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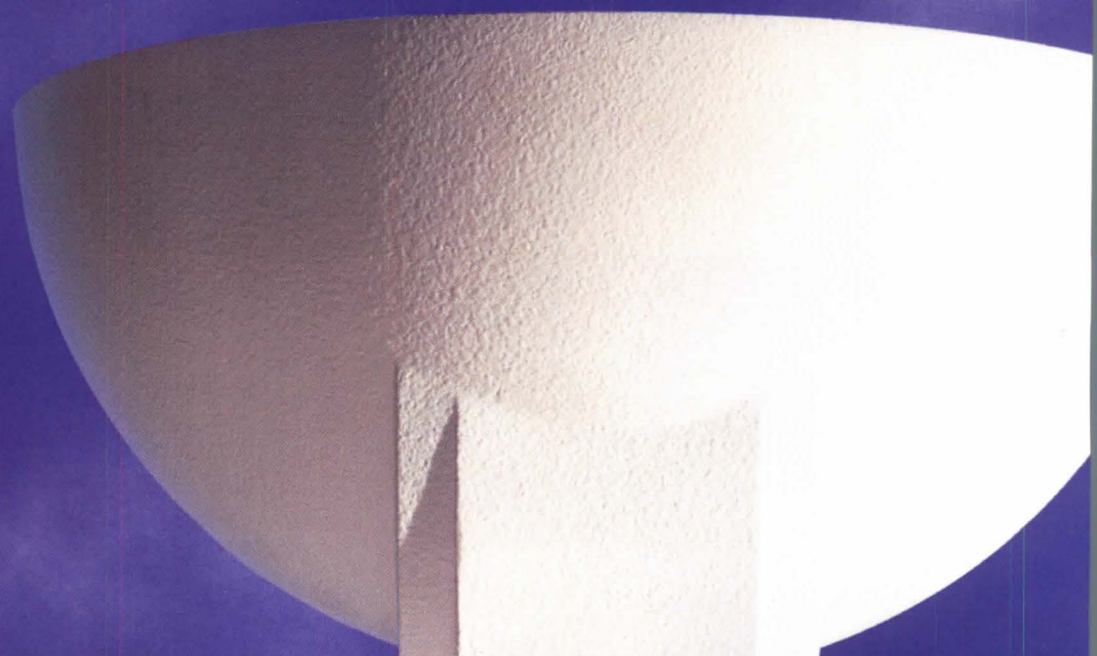
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## Return Cities to the Agenda

*No presidential candidate is talking about inner cities, despite the dire consequences of urban decline.*

This year's presidential election campaign has pushed an important issue off the agenda: our inner cities. While anxious to cut welfare and taxes, neither Bill Clinton nor Bob Dole has outlined an urban policy, despite the ongoing drain of people and jobs from our cities.

From 1990 to 1994, the population of several of our largest cities dropped steeply: Washington, D.C., decreased by 6.6 percent; Boston, 4.6 percent; Baltimore, 4.5 percent; and Chicago, 2 percent. Meanwhile, joblessness and poverty are rising in urban neighborhoods. As renowned sociologist William Julius Wilson wrote in the *New York Times* recently, "The problem [of joblessness in the ghetto] has now reached catastrophic proportions, and if it isn't addressed, it will have lasting and harmful consequences for the quality of life in the cities and, eventually, for the lives of all Americans."

Urban decline is a direct result of the growing gap between center city and suburb that current federal policy is unable to bridge. Since the 1980s, the government's urban vision has centered on "enterprise zones," intended to attract businesses to decaying urban areas through tax breaks and decreased regulations. The Clinton Administration has reprised this policy under the title of "empowerment zones." Call them what you will, these programs create few real jobs. Tax incentives and deregulation are not enough to offset the high costs of land, labor, security, and insurance in inner cities.

Moreover, a recent study of New York's decade-old economic development zones, modeled on federal enterprise zones, found the program simply encouraged the transfer of businesses from one location to another, without infusing new jobs into urban neighborhoods. Even when jobs are available, many of the poor can't reach them. Federal transportation policy still encourages the building of major highways into the suburbs, rather than public transportation that would link the inner city to outlying areas.

With political prerogative now shifting from the federal government to states and localities, some cities have taken the initiative to tackle their own urban decay. Detroit's new mayor, Dennis Archer, is making industrial development a top priority; three of the major automakers have committed to projects that call for upgrading the city's older manufacturing plants. Baltimore is also benefiting from aggressive new economic-development measures under Mayor Kurt Schmoke that focus on bolstering the city's ports, airport, and infrastructure to attract trade. Phoenix is encouraging urban infill through tax breaks, imposing moratoriums on rezoning land on its outskirts, and levying higher hook-up fees for utilities in new suburban developments.

But for every city reinvesting in its core, there's another squandering resources on suburban-style development. Norfolk, Virginia, is building a new, faceless mall downtown (page 67, this issue), which may bring jobs but will surely siphon life off the streets. St. Louis, with a population less than half what it was in 1950, is planning a city-sponsored golf course and luxury housing on the former site of the Pruitt-Igoe public housing complex. Atlanta has proposed a 211-mile beltway 20 miles outside its existing ring road.

Our center cities, the cultural, civic, and commercial hearts of our metropolitan regions, will continue to decline unless serious measures are taken to supply jobs, improve education, and most importantly, share revenue between cities and suburbs. Public and private sectors must collaborate as economic partners in finding new ways to foster urban revitalization. Instead of ignoring inner cities, politicians ought to champion strategies for saving them. Cities should top our national agenda. They should no longer be considered politically incorrect.

Debra K. Dietz

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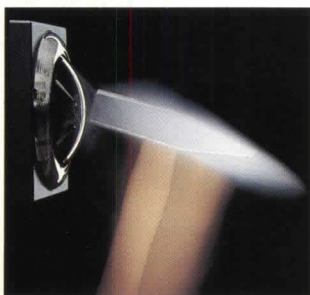
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## Exciting Passages

*A new publisher, a redesign, and editorial changes promise to make 1997 a banner year for this magazine.*

As BPI's new group publisher and vice president, I'd like to acquaint readers with several important changes at ARCHITECTURE as we approach the magazine's 84th year in 1997. A changing of the guard at the publisher level transpires with the January issue when Robert Kliesch, publisher for the last 10 years, takes his leave for a well-earned retirement. Bob's hard work leaves ARCHITECTURE with a dominant share of the market. Already on board to replace Bob and work side by side with him for the next few months is Steven Donohue, who comes to us from McGraw-Hill, where he was director of strategic marketing for *Engineering News-Record*. Our best wishes to both Bob and Steve for much success.

In January 1997, ARCHITECTURE will become the only independent magazine devoted to architecture in the United States. We'll start off by publishing the winners of the profession's most influential design competition—the 44th Annual Progressive ARCHITECTURE Awards.

The passion and reverence felt by the industry for this competition, which received 449 entries this year, is quite extraordinary. I have firsthand experience with this important awards program, thanks to a small role I played in initiating a very special project that won a *Progressive Architecture* citation in 1993. From 1990 to 1992, a generous pro bono collaboration between Swanke Hayden Connell, Perkins & Will, and Kohn Pedersen Fox produced a master plan for a pediatric AIDS center at Bronx Lebanon Hospital in the South Bronx. While they may demur from the compliment, I must use this forum to thank Richard Hayden, who first embraced the project; Neil Frankel and Randy Gerner, then with Perkins & Will, whose hearts were large; and Mark Chen of Perkins & Will, who became the tireless point man. Many more people devoted hundreds of hours to a true collaboration among architects and designers... a great effort. When news of the award broke, the joy and pride

of being recognized was enormous. ARCHITECTURE looks forward to sponsoring these terrific awards for many years to come.

A fitting new showcase will be created for the Progressive ARCHITECTURE winners in January by J. Abbott Miller, director of Design/Writing/Research, who received the Chrysler Foundation's first Award for Innovation in Design and was named by *I.D.* magazine as one of its "I.D. Forty" top young designers. Miller has been commissioned by Editor-in-Chief Deborah K. Dietsch to give ARCHITECTURE a new look for 1997.

Deborah will continue to guide the editorial content of ARCHITECTURE from our Washington office, as she has done so successfully since 1989. For me, it is wonderful to be reunited with Deborah. I was the publisher of *Interiors* when she joined our editorial team in 1982, fresh out of Columbia University with degrees in architecture and historic preservation. It was clear from the start that Deborah had great instincts and talent. At ARCHITECTURE, her leadership has earned the magazine a record number of Jesse H. Neal Achievement Awards, including one this year for Deborah's own editorials. Additional honors from the Society of National Association Publications, the American Society of Business Press Editors, the Construction Writers Association, and other organizations make ARCHITECTURE the most highly awarded and recognized publication for architects.

Indeed, the short version of our mission statement for over 80 years is to do just that—serve architects. I am proud to join Deborah and Steve as ARCHITECTURE continues to set the standard for architectural journalism into the 21st century.



Dennis M. Cahill  
Group Publisher/Vice President

## Letters

### Educating the profession

I thoroughly enjoyed your August issue, and Reed Kroloff's "How the Profession is Failing the Schools" in particular (pages 92-93). The assessment of conditions was factual and well-tied to the economic climate affecting intern employment.

Kroloff's article came closest to identifying the areas of action outlined in the Carnegie Foundation report: improving and coordinating curricula and restoring a duty among practitioners to nurture apprenticeship—and he didn't require 30 months to write it, either.

*Richard S. Corner, AIA  
Virginia Beach, Virginia*

Adele Naude Santos and Harold Adams are correct in their assessments of architectural education in "Practitioners Grade the Schools" (ARCHITECTURE, August 1996, pages 90-91). "Lack of integration of technical subjects with design studios" and "detachment from the world of practice" were quite evident in my education.

My school taught the subject and theory of design very well; it also taught materials and methods, structural technology, and environmental systems well. But none of these courses were ever seriously combined with any of the others. When I graduated and entered the profession, it became apparent that my education was just getting started.

*Gregory M. Wall  
Steinman and Associates Architects  
Beaumont, Texas*

Regarding the comments in "Practitioners Grade the Schools," consider an architectural education that gathered together these statements. A sample: curricula and internship to include more education than vocation (Eizenberg), background architecture (Quigley), building systems (Powell), response to demographics (Plater-Zyberk), architecture as a cultural force (Elam), working in

teams (Bond), business and finance plus foreign languages (Adams), broad education (Leers), architect as generalist (Beeby), verbal and graphic skill (Frasca), integration of technical subjects in studio (Santos), and practice as casework (Tigerman).

If these became the goals of all architecture programs, the profession and society would be better served. In "How the Profession is Failing the Schools," Reed Kroloff states that we don't need fewer architects. What he fails to note is that we do need better ones.

*Terrence G. Heinlein, AIA  
Boston, Massachusetts*

### Education or exploitation?

In your August editorial, "Build a Better Internship" (page 15), you do not mention a logical alternative: do away with the internship program as requirement for licensing. In my experience, the internship program was meaningless in teaching me anything but how employers exploit employees. Receiving an architectural license after a minimum of three years' work experience added not one iota of pay, job responsibility, or job security.

Lawyers can take the bar examination right after law school, and passing it doesn't immediately make them high-powered international corporate lawyers. They still have to spend years in a firm learning the skills they need. The same would be true for architects. Having or not having a license has nothing to do with being able to design buildings. Why not accept that internship contributes nothing to the profession except a slave-labor pool and abolish it as a licensing requirement?

*Les Center, AIA  
Houston, Texas*

I applaud your editorial regarding the demeaning practice of underpaying or not paying recent graduates by members of our profession. I hope you will support some of the Associ-



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ation of Collegiate Schools of Architecture (ACSA) policies you lauded, by not publishing the work of these architects—perhaps they will lose the appeal that creates the market.

*Jerry A. Davis, FAIA  
President, AIA New York Chapter  
Managing Principal, HOK  
New York City*

As the national officers of an organization profoundly affected by professional exploitation of students and interns, we were heartened by the strong statement of support in your August editorial. What surprised us is that one of the architects most vocal about his firm's policy of not paying interns was then featured on the cover of the August issue.

We encourage ARCHITECTURE to live up to the minimum standards set by the AIA, ACSA, and the AIAS and not publicize those firms breaking the law, or at the very least include a firm's response to such laws in any articles.

*Raymond H. Dehn, President  
Casius H. Pealer, Vice President  
American Institute of Architecture  
Students  
Washington, D.C.*

*Editor's note:* Eisenman Architects, design architect of the University of Cincinnati's Aronoff Center of Design and Art, maintains that its interns are European students on government grants who are prohibited from receiving salaries. Associate architect Lorenz + Williams employs students as interns, and the firm has "never had a student we didn't pay," according to Principal Richard Roediger.

#### Las Vegas lament

Your August Protest (page 71), regarding the design of the University of Nevada at Las Vegas (UNLV) School of Architecture seems to be an apology for a "signature" architect who presented a scheme that failed to address several issues. Bar-

ton Myers's initial design was not responsive to the budget—the details relied on trade skills and specialties not readily available in the Las Vegas market. The costs of \$165 per square foot of the first two bids were the highest unit cost of any public works project in Nevada to date.

JMA/Lucchesi-Galati, the local partners of the design team, stood fast to develop a design that met the program and budget of the UNLV project at their own expense. They have delivered this project in very stressful conditions resulting from the controversy generated by the selection process.

*Eric Anderson, AIA  
Director, Planning and Construction  
University of Nevada, Las Vegas*

#### Self-Esteem 101

Noushin Ehsan's Opinion (ARCHITECTURE, July 1996, pages 53-57), states that architects' problems stem from low pay and a resultant lack of stature and self-confidence." The reverse is the truth: low self-esteem, much of it caused by misapplication of criticism in architects' education, is the reason architects accept low pay. An article on how the education process contributes to low self-worth (sadly missed in your otherwise provocative August issue) would bring the real culprit out of the closet.

*Weld Cox  
Block Island, Rhode Island*



#### Correction

"Freestanding workstations" (August 1996, page 171) erroneously showed Hayworth's Correspondent office system, not the Kyo Cabin (above).

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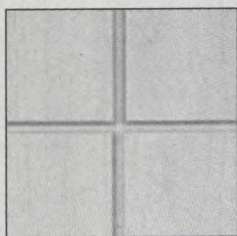
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## Events

### Exhibitions

**CHICAGO.** "Building for Air Travel: Architecture and Design for Commercial Aviation," October 19-January 5, 1997, at the Art Institute of Chicago. Contact: (312) 443-3600.

**LOS ANGELES.** "Paradise Cage: Kiki Smith and Coop Himmelblau," November 24-February 2, 1997, at the Museum of Contemporary Art. Contact: (213) 626-6222.

**NEW YORK.** "Breuer's Whitney," celebrating the museum's 30th anniversary, through December 8 at the Whitney Museum of American Art. Contact: (212) 570-3633.

**WASHINGTON, D.C.** "The Old World Builds the New: The Guastavino Company and the Technology of the Catalan Vault, 1885-1962," through January 5, 1996, at the AIA. Contact: (202) 626-7300.

"Spatial Reverberations: Watercolors by Lauretta Vinciarelli," through November 10 at the National Building Museum. Contact: (202) 272-2448.

### Conferences

**AUSTIN.** "The Question of Economic Value," October 25, symposium sponsored by the University of Texas Center for American Architecture and Design. Contact: (512) 471-9890.

**BOSTON.** "Architecture in Perspective," October 24-29, convention of the American Society of Architectural Perspectivists. Contact: (617) 951-1433, ext. 225.

"Urban Waterfront Planning, Development, and Culture" international conference, November 14-16, sponsored by the Waterfront Center. Contact: (202) 337-0356.

**LOS ANGELES.** American Society of Landscape Architects annual meeting, October 19-21. Contact: (202) 686-2752.

**NEW YORK.** "Classical New York, Classical America," November 2-3, sponsored by the Institute for the Study of Classical Architecture. Contact: (718) 636-0788.

Interplan exposition, November 7-9 at the New York Coliseum. Contact: (800) 950-1314.

**SAN DIEGO.** United States Green Building Council conference, November 17-19. Contact: (619) 535-0050.

### Competitions

National Trust for Historic Preservation's Great American Main Street Awards. **Entries due November 1.** Contact: (800) 441-2018

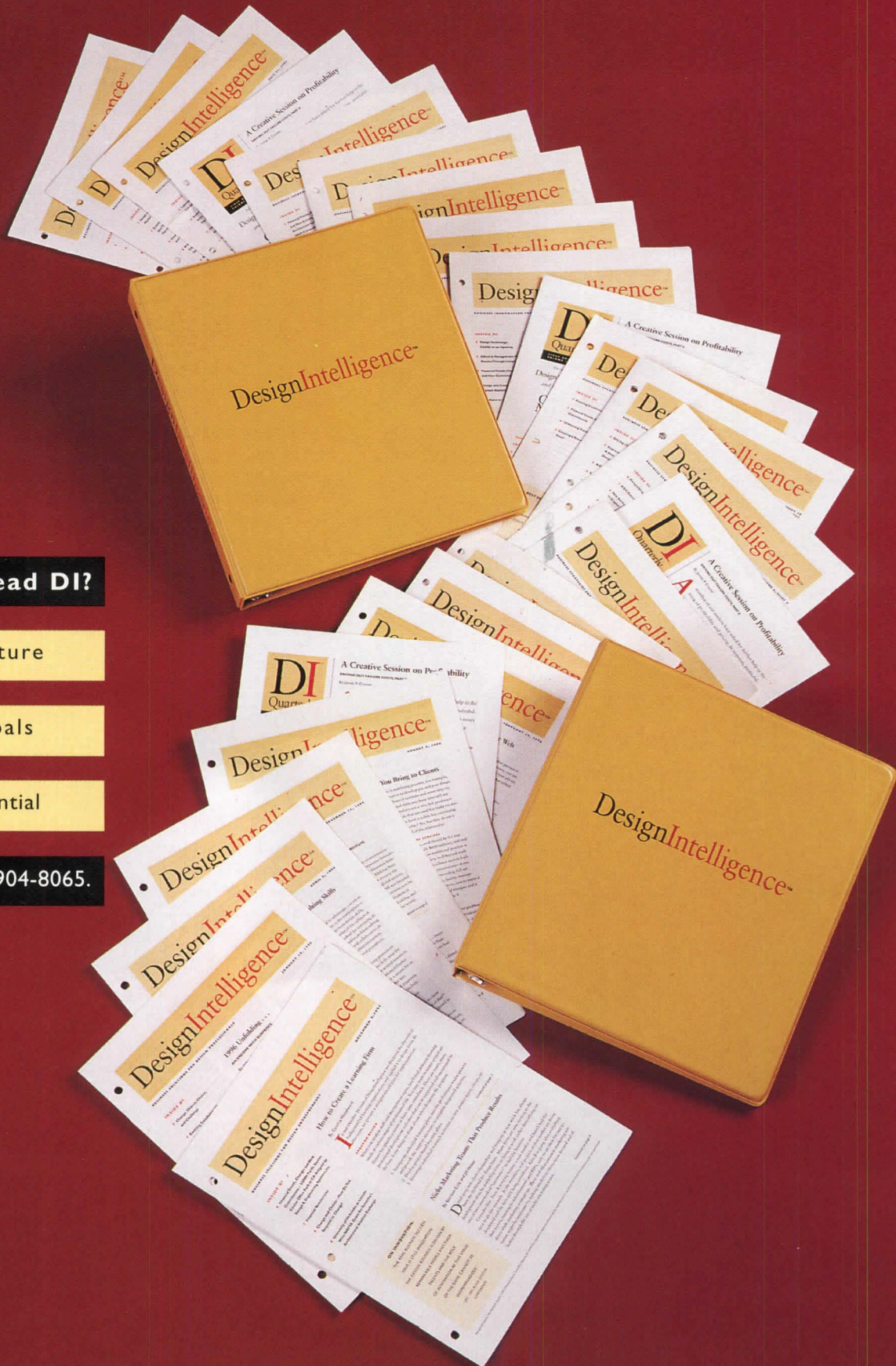
General Services Administration (GSA) Design Awards for GSA-authorized projects. **Submission deadline November 8.** Contact: (202) 501-1888.

Rome Prize fellowships of the American Academy in Rome. **Applications due November 15.** Contact: (212) 751-7200.

Rotch Traveling Scholarship. **Requests for applications due in writing January 3, 1997.** Contact: 52 Broad Street, Boston, MA 02109.

James Beard Foundation Awards for restaurant design and graphics. **Deadline for entries January 31, 1997.** Contact: (212) 627-2090.

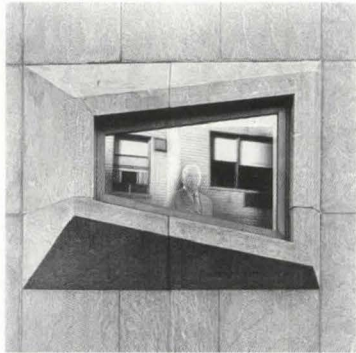
Paris Prize, "Real Downtown/Virtual Downtown," sponsored by the Van Alen Institute. **Submissions due January 31, 1997.** Contact: (212) 924-7000.



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### The Whitney Turns 30

At its opening 30 years ago, New Yorkers decried Marcel Breuer's Whitney Museum of American Art as a brutish imposition on urbane Madison Avenue. "Breuer's Whitney," on view at the museum through December 8, fondly recounts the history of the building whose architecture has come to be revered. Guest-curated by Nicholas Olsberg, chief curator of the Canadian Centre for Architecture, the exhibition comprises models, drawings, and, most importantly, photos of exhibitions at the Breuer building as well as the Whitney's previous homes. This chronology reflects the symbiosis between museum architecture and art over the 20th century. As American art grew in size and abstraction, so did the buildings housing the Whitney.

When the museum outgrew Breuer's design in the early 1980s, the Whitney turned to Michael Graves, only to scuttle his overscaled Postmodern design after years of heated debate. The exhibition ends with renderings of architect Richard Gluckman's far quieter scheme, now under construction. The Whitney's fifth-floor offices are being relocated to adjacent brownstones; the vacated space will house newly expanded galleries, to be completed next October.—*Ned Cramer*

### HTB Sold, Former Chairman Sentenced

After two years of turmoil, the Oklahoma City-based architecture and engineering firm HTB has been sold to Dewberry & Davis, Fairfax, Virginia-based engineers and architects. The sale comes shortly after HTB's former chairman, Rex M. Ball, received a 30-month deferred sentence for lying to an Oklahoma grand jury.

Dewberry bought HTB to penetrate the Midwestern market, maintains Managing Principal William H. Allen. HTB's Oklahoma City and Tulsa offices will operate as Dewberry Design Group, while the new owner tries to shed the controversy that has embroiled HTB for three years and ultimately prompted Ball's departure in 1994. Ball, 62, left HTB amid uproar over his firm's role in designing the Oklahoma County Jail—where, among other problems, several inmates escaped by removing glass blocks from the exterior wall. Ball's brother Leonard F. Ball, a principal of HTB, followed the chairman out the door.

Then in January 1995, the Ball brothers were implicated in a separate scandal in Oklahoma County: Leonard Ball and seven others were indicted on racketeering charges for allegedly conspiring to take over the county government's budget board and award government contracts through bribes—part of a scheme cryptically called the "New Order." During a grand jury investigation, Rex Ball testified he had never heard of the plot, despite the contradictory testimony of three witnesses, and was indicted on perjury charges.

In the Seminole County courtroom this summer, District Judge Gordon Melson called the case "much ado about nothing," and ignored the jury's push for an 18-month prison sentence, giving Rex Ball a deferred 30-month term, 800 hours of community service, and a

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\$1,000 fine. "If Rex behaves himself, the whole thing is wiped off his record after 30 months," contends William R. Burkett, Ball's attorney.

Less certain is whether Ball retains his presidential appointment to the federal Commission of Fine Arts in Washington, D.C., and if he will keep his architect's license. A source at Oklahoma's architectural registration board said the issue will be discussed this fall. Meanwhile, a Commission of Fine Arts source reports no official word on Ball's membership status.

In an interview, a cheerful Rex Ball—who recently moved from Oklahoma City to Tulsa—says his license is intact, that he has talked to White House officials about his appointment status, and he indeed considers himself a Commission member, particularly since his deferred sentence implies no judgment.

Dewberry plans to put HTB's troubles behind it. "We're excited about the new geography," Allen remarks, "and we're focusing on bringing more identity to those offices."—*Bradford McKee*

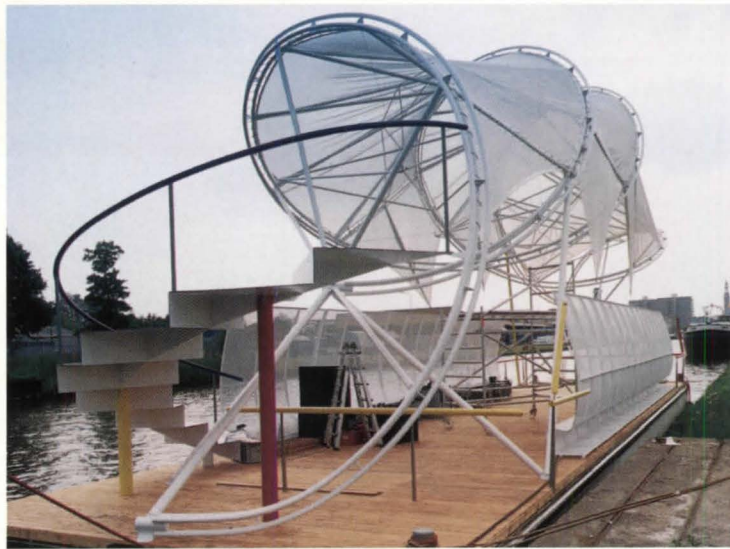
### No Winner in Prado Design Competition

Out of nearly 500 entries in the competition to expand the sorely overcrowded Prado Museum (1787) in Madrid, Spain, not one of the 10 shortlisted projects was chosen by the jury as the winner. Last month, the 13 jurors, who included Spanish government officials and architects Mario Botta, Dan Eytan, and Herman Hertzberger, declared Madrid-based architects Alberto Martínez and Beatriz Matos the first runners-up, and Zurich-based architect Jean-Pierre Durig second in line. Among the rejected finalists was Rafael Moeno. The state-run museum has no definite plans for the selection of a final design.—*N.C.*



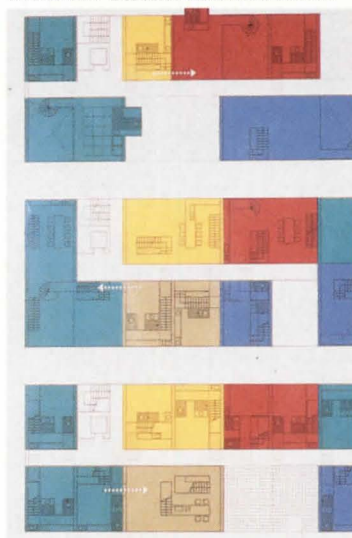
TOSHIYUKI KOBAYASHI

TAKAMATSU: Tel Aviv hotel and offices.

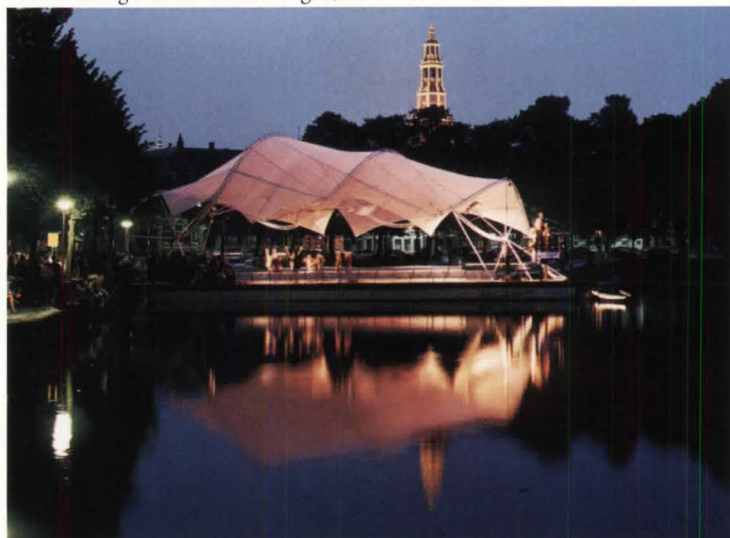


JOHN STÖEL

MAKI: Floating theater for Groningen, The Netherlands.



ADH ARCHITECTS: Cohousing plan.



JOHN STÖEL

MAKI: Pavilion floated to performance sites during international arts festival.

## Japanese Architects Look West

In his slim volume of essays called *The Island Nation Aesthetic*, Japanese architect Arata Isozaki posits that his countrymen continually import and absorb ideas from abroad and therefore “see Japan with the eyes of a foreigner.” Isozaki himself is no exception. In projects such as his Tsukuba Civic Center (1983), the architect combines Classical elements and nonhierarchical Japanese composition. He jokingly refers to the building’s amalgam of Western and Eastern traditions as “schizophrenic eclecticism.”

As Isozaki and other postwar Japanese architects adapted Western-style designs, they broke away from Japan’s xenophobic architectural scene by winning big commissions overseas and media attention be-

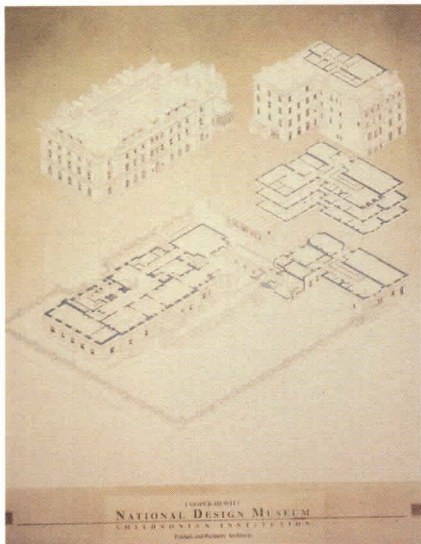
yond the Pacific Rim. Signs of global renown continue as the work of mature Japanese designers is showcased in international exhibitions. “Sensing the Future: The Architect as Seismograph,” curated by Hans Hollein at the Venice Biennale’s Sixth International Architecture Exhibition, includes buildings by Isozaki, Tadao Ando, and Toyo Ito as well as up-and-coming designers Itsuko Hasegawa, Kei’ici Irie, Waro Kishi, and Kazuyo Sejima.

Stateside, a September 14 symposium, organized by the McKinney Avenue Contemporary museum in Dallas and the local AIA chapter, compared the role of lightness in the work of major postwar Japanese architects Ando, Ito, Sejima, Fumihiko Maki, and Kenzo Tange, and the role of darkness in designs by Shin Takamatsu, Wasaharu Takasaki, Kazuo Shinohara, and Seiichi

Shirai. The symposium inaugurated an installation by Takamatsu, on view through November 3, that incorporates drawings, photographs, and videos of the architect’s work.

Japanese architects are also being commissioned for projects in Europe. In The Netherlands, Maki designed a floating theater for an international performing arts festival staged during August and September in Groningen. The canopied pavilion, described by the architect as “a cloud, a white swan, or even a piece of escargot,” floated along Groningen’s canals to performance locations at the water’s edge.

A younger generation of Japanese architects is eschewing the previous generation’s formalism by focusing on social issues affecting the island nation. Shigeru Ban’s cardboard-tube designs reflect the architect’s advocacy of the environment and



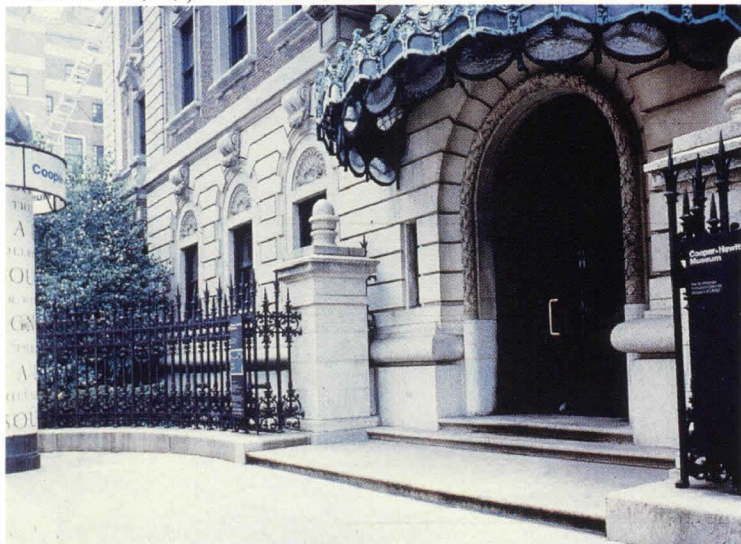
**PLAN:** Museum (left) joins new resource center.



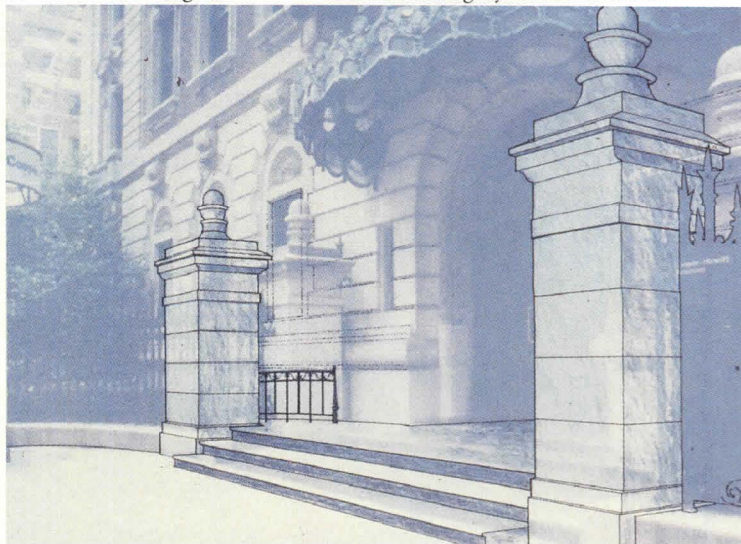
**NEW BRIDGE:** Polshek links mansion with town houses (right).



**TERRACE:** Existing layout bars disabled.



**EXISTING ENTRANCE:** No ramp for disabled on museum's 91st Street side.



**RENOVATED ENTRANCE:** Polshek extends balustrade to insert ramp (left).

the underprivileged (pages 104-109, this issue). And Makoto Shin Watanabe and Yoko Kinoshita Watanabe of Tokyo-based ADH Architects are designing cohousing for single people, who make up a growing segment of the Japanese population. These clusters of self-sufficient bedrooms, each with a small kitchen and bath, can be linked to common areas, offering a spatial flexibility that reflects recent changes in how the Japanese live.—*N.C.*

## Renovated Cooper-Hewitt Reopens

Since 1976, Andrew Carnegie's former Fifth Avenue mansion in New York has housed the Smithsonian Institution's Cooper-Hewitt National Design Museum. But for the last 13 months, the Cooper-Hewitt

has been closed. On September 17, the museum reopened, unveiling the first part of a three-phase, \$20 million renovation and expansion effort headed by New York architect Polshek and Partners.

Polshek's primary charge, and the focus of the project's first phase, was to bring the building up-to-date with requirements of the American with Disabilities Act (ADA). As part of the initial phase, Polshek also renovated the museum's ground-floor exhibition galleries and reconstructed the mansion's badly deteriorated conservatory. Later phases, still in construction, entail gutting and reconfiguring two adjoining 19th-century town houses into a new design resource center; adding a two-story, pergola-inspired bridge connecting the original museum to the new resource center; and renovating second-floor galleries.

The 1902 Carnegie mansion was originally overhauled by Hardy Holzman Pfeiffer Associates 20 years ago, adding basic modern amenities such as a public elevator. But many portions of the building, including its lush garden and terrace, the site of frequent museum installations and openings, remained conspicuously inaccessible to the physically disabled—such as Cooper-Hewitt Director Dianne H. Pilgrim, who suffers from multiple sclerosis and is confined to a wheelchair.

Throughout the project, Polshek opted for a quiet approach that disturbs little of the Beaux-Arts building's original fabric. A new entry ramp, for example, is slipped behind an existing balustrade that is pulled 4 feet from the street facade, maintaining the original elevation. In designing the link to the new resource center, Polshek defers quietly

to the adjoining buildings. The brick, granite, and cedar bridge looks and feels more like an enclosed pergola or voluminous garden wall than a building addition.

The redesigned first-floor galleries opened with an energetic inaugural exhibition titled "Mixing Messages: Graphic Design in Contemporary Culture," which runs through February 16, 1997. Designed by Boston architect Kennedy + Violich, the show features innovative graphic design of the past decade, from shopping bags and fashion advertisements to posters and airline logos.

