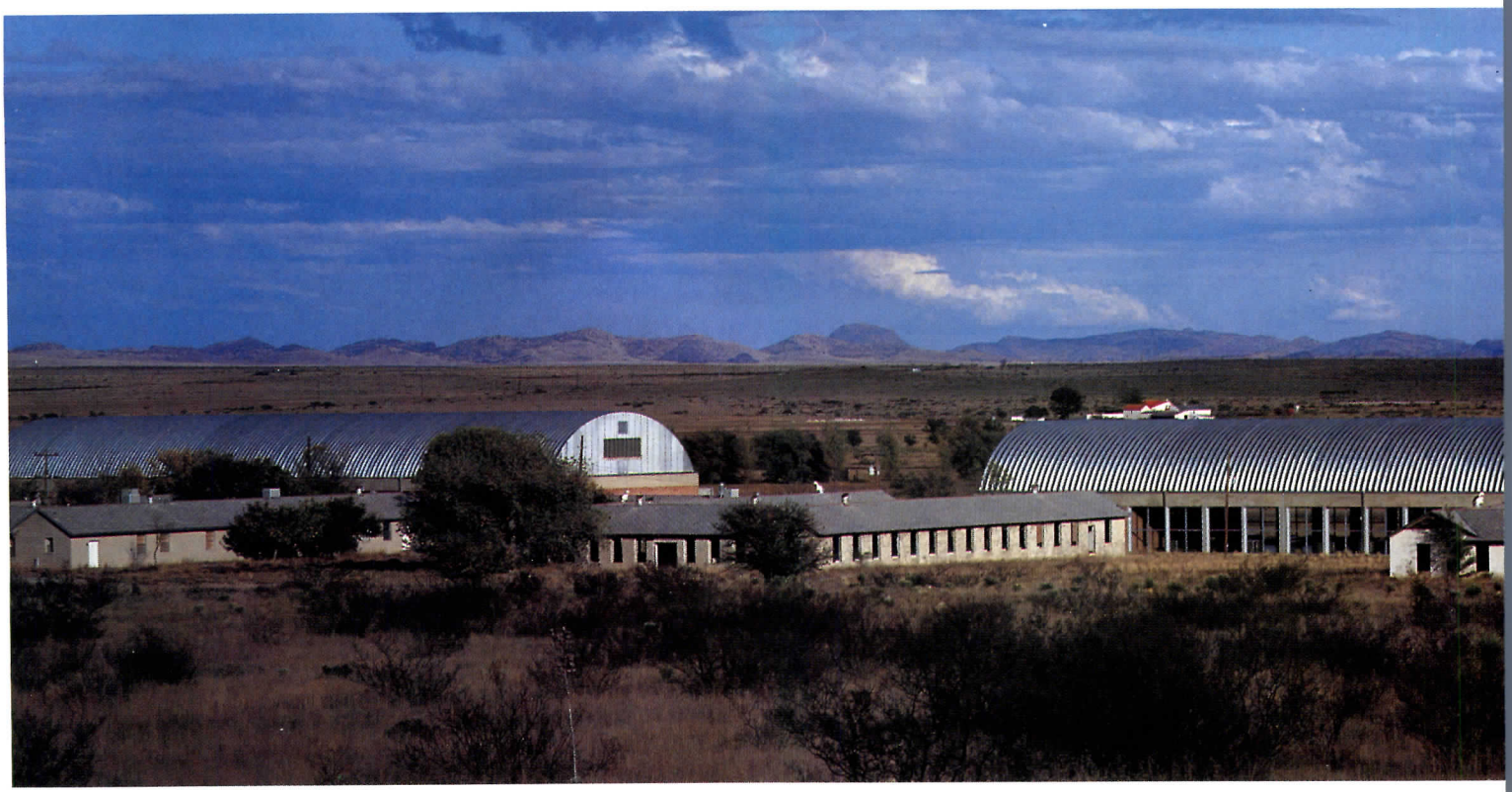
Judd added corrugated iron barrel-vaulted roofs and aluminum-framed square windows to former artillery sheds.



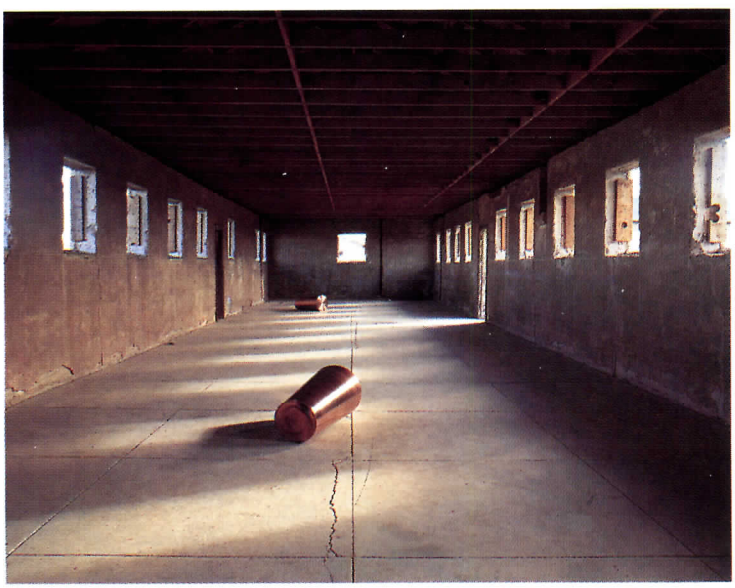
Inside the sheds are Judd's 100 milled-aluminum boxes.

The Chinati Foundation Marfa, Texas

Named for a nearby mountain, The Chinati Foundation comprises 350 acres outside Marfa, Texas, 200 miles southeast of El Paso. Not a typical museum, the Foundation's dozen plus buildings include the former Fort D. A. Russell. Its core is two 1930s artillery sheds and a row of converted barracks (photo below). In 1984 the sheds were remade into a permanent installation of Judd's sculpture. Judd replaced existing leaky flat roofs with corrugated iron barrel vaults, doubling the structures' previous height. Garage doors were removed in favor of regularly spaced giant square windows. Inside, Judd installed 100 aluminum pieces, each slightly different (previous page), which stand in eerie juxtapostion to the untamed landscape and phrases in German inscribed

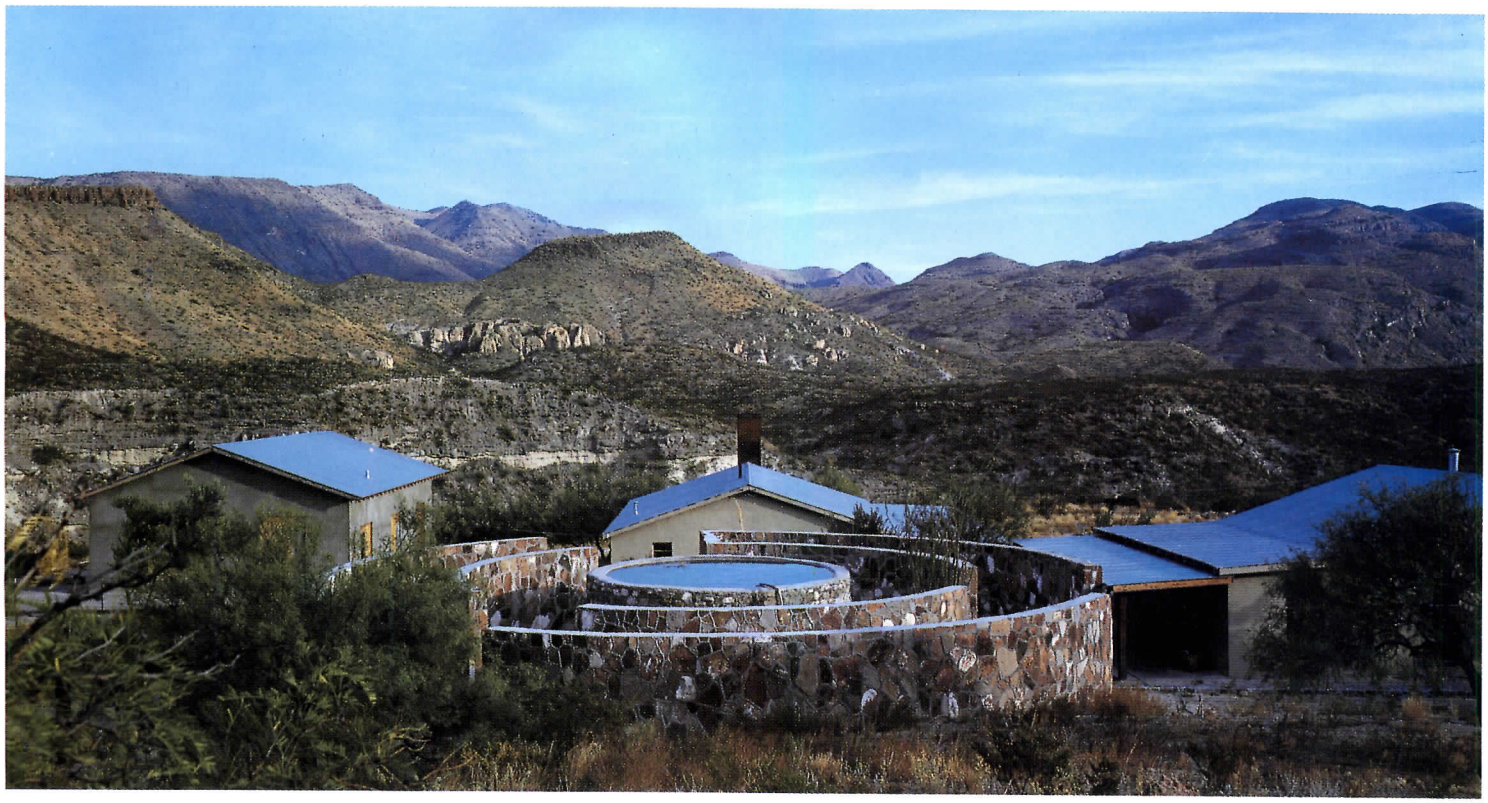


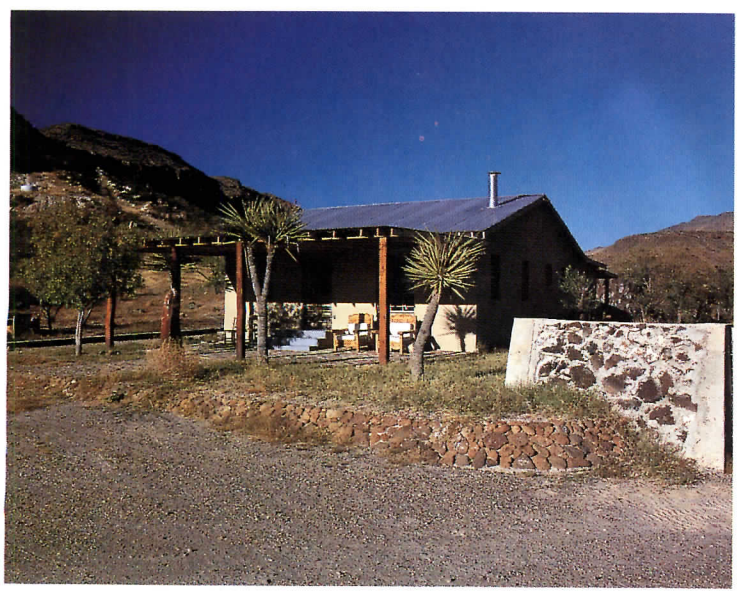
on the walls—reminders that the sheds housed prisoners during World War II. Barracks stripped to their architectural essentials (right) are for additional exhibitions, including Roni Horn's Things Which Happen Again; For a Here and a There *(below left). The Arena (opposite left and below right) was first an airplane hangar in east Marfa during World War I. Later it was moved to the Fort as a gym. After World War II, the floor was removed (due to a wood shortage), revealing concrete supports, and replaced by sand. To make a working/living space, Judd retained the truss ceiling and adobe walls, adding concrete floors at both ends and filling the rest with gravel. Outside, Judd built atop foundations, making enclosures for outdoor eating (opposite right).*

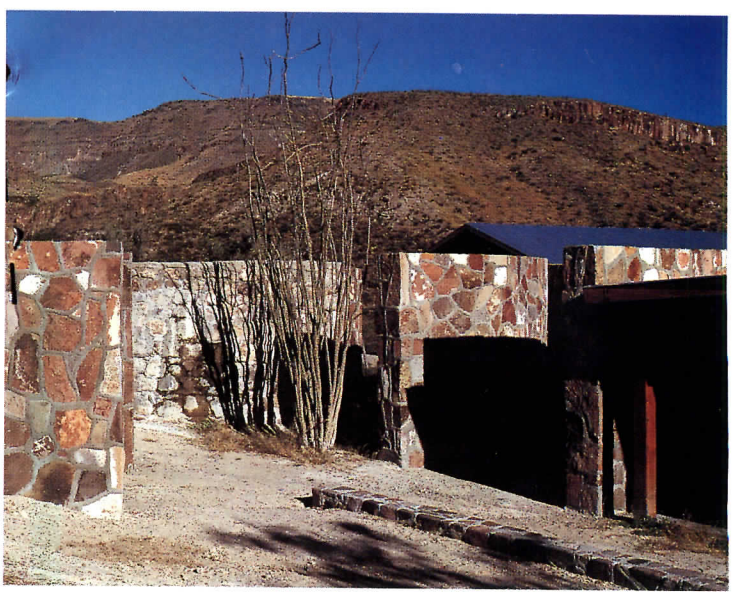


Ayala de Chinati
Presidio County, Texas

Some 50 miles outside of Marfa nestled in the hills overlooking the Rio Grande and the Mexican border beyond, is Donald Judd's 45,000-acre ranch, called Ayala de Chinati. Like most of Judd's architecture to date, the ranch is a combination of existing and new construction. Within the grouping of small buildings are Judd's private quarters—bedroom, living room, and study—(bottom left and at right in photo below), his public quarters—a dining room and kitchen (in the middle in photo below and opposite bottom left), quarters for ranch staff (at left in photo below), and his studio (opposite top). In between, Judd has designed a series of walls made of adobe—a lost building art, he says—that tie the once ramshackle structures into a unified complex. (The making







of seemingly self-contained compounds is a recurring theme in Judd's architecture.) Made of local stone that ranges in color from reddish earth tones to charcoal grays, the walls act variously as enclosures for the buildings and water reservoirs; corrals for horses (which will be added once the complex becomes a working ranch); and site-specific sculpture. Partially finished for now, the walls suggest a work in progress. Judd added front and back porches to two of the structures framed in wood with corrugated-metal roofs to provide shaded outdoor seating, giving the diminutive structures increased scale. Windows and doors are aligned on axes to create views through the buildings and provide cross ventilation; skylights in the studio add natural light.

Main Street Marfa, Texas

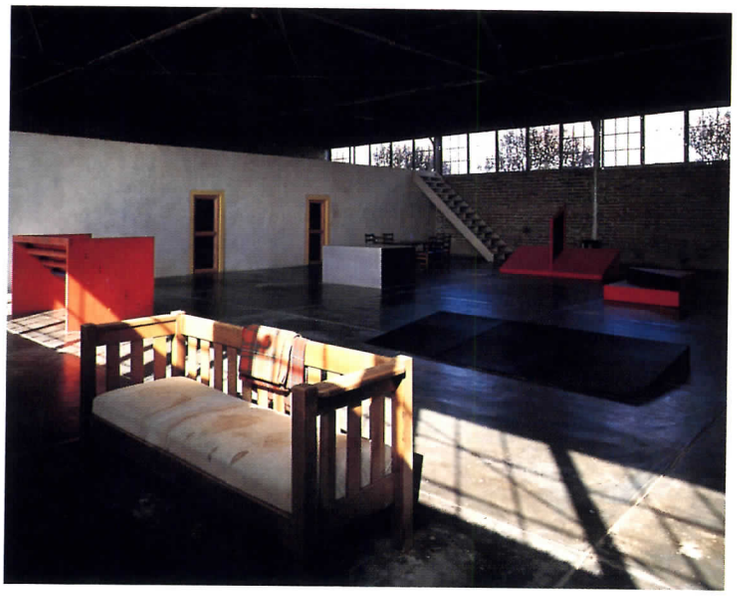
Although a dot on the vast West Texas landscape, the town of Marfa has more than one claim to fame. It was here that the 1956 Hollywood classic Giant *was filmed, starring James Dean as the maverick oilman. And it is in this same small town that curious out-of-towners gather to catch a glimpse of the "Marfa lights"—glowing apparitions that some locals attribute to extraterrestrial visitors. In recent years, Marfa has become renowned within the art world for what has become an annual October weekend art-opening-cum-barbecue given by Donald Judd. It's ironic that Judd, known for his love of solitude and an outspoken critic of art institutions, is host to some 800 museum officials, gallery owners, collectors, and assorted art-world denizens, more than a*

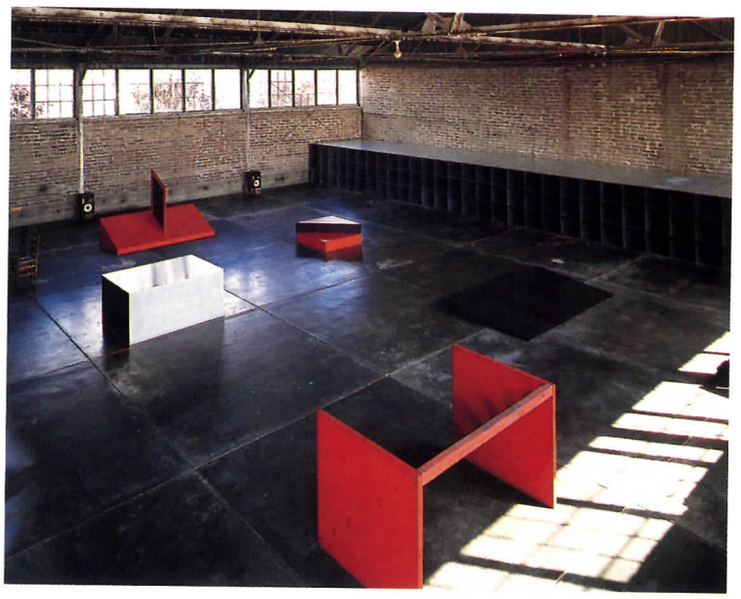
third of the town's full-time population. Since he moved to Marfa in the early 1970s, Judd has purchased several abandoned buildings along Main Street (left). In addition to the Dia Foundation's initial sponsorship, the sale of Judd's sculptures and paintings has helped finance the Chinati Foundation's rapid expansion, making Judd, particularly during the art-market boom of the mid-1980s, one of Marfa's principal employers. (A stagnant local economy that relies mostly on farming and cattle has not provided him with any notable competition.) Judd's real-estate holdings include the former Marfa National Bank (opposite) and a nearby supermarket (below), allowing him to "practice" architecture in the way he see fits. "One of the reasons I didn't become an architect [when I started my career]," Judd explains, "is that I didn't think I could work with anyone or rely on anyone for work. Now I'm my own client, which is best." Judd has remade the 1930s bank into a home for part of a vast furniture collection by such 20th-century masters as Alvar Aalto, Mies van der Rohe, and Gerrit Rietveld. On the ground floor, he removed years of alterations, stripping the double-height space to its naked, concrete shell. Wood furniture of Judd's own design is mixed with an old wood table, the bank's WPA-style mural, and existing wrought-iron window grates. Upstairs, the office walls were given a fresh coat of the cream color paint original to the building; wood door frames and baseboards are once again black. This hallway

of receding ebony frames dramatizes the arrangement of rooms en filade. *Furniture is spare and carefully placed throughout. "We move the furniture around a lot—from building to building and room to room. Sometimes it takes three years to get a room right," admits Judd's assistant Rob Weiner. Paintings and drawings, which include works by Judd and Josef Albers, and drawings by Mies, Goya, and Rembrandt are also placed with an eye to the unexpected pairing. Around the corner, the old Safeway store is now Judd's sculpture studio. The glass facade has been covered in construction paper, and the shell has been stripped, leaving wood bow trusses hovering over Judd's metal boxes—two distinctly different structural tours de force. Down the street from the sculpture studio is a group of small buildings known as the Cobb House Complex. One building, which is used as a guest house of sorts, has refinished floors and walls and contains Judd's early paintings (top right). Adjacent is a former storage shed, now dominated by a giant pivoting door/window, a Judd signature (top left). This structure has been remade into a showcase for furniture by Rudolf Schindler (bottom), one of the few 20th-century architects Judd admires. Made of California redwood, the sofa, chairs, ottomans, and lamp were reproduced by a woodworker to Schindler's original designs. (Judd hopes to mount a more complete exhibition of Schindler drawings and furniture in the future.) Hanging on the newly troweled walls are*

some of Judd's lesser known paintings. Although most of the Chinati Foundation buildings contain at least one bed in case the nomadic Judd chooses to stay put for the night, his first and principal Marfa residence is the Block House, located across the railroad tracks from the bank, supermarket, and Cobb House. Actually a series of recycled structures surrounded by a new adobe wall that screens the highway and adjacent granary, the Block House includes the "two-story house" (right), once an army office, and, next door, a former airplane hangar, now used as display space for some of Judd's larger scale metal work (below).

Project team: *Donald Judd, Jeffrey Kople, Rob Weiner, Ramon Nunez, Michael Roch, Robert Lara, Eddie Lara, Miguel Leyva, Antonio Valdez, and Rafael Garcia; Jeff Jamieson and Rupert Deese, furniture*





Inside Job

Arch Street, The Greenwich Teen Center
Greenwich, Connecticut
Shope Reno Wharton Associates, Architects

On the outside, it's a simple red-brick building, a humble industrial structure dating back to just before the Civil War. But on the inside, it's an explosion of space, color, and exposed timbers that breaks free of the straight-laced container. "Because it's for teenagers, I wanted it to go a little off-kilter on the inside," explains architect Bernard Wharton, one of the partners in charge of The Greenwich Teen Center (better known as "Arch Street," for its location). "I never saw this as a gray-flannel-suit type of project."

Although just a short walk from downtown Greenwich, the building sits on the edge of a small city park and has few immediate neighbors. Somewhat removed from the fray, the building projects a rugged dignity that even its use for many years as a maintenance facility for the town's department of public works couldn't shake. "We wanted to retain the integrity of the building on the outside," says Wharton. To that end, the architects cleaned and repointed the thick masonry walls, restored the existing double-hung wood windows, and resisted pressure to add new windows to the building's west elevation facing the park. A few changes were made, though, including adding a small front porch painted the same forest green as the rest of the exterior trim, and breaking through the rear (south) facade for a set of windows offering views of Greenwich harbor. A short ramp on the west side of the building provides wheelchair access.

While the exterior still presents a tough protective shell, the interiors now pop with color and angles. Underlining the contrast between indoors and out was clearly one of the architects' goals. The idea was to be restrained on the outside, says Wharton, and then release all the tension on the inside.

Gutting the interior of the building, the architects preserved only the brick envelope and the 14-by-14-inch wooden posts and beams. Sandblasted and protected by a clear stain, the timber framework now acts as star performer in an interior that balances an old structural grid with modern intrusions such as metal railings, glass partitions, and Mexican-inspired colors including teal, red, and yellow. To bring the building up to code, Shope Reno Wharton enclosed two corners for stairwells, added a handicap-accessible elevator, and installed a sprinkler system. There is also a new hot-air heating system; running new metal ducts under the exposed wood roof was no problem.

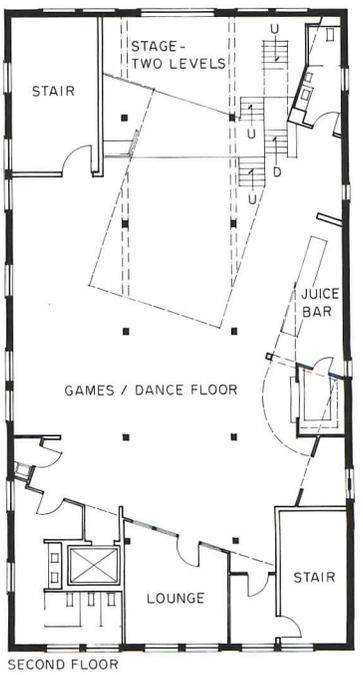
Administrative offices and a reception area occupy the ground floor, while spaces for the teens fill the second and third floors. The heart of the teen center is the two-story great room that can be used for dances, games, or indeed most other kinds of general gathering. A two-level stage marks the south end of the space, and a glass-enclosed lounge the north end. Overlooking the great room is a third floor with dining booths, a snack bar, kitchen, and game area.

Wharton describes the evolution of the teen center as a process of "total participatory design." As soon as the town of Greenwich agreed to rent the building to the nonprofit teen center, the architects set up a public meeting at the site. Teenagers and parents who attended the meeting were organized into four teams and asked for their design ideas. Sketches and diagrams from each of the teams were used by the architects as source material for the final design. "A lot of what came out of that meeting is here today," states Wharton. With a running start, the center was designed in four months and built in nine, on a construction budget of $1 million.
Clifford A. Pearson

Durston Saylor photos

The building's masonry exterior (above) was preserved, but its interior gutted. The heart of the project is its two-story great room (top opposite). The reception area (bottom left opposite) and a dining area on the third floor (bottom right opposite) mix new materials within an old timber frame.

Credits
Arch Street, The Greenwich Teen Center
Owner: *Town of Greenwich Connecticut/ The Greenwich Teen Center, Inc.*
Architect: *Shope Reno Wharton Associates—Bernard Wharton, Allan Shope, principals-in-charge; Jerry Hupy, project architect; Neil Bouknight, Katy Esser, Cynthia Filkoff, Christine Wolfe*
Engineer: *DeStefano Associates (structural)*
Consultants: *Electrical Design Consultants (electrical); Encon, Inc. (hvac)*
General Contractor: *Franco Brothers*
Manufacturer Sources:
See Contents page



SECOND FLOOR


ARCH STREET

Back in the Swim

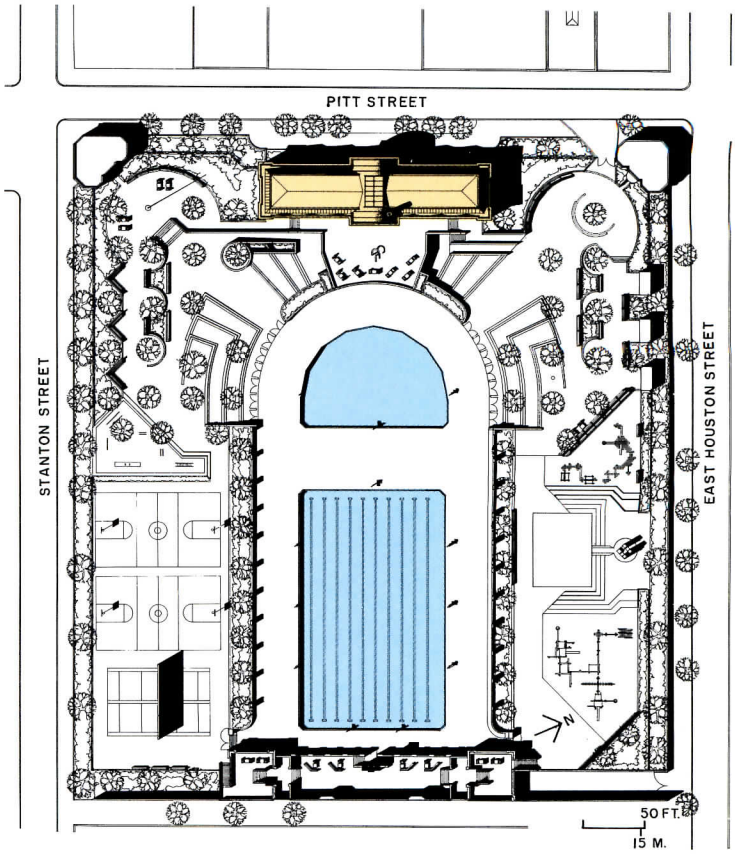
A historic park, built to alleviate a poor-immigrant neighborhood's crowded conditions, is renewed to serve that purpose better today.

Hamilton Fish Park
New York City
John Ciardullo Associates, Architect

Urban-planning ideas have changed since the turn of the century when architects Carrère and Hastings (who designed New York City's elegant main public library) sought to solve social problems on Manhattan's Lower East Side with a Beaux-Arts garden of parterres anchored by a Petit-Palais-inspired gymnasium—thereby displacing two blocks of densely populated tenements. Today, only the gymnasium (top in plan and 1) survives. The garden was destroyed by its unhappy recipients within a year. Active-recreation facilities quickly took its place, including a track, and basketball and tennis courts. Drawing on newer ideas of how to cool down overheated situations, architect Aymer Embury replaced the previous facilities with two large swimming pools in 1936 (a favorite device of then Parks Commissioner Robert Moses, who opened 11 of them that summer), cut the park into three strips by fencing the sides of the pools, converted the gymnasiums into changing rooms, and excavated a new basement level under them to hold mechanical equipment, including a boiler room projecting outward (photos 1 and 4).

This was the plan that John Ciardullo Associates found when it was commissioned by New York City Parks and Recreation to restore and make functional the badly deteriorated, vandalized, and unworkable facility named for a 19th-century Congressman. That was in 1978, and it is testimony to the determination of the architects, the city agency (represented by architects Anna Marie McKinney and Joe Sdao), and community activists to get bouncing-ball funding directed back towards the project and see it through to its opening in July of last year. Among the physical problems the architects faced: People loitering on the strips of land outside the pool fences threw empty bottles inside, forcing pool users to walk and swim over broken glass; the semicircular diving pool had become a liability problem; there was no handicapped access; the pool equipment was outmoded; the officially designated landmark main building had a badly leaking copper roof, broken and boarded windows, and rotted woodwork; structural brick walls were exposed inside and had no insulation; and the well-built brick and limestone exterior, although in surprisingly good condition, was coated with layers of cement paint. By contrast, the soft-brick structures built in 1936, including the corner pavilions and the boiler room, had badly deteriorated.

Today, the pools have been completely rebuilt, the larger one to official Olympic size and the smaller one as a practice pool. A tunnel alongside them carries piping and wiring for easy access, and connects to new stainless-steel sand filters under a new terrace at the south end (3 and 6). New fencing around the site perimeter replaces the old fencing at the pools and allows for controlled access to the entire area (either through the building or a gate at the northeast corner). Handball and basketball courts and a playground paved with chopped discarded tires (5), as well as passive-use brick-paved areas (2 and 4) occupy spaces where the bottle- throwers gathered. Freestanding outdoor showers and lockers in brick piers along the fences allow pool use without entering the building. The once-deteriorated corner pavilions and the boiler room are completely rebuilt with new brick and limestone aggregate trim, and hold air-conditioning condensers. The architects created a terrace on top of the latter and a handicapped ramp to reach it and the main building (1). This building, painstakingly stripped of paint, has a new lead-coated copper roof; its changing rooms, now relocated to the basement, have been replaced by two grand spaces for community programs. Up to 3,000 children a day use the pools and after a full season of use, the $13-million renovation is so well respected and taken care of that it looks like it did on opening day. *Charles K. Hoyt*



John Ciardullo's preferred design language is frank Modernism and his firm has used it for much of the landscaping detail (see wide slopes leading down to ground floor in 1, 2, and 4 and terrace above). But they kept a formal plan and added new Classical elements necessary to balance the whole scheme, such as rebuilt terraces over new filter-equipment rooms (3 and 6), where a free-standing column conceals a vent stack.

© *Roy Wright Photography, Inc.*

1

2

3

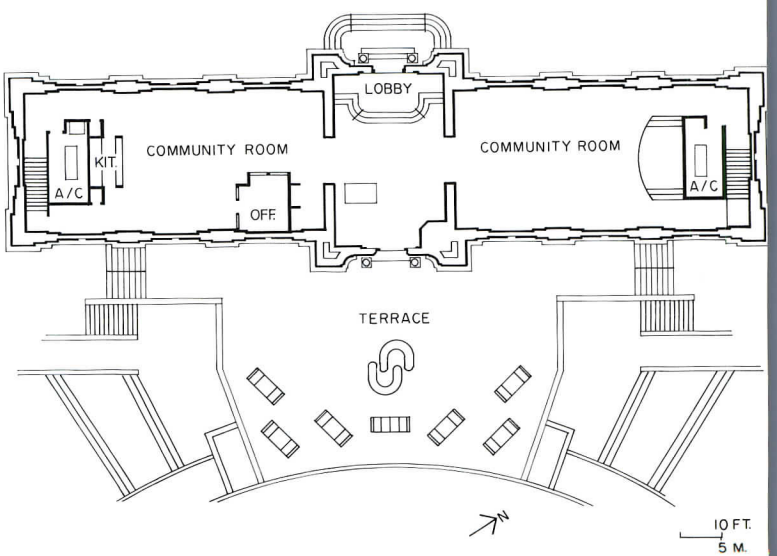
4

5

6

Two community rooms are separated by a skylit central hall. While the exposed brick interior was covered with drywall and marble to conceal some mechanical and electrical leads and allow for building insulation, the architects left the original wood trusses exposed after sandblasting them to remove many coats of paint. Air-conditioning feeds rise from central units behind a stage in one room (left) and food-service facilities in the other (background, right).

Credits
Hamilton Fish Park
New York City
Owner: *New York City Parks and Recreation*
Architect: *John Ciardullo Associates—John Ciardullo, principal; Paul Spears, project architect; Richard Piacentini, project manager*
Engineer: *Rubio Associates*
General Contractor: *AFC Enterprises, Inc.*
Manufacturer Sources:
See Contents page



A City in Limbo

© Barry Halkin

Many of the handsome new office towers that rise like a mesa over Philadelphia's plain of three- and four-story row houses were completed in the last five years, auguring a renewed faith in a city that had come to symbolize America's collapsed industrial might. Today, Philadelphia's transformation is endangered as forces it cannot control have brought it—fiscally speaking—to its knees. It's not alone, and many experts foresee increasing urban fiscal distress. Though the nation has essentially failed to respond to the urban pathologies the latest Los Angeles riot exposed, who is to say how long they can be ignored? In seeking solutions, it's worth considering that one urban success story is the role of historic preservation—especially that driven by investment-tax credits. The shining new towers are symbolic; restoration and adaptive reuse were—and can again be—the real engines of Philadelphia's resurgence.

Preservation as a force for renewal

As new generations discovered the city's pleasant, walkable scale and vast reservoir of high-quality, inexpensive housing, it seemed in the 1980s that Philadelphia was stemming a three-decade flight of businesses and homeowners. Some credit for this must go to the preservation movement and the investment tax credit for restoration of landmarked buildings. Historic preservation has for decades been important to Philadelphia. Under urban-renewal programs, Society Hill was transformed from a slum into one of the nation's earliest revitalized historic districts. From the '50s, preservation gained steady momentum, reaching a high point in the 1976 restoration of the Philadelphia Academy of the Fine Arts, which brought the forgotten legacy of Frank Furness stirringly back to life. That same year, Congress spurred preservation activity by providing generous tax breaks for redevelopers of landmarked properties. "The investment tax credit was used to redevelop more buildings in this city than any other and at far greater dollar value," says Richard Tyler of the Philadelphia Historic Commission (446 projects costing $1.4 billion, according to the State Bureau for Historic Preservation).

The presence of recognized developers in neighborhoods previously regarded as off-limits spurred dozens of smaller builders and homeowners to build or remodel properties without tax breaks. Renewal in Philadelphia steadily expanded outward from Society Hill and other central neighborhoods to Queen Village, Olde City, the Northern Liberties, Germantown, and Chestnut Hill (some recent projects are shown on the following pages).

Up against the wall

This good news, however, obscured intractable economic and social problems. One in four Philadelphians still lives below the poverty line, and only half the city's residents annually earn more than $17,500. Moreover, there are formidable barriers to increasing income and jobs. Philadelphia has the highest local-tax burden in the nation for a family of four with an income of $25,000 or less, according to the Pennsylvania Economy League, and its business taxes are much higher than surrounding communities. Still, the city collects only enough money to spend about one-third what New York City spends per capita. The imbalance is further aggravated, according to the League, because the city faces extraordinarily high costs from mandated state programs while receiving among the least state aid of any large city. "The city's budget is being overwhelmed by mandated services," says Dianne E. Reed, the League's executive director. And federal urban aid was slashed from $250 million in 1981 to $54 million by 1989. This high tax/low service economy has put the city at an enormous disadvantage. With a flat wage tax of nearly five percent, employers can give workers a hefty raise at no cost to themselves simply by moving out. It didn't help that in 1986 the tax credit lost much of its value through tax-code changes.

In 1990, these powerful disincentives converged. Facing a $200 million shortfall in a $2.1 billion budget, the city barely avoided bankruptcy. Since then it has battled back to solvency by raising taxes further, obtaining givebacks from unions, and cutting services (church groups threatened to cut off services to AIDS patients because the city had not paid them). But the city is not out of the woods: "You can privatize," says the Economy League's Reed, "you can cut, but you can't cut enough. It's a long-term structural problem." (The city still may have to sell its profitmaking sports stadiums, and gas and water companies.)

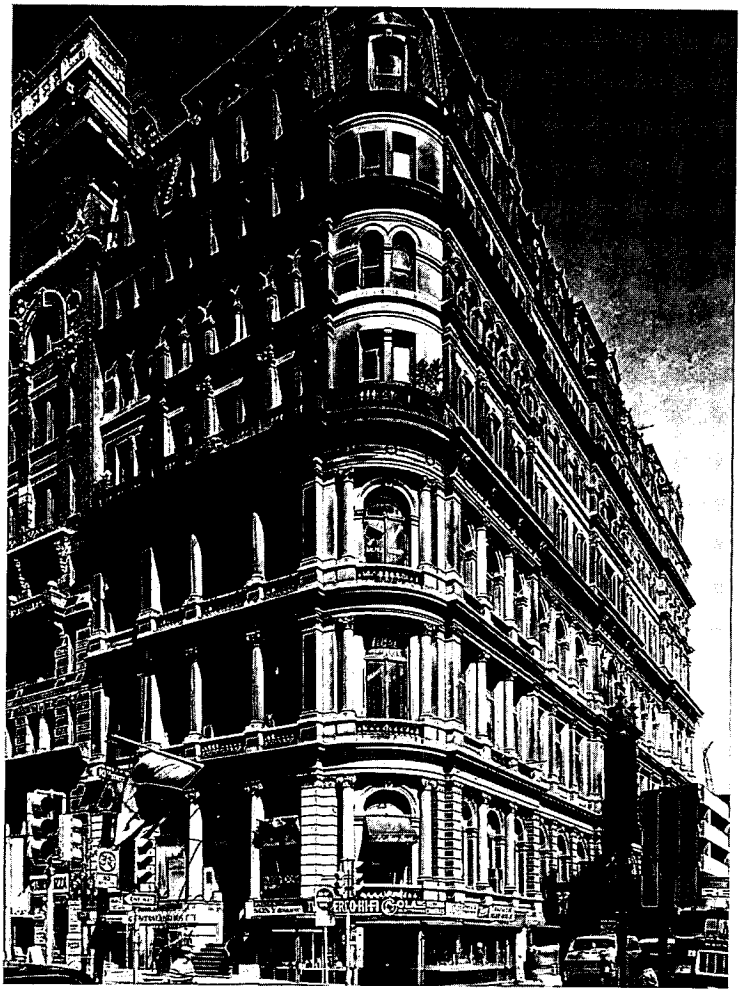
The ingredients of urban revitalization

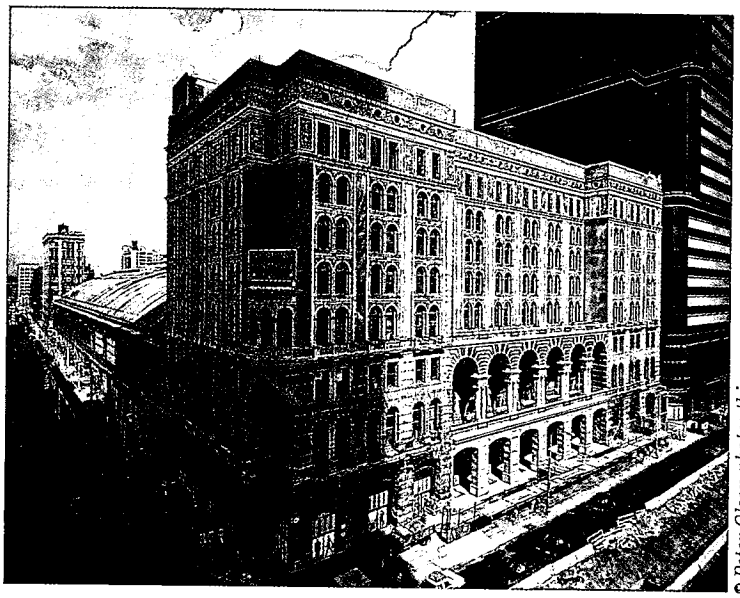
Ironically, Philadelphia has what many job-creation experts say are the essential elements for prosperity: some 100 colleges and universities, including five medical schools—more than any other city—that spin off research into new companies and new products. Indeed, Philadelphia is the center of the biotechnology-research belt that stretches from suburban New York City to Wilmington, Delaware. Nearly every pharmaceutical company in America has substantial facilities in the area. And there is job spinoff: health care and the teaching hospitals have a $5 billion impact on the city's economy and employ some 10 percent of the city's workers. The hospitals and schools are tax exempt, though, and the research and development jobs go overwhelmingly outside the city. Just in the last few years pharmaceutical giants like Smith-Kline Beckman, McNeil, and Rhone-Poulenc Rorer, have built large R&D facilities in the suburbs. None has built in the city.

Philadelphia's situation is not far different from many other older cities: Hartford and Bridgeport, in Connecticut, have recently faced

Continued on page 138

It's a coincidence that the slide in historic redevelopment parallels Philadelphia's suddenly collapsing fiscal fortunes. But the future of historic preservation and the future of this city may well go hand in hand.





© Peter Olson photos this page

Endangered:

Demolition threatens a number of important Philadelphia structures, exacerbated by economic and legal uncertainties. The Victory Building (1873, Henry Fernbach, architect; top floors added 1890 by Phillip Roos), among the last of a whole street of similar musclebound, 19th-century commercial buildings, has for years avoided the wrecking ball, its owner opposed to adaptive reuse (above left). Presiding over a parklike lawn, the U. S. Naval Home (1833, William Strickland) is an extremely rare (though unused and neglected), Greek Revival institutional complex (top right). Some later additions have been demolished, but the present developer. a builder of suburban tract houses, has no current redevelopment plans. The Reading Terminal's spectacular train shed, one of the largest extant, will see new life as part of the city's convention center (under construction). Its headhouse (1891, Francis Kimball—bottom right), has had much of its Venetian-revival detail restored already (a joint venture of Bower Lewis Thrower and Cope Linder Associates with John Milner Associates as preservation architects). Upper floors, however, have failed to attract office tenants, and redeveloped ground-floor retail (along a connection to a new commuter-rail station) has not been viable. Though completion of the convention center may reverse the situation, the owner maintains that demolition is a possibility. J. S. R.

Restored:

Furness Building *(1891, Frank Furness, original architect; Venturi, Scott Brown & Associates, restoration architects; Clio Group and Marianna Thomas, restoration consultants). The exotic forms and spatial gymnastics of Frank Furness lost their allure in the 20th century, and much of Furness's work has been demolished. Exterior restoration took the sandstone of this University of Pennsylvania centerpiece from sooty black to an almost-shocking raw-clay red. With removal of an added mezzanine, the reading room soars four levels to an intricate, restored laylight.*

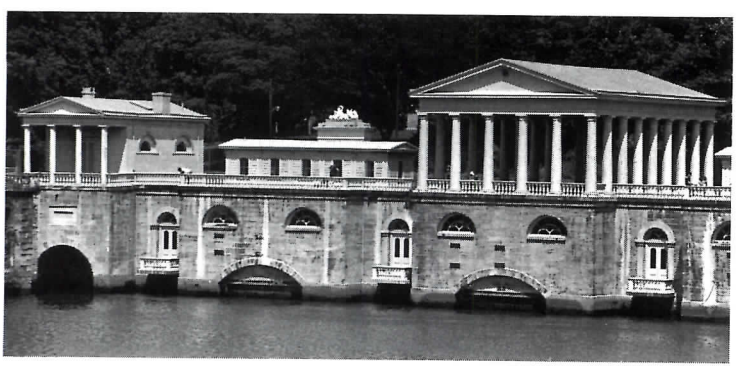
30th Street Station *(1933, Graham, Anderson, Probst & White, original architects; Dan Peter Kopple & Associates, restoration architect). This was virtually the last of the great temples of the railroad era. Gerald D. Hines interests used the investment-tax credit to support this restoration, which will form a focal point for a vast development of air rights over adjacent rail yards. Exterior masonry was cleaned and repaired and glazing upgraded. The begrimed ceiling of the monumental waiting hall was painted, the travertine walls scrubbed, mechanical systems updated, and storefronts restored to match originals. Unused concourses have been turned over to retail and the office floors have been reconfigured for modern floor layouts.*

James S. Russell, top and bottom

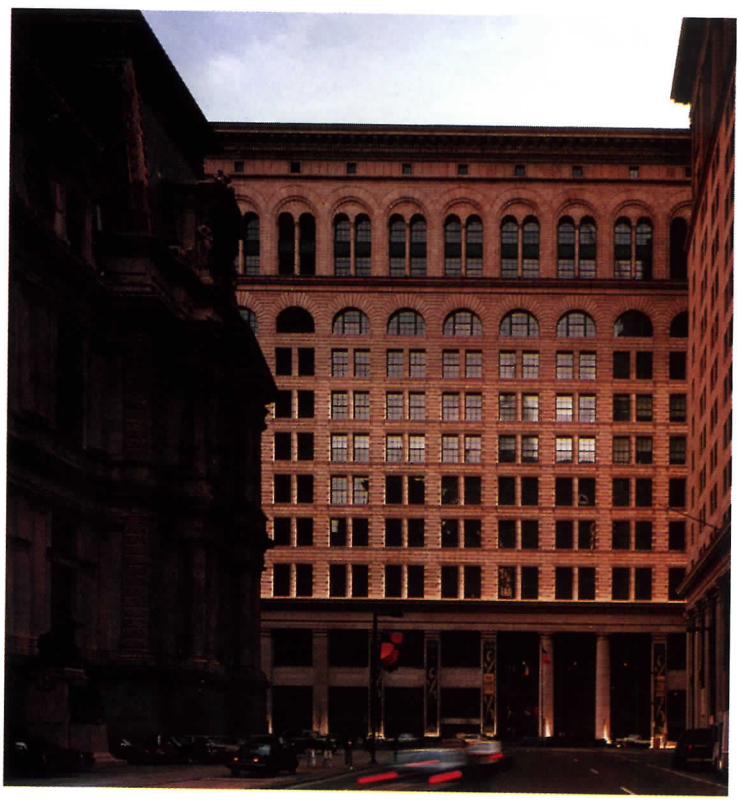
Robert Golding/B&H Photographics, top and bottom

Fairmount Waterworks
(1812-22, Frederick Graff, original architect; John Milner Associates, restoration architect). The series of delicate classical temples that line the Schuylkill River surmounts one of America's oldest engineering landmarks. With funds raised from public and private sources, the Junior League, the Fairmount Park Commission, and the Philadelphia Water department have restored—since 1982—much of the complex. The city seeks a restaurant tenant for the former engine house (large structure at right of photos) and is raising funds to restore 19th-century water-pumping machinery, at which time an interpretive center will expand to a full-fledged museum.

John Wanamaker Building
(1911, Daniel H. Burnham & Company, original architect; Burt Hill Kosar Rittelmann Associates, restoration architect). While well-located, a 1.9-million-sq-ft department store is simply too big these days. Assisted by the tax credit, the architects restored the lower five floors for the downsized Wanamaker's store, converted the upper seven levels to office space, and added 660 parking spaces below grade. Office users take escalators from a new lobby to a mezzanine, which gives access to 22 new elevators while disturbing a minimum of ground-floor retail area. Above the trademark Grand Court's roof, a new floor was built and a lightwell was converted to a skylit atrium, welcome relief for workers in the deep, 120,000-sq-ft floors. J. S. R.



