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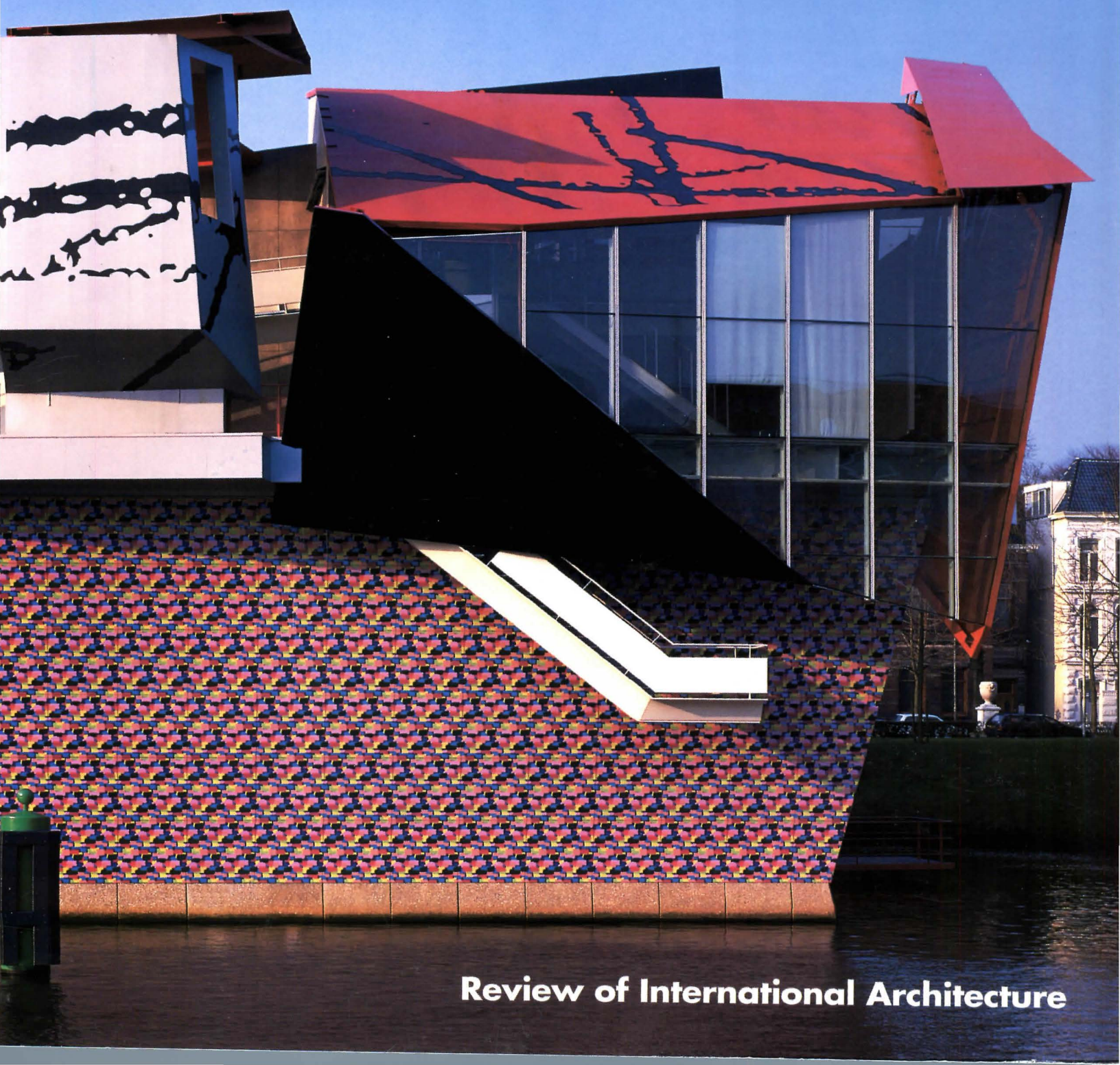

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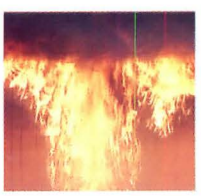

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Compromised Commemoration

A new memorial to the Korean War symbolizes what's wrong with our national monuments.

Americans are obsessed with memorials. Ever since the Vietnam Veterans Memorial was proposed in 1977, grass-roots groups have rallied to commemorate civil rights activists, black patriots, slain policemen, astronauts, suffragettes, and the witches of Salem, to name just a few. The latest evidence of this memorial mania is the Korean War Veterans Memorial in Washington, D.C. Dedicated in July, its corny ensemble of sculpted soldiers, granite walls, and reflecting pool symbolizes more than a forgotten war. It reflects the sad state of memorial design and how politics sully the process of competitions and design review.

The competition for the Korean memorial was won in 1989 by a team of four architects from Pennsylvania State University. But after being asked by reviewing agencies to alter their winning scheme, the team refused, sued the government, and lost in federal court. The design was then taken over by local architect Cooper-Lecky and revised several times. Only token elements of the winning team's design remain.

Most prominent are 19 realistically sculpted soldiers that are isolated within a juniper garden between parallel strips of granite (above). This figural ensemble is juxtaposed against a freestanding black granite wall that terminates in a circular reflecting pool (top) and attempts symmetry with Maya Lin's sunken Vietnam memorial. But its brazen recall of Lin's black granite expanse demeans the emotional power of her simple design.

The Korean memorial is hardly an isolated case of a compromised memorial design. Since the Vietnam wall was completed, veterans have insisted on adding statuary to the site. Across the Potomac River, the Women in Military Service Memorial has finally broken ground, but according to a much more reticent version of architect Weiss Manfredi's winning scheme. These revisions, however, are minor compared to the 7.5-acre memorial to President Franklin Delano Roosevelt now taking shape on the Tidal Basin. It will be completed 37 years after the winner of the competition was announced, according to an overblown scheme by a different designer, Lawrence Halprin.

Despite these bureaucratic setbacks, national competitions are still a democratic way of securing designs for memorials that pay tribute to national events. What shouldn't be compromised, however, is the architectural vision of the competition winner, as the Korean memorial—a soulless imitation of the Pennsylvania team's scheme—reminds us. In sponsoring and reviewing our memorials, veterans and government should honor the jury's decision—or scrap the winner and start over. They should realize that the most potent symbols of remembrance—like the Vietnam memorial—may also be the most controversial.

Deborah K. Dietsch

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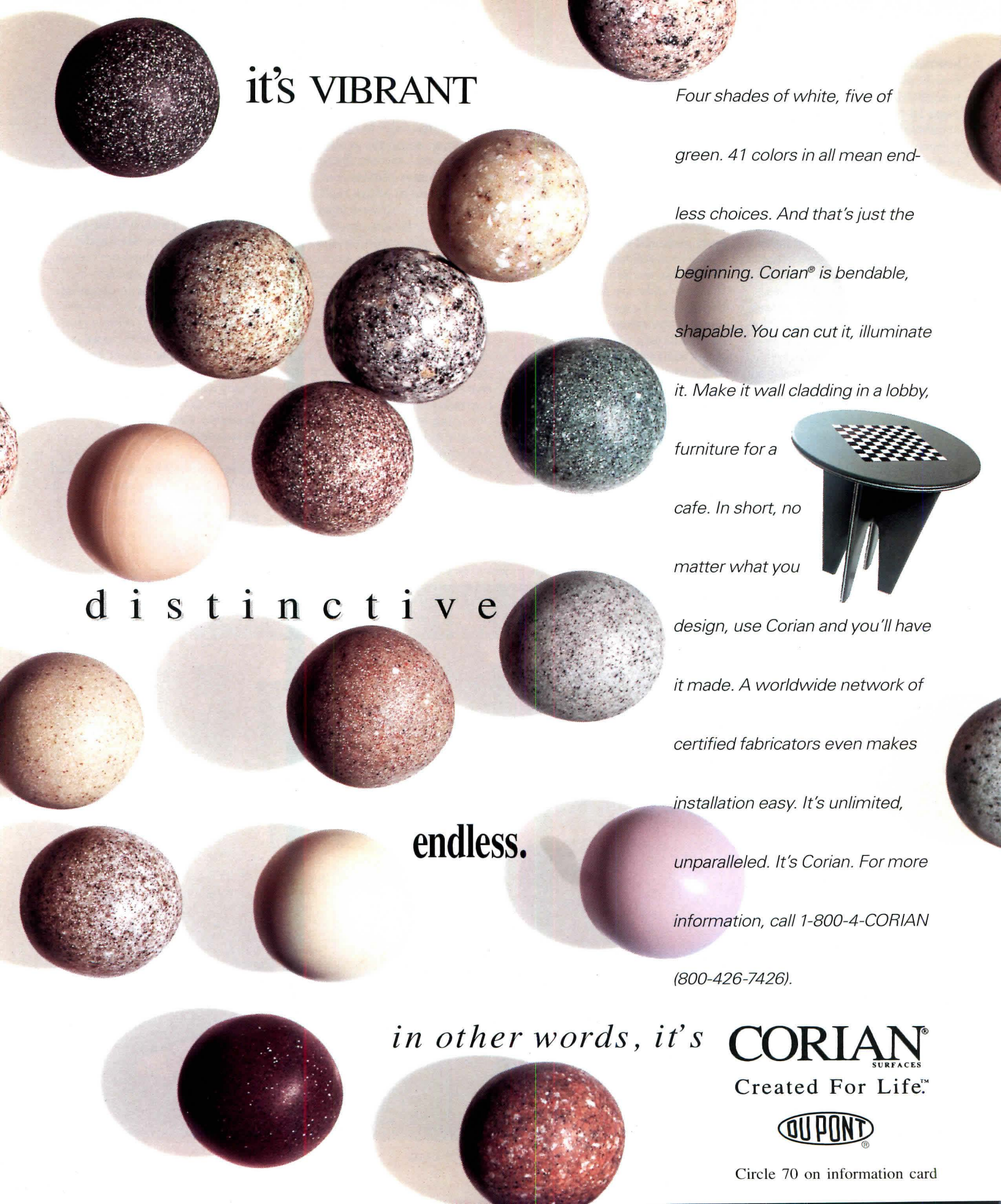

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Events

Exhibitions

CHICAGO. "The Prairie School: Design Vision for the Midwest," October 14-January 7, 1996, at The Art Institute of Chicago. Contact: (312) 443-3600.

NEW YORK. "A New England Wooden Synagogue," through January 14, 1996, at the Jewish Museum. Contact: (212) 423-3271.

PITTSBURGH. "Monolithic Architecture," October 3-February 11, 1996, at the Heinz Architectural Center. Contact: 412-622-5550.

SAN FRANCISCO. "Chrysler Award for Innovation in Design," through December 3 at Museum of Modern Art. Contact: (415) 357-4000.

Conferences

ALBANY. Home Energy Rating Systems Council's conference, November 7-10. Contact: (202) 638-7000.

ALBUQUERQUE. Conference on innovations in building regulatory process, November 1-2. Contact: (703) 437-0100.

ATLANTA. Comprehensive indoor air quality review, October 18-19. Contact: (404) 933-0638.

BALTIMORE. "Rethinking the City: Conservation, Preservation, Innovation," Maryland Institute of Art, November 10-11. Contact: (410) 225-2219.

CHICAGO. "Design for the Internet," sponsored by American Center for Design, October 25-28. Contact: (800) 257-8657.

MILWAUKEE. "Wright in Wisconsin," sponsored by Frank Lloyd Wright Building Conservancy, October 5-8. Contact: (708) 366-9342.

NEW YORK. "Ornament of Classical Architecture," Institute for Study of Classical Architecture, October 21-22. Contact: (212) 570-7374.

PORTLAND. Urban waterfronts conference, October 19-21. Contact: (202) 338-6657.

SAN FRANCISCO. AIA conference on courthouse design, October 11-14. Contact: (202) 626-7482.

SEATTLE. Association for Computer-Aided Design in Architecture's conference, October 19-22. Contact: (305) 284-6521.

WASHINGTON, D.C. Metalcon International '95, October 24-26. Contact: (800) 537-7765.

Competitions

Healthcare design competition, open to professionals and students. Entry deadline: **October 2.** Contact: (510) 370-0345.

National Endowment for the Arts' projects grants. Entry deadline: **November 3.** Contact: NEA Design Program, (202) 682-5437.

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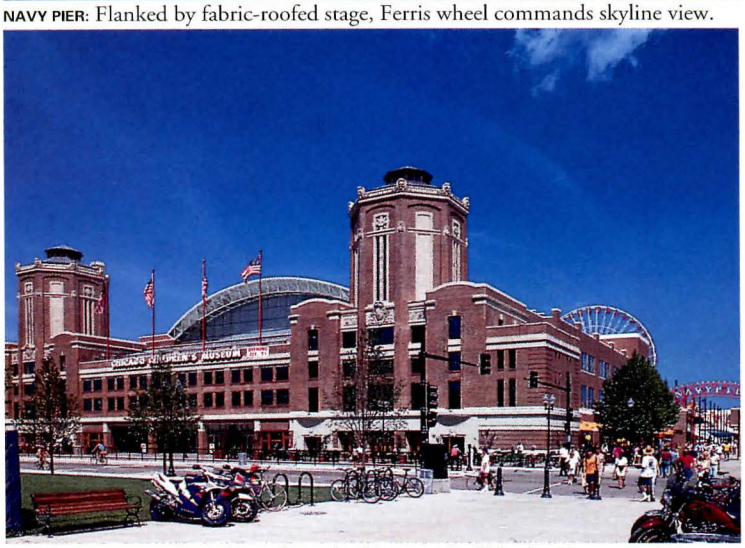
News

NAVY PIER: Flanked by fabric-roofed stage, Ferris wheel commands skyline view.



CHILDREN'S MUSEUM: Interiors of new building are by Wheeler Kearns Architects.

WAYNE CABLE PHOTOS

GATEWAY PARK: Botanical gardens, bicycle paths, and skating rink front lake.

Renovated Navy Pier Opens in Chicago

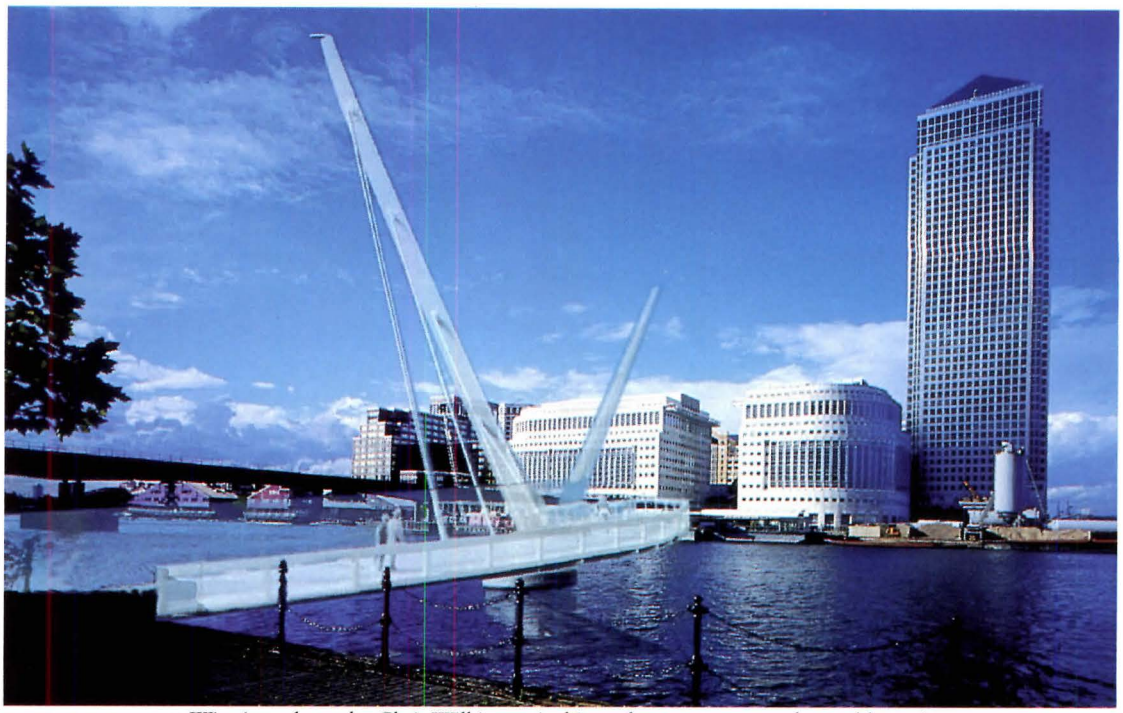
The most visible element of Chicago's reincarnated Navy Pier, which opened in July, rises 15 stories and seats 240 thrill-seekers: a Ferris wheel. Opponents dislike the carnival aspect that the ride adds to the lakefront retail and entertainment development, but advocates cite the fact that its inventor, George Ferris, displayed the first wheel in Chicago in 1893. Like it or not, the ride creates an unmistakable landmark from the freeway.

Navy Pier is built on the remains of the Metropolitan Pier, constructed on Lake Michigan in 1916 to handle coal, grain, and timber trade. Designed by Benjamin Thompson & Associates (BTA) of Cambridge, Massachusetts, and Chicago-based VOA Associates, the $204 million refurbishment preserves the Grand Ballroom on the pier's outermost tip as well as its historic head house on the shoreline, but razed the original freight sheds that stretched 2,300 feet in between these landmarks.

BTA/VOA's additions comprise brick and precast concrete buildings containing exhibit halls; a performance area topped by a white tensile roof; the Ferris wheel; and, close to the western shore, the "family" pavilion, which will house an IMAX theater and a children's museum, scheduled for completion this fall.

The Metropolitan Pier & Exhibition Authority selected BTA/VOA's scheme in a 1991 competition to redevelop the pier, which served as a military training facility and a University of Illinois annex. The freight sheds had been vacant since 1965, though fishermen still visited the site. Commercialization of the pier has not entirely displaced these anglers—three new steel-framed shelters encourage fishing off the end of the dock.—*Ann C. Sullivan*

Once scorned for 1980s excess, the instant city on the Thames is gaining new life.



CABLE-STAYED BRIDGE: Winning scheme by Chris Wilkinson Architects has permanent and movable sections.

PONTOON BRIDGE: Future Systems' structure floats off Canary Wharf.

ECOSTATION: De Rijke relies on recycled materials.

London's Docklands Finally Takes Off

It took only a minute before the British architectural community condemned the London Docklands Development Corporation (LDDC), launched in 1981 to redevelop 8.5 square miles of former shipping docks on the Thames. How could such an organization hope to develop east London without a master plan? Why bother to reinvigorate an historic area by commissioning American architects?

Fourteen years later, the LDDC appears to have listened and learned its lessons. Now, development of the Royal Docks, to the east of Canary Wharf, is about to take place, with a very different flavor from its high-density neighbor. Four highly architectural inventions will characterize the 3.28-square-mile area.

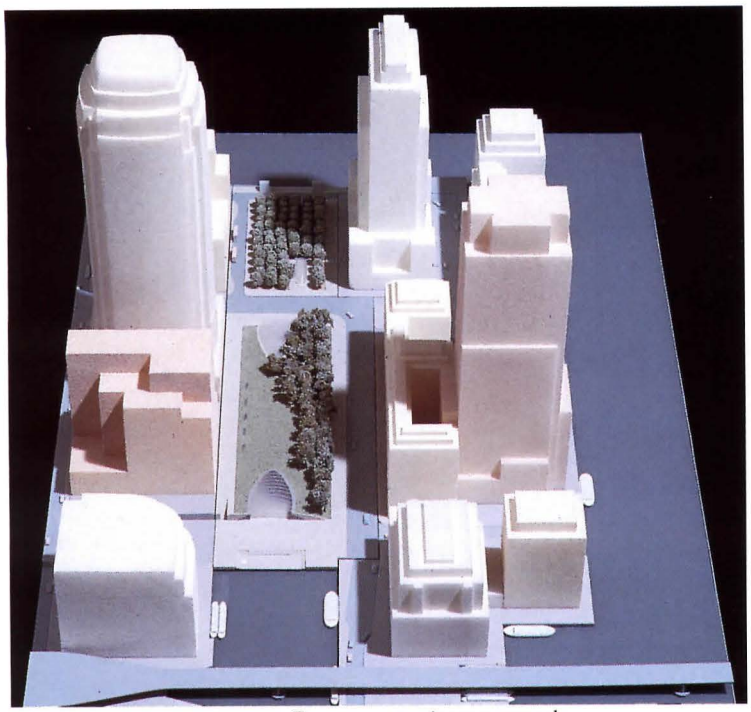
The first is a new residential quarter, which is about to start construction and is intended as a social experiment as much as a commercial reality. The West Silvertown Urban Village will be developed by a consortium of private and public partners over the next decade, according to a concept based on Prince Charles's preoccupations with reinventing village life. A design code has already been drawn up by Tibbalds Monro, a London-based practice well versed in urban planning, for the waterside development, which will eventually house some 5,000 people.

On Victoria Dock, an enormous new international exhibition center, designed by London architect Moxley Jenner & Partners, is planned with exhibition galleries, two hotels, and a conference center on a 4.3 million-square-foot site.

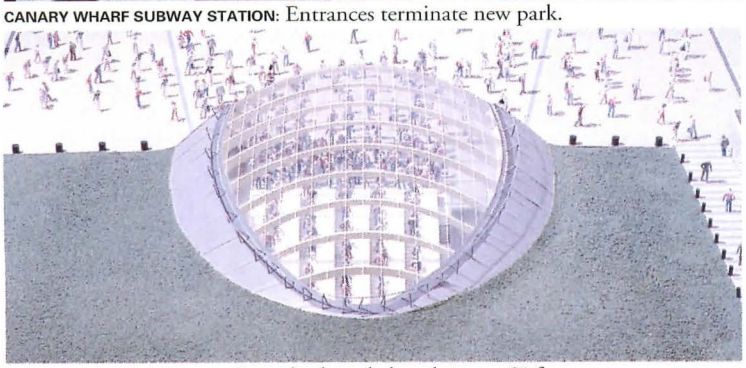
Next on the architectural agenda is a brand new, campus-style university that has already undergone a design competition won by RMJM, an Anglo-Scottish practice. Add that to the choice of Alex de Rijke, a London-based Dutch architect, who has designed an educational ecostation (above), and three competitions for pedestrian bridges, won by High Tech practices such as Chris Wilkinson (top), Future Systems (above left), and Ian Ritchie, and the architectural kudos of Docklands have arrived.

It is ironic, therefore, that just as the LDDC appears to have begun master-planning the Royal Docks, the rest of Docklands, unplanned and largely unpleasant, has begun to achieve many of its early objectives.

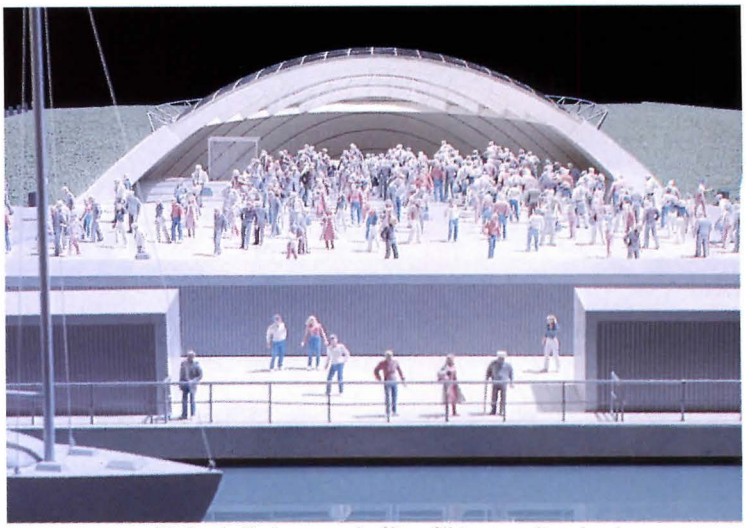
Most symbolic of this sudden success is Norman Foster and Partners' magnificent underground tube



CANARY WHARF SUBWAY STATION: Entrances terminate new park.



ENTRANCE DOME: Norman Foster's glass-clad vault spans 65 feet.



STATION SECTION: Ticket hall, shops, and offices fill intermediary level.

INTERIOR: Escalators descend from entrance canopies to platforms.

station proposed at Canary Wharf (above). When completed in 1997, its glass armadillolike structures will connect Docklands directly to London's hard-working subway system.

Canary Wharf, located in the distinctive oxbow of the River Thames, has long been the target of ridicule and disbelief. In 1992, the giant office complex went bust, a reminder of the 1980s excess.

But the architects who attacked its American glitz and acres of empty offices have had to concede that not only Canary Wharf but even other parts of Docklands, such as the Isle of Dogs and Surrey Quays, are finally taking off. Since 1981, some $3.18 billion of public money and $9.69 billion of private investment have been poured into Docklands. Setting itself up in direct competition with the cramped, traffic-bound City of London, the Olympia & York-developed Canary Wharf is now doing well.

Almost 14.5 million square feet of office space have been created since 1981 when the London Docklands story began. Of this total, just under a third is still available, with prices averaging $16 per square foot. In contrast, the City of London is currently running an office-space availability of 13 percent, with costs of $48 per square foot.

The result is that Docklands boasts more than 2,350 companies among its tenants, including thriving national newspapers, the *Independent* and *Telegraph*, and international banks, such as Morgan Stanley and Citibank.

Further evidence of the Docklands' success is its growing population. Since its inception, employment has more than doubled, with almost 66,000 working in the area today. In addition, the residential population has increased from 40,000 in the 1980s to 68,000 in 1995.

Development in Docklands has also reversed London's concentration of infrastructure, which has traditionally been westward. There is now a new city airport 3 miles east of Canary Wharf for business commuters to European cities.

More importantly, the first new underground line since the 1960s will link Surrey Quays and Canary Wharf to south central London in 1998. And the new station for the fast speed train to the European continent is likely to be Stratford, an underdeveloped area only 10 minutes from Canary Wharf. Suddenly, the City of London is worried. Canary Wharf, once only a threat because of cheap rents, will soon boast faster, easier transport links than other London locations.

The British architectural community has overlooked these positive changes in the Docklands largely because of its buildings—low-rise monstrosities of no distinction. But these buildings, intended to last only 20 to 30 years, will gradually be replaced as economic factors make high-rises more effective.

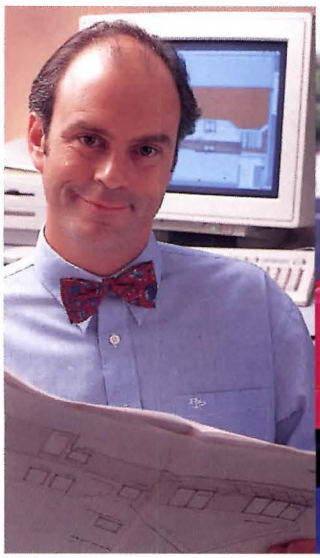
Meanwhile, the decent buildings of the area by leading British architects, such as Nicholas Grimshaw, Richard Rogers, and Norman Foster, will remain. They make up 2 percent of the building stock, a higher percentage than in most of the U.K.'s regional cities. Docklands' growing economic success is likely to encourage more like them.
—*John Welsh and Louise Rogers*

John Welsh is editor and Louise Rogers is deputy editor of the Royal Institute of British Architects Journal.

CHRISTIAN RICHTERS PHOTOS

COURT OF HUMAN RIGHTS: Stainless steel-clad circular court and commission rooms flank glass entrance hall.

WHAT WOULD YOU THINK OF



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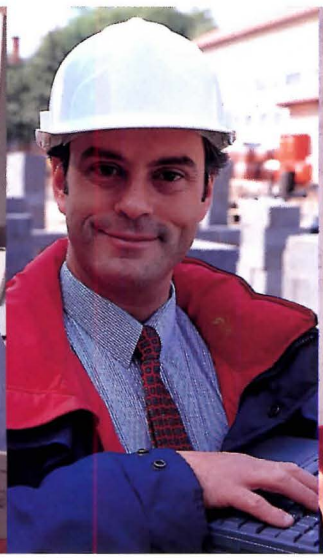

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ENTRANCE HALL: Helical staircase incorporates vestibule to courtrooms.

Court of Human Rights Opens in Strasbourg

The new Court of Human Rights, in Strasbourg, France, does away with traditional courtrooms' wood paneling and raised judges' benches. Richard Rogers Partnership's latest building strives for accessibility and equality, not rigidity and hierarchy.

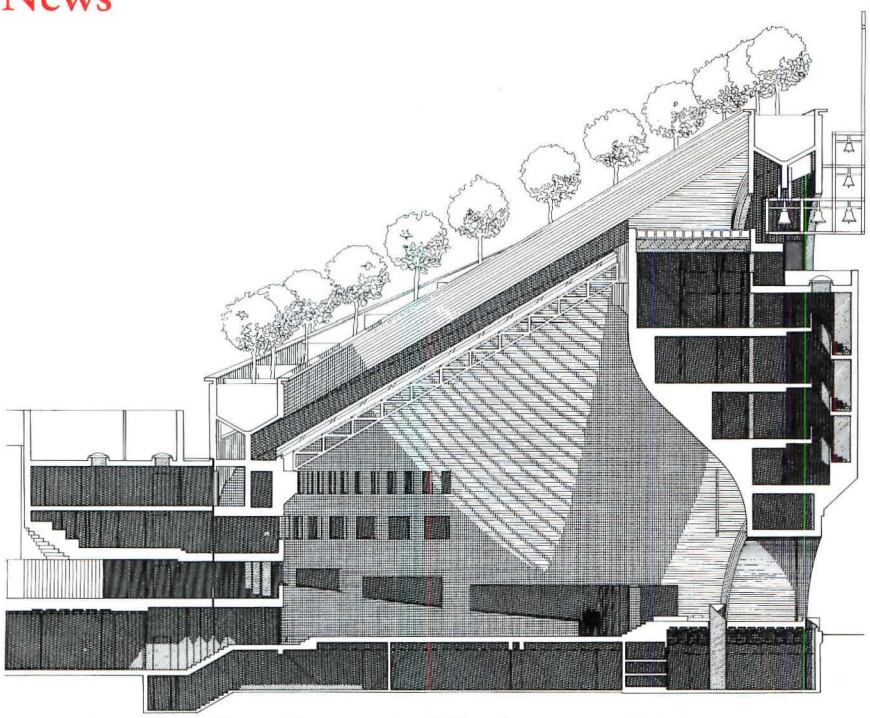
The new building houses both the European Court of Human Rights and the European Commission of Human Rights. These two agencies are part of the Council of Europe, which enforces a 1950 treaty designed to safeguard human rights on the European continent.

By the late 1980s, the Council of Europe had expanded from its original 12 members and required more space. The council and the city of Strasbourg held a competition in 1989, and Richard Rogers Partnership won the project.

One of Rogers' design aims was to allow for changes in the composition and needs of the court. This adaptability was put to the test while the building was still under construction; after the fall of the Soviet Union, the size of the building was increased to accommodate new states, bringing the council's current membership to 34.

Rogers reversed the formula that made his Pompidou Center and Lloyd's of London famous. Instead of showcasing girders and pipes on the exterior, he displayed them inside the 325,000-square-foot building. Brightly colored structural elements shape daylit interior spaces, particularly a glass-enclosed, futuristic entrance hall. Drumlike court and commission rooms flanking the hall are more subdued to create the sense of a cooperative, rather than a hierarchical, assembly.

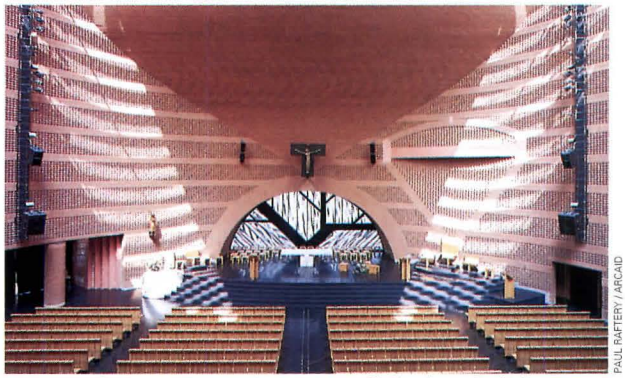
According to Rogers, the circular exterior forms of the court and commission rooms, which terminate a spine of offices, symbolize the equality of all participants in the system, while the transparent and reflective exterior materials represent "a desire for the transparency of justice."—*Katherine Eggers*



SECTION: Nave is flanked by parish center wing (left) and art museum (right).

PINO MUSI

TREES: Circle of lime trees recalls crown of thorns.



PAUL RAFTERY / ARCAID

NAVE: Rooflights and stained-glass tree of life admit daylight.

PAUL RAFTERY / ARCAID

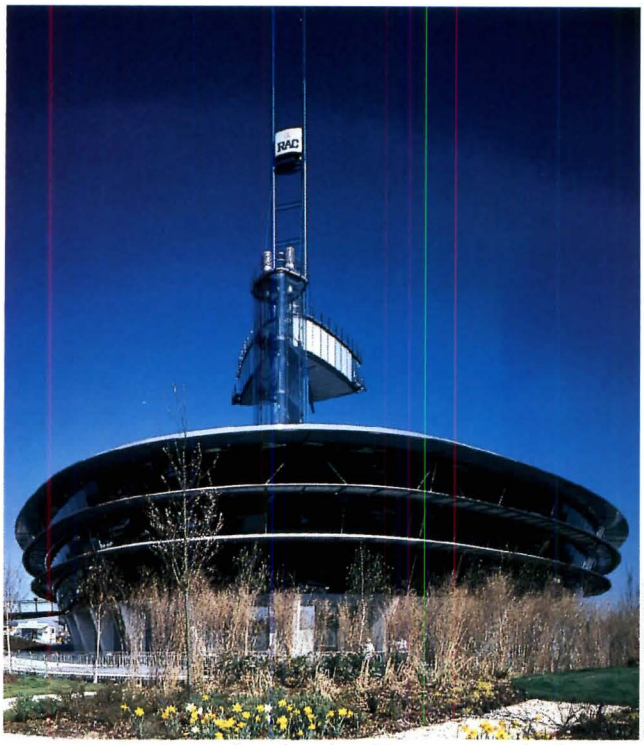
CYLINDER: Brick-enclosed stair leading to belfry projects from main volume.

Botta-Designed Cathedral Sparks Controversy

The faithful attending mass at a new cathedral in Evry, a Paris suburb, are greeted by stereo sound, a monumental projection screen, electronic surveillance, and a crown of lime trees. Swiss architect Mario Botta's devil-may-care attitude about context is clearly evident in his latest cylinder, which evokes his buildings elsewhere. Before reason prevailed, for example, his San Francisco Museum of Modern Art (ARCHITECTURE, December 1994, pages 20-21) wore a similar crown of trees. But even though Evry's Cathedral of the Resurrection lacks a spire, the quality of the building's interior daylight and its splendid acoustics have made it popular with parishioners. "I have thought about a house of God in the spirit of a house for people," Botta admits.

The 12-story building, which opened during Holy Week in April, is built of richly detailed brick and designed to accommodate 1,400 people. A sloping glass roof brings daylight into the circular nave, which is ringed by a vestry; organ and choral chamber; offices; and, on the upper floors, a museum of religious art. A rectangular wing on the southeast side of the cylinder houses a chapel, conference room, parish center, and caretaker's residence.

Dubbed "Notre Dame of IKEA," by the satirical Paris weekly *Le Canard Enchaine*, the $13 million building fomented controversy even before it was constructed. Bishop Guy Herbulot, who led the cathedral-building effort, was criticized for using such modern fund-raising strategies as direct mail. And protesters called tax rebates for donors unconstitutional, claiming they violated the separation of church and state. Nevertheless, the successful program to build a cathedral in Evry, a new town of about 80,000, foretells a religious resurgence: Four cathedrals in Paris are being restored, and other new places of worship are under consideration throughout France.—*Heidi Landecker*



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RAC OFFICES: Continuous, frameless glass skin wraps upper levels.

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SPIRE: Glazed elevator leads to visitors' room.

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TOPLIT ATRIUM: Concrete structure is exposed; staircase connects open office.

Grimshaw Designs Auto Club to Save Energy

Nicholas Grimshaw & Partners' design for the regional control center and offices of the Royal Automobile Club (RAC) develops the distinctive style that first appeared in the firm's *Western Morning News* building (ARCHITECTURE, September 1993, pages 78-83). But whereas the *News* was shiplike in form, the new RAC building is more like a flying saucer, designed to be clearly visible to passing motorists who are the RAC's potential customers.

The organization of the three-story building is simple and logical. Open-plan offices surround a toplit atrium with open staircases in the center and service cores in the three corners. The concrete structure is exposed externally at ground floor level, where the perimeter columns become tapered fins. Above this, the building is wrapped in a continuous skin of frameless glass, supported by slender raking steel members. Problems with glare at the *Western Morning News* have been solved here by the addition of continuous horizontal sunshades that double as maintenance walkways.

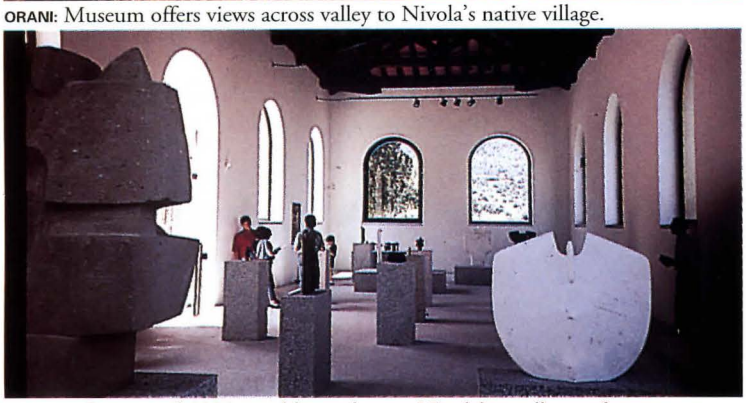
The RAC is sealed and air-conditioned—a necessary precaution on this noisy site where air pollution is likely to be high—but nevertheless incorporates several energy-saving features. The displacement ventilation system, supplied through the floor rather than the ceiling, concentrates cool air in the occupied zone, and incorporates a thermal wheel—a tightly-packed cylinder that transfers heat and moisture from exhaust air to the supply airstream. Grimshaw's design is also the first commercial use in Britain of environmentally friendly chillers that incorporate ammonia rather than chlorofluorocarbons.

Since pioneering the British High Tech style in the 1970s and '80s, Grimshaw has entered a new phase in his career, applying the technical lessons of that earlier period to a series of boldly expressive, futuristic designs.—*Colin Davies*

PETER CHERMAYEFF PHOTOS

ENTRY COURT: Nivola's abstract female figures in marble are staggered outside museum in Sardinia.

ORANI: Museum offers views across valley to Nivola's native village.



GALLERY: Renovated 1920s washhouse houses Nivola's smaller works.

Chermayeff Designs Museum for Mentor

In June, the small town of Orani, Italy, located in the remote central mountains of Sardinia, celebrated the opening of a new museum dedicated to the sculptor Costantino Nivola (1911-1988). Although Nivola was born in Orani, the majority of his career transpired in New York. But the way of life of his native village, the ritual of making bread, the gathering of sticks for a fire, the tools of the building trades, were always present in the sculptor's personal mythology of forms. No matter where he worked, Nivola brought palpable traces of his village with him.

The museum, designed by local architect Umberto Floris and Boston architect Peter Chermayeff of Cambridge Seven, who as a student worked as Nivola's assistant, maintains the spirit of the artist—modest, direct, and laced with ironic inflections. Nivola, who worked with architects such as Le Corbusier, Marcel Breuer, and Eero Saarinen, had a particular sensibility for architectural space. His most famous works in the United States are 35 concrete sculptures in the Morse and Stiles colleges at Yale (1961) and a polychromed relief for the Olivetti showroom in New York (1953). On Sardinia, his most prominent works are the series of granite monoliths for Piazza Sebastiano Satta in Nuoro (1966) and monumental marble figures for the Palazzo della Regione Sarda in Cagliari (1987). The major works of the Nivola Museum—monumental, disk-shaped female figures in marble—are arranged in a staggered pattern in the entry court, giving the space a ritual resonance.

The museum plans to sponsor international sculpture competitions to maintain a dialogue with the outside world and eventually hopes to expand its facilities in a series of terraces to accommodate temporary exhibitions, galleries for Nivola's graphic output, and archival spaces.—*Richard Ingersoll*

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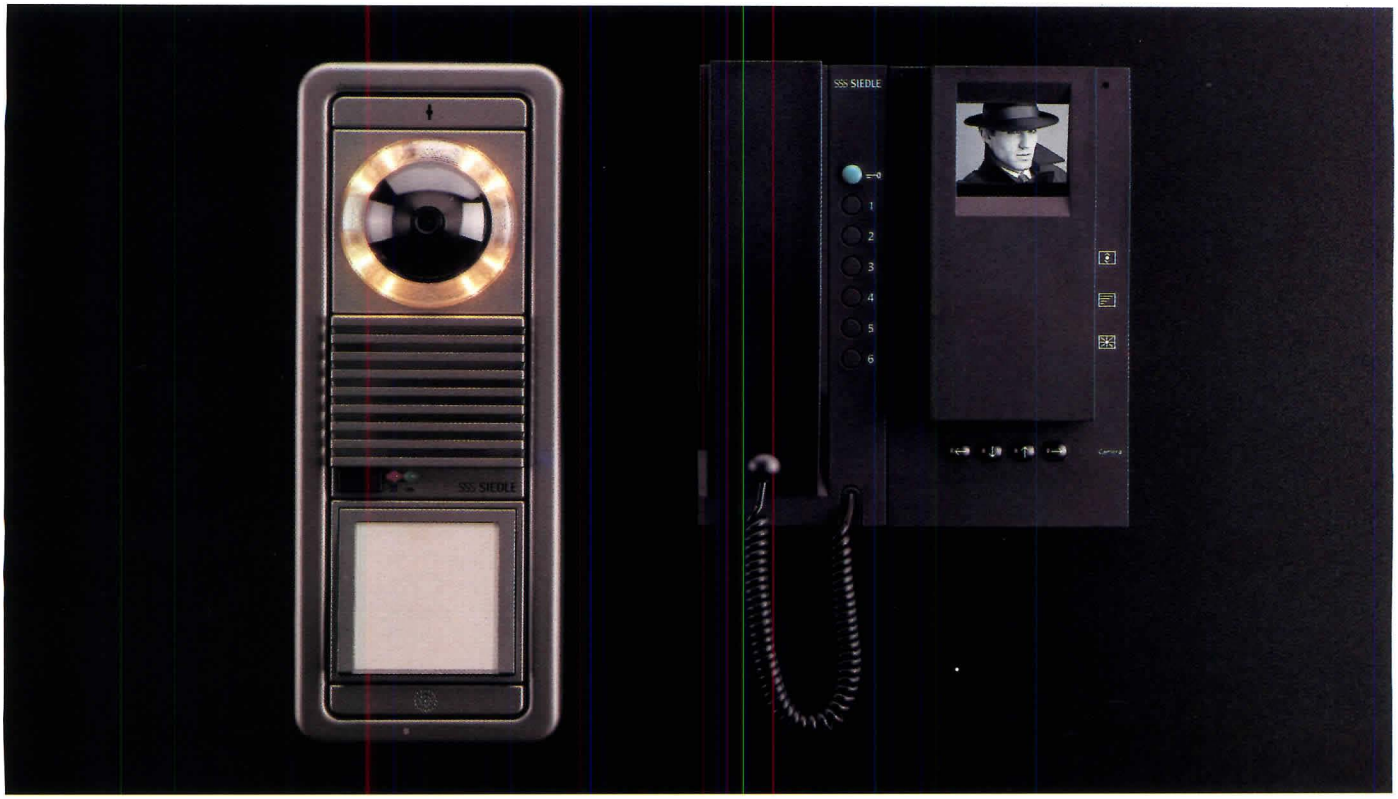

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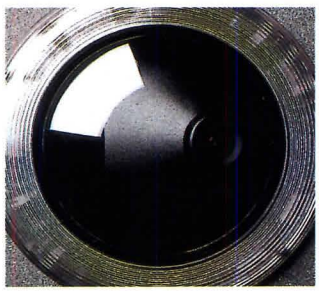

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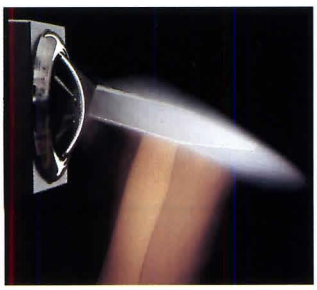

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News

American Center threatened

The 15-month-old American Center in Paris, designed by **Frank Gehry**, may close by the end of the year due to poor financial planning. All of the proceeds from the sale of the center's former headquarters were sunk into the new Gehry building, fund-raising efforts have done little to satisfy the $6 million annual budget, and operating costs are rapidly depleting a $5.5 million endowment. The potentially profitable restaurant and 26 apartments in the building remain unlet. Directors estimate the center will be bankrupt by December if funding is not secured. Last minute plans include refinancing the $42 million building and negotiating partnerships with American businesses.

Federal appointment

The U.S. Senate has confirmed President Clinton's appointment of New York architect **Arthur Rosenblatt** to the 15-member National Museum Services Board, which establishes policy for the Institute of Museum Services (IMS). Museums across the country seeking federal funding petition IMS, which, along with the National Endowment for the Arts and the National Endowment for the Humanities, falls under the umbrella of the National Council for the Arts and Humanities.

International update

In the Philippines, an invited competition is now under way for conversion of the former U.S. naval station in Subic Bay to civilian uses. Invited competitors are **Koetter, Kim & Associates**; **Kenzo Tange**; **Peter Calthorpe**; and **Terry Farrell**. The winner of the competition will be announced next month.

Electricidade de Portugal has commissioned **Cambridge Seven Associates** to preserve and display 80 Paleolithic carvings found during construction of a new dam on the Côa River in northern Portugal; early strategies include encapsulating the engravings in place and building a visitors center around them.

Einhorn Yaffee Prescott is restoring the U.S. Embassy in Argentina; and **Rafael Moneo** is designing the $5 million Spanish ambassador's residence in Washington, D.C.

New commissions

Thompson & Wood of Cambridge, Massachusetts, has completed a new master plan for the streetscape of Morris Lapidus's six-block Lincoln Road Mall in Miami Beach, in association with landscape architect **Martha Schwartz**; **Hiroshi Hara**, who is designing new shade structures; and **Carlos Zapata**, who is developing new street graphics.

Spillis Candela & Partners has been commissioned to design the Dare County Governmental Center in Manteo, North Carolina. **Smith-Miller + Hawkinson Architects** is designing a hotel and condominium complex in Telluride, Colorado, and a coffee shop at Cooper Union. Los Angeles-based **Narduli/Grinstein Architects** is renovating Beat poet Allen Ginsberg's loft in New York. **Coe Design** has been selected to design the headquarters of the Los Angeles AIA at Pacific Design Center. **Finegold Alexander + Associates** with **Caples Jefferson Architects** is renovating the historic Shurtleff School in Chelsea, Massachusetts, into an early learning center run by Boston University.

