75TH ANNIVERSARY YEAR

PA

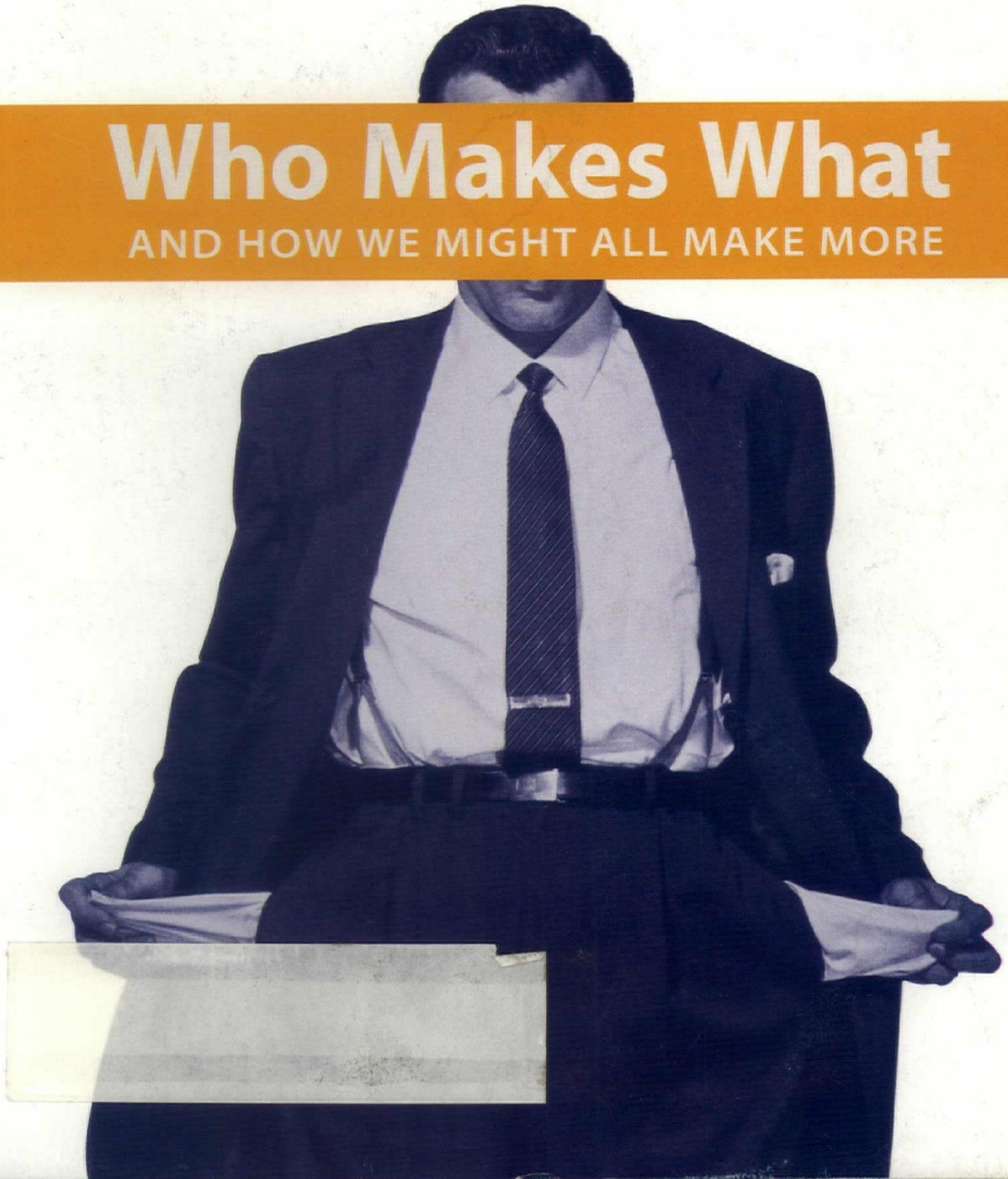
Progressive Architecture | A Penton Publication December 1995

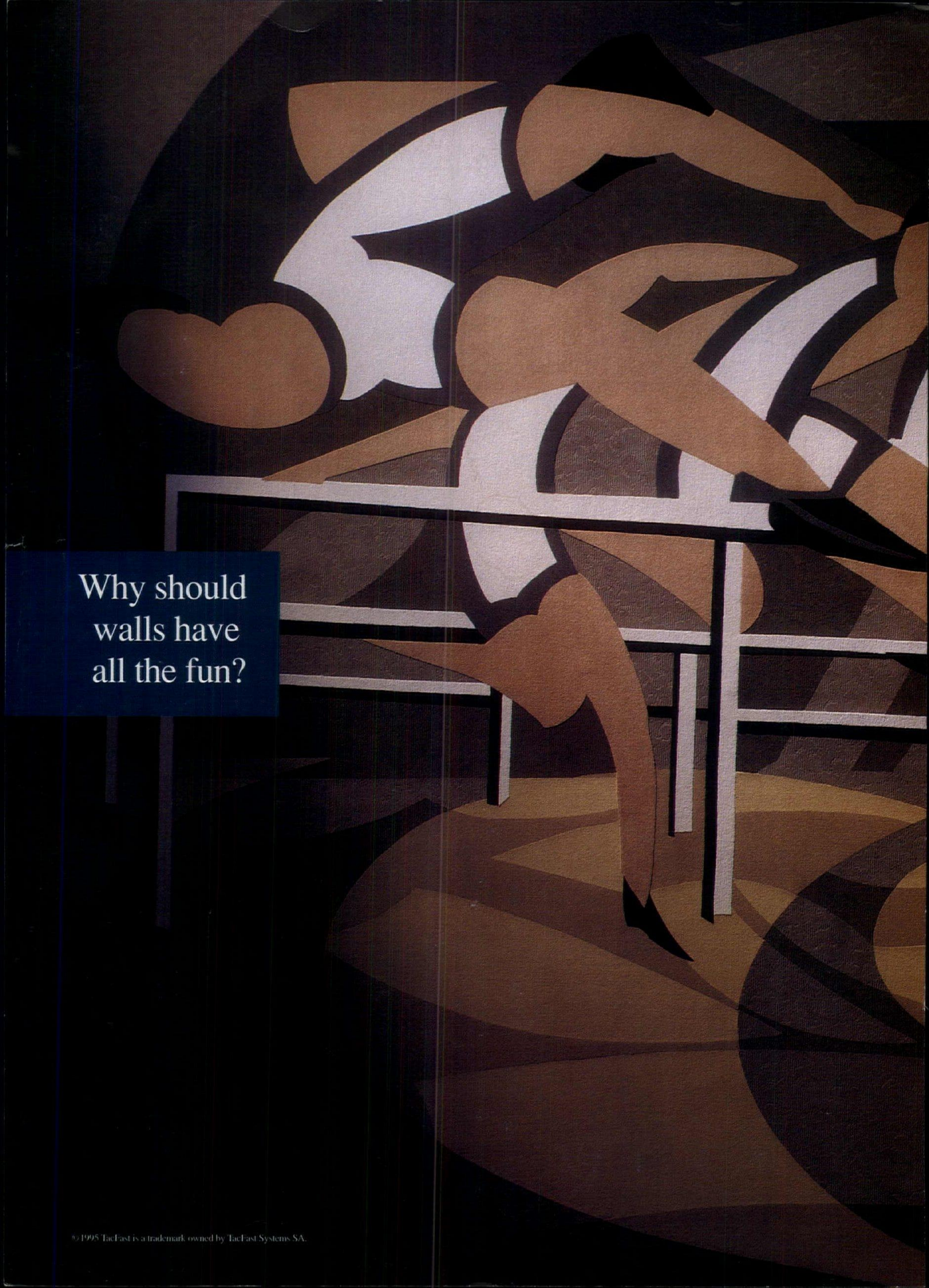
Also in this issue

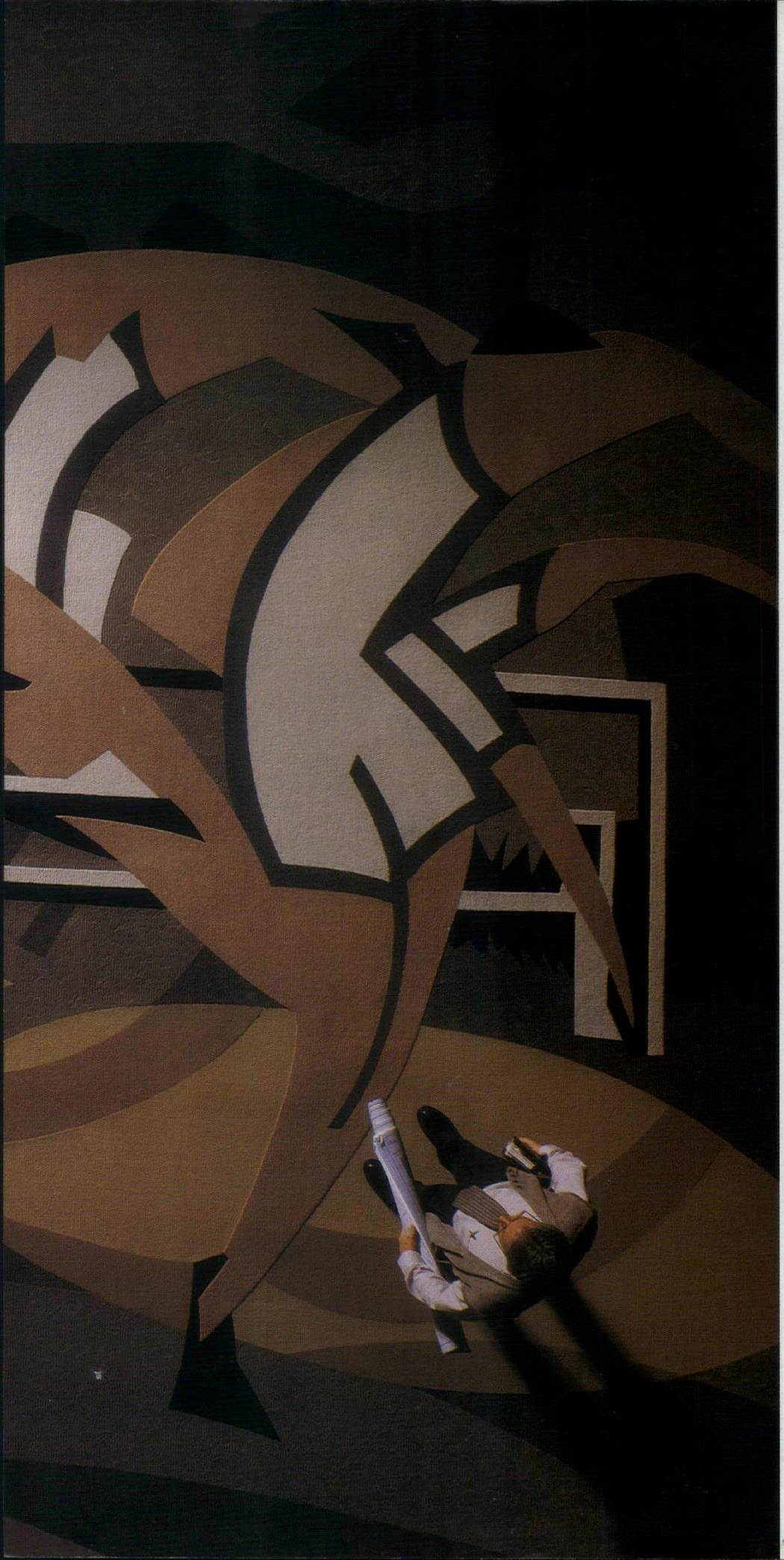
- Process: The Getty
- Profile of a Design/Build Firm
- Washington Metro
- Technics: Cladding

Who Makes What

AND HOW WE MIGHT ALL MAKE MORE







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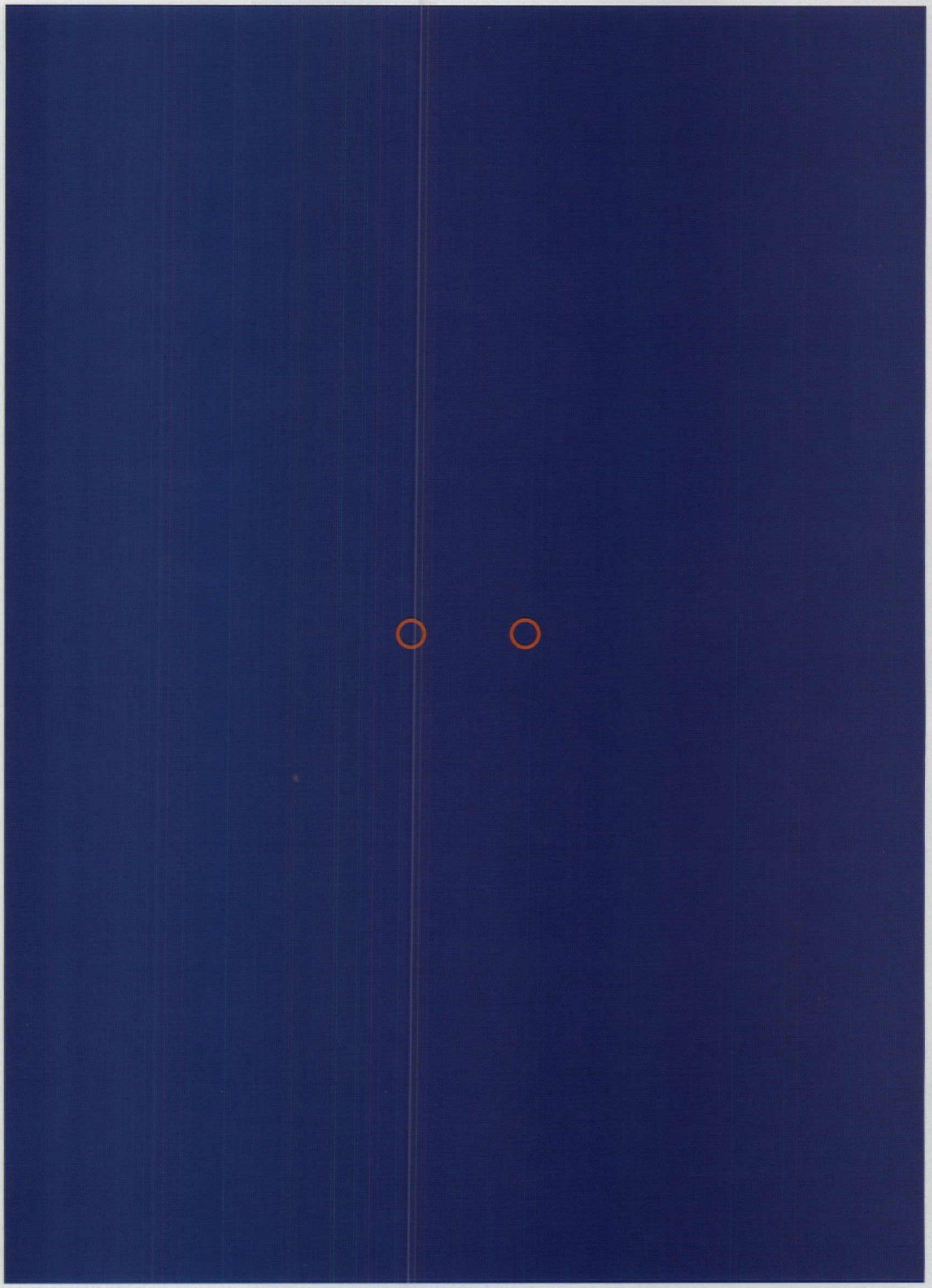

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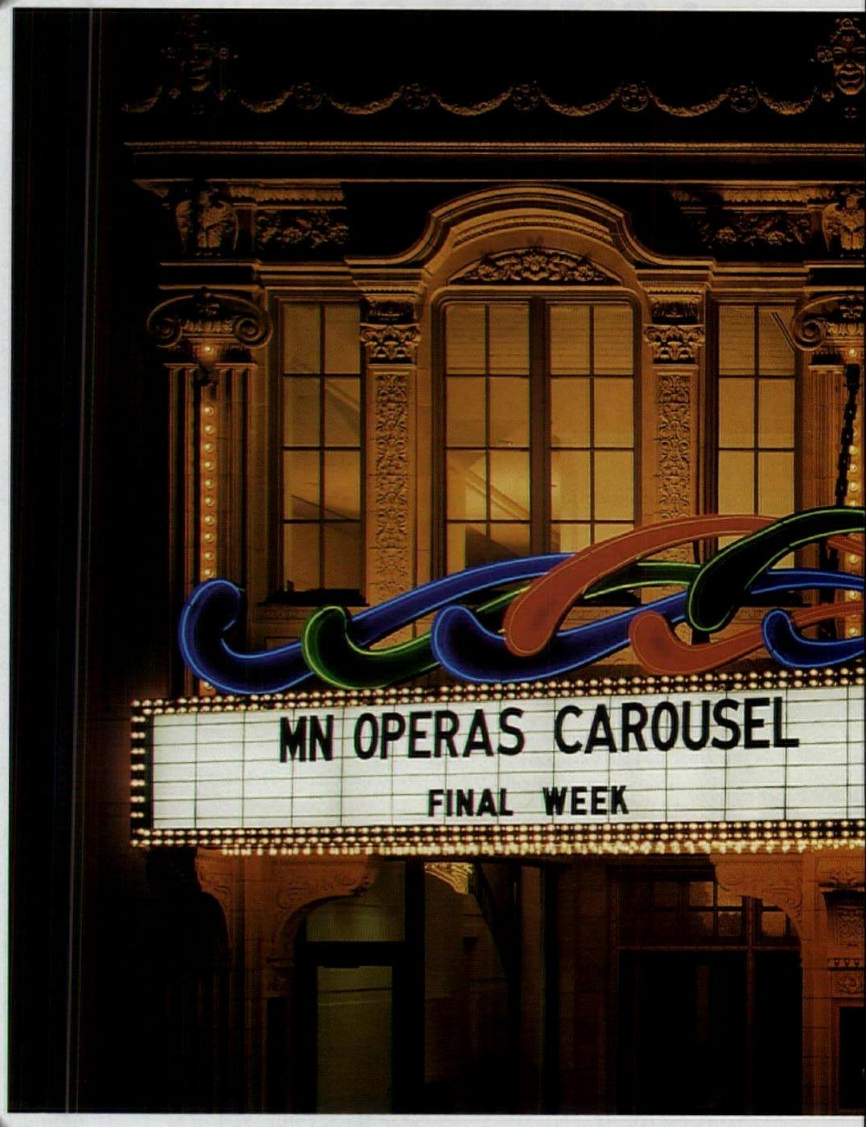


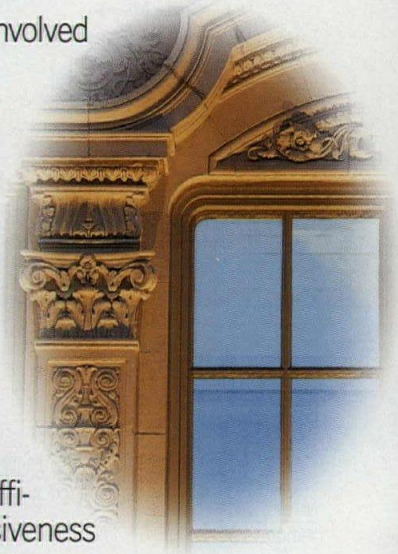
When it opened in 1921, the State Theatre in Minneapolis was hailed as the most luxurious showplace between New York and San Francisco. Sixty years later however, when planning began for a $130 million office/retail complex for the site, it appeared this grand old theatre would go the way of the silent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

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

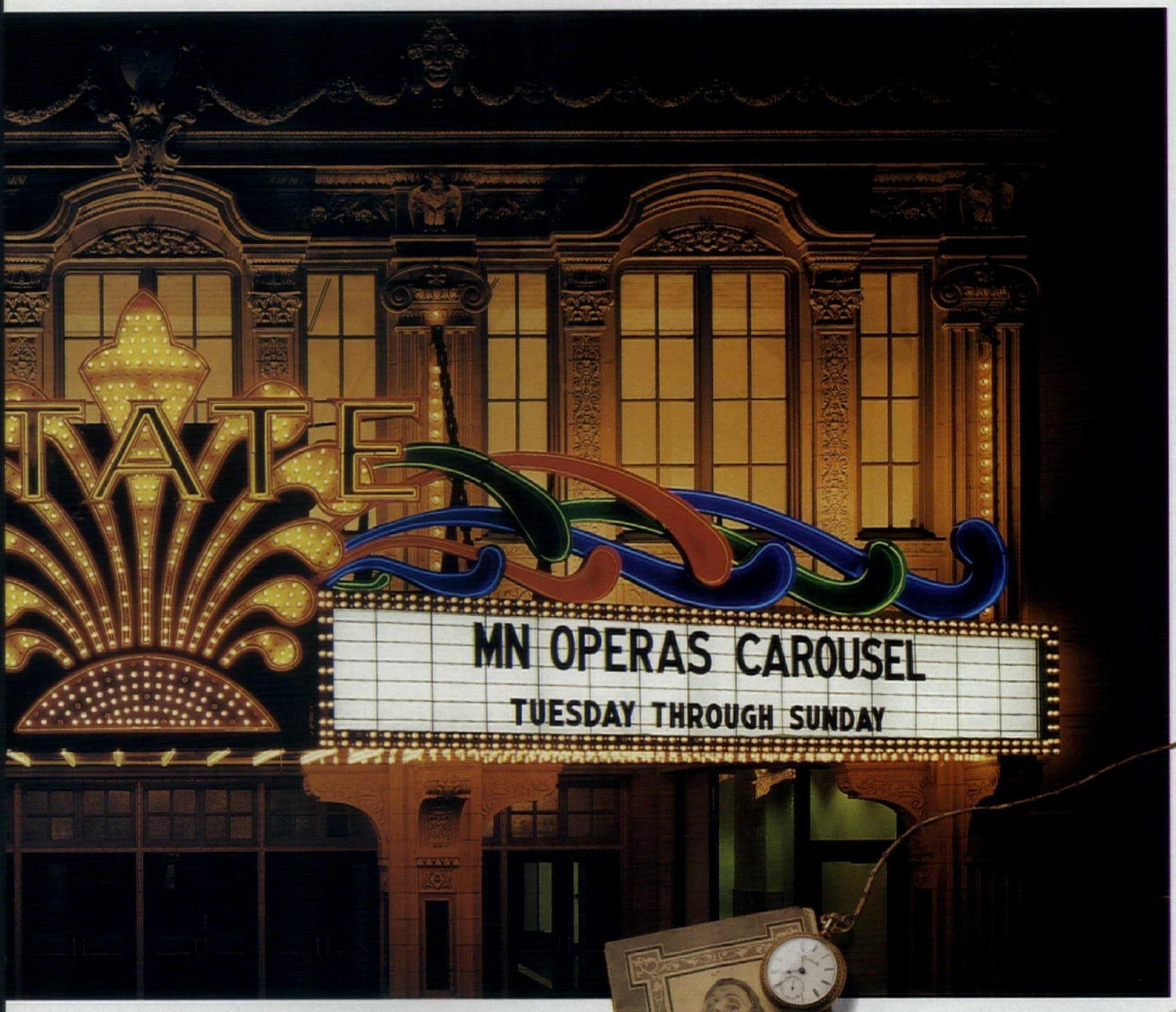
You see, the windows above the theatre's marquee posed a two-sided problem. Not only would they have to fit perfectly and look exactly like the originals, they'd also have to be durable and maintenance-free. And Marvin was the only manufacturer willing to make these unique windows and stand behind them.

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

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



ASKED US TO MAKE THE WINDOWS.



and flexibility are as much a part of every window and door they build as wood and glass.

Today, more than 70 years after it first opened its doors, the State Theatre has reopened as the glittering star of the Twin Cities' cultural scene. And those who've seen it agree that everyone involved in its restoration deserves to take a bow.

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News

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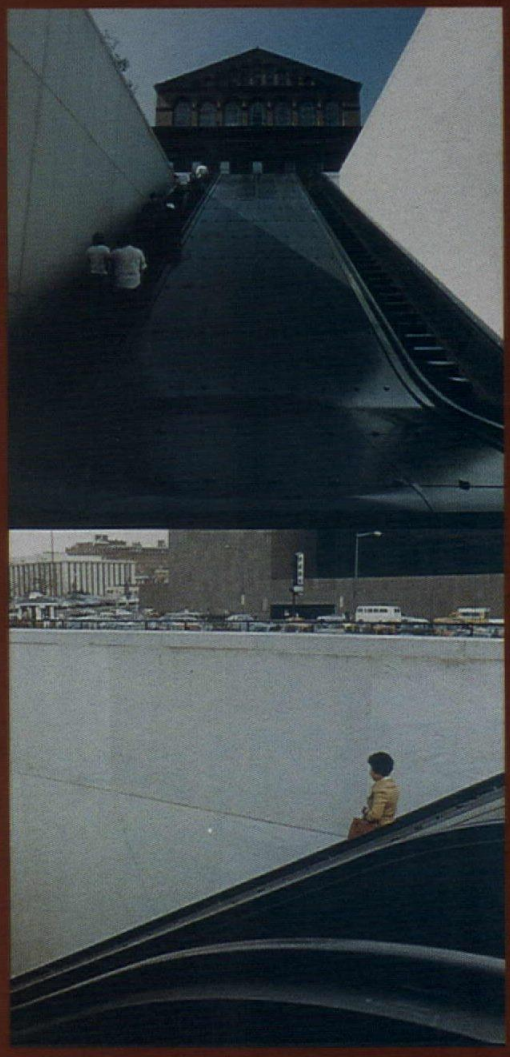
FACING PAGE
America's longest escalators link Washington's Metro to city streets (p. 76).

Features

EDITOR IN CHARGE: John Morris Dixon



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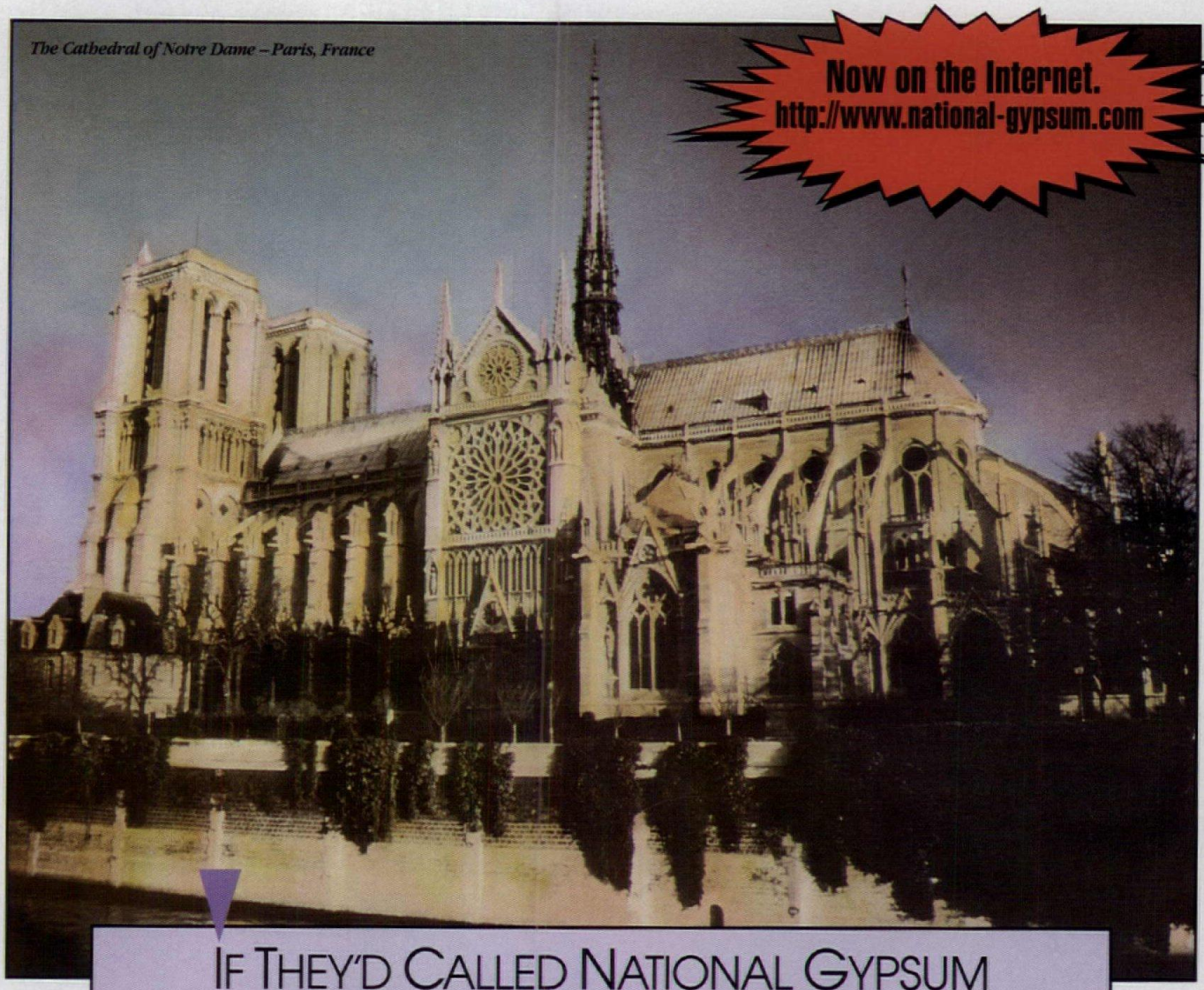

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The Price of the Superstore

The revolution now reshaping American retailing raises issues on which the architectural profession should take a stand. At a recent Municipal Art Society symposium in New York, a retail and management consultant made a disturbing claim: that there can be "no public policy justification" for protecting small merchants from being driven out of business by "Big Box" retailers. The consultant, John Alschuler, of Hamilton, Rabinovitz & Alschuler, asserted that since many New Yorkers get by on tightly limited budgets, the city owes them the cheapest retailing that competitive enterprise is willing to provide; if existing retailers get crushed, so be it. These are not idle words. Thousands of small stores across the country, many of them in downtown and neighborhood commercial districts, have already closed as warehouselike stores have opened on outlying highways, and the pace does not appear to be slowing.

"Big Box" retailing is not good for the typical architect, and it can be crippling to the character of our communities.

One reason to be concerned about Alschuler's argument – presented as part of an exhibition titled "Beyond the Box" (see "Breaking Out of the Box" on page 45) – is the economics of the profession: superstores are not good for the majority of local architects. The work of designing these giant-size, generally low-budget buildings tends to be concentrated inside the large retail companies themselves and in a small number of architectural firms that produce prototypes to be repeated across the country. Most practitioners fare better in a retail economy made up predominantly of small, local stores, whose construction, renovation, and expansion provide jobs for architects within the community.

But that is not the only reason why architects should join the debate over retailing's emerging shape. Architects are concerned about the appearance, the physical organization, and the social well-being of communities – all of which can be undermined by superstores. In New York, one person in the audience suggested there is no reason for government to exercise more than the most routine control over the building and site design of superstores, because customers will vote with their pocketbooks, and good design will win out in head-to-head competition. If only it were so. In fact, customers make many spending decisions strictly on price, jeopardizing the ability of enlightened design to triumph in a laissez-faire environment.

Unless there is intelligent community oversight, the kind of design we're likely to see more of is dull, elementary enclosures set behind acres of asphalt. Maybe the person in the audience thought this could be construed as "good design." But surely architects, trained as they are to distinguish between mere expedience and more worthwhile qualities in the environment, should insist on a higher standard.

Not all superstores, or their designs and locations, are bad. The Municipal Art Society program pointed out that there are several different kinds of superstores, ranging from general-merchandise retailers (like Wal-Mart) to single-category retailers (like Staples and Office Max) to retailers who focus on groceries, augmented by other goods. Certain superstores may fill a real need in parts of the Big Apple, many of whose residents currently drive to the suburbs to do their major shopping. New York may be able to accommodate some superstores with little or no loss to existing retailers. But Big Boxes are likely to harm the business districts of many smaller places like Saranac Lake and Lake Placid, New York, two old towns of great appeal that are currently facing a developer's proposal to build a Wal-Mart along the highway between them. The superstore proliferation is a significant problem at a time when, as Newark architect Brian McGrath noted in a "Beyond the Box" presentation, it is estimated that half of the 4.6 billion square feet of retail space in the U.S. is vacant.

As a society, we have every right to tilt the odds to favor retail districts composed, to the maximum extent feasible, of small stores and independent local merchants – the sort of merchants most likely to spend their entire lives in one community and to invest energy in its social well-being. Public policy is justified in favoring stores that make a community more distinctive and cohesive and ultimately more stable. In the end, the public good cannot be measured solely by the tally at the checkout counter. □

Philip Langdon

Philip Langdon

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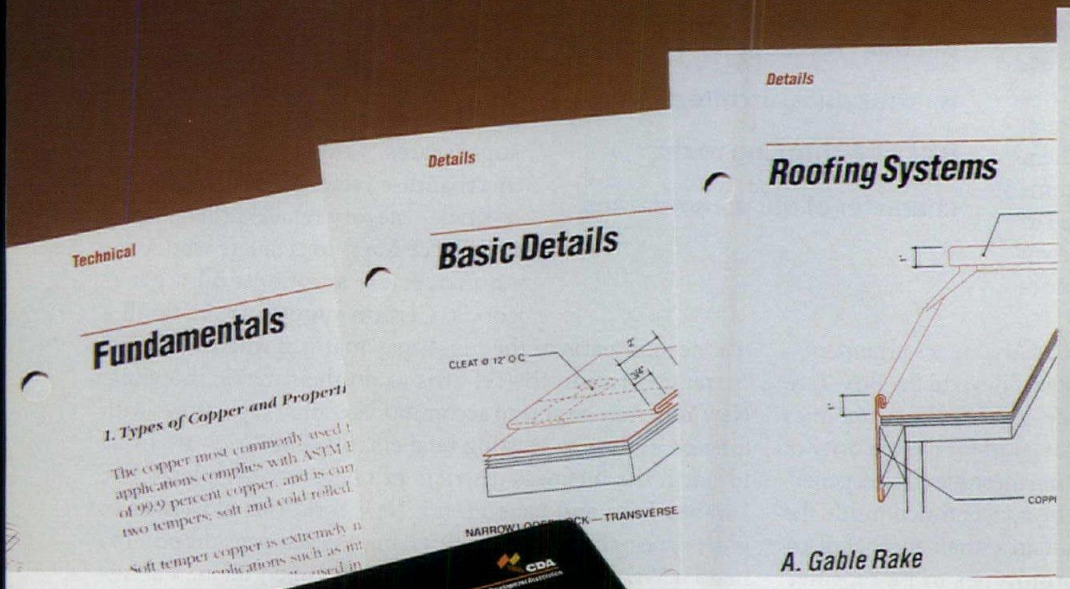

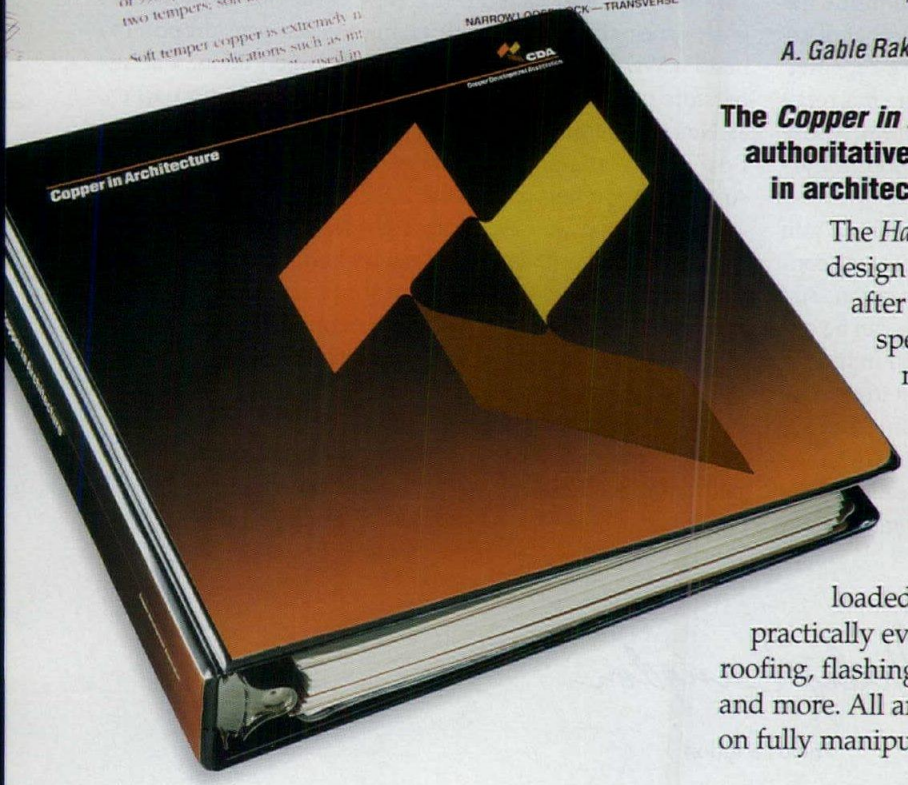

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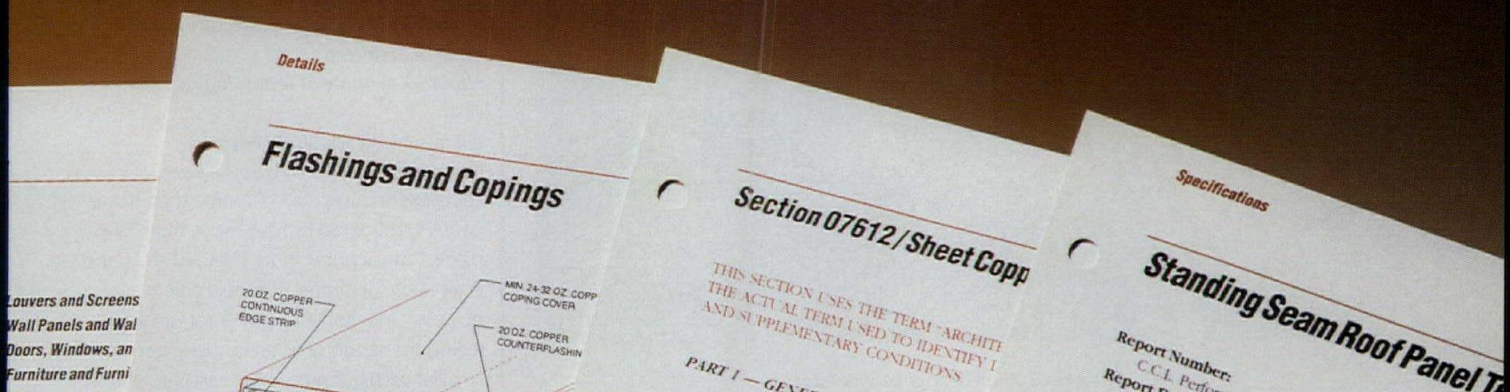

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Views

The Failing Schools

As someone who has led the schizophrenic life of practicing and teaching for the past 23 years, I think your article "The Schools: How They're Failing the Profession" (Sept. 1995, p. 47) puts too much blame on education and does not adequately analyze or question the profession. The atelier system depended on well-educated "thinking" apprentices. That is all we should expect and need from graduates. The profession does not need better technicians: it needs greater awareness and concern. I believe young graduates might best be sought for this quality, along with their capacity to quickly become professional.

Jon Michael Schwarting, Partner
Karahan Schwarting Architecture Company
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New York Institute of Technology at Islip

A Graduate Work-Study Program

Nothing could be more to the heart of this century's architectural dilemma than those issues spotlighted in your September 1995 piece, "The Schools, How They're Failing the Profession." It almost compels one to ask, however, in what way is the profession failing the schools? After all, those not so familiar with our profession can hardly hide their dismay that anyone would pursue a rigorous course of studies through 170 credits, demanding almost sacrificial efforts over what usually extends out to six or more years, to face a competitive job market where one can expect, after vigorously competing for a position, a beginning salary of $22,000 per year.

The problems are multiple, not the least of which is the curious manner by which we as architecture professionals deliver our services within the complexities of the building process, while having little economic investment, risk, or control in the process. As well, answers are not simple and work-study programs, while bridging some of the gaps between the academy and practice, do not address the deeper issues, those issues that have to do with the real value of architecture – as we have defined it today – to the society as a whole. But the most important question and indeed the deep moral issue is, are the schools failing the students? The profession may not exist in its current form when today's graduates reach the prime of their careers, but let us hope that their education prepares them to be productive citizens and professionals willing to stake out territory for a more engaged profession of architecture in a world that desperately needs, desires, and will buy design. *(continued on page 16)*

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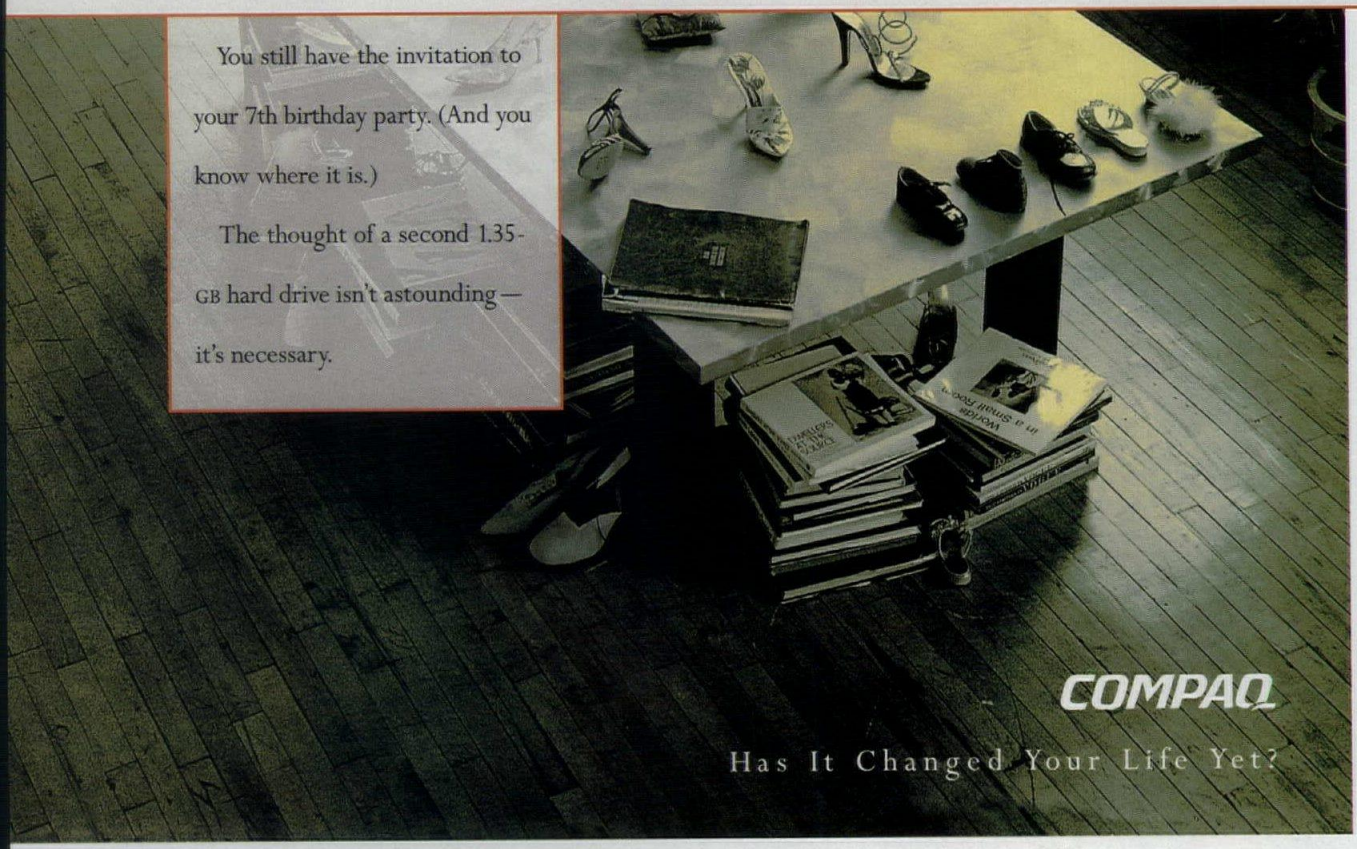

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Has It Changed Your Life Yet?

(continued from page 12)

In 1988, the University of Oklahoma initiated a unique work-study program at the graduate level. Students holding a professional accredited undergraduate degree are placed in offices in Tulsa and work full-time while pursuing a Master of Architecture degree. Classes and studios are at night and on Saturdays. Excellent facilities are located adjacent to downtown at the University Center at Tulsa, and students' theses are based around ongoing urban design problems for which the city serves as a real-time laboratory. The faculty is largely composed of practicing architects, developers, and related professionals who run full-time businesses, and teach as adjunct faculty, because they love it. Typically, students require two years and one semester to complete the program. They graduate, however, without a mountain of debt, and with a considerable amount of professional experience to go along with their graduate degree. They obtain IDP points, and are frequently ready to sit for the ARE upon graduation.

James Patterson, AIA, Professor and Director
Urban Design Program in Architecture
University of Oklahoma at Tulsa

BAC's Concurrent Education

In Michael Crosbie's article (Sept. 1995. p. 47) entitled "The Schools: How They're Failing the Profession" no mention was made of the Boston Architectural Center, a serious omission in our view, since the BAC has conducted a successful and well-known *concurrent* educational program for years.

Our curriculum has two components – academic studies and professional practice – each with its own faculty. In recent years the Practice Component faculty, comprising volunteer professionals, has developed detailed procedures used to monitor and measure office-based learning, to evaluate student progress, and to advise (mentor) degree candidates in their office-learning situation. Under guidelines originally developed by the American Council on Education, the BAC's version of Contract Learning considers the practice setting as a laboratory-for-growth, where the students' contribution of services is reciprocated by the supervisor's willingness to lead or instruct – as a product of practice.

We strongly believe that the Boston Architectural Center offers our students an established, proven alternative design education, through an exchange that enriches everyone involved. As a faculty we are proud to volunteer our time and expertise in support of a center for learning that strives every day to connect formal education with the practicing profession.

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Boston Architectural Center

Students As Collaborators

Michael Crosbie's article: "The Schools: How They're Failing the Profession" (Sept.1995, p. 47) was superb but I must offer one correction ... and fill in a gap.

You were generous in quoting my observations and my note that at SFIA our educational "program gets some of its best suggestions for new courses, lectures, and exhibits from students." That may be an accurate quote as far as it goes, but I hasten to amend it. We have to *(continued on page 18)*

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(continued from page 16) go well beyond "taking suggestions" ... that would be no more than the traditional top-down paternalism we're questioning.

Our students are collaborators, and we encourage them to start and run any classes they need that we don't provide. We don't decide, they do. Our job is to show them how to do it. For example, a group of our students started a lively Ecological Architecture lecture series, which evolved into a regular class, expanded into a multicourse certificate program, and soon will be a full-fledged Master of Ecological Design degree program. With a little help with curriculum planning, students can administer a course and find experts to speak on course topics as well as any faculty member can.

We can accommodate changes like this easily ... ours is a school devoted to experimental reforms. Other schools aren't so fortunate. It is extremely difficult to create structural reform in most schools for the simplest of reasons: Tenured faculty run the show. They're comfortable and have little incentive to make changes. If some educators can live with themselves, as they have for many years, fully aware of the surveys and knowing that over 80 percent of graduates feel cheated in major aspects of their education, it should be obvious that they won't change voluntarily no matter how dissatisfied the graduates become.

But there are many other educators who are eager to make changes. They have been frustrated for years by their inability to get a consensus of tenured colleagues and/or administrators to go along. It's remarkable, for institutions devoted to research, how little research there has been on problems and solutions in architectural education. This isn't due to the lack of desire of some to do it, it's due to the resistance they face from those who have the power and who are entrenched in the very old ways of doing things. The reformers need support and help. I strongly suggest you interview these people (you'll find at least one in every school) and get their specific, concrete recommendations out into the arena of nationwide professional discussion ... much as you have done with your schools article. A little public recognition of those who offer concrete, positive, practical solutions would do wonders. They simply don't get much help or respect otherwise, and it wears them down.