Top, middle, bottom courtesy City of Philadelphia



© Scott McDonald/Hedrich-Blessing, top and bottom

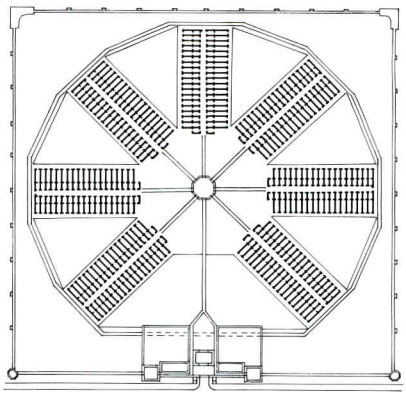
© Barry Halkin and Jack Ramsdale photos

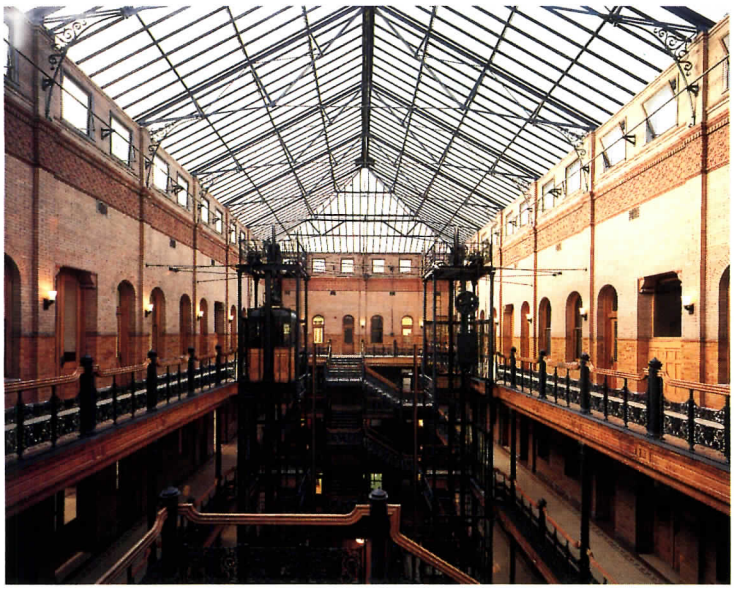
TroublingRuin

Eastern State Penitentiary

The brooding, 30-ft-high Gothic stone walls of Eastern State Penitentiary present a dilemma: What do you do with a great work of penal *architecture? (Even demolition of the 12-ft-thick walls is costly.) Not used since 1970, Eastern State is a powerful monument to an idea as much as a work of architecture. Though altered innumerable times, the prison's essential nature is represented by the diagram (opposite) drawn by its original architect, John Haviland (the first cell blocks were completed in 1829). The radial scheme permitted observation of all the corridors by one guard. Based on a Quaker rehabilitation ideal of solitude combined with manual labor, prisoners occu-*

pied individual cells that lead to separate exercise yards. Cells were plumbed and skylit. Solitude was carried so far that only alternating exercise yards were open at once and prisoners were hooded when moved. While forced communal labor became the dominant U. S. model, the "Pennsylvania System" was copied widely throughout the world. Reuse schemes have been proposed and fallen by the wayside. "They would have cost too much and damaged too much historic fabric," says architect Sam Harris of Kieran, Timberlake & Harris, architects who are completing a building-assessment as a basis for a new (possibly subsized) restoration scheme. For now, though, it is a troubling, evocative ruin. J. S. R.

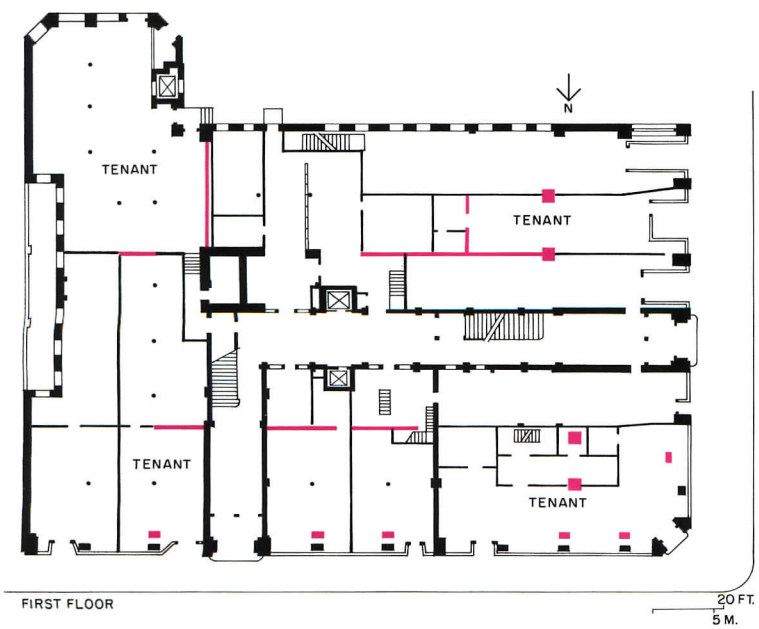


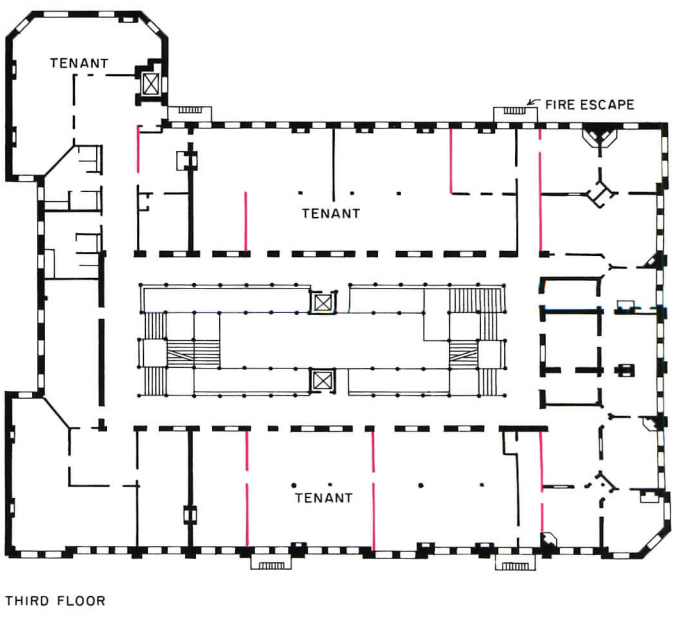


"Close collaboration between architect and structural engineer produced a redesigned cross-wall system," say the architects. "Historic partitions which defined original configurations were retained; those deemed noncontributing were removed. New wood-stud plywood shear walls required for cross bracing were introduced and located to provide flexibility in tenant leasing. The result was a straightforward, economical solution for the interior shear wall system," they continue. To bring the building in line with handicapped-access requirements, accessible restrooms were installed on each floor. Existing restrooms, which retained original marble and wood, became the women's bathrooms. New men's bathrooms were built using office space. Need for an accessible path from the park to the atrium led to the addition of a ramp at the Third Street entrance. The Bradbury has a double life. Its main retail floor is taken up by stores that are part of the Broadway-Spring corridor, a Hispanic shopping district whose per-square-foot sales rival those of Rodeo Drive in Beverly Hills. Above the street, the building competes for the burgeoning state and federal office market spreading from the rear (east) of the Bradbury. The interior court, laced together with a cast-iron staircase and hydraulic elevators, unifies the Bradbury's different worlds.

Credits

The Bradbury Building
Los Angeles
Owner: *The Yellin Company*
Architect: *Levin and Associates, Architect—Brenda Levin, principal-in-charge; Natalie Shivers and Tim Brandt, project managers; Barbara Horton and Jeff Shelton, senior designers; Carl Davis, David Campbell, and Jennifer Lee, project team*
Retail architect: *Pica & Sullivan Architects—Maureen Sullivan, principal-in-charge*
Engineers: *Kariotis and Associates (structural); Pacific (mechanical); Clark (electrical)*
Consultants: *Historic Resources Group (historical); Rolf Jensen and Associates (fire/life safety); Margaret Bach (codes); Bob Millar (lighting); Sonnenleiter Associates (space planning); David Carlebois and Pro So Co., Inc. (masonry/tile); Lynda Lafever (wood); Rosamond Westmoreland (terra cotta); Tim Bielski (exterior)*
General contractor: *Krismar Construction*
Manufacturer sources: *See Contents page*





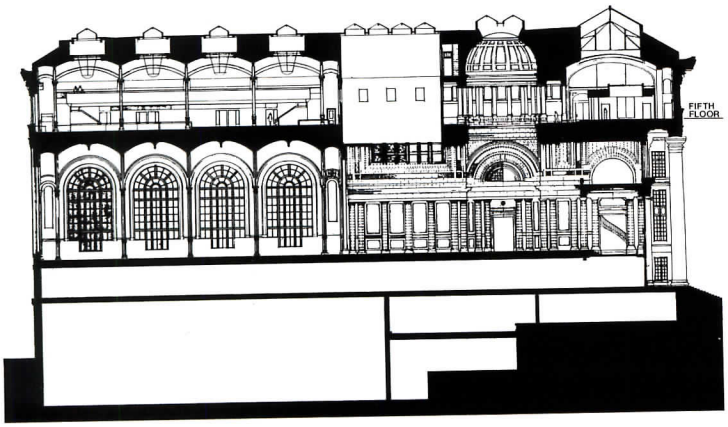

EXIT
EXIT

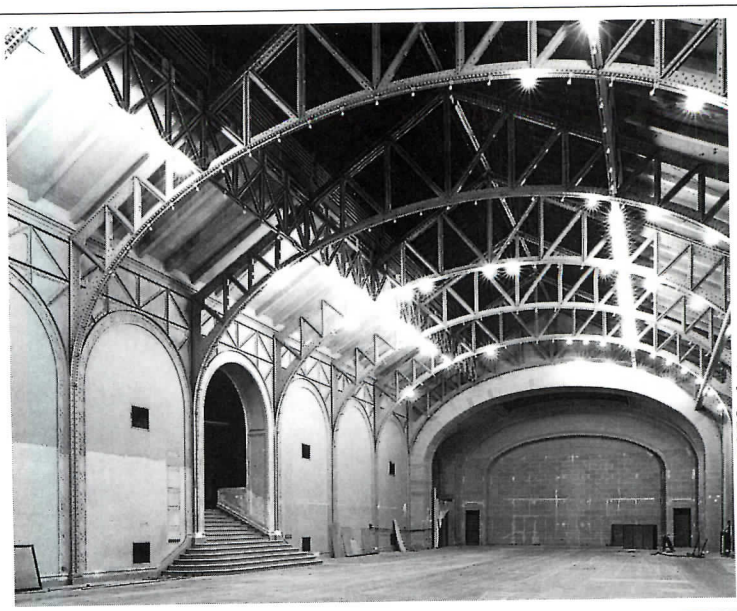
Focus on The 3 Rs: Rehabilitation Renovation Reuse

Developers and institutions alike continue to turn to the three Rs as a means of saving significant structures while getting the most for their construction dollars. Some buildings are gutted and turned to entirely new uses: the monumental galleries of a former museum in Albany were turned into office space; the Clock Tower, a former lithography shop in San Francisco, is now housing and office space; 514 Central in Albuquerque became an art gallery and architect's studio. A former telephone-

New York Education Center

Albany, New York
Einhorn Yaffee Prescott, Architects





© Jeff Goldberg, ESTO photos

514 Central

Albuquerque, New Mexico
Garrett Smith, Architect

© Peter Aaron, ESTO photos

switching station is now Fort Ticonderoga's library. Other spaces retained their original function but have been renovated, like the Lion House at Lincoln Park Zoo, Chicago, and the auditorium at the New School for Social Research in New York City. In New Orleans, the use of preservation tax credits helped 23 circa 1890 shotgun houses to be saved for low-income housing. The urban fabric gains when carefully thought-out projects lengthen the life of older buildings. Charles D. Linn

Museum saved from relic status

The future of Palmer and Hornbostel's 1908 New York State Education Building was imperiled when its two main occupants, the State Museum and the State Library, moved to more-modern quarters. Making huge volumes of space into offices was a major challenge. Architects Einhorn Yaffee Prescott used new mezzanines to increase usable fifth-floor area by 20,000 square feet, to 95,000 square feet. The streamlined form of the new mezzanines was derived from the building's original arched and curved spaces. The mezzanines are located so they have minimal impact on the existing architectural space. Private offices are housed below them, and they provide structure for carrying the hvac equipment. This allows most of the original roof structure, skylighting, and decorative wall and ceiling details to remain exposed. The new lightweight mezzanine structures were dynamically tuned during design using computer modeling to dampen potential vibration problems. Lighting is achieved by means of a task/ambient system, and daylight penetration into the space is controlled by colorful fabric banners. *Charles D. Linn*

New mix of bricks on Route 66.

514 Central is one of a number of urban-infill projects revitalizing downtown Albuquerque. Central Avenue, the spine of this development, was once Route 66's route through town. Although this store building dated back to around 1910, the existing front facade was "modernized" in the 1950s. Architect Garrett Smith replaced it with a facade designed to have a strong street presence, combining a formal rusticated-masonry base with terrazzo tile above. This wall is punctuated by neon numerals that come tumbling over the parapet; these are derived from the neon signage that traditionally embellished buildings along the highway. Openings are punched into the masonry base to visually connect a print gallery with the street. A second, much larger opening above exposes the building's *piano nobile,* Smith's office. Inside, a simple steel-frame, joist-and-deck second floor was added to maximize available area. A new roof structure, including new monitors to bring daylight to the first and second floors, was also added. New Mexico's traditional finish materials, like hard-trowelled natural plaster, have been used throughout the building. *C. D. L.*

John L. Tishman Auditorium

The New School For Social Research
New York City
Prentice and Chan, Ohlhausen Architects

Brian Rose photos

Lion House

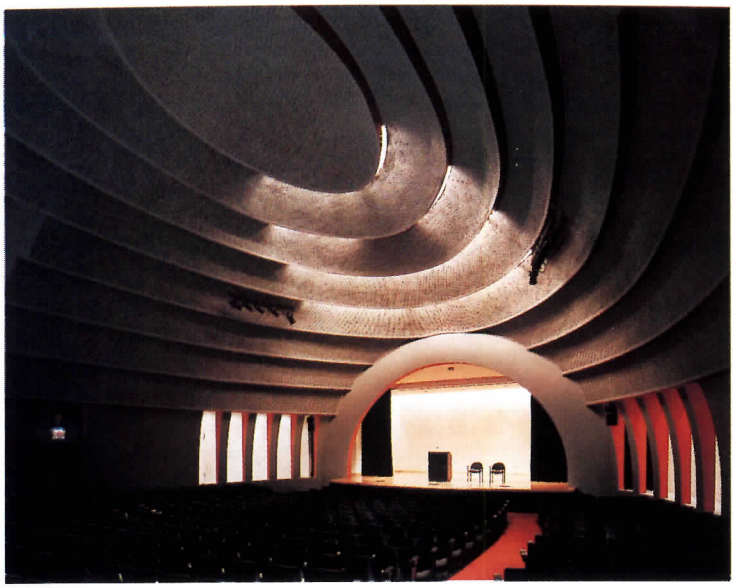
Lincoln Park Zoo, Chicago
Hammond Beeby and Babka, Architect

John Kimmich photos

Thompson-Pell Library

Fort Ticonderoga, New York
Ann Beha Associates, Architect

© David Hewitt and Anne Garrison photos



Auditorium steals show

The auditorium of the New School was badly in need of renovation. The walls and ceiling had been painted white for as long as anyone could remember, the stage was too small for performances, and its mechanical systems were worn out, according to architect Rolf Ohlhausen, of Prentice and Chan, Ohlhausen Architects, who was asked by the New School to oversee the renovation. Ohlhausen began by doing research on both the building and its architect, Joseph Urban. Among the items he found were articles ARCHITECTURAL RECORD published during the building's design phase and after the building was completed in 1931. "The actual stage was very cramped. By looking at the original design in RECORD I found that it was much larger, and that when built, it had been truncated to solve an egress problem. So one of the first things we could to do now, given the current egress situation at the school, was enlarge the stage." Ohlhausen also had almost 70 paint samples taken, so Urban's original color palette for the auditorium and lobby could be rediscovered and reused. The projection booth, lighting, acoustics and mechanical systems in the space were also modernized. *C. D. L.*

The house that roared

The renovation of Dwight Heald Perkin's 1912 Lion House Building was part of Hammond Beeby and Babka's master plan produced for the Landmark Campaign, the Zoo's program to renovate this and the Children's Zoo buildings. The Lion House's sterile concrete and glazed-brick cage areas have been replaced by simulated habitat that includes murals, plant materials, and "denning" areas. The heavy bars that once separated person and beast have been replaced by a system of high-tension wires. These allow an unobstructed view of the animals without the "fishbowl" appearance of glass, which is difficult to keep clean and acoustically isolates visitors from the terrifying roar of the big cats. The Great Hall's terra cotta and glazed brick surfaces, including the Guastavino vaulted ceiling, were chemically cleaned to restore them to their original brilliance. A new hvac system assures that odors in the Lion House are tolerable—important since the Hall is often used for fundraising functions. *C. D. L.*

Switching building switched

When the board of directors at Fort Ticonderoga historic site set out to look for library space, they determined there was no single location within the Fort itself large enough to accommodate the museum's extensive collection of books and artifacts. That created a dilemma. A new building on the site would have been intrusive and was out of the question. Instead of building anew, the board secured an old telephone switching building that stood on the approach road to the Fort and retained Ann Beha Associates of Boston to transform its brick and reinforced-concrete shell into a library. The first-floor level features areas for research and study, staff offices, conference space, and movable book storage, trimmed in stained Adirondacks oak. Basement rooms house collections and study, storage, and exhibit preparation. Including the complex hvac system required for collection preservation, a small addition to accommodate an elevator and loading dock, masonry repairs, new glazing, roof and other waterproofing, and an entire interior build-out, the work was accomplished on a $750,000 budget. *C. D. L.*

Clock Tower

San Francisco
David Baker, Architect

J. D. Peterson photos

Borne Apartments Renovation

New Orleans
The Architectural Team, Architect

Time comes for Clock Tower

The Clock Tower is one of several recent adaptive-reuse projects that is helping revitalize San Francisco's South of Market district. The 127-loft building has a commercial permit which allows a residential live-and-work-use, meaning that the lofts can be used as apartments or offices. The building was to be renovated into offices originally. Architects developed some 10 schemes for developers, but with the glut of office space in San Francisco, none of the schemes penciled out at the bottom line, according to architect David Baker. "The bad office market made the lofts possible. The building finally got sold at a price low enough that something interesting could be done with it." Originally, the building housed an enterprise that printed labels for fruit crates. The structure grew up in seven building phases since 1907, including three basic building types: a timber-framed and brick low-rise building, a six-story brick, timber, and steel building with the 170-ft steel clock tower in the middle of it, and a six-story reinforced concrete portion, including a four-story concrete parking garage. Layout of the lofts preserved existing "geology" like the courtyards and airshafts at left. Baker adds that flexibility on the part of two city agencies made reuse of the building possible. Though the city landmarks agency was strictest when it came to barring alterations of landmarked exterior portions of the building, it allowed interior changes to be made as they were needed. "The building department was very flexible in allowing this code nightmare to be renovated at all—a one-hour, Type V building sharing a wall with a reinforced concrete building? Many building departments would have said, 'tear it down.' " *C. D. L.*

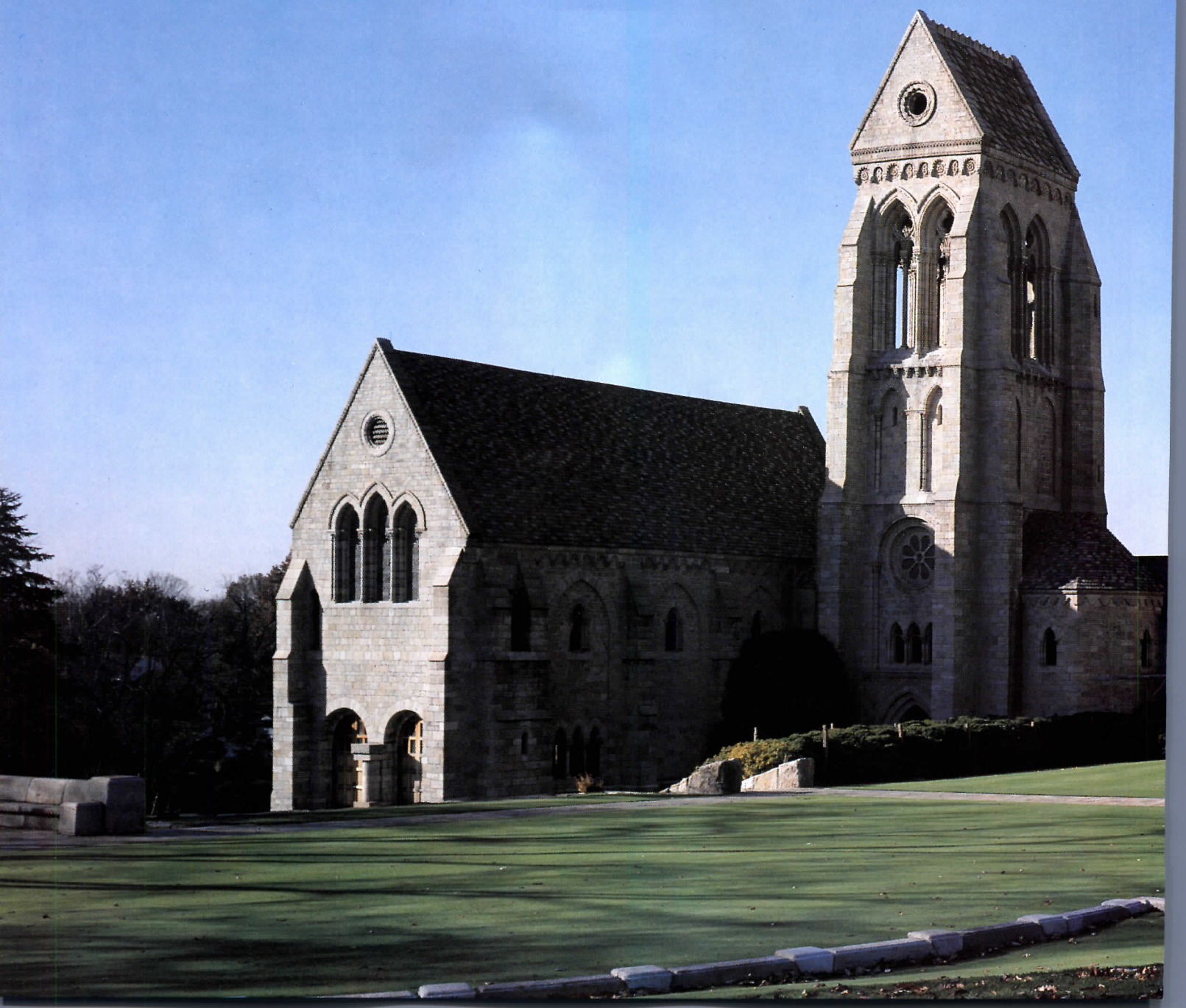
Apartments "Borne" again

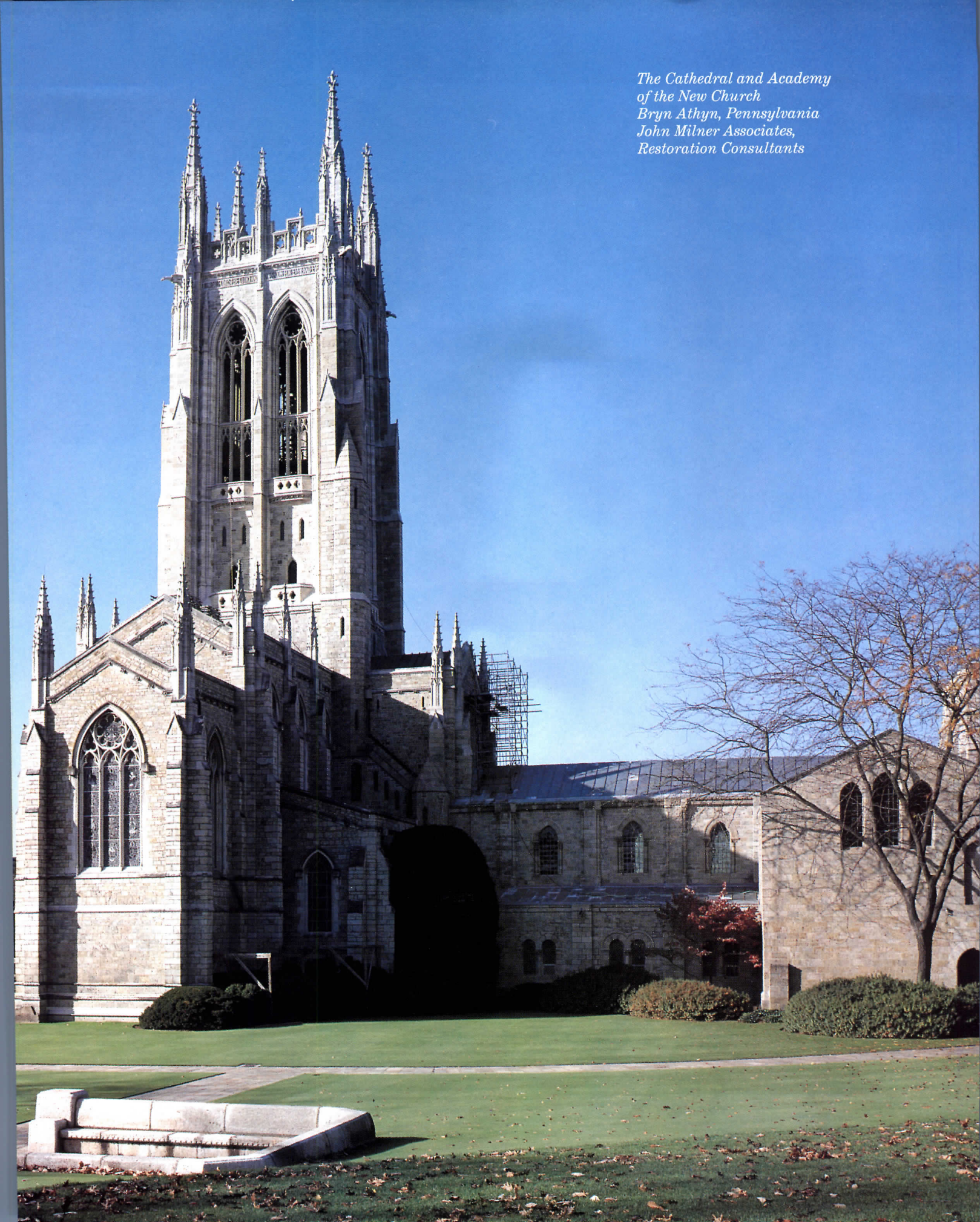
The Borne Apartments project renovated 23 shotgun houses, with a total of 59 living units, in two separate economically depressed New Orleans neighborhoods. The houses had been owned by the Borne family since their construction as housing for laborers and freed slaves around the turn of the century. Investment banker-turned-developer Keith Butler found investors in the black community, and, aided by historic preservation tax credits, was able to purchase the structures and finance the renovation. Karen Mitchell, formerly of the Architectural Team of Chelsea, Mass., directed the project on-site. Getting the tax credits required that the exterior of each shotgun house be repaired. Replacement of the weatherboards, window sash, doors, and frames was acceptable only if the originals were rotten or missing. Any replacement had to match the original exactly. The interiors were required to retain some original millwork and the original ceiling heights, but rather than requiring the original two-unit floor plan to be reimposed in each house, the most recent floor plan in each house was reused. This meant duplexes that had been carved into triplexes and fourplexes over the years remained, so the improvements made over the history of the buildings weren't wiped out by restoration. This project worked both for the residents and the investors as well as from architectural and preservation perspectives. It provides low-income housing in two inner-city neighborhoods and reclaims historic buildings on the verge of being lost to decay. *C. D. L.*

TECHNOLOGY FOCUS

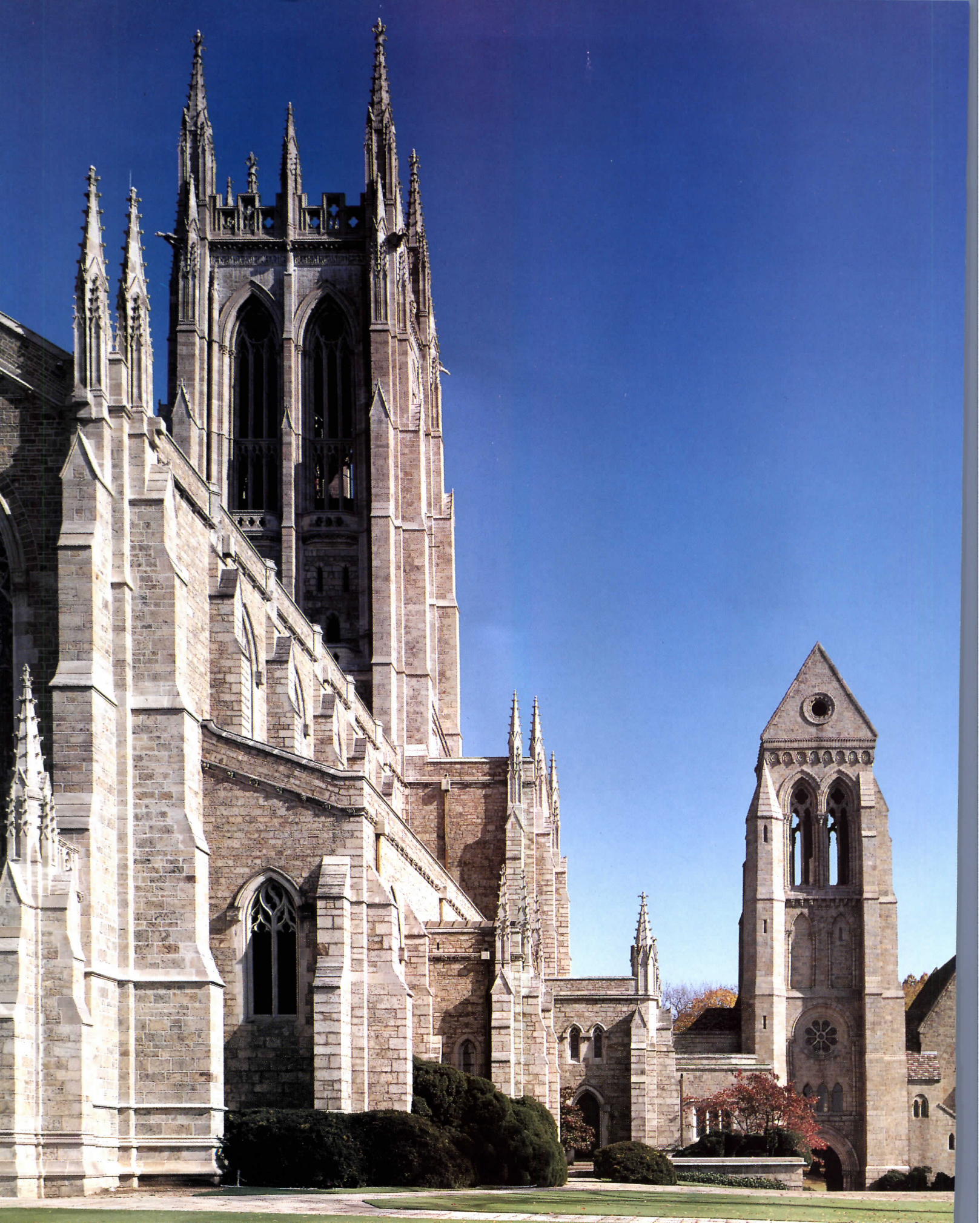
Stewardship

At Bryn Athyn, religious precepts coincide with a long-term view to building conservation.



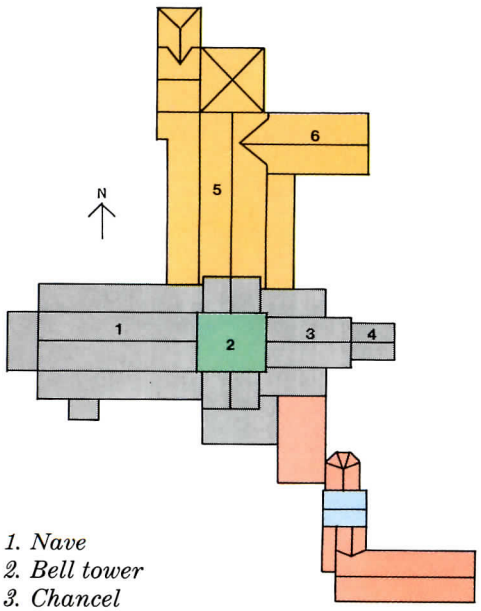


The Cathedral and Academy of the New Church
Bryn Athyn, Pennsylvania
John Milner Associates, Restoration Consultants



John Milner Associates

The religious and academic community founded by the Pitcairns was named Bryn Athyn, from Welsh words meaning "hill of cohesion." Opposite: view from the west; overleaf: east elevation. Below: roof plan shows the variety of original materials. Hard-to-work metal was replaced with a single-ply membrane on the small, intricate tower roofs. True to its long-term approach, the community has already set aside funds for 20 years of costs to repair stone (some intricately carved, above).



1. Nave
2. Bell tower
3. Chancel
4. Sanctuary
5. Choir
6. Choir vestry

LEAD-COATED COPPER
MONEL
EPDM
TERRA COTTA
GRANITE SHINGLES

This is not a story of restoration as much as of stewardship—an approach that takes a much longer view than Americans are used to. Like an ideal English landscape vision, the Cathedral and Academy of the New Church rises at the crest of a hill. This is not Oxford, though; it's Montgomery County, Pennsylvania, only a few miles north of Philadelphia. When restoration architects from John Milner Associates were called in to make a conservation assessment, the buildings looked well maintained. Nevertheless, significant problems had developed that defied maintenance solutions.

Raymond Pitcairn, scion of the family that founded and prospered from the success of Pittsburgh Plate Glass, gave up the practice of law and, following his father's wishes, devoted 15 years, from 1913, to the design and construction of a church community and academy to spread the theological teachings of Emanuel Swedenborg. True to his father's principles, Pitcairn took the long view: the community would be built as permanently as possible. Pitcairn did not have an architectural degree; he was simply an inspired amateur. (Ralph Adams Cram was consulted on the original design.) He eschewed most modern building techniques, using traditional load-bearing masonry walls and white-oak ceiling beams held together with locust-wood pins. He assembled skilled artisans who built most of the structures wholly on site.

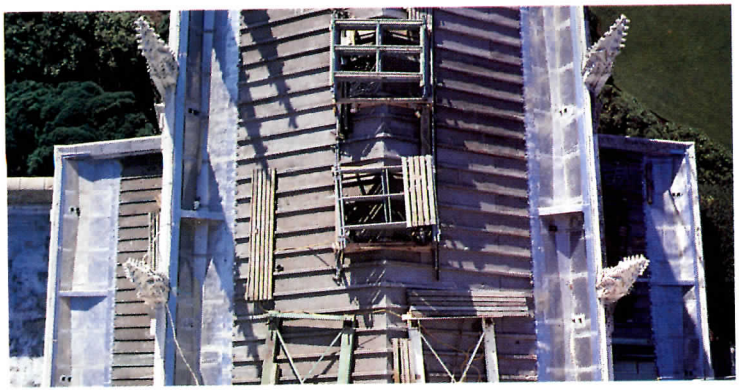
John Milner's work focused on roofs and stonework. Most of the metal roofs were in excellent condition—not surprising since they were made of lead-coated copper and monel. Lead-coated copper has a very long life, but monel (often used for corrosion-resistant inserts) is among the toughest (and most expensive) materials available. The architects found that some roofs kept failing for two reasons: first, while roof battens could absorb thermal movements, mechanics had failed to provide for movement in the gutters. Other roof problems developed because Pitcairn did not want to see metal drip edges at stone copings, and flashing-to-stone intersections, exposed on horizontal surfaces, failed repeatedly.

Cracking and spalling of stone trim and decorative stones (set within walls of granite from Rhode Island) initially puzzled the architects. A structural analysis revealed that the compressive strength of the Bowling Green (Kentucky) limestone chosen by Pitcairn was not adequate to the imposed loads.

The architects suggested extending the metal roof to form a drip edge over stone copings Pitcairn had left exposed. In this case it was the church that had to be convinced that the detail was esthetically acceptable, not the architects. "This is a client very concerned about the precepts of the original construction," observed Fred Walters, a project manager at Milner. "There's a close connection between the approach to the building and their religious beliefs. They see themselves as caretakers of the future." *James S. Russell*

Credits
The Cathedral and Academy of the New Church
Bryn Athyn, Pennsylvania
Owner: *The Academy of the New Church*
Restoration Architect: *John Milner Associates—F. Neale Quenzel, partner-in-charge; Frederick L. Walters, Barry Schnoll, project managers*
Consultants: *Keast & Hood Company (structural engineering); Robert Linck Roofing (roofing)*
Specialty Contractors: *George H. Duross, Inc. (roofing and metalwork); Dan Lepore and Sons, Co. (stone)*

Replacement gutters were detailed to avoid removing the entire roof, which had been built from bottom to top. New baffles were installed to allow thermal movement (details opposite bottom). Work is shown in progress over the nave (1). Some gutter sections had to be built onsite to conform to subtle curves introduced by builders to correct for the distortion the eye introduces. Monel is very heavy, so structural laps were riveted; waterproof joints were soldered. Outside corners (such as 4) were also used for expansion baffles. A baffle cover (not shown in photo) extends under the roofing apron, around the corner, and over the gutter and baffle, concealing solder joints as well. Certain conditions were so complex, such as where buttresses projected into gutters (2, and detail opposite), or where chamfers became scuppers (3), that the architects folded and overlapped sheets of paper to work out the flashing details. Additional drains were installed between the baffles, and overflow scuppers were added for all drains (plan, bottom). Heat-trace cable was added to replaced internal downspouts, some of which had burst from ice expansion.



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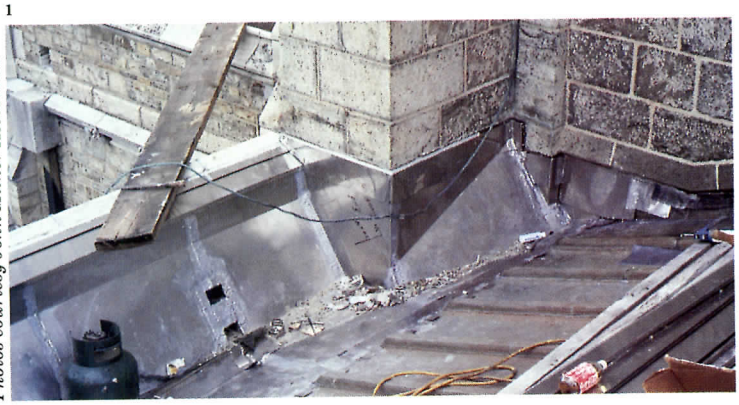

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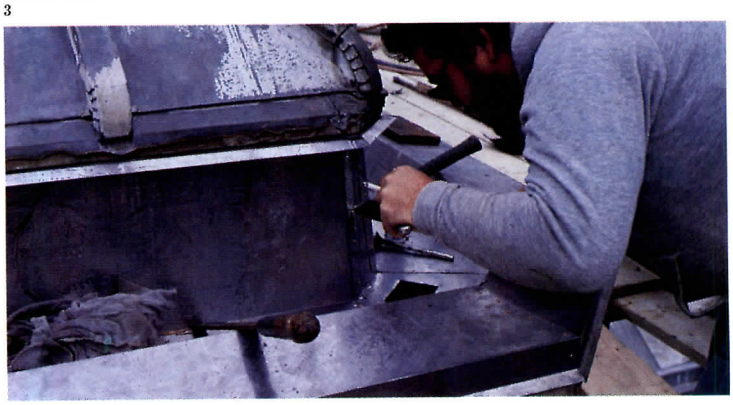

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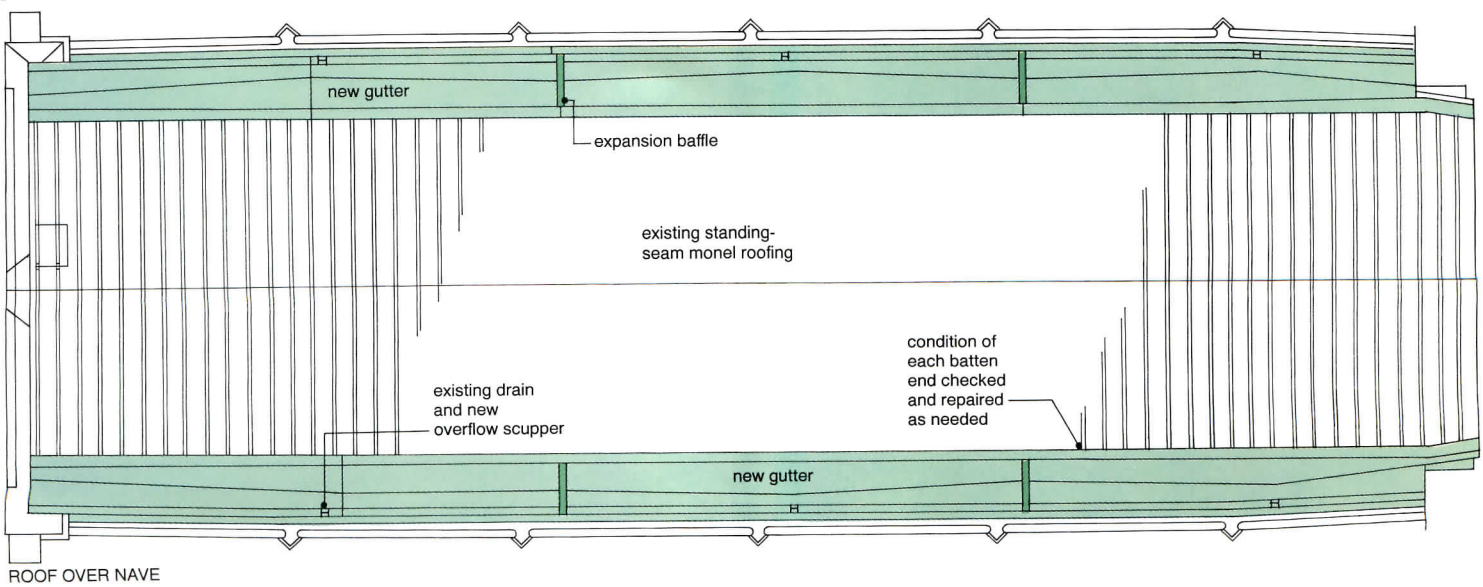
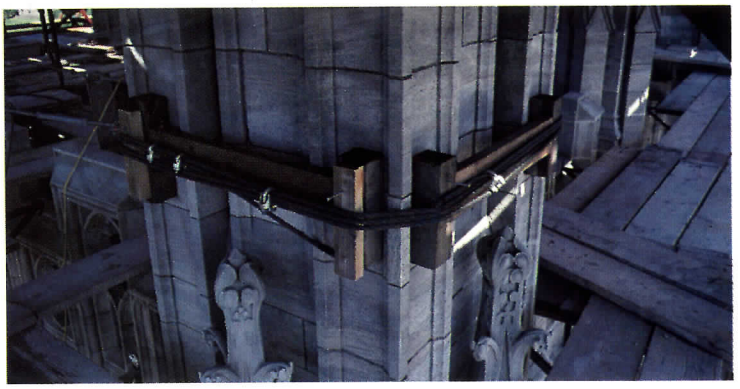
Photos courtesy John Milner Associates



ROOF OVER NAVE

The failing limestone trim was documented using photos of each elevation with computer-drawn and numbered overlays (printed on letter-sized sheets for easier handling by masons onsite). The architects divided remedial work into three categories: replace (with stronger limestone from Indiana), repair, or monitor. Some stone walls were found to be too thin, allowing water to accumulate in undrained cavities. Full-depth (up to 20-in.) stones were specified. Though nominally less expensive to contract for carving in Indiana, the stone contractor worked much of the stone onsite to avoid costly documentation mistakes (8). The nave tower's open Gothic tracery required masons skilled in carpentry to devise the intricate shoring needed (5, 7), allowing removal of structurally essential stones (6). Other stone remedies included reworking metal-cramp details placed too close to the stone's outer surface (water accumulation caused spalling), and repointing horizontal coping-stone joints (originally protected with lead and minwax) using water-permeable mortar (water wicks out as well as in) and sealant so the joints would shed water. J. S. R.

5



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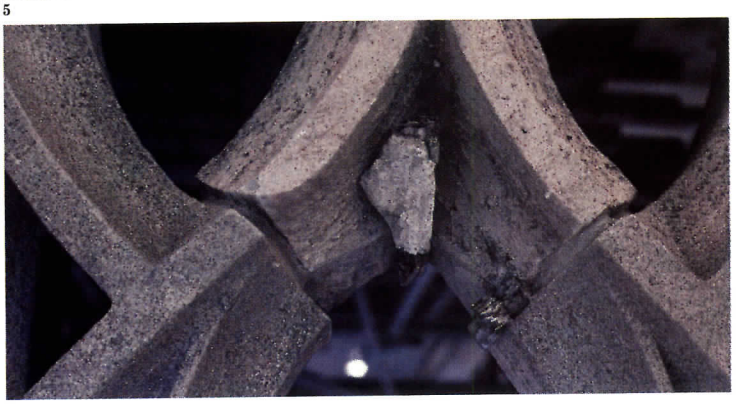

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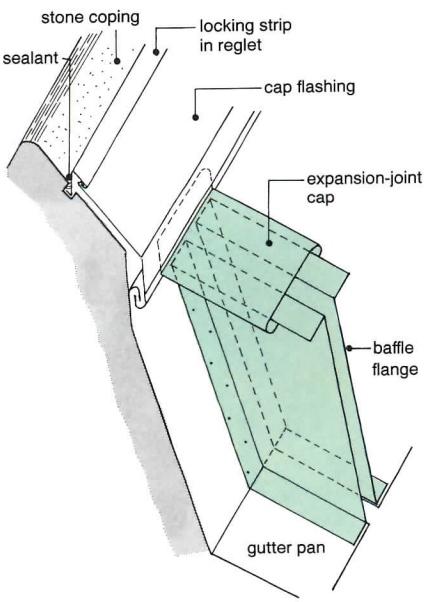
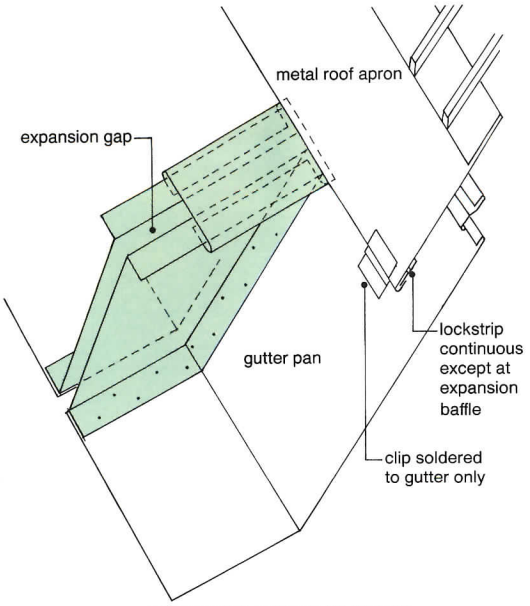
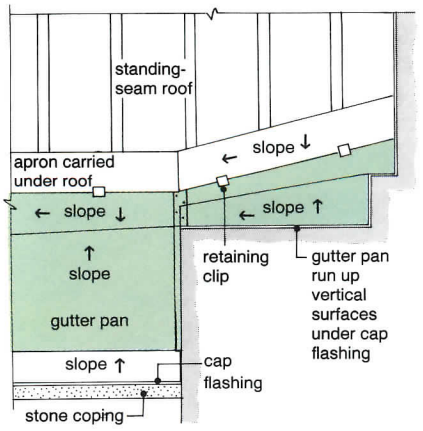


EXPANSION BAFFLE AT STONE PARAPET



EXPANSION BAFFLE AT APRON



GUTTER AT TOWER (PLAN)

TECHNOLOGY FOCUS

Investigating Stone

A forensic-engineering assessment tags masonry walls' worst enemies: water penetration abetted by air pollution.

By Simon F. Shipley and Werner H. Gumpertz

From long experience we know that "they don't build the way they used to." It's often a good thing they don't. Our investigation of the Massachusetts State House has shown significant design deficiencies, particularly in masonry-wall construction. Many of the weaknesses we found are common to historic buildings, and the *mechanics* of deterioration, including air pollution, are common to many masonry structures.

In 1987, the Commonwealth of Massachusetts hired the authors' firm to investigate structurally damaged and deteriorated stone and brick masonry walls in the State House. [Based on the engineers' analysis, a phased restoration is in process.] The original building, designed by Charles Bulfinch and completed 1798 (below), has been enlarged twice. The drawing opposite shows a portico of one of the 19th-century additions. Flashing covers the parapet at the roof and cornice, but the stone railings, stone walls, and brickwork backup are open to water penetration.

On the southwest corner of the west wing, we found outward structural migration of corner stones, due to thermal- and probably moisture-driven expansion. The joints opened when low temperatures caused the stones to shrink. Repeated cycles slowly ratcheted the joint openings wider. The continued movement is approaching the point of structural instability.

