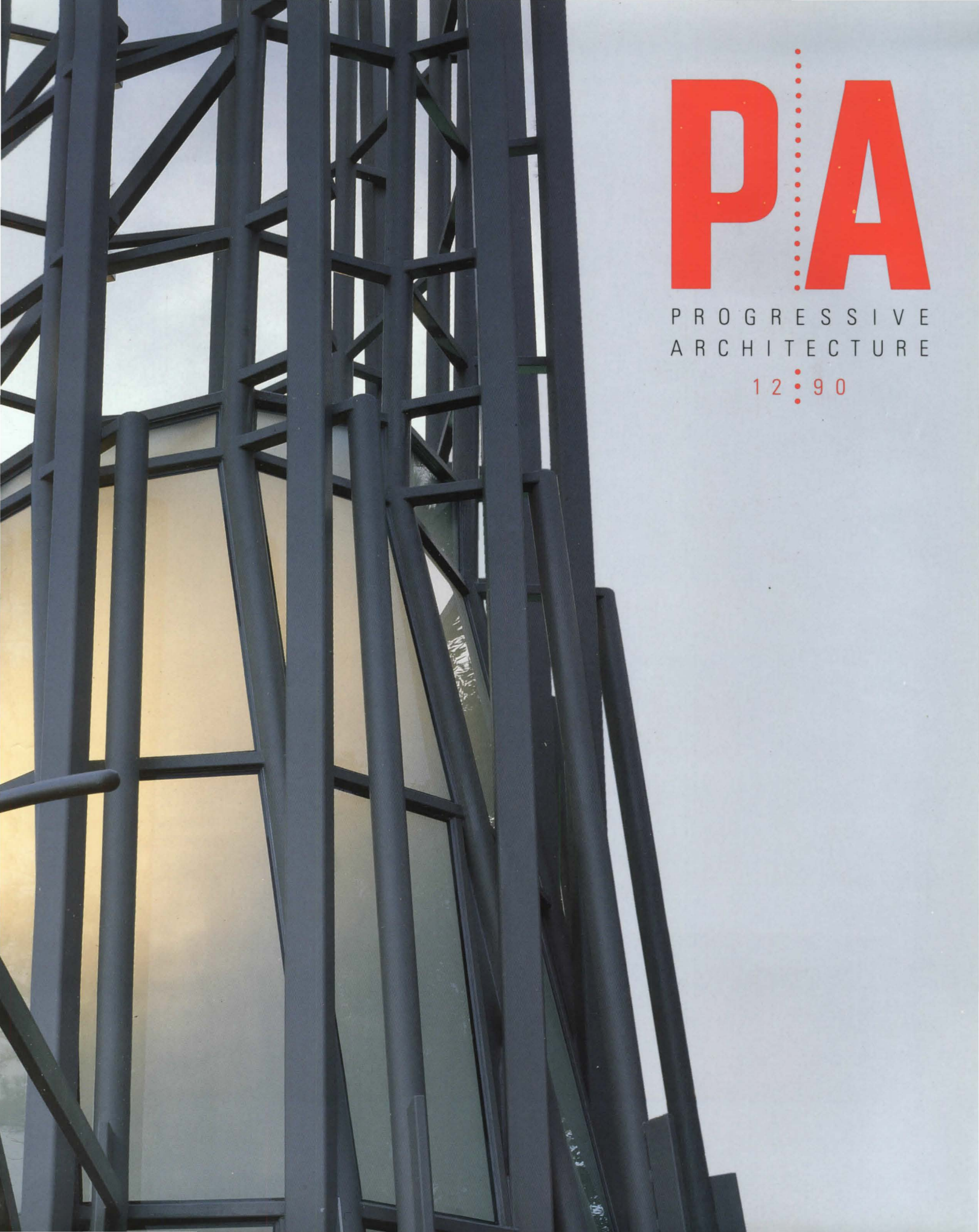

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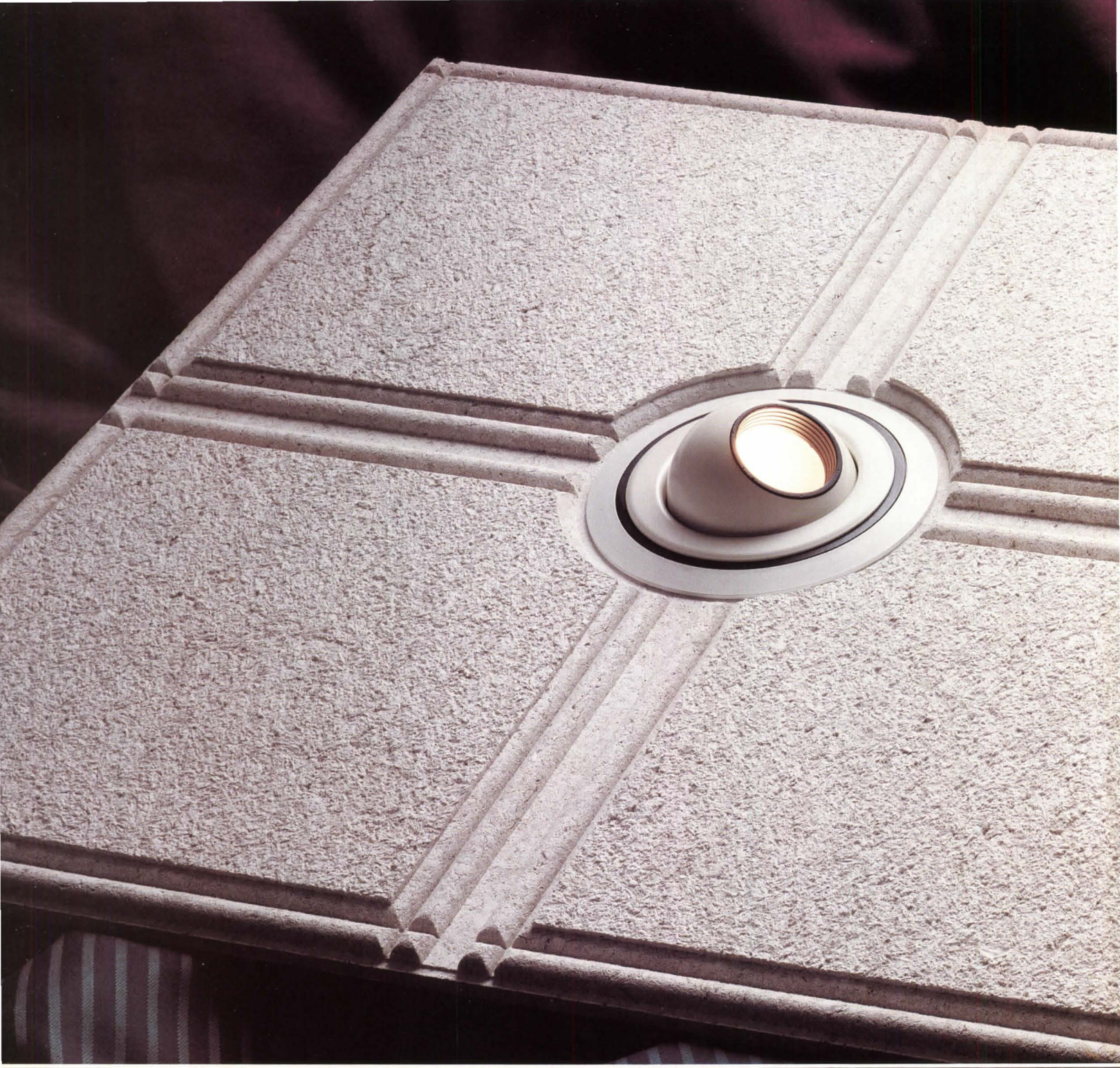

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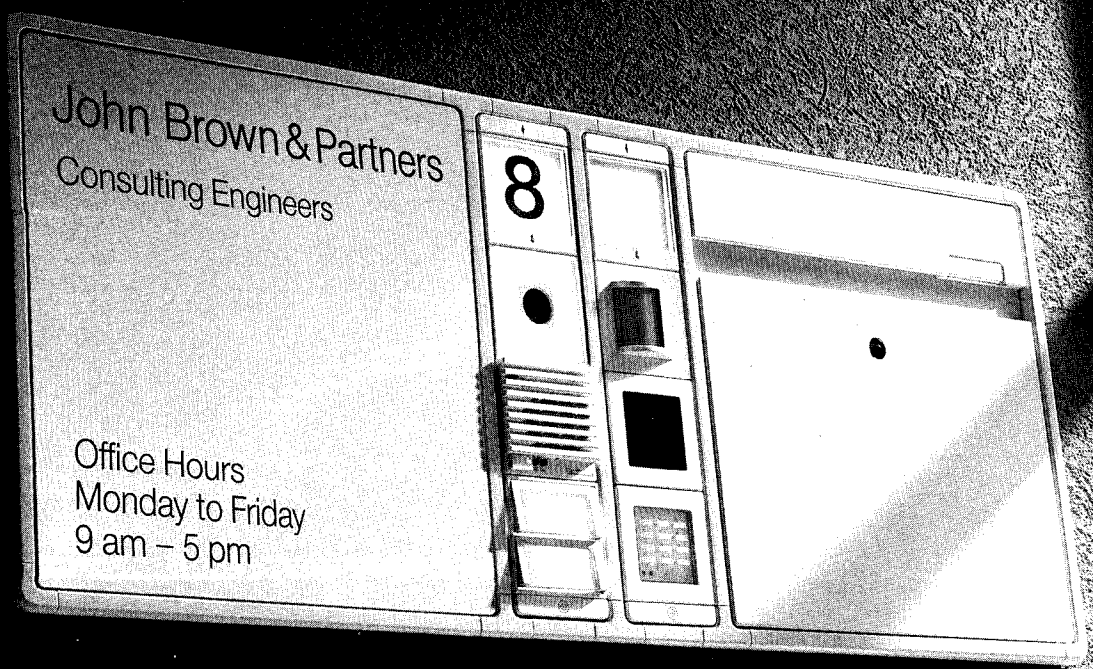

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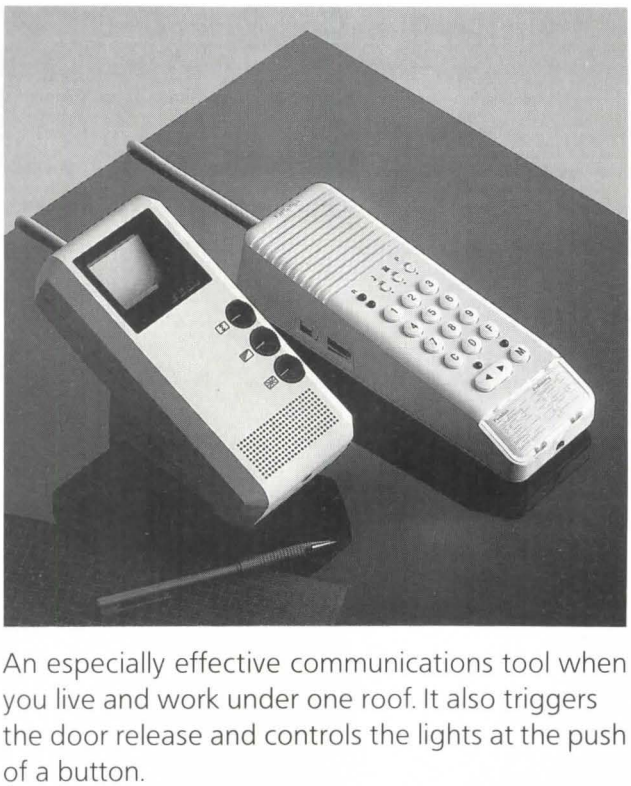

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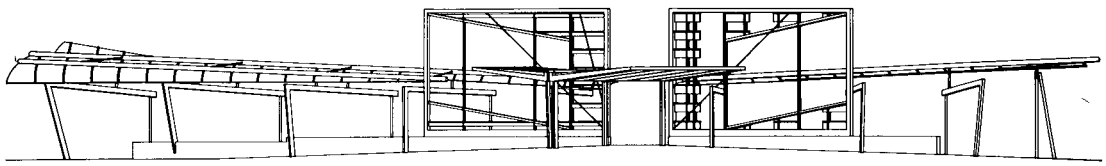

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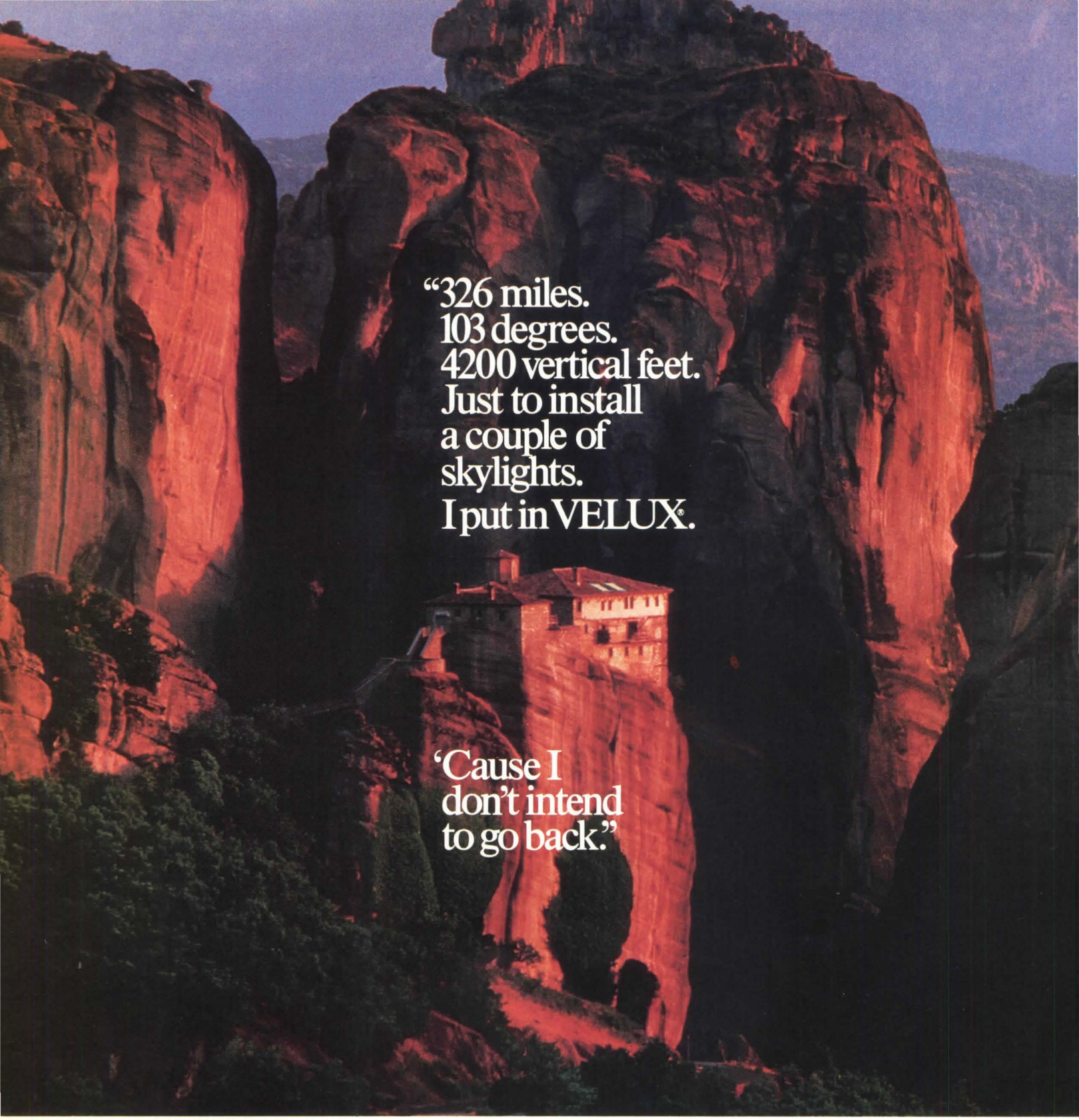

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Editorial:
Recognition for Minority Architects

The frustrating situation of black architects, in particular, is reflected in a recent conference of the National Organization of Minority Architects.

Twenty years ago the National Organization of Minority Architects was founded in Detroit, and this October the group held their annual conference there to mark the occasion. There were some accomplishments to look back upon, but it is all too obvious that not enough has happened to the status of minority architects over the past 20 years.

Referring back to the AIA Convention of 1968, when the late Whitney Young galvanized the profession to increase minority involvement, NOMA president Harry Overstreet of San Francisco told conferees: "Our role in the built environment must be redefined. From 1968 until now, someone else has defined our role. Now we (a minority in number but not in talent) must clarify and insist on defining our own role as architects. We must participate in the built environment at the same level as majority firms."

While NOMA's name encompasses all racial minority groups, the organization's membership has been and remains largely black. And whatever it may owe to the radicalism of the 1960s, NOMA today is an organization led by sensible, success-oriented practitioners and teachers. Its members recognize a close link between success in practice and success for blacks in schools of architecture, as both students and faculty.

One of the critical problems discussed among the conferees this year was visibility. If black students and their families hardly ever hear of a black architect, the most promising young people are unlikely to look to architecture as a career; if the designs and writings of black faculty members are rarely published, their chances for advancement or influence are reduced; if clients rarely see or hear of a black architect, black architects are not going to have the credibility they need.

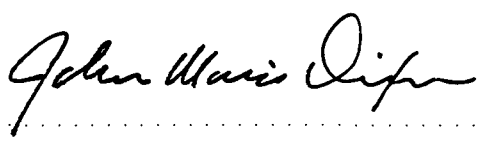
The problem is somewhat circular, and mere exposure in print could help break the circle. That is where we magazine editors come in: I was invited to this conference to observe, of course, but also to talk about the magazines and their publication policies.

I had to admit that hardly any work by black architects has been seen in P/A in the past decade. To my knowledge, P/A's competitors have also been publishing little or no work by black-owned firms. The editorial staffs of our magazines, I explained, are overwhelmingly concerned with the work, rather than in who produced it. We may speak of "star architects," but like the profession we serve, we are really thinking of star-caliber work; if you want to read something about the character of a Gehry or a Graves, you will find more in the airline magazines than in the professional journals. (This is not necessarily as it should be, and we at P/A are trying to look more seriously at the minds behind the work.)

The keystone of P/A's architecture coverage is the P/A Awards program, in which the entrants are cloaked in anonymity. When we assembled our July issue on Young Architects, we did not conceal identities, but we requested their photos only after selections were made. It turned out that none of the featured individuals was black, or came from any other officially recognized minority group. The NOMA conferees asserted that P/A should not have accepted such omissions in a survey of young talent, but should have made a special effort to find some minority work that deserved to be included.

In America today, where the gulfs between racial groups seem to be widening rather than closing, true fairness in publishing may require extra efforts to discover minority achievements. P/A has been planning a Perspectives article for early 1991 on some historical black architects. And we are now planning, for later in the year, an investigative article on the present status of black firms; it will concentrate on the practice strategies of black professionals – and the policies impinging on them – but will also take up representative commissions.

As we discussed in Detroit, it would be great for the image of black architects if we saw the emergence of an architectural counterpart to the film director Spike Lee. That may or may not happen soon, but meanwhile hundreds of minority architects and designers are turning out thoughtful, skillful professional work. Whether you are one of those professionals yourself or an admiring white colleague, please help us at the magazines (not just P/A alone) by bringing accomplishments of minority professionals to our attention. ■



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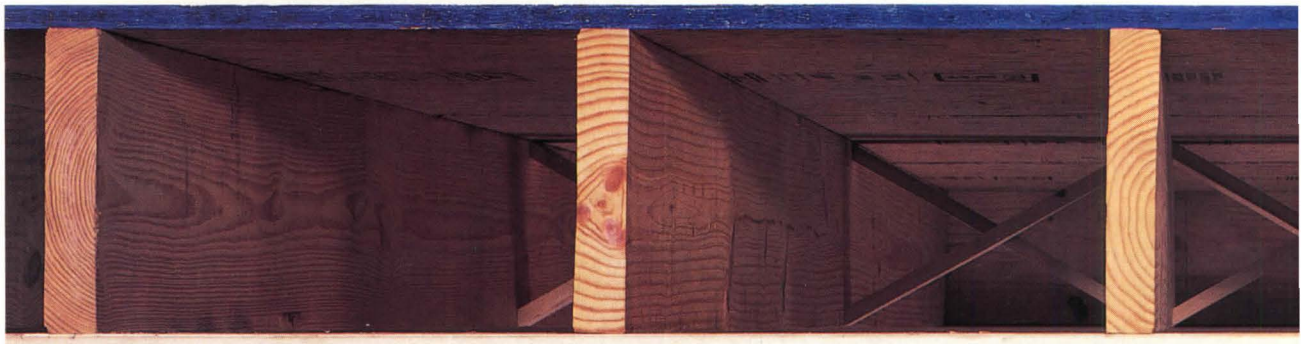

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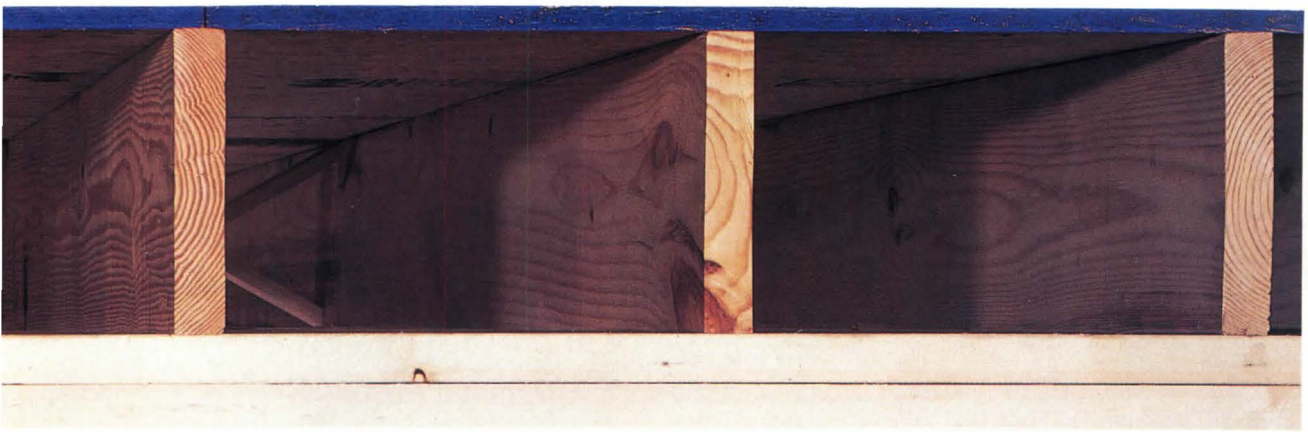

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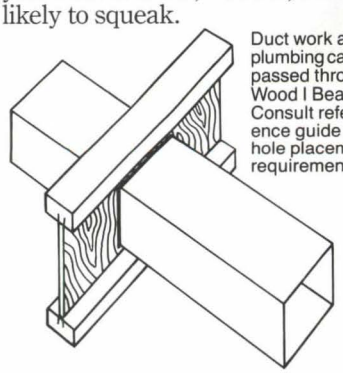

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Views

Recession Strategies

An excellent, provocative and necessary editorial in the September issue (Reflections on the Recession p. 9). I hope it produces responses from individuals and the AIA.

William Kent Schoenfisch
Marketing and Communications Counsel
Rifton, New York

Single-Product Specs I

As always, P/A causes me to think about issues raised in its articles, and October's issue was no exception. While Mr. Rosenfeld makes many good points in his article on specifications (p. 53) I think there are times when single-product specifications are appropriate.

An obvious example would be the client who wishes to standardize on a particular manufacturer's products such as locks or plumbing fixtures to simplify future servicing. Another would be a critical component of a project where on the basis of careful research or long experience the architect has good reason to use a particular product and the consequences of using an "equal" substitution that in time does not turn out to be equal could be serious.

On the other hand, I don't think anybody would argue his wisdom in the great majority of building components where there are often a number of competing products whose characteristics and suitability are all but indistinguishable, and the savings to be gained from competition are indeed "real."

What distresses me, though, is his use of phrases like "To produce the best (as well as least costly) result. . . " and "the best product at the best price." While we may not want to admit it, in general you get either the "best product" or the "best (i.e., cheapest) price" and rarely both at the same time. In the case of buildings if this is not obvious now it will probably become obvious in the future when the increased maintenance costs of cheaper products and construction methods greatly exceed what was saved initially by their use. This "best price" mentality has, sadly, become so pervasive in our country today that our products and services (such as plywood and airline travel) often cannot compete with their costlier foreign counterparts.

It's probably high time that we stop deluding ourselves about getting the best products at the best price and return to a more basic rule – you get what you pay for – and strive to put more long-term value into our goods and services.

Peter Borgemeister
Architectural Preservation
Providence, Rhode Island

Single-Product Specs II

Walter Rosenfeld's advocacy of "thinking generic" makes two assumptions:
— that equal products can command significantly disparate prices;
— that specifiers can, and will, take the time to evaluate submittals that are superficially similar.

I don't believe that either is true.

I spent 18 years as a member – then manager – of the Architectural Services department of a widely specified manufacturer of Section 10 products. Much of that time was spent interpreting "or equal" specifications and trying to stiffen specifiers' spines. I'm still trying as a consultant.

Competition is indeed the basic rule of the U.S. construction "game," and does guarantee the lowest price to the project owner. But that competition is – or should be – among general contractors, each with his group of subcontractors, to supply the specified components at the lowest price.

Why else specify at all? If, in a given section of the specification, there are three or more manufacturers who make truly equal products, there are probably more than three. A performance specification, outlining the appearance, function, and guarantees required, leaves the field open to resources perhaps unknown to the specifier, who can meet the standards. Brand names alone do not guarantee submittal of what the specifier had in mind.

In other sections, manufacturers' prices may be only one element in the bid price. Financing, warehousing, installing and servicing after installation can be significant. Exactly equal products cost equal money, give or take a few cents. A significantly different bid price indicates only that the pre-selected "equals" are not equal. Where a specific product has been specified, the only incentive for the bidding contractor to substitute is financial. When the owner is offered a cash incentive to accept Brand X, specified or not, it's a safe bet that the general and subcontractors are each pocketing at least that much.

Courts have repeatedly upheld the architect's right, even duty, to specify what he believes will best serve his client's interest. If that means a "one name" specification, that's what he must write. "Thinking generic" produces a generic, plain-brown-wrapper building. The specifier may correctly want just that for a factory warehouse or a low-cost housing project. For a public building whose profitability to the owner depends on attracting the public as tenants or patrons – a plain vanilla building is a loser at any initial cost.

The architect legally is responsible for the safety and performance of every element he specifies. He accepts a fee for exercising his knowledge of building products. A loose, three-names-or-equal specification abdicates that responsibility. It merely endorses the judgment, if not the self-interest, of the contractor.

Why specify at all?

Ruth Campbell
Addendum I
Leucadia, California

Single-Product Specs III

Walter Rosenfeld's article ("Specifications", P/A, Oct. 1990, p. 53) seems to say, "cheapest is best"! In as much as the architect is employed to (in some cases) do the best job possible to take into account form, function and cost, why not select the best product for the job consistent with the owner's budget? The manufacturer who builds a better mousetrap, or a better looking mousetrap, should not be forced to always compete at the lowest possible level. If a particular product is the best for the job, even if sole-sourced, the architect has an obligation to consider the product and, if in the owner's overall interest, see that it is incorporated in the project.

If Mr. Rosenfeld is concerned about the lack of competition he should create the competition at the conceptual stage by requiring manufacturers to commit, in writing, to adherence to a certain cost given the applicable parameters, prior to a final decision regarding use of a particular product. Legitimate manufacturers and their representatives welcome this type of competition and the work it entails. So should the architect who cares.

Gilbert L. Phillips
President
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Walter Rosenfeld agrees with some of these points, disagrees with others. For his response, see the Views column in the next issue of P/A. – Editor

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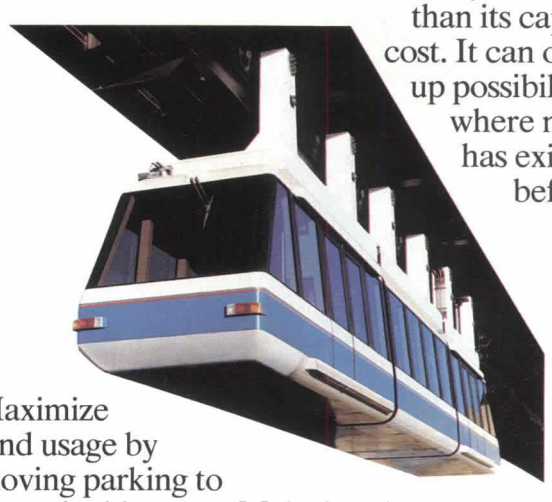

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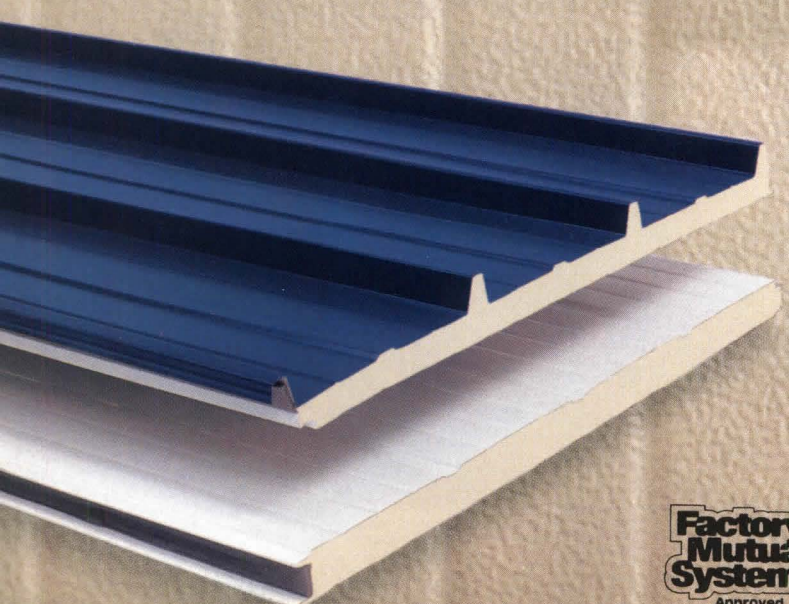

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Infill housing by OMA at left; Checkpoint Charlie is at the end of the street.

OMA's Berlin Housing Confronted by Change

One of the newest structures to be affected by the lightning-fast political changes leading to German unification has been the new housing at Checkpoint Charlie, designed by the Office for Metropolitan Architecture (Matthias Sauerbruch and Elia Zenghelis with Dirk Alten, Barbara Burren, Eleni Gigantes, Reni Keller & Alex Wall).

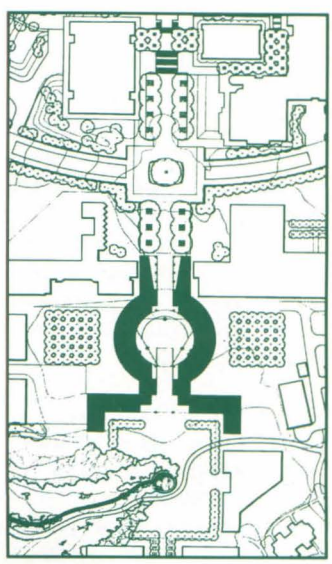
The housing, sponsored by the International Building Exhibition, or "IBA", is a seven-story infill structure containing 24 apartment units. The base was planned to be a bus turn-around and to contain office space for the American forces who, until this year, administered the checkpoint.

Many foreign architects who were invited to participate in IBA struggled to give their buildings a sense of "context", "place," or "Berlinness" by using materials or architectural elements characteristic of different Berlin buildings. OMA, however, was handed a unique program for a mixed-use building which, by the nature of its use, could only have been built in Cold War Berlin.

When the building was developed by OMA during the mid-1980s, the program generated an initial idea for the whole structure. OMA imagined that a section through the building would represent a section through West Berlin: Allies at the base, followed at the middle levels by larger units to be taken up by Turkish guest workers and their families, with Germans living in small units at the top. This metaphor suggested a series of programmatic transformations from base to top which inspired the architectural development of the building. With virtually every level a different plan, the infill structure departs from the typical cookie-cutter approach to social housing, with one basic floor plan repeated throughout all levels of a structure. The mixture of the units and the varieties of circulation systems make the building a delight and a surprise to experience. It is also one of the few IBA structures to be built that seriously answered the exhibition's call to develop or invent new or experimental solutions for housing. Thus, a metaphor for Berlin was translated into an ingenious solution for social housing.

With the opening of the Wall on November 9, 1989, the program for OMA's structure was suddenly rendered obsolete. The building was occupied during the winter of 1989–90, but the American forces have never used the base zone that was designed for them. (The official German unification on October 3, 1990, officially ended the Allies' 45-year occupation of Germany.) Turkish guest workers have for the most part not been given units in the building; instead, apartments have been allotted to families of East Germans or ethnic Germans recently arrived from Eastern Europe. With commerce replacing the Allies at the base, and Germans from Eastern Europe occupying the upper levels, the building that was planned to represent a cross-section through Berlin in the 1980s has been transformed to hold a probable cross-section through this German metropolis in the 1990s. While OMA's housing at Checkpoint Charlie has become a peculiar piece of Berlin's architectural history, the strength of its architectural solutions has allowed it to reflect a part of the future. **Mary Pepchinski** ■

Energy, at long last, is back on the national agenda. See Thomas Vonier's Washington Report, page 19.



Recent works by James Stirling, including the science library at the University of California at Irvine (above), confront the relationship between architecture and public life. Projects, page 96.

Pencil Points

Architect Harvey Gantt lost in his race to unseat Senator Jesse Helms in North Carolina. Gantt, a Democrat and former mayor of Charlotte, received 47 percent of the vote to Helms's 53 percent.

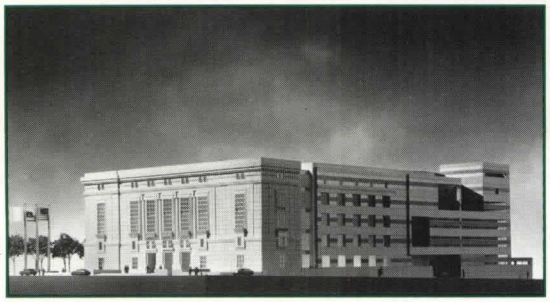
The AIA has announced its selection of 1991 Honorary Fellows. They are: Tadao Ando, Osaka; Jozsef Finta, Budapest; R. David Jackson, Sydney; Jens Nielsen, Copenhagen; Alexandros Tombazis, Athens; and Richard Young, Toronto. Fellowships are conferred upon architects (non U.S. citizens) of "esteemed character and distinguished achievements."

Renzo Piano is the recipient of the 1990 Kyoto Prize for Creative Arts and Moral Sciences, presented annually by the Inamori Foundation, Japan. Piano, one of three Kyoto Prize winners – others are for Basic Sciences and Advanced Technology – takes home a Certificate of Recognition, a Gold Medal, and $300,000.

The Mobile County/City Building Design Competition has been won by Harry Golemon/Mario Bollulo, Houston, Texas, in association with Frederick C. Woods & Associates, Mobile, Alabama. The 500,000-square-foot building will house administrative offices and courtrooms for the City and the County of Mobile, Alabama.

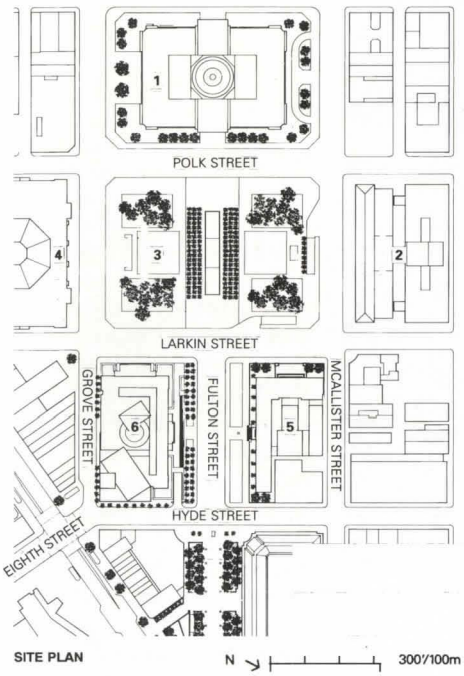
Harvard University Graduate School of Design has awarded its second Prince of Wales Prize in Urban Design to the City of Barcelona for its public urban spaces program – 140 separate projects completed between 1981 and 1987.

The Roebling Bridge/Delaware Aqueduct, located on the Pennsylvania/New York border, received the Top Honor Award in the Waterfront Center's fourth annual Excellence on the Waterfront project competition. Restoration work was by Beyer Blinder Belle, New York.



Peter Xiques

Larkin and Grove Street elevations of New Main.



Classical/Modern "New Main" for San Francisco

The City of San Francisco has made public the design for its 400,000-square-foot New Main Public Library, to be located across from the present facility in the city's Civic Center. Designed by James Ingo Freed of Pei Cobb Freed & Partners in association with Simon Martin-Vègue Winkelstein & Moris, the 'New Main' blends the Beaux-Arts imagery of the existing Civic Center with the Modernist geometries of the Pei firm in a manner similar to Freed's competition-winning design for Washington, D.C.'s Federal Triangle (P/A, Dec. 1989, p. 20).

While the building's Hyde Street and Grove Street elevations effectively reflect the Modern character of the building, the elevations that face the Civic Center are wrapped in an abstracted, symmetrical Classical skin, enlivened by details such as I-beam ends resting on its cylindrical columns. Inside, the building encourages walk-through traffic with generous main-floor public space and a five-story atrium.

The architects propose moving the Pioneer Monument, which sits on the site at the corner of Hyde and Grove. The fate of the monument has been a subject of contention in the city, and while it is absent from the architects' drawings, the massing of the building — especially the canted box that houses closed stacks — suggests an attempt to accommodate it should it remain.

Construction on the building is scheduled to begin in 1993, with an opening in late 1995. The existing library will become an Asian Art Museum.

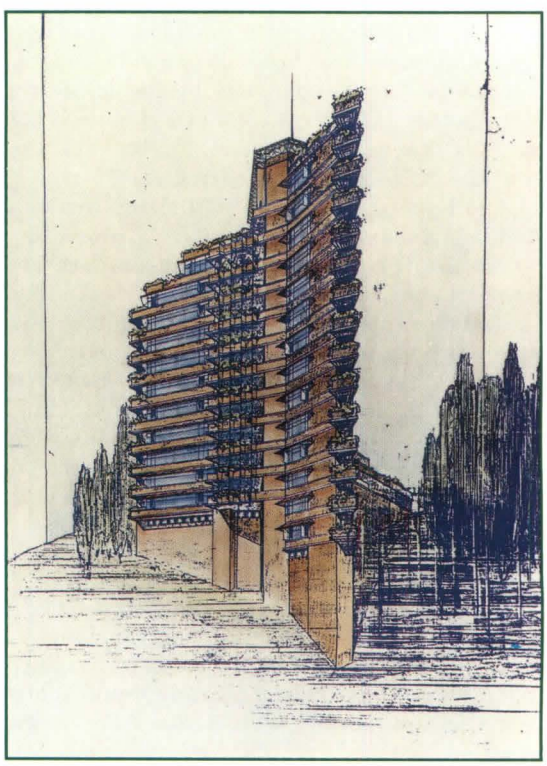
Mark Alden Branch ■

Unbuilt Wright Tower Considered for Pittsburgh

The archives of the Frank Lloyd Wright Foundation have been tapped once again for the construction of a previously unbuilt Wright design. L.D. Astorino Associates, one of the architecture firms responsible for preservation of Wright's Fallingwater, has unveiled plans to build Point View Tower, a 12-story, $12-million cliffside condominium complex designed by Wright in 1953 for Fallingwater client Edgar J. Kaufmann. The tower will be built on a 1.4-acre site in the Mount Washington area of Pittsburgh, just 100 yards from the spot Wright originally selected.

Like Los Angeles developer Charles Klotsche, who has built two Wright houses (P/A, Nov. 1989, p. 23), Wright enthusiast Louis D. Astorino was inspired by a trip to Taliesin West, where he discovered drawings for the tower in the course of his research for Fallingwater. Taliesin Associated Architects, under the direction of William Wesley Peters, will be architect of record for the project, while Astorino's firm will be the local architectural liaison. The project is being developed as a joint venture between the Astorino firm and developer John E. Connally. **Judy Donohue** ■

The author is a freelance writer in McMurray, Pennsylvania.



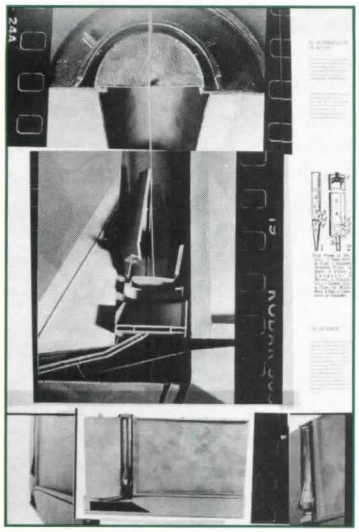
Wright rendering of his 1953 Point View Tower project for Pittsburgh.

27 Uses for an Abandoned Missile Silo

Last year, as the Cold War edged toward obsolescence, Storefront for Art and Architecture, an alternative gallery in Manhattan, announced a timely program. Entries were invited for the rehabilitation of some of the epoch's most potent but unfamiliar sites – 12 Atlas missile silos near Lake Champlain in Plattsburgh, New York.

Deactivated in 1965, just three years after an intricate underground launch network was built, the site proved surprisingly easy to document: Kyong Park, Storefront's director and the initiator of the Project Atlas show (exhibited this fall) published detailed drawings and photographs of the 160-foot-deep silos, with an invitation for designs from anyone intrigued by the paradox of a technological tour de force dedicated to destruction.

The 27 displayed entries, selected by Vito Acconci, Neil Denari, Elizabeth Diller, Patricia Phillips, Lebbeus Woods, and Storefront's Project Atlas Committee, ranged from parodies to somber memorials. Perhaps the most deceptively naïve was Jeff Vandeberg's "And They Shall Beat Their Missile Silos into Homes for Moonlight Mushrooms," in which he proposed converting the missile elevators into multilevel fungi farms that would be lifted above grade for evening harvesting. Shayne O'Neil's "(Re)-Instrumentalizing the Artifact" suggested that the silos become giant organ pipes; a dozen could create an eerie memorial concert.



Shayne O'Neil's proposal to turn missile silos into organ pipes.

The Nuclear Heritage Theme Park, a video presentation by Pearson Post Industries Defense Entertainment Technologies, opened with talking-head monologues where Pearson invited "the whole family" to visit the site's amusement park, a celebration of defense technology's stature in popular culture. Pearson Post promised Warheads on Parade, thrill rides that simulate G-force tests for pilots, as well as military footage of the armaments built with our tax dollars. Laughter in the gallery subsided, however, with the video's finale of atomic detonations; nuclear arsenals and the threat of destruction are still with us. **Philip Arcidi** ■

Designer's Saturday: A Waiting Game

The atmosphere at the fair held in New York in mid-October was one of contained energy: The extravagance that characterized similar events in recent years has all but disappeared – gone were the lavish parties, piles of slick promo materials, standup comics, and *de rigueur* reinvention of showrooms from one season to the next. Yet it was apparent that the design community's interest hadn't waned. Traffic seemed lively in numerous Manhattan showrooms and at the IDCNY in Long Island City.

The number of product introductions was relatively modest. (This is not necessarily a bad thing; relieved of the pressure to produce something new for one or two shows every year, manufacturers might now focus on fine-tuning the fewer products launched.) Among the noteworthy debuts were Herman Miller's Relay freestanding furniture by Geoff Hollington, (P/A, Sep. 1990, p. 161) and the elegantly minimal Ariel stacking chair designed by David Rowland for Allsteel.

Certainly much of the event's interest lay in the increased sophistication and intricacy of the textiles, which are on the whole more complex and eclectic than the tweedy, self-effacing stuff hitherto associated with contract furnishings. Among the best in show were Jhane Barnes's additions to her spectacular collection for Knoll; the Pavimento fabrics by Kristie Strasen for Hickory Business

Elliott Kaufman

Formica screen by Karen Bausman at Designer's Saturday.

Furniture, which were inspired by Italian floor paving patterns; and Jennifer Eno's Lexington Avenue collection for Bernhardt. Drawing its geometric motifs from the mosaic friezes of New York subway stations, the Bernhardt fabrics exemplify many of the traits that distinguish the others. Simulating the substantial feel of jacquards or brocades, they take advantage of the textile's nap to render startling color shifts; The "architectural" patterns are both ornamental and subtle.

Globalization was the overall theme of Designer's Saturday, addressing through panels and ex-

(continued on next page)

Washington Report

Energy is back on Washington's agenda, after what has seemed like a long absence. It may be too little too late and stems from regrettable causes, but rekindled public and political interest in national energy policy could be positive. When President Bush briefly mentioned energy conservation this fall in his address to Congress on events in the Persian Gulf region, he touched off "a scramble for new program ideas," according to a longtime Department of Energy consultant.

The architectural profession may be positioned once again to offer good suggestions. Under auspices of the AIA and the Association of Collegiate Schools of Architecture, the Council on Architectural Research has organized a small group of veteran energy activists to examine research by the national laboratories over the past several years. The group hopes to identify results that could be disseminated to architects and to suggest new areas for research.

Notwithstanding the wishes of the past administration, DOE's conservation and renewable energy research programs have continued during the 1980s. Much of DOE's funding has always been funneled to federal laboratories, which date from DOE's predecessor organization, the Atomic Energy Commission. The proportion of DOE's funds spent in the national labs has risen in recent years, displeasing at least some critics. The labs adeptly justify and spend their research budgets but have never had much influence on practice.

Information and research may not be the keys to more energy-efficient buildings in any case. "Anyone who wants an energy-conscious building, right now, has more than enough information and guidance available," scoffs a pioneer in passive solar design who believes that only professional leadership, higher energy prices, incentives, and regulations – not more information or research – can have a substantial effect on building practices.

And at the moment buildings are not regarded in policy circles as very important to the national energy future. Calls have

(continued on next page)

Washington Report cont.

emerged in Congress for strict new measures to curb gasoline use in automobiles, but, apart from a few architects and those who are already active in DOE's buildings-related programs (or hoping to be), there has been little talk about energy and buildings.

This is understandable to a degree: Construction has become more energy-efficient over the last 15 years and, by most accounts, the potential for saving energy in buildings pales in comparison with the larger and more challenging transportation and industrial sectors. But failure by Congress to focus on buildings also reflects too narrow a conception of the influence that architects and planners could have on urban development patterns. They could bring to bear the potential for co-generation, recycling systems, mass transit, and a host of improved approaches to planning and powering communities.

The AIA is reportedly considering plans to reconstitute a standing energy group as part of its newly formed Committee on the Environment. This move would at least provide a basis for renewed discussions about energy and buildings in broader terms and might engender new and more significant ideas.

At the very least, somebody needs to guard against the inclination simply to pick up where we left off ten years ago when the Reagan administration entered the White House vowing to dismantle DOE. If we really expect to reexamine and alter our energy options, efforts will have to go well beyond such national laboratory favorites as expensive, overwrought, computer-aided analysis tools.

As was the case ten years ago, circumstances call for far-reaching reconsideration of the ways in which we develop, build, and service our urban centers – and not only to conserve energy.

To at least some architects who have worked long and hard on energy issues, focusing on single buildings – or, as seems more likely in the established federal environment, on isolated pieces of buildings – will never produce enough in the way of sorely needed results.

Thomas Vonier ■

Designer's Saturday *(continued from previous page)*

hibitions the growing involvement of American designers and manufacturers abroad, as well as the deepening European penetration of the U.S. market. Of the foreign firms present, Unifor and Vitra (now independent of Stendig) could be seen as harbingers of a highly evolved continental aesthetic, evident in contract and residential furniture, that is leaner and less "coddling" than the equivalent American products. Unifor mounted a delightful exhibit of Aldo Rossi's drawings and models to complement his Parigi and Milano chairs and column-like chest of drawers.