Survey the students. I received dozens of excellent suggestions on how to improve the school by surveying students at UC Berkeley while teaching there some hears ago. At SFIA, we've created a master list of 30 specific problems and possible solutions in architectural education. I'm sure others have found many more. We'd love to seem them all in print.

Over the past couple of years, I've seen many successful examples of innovative changes in various design schools; I'm sure you could find many more. The problem is that other schools aren't usually aware of these successes, and they have little motivation to emulate them even if they are aware. I'm sure you could add a lot to the educators' awareness and motivation. Thanks again for an extremely worthwhile piece of architectural journalism. You're working hard to do some good and, believe me, it's much appreciated.

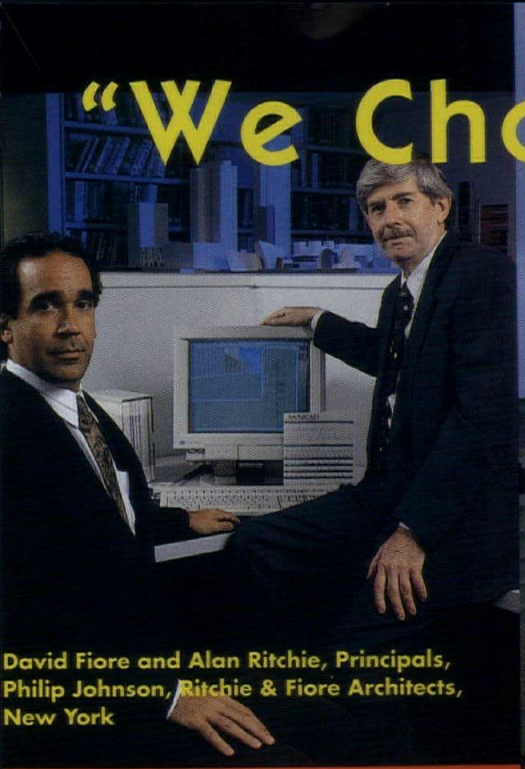
Fred A. Stitt, Director
San Francisco Institute of Architecture

CORRECTION

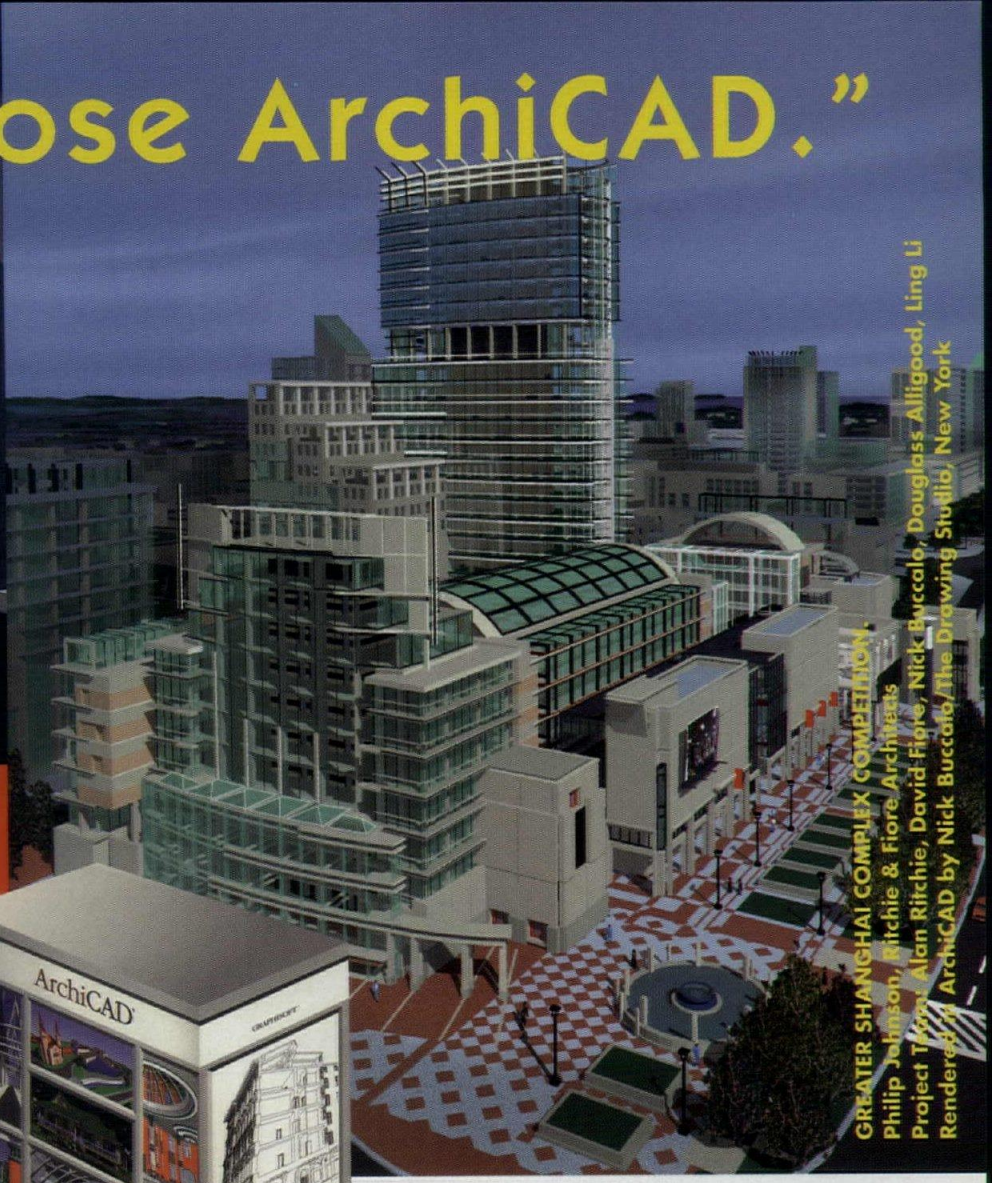
Taichung credits

The second-prize-winning design for the Taichung Civic Center design competition (P/A, Oct. 1995, p. 28) was completed by the Kansas City office of HNTB Architects in collaboration with students at the University of Kansas School of Architecture and Urban Design.

"We Chose ArchiCAD."



David Fiore and Alan Ritchie, Principals, Philip Johnson, Ritchie & Fiore Architects, New York



GREATER SHANGHAI COMPLEX COMPETITION.
Philip Johnson, Ritchie & Fiore Architects
Project Team: Alan Ritchie, David Fiore, Nick Buccalo, Douglass Alligood, Ling Li
Rendered in ArchiCAD by Nick Buccalo/The Drawing Studio, New York

So much of our work is done on computer these days that the choice of CAD software becomes critical to the overall efficiency of the office. We chose ArchiCAD so that the entire office can standardize under one system. Since our approach is to have the senior staff do as much of the 'hands on' work as possible, an integrated software allows them to spend more time on project management and less time on system management.

With hand drafting or other software, presentation, schematics and design development documents typically are not usable when the next phase begins. By contrast, using ArchiCAD, senior staff can begin the work on the computer by quickly generating sketches, square footage allotments, programming, cost estimates, etc. for a variety of schemes. These same drawings can be used throughout subsequent phases of the project.

The Shanghai Complex Competition was definitely a situation where a small project team was able to produce a large quantity of high quality presentation drawings in a matter of days. Any other method of approaching the project would certainly have taken several more people, and we would have had to scale back our presentation.

David Fiore, Principal
Philip Johnson, Ritchie & Fiore Architects, New York

Available for Mac OS, Windows, and Windows NT, ArchiCAD is an award winning, complete software solution for all phases of architectural work. It stores building information - model, drawings, and bill of materials - together as a "Living Document" of your project. ArchiCAD is also compatible with AutoCAD dxf and dwg files.

"With ArchiCAD, senior staff can begin design work on the computer. We found that the software 'thinks' like an architect."

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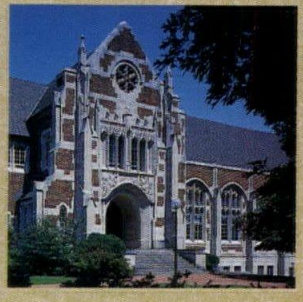

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Please FAX us your thoughts and help P/A address a critical subject:

Continuing Education

For a forthcoming article, P/A welcomes your responses. Use this form or a separate sheet, referring to the question numbers.

Continuing education (CE) is now a reality. Several states require CE for architects to maintain their architectural registration, while the American Institute of Architects (AIA) has made CE a requisite for membership. But do these CE programs provide a tangible service to architects? Do they respond to the architect's changing role? Do they ultimately lead to a better educated architect and to better buildings? In preparation for a cover story on this subject in an upcoming issue, we would like you to share with us your experiences with and perceptions of the role of continuing education in the profession.

1. If you practice in a state that requires CE for architectural registration, what are the program's strengths and weaknesses?

2. Has participation in a CE program helped you as an architect? If yes, how? If no, why not?

3. How should CE respond to nontraditional practice?

4. What does your CE program cost annually, and do you think it's worth it?

5. What sources have provided you with the best/worst CE courses and materials?

6. What is your appraisal of AIA's CE program?

7. What general concerns do you have about CE?

Optional: Your name Your telephone

Feel free to address the issue as you wish, without being bound by the questions or by this form. All responses will be considered confidential. Nothing will be quoted by name unless we obtain your express permission. Send responses to: Continuing Education, FAX: (203) 348-4023, e-mail: PAeditor@aol.com - subject: Cont. Ed.

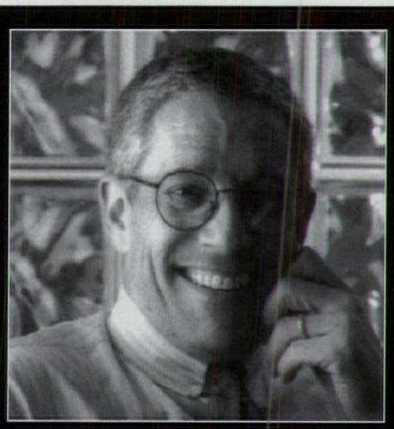
The New P/A: THE PROFESSION RESPONDS

"The new Progressive Architecture is an impressive and refreshing approach to architectural journalism. When the first issue arrived at my office in February, 1994, I actually read it from cover to cover, something I had not done in 30 years! Subsequent issues have been of a surprisingly consistent, high quality, indicating that the editorial staff is doing their homework.

"P/A's new approach puts the magazine in front of a broad readership — students, interns, young and experienced professionals — with a range of topics that appeal to all readers. The lead articles are always of interest and importance to the profession.

"In every department the new P/A is greatly improved. Their editorials take a stand on critical issues. Their profiles highlight some of the more interesting work being designed today. Their building critiques are written very much in the spirit of a jury review, certainly something that all architects can relate to. And most important for the many of us who are concerned about the future of our profession, P/A has not been shy about pointing out some of the problems. Actually their participation in the profession's self-analysis has been a significant help to us all."

Leland D. Cott, FAIA
Principal
Bruner/Cott & Associates
Cambridge, Massachusetts



Cott has a Bachelor of Architecture from Pratt Institute and a Master of Architecture in Urban Design from Harvard. Between degrees he spent two years as a rural architect for the Peace Corps in Colombia. His is a visiting faculty member at the Graduate School of Design, Harvard, and is the 1996 President of his AIA chapter, the Boston Society of Architects.

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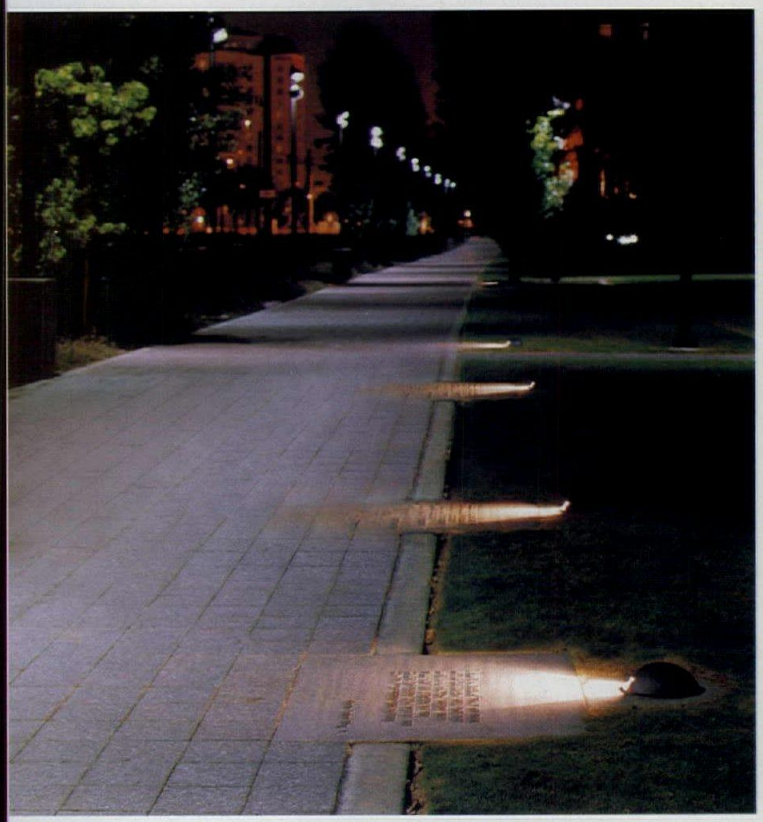

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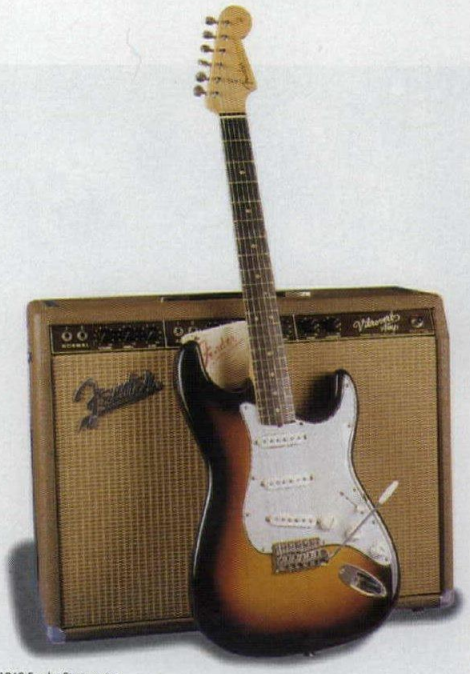
It Changed Music

Music Changed The Generation

The Generation Changed The World



1963 Fender Stratocaster

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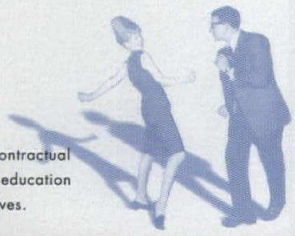

1971 | Contract review course 1981 | Mediation Works! incentive program 1988 | Partnering incentive 1993

1974 Cost of Defense deductible option | TeamCover project insurance 1987 | 1989 Split limits option

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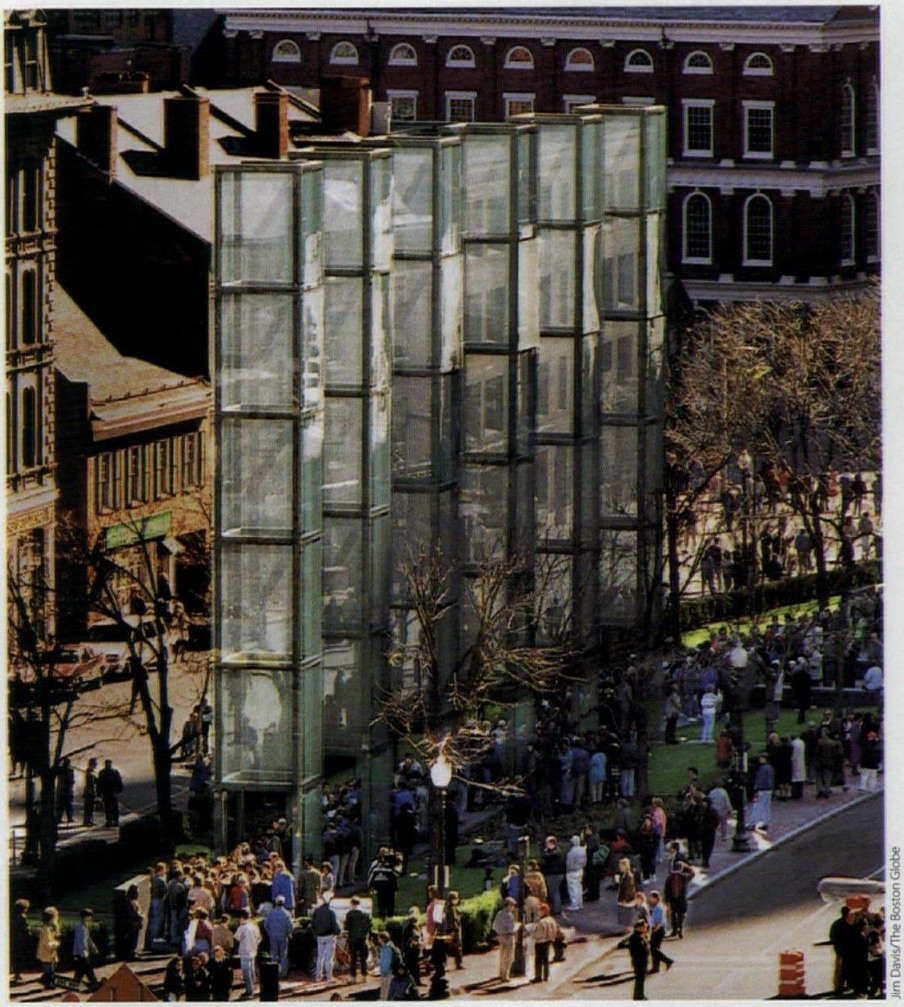
Remembrance in Downtown Boston

In the very heart of Boston, between City Hall and the Union Oyster House, six elegantly minimal pylons have risen on a fragment of park land. For the thousands of people streaming past each day in cars and trucks and on foot, these little towers serve as a dignified reminder of one of history's grimmest events, and of the spirit that the Holocaust could not quench. The $4.3 million needed for their construction and for a maintenance endowment was raised through a campaign initiated by concentration camp survivors in the Boston area.

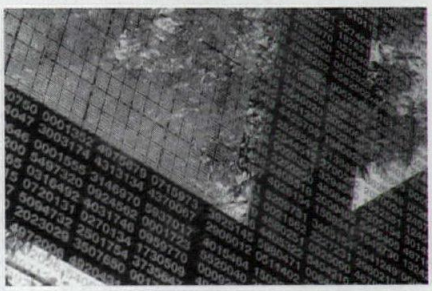
The New England Holocaust Memorial faithfully realizes the competition-winning scheme by architect Stanley Saitowitz of San Francisco (P/A, August 1991, p. 24). For a very constricted site – virtually a traffic island amid a variety of distracting backdrops – Saitowitz wisely proposed structures that achieve their presence through understatement. The half-dozen minimalist steel-framed structures, 54 feet high, are clad in glass, etched with numbers from zero to six million. The way in which the glass sheets are pinned to the frame, with their free edges forming a kind of visible aura, effectively establishes that the structures, though unpretentious, are far from mundane.

Despite the proximity of heavy traffic along one side, visitors can conveniently walk to the site, where they can read a series of powerful inscriptions on the glass and on low granite walls. As they follow a path through the bases of the towers, they pass over gratings that emit plumes of steam from what appear to be hot embers in the pits below (actually fiber-optic lighting and rocks). This shift from austere minimalism to rather theatrical representation is the most debatable aspect of an otherwise impeccable scheme. At night, subdued illumination from beneath the gratings lights the glazed towers from within, heightening their prominence in this active urban scene.

John Morris Dixon



Jim Davis/The Boston Globe



Sze Tsung Leong

Visitors inspected the New England Holocaust Memorial after its completion in late October. At right, a detail of numbers etched on the glass pylons.

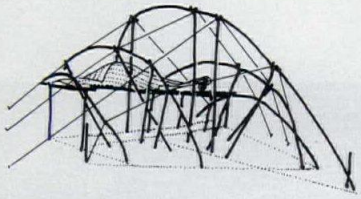
Under the Gun, NEA Cuts Staff and Reorganizes

Jane Alexander, chair of the National Endowment for the Arts, has announced a major structural reorganization of the agency and the elimination of 89 out of 240 staff positions. The agency was streamlined in anticipation of a 40 percent budget cut agreed upon by a Senate-House conference committee in September. The House proposal to nix the NEA completely was defeated (P/A, August 1995, p. 9) but its supporters have made great strides in limiting opportunities for the country's creative talent. The agency's budget for fiscal year 1996 (unofficial as P/A goes to press) will be $99 million, reduced from $163 million.

In addition to the loss of staffers, the NEA will no longer have a discipline-based structure or offer direct grants to individuals, excepting literature, jazz, and heritage applicants. All discipline programs, including design, have been eliminated and replaced by four theme categories. The categories, through which the NEA will support organizations and institutions, are: Heritage & Preservation, Creation & Presentation, Education & Access, and Planning & Stabilization. Application guidelines will be available next month; call (202) 682-5400.

Abby Bussel

Books



African Nomadic Architecture: Space, Place, and Gender *by Labelle Prussin, Smithsonian Institution Press and the National Museum of African Art, Washington, DC, 1995, $55.*
This book on African nomadic architecture makes a timely contribution to the discussion of gender inequities in the profession and offers an alternative way of thinking about the role of shelter in society. The book includes a survey of the construction techniques and materials of nomadic dwellings and how they are transported and arranged to create communal spaces. Placing the mobile structures in historical, cultural, and social context, Prussin revises both the definition of architect (African nomadic structures are most often designed and built by women) and of what traditionally qualifies as architecture, expanding the definitions offered by Vitruvius and Viollet-le-Duc. In contrast to the Western ideal of permanence, nomadic architecture, says the author, an architect and a historian who has spent many years conducting field research, is about process, not product. With her book, Prussin firmly establishes African women's contributions to world architecture and offers a new way of thinking about design in our own, increasingly mobile society. Shown: the structural frame of a Hadendowa (Beja) tent armature and a Fellata-Baggare framing diagram.

As I Was Saying: Recollections and Miscellaneous Essays, Volumes 1, 2, and 3 *by Colin Rowe, edited by Alexander Caragonne, MIT Press, Cambridge, Mass., 1995, $30 each.*
Rowe, though he spent most of his academic career in the U.S., retiring from Cornell in 1989, is a product of Britain, and he possesses a British writer's instinct for being caustic, funny, gossipy, erudite, and incisive, often all in the same essay. It is to everyone's gain that this great theorist and critic has collected articles, reviews, lectures, studio critiques, anecdotes, doggerel, and miscellaneous thoughts from the past 42 years – most of them remarkably fresh. Volume 1, which includes his time at the University of Texas in the 1950s, contains a hilarious account of life in a department presided over by Harwell Hamilton Harris and his imperious wife, Jean Murray Bangs. A high point of Volume 2, subtitled "Cornelliana," is a penetrating critique of the Yale Mathematics Building and the weaknesses of Robert Venturi's approach to architecture – a commentary so devastating that it caused an uproar at Yale and was never released by its intended publisher, Yale University Press. Volume 3, "Urbanistics," presents more Cornell student projects than most readers may care to examine, but the writing remains superb, carrying on Rowe's trenchant critique of 20th-Century architecture's missteps and illusions and rounding out a thoughtful analysis of how architecture might chart a better course.

Steel, Structure, and Architecture *by Arne Petter Eggen and Bjørn Normann Sandaker, introduction by Christian Norberg-Schulz, Whitney Library of Design, New York, 1995, $35.*
This is not a dry, technical text, but a comprehensive, inspiring book on designing with steel. The authors combine history (reviewing some of the great early steel structures such as Paxton's Crystal Palace and Labrouste's Bibliothèque Ste. Geneviève) with information on how steel is fabricated and erected to introduce the reader to the material. The authors then present in-depth analyses of projects (with lots of black and white photos and drawings) from around the world that use steel in various ways: glazed spaces, multistory buildings, long-span structures, ribbed structures, multibay structures, steel with other materials, and bridges. For the architect contemplating steel in a project, or especially for the beginning architecture student, this book will be valuable.

Briefly Noted

The Digital Architect: Common-Sense Guide to Using Computer Technology in Design Practice *by Ken Sanders, John Wiley & Sons, New York, 1995, $39.95.*
Covers Windows '95, AutoCAD Release 13, technological and management issues, multimedia presentations, and more.

The International Style
by Henry-Russell Hitchcock and Philip Johnson, with a new foreward by Philip Johnson, W.W. Norton & Company, New York, 1995, $27.50.
Redesigned edition of the seminal original, with a flippant, if good-natured look back by Johnson.

Ralph Johnson of Perkins & Will: Buildings and Projects *introduction by Robert Bruegman, Rizzoli, New York, 1995, $60 hardcover, $40 paper.*
Johnson's Rationalist designs, tempered by careful consideration of site and program, of institutional and educational facilities (see p. 35).

Glenn Murcutt: Buildings and Projects *by Françoise Fromonot, Whitney Library of Design, New York, 1995, $35 paper.*
A look at the work and career of Australian Modernist (P/A, April 1994, p. 66), whose designs are guided by site and climatic conditions.

Views of Rome *by Steven Brooke, Rizzoli, New York, 1995, $60.*
Black and white images of Ancient, Christian, and Modern Rome (often paired with Piranesi engravings) taken by photographer Brooke.

Marshall Erdman, 1922–1995
Marshall Erdman, a Madison, Wisconsin, builder known for his belief in prefabrication and standardization and, most of all, for his faith in Frank Lloyd Wright, died of cancer Sept. 17 at the age of 72. Erdman came to the United States in 1940, just before Stalin took over his native Lithuania. A few years later he started building prefab houses. When Wright told him his designs were "no good," he introduced prefab designs by Wright, selling just two of the houses. Erdman, whose first large project was construction of Wright's First Unitarian Church in Madison, a money-losing proposition, persevered and became a confidant of the master, and later was instrumental in establishing the Taliesien Preservation Commission in Spring Green. Through producing prefab schools and medical buildings and Techline cabinets and furniture, Erdman became one of Madison's leading businessmen. At his death, he was starting construction of Middleton Hills, a 150-acre development in the suburb of Middleton, planned by Andres Duany & Elizabeth Plater-Zyberk.

Willis N. Mills, 1907–1995
Willis N. Mills, 88, an architect who designed St. Mark's Episcopal Church in New Canaan, Connecticut, the Burndy Library in Norwalk, Connecticut, and housing, college buildings, and other works in the Northeast, died Sept. 21 in Chatham, Massachusetts. He was a founding partner of Sherwood, Mills & Smith in Stamford, Connecticut, and was chairman of the AIA Building Committee prior to selection of a design for AIA headquarters. He leaves two architect sons, Willis Mills, Jr., of SMS, and Matthew R. Mills of Robinson, Mills & Williams, San Francisco.

New Heads of School Programs

New York architect Karen Van Lengen, a former associate of I.M. Pei & Partners who has taught at Texas, Cornell, Yale, Penn, and Columbia, has been appointed chair of the Architecture and Environmental Design Department at Parsons School of Design. She succeeds Susana Torre, who left the New York school several months ago to become director of Cranbrook Academy in Michigan.

Among other recent appointments, Eric Damian Kelly, chair of community and regional planning at Iowa State University, has been named dean of the College of Architecture and Planning at Ball State University in Muncie, Indiana. Patricia O'Leary, an expert on solar energy and a leading scholar on Mexican architect Luis Barragan, has been appointed dean of the College of Architecture and Planning at the University of Colorado at Denver. □

Searching for a Better Deal, AIA Switches Magazines

Architects accustomed to receiving *Architecture* magazine as an automatic benefit of AIA membership are going to get *Architectural Record* instead, starting in January 1997. The AIA and McGraw-Hill Companies have signed a letter of agreement under which McGraw-Hill is to provide the magazine of the AIA from 1997 through 2003. *Architecture*, published by Billboard Publications, Inc., will remain the AIA magazine through December 1996, extending a seven-year contract that began in March 1989.

During the transition year, McGraw-Hill "will research AIA member needs and use that information to create a redesigned, refocused *Architectural Record*" for a membership described rather optimistically in AIA's press release as "steadily growing and increasingly diverse." McGraw-Hill has also agreed to supply other membership benefits, including continuing education programs, "awards programs that support the Institute's public education strategies," and access to the company's online information.

All interested publishers were invited to make proposals. Besides McGraw-Hill, three other publishers made final-round presentations at AIA headquarters: Billboard, the New York Times Publishing Company, and Penton Publishing, publisher of P/A. The committee considering the proposals showed concern about editorial policies, but it was clear that a key criterion was an improved financial arrangement for AIA. Under the existing deal, revenues from the magazine have added virtually nothing to AIA coffers over the life of the contract. (Billboard paid a lump sum to buy *Architecture* from AIA, then AIA essentially repaid that amount in annual subscription fees.) Financial details of the new arrangement with McGraw-Hill have not been released. Changes that *Architecture* may make to remain viable without an assured infusion of subscription fees from AIA remain to be seen. □

Looking at Cities

The National Building Museum in Washington, D.C., has decided to place greater emphasis on the future of cities. Fred Jordan, a former newspaper reporter whose career has involved cities and intergovernmental relations, has been appointed urban issues officer, a new position in which he will organize a series of monthly colloquia in 1996 on the design, building, and governance of cities. The series, "Mending the Fabric of Democracy," will bring together knowledgeable individuals from the U.S. and other countries to consider how cities are rising to their challenges. □

© Eric Oxendorf

A Roundup of Capitol Ideas

With "The Dome: Symbol of American Democracy," the National Building Museum has mounted a modest show nicely illustrating the surprisingly wide range of ideas that shaped domes on more than 40 state capitols. The exhibition, continuing through April 14, 1996, consists mainly of fine color prints by photographer Eric Oxendorf, whose views, taken in predominantly symmetrical and ornate buildings, are often kaleidoscope-like, showing designs, decorations, icons, and art. Shown (above) is the Connecticut state capitol in Hartford, built from 1873 to 1879.

The photos reinforce a point well made in the show's informative text: that although most states followed the U.S. Capitol in seizing upon the dome as a Classical symbol of authority and unity, plenty of room has existed for individual, and occasionally even idiosyncratic, expression. A section devoted to construction of the Wisconsin capitol in Madison, designed by George B. Post & Sons in 1917, suggests the technical prowess the builders needed, but the show is mostly about how statehouse domes look from below – and what their creators intended them to mean. **Thomas Vonier**

Seattle Heeds Its Pedestrians

What loomed as an urban design disaster for Seattle may turn into a boon. Several years ago, two blocks of Pine Street were closed to auto traffic, a change that greatly increased the size and usefulness of Westlake Park, a paved plaza that is downtown's most significant open space. The two blocks remained closed until earlier this year, when Nordstrom's, the Seattle-based retail giant, said it would join in a major redevelopment project only if the blocks were reopened to cars. It was an act of civic blackmail, and in a public vote after a strenuous campaign led by the city's newspapers (which are dominated by downtown business), the cars won. Subsequently, however, the city's planning and design commissions convened a task force and public forum to see how Pine Street might be made more accommodating to pedestrians.

The result was a detailed plan to make the street "a vibrant community promenade with continuity, transparent storefronts, and individual character and spontaneity along its length." The plan calls for narrowed traffic lanes, widened sidewalks, lavish use of street furniture, new lighting, and programming of public activities. If the plan is carried out, Seattle will not so much lose an open space as gain an attractive pedestrian link from the city's residential heights to Pike Place Market and the waterfront. **Donald Canty**

Calendar

Maxwell MacKenzie

COMPETITIONS

Architecture in Perspective
Deadline, submission: January 12, 1996
Entrants in the annual Architecture in Perspective awards program may submit work in two categories: informal sketches and formal presentation drawings. Selected entries will be included in a traveling show. Contact American Society of Architectural Perspectivists, 52 Broad St., Boston, MA 02109-4301. Tel. (617) 951-1433 ext. 225.

Environmental Graphic Design
Deadline, submission: January 15, 1996
Signage, wayfinding, exhibition designs, unique landmarks, and city gateways may be entered in the 1995 Design Awards Competition sponsored by the Society of Environmental Graphic Designers. Contact SEGD, 1 Story St., Cambridge, MA 02138. Tel. (617) 868-3381. FAX (617) 868-3591. E-mail: SEGDOffice@aol.com.

National Library for Japan
Deadline, registration: January 16, 1996
The Japanese Government has announced an international competition for the design of a National Library to be located between Kyoto and Osaka. Contact Kansai-kan of the National Diet Library, Competition Office, Ministry of Construction, 2-1-3 Kasumigaseki, Chiyoda-ku, Tokyo, 100 Japan. Tel. 81-3-3581-5996. FAX 81-3-3581-5712.

International CAD Competition for Students
Deadline, registration: January 31, 1996
submission: April 30, 1996
Students and interns may compete for the 1996 Graphisoft prize. The challenge is to design "works that have never existed physically or are long missing from the physical landscape, but are nevertheless real in our present day culture," usinf ArchiCAD as a design and modeling tool and QuickTime VR as a visualization tool. Contact VR Une Architecture, AIAS, 1735 New York Ave., NW, Washington, DC 20006. FAX (202) 626-7414. E-mail:aiasnatl@aol.com.

Wood Furniture Competition
Deadline, submission: January 31, 1996
Furniture that promotes the economical use and durability of wood may be entered in the 1996 International Furniture Design Competition Asahikawa. Contact Asahikawa Furniture Industry Cooperative Office, 10-chome, 2-jo, Nagayama, Asahikawa, Hokkaido, 079 Japan. Tel. 166-47-0655. FAX 166-48-4749.

I.D. Annual Design Review
Deadline, submission: February 1, 1996
The I.D. Annual Design Review, open to American and European designers, includes the following categories: consumer products, equipment, environments, furniture, graphics, packaging, concepts, student work, and interactive media. Contact Melissa Dallal, I.D., 440 Park Ave. S., 14th fl., New York, NY 10016. Tel. (212) 447-1400. FAX (212) 447-5231.

Vincent Scully, Jr., Research Grant
Deadline, application: February 1, 1996
The $10,000 Vincent Scully, Jr., Research Grant is awarded to facilitate the publication of a monograph on American architecture. Contact Architectural History Foundation, 350 Madison Ave., New York, NY 10017. FAX (516) 944-5961.

Young Architects
Deadline, submission: February 12
The Architectural League of New York has announced its annual Young Architects competition. Entrants can be no more than 10 years out of architecture school. Contact Architectural League, 457 Madison Ave., New York, NY 10022. Tel. (212) 753-1722.

DuPont Benedictus Awards
Deadlines, submission: March 1, 1996
Completed commercial and residential projects may be submitted to the 1996 DuPont Benedictus Awards for Innovation in Architectural Laminated Glass. A student competition (April 1 submission deadline) is for the design of an Olympic pavilion at the Games in Sydney, Australia, in the year 2000. Contact Benedictus Awards, c/o Joanna Hanes-Lahr, 1100 New York Ave., NW, Washington, DC 20005. Tel. (202) 393-5247.

EXHIBITIONS

Stone Construction through the Ages
Through January 5,1996
The Octagon, Washington, D.C.
"Origins" is a show of photographs by Maxwell MacKenzie that document rural stone structures in Europe. (Shown above: near St. Affrique, France, July 1994.)

Frank Lloyd Wright and Japan
Through January 7, 1996
Los Angeles County Museum of Art, Los Angeles.
This exhibition includes Japanese folding screens, textiles, sculpture, ceramics, and prints collected by Wright, and related material.

Jean Nouvel
December 5–January 30, 1996
Storefront for Art & Architecture, New York.
Recent projects by French architect Jean Nouvel will be presented in a site-specific installation.

CONFERENCES

P/A Awards Lunch and Design Conference
January 20, 1996
Los Angeles, California.
The presentation of the 43rd annual P/A Awards will be held in conjunction with a design conference. See p. 97 for details or call (800) 223-9150.

Practice Notes

How to Run an Office
Architect Larry Jenks has written *Architectural Office Standards and Practices, A Practical User's Guide (McGraw-Hill, $50)*, a useful compendium of advice and checklists for running an architectural office. He covers everything from working drawing organization and conventions, to project management, to office organization and contract administration. Contact McGraw-Hill at (212) 337-5945 or 337-5951 for more information.

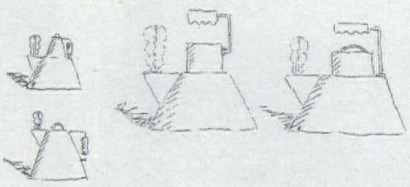
Understanding Risk
DPIC – Design Professionals Insurance Company – has published two free booklets that discuss the risks in doing foreign projects or in design/build. "Design-build projects," says DPIC President Marty Becker, "will likely expose you to contractors' liabilities, while foreign projects will introduce business, currency, and personal risks that don't exist in your domestic practice." To order the booklets, write to: Handbooks, DPIC Companies, 2959 Monterey-Salinas Highway, Monterey, CA 93940 or fax on company letterhead to (408)649-3240 or e-mail request to info@dpic.com.

Technics Notes

Preservation Publications
A comprehensive catalog of historic preservation publications (some of them free) is available from the U.S. Interior Department. Scores of publications and videos are listed. Contact Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954; phone (202) 512-1800; fax (202) 512-2250.

Pyramid Scheme
Conservators of the Great Pyramid of Cheops in Gizeh, Egypt report that moisture from thousands of visitors a year is causing spalling of the stone blocks inside its chambers and is endangering wall paintings. To mitigate the problem, the pyramid is being fitted with a mechanical ventilation system to expel the moist air. The project should be completed by February.

Check that Building Code
A new reference source of relevant codes for home design and construction has been published by Taunton Press. *Code Check: A Field Guide to Building a Safer House* ($14.95) is a 32-page flip book that includes 60 line drawings and 36 tables, which help answer the 600 most common code questions. Contact Taunton at (800) 283-7252, ext. 289 or 238.



Courtesy Philadelphia Museum of Art

Blowing His Own Whistle

For those who have wondered whether Michael Graves's work holds water, the definitive answer can be found through February 25 at the Philadelphia Museum. It's a show titled "Michael Graves: The Architect and the Tea Kettle." This cozy, pocket-size exhibition traces the development of three of Graves's forays into industrial design, including his most celebrated product: the stainless-steel Alessi tea kettle with the bird whistle. To give visitors a good handle on Graves's work, the show features original sketches, then follows the design process through dimensioned drawings, study models, prototypes, and final production pieces. Shown (above) is an original sketch of the Ferris tea kettle for Moller Design in 1992.

For some, objects like Alessi's domed teapot are a scandalous symbol of the commodification of architecture and design in the 1980s. For others, they are welcome demonstrations that industrial design and consumer products can be infused with an architectural sensibility. In any case, nearly 750,000 of the Alessi tea kettles have been sold, Graves said in a lecture. (The Princeton designer also revealed that he receives half of one percent of the manufacturer's gross sales as compensation.) While newer Graves products on display, such as a tea kettle, with Mickey Mouse ears, for Walt Disney, may not be everyone's cup of tea, the exhibition hits the spot.

Donald Prowler

Managing the New Urbanists

The Congress for New Urbanism, moving to become a more "managed" operation, has named San Francisco marketing consultant and author Peter Katz as its first acting executive director – a step expected to lead toward selection of a permanent executive director (possibly Katz) next July. The Congress, which has held three national conferences in its efforts to redirect thinking on community design, will be based in San Francisco. It is preparing to solicit funds from foundations. With Katz, an architectural Modernist, at the helm, the use of "Neotraditionalism" as a synonym for "New Urbanism" will likely be assiduously avoided, perhaps making the movement less suspect among those who object to the revival of historic building styles. □

Redoing Health Care Design

Medical facility experts, meeting in New York in October, painted a picture of a health care industry caught up in difficult changes, some of which could offer opportunities to architects. More than 200 health planners, hospital administrators, construction industry leaders, and architects convened at St. Vincent's Hospital and Medical Center to consider the results of cost-conscious managed care, reduced federal spending on Medicare and Medicaid, and other shifts in finances.

As hospitals reduce the number of inpatient beds and increase delivery of outpatient services, many institutions, in the view of analysts, will be forced to close or will be left with vast amounts of vacant, underutilized space. Architects will be needed to help with these transitions, shifting care from inpatient bed towers to neighborhood primary care facilities, developing alternatives for the sites of hospitals to be razed, converting hospital spaces to hospices, elderly housing, nursing homes, administrative offices, and other uses, and planning for the larger-scale ambulatory care facilities that will accommodate merged health networks and consolidated diagnostic services. The biggest challenge, said Joe Spiak of Merrill Lynch, will be how to finance changes when aging, debt-burdened facilities do not have access to capital. One encouraging development predicted by Angelo Fanelli of Beth Israel Medical Center in New York is that as a result of mergers and the formation of new health alliances, some institutions, in the current era of downsizing, will instead have to "upsize." **Barbara A. Nadel**

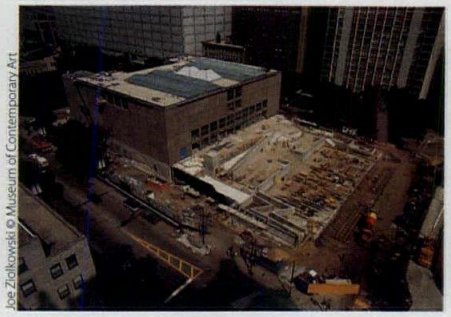
Barbara A. Nadel is an architect and writer in Forest Hills, Queens.

Amy Thomas

Seaside versus Hurricane Opal

The ends of the boardwalks are gone, and the sand dunes suddenly look like cliffs, but Seaside otherwise suffered little damage during Hurricane Opal's October rampage in the Florida panhandle. A mile to the east or west, buildings lost their roofs, but at Seaside, says developer Robert Davis, "a few pieces of tin roof were peeled back, but there was little water damage." The Federal Emergency Management Agency was so impressed that it sent investigators in to find out why Seaside fared so well during the storm, whose sustained winds of 125 miles per hour or more wrecked other developments on the Gulf of Mexico.

Seaside's hardiness was attributed by Davis and FEMA principally to these factors: First, buildings were constructed behind a protective line of dunes, and native vegetation was preserved, reducing erosion. Second, the great majority of its buildings were on pilings extending 12 to 14 feet below the surface, protecting against uplift and undermining. Third, properly tied-down metal roofs fared better in storms than did the asphalt composition shingles of nearby developments. Fourth, buildings were clad in materials such as wood rather than vinyl siding, and they were constructed with plywood sheathing, heavier-duty hurricane clips, corner bracing, and other fastening techniques that effectively kept the houses from pulling apart. Seaside is now repairing boardwalks and starting dune restoration, which involves the planting of sea oats and other vegetation. □



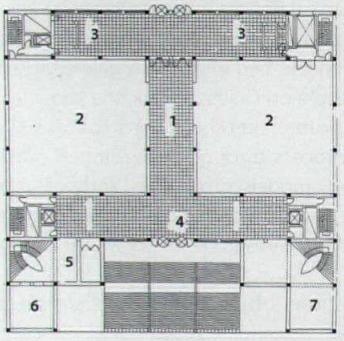
Joe Ziolkowski © Museum of Contemporary Art

Hedrich-Blessing

Chicago Museum Rises

Now nearing completion is the $46.5-million Museum of Contemporary Art (MCA) and sculpture garden on a site overlooking Lake Michigan in Chicago, the first building in the U.S. by German architect Josef Paul Kleihues (P/A, May 1992, p. 27). Clad in cast aluminum panels and set on a limestone podium, the 147,000-square-foot building has a composed air, which is in sharp contrast to the character of its neighborhood, where the retail clatter of Michigan Avenue mingles with a sprawling teaching hospital, apartment towers, and the Water Tower that survived the Chicago fire. In this context, the museum's subdued materials and formal exterior entry stair set it apart. An elevated sculpture garden (left photo) will afford a view of the lake, across a block-square city park that is in need of rehabilitation. The official opening of the MCA, which was designed in association with local architects A. Epstein & Sons, is slated for July 1996.

Cheryl Kent



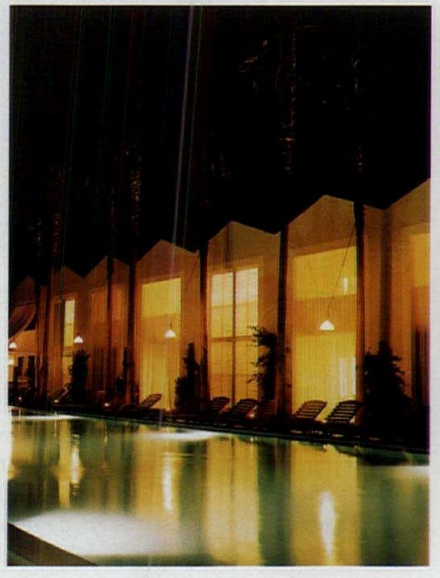
SECOND FLOOR PLAN

Starck Transforms Another Hotel

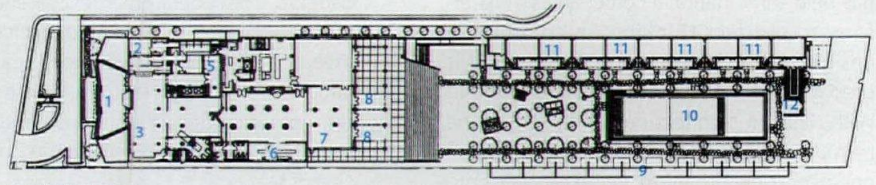
The $22-million renovation of the 1947 Delano Hotel in Miami Beach by Philippe Starck for hotelier Ian Schrager, owner of the Starck-designed Paramount and Royalton hotels in New York, has been the subject of much media attention since its opening earlier this year. And the hoopla, for the most part, is deserved. The highlight of the project, which was designed with Anda Andrei and PMG Architects, is the lobby, with its eccentric collection of furniture by Dali, Gaudi, Eames, and Starck. A long, double-height space with dark wood walls and a double row of hefty white columns, the lobby is both imperial and mysterious. Diaphanous white cotton curtains hang from floor to ceiling on both sides of the columned passage, subdividing the space into more intimate salons. Starck, however, takes one false step at the Delano: the pleated stucco façade of its tower has been painted white. Set amid the Deco pastels of South Beach, the gesture seems strangely tentative, posing the hotel as an all-too-earnest wallflower at an insouciant beach fling.

Peter Whoriskey

The author writes on architecture for The Miami Herald.