Stone carvings are particularly vulnerable to deterioration, exacerbated by air pollution. The proportionally large exposed surface of sculptured details and their intricate forms retain water and airborne dirt. Simpler details and plane, smooth surfaces suffer less because of the washing action of the rain. In some of the decorations, such as pilaster heads, the loss of stone has not only made the decorations more rounded, it has also caused hidden cracks. One piece came off in the hands of an investigator. Stone pieces weighing several pounds or more could fall without warning.

Our experience on the Massachusetts State House, as well as many other stone buildings, has shown that water is the most important agent of destruction. Stone is not permanent, nor are all stones created equal. Fine-grained stones are more weather-resistant than coarse stones. Generally, igneous stones, such as most types of granite, are more weather-resistant than metamorphic stones, such as slate, and just about all sedimentary stones, such as limestones.

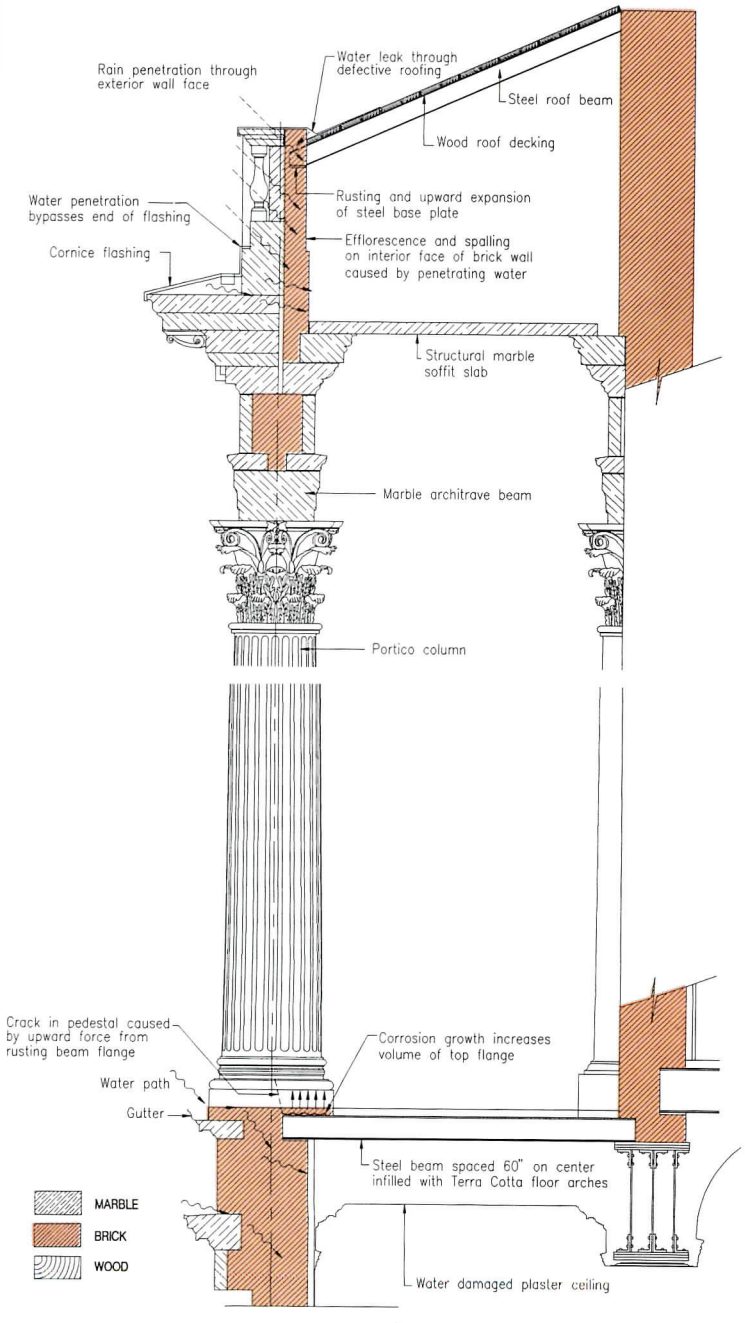
Exposed stone surfaces that are horizontal or sloped should be treated like roofs with appropriate flashing and drips. Decorative features, such as modillions, dentils, and other carved stones, need flashings or other active protection to prevent rapid deterioration and dissolution (photo 1, opposite). Even full-thickness bearing walls require properly sized and spaced joints designed to take up thermal and moisture movement.

In joints, very hard cement mortars and very soft lime mortars are less stable than intermediate-strength cement-lime mortars. The recent practice of installing sealant in place of—or in front of—joint mortar allows some movement, but sealants discolor, harden, and lose bond, after which they permit water to enter (photo 2).

Masonry walls absorb and transmit water. Lack of a continuous cavity in old solid stone walls holds water within the wall, which speeds deterioration. Iron and steel inserts and anchors will likely damage stonework because their corrosion tends to "explode" masonry (photo 3). Bearing walls—especially where stones are used as beams or are cantilevered—must be checked carefully under modern structural-design standards. The rules-of-thumb design of many stone walls is not adequate. ■

Simon F. Shipley is a staff engineer and Werner H. Gumpertz a senior principal at Simpson Gumpertz & Heger, consulting engineers in Arlington, Massachussetts.

The engineers' analysis showed several design deficiencies. The steel base plate supporting the roof rafter had rusted and expanded upward, bulging up the sheathing and splitting the roofing. The resulting leaks could have rusted and dangerously weakened the rafter. The masonry walls lack both a cavity (to catch and direct water outward) and through-wall flashing (both of which are now standard). The wall itself is not a suitable barrier against water penetration, evidenced by extensive efflorescence and spalling of the interior face of the brick that backs up the stone veneer.



SECTION THROUGH PORTICO

1. The sharp arrises of a stone decoration at the head of a column capital have worn down, and freezing water retained on the roughened surfaces has caused a diagonal break in the stone. A sloped mortar wash—used to protect the top surface of other projecting stones—failed, exacerbating damage. It should have been flashed.

1

2. This crack was filled with sealant. The stone should have been repaired by injection of a bonding agent (sealants' adhesive bond with stone usually fails shortly after installation). Better yet, it should have been replaced.

2

3. Water penetration at the foot of the stone portico column has corroded the brick-arch support beam, and the rust, having much greater volume than steel, has pushed up against the column base, breaking its corner.

3

Photos this page courtesy Simpson Gumpertz & Heger

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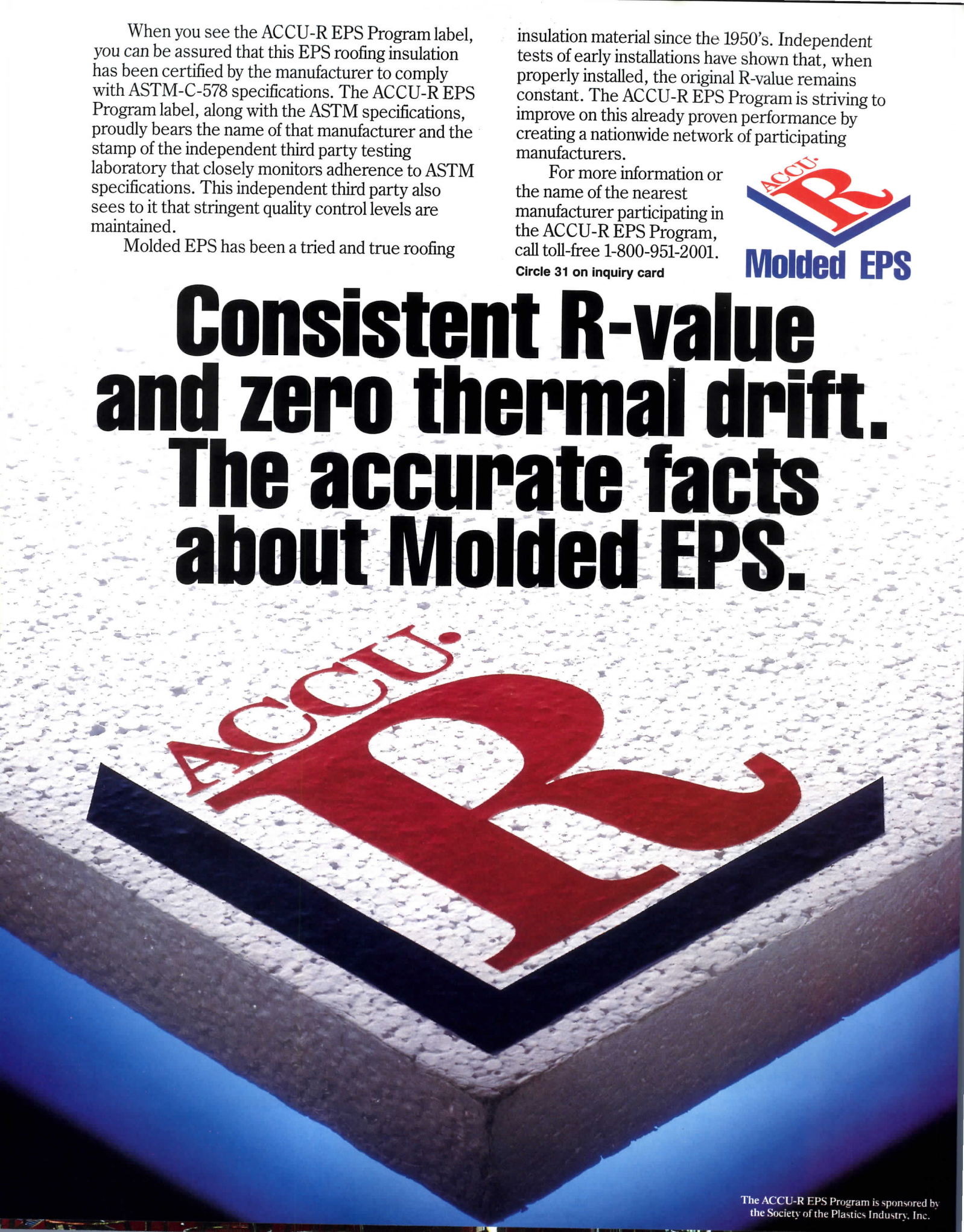
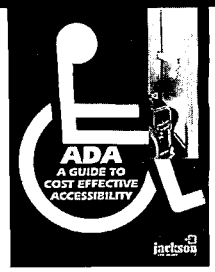


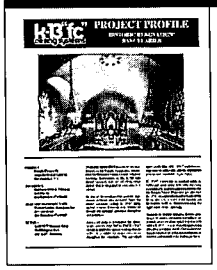
The ACCU-R EPS Program is sponsored by the Society of the Plastics Industry, Inc.

Product Literature

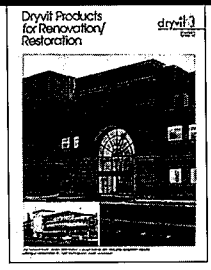
412. Lead-paint encapsulation
Literature explains how Saf-T-Shield, a two-step elastomeric coating, permanently encapsulates lead-based paint, without abatement or removal of old paint. The all-acrylic, nontoxic system includes a gray primer and white or custom-color finish coat. Proko Industries, Mesquite, Tex.



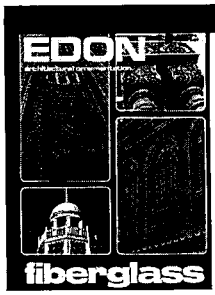
413. Panic hardware
A Jackson Exit Device catalog defines an "accessible" doorway as one that maintains a 32-in. clear width in standard 36-in.-wide spaces with the use of new slim-profile full-width panic bars. Describes vertical- and concealed-rod exits that meet ADA requirements. Builders Brass Works Corp., Los Angeles.



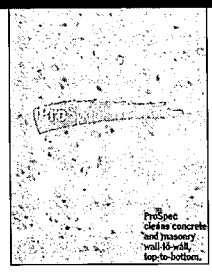
414. Acoustic upgrade
Individual project profiles describe spray-applied acoustical texture installed in historic structures, such as religious sanctuaries, theaters, and libraries. Sound-attenuation and fire data listed; illustrations show custom-color capability. International Cellulose Corp., Houston.*



415. Exterior renovation
A color booklet highlights decorative and functional coatings especially suited for restoration applications. Photos show projects before and after; typical substrates are matched with the most appropriate upgrade. Dryvit Systems, Inc., West Warwick, R. I.*

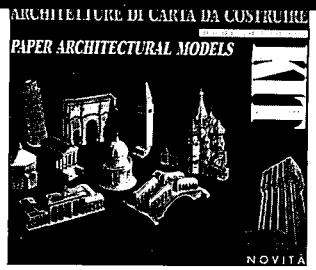


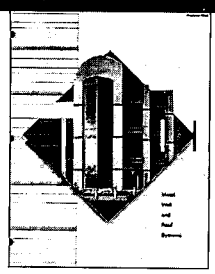
416. FRP ornamentation
Catalog covers architectural elements such as dormers, window trim, moldings, and cornices, as well as custom shapes such as Art Deco spandrels, all made of lightweight fiberglass-reinforced polyester in a Class 1 formulation for interior and exterior use. EDON Corp., Horsham, Pa.



417. Masonry cleaners
A folder introduces ProSpec restoration products said to clean a variety of surfaces without damaging the patina, such as limestone/precast cleaners that remove hydrocarbon buildup, and products specific for efflorescence, tar, graffiti, paint, and more. Watson Bowman Acme Corp., Amherst, N. Y.

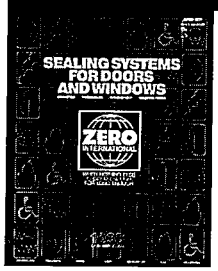
For more information, circle item numbers on Reader Service Card.





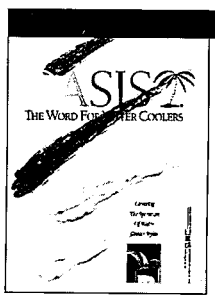
418. Cardboard scale models
Catalog describes Domus Kits, ready-to-assemble die-cut models that show the architecture of some of the world's most famous structures in three dimensions. Line includes Palladio's Villa Rotonda, St. Basil's in Moscow, and Florence's Duomo. Silver Visions Publishing Co., Newton Highlands, Mass.

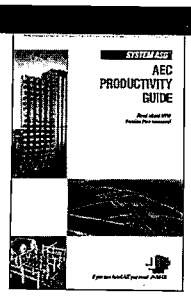
419. Wall-roof systems
A 32-page design catalog illustrates architectural and industrial assemblies from "a single source for the complete building envelope." Panel configurations include the Crown Signature and Foamwall series. Describes products adaptable to meet special uses. E. G. Smith Construction Products, Inc., Pittsburgh.



420. Fire/smoke gaskets
A 32-page, 1993 catalog introduces intumescent FS-3 fire- and smoke-control door-sealing systems, and offers detailed specification guidance for hundreds of components and integrated control systems to stop air, light, smoke, fire, sound, and EM/RF interference at door and window openings. ZERO International, Inc., Bronx, N. Y.

421. Greek marble
A new pocket-size brochure illustrates some recent American architecture using marble from Greece on floors, walls, and as building cladding. Long known for the distinctive colors of its stone, Greece is now the fourth largest marble producer. Greek Trade Commission, New York City.

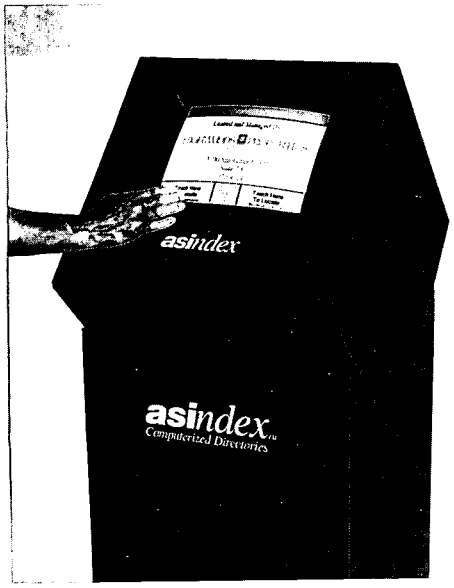




422. Water coolers
Oasis's 1993 catalog has 28 color pages on fountains for all occupancies, from office to heavy duty/hazardous. Features include lead-free materials throughout the waterways, stainless-steel tops, and Dial-a-Drink bubblers. A Lead-Out filter is offered for retrofit. EBCO Manufacturing, Columbus, Ohio.

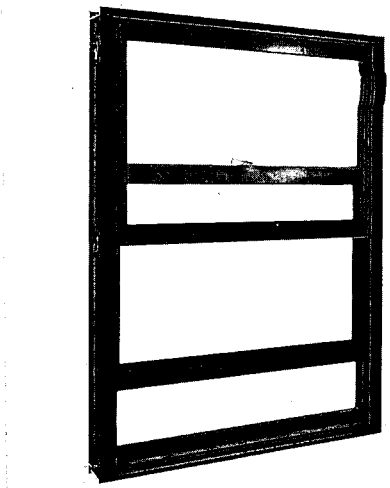
423. CAD productivity tools
A concise, 50-page guidebook describes products for the architect, engineer, and contractor, with platform, memory, price, and ordering information. Its five sections range from design software such as ASG Architectural and Model Vision through civil engineering and hvac solutions, to Vertex electronic product catalogs. ASG, Sausalito, Calif.*

**Product data on CAD disk*



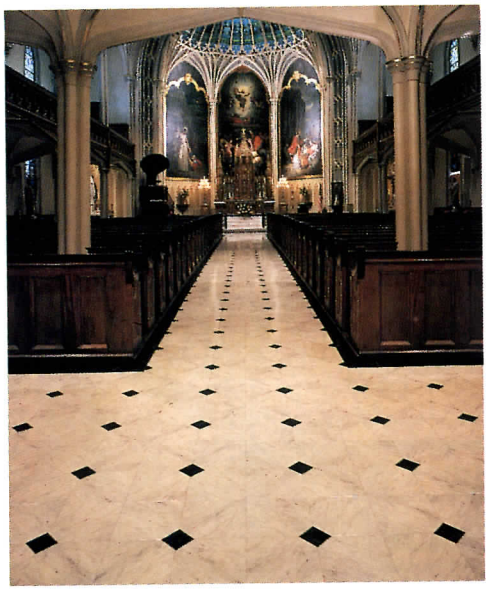
306. Touchscreen. A computerized building directory housed in an 18-in.-square matte-black laminated box can be pedestal-, wall-, or ceiling-mounted. It lets visually impaired users select large-type displays. ASI Sign Systems, Inc., New York City.

307. Veneered-steel ceiling. Lightweight and noncombustible, new WoodPlus 2 linear ceilings have 4-in.-wide steel beams finished in a choice of six real-wood veneers, with matching perimeter components. Chicago Metallic Corp., Chicago.

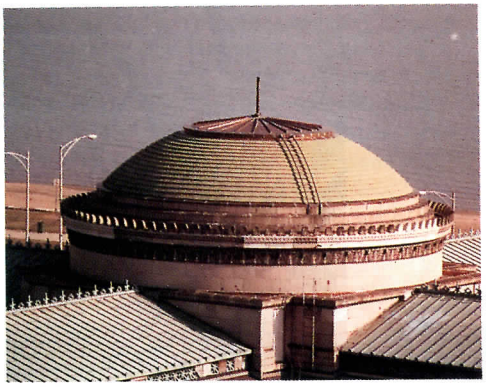


308. Depression-era windows. The Series 690, a thermally efficient double-hung tilt-turn design, was specified for the restoration of Chicago's Merchandise Mart because it duplicated the sight lines of the original, 1930s wood units. EFCO Corp., Monett, Mo.

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



309. Marble look. For the aisles in a landmark New Orleans church, restoration architects Koch & Wilson chose veined Century Marble vinyl tile to match the old stone of the circa-1840 altar and sanctuary. Azrock Industries, Inc., San Antonio, Tex.



Tom Jimison

310. Tile-roof restoration. A 100-year-old tile manufacturer is in a unique position to assist in the authentic restoration of historic properties. When Joseph Godfryt, AIA, was asked by the Chicago Park District to return the domed roof of the Museum of Science and Industry to its original condition, he turned over one of the original tiles, noted the copper-patina color of the spillover glaze and the graduated-width data on the reverse, and specified new tiles identical to the 1930 originals from the same source. Ludowici-Celadon, Inc., New Lexington, Ohio.

311. New light in old fixtures. Relamping with energy-efficient bulbs did not affect the pre-World War I appearance of the large Park Avenue brass and molded-glass chandeliers installed at the Smithsonian Institution's Museum of Natural History. Six 36W biaxial fluorescents provide both direct and indirect illumination from the integrally ballasted fixture. Many replica luminaires can be customized to accept high-performance sources with no compromise to their period-design features. Rejuvenation Lamp & Fixture Co., Portland, Ore.

Manufacturer Sources
dcontinued from page 135

Pages 114-115
The New School For Social Research
Prentice and Chan, Oldhausen Architects
Paints: Benjamin Moore & Co. Upholstery on fixed seating: Designtex Fabrics, Inc. Plaster restoration: A joint venture of Newport and Roth Painting. Architectural fixtures: custom by Imero Fiorentino Associates, fabricated by Edison-Price, Inc. Theatrical lighting: Altman. Dimmers: Colortran.

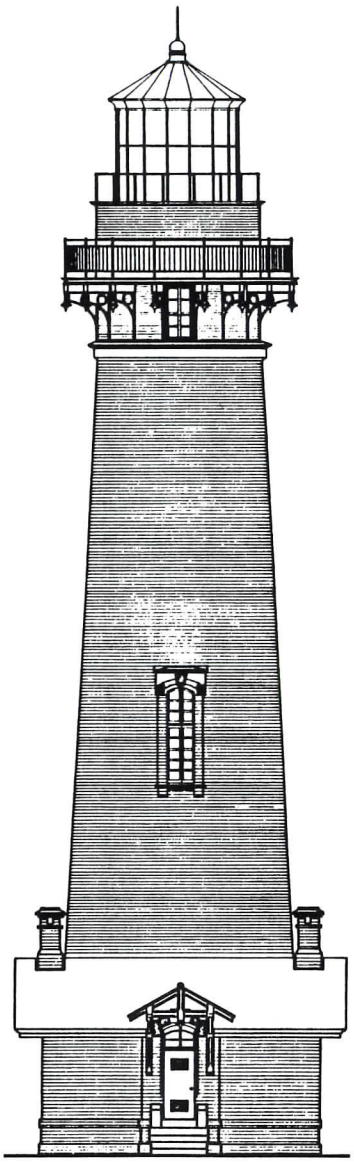
Pages 114-115
Lion House, Lincoln Park Zoo
Hammond Beeby and Babka, Architect
Custom-color paint on cast-iron windows: TNEMEC (EnduraShield). Cleaner for glazed brick and Guastavino tile: ProSoCo, Inc. Terra-cotta trim: Gladding-McBean (custom color). Architectural metalwork: Chicago Ornamental Ironwork.

Pages 114-115
Thompson-Pell Research Center, Fort Ticonderoga
Ann Beha Associates, Architect
Exterior lighting: Lightolier, Inc. Pendants: Ripman Lighting. Paints: Benjamin Moore & Co. Seating: Bernhardt. Aluminum-framed windows: EFCO Corp.

Pages 116-117
Clock Tower
David Baker, Architect
Skylights: Velux-America, Inc. Apartment entry doors: CalWood. Aluminum windows: All-Weather Window. Glass block: Weck. Zinc-coated railings and aluminum stair treads: custom by architects, fabricated by South Park Fabrication. Integrally colored stucco: La Habra. Paints: Fuller-O'Brien.

Pages 118-121
Bryn Athyn Cathedral
John Milner Associates, Architect
Restoration masonry: Indiana Limestone Co., Inc. Single-ply roofing: Carlisle SynTec Systems, Inc. Monel-metal roofing: Inco Alloy, Inc. Heat-trace cable: Chromolox.

1	Exxon
2	General Motors
3	Mobil
4	Ford Motor
5	IBM
6	Texaco
7	E.I. du Pont
8	Standard Oil (Ind.)
9	Standard Oil of Cal.
10	General Electric
11	Gulf Oil
12	Atlantic Richfield
13	Shell Oil
14	Occidental Petroleum
15	U.S. Steel
16	Phillips Petroleum
17	Sun



PIGEON POINT LIGHTHOUSE, SAN MATEO COUNTY, CA.

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Planning on restoring a house, saving a landmark, reviving your neighborhood?

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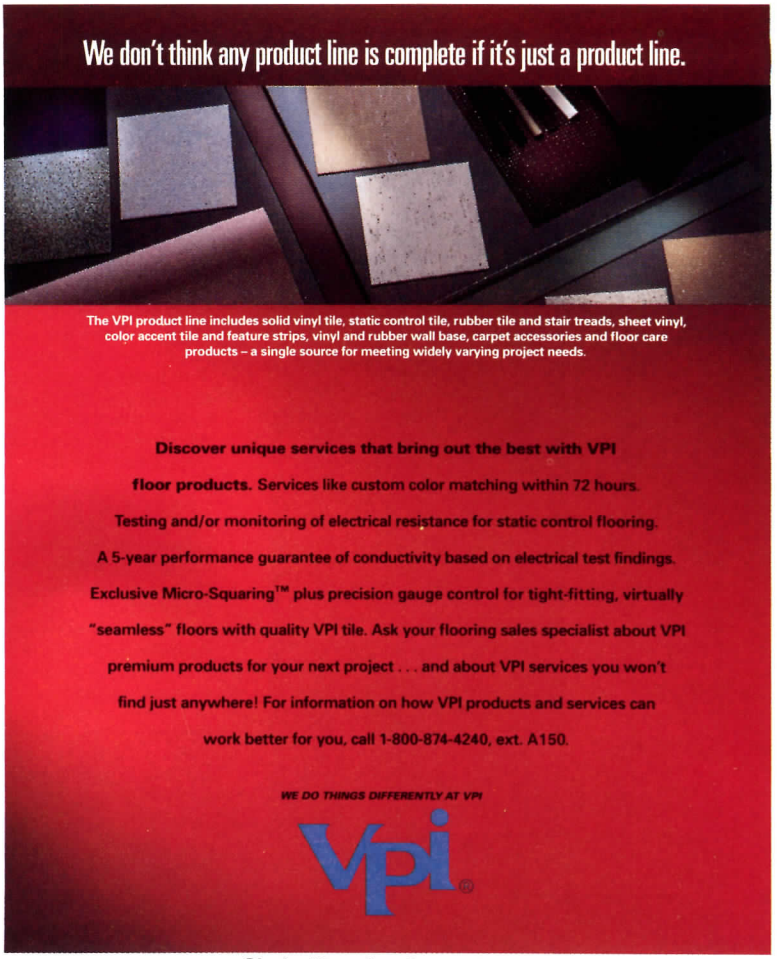

Circle 43 on inquiry card

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COMPETITION

THE FENCE

an open design competition

JURY

Eric Owen Moss — Hank Koning
Crombie Taylor — Dion Neutra
Susan Whitin — Barbara Stauffacher Soloman — David Gebhard

CHALLENGE

This ideas competition seeks innovative ideas for a fence; one that serves as a model for the security, identity and enhancement of urban neighborhoods.

SITE

The Village Green is an urban oasis of over 100 multi-family dwellings housing over 600 families on 64 acres within riot torn central Los Angeles. Built as Thousand Gardens and also known as Baldwin Hills Village, The Village Green is an architectural, landscape design and urban planning masterpiece. The Village Green was designed by Reginald D. Johnson and the Firm of Wilson, Merrill and Alexander with Clarence S. Stein as consulting architect. Built from 1938 to 1942, The Village Green is the quintessential manifestion of the Radburn idea.

PRIZES

Grand Prize	$7500	Second Prize	$2500
Third Prize	$1000	Merit Awards	$ 250

CALENDAR

Program available	January 15, 1993
Submissions due	April 22, 1993
Exhibition	May 1993

Registration fee is $50; fee for students is $25.
To register, send name, address, and fee to:
The Fence Competition, PO Box 1332, Culver City, CA 90232
Phone/fax number is (213) 296-6226.

Note: *This competition is privately funded and has received no public monies or support. No offer of a design commission has been made; this is an idea competition only. This competition has no affiliation with The Village Green Homeowners' Association.*

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Director of Planning/Design—Key Design Position for right individual with solid experience in major commercial, residential, healthcare / elderly projects to supervise design department of national firm in Midwest. A "take charge position" requiring creativity, ability to personally present designs to clients, & successful client relations. This opening is for a person who will continue & enhance the design image of firm & is intended to result in key growth in firm. Submit examples of work designed in past 6 years, including schematic sketches & finished presentation package in own hand. Do Not Present Any Work Prepared By Others. Send with resume detailing experience, building types, salary history & expectations to P-7117, AR.

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Architect: Design and plan architectural drawings and specifications for educational, cultural and institutional facilities, large-scale commercial developments and aquariums. Requires production of documents in both metric and U.S. standards. 40 hrs/wk, 8:30 am to 5:00 pm, overtime as required. $27,550/yr, overtime exempt. Must have 4 years of college and Bachelor's degree in Architecture. Education must have included at least 2 courses in the history, language, or art of a Far Eastern country. Must have evidence of exceptional design ability in institutions of corporate facilities, either in the form of (a) personal recommendations from clients, architects or architectural firms familiar with his/her work, or (b) receipt of awards, prizes or special recognition in architectural competitions. Must have 1 year experience in job offered or as Teaching Assistant in Architectural School Gallery. Must submit resume and portfolio. Must have proof of legal authority to work permanently in the U.S. Send Two Copies of resume to: Illinois Department of Employment Security, 401 South State Street–3 South, Chicago, IL 60605, Attn: P. Kula, Ref# V-IL-5748-K. No Calls. An Employer Paid Ad.

BOOKS FOR SALE

Old and rare books. Architecture and Decorative Arts. Send for free illustrated catalog to: James Beattie, 105 North Wayne Ave., Dept. R, Wayne, PA 19087 or call 1-800-441-6705.

FOR SALE

The Froebel Gifts 2-6 were designed in 1830, and used by Frank Lloyd Wright as a young child "the maplewood blocks are in my fingers to this day," FLW at age 88. 114 pcs hard maple $195. Heartland 1-800-621-4660 P.O. Box 727 Branford Ct.

WANTED

Wanted: Frank Gehry cardboard furniture or Frank Lloyd Wright drawings or furniture. 1-800-292-8189.

A City in Limbo

Continued from page 103

insolvency as has Los Angeles's schools. No one is bailing out bankrupt *East St. Louis.* The common problem these older cities have is that they can't capitalize on their assets because they flow freely across political boundaries while the region's social burdens are held steadfastly within the city limits.

Landmark designation at risk

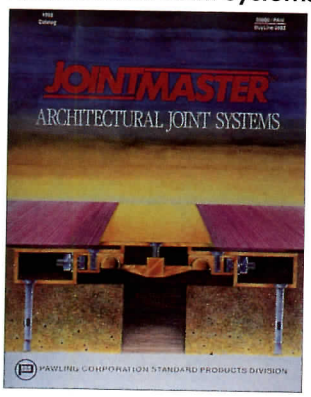
Ironically, as the city's economy deflated, the state Supreme Court struck a blow against landmark designation, deciding in 1991 (in *United Artists Theater Circuit, Inc. v. City of Philadelphia)* that the city's landmark law was an unconstitutional "taking" of private property under the Fifth Amendment. (The case, affecting only Pennsylvania, involves designation of a theater interior the owner wanted to divide.) The city was granted an unusual opportunity to appeal, which had been delayed pending the U. S. Supreme Court's decision on another "takings" case: *Lucas v. South Carolina Coastal Council.* According to Stephen N. Dennis of the Center for Preservation Law, the courts have traditionally held that a taking does not occur as long as the owner retains some reasonable opportunity to make a profit—a reading that was upheld when the court decided *Lucas* last summer. The Pennsylvania court has still not handed down a final decision on *United Artists.* (See also RECORD, October 1992, page 38.) With designation in limbo, a number of important landmarks are threatened (page 137).

Nevertheless, Philadelphia and other cities' experience with the investment-tax credit teaches a lesson. The credit poured public and private dollars with remarkable efficiency into neighborhoods where they could do a great deal of good. Historic redevelopment offers a synergistic economic boost—improving the quality of life (a key to business location, say experts) as it creates jobs. No urban-renewal program (certainly not the feeble enterprise-zone program that died in the last Congress) can point to a comparable record of success. It's not that historic preservation alone can save cities (Philadelphia's income figures show that), or even that the credit should be restored in its previous form (similar tax credits for new development contributed mightily to the current commercial glut), but that incentives to invest in cities do pay off. *James S. Russell*

Product Literature Showcase

Here are some building 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 one of the special Reader Service Cards bound to the back of this issue.

Pawling JOINTMASTER® Architectural Joint Systems

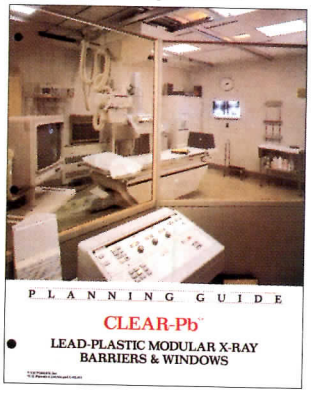


16-page color catalog features complete line of versatile floor, wall & ceiling joint covers providing style & function for new construction & renovation projects. Catalog highlights special product features, illustrates several options available & provides written guidelines on how to specify joint covers. JointMaster® systems meet newest fire barrier acceptance criteria. Many styles & finishes in a wide range of NEW COLORS for contemporary design-coordinated projects.

Pawling Corporation

Circle 44 on the inquiry card.

Free X-Ray Room Planning Guide



New guide illustrates user designed installations of CLEAR-Pb Lead-Plastic Modular Barriers and Windows in hospitals, radiation therapy centers. CLEAR-Pb is a transparent, lead-impregnated plastic sheet in lead equivalencies from 0.3 to 2.0 mm; over 200 stock sizes up to 6 x 8 ft. (larger on special order).

Nuclear Associates

Circle 45 on the inquiry card.

CHADSWORTH COLUMNS™

Color brochures feature wooden architectural, marble/fiberglass and foam/stucco columns in a variety of styles. Columns are offered round, square or octagonal with plain or fluted shafts. Diameters range from 6 to 36 inches with heights to 40 feet. Job site delivery. CHADSWORTH...The Column Source. For catalog (800) 394-5177. Sales (404)876-5410. Free brochures.

Chadsworth Incorporated

Circle 46 on the inquiry card.

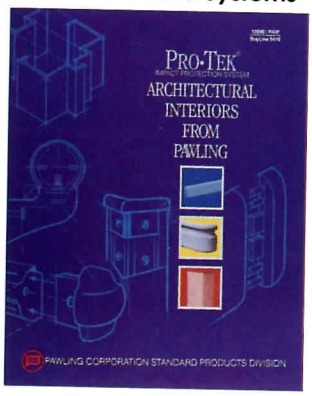
All New 88-Page TimberForm Catalog

More than 350 products made of cast iron, perforated metal, steel, welded wire & wood are offered in a dozen different design series from traditional to contemporary. Ash receptacles, benches, bike racks, bollards, liter containers, picnic & game tables are presented in design-coordinated families. Over 170 designer colors are available. Photos, technical data & product dimensions are shown. Call toll-free 1-800-547-1940(ext. 502).

Columbia Cascade

Circle 47 on the inquiry card.

Architectural Interiors Wall & Corner Guard Systems



24-page catalog features full line of wall & corner guards, handrails, baseboard systems & door protection products to complement your most stringent design/color requirements AND functionally reduce impact damage anywhere in heavy traffic environments: government buildings, office complexes, shopping malls, schools/colleges & healthcare facilities. Many styles in 40 NEW COLORS for contemporary design-coordinated projects.

Pawling Corporation

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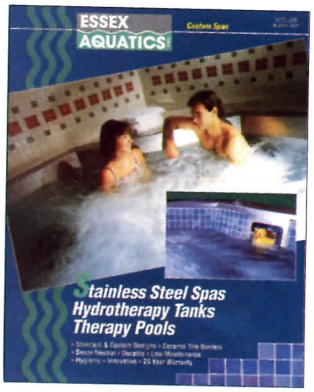
Spas and Therapy Pools



Essex Aquatics, Inc. mfgs. spas & therapy pools using Type 316-L stainless steel for hygiene, durability (25 yr. warranty). Spas are beautifully finished & designed for max spa efficiency. Options such as ceramic tile borders, design options from our custom department, & competitive pricing make **Essex Aquatics** the premier choice for your next spa project. 3 Vincent Avenue /Old Saybrook, CT 06475. 800-258-5958.

Essex Aquatics, Inc.

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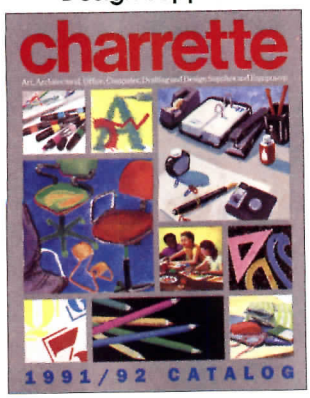
Product Literature Showcase

CAD and Design Supplies



Catalog highlights a complete selection of CAD, design and office supplies, furniture and equipment--in stock for immediate shipment. Charrette offers 40,000 popular and hard-to-find items for outfitting and supplying an architectural office. For our latest products flyer or to place an order, call 1-800-367-3729 or fax 1-800-626-7889.

Charrette Corp.

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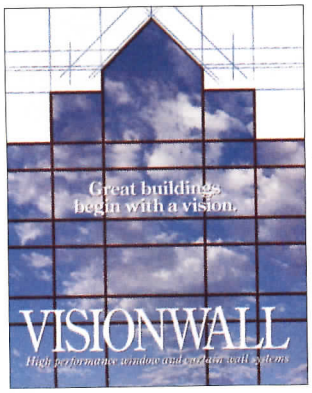
High Performance Curtain Wall System

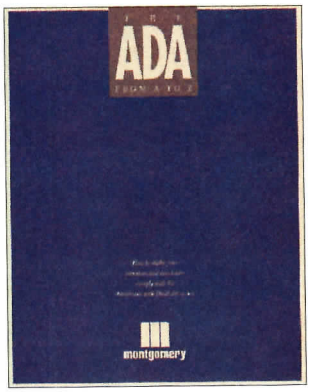


Create comfortable, energy-efficient indoor environments with the VISIONWALL® high performance window & curtain wall system. Features R-8 glazing, extruded aluminum frame with 3–inch deep thermal break, great resistance to condensation, & excellent acoustical attentuation characteristics. Custom designed & precision manufactured for commercial, institutional & industrial applications.

Visionwall Technologies

Circle 51 on the inquiry card.

Elevators & The A.D.A. From A to Z



Do your elevators & escalators comply with the Americans with Disabilities Act (A.D.A.) ? This brochure offers guidelines to assist in reviewing existing equipment. Montgomery discusses buildings which require elevators, specific regulations & how to obtain professional, expert assistance. This brochure also contains easy-to-follow A.D.A. Audit form to help determine equipment compliance.

Montgomery Elevator

Circle 52 on the inquiry card.

NEW Dual-Actuated Door Bottom

Obtain max seal protection at minimum force with the new National Guard Products Dual-Actuated Automatic Door Bottoms. An actuator on both the hinge side & the latch side actuate dual springs lowering the unique Heavy Duty but Light Weight drop bar & silicone sealing profile. Low force & no drag are the beneficial results of these fire, smoke & sound sealing automatic door bottoms. For more info: 1-800-NGP-RUSH or FAX 1-800-ALL-RUSH.

National Guard Products

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Add daylight in offices, plants, residences -- the applications are endless. Ideal for conventional, built-up, shingle roofs or pre-engineered metal buildings. The translucent skylight/integral curb unit is low-profile, self-sealing, self-flashing & available in any dimension within 5' wide & 22' long to fit the exact structural opening *or interior size requirement* for new construction or retrofit. Colorful, fact-filled new brochure. 1-800-251-3001.

Custom Curb, Inc.

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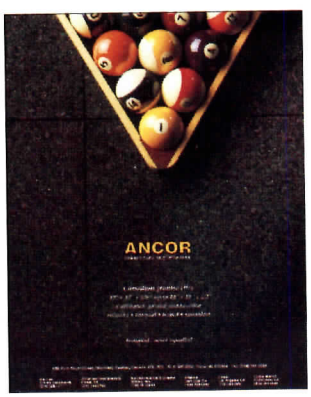
ANCOR GRANITE TILE

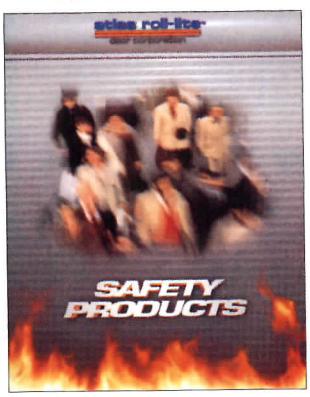


Ancor produces close to three dozen No. American and imported granites in a full range of colors and finishes for residential, commercial and institutional use. Standard format is 12 x 12 x 3/8"; other sizes up to 18 x 18 x 1/2" available. Ancor's honed finish tile is particularly suitable for high traffic commercial areas. 435 Port Royal West, Montreal, Quebec, H3L 2C3, Canada. Ph#(514) 385-9366, Fax# (514) 382-3533.

Ancor Granite Tile

Circle 55 on the inquiry card.

New Safety Products Brochure from Atlas Roll-lite

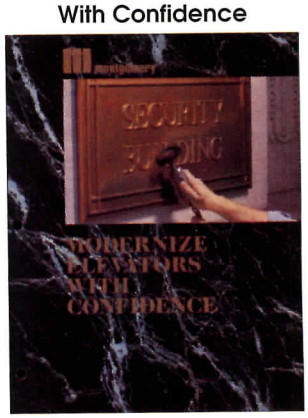


Atlas Roll-lite's new safety products brochure highlights FirePower, FirePowerII, Fire Scout, PowerGuard, Viscous Speed Governor, and Smoke Detector products. The safety products are now tested and approved by Underwriters' Laboratories, Factory Mutual, and others. Complete brochure is available upon request. Atlas Roll-lite Door Corp. P.O. Box 593949, Orlando, FL 32859-3949.

Atlas Roll-lite

Circle 56 on the inquiry card.

Modernize Elevators With Confidence

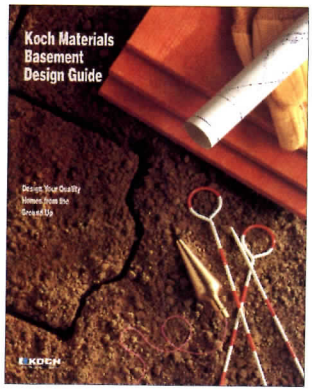


Upgrading elevators, including their appearance, can dramatically enhance a building's desirability & tenant appeal. But, unless properly planned & executed, renovation can cause difficulties. This colorful & fact-filled brochure explains how Montgomery uses a proven Systems Approach to minimize disruption... while improving operating efficiency & appearance. Montgomery's approach can actually improve elevator service during modernization.

Montgomery Elevator

Circle 57 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 Materials Co.

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B.I.G. Catalog of 292 Steel Booth Models

Pre-assembled & pre-wired, ready-to-install steel booths from B.I.G. Enterprises. We've been designing & manufacturing booths for over 20 years to blend pleasingly with any architectural style & ergonomic need. Easy to install, handi-cap approved, we deliver throughout the world. Call or write for your free catalog of 292 booth models. Call Dave King (818) 448-1449 or write 9702 E. Rush St., S. El Monte, CA 91733-1730.

B.I.G. Enterprises

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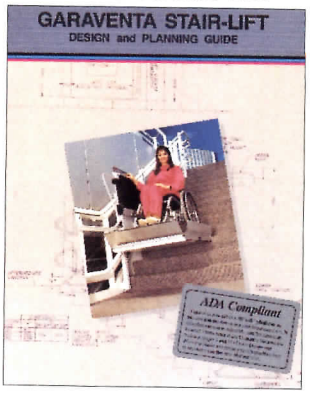
New Information on Garaventa Stair-Lifts



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Garaventa

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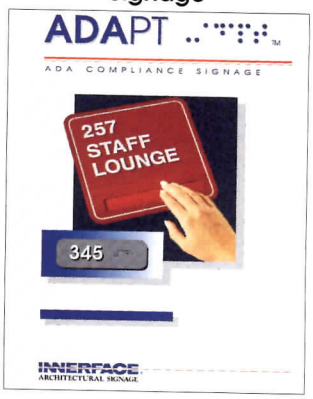
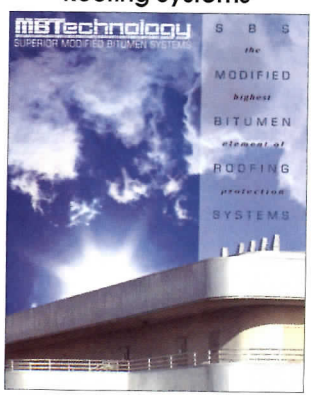


INNERFACE makes it easier for you to meet the new Americans With Disabilities Act (ADA) signage standards. INNERFACE offers (1) A variety of compliance signage, (2) National distribution, (3) Solid 21 year history and (4) Economical, attractive, and highly functional interior and exterior signage. Innerface also offers a complete line of interior and exterior signage. For free literature please call (800) 445-4796.

INNERFACE

Circle 61 on the inquiry card.

SBS Modified Bitumen Roofing Systems

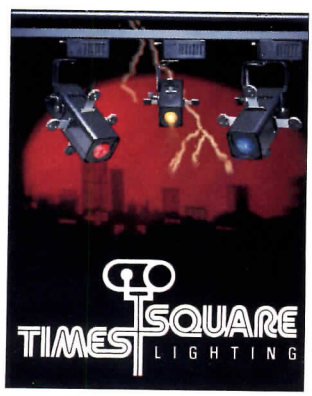


MBTechnology offers a complete line of premiere elastomeric roofing and waterproofing systems. Our products provide quality with superior flexibility, weatherability and strength, when compared to traditional roofing systems. Brochure outlines company background, information on products and services and technical data on SBS modified roofing systems. Call 1-800-621-9281.

MBTechnology

Circle 62 on the inquiry card.

TIMES SQUARE LIGHTING

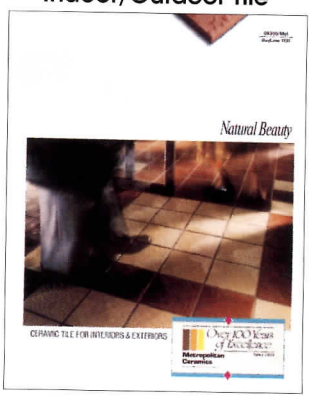


With over 60 years of experience, Times Square Lighting broadens the creative minds of the Architect with their complete line of display and track lighting fixtures. Low voltage energy saving fixtures, line voltage pars from 50 to 1000 watts, and pattern and framing projectors, can all be found in our 40 page catalog. Call (914) 947-3034 or fax (914) 947-3047 for further information.

Times Square Lighting

Circle 63 on the inquiry card.

Metropolitan Ceramics' Indoor/Outdoor Tile

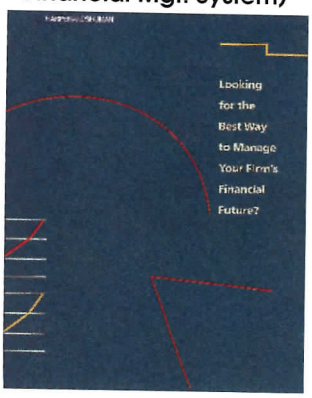


See the latest indoor & outdoor applications for vitreous (less than 3% absorption) unglazed ceramic tile from Metropolitan Ceramics. Featured are new **METRO**® Accents, a colorful selection of hand-glazed accent tiles designed for use with Metropolitan's **IRONROCK**® and **METRO**® TILE unglazed tile. The brochure also includes color swatches, performance specifications, trim shapes & more. Metropolitan Ceramics, P.O. Box 9240, Canton, OH 44711 or call 216-484-4887.

Metropolitan Ceramics

Circle 64 on the inquiry card.

CFMS (Computer-based Financial Mgt. System)



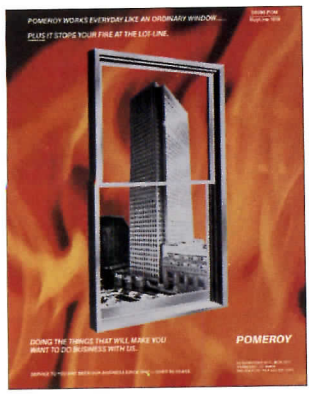
Harper and Shuman develops, sells and supports financial management software specifically for architects. The only system of its kind sponsored by the AIA, MICRO/CFMS runs on PCs and CFMS runs on the DEC VAX. A modular approach lets you buy only what you need. Call today 1-800-275-2525. Harper and Shuman, Inc.