Competition winners

Michael Graves with **Smith, Hinchman & Grylls** has won the competition to design the new $90 million Federal Courthouse Annex in Washington, D.C., to be located on Constitution Avenue opposite the East Wing of the National Gallery of Art. The team was selected over the following finalists: **Shalom Baranes**; **Philip Johnson, Ritchie & Fiore Architects** with RTKL; **Hanson Lind Meyer** with **Venturi, Scott Brown**; and **Bohlin Cywinski Jackson** with **Burt Hill Kosar Rittelmann**.

C.W. Fentress J.H. Bradburn and Associates, in association with **Muller and Caulfield** of Oakland, California, won a competition to design a $200 million government administration complex for the City of Oakland. The firm was selected over finalists **Heller & Leake** and **Michael Graves**.

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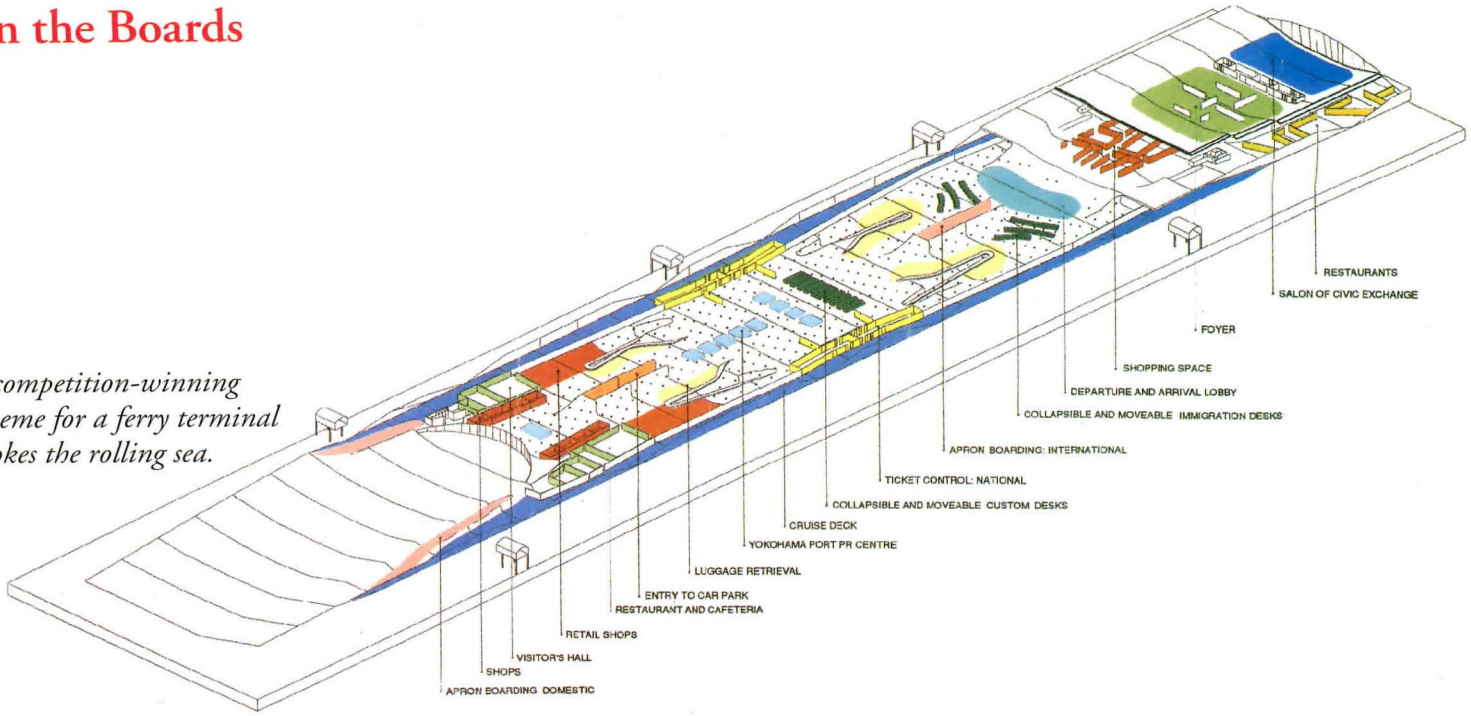
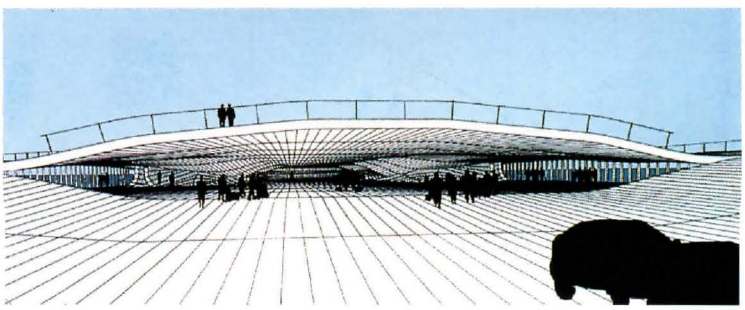
On the Boards

A competition-winning scheme for a ferry terminal evokes the rolling sea.





Yokohama International Port Terminal
Yokohama, Japan
Foreign Office Architects

Farshid Moussavi and Alejandro Zaera-Polo's winning design for the Yokohama International Port Terminal evokes the waves of the surrounding bay and naturally rolling open spaces. The terminal, located in Japan's second largest city, will accommodate 53,000 passengers a year, as well as the locals who visit the terminal's shops and restaurants or surrounding park. The design was selected in February from a competition sponsored by Yokohama City Port that drew nearly 700 entries from Japan and overseas.

Twenty-nine-year-old Moussavi and Zaera-Polo, 32, who call their firm Foreign Office Architects, teach at the Architectural Association in London. The two worked in the early 1990s at Rem Koolhaas's Office for Metropolitan Architecture (OMA). Koolhaas served on the jury of 12 architects that chose the winning scheme for the ferry terminal, designed with structural engineers Ove Arup & Partners.

The proposed 600-meter steel structure consists of a plaza leading to the terminal, which contains shops, restaurants, and ticketing and waiting areas (top). Yokohama plans to build the structure within the next five years.—*Melissa Weinstein*

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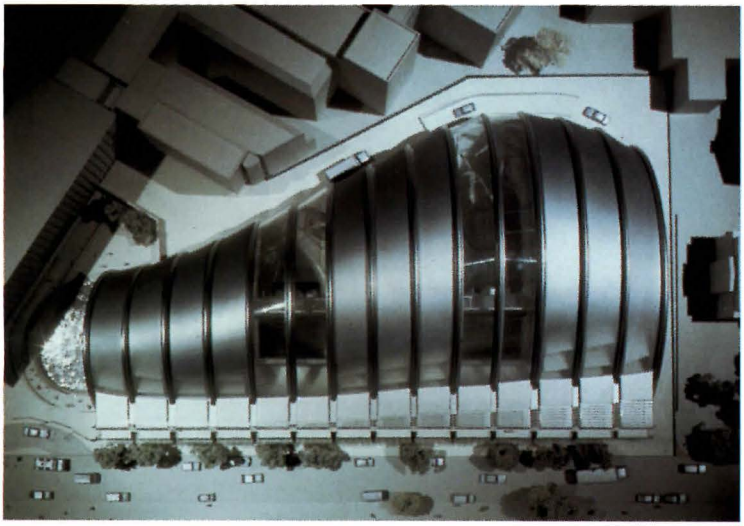
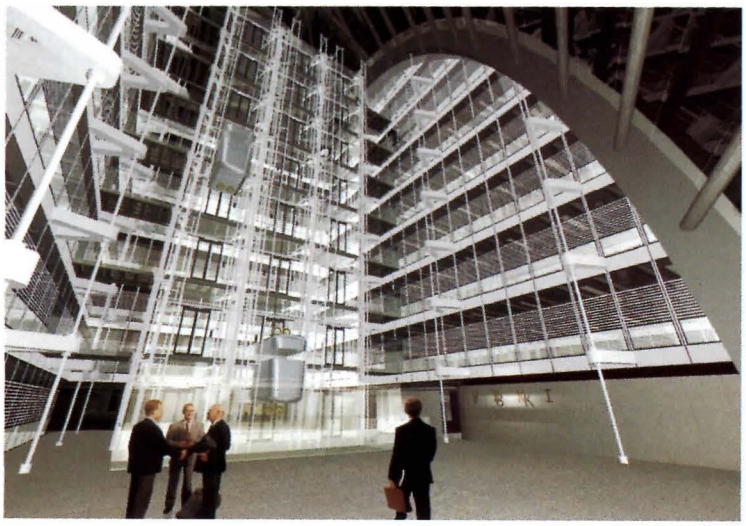
On the Boards





Stock Exchange and Communication Center
Berlin, Germany
Nicholas Grimshaw & Partners

In 1992, the Berlin Chamber of Commerce held a competition to consolidate in a new building its offices with those of the Berlin Stock Exchange and the local Federation of the Industrialists. The winner, Nicholas Grimshaw, devised a cocoon-shaped structure that fills its irregular site in western Berlin. The architect suspended the top eight floors from 15 elliptical arches, leaving the ground floor column-free. Twin atriums interrupt the stainless steel-clad enclosure, daylighting interior offices. Ground-level circulation snakes along an inner street that parallels the site's boundaries. The project is scheduled for completion in late 1997.—*A.C.S.*

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Protest

A garish headquarters by Terry Farrell obscures the architect's urban sensitivity.

VAUXHALL CROSS: Postmodern decoration diminishes new spy headquarters.

Missed Opportunity on the Thames

With its three longitudinal blocks stepping back from the Thames, its appliqué of terraces, its vague Art Deco-ish decoration, Terry Farrell & Company's Vauxhall Cross building certainly ranks as one of London's uglier recent arrivals. Indeed, Farrell's composition is so garish that its neighbors—cheap 1960s slab blocks—appear to be of almost Miesian simplicity.

The real disappointment of Vauxhall Cross, however, is not its appearance but rather its missed opportunity. This building was the final in a series of three urban structures designed and completed by Farrell within the past five years. The other two are Alban Gate, located on the fringes of the City of London, and Embankment Place, which hovers over Charing Cross railway station. The trio represents the grand finale of Farrell's Postmodern binge, an excursion into frivolity underwritten by the boom-time economy of the 1980s.

However, unlike many of his peers, Farrell has always been concerned with repairing the urban fabric so often damaged by 1960s obsessions with the car. Alban Gate, for example, bridges a highway driven through the medieval street pattern. Embankment Place restores one side of derelict Villiers Street, humanizing it with shops. And Vauxhall Cross, despite being the home of MI6 (the U.K.'s equivalent of the CIA), extends public access beside the Thames, a crucial urbanistic ambition for London that started in the mid-19th century and still has a long way to go.

What disappoints at Vauxhall Cross is not so much Farrell's vision as his detail. Like many of his contemporaries, Farrell entered architecture in the High Tech era of the 1960s, and his original partner was Nicholas Grimshaw. After their split in 1980, Farrell became the high priest of Postmodernism and now advises the Prince of Wales. His early work, such as the Clifton Nurseries pavilion in Covent Garden (1981) and the TV-AM studios in Camden Town (1982), seemed to herald an intellectual revolt to international Modernism. But soon Farrell's work, like so much Postmodernism, became merely the corporate style of the 1980s. And his motifs, particularly for Vauxhall Cross, have dated quickly: cheap concrete cladding, ridiculous pharaonic symmetry, clipped trees, beaconesque clerestories.

And how different it could have been. Farrell, as if to reflect the great simplicity of the 1990s, has moved on. This month, his convention center in Edinburgh will be completed. Like Farrell's London buildings, this complex project is at ease with its location. But the exterior is quite different—expressing the auditorium inside—and selectively rendered in brick with a glass canopy. It represents Farrell's new style: bold, vigorous, and contemporary. What a pity Vauxhall Cross was not designed just a few years later.—*John Welsh*

John Welsh is editor of the Royal Institute of British Architects Journal.

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Designing Men

Playwright Wendy Wasserstein explains male architects' growing appeal at the box office.

Architects have become Hollywood hot properties, the profession to be in. Not, of course, those actually making a living pushing a pencil over bath-towel-sized sheets of paper. Instead, architects are the current on-screen wonders of the working world, the ones to trust, the ones to be in touch with and be touched by, thinkers with good hands, real men—with minds. Men like Mike Brady.

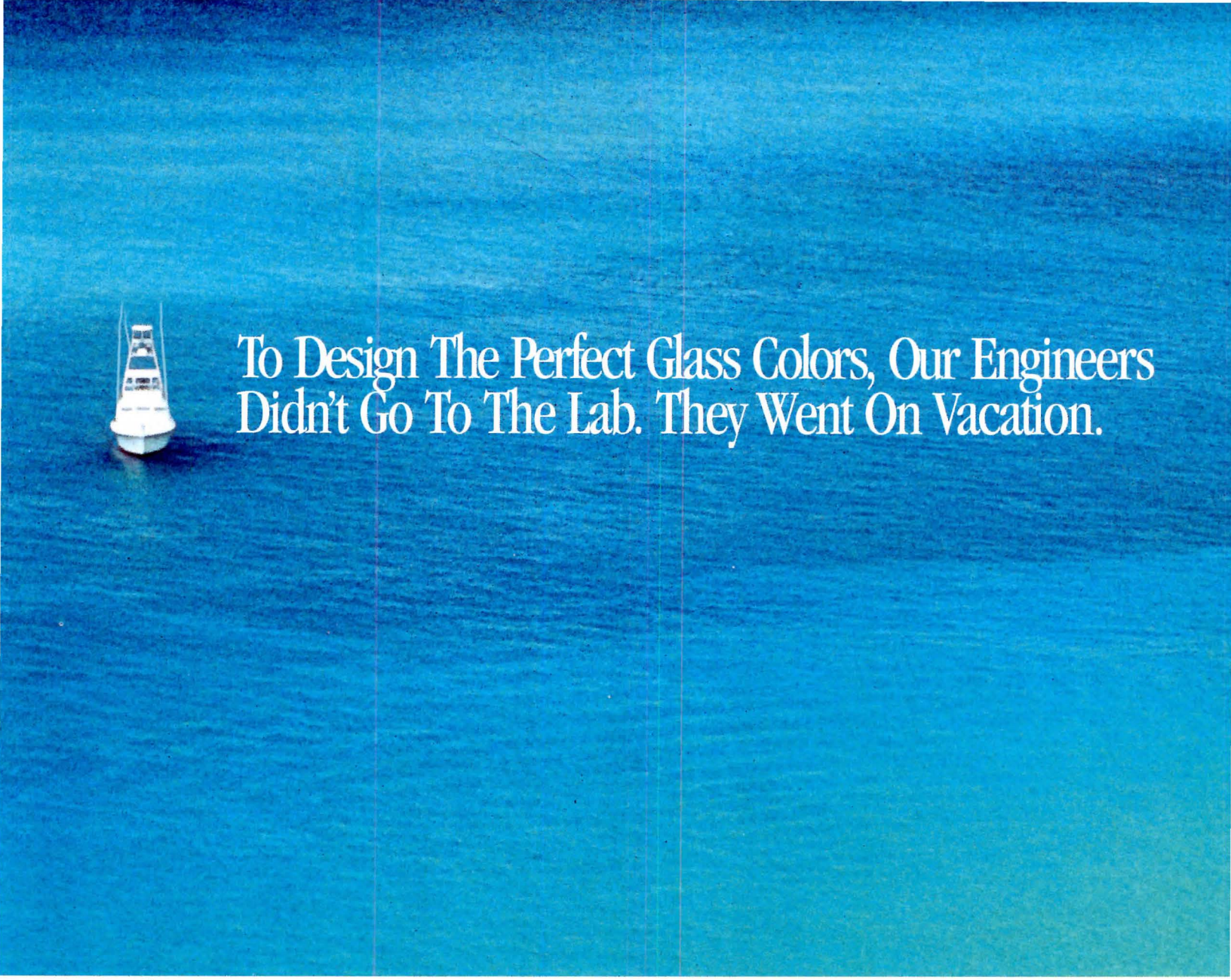
The *Brady Bunch* dad is a guy with principles and bell-bottom trousers. He's an architect who built his own kind of house, and he has his own kind of retro family values. If he were a crooner, he'd be belting nightly an Our Gang version of "My Way" at the Sears, Roebuck bar-and-grill. Mike Brady, much like Gary Cooper as the classic cinema architect Howard Roark in *The Fountainhead*, is willing to stand up for his beliefs and manly enough to follow through.

But Mike is a sensitive guy, too. He reads *Jonathan Livingston Seagull* in bed and is a caring husband and a loving dad. He even has artistic integrity. In *The Brady Bunch Movie*, his building designs consistently bear more than a passing resemblance to *77 Sunset Strip*, but he doesn't budge from his vision. Mike's split-level gas station is his version of the Robie house.

Of course, Mike isn't the only sensitive but wholly hetero hero who has appeared on the silver screen lately. In fact, architects are the movie men of the moment—the perfect combo of the old male and the new. Movie architects wear T-shirts and jeans and have unstructured, Dolce & Gabbana or Banana Republic silhouettes, but they are quite capable of holding their own with prominent men in stylish business suits. They're artists who have no problem with numbers. Developers are evil movie bad guys, willing to throw over the environment just for a condo. But architects, though initially cool and withholding, are on the side of good. Movie architects tend to be hunky and tall,

TAKASHI SEIDA / PARAMOUNT PICTURES

COLLABORATION: Silver-screen architects Sharon Stone and Richard Gere contemplate museum design.



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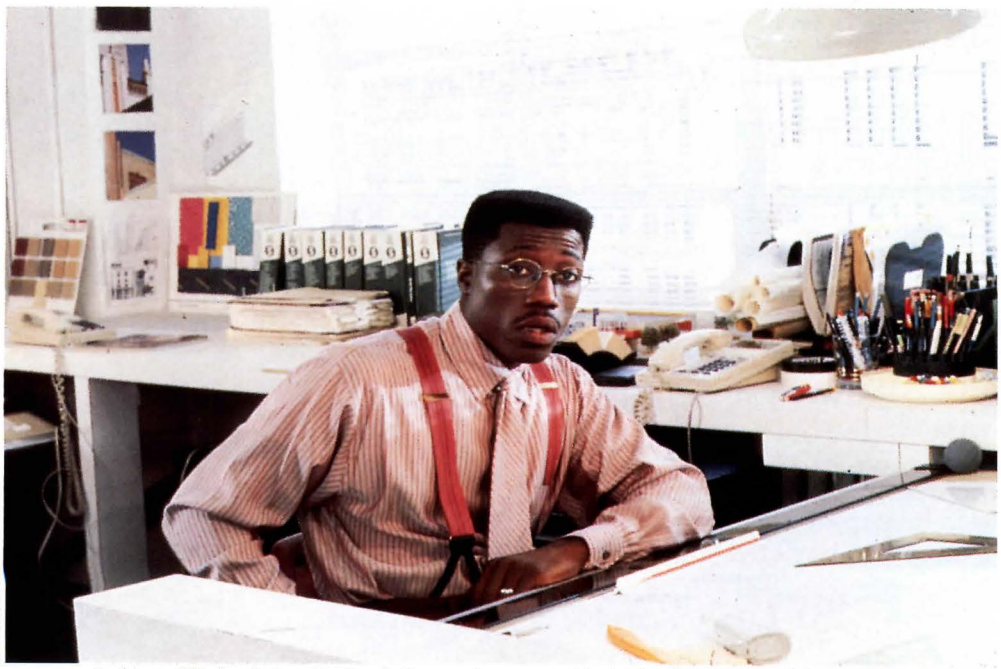
"A building has integrity, just like a man," Howard Roark asserts. Film architects have the instincts of artists and the responsibilities of real men.

like Gary Cooper, and unlike the real-life shortish greats—Frank Lloyd Wright, Louis I. Kahn, and I.M. Pei.

Among the recent crop on screen were the sweet and widowed Tom Hanks, in *Sleepless in Seattle*; the befuddled but secretly sweet Woody Harrelson, in *Indecent Proposal*; and Jeff Bridges, the Good Samaritan plane-crash survivor, in *Fearless*. When Bridges lets the husband of a distressed fellow survivor know that he's an architect, the husband is reassured of his seriousness.

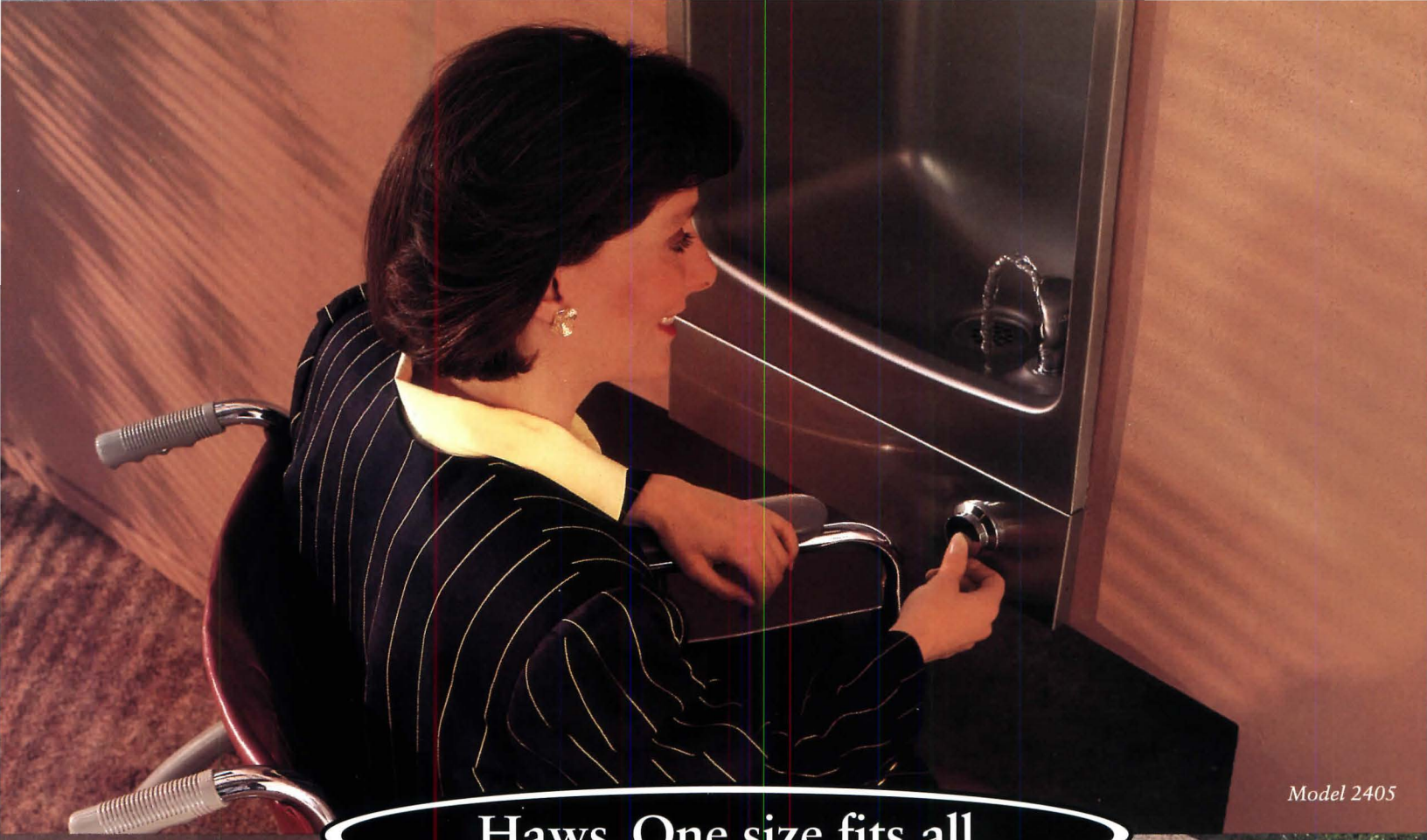
It takes a real man to romance a Romanesque curve. Richard Gere, in *Intersection*, plays an architect trapped at a midlife crossroads between Sharon Stone, his coolly elegant wife, and Lolita Davidovich, his wilder, younger, sexier journalist lover. Tom Selleck, in *Three Men and a Baby*, is an architect so secure in his masculinity that he bonds adorably with his baby girl by bringing her to a building site in a small, pink hard hat. It's a detail she might well mention to her therapist—along with the three men—in the future.

Until recently, film architects, like cowboys, had no ethnic affiliation. Sam Waterston, in *Hannah and Her Sisters*, is from the innovative and socially agile school of Robert A.M. Stern, Hugh Hardy, and Charles Gwathmey—the ultimate gentleman architect, well versed in opera and the Flatiron District. In more recent films, the education and vitae are the same, but the background



DAVID LEE / UNIVERSAL CITY STUDIOS

DIVERSITY: Architect Wesley Snipes in *Jungle Fever* seeks partnership in firm but is turned down.



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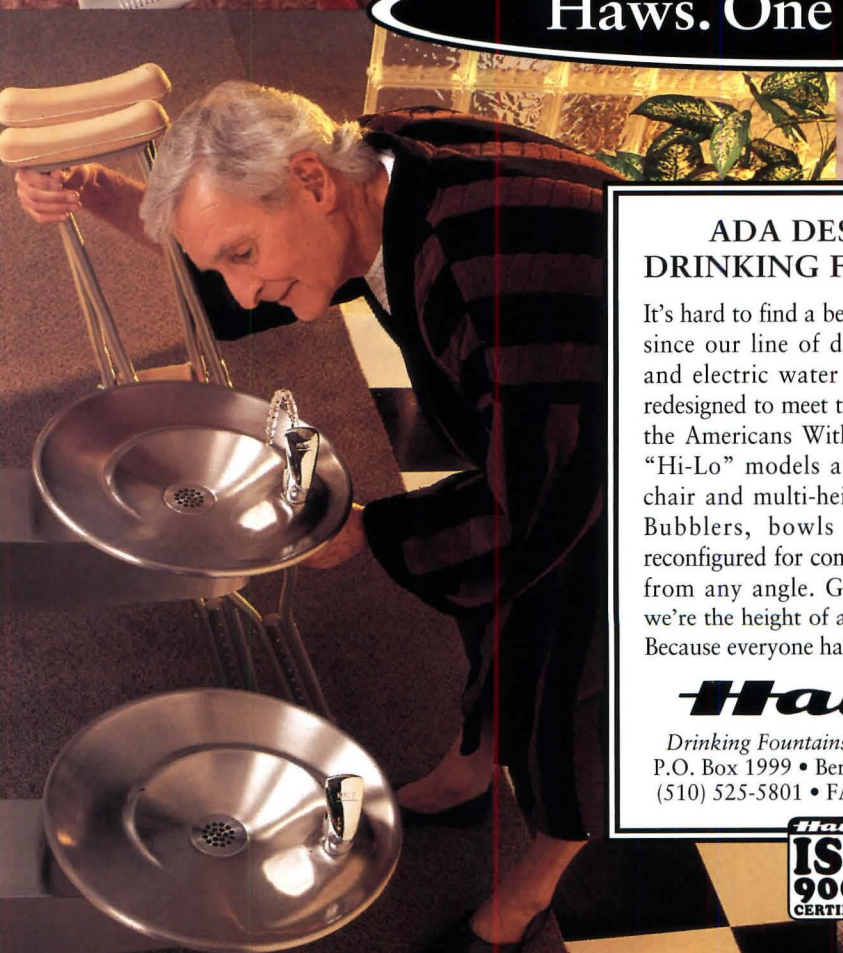

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Opinion

is more diverse: Wesley Snipes, for example, plays an architect trapped by his Classical and classist taste in Spike Lee's interracial romance, *Jungle Fever.*

The current champion of architect casting, David Strathairn, plays the overworked—and possibly Jewish or at least not Waspy—architect husband of Jessica Lange in *Losing Isaiah* and of Meryl Streep in *The River Wild.* (Obviously, architects prefer blondes.)

Of course, there are other sensitive but masculine vocations in current films: James Woods is a veterinarian in *Immediate Family,* and Burt Reynolds is a sculptor in *The Man Who Loved Women.* But to someone scanning the possibilities for attractive new-male careers, a book editor seems too intellectual; a film director, too autocratic; a doctor, too open to malpractice; an investment banker, too "eighties"; a talent agent, too scuzzy; a personal trainer, too Fabio; a lawyer, too big a prenuptial; a congressman, too Republican to pair with the likes of Jessica or Meryl; and a college professor, too low-salaried, too politically correct, and maybe even too potentially gay.

"A building has integrity, just like a man," Howard Roark asserts to his critics in *The Fountainhead.* Film architects have the instincts of artists and the responsibilities of real men. They are never elitist, because, bottom line, they care about how we live—about the nitty-gritty, the bathrooms, the kitchen sinks. Most important, metaphorically and concretely, an architect can always "get it up." One wonders what profession holds a similar cinematic metaphor for contemporary females. *Pretty Woman II* is already in the works.—*Wendy Wasserstein*

Playwright Wendy Wasserstein was a student at the Yale School of Drama and cut class to sit in on Vincent Scully's lectures. This essay is adapted from an article by Wasserstein that appeared in The New Yorker *in May.*

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ARCHITECTURE

September 1995

Review of International Architecture

Our review of international architecture focuses on buildings for the arts. These museums, concert halls, and cultural centers suggest that resurgent Modernism is not solely a domestic phenomenon. To be sure, projects such as the Groninger Museum (cover) represent Postmodernism's last gasp. But renewed interest in the spatial and communicative potential of structure and materials dominate our featured projects, as represented by Peter Cardew's Belkin Art Gallery in Vancouver (this page). Architects around the world are moving away from excesses of the style-conscious 1980s toward purer forms.

Rain Coast Culture

Belkin Art Gallery • Vancouver, British Columbia • Peter Cardew Architects

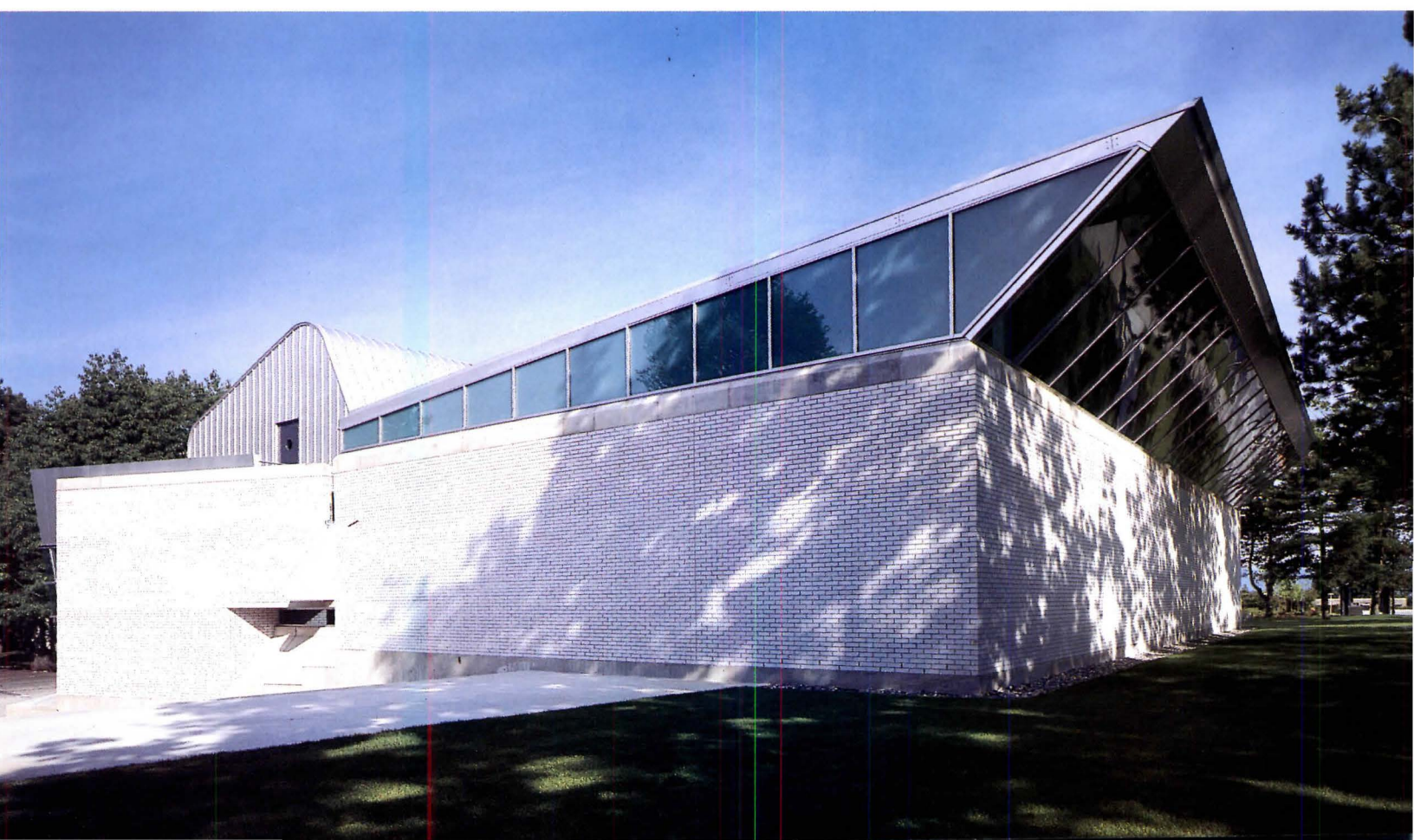
Any architectural act in Vancouver is burdened by competition from nature. So bounteous and bracing is the city's setting that constructions can either succumb to a false authority granted vicariously by their Valhalla backdrop, or withdraw into the scenery, apologize for their forms, and arrange their fronds and firs like a frightened fan dancer. While Vancouver is unquestionably one of the great New World cities, it is home to few great buildings, even after the last decade of rapid growth. Those rare local architects who get it right, Arthur Erickson, John and Patricia Patkau, and now Peter Cardew, tend to balance sensuous delight in nature with cerebral tectonics.

Not surprisingly, the peninsular Point Grey campus of the University of British Columbia (UBC) is Vancouver in miniature, only more so. The half billion dollars worth of largely mediocre campus building since 1990 lacks the ingratiating wrapping topiary and strategic tree planting that masks the worst of the previous waves of buildings constructed around 1970 and 1920. One university building that most assuredly will not need camouflaging topiary or distracting trees is Peter Cardew's sublime new Belkin Art Gallery. Floating like a serene island in UBC's ragtag fine arts zone, the confidence and conviction of this gallery rival that of its neighbor, Erickson's much larger Museum of Anthropology (1977).

The two UBC museums are also interestingly linked by program. Erickson's "open storage" concept, which permits the permanent display of much of the Anthropology Museum's collection, has since been widely imitated in museums around the world. The permanent collections at the Belkin, however, are strong in photography, prints, and postwar conceptual art and do not lend themselves to Erickson's glass-case treatment of three-dimensional totems. But with clever space planning and artful sectional manipulation, Cardew does Erickson one better. The Belkin blurs the distinctions between artifact route and public corridor, between curators and visitors, between storage/preparation areas and galleries; in other words, between rigid programmatic separation of public front-of-house and secured back-of-house that needlessly encumbers so many cultural buildings.

A key means by which Cardew accomplishes this breakdown of hierarchies is borrowed space and borrowed light, with areas such as the lobby blending into adjacent spaces without loss of architectural

ABOVE: Belkin Art Gallery is distinguished by simple white volumes clad in white brick typical of the University of British Columbia. **THESE PAGES:** Main galleries (left) are separated from windowless print gallery (right) by canopied entrance.

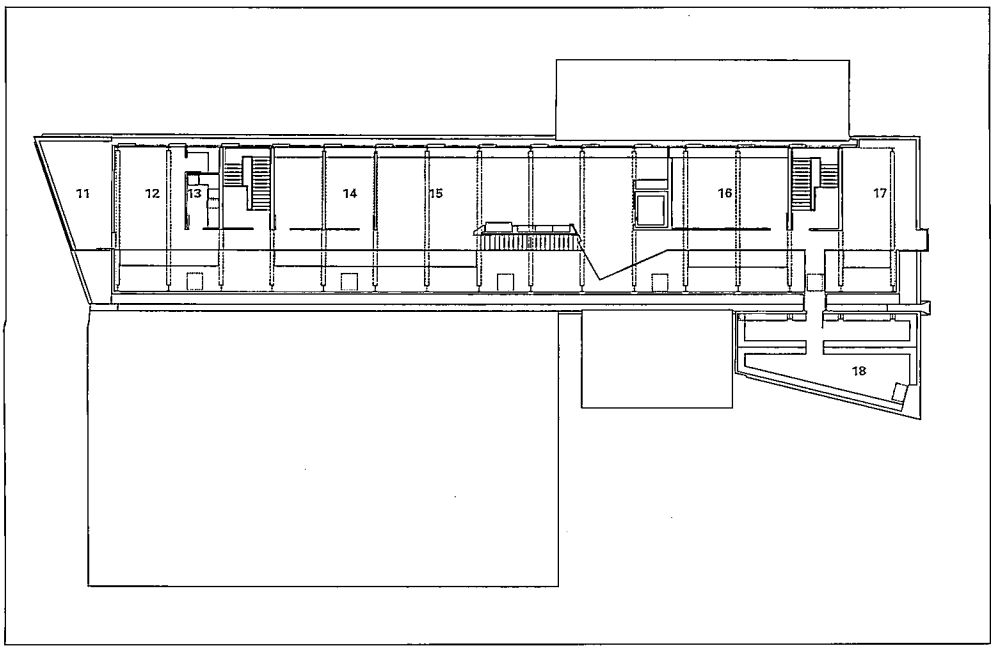


character, rendered ever-changing by natural light from top and side openings. The primary compositional device at the Belkin is a single linear corridor along which all gallery functions are aligned, framed, and modulated by large, skylit steel bents. Required functions of loading, holding, preparation, conservation, temporary deposit, and permanent storage of artwork are aligned behind cheap but efficacious rolling steel garage doors on one side of this corridor, with gallery spaces set along the other.

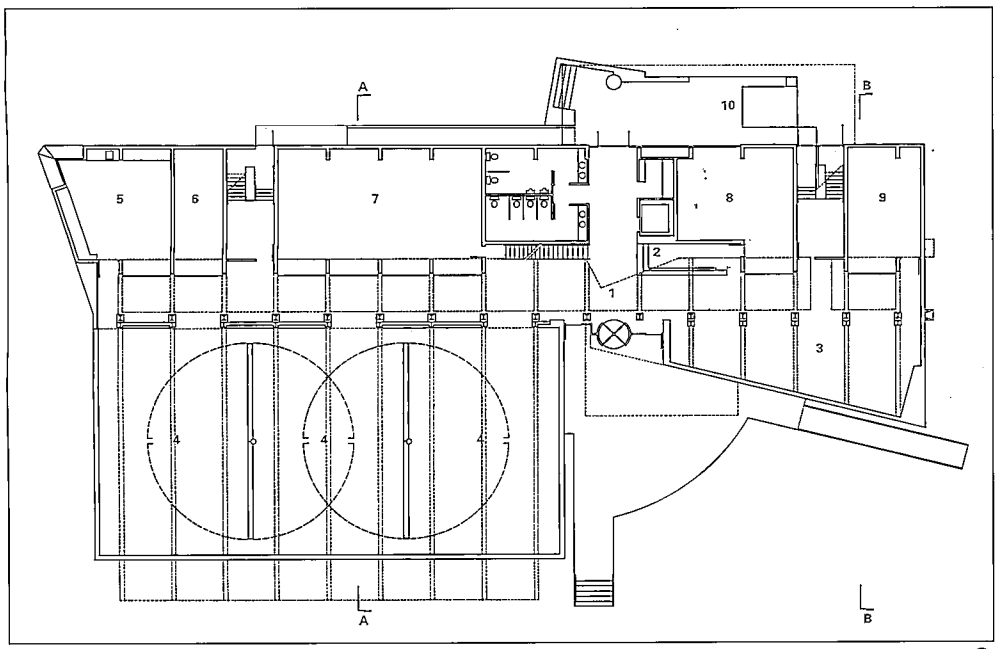
Most contemporary art museums are still stuck in a Georgian house world, with expensive doubling of elevators, stairs, and corridors for the movement of art and staff; functional sheds for support functions; and self-conscious formalist architecture for the public spaces. What Cardew accomplishes is more akin to the Case Study houses of the 1950s, with their economy of flexibility, and democratic outlook born of necessity. For example, support staff who work in the open mezzanine above the gallery are architecturally situated to double as docents and guards when needed, and curators connect visually and acoustically with their galleries by simply leaving their office doors open. Credit for Cardew's demystification and democratization of gallery functions must be shared with Director-Curator Scott Watson, an art critic and theorist who has long been associated with progressive causes.

This democratic spirit is especially apparent in the galleries, which are subdivided by rotating walls. The movable panels, framed in steel and hung from structural columns, can be arranged in a variety of configurations according to the exhibition needs of Watson and other curators. This idea is adopted from the movable panels in John Soane's London house and, more recently, the motorized panels of Philip Johnson's painting gallery on his New Canaan compound. Cardew's treatment is quieter than those concocted by these gentlemen collectors and complements his repertoire of considered details.

FACING PAGE, TOP: Prowlike corner window brightens curatorial workroom. Triangular rainspout and cylindrical basin below celebrate Northwest's rain coast in Corbusian fashion.
FACING PAGE BOTTOM: Ultraviolet-filtering clerestories sweep around galleries.
TOP: Assertive angled brace and splayed stair dignify loading dock with status as alternate public entrance.
ABOVE: Hanging entrance canopy echoes those in Vancouver's Yaletown warehouse district.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

PLANS: Circles inscribed on first floor plan show range of gallery configurations made possible by pivoting walls. Second floor incorporates administrative and archival offices.

FACING PAGE, TOP AND BOTTOM: Paintings in main gallery are hung on movable, 35 feet long by 17 feet high walls that pivot on steel bearings buried within the walls' 17-inch thickness. Steel frames support wallboard on plywood, similar to fixed gallery walls.

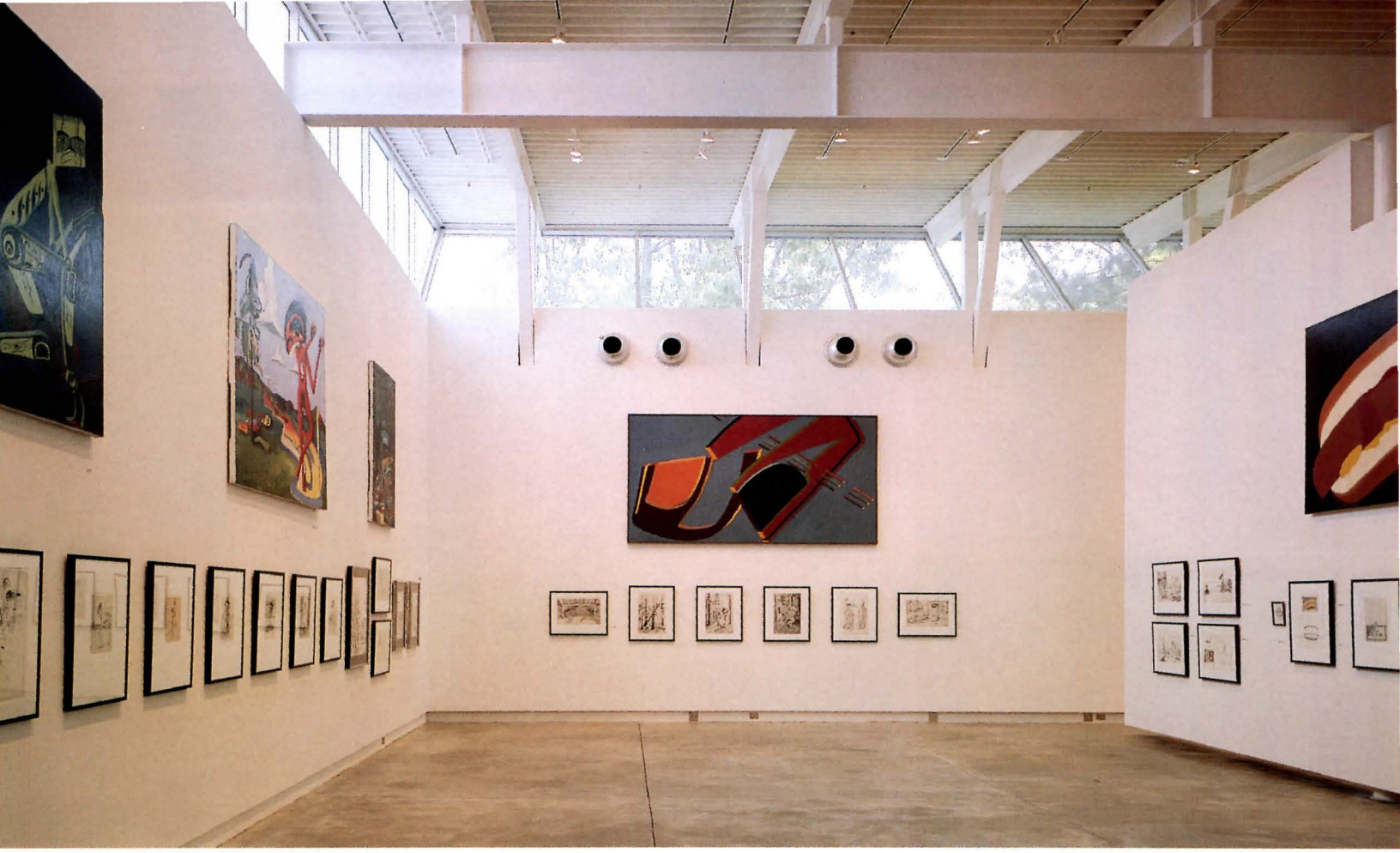
1 FOYER
2 RECEPTION
3 PRINT GALLERY
4 GALLERY
5 CURATORIAL WORKROOM
6 STORAGE
7 PERMANENT HOLDING
8 SHIPPING/RECEIVING
9 CRATE STORAGE
10 LOADING
11 DECK
12 CONFERENCE ROOM
13 KITCHEN
14 DIRECTOR'S OFFICE
15 OFFICE
16 LIBRARY
17 SEMINAR ROOM
18 ARCHIVES

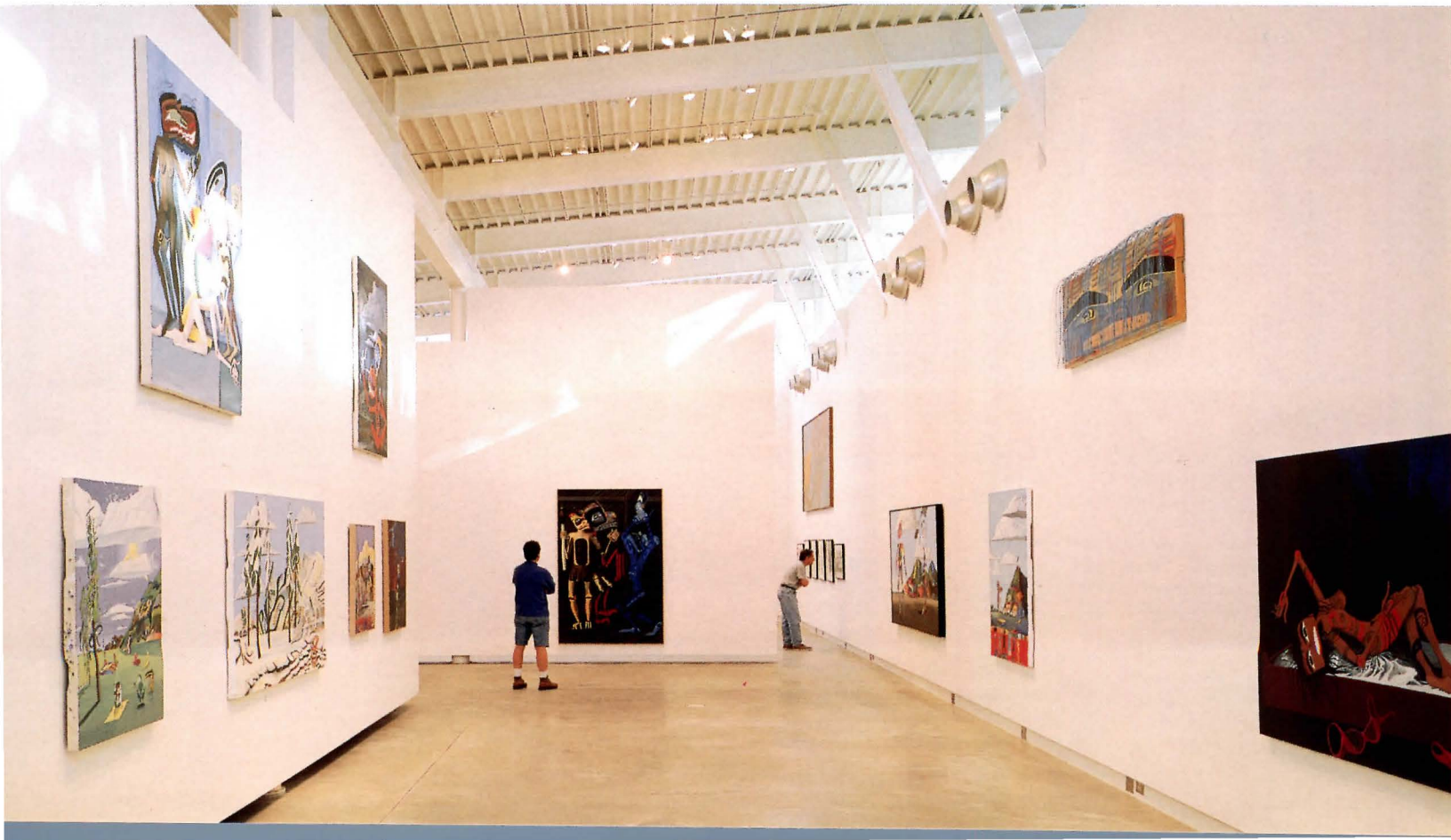
Cardew is interested in a more complex rhetoric of the practical, in which meaning and beauty are added by formal ordering and through the choreography of overlapping functions and spaces. With changing views, light, and even gallery walls, his design defies its status as a small, modestly funded building by never being the same twice.

