

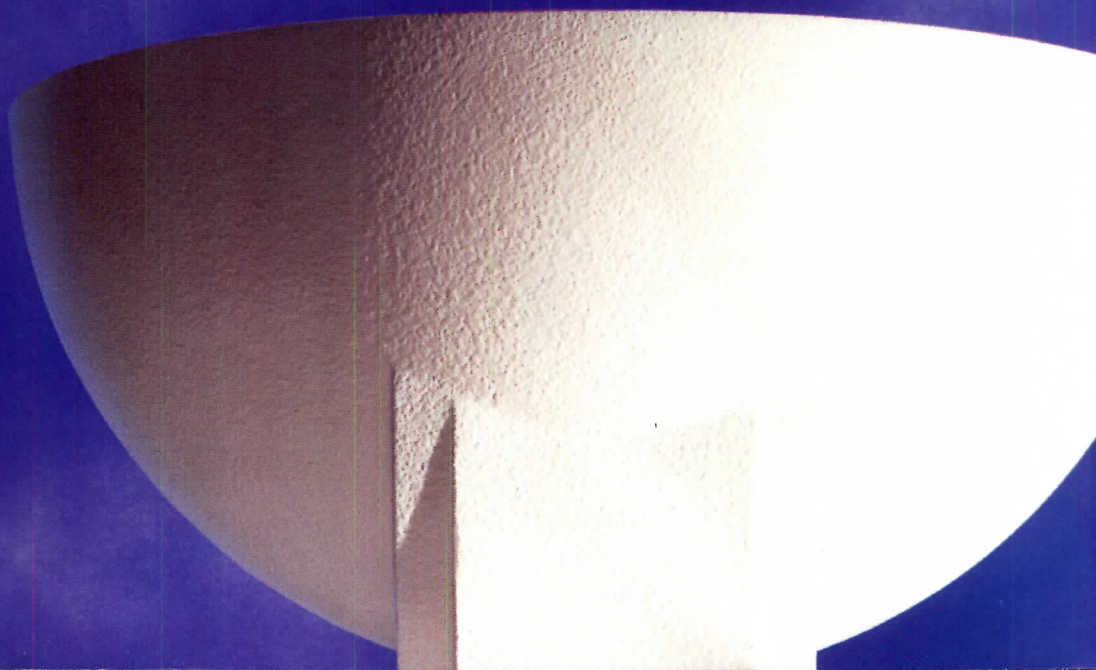


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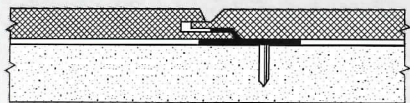
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Letters

Where's the community?

I found it interesting that of the seven community buildings featured in your June issue [ARCHITECTURAL RECORD, pages 66-103], not one of them was shown in the context of the community they were built in. Does this mean that (1) these buildings did not consider their town or city, or (2) your magazine has chosen to ignore this aspect?

If the former is true, you have the responsibility to find examples of interesting buildings which relate to their community fabric. If the latter is true, I think you should be ashamed. As one of the dwindling number of journals representing new architectural ideas to the profession, you should do more than present isolated objects, however beautiful, as worthy of the title "community buildings."
*Bruce Brubaker, Architect
Point Richmond, California*

Editor's note: It is a mistake to think that architecture is good just because it fits into the "context of a community." True, buildings, especially community buildings, should be good neighbors, but the architects who design them should also aspire to bring more to these neighborhoods, not allowing themselves to be limited by what was there before. Does a ghetto deserve a ratty building because it fits into that "context"?

The writing in these stories certainly showed how the architects and their solutions sought an understanding of the context of these communities in ways that cannot be understood just by looking at the pictures of these "isolated objects."

Boyer Report available

I read your editorial on the architectural education (Boyer) report by the Carnegie Foundation for the Advancement of Teaching [ARCHITECTURAL RECORD, June 1996, page 9]. Could you tell me where I can get a copy?
*Donald P. Greenberg
Director, Program of Computer Graphics
Jacob Gould Schurman
Professor of Computer Graphics
Cornell University*

Editor's note: Order from California Princeton Fulfillment Services, 1445 Lower Ferry Road, Ewing, NJ 08618; phone 800/777-4726 or 609/883-1759. Cost: \$15 plus shipping.

Ready for inspection

I found your recent editorial, Ready for Inspection [ARCHITECTURAL RECORD, May 1996, page 9] in need of clarification. First, the New York City Dept. of Buildings has had greater issues than clogged inspectors' calendars and downsized departments. Bribery and corruption, at all levels in the department, has been eliminated.

Since the election of our new mayor and his appointment of Joel Miele as Commissioner of Buildings, I have seen more positive changes take place during this short period than the total of all the time I have previously been dealing with this agency.

To say that they are fostering change is an understatement. Every facet of the department has been examined and reviewed for improvements, all of this done with the professionals it was meant to assist in mind. This commissioner has pushed for changes in the approval and inspection procedures, not only to help cut through the bureaucracy but, in his words, "to put licensed design professionals on the same level as all other state-licensed individuals." The attempt to eliminate "proscriptive" reviews goes hand in hand with this increase in responsibility. The question is not if professionals are ready for increased responsibility for inspections, but rather whether the powers that be will assist in this reaffirmation of our project control.

You stated [in your editorial] that architects have to utilize their talents and skills outside the traditional design practice. To this end, project involvement must begin at an earlier point than it has traditionally, and conclude well after occupancy.

*Robert M. Scarano, Jr.
Scarano & Associates
Architects
New York City*

To RECORD's Readers

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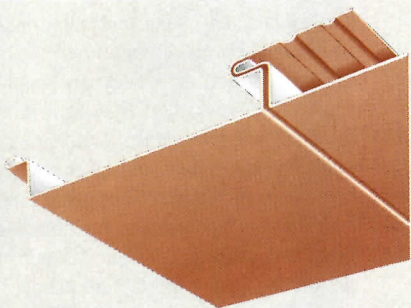
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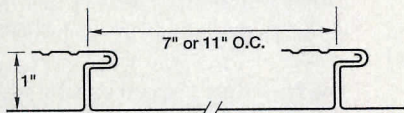
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At the opening of the present decade, RECORD published a list of 16 challenges facing the architectural profession. Since that day many of these challenges have been met, others are on their way to being met, still others defy solution any time soon:

- ◆ The computer has made great and largely beneficial inroads into architectural practice. It has become a friendly daily tool, not a “you gotta have it” machine placed in one corner and shepherded by a single-minded techno-guru. We’re seeing leaner firms, more dependent on CAD than ever before. And it promises to give even small firms the power to compete in a tough marketplace.
- ◆ In housing, the list criticized the unbalanced ratio of palaver to performance. This too is changing, though not at a rate that the scale of the problem demands. Resource-consuming housing conferences are still held, including the recent United Nations-sponsored Habitat II conference in Istanbul, to be reported on in these pages next month. But their tone is more pragmatic—the critical roles of finance, engineering and social infrastructure, and sound administration are being addressed—and architects are showing greater ingenuity in converting declining housing resources into viable housing.
- ◆ The architectural “star” system, endemic to the high-rolling ‘80s, while not in eclipse, is at least being matched by a greater esteem for the team, without which even the most celebrated stars would not survive.
- ◆ Global practice has made seven-league strides in the decade. U.S. firms are at work from Bilbao to Beijing; European firms are busy in New York City and Chicago. Some American firms collect half their billings from overseas work. How long this continues in the developing nations hinges in part on how many American-trained architects end up replacing foreign firms as they return to their own countries with their newly acquired expertise.
- ◆ Architecture as fashion, or stage set, is not about to decline. Spurred by an ecumenical mindset where all is fair—from reconfigured Classical and Gothic to small-town nice to high-tech industrialized—the line between a logical expression of the program and applied bravado will remain indefinitely blurred.
- ◆ “Green” design has entered the architect’s daily vocabulary despite price-premiums and a lack of visibility.
- ◆ The use of techno-jargon by the profession continues unabated. With heightened citizen participation in planning and design decisions, especially on public projects, it is once more time for simple language to creep into the architect’s communications.
- ◆ The scope and quality of building research has made modest strides in recent years, but due in part to cheaper U.S. energy and more lenient U.S. codes in such areas as a right to daylight, technological breakthroughs have lagged behind those of some European nations. University-based building research has not had enough success in leaping over the gap to practical applications in the marketplace. Architects by and large lack research training and resources, although their contribution to building knowledge yielded by day-to-day work on projects is all too often ignored. As for U.S. product manufacturers, they have become increasingly sophisticated in imparting up-to-the minute information in usable formats.