Harper & Shuman, Inc.

Circle 65 on the inquiry card.

Product Literature Showcase

POMEROY



Pomeroy features its line of automatic closing steel fire rated hollow metal windows. UL listed. Call 203-324-6775 or fax 203-325-3397 for more product information. Pomeroy, 64 Sunnyside Avenue, Box 1377, Stamford, CT 06904.

POMEROY

Circle 66 on the inquiry card.

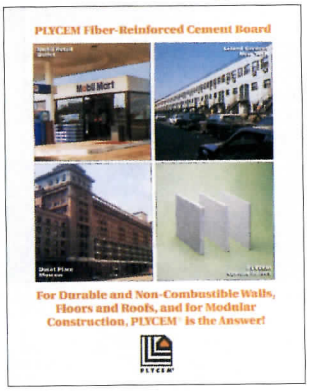
Go Ahead- Pave it With Grass

We've been developing products to meet increasing demands for porous paving for 10 years. You can count on Grassrings² for features you want most: Flexibility, 100% grass coverage, excellent porosity/drainage, & fast installation - for vehicular & pedestrian traffic, with grass or gravel materials. For details about this proven, affordable system, call (800) 428-1333 or fax (303) 696-9757.

Rings, Inc.

Circle 67 on the inquiry card.

Need Fire-Resistant Roof Sheathing?



PLYCEM® is the answer! PLYCEM Fiber-Reinforced Cement Boards are as versatile as plywood, but they are non-combustible, making PLYCEM the perfect replacement for failed FRT plywood! PLYCEM is rot-proof and moisture-resistant, but it is cut and installed using convention carpentry tools. To learn about the many applications for PLYCEM, call 1-800-243-6677.

U.S. Plycem Corp.

Circle 68 on the inquiry card.

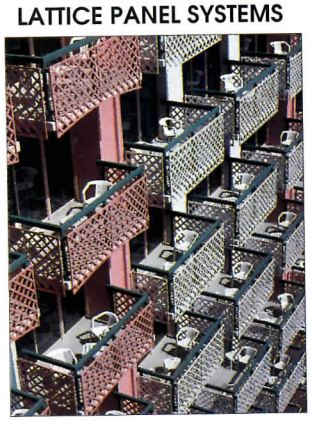
CEDAR IMPRESSIONS™

CertainTeed Corporation now offers Cedar Impressions™, a distinctive flame-retardant polypropylene siding panel manufactured in molds patterned from real cedar shingles. Offering the authentic look of cedar perfection shingles without the maintenance worries, this 48" x 14" panel installs like a traditional siding panel and has interlocking tabs for a virtually seamless look. Call 1-800-233-8990 for more information.

CertainTeed Corporation

Circle 69 on the inquiry card.

VINYL & ALUMINUM LATTICE PANEL SYSTEMS

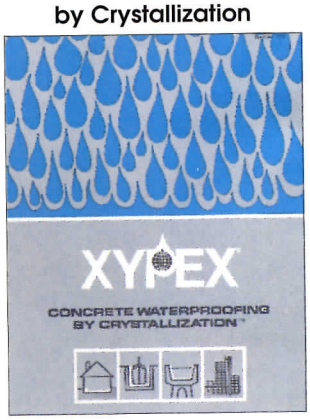


Easily installed, durable system is ideal for porch, deck, balcony & utility enclosures, building facades, fences, arbors, trellises & a variety of exterior & interior applications. Variety of weights, patterns & finishes available. Installations can be shipped in preassembled sections thus reducing labor costs & waste. Cross Industries will custom fabricate to meet special design or code requirements. Send sketches/drawings for quotation to: 3174 Marjan Dr., Atlanta, GA 30340. 800-521-9878. Fax: 404-457-5125.

Cross Industries

Circle 70 on the inquiry card..

Concrete Waterproofing by Crystallization



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

Xypex Chemical Co.

Circle 71 on the inquiry card.

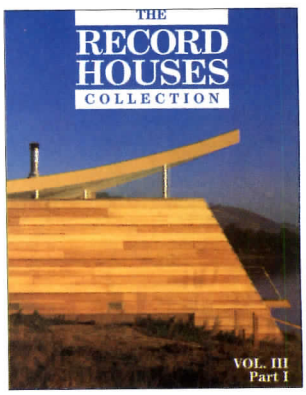
New High-Pressure Laminate Compact Kitchens Catalog

Dwyer introduces a new concept in compact kitchen cabinetry...design freedom. Choose from the wide selection of Wilsonart® Formica® and Nevamar® decorative laminates in thousands of patterns, textures and colors.

Dwyer Products Corp.

Circle 72 on the inquiry card.

THE RECORD HOUSES COLLECTION

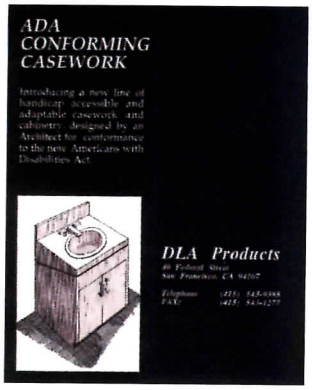


Compilation from 1990/1991/1992. We put 3 yrs. worth into a 2 volume set. Over 290 pages, in full color, with plans & text directly from the pages of Architectural Record's RECORD HOUSES issues. Just $19.95 (including postage & handling). A single compilation 1987/1988/1989 is also available for $19.95. Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

RECORD HOUSES

Circle 73 on the inquiry card.

New Handicap Accessible Counters & Cabinets

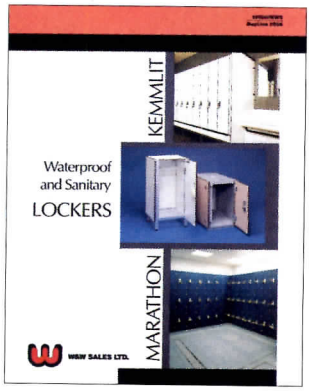


This new line of handicap accessible and handicap adaptable casework and cabinetry features integral removable base cabinets and is adaptable to suit modular cabinetry. Designed for conformance with the Americans with Disabilities Act and most local codes, including California Title 24. Custom finishes and configurations available. Ideal for retrofit and remodeling. Telephone (415) 543-9385.

DLA Products

Circle 74 on the inquiry card.

WATERPROOF & SANITARY LOCKERS

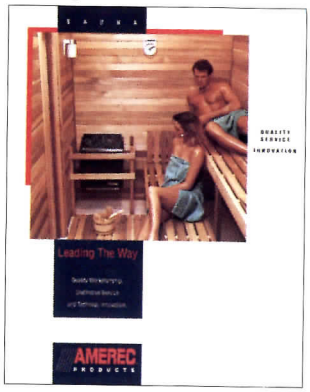


A new colorful, 8-page locker brochure by W&W Sales Ltd. describes both KEMMLIT and MARATHON locker systems as being completely waterproof and sanitary - making them outstanding performers in any facility while still allowing a choice of color and design. The brochure includes product descriptions as well as interior and exterior product specifications.

W.W. Sales Ltd.

Circle 75 on the inquiry card.

Amerec Sauna & Steam Quality Products since 1963



Amerec pre-cut and modular sauna kits can be customized to fit virtually any size room. All Amerec sauna rooms utilize grade A, kiln-dried Western Red Cedar for lasting beauty with proven durability and performance. Amerec products are manufactured with pride in the U.S.A. Please call 1-800-331-0349 to request an architect's specification kit.

Amerec

Circle 76 on the inquiry card.

Worthington Group

Introducing the Classical Tuscan Column, based on designs of Vitruvius and Vignolo; and crafted in pine. Our large volume allows us to offer these authentic replications of classical designs at a price far more reasonable than other companies. Worthington also offers fiberglass balustrading, plaster moulding and much more. Shipped factory direct. 44 page color catalog $3.00. Call (800) 872-1608.

Worthington Group

Circle 77 on the inquiry card.

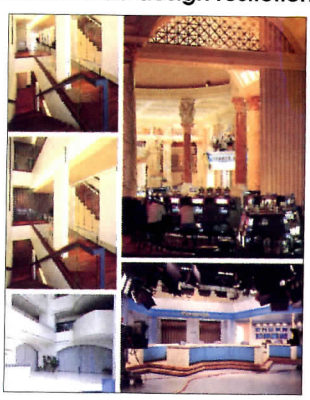
The Solution To Creative Design

Sunbrella® acrylic fabric is used worldwide for awnings, window treatments, room dividers, screens, traffic directors, signage. Over 90 colors & styles. Solution-dyed fibers maintain bright colors for years. Five-year limited warranty against fading or loss of strength due to sunlight, rot, mildew or atmospheric conditions. Glen Raven Mills, Glen Raven, NC 27217.

Sunbrella®

Circle 78 on the inquiry card.

Using folding fire doors to overcome code design restictions.



Won-Door Corp. takes you around the country on a tour of high profile and historic restoration building projects. Each of which solved its unique code restrictive design problems with FireGuard folding doors. To receive your free copy this enlightening 12 minute video tape, contact your Won-Door representative or call direct (800) 453-8494.

Won-Door

Circle 79 on the inquiry card.

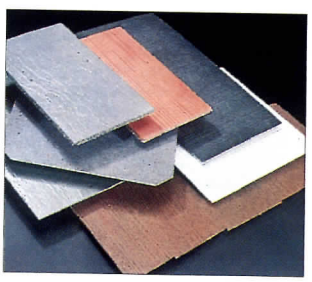
Open & Private Offices A Single Source

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 80 on the inquiry card.

Fiber-Cement Slate Shake And Shingles



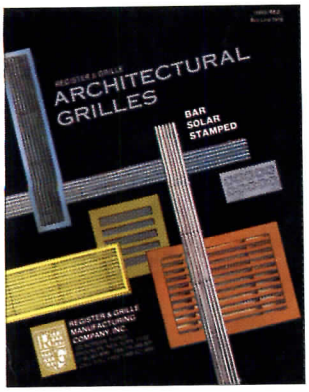
Supradur Manufacturing Corporation has been manufacturing shingles, shakes and slate for more than 40 years. All product lines are manufactured from environmentally-friendly, asbestos-free fiber cement. Used for historic restorations, commercial construction and residential property, these materials are made in the U.S.A. and are available through a network of 500+ distributors.

Supradur Manufacturing

Circle 81 on the inquiry card.

Product Literature Showcase

Decorative Grilles

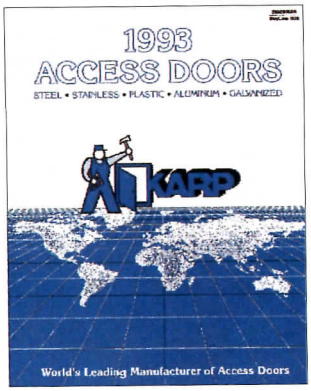


Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects & interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille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

Register & Grille Mfg., Co.

Circle 82 on the inquiry card.

New 1993 Access Door Catalog



Karp Associates Inc., the leading manufacturer of access products, is proud to offer a new catalog describing Karp's complete line of access doors, roof hatches and floor doors. In addition to new product information this new 20-page catalog contains a section on Karp's new Special Custom Division. This new division is devoted solely to the manufacture and design of special custom products for the access door market.

Karp Associates Inc.

Circle 83 on the inquiry card.

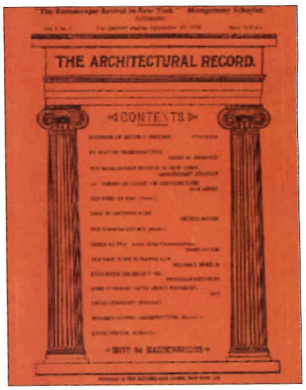
Fire Rated Wood Frames Install Quickly

Prestige... Warmth... Beauty... These are the hallmarks of candor frames from Algoma Hardwoods. Specifying Architectural wood frames by candor broadens design capabilities and allows the architect and owner to create an environment with the richness of wood that is unique, distinctive and beautiful.

Algoma Hardwoods

Circle 84 on the inquiry card.

Limited Numbered Edition

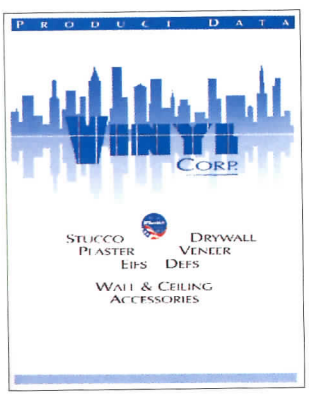


ARCHITECTURAL RECORD'S first issue (1891) is reprinted to celebrate our centennial. 150 pages. 64 illustrations. Every architect should have this collector's issue. Only $16.95 ppd. For more information call: 212-512-3443. ARCHITECTURAL RECORD, Circulation Department, 1221 Avenue of the Americas, New York, NY 10020.

Architectural Record

Circle 85 on the inquiry card.

NEW PRODUCT CATALOG



Vinyl Corp manufactures the most extensive line of over 450 quality wall and ceiling accessories for stucco, plaster, EIFS, DEFS veneer and drywall. All accessories are exclusively manufactured with BF Goodrich Geon® Vinyl compounds. For more information call (800) 648-4695, and ask for Vinyl Corp's new product catalog. VINYL CORP, 8255 NW 70th Street, Miami, Florida 33166.

VINYL CORP

Circle 86 on the inquiry card..

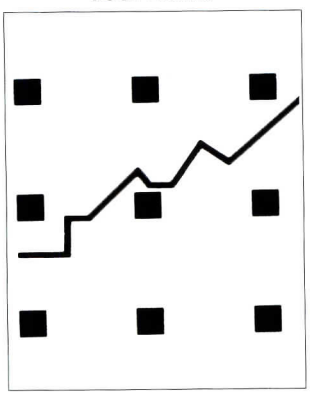
A Practical Solution to Roof Paver Stone Applications

New bulletin shows a better way to transform a roof into a patio, terrace, balcony, walkway, plaza podium, promenade, or just plain roof deck, using the Pave-El Pedestal System. Designed to elevate, level, and space paver stones for drainage in any weather, Pave-El reliably protects roof, paver stone, membrane and insulation. Ellicott Station Box 119, Buffalo, NY 14205. 416-252-2090.

Envirospec

Circle 87 on the inquiry card.

Keep Dodge In Your Plans!

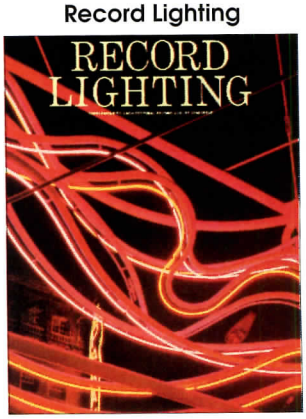


Don't forget to provide your local Dodge Reporter with the details and plans for your next job. You don't want them to miss out on the best bid for your next job. Contractors can't bid on jobs they don't know about. Thank you for your input. We appreciate your cooperation. F.W. Dodge, Mc-Graw-Hill Construction Information Group.

F.W. Dodge

Circle 88 on the inquiry card.

Back Issues of Record Lighting



Add to your files by ordering back issues of RECORD LIGHTING, the exciting color supplement to Architectural Record. The price per issue is only $3.50 each (includes postage and handling). Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

Record Lighting

Circle 89 on the inquiry card.

1992 index

Architectural Record, Vol. 180.
January-December 1992.
Published by McGraw-Hill, Inc.,
1221 Avenue of the Americas,
New York, New York 10020.

Readers using this index will find buildings entered in two ways: by architect's name and by building type.

KEY:
RL RECORD LIGHTING
BTS Building Types Study

Advertising index

Bold face—page number
Italics—Reader Service number

For detailed data, prefiled catalogs of the manufacturers listed below are available in your 1992 Sweet's Catalog File as follows:

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(E) Engineering & Retrofit
(I) Industrial Construction & Renovation
(L) Homebuilding & Remodeling
(D) Contract Interiors

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Kevin Beatty
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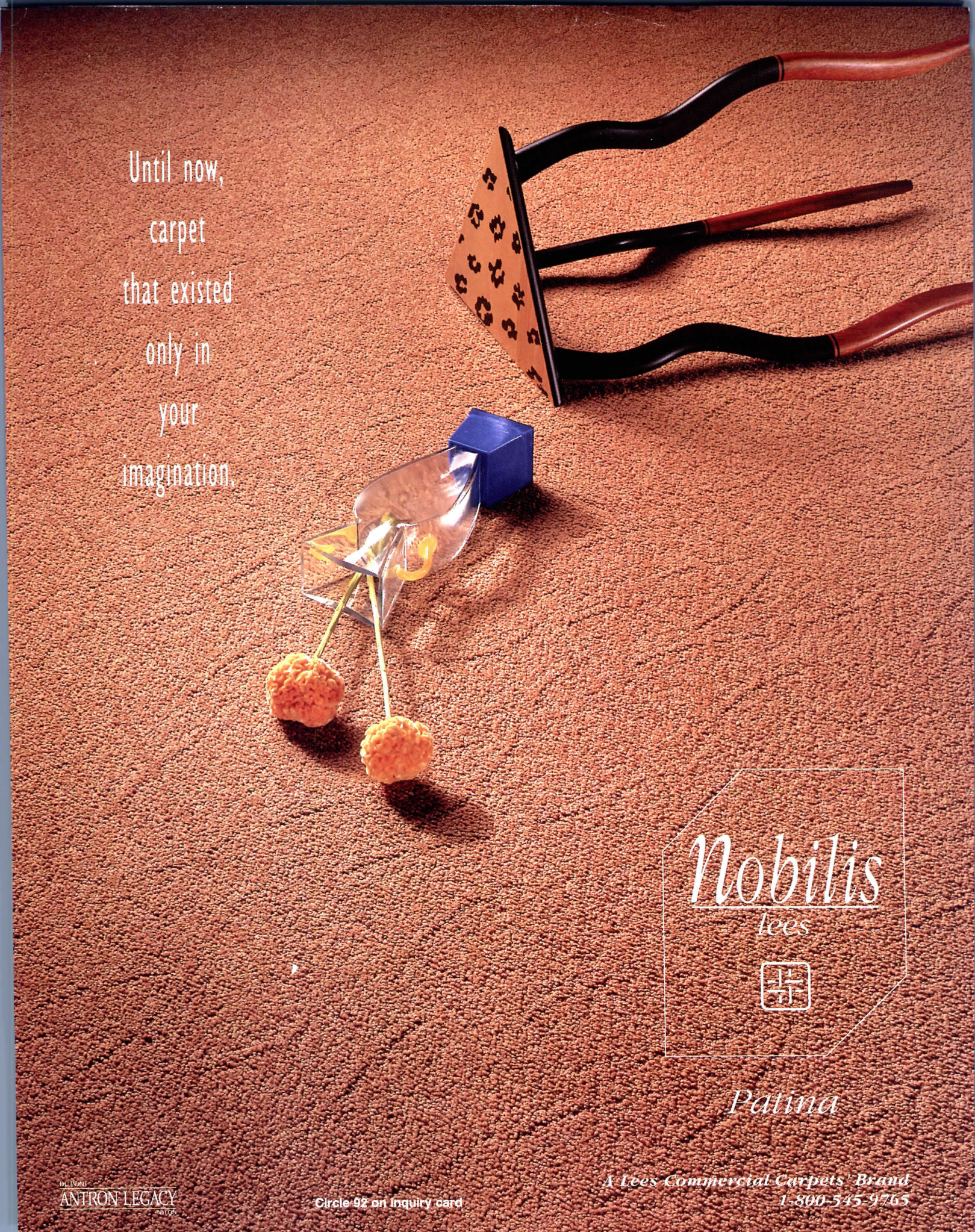
Until now,
carpet
that existed
only in
your
imagination.
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lees
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DUPONT
ANTRON LEGACY
NYLON
Circle 92 on inquiry card

TRANSFORM DAMAGED, UNEVEN WALLS INTO BEAUTIFUL INTERIORS WITH NEW ACROVYN PRELAMINATED WALL PANELS.

Now you can easily resurface badly damaged drywall, old ceramic tile, even irregular block interiors.

New Acrovyn Prelaminated Wall Panels are available in 16 textures and 64 colors in floor to ceiling or wainscot heights. The entire system is completely integrated and includes accessory moldings and protective components. Panels are 3/8" thick with a high density, rigid fiberboard core that provides five times the impact resistance of a standard 1/2" gypsum board wall. The system is Class I Fire Rated and may be used with equal ease in new construction. Standard and custom sizes are available.

For complete details call toll free 800-233-8493. The C/S Group.

ACROVYN® INTERIORS

Patent Pending

Circle 93 on inquiry card

RCHITECTURAL RECORD 2/1993

ASID AWARD WINNER

CREATING A NEW PATH IN VINYL

Possibilities™ vinyl sheet flooring features three fabric-like visuals designed to work together.
Heathered pattern in 2′ width serves as a border or accent for dot or weave visuals.
All available in 10 contract colors.
For more information, call 1 800 233-3823 and ask for Possibilities.

WE HAVE A REPUTATION TO PROTECT.

Your reputation depends on your ability to protect your customers from nature's worst, whether it be howling wind, bitter cold, torrential rain or the searing heat of the sun. If the roof you apply leaks, or otherwise fails to protect those beneath it from the elements, it's your reputation that's at stake.

That's why contractors, architects and roofing suppliers across America put their faith in TAMKO. They can depend on the unsurpassed performance of our products. And they can rely on us to stand beside them, before and after the sale.

You see, we believe your reputation is our reputation. And we're going to do everything in our power to protect it.

NRCA Booth 542

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Clash of Symbols

I write to you regarding your Design News piece entitled "Prime Minister Collaborates on Regional Skyscraper Design" [RECORD, December 1992, page 11]. Due to the highly sensitive political and religious climate in Malaysia, I felt it necessary to address certain inaccuracies in the article.

Use of the phrase "Prime Minister Collaborates . . ." is inaccurate. The Prime Minister, while having a strong interest in architecture, is not an architectural historian. Our office recognized that traditional Islamic symbols and forms would play an important role in the design of the Kuala Lumpur City Center. As a result, we analyzed these as well as indigenous architectural forms and materials. The project was wholly designed by Cesar Pelli & Associates.

Of greater concern to us was the following sentence: "Islamic forms and geometries influenced the rotated-square floor plates that mold its overall minaret silhouette with setbacks and recall the area's Hindu roots." While Malaysia is a nation of many ethnic and religious backgrounds, its Moslem religious heritage should not be confused or equated with Hinduism. It is well known that Islamic religious and cultural traditions predominate in Malaysia.

Jack A. Gold
Public Relations Director
Cesar Pelli & Associates
New Haven, Connecticut

Implement ISTEA!

In keeping with President Clinton's assertions that rebuilding America's infrastructure, restoration of the economy, and job training are priorities, there is a major move he could urge the new Congress to make that would go a long way to achieving the above objectives. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) was originally budgeted for $151 billion over six years. It has been subsequently reduced. Acceleration of public works, infrastructure programs, and transportation improvements *now* are the kind of things we need to continue the regrowth of our economy. The spin-off will be an expanded tax base. ISTEA funding is essential.

Also vital to the brick and mortar in rebuilding our cities is training for our youth and other unemployed. We cannot just be content with introducing new mortar to our cities while ignoring the sense of hopelessness (which is the core of urban unrest and violence).

R. Dan Ritchie
Somerset House, Inc.
Washington, D. C.

Corrections

The new wood-stud plywood shear walls installed for cross-bracing to meet seismic requirements of the restored Bradbury Building [RECORD, January 1993, page 110] were indicated in red on the floor plans, but this color designation was not explained in the caption.

The correct price of the CalComp DesignMate—a new D-size, 8-color pen plotter featured in the PRODUCT REPORTS issue [December 1992] is $1,992.

The correct address for Builder Guidelines, Builder Guide [RECORD, December 1992, page 15] is Passive Solar Industries Council, 1511 K Street, N. W., Suite 600, Washington, D. C. 20005, 202/628-7400.

March 8-12
14th International Making Cities Livable conference, Charleston, S. C. Organized by IMCL Conferences, P. O. Box 7586, Carmel, Calif. 93921. 408/626-9080.

March 10-13
Urban Waterfront Development-Pacific Rim Conference, Convention Centre, Darling Harbour, Sydney, Australia. Contact Pacific Rim Conference, P. O. Box 787, Potts Point, NSW 2011, Australia, 61-2-357-2600 or fax 61-2-357-2950.

March 17
Redefining and Renewing the American City: The Role of Architects of Color, Cooper-Hewitt Museum, 2 East 91st St., New York, N. Y. Call Education Department, 212/860-6321.

March 17-19
WestWeek 93, Pacific Design Center, 8687 Melrose Ave., Los Angeles, Calif. 310/657-0800.

March 19
3rd Annual Symposium on Public Monuments, 1271 Avenue of the Americas, New York, N. Y. Call Dila De La Paz, 212/889-6960.

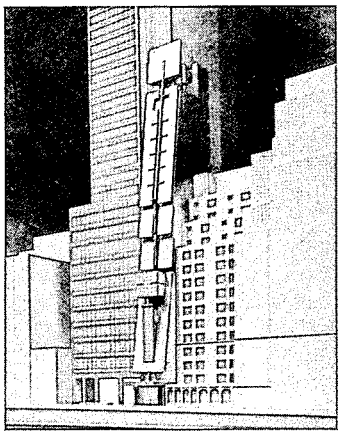
March 19-21
Monterey Design Conference. Contact conference coordinator Donalee Hallenbeck, 800/886-7714.

March 30-April 3
Baucon Asia 93. International. Trade Fair for building design, construction, products, and equipment. World Trade Centre, Singapore. Contact MMG, Munich, Germany, 49-89-5107, Fax 49-89-5107-171.

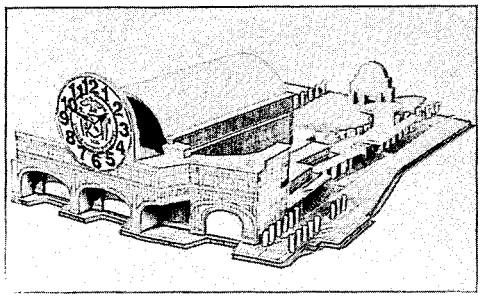
April 4
The Parthenon: Glory on the Acropolis, Arthur Ross Gallery, University of Pennsylvania, Call Sally Young, 215/977-7383.

April 21-24
International Tile & Stone Exposition, Miami Beach Convention Center, 407/747-9400.

Flawed Signal



Austrian Cultural Institute



Staten Island Ferry Terminal

It's easy to second-guess a design jury. The judges' task is not enviable. It commonly reviews more projects than there is time for, and judges are often handicapped in never knowing whether or not entries technically meet the rigorous demands of the program. Nowhere is the judging process more crucial than when the end result is a commission to the winner, especially if it's a high-profile building or a building in a sensitive setting that a city or neighborhood must live with for generations.

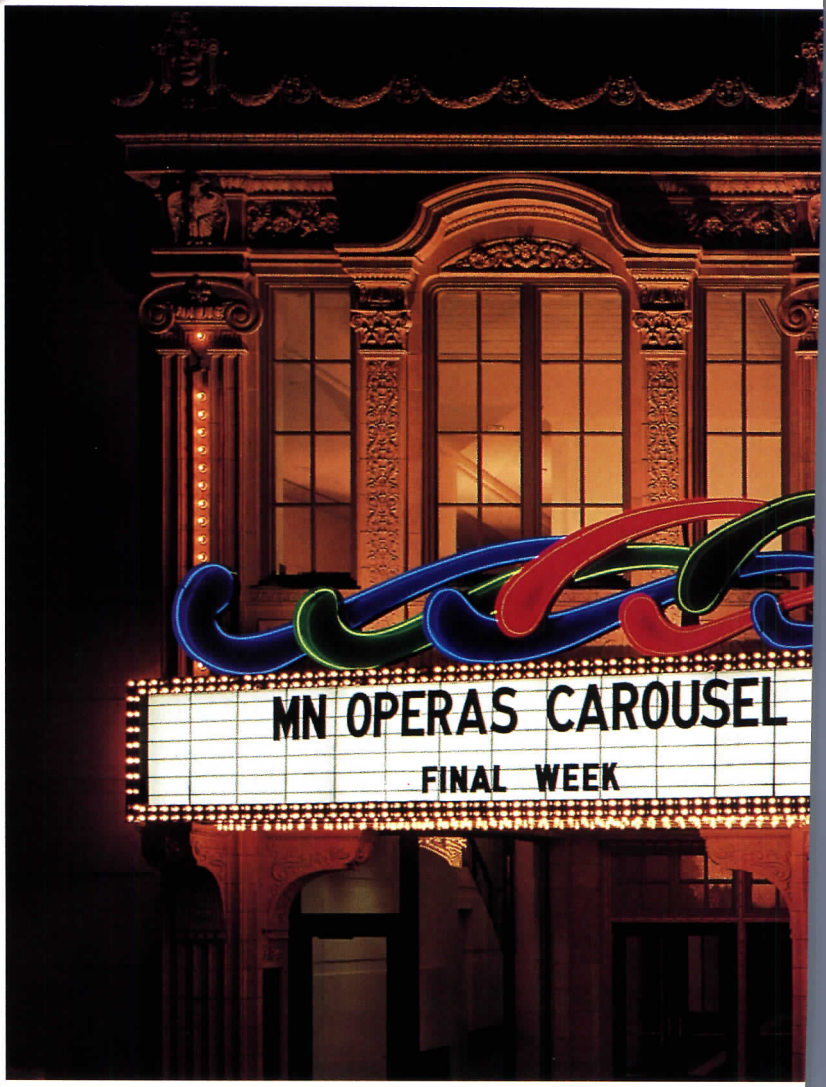
As a veteran of many juries, I hesitate to toss brickbats or bouquets at two recent competition winners. Yet, perhaps because both are virtually in my back yard, I have difficulty making my peace with one of them, but will probably get to love the other. One of them is the winning design to replace the burnt down Staten Island Ferry Terminal, by Venturi Scott Brown Associates and Anderson/Schwartz Architects [RECORD, December 1992, page 12]. The terminal will come equipped with a 10-story-high clock that informs morning commuters in no uncertain terms how early (or late) they are for work. Aside from casting a rather deep shadow over one of the few large sunny spaces to be found in the city of New York (and aside from costing a fortune), the quirky quality of the design combined with the grand entry hall is a strong, simple solution that should wear well.

Not so the Austrian Cultural Institute, designed by Raimund Abraham, an Austrian and long-time instructor at the Chanin School of Architecture at Cooper Union. Oddly, the Institute design likewise invokes time as an icon—in this case the building (see photo) looks like a giant metronome for reasons that clearly have nothing to do with this East 52nd Street block. There is an obtrusiveness about the design, a reach for originality at any price, that in its present form risks becoming an obstreperous neighbor on a block that badly needs a touch of elegance and grace. Now, for all I know the building will function well, providing the Institute with the types of spaces it needs. What fails is the public face. We see a hostile confection, which at least one reviewer has sought, through words, to elevate to the status of genius. *The New York Observer,* a usually sanguine and often pleasantly caustic spectator on the New York scene, gushes with praise. Some samples: "... Mr. Abraham's haunting design resembles an abstract metronome to usher in the coming millenium;" "It will have a disturbingly mysterious yet elegant sculptural presence, one that turns its back on the decorative historicism often exploited in recent commercial building ..."; "[the] architecture has metaphysical atavistic origins ...;" this is backed up by a quote from Mr. Abraham "...I think [of] history in terms of the possibility to go back as far as one can, into geology, into something before architecture." And, unkindest cut of all, in the words of jury chairman Kenneth Frampton, "the assertiveness of the form will put it on a level that makes the Guggenheim or the Seagram Building worth visiting."

All of which sounds impressive but in fact says next to nothing about how the building will look to New Yorkers, nor about the dire challenge to those architects who will eventually be designing the replacement buildings for its architectural neighbors on the block.

The selection process failed to come up winners on this one. That's too bad, because this building is a slap in the face to the block, and sends a flawed signal to every other block in the land. *Stephen A. Kliment*

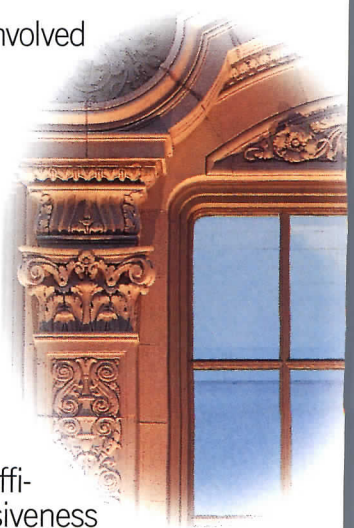
THEY DON'T MAKE THEATRES LIKE THIS ANYMORE. WHICH IS WHY THE



When it opened in 1921, the State Theatre in Minneapolis was hailed as the most luxurious showplace between New York and San Francisco. Sixty years later however, when planning began for a $130 million office/retail complex for the site, it appeared this grand old theatre would go the way of the silent films it once screened.

But in 1985, a determined group of preservationists succeeded in getting the State placed on the National Register of Historic Places. And one of the first companies to become involved in its restoration was Marvin Windows and Doors.

You see, the windows above the theatre's marquee posed a two-sided problem. Not only would they have to fit perfectly and look exactly like the originals, they'd also have to be durable and maintenance-free. And Marvin was the only manufacturer willing to make these unique windows and stand behind them.



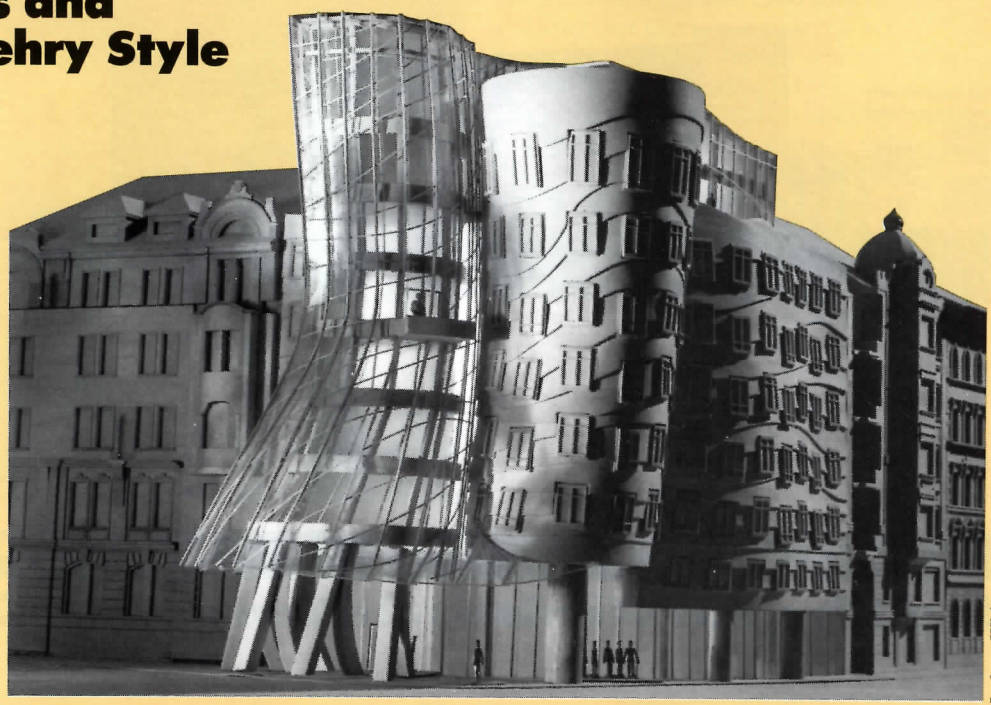
And so, working from measurements of the existing openings, Marvin built the 3′ x 10′ windows and 6′ x 10′ double-width units with custom divided lites and the same gently rounded frames as the originals. In addition, each window received a commercial grade exterior finish in a color that matched the look and style of the building.

As a result, the State got windows that look like the originals but actually feature the newest ideas in design, craftsmanship and energy efficiency. And Marvin got the opportunity to prove once again that responsiveness

Prague

Rounding the Corners and Tilting the Angles, Gehry Style

Judging by the 55,000-sq-ft commercial office building in a historic district on the banks of the Vltava River, Frank O. Gehry & Associates seems to be entering a new phase that values sculptural roundness over assertive angles. The design honors local 18th- and 19th-century use of skylights, intricate plaster facades, and twin towers on corner sites—in this case, a corner empty since a U. S. bomb fell on it in World War II, one of only three sites in the Czech capital's historic district available for new construction. Gehry's twin towers are gently opposing circular volumes, one of concrete poured in wave patterns, widening as it rises; the other a double-layered cylinder of clear glass sweeping into a canopy extending to the sidewalk's edge. Scheduled for completion in late 1994, the project includes ground-floor retail and a roof-level five-star restaurant. ■

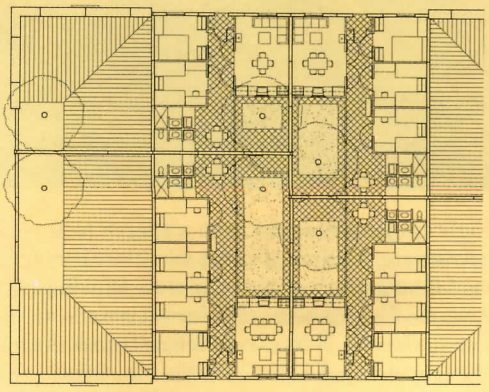


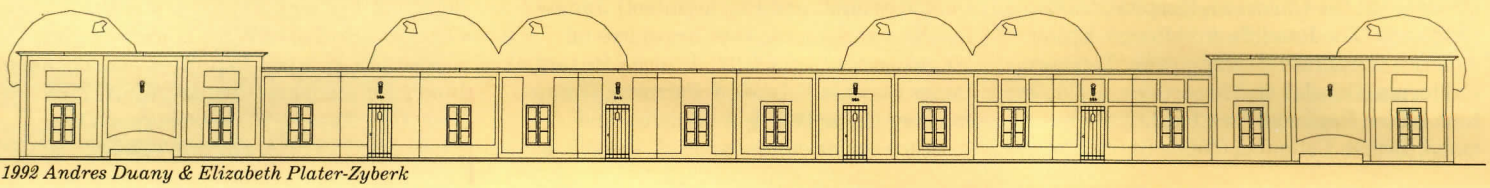
Joshua White

Florida

Immovable Homes for Migrant Farmers to Help Batten Down Hatches After Hurricane Andrew

Most Americans didn't realize that migrant farm workers establish permanent homes until Hurricane Andrew demolished their trailer parks in Dade County. Andres Duany and Elizabeth Plater-Zyberk have now designed new communities, using prefabricated elements from the warehouse industry, which, unlike swamped conventional builders, is under-utilized simply because most of its product escaped damage. Wall elements are cast in local Mediterranean Revival motifs to disguise traces of industrial technique; roofs are punched through to form private courtyards for the two- to four-bedroom units. Cornices straddle the slab joints and lock the units together against hurricanes. "I *thought* I knew how they lived," says Duany, who learned from the householders to provide distinct male and female hang-outs at opposite ends of each unit. Since armoires are important room ornaments, there are no built-in closets. Serving the 290 units—15 per acre—are a social center, church, playing field, and two day-care/laundry centers. Per-unit costs are in the $30,000 range. ■





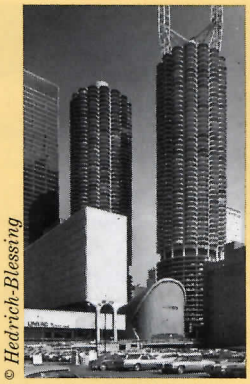
Chicago

Preservationists Struggle to Save Marina City; But a College Campus May Be "Surgically Destroyed"

Questions about if, when, and how to preserve deteriorating Modernist edifices that are too young for official landmark status have focused on two mid-1960s Chicago projects, with consequences at opposite ends of the preservation spectrum. Bertrand Goldberg's Marina City (right)—a seminal multi-use urban complex that's a favorite among tourists—has endured a decade of Dickensian ownership transactions since its "corn-cob" residential towers were sold off as condos. The remaining property became a maintenance nightmare and chain-of-title hot potato in the wake of bankruptcy, foreclosure proceedings, and the Resolution Trust Corporation's abrupt abandonment of the complex in September 1992. Now, the icon is plagued by asbestos, millions in back taxes, and $50,000-a-month losses since a rent hike five years ago all but emptied the office building.

Two years ago, when developers announced plans to buy Marina City, demolish the theater, and convert the office building into a hotel, the Chicago Planning Commission issued a planned-development amendment that protected, in part, Goldberg's original design, and the project was dropped. Recently, another developer, Roger Levin, expressed interest in revitalizing the property with Goldberg's input, restoring some of the architect's uncompleted plans in the process. Whether this scheme for the proto-landmark can move forward remains to be seen.

Across town, the University of Illinois campus at Chicago Circle (far right) is facing some "revitalization" of its own. Designed by Walter Netsch for Skidmore, Owings & Merrill as one of the first instant campuses created in the urban institutional explosion of the 1960s, U. I. C. is a brutalist concrete and granite complex surrounding a central forum and linked by a double-decker walkway. A variety of issues ranging from bad maintenance to perceived security hazards led university trustees to hire Chicago's Daniel P. Coffey & Associates to present five options for revamping the campus core. The plan chosen was Coffey's most radical modification of Netsch's design, since it dismantles the upper walkway and the forum entirely. "It's the surgical destruction of the campus's heart," according to Netsch, who admits there's room for improved landscaping and maintenance. Thus far, Circle Campus has not enjoyed the kind of preservation-group crusade that was mounted for Marina City. "We did an internal evaluation of all the underage landmarks that merited our protection, and Marina City has a special significance that we didn't feel was the case at U.I.C.," according to Vince Michael, Chicago program director for the Landmarks Preservation Council of Illinois. *Victoria S. Lautman*

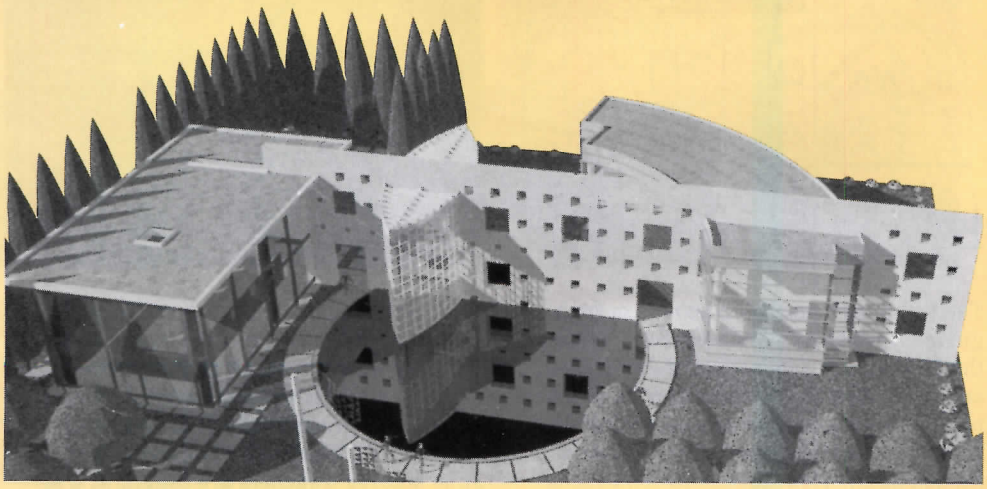


© Hedrich-Blessing

Orlando R. Cabanban

Budapest

Expo Pavilion Circles the Square



Skidmore, Owings & Merrill design partner Joseph Gonzalez employs transparency and curved form to transcend the "relentlessly" gridded environment of the Kontrax Telecom pavilion in an industrial area converted to exposition uses. Within the 150-sq-ft parcel, an eye-shaped observatory, an office-and-sales arc and an equipment display rectangle are strung on a see-through wall with a second-story walkway hung on its back. A round pool slips serenely through the wall and gives a lift to the observatory. ■

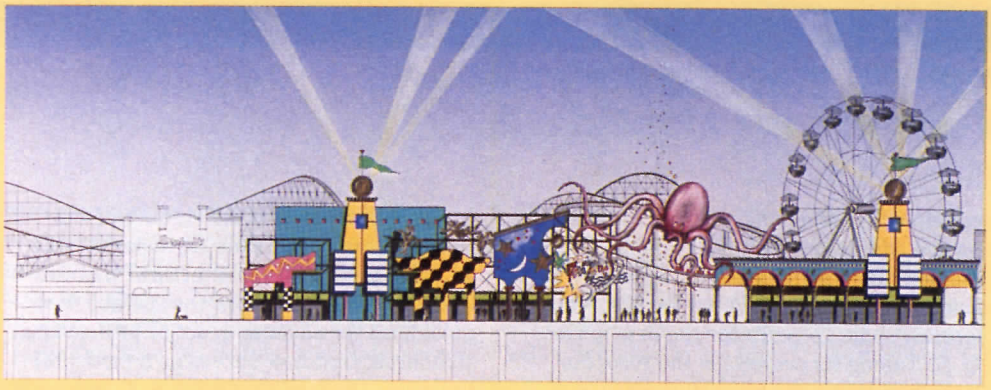
Denver

Ponti Design Is Centennial Focus

The only public building by Gio Ponti in the western hemisphere—the 1971 Denver Art Museum designed in collaboration with the Denver firm of James Sudler Associates—is a major focus of the museum's centennial celebrations. A year-long multimedia exhibit (ending February 6, 1994) explores what curator of design and architecture R. Craig Miller calls "really a rather extraordinary building," one that departed from archetypical Beaux Arts and Modernist designs for American museums to take on urban and regional issues, loft-like open-plan gallery designs, colors based on Le Corbusier's Maison Jaoul, and forms reminiscent of Ronchamp. Positioning itself as the latest center for Modern design and architecture, the Denver Museum also picks up the good-design torch with a "Good Design 1993: Italy" show that opens April 1, 1993. ■

Santa Monica

Amusement Pier Returns to Life



Architect Ken Stein is the unanimous winner of a competition to design a new amusement zone on a vacant 70,000-sq-ft patch of the historically sensitive Santa Monica Pier. The scheme evokes the glory days of the pleasure pier with corner towers based on photos of the old LaMonica Ballroom, a roller coaster and other rides, a serpentine games arcade, retail, and food. On a clear night, the good times will be visible for six to eight miles along the Pacific Coast from Malibu to Palos Verdes. ■

Dresden

Frank Stella Trades Art for Architecture To Design Museum of Contemporary Art

Steven Sloman

The Dresden City Parliament has decreed that a privately-sponsored museum of contemporary art can be erected in a park near the lavishly Baroque Zwinger Museum and the recently reconstituted-from-scratch opera house—but only if the project carries out a design by American artist Frank Stella. Collectors Rolf and Erika Hoffman commissioned Stella after proposals from architects made them "absolutely sure we would not go ahead with conventional post-modern architecture," says Rolf Hoffman. "There is a great danger that Dresden—along with other German cities—will be rebuilt as a fake Baroque city." The scheme is less a rebuff of tradition than a 21st century reworking of it; the swirled domes above, for instance, are orange-section takes on an 1841 orangerie left in fragments after Allied firebombing in 1945. "Stella understands the Baroque spirit," says Hoffman. "Even the Zwinger was never meant to be a serious building." The galleries occupy the top floors of five office buildings whose rents will support museum activities without carrying the influence of corporate sponsorship. ■

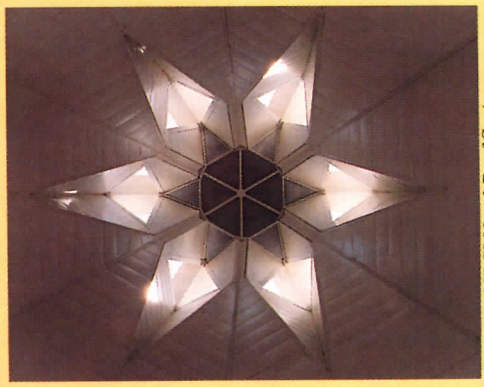
Berlin

Greening a 1950s Office Building

Using conventional technology and resources, Louisa Hutton and Matthias Sauerbruch of LHMS Architects have gotten the nod for an air-conditioner-free extension to the 1950s headquarters (center) of Gemeinnutzige Siedlungs-und Wohnungsbaugesellschaft (GSW), a government housing society that has been client to Mies, Gropius, and Scharoun. To begin building later this year with Ove Arup as consulting engineers, the first phase (right) runs a glass-skinned three-ft-deep solar flue the full length of the western exposure. In the summer, fresh air enters operable windows on the east and is drawn through 21- to 27-ft-deep floors by warmer, used air rising up the western flue; high temperatures only make air in the flue rise faster, pulling more fresh air from the east. Overnight, mechanical fans blow cooler air through floor slabs to counteract morning heat, and the east facade's individually controlled shutters control early glare; the randomly colored pink, yellow, orange, and purple shutters change the facade as weather conditions dictate, offering employees a new approach to work each day. In the winter, mechanical extract fans atop the flue pass stale used air over a thermal wheel to warm up chilly intake air. The design links the drastically different buildings on every floor—creating a Berlin-Wall-side metaphor for the union of the two Germanies—but the natural ventilation does not extend to the older structure; Ove Arup's Guy Battle estimates its efficiency would drop with a building depth greater than 27 ft. Energy savings could pay for the double curtainwalls in roughly 10 years, a payback period that European banks welcome more readily than their American counterparts do. ■

Specification Series: Manufactured Metal Roofing

View inside complex metal roof on Visitor Pavilion, Port of Houston, designed by MCCM Architects and built by R. W. Honea Sheetmetal.