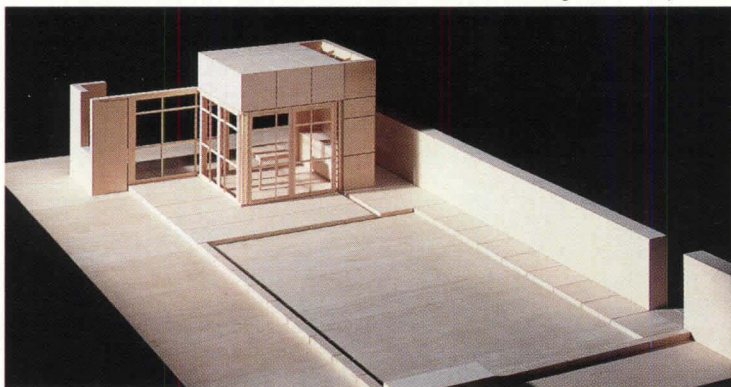
The second phase of Polshek's renovation, including the completion of the bridge and the opening of the design resource center, will be finished in time for the museum's centennial in fall 1997. Renovation of the second-floor galleries will continue through 1998.—*R.A.B*



GRAVES: Classical rotunda.



GRAVES: To be completed next year.



MEIER: 65-square-foot pavilion with garden outside Copenhagen.

## Architects Update Danish Summer Houses

Fourteen architects from around the globe have designed pavilions for "Kolonihaven—The International Challenge," an architectural component of Copenhagen's yearlong activities as the 1996 Cultural Capital of Europe. Each architect was invited to contribute a 65-square-foot update of the traditional Danish *Kolonihavehus*, or summer house, which began proliferating on garden plots outside Danish cities in the 1880s.

The participants, selected by organizer Kirsten Kiser, are American architects Michael Graves and Richard Meier; Japanese architect Arata Isozaki; and Europeans Heikkinen & Komonen, Mario Botta, Dominique Perrault, Henning Larsen, Josef Paul Kleihues, Leon Krier, Søren Robert Lund, Enric Miralles, Aldo Rossi, Richard Rogers, and Alvaro Siza. Construction has begun in the Kolonihaven park south of Copenhagen, and will continue through next year.—N.C.

YOU'LL NEVER RUN OUT OF IDEAS

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American Forest & Paper Association, APA—The Engineered Wood Association, Canadian Wood Council, National Particleboard Association, Southern Forest Products Association, West Coast Lumber Inspection Bureau, Western Wood Products Association.

## Trump Proposes Record-Breaking Tower

Donald Trump is pitching plans to develop the world's tallest building in New York City. If built, the 1,792-foot tower will surpass the current record holder, Cesar Pelli's twin Petronas Towers in Kuala Lumpur, Malaysia (ARCHITECTURE, September 1996, pages 159-165).

Kohn Pedersen Fox (KPF) Associates is designing the tower in conjunction with a freestanding pavilion for the trading floor of the New York Stock Exchange (NYSE). The NYSE announced in August that it intends to relocate from its historic Wall Street quarters to a more modern facility. On the same day, Trump unveiled KPF's proposal, which places the new NYSE headquarters on a city-owned site on Wall Street's eastern end, overlooking the East River.

The NYSE has not committed to a site or a developer, but it has assured city officials that it will remain in Manhattan, allaying their fear of los-



NYSE PAVILION: KPF's glass envelope encloses 120,000-square-foot trading floor.

ing the financial powerhouse to New Jersey or Connecticut. The pavilion has a better chance of getting built than the tower, which would require "a lot more growth in New York's demand for office space," predicts Eugene Kohn, KPF's partner-in-charge of the project.

The NYSE's move has been contemplated before: Three years ago, officials considered razing the entire block of buildings across the street from 11 Wall Street to accommodate a new trading floor and head-

quarters. Trump's latest proposal is his second attempt to return the "world's tallest tower" title to New York after his aborted efforts in the mid-1980s to finance "Television City," a mixed-use complex proposed for the Upper West Side.

Nor is it KPF's first bid to steal the crown: Site excavation is beginning in China, for the KPF-designed Shanghai World Financial Center, a 1,509-foot-tall tower scheduled for completion in 2001 as the latest record breaker.—A.C.S.



AP/WIDE WORLD PHOTOS

TOWER: Trump's bid for world's tallest.

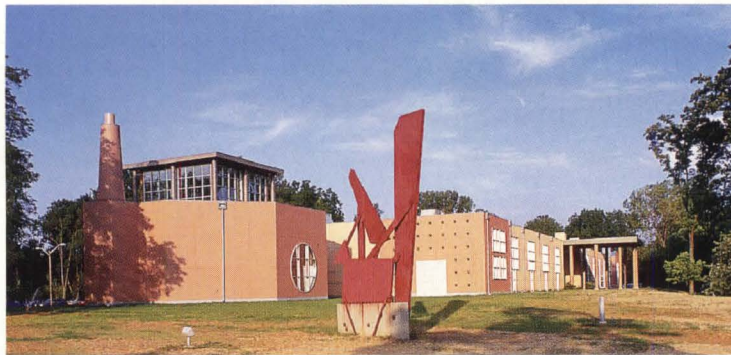
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ARTS CENTER: Octagonal library adjoins studios (right), open to public view.

### Graves Goes Home

Michael Graves has returned to his hometown of Indianapolis—not as a resident, but as the architect of a significant new cultural project.

Graves's \$7.5 million, 44,000-square-foot Indianapolis Art Center (IAC), which opened June 1 in the suburb of Broad Ripple, is a combined education facility and gallery with three exhibit halls, a library, a 224-seat auditorium, an outdoor stage, and 13 studios, including one

of only nine glass-blowing facilities open to the public in the U.S.

Despite Graves's personal connection, "it was not particularly Indianapolis that we tried to represent through the design," Senior Associate John Diebboll maintains, but "the industrial character so often associated with studio art spaces"—the building's largest single program component, serving the Center's 4,000 students. While some of the studios do feature extensive glazing, the window treatment is closer to

residential prototypes than to the industrial sash of SoHo lofts or San Francisco warehouses. The strongest industrial imagery of the IAC is conveyed by the chimneys terminating the building's long axes. One set appropriately marks the kiln room, but the other, capping the library fireplace, is not industrial at all.

Here, as is often the case with a Michael Graves building, intended representational schema are obscured by his trademark abstract historicism. Graves buildings are stately, even heavy, assemblages of warmly colored, familiar forms, and the new art center, with its limestone veneer and ivy-covered pergola, is no exception.

Given the civic aspirations of what is not, after all, a very large building, Graves's formal esthetic is appropriate, lending the IAC a presence it might not otherwise have achieved. Joyce Summers, director of the 65-year-old institution, confirms that "The new building has given us greater visibility and a much stronger community profile."—R.K.

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## WWII Memorial Shortlist Announced

Six finalists have been shortlisted in the controversial competition for a World War II Memorial on the National Mall in Washington, D.C. A secret 12-person evaluation board of design professionals, war veterans, and area experts announced the list in August. The sponsors, the General Services Administration and American Battle Monuments Commission, refuse to reveal the identities of the board members until after the winner is chosen, to "prevent conflicts of interest." Bill N. Lacy, executive director of the Pritzker Architecture Prize, is acting as competition advisor.

The selected finalists are Brian Ambroziak, a graduate student at the Princeton University School of Architecture; landscape architect Diana Balmori, principal of New Haven-based Balmori Associates; Friedrich St. Florian, architect and former dean of the Rhode Island School of Design; Bernard J. Wulff

(designer of the proposed U.S. Capitol Visitors Center) and William C. Jackson, both of the Washington, D.C., office of RTKL Associates; Rafael Viñoly Architects of New York, designer of the Tokyo Forum (pages 110-135, this issue); and Weiss/Manfredi Architects in New York, winner of the competition for the Women in Military Service Memorial, now under construction at Arlington National Cemetery. Finalists were selected on the basis of schematic design "visions" for the memorial, and each will receive \$75,000 and may bring on a partner firm to develop a more comprehensive scheme for the second round of judging later this month.

This second jury comprises architects David M. Childs, partner of Skidmore, Owings & Merrill; John S. Chase of Houston; Hugh Hardy of Hardy Holzman Pfeiffer Associates; AIA Gold Medal-winner E. Fay Jones; Cathy J. Simon, principal of San Francisco-based Simon Martin-Vegue Winkelstein Moris; landscape architect Laurie Olin;

architecture critic Ada Louise Huxtable; and National Gallery of Art Director Earl A. Powell, III.

Several distinguished World War II veterans, drawn from the government, military, and major corporations, will also serve on the jury: U.S. Senator Daniel K. Inouye of Hawaii; former PepsiCo CEO Donald M. Kendall; retired Admiral Robert L. Long; Elliot L. Richardson, former secretary of defense and attorney general; and retired U.S. Army General John W. Vessey, former chair of the Joint Chiefs of Staff.

Once the final panel of jurors recommends a scheme, the design must pass muster with several groups, including the secret executive board; ABMC's commissioners and Memorial Advisory Board; the National Capital Memorial Commission, the Commission of Fine Arts, and the National Capital Planning Commission. The winner is scheduled to be announced November 20. The ABMC hopes to have the memorial completed in time for the 55th anniversary of the war, in 2000.—N.C.

## J.B. Jackson Dies

Iconoclastic landscape and architecture critic John Brinckerhoff Jackson died on August 29, at the age of 86, in Santa Fe. Through *Landscape*, the magazine that he founded, published, and edited from 1951 to 1968, Jackson popularized appreciation of the vernacular landscape. Rather than dismiss the shopping malls and trailer parks of America as devoid of esthetic merit, he celebrated their cultural and social meanings. According to Robert Riley, former associate editor at *Landscape*, Jackson "drew attention to the ordinary, outside of the concerns of the design schools and professions, and made it respectable."

Jackson wrote several books, including *American Space*, *The Necessity for Ruins*, and *A Sense of Place, a Sense of Time*, taught at the University of California at Berkeley and the Harvard University Graduate School of Design. In his last years, Jackson lived in La Cienega, New Mexico.—N.C.

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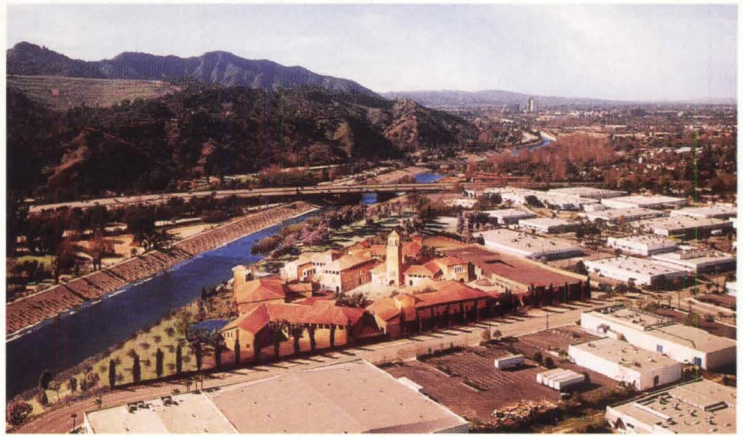


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## Dreamworks Animation Campus on Fast Track

In the latest of many projects undertaken by film studios in the Los Angeles area, construction has started in the city of Glendale on a 300,000-square-foot campus for the animation division of Dreamworks, the new entertainment company formed by Steven Spielberg, David Geffen, and Jeffrey Katzenberg. Design architect Steven Ehrlich of Santa Monica won the commission in a limited, invited competition of five firms. Gensler is the executive architect and SWA Group is the landscape designer.

Like other film studios, Dreamworks' Glendale facility for its feature-animation group is separated from its movie, television, and music headquarters, to be located within the 1,000-acre Playa Vista housing and commercial development on the L.A. oceanfront just south of Marina del Rey. At the Glendale complex, the surprisingly conventional Mediterranean idiom



GLENDALE COMPLEX: Ehrlich organized five-building studio around central plaza.

was handpicked by Katzenberg, who selected images of the piazza in Verona as Ehrlich's point of departure.

The scheme configures five buildings on a triangular, 14-acre site immediately west of the Los Angeles River. The two- and three-story structures are connected by covered, open-air bridges intended to serve as social spaces, according to Ehrlich, who says the design "encourages the

creative synergy that can occur from chance encounters." Completion is expected in December 1997.

Meanwhile, Dreamworks appears to have thwarted a challenge to its planned Playa Vista headquarters. In July, a Los Angeles Superior Court judge refused a request by an environmental coalition for further review, saying that an existing study was adequate.—*Morris Newman*

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## Environmental Artwork Completed in Des Moines

*Greenwood Pond: Double Site*, by New York-based environmental artist Mary Miss, is the latest installation in an 81-acre park at the Des Moines Art Center. For the 6.5-acre site, Miss arranged bridges, a pavilion, walkways, seating, and an observation tower around a pond to offer visitors different vantage points on the water.

Working with a local garden club, science center, and environmental groups, Miss enhanced an existing pond used by the community for ice-skating and summer recreation. "The way you can use water to look at the integration between the built and natural environment is very compelling to me," Miss explains.

Miss's path surrounds the pond, at one point leading to a ramped boardwalk that drops to the water's surface. A bridge incorporates a seating area from which steps lead down to the water's edge. Another walkway leads to a 15-foot-long

concrete trough that forms "a cut into the water," bringing the surface of the water to eye level. A steel-grated walkway takes visitors over the pond's surface along a path that will become a corridor through cattails and bulrushes when the vegetation matures. In summer, removable walls transform a skaters' pavilion into a picnic shelter, and its arched roof pattern is repeated by a series of trellises that are inspired by local agrarian forms.

Miss is best known for the park she designed with Susan Child at South Cove in New York's Battery Park City, and her work has often addressed the relationship of water and land. *Ropes/Shore*, her 1969 installation at Ward's Island in the East River, for example, enclosed the southern shore of the island with ropes anchored at 20-foot intervals.

The Des Moines Art Center's parklike setting includes artworks by Richard Serra and Bruce Nauman. *Greenwood Pond: Double Site* will be officially dedicated on October 19.—Heidi Landecker



OBSERVATION TOWER: Overlooks pond.



STEEL WALK: Bulrush-lined, eventually.



PAVILION AS METAPHOR: Skating shelter and wooden arches recall agrarian forms.

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## AIA Launches Website

Like everyone else lately, the AIA is jumping onto the World Wide Web. In late August, the AIA took its proprietary electronic service to the global computer network to give members a full gamut of on-line resources, from job listings and project postings to the latest stock quotes. The new web address ([www.aiaonline.com](http://www.aiaonline.com)) augments the Institute's year-old organizational site ([www.aia.org](http://www.aia.org)), which acts as its public resource information area.

The new website's Forums & Roundtable area, open to anyone on the Internet, serves as a bulletin board for information exchange on topics from choosing the right architect to the merits of stainless steel in the kitchen. An AIA-members-only section features a search engine for users to locate and correspond with other AIA members—a virtual version of ProFile for member firms. Individual offices can post their website links in many of the site's sectors, allowing other architects to

obtain a firm's profile, project history, and possible job offerings. Architect William Robison of Engberg Anderson in Milwaukee, for example, uses AIA's on-line postings weekly, preferring on-line searches to perusing his hardbound *ProFile*.

AIAOnline Director Darrell Lewis hopes the site will become architects' "first stop for information." Registration is handled on-line, allowing free, unlimited use by all members—a welcome relief from the previous \$9 per hour rate. The service is underwritten by paid ads in the website's Products Catalog.

Long-term goals for the website include continuing education, cost-estimating programs, contract documents, and audio/video conferencing. Although only about half of its 58,000 members are regular users of the Internet, the AIA hopes the new service will attract up to 20,000 visitors a month. To capture the younger audience, the strongest potential users, AIAOnline is planning to extend the service to AIAS members.—*Peter Morelewicz*

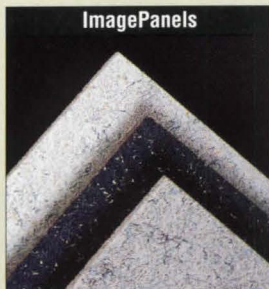
## New Professional and Academic Appointments

Nicolai Ouroussoff, a writer for the *New York Times* and *Architectural Record*, joined the *Los Angeles Times* in September as its architecture critic. The Hillier Group gained a Washington, D.C., office in June, but lost star designer Wes Jones this summer after his troubled one-year tenure as design director.

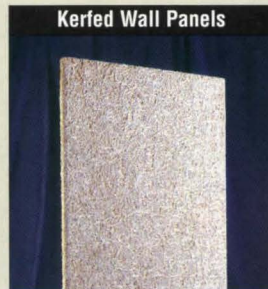
Several schools of architecture have appointed new heads: Thomas Hanrahan of Thomas Hanrahan Victoria Meyers Architects joined Pratt Institute last month as dean of its architecture school. In January, Richard Eribes will step up as dean at the University of Arizona. Linda Sanders, formerly of the University of Arizona, has been named dean at California State Polytechnic in Pomona. University of Oregon Professor G.Z. "Charlie" Brown has been promoted to department head for architecture. Architect Joel Sanders is the new director of graduate programs at Parsons School of Design.

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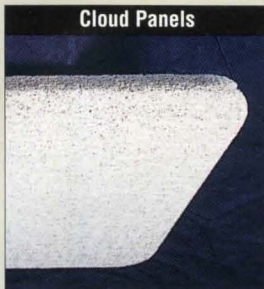
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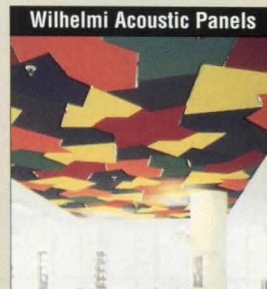
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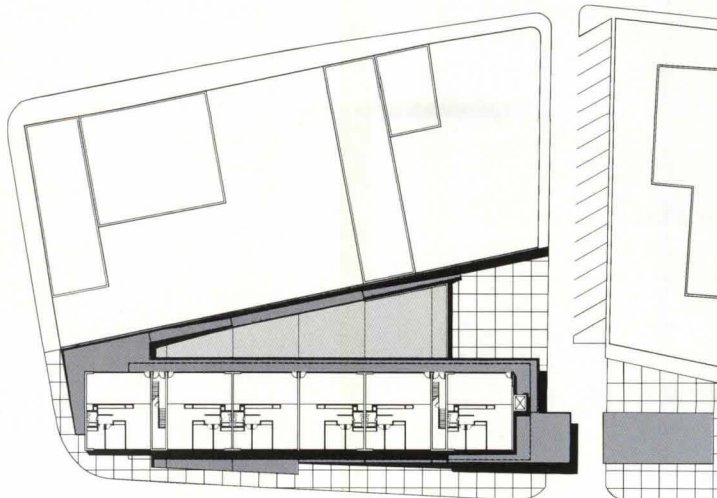
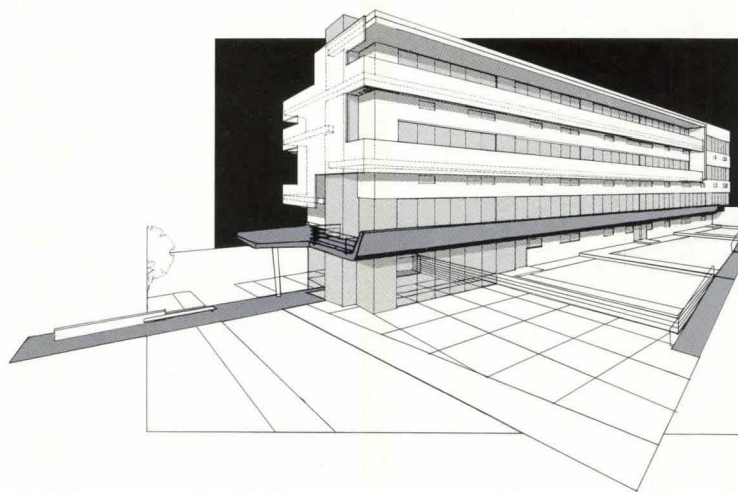
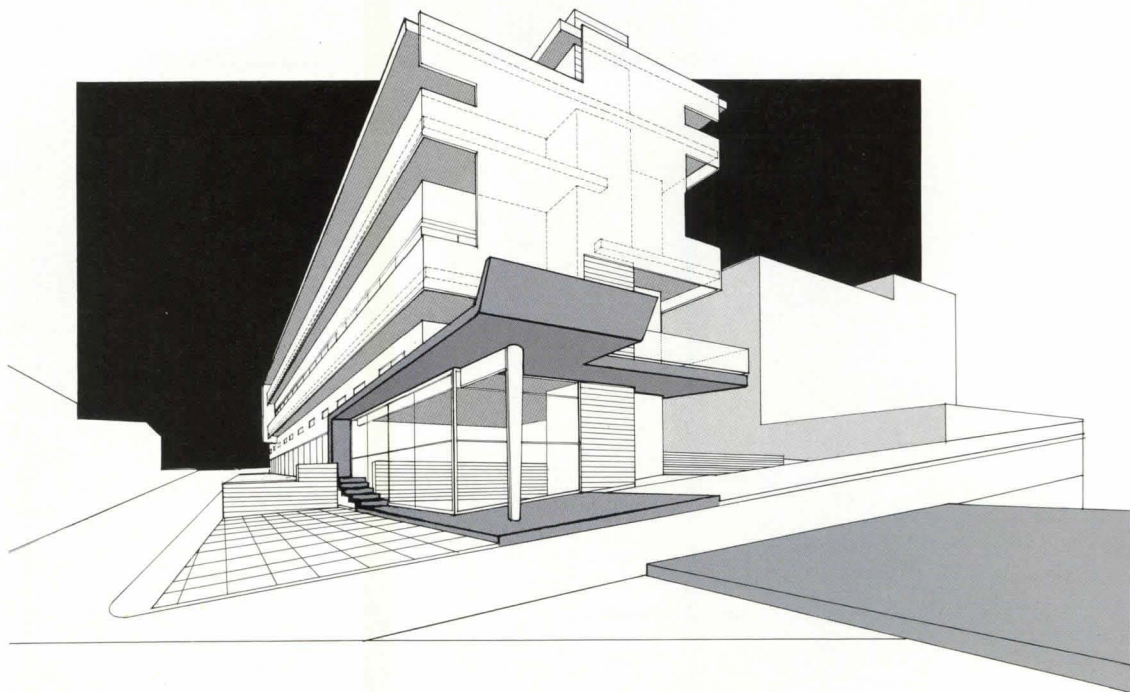
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**Artists' Live/Work Housing**  
**Peekskill, New York**  
**Joel Sanders, Architect**

Nearly three years after New York-based architect Joel Sanders won a *Progressive Architecture* Award for his Artists' Live/Work Housing project in Peekskill, New York, a revised version breaks ground next spring. In Sanders's new scheme, 30 units of combined studio and living space occupy a bar-shaped building on the south side of a major street that runs uphill from the Hudson River toward downtown Peekskill. A sloping, wedge-shaped plaza lies on the other side of the building, providing an outdoor gathering space for the resident artists.

Each apartment, reached by an external corridor, spans the full width of the building, with studio space located on one side and living space on the other. North-facing studios on the ground floor enliven the streetscape; the orientation of studios and living spaces alternates from floor to floor on the upper levels.

A lobby and community gallery occupy the west end of the ground floor; translucent polycarbonate panels wrapping the access corridors merge on the west facade above the gallery-cum-lobby to form a large screen, visible from the street and nearby freeway, on which videos and slides will be projected—*N.C.*

## On the Boards



**Fremont Public Association  
Miller/Hull, Architect  
Seattle, Washington**

Community service is gaining a prominent, if controversial, new face in Seattle's Wallingford district with local architect Miller/Hull's design for the Fremont Public Asso-

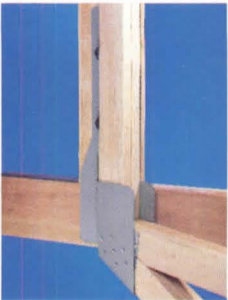
ciation (FPA). Plans to consolidate the 22-year-old nonprofit organization's food, shelter, counseling, and healthcare services, which are currently scattered throughout Seattle, have fueled a classic case of NIMBY-ism—Not In My Back Yard syndrome—in this commercial and residential neighborhood to the



north of downtown. However, records kept on visitors to the FPA's existing food bank reveal that the majority of people in need of its services reside in this area, explains project architect Steven Tatge. Despite community skepticism, the association is proceeding with plans to construct the \$2.8 million facility,

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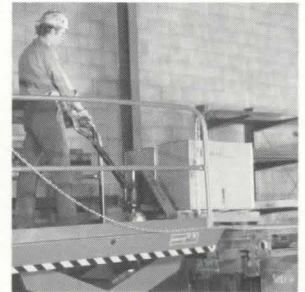
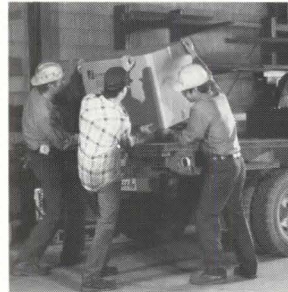
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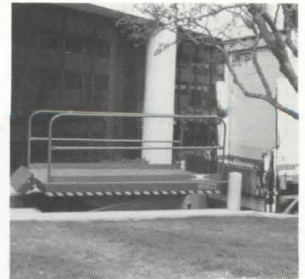
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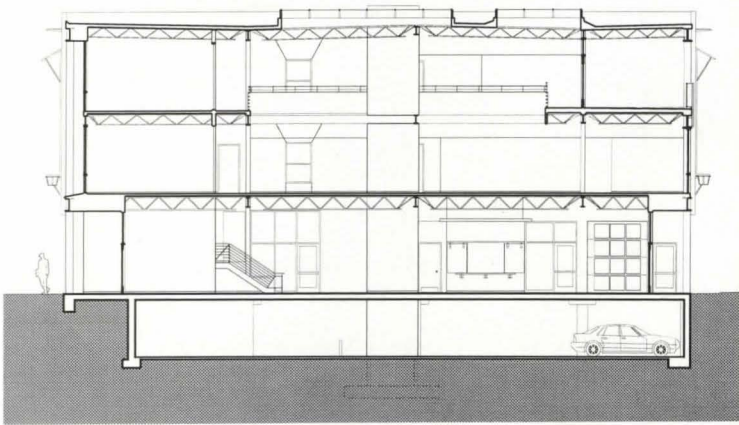


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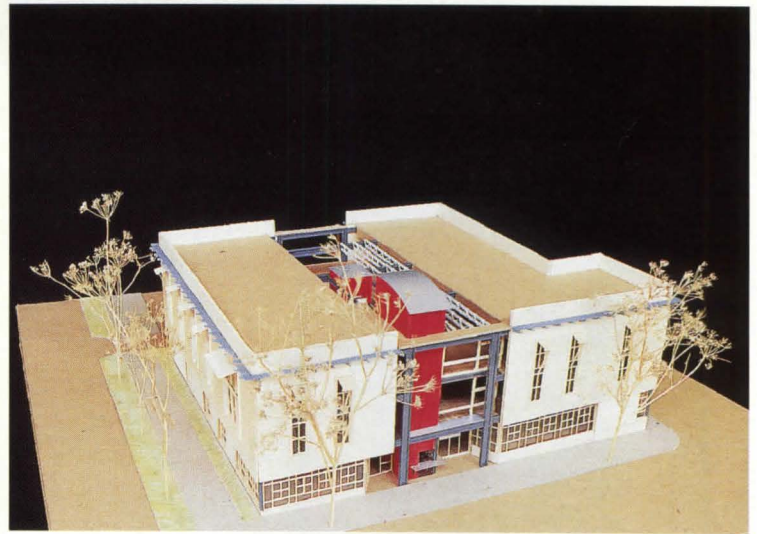


which is scheduled for completion in the summer of 1997.

Rejecting stereotypical institutional models, Miller/Hull designed an open, light-filled facility centered on a pedestrian passageway and gallery that bisects the three-story volume. This glass-clad atrium, incorporating a stuccoed stair tower,

is framed in steel and draws daylight into the center's upper floors.

The ground level, recalling a typical street-level storefront, will contain a public library, food bank, and meeting space in addition to the art gallery. Inspired by Pike Place, Seattle's waterfront open-air market place, Miller/Hull has organized the

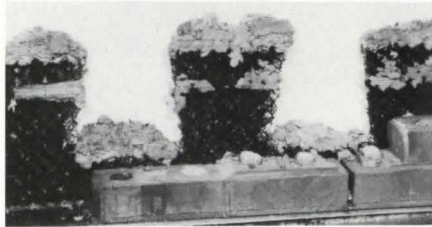


food bank's layout to allow people to select their own items rather than approach a sterile counter where provisions change hands in prepackaged paper bags.

The upper floors of the 30,000-square-foot facility will contain meeting rooms, offices, and specialty centers for family and em-

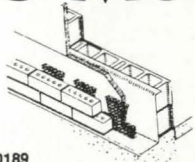
ployment services and in-home assistance for the elderly and disabled. These floors are clad in fiber-cement siding that resembles wood to blend in with the two- and three-story commercial buildings found in the area. Expansive double-hung windows capped by canvas awnings assist natural ventilation.—A.C.S.

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*A vast, windowless mall may help Norfolk's economy—but will hurt its downtown.*



**MACARTHUR CENTER:** Schematic of mall, still to be approved, offers few entrances or windows. Revised facades are under study.

## Downtown Norfolk Gets Malled

The prevailing fascination with re-creating urban density in America's suburbs is countered by the city of Norfolk, Virginia, which proposes to inject suburbia into its downtown. The city has aggressively courted the Taubman Company to create an inverted, \$300 million shopping mall (\$100 million from local taxpayers). When completed in 1998, this 22-acre complex will cover roughly one-fifth of Norfolk's central business district.

The MacArthur Center mall shows little promise of enhancing its immediate architectural surroundings, much less recognizing them. Instead, it sidles up to its neighbors like an overeater at a cheap buffet.

Designed by four teams of architects working with consultant Ray Gindroz of Pittsburgh's Urban De-

sign Associates, the project encompasses two vast parking garages and 1.2 million square feet of retail space. Bounded by City Hall, Monticello, and Freemason avenues, the fortresslike, 60-foot-tall structure dwarfs its site as well as several neighboring historic houses.

Preliminary schematics (above) reveal a tall, blank block of stucco at the intersection of Monticello and City Hall avenues, a site that once gave life to the teeming city market. The majority of the mall's periphery offers no streetside store entrances, no windows, no place to stand protected from rain. An entrance tower beckons pedestrians to a paved walkway through the southern parking garage, which ironically presents its huge flank to one of Norfolk's finer buildings and the mall's namesake, the MacArthur Memorial.

Though the City of Norfolk and the Norfolk Redevelopment and

Housing Authority insist the building is a "work in progress," these features are unlikely to change. The city is intensely committed to the development and has limited public comment at all presentations since controversy erupted over the project.

When city officials asked the local AIA chapter to sponsor an August meeting on the project, they disallowed discussion of design alternatives. And, oddly, a member of the Norfolk Design Review Commission recently defended the building on purely economic, rather than design, merit. If MacArthur Center's only purpose were to balance its own financial obligations, its planning and design indignities might be overlooked. But even shopping malls have civic responsibilities. Norfolk deserves better.—Patrick Masterson

*Architect Patrick Masterson is president of AIA Hampton Roads.*

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## Save Architecture in Our National Parks

*Without more federal support, our country's most important historic sites will be lost.*



**ENDANGERED LANDMARK:** Now closed, Granite Park Chalet (1914) in Glacier National Park faces uncertain future.

Lured by picture-postcard images indelibly etched on the American mind, millions of vacationers throng our national parks every year. These unspoiled enclaves have been called “the best idea America ever had,” and judging by the constantly growing volume of visitors, everybody loves them. The parks are the envy of the world and this nation’s greatest treasure, encompassing some of the most precious elements of our heritage. Sadly, they are also testament to the erosion of our resolve to keep that heritage alive.

The national park system is much more than geysers, giant redwoods, and grizzly bears. The scenic magnificence of parks such as Yosemite, Yellowstone, and the Everglades often obscures the fact that more than half of the 368 units in the park system are historic sites—places such as Independence Hall, Fort Sumter, and the homes of Harry Truman and Teddy Roosevelt. Moreover, many parks known primarily for their natural beauty are also dotted with significant build-

ings. The National Park Service (NPS) is responsible for more than 20,000 historic structures. Today, many of these structures—the brick-and-board evidence of America’s history—are in very real peril.

The crisis is rooted in two factors: inadequate government funding and wrong-headed policies on the part of some park officials. The annual budget for the parks (adjusted for inflation) has dwindled by \$202 million since 1983, while the number of visitors has increased by almost 70 million in the same period. In this context of declining funding, the preservation of historic structures in the NPS’s care must compete with legitimate and ever-increasing demands for wildlife protection, trail maintenance, employee housing, and law enforcement.

Despite its generally praiseworthy record of good stewardship over the years, the NPS currently faces an estimated backlog of \$470 million in rehabilitation and restoration of historic structures and cultural landscapes,



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# Opinion

plus an additional \$237 million in scheduled inspections, stabilization, and maintenance.

Consider the plight of a few historic federal sites in the Northeast. In New York, Hamilton Grange, Alexander Hamilton's once-elegant home on Manhattan's Upper West Side, is so badly deteriorated that visitors are no longer allowed inside. The splendid restoration of Ellis Island's grand Main Building camouflages the sorry conditions that prevail elsewhere on the island, where more than a score of historic buildings have stood vacant for years and are literally falling apart. At Thomas Edison's "Invention Factory" in West Orange, New Jersey, last year's appropriation of \$1 million is far short of the amount needed to restore the buildings and conserve the priceless collection of artifacts.

Conditions are equally grim in the scenic wonderlands of the West. Though best known for its alpine vistas, Montana's Glacier National Park is also home to more than 300 historic structures. Among them are the Sperry and Granite Park chalets, built by the Great Northern Railway early in this century, and the famous, more luxurious Many Glacier Hotel (1914). These handsome buildings were pivotal elements in the Great Northern's "See America First" campaign to lure vacationers to the "American Alps"—but their architectural and historical significance alone can't save them. The two remaining chalets, the last survivors of the original nine, were closed to the public in 1992 out of concern for environmental and visitor safety; their uncertain future led the National Trust to include the chalets on this year's "America's 11 Most Endangered Historic Places" list. The Many Glacier Hotel, while still in service, could share the same fate unless extensive structural repairs are made. The cost of restoring these three buildings alone is estimated to be in the millions of dollars.

The alarming situation at Glacier represents only the tip of a very big iceberg. The NPS's Western Regional Office is responsible for a vast array of 5,000 historic structures, ranging from world-famous attractions such



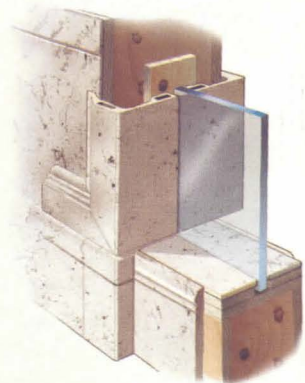
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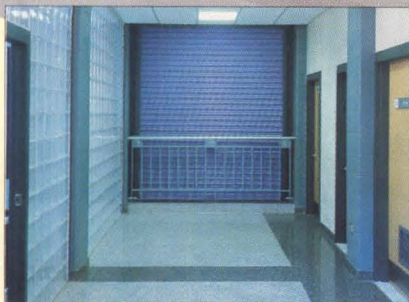


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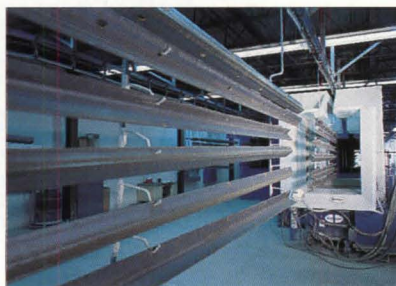
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## Opinion

as Alcatraz to lesser-known gems such as the partially ruined 19th-century mission of San Jose de Tumacacori in Arizona. To care for landmarks across a region sprawling from the slopes of the Rockies to American Samoa, the Western office has a grossly inadequate annual preservation budget of \$1.5 million.

But money isn't the only issue. Elsewhere in the system, preservation is hampered by an outright bias against historic structures on the part of some park administrators. The National Park Organic Act of 1916 states clearly that a fundamental purpose of the NPS is "to conserve the historic objects" in its care. Despite this, too many officials mistakenly believe that historic structures somehow interfere with the "true mission" of the parks.

In recent years, proposals to demolish or diminish the role of historic structures have been advanced in several parks. In 1993, at Rocky Mountain National Park in Colorado, a former superintendent was narrowly prevented from razing the McGraw Ranch, an evocative site that illustrates the history of ranching in the Estes Valley from the 1870s to the 1930s. The stated reason for the proposed demolition: a lack of funds to preserve and maintain the buildings and a desire to expand habitat for the park's elk population.

Right now in Tennessee's Great Smoky Mountains, more than 60 early 20th-century buildings that make up the Elkmont Historic District (listed on the National Register of Historic Places) are purposely being allowed to deteriorate so that parkland can return to a so-called natural state. Similar threats to historic buildings have cropped up in parks from Grand Teton in Wyoming to Cumberland Island on the Georgia coast.