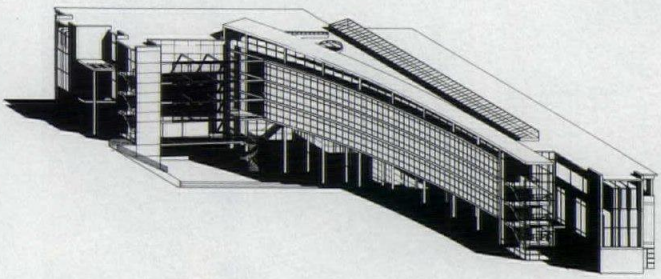
Photos: Oberto Gili

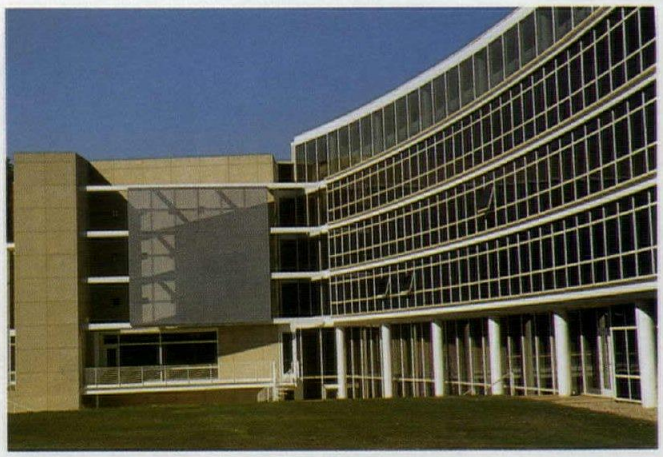


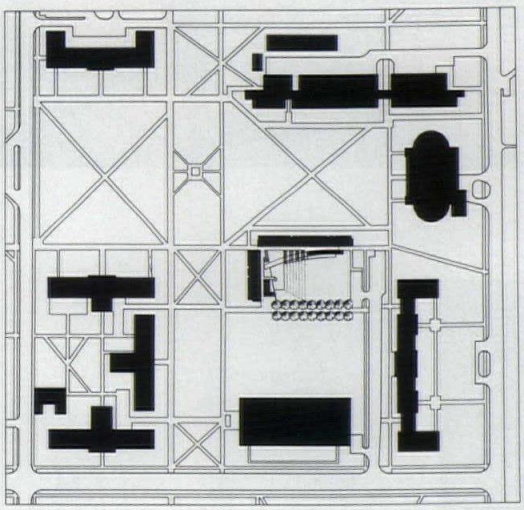
FIRST FLOOR PLAN

N 100'/30m

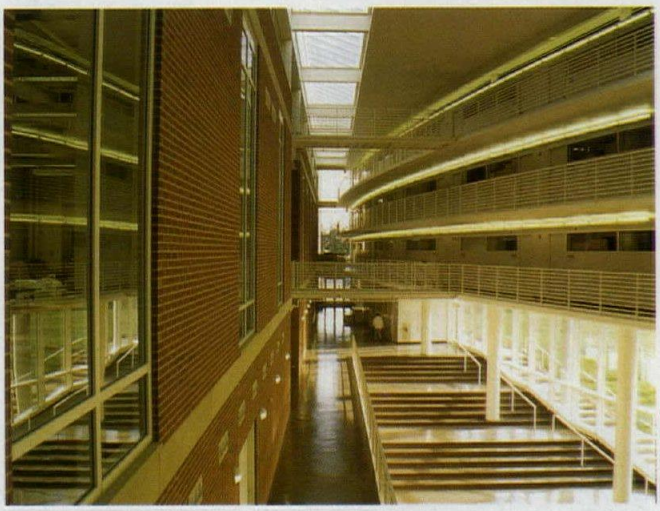
1 ENTRY
2 RECEPTION
3 ENTRY LOBBY
4 "EAT-IN" KITCHEN
5 GIFT SHOP
6 ROSE BAR
7 BLUE DOOR RESTAURANT
8 VERANDA LOUNGE
9 CABANAS
10 POOL
11 DUPLEX COTTAGES
12 BAR







SITE PLAN N ← 300'/100m



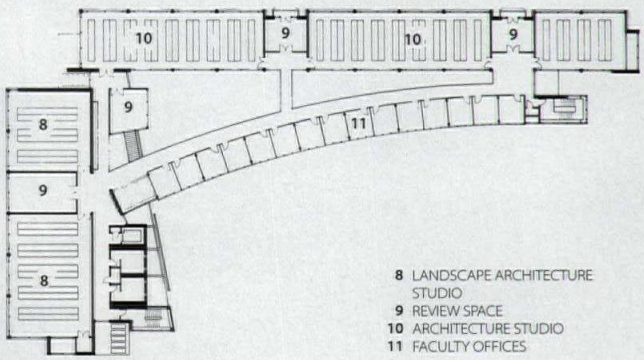
Photos: Ron Gordon

Making a Space for Architecture

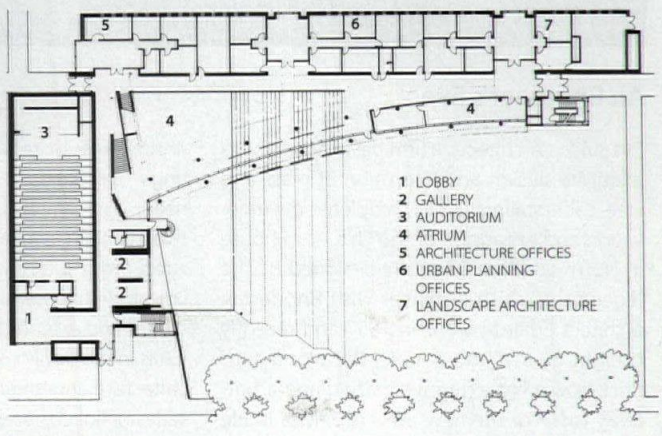
Perkins & Will's competition-winning design for a new architecture building – Temple Hoyne Buell Hall – at the University of Illinois at Urbana-Champaign has been completed. The building fits its site well. Blocks containing studios and support spaces define the edges of two existing quadrangles. The three-part division of the outer walls of these blocks into base, shaft, and cornice also responds to the tripartite division of the older Classical buildings on campus. The inner side of the L-shaped structure has a much more Modern character. A raised glass-clad wing, containing faculty offices, curves out over a terraced yard. This new outdoor space culminates in a large screen that can be used to project images.

A glass-walled atrium, whose broad cascading stairs continue the yard's terraces, occupies the wedge-shaped space between the studio and office wings and serves as a gathering place for the entire school. Projects can be displayed along the atrium's walls, and students and faculty can observe each other moving through the building along its walkways, bridges, and stairs. That transparency of movement continues even to the mechanical system, whose risers are exposed in glass-walled enclosures at the two ends of the L.

The design of the architecture school offers students an important lesson: that a simply organized building may be the best way to respond to a complicated program in a complicated age such as our own.



STUDIO LEVEL PLAN



FIRST FLOOR PLAN N ↑ 40'/12m

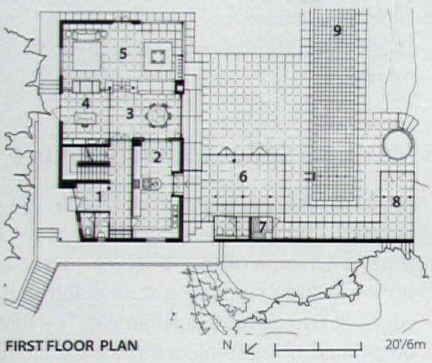
Ambitious New College at OSU

Construction of Ohio State University's 378,000-square-foot Fisher College of Business is slated to begin next spring in Columbus, based on a master plan by Cooper, Robertson & Partners of New York, with local firm Karlsberger Companies as planners of record and associate architects. The $80.7-million complex occupies 5.5 acres northwest of the campus's main oval. Cooper, Robertson & Partners are the design architects for three buildings on the west portion of the site (left, in photo), including the Faculty and Administrative Building, the Executive Education Building, and a 120-room executive residence/hotel; Kallman McKinnell & Wood Architects of Boston are designing the three eastern components, comprising the Graduate and Undergraduate buildings and the Business Resource and Library.

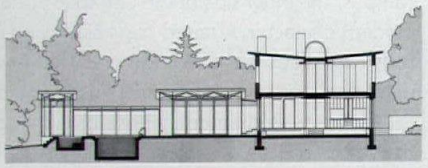
Cooper, Robertson & Partners

Photos: Richard Bryant/Arcaid

1 ENTRANCE HALL
2 KITCHEN
3 DINING
4 STUDY
5 LIVING
6 NEW DINING ROOM
7 SAUNA
8 GYM



FIRST FLOOR PLAN N 20'/6m



SECTION 20'/6m

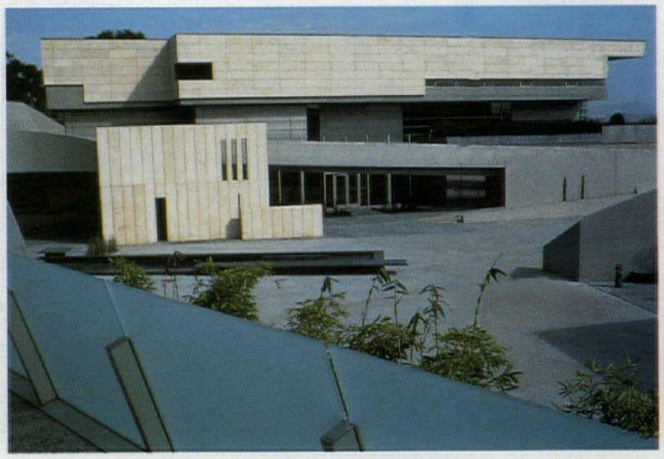
An Engineer's Eye

Eva Jiricna Architects, a firm best known for its exquisite design and execution of glass and steel cable staircases, has completed the renovation and expansion of the Ove Arup house in North London. Originally designed by the legendary British engineer with Rhodesian architect Erhard Lorenz in 1957 and recently bought by a young couple, the wood-and-brick house has extensive glazing and a butterfly roof. For the new owners, Jiricna made minor exterior repairs, replaced interior fittings, upgraded the kitchen, bathrooms, and heating system, and, most significantly, added two stainless steel and glass pavilions, which wrap around a new lap pool. Gray Spanish limestone flooring unifies all the ground floor spaces and extends to the poolside.

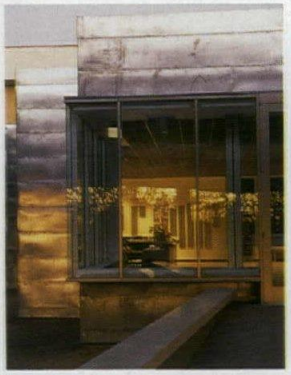
It is in the pavilions that Jiricna best weds architecture and engineering: the structure is a series of linked, pin-jointed columns supporting a diaphragm roof that is tied down at the front and back with stainless steel rods and fixed to the pavilion's solid stone rear wall. The pavilions, which house a dining room and a gym, are linked by a passage of translucent glass walls. The delicacy of the structural members, pared down like a spider's web, and the canted, shiny metal fascias, abstracting the lift of the butterfly roof, pay homage to the Arup/Lorenz design without mimicking it.

A Latterday Monastery for Science

Tod Williams Billie Tsien & Associates' newly completed Neurosciences Institute in La Jolla arose from a close collaboration between architects and client. As detailed in a P/A "Process" article (April 1995, p. 76), the compound was conceived as a scientific "cloister," in which visiting fellows would enjoy an environment conducive to both private reflection and unfettered exchange. Scooped out of an east-facing hillside located about half a mile from the Salk Insititute, the 56,000-square-foot complex comprises an elevated Theory Center and a bermed laboratory wing that together form a U-shaped line of buildings looking east to the distant view; a freestanding bermed auditorium occupies the central void, creating a winding plaza envisioned as the institute's primary, rather intimately scaled public space. A walkway on the roofs of the half-buried labs leads to the adjacent Scripps Research Institute. In the best Modern tradition, the buildings are meticulously constructed, affording rich, sensuous variety within a spare palette of exposed concrete, fossil stone, serpentine, redwood, and sandblasted glass. Joseph Wong Design Associates of San Diego were associate architects.



Attending to the Street

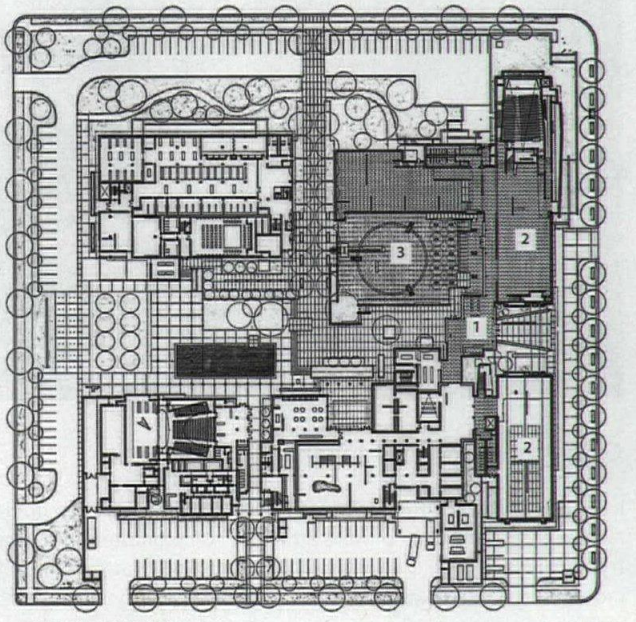


Photos this page: Bill Timmerman

While cities such as San Francisco have built signature buildings to house their art collections, Phoenix has taken a more subtle tack. The renovation and expansion of the Phoenix Art Museum, originally designed by Alden Dow in 1956, meets the public at eye level. Designed by local architect Lescher & Mahoney/DLR Group in association with Tod Williams Billie Tsien & Associates of New York, the first phase of this $25-million project is complete, its two changing exhibition galleries opening this past summer. In contrast to the Museum of Modern Art in San Francisco, a brick behemoth imposed by Swiss architect Mario Botta, the Phoenix project is modest in its scale and materials, and marks, with the completion of the Neurosciences Institute in La Jolla (shown above), a turning point for Williams and Tsien, shifting their practice decidedly to high-profile commissions.

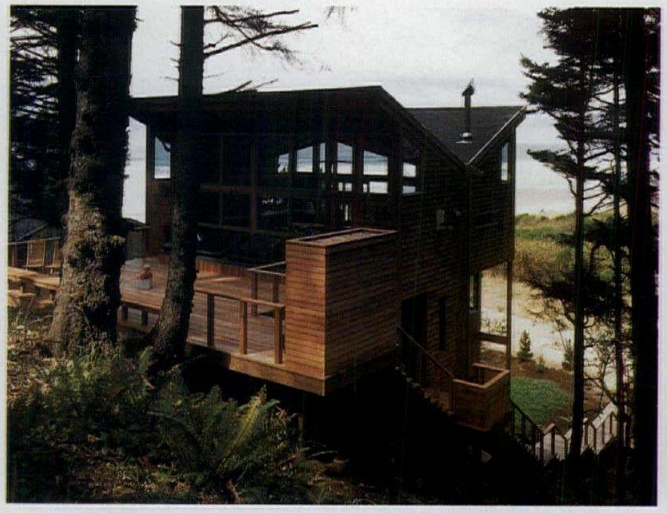
The 45,000-square-foot museum addition, a significant component of Phoenix's plans to bring high caliber design to its cultural institutions (P/A, Dec. 1994, p. 58), is both a human-scaled piece of street sculpture on the city's main north-south artery and a simple container for the display of art. Its two wings, clad in precast concrete panels with a luminescent gray-green aggregate, angle toward a new pedestrian entrance on the avenue (an anomaly in this car-oriented locale). The entrance lobby also houses an information center and connects the old and new parts of the museum. Above the entry, which is marked by a perforated steel canopy, a terne-coated steel-clad bridge links the wings at the second floor.

To be completed by next spring are the great hall, two libraries, a restaurant, an enlarged museum shop, and a 300-seat auditorium; the official opening is September 1996. Funding has not yet been raised for the 94-foot-high sculpture pavilion, a cone-shaped structure of translucent fiberglass panels set within the museum's courtyard.

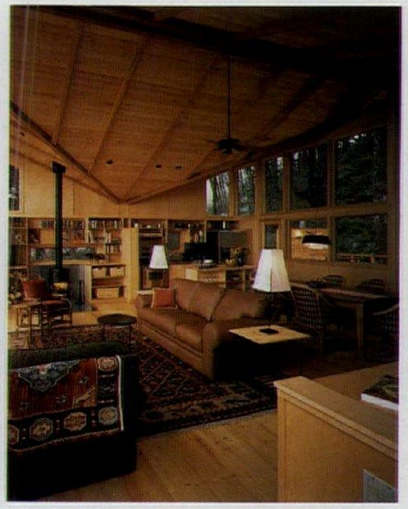


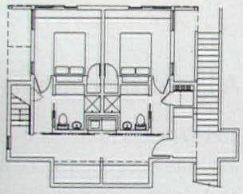
GROUND FLOOR PLAN

1 NEW LOBBY
2 NEW CHANGING EXHIBITION GALLERIES
3 PROPOSED SCULPTURE PAVILION

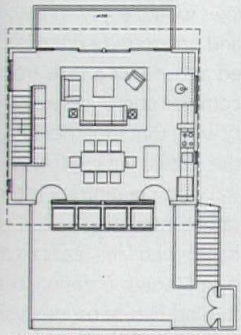


Photos: Michael Mathers





SECOND FLOOR PLAN

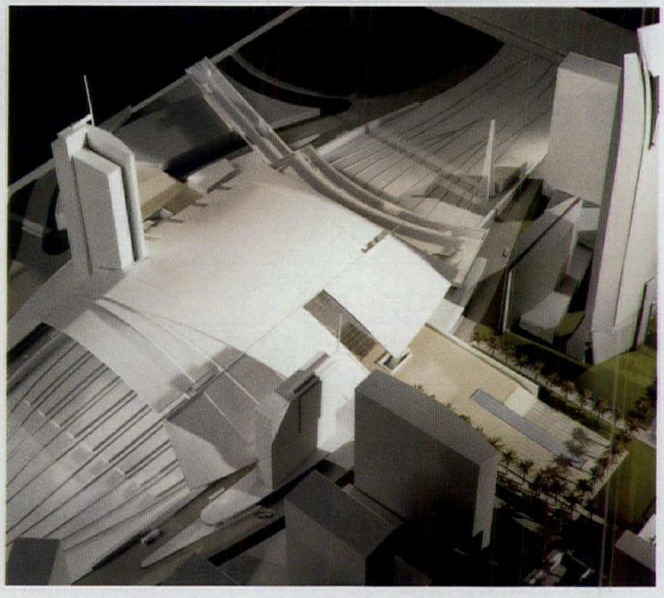


THIRD FLOOR (ENTRANCE) PLAN

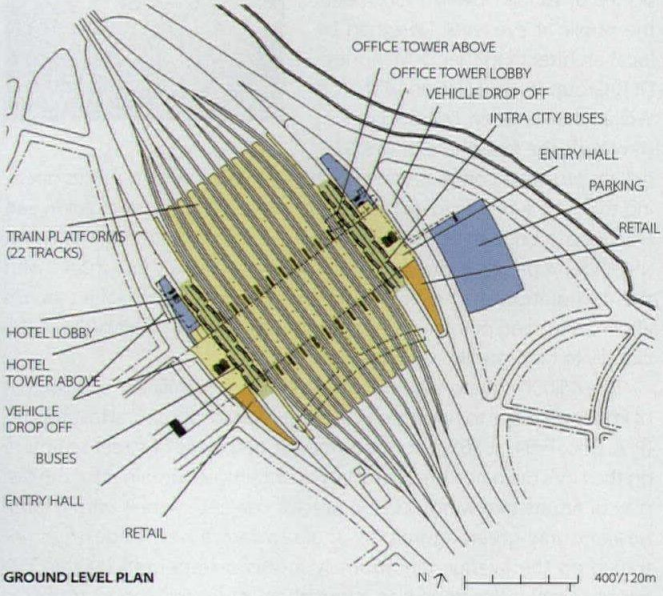
N 20'/6m

Firm Retreat

How many design firms have their own beach house? Not many that we know of, but BOORA Architects in Portland recently completed a refreshing getaway place at Neskowin, Oregon, on the Pacific coast. Intended as a retreat for any of BOORA's 80 staff members, the 1,860-square-foot wood structure has a studio/bedroom and a bathroom on the first floor, two bedrooms and two bathrooms on the second floor, and, at the top, a great room, serving as kitchen, dining area, and living room. Wood surfaces and glass give the elevated great room an appealing balance of warmth and transparency. Attached to the great room are two decks – one facing the ocean, the other nestled against a forested hillside. The idea for BOORA's beach house came out of a retreat of the principals, in which they decided such an amenity was a good use for some of the firm's profits. The program was initiated by the partners in a charrette, after which Stan Boles, the firm's design principal, took the lead in developing the design.



Ellerbe Becket

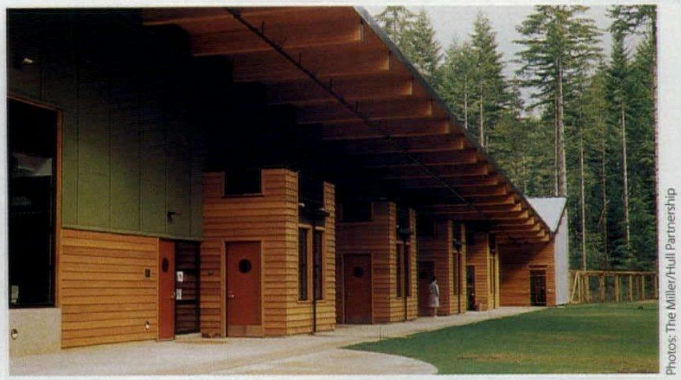


GROUND LEVEL PLAN

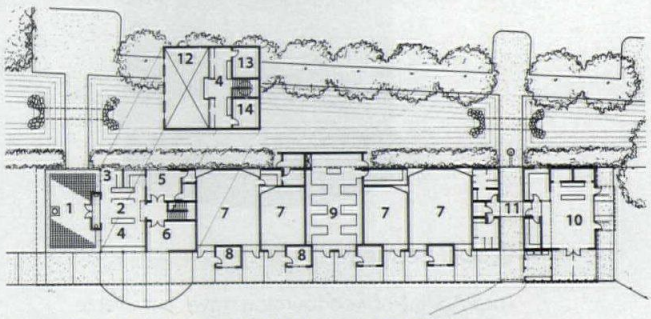
N 400'/120m

Catch the 5:05 from Jakarta

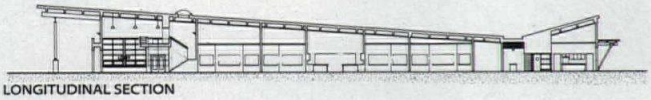
If the Manggarai Integrated Transportation Terminal comes to fruition, rail travel should become more attractive to commuters and others trying to cope with the monstrous congestion that now hobbles movement in Jakarta, Indonesia. The New York and Minneapolis offices of Ellerbe Becket, with Peter C. Pran as design principal, has produced this conceptual design, for which a group of seven developers is trying to line up construction financing. The 640,000-square-foot terminal, to be built where a much smaller Dutch colonial station now stands, is a purposely impressive building, with a metal roof that suggests moving, folding planes sliding beneath one another. Glazed slots in the roof, complemented by glass at the terminal's east end, are meant to give people views both to the sky and to the trains below. The terminal would accommodate bus service as well, and would include a 15-story hotel and an attached 25-story office building in its first phase.



Photos: The Miller/Hull Partnership



OLYMPIC COLLEGE SHELTON: FIRST FLOOR PLAN (WITH MEZZANINE)



LONGITUDINAL SECTION

1 COVERED ENTRY
2 LOBBY
3 ADMINISTRATION
4 LOUNGE
5 CONFERENCE ROOM
6 LEARNING RESOURCE
7 CLASSROOMS
8 FACULTY OFFICES
9 LABORATORY
10 DAYCARE
11 COVERED PASSAGE
12 OPEN TO BELOW
13 MECHANICAL
14 STORAGE

N 40'/12m

Vitality Wins the Day

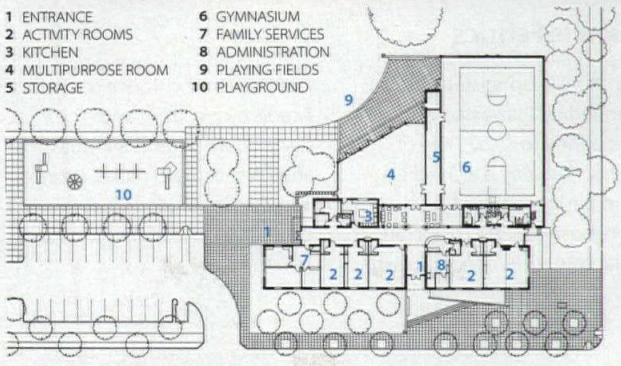
Of the local 1995 Honor Awards bestowed by AIA Seattle in late October, two went to a pair of widely disparate buildings by the Miller/Hull Partnership. The premiated projects, both spearheaded by principal Robert Hull, differ significantly in site, program, and appearance, yet when examined closely they reveal a shared design sensibility evidenced in animated forms, articulate detail, and astutely applied color.

The 20,000-square-foot Garfield Community Center is located in Seattle's "inner city," adjacent to a high school. The local community was closely involved in its development, attending meetings with the designers, planners, Seattle Parks Department, and the Arts Commission. With the blessing of the public client agencies, the architects placed considerable emphasis on sustainability, devising ways to maximize daylight and natural ventilation. Materials used include fly ash in concrete, recycled content in wallboard and insulation, and recycled paint used as primer. The building has a strong streetside presence, thanks to hard-edged, but hardly dour masonry façades. It is looser toward the interior of the block: a cheerful mutipurpose room, meant for social events, overlooks a playing field via an expansive glazed garage door.

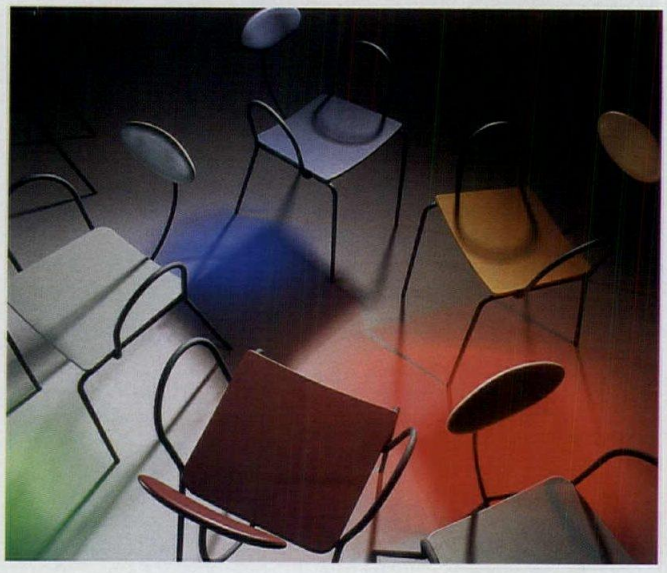
The Olympic College Shelton, Miller/Hull's second award-winning building, is located in the timber-working region of Western Washington. As the first phase of a three-phase community-supported campus plan, the 8,000-square-foot structure contains classrooms, administration, and a daycare center. Here, too, the architects employed environmentally conscious masterplanning on a spectacular site at the foot of a steep wooded hill, using indigenous materials (glu-lam beams, tongue and groove decking, cedar siding) donated by local manufacturers. A deft way with wood, evident in the juxtapositions and joints, breathes fresh life into the proposition of regional architecture in the Northwest.

Photos: Strode Eckert

1 ENTRANCE
2 ACTIVITY ROOMS
3 KITCHEN
4 MULTIPURPOSE ROOM
5 STORAGE
6 GYMNASIUM
7 FAMILY SERVICES
8 ADMINISTRATION
9 PLAYING FIELDS
10 PLAYGROUND



GARFIELD COMMUNITY CENTER: FIRST FLOOR PLAN N 40'/12m



Indoor Café Chair

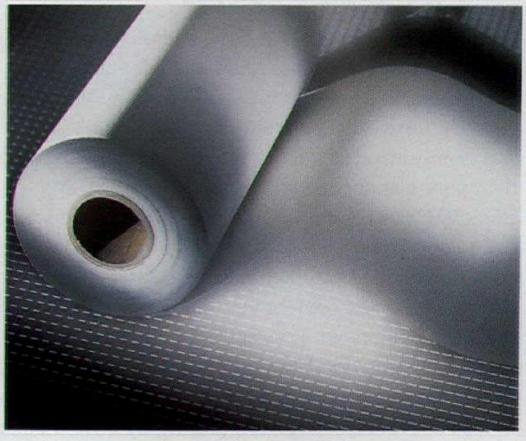
The Bebop chair, designed by Jonathan Crinion, is available from Kiosk Mobilia. The chair has an elliptical solid maple backrest, a maple plywood seat, and a textured gray frame. The seat and back are available with wine, mustard, blueberry mist, and pale sage finishes.
Circle **100** on reader service card

Wood Stoves

The RAIS line of woodburning stoves is available from Harbor Farm in cylindrical, rectangular, or built-in models. Changeable color panels come in yellow, scarlet, violet, ultramarine blue, light blue, white, or black. The RAIS line is environmentally friendly, providing energy-saving heating and cooking. The stoves are made of steel up to 1/4" thick, firebrick, and have steel or tempered-glass doors.
Circle **101** on reader service card

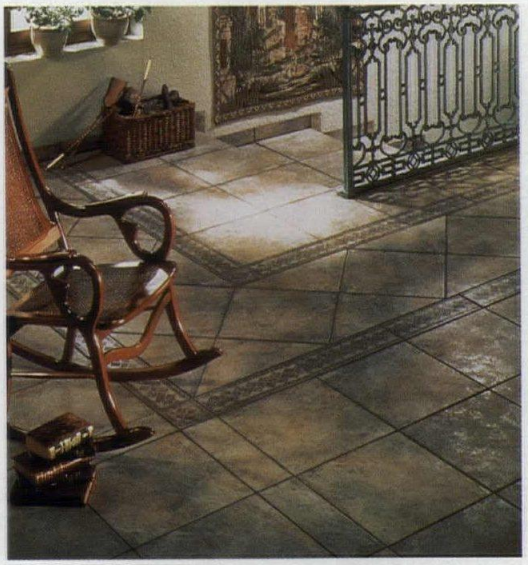
Chenille Fabrics

Two chenille upholstery fabrics designed by Jhane Barnes have been added to Knoll's line of textiles. Embassy is a checkerboard design made of wool, rayon, polyester, and nylon and is available in steel, copper, pewter, and gray-blue colorways. Academy is a fabric with the same fiber content as Embassy and is available in nickel, bronze, iron, and lead colorways.
Circle **102** on reader service card



Reinforced Membrane Roofing

GenFlex RM, available from Genflex, is a reinforced thermoplastic membrane for use over a wide range of roof decks and insulation materials. Its two layers of PVC material are fused together with a layer of fiber reinforcement. The membrane is resistant to tears, punctures, and UV rays and can be mechanically attached or fully adhered.
Circle **103** on reader service card

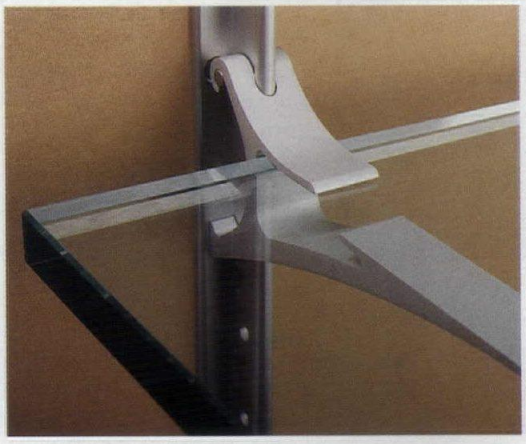


Interior Tile

Dal-Tile introduces its Lithos™ series of interior tile. The tile, which gives the appearance of antique weathered marble, is available in five colors: Verde (green, gray, and tan); Rosso (orange-red with white accents and gray veins); Beige (neutral with gray veins); Blanco (rosy beige shading with gray veins); and Gris (brownish-gray with gray veins). Lithos comes in 12 3/8" x 12 3/8" and 16 5/8" x 16 5/8" tiles.
Circle **104** on reader service card

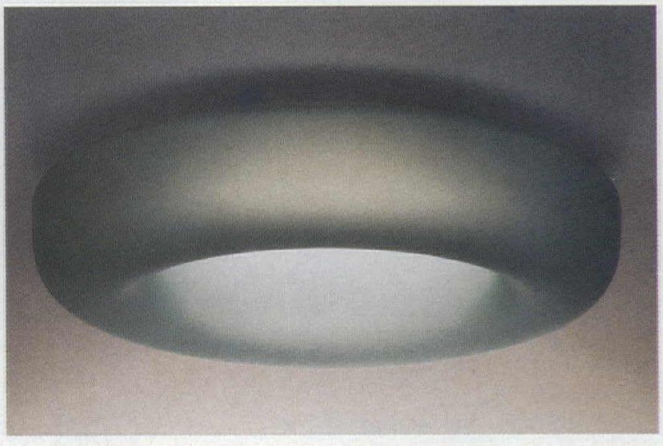
Bath and Kitchen Collection

Waterworks® is a collection of kitchen and bathroom fixtures and accessories. Products are updated classics or authentic reproductions. A collection of ceramic (hand-glazed and made to order), stone (limestone, marble, or cleft slate), and mosaic tiles is also available. (Shown above: Bruges round and oval sinks, available in hammered and weathered copper or hammered satin nickel.)
Circle **105** on reader service card



Shelving System

A wall-mounted shelving system called "Ellen's Brackets" is available from the Parallel Design Partnership. They are made of anodized aluminum and are mounted on tracks. The brackets are locked into place with stainless steel pins, come in two sizes to accommodate 3/4"- or 3/8"-thick shelving, and are vertically adjustable at 1 1/2" intervals.
Circle **106** on reader service card



Downlighting with Decorative Glass

Zumtobel's OPTOS Downlight Series now includes three glass accessory covers called Auriga (shown above), Tauri, and Mizar. They are suspended from the OPTOS luminaire with tabs attached to an accessory ring and are available for both 6" and 8" apertures. A selection of light sources (incandescent, PAR, compact fluorescent quad, or metal halide), reflectors (faceted or louvered), and ring finishes (clear or white) are offered. Auriga comes in white, blue, and green; Tauri comes in green and blue; and Mizar comes in red and blue.
Circle **107** on reader service card

Dimming Control for Fluorescent Lighting

Lutron announces its Personna fluorescent light dimming control system for commercial applications. An infrared remote control sends signals to a fixture-mounted receiver that activates an electronic dimming ballast. Employees can adjust illumination levels of individual or groups of lights for different tasks.
Circle **108** on reader service card

Door Access and Sealing System

ADA Access System is manufactured by Zero International. The three-component system includes: a "Light Spring" automatic sliding door bottom that can be semi-mortised or surface-mounted; a ¼"- or ½"-high door saddle available in 3" to 7" widths; and a Compress-O-Matic® Head and Jamb Protection System, a neoprene seal, and a protruding neoprene "finger" that provides a guard against excessive force or movement.
Circle **109** on reader service card

Coolers and Fountains

Elkay's Soft Sides™ water coolers and drinking fountains have rounded fronts and lead-free components and are made of 18-gauge steel. Four water cooler and three drinking fountain models are available. Wall-mounted and sensor-operated models are designed to meet ADA requirements.
Circle **110** on reader service card

Floor Coating

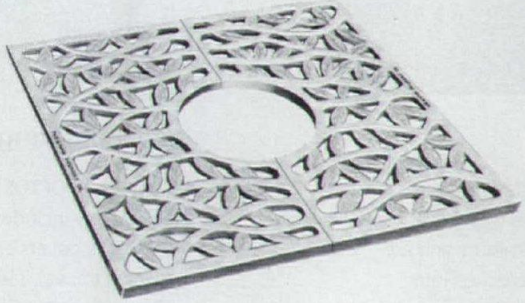
Day-Chem Sure Hard J-17 chemically bonded floor protection is available from Dayton Superior. The product can be applied to interior and exterior concrete floors and masonry surfaces, protecting them from tire marks, dusting, and water.
Circle **111** on reader service card

Decorative Wall Finish

Aquafleck® decorative wall finish is available from California Products. The two-coat system includes a solid color 100% latex base coat and an acrylic latex finish coat with color flecks. The water-based finish comes in 48 colors and is odorless, quick-drying, lead- and mercury-free, and cleanable. Aquafleck® is ASTM Class "A" fire-rated and can be applied to plaster, sheetrock, ferrous metal, wood, and masonry block.
Circle **112** on reader service card

Keyless Filing System

The Keyless Entry Storage System and Custom Applications system, manufactured by Meridian, controls access to filing systems with a flush-mounted electronic keypad. A bar-code option provides continuous file tracking to instantly locate any file within the system. The Custom Applications and Keyless Entry Storage System can control up to 100 multidrawer file cabinets. The system comes with a backup power source insuring accessibility during emergencies.
Circle **113** on reader service card



Tree Grate Catalog

This 38-page catalog of cast iron tree grates and guards manufactured by Neenah Foundry illustrates more than 75 styles, including the R-8730 180° Square grate (shown above). All products are made from recycled materials including automobile parts and other scrap iron; they meet or exceed ASTM A-48 Class 35 standards. Most units allow for the installation of sub-grade lighting units. Primer and finish paints are available as options.
Circle **114** on reader service card

Computer Products

Fastest Inkjet Plotter

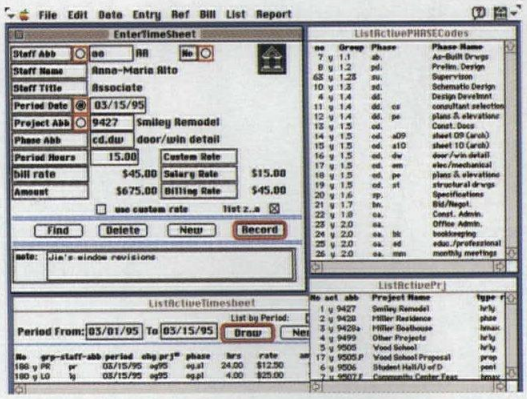
Hewlett-Packard has introduced its fastest inkjet plotter, the HP DesignJet 750C large-format color plotter. With more functionality than the 650C, this plotter costs $500 less – $6,495 for a D-size and $7,495 for an E-size plotter. Outputting a typical CAD drawing in four minutes, the new plotter can create smooth area fills without color banding.
Circle **115** on reader service card

Audio Animation

Visual Information Development has upgraded its Presenter Professional animation software with Digital SoundStage™, which allows users to pull sound, pictures, and animation together in the presentation of projects. Special 3D microphones can be placed anywhere in a room to simulate the actual audio environment.
Circle **118** on reader service card

Construction Management System

IBM has teamed up with Software Shop Systems to offer a single-source for hardware and software for the construction industry. The menu-driven, job-cost accounting program, called "The Construction Manager," will now be backed by IBM hardware and support. Single-user and multi-user systems are available.
Circle **119** on reader service card



Project Management Software

Architect Arne Bystrom designed Mac Architect to handle invoicing, job costing, and receivables; to track multipliers and efficiency ratios; and to produce project performance reports. Available from the BEEDEE Corporation, the new version – MacArchitect 2.0 – is accelerated for the Power MacIntosh and has improved reporting capabilities.
Circle **116** on reader service card

Building Products CD

Builder magazine has released its Buyer's Guide on CD-ROM, Version 2.0, entitled *The 1996 Guide to Building Products*. Containing information on 10,000 products from 2,100 manufacturers, it features interactive product catalogs, videos, and 400 new product introductions.
Circle **120** on reader service card

Customizable CAD

Eagle Point has released ArchPro for AutoCAD™, easily learned and customizable design software. It contains parametrics of structural components, walls, doors, windows, and roofs to speed the creation of drawings. It also has expanded text capabilities, an animation option, and simple 2D to 3D conversions.
Circle **117** on reader service card

Multifunctional Plotter and Copier

Release 1.1, an upgrade of the Océ 9800 multifunction plotter/copier has been introduced by Océ-Bruning. A matrix job-plotting feature lets users create various types of plots automatically. Automatic image shifting, roll selection, and origin detection are other productivity-enhancing aspects of the new release.
Circle **121** on reader service card

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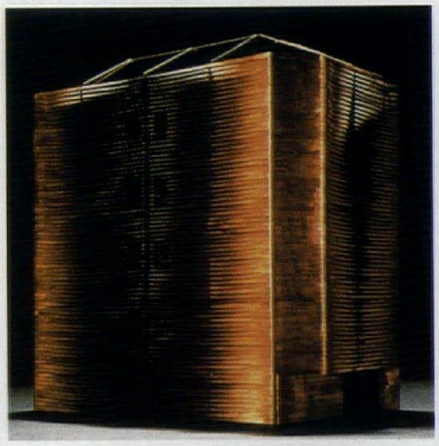
Circle **No. 310** on Reader Service Card

Monolithic Architecture's Mysterious Rationale

A show at the Heinz Center reveals the beauty of buildings that look solid. But how would they stand up to real life? *by Steven Litt*



Studio Friel

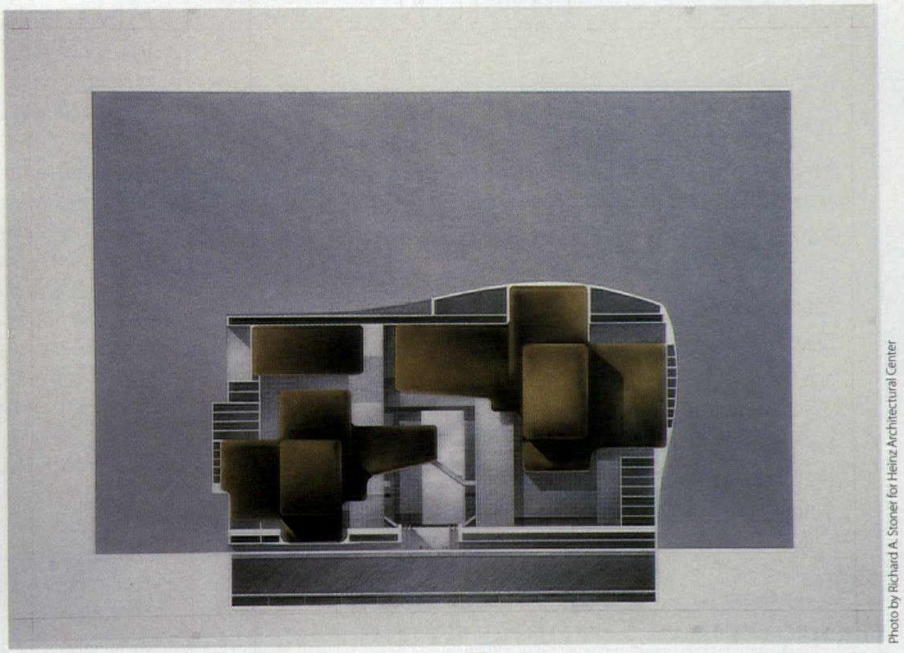


Photo by Richard A. Stoner for Heinz Architectural Center

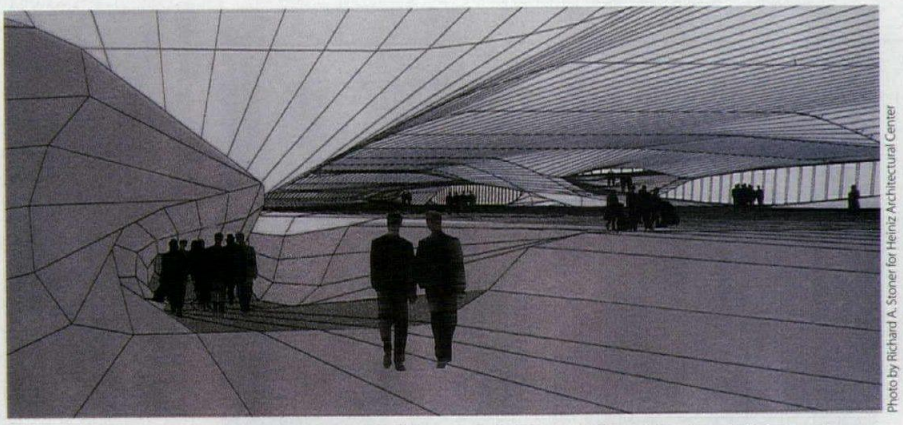


Photo by Richard A. Stoner for Heinz Architectural Center

Included in the Pittsburgh show are a model of Herzog & de Meuron's Signal Box (top left) in Basel, a section of Jean Nouvel & Associates' New National Theater in Tokyo (top right), and a computer rendering of Farshid Moussavi and Alejandro Zaera-Polo's Yokohama International Port Terminal.

Forget context. Forget traditional urbanism. Forget the idea that a building should express or even reveal its internal functions. A striking and provocative exhibition put on by the Heinz Architectural Center at the Carnegie Museum of Art in Pittsburgh documents nine recent projects that strive to overwhelm their surroundings – and users – by looking massive, monumental, and occasionally more than a little strange.

Most of the nine buildings in "Monolithic Architecture," as the show is called, have more in common with the stark beauty of minimalist sculpture or with the streamlined look of machine housings than with historicist imagery or deconstructivist deformation. Rather than strive for a smooth contextual fit with their environs, the buildings express benign indifference to the outside world, like a whale amid a school of minnows.

Sculpted Austerity

With works by Peter Eisenman, Rem Koolhaas, Rafael Moneo, Jean Nouvel, and others, the exhibition is visually stimulating, tightly focused, and full of visionary projects that occupy a zone between austere beauty and a domineering desire to crush and overpower. The sheer forcefulness and sculpted elegance of the models in the show gives it the potential to engage a broad public, although the introductory essay in the exhibition's catalog is jargon-studded and seems aimed at graduate students and others who decipher academic prose for a living.

The show is the latest venture of the two-year-old Heinz Center, a small but promising architecture department at the Carnegie that was established with a $10-million gift from Pittsburgh's Drue Heinz Foundation. "Monolithic Architecture" is the brainchild of Rodolfo Machado, a professor at the Harvard Graduate School of Design and a principal in the firm Machado and Silvetti Associates, and of Rodolphe el-Khoury, an assistant professor at Harvard and a partner in Office dA.

The idea is that through tricks in the handling of materials, concealment of doors and windows, and other sleights of hand, a building can create the impression that it is not a hollow container but a solid monolithic mass. Why pursue such a goal? Because, as the organizers put it, the imposition of strict limits on the form of a building can lead to a "clear and single utterance" that delivers "tremendous eloquence with very limited formal means."

The premise comes across powerfully in Nouvel's 1986 competition entry for the New National Theater in Tokyo. Renderings make the building look like *(continued on next page)*

Steven Litt is the architecture critic of the Cleveland Plain Dealer.

Monolithic Architecture *(continued from previous page)*

a gigantic chunk of polished obsidian, with swelling contours clad in shiny black stone. The irregular volumes of the auditoriums inside are to be sheathed in gold leaf and cradled in their black container like musical instruments inside a carrying case. The mystery and enigma in Nouvel's project and in others relate monolithic buildings to the wrapped structures of Christo and the cubic sculptures of Donald Judd.

A spirit of elegant otherness pervades Philippe Starck's Le Baron Vert, an office building completed in Osaka in 1992, which resembles a giant tombstone clad in panels of green-colored metal. The same is true of a five-story railroad Signal Box, built in 1988 for the Swiss Federal Railway in Basel from a design by Jacques Herzog and Pierre de Meuron. Their building is a concrete pillbox wrapped in shiny bands of copper like a motor housing or a piece of electrical equipment. (This work, incidentally, is also included in the Museum of Modern Art's "Light Construction" show in New York; go figure.)

Monolithic's Light Side

Not everything in the show tries to look like solid rock or heavy metal. Koolhaas's 1989 design for a Sea Terminal on the coast of Belgium resembles a blown-up version of dockside bollard, with truck ramps radiating from the base instead of mooring lines for ships. Portholes in the façade and a huge glass bubble on top reveal a hotel, a casino, and other internal components.

The show stretches the idea of skin-as-architecture to include Farshid Moussavi and Alejandro Zaera-Polo's 1995 design for the Yokohama International Port Terminal, now under construction. Fashioned out of folded plates of steel, the pier is an undulating dunescape with walls, floors, and ceilings that meld in curvaceous topographies like those of Eero Saarinen's TWA Terminal at John F. Kennedy International Airport in New York, but on a vaster scale. The Yokohama Pier has plenty of the futuristic strangeness that pervades the rest of the show, but unlike the other designs, it is marked by an engaging playfulness; its flowing surfaces look like a skateboarder's paradise.

While the show makes a strong case for monolithic architecture, it also reveals weaknesses. The emphasis on sleek, uninterrupted surfaces makes it hard to imagine many of the projects as real buildings with expansion joints, air intake louvers, and other picky necessities of real construction that would tend to deflate the desired monolithic impression.