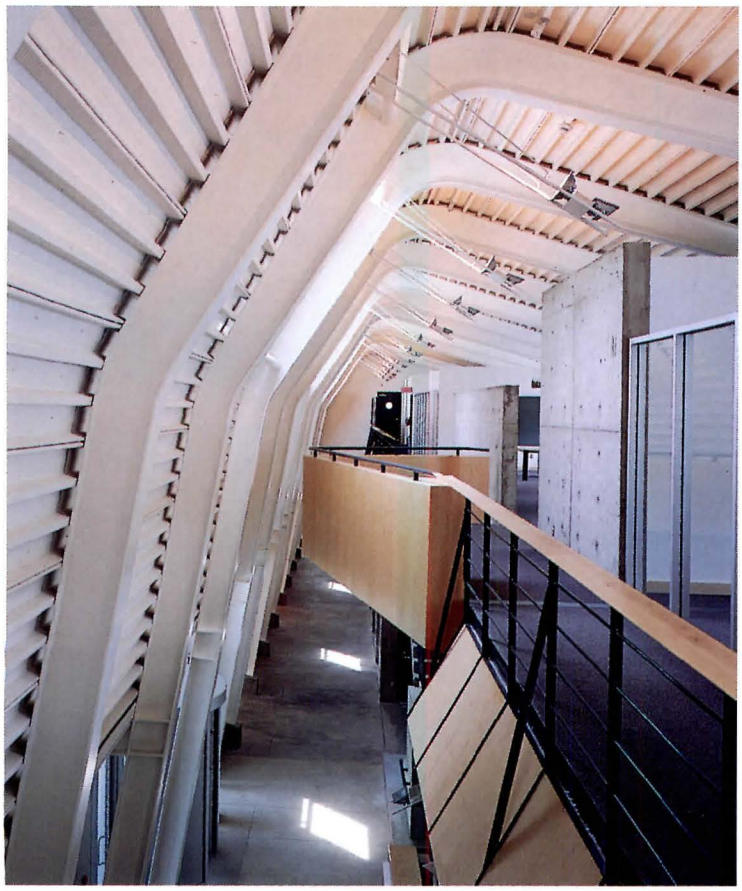
The architect's skill as sculpturally gifted designer is evident in his avoidance of that shibboleth of architectural flexibility: anonymous spaces. The splay of the print gallery opens up the one unencumbered view possible to the ocean and mountains from the front entrance. It is echoed in the forming of the loading dock stair, pointing toward a landscaped square from which most pedestrians arrive. The art preparation workroom is also shaped to admit welcome light and views to those who too often toil in the bowels of museums. These three linked manipulations of plan energize the entire layout with a kind of rhetorical vigor—an argument larger than its constituent parts.

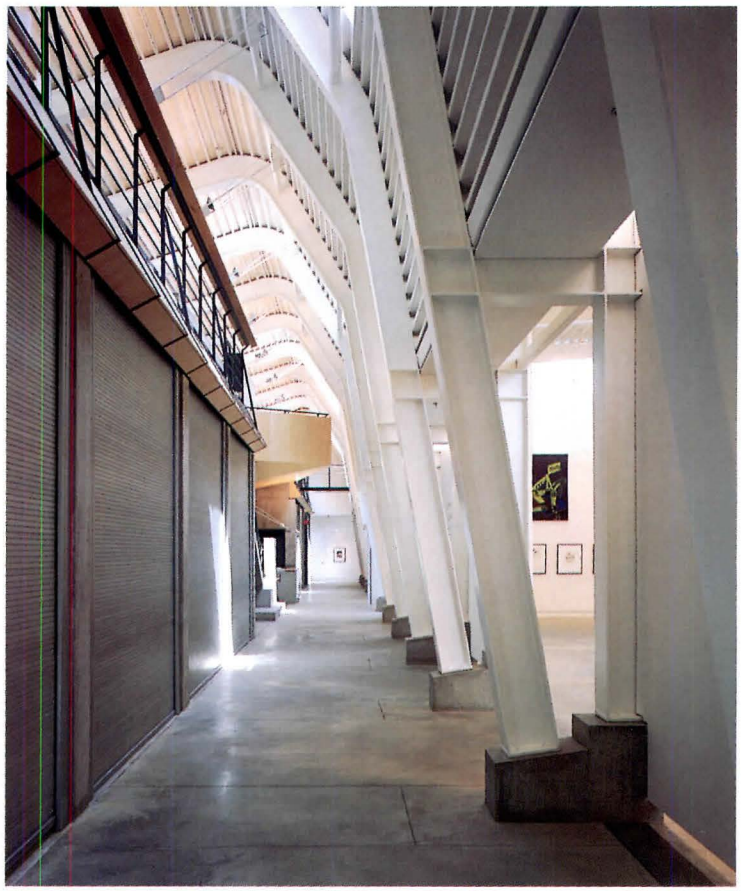
Cardew's section shifts are just as revealing: The lid of the gallery roof is lifted up to admit clerestory north and east light, but more importantly, oblique views of leaden skies and oaks and firs outside. Canadian maple panels wrap the mezzanine level and serve as skirting along the corridor-long rolling door storage, imparting a warming radiance at the very heart of what is otherwise an athletically metallic building. This last detail, which pokes out in plan to form something of a wood snout, is a playful allusion to the work of the Patkaus and other Vancouver architects who champion a kind of no-nonsense Rain Coast Expressionism. The Belkin Art Gallery is a clear demonstration that another architect of international stature has arrived with the skills and sensitivities necessary to bring Vancouver architectural acclaim.—*Trevor Boddy*

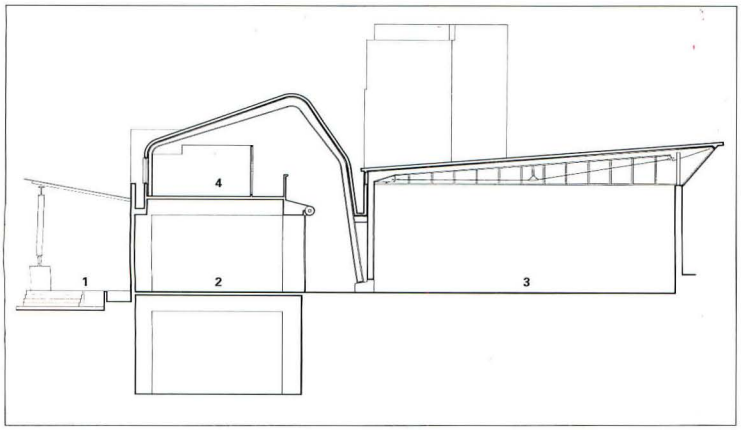
Trevor Boddy is the author of The Architecture of Douglas Cardinal.



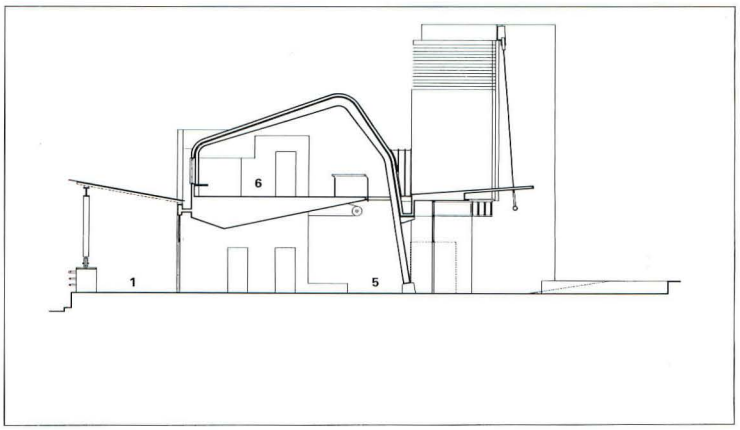








SECTION A-A



SECTION B-B

20'/6m

SECTIONS: Mezzanine (left) houses offices; rolling industrial-style door encloses storage area below.
TOP LEFT: Offices occupy mezzanine level so that support staff and curators can survey public spaces and corridors.
TOP RIGHT: Storage and art preparation, behind metal doors (left), and main gallery (right) meet along toplit spine.
FACING PAGE: Gallery is entered from steel-vaulted foyer with reception desk (right). Narrow concrete staircase leads to offices and maple-paneled balcony.

BELKIN ART GALLERY
VANCOUVER, BRITISH COLUMBIA

ARCHITECT: Peter Cardew Architects, Vancouver—Peter Cardew (principal-in-charge); Marc Boutin, Janne Corniel, Don Kasko (project team)
ENGINEERS: C.Y. Loh Associates (structural), D.W. Thompson Consultants (mechanical/electrical)
CONSULTANTS: Gabriel/Design (lighting); Cultural Building (programming)
PHOTOGRAPHER: Timothy Hursley

1 LOADING
2 PERMANENT HOLDING
3 GALLERY
4 DIRECTOR'S OFFICE
5 FOYER
6 OFFICE

Urban Reflection

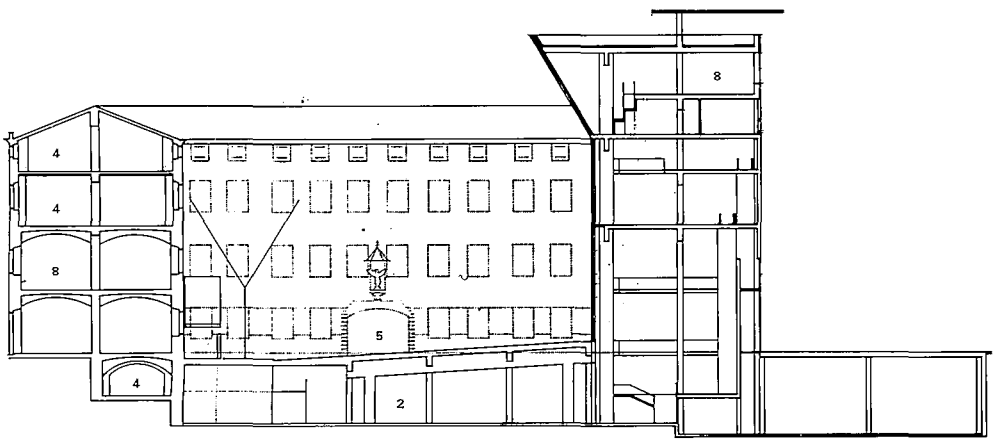
Center of Contemporary Culture • Barcelona, Spain • Albert Viaplana and Helio Piñón, Architects

The metamorphosis of the Casa de Caritat into a contemporary cultural center is the most recent in a long series of interventions carried out since the charity hospital was established in the Raval area of Barcelona's Gothic Quarter in the early 19th century. The project consisted of restoring three wings of the building known as the Pati de les Dones (the Women's Patio)—a unified ensemble forming a U shape around a courtyard—and the demolition of a later wing to the north that lacked significant architectural value. In its place, a new 4,500-square-meter building was designed by Albert Viaplana and Helio Piñón to contain the center's nuclei of vertical circulation and, on the basement level below the courtyard, a new reception hall.

The restoration involved carefully repairing the sgraffito and stonework on the original facades and reconstructing the tiled roof. Viaplana and Piñón distributed the program throughout the three double-bay sections of the existing building by placing offices, conference and seminar rooms, bookshop, and café on the first and second floors and devoting the third and fourth floors to galleries.

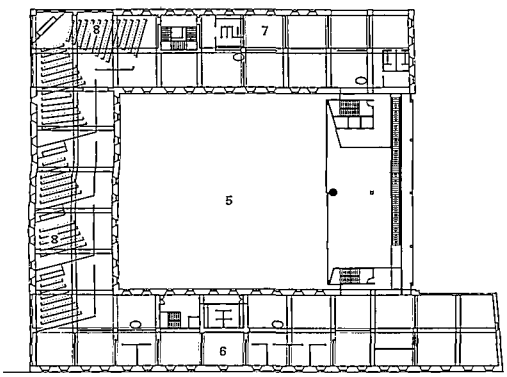
In contrast to the decorated surface of the original wings, the courtyard facade of the new building is totally glazed. This surface

ABOVE: Viaplana and Piñón clad rear facade of new cultural center in granite (left) to harmonize with stucco of 1802 charity hospital (right). **FACING PAGE:** Courtyard facade of new entry hall is clad in double-paned thermal glass in two shades of gray.

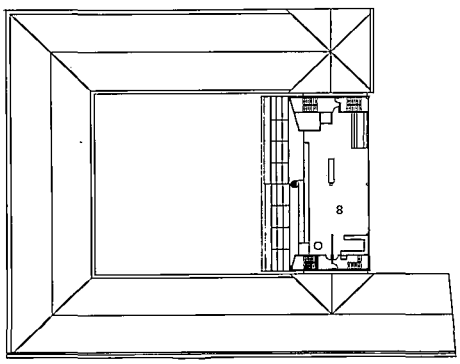


SECTION A-A

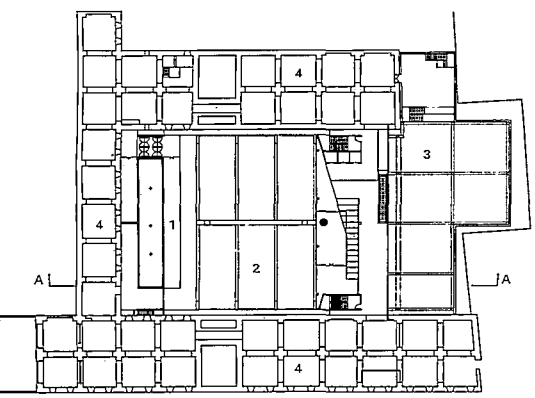
20'/6m



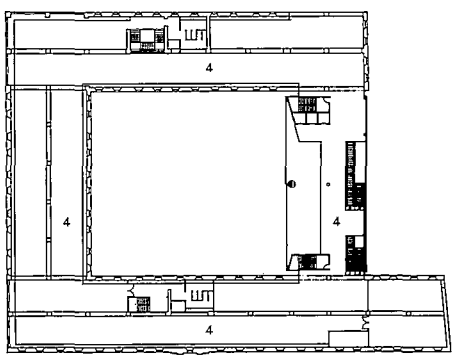
SECOND FLOOR PLAN



FIFTH FLOOR PLAN



BASEMENT PLAN



THIRD FLOOR PLAN

60'/18m

SECTION: Space under courtyard houses new reception area. New volume (right) houses entrance hall, circulation core, and gallery lobbies.
PLANS: Existing wings are renovated to house entry hall and permanent exhibition galleries in basement; temporary exhibition spaces on third floor; and offices and seminar rooms on second floor. Fifth floor of new building contains VIP reception/conference room.
FACING PAGE, TOP LEFT AND RIGHT: Viaplana and Piñón projected window wall of top-story reception hall to capture views of Barcelona.
FACING PAGE, BOTTOM LEFT: New five-story entrance hall is clad in travertine.
FACING PAGE, BOTTOM RIGHT: Staircase in entrance hall leads from underground reception hall to elevator (left) and escalator (right).

1 RAMP
2 ENTRANCE HALL
3 RECEPTION
4 EXHIBITION
5 COURTYARD
6 OFFICE
7 URBAN STUDIES CENTER
8 CONFERENCE ROOM

reflects the immediate surroundings; its top two stories rise above and incline toward the courtyard like a huge cornice, mirroring spectacular views of Barcelona.

The subtle downward slope of the newly paved courtyard guides the visitor to a ramp that descends into an entrance hall below the courtyard. Once inside the new wing, monumental escalators lead to upper galleries and culminate on a miradorlike fifth floor, which offers a panorama of the city.

The minimalism characteristic of the work of Viaplana and Piñón overwhelmingly resolves the duality of languages presented by the juxtaposition of the old and new architecture. The architects' rigorous adherence to the formal arrangement of the courtyard, combined with the neutrality of their materials, achieves a simultaneously autonomous and integrated relationship between the new cultural center and its context.

The differentiation between old and new is further expressed by the manner in which Viaplana and Piñón's glazed facade endows the Pati de les Dones with a public character. The courtyard is transformed from an interior, semiprivate space to one more closely resembling a public square. This space now forms part of an ensemble that sensitively responds to the urban conditions of this area: It takes on the role of a connector for pedestrian traffic from the street to the planted area behind the courtyard, from which one gains access to the newly completed Museum of Contemporary Art by Richard Meier.

With its new identity, the Casa de Caritat fulfills its role as an integral element of the extensive renewal plan for the Raval area of Barcelona's Gothic Quarter. This ambitious urban project delineates a band of newly constructed and refurbished cultural institutions whose end point is defined by Viaplana and Piñón's Art Center of Santa Monica, a 1989 exhibition hall.—*Diane Gray*

Diane Gray is an American architect who currently lives in Barcelona.

CENTER OF CONTEMPORARY CULTURE
BARCELONA, SPAIN

ARCHITECT: Albert Viaplana and Helio Piñón, Architects, Barcelona—Albert Viaplana (principal-in-charge)
ENGINEERS: Brupau/Obiol/Moya (structural); Jaume Cera, J.G.Y. Associated (electrical)
GENERAL CONTRACTOR: O.C.P Construction
COST: $29.2 million
PHOTOGRAPHER: Ferran Freixa

Global Technics

National School of Theater • Mexico City • TEN Architects

If the National School of Theater on Mexico City's City of the Arts campus was published without a text or a site plan, it might easily be mistaken as having a European provenance. The building's unusual engineering and rarified palette of materials belie a sophisticated approach to architecture that one expects to find in Holland, France, or Spain, but seems surprising in Mexico. The design by TEN (Taller de Enrique Norten) Architects proceeds in the Modernist tradition of gathering volumes—a theater, a library, and classrooms—under a single roof, giving the building a unified form in its great shell, while allowing for a variety of internal formal combinations.

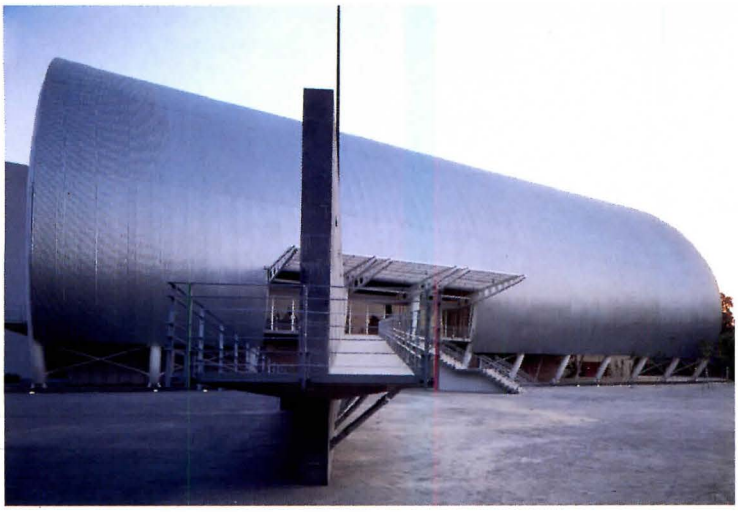
The roof is a minor triumph of engineering, unlike anything to be found in Mexican architecture, and closer to the technology of bridges and oil derricks than that of institutional buildings. With the engineering assistance of Ove Arup & Partners, TEN Architects, under the direction of Principal Enrique Norten, revived Victor Contamin's pin-joint connection employed at the 1889 Galerie des Machines in Paris to fix 12 elliptically bent steel ribs, which support the billowing corrugated steel sheathing.

The half-meter-diameter beams were produced in Mexico but then shipped to Houston to be milled. It was more economical and efficient to send the beams to Texas due to the greater technical capacity associated with the production of oil rigs. The generous umbrellalike shell, exposed on its short sides to allow for natural ventilation, creates a dramatic space and inspires the kind of vertiginous feeling one gets inside an airplane hangar.

The interior is structured around terraces, stairways, and balconies that offer a variety of impromptu proscenia and viewpoints. Without relying on the historical forms of the theater, the arrangement of elements induces the sort of reflexivity that is the essence of theater. It reinvents the condition of a world within the world that has always been the metaphysical premise of the stage.

The interior volumes are linked by a promenade that begins in the outer plaza where a long, switchback ramp, hung on a rough stone wall, obliquely pierces into the building shell that is met by a great thrusting canopy. Once inside the shell, a slate-paved platform gently arcs toward the entry to a full-scale professional theater with seating for 300. To the left, the platform leads to a balcony that juts out of the shell to look back on the campus; to the right, the platform opens to a cavernous internal courtyard, an exhilarating Piranesian space filled with exposed stairways and catwalks under the sweeping vault.

ABOVE: National School of Theater, on the campus of the City of the Arts in Mexico City, includes a theater, library, and classrooms. **THESE PAGES:** Steel-truss-supported steel canopy (right) pierces shell, forming the theater's main entrance.



TOP: Switchback ramp leading to entrance is hung on lava-rock-clad wall that diagonally intersects shell.
ABOVE: View of interior court shows structure of curved tubular ribs, fastened at base by pin joints and tensioned by cables.
FACING PAGE: South facade above office windows is sheathed in California redwood slats that conceal balconies leading to classrooms and offices.

Across the courtyard, a long, seven-story bar of teaching and rehearsal rooms contains a series of classrooms and offices as well as double-height chambers that replicate the proportions of the stage in the school's theater. Balconies in the courtyard are wrapped in glazed parapets inscribed with texts from Shakespeare's "Hamlet."

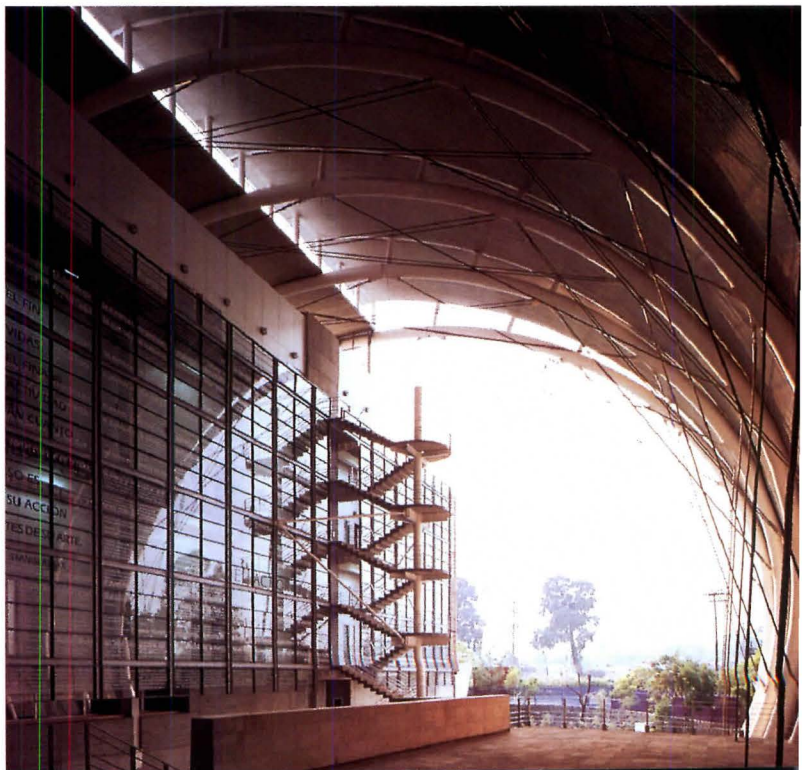
A cantilevered, ship-shaped volume housing an oblong, three-story library is perched above the theater and served by a second balcony that overlooks the entry platform. The library's roof terrace offers the best filtered light and the most precipitous views to the platforms below and the interior court. The library's battered, hull-like form is accentuated by its unrelieved cladding of tropical hardwood veneers. Norten's most intriguing choice of materials, however, is a sheer screen of California redwood slats that wraps the unvaulted southern exposure of the school.

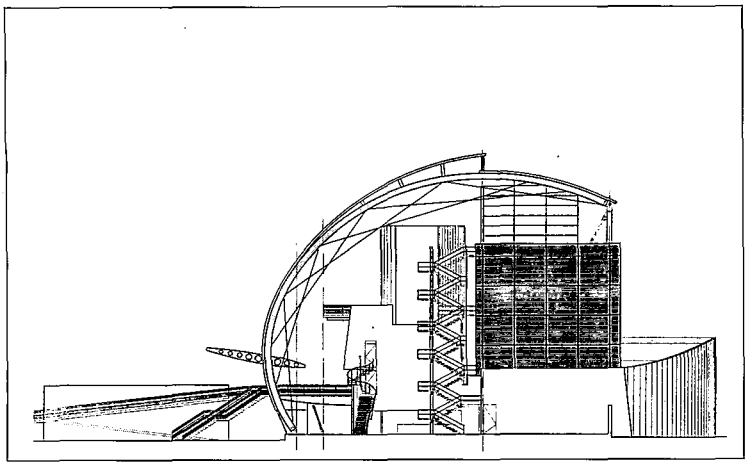
The projects of TEN Architects always demonstrate a high level of technical research and a love for the honesty of materials. The firm shows a new technical competence and spatial fluidity that poses an alternative to the more traditional bright-colored planes and Neo-Aztec platforms.

For the new National School of Theater, Norten's reliance on English engineers, Texas manufacturers, California lumber, and Shakespeare's text demonstrates a clear desire to engage Mexico through the act of building as a partner in a global culture. The high quality of both the school's conception and execution eloquently rebuts the crude techniques and folkloric retreat to the vernacular that so often is promoted as the ideologically correct position in less developed countries such as Mexico. In its exceptional lightness and typological invention, the National School of Theater presents a challenge to Mexican architecture within the larger framework of international design.—*Richard Ingersoll*

Richard Ingersoll teaches at Rice University and is editor of Design Book Review.

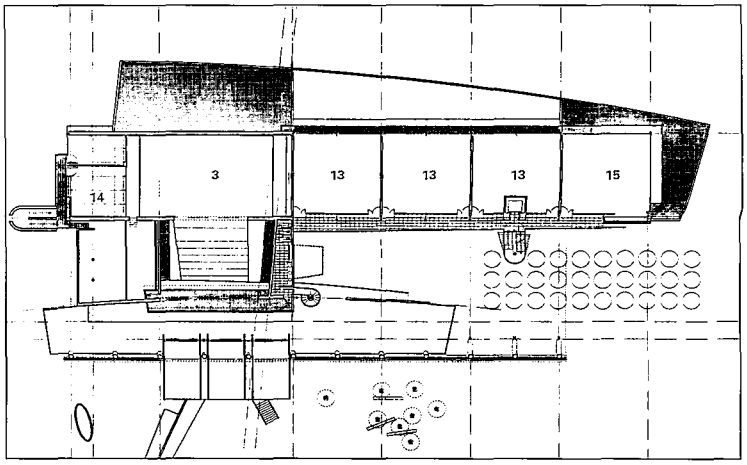

EL ACTOR NACE



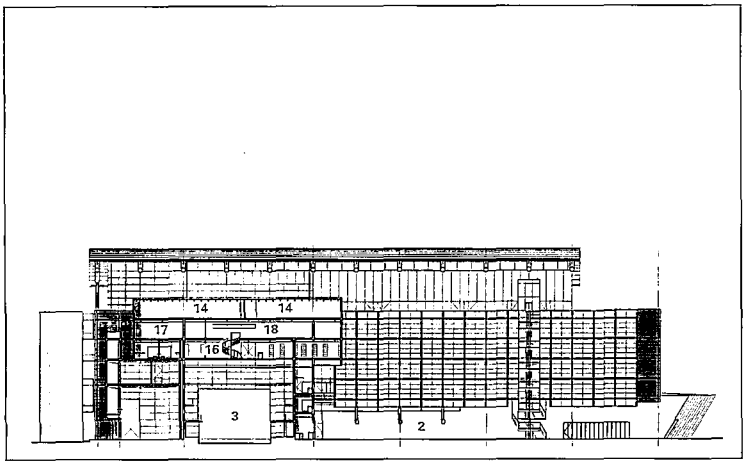


WEST ELEVATION

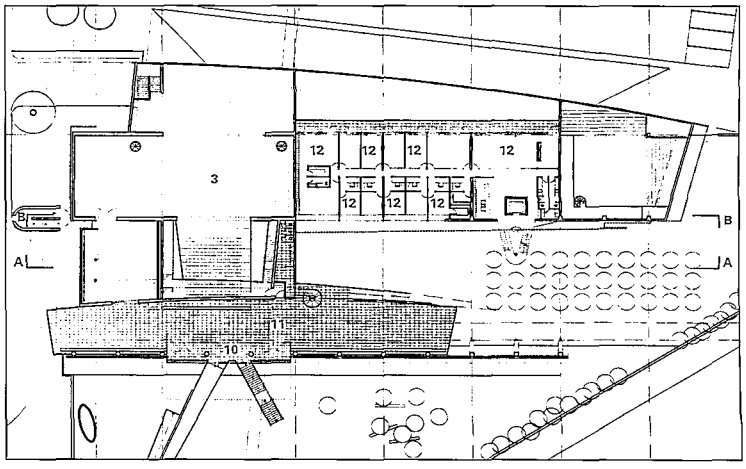
16.4'/5m



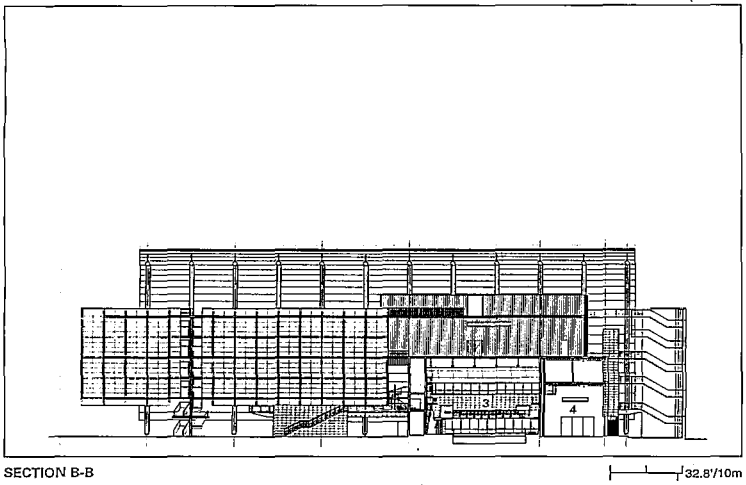
THIRD FLOOR PLAN



SECTION A-A

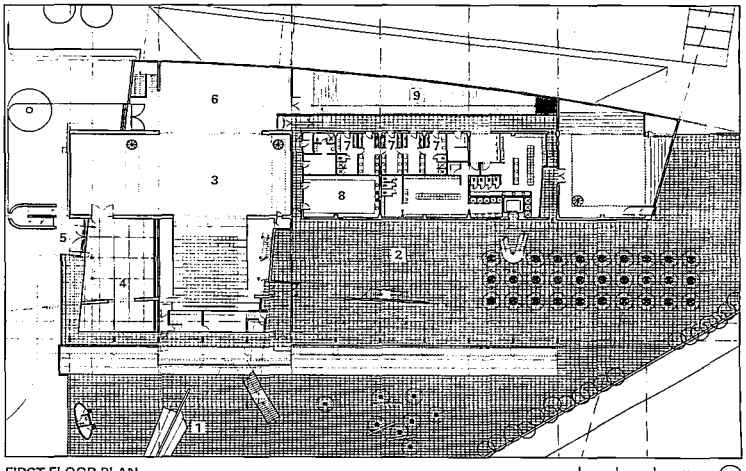


SECOND FLOOR PLAN



SECTION B-B

32.8'/10m



FIRST FLOOR PLAN

32.8'/10m

1 ENTRANCE RAMP
2 INNER COURTYARD
3 THEATER
4 SCENERY SHOP
5 SERVICE ENTRANCE
6 BACKSTAGE
7 DRESSING ROOM
8 MAKE-UP ROOM
9 SERVICE COURTYARD
10 THEATER ENTRANCE
11 LOBBY
12 OFFICE
13 CLASSROOM
14 COSTUME STORAGE
15 GYMNASIUM
16 LIBRARY
17 VIDEO LIBRARY
18 AUDIO LIBRARY

FACING PAGE, TOP: Cladding for each internal volume is different: etched glass for the classrooms (right), travertine for the theater (center), and tropical hardwoods for the library. Balconies (top and left) provide space for outdoor performances.

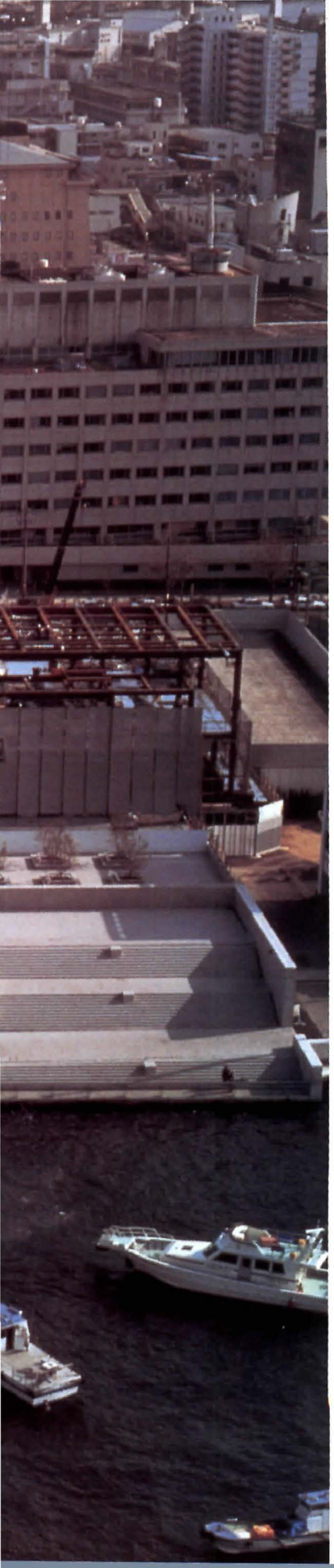
FACING PAGE, BOTTOM LEFT AND RIGHT: Exposed staircase permits views and impromptu performance spaces. Quotes from "Hamlet" are inscribed on panels.

NATIONAL SCHOOL OF THEATER
MEXICO CITY

ARCHITECT: TEN Architects—Enrique Norten, Bernardo Gomez-Pimienta (principals-in-charge); Gustavo Espitia, Héctor L. Gámiz, Miguel Angel Gonzalez, Armando Hashimoto, Miguel Angel Junco, Carlos Valdez, Oscar Vargas (design team)
ENGINEERS: Tecnoproyectos (mechanical); Jules Fisher (theater mechanical); Alonso-Garcia + Miranda (structural)
CONSULTANT: Jaffe, Scarborough, & Holden (acoustics)
CONSTRUCTION MANAGEMENT: Rioboo
GENERAL CONTRACTOR: Federal District Department
PHOTOGRAPHER: Luis Gordoa

On The Waterfront

Suntory Museum • Osaka, Japan • Tadao Ando Architect & Associates

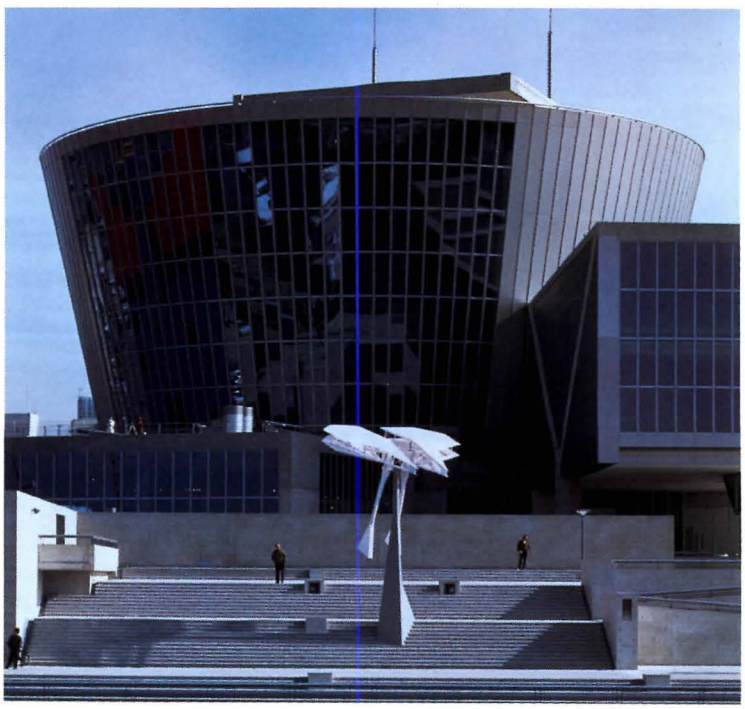


Tadao Ando, this year's Pritzker Prize winner, achieves remarkable craftsmanship and spiritual depth in his architecture. The Suntory Museum, overlooking Osaka Bay, reflects a newfound civic scale in the self-taught architect's work. Begun in 1991 as part of a new development called Tempozan Harbor Village, a district zoned for commercial expansion, the 148,600-square-foot museum is built on reclaimed land similar to Kansai Airport (ARCHITECTURE, January 1995, pages 84-93, 97-103), situated 35 miles to the south.

Ando's preference for monochromatic austerity is particularly pronounced here, especially in contrast to its colorful and expressive neighbor, Cambridge Seven's Ring of Fire Aquarium, completed in 1991. The Suntory Museum, which houses contemporary and performance art, complements the waterfront aquarium, which has already made the site an important tourist attraction for the city of Osaka.

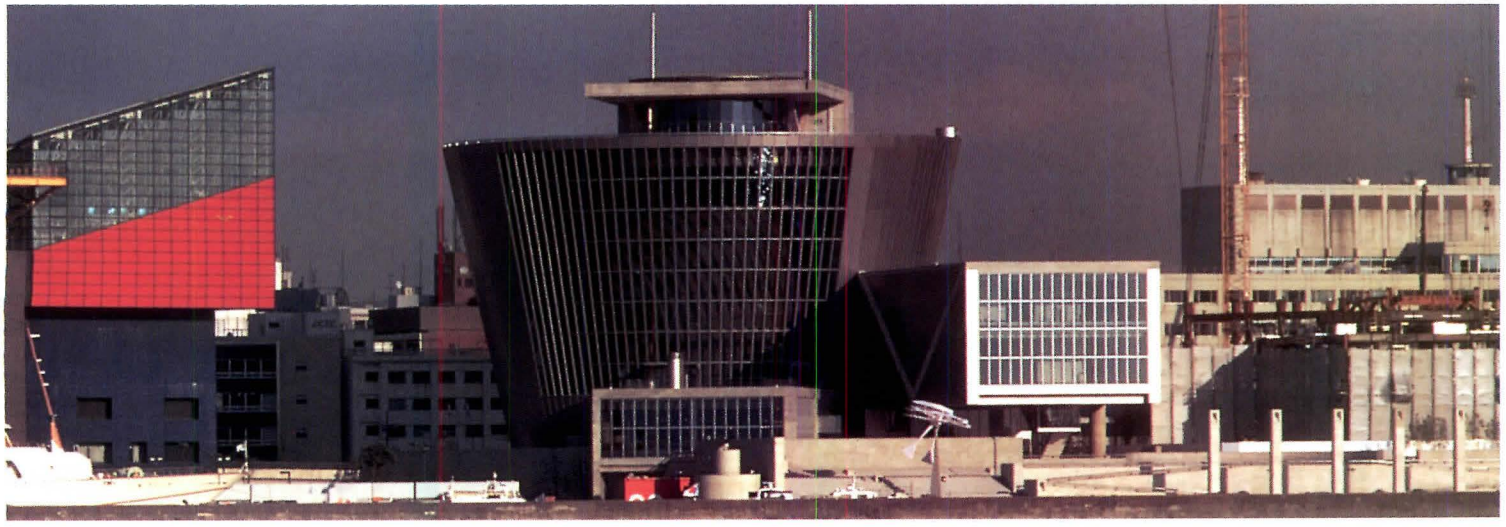
Ando establishes a dynamic visual connection between visitors and the sea in the orientation of the museum. Through his treatment of external space, he restores a meaningful affiliation with water, which plays an important role in Japanese culture. Like the wedded rocks of the Shinto monument at Futamigaura, the museum's two rows of pillars at the waterfront reinforce the contiguity of land and sea, while making abstract reference to the visitors who promenade along the bayfront plaza. From these pillars, a generous, gradual sequence of steps and terraces leads to the museum. As if on a movie screen, views of the harbor and aquarium are framed by long, rectangular apertures in the concrete walls that extend beyond the building envelope.

This conceptualization is articulated through a theatrical mixture of gallery, dining, and performance spaces. Ando accommodates exhibition spaces in the southernmost rectangular volume; restaurant and services occupy the northernmost portion. These two wings, joined by a glass-and-steel inverted cone housing an IMAX theater, extend a gesture of open arms toward the sea.

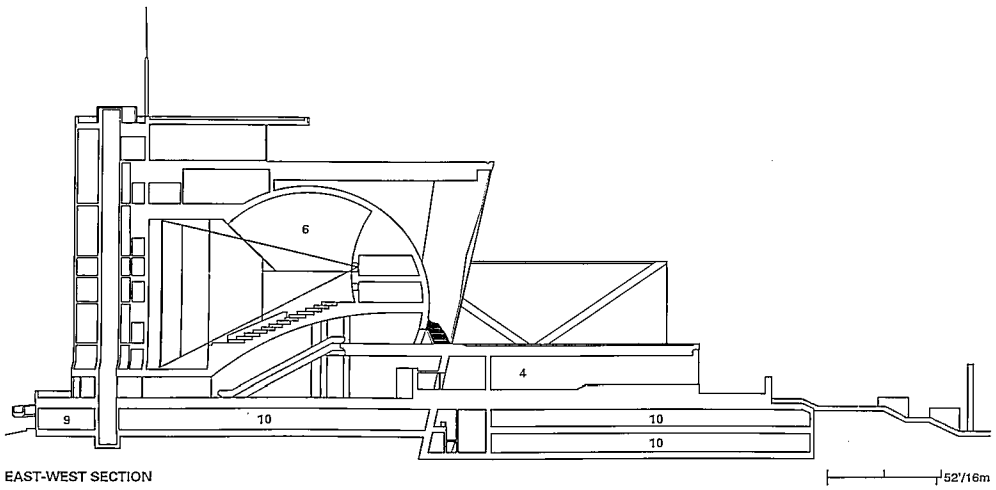


THESE PAGES: Suntory Museum is bordered by bridge to aquarium (left) and hotel under construction (right). **ABOVE:** Sequence of stairs and terraces leads from waterfront plaza to conical auditorium, with restaurant (left) and galleries (right).