Finally, architects must face the fact that in the decades to come they cannot live by design alone. Increasingly, they must be prepared to focus on providing services both upstream and downstream from traditional design practice. And as RECORD stated at the start of the decade, it’s time “to rebuild the architect’s state of worth, to take a tougher stand in fee negotiations, to realize that profit is not a dirty word, and to point out to the client the risks incurred in eroding the architect’s authority.”

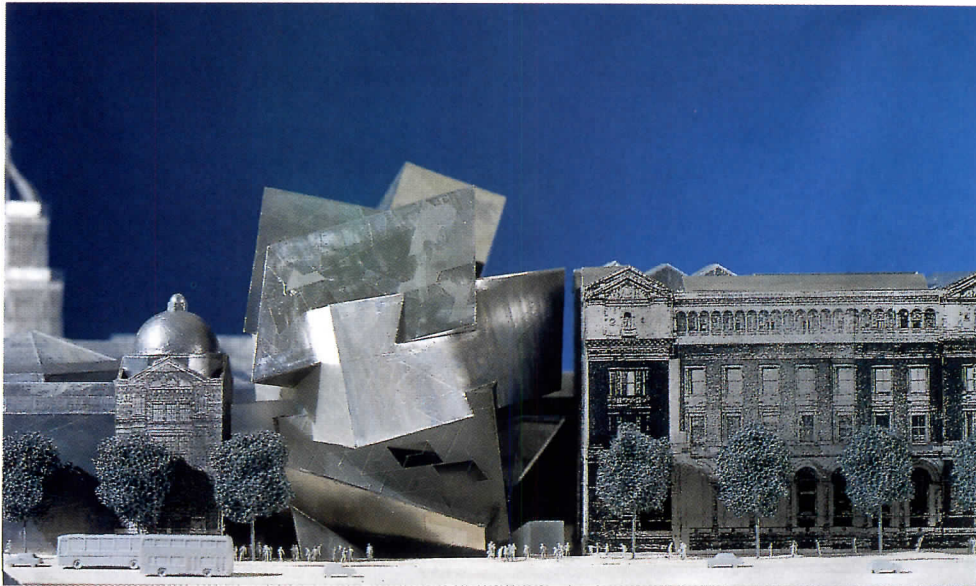
Stephen A. Kliment

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London

Libeskind Crosses the Channel



Berlin-based Daniel Libeskind is the latest in a growing number of foreign architects—Behnisch, Calatrava, and Herzog & de Meuron, among them—who have won commissions in Britain. The new trend marks a belated gesture by Britain, whose own architects have been showered with overseas commissions. In May Libeskind was chosen to design the \$63-million Boilerhouse extension to London's Victoria & Albert Museum, following an open competition that attracted over 100 entries. If built, Libeskind's heaped, angular volumes—the first significant example of "Deconstructivist" architecture in Britain—will provide 108,000-sq-ft of exhibition space. Sandwiched between two Victorian galleries, Libeskind's design pays homage to the period with its own polychrome ceramic tile cladding. Funding is yet to be secured. *Hugh Aldersey-Williams*

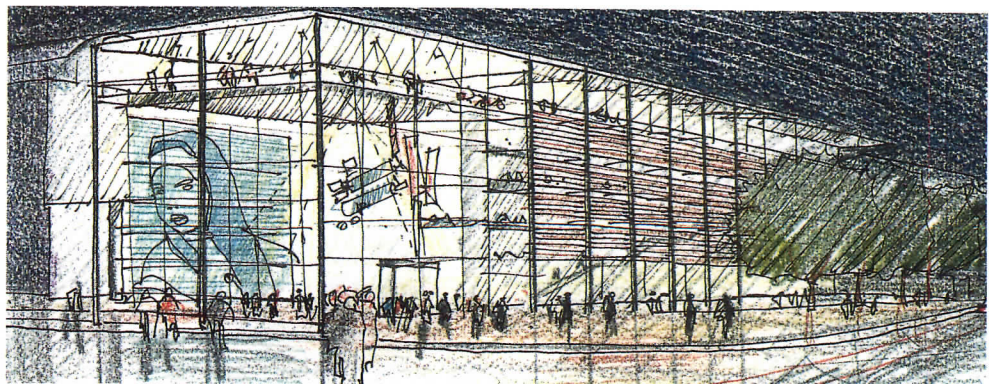
Aspen Design Conference

German Design Peaks in the Rockies

The 46th International Design Conference in Aspen, the annual meeting of design minds held last month in Colorado, took on the theme of "Gestalt: Visions of German Design." Designers of buildings, products, graphics, furniture, and fast cars and trains as well as clients, critics, and academics dissected the complexities of German design culture that often surface in watered-down form on American shores. Speakers provided a sense of the design ferment in present-day Germany and critiqued its results: Culture critic Bazon Brock argued that the "Germanness" in German design springs from an odd duality of rationalism and idealism, while architect Axel Shultes decried the spatial dismemberment of Berlin in the name of "critical reconstruction." One hopes a design gestalt as vital as the Germans' will take root in the U.S. *M. Gordon Brown*

Germany

Living the Multimedia Life, Foster-Style



Sir Norman Foster & Partners of London has won an international competition for the design of a Multimedia Center in Hamburg. The 237,600-sq-ft project includes an extension to the city's Media Center, offices, shops, a café, and a glass-enclosed reception area

with a giant screen to highlight the center's work. To fully integrate the experience for young and old, it also includes housing and a senior-citizens home. The L-shaped complex of glass, steel, and concrete is to be completed in 1998. *Abby Bussel*
(*News continues*)



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Post-Games Private Development Keeps Faith With Olympic Spirit

The design professionals from around the world who gather in Barcelona this month for the 19th Congress of the International Union of Architects will find a city that has not rested on its Olympic laurels. While the 1992 Olympics gave impetus to important infrastructure improvements, public amenities, and cultural facilities (including Richard Meier's recently opened Museum of Contemporary Art in the Gothic Quarter, and the adjacent Center for Contemporary Culture by local architects Albert Viaplana and Helio Piñón, headquarters for the Congress), in the succeeding four years the city has extended its campaign of urban growth from the public to the private sphere.

A dozen new areas

In a policy already in place before the Games, Mayor Pasqual Maragall has given the city government a leading role in private development, designating 12 areas for investment, establishing design guidelines for new construction, and lobbying actively to direct private commissions to the best local talent.

The 12 "New Centralities," now in various stages, were established to relieve pressure on the historic core and stimulate certain neglected inner-city districts. One of the first was completed last year in the *port vell* or old port, where Viaplana and Piñón have planned

a striking waterside commercial complex and park on the site of obsolete wharves, featuring an IMAX theater by architects Jordi Garcés and Enric Soria, an aquarium by Robert and Esteve Terradas, and their own shopping mall linked to the city by a fanciful wood pedestrian bridge across the harbor. Rafael Moneo, working with urban designer Manuel de Solà-Morales, designed a full-block 1-million-sq-ft megastructure on the Diagonal avenue that is a development area in its own right, with offices, hotel facilities, and a two-level commercial arcade; known as the *Lilla* block, its long staggered limestone facade has become an instant landmark. And Garcés' and Soria's plan for Tarragona Street has culminated in their design for the Hotel Plaza, a severe, minimal cubic block relieved by its exquisite stone detailing.

Currently in development are the 200-acre Sagrera district, site of the future high-speed train station, master-planned by Sir Norman Foster and Partners, and the 90-acre Diagonal Mar complex beside the Olympic Village, by Ricardo Bofill's Taller d'Arquitectura.

According to the rules

As the buildings mentioned so far suggest, the city's design guidelines, intended to harmonize new construction with old, call for street facades in stone with regular vertical

or square openings. Interior openings and surfaces may vary. Interesting interpretations of these rules can be seen in Esteve Bonell's Citadines Aparhotel on the pedestrian Ramblas of the Gothic Quarter; in a nearby office building by Oriol Bohigas' studio MBM; and in the Carburros Metálicos Offices by Lluís Domènech and Roser Amadó, where a chamfered block corner in the 19th-century Eixample is used to create a diagonal geometry of thin stone veneers and glass.

The most controversial aspect of Barcelona's activist role in development is its promotion of specific architects, helping clients organize limited competitions and suggesting lists of firms. Maragall has said that the city "seeks to create alliances" with developers, but it also applies pressure when necessary, following a precedent set by the 1992 Hilton Hotel on the Diagonal, by Viaplana and Piñón, after the city objected to a scheme that Maragall thought more appropriate to a coastal resort. While this policy seems ethically questionable and could be vulnerable to abuse, it reflects the passionate commitment that Barcelona's leaders feel for their city and expect from those who build here. As Maragall told one prominent developer shortly before winning him over, "You will go down in history as the destroyer of the Eixample, but you could be remembered as its savior." *David Cohn*



1. *Lilla* Diagonal by Rafael Moneo with Manuel de Solà-Morales.