Courtesy MBCI Metal Roof Systems

By W. Dean Walker

There are two types of preformed roof systems: water shedders and water barriers. Barriers resist the passage of water under hydrostatic pressure.

Water shedders must have slopes of 3 in 12 or greater, and decking for support. Base felts or rubberized asphalt membranes are also needed for additional moisture protection. Water barriers can have slopes as small as 1/4 in 12 and need no supporting structure.

Types of water shedders include: batten-seam (covered with snap-over caps); Bermuda (panels continuous across slope); corrugated (ribbed panels with exposed fasteners); flat-seam (one panel edge folded back on itself to interlock with the next panel edge); shingle panels (formed to look like tile); and standing-seam (vertical edges folded one over the other). Standing-seam systems can also be water barriers. Batten-seam and standing-seam are the most commonly used. Find illustrations of all types in the Sheet Metal and Air Conditioning Contractors National Association's *Architectural Sheet Metal Manual, Metal Roofs.*

System-performance requirements should include no air leakage in testing according to ASTM E 283 at pressure differentials up to 1.57 psf, and no water penetration in testing according to ASTM E 331 when the inward static-air pressure differential is not less than 6.24 psf and not more than 12.0 psf.

Submittals: Require manufacturer's product specifications, standard details, certified product-test results, and samples and color chips for proposed finishes. Sample panels should be a minimum of 12 inches long. It is a good idea to get samples of clips, battens, fasteners, and closures. Require shop drawings showing layouts of panels, details of edge conditions, joints, panel profiles, supports, accessories, and anchorages.

Quality assurance: An industry-respected test for wind uplift is UL 580. The key is that the system must be installed exactly as it was tested, including material gauges, clips, fasteners, secondary-structural-member gauges and spacings, rib heights, and panel configurations without even minor modifications. Typically, you might specify that the roof-panel system, including supports, meets UL 580 for Class 90 wind uplift resistance.

Although principally developed for curtain walls, ASTM E 330 has been modified for testing standing-seam systems. Currently, a new standard, E.06-57, is under development by ASTM, but is still at the committee stage.

Finishes and installation: Protective coatings provide corrosion prevention by sacrificing themselves, or by forming a barrier. With the exception of the last two listed below, which cost a premium for their natural appearance, they may be painted.

- Zinc coating G-90 on steel ASTM A525 provides primary sacrificial protection.
- A minimum 0.65-ounce aluminum-coating on steel ASTM A-463 provides barrier protection, except in a marine environment where it becomes sacrificial.
- A 55-percent aluminum and 45-percent zinc-coating on steel provides sacrificial and barrier protection.
- Terne (20-percent tin and 80-percent lead) on copper-bearing carbon steel or stainless steel 304 provides sacrificial protection.
- Microzinc, a zinc-copper-titanium alloy is both base metal and finish.

The wide variety of coatings for steel and aluminum can be seen in the National Coil Coaters Association's *Comparative Properties and Performance Chart.*

Installation: The expansion rate of the metal selected will affect stress and "oil canning." Prevent stress problems with expansion joints. Thermal movement can be controlled with concealed clips that typically allow movement of one inch in each direction when installed in a centered position. Also consider galvanic corrosion from dissimilar metals in contact with each other or water runoff from one to the other. Water draining from some metals can stain other building materials if not adequately diverted. Require an underlying layer of roofing felt as a moisture barrier, and of building paper above it, which prevents the metal from bonding to the felt.

Insulated roof panels

- Honeycomb core slabs of kraft paper or aluminum with hexagonal cells no larger than one inch across.
- Poured-in-place modified isocyanurate foam with a minimum of 90-percent of its cells closed.
- Rigid or semi-rigid boards of polyisocyanurate (urethane), extruded polystyrene, molded polystyrene, or glass fiber.

Insulation may also be installed as the panels are being erected and is generally a glass-fiber blanket, ASTM C 991, of 0.5-pcf density, with UL flame-spread classification of 25 or less with 2-inch-wide continuous vapor-tight edge tabs. A facing of vinyl-reinforced polyester, vinyl-reinforced foil, foil-reinforced kraft paper, or polypropylene-reinforced polyester retards the migration of moist air. Insulation of this type is generally 1 1/2-inch to 4-inches thick held in place with 26-gauge galvanized steel retainer strips. Or you may call for flexible, resilient, noncombustible blankets of mineral or glass fiber, ASTM C 665, Type I, II, or III; Class A may be used on the underside of panels.

Fasteners: These must be strong and corrosion resistant. Self-tapping and self-drilling screws are usual, although self-locking rivets, self-locking bolts, and end-welded studs are sometimes used. Use corrosion-resistant or stainless-steel exterior fasteners and galvanized or cadmium-plated interior fasteners. Cushion outdoor exposed fasteners with metal-backed neoprene washers. Locate exposed fasteners in true vertical and horizontal alignment. Felts under roof panels should be asphalt-saturated and organic, conforming to the requirements of

Mr. Walker is senior associate and chief specifier in Lohan Associates.

ASTM D 226, Type II (No. 30). You will get better moisture protection from polyethylene-sheet-backed rubberized-asphalt membrane, 40-mils thick.

Accessories: Frequently included with systems are closed-cell, self-extinguishing, expanded cellular-rubber closure strips, pressure-sensitive 100-percent-solids polyisobutylene compound with release paper-backing sealing tape, and one-part elastomeric polyurethane, polysulfide, or silicone-rubber sealant. Fabricate panel joints with captive gaskets or separator strips, which provide a tight seal and prevent metal-to-metal contact.

Panel supports and anchorage include secondary framing of C- or Z-shaped roof purlins of cold-formed galvanized steel, eave struts of unequal-flange C-shaped sections formed to provide adequate backup for roof panels, and flange and sag bracing of shop-painted, roll-formed steel. Secondary structural members are usually the manufacturer's standard sections of cold-formed galvanized steel. Call for purlins, angles, channels, and other secondary structural-panel supports and anchors installed according to *AISC Manual of Steel Construction*, "Code of Standard Practice," and for roof panels installed according to manufacturers' instructions.

For lap-seam panels, call for sealant tape at lapped joints of ribbed or fluted sheets, and between roof sheets and accessories. For standing-seam panels, call for panels fastened to supports with concealed clips according to manufacturer's instructions.

Also require panel units shimmed and aligned within installed tolerance of 1/4 inch in 20 feet on level, plumb, and slope and on location line, within 1/8-inch offset of adjoining faces and of alignment of matching profiles. ■

Guide Specification
PART 1. GENERAL

A. Summary
1. Formed roof panels with applied batten. 2. Lapped standing-seam roof panels. 3. Insulated roof panels. 4. Fiber insulation. 5. Accessories including trim, copings, fascias, gravel stops, ridge closures, clips, seam covers, battens, flashings, gutters, gaskets, fillers, and closure strips. Match metal materials and finishes of roofing.

B. Not included: Structural-support steel and rough carpentry.

C. System performance requirements
1. Air infiltration. 2. Water penetration.

D. Submittals
1. Manufacturer's product specifications. 2. Samples. 3. Shop drawings.

E. Quality assurance: Wind uplift.

F. Delivery, storage, and handling: Prevent bending, warping, and surface damage.

G. Finish warranty: Furnish panel manufacturer's 20-year finish warranty.

PART 2. PRODUCTS

A. Manufacturers: (list)

B. Sheet metal
1. Hot-dip-zinc-coated structural steel: ASTM A 446; G90 coating ASTM A 525, Grade C. 2. Commercial-quality galvanized steel: ASTM A 526, G90 coating, ASTM A 525. 3. Structural-quality aluminum-zinc-alloy-coated steel: ASTM A 792, Class AZ-50 coating; Grade 40. 4. Aluminum-coated steel: ASTM A 463, T1-40 coating. 5. Stainless steel: ASTM A 240, Type 304; ASTM A480, No. 4 finish. 6. Aluminum: ASTM B 209, Alclad alloy 3003 or 3004 with embossed finish.

C. Metal finishes
1. Apply coatings before forming and fabricating panels. Protect coating. 2. Finish panels with fluoropolymer (PVDF), siliconized polyester or acrylic enamel.

D. Roof panels
1. Panel face sheets: Fabricate to the profile or configuration shown of zinc-, aluminum-zinc-, or aluminum-coated steel sheets, 24-gauge (0.0239-in., stainless-steel sheets, 16-gauge (0.0598-in.), or Alclad alloy stucco embossed-finish aluminum sheets 0.040-in. thick 3003 or 3004.
2. Batten-seam roof panels. 3. Standing-seam roof panels. • Clips and cleats.
4. Insulated roof panels: Factory assemble:
• Honeycomb-core slabs.
• Poured-in-place modified isocyanurate foam.
• Rigid or semirigid boards.

E. Fiber insulation: Glass- or mineral-fiber blanket insulation installed with panels.
1. Retainer strips.

F. Miscellaneous materials including fasteners, felts, underlayment, closure strips, sealing tape, and joint sealant.

G. Panel fabrication
1. Fabricate and finish panels and accessories at the factory.
2. Fabricate panel joints with captive gaskets or separator strips.

H. Provide panel supports and anchorage
Include secondary framing, eave struts, flange and sag bracing, and secondary structural members.

PART 3. EXECUTION

A. Installation
1. Install purlin, angles, channels, and other secondary structural-panel support members in accordance with AISC.
2. Comply with manufacturers' instructions and recommendations for installation.
3. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.
• Install panels with concealed fasteners.
• Install panels with exposed fasteners.
4. Install component accessories.
5. Install gaskets, joint fillers, and sealants for weatherproof performance of system.
• Shim and align panel units.

B. Cleaning and replacement
1. Clean finished surfaces as recommended by panel manufacturer. 2. Replace damaged components.

How One Firm Broke into CAD Through Design, Not Production

By John Hughes

James Stewart Polshek and Partners used CAD from the first for 3-D modeling, but not without initial problems. Despite hardware upgrades in 1989 to '386/33MHz and '486/25MHz machines, JSPP's stand-alone PCs were isolated in a distant corner of the office. Anyone wanting to use them had to leave their desks and teammates. It was also difficult to track and protect CAD files. "Keeping track of and protecting drawings became a chore that could only be solved by networking," says Benedict Okoh, JSPP's systems manager. "The machines also were put on an automatic tape-backup system that runs every 24 hours to protect against data loss."

The decision to network all of the firm's PCs was made in 1990, allowing JSPP to develop its first complete set of construction documents with CAD. The project selected was Inventure Place, Home of the National Inventors Hall of Fame (photo above right), an 80,000-square-foot technology and science center in Akron, Ohio.

The project is three distinct blocks set on a landscaped plaza. A stainless-steel wing rises above the plaza and shelters a wall. Within, five tiers carry exhibits exalting innovation. Below the plaza is an underground exhibit "laboratory," where visitors explore invention concepts using a hands-on approach. A four-story service building contains a lobby, gift shop, cafe, classrooms, access to an underground large-screen theater, mechanical spaces, and a resource center. A 200-foot-high tower completes the composition.

JSPP first used CAD to build a 3-D model of downtown Akron and illustrate how the Hall of Fame would fit in. (The model has since become useful for another commission the firm secured about three blocks away from the Hall of Fame: the Akron Convention Center.) As the architects focused on the Hall of Fame itself, the project team continually updated its 3-D database, which now covers the entire building down to handrails and stair treads."The Hall of Fame's 3-D model has been both a design and analytical tool for studying the character of spaces and details, and for showing how the building's functions relate," says Donald Weinreich, a JSPP senior partner.

Mr. Hughes is a freelance writer in Ft. Collins, Colorado.

Easier response to program changes

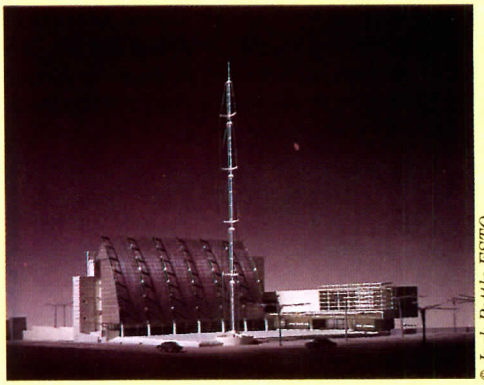
When JSPP began design development, the client asked the firm to produce documents for a building to be built in phases. So the architects produced documents for a 37,000-square-foot first phase. They came up with their own layer naming system and developed drawings with about 20 layers, which show column grids, structure, enclosure, glazing, furniture, dimensions, and ceiling systems. The layers would allow information to be easily transported to other drawings of similar areas in later phases. "On this first project, we placed great emphasis on the quality of the drawings," says Weinreich. "Using colored lines on the screen indicating seven pen widths, we were able to establish a drafting standard that mimics high-quality inked linework."

At the end of each project phase, JSPP filled a tape with all of the data as a record set. The architects continued to develop and embellish the data to complete the construction documents. CAD became invaluable when, toward the end of construction-documents, the client changed the scope of the project and gave the go-ahead to develop the entire 80,000-square-foot building as one package.

"This would be very inconvenient if you were drawing in a conventional manner," says Weinreich. "How do you transfer all the information from one drawing to another without going through the enormous expense of paying for mylar washoffs? CAD made it simple to change the size of sheets and add or extend all of the building components to create a much bigger project. An added bonus was that, in the end, our drawings still looked new. In this case, CAD benefitted the client and kept us from having to do a lot of drudge work."

Keeping use flexible

After JSPP's CAD success on the Hall of Fame, the technology sold itself. Now junior draftspeople and associates use it. They are encouraged to fit it to their own needs and to consider it as one of many tools at their disposal. No one has had any formal CAD training; new users are trained on the job by those with more experience, although they must show enough interest to become competent fairly fast. According to Weinreich, JSPP can have people working productively after about 30 hours of learning time. "CAD has worked well for some of us and less well for others," says Weinreich. "The more general exposure one has had to computers before learning CAD, the better off one is. Computers demand a level of precise thinking that many people find constraining and annoying until they get used to it."



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National Inventors Hall of Fame.

Now CAD covers the range of drafting tasks within JSPP's offices. The system is a comfortable tool for about 10 of the firm's architects, who do everything from developing perspectives and modeling complex buildings to working out details and generating door and window schedules.

Managing the system

JSPP's systems department is managed by Okoh, who is responsible for researching, developing, and integrating new software and hardware products into the office, as well as for supporting PC users, troubleshooting, and overseeing the daily operations of networks and systems.

Although DataCAD is still JSPP's CAD software of choice, the firm has expanded its automated arsenal significantly in the last few years. JSPP's primary CAD stations are '486/33MHz and '486/25MHz PCs, each with at least 16MB of RAM, a 200MB hard disk, a high-resolution graphics card, and a 16-inch-

While many offices first look at CAD for its production efficiencies, James Stewart Polshek and Partners looked at the creative possibilities first.

or-greater multifrequency monitor that meets the Swedish Board for Technical Accreditation's maximum recommended values for electric and magnetic fields. The firm's architects share a C-size Hewlett Packard 7550A pen plotter for in-house test plots, as well as a Versatec 8500 Series electrostatic plotter for large-format output. Moreover, JSPP has a high-speed modem (19,200 baud) for sending files to its plot bureau, and sharing files with consultants and others.

All CAD computers are networked via a central computer running Novell's SFT Netware with duplexed, external 650MB drives. According to Okoh, the duplexed drives provide tremendous fault tolerance as data on a primary drive are mirrored automatically to a secondary drive, thus virtually eliminating the possibility of data loss. Furthermore, since the drives are external, a failed drive can be replaced without disrupting people at work, which cuts costly down-times.

Complementing JSPP's CAD system are numerous "satellite" '486DX and '386DX-based computers (each of which also is CAD capable and ready) running Microsoft Excel for spreadsheets, schedules, management, and financial analysis and reporting; Aldus PageMaker for desktop publishing; WordPerfect for word processing; Micrografx Designer and Graph Plus, Alias Upfront, and Corel Draw, Deluxe Paint II, and Picture Publisher for graphics work other than drafting; and a Benelog Tracking System for logging shop drawings.

Printing is done on several networked Hewlett Packard Laserjet Series III, IID and II printers. Most Series IIs are outfitted with Postscript boards for faster and clearer text and graphics printing. The firm's "satellite" PCs are networked through a second server also running Novell's SFT Netware. This file server is seamlessly bridged to the CAD server, thus making it possible to access and share both CAD and non-CAD files across the network and to absorb sudden workload increases.

"In setting up and configuring a computer system, in addition to making it as simple as possible to use, there should be as much input as possible from those who will ultimately use it daily," says Okoh. "The idea is to provide our people with tools powerful enough to do their work without sacrificing safety, comfort, or efficiency."

CAD did substantially boost JSPP's productivity. "My advice to those interested in their own CAD system is to learn as much as they can about how PCs, networks, and software work," says Weinreich, "even if they will not be setting it up. This will help communicate unique needs to specialists who will. *And* a few basic computer management skills will help handle minor daily problems. ■

CAD's Evolution in Polshek's Office

• 1984. First use CAD by agreeing to be a beta tester for a manufacturer. Get 3-D/2-D software to run on one PC. Package proves slow, unsophisticated, and of little use.

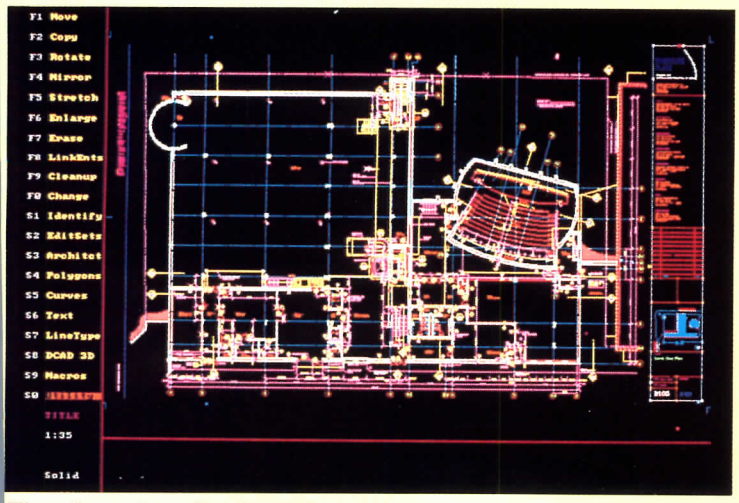
• 1988. CAD permanently introduced with purchase of CADKEY's DataCAD package and two '386-20MHz workstations. Two architects are trained to use the program as a design tool for mainly 3-D modeling.

• 1989. Three additional architects are trained in 2-D and 3-D modeling. Hardware upgrades to '386-33MHz and '486-25MHz computers.

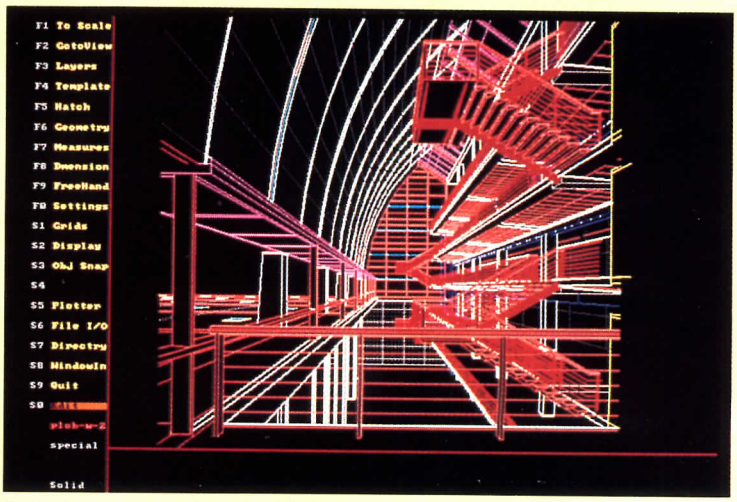
• 1990. Purchase of two additional workstations and the first set of construction documents done entirely with CAD. Installation of a dedicated CAD network with automated daily file backups.

• 1991. '486-33MHz PCs replace four slower units. Direct modem connection established to blueprinting service for all plotting. Two projects placed fully on CAD, and other projects partially.

• 1992. Firm up to six workstations. Develops screen-capture and image-painting techniques. Five projects on CAD and more expected.



First floor plan showing colored lines that translate into varied line widths on prints.



Interior perspective showing great wall and tiers.

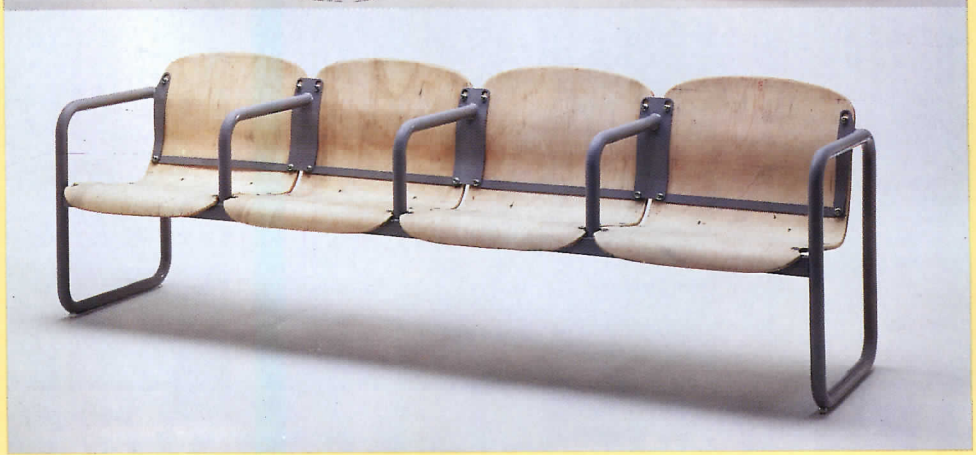
Just What the Doctor Ordered

300. Therapeutic seating
Architect Roger K. Leib has been designing and manufacturing patient chairs and other seating pieces for hospitals and healthcare facilities for over 16 years, winning awards and market share in the process.

With current post-operative protocol insisting that patients get moving within hours of surgery, and wheelchairs never intended for use as long-term seating, the lightly scaled Rose chair (top photos) fills a recognized need by supporting an invalid and encouraging physical exercise. Now offered in a brand-new bentwood version in oak or maple, the furniture combines unique materials and patented mechanics in a design that has been classified as a registered medical device by the U. S. Food and Drug Administration—the only patient-room chair on its list.

Unlike clunky visitor chairs that depend on bulk to help you get up out of the chair, Leib's chair uses its rounded arms and broad base to provide stable support. The seat platform, set at a standard 18-in. height, is made of a resilient, steam-cleanable polyester mesh that conforms to the user's body while distributing weight evenly, avoiding the concentrated load points and heat buildup that can cause bedsores. The spring-steel back is a lordotic curve that supports the spine, making breathing easier. The back flexes independently of the seat in a subtle rocking motion that enhances muscle tone. Leib has backup clinical studies.

Another "unbulky" Leib design is the Clairespan bench for waiting rooms. Engineered to suit the needs of the fussy five percent of the population said to find most chairs uncomfortable, Clairespan is made of molded-plywood modules joined by steel plates. This connection of adjacent seat backs creates a series of shear panels that acts as a rigid structural beam without a beam's weight or underseat depth. (Leib describes the design as a segmented modular bridge that spans gracefully between its two legs.) Each seat is fully upholstered, and can be specified in configurations of up to four-seats-wide, each with armrests.
Add Interior Systems, Inc., Los Angeles. ■



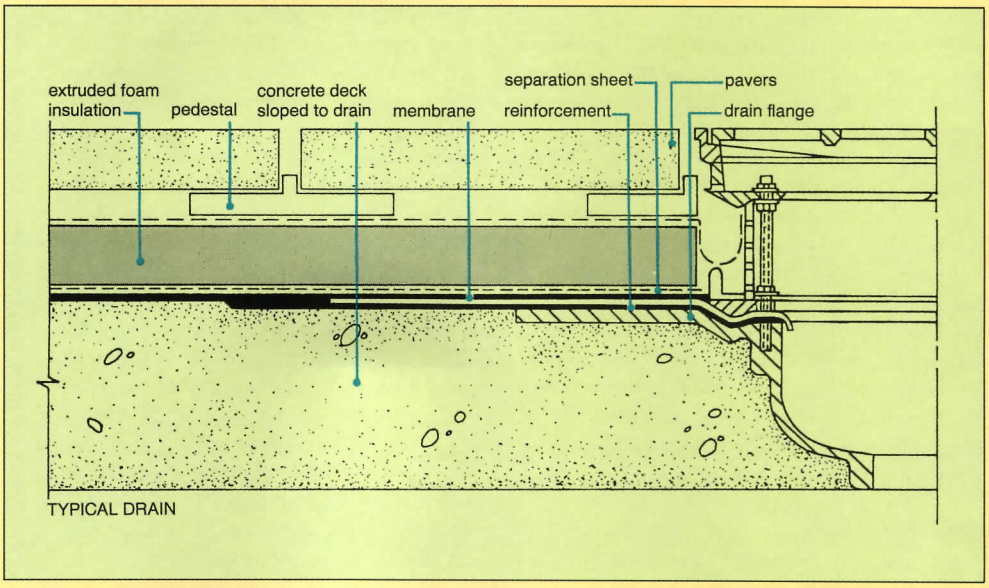
Roofing: On the Level

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

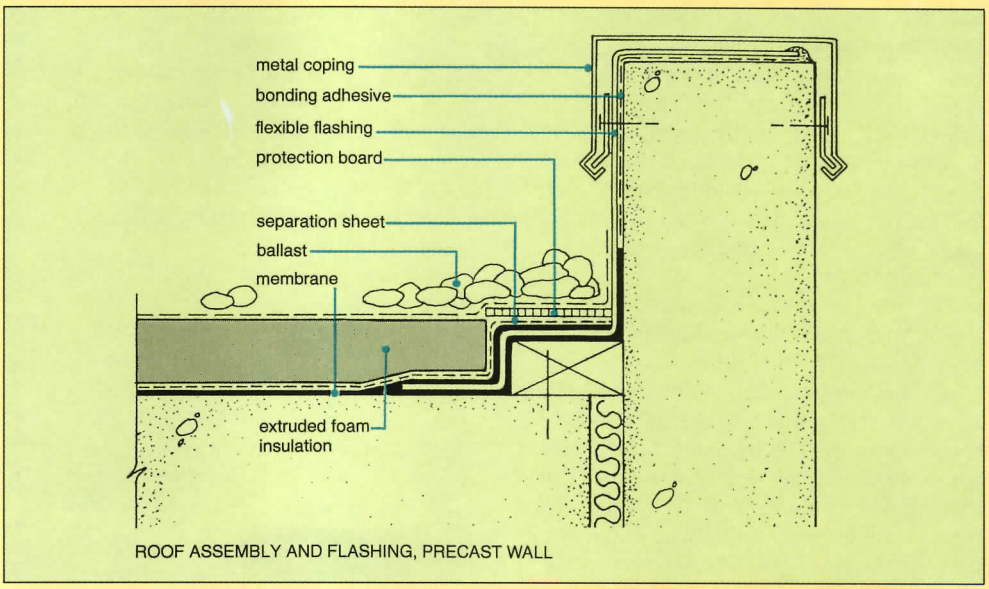
301. Seamless recovery
The facility architects at Boeing Company faced a daunting list of site and performance conditions when they specified the seismic upgrade and re-roofing for an enormous manufacturing building in Seattle. Job restrictions included an installation schedule phased over three years, during which work could not impact plant operations, and each reroofed section had to bond with prior work, without cold joints. The concrete roof-deck itself was only 1 1/2-in. thick, and the earthquake work included a perimeter shear collector and seismic topping, which further reduced the available weight allowance. There were literally hundreds of roof penetrations, and more were anticipated. None of the rooftop utilities could be moved, which precluded a sloped system, so the membrane had to accept (and guarantee) a dead-level condition.

Monolithic Membrane 6125, a fluid-applied elastomeric in use for over 25 years, was selected for its ability to meet all of these disparate job requirements. A blend of asphalt and synthetic rubber, the thermoplastic material adheres to a range of deck substrates and can bridge small voids. (Besides concrete surfaces and some remaining BUR, the Boeing roof had wood blocks, hundreds of metal vents and other penetrations, and it tied into three abutting buildings: the membrane bonded to all these without changing materials at any point.) It is said to remain flexible, filling voids such as those around penetrations (lower right).

The details at right call out system components: a separation membrane on top of the waterproofing, to protect it from construction traffic and shield it from ultra-violet degredation; extruded-foam board (Styrofoam) for insulation and to resist impacts; and a ballasting (stone, concrete pavers, or a cement-surface version of the insulation board) that brings the roof its FM I-90 rating. The sheer size of the roof suggested a unique delivery method to the roofing contractor: pumping kettles were located on the ground, with heated rods sending the 6125 up onto the roof and into heated jugs mounted on wheels for moving where needed on the roof. American Hydrotech, Inc., Chicago. ■



TYPICAL DRAIN



ROOF ASSEMBLY AND FLASHING, PRECAST WALL

Windows CAD

Cadvance 5.0 for Windows

By Steven S. Ross
This month we describe two CAD packages. One shows progress in one of the Windows CAD pioneers (Drafix). The other defines the new high end (Cadvance).

There's a revolution brewing in computer-aided design, one that strikingly simplifies the way 2-D, 3-D, models, and data are merged. For the past six months we have been testing numerous Windows-compatible CAD and modeling packages for DOS computers. Although Windows promises a more standard interface, these packages vary in speed, features, and—yes—interfaces. They also vary in their ability to exchange data with other Windows software.

Data exchange is the key. Using the Windows clipboard, it should be possible to import and export images, at least as bitmaps. Packages vary in their implementation of the clipboard, however. A "TWAIN"-capable package can receive a scanned image right off a scanner. One that does not have TWAIN may be able to import the image, but only after it has been saved as a file, and perhaps translated by some other software. Usually, text pasted from the clipboard is treated as a graphic by the receiving software.

Using Microsoft's "object linking and embedding," or OLE for short, you (or a third-party vendor) can create a link between data in your drawing and an external database, spreadsheet, or desktop-publishing package. Some packages can send and receive OLE (that is, if something changes in the database, it will be automatically updated in the drawing, or vice-versa). Some can only send (they are OLE "servers" but not "clients," in the argot of the computer-techie world).

If you have the right software and enough disk space, you can even embed sound into your Windows presentations.

Interfaces need some work. Windows encourages "deep" pulldown menus (there are not many menus in most Windows packages, but each one has lots of commands. Production drafting requires more menu bars, each less deep, for easier access to commands.)
Continued on page 113

This is the most sophisticated Windows implementation of 3-D CAD software yet produced. It includes a powerful macro language, excellent links to other Windows software through OLE (object linking and embedding), rough rendering, and translation to and from AutoCAD binary (DWG) as well as DXF files.

Although this version is a radical departure from earlier (non-Windows) Cadvance software, it retains many of the features that gave Cadvance a niche in the market. There's good behavior on networks (you sign on with a three-digit code that helps define the temporary files' names, for instance), and files can be referenced (viewed but not edited) by one user while being updated by another. Multiple users can update the same database, but not the same record at the same time. It is also easy to change object properties (line weights, style, color, and layer).

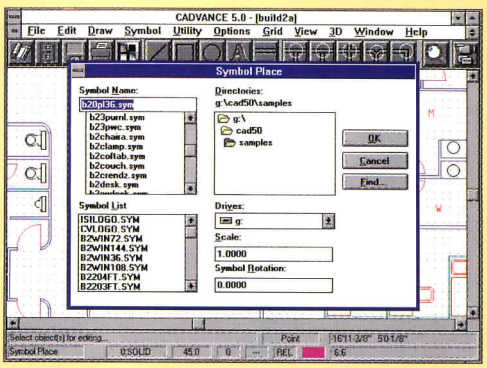
There's good control of symbol libraries, in the sense that you can place symbols anywhere in your computer or network. But you can't view them until you bring them into the drawing. One way to get to know new symbol libraries: print them out and create a "book" of them. Or, open a new window (on an unused layer), and import the symbol to it before moving to the main drawing. Symbols from older versions of Cadvance can be translated (the documentation says one at a time, but you can use the DOS wildcard SYM for the old symbols and just specify the path without wildcard for the new ones) using a DOS utility included with the package.

There are about two dozen file types thrown off by the system—enough to drive network managers a bit crazy. But the variety seems unavoidable. You can save drawing defaults in any number of "INI" files, for instance. Dimension settings are in DIM files, macros in CBL, CBX, or CBN, digitizer menu templates in DTF, and so forth.

Cadvance 5.0 is one of a growing number of packages that can pick up an AutoCAD DWG file directly, without DXF translation. The system is not absolutely foolproof, because some entity types in DWG are not supported by Cadvance, and polylines may

Cadvance summary

Equipment required: IBM PC or compatible with 80386SX or higher CPU, VGA monitor (800x600 recommended, to see all on-screen data cues), Windows 3.0 or higher in enhanced mode (Windows 3.1, the current version as of January 1993) strongly recommended), 4 MB of random-access memory (8 MB or more strongly recommended), mouse or digitizer (the mouse is fine). Coprocessor recommended by not required on computers with 80386 CPU chips or equivalent. Full installation, including bonus files, requires 9 MB of fixed disk space. Supports any devices supported by Windows itself, including voice input and output, digitizers, printers, plotters, and high-resolution displays.
Vendor: Isicad, Inc., 1920 West Corporate Way, P. O. Box 61022, Anaheim, Calif. 92803-6122, 714/533-8910, fax 714/533-8642. $1,995 includes unlimited telephone (toll-free), fax or CompuServe support. Competitive upgrades are $395; includes support.
Manuals: Good. There are two large paperbacks. They contain an architect-oriented tutorial, guide to 3-D, guide to accessing external databases (for creating bills of materials and so forth), and a reference to the "BASIC-like" macro language.
Ease-of-use: Good. All the Windows bells and whistles are included, it seems. Despite that, Cadvance is reasonably nimble. As with any feature-laden Windows software, we recommend plenty of memory and a fast computer. Our standard review computer, a 486-equipped machine with 16 MB of RAM



You can't view a symbol from the extensive library before placing it, but you can scale or rotate it. Symbols can be 2-D or 3-D. Note horizontal tool bar near top of screen.

Drafix Windows CAD 2.10

not keep their resolutions. The translator is licensed from Sirlin Computer; it reads files from AutoCAD 9 through 12, and saves to AutoCAD 11.

There's complete control of the clipboard, too—it picks up objects as a bitmap or Windows metafile (with some vector information), as well as in Cadvance's own 2-D/3-D format. And, OLE links can ride along, too. The 3-D objects can be pasted into a 2-D drawing for quick display and faster printing. You can create macros simply by "recording" a task and saving the result.

All in all, a fine successor to Cadvance 4.0, the DOS version. Even large practices should find it worthy. It is perhaps more production-oriented than "creative" oriented—in the sense that you will probably want to work mainly in 2-D rather than to move 3-D blocks around. But once the work is done, you will find it easier than with most—if not all—DOS software to move your design into an on-screen or printed presentation.
Circle number **303**

running at 33 MHz, ran Cadvance easily. Such a computer with large fixed disk and 1024x768 non-interlaced color monitor should cost under $4,000 these days. A 16 MHz 386SX with 4 MB (2 MB available to Windows) and a coprocessor (about $1,200 at current prices), was sluggish. But freeing up another 4 MB improved speed dramatically.
Error-trapping: Good. There's an "undraw" function that deletes objects in the order you draw them. But beware: Bad office practices can get you into trouble because the program is so flexible, you can edit a drawing while it is being referenced by someone else in a network, for instance. The cure is to frequently update ("regen") files you are referencing, if you believe someone else is changing them. You can also set the system to update linked files manually—and then forget to do so. The macro system is quite stable and error-aware; you can't read and write to the same macro, for instance.

Be careful about adding attributes all at once, through a database. When you do, a dialog box opens; once you choose the database to link, you can't change it. ■

This full-featured 2-D package has a long pedigree and features that make it a good choice for production drafting. Foresight Resources was the first software firm into the Windows CAD market, in 1989. This version, released this fall, supports Windows 3.1 TrueType fonts, has a better help system, more speed, and more flexible printing options.

Despite its low price, Windows CAD 2.10 includes sophisticated symbols handling (you can view symbols before they are brought up), associative dimensioning, a good internal database, and good file translation (although AutoCAD is via imperfect DXF only).

The clipboard allows export as Windows metafiles as well as bitmaps. There's import and export of files from Drafix CAD Ultra and HPGL format, as well as IGES.

There's no OLE, but the package's attribute files can be exported to Excel spreadsheets, database software (as comma separated variables) or as fixed-field-length ASCII.

The Windows pulldown menus are supplemented with a toolbar and user-defined tool buttons (the equivalent of a custom tool bar). Much of the "dialog" that might otherwise take place in dialog boxes can take place in a horizontal "edit bar" above the window.

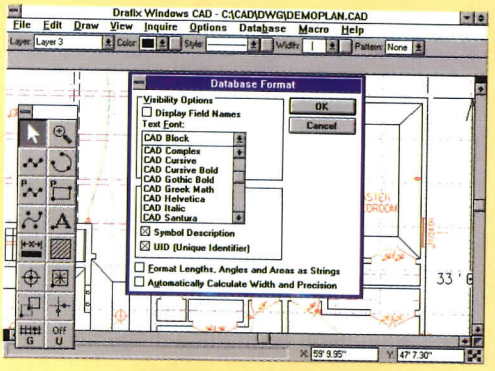
The full Windows viewing flexibility is not implemented; you can split the screen into two or four panes, but you can't overlap views.

Note that Windows CAD 2.1 appeared at the same time as the DOS Drafix CAD Ultra 4.2. Some Ultra add-ons (the landscape symbols library or architectural symbols libraries, at $150 each) are compatible with both packages. But raster-to-vector Drafix CAD Overlay is not.

Consider Drafix Windows CAD when you do not expect to be exchanging files often with other CAD packages, and where OLE and 3-D are not required. It's about the best Windows package around for older computers, too. Given the company's track record, expect continuing improvements over time.
Circle number **304**

Drafix Windows summary

Equipment required: IBM PC or compatible with 80286 CPU or higher (at least 80386 recommended), 2 MB of Windows memory (either in RAM or in a disk swap file; 4 MB of RAM recommended), Windows 3.0 or higher running in standard or enhanced mode (Windows 3.1 in enhanced mode strongly preferred). Math coprocessor strongly recommended.
Vendor: Foresight Resources Corp., 10725 Ambassador Dr., Kansas City, Mo. 64153. 816/891-1040; fax 816/891-8018. $695; Upgrade from Drafix CAD Ultra 3.0 and later is $145; from version 2.0 of Windows version, $45.
Manuals: One excellent 568-page paperback with tutorial and reference section. Command summary sheet and short summary printed on mouse pad.
Ease-of-use: Good. You can set startup preferences in an INI file; if you want more than one set of preferences, you enter them into a file with no drawing in it, and use the empty file as a template. Closing a dialog box after changing an option usually forces a time-consuming drawing regeneration.
Error-trapping: Good. There's an undo. ■



The internal database works fine; it is flexible in format, and can export files to other software—but not dynamically—as you change the drawing or change the external file.

Following the Sun

In the land of the midnight sun, Finnish architects take natural light seriously.

Valokuvaamo Jussy Tianinen

An angled skylight animates the interior of the new Rovaniemi airport.

Clifford A. Pearson

A glass-enclosed atrium creates an indoor street at Technocent in Oulu.

Clifford A. Pearson

New phone booths in Helsinki are Modern pavilions set in the urban landscape.

The First Law of Eco-Dynamics might read something like this: The scarcer a resource, the more fiercely it is coveted. So it is not surprising to find pools of water and bubbling fountains at the heart of hot-climate landmarks such as the Alhambra in Granada, Spain, and the work of Luis Barragán in Mexico. Nor is it strange that the Finns, whose territory extends into the Arctic Circle, worship the sun.

What *is* remarkable is the sophisticated way in which Finnish architects have been able to manipulate sunlight within a Modernist esthetic, marrying the natural to the artificial. A recent tour of Finland reminded me how much designers in sun-rich countries such as the United States take this resource for granted.

A master shows the way

As with other aspects of Finnish architecture, Alvar Aalto set an example for later generations, with his uncanny ability to exploit natural light as a powerful design element. From his tuberculosis sanatorium in Paimio, built between 1929 and 1933, to his Säynätsalo town hall in the early 1950s, Aalto showed how versatile an element sunlight could be—slashing through deeply set ribbons of glazing, cascading through clerestory windows, or washing over interior surfaces.

One of the more imaginative uses of light in recent Scandinavian architecture is at the new airport in Rovaniemi, the northern-most city in Finland, where the sun disappears for months each winter and, according to tourist brochures, Santa Claus resides. Designed by Mikko Heikkinen and Markku Komonen, the terminal is a sharply detailed structure whose roof and entry canopy are suspended from cable towers. Sweeping through the roof is a dramatic skylight that marks the location of the Arctic Circle. As it slices through the rectangular terminal at an angle determined by the earth's latitude and longitude—rather than the building's grid—the skylight serves as a welcome intrusion that adds a strong sense of movement to what could have been a static space. Not just a symbolic gesture to polar geography, the skylight helps bring the building's interior to life.

Heikkinen and Komonen are two architects to watch. Although their Finnish Science Center just outside Helsinki is a somewhat awkward set of Gehryesque forms, their designs for the Rovaniemi airport, as well as a school for rescue operations in Kuopio and the new Finnish embassy in Washington (now under construction) show a bold attempt to combine clean Modern forms and the latest technology with a sensitivity to the natural setting.

Light that softens edges

A similar set of concerns marks the work of Juha Leiviska, but with different results. While Leiviska shares with Heikkinen and Komonen an interest in pulling the outdoors into the center of his work, his buildings use natural light to soften edges and impart an almost spiritual quality. His Männistö church, now nearing completion, promises to be an enticing place for spiritual contemplation—with sunlight filtering through tall, narrow openings and creeping inside in an indirect, mystical way. His design for the new German embassy, now being built in Helsinki, takes full advantage of its irregular site, zigzagging to capture the best views and light.

In the city of Oulu, about three-quarters of the way between Helsinki and the Arctic Circle, architects Tuomo and Heli Juola have been designing all-steel buildings that belie the material's reputation as cold and impersonal. A recent structure, the three-story research and development building called

Vieux Montréal

A long-awaited exhibit and book on the planning and design of Montreal, created by Phyllis Lambert, are lessons in urban scholarship not only for Montreal but for other cities. They achieve that status through intensive research into power and politics as generators of urban form.

Lambert is heir to a distillery fortune, sponsor of the Seagram Building in New York, and founder of the Canadian Centre for Architecture in Montreal. Her exhibit, "Opening the Gates of 18th Century Montreal," the result of 15 years of research, recently closed at the C. C. A., but will continue to have an impact on the architectural profession through its catalog, distributed by The MIT Press (1993, 93 pages, $16). By means of some 400 objects—letters, maps, portraits, drawings, deeds, models, military orders, computer simulations, specifications for fortifications—the exhibit uncovered the sources that shaped today's Montreal.

Lambert and her co-curator/co-author, Alan Stewart, pay due heed to such physical formmakers as geography, the early placement of gates and ramparts, and prevailing architectural styles in the past. But they go beyond these to suggest and document ways in which Montreal was also shaped by forgotten patterns of land proprietorship, by national trade routes, by decisions about troop locations, and much else. They distinguish too, the laws, customs, and mind-sets of France from those of Britain, which conquered Montreal in 1760. They argue that the English overlaid a new, loose, picturesque city—a proto-Romantic, 18th-century ideal—onto a rule-bound, hierarchical, rigidly aligned French one.

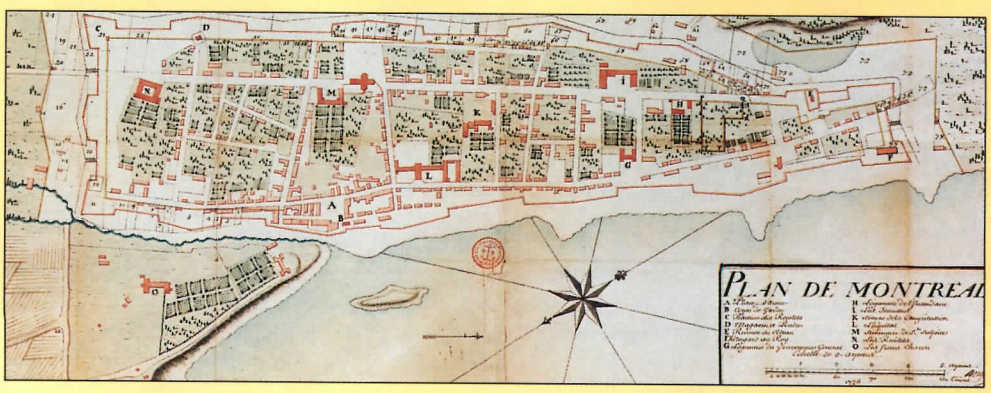
Lambert scavenged the archives of Canada and France and uncovered an astonishing lode of rare documents. At one level, the exhibit can be enjoyed simply as a map-lover's paradise, an Eden of exquisitely hand-colored cartography.

The city in 3-D

Less convincing are the computer images. The Center for Landscape Research in Toronto, working off Lambert's database, created three-dimensional images of Montreal at various stages of its early history. Played on TV screens, these include bird's-eye swoops through the simulations, as if the city were being photographed from a helicopter. The images are mildly informative but too diagrammatic and crude to mean much. And they're nothing new: the Pentagon has done this kind of thing for years.

An important sideshow to any exhibit at the C. C. A. is the institution's own piece of architecture—its three-year-old building by Peter Rose [RECORD August 1989, pages 57-59]. A national AIA Honor Award winner, it's a brilliant work, handsomely detailed, yet nevertheless troubling because it's a villa in the city, aloofly withdrawn behind a barrier of lawns and fences from the very urban streetscape it celebrates.

Troubling too is the sculpture garden by Melvin Charney, a plaza filled with something very like tombstones, sculpted as abstract representations of local buildings or famous ones—virtually a reliquary of architecture. Is the Centre telling us that architecture is dead? That it's now something merely to be studied and museumized?
Robert Campbell



Technocent, combines grey and white steel panels with a rusting Cor-Ten base and a steel space-frame atrium. By varying the color and orientation of the steel panels and sandwiching two office wings on either side of the sun-filled atrium, the architects give the building a sense of playfulness and warmth.

While the office atrium has become something of an architectural cliché, the Juolas are able to make it come alive. Brick paving, careful detailing, and interior windows give the atrium the feeling of an enclosed street—a place where office workers can enjoy lunch or casual conversation.

And like so many other Finnish architects, the Juolas skillfully manipulate sunlight—letting it flood into the atrium, but filtering it through perforated steel bent around stairwells and reducing its strength with suspended metal brise-soleils wrapped around the exterior.

Opening buildings to their settings

Implied in any discussion of light and architecture is the issue of transparency. While the Finns appreciate enclosed, protected spaces—especially their beloved saunas [RECORD, April 1992, pages 38-39]—they also seem to demand an architecture that opens up to its surroundings. Summer cottages set in the woods or around any body of water often feature at least one wall of glass that breaks down (at least visually) the separation between indoors and out.

An original example of rooms with a view are Helsinki's new telephone booths, designed by architect Juhani Pallasmaa. Modest additions to the urban landscape, the freestanding structures are carefully detailed glass pavilions that seem to hover just above the ground. With glass on four sides and slender metal framing, the booths are perhaps the ultimate in transparent enclosures.

Buildings often express different aspects of their personality, depending on the time of day and the progress of the earth around the sun. At the end of a temperate spring, Finnish architecture impresses with its ability to dance with light. *Clifford A. Pearson*

Beyond De Stijl

RSA/Centraal Museum Utrecht photos

Rietveld explored the idea of "core houses" designed around central stairwells.

Mention Gerrit Thomas Rietveld to a roomful of knowledgeable architects and everyone will have the same two images in mind: the Red-Blue Chair of 1918 and the cubist Rietveld-Schröder House of 1924. Like his colleagues J. J. P. Oud, Theo Van Doesburg, and Piet Mondrian, Rietveld became synonymous with De Stijl, the short-lived but influential movement in Dutch art and architecture in the 1920s.