TOMIO OHASHI

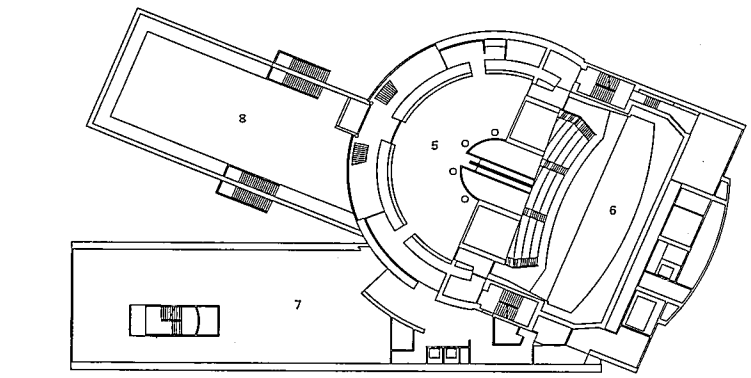


TOP: View of bay from terrace beneath galleries reveals symbolic pillars, evocative of Shinto religious monuments, marking water's edge. Glass-enclosed stair serves as fire exit.
ABOVE: Tempozan Harbor Village includes Ring of Fire Aquarium by Cambridge Seven (left) as well as museum.
FACING PAGE: Double flight of stairs leads up from street behind museum to main entrance, marking point of intersection between stainless steel-paneled *cone and exposed concrete walls.*

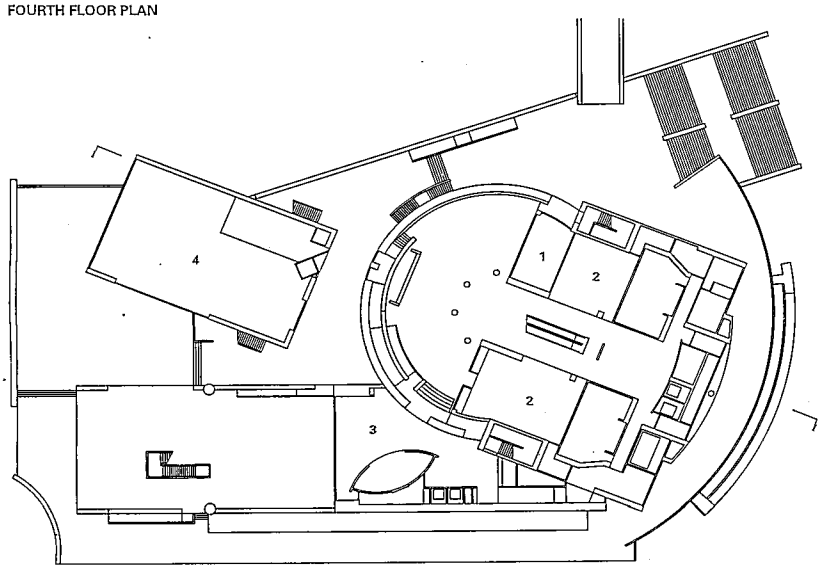


EAST-WEST SECTION

52'/16m



FOURTH FLOOR PLAN



SECOND FLOOR PLAN

52'/16m

SECTION: Ando enclosed IMAX theater in cone and incorporated two-level parking garage (right) below galleries.
PLANS: Semicircular lobby leads to theater. Galleries occupy south wing; restaurant and offices occupy north wing.
FACING PAGE, TOP: Stainless steel-and-glass curtain wall surrounds concrete dome (left) of IMAX theater.
FACING PAGE, BOTTOM: Interior of 32-meter-diameter theater is clad in sound-absorbing acoustical panels.

SUNTORY MUSEUM
OSAKA, JAPAN

ARCHITECT: Tadao Ando Architect & Associates, Osaka
PHOTOGRAPHER: Shigeo Ogawa, except as noted

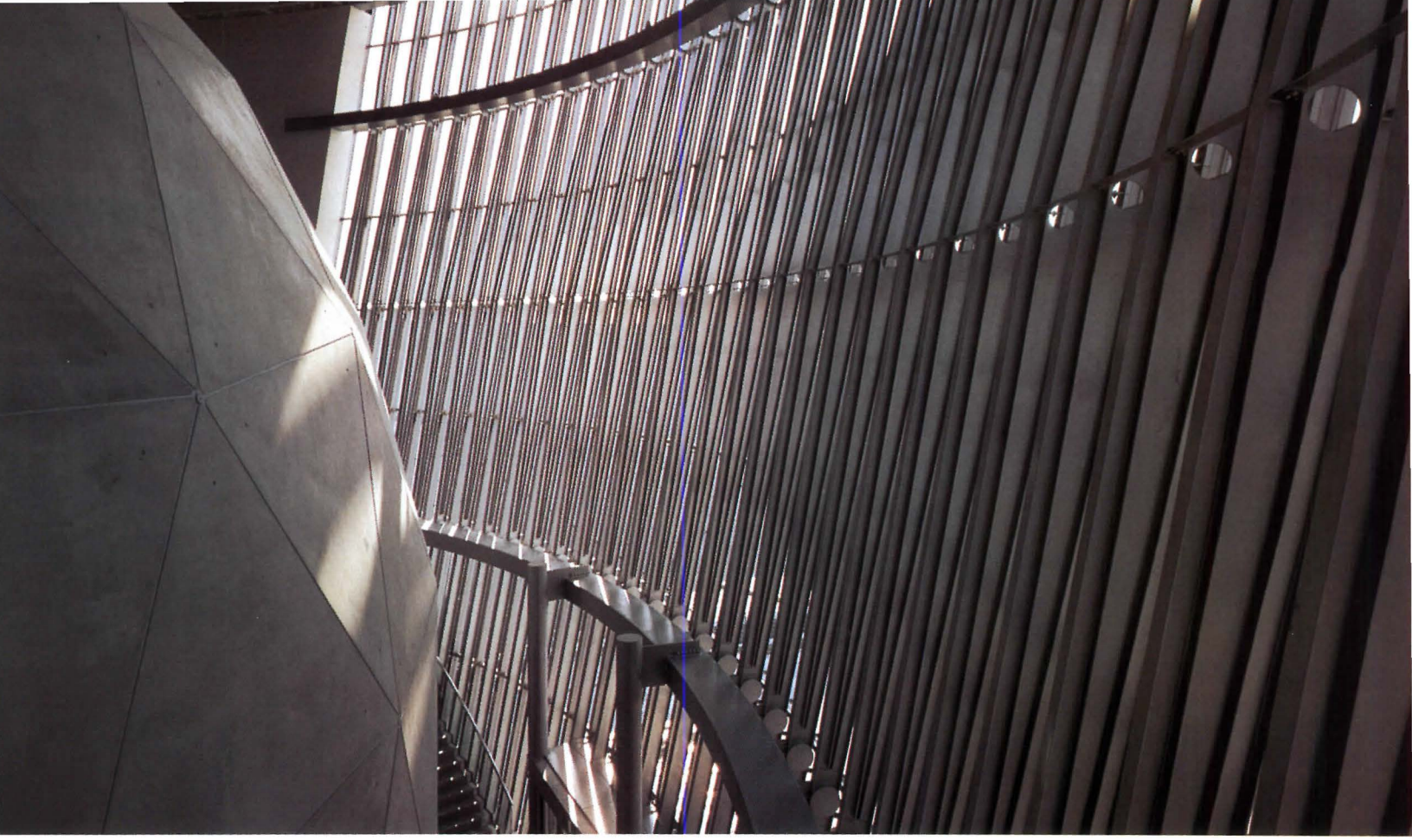
1 ENTRANCE
2 GIFT SHOP
3 FOYER
4 RESTAURANT
5 LOBBY
6 THEATER
7 GALLERY
8 ROOF TERRACE
9 OFFICE
10 PARKING

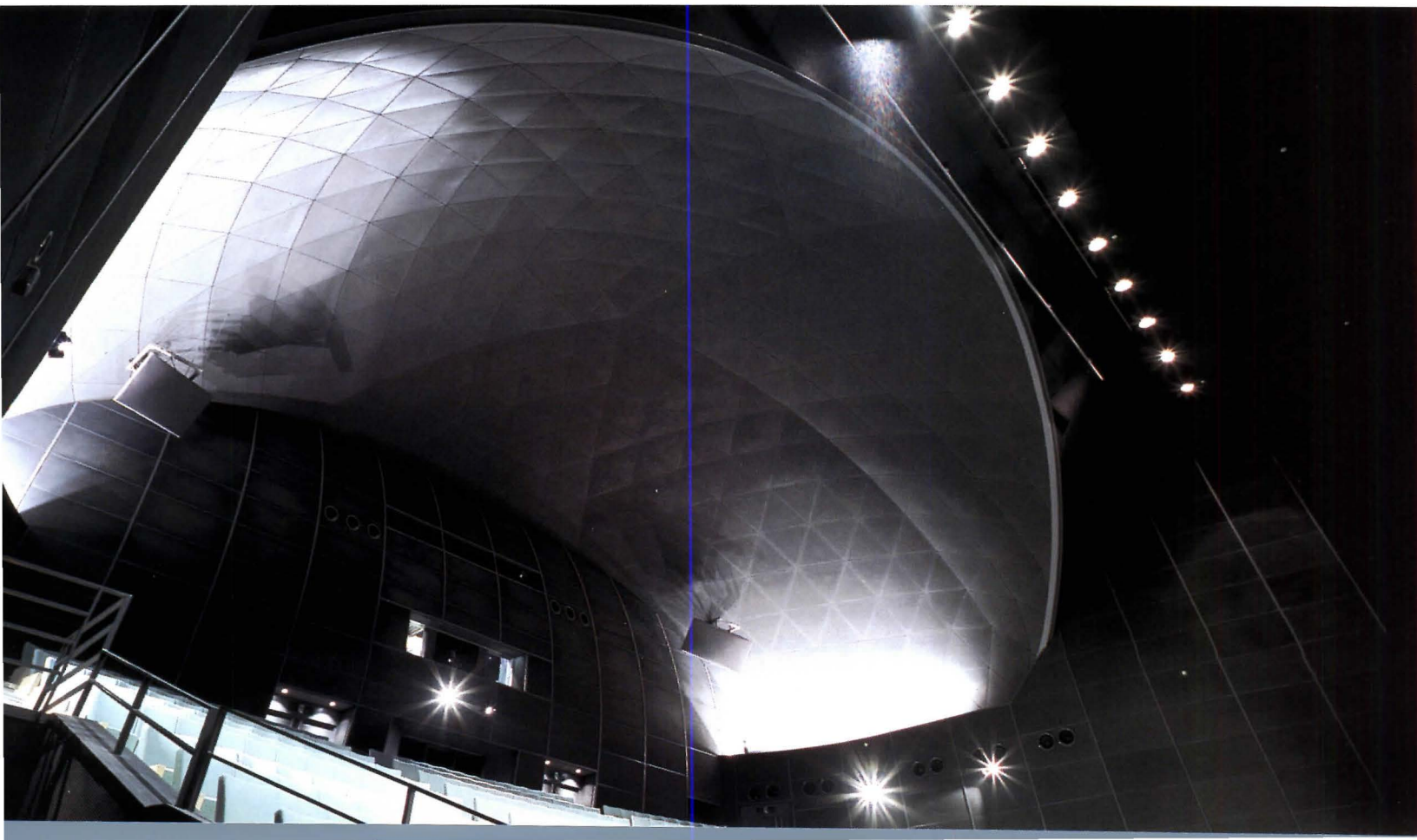
Set on an elevated stage facing the water, the ensemble is an imposing juxtaposition of intersecting Euclidian solids. As a result, the Suntory Museum presents an impassive facade to the street, relieved only by the openness of the steps leading to the main entrance. This elevation masks the rear of the IMAX projection screen, but is an appropriate response to its context as a decisive pivotal point where the street pattern changes direction.

Entering the museum from the two-level parking garage beneath it is not as auspicious an arrival as the approach across the impressive bridge separating the new building from the aquarium. Unfortunately, Tempozan's distance from Osaka's center means most visitors will park in the garage and only experience the bridge after leaving the museum. However, where many of Ando's other projects involve a sense of sinking below the surface, the Suntory Museum conveys a rising from the depths, up toward the light.

The main semicircular foyer—which is located directly below the IMAX theater—is subdued, dignified, and cryptlike, creating an atmosphere similar to the hallowed intimacy of Ando's chapels of the mid-1980s. A central escalator, rising parallel to the curved plasterboard soffit of the raked auditorium seating, leads to a naturally lit lobby. The visitor is brought into the glazed enclosure surrounding the theater and is once again reminded of the presence of the sea. Here, the stainless steel structure casts spectacular distorted shadows onto the concrete-paneled sphere of the auditorium, animating the space and emphasizing its layered condition. It is at these moments, moving between events, that the visitor has the opportunity to enjoy the glimpses of water, which gather momentum until the finale at the top of the building, an observatory lounge offering panoramas of the bay.—*Sarah Chaplin*

Sarah Chaplin is the founder of London-based esprit d'escalier architextural research and a lecturer at Middlesex University.





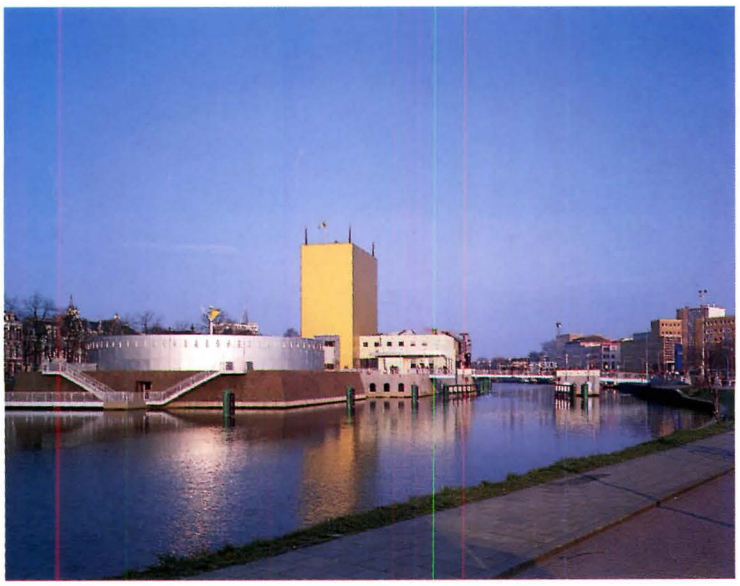
Art With Attitude

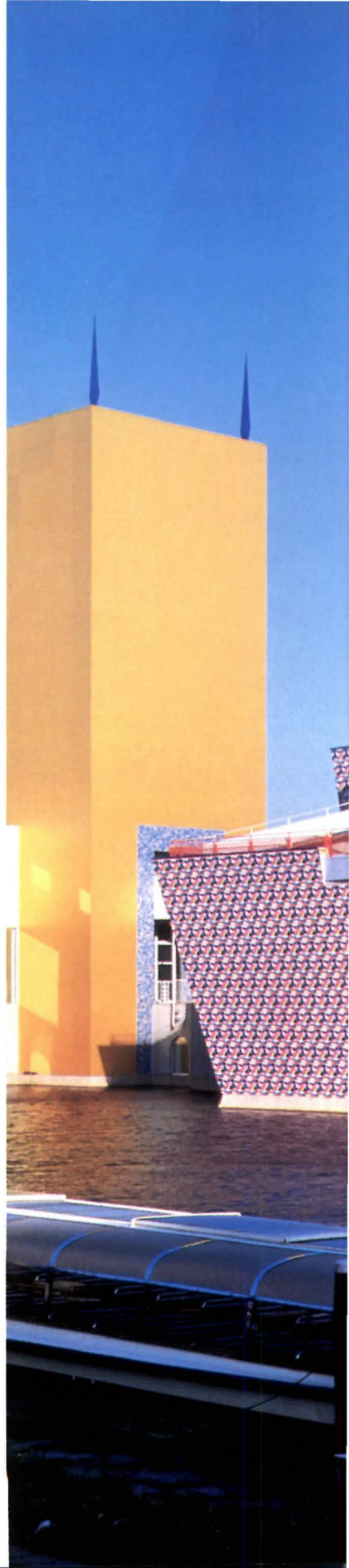
Groninger Museum • Groningen, Netherlands • Alessandro Mendini, Coop Himmelb(l)au, Michele De Lucchi, Philippe Starck, Architects

In 1983, Milanese architect Alessandro Mendini masterminded the famous project in which the tableware manufacturer Alessi invited a dozen internationally known architects to design silver tea and coffee services. The resulting refined and witty pieces sat on their trays like buildings on a piazza embodying European urbanism in miniature.

Recently, Mendini's speculation in silver has borne grander fruit in Groningen, Netherlands, where the architect orchestrated a number of pavilions forming the Groninger Museum of Art on a bargelike piazza anchored in a canal. This floating square lies between the city's train station and historic section; a drawbridge connects the museum to the city. The piazza itself is flanked by three playful pavilions, each surrounded by water and all connected by bridgelike corridors. Though Mendini designed the urban master plan and the buildings' parti, he invited French designer Philippe Starck to design the interior of the decorative arts section and Milanese colleague Michele De Lucchi to design the interior for the archaeology and history department. Vienna-based Coop Himmelb(l)au designed a steel-and-glass superstructure for contemporary art, which rests on a Mendini-designed base, holding the permanent art collection.

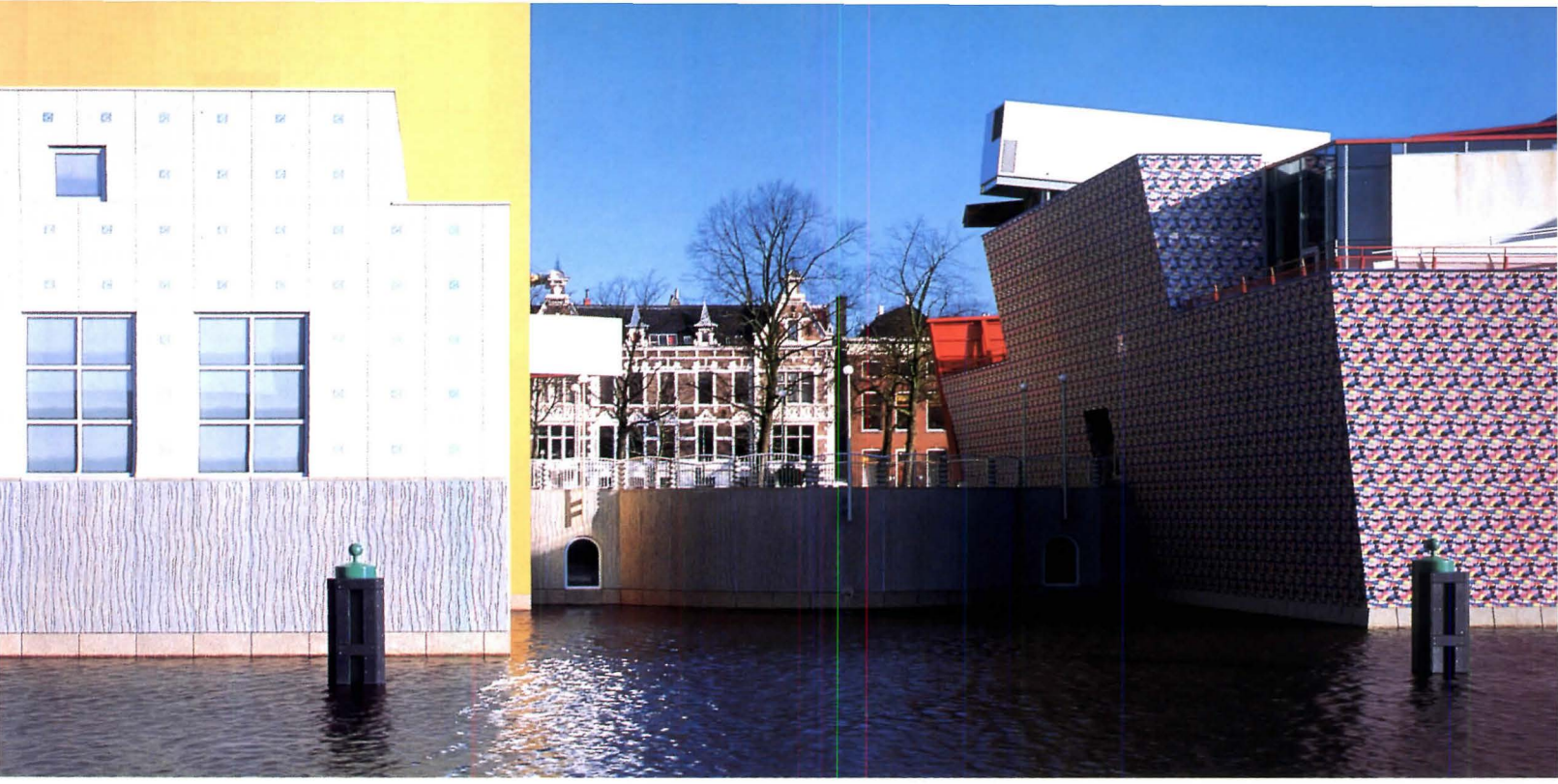
The simple strategy of making the museum a stepping stone between canal banks means that 1.8 million people pass its doors annually—pedestrians and bicyclists now take advantage of the new shortcut. But like the Ponte Vecchio in Florence, the passage is more than a bridge. Chairs by Philippe Starck spill from a café just to the side of the museum's main entry, at the foot of Mendini's gilded tower that serves as the museum's storehouse "treasury." Opposite this entry, on the other side of the piazza, the Milanese architect's square brick structure topped by a drum floats in the canal like a fortification in a moat. Beyond the golden tower lies a third pavilion: A large, inverted trapezoidal building supports the wild, flyaway steel wings of the contemporary art pavilion designed by Coop Himmelb(l)au. Because water foregrounds and backgrounds them, the simplicity of Mendini's plain pavilions is more complex in experience than in concept; in flat Holland, the surrounding water turns the urban ensemble into an acropolis.

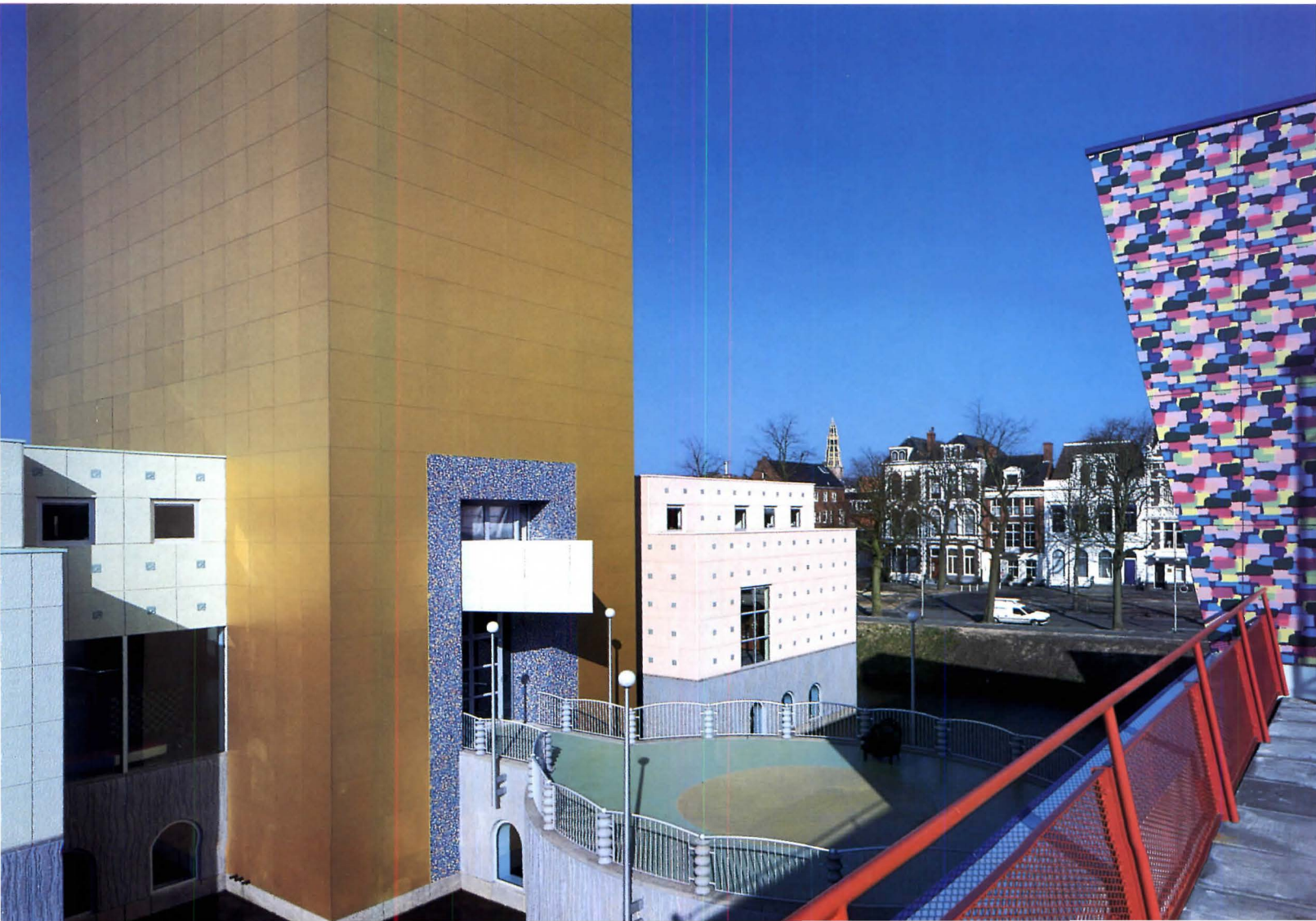




ABOVE: Groninger Museum is built on bargelike piazza in canal and connects via drawbridge to south bank. **THESE PAGES:** Alessandro Mendini designed all volumes except steel-and-glass structure by Coop Himmelb(l)au, built on Mendini's base.


GRONINGEN
RONDVAARTBEDRIJF KOOL





The program for the museum called for differentiated building shapes to embody the museum's various departments. The simple shapes, which Mendini juxtaposes without formal transition, clearly mark the various sections. To the west, a circular form, punctuated by a frieze of vases, houses the decorative arts collection, and the brick ramparts contain the archaeology and history section. The cubic volumes at the center house the entry, café, museum shop, storage tower, auditorium, classrooms, and library.

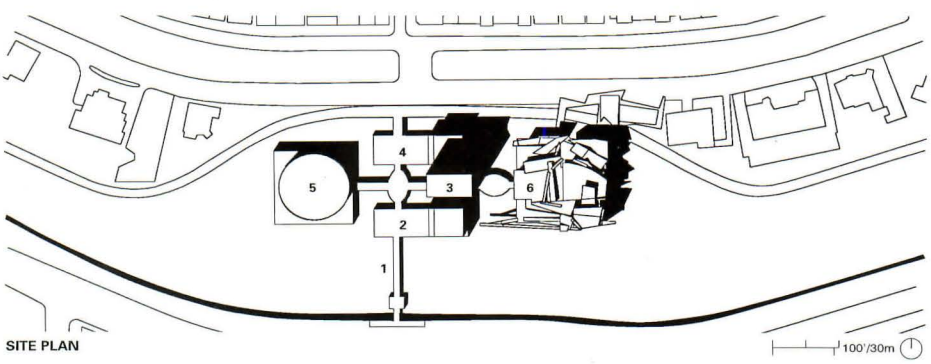
If Adolph Loos once observed that ornament is crime, Mendini is felonious: He revels in the decorated surface and flirts openly with kitsch. Bathroom tiles cover many walls, inside and out, and intensely colored mosaics encrust all surfaces of a spiral staircase. Insouciant pastel paints make a heavy concrete staircase look like cotton candy. A pointillist pattern of riotous color covers the metal facade of the bargelike pavilion housing the visual arts collection.

Many museums no longer represent discreet, neutral precincts but monuments of design that are both the largest artifacts of a museum's collection and a symbol of the institution's spirit. The Groninger Museum therefore reaches well beyond its jubilant urbanism to an international arena in which architecture acts as a cultural semaphore.

Visitors are surprised, charmed, and sometimes shocked by the cheek of the building—this is a museum with attitude. But Mendini's design merely embodies the spirit inside, where curators have amassed an adventurous collection displayed in innovative ways. Director Frans Haks enjoys juxtaposing paintings from different periods to establish unexpected relationships—much as Mendini does with architectural forms.

For all the decorations inside and out, the Groninger Museum's pavilions are spatially conservative: Simple walls form simple rooms. Especially in the two stories of the east wing, which serve as the galleries for the museum's permanent collection, Mendini has organized

1 BRIDGE
2 LIBRARY/CAFÉ
3 ART STORAGE
4 OFFICES
5 DECORATIVE ARTS/ ARCHAEOLOGY & HISTORY COLLECTIONS
6 CONTEMPORARY ART AND PERMANENT COLLECTIONS



SITE PLAN

FACING PAGE, TOP: Administrative and storage section (left) connects to bargelike pavilion (right).
FACING PAGE, BOTTOM: Museum is entered from circular plaza.
TOP: Precast concrete-clad museum shop flanks entrance tower.
ABOVE: Upended model of museum scheme creates totemic sculpture.
SITE PLAN: *Entrance and administrative* pavilions flank decorative art collection (left) and contemporary art galleries (right).

ABOVE: From north bank of canal, ramped landing and steel fire stair lead to east pavilion, a juxtaposition of Mendini's decorative base and Coop Himmelb(l)au's tectonic steel-and-glass superstructure.
FACING PAGE, TOP: Waterside facade shows south-facing windows to galleries for contemporary artwork.
FACING PAGE, BOTTOM: Steel plates of east pavilion are painted with pattern based on Coop Himmelb(l)au's original sketch for museum.

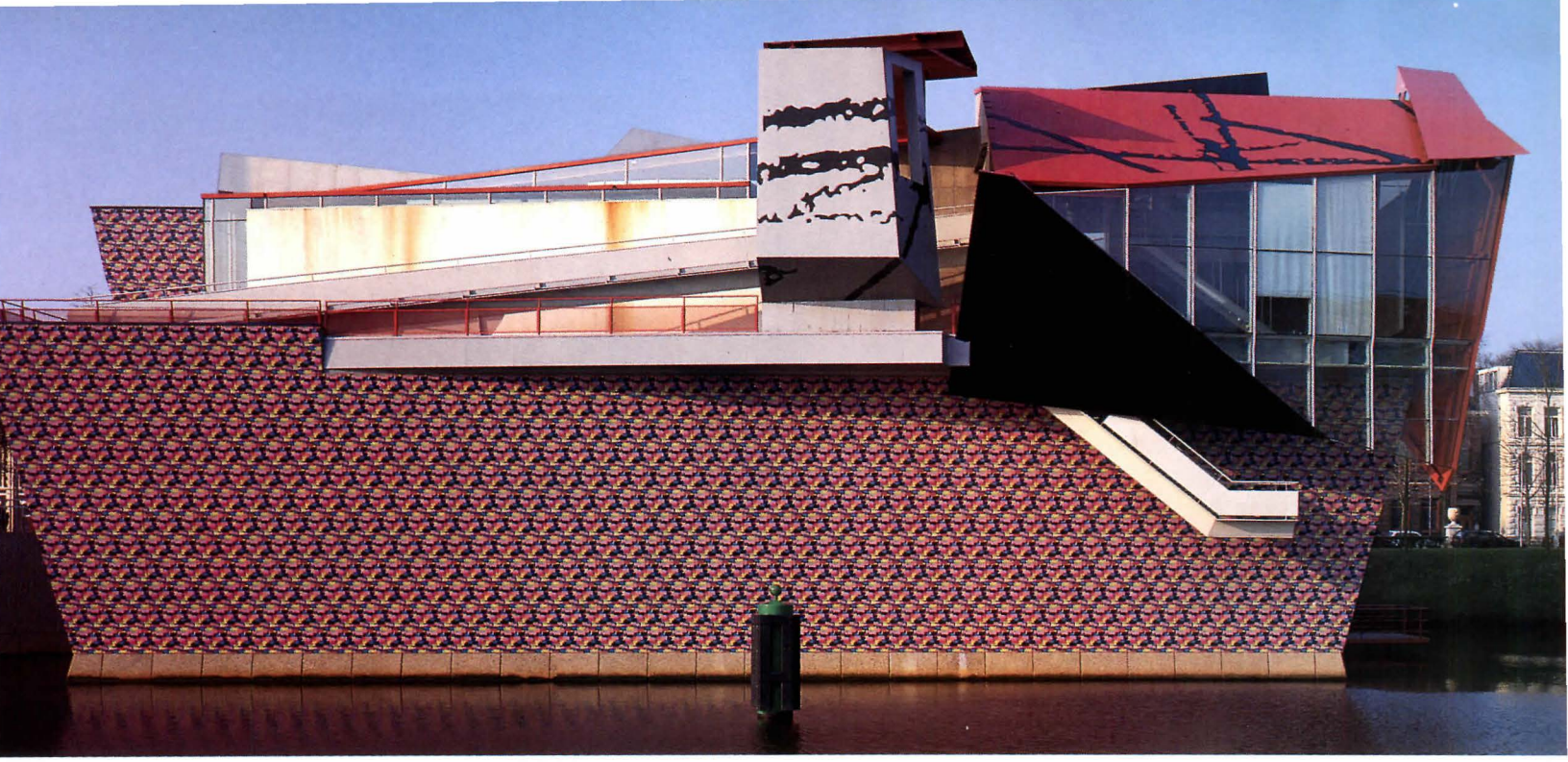
a very traditional grouping of symmetrically disposed rooms that form a doughnut of circulation around a central gallery.

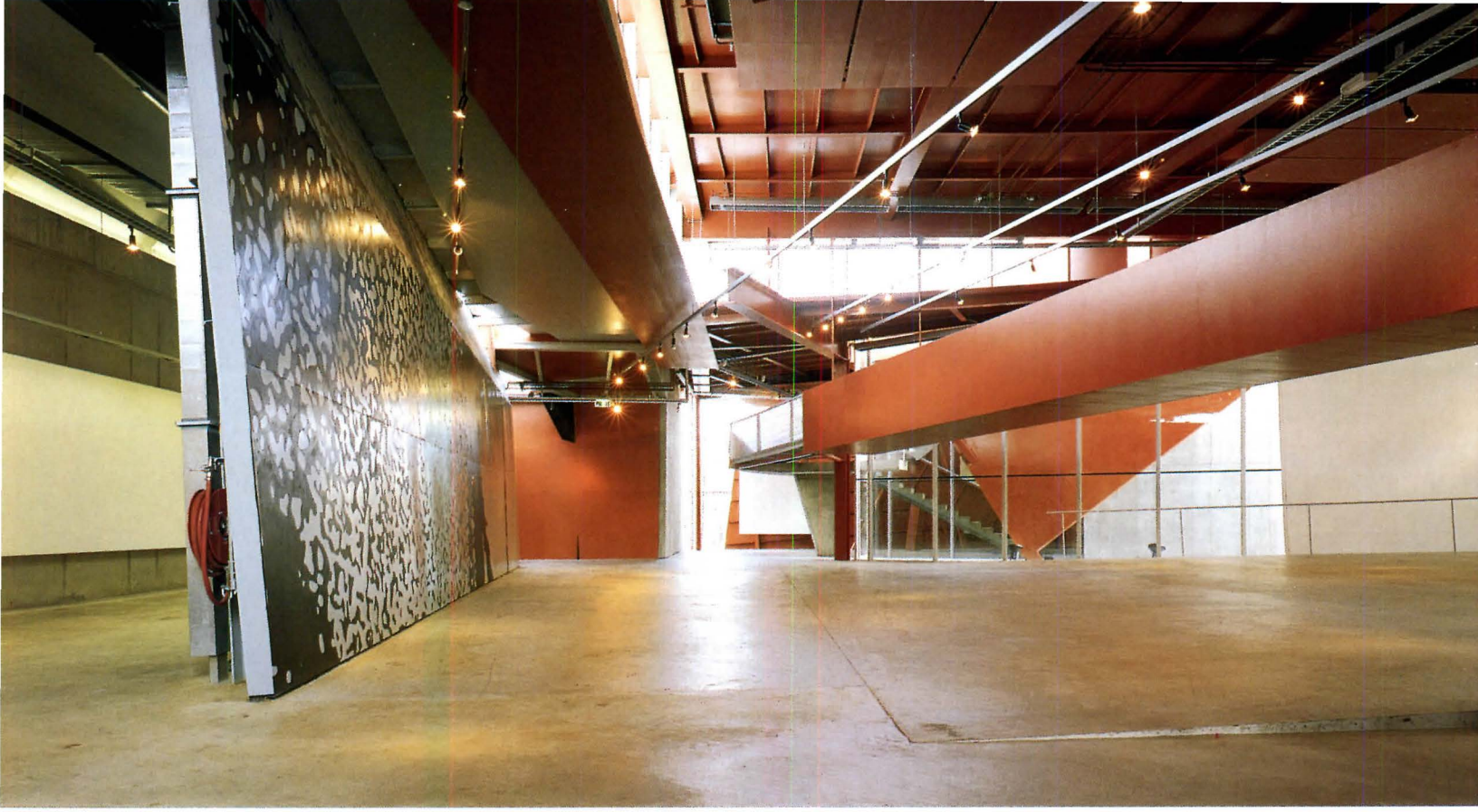
Michele De Lucchi had perhaps the most difficult design task with the archaeology and history section because of the density of often unrelated material. De Lucchi conceived the interior as stage sets—domestic life in Groningen; the church; times of war—and he arranges the sets into a darkened labyrinth that leads visitors from highlighted microcosm to microcosm.

Directly upstairs, Starck creates a universe that is luminous, open, and spatially flowing. In this circular pavilion, dedicated to the decorative arts and featuring a porcelain collection, Starck carves out circular and semicircular spaces by hanging rows of white diaphanous curtains on either side of curved stripes of white neon. The floor-to-ceiling curtains glow as they divide space and separate vitrines. Ever puckish, the Parisian designer proposes a soft architecture.

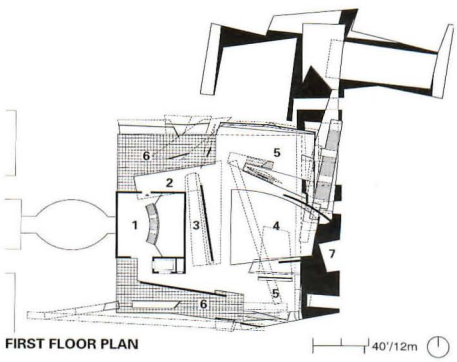
The most different of Groninger's intentionally differentiated, linked pavilions is the exhibition hall designed by Coop Himmelb(l)au: The Austrian architects (who designed their section out of their Los Angeles office) conceive form as open. All of Mendini's self-consciously differentiated shapes are basically Euclidean—and closed. Using a "blindfolded" design process based on accidental operations, the Coop Himmelb(l)au team generated a building that is an unpredictable admixture of fragmented form and space. Walls and ceilings are broken into tectonic plates suspended in midair, which admit natural interior light through crevasses and exploded corners. The openings also permit glimpses of the city and canal outside. This *kunsthalle* is a kind of storm-tossed loft frozen in a state of turbulence.

Divided into one large gallery with two flanking rooms, the space is traversed by a bridge that allows overviews of the three-dimensional artworks displayed in this section. Coop Himmelb(l)au abandons the missionary



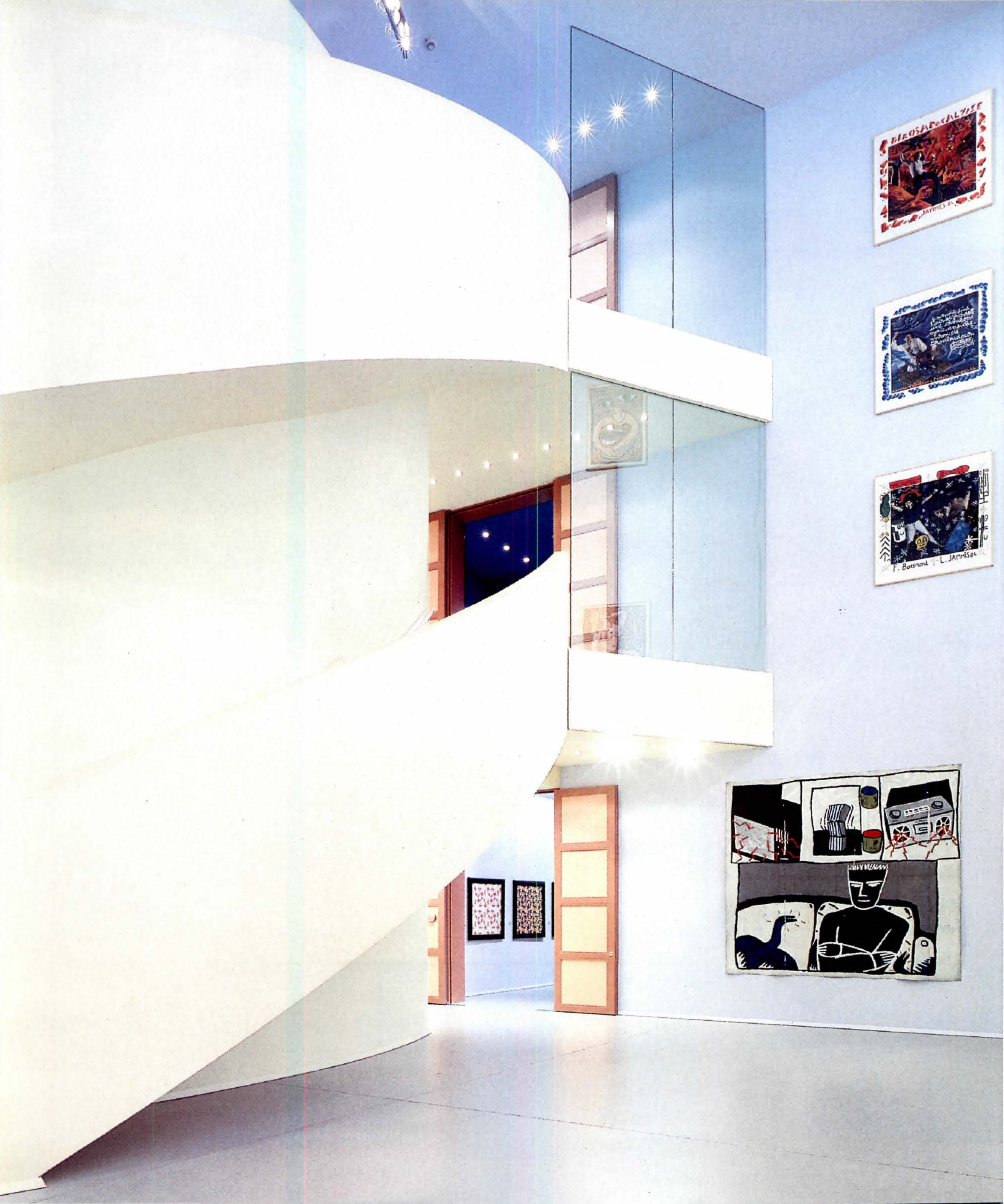


1 STAIR HALL
2 ENTRANCE
3 PRINT ROOM
4 MAIN EXHIBITION SPACE
5 GALLERY
6 TERRACE
7 DOCK



FIRST FLOOR PLAN

FACING PAGE, TOP: Viewing bridge traverses lofty space of Himmelb(l)au's exhibition hall. Lighting tracts, heating elements, and ductwork are suspended from steel roof plates. **FACING PAGE, BOTTOM:** Bridge is supported by concrete and paneled in acrylic. Steel walls recall ships' hulls. **ABOVE:** Bridge leads from north to south side of gallery. Stair to roof walkway is visible in window. **PLAN:** Pavilion comprises main exhibition hall flanked by galleries.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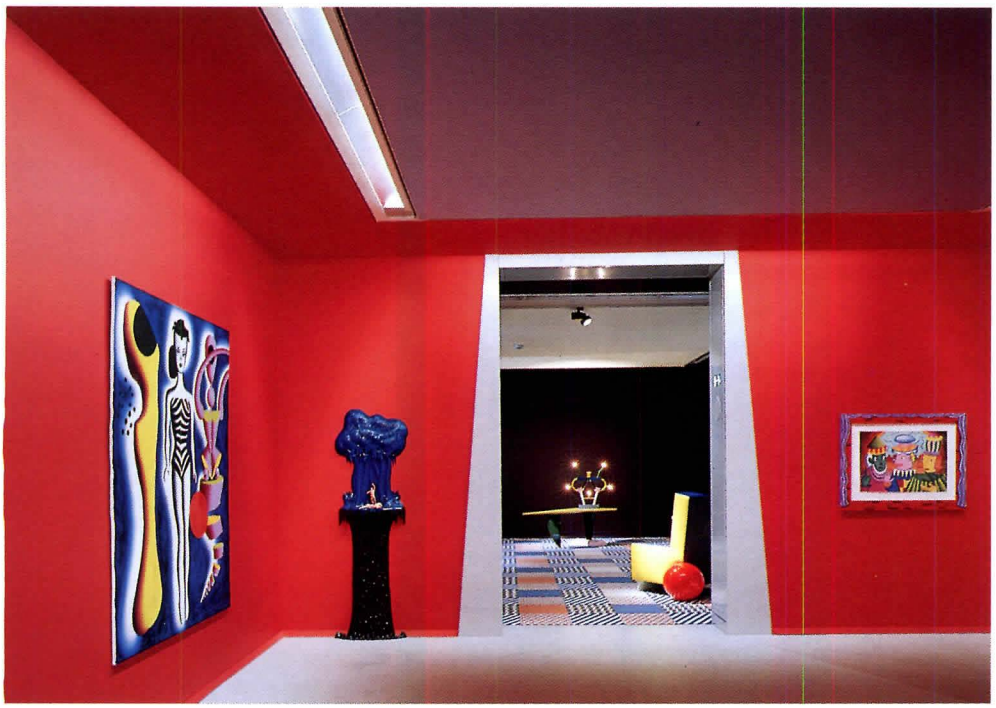
position for viewing art, suggesting other points of view in a space that continually recomposes itself as viewers walk through it. The large gallery is more robust in its parts than the firm's previously completed, more delicate galleries, and it reflects the genius loci of Groningen's shipyards, where the building was fabricated. The sheer energy of the raw space demythologizes the museum as a holy precinct for viewing sacred objects and is especially appropriate for exhibiting the loft-generated artworks that seem to typify the tough and iconoclastic art of our time.

In this most contained and controlled country, where every hectare is cultivated, and in this highly controlled and self-conscious museum, where every surface is decorated, the Coop Himmelb(l)au wing adds just the right touch of power and wildness. This is the much-needed breakout building for a museum whose heterogeneity becomes too homogeneous because of its esthetic and ideological consistency.

Mendini's policy of mixing shapes on the same piazza by collaborating with different architects—and keeping their contributions visually distinct—works in the Groninger primarily because the Coop Himmelb(l)au pavilion differs so radically from the pieces designed by the three other architects. The accidentalism and the sheer scale of the shipyard materials break the preciousness that gathers around the other pavilions, salting the ensemble with apparent disorder. Coop Himmelb(l)au keeps the museum from slipping into the cloying sweetness of forced fun. The Austrian architects also add spatiality to a complex otherwise developed mostly through surface manipulation.

Because of this vigorous mixture, the Groninger Museum is not the design victim of its own self-conscious strategy. The ensemble is genuinely rather than superficially heterogeneous. It gives visitors a range of environments in which and through which they can experience and interpret a fresh and unusual art collection.—*Joseph Giovannini*

FACING PAGE: Pastel-colored, poured-concrete staircase connects three floors of east pavilion, starting in halls devoted to permanent collection.
TOP: Designed by Philippe Starck, the interior of the decorative arts pavilion features freestanding glass cases for independent displays with neon-lit translucent curtains that divide space.
ABOVE: Continuous wall of glass vitrines houses the Groninger Museum's extensive collection of porcelain.