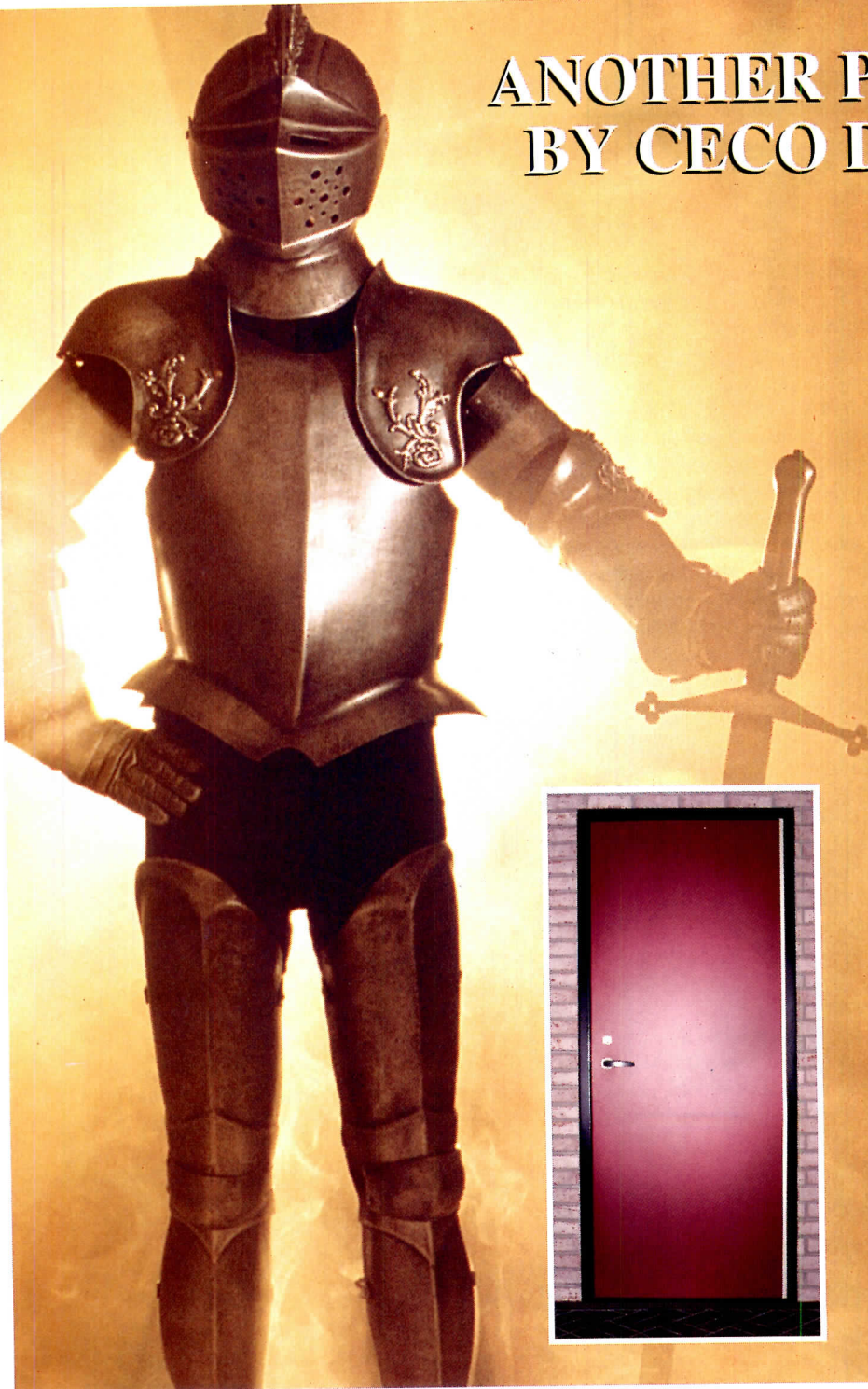
2. Waterside commercial complex by Albert Viaplana and Helio Piñón.

3. Office building by Oriol Bohigas of MBM.

4. Carburros Metálicos offices by Lluís Domènech and Roser Amadó.

News continues

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Briefs

Architect chosen for Berlin Embassy

Moore Ruble Yudell Architects & Planners of Santa Monica with Gruen Associates has won the competition for the U.S. Embassy in Berlin [RECORD, March 1996, pages 36-43] to be built next to the Brandenburg Gate.

Call for entries

The American Battle Monuments Commission is sponsoring an open design competition for the first national World War II Memorial in Washington, D.C. Submissions are due August 12. Contact Christine Kelly, General Services Administration, telephone (202) 708-4900.

New leadership in the schools

◆ Architect/critic Donna Robertson has left her position as dean of the Tulane University School of Architecture to take the same position at IIT in Chicago.

◆ Peter Lynch will replace Dan Hoffman as head of Cranbrook Academy's architecture department this fall.

Advisors for Oklahoma City Memorial

An interdisciplinary team comprising architect Donald Stastny, landscape architect Paul Morris, and public-art consultant Helene Fried will organize the international competition for the \$10-million Murrah Federal Building Memorial in Oklahoma City. The team hopes to call for entries this fall.

Awards for the civic-minded

◆ BOORA Architects of Portland received Oregon's 20th Governor's Arts Award. The first architecture firm to be so honored, BOORA provides free space in its office for two arts institutions and a scholarship for minority architecture students.

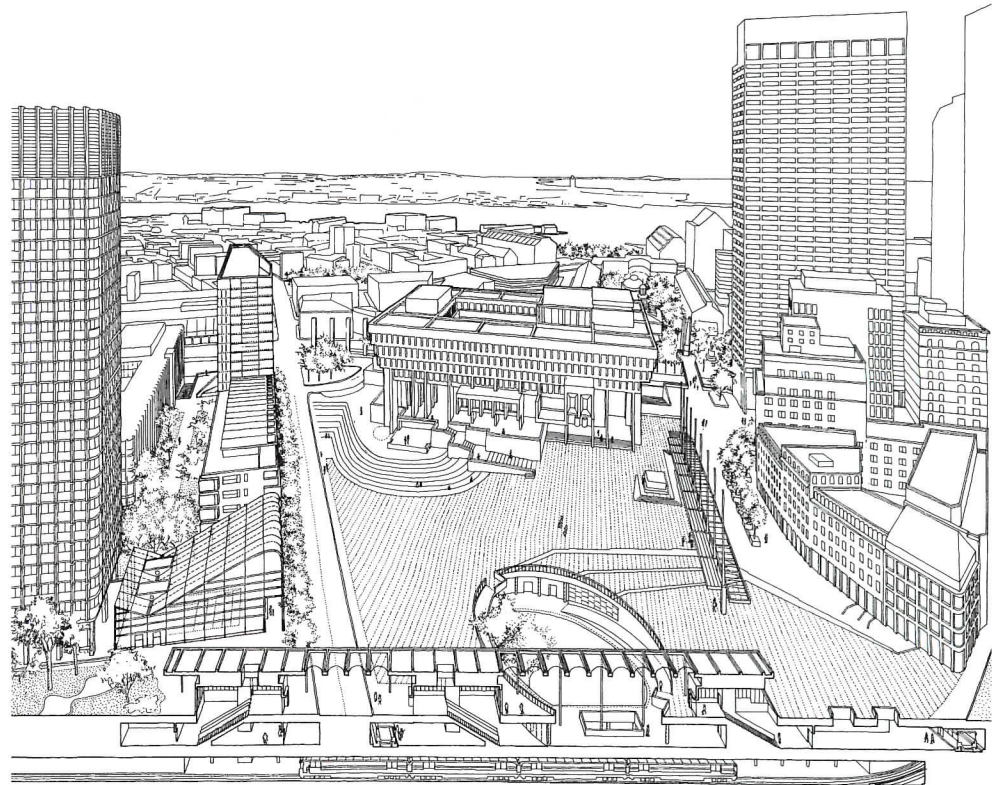
◆ The fourth annual Seaside Awards were presented in Seaside, Fla., in April to Jane Jacobs and Leon Krier for their advocacy of traditional community-making.

Franklin D. Israel, 1945-1996

Franklin D. Israel, a leading figure of his generation, died on June 10 at 50. An architect and educator, most recently at UCLA, Israel was best known for his houses [RECORD, April 1995, pages 82-91].