Does this double whammy of underfunding and misguided policy spell doom for the parks and historic structures they contain? No, but saving them will entail fundamental changes in the way they are used, cared for, and administered. The recent outpouring of private-sector financial support and volunteer labor to help restore the flood-damaged C&O Canal National Historical Park in Washing-



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ton, D.C., and Maryland clearly indicates the public's willingness to assume a hands-on role in the preservation and careful stewardship of nationally significant resources.

Current fiscal realities require that the private sector be asked to provide more financial support for the parks through increased admission fees and more realistic contractual agreements with concessionaires. The Clinton Administration has called for a study of innovative ways—including partnerships with private-sector individuals and the business community—to bring new capital into the parks. Congress is considering bills that would allow parks to increase their entrance fees (some of which, astonishingly, have not risen since the NPS was created in 1916) and that would expand the role of the private-sector National Park Foundation in establishing carefully regulated corporate sponsorships of park facilities and activities. Focusing attention on the parks is laudable, but an important point must be kept in mind: Whatever funding mechanisms are employed, it is imperative that the needs of historic resources be addressed on an equal footing with demands for protection of natural resources, trail maintenance, and wildlife habitats.

It boils down to this: What is needed is a dedicated fund for the maintenance of historic structures in the national park system. In the absence of such a fund, important historic resources will continue to be lost or remain endangered. This sends a very disturbing message: What is our heritage worth? How can a nation say it values its heritage if it puts no resources into preserving it?

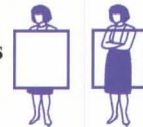
Once historic resources are gone, they're lost forever. Now, before it's too late, is the time for all of us—especially architects—to let it be known that the cultural heritage embodied in our national parks is worth whatever it takes to save it. What's at stake here, after all, is not just bricks and mortar, but a part of the American soul.—*Richard Moe*

*Richard Moe is president of the National Trust for Historic Preservation.*

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**3M Innovation**

Even by the rollicking standards of Japan's exuberant "bubble" era, it was an amazingly audacious idea: to erect Notre Dame Cathedral in a vacant lot on the west side of Tokyo. No, the Japanese didn't ship the actual structure east from its island in the Seine. Instead, the Tokyo municipal government com-

# J A P A N

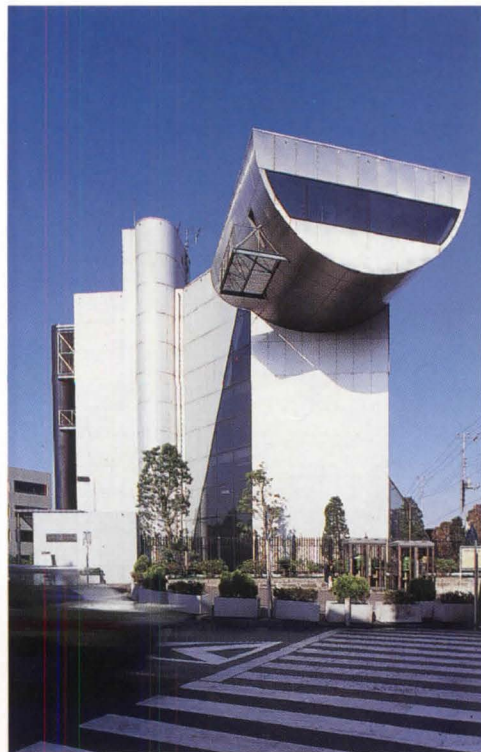
AS THE SUN SETS ON THE LAVISH BUBBLE ERA, WHAT DOES THE FUTURE HOLD FOR ARCHITECTURE IN JAPAN?

missioned Kenzo Tange, the patriarch of postwar Japanese architecture, to design the new Tokyo City Hall.

Tange conceived the building as a massive urban cathedral styled on Notre Dame, complete with twin bell towers 797 feet tall and modern-day flying buttresses connecting the mayor's office to the city council chamber. When this stupendous edifice was completed in 1991, it was the tallest building in the Japanese archipelago.

The city hall was also precisely what Tokyo's establishment had wanted Tange to create: a proud, soaring symbol of the economic might of the world's newest financial superpower.

To the distress of Tange and his political patron, Tokyo Governor Shunichi Suzuki, however, the huge new monument sparked huge controversy. Citizens derided the billion-dollar structure as *takusu towab*—that is, “tax tower”—and critics complained (accurately) that this hall of the people had been built at superhuman scale. When Toho Studios brought out the 1991 version of its annual *Godzilla* movie, the flame-breathing dinosaur was shown stomping through West Tokyo and trashing Tange's masterwork.



CENTENNIAL HALL: Shinohara's campus landmark (1987).

Audiences roared their approval, and that one scene made *Godzilla vs. King Ghidra* a monster hit, so to speak, at the box office.

Tange's design for Tokyo's city hall was a product of its era—Japan's free-spending, sky's-the-limit period in the 1980s known as the bubble. But by the time the giant building could be constructed, the bubble had burst, causing major changes in the economy, the national psyche, and the Japanese people's idea of what architecture should be.

Japan's economic bubble, roughly spanning the years from 1983 to 1991, marked the payoff for the decades of steady investment, long-range planning, and sheer hard work by the Japanese to rebuild their shat-

tered nation after World War II. Attracted by handsome design and high quality, consumers around the world were literally lining up to buy Japanese cars, cameras, computers, and cassette players. Money poured into Japanese banks, not only from these export sales, but also from domestic customers, for Japanese workers maintained their high savings rate even as wages soared.

By the late 1980s, Tokyo's new financial muscle was being felt around the world. Japan was the home of 14 of the world's 15 biggest banks. It became the world's biggest creditor nation and the largest donor of foreign aid. Americans were shocked when Japanese investors started buying famous U.S.



COLLEZIONE: Ando's ode to shopping (1989).



MAKUHARI MESSE: Maki's convention center (1989).

assets, but gradually came to live with the fact that such national icons as 7-Eleven, Firestone Tire, Rockefeller Center, and about half of Hollywood's studios were Japanese property. When U.S. veterans of World War II gathered in Honolulu in 1991 to mark the 50th anniversary of Pearl Harbor Day, they found, to their consternation, that they had to stay in Japanese-owned hotels.

This expanding froth of money created a golden age for architecture. Not only Tokyo and Osaka, but towns and villages all over Japan built ambitious new municipal gymnasiums, libraries, hospitals, museums, and concert halls. Typical was the city of Mito, capital of a rice- and soybean-growing prefec-

ture about a hour's drive north of Tokyo. Through taxes, bonds, national government grants and local donations, this city of 235,000 came up with \$100 million to build an arts center, and gave the commission to Arata Isozaki. The resulting Art Tower Mito (1990) combines a small concert hall with a gallery and classrooms. The clean, Modern lines of the building, reminiscent of Isozaki's Museum of Contemporary Art in Los Angeles, are dramatically set off by a 300-foot tower of gleaming cubes balanced atop one another like a helix of DNA.

In the big cities, major companies scrambled to get choice pieces of land and sign up the best-known architects for splashy new



TOKYO CITY HALL: Tange's municipal cathedral (1991).

hotels and headquarters. There was fierce competition to be the biggest and the best. Within a few months after Tange's city hall laid claim to the title of Japan's tallest building, it was surpassed by the Landmark Tower, a 70-story hotel on the bay in Yokohama.

Some of the most visible commissions during this period went to foreign architects, the result of a lingering sense of inferiority toward the West that dates back to Japan's defeat in World War II. When Asahi Beer's invention of “Super Dry” beer brought a dramatic spike in profits, the firm hired Philippe Starck to build a new corporate headquarters on the site of its traditional Tokyo brewery in the ancient temple district of Asakusa.

The 1989 Asahi Biru Honsha (sometimes called “Super Dry Hall”) is big and playful. On its roof sits a black granite cube topped with a golden curving blob that Starck calls the “Flamme d’Or.” The guides in the building’s lobby say it represents not a flame but a golden drop of beer. (Others claim it resembles something yellow a large dog might leave behind on the sidewalk.)

British designer Nigel Coates was also awarded many Japanese commissions in the 1980s, including a fancy Italian restaurant on a corner lot in the trendy neighborhood of Hiroo. Since expensive French and Italian dinners were *de rigueur* for dating couples during the bubble, Coates’s mission was to

mood to stop and admire the architecture.

One of most impressive efforts to import architects of international renown was in Fukuoka, on Japan’s southwestern island of Kyushu. The condominium towers designed by Michael Graves and Stanley Tigerman (1989) were joined in the early 1990s by housing by Mark Mack, Steven Holl, Rem Koolhaas, Oscar Tusquets, and Christian de Portzamparc. Fukuoka Jisho, the enlightened developer of the project, worked with Arata Isozaki to choose the international architects.

The Japanese built several new airports during the bubble, and the biggest commission of the lot went to Renzo Piano. His Kansai International Airport (1994), on an

high-quality architecture to revitalize urban and suburban development has been under way since 1988. Advised by Arata Isozaki, the program, called Kumamoto Artpolis, has built some 50 innovative structures, including housing, museums, and community centers, which are designed largely by Japanese architects both well known and unknown.

Tange’s student Tadao Ando satisfied the bubble era’s yen for the monumental with his huge polished-wood Japanese pavilion at the Seville World’s Fair (1992), one of the most successful structures at the exhibition. Ando also created a series of stunning Christian chapels during the bubble years. They did not indicate a surge of religious conversion



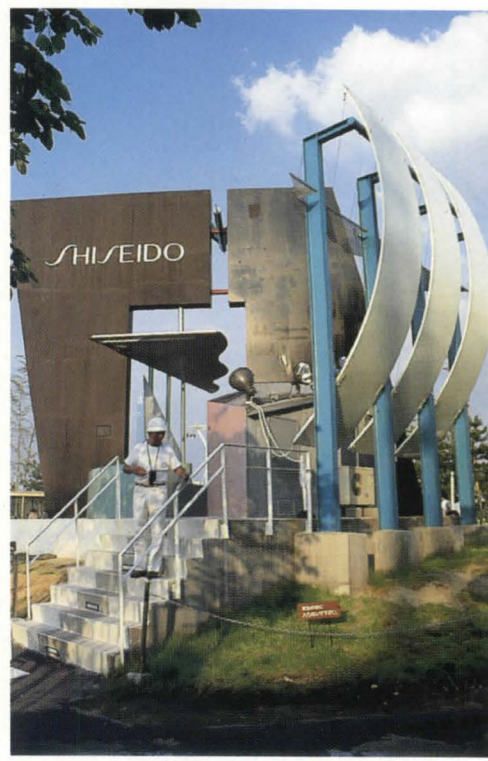
ART TOWER MITO: Isosaki’s sculptural DNA helix (1990).



FUJI TELEVISION: Futuristic orb by Kenzo Tange (1997).



BIG SIGHT: Convention center on landfill (1996).



SHISEIDO PAVILION: Hajime Yatsuka’s Osaka folly (1990).

set his establishment apart. He did it by creating an instant ruin—a massive brick wall, shattered and cracked, with a half-scaffolding on the front as if to hold up the structure. The arresting design of *The Wall* (1990), however, did not save the restaurant from bankruptcy, and Coates’s structure currently houses a singles bar called *The Drug Store*.

Richard Rogers’s *Kabukicho Building* (1993) is an attractive, angular office building, but one almost nobody sees. It stands on a corner in the Kabuki-cho neighborhood in Shinjuku famous for “soaplands”—brothels built around a bath motif. The street gets most of its business after midnight, and the folks who walk by are generally not in the

artificial island off Osaka, has an open, casual feeling that belies its vastness; at 1.7 kilometers, it is the longest building in history. It is also one of the easiest international airports for passengers to navigate.

Despite this rash of foreign-designed buildings, many major commissions of the era were entrusted to Japanese architects. Fumihiko Maki’s projects in this period ranged from compact shopping marts such as the *Spiral Building* (1985), an infill building in Tokyo’s trendy boutique neighborhood of Aoyama, to the giant convention center, *Makuhari Messe* (1989), with a low-slung dome.

In Kumamoto Prefecture in southwest Kyushu, a government program to construct

in a country that remains less than 1 percent Christian. Rather, these pseudo-churches were constructed in response to bubble fashion: a Christian wedding, complete with flowing white gown and march down the aisle, became (and still is) the rage among trendy young workers. Ando’s remarkable *Church on the Water* (1989), with mahogany pews lined up before a cross rising from a small lake, stands at the base of the gondola at the Tomamu Ski Resort in Hokkaido, a convenience that lets busy couples schedule their weddings and skiing honeymoons without the need for intervening travel.

Convenience, fashion, and damn-the-expense were the watchwords of the giddy

bubble years. Everybody seemed to have money, and prices went through the roof; the bubble was the heyday of the \$100 honeydew melon, the \$300 greens fee for a round of golf, the \$300 steak dinner (soup and salad, extra charge). A tony brasserie in the famous Ginza shopping district offered a single cup of coffee—the menu called it “L’Histoire Romantique”—for \$60. The coffee came laced with sherry and thick whipped cream, and customers got to take the cup and saucer home in a fancy box. But it was still \$60 for a cup of coffee, and it became the symbol of the bubble’s wretched excess.

It couldn’t last, of course. Yet Japan was still shocked at how fast the bubble burst in

Corporate “downsizing” is not socially acceptable in a nation of lifetime loyalties. Thus, people still have their jobs, and they still have big savings deposits. The average Japanese still has enough to dress nicely and buy a new car every few years. But items like “L’Histoire Romantique” have disappeared from the menus, and the \$2 cup of coffee at “Misutah Donahtsu” (Mister Donut) has become the nation’s favorite because this American chain actually offers a free refill, something unheard of in the bubble days.

The end of the bubble has also meant the end of architect’s heaven, the era of lucrative commissions. Like Tange’s enormous city hall, the lavish buildings that came out of the

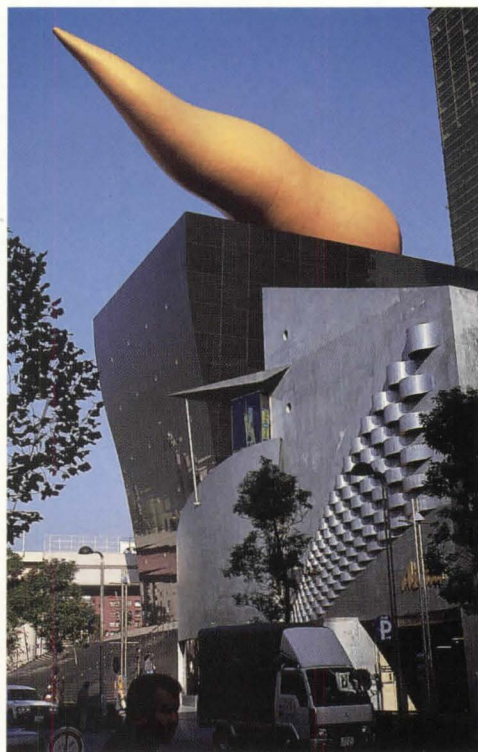
York-based architect Rafael Viñoly in 1989.

Viñoly was given a massive space in which to design, and he filled it massively with the Tokyo International Forum. The complex consists of two enormous granite-clad structures, so big and stark that the building feels as if the world’s two biggest aircraft carriers sailed in and dropped anchor in the heart of Tokyo’s financial district. The Forum’s looming gray walls pose an unfriendly face to the neighbors, and the mood is not softened by the granite plaza festooned with signs telling people what they cannot do: “No public gatherings.” “No vending.” “No bikes.” “No balls.” “No roller blades.” “No sleeping.”

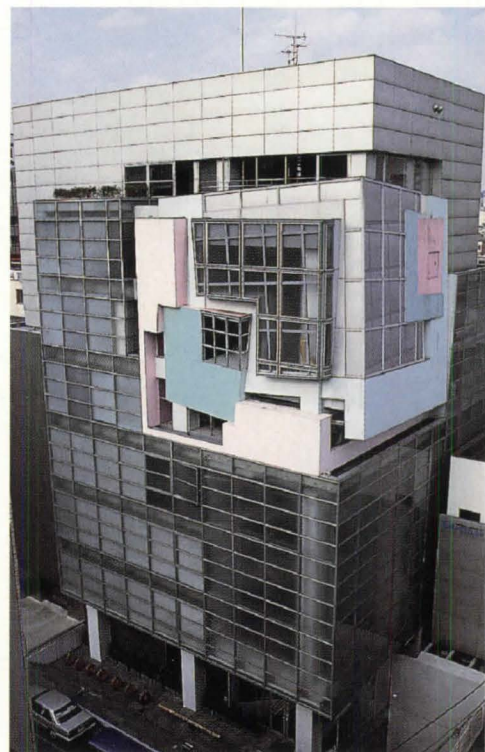
Since the complex isn’t open to the public



LANDMARK TOWER: Stubbins Associates’ Yokohama icon.



ASAHI BEER: Philippe Starck’s golden flame (1989).



KOIZUMI SHOWROOM: Eisenman’s seismic shock (1990).

1991. On the Tokyo stock exchange, the Nikkei average had quadrupled in value, to a high of 38,000 yen in 1989; within two years, it had fallen to less than half that level. Land prices, which had been escalating 20 to 30 percent per year in the late 1980s, took a sickening plunge with the new decade, and are still falling about 15 percent each year. Real estate values went down and further down, creating a severe banking crisis that dried up investment capital. Japan plunged from that ever-expanding bubble into five years of recession—the worst economic times since the end of World War II.

For all the bad news, visitors to Japan in the 1990s have not found a country in ruins.

bubble era are now viewed as somewhat unseemly—the common adjective is “bubbly,” which today connotes something overly big and expensive, such as the Tokyo International Forum (pages 110-135), a \$1.65 billion, 145,076-square-meter complex.

When Tange’s new town hall moved west out of the Marunouchi (meaning “inside the circle”) district, the remaining powers—including officers at the headquarters of 10 of the world’s 12 largest banks—were angry. As a political pay-off to the moneyed and powerful interests remaining in the district, the Tokyo metropolitan government held a competition for a new conference and performing arts center, which was won by New

yet, people nearby don’t seem to have much of a feeling for the buildings except their size. “Man, that baby is enormous,” says Atsuko Ariyoshi, an “office lady” who works in a bank down the street. “At first I thought it was a prison or something, but nobody would put that in this neighborhood.”

The post-bubble downturn has also caused a dearth of major new building projects. Worst of all, some projects have been canceled in the midst of construction. The most famous victim is the so-called Teleport Town, a multi-billion-dollar new town in the heart of Tokyo that was supposed to provide office, hotel, and shopping space plus residences for 63,000 on a strip of reclaimed

land where the Sumida River empties into Tokyo Bay. If this mega-development had gone according to plan, it would right now be hosting the 1996 World City Expo.

But in last year's election for governor of Tokyo, one dark-horse candidate repeatedly blasted the project as an example of "bubble era waste"—and won the election on the strength of this issue. When Governor Yukio Aoshima took office last spring, his first major act was to cancel the Expo and stop further construction at the site.

Today, the Teleport project is half shining new city—with a hotel, highways, and a modern, sleek elevated railroad completed—half ghost town, in which streets lead to abrupt

Center, a 230,000-square-meter conference center designed by Sato Architectural Office, supplanting the existing facility in the suburb of Harumi. Even in its incomplete state, Teleport stands over Tokyo Bay like a seminar on the possibilities of large-scale public architecture. The ambitious, innovative buildings are awesome in the literal sense: weekend crowds strolling the nearby beach and shopping district are constantly stopping to gaze up in awe at the structures around them. At night, the lights of Teleport glisten beneath the graceful slope of Tokyo Bay's newest bridge, "Rainbow Bridge." The interruption of this vast project has been deplored by the business establishment, but among

also means that some of the nicest recent architecture in Japan is almost minute in scale. Police departments in Tokyo and other cities have commissioned well-known architects to design the *koban*, or police box, found near almost every major train station and intersection in Japan. Each *koban* is basically a tiny local police precinct—traditionally an ugly hut of gray concrete—with one or two officers on duty. Today, appealing new *koban* are appearing all over the country.

In Kumamoto, one of the latest Artpolis projects is a *koban* completed in 1995 by Kiwako Kamo and Manuel Tardits of Célavi Associates, a team of young Tokyo architects. The 647-square-meter site had to accommo-



THE WALL: Nigel Coates's instant ruin (1990).



CENTURY TOWER: High-rise by Norman Foster (1991).



TOKYO TELECOM: HOK's Telecom Center (1996).

dead ends where construction stopped. The emphasis, in the design stage, was on urban planning and environmentally friendly infrastructure: for example, a network of underground tunnels allows garbage to travel in a vacuum system linked to offices and apartments; energy-generating incinerators will power air-conditioning units.

Teleport's buildings include Kenzo Tange's amazing, sphere-balancing broadcast headquarters for Fuji Television (scheduled to open in April 1997); HOK's Tokyo Telecom Center, a 158,000-square-meter telecommunications headquarters for Nihon Telephone and Telegraph, completed in February; and the Tokyo Big Sight International Exhibition

voters, Governor Aoshima ranks as one of the country's most popular government officials. The lesson is hardly lost on other Japanese politicians.

Architecture in Japan has become a more modest endeavor than it was during the rambunctious bubble years. The great corporate headquarters and glitzy concert halls that marked the late 1980s and early 1990s have given way to smaller, less ostentatious projects. Younger architects such as Shigeru Ban (pages 104-109) have introduced socially conscious agendas and volunteerism to the Japanese, such as temporary housing for refugees in earthquake-recovering Kobe.

The lack of funds for blockbuster projects

date both a lot for impounded cars and a police box, which the architects sited on a street corner. The spare, concrete building presents a friendly face to the pedestrian, with gold "egg" and "whale" sculptures in the forecourt, and a sheltering portholed volume that just happens to coincide with a bus stop. This spry structure is small enough to fit inside the lobby of a bubble-era hotel—but its amicable public gesture suggests that architects still have something worthwhile to say in post-bubble Japan.—*T.R. Reid*

*T.R. Reid is a foreign correspondent for The Washington Post and was Tokyo bureau chief from 1990 to 1995.*

The uncompromising order running through Yoshio Taniguchi's architecture is so strong that it seems to assume greater substance than the people who occupy his buildings. It is impossible to inhabit this Japanese architect's designs and not consider the power of rhythm and proportion. The lines of a three-dimensional gridwork seem to radiate through one's body.

This approach is certainly a result of the period when Taniguchi came of age. Born in 1937, the son of the influential architect Yoshiro Taniguchi first received an engineering degree from Tokyo's prestigious Keio University in 1960, then immediately entered Harvard's Graduate School of Design to study architecture. During the years of his American studies, Taniguchi was deeply affected by the 1960s debates over proportion and structuralism. He also worked briefly for Walter Gropius, which architect Fumihiko Maki claims led Taniguchi to adopt the Modernist order of the postwar period with a Germanic rigor.

The architect's work is one of exacting compositional strategies that seem almost academic. His designs address geometric play, polar juxtaposition and contrast in materials and organization, rhythmic use of simple vocabularies of columns and planes, and legible proportional systems. In his early work, this approach is pronounced: the Shiseido Art Museum, for example, is organized as two buildings connected at the corner: one is square in plan with a circular courtyard, and one is circular in plan with a square courtyard. Today, through tight control of the design process and extensive research into materials, he creates a textured, sensual architecture that exhibits greater subtlety and a sensitivity to finishes, as can be seen in his juxtaposition of glossy, bright surfaces and dark, split-faced slate in the Toyota Municipal Museum of Art.

Blending material sensibility with a rational order was a hallmark of postwar Japanese Modernism, and Taniguchi had an opportunity to closely observe its master, Kenzo Tange. In 1964, Taniguchi graduated from Harvard and entered Tange's graduate studio at Tokyo University; he also began working in Tange's office at its peak—the year Tange completed two of his finest works, the Tokyo

Olympic Complex and Saint Mary's Cathedral. The younger architect's strategy closely resembles his mentor's early, best work: Taniguchi enriches his designs through collaboration and chooses projects with an eye toward their cultural significance.

Taniguchi stimulates his work through collaborations with artists and landscape designers, just as Tange worked closely with Isamu Noguchi through the mid-1960s. He has successfully teamed up with American landscape architect Peter Walker in designing the Toyota Municipal Museum and the IBM Japan Makuhari Technical Center, and has worked with the tea master Hiroshi Teshigahara and with other, less well known, Japanese artists. Notably, Taniguchi has in-

of Art (1995). Currently, he is designing the Tokyo National Museum's Gallery of Horyuji Treasures, to be completed in 1998.

Although many Japanese architects have designed regional museums, Taniguchi's ability to elevate these small buildings into significant cultural statements and successful public spaces is acknowledged in the Gallery of Horyuji Treasures commission, awarded through a major invited competition. The Horyuji complex of Nara Prefecture, begun in the sixth century and rebuilt in the seventh, is Japan's oldest and most important Buddhist site. The artifacts alone will make this museum internationally significant. For architects, the location—Tokyo's Ueno Park—also has special resonance. Taniguchi's building will take its place among those by Le Corbusier and by Tange's mentor and chief rival, Kunio Maekawa.

While the National Museum will cement Taniguchi's reputation as one of Japan's leading architects, Tokyo Sea Life Park led local architects to recognize that he is now among the country's best designers. The skillful way in which Taniguchi manipulated the landscape of this site to establish a series of horizontal planes merging with the sea, and the dramatic beauty of the entry pavilion, make this park one of Tokyo's most popular spots.

Why is Taniguchi's work not better known outside Japan? The architect has, after all, been in independent practice since 1975, but to maintain a high degree of control over the design and construction processes, he keeps his office relatively small, never more than a dozen people.

He is also one of the most reticent architects in Japan. The limited number of buildings his firm has taken on in any given year and his reluctance to take time away from practice for promotional activities diminishes the information available on his designs. Recently, however, *Japan Architect* covered his major works in a special issue, and a Japanese-language monograph was released last month.

For those beyond Japan's shores, Yoshio Taniguchi will not remain unknown for long. Yet to truly comprehend the spatial and compositional potency of Taniguchi's architecture requires that one stand in the web he draws and experience the power of his ordered landscape.—Dana Buntrrock

## YOSHIO TANIGUCHI MASTER OF MINIMALISM



ABOVE: Taniguchi's octagonal entry pavilion at Sea Life Park Aquarium (left) contrasts with his sail-like structures marking shoreline of Tokyo Bay.  
FACING PAGE: Aluminum panels and steel mullions of Kasai Rinkai Viewpoint Visitors Center's curtain wall demonstrate Taniguchi's nested proportional systems.

visited the artist Genichiro Inokuma to contribute murals for key public spaces—in the IBM building and his highly regarded Marugame Museum of Contemporary Art—each reminiscent of Noguchi's mural in Tange's first Tokyo City Hall.

Like Tange during the postwar era of Japanese reconstruction, Taniguchi concentrates his practice on regional institutional buildings, which offer opportunity for symbolic power. But while Tange focused on governmental centers, Taniguchi has had his greatest successes with local art museums. In this decade alone, he has completed the Higashiyama Kaii Gallery for the Nagano Prefectural Shinano Art Museum (1990), the Marugame Museum of Contemporary Art (1991), and the Toyota Municipal Museum



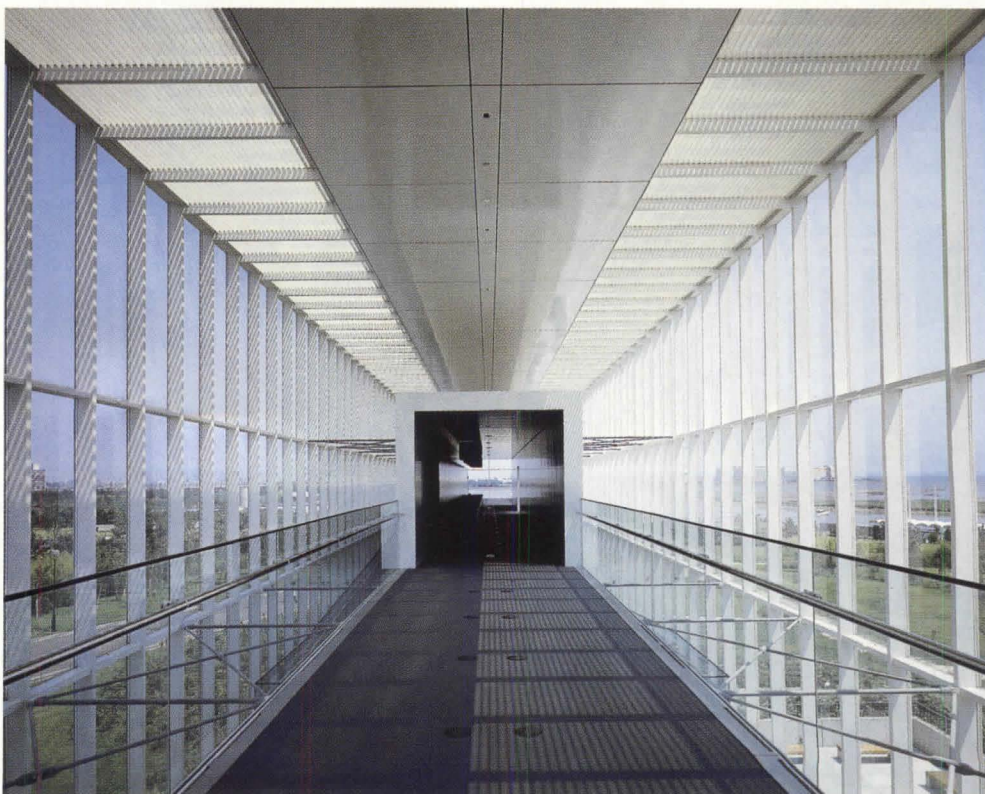
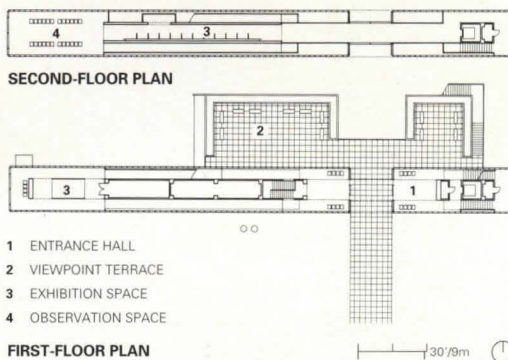


# VISITORS CENTER

Completed in 1995, the Kasai Rinkai Viewpoint Visitors Center in Tokyo sits on reclaimed land to the west of Taniguchi's Sea Life Park (1989). Unlike most new development along Tokyo Bay, these buildings were intended to celebrate and enhance the natural beauty of the shoreline. Water, mist, and sail-like constructions anchor Sea Life Park to its site, while the visitors center is little more than a frame. It is a folly-like structure more than 10 times as long as it is wide, in sharp contrast to the domed octagonal form of the architect's earlier aquarium. A highly transparent glass-and-steel wall and a slender floor plane further exaggerate the building's thinness. By uniting structure and curtain wall, Taniguchi renders columns unnecessary, allowing the building to remain uncluttered. Lateral forces are carried to the cores of the building by tie rods bracing the external frame at the upper floor.

The result is a delicate, precise building that acts as a gate where a popular park meets the sea. It is little more than a tightly controlled path that moves up stairs at the building's western end, then crosses and descends by way of a series of ramps. Surprisingly, despite the almost nonexistent program—above grade, little more is housed than five video screens and less than 30 linear feet of display panels—the structure is quite popular. Young couples come simply to sit or look out over the low, flat landscape. By contrast, the restaurant and souvenir shop below grade are almost empty.

As with much of Taniguchi's architecture, the visitors center exudes a floating quality through a cagelike structure of glass and vertical mullions, and through gridded tile walls and brushed ceilings that are clearly visible through the skin. The building responds to the weather and the nearby sea with a glowing luminosity or a brittle sparkle.



**PLANS:** Visitors center houses restaurant and gift shop in basement.  
**BELOW:** Air intake and exhaust are artistically addressed in minimalist composition of east elevation.  
**BOTTOM:** Tie rods brace frame at floor level of mezzanine; 50-by-100-millimeter steel mullions are structural.  
**FACING PAGE, TOP AND BOTTOM:** Concrete support area contrasts with transparent structure above; elevator core and enclosed video area are silhouetted against glazed cagelike frame.

DANA BUNTRICK

TOSHIHARU KITAHIMA



PHOTOGRAPH BY KOTAJIMA



PHOTOGRAPH BY KOTAJIMA

# TOYOTA MUNICIPAL MUSEUM OF ART

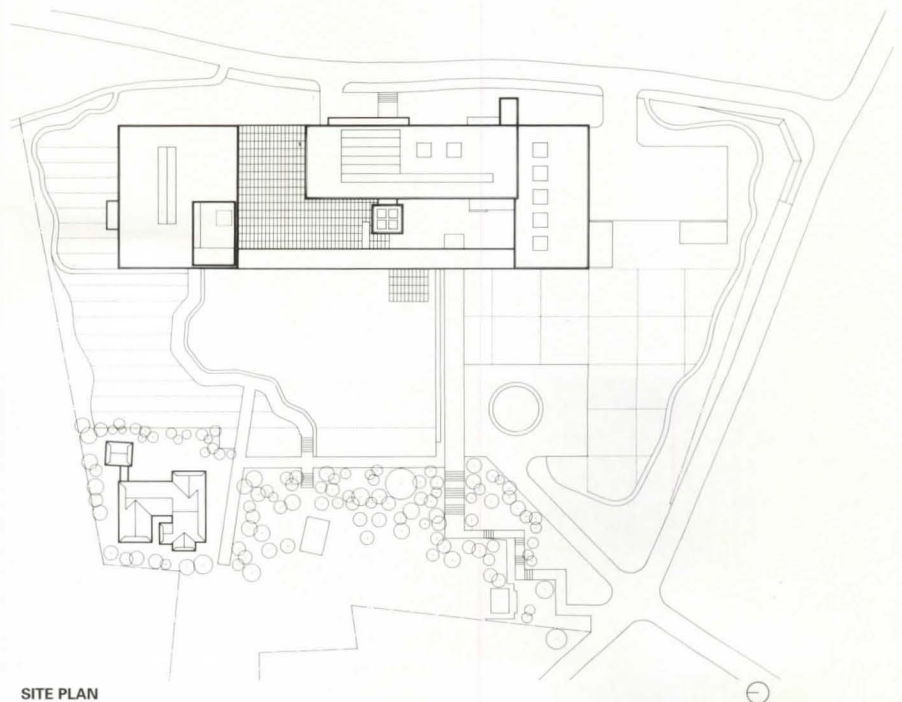
Skirting the entrance to the Toyota Municipal Museum of Art stand two sculptures that embody key attributes of Yoshio Taniguchi's design: a simple cubic volume by Sol Lewitt and a sculpture of curved, rusted steel plates by Richard Serra. Lewitt uses a geometric simplicity to create a Modernist, unlimited space, while the rough materiality of Serra's piece establishes an enclosure.

Taniguchi skillfully combines these two strategies in the \$122 million museum, paid for entirely by the city of Toyota. Lush, green, split-faced Vermont slate wraps the exterior plazas; inside, keen rectilinearity, rendered in a screen of large translucent panels of glass, allows space to seem continuous. The sequence of spaces moves between bounded and free-floating, glowing and dimly lit, to draw one through the museum.

The proportional systems that organize the building are powerful. Taniguchi went so far as to float the plaza's slate floor on a frame rather than mortar it, in order to reduce the necessary slope of the plane and keep it visually in line with the demarcated walls. The flatness is imperceptible, but it is sensed as a quality of tautness that strengthens the proportional order running through the glass-and-stainless-steel curtain wall, the aluminum panels, and the large slate panels of the walls.

Peter Walker's landscape design, cutting the rolling terrain with a geometry of lines and checks, so neatly responds to the architectural order of Taniguchi's building that the two designs seem to be of the same hand. Yet the richness of landscape and architecture do not upstage the artworks that inhabit the museum grounds. Rather, a vivid setting frames each piece of art. In this way, Taniguchi ensures that the building is never completely forgotten while visitors are enjoying the splendid modern and contemporary Western art collection.

**BELOW:** Aerial view reveals American landscape architect Peter Walker's bold design. Outdoor sculptures include Sol Lewitt cube (lower right). **SITE PLAN:** Teahouse (lower left) was also designed by Taniguchi. **FACING PAGE, TOP:** Main entrance combines warm tones of split-faced Vermont slate (right) with curtain wall of stainless steel and fritted glass. **FACING PAGE, BELOW:** Taniguchi reworked former site of city's castle to create rough-edged central pool.