A new exhibit, organized by the Central Museum in Rietveld's home town of Utrecht and the Rotterdam-based Dutch Architecture Institute, however, asserts that the architect/cabinetmaker's influence continued well beyond the demise of De Stijl. As it turns out, Rietveld, who was born in 1888, maintained an active practice almost until his death in 1964.

A comprehensive inventory

The exhibit, which will spend the summer at the Centre Pompidou in Paris and then probably go to New York, is the first major retrospective on Rietveld's work since 1958 (marking his 70th birthday) and the first to travel outside Holland. The real event, however, is publication of the catalog, the first complete inventory of his work. It contains 681 entries, including not only furniture and architecture, but also typography, urban planning schemes, and experiments with colors and materials.

One of the exhibition's tenets is that Rietveld's furniture and his architecture were tightly linked. He himself stated that the house he built for Truus Schröder was derived from the Red-Blue Chair and vice versa. "As an architect, you have to do a chair every now and then to see how far along you are," stated Rietveld.

From the 1930s on, both Rietveld's furniture and his buildings bear the mark of his fascination with mass production and standardization. These processes, he felt, would not only bring a modern way of life to the masses, but would also increase people's awareness of space and their surroundings.

To Rietveld, architecture went beyond the prosaic function of providing shelter; it included the demarcation of space. For example, his famous Zigzag Chair of 1932—a synthesis of form, function, and construction—does not enclose space, but rather defines it with its four planes.

While his De Stijl compatriots were known for their dogmatic attitudes to materials and colors—Van Doesburg and Mondrian, for example, fought bitterly over whether diagonal lines could be included in their art—Rietveld was more flexible in his ideas and his work. In fact, just before his death in 1964, he made a speech on receiving an honorary doctorate from the Technical University of Delft and speculated on an architecture of the future—one in which walls of brick and stone would be superseded by hydraulic, thermal, and acoustic innovations. While other De Stijl practitioners insisted on only things "modern," Rietveld felt that traditional materials such as wood and thatch were just as suited to his larger purpose as glass, steel, and concrete.

One of Rietveld's major preoccupations was with the "core house," in which functional spaces such as the kitchen, toilets, and bathrooms (preferably molded as a single piece) were concentrated around the stairwell in the center of the dwelling. He experimented endlessly with the industrial production of furniture. In the years following World War II, he also designed some 20 social housing projects, of which only six were built. Try as he might to design for the masses, Rietveld still found himself designing "one-off" buildings. A few of his post-war projects included the Dutch pavilion at the Venice Bienniale in 1958, a weaving mill in the Dutch town of Bergeyk, the press room in the Unesco building in Paris, a Foucault pendulum in the United Nations headquarters in New York, and the Van Gogh Museum in Amsterdam (completed in 1973, after his death).

In retrospect, Rietveld was ahead of his time; the kind of industrial patrons he hoped to attract were not yet alert to his ideas. In his own time, he was imprisoned in his own legend, shelved as a "spontaneous genius," a gifted tinkerer. With a wry sense of humor, he called himself "a pirate in the building business." This new exhibition and catalog, however, broaden our view of the man and his work. Rietveld now assumes pride of place as an architect and carpenter who wasn't searching for new rules, but for new possibilities. *Tracy Metz*

"Gerrit Rietveld, 1888-1964" is at the Centraal Museum in Utrecht until March 21. It travels to the Centre Pompidou in Paris, where it will be from June 23 to September 27. Although plans are not final, the exhibit is expected to come to New York in late 1993 or early 1994.

A bent laminated-wood chair shows what Rietveld did after De Stijl.

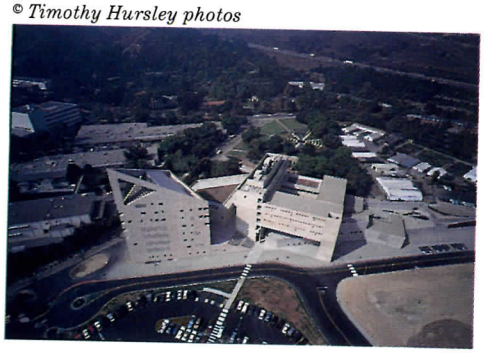
One of the challenges in writing this page, which introduces the design portfolio section, happens in months when there is no common theme to the projects. The late Paul Sachner was able on occasion to find threads that no one else saw until he pointed them out. But mostly, this very variety is what gives the section its character. To use Paul's words from last year's May issue: " . . . when RECORD elects to publish articles [as a design portfolio], it is with the deliberate intent to show how all works of architecture, despite wide variations in budget, usage, and style, somehow respect and even enhance the existing environment." Indeed, no building is too small (or too large, for that matter) to make it into the portfolio (not long ago we published a small church renovation which cost $10,000). This month opens with Antoine Predock's symbolic mixed-use academic building for The California Polytechnic University, Pomona (page 62), followed on page 70 by Europe's tallest building, Frankfurt's Messe Tower by Murphy/Jahn, and Schwartz/Silver's scrupulously detailed library for a small community near Boston (page 78). Starting on page 84, Santiago Calatrava brings off a technical tour de force with his soaring lobby for BCE Place, Toronto and, by way of contrast, James Cutler's Bloedel Education Center, near Seattle (page 92), is a loving memorial to Prentice Bloedel's wife, who is buried in the grounds. Building Types Study 702: Health-Care Facilities (page 98) reflects two trends—the exodus from inpatient to outpatient facilities; and separation of treatment from nontreatment functions—all designed to control the outrageous cost of medical care. *S. A. K.*

Magic Marker

A new classroom and administration building in Pomona, California is a symbolic gate for a growth-minded Polytechnic.

Classroom/Laboratory/
Administration Building
The California Polytechnic University
Pomona, California
Antoine Predock Architect

© *Timothy Hursley photos*



Seen from the freeway, the CLA building is an artificial mountain whose tip is carved out as a "sky viewing room" (currently unfinished) from which students and faculty can watch airplanes as they approach the Los Angeles airport in the distance. From the vast parking lot in front, the building rises like a modern academic castle.

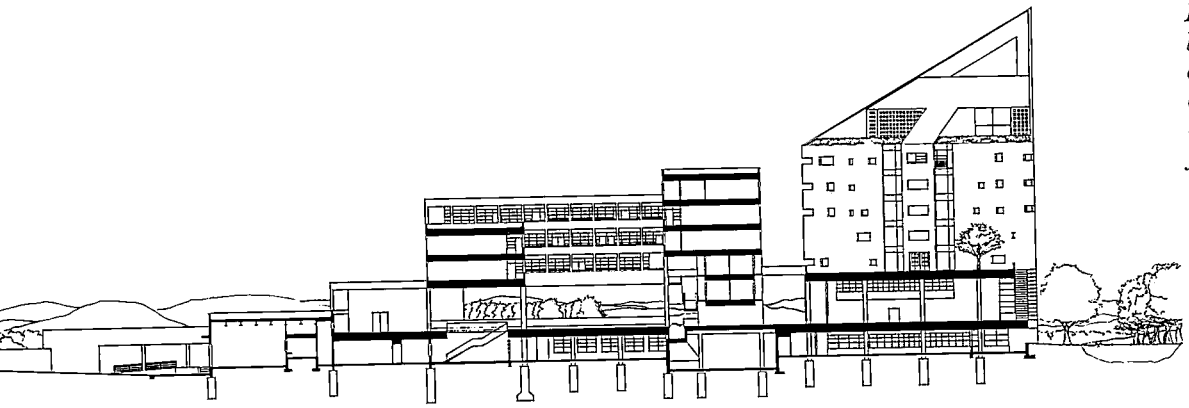
Most people don't know much about the California Polytechnic University at Pomona. "We've been an oasis in Los Angeles, but an unknown one. Those days are over now, thanks to this building," says associate vice president Chris Christofferson. The building that is putting this former agricultural college on the map is the Classroom/Laboratory/Administration (CLA) building, a 183,000-square-foot hybrid designed by Albuquerque-based architect Antoine Predock. The building's sheer size—it's the largest on campus—would make it noteworthy. What's more, Predock and his client intended the structure to be more than just a utilitarian box. "We wanted a building that was a symbol of our transformation from an 'ag school' into a true polytechnic—and we got it. This building stands for a new age," explains Dean Marvin Malecha of the University's School of Environmental Design.

It was Malecha who initiated the idea of holding a competition for the building. He convinced then-president Hugh O. La Bounty that Pomona needed a "gateway" instead of just another piece added to the jumbled and decentralized campus that had grown on this former ranch 40 miles east of downtown Los Angeles. Predock won the competition (beating out The Architects Collaborative and Ricardo Legoretta) because, as Christofferson puts it, "he took what we said about portals and markers figuratively, not literally." Predock responded to the site, located at the edge of a parking lot and the foot of a ridge, by creating a tower that can be seen from the three freeways that intersect at the campus' edge. Having made the building visible, he then split the program's major requirements between two forms. A tower rises from a base of student services to administrative offices, while a donut-shaped building next to it houses the classrooms and computer laboratories.

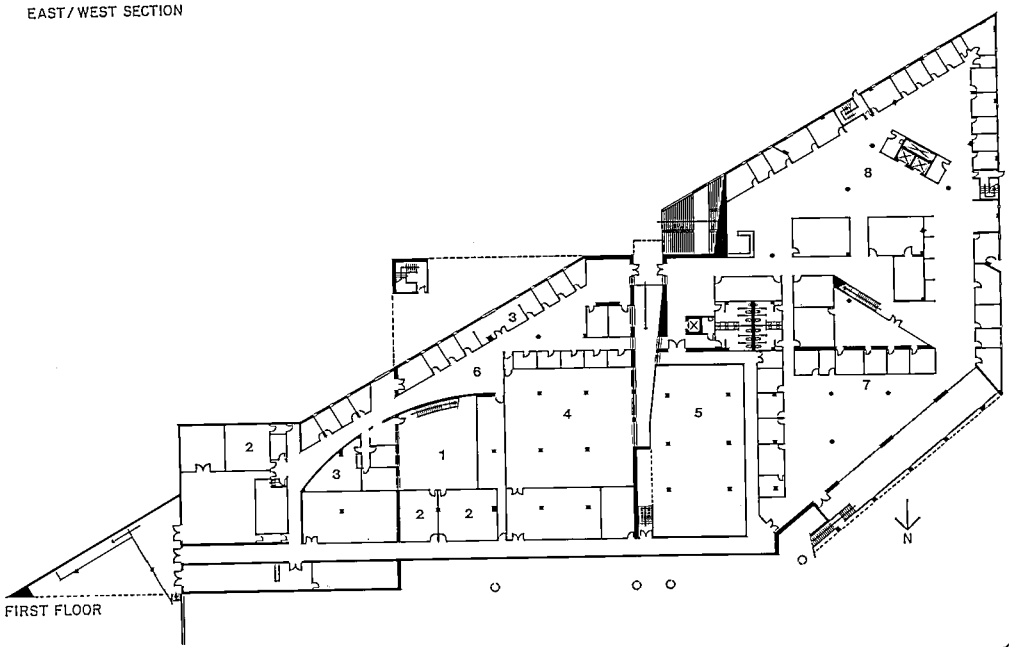
"I did not want to fragment the building for the sake of fragmentation. I wanted it to come apart organically into its natural components," Predock explains of the composition. "The whole building is a threshold: between the desert to the east and the Mediterranean quality of L. A. to the west, between the valley and the university, between the parking and the hills, between the enclosed garden behind the site and the expansive view down the slope. That sense of boundary is repeated at a smaller scale to distinguish functional pieces." The result is a layering of doorways, paths, outdoor courtyards, rooftop gardens, bridges, balconies, and "paseos" (walkways) that mimic paths once existing on the site.

What ties the building together "is a concern for the landscape," in Predock's words. The overall organization echoes the silhouette of the nearby San Bernadino Mountains, while the plaza offers framed views of the valley from underneath the classroom building. Structurally, the triangular shape of the tower requires fewer moment connections to strengthen it against earthquakes, while the classroom building is supported in part by a 100-foot Vierendeel truss. Large windows are screened by colonnades, leaving only small view slots facing direct sun. The open classroom building allows for natural cross-ventilation. It incorporates stepped lighting controls and motion sensors that turn lights off when a room is unoccupied.

Seen from across the campus or the valley, the tower rises up like a machined canyon wall set against the spiraling stack of classrooms. Up close, it's a progression of geometrically posed blocks that dance around you as you find your way through the building. It is monumental, purposely complicated, and hard to ignore. "People either love it or hate it," admits Christofferson; "There's no in between. And that is exactly what we wanted." *Aaron Betsky*

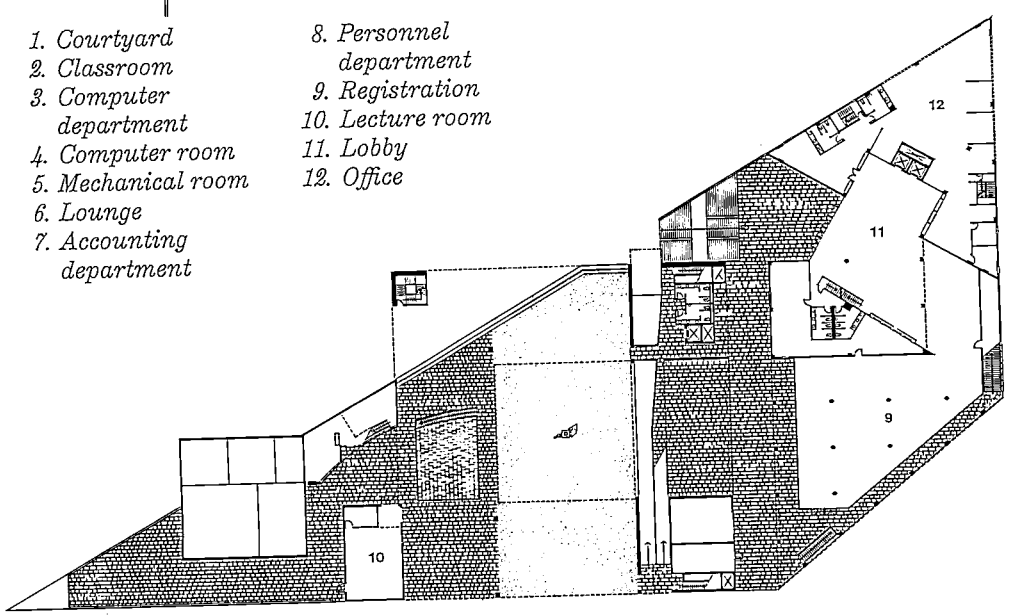


EAST/WEST SECTION



FIRST FLOOR

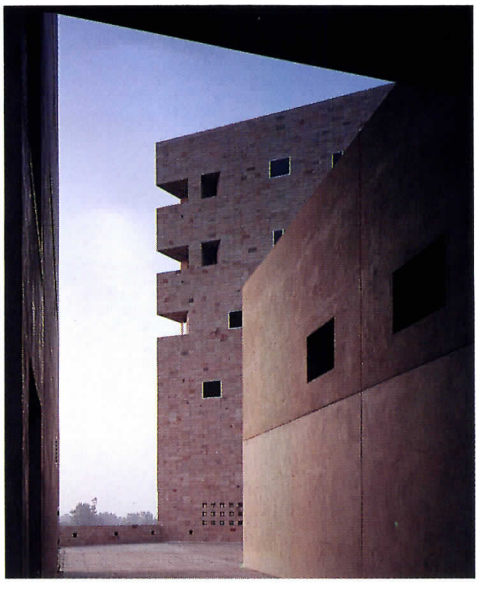
1. *Courtyard*
2. *Classroom*
3. *Computer department*
4. *Computer room*
5. *Mechanical room*
6. *Lounge*
7. *Accounting department*
8. *Personnel department*
9. *Registration*
10. *Lecture room*
11. *Lobby*
12. *Office*



SECOND FLOOR

Plans reveal the underlying logic of the CLA Building. Predock filled out the triangular site and then carved out courtyards. Computers and equipment take up much of the concrete base, except for a financial-aid area in the northwest corner, where students can wait either in a two-story space or by an existing duck pond outside. Most student services are located on the ceremonial plinth (bottom), where a courtyard provides room for outdoor queuing. A second courtyard, separated from the reddish sandstone administration building by a "paseo," is the base for the classroom building, which is clad in tinted-glass fiber-reinforced concrete. Here, a large lecture hall seems to hold up one corner of the building (opposite top). A lower courtyard provides entry to the base. Additional courtyards on the roof of the administration building and the sixth floor of the classroom building overlook the campus.

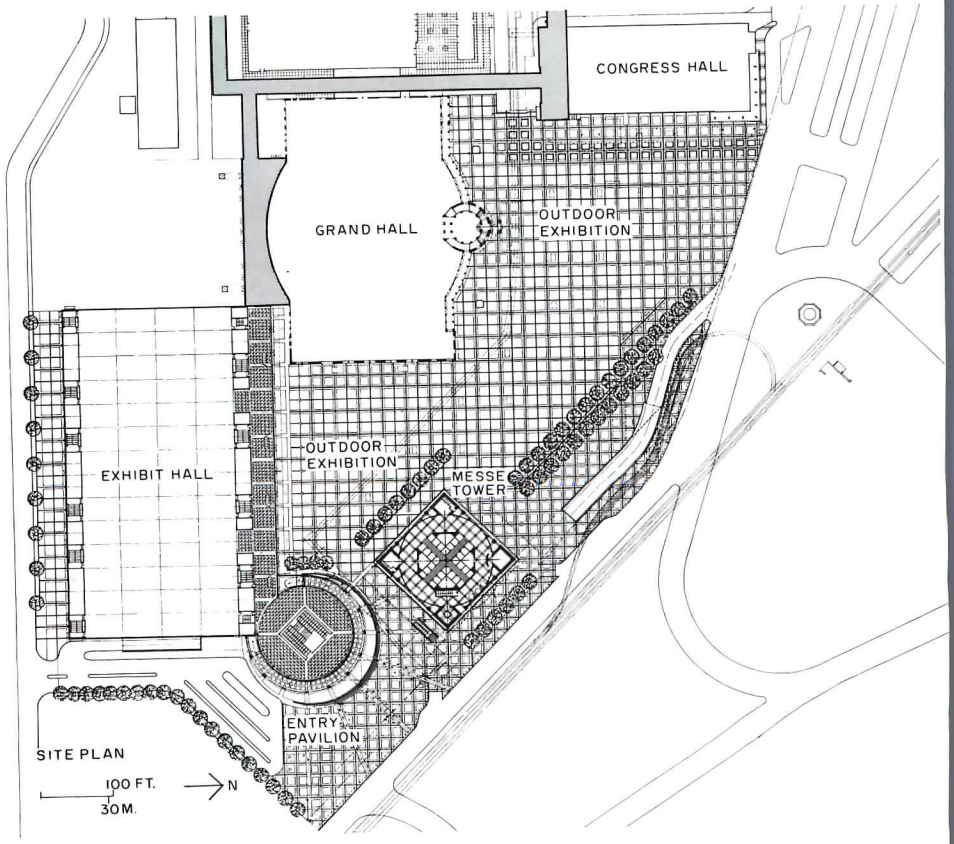
By opening up the structure, Predock allowed both paths and cooling breezes to criss-cross the building. Predock's interest in movement and rhythm extends to the placement of different-sized windows, with passive solar-heating in mind. Clerestory slots light computer laboratories, while well-placed small windows force workers to temporarily "leave the computer to admire the view," according to Predock. Larger windows mainly face interior courtyards, where they are shaded by arcades. "This is one of the most energy-efficient buildings in the state, and all of this at $110 a square foot," says California State University architect Will Nighswonger.



Budget cuts during construction limited interior finishes. The "inner wrapper" of the classroom building is composition board and extruded aluminum window walls (middle), while a "bustle" of offices is corrugated metal (top). "We rolled the dice as far as costs," says Christofferson, admitting that the $25-million building stretched their financial abilities, "but how can you put a price on that valley view underneath the clear span?"

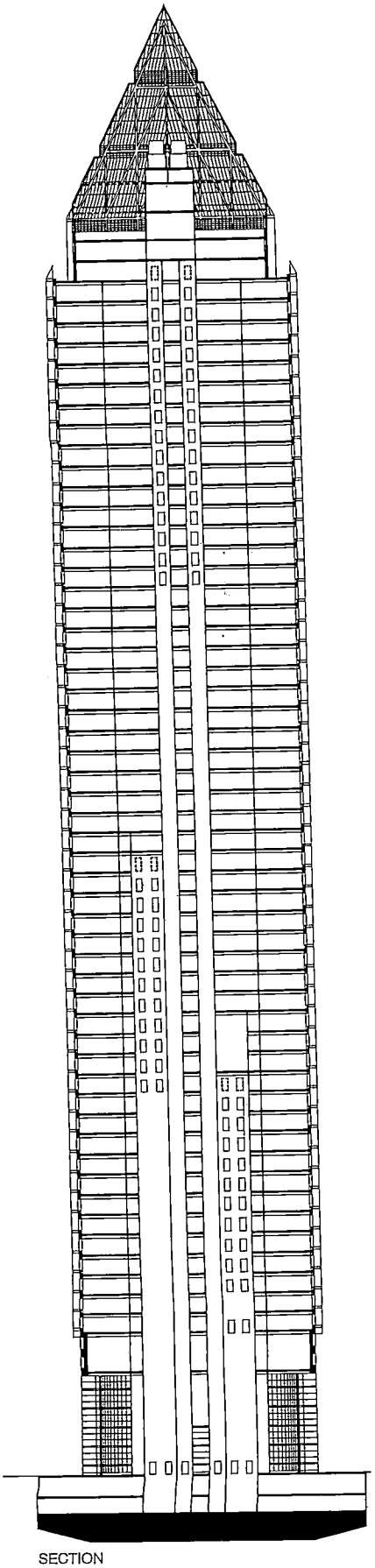
Credits

Classroom/Laboratory/ Administration Building
The California Polytechnic University, Pomona, California
Owner: *The California State University—Will Nighswonger, State University Architect; George Owen, Construction Manager*
Architect: *Antoine Predock Architect—Antoine Predock, principal-in-charge; Cameron Erdmann and W. Anthony Evanko, project architects; John Bass and Phyllis Cece, job captains; Curtis Scharfenaker, project manager; Geoffrey Beebe, Jon Anderson, Kevin Spence, Jean Pike, Jim Visscher, Hadrian Predock, Dorothy Pierson, Eileen Devereaux, Keith Robertson, Daniel Andrade, Geoffrey Adams, Rebecca Riden, Samuel Sterling, Chris Calott, David Nelson, Rebecca Ingram, John Fleming, Mischa Farrell, Paul Gonzales, Mark Donahue, Brett Oaks, Christopher Stacecki, Jennifer Jardine, Geoffrey Adams, Jeffrey Wren, Jorge Burbano, Robb Romero, and Douglas Friend, team*
Consulting Architect: *Gensler & Associates*
Engineers: *Robin E. Parke Associates (structural); Timmerman Evans Schrieber (mechanical/electrical/ plumbing); Chavez Grieves Consulting (civil); William C. Kelley (specifications)*
Contractor: *HuntCor, Inc.*
Manufacturer Sources:
See Contents page

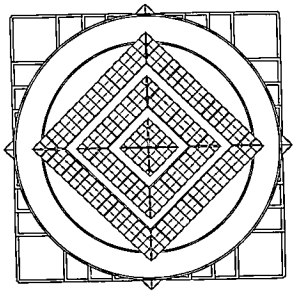

CONGRESS HALL
GRAND HALL
OUTDOOR EXHIBITION
EXHIBIT HALL
OUTDOOR EXHIBITION
MESSE TOWER
ENTRY PAVILION
SITE PLAN
100 FT.
30M.
N

The landmarked Festhalle (below), built by Von Thiersch in 1909 and the oldest building on the fairgrounds, is decorated with the red Main sandstone traditionally used for Frankfurt's representative buildings. With an eye to modern-day corrosives, Murphy/Jahn chose a more resistant but contextual material: flamed and honed red granite. The triple-deck pyramid (top right) capping the Messeturm, its outlines etched in light at night, houses air-conditioning installations. The structure brings the tower up to 845 feet, making it Europe's tallest office building, particularly significant to Jahn, for whom it represents his return as prodigal son to his native country.

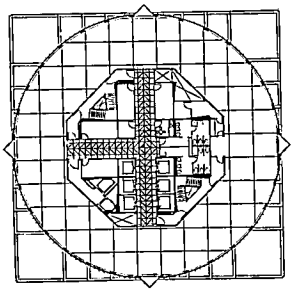
In the glass circle circumscribing the lobby, the tower's main entrance (bottom right) is announced by a canopy of butted glass resting on steel supports, an ever-so-slightly Art Deco touch. For security reasons the Deutsches Bundesbank has exclusive access to a separate entrance and elevators.



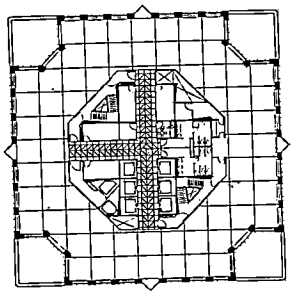
SECTION



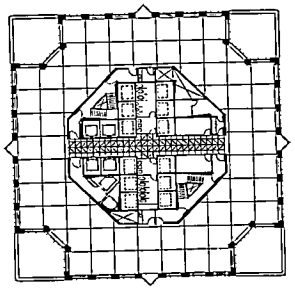
ROOF PLAN



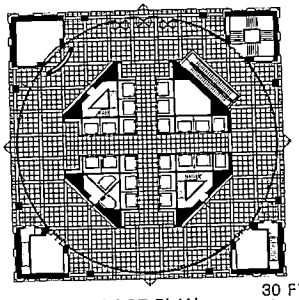
HIGH-RISE CYLINDER PLAN



HIGH-RISE PLAN



LOW-RISE PLAN

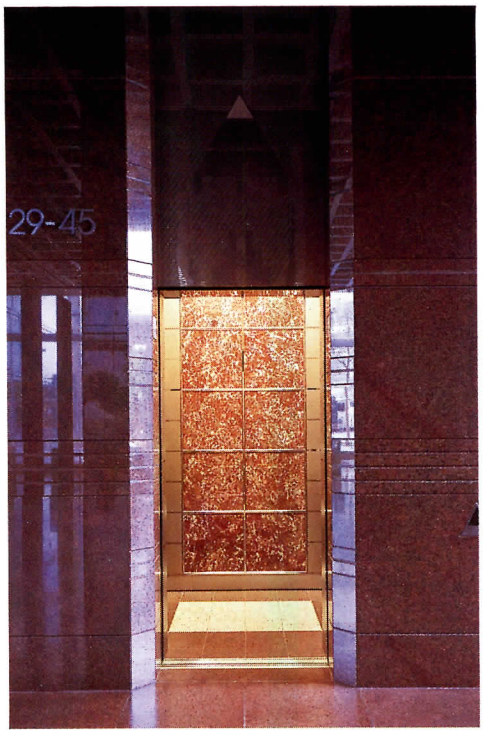


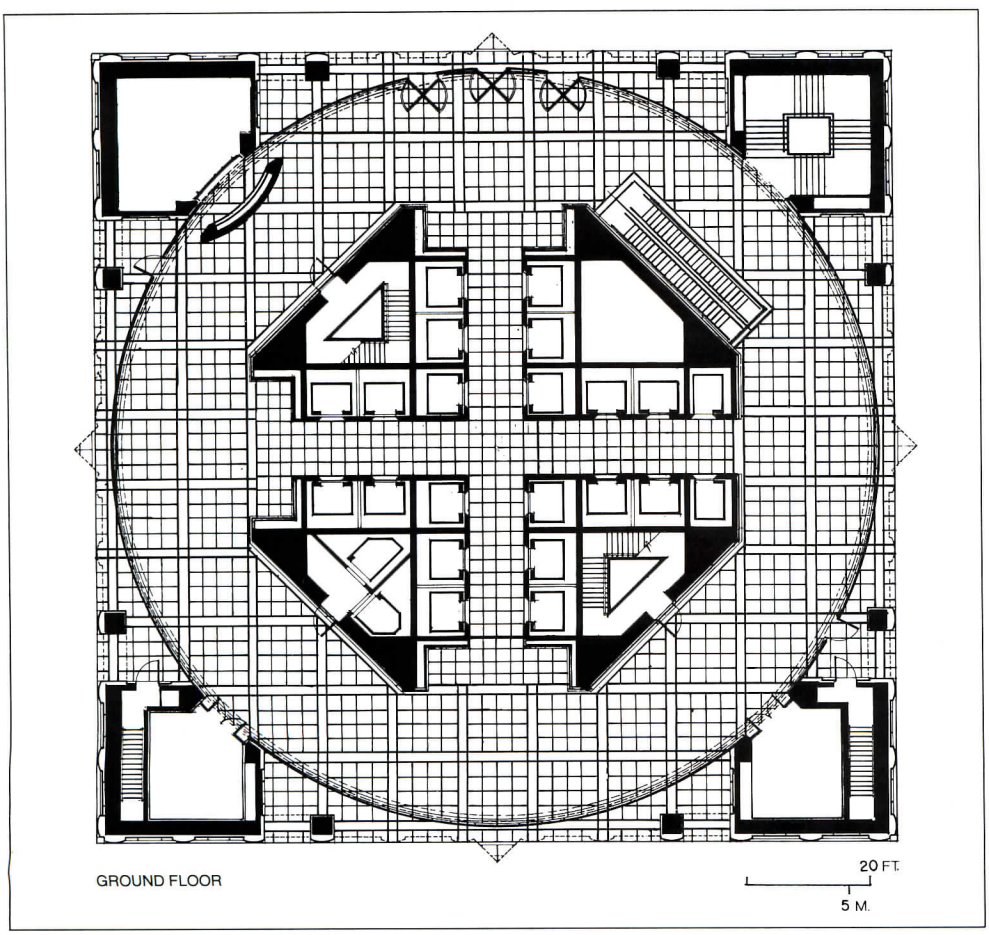
GROUND FLOOR PLAN

30 FT.
10 M.

The octagonal core accommodates 20 elevators serving four different office levels, plus two each for freight and the tenth-floor restaurant. The cylinder, sprouting from flat stepped gables on four sides, rests on a larger square base. Two underground levels provide 900 parking slots for the tower's tenants.

Cross sections (from top to bottom): the pyramid (a shape recurring in the roof of the entrance pavilion and even in the tower's elevators); the upper floors of the cylinder; the middle and lower zones; and the ground floor with its circular glazed lobby. The cladding, convex strips of polished red granite evoking pilasters, projects a sense of solidity at the base, while the aluminum strips add a Deco touch. The rest of the tower is sheathed in panels and strips of honed and flamed red granite, mounted in aluminum frames and secured to the concrete structure as prefab panels.





Four banks of elevators (top), each providing access to a different section of the tower, form an octagon in its core. The aisles between them, and the clear glazing of the round lobby, bring daylight into the heart of the ground floor and make for unhindered visual contact with the surroundings. Ground floor plan (below): the shaft, with offices arranged around the perimeter of the elevator core, penetrates a square base. The corners, discreetly screened from public scrutiny by ceramic-frit panes, accommodate building security, emergency exits, lobby maintenance, and storage. The lobby itself, paved in a bold geometrical pattern of mirror-polished red and white granite and enclosed by a circle of butted glass panels, is entirely empty, except for the reception desk, the burnished steel elevators and stairs, and an escalator providing access to the underground parking.

Credits

Messe Tower
Frankfurt, Germany
Developer: *TishmanSpeyer Properties*
Architect: *Murphy/Jahn—Helmut Jahn, Rainer Schildknecht, Raimund Schoeck, Lothar Pascher, Sam Scaccia, Steven Cook, Dieter Zabel, Mark Frisch, Stephen Kern, Steven Nilles, project team*
Engineers: *Dr. Ing. Fritz Noetzold (structural); Brendel Ingenieure (mechanical, plumbing, and fire protection); Ebener & Partner (electrical).*
Consultants to TishmanSpeyer: *Office of Irwin Cantor; Jaros Baum & Bolles.*
Consultants: *Dipl. Ing. Walther Pieckert (wind analysis); Rowan, Williams, Davies and Irwin, Inc.; Jaros Baum & Bolles (vertical transportation)*

Frame for Reference

A library/senior center offered Schwartz/Silver Architects new fields of expression for traditional wood-frame construction.

Hanson Library and Senior Center
Hanson, Massachusetts
Schwartz/Silver Architects

A small town between Boston and Cape Cod, Hanson has little in the way of civic architecture. Blink on your way through the town of 8,500 and you'll miss the Citgo station and convenience store. To rectify this situation, Hanson hired Schwartz/Silver Architects to design a library/senior center that would contribute to the public realm. Because he lives nearby, principal-in-charge Robert Miklos remembered the town's history as a popular resort in the 1920s and the legacy of summer camps built at that time. "They're simple timber buildings with wrap-around porches, octagonal projections, and trees for columns," says Miklos.

Like the old camp structures, the new 12,000-square-foot library/senior center establishes an identity based on its straightforward stick construction. "This is a blue-collar town," says Miklos, "and we felt this building should be unpretentious, modest." The result is a low-slung brick-and-wood building with a casual Arts-and-Crafts feeling.

Although combining a library with a senior center may not be the most common mix of uses, it brought support from two different constituencies that don't always agree on how town funds should be spent. In the process, it re-established a link between elders and learning that most traditional societies accept as natural. But the architects soon discovered that while seniors and children could certainly contribute to each other's well-being, they also had separate needs. Schwartz/Silver therefore developed an L-shaped plan in which the senior center is perpendicular to the library and has a more residential character. Linking the two facilities are a common lobby and a shared 1,200-square-foot community room.

A long narrow site with zoning setbacks forced the architects to take a linear approach, stretching the library component eight bays long. Each bay accommodates three stacks of books, which must be separated by at least three feet for wheelchair access. The resulting 14-foot-8-inch bay became the organizing module for the building's hallmark wooden frame, which is fully exposed on the inside. Southern yellow-pine posts eight inches square support 2-by-4 and 2-by-6 beams and rafters. Holding the frame together are field-assembled wooden trusses and slender metal cross wires. The steady rhythm of the handsome frame gives the library interior a strong sense of balance and proportion.

While most libraries place book stacks in the center of the floor and reading areas around the perimeter, Miklos took a different tack. By creating a double-height reading room that forms a kind of nave and placing stacks in single-height aisles on either side, the architect was able to design an efficient plan that reduces mechanical and sprinkler runs in shelf areas. The extra height in the nave is exploited for clerestory windows that flood the reading room with natural light. The design also provides a passive solar benefit in spring and fall: hot air collects up high and then is sent down by paddle fans. In winter, a gas-fired furnace heats the library.

Two special areas—a children's reading room and a historical collection room—were pulled beyond the envelope of the nave. The octagonal children's area recalls the projecting towers of the town's summer camps and serves as a pleasant foil to the building's grid, while the rectangular history room terminates the library's main axis. Inside and out, the architects layered their design—adding simple planes of drywall and a reserved palette of colors to the interiors and an 8-foot-high veneer of brick on the exterior. Overhanging roofs and bands of clerestory windows tie the building to its flat site like a municipal prairie house. *Clifford A. Pearson*

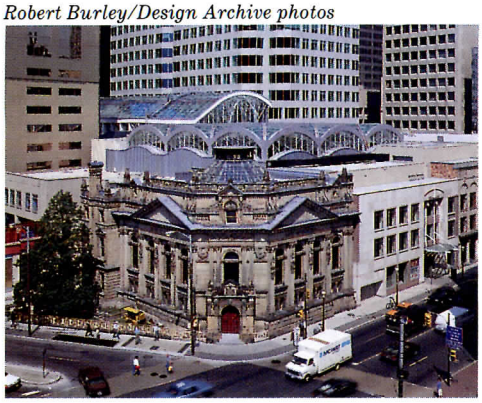
© Richard Mandelkorn photos

The building's wood frame (seen during construction, above) is exposed on the inside (following pages), but asserts itself in a less direct way on the exterior. Clad with brick and wood planking, the wood structure seems to emerge from a masonry base on the outside and become lighter as it rises (opposite). Only 3,500 square feet, the senior center (top, opposite) has a more residential character to it—most apparent in its chimney. The entrance to the building (bottom, opposite) is marked by a covered walkway whose post-and-beam construction recalls Arts-and-Crafts houses.

Steel Connection

Galleria and Heritage Square
BCE Place
Toronto, Ontario
Santiago Calatrava with
Bregman + Hamann Architects

Robert Burley/Design Archive photos



Although only the facades of 12 low-scale brick warehouses were preserved on the northern perimeter, the complex is anchored on the southeast by the 1885 Bank of Montreal, which is being restored as Canada's national hockey museum (top). Projecting forward from its main entrance on Bay Street (middle), the Galleria contrasts sharply with office towers. Inside, facing the entrance (opposite), the Galleria's steel trees touch down atop a historic former bank reassembled on site as office space. BCE's mix of forms is again visible as the Galleria lets out onto artist Scott Burton's Garden Court (bottom).

A jumbled city block of new speculative skyscrapers, infill structures, and 19th-century commercial buildings in downtown Toronto is the setting for Santiago Calatrava's soaring steel Galleria and Heritage Square, the result of a percent-for-art competition and the Spanish architect and engineer's first completed project in North America. The glass-covered atrium bisects BCE Place, a 5.4-acre mixed-use complex, linking building lobbies and creating a retail and restaurant concourse with access to the city's underground transit concourse one flight below. The Galleria fans out for 350 feet from its entry between two new office towers of some 50 stories, presenting an allée of white-painted steel trees held in tension by a two-tiered network of arches and steel latticework and crowned along its entire length by a vault of glass. At midpoint along its south wall, the Galleria leads to another piece of the percent-for-art puzzle, a brick-paved Garden Court designed by the late artist Scott Burton. It then jumps over a landmark building earlier dismantled elsewhere on the site and reassembled here.

The smartly differentiated Galleria and Square, a long, high corridor that is essentially a light court, stand in sharp contrast to the jumpy streetwall of the perimeter facades. The Galleria is intended to be a freestanding structure and each column is tied to the building behind it to provide added strength and permit movement. To form the roof support, columns placed every 45 feet rise and branch twice into twos, first at 22 feet, then at 48 feet above grade. The roof system, a space frame that is also attached to the buildings behind it, contains a lower tier of parabolic arches at 12-foot intervals joined by a lattice of individually angled steel bars to an upper tier of circular arches. These also occur every 12 feet, alternating every six feet with the parabolic arches. Loads are continually transferred in an accelerating tempo that is locked in place, a paradox of movement and stillness. "The roof is autonomous," explains Calatrava. "It's tactical and architectural glue."

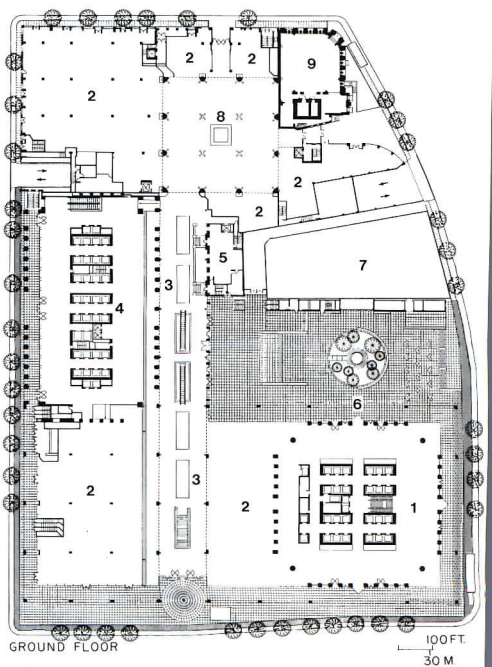
At its east end, the 90-foot-high Galleria drops 25 feet as it passes into the 100-by-100-foot Heritage Square. The transition is signaled by a huge pair of operable steel-and-glass windows suspended in a steel T-frame atop a brick-clad girder. The ceiling of Heritage Square is a series of vaulted squares created by intersecting diagonals. Twelve columns, each branching into two and affixed to surrounding buildings, form the Square's perimeter. Four more columns that rise in four directions are in the plaza, and appear to grow from circular grilles but continue through to the concrete deck. The perimeter columns are welded to brick-clad vertical steel plenums that pump fresh air into the space from grilles located about 20 feet up. (The Galleria's air-circulation system is in adjacent towers.) Sprinklers for both the Galleria and Square are concealed above structural latticework. During design development, the framework was reinforced to comply with strict local guidelines for snow loads.

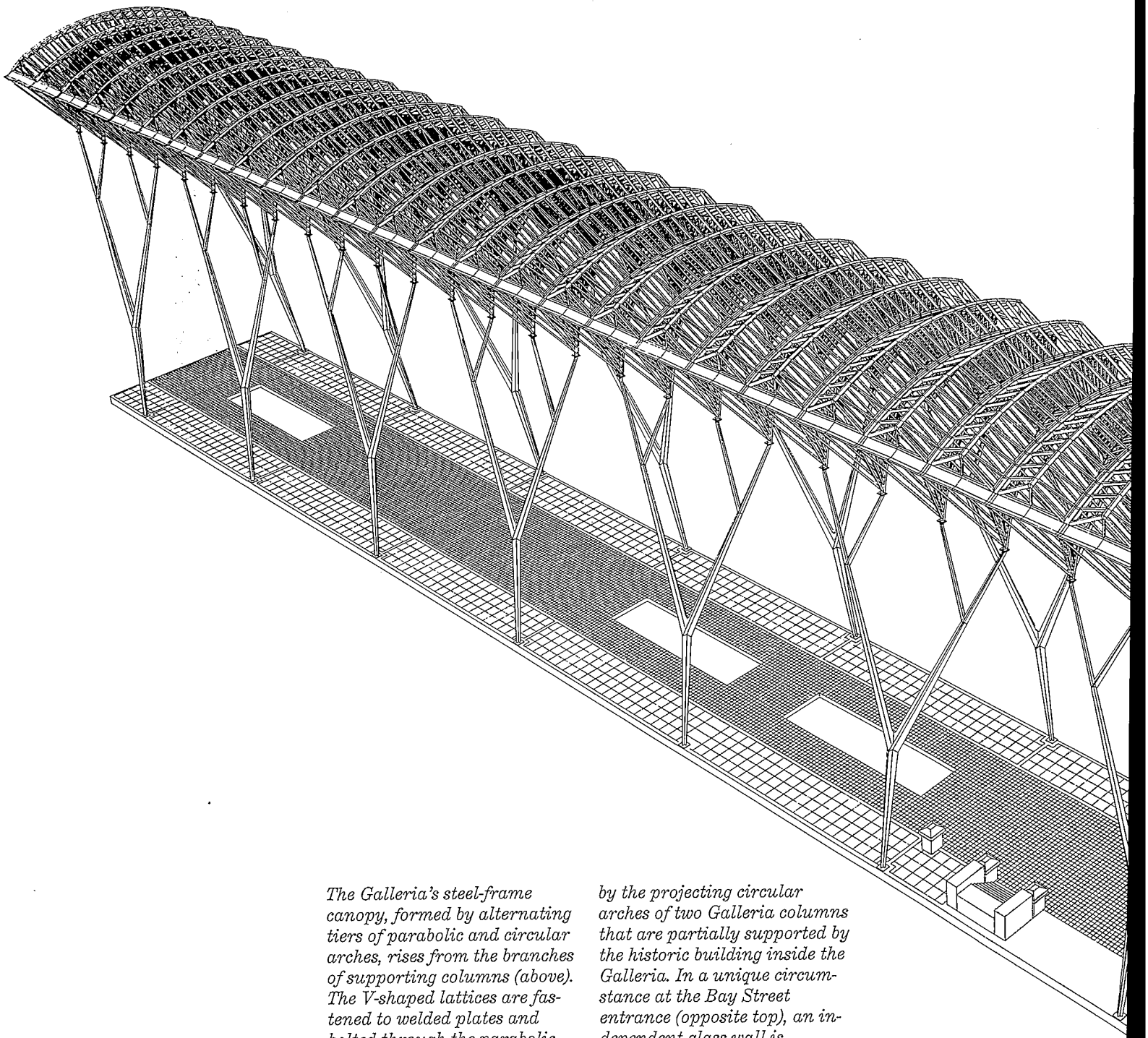
That requirement, along with the difficulty of working with local engineers and contractors unused to Calatrava's intricate designs, posed the greatest challenge. "Their detailing is more industrialized than I'm used to," notes Calatrava, who nonetheless collaborated with the steel fabricator to execute his precise design, avoiding visible nonalignment of intricate parts and pieces.

The clash between overscaled granite-and-glass skyscrapers and the restored 19th-century storefronts and lackluster infill buildings of BCE Place is muted inside the Galleria, which has a controlled presence all its own. "The galleria is an invention of the 19th century," says Calatrava. "It's another kind of city." *Peter Slatin*

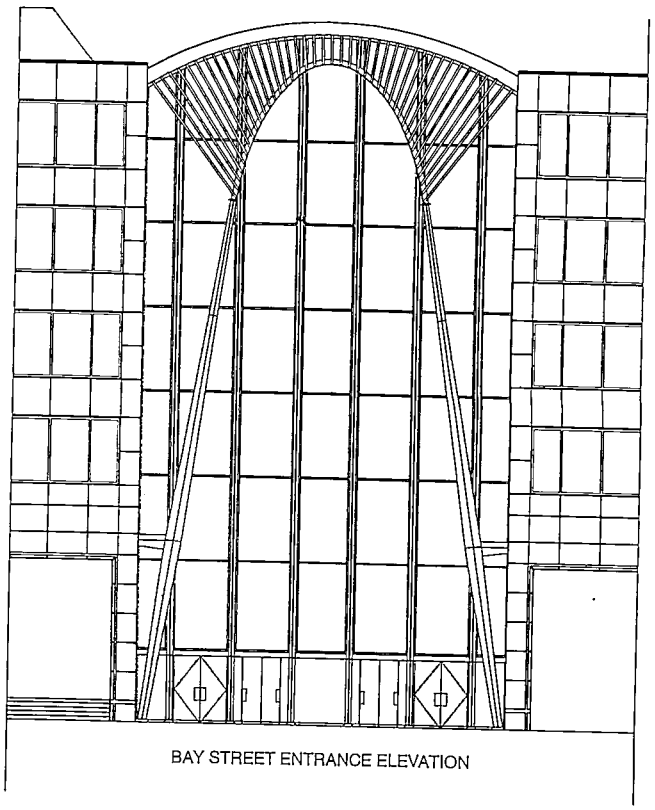
Along with office towers designed by Skidmore, Owings & Merrill and Bregman + Hamann, the complex includes a series of small infill buildings (site plan, below). A stair with a Santiago Calatrava-inspired balustrade designed by Bregman + Hamann leads to Toronto's extensive underground network of subways, offices, and retail spaces (bottom left). A brick-clad steel beam supports a massive steel-and-glass window, which can be used to close off the Galleria (opposite). It adjoins the flexible connection to Heritage Square, whose columns are welded to vertical steel plenums that provide air circulation. At Heritage Square, intersecting diagonals lace together to form vaulted ceiling squares (top left) as opposed to the single-span arches of the Galleria.