Serge Chermayeff, 1901-1996

Serge Chermayeff died May 8 at 95. Chairman of the architecture departments at both Harvard and Yale and author, with Christopher Alexander, of *Community and Privacy: Toward a New Architecture of Humanism*, his best-known work is the Bexhill Pavilion in Brighton, England. ■

A Face-Lift for City Hall Plaza

The Brutalist landscape of Boston's City Hall Plaza, part of a 1960s masterplan by I.M. Pei, may be transformed into a more pedestrian, civic space, if a proposal by Chan Krieger & Associates with Prellwitz Chilinski Associates is realized. The redesign includes a

revised subway station, a hotel, shops, cafés, a visitors center, new streets, an electronic billboard, an amphitheater, and a music garden. The project was commissioned by the Trust for City Hall Plaza, a non-profit group created by business and civic leaders. *A.B.*

Jerusalem

Foreign Affairs

A.J. Diamond, Donald Schmitt & Company of Toronto, with the local firm Kolker, Kolker, Epstein Architects, have won a competition for the Israeli Foreign Ministry building in Jerusalem's National Precinct, which holds the Knesset, the Israel Museum, and the Supreme Court. To be completed in 1998, the project includes offices, a school, dining facilities, and a ballroom. *A.B.*

Ewing, New Jersey

Outcry Saves Kahn Pavilions, For Now

A proposal by the Jewish Community Center of the Delaware Valley in Ewing, N.J., to demolish two of its Louis Kahn-designed pavilions (1954-'59) set off a recent outcry in the architectural community. Word of the threat spread quickly and put a stop, for now, to the JCC's plans. Used by the center's day camp and sited near their more famous Bathhouse brethren, the pavilions have extensive water damage. Poor maintenance, say engineers who have inspected the site, is the main reason for their condition. Efforts to establish an independent fund-raising campaign for restoration are underway. For more information, contact Preservation New Jersey at (908) 442-1100. *Abby Bussel*

News continues

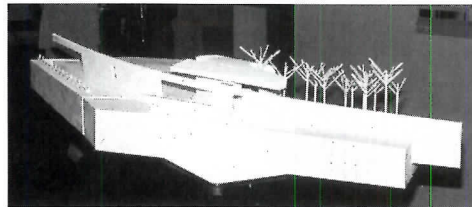
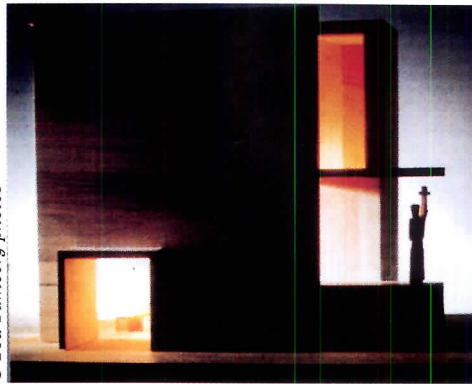
Moneo Keeps on Winning

Rafael Moneo has won the international competition for the Cathedral Square Project in Los Angeles, beating out semi-finalists Frank O. Gehry & Associates; Morphosis; Venturi, Scott Brown & Associates; and Santiago Calatrava. Selected from a field of 46 entrants, the five firms participated in a theoretical sketch exercise (shown here)—a shrine for the statue of Junípero Serra, a Spanish Franciscan friar who founded nine missions in California. The 3,000-seat cathedral will include residences for the Archbishop of Los Angeles and clergy, offices, a conference center, and a public plaza. Awarding the commission, Cardinal Roger Mahony told Moneo that “for you this project was more than the design of another building for a client. This enterprise was about creating a wonderful sacred space in the midst of a modern city known for its ephemeral entertainment glitter.” This continues the Spanish architect’s winning streak, having received

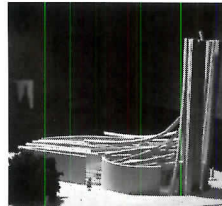
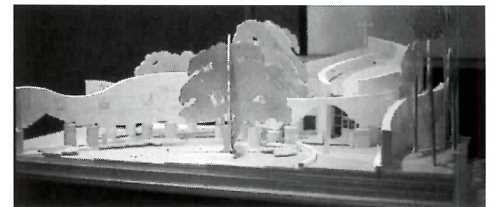
Sketch-exercise entries for the theoretical shrine:

1. Rafael Moneo; 2. Morphosis; 3. Venturi, Scott Brown & Associates;
4. Frank O. Gehry & Associates; 5. Santiago Calatrava

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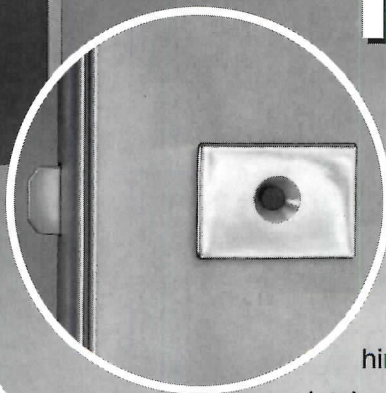
this year’s Pritzker Prize and UIA Gold Medal. But all is not rosy for the new cathedral. The local Catholic Archdiocese, the country’s largest, hopes to build on the downtown site of its historic, but earthquake-damaged 1876 cathedral: the proposed demolition has been the subject of a battle between the Church, the City, and preservationists. Construction, to be completed in the year 2000, will be funded by The Dan Murphy Foundation, The Thomas and Dorothy Leavey Foundation, and other private donors.
Abby Bussel



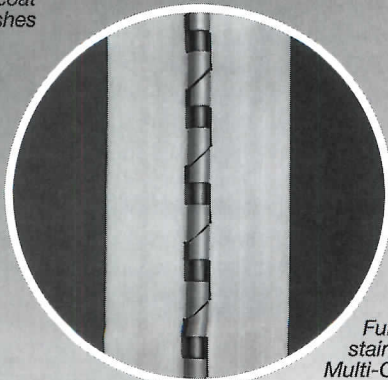
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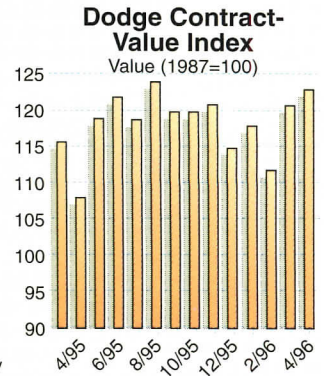
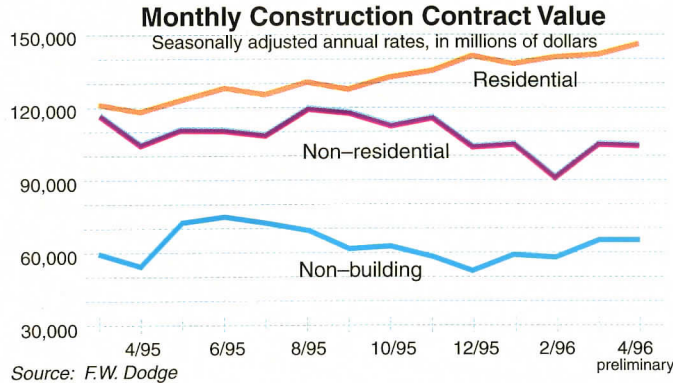
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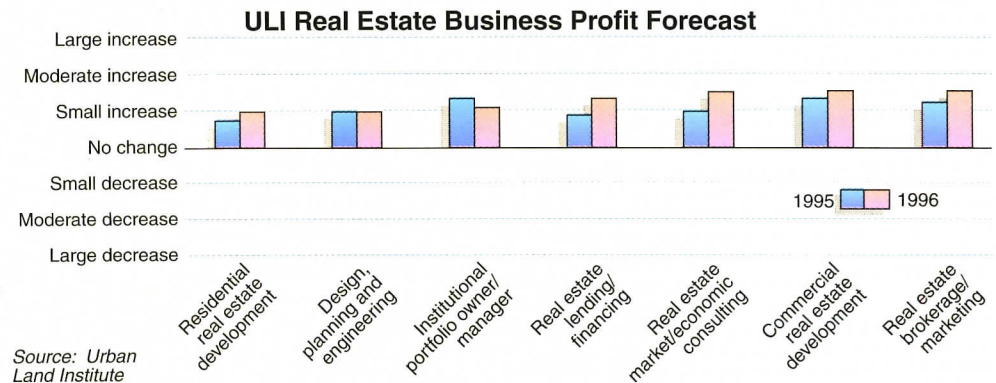
Housing bounces back

In spite of rising interest rates, single-family housing construction strengthened in recent months. A combination of greater confidence and the fear of even higher rates may be driving some sales, says F. W. Dodge's Robert Murray. Commercial construction was up, boosted by starts in casino and hotel projects; other commercial types were flat or declined. Schools, hospitals, and detention facilities declined in April. Overall, non-residential volume in the first four months of 1996 was 7 percent below 1995 ■