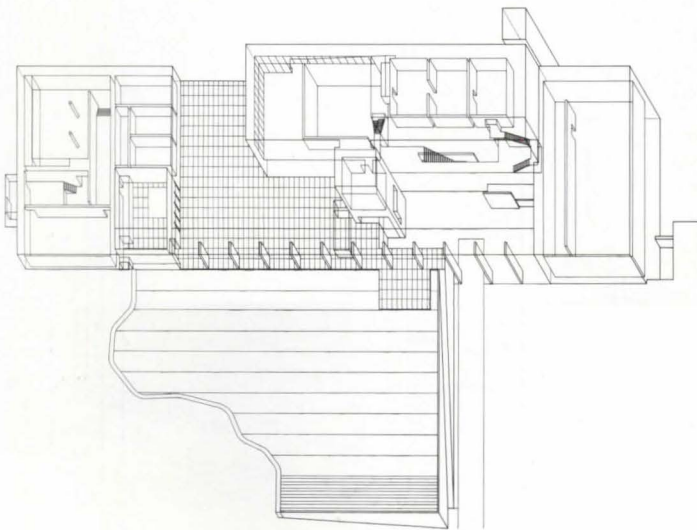
SITE PLAN



**BELOW:** Point-supported planes of white fritted glass in galleries conceal louvers used to control light.

**AXONOMETRIC:** Lacquer displays (left) and main galleries (right) are organized across central plaza.

**THESE PAGES:** Gallery incorporates stair leading to plaza level (center) with stair leading to main lobby (right); sculptural signage is by Jenny Holzer.









It is not surprising that a Japanese architect constructs elegant buildings of paper. After all, in Japan, the traditional house is defined by paper *shoji* screens, and the Japanese have refined an entire art of folded paper, *origami*. The paper architecture designed by Shigeru Ban, however, owes as much to this 39-year-old architect's education in the United States as it does to Japanese culture.

Ban's exploration of paper as an architectural material grows out of issues that are still peripheral to practice in many industrialized countries, and even more so in affluent, consumption-oriented Japan. The architect is especially concerned with using ecologically sensible materials and with serving both the rich and poor; clients for his paper structures, which are constructed of cardboard tubes, include haute-couture designer Issey Miyake as well as former Vietnamese boat people rendered homeless by the Kobe earthquake (page 107).

Paper in Ban's work dates from his earliest days of independent practice. In 1985, he had just graduated from New York's Cooper Union and had only a year of experience in an office, albeit Arata Isozaki's. For a novice architect, exhibition design offers greater opportunity to experiment, since clients are less concerned about one's lack of experience. Work for the Axis Gallery in Tokyo's trendy Roppongi district sustained Ban's practice in its first two years: in his first exhibition design, for the work of Emilio Ambasz (1985), Ban divided the long gallery space with fabric purchased on rolls, deciding to hold on to the cardboard cores on which the fabric had been wrapped.

In 1986, Ban designed an exhibit of Alvar Aalto's work; the cardboard cores left over from the Ambasz show allowed him to inexpensively mimic Aalto's undulating wood-slat ceilings—and Ban was hooked on paper tubes. Like Aalto, he began to recognize the architectural potential of building components to shape spatial experiences. A visit to the architect's office today reveals other experiments in progress. Among the paper chairs and variously shaped paper tubes lie jumbled glulam rings, hollow-core sheets of plastic and paper, cement board, and glass block filled with Styrofoam beads.

A creative approach to materials and construction, organized by simple compositional

strategies, has come to define Ban's architecture. Many assume Isozaki had some impact on the architect, but Ban credits Cooper Union's dean John Hejduk, who studied under Pier Luigi Nervi, as an important influence. Additionally, while still early in the Japanese architect's career, an engineer who found himself stymied by Ban's challenging use of unusual materials suggested that the young architect meet the eminent engineer Gengo Matsui, who helped to shape the reaching forms of Japan's most dramatic postwar architecture. Matsui invited Ban to visit him at home rather than in the office, and calculations were followed by long evenings of sketches and drinks. For Ban, Matsui became a crucial part of his education.

## SHIGERU BAN ETHICAL EXPERIMENTER



**FACING PAGE:** Shigeru Ban sits in his Paper Gallery (1994), built for fashion designer Issey Miyake. Chairs were also designed by Ban.  
**ABOVE:** Paper-tube-supported tents were designed for Rwandan refugees.

His time at Cooper Union and earlier studies at Southern California Institute of Architecture also left Ban with a respect for volunteerism. He was surprised by American students' willingness to serve at Arcosanti or at corner soup kitchens for free, simply to participate in a cause they believed in. Such volunteerism has little precedent in Japan, and is therefore the least understood facet of Ban's work at home. The architect relies on research foundations and wealthier clients to subsidize the designs he produces for those too poor to pay, and he has encouraged students to volunteer in building the Paper Log Houses and Paper Church in Kobe.

Recently, Ban has taken his lightweight structures to the United Nations High Commission for Refugees (UNHCR), proposing paper structures to house Rwandan refugees.

Paper can be quickly transported to remote sites and easily assembled by unskilled labor, and when abandoned, it causes no environmental damage. Currently, when the United Nations issues aluminum and PVC tent poles to refugees, they are sold for income, and the refugees then cut down trees for tent supports. With the population of refugee communities in the tens of thousands, they quickly deforest the area around camps.

After the UNHCR expressed an interest in his work, Ban began to develop paper-tube tent systems with the assistance of the Swiss furniture maker Vitra. However, the UNHCR offered only limited financial support, so the architect applied for and received research funding from the Housing and Community Foundation of Tokyo, allowing him to travel between Japan, Europe, and East Africa while maintaining his practice at home.

Ban has focused on developing alternative tent configurations for family use and for larger structures needed in the field, made possible by the ease of cutting paper tubes to different lengths. He also envisions that larger paper tubes can be used independently to house latrines, a theory tested in his own house (page 108). After visiting Africa, however, Ban began to see the potential application of paper tubes in more permanent structures people build as they resettle: the tubes can be used as the inner frame of mud walls in a manner remarkably similar to traditional vernacular structures. Initial investigations

have been promising enough to lead to field tests in Palorinya, Uganda, which are anticipated to begin later this year.

Ban argues that the discipline of architecture does little today to serve those in need; while many call poor people of color "minorities," in global terms, this group represents a clear majority and a challenge to all architects. An article in *Tokyo Journal*, reporting one of the many awards Ban has won recently, calls him an "ethical experimenter." This description neatly sums up the two realms that this emerging architect embraces—and few architects have been able to do so with such finesse.—*Dana Buntrock*

*An assistant professor of architecture at the University of Illinois in Chicago, Dana Buntrock is researching Japanese construction practices.*

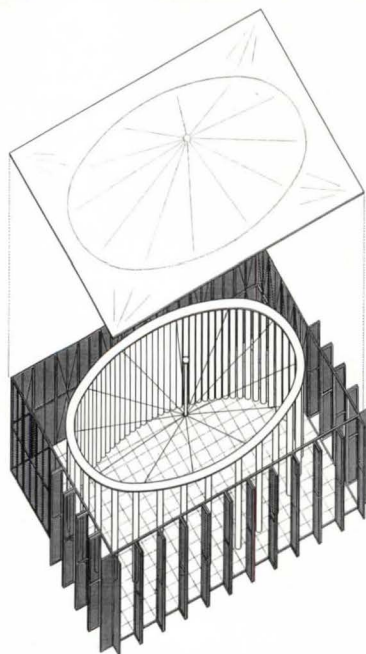
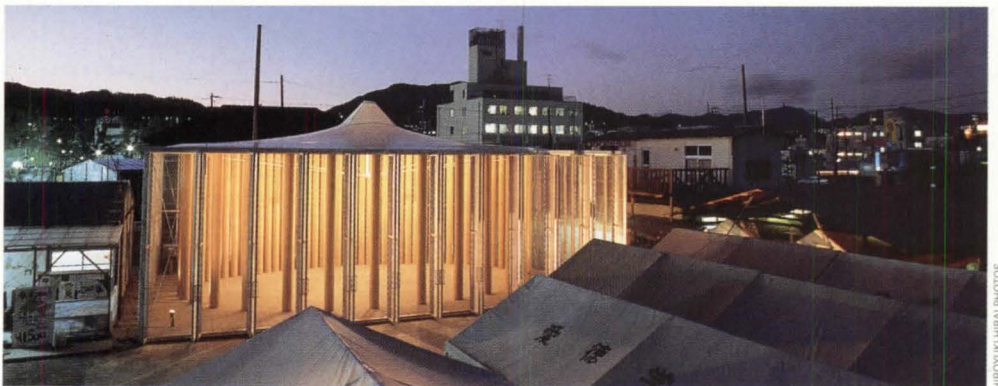
# PAPER CHURCH

Following the 1995 earthquake in Kobe, fires tore through the city's densely packed neighborhood of Nagata. They stopped, some would say miraculously, at the foot of a statue of Christ. Photographs of this charred, leaning statue, with its arms raised over the devastation of an impoverished community, were featured in magazines and newspapers throughout the world.

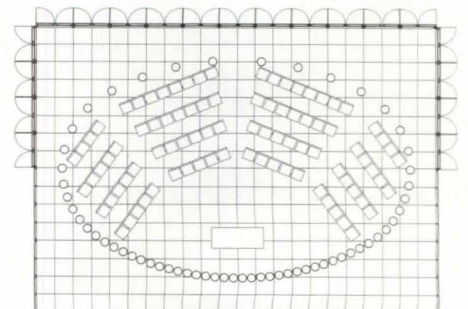
Shigeru Ban was drawn to aid the Catholic church where the statue stood, but his earliest efforts were rebuffed by the priest. Father Kanda vowed that the church would not rebuild while others were homeless, nor spend money for a sanctuary. Although not a Christian, Ban traveled from Tokyo each Sunday by bullet train to join the Takatori Church congregation, growing convinced that the temporary tents during the heat of the summer rainy season or the cold of winter.

Father Kanda grudgingly challenged Ban to find a way to build a sanctuary and community center, and the architect set out to find materials, volunteers, and financial support. He spoke on radio, was interviewed by a major newspaper, lectured to students, asked manufacturers for donations, and even organized an exhibit of his proposal at a posh Tokyo department store.

Many of the 160 volunteers who journeyed to Kobe had little construction skill. They slept in two rooms, washed up in the public baths, and forgot the pleasures of air-conditioning. Over the course of five weeks, they built a generous, improbably beautiful structure using only steel scaffolding; a translucent, corrugated polycarbonate sheet; polyester tent fabric; and paper tubes. This 169-square-meter building is expected to remain in use while the community around it is reestablished. Its modest costs and ingenious poetry have become an inspiration for many in the city.



**TOP:** Roof of Paper Church is supported by cable-and-post system.  
**ABOVE:** Church is located in Nagata area of Kobe, currently rebuilding after 1995 Hanshin earthquake.  
**AXONOMETRIC:** Ovoidal paper tube structure is wrapped by steel scaffolding and corrugated polycarbonate doors.  
**PLAN:** Paper tubes form internal enclosure around seating and altar.

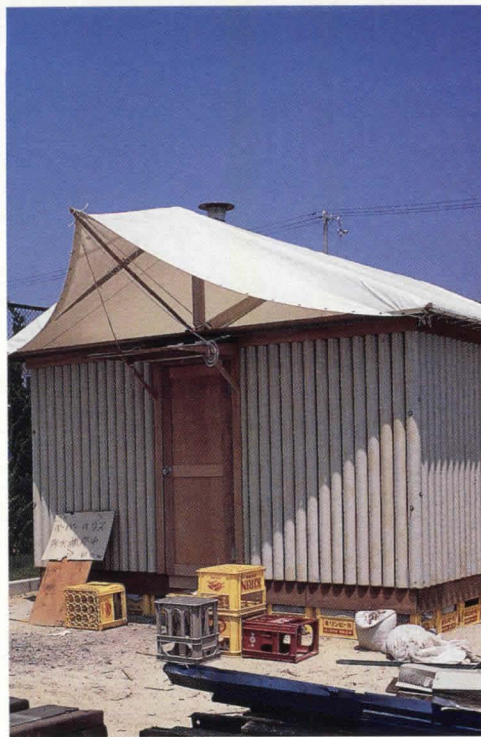


**FLOOR PLAN**

## PAPER LOG HOUSES



HIROYUKI HIRAI



DANA BUNTROCK



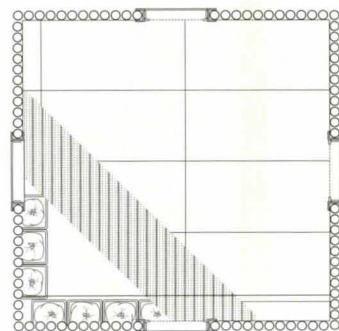
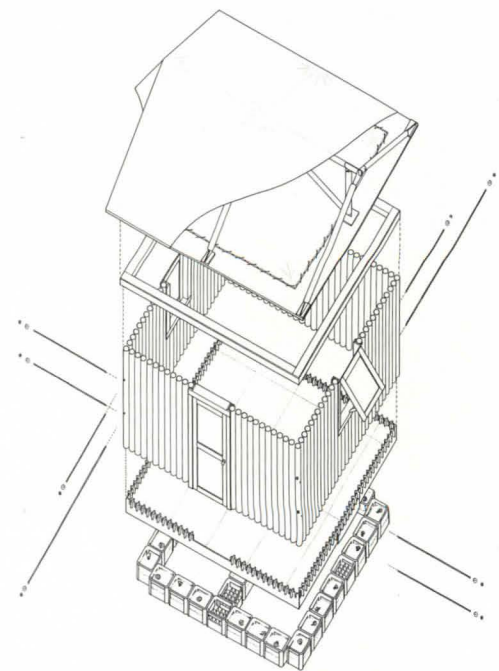
HIROYUKI HIRAI

**TOP LEFT:** Gables are shut to retain heat.  
**TOP RIGHT:** Fabric roof can be opened at gable to catch breeze.

**ABOVE:** Six units of temporary housing were erected in public park.

**AXONOMETRIC:** Paper Log House is built on beer-crate foundation. Paper tubes are erected over plugs in floor; tented roof sits on paper-tube frame.

**PLAN:** Each wall of 16-meter-square interior incorporates door or window.



FLOOR PLAN

3.5/1m

When the Kobe earthquake struck, Ban was already developing his paper structures for use in refugee communities. While many assumed that the government would address the needs of the devastated city, Ban recognized that two groups would not find immediate support: immigrants, who are marginalized in Japan, and the Christian church, which serves less than 2 percent of the population.

These two communities were united in a Catholic church serving longtime Korean residents and the more recent Vietnamese boat people. The priest offered some financial support for temporary housing, and Ban began to develop a 16-square-meter temporary house prototype and to search for material donations and volunteers.

The same volunteers who built the Paper Church (facing page) helped construct the Paper Log Houses. While extremely simple, the design is innovative in its details. The foundation, constructed of a raft of plastic beer crates donated by Kirin, a beer company, is topped by 108-millimeter-diameter paper tubes tied together as floor and wall panels. At the ends of the tubes, a row of cross-shaped plywood plugs holds the rafted panels together. Each tube is slipped over a plug and joined with ties made of 6-millimeter-diameter steel rods—a method simple enough for even the most unskilled volunteer. Above the walls, two layers of vinyl tent fabric supported by a paper-tube frame form the roof. The fabric can be opened to channel cooling breezes across the interior, and its translucency brings light into the space.

For the residents, who lived in ramshackle tents or plywood shacks after the earthquake, these simple houses are a great improvement. The owners have demonstrated their appreciation through careful maintenance, and Ban has begun to wonder how long, in fact, they may last.

# CASE STUDY HOUSES

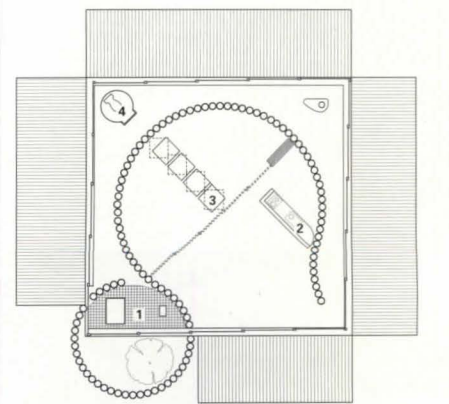
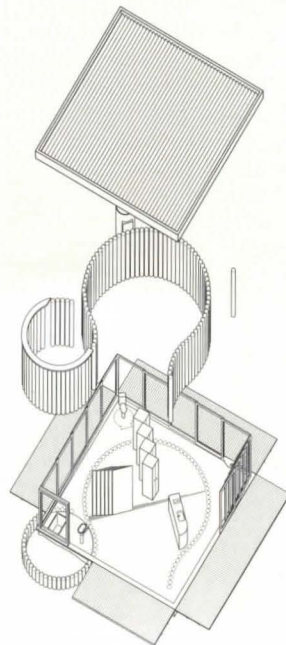
Shigeru Ban's material investigations extend beyond paper tubes, as evidenced by the architect's three Case Study Houses nestled together in the hills above Lake Yamanaka, not far from Tokyo. The first house, for Ban and his extended family, was designed in 1990, although the architect did not have the money to build the 10-by-10-meter-square structure until 1994. Supported and enclosed by paper tubes (even the toilet is housed in a paper tube), the house can be divided by sliding screens into two sleeping rooms, or opened up into a "great room" during the day. Other material investigations include the architectural use of cabinets to create a movable wall, which eventually led to the development of the structure that the architect calls the "Furniture House," north of Ban's own.

A second house was designed the following year for photographer Hiroyuki Hirai, whose images are published on these pages. The double-roofed design grew out of consultations with the engineer Gengo Matsui, after Ban realized a single attenuated roof was infeasible because of deflection caused by winter snow loads. By separating the roof into two layers—a corrugated steel panel floating above conventional batten-seamed roofing—deflection can be entirely isolated from the interior walls. The double roof also reduces heat gain and allows greater areas of glass on the south facade.

The third building, the Furniture House, was designed in 1992 and the bulk of it built in a few days last summer. Similar in concept to Ban's paper-tube architecture, the walls are constructed of factory-manufactured oriented-strand-board (OSB) cabinets. The cabinets are simply screwed together, allowing the walls to be quickly assembled on site by less expensive, unskilled labor. Ban is developing this idea for a low-cost apartment building to be completed this November in Kobe.



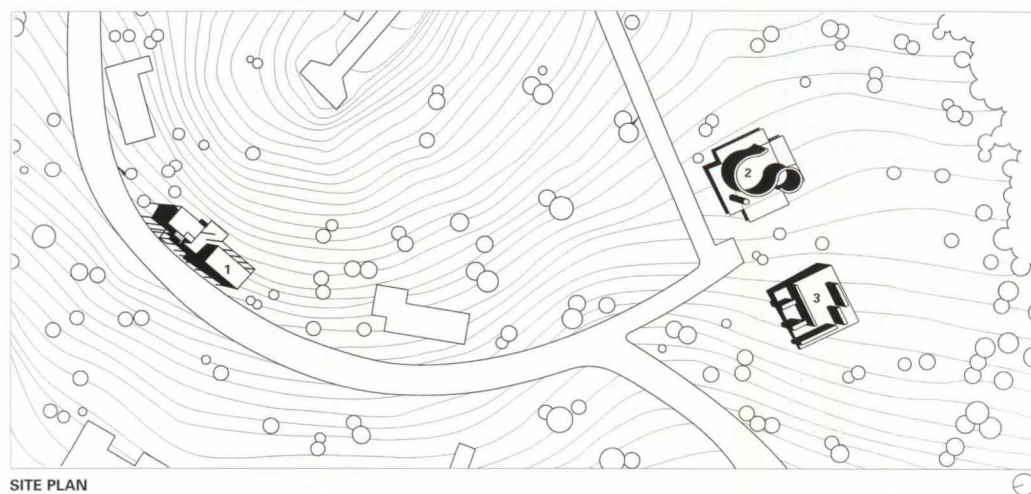
HIROYUKI HIRAI PHOTOS



FLOOR PLAN

8.5/2.5m

- 1 BATHROOM
- 2 KITCHEN
- 3 MOVABLE CLOSETS
- 4 TOILET

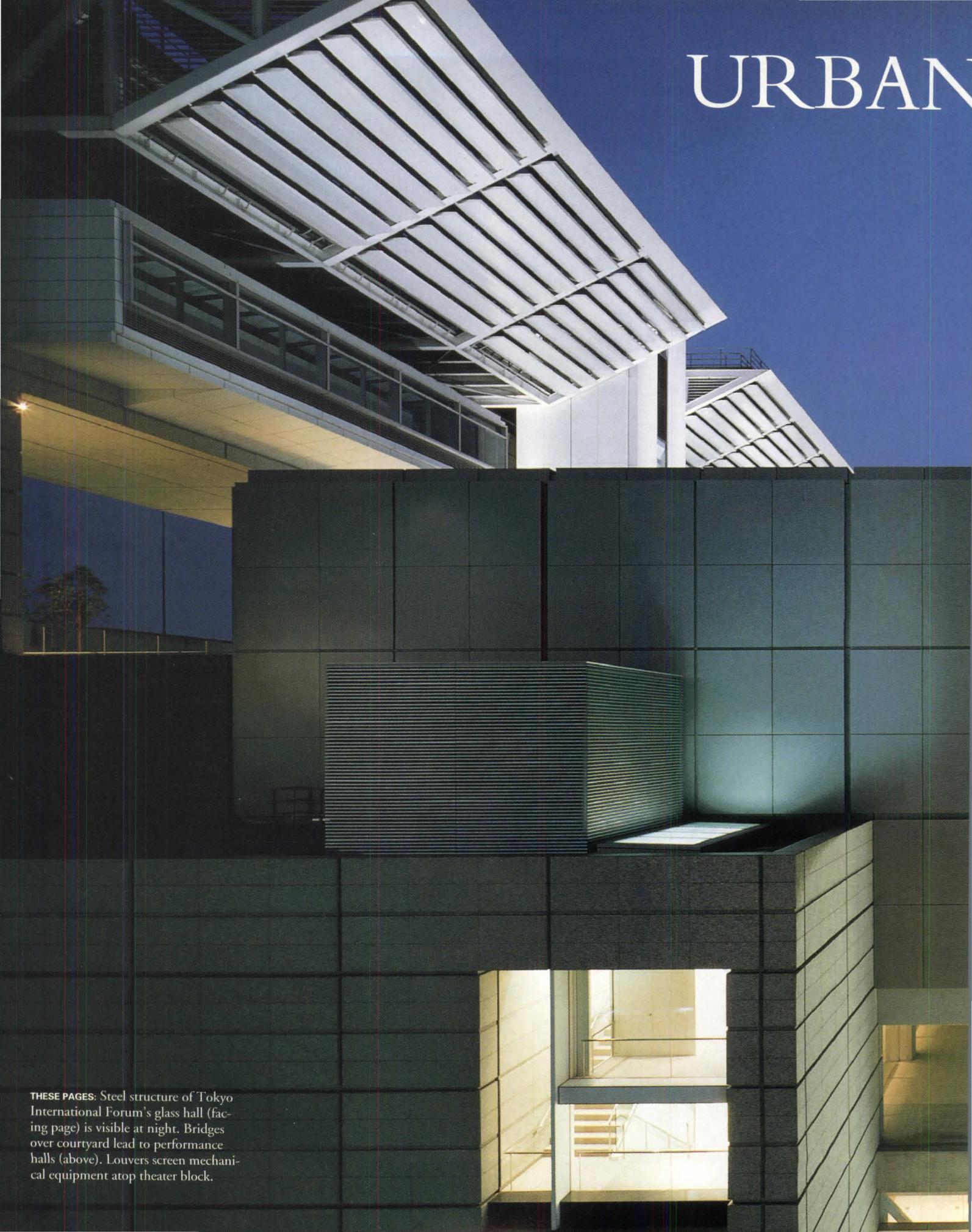


SITE PLAN

- 1 HIRAI HOUSE
- 2 BAN HOUSE
- 3 FURNITURE HOUSE

**FACING PAGE, TOP:** Paper tubes of Ban's summer house support roof.  
**FACING PAGE, CENTER:** Sliding glass doors are opened to unify interior and forest.  
**FACING PAGE, AXONOMETRIC:** Paper-tube structure resembles Paper Church's.  
**FACING PAGE, PLAN:** Large interior can be divided by doors and movable cabinets to create private sleeping areas.  
**TOP LEFT:** Furniture House cabinets support conventional roof of wood rafters.  
**ABOVE LEFT:** Factory-made cabinets and shelves support Furniture House roof.  
**TOP RIGHT:** Thin corrugated roof of Hirai House does not touch interior walls.  
**ABOVE RIGHT:** Yellow stair connects living and dining platform of Hirai House to sheltered terrace under roof.

# URBAN



**THESE PAGES:** Steel structure of Tokyo International Forum's glass hall (facing page) is visible at night. Bridges over courtyard lead to performance halls (above). Louvers screen mechanical equipment atop theater block.

# NEXUS

Tokyo International Forum  
Tokyo, Japan  
Rafael Viñoly Architects





SITE PLAN

Some call the \$1.65 billion Tokyo International Forum the last overpriced bauble of Japan's "bubble" economy. Others jokingly call the 6.7-acre complex the world's largest ticket booth, packing four performance halls for dance, concerts, and theater next to a huge conference center and banquet halls fit for a G-7 summit. Regardless of the interpretation, one fact remains certain: With the completion of this multipurpose structure, the relatively unknown, Uruguay-born architect Rafael Viñoly will be recognized for masterminding the most ambitious civic building of the late 20th century.

The Tokyo Forum won't be remembered as an architectural milestone so much as an urban triumph. Viñoly has not pioneered new design concepts, but he has accomplished a more difficult task: creating a mammoth public work that is at once monumental and intimate. His performance and exhibition halls assume a civic scale yet are divided into penetrable components grouped around a public plaza. The building is also linked to the city, with pedestrian passageways to major subways and train lines. It's Lincoln Center recalibrated to downtown Tokyo.

Viñoly's primary achievement is his remarkably clear organization of the Forum's program on its triangular site, which won him the international competition for the building in 1989 over 395 entries from 68 countries: The architect simply divided the building's components to align with existing urban geometries. On the western side, he respected the street grid by segmenting the performance halls into four boxy theaters. On the eastern side, he curved the conference hall to the boundary of an adjacent elevated railroad and completed the arc as a sharpened ellipse. Between the two halves, Viñoly diagonally extended an open plaza to the flanking streets, providing a passageway for commuters between busy Tokyo Station two blocks to the north and Yurakucho Station to the south. This strategy results in a building that, while largely horizontal, never feels

**TOP LEFT:** View from south shows granite base and ventilation louvers of curved glass hall, and stepped, cantilevered volumes of aluminum-clad theaters.

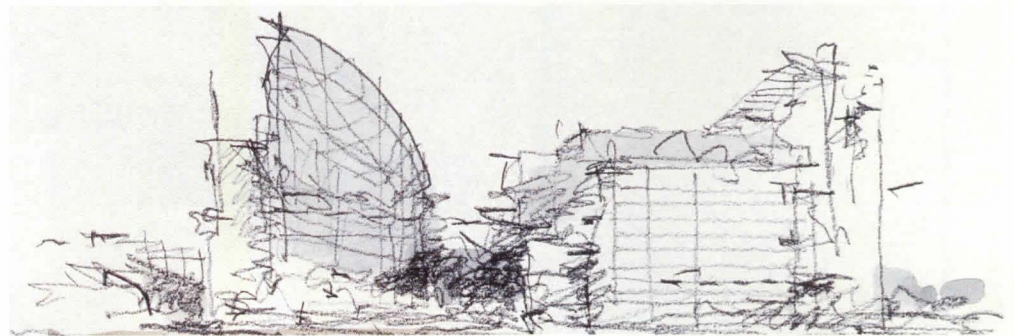
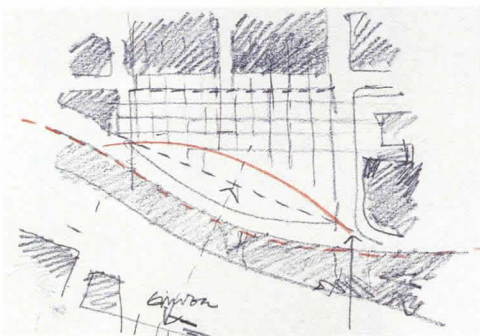
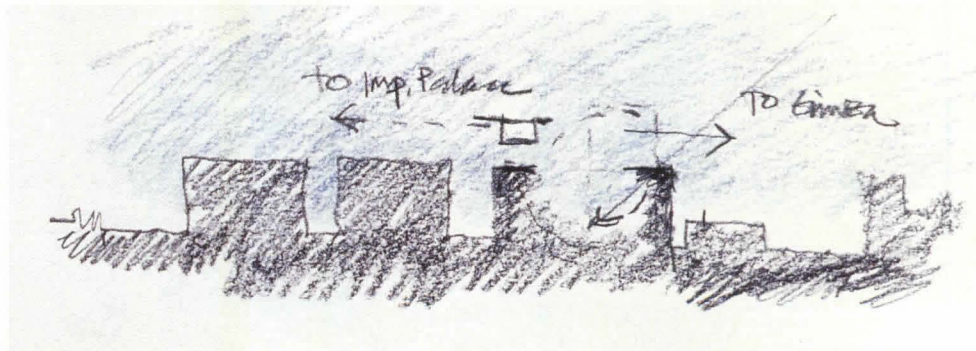
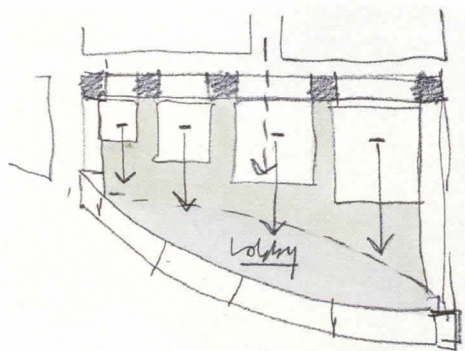
**CENTER LEFT:** Eastern elevation of glass hall reveals curved roof truss above bullet-train rail line.

**SITE PLAN AND SKETCHES:** Theaters are oriented to city grid; curved glass hall aligns with rail tracks. Plaza leads diagonally through site, connecting Tokyo Station (right) with Yurakucho Station (left).

**FACING PAGE, TOP LEFT:** Viñoly articulated west facade of theater block with variegated openings.

**FACING PAGE, TOP RIGHT:** Faceted window of Hall B's lobby aligns with street leading from Imperial Palace.







overblown or claustrophobic, as do so many urban convention centers and coliseums.

"During the competition, many jurors thought my entry was Japanese in comparison with more 'extroverted' proposals," Viñoly reports. Indeed, the New York-based architect's design exhibits none of the brashness characteristic of Japan's 1980s imports from European and American architects (pages 91-95, this issue). His cool, boxy theaters and structurally exuberant, elliptical conference hall blend Japanese politeness with Western expressiveness, a combination that befits this hybrid building.

Ironically, the most reticent side of the Forum is devoted to entertainment. Clad in gray granite and aluminum, the block of performance halls blends in all too well with the banks and office high-rises of Tokyo's Marunouchi district. Although the new building is located near the colorful, neon-emblazoned Ginza, it relates more to the sober financial district and Imperial Palace to the west than to the city's entertainment zone.

Viñoly has incorporated no marquees on the building's city-facing exteriors to announce the events taking place inside, although banners may be hung discreetly from the flagpoles at the plaza entrances when the Forum opens to the public in March 1997. An obvious location for exterior signage is the blank, solid expanse facing the railroad tracks—hardly a precious setting—which could have benefited from an electronic billboard or two. (Instead, it is lined with huge air-conditioning louvers, which form the main view of the Forum for rail commuters.) Without such graphic punctuation, the gray building virtually disappears into its corporate surroundings. It's a good, but introverted, neighbor.

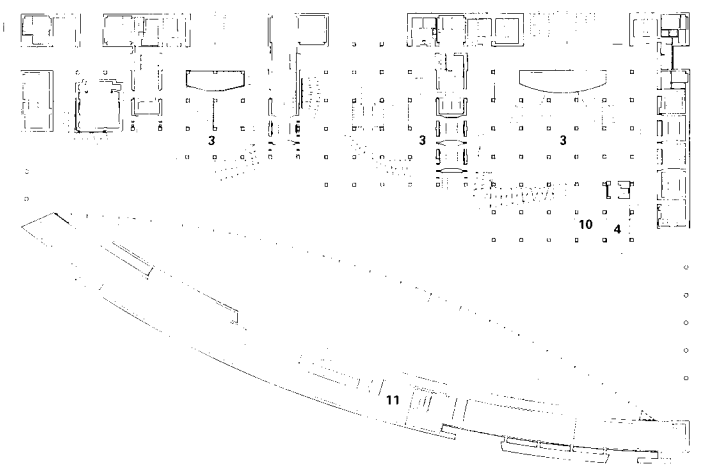
The Tokyo Municipal Government, however, commissioned the Forum to be noticed as a symbol of Japan's newfound stature in international trade. It envisions the building as a global meeting ground, "where citizens of Tokyo can meet with other peoples from all over the world," according to former governor Sunichi Suzuki. But the place is too polished to feel populist. Its exclusive downtown address, finely finished halls, English-language signs, and secured basement parking garage (with a private entrance for dignitaries) are meant to appeal to an elite international audience. And they will come: already, 477 events are booked two years before the Forum's opening, including Western performers such as José Carreras, the Alvin Ailey Dance Theater, and the Boston Pops.



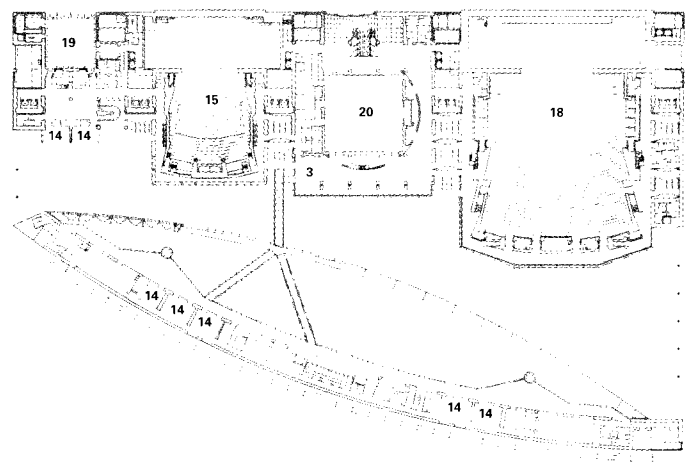
**FACING PAGE:** Theater block is clad in Brazilian granite and gridded aluminum panels. Courtyard is paved in black granite; illuminated glass path marks primary public circulation.

**TOP:** North facade reveals division of theater blocks into transparent glass hall (left), auditoriums, and bar-shaped building (right), which houses fly towers and box offices.

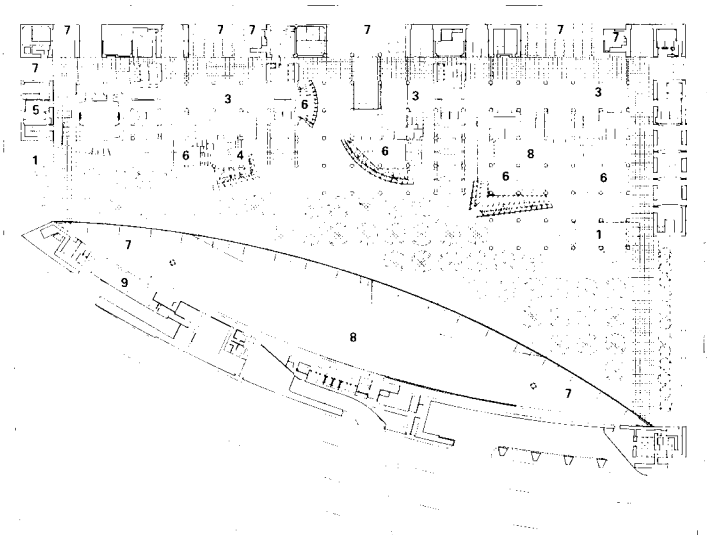
**ABOVE:** Glass hall (left) and glass-enclosed restaurant with sculptural stair (right) border plaza's north end.