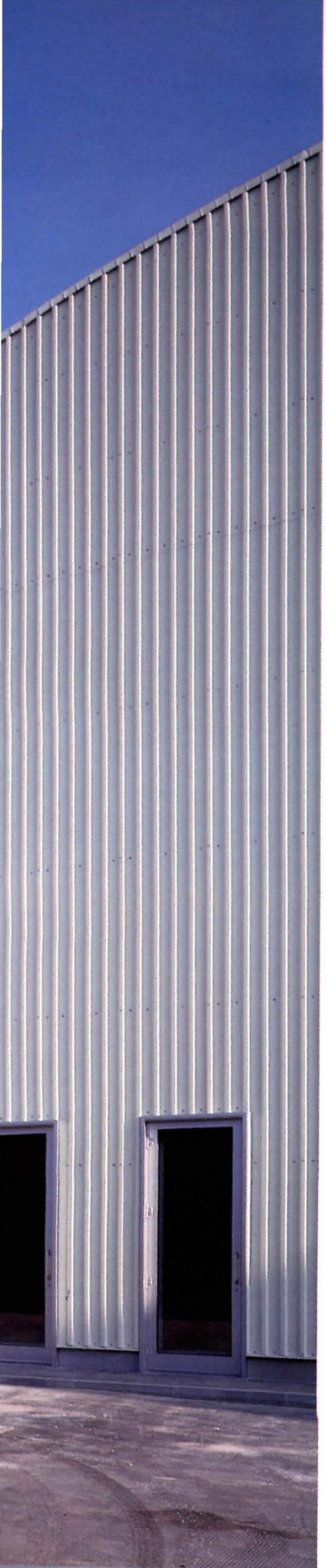
TOP: Elliptical exhibition corridor links central entrance pavilion to permanent collection galleries.
ABOVE: East wing houses permanent collection in enclosed, traditionally shaped rooms.
FACING PAGE, TOP: Neon artwork by François Morrelet hovers above mosaic-encrusted staircase by Mendini.
FACING PAGE, BOTTOM: Stairwell spirals down to main corridor leading to east and west wings.

GRONINGER MUSEUM
GRONINGEN, NETHERLANDS

ARCHITECT: Studio Mendini, Milan—Alessandro *Mendini*, *Francesco Mendini*, Alchimia, Gerda Vossaert, Alexandra Mocika
ASSOCIATE ARCHITECTS: Coop Himmelb(l)au—Wolf D. Prix, Helmut Swiczinsky, Frank Stepper, Karolin Schmidbaur, Michael Volk, Fanée Aaron, Spencer Hunt, Tom Wiscombe; Michele De Lucchi with Ferruccio Laviani, Geert Koster; Philippe Starck
ARCHITECT OF RECORD: Team 4 Architecten, Groningen
ENGINEERS: Ingenieursbureau Wassenaar (structural); Van Heugten (electrical)
GENERAL CONTRACTOR: Van Wijnen
COST: $19.7 million
PHOTOGRAPHER: Luc Boegly/Archipress

Functional Dramatics

Rehearsal Stage • Vienna, Austria • Gustav Peichl, Architect

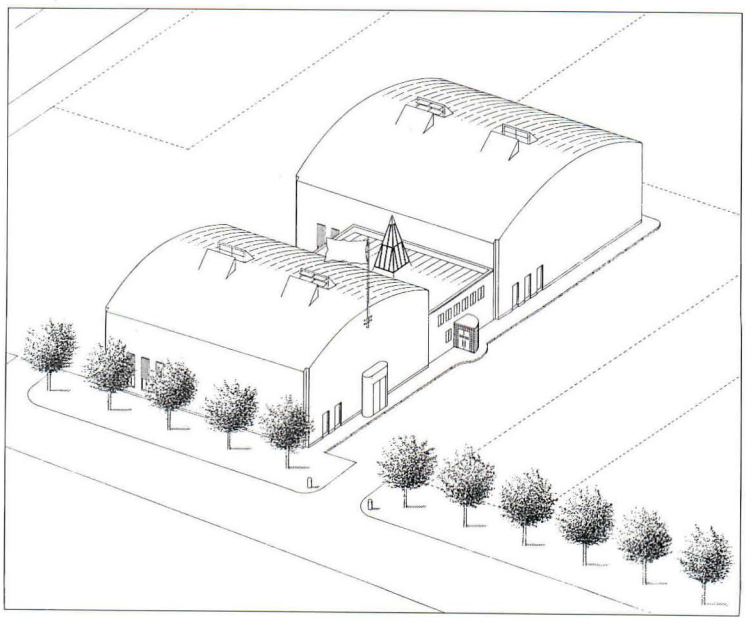


Beyond Vienna's Ringstrasse with its opera house, theaters, and museums; past the Belvedere Gardens and the expansive tracks of South Station lies the Arsenal, an enormous 19th-century precinct of military buildings. Today, with Austria's reduced military might, the Arsenal's gauntly Classical buildings—bluntly labeled Object 3, 19, 20, etc.—are being reprogrammed for new institutions, many of them cultural. New buildings have also been added, including a telecommunications complex signaled by a 1970s-style needlelike tower.

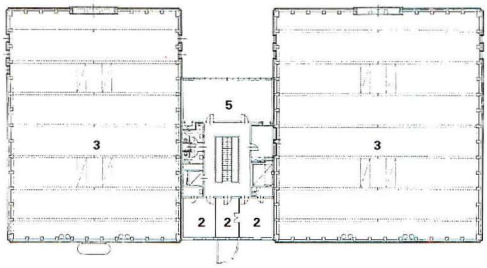
Into this highly geometric landscape, the Burgtheater—Austria's primary state-supported theater company—has recently completed its rehearsal stage, designed by Gustav Peichl. The Viennese architect's best-known buildings are a series of technically honed components for the Austrian broadcasting service that Peichl both hides and reveals within the landscape, usually in arcadian settings. In the more urban Arsenal, however, Peichl accepted the theater company's budgetary and functional demands and designed a less rhetorical, if manicured, object building that completes its corner of the site's orthogonal layout. The new rehearsal stage relates functionally and visually to the neighboring scenery workshop, a great extruded shed.

The building comprises two main rehearsal halls, both roofs vaulting in profile to accommodate large stage sets. Aligned with the scenery workshop, the halls are high without being overpowering and identical in length. The hall to the west maximizes its internal area, and Peichl digs into the site to accommodate two more rehearsal rooms beneath the narrower volume to the east. In the gap between the two halls, the architect inserted the more domestically scaled spaces: offices for director and designers, wardrobe storage, an elevator, and dressing rooms. Through four comparatively compressed stories—two above grade and two below grade—these minimal rooms are arranged tightly about an almost vertiginous exposed stair, a central isolated element rising toward a sharply pyramidal skylight.

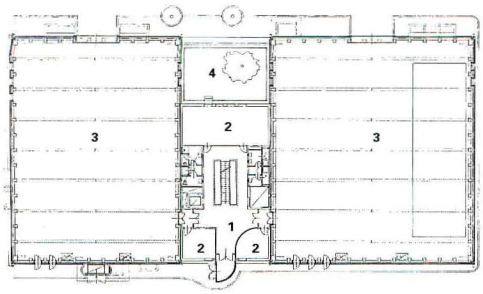
The building is entered through a quarter-cylinder lobby of glass block. Ahead lies the thin chasm of a stairwell with its white nautical-style handrails. Typical Peichl details include porthole windows in



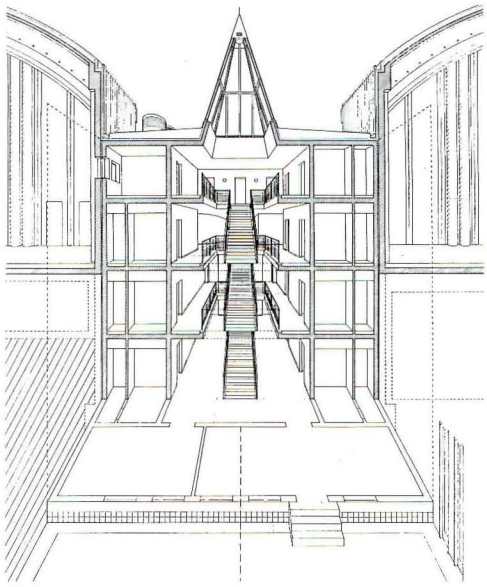
THESE PAGES: Corrugated aluminum skin of rehearsal stage appears to float because of raised skirting detail. Building is entered through glass-block enclosure. **ABOVE:** Peichl paired vaulted rehearsal halls around domestically scaled office volume.



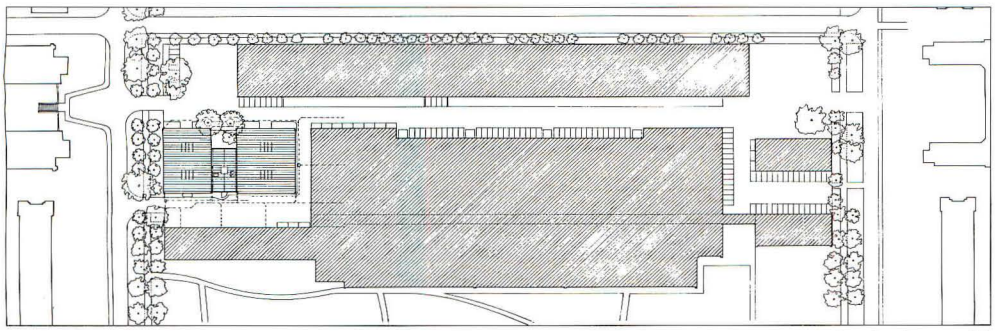
SECOND FLOOR PLAN



FIRST FLOOR PLAN



24.5'/7.5m



SITE PLAN

100'/30m

PLANS: Center volume contains stairwell, wardrobe spaces, and lounge.
SECTIONAL PERSPECTIVE: Stairwell is flanked by rest rooms and offices.
CENTER: Stairwell, with lounge beyond, is detailed with nautical-style steel rail.
SITE PLAN: Rehearsal hall (left) is located to southeast of scenery workshop.
FACING PAGE, TOP: Concrete ribs frame interior space of larger hall.
FACING PAGE, BOTTOM: Trees on rear facade shade lounges between halls.

REHEARSAL STAGE
VIENNA, AUSTRIA

ARCHITECT: Gustav Peichl
ENGINEER: Wolfdietrich Ziesel (structural)
COST: $10.2 million
PHOTOGRAPHER: Gisela Erlacher/Arcaid

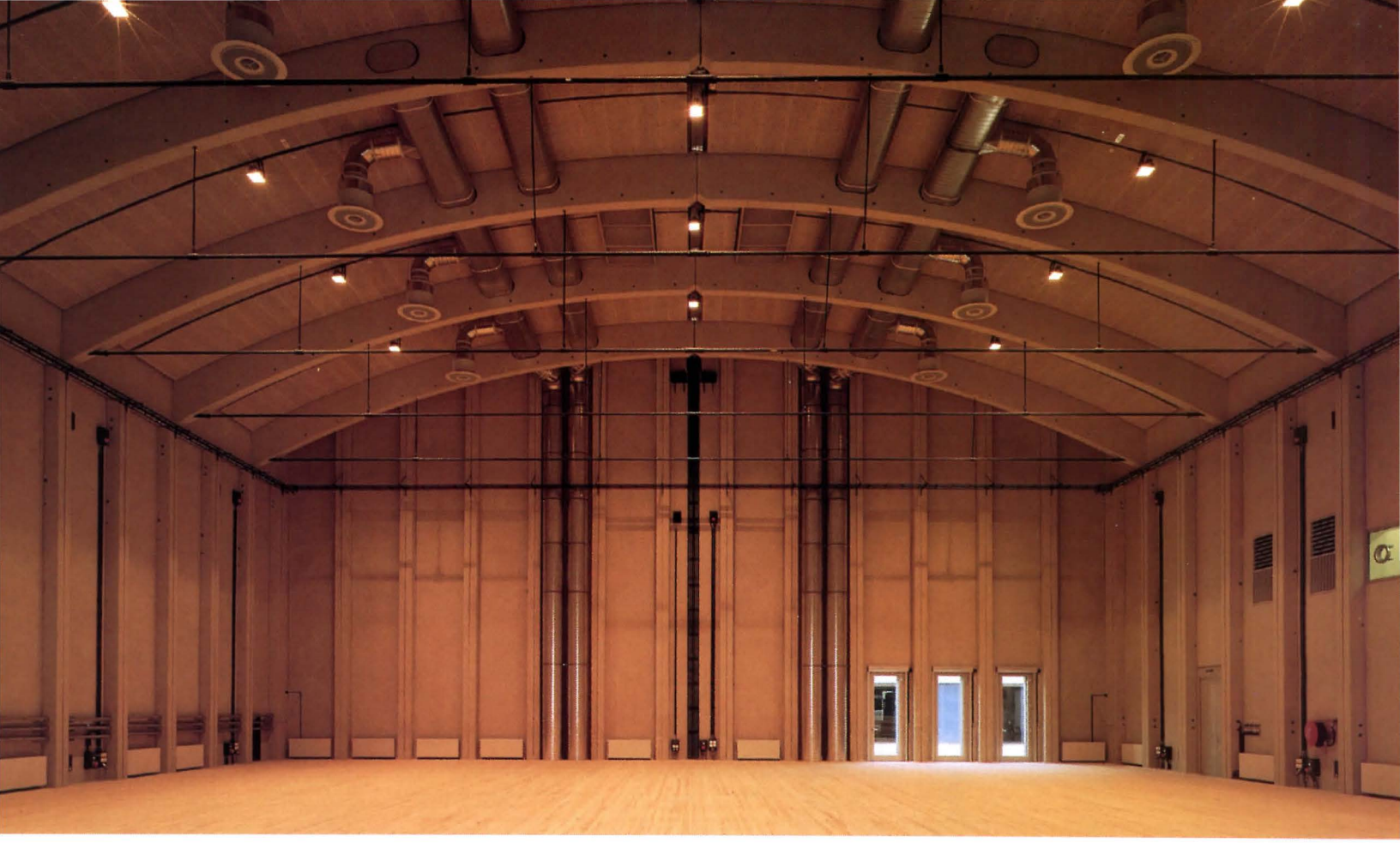
1 FOYER
2 DRESSING ROOM
3 REHEARSAL STAGE
4 COURTYARD
5 LOUNGE

the doors and hemispherical light fixtures. At the east and west sides of the entrance, double doors lead through acoustic lobbies into the large halls, shells of prefabricated concrete ribs and vertical slabs. The ribs, sufficiently thick to allow penetration by air-conditioning ducts and the suspension of lighting, span halfway across the hall and meet in a pin joint at the ceiling. A set of big delivery doors at the south end of each hall and windows with operable blinds establish a rapport with the outside world.

Peichl works in the great Viennese tradition of form and skin. He is acutely aware of civic buildings as object architecture and the exploration of ornament as an expression of construction and materiality. After previous, more eclectic, and technically complex designs—notably Bonn's Art and Exhibition Hall (ARCHITECTURE, September 1993, pages 116-119)—Peichl's Viennese container for theatrical practice is a suitably calm, ornamented object building. It is not a mere decorated mass; its constituents are architectonically expressed. The halls are clad in corrugated aluminum siding with a deep profile, recessed at the corners, with the thinner rib facing outward to achieve a crisper skin. Onto this structure, elements of Peichl's well-rehearsed vocabulary are added: twinned components, such as doors, electrical fixtures, and air vents; elongated doors; a jaunty flagpole; an extruded capsule housing a service elevator. In particular, the glazed pyramid above the stairwell in the office volume acts as an iconic marker between the vaults.

Playful even on a tight budget, Peichl's architecture is as much about subtraction as addition. Toward the south, the central block stops, accommodating daylit lounges facing a deep sunken courtyard. As a final detail, a single tree is planted within this excavation on the centerline of Peichl's theater complex.—*Raymund Ryan*

Raymund Ryan teaches architecture at University College Dublin, Ireland.



Harmonious Ensemble

City of Music • Paris, France • Christian de Portzamparc, Architect

It has taken 10 years of backbiting politics and budget cuts to hatch the second part of architect Christian de Portzamparc's Cité de la Musique (City of Music) at the Parc de la Villette, situated at the northeast edge of Paris. The first part, the new National Conservatory of Music (1990), is a luxurious facility highly popular with the students of music, song, and dance, who study, live, and perform there. It forms the west half of the south entrance "gate" to the 132-acre park, with a four-part, pierced facade over a reflecting pool, capped by a roof derived from Ronchamp. A generally rectilinear, loose assemblage of stone-facaded buildings around a courtyard, Portzamparc's original complex gives free rein to color and freeflowing form inside the court, with frequent references to 1950s heroes—Le Corbusier, Oscar Niemeyer, Alvar Aalto, and Eero Saarinen.

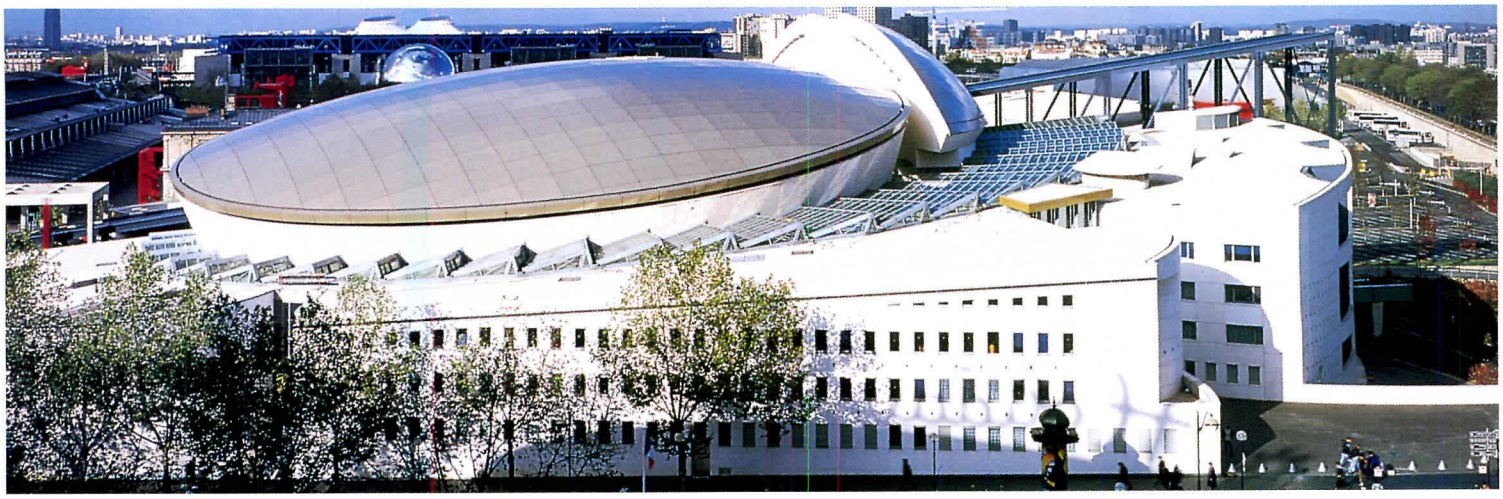
Portzamparc's second part of the Cité de la Musique, officially opened in January, completes the east half of the south gate to the park. The new complex simultaneously creates a perspective portal to the city of Paris from a nearby freeway by pairing its long, pierced white stone facade with that of the hotel across the avenue to the south, also designed by Portzamparc.

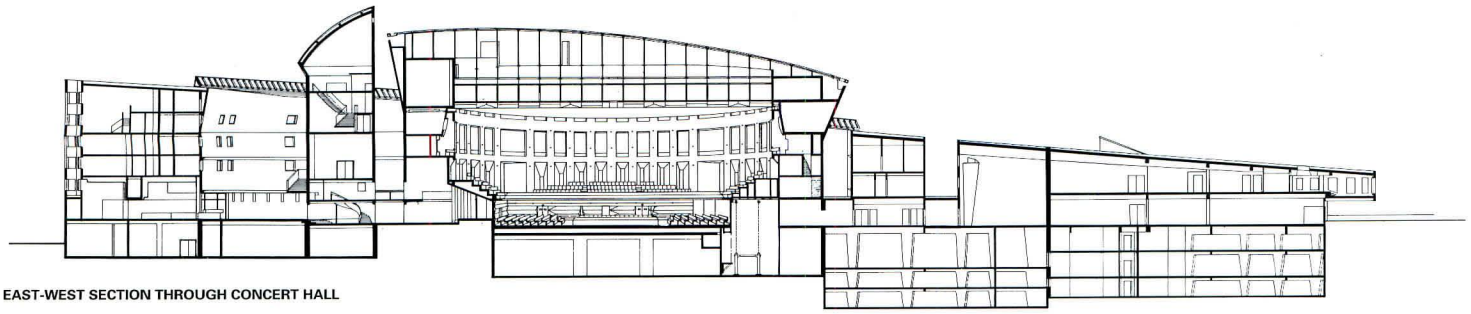
This second phase of Cité de la Musique, although built on a shoestring, has an innovative agenda: performance spaces; a museum of music; offices and meeting facilities; 82 living units for married students; a high-tech public music-information and study center; a café; a library; and a space for children to discover music in, the same way they discover science at the City of Science at the north end of the park, designed by Adrian Fainsilber (1986). This is to be a place where the public, students of music, artists, and children can meet. Although its original program was cut, it could still become one of the richest environments for musical creation in the world.

The new assemblage of structures is wedge-shaped in plan and elevation to follow the site boundaries on two sides, and on the third, to provide an angled wall to the Parc de la Villette—reinforcing an important angled path to a rock-music performance space in the park, the tentlike Zenith. The facades along the street boundaries are neutral and banal, but the park facade is more idiosyncratic, suggesting possibilities within. When viewed from a distance, however, a flying-saucer shape on the roof (the concert hall) and a sliced dome that projects upward are peculiar and disconcerting.

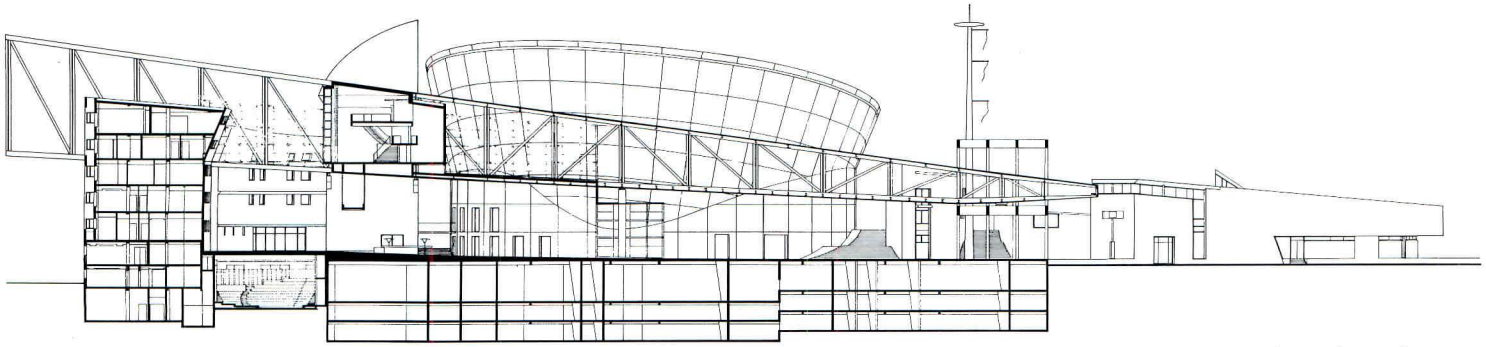
ABOVE: Second phase of Cité de la Musique is entered under red cubic "folly." **THESE PAGES:** Portzamparc fractured volumes to indicate museum with segmented vault (left), concert hall with drum (right), and cone-shaped library (foreground).


Holiday



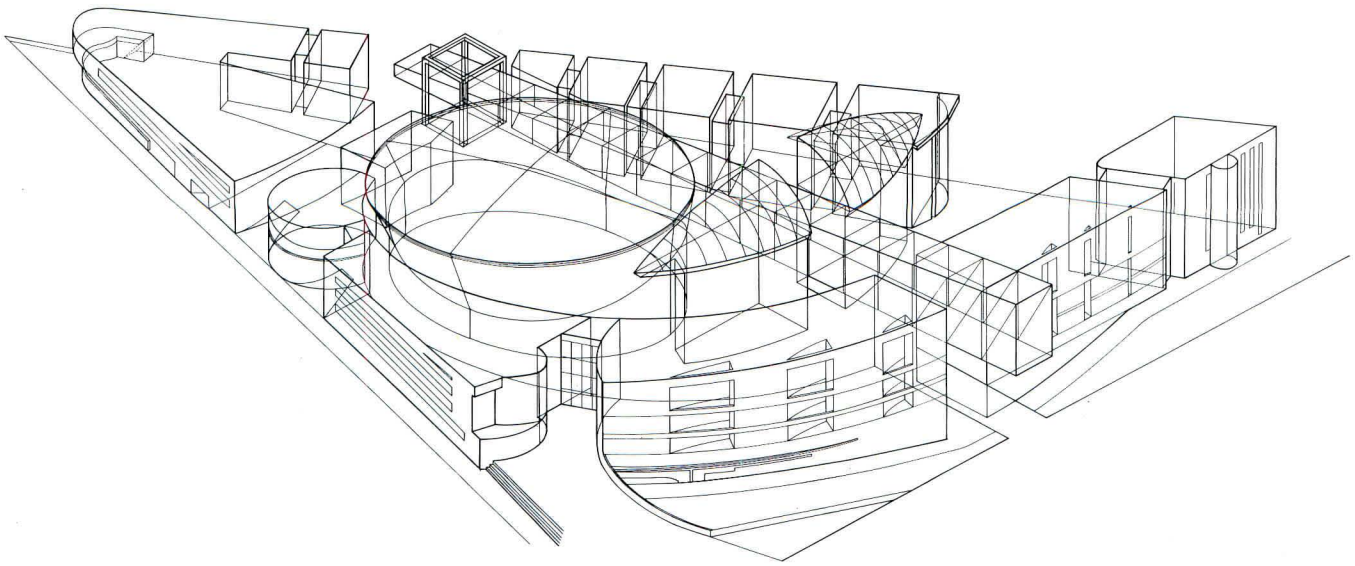


EAST-WEST SECTION THROUGH CONCERT HALL



EAST-WEST SECTION THROUGH MUSICAL STREET

40'/12m



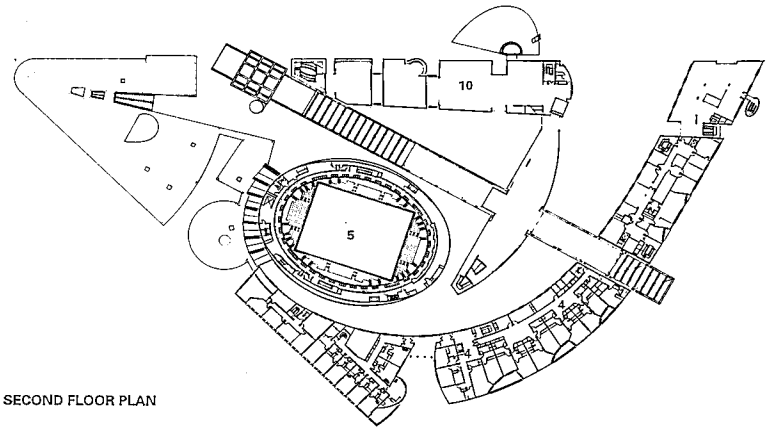
In its spatial disposition, the whole complex is more like a medieval walled town than a building: Its edges are clearly defined by walls pierced with entrances; enigmatic objects project above them like the cupolas or steeples of a medieval town. Portzamparc calls it "the little town that is the Cité." Here, it is the interstices that count—the spaces between and inside various walls and volumes, interior streets, and places.

The interior streets are formed first by the main entrance, leading to a covered outdoor courtyard that changes to an interior lobby. From the lobby, a spiraling interior pathway encircles the main ellipsoidal concert hall. This "musical street" is a gathering place—with exhibits, seating, and a bar—and functions as a lobby for performances. All the contiguous spaces have windows looking onto this street, which captivates visitors with its skylit luminosity and tantalizing perspective.

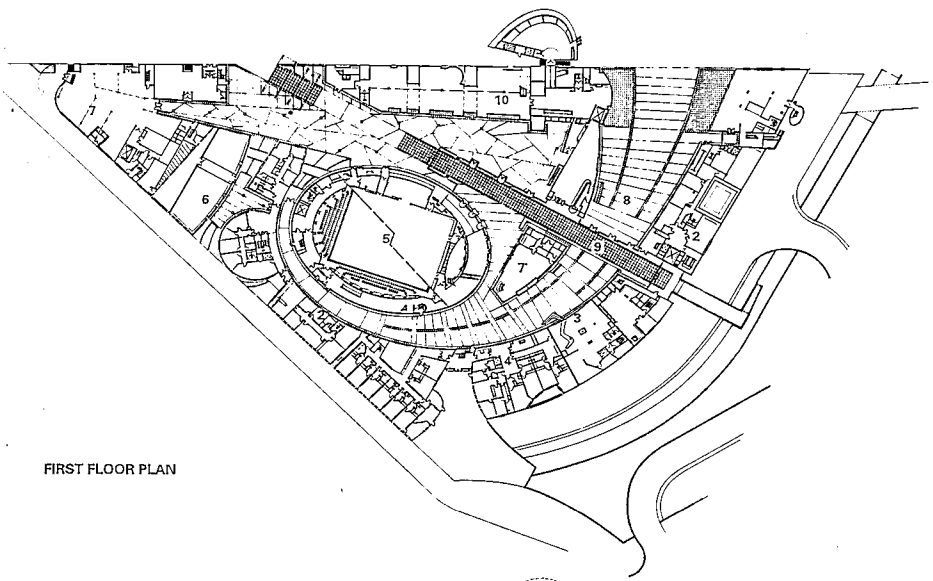
The outer wall of this cornucopia-shaped musical street is painted and tiled in colors and segments to suggest residential building scale (indeed, graduate student apartments and various offices are behind this wall), while the inner, monumental wall around the concert hall remains white stone. The large end of the space is faced in glass, formed of three immense sliding panels three and a half stories high, opening toward the park.

The museum entrance is at the intersection of the two streets, and although its interior is unfinished, the museum will be a counterpoint to the luminosity of the musical street. Enclosed by pierced screen walls to protect the precious 4,500-instrument collection, it contains a small, egg-shaped conference and recital hall of 230 seats with a new baroque organ designed by Portzamparc.

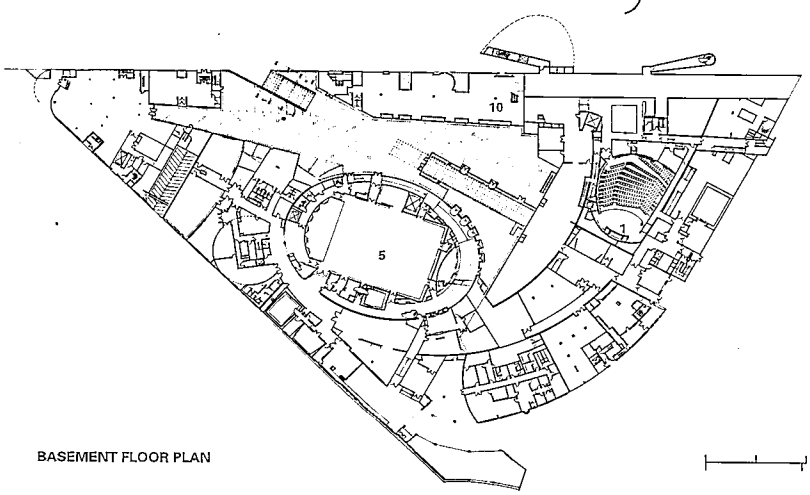
For the main concert hall, the architect designed adaptable seating (800-1,200) and a changeable podium on its inscribed rectangular floor, with upper mezzanines that are segments of the ellipse and higher galleries set within the ellipse, like the triforium in a cathedral, for students. The layout lends



SECOND FLOOR PLAN



FIRST FLOOR PLAN



BASEMENT FLOOR PLAN

100'/30m

1 RECITAL HALL
2 OFFICE
3 CENTER OF INFORMATION FOR MUSIC AND DANCE
4 STUDENT RESIDENCE
5 CONCERT HALL
6 REHEARSAL HALL
7 CAFÉ/BAR
8 MUSICAL STREET
9 CIRCULATION
10 MUSEUM

FACING PAGE, TOP: Wedge-shaped facade hides geometric activity beyond.
TOP SECTION: Office-residence block (left) overlooks musical street.
CENTER SECTION: Truss spans east-west axis through musical street.
AXONOMETRIC: Intersecting volumes include cylinder (concert hall); cubes and split lozenge (museum); curved perimeter block (office-residence).
PLANS: Recital hall and museum are housed underground.

itself to arranging singers and musicians around the hall and in the mezzanines.

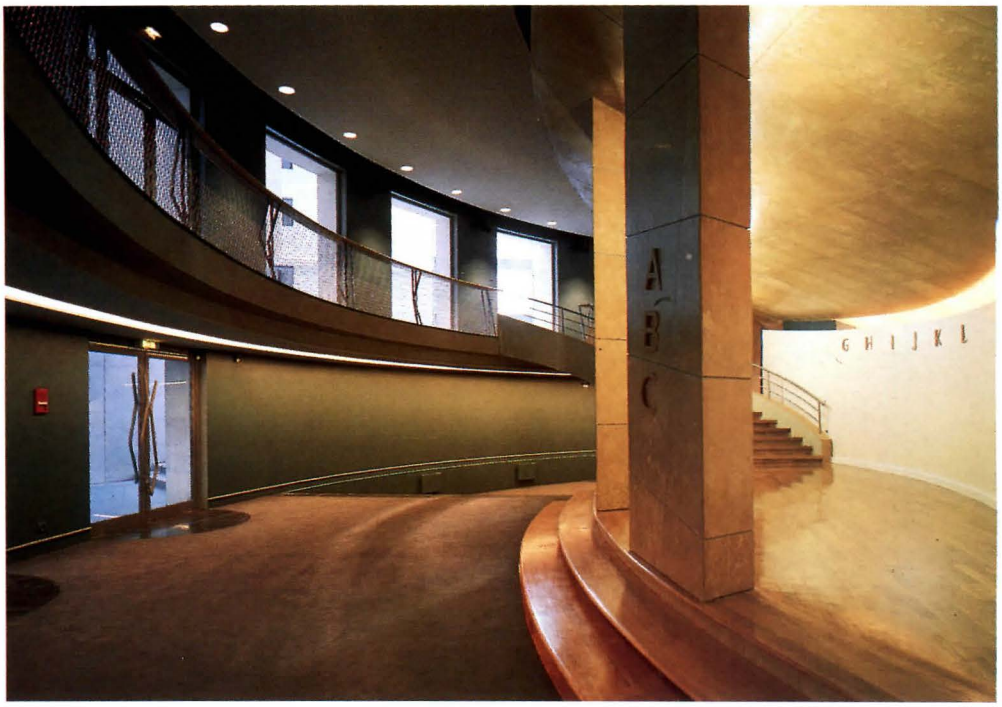
This worst-possible configuration boasts rich, crystal-clear acoustics thanks to tall, deep niches all the way around the hall that destroy the focus points. The hall's absorption is juggled by means of movable wall curtains and reflective panels above the ceiling light-grid that can be opened to absorptive material beyond. The adaptability is low tech: hand-moved seats (five hours), hand-set lights (one day). Many costly cutting-edge installations such as those at the Bastille Opera have never become functional, whereas Portzamparc's stagecraft is cheap, and it works.

The second phase of Cité de la Musique successfully defines its site with a fluidity of function and spatial penetration. Portzamparc's well-proportioned inner volumes; their relationship to human scale; and daylit, visual intersections are uplifting. If the architect sometimes does clumsy things, like projecting walls out at the top, for example, it is not to disconcert, but to create a sense of enclosure.

Overall, this is an architecture of delight, a place of pleasurable sensations for the eye, the body, and, of course, the ear. The Cité is filled with felicitous intersections, unexpected revelations of space or the city outside. It encourages creative things to happen. Portzamparc explains, "I am attentive to the link between the body and the spirit, vision and hearing. I sought to make this place permit a sort of awakening on the sensory level."

Portzamparc may be called Deconstructivist, but here, he uses his freedom from many of the old canons of visual order to respond to the demands of site and program, light and pleasure. With architecture that is user-friendly and humane, the Cité de la Musique is destined to become highly successful, the most appreciated of concert halls in Paris by all serious lovers of music, whatever the genre.—*Barbara Shortt*

Barbara Shortt is an American architect who writes frequently about French architecture.



FACING PAGE, TOP: Concrete outer wall of curved skylit interior street is a counterpoint to the sandstone-clad drum of concert hall and service module.
FACING PAGE, BOTTOM: Wedge-shaped module housing bar and museum floats between concert hall (left) and residence block (right), with access to public information booth.
TOP: Oak-paneled concert hall foyer blends with marble pillars.
ABOVE: Steel railings of foyer's upper level are detailed with oak armrests.

THESE PAGES: Concert hall's plywood ceiling grid, with suspended, movable lights, conceals doorlike sound-reflective wooden panels that open to sound-absorptive material. Wall niches are lit with decorative, colored lights. **TOP:** The 230-seat recital and conference hall features niches and lighting similar to concert hall. **ABOVE:** New organ designed by Portzamparc has carved oak case with mother-of-pearl finish.

CITY OF MUSIC
PARIS, FRANCE

ARCHITECT: Atelier De Portzamparc—Christian de Portzamparc (principal-in-charge); Francois Barberot, Betrand Beau, Olivier Blaise, Benoit Juret, Florent Leonhardt, Etienne Pierrès, Bruno Barbot, Céline Barda, Frédéric Borel, Nadine Clément, John Curran, Laurence Daugé, Eamon Gogarty, Julie Howard, Jean-Marc Lalo, Marie-Elizabeth Nicoleau, Richard Scoffier, Léa Xu, Pascal Boutet, Isabelle Burck, Odile Pormin, Martin Andujar
COST ESTIMATOR: Sodeteg
CONSULTANTS: A.C.V., Commins Ingemansson, Xu Acoustique (acoustics); Gérald Karlikoff (lighting); Jacques Dubreuil, *Jacques Lecomte (theatrical)*
COST: $106.6 million
PHOTOGRAPHER: Stephane Couturier

Out of Antiquity

Arles Museum of Archaeology • Arles, France • Henri Ciriani, Architect

French architecture of the past decade has been known mostly through President Mitterrand's *grands projets* in Paris. But some of the most interesting recent buildings in France have been realized in the provinces. A case in point is the recently completed Musée de l'Arles Antique (Arles Museum of Archaeology) designed by Peruvian-born Parisian architect Henri Ciriani, who was selected by a competition. The complex is a center for research, combining workshops and study areas with galleries and administrative offices for surveying local archaeological digs. It is, in effect, a place of initiation for the visitor who wishes to grasp the ancient history of Provence.

Ciriani establishes a strong presence for the new institution, located beyond the western edge of the old city, by basing his geometry on an equilateral triangle. This shape stands up to the chaotic immediate environment and resonates with bold imprints in the history of Arles, such as the Roman amphitheater and oval arenas. But Ciriani chose a form never used in antiquity, avoiding obvious contextualism.

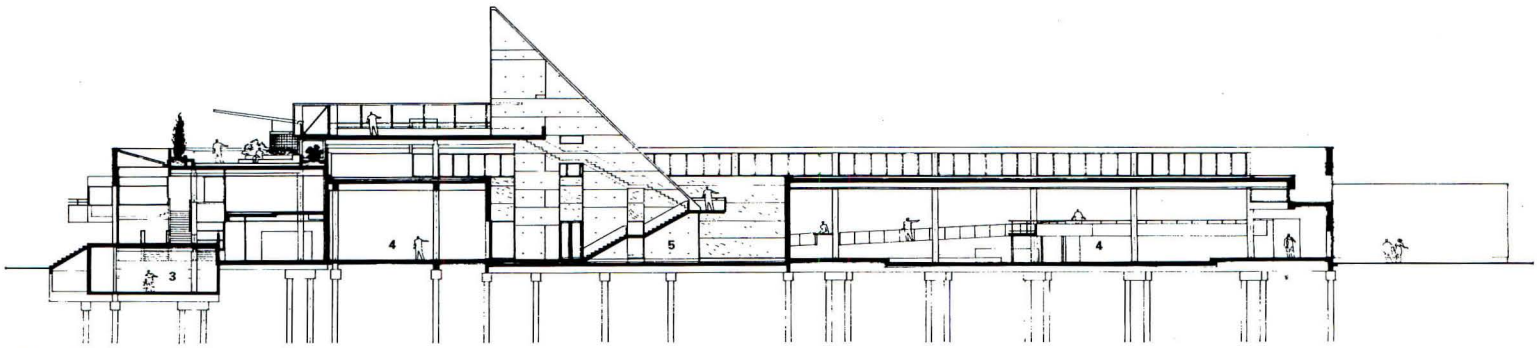
The interior is organized around the Corbusian theme of an architectural promenade through a grid of *pilotis* by means of ramps; at the building's center is an atrium with reflecting surfaces of water at its base. A stair ascends to a roof terrace with stunning views, and slots and skylights admit natural light. The result is a vivid experience of geometry, structure, space, and color.

Ciriani's museum at Arles is a clear statement of his notion of a "cultivated abstraction," a geometrical order reiterating basic architectural ideas such as the facade, the processional route, and the atrium, but without recourse to historical references. It relies upon incisive gestures, such as the punctuated main facade with its receding and advancing objects beckoning to the old city and, of course, the triangular plan rotating around an illuminated void. But the routes suggested by the geometry of the building and the museum's sequence of historical periods do not coincide; while the clear-cut planes and the structural grid sometimes overwhelm the objects on display.

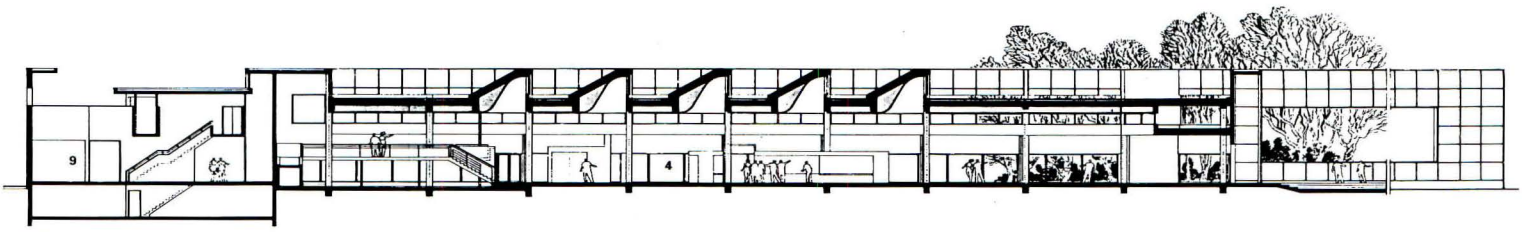
Critics claim that Ciriani still reverts to Neo-Corbusian trills when uncertain what to do. Even so, the architect must be credited with a memorable work, one that takes its place in a line of research into the anatomy of Modern spatial ideas.—*William J.R. Curtis*

W. Curtis is writing a book on recent Spanish and Portuguese architecture.

ABOVE: New museum is located off highway west of Arles and close to Rhône River. **FACING PAGE, TOP:** Semireflective walls respond to light and sky of Midi. **FACING PAGE, BOTTOM:** Main entrance is at southeast corner under projecting offices.

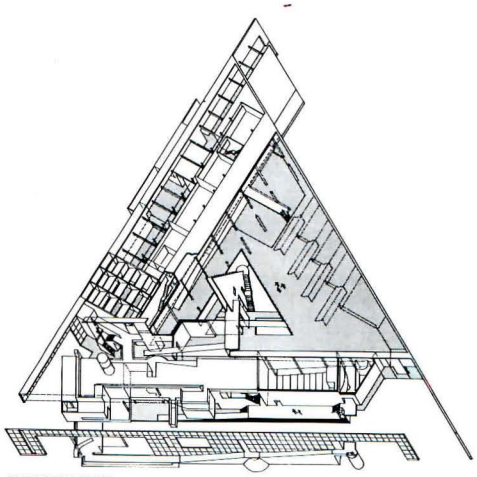


SECTION A-A

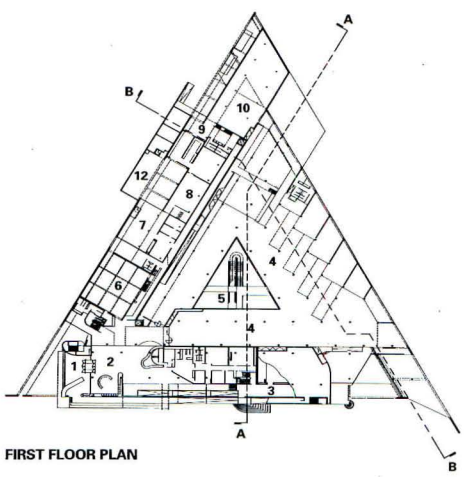


SECTION B-B

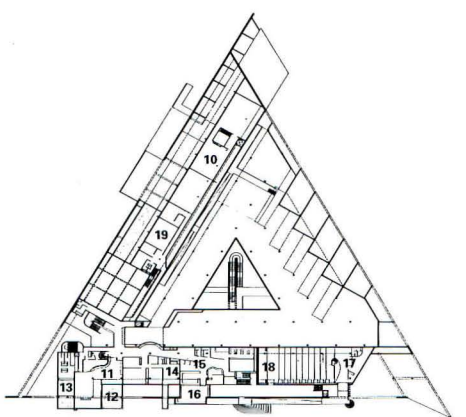
32.8'/10m



AXONOMETRIC



FIRST FLOOR PLAN



SECOND FLOOR PLAN

20'/6m

SECTIONS: Section along main axis (top) reveals stair that rises from reflecting pool at base of atrium to roof terrace. Interior ramp allows vantage points over Roman mosaics displayed on floor below and descends along interior wall painted Pompeiian red. Six-meter-high galleries are daylit through angled roof monitors.
PLANS: Ciriani organized museum as equilateral triangle with exterior planes extending beyond apexes to produce sense of rotation. Base of triangle incorporates administrative functions and entrance (left). Left side contains temporary exhibition hall, labs, and storage; right side allows glimpses of riverbank through glazing.
FACING PAGE, TOP: In daylit galleries, statues and architectural fragments are displayed on plinths.
FACING PAGE, BOTTOM: Angled roof monitors bring daylight into main galleries. Antique columns and display cases containing smaller objects are arranged like partitions within open plan.