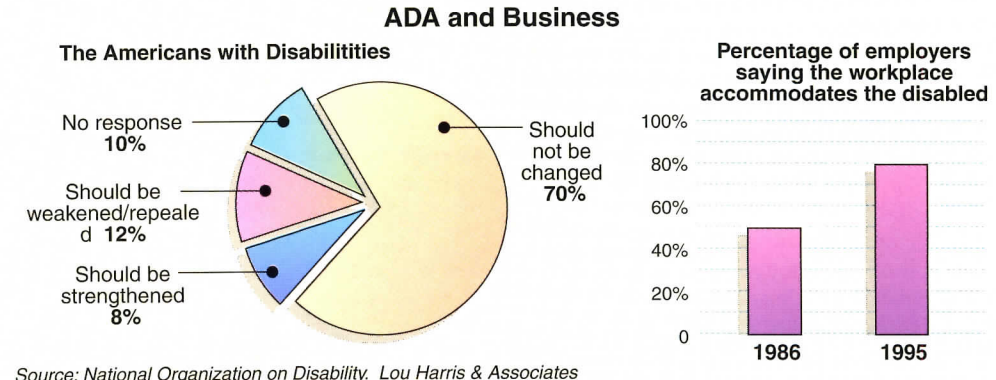
Commercial development's still tough

The Urban Land Institute's "1996 Real Estate Forecast" shows increasing profits for commercial real-estate brokers and development companies, but not much trickling down to design firms. Analysts feel this is because construction levels remain low, even though real-estate activity is up. Design firms added employees faster than other respondents, which may mean more work is in the pipeline, but fee income simply hasn't caught up. Call 800/321-5011 to obtain the survey (\$14.95 members/29.95 non-members). ■



Buying in to ADA

Though there's been much confusion about just what is required under the Americans with Disabilities Act and other regulations affecting the disabled, American business doesn't favor changes in the legislation, according to a survey by the National Organization on Disability. The survey showed that only a small percentage of employers reported increased litigation costs. And a much higher percentage of business is now actively accommodating the needs of disabled workers and applicants. ■



The Profession This Month

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Short Takes

◆ **Troublesome overtime provisions:** Offering salaried "exempt" employees overtime pay is a violation of U.S. labor laws, but Zweig White's "Policies and Procedures" survey shows 42 percent of respondents still do so. If salaried employees receive overtime pay, they are legally defined as hourly, and are due time-and-a-half pay when more than 40 hours per week are worked. Heavy fines are possible. The survey (\$250) can be obtained by calling 508/651-1559.

◆ **Photo guidance:** How do you get professional photography that correctly reflects a project's virtues? The American Society of Media Photographers offers a free brochure. Send a stamped, self-addressed envelope to ASMP, 14 Washington Road, Suite 502, Princeton Junction, NJ 08550.

◆ **Affordable housing innovation:** As part of HUD's Building Innovation for Homeownership program, innovative house-building techniques are sought for recognition and possible financial support: Steve Winter Associates, 203/857-0200. ■

Succeeding in a Volatile World

By Peter Slatin

As the United Nations Habitat conference convened this June in Istanbul to discuss issues of growth and development, architect Randy Gerner was grappling with Turkey's own very real growing pains. Gerner, a principal in Gerner Kronich Valcarcel, of New York City, has landed a few good commissions in the U.S., such as a 110,000-sq-ft corporate interiors project. In Turkey, however, the firm, whose partners split off from Kohn Pedersen Fox Interior Architects only 18 months ago, has already received four building or planning projects, including a new 40-story headquarters building for the country's largest conglomerate, a historic-renovation project, and a major urban master plan.

It's not just the Pacific Rim that's busy [see the supplement on that subject elsewhere in this issue]: "Istanbul has the potential to be a Singapore to Middle Eastern countries and the former Soviet states," says Gerner. "It's a bridge to the Islamic cultures where Asia meets Europe, literally and figuratively, in the center of the city."

This bridge, however, also can be an obstacle course for a Western-oriented architect, even one well acquainted with overseas work. Dozens of issues, says Gerner, confront the daily effort to bring a building out of the ground, both on paper and at the site.

"Even the culture as to how to prepare drawings is different," Gerner explains. For example, the convention for arrows on stairs in plan is opposite that used in the U.S.—one small indication of just how topsy-turvy the design terrain is.

When in Rome—or Jakarta . . .

As overseas building markets continue to expand, especially in less developed countries, U.S. architects have been learning that to be successful requires a careful rethinking of how the firm works. Clients in foreign countries value American technical and design knowhow judiciously mixed with an openness and sensitivity to the host country and client.

Peter Slatin writes on architecture and real estate for The New York Post and other publications.

"We do our homework," says Bernardo Fort-Brescia of Arquitectonica, the Miami-based firm, which has an international practice ranging from Europe and Latin America to such exotic locales as Shanghai and Times Square. "Every place has a different business culture and different priorities," says Fort-Brescia, "from a sense of timing to reasons for making certain development decisions. We think of each project within those para-

has negotiated many overseas contracts with developers. "You have to interview everyone to see who really has the experience" to act as an associate architect, a joint-venture partner, a consultant or subcontractor.

Another person whose experience and understanding the architect will likely need to carefully evaluate is the developer. In what De Chiara calls "quasi-Third World coun-



© El País

Caveat Emptor: These Johnson Burgee twin towers in Madrid sat for years as bare steel. Local managers are accused of defrauding Kuwaiti investors.

eters, read a lot about the countries we're going to—we inform ourselves."

Few firms are able to go into foreign markets cold. Arquitectonica, due to Bernardo Fort-Brescia's roots in Peru, has long cultivated relationships in Latin America. Randy Gerner knew someone who was friendly with someone in Turkey, and built on that relationship.

Who is on the team?

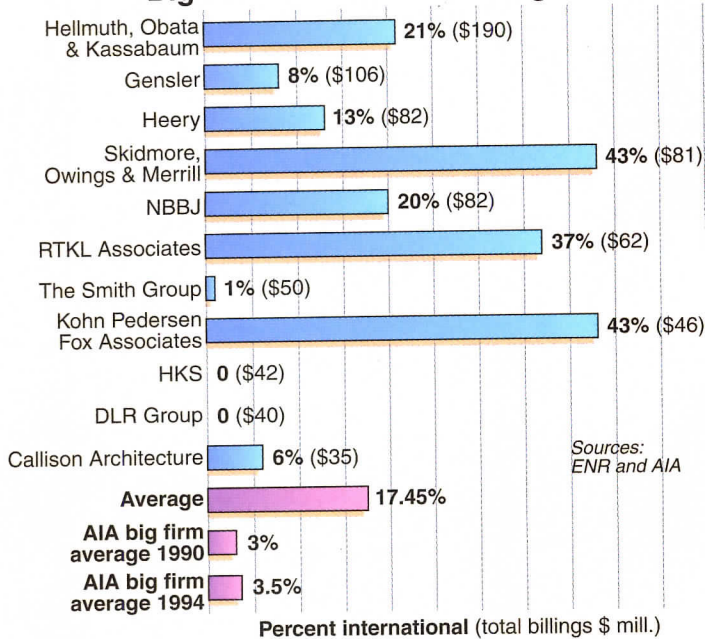
Laying the groundwork should begin even before submitting qualifications. "There is virtually no area where preparation is not required," says Michael De Chiara, a partner in the New York law firm Zetlin & De Chiara, which specializes in real-estate practice and

tries," like China—where capitalism and communism meet in a vast, swirling confluence of booming urban population and bare-bones agricultural society—"the level of unfamiliarity and unsophistication in modern building techniques creates impediments in the front end of any project."

"The well-advised architect," Di Chiara continues, "has to be sensitive about educating owners and developers." At the same time, doing business in China requires heeding a negotiating style in which, "of 20 points agreed to on Monday, 18 will be taken back on Tuesday." Still, says De Chiara, the slow early pace is both standard and worthwhile, because it means establishing the proper framework to construct a modern building.

International practice is becoming more important to American firms. Obstacles can be many, but so can rewards. On these pages, an overview of critical issues for firms thinking of taking the plunge; on the following pages, we spotlight two volatile markets.

Big Firm International Billings



Varied Mix:

Though large firms pioneered global practice, not all do a high percentage of international work. Still, work outside the U.S. is steadily climbing. Firms listed are the largest architects and A/E's that do mostly general-building design, according to ENR.

Western Europe, "there were factions vying to prove theirs were the best codes. But we came up with a consensus."

The key framework for overseas work, however, is language. Arquitectonica, for example, boasts many designers with multiple languages. GKV has three Turkish speakers on staff. Fox & Fowle, a New York City firm with two large projects under construction in Shanghai, opened an office there in 1992 with Chinese-American staffers who speak the language.

In the end, says Randy Gerner, there's no secret to working overseas, but you do need to walk a fine line. International clients "hire American firms because we offer something they don't have," such as specific project or technical experience. "But you have to be sensitive to the culture and understand its values, whether that means using native materials or intelligently incorporating local motifs in your design." For most U.S. firms, he says, doing neither "is a sure road to failure."