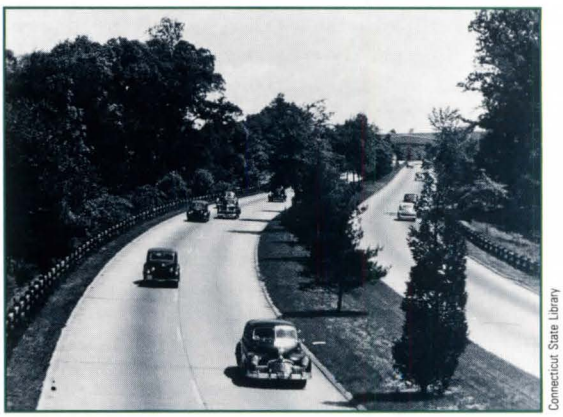
A folding screen commissioned by Formica from Karen Bausman, of Bausman Gill Associates of New York, served as a backdrop for programs held at the A&D Building. The screen's perforated wings evoked celestial constellations; unwittingly, perhaps, it also provided a foil for the terrestrial stars on the dais. **Ziva Freiman** ■

Cloudy Future for Connecticut Parkway

The fate of Connecticut's Merritt Parkway, the 38-mile scenic highway from Greenwich to Stratford completed in 1940, is currently a topic of debate. The highway is described as "the crowning achievement of a major movement in design" by Catherine Lynn of the Connecticut Trust for Historic Preservation. Inspired by the nineteenth-century City Beautiful movement, the Merritt has 35 unique and ornate bridges designed by architect George Dunkelberger – ranging in style from Art Deco to Italianate – and a beautifully landscaped right-of-way.

In this 50th anniversary year of the roadway, concerns over present congestion and the anticipated 80 percent increase in traffic by 2010 have prompted Connecticut State Department of Transportation officials to consider plans for expanding the Merritt from four lanes to as many as eight lanes. A proposal to create a "mirror image" of the Parkway in its 300-foot wooded right-of-way would preserve the bridges but destroy much of the scenic landscape. Preservationists would like to see mass-transit improvements and the widening of the parallel I-95 and Route 1 highways instead, but these solutions are more complicated than paving the Parkway's green belt.

The issues of preservation versus economic development affect many parkways across the nation that were designed and built between the two World Wars to provide an experience of countryside for recreational and interurban drivers. Changing urban patterns in Connecticut have caused traffic on the Merritt to increase two and a half times since it opened; daily commuting has long since supplanted weekend outings as the parkway's primary use. The state government fears that increased congestion will drive business out of the region.



Connecticut State Library

1940s photograph of the Merritt Parkway.

Although the historic Parkway cannot be easily adapted to the ever changing and rapacious needs of the automobile, preservation of the Parkway's bridges and landscapes is an important issue to address when considering the area's long-term transportation and development concerns.

In the meantime, preservationists are lobbying for National Landmark designation, and the state's proposals are undergoing an environmental review; no decisions will be made until the state completes this process in 1991. **Julie Meidinger** ■

Conference Considers Third World Building

Can First World architects participate effectively in the dynamic building process underway in the Third World, where most of the planet's urban population now lives? This and other questions were addressed in the second conference of the International Association for the Study of Traditional Environments held at the University of California at Berkeley in October.

Conference directors Nezar Al-Sayyad and Jean-Paul Bourdier assembled over 100 speakers from 30 countries to address the theme of cultural dualities in a multidisciplinary way. Keynote speaker Hassan-Uddin Khan of the Aga Khan Trust for Islamic Culture noted that in today's world the polarities of internationalism and realism "exist in a dialectic within which architects have to operate. It now appears impossible not to be influenced by international developments and to base buildings strictly on a regional tradition."

Although nostalgia for vanishing vernacular building traditions was evident, Al-Sayyad observed in his summary remarks that the mood of the conference had moved beyond guilt over lost paradises to concern for fitting traditional settlements into a world order. Architects can assist this process, the speakers agreed, but they are hampered by the emphasis on formal solutions in their education. It is hard to create a synthesis of past imagery and contemporary needs even without external influences. The task, particularly for First World architects, will be to comprehend what is truly authentic in another culture and design from that point of view. **Sally Woodbridge** ■

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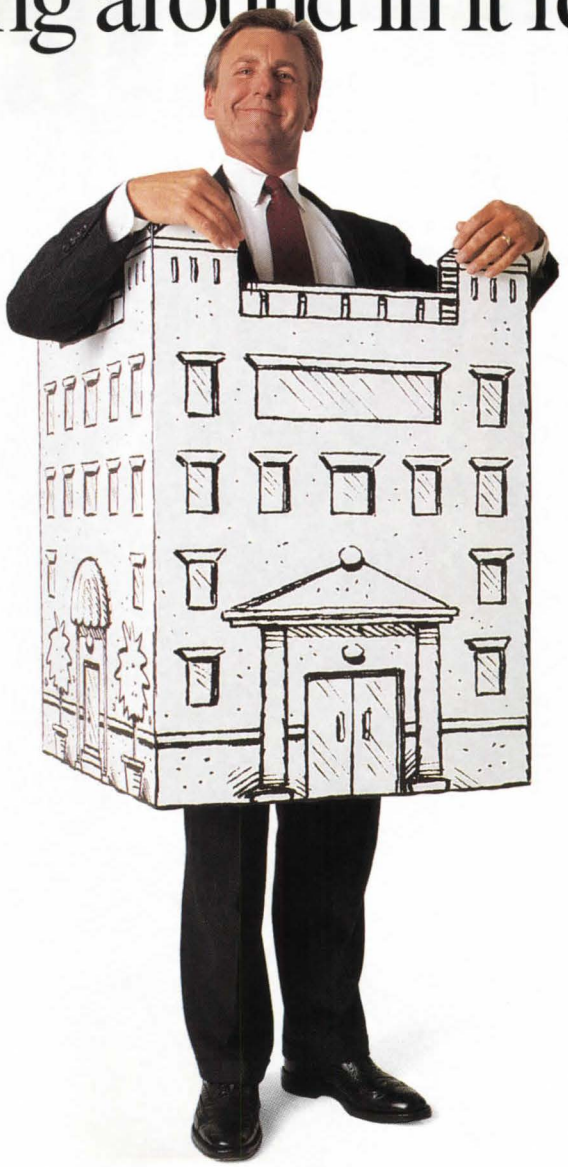

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Calendar

Exhibitions

Peter Rose
Through December 28

Cambridge, Massachusetts. Recent work by Montreal-based architect Peter Rose is on view. Gund Hall, Harvard University Graduate School of Design.

Monuments and Memorials
Through January 4, 1991

Chicago. Six artists and three architects were invited to "create memorial designs for our time" in an effort to "raise fundamental questions about the role of art and architecture in the urban environment." State of Illinois Building.

New Projects
Through January 5, 1991

New York. Recent projects by Coop Himmelblau, Peter Eisenman, SITE, Aldo Rossi, Bernard Tschumi, John Hedjuk, Rem Koolhaas/OMA, and Zaha Hadid will be on view. Max Protetch Gallery.

American Arts & Crafts
Through January 6, 1991

Los Angeles. This exhibition celebrates the American Arts & Crafts movement with 250 decorative arts pieces from the collection of Max Palevsky and Jodie Evans and the museum's permanent collection; furniture, glass, ceramics, and metalwork by Greene & Greene, Stickley, Wright, and others are displayed. Los Angeles County Museum of Art.

Britain's Independent Group
Through January 13, 1991

Los Angeles. Though Britain's Independent Group first banded together in the 1950s in an effort to understand the rise of materialism in mid-century America and its effect on Europe, its members are perhaps best known as originators and arbiters of Pop Art and its offspring. Reyner Banham, Peter and Alison Smithson, James Stirling, and Colin St. John Wilson were among the architects, artists, and critics in the IG. Museum of Contemporary Art.

Affordable Housing
Through January 27, 1991

New York. "Visions of Home: Designs for Affordable Housing in the South Bronx," an exhibition comprising ten competition-winning proposals for housing on a real site in the Morrisania section of the South Bronx, is meant to enhance the housing discussion. Bronx Museum of the Arts.

Mondo Materialis
Through February 24, 1991

New York. Collage panels of materials – from plastic to recycled crushed glass – generated by architects and designers in an effort to assess our natural and manmade resources, are supplemented with a display of new materials and finishes developed by manufacturers. "Mondo Materialis" (P/A, May 1990, p. 23) was organized by the Steelcase Design Partnership and originated at the Murray Feldman Gallery in Los Angeles. Cooper-Hewitt Museum.

Blue Ridge Parkway
Through April 18, 1991

Washington, D.C. One of the more sensitively designed roadways in the United States, the Blue Ridge Parkway, linking Virginia's Shenandoah National Park with North Carolina's Great Smokey Mountain National Park, is documented with drawings and photographs. National Building Museum.

Albert Pope: Urban Reservoirs
December 4-January 26, 1991

New York. Projects by Houston architect Albert Pope (P/A, July 1990, p. 82) "attempt to engage the post-war city as a powerful but neglected palette. . . to confront the indiscriminate proliferation of style." John Nichols Gallery.

Iakov Chernikhov
December 7-March 9, 1991

New York. This exhibition of 400 original drawings and 100 "artifacts" by Russian Avant-

(continued on page 24)

Calendar *(continued from page 23)*

Garde architect Iakov Chernikhov is a rare opportunity. Arthur Ross Architecture Gallery, Columbia University.

Architectural Perspectivists
December 10-January 10, 1991

Boston. "Architecture in Perspective V," the annual competitive exhibition sponsored by the American Society of Architectural Perspectivists, will include the illustration that won the ASAP's fourth annual Hugh Ferriss Memorial Prize (P/A, Sept. 1990, p. 26). Gallery of the State Transportation Building.

Competitions

Rancho Mirage
Entry deadline January 4, 1991

Rancho Mirage, California. The City of Rancho Mirage is holding an open, two-stage competition to develop a master plan for a proposed $20-million Civic Center. The center will house government and community facilities. Contact William H. Liskamm, Competition Advisor, Civic Center Design Competition, c/o Rancho Mirage City Hall, 69–825 Highway 111, Rancho Mirage, Cal. 92270.

New England Holocaust Memorial
Registration deadline January 18, 1991, submission deadline March 4, 1991

Boston. The New England Holocaust Committee has announced a two-stage international design competition for a Holocaust memorial in Downtown Boston. Architects, landscape architects, artists, and "collaborators from diverse fields" are eligible. Contact New England Holocaust Memorial Committee, c/o Katharine Kane Inc., 59 Temple Place, Boston 02111 (617) 338-2191.

Andrea Palladio Prize
Submission deadline January 31, 1991

Venice, Italy. The two-stage, biennial Andrea Palladio International Prize for Architecture (P/A, Dec. 1989, p. 26) is open to registered architects and engineers who are less than 40 years old on January 1, 1991. Each candidate may submit one project. Contact Caoduro S.p.A, Via Chiuppese 15, 1–36010 Cavazzale (Vicenza) Italy tel. 0444/595900 or FAX 0444/596761.

Innovations in Housing
Entry deadline February 8, 1991

Tacoma, Washington. A "move-up home" of 2500 square feet or less that uses wood products and systems in aesthetic and structural applications is the brief for this annual design competition. The winning design is built and published in *Better Homes and Gardens,* a sponsor along with *Builder,* P/A, and the American Plywood Association. Architects, designers, engineers, builders, and students may enter. Contact Innovations in Housing, P.O. Box 11700, Tacoma, Washington 98411 (206) 565-6600 extension 172.

Conferences

NAHB Conference
January 18–21, 1991

Atlanta. The 47th annual National Association of Home Builders convention and exposition will be held at the Georgia World Congress Center in Atlanta. Educational programs, talks by industry leaders, and over 1000 product exhibitors are part of the four-day event. Registration deadline is December 1. Contact Betty Christy, NAHB, 15th and M Streets, N.W., Washington, D.C. 20005 (202) 822-8861.

Landscape Architecture
February 15–16, 1991

Bethesda, Maryland. "Green: The Color of the 90s" is the theme for the fifth annual symposium and Resource Fair on landscape architecture and design. Contact Environmental Design, P.O. Box 15121, Chevy Chase, Maryland 20825–5121 (301) 652-1212 or FAX (301) 933-2916. ■

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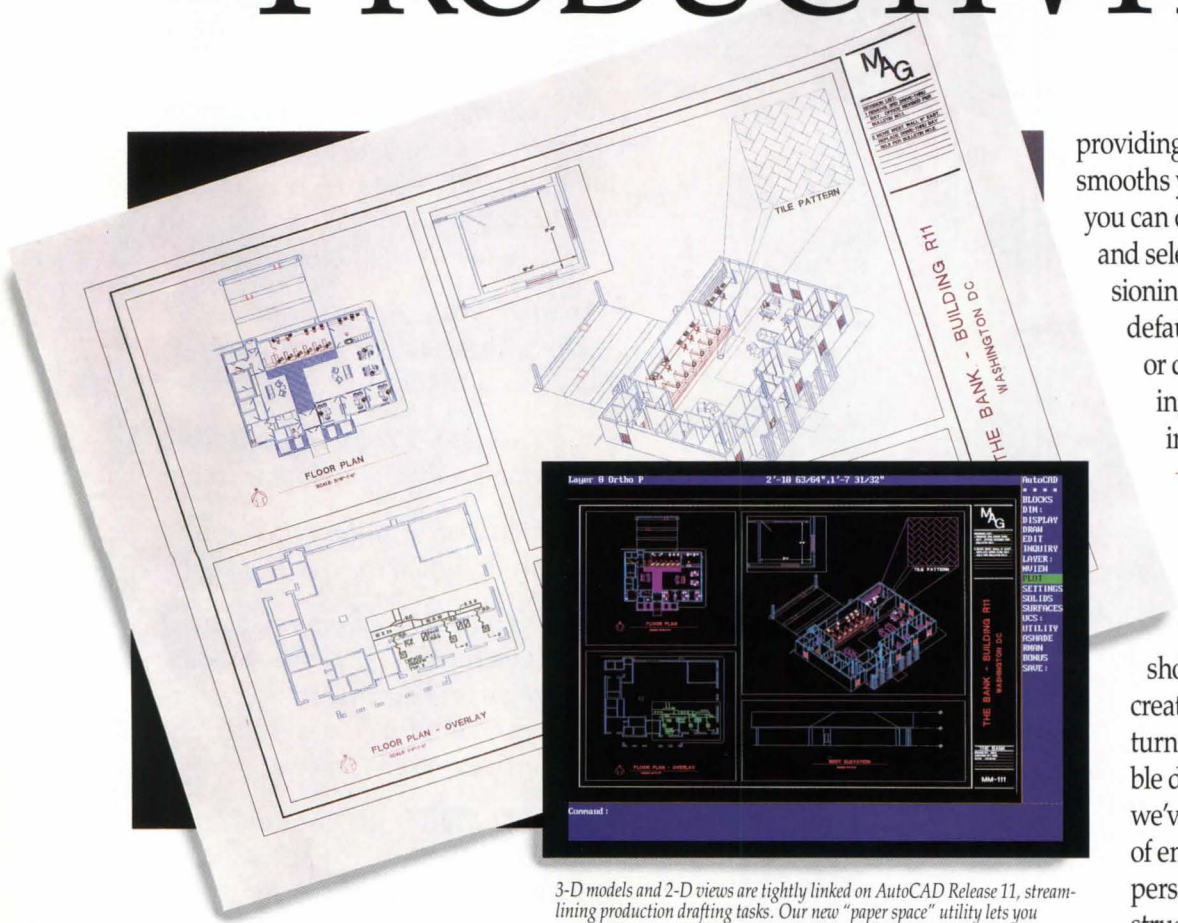

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Technics: Seasoned Ideas, New Technologies

Pete Kent of the Wood Products Information Center explains how new standards can help architects better understand and specify I-joists and glulams.

The apparent simplicity of glued-laminated beams and wood I-joists belies their intricate systems of engineered performance. Rather than one solid piece, they are made of several components that provide a greater and more predictable strength than otherwise possible. Such properties have helped to bolster an increasing acceptance of these products during the past two decades, and while the product concepts are not new, the variations on them are increasing. This means that architects should better understand the detailing and specification requirements of the new generation of glulams and I-joists.

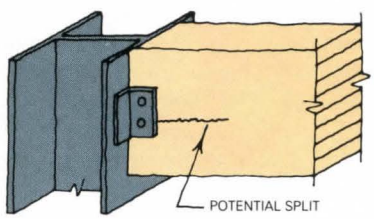
Glued-Laminated Timbers (Glulam)

Laminated timbers were used in Europe as early as 1893 for an auditorium in Switzerland, and U.S. researchers began working with the concept in the 1930s. By 1954, a combination of synthetic resin adhesives, structural modeling formulas, and industry standards set the origins for the modern laminating industry.

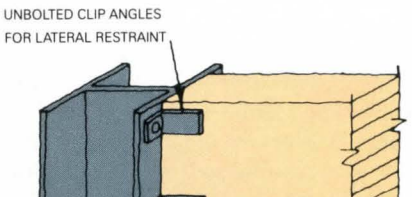
Glulams can be manufactured either curved, straight, or with a camber that offsets dead-load deflection for appearance purposes. Continuous straight beams have spanned up to 140 feet, and section depths of more than seven feet have been used. Curved arches can be two- or three-hinged and may be designed as radial, Gothic, A-frame, Tudor, or parabolic. Use of curved members in dome configurations, as in the Tacoma Dome, have spanned more than 500 feet.

Glulam components can be quickly erected on site, requiring only hand tools and often using standard metal connections that are listed in manufacturers' catalogs. Typical connections are for beam, arch, and column applications. Beams are used for specialty structures, industrial roofing systems, pedestrian and highway bridges, highway barriers, light posts, and marine applications. Custom beams for architectural effects are prevalent in the Eastern U.S. Western laminators specialize in stock beams used for garage and door headers in residential construction and for the structural framing of panelized wood roof systems.

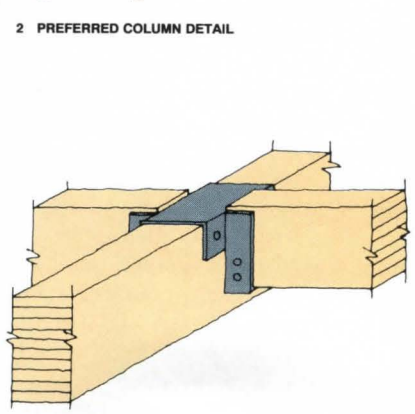
Glulams are made by gluing together laminations of structural dimension lumber. The lumber, which is usually softwood species, is graded specifically for use in laminating. It is graded either visually or both visually and machine-measured for stiffness. To provide continuous lengths for a



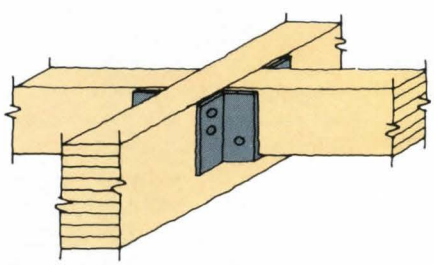
1 POOR COLUMN DETAIL



2 PREFERRED COLUMN DETAIL



3 SADDLE CONNECTION



4 FACE HANGER

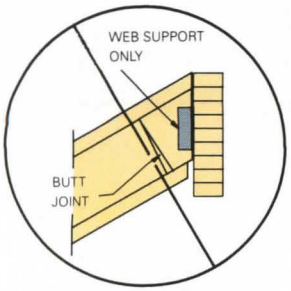
1 Timber connectors or bolts should not be located near the center of the ends of large beams or girders, since the concentration of the tension perpendicular to grain and shear stresses tend to cause splitting of the member.

2 The preferred method of end fastening locates bolts toward the bottom of the beam to minimize the effect of shrinkage between the bottom of the beam and the fastening. Note the beam support under the member and the use of unbolted clip angles for lateral restraint.

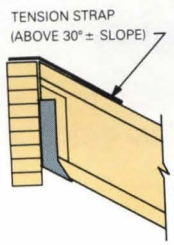
3 Several methods can be used to support the ends of bending members that frame into other beams, rather than on columns, walls, or pilasters. The preferred method is to transfer the end reaction by bearing perpendicular to the grain in a saddle-type connection.

4 When the end reaction of the beam is fairly small, the hanger can be fastened to the face of the girder. Bolts or connectors in the main carrying beam or girder should be placed in the upper half of the member. In the supported member, they should be placed near the bottom.

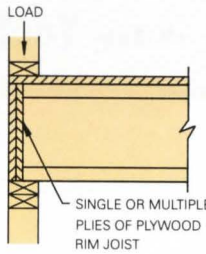
[Drawings and captions are excerpted from Wood Frame Design for Commercial/Multifamily Construction, *Western Wood Products Association, Portland, Oregon (503) 224-3930.]*



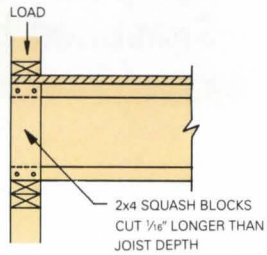
5 WEB SEGMENT PULLS OUT



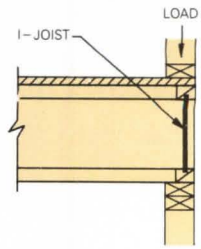
6 SLOPED SEAT JOIST HANGER



7 FULL DEPTH PLYWOOD RIM



8 FULL DEPTH 2×4 CRIPPLES



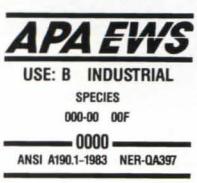
9 BLOCKING CUT FROM I-JOISTS

American Plywood Association Expands Services

The American Plywood Association in January 1991 will launch a new organization, American Wood Systems, to provide quality assurance, promotion, research, and testing services to member manufacturers of glued wood structural members, including glulams and I-beams.

The first function of AWS will be to offer use of a new APA-EWS (for "Engineered Wood Systems") trademark to member manufacturers' products that meet the specifications of ANSI A190.1, *Structural Glued Laminated Timber*. The trademark, like APA trademarks that appear on plywood and structural panel products, signifies that member firms subscribe to an AWS-sponsored program of testing and quality assurance. The trademark does not represent a new standard, but only that quality assurance is provided by APA-EWS. Other organizations also provide testing services, so products lacking the APA-EWS trademark do not necessarily fail to meet the specifications of ANSI A190.1.

As other industry-wide standards are developed for other structural composite products, AWS will apply its trademark to these products with reference to the governing standard. For more information, call American *Wood Systems in* Tacoma, Washington (206) 565-6600, ext. 186. **Kenneth Labs** ■



given member size, the lumber is end-jointed with structural adhesives. During the assembly of a bending member, laminations are arranged by the grade of lumber. The higher quality grades are placed on the outer portion of the beam, because the beam's strength is controlled by the quality of lumber used in the outer tension zone.

There are some 190 standard industry layup profiles, the strength properties of which are predetermined by species and grade combinations, types of glue, and depth of the beam. Specifications that correspond to these layups are published by the American Institute of Timber Construction (AITC), an industry trade association that also ensures quality control, sound design practices, and proper specification. (AITC also distributes the GLSizer™ software, which sizes glulam timbers for a variety of loading conditions in conformance with the AITC *Timber Construction Manual*).

Glulams should be specified by the mechanical properties needed and the desired visual characteristics. Architects often specify glulam members by a specific layup combination, a practice that may not be the most efficient for a given application. Ideally, the designer should specify the primary stress required by a given design, such as extreme fiber in bending, along with design values that include modulus of elasticity, compression perpendicular to grain, and horizontal shear. This gives the manufacturer latitude to select the more economically available materials that will satisfy the design requirements and design and avoid potential unnecessary costs or overspecification.

Glulam appearance grades refer strictly to the finished appearance of the member and bear no relation to a beam's structural properties. On a rising scale of aesthetic quality, grades include Industrial, Architectural, and Premium. Appearance grade descriptions are available from the AITC. All structural glulams are manufactured to a national standard (ANSI/AITC A190.1–1983). The standard establishes requirements for production, inspection, testing, and certification. It also provides the basis for common understanding of product characteristics among producers, suppliers, distributors, and end users.

Changing timber resources, particularly in the Western U.S., are shifting emphasis to more selective specification of glulams. Designers who use Western species glulams most often request, as a matter of practice, a fiber bending strength of 2400 psi. However, material used in the tension lamination for 2400 psi beams is not now as readily available as it was in the past.

AITC recently reviewed current beam usage and found that many applications could use beams with 2000 psi ratings, particularly in residential construction. Even in industrial buildings, which often require 2400 psi ratings, some members (such as purlins) can use 2000 psi. Where applicable, substituting 2000 psi rated beams for 2400 psi rated beams, where design stresses permit, will usually cost less. Such substitution would also allow the use of more readily available lumber resources. In the Eastern U.S., high-quality southern pine laminating combinations are available with a 2600 psi fiber stress in bending. Specifiers should consult local suppliers to determine availability of stress levels for a particular market.

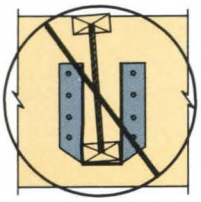
Because of such uniform industry practices, glulams are accepted by all three major building model building codes. However, local code jurisdictions should be consulted, as is customary with other materials, as they may revise the model codes through minor amendments.

I-joists

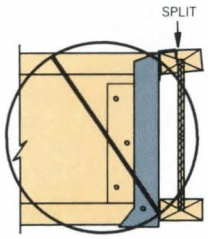
Wood I-joists are a lightweight, engineered structural component used for floor and ceiling joists and rafters in residential and nonresidential construction. First manufactured during the 1920s, the product did not come into modern usage and volume production until the late 1960s.

I-joists are made of top and bottom flanges connected by a central web panel. Flanges and webbing are machined with a matching groove and then bonded with structural adhesives. Flange material is usually machine stress rated (MSR) lumber, which is finger-jointed to obtain required lengths, or laminated veneer lumber (LVL), which can be ordered to length, thickness, and width and used directly in production. LVL has a higher tensile strength than MSR lumber, as well as a higher cost.

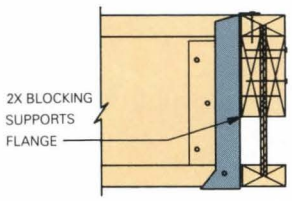
Individual web panels are edge glued with a simple butt joint, scarf joint, or machined groove. Fabricators have traditionally used structural plywood for the webbing material. However, oriented strandboard (OSB) is gaining rapid acceptance because of its lack of core voids and availability of longer panels. Finished depths range from 9 to 32 inches, with lengths of up to 80 feet. Lengths can



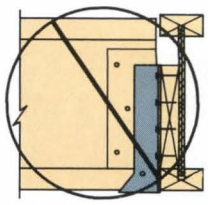
10 UNRESTRAINED ROTATION



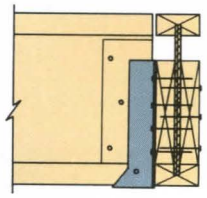
11 FLANGE ROTATION



12 RECOMMENDED INSTALLATION



13 INADEQUATE NAILING



14 RECOMMENDED INSTALLATION

be custom ordered or can be cut to size on site. In addition, single-tapered joists are available for roof applications.

Though a common I-joist design is typical among fabricators, the industry is highly proprietary. Unlike layup and material combinations formulated for glulams, there has been no industry requisite for manufacturing, finished sizes, or types of material used in I-joist production. However, an American Society for Testing Materials standard (ASTM D5055–90) listing common criteria for I-joists was recently approved.

The I-joist industry is test-based. Manufacturers formulate their own design and materials to meet requested specifications. Variations among manufacturers include production techniques, patented joints for the flange-web connection, types of adhesives, and the grade and types of flange and web material used. The advantage is that the producers can optimize the best and most economical combination of materials, the availability and cost of which often fluctuate.

The ASTM standard, published in July 1990, provides accepted measures for industry-wide development of design values and quality control. It requires testing of the flange stock, end joints, and completed joists. Quality control includes testing I-joists sections to failure on a daily basis. Daily testing also supports manufacturer's evaluation reports, which are used by building code officials in lieu of acceptance by the model codes.

One limitation of the proprietary joists is that architects cannot specify a particular grade. Neither can they use an "equal or exceed" specification without risking substantial increased costs. Specifications should include vertical loads, lateral considerations, joist depth and spacing, and deflection criteria. Manufacturers' catalogs provide the requisite information, which is backed by the manufacturer's staff of registered engineers.

I-joists require certain considerations during application. Web stiffeners or blocks may need to be used at bearing points to help reduce the load on the flange-web connection. This is especially true with the deeper sections. To assist load transfer in multistory buildings, blocking panels made of short I-joist pieces are placed over the lower bearing wall between the joists. Solid sawn lumber and I-joists should not be mixed in use because of the lumber's differential shrinkage. Joist hangers must be selected by the type of application. Though stock hangers are available, they are not always compatible with all I-joists. Manufacturer's catalogs provide detailed specifications on fasteners.

One of the greater assets of wood I-joists is the ability to bore large diameter holes in the webbing for ducts. Producers' catalogs provide diameter limits, and some joists come pre-punched. Cutting of the flange material is forbidden.

I-joists are not without their limitations. The joist material cost can be twice that of structural lumber. But this comparison does not take into account lower labor costs due to quicker installation and lower material waste. In addition, end users have, in some cases, complained of annoying floor vibrations. To correct this, manufacturers recommend shorter spans, stiffer underlayments, or deeper sections.

In addition, the joists are accepted in generic one-hour fire-rated floor-ceiling assemblies that use Type-X or Type-C gypsum. Some local jurisdictions, however, do restrict I-joist depth. Fire safety is a concern due to the thin cross sections.

For the future, joist designs are moving toward deeper sections and doubled flanges, with strength characteristics that are nearing those of beams.

Pete Kent ■

The author is the secondary wood products coordinator of the Wood Products Information Center, a function of the World Forestry Center in Portland, Oregon. The nonprofit educational Center has recently begun publication of Wood Design Focus, *a quarterly technical newsletter. The first issue (Spring 1990) features five articles on I-joists.*

Recommended Reading

ASTM D5055–90, *Standard Specifications for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists*. ASTM, Philadelphia (215) 299-5585.

Glued Laminated Timbers for Industrial, Commercial, and Institutional Buildings – 1990, and *The GLSizer*™ (software for DOS 3.1 and later versions that complies with the 1985 edition of the *AITC Timber Construction Manual*) AITC, Vancouver, Washington (206) 254-9132.

"Prefabricated Wood I-Joists: An Industry Overview," *Forest Products Journal*, vol. 40, no. 3, pp. 15–20, Forest Products Research Society, Madison, Wisconsin (608) 231-1361.

Wood Design Focus, vol. 1, no. 1, Spring 1990, World Forestry Center, Portland, Oregon (503) 228-1367.

5 End fastening of I-joists at web members alone is not generally recommended, because it stresses joints within the web near the end of the joist, and can also pull the web out of the bottom flange.

6 The bottom flange of sloping joists should be seated in a joist hanger, with filler blocks added to the sides of the web. Tension straps are desirable on steep pitches.

7–9 Loads from above must be transferred through blocking to the bearing below, since the joists have little bearing capacity beyond that necessary to support their own reaction. Blocking should consist of plywood, I-joist segments, or cripple studs (squash blocks). Sawn lumber has greater shrinking and swelling rates than web material and is not recommended for blocking.

10 The top and bottom flanges at the end of joists must be restrained against rotation, either by a full-depth hanger or by blocking the sides of the web to fill the width of the hanger.

11–12 Web stiffeners are required on the receiving I-joists when top-bearing hangers are used. These should be installed tightly against the lower side of the top flange to support it and to resist cross grain bending, rotation, and splitting.

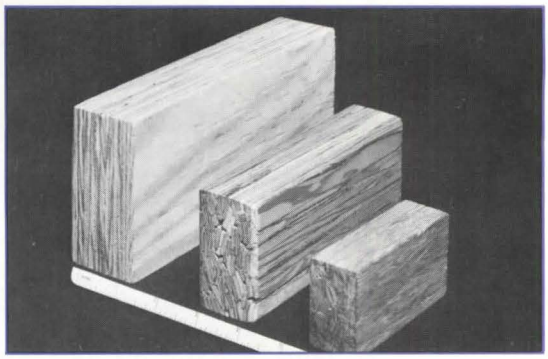
13–14 Face nail hangers require blocking on both sides of the receiving I-joists, and nails should extend beyond the web material into the backer blocking. In general, nails driven into the flanges should not exceed the diameter of a 10d nail or 1 ½ inches in length. Nails driven into the stiffeners should not exceed the diameter of a 16d nail.

[Drawings and captions adapted from "Special Design Considerations for Wood I-Joists," John D. Maly, PE, in Wood Design Focus, Spring 1990.*]*

Structural Composite Lumber

U.S. Forest Products Laboratory researchers **J. Dobbin McNatt** and **Russell C. Moody**

describe the strengths and applications of the newest generation of reconstituted engineered wood products.



1

Increased use of engineered wood products such as parallel-chord trusses, prefabricated I-joists, and glued-laminated (glulam) timber has created a demand for high- strength structural lumber. High-quality structural lumber is needed for the flanges and outer laminations of such products to assure the high strength and stiffness needed for reliable performance. However, it is becoming more difficult – and thus more expensive – to obtain such lumber from available forests. For example, the yield of rough green lumber at the sawmill ranges between 40 and 60 percent of the log volume. The yield of top-quality structural lumber, however, is no better than 20 percent in large, old-growth logs, and is minimal in smaller, second-growth logs.

The demand for high-quality structural lumber has led to the development of various types of reconstituted engineered lumber, which are classified into the general category of structural composite lumber. Three distinct types have emerged: laminated veneer lumber (LVL), parallel strand lumber (PSL), and laminated composite lumber.

Laminated Veneer Lumber

Laminated veneer lumber (LVL) is produced by gluing together layers of veneer with the grain of all the layers parallel (1). This differs from plywood, in which the grain of most plies lies perpendicular to that of adjacent ones. The first mass production of LVL for commercial high-grade structural lumber occurred in 1971. Today, several manufacturers produce LVL, using specially graded veneer and similar processes. Most manufacturers use 1/10 to 1/6 inch (0.25 to 0.42 cm) thick veneer. End joints may be butted together, scarf jointed, or slightly overlapped, and are staggered in the layup. After the veneers are coated with a waterproof adhesive, they are bonded together by heat and pressure. The result is a continuous billet of lumber up to 1 3/4 inch (4.4 cm) thick and 2 or 4 feet (0.6 or 1.2 m) wide, which is ripped to the desired width and cut to length. Lengths up to 80 feet (24.4 m) are available.

The manufacture of lumber from layers of veneer allows the dispersion of strength-reducing characteristics such as knots and sloping grain, resulting in a high-quality product that is more uniform in structural properties than sawn lumber. Laminated lumber is also less likely to warp or split. Treatment of LVL with preservatives is enhanced as a result of lathe checks produced in the veneers by the peeling operation and because of the butt joints, which allow the preservative to penetrate the end grain. Consequently, LVL made from difficult-to-treat species such as Douglas Fir heartwood can be treated more thoroughly than sawn lumber from such species.

The Forest Products Laboratory has investigated an experimental process for quickly producing structural members from parallel-laminated veneers, using rotary-cut sheets of wood up to 1/2 inch (1.27 cm) thick. In the Press-Lam process, ready-to-use products can be manufactured from logs in less than an hour. Logs are first peeled on a lathe into veneer. The veneer is then clipped into sheets and press dried in a rapid process that produces a flatter and more stable sheet than that obtained through conventional drying. While hot, the veneer sheets are coated with adhesive and are then laminated in an overlapping fashion so that the butt joints in the different layers are not placed close to each other. The panel is pressed, and the residual heat of drying quickly cures the adhesive. A wide, thick panel of continuous length can be constructed from these sheets, which can be cross cut and ripped into timbers of desired size.

As a demonstration project, a 6 inch x 12 inch (actual dimension, 15.2 x 30.5 cm) Press-Lam beam, 47 feet (14.3 m) long, was installed as the basement beam in a factory-built house. A highway bridge was also built using preservative-treated Press-Lam timbers. Other studies have investigated the use of the Press-Lam process for manufacturing railroad ties and utility pole cross arms.

Technically, any plywood mill can produce LVL in 8 foot (2.4 m) lengths by gluing veneers together with the grain of all the layers parallel. Longer members are possible through end jointing. In a Forest Products Laboratory study of end-jointed 3/4 and 1 1/2 inch (1.9 and 3.8 cm) LVL, several types of scarf and finger joints provided good tensile strength. The LVL compared well with even the highest grades of visually-graded sawn lumber.

The first engineered use of LVL was in the 1940s when Sitka spruce veneer was used to produce high-strength aircraft parts. For many years, the furniture industry has used LVL to produce curved furniture parts. The Council of American Building Officials has issued National Evaluation Reports that provide building code approval for

2

Product	Design Value (psi) Bending Stress	Modulus of Elasticity	Compression (perpendicular)	Horizontal Shear
Laminated Veneer Lumber	2,800 [b]	2,000,000	500	285
Parallel Strand Lumber	2,900	2,000,000	600/400 [c]	290/210 [c]
Laminated Composite Lumber	1,950	1,500,000	555	400
Select Structural Douglas Fir	1,800	1,800,000	625	95

[a] For converting English to International System units, 1 psi = 6.89 x 10^3 Pa.
[b] Bending stress of LVL made entirely from high grade veneers can be as high as 4,250 psi (29.3 MPa).
[c] Parallel/perpendicular to wide face of strands.

3 DESIGN VALUES OF PRODUCTS MADE FROM STRUCTURAL COMPOSITE LUMBER [a]

various uses of LVL. Laminated veneer lumber is used in wood-frame construction as roof and floor beams, girders, and headers. Other uses include scaffold planks, flanges for open-web parallel-chord trusses and I-joists (2), tension laminations for glulam beams, and parts for windows, doors, and furniture. A recent article in *Panel World* (September 1990) reported that nine U.S. plants currently manufacture LVL.

Parallel Strand Lumber

Parallel strand lumber (PSL) is manufactured from strands of elongated flakes of wood. Two variations of this product have been developed, one in Canada and the other in Australia. Canadian PSL is made from ⅛ or 1/10 inch (0.32 or 0.25 cm) thick veneer clipped into ½ inch (1.27 cm) wide strands up to 8 feet (2.4 m) long (1, center). The veneer is coated with a waterproof adhesive and cured under pressure using heat generated with microwave energy. The finished product is a continuous structural member 1–3/4 to 7 inches (4.4 to 17.8 cm) thick and 7 to 18 inches (17.8 to 45.7 cm) deep. It is available in up to 66 feet (20 m) lengths and has code approval for use as beams, headers, columns, and posts.

A similar PSL product has been developed in Australia for manufacturing lumber from small-diameter logs (1, right). In the manufacturing process, the logs are debarked and passed through a series of roller mills that crush them into mats of interconnected strands. After further processing and drying, the mats are impregnated with a resin adhesive to coat all strands uniformly, and then they are laid up as successive laminations, pre-pressed, and compacted to final density; the resin is cured by dielectric heat. The manufacturers of this product have not sought code approval in the United States.

Laminated Composite Lumber

A laminated composite structural lumber product has been derived from a combination of LVL and oriented strandboard (OSB) technologies. It has the same rectangular cross section as nominal 2 inch (5.08 cm) lumber, but has the characteristics of an I-joist; in a laminated composite, LVL "flanges" are edge-glued to an OSB "web" (2, right). This product is available in sizes up to nominal 2 x 16 inch (5.08 x 40.6 cm) lumber, in up to 36 foot (11 m) lengths, and in 2 foot (0.6 m) increments. It is accepted by the Council of American Building Officials for use as headers, floor joists, and roof rafters.

Properties of Structural Composite Lumber

As shown in the accompanying table (3), strength and stiffness of structural composite lumber products compare favorably with that of products made from high-quality, solid structural lumber. These properties are for dry conditions of use and are subjected to adjustment for duration of load and repetitive member use as provided for in building codes. Because of the reconstituted nature of the material, fasteners that work well in solid wood members should be used with caution in structural composite lumber – lathe checks seriously reduce fracture toughness of wood.

It is interesting to contrast properties of various structural composite lumber products with that of Select Structural Douglas Fir, a high grade of sawn lumber (3). The modulus of elasticity (stiffness) values of LVL and PSL are about 10 percent higher than that of the Douglas Fir, but the design stress in bending (and tension) is at least 50 percent higher. The structural composite lumber products, therefore, have an advantage in applications where strength is of primary importance, as in the chords of trusses and flanges of I-beams. In such members, the stiffness of the product is attained through the geometric arrangement of the chords and flanges.

The strength properties of laminated composite lumber are comparable to those of high-grade sawn lumber, and modulus of elasticity (stiffness) is comparable to that of a lower grade of structural lumber. As a result, composite lumber has an advantage where it can replace No. 2 or No. 3 grade lumber in wide members, such as floor joists.

Standards for Structural Composite Lumber

The American Society for Testing and Materials is currently developing a standard specification for structural composite lumber. This standard covers mechanical and physical property tests, sampling and data analysis methods, design property assignment procedures, and related quality control programs. The purpose is to ensure maintenance of design values for a product intended to meet specific performance requirements in engineering applications. The standard requires initial evaluation of the product as well as an ongoing

1 Structural composite lumber products come in a variety of shapes, sizes, and appearances via several different manufacturing processes. Laminated veneer lumber (left) is made by a number of mills by orienting the grain of all plies in the same direction. Parallel strand lumber is made by either a Canadian or Australian (center and right, respectively) process, although only the Canadian product is available in the U.S.

2 Laminated veneer lumber (LVL) is also used as a component of other composite products. Typical applications are as tension and compression flanges in plywood web I-joists (left) and in oriented strandboard structural members (right).

3 Structural composite lumber products compare favorably with high-quality sawn lumber. While the modulus of elasticity (stiffness) of LVL and PSL lumber is only slightly higher than that of Douglas Fir, the design strength in bending and tension is more than 50 percent higher. Laminated composite lumber (OSB core with LVL edges) is comparable in strength to high-grade sawn lumber and comparable in stiffness to a lower grade of structural lumber – making it a good substitute for No. 2 or No.3 lumber in floor joists, for example.

quality control program. In qualification testing, factors that may influence performance, such as orientation of wood elements and presence of end joints, are evaluated. Allowable design stresses (3) are derived by making adjustments for such factors as property variability and duration of load. A qualified independent inspection agency is employed by the manufacturer to supervise the quality assurance process.

Outlook

The importance of structural composite lumber products is expected to grow as demands for more highly engineered products increase and the wood industry shifts to a greater use of small-diameter trees. The versatility of structural composite lumber illustrates how renewable forest resources can provide a broad array of structurally efficient products that benefit manufacturers and consumers alike. **J. Dobbin McNatt and Russell C. Moody** ■

J. Dobbin McNatt is a Research Forest Products Technologist, and Russell C. Moody is a Supervisory Research Engineer with the Forest Products Laboratory's Engineered Wood Products and Structures Project.

Recommended Reading

The Wood Handbook: Wood as an Engineering Material, Agriculture Handbook 72 (Stock number 001-000-04456–7), U.S. Government Printing Office (202) 783-3238, 1987, 468 pp., $27.

The Wood Book, Hatton-Brown Publishers, Inc., Montgomery Alabama (205) 834-1170, 1990 (updated annually), $20.

Acknowledgement

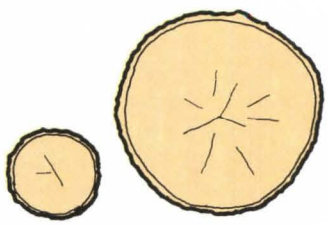
The Forest Products Laboratory, an agency of the Department of Agriculture Forest Service, is maintained in cooperation with the University of Wisconsin. The mission of the Forest Products Laboratory is to improve the use of wood through science and technology, thereby contributing to the conservation and management of the forest resource. This article was written and prepared by U.S. Government employees on official time, and it is therefore in the public domain and not subject to copyright.

Big Planks from Little Logs

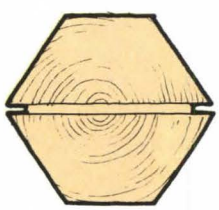
While North American producers have adopted a variety of technologies to make structural composite members from veneers, strands, wafers, and glued-up sawn lumber, Finnish manufacturers have taken another step and are making solid wood composite planks – over four feet in width and almost ten feet long – from small trees. The end product looks a bit like butcher block, but the component pieces, or blanks, are trapezoidal in section, instead of rectangular. The blanks alternate in orientation, so the face pattern is wide-narrow-wide-narrow. Thickness capability ranges between 15 and 75 mm (roughly 9/16 and 3 inches).

The trapezoidal shape allows the wood blanks to be cut from logs between three and eight inches in diameter. A pair of blanks can be cut from small logs with very little waste, allowing lumber products to be made from the first thinnings of plantation forests.

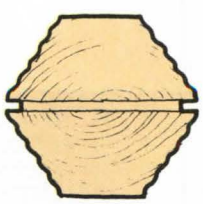
Finnish manufacturers of "WISA-Wood" envision a wide range of uses, including doors, door and window frames, cabinetry, stair components, table tops, furniture, and many consumer products. While the planks are not yet available in the U.S., the forest industry here has been looking into the technology and the economics, and the Finnish machinery supplier has a U.S. subsidiary. One can reasonably suppose that it's only a matter of time. **Kenneth Labs** ■



LOGS 3" TO 8" IN DIAMETER



BLANKS CUT FROM LOGS



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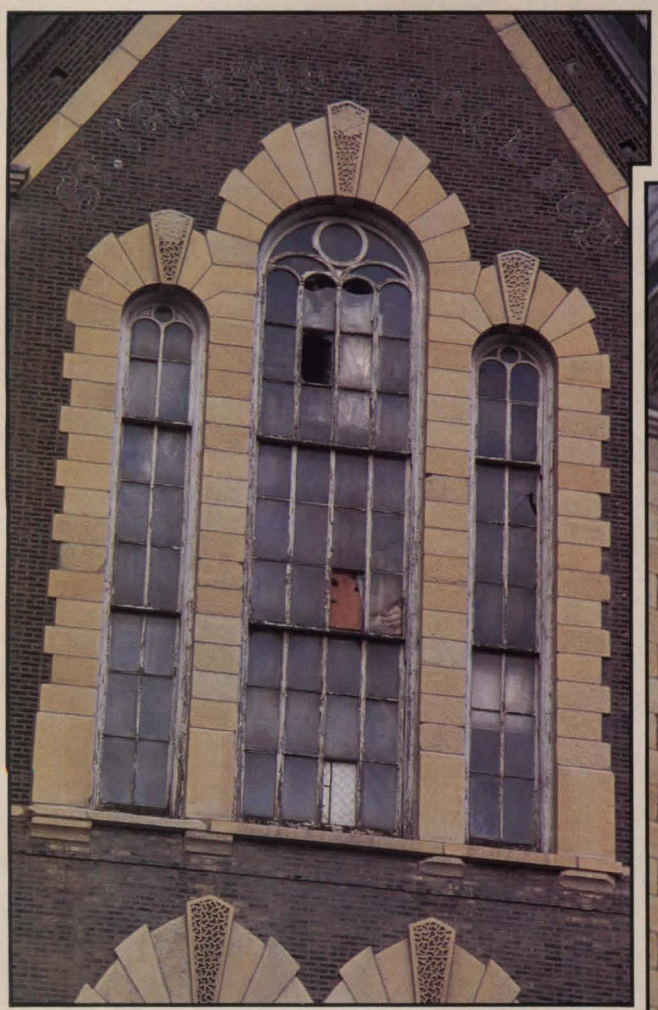

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Technics Topics

A new publication provides a useful reference,

but it addresses only part of the problem.

Tolerances in Construction

It is a rare architect who hasn't at some time left a job site wondering what reasonable limits of acceptability exist for members out of plumb, floors and foundation walls not level, gaping joints between cabinets and walls, and minor but annoying mislocations of windows and doors. Building trades whose dimensional performance depends on the workmanship of others preceding them are especially concerned with construction tolerances, so it is no surprise that the Foundation of the Wall and Ceiling Industry has recently issued a compilation of tolerances published by other associations.

The FWCI manual is a laudable effort and should be of interest to any architect who watches his work being built, but it still does not satisfy all the questions architects must have about dimensional inaccuracies. There are other sources beyond the purview of the FWCI also of interest.