What the exhibition doesn't explain is why advanced capitalistic societies at the end of the millennium are calling forth such stark, simple forms. Perhaps it is a desire to show architecture's power to create a real experience of place at the very moment when virtual reality is destroying the importance of place. Or perhaps it stems from a puritanical desire to reduce architecture to Platonic solids. One thing seems certain, however: In all but the most skillful hands, monoliths would be simply big, banal, and bland – like the typical shopping mall. To work as true monoliths, buildings have to be designed with passionate precision, and it is difficult to envision more than one or two monoliths per city. They are hardly the kind of things with which to weave an urban fabric.

No, monoliths are special objects intended to impose order on the spaces around them, like the obelisks in the Rome of Pope Sixtus V. It may be time for city planners to rev up their regulations, lest too many monoliths drop onto the landscape with a loud, reverberating thud. □

MORE THAN $50,000 OF PRIZES WILL BE AWARDED AT THE INTERNATIONAL LEVEL:
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HONORABLE MENTIONS: ARCHICAD STUDENT VERSION

VR Une Architecture

INTERNATIONAL STUDENT CAD COMPETITION

"Man looks at the creation of architecture with his eyes which are 5'-6" from the ground. One can only deal with aims which the eye can appreciate, and intentions which take into account architectural elements."

-"Vers Une Architecture," Le Corbusier, 1923

MORE THAN $30,000 OF PRIZES WILL BE DISTRIBUTED IN THE UNITED STATES:
FIRST PRIZE: POWERMAC 9500 WITH 21" MONITOR + ARCHICAD + TRIP TO INTERNATIONAL JURY + $250 TO THE LOCAL AIAS CHAPTER
SECOND PRIZE: POWERMAC 8500 WITH17" MONITOR + ARCHICAD + $250 TO THE LOCAL AIAS CHAPTER
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1996 GRAPHISOFT PRIZE

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THE ARCHITECTURAL REVIEW

GRAPHISOFT®

One of the most exciting recent technological achievements in the computer industry is the arrival of "Virtual Reality" on personal computers through Apple Computer's QuickTime VR technology. The potential to navigate freely within a rendered scene simply by moving the mouse creates new opportunities for the exploration of three-dimensional space. Graphisoft and the competition sponsors invite all architectural student and intern to explore the potential of this technology on architectural design and the communicate of design by participating in an international design competition.

DESIGN CHALLENGE

Using ArchiCAD as a design and modeling tool and QuickTime VR as a visualization tool, we are interested in your interpretation of works which have never existed physically or are long missing from the physical landscape, but are nevertheless real in our present day culture. We invite students to make manifest our cultural "virtual reality" by generating a computer-based "virtual reality" based on one of the following references:

• THE **LABYRINTH** • THE **PLEASURE DOME** AT XANADU FROM COLERIDGE'S "KUBLA KHAN" • THE **PHAROS OF ALEXANDRIA** • **RYUGUJO** FROM JAPANESE FOLKLORE • THE **ABBEY FROM THE NAME OF THE ROSE** BY UMBERTO ECO • THE **CENOTAPH FOR NEWTON** FROM THE PROJECT BY E.L. BOULLEE • THE **HANGING GARDENS OF BABYLON** • THE **STODDARD TEMPLE** FROM AYN RAND'S THE FOUNTAINHEAD • THE **DEPARTMENT STORE (GRAND MAGASIN)** FROM EMILE ZOLA'S LADIES PARADISE (AU BONHEUR DES DAMES) • **HOTEL CALIFORNIA** FROM "HOTEL CALIFORNIA" BY THE EAGLES.

The jury will use computer files to evaluate entries. Each entry must include between five and 25 QuickTime VR scenes generated from ArchiCAD showing design intent and the quality of spaces. A three-dimensional computer model of the entire project should also be submitted in the ArchiCAD file format.

SCHEDULE

- Registration opens: September 1, 1995
- Registration closes: January 31, 1996
- Submissions due : April 30, 1996 • US and local juries: May 9, 1996 • International jury: May 27, 1996 in Copenhagen

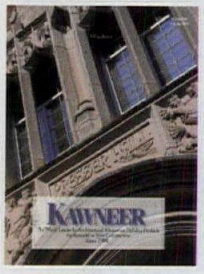
ELIGIBILITY

All registered full-time or part-time students of architecture, landscape architecture, interior design, urban planning, or an allied discipline. All interns who have graduated from a school of architecture within the past five years.

For Information and Registration call the AIAS at 202-626-7472

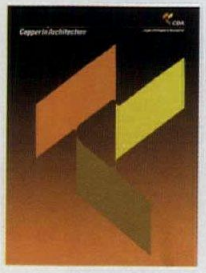
Cladding & General Products and Services Literature Digest

This new four-page flyer shows the lighting products available from BEGA that conform to ADA standards. A simple, easy to follow grid of product photographs indicates each product number and the corresponding page number for the BEGA Catalog No. 6. An index on the back page denotes lamp and dimensions for each product.
BEGA/US. Circle No. 330

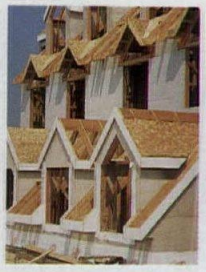


Kawneer Company's classic aluminum windows combine design flexibility, improved insulation, and lowered maintenance costs for renovation and new construction projects. A particular aesthetic can be achieved with exterior panning, interior trims, and applied or between-the-glass muntins. Thermal superiority stems from Kawneer's patented Isolock® thermal break, separating the frame's interior and exterior.
Kawneer Company, Inc. Circle No. 333

The TacFast™ Carpet System offers a revolutionary way to make carpet installations quicker, easier, and more economical than ever before – thanks to a built-in loop backing and a 3M hook tape. The innovative system has no offensive adhesive odors and offers flexible design opportunities.
3M Specialty Chemical. Circle No. 335

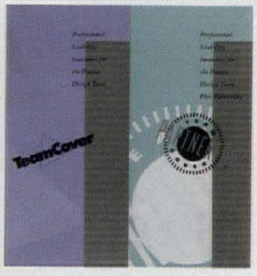


This eight-page folder describes recent and ongoing work by the Copper in Architecture Program to provide the architectural community with copper design detail, specifications, and technical information. The folder contains both general and specific data on the use of copper.
Copper Development Assoc. Circle No. 331



FiberBond® sheathing from Louisiana-Pacific is designed for use on outside or sidewall framing. It provides a water-resistant backing for a variety of exterior siding materials. The panels are strong and fire-resistant with superior fastener holding ability. Sheathing can be used in EIFS construction and meets or exceeds ASTM C79 requirements. Wallboard and underlayment panels are also available. **For a free brochure, call (800) 299-0028, ext. 340.**

United States Gypsum Corporation's *USG Fire Stop System for Floor and Wall Penetration* is a 12-page brochure with technical and application data on a wide range of UL-classified systems and designs for the USG Fire Stop System. The system's primary component is FIRECODE Compound, which effectively blocks smoke, gas, flames, and water from passing through penetrations in concrete floor and gypsum board wall assemblies.
United States Gypsum Co. Circle No. 336

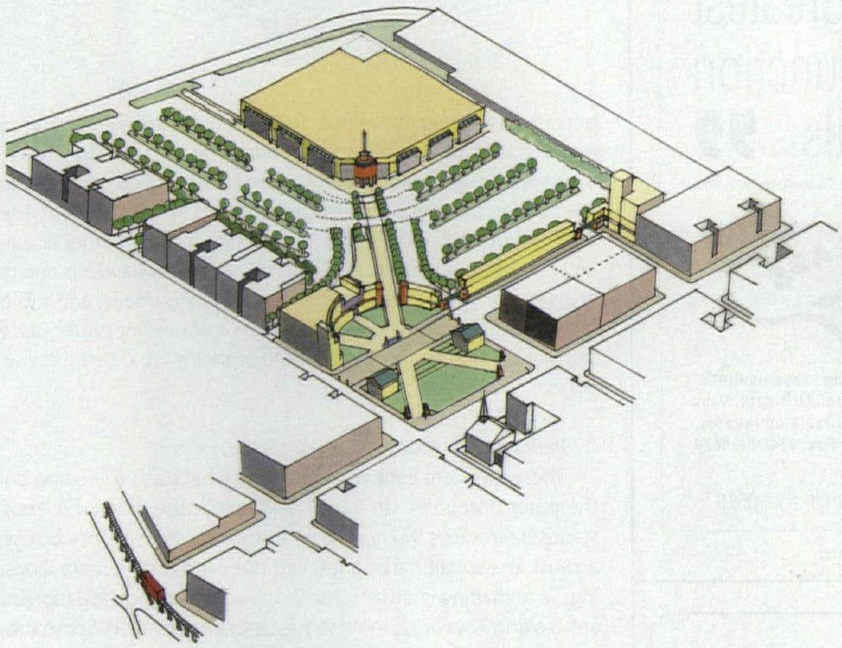


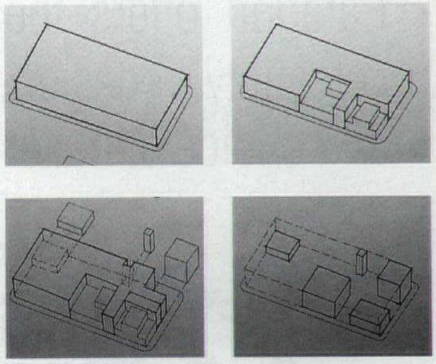
TeamCover is DPIC's project-specific professional liability insurance for the whole design team. It is noncancelable with a dedicated limit and guaranteed premium rate for the life of the project. Partnered TeamCover includes project coverage and partnering: DPIC helps to pay to get the design and construction teams working together to bring the project in on time, on budget, and with no disputes.
DPIC Companies. Circle No. 332

The Marvin Design System (MDS) is a comprehensive software package that helps architects and designers to streamline the CAD design/specification process. MDS works with Windows and AutoCAD, allowing both small and large firms to take advantage of several unique and time-saving on-line features not available with any other design software.
Marvin Windows & Doors. Circle No. 334

Breaking Out of the Box

As superstores enter that bastion of street-oriented urban retailing, New York City, critics are trying to make them fit in better. *by Philip Langdon*





Public Works Design envisioned a superstore (left) with a corner entrance axially linked to a public open space. Nearby buildings, forming a consistent edge, would give a sense of enclosure to the parking lot. A group in the Graduate Urban Design Program at Pratt Institute proposed carving pieces out of the Big Box (above), inserting more varied activities into them, and relocating some Big Box merchandising to other locations nearby.

There was a time when new trends in retailing originated in the big cities and only later trickled out into the hinterland, where people and money were scarcer. But in 1990s America – the world's first predominantly suburban civilization – the old order is often reversed; development trends sweep across vast stretches of outlying terrain before finally, like the Visigoths of the Fourth Century, they march into the weakened city.

No Wal-Marts have yet arrived in New York, but the great metropolis is readying itself for superstores. Mayor Rudolph Giuliani and the City Planning Department not only anticipate so-called Big Box retailers; they're eager to lay down the welcome mat, especially in sections of the city where manufacturers (whose employment has plummeted by two- thirds since the late 1950s) have ceased to occupy much of the land zoned for industry. Such a prospect gives the willies to those who care about architecture and traditional urban qualities. Consequently, an important public debate has begun to unfold, one in which the rest of the country, along with New York, has an opportunity to think about how to deal with merchandising behemoths.

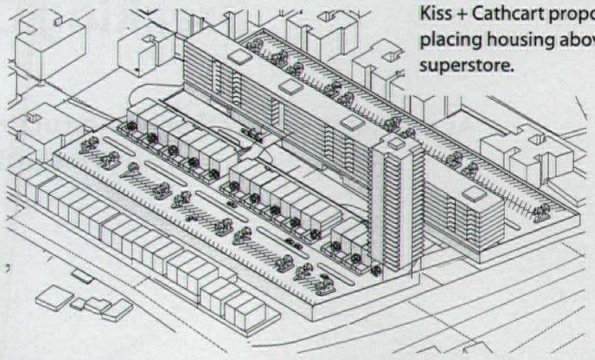
They'll Take Manhattan

A number of superstores – retailers that typically occupy bulky, inexpensive one-story buildings, selling large volumes of goods cheaply – have already landed in Manhattan. On Sixth Avenue between 19th and 23rd Streets, retailers such as Burlington Coat Factory, T.J. Maxx, Staples, Barnes & Noble, and Bed, Bath & Beyond have taken up residence en masse, congregating in what were, just five years ago, the largely vacant department stores from New York's turn-of-the-century "Ladies' Mile." Many of the newly arrived merchandisers have adjusted comfortably to this old-time environment of sidewalks and display windows on the outside, elevators and escalators on the interior. Some have yet to think through all the details of using late-19th-Century multifloor buildings, but on the whole, the results have been encouraging. Sixth Avenue exudes urban well-being.

In the outer boroughs, as in most suburbs, superstores are unlikely to support such urbanistic splendor, however. So Robert Lane, Ann Kaufman Webster, and Michael Conard organized a Municipal Art Society program, "Beyond the Box," in which they asked designers to develop ideas for sites in four of the five boroughs. The results varied greatly. Some participants proposed breaking up the box. A group in the Graduate Urban Design Program at Pratt Institute (Todd W. Bressi, James Rossant, Richard Scherr, Pushpa Arabindoo, and Hui Do) suggested that the main selling area not be a perfect rectangle, but instead a large space edged by recesses, bulges, and balcony connections. These irregularities, and the varied uses they could accommodate, would, they said, help the Big Box "celebrate the inherently public act of shopping." Kiss + Cathcart Architects, New York, proposed organizing superstore retailing as two sides of a street, with 300 units of townhouses or slab tower apartments above to encourage 24-hour use and casual surveillance.

Most intriguing in its simplicity was a solution offered by Public Works Design, a Los Angeles urban design firm. That firm's exhibitors (Doug Suisman, Alex Bassin, George Chacon, Thomas Nagel, and Anthony Pardowski) accepted the economic inevitability of a single-story building with an essentially rectangular plan, but they rotated the box so customers would *(continued on next page)*

Breaking Out of the Box *(continued from previous page)*



Kiss + Cathcart proposed placing housing above a superstore.

enter from a corner rather than from the usual unceremonious opening in an interminable front wall. If people arrived through the corner, their cone of vision would correspond to the angled configuration of the interior; the space would open outward in front of them. The designers argued that the corner should face a street corner or a newly created public open space, which might contain pavilions and green areas for daycare, a playground, community gardens, and job training. The Big Box could thus help define a significant public place, especially if buildings nearby were also organized to create a consistent edge.

Parking Lots 'R' Us

These ideas are light years ahead of what's actually being built in the outer boroughs. On Bartow Avenue in the Bronx, for example, stands a new Toys 'R' Us store: a brutally simple masonry box set up against an asphalt parking lot, without even rudimentary landscaping. So uninviting is it that some Bronx residents shop at a more pleasant-looking Toys 'R' Us in Westchester County instead. Some suburbs are far ahead of the city in requiring Big Box retailers along highways to plant trees and ground cover, install landscaped berms between parking lots and the roads, articulate long façades, and provide pedestrian walkways.

There is no single best way of dealing with superstores. In many small communities, where a general-merchandise superstore like Wal-Mart would crush the existing downtown, local governments – backed by appropriate state laws, like Vermont's Act 250 – would be wise to reject superstores or require them to settle in the central business district. Useful strategies are explored in Constance Beaumont's *How Superstore Sprawl Can Harm Communities, and What Citizens Can Do About It*, published last year by the National Trust for Historic Preservation.

No one should swallow easily the arguments being advanced by developers' representatives and by the exponents of an unfettered free market; many of their assertions are intellectually sloppy or dishonest. In a Municipal Art Society symposium, John Alschuler, a management and real estate consultant who works with developers, claimed that retailers would consider it "torture" to have housing included in their sites, and he insisted that developers want to avoid mixed use. Hearing this, a woman in the audience pointed out something Alschuler had conveniently failed to mention: that superstore developers participating in the Beyond the Box program had already indicated they could in fact accommodate alterations of their standard formats – including mixed use – if they were required to do so. The assumption that retail development must take the uninspired shape we see along the usual commercial strip deserves only scorn. The New York program thus modestly advanced the cause of decent urban design, in part by displaying better designs, and in part by showing the public that statements from business advocates about what is feasible ought not be accepted at face value. □

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Please submit a publication-quality package including clear, unlabeled black-and-white plans and sections in the form of photostats or high-quality computer prints. Graphic scales, north arrows, and room functions should be supplied on accompanying photocopies of the drawings. We also need two or three photos (prints or duplicate slides or 4x5 transparencies suitable for publication). Be sure to include photo credits.

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Architect (include credits for people in firm plus the names of associated architects)

Client (name)

Program (brief description of requirements)

Building area (net and gross square feet)

Cost (per gross square foot, and year of construction)

Major materials (keep list brief)

Consultants (list firm names and specialties)

CAD-developed? (yes or no)

Architect's statement (about 150 words, describing design intent and final design)

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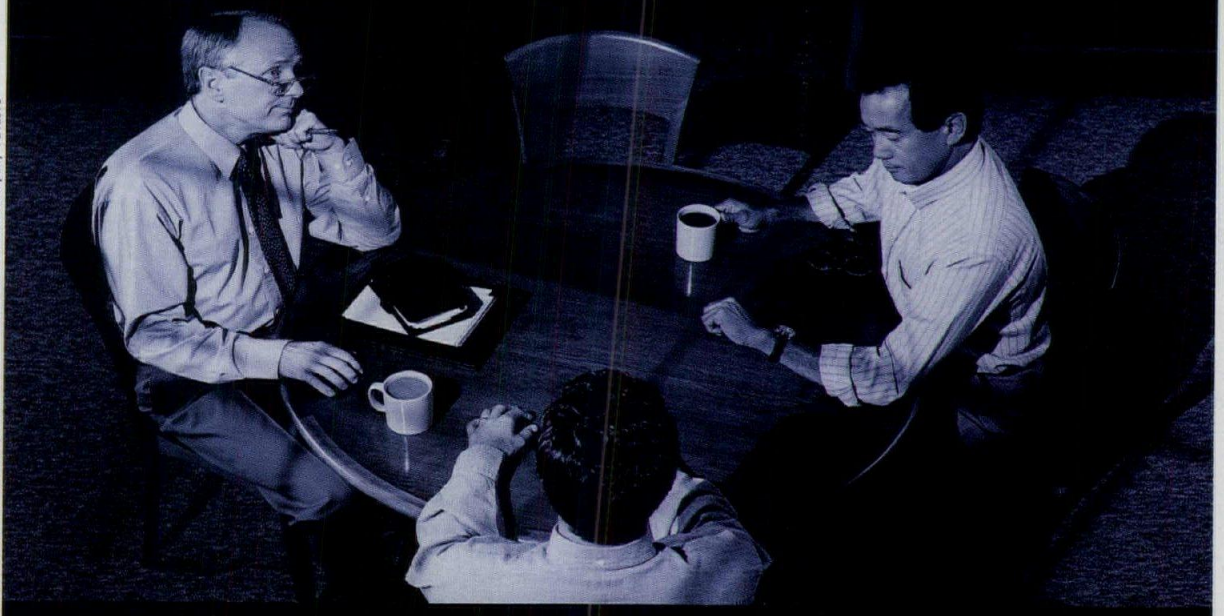

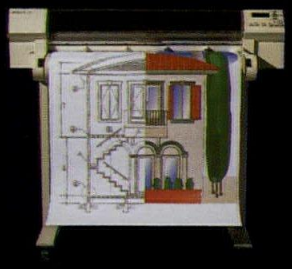

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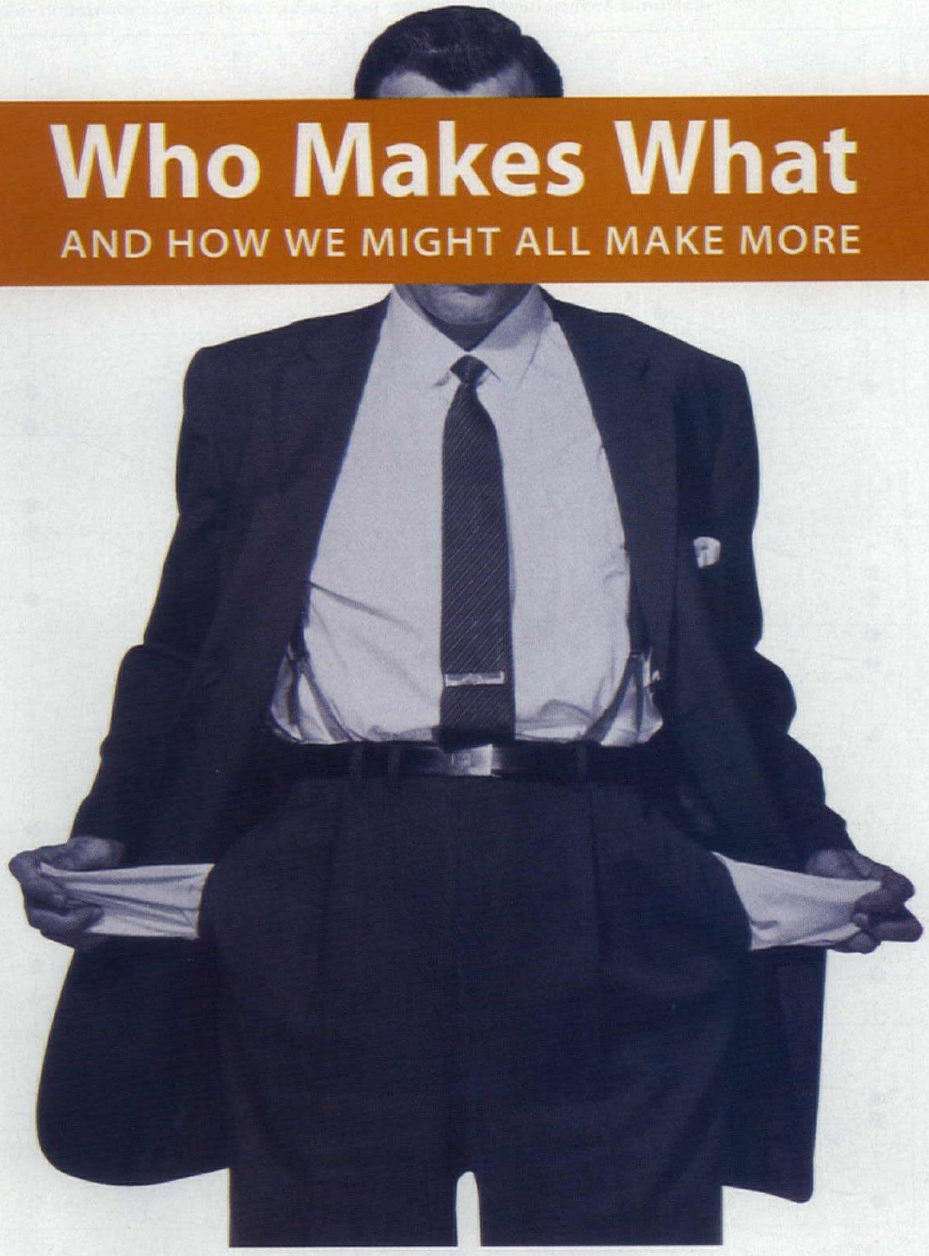
Who Makes What

AND HOW WE MIGHT ALL MAKE MORE

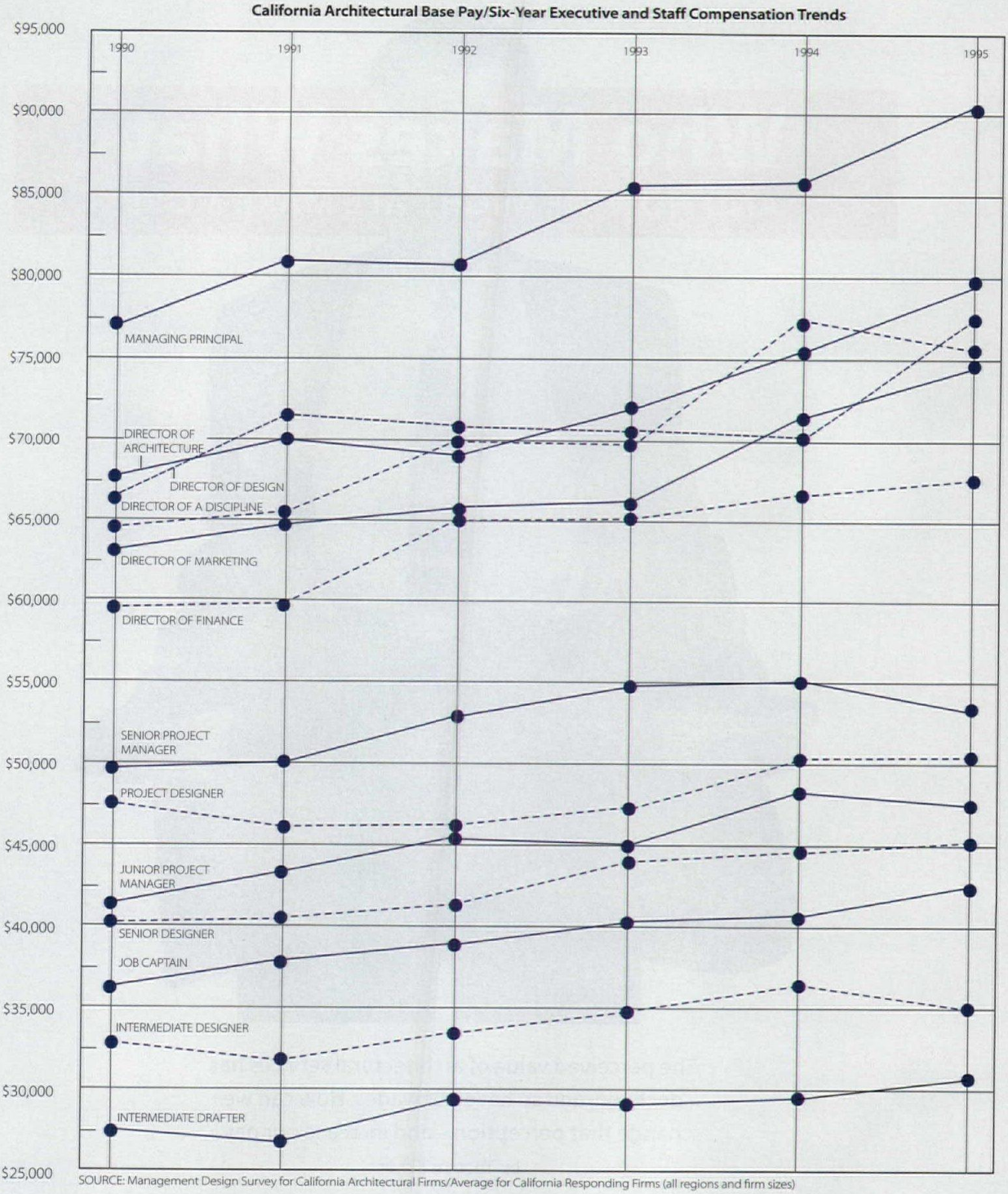


The perceived value of architectural services has declined, and so have our wages. How can we change that perception – and increase our pay?

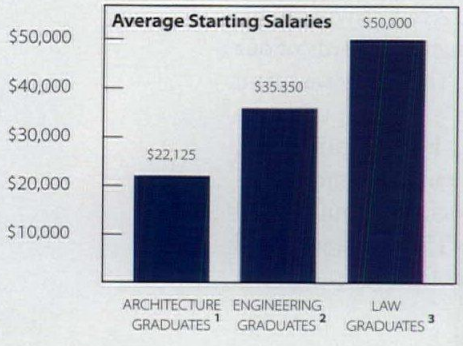
by Thomas Fisher

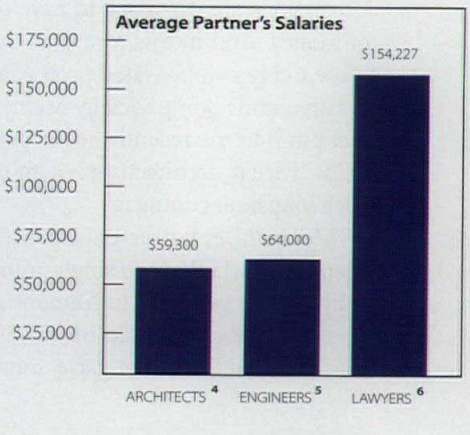
Professions are supposed to have compensations beyond that of money. And in this regard, architecture may be one of the more richly compensated professions of all, allowing us to be creative while doing socially useful work. As a Nashville architect put it to me recently, when describing the rewards of our field, "Face it, architecture is a lot of fun. That's why we spend such long hours doing it."

Meanwhile, better-paid professions have begun to ask themselves whether too single-minded a pursuit of money has eclipsed the personal fulfillment and social commitment of their work. Recent books on law, such as *The Lost Lawyer* and *The Betrayed Profession*, have argued that the legal profession



SOURCE: Management Design Survey for California Architectural Firms/Average for California Responding Firms (all regions and firm sizes)





SOURCES

1 CENTER FOR THE STUDY OF THE PRACTICE OF ARCHITECTURE/ UNIVERSITY OF CINCINNATI
2 AMERICAN ASSOCIATION OF ENGINEERING SOCIETIES
3 NATIONAL ASSOCIATION FOR LAW PLACEMENT
4 AMERICAN INSTITUTE OF ARCHITECTS
5 NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
6 SURVEY OF LAW FIRM ECONOMICS

has focused too much on the marketplace and has lost its core values, its collegiality, and its public respect.

But the psychological compensations of architecture do not pay the bills, and more and more architects are finding it hard to earn decent fees or even a livable wage. The average starting salary of architectural interns, according to the University of Cincinnati's Center for the Study of the Practice of Architecture, is $22,125, less than half of what the National Association for Law Placement claims is the average starting salary of lawyers entering private practice: $50,000. And the mean compensation of architectural principals, says the AIA, is $59,300, less than half the $154,227 average income of partners in law firms reported in a 1993 Survey of Law Firm Economics.

Even a field closer to our own – engineering – pays markedly better. As a female practitioner from Wisconsin writes, "I started six years ago at $4.50 an hour! I moved up to $6.00 then changed jobs for $6.50 an hour. I started where I am now, with a master's degree, for $9 an hour. I have friends with four-year engineering degrees making $30,000 to $35,000 to start! I certainly expected better when I graduated." Surveys confirm those numbers. The American Association of Engineering Societies shows engineers' median starting salary as $35,350, while the National Society of Professional Engineers lists their median income at $64,000.

Why have architectural wages seemingly fallen so far not only behind other professions', but behind where we were in terms of buying power just twenty years ago?

These disparities probably come as no surprise to most of us. We all learned, at some point during our education or internship, that architecture was not a field in which one is likely to become rich. But the extent to which those numbers represent a fairly dramatic fall in architects' standard of living over the last few decades is not at first clear. Architectural compensation surveys, for example (facing page), generally show average incomes rising, if very slowly in recent years. While such surveys can help us ascertain the wage ranges for particular job titles or locations, they tend to disguise the profession's financial condition, since they rarely evaluate the real buying power of our incomes.

An architect in Vancouver offers some insight into what we discover when such evaluations are made. "I was recently given some figures," he writes, "derived by an actuary, which gave a factor to apply to the wages earned in 1975 to compare them with wages in 1995. These were Canadian figures and took into account changes in tax structure, inflation, etc., and gave a comparison. If one earned so much in 1975, this is how much you would have to earn in 1995 to have the same spending power. In 1975, I earned $10,200 Canadian. In 1995, to have the same spending power, I would have to earn over $160,000 Canadian !!!" This suggests that, were we keeping up with our earning power twenty years ago, we should be making, on average, what lawyers now make. The U.S. consumer price index shows that current salaries would have to be 3.26 times higher than in 1975 just to stay even, while census figures indicate that average architectural incomes have increased only 2.9 times over that same period.

Why have architectural wages seemingly fallen so far not only behind other professions', but behind where we were in terms of buying power just 20 years ago? And what can we do about it without sacrificing the other personal compensations that attracted us to architecture in the first place?

The Wage Slump

In some respects, our stagnating wages correspond to a trend throughout much of the economy. The July 17th cover story in *Business Week* argues that the wage situation, at least in the United States "seems to defy the law of supply and demand: While companies prosper, inflation-adjusted wages and benefits are climbing at less than half the pace of previous expansions. Indeed, one Labor Department survey released in June shows real employee compensation actually sliding in recent years."

Whether this is good or bad depends upon your perspective. Some economists, according to *Business Week*, see stagnant wages making American labor more competitive, exports more attractive, and productivity more robust. Other economists, such as Jeremy Rifkin in his book *The End of Work*, are more pessimistic, viewing the wage slump as the result of the information-technology revolution, which "has seriously undermined the fortunes of middle-class wage earners ... (while) it has been a boon to the small number of top executives who run the nation's businesses."

Whatever your perspective on it, the wage situation, says the AIA's chief economist, Kermit Baker, "will get worse. With low inflation," he says, "firms can't raise fees and so they must eke profits out of greater efficiencies, fewer workers, and more pressure on salaries and benefits packages. There are pressures on costs throughout the economy, and architects are not immune." It seems, however, that wage stagnation has hit our profession harder than others. *The New York Times*, in a review of the recent census, shows architects in the top quarter of 49 job categories in terms of income, with a median weekly salary of $702. Yet the *Times* notes that, of all the fields included, architects are unusual in having "not seen a rise in their median pay since 1990."

Supply and Demand

One explanation for the stagnation of architectural income, in particular, is that the supply of architects is out of balance with the demand for our services. Houston architect R. Gregory Turner, in an article in the October issue of *Architectural Record*, argues that "the laws of supply and demand have caught up with the practitioners of architecture ... As spending [for construction] has leveled off, the number of people working in the architectural arena has nearly tripled." He rightly sees that cutting supply – shrinking or clos-

Who Does Well and Why

Some firms organize themselves to maximize compensation. David Weaver, an L.A. architect, "downsized" his firm and became a sole practitioner, outsourcing work to drafting services. "I am more efficient," he says, "and I have less stress and make more money," well into six figures in recent years. "Most architectural offices," he adds, "are terribly inefficient and poor at delegation." He believes architects can do well, financially, "if we keep service always in mind, focusing on making every client a repeat client."

William Krisel, another Southern California architect, started out some fifty years ago doing custom houses and found it hard to make a decent living. So his firm, Palmer & Krisel, developed and copyrighted a Modern, single-family house design that, "became the most popular in California," he says. "Builders put up 10,000 a year and we received a fee for each." Having prospered because of this economy of scale, Krisel feels that "there is no limit to your compensation. If you have a worthwhile idea, you will be paid handsomely."

The Atlanta firm, Design Traditions, set out "to improve the quality of spec house design," says architect Roger Caldwell, publishing collections of house designs called "Portfolio Homes." Homeowners and builders can order contract documents (by credit card if they wish), and can chose from a menu of customizing services, ranging in cost from $500 to $75,000. The firm, which also does custom commercial and residential work, has thrived, growing to 55 people in just 12 years.

ing schools, reducing the numbers granted licenses, discouraging youths from entering the field – as short-sighted, not to mention impossible to do.

But Turner's prescriptions for increasing demand have their own problems. "Sell the services clients want," he writes, arguing that design is not high among them. But if doctors sold patients what they wanted, surgery would not be high on the list either. The issue is not that we have oversold design to our clients, but that we have undersold it, allowing it to be portrayed as strictly an aesthetic, compositional act rather than the problem-solving, value-adding activity that it is. If we are to increase demand – and with it, increase wages and fees – we need to demonstrate, in ways that clients can understand and measure, the real worth of design.

Turner also advocates, in the spirit of this moment, reducing regulation and taxes, arguing that this will stimulate private construction. This assumes, of course, that regulation and taxes are, alone, preventing large numbers of clients from building, something for which there is little evidence. If other factors, such as the overbuilding of the 1980s, the globalizing of our economy, and the slower growth of our population, have also affected the amount of construction, then deregulation and tax reduction are unlikely by themselves to stimulate much new demand.

Changing Public Perceptions

Educating the public about the value of design is another tack often mentioned by many in the field. "It will be difficult to make architecture more lucrative without changing the American public's lack of appreciation for design," writes an intern from Washington. "Educate potential clients," says a project architect from Ohio, "as to the level of service they can and should expect from an architect." "Change the public's perception of who we are," adds a project architect from Connecticut. "Building code enforcement is not it."

But "how do you change the client's view of us?" asks an intern from Florida. The AIA's current advertising campaign in business publications (see P/A, April 1995, p. 15) is one effort, trying to make a link between the myriad problems architects must address in a project and the visual power of the final result. Such advertising has some value in getting architects out in front of people who have probably never met an architect or even thought about what we do.

But that advertising, like many of the profession's efforts at "educating" the public, assumes that people want – or feel that they need – to learn about a group whose work is increasingly viewed as a commodity. "The willingness of some [firms] to play 'name-that-fee' to keep busy," observes an Ohio principal, "has turned architecture into a commodity." (He estimates that 95 percent of the clients in his area chose architects based solely on the lowest fees.) "What's even scarier," he adds, "is that we often sound like commodities. A program manager recently told me that, at interviews, architects all say the same thing, despite very different skill levels or types of practices."

As long as we are widely seen this way, no amount of advertising is going to make a difference. Nor are other, more extreme approaches – for example, a "nationwide architectural

strike," mentioned by an architect in Georgia or a "return to a fee scale," proposed by a Arizona intern – likely to work, even if they were feasible or legal. If low fees and compensation stem from of a low perceived value, then we must learn to demonstrate our value in ways that nonarchitects understand.

Demonstrating Value

Winning awards and getting published are traditional ways of doing so. "Even though the historical identity of architects," observes the reigning sociologist of the profession, Robert Gutman, "has been that of artists who don't add much value, the successful, signature architects, ironically, do rather well, with better remuneration than many of the service firms." The difficulty with this form of demonstrating value is that it works only for those clients who want signature architecture, and it applies to a fairly small number of firms. Also, since the market value of name architects demands that the supply be limited, older ones tend to fall out of the firmament as new ones arise.

Other ways of demonstrating the value of design and architectural services are, by contrast, relatively undeveloped. "The profession," notes the AIA's economist, "has not learned to talk about what it does in a language that business people can relate to." To make his point, he wrote an article on the front page of *AIA Architect* reporting on research done in the early 1990s looking at the effect that well-designed office buildings in Boston had on rents, vacancy rates, and lease-up rates. In the tight market of 1986, rents were 20 to 25 percent higher, but in the soft market of 1990, good design made no difference.

One of the biggest obstacles to demonstrating the value of architecture is the architecture culture itself.

Although a worthy effort, that research shows how crude our measures of design's value really are. What effect does good design have, not just on rents and lease rates, but on the most expensive part of any building: the people who inhabit it – their happiness, productivity, and well-being? And what aspects of buildings – their exterior aesthetics, their interior amenities, their material durability – have the greatest effect or add the most value? The fact that we do not have demonstrable answers to such questions has a great deal to do with why we as a profession are not better paid.

As evidence of that, Gutman notes that "doctors, in the 19th Century, were poorly compensated, but in the 20th Century, they gained respect and increased remuneration." Their success arose, in part, out of a concerted effort by physicians and academic researchers, working together, to know the effects of their every action. We pay doctors well not only for their skill – their art – but for their knowledge of what a particular symptom means, what a particular procedure might accomplish.

Architecture is well suited to such an effort. Methods of evaluating the performance of buildings, even of particular aspects of buildings, are well developed in the academic community. And our actions, as architects, have considerable leverage in effecting bottom-line improvement. Minnesota architect Lew Moran observes, "the cost of employee salaries and benefits are 90-plus percent of the capital outlay associated with a life-cycle facility analysis, with the facility itself only two percent of life-cycle costs. It doesn't take much change in the facilities or operations to reap large people savings, such as reduced staff growth and increased productivity."

There seems to be a growing recognition within the profession that our wages and fees depend upon such demonstrations of value: the American Architecture Foundation, for example, has begun to collect anecdotal evidence of projects where design has made a difference to a client's operation. To be effective, however, we need to go beyond anecdotes and scattered research reports to a coordinated effort on the part of both practitioners and academics, with the results available to every architect.

Unfortunately, that may take a long time, just as it took a long time to get to this position. "We didn't become unappreciated, undercapitalized, and unnecessary overnight," continues Moran. "We had to work hard during the last 50 years to alienate the public ... ignoring the relationship between buildings and people for the most part, internalizing the debate about design, and turning a deaf ear to the client and users. The public did what anyone would do in a similar situation: they assumed we were elitist fools and forgot us."

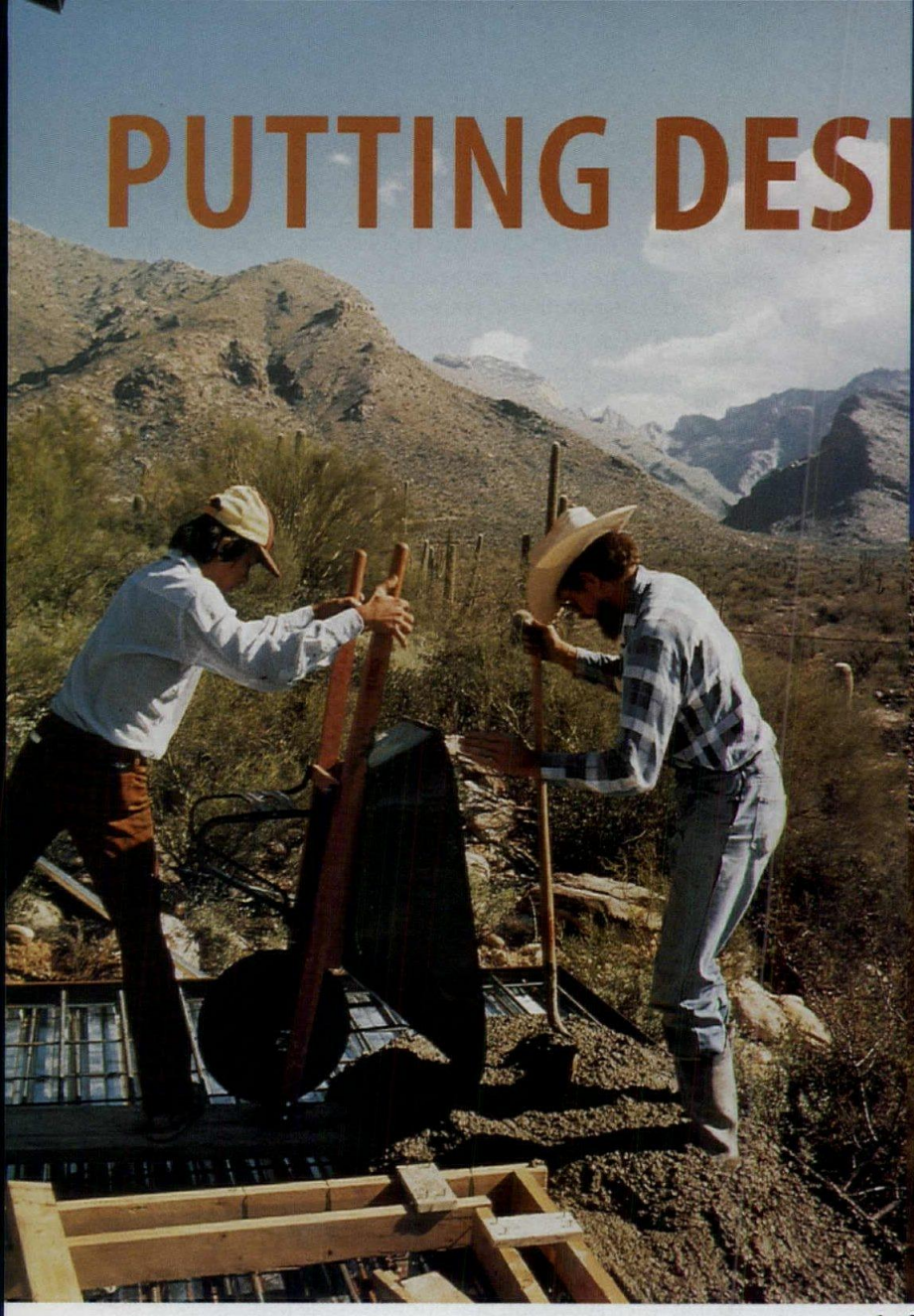
Thinking Like Clients

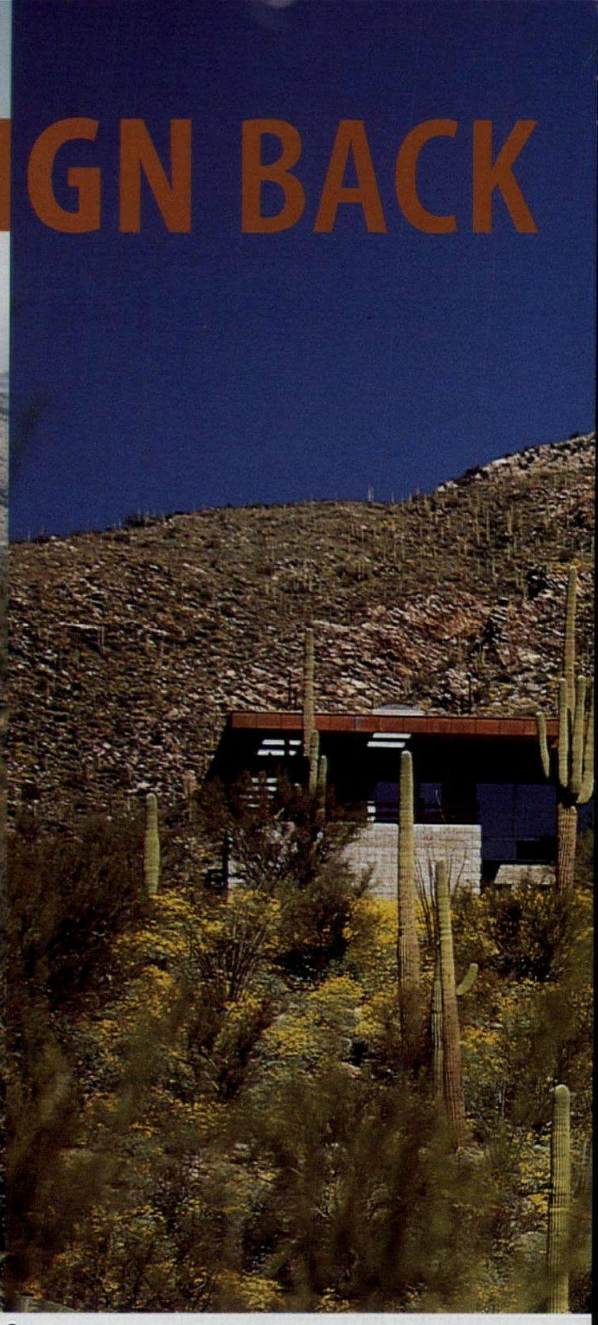
Statements like that suggest that one of the biggest obstacles to demonstrating the value of architecture – and with it, the value of our fees and the size of our incomes – is the architecture culture itself. "Our tradition," observes Gutman, "assumes that there is a conflict between business and design, so much so that when successful practitioners come to the schools, they often act as if the conflict is real, even though they wouldn't be where they are without being skilled in both. The question we should ask ourselves is how we can get out of such a dreadful, foolish situation."

Other professions have begun to address the problem by focusing on communication with clients. "The major medical schools," notes Gutman, "have instituted mandatory first-year courses entitled Introduction to the Patient." A similar offering in the architectural schools, looking at what architectural clients value and how can we communicate with them – could be an important first step. "Architects must learn how to talk in the language clients use," argues Margot Jacqz, who places and recruits design professionals.

Speaking clients' language may also help us see ourselves through clients' eyes. A St. Louis architect, who once worked for a corporation, writes that "working in a group of nonarchitect business folks gave me a whole new view of how we architects are perceived. We are the 'money spenders.' Since companies exist to make money, we are, without a doubt, a group to be closely watched – the enemy, the fox *(continued on page 95)*

PUTTING DESIGN BACK





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The practice of Line and Space demonstrates how architects can have more control over their finished product while refining design until the last nail is set.

by Michael J. Crosbie

"Letting go of our obligations at the building site is the death of architecture," declares Tucson architect Les Wallach, as we sit in his office discussing his design/build practice, Line and Space. "Going from being the supervisor at the site to being just an observer allowed construction managers to come about."