Further Information

The AIA's International Markets and Practice Professional Interest Area offers several publications for firms interested in pursuing international work. Among them:

- ◆ *Getting Paid: Strategies to Ensure Payment in Foreign Markets.* 1993, \$40 non-members, \$36 members, Order no. J320. Contract provisions and dos and don'ts.
- ◆ *Resource Guide for Practice in Foreign Markets.* 1993, \$45/\$40, order no. J352. Includes prime contacts in government agencies, multilateral development banks, chambers of commerce, and other resources on foreign markets and practice issues.
- ◆ *International Practice Checklist.* 1993, \$45/\$40, order no. J353. A companion to the Resource Guide, this publication identifies the basic information architects must consider for practice outside the U.S.

To order publications, contact:

AIA Order Department
9 Jay Gould Court
P.O. Box 753
Waldorf, MD 20604
800/365-2724; 800/678-7102 (fax) ■

Construction documents are both a strength and weakness of U.S. architects. American architects provide an over-abundance of detail in their working drawings, whereas overseas, many decisions are left up to the contractors—who may change drawings (often without asking) not only to suit local

that knowledge and technology gap. "When you go to a place like Kuala Lumpur to build a building that's larger, taller, and longer than anything else, the codes just don't apply," says Charles Thornton, a principal in the international engineering firm Thornton Tomasetti, which is building Cesar Pelli's

"Every place has a different business culture and different priorities, from a sense of timing to reasons for making certain decisions."—Bernardo Fort-Brescia

conditions, but to suit construction convenience. "We probably put too much emphasis on drawing," says Gerner. "It's really about diplomacy. If you as an architect or business person choose to work in another culture, you have to accept their way of doing business as opposed to insisting on your way."

Whose standards apply?

Finding a way to handle technological questions is another process that demands patience, thoroughness, and diplomacy. Foreign contractors may not be equipped to handle sophisticated structural or mechanical systems, but could also be sensitive about

1,492-ft-high Petronas Towers in Kuala Lumpur. "It's an educational process to learn what does and what doesn't apply."

To adopt a code approach suitable to both project and locality, Thornton's and Pelli's offices took members of the project team to see comparable large projects in New York City and Chicago, such as the World Trade Center and the World Financial Center.

"We did a synthesis of the best of all the other codes," says Thornton. Because the team included people educated in—and biased toward—Japan, New Zealand, and

Not For the Faint of Heart

By David Cohn

Though architects from the United States continue to find work in developing countries hungry for sophisticated infrastructures and the symbols of prosperity, they have also been active since the 1980s in mature economies, such as those of Western Europe, where they have had to compete with entrenched local firms and other international practices. The experiences of a number of prominent American firms that have a strong European presence is a window into the advantages and obstacles of working in the emerging global marketplace.

Americans typically enter Europe via two basic routes: through an invitation based on their international renown or under the sponsorship of a U. S. client. In order to *maintain* an active European presence, American architects must be able to secure a solid group of local clients, through participation in limited competitions and direct contacts. This effort requires special ties to a region, and may also entail substantial commitment of resources and energy.

Both Skidmore Owings & Merrill (SOM) and Kohn Pedersen Fox (KPF) opened London offices after having secured large commissions at the Canary Wharf project, which was begun in 1985 by an American developer, G. Ware Travelstead (who later sold the project to Toronto-based Olympia and York). In the same period, according to Robert Turner, current director of SOM's London office, the firm secured the commission for the 10-building Broadgate development, over Liverpool Station, from a local developer, and won a competition for the London County Hall. Currently the firm's portfolio is chiefly in Britain, but includes projects in Germany, Holland, and a handful of other countries—all for European clients.

How native do you go?

Europe, in the late 1980s, seemed poised for enormous growth in banking and other services—a golden opportunity for American firms facing precipitous declines in such work in the U.S. KPF opened its London office after Canary Wharf began construction, and

David Cohn is RECORD's Madrid-based correspondent.

has found work in basically the same countries as SOM. Its strategy has been to “go native,” hiring architects for both staff and senior management positions from Holland, Germany, Spain, France, and Great Britain for projects such as Thames Court, London; provincial government offices for the Hague; and an office building in Düsseldorf. Like Turner, KPF's Lee Polisano sees the London office as a “European entity” rather than as just a branch of an American firm.

Polisano declares that “we wouldn't have gotten 90 percent of our European work if we weren't here.” KPF's strategy required “a tremendous investment to start with,” and, to survive the economic downturn of the 1990s, “a belief that we would succeed in the long term.” KPF London has doubled its staff in the past nine months to about 80 architects. SOM, whose London staff grew to 300 during the height of Canary Wharf, is now stabilized at 35, still large by European standards, but testimony to the fact that Europe is not immune to construction cycles.

Murphy/Jahn, on the other hand, does extensive work in Germany while working entirely from its Chicago offices, sending construction documents to building sites by courier or Internet. The American developer Tishman Speyer first introduced Germany to the firm in 1985 by commissioning the Messeturm in Frankfurt [RECORD, February 1993, pages 70-77], winning the firm wide recognition.

Succeeding commissions included not only the widely publicized mixed-use project for Sony on the Potsdamer Platz in Berlin, and the one-million-sq-ft Munich Airport Center [RECORD, June 1995, pages 40-43], but more modest projects, such as the Ku-Damm 70 in Berlin that just received an AIA Honor Award. These projects were all either won in competitions (though Sony is also backed by Tishman Speyer) or obtained from local sources, drawing on the fact that Helmut Jahn is a German native.

Moore Ruble Yudell, recent winner of the competition for the U.S. Embassy in Berlin [RECORD, March 1996, pages 38-39], was first invited to Europe with Charles Moore in 1982, winning a competition for Berlin's Tegel Harbor housing. The project's success helped

secure a number of luxury and large-scale housing developments—a type rarely associated with Americans—in Potsdam and other Berlin suburbs and Malmö, Sweden.

Clients like a service orientation

Not surprisingly, however, the bulk of American work in Europe continues to be in large-scale commercial development. With 82 of the world's 200 largest architectural offices here, according to a recent survey by London's *World Architecture*, Americans offer special expertise in master planning and project management.

American firms also distinguish themselves from their European colleagues through their high level of client service and project control, according to those architects inter-

American architects have traditionally been brought in for their expertise in large commercial. Projects by firms like Kohn Pedersen Fox don't necessarily have much of an American look, however. The Guggenheim Museum in Bilbao, Spain, is groundbreaking in two ways. It's one of the few important cultural facilities entrusted to an American, and it's on the Mediterranean rim, which has not offered many opportunities for those from the U.S.

Americans are still weakly represented in the "star system" of architects whose buildings are acquired as cultural status symbols by cities and patrons across Europe.

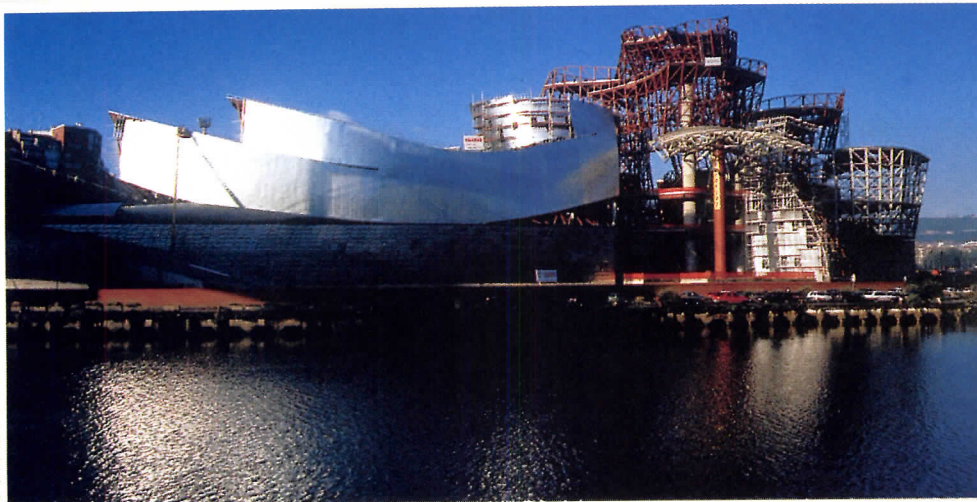
viewed. In most European countries, architects leave many project details to be resolved by well-trained crafts workers or on-site, rather than through a fully detailed set of drawings. But European contractors and clients are no longer able to count on consistently high subcontractor quality and owners are becoming increasingly intolerant of the quality-control issues and costs of correcting errors on-site. Detailed construction

drawings, specifications, and close construction supervision "have made us many friends among clients," according to Keith Palmer of Murphy/Jahn, "and made our contractors work harder than they are accustomed to." SOM and KPF also insist on doing all working drawings in-house to maintain quality standards, limiting the role of local architects. KPF's Polisano says, "we only use them if we're asked to by the client."