Quality Standards for the Professional Remodeling Industry and the *Warranty Documents* of the Home Owners Warranty Corporation specify tolerances for contract and speculatively built residential work, including foundations, walls, floors, and finish carpentry. More explicit tolerances for casework are given by grade (economy, custom, and premium) in *Architectural Woodwork Quality Standards.*

The problem of allowing for fabrication and erection tolerances in design and detailing is discussed in *Installation of Aluminum Curtain Walls,* and Christine Beall addresses related issues in "Specifying Construction Tolerances" in a recent issue of the *Construction Specifier.*

Instrument	Accuracy
Steel tape accuracy (Latta):	± 1/8" in 10', ± 1/4" in 100'
Setting out a right angle (Latta), steel tape:	2 minutes of angle (± 3/4" in 100')
vernier transit:	40 seconds of angle (± 1/4" in 100')
Vertical accuracy (Latta), spirit level:	± 1/4" in 10'
plumb bob (still conditions):	± 1/8" in 10'
transit (optical plummet):	± 1/8" in 100'
Horizontal accuracy (Latta), spirit level:	± 1/4" in 20'
optical level:	± 1/8" in 200'
Construction Assembly	**Tolerance**
Foundation squareness (NAHB):	20' ± 1/2" in 12'/16'/20' triangle
Concrete slab evenness (NAHB):	+ 1/4", – 1/4" in 32"
"flat" (ACI):	– 3/16" in 72"
"very flat" (ACI):	– 1/8" in 72"
Wood floor evenness (HOW):	+ 1/4", – 1/4" in 32"
Walls out of plumb (NAHB):	1/4" in 32"
Steel stud framing out of plumb (FWCI):	1/960 of span (1/8" in 10')
Suspended acoustical ceiling flatness (FWCI):	1/8" in 10'
Masonry bearing wall, plan location (FWCI):	± 1/2" in 20'
Face gaps in premium cabinets (AWI):	1/64" wide, 3" long
Joints between moldings and walls (NAHB):	1/8"

The accuracy attainable in practice is limited by three separate activities, manufacturing of components, laying out work in the field, and positioning the components in place. The accuracy of laying out the work depends in part on the limitations of measuring devices and their users. The National Research Council Canada has suggested some instrument inaccuracies (see accompanying table).

It's always a good idea to discuss reasonable accuracy – and what you have to pay for it – with contractors. The following publications should help guide the conversation before it turns into an argument.

Kenneth Labs ■

References

Architectural Woodwork Quality Standards, 5th Edition, Architectural Woodwork Institute, Arlington, Va. (703) 671-9100, 1989, 141 pp.

Home Owners Warranty Corporation *(Insurance/Warranty Documents),* Arlington, Va. (703) 516-4100.

"Inaccuracies in Construction," J.K. Latta, *Canadian Building Digest* 171, National Research Council Canada, Ottawa (613) 993-2607, 4 pp.

Installation of Aluminum Curtain Walls, American Architectural Manufacturers Association, Des Plaines, Ill. (708) 671-9100, 1989, 30 pp.

Quality Standards for the Professional Remodeling Industry, National Association of Home Builders, Washington (202) 822-0463, 1987, 92 pp.

"Specifying Construction Tolerances," C. Beall, *The Construction Specifier,* August 1990, pp. 74–79.

Standard Specifications for Tolerances for Concrete Construction and Materials, ACI 117–90 and *Commentary,* ACI 117R-90, American Concrete Institute, Detroit (313) 532-2600.

Tolerances, Variations, and Pre-Existing Site Conditions for the Wall and Ceiling Industry, Foundation of the Wall and Ceiling Industry, Alexandria, Va. (703) 684-2924, 1990.

Tech Notes

***Engineering for Extreme Winds: 1991,* a short course presented by the Institute for Disaster Research, will be held February 6–8 in Lubbock, Texas. Instructors include Joseph Minor, author of a popular P/A (April 1990) Technics Topic. Texas Tech University (806) 742-2352.**

The Architectural Woodwork Institute is now accepting architects as affiliate members. Affiliates receive a technical information package, a subscription to the quarterly *Design Solutions,* and an annual directory. AWI, Arlington, VA. (703) 671-9100.

***The Science and Technology of Building Seals, Sealants, Glazing, and Waterproofing,* a symposium sponsored by ASTM Committee C-24, will be held January 30, 1991, in Fort Lauderdale, Florida. ASTM (215) 299-2617.**

***Residential Indoor Air Quality and Energy Efficiency* by Peter du Pont and John Morrill discusses radon, combustion pollutants, organics, asbestos, moisture and biological contaminants, controls, and monitoring. American Council for an Energy Efficient Economy, Washington, D.C. (202) 429-8873, 267 pp., $24.50.**

***The Maine Guide to Energy Efficient Residential Construction* is a manual of acceptable practices that should be of interest to designers in northern states. State of Maine, Energy Division, Augusta (207) 289-6000, 80 pp., $7.35.**

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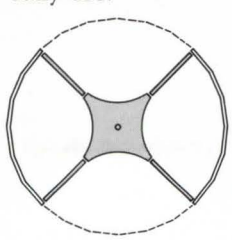
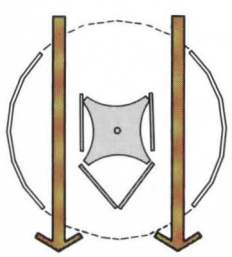


Normal stopped position shown. During rotation, wings are always in contact with the enclosure.



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Circle **No. 308** on Reader Service Card

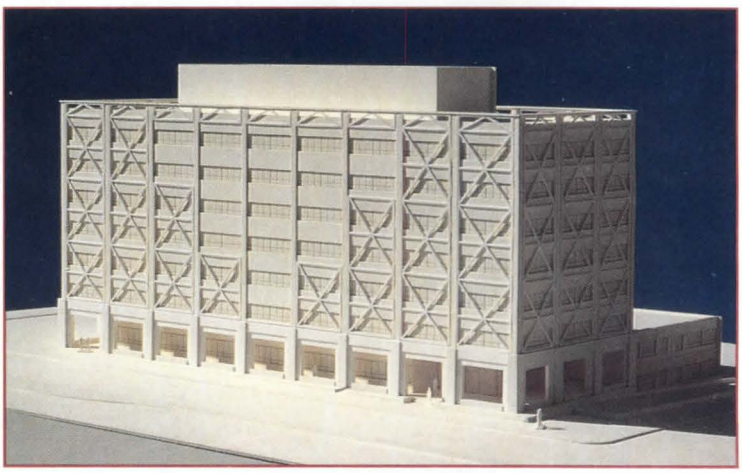
Jeff Cohen of Hansen/Murakami/Eshima and **Loring A. Wyllie, Jr.,**

and **John A. Dal Pino** of H.J. Degenkolb Associates describe

the challenges and opportunities of a structural retrofit.

Jane Lidz

University Hall's nonductile columns needed bracing for better seismic performance (northeast corner view).



Jeff Cohen

Symmetrically arranged x-braced steel frames were placed within bays of the projecting concrete columns to create an open structural screen over the façade.

Seismic Upgrade, Structurally Expressed

The October 1989 earthquake in Northern California underscored the importance of a University of California program to upgrade buildings in need of seismic correction. Recently appropriated funds of $50 million include $8.2 million for the major seismic strengthening of University Hall in Berkeley. Located across the street from a main entrance to the University, this 1957 building was designed by Welton Becket and Associates and clearly belongs to its period. It consists of a seven-story rectangular tower and an adjoining two-story wing. Projecting concrete columns run along the face of the tower, except at ground level, where they are free-standing to form an arcade. Alternating bands of strip windows and ceramic tile veneer create a horizontal look that contrasts with the supporting columns.

Problem and Options

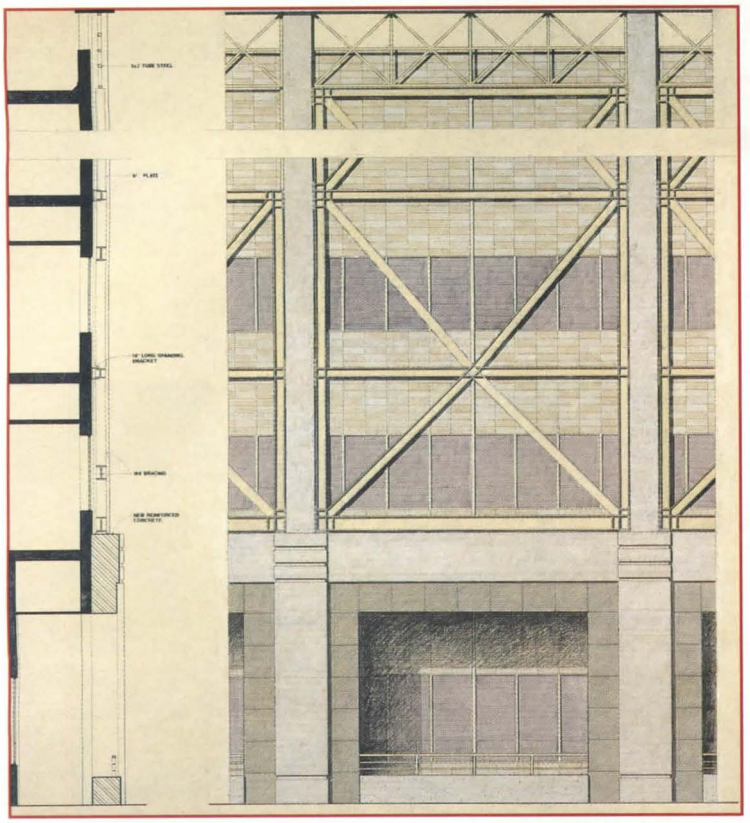
The tower is a concrete frame structure 200′ x 70′ in plan. Floors are a combination of concrete flat slabs and slab and beam framing. Lateral forces are currently resisted by the exterior frames around the perimeter of the building – consisting of 24-inch-square columns and 8′ x 7′ deep concrete spandrel beams – and by three interior transverse shear walls in the core. The deep spandrel beams, however, are stronger than the columns under frame action, creating weak links in the columns. The columns below the fourth floor are spirally reinforced and should provide ductile performance, but above the fourth floor they are nominally tied and are susceptible to damage. Unless braced, they may lose their integrity and be unable to support the weight of the upper floors during a major earthquake.

Three approaches for bracing the tower were proposed by the structural engineer. One scheme relied on new shear walls to be built within the tower; another called for substantial concrete piers, rising the full height of the building, to be formed around most of the existing columns. The third, a steel bracing system, was chosen because it is the most economical of the three options and allows for the least amount of occupant disruption during construction. The steel scheme also gave the architects an opportunity to seismically strengthen the building in a manner consistent with its existing structural aesthetic.

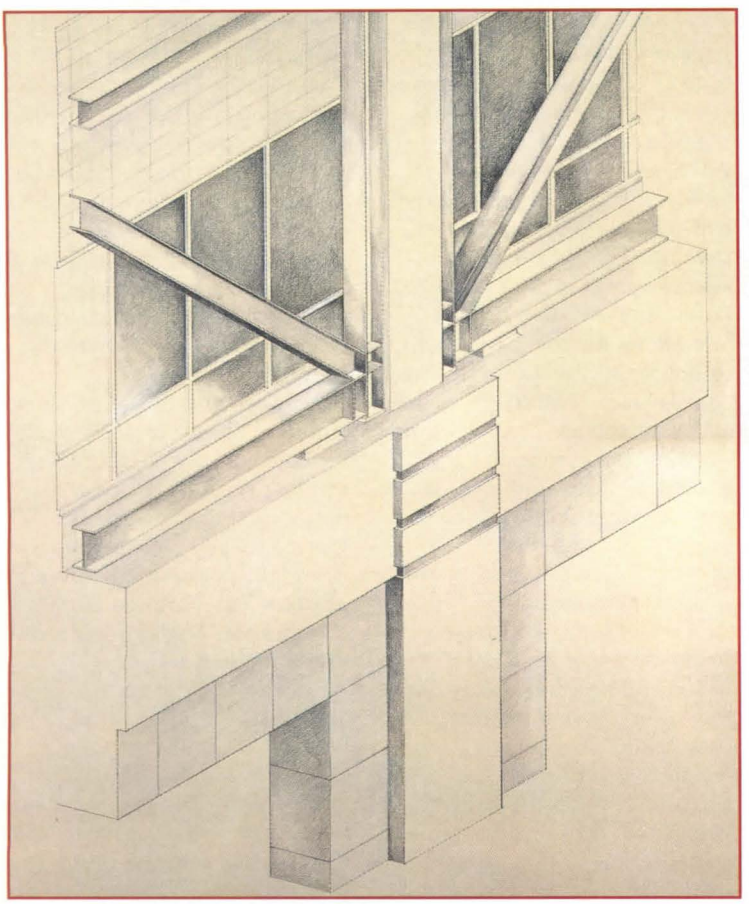
Design Resolution

Two-story high X-braced steel frames, made from 8′ wide flange sections, surround the tower above a new concrete colonnade. The steel-to-steel connections are full penetration welds to develop the entire strength of the members. Since actual seismic forces often exceed code level design loads, a less than full-strength connection would create a weak link in the system, which might lead to a nonductile failure. The architects also wanted to avoid gusset plates, the size of which could destroy the visual profile of the braces. The colonnade, designed to keep within the clean aesthetic of the original building, stiffens the lower story and transfers shear forces from the steel X-braces to the foundation.

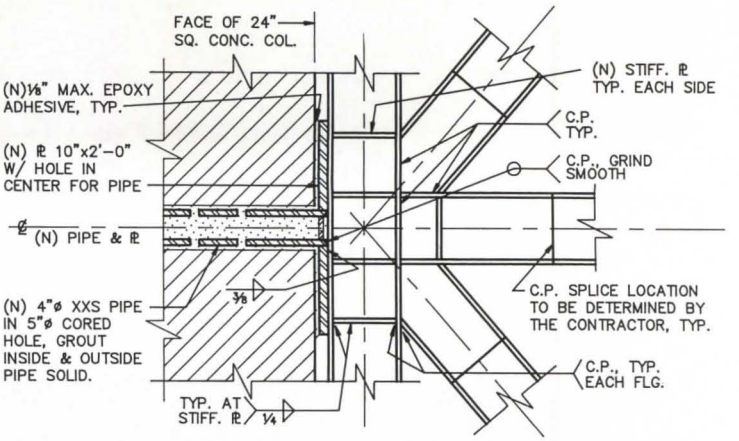
Connections of the new steel frame to the concrete were also a challenge. Since the building will be near 70 percent occupancy during the work, the University and design team wished to minimize the amount of noise and vibration from construction activities. As a result, a method was developed for anchoring the vertical members of the X-braced frames to the existing columns using a minimum number of attachment points. These connections also transfer the seismic load of the building into the bracing system through bearing on the columns. The horizontal members of the bracing system are



The new colonnade – while structurally necessary – also accepts the "visual weight" of the new bracing.



The wide flange sections were placed with their webs running vertically, to prevent rainwater from ponding on the steel.



At each floor level, typically, a four-inch double-extra-strong pipe is inserted into a five-inch hole cored horizontally through the column. A flat plate is shop-welded to one end of the pipe and a similar plate with a pipe-sized hole is field-welded after installing the pipe. The center of the pipe and the annular space between the pipe and the concrete are filled with nonshrink grout. The space between the steel plates and the concrete columns is epoxied after the steel vertical wide flanges are in place. The vertical wide flanges are connected to the vertical flat plates with fillet welds on both sides.

secured to the existing horizontal concrete beams with steel brackets. These brackets are welded to the steel beams and epoxy-bolted to the concrete through the ceramic tile veneer. The vertical wide flanges extend down into the concrete colonnade for attachment. All exposed steel bracing will be treated with a high quality, epoxy-based primer and an aliphatic polyurethane finish.

There was some concern about the existing, nominally-tied columns above the fourth floor, at locations where new steel braces are not being installed. If lateral deformations are large enough, these columns might develop excessive cracks, perhaps leading to loss of vertical load capacity. To locally strengthen and provide confinement to these columns, steel plates will be added on both sides of the columns and epoxy-bolted deep within the column core.

Upgraded Seismic Rating

The seismic performance of University Hall – located within a mile of the active Hayward Fault – was originally rated as "very poor," as defined in the Seismic Safety Policy of the University of California. The new work will change that rating to "good," and will provide a much-improved level of seismic safety. Computer modeling and other research of the new bracing system have shown that it is effective in increasing the stiffness of the building and protecting the concrete columns, although cracking is obviously expected in the concrete. The extent of structural or nonstructural damage expected during a strong earthquake, however, is not anticipated to jeopardize life. The project is scheduled for completion in July of 1991.

Jeff Cohen, Loring A. Wyllie, Jr., and John A. Dal Pino ■

The design team consisted of Hansen/Murakami/Eshima, Architects and Planners, Oakland, California (Michael Murakami, principal-in-charge, Robert Akiyama, project architect, Kearny Chun, project manager, Jeff Cohen and Christian Bartlett, project team), and H.J. Degenkolb Associates, Engineers, San Francisco (Loring A. Wyllie, Jr., pricipal-in-charge and John A. Dal Pino, project manager).

[A more thorough engineering discussion of the upgrade will appear in the January 1991 issue of *Modern Steel Construction,* published by the American Institute of Steel Construction, Chicago (312) 670-5407. – Editors]

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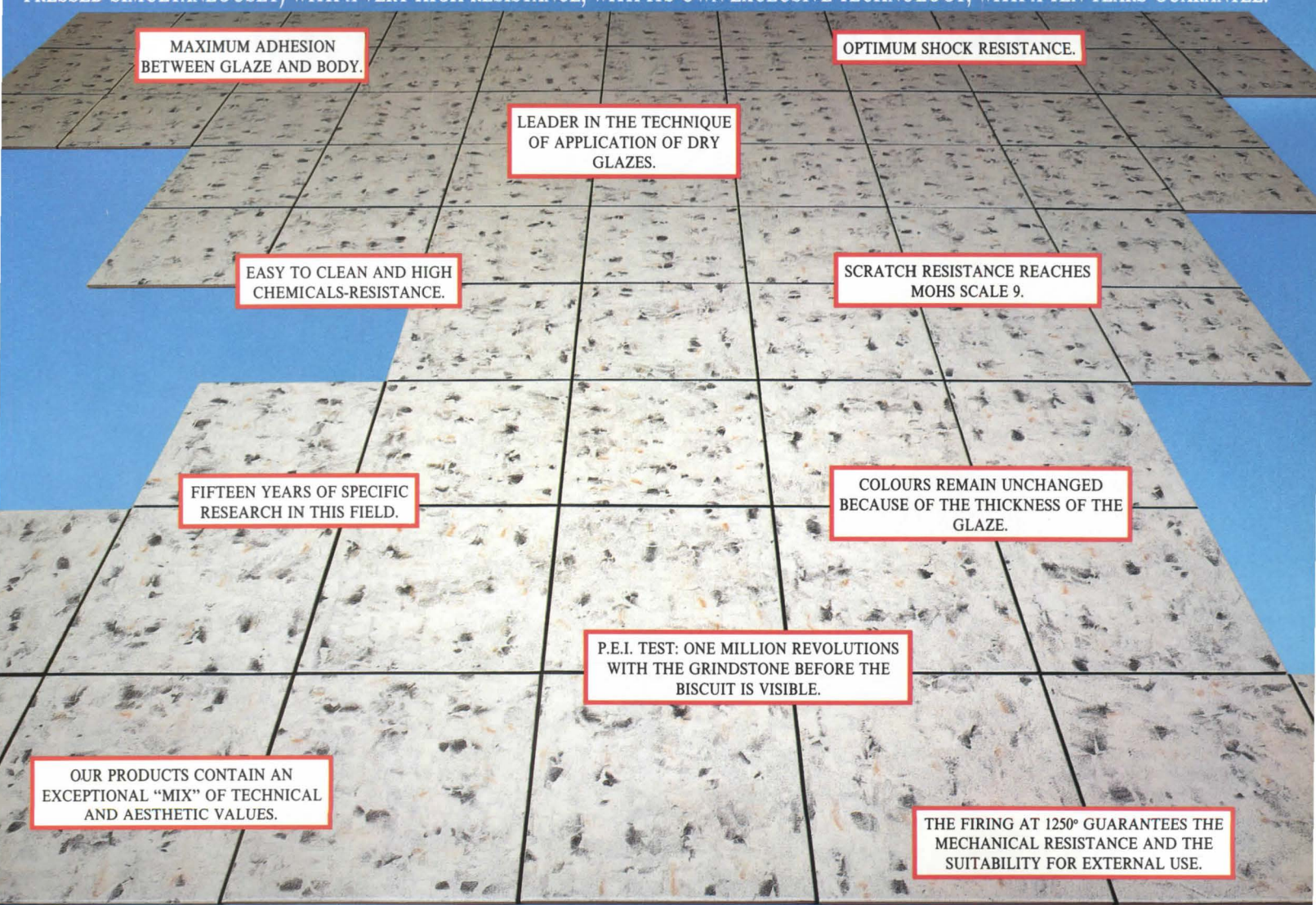

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Misconception #2:

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No electric door strike provides real security, no matter how good the intentions or how well it's designed. Even the best strike is only a traffic control device — because it mates with a short–throw latch bolt that any experienced intruder can jimmy in seconds. For *real* security, you want a deadlock. Check the ones the State Department installed to protect U.S. embassies around the world.

Misconception #3:

Electric strikes are just another kind of hardware.

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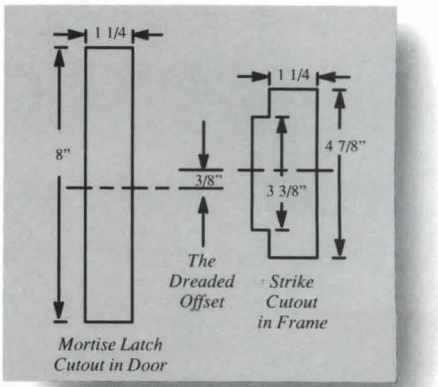

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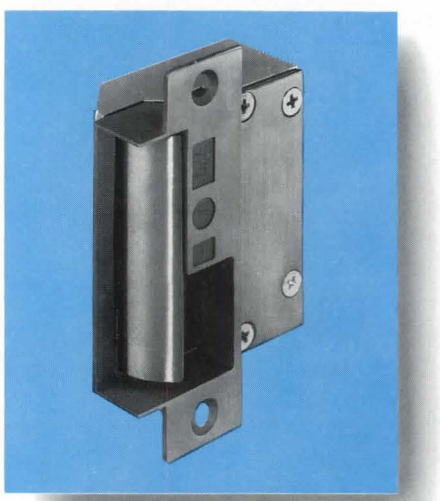

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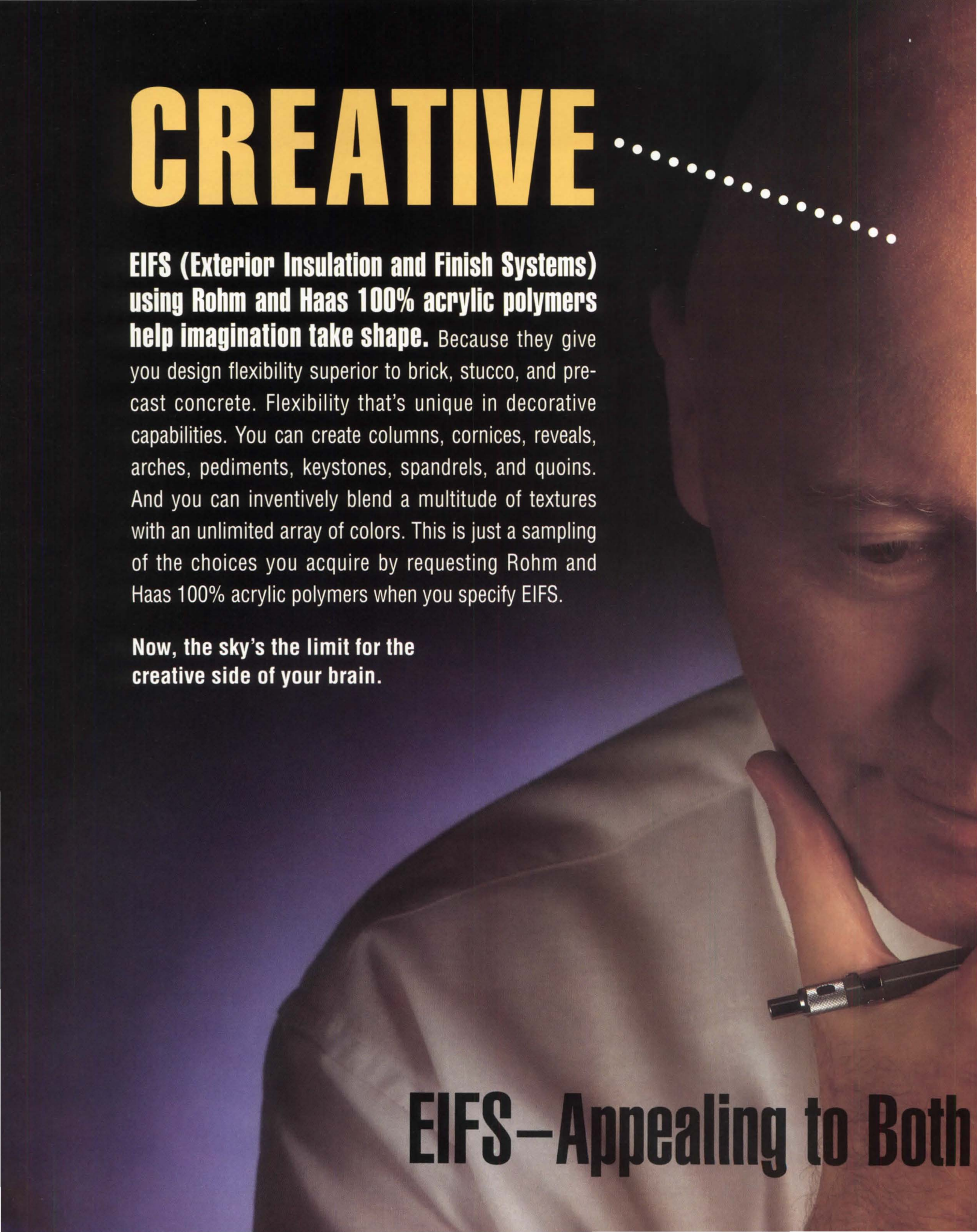
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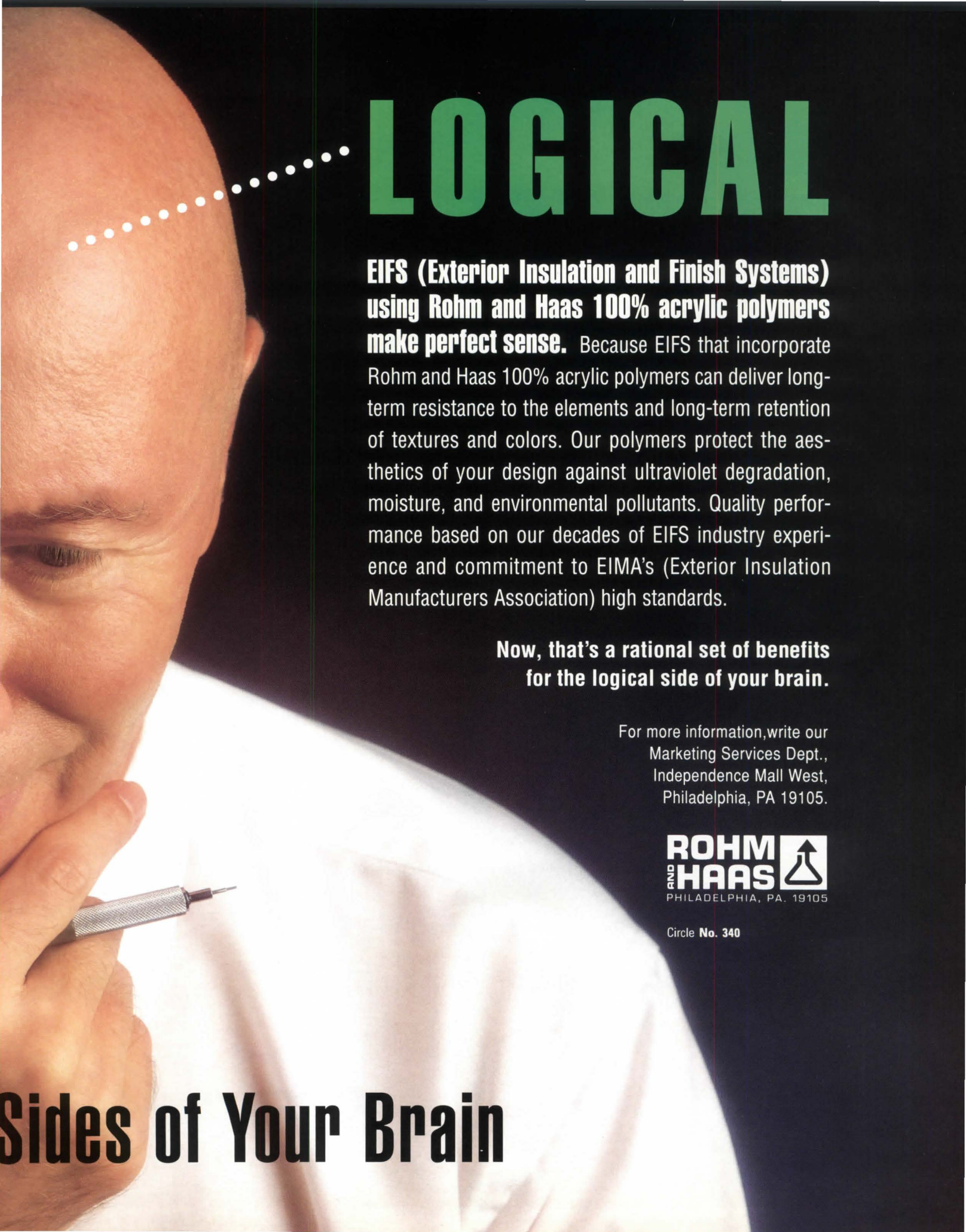
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Reader Poll
Marketing Architectural Services

We encourage all readers in architectural and design firms to answer the following questions. The results will be published in the April 1991 issue of Progressive Architecture. Please tear out, fill in, and mail promptly.

For each of the following 4 questions, indicate the degree to which you agree or disagree with the statement by writing in the number of your choice according to the following scale:
4 = Agree Strongly **2 = Disagree Somewhat**
3 = Agree Somewhat **1 = Disagree Strongly**

1. ____ Architects should get commissions on the strength of their reputations rather than by marketing.
2. ____ Paid advertising is a valid way to get commissions.
3. ____ Price competition is a legitimate part of the process of obtaining commissions.
4. ____ Marketing architectural services should be left to specialists, not architects.

5. **Please rate the following ways of finding leads to commissions. Use the following scale:**
Most effective 4 3 2 1 Least effective
____ Reading newsletters and published project listings
____ Reading business periodicals
____ Reading local newspapers and periodicals
____ Regular contact with executives
____ Entering design competitions
____ Referrals from previous clients
____ Referrals from allied professionals
____ Paid advertising
____ Cold calls

6. **Does your firm use paid advertisements?**
☐ Regularly ☐ Rarely ☐ Never

7. **How would you rate the following as inducements when marketing to a prospective client? Use the following scale:**
Most important 4 3 2 1 Least important
____ The firm's design talent
____ The firm's design process
____ The firm's technical expertise
____ The firm's reputation as a team player
____ The firm's adherence to schedule and budget
____ The firm's pricing/fee flexibility

8. **When an economic slowdown is projected, how should a firm's marketing change? Use the following scale:**
Most effective 4 3 2 1 Least effective
____ Devote more money and effort to marketing
____ Devote more attention to previous clients
____ Expand the geographical range of a firm's marketing
____ Diversify into architecturally related services

9. **Do you believe that other firms have increased their marketing efforts over the past two years?**
☐ Yes ☐ No

10. **Has fee bidding become more common in the past two years?**
☐ Yes ☐ No

11. **How much uncompensated work should a firm be willing to undertake in order to procure a commission? Check all that apply.**
☐ None
☐ Site visit and discussion with clients
☐ Initial design sketches and models
☐ More detailed work, including cost estimates

12. **What percentage of your firm's commissions come from repeat clients?**
☐ More than 50% ☐ 10% to 24%
☐ 25% to 49% ☐ Less than 10%

13. **Who are your firm's primary clients? Check all that apply.**
☐ Individuals with small projects
☐ Developers building on spec
☐ Corporations
☐ Public agencies and institutions

14. **How have clients changed over recent years? Check all that apply.**
☐ No significant changes
☐ Ratio of new clients to repeat clients has increased
☐ An increasing number of clients drop a project after architects have executed billable work

15. **Which activities outside of the office are most likely to enhance a firm's marketability? Check the three most effective items.**
☐ Membership in a local business group
☐ Involvement in local civic and charitable organizations
☐ Membership in a private club
☐ Informal contacts within the community
☐ Execution of pro bono architectural services
☐ Active involvement in politics and planning process

16. **Who is responsible for marketing in your firm? Please rank the following:**
4 = Primary responsibility **2 = Minor supporting role**
3 = Major supporting role **1 = No involvement**
____ Principals or partners
____ Designated staff architects
____ Specified marketers without architectural training
____ Anyone in the firm who shows initiative
____ Outside consultants

The following questions are for classification purposes only.

17. **Size of firm:**
☐ 1-9 employees ☐ Over 50 employees
☐ 10-50 employees

18. **Which best describes the scope of work offered by your firm? Check one item.**
☐ Architecture ☐ Interior design
☐ Architecture & engineering ☐ Other
☐ Design/Build

19. **How long has your firm been established?**
☐ Less than three years ☐ 11-20 years
☐ 3-10 years ☐ Over 20 years

20. **What is your position in the firm?**
☐ Principal or partner
☐ Senior level architect/designer
☐ Staff architect/designer
☐ Marketing professional
☐ Other staff

PLEASE FOLD IN AND FASTEN

Reader Poll
Marketing Architectural Services

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To be sure that your opinions are counted, fill out and mail this form before January 7, 1991.

Results will be published in the April 1991 issue of P/A.

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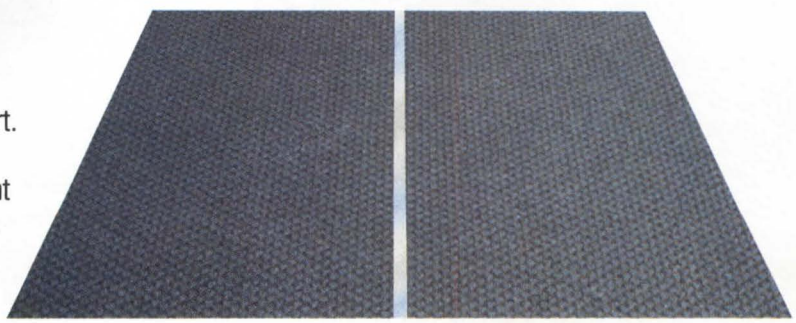

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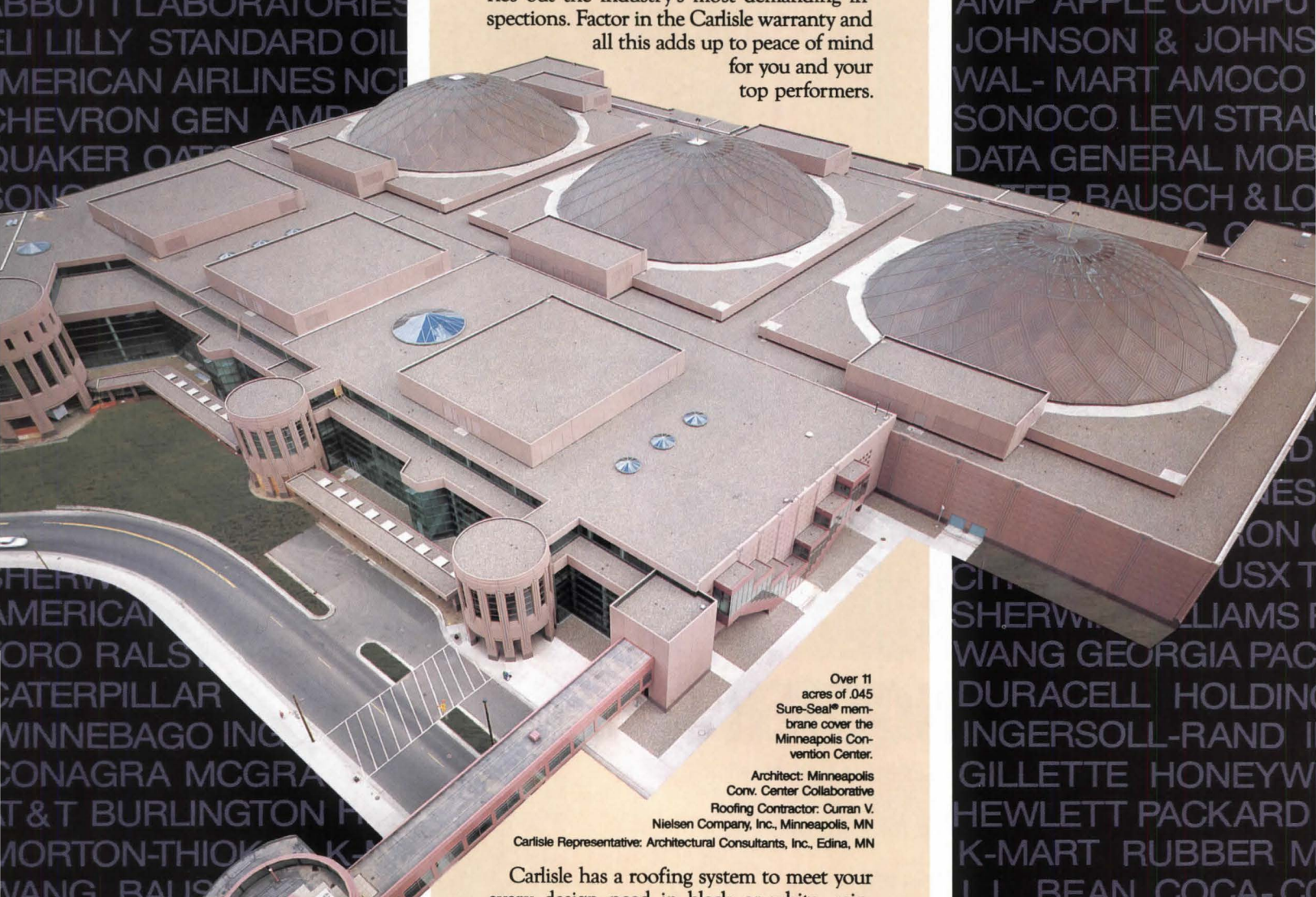

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Practice

William Voelker discusses the upcoming transitions in our economy that will affect architecture.

Economics: Whither the Economy?

At least four critical economic transitions are now well underway in the world, and they carry implications for the entire architectural profession, right on through to the draftsperson in Dayton.

Transition One: Deflation of Asset Prices

The decline in Japanese equities, the collapse in U.S. junk bonds, and the migration of Texas-sized real estate problems to New York, New England, and Donald Trump are all signs that a deflation of asset prices is underway. Why is this important? Were real estate values in the U.S. to fall by roughly 17 percent from their peak in the mid-to-late 1980s (and one could make a good case that this process is already well underway), this would be equivalent to all the wealth held in corporate equities within United States stock markets being taken out of the economy. The $3.5 trillion may not come out of our economy in just that way, but the coming deflationary undertow will nonetheless be strong. A bigger worry is that the end of asset inflation could set off a major liquidity crisis, with a resulting sharp rise in interest rates.

Transition Two: A Slow-Motion Global Credit Contraction

Architects are creatures of credit, and total credit growth in the U.S. has broken a 40-year uptrend. Since 1954, construction activity has thrived best when there has been an expansion of credit-based liquidity, as represented by the real money supply or M-3, and of corporate profit margins. During the past several decades, when both liquidity and profits have been contracting, the construction market has been much more at risk.

Today corporate liquidity is also deteriorating and offsetting still healthy investment liquidity. But, the savings and loan crisis threatens the latter. Periods of corporate profit famine have always in the past led to declines in real capital spending. Construction growth is now especially contingent upon lower interest rates and positive monthly real Gross National Product numbers. The catalyst for further construction weakness would be higher interest rates and/or weaker economic growth as reflected in the GNP.

Transition Three: Inflation/Deflation Battle Looms

Highly leveraged entities and overpriced real estate are the keys to the coming inflation/deflation battle. Our Federal Reserve Board, under Alan Greenspan, knows that in any recession the Fed will be forced to expand the money supply rapidly and risk inflation or the economy will automatically deflate on its own in a major way. One key question here becomes, can Japanese and U.S. real estate prices hold up with interest rates historically high? We should know soon.

Transition Four: Eastern Europe Moves from Communism to Capitalism

Everyone is aware of the rebirth of Eastern Europe. What most architects may be less aware of is the potential for international economic shocks that grow out of these developments. The foremost of these would be a Soviet debt default. Such an event would raise questions about the viability of Eastern European debt and increase the tendency for U.S. and other banks to become more conservative — speeding up the inflation/deflation battle.

The Modern Financial Infrastructure

In the context of such major economic transitions, larger architectural firms will possess definite advantages – along with definite challenges. Such firms will be able to take advantage of economies of scale, have access to greater financial resources, and use the best in communication networks.

But, in the coming price war for the ever warier architectural client, these same larger firms will also have to pay more attention to economic factors and adjust to growth that is as much or more international than domestic.

For smaller architectural firms, as we progress through the 1990s, marginal projects will be less and less likely to go forward. But small, medium, and large architectural firms will all have to learn to deal with clients who are less willing to take risks, because we are moving from a world of people in search of yield to one in which they search for economic safety. **William Voelker** ■

The author is Manager of Architectural Design Services for the ESE Inc., Facility Design Group, and also serves on the faculty of the School of Architecture at the University of Illinois.

Practice Points

Designing a corporate training room? The Howe Furniture Corporation has recently published *Training Room Solutions: A Guide to Planning the Learning Environment*, which includes guidelines for design considerations such as programming, furniture, equipment, lighting, and HVAC. The guide is $25 from Howe, (800) 888-4693.

The average cost of residential lots has risen 62.5 percent in the United States since 1985, according to a survey by the Urban Land Institute (ULI), but the rate of inflation has varied widely in different parts of the country – from over 100 percent in Boston, San Jose, San Diego, and Seattle to no inflation or actual decline in cost in Houston, Oklahoma City, New Orleans, and Phoenix. Call the ULI at (202) 624-7000.

Decreased economic incentives caused by federal tax reform laws of 1986 have resulted in 2000 fewer buildings each year to complete the National Historic Preservation Design Review and a more than 50 percent reduction in the creation of new housing units through preservation. Call The National Trust for Historic Preservation for details on the tax laws at (202) 673-4000.

Looking for historic details? *Clem Labine's Traditional Building: Historical Products for Today's Professional* is a bimonthly roundup of preservation products organized in CSI Masterformat. Call (718) 636-0788 for information.

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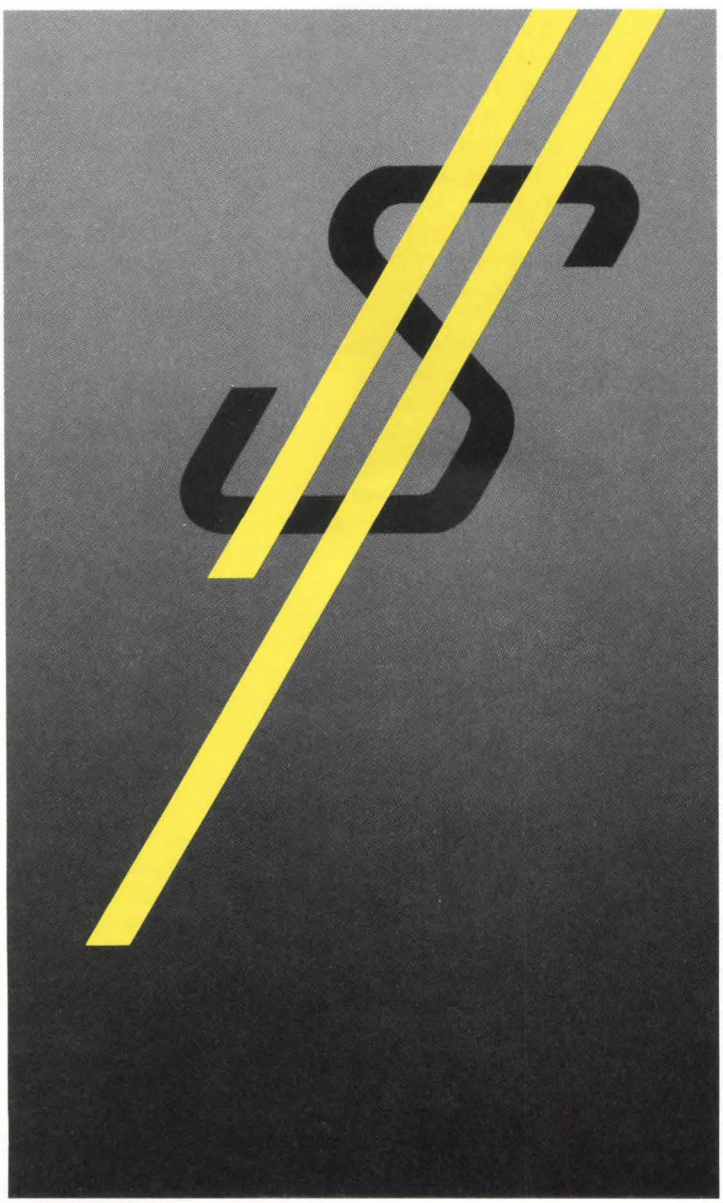

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William Lohmann describes the three stages in specifications writing.

Illustration: Leilee Ladds

Specifications: The Document River

With a surprising degree of correlation, the flow of construction documents through a project has been likened to a river.

The "river" is composed of both written and graphic documents. The written documents include agreements, correspondence, administrative forms, minutes of meetings, and reports. They also encompass a series of three documents called the preliminary project description, outline specification, and project manual.

These documents present an interesting study of design and construction document interdependence and information flow. Since they span the entire development process, the three documents also serve as channel markers along the way.

Preliminary Description

The "preliminary project description" is usually a rather terse statement describing major elements of the project. Its objective is to document early decisions on structural systems, exterior enclosure systems, mechanical and electrical systems, major equipment items, and other significant project components. Sometimes the preliminary project description is in an outline format based on headings from Uniformat *(A Logical Approach to Controlling Costs During Design),* which is published by Hanscomb Associates. At other times, the description is in a narrative form. The preliminary project description is prepared by the design professional and consultants during the schematic design phase and distributed to all parties as the basis for further document development. It may be used for early budget analysis but is too brief and premature to become part of a construction contract.

Outline Specification

The "outline specification," which is frequently prepared at the end of the design development phase, requires input from all specifying sources. It contains more detailed information than the preliminary project description and is based on the document headings, divisions, and section titles in Masterformat. The outline specification is occasionally required by the client, code authorities, or lenders and should reflect their special interests.

The level of detail in the outline specification should be commensurate with its purpose, which is to document design decisions, record special project requirements, and obtain the client's concurrence on design work completed up to that point. When it is available, information on bidding requirements and general and supplementary conditions is included. It sometimes also contains initial code analysis forms, general design parameters, special consultant reports, and similar background information. In brief form, it includes administrative items; primary materials, fabrication, and testing; special products and their manufacturers; applicable design parameters; and performance requirements.

Even for small projects, the outline specification should not be used as a "scope" or contract document. Its release usually signals the end of the design development phase, and it is issued to the client and consultants. After issue, revisions should be documented, dated, and distributed to the same parties who received copies of the original document.

Project Manual

The "project manual" is prepared by all specifying sources during the construction documents phase and coordinated by the design professional. It is the basis for a construction contract. Depending on the type of contract, it is issued sequentially in packages or at the end of the construction documents phase. The project manual greatly expands the information in the outline specification and includes complete contractual requirements, detailed reference standards, current product data, and extensive design, performance, and workmanship criteria.

The components of the project manual are organized into two major groups – the bidding and contract requirements and the specifications. The bidding and contract requirements describe the rules for bidding and the form of the contract between the successful bidder and the owner, including the responsibilities of each party, guidelines for dispute resolution, insurance clauses, and similar requirements.