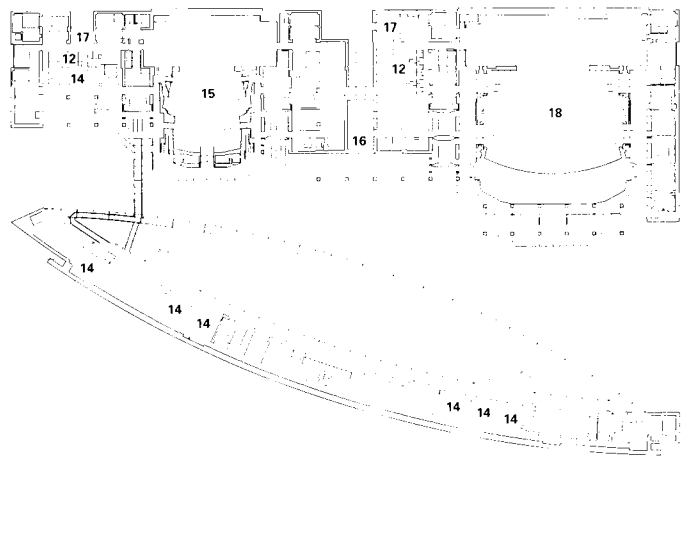
LEVEL 2 PLAN



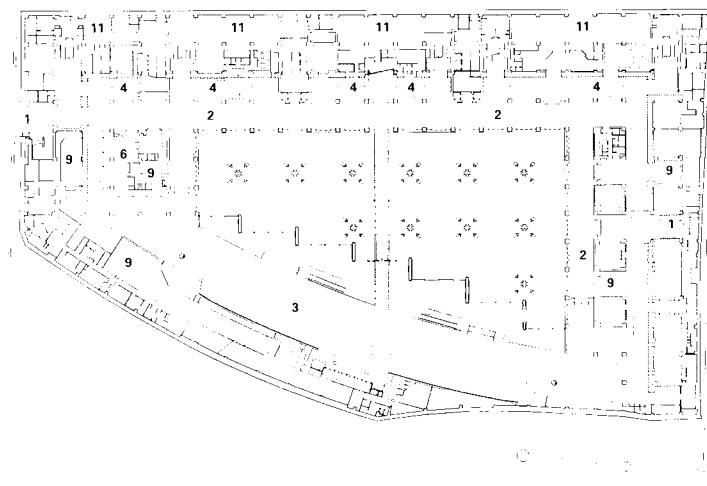
LEVEL 5 PLAN



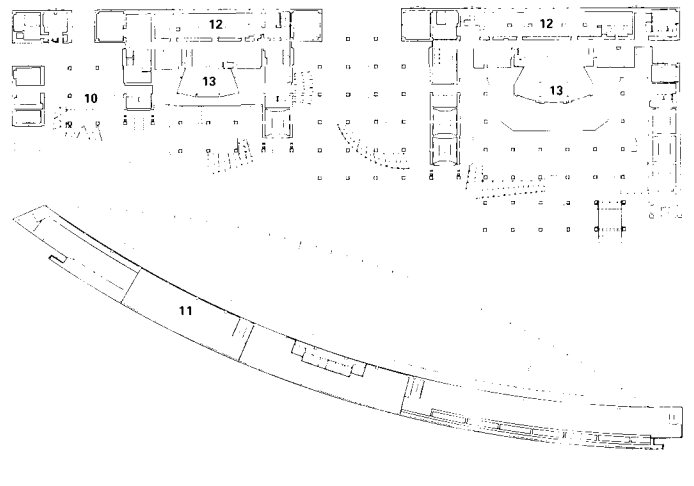
LEVEL 1 PLAN



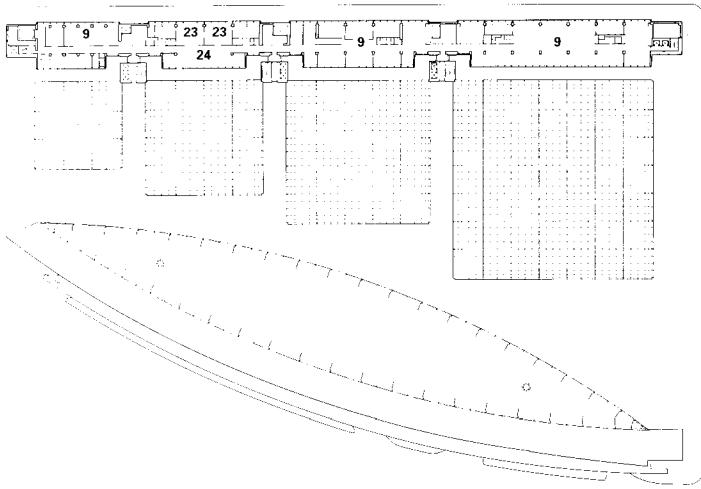
LEVEL 4 PLAN



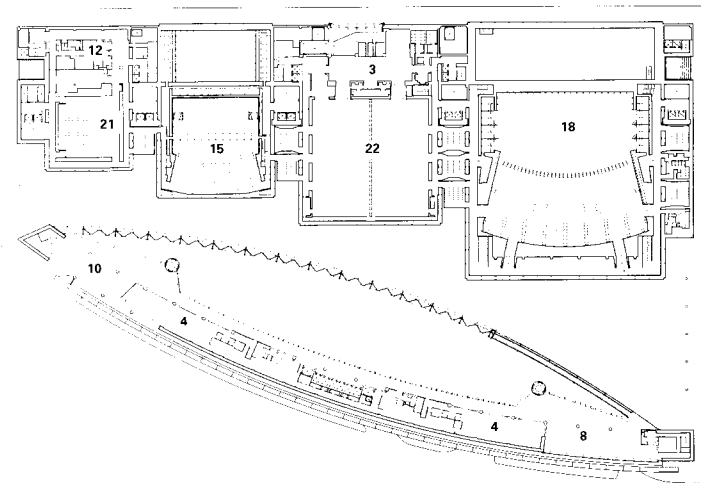
CONCOURSE LEVEL/B1 PLAN



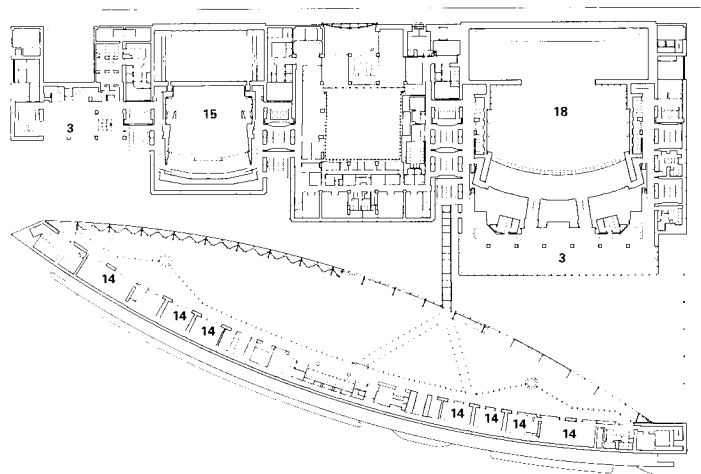
LEVEL 3 PLAN



LEVEL 11 PLAN

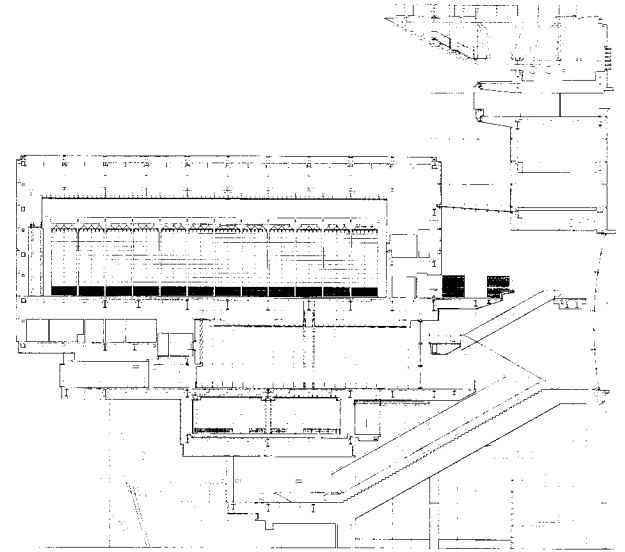


LEVEL 7 PLAN



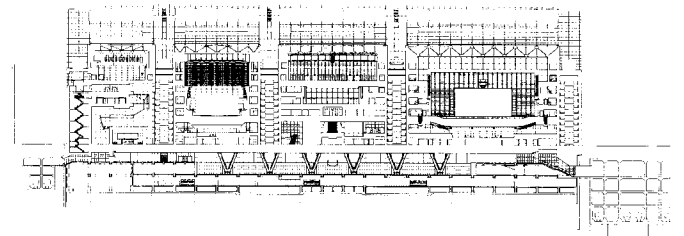
LEVEL 6 PLAN

- |                    |                     |                          |
|--------------------|---------------------|--------------------------|
| 1 SUBWAY ACCESS    | 9 OFFICES           | 17 GREEN ROOM            |
| 2 CONCOURSE        | 10 TERRACE          | 18 HALL A                |
| 3 LOBBY            | 11 MECHANICAL ROOMS | 19 LARGE CONFERENCE ROOM |
| 4 RESTAURANT       | 12 DRESSING ROOMS   | 20 BANQUET HALL          |
| 5 AUDIOVISUAL HALL | 13 ORCHESTRA PIT    | 21 HALL D                |
| 6 RETAIL           | 14 CONFERENCE ROOMS | 22 HALL B                |
| 7 PUBLIC ENTRANCE  | 15 HALL C           | 23 VIP RECEPTION ROOM    |
| 8 GALLERY          | 16 REHEARSAL ROOM   | 24 VIP LOUNGE            |



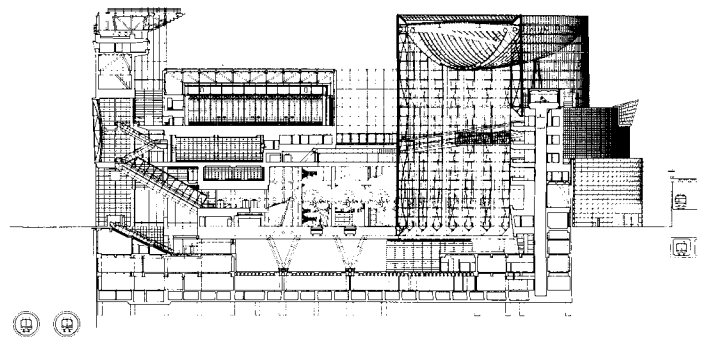
EAST-WEST SECTION THROUGH HALL B AND BANQUET HALL

30/8.5m



SOUTH-NORTH SECTION

100/30m



WEST-EAST SECTION

67/20m

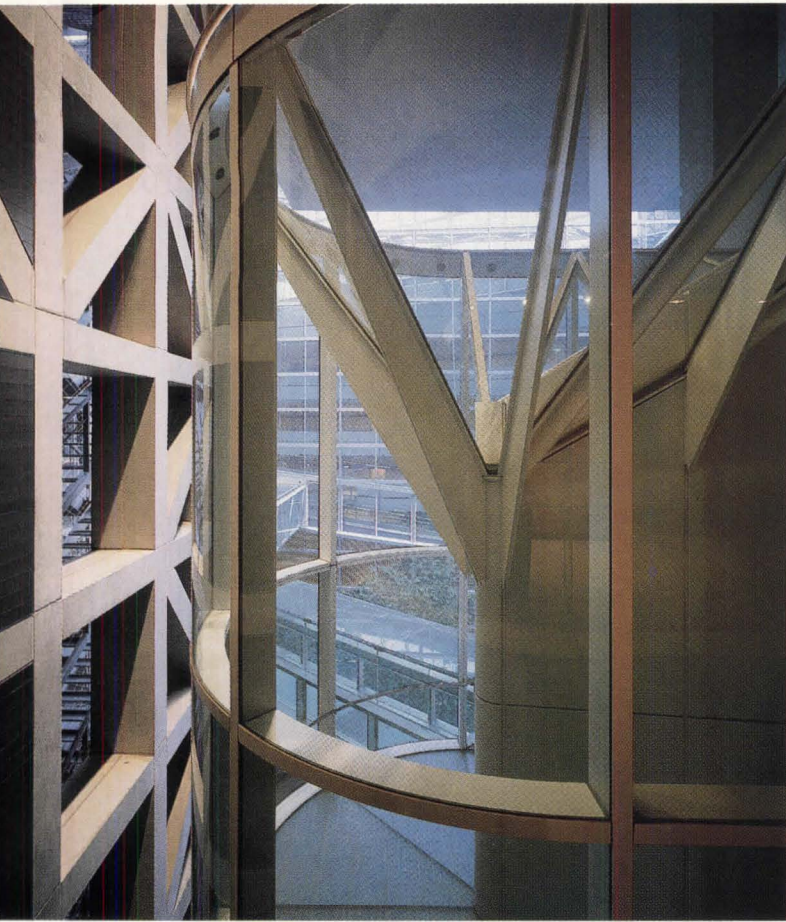




**FACING PAGE:** Planted with zelkova trees, courtyard incorporates artwork, such as Richard Long's *Hemisphere Circle*. Exposed concrete shear walls (left) are articulated by latticelike structure that resists seismic forces.

**TOP:** Stairs and balconies connect theaters with plaza. Polished stone sculpture, *Ishinki*, is by Kan Uchida.

**ABOVE:** Ground level of theater block is enlivened by exit stairs and angular glass-and-steel enclosures housing cafés and shops.





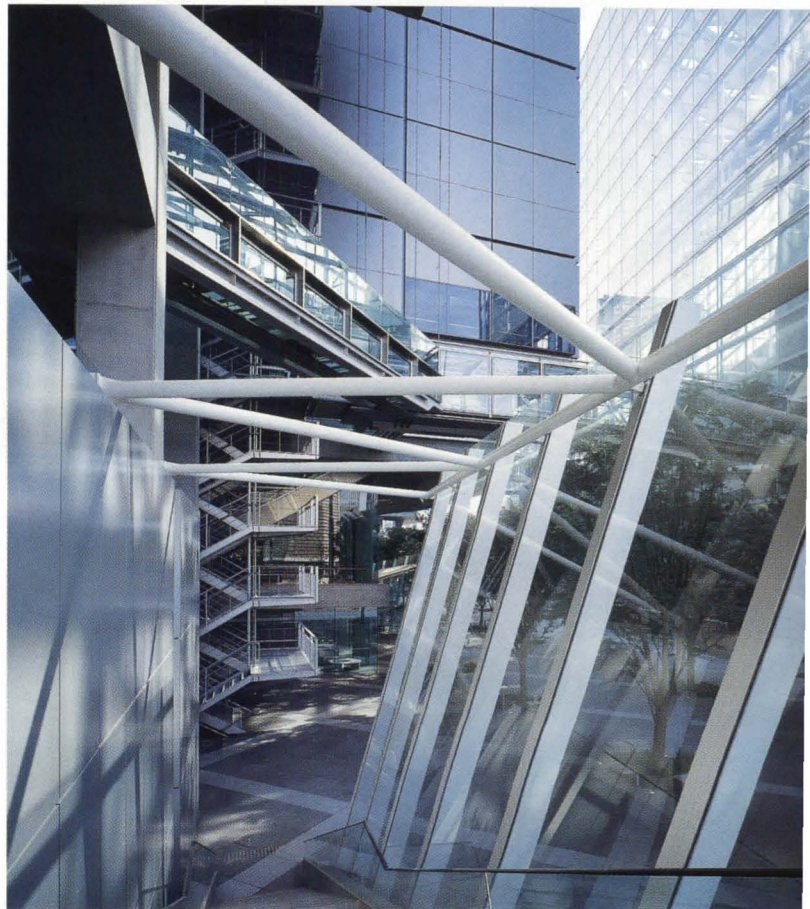
Tempering the Forum's elitist edge, at least formally, is its openness, which is intended to counter Japan's xenophobic reputation. Viñoly achieves this accessibility with an architecture of transparency and movement. Its most compelling manifestation is the glass hall on the site's western side. Although the huge hall serves as a conference center, most of its elliptical volume comprises a grand, light-filled atrium extending seven stories above ground and three below. Meeting rooms, offices, and cafés are relegated to the windowless block facing the railroad lines.

Large expanses of glass are rare in earthquake-prone Tokyo, and Viñoly capitalizes on the lightness and transparency of his glassy ellipse to dramatic effect. The soaring hall is framed by two giant, tapering columns that support roof cables articulated by a skeletal truss, designed in collaboration with structural engineer Kunio Watanabe. Viñoly intensifies the spatial experience with a Piranesian layering of ramps and bridges that encircle and crisscross the space. His awe-inspiring structure pushes the engineered tradition of glass exhibition halls, begun with Joseph Paxton's Crystal Palace, to a more sophisticated and articulate level (pages 130-135, this issue).

Walking on the lightweight ramps and bridges suspended within the glass hall's cavernous void is vertiginous, although the exposed steel-and-glass structure is ingeniously engineered to resist the most severe natural forces. Viñoly's dizzying circulation and huge expanses of glass more effectively establish a psychology of instability than any wall-tilting Deconstructivist could ever hope to achieve.

In creating such a bold, light, and transparent space, Viñoly establishes a social heart for the Forum and a distinctive symbol for its public ambitions. At night, the top of the marquee glows with light above the surrounding boxy buildings, revealing the sinuous outline of its undulating roof truss, hovering in space like a ghostly ship's hull.

The glass hall visually merges with the adjacent plaza to reinforce the Forum's image



**FACING PAGE, TOP LEFT:** Curved, glass-enclosed stair connects fifth-floor conference rooms beneath black-box theater to fourth-floor bridge.

**FACING PAGE, TOP RIGHT:** Steel arm extending from roof beam to floor beam helps support cantilevered glass box of café over plaza.

**FACING PAGE, BOTTOM LEFT:** Steel-and-glass bridge connects conference rooms to glass hall.

**FACING PAGE, BOTTOM RIGHT, AND RIGHT:** Stairs behind canted glass enclosure lead from plaza to third-floor lobby and meeting rooms atop audiovisual hall.

**TOP RIGHT:** Laminated glass floor beneath cantilevered terrace is supported by chamfered steel brackets.



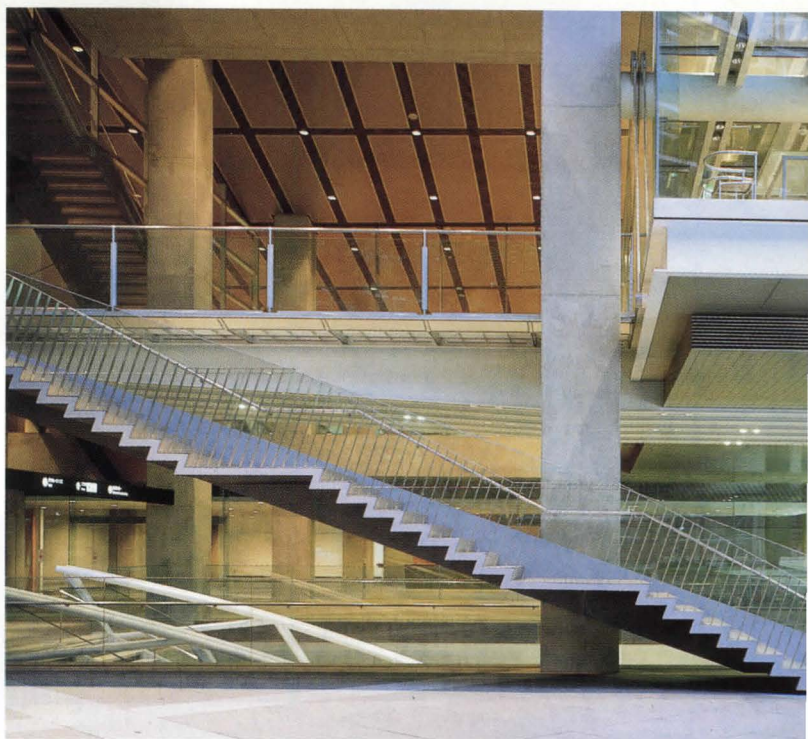
of openness. The central garden courtyard will be used not only by theatergoers and conferees, but by ordinary citizens traversing the site to nearby transportation hubs and offices. Planted with zelkova trees and open to the sky, this combination of plaza and passageway is unusual in Japan's dense cities. It's a public inversion of the private Imperial Palace gardens and a landscaped complement to Viñoly's lucid architecture.

In contrast to the glass hall, the portion of the building housing the performance halls is largely opaque, although no less technically inventive (pages 126-129, this issue). The auditorium and other performance spaces are connected by a slim bar building, housing box offices, staff areas, and entrance lobbies, that faces downtown. Viñoly attempts to relieve the bar's two-block-long street wall with varied openings and finlike projections marking the location of stagehouses, but the facade nevertheless remains a formidable expanse. Its most appealing feature is an 18-meter-square glazed aperture at the center, which terminates the axis of a street leading to the Imperial Palace. This giant window's bowed struts and faceted glass echo the glass hall's structural vocabulary and suggest the image of a Japanese kite. Similarly, the theaters' gridded granite and aluminum paneling subtly evoke a *shoji* screen or lacquered box.

On the courtyard side, the performance halls assume a more permeable profile. Each of the four theaters is articulated as a separate stepped box and activated by stairs, balconies, and glass-enclosed pavilions with restaurants and cafés. The largest auditorium, at the northern end, seats 5,000 for theatrical performances, concerts, and large meetings; the smallest, at the southern boundary, seats up to 350 for experimental productions and doubles as a recording studio. Between the two are a 1,000-square-foot hall for fashion shows and conferences and a 1,500-seat, wood-paneled theater for concerts and dance.

Constructing these multifarious venues proved daunting. The site was formerly occupied by Kenzo Tange's 1957 city hall and council buildings, demolished in 1991; government staff was relocated to Tange's new municipal high-rise in Tokyo's business district of Shinjuku. Once the site was cleared for construction, workers discovered Edo-era artifacts that caused a 10-month delay until an archaeological dig was completed.

Finally begun in October 1992, construction was divided between two consortiums of contractors. The Taisei Corporation headed a group of 10 contractors to build the theaters,



**FACING PAGE:** View from glass floor of second-level terrace reveals stairs and escalators to performance hall and tree-lined courtyard beyond.

**TOP:** View through columns supporting theater block illustrates Forum's openness and permeability, and highlights Viñoly's approach to layering circulation, transparency, and views.

**ABOVE:** Floating steel stair connects terrace and glass box café (top right) to Forum's outdoor courtyard.



while Obayashi Corporation managed nine contractors to develop the glass hall. Viñoly's Tokyo office was similarly divided into a theater team, led by Project Manager Sandra McKee, and a glass hall team, headed by Project Manager Charles Blomberg. Viñoly savors his collaboration with Japanese contractors and consultants, which resulted in a remarkably precise level of detail. "It's a very different industry from ours," he explains. "In Japan, there's vast technical support and resources available to the designer. Everyone is pushing in the same direction. When you work in such a nonlitigious environment, things always come out better. You can even have a good time making architecture."

Viñoly's own musical and cross-cultural background also helped the performance-oriented project. Born in Montevideo, Uruguay, the son of the local opera's artistic director, the architect originally trained to be a classical pianist. (He still plays and had an electric piano installed in his Tokyo office.) After studying and practicing architecture in Buenos Aires, Viñoly moved to New York in 1979 to escape Argentina's oppressive political regime and opened his office in 1983.

The largest projects now on the boards in Viñoly's SoHo warehouse are a 23-story commercial tower for Samsung in Seoul, a Bronx courthouse, and a Princeton University stadium. Viñoly clearly likes to build, dismissing the profession's preoccupations with theory and originality. "Structure and assemblage are the stuff you can make art with, if you are lucky," he maintains. And the 52-year-old architect has been lucky. Over the past decade, he has won many important competitions, such as the Baltimore Performing Arts Center and Snug Harbor Music Hall. In August, he was named a finalist in the World War II Memorial competition for the National Mall in Washington, D.C. While he is not well known outside of New York architectural circles, Viñoly will undoubtedly receive international recognition with the completion of the Forum, his largest and most complicated project to date.

Though not formally groundbreaking, the Forum is a serious work that benefits Tokyo—and Japan—with a rare public space and dignified setting for cultural activities. Its urban sensitivity and technical mastery are refreshing in an era too often marked by architectural affectation and slipshod construction. This elegant building reminds us that the urban potential of Modernism and the collaborative craft of architecture are still relevant, and possible.—*Deborah K. Dietsch*



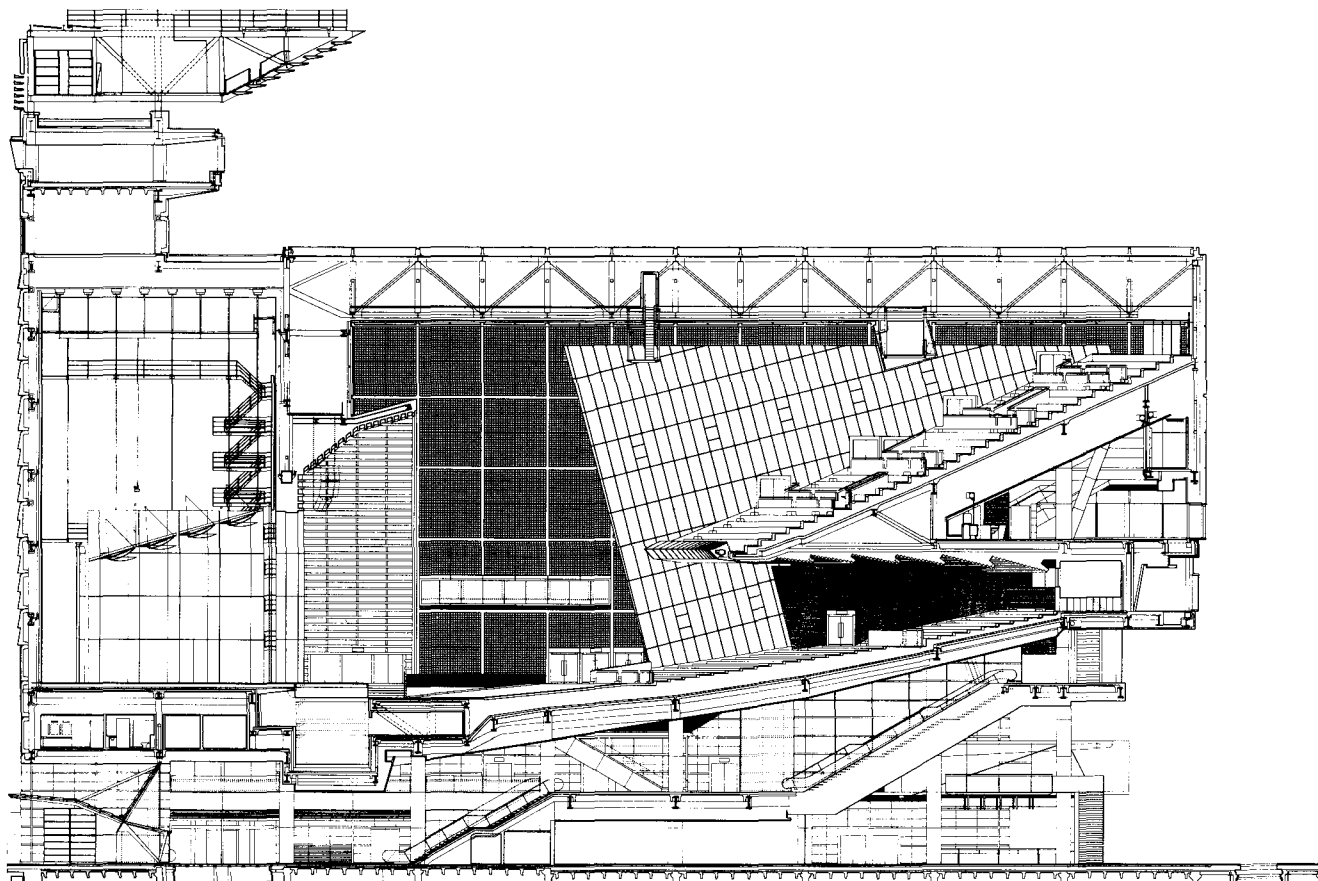
**FACING PAGE, TOP:** Backlit glass panels surrounding banquet hall beneath Hall B recall traditional *shoji* screens.

**FACING PAGE, BOTTOM:** Monochromatic carpet, designed by Viñoly to recall Japanese *sumi* painting, dominates large conference room adjoining black-box theater in Hall D.

**TOP:** Beneath theater block, shops and restaurants line concourse connecting Forum to subway lines and parking.

**ABOVE:** In exhibition hall, clusters of tubular steel columns support plaza.

# HALL A: 5,000-SEAT THEATER



WEST-EAST SECTION THROUGH HALL A

1/6/4.5m

The Tokyo Forum's four theaters vary in size and program, from a vast, 5,000-seat performance hall wired with a high-tech electronic acoustical system to a flexible, intimate black-box theater for experimental drama and sound recordings which seats up to 350. Given the building's proximity to major subway and rail lines as well as street traffic, the theaters required substantial acoustic protection from noise and vibrations.

Norwalk, Connecticut-based consultant Jaffe Holden Scarbrough Acoustics and local Japanese specialist Yamaha Acoustical Research Laboratory devised an underground acoustical barrier around the site's perimeter. This 2-foot-thick concrete secant wall extends roughly 28 meters below grade and helps to deflect vibrations of subway trains.

The acousticians further shielded the auditoriums by erecting a costly box-within-a-box structure. The

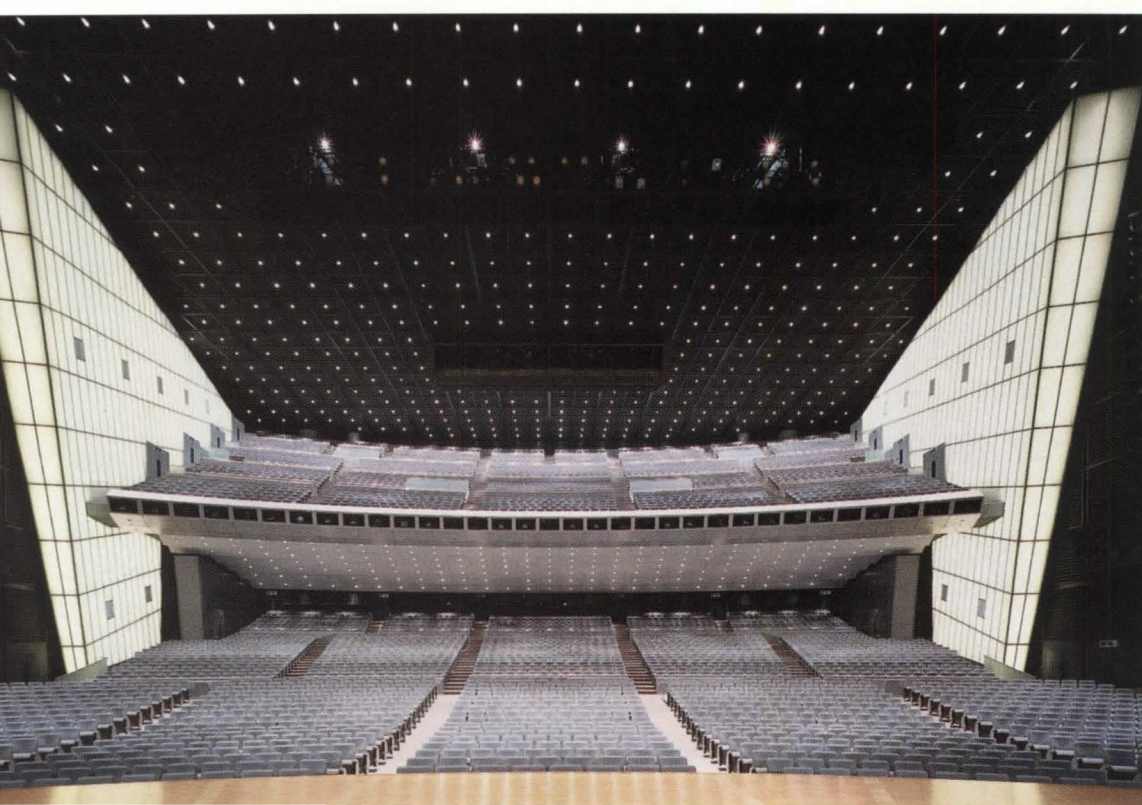
building's overall structure of precast concrete panels on a steel frame constitutes the outer boxes; the interior volumes are constructed of lightweight concrete panels and metal studs atop another concrete floor slab. Rubber isolating pads inserted between tiebacks that join the two structures prevent outside sound and vibration transmission, while similar isolators surrounding duct openings eliminate noise and vibrations from the building's mechanical systems.

To maximize the square footage of the performance halls, auditoriums, and banquet rooms, the four theater volumes are dramatically cantilevered 17.5 to 27.5 meters above the adjacent plaza from a rigid steel-framed armature. They are wrapped in crisply detailed, 2.5-by-2.25-meter aluminum panels. The rectilinear 57.5-meter-high bar concealing the theaters' fly towers is clad in 30-milimeter-thick panels of Brazilian

granite that were applied to precast-concrete infill panels off-site.

The largest of the Forum's auditoriums, known as Hall A, seats more than 5,000 and is geared primarily toward large international conferences. In fact, the 78,000-square-foot theater, like the Forum's other auditoriums, is wired for simultaneous translation in eight languages. But the sophisticated electronic acoustical system of Hall A allows the space to host any type of performance, from rock concerts to chamber music and speeches.

Jaffe Holden Scarbrough and Yamaha combined two electronic enhancement systems to distribute a full range of sounds evenly throughout the vast theater interior. Early field speakers, for example, are placed above the proscenium and on the underside of the balcony, while bass speakers are attached beneath seats and in the ceiling and side walls.—*Raul A. Barreneche*



**FACING PAGE, SECTION:** Interstitial space occupied by 4-meter-deep roof truss (top) acts as acoustic barrier for performance hall. Floor above fly tower (top left) houses offices; louvered enclosure at top conceals roof-mounted mechanical equipment.

**ABOVE:** Paneled in Japanese maple, Hall A's 21-meter-high proscenium bridges scale of 16-meter-high stage and volume of auditorium.

**LEFT:** Balcony is flanked by pair of canted walls of translucent, illuminated laminated glass.

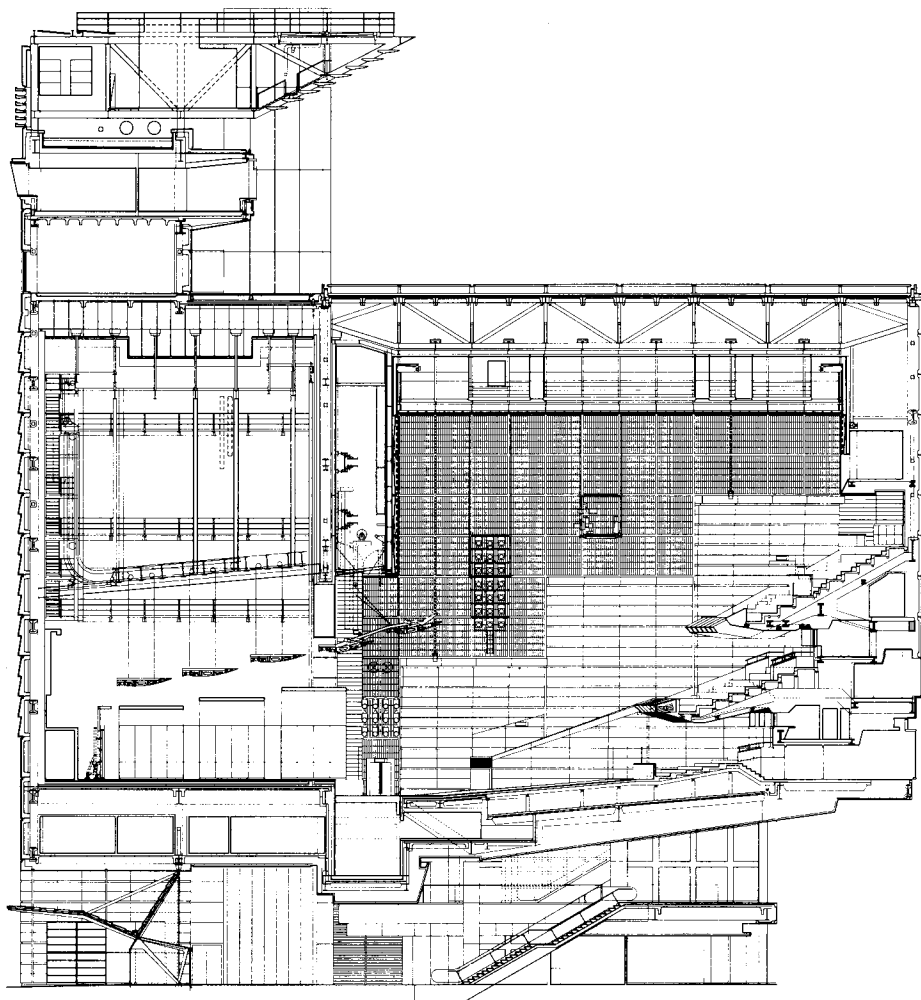
# HALL C: 1,500-SEAT THEATER

The second largest of the Tokyo Forum's theaters, the 30,000-square-foot Hall C is designed as a concert hall for orchestral and other musical performances. The key difference between this 1,500-seat hall and the 5,000-seat Hall A is the smaller theater's reliance on natural acoustics, as well as its flexibility in accommodating the acoustical nuances of different types of performances.

The wood-paneled interior of Hall C is typical of the rich palette of natural materials Viñoly employs throughout the Forum's interiors, which resonate with Japanese material sensibilities. The deep cherry-colored wood cladding the interior walls and seats is *karin*, a hardwood from Indonesia, which has been rotary cut to achieve a burlled finish and applied as a veneer over fire-proof calcium board.