Breaking out of the commercial mold

Given their size and volume of work, Americans are still weakly represented in the "star system" of internationally known architects whose buildings are acquired as cultural status symbols by cities and patrons across Europe. Only Richard Meier and Frank O. Gehry are currently considered in the top rank, with the work of Philip Johnson, Pei Cobb Freed, and Cesar Pelli relegated to a secondary, commercial level. A smattering of Americans, introduced through academic and artistic circles, are also taken seriously: Peter Eisenman, John Hejduk, and Steven Holl.

Palmer, of Murphy/Jahn, notes that Americans got their feet wet in Europe 10 or 12 years ago when nearly every European city
Continued on page 150



1. *The Guggenheim Museum, Bilbao, Spain, designed by Frank O. Gehry and Associates.*

2. *Thames Court, London, is a mixed-use project designed by Kohn Pedersen Fox Associates' London office.*

3. *KPF designed this 325,000 sq ft office building for a site in Düsseldorf, Germany.*

© Joshua White



© Hayes Davidson



© Economic O'Mahony

Peso's Down But Americas Aren't Out

By Peter Slatin

As the economy of the northeastern United States contracted in the late 1980's and early 90's and the opportunities for overseas work expanded, work-starved architects began looking south of the border for design employment opportunities. But for many who gained a foothold in Mexico and were encouraged by the passage of NAFTA, another shock was in store: the sharp devaluation of the Mexican peso in December 1994, which put the country's economy in "the dumper."

That's according to Leon Manoff, a senior managing director at Williams Real Estate, an international firm based in Manhattan. "Here, we don't have a true sense of the pressures they face—economic deflation of 7 percent. It's an induced, severe depression," says Manoff, who grew up in Mexico City and has made numerous real-estate deals for institutions such as Republic National Bank.

Shifting gears

But the dislocation nonetheless has a bright side, not only for Mexico but also for U.S. firms seeking opportunity there. Manoff notes that despite the hard times, the political situation remains stable, suggesting long-term benefits. "There's no threat of rescinding policies meant to democratize business and move forward," he says. In addition, "there is a consensus that the economy has bottomed—the mood has gone from suicidal to glum."

That assessment has several implications for U.S. architects. First, the long-term outlook for new-office construction is relatively bleak. However, the market for corporate interiors and industrial work is now starting to improve, according to those on the scene.

"At least 60 percent of the projects we had won before devaluation went on hold," says Roger Soto, who heads HOK's three-year-old Mexico City office. "So we shifted our practice from primarily architecture to interiors, for which there is a continuing demand." As a result, says Soto, the office—which he founded—now includes 20 architects.

Peter Slatin writes on architecture and real estate for The New York Post and other publications.

"The key," Soto continues, "is having a local office with people trained in the American standard of practice. But you've also got to adapt to reality, because it's a developing country, and they do things very differently."

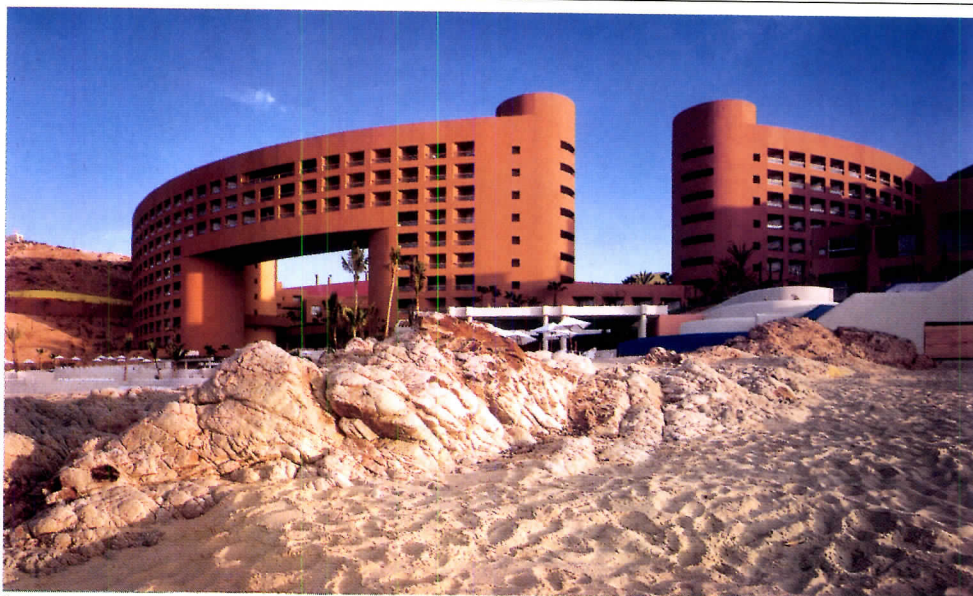
The clients "just giggled"

Andres Andujar, a senior vice president at 3D/International in Dallas—which has completed some 30 projects in Mexico—remembers a meeting at which plans for a luxury maternity suite at a women's hospital in Monterrey were unveiled. The clients "just giggled" at the room layouts. Though based on typical luxury suites in the U.S., they were far too small. "In the states you get a handful of visitors because you don't want to bother the mother. In Mexico, a new mother would

expect 27 visitors a day. There, it's not polite not to go."

3D/I, too, experienced a significant dropoff in work following the peso devaluation—as, of course, did local architects. But Andujar says the firm has found a way to leverage that shortfall: "We're taking advantage of the situation to do some production, buying CAD drafting expertise for our Latin American projects."

In other words, 3D/I and other firms have found Mexican architects to be a lower-cost source of professional expertise who are also culturally acclimated to the South American market. "Sometimes the cost of the work is less than half the price that would have been budgeted to do it stateside," adds Andujar.



© Ferrnando Cordero

Large-scale projects in Mexico are no longer the province of large firms from out of the country. This Westin Regina Los Cabos hotel was designed by Sordo Madaleno Arquitectos of Mexico City. The room wings embrace and traverse the dramatic landscape (1), while a monumental courtyard (2) creates an oasis-like place of repose.



In Mexico, "there is a consensus that the economy has bottomed: the mood has gone from suicidal to glum."—Leon Manoff

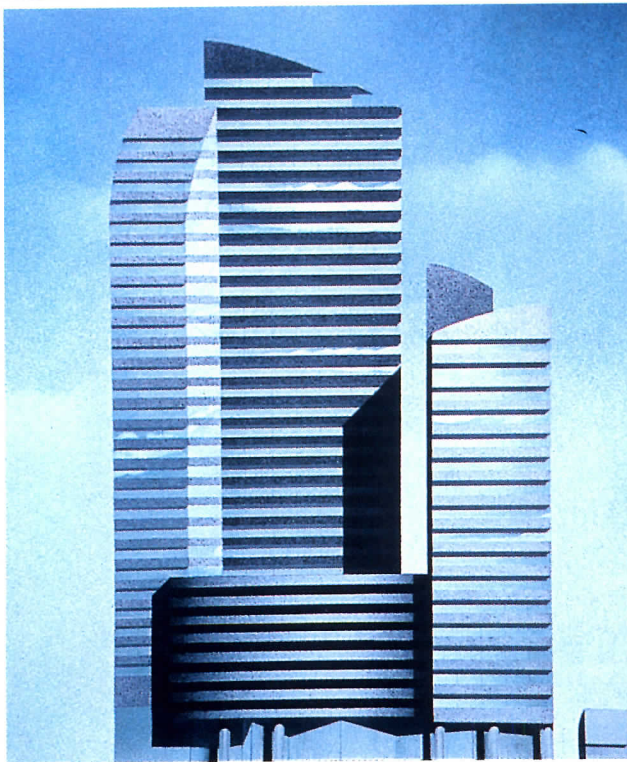
Indeed, as the Mexican pie has shrunk, the bounty elsewhere in the region has grown. Argentina and especially Brazil are proving to be extremely active development markets, with Chile, Colombia, Peru, and Venezuela not far behind.

The Miami-based firm Spillis Candela has taken steps to extend and solidify its outreach in the hemisphere. In late May, the

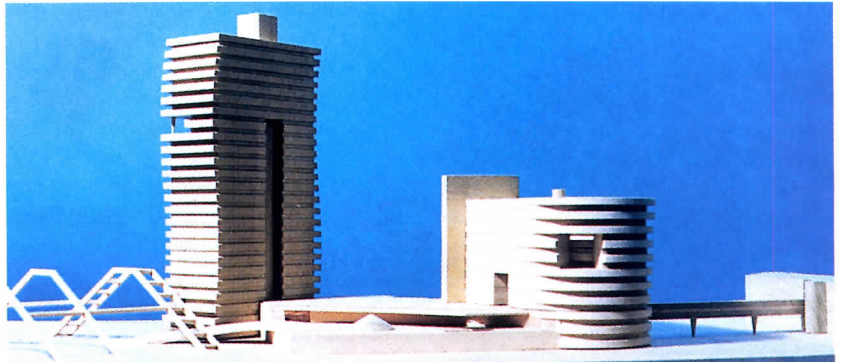
firm held a three-day symposium for the dozen or so firms it associates with throughout Latin America. In addition, says senior partner Julio Grabiell, the firm invited client representatives and real-estate and financing professionals—all the expertise needed to get projects into the ground. The idea, he says, was "to create a more formal relationship" among the members of the group. "If you don't have a good rapport with your associ-

ates, it makes it impossible to accomplish anything," says Grabiell. "You have to have complete faith and trust in your associates, a mutual respect and a clear definition of responsibility."