The specification sections are grouped under 16 major Masterformat divisions. Division 01 sections describe the administrative responsibilities for the work, such as permits, project meetings, submittal procedures, temporary facilities, and contract closeout requirements. Divisions 02 through 16 encompass the technical specifications, a detailed description of materials and equipment and their incorporation in the work. Each specification section includes submittal requirements, design and performance criteria, testing standards, product descriptions, and other information that is unique to the materials and equipment specified in the section.

Some projects will not need all three of the written documents. Work of limited scope, such as a remodeling project, may rely solely on a project manual. A reduced fee may curtail some preliminary documentation, too. For small projects, many firms eliminate the intermediate outline specification, flowing directly from the preliminary project description to the project manual.

The continuity of information from one document to another is important. Unless recorded decisions are changed, the following document must reflect the prior information. Only greater detail and new information may be added.

The preliminary project description, outline specification, and project manual produce a controlled continuity of design and construction information. When developed carefully with the drawings, they become an essential part of the "river" of construction documents.

William Lohmann ■

The author is Vice President, Director of Specifications, at Murphy/Jahn in Chicago

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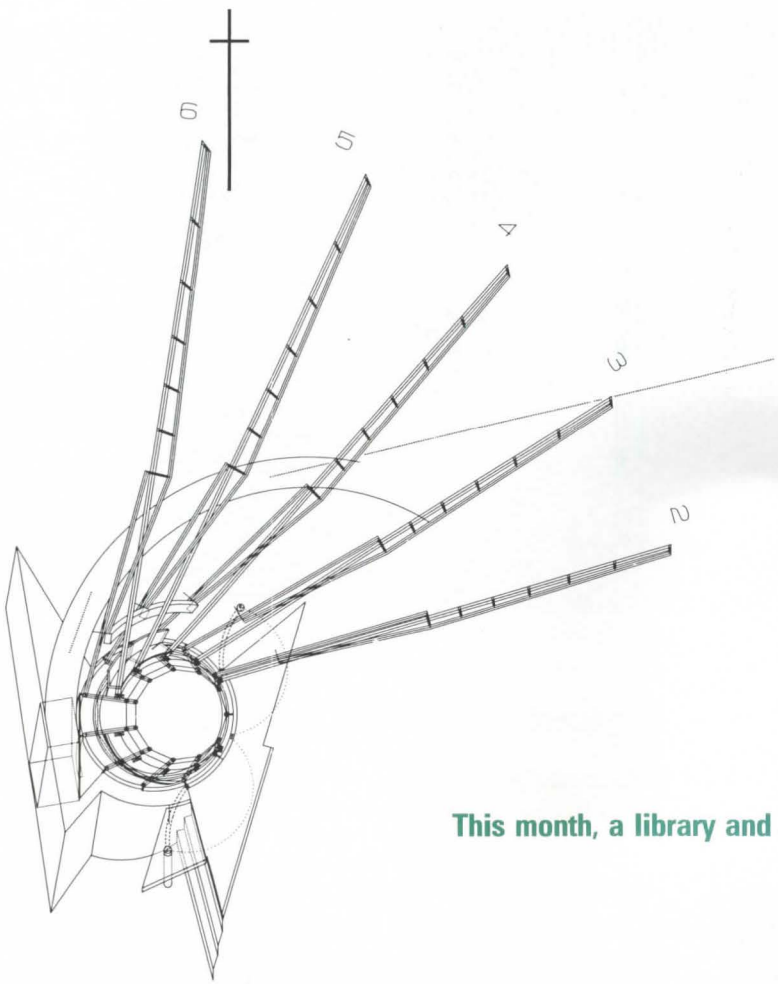
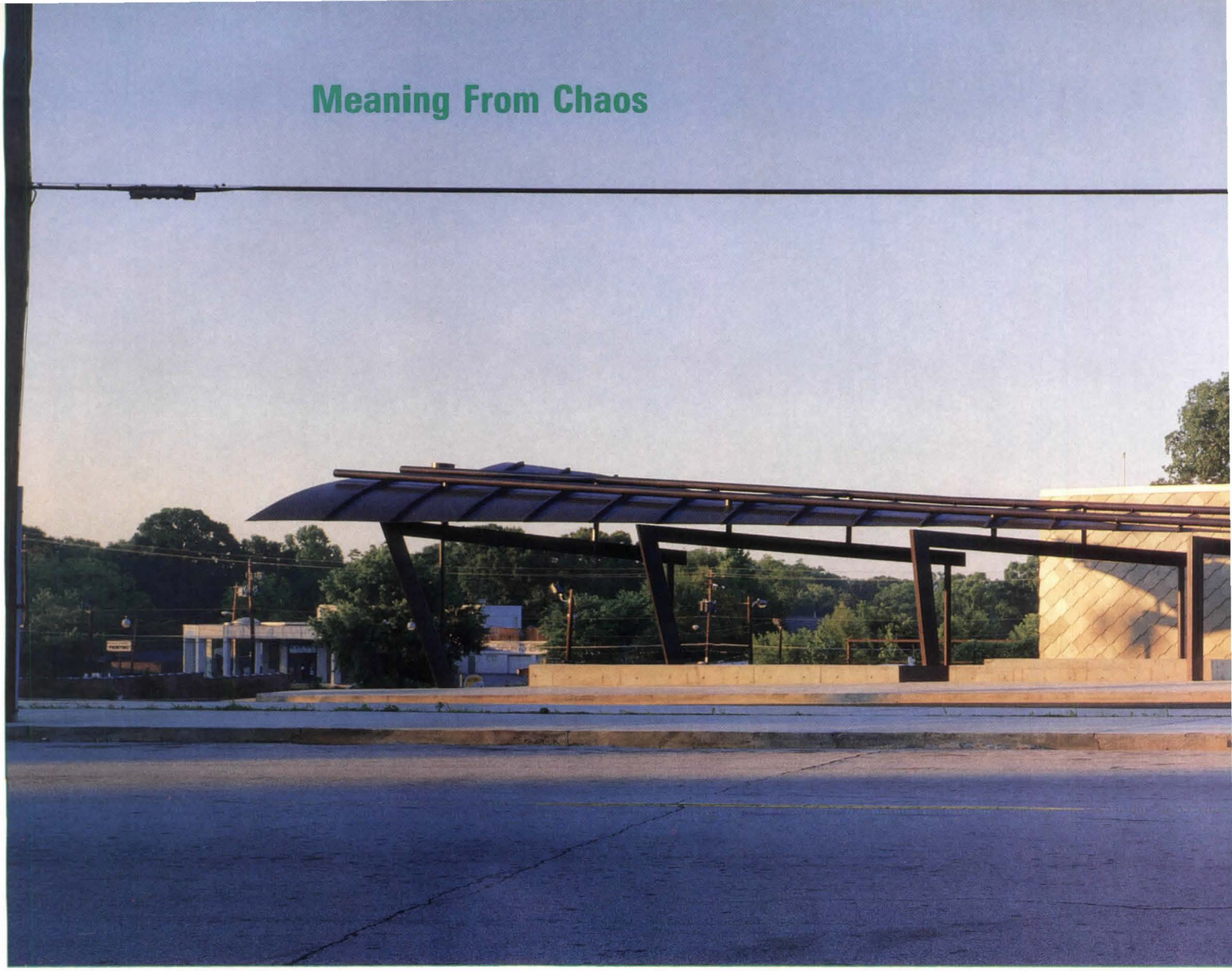


This month, a library and a conference center complex by Scogin Elam & Bray reveal, amidst fragmentation, spaces that are paradoxically peaceful.

Computer projection of the steel supports for the chapel at Emory University Conference Center, left; West elevation of Conference Center building, right.

Meaning From Chaos



1

Scogin Elam & Bray overcome political and economic pressures, site and budget limitations, and a lack of real context in an Atlanta branch library.

From Buckhead Avenue, the north façade (1) is largely dominated by the canopy and porte-cochère that connects the east parking with the entry and west parking. The west wall (2) is minimally fenestrated and has one of the largest sections of slate shingles, each individually installed by one man. Downtown Atlanta is in the distance. Sunshades on the south façade (3) cut solar glare and penetration in the reading room.

Buckhead is not Georgetown. Yet in designing a new branch library for the Atlanta-Fulton County Library System, Atlanta architects Scogin Elam & Bray were confronted with local objections that the proposed design was antithetical to the "Georgetown character" of the area. Once developed with a small town core, the Buckhead neighborhood has undergone an almost continuous metamorphosis from an upscale residential character to a growing commercial/residential/entertainment sector. It is increasingly, as the architects characterize it, "a really dynamic situation of open parking lots, nightclubs, highrise office buildings, highrise condominiums, churches, boutiques, Yuppie housing, and multimillion-dollar homes."

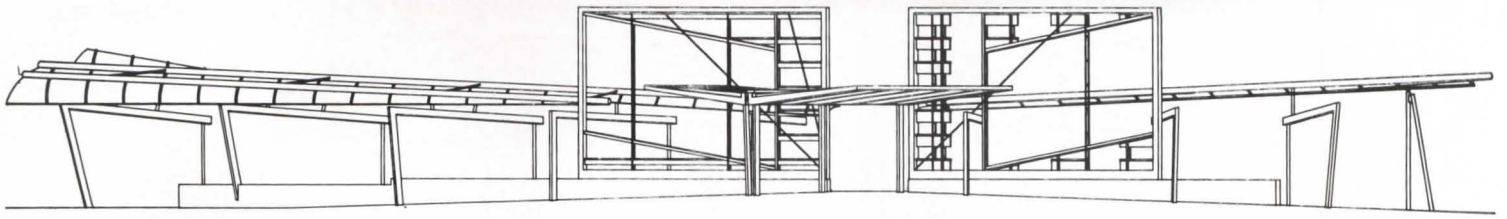
It is this dynamism to which the design is addressed, along with very strong site influences. The square footage and parking requirements of the program literally consumed all buildable areas of the site. At the north end is Buckhead Avenue with more pedestrian activity, compared with the downhill south side, which is primarily automobile-oriented. However, the most important asset of the property is a rare view from its location at the top of a hill back toward downtown Atlanta. As Mack Scogin points out, "That played a huge role in the design, because it is a rare opportunity for a view – a public view – of the downtown part of the city. There are lots of private views from tall buildings, but rarely can you find a public view." That prompted the county to back the architects in their position that it was the public's right to control this rare site, not that of private developers.

The building's organization is a fairly simple linear one. A public meeting room located near the entry can be used separately, after library hours. The entry leads to the circulation desk cone, and from there the progression is directly to the main reading room, with children's reading area, browsing and conference spaces, and work-

(continued on page 64)

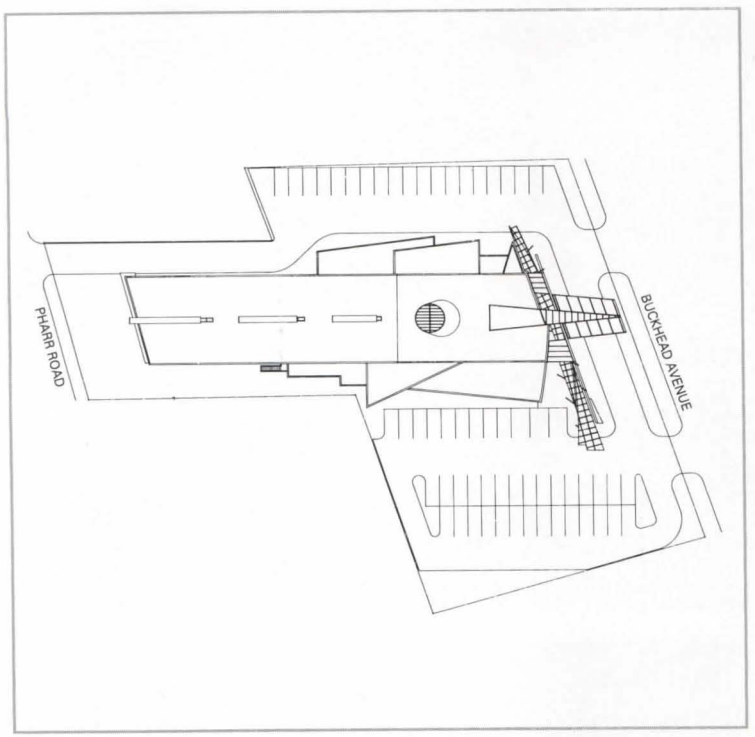
2

3



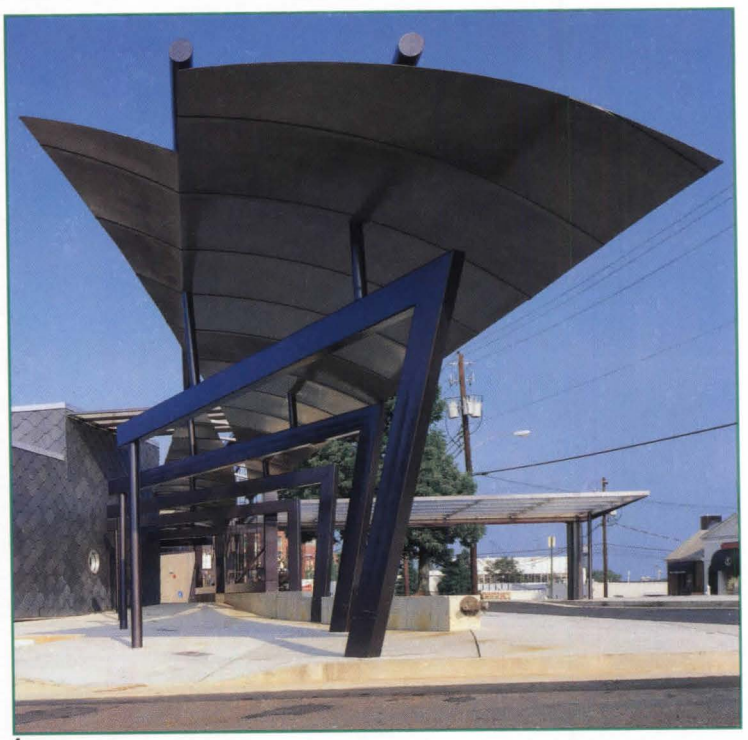
NORTH ELEVATION SCREEN WALL, CANOPY AND PORTE-COCHÈRE

20'/6m



SITE PLAN

N → 100'/30m



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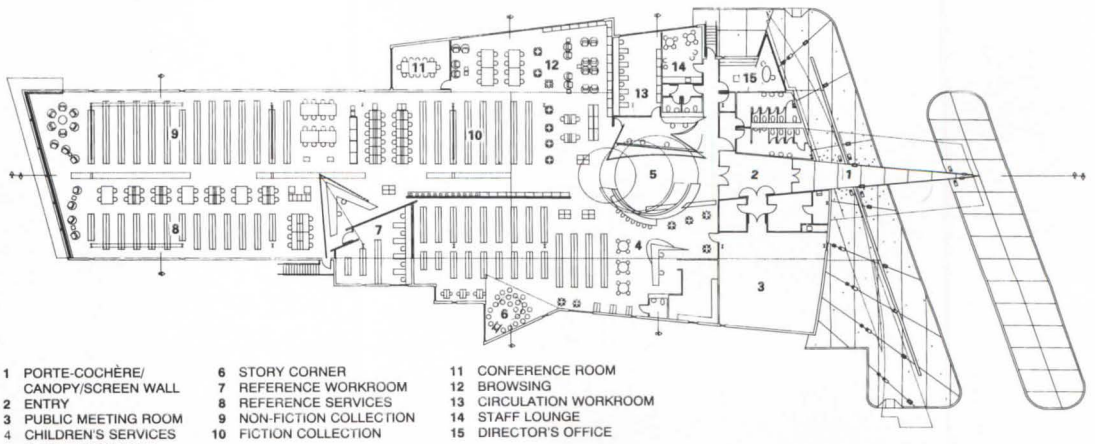
Curved rolled steel plate forms the canopy from the east parking area (4) to the porte-cochère and entry. The librarian's office forms a prominent wedgelike prow at the west end of the curved front facade (5). Comprising steel, corrugated translucent fiberglass, and laminated glass, the porte cochere, canopy, and screen wall form a complex collage of pieces that brings pedestrian scale to the front entry. Steel members are painted in an automotive deep gray that adds a richness, and artfully placed glass partial infill panels complete the composition.



1 PORTE-COCHÈRE/ CANOPY/SCREEN WALL
2 ENTRY
3 PUBLIC MEETING ROOM
4 CHILDREN'S SERVICES
5 CIRCULATION DESK
6 STORY CORNER
7 REFERENCE WORKROOM
8 REFERENCE SERVICES
9 NON-FICTION COLLECTION
10 FICTION COLLECTION
11 CONFERENCE ROOM
12 BROWSING
13 CIRCULATION WORKROOM
14 STAFF LOUNGE
15 DIRECTOR'S OFFICE

FIRST FLOOR PLAN

N → 40'/12m

Project: *Buckhead Branch Library, Atlanta.*
Architects: *Scogin Elam & Bray, Atlanta (Mack Scogin with Merrill Elam and Lloyd Bray; Susan Desko, John Lauer, Chriss Mills, Carlos Tardio, Shawn Evans, Patricia Kerlin, Ellen Hooker, Ron Mitchell, and Leslee Hare, team).*
Client: *Fulton County, Atlanta-Fulton County Library System; James Brooks, library planner. Site: t-shaped through-block parcel in a mostly low scale (but changing) light urban area; boundary streets are Buckhead Avenue and Pharr Road.*
Program: *replacement branch library to contain reading and browsing spaces and stacks, a childrens' collection and reading area, staff offices, circulation area, and public meeting room.*
Sructure: *steel bar joists and steel frame on concrete foundations.*
Major materials: *slate shingles, rolled steel plate and steel frame, translucent fiberglass sheet, painted gypsum board (see Building Materials, p. 110)*
Mechanical system: *gas heating, electric cooling, six constant volume single-zone rooftop units.*
Consultants: *Browder + LeGuizamon, structural; Jones Nall & Davis, mechanical; Doug Allen, landscape; Heery Program Managers, construction program management.*
General contractor: *Wilkerson Construction.*
Costs: *$1.8 million; $90/sq ft.*
Photos: *Timothy Hursley.*

6

7

The main reading and stack area (6) is dominated by full-height glazing toward the view back to downtown, and punctuated by three skylighted slots on the north-south axis. Diagonal steel framing members accomplish lateral structural bracing. The interior focal point is the circulation desk area (7), housed within the slant-walled conical space. At the far side of the cone (8), a pink acrylic window at a child's sitting height connects with the childrens' collection area beyond. A typical steel bar joist continues through the tapered space, which is truncated by a domed skylight at the top, beyond the roof plane.

(continued from page 60)

rooms on either side of the north-south axis. The exterior expression of the facility's long dimension is that of a projection rising up from the pedestrian scale of the Buckhead Avenue entry to the more lofty reading room volume. Scogin says the intention was to employ traditional elements of architectural organization, a porte-cochère and colonnade leading to a definitive front entry, then to an arrival area, and on to the main functional element. The porte-cochère canopy construction is purposely complex and visually active to make the front elements sympathetic to pedestrian activity; the assemblage connects both parking lots and provides street access in front.

Across the south façade, sun shades act to cut down sky glare and direct sun in the reading room, enhancing the downtown view. A major focus is the truncated, slanted, skylighted cone at and above the circulation desk, which projects through the roof, resembling the smokestack on a large gray ship.

The gray slate was chosen, Scogin says, to deal with two issues, the most obvious was how to wrap a building shaped like the library. The other divides into two more or less conflicting goals, to signify something that has no apparent rational organization or directional implications, yet to represent a permanence usually characterizing a civic building. Scogin sees the slate as being a very traditional material used in a "new, dynamic way," more a collection of systems than one uniform surface treatment.

Given the wildly disparate elements that comprise Buckhead and the streetscapes directly around the library, a description would be more apt to include the term "chaos" than "Georgetown." Mack Scogin attributes much of the success of the library project and the ultimate defeat of the would-be "design sheriffs" to "tremendous support" from the community as a whole, the library administration, and the county administration. The facility is a skillful and inspired addition to an area in constant flux. The fact that some members of the earlier negative factions have come around to support the resulting building is gratifying, and appropriate. Buckhead now has one of the best buildings not only in the city-county library system, but in the city as a whole. **Jim Murphy** ■

Focal Point

To make a heart for a community of theology students, Scogin Elam & Bray create a whirlwind at Emory.

1

Emory University is not even remotely like Buckhead. Specifically, the Candler School of Theology at the northern edge of the expanding Emory campus is a drastically different environment for the design process from the conditions the Buckhead library confronted. And, the programs themselves couldn't be less alike.

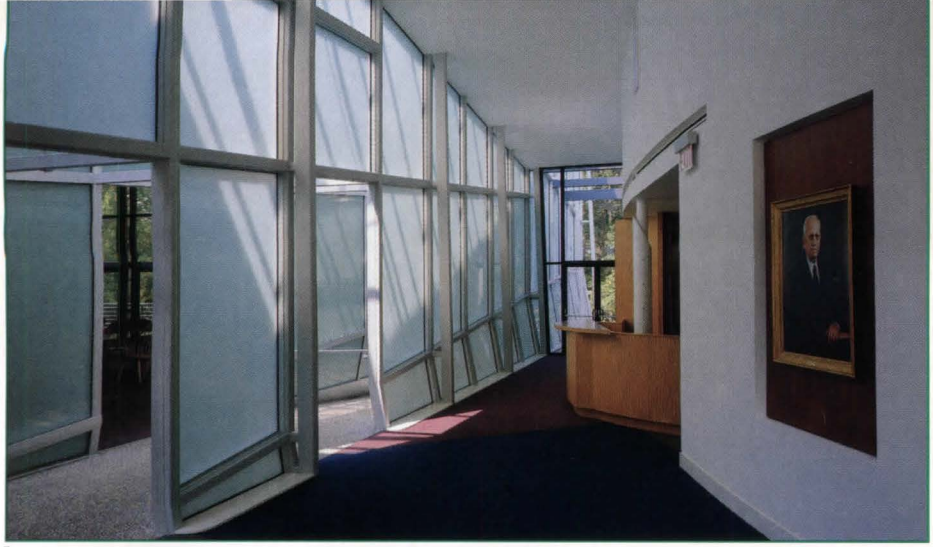
The several-part program represented by the Turner Village/D. Abbott Turner Center project made a true hybrid of building functions into one multifaceted design challenge. One requirement was to renovate and upgrade student apartment buildings built in the early 1950s. The second, and more demanding, need was to create a heart and center for the school of theology, the focus of an intended community comprising all aspects of the school's mission. A master plan done by the architects determined the location for the new building and sites for planned Candler facilities.

The community center itself had a program that combined many requirements, presenting some subtle and not so subtle contradictory goals. It was to combine the functions of social center, conference center, and a small chapel. While not a major worship place or church, it was, paradoxi-

2

3

From the front entry (1), the fascia sweeps in arcs, gesturing toward the housing. Offsets (3) allow daylight in the meeting rooms. From the west (2), living room and meeting room are visible. The path to the chapel begins at the glass 'nave' and the stair from the rear deck (4).



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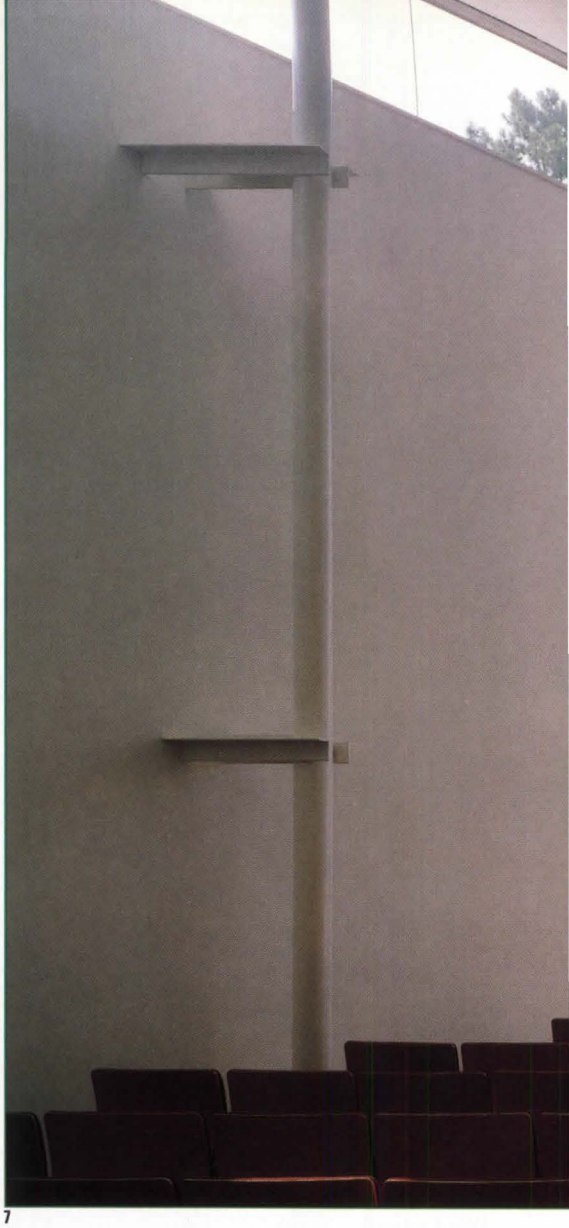

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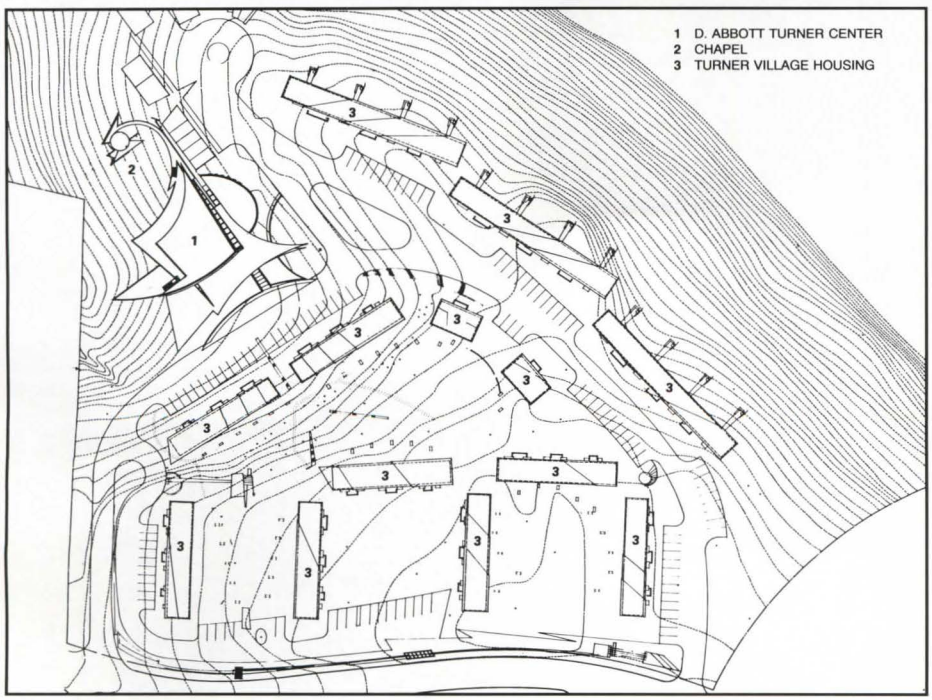
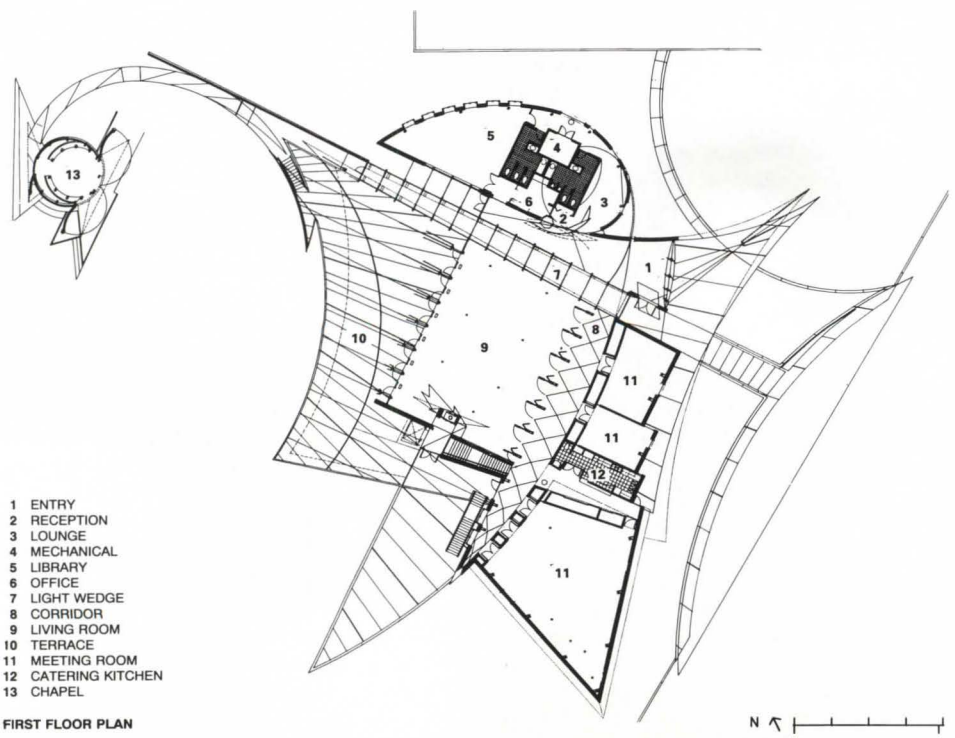


SITE PLAN

cally, not free of spiritual implications because of its connection with the theology school.

The housing was redone, as the architects point out, in a basically cosmetic manner, the budget eliminating some of the extras proposed in the early schemes. The client had requested that the existing low-pitched roofs be reconfigured, so shallow vaulted roofs – stepped up in several segments, diagonal to the orthogonal building perimeters – replaced the pitched version. Kitchens were brought up to date, as were the mechanical systems, the carpet, and the interior wall finishes. No wall configurations were changed on the interior, however, and the client did not accept the architects' proposals to make spatial use of the higher volumes under the new roofs, or for the porches and other amenities suggested. New front doors and stone side panels, and new front canopies were added. The panels comprise several varied types and hues of stone.

In the conference center building, the plan shape of the roof on the front echoes the site shape, and seems to be making welcoming and embracing gestures toward the street and the housing facilities. "The shape of the roof lifts up,"

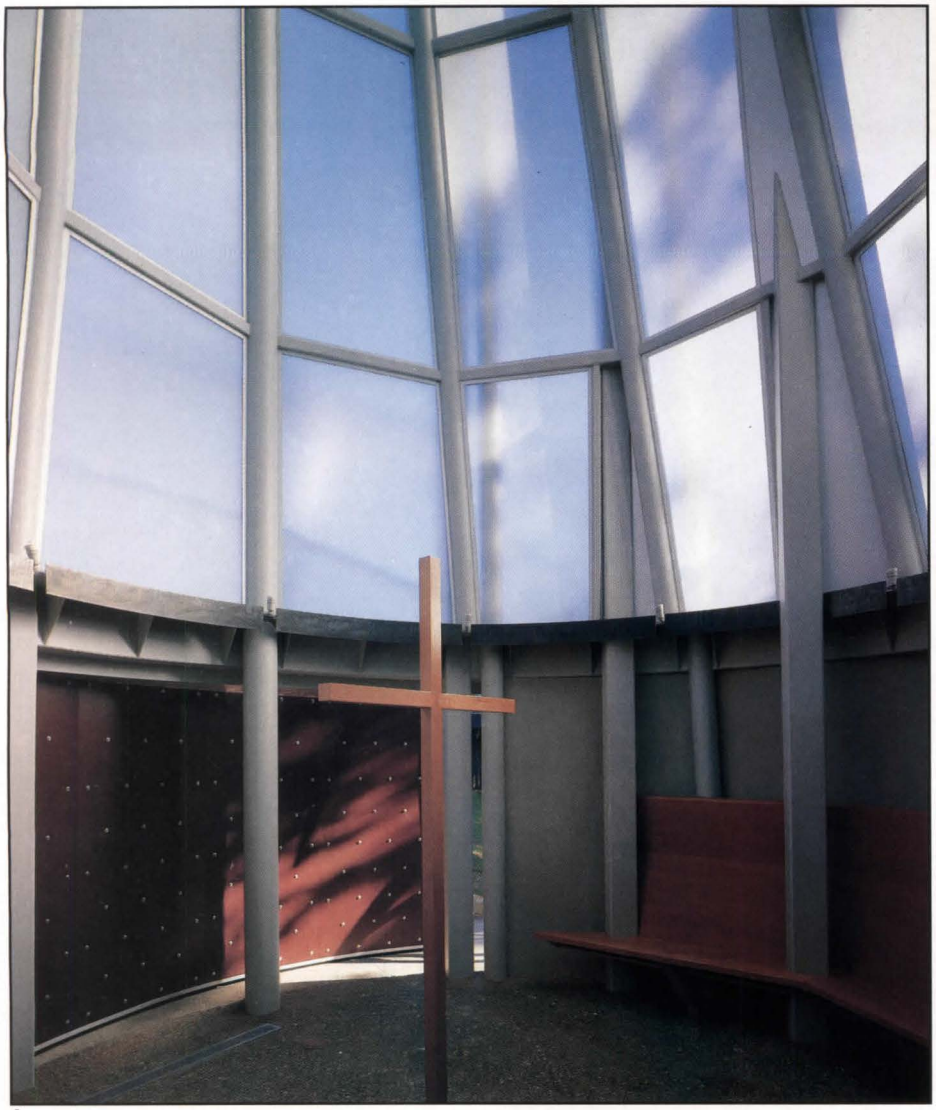


1 ENTRY
2 RECEPTION
3 LOUNGE
4 MECHANICAL
5 LIBRARY
6 OFFICE
7 LIGHT WEDGE
8 CORRIDOR
9 LIVING ROOM
10 TERRACE
11 MEETING ROOM
12 CATERING KITCHEN
13 CHAPEL

FIRST FLOOR PLAN

N 40'/12m

At the entry and office corridor (5), as well as in the living room (6), light is borrowed from the skylighted passage to the chapel. The main source of daylight in the living room, the glass northwest wall facing the chapel, is supplemented by metal halide lighting fixtures. These fixtures, designed by the architects, are mounted on columns rising above the paired swinging and bifold doors screening the large room from the passage beyond. Characterized by a fireplace and flexible, soft, comfortable furnishings, the room is meant to function as a space to promote interaction and exchanges between the theology students; as such, it is frequently reconfigured for various functions including conversation, dinners, or dances. The largest of three meeting rooms (7) will handle other gatherings and/or lectures.



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Focal point of the entire complex and generator of most of the plan moves, Scogin says, is the upright of the cross on the small chapel, which is located beyond the living room side of the building. Glazed with translucent glass between steel supporting legs, the chapel space is truncated and skylighted with clear glass (10). Only the center front support is vertical, pairs of the others have different configurations to align with the two tangent circles of the plan. Its capacity of 10 to 12 on the interior (8) is to be augmented by the ability to open two curved doors to the hillside and living room deck (9), allowing some activities to include those spaces as well. The steel tower supports seem to echo the wooded backdrop (11).

Mack Scogin explains, "and it is trying to sculpt a kind of space that has a quality of lightness, of a spiritual nature, to it. The building is a mixed breed, it's not a church; you don't feel like it is. But then again, the way the light enters it and in other ways, it implies a religious connection, it has a spiritual quality to it."

The chapel, even though it is one of the smallest pieces of the program, and not stressed as a major function of the center, is nevertheless seen as "the heart and soul of the conference center," says Scogin, "if not of the entire School of Theology. So the initial move was to take this smallest program element and somehow make it the most prominent and significant architectural element."

Intended to hold only 10 to 12 people, the chapel can serve as a backdrop for larger assemblies seated on the back deck and the hill leading down to it. The architects decided to pull the chapel out of the main body of the center so that it became the symbolic piece, the sculptural piece, as well as a functional piece. It is set toward the back of the site, against the natural woods. Its position is a conscious effort to reconcile its symbolic importance with its programmatic size and to deemphasize its function relative to the entire building. "It's not as if this were a church camp, or a retreat," Scogin explains. "The chapel is not put forward because it would have too much power, too much prominence. Again, this is an attempt to deal with this delicate balance between the intentions of the building."

In plan, the chapel is not one circle but two, tangent at the vertical centerline of the pair of curved front doors and the cross atop the structure. Once the decision was made to make the cross the focal and generative point, says Scogin, "Everything literally began to spiral off of the chapel. The circulation to it, the shapes of the building, the radiating lines that flow all the way through the plan, if not literally, then psychologically, come from the chapel itself."

The relationship of the chapel to the conference center design effectively extends its role. Approaching the entry to the main building, a visitor is looking down a long glass "wedge" between the living room and the office-to-library corridor. The resulting forced perspective of the passage makes the most dramatic use of this skylighted space, which also contributes daylight to

12

13

14

Most changes on the existing Turner Village student housing (14) were purely cosmetic. Responding to the client's request for a change away from the shallow-pitched roof, the architects designed a telescoping shallow vault form (13), rising higher than the original. New entry canopies and doors with flanking side panels of varied stone comprised the main elements of change (12, 13).

Project: *D. Abbott Turner Center, Candler School of Theology, Emory University, Atlanta.*
Architects: *Scogin Elam & Bray, Atlanta (Mack Scogin with Merrill Elam and Lloyd Bray; Susan Desko, Jeff Atwood, John Lauer, Leslee Hare, Frank Venning, Criss Mills, Carlos Tardio, Denise Dumais, Monica Solana, Jane Seville, Roy Farley, Christine Gorby, Sean McLendon, team).*
Client: *Candler School of Theology; Dean, Jim L. Waits.*
Site: *on the northern edge of an expanding Emory University campus, sloping downward toward the northeast, north, and west.*
Program: *along with renovating 13 student apartment buildings, the requirement was for a multi-function community/conference center and small chapel.*
Structure: *steel frame with metal roof decking on steel bar joists, masonry veneer walls, composite concrete floor slab on steel framing, and concrete spread footings.*
Major materials: *manganese iron spot brick, aluminum windows, steel fascias, and standing seam steel roofing; for chapel, steel trusses, translucent laminated or sandblasted glass and clear glass skylights. (see Building Materials, p. 110)*
Mechanical system: *gas-fired boiler, direct expansion air cooling.*
Consultants: *Browder + Leguizamon & Associates, structural; Jones, Nall & Davis, mechanical; Travis Pruitt & Associates, civil; Doug Allen, ASLA, landscape; Wiliamson & Associates, specifications; Ramon Luminance Design, lighting; Costing Services Group, costing.*
Photos: *Timothy Hursley.*

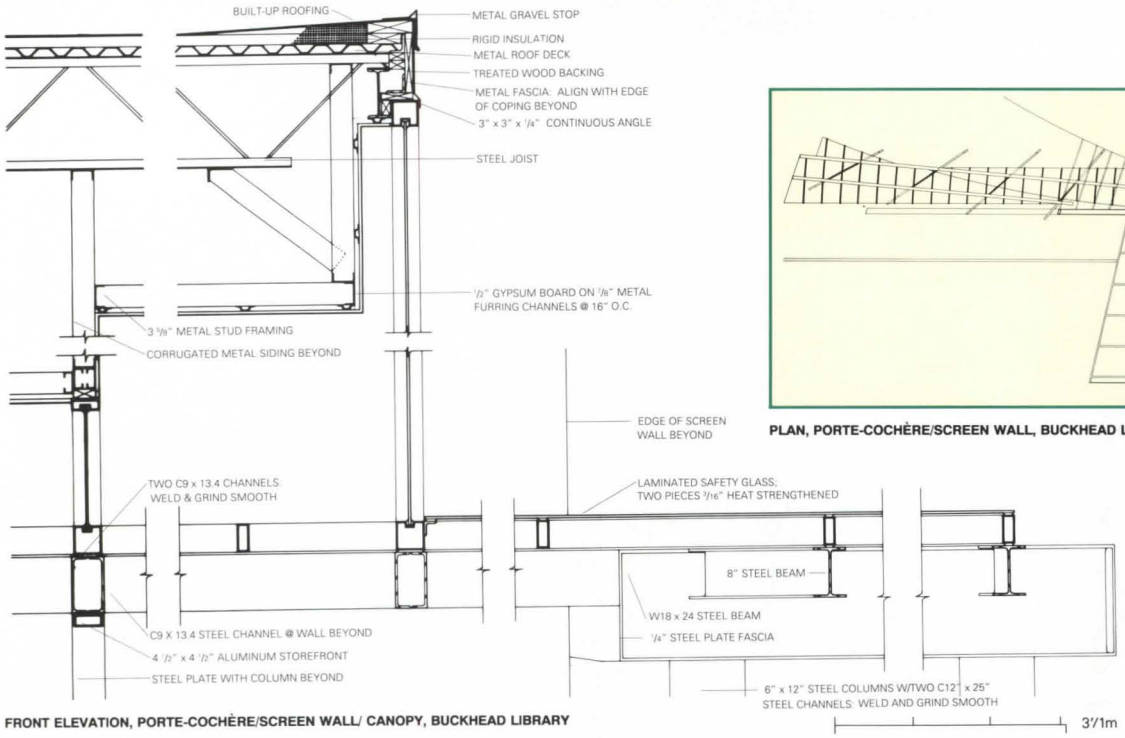
the adjoining rooms. Linking the building and the approach to the chapel, the "wedge" is seen by Scogin as "part of the chapel experience, but also part of the building, reinforcing the importance of the chapel. It is, in effect, the nave, the processional piece, of the chapel."

Along with the sweeping roof overhangs, one of the other idiosyncracies of the exterior of the building is the outward cant of the brick in the southwest corner. It is described by Scogin as "an intuitive move that destabilizes the building, a subtle thing to make you wonder about the building's nature." The pitch of the roof at the west wall is played off against, and "floats" above, the horizontal top of the brick, the glazing along that wall forming an angled wedge. Ornamental diagonal steel angles add another level of complexity at a number of locations on the southeast and northwest walls, running between the steel roof members and steel pipe columns.

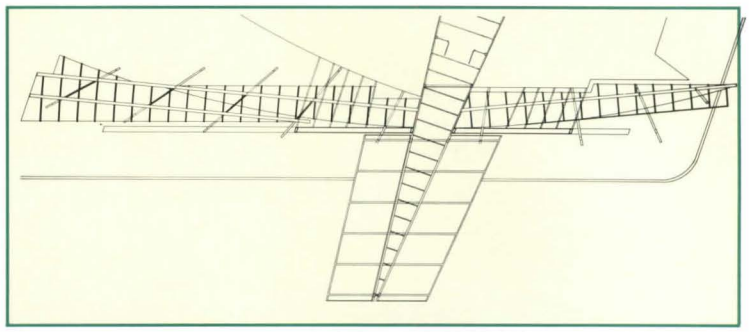
Inside, the entry foyer connects the office on one side with the corridor to the living and meeting rooms on the other. The 2270-square-foot living room is the activity center; if it weren't for the comfortable and movable lounge furniture and the fireplace, the room could be mistaken for a worship hall, with its high spaces and plentiful natural light. It is used, Scogin reports, "for everything you can imagine. The furniture changes almost daily," and the room has been used for informal lounging, dinners, and dances.

Three meeting rooms of varying sizes and a small catering kitchen line the other side of a corridor defined by the curving line of their walls and a multiple row of pairs of swinging and bifold doors. Lighting fixtures designed by the architects are mounted above the line of these doors, providing night and supplementary lighting for the living room. The largest meeting room also could be used as a chapel, because of its height and lighting. Being larger than the detached chapel, it may well be put to such use for mid-size services. The only other large space is the library, really more a quiet study space than one for books.

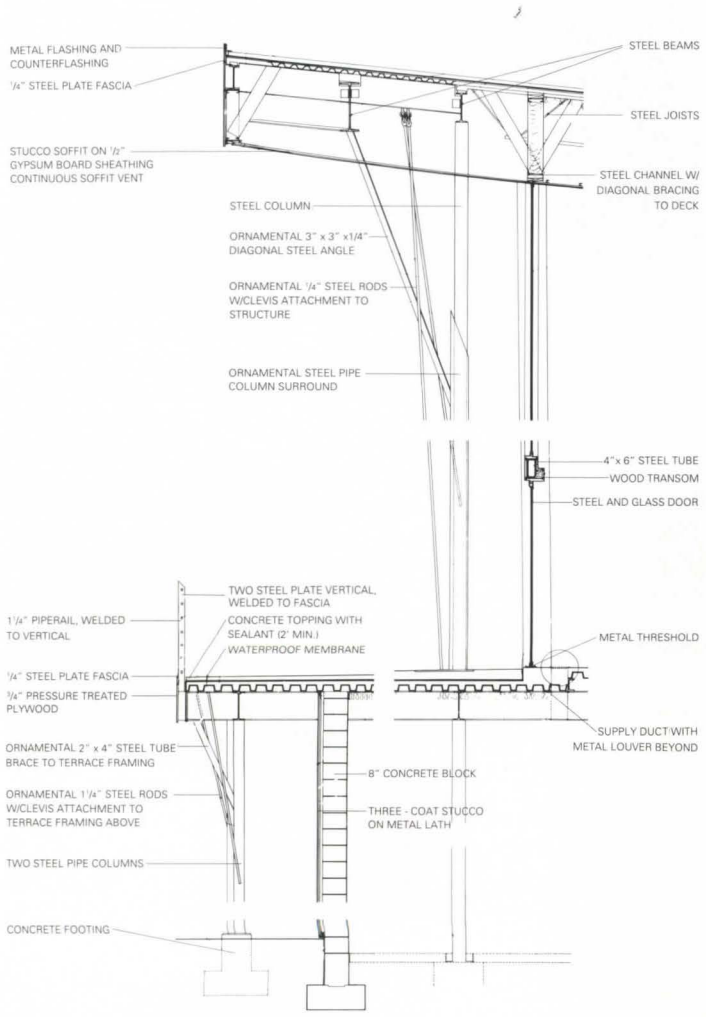
The entire complex – the conference center, the chapel, and the renovated housing – is an extremely skilled composition of unlike programmatic parts. Each is handled with invention, design excellence, care and imagination in its details, and more than a little daring. **Jim Murphy** ■



FRONT ELEVATION, PORTE-COCHÈRE/SCREEN WALL/ CANOPY, BUCKHEAD LIBRARY



PLAN, PORTE-COCHÈRE/SCREEN WALL, BUCKHEAD LIBRARY 20'/6m



SECTION FROM LIVING ROOM WALL, TURNER CENTER

Details on this page, representing both the Buckhead Library and the D. Abbott Turner Center, are only a minor indication of the thought process that goes into the work of Scogin Elam & Bray. The Living Room wall section of the Turner Center, relatively straightforward and unremarkable at a glance, embodies the upward turn of the roof and the diagonal non-structural angles at the columns, both enriching the expression of the overall to a great degree.

Probably the first thing a visitor notices at the Buckhead Library, the complicated canopy/porte-cochère/screen wall assembly at the entry required a large number of details for the understanding of the client, the builder, and probably the architects as well. It is a masterful collage of pieces that pull together to make a very functional design element and association with pedestrian scale.

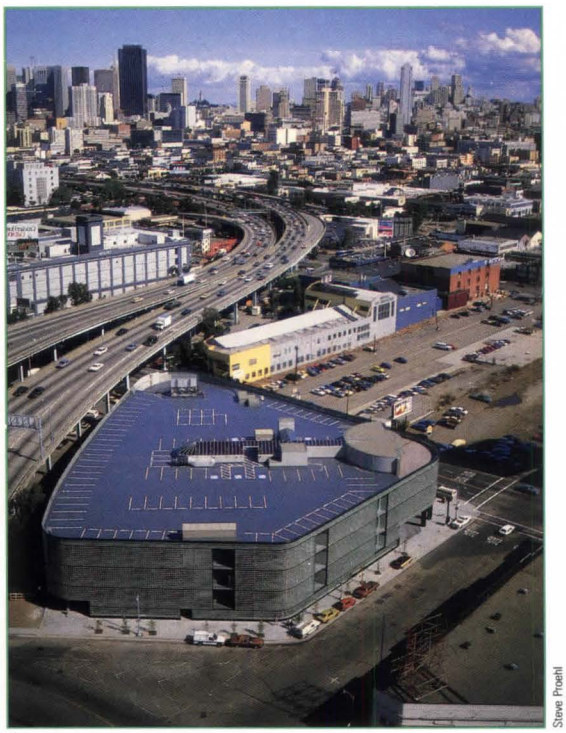
The very high level of design quality in both the Buckhead library and the Turner Center and Village is hardly surprising, coming from the same group of principals that created the Clayton County, Georgia, library (P/A, November 1988, p.82), the unbuilt radio station for Atlanta's WQXI (P/A, January 1988, p.99), and the Atlanta Herman Miller showroom, not to mention the downtown branch of the High Museum in the Georgia Pacific Building, and the small bridge/folly for an office building grouping near the perimeter. All of these projects involved clients willing to take the risk of building unorthodox and brilliant designs, to one degree or another. They represent the further development of a talent evident in much of the work the principals had begun while Mack Scogin was president and head of design at Heery & Heery Architects. Their design for the new Coca Cola headquarters in Atlanta, while not completed entirely as Scogin intended, is a clear forerunner of the Buckhead and Emory projects, a level of skill that ranks the work among the best being done anywhere. The challenge, now that Scogin is chairman at the Harvard Graduate School of Design, is clearly to keep the work flowing, a condition of which he, Merrill Elam, and Lloyd Bray are quite aware.