1. *Canada Trust tower*
2. *Retail*
3. *Galleria*
4. *Bay Wellington tower*
5. *Historic building*
6. *Garden court*
7. *22 Front Street*
8. *Heritage Square*
9. *Bank of Montreal*

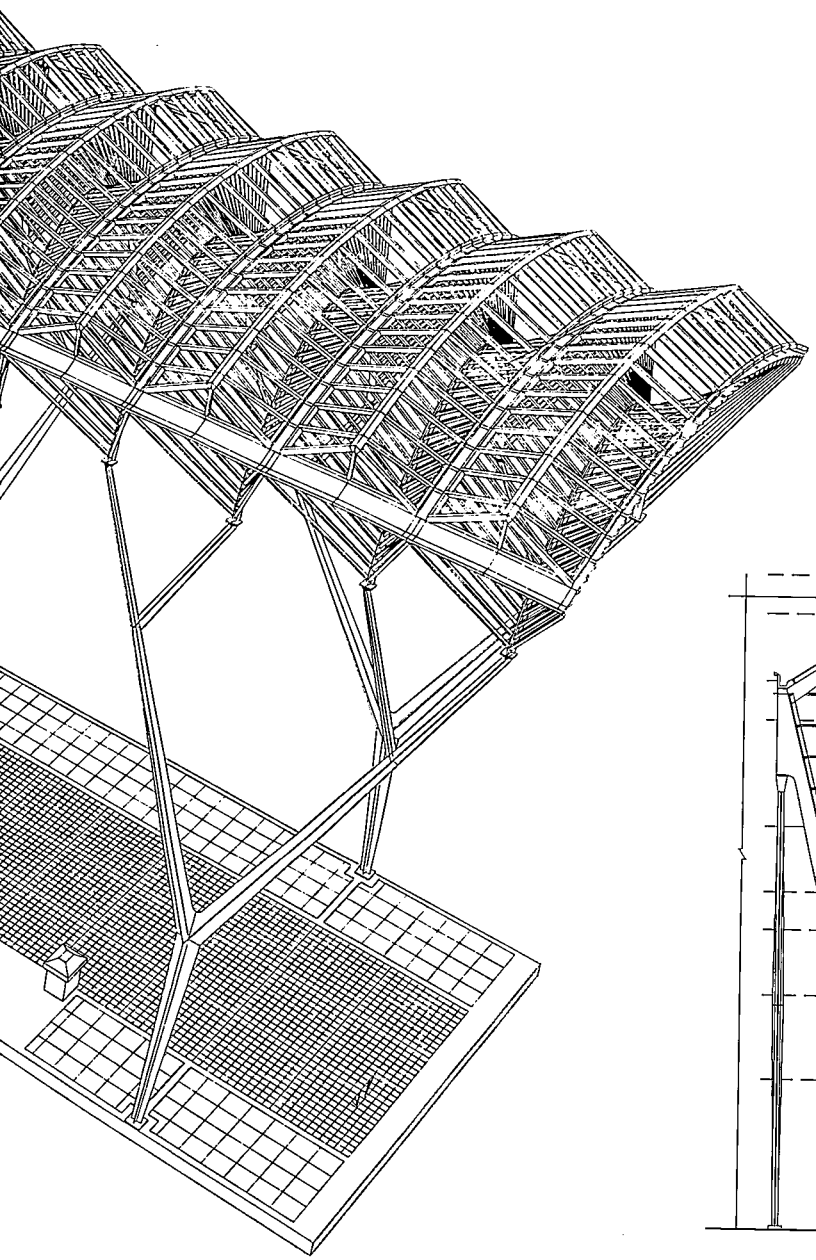


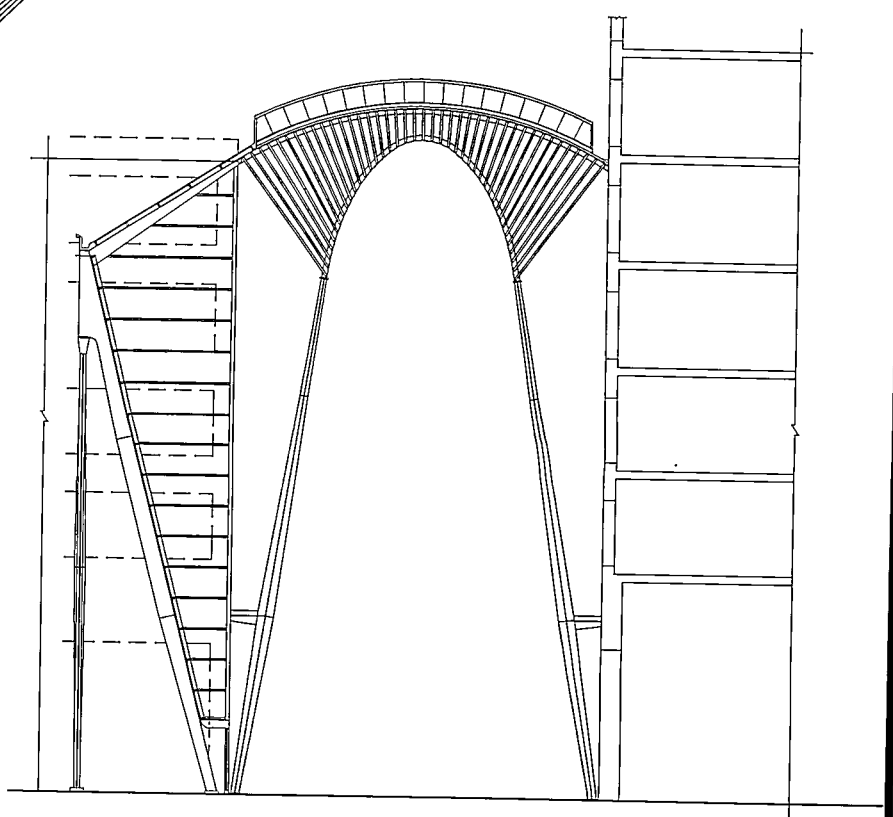


The Galleria's steel-frame canopy, formed by alternating tiers of parabolic and circular arches, rises from the branches of supporting columns (above). The V-shaped lattices are fastened to welded plates and bolted through the parabolic arches. The upper arch, a slice from a 40-foot radius circle, stretches from building to building. Skyline mullions sit on continuous structures that span the top arches and rest atop longitudinal members. Gutters are arranged along the edges of the glass roof. The entrance to the Garden Court features an inclined glass wall (opposite bottom). It is framed by the projecting circular arches of two Galleria columns that are partially supported by the historic building inside the Galleria. In a unique circumstance at the Bay Street entrance (opposite top), an independent glass wall is squeezed between two adjacent top arches inside and outside the Galleria. Outside, a complete "tree" forms an entrance canopy, which is tied to the main structure with a specially designed expansion joint. On the floor, granite pavers surround inlays of illuminated glass block, creating a glowing walkway.



BAY STREET ENTRANCE ELEVATION



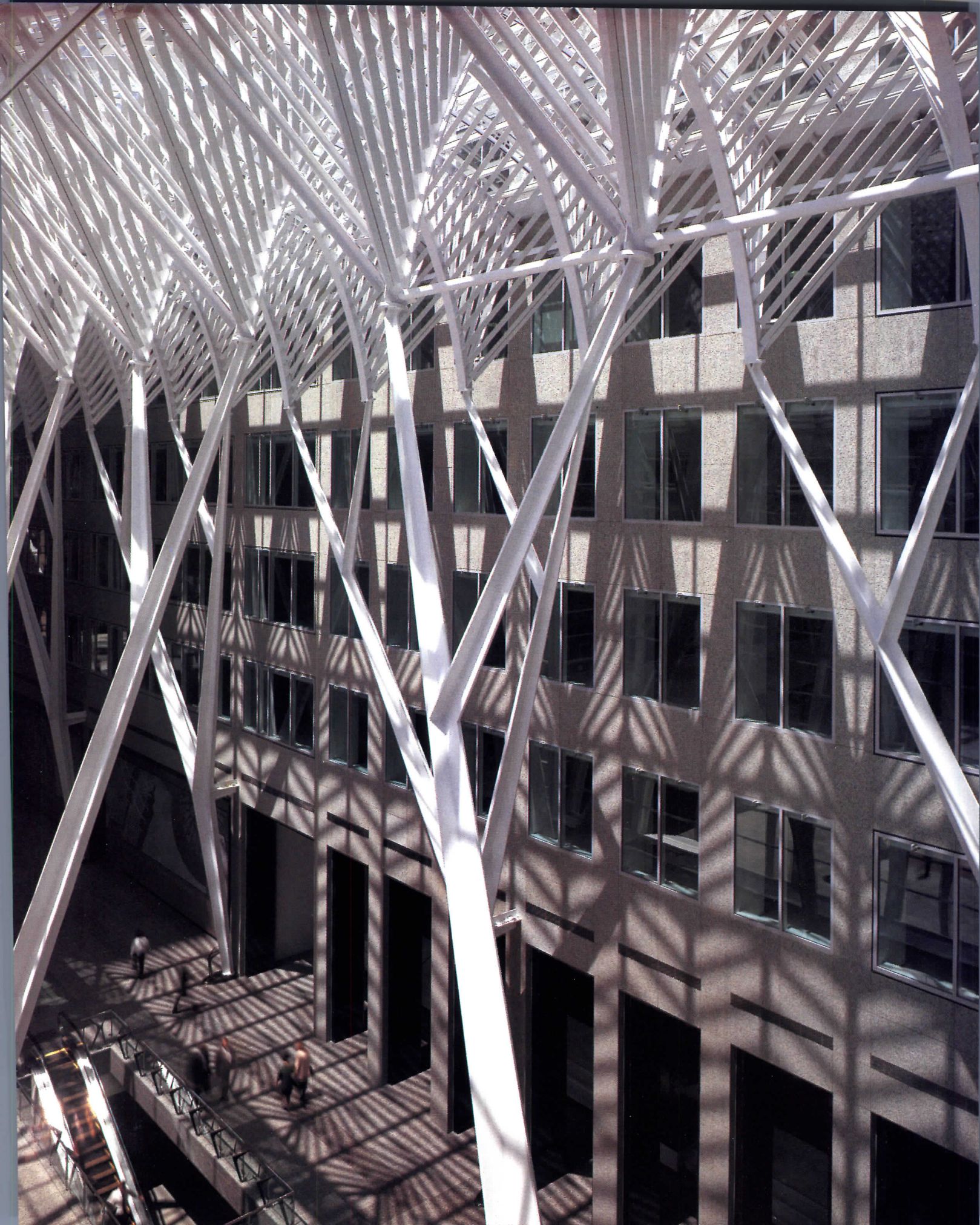


GALLERIA SECTION LOOKING WEST AT GARDEN COURT

The four interior columns in Heritage Square are bolted to the concrete deck, rising through lighting grilles in four directions. The interior elevations of the surrounding buildings, which are of different heights, are faced in double-glazed sealed panels behind an aluminum grid to create the optical illusion of a consistent backdrop for Heritage Square. Brick-clad arched beams of precast concrete span reinforced steel-frame plenums for air circulation (top left). A fountain designed by Calatrava to be similar in spirit to the Galleria's operable windows is currently under construction.

Credits

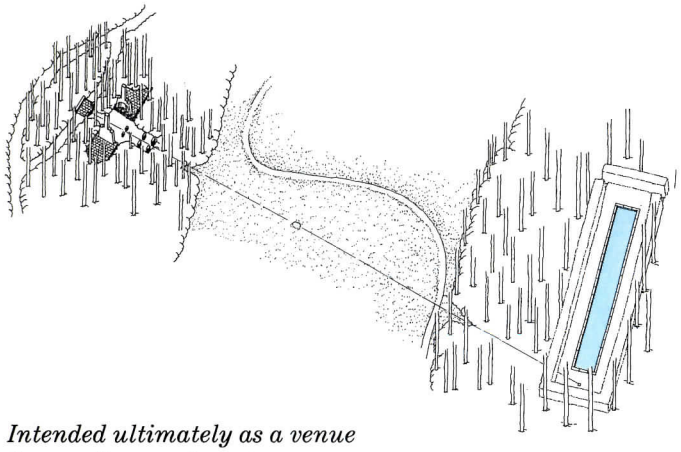
Galleria and Heritage Square
BCE Place, Toronto, Ontario
Owner: *Brookfield Development Corporation*
Galleria and Heritage Square
Architect: *Santiago Calatrava*
Architect of record: *Bregman + Hamann Architects—Tõnu Altosaar, partner-in-charge; Gastons Korulis, associate; André Lessard, Alkim Sonmezocak, and Clement C. Wong, associates-in-charge; Neal Barkhurst, Mohsen Boctor, Wayne Upiter, and Ramy Youakim, project team*
Engineers: *Yolles Partnership Limited (structural); The Mitchell Partnership (mechanical); Mulvey & Banani (electrical); Hatch Associates (civil)*
Consultants: *Vision Engineering and Design, Inc. (glazing); Rowan Williams Davies & Irwin, Inc. (snow and ice); Vibron Limited (acoustics); Trow Geotechnical Ltd. (geotechnical); University of Western Ontario (wind tunnel study); Mulvey & Banani International, Inc. and H. M. Brandston & Partners, Inc. (lighting)*
Contractors: *PCL Constructors Eastern Ltd. (general); Canron, Inc., Eastern Structural Division (steel)*
Manufacturer Sources:
See Contents page



House of Reflection

Virginia Merrill Bloedel Education Center
Bainbridge Island, Washington
James Cutler Architects

Art Grice photos except as noted



Intended ultimately as a venue for meetings and seminars, this modest wood-framed pavilion is for now a place of contemplation for Prentice Bloedel. Architect James Cutler has set up an axis linking the entrance bridge (opposite) with his wife's gravesite, at the head of a reflecting pool (site drawing above.)

Tucked so snugly within its site that a forest of Douglas firs appears to have grown up around it, the Virginia Merrill Bloedel Education Center is the latest addition to one of this country's most intriguing, decades-long owner, designer, landscape-design collaborations. It's located on the Bloedel estate, 150 acres of forests, meadows, and marshes that roll down to Puget Sound. Over a period of many years, Prentice Bloedel created a series of landscape-architecture vignettes with such noted designers and environmental planners as Thomas Church, Geoffrey Rauch, and Richard Haag. While many acres have been left wild, parts of the site have been developed as an English landscape, a traditional Japanese garden (with a teahouse by Paul Hayden Kirk), a moss garden, and a sweep of wildflower meadow. Though architect James Cutler's education center continues this tradition of sensitively sited, well-crafted interventions, it's more than that: it's a memorial to a 62-year bond of love.

"Our client and his wife had not been separated for more than a day or two all those years," explains Cutler. At age 90, Bloedel asked Cutler to design a unique memorial to his deceased wife: a place to remember her with a view toward her unmarked gravesite, which is at the head of a reflecting pool set within a "room" of trimmed hedges surrounded by towering firs (this a collaboration of Bloedel, Church, and Haag). By creating a relationship to the gravesite, yet setting the building away from it (site sketch left), Cutler has recognized both the Bloedels' union and the circumstances of the place.

Perpendicular to the pavilion's shed roof, Cutler has formed an axis that leads from a gravel drive across a bridge (opposite) through the pavilion, where paired stone fireplaces suggest a gateway. A wooden deck set on stone piers (top left) draws the axis out of the structure, through trees, and across a meadow (where the axis is marked by a boulder) to the grave.

Typical of many Northwest architects influenced by Japanese prototypes, the structure of the pavilion is completely clear. The metal roof is supported on timber rafters which are in turn held up on perimeter beams strapped to supporting posts and angled braces. (The beams are doubled, symbolically, at the central doorway and as tension members between the outriggerlike braces.) A wood-frame curtain wall is set within this post-and-beam system. Its double-rabbeted profile is identical for jambs and sills, and receives windows, doors, or panels of clear-cedar siding using identically profiled stops.

Though the wood superstructure may not last forever, the foundations, "those series of stone monoliths," says Cutler, "will last, and they'll always be kind of an arrow to [the Bloedels'] relationship and the grave."

Cutler also has strong notions about making his buildings fit the site. "We spotted [the location of] every tree. We designed the building and adjusted it to cut down only two or three trees." To further avoid disturbing the site, the access drive was used as a staging area and a very strict construction area was agreed to—and enforced with fines. Landscaping? "We didn't need any," says Cutler.

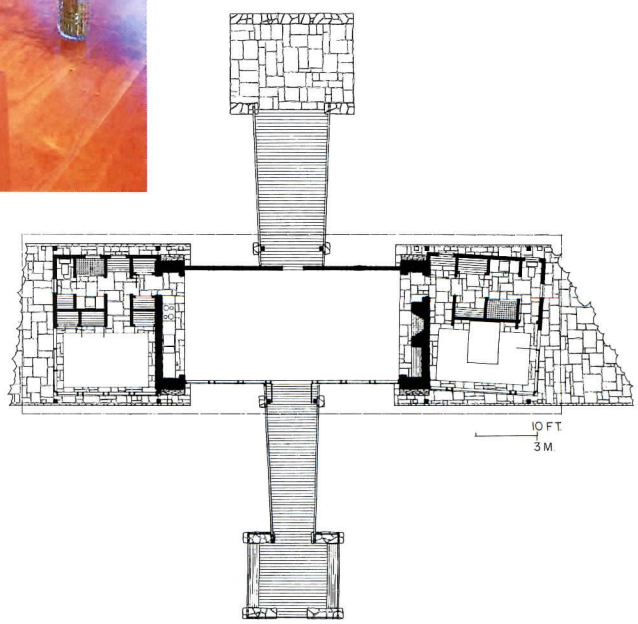
The Bloedels established a foundation to run the estate, which is now open to the public as the Bloedel Reserve. The pavilion will ultimately be converted for lectures and seminars, and will be used, says director Richard A. Brown, to convey the Reserve's lessons of "stewardship and environmental responsibility; nature in the wild and nature managed by man." *Charles Linn*

Chris Eden, Eden Arts

A stone plinth supporting the superstructure is interrupted at its center, expressing the cross axis that begins at the entrance bridge and penetrates the living room (bottom left), which will become a lecture room in the future. Architect James Cutler carried the axis toward the gravesite on a wooden deck supported on stone piers (opposite). A bedroom-and-bath suite is located at each end of the house (they'll become offices and meeting rooms). The client's bedroom was twisted slightly off-axis to align it with the gravesite (plan below). Structural loads are carried on exposed heavy-timber posts and beams clearly separated from the nonbearing wood-framed curtain wall (top).

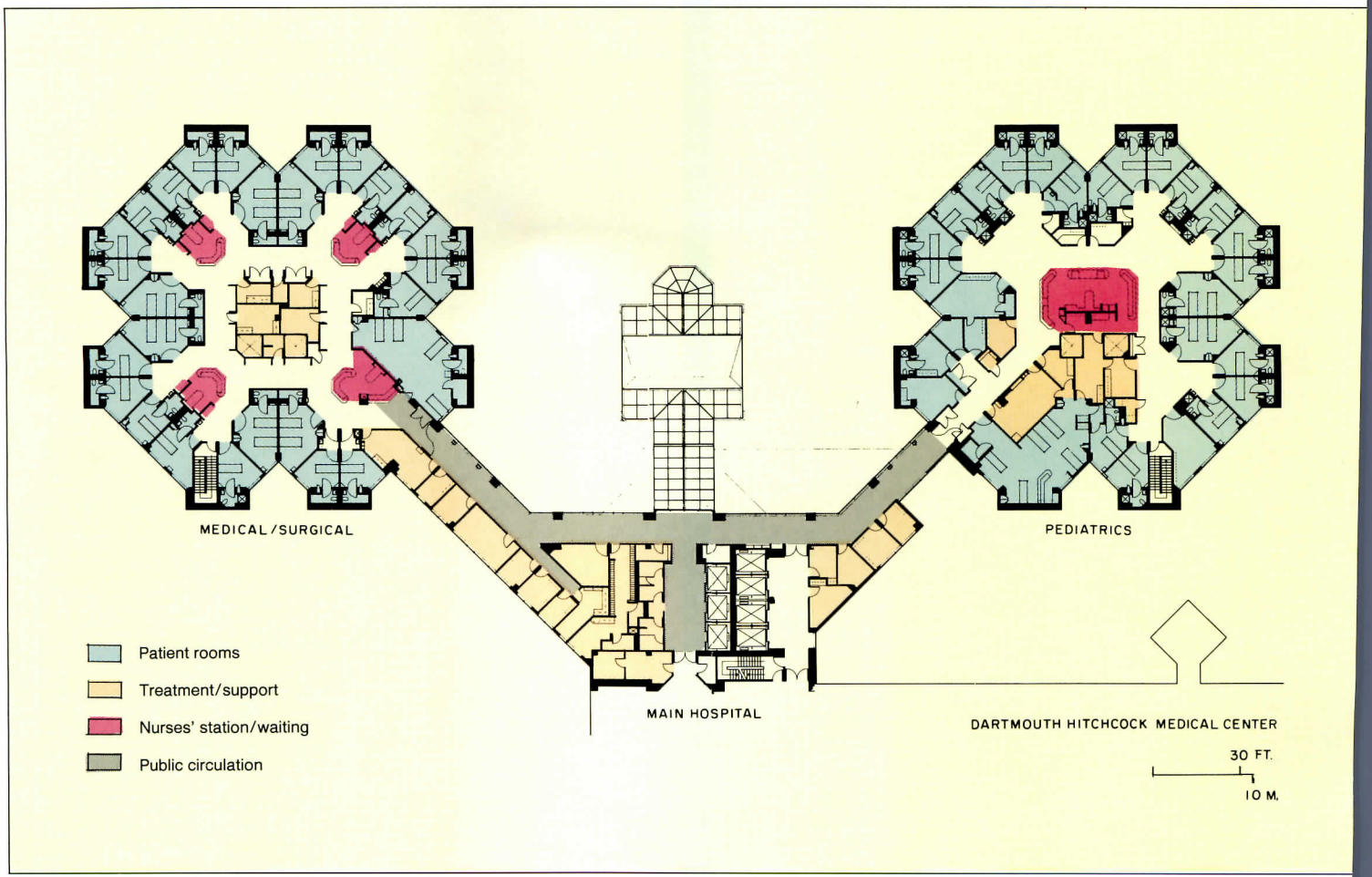
Credits

Virginia Merrill Bloedel Education Center
Bainbridge Island, Washington
Owner: *The Arbor Fund*
Architect: *James Cutler Architects—James Cutler, designer; David Cinamon, project architect; Nick Reid, Bruce Anderson, project team*
Engineer: *KPFF Consulting engineers (structural)*
General Contractor: *Charter Construction*
Manufacturer Sources: *See Contents page*



Managing Acute Care

In the last few years, much medical-facility construction has been driven by what insurers want. Hospitals have built facilities for well-reimbursed procedures and closed money-losing ones. Health-maintenance organizations increasingly expect to hold down costs by making prepayment arrangements with doctors and their hospitals. President Clinton has pledged early action on health-care reform, which will likely

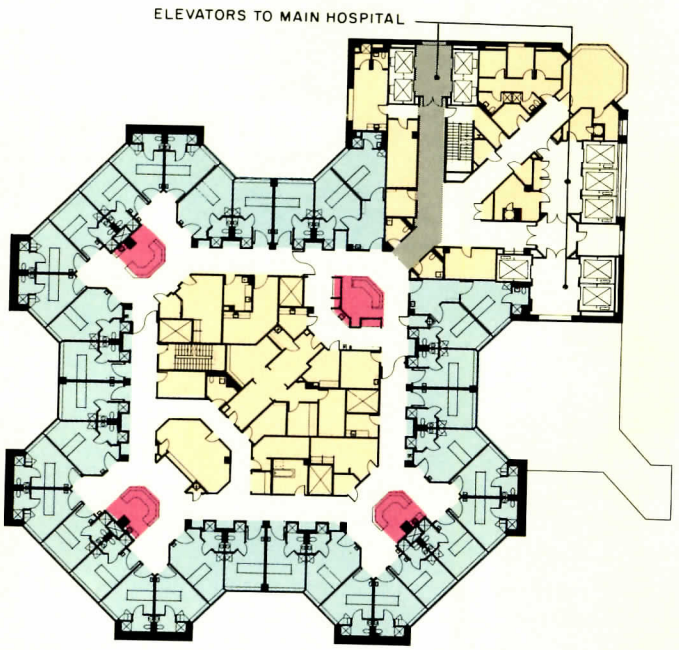


Inpatient-Care Prototype

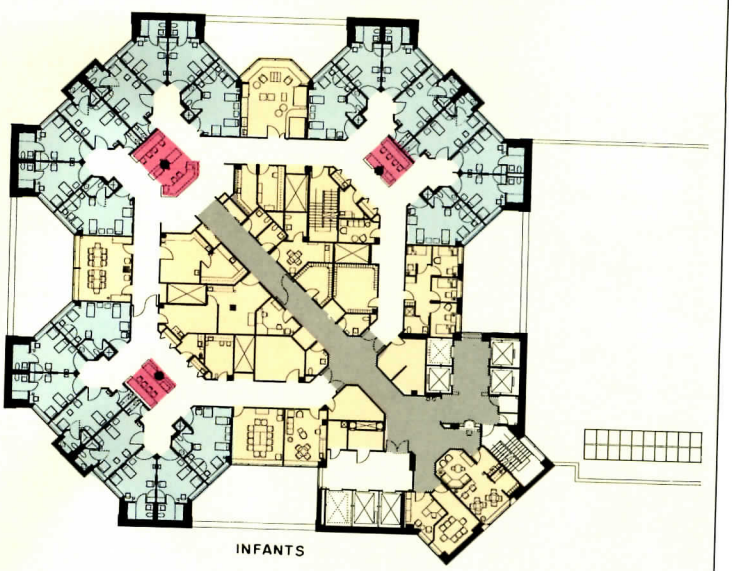
Shepley Bulfinch Richardson and Abbott, Architects

To reconcile short walking distances for staff with varying requirements for near-to-bed support, Shepley Bullfinch Richardson and Abbott have proposed a podlike form for the standard 36-bed, in-patient nursing unit. For units at the Dartmouth Hitchcock Medical Center (above and photo opposite), the first phase of which was completed a year ago, patients in a fully staffed medical-surgical floor are no more than 15 feet from a nursing station. When less staff coverage is provided, they are no more than 80 feet. The most frequently used supply and utility rooms are in a small central pod. A similar floor, arranged for pediatrics, devotes much of its center to a nursing station. Rooms face onto alcoves which become play areas as needed. In both plans, visitors pass the minimum num-

change planners' priorities. Whether the nation goes to Clintonian "managed competition" or a Canadian-style nationwide single-payer system (the two most likely options), the projects on these pages reflect two large-scale trends that are likely to continue: the movement of more procedures from inpatient to outpatient facilities and the separation of treatment functions from ordinary office and administrative tasks so that the latter are not performed in the same high-cost buildings as technology-intensive procedures. Various schemes that make care more "patient-centered" have been tried and been shown to speed healing, even for outpatients, but such hard-to-quantify issues get short shrift in an era of knee-jerk cost containment. The challenge in tomorrow's health-care universe—whatever it becomes—will be to keep these issues on the table. James S. Russell



YALE NEW HAVEN HOSPITAL



HASBRO CHILDREN'S HOSPITAL (FOURTH FLOOR)

er of patient rooms before ncountering a nurse's station. cute-care and intensive-care atients to be served by new nits at Yale New Haven Connecticut) Hospital, now un-er construction (opposite left), equire more close-by support rvices, so the center of the pod larger. With toilet rooms aced at the exterior, staff sur-illance is simplified and alking distances are short.

Small alcoves around nurse substations allow informal semiprivate conferences. At the Hasbro Children's Hospital, in Providence Rhode Island (also in construction—above right), a diagonal corridor conveys visitors through the central support pod to a reception desk. Nursing substations place staff close to infant patients. The rooms are large enough so family members can spend the night. *J. S. R.*

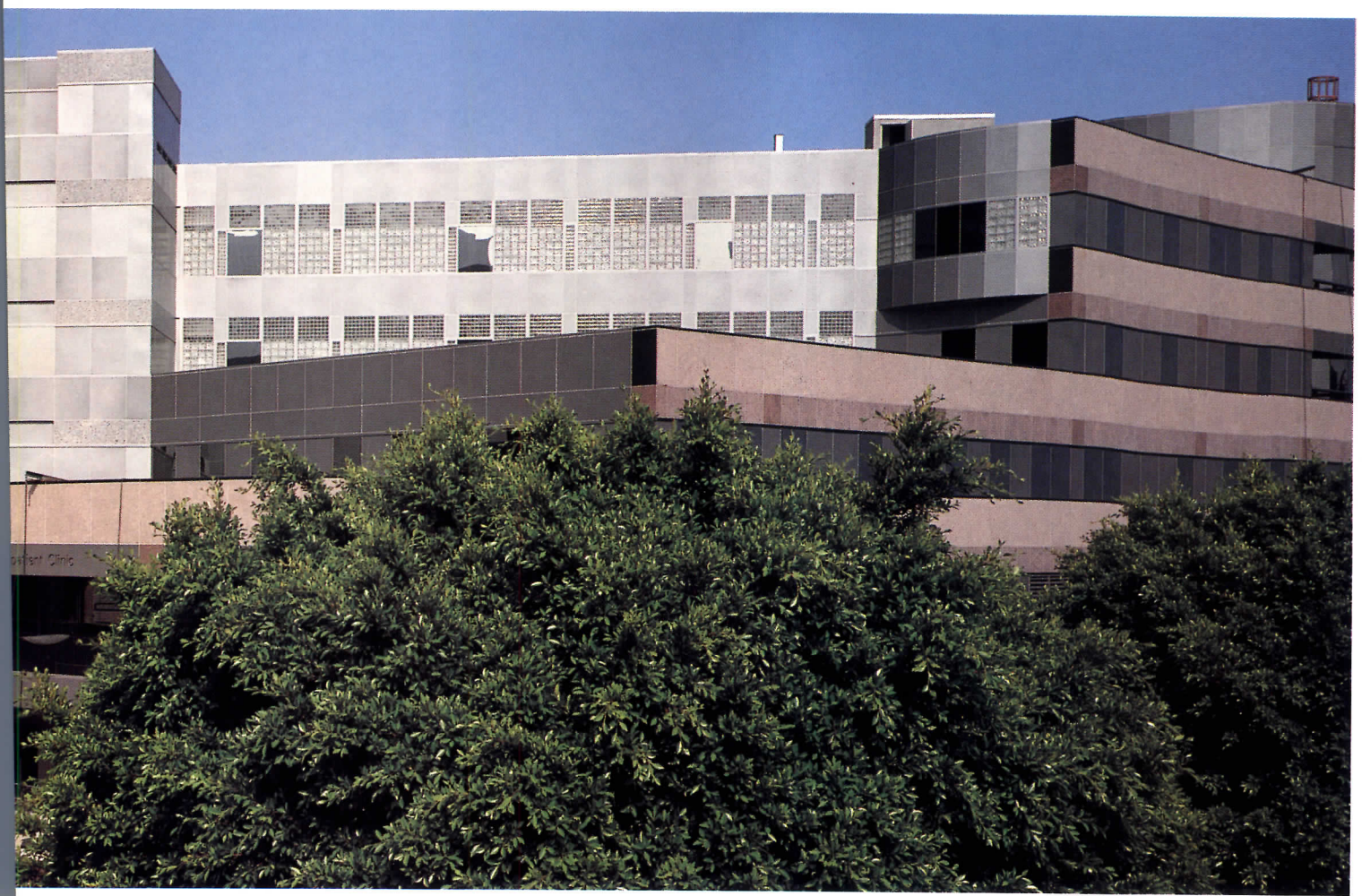
Jean Smith

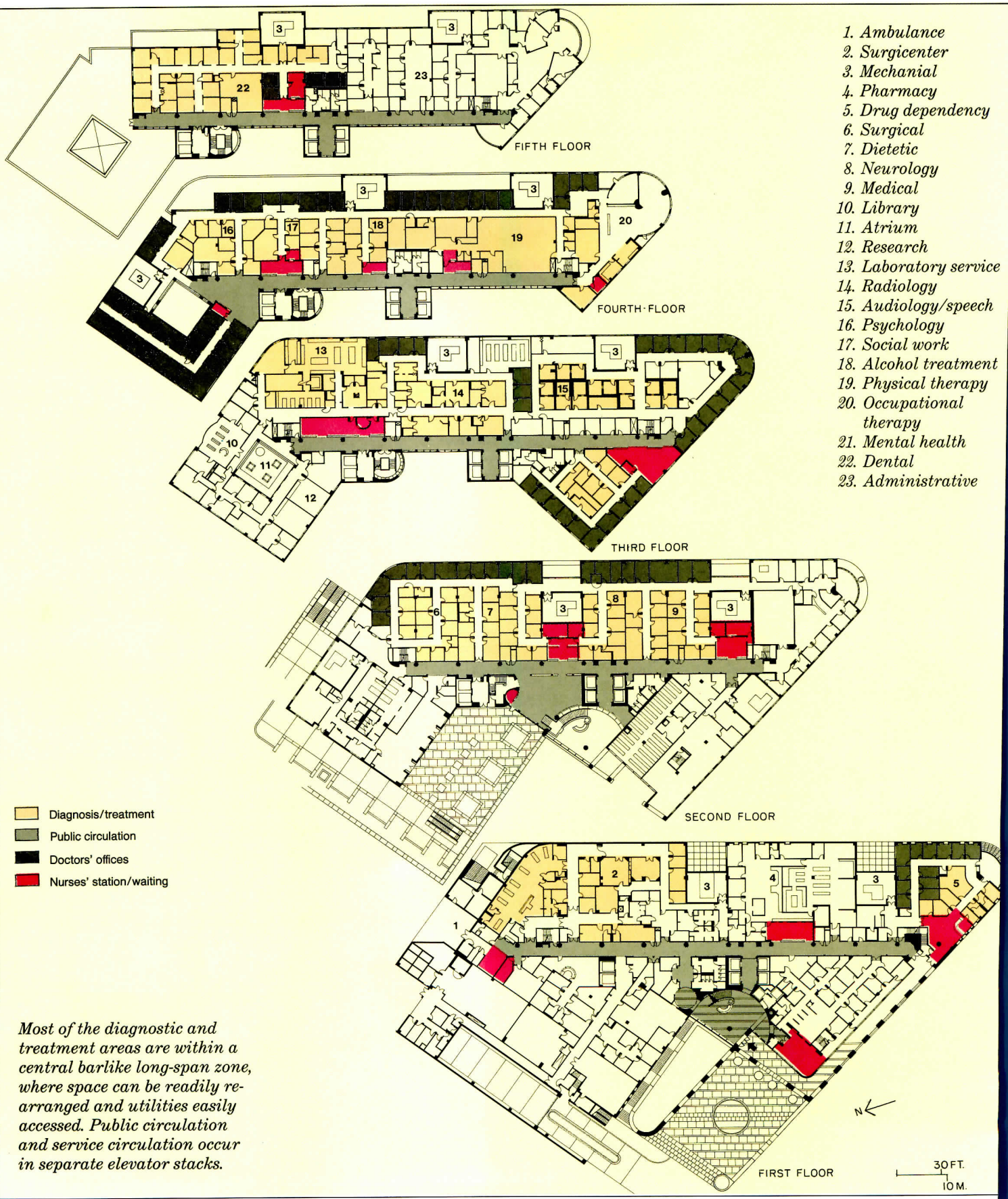
Veterans Administration Outpatient Clinic

Los Angeles, California
Bobrow/Thomas and Associates, Architect

The needs of ambulatory patients are less intense than those of patients confined to beds for days or weeks. Nevertheless, an individual's experience may be very stressful. Patients being treated over repeated visits—such as for cancer—may be subjected to painful and tedious procedures. Likewise, AIDS patients value privacy when shunted from one clinic to another (for care of the wide assortment of conditions that afflict those lacking conventional immune defenses). Because treatment methods are changing very rapidly (along with the required technological support), most hospitals seek the most flexible possible layout for diagnostic and treatment areas. All too frequently the architectural result is a very deep plan

with identical, disorienting, mazelike corridors. With more construction shifting to ambulatory facilities, architects are focusing on solutions to these problems. At the Los Angeles Veterans Administration clinic, Bobrow/Thomas strove for a clear yet flexible organization that solves functional issues while providing stress-reducing connections to the outside world both for patients and staff. The overall massing of the 340,000-square-foot facility responds to a site that straddles two city street grids and links the civic center neighborhood to the northwest with "little Tokyo" to the east. The entrance side (photos below) faces the quieter midblock and downtown. The main entrance at the center of the complex opens to a sunny plaza (opposite bottom). The architects have oriented public circulation and waiting areas to this quieter, greener side. Physicians' offices face busy Alameda Street. The broad, lower floors are clad in reddish granite. These floors incorporate many of the support functions. The angled slabs of the upper floors, which contain most of the clinics, are smaller, looking onto rooftop gardens. Their banded horizontal mass is visually held together by vertical circulation towers. The gridded aluminum-panel cladding (sun reflections account for the apparently mottled effect) is enriched by the small-scale patterning of window openings, which are filled with patterned and clear glass blocks and set off by gray-granite insets.





Most of the diagnostic and treatment areas are within a central barlike long-span zone, where space can be readily rearranged and utilities easily accessed. Public circulation and service circulation occur in separate elevator stacks.

With technology and cost-containment measures driving design, the result can be poor accommodations for patients and families. At the VA Medical Center the patient finds individual clinics from an external public corridor (instead of an intimidating maze of hallways), which also provides orienting light and downtown views to waiting areas (top right). The treatment suites themselves are relatively small, so patients are never far from accompanying family or friends. Doctors' offices line a rear corridor, assuring privacy during treatment and offering windows for staff (internal atrium, bottom right). Top and bottom left: the two-story entrance lobby. *J. S. R.*

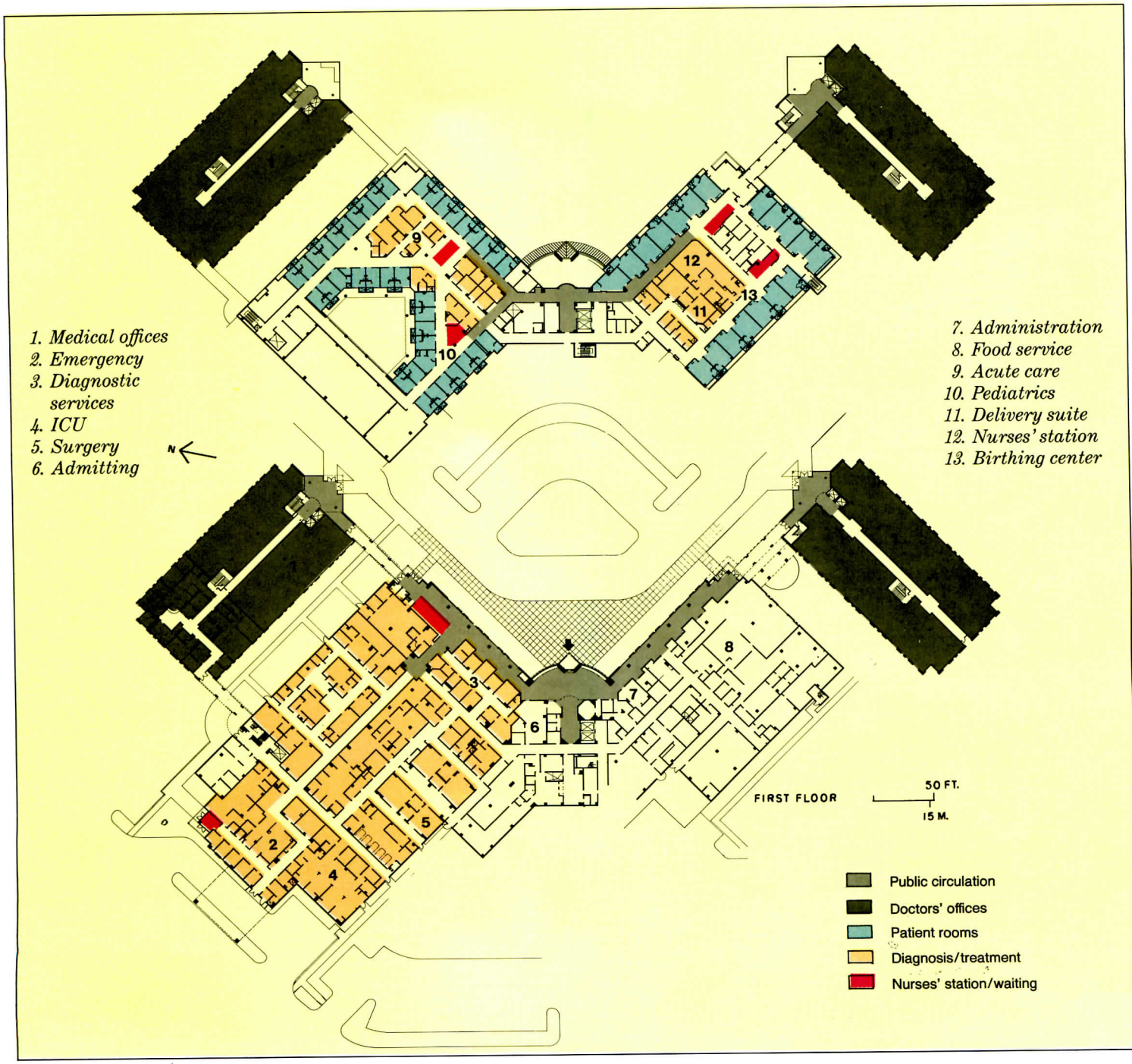
Credits

Veterans Administration Medical Center
Los Angeles, California
Owner: *Veterans Administration*
Architect: *Bobrow/Thomas and Associates—Michael Bobrow, design principal; Julia Thomas, planning principal; Carl Hunter, Robert Wielage, Wayne Fishback, principals-in-charge; Barney Jenson, Joseph Rothman, Mohammed Saeid, Mark Rios, Anthony Morretti, Robert Rawski, design and construction team*
Engineers: *Cygna Consulting Engineers (structural); Hayakawa Associates (mechanical, electrical, plumbing)*
Consultant: *Horton-Lees Lighting Design (lighting)*
Contractor: *J. W. Bateson*

Mercy Southwest Hospital

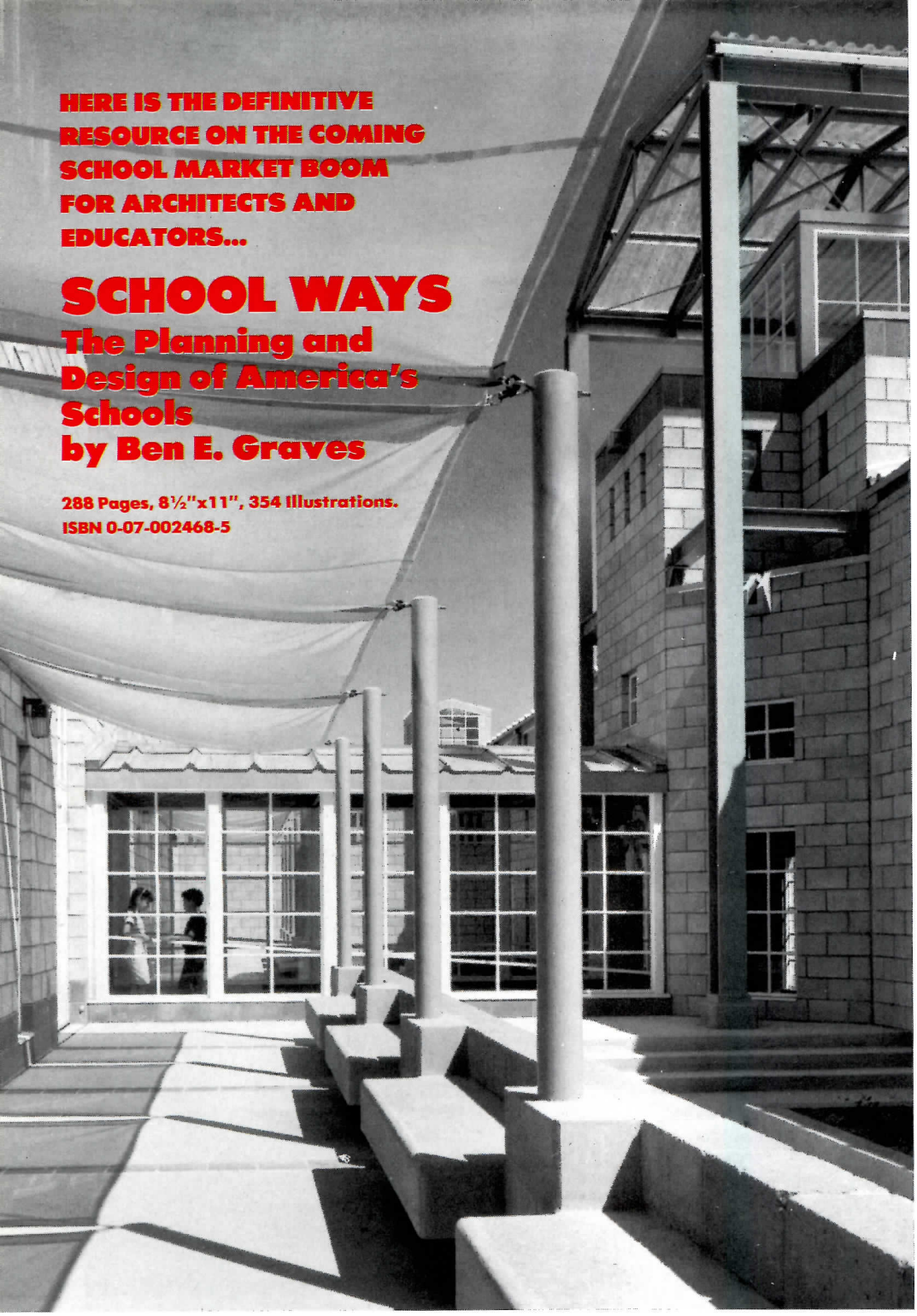
Bakersfield, California
Kaplan McLaughlin Diaz Architects
BFGC Architects, associated architect

Rather than add to an overcrowded site, Mercy Southwest began a new 31-acre campus with this two-story complex incorporating both inpatient and outpatient services. The curved facade of the lobby announces the main entrance to patients and visitors (opposite middle left). Doctors' offices and administrative functions are housed in separate office buildings which were much less expensive to build than the main hospital. The generous, two-story lobby offers an orientation point for visitors and patients (opposite bottom). Symmetrically arranged single-loaded corridors (opposite top and plans) link public areas, and—through a breezeway—the medical office buildings (middle). A small emergency room and four-bed intensive-care unit are



located together (to share staff for the most acute cases) at the rear of a large wing housing clinic and treatment areas. The second, inpatient, level is split into two wings, with public access along the same pattern as the lower level for ease of orientation. In the 18-bed birthing center, uncomplicated labor, delivery, and recovery take place in the patient's room. *J. S. R.*

Credits
Mercy Southwest Hospital
Bakersfield, California
Architect: *Kaplan McLaughlin Diaz*
Associate Architect: *BFGC Architects*
Engineers: *Butzbach, Bar-Din & Dagan (structural); Syska & Hennessy (mechanical, electrical);*
Contractor: *Centex/Golden*



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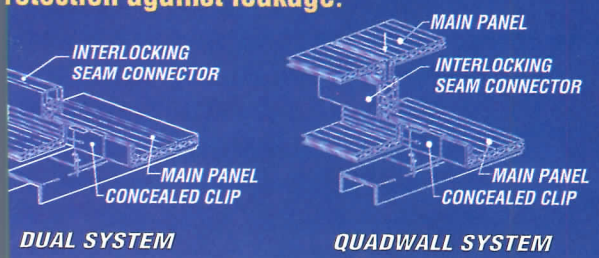

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Tel. (708) 816-1060/FAX (708) 816-0425
Toll Free: 1 (800) 759-6985

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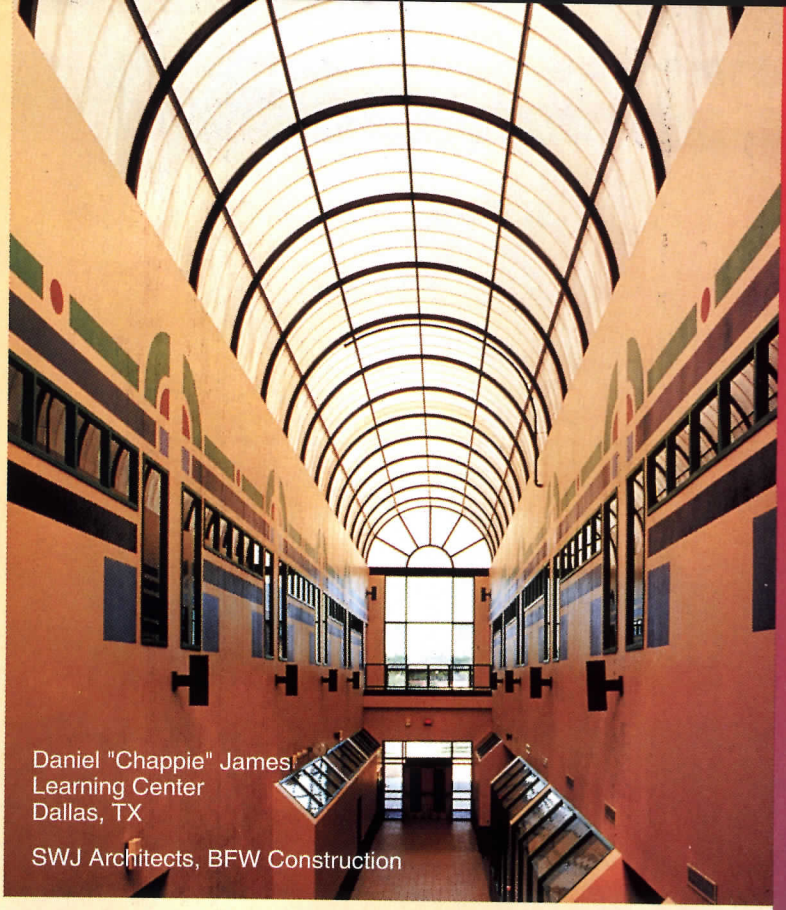
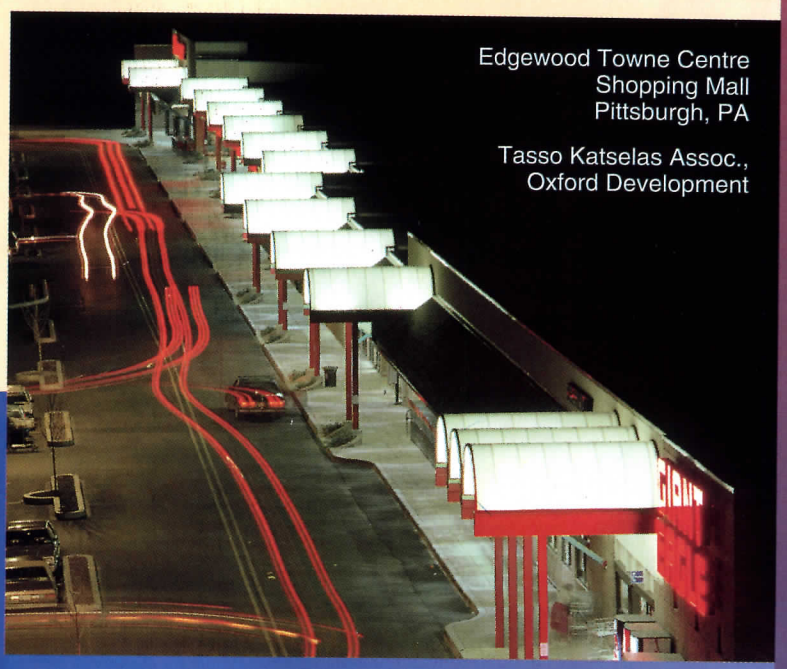
See us in **Sweet's** - 07820/CLE - BuyLine 4424.