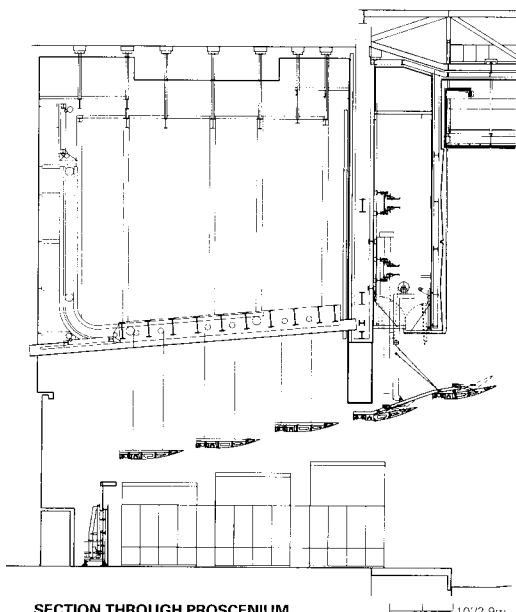
In the upper reaches of the theaters, the wall finish changes to a grid of aluminum mesh panels over acoustically reflective gypsum board. Here, movable absorptive fiberglass panels inserted between the gypsum board and the aluminum mesh panels slide up or down to change the hall's reverberation time and reflectivity according to performance type.

For symphonic performances, the acoustic volume of the space can be changed by a "concert hall shaper" developed by acousticians Jaffe Holden Scarbrough and Yamaha (section, right). This 11-ton steel panel moves along a mechanized track and turns horizontally from its vertical storage position against the fly tower's back wall in order to close off the tower from the stage and audience. Baffles mounted to the steel underside bounce sound out into the audience and help musicians on stage hear the music more clearly. An additional pair of reflectors positioned in front of the proscenium retract into a slot above the proscenium when not in use (detail, far right). —R.A.B.



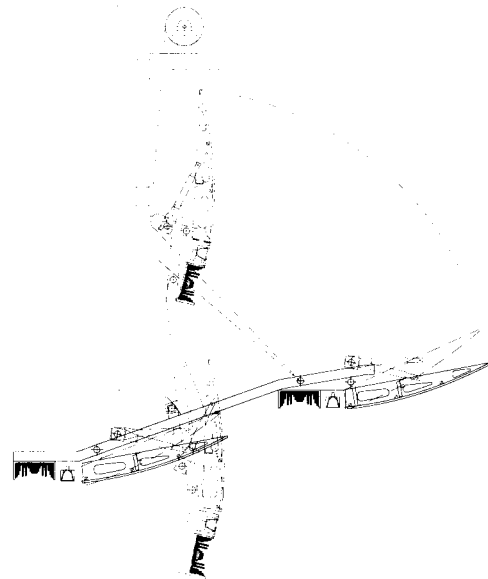
WEST-EAST SECTION THROUGH HALL C

15/4m



SECTION THROUGH PROSCENIUM

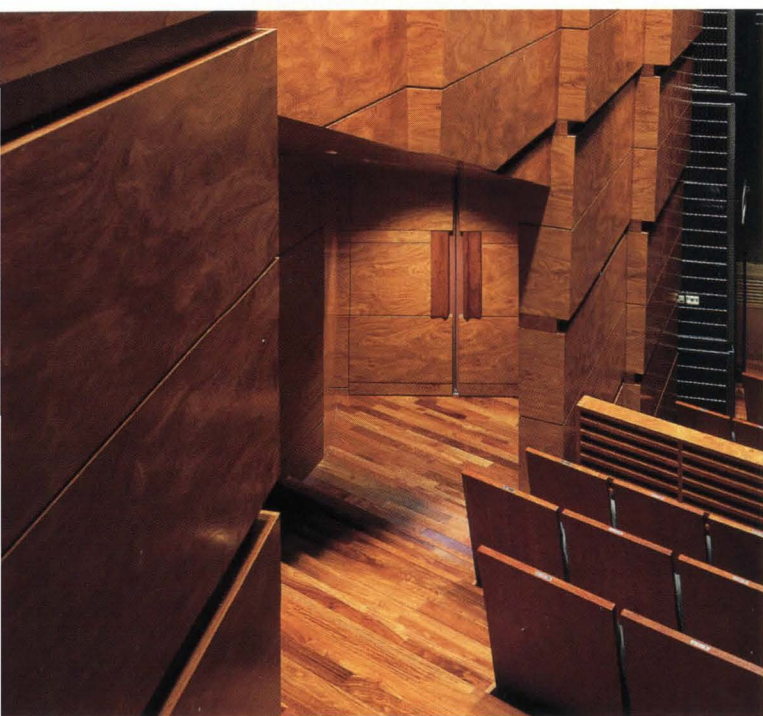
10/2.9m



DETAIL OF BAFFLE

3.4/1m





**FACING PAGE, TOP SECTION:** Public entry sequence to Hall C begins beneath glass canopy under fly tower (bottom left), and continues through second-floor lobby beneath raked auditorium floor. Theater achieves acoustical flexibility with retractable steel panel and baffles (left) over stage.

**FACING PAGE, BOTTOM SECTION:** Retractable steel panel closes off fly tower for orchestral performances.

**FACING PAGE, DETAIL:** Japanese maple-veneered baffles rotate down from proscenium to reflect sound.

**ABOVE:** Wood paneling over fireproof calcium board provides reflectivity to side walls. Aluminum mesh panels above wood conceal adjustable fiberglass panels for acoustic absorption.

**LEFT:** Wooden wall panels and seat backs are crafted from rotary-cut Indonesian karin.

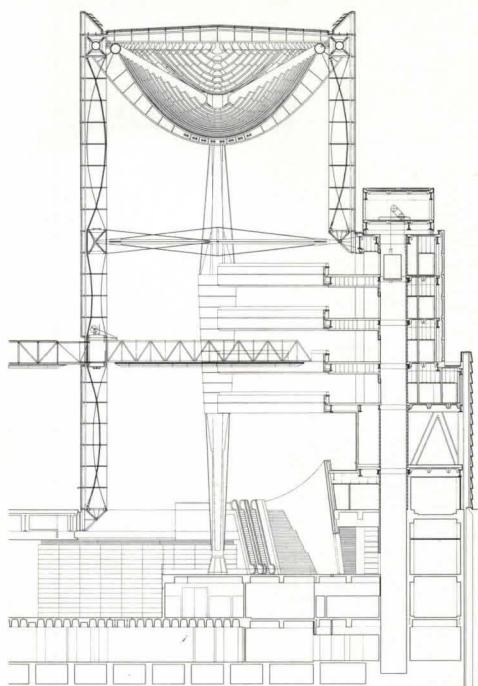
## GLASS HALL



**ABOVE:** Tapered steel columns support 124-meter-wide span of roof structure. Glass hall comprises concourse-level trade hall (bottom left), conference center, and offices (right).

**SECTION:** Vertical cable trusses stabilize spidery glass curtain walls on east and west facades. Sweeping wall of beechwood slats flanking escalators and stairs (bottom center) conceals pedestrian ramp leading to conference rooms, offices, and meeting rooms. Bridge (center) joins conference bar to theaters.

**FACING PAGE:** Pedestrian bridges connect conference rooms (left) to ramps overlooking courtyard (right) and bridges to theaters beyond, and horizontally brace curtain-wall structure.



WEST-EAST SECTION THROUGH GLASS HALL | 25/7.3m

The Forum's structural tour de force is its soaring, 47,000-square-foot glass hall. Separated from the theaters by a tree-shaded plaza, this elliptical hall includes a skylit atrium and a seven-story bar of conference rooms. The hall's bold, expressive construction is a major feat of engineering, but structurally efficient for its scale.

The glass hall's structure was far less adventurous in the original competition scheme: Viñoly envisioned 12 centrally placed columns extending the 682-foot length of the hall to support a conventional space frame holding up a glass roof. But engineer Kunio Watanabe of Tokyo-based Structural Design Group later found this arrangement highly inefficient and suggested instead a more daring roof structure supported by two large columns.

The resulting structure comprises two monumental steel-pipe columns that taper from a maximum width of 4.5 meters at roughly two-thirds of their height to 1.3 meters at their bases and capitals. They support a remarkable 124-meter clear span between them and 42-meter-long cantilevers at either end. At the fourth and seventh floors, the conical columns are tied into the structure of the conference bar for lateral stability against seismic and wind loads. The columns are constructed of fire-rated steel, a material developed by the Japanese that can withstand temperatures of 600 degrees Celsius while maintaining 75 percent of its design strength; consequently, columns cast from this material can be left exposed.

The columns support a monumental roof structure resembling a prehistoric skeleton or the framing of a ship's hull. The relatively lightweight structure is composed of a pair of 1.2-meter-diameter tubular steel compression arches that span the columns and two tubular steel compression beams cantilevering from each column to the ends of



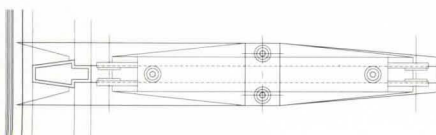
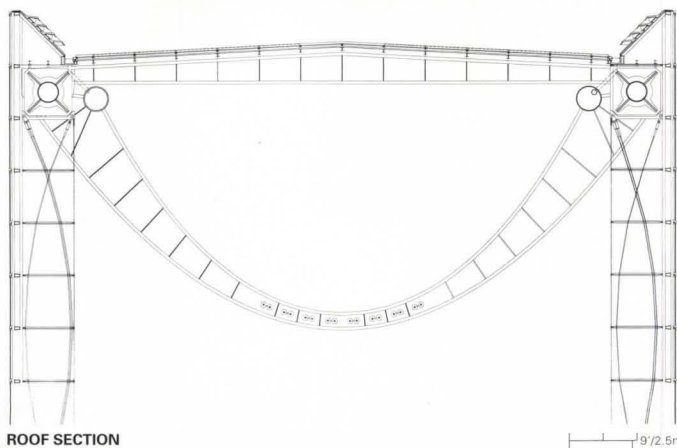
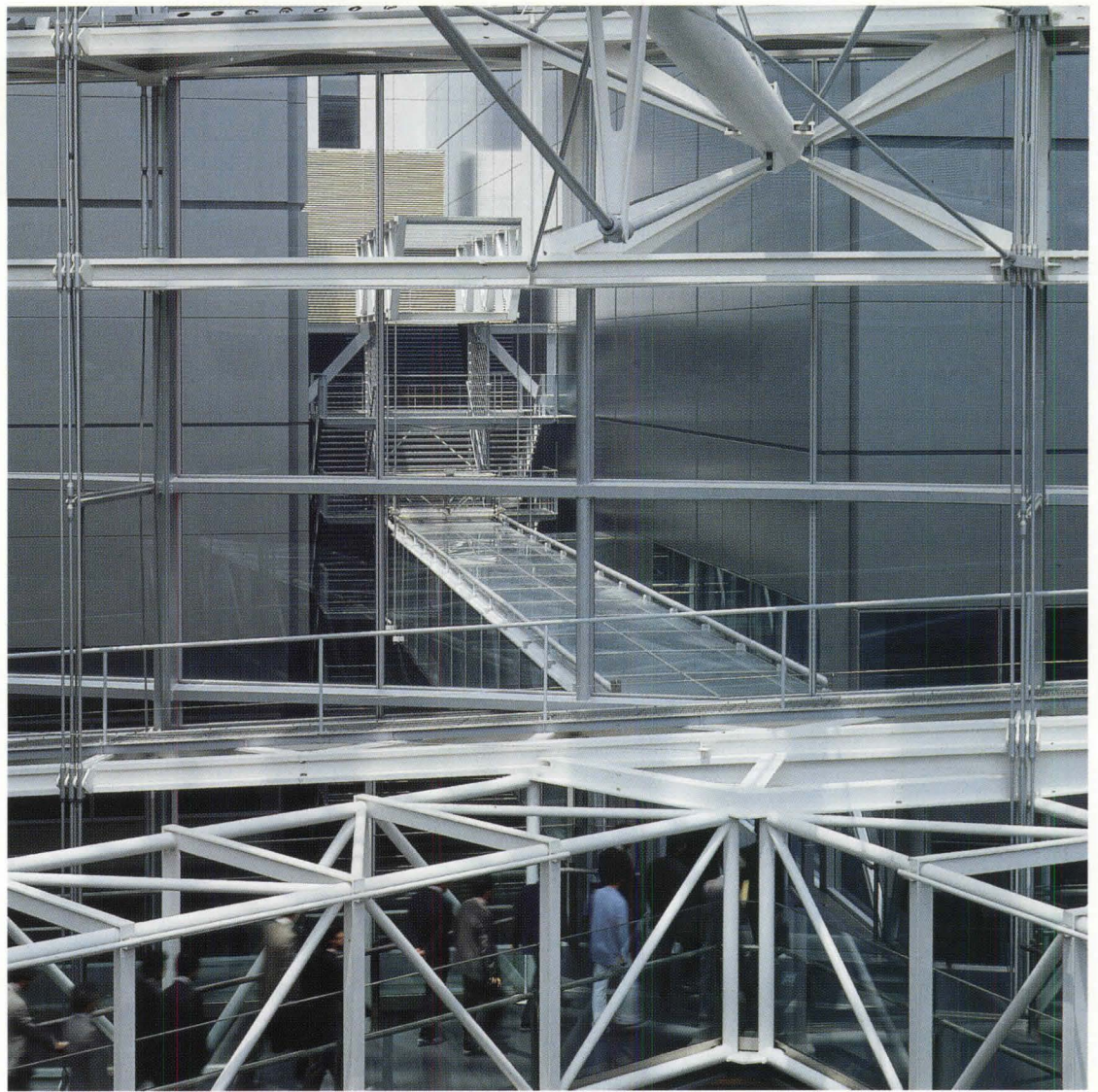
the elliptical hall. A series of 16 tension cables is inversely curved to the compression arches and to the cantilevered beams. The tension and compression members are separated by 56 steel ribs that also support the building's roof, a standard steel frame with insulated glass.

At first, Viñoly hesitated to build such a large glazed expanse in a seismically active area. Glass is not a traditional building material in Japan, given perceived safety issues in an earthquake. "Large glass buildings are not common in Japan, more for psychological reasons than engineering," explains Viñoly. "But we wanted to make the glazed walls really transparent, and that, coupled with the building's sheer size, is what created the technical challenges."

The 57-meter-high curtain wall of the west facade is fitted with 16-millimeter-thick laminated glass and stabilized by freestanding steel cable trusses spanning the entire height of the wall. The cable trusses also help tie the roof truss down and prevent it from rocking during an earthquake. Because the twin tapered columns support the entire load of the roof, the lightweight curtain wall remains free of fireproofing.

To stiffen the wall against the lateral loads of wind and earthquakes, Viñoly designed the circulation ramp along the west wall as a 2.8-meter-deep horizontal beam to provide rigidity and absorb wind loads. Above this curved ramp, 32.5 meters from the plaza, a horizontal trussed arch acts as a second wind beam to brace the delicate glass wall. Pedestrian bridges on the fifth and sixth levels and two large steel struts above the conference level transfer lateral loads on the curtain wall to the solid mass of the conference bar.

Despite the Forum's size, there are no expansion joints in its foundations, due to seismic considerations. Both the glass hall and the theater block sit atop a continuous concrete mat linking the two masses below ground. However, to allow the above-grade portions of the buildings to move at slightly different frequencies during an earthquake, the steel-and-glass bridges that span the glass hall and theaters over the courtyard act as a kind of expansion joint: The bridges are structurally linked to the theater block, but during an earthquake, the bridges' floors are designed to slide over the ramp of the glass hall where the two surfaces meet.—R.A.B.



DETAIL OF COMPRESSION STRUT

**ABOVE:** Trusses of glass hall's ramp and bridges to theater block stabilize hall's glazed west-facing wall.

**SECTION:** Tension cables of roof structure are inserted through holes in bottom of 56 curved steel ribs. Ribs separate tension cables from tubular compression pipes at outer edges of ribs and compression struts (top left and right) atop cable trusses of curtain walls. Structure supports flat roof of steel and insulated glass.

**DETAIL:** One of twin steel compression struts, mounted to east and west curtain walls and extending across width of glass hall, provides lateral bracing.

**FACING PAGE:** On east wall, 2.55-meter-deep brackets (right) anchor tension cables of curtain-wall trusses. Steel tubes between brackets conceal uplights illuminating roof structure.



**DESIGN ARCHITECT:** Rafael Viñoly Architects—Rafael Viñoly (design principal); Kathleen Bryne, James Conti, Patricia Dickman, Bernard Frombgen, Christine Frombgen, William Griffen, Suenn Ho, Marcela Villanueva, Jackie Welsh (competition team); Jay Bargmann, Charles Blomberg, Harris Feinn, Atsuko Imagawa, Chan-li Lin, Sandra McKee, Naomi Sato (project managers); Ryu Aizu, Marcelo Alexander, Maria Aviles-Lebron, Cathleen Bachman, Brenda Barnes, Charles Berman, Rustico Bernardo, Jean Campbell, Chi-Sey Chang, Wen-Cheh Chiu, Jong Cho, Joseph Credle, Joseph DesRosier, Susan Frosrén, Nicolas Guillot, Peter Hahn, Eric Hansell, Hiroko Hashimoto, James Herr, Isao Ikeda, Sachie Isaka, Sung Won Jung, John Kinnaird, Masamichi Kiryu, Michiko Kishi, Toshihiro Kiyoshige, Shigeru Kotouda, Sharon Kovalsky, Shizuka Kubota, Irene Medvedosky, Lucas Michael, Fusako Miura, Takeshi Miyakawa, Kazuko Murakami, Noor Othman, Richard Pedranti, Naoki Sasaki, Marianne Schali, Jonathan Schloss, Masao Shida, Masaichi Shimizu, Yasunori Tomiyoshi, Dai Tsukamoto, Celeste Umpierre, Rafael Menendez Viñoly, Christopher Warnick, James Westcott, John Wong, Michael Woods, Yeng-Tse Wu, Yoshifumi Yasumiya, Hiroki Yoshihara, Hisham Youssef, Yung-Bae Yi, Merek Zamdner, Martin Zogran (project architects)

**ASSOCIATE ARCHITECTS:** Masao Shiina Architects—Masao Shiina (principal-in-charge); Takeshi Kato (project manager); Nobuhiko Toyonaga (project architect); GKK Architects and Engineers—Reiichiro Kitadai (principal-in-charge); Shinji Nagayama, Hiroshi Yamaki (project managers); Shuuichi Iida (project designer); Tomofumi Nagayama (project architect)

**ENGINEERS:** Structural Design Group, Umezawa Structural Design Laboratory, Hanawa Structural Design, Sasaki Structural Planning Laboratory, Yokoyama Structural Design (structural); P.T. Morimura and Associates (mechanical/electrical)

**CONSULTANTS:** Jaffe Holden Scarbrough, Yamaha Acoustics Research Laboratory (acoustics); Theater Workshop, Jules Fisher Associates (stage mechanism and lighting); Claude R. Engle Lighting Consultant, Lighting Planners Associates (lighting); John Van Deusen and Associates (mechanical transportation); Plants Associates (signage); Futaba Quantity Survey (cost estimating); GKK (tenant spaces); ALP Laboratory (landscape)

**CONTRACTORS:** Taisei, Toda, Shimizu, Hazama, Tekken, Nissan, Mitsubishi, Ohki, Odakyu, Kokune (theaters); Ohbayashi, Kajima, Ando, Zenidaka, Goyo, Fujiki, Morimoto, Chizaki, Katsumara (glass hall)

**COST:** \$1.65 billion

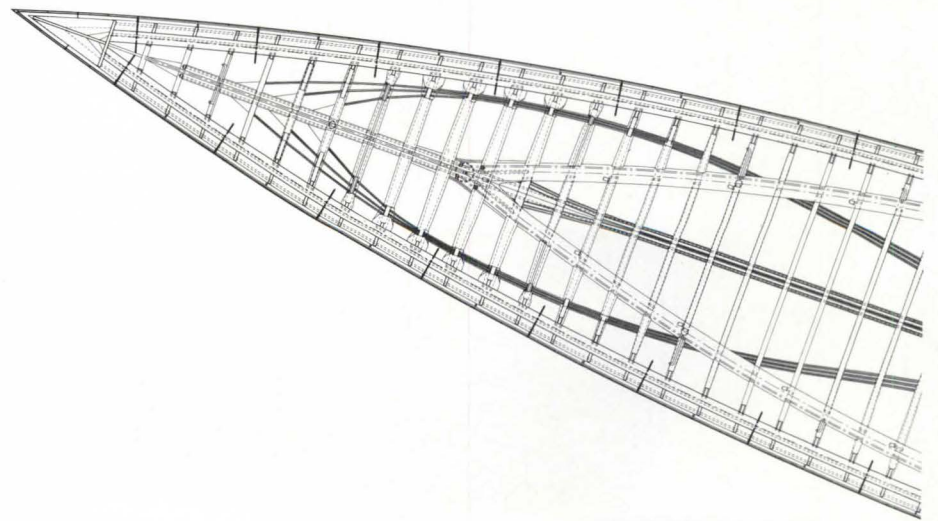
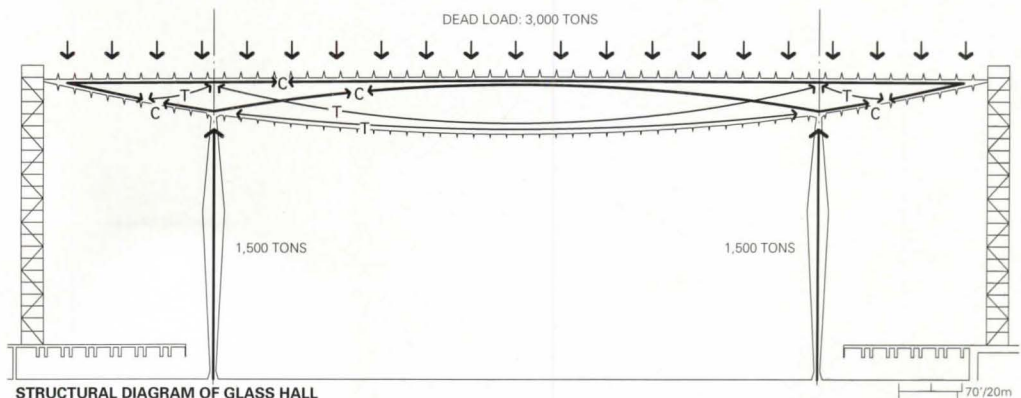
**PHOTOGRAPHER:** Timothy Hursley

**TOP:** At night, transparent glass curtain wall reveals steel ribs, arches, and cables of roof truss.

**DIAGRAM:** Tension (T) and compression (C) members counter forces of roof. Twin, tapered columns support roof's 3,000-ton dead load. Cantilevered ends of roof structure are supported by vertical wall trusses extending to plaza level.

**PLAN:** Twin compression arches (right) are framed into column capitals (center). Cantilevered beam spans from column to ends of hall. Tension cables extend from center of roof to cantilevered ends.

**FACING PAGE:** Steel ribs of skeletal roof truss separate tubular compression arches from tension cables.





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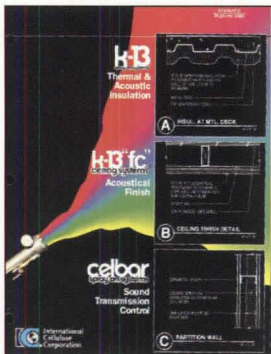
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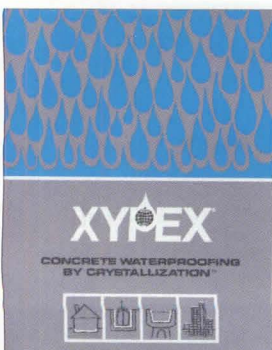
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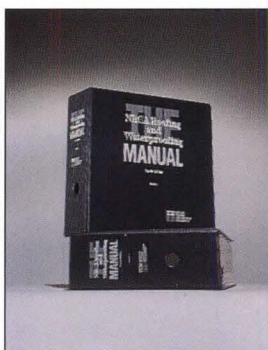
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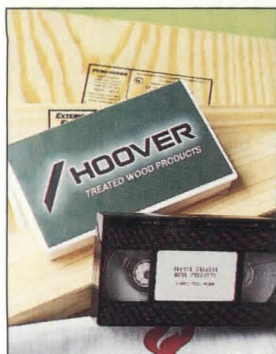


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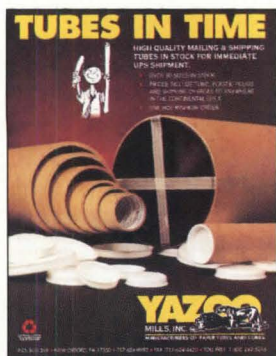
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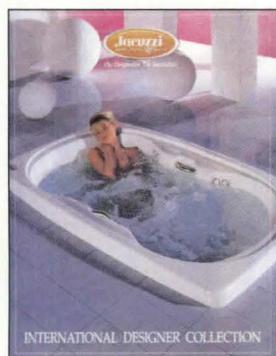
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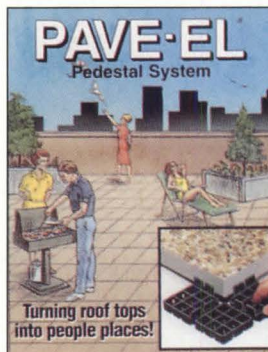
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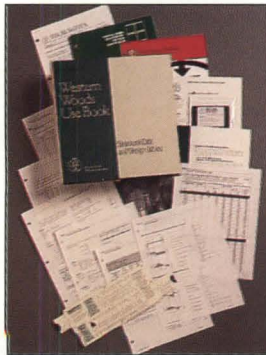
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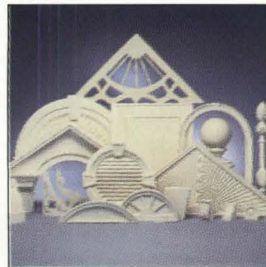
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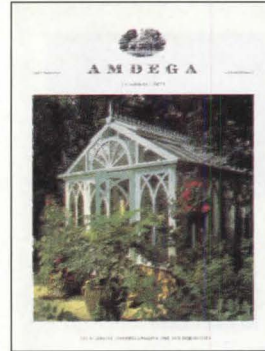
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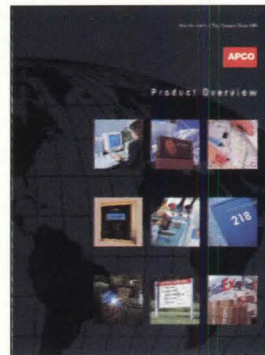
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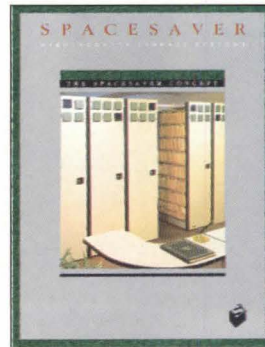
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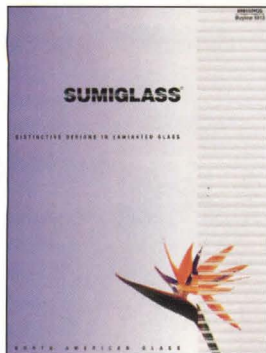
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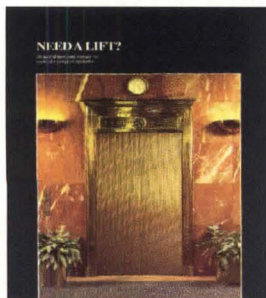
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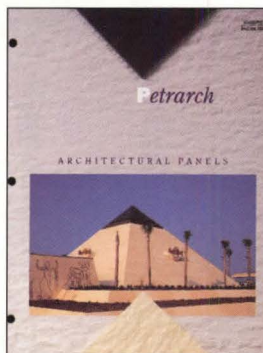
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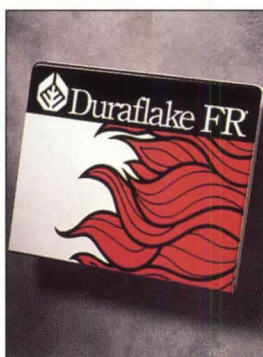
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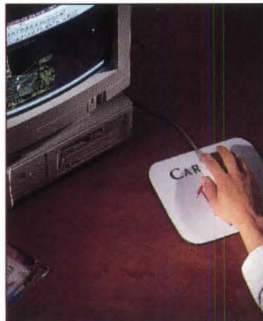
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**TimberForm® Willow™ Site Furniture**—This unique family of coordinated street and mall furnishings from Columbia Cascade Company includes benches, backless seats, settees, chairs, litter containers, plus an ash receptacle and planter. Features all-steel welded construction with Schedule 40 pipe frames and round rod willows. Powder coated in your choice of over 170 designer colors. Patents are pending. Twelve other design families from traditional through contemporary are also offered. For specifier catalogs call 1-800/547-1940 ext. 778 or fax us at 503/223-4530.

Circle 69.

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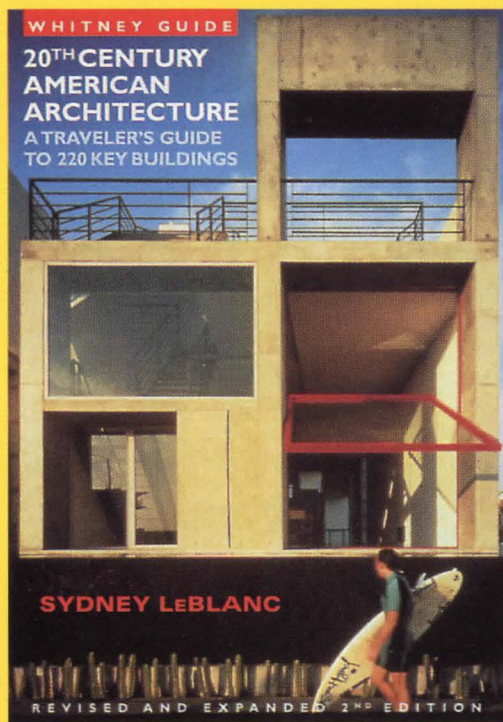
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**Circle 75.**

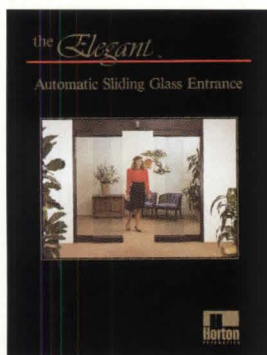
## Southern Aluminum Finishing Co.



**New Metal Cornice System**—Pre-Engineered "Designer Cornice" offers you four interchangeable profiles and a variety of accessory trims for a custom cornice design. Designer Cornice may be installed over wood or metal framing—even parapets can be boxed out with Designer Cornice to achieve an impressive building feature. Available with custom colors or rich anodized finishes. Call 1-800-334-9823 for free literature.

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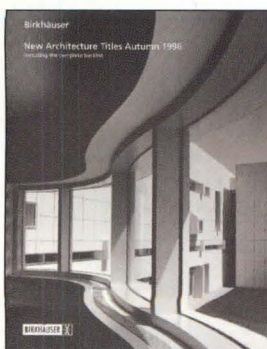
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**Automatic Door Architectural Elegance**—Horton Automatics Elegant™ automatic sliding glass entrance system meets the demands of modern architecture yet conforms to building codes and energy conservation requirements. Automated by the microprocessor driven Series 2001 operator, glass panels slide quietly on a concealed track. For emergency egress, a breakout feature allows glass door panels to swing out. Call 800-531-3111.

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## Birkhäuser

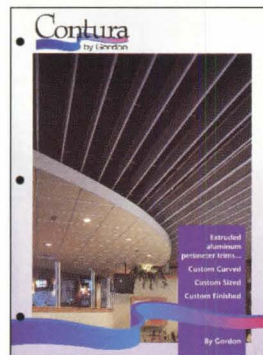


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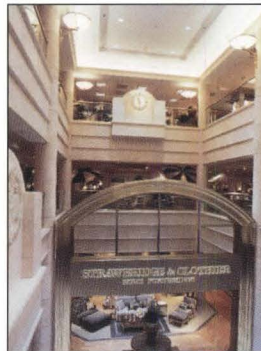
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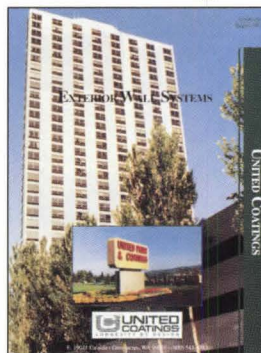
## Quinstone Industries, Inc.



**Quinstone Industries** molds several new materials into the look and feel of stone. With four textures, six colors and a fire/smoke rating of 0/0 this is one of the hottest new products. With the installation by carpenters, it allows a freedom of design, never before possible with real stone, plus adding a considerable cost saving. Quinstone Industries, Inc., 1112 West King St., P.O. Box 1026, Quincy, FL 32352, 1/800-621-0565.

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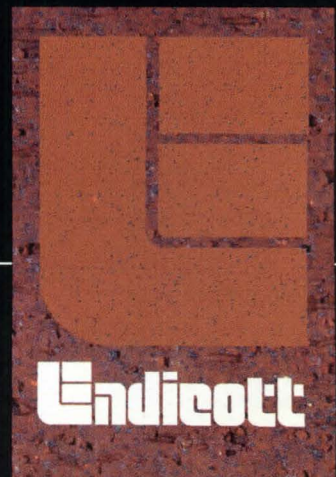
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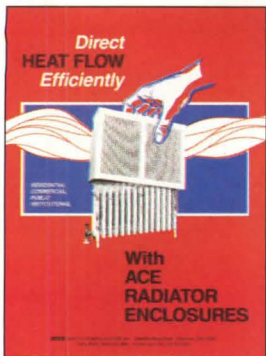
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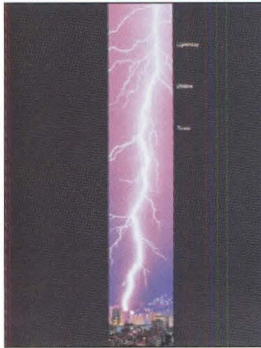
## CRSI



**CRSI Workbook for Evaluating Concrete Building Designs**—An easy-to-use resource for confirming the framing system of a reinforced concrete structure. Material dimensions, quantities and cost analysis along with impact on other building systems are featured. 80 pages. Contact CRSI for ordering information. Phone: 847-517-1200. Fax: 847-517-1206.