Building with Blocks

For a speculative building, Tanner Leddy Maytum Stacy Architects use glass block on an unprecedented scale.

Richard Barnes

1



Steve Proehl

2

Although the streamlined contours of the building suggest an elegant object, only two sides carry this message (1). Deadened by the freeway, the building's backside is clad in lackluster concrete block. A ramp at the north corner leads up to the rooftop parking; the city required 145 spaces of which 140 are on the roof (2). The curtainwall is divided into 11' by 8' panels surrounded by neoprene strips. NEG's standard details for the block use a metal foot attached to panel reinforcing ladders that key into a channel in the supporting frame. This channel does not overlap the edges of the block and can be flush with the outer face. The channels are lined with thin sheets of synthetic rubber to prevent any adherence of mortar to the channels, allowing the panels to expand, contract, and move during quakes while remaining securely in place.

Dramatic use of a time-tested industrial material enabled the San Francisco Diamond and Jewelry Mart to mitigate its daunting location in the shadow of a double-decker freeway. Some 22,000 glass blocks compose the translucent walls that sweep around the two visible sides of this irregular wedge-shaped building (winner of a P/A citation, Jan. 1984, p. 112) making it, by the architects' account, the largest glass block structure in the country.

In 1983, when architects James Tanner and Richard Stacy were searching for materials to use in this speculative building, they took a fresh look at glass block because the structure's function as a high-tech electronics bazaar called for the glossiest image possible (a gleaming aesthetic equally appropriate for its subsequent use as a jewelry mart). As they learned more about glass block, the designers came to believe it could meet code requirements for seismic stability and energy conservation while remaining cost-effective, and convinced their client to make it the major building material. According to Stacy, the project architect, Nippon Electric Glass block was used because it could be detailed to reveal the entire surface of the block.

Indeed, the structure performed well in the October 1989 earthquake despite the risky soil conditions of landfill and a high water table. The engineers had introduced an expansion joint that runs diagonally through the building so that its two halves can move independently. A slight offset of the walls along this joint occurred following the quake, but you have to look hard to see it. The atrium skylight was constructed so that it bears wholly on one side of the atrium; the opposite side rests on rubber-base isolators so that the skylight can move as the building does without fracturing.

In general, the interiors suffer from budget constraints. Although clean and straightforward, they do nothing to heighten the promise of the glamorous exterior. The floorplates are packed with leasable space, 145,000 square feet of it, and the ground floor is even suppressed a half story to get four floors in under the 40-foot height limit. More's the pity that innovative use of materials stops at the building shell; such a daring beginning deserved to be carried through. But since speculative buildings rarely break out of the predictable mold, we can be grateful that the architects seized the opportunity they had. **Sally B. Woodbridge** ■

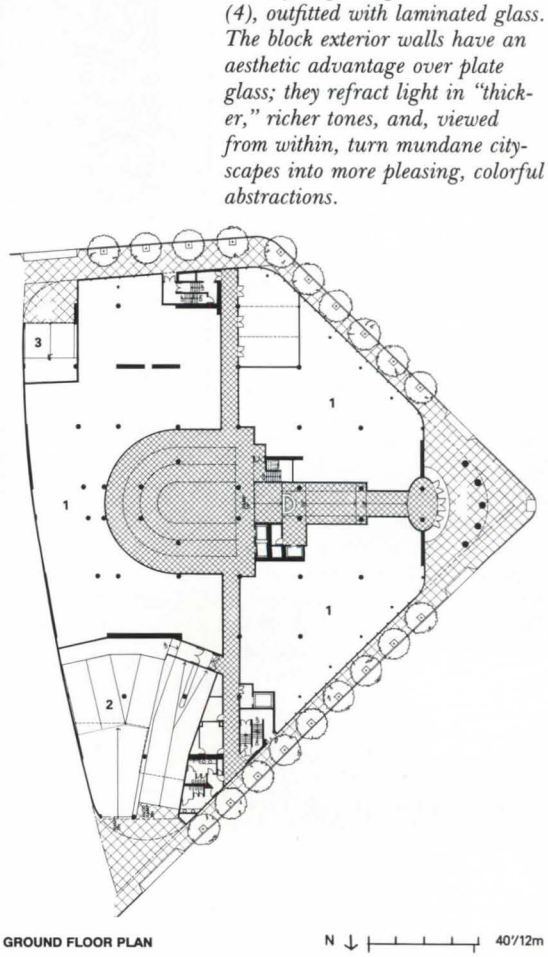
3

4

Photos this page: Richard Barnes

Project: *Diamond and Jewelry Mart, San Francisco.*
Architects: *Tanner Leddy Maytum Stacy Architects (formerly Tanner & VanDine Architects), San Francisco. (James Tanner, Richard Stacy, principals; Michael Connel, Craig Edwards, Amy Eliot, Karen Fiene, William Goryl, Alan Ohashi, Peter Van Dine, project team.)*
Clients: *999 Brannan Street Associates (Barry Scherman).*
Site: *triangular, one-acre lot adjacent to elevated freeway in Showplace Square area.*
Program: *approximately 120 wholesale showrooms (at 1000 sq ft); central 5000-sq-ft atrium/restaurant.*
Major Materials: *see Building Materials, p. 110.*
Consultants: *Edgar Haag, landscape; Watry Design Group, structural; Marion Cerbatos Tomasi, mechanical; Architectural Lighting Design, lighting.*

The building's leasable space is organized around an atrium (3), with floor plates that increase in size toward the top. To add interest, the sleek, curving curtainwalls are interrupted in several locations by angular glazed niches (4), outfitted with laminated glass. The block exterior walls have an aesthetic advantage over plate glass; they refract light in "thicker," richer tones, and, viewed from within, turn mundane cityscapes into more pleasing, colorful abstractions.



GROUND FLOOR PLAN

Beyond Technical Finesse

Thoughtful construction and compelling imagery converge in Philippe Samyn's office annex.

1

The office annex, set in an excavated valley to minimize its bulk, is entered from the porch of the existing manor house, which was converted to office use. The sloped roof seen from the garden (1) is complemented by a roof whose curve (3) matches the porch entrance. Skylights at the base of this steel structure (2) light storage cupboards set in the bracing walls of the lower level. The pine office bays, with customized desks, are lined with exposed lighting conduits, and the trusses above the workstations match the profile of the conical roof over the library.

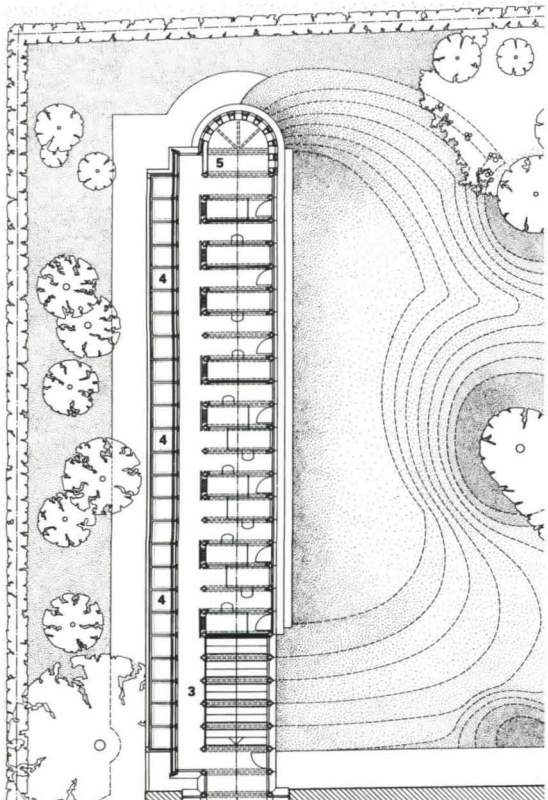
Further discussion of Samyn's integration of structure and form appeared in this year's Young Architects issue (P/A, July 1990, p. 76).

The garden façade of Samyn & Partners' graphic design studio is a commendable, but modest exercise in Modernism, a transparent structure annexed to a villa in suburban Brussels. Inside, however, the architect's manipulation of space and materials is refreshingly inventive: Here, the columns seen on the garden façade are paired to support a truss centered over two floors of workstations. Parallel to the wood bays, a line of arced steel tubes support a roof clad with corrugated metal decking. The juxtaposed materials offer a handsome contrast of textures, but they were selected for structural reasons: Samyn specified wood because it is easily drilled to hold the array of fixtures typical of a high-tech office; steel was the most economical way to realize the desired profile of the hallway. The retaining wall on the north side was built of unit masonry as a simple alternative to concrete formwork.

Samyn's use of stock materials is part of a personal mission to render the technological poetic. Educated as an engineer and architect, he sees technology as "both the best and the worst thing:" It allows us to build anything imaginable, but it can also seduce the architect with an autonomous scientific rationale. Samyn admires sensitive architects (such as Victor Horta, a Belgian Art Nouveau precursor) whose work is technologically clear and humanistically informed.

Samyn's architectural poetry extends from the abstract to the figurative: The annex terminates in an evocative apse. A formal archetype, it defies any succinct rationale – the curved wall encloses the libraries that serve each floor, but its conical roof was not mandated by the plan. In fact, Samyn wrestled with the profile during redesigns that lasted a year. It was a creative leap that defied the linear reasoning typical of the rest of the building.

The apse has an unaffected quality that saves it from sentimentality. Detailing is minimal, and the apse and flanking glass wall remain distinct, like the wood and steel structures inside. Their contrasting profiles refer to the alley (a remnant of a once expansive lot) that the building occupies. A walk down the hallway of the annex is analogous to a stroll beneath the trees that once lined the alley: The arced steel tubes are an abstract arbor that extends over the gabled office bays, which allude to garden pavilions on a landed estate. **Philip Arcidi** ■



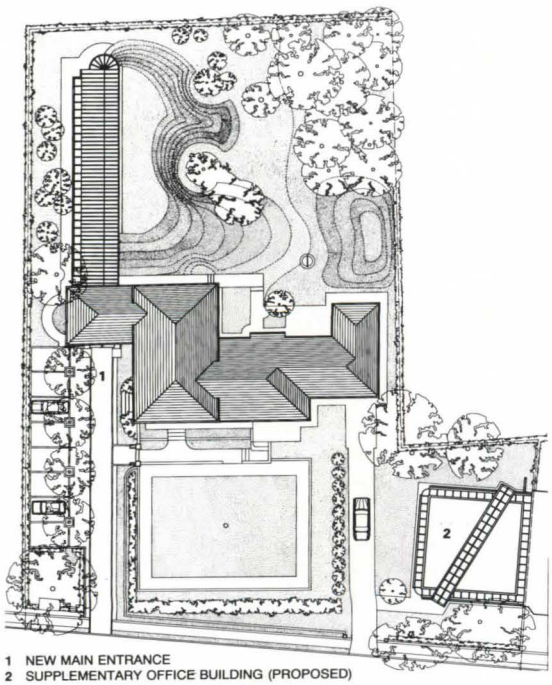
1 ENTRANCE
2 DOOR TO EXISTING OFFICES
3 BRIDGE TO WORKSTATIONS; ADJACENT STEPS TO LOWER FLOOR
4 STORAGE CABINETS
5 LIBRARY

FIRST FLOOR PLAN

N 20'/6m

2

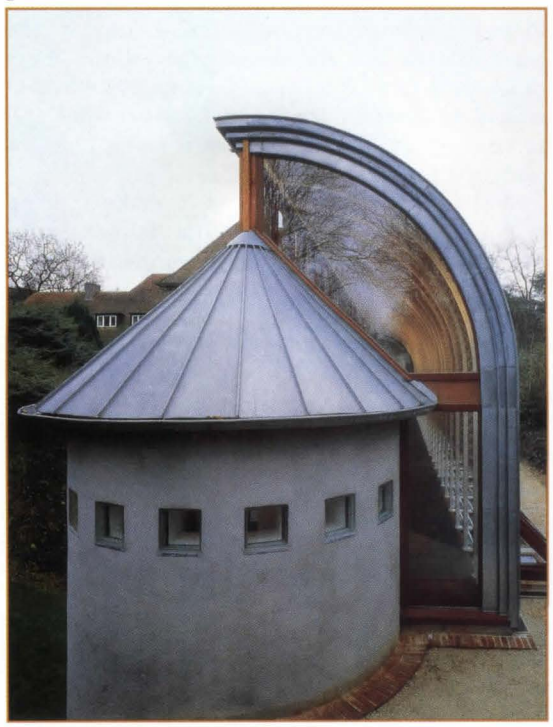
Photographs by Ch. Bastin & J. Evrard



1 NEW MAIN ENTRANCE
2 SUPPLEMENTARY OFFICE BUILDING (PROPOSED)

SITE PLAN

N 40'/12m



3

Project: *graphic studio annex, Brussels, Belgium.*
Architects: *Samyn & Partners, Architects and Engineers, Brussels (Philippe Samyn, partner in charge; Jacques Ceyssens, site assistant; Bernard Colin, drawing assistant).*
Client: *Design Board/Behaeghel & Partners.*
Site: *a 35,400-sq-ft lot in an established suburb.*
Program: *the 3000-sq-ft studio, built on the alley of a once-expansive estate, has 20 workstations with garden views.*
Structural systems: *frames of pine and steel; CMU retaining wall.*
Major materials: *wood floors; corrugated aluminum decking; cement plaster on masonry; klinkaert clay bricks; zinc roofing; custom office furniture.*
Mechanical system: *hot water heating.*
Consultants: *Setesco S.P.R.L., structural.*
General contractor: *Praet S.A.*

Inquiry: Religious Buildings

Religion isn't dead, and neither is religious architecture –

but both face the need to respond to a changing world.

Working With (Groan!) the Building Committee

All of the architects whose work is shown here were asked whether they worked with a lay building committee; all answered yes, some with a chuckle and some with a groan. Such committees have a reputation for being prickly, political, and averse to new ideas. Peter Bentel of Bentel & Bentel (page 82), says that "slowly but surely you build trust, but always by the end you're working in sync." He also suggests that small committees (six to eight) are best. Norman Jaffe says that on his synagogue (page 83) "there were wars. You have to fight, be insistent." Most reported that the presence of a strong individual helps an architect get his ideas across. In liturgically based churches, a liturgical consultant is often hired before the architect; the consultant helps the congregation define its worship needs and present them to the architect.

Church members are often uncertain about the philosophical implications of various plan types and images. Church architect Curtis Illingworth of San Luis Obispo, California, uses his own unpublished guide to educate congregations on the history of church architecture, so they can better understand the precedents they admire. Illingworth and others also conduct classes for church members on the subject.

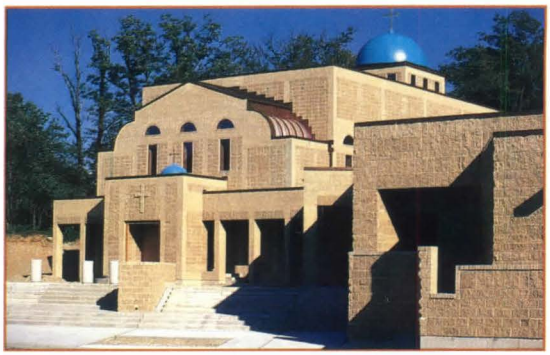
Over the last 20 years, people in both the religious and the architectural communities have begun to grumble about the state of religious architecture. Social changes and liberalization in Christian and Jewish denominations have led, some say, to an architecture that takes great care to emphasize the secular and communal aspects of religion, but fails to celebrate the transcendent nature of God. Such a shift in emphasis should not necessarily result in lesser architecture – a celebration of community ought to be a rich subject for an architect – but too often, new churches fail to inspire, whether because of the architect's failure to meet the design challenge, budget constraints, divisive building committees, or an unclear definition on the part of a church as to what it wants to be. Architects and congregations are dealing with these problems in several different ways, as the examples on the following pages show; these range from traditional plans and images, to hybrid efforts, to abstract designs that call on light and space – not traditional forms or iconography – to achieve a transcendent presence.

The Christian church began to shake itself up in the 1950s, when people such as liturgical consultant Frank Kasmarczyk began considering ways the church could better serve its members as a community, rather than as individual worshippers under the guidance of the church hierarchy. Some of Kazmarczyk's innovations – a centrally oriented "community" seating arrangement around the altar, a large secular gathering space outside the sanctuary, less formal areas for confession, among others – were adopted as policy by the Catholic Church under the Vatican II conference, and the ideas also spread to other denominations. This was true especially in the 1960s, when social and political upheaval made the authoritarian nature of the church seem dated.

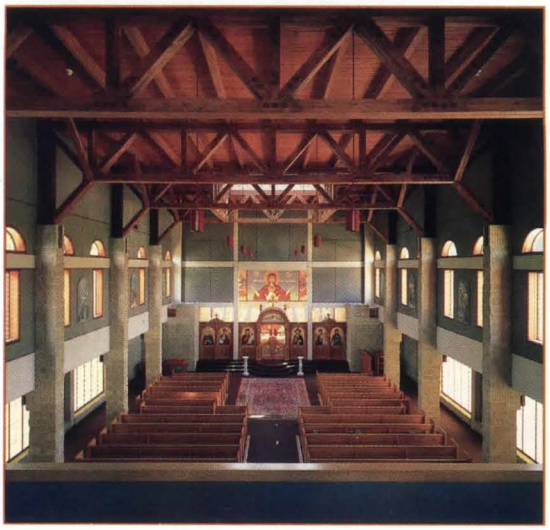
One of the most significant of these changes, architecturally, was the advent of the community seating arrangement. While not without precedent in early Christian and Reformation tradition, the arrangement challenged the basic Basilican form that was common among Catholic and most mainline Protestant churches. Community seating is now the rule rather than the exception in new churches, and with it has come the need to endow the new plan configurations (usually fan shapes, squares, or rectangles with the altar on the short axis) with a "churchlike" quality. In many congregations, there is a conflict between the desire for community seating and the desire for traditional features such as a long aisle for processions.

Most of the churches on the following pages are liturgically based. This is not entirely coincidence; liturgically based churches (Catholic, Episcopal, Lutheran, and Orthodox, for example, as opposed to more word-based Protestant denominations) tend to place more importance on buildings, since physical procession and physical elements are a large part of their service. Word-based churches lean philosophically toward more utilitarian structures, and it is rare that significant architectural content is found in their new buildings. (Exceptions include the Magee Church of Christ on page 80 and Christ Church on page 82.) The biggest growing sector of organized religion in America, the loosely affiliated or non-denominational evangelical Christian church, favors large, arenalike auditoriums of little architectural distinction.

Where the church is going in the future is an issue that poses a challenge for architects. Betty Meyer, editor of the magazine *Faith & Form*, sees churches becoming more ecumenical (Christian and Jewish worship services seem to be moving ever closer), but having to respond to the demand by younger recruits for an air of transcendence and spirituality. Accomplishing the latter without falling back on traditional iconography (which would be inappropriate for an inclusive church), Meyer believes, is what religion and architects are going to have to do. **Mark Alden Branch** ■



Tom Hille



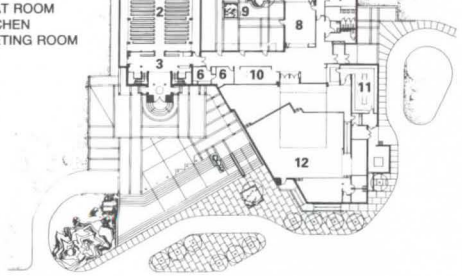
Richard Bonarigo

St. John of Damascus Church, Dedham, Massachusetts.
Architects: *Imre and Anthony Halasz, Inc., Boston.*

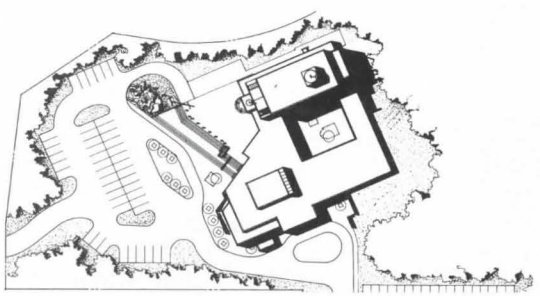
"Taken the iconography, which is so closely connected to the liturgy, it's almost impossible not to use traditional forms," says Imre Halasz about this church. The Eastern Orthodox church has not undergone the liturgical changes of other Christian denominations; as a result, the architects stuck to older models drawing on the early basilicas of Ravenna for inspiration. The church is thus based on a strongly reinforced horizontal axis and a vertical axis defined by a dome. As in the Ravenna churches, an exposed wood structure is used to span the space.

The architects chose to keep the parish hall and support facilities low relative to the sanctuary. This strategy is in keeping with the traditional stepping of forms toward the sanctuary, and also avoids an all-too-common duality between the church's sacred and secular functions.

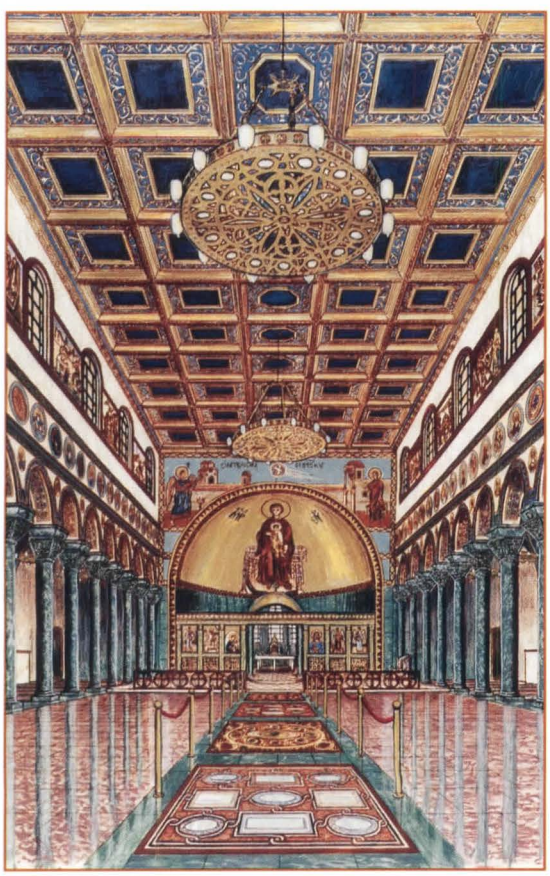
1 APSE
2 NAVE
3 NARTHEX
4 CLASSROOMS
5 NURSERY
6 OFFICES
7 PRINTING
8 BOARD ROOM
9 COURTYARD
10 COAT ROOM
11 KITCHEN
12 MEETING ROOM

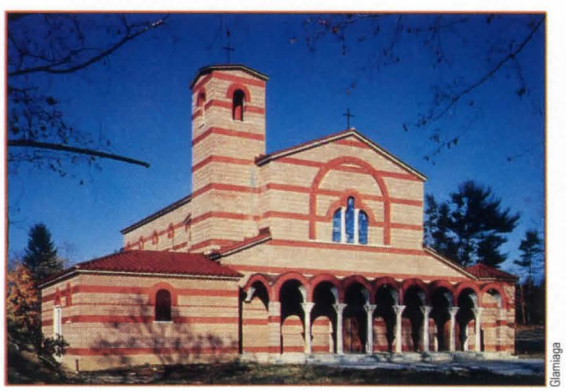


FLOOR PLAN N 100'/30m



SITE PLAN N 100'/30m



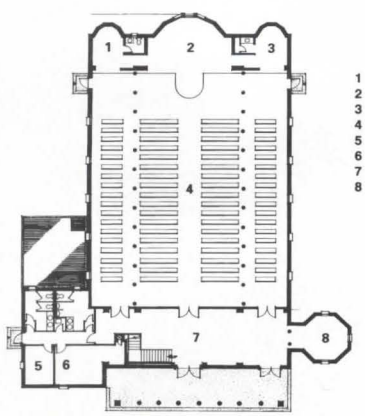


Glamiaga

St. George Basilica, Norwalk, Connecticut.
Architects: *Steven P. Papadatos Associates, New York.*

Steven Papadatos has designed a number of Greek Orthodox churches based as authentically as is feasible on early Christian models, which are still appropriate to Greek Orthodox liturgy. Like Halasz (above), Papadatos looked to Ravenna in this church, specifically at Saint Apollinare Nuovo, on which the ceiling and basic proportions are modeled. Exterior materials include alternating bands of red brick and stone and a red tile roof. Inside, unlike many modern churches, St. George has a separate baptistery, an octagonal room off the narthex; the shape has its origins in the early church, where its original association with death was appropriated to represent the symbolic death and rebirth of baptism. While the church has been used since 1974, the elaborate interior, an expensive undertaking, is just being completed this year.

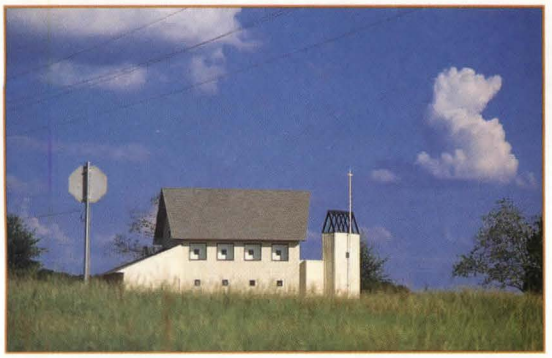
1 PRIEST'S SACRISTY
2 ALTAR
3 BOY'S SACRISTY
4 NAVE
5 OFFICE
6 MECHANICAL
7 NARTHEX
8 BAPTISTRY

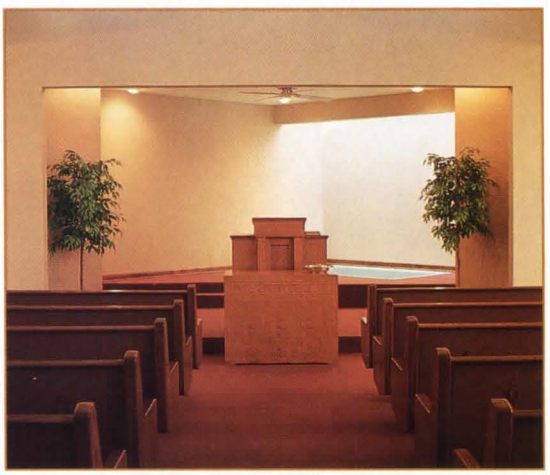


FLOOR PLAN N 40'/12m

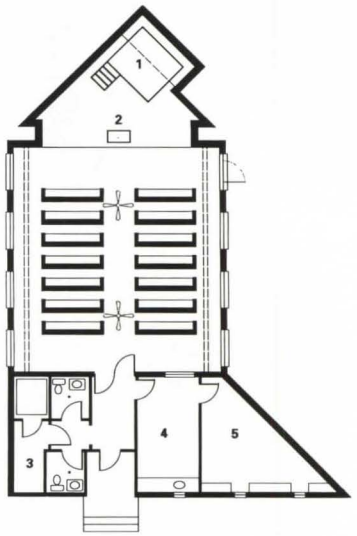
Magee Church of Christ, Magee, Mississippi.
Architects: *Mockbee/Coker Architects, Canton, Mississippi.*

This modest church was designed to serve as a sanctuary and future parish hall for a small congregation. In keeping with rural protestant traditions, the church wanted a simple building. The architects responded with a small linear nave – with only seven rows of pews, a semicircle is hardly necessary to encourage community – and a skylighted triangular space for the baptismal pool. The sanctuary has inner walls that baffle light from the outside wall through small openings. The triangular form of the pastor's study was developed as a way to reconcile the shed roof of the church's front with a necessary wing. The materials include wood stud walls, a scissor-truss roof, a slab foundation, galvanized steel siding, and fiberglass shingles.





Photos: David Fox

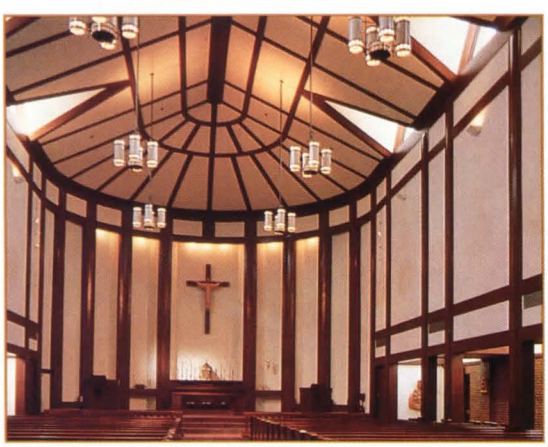


1 BAPTISTRY
2 PULPIT
3 STORAGE
4 SECRETARY
5 PASTOR

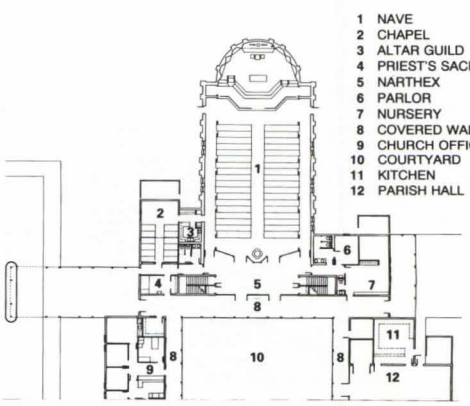
FLOOR PLAN N 20'/6m

St. Vincent's Episcopal Church and School, Bedford, Texas.
Architect: *Jim Bransford, Fort Worth, Texas.*

The architect first presented this suburban Dallas-Fort Worth congregation with a fan-shaped sanctuary; this design went as far as design development before the vestry had "a change of heart" and requested a more traditional scheme inspired by Gothic architecture. The second design, which was built, uses buttresses and a semicircular apse to suggest the Gothic on the exterior, and wood "tracery" applied to gypsum board on the interior. In a church of this shape, acoustics became an important consideration. The walls of the apse were shaped to further projection from the pulpit, and the architect reports that, although a public-address system was roughed in, it did not have to be installed. Outside the sanctuary, a courtyard serves the sanctuary, the parish hall, and the adjacent elementary school.

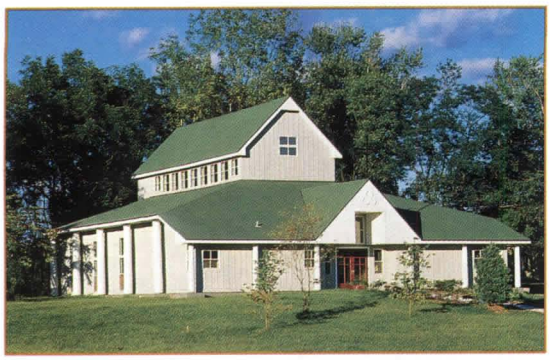


Photos: Jim Bransford



1 NAVE
2 CHAPEL
3 ALTAR GUILD
4 PRIEST'S SACRISTY
5 NARTHEX
6 PARLOR
7 NURSERY
8 COVERED WALK
9 CHURCH OFFICE
10 COURTYARD
11 KITCHEN
12 PARISH HALL

FLOOR PLAN N 40'/12m



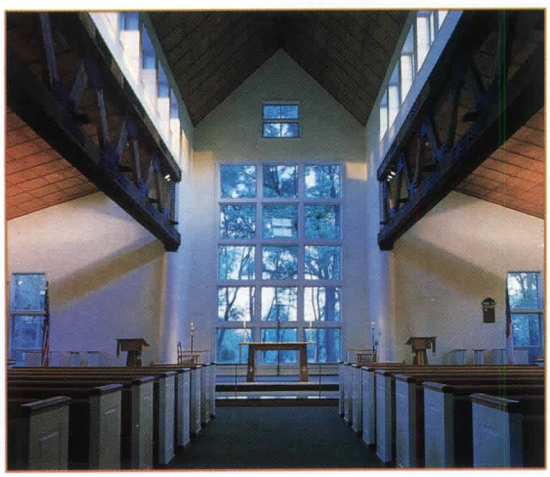
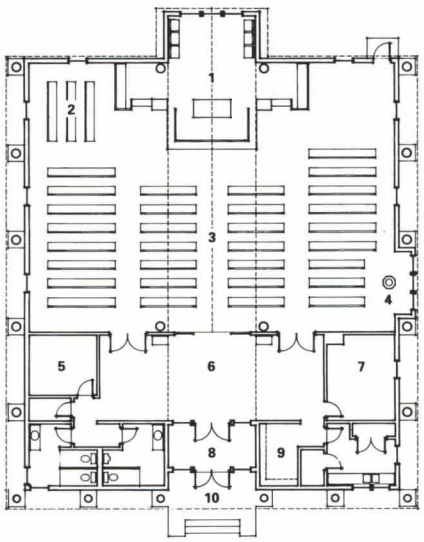


Photo: Maxwell MacKenzie



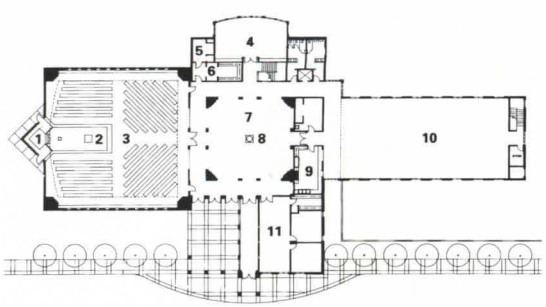
1 ALTAR
2 CHOIR
3 NAVE
4 BAPTISTRY
5 MECHANICAL
6 NARTHEX
7 CHOIR ROOM
8 VESTIBULE
9 COATS
10 PORCH

FLOOR PLAN N 20'/6m

St. Francis Episcopal Church, Great Falls, Virginia.
Architects: *Kerns Group Architects, Washington, D.C.*

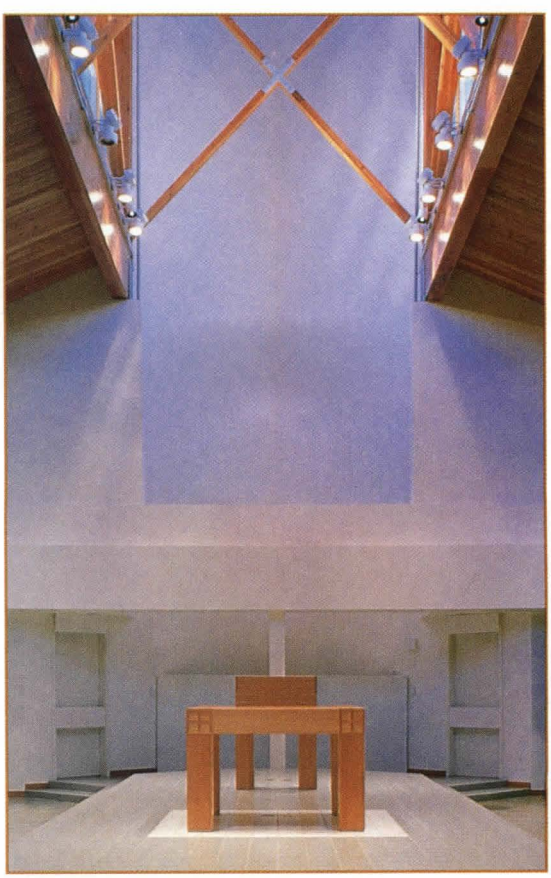
St. Francis is an Episcopal congregation which split from a larger church to create a "country church" in suburban Virginia; they wanted their church design to reflect the rural character of the site. Project architect Glenn Neighbors, a P/A Young Architects alumnus (June 1987, p. 70), designed a small building that uses modest materials in an inspiring manner. The sanctuary, which has an implied central "nave" defined by a linear clerestory, was originally intended to have a somewhat central plan, with the pews on either side of the nave facing inward. After moving in, though, the congregation decided to have all the pews face forward.

Behind the church is a clearing that the congregation calls its "green room." Special services (on Easter, for instance) are held in the outdoor space, which is visible from the large windows behind the altar.



1 ORGAN
2 ALTAR
3 SANCTUARY
4 FAMILY ROOM
5 MECHANICAL
6 SACRISTY
7 COMMONS
8 FONT
9 KITCHEN
10 FELLOWSHIP HALL
11 OFFICE

FLOOR PLAN N 100'/30m



Photos: Assassi

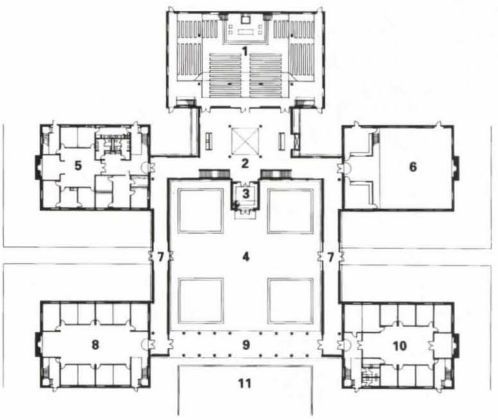
Faith Lutheran Church, Clive, Iowa.
Architects: *Herbert Lewis Kruse Blunck, Des Moines, Iowa.*

As in St. Francis (above), this project seeks to reconcile the desire for a linear progression with the desire for more intimate seating. The original sanctuary was the square room in the center of the plan that now serves as a commons. The architects added to three sides to create a cross-axial plan, emphasizing an axis through the new sanctuary ending in a raised clerestory "chapel" above the altar. Although the Lutheran Church has no official guidelines for design, the congregation hired a liturgical consultant who, with the architects, considered some of the Vatican II recommendations. For instance, the former sanctuary provides a gathering space and overflow seating. The baptismal font is placed in the center of this space in recognition of the centrality of baptism in all aspects of Christian life.

Christ Church,
Lake Forest, Illinois.
Architects: *Hammel Green & Abrahamson, Minneapolis.*

This Congregational church wanted a "light, bright" interpretation of the earliest New England meeting houses, according to project architect John Justus. As it happens, such a model, with the pulpit set on the short axis rather than on the long one, works well in allowing an intimate, communal arrangement. The spare sanctuary is traditional in detail except for the linear metal ceiling, which is perforated to diffuse sound in the attic above. The sanctuary, bell tower, and parish house are but the first phase of the project, which should one day include three other clapboard buildings for church functions.

Photos: Shin and Erich Koyama



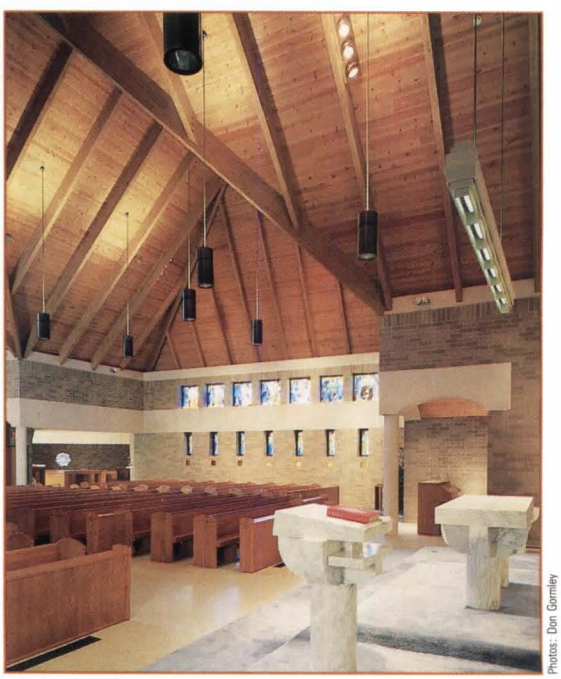
1 MEETING HOUSE
2 NARTHEX
3 BELL TOWER
4 OUTDOOR GATHERING
5 EDUCATION
6 SOCIAL (FUTURE)
7 ENCLOSED WALKWAY
8 EDUCATION (FUTURE)
9 DROP-OFF
10 OFFICE (FUTURE)
11 FORECOURT

FLOOR PLAN

N → 100'/30m

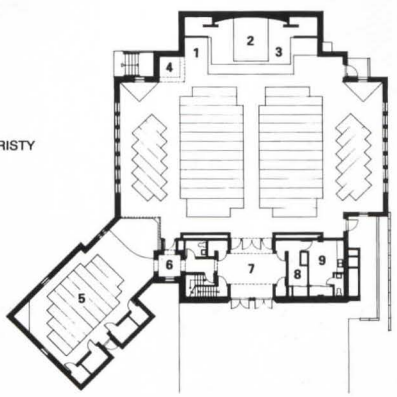
St. Hyacinth Roman Catholic Church, Glen Cove, New York.
Architects: *Bentel & Bentel, Locust Valley, New York.*

A congregation largely of Polish descent, St. Hyacinth wanted a building that would reflect some of the traditions of Middle European and Polish church design. The architects say that the brick detailing, heavy plank front doors, oval windows, and iron grillework are an effort to respond to that desire. The plan, in accordance with the wishes of the liturgically conservative congregation, is linear, and the altar is recessed in the traditional manner. But the broad squarish shape of the sanctuary is such that the pews remain close to the altar. The adjacent daily chapel is placed at an angle for several reasons, most notably to allow it to be used as overflow seating for the sanctuary but also to help create an outdoor space at the entrance. Such a space was especially important, since the church's budget did not permit a secular gathering space.



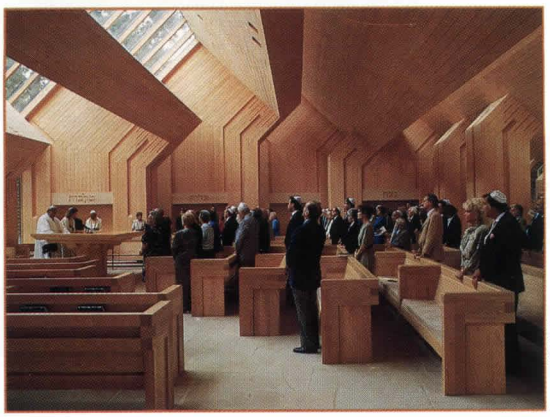
Photos: Don Gormley

1 BAPTISTRY
2 ALTAR
3 PULPIT
4 ORGAN
5 CHAPEL
6 TOWER
7 VESTIBULE
8 ALTAR BOYS
9 PRIEST'S SACRISTY

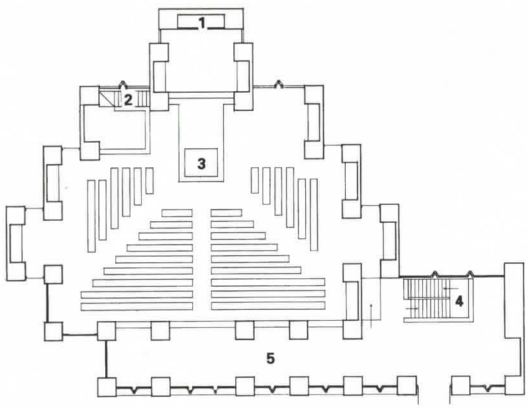


FLOOR PLAN

N ↖ 40'/12m



Photos: Jeff Heatley



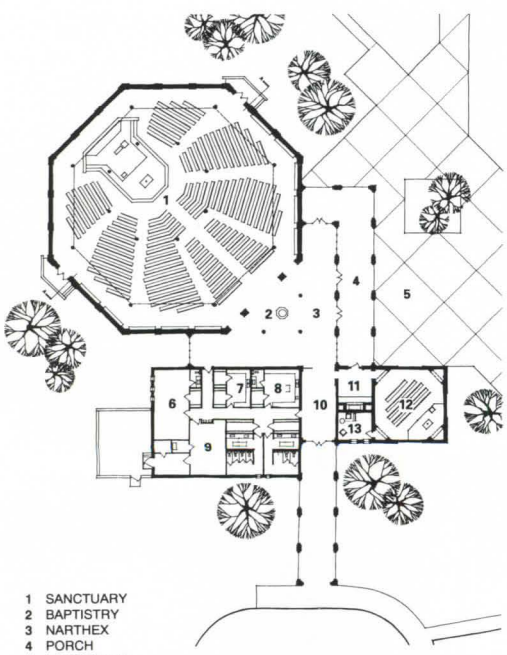
1 ARK
2 STAIRS DOWN TO ROBING ROOM
3 BIMAH
4 STAIRS DOWN TO HALL
5 LOGGIA

FLOOR PLAN

N ↑ 20'/6m

Gates of the Grove Synagogue, East Hampton, New York.
Architect: *Norman Jaffe, Bridgehampton, New York.*

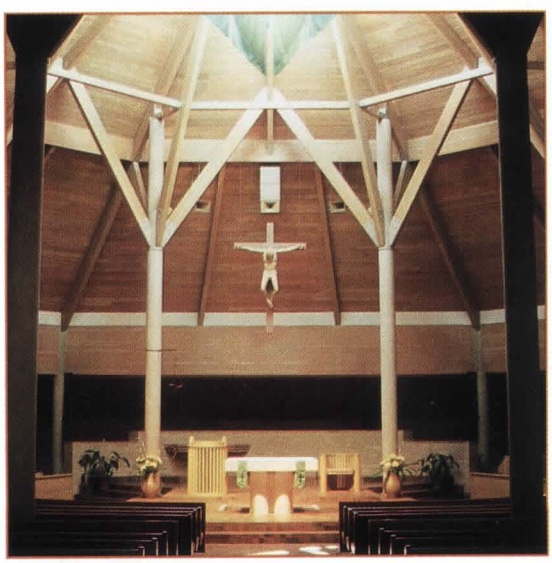
This Long Island Jewish congregation initially wanted a linear, basilican plan, but architect Norman Jaffe convinced them of the value and historical significance of a plan based on the idea of placing the bimah, or reading table, in the center, as it was in Classical Orthodox temples dating back to Abraham's tent. In modern Jewish services, however, the sermon has taken on new importance, and so a U-shaped seating arrangement was used to ensure that the rabbi could face the worshippers. Jaffe emphasized the importance of the reading of the Torah by stretching the usually short procession between the ark – which is articulated as a smaller building – and the bimah. In keeping with Jewish tradition and the Second Commandment's prohibition of graven images, the architecture is influenced most by "words and time, not objects in space," Jaffe says.

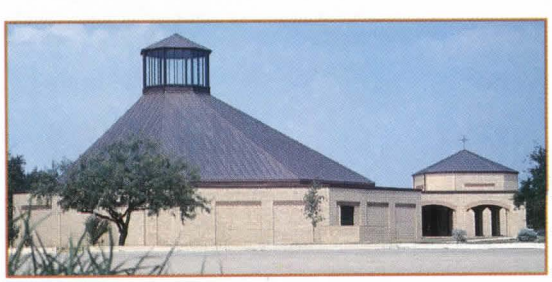


1 SANCTUARY
2 BAPTISTRY
3 NARTHEX
4 PORCH
5 COURTYARD
6 CHOIR
7 WORK SACRISTY
8 VESTING SACTISTY
9 MECHANICAL
10 ENTRY
11 SHRINE
12 DAILY CHAPEL
13 RECONCILIATION

FLOOR PLAN

N → 40'/12m





Photos: Duane Landry

St. Catherine of Siena Catholic Church, Austin, Texas.
Architects: *Landry & Landry, Dallas.*

In this project, the architects tackled a problem they had considered before in a round church: how to give the altar a central prominence without putting seating – or the choir – behind the priest's back. To solve this problem, they moved the altar off center and designed a vaulted roof that peaked above the altar with a skylight. The church thus comes as close as possible to being a "church in the round" without denying a view to worshippers.

In keeping with a belief that the structure of a church should be expressed and easy to understand (as Gothic cathedrals are), the architects used treelike supports in two rings – one tracing the ambulatory at the walls and one surrounding the altar. The supports and the roofline are meant to suggest both worship among the trees and the tents of the "wandering people."