It is a familiar complaint, one that I have heard countless times over the years – architects bemoaning their loss of control as projects move from the drawing board to construction. While attorneys and liability insurance agents have advised architects to stay away from the site to keep out of trouble, others in the construction industry have grabbed the reins.

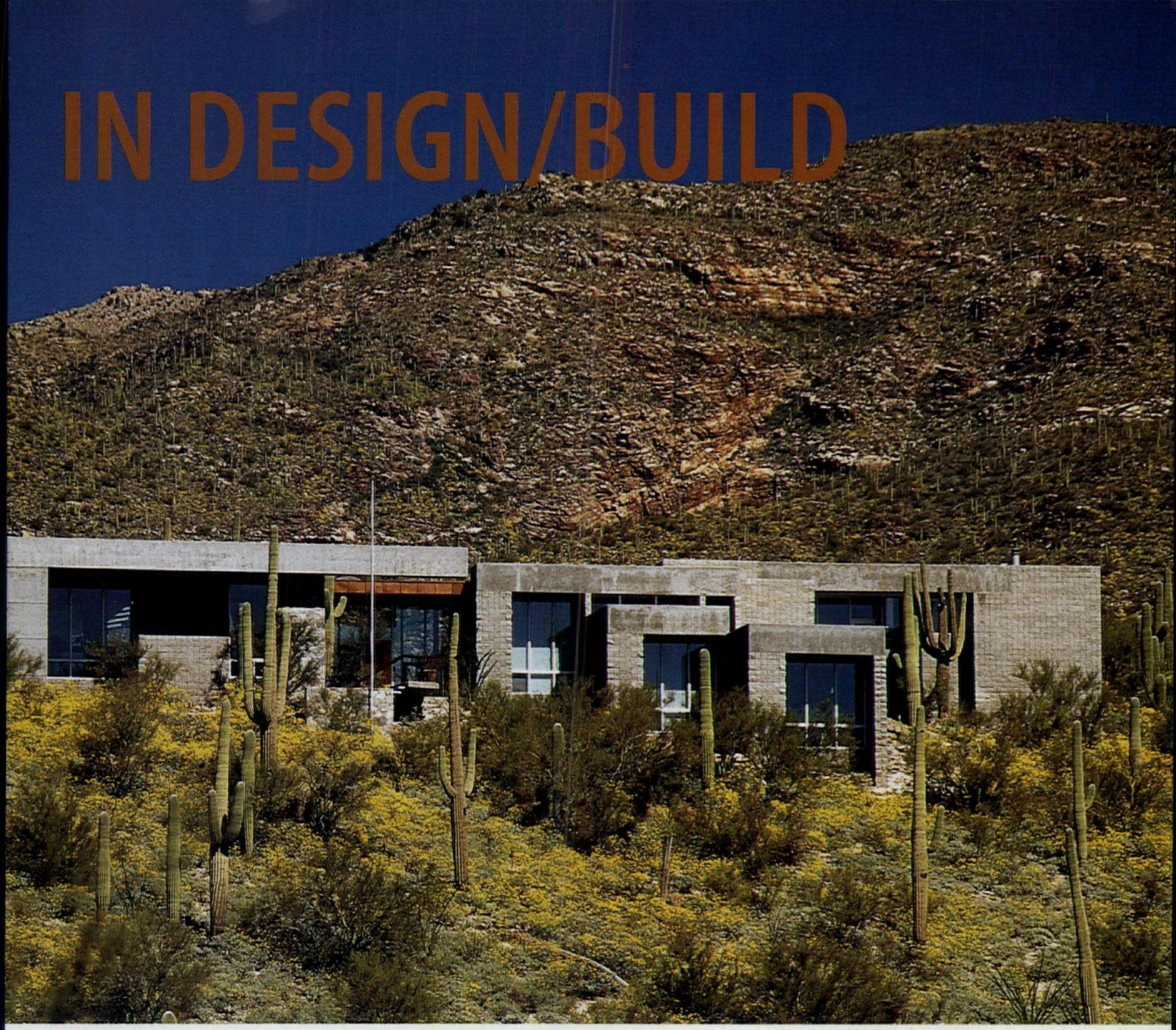
But Wallach does more than complain. Over the past 18 years he has built his practice around constructing his own designs. "We build because it is the completion of the design process," says Wallach. "Construction allows closure of a circle that starts with the definition of needs and the formation of concept." In the process, Wallach's firm has collected more than 20 design awards.

A Blast From the Past

Wallach is quick to point out that his method of design/build is not the same model that has been touted over the past few years, where the architect partners with a general contractor. "The conventional notion of design/build carries the idea of partnering to *ad nauseam* levels," says Wallach, "where the contractor is running the show, filling in the gaps that the architect leaves. That way of design/build gives the architect much less control."

Wallach's technique is akin to the way the profession worked more than a century ago, where the architect, through constant presence at the

IN DESIGN/BUILD



site, maintained control over the construction process, adjusting and often improving the building's design as it sprang to life. Wallach's method is updated, taking advantage of project management tools such as critical path analysis.

Line and Space includes three architects and three interns, all of whom become involved in construction. Wallach says that he has no shortage of prospective interns, who are eager to marry their design education with the gritty world of construction. The firm's collective experience in building informs the design process. "The notion of how to build something is always present while we're designing it," says Wallach. "We're considering means and methods as we design, and solutions begin to suggest themselves." For example, considering the support for a beam might lead to the incorporation of a lighting system within the structure. The germination of an idea on the drawing board grows on the site during construction. "You might not fully realize an opportunity until you're actually building it," says Wallach. According to Henry Tom, a project manager at Line and Space, "The biggest advantage to working this way is that you do understand how things go together as you're drawing them. You start to understand the construction sequence. Sometimes we get bogged down in that process, because we want to understand how everything goes together."

How Do They Do It?

Unlike conventional design/build firms, Line and Space does not offer design/build packages. Clients can commission Line and Space to provide conventional architectural services, or extend the relationship by contracting with the firm to serve also as the builder. Often, it is not

Members of the firm Line and Space (1) get close to the creation of their projects. The south elevation of the Hansen House (2) demonstrates how the design accommodates the site's existing vegetation.

Photos: Les Wallach (1); Henry Tom (2)

certain whether Line and Space will be the builder until the construction document phase (the firm is small and nimble enough to adjust to projects changing from design/build to conventional project delivery with modest disruption). By this time, the architects and clients feel that they've built a relationship of trust that also allows Line and Space to build the project. This element of trust is important, Wallach points out, because projects are constructed on a cost-plus-a-fixed-fee basis. "This allows us to change the design or the specifications as necessary to meet budget requirements," explains Wallach.

The firm constructs its projects according to an agreed-upon budget that does not include a fixed fee. This removes the temptation to cut costs to increase profit and protects the firm's profitability. This arrangement allows Line and Space to make subtle adjustments to the design as it emerges. It also permits design decisions on things such as finishes, exterior cladding, and fixtures to remain open as the architects search for the best alternatives. Working closely with laborers and craftspeople, the architects can keep their feelers out for "material opportunities." Often this results in savings for the client. For example, Wallach says that on the design of the Arizona Sonora Desert Museum (page 58), natural stone walls were possible at a fraction of the going rate. Line and Space found salvaged stone from a site near the museum that was being excavated for an elementary school. The stone was sorted and split by Line and Space, and installed by the architects' master masons.

If the museum project had been bid out and constructed in a conventional way, fieldstone cladding would have been a budget-buster; cost for materials from a stone yard would have been $40,000, with installation running $70,000, according to Wallach. But by virtue of the architect's involvement in construction, the salvaged stone was obtained for $4,000, and the masons working with Line and Space installed it for $42,000. The result? The client got natural stone cladding at less than half of the normal bid cost, while the architects used a material that would otherwise have been too expensive. Wallach explains that this is how the process works throughout the project to produce better architecture: the architects are constantly weighing alternatives, considering options, and looking for bargains. And when the architect is the builder, there's no such thing as a change order or a contractor's lawsuit.

What keeps this open-ended design/build method from leading to complete chaos? Line and Space uses detailed critical-path analysis to keep the project moving forward (Wallach was a

Photos these two pages: Henry Tom

3

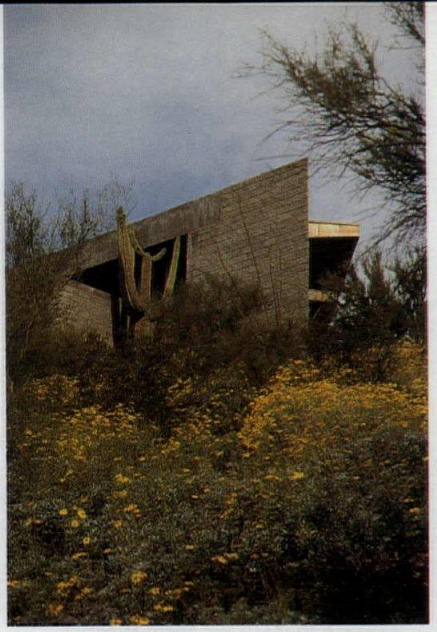
Hansen House

This 6,000-square-foot house overlooking the city of Tucson blends through its materials and its faceted form (6) with its rocky desert site in the foothills of the Santa Catalina Mountains (2). A pathway that bridges natural gullies (5) leads to the front door, beside which stands a tall saguaro cactus (4). One enters at the very heart of the house: a glassy hallway (7) that connects the living areas to the west with the bedrooms to the east. One can also proceed through the hallway back out to a protected courtyard. To preserve existing vegetation and site features, the house moves in and around them, incorporating them into the architecture.

The design uses passive solar features to protect it from the desert sun: generous overhangs provide deep shade to the rooms, while the masonry walls absorb the heat, keeping the interior cool. The need for shading was balanced with the desire to frame views. For example, in the bedroom suite, the architects worked with the clients on site to adjust the overhangs so that they would be deep enough to block glare from the sky but not so deep as to obstruct views of the mountains. Water runoff from the roofs is collected and fed to the house's surrounding plants.

The architects became deeply involved in the construction. At one point when reinforcing was not completed by a subcontractor, and a concrete pour was scheduled for next morning (3), the architects put down their pencils and worked late into the night under floodlights placing the rebar in time for the pour. According to Les Wallach, "we headed home long past midnight knowing that we were totally immersed in architecture."

4

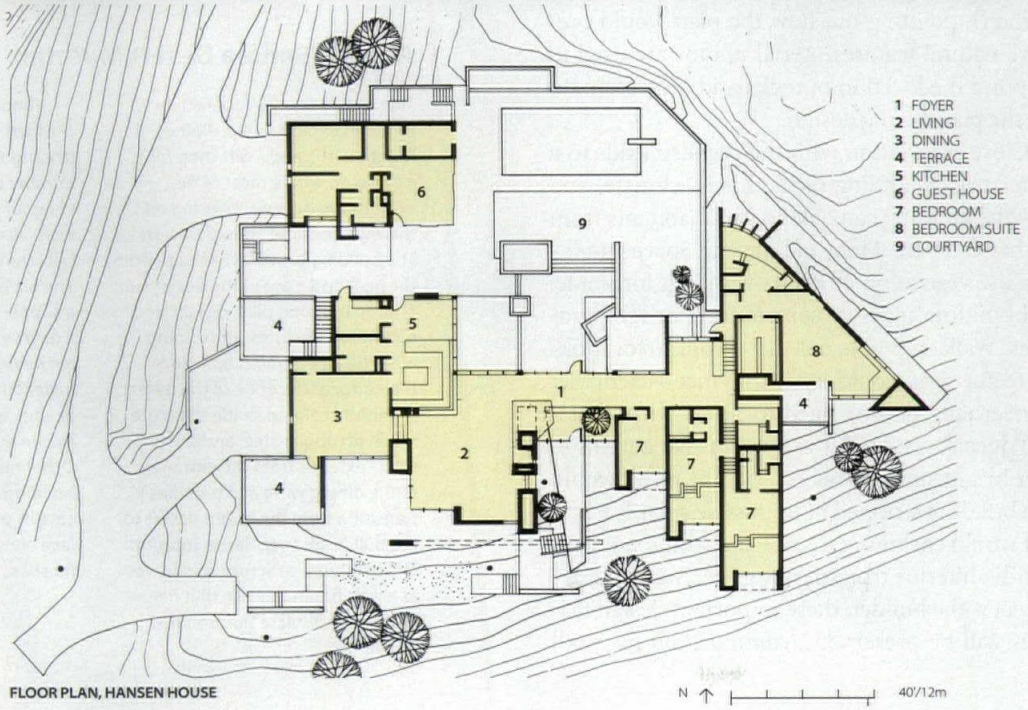


6

5

7

Project: Hansen House, Tucson, Arizona.
Clients: Jorgen and Margarita Hansen.
Architect: Line and Space, Tucson; Les Wallach, Henry Tom, Bob Clements, John Lovegrove, Tom Dieterle, Brian Farling, Craig Porter, Cuong Truong, Oscar Grijalva, Tom McGuire, Michael Grijalva, Craig Dunkleberger, Richard Barna, Barry Cole, Garlin Howlett (project team).
Consultants: Holben, Martin and White Structural Engineers (structural); Burnside Canney Engineering (electrical).
Contractor: Line and Space.



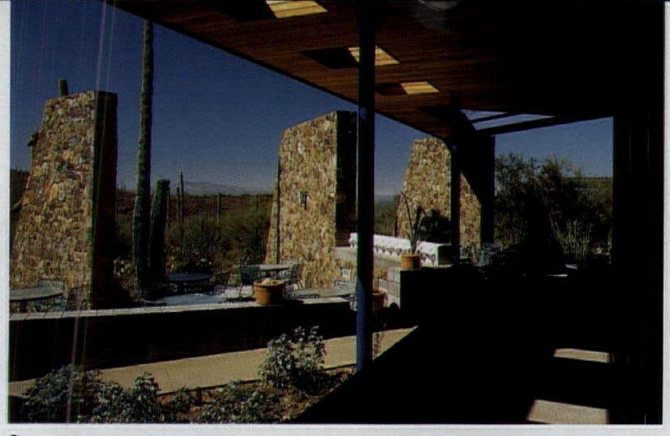
FLOOR PLAN, HANSEN HOUSE

mining engineer before he went to architecture school, and spent a number of years in Vietnam planning and managing the construction of military facilities and infrastructure). The critical path dictates how much leeway in budget and time Line and Space has on design decisions. Working closely with the same craftspeople over a number of years, the architects also have first-hand experience with construction possibilities: can a material be used in a certain way, how long will it take to build it, and do the craftspeople have suggestions on better ways to do it? Most of this information isn't readily accessible to the architect who doesn't spend time on the site.

Design that Grows From Practice

Wallach's way of practice has a direct influence on design. Intimacy with the construction site has led in his case to a higher sensitivity to preserving the natural attributes of the land. For example, Wallach's own house (p. 60) is a study in how the architecture can accommodate itself to existing topography and vegetation: a wall jogs around a giant saguaro cactus; the house itself bridges an existing arroyo so as not to disturb the flow of water across the site. Many of Wallach's buildings have plans with an organic quality, as the spaces move around rock outcroppings and flora, or twist to capture special views. A lot of design takes place on the site with the client, staking out walls and shifting them to fine-tune the plan. I spent the better part of a morning with Wallach and his associate, Bob Clements, as they worked with a surveyor to lay out a driveway on a hilly house site. Wallach also walked me through the design ("Watch out for the rattle snakes," he warned), pointing out how the plan would preserve natural features. Aerial photos are used to pinpoint the location of rocks and vegetation on the site plan during design.

Close association with the site also leads to a better understanding of the micro-climate, and how the building can defend its inhabitants from the harsh desert. Many of Line and Space's buildings use vegetation or deep overhangs for shade, and building mass to control interior temperatures. Wallach points out that a contractor looking to cut costs would try to convince a client that an overhang doesn't need to be so deep, that a wall doesn't need to be so long, or that a trellis to filter bright sun isn't necessary. The result would be a building stripped of its passive solar features that would cost more to cool and would not protect the interior from desert glare. But if the architect is the builder, these important design features will be preserved. *(continued on page 60)*



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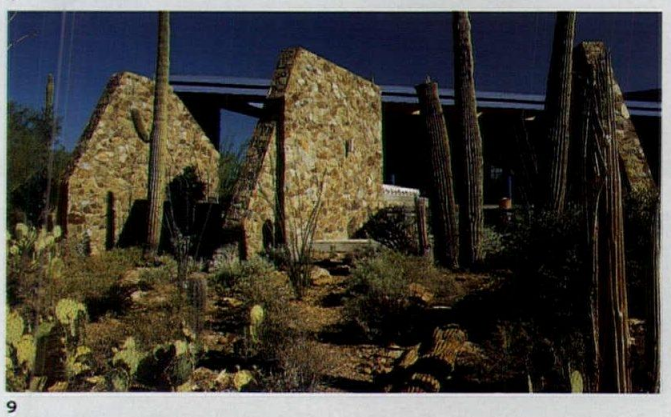

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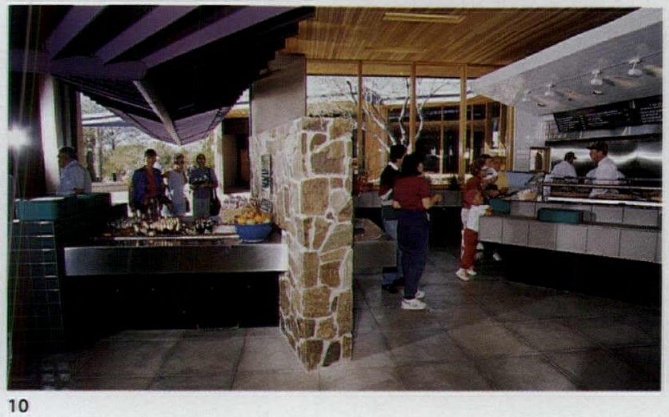


10

Henry Tom (8, 9, 11, 12); Michael R. Stoklos (10)

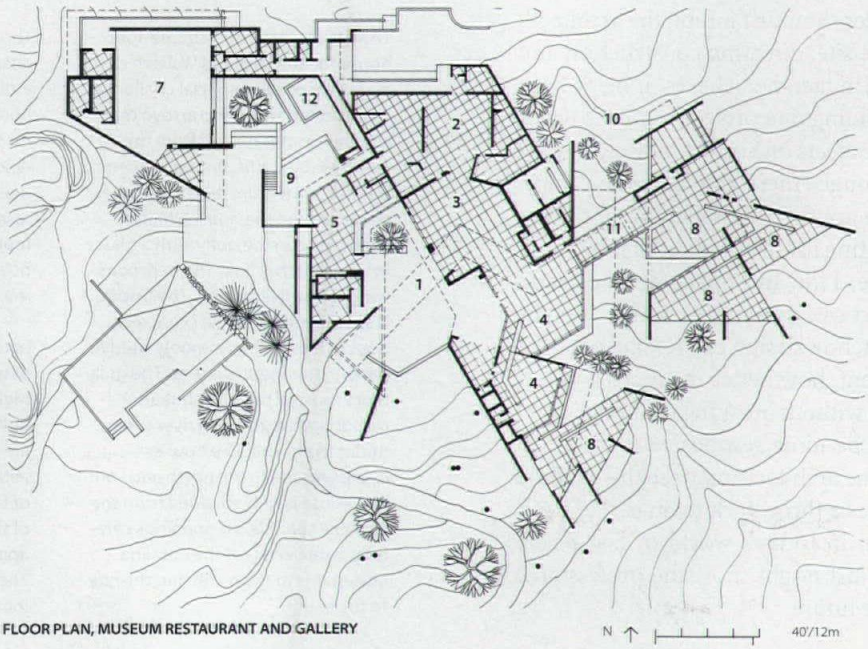
Arizona Sonora Desert Museum

This 20,000-square-foot facility provides exhibit space, dining facilities (10), and a gift shop for a museum where most of the exhibits are outside, focusing on the wildlife of the Sonora Desert. The building provides a respite from the heat and glare of the desert sun. The meandering plan jogs around natural site features, with dining areas (8) and terraces that place the visitor at the edge of the desert. A brightly colored shade structure made of tubular steel and sheet metal extends from the entrance to the dining wing and provides a transition from the bright desert to the building's cool, darker interior. The overhead structure also serves as a way-finding device that helps visitors to circulate through the building.

Among the building's distinguished features are the angled, sloping walls (9, 12) that extend into the desert and carefully frame views of the natural setting. The walls also provide shade and privacy between outdoor terrace spaces. The walls were to be stuccoed, but a supply of salvaged stone from a nearby school project became available and was sorted, split, and installed by Line and Space (11) at a fraction of the cost had the material been conventionally bid. Other materials throughout the building – such as the wood ceilings, cast-in-place concrete, and split-face concrete block – have natural finishes.

11 (inset), 12

Project: Arizona Sonora Desert Museum Restaurant and Gallery Complex, Tucson, Arizona.
Client: Arizona Sonora Desert Museum, David Hancocks (director).
Architect: Line and Space, Tucson; Les Wallach, Henry Tom, Bob Clements, John Lovegrove, Manfred Kropf, Chuck Martin, Monica McClelland, Jeff Jeanette, Brian Farling, Jeff Adams, Craig Porter, Cuong Truong, Oscar Grijalva, Tom McGuire, Michael Grijalva, Craig Dunkleberger, Richard Barna, Barry Cole, Garlin Howlett (project team).
Consultants: Turner Structural Engineering Company (structural); GLHN Architects and Engineers (mechanical/electrical).
Contractor: Line and Space.



FLOOR PLAN, MUSEUM RESTAURANT AND GALLERY

Back to the Future?

There are no short-cuts to Line and Space's design/build method, and there are certain drawbacks. It relies on close relationships with local laborers and craftspeople – ties that take years to establish. "You build relationships by going into the field and working," explains Wallach, "working with a welder, for example. It may take a while to find a good one, and once you do they're a treasure. You have to have the experience yourself to recognize that talent. We never take these people for granted. We talk to them about working on projects months in advance. And they enjoy working on jobs that are challenging." Craftspeople and builders are hired on as contract employees. Using local building talent limits where you can design and construct a project. Wallach's design/build ventures are all within the Tucson area, and he points out that the desert climate allows a virtually uninterrupted construction season.

The architect who builds can handle projects only up to a certain size. Wallach says that the Arizona Sonora Desert Museum, at 20,000 square feet, is the upper limit for a design/build project for him. Bigger projects become too complex for Line and Space to manage while maintaining the hands-on control they enjoy. Wallach says that other design/build architects might handle larger projects, depending on management style.

Line and Space builds only one project at a time. This isn't a problem when you consider that a single job will keep the entire office occupied for a year or two. During a typical design/build project Wallach spends at least half the day on-site, returning to the office to catch up with other projects, while other architectural staff go to the job. The staff is predominantly in their 20s and 30s and enjoys their time off the boards. Wallach says that growing older shouldn't inhibit the architect's prescense on the site, directing construction and refining design (in fact, he believes, it helps keep you young). Building one project at a time limits the number of projects one can complete, and if a project falls through, there can be some scrambling to pick up another (although Wallach says that he has a waiting list of potential clients).

Caveats aside, Line and Space demonstrates how the architect can gain more control over the finished product, how design can remain open for further refinement, how better materials and finishes can be had without breaking the budget, and how design can be more responsive to the client and the site. Some architects may see this method of design/build as a throwback to an earlier time, an anachronism in today's world of fast-paced practice. But it just might show the profession a better way to the future. □

Mark Feirer, Courtesy *Fine Homebuilding*

13

Colby Campbell

14

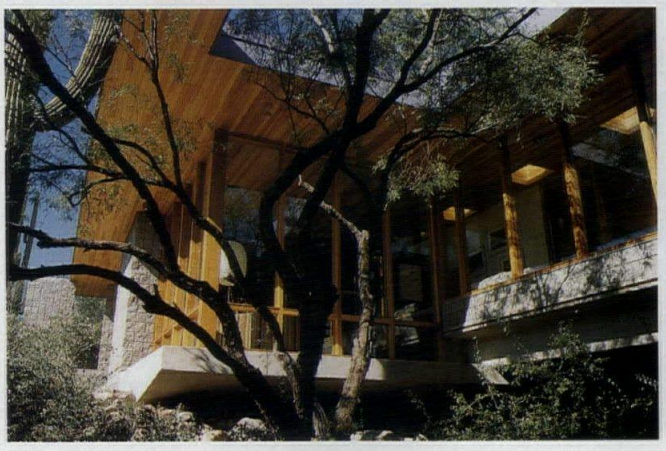
Arroyo House

The site for this 3,300-square-foot house for architect Les Wallach and his family posed a special challenge: it is bisected by a deep arroyo that channels water run-off from the nearby mountains. Rather than ruin this natural feature (and divert the water around the house) Wallach chose to span the gully with a glassy bridge (13) that links the bedroom wing to the living wing. The bridge is supported by precast concrete double tees (17), commonly used for parking garage structures. The gully is dry most of the time, but after cloudbursts a gurgling river runs under the house. The house's longer exposures are to the north and south. The house is fully shielded from the western sun. Glazed openings carefully frame views of the Catalina Mountains to the north and the city to the south.

The house is difficult to see for the desert plants and trees that thrive around it (15). Wallach planned the house to wrap around existing cacti, mesquite, and ironwood. The house reaches out to the landscape with deep overhangs that shade it (16). The roof of the living room deck has a 20-foot cantilever, supported by steel beams that tie back into the fireplace mass (see Selected Detail, p. 106).

Materials throughout have mostly natural finishes. Masonry walls include natural stone salvaged from a nearby highway project and split concrete units that lend a rough texture. Floors are floated and scored concrete (14) with a waxed finish. The ceilings are of Douglas fir, also used on the soffits of the overhangs so that the roof appears as an uninterrupted plane. The roof's bright blue metal fascia joins the house with the desert sky.

15



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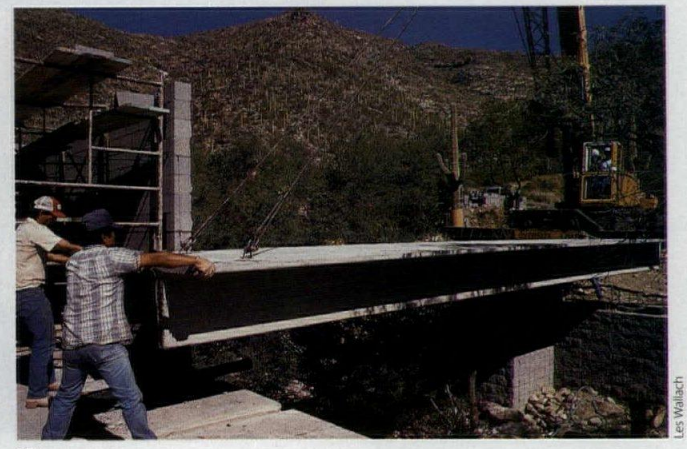
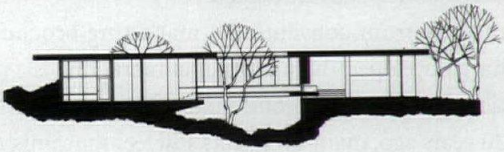


17

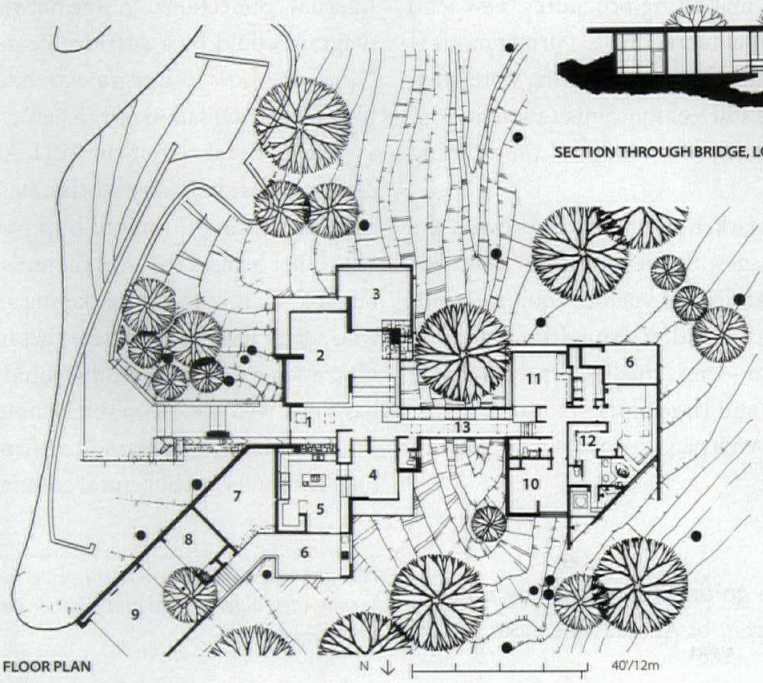
James Brett (16); Robert Freund (15)

Les Wallach

Project: Arroyo House, Tucson, Arizona.
Client: Les, Susan, and Aaron Wallach.
Architect: Line and Space, Tucson; Les Wallach, Pam Little, Todd Tovani, Henry Tom, John Lovegrove, Beebe Okoye, Garlin Howlett (project team).
Consultants: Richard Ebeltoft (structural).
Contractor: Line and Space.



SECTION THROUGH BRIDGE, LOOKING NORTH



1 FOYER
2 LIVING
3 DECK
4 DINING
5 KITCHEN
6 TERRACE
7 COURT
8 SHOP
9 GARAGE
10 BEDROOM
11 STUDY
12 BEDROOM SUITE
13 BRIDGE

FLOOR PLAN

Architects Take Business On-Line

Pioneering architects are tapping into the Internet and are coming up with innovative ways to do business.

by B.J. Novitski

While pundits debate the relative merits of the information superhighway, professionals, including a growing number of architects, are taking full advantage of its vast resources. But rather than merely consuming the Internet's goods, architecture firms are using telecommunications technologies to market their services, share documents with clients, collaborate with consultants, and inform the public about the profession.

This year alone, dozens of firms have set up their own sites (or "home pages") on the World Wide Web, a graphic and widely accessible portion of the Internet, and the number increases daily. Anyone with Internet access and graphic browsing software can easily "visit" these sites and view the photographs, text, and other information a firm has "published" about itself. (See Architectural Resources on the World Wide Web, page 65.)

At first glance, these Web sites appear to be marketing displays, showcasing recent projects and describing the firm's client services. Indeed, some pages are copied directly from conventional marketing brochures. Few who have developed them claim that marketing is a prime motivation. Even though prohibitions against advertising were lifted 20 years ago, many architects still feel squeamish about it. And most realize that potential clients do not spend time surfing the Net. Not yet anyway.

Although conventional marketing brochures provide the inspiration for some Web pages, the new medium demands new design principles that anticipate visitors equipped with different browsing software, smaller (sometimes monochrome) screens, and slow modems. Images, especially large ones, are slow to download, and large blocks of text are difficult to read on the screen. So Web page designers must balance text and graphics judiciously.

Pioneering Websters

One of the first firms to go on-line with its own home page was Lord, Aeck & Sargent of Atlanta (location: http://ideanet1.ideanet.com/~las/). This firm has been in the forefront of technology, both in the high-tech research facilities they design and in the way they run their drawing-board-free practice. Their experiments on the Web are a natural extension of their interest in how computers can improve the way they do business. Lord, Aeck & Sargent's information technology manager, Don Harris, admits they haven't found new clients as a direct result of being on the Web. "But for now," he says, "a Web site is still prestigious because so few firms have one. And our high-tech clients, who are setting up their own sites with links to and from ours, get a certain satisfaction from knowing that their architects are out in front technologically."

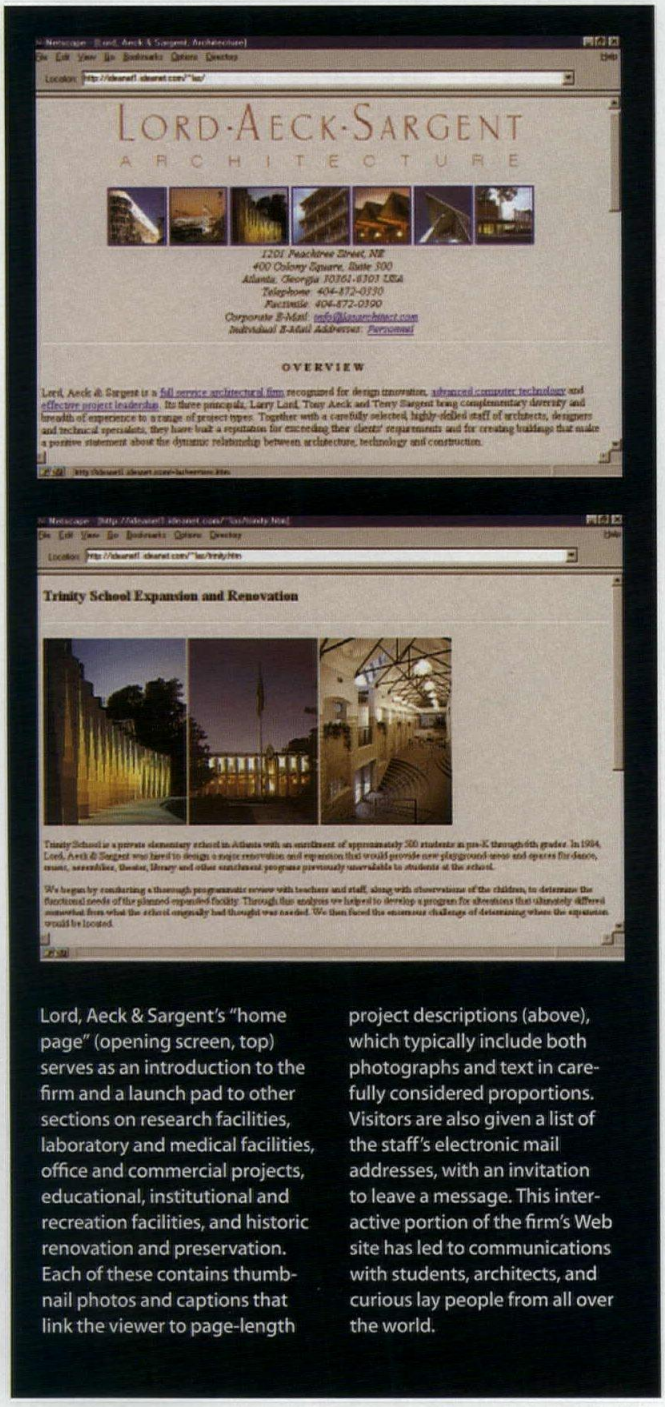
One emerging consequence of their work on the Internet, Harris adds, is their heightened awareness of an "architecture without walls." During programming, they can show the client the difference between real space needs and information needs that can be satisfied through Internet connections. "A line between two spaces in a bubble diagram could be a corridor or a phone line," Harris says. "Knowing how to integrate architectural and technological planning enables us to offer a new client service."

The San Francisco firm MBT Architecture, known for its design of research laboratories, has had its Web site in place since last spring (location: http://www.mbtarch.com/~mbt). Like other firms, MBT sees the site's purpose as somewhat less tangible than outright marketing. Associate Robert Roberts, who set up the system, agrees that no institutional client planning a large research facility would select an architect on the basis of a Web site. However, he notes, there are indirect benefits. The site has increased the firm's name recognition, not only within the architectural community, but worldwide. And

The author is a freelance writer in Eugene, Oregon, who specializes in computer-aided design and practice issues. Her Internet address is bjn@efn.org.

its substantial project information provides current clients with input for their own projects. "It's also possible," Roberts says, "that this might give us an extra edge with potential clients who have already short-listed us. Jobs are won through human contact, and our Web site tells these clients that we're open and responsive. We assume that all the architects on a short list are qualified, so the final selection is based on intangibles. And one intangible might be our Web page."

While impressed with the number of responses they've received, MBT is not idly waiting for intangibles to pay off. They have designed their Web pages to be informative for the public and functional for the staff. In addition to photographs and project descriptions, MBT's pages include lots of written information about the firm's philosophy, design approach, and project management techniques. Roberts sees this as a public service resource for students and others who are curious about how firms operate. And more importantly, the information also serves as a database available to the entire MBT staff, who have instant access to the firm's history without making a trip to the library or the slide archive.



Lord, Aeck & Sargent's "home page" (opening screen, top) serves as an introduction to the firm and a launch pad to other sections on research facilities, laboratory and medical facilities, office and commercial projects, educational, institutional and recreation facilities, and historic renovation and preservation. Each of these contains thumbnail photos and captions that link the viewer to page-length project descriptions (above), which typically include both photographs and text in carefully considered proportions. Visitors are also given a list of the staff's electronic mail addresses, with an invitation to leave a message. This interactive portion of the firm's Web site has led to communications with students, architects, and curious lay people from all over the world.

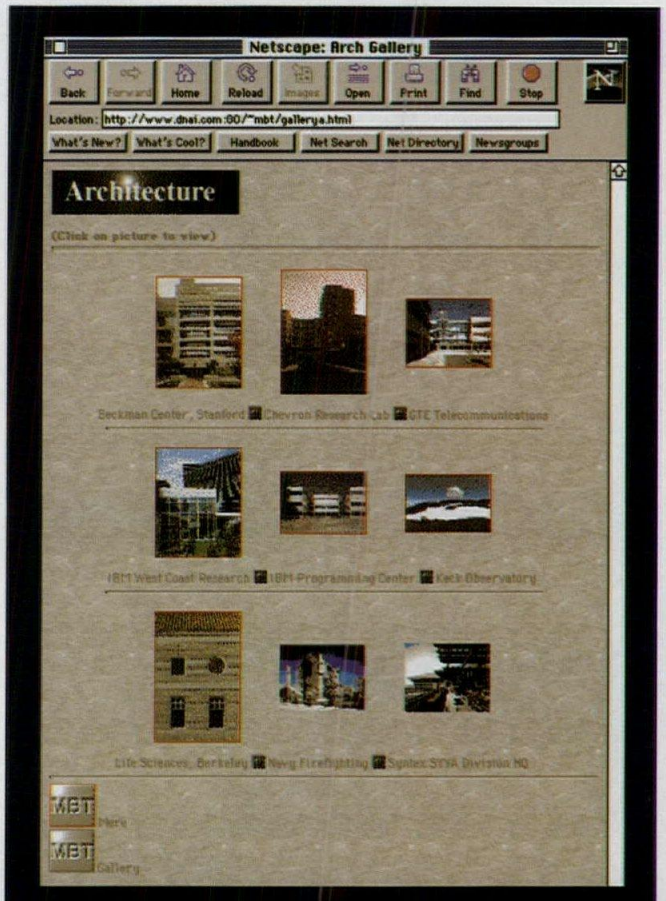
Cyber Collaborations

Both MBT and Lord, Aeck & Sargent hope to extend the capabilities of their Web sites to make them more interactive. This would be useful, for example, in exchanging CAD files with consultants or exchanging reports with clients. But some architects, including Yost Grube Hall (YGH) of Portland, Oregon, are already taking advantage of the collaborative opportunities of the Internet.

YGH has recently begun work on a major renovation and expansion of the University of Oregon Law School library. In the 20 years since the existing facility was built, the information age has arrived, and the concept of "law library" no longer refers only to books. It is also a vast, global, constantly changing, digital resource that is vital to this information-intensive profession. Redefining "library" has required extensive collaboration between the architects and the school's exceptionally computer-literate user groups, and this collaboration depends heavily on telecommunications. Meetings between the various groups are coordinated through a centralized master scheduling program: architects and users exchange written documents describing elements of the architectural program; video conferencing connects the architects in Portland with their out-of-state consultants and with their on-site staff; and the Internet is used to exchange design and working drawings between architects, consultants, and clients.

To create another forum for professional collaboration, Peter Kimmel, president of his own facilities management consulting firm, Peter S. Kimmel & Associates, in Bethesda, Maryland, has recently instituted FMLink, a Web site for information geared toward facilities managers and their contractors (location: http://fmlink.com). Resources include news articles, help forums, calendars, job listings, product and service directories, material safety data sheets, and other information. In addition to these resources, Kimmel says, "We also see great potential in the Internet as an interactive medium for project management, centralizing the schedule and budget input from

the many people involved in a project, including designers, facilities managers, and furniture suppliers." He notes, however, that the biggest benefits won't accrue until the technology permits more intelligence in tracking data than it does now. "For example," he says, "users entering data for a small, repetitive project might be prompted for only minimal input, while a major construction project needs a greater amount of detailed data. Existing software can't distinguish between small and large projects. This requires sophisticated computer programming that cannot yet be done cost effectively."



MBT Architecture of San Francisco was one of the first firms to publish its own site on the World Wide Web. Visitors are given thumbnail images to select from; clicking on one yields an enlarged photograph of the building.

But on-line capabilities are improving rapidly, as demonstrated by the AIA's new version of AIA Online. This information service has been slow to gain popularity among professionals, partly because of its text-only user interface and its per-minute fee structure. The new version will feature a graphic interface, reorganized content, and a flat rate for users who have Internet access. Most significant, the use of the Adobe Acrobat format will enable users to exchange documents in any format: CAD drawings, spreadsheets, databases. Although these files are not yet completely interactive on-line, the system supports redlining, so collaborators can "mark up" and return each other's work without installing or knowing how to use the applications that generated the documents.

Talk, Talk, Talk

In addition to the recent developments in the exchange of drawings, specifications, and architectural programs, on-line services are famous for another medium of exchange: talk. In its early days, the Internet was exclusively text-based, and the tradition of (typed) discussion forums has endured. The first architects to join these forums were necessarily the early adopters of computers, and their talk focused on their struggles with technology. Popular examples of such forums are LEAP and PLACES. LEAP is the League for Engineering Automation Productivity forum on CompuServe, (keyword: LEAP), and PLACES for the Built Environment is an America Online forum (keyword: aecsig). They have served an important function in supporting the AEC community during its difficult technological transition by enabling architects and engineers to share experiences and to receive help from computer experts.

Now that the Internet is more accessible to nontechnical users, discussions are emerging among architects about the strategic value of technology rather than the nuts and bolts of making it work. One example of this occurs on CompuServe, formerly in the Time-Warner Dwellings forum (keyword: TWDwellings), now in a forum sponsored by the Association for Total Cost Management (keyword: TCMFORUM). On one recent evening, the forum hosted a "live" conference featuring guest "speaker" Jerry Albert Laiserin, director of the Design Technology Forum and chair of the AIA's Advisory Group on Computer Aided Practice. The conference participants all logged into the forum site at the same time and everyone's written comments were simultaneously seen by all. Despite the slight chaos of the interactive format, the discussion was substantive, ranging from how to decide on a level of technology appropriate to firm needs to how to anticipate the types of architectural services best suited to the design of the workplace in this age of rapidly changing telecommunications technologies.

On the subject of computer-based collaboration, Laiserin cited an architect engaged in a large project for a client who insists that all communications be conducted electronically. "This means no phone calls," Laiserin explained. "No mail and no overnight deliveries. And it's not only this way between ar-

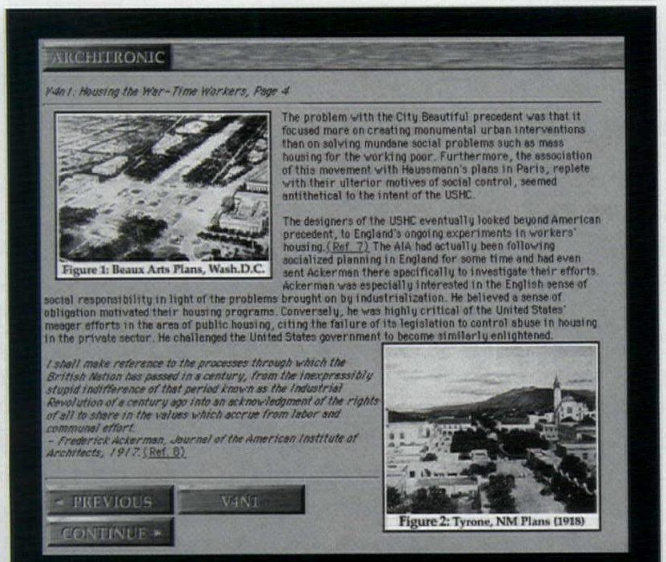
chitect and client but also between the architect and all the consultants and the contractors. No "old media" costs are reimbursed. This project is proceeding well, and the client is happy. The architect posts the latest design revisions, and the client reviews them without traveling to the architect's office."

The Dwellings forum was originally set up to enable homeowners to get practical advice from experts about design and construction problems. But over time it has evolved into a dialogue between architects and lay people. Architect Linda Joy Weinstein of Oakland, California, who formerly led the Design/ Architect section of the forum and is now developing a similar section of the TCMFORUM, sees this unique coming together of architects and the public as an opportunity for interaction. Inquiries range from how to build a deck to how to select an architect. "They're interested in what we do and how we do it," Weinstein says, "but initially they may see us as a luxury they can't afford. Then we get into a detailed discussion about what they need, and once they understand the complexity of the problem, they realize there is value in hiring an architect."

Also making this breakthrough in public understanding is Lee Kersh, an architect in Eugene, Oregon. He has recently started a Web page called "Boxed Architecture," in which he invites the public to pose questions to the profession (location: http://www.4j.lane.edu/aiab/ba.html). He then answers the questions himself or forwards them to colleagues. Dedicating only a few hours per week to the effort, Kersh feels that he's helping to educate the public, not only in the specifics of their questions – local building codes, career options – but also in the value of architectural services.

Architects and the public can also find information through a small but growing number of architectural publications now on-line. *Architronic*, a scholarly architectural journal, is one of the first to exist exclusively on the Internet.

And with this issue, P/A goes on-line with Princeton Architectural Press's Architecture On Line™ (for a subscription, contact PAP at (800) 458-1131 or E-mail: moderator@pap.designsys.com). Or, for a look at P/A's monthly cover design and table of contents only, contact Arch-Online™ NY (location: http://www.arch-online.com/).



An excerpt from "Housing the War-Time Workers," by Elizabeth Edwards Harris of the Department of Art and Architecture at UCLA, appears in a recent edition of *Architronic*, a scholarly journal of critical ideas about architecture. It is one of the first architectural publications to exist solely in electronic form and is distinguished from other on-line efforts by its focus on buildings instead of computer technology (location: http://arcrs4.saed.kent. edu/Architronic/homepage.html).

What's Next

Perhaps the most exciting aspect of this technology for the architectural profession is its unpredictability and the freedom it offers to rethink traditional forms of practice. Two years ago, few people outside academia had heard of the World Wide Web. One year ago, architects were only beginning to think about its marketing potential. Now it's being used to promote the profession and to support unprecedented collaborations.

Fear and skepticism have kept many from driving onto the information superhighway, but the road has been paved. For practitioners who have not yet started to explore the Internet, there's now no excuse. □

Architectural Resources on the World Wide Web

Each of the following Web sites features a master list of architectural sites worldwide.

AIA Home Page (location: http://199.170.0.130/homepage.htm)
The home page of the American Institute of Architects is open to the public and contains links to information about career opportunities, education, selecting an architect, the art and science of architecture, and more.

Architecture and Buildings
(location: http://www.unlv.edu/library/ ARCH/index.html)
This is one of the most extensive lists of research information on university and government agency-based resources; it was compiled by Jeanne Brown, the architecture studies librarian at the University of Nevada, Las Vegas.

The World-Wide Web Virtual Library: Architecture
(location: http:// www.clr.toronto.edu:1080/VIRTUALLIB/ARCH/info.html)
Researchers at the University of Toronto have compiled a list of schools, government agencies, organizations, firms, individuals' portfolios, construction conferences, competitions, and more.

Yahoo Business Corporations: Architecture
(location: http://www. yahoo.com/Business/Corporations/ Architecture/)
A list of design and construction firms that have their own Web sites.

Yahoo – Arts: Architecture
(location: http://www.yahoo. com/Art/ Architecture/)
An index to worldwide resources of construction data, library and museum archives, individuals' Web sites, and more.