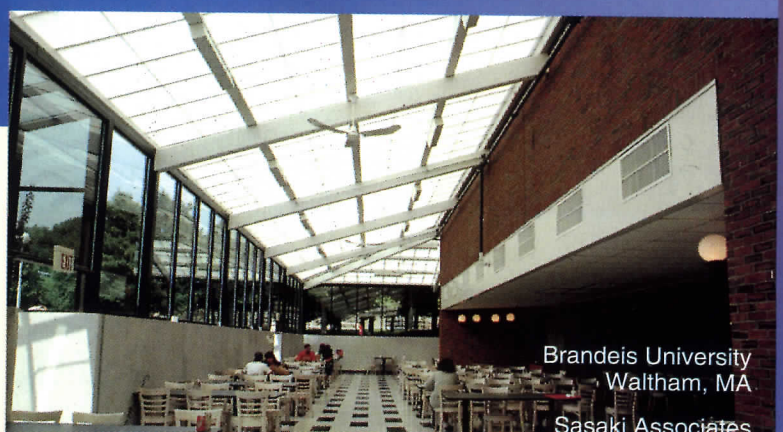
Daniel "Chappie" James Learning Center
Dallas, TX

SWJ Architects, BFW Construction



Edgewood Towne Centre Shopping Mall
Pittsburgh, PA

Tasso Katselas Assoc., Oxford Development



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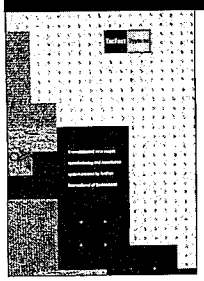
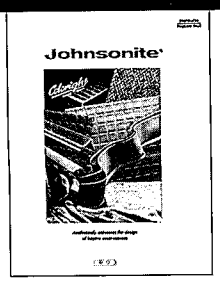
Get the facts about the Danpalon system by CPI. Discover why it's the one designers prefer.

Product Literature / Healthcare

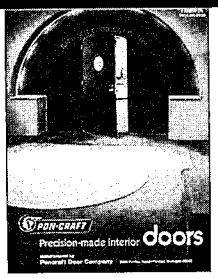
For more information circle item numbers on Reader Service Cards.



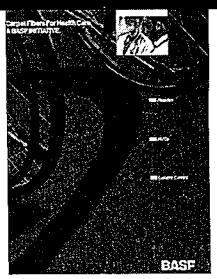
400. Carpet-laying system
A new installation/backing technology from Switzerland, the TacFast system uses Velcro hooks and integral loops to secure contract carpeting without adhesives and seam sealants. Carpet is said to lift up easily, and can be cut-to-fit, moved, and rotated to equalize wear. TacFast Systems, Richmond Hill, Ontario.



401. Resilient flooring products
A 20-page architectural guide illustrates the components of the Coloright Flooring system, color-matched rubber and vinyl products and accessories that are coordinated with leading carpet, ceramic tile, marble, fabric, wallcovering, and laminate surfaces. Johnsonite, Chagrin Falls, Ohio.



402. Interior doors
Pon-Craft catalog shows colorful laminate- and FRP-faced solid-core doors in institutional, healthcare, and school settings, and introduces Fiberclad doors available in fire-ratings of up to 90 minutes. Doors are furnished with finished edges, ready to accept mortise hardware, and are suited for retrofit use. Poncraft Door Co., Auburn Hills, Mich.

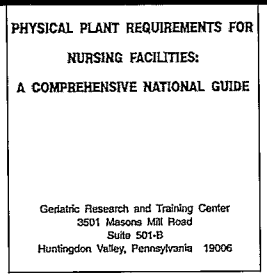


403. Carpeting for healthcare
A technical and design guide stresses the esthetic, comfort, acoustic, and maintenance advantages of Zeftron-nylon carpeting in hospital, geriatric, and other healthcare environments. The solution-dyed fiber is said to resist fading even when cleaned with strong bleach solutions. BASF Corp., Williamsburg, Va.

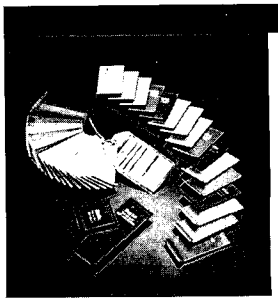
404. Institutional laundry
Speed Queen washer-extractors, drying tumblers, and flatwork finishers are described as ideally suited for use in healthcare facilities, hotels, motels, schools, and other large-volume on-premise laundry applications. A Sweet's catalog insert provides architectural specifications. Speed Queen, a Raytheon Co., Ripon, Wis.

405. Fire-blocking fabric
A data sheet highlights the fire-resistant benefits of ThermaBlock spunlaced aramid-fiber sheets and quilts in helping upholstered furniture pass the stringent fire tests, such as California 133, required for healthcare occupancies. Du Pont Co., Wilmington, Del.

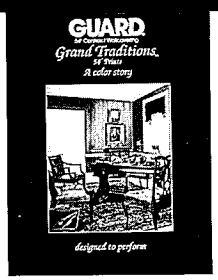
406. Upholstered lounge seating
Product overview brochure uses color photos to demonstrate the versatility of Elysée modular furniture. Steel-framed units come in corner, armless, multipurpose, and ottoman components for linear, corner, or circular configurations; available in a wide range of contract-upholstery options. Steelcase, Inc., Grand Rapids, Mich.



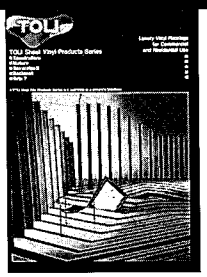
407. Nursing facility guide
A 500-page binder summarizes the physical-plant requirements for nursing homes in each state. Offers guidelines for decor, design, lighting, and environmental strategies that help provide effective health care in institutional settings. $180 charge; annual updates. Geriatric Research and Training Center, Huntingdon Valley, Pa.



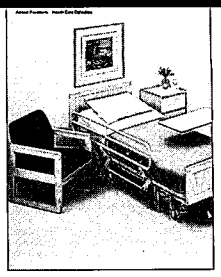
408. Commercial rubber tile
Sampling program assists architects and designers in selecting rubber-tile flooring, cove base, and stair treads. Patterns include raised-disc, marble, travertine, and new Constellation flooring, a speckled design offered in 12 base colors. Test and performance data included. Burke Flooring Products, San Jose, Calif.



409. Vinyl wallcoverings
A brochure introduces new Guard contract damasks, dimensional textures, large-scale florals, and faux finishes in four coordinated, nature-inspired color families. Type I and Type II vinyls are appropriate in healthcare, hospitality, corporate, and retail interiors. Columbus Coated Fabrics, Columbus, Ohio.

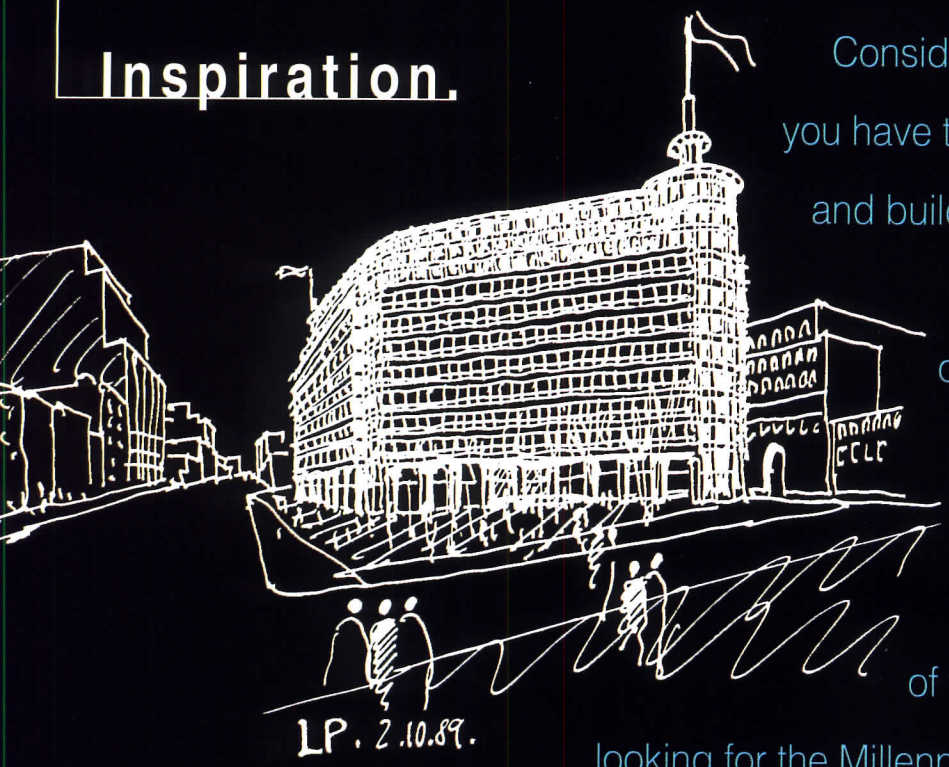


410. Woodgrain sheet vinyl
Commercial flooring catalog highlights the new Mature vinyl range, developed specifically for heavy-duty, welded-seam healthcare requirements. Offered in 13 designs and 29 colorways, flooring line includes realistic terrazzo, suede, cork, and woodgrain (parquet and plank) patterns. TOLI International, Commack, N. Y.



411. Patient-room furniture
A 16-page color brochure illustrates solid-oak furniture designed to age gracefully under the stresses incurred in hospital, dormitory, and psychiatric-care facilities. Includes seating and case goods for lounges, client rooms, and reception areas; some pieces can be modified to meet space, budget, or program needs. Adden Furniture, Inc., Lowell, Mass.

Inspiration.



Considering the 10,001 details you have to worry about in designing and building a project, the least we can do is simplify part of the process. If you're looking for a wall material that will both inspire you and withstand the tests of time and nature, you're looking for the Millennium Collection from Stark Ceramics. For complete details, send for your free Millennium portfolio and information guide and see how several companies like Murphy/Jahn have taken projects from sketches to structures with Stark's Millennium Collection.

Stark, P.O. Box 8880, Canton, OH 44711

Execution.

stark

1 800 321 0662

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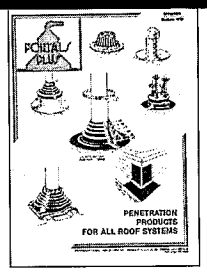
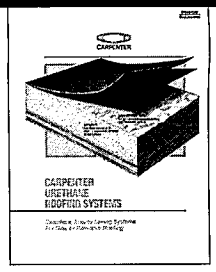
Product Literature / Roofing

412. EPS insulation
Specification guides discuss the importance of density, fusion, and dimensional stability to the long-term performance of roofing insulation. ThermoSafe EPS boards use no CFC/HCFC blowing agents, and are available as a composite with perlite, fiberboard, Type X gypsum, and other materials. Polyfoam Packers Corp., Wheeling, Ill.

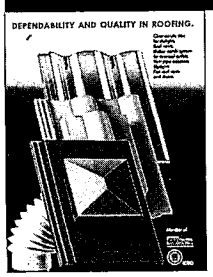
413. BUR specification
ARMA offers a pocket guide to built-up roofing, including sections on deck design, flashing details, vapor barriers, and selection of roofing felts. Code bodies, trade associations, and manufacturers are listed with addresses. Asphalt Roofing Manufacturers Association, Rockville, Md.



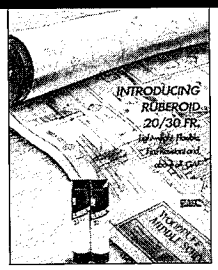
414. Roof-penetration seals
An architectural catalog illustrates customized flashings, drains, vents, and pipe seals that accommodate a wide range of roof penetrations without pitch pans. Products are designed for both retrofit and new work; detail drawings demonstrate installations. Portals Plus, Inc., Bensenville, Ill.



415. Built-up urethane roof
A four-page brochure explains how spray-applied urethane, acrylic, or silicone membranes, topped with aggregate, work as both weatherproof roofing and insulation. Lists test data; a coating decision matrix matches specific job requirements with the recommended product. Carpenter Insulation & Coatings Co., Richmond, Va.

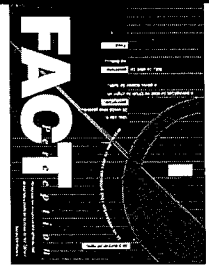


416. Tile-roof accessories
Ingenious stack sleeves, vents, and skylights are made of durable PVC in colors and shapes to match standard clay roofing tiles. Snap-together German-designed products are said to save installation time by eliminating flashing and tile cutting. Klober Plastics, Inc., Irvine, Calif.

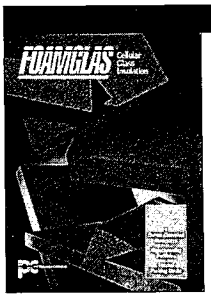


417. Fire-rated mod bit
Folder describes Ruberoid 20/30FR modified-bitumen roll roofing as qualified for a UL Class A rating without the requirement for additional gravel or coatings. Sales and technical offices are listed. Roofing comes in white, black, and tan colors. GAF Building Materials Corp., Wayne, N. J.

418. Lightweight-cement tiles
Premium Duralite tiles are said to have the distinctive texture and freeze/thaw weather resistance of standard cement tiles, but to weigh less (about 780 lbs. per square), making them suitable for reroof applications. Offered in shake, slate, and Spanish styles. Monier Roof Tile, Inc., Orange, Calif.

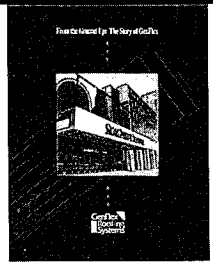


419. BUR notebook
Owens-Corning states its case for built-up roofing systems in an informal, notebook-style booklet. Sprinkled with literary quotes and informative doodles, the brochure is a quick seminar on the performance of multi-ply BUR against competitive roofing systems. Owens-Corning Fiberglas Corp., Toledo, Ohio.



420. Cellular-glass insulation
A new 20-page technical brochure explains the manufacture and in-use performance of closed-cell Foamglas insulation. An all-glass, noncombustible board product, Foamglas is claimed to have superior dimensional stability, chemical resistance, sound control, and a high strength-to-weight ratio. Pittsburgh Corning, Pittsburgh.

421. SBS-modified bitumen
Color booklet emphasizes the maximum protection claimed for SBS-modified membrane systems through their durability, resistance to cyclic stresses, and excellent cold weather properties, and explains the importance of specifying compatible roofing components. Manville Roofing Systems, Denver.*



422. Membrane roofing systems
A capabilities brochure highlights this maker's roofing history, from General Tire to GenFlex, describing technical and research efforts in the development of EPDM and reinforced-PVC roofing products. Recent national roofing projects are listed for reference. GenFlex Roofing Systems, Maumee, Ohio.

423. EPDM single-ply
A 1993 technical catalog is offered to architects and roofing specifiers. Ballasted, fully adhered, and mechanically attached membrane systems are keyed to a selection guide. New products include reinforced RubberGard EPDM and UltraPly 78+ single-ply systems. Firestone Building Products Co., Carmel, Ind.
continued on page 119

*Product data on CAD disk

F L O O R I N G

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Be tame with the environment, but not with your creative impulses. Go ahead. Be bold and expressive with color and wildly original in composition. Choose from a palette of 72 fabulous colors, inlay them in any shape you desire, and create one-of-a-kind floors.

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SURFACES

forbo

Circle 29 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 62-69
Classroom/Laboratory/Administration Building
California Polytechnic University
Antoine Predock Architect
Sandstone: Southland Stone. Sealant: Dow-Corning. Backer-board: U. S. G. Corp. (Durock). Customized acrylic stucco: STO. Sealant: Tremco. Sheathing: Georgia-Pacific Corp. (Densglas Gold). Corrugated steel: George D. Widman. Concrete sealants: Sikaflex. Flush-face steel panels: AEP-Span. Standing-seam roof: Berridge Mfg. EPDM roofing: Carlisle Syn-Tec Systems. Aluminum windows: Custom Window Co. Solar-control glazing: PPG Industries (Solex). Entrances, doors, and storefronts: OSAMA Building Products. Concrete finish: Hydrozo. Step lighting: BEGA. HPS lights: Devine Lighting. Drinking fountain: Sunroc Corp. Custom-color fiberglass panels: Glasteel Tennessee. Glass block: Pittsburgh-Corning. Ceilings and resilient flooring: Armstrong World Industries. Grid: Chicago Metallic Corp. Downlights and parabolic troffers: Lightolier. Elevators: Montgomery.

Pages 78-83
Hanson Library and Senior Center
Schwartz/Silver Architects
Timber framing: Southern Yellow Pine. Wire-cut brick: Yankee Hill. Aluminum storefronts and windows: EFCO Windows. Glass: Southwall Technologies. Vinyl flooring: Azrock Industries. Carpet: Shaw. Upholstered chairs and fabric: Stickley. Children's room chairs: Thonet. Library furnishings: Adden. Stacking chairs, folding tables: KI. Six-panel doors: Lag Design Industrial Millwork Corp. Locksets and closers: Sargent. Hinges: Stanley. Exit devices: Von Duprin. Suspension grid: Chicago Metallic. Linear fluorescents: Litecontrol. Downlighting: Staff. Paints and stains: Benjamin Moore. Uplighting: Elliptipar. EPDM roof: Firestone. Shingles: Owens-Corning.

Pages 84-91
Galleria and Heritage Square
Santiago Calatrava with Bregman + Hamann Architects
PVC roofing: Sarnafil. Green-tinted low-E glass and aluminum curtain wall: AFG Glass. Paints on exposed steel: Glidden. Paints on aluminum: DeSoto. Entrances: C. J. Rush; F. L. Metals. Locksets: Schlage. Exit devices: Von Duprin. Elevators and escalators (Phase I): Otis. Elevators (Phase II) Dover.

Pages 92-97
Virginia Merrill Bloedel Education Center
James Cutler Architects
Clear-fir windows: Northwest Window Works. Glazing: Southwall Technologies (Heat Mirror 88). Fir doors: Nicolai. Locksets: The Ironmonger (D Line). Painted-steel roof: Taylor Metal Products. Clear wood finish: Ship 'n Shore. Welded connectors: custom, fabricated by Garrett Metals.
Pages 96-97—Customized low-voltage spots: Lightolier. Sconce: custom by architect, fabricated by J & F Metals. Fir cabinetry: Kevin McDonald & Associates. Pulls: Stanley. Cherry-wood couch and dining tables: Art Grice and Associates. Dining chairs: Thos. Moser Cabinetmakers. ■

1	Exxon
2	General Motors
3	Mobil
4	Ford Motor
5	IBM
6	Texaco
7	E.I. du Pont
8	Standard Oil (Ind.)
9	Standard Oil of Cal.
10	General Electric
11	Gulf Oil
12	Atlantic Richfield
13	Shell Oil
14	Occidental Petroleum
15	U.S. Steel
16	Phillips Petroleum
17	Sun

Windows CAD *continued from page 38*
Some software designers get around the problem by providing separate menus of "tools" that are always on-screen. Some allow you to customize a toolbar. Some trumpet "shortcut" keyboard commands. Some hide extra commands inside dialog boxes. Some suggest using a digitizer, with commands mapped out on its surface. Some do all of the above.

There's no right or wrong approach. Most experienced drafters end up learning the common shortcut keystroke commands eventually. But if your office turnover is high, drafters may not be fully up to speed by the time they move on. Customized toolbars work well (we prefer them, in fact), but lead to lack of interface standards, even within the same practice.

We also expect CAD and modeling software to lead the march toward Windows NT, which should be released by mid-1993. That "new technology" version of Windows will allow full 32-bit processing of such tasks as rendering, speeding things up considerably. There's no other common task in all of computerdom that so obviously craves the speed.

Nevertheless, computers equipped with the 80486 CPU, running at 33 MHz, are common and cheap (a bare-bones system can be had for under $2,000; double that for a high-resolution monitor, plenty of RAM, and plenty of fixed-disk space). They have more than enough speed to comfortably handle routine production-drafting chores within the current version of Windows, 3.1.

That's part of what is powering the push to Windows. But standardization—OLE, standard printer drivers, and so forth—has the potential to pry away customers from AutoCAD. Many software developers consider Windows their last chance at regaining market share from AutoCAD—a package with so many add-ons available. In turn, Autodesk has not been standing still.

Neither have Apple developers; they have embraced the new System 7 features, faster Macintosh models, and high-resolution monitors. And Apple software developers, with a head start on interface design, are more standard in their approaches.

In the coming months, we'll be exploring many more—they are where much of the "action" is in new software development. *Circle number* **302**

PlotView 3.1

This Macintosh program does one very useful thing, and does it well: It converts HPGL files to PICT files. This allows you to move files into different applications—from CAD to desktop publishing, for instance. It also allows you to print your output on a LaserWriter, ImageWriter, or similar Macintosh printer, instead of on a plotter.

The resulting PICT files are the "object-oriented" kind; if the receiving software allows it, you can edit text in the converted file, for instance. *Circle number* **305**

Equipment required: Any Macintosh, from 512K enhanced to Quadras. System 6 and 7 compatible.
Vendor: Stevens Creek Software, 21346 Rumford Dr., Cupertino, Calif. 95014 408/725-0424. $99.95.
Manual: Simple and to the point.
Ease-of-use: Good.
Error-trapping: A stable, elegant program. Can be run under MultiFinder (at least on our system), but it does slow things down. ■

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Applications are invited before March 15, 1993 on the application forms available from:

Harvard University
Graduate School of Design
Office of Human Resources
48 Quincy Street, S203
Cambridge, MA 02138
Attn: Search Committee
FAX: (617) 496-5310.

Applicants should not send portfolios or dossiers with their completed applications.

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FACULTY POSITIONS VACANT

Dean: College Of Architecture - The University of Oklahoma - Applications and nominations are invited for the position of the Dean of the College of Architecture, The University of Oklahoma, Norman, Oklahoma. The College of Architecture is a multidisciplinary college comprising Architecture, Construction Science, Interior Design, Landscape Architecture and Regional and City Planning. The college has 30 full-time and 10 part-time faculty, approximately 500 undergraduate students, and 120 graduate students. The College offers five Baccalaureate and five Masters degrees. Candidates Must Have The Following Qualifications: Candidates with an academic background must possess a terminal degree and qualify for appointment as a tenured professor in the college. Candidates with a professional background must have an outstanding record of leadership and achievement and a demonstrated commitment to and an understanding of higher education. Demonstrable administrative, budgetary, and fund raising skills. Strong leadership, managerial, and communication abilities. Ability to construct cooperative relationships within the College and among the University's other academic programs. Personal qualities that will facilitate working relationships within the University, its alumni, and among professionals and organizations. Commitment to Affirmative Action employment guidelines, practices, and outcomes. Position Available July 1, 1993. The Salary is competitive. The Search Committee will begin reviewing applications by February 1, 1993. The position will remain open until filled. A completed application should consist of a letter of application, a curriculum vitae, and a list of five references. Please send nominations and/or applications to: Dr. David G. Woods, Dean, College of Fine Arts and, Chair. Architecture Dean Search Committee, 540 Parrington Oval, Room #122, Norman, Oklahoma 73019-0560. Phone: (405) 325-2771 FAX: (405) 325-1667. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer.

The Graduate School of Architecture and Urban Planning at UCLA invites applications for a full-time, tenure-track position in the Architecture/Urban Design Program, beginning academic year 1993/94. The successful applicant will be expected to teach in design studios and at least one other area of the teaching program and to actively pursue practice and/or research and scholarly activities. It is anticipated that the position will be filled at a junior level, but candidates who are exceptionally well qualified will be considered for appointment at a senior level. UCLA is an Equal Opportunity/Affirmative Action employer and the Architecture/Urban Design Program especially encourages applications from women and members of minority groups. Applicants are asked to submit letters of application, including curriculum vitae, the names and addresses of at least three referees, and a few non-returnable samples of design work by March 1, 1993 to Professor Jurg Lang, Program Head, Architecture/Urban Design, Graduate School of Architecture and Urban Planning, UCLA, Los Angeles, California 90024.

UNC Charlotte's College of Architecture seeks a person to initially teach Second Year Studio/Seminar and person to participate in upper year and graduate courses. Applications are encouraged from persons who have demonstrated teaching effectiveness in introducing students to issues of building systems, site and form. Terminal professional degree in Architectural plus teaching and fine professional design experience are required. Appointments may be for a visiting or tenure track - Assistant or Associate Professor position. CAD knowledge is desirable but not required. The College is composed of 27 diverse, dedicated faculty members, an extensive distinguished visiting architects program, and 275 students. It offers undergraduate 5-year program and a graduate research program focusing on Theory of Architecture and Technology. The College seeks individuals committed to working with colleagues in providing a holistic, innovative architectural education and the generation of new knowledge in the field. Send letter describing approach to teaching and subject with vita and anmes of 5 references to Charles C. Hight, Dean, College of Architecture, UNC Charlotte, Charlotte, NC 28223. Closing date March 31. Affirmative Action/Equal Opportunity Employer.

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A British Citizen R.I.B.A. Arab Chartered Consultant Architect, 49 years old, with existing own practice wishes to hear from U.S.A. medium to large practices with a view to collaboration/Association/merger/joint venture/or partnership in the Arab Countries, U.S.A., and Europe. Please reply to P O Box 17557, Doha, Qatar, Arabian Gulf.

Young Practitioner seeks retirement minded Architect with established practice. Desire partnership leading to buyout. Upper Midwest location. Reply to BO-7153, AR.

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Showcase Focus

Here are some building products, catalogs, brochures, and technical literature available in the architectural market today. To receive your copy of any of them, circle the corresponding number on the Reader Service Cards bound to this issue.

All New 88-Page TimberForm Catalog

More than 350 products made of cast iron, perforated metal, steel, welded wire &wood are offered in a dozen different design series from traditional to contemporary. Ash receptacles, benches, bike racks, bollards, liter containers, picnic & game tables are presented in design-coordinated families. Over 170 designer colors are available. Photos, technical data & product dimensions are shown. Call toll-free 1-800-547-1940(ext. 502).

Columbia Cascade

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STYLES PATIENT LIGHTS

Alkco introduces Impressions Plus, an exciting new line of decorator patient room lighting that turns the patient room into a contemporary and happy room, and yet provides all the lighting requirement of a patient room. Impressions is fully presented in Alkco's four color easy to use brochure.

ALKCO

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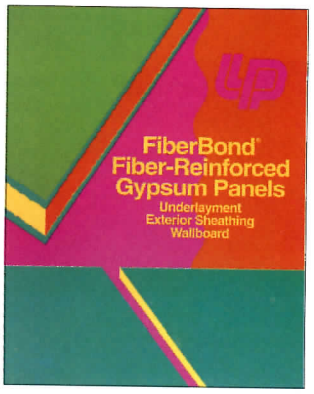

FiberBond® is a fiber gypsum panel reinforced with recycled newspaper. Wallboard for interior walls and ceilings, new exterior sheathing designed for use on the outside of sidewall framing and new underlayment provides an excellent base for thin resilient floor covering. With a solid, impact-resistant surface; excellent sound control; thermal insulation; and moisture resistance.

Louisiana Pacific

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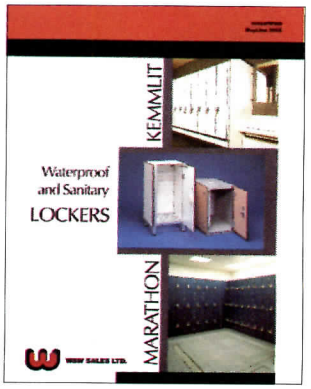
KEMMLIT/MARATHON Brochure



A new colorful, 8-page locker brochure by W&W Sales Ltd. describes internationally acclaimed KEMMLIT and MARATHON locker systems as being completely waterproof and sanitary -- making them the leading performers in Health Care Facilities. A wide choice of colors and designs are available. The brochure includes product descriptions as well as interior and exterior product specifications.

W&W Sales Ltd.

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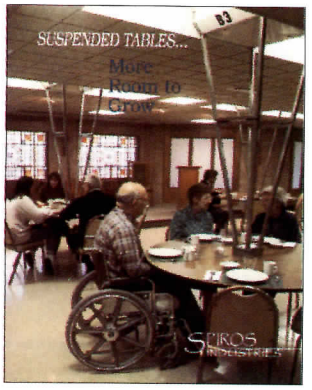
Suspended Tables Broaden Facility Space Options



Spiros suspended tables are ideal for long-term care facilities with added space needs. A dinning area can be converted in minutes into a recreation center, therapy room, lounge or chapel by Automatically retracting these unique dining tables to the ceiling. Ease of access to wheelchair residents since tables have no legs to bump or cram. Reduced housekeeping & maintenance costs. 7666 Highway WW, P.O. Box 917, West Bend, WI 53095.

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Showcase Focus

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Kroy, Inc.

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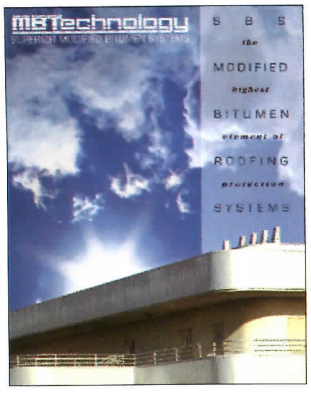

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MBTechnology

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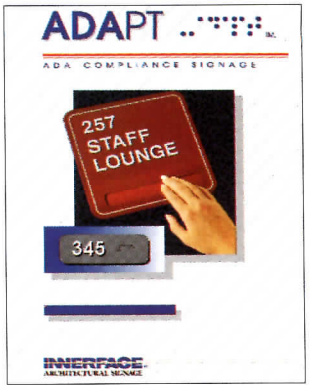
ADA Compliance Signage



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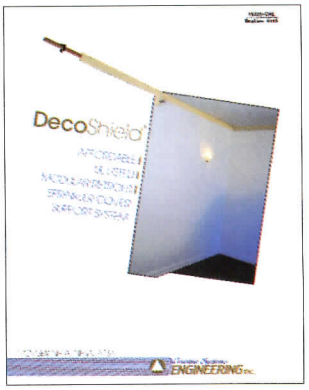

The DecoShield® Modular System by **Creative Systems Engineering**. Produced from high-impact, low flame spread, low smoke generation BFGoodrich engineered resin, this system is UL tested & listed for use with listed CPVC sprinkler piping, & metal piping. Snap-fit cover support system is designed to be installed by a piping contractor, & can be utilized with hot water heating, comunications, & plumbing & air conditioning systems. Call 608-757-0717, fax 608-757-0721.

Creative Systems Engineering, Inc.

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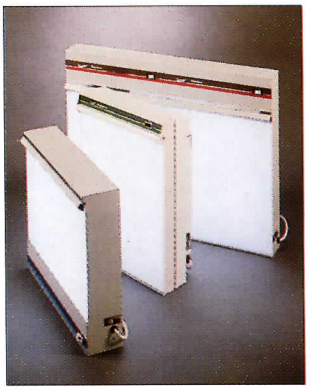

Wolf X-Ray Corp. is the largest manufacturer of illuminators used in hospitals for x-ray film viewing... specifically designed for the unique needs of the radiologist. Free 100 page catalog has extensive information on illumination features, installation, measurements, etc. and Wolf has trained sales people, including draftsmen, to assist health care architects in planning reading rooms. 800-356-9729.

Wolf X-Ray Corporation

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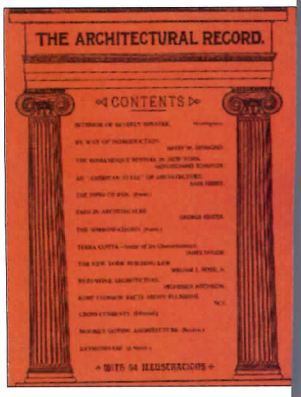

ARCHITECTURAL RECORD'S first issue (1891) is reprinted to celebrate our centennial. 150 pages. 64 illustrations. Every architect should have this collector's issue. Only $16.95 ppd. For more information call: 212-512-3443. ARCHITECTURAL RECORD Circulation Department, 122 Avenue of the Americas, New York, NY 10020.

Architectural Record

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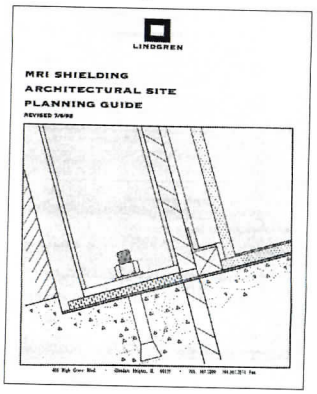
"Number One *In* Shielding Solutions"



MRI Site Planning Guide - Manual provides collection of typical architectural details & specifications, designed to illustrate methods of construction utilized when shielding a Magnetic Resonance Imaging system. Helpful to those involved in the planning of Radio Frequency & Magnetic Shielding systems. Included are the latest innovations in shielded doors, windows, electrical power line filters, HVAC penetrations & vendor requirements. 400 High Grove Blvd., Glendale Heights, IL 60139.

Lindgren R.F. Enclosures, Inc.

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New custom-designed table lamp for lounge & day rooms. Nightingale Brass 'n Color series features a choice of 7 standard colors or 1500 custom Benjamin Moore finishes. Indestructible, flame retardant Fiber Last shade, anti-theft Perma-Mount base & Safety Guard to prevent access & removal of bulbs are options available. Heavy-duty construction, 5 yr. warranty, UL & CSA listed. Free 30 day trial offer. 800-558-2628 or fax 414-964-2944 for info.

Adjustable Fixture Co.

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EFCO 1993 Sweets Brochures

EFCO® Corporation's 1993 Sweets Brochures are now available upon request. Each brochure showcases specific applications in one of three Section 8 categories. Curtain Wall, Storefronts & Entrances, and Commercial Windows. To receive your copies, call toll-free 1-800-221-4169.

EFCO Corporation

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Bathroom Support Systems

This eight (8) page brochure features Grab Bars, Support Rails and Seating Systems for residential and commercial barrier free environments. Products made of high quality nylon with steel inserts are shown in full color with additional details on design layouts. HEWI nylon products, available in 13 colors, are easy to clean, resistant to bacteria, comfortable to touch and require minimal maintenance.

HEWI, INC.

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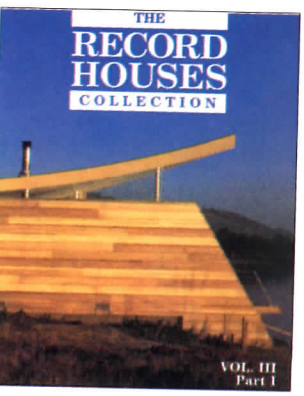
THE RECORD HOUSES COLLECTION



Compilation from 1990/1991/1992. We put 3 yrs. worth into a 2 volume set. Over 290 pages, in full color, with plans & text directly from the pages of Architectural Record's RECORD HOUSES issues. Just $19.95 (including postage & handling). A single compilation 1987/1988/1989 is also available for $19.95. Send check or money order to Architectural Record, 1221 Ave. of the Americas, New York, NY 10020. Attn: Back Issues.

Record Houses

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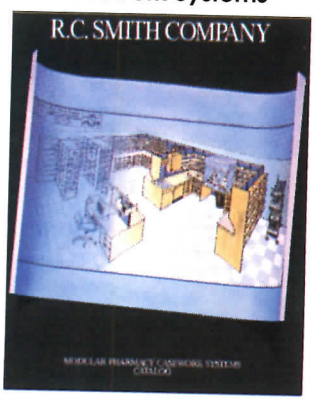
Modular Pharmacy Casework Systems



R.C. Smith Casework is totally modular and freestanding, requiring no attachment to walls, floors, or ceilings, therefore utilizing approximately 30-40% more usable space than cantilever style components. We provide total involvement, from concept and CAD design to finished installation. We also provide a full three year warranty on all equipment when purchased with our installation program. Free catalog call (800) 747-7648 or fax (612) 854-8160.

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Unika Vaev now provides the health care specifier with two sophisticated and contemporary cubicle cloths -- large scale reversible patterns, woven in 100% Trevira F.R. These new styles offer the designer Unika Vaev's celebrated quality and innovation for less than $20 a yard. Our custom color program for large projects allows limitless possibilities. Call Dorothy Cosonas at 212-750-0900, or 800-223-1620 for more information.

ICF

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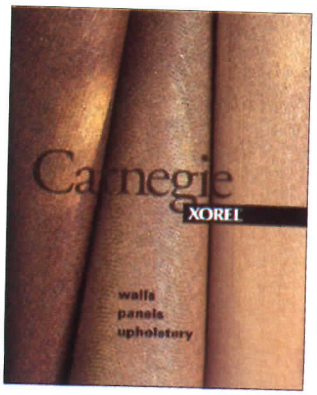
Xorel fabrics



Xorel is the most durable, stain resistant, and easy-to-maintain fabric on the market today. Flame retardant and available in 1690 colors, Xorel is ideal for wallcovering, panels or upholstery. Carnegie's full-color brochure gives detailed information on test results, uses and recent installations.

Carnegie Fabrics

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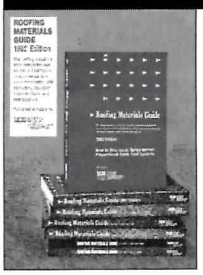
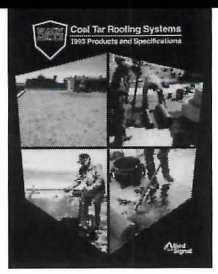
ARCHITECTURAL RECORD's over 100 years of serving the industry, coupled with its clean, crisp, contemporary format will help your organization put its best foot forward.

Product Literature/Roofing

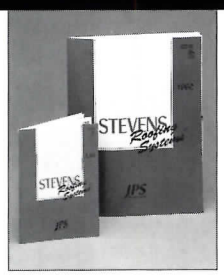


424. World of roofing
An objective publication (without advertising) compiled annually by the National Roofing Contractors Association, the Roofing Materials Guide provides technical information on more than 750 roofing membranes, 130 metal roof panels, 190 types of insulation boards, and 160 fasteners. $65/members; $95/nonmembers. NRCA, Rosemont, Ill.*

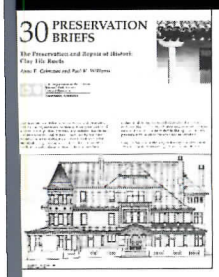


425. Coal-tar roofing products
The 1993 Black Armor catalog contains specification and detail information on coal-tar membrane products, roof insulations, and waterproofing systems, and introduces a new line of roof coatings. Technical data is supplemented with charts, tables, and drawings. Allied-Signal, Inc., Morristown, N. J.*

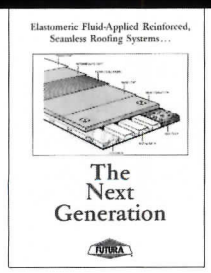
426. Roof-coating systems
A capabilities brochure describes VOC-compliant protective coatings and single-ply roofing systems for applications ranging from structural maintenance and repair to new construction. Interior and exterior products include Rubberflex, Permaroof, Permaply, Geoflex, and Alumanation 301. Republic Powdered Metals, Inc., Medina, Ohio.*



427. Hypalon single-ply
A 12-page, pocket-size brochure details the Hi-Tuff roofing system, based on Du Pont's chlorosulfonated polyethylene (CSPE) synthetic rubber. The lightweight roof is typically mechanically fastened, and comes in white as well as standard colors of airport gray, terra tan, and sky blue. JPS Elastomerics Corp., Northampton, Mass.*



428. Historic tile roofs
A clay-tile roof is a prominent feature in defining the overall character of a historic building. A new NPS Preservation Brief traces the history of clay roofing, and gives general guidance on how to plan and carry out a project involving the repair and selected replacement of historic tiles. National Park Service, Washington, D. C.



429. Fluid-applied urethane
Illustrated with detail drawings, a catalog describes the characteristics, components, and specifications of one- and two-ply Futura systems, which combine a reinforcing polyester scrim with fluid-applied urethane or acrylic membrane. Futura Coatings, Inc., Hazelwood, Mo. ■

**Product data on CAD disk*

THE MARKETPLACE

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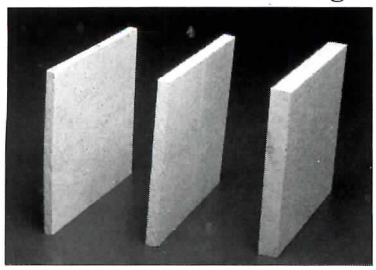

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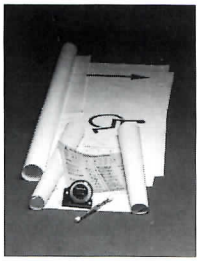

The National Hardware Network, Inc. Easy to use tools let you quickly assess existing facilities for minimum ADA requirements. Kit contains a pressure gauge to check door opening force, an angle gauge to measure ramp slope ratios, a set of reusable floor templates to determine wheelchair approach clearances at accessible openings, an architects template to check approach clearances on blueprints (1/8" & 1/4"), & a copy of the ADAAG which contains all specifications of the ADA. Call: 800-767-5478, or Fax 206-922-9484.

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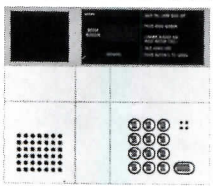

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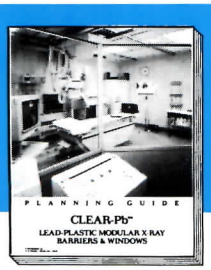

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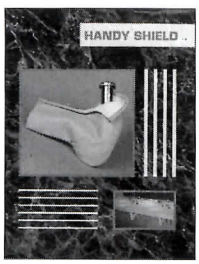

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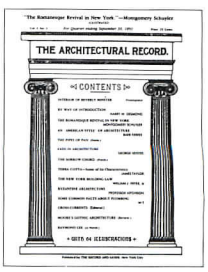

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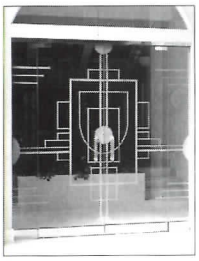

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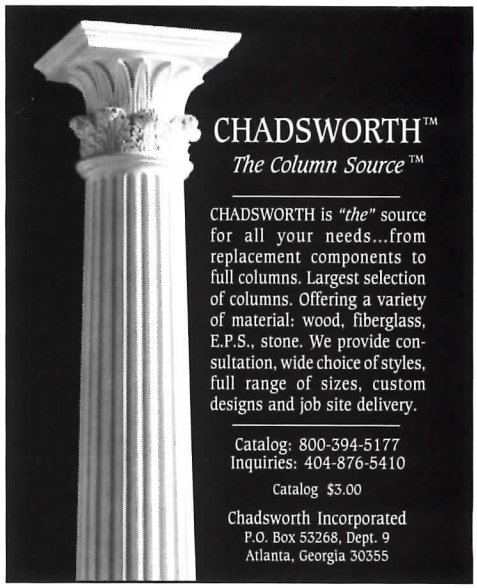

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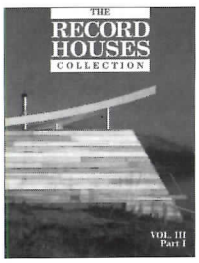

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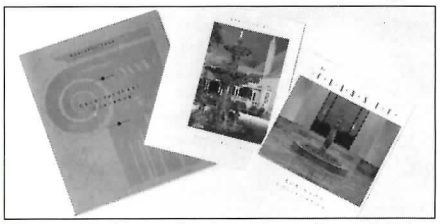

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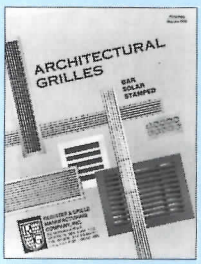

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Architect: John Tarlos & Associates.
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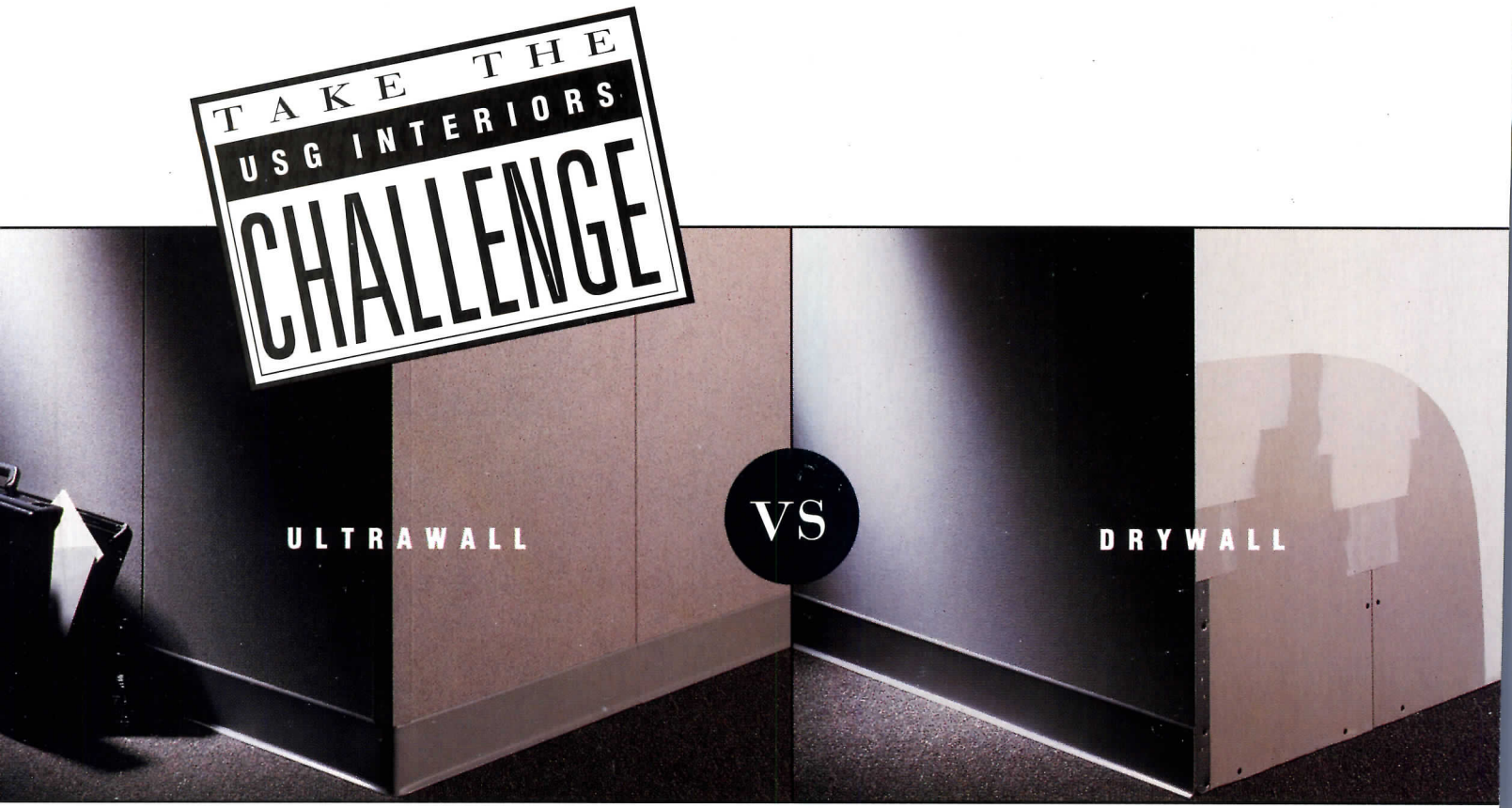

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