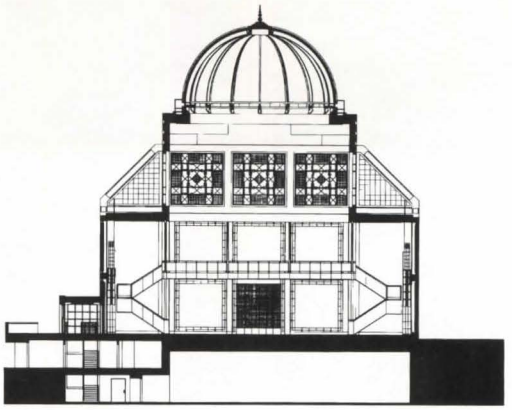
Islamic Cultural Center, New York.

Architects: *Skidmore, Owings & Merrill, New York.*

The Islamic Cultural Center, sponsored by the Islamic nations of the United Nations, is building this mosque and religious center on New York's Upper East Side for the city's Muslim community.

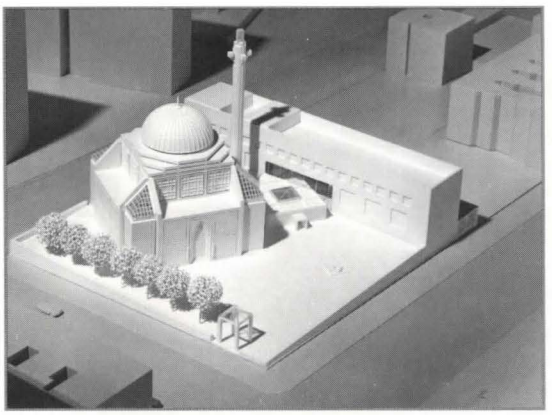
In Islamic services, worshippers are either standing or kneeling at all times on a carpet. Women and children participate from the mezzanine above the main level. Outside of services, the prayer hall is used by individuals for reading the Koran and for instruction of children; for these functions, benches are provided around the perimeter.

Islamic law prohibits pictorial images in mosques; therefore, the mosque's ornament is derived from geometric patterns, in this case based on squares, as is the plan. Much of the ornament is text in stylized Arabic script based on a square grid and created for the mosque.

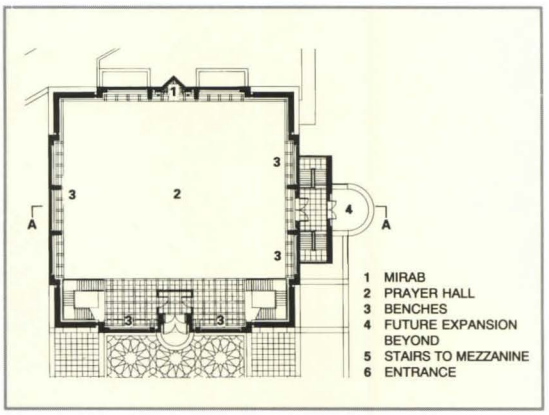


SECTION A-A

40'/12m



Nathaniel Lieberman



FLOOR PLAN

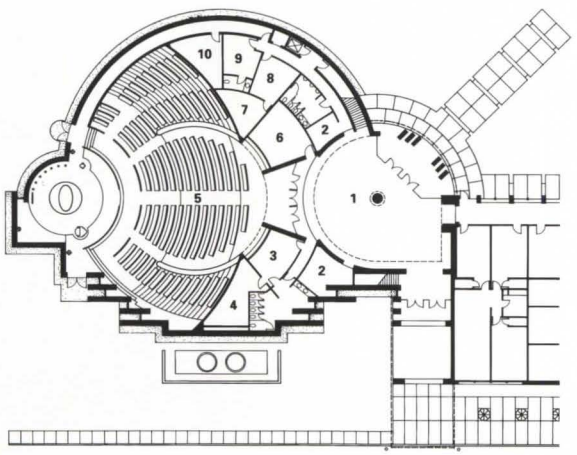
N

40'/12m

St. Peter's Lutheran Church, Columbus, Indiana.

Architects: *Gunnar Birkerts & Associates, Ann Arbor, Michigan.*

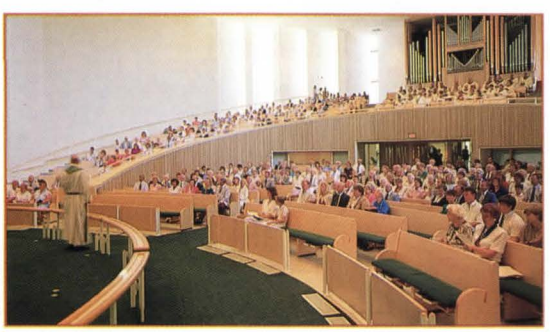
Despite their liturgical conservatism, Gunnar Birkerts found this congregation to be informed and progressive architecturally, due in no small part to their Columbus, Indiana, location. Birkerts conceived the plan as a duality between orthogonal and circular geometries, with one side defined in lines and planes, the other as part of a circle. While the space is essentially (but not exactly) circular, the seating nevertheless faces forward generally. There is seating for 320 people in the "inner circle" on the floor of the sanctuary and another 680 seats in the U-shaped ramp that surrounds the "inner circle," thus accommodating services and events of different sizes.



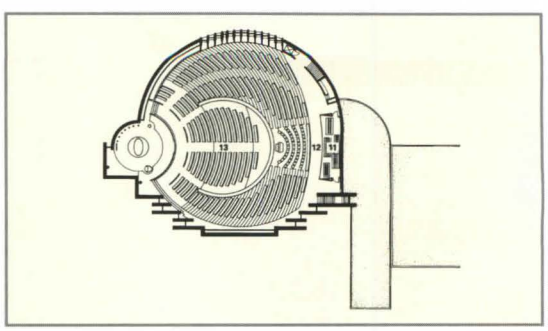
FIRST FLOOR PLAN

N

40'/12m



Keiichi Miyashita

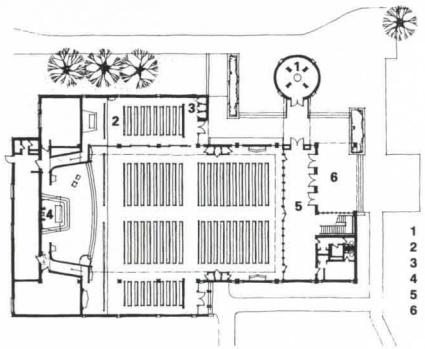


BALCONY PLAN

N

100'/30m

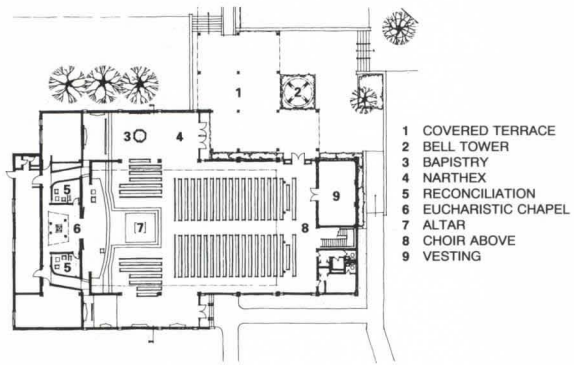
St. Bernard of Clairvaux



EXISTING FLOOR PLAN

N ↙ 40'/12m

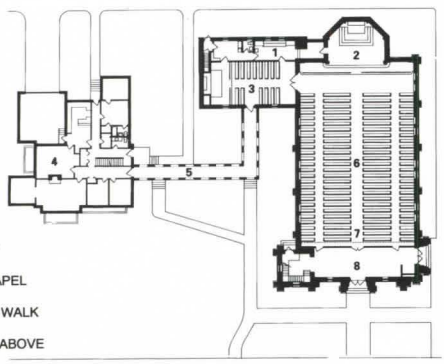
Duane Landry



NEW FLOOR PLAN

St. Bernard of Clairvaux Catholic Church (renovation), Dallas.
Architects: *Landry & Landry, Dallas.*

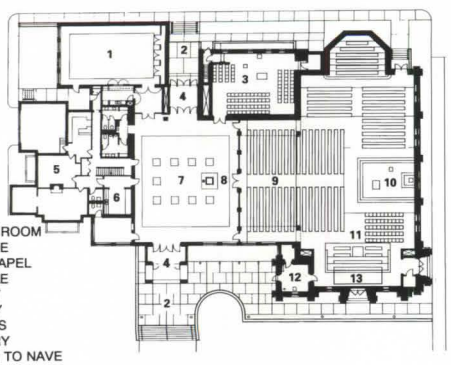
Not everyone in the congregation was behind the idea of bringing this 1950s church into compliance with the recommendations of Vatican II, but a "committed pastor" convinced them that the changes would give them a "better worship life." The project is a good example of how a resourceful architect can effect such a change. The church's seating plan and altar were changed, the baptistery was brought into a new narthex (formerly a daily chapel), and, given Dallas's relatively mild climate, a covered terrace was built to facilitate secular gathering. The eucharist was placed behind gates in a space left by the removal of the altar.



EXISTING FLOOR PLAN

N → 40'/12m

St. Mary of the Lake



NEW FLOOR PLAN

Jess Smith

St. Mary of the Lake Catholic Church (renovation), White Bear Lake, Minnesota.
Architects: *Hammel Green & Abrahamson, Minneapolis.*

As in St. Bernard's (above), this project entailed bringing a church up to date with changing liturgical requirements, but more important for this congregation was the need to expand. The architects proposed a "gutsy move:" stripping the church of its original detail, adding a wing in the center of one side, and moving the altar to the center of the composition. In addition, a channel of clerestories was added to the ceiling. A large new narthex with baptistery was added outside the new entrance to the sanctuary, and the eucharist was relocated to the base of the bell tower.

Supported in Detail

Precise craftsmanship discloses the intellectual order of a serene Manhattan penthouse by Deamer + Phillips.

1

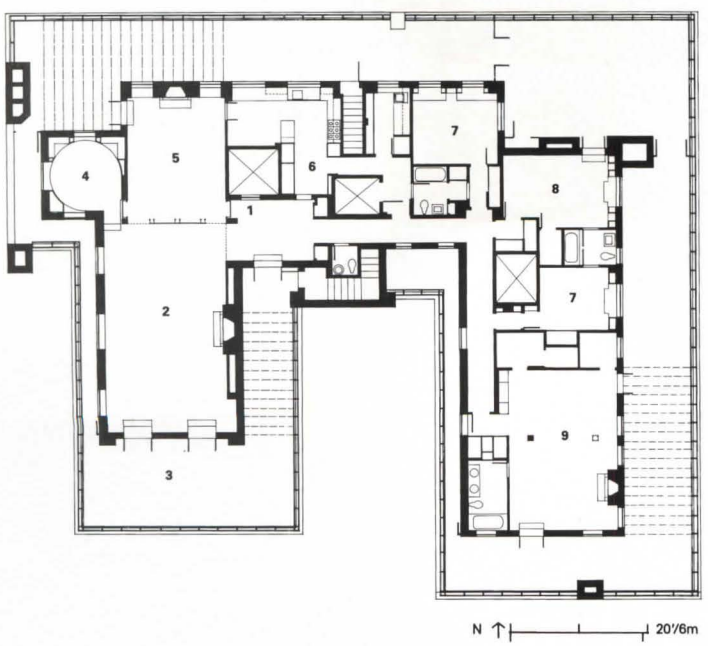
2

While it seems oxymoronic to speak of abundant understatement, the term aptly describes this Park Avenue penthouse renovated by Peggy Deamer and Scott Phillips – it is at once physically spare and conceptually rich. The handsome suite of rooms is an exploration of two ways of making a wall: The perimeter, a load-bearing masonry enclosure, whose interior is clad in plaster, is offset by the penthouse's architectural centerpiece – a partition built like a curtain wall, with panels of glass in a cantilevered steel frame.

Deamer + Phillips' explicit details complement the modesty of their large-scale moves. They relocated a few of the existing walls and removed the original molding so that their white plaster sufaces provide a neutral backdrop for the furniture. Subtle highlights articulate the austere walls: In the hallway that leads to the bedrooms, ebony trim, steel and brass extrusions on the glass light fixtures, and the reveals of the doors impart a spare formality that recalls Josef Hoffmann's work of the early 20th Century. Like him, Deamer + Phillips reserve sinuous lines and sculptural flourishes for the furniture. Some of these pieces, collected by the client, are by Hoffmann and his contemporaries; others were designed by Deamer + Phillips themselves. They made custom cabinets, chairs, and lamps with inlaid veneers and precise

The bedroom hallway (1) aligns with the glazed partition (2), which leads to the circular library (3).

4



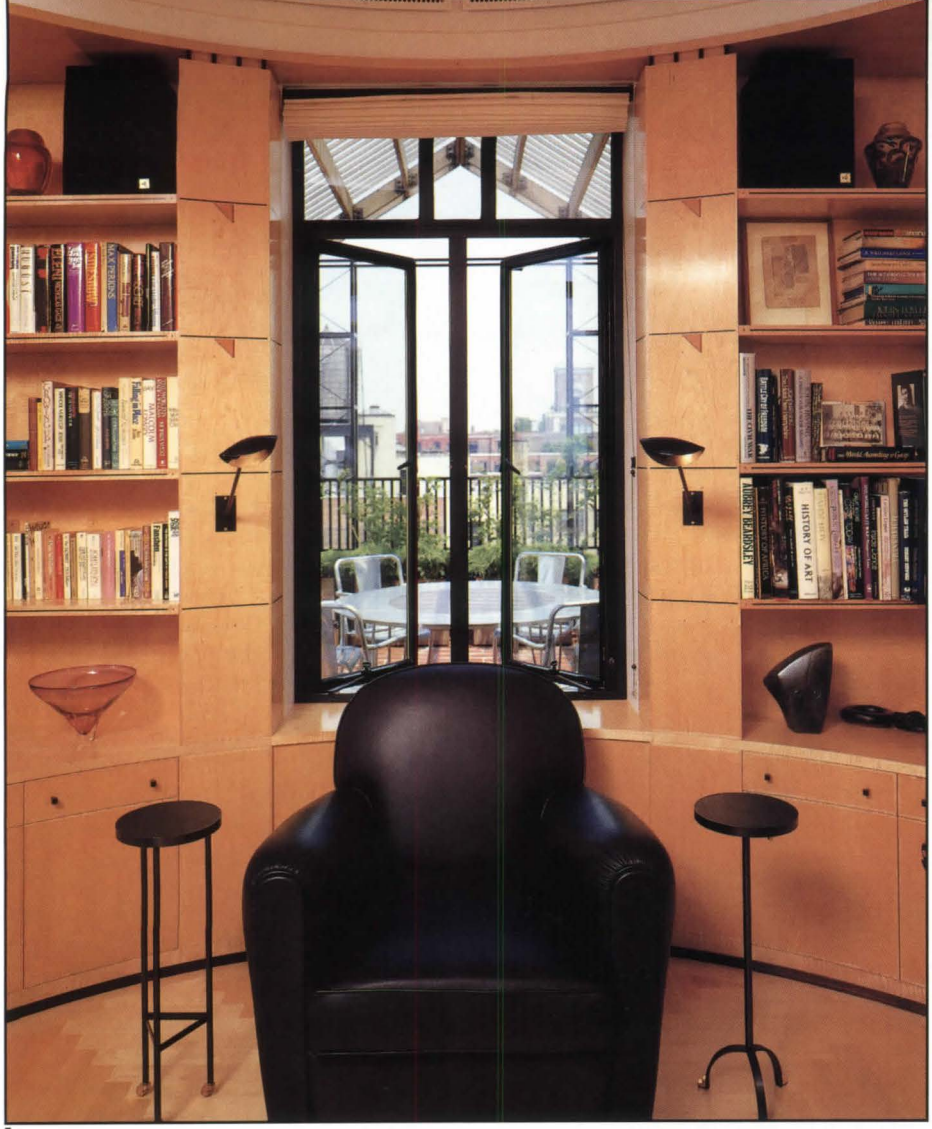
FLOOR PLAN

1 ENTRY
2 LIVING ROOM
3 TERRACE
4 LIBRARY
5 DINING ROOM
6 KITCHEN
7 STUDY
8 BEDROOM
9 MASTER BEDROOM

metal connections, and their tabletops and mantels are supported by exposed steel plates and frames, as correlates of the glass and steel partition that separates the dining and living rooms.

A spatial rationale guided the detailing of this translucent wall: It joins two rooms that share a shifting axis. The center of the screen marks the midpoint of the dining room, while the brass picture rail and four light fixtures on the opposite side frame a new axis for the living room. In essence, this partition is a line of columns that support a glass skin. The piers that flank this screen wall, by virtue of their cladding, imply alternate readings of the column, one traditional, the other Modern. In its proportions and plaster surface, the pier next to the foyer suggests that the column is an excised piece of the white walls that enclose the penthouse – a concept that dates from the 12th Century. The marble-clad column next to the library, however, is a discrete object, distinct from the plaster walls as well as the glazed partition. Here, the stone veneer is both opulent and intellectually provocative: Marble renders the pier a sensuous object with iconic stature. It has the presence of a Classical column delineated in an abstract, contemporary way: Its polished stone is as reflective as the adjacent glass panels. Both are clad surfaces, hung from steel columns.

Philip Arcidi ■



5

In the 14-foot-tall living room (4), steel and glass grids are interspersed among stark white surfaces; the lights and seating remain distinct from the enclosing walls. A library window (5) is framed by column-like panels, with ebony dentils in a reveal beneath the soffit. Metal grids appear throughout the house, including Deamer + Phillips' kitchen cabinets (6); they distinguish the horizontal surface, its support, and the enclosing veneer.

6

Project: *Park Avenue Penthouse, New York.*
Interior architects: *Deamer + Phillips (Peggy Deamer and Scott Phillips, partners; John Jacobson, Charlotte Milholland, Karen Brenner, project team).*
Program: *renovation of a 3500-sq-ft penthouse, with minor modifications to existing floor plan.*
Structural system: *most of existing structure preserved; two columns replaced by steel beams.*
Major materials: *plaster walls; maple, ebony, and purple heart floor; patterned glass and oxidized steel partition; marble and granite stairs, counter tops, mantels, and column veneer; steel windows and doors; assorted hardwoods and perforated metal for cabinetry (see Building Materials, p. 114).*
Mechanical system: *central air conditioning and steam radiators.*
Consultants: *Robert Silman Associates, structural; Rubiano Consultants, mechanical; Peter Carlson, upholstery and drapery. Contractor: Kahn-Snyder Co.*
Costs: *withheld at client's request.*

Photos: Jonathan Wallen

Perspectives

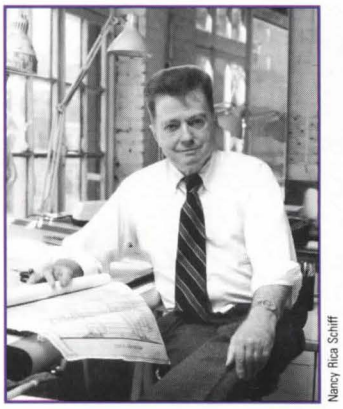
Rudolph speaks out on what architects can and cannot do,

the schizophrenia of teaching, and urbanism gone astray.

Interview: Paul Rudolph

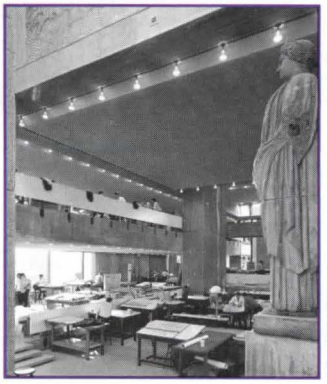
Ross Miller, a frequent contributor to P/A, *interviewed Rudolph in October 1988, shortly after the architect celebrated his 70th birthday.*

Ross Miller: Why is there such a fascination with style, such a clamor to change the skyline rather than look at the way buildings meet the street?
Paul Rudolph: I would suggest it's always been that way. It may be a little more apparent now, there's much more attention drawn to such things. I believe that the Renaissance happened because a group of people felt very much the same way about their physical environment, and they made it happen.
Miller: Would you permit this one difference, though, that the relationship between the pedestrian and the architecture he either enters or passes has changed? The architecture seems to be much more forbidding on the level of the street. For example, 57th Street, where you have your office, has changed remarkably in the interiorization of the street. It has almost been barricaded behind a security cordon, where people can enter these new vertical streets as malls or atriums, but that availability of architecture meeting the street in a predictable line is gone.
Rudolph: The difference, of course, is that you have a vastly different scale, and the juxtaposition of one scale to another. To me it is not so much a question of the malls being a disaster. They aren't very well handled architecturally, but it's the same old thing, isn't it? The idea of the opening for pedestrians at right angles to the space in the street is a time-honored affair. It's purely a question of how it's handled.
Miller: The issue that is raised by this kind of malling is that the street seems to disappear; there is an anti-urban gesture going on.
Rudolph: The phenomenon is that we cry out for open space, or at least we give great lip service to open space, but when it comes right down to it, when we have the possibility of open space we don't know how to handle it. The best example of that in New York, I believe, is Central Park, which, of course, is a fantastic thing. And then there is the park in front of the Plaza Hotel, which leads to the park. Up until a very few years ago, that was organized by the alignment of buildings on Fifth Avenue, which was continuous. But then along came a building that set back just at the wrong place, so that you have a plaza in front of the plaza that is in front of the Plaza Hotel. Well, that was really an unfortunate misunderstanding of the disposition of voids and solids. Okay, how did that happen? Of course, it's a huge building that was built, and one can argue that it should not be right over the street, the shadow involved, etc. But you cannot legislate such a thing. It has to be felt by the human being, wisely felt. [Open space in the city is] like God, Mother, and Country. . . what do we do with it? We misuse it.
Miller: What is your feeling about the Post-Modern movement in architecture, really a movement that's brought public attention to architecture that has been lacking for a long time.
Rudolph: Post-Modernism's only point is that it deals with urbanism. But it deals with it in such a naïve way. First of all it ignores the car, or transportation. It ignores the whole notion of scale, which we don't understand, you see. My thesis is that we just don't understand that there are new forces at play that need to be turned in such a way that great cities can occur again. Post-Modernism, or stylistic notions of this kind, are, well, amusing. But is architecture to amuse?
Miller: It's funny, because you really were at the source of these notions.
Rudolph: What did I do? I'm aghast, you see.
Miller: Can you talk specifically about that time, when you were dean at Yale.
Rudolph: Well, obviously I was totally unclear. The theory of architecture is a passionate interest to me. Obviously, I was a terrible teacher. The only thing I can say is that I never wanted anyone to pay any attention to me in terms of what I myself do. That I made a great effort to talk in terms of principle, which I'm a great believer in to this day. What I'm really trying to suggest is that to be a teacher, or to be the head of a school, is a totally different thing from being an architect, which, because it involves a high degree of emotion, is a highly personal affair. There are many inexplicable aspects of being an architect. In order to carry out anything it takes great strength and assuredness and passion. But to be a critic or to be a teacher, or to determine the course of a school, is the exact opposite. One must be totally objective, and try to understand what it is the student is after, and put that in a context that is helpful to him, and that means clarifying what other people have done throughout history, as well as today, and really not let one's own prejudices interfere at all. So, one has



Nancy Rica Schiff

"One has to be two different people if one wants to practice architecture and teach."



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A studio in the Art & Architecture Building at Yale

Times Square in the 1940s

to be two different people if one wants to practice architecture and teach.

Miller: What was your sense of Venturi's work when it was published?

Rudolph: I invited him to Yale. He came, totally opposed to it. It was part of the idea of the school, that you would invite the best people on the opposite side of the fence, and the student would hear many points of view. That's part of what education is about. But the results can be terrifying.

Miller: The years of your deanship were really the golden years, the years of most profound change at Yale. Can you connect it to the general tumult of the Sixties?

Rudolph: *I was first at Yale in* 1956, and I left in 1965. I was chairman of the school of architecture from 1957 to 1965. The Art and Architecture building was opened in 1963. I had told the administration in 1964 that I wanted to leave, and I stayed a year to allow them to look for someone else. It was a highly personal matter. I wanted to build my buildings, and devote all of my time to that. But also, I could not tolerate . . . having to be two different people.

Miller: Do you find it curious that the A&A Building became associated with a sense of alienation of that time? Physical attacks were made on the building itself when you weren't there, in fact. The building spoke for you after the fact.

Rudolph: Of course, that really is a very traumatic experience, which I certainly don't pretend to understand, which I never talk about because I can't. A few days ago I celebrated my 70th birthday, and on a more personal level, the most touching acknowledgment or gift was an inadvertent one, because students of Yale School of Architecture are opening an exhibition on the Art and Architecture Building, studies, drawings, photographs of it as it was. They built a new model of it. And their avowed intent is to see to, or encourage, putting the building back together. It's been reported that the students of architecture burned the building. My understanding is that nobody knows that. It was burned. . . yes. It was.

Miller: I'd like to follow up on a point you made that, for architecture to be a work of art, it moves beyond the intention of the architect and can be perceived as something completely opposite to the original intention. Obviously, the A&A building is associated with that period of revolt at Yale and in the country in general. I think it's a profound thing that a work of architecture is associated with that at all, even if it's a misreading of your original intention.

Rudolph: The nature of architecture is what is at stake. And there is real power involved. And I'm very proud of that. A theory is that there are certain buildings that are for all people, but we don't build programmatically very many buildings like that; there are not many churches or religious or governmental buildings built. If there are, they are essentially office buildings. . . In terms of the dynamics, which is a better word than power, the dynamics of architecture are [in] those building types that need to have the greatest emphasis, or sense of place. That has to be related to use. New York, of course, has mainly office buildings and residential buildings of various types; they are by far larger than anything else. Rockefeller Center is much larger than St. Patrick's Cathedral, although St. Patrick's Cathedral does a very good job of holding its own.

"To me, Times Square is totally fascinating because it is one of the largest, most important good-time places in the United States. But can architects make good-time places?"

Miller: And a very good business.

Rudolph: Yes. But that brings up a great principle for me, that that which is small, because of its use and social relationship to people, often needs to be dominant, rather than subservient. And how do you make a small building dominant, surrounded by very large things? That's a 20th-Century problem that I don't hear much discussion about. We don't even ask the right questions. We talk about style until it comes out of our ears.

Miller: I think it's part of the lack of cultural consensus, the lack of real sturdy debate about the nature of these larger issues. A case in point is Times Square, a pivotal area that is undergoing massive rethinking, redesigning, rebuilding.

Rudolph: To me, Times Square is totally fascinating because it is one of the largest, most important good-time places in the United States. But can architects make good-time places? There are many, many things that planners and architects cannot do. There's an *interaction*, you see. I read that the Municipal Art Society says you've got to legislate lots of signs for Times Square. You can't legislate, truly, the dynamics of a good-time place. It has to come from other ways

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Rudolph's Bond Centre in Hong Kong, completed 1984

of communication. . . For me the most pertinent question isn't just the street at all, it's that areas, I would call them places or spaces, develop. They're not planned, necessarily, can't be planned. Maybe we're too impatient now. It took a thousand years for Venice to get its Piazza San Marco. And many fine things, it seemed, were torn down to make that possible, which is not what we hear [today], that you've got to save every last thing if it's more than two years old.

Miller: Why is planning usually associated with this sense of cleaning up, or hygiene?

Rudolph: Because you've got to have a set of guidelines, a set of formulas, a set of the things that can be understood by a great number of people. It's got to have the legal people involved.

Miller: The whole aspect of Baroque planning, from Pope Sixtus on, carried with it enormous violence. It's a fantasy that we'll get rid of all of the "undesirable" elements, that is, those elements of disorder that we don't like, and keep the elements of disorder that we enjoy, and that, somehow, it's all going to work out.

Rudolph: Well, you see, the developers are the real architects of the time. I don't know many developers, and I've worked very little for developers, it so happens, but the ones that I do know are inevitably frustrated architects. And, in many ways, perhaps that is as it has to be. I don't know. But I want to go back to the idea of rules and no rules; consensus and no consensus. . . If I may change the tenor of this just a little bit [away] from New York. I've just recently been working in Hong Kong. As you know, it has one of the great sites for a city. It's built around a harbor; there's very little flat land, mountains on all sides. This means that the buildings are very tightly opposed one to the other. It also means that a two-level system of circulation has, in a very natural way, grown up in Hong Kong, i.e., a raised pedestrian one, and a vehicular one below. It's often ridiculous in its connections, and it doesn't work, and it's very rude, and done as cheaply as possible. But as a unifying thing, it is without parallel, and in another 100 years it probably will really be something. It's the equivalent of Haussmann's Paris, if you will, which, of course, did develop in a three-dimensional way: a circulation system, and a system of buildings, and focal points, and that which is comprehensible, and varied in character, etc. . . . I'm reminded that Michelangelo turned [the Campidoglio], a most difficult piece of real estate, into a fantastic piece of urbanism by putting façades, one bay deep, on three buildings. Well, he did it only on two, and it took 100 years to get the third one built. But, by God, it was a strong enough and clear enough idea that they did it. So, evolution is what I'm suggesting. It's not a matter of planning from on top, alone. . . Style has its place, but it isn't the most important thing. I regard the manipulation of scale, the understanding of space, and the sequences, the exercise of proportion, the relationship of one material to another, the clarity of expression, which changes very rapidly, and I happen to think you cannot ignore the 20th Century. I'm really offended by buildings going up that you can't tell whether they've been there forever or not. The ignoring of what is intrinsic to buildings, by putting extraneous elements all over them, is so anti-architectural that I see no justification for it at all. . . except one of sentiment.

"We give great lip service to open space , but when it comes right down to it, when we have the possibility of open space we don't know how to handle it."

"How do you make a small building dominant, surrounded by very large things? That's a 20th Century problem that I don't hear much discussion about."

Miller: Well, sentimentality linked to nostalgia for for an original that never really existed. It's curious that these battles were fought out in late 19th-Century America. But we seem to have abandoned the struggles of the past and gone back to a sense of style, which in architecture just translates to skin.

Rudolph: I know. I think there are a lot of reasons for it. Partially that there is great misunderstanding [of], and great limitation by the precepts of the International Style, but it wasn't the basic notions of the International Style that were the problem; it was the way it was carried out. And, also, the fact that it was not expanded. We've fallen, for various reasons, into too much dealing with architecture that is intended to recall something else. I think architecture is far too important to depend on that alone. . . It has to be in and of itself. . . Well, I realize that I'm sounding very negative. I don't mean to. I think that correctives have a way of coming about. And you can see the past 20 years or so as being a corrective to what preceded. And while one doesn't like the corrective very much, out of that will come something else. And so, you know, I remain quite positive, in spite of the way I probably sound. ■

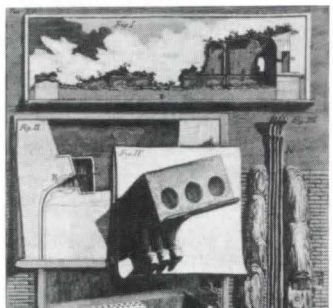
Passages from **Italo Calvino's** mind-expanding anthology.

Excerpt: Invisible Cities

In Maurilia, the traveler is invited to visit the city and, at the same time, to examine some old post cards that show it as it used to be: the same identical square with a hen in the place of the bus station, a bandstand in the place of the overpass, two young ladies with white parasols in the place of the munitions factory. If the traveler does not wish to disappoint the inhabitants, he must praise the postcard city and prefer it to the present one, though he must be careful to contain his regret at the changes within definite limits: admitting that the magnificence and prosperity of the metropolis Maurilia, when compared to the old, provincial Maurilia, cannot compensate for a certain lost grace, which, however, can be appreciated only now in the old post cards, whereas before, when that provincial Maurilia was before one's eyes, one saw absolutely nothing graceful and would see it even less today. . . and in any case the metropolis has the added attraction that, through what it has become, one can look back with nostalgia at what it was.

Beware of saying to them that sometimes different cities follow one another on the same site and under the same name, born and dying without knowing one another. . . It is pointless to ask whether the new ones are better or worse than the old, since there is no connection between them, just as the old post cards do not depict Maurilia as it was, but a different city which, by chance, was called Maurilia, like this one.

Whether Armilla is like this because it is unfinished or because it has been demolished, whether the cause is some enchantment or only a whim, I do not know. The fact remains that it has no walls, no ceilings, no floors: it has nothing that makes it seem a city, except the water pipes that rise vertically where the houses should be and spread out horizontally where the floors should be: a forest of pipes that end in taps, showers, spouts, overflows. Against the sky a lavabo's white stands out, or a bathtub, or some other porcelain, like late fruit still hanging from the boughs. You would think the plumbers had finished their job and gone away before the bricklayers arrived; or else their hydraulic systems, indestructible, had survived a catastrophe. . . or the corrosion of termites.



Piranesi's plumbing system of a fountain

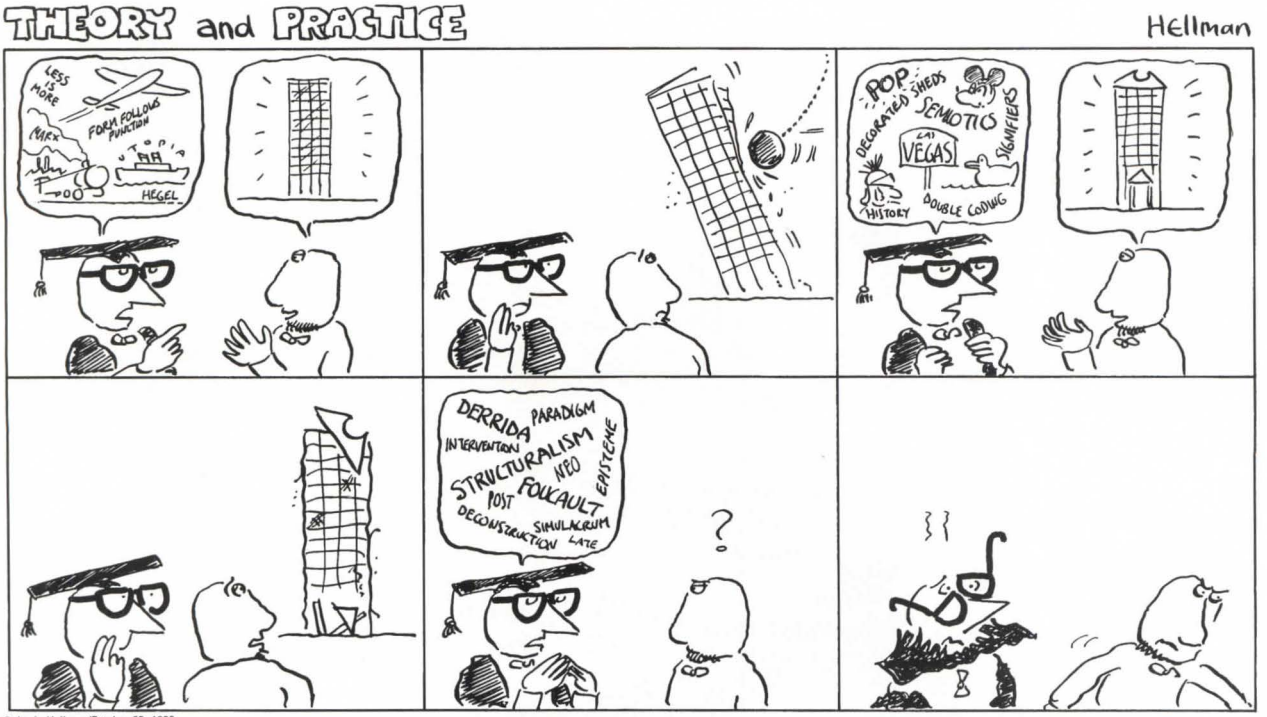
Abandoned before or after it was inhabited, Armilla cannot be called deserted. At any hour, raising your eyes among the pipes, you are likely to glimpse a young woman, or many young women, slender, not tall of stature, luxuriating in the bathtubs or arching their backs under the showers suspended in the void, washing or drying or perfuming themselves, or combing their long hair at a mirror. In the sun, the threads of water glisten . . . the jets of the taps, the spurts, the splashes, the sponges' suds.

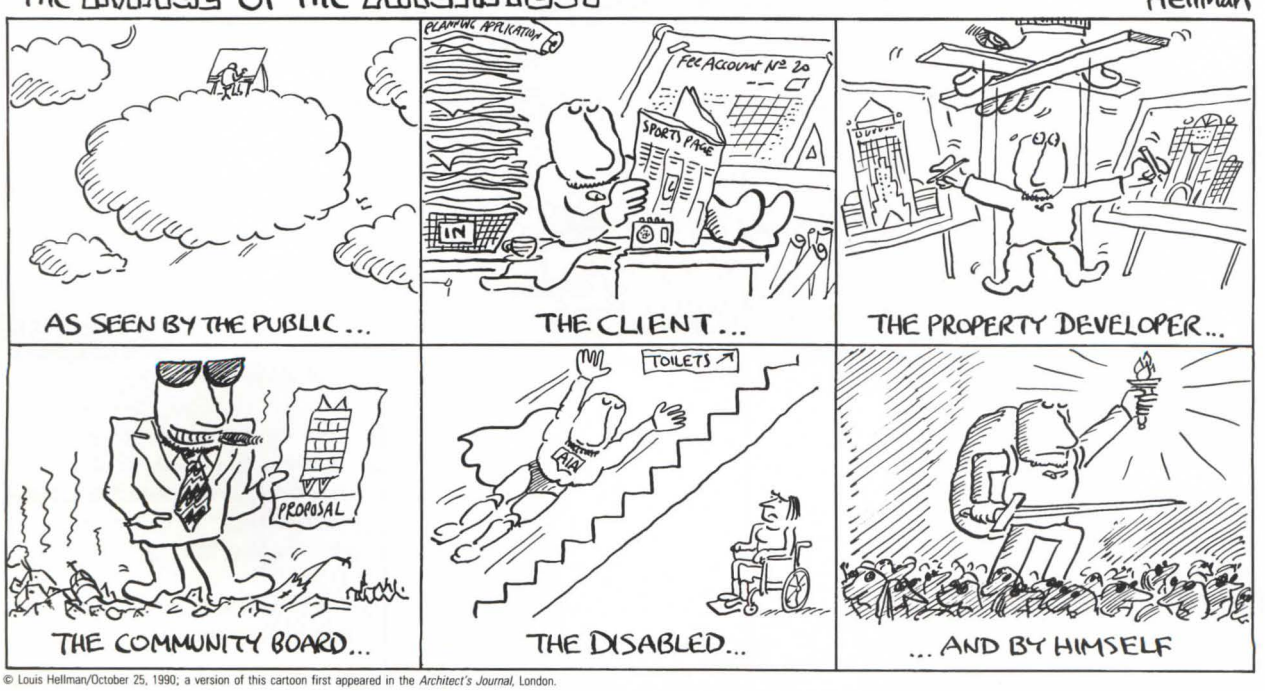
I have come to this explanation: The streams of water channeled in the pipes of Armilla have remained in the possession of nymphs and naiads. Accustomed to traveling along undergound veins, they found it easy to enter into the new aquatic realm, to burst from multiple fountains, to find. . . new ways of enjoying the water. Their invasion may have driven out the human beings, or Armilla may have been built by humans as a votive offering to win the favor of the nymphs, offended at the misuse of the waters. In any case, now they seem content, these maidens: In the morning you hear them singing.

The city of Sophronia is made up of two half-cities. In one there is the great roller coaster with its steep humps, the carousel with its chain spokes, the Ferris wheel of spinning cages, the death-ride with crouching motorcyclists, the big top with the clump of trapezes hanging in the middle. The other half-city is of stone and marble and cement, with the bank, the factories, the palaces, the slaughter-house, the school, and all the rest. One of the half-cities is permanent, the other is temporary, and when the period of its sojourn is over, they uproot it, dismantle it, and take it off, transplanting it to the vacant lots of another half-city.

And so every year the day comes when the workmen remove the marble pediments, lower the stone walls, the cement pylons, take down the Ministry, the monument, the docks, the petroleum refinery, the hospital, load them on trailers, to follow from stand to stand their annual itinerary. Here remains the half-Sophronia of the shooting-galleries and the carousels, the shout suspended from the cart of the headlong roller coaster, and it begins to count the months, the days it must wait before the caravan returns and a complete life can begin again. ■

Punchline: More from the pointed pen of British architect and cartoonist **Louis Hellman.**





Books: Whose Drawings Are They, Anyway? Architectural Images Outside the Office.

David Friedman discusses a new perspective on architecture promoted by an exhibition catalogue from the Canadian Centre for Architecture.

Books of Note

I.M. Pei: A Profile in American Architecture *by Carter Wiseman, Harry N. Abrams, New York, 1990, 320 pages, illus., $49.50.*
A sympathetic tale of the prodigious architect making his geometric mark on the landscape, this biography intertwines Pei's personal/professional history with a hand-picked selection of monumental commissions.

An Atlas of Venice *edited by Edoardo Salzano, Princeton Architectural Press, New York, 1990, 420 pages, illus., $175.*
Powerful aerial photographs of Venice – a few are reproduced in the book reviewed this month – expand the pedestrian's experience of the city; essays describe Venice's cartographic history and the method used to divide the city into 186 plats for this handsome survey.

The New Moderns: From Late to Neo-Modernism *by Charles Jencks, Rizzoli, New York, 1990, 300 pages, illus., $75.*
Jencks again sets out his own, very personal, interpretation of the state of Modernism, this time skewering what he currently perceives as a blurry line between Late and Neo-Modernism.

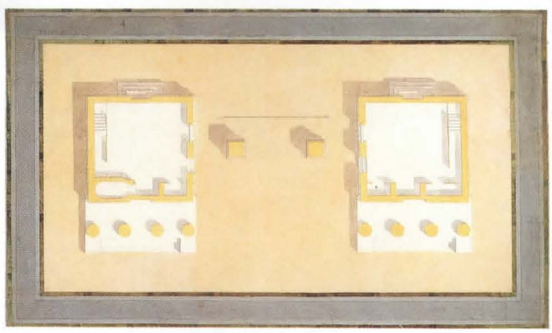
Modern Architecture: Photographs by Ezra Stoller *with an essay by William S. Saunders, Harry N. Abrams, New York, 1990, 216 pages, illus., $60.*
This survey of Stoller's career as America's visual chronicler of Modern architecture is a celebration of his classical approach and lucid results.

Architecture and Its Image: Four Centuries of Architectural Representation, *edited by Eve Blau and Edward Kaufman, Canadian Centre for Architecture, Montreal, and MIT Press, 1989, 369 pp., illus., $75.00.*

Architectural images are almost as old as building itself. Greeks of the archaic period preserved the remains of their ancestors in funerary urns that resemble modest huts. Roman coinage celebrated war and peace with abstractions of the porch and opened or closed door of the Temple of Janus. In Egypt and Mesopotamia, the city was symbolized by a pair of perpendicular lines surrounded by a circle. In Roman art, bundles of buildings surrounded by a wall gave a generic picture of urban civilization.

Architectural drawing is a much more limited phenomenon. Extremely rare before the 13th Century, it is also very specialized. From freehand sketches to measured drawings, the genre is defined by its purpose: Architectural drawings develop a design or contribute to its transformation into a full-scale building. To architectural historians, these drawings are not merely utilitarian tools; they are the bedrock of their academic discipline. Designers, who produce these primary resources for scholars, have often been most comfortable with a strict definition of architectural drawing. In recent years the heirs to this professional view have resisted the historian's belief that drawing should be considered an end in itself. Many architects are skeptical about the market that this perspective generated.

When scholars used architectural drawings only for information about the projects represented, they ignored a significant part of the medium's message. By the late 1950s, historians and critics began to search for a larger role for drawing by focusing on the images themselves. In discussions of the process of design, they pointed to the way the tools of representation influence the character of the architectural product. Scholars examined the qualities of media – from ink on parchment to graphite on yellow trace – for their receptivity to different sensibilities and, conversely, for the way they guided designers' attitudes toward form. In this new critical view, the conventions of image-making are one of the forces that shape an epoch's architecture. For example, the prominence of the façade in the Renaissance might be tied to a way of seeing defined by perspective. More recently, the ambiguity and multiplicity in Modern architecture has been linked with axonometrics.



Collection Centre Canadien d'Architecture/Canadian Centre for Architecture, Montreal

Design for Gate Lodges (1789) by Willey Reveley, a British proponent of the Greek Revival; drawings featured in Architecture and Its Image.

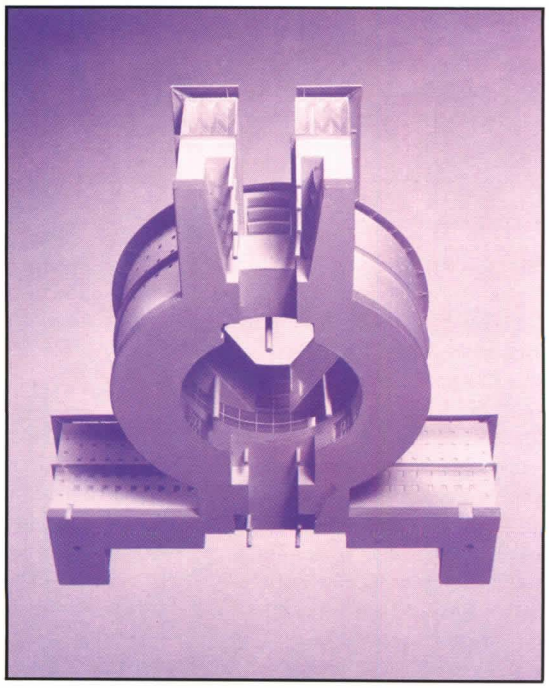
Enter *Architecture and Its Image,* the catalogue published by the Canadian Centre for Architecture (CCA) for the first exhibit in their new museum (see P/A, Aug. 1989, p. 68). The collection of the CCA contains over 20,000 prints and drawings, many early photographs, and a library of 130,000 books and incunabula. The exhibit, with its mere hundreds of objects, was of course, only a selection of these riches. Nonetheless, the variety of images displayed was broad enough to force the hand of the organizers. They opted to defy chronology and present the collection thematically. Images from the 16th through the 20th Centuries are divided into groups that represent (1) the three-dimensional presence of the building, (2) topographical and temporal themes in architecture, and (3) the process of design and display.

Representation is the unifying theme of the exhibition. The catalogue constantly asks readers to assess the relative virtues of different ways of

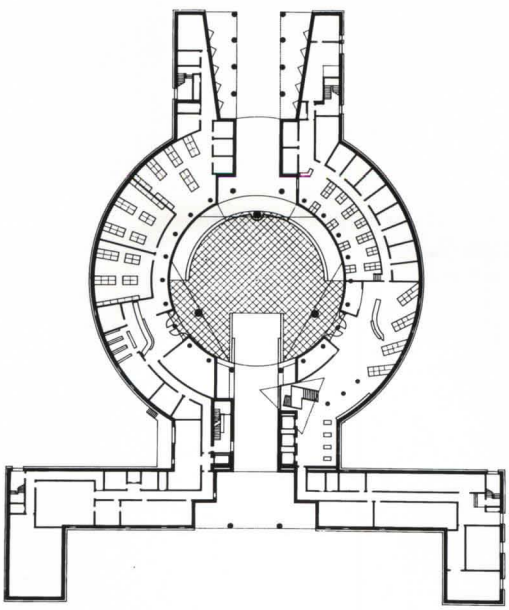
(continued on page 117)

Projects: James Stirling Michael Wilford & Associates

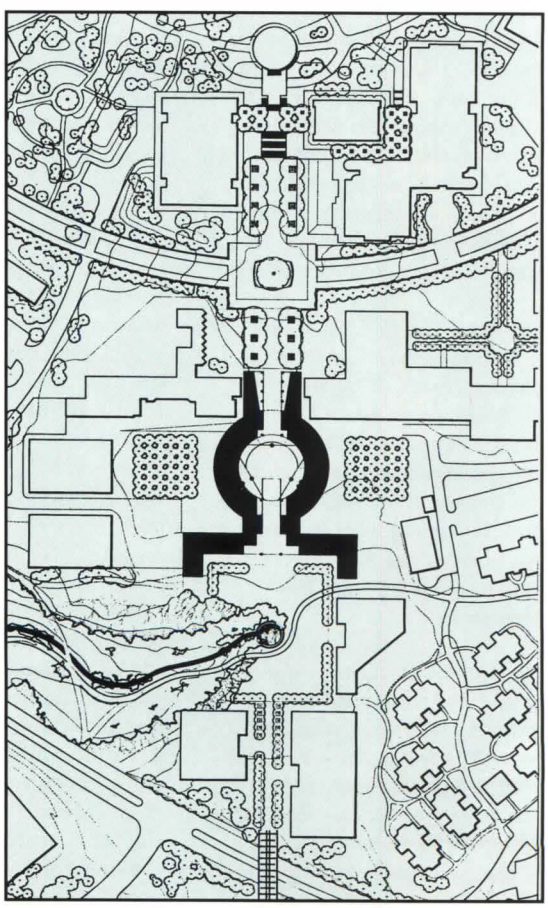
James Stirling's recent work raises questions about the effect of media on architecture and public life.