Raising the Getty

The construction site of the arts acropolis by Richard Meier & Partners offers glimpses of the architecture's magnitude and virtuosity, but also its lack of coherence.

by Morris Newman

An aerial view, looking south (facing page), shows the Getty Center under construction. The site is about 900 feet above the San Diego Freeway, in the Sepulveda Pass area of West Los Angeles. Visitors arrive at the main plaza after a four-minute tram ride.

The 945,000-square-foot Getty Center in Los Angeles is a big project attempting to fulfill almost impossibly big expectations. The Center was conceived in the early 1980s by the J. Paul Getty Trust's board of directors, who sought to raise the institution's profile in the world of art scholarship by consolidating its research, conservation, other arts-related programs, and a new museum, on a single site. Richard Meier won the commission in 1984, following an exhaustive worldwide interviewing process conducted by a screening committee. The project had many of the prerequisites for greatness: a client that could afford the best (with a budget now at $733 million, and rising); a seasoned, gifted architect; and a unique hilltop site with dramatic views.

From the outset, however, the project's enormous promise was shadowed by proliferating constraints and institutional politics. Several separate entities grouped under the Getty umbrella – each with its own distinct agenda and needs – constituted the client; as a result, the program was thicker than most phone books. Beyond the institutional requirements, myriad limitations were imposed by homeowners in neighboring residential areas (see sidebar, p. 68).

Meier's design philosophy for the Getty was complex in itself. The architect sought to bring a "classical" sense of order to the project, in part through the use of an axial site plan; at the same time, he resolved to acknowledge the rugged topography of the hilltop site by arranging buildings, quite unclassically, along the irregular contours of the ridge.

His scheme, unveiled four years ago after numerous iterations, comprised six low-lying buildings arrayed informally to form a sprawling, nonfigural campus. Critics gave it a mixed-to-hostile reception: in a *New York Times* review of Oct. 13, 1991, Paul Goldberger praised individual pieces of the design but bemoaned the lack of "any single transcendental element [and] any powerful, unifying architectural idea." A roundtable of like-minded P/A editors (Feb. 1992, p. 103) criticized the incoherence of the site plan; Aaron Betsky, in the November 1991 issue of *L.A. Architect*, likened the complex to an "office park."

A visit to the construction site suggests that the Getty is not the fiasco that some critics predicted, if not quite the masterwork that the client had hoped for. With construction more than halfway complete (handover is scheduled for 1997), the buildings turn out to be handsome, the materials engaging, and the workmanship good. It is, in fact, hard to resist excitement when first encountering this "temple mount" of heroic forms, glinting in the Southern California sunlight, even if one questions the wisdom of building a latter-day acropolis set apart from the city.

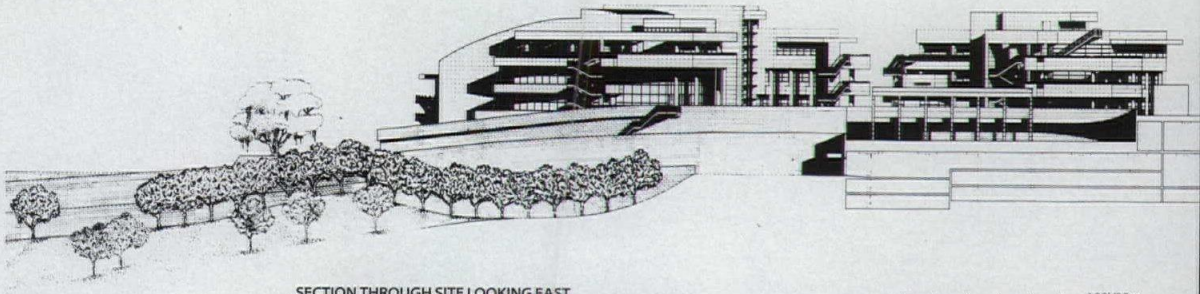
That excitement does not dispel some of the initial reservations regarding the design. The tension in the master plan between classicism and site-specificity remains unsatisfactorily resolved. Nor does the scheme establish a clear visual hierarchy among the buildings. Although the program stipulated that the buildings should each have a distinctive shape, the final design suffers from the homogenizing effect of structures that are too similar in height and mass. At 65 feet, the museum is the tallest of the buildings, and the only one clad in travertine.

Indeterminate scale is another concern. The buildings are neither intimate nor monumental; they occupy an uncomfortable middle zone.

If the Getty Center has fallen short of the highest expectations, portions of it nonetheless yield isolated pleasures. Among these, the fine entrance plaza with its heroic staircase and the museum's raised entrance plinth offer stunning vistas of city and ocean to the south; similarly oriented towards the view, the circular Center for the History of Art and the Humanities promises to take a high place in the Meier canon. But in a design that has sought classical unity the parts remain greater than the whole.

The author, P/A's correspondent in Los Angeles, is editor of L.A. Architect *and senior editor of* California Planning & Development Report.

Warren Aerial



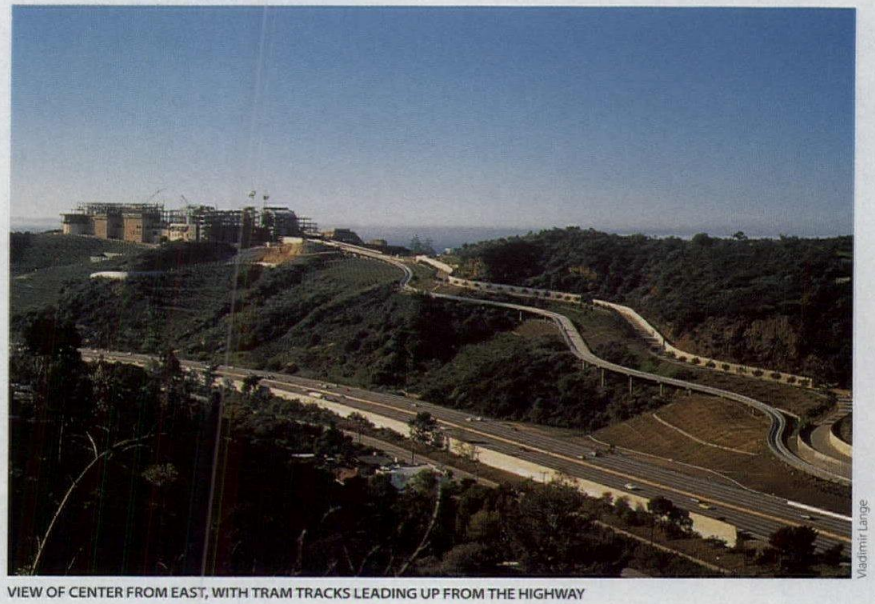
SECTION THROUGH SITE LOOKING EAST

100'/30m

Forces Shaping the Design

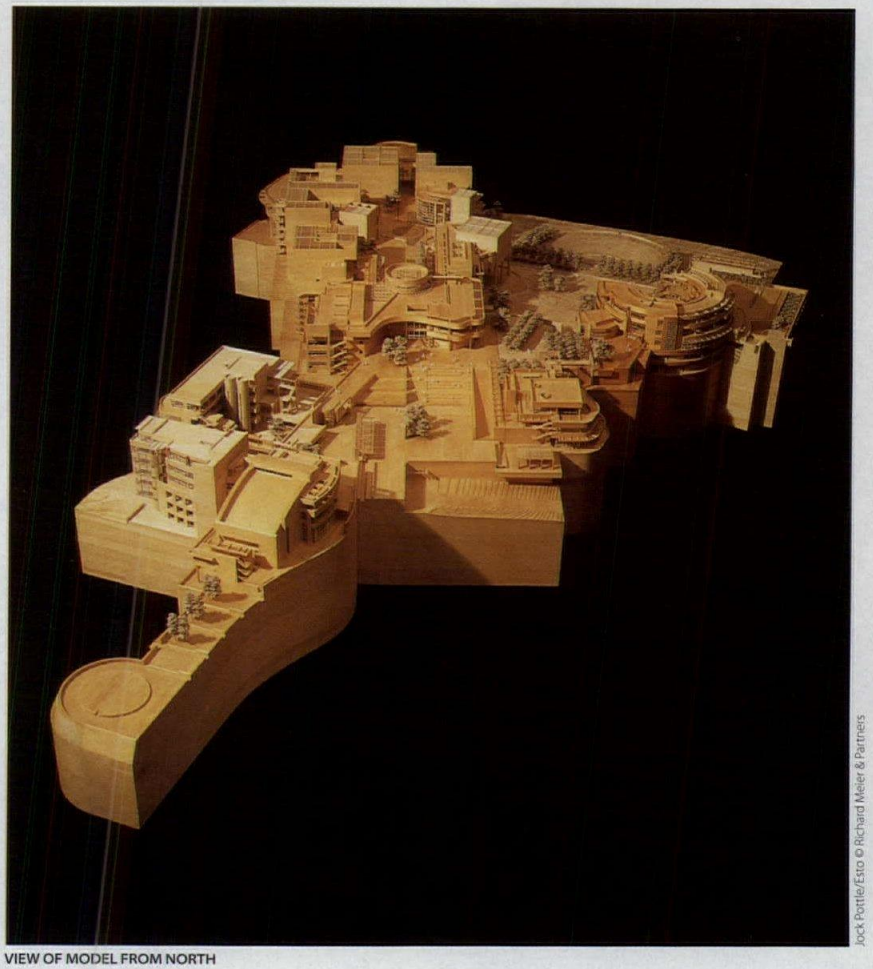
Constraints on the design of the Getty Center were imposed by both the client and the community. No program for the Center existed in 1984, when Meier was selected as the architect. The heads of the various Getty entities spent much of 1985 developing a program, which was presented to Meier in 1986. The directors had arrived at extraordinarily detailed requirements; five-inch-thick books of specifications were prepared for certain individual buildings. The Getty organization was represented by Stephen D. Rountree, director of the Getty's building program. As the design progressed, Meier also conferred with at least a dozen senior staff members, while another 40 "key users" offered input to the design. The intramural politics among the Getty groups apparently militated against a strongly hierarchical scheme; throughout, Rountree acted as a sort of referee between the architect and various staffers. The Getty components collectively decided to distinguish each building with a strong shape; hence, the circular plan of the Center for the History of Art and the Humanities, and the five-pavilion configuration of the museum.

Since the 110-acre Getty property was originally zoned for residential uses, Getty officials met with homeowners who lived within sight of the Center to determine the constraints that would be placed on the project. Neighborhood groups expressed concern about "traffic, privacy, noise, night lighting, landscaping, and the scale and appearance of buildings," according to Rountree. Ultimately the Getty agreed to a list of 107 conditions relating to these issues. Among these were a height restriction of 65 feet and prohibitions on the use of the color white (a Meier trademark) and on the removal of any soil from the construction site. Concerns about traffic and noise helped convince Getty officials to concentrate the parking in a structure near the freeway, and to transport visitors up to the Center in a quiet cable-drawn tram manufactured by the Otis Elevator Company.



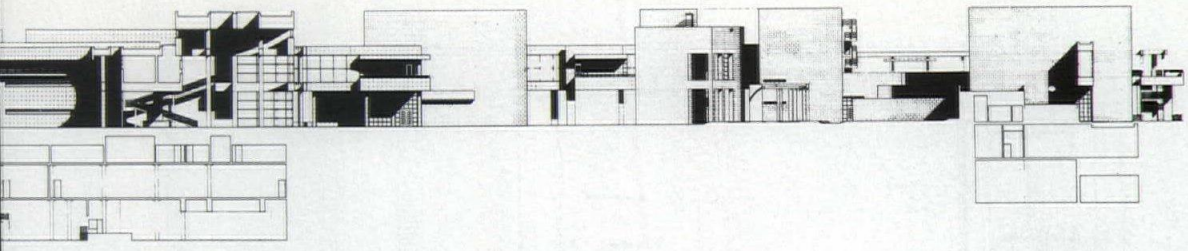
Vladimir Lange

VIEW OF CENTER FROM EAST, WITH TRAM TRACKS LEADING UP FROM THE HIGHWAY

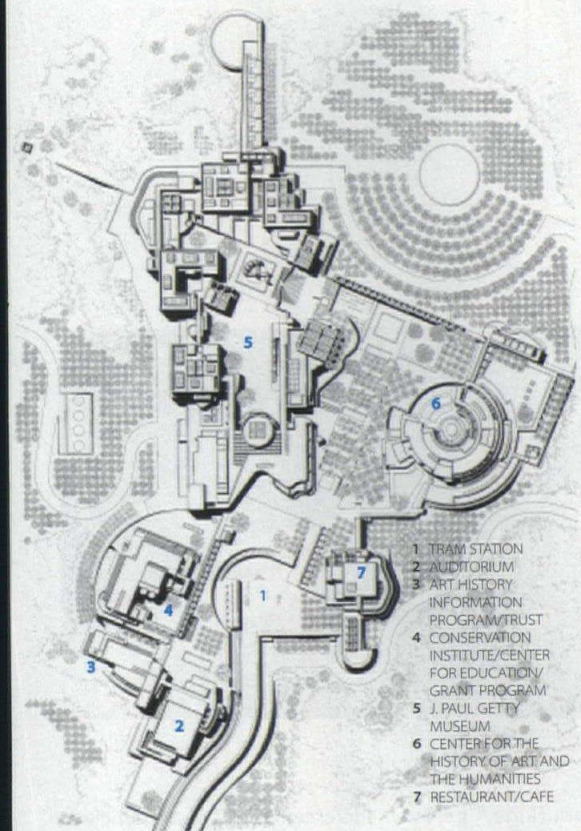


Jock Pottle/Esto © Richard Meier & Partners

VIEW OF MODEL FROM NORTH

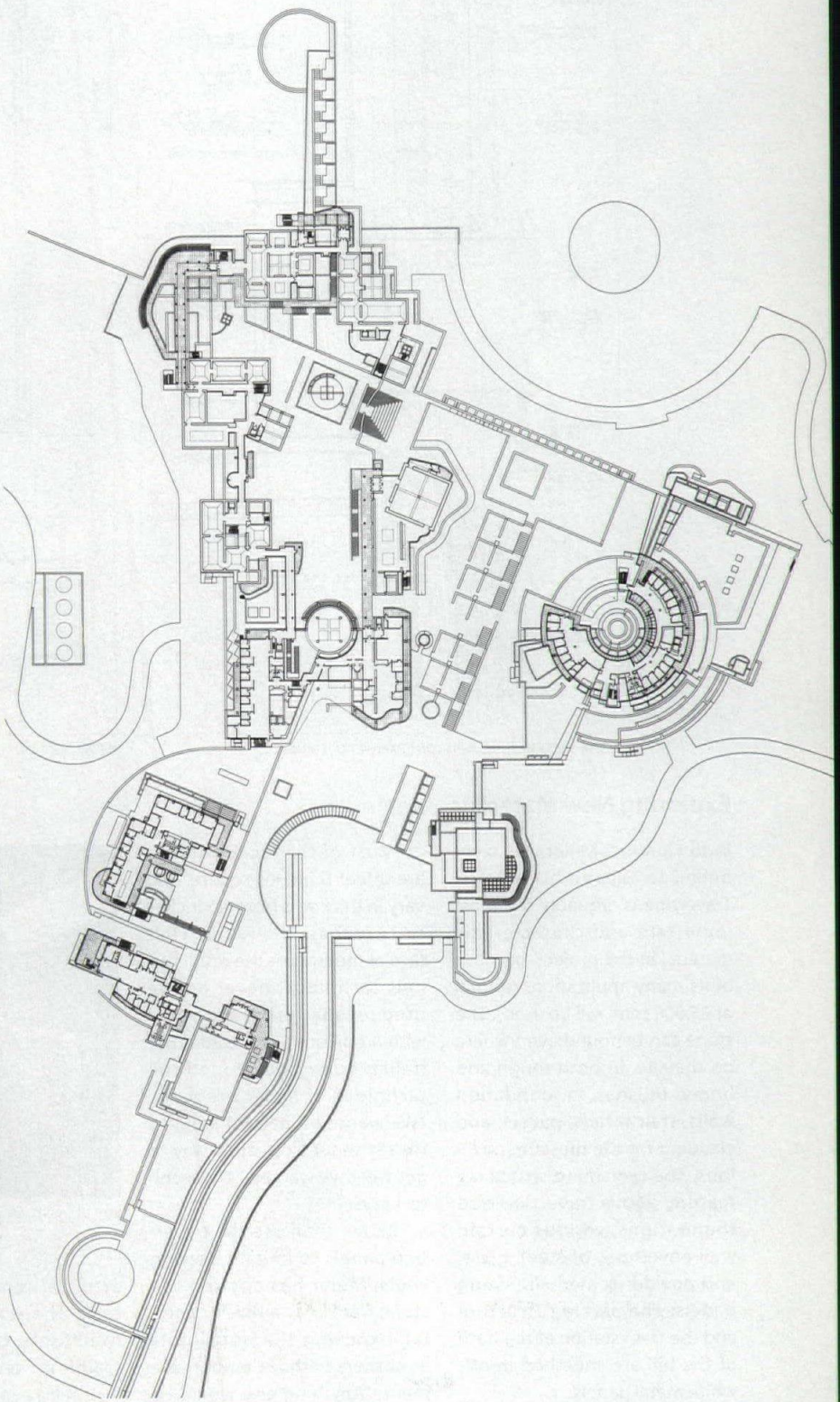


The program of the Getty Center calls for six buildings: The J. Paul Getty Museum, featuring a circular lobby (the "rotunda") and five interconnected pavilions (360,000 square feet); a restaurant and café building; a free-standing, 450-seat auditorium; the Center for the History of Art and the Humanities, containing a one-million-volume library and five million study photographs of art and other archival materials (201,000 square feet); a single building housing the Getty Conservation Institute, the Getty Center for Education in the Arts, and the Getty Grant Program, (80,000 square feet); and a single building housing the administrative offices of the Getty Trust and the Art History Information Program (64,000 square feet). A six-level parking structure provides 1,200 parking spaces for the public at the lower level, just off the San Diego Freeway. A second underground parking structure at the top of the hill provides 350 parking spaces for staff and visiting scholars.



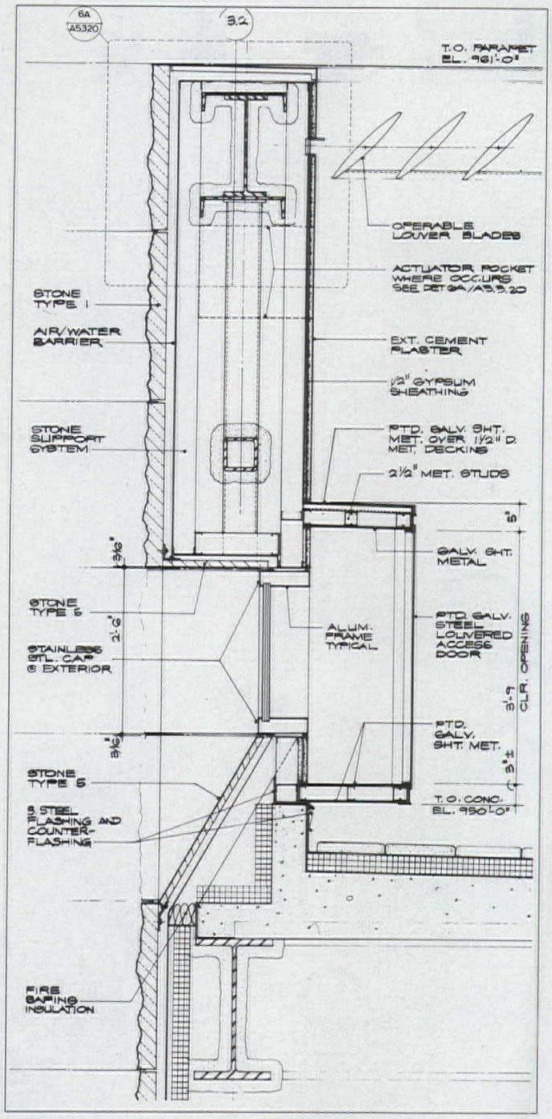
SITE PLAN

N 200'/30m

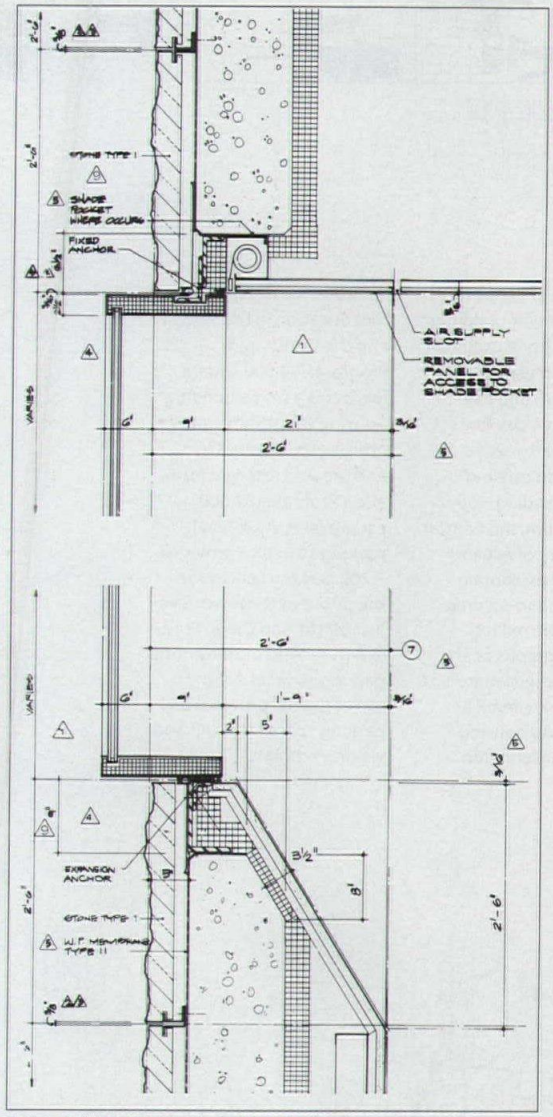


UPPER LEVEL FLOOR PLAN

N 200'/30m



DETAIL SECTION THROUGH STONE PARAPET OPENING



DETAIL SECTION THROUGH PROJECTING WINDOW

Exploring New Materials

In this project Meier was compelled to expand his palette. Travertine is arguably the most important and characteristic material in the project, because of its many applications (a total of 25,000 tons will be used). The stone can be found everywhere on the site, in both rough and honed finishes, in foundation walls, stair treads, pavers, and cladding for the museum pavilions. The remaining structures feature, above travertine-clad foundations, various curtain wall envelopes of steel, glass, and powder-coated aluminum panels. The parking structure and the tram station at the base of the hill are sheathed in off-white metal panels.

Most of the façade stones are 2 feet 6 inches square, and vary in thickness from 3.5 inches to 11 inches. The rough, cleft face of the stone is the result of a new technique, never before used, of shattering the stone with a guillotine-like blade. The Italian quarry developed the technique at Meier's request: "We wanted a natural look, so we set about to create a way to get what we wanted," the architect says.

Rather than use the travertine panels to imitate bearing walls, Meier has applied the stone frankly as a finish material, exposing the butt joints at corners without embarrassment. "Anything else would be artificial camouflage," he asserts. The stone panels are affixed to the bearing walls with stainless steel brackets, with 3/16-inch reveals between the increments. The dry-hung cladding serves the dual purpose of letting moisture enter and escape freely, and providing seismic "wiggle room."

DRY-HUNG STONE MOUNTED WITH BRACKETS

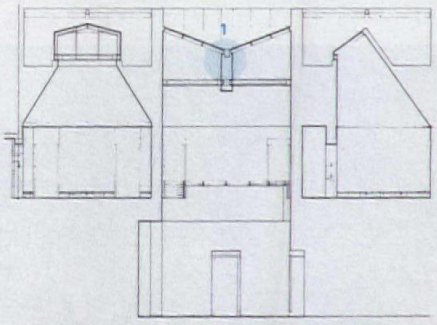
Photos these two pages: Vladimir Lange

WEST FAÇADE OF MUSEUM PAVILION IV (ABOVE); VIEW OF EAST FAÇADES OF TRAVERTINE-CLAD MUSEUM PAVILIONS (BELOW) WITH CONSERVATION INSTITUTE ON THE RIGHT

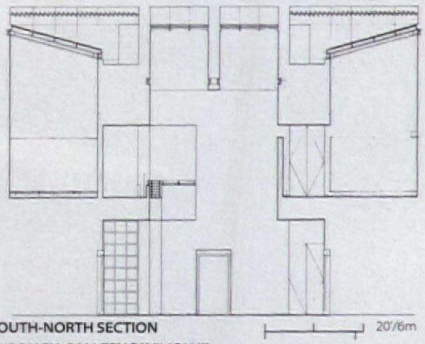
EAST FAÇADES OF GALLERY PAVILIONS, WITH METAL PANEL-CLAD CONSERVATION INSTITUTE IN FOREGROUND

The Galleries

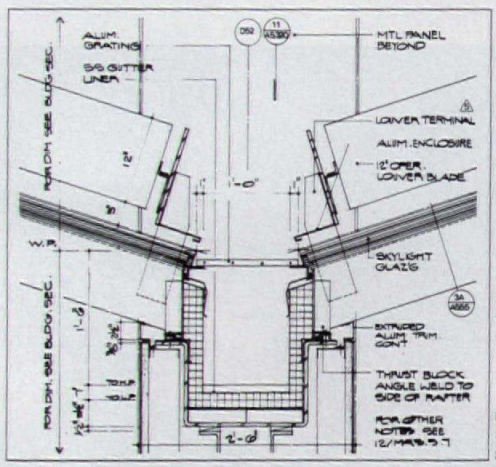
Lighting the galleries is one of the most technically demanding aspects of museum design. At the Getty, large skylights at the top of the 65-foot-tall museum pavilions vary in area and orientation, although the intensity of light in all the galleries is uniform. (Computer-regulated artificial lighting compensates on overcast days.) Exterior louvers block direct sunlight, and certain skylights are tilted in particular directions to reflect light onto interior soffits, so that natural light in all the interiors is indirect. The triple-glazed skylights feature a top layer of gray tinted glass, an air space, and a second layer with an ultraviolet filter sandwiched between clear panes. While the galleries are all 27.5 feet wide, they vary in length, their proportions tailored to the collections they will house. The relatively intimate spaces in the cross sections at right are suited to small-scale Medieval art.



EAST-WEST SECTION THROUGH GALLERY PAVILION III



SOUTH-NORTH SECTION
THROUGH GALLERY PAVILION III



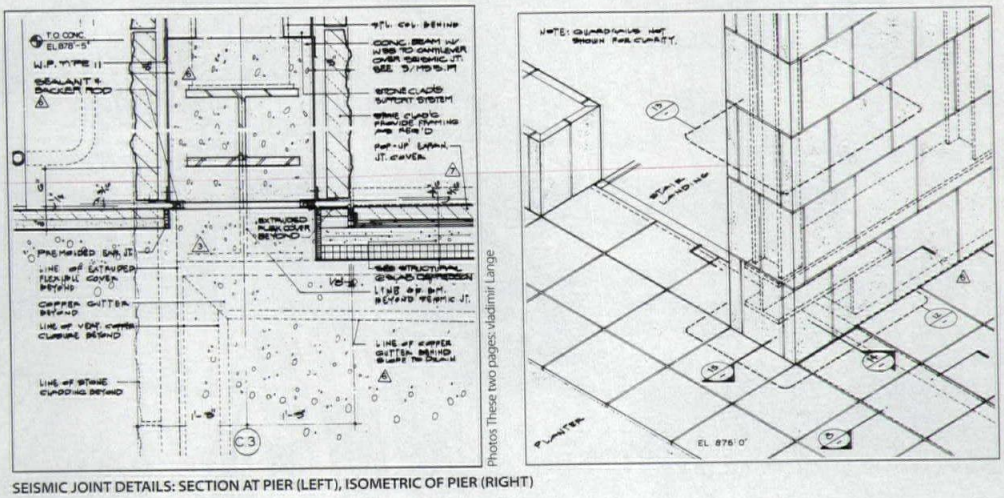
SKYLIGHT DETAIL 1: GUTTER SECTION

Photos These two pages: Vladimir Lange

VIEW OF AUDITORIUM'S WEST FAÇADE: METAL WATERPROOF ENVELOPE TO BE CLAD WITH BEIGE POWDER-COATED METAL PANELS

Seismic Engineering

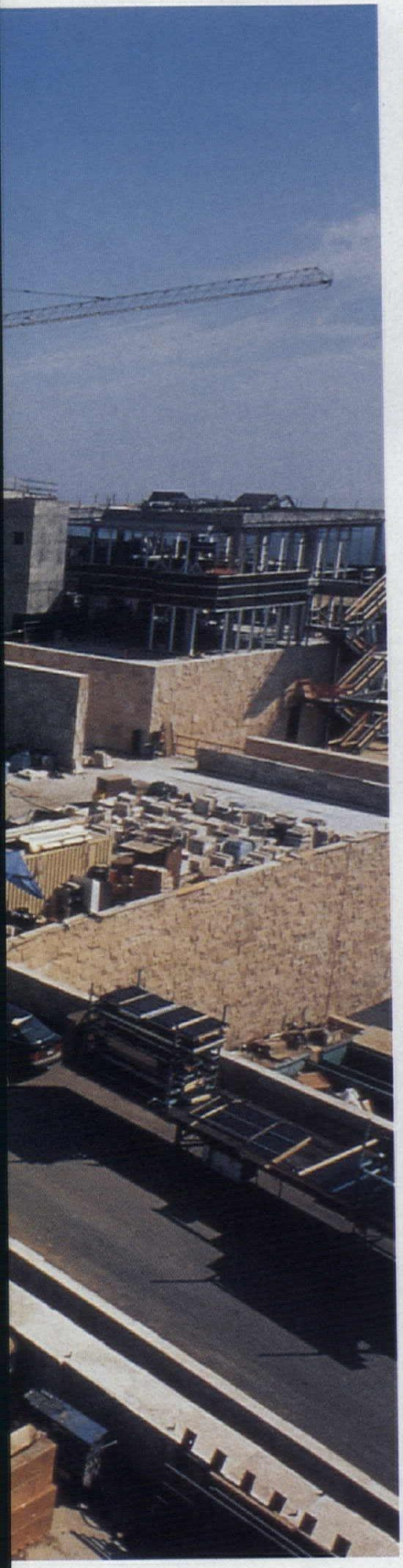
The basic seismic system for the Getty Center combines reinforced concrete shear walls and flexible steel moment frames. The buildings are massively overstructured on lower stories to provide stability (Meier emphasizes that the buildings are reinforced far beyond the requirements of local codes). The structures were further strengthened shortly after the Northridge earthquake of January 1994, when hairline cracks appeared in a number of steel joints and required reinforced welds. Like most buildings with seismic reinforcements, the Getty had been engineered to withstand lateral motion; the 1994 earthquake damaged many buildings with a series of powerful vertical jolts. Steel framing is used on the buildings' upper floors to lower costs and reduce weight, without sacrificing adequate shear resistance.



Photos These two pages: Vladimir Lange

SEISMIC JOINT DETAILS: SECTION AT PIER (LEFT), ISOMETRIC OF PIER (RIGHT)

RECENT CONSTRUCTION PHOTOS: ARRIVAL PLAZA AND ENTRANCE TO MUSEUM (ABOVE), AERIAL VIEW OF CENTER FOR THE HISTORY OF ART (FACING PAGE)



Warren Aerial; Valdimir Lange (left)

Logistics of Construction

The six-year fast-track construction schedule presents formidable logistical challenges. The site has a limited area for storing materials, and it is accessible by only one road. As a result, the staging of materials has required meticulous coordination of multiple construction processes, which are occurring simultaneously. To avoid confusion and crowding, usually no more than 800 workers are on the site at a given time, although their number has risen to as many as 900. Generally, the materials stored onsite are only those to be used within several days. The slabs of travertine, for instance, are being shipped over a six-year period from the quarry near Rome; they are stockpiled in a one-acre yard about one mile away from the site, then delivered in pallets ready for installation. Similarly, modular increments of the curtain wall systems are preassembled offsite.

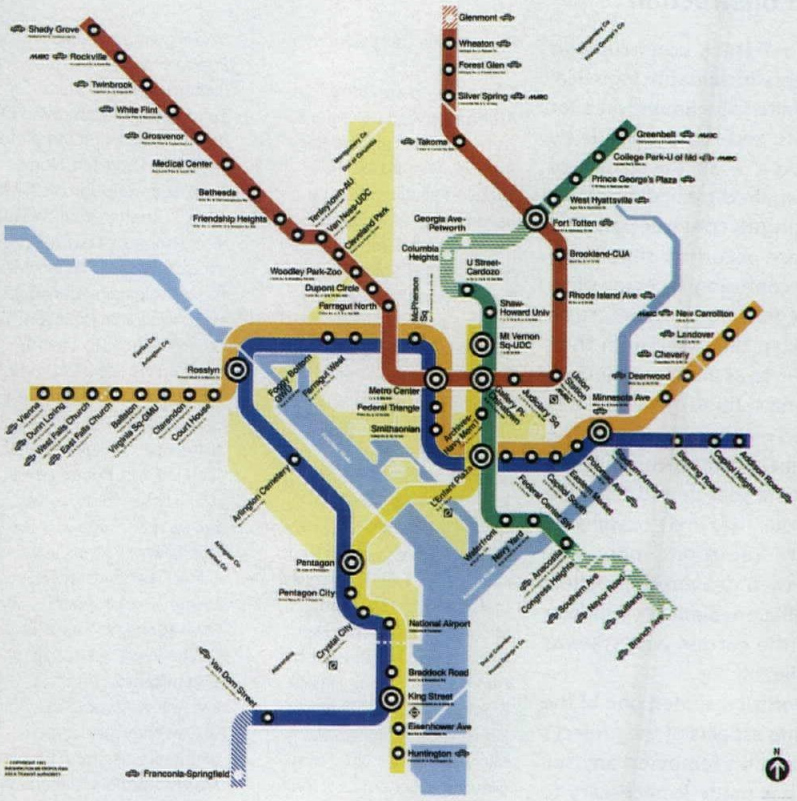
The earthworks presented one of the most challenging aspects of the project's logistics. The ban on removing any soil from the site has made it necessary to move small mountains of soil repeatedly from one temporarily inactive portion of the site to another; eventually, the soil that is left over from other earthworks on the extensively landscaped campus will be used on the north edge of the site.

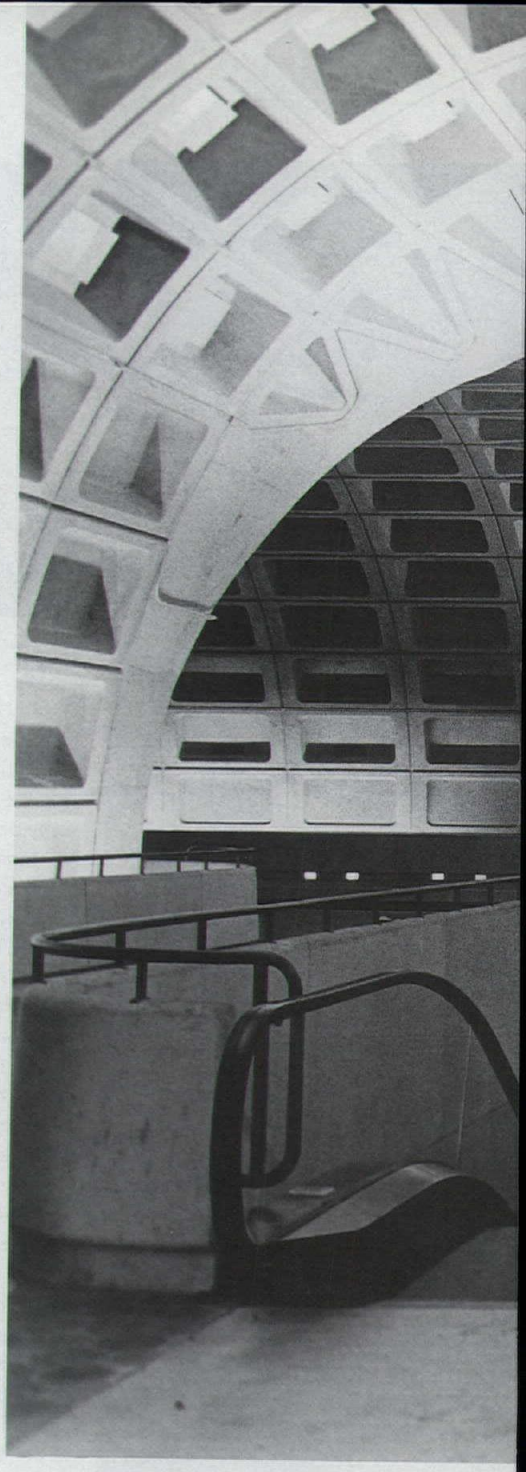
Architects in Meier's Los Angeles office report that, thanks to careful planning upfront, construction has proceeded smoothly. The one exception was when the Northridge earthquake caused a month's delay while workers went back to reinforce welds at steel joints.

Project: The Getty Center, Los Angeles.
Client: The J.Paul Getty Trust.
Architects: Richard Meier & Partners, New York and Los Angeles (Richard Meier, Michael Palladino, Donald E. Barker, partners in charge; Amy Alper, Robert Ashley, Gregory Baker, John H. Baker, Roger Barrett, Peter Blum, Karen Bragg, Daniel Braun, Noel Carriere, Christopher Coe, Florencia Costa, James Crawford, David Davis, Carlos Dell'Acqua, Victor DeSantis, Joan Diengott, Maurice Edwards, Robert Edwards, Thomas Farrell, Eric Fischer, Nils C. Finne, Francis X. Freire, E. John Frishman, Dean Geib, Pavel Getov, Derek Gonzales, Stefan Gould, Tom Graul, Michael Gruber, Jason Haim, Gavin Harris, Jeffrey Heller, Hiro Hemmi, Dennis Hickok, Bradley James Hill, Thomas Hoos, Michael Hootman, Michael Hughes, Nizar Idrisi, Glen Irani, Richard Kent Irving, James Jackson, Bijoy Jain, Kam Kamran, Anne Katata, Christine Kilian, Richard Kuhn, Bernard Kummer, Robert Larson, Jean Lem, Mario Madayag, Wayne Martiny, James Matson, Hiroshi Matsubara, James Mawson, Stephen McCallion, Neil McLean, Mark McVay, Paul Mitchell, Milena Murdoch, John Murphey, Alexis Navarro, Olivia Ocampo, David Scott Parker, John Petro, Eric Randolph, Raynaldo Raya, A. Vic Schnider, Rivka Schoenfeld, Joanne Scott, Anne Seol, Timothy Shea, Lilia Skutnik, Jay Smith, Mark Sparrowhawk, Bruce Stewart, Richard Stoner, Krishna Suharnoko, Timothy Swischuk, Aram Tatikian, Phil Templeton, Russell N. Thomsen, Norm Title, George Todorovich, Jeff Turner, Stephen Vitalich, Laszlo Vito, Thomas Vitous, Michael Volk, J.F. Warren, Malvin Whang, Bruce Weinstein, John Woell, Harry Wolf, James Kinsun Yu, David Yuguchi, L.A. team; Peter Burns, Peter Coombe, John Eisler, Jeff Green, Stephen Harris, Abigail Hopkins, Raphael Justewicz, Christina Kohn, Jah-Hee Koo, Robert Lewis, John Locke, Knut Luscher, Jun-ya Nakatsugawa, Alex Nussbaumer, John Quale, Gilbert Rampy, Greg Reaves, Joseph Shields, Alan Schwabenland, Carlos Tan, Dukho Yeon, N.Y. team).
Consultants: Emmet L. Wemple & Assocs., The Office of Dan Kiley, landscape architects; Karsten/Hutman Margolf, project management; B & E Engineers, Rogoway/Borkovetz Assocs., civil engineering; Woodward-Clyde, geotechnical; John L. Altieri, Hayakawa Assocs., mechanical and electrical; Pacific Soils Engineering, soils; Robert Englekirk, structural; The Office of Thierry Despont, decorative arts galleries.
General Contractor: Dinwiddie Construction Co.
Photos: Copyright The J. Paul Getty Trust Richard Meier & Partners, except as noted.

Long-term Capital Asset

After two decades as Washington's reigning Modern monument, the city's Metro system continues to expand under the direction of its original firm of architects. *by John Morris Dixon*





In the 26 years since construction began, Washington's Metro system has grown to 79 stations, with about 100 miles of track, and it has substantially affected its region's growth patterns. From the outset, the system's stations were intended to have a spaciousness and serenity associated with other Federal construction in the city. At the L'Enfant Plaza station (above), where two lines cross, two 600-foot-long coffered vaults give the appearance of a vast, softly illuminated sanctuary.

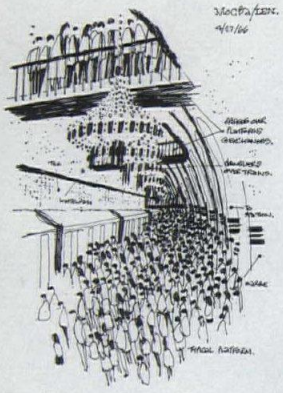
In retrospect, it seems like some kind of miracle that the stations of the Washington Metro emerged as exemplary works of Modern design. And it is an equal wonder that today's continuing extensions of the system are being designed by the original architects, Harry Weese Associates, following design principles they laid down back in 1969. Since that time, the way public facilities are shaped has changed radically – from a top-down imposition of total design to a process that responds to community interests – yet the validity of the initial design here has been sustained.

Riders of the Metro system are almost universally impressed with the spacious, stately underground stations, so different from the American image of subways. Following a standard design, which varies only subtly with circumstance,

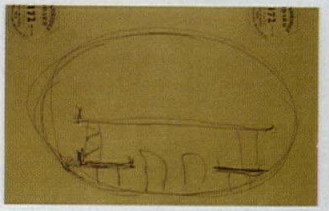
these stations are column-free, with ticketing mezzanines and train platforms that float free of enveloping coffered structural vaults; materials are good, sound is muted, and indirect lighting is subdued. Neither the entrances to the underground stops nor the above-grade stations outside the downtown area reach this level of distinction, but they are nevertheless admirable for their restraint and appropriateness.

How did these elegant stations come into being, against all the odds? Washington is, after all, a city where almost everything conspires to thwart the efforts of Modernist architects. The city's Classical building traditions and street-wall planning concept have permitted few outstanding Modern buildings, except within its green spaces (Maya Lin's Vietnam Memorial) or beyond the edges of its grid (Eero Saarinen's Dulles Airport). When the structure is for public purposes, there have usually been the combined obstacles of meddling by Congress, of lobbying by special interests, of narrow-minded design review panels. A further problem for a transit system is that in this city, which has never enjoyed true local government, there has historically been little regard for the convenience and comfort of ordinary citizens.

It was therefore something of a magic moment back in 1965, in the brief heyday of Great Society social commitment, when the Federal government generously funded a public transit system for the working population of the city, and subsequently its suburbs, as well. To assure design quality for the system, the architects were placed on an equal footing with the engineers, who typically dictate the configurations of transit



The Harry Weese Associates design team began its work by examining 18 foreign transit systems; scores of sketches by project manager Stanley Allan include images of column-free, vaulted stations in Moscow (top left) and London (below left). Though an early design study for the Metro shows a vault (bottom sketch), it was ruled uneconomical by the engineers. Then Commission of Fine Arts member Gordon Bunshaft proposed a vaulted configuration and sketched it on the back of a presentation board (below), sending everyone back to the drawing board. Soon after, the architects modeled a scheme with a ticketing mezzanine hovering above the train platforms (right) that established the basic station geometry.



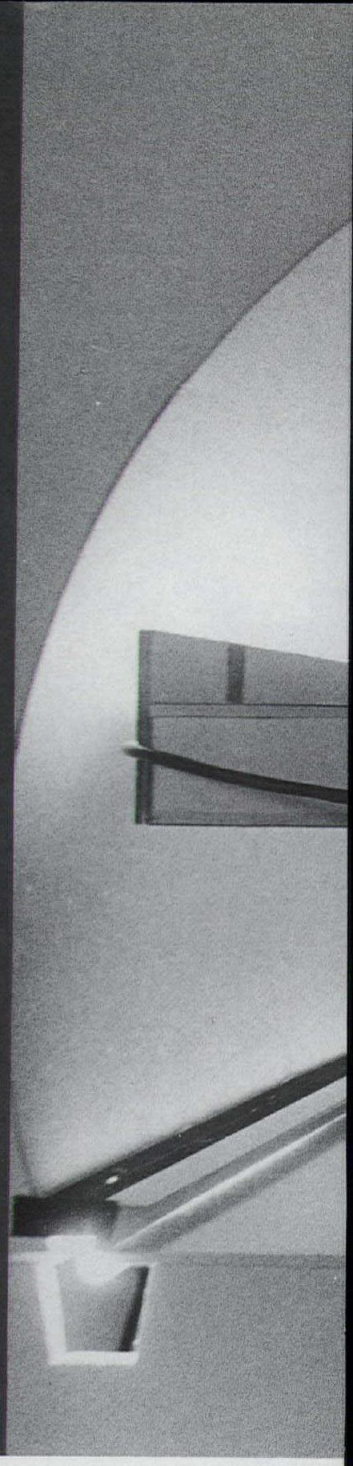
Station Design Principles

Underground Stations

- Structural vault provides unified surface.
- Vault surface always out of reach of users.
- All lighting bounced upward off of vault; no sources visible.
- Nothing suspended from vaults.
- Forced air enters the station through coffers of vaults and is exhausted through grilles at track level, thus eliminating the heat and odors of braking steel wheels at their source.
- High-efficiency acoustic absorbers in coffers of vault.
- All signage on pylons rising from platforms. Horizontal signs had to be added for legibility from inside trains.
- User touches only very durable materials: concrete, granite, bronze.
- Entry to station via mezzanine with view of entire station.
- Mezzanine plan tailored to circulation diagram; no dead corners.
- Mezzanine minimum height above platform.
- All destinations within station visible; orientation self-evident.
- Minimum of structural columns, round for minimum obstruction.

Above-ground stations:

- Platforms identical to underground.
- Continuous skylight strips.
- Minimum of columns, away from platform edges.