ARLES MUSEUM OF ARCHAEOLOGY
ARLES, FRANCE

ARCHITECT: Henri Ciriani Architect, Paris—Henri Ciriani (principal-in-charge); Jacky Nicolas (assistant)
ASSOCIATE ARCHITECT: Jacques Bajolle
ENGINEERS: CESBA (structural); INEX (mechanical); SCOBAT (civil)
GENERAL CONTRACTORS: SPIE Méditerranée, Ateliers St. Jacques
COST: $27.9 million
PHOTOGRAPHER: Paul Raftery/Arcaid

1 ENTRANCE
2 LOBBY
3 GALLERY
4 PERMANENT EXHIBITION HALL
5 ATRIUM
6 TEMPORARY EXHIBITION HALL
7 WORKSHOP
8 LABORATORY
9 LOADING BAY
10 STORAGE
11 CAFÉ
12 TERRACE
13 STAFF ROOM
14 OFFICE
15 LIBRARY
16 READING ROOM
17 FOYER
18 AUDITORIUM
19 ARCHAEOLOGY SCHOOL

Pacific Overture

Kirishima International Concert Hall • Aira, Japan • Maki and Associates, Architect

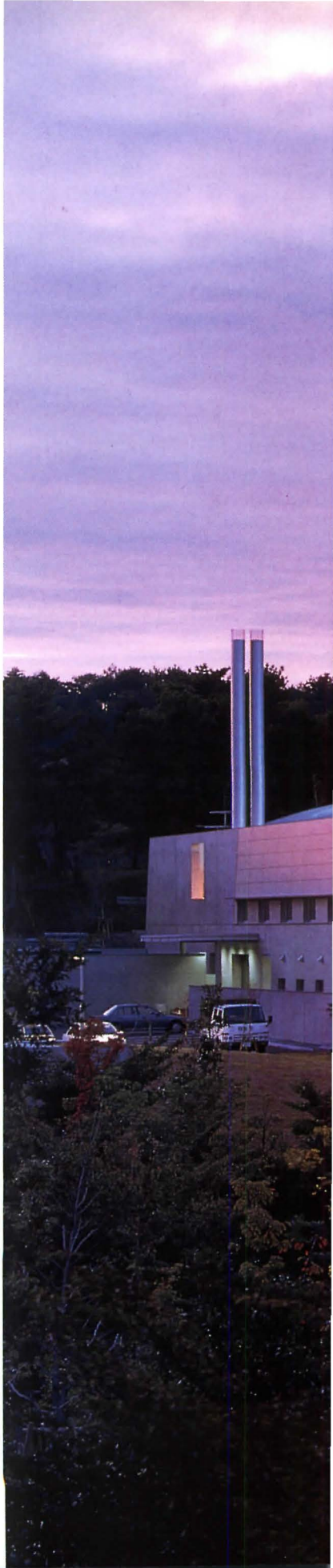
Much of the challenging architecture of recent years has been characterized by an urbanism of fractured and indeterminate space and form that integrates architecture with society. Fumihiko Maki's 1985 Spiral building demonstrated such meshing of building and city in both socioeconomic and physical terms. By contrast, Maki's Kirishima International Concert Hall is a displaced urban fragment indicative of a new engagement between the city and the landscape. Hidden in a volcanic mountain range at the very southern end of Kyushu, the southernmost major island of the Japanese archipelago, the new concert hall speaks to and of the city from a place of solitude.

This area of Japan was frequently visited by Gerhart Bosse, a notable European violinist who, with local musicians, promoted an international festival of music each year. The festival warranted a worthy performance space, so the Kirishima Concert Hall was funded by the district government, Kagoshima Prefecture, which commissioned Maki to design the building.

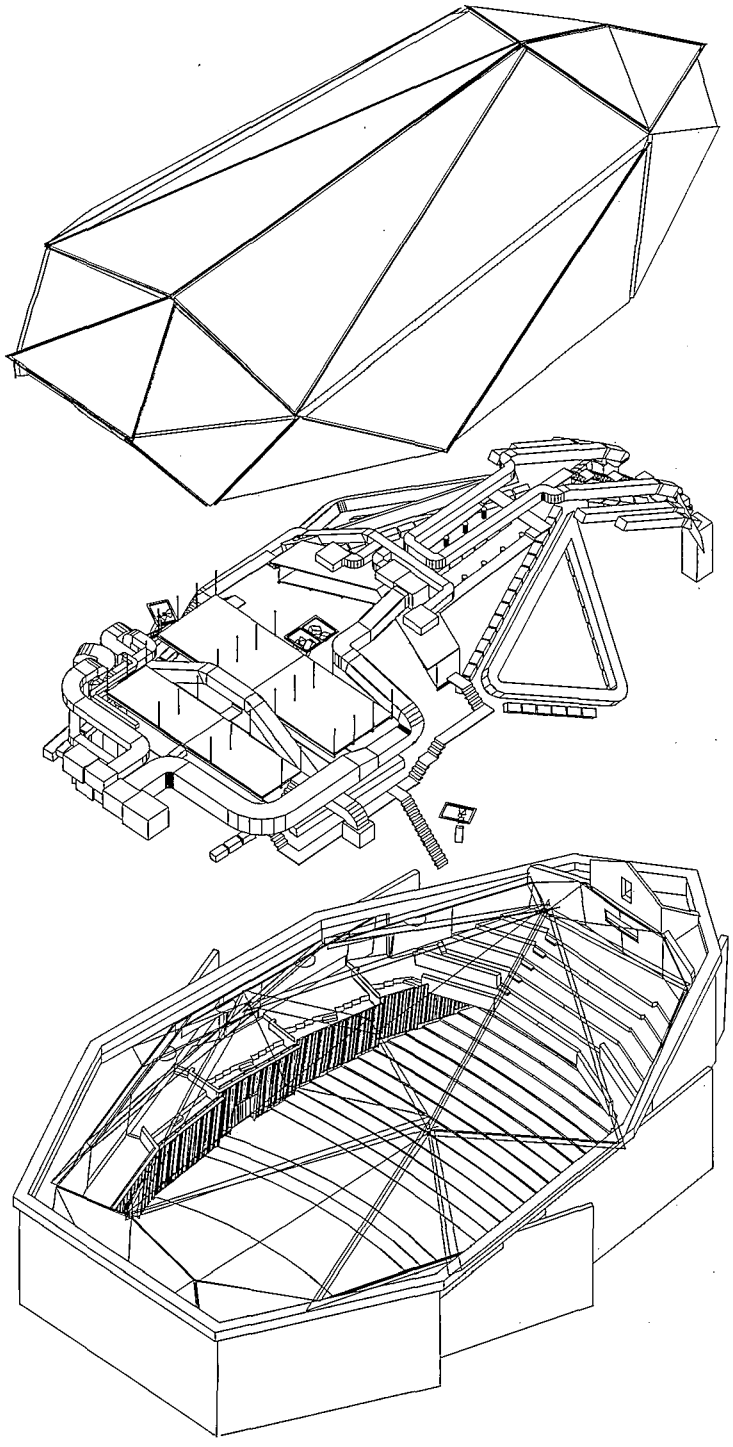
Precedents for the concert hall can be seen in Maki's "cloud" buildings—a series of cavernous structures with hovering metal roofs, such as the gymnasiums for Fujisawa and Tokyo, designed in the 1980s. Each cloud building is intensely urban, offering a strong visual presence as an object while forming a successful public space. The Kirishima Concert Hall is the result of transporting such an urbane fragment to the beautiful remote mountains of southern Kyushu.

The principal building consists of a solid podium of concrete, wedged into the hillside, with its mass capped by a stainless steel roof that looks like the upturned hull of a ship. Writes Maki, "The figure that emerged from our design exploration—that of a light, streamlined vessel—epitomizes the festive spirit and the sense of collective experience that we might associate with musical gatherings." But Kirishima is an isolated ship, without water, stranded somewhere in the mountains of Japan. The concert hall is accompanied by secondary performance spaces and practice rooms, as well as an outdoor theater located to the north of the main hall.

Maki celebrates the act of procession by leading visitors up ramps from parking areas and past the hall, before they double back and



ABOVE: Located on Kyushu Island, Kirishima International Concert Hall comprises main auditorium (left) and outdoor theater (right). **THESE PAGES:** Foyer and bar are visible through east end. Roof is clad in 0.4 millimeter-thick stainless steel.



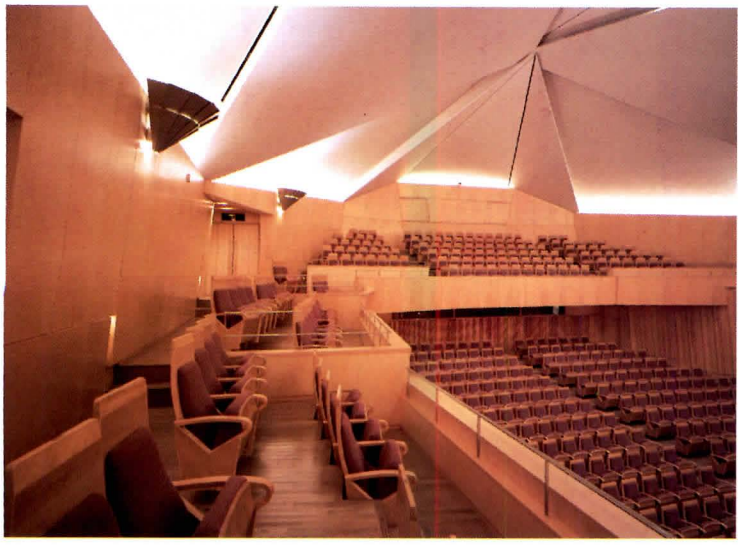
ABOVE: Concert hall axonometric reveals folded planes of roof above ductwork, lighting, and catwalks.
FACING PAGE, TOP: Maki divided building into concert hall and wing of practice halls and offices.
FACING PAGE, BOTTOM LEFT: Angled window wall of foyer is framed in steel I-beams and aluminum mullions.
FACING PAGE, BOTTOM RIGHT: Concert hall is entered from east-facing plaza. Stairs comprise granite panels alternating with concrete aggregate.

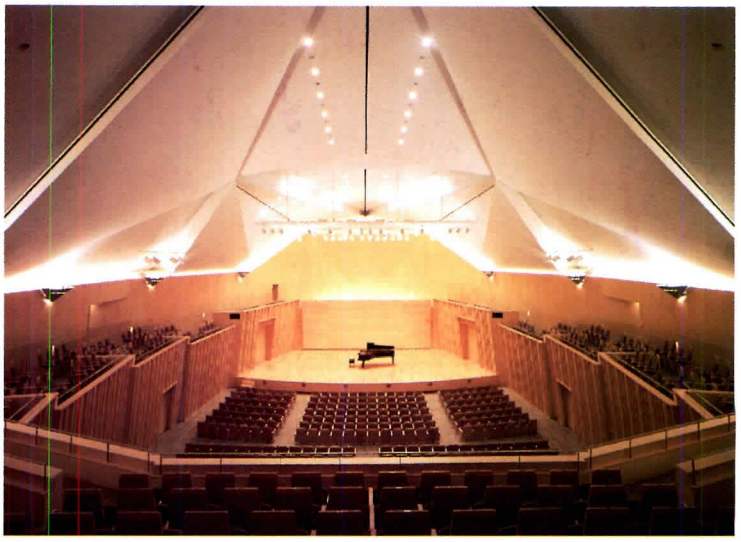
enter the building. Inside, he continues the promenade in the main foyer, which leads to a visual explosion revealed through sloping glazed walls: the expanse of the Kirishima mountain range with the active volcano of Sakura-jima in the distance. Here, Maki disturbs the balance of his composition by moving the auditorium's axis south to that of its base, thus providing extra circulation area on the entry side. The visitor turns back from the view to enter the rich but restrained auditorium, which has already attained an international reputation for excellent acoustics.

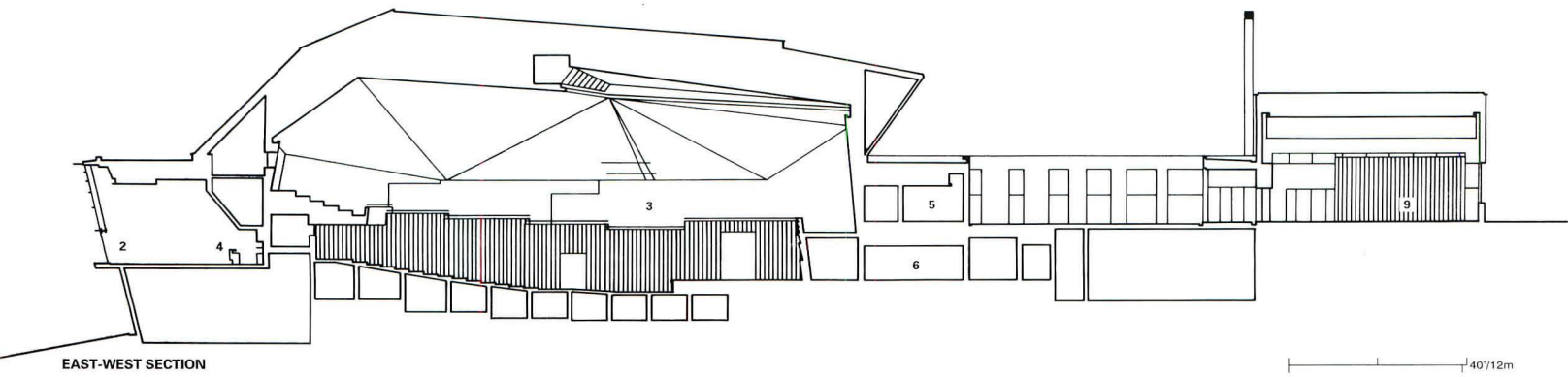
The first sight of the concert hall can best be described as arresting and disturbing. The rocklike mass of the building as it juts forward over the slope and toward the mountains conveys a powerful directionality. And the asymmetrical arrangement of its parts—the displaced axis of the roof of the concert hall in relationship to its podium and the multidirectional sloping of the walls—creates a visual instability. Furthermore, the compressed energy in the distorted body of the building pushes up, contorting the taut metal skin of the roof that contains it, suggesting a potentially explosive tension. This sense of tension and twisting is not found in the metal roofs of Maki's earlier buildings, such as the gymnasiums, that appear to float easily over the spaces they shelter.

With this building, Maki establishes a challenging relationship between city and landscape, with esthetics indicative of Japan in the 1990s—much as the design of Maki's Spiral building represented Japan in the 1980s. The Kirishima International Concert Hall takes a displaced piece of urbanity and abandons it on a mountaintop. If the nautical correspondence is to be accepted, then the concert hall has to be a ship stranded in the grasp of a storm. Like Noah's Ark, it could mark the start of a new urbanism in Japanese architecture.—*Jennifer Taylor*

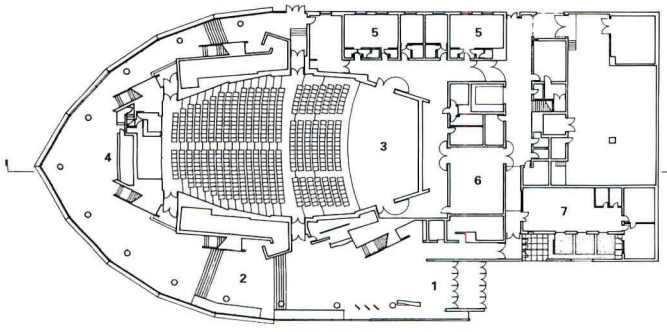
Jennifer Taylor teaches architecture at the University of Sydney in Australia.



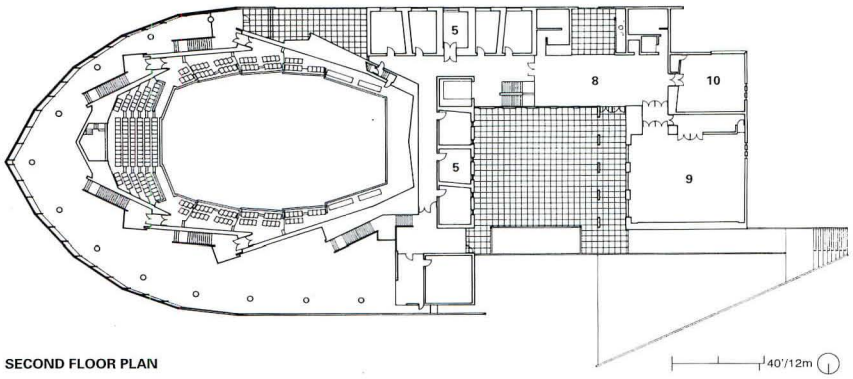




EAST-WEST SECTION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

TOP LEFT: Gypsum wallboard-covered ceiling in concert hall reflects sound generated at stage toward audience.
TOP RIGHT: Concert hall seats 770. Ceiling is uplit by fluorescent fixtures.
SECTION: Plenum for lighting, ductwork, and catwalks between hall's roof and ceiling averages 2.5 meters in depth.
PLANS: Open courtyard separates concert hall from practice rooms and small hall on second floor.
FACING PAGE: Aluminum planes in *foyer's glass curtain wall obscure and* frame views. Carpet is designed by Japanese textile designer Kei Miyazaki.

KIRISHIMA INTERNATIONAL CONCERT HALL AIRA, JAPAN

ARCHITECT: Maki and Associates, Tokyo—Fumihiko Maki (principal-in-charge); Yukitoshi Wakatsuki, Yasushi Ikeda, Yoshitaka Wada, Mark Mulligan, Paul Harney, Noriko Kawamura, Yoshiki Kondo, Minoru Kudaka (project team)
LANDSCAPE ARCHITECT: Equipe Espace
ENGINEERS: Structural Design Group (structural); Sogo Consultants (mechanical/electrical)
CONSULTANTS: Yoiichi Ando (acoustical); Nagata Acoustics (theatrical/lighting); Kei Miyazaki (carpet design)
GENERAL CONTRACTOR: Takenaka
PHOTOGRAPHER: Toshiharu Kitajima

1 ENTRANCE
2 FOYER
3 CONCERT HALL
4 BAR
5 DRESSING/ PRACTICE ROOM
6 STORAGE
7 OFFICE
8 LOBBY
9 SMALL HALL
10 REHEARSAL ROOM

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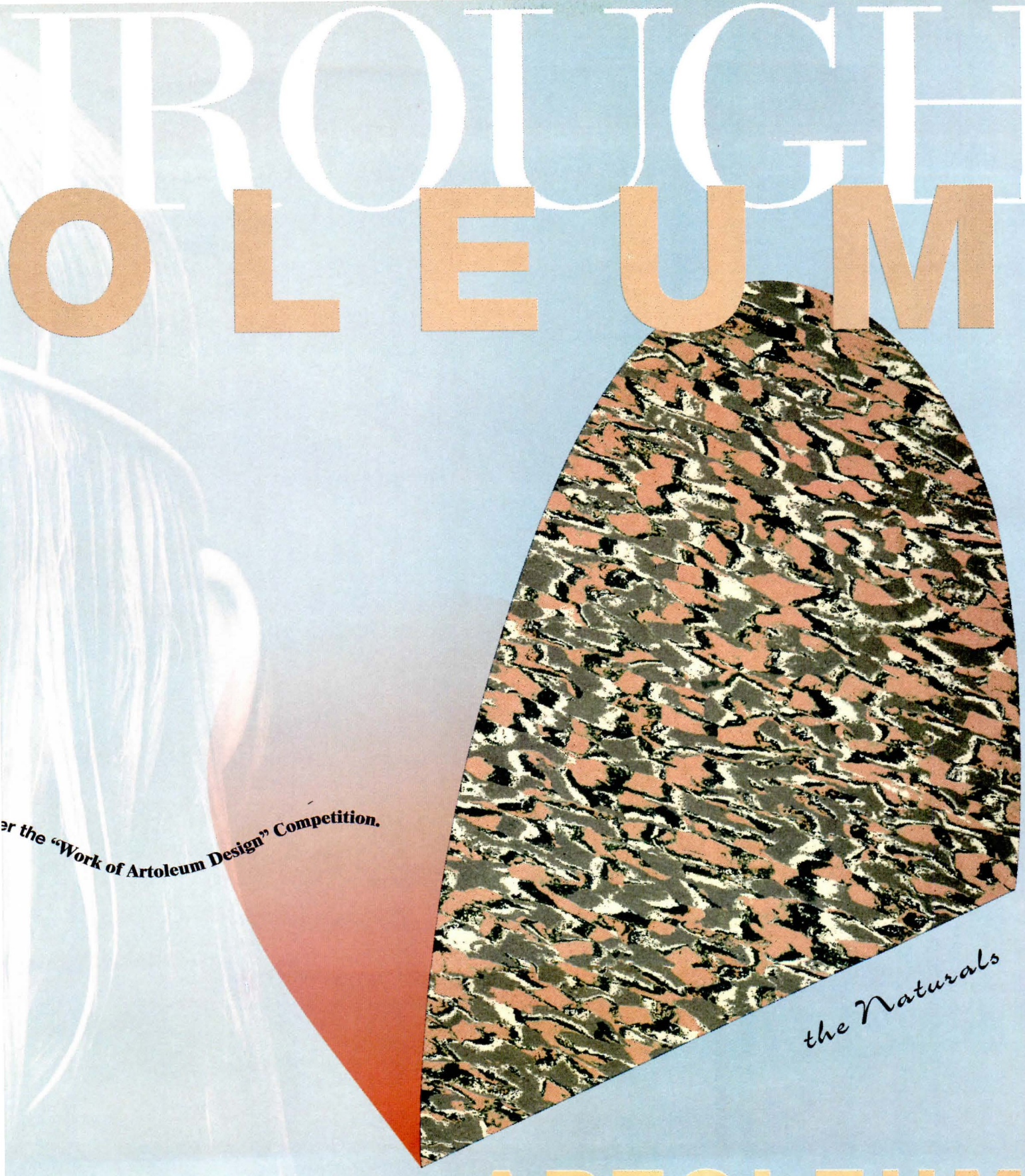

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Technology & Practice

GEORGANNE DEEN

It's a smaller world than it used to be, as this month's global focus shows, but it's no less challenging for architectural practice and technology. Our practice feature on working in China, for instance, reports that American architects (such as Kanner Architects, designers of Nanjing Airport, above) are discovering that a low level of fees often fails to support a high level of service overseas, despite the allure of designing high-rises in Shanghai and Hong Kong.

This month's computer article finds other firms practicing in foreign countries through computer links such as the Internet, CompuServe, or their own customized wide-area networks. Now architects at home and abroad can practice together in a continuous relay—while one sleeps, the other works.

Our residential feature highlights a house on a rugged escarpment in Australia. Architect Glenn Murcutt has created a slender, Miesian pavilion that conducts an elegant dialogue between indoors and out. Simple siting and structure bind Murcutt's mountain house to nature.

Simplicity is also the benefit behind tilt-up construction, as this month's technology article reveals. This on-site concrete technology minimizes formwork and reduces costs. Such panels used to be for cladding only, but most are now erected as loadbearing systems for increased structural efficiency.

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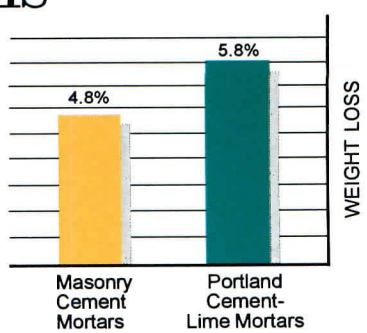

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China Syndrome

Working in Shanghai and Hong Kong requires architects to stretch limited fees.

Costs of Doing Business in United States Versus China

	New York	Shanghai
Office space	$490 (Midtown) per square meter, per year	$1,109 per square meter, per year
Housing (rent plus utilities, maintenance, insurance)	$15,769	$74,167
Transportation (fixed and operating costs for one car)	$5,590	$20,014
Goods & Services (food, household goods, clothing, medical care, entertainment)	$23,450	$26,079

SOURCES: JONES LANG WOOTTON INTERNATIONAL RESEARCH; RUNZHEIMER INTERNATIONAL CONSULTANTS

ABOVE RIGHT: Chart compares selected costs of living in Shanghai and New York City. Costs of housing and goods and services in China are estimated for a family of two with an annual income of $75,000. All figures are U.S. dollars.

Like modern-day Marco Polos, American architects are traversing the globe to China, hoping to cash in on the biggest building boom in the world today. Market capitalism is flourishing in the People's Republic since leader Deng Xiaoping opened Shanghai, Shenzhen, and 12 other cities to foreign investment in 1984. Urban development is on overdrive, producing mammoth mercantile complexes in Beijing; "free port" facilities and a new city center on salt flats near coastal Tianjin; and skyscrapers in Shanghai, where 40 million square feet of office space are set to open by 1998, much of it designed by American architects. Atlanta-based John Portman & Associates (JP&A), for instance, is designing 8 million square feet of high-rises in Shanghai alone.

Such feverish growth has led some half-dozen American firms to open branch offices in Shanghai—or, alternatively, Hong Kong—to cultivate a regional presence and to oversee design and construction locally. Yet Shanghai, like many cities in China, is a tough place to work and live; the country is experiencing great social upheaval as the centrally planned state economy steadily gives way to a burgeoning private sector. The economics and logistics of working between China and the United States make such ventures a gamble for architects.

Practicing architecture in China "certainly has not been a windfall," asserts Bruce Fowle of Fox & Fowle Architects in New York, which opened its Shanghai office in 1992. "But thus far, the projects have been worth it," and, with work in the United States declining, overseas commissions have helped the firm stay in the black. "The work in China has exposed us to the most rapidly developing market in the world and a degree of architectural freedom that is rare in the United States," Fowle attests.

The architectural work available in China today—ranging from high-rise hotels and office towers to entire new towns—is challenging and can be profitable. But it is also fraught with risks, and the fees are generally low. However, because most projects are quite large, the higher volume of work usually offsets the

Costs of Opening an Office in China

Hellmuth, Obata & Kassabaum Shanghai

Typical office expenditure	Estimated cost (U.S. dollars)
Office opened	1995
Office rent	$85,000 (per year) (85 square meters)
Registration fees	$5,000
Office furnishings	$70,000
Office equipment	$20,000
Local staff (2 secretaries)	$10,000 (per year)

Fox & Fowle Architects Shanghai

Typical office expenditure	Estimated cost (U.S. dollars)
Office opened	1992
Office rent	$40,000 (per year) (100 square meters)
Registration fees	$10,000
Office furnishings	$55,000
Office equipment	$100,000 (includes import fees)
Local staff (architect, 3 draftsmen, secretary)	$50,000 (per year)

lower margin. Such is the case with John Portman's firm, which has been working in China since 1980, and which, with four projects under its belt there, opened its Shanghai office in early 1993.

"It would be more profitable not to have an office over there, but how would we service the jobs?" questions Warren Snipes, executive vice president of JP&A in Atlanta, who spends each morning until 11 o'clock—and until 11 o'clock some nights—talking on the phone with his team in China. Given the cost and logistical hurdles, American architects working in China are trying to figure out what level of service to provide to clients 12 time zones away who pay fees of 1 percent to 2.5 percent (some firms squeeze out 5 percent). Those fees, incidentally, which are paid upon completed phases of design, must also cover the architects' reimbursable expenses as well as the cost of living in China.

Steep start-up costs

As throughout much of Southeast Asia, clients in China emphasize their eagerness to import American architecture, yet they do not always make it easy for U.S. firms to compete on the mainland. Most development in China today is fueled by overseas Chinese investors working from Hong Kong. These clients can be clannish, and the bureaucracy can be confounding, so it always helps to have good *guanxi*, or connections, to help them negotiate the myriad restrictions on foreign architects in China.

One of the first obstacles confronted by American architects is the limit on where they may live and work. Foreign businesspeople in Shanghai and throughout China may only reside in "registered" office or apartment buildings. If a building is registered with the government, the landlord is authorized to charge extremely high rents.

Silas Chiow, a marketing director of Hellmuth, Obata & Kassabaum (HOK), arrived in Shanghai in September 1994 from the United States to open HOK's first office in China, where the firm has 20 projects in progress (HOK already has an office in Hong Kong). It took Chiow more than eight months to find office space. After looking at more than 30 "registered" buildings, Chiow finally settled on 85 square meters on Nanjing Road for $7,000 a month. "The alternative is to work in a lousy building with bad power connections," Chiow reports.

The housing situation for foreign nationals is much the same. "It's a continuing struggle," laments Fowle. "You can get a one-room apartment for $7,000, or you're forced to live in some illegal situation in Chinese housing, which is hardly something the average American architect is enticed into doing."

The greatest ongoing cost of setting up shop in Shanghai, however, lies in staffing. David J. Brotman, vice president and director of RTKL, which has 15 projects in China after three years of working there, calculates that skilled professional staff hired locally cost 20 percent to 30 percent more in Hong Kong and Shanghai than in the United States because demand for architectural expertise is high. And skilled expatriate staff from the United States don't want to relocate unless they receive sizable cost-of-living differentials and hardship pay. "We find it's more economical to do most of our work on China projects here," Brotman remarks.

State-run institutes

Not only is it much more expensive for Americans to try to execute work in China, but it's officially illegal as well. American architects are allowed to set up only representative offices for marketing and sales, not production bureaus for design and drafting, on the mainland. Thus, firms report that 90 percent of their design work takes place in the United States. Americans generally rely on state-run design institutes to produce working drawings and construction documents and often to perform construction administration. Local architects, usually from these state-run institutes, serve as architects of record on all foreign firms' projects.

Fox & Fowle, for example, has associated for three years with such a state-run entity affiliated with Tongji University's Architectural Design Research Institute in Shanghai. Under this association, Fox & Fowle has designed the Jahwa and Shenhua towers in Shanghai, as well as the International Commercial Bank of China, all under construction and scheduled for completion by 1998. The chief difference in practice at these institutes is that "their mode is to learn, not to make money," Fowle observes, so the work may take twice as long as in the United States. Yet, in the past three years, Fowle notes, the institutes have almost fully embraced computer-aided design, and their

John Portman & Associates
Shanghai

Typical office expenditure	Estimated cost (U.S. dollars)
Office opened	1993
Office rent	$160,000 (per year) (office space and 3 apartments)
Registration fees	N/A
Office furnishings	(see below)
Office equipment	$40,000 (includes furnishings)
Local staff	$10,000 per person (per year)

The Nadel Partnership
Hong Kong

Typical office expenditure	Estimated cost (U.S. dollars)
Office opened	1992
Office rent	$54,000 (per year) (83 square meters)
Registration fees	$10,000
Office furnishings	$15,000 (ongoing)
Office equipment	$12,000
Local staff (secretary)	$10,000 (per year)

ABOVE: A cost accounting of four firms' start-up expenses in China shows high rents and registration fees for architects practicing on the mainland. Costs for The Nadel Partnership's office in Hong Kong reflect expenses roughly equal to new branch offices in Shanghai.

high-rise engineering expertise is vastly improved, though standard structural design remains "antiquated."

Like Fox & Fowle, John Portman & Associates, probably the first American firm to enter China for the long haul, also has a long association with a state-run design institute, the Zhejiang Building Design and Research Institute in Hangzhou.

As is common for American firms, JP&A may only execute the project through design development. Unlike standard U.S. practice, design development drawings serve as the basis for all mechanical, structural, and electrical permits and so must be comprehensive. Beyond these documents, JP&A tries to ensure quality control throughout the design and construction process at arm's length.

Codes are checked back and forth between Atlanta and Shanghai. The firm has translated most Chinese codes into English—10 percent of the Atlanta staff is fluent in Chinese dialects—and the office even uses a Chinese version of WordPerfect. Even so, Snipes asserts, "I can't overemphasize the need to have quality people on the ground in Shanghai."

Branch office mentality

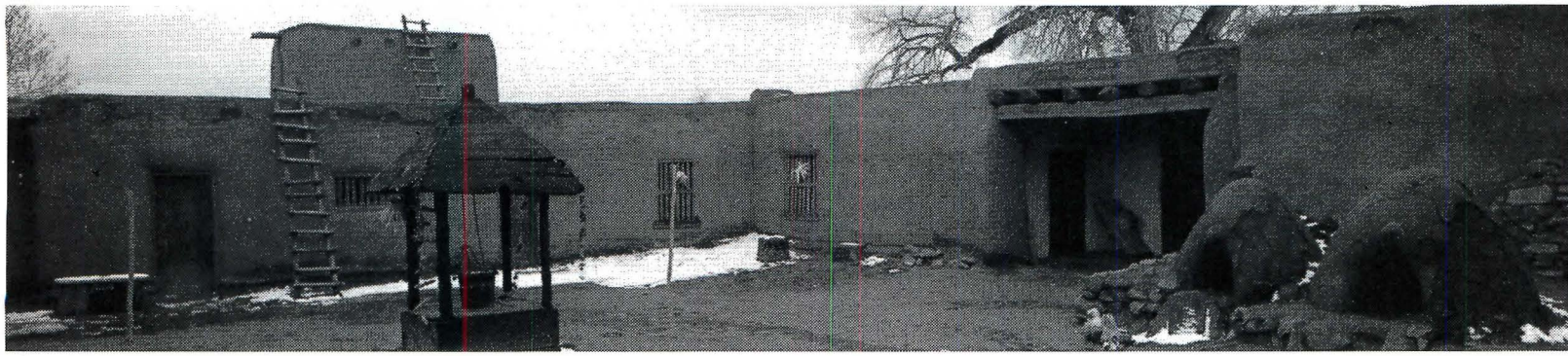
Yet, having staff in China doesn't necessitate having an office there, contends William Karst, principal of Callison Architecture in Seattle, which has worked in Shanghai since August 1993 and currently has seven projects under construction in China. On any given day, 40 of Callison's 320 employees are traveling to job sites and locations, keeping in touch with headquarters by virtue of a proprietary wide-area computer network. "Our project teams are never insulated from the client by a branch office," Karst assures.

Clients want personal access to the project principals, but usually not the same principals throughout the project, Karst points out. For instance, five of Callison's 13 principals have worked on the Xu Jia Hui project in Shanghai through design development. In the construction documents phase, those principals were replaced in China by two full-time technical staff. Such a degree of service would not have been possible with a branch operation, contends Karst, who believes such offices lead to a profit-center mentality, with staff worrying more about demonstrating cost benefits than providing excellent service to clients.

Pooling projects

HOK's Shanghai post, on the other hand, is less a branch office than a branch of its branches, according to Chiow. Five of HOK's U.S. offices pool a percentage of profits generated from Chinese projects into a general operating fund to support the Shanghai office. The bulk of the firm's work is in Shanghai, Shenzhen, and Beijing. Like Callison, HOK sends a team of designers to work with the client for a week. The designers continue most of their work in the United States, whereafter Chiow serves as liaison, an arrangement he insists doesn't compromise client relations. "The Chinese feel we are pioneers," Chiow explains. "Shanghai has worked quite well for us, but we're learning as we go."—*Bradford McKee*

IT'S DISCOVERING WHAT THIS COUNTRY WAS LIKE BEFORE IT WAS CALLED AMERICA.



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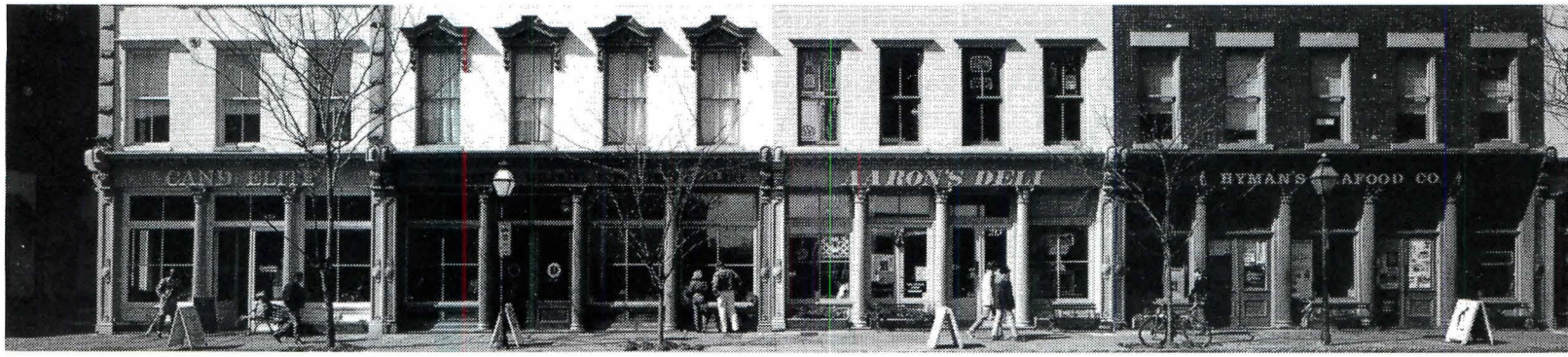

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Outback Refinement

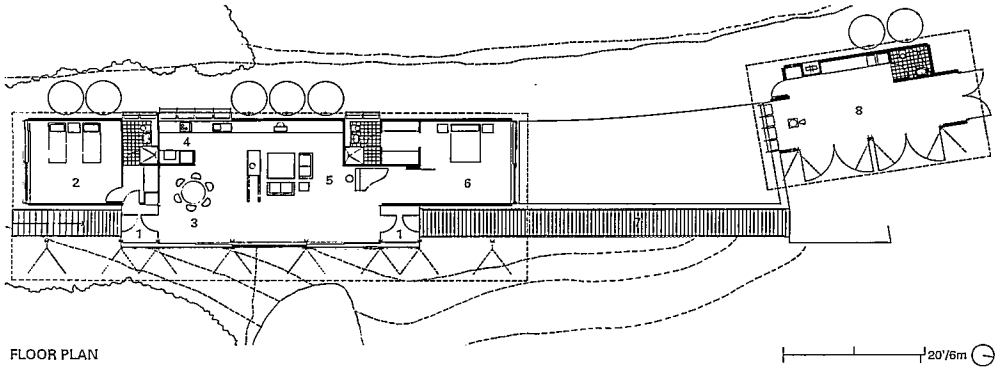
Architect Glenn Murcutt's latest house is detailed with a tough elegance suited to its site.

ABOVE RIGHT: The house is approached from a steel-supported bridge that follows the path of an existing bush trail.

Nothing quite expresses the relationship of Australians to their country so well as the veranda. This shelter simultaneously separates and links a building to landscape by imposing an open interval between the man-made object and nature. Glenn Murcutt's latest house in Mt. Wilson, a village in the Blue Mountains 80 miles west of Sydney, achieves this transition in much the same way as a veranda. Built over a walking trail in the bush, the house overlooks an escarpment marking the great dividing range behind Sydney.

The clients of the house are a retired economics professor and his wife, a gifted potter. The professor requested a house that was both simple to construct yet rigorously detailed to keep local workmen employed in its construction. He asked Murcutt for a house as reliable as a Mercedes-Benz car and engineered with the same finesse. His wife requested a shady bush retreat with a pottery studio, where she could practice her hobby of regenerating native plants.

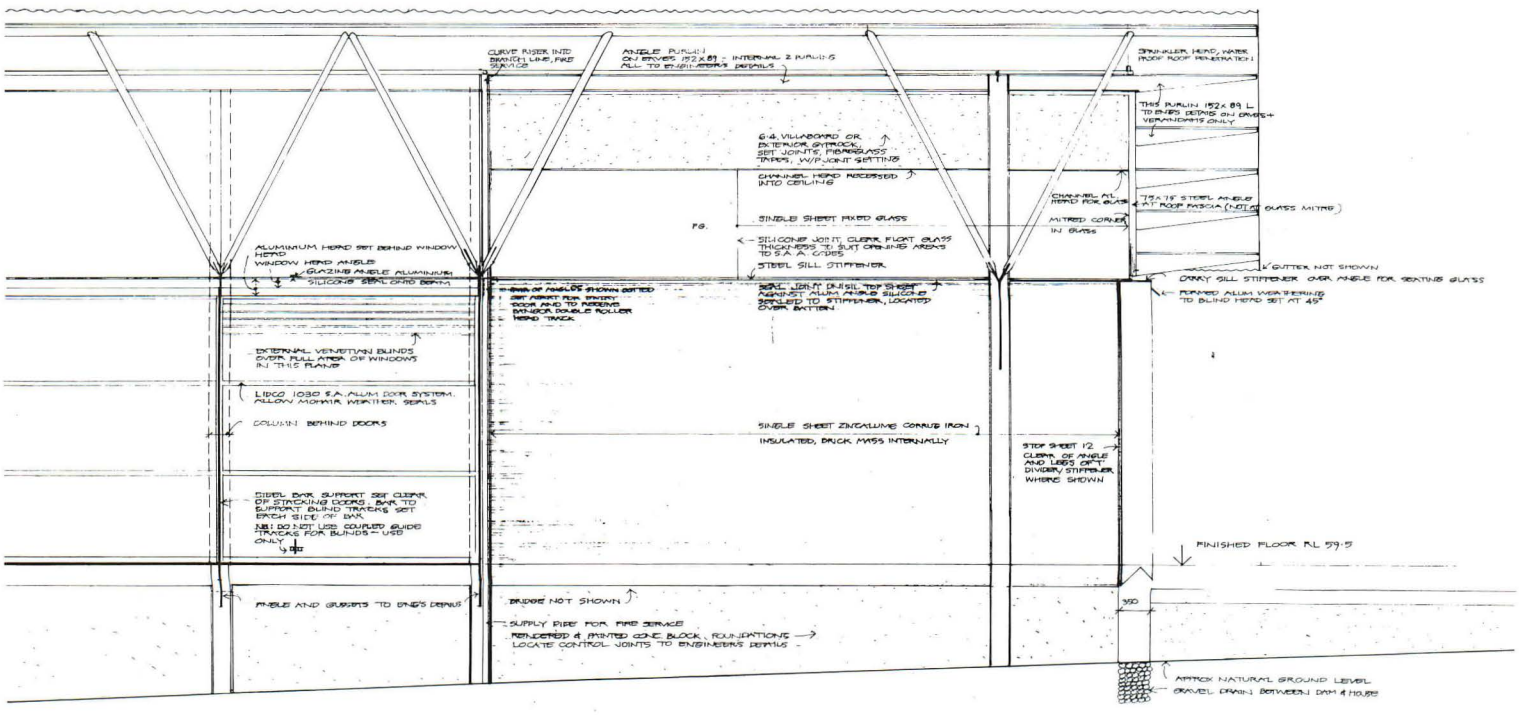
As with so many of Murcutt's houses, this 1,700-square-foot building is a long, thin pavilion, measuring 21 feet wide by 81 feet long with a low, protective back and a front open to the nearby cliff. It is covered by a lean-to roof of unframed corrugated steel sheets that project forward 7 feet over the main block of the house. The roof is supported on steel-pipe V-struts bolted at their bases to



FLOOR PLAN

1 ENTRANCE
2 BEDROOM
3 DINING ROOM
4 KITCHEN
5 LIVING ROOM
6 MASTER BEDROOM
7 WALKWAY/BRIDGE
8 STUDIO/GUEST HOUSE

SITE PLAN: Pottery studio/garage pavilion (right) doubles as guest house. Main house has central open living and dining area, master bedroom to the north (right), and a guest bedroom served by its own bathroom (left).
ABOVE: Main east-facing facade can be opened to the surrounding bush by drawing back sliding aluminum-framed windows.
FACING PAGE, TOP: East facade can be closed off with electrically operated aluminum louvers that exclude insects and break down the strong sunlight.
FACING PAGE, ELEVATION: V-shaped struts supporting corrugated roof are bolted to aluminum window frames on east-facing elevation.


CURVE RISER INTO SPRINKLER LINES, FIRE SERVICE
ANGLE PURLIN ON EAVES 152 x 89 - INTERMAL Z PURLINS ALL TO ENGINEERS DETAILS
SPRINKLER HEAD, WATER PROOF ROOF PENETRATION
THIS PURLIN 152 x 89 L TO ENDS DETAILS ON GABLE + VERANDAHS ONLY
6.4 VILLABOARD OR EXTERIOR GYPROCK, SET JOINTS, FIBREGLASS TAPED, W/P JOINT SEALING
CHANNEL HEAD RECESSED INTO CEILING
CHANNEL AL HEAD FOR GLASS
75 x 75 STEEL ANGLE AT ROOF FASCIA (NOT AT GLASS MITRE)
SINGLE SHEET FIXED GLASS
FG.
MITRED CORNER IN GLASS
SILICONE JOINT, CLEAR FLOAT GLASS THICKNESS TO SUIT OPENING AREAS TO S.A. CODES
STEEL SILL STIFFENER
GUTTER NOT SHOWN
DRIPPY SILL STIFFENER OVER ANGLE FOR SEATING GLASS
REMOVED ALUM WEATHERING TO BLIND HEAD SET AT 45°
ALUMINUM HEAD SET BEHIND WINDOW HEAD
WINDOW HEAD ANGLE
GLAZING ANGLE ALUMINIUM
SILICONE SEAL OVER BEAM
EXTERNAL VENETIAN BLINDS OVER FULL AREA OF WINDOWS IN THIS PLANE
LIDCO 1080 S.A. ALUM DOOR SYSTEM. ALLOW MOHAIR WEATHER SEALS
COLUMN BEHIND DOORS
SINGLE SHEET ZINCALUME CORRUG IRON
INSULATED, BRICK MASS INTERNALLY
STOP SHEET 12 CLEAR OF ANGLE AND LEGS OF DIVIDER, STIFFENER WHERE SHOWN
STEEL BAR SUPPORT SET CLEAR OF STACKING DOORS. BAR TO SUPPORT BLIND TRACKS SET EACH SIDE OF BAR.
NB! DO NOT USE COUPLED GLIDE TRACKS FOR BLINDS - USE ONLY
FINISHED FLOOR RL 579.5
350
ANGLE AND BRACKETS TO ENG'S DETAILS
BRIDGE NOT SHOWN
SUPPLY PIPE FOR FIRE SERVICE
REINFORCED & PAINTED CONC. BLOCK FOUNDATIONS
LOCATE CONTROL JOINTS TO ENGINEERS DETAILS
APPROX NATURAL GROUND LEVEL
GRAVEL DRAIN BETWEEN DAM & HOUSE

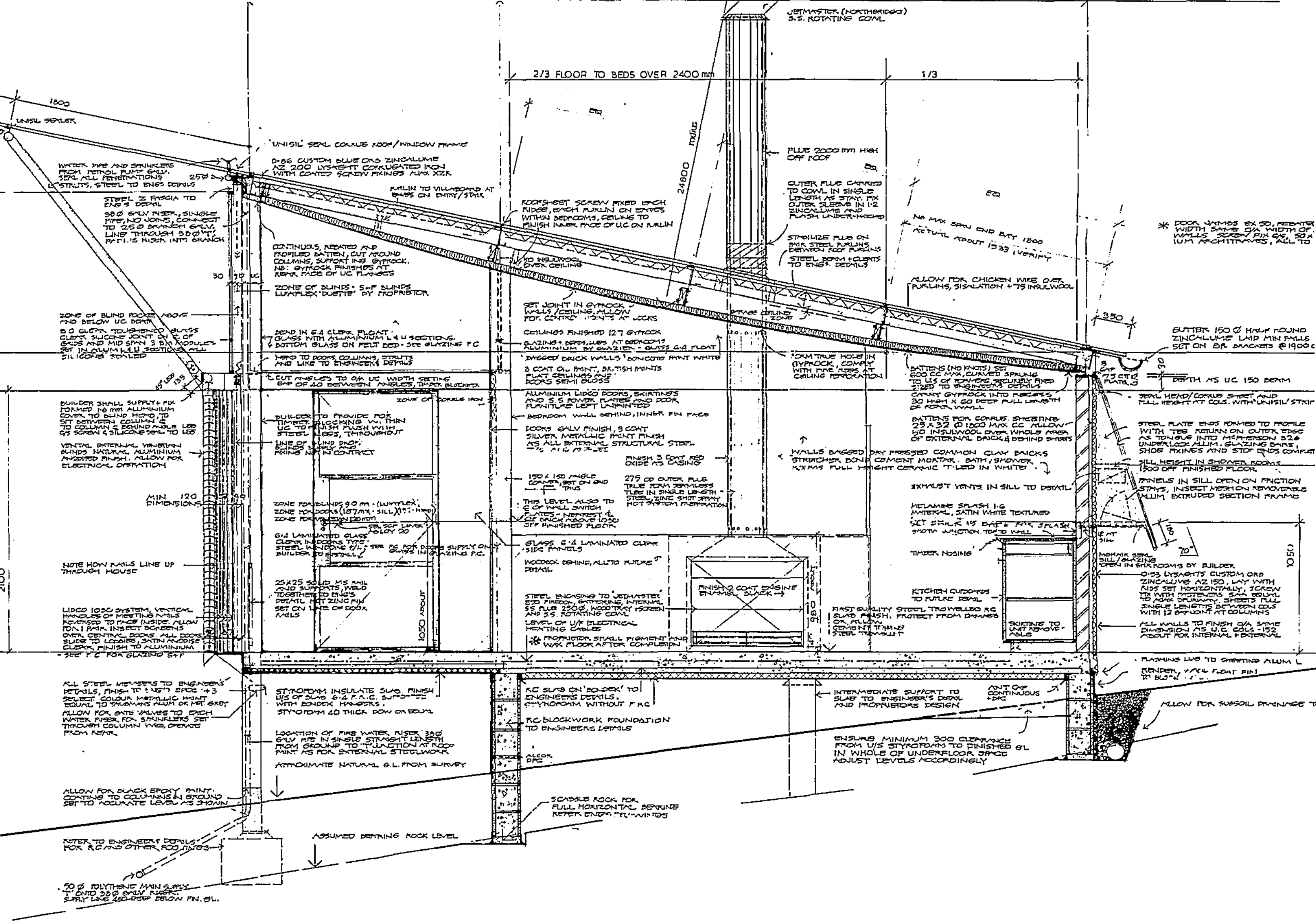
the aluminum window frames. At their tops, the struts are welded to a T-pipe connector inserted into the beams. The roof's underside is gently curved in a convex bow of plasterboard that models the ambient daylight.