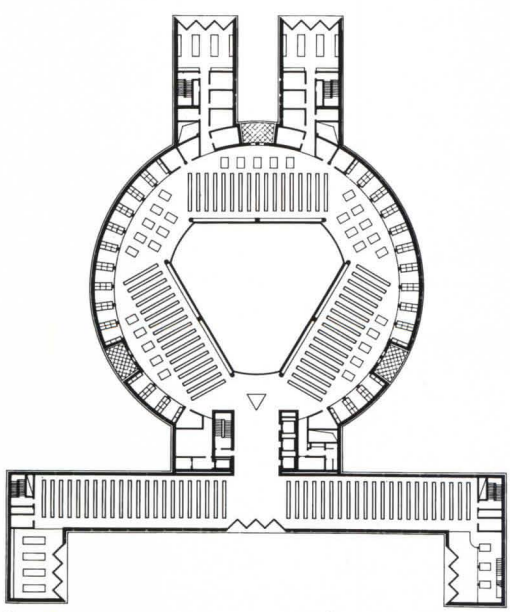
1c WORM'S EYE VIEW OF MODEL



1a SCIENCE LIBRARY UNIVERSITY OF CALIFORNIA, IRVINE. GROUND FLOOR PLAN



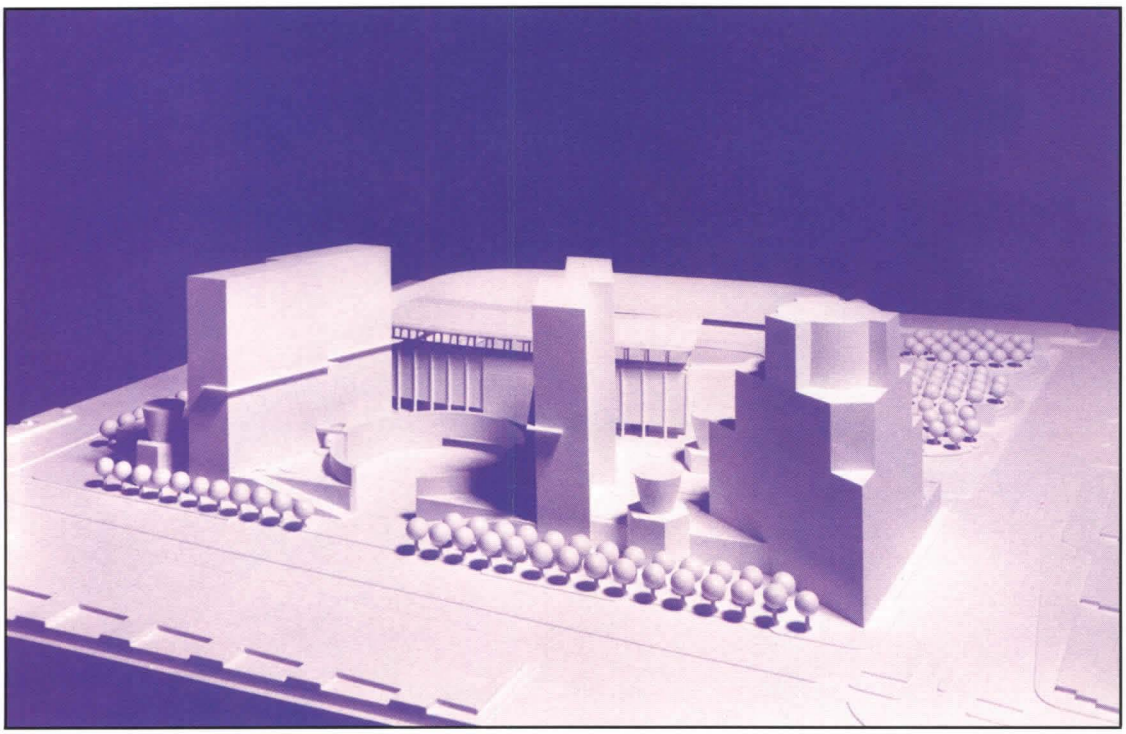
1d SITE PLAN N ↑ 100'/30m



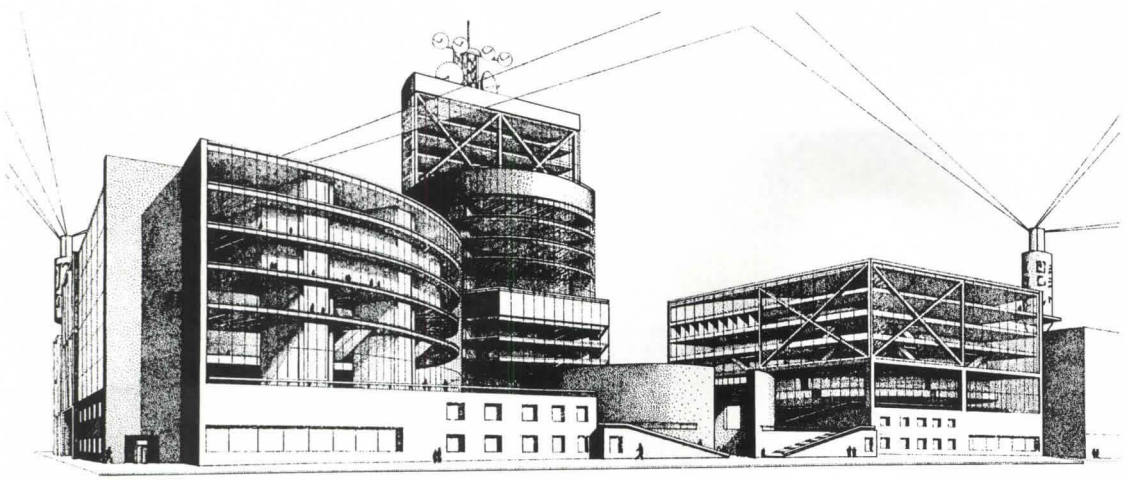
1b 5TH AND 6TH FLOOR PLAN N ↑ 40'/12m

We no longer get our information about the world through face-to-face contact on a city square, but through television, newspapers, books, fax machines, computers —most of which are used indoors. Modern architecture, with its open interiors and mute exteriors, was a clear if not entirely conscious response to this spatial inversion of public life. But that is not the only or even the best response.

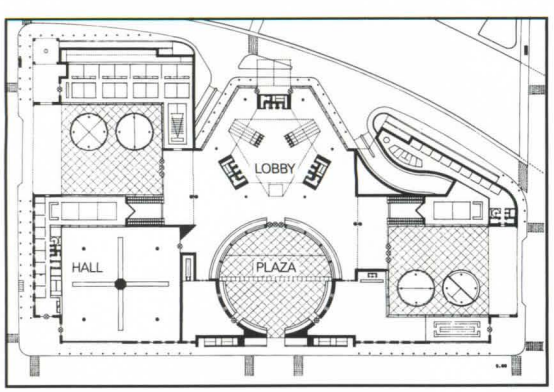
The recent work of James Stirling Michael Wilford & Associates offers an alternative model for the relationship of architecture and public life. Rather than make objectlike buildings that leave outdoor space undefined, Stirling typically pushes a structure to the boundaries of its site, creating a walled compound that recalls the historic image of fortified towns. And rather than let interior space flow together amor-



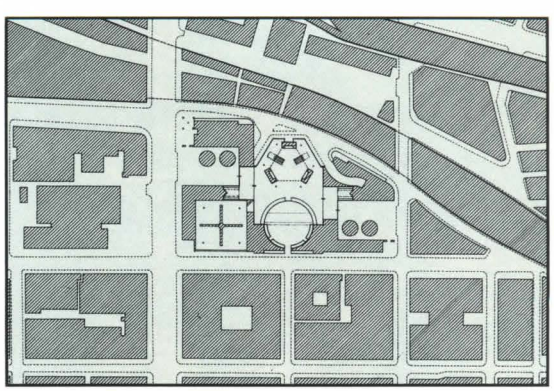
2 STADIUM, SEVILLE. MODEL



3a COMPETITION ENTRY, TOKYO INTERNATIONAL FORUM. PERSPECTIVE



3b FIRST FLOOR PLAN N ↑ 100'/30m



3c SITE PLAN N ↑ 300'/100m

phously, Stirling usually creates grandly scaled, strongly figural courts and lobbies that look and function like traditional urban plazas. These buildings suggest that the interior and increasingly private nature of public life need not remain unconnected to our urban past.

Stirling's formal strategies tend to be of two types: carving large (and often circular) spaces out of a solid block of building, as in his Staatsgalerie in Stuttgart (P/A, Oct. 1984, pp. 67–87), or placing figural buildings (with a studied casualness) within a perimeter wall, as in his Science Center in Berlin (P/A, Nov. 1988, pp. 23, 26). These objects-in-space and space-defining objects mark, as Colin Rowe first pointed out, the two poles of Modern and Classical urbanism. Stirling has carried the dialogue between those two traditions onto private property, the new locus of public life.

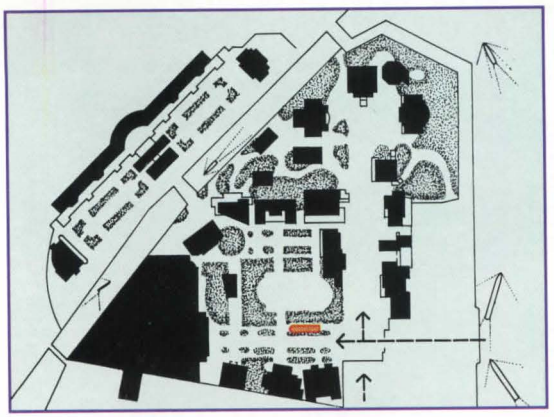
Of the firm's recent projects, the proposed science library for the University of California at Irvine (1) is most characteristic of Stirling's space-defining objects. Straddling a major pedestrian path, the building has three parts: a gateway piece that is inserted in the narrow space between two buildings, a circular library with radiating stacks that encloses a round (and on the upper floors, a triangular) court, and two rectangular administrative wings that define one edge of a future bio-science quadrangle. The building funnels both people and views into the glass-walled entry court, making it come alive. On an overly large campus of poorly related object-like buildings, this structure creates a needed contrast: compressed urban space with a real function.

Two other recent projects explore the idea of objects within a defined perimeter. A proposed development around Seville's stadium (2) places two office towers and a hotel atop a podium containing a department store. The podium is carved away to create a large circular walled plaza that leads to the stadium's main entrance; the flanking office towers are

also entered off of this space. Broken up with department store and hotel entrances, the podium has a series of ramps and stairs that give access to its roof, on which stand gardens.

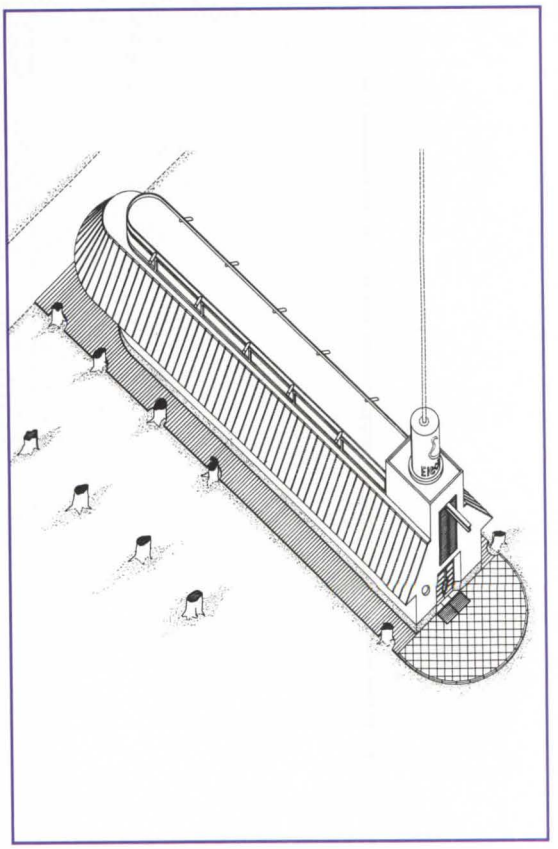
Stirling pursued a similar solution in his scheme for the Tokyo International Forum (3) see also winning scheme by Viñoly, P/A, Jan. 1990, p. 27). Here, three glass blocks stand atop a stone-faced podium out of which is carved, again, a circular walled entry plaza. A central tower composed of hexagonal, circular, and semi-circular sections contains smaller meeting rooms, while the Forum's theaters occupy two flanking volumes, one of which is square and the other half-round. Here, because of the large program that had to be crammed onto site, the objects tend to overwhelm the podium on which they stand. Nevertheless, both the Seville and Tokyo projects embody the internalization of public life: The coherent dialogue of forms that once occurred among buildings in a city happen here among the parts of an individual project.

Richard Sennett, in his book *The Fall of Public Man,* wrote that this change in public life has resulted in a demise of ritualized behavior or dress among people. How we act or appear on the street is now strictly a matter of personal expression, pure idiosyncracy. And so it is with the object buildings we construct, each of which seeks its own identity, its own image. Stirling seems to caricature that in his little bookshop for the Venice Biennale (4). This boat-shaped building, looking like a landlocked vaporetto, stands between two rows of trees within a large formal garden. Highly idiosyncratic, the structure has a broad-brimmed hat, a slightly asymmetrical face, and a transparent body. And inside, it is full of that usurper of public life: the words and images of media. **Thomas Fisher** ■

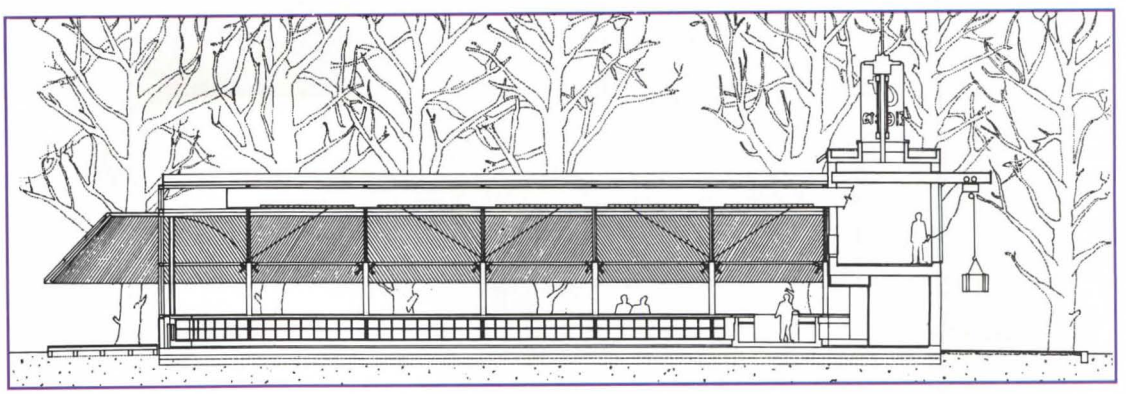


4a BOOKSHOP, VENICE BIENNALE. SITE PLAN N ↑ 300'/100m

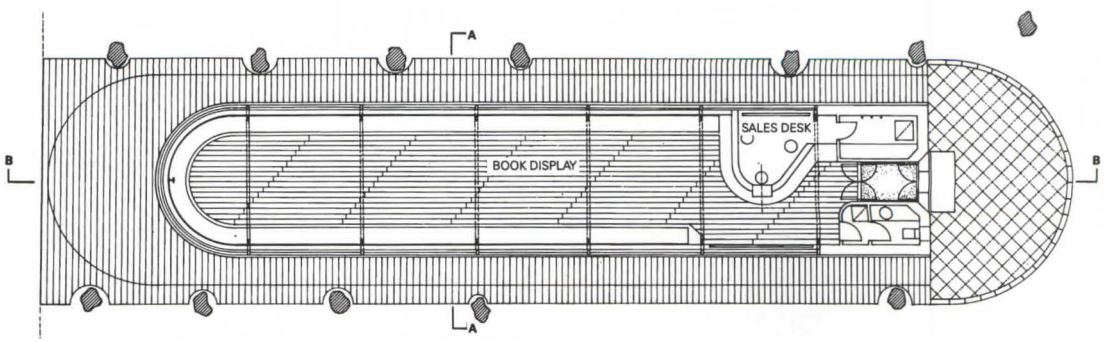
4b SECTION AA 20'/6m



4c AXONOMETRIC



4d SECTION BB



4e FIRST FLOOR PLAN N ↑ 20'/6m

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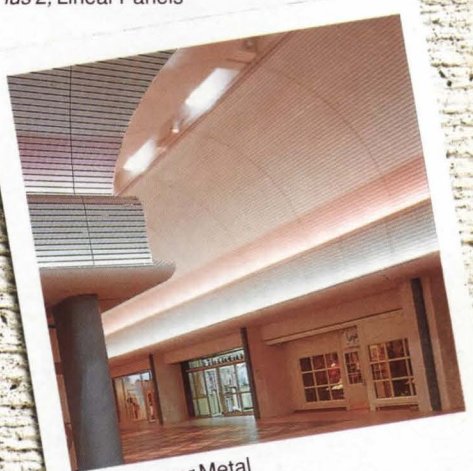

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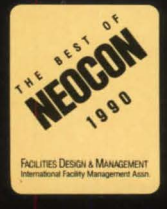

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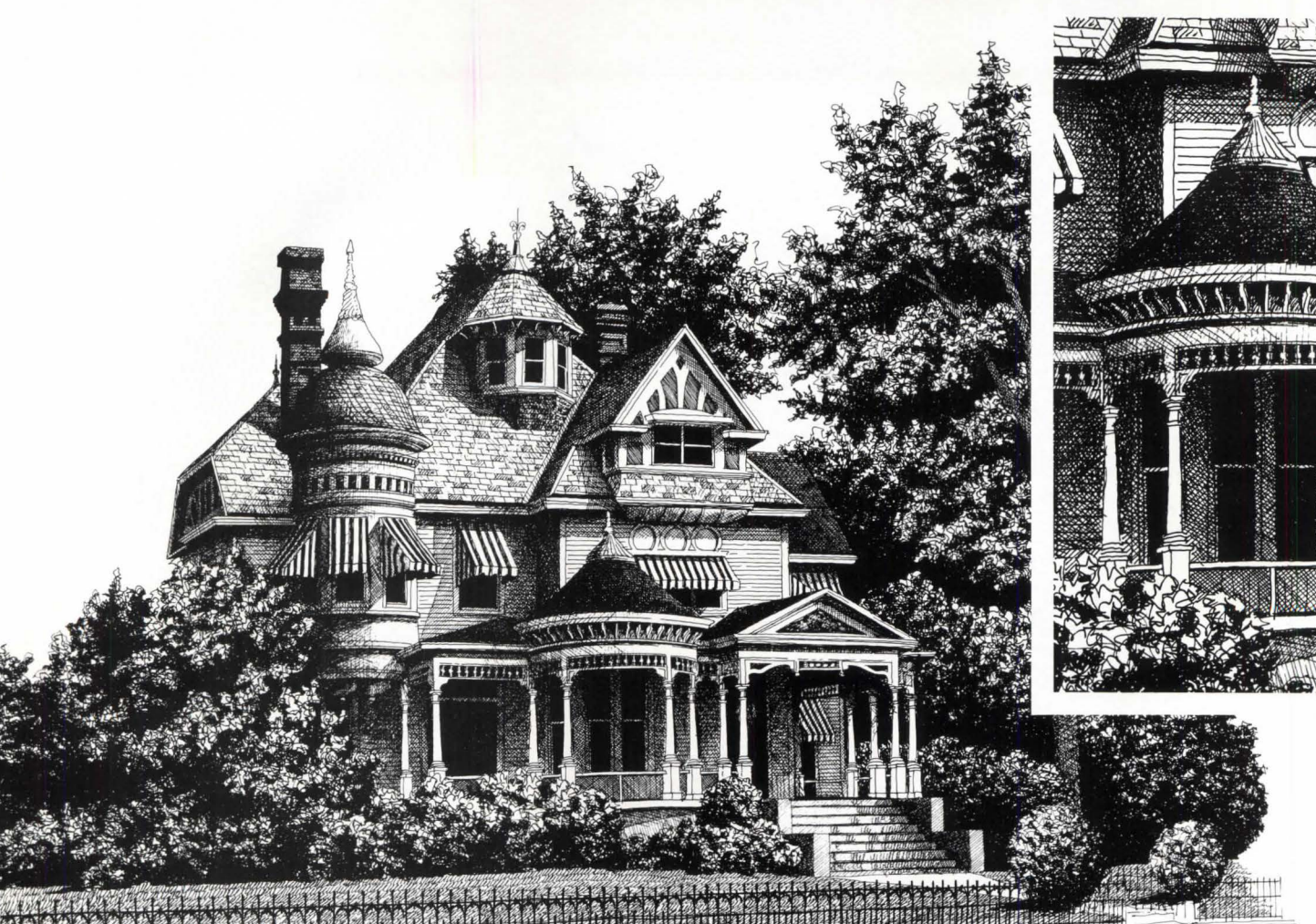

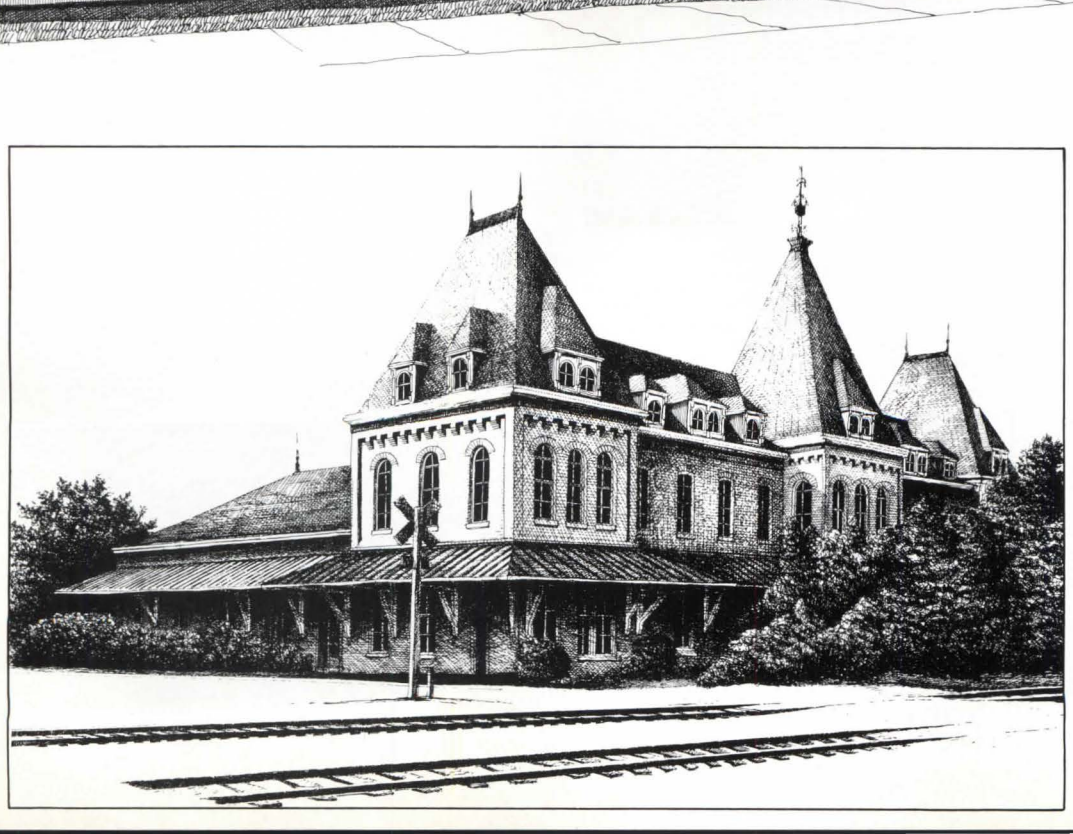

RENDERING

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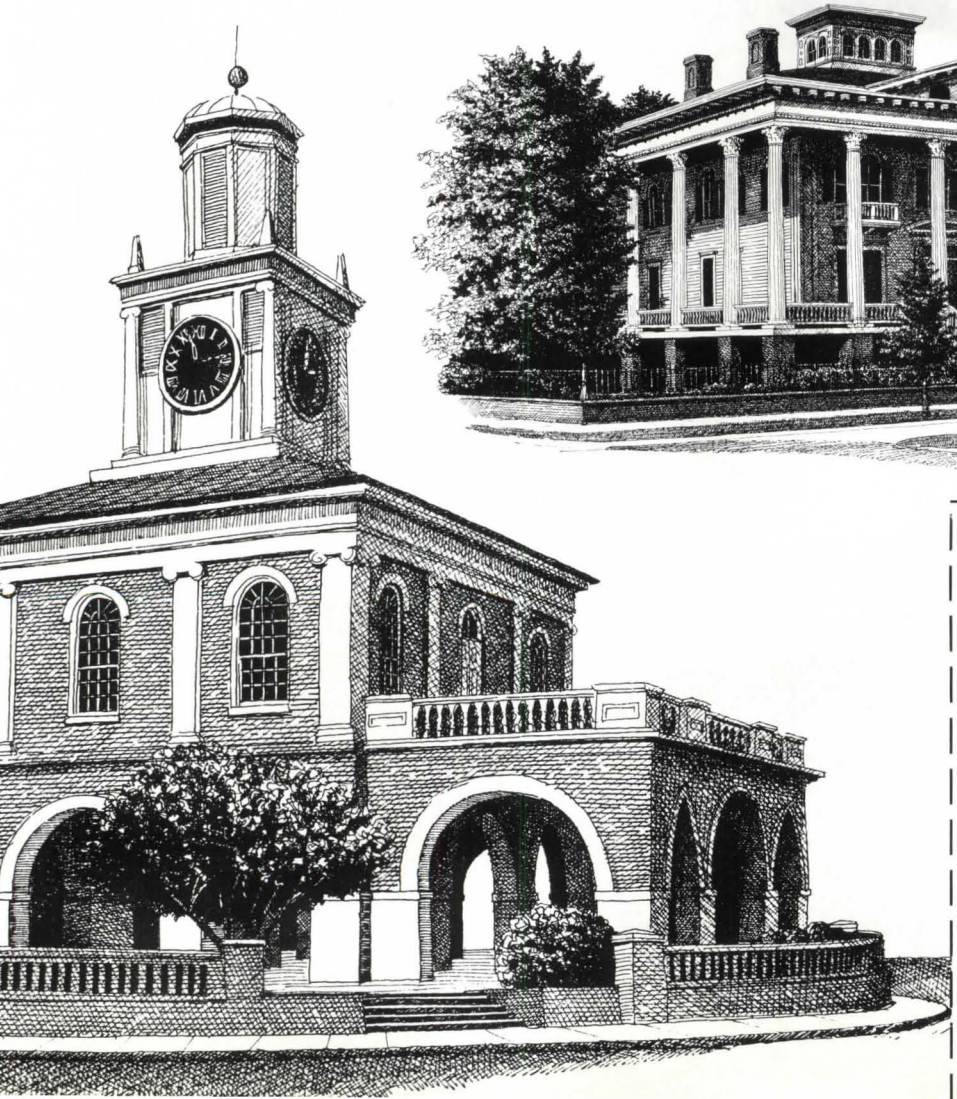

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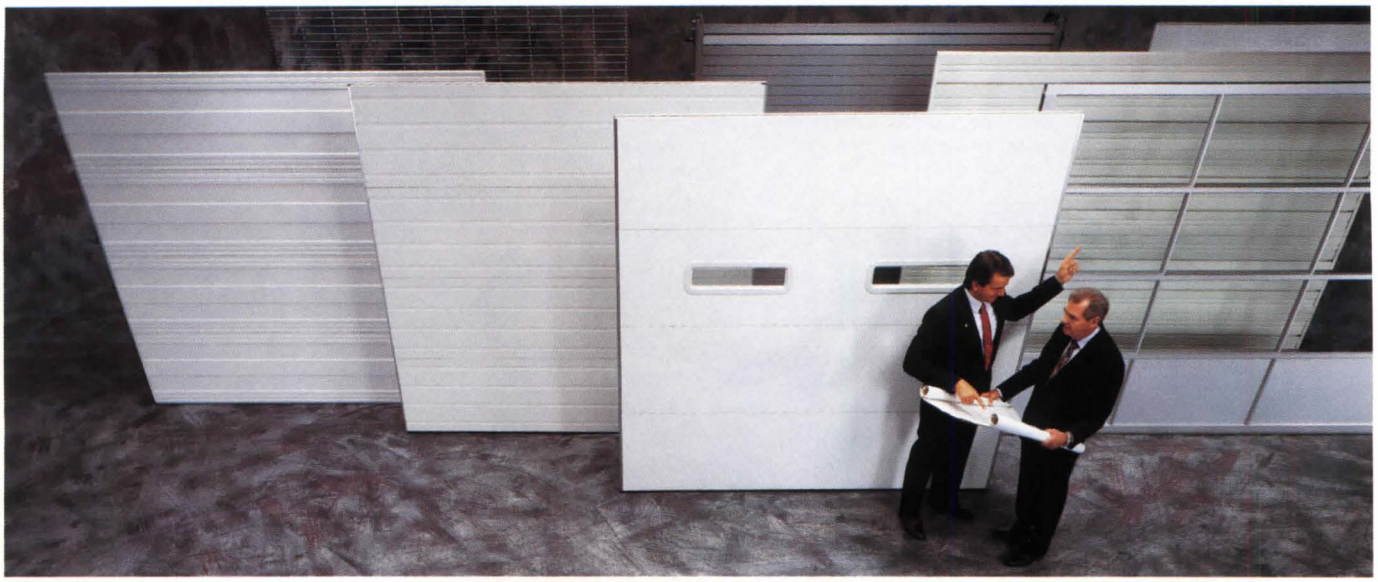

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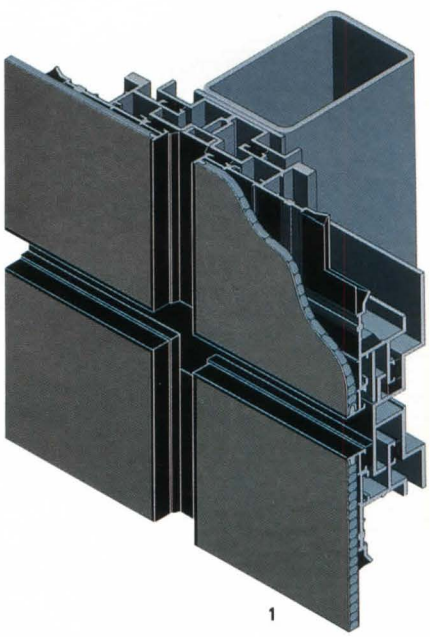

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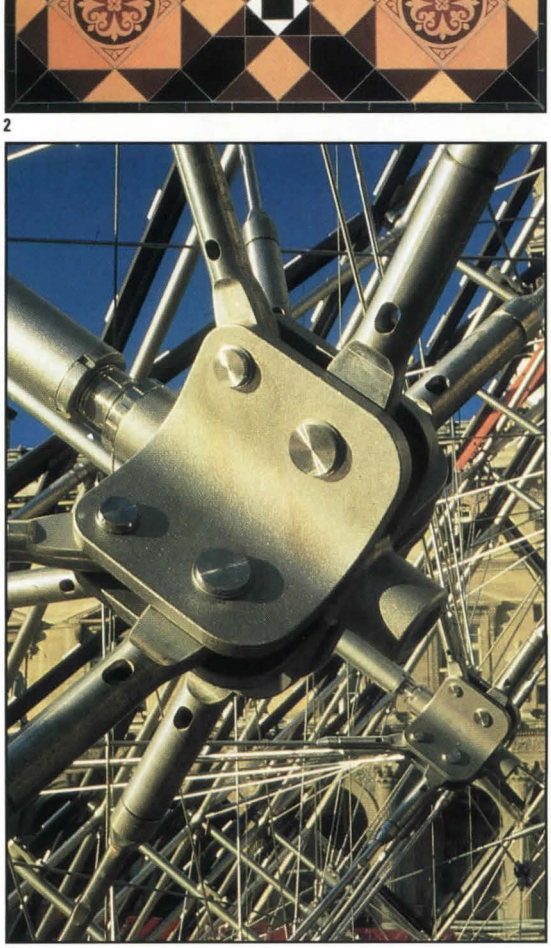

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2 Encaustic and Geometric Tiles
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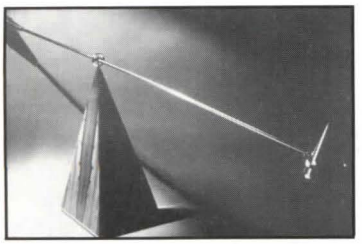

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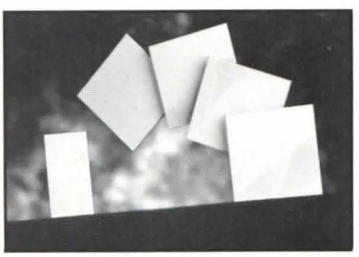

Embossed Tiles
The Krizia collection's "Figure Geometriche" glazed and embossed ceramic tiles have rhombic, square, and frame shapes on porcelain or pearly-white backgrounds.
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"Solitaire" is a textured vinyl surface treatment available in 24 pastel colors. Forbo-Vicrtex.
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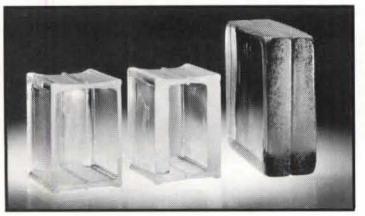
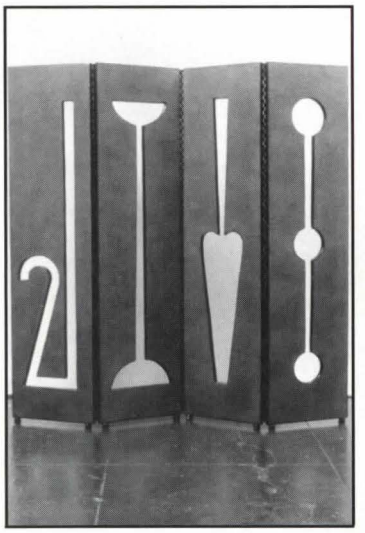


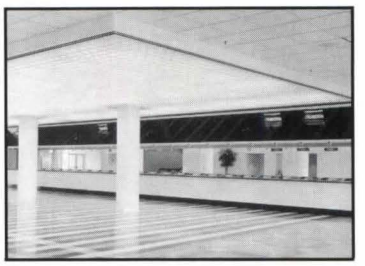
Security Glass Blocks
"Security Block" – the newest addition to the "PC Glass Block"® line – is 6″ × 6″ × 3⅞″ with a ¾-inch-thick face. It is available in the "VUE"® pattern for increased translucency. Pittsburgh Corning.
Circle 105 on reader service card



Handmade Screens
Folding handmade screens and room dividers, designed by New Yorker James Johnston, are constructed of furniture-grade birch plywood and finished with acrylic and enamel paints. "Hieroglyphs" (above) is 48″ × 49″. James Johnston.
Circle 106 on reader service card

Structural Sealing Joint
A preformed neoprene profile for concrete structures is called the "Jeene Structural Sealing Joint System." The profile is bonded to joint gap walls by an epoxy-based adhesive where it is pressurized through an air injection valve for full expansion; air is released after concrete is cured. Hydrozo.
Circle 107 on reader service card

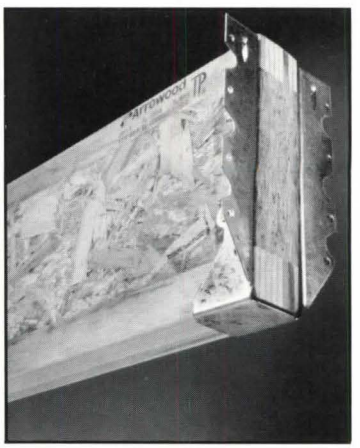
Commercial Roofing Manual
The 1991 *Commercial Roofing Specification & Detail* manual includes application information for the full line of BUR and SBS modified products; ten new specifications for "Awaplan Premium FR"™ and "Versa-Cap FR"™ fire retardant products are also included. Tamko Asphalt Products.
Circle 200 on reader service card



Ceiling System
The "Luvr-Grid Ceiling System" for commercial and retail applications consists of open cellular modules (with 8-inch to 48-inch-square cells) suspended from a T-bar grid. Perimeter trim, wall angles, and other components are available. Alcan Building Materials.
Circle 108 on reader service card

Armchair Stacker
The steelframed "BCN" armchair has a chrome, lacquered epoxy, or double-coat metallic finish and leather upholstery. It is 21¾ inches wide, 23 inches deep, and 25¾ inches high at the seat. Brayton International.
Circle 109 on reader service card

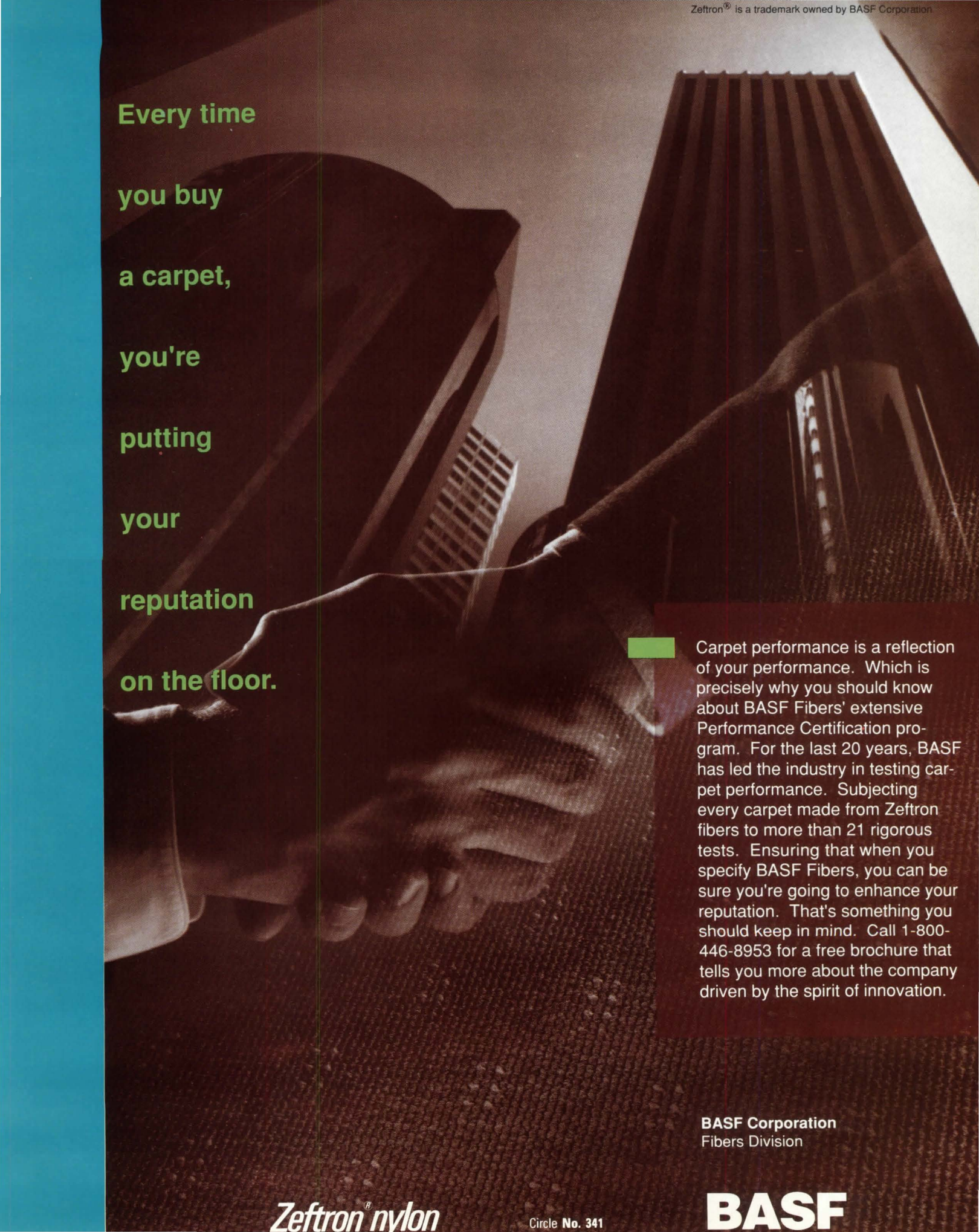
Glulam Beams
Weyerhaeuser Glulam beams and headers use machine stress-rated lumber (MSR) and proprietary beam design methodology (PBDM) to tailor the manufacturing of beams to specific end uses. Weyerhaeuser.
Circle 110 on reader service card



Framing Material
Arrowood™ hardwood composite framing material is produced by combining parallel laminated veneers with oriented strand board to create a board with uniform strength, stiffness, and size.
Fibreboard Technologies.
Circle 111 on reader service card

Glulam Software
The GLSizer™ calculates the size and applicable stress combinations of glued laminated timber (glulam) on any IBM®-compatible system.
American Institute of Timber Construction.
Circle 112 on reader service card

(continued on next page)



Every time you buy a carpet, you're putting your reputation on the floor.

Carpet performance is a reflection of your performance. Which is precisely why you should know about BASF Fibers' extensive Performance Certification program. For the last 20 years, BASF has led the industry in testing carpet performance. Subjecting every carpet made from Zeftron fibers to more than 21 rigorous tests. Ensuring that when you specify BASF Fibers, you can be sure you're going to enhance your reputation. That's something you should keep in mind. Call 1-800-446-8953 for a free brochure that tells you more about the company driven by the spirit of innovation.

BASF Corporation
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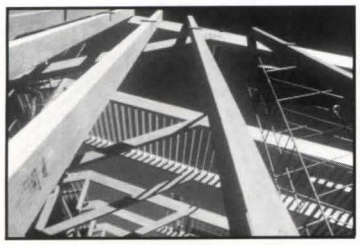
Zeftron® nylon

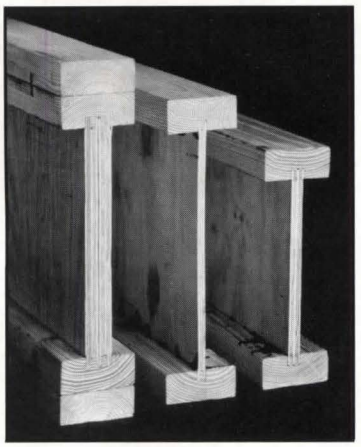
BASF

(continued from previous page)

Span Design Tool
Wood-E™ IBM®-compatible software calculates roof and floor span loads for Gang-lam® LVL beams and GNI™ joists. Lousiana-Pacific Engineered Products.
Circle 113 on reader service card



Wood Literature
A brochure describes Parallam® beams, headers, columns, and posts that are manufactured from Douglas-fir veneer strips cured under pressure. MacMillan Bloedel.
Circle 201 on reader service card



Double-Wood I-Beams
The WI-4410 beam is constructed of double 5/8" plywood web fitted into a double 4 x 2 lumber flange. Georgia Pacific.
Circle 114 on reader service card

Engineered Lumber
TJI® wooden I-joists and Micro-Lam® laminated veneer lumber are suited to residential and light commercial uses. Trus Joist.
Circle 115 on reader service card

Building Materials

Major materials suppliers for buildings that are featured this month as they were furnished to P/A by the architects.

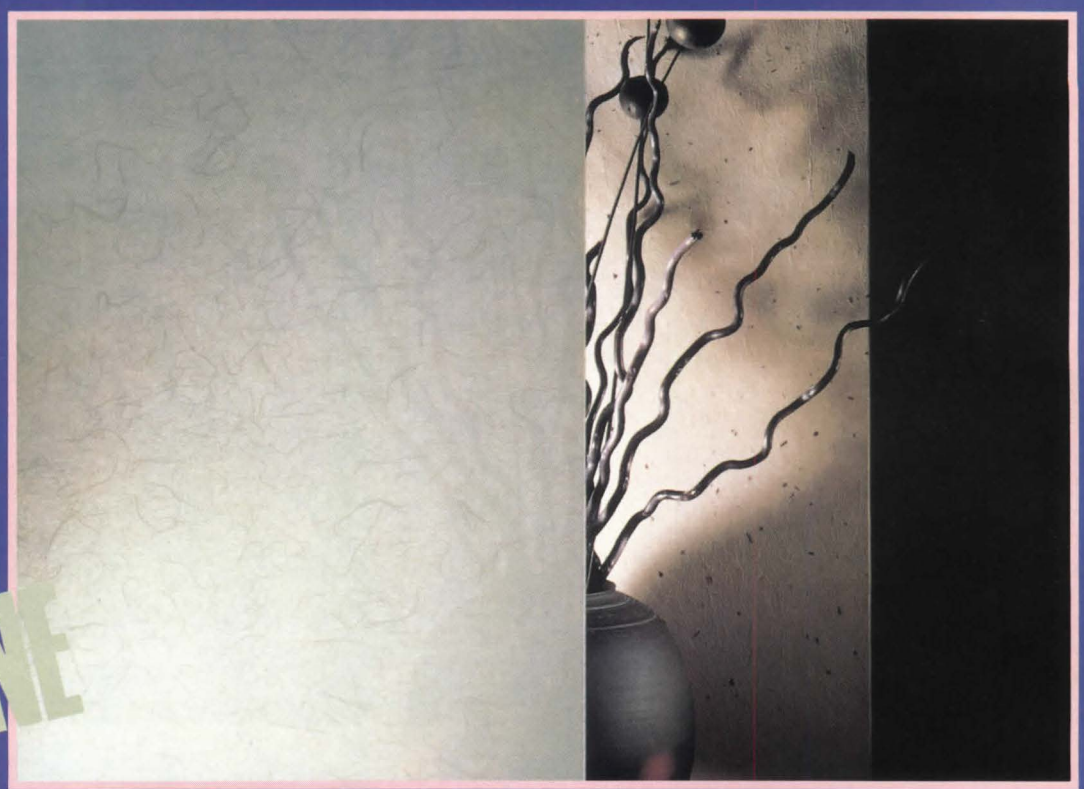
Project: Buckhead Branch Library, Atlanta. *Architects: Scogin Elam & Bray, Atlanta (p. 60).* Steel frame and deck, steel stairs and handrails: Five Star Steel. Slate shingles: Buckingham Slate. Storefront system, aluminum window and door frames, and concealed overhead door closers: Kawneer. Wood doors: Arch-1-Tech. Built-up roofing: Manville. Standing seam metal: Morin. Silicone sealants and batt insulation: Owens Corning. Internal roof drains with metal pipe: U.S. Pipe. White interior paint: Duron. Pivot hinges: LCN. Thumbturn key locks and concealed vertical rod panic exit devices: Von Duprin. Marquee/canopy: Roy-O-Lite. Smoke detector, duct housing, and accessories: Fernal. Metal halide downlights: Lithonia. Metal halide direct burial lights: Kim. Wall- mounted lavatories and water closets: American Standard. Flush valves: Sloan. Stainless steel toilet stalls: Metpar. Miscellaneous accessories: McKinney/Parker. Water fountains: Halsey Taylor. Vertical rotating blinds: Louver Drape. Gas and electric HVAC equipment: Trane.

Project: D. Abbott Turner Center, Emory University, Atlanta. *Architects: Scogin Elam & Bray Architects, Atlanta, Georgia (p. 66).* Concrete: Williams Brothers. Steel reinforcing: Applied Systems Associates. Steel and pipe rail fabricators: Grace and Wylie. Metal stud walls: Consolidated Systems. Bar joists: Vul-
(continued on page 114)

AGC
ASAHI GLASS COMPANY

The Soft Light of Paper in Glass.

LAMI TONE



This photo features Cloud Dragon 2

Glass Japanesque

The subtle glow of light passing through Japanese paper screens, or *shoji*, is beautifully recreated by this glass design material, in five paper styles.