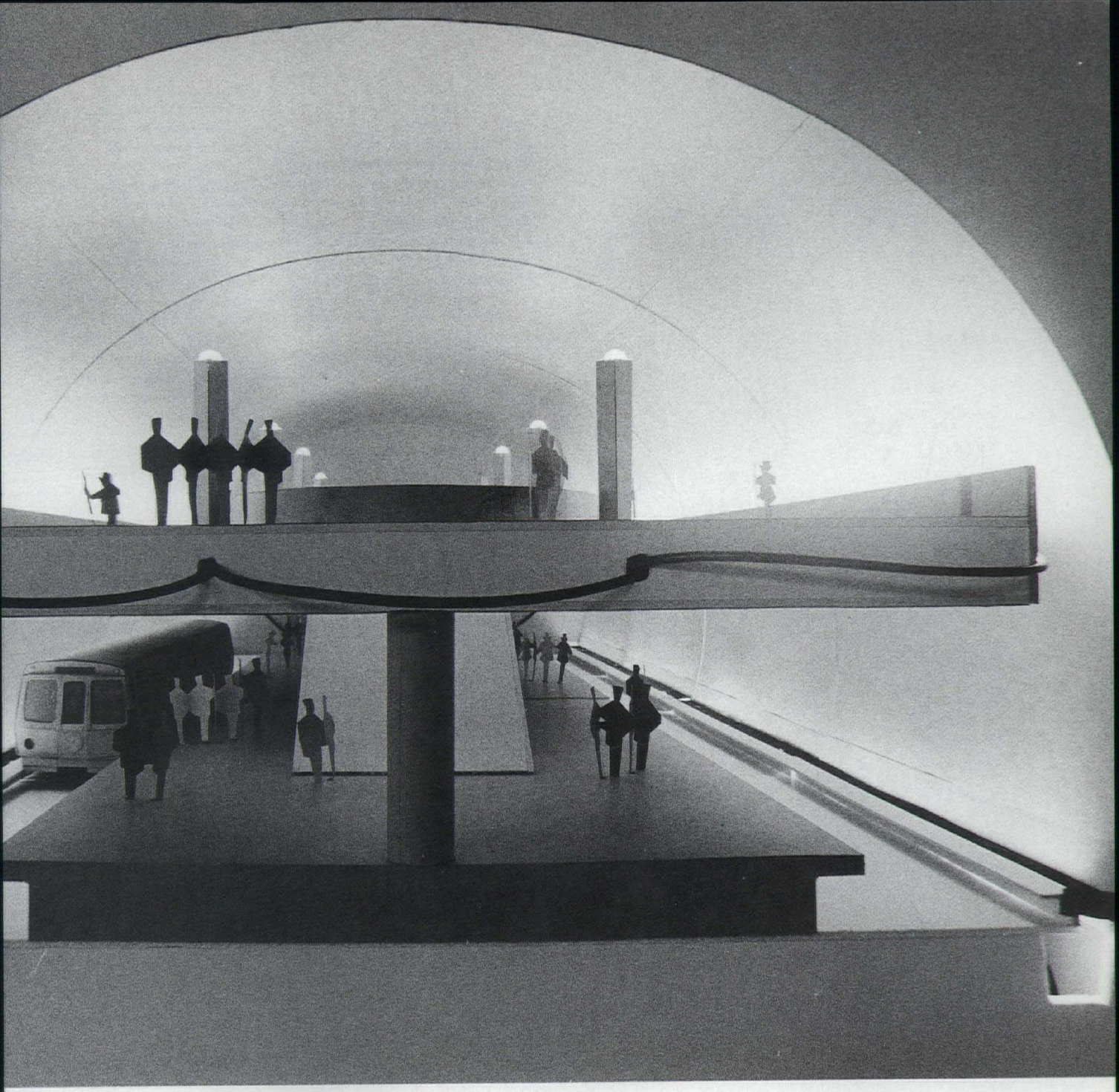


stations, along with their structural systems. As the architects in this equal partnership, the National Capital Transportation Agency chose Harry Weese Associates, a Chicago firm with a solid design reputation and one expected to deal effectively with the capital's Planning Commission and its notoriously tyrannical Commission of Fine Arts. The resulting scheme was a true collaboration between architects, engineers, and review bodies.

Not that the transit design proceeded swiftly, without obstacles. One member of Congress was able to delay approval of the system from 1966 to 1968, an interval that turned out to be a blessing in allowing for the thorough consideration of design possibilities that led to the vaulted station configuration. During that interval, too, a compact with suburban communities established the Washington Metropolitan Area Transit Authority, with a broader mandate, as the new client. WMATA's general manager, retired Corps of Engineers general Jackson Graham, renowned for his management skills and his political astuteness, got construction under way in 1969, working toward the first operating segment in 1976.

Underground, But Still in L'Enfant's City

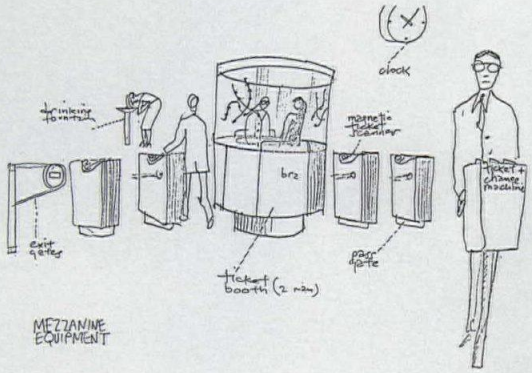
While going underground removed the stations from the Classical dictates of above-ground Washington, both the architects and the reviewing commission realized – well before "contextualism" became the watchword – that this buried architecture would have to honor the Classical design spirit that so effectively identifies this city with the ideals behind it. One

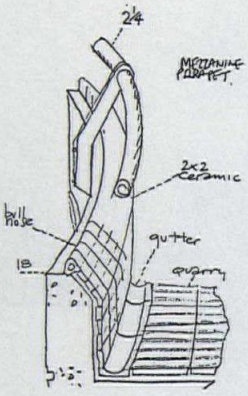


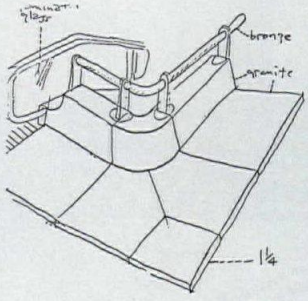
result of this realization was to rule out the individualization of stations under different architects, which characterizes the transit systems in San Francisco and Atlanta, for instance, begun around the same time. And the consistent station design that was adopted upheld the Modernist principles of everyone involved, yet its forms recall Latrobe's chambers in the Capitol, architectural high points of the early Republic.

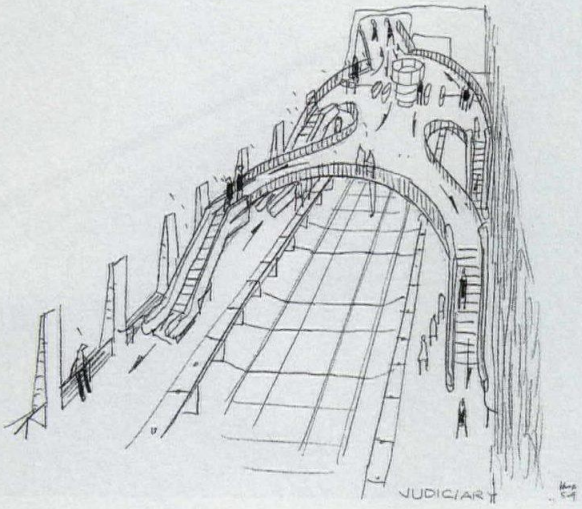
The equal role accorded the architects did not guarantee that the engineers would readily share design authority. We must thank the intransigent Gordon Bunshaft of Skidmore Owings & Merrill, who dominated the Commission on Fine Arts in the 1960s, for the vaulted station configuration. Weese and his staff, impressed by overseas transit systems they had visited, favored vaulted stations, but the engineers – Deleuw Cather – had proved to their own satisfaction that a flat-topped station configuration would save money; as a result, the architects had not been allowed to broach the subject of vaulted stations before the commission. But Bunshaft came up with the same concept at a Commission of Fine Arts meeting and insisted it be given further study. WMATA manager Graham ordered a third-party recalculation by engineers Amman & Whitney, which showed that for locations with an overburden of more than 14 feet – almost all of those planned – the vault was more economical. Thus the architects' preference prevailed over the ostensibly objective judgment of the collaborating engineers, only because the review panel insisted and the client handled the issue wisely.

Notwithstanding this crucial dispute over station configu-





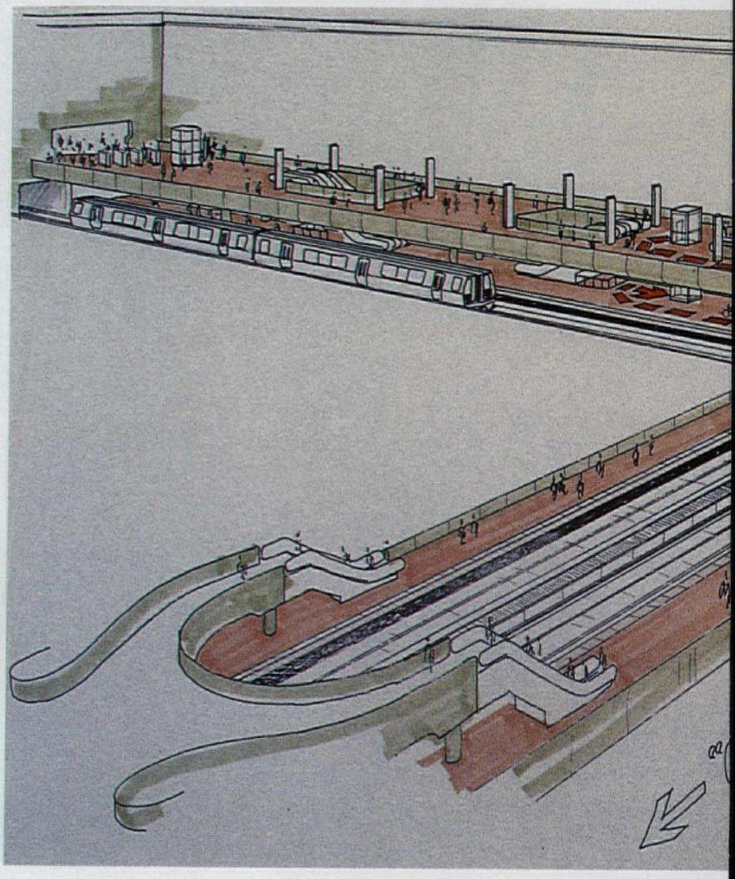




Early Harry Weese Associates sketches (left) propose minimum obstruction for the user passing through: booths and gateways are minimal, parapets are curved. The typical ticketing mezzanine stands free of the station envelope, at a minimal height above the train platform, with a minimum number of round columns supporting it.

A detailed section of the Gallery Place Station (below), shows how these design intentions are carried out in an actual station where two lines cross. Arrows show handicapped access routes, which were required by a Federal law that went into effect in 1970, after the station designs were complete and some construction had begun.

The typical vaulted station (facing page, left) has been affected by only slight alterations – mainly the installation of some horizontal signage (because vertical signs are hard to read from the train interiors) and of backlighted advertising signs at wide intervals. Where stations are bored through rock (facing page, right) the grid of deep coffers is not needed, and the acoustic panels, clad in perforated aluminum, fill wider areas between thin concrete arches.

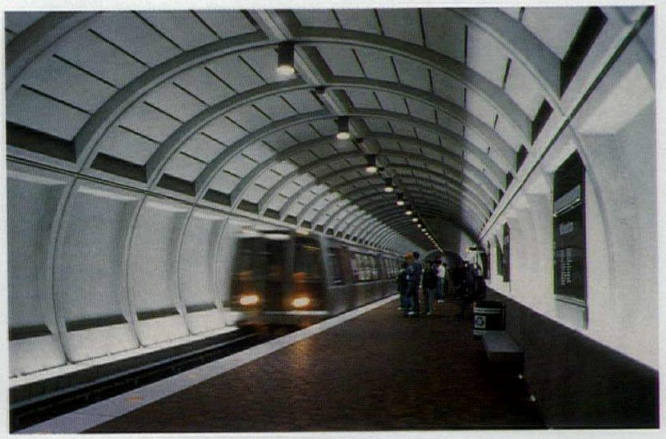


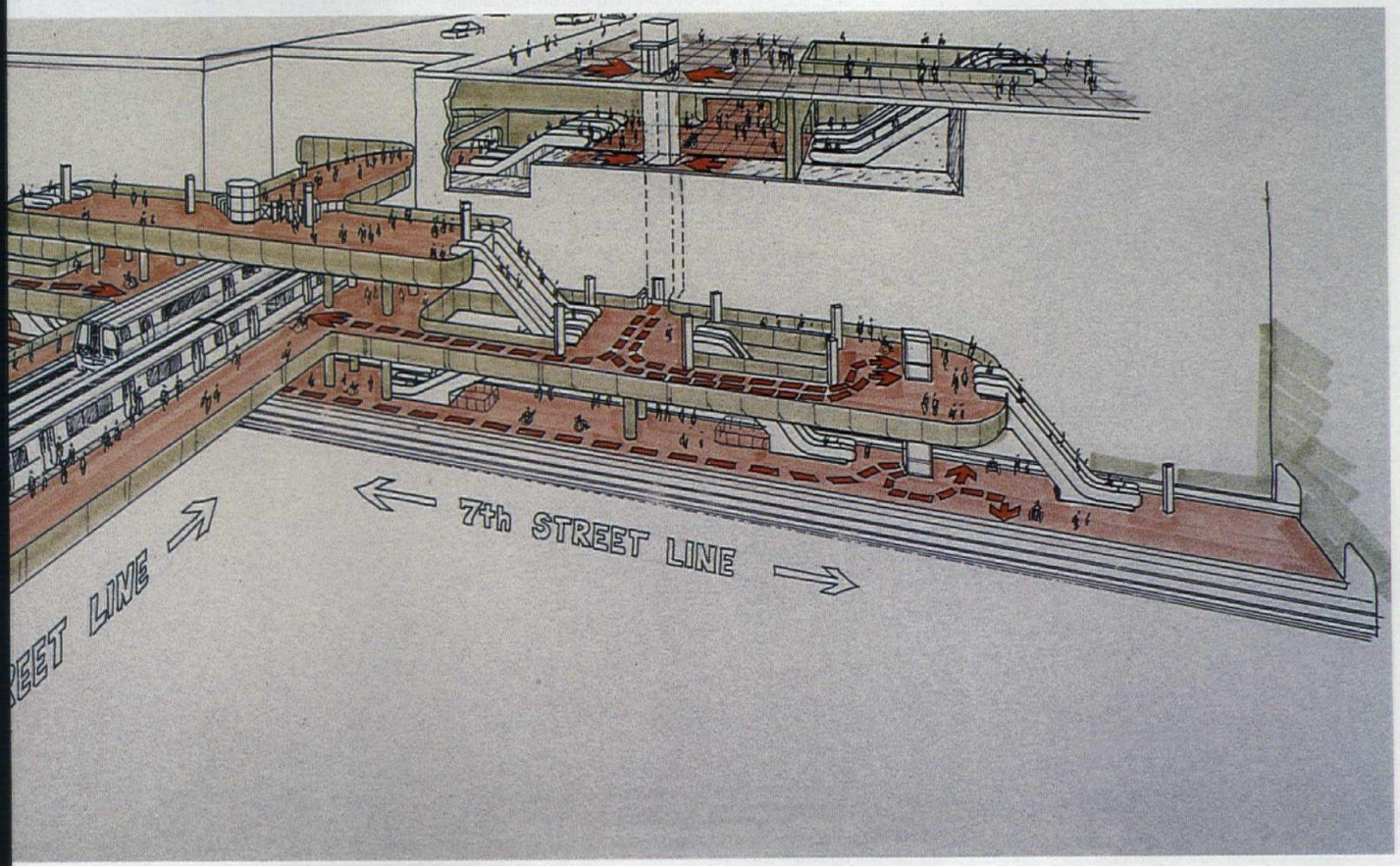
ration – and possibly because of its enlightened resolution – the architects recall an exceptionally cooperative atmosphere among architects, engineers, WMATA, and reviewing commissions. This cooperation must explain, at least in part, why the same organizations – with many of the same individuals – have guided the expansion of the system ever since. In 1990, the client decided it was time to open up the design commission for continuing work on the system to other firms, but after careful consideration of proposals submitted, the contract was again awarded to Harry Weese Associates.

An Uplifting Underground Experience

The performance of the system's stations to date bears out the intentions of its originators. Stanley Allan, project manager for HWA from 1966 through 1978 – later president, then chairman of the firm – stated at the outset that the stations were to be designed as if for "ladies and gentlemen." Specific steps toward these objectives included banning almost all advertising and commercial clutter, keeping sound levels down, and swiftly exhausting the heat of train engines and brakes; at no point would users confront the "zoo bars" found in other transit systems.

Vandalism was confronted directly by using resistant materials such as granite and by keeping vault surfaces out of users' reach. Even considering such conscious antivandalism measures, it is a tribute to the system's image of dignity and generosity that rates of vandalism and crime have remained very low, in a city where social problems have worsened drastically

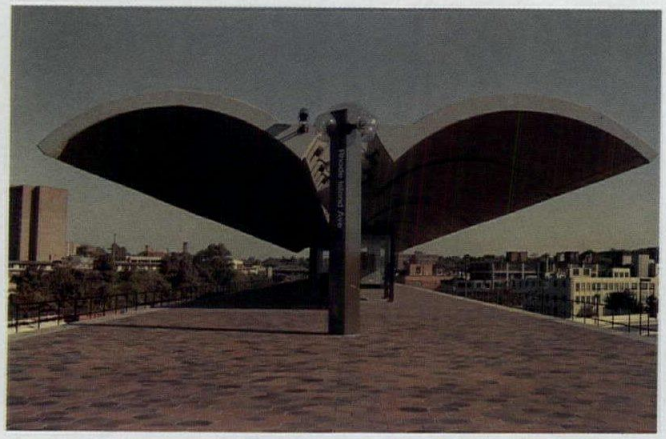


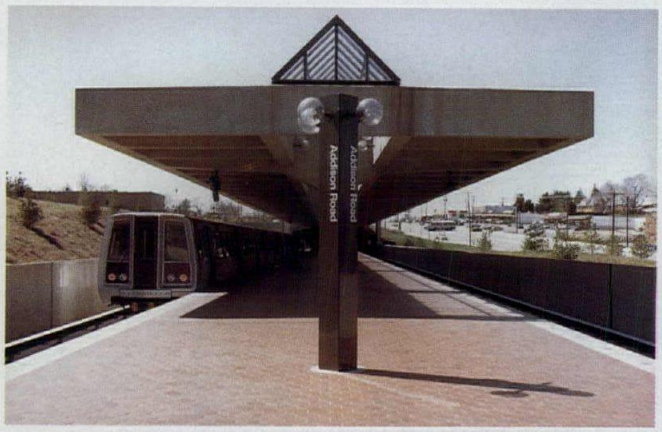


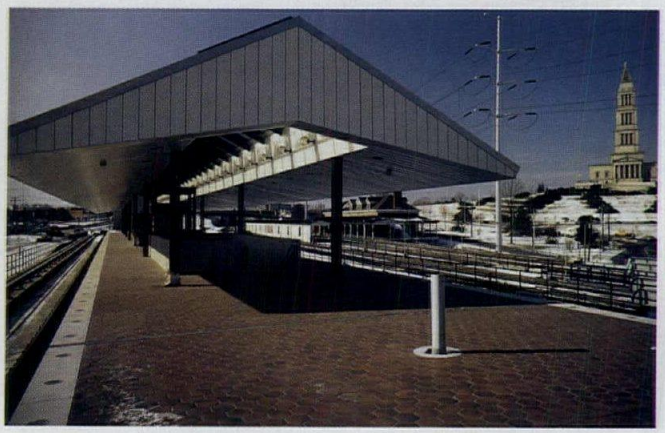
over recent decades. "Where else," asked a 1983 *Philadelphia Inquirer* article, "do people feel uneasy about muggers lurking in the shadows as they walk to the subway – and then relax once they get inside."

As the Metro system has grown to include 79 stations, with 7 more now under construction, it has been subject to forces of change. Even before the first stations were completed, a change in Federal law required that all new transit stations be wheelchair accessible. The cost of inserting these elevators at all stations, sometimes involving purchase of new property or easements, increased initial costs substantially. But the result was one of the world's first fully accessible systems.

Another early change was the insertion of horizontal station signs, to supplement those reading vertically on pylons. Passengers had difficulty reading the vertical signs from inside the trains, a problem compounded by a Federal energy-conservation requirement for tinted window glass for all trains that run above ground, as virtually all Metro trains do outside the center city. The chaste platforms have become a bit more cluttered over the years, with large trash receptacles the original designers did not foresee, and the siren call of revenue has added some advertising: posters are placed along passages to the ticketing mezzanine and backlighted ads are widely spaced along the platforms, using standard boxes designed by the architects, a scheme that yields high revenues per sign. There is no advertising in the subway cars. The client agreed to allow newspaper dispensers on the station mezzanines, but commissioned the architects to design standardized units for

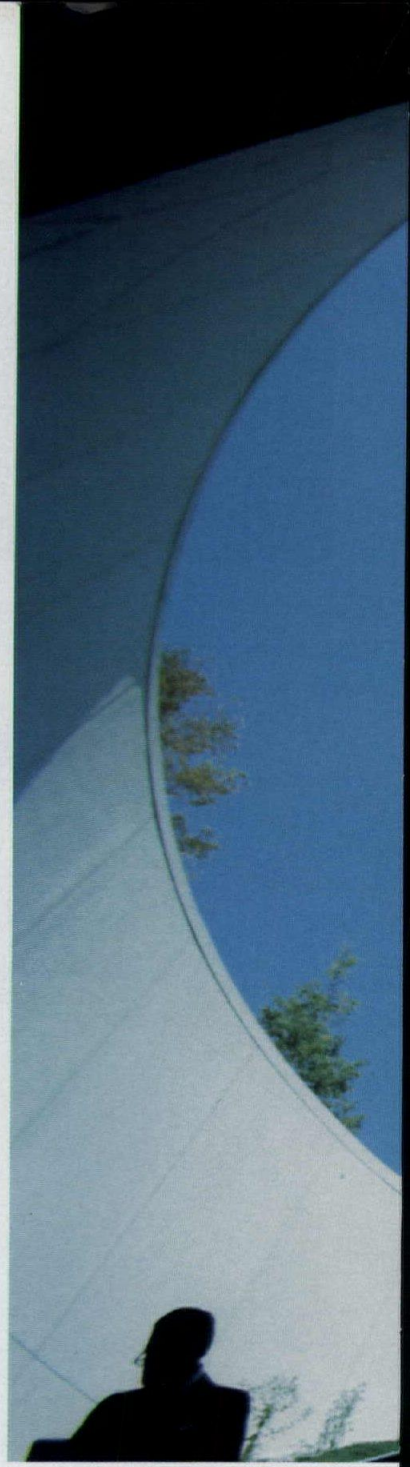






The first above-grade Metro Stations had a gull-wing canopy over the platform (top left), which echoed the below-ground stations in their minimal interruption by columns, their diffused lighting, and their variation on vaulting geometry. As new suburban stations were added, the gull-wing configuration proved to look awkward when seen from above, and a straight-lined canopy (middle left), retaining the single line of columns and central skylight, was adopted. The effect of community involvement is quite visible at the King Street station in Alexandria (bottom left), where a gabled profile was devised to satisfy local representatives.

The long escalators that provide dramatic entrances to stations such as Dupont Circle (right) are based on precedents in the former Soviet Union, whose transit systems still have the world's longest escalators. Metro's designers learned in Russia that escalators need not be interrupted by landings, as they had been in the U.S. until then, and that user confidence could be assured by having several level treads at the top and bottom.

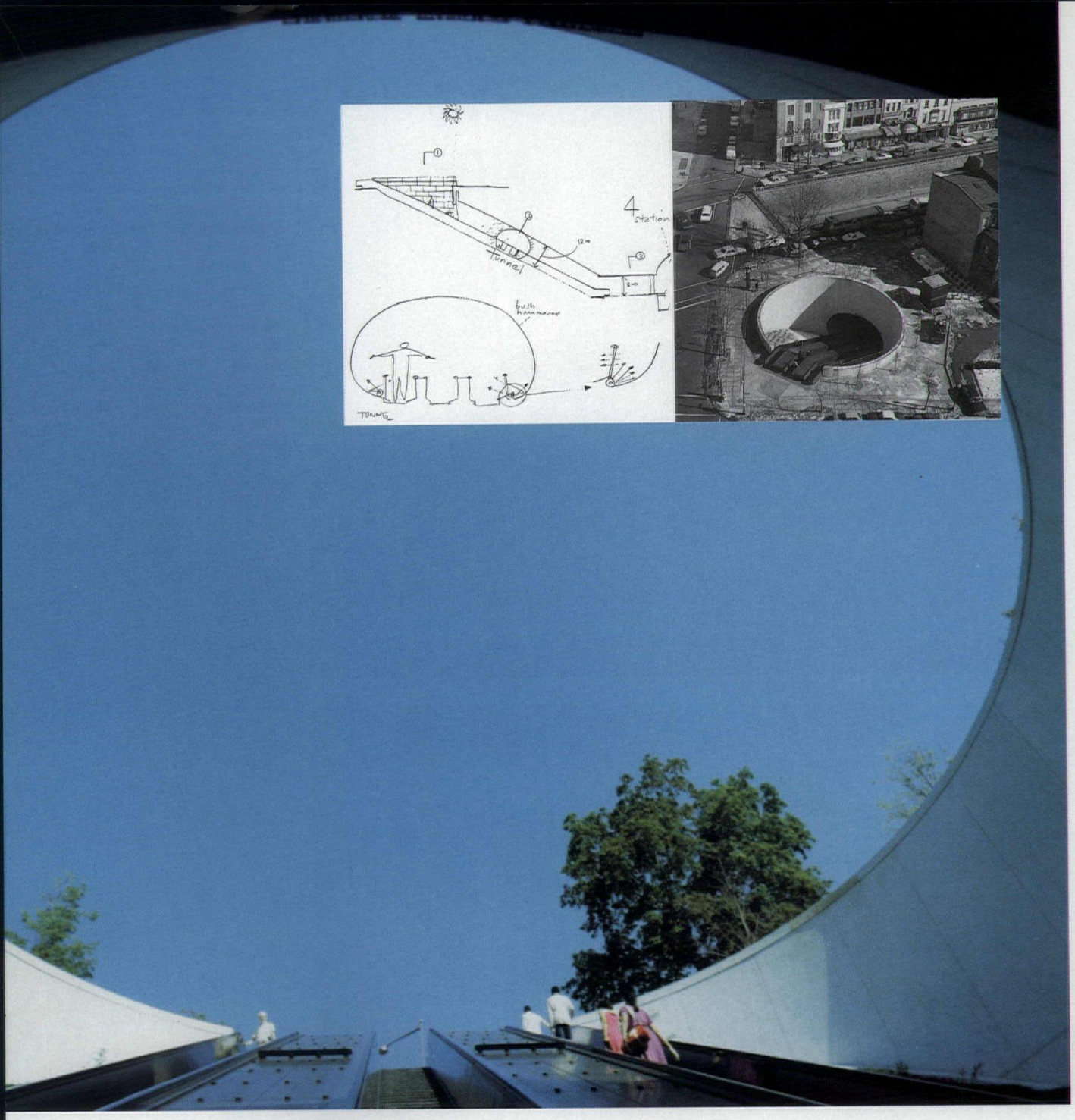


them. (On the sidewalks outside stations, however, the proliferation of disparate newspaper dispensers cannot legally be prevented.) Here and there maintenance staff have added extra, all-too-visible lighting fixtures or have painted areas of concrete. A new, small-scaled visual distraction is wiring strung along the vaults to accommodate passengers' cellular phones; it is a measure of the system's high standards that the architects are concerned about these wires.

The escalator wells leading into the stations became a subject of concern when Washington's homeless began to camp out in them. At some downtown stations, grilles that secure the stations after hours of operation have been moved from below-grade locations to the tops of entry parapets to keep out the homeless. In any case, these entry wells have no weather canopies, since they were to be only minimally visible in the cityscape. The architects have some designs on hand for discreet glass-roofed canopies to shelter users without cluttering public thoroughfares, but nothing has been done that might encourage lingering at these entrances.

Communities Join the Design Process

As new stations have opened in recent years, almost all of them above-grade stations at the edges of the system, community opinion has become an increasing factor in design. The fact that many of these stations include parking garages and bus stations increases the degree to which the neighbors become collaborators on design. Canopies at station entries and at "kiss-ride" drop-offs have become more extensive. The



canopies over the platforms themselves have metamorphosed from the original vaulted "gull-wing design" to a tougher, straight-lined wing profile, and occasionally a community insists on modifying that (facing page). The architects observe, however, that community pressures have been on the whole more positive in their insistence on established station quality than obstructive in demanding local exceptions.

The admirable quality of the Metro stations is, of course, only one effect of the system on its city. The system has reduced traffic congestion and the voracious demands for downtown parking structures and ultimately made it possible for more employment growth to take place in center city than it could have without the Metro. The system has encouraged intensive development around some stations, notably at Pentagon City, and convenience to Metro stations has become a standard claim of real estate ads.

Now that omnidirection commuter traffic is clogging suburban arteries, HWA's Stan Allan is strongly advocating a circumferential transit line, most of it on or under the heavily congested Beltway, which would link existing lines at or near their ends (a pattern long established in London, Paris, Moscow, and Tokyo). Allan also proposes zoning to encourage dense residential and commercial development at these new nodes. Investment in such a politically ambitious plan could not only ease traffic, notes Allan, but could "reinforce the investment already made" by vastly increasing potential routes through the system.

What that investment has been to date, says Allan, nobody

Photos this page: Robert Lautman

The suburban Metro stations recently completed or in design are typically elevated or at grade, with extensive drop-off and parking facilities. At the Eisenhower station (top left) canopies at the street-level entrance echo the profile of the gull-wing platform canopy above. At the station in Huntington, Virginia, (below left and photo, facing page) a distinct platform cover was designed for a just-below-grade situation. Stations designed for Glenmont and Suitland, Maryland (inserts, facing page) show efforts to organize garages, walkways, and platforms for buses and car drop-off into islands of civic order amid the sprawl; stations in these instances are underground (Glenmont) and at grade (Suitland).

quite knows. The original 25-mile, 25-station system was to cost $625 million, but the 1969 agreement that added the suburbs and upped the stations to 86 was first pegged at $2.6 billion – later increased to $3.2 billion, then $4.5 billion. Work to date, with 79 stations operating and seven more slated to open by 1999, has probably cost in excess of $7 billion. After the next round of station openings, the system will have 101 miles of operating track, second in the U.S. only to New York's 230 miles. The major part of the outlay has been Federal expenditure, and all of the investment is being offset by a steadily increasing revenue. All things considered, this has been one of Washington's most defensible programs – economically, socially, and aesthetically. □

Project: Washington Metropolitan Area Transit System, Washington, D.C.
General Architectural Consultants: Harry Weese Associates, Chicago and Washington, D.C., 1966-present (Harry Weese, design architect, 1966-1992; Bob Reynolds, design development architect, 1966-1969; Dave Munson, design development architect, 1966-1995; Jerry Karn, design development architect, 1969-1983; Stanley Allan, project manager, 1966-1984, continuing overview, 1985-1992; John Corley, project manager, 1984-present).
General Engineering Consultants: Deleuw Cather, 1966-present (Jim Caywood, project manager, 1966-1989; Ken Knight, chief structural engineer, 1966-1984; Bob O'Neil, chief civil engineer, 1966-1990; Al Bumanis, structural engineer, 1966-1968).
Client: National Capital Transportation Agency, 1960-1967; Washington Area Metropolitan Transit Authority, 1967-present (Walter McCarter, NCTA administrator, 1964-1967; Jackson Graham, WMATA general manager, 1967-1976; Carmen Turner, general manager, 1983-1990; John Rannells, chief architect, 1960-1967; Sprague Thresher, chief architect, 1967-1978; Emanuel Mevorah, chief architect, 1978-1992; Mel Siegel, deputy chief architect, 1966-1993, chief architect, 1993-present; Kent Cooper, architectural consultant, 1965-1971).

Stop that Water Vapor

Exterior enclosure systems for high-humidity environments demand close attention to vapor barriers. Here's a primer on the most important issues to keep in mind.

by Thomas F. O'Connor and Paul G. Johnson

Abstract

Many building interiors today require high levels of humidity. Maintaining such levels is impossible without proper attention to the enclosure's vapor retarder, insulation, and air barrier, particularly in retrofitted buildings. The authors review the weak points in barrier systems, and how good performance can be achieved through properly executed construction documents and quality control.

Increasingly, new and rehabilitated buildings have interiors with high relative humidity on the order of 30 to 60 percent. Examples of such environments include spaces for sensitive electronic equipment; museum and library conservation; intensive-care units, surgeries, and laboratories; and various manufacturing operations that did not exist as recently as a decade ago. When the interior of a building is humidified to a relatively high level, the building's exterior enclosure system must perform 24 hours a day to maintain it. Any weak link in the enclosure is an invitation to problems (1).

There is a host of current publications (listed in the references at the end of this article) that readers should consult for detailed information on the design of vapor-resisting systems. In this article, we examine what architects need to know in designing such systems, explain how to execute and coordinate construction documents to maintain the system's integrity, and give some tips for quality control during construction.

What Do Architects Know About Vapor?

Exterior enclosure systems are the first line of defense against the passage of water vapor both out of and into a building. This would seem obvious, but in our forensic work we see new buildings where architects have not resolved the water-vapor resistance requirements and have overlooked the most elemental issues.

Adaptive reuse of existing buildings presents its own problems. If the enclosure is not up to the performance demands of a high-humidity environment, then it must be upgraded or, if that is not possible, replaced with a properly designed system. Some historic buildings simply will not sustain high humidity levels, since the envelope cannot be upgraded without detrimentally altering its historic or artistic significance.

In northern climates during the winter, vapor moves through an enclosure from the humidified interior spaces to the cold, relatively dry exterior (2). In southern climates during the summer, the opposite condition exists: vapor moves through an enclosure from the warm, humid exterior to the air-conditioned interior. Good performance depends on controlling vapor movement and condensation. Vapor that enters should pass through without condensing within materials or on concealed surfaces.

Limiting the migration of vapor depends upon the performance and continuity of the vapor retarder, the air barrier, and the thermal insulation. The vapor retarder limits the passage of vapor into the wall, thermal insulation keeps the interior surface of the vapor retarder above the dew point, and the air barrier restricts the passage of vapor-laden air into the wall. Failure in any one of these three elements will likely result in condensation or frost on concealed surfaces inside the wall, or within absorptive materials that are at or below the dew or frost point (4).

This all might seem elementary, but recently we were asked to review another firm's working drawings of an enclosure system design for a new building. There were many instances where none of the primary elements were properly designed or coordinated. Had it been built as drawn, the building would have had uncontrolled water-vapor passage, and the cladding would have had the potential for failure.

Vapor-Resisting System Continuity

The best-designed vapor-resistive system won't work if it is not coordinated with other systems such as the roof, the structure, the foundation, and the fenestration. Not long ago we investigated a building with a combination insulation and vapor retarder that could not be properly in-

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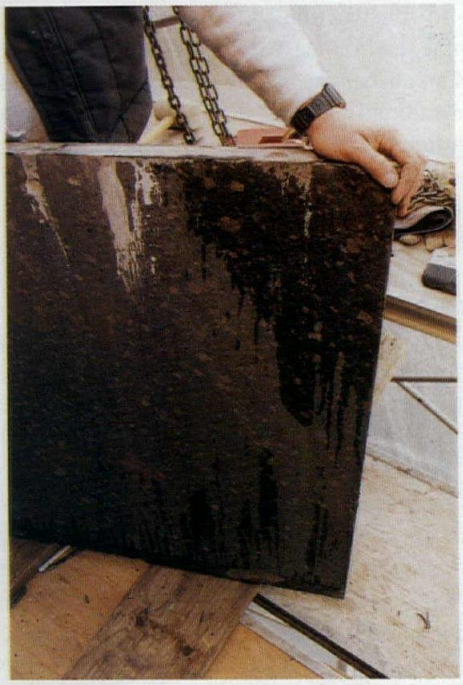

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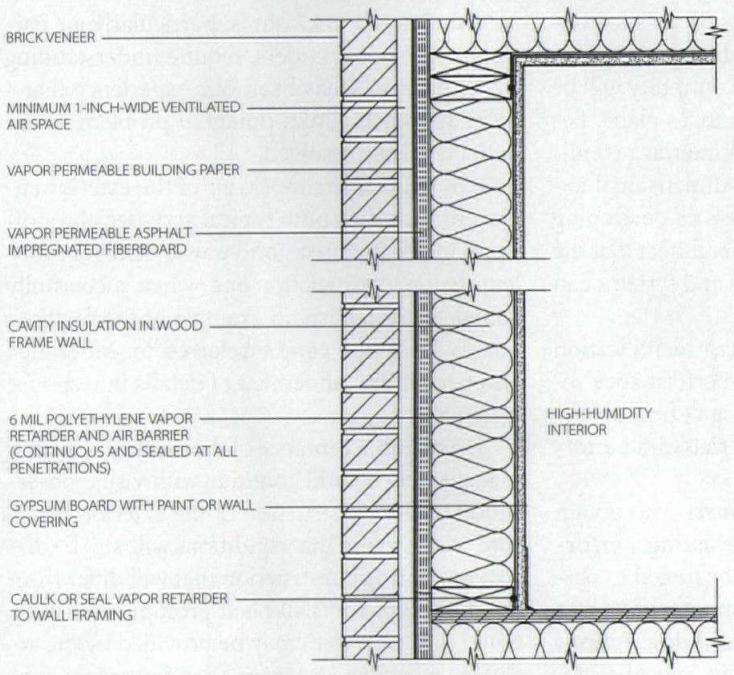
Frozen exfiltrating water vapor from a skylight system incapable of supporting the interior humidified environment (1). Granite cladding shows exfiltrating water vapor condensing on its interior surface (2).



3 EXTERIOR WALL DETAIL WITH INTERIOR SINGLE-PLY RETARDER AND BARRIER

stalled because of conflicts with other construction elements. This problem could have been avoided if the continuity of the vapor-resistive system had been considered early on in schematic design, when the relationship of the enclosure to structural elements and other building systems was established. In an adaptive-reuse project, these relationships should be studied in the planning and programming phases. The need for adequate working space in which to install components is frequently overlooked. Without it, obtaining continuity at changes in the building plane or between different enclosure systems is virtually impossible.

Get the Best Information

Will the materials perform as you hope they will? Accurate technical data describing the performance of vapor-resisting and air-barrier systems may be hard to come by, particularly for newer materials. Manufacturers, for example, often report water-vapor performance in such terms as "permeance" and "resistance," which are similar in concept but have different meanings. The former refers to an amount of water vapor diffusing through a material, while the latter concerns the degree to which the material restricts the flow of water-vapor through it. ASHRAE and other organizations publish technical data for various building materials, but it is sometimes difficult to relate, for example, the vapor-resisting property to the system, the material, or the construction method being considered. This is particularly true when you are working with existing construction, where adequate information on the vapor-resisting performance for extant materials and systems may not be available.

What should you do in such cases? Consulting a mechanical engineer or another professional familiar with water-vapor and air-movement control is one solution, but architects may not know the right questions to ask about their particular project. Make the best use of a consultant's time

by asking questions such as: Are there industry-recognized test methods to identify the vapor-resisting performance of extant construction? Is there an optimal material for a vapor retarder? If so, how is continuity achieved with numerous penetrations? And finally, will the proposed air-barrier material have the necessary durability to perform for the life of the enclosure system? Whatever you do, don't guess! This is particularly advisable for older buildings, which rarely have intentionally designed insulation, air barriers, or vapor retarders.

Wherever possible keep the air barrier and vapor-retarder components of the exterior enclosure system simple in design and construction. A polyethylene sheet, for example, can be used as both a vapor retarder and as an air barrier in high-humidity environments, resulting in fewer joints, seams, and transition conditions (3). Fundamental to its performance is its thickness, to satisfy the vapor-resistance requirement, air-pressure strength, and attachment technique.

Documenting the Enclosure System

Okay, so you've designed a vapor-resisting system using the best information, you've grappled with those pesky penetrations, and you've identified the right materials to use. But the best-designed system will never see the light of day if the construction documents are inscrutable. Remember the five Cs: documents must be *clear, concise, correct, consistent,* and *coordinated*. Considering each of the five Cs:

- *Clearly* identify vapor-resisting materials and systems, and the relationships between the exterior enclosure and other building systems. The documents must include enough details to convey the intent and demonstrate the constructability of the wall. Document how continuity will be achieved as the exterior wall changes plane. For example, typical transition and interface conditions could be shown in three-dimensional axonometric drawings. The process of developing these details will confirm to the architect that the proper vapor-resisting materials and systems can be reasonably constructed.
- Include appropriate and *concise* identification of material characteristics and performance requirements. The specifications can't be ambiguous or silent on important materials and performance criteria. Spell them out.
- Use materials and systems *correctly* to obtain the required level of vapor-resisting performance. A material usually can't be forced to perform in a setting that is inappropriate for its use.
- Terminology, dimensions, and descriptions of characteristics and requirements must be *consistent*. Nothing is more exasperating to a bidder than conflicting terminology or dimensions. They often leads to increased costs and delays as construction crews attempt to decipher them in the field. A good technique is to list materials and terminology once in a referenced table, which is then keyed to drawings by letter or number code.
- *Coordinate* specifications and drawings. Specs that are revised from a past project for use on a new job often do not relate to, or they conflict with, information shown on the drawings.

The five Cs weren't observed for the building shown in photograph 5. The vapor-resisting component was not designed for an appropriate location in the enclosure, resulting in construction conflicts. Gaps in the components permitted the passage of vapor-laden air. Deficient attachment eventually allowed the components to move. These and other oversights resulted in vapor condensing (or frosting, as illustrated) on the interior face of the stone cladding. Eventually the cladding and the vapor-resistive system had to be replaced.

Construction Quality Management

Because the vapor retarder and the air barrier for the enclosure systems will perform only if they are properly installed, the following quality management procedures should be considered:

- Hold preconstruction meetings with all parties involved in the construction of the exterior enclosure system. We've found that without such meetings, misunderstandings can grow.
- Work as a team with contractors and consultants to develop methods of communication so that problems can be efficiently identified and resolved. Exterior enclosures, particularly air barriers and vapor retarders, require understanding by all parties. It has been our experience that a team approach allows potential problems to be anticipated and resolved.
- Construct a site mock-up of the exterior enclosure, including both typical and special conditions. Mock-ups are a good way to discover problems before construction and, when successfully completed, establish an example of the required quality level that can be referred to. Mock-ups also permit the refinement of details in response to actual conditions.
- Following acceptance of the mock-up, quality management should continue with visual observation of the construction of the exterior enclosure. We've found that conditions will still be discovered during construction that will differ from the mock-up, and will need prompt resolution. Observation services may be provided by the architect, a testing agency, or an independent con-

Stone cladding joint deterioration caused by excessive exfiltrated water vapor that condenses, saturates, and freezes in the mortar (4). Exfiltrating water collects and freezes on the inside surface of a stone cladding panel (5). Thermographic image of the exterior of an enclosure wall reveals weaknesses in insulation where heat escapes, indicated by bright red and yellow areas (6).

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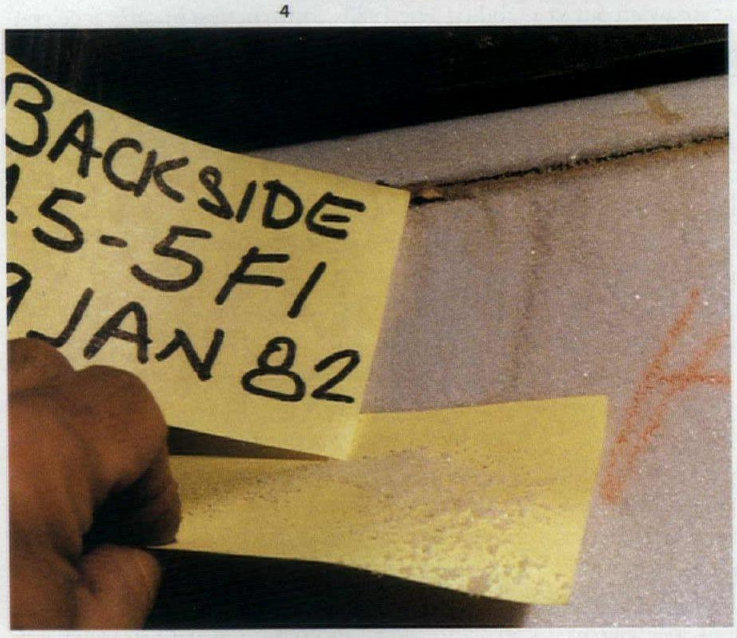

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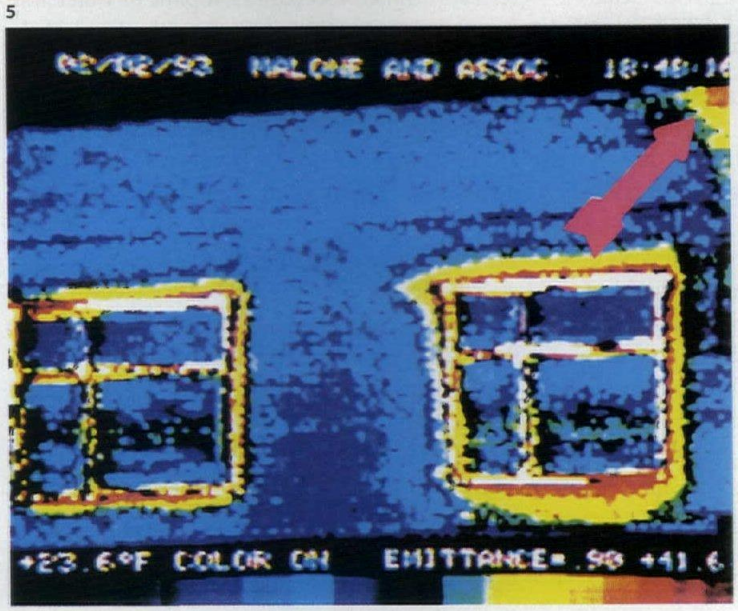

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sultant. Whoever provides this service must be familiar with the project requirements, knowledgeable of the systems and materials being installed, and must possess good observation and communication skills.

If there are questions regarding the quality of the completed construction, several methods can be used to verify the work, including infrared thermography and invasive probes. Infrared thermography is useful to determine problems such as insulation discontinuities, air infiltration/exfiltration that permits vapor passage, and vapor- or water-saturated construction. The red arrow in photograph 6 points to an area next to a masonry expansion joint that infrared thermography identifies as warmer than the surrounding construction. Subsequent visual observation determined that there was an air exfiltration problem. Sometimes the cause can't be determined without removal of some of the cladding or interior finish. These techniques are valuable in identifying and locating problem areas in existing buildings as well.

Conclusion

The control of water-vapor movement is best accomplished in the earliest stages of a building's design. With good construction documents and quality management of construction, a good vapor-resisting enclosure can be achieved. □

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Cladding's Ticking

The building boom of the last decade left a legacy of poorly designed and detailed curtain walls. Here are some of the most egregious sins of the 1980s, and what we can learn from them. *by Stephen Ruggiero*

Abstract

This article examines some of the common design and construction problems found in cladding systems from the 1980s that continue to bedevil buildings. Case histories are presented (with names changed to protect the insolvent) and general concepts are discussed for remedial construction.

During the boom of the 1980s, the construction industry delivered an unprecedented amount of commercial office space to the real estate market. The skylines of urban areas became packed with high- and mid-rise buildings that sprawled out to the suburbs. Throughout the country, many of these buildings share two characteristics: their exterior façades have significant leakage and deterioration, and the buildings suffer from low occupancy rates that, in some cases, make them an economic liability. These two factors combine to present a tough dilemma for property owners: significant expenditures are needed to remedy leakage in order to keep disgruntled tenants, yet raising funds requires further investment in a shaky venture.

The Failed Experiment

Over-reliance on sealants and lack of back-up (redundancy) against water penetration are consistent problems in curtain walls constructed in the 1980s. In its quest to streamline exterior wall systems and to simplify the details of construction, the industry embarked on a wide-scale experiment that ultimately failed. The prevailing wisdom of the day held that flashing was both unnecessary and a major tactical obstacle for the construction team. Ironically, the inclusion of simple metal flashings at strategic locations within the wall section could have provided successful wall systems with only a nominal increase in cost. The real issue was the reluctance of construction managers to coordinate the trades necessary to effect functional flashing; it was easier to persuade the design team to delete the flashing and depend upon surface-sealed barrier walls.

A number of factors combine to preclude the success of such walls; cladding materials must remain free of cracks and voids that allow water to seep to the interior. The use of relatively thin stone veneers requires vigilant care in fabrication and installation to achieve a good barrier wall, independent of the material's long-term weatherability. The 1980s construction boom's accelerated project schedules led to the use of inexperienced panel fabricators. Materials such as marble and travertine have not proved to be durable, particularly in freeze-thaw environments.

Joint sealants are critical to the long-term waterproofing of the wall system. Most wall systems consist of at least one opaque panel material, vision units (windows), and the joints between them. The performance demands on these joints are generally underestimated and the materials used to seal them have been problematic.