The Mt. Wilson house illustrates Murcutt's development of an essentially linear typology where the chief variable is the section and roof profile. From the Glenorie house (1983) and Done house (1990), in Mosman, a suburb of Sydney, each with segmental barrel-vaulted roofs, to the South Coast vacation house (1985) at Binji Point, whose wavelike roof rears up then drops suddenly like a breaker at the surf, the architectural character of each Murcutt house is defined by its roof section, reflecting the architect's response to characteristics of the site. At Mt. Wilson, the ceiling pushes the inside space outward into the bush.

The clients wanted a shady interior, so the profile has a convex underbelly that pushes down the interior spine of the house, throwing the space out along the edges. In the early morning, broken sunlight reaches inside and spreads its striated bands of light and dark across the swollen undersurface of the ceiling. The plan of the house reiterates this linear motif with a simple elegance.

Murcutt placed bedrooms at opposite ends of the building with a living area between. Two bathrooms adjoin the main bedroom and guest room and further isolate them, leaving the center free for the kitchen, which is partly separated from the living room by a freestanding steel fireplace whose base incorporates a wood storage space.

The house is approached by a little-used mill road. Beside the road is a smaller, second pavilion measuring 31.2 feet long by 15 feet wide, which serves as a combined garage, pottery studio, and guest house. It is at this point that Murcutt incorporates the bush trail into the scheme, preserving its alignment in the interior spine of the house. At the south end of the house, steps lead



from the dining room to the nearby escarpment. The structure is supported on a foundation wall of concrete block, which is oriented so that the hollows within the units provide drainage every third block. Thus, Murcutt avoided disturbing the natural flow of groundwater, since eucalyptus is sensitive to changes in the water table.

Murcutt designed the front of the house to vary its exposure, from a completely open veranda with no physical barrier between the interior and the landscape, to the use of electrically operated aluminum blinds, which can be adjusted to give a precise setting of screening and light.

On a cold day, horizontal sliding glass doors and screens can be drawn to seal off the inside, which is warmed by the fireplace. A system of heating coils cast into the concrete floor slab warms the floor. Overhanging sheets of 0.86-millimeter-thick, zinc-coated corrugated steel completely shutter the house, and sprinklers mounted on the roof protect it from bush fires.

The feeling inside is of elegant austerity, with a waxed, steel-troweled-cement finish on the concrete floor. This minimalism is emphasized by color, which is limited to white inside. All external steel surfaces are silver in keeping with the silvery foliage of the surrounding eucalyptus trees. A row of five corrugated iron water tanks, each storing 35,000 liters at the back of the house, provide an independent water supply.

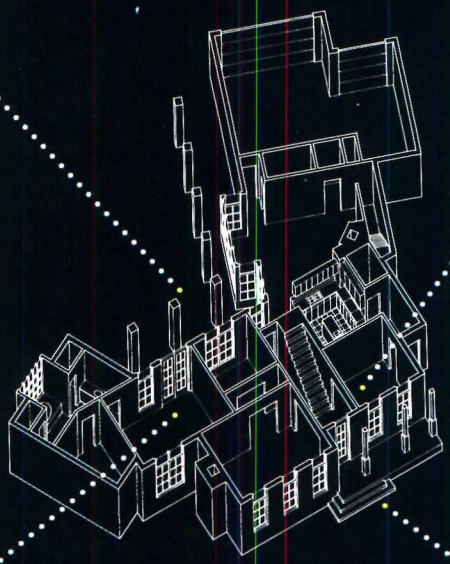
The Australian bush is eerie and melancholy, with a certain hard elegance. This character has made it difficult for Europeans to get close to it, even after 200 years of settlement. Murcutt's new house at Mt. Wilson does just that, introducing some of nature's forbidding toughness inside. In turn, the architecture is invested with a delicate hardness and economy of means.—*Philip Drew*

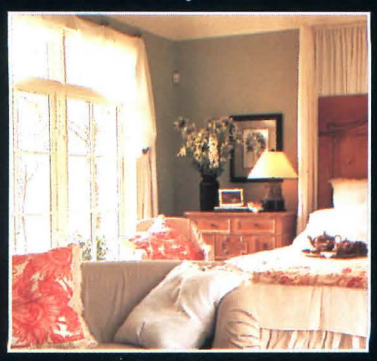
Philip Drew is author of Leaves of Iron, *a book on the work of Glenn Murcutt.*

FACING PAGE, LEFT: Living room is separated from kitchen by a steel-clad fireplace with a stainless steel flue that supplements radiant floor heating.
FACING PAGE, RIGHT: Curved surface of plasterboard ceiling reflects daylight entering through clerestories.
SECTION: Floor slab is supported by concrete foundation designed with vertical openings to maintain existing drainage patterns over sloped site.

MT. WILSON HOUSE
MT. WILSON, AUSTRALIA

ARCHITECT: Glenn Murcutt
ENGINEER: James Taylor & Associates
GENERAL CONTRACTOR: A.J. & P.G. Tromp
COST: $160 per square foot
PHOTOGRAPHER: Anthony Browell





Global Networks

As American architects increasingly undertake projects abroad, the most savvy are turning to new on-line technologies such as digital and wide-area networks and services such as the Internet. Their reasoning is straightforward: Time is money.

Managing a foreign project from the home office presents stiff challenges to practitioners: long and expensive air flights to visit sites, clients, consultants, and associate partners; unreliable delivery service; and difficult communication over multiple time zones, to name a few. Yet the demands of personalized attention, accuracy, and quick turnaround that have become the norm for national clients hold true for international work as well.

To meet these global requirements, computer-savvy practitioners have begun to capitalize on burgeoning electronic networks. With such technology, a few are even trying to take advantage of the time differences inherent in foreign work, offering clients around-the-clock attention as geographically dispersed employees and consultants work on projects at all hours of the day and night.

Architects have a variety of electronic services from which to choose, including the freewheeling domain of Internet, proprietary companies such as CompuServe and America Online, and wide-area networks (WANs) established for an individual firm. Linkages can be made through regular phone lines (Plain Old Telephone Service, or POTS), an integrated services digital network (ISDN), dedicated digital circuits known as T1, and even more advanced technologies such as frame relay and asynchronous transfer mode (ATM), although these last two are too expensive and complex for the average-sized firm to consider. The speed, dependability, types of information that can be transmitted, and costs of setup and usage vary widely, depending on which service and type of connection is selected. They require a firm to undertake thorough research of its communication needs before embarking on a particular route.

To renovate a 3,500-square-foot bistro within the Puerta Platas International Airport in the Dominican Republic, the Westbury, New York, firm of Boccard Suddell accessed the world's largest network, the Internet, through America Online. The connection was made through regular telephone lines. "Only two site visits were necessary for the entire project—one for existing conditions and the other for the opening ceremonies," explains project architect Paul Doherty. The design team chose to communicate through an electronic network

Global Networks at a Glance

Technology/Service	Description	Pros	Cons
Plain Old Telephone Service (POTS)	Point-to-point analog Up to 28.8 Kb/s, modem-to-modem	Universal connections Familiar equipment	High usage charges Slow Unreliable and inconvenient for overseas data
Integrated Services Digital Network (ISDN)	Point-to-point digital Up to 128 Kb/s via special modems	Moderately fast Pay for connection only as needed	High setup charges No universal connections Need special equipment at both ends of transmission
T1	Dedicated digital circuit Up to 1.5 Mb/s via permanent connection between locations	Very fast Good for large volume of transmissions	High setup and monthly charges Pay the same for one message as for 1,000
Frame Relay and Asynchronous Transfer Mode (ATM)	Types of variable-rate digital circuits Up to 45 Mb/s	Ultrafast Flexible services	Very high up-front cost for equipment Neither technology is fully standardized
Wide-Area Network (WAN)	Typically digital, dial-up (ISDN), or dedicated connections (T1) that link local area networks together	Private network Choice of connections depends on volume of communications Once set up, automatically available	Difficult to set up overseas links High cost of equipment, usage, or both, depending on technology chosen
Internet	Typically, dial-up access to anonymous high-speed networks	Flat-rate service Moderate speed Universal connections	E-mail generally limited to text Unreliable and inconvenient for overseas data
CompuServe	Widespread local access to the oldest major on-line service Significant commercial presence overseas	Any file type Easy to use Internet speed for the price of a local call	Per-minute access charges at both ends of transmission

primarily because of time pressures—the bistro renovation project was to be designed and built within six weeks—and a restrictive budget that limited site visits.

Throughout the project, the New York architects communicated with the owner in the Dominican Republic through chat rooms, a temporary channel set up on the Internet for discussions. Through a fax, electronic mail, or a phone call, two or more parties arrange a specific time for the discussion and a code name for the room. Each participant dials up a local telephone number to access the network and proceeds to the agreed-upon location. The conferees begin conversing by typing lines of text, waiting for the other to respond. Each party can edit whatever is in the text; therefore, two or more distant speakers can hammer out the phrasing of a specification or the wording of contract language right on screen.

Enamored with the possibilities that global networks have to offer, Boccard Suddell has also experimented with a 24-hour-a-day construction document service consisting of the firm's New York office; a colleague in Japan who was educated in the United States and, therefore, familiar with U.S. standards; and the Internet. Doherty first couriers the plans to the Japanese associate. A day later he transmits via Internet's electronic mail an outline specification. Working on the other side of the globe, the foreign architect begins to flush out the document while Doherty sleeps. The specs are then returned to New York in the morning, Eastern Time, for Doherty to develop further. "This process continues until the specification is complete," Doherty explains.

The advantage of communicating through Internet is its price. Monthly charges can be as low as $20, and a local call to this system can take the practitioner virtually anywhere in the world. Proprietary services such as CompuServe and America Online are now providing their own gateways to Internet, although the price is a little higher. Doherty cautions practitioners working abroad to check with their local Internet provider regarding additional access charges levied by another country on Internet. Such fees can jack up the price significantly.

The Internet is not without its drawbacks: Many, for example, worry about its reliability. "With Internet, you are taking chances," explains Doherty. "The data doesn't necessarily travel the shortest distance. A message from New York to New Jersey may first go through a research site in Greenland and then an educational site in Tokyo." And unless you are connected via ISDN or a more sophisticated technology, transmission of CAD and video data is quite slow, if not impossible, over the Internet.

Some firms have opted to communicate abroad through CompuServe or America Online, which offer more direct and more secure routing of electronic information. "Unlike Internet, which is an amalgamation of independent services, CompuServe is one organization with all the same protocols," explains Associate Partner Tomas Hernandez of Kohn Pedersen Fox (KPF) in New York. "There is a lot of hype about the Internet. But it is nowhere as clean as CompuServe or America Online." In addition, the proprietary systems can more readily transfer all types of files, including CAD drawings. While

users pay a minimal, flat rate on Internet, they are charged by the minute on the proprietary services.

During the schematic design phase of the Nanjing Xi Lu mixed-use project in Shanghai, China, KPF chose to communicate to its client, the Hang Lung Development Company, and its associate architect, Frank C.Y. Feng Architects & Associates, both of Hong Kong, through CompuServe. Notes senior designer James von Klemperer, "We were under tremendous time pressure to get city approval. We had so much information being transferred across the Pacific, it would have taken all night to modem the drawings over phone lines and two and one-half days to express mail a disk." The team could not transmit via fax because the designers had to validate the orientation of their project in relationship to a point in the city known as ground zero, following Shanghai planning requirements, and this could not be accurately measured from a facsimile.

San Francisco-based Backen Arrigoni & Ross (BA&R) is experimenting with another form of information transfer, videoconferencing, in designing a senior living project near Tokyo. Before investing in a system of their own, the architects tested the quality of such communication by renting space at a videoconferencing center in San Francisco, while the Tokyo client reserved space in a comparable facility in Japan. The architect and client discussed the palette of materials, displaying examples through the camera to test out the resolution of the system. A subsequent trip to Japan allowed the clients to confirm that they liked what they saw.

Subsequently, architect and client have begun to set up their own system, which consists of specialized videoconferencing hardware and software connected to a Macintosh computer on either side of the Pacific. The two systems are connected via ISDN lines, which allow various types of information—voice, data, video—to be sent simultaneously. An architect in San Francisco can speak to a client in Tokyo while both are looking at the same document on screen.

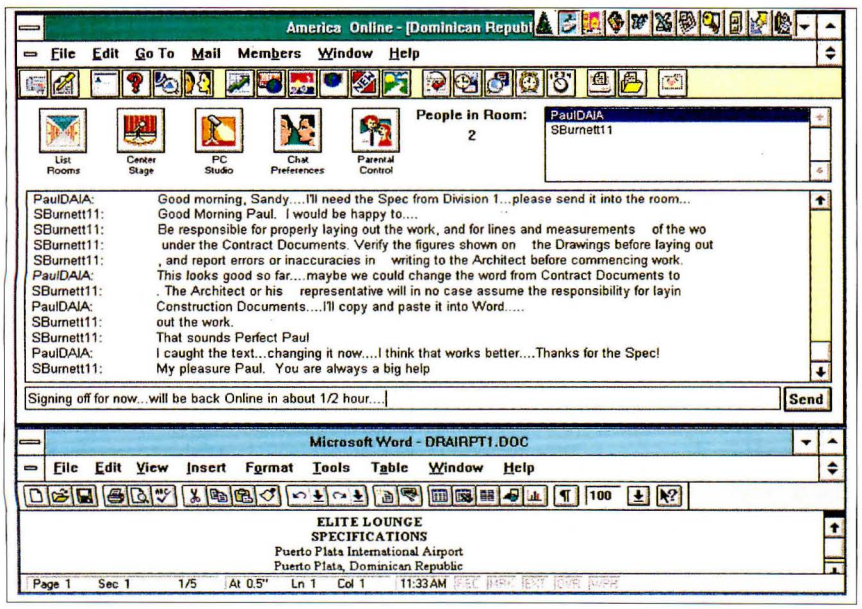
Cursor tools allow the two conferees to point out issues of concern on the electronic drawing, and corrections can be made in real time for both to see. In addition, a small video camera atop their respective computers captures the participant's moving image, which is transmitted to the other monitor as an inset on the screen. The architect can therefore display materials, such as carpet samples, door handles, or fabric swatches. Although the sharpness of the image is very good, observes BA&R Vice President Patrick Mays, care must be taken to properly calibrate color rendition between transmitting and receiving systems so that the hues remain true.

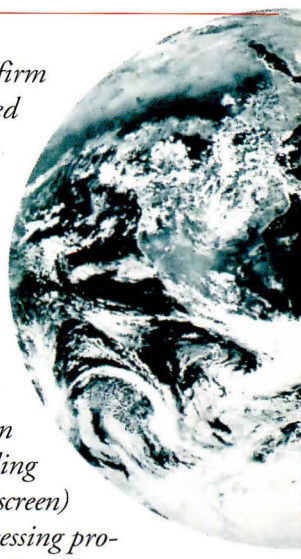
BA&R Vice President John Lee doesn't believe videoconferencing will replace long-distance travel, especially to Asia where face-to-face interaction is still important. Lee does think it will enhance communications on a day-to-day basis. When BA&R works on a foreign project, architects travel as frequently as once every six weeks to present their designs or material selections to the client. In waiting so long to get feedback, the architects run the risk of finding out that their client did not like what developed in the last six weeks. "With video imaging," Lee explains, "we can discuss these items and get client responses more frequently to help make the process more fluid." The design or materials would still be presented in person every six weeks or so, but now, explains Lee, "it becomes a process of confirmation rather than an introduction to design ideas."

Architects as a whole have been slow to hook into the electronic web of communications. Many firms are just now signing on to proprietary systems and the Internet, or establishing their own dedicated networks between offices, and exploring how to use them most effectively for projects here and abroad. At the same time, new and improved services are being offered by telecommunication companies at great speed.

Some architects remain skeptical about the benefits of the virtual practice, arguing that the best communication takes place day-to-day between people working side by side. Others contend that some projects, especially those that are large and include many consultants from distant lands, would never get off the ground without a network. The only way to find out how the information superhighway will help your international practice is to hop on and take a ride.—*Nancy B. Solomon*

Internet





New York-based architecture firm Boccard Suddell communicated with its client in the Dominican Republic through chat rooms (left) on the Internet via America Online. The screen reveals who is in the room; text of the conversation; participants' comments as they are typed in; and a copy of the specification for the renovation project under discussion. Wording developed in conversation (top of screen) can be pasted into the wordprocessing program (bottom). In typical on-line discussions, lines of text from various participants overlap, giving new meaning to the phrase "reading between the lines."

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Tilt-Up Concrete On the Rise

Architects are rediscovering the cost-saving benefits of on-site concrete construction.

ABOVE RIGHT: Tilt-up walls of the Sherman Heights Community Center in San Diego, designed by architect Rob Wellington Quigley, are temporarily supported by steel braces.

Tilt-up construction is as straightforward as its name suggests: Concrete wall panels are poured horizontally onto a floor slab or a casting bed, then moved upright into place. Despite its apparent simplicity, tilt-up construction has been a relatively obscure building technique until recently. It was pioneered in the early 1900s by California visionaries such as Irving Gill and R.M. Schindler, whose own 1922 house in Los Angeles was constructed of concrete panels separated by vertical strips of glass. Tilt-up virtually disappeared until builders of low-cost warehouses, suburban office buildings, and shopping centers rediscovered it in the 1960s. Over the past few years, a new crop of resourceful architects in the West and Southwest have again started paying serious attention to the technology. By minimizing formwork and eliminating the need for transportation to the site, tilt-up offers huge savings in construction time and costs.

Most tilt-up buildings are loadbearing to increase structural efficiency. After being poured on the ground, panels are lifted with cranes that grab hold of steel anchors cast into the slabs. Once in place, telescoping steel braces support the panels until the walls are secured to footings and roof decking is installed.

The size of the building's floor plate dictates the size of tilt-up panels; otherwise, the construction method offers architects great flexibility. Details such as cornices, pilasters, and spires can be cast in the panels. Once erected, tilt-up walls can be repositioned and even disassembled and moved to another site.

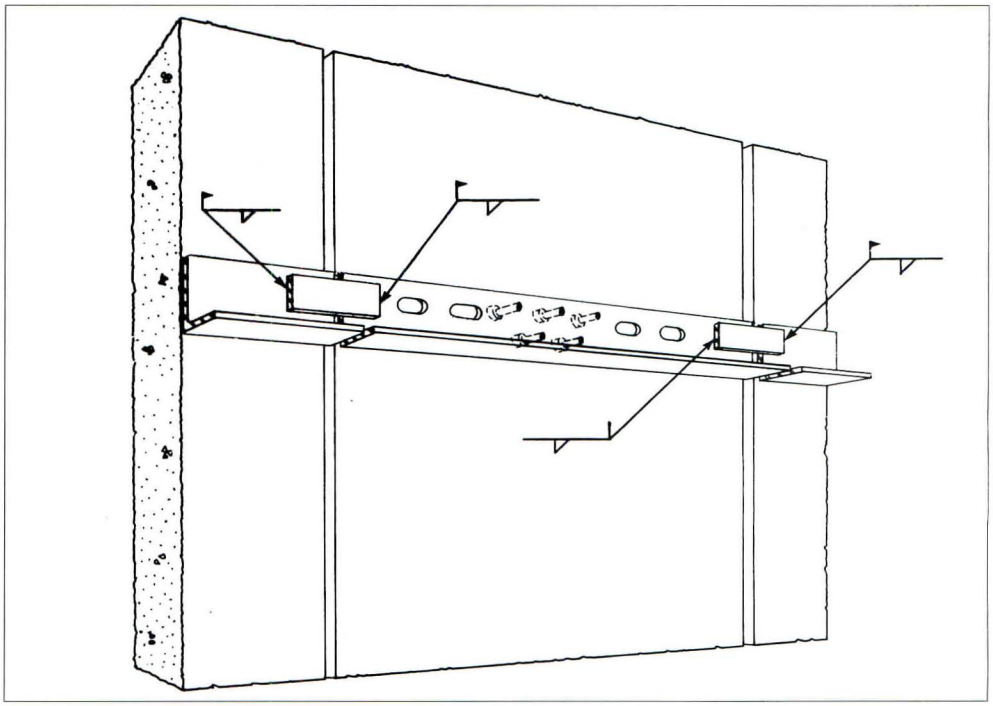
Publications outlining specific tilt-up details are available from a number of sources, including the Portland Cement Association (PCA), the American Concrete Institute, and the Tilt-Up Concrete Association (TCA). PCA has created software called TILT to help engineers design tilt-up structures; another computer program is in development. TCA, meanwhile, has released a new set of guidelines on the temporary bracing of tilt-up panels. For more information, contact the Portland Cement Association at (708) 966-6200 or the Tilt-Up Concrete Association at (319) 895-6911.—*Raul A. Barreneche*

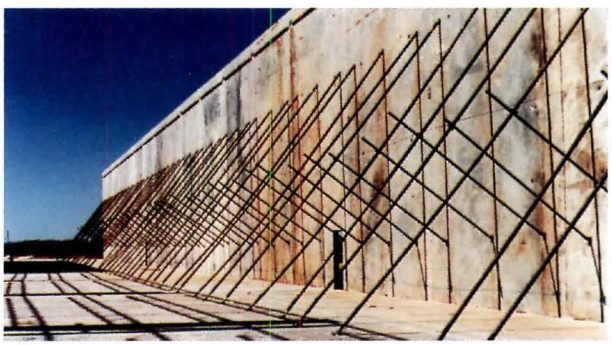
Tilt-up concrete construction has significant advantages over both precast and poured-in-place concrete. But there are important differences between tilt-up and other concrete construction methods that architects should understand when detailing panels.

Loadbearing tilt-up walls require both vertical and horizontal reinforcement (facing page, bottom right). Vertical rebars are typically inserted into the wall panel at 12- to 16-inch intervals; the amount of horizontal reinforcement, meanwhile, depends on the size and thickness of the panel. The Prestressed Concrete Institute recommends that horizontal rebars cover a minimum of 0.1 percent of the panel's cross-sectional area. That translates into 0.072 square inches of reinforcement per linear foot of concrete for a 20-foot-high by 6-inch-thick panel. Shear walls require additional reinforcement.

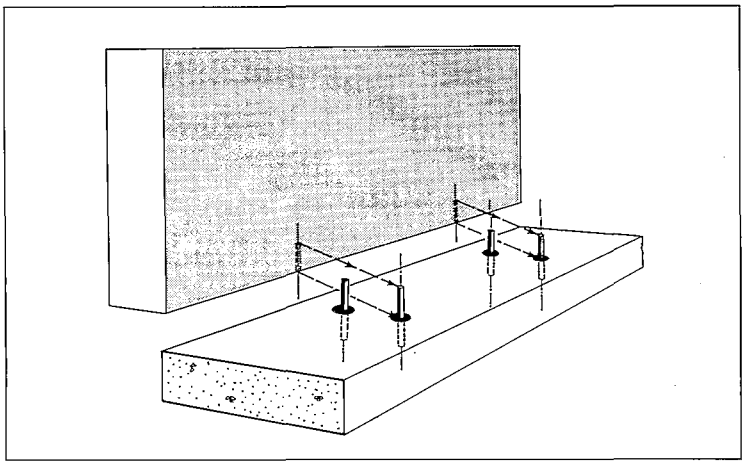
Temporary braces support the panels against surface winds until the roof structure is installed (this page, center). The placement of these braces must be planned carefully, since the anchors that hold them are cast into the panel while it's poured. Standard telescoping steel braces or site-constructed wood braces can be specified. Architects should consult the Tilt-Up Concrete Association's bracing guidelines for spacing dimensions and other calculations.

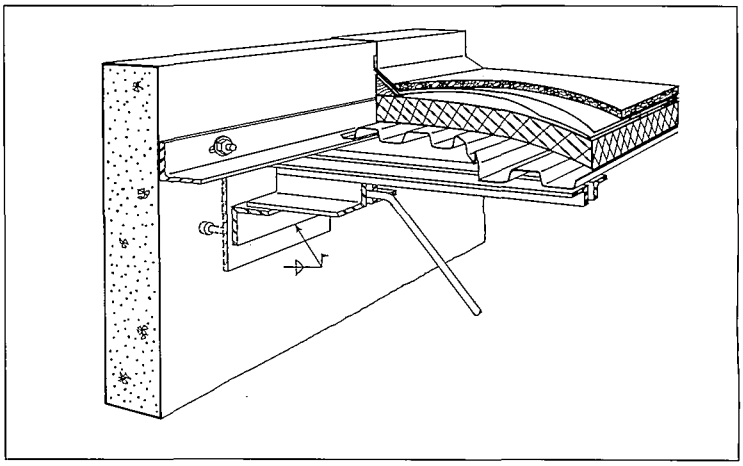
Once the panels are erected, a 2- to 4-foot gap is typically left between the wall panel and the concrete floor slab. After wall panels are fastened to their foundations with steel rods, concrete is poured in to fill the gap, covering bent reinforcing rods cast into the wall, as well as additional rebars inserted to connect the floor slab and the new surface (facing page, center left). The width of the gap depends on factors such as soil conditions and slope.

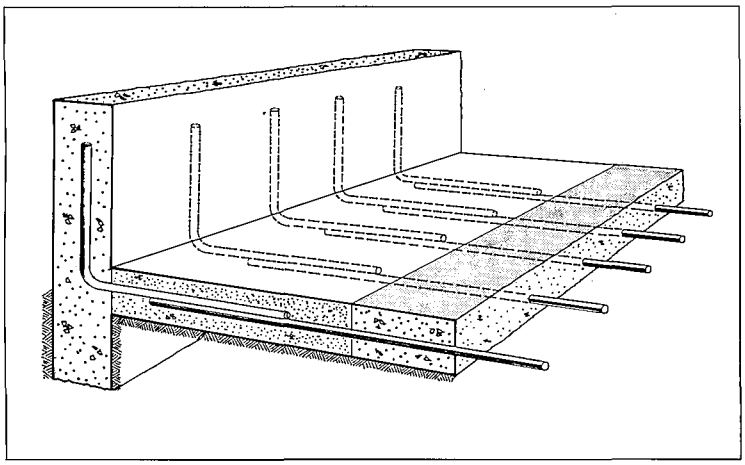


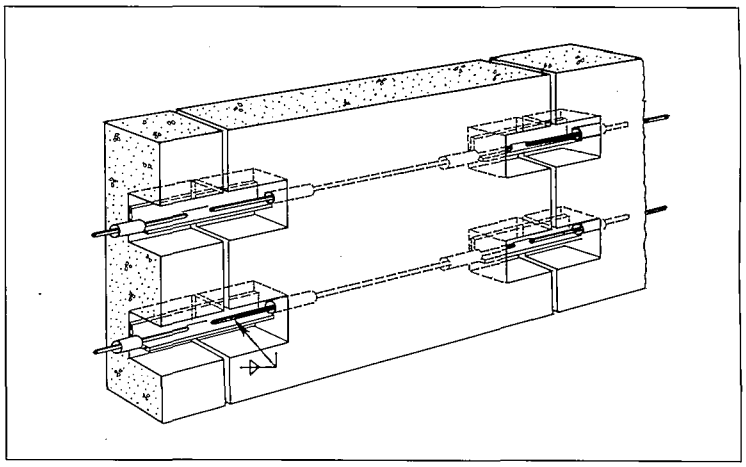


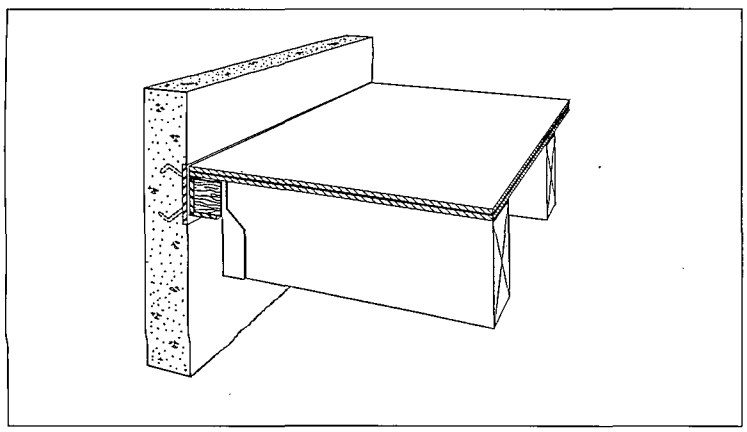
ABOVE: Steel chord angles fastened to wall panels support metal roof.
LEFT: Temporary bracing reinforces tilt-up panels against surface wind loads until roof structure is installed.
BOTTOM LEFT: Tilt-up concrete panels (right) performed well in the 1994 Northridge earthquake, even in cases where roof-wall connections failed.
FACING PAGE, TOP LEFT: Concrete walls are anchored to footings with steel rods inserted into predrilled holes.
FACING PAGE, TOP RIGHT: Tilt-up structures are typically fitted with metal deck roof system.
FACING PAGE, CENTER LEFT: Steel rods anchor tilt-up wall panel and floor slab.
FACING PAGE, CENTER RIGHT: Chord bars cast into concrete wall panels support wood-framed roof system.
FACING PAGE, BOTTOM LEFT: Wood roof joists can also be supported by ledger beams bolted to steel angles.
FACING PAGE, BOTTOM RIGHT: Typical tilt-up wall section reveals vertical reinforcing rods at center and horizontal rods toward outside face of wall.

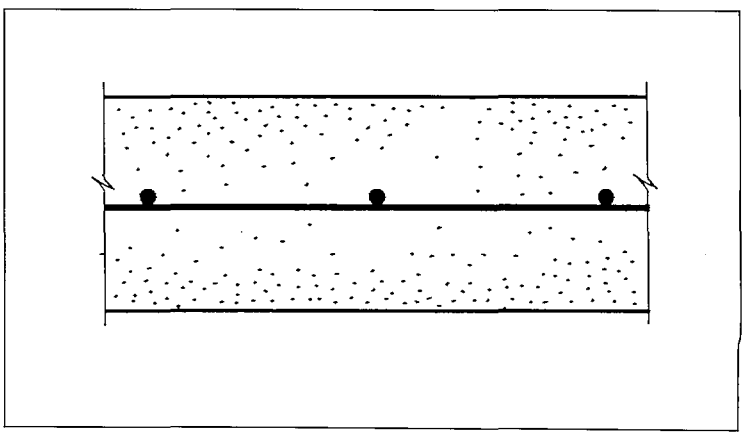












Tijuana River Visitors Center
Imperial Beach, California
Rob Wellington Quigley, Architect

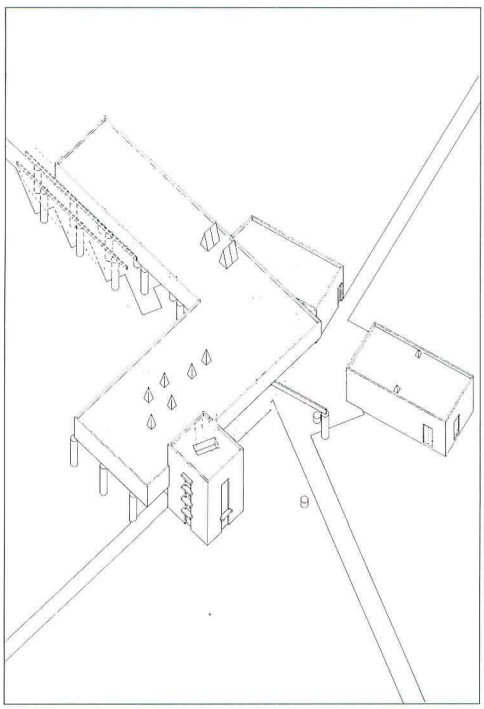
San Diego-based architect Rob Wellington Quigley is one of tilt-up concrete's biggest advocates. "In California," explains Quigley, "there are only two real vernacular construction techniques: wood framing and tilt-up concrete." Quigley has constructed tilt-up buildings throughout Southern California, ranging from churches and community centers to recreational buildings and office buildings.

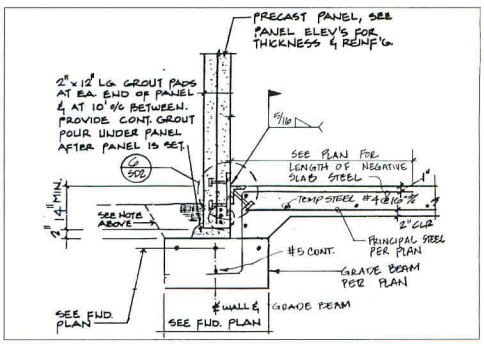
Quigley recently specified tilt-up concrete for an interpretive center in Imperial Beach, just across the U.S.-Mexico border from Tijuana. Sited on the coast with a view of the Tijuana River, the center comprises exhibit spaces, a double-height classroom building, administrative offices, and an auditorium. Given the harsh marine environment and heavy traffic in the building, Quigley specified tilt-up concrete to create a rugged, cost-effective building.

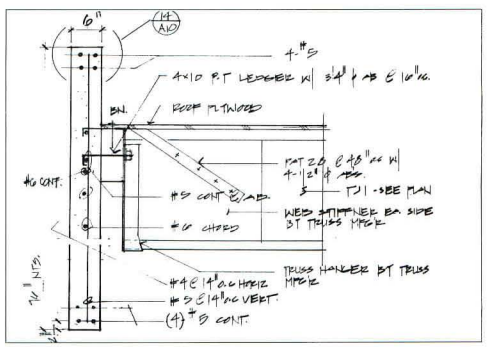
The architect constructed the center's main L-shaped building with 6-inch-thick tilt-up concrete panels, with concrete block on the auditorium exterior to impart scale to the building and create a foil for the plain surfaces of the tilt-up walls. The classroom building, topped by a sawtooth skylight, is also constructed of tilt-up walls; the volume containing rest rooms, meanwhile, is built of concrete block.

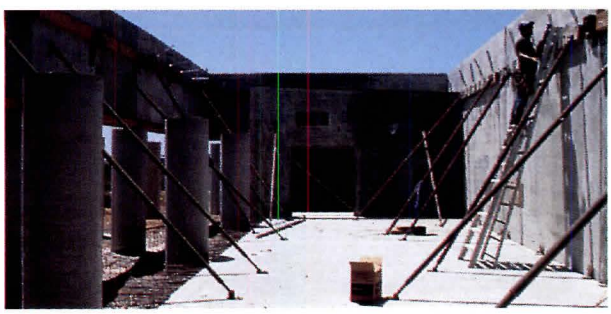
The 6-inch wall thickness is a standard dimension in tilt-up construction, which results from using 2 by 6 plywood strips as formwork. "Using standard lumber dimensions keeps costs down," explains Quigley.

During construction of corner tilt-up panels, 2-inch-square steel plates were imbedded into the concrete. The plates created a surface to which L-shaped, 1/2-inch steel channels were welded, to join the panels at the corner. To join the wood-framed roof to the tilt-up structure, Quigley bolted 4 by 10 wood ledger beams to the wall.





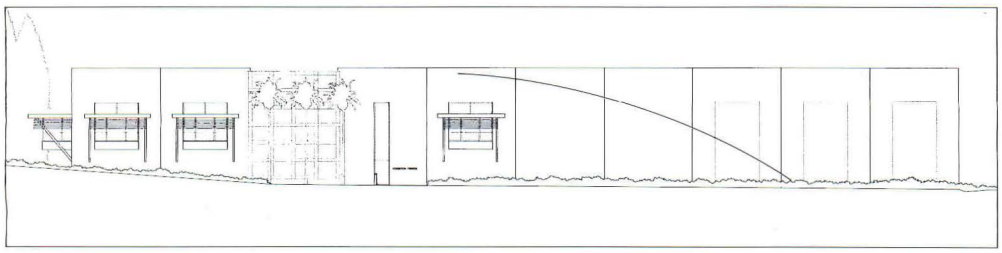


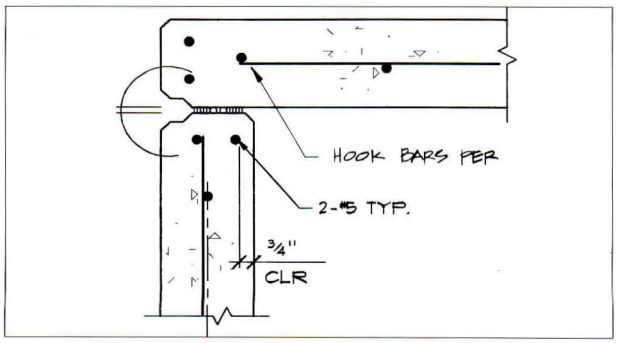


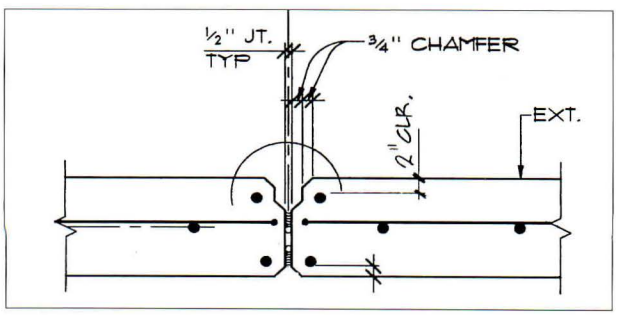
AXONOMETRIC: Visitors center comprises exhibit spaces (left), classroom crowned by peaked skylight (foreground, center), and rest rooms (right).
DETAIL, TOP RIGHT: Tilt-up concrete walls are joined at corners with steel angles welded to plates cast into the panels.
DETAIL, ABOVE: Wood-framed roof system is anchored to tilt-up wall with 4 by 10 wood ledger beams.
ABOVE LEFT: Peaked skylight distinguishes top of tilt-up classroom.
BELOW LEFT: Temporary braces support tilt-up walls during construction.

Foreston Trends Headquarters
San Diego, California
Rob Wellington Quigley, Architect

DAVID HEWITT / ANNE GARRISON







TOP: Wood-framed office bays at warehouse corner cantilever out from tilt-up concrete walls.
ELEVATION, ABOVE: Warehouse facade is composed of individual 38-foot by 24-foot tilt-up panels.
DETAIL, RIGHT: Horizontal section through corner panels reveals location of reinforcing bars.
DETAIL, BELOW RIGHT: Chamfered edges of tilt-up wall panels are joined with a flexible silicone sealant.

In designing a 110,000-square-foot warehouse, office, and distribution facility in San Diego, Rob Wellington Quigley selected tilt-up concrete construction for its low cost. According to project architect Guillermo Tomaszewski, the cost of construction was roughly $25 per square foot, which is even cheaper than an off-the-shelf, metal-clad warehouse structure. "Tilt-up concrete also allowed us to achieve the height and clear span we wanted very efficiently," adds Tomaszewski.

The 38-foot-high by 24-foot-wide panels were all cast on the warehouse floor. Because the floor slab covered such a large area, the wall panels could be poured without building casting beds or stacking units up atop each other; such efficiency in construction also resulted in a quick construction time of under eight months.

After the panels were tilted into position with cranes, the joints between the panels were sealed and the tops of the units tied together with steel plates. Quigley chamfered the panel edges and exaggerated the dimension of the joints between panels to express the idea that the building is constructed of individual panels, not a monolithic slab of concrete. The joints are also detailed so that entire panels can be removed and repositioned to accommodate expansion of the building in the future. The tilt-up structure is topped by a prefabricated, panelized wood-framed roof system.

Quigley articulated the offices at the southwest corner of the building with wooden bays that cantilever out from openings cast into the tilt-up concrete walls. Inserted between the offices, a single glazed bay encloses an interior courtyard and lobby. The architect sandblasted the front facade, but elected to paint the rear wall of the building with a protective coating that minimizes damage from graffiti.

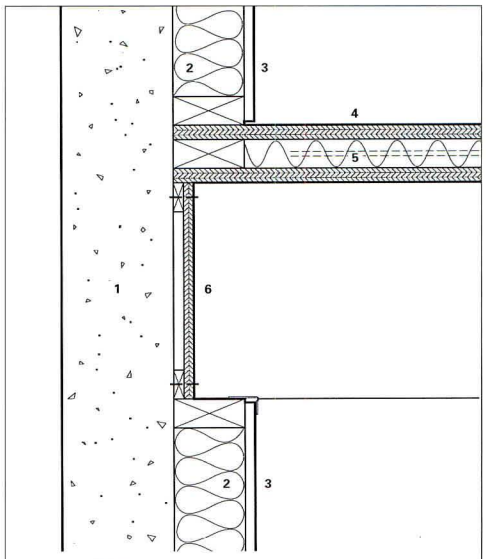
Travis Street Apartments
Dallas, Texas
Cunningham Architects

"Our client wanted something different than typical wood-frame construction, something that would last longer," explains architect Gary Cunningham of his design for a three-story, four-unit apartment building in a funky Dallas neighborhood. Cunningham considered other types of concrete, but found that tilt-up offered the same durability, but at a lower cost. "In fact, with tilt-up construction, the building came in at $70 per square foot —the same as for a wood-framed structure," Cunningham boasts.

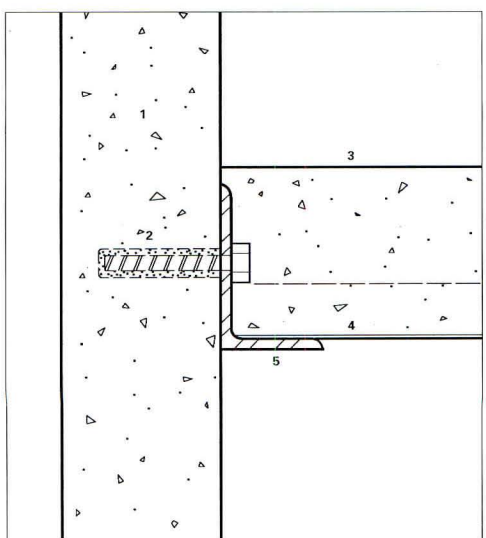
The apartment building's tilt-up facades and party walls support a cellular concrete floor deck at the second level and laminated wood joists at the third floor. To keep costs down, Cunningham specified 5 1/2-inch-thick panels, which, due to their thinness, actually bent and flexed during construction.

A major challenge for the architect was casting 30-foot-square concrete panels on a 50-foot site. Cunningham poured the first tilt-up panel on the ground, atop a bed of sand. A second panel was then cast on top of this first slab, and subsequent slabs were created using the underlying panel as a casting bed. Geometric patterns emphasizing the 9-square geometry of the building's elevation were scored into the walls during construction, and texture was imparted by trowelling the wet concrete with farming tools and rakes.

Cunningham discovered added benefits to specifying tilt-up concrete. The inherent structural strength of the material allowed the architect to carve out complex interior spaces and to create a 20-foot cantilever over the garages at the rear of the building. In addition, the 3-hour fire rating achieved with concrete construction allowed Cunningham to expose wood framing inside the units, which would not have been allowed by code with wood-frame construction.



1 TILT-UP WALL
2 3 1/2-INCH BATT INSULATION
3 1/2-INCH GYPSUM BOARD
4 3/4-INCH FIR VENEER PLYWOOD
5 ACOUSTIC BATTS
6 1/2-INCH FIR VENEER PLYWOOD BLOCKING

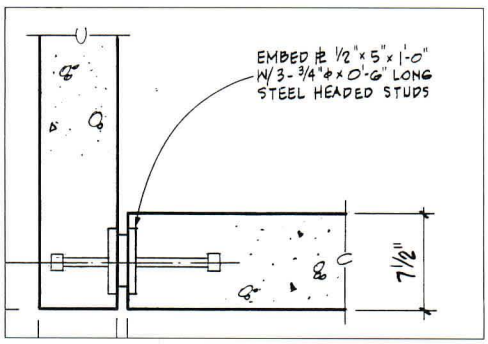


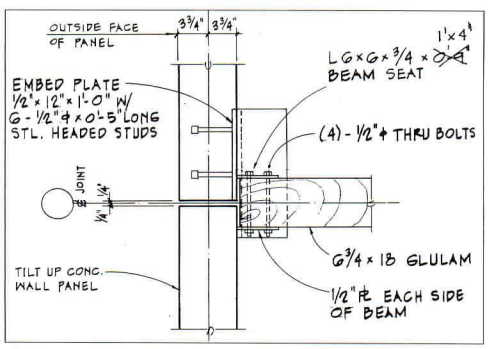
1 TILT-UP WALL
2 3/4-INCH BOLT WITH EPOXY
3 6 1/4-INCH CONCRETE FLOOR SLAB
4 2-INCH METAL DECK
5 STEEL ANGLE

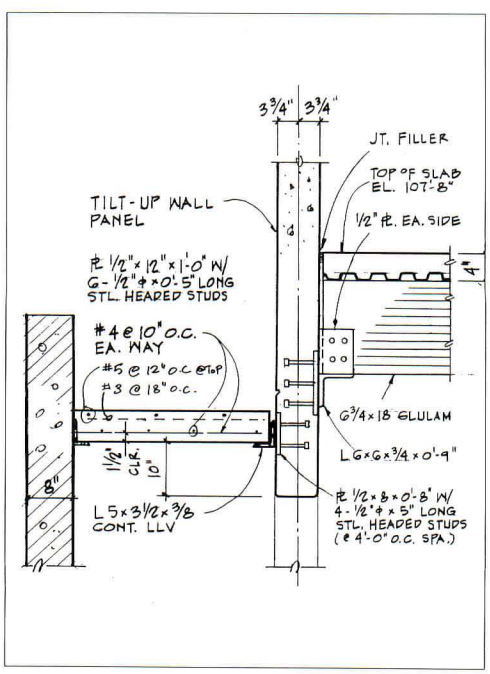
J.F. WILSON PHOTOS

TOP: Tilt-up wall panels allowed 20-foot cantilever over garages.
ABOVE: Textures and geometric lines scored into 30-foot-square wall panels animate apartment building facade.
DETAIL, TOP LEFT: Laminated floor joist supporting third level is fastened to tilt-up wall with plywood blocking.
DETAIL, LEFT: Steel angle bolted to exterior tilt-up wall supports concrete floor deck of second floor.