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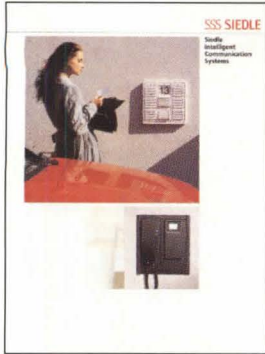
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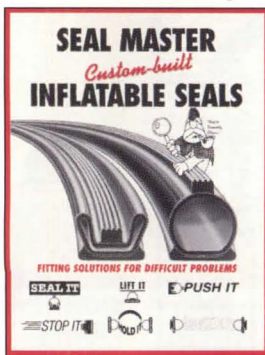
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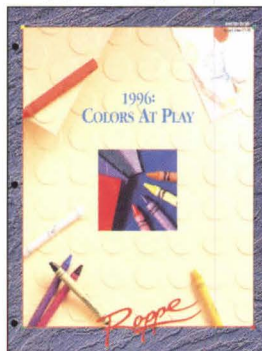
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## Seal Master Corporation



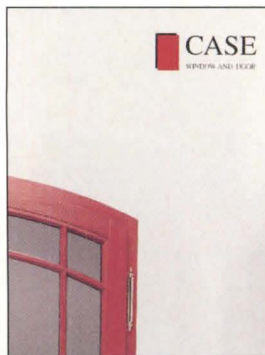
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## Roppe Corporation



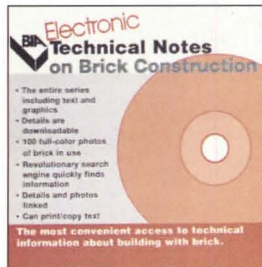
**Roppe Floors—Colors at Play.** Roppe's 1996 catalogue features their complete line of high quality, color coordinated rubber and vinyl flooring products including covebase, tile, treads, sheet vinyl, and accessories. For a free copy, call 1-800-537-9527. More information also available on: Sweets & SweetsSource, Architects First Source (hard copy & internet), Roppe Billboard: Dial 1-419-435-3119, Enter ID of "COVEBASE" then "ROPPE 1" (password), Free Disk: Call 1-800-537-9527, ext. 142.  
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## Case Window and Door



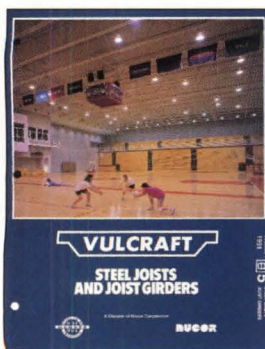
**CASE WINDOW AND DOOR** combines German durability and engineering with U.S. architectural millwork finishes to produce windows and doors, window walls, and rolling glass walls for luxury residential and commercial projects. Wood products are custom made with any appropriate wood species. Metal-clad systems are available. Hardware options are virtually unlimited. Glazing thickness up to 1 3/4" (44 mm).  
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## Brick Institute of America



**Technical Notes on Brick Construction** on CD-ROM. The digitized version contains text, drawings, photographs, tables and charts on design, detailing and construction with brick. Excellent search program. Details download. 100 full color photos show brick in applications. Available for \$99.95 through Nov. 15, 1996. Visa/MC welcome. Brick Institute of America, 11490 Commerce Park Drive, Reston, Virginia 20191, (703) 620-0010.  
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## Vulcraft

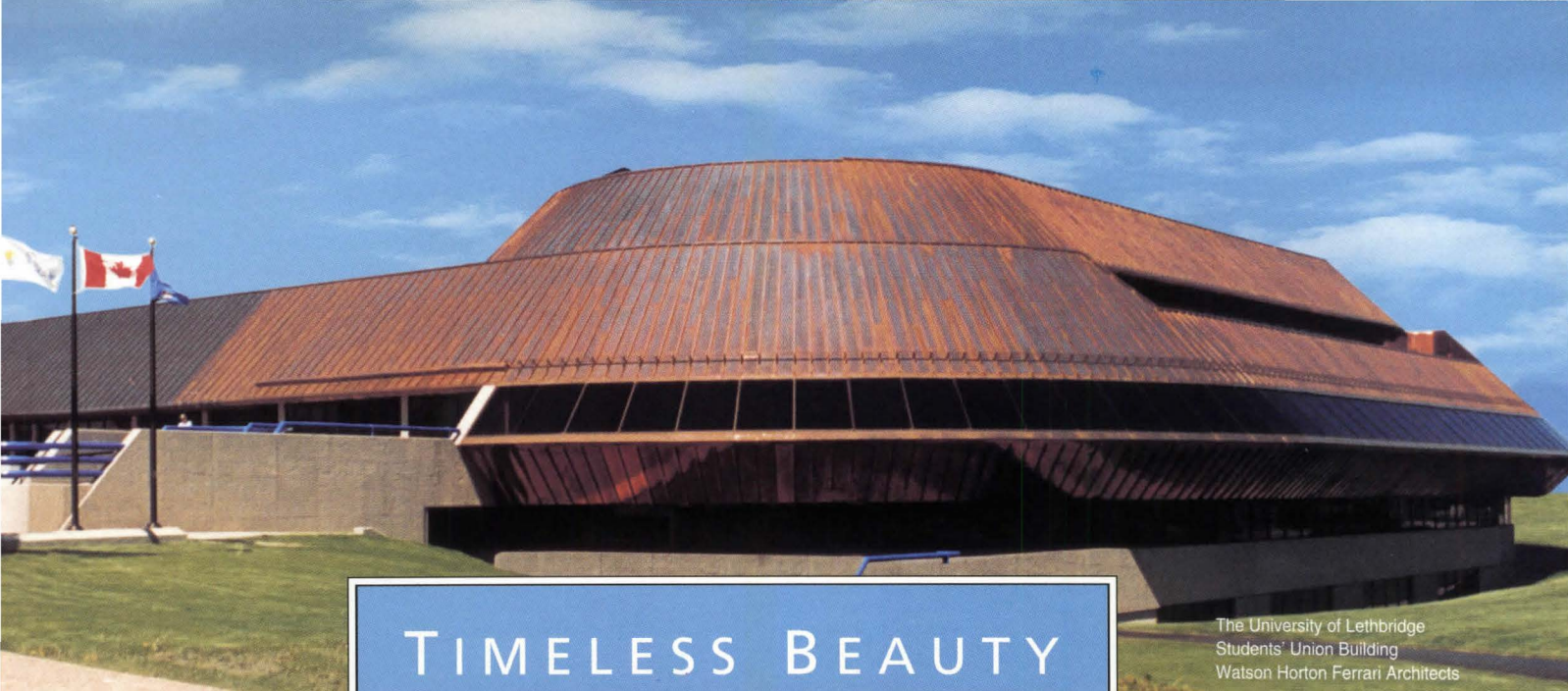


**STEEL JOISTS AND JOIST GIRDERS.** This 94-page design manual provides indepth information for the optimum use of steel joists and joist girders. As the largest producer in the United States, Vulcraft has the most experience and expertise in the application, design and manufacture of these products. The economies of steel joists and joist girders contribute to their increasing utilization.  
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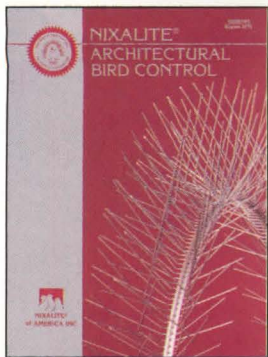


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\* On 3 1/2" IBM-compatible disks.

## Nixalite of America, Inc.



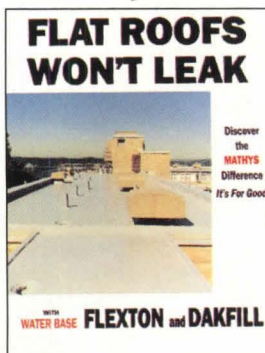
**BIRD AND CLIMBING ANIMAL CONTROL**—Nixalite of America Inc. manufactures a stainless steel barrier providing long lasting and effective control for pest birds and climbing animals. NIXALITE blends with the surrounding architecture and does not detract from structural design. NIXALITE's brochure provides information and lists model specifications, estimating procedures, mounting systems, accessories and special services. 800/624-1189 or fax 800/624-1196. Visit our website at <http://www.nixalite.com>  
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## ACI Distribution



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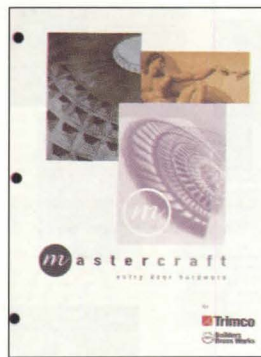
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## Musson Rubber Company



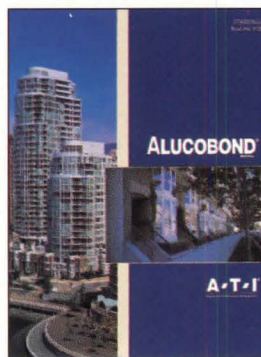
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## Trimco/BBW



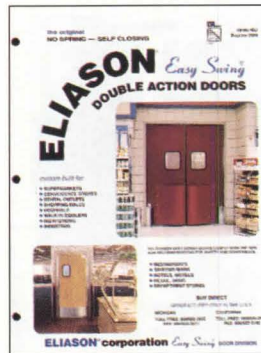
**Mastercraft by Trimco/BBW—Sculpted Entry Pulls.** Mastercraft, a series of 20 strong, elegant pulls offering a unique opportunity to show entry doors as tasteful works of art. These hand-finished pulls provide a stunning first impression for any building. Series includes round, square, vertical and freeform pulls. Cast in our own foundry in all standard architectural finishes. **FREE COPY.**  
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## Alucobond Technologies, Inc.



**NEW ALUCOBOND™ MATERIAL CATALOG AVAILABLE**—This new 12-page, full-color catalog illustrates recent applications in a wide range of new and retrofit applications plus provides complete general and technical information for Alucobond® Material and Alucobond 21® Material. A current color chart is also included plus a description of attachment methods.  
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## Eliason Corporation

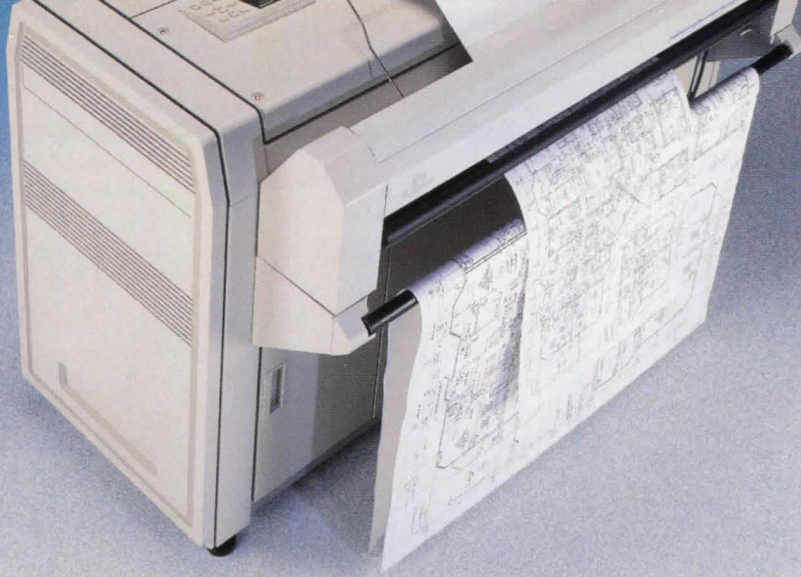


**Double Action Doors**—Eliason has announced the availability of a new 1996 Easy Swing door Price/Spec catalog. Doors are illustrated in full color with complete specifications, technical and application data. Finger touch opening and safe, gentle time delay closing are features desirable in busy Retail Outlets. Doors can be specified and purchased direct. A hard bound catalog will be sent at no charge. Eliason Corporation, P.O. Box 2128, Kalamazoo, MI 49003. Phone: 800-828-3655, Fax: 800-828-3577.  
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JDL's customer satisfaction surveys continue to show that customers appreciate our commitment to quality service and support. JDL's service organization, Bell & Howell, has been servicing imaging products for over 40 years. And you always have direct access to JDL's own technical support team — at no charge.

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We back up our plotters with a 30-Day Money Back Guarantee. We will run free plot tests using your files so you know, in advance, the quality and performance you can expect. We know you won't find a better plotter, even at twice the price.

***So call us today and ask for your FREE 3000E video demo.***

**800-899-8709**

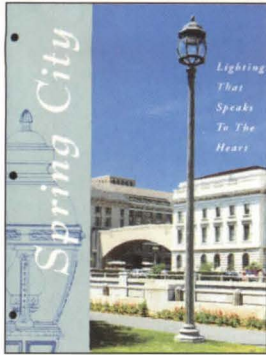
**FAX: 805-389-6993**

**E-MAIL: [jdlsales@aol.com](mailto:jdlsales@aol.com)**

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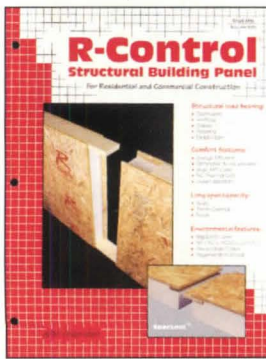
**JDL**  
Japan Digital Laboratory

## Spring City Electrical Mfg. Co.



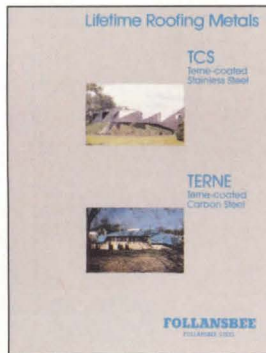
**OUTDOOR LIGHTING**—Cast iron is almost universally acknowledged to be the best material for outdoor lighting standards: beautiful, durable, and virtually maintenance-free. Spring City's full-color, 8-page catalog shows traditional cast iron lighting posts, bollards, traffic control, and more from the country's widest selection. Spring City Manufacturing Company, Spring City, PA  
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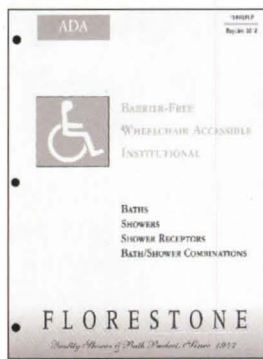
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October 1997

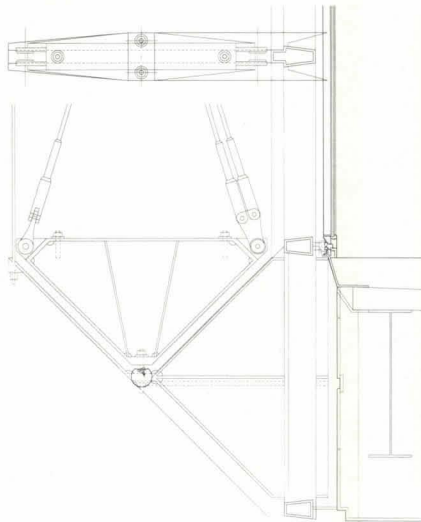
August 26, 1997



## Japan Taps U.S. Expertise

*U.S. architects have found new clients for their design talents—across the Pacific.*

Continuing our coverage of Japan, this month's Practice feature looks at the complicated construction process behind Rafael Viñoly's Tokyo International Forum. The mammoth undertaking consumed seven years, \$1.6 billion dollars, and one of the largest pieces of prime real estate in Tokyo. It also brought together design professionals from two different cultures and taught them the power of cooperative endeavor. The Forum's complex program, innov-



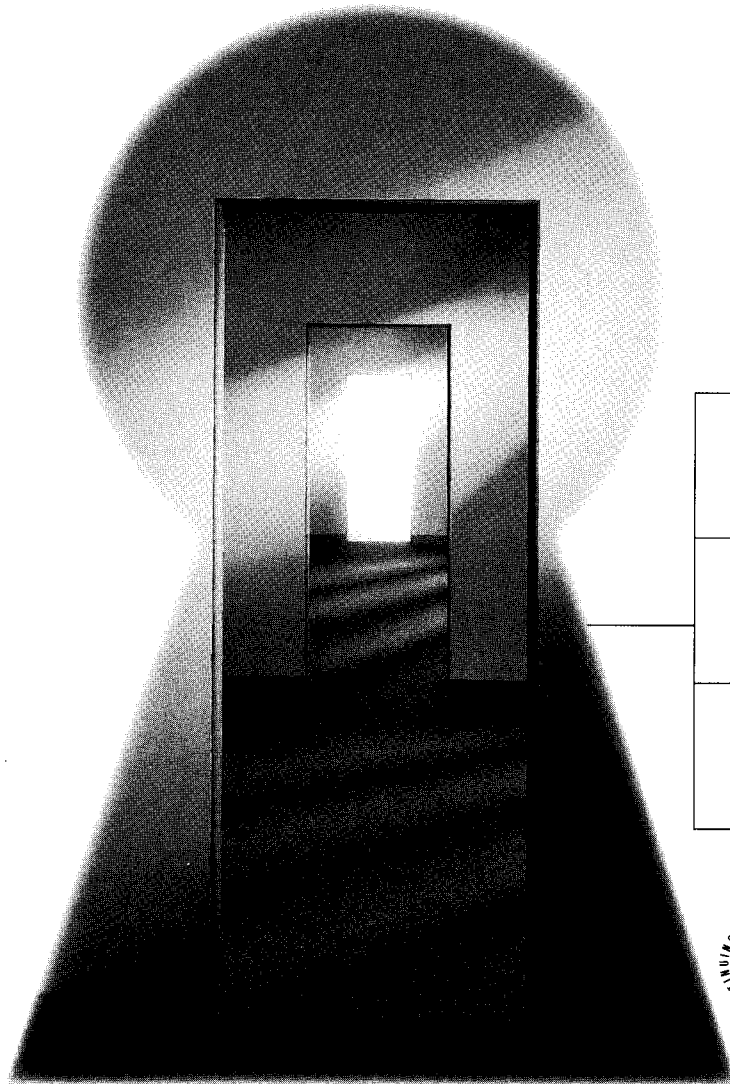
TOKYO TEAM: Rafael Viñoly (2nd from right) confers with Forum team.

ative structure, and ambitious construction schedule required remarkable dexterity from an unwieldy group that at times included as many as 33 prime contractors, to say nothing of architects, engineers, planners, and others. The successful results offer important lessons for professionals on both sides of the Pacific.

In addition to tapping U.S. design talent, the Japanese have begun importing American housing expertise. Japan's 1980s affluence, a general fascination with things American, and the quality of our residential construction have sparked demand for subdivision-style houses. Entrepreneurial Pacific Northwestern architects are pursuing this market with promising economic results.

The Pacific Northwest is also an important source of salvaged wood, which is gaining popularity among architects for use as both structure and finishes. The timbers rescued from demolished buildings offer designers access to a type of old-growth lumber that has all but vanished from today's construction market.

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## Building the Tokyo Forum

To mark the completion of the Tokyo International Forum's performance halls late last year, 100 architects and contractors gathered on the roof of its largest hall under a striped Shinto tent. Before an altar, each team captain received an oak leaf from the Shinto priest, ceremoniously passed the leaf over the last structural steel beam, and performed a series of claps according to custom. Tied with a symbolic banner, the beam was hoisted into place as "Pomp and Cir-

Moreover, the client helped shape a break-neck building process that, while chaotic and unpredictable, drove the design's evolution from a competition-winning sketch to a grand essay in technical wizardry. The project's public nature created a collective sense of social purpose that transcended the esthetics of design, Viñoly maintains, to "the esthetics of pulling things together."

Keeping the client's 42-month schedule was imperative, but the work could be expe-



SHINTO CEREMONY: Viñoly receives oak leaf from priest.

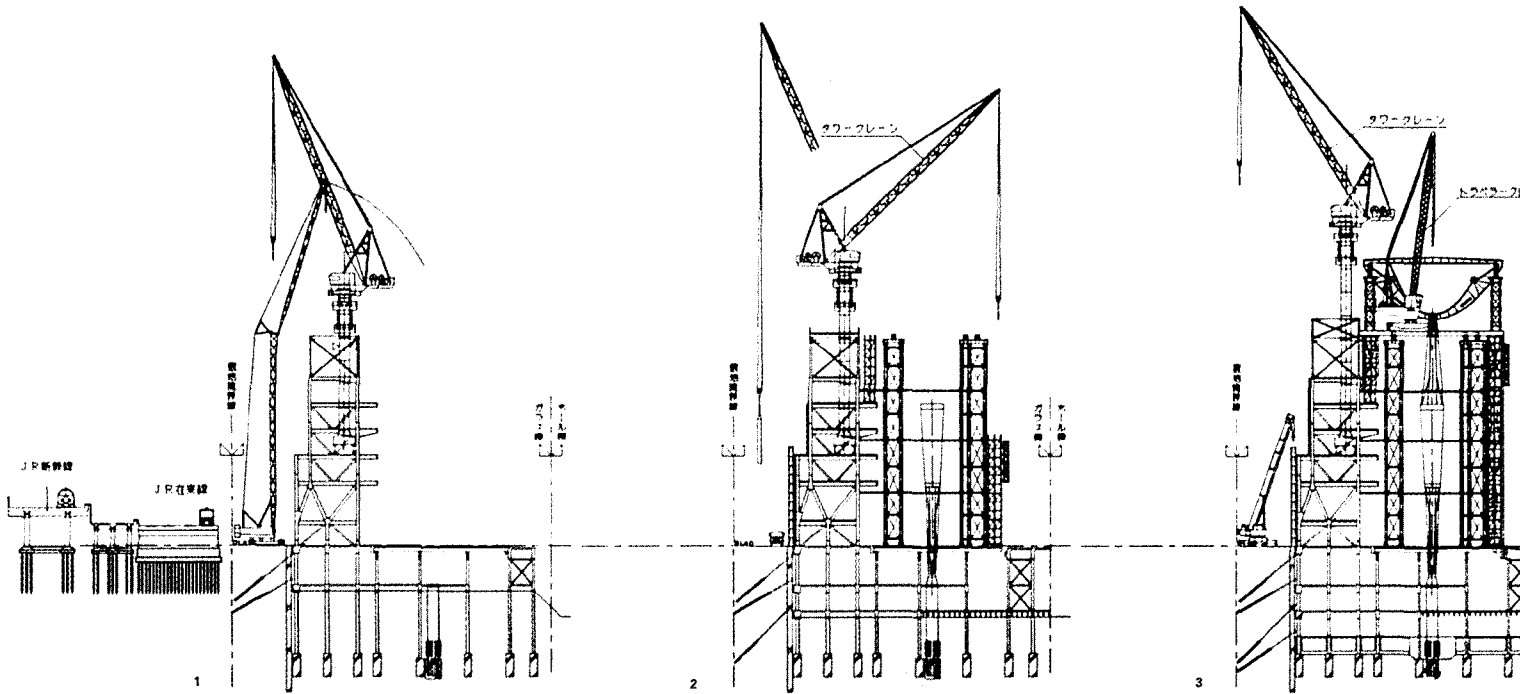
*A risky, fast-track Japanese project took Rafael Viñoly Architects on a journey of blood, sweat, and sake.*

cumstance" played and everyone sipped *sake*.

This topping-out toast represents more than a flourish of Japanese color. It reflects the solidarity shared among the client for the Forum—the Tokyo Metropolitan Government—and the contractors and consultants who crafted the \$1.65 billion civic landmark, as well as their American design maestro, Rafael Viñoly Architects. When the New York-based architect won Japan's first-ever international competition for a government project in 1989, the firm was relatively little known among its big-name competitors. With a great show of faith, the government admitted Rafael Viñoly to the exclusive Japan Institute of Architects and gave his office the cat-bird seat in construction administration—the first foreign firm ever to oversee construction in Japan.

ded by employing the Japanese "top-down" method of construction. In this faster and costlier approach to building, piles are driven into the site and the first-floor slab is set; then the building is built upward as excavation continues below. (The Forum actually topped out before digging was completed, and the building settled more than expected.)

From the start, Viñoly's staff received crucial help from two Tokyo-based associates. Masao Shina Architects, recommended by Kenzo Tange, sent two project architects to New York during design development to direct detailing and review drawing standards. Masao Shina in turn suggested GKK Architects & Engineers, which coordinated feasibility studies, disaster-prevention plans, code research, and building permits, and later helped set the construction schedule, order



materials, and advise on cost control. But Viñoly's office still "made the final decisions in every respect," claims Project Manager Shinji Nakayama, managing director of GKK.

Meanwhile, Viñoly's firm swelled in size: After an August 1990 preliminary design presentation, the 30-person staff grew to 120 and bought 50 new computer terminals, including five UNIX stations for animated video simulations. In just nine months, Viñoly's office completed 2,500 construction documents.

#### Delay helps design

But the architects soon found that this rigid schedule could be stretched by Tokyo's will. In June 1991, just after Viñoly submitted the construction documents, the government hit the brakes. This indefinite delay would ultimately last a year. The official reason was that artifacts dating from the Edo era (1609-1868) had been found below the site and would require archaeological tests. More to the point, Japan's economy was wracked by bank failures and inflation; postponing construction reportedly allowed the Tokyo government to fold the extravagant construction expense into the next fiscal year.

This setback worked in Viñoly's favor. Looking back, the architects liken the intensive documents phase to turning up the oven on a cake too quickly. The hiatus bought time to review the design and documentation critically, and to coordinate drawings better. To make up for halted cash flow and keep the bigger staff busy, Viñoly negotiated

a separate fee to build a 1:50 scale, 15-foot high maplewood model, which helped work out additional design kinks, and to produce an animated video simulation of the building.

Also during this period, Futaba Quantity Surveying continued to complete cost breakdowns for the project. The Tokyo government compared Futaba's figures to its own anticipated costs and announced, with some hyperbole, that the building was 70 percent over budget—before it even went out to bid. "Nobody knew how to price it," Project Manager Charles Blomberg maintains, because features such as the Forum's glass walls, outsized structure, and other custom items proved peculiar to estimators. Negotiations to cut costs began in late 1991 and continued through the next year, even as the project went out to bid in August 1992.

By that October, 33 prime contracts fell into place, for items ranging from mechanical and electrical services to cleaning equipment and the plaza's high-test glass floors. Viñoly's office decided at the start to rely mainly on Japanese contractors and consultants—"It would only have been a security blanket taking an American structural engineer," maintains Viñoly Senior Vice President Jay Bargmann. The few exceptions occurred in the design of theater spaces, for which Viñoly hired Jaffe Holden Scarbrough Acoustics for its experience in classical concert halls. The American acousticians executed initial documentation for the theaters, then handed the project to Yamaha Acoustics

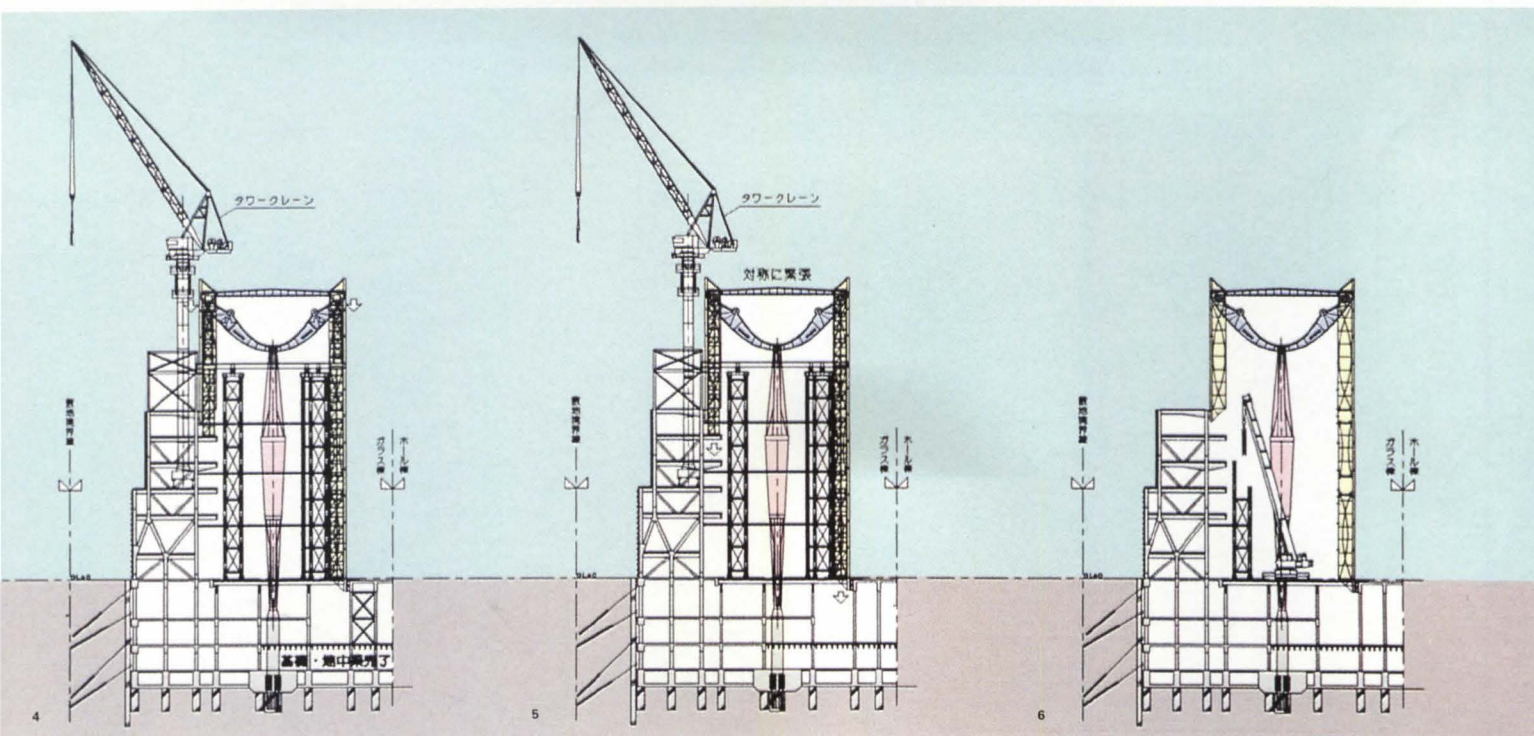
Research Laboratory for testing and presentations to contractors.

#### Site's separate contracts

As is typical in Japan, most prime contracts were awarded to joint-venture teams of several major Japanese construction firms, undergirded by dozens of subcontractors; authority ran according to a contractor's financial stake in the joint venture. Contracts were organized according to the site, which was split roughly down the middle of the central plaza between the four performance halls and the glass hall.

Taisei Corporation, the largest construction firm in Japan, which worked on Kenzo Tange's Tokyo City Hall and Yoshio Taniguchi's Toyota Municipal Museum of Art, led a team of 10 contractors building the performance halls. Construction of the glass hall was awarded to a nine-firm team led by Obayashi Corporation, a family-owned firm that started out in carpentry and is now Japan's third-largest contractor, having built Renzo Piano's Kansai Airport in Osaka and Norman Foster's Century Tower in Tokyo. Separate joint ventures were formed for mechanical, electrical, plumbing, and elevator systems.

This army of contractors began taking over the Forum's site in December 1992. On the glass hall side, however, cost remained an obstacle—as did the proposed roof structure's weight. Obayashi's final contract was delayed, yet the contractor agreed to continue working for six months with the architects and engineers revising the roof's design



and fabrication. Originally, the mammoth roof structure—then a standard space frame atop 12 columns—was to be built on the floor of the hall and hoisted into place. But raising the roof would create torsional problems with proposed vertical tie-down cables along the walls, and the bridges, struts, and tie assembly traversing the interior would block the way of cranes. Viñoly, Obayashi, and structural engineer Kunio Watanabe of Structural Design Group revamped the scheme into two columns and a structural rib frame. Instead of tie-down cables, the bridges, ramps, and roof connections would support the walls laterally.

Suspense hung over the site as the roof structure was wrought and assembled. Rather than build the structure on the ground, the architects and engineers mounted a 42-meter staging platform with a crane, from which they would put together the roof's rib framing, compression pipes, and tension cables. Finally, the roof was lowered from 24 jacks to load the columns and meet the walls, a process that took two days, a week apart. Strain gauges measured and analyzed the displacement of the roof's center versus its cantilevered ends, which deflect in opposite directions. Once structural performance proved sound after the first stage, final jacking fully loaded the columns. The roof settled within 7 millimeters of the maximum allowable deflection; the team collectively exhaled and uncorked champagne.

For Viñoly, maintaining the design's in-

tent proved tricky. At the peak of construction, when some 3,000 workers were on the site, Viñoly traveled to Tokyo for two weeks of every month to join project managers Blomberg and Sandra McKee for exhaustive design reviews. The conventional Japanese process—striving to meet the schedule above all else—yields a cumulative approach to detailing and matching materials, often at simplicity's expense, notes McKee, who oversaw construction of the performance halls. "Details get added on top," McKee explains, "and quite often there isn't time to say, 'Wait—what can we take back? Do we really need these five things?'"

In one testy instance involving a roof access door, the details were growing "too fussy," Blomberg contends. "The door was too small, because the sash fabricators were adding dimensions for the gasket, door hinges, the seal, and back structure." Blomberg finally protested, and the exchange was tense: "I said, 'I don't think this is working,'" he recounts. "My translator almost shot me." Ultimately, an Obayashi foreman validated Blomberg's decision and the work proceeded.

#### From drawing to detail in days

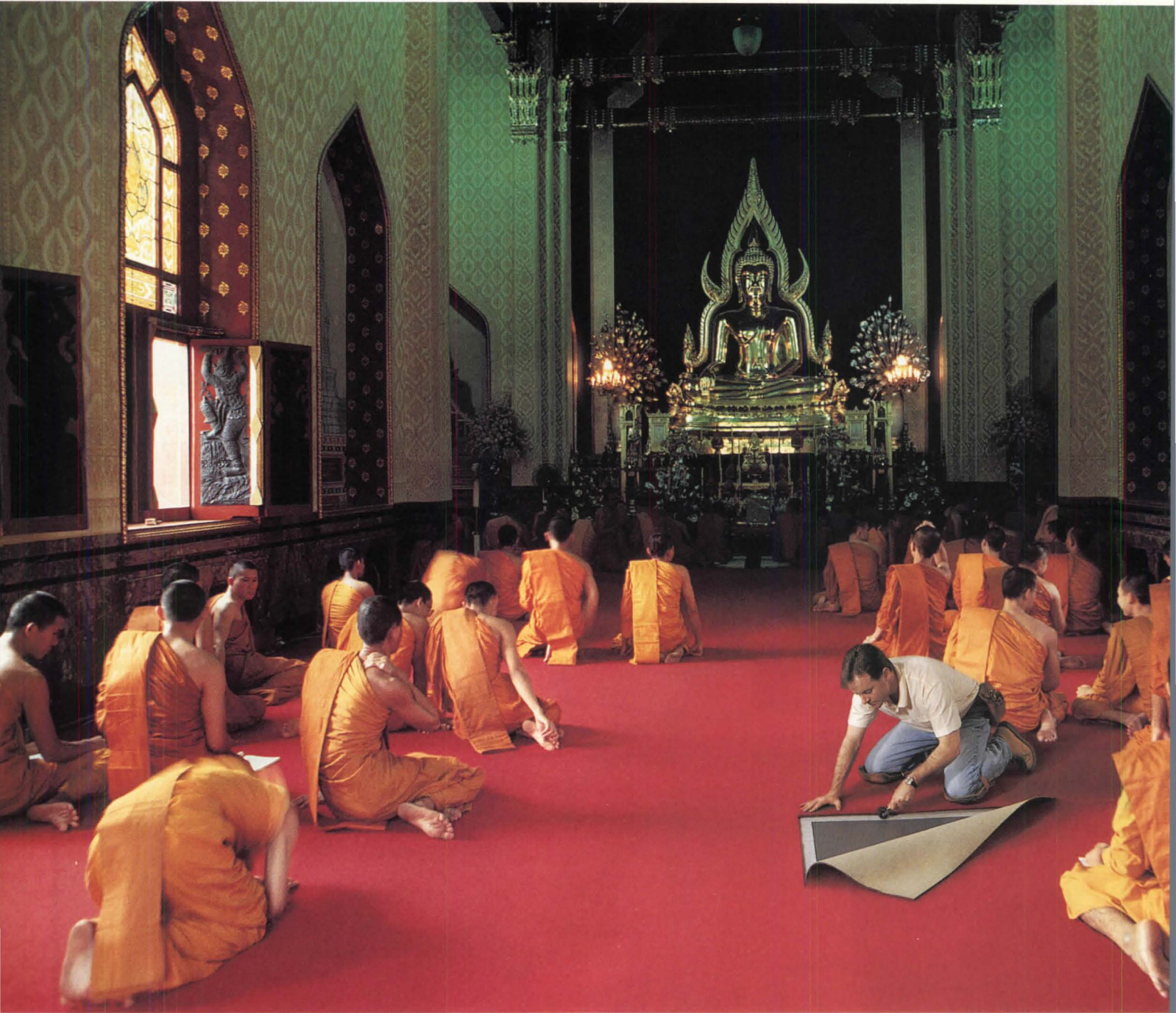
Generally, such details were hashed out in marathon meetings involving 250 or more workers and lasting 10 hours on Mondays and Tuesdays for five months. All the contractors lined up to work out final connections with the help of a shop drawing expert who, for example, drew the angle and slope

of the glass hall's ramp by hand on the spot for the steel fabricators. The drawings had been developed within reach of ordering material quantities, but details evolved through the shop drawings. "They'd change the drawings and go off and build the detail the next day," Blomberg recalls. "It's a very aggressive way of working."

Reflecting on the six-year journey of blood, sweat, and *sake*, Viñoly argues that American construction teams squander their efforts either in the "artificial" process of value engineering, or worse, in litigation after the fact. In Japan, Viñoly maintains, a risky enterprise such as the Forum is possible because the Japanese project principals and laborers alike were "capable of reacting without cynicism." And with nary a lawyer in sight.

With its superlative structure and technical reach, the Tokyo International Forum embodies this uncommon confidence and harmony. Viñoly trekked to Japan 100 times with a powerful design concept, but without preconceptions of how it should be realized. Rather than resist foreign methods, the American architects looked, listened, and learned at every turn.—Bradford McKee

**THESE PAGES:** Diagram illustrates glass hall's "top-down" construction. Pilings are driven and first-floor slab is set; excavation and erection (1) begin at same time. Main columns are affixed into second-level basement (2) as roof scaffolding rises. Crane hoists roof structure into place for assembly (3). Jacks support roof (4) until load of roof is distributed to columns (5) and temporary bracing is dismantled (6).



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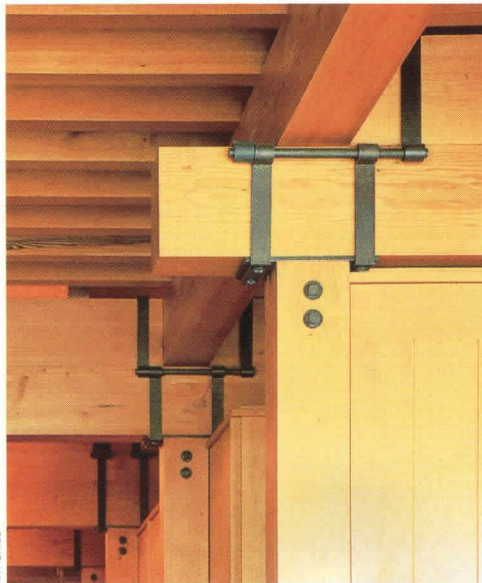
## New Life for Old Wood

Logged, milled, sold, and installed over a century ago, some of the oldest—and most prized—lumber in the country is making its way to market again. Timbers that once supported barns in New Hampshire and factory floors in Chicago are now being recycled to construct new houses, hotels, and other buildings. They are reappearing in these structures as refinished framing members, siding, floors, and finishes.

When the colonization of America began

However, a substantial cache remains in the form of structural and finish materials in a variety of pre-20th-century buildings, and it is being harvested once again.

Older buildings slated for destruction, whose construction materials in the past were often simply discarded, are now carefully inventoried by demolition companies that remove lumber deemed fit for reuse. The wood is sold to brokers, or directly to refinishers who process it by removing nails, bolts, and



ART GRICE

POOL HOUSE: Salvaged Douglas fir structural members.