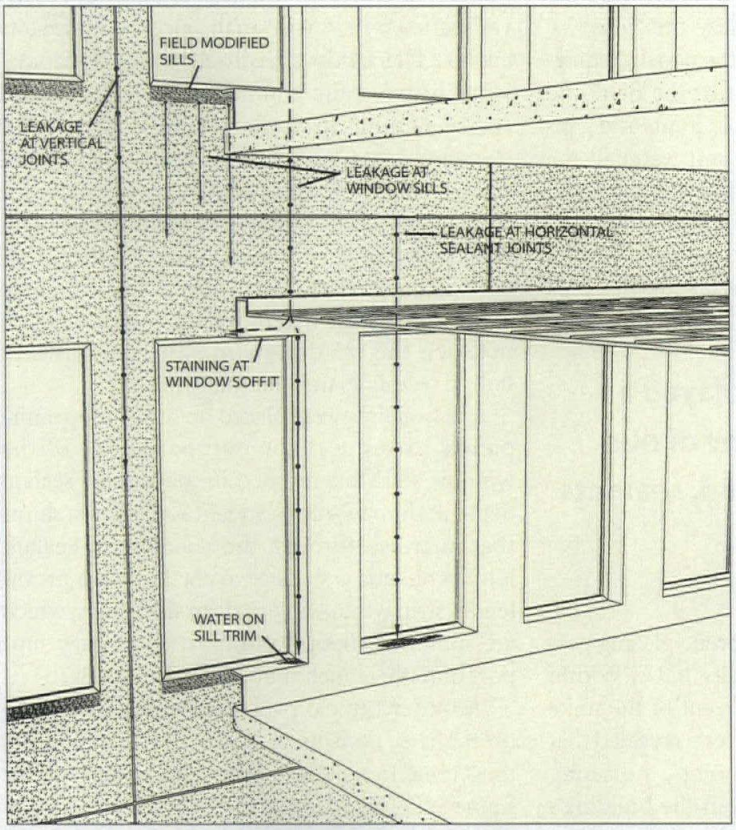
Relatively thin and lightweight wall sections have little capacity to absorb even small amounts of water. Unlike the massive masonry barrier walls that were common at the turn of the century, modern barrier walls are not constructed with multiple wythes and layers of absorptive material. Drawing 1 shows a typical modern wall system and the all too common path of water flow from cladding sealant defects to the head of the window below. Water flows readily, without obstruction, damaging finish materials and annoying the building tenants. Two case histories I have recently worked on illustrate in excruciating detail these cladding sins of the 1980s.

An Inside Sealant Job

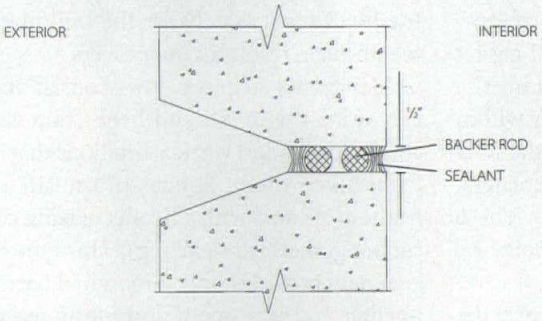
The first example is a 33-story steel-framed office building. Leakage problems similar to those depicted in drawing 1 occurred throughout the building soon after occupancy, as did panel cracking on one elevation. The exterior is a barrier-wall system of concrete panels with punched windows and sealant joints between panels. The joints were to be dual seals (2) to provide some redundancy against leakage. Unfortunately, several design features made installation of the dual seals impractical.

The author is a senior associate with Simpson Gumpertz & Heger Consulting Engineers in Arlington, Massachusetts.

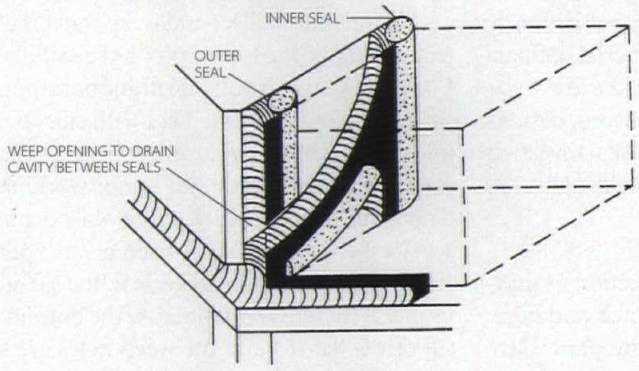
Time-Bombs



1 SCHEMATIC OF TYPICAL LEAKAGE IN BUILDING ENVELOPE INVESTIGATION



2 DUAL SEAL JOINT WITH INTERIOR APPLIED SEALANT



3 TWO-STAGE REMEDIAL VERTICAL SEAL WITH WEEP OPENINGS AT THE BASE OF THE JOINT

As drawing 2 shows, the inner seal was to be installed from the *inside* of the building. While we see this type of detail shown frequently on design drawings, rarely can the inner seal be constructed from the interior. Spandrel beams and columns often block access to the joints, and there is no practical way to weep a dual joint of this configuration.

The correct way to install a dual joint is to gun both seals from the exterior, turning the inner seal to the exterior as shown in drawing 3. This requires, however, a minimum width of $^3/_4$-inch so that the joints can accommodate installation of the inner seal. For this project, the joint width was set at $^1/_2$-inch, and erection tolerances sited in the specifications for the precast panels allowed for variations of $^1/_4$-inch. The joint geometry presented after panel erection made installation of a dual seal impossible, and problematic for even single seals in some locations.

The two-part urethane sealant soon developed characteristic weathering problems including a surface that cracked and became soft and gummy (4). Various workmanship shortcomings that were inevitable given the number of joints exacerbated the sealant problems. The flat panel edges along the joints are not canted toward the exterior, and allow water that penetrates the seals to flow inside readily.

Going Out of Business Sale

The problems in this building go deeper, because the precast panel fabricator who started the project was relatively inexperienced and produced panels with a number of problems. It is interesting to note that this fabricator went bankrupt and was replaced after half the panels were in place. Building elevations clad by the first fabricator exhibit the problems discussed below, while elevations clad subsequently do not.

The most apparent problem was the multiple cracking observed on the face of the panels. We X-rayed the panels in place and took core sam-

ples to conduct petrographic analysis, which showed that the panels lacked wire mesh reinforcement and were subject to rapid drying during initial cure. These factors confirmed that the cracks resulted from shrinkage stresses.

A less obvious fabrication problem that resulted in significant leakage problems involved the reglet/gasket system used to glaze the windows. The sill reglet was miscast into the panels, requiring the sill to be chopped out in the field and reset. This inevitably created cold joints and gaps around the new reglet that admit water to the building. Leakage through this point of entry also showed up at the head of the window below.

Fogging of the insulating glass units (IGUs) within the punched openings resulted in part from the use of structural neoprene glazing gaskets and in part from low quality IGUs. Within six years, approximately 10 percent of the units had fogged, and our dew-point tests revealed that many units had drifting dew points, indicating that failure was imminent. Given the building's 5,500 IGUs, replacement of failed units would be an expensive maintenance item.

The sealant joints on this project displayed a number of problems common to many of our investigations. As a wise man once said, sealants are hole fillers, not waterproofers.

Neoprene gasket glazing tends to be problematic for IGUs in general because the sill gasket tends to undergo compression set from the weight of large IGUs, resulting in ponding within the glazing pocket. The bottom edge of the IGU tends to contact the sill gasket in the corners, trapping water against the IGU seals (5). These seals fail under prolonged exposure to moisture, which leads to fogging.

The subject IGUs have a single butyl seal at the perimeter of the two glass lights. As is sometimes the case with economy units, the seal is poorly applied, with variable depth of material. Of particular concern is the tendency for the seal to be skipped at the corners. For these reasons, designers should specify IGUs with dual seals consisting of an inner butyl seal and an outer silicone seal.

Hole Fillers, Not Waterproofers

The second case study is a collection of mid-rise buildings clad with granite panels and horizontal strip windows. The granite panels are hung on panelized frames that were lifted into place and bolted to the structural steel frame. Once again the system is conceived as a surface-sealed barrier wall, lacking back-up waterproofing and flashing. Leakage occurred soon after occupancy and has increased with time.

The sealant joints on this project displayed a number of problems common to many of our investigations. As a wise man once said, sealants are hole fillers, not waterproofers. The horizontal joints between the granite panels and the head and sill of the strip windows were designed to be ¼-inch wide. Clearly, this is inadequate to accommodate normal construction tolerances for strip windows and panels while maintaining a viable joint width. Consequently, a number of as-built joints were ⅛-inch wide or less. In some cases, the sealant was omitted for lack of space between the windows and panels, and water flowed readily to the interior.

Plastic shims were placed on top of the granite panels to support the outboard edge of the window sills; this resulted in inadequate sealant depth at shim locations and, in some cases, shims that migrated through the sealant (6). Sealant joint problems associated with shims are prevalent in strip windows with deep sill frames, which are somewhat floppy and need temporary support until their anchor bolts are tightened.

Another typical problem occurs where the urethane sealant used in the horizontal joints must bond to silicone sealant used in the window frame (7). This infamous phenomenon of adhesion incompatibility between urethane and silicone was lost on both the designer and the contractor. Unfortunately for the building tenants, the problem results in many leaks.

Horizontal strip windows consist of a typical can system with sill and head frames that run continuously, and vertical mullions that are cut to fit between them. Splices in the sill and head frame are sealed with silicone; glazing consists of rubber gaskets (dry glazing). This type of system generally provides only a marginal barrier to the weather and is prone to long-term leakage for a number of reasons.

The sill must collect and weep water that infiltrates without the back-up of a true sill flashing. The splices in, and bolt penetrations through, the sill can are sealed in the field with silicone. Even under the best of circumstances these seals are prone to deterioration and minor workmanship flaws, and the durability of the seals defines the service life of the system from a waterproofing standpoint. Water that collects in the sill tends to immerse these sealants because the bottom of the sill can is flat (8) and the weep holes are set ⅛-inch or more above the bottom. Dry gasket glaz-

ing tends to shrink, creating gaps that allow water to penetrate to the sill can. Open metal-to-metal joints in the face of the window frame provide additional paths of water penetration.

The relatively large and thin (3cm-thick) granite panels used in this building require significant care in handling during fabrication and erection. We found a number of hairline cracks in the stone. Of greater consequence to leakage are damaged panel edges that cannot be easily repaired, as epoxy patches tend to shrink in time. Given that the panels were prefabricated, the inclusion of secondary waterproofing elements in the system would have been relatively easy. Head flashing in buildings with horizontal strip windows should be standard practice. The continuous nature of the system makes the flashing detail relatively simple, and a piece of metal can capture nearly all leaks that occur through the panels and the various sealant joints (10).

Note that the preconstruction mock-up of the typical wall apparently revealed the potential for many of the problems cited above. Items like sealant incompatibility, viability of joint widths, and various issues concerning the strip windows were dealt with in an ad-hoc manner during the mock-up to achieve successful water and air infiltration tests. But none of the tweaking during the mock-up testing was translated into detailed procedures or shop drawings for final construction. This is another recurrent theme that we have seen in construction: schedule demands inhibited the project team from making necessary changes to the system and its details, only to create bigger problems down the road.

Remedial Procedures

Remedying leakage in occupied buildings presents a special challenge because of the constraints placed by the property owners on access to the interior. Every effort should be made to provide window head flashings as part of the remedial program (10). Even if the flashing cannot be installed to an ideal configuration because of limited access, any metal element with nominal pitch to the exterior as a back-up to the sealant joints is helpful. Installation of remedial flashings is sometimes impractical because of narrow joints between windows and cladding panels or interference from connections.

Many remedial efforts start with silicone replacement of the existing urethane sealants. For most wall configurations this approach makes sense because silicones generally have superior weathering characteristics, but they do not bond as well as urethanes to some substrates, particularly concrete. In the first case study, the remedial

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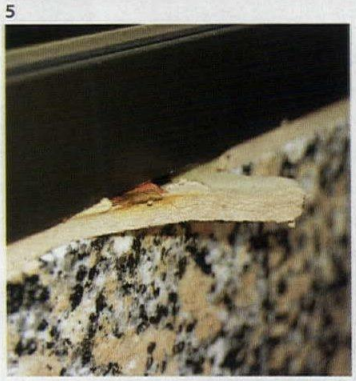

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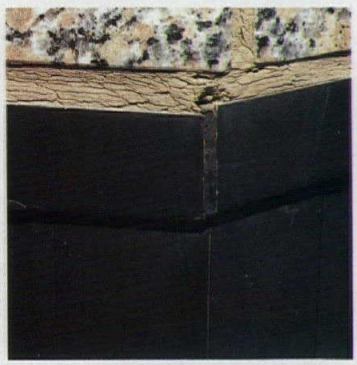

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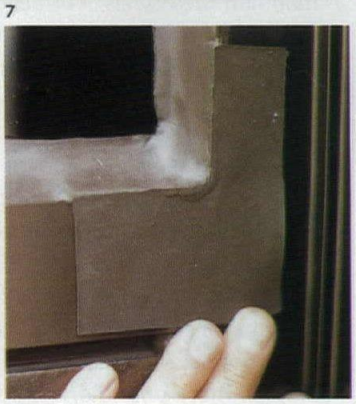

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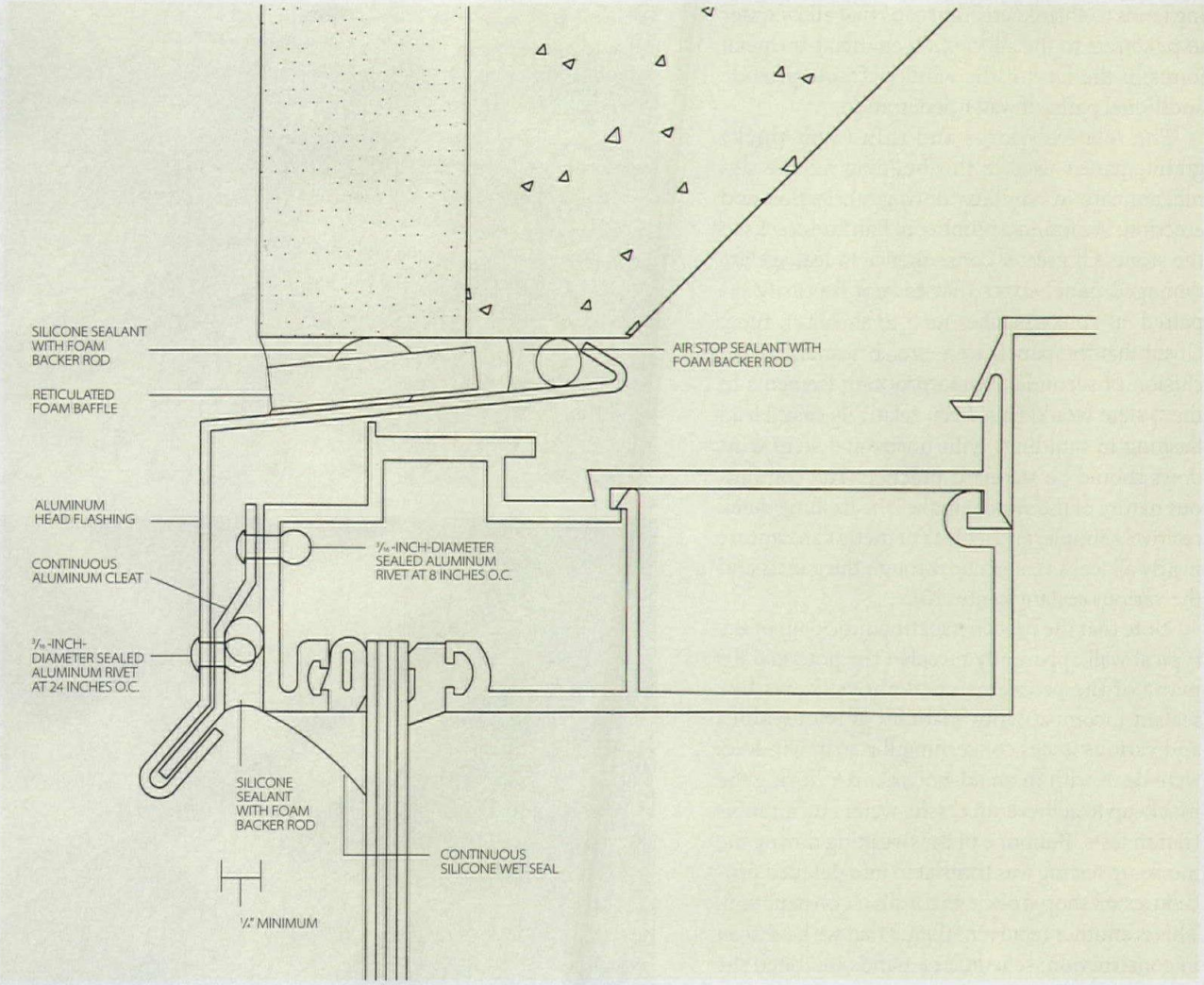

10 HEAD FLASHING DETAIL OVER STRIP WINDOWS

sealant of choice is one part urethane, while in the second case history, silicone is a better choice. Material selection is only a small part of the battle. Remediation must address the basic joint geometry and substrate issues, which often add significant field labor and expense.

Wet-sealing of window glazing and metal-to-metal joints of the window frames is a common approach to remedying leakage and is generally successful if the property owners are willing to maintain these seals routinely. We have successfully used prefabricated silicone sheets and boots to strip metal-to-metal joints rather than rely on surface-applied sealants (9).

Lessons to Remember

As the industry looks ahead to the next era of high-rise construction, architects should remember these lessons from the 1980s:

Provide flashings within the wall assembly. Look for opportunities to include flashing in the wall system, particularly at the head of strip windows. Where possible, include back-up waterproofing. Even the EIFS industry, which has traditionally marketed its products as barrier walls, is developing systems that include internal drainage capabilities and through-wall flashings (P/A, Oct. 1994, p. 100).

Do not underestimate the functional requirements of sealant joints. If you are going to rely on a surface-sealed system, pay careful attention to detailing requirements. Joints must be wide enough to maintain a minimum width of ⅜-inch after accounting for construction tolerances for adjacent wall components. Provide slope to the exterior for horizontal joints and, if possible, a back-up seal that is weeped to the exterior.

Conduct mock-up fabrication and testing and use the results to improve the constructed system. It is essential to schedule the mock-up in time to allow meaningful input to the final fabrication process. Most important, necessary revisions must be incorporated into shop drawings, and the architect must ensure that they are implemented in final construction. □

Who Makes What *(continued from page 53)*

in the hen house – and seldom the valued consultant advisor we would like to think.... We must always ask, does the client want this or do I want this? Is this building design going to help Mr. XYZ's corporation prosper? If the answer is yes, then you are on the right track. If no, then you should check your motivation. Your client is not paying you for your idealism."

In communicating better with clients, we might even learn something from them about how to handle such things as contract negotiations, where many of the profession's compensation problems begin. "Architects generally do a terrible job in pre-contract negotiations," argues Bill Fanning, Director of Research for the Professional Services Management Journal. "The attitude is to get the job and worry about how to do it later. When business people can't negotiate a contract with sufficient rewards, they say no." Some architects eventually learn this, says Fanning, and some never do. "Architects end up paying tuition for a design education, and then paying for a business education through poor compensation."

Differences in Pay

Yet some people's compensation is poorer than others, often depending upon the size of the firm or your position in it. The AIA shows a marked difference in the compensation of partners in small firms and large: the average salary for a sole practitioner, for example, is $43,100, while that of a partner in a firm with more than 20 people is $110,000. The lower you are in the ranks, however, the less difference the size of the firm makes. The average compensation of a person just registered in a small firm (two to four people) is $28,900, and in a large firm (over 20 people) is $31,000. The gap between the compensation of partners and their staff is also widening. Surveys of California firms, conducted by Management Design for the California AIA, shows principals' income, over the last six years rising almost twice as fast as project managers (16 percent versus 9 percent) and one-and-a-third times as fast as designers (16 percent versus 11 percent).

The anger at perceived inequities in pay within firms is palpable in the fax-backs we received from readers at all job levels. From an intern in Michigan: "Interns starting out, even those with experience, are just tools to be used. We're charged at $40–$50 an hour and we're not getting even $15 an hour." From a project architect in Wisconsin: "The rich get richer, and those in power a number of years forget what it's like at the bottom." From an associate in Maryland: "Most principals are either clueless or gutless about obtaining suitable fees for services and negotiating scope versus fee. Entry-level slaves' abuse allows this lack of skill at upper levels to persist." And from a principal in Connecticut: "Managing partners of larger firms pay themselves too well, their hard-working subordinates too little. The reason? Greed."

Such sentiments prompted some, in the 1960s, to form a short-lived architectural union. It is doubtful, though, that such an effort, in today's pro-business, anti-union climate, would succeed. Instead, compensation consultants advise us to take a free-market approach to our own careers, fostering skills or knowledge that will give us a competitive advantage, maintaining our networks of colleagues and potential employers, and keeping our résumés and rolodex files up-to-date.

The comments of partners and management consultants reflect this laissez-faire attitude. A retired principal in California writes that "The entry-level and junior people expect more pay than they are worth. Experience pays." William Fanning, noting the amount of risk principals shoulder and the elasticity of their pay in bad times, thinks "there is not enough difference in the compensation of partners and their staff." Paul Bartlett, an architect and management consultant in Connecticut, argues that learning to get higher compensation begins inside the office. "Staff members need to learn how to demonstrate their value to the firm's ownership if they want higher pay."

"Managing partners of large architectural firms pay themselves too well, their hard-working subordinates too little."

Bonuses can help narrow the pay gap in offices, at least during good times. A survey by Practice Management Associates shows 91 percent of firms provide some form of bonus, with 52 percent basing it on merit. Also, some firms are beginning to compensate principals differently, based on their performance rather than on their percentage of ownership. Amsler Woodhouse, MacLean, Architects in Boston, is one such firm. "Principals perform differently," says Kenneth MacLean, "in terms of bringing in clients, collecting fees, and controlling costs, and so they need to be paid differently."

A Coming Brain Drain?

As long as the leaders in our field continue to act as if architecture is a gentleman's art, the devaluation of architectural services and the inadequacy of architects' compensation will remain problems. A New Jersey architect believes that we will "experience a talent drain from architecture to other areas" before the profession starts to take these problems seriously. Indeed, that drain may already be under way. Almost one-third of the readers who wrote to us say that, because of low compensation, they are considering or actively pursuing another career: construction management is the most often mentioned. Some in the profession may find these shifts a good thing, they will reduce competition. But there is a terrible price for the profession in terms of lost talent.

Such a scenario suggests that, one way or the other, the culture of architecture will change. We can control that change and, from this moment on, determine to prove to clients that we can help solve their real problems, for which we must insist on being well paid. Or we can continue as we are going, letting architecture become a commodity as we linger on in a shabby nobility that has already begun to characterize some sectors of the profession. "We remain," says architect Lew Moran, "the victims of our limited thinking ... and continue to set up practice in a guaranteed-to-barely-survive fashion." If we could channel but a fraction of our creative ability to addressing our own compensation and public perception problems, this profession would, I think, be almost guaranteed to succeed. □

Progressive Architecture 1995 Annual Index

This index lists the issue and page number of articles that have appeared in P/A in 1995. It is organized alphabetically by subject, and by architects and designers. The 1995 P/A Annual Index was compiled by Search Publishing Inc. of Devon, PA.

SUBJECT INDEX

(continued on page 99)

P/A Awards Presentation & Design Conference

design

CLIENT SUPPORT FOR DESIGN EXCELLENCE

Saturday, January 20, 1996, – Los Angeles

Client-Architect Interaction is the basis of all good architecture, and this full-day conference will present important insights on this collaboration from both the client's and the architect's point of view. Talks by and interviews with exemplary clients and architects will be interspersed throughout the day with discussion in which all conferees will participate.

Clients committed to design excellence will discuss the sources of their commitment, how they shape programs and choose architects, how they encourage the best from their architects, how they deal with the realities that threaten design and construction quality. Speakers will include Frederick and Laurie Samitaur Smith, developers of a remarkable enclave of remodeled office structures in the L.A. area designed by Eric Owen Moss, and another respected client for major developments that are noted for their design distinction.

A national program of design excellence will be the subject of the featured speaker at the noon-hour awards lunch, Edward Feiner of the General Services Administration in Washington, who is responsible for the current program of outstanding U.S. Courthouses being constructed across the country.

The nurturing of the design-oriented client will be the subject of the afternoon sessions, which will feature two of the distinguished jurors for the 43rd annual P/A Awards competition, Will Bruder and N. Michael McKinnell. These architects will talk about the design principles behind their own fine works and the significant issues and trends they perceived among the 444 entries to the latest P/A Awards competition. Several architects who won these awards this year will take part in panel discussions on working with clients for design excellence.

(see reverse for program and details)

P/A Awards Presentation & Design Conference

Saturday, January 20, 1996 - Wyndham Bel Age Hotel, Los Angeles

Attend the full-day conference, including the P/A Awards lunch, for $245 ($195 if you register by December 31st.) You will earn 10 AIA continuing education credits for attending the conference. Alternatively, attend just the awards lunch, which will include presentation of honors and a significant speech on design excellence, for $95.

For a more complete, updated conference agenda, or to register for the conference, call 800-223-9150 (from 8:45 a.m. to 5:00 p.m. Eastern time.) Conference accommodations at the Wyndham Bel Age Hotel (1020 N. San Vicente Boulevard, West Hollywood, California 90069) are $120 per night for attendees; call 310-854-1111 and mention the Progressive Architecture Conference when making reservations. Attendance is limited, so register early.

PROGRAM

8:30–9:00	Registration, Coffee
9:00–9:15	Introduction to the day's program
9:15–10:45	**Client Support for Design Excellence** Frederick and Laurie Samitaur Smith *developers* *Culver City, California* another major client *to be announced*
10:45–12:00	Panel Discussion with Audience Participation
12:00–1:00	Lunch
1:00–1:30	**A National Program of Design Excellence** Edward A. Feiner, AIA *Deputy Director for Design and Construction* *General Services Administration,* *Washington*
1:30–2:00	Review of P/A Award winners and presentation of certificates
2:00–3:00	**Nurturing and Serving the Well Motivated Client** N. Michael McKinnell *jury chair for the 43rd P/A Awards* *Kallman McKinnell & Wood* *Boston* Will Bruder *juror for the 43rd P/A Awards* *William P. Bruder - Architect* *New River, Arizona*
3:00–4:45	Panel discussion among winning architects in 43rd P/A Awards, with audience participation
4:45–5:00	Wrap-up

CALL Toll Free – 1-800-223-9150
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☐ **I am registering by December 31 for the early registation rate of $195.** Number of registrations ____ x $195.

☐ **I am registering for the conference at a rate of $245.**
Number of registrations ____ x $245.

☐ **I am registering for the Lunch and Feiner lecture only.**
Number of registrations ____ x $95.

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☐ **Yes, I'm interested**. Before I register, please send more information about the conference. Please add my name to the conference mailing list.

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Payment Refund Policy: You will receive a complete refund if you cancel up to two weeks before the conference. Cancellations within two weeks of the conference will result in a refund, less a $150 administrative fee. Confirmed registrants who fail to attend the conference are liable for the full fee. If you are unable to attend, substitutions will be accepted at any time - including the day of the conference. We reserve the right to cancel or reschedule any course which lacks sufficient registration. If we must cancel, registrants will receive a full refund of the registration fee. The Penton Institute reserves the right to make changes in the program and speakers when circumstances necessitate such changes.

(continued from page 96)

(continued on next page)

ARCHITECTS AND DESIGNERS

P/A Classified

The State University of New York at Buffalo, Department of Architecture, seeks qualified applicants for two positions beginning Fall 1996. Tenured or tenure track preferable, clinical appointments possible.

Computing Applications in Design: Appointee expected to teach computing applications courses, promote/coordinate/teach computing integration in graduate and undergraduate design, studios, create an electronic (smart) graduate design studio, and pursue scholarship. Candidate should have significant academic or practice experience, an Architecture degree, and design studio teaching experience.

Structures and/or Construction: Appointee expected to teach structures and/or construction courses, pursue scholarship, and teach and consult in design studios. Candidates should have significant academic or practice experience, an advanced or professional degree, and excellent computing skills in this area.

Candidates should demonstrate a commitment to advancing the discipline and practice of architecture, a record of scholarship appropriate to a major public research university, and a willingness to work collaboratively with faculty. Salary commensurate with rank and qualifications. Send resume; names, addresses and phone numbers of three references; and sample of professional, scholarly and research work to Robert G. Shibley, Chair, Faculty Search Committee, Department of Architecture, 112 Hayes Hall, SUNY, Buffalo, NY 14214-3087 (shibley@arch.buffalo.edu). Review of applications will begin January 15, 1996. AA/EOE. Women and minorities are strongly encouraged to apply.

Director, Interdisciplinary Design Institute Washington State University at Spokane

Washington State University at Spokane invites application and nomination for the senior-level position of Director of its newly formed Interdisciplinary Design Institute. The Design Institute currently embodies baccalaureate completion and research programs in architecture, construction management, interior design, and landscape architecture. Graduate degree programs are being developed. On January 1, 1996, the Design Institute will move to newly constructed facilities at the Riverpoint Higher Education Park in Spokane. These facilities include classrooms, studios, and CAD space for 135 full-time students.

The successful candidate will have a record of publication in refereed journals and/or recognition of creative activity, teaching experience in professional and graduate programs, and a terminal degree in one of the disciplines represented in the Institute. In addition to the required qualifications, highly desirable qualities include the PhD. in one of the design disciplines, a record of publication in refereed journals, experience working with industry/private sector, and active participation in professional organizations. Application package, including vita and list of five (5) references with addresses and phone numbers, should be sent to the search committee chair:

Dr. Robert Scarfo
Professor of Landscape Architecture
Washington State University at Spokane
601 West First Avenue
Spokane, WA 99204-0399

Applications and nominations will be received until February 1, 1996 or until the position is filled.

WSU is an equal opportunity/affirmative action educator and employer. Members of protected groups are encouraged to apply.

UNIVERSITY OF MIAMI SCHOOL OF ARCHITECTURE

The School of Architecture of the University of Miami seeks applicants for two tenure track faculty appointments to offer undergraduate and graduate level instruction in architectural design plus courses in a specialty such as theory, sustainability, or technology. One of these positions is primarily in the area of technology. These full time positions include responsibilities for teaching, scholarship, administration and service. Candidates should have a terminal degree in their field, previous teaching experience, and creative work in design, scholarship, practice or a combination thereof which demonstrates promise of significant achievement. Candidates should send a letter of interest and curriculum vita to: Jorge Hernandez, Chair Faculty Search Committee, University of Miami, School of Architecture, PO Box 249178, Coral Gables, FL 33124-5010. Review of the application will begin on December 1st.

The University of Miami is an EO/AA employer.

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Architectural Freehand Drawing

Beginning Fall 1996

A part-time, possibly longer-term faculty position is available for a person qualified to offer graduate-level instruction in architectural drawing, starting in the Fall of 1996. The person holding this position will be responsible for teaching a required workshop course that emphasizes line drawing as a means to articulate and communicate architectural concepts. Candidates should be qualified to demonstrate techniques for translating freehand perspectives into two- and three-dimensional orthographic sketches and to teach students to draw accurately and succinctly using the lineaments of buildings, architectural details, spaces and landscapes as a basis for drawing from memory and imagination. Preference will be given to candidates showing demonstrated achievement in the teaching and practice of the aforementioned techniques. The teaching obligations, in the Fall term, would be for one four-hour class per week. Weekly airfare and housing allowances are available for out-of-town instructors.

Candidates should send or fax a resume, a letter of interest, and a maximum of four 8.5" x 11" pages of sample drawings as soon as possible but no later than January 5, 1996 to: **Mike McGrath, Director of Faculty Planning, Harvard University Graduate School of Design, 48 Quincy St., Cambridge, MA 02138. (617) 495-5409 (voice); (617) 496-5310 (fax).** Harvard University is an equal opportunity employer.

HARVARD UNIVERSITY
Graduate School of Design

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

THE SWISS FEDERAL INSTITUTE OF TECHNOLOGY LAUSANNE (EPFL)

Department of Architecture

Opening for three professor positions

1. PROFESSOR OF URBAN DESIGN AND LAND USE PLANNING

The new professor's task will consist of teaching land use planning, the history of cities, and urban theories.

The EPFL is expecting from this new professor, a strong professional experience in architecture, a high level of competence, a talent for pedagogy and a deep interest for teaching.

2. PROFESSOR OF ARCHITECTURAL DESIGN

The new professor's task will consist of teaching architectural design and its theory from first to fourth year students, in the Department of Architecture.

The EPFL is expecting from this new professor, a strong professional experience in architectural construction, high level competence, talent and a deep interest in teaching.

3. PROFESSOR OF THEORY OF ARCHITECTURE

The new professor's task will consist of teaching theory of architecture to students from the 1st to the 4th of our 4 years' program as well as at post-graduate level.

The EPFL is expecting from this new professor, a large professional experience in architecture practice, a high level of competence, a talent and a deep interest in teaching.

For the three positions:

Furthermore, the new professors will be required to direct interdisciplinary research works and to collaborate with the other teachers of the Department of Architecture as well as with those of other departments of the EPFL.

The opening concerns candidates (male or female) with a University education and whose abilities in the field of architecture are recognised from a both practical and theoretical point of view.

Deadline for application: February 29, 1996

Start date: to be discussed

The documentation regarding this position can be obtained at the following address:
Présidence de l'EPFL, Centre Est - Ecublens, CH-1015 Lausanne, Switzerland

UCLA Department of Architecture and Urban Design

Tenure Track Position in Design and Computation. The Department seeks an individual with strong qualifications to provide leadership in the area of computation as it applies to architecture. Areas of expertise may include: visualization, urban design, construction technology, computer-aided design, design automation, design theory and user interfaces. Applicants should demonstrate ability to teach both fundamentals to professionals and advanced courses to research degree students, including the Ph.D. degree. Professional distinction, demonstrated by the ability to expand research in the field and obtain extramural funding, is required. Responsibilities will include supervision of the department's computing lab and staff, as well as the possibility of administering a research center in the field of computation.

The Department of Architecture and Urban Design at UCLA offers four degrees at the graduate level, including M.Arch.I., M.Arch.II, M.A. and Ph.D. in Architecture. It has strong relations with other departments on the UCLA campus, including computer science, design and mechanical engineering. The department has outstanding facilities for teaching and research. It is expected that the appointment will be made at a senior level., but qualified junior applicants will also be considered.

Tenure Track Position in Architectural Technology. The department seeks an individual with strong qualifications to provide leadership in the area of architectural technology. The successful applicant will be expected to teach some combination of the following subjects: building construction, sustainable design, environmental control systems, lighting and daylighting or acoustics and will be expected to pursue scholarly activities, applied work or theoretical research.

The successful candidate will be responsible for teaching both fundamentals to professionals and advanced courses to research degree students, including Ph.D.'s, and will also be responsible for expanding research in his or her area and for obtaining the necessary research funding. It is expected that the appointment will be made at a junior level, but qualified senior applicants will also be considered.

The positions will remain open until filled. Applications should be accompanied by a curriculum vitae, non-returnable examples or work, names, addresses, fax numbers of at least three references, and a letter of interest by January 2, 1996 to: Robin Liggett, Design and Computation Search Committee. For the Technology position send application to Jurg Lang, Chair, Department of Architecture and Urban Design. Address all applications to the Department of Architecture and Urban Design, School of the Arts and Architecture, UCLA, Box 951467, Los Angeles, CA 90095-1467.

UCLA is and Equal Opportunity/Affirmative Action employer. The Department of Architecture and Urban Design seeks diversity and encourages women and members of minority groups to apply.

THE UNIVERSITY OF TENNESSEE, KNOXVILLE — The School of Architecture is seeking a faculty colleague to teach History and Theory of Architecture, at the beginning and advanced levels. This person will participate in the overall educational mission of the School. A Ph.D. in architectural history or a related discipline is required. The following is desirable, but not required: a background in architectural education and/or practice, teaching experience, and an ability to participate in the various areas of the architecture curriculum. The successful candidate should also have an agenda of scholarship, research, and/or creative work which establishes a direction for personal intellectual accomplishment and which will complement the academic program.

The position is a tenure track appointment, at either the Assistant of Associate Professor level. The University of Tennessee School of Architecture offers both a five year B. Arch program (350 students) and a first professional M. Arch program (30 students). The appointment and salary will be commensurate with qualifications. Screening will begin on February 15, 1996, and continue until the position is filled. Applicants should submit a curriculum vita, a short statement of intent, a list of three references, and examples of scholarship and personal work to: Professor Max Robinson, Chair, Faculty Search Committee, College of Architecture and Planning, University of Tennessee, 1715 Volunteer Boulevard, Knoxville, TN 37996-2400

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Tenure-Track Positions School of Architecture

SYRACUSE UNIVERSITY – The School of Architecture is conducting a search for expected full-time tenure-track positions in Architectural Design and Technologies at the rank of Associate or Assistant Professors beginning Fall 1996. For each position, candidates must demonstrate an interest in pursuing intellectual goals through scholarship, research and professional practice and have the ability to communicate effectively with students.

Architectural Design (three to four positions)

Teaching responsibilities include teaching required undergraduate and graduate design studios as well as elective courses. One of the following areas of expertise is required: Computer Applications, Drawing, or Urban Design. Candidates should demonstrate a capacity to teach undergraduate and graduate studios and have, as a minimum, a first professional degree in Architecture with experience in professional practice. Applicants should explicitly state their area of secondary expertise. The salary level will be commensurate with experience.

Architectural Technologies

Teaching responsibilities include teaching basic technology sequence, as well as related elective courses. In addition, candidates should have a willingness to serve on design reviews and be consultants in studio teaching. A professional degree in Architecture with an advanced degree in architectural technologies (or equivalent professional experience) is required.

Candidates for either position should send curriculum vitae, a minimum of fifteen photocopied samples of design work (not to be returned) a statement of interest and goals, and the names of at least three references, by Friday, December 29, 1995, to: **Chair, Faculty Search Committee, 103 Slocum Hall, School of Architecture, SYRACUSE UNIVERSITY, Syracuse, NY 13244-1250.** Syracuse University is an Equal Opportunity/Affirmative Action Employer. Women and members of other traditionally under-represented groups are encouraged to apply.

AMERICAN ACADEMY IN ROME, a 101 year-old center for independent study, seeks creative individual with extensive experience and recognized reputation in one or more arts disciplines to head its Rome programs in architecture, design, literature, music and visual arts. Applicants should have broad cultural interests, organizational/administrative skills, wide network of Italian/European contacts in the arts world and fluency in Italian and English. Salary and benefits, including housing in Rome, are negotiable and will be competitive. Qualified candidates should submit resume and 3 letters of reference by 31 January 1996 to Arts Director Search, 7 East 60 St., NY, NY 10022 Att: W.A. Linker

The School of Architecture at Princeton University is seeking candidates for a full-time faculty position, tenure track, at the rank of Assistant or Associate Professor.

The position is for a candidate to teach courses in the structural design of buildings and related areas of building science. Qualifications shall include: previous teaching experience, the ability to carry out scholarship and research in an area of specialized interest, recognized excellence in structional design, and previous experience with computer applications for structural design and modeling. A professional degree in civil engineering and/or architecture is required. Teaching responsibilities include participation in the A.B. and M.Arch. programs.

The position will begin in September 1996. A letter of interest and curriculum vitae should be sent before January 1, 1996 to:

Ralph Lerner, Dean
Princeton University
School of Architecture
Princeton, NJ 08544
Princeton University is an Equal Opportunity/Affirmative Action Employer.

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Architectural Designer: Formulate basic design concepts for hotel and resort interior space utilization. Consult with clients and prepare information regarding designs, specifications, materials and cost estimates in connection with design, construction and preparation of layout of projects and integration of architectural elements into unified design schemes under supervision of licensed architect. Req.: Bachelor's in Architecture and 2 yrs exp. $30,000 per year, 40 hrs/wk, 9-5. Submit resume to: Job Service of Florida, 2660 W. Oakland Park Blvd., Ft. Lauderdale, FL 33311-1347. **Re: Job Order # - FL 1324015.**

PHILADELPHIA COLLEGE OF TEXTILES AND SCIENCE

SCHOOL OF ARCHITECTURE AND DESIGN

The School of Architecture and Design invites applications for the Director of the Interior Design program, Director of the Industrial Design program and four full-time tenure-track or visiting Assistant/Associate Professor positions in undergraduate architecture and graphic design, beginning Fall, 1996. The School offers five degree programs: five-year B.Arch. (NAAB candidacy status), four-year B.S. in Architectural Studies, four-year B.S. in Interior Design (FIDER accredited), four-year B.S. in Graphic Design Communication and four-year/five-year B.S. in Industrial Design.

Interior Design Program Director

Primary responsibilities include administering the Interior Design program, which has an enrollment of 150 students. Other responsibilities include teaching in and coordinating a foundation design studio, upper-level design studio or related course area. The College seeks a director with a vital commitment to quality design education who can lead, promote and support the mission of the Program and the School. Professional degree in interior design or architecture, appropriate advanced degree, minimum of seven years experience as a practicing professional and NCIDQ or architectural registration required.

Industrial Design Program Director

(Pending budget approval). Primary responsibilities include administering and developing the School's new Industrial Design program. Other responsibilities include teaching in and coordinating a design studio or related course area. The College seeks a director with a vital commitment to quality design education who can lead, promote and support the mission of the Program and the School. Degree in industrial design, appropriate advanced degree and minimum of seven years practice experience required.

Architecture--Advanced Design Studio (Two Positions)

Primary responsibilities include teaching in and coordinating upper-level studios (3rd and 4th year) in 5-year B.Arch. program. Other academic responsibilities include teaching in one of the following areas: professional practice, community design and housing, history and theory of landscape architecture, urban design and planning, CAD, structures or building technology/systems. Candidates should have substantial experience in professional practice and excellent knowledge of building systems. Professional degree in architecture, appropriate advanced degree and architectural registration required.

Architecture--Architectural Structures

Primary responsibilities include teaching in and coordinating curriculum development in structures, construction and related elective courses. Other academic responsibilities include working in collaboration with technology and design faculty in integrating structures and technology in the design curriculum. Professional engineering degree required; advanced degree, professional architecture degree and registration desirable.

Graphic Design Studio

(Pending budget approval). Primary responsibilities include teaching in and coordinating advanced studios in graphic design. Candidates should have excellent computer skills and substantial experience in professional practice. Previous teaching experience and expertise in one of the following areas is desirable: multi-media, typography, digital imaging, or 3-D applications of graphic design (i.e., signage, package design, exhibit design), MFA or equivalent experience required.

Candidates should have teaching experience and demonstrate strong creative achievement (design, scholarship or professional practice) in their primary field. Send letter of application; curriculum vitae; portfolio with examples of professional and academic work; and names, addresses and telephone numbers of three references to: **Gary J. Crowell, Dean, School of Architecture and Design, Philadelphia College of Textiles and Science, School House Lane and Henry Avenue, Philadelphia, PA 19144-5497.**

Review of applications will begin January 15, 1996.
Tele:(215) 951-2896. AA/EO Institution.

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SCOTT & WHITE

STAFF ARCHITECT One of the largest multi-specialty medical centers located in the U.S. is actively recruiting for an individual with a Bachelor's degree in Architecture required with 10-12 years post license experience, 3-5 years experience in design and construction of medical facilities, as well as project management experience. This position requires licensure by the State of Texas. Experience with Total Quality Management, construction administration, and CAD is a plus. Excellent benefits, competitive salaries, growth potential, and relocation assistance. Qualified candidates send resume with salary history to: Scott & White Hospital, Human Resources Department, 2401 S. 31st St., Temple, Texas 76508 OR FAX#817-724-1631. EOE

Selected Detail

Glass-Walled Fireplace

CSI SECTION 10300

Glenn Christiansen

FIREBOX WITH GLASS WALL

Mark Feirer, Courtesy *Fine Homebuilding*

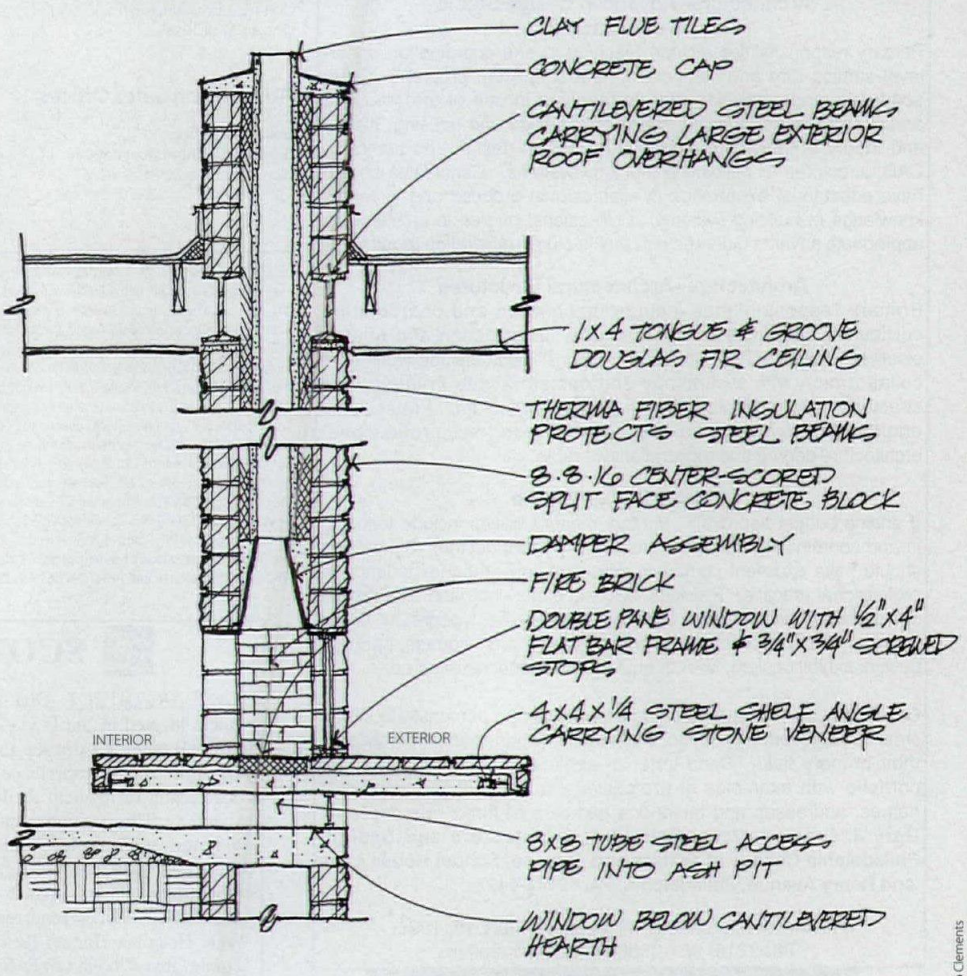
FIREPLACE MASS SERVES AS COUNTER WEIGHT

There is more to the fireplace in architect Les Wallach's Arroyo House (p. 60) than at first meets the eye. The fireplace occupies the living room's west wall, which overlooks a gully that allows water to run under the house. Rather than hide the view of the gully behind the fireplace mass, Wallach chose to glaze the lower portion of the wall (see section drawing).

The glazing line is at the back of the firebox (photo above) so that half the hearth is inside the house, with the other half floating in space over the gully. The exterior portion of the hearth occasionally attracts wildlife; recently Wallach discovered two bobcats lounging there.

The levitating hearth is a concrete slab cantilevered from the fireplace mass, with steel shelf angles to carry the hearth's veneer stone. The glazed fire wall is two layers of 1/4-inch tempered glass. Wallach reports that because the fireplace draws well and the firebox is open on two sides, the glass wall does not overheat. There is also glazing under the cantilevered hearth.

Embedded in the fireplace mass near its top are two W18x40 steel I-beams that help support the 20-foot overhanging roof of an adjacent exterior deck. The masonry mass of the fireplace acts as a counterweight to the roof overhang, keeping it in equilibrium. Four-inch batts of Thermafiber insulation are placed between the beams and the clay flue to protect the steel from high temperatures. **Michael J. Crosbie**



Bob Clements

SECTION THROUGH FIREPLACE