Paper-like film between two 3mm sheets of float glass provide safety-glazing with laminated structure that stays clear even after 3,000 hours of WOM UV exposure.

The Lamitone Japanese Shoji Series is ideal for windows, doors, partitions, and beautiful lighting effects. See the soft light of handcrafted paper recreated in glass.

Thickness: 3+3mm Size: 1,829mm × 914mm Weight: 3+3=15kgm^2
Lamitone Japanese Shoji Series: Morning Mist Cloud Dragon Snow White Shoji Stripe Shoji Straw

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The designer's element.

Circle **No. 336**

(continued from page 110)

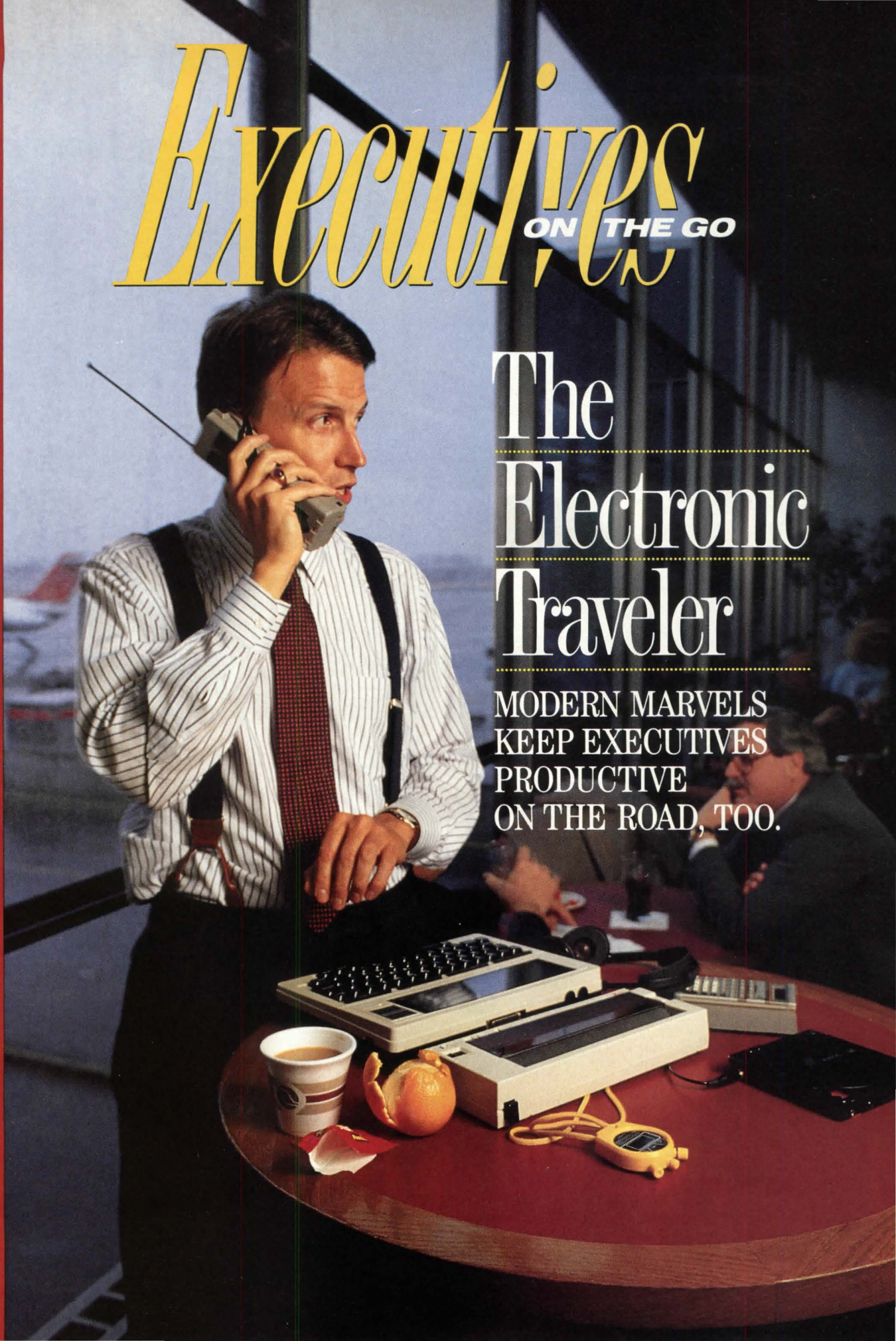
craft. Manganese ironspot brick: Endicott Clay Products. Gypsum board: United States Gypsum. Curtain wall and aluminum/glass entrance doors: Atlas Architectural Metals. Steel doors and frames: Steelcraft. Wood doors: Eggers. Custom wood doors: L.R. Walker & Company. Standing seam metal roofing: Berridge Manufacturing Company. Metal decking: Cyclops-Bowen Metal Deck Division. Sealant: Tremco. Moisture-vapor barrier: Glas-Kraft. Silicone: Dow Corning. Gutters: Goodyear Tire and Rubber. Paint on steel: Rynothane, Southern Coatings. Hinges: Hager. Locksets: Corbin, Best Cylinders. Door closers: LCN. Door pulls: Quality. Microwave: Sharp. Dishwasher and compactor: Kitchen Aid. Oven Thermador. Refrigerator: Sub-Zero. Intercom amplifier: TOA. Ceiling speakers: Soundolier. Signage: Apco Architectural Signing. Metal halide yoke and pendant interior lighting: Elliptipar vapor downlights: Greenlee. High pressure sodium lights: J W Lighting, Minicon. Water closets and faucets: Kohler. Flush valves: Sloan Valve Company. Toilet stalls: Global. Washroom accessories: Bobrick. Wall-mounted water fountains: Halsey Taylor. Pedestal water fountains: Haws. Concealed ceiling sprinklers: Automatic Sprinkler Company of America. Gas-fired water boilers: Weben-Javco. Fan coil and split system A.C. units: Carrier. Wood tables, upholstered chairs and couches: Gilbert International. Wood chairs and rocking chair: Thomas Moser. *Upholstery materials:* Knoll, Gilbert International, Deepa Textiles.

Project: San Francisco Diamond and Jewelry Mart. *Architects: Tanner Leddy Maytum Stacy Architects (formerly Tanner & VanDine Architects), San Francisco (p. 74).* Precast concrete piles: Kie-Con, Inc. Concrete columns: Bode Gravel. Concrete block: Warren Masonry. Post-tensioned concrete floors and roof: VSL Corp. Glass block curtain wall: Nippon Electric Glass. Granite veneer: Clervi Marble. Aluminum frame windows/Solexglass: U.S. Aluminum. Aluminum frame skylights/Solexglass: Supersky Products. Herculite doors: Brite Vue. Garage Grilles/fire doors: Kinnear. Terrazzo carpet: Associated Terrazzo. Waterproof traffic topping for roof: Dex-O-Tex. Silicone sealant: Dow Corning. Kynar painted aluminum: PPG Industries.

Park Avenue Penthouse, New York (p. 86). *Designers: Deamer + Phillips, New York.* Eggshell alkyd paint: Benjamin Moore. Patterned glass and oxidized steel partition: Treitel-Gratz. Aluminum tubing and redwood terrace railing: Sterling Factories. Maple, ebony, waxed purple heart floor: Dimension Hardwood. Wool carpets: Elizabeth Eakin and V'soske. Steel and low-E glass windows and doors: Hopes. Recessed down lights: Edison Price and Express. Area and desk lamps, brass cabinet hardware: Todd Noe. Maple, sycamore, purple heart, ebony, and peroba rosa inlay paneling, shelving, cabinets, tables, desks, chairs, beds, and wood hardware: Steve Truslow. Steel and brass tables, desks, chairs, beds, drapery hardware: Solo Engineering. Fabric drapery, upholstery: James Gould, D'Angeles. Absolute Black, Negro Marquina, Belgian Black, and Tigrato stonework: Foro Marble. Security system: Caltron. ■

A Lifestyle Supplement to Penton Publications/Travel/Lodging/Resorts/Recreation/Leisure

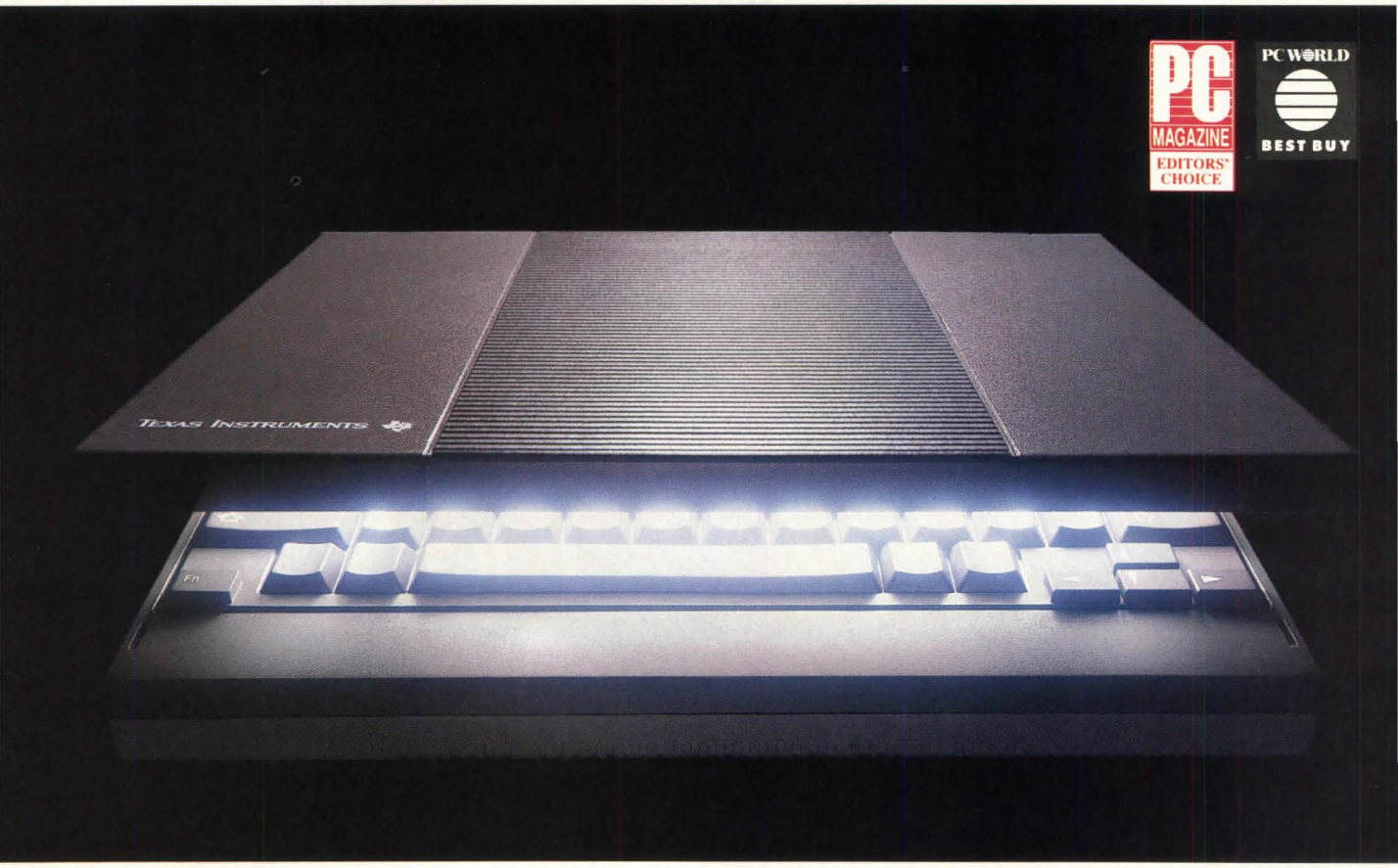
Executives ON THE GO



The Electronic Traveler

MODERN MARVELS KEEP EXECUTIVES PRODUCTIVE ON THE ROAD, TOO.

The new look of power.

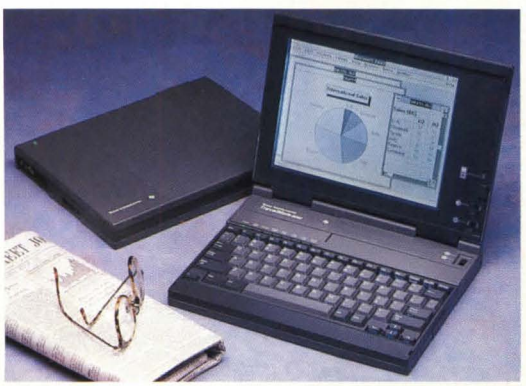


286 processing in a computer that's notebook size, 1.4″ thin and 4.4 lbs. light.

Introducing the TI TravelMate™ 2000 notebook computer — from the company that pioneered portable computing solutions.

Since inventing the first portable data terminal in 1969, TI has led the way in packing more and more functionality into smaller and smaller products. Now TI brings you the next generation in portable computing — the TravelMate 2000.

This sleek, 4.4-lb. notebook computer gives you the power of a PC-AT® in an ultrathin 8½″ x 11″ package. It's designed to fit your workstyle — wherever you work — in the office, at home or on the road. Just slip it in your briefcase with your file folders, journals and other business materials, and you're ready to go.



Large VGA screen with leadership display technology.

You'll appreciate the technology behind the 10″ diagonal VGA display. It's a remarkable feature for a computer that's notebook size. The high-resolution 640 x 480 supertwist screen easily handles demanding windowing and graphics applications.

More features to meet your application needs.

The TM 2000 has the power to run your favorite software — 12 MHz 80C286 processor, 20MB hard disk drive and 1MB of RAM. A built-in, rechargeable battery lets you work up to two hours. With an optional add-on battery, you can work up to five hours — enough for coast-to-coast flights.

You also get a full-function AT enhanced keyboard, so you can work with the same feel of your desktop PC.

In addition, we've loaded MS-DOS® and LapLink™ in ROM, and preformatted the hard disk.

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TEXAS INSTRUMENTS

FOR INFORMATION, CIRCLE NO. 11

THE ELECTRONIC TRAVELER

BY TERRY BREEN

ILLUSTRATION: HAL MAYFORTH; COVER PHOTO: HOME OFFICE COMPUTING MAGAZINE

PORTABLE PHONES, LAPTOP COMPUTERS, AND OTHER MODERN MARVELS KEEP EXECUTIVES PRODUCTIVE ON THE ROAD, TOO.

▶A screenwriter portraying a state-of-the-art business executive might click with a script about a 41-year-old Minneapolis computer-industry analyst named Gary Smaby.

In an action-packed tale of endless planes to catch and details to juggle, Smaby (cover) would be an electronic marvel, thanks to the mobile office he carries in a canvas bag over his shoulder.

As the movie opens, Smaby would be videotaping a business presentation with a Sony camcorder not much bigger than his hand...

Cut to Smaby plugging his camcorder into his hotel-room TV, then dictating reactions to the tape into a tiny Olympus Pearlcorder microcassette recorder...

Then to him making a crucial call on his hand-held NEC cellular phone as he taxies to the airport...

Next, to a close-up of that same phone, with the camera pulling back to reveal Smaby bicycling down the beach near his winter home in San Diego...

Then to an airplane where he records his expenses for the day, then writes a report on a Tandy laptop computer...

Then to his next hotel room, where Smaby uses the laptop's built-in modem, linked to the phone, to send that report to a client's electronic mailbox

The Seiko Receptor ($225) is a digital watch plus pager.

and, moments later, receives a document on his portable Panasonic fax/answering machine...

Finally, to yet another phone, where Smaby dons featherweight Sony headphones and clicks on his portable Sony compact-disc (CD) player to unwind with some soothing jazz on his way home to Minneapolis...

Where he notes: "With the gear I carry in my bag, it doesn't make any difference where I am as long as there's a phone line."

Certainly, not all business travelers employ electronics with the passion of Gary Smaby, but millions of mobile executives now rely on an ever-growing selection of electronic wonders to keep them as productive on the road as they are in the office.

Says Michael Ribero, senior vice president of marketing for Hilton Hotels Corp.: "The ideal travel scenario is one that permits an *uninterrupted* work schedule—and recent technological advancements allow me to work in a hotel room, on the road, or in the air."

Ribero works during flights on a 7-lb. Compaq LTE computer that's the size of a notebook, stays in touch from his car with a Panasonic cellular phone, and relaxes by watching movies on his Sony Video Walkman, one of an increasing number of tiny VCRs that play tiny 8mm tapes.

Greyhound Corp. Chairman John Teets relies not only on portable phones, but on portable fax machines. On the road, he plugs his portable Savin fax machine into hotel room data ports to send and receive sensitive documents in privacy as well as comfort.

Likewise, David Masten, chairman/CEO of Cheskin-Masten, a Palo Alto, Calif., marketing research firm, appreciates his Tandy 1100 FD laptop computer as much for security as productivity. "Even in the close quarters of an airplane, my laptop's flat screen makes it difficult for people next to me to read what I'm writing," he says. "Using the laptop is more secure than writing on a pad."

One of the smallest hand-held cellular phones is the Motorola MicroTAC.

A hand-held cellular phone can even be a lifesaver, John Vitta Jr. discovered. The Detroit-area salesman for Ecolab Inc. recently was accidentally locked into a storage compound surrounded by a high fence and barbed wire. As barking guard dogs began circling his car, Vitta pulled his NovAtel phone from his briefcase and called for help.

Clearly, portable—often battery-powered—electronic devices have set road warriors free. The ripple that began 30 years ago with the first portable pagers, and intensified eight years ago with cellular phones and portable computers, is today a tidal wave of increasingly useful—and affordable—compact devices.

Consider electronic pagers. Originally used only by emergency personnel, battery-powered pagers are now worn or carried by nine million Americans in all walks of life. A proliferation of networks transmitting via satellite and/or radio, including national services SkyTel, Metrocast, and Cue Paging, allow subscribers to be beeped in and around most American cities—and, soon, internationally.

Using a pager generally is much cheaper than a cellular phone. Most pagers sell for $150-$400, and basic subscriptions run about $50 a month for national service.

Besides beeping, flashing, or vibrating, the typical pager (weighing only several ounces) displays callback numbers and short messages. For those desiring access to long messages, Cue Paging and SkyTel provide a voice-mail system.

Recently, Motorola combined the pager with a digital watch. Its Wrist Watch Pager ($300) is the size of a sports watch, weighing just 2oz.

Like pagers, cellular phones—some small enough to fit pocket or purse—can be used just about anywhere. That's because cellular telephone service—named for the "cells" or radio coverage areas which serve callers as they move

Sony's 8mm camcorder ($1,100) weighs only 2 lb.

Sony's Video Walkman ($1,200 and up) color TV/VCR fits in the hand.

The Sharp Wizard is an expandable organizer.

about—is now available in 300 U.S. cities. More than two million Americans use cellular phones.

Until the last few years, business travelers were limited to car-mounted "mobile," or heavy shoe box-sized "transportable" cellular phones. While less powerful, the new "portable" or "handheld" phones are more than adequate in metropolitan areas. Typically the size of cordless phone handsets, they're priced from $300 to $2,000.

One of the smallest hand-helds, Motorola's MicroTAC, is the size of a checkbook and weighs 11 oz. The $2,000 unit features speed dialing and call screening, and can store 120 numbers. Among distinctive services, Cincinnati Microwave's portable phone (a special Motorola Ultra Classic, $795) features a "Plus" button, connected to company headquarters, offering free roaming or service assistance.

Car phones also are becoming more innovative. In its upscale 1991 Plymouth, Dodge, and Chrysler models, Chrysler Corp. features Visorphone—a hands-free, speakerphone-style cellular phone mounted on the driver's sun visor ($869 plus installation). After punching in a number, the driver can talk while keeping both hands on the wheel. The unit automatically mutes the car radio during a call.

Cellular phone users pay handsomely for the convenience. Besides regular long-distance phone rates, they are charged a monthly service fee of approximately $30-$60, which includes some airtime, plus 35¢-65¢ for additional minutes, whether receiving or calling.

Through a small interface, today's cellular phones also can send and receive data from portable fax machines and computers. Among the portable fax machines are the Medbar Portafax 2001 ($700), a paperless unit that displays data on any computer or TV screen; Panasonic KX-F80 ($850), which doubles as an answering machine; Mitsubishi Acces, with built-in speakerphone ($1,299); and Ricoh PF-1 ($1,695), the smallest portable fax machine capable of sending and receiving letter-size documents. The size of a business letter, the PF-1 is 2 in. thick and weighs 5.5 lb. Most fax machines, by the way, double as copiers.

While portable computers can telecommunicate via cellular phones, Intelligence Technology Corp. recently launched what it calls the world's first *cellular* laptop computer—a portable computer and cellular phone combined (ITC 386 CEL; $8,700).

Benefits of exchanging computerized data over the phone while on the road—whether using cellular or standard land lines—include tapping into distant mainframes and electronic mail systems. But whether a portable computer is linked to a phone line or not, it's a grand traveling companion. Today, practically any computing that can be done in the office can be done on the road, thanks to small but powerful portables.

Among the most innovative laptop computers (these generally weigh 10-15 lb) is GRiD Systems' new GRiDCASE 1550sx. It's the first laptop PC with a "mouse" electronic pointing device built into the keyboard. Price: $6,295.

Notebook computers resemble thick hardcover books, easily fit into a briefcase and generally weigh less than 7 lb. State-of-the-art models include the Texas Instruments Travelmate 2000 ($3,999) and Compaq LTE/286 Model 20 ($4,600), both of which feature a 20MB hard-disk drive; 4.4-lb. NEC UltraLite ($2,500); Zenith MinisPort ($1,999); Tandy 1500 HD ($1,999), the only notebook computer weighing less than 6 lb with floppy and hard-disk drives; Toshiba T1000 ($999).

Even smaller than a notebook computer is the "palmtop" Atari Portfolio

IT'S THE WAY WE PUT THEM TOGETHER THAT SETS US APART.

At Motorola, we believe a cellular phone not only should work the first time out of the box, but we feel it should also be working years down the road.

And after we build them, we make it our business to ensure they're built right.

We put our phones through one of the most rigorous testing programs in the industry, exposing them to everything from temperature extremes to assorted shock and drop tests.

And this painstaking attention to quality pays off. Over the years the quality built into our phones has won over more than customers. It's also won some very prestigious awards. In 1988, Motorola received the first Malcolm Baldrige award, given by the President of the U.S. to recognize the quality of Motorola's equipment and services. And this year, Motorola received Japan's 1989 Nikkei award for creative excellence in products and services.

The fact is, when it comes to quality and durability, our phones don't just stand out.

They stand alone.

MOTOROLA
1-800-331-6456

($400), the size of a VHS videocassette and weighing less than a pound. Yet, it can perform a wealth of spreadsheet and word-processing functions, besides serving as an appointment calendar and calculator.

Smaller still is a device that's not quite a personal computer, but much more than a pocket calculator. The "electronic personal organizer," small enough to fit pocket or purse, serves as a sophisticated electronic notepad for appointments and phone numbers. Some organizers also can store a sizeable number of notes, which later can be downloaded into a computer system at the office.

Most popular organizer is the Sharp Wizard, available in eight models ranging from $100 to $400. The more advanced can store up to 35 pages of memos and several thousand phone-directory and calendar entries. Optional integrated circuit cards can expand the Wizard into a travel guide, language translator, spreadsheet, and more.

More specialized and less expensive (below $200) than electronic organizers are a bevy of pocket-sized electronic

Seiko's Multilingual Translator translates instantly.

novelty items, including pocket language translators, money exchange calculators, business-card files, and automatic phone dialers.

On the horizon are portable computers that recognize handwriting and/or the human voice. PCs that replace the keyboard with either a pen and electronic pad or a microphone soon will be common.

Les Spielman, president of Hospitality Automation Consultants, a hotel-technology consulting firm in North Hollywood, Calif., foresees the not-too-distant day when he'll have a laptop computer that will act like a real live traveling secretary.

"I'll be able to tell it to get me certain flight information, it will dial up the Official Airline Guide and get the information downloaded, and read it back to me in a synthesized voice," he says. "And this is the kind of traveling secretary that won't get me in trouble with my wife."

Terry Breen is a Chicago-based freelance writer and former senior editor of LODGING HOSPITALITY magazine.

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FOR INFORMATION, CIRCLE NO. 15

Books *(continued from page 95)*
presenting similar material. Compare, for example, a bird's-eye view of ancient Rome by the 16th-Century architect, painter, and topographer Etienne Dupérac to the 1982 aerial photomaps of Venice by the Compagnia Generale Ripreseaeree di Parma. Dupérac's less precise, but more synthetic, view spoke to contemporaries who identified Humanist values with Classical artifacts. The photographers documented the status quo for the planning board that governs development around Venice's lagoon. Taking representation seriously demands that we acknowledge the differences between these two images as the intention of their makers, and not as the inevitable result of the medium. The catalogue's authors assess intention by looking at the images through the eyes of their intended audiences.

The CCA has the best collection of architectural images formed in Modern times, but it cannot compete with Florence's Uffizi or Vienna's Albertina in the number of holographic drawings by major architects. Instead, the CCA has a unique collection of the images distributed outside the restricted circle of people actively involved in any architectural project. The catalogue's generally excellent selection of essays addresses the various forms of this re-presentation of architecture to the culture at large.

Hélène Lipstadt, whose essay presents this theme most directly, writes about treatises, self-authored monographs, competitions, and exhibitions. Here the architect is personally involved in the "exportation" of images, and outsiders get their best chance to see the drawings that originated in the design and production process. Lipstadt explores the way these images are transformed by their new, public context.

Photographs, unlike drawings, are produced at a greater distance from the design and construction process, but their power for diffusing information is immense. Eve Blau's essay, "Patterns of Fact: Photography and the Transformation of the Early Industrial City," is about buildings and topography in the 19th-Century European city. She reveals the way the subject, format, and sequence of photographs in books "documenting" the city supported a class-determined urban renewal policy.

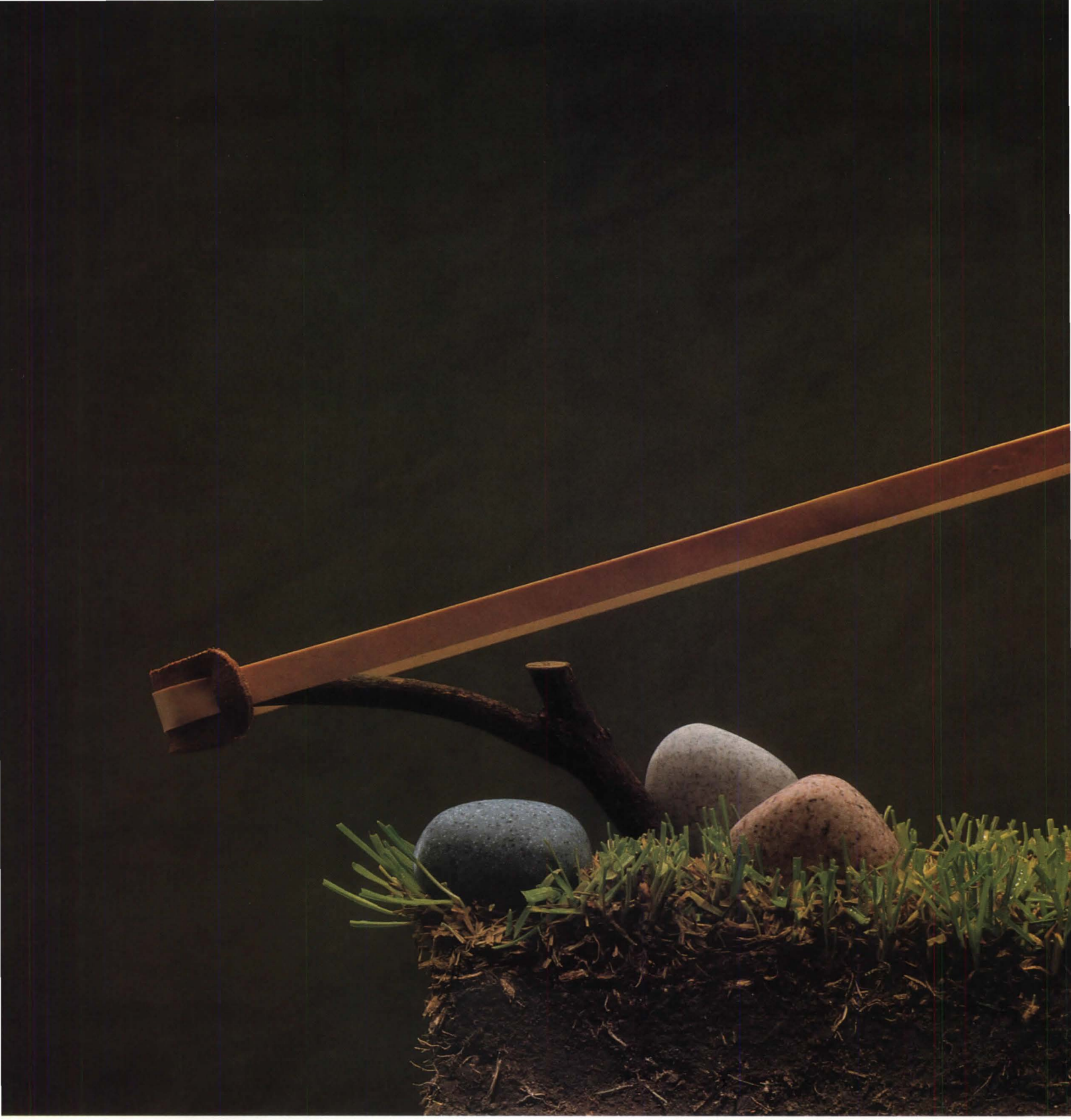
Edward Kaufman's "Architecture and Travel in the Age of British Eclecticism" is also concerned with set and sequence, particularly the progression of a voyager's itinerary and the set of images that illustrate the monuments seen. The images in this group document the reception of architecture in the 18th and 19th Centuries by intrepid enthusiasts for whom buildings were only one of the delights of distant places.

"Architectural Projection" by Robin Evans focuses on the medium of drawing more directly. He argues for a design process that takes place at the drawing board, under the influence of drafting conventions. Fine essays on stage sets by William McClung and on computer graphics by Robert Bruegmann, scholarly comments on the work displayed, and over 500 exceptionally well reproduced illustrations complete the publication.

Architecture is the great cultural artifact of our time. Its audience has expanded well beyond the borders of the profession, generating an ambitious and diverse clientele and an expanding number of popular magazines. *Architecture and Its Image* can expand the scope of discussion; it presents objects once considered peripheral to the creation and criticism of the physical environment. Through the catalogue's collection of images we find a fresh and exciting picture of what architecture has meant to the world at large.

David Friedman ■

The author is an associate professor in the architecture school at MIT and author of Florentine New Towns: Urban Design in the Late Middle Ages *(Architectural History Foundation), winner of the Society of Architectural Historians' Alice Davis Hitchcock prize for 1990.*



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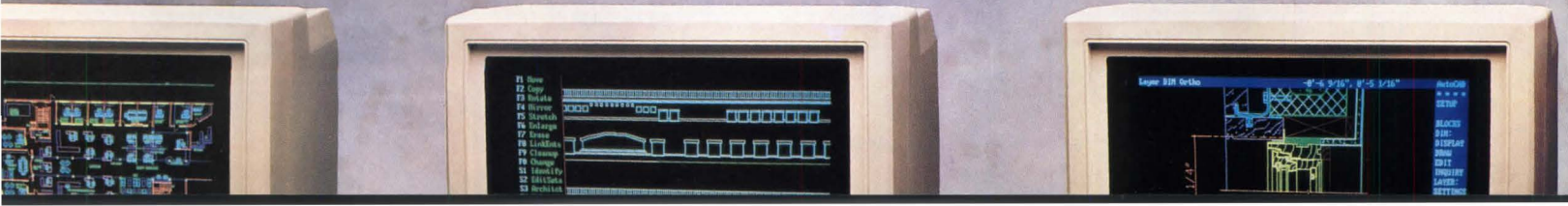

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Progressive Architecture 1990 Annual Index

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P/A Classified

Situations Open

Faculty of Environmental Design
Academic Position

The University of Calgary Faculty of Environmental Design invites applications for a five-year limited term faculty position in the Architecture Program effective July 1, 1991. There is potential for this position to be converted to tenure-track at the end of the five-year term. Responsibilities include primary teaching in architectural history and theory, secondary teaching in architectural design studio, supervising graduate students and developing a program in research, scholarship and creative activity.

Qualifications include a professional advanced degree in architecture or architectural history as well as demonstrated teaching and research abilities.

Salary commensurate with qualifications and experience.

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. The University of Calgary has an Employment Equity Program and encourages applications from all qualified candidates, including women, aboriginal people, visible minorities, and people with disabilities.

Applicants should send a detailed curriculum vitae, the names of three referees and examples representative of research, professional and/or teaching work by March 1, 1991 to:

Mr. J.L.S. Brown
Chair, Search Committee
Faculty of Environmental Design
The University of Calgary
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4

THE UNIVERSITY OF CALGARY

DEPARTMENT OF ARCHITECTURE
COLLEGE OF ARCHITECTURE
ART & PLANNING

Position: Assistant, Associate, or Professor of Architectural Technology

The Department of Architecture is seeking three candidates at the Assistant, Associate or Professor level for positions in the technology area of the curriculum. Candidates are sought in the following areas: 1) structures; 2) HVAC, mechanical and passive solar systems; and 3) computer graphics. In addition to their specialty, candidates should be qualified to teach in at least one other area of technology (including building technology, site planning, lighting and acoustics) and have the ability to contribute to the undergraduate and graduate programs. Appointment criteria will include previous teaching experience; professional degrees at the graduate level; professional experience and research in architectural technology. Academic scholarship and teaching are obligations of this position. Rank and salary are commensurate with experience. Because this position should be filled by the Fall 1991 term, curriculum vitae and supporting materials must be submitted by January 15 to:

Professor J. Ochshorn
Technology Search Chair
Department of Architecture
143 E. Sibley Hall
Cornell University
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Department of Architecture
University of California
at Berkeley

The Department of Architecture, U.C. Berkeley, is seeking two tenure track faculty starting in the 1991-92 academic year, at the assistant or associate professor level. Candidates will be expected to teach design studio at the undergraduate and graduate level and to conduct lecture courses and perform high quality academic work in one or more of the following major areas of the architectural curriculum: professional practice, design theories and methods (with emphasis on computer applications), social and cultural factors, architectural history and theory, urban design, and building technology. A Master's-level degree and a record of scholarly and/or professional achievement are required.

Preference will be given to individuals who can demonstrate the ability to initiate and carry out multidisciplinary teaching and research or creative work within an architecture department. The candidate should have an agenda and genuine enthusiasm for work within the university context.

Application forms are available from the **Secretary to the Search Committee, Department of Architecture, University of California, Berkeley, CA 94720.** Completed applications must be postmarked no later than January 31, 1991. Pending budget approval, appointments will become effective July 1, 1991.

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FACULTY POSITION
IN ARCHITECTURE

Princeton University School of Architecture is seeking candidates for the full-time position (tenure-track) of Lecturer, or Assistant Professor of Architecture. Teaching responsibilities include participation in the undergraduate and graduate programs. Candidates must demonstrate the ability to teach in a design studio, and in one of several specialized areas (theory & criticism, technology, urbanism, computer applications, etc.). Desirable qualifications are: previous teaching experience, recognized excellence in architectural design, and scholarship in one of the areas of specialized interest. The position is to begin in September 1991. Application letter, curriculum vitae, and several examples of design work, should be sent before January 15, 1991 to:

Faculty Search Committee
Princeton University
School of Architecture
Princeton, NJ 08544

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Penn State's Department of Architecture anticipates availability of tenure track and visiting positions at the assistant or associate professor levels to teach architectural design beginning Fall 1991.

Emphasis is on inquisitive design and criticism with ability to teach in related areas of 1.) theory, 2.) history, 3.) technology, or 4.) management. Desirable credentials include: advanced professional degree in architecture, or equivalent education, practice and teaching; evidence of teaching competence; high quality design; research and publications; and professional registration.

Applications received by January 15, 1991 will be assured consideration. However, all applications will be considered until positions are filled. Submit curriculum vitae and names and addresses of three references to: **Professor Peter Magyar, Department Head, 206 Architecture Unit C, Box PA, University Park, PA 16802.** Affirmative Action/Equal Opportunity Employer. Women and Minorities are Encouraged to Apply.

Faculty Positions
University of Florida

The U.F. Dept. of Architecture anticipates Fall 1991 positions in History, Theory, Environmental Technology, and/or Undergraduate Design. A terminal degree in the specialty is required; Ph.D. and professional experience is desirable. Contact: Fred Morgan, Chair, Faculty Search Committee, Department of Architecture, University of Florida, Gainesville, FL 32611, (904) 392-0215. Deadline for all materials is 1/28/91. AA/EOE.

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DEPARTMENT OF ARCHITECTURE
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ART & PLANNING

Position: Assistant, Associate, or Professor of Architectural Design

The Department of Architecture in the College of Architecture, Art, and Planning at Cornell University is seeking candidates at the Assistant or Associate level for a positions in Architectural Design in the graduate and undergraduate programs. Candidates must be qualified to teach architectural design as well as courses in another area of the curriculum, such as building construction, architectural theory, profession of architecture, design communication, etc. Appointment criteria will include previous teaching experience, scholarly preparation, creative work, or research in design. Academic scholarship and administration are obligations of these positions. Rank and salary are commensurate with experience. Because this position should be filled by this Fall 1991 term, curriculum vitae and supporting materials must be submitted by January 15, 1991 to:

Prof Werner Goehner
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BUILDING ENGINEERING

Concordia University. Centre for Building Studies. The Centre has an opening for a tenure-track faculty position. Applications are sought from candidates whose interests and expertise lie in one or more of the following areas: Architectural Engineering; Lighting and Building Environment; Building Science; and Building Envelope. Successful candidates will have a Ph.D. or equivalent related to any of these areas, accomplishments in terms of research publications and related experience. Duties include teaching at graduate and undergraduate levels, supervision of M.A.Sc. and Ph.D. students and research. In particular, a major experimental facility has been planned and the position requires the participation of the applicant in its development. Although the language of instruction and Concordia University is English, bilingualism (English and French) will be an asset. Salary and rank are negotiable depending on academic qualifications and experience. Send a complete resume with three references to: **Dr. P. Fazio, Director, Centre for Building Studies, Concordia University, 1455 de Maisonneuve Blvd. West, Montreal, Quebec, H3G 1M8.** In accordance with Canadian Immigration Policy, the advertisement is directed at Canadian citizens and permanent residents. Women are particularly encouraged to apply.

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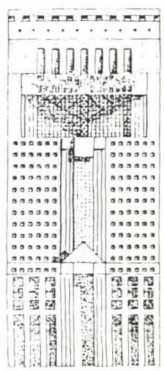

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The School of Architecture & Planning, University of New Mexico seeks candidates for tenure track appointment at Assistant or Associate rank. Position emphasizes natural systems in large scale site planning and urban design. Master's degree in architecture, landscape, urban design or planning required. Review of applications begins March 1, 1991. Contact: **Search Committee, School of Architecture & Planning, UNM, 2414 Central SE, Albuquerque, NM 87131, (505) 277-2903.** UNM is an AA/EEO employer.

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Situations Open

University of Tennessee - Knoxville. The School of Architecture is seeking candidates for two (2) tenure-track positions; one (1) Associate Professor and one (1) Assistant Professor. Salary commensurate with experience. The appointments will begin on August 1, 1991. Candidates should be prepared to teach design as a rigorous inquiry holistically addressing both cultural and environmental influences impacting the built environment. Candidates shall also be expected to teach in a related field of expertise as well as engage in scholarship, research and/or practice.

Applicants shall have a M. Arch Degree, and be legally licensed to practice architecture. Please send a curriculum vitae, portfolio, and the names, addresses, and phone numbers of three references to: **Faculty Search Committee, c/o Dean's Office, College of Architecture and Planning, 217 Art and Architecture Building, 1715 Volunteer Blvd., The University of Tennessee, Knoxville, Tennessee 37996-2400.** Review of applications will begin on February 1, 1991, and continue until the positions are filled. The University of Tennessee is an EEO/AA/Title IX/Section 504 employer. We encourage applications from women and minority candidates.

DEPARTMENT OF ARCHITECTURE
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ART & PLANNING

Position: Senior Position in Architectural Theory and Design

The Department of Architecture in the College of Architecture, Art, and Planning at Cornell University is seeking candidates at the Senior Academic level for a position in Architectural Theory and Design. Candidates should be qualified to teach lecture and seminar courses in architectural theory, as well as at least one design studio each academic year in the graduate and undergraduate programs. Appointment criteria will include previous teaching experience, scholarly preparation, creative work, or research in design. Academic scholarship and some administration are obligations of these positions. Rank and salary are commensurate with experience. Because this position should be filled by the Fall 1991 term, curriculum vitae and supporting materials must be submitted by January 15, 1991 to:

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Circle **No. 351** on Reader Service Card

For the 38th time, *Progressive Architecture* will bring you the P/A Awards in our January issue, and this means that the last few weeks have been busy ones for our staff. *We customarily tape the last day of jury proceedings and then have transcriptions made, to supply the comments that accompany our spreads on the winning entries. This is not foolproof; some of the best comments come in the heat of argument, when, despite our pleas to take turns, the jurors all begin to talk at the same time. ("How can we have a discussion and not talk at the same time?" protested one of this year's jurors.) Another problem is the tendency of jurors to talk about projects with their hands, gesturing at relevant images without describing them orally, so we get on tape something like this: "Now I'm really impressed with this move here, the way it sort of goes like this, but then when you turn the page you see this stuff going on . . ." And finally, there are audibility problems. We had to rack our brains for a while last year to figure out what a juror meant by "this poached-egg stuff" before we realized the transcriber had misheard "poché."*

. . .

This year's transcribers had trouble with "funicular," a word that seems to be in these days, as we heard it often from different jurors. If you don't have a dictionary on your drawing board, ours says "1: dependent on the tension of a cord or cable; 2: having the form of or associated with a cord; 3: relating to or being a funiculus." The only trouble is that these definitions are for an adjective, and our jurors used it as a noun. The only possible nominal definition seems to be a "cable railway." "Funiculus" means "1: a bodily structure suggesting a cord, as a: UMBILICAL CORD, b: a bundle of nerve fibers, c: SPERMATIC CORD; 2: the stalk of a plant ovule." You figure it out.

We also continue to hear "intervention" often. This is a buzzword that won't go away. We suppose that its four syllables and abstract quality lend it a loftier cachet than the word it usually replaces, i.e., "building." But if "funicular" and "intervention" are in, "celebrate," while popular among entrants, was condemned by the research jury as overworked, especially when used in reference to urban design studies — it seems that it's right up there with balloons in renderings of street scenes. (Did someone say "pedestrian mall?") Regardless, our 25 winners will, come January, have cause to, uh, make merry.

. . .

Photos: Nick Wheeler

Larger-than-life Legos in Enfield.

Lego Day Care Center by Jeter, Cook & Jepson: our childhood dream realized.

In the awards program, the jurors (and the editors) review over 800 representations of unbuilt projects; it's gratifying to see the best ones get built (and most of them — two-thirds, by our own accounting — do see the light of day in one form or another). But for those of us who grew up with Tinkertoys, Lincoln Logs, or Legos, there is a whole file of unbuilt projects from childhood stored away in our minds. When we were kids, we always seemed to use such toys to make buildings (although Legos were also suitable for making airplanes, robots, or free-form sculpture, as non-architectural children did). Legos taught us about structure, color, and proportion, and finally taught us the limits of modular design. Most important, though, was the day we began to think of Lego buildings as models of something larger, and learned about scale. We tried to picture what our Lego creations would look like at roughly 50 times their size.

Now, with the completion of the Lego Company's in-house Day Care Center (above, below left) at its Enfield, Connecticut headquarters, architects Jeter, Cook & Jepson of Hartford have attempted to give us an answer. The architects used enamel-coated aluminum panels to mimic the bright primary colors of Legos, and borrowed the imagery of the blocks' stud-and-tube couplers for skylights and other features.

Interestingly, the center is operated by Kinder-Care, the day care giant whose own architectural image is a bright red roof with a cupola, frighteningly reminiscent of a Kentucky Fried Chicken franchise (proposed motto: "We do children right"). But here, their McChildcare image took a back seat to Lego's own language. **Perhaps Tinkertoy, Inc. could use a day care center. Norman Foster? Richard Rogers? Are you listening?** ■

P/A ADVERTISERS' INDEX DECEMBER 1990

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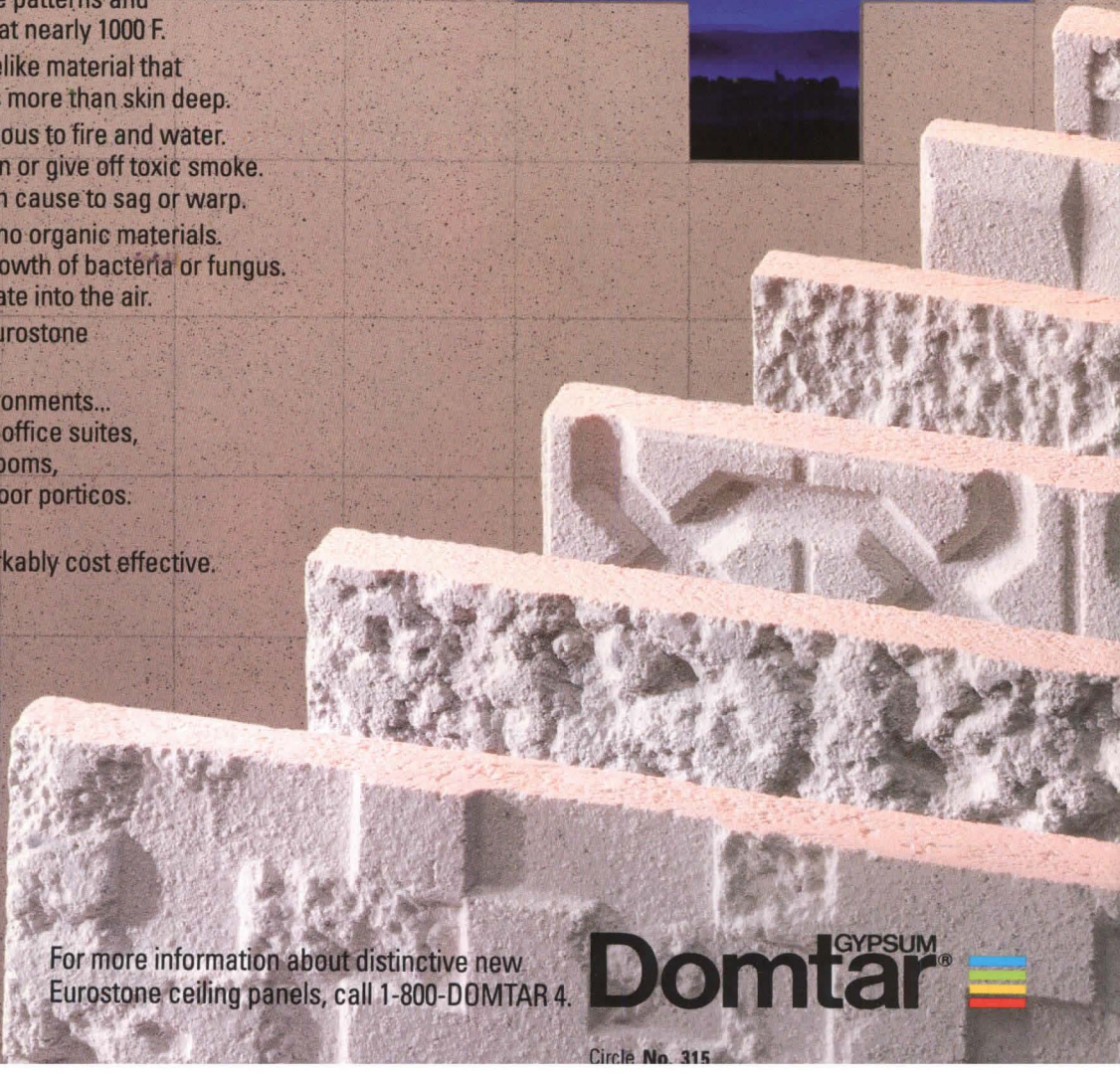

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