*Despite grading questions, salvaged timber is gaining popularity as an alternative source of lumber.*

in earnest in the 16th century, one billion acres of virgin forest covered the area that would become the United States. As the nation cut its Manifest Destiny across the continent, much of the oldest, largest timber fell—for timber production as well as clearance. Today, although hundreds of millions of acres have been replanted, less than 4 percent of the original forests and their extraordinary old-growth specimens remain, the majority of which lie on land owned by the federal government and managed by the United States Forest Service. Most of the previously harvested timber is gone forever.

other infiltrations, and then cut and plane the members into useful shapes and sizes. These firms either resell the wood as nominally sized lumber or, often, install it themselves as specialist subcontractors. The reclaimed wood gets a new lease on life as structural members, case-pieces, or most frequently, paneling and flooring.

Reclaiming old wood has become known as “salvaging,” though some in the industry prefer the term “reclaiming” to distinguish their work from timber companies’ harvesting of fallen lumber from forest floors or swamp bottoms. The practice has been around for

some time, but has become more profitable over the last five years. “In the 1970s, salvaged wood was seen as used, or just plain old—it was a negative,” explains Tedd Benson, president of Benson Woodworking in New Hampshire. “Recycling added some value in the 1980s, but it wasn’t until the 1990s that people began to see it as precious,” he recalls. Most salvaged wood is either long-leaf Southern pine from the vast forests of the Southeast or Douglas fir from the timber-rich Northwest.

Salvagers offer consumers access to a type and quality of wood that is increasingly difficult to find—specifically, older-growth trees. “These woods are beautiful,” claims Timm Locke of the Western Wood Products Association (WWPA). “In the old days, people logged only the best trees, so the lumber is

Older trees have many more and much denser growth rings, which give the wood a finer grain than newer specimens, and their naturally more resinous content endows them with a rich luster and color. In addition to its beauty, the timber is attractive for a number of other reasons. “It is dry and stable,” explains Gordon Plume, president of Seattle’s G.R. Plume Company, a salvaged-lumber specialist. “This relieves some of the shrinkage problems—twisting, cracking, and gapping—often encountered with green wood.”

Salvaged timber suppliers also use these age and growth characteristics to support claims for the strength of their products. However, according to Kevin Chung, director of Engineering Support at the WWPA, “there is very little correlation between density and design value.” The relationship between

criteria of new lumber, it would not perform adequately,” counters WCLIB Executive Vice President Brad Shelley. “For the typical uses of these products, structural integrity does not worry us.” The WCLIB grades salvaged wood at a number of retail mills.

As Locke notes, current ALS standards assume freshly cut timber. The grade rules are the result of extensive testing underwritten by the timber industry and approved by federal regulators. Despite its age, salvaged timber is actually a relatively “new” product sold by a handful of dealers, thus the demand for systematic testing has not been great before now. WCLIB’s Shelley expects that to change. “These are great products, resources that have been underutilized in the past,” he explains. “As the market develops, I think everyone will be doing this sort of grading.”



LONG-BELL LUMBER MILL: Millions of board feet were salvaged, including trusses.



MCILVANE HOUSE: Bohlin Cywinski Jackson used recycled madrona for fireplace.

great—very clear, few knots, tight graining. This type of product is less and less available.”

Scott Berg, director of Forest Policy Research for the American Forest and Paper Association, points out that “there is virtually no old growth left on private land in the United States. What remains is on federal land, and the National Forest Management Act (NFMA) of 1976 allows the Forest Service to harvest only as quickly as the forest grows.” In the Pacific Northwest, where most of what remains of the older forests is located, this policy means trees can only be cut down after 90 years—their biological maturation point. Further, the NFMA enjoins the Forest Service from clear-cutting large acreages. These restrictions significantly limit new supplies of older woods.

age and structural integrity worries the WWPA in other ways as well. “Currently, all American Lumber Standards Committee (ALSC) grading rules assume lumber comes from new trees, not from old buildings,” explains WWPA’s Locke. “We don’t know what the duration of load factor is on wood. In other words, we don’t know what happens when you take a piece of wood out of an old factory and use it somewhere else.” As a result, the WWPA, which is sanctioned by ALSC to inspect wood products, will not grade salvaged lumber.

However, the West Coast Lumber Inspection Bureau (WCLIB), another ALSC-approved organization, does not share the WWPA’s concerns. “We’ve seen no information to indicate that, if salvaged timber meets all the grade

Bob Falk of the U.S. Department of Agriculture’s Forest Products Laboratory, who leads exactly that kind of research, agrees with Shelley’s analysis. “We’re in the midst of research on timbers taken from military buildings erected during World War II, evaluating them according to American Society of Testing and Materials (ASTM) tests applicable for new wood products,” he explains. “We hope to have results by next spring that will tell us how the old timber performs.” Although Falk cautions that the testing is preliminary, he also believes that “a number of the other bureaus will probably come around to grading” the salvaged timber as market demand rises.

In many instances, the disagreement over grading is rendered moot by the type of application. By far, the largest use of recycled



lumber is in finishes, furniture, and flooring, none of which require ALS grading. And as Benson points out, “heavy timber was the ‘steel’ in large buildings before actual steel was developed—it supported enormous loads.” The WWPA does not disavow the use of reclaimed timbers in structural applications, but urges caution in specifying them where single members are responsible for large loads. “We had no problem using ungraded lumber,” explains Eugene, Oregon-based Gary Moye of his experience with recycled timber (following pages). “We knew it was old growth of very high quality, and we checked it out thoroughly with our engineer, who was also very comfortable. I’d use it again.”

Despite the lack of current certification standards, the previous structural life of some of the reclaimed timber certainly strains cur-

Surrounding the nostalgia, however, are clouds on the otherwise clear horizon of reclaimed lumber. “We feel the use of salvaged wood is a great idea, but there are questions about the supply of old buildings and the appropriateness of taking down some which still may have useful life in them,” cautions Nadav Malin, managing editor of *Environmental Building News*. Further, the salvaging process is expensive, both in labor and material: up to 55 percent of the original wood is lost in refinishing. Salvaged lumber can end up costing twice as much—and more—than its newly harvested counterpart.

“The nominal costs may be much higher,” counters Plume, “but as part of the overall construction budget of a building, the percentage differences are smaller.” He and others point to the stability, strength, and quality

struction, which is a sad commentary on our culture,” laments architect Peter Bohlin of Bohlin Cywinski Jackson. The firm has specified reclaimed timber for several residential projects. “Reusing this wood is the right thing to do. It puts our clients and us on the side of the angels,” maintains Bohlin.

Most reclaimed-timber specialists recognize that the wood’s availability will certainly limit its widespread application, and as Malin points out, the older buildings are themselves a finite resource. But the figures of known resources are astounding. For instance, the Long-Bell Lumber Mill in Longview, Washington, yielded 15 million board feet of salvaged wood. Portland, Oregon’s demolition-slanted Terminal 4 Pier and its associated buildings are estimated to contain 8 million more. Salvagers are also now recover-



SKAMINIA LODGE: Ankrum Moisan Architects applied salvaged pine and Douglas fir.



BUCKLEY SCHOOLHOUSE: Peeled log column was incorporated by Fernau and Hartman.

rent standards for credulity. For instance, one specimen removed during demolition of the mammoth Weyerhaeuser Lumber Mill in Klamath Falls, Oregon, measured over 3 feet thick and more than 100 feet long. The Brodingtonian scale of such a member and the optimism and hubris represented by its manufacture and installation embody both the extraordinary power of nature and the unbridled scale that characterized early American settlement. The nostalgia engendered by such artifacts and the stories of their creation are a significant source of salvaged timber’s appeal. “Clients absolutely love the stories about the buildings out of which their lumber was pulled,” relates Benson, who waxes rhapsodic about the fate of abandoned shipping piers, lost wineries, and deserted warehouses.

finishes of their material as factors that must be considered in budgetary calculations. For furniture, flooring, and finish applications, solid recycled lumber is difficult to compare directly to the laminated or composite materials more typically available on the market.

These cost and ethical considerations are the flip side of the environmental coin at the center of any transaction involving salvaged timber. Nearly everyone applauds the notion of recycling beautiful wood that might otherwise end up as part of the nearly 200 billion pounds of wood and paper products Americans throw away annually. Prior to the advent of the salvaging movement, that’s exactly what happened to much of this lumber. “In the past, much of this wood was either thrown away or wasted as shoring on highway con-

ing timbers from the bottom of former logging rivers, as well as mill ponds where the river-run logs were stockpiled before processing. Because wood was the structural material of choice for most buildings until the beginning of the 20th century, it seems reasonable to believe that supply should continue to meet demand for some time in what is still a niche market.

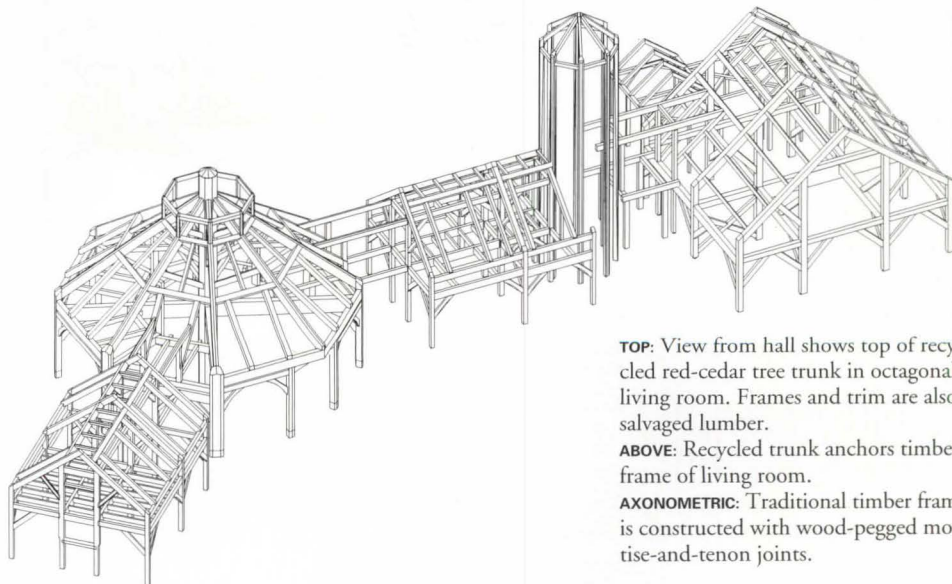
Salvaging wood raises interesting issues beyond those related to the harvesting of industrial history. “It has implications for how we build for the future,” suggests Malin. “We might want to ask ourselves how to build in a way that will make today’s buildings easier to reuse later.” With the excitement being generated by salvaged timber, the question seems eminently reasonable.—*Reed Kroloff*

**Furst House**  
Center Harbor, New Hampshire  
Benson Woodworking Company

For a New Hampshire family retreat situated on Squam Lake—where the movie *On Golden Pond* was filmed—a house crafted of wood rescued from demolition-slatted historic structures seems only too appropriate. The Furst House is a traditional timber-framed building, with mortise-and-tenon joints, wood pegs, and thousands of board feet of hand-finished paneling, doors, and trim—most of it reclaimed Douglas fir. The motivating force behind the project is Tedd Benson, author of several texts on the history and practice of traditional timber framing.

Benson's New Hampshire-based design/build firm helped pioneer reclaimed lumber as a viable building material and has been using it for more than 25 years. "The owners wanted to create a legacy for their family," explains architect William Holtz of Benson Woodworking, "and we felt that using materials with a previous life, like salvaged timber, gave the building a timeless sense." Adirondack styling and the furniturelike assembly of the structure reinforce that impression. Much of the house's reclaimed wood came from the Long-Bell Lumber Mill in Longview, Washington.

A recycled timber frame extends throughout the building, branching off from an octagonal entrance hall wrapped around a monumental tree trunk. While most connections are mortise and tenon with wood pegs, rafters and column bases at the foundation are secured with steel strapping. The wood structure is completely exposed inside, and an insulating stressed-skin panel system (oriented-strand board on two sides of a foam core) wraps the exterior. The panels are nailed directly to the columns, the only breaks in the thermal envelope. "This system actually separates structure from skin," notes Holtz. "Conceivably we could save the timber in the future by stripping away the skin."

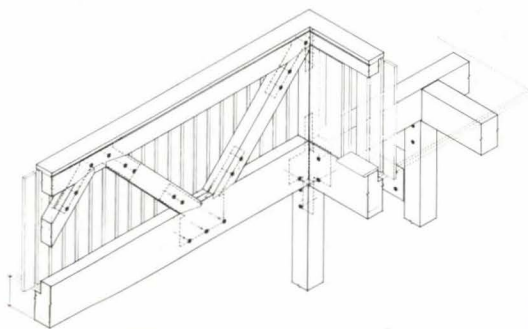
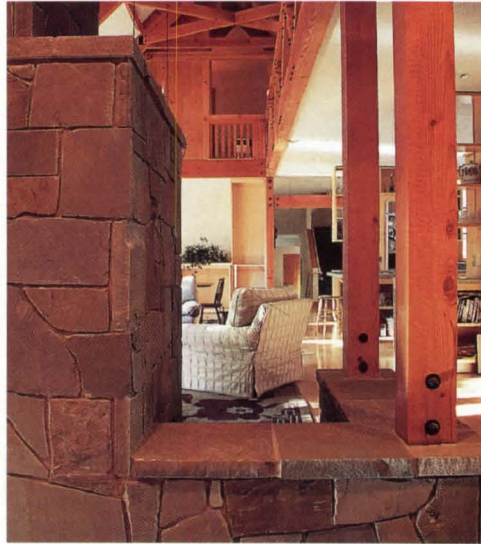


**TOP:** View from hall shows top of recycled red-cedar tree trunk in octagonal living room. Frames and trim are also salvaged lumber.

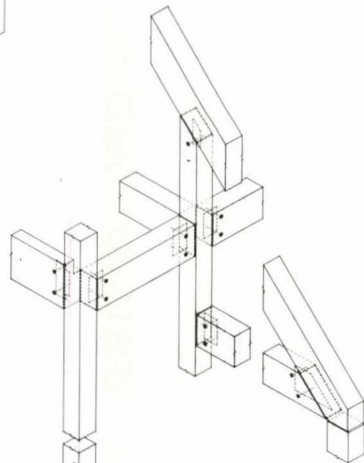
**ABOVE:** Recycled trunk anchors timber frame of living room.

**AXONOMETRIC:** Traditional timber frame is constructed with wood-pegged mortise-and-tenon joints.

**Hopkins-Green House**  
**Eugene, Oregon**  
**Gary Moyer, Architect**



**DETAIL OF RAILING TRUSS**



**DETAIL OF RAFTER**

**TOP LEFT:** Clustered columns of salvaged Douglas fir support porch.  
**TOP RIGHT:** Hinges connect cross-braces at end of hallway to beams, easing field alignment during construction.  
**ABOVE LEFT:** Living room is paneled in salvaged Douglas fir. Columns rest on steel seats under fireplace's stone fascia.  
**ABOVE RIGHT:** Second-floor railing detail (right) doubles as engineered truss above open kitchen.  
**DETAILS:** Steel plates slotted into timbers connect framing members.

The idea of using salvaged wood on this house came from the clients," explains architect Gary Moyer of Eugene, Oregon: "Environmental sensitivity was very important to them." As a result, the new house features an exposed timber structure recovered from an old lumber mill in Washington and a turn-of-the-century railroad bridge. Furthermore, only six trees were removed from the mountainside site to make way for the new building.

Moyer, who studied with and later worked for Louis Kahn, found the reclaimed timber challenging from both technical and philosophical perspectives. "The expressed timber reflects the owner's desire for a particular look or feel, rather than a complete structural system, which was a struggle for me," he admits.

However, Moyer was determined to assemble and engineer the wood in a fashion both visually instructive and structurally sound. Budget and subcontractor limitations drove the architect to avoid connecting timbers with face-mounted steel plates or jackets. Instead, plates are slotted into grooves cut into the timber ends, then bolted through to the surface and held in place with washers that are routed out flush with the surface of the wood. Each washer is covered with a powder-coated acorn nut. The result is a clean, contemporary connection, where wood never actually touches wood, and the steel is visible through the 1/4-inch-thick connection.

In addition to the columns, beams, struts, and purlins in the main living quarters and hallways, salvaged Douglas fir was also applied as wainscots and trim. "The salvaged wood was nominally more expensive," notes Moyer, "but the dimensions we were specifying would have driven us to either very expensive new products, or some sort of composite materials—and the rescued timber is so much more beautiful."

**Pool House**  
**Bellevue, Washington**  
**Bohlin Cywinski Jackson and**  
**James Cutler Architects,**  
**A Joint Venture**

The millions of board feet salvaged from the Long-Bell Lumber Mill in Longview, Washington, have provided lumber for buildings across the country, including the Furst House in New Hampshire, the Hopkins-Green House in Oregon, and this suburban Seattle Pool House, part of an extensive, custom-designed residential compound that incorporates reclaimed timber throughout.

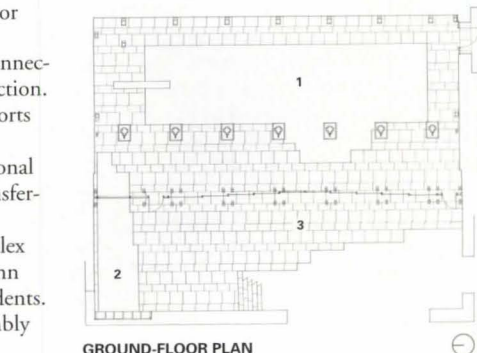
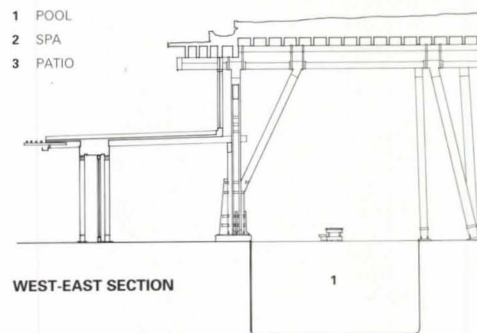
The majority of the wood in the Pool House is reclaimed Douglas fir, with occasional cedar accents. The owner specified extremely high-quality wood for its visual and tactile warmth and its regional significance. Architects Bohlin Cywinski Jackson and James Cutler suggested salvaged timber because, according to Bohlin, “none of us wanted to cut the old growth necessary to produce the quality level the owner was seeking.”

Reclaimed lumber turned out to be a bonus in other ways. “In large applications of new timber like this, shrinkage is a serious problem,” notes Cutler. “Salvaged wood is already dry and very stable.” Further, the exposed pier-and-beam design called for large-dimension timbers—especially in this pavilion, which supports a landscaped garden on its roof. These were readily available from salvaged-lumber specialist Gordon Plume.

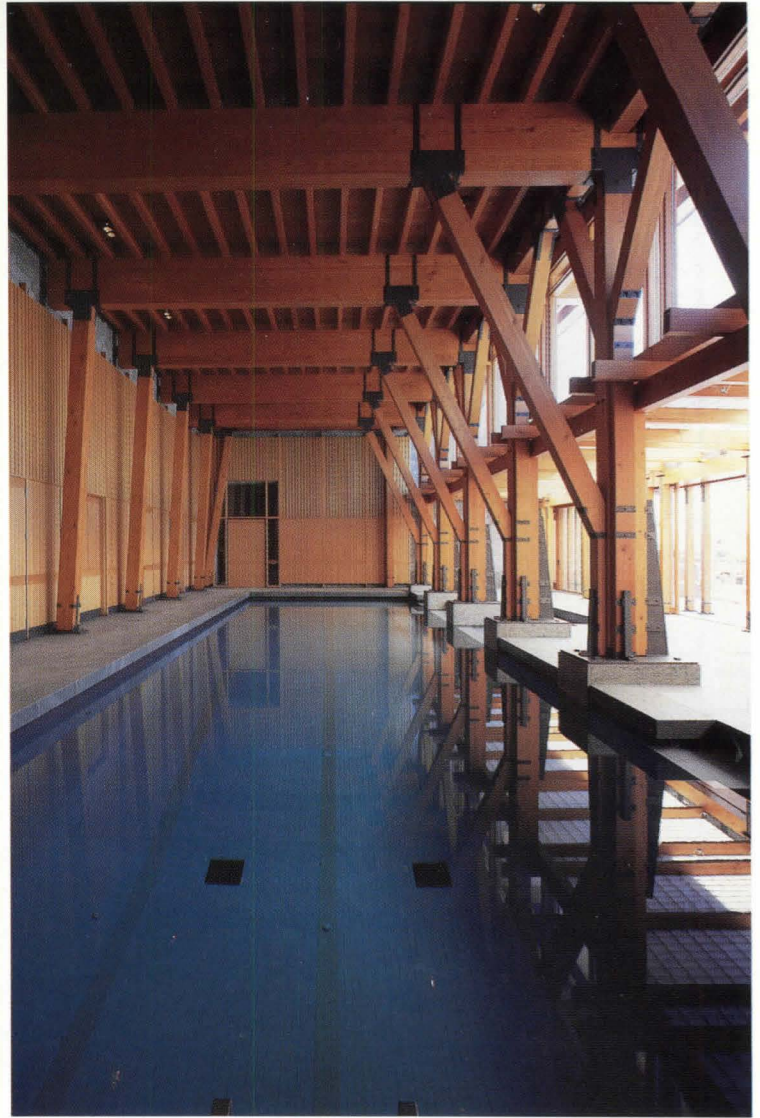
The main beams, measuring 26 inches by 11 inches by 31 feet, are composed of three 31-foot members glued together and shackled in spring-loaded steel brackets that equalize dimensional shifts between the lumber and its metal joinery. Columns rest in steel shoes that lift the wood ends slightly off the surface to protect against moisture seepage. Exposed beam ends are capped in a similar fashion. The complicated steel assemblies establish an Arts and Crafts-inspired structural language clearly articulated throughout the building.



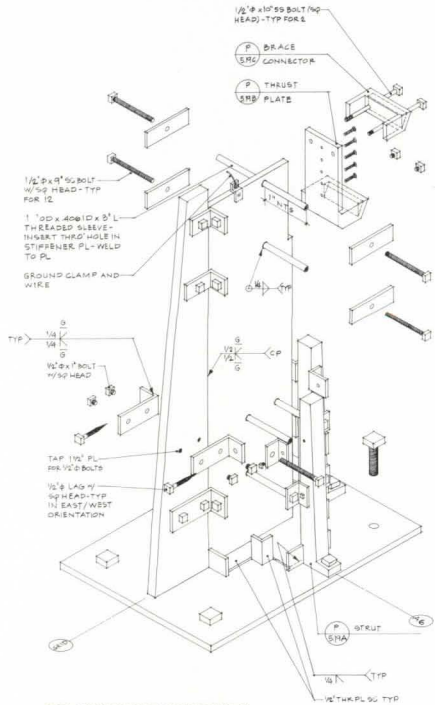
ART GRICE PHOTOS



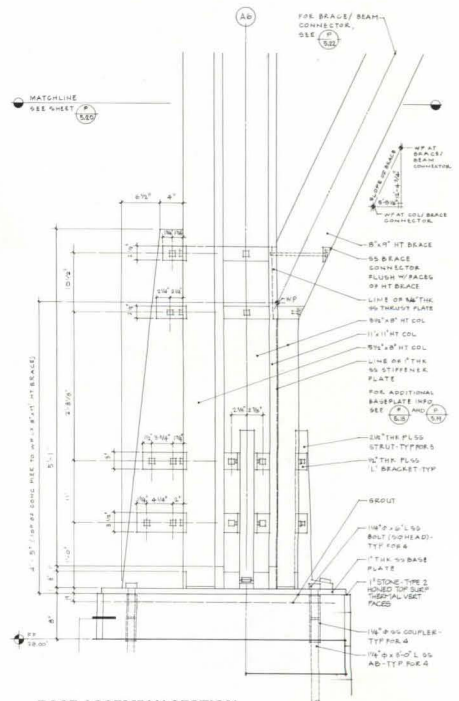
**TOP:** Glass partition divides interior and exterior of spa.  
**ABOVE:** Spring-loaded straps at connections limit expansion and contraction.  
**PLAN AND SECTION:** Structure supports landscaped roof.  
**FACING PAGE, LEFT AND RIGHT:** Diagonal struts reduce beam depth by transferring loads to columns earlier.  
**FACING PAGE, AXONOMETRIC:** Complex fin and strapping details at column base recall Arts and Crafts precedents.  
**FACING PAGE, SECTION:** Brace assembly rests on granite-faced plinth.



ART GRICE PHOTOS



COLUMN BASE ASSEMBLY



BASE ASSEMBLY SECTION



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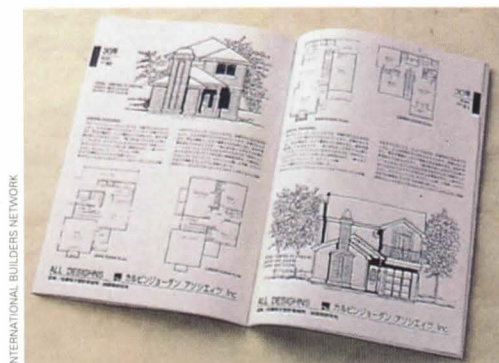
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## Export Housing For Japan

It is ironic that the country that invented the highly efficient *kanban* system for manufacturing automobile components has lagged behind the United States in the efficient design and production of new housing. The Japanese are among the richest people in the world, but they live in crowded apartments with the smallest residential floor area per person among developed countries. Many conventional Japanese houses are built in modern adaptations of the labor-intensive,

with the Japanese Ministry of Construction and the City of Kitakyushu Municipal Housing Authority to build a research-and-demonstration project of 16 affordable wood-frame houses in Kitakyushu, on the island of Kyushu in southwestern Japan.

The Andersons analyzed the costs of building the same houses in the States and in Japan, documenting aspects of the Japanese process that made the houses more expensive. “We applied cost-saving strategies to maxi-



PLAN BOOK: Calvin Jordan Associates' 34-house catalog.

*Wood-frame houses designed by American architects are cost-effective and efficient to build in Japan.*

centuries-old post-and-beam manner—which few Japanese can afford. Now, backed by the U.S. lumber industry and a Japanese government seeking to ease trade friction, architects from the Northwestern United States are exporting American-style wood-frame house designs and prefabricated modules. Some are working with American builders who construct their designs in Japan; others are teaching Japanese builders how to build what are known in Japan as “import houses” more efficiently, making them more affordable for Japanese consumers.

Architect brothers Peter and Mark Anderson of Anderson Anderson Architecture/Bay Pacific Construction, for example, run a Seattle firm that designs and builds single- and multi-family housing. Six years ago, they began designing houses for well-to-do Japanese businessmen who wanted U.S.-style custom models. More recently, the architects worked

to “maximize the efficiency of construction,” explains Peter Anderson. “We were teaching them new ways to lay out the framing”—conducting seminars, for example, on the way foundations are built or the selection of pre-engineered lumber. Adds Toshinori Nozu, director general of buildings for the City of Kitakyushu, “American architects played a significant role in teaching our builders new technologies and developing efficient distribution systems for American-made materials.”

The desire for U.S.-style houses, maintains Robert Yamazaki, a Fukuoka-based importer of American house designs, building know-how, and building materials, is partly a matter of a new way of living. Before Japan's economic boom of the 1980s, “home, for the Japanese, was basically a shelter. We would never entertain at home,” Yamazaki explains. “People referred to their homes as rabbit holes, and families lived so close together we



called it "skinship." But with the newfound wealth of the middle class—and the discovery of insulated Western-style construction, which allows central heating—"home is now a place to live and to enjoy."

And both Yamazaki and Anderson point out that the Japanese appreciate American-style construction for its practical benefits. "Our houses are better insulated and stronger, offering more resistance to earthquakes and winds," maintains Anderson. Yamazaki adds that U.S. frame houses withstood the Kobe earthquake, whereas post-and-beam houses may "twist and fall down" under structural pressure. The 2-by-4 frame houses are also more efficient to construct, saving costs in time and labor, and ultimately making houses as much as 50 percent cheaper for consumers.

#### Market niche

But post-and-beam housing still accounts for about 85 percent of Japanese wood-housing starts, which recently averaged 1.4 million per year. Historically, these houses featured exposed wood, so both the quality of the wood and the workmanship were esthetically important. But the carpenters who can build traditional houses are a dying breed: ever since World War II, young Japanese have sought more prestigious jobs in business and industry rather than in trades like carpentry, which reeks of ancient customs. Unfortunately, though post-and-beam construction has been modernized with metal fastenings and panelized wall systems, this more affordable method retains the inefficiencies of the old system without the elaborate joinery and

craftmanship that made it beautiful.

Today, housing needs are increasing as the selfless Japanese salaryman, who put rebuilding the state before his own needs, gives way to a growing consumer class. Families have larger incomes, and well-traveled Japanese, now acquainted with Americans' larger houses and more home-oriented way of life, are seeking town houses and detached single-family houses. Japanese builders are responding with their own version of the affordable frame house, but according to U.S. architect Roger Williams of Mithun Partners, another Seattle firm with a toehold in Japan's housing market, Japanese builders' construction techniques make wood framing more expensive than it needs to be.

For example, Williams explains, in Japan, poured-in-place foundations are constructed under interior loadbearing walls as well as exterior walls, requiring more concrete, which may cost three times what it costs in the United States. Japanese builders also prefer to build on the 3-by-6-foot system (equivalent to a 1-by-2-meter straw tatami mat), rather than the 4-by-8-foot module utilized by North American carpenters. As a result, the Japanese incorporate smaller-size materials, requiring more of them to cover the same area. (A 4-by-8 panel of drywall or plywood, for example, covers 78 percent more wall area than a 3-by-6 sheet.) Japanese builders also use more lumber of higher quality when framing a house, and they construct trusses on site out of lumber, a time-consuming, labor- and wood-intensive process.

American architects, builders, and even

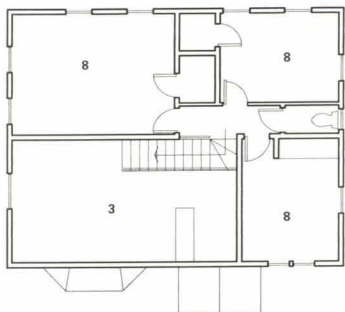
building-products suppliers have thus found a market niche in residential construction, one that has been backed by the State of Washington's Department of Community, Trade, and Economic Development and earned a seal of approval from the U.S. government—always eager to combat Japan's trade surplus. The department is sponsoring a series of 12 one- and two-day lectures by architects and builders for Japanese executives, architects, planners, and developers.

The "Washington State Imported Housing Program: The Fundamentals of the American Wood Building System" lectures, which have been held monthly in Kobe and Tokyo throughout 1996, focus on topics such as design fundamentals; differences between American and Japanese codes; materials selection, delivery, and maintenance; heating and air-conditioning (rare in most Japanese houses); marketing U.S.-style houses; construction planning and management; and construction—including materials handling, product installation, and a two-day on-site building practicum. Maintains Williams, who, along with Mark and Peter Anderson, has delivered many of these lectures, "We aren't selling just building materials, but lifestyle issues and building know-how."

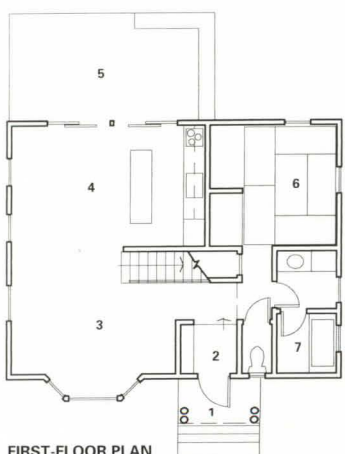
#### Hybrid houses

The "lifestyle issues" these architects are marketing are evident in Mithun's design for the Mill Creek model home constructed at the Rokko Island Import Housing Park development. The park showcases efficient, affordable housing to people who lost their homes





SECOND-FLOOR PLAN



FIRST-FLOOR PLAN

- |                  |               |
|------------------|---------------|
| 1 PORCH          | 5 DECK        |
| 2 VESTIBULE      | 6 TATAMI ROOM |
| 3 LIVING ROOM    | 7 BATHROOM    |
| 4 DINING/KITCHEN | 8 BEDROOM     |

**FACING PAGE, TOP LEFT:** New Kitakyushu housing features Japanese designs built with U.S. expertise.  
**FACING PAGE, TOP RIGHT:** Prototype by Anderson Anderson comprises interchangeable modules.  
**THIS PAGE:** MCM's houses near Sendai offer bay or arched windows, Japanese baths, and tatami rooms.

in the Kobe earthquake. Customers can stroll through houses designed by Japanese architects as well as those from the U.S., Canada, Finland, Sweden, Britain, Australia, and Norway. Japanese families visit the landscaped park, which resembles a fairground, on weekends, shopping for houses much as Americans might shop for a car, requesting or refusing different options.

The Mill Creek house, designed for a Japanese builder called Tokyu Home, is entered via the traditional *genkan*, a lowered anteroom for changing from shoes to slippers. The house incorporates a small tatami room—a Japanese living room that can double as a sleeping chamber—and a two-story, American-style living room with a fireplace, an open kitchen/dining area, a laundry room, and a garage. Four bedrooms adjoin a Japanese-style bathroom, with a soaking tub separated from a toilet room, on the second floor. Though designed by American architects, the 2,145-square-foot-house was constructed by Japanese builders using 2-by-4 lumber from the United States.

**Cultural and spatial challenges**

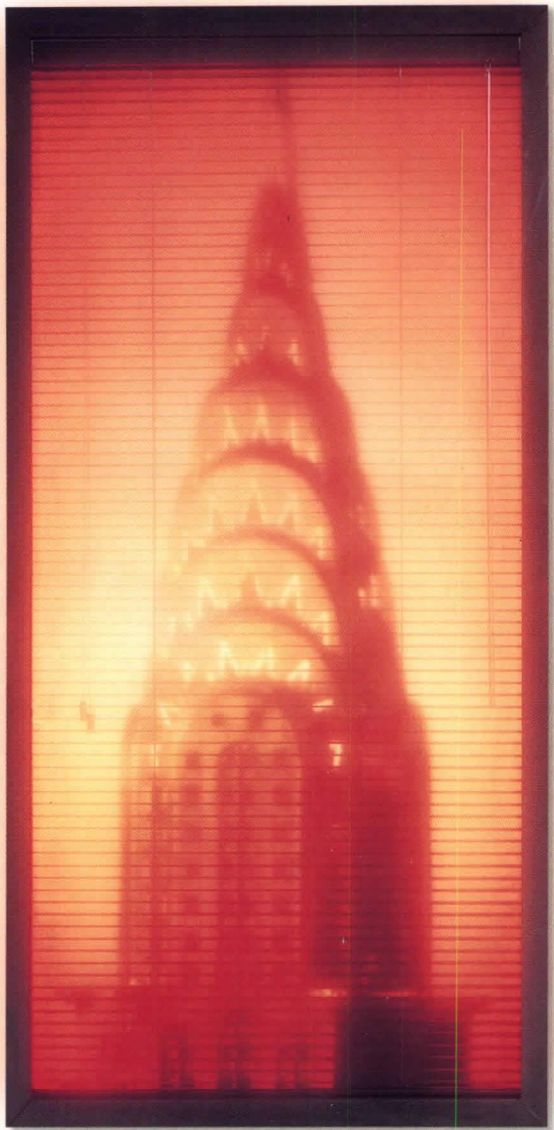
Some American architects find their instincts challenged when designing for Japanese customs. Robert Moreland of MCM Architects in Portland, Oregon, for example, notes that the Japanese are more concerned with the compass orientation of certain rooms than they are with addressing a view. Moreland designed houses for the Natori subdivision in Sendai, a city of 2 million about two hours by bullet train north of Tokyo. Although the

lots overlooked a forested valley to the north, the living rooms had to face south or west. “Unfortunately,” relates Moreland, “the great view was to the north.” His solution was to design a 1,200-square-foot house with open-plan rooms that allow occupants to look through to the view.

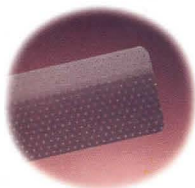
“You get two kinds of homebuyers in Japan,” explains Moreland. “There are people who want an American-looking house—much as we might want a Mediterranean or a Tudor-style house—but with Japanese-style rooms on the interior.” Others, Moreland continues, want an American-style open plan, with kitchens giving way to family rooms and interconnected living/dining areas. Moreover, to the Japanese mind, an American house should be big. This presents a challenge to the architect designing for a lot only large enough to comfortably accommodate 1,100 square feet. The houses Moreland designed for the Natori development employ an open plan to create a feeling of more space. A Japanese tatami room and bath are included along with American-style living, dining, and kitchen areas on the first floor.

The Japanese are accustomed to heating rooms only as they use them, and think of central heating as an American feature that allows them to move freely and comfortably from room to room. The Natori houses in Sendai, which has a humid climate similar to that of Washington, D.C., offer central heating but no air-conditioning.

American architects designing for the Japanese market must also consider different family structures than if they were designing



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