Prince of Peace Catholic Community
Dallas, Texas
Cunningham Architects







TOP: Rock salt was added to concrete walls to create texture.
CENTER: Bays of classroom building are topped with precast concrete roof.
ABOVE: Tilt-up construction minimized building costs of religious campus.
DETAIL, TOP RIGHT: Tilt-up panels are joined with steel-headed studs.
DETAIL, CENTER RIGHT: Steel plate supports beam seat for wood floor joist.
DETAIL, RIGHT: Tilt-up wall supports wood joist (right) and concrete roof.

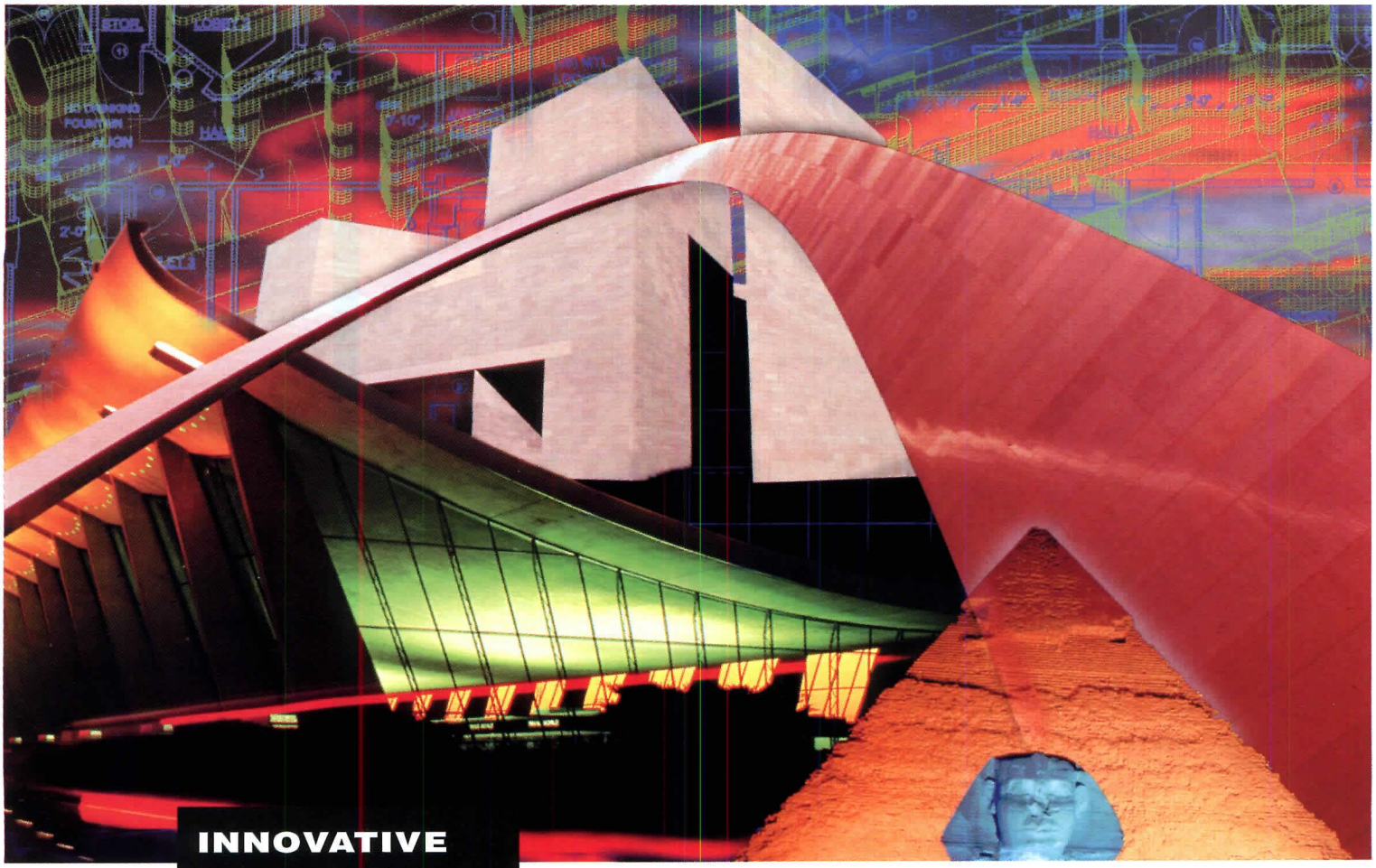
In designing a 24,000-square-foot elementary school and library—part of a 70,000-square-foot Catholic campus in Dallas—local architect Gary Cunningham selected tilt-up concrete for its low cost, increased durability, and quick construction time. The project took only 10 months to complete, at a cost of just $50 per square foot.

The two-story building containing classrooms, administrative offices, and a library is constructed of 7 1/2-inch-thick tilt-up wall panels. Steel angles bolted to the tilt-up walls support laminated wood beams; the beams support a 4-inch-thick concrete floor slab cast into metal decking. Wooden roof trusses enclosing the building are fastened to the top of the tilt-up panels with steel-headed studs.

On the east and west elevations, Cunningham projected single-story alcoves from the classroom building to house reading nooks. The sides of each bay are glazed, while the fronts are enclosed by an 8-inch-thick tilt-up wall with punched windows and topped by a 6-inch-thick precast concrete roof slab.

According to project architect Sharon Odum, coordinating the construction of the tilt-up panels was a difficult task. "Once the first floor slab was constructed, we had to leave out the columns and all the plumbing that went through that slab," recalls Odum. The cutouts in the slab for columns and plumbing chases were filled with sand, and the wall panels cast over them.

To animate the surface of the tilt-up panels, Cunningham took tree branches from a creek adjoining the site and raked them through the wet concrete to create patterns and textures. The architect specified a float finish for the concrete (instead of a hard-trowel finish), which allowed him to sprinkle rock salt of different-sized grains onto the top layer of the tilt-up panels.



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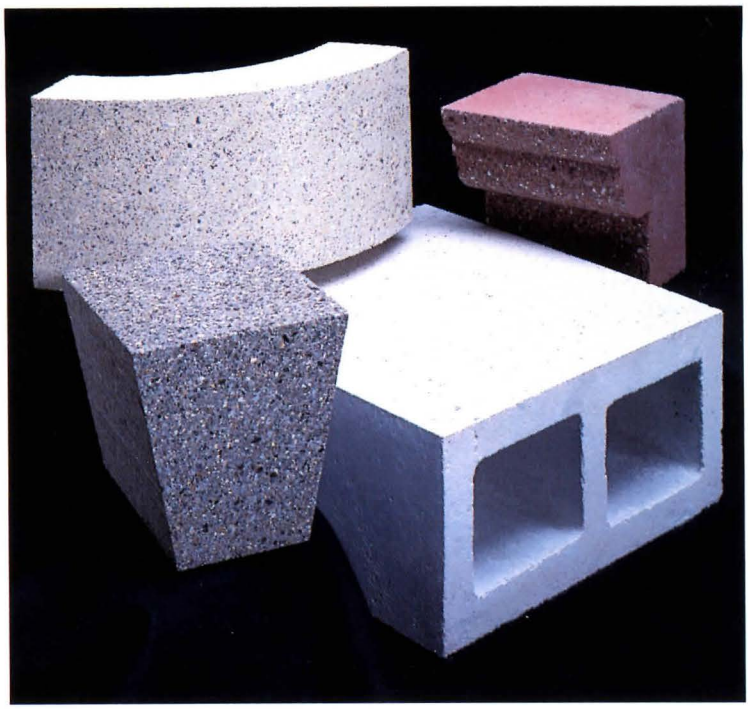
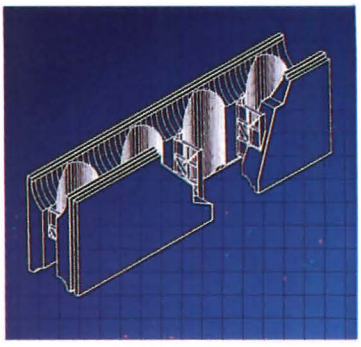
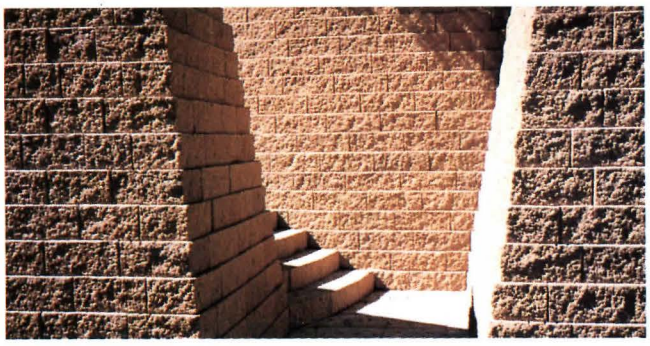
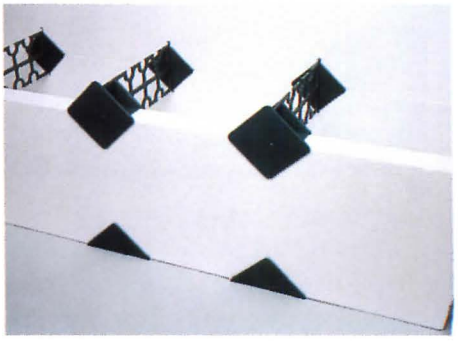
Products

Irregular shapes, lightweight blocks, stay-in-place formwork increase concrete's versatility.









TOP: Through specialized molding and cutting techniques, Trenwyth Industries manufactures its Trendstone Monumental Series concrete blocks. The series comprises nonstandard units of multi-aggregate concrete with a ground-face finish and clear acrylic coating, which waterproofs the block and accentuates its natural aggregate pattern. Specialty shapes include curved arch, keystone, quoin, sill, and column-wrap blocks. Trenwyth offers the series in a variety of colors, and all units contain an additive to prevent efflorescence. Other styles include acoustic dampening, glazed-faced, and oversized blocks.
Circle 401 on information card.

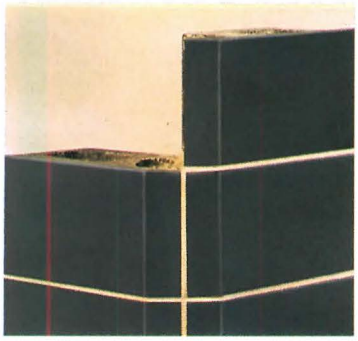
ABOVE: Versa-Lok's retaining walls require neither mortar nor deep foundations and footings. The 80-pound, 16-inch-wide, and 12-inch-thick units are assembled in rows of alternating bond; each level is set back 3/4 inch from the level below. Fiberglass pins measuring 6.8 inches long are inserted through a unit into slots in the unit below. For walls up to 4 feet high, the mass of the structure supports itself; but higher walls require structural supports. The absence of an impervious mortar seal allows the entire wall surface to drain freely. However, cap units require a light cement adhesive.
Circle 402 on information card.

TOP RIGHT: Early next year, Georgia-based Hebel Southeast will become the first American manufacturer of precast aerated concrete. Currently imported from Europe, this lightweight concrete is formed of cement, lime, sand, and an expanding agent. The resulting block has the solidity of standard concrete and a high fire-resistance rating, yet a 4-inch by 10-inch by 25-inch Hebel unit weighs only 18.5 pounds, approximately one-fifth the weight of a standard concrete block. Aerated concrete is also easily manipulated—a solid block can be carved with woodworking tools.
Circle 403 on information card.

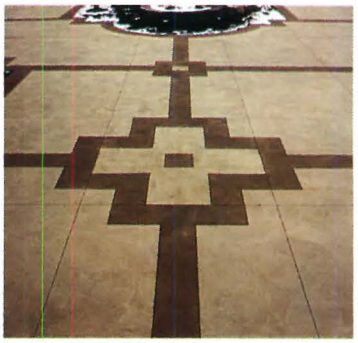
CENTER RIGHT: Units of expanded polystyrene create forms for poured-on-site concrete walls and foundations. The system becomes part of the completed structure, insulating the concrete and eliminating the need for wooden formwork. The Reward expanded polystyrene form, manufactured by 3•10 Insulating Forms of Omaha, is pierced by vertical and horizontal 6- or 8-inch-diameter cavities. Concrete poured into a layered form assembly will harden into a grid of beams and columns. The resulting structure has the strength of slab-concrete walls yet is composed of less concrete.
Circle 404 on information card.

ABOVE: Manufactured by AFM Corporation of Minnesota, the Diamond Snap Form System comprises 2-inch-thick, notched expanded polystyrene panels connected by plastic ties. Perform Guard panels are available with 90 and 45 degree corners, and the ties are grooved to support rebar.
Circle 405 on information card.

Products



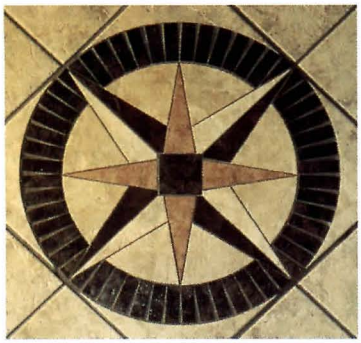
Glazed-concrete block
The Burns & Russell Company of Baltimore produces concrete block with a permanent factory-adhered glazing on one or more faces. This 1/8-inch-thick polymer glazing limits abrasion, staining, or penetration of corrosive pollutants into the concrete and is available in a spectrum of satin-finish colors, eliminating the need for on-site finishing of wall surfaces. Jamb, cap, bullnose corner (above), cove, and octagonal column units are offered.
Circle 406 on information card.



Concrete paving
Intended to simulate traditional paving materials such as slate, granite, brick, and cobblestone at a lower cost, Creative Paving Systems from Bomanite Corporation of California are cast-on-site concrete slabs that are colored and imprinted with a pattern. A powdered coloring agent is shaken onto the surface of the wet concrete, altering the slab's surface color on site. Twenty-five colors and 45 patterns, such as La Paz Stone (above), are available.
Circle 407 on information card.

Concrete pigments
California-based Davis Colors offers 25 standard pigments for concrete and will supply free samples (above) to design professionals. Made from mineral oxides, the pigments are lightfast, limeproof, and weather-resistant. Integral to the concrete, the manufacturer's colors are purported to last for the life of the concrete structure. The pigment can be added to a concrete mixer on site or mixed at the ready-mix plant to ensure tighter quality control.
Circle 408 on information card.

Colored linoleum
Inspired by the brushstrokes of Impressionist painters, the new Artoleum linoleum flooring from Forbo is made from natural, biodegradable materials: linseed oil, pine resins, cork, and wood flour. The line's 30 patterns range from high-contrast color combinations to subtle blends of blue or green (above). Fire-resistant, durable Artoleum is available in rolls measuring 79 inches wide, 105 feet long, and 1/10 inch thick.
Circle 409 on information card.



Italian tile
Working with clay from Italy's Modena region, Marca Corona devised its Rosa dei Venti collection of ceramic tile, unveiled at the International Tile and Stone Exposition in Miami this spring. Precise manufacturing techniques enable custom installations for both residential and commercial projects. Each piece in the 24-inch-square porcelain medallion (above) is water-cut to obtain sharp edges and face-mounted on paper sheets to simplify installation.
Circle 410 on information card.

Ceramic flooring
Monarch Tile introduces Persia, a ceramic floor tile that combines the look of hand-cut stone with the durability of ceramic tile (above). Measuring 13 inches square, the ceramic tiles are suited for high-traffic areas in both commercial and residential applications. Beige, pink, teal, and bone colors are available. Persia may be combined with complementary geometric liners from the Florence, Alabama-based manufacturer for custom installations.
Circle 411 on information card.

Coordinated carpets
Mannington Commercial's Carthage loop-pile carpets are designed to coordinate with the Georgia-based company's vinyl composition tile (above). Carthage is available in 26- and 20-ounce weights, in 12-foot broadloom, and in 6-foot or 18-inch modular sizes. Blue, burgundy, gray, and brown tones are featured in the 16-shade palette. The Macro-Tec backing system for modular carpet units includes a moisture barrier and welded seams for precise installation.
Circle 412 on information card.

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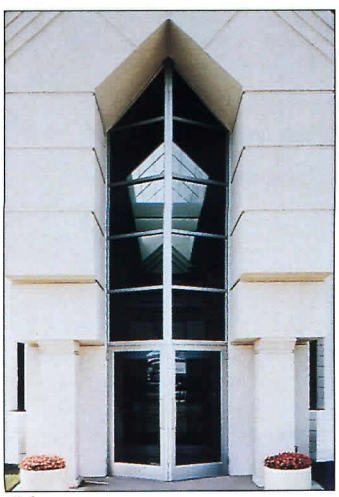

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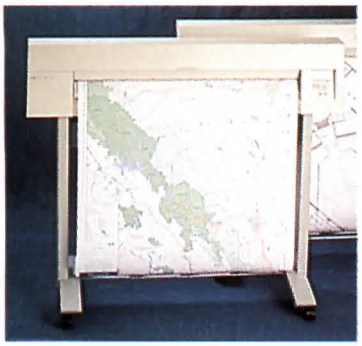
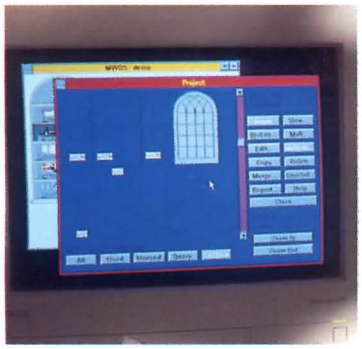
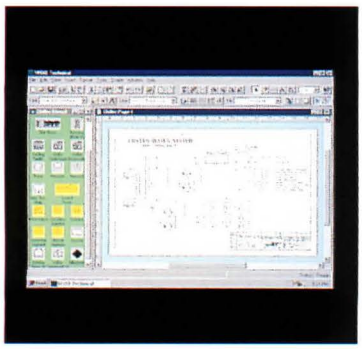


Low-cost plotters
This spring, Hewlett-Packard discontinued production of pen plotters, focusing on the faster, more versatile inkjet technology. Adding low-cost options to this product line, HP introduced the 300 dpi, four-color DesignJet 250C and the 600 dpi, monochrome DesignJet 230 (above), both available in 24- and 36-inch-wide output options. Color plots require special inkjet paper.
Circle 415 on information card.

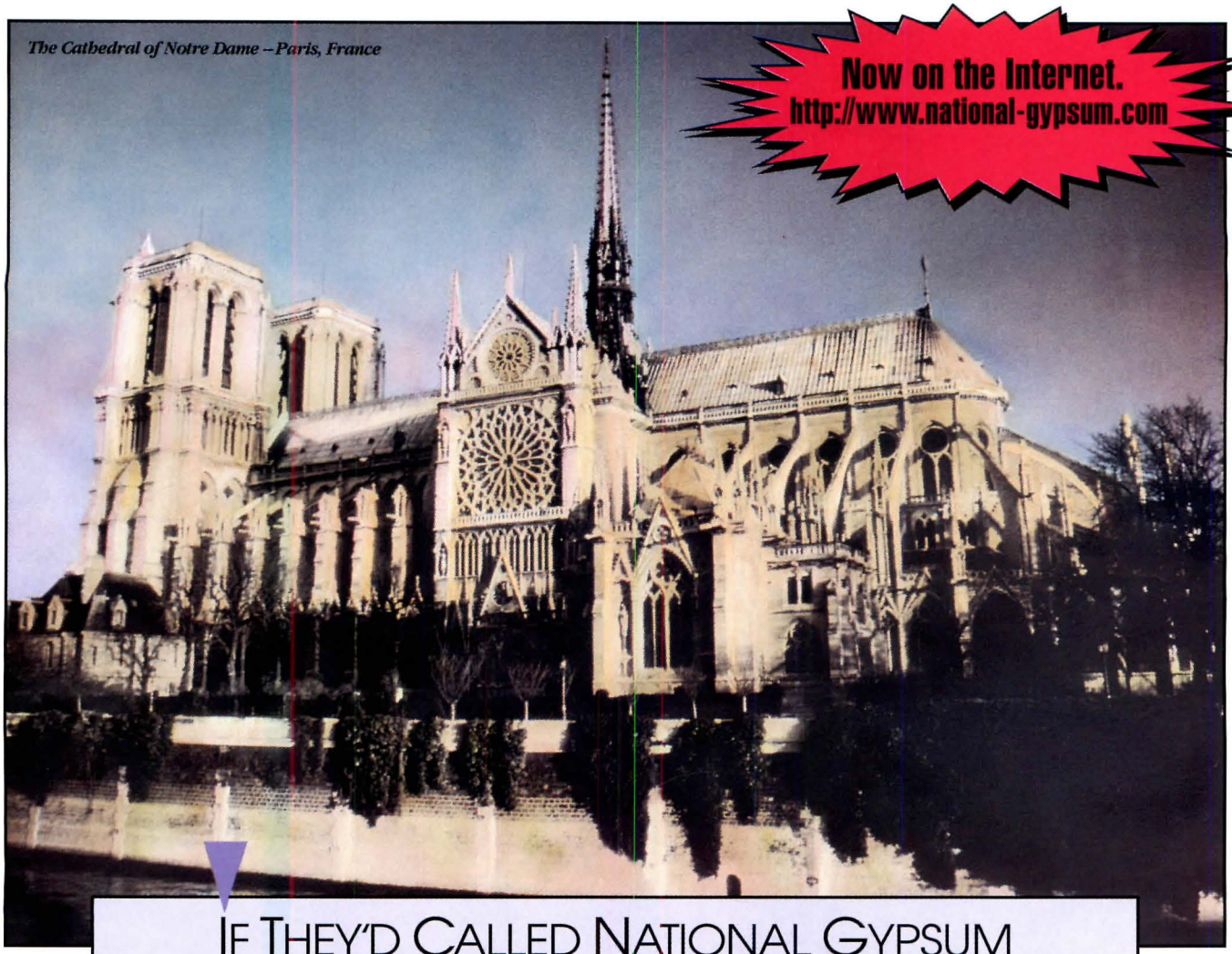


Window design system
Marvin Windows & Doors has designed a software package to enhance the computer-aided design process. Marvin Design System (above) provides fenestration design options and details based on Marvin's 11,000 standard windows sizes. With options for custom window design, the program alerts the user if a design choice exceeds structural limitations.
Circle 413 on information card.

Coordinating software
Contract Colorways (above) is a free software program from American Olean Tile Company cosponsored by 13 additional manufacturers, including American Standard, Metpar, Formica, and Surrell. The program is designed to recommend coordinated combinations for tile, grout, plumbing fixtures, partitions, laminates, and other surface finishes. It offers information on all colors, sizes, textures, prices, application options, and ADA compatibility of American Olean's 1995 product lines and color information for product lines of the cosponsors. The manufacturers' software will be updated annually and redistributed to registered users. A color monitor; 4 megabytes of RAM; 4 megabytes of hard disk space; and a PC, running at least MS-Windows 3.0 or a Macintosh with System 7.0, are needed to operate this software.
Circle 416 on information card.



Schematic software
Windows-based Visio Technical 4.0 provides a single tool for technical drawing and business diagramming, featuring SmartShapes, objects that are placed in the drawing and respond to changes in adjacent features. For example, Johnson Controls customized a set of SmartShapes to generate a schematic design of an HVAC system (above).
Circle 414 on information card.



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Products

Smart windows
Loewen Windows' new Heat-Smart ER Window Systems are designed to reduce heating costs. System 1 is a double-paned, sealed glass window; Systems 2 and 3 are both triple-paned units. A thermal barrier in each unit purportedly traps and stores heat gain from direct sunlight. The ideal position for a Heat-Smart window is shaded from direct sunlight during summer months when the sun is high, and exposed to direct sunlight in winter months when the sun is low, maintains the Illinois-based manufacturer.
Circle 417 on information card.

Replacement windows
The Precision Fit replacement window from Pella Corporation is shipped as a fully framed assembly, including sash, screen, and hardware. The wooden unit fits inside a standard 3 1/4-inch-wide sash pocket and eliminates the need to completely remove the entire existing window frame. Caulk and nails secure the window to the existing stop. The exterior of each double-hung window is treated with an enamel finish; interior wood surfaces may be painted or stained. The sash pivots in the center to facilitate cleaning. Each Precision Fit window is built to order, in sizes ranging from 37 1/4 to 77 1/4 inches high, and 20 3/4 to 44 3/4 inches wide.
Circle 418 on information card.

Roof windows
Chester, Connecticut-based Roto manufactures a complete line of roof windows for residential construction. Operable and fixed units are designed with identical profiles to allow architects to specify both types while maintaining a consistent roof line. An optional motorized system conceals hardware inside the sash, and a wall-mounted keypad operates up to four units—a rain sensor purportedly detects precipitation and automatically signals the window to close. Roto offers three energy-efficient glazing options, sash and flashing in five complementary colors, and condensation gutters.
Circle 419 on information card.

Hurricane shutters
The Polymers Division of Miles, a research company based in Pittsburgh, Pennsylvania, has developed Makrolon 3103 polycarbonate resin for the production of hurricane shutters. Working with ClearShield Manufacturing Corporation of Riviera Beach, Florida, Miles devised a transparent shutter to protect windows from high winds and debris. The ClearShield screen allows daylight to enter a house, and its corrugated construction permits outside air to circulate through open windows. ClearShield purportedly provides greater impact resistance than steel or aluminum shutters, weighs less than these metals, and features a low deflection rate—3/4 inch, compared with 3 to 4 inches for aluminum or steel. To install the shutter, a simple metal framework attaches to the building facade and the panel is bolted in place.
Circle 420 on information card.

Motorized shades
Two new publications from Somfy Systems detail the Cranbury, New Jersey-based company's line of motorized components available for pleated and roller shades. *Pleated Shades in Motion* details the capabilities of the company's LT 28 DC motor, which mounts in the shade's headrail assembly. Accessories include hardware for fastening the cylindrical headrail and wall-mounted toggle and rocker switches. The second brochure, *Roller Shades in Motion*, specifies the lifting capacity of Somfy's DC motors and 400 series AC motors and describes such accessories as remote controls and wall-mounted switches.
Circle 421 on information card.

Rot deterrent
Cedar Breather is a nylon mesh created by Benjamin Obdyke to combat corrosion of wood shingles and siding. The lightweight matrix is inserted between plywood sheathing and wood siding or shingles, creating a cavity that allows the underside of siding or shingles to dry after exposure to rain, snow, or humidity. Furring strips are not required.
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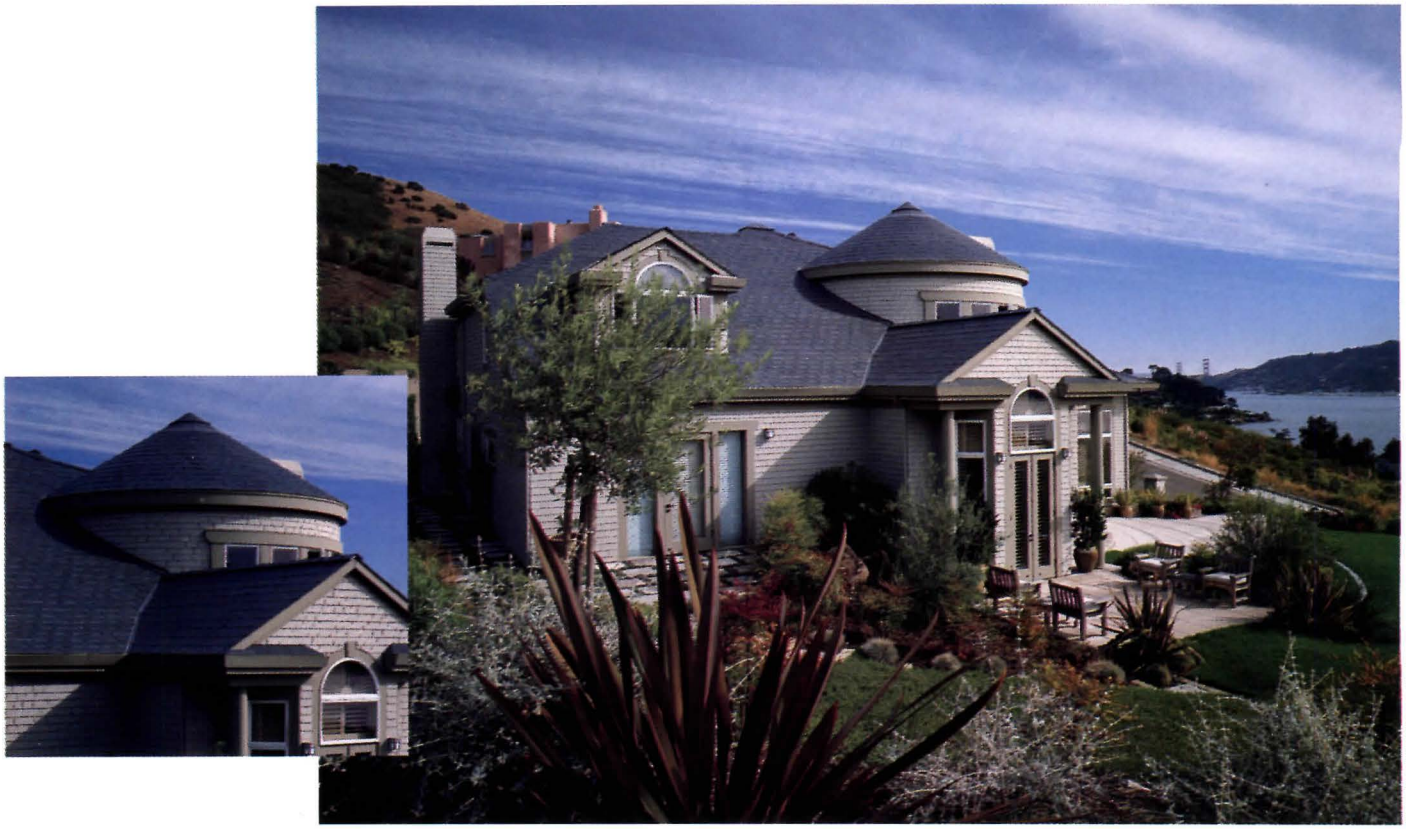

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Introducing the new AL-Series standard duty keyed levers from Schlage®.

Engineered with performance as the ultimate goal...and no compromises. These Grade 2 locksets are loaded with superior parts. For starters, there is the stainless steel, inter-locking spindle that provides extra strength when excess force is applied to the lever in the locked position.

Added to that are the threaded hubs and castle nuts, which literally bolt the chassis to the door to prevent loosening. We've chosen compression springs for the heavy-duty spring cages, which provide consistent lever return. And the "true" through-bolting, outside the 2-1/8" through bore preparation, prevents the chassis from rotating. This keeps the latch from disengaging, which can result in lock-ins/outs.

And finally, we've utilized our classic, machine extruded brass cylinder with nickel silver pins and keys for the greatest wear resistance and smooth operation.

The new AL-Series from Schlage®. We didn't compromise, so why should you?

Interlocking Spindle

Machined Hub

Compression Spring

"True" Through-Bolting

Cylinder

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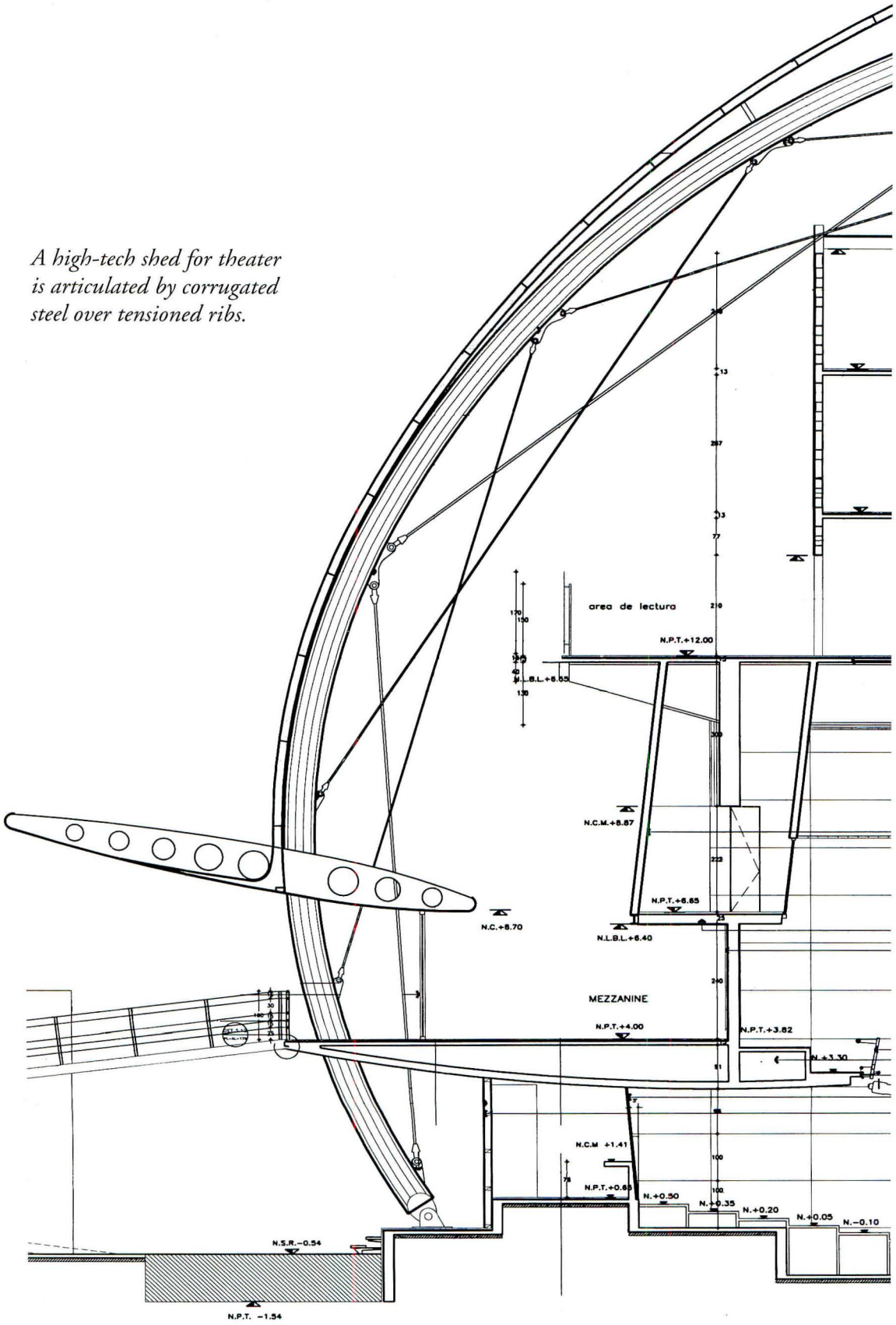
Contact your Schlage® dealer or call us today at Schlage Lock Company, 415-467-1100 ext. 5200 for more information.

Circle 162 on information card

Details

A high-tech shed for theater is articulated by corrugated steel over tensioned ribs.

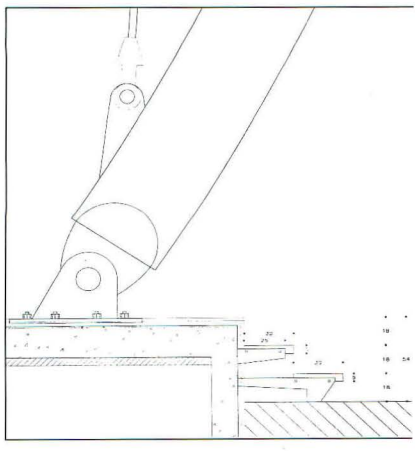


National School of Theater
Mexico City, Mexico
TEN Architects

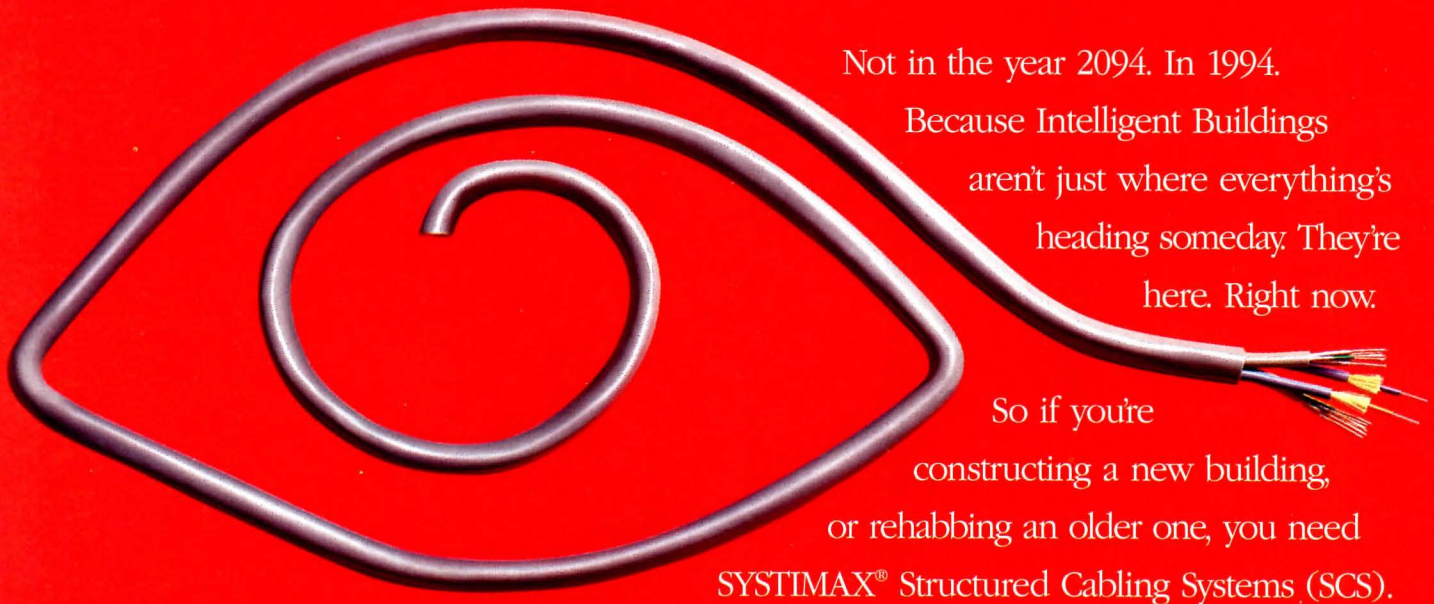
Mexican architect Enrique Norten collaborated with the New York office of engineer Ove Arup & Partners, as well as local engineer Alonso-Garcia + Miranda, to develop a lightweight structural system for the new National School of Theater in Mexico City (pages 78-83). Performance spaces, rehearsal rooms, classrooms, and offices are covered by a steel-and-fiberglass roof stretched over curved, 2-foot-diameter tubular steel ribs. This assembly is similar to the design of the boarding wing at Renzo Piano's Kansai International Airport in Osaka, Japan, also engineered by Arup (ARCHITECTURE, January 1995, pages 84-93, 97-103).

The 12 ribs comprising the frame of TEN's School of Theater are bent into elliptical profiles and tensioned by galvanized steel cables, which are anchored by steel plates welded to the interior surface of the ribs (section, left). At the top of the building, the ribs are anchored to 75-foot-high steel structural columns with 6-inch hinged steel pins. At ground level, the ends of the ribs are supported by similar pins bolted to the concrete floor (detail, below).

Over this framework, Norten applied two sheets of 3/4-inch-thick corrugated steel insulated by 2-inch-thick fiberglass and 4-inch-thick perforated acoustic panels. At the top of the structure, the cladding is supported by 8-inch-diameter steel tubes extending from the elliptical ribs; midway down the structure, steel channels framing the skin are welded directly to the ribs.—*R.A.B.*



Imagine a building where the doors have eyes, the walls have ears, and the thermostat knows you get a little chilly around 4p.m.



Not in the year 2094. In 1994. Because Intelligent Buildings aren't just where everything's heading someday. They're here. Right now.

So if you're constructing a new building, or rehabbing an older one, you need SYSTIMAX® Structured Cabling Systems (SCS). With SYSTIMAX SCS, a single cabling system not only supports your heating, air conditioning, energy management, and security, but all your voice and data needs.  Not to mention high bandwidth applications like CAD/CAM and video. Which virtually makes your building future-proof.  Besides which, all certified SYSTIMAX SCS installations come with a 15-year extended product warranty and application assurance. And are backed by AT&T Network Systems and Bell Laboratories service and support.  And if that isn't smart, what is? Call us at 1 800 344-0223, ext. 4014. Outside the U.S., call 602 233-5855.

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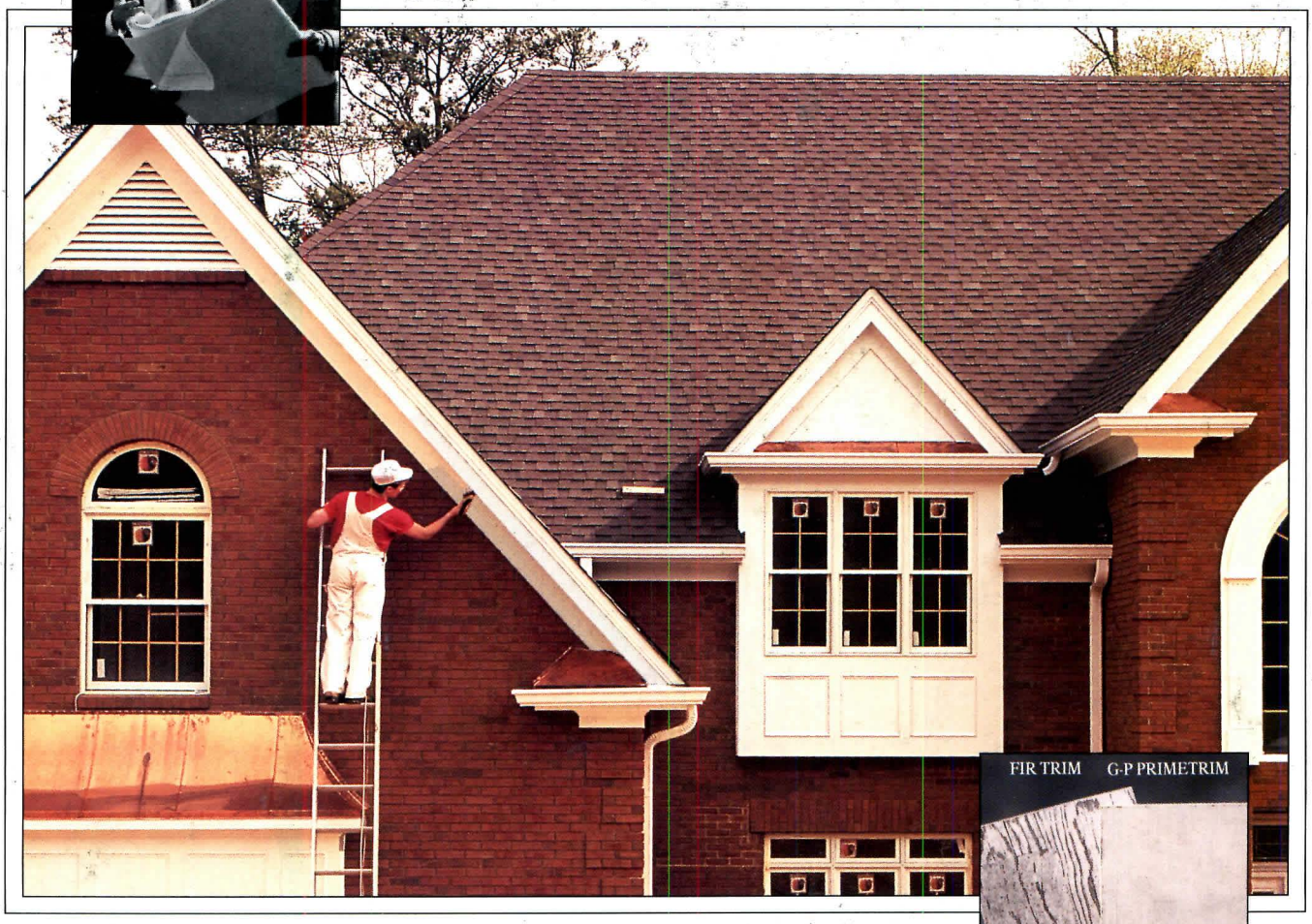
Circle 164 on information card

"If cost were no problem, I'd spec premium performance trim every time. I suppose PrimeTrim™ can solve that?"



G-P: Matter of fact, yeah. PrimeTrim gives you premium performance at less cost than premium lumber trim.

YOU: *What do you mean, "premium performance?"*

G-P: What I mean is, it's engineered to eliminate knotholes and finger joints, it resists warping and splitting, and it comes in uniform 16′ lengths, so you'll have fewer seams. Also, the thickness piece to piece is totally consistent, and...

YOU: *Okay, okay. That kind of quality is hard to find, especially at a good price.*

G-P: ...and you save money because installation is easier and it won't need to be primed.

YOU: *Won't need to be primed? Don't you have to prime it to paint it?*

G-P: PrimeTrim comes with a factory applied, oven baked prime coat that's even better than on-site priming.

YOU: *So it takes paint well. But does it hold the paint? You know the weather around here...*

G-P: PrimeTrim meets G-P's tough standards on residual swell, which means minimal chipping and peeling. PrimeTrim resists decay, too–in over five years of lab and field tests it beat every other trim tested. Our 10-year limited warranty* backs that up.

YOU: *It's about time somebody solved my trim problems.*

G-P: Now, what other problems can I solve for you? And give me a tough one this time.

For more information on G-P PrimeTrim, call 1-800-BUILD G-P (284-5347), Operator 731

Solve it with G-P.℠

Georgia-Pacific

*Ask your retailer or call G-P for a copy of the limited warranty containing terms and conditions of coverage. "PrimeTrim" is a trademark, "Summit" a registered trademark and "Solve it with G-P" a service mark of Georgia-Pacific Corporation.

Home features G-P Summit® Shingles.

Circle 166 on information card