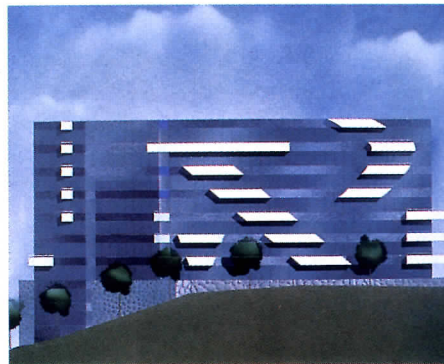
One purely practical reason for this interdependence, he says, is that it is a mistake to take Central and South America as an undifferentiated region. "There are technical language changes in each country that you need to learn, and there are nuances within those," he says. "You have to be very careful and sensitive." Miami's role as gateway to Latin America also helps. Both Spillis Candela and Arquitectonica, another Miami-based firm active in Latin America countries, can hire from an abundant supply of architects from Central and South America. ■



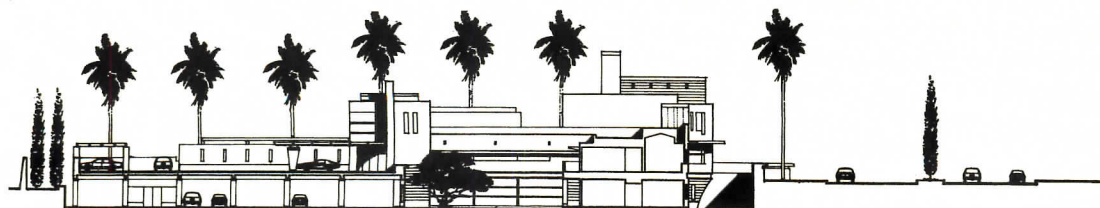
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Three projects by Miami-based Arquitectonica testify to the variety and sophistication of work in South America.

3. Four Seasons Complex in Caracas, Venezuela. The 37-story structure includes hotel-serviced apartments and retail facilities.

4. Parque Fundidora Convention Center Hotel in Monterrey, Mexico: a 500 room hotel.

5. Palos Grandes Condominium Towers, Caracas, Venezuela: a pair of apartment towers on hilltop overlooking the city.

6. RTKL Associates offers most workers direct access to terraced gardens in new headquarters designed for Gentor Corporation, in Monterrey, Mexico.

Wider Service Scope Promises Profits

By Sheri Olson

A lingering legacy of architecture's extended recession is that firms sense a continued inability to negotiate adequate fees. This is at a time when the marketplace is able to support higher fees and other improved contract conditions. Not all firms are held in the grip of such expectations, however. An increasing number are able to charge above-average fees. The gap between firms that are able to obtain high fees and those that cannot is one of the significant trends reported in Professional Services Management Journal (PSMJ)'s "1996 Design Services Fee Survey."

In general, the survey finds that fee levels are somewhat higher over last year while contract terms have only marginally improved. While this picture remains mixed, PSMJ and others analyzing compensation trends are now able to sketch new scenarios for firms to boost fees and profits.

Some trends:

- ◆ PSMJ found higher total revenues for government work, but billing rates that are lower and contract conditions less favorable than for private-sector clients.
- ◆ Fee bidding rises and fall as it goes in and out of favor with clients.
- ◆ It is becoming rarer for design firms to offer only a basic scope of services (as defined in AIA's document B141). As projects become increasingly specialized and diversified, clients seek a wider range of one-stop services, and architects find many "expanded" services more profitable.

Billing rates improving

In a continuing trend over the past three years, staff billing rates have been increasing 2 to 3 percent annually—in line with inflation. In PSMJ's survey, this increase is uniform across nearly all staff levels. Only rates for principals, where the average is \$111 an hour, have held steady.

Billing rates may differ as much as 20 percent among firms, and are highest in the West and lowest in the Mountain states, Southwest, and Midwest. The survey covered a range of architectural, engineering,

Sheri Olson is a teacher, writer, and architect with her own firm newly relocated to Seattle.

and multi-discipline firms. By firm type, engineering and A/E/P rates tend to be higher than architects'.

Overall revenues are also on the rise, but slowly. Thirty-five percent of firms reported gains in a recent AIA "Work on the Boards" survey, with the largest proportion reporting an increase over six months. At the same time, however, a higher percentage of fees is going to engineers due to environmental, life-safety, and energy demands.

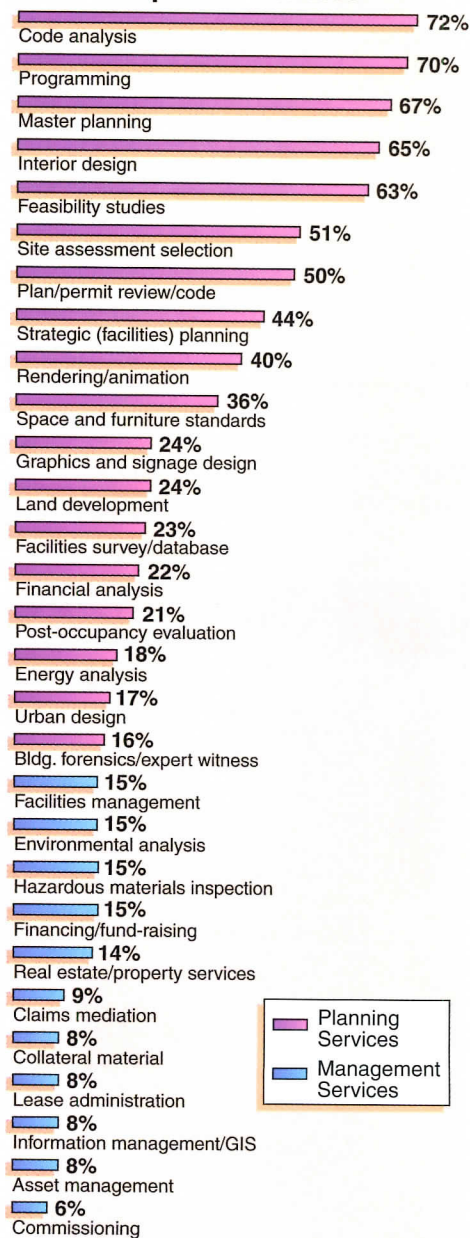
While increases in billing rates and revenues may be anemic, some firms are more profitable than ever. "Firms are achieving the best profit figures of the decade by diligently controlling their indirect expenses and maintaining extraordinarily low overhead rates," says Neil Holmes, a senior associate at Harper and Shuman, makers of CFMS financial-management software. Their 1995 survey of 230 client firms reports a 10 percent decrease in overhead rates over the past three years. Firms have achieved these record low rates by renegotiating leases, changing benefit packages, and reducing non-technical staff. Since there is a limit to how "lean" a firm can become, Holmes says this trend is not expected to continue.

The diverse performance of various building types also affects the design-services marketplace. William F. Fanning, research director at PSMJ, predicts big growth for industrial projects (high tech, communications, research labs, and pharmaceutical), commercial users (stores and food service), and commercial-development clients (build-to-suit, not speculative). Retrofitting and renovation of offices, shopping centers, and housing remain strong, keeping facilities management, space planning, and interior design services in demand, says Fanning. [See also RECORD's architectural marketplace outlooks, June 1996, pages 36-39.]

Negotiating is key to higher fees

For many building types that saw fees drop during the recession, better compensation is increasingly the norm. A notable trend revealed by PSMJ's survey is the increase in the upper quartile of fees as a percentage of construction costs, indicating that some architects are obtaining much higher than

Expanded Services



Sources: DPIC Companies, Inc. 1996

While nearly all firms surveyed offered some services beyond those defined as basic in AIA's B141, the amount of fee income derived from such services remains small. The planning tasks, mostly offered prior to design, make up a higher percentage of services offered than management fees—an area of increasing opportunity for architects, according to numerous experts.

A recent fee survey suggests strategies design firms can use to escape the trap of commodity pricing for commodity services.

average payments. "In the past, differences in fee levels adhered to building types to some extent," explains Fanning, "but now there appears to be more diversity in fees even within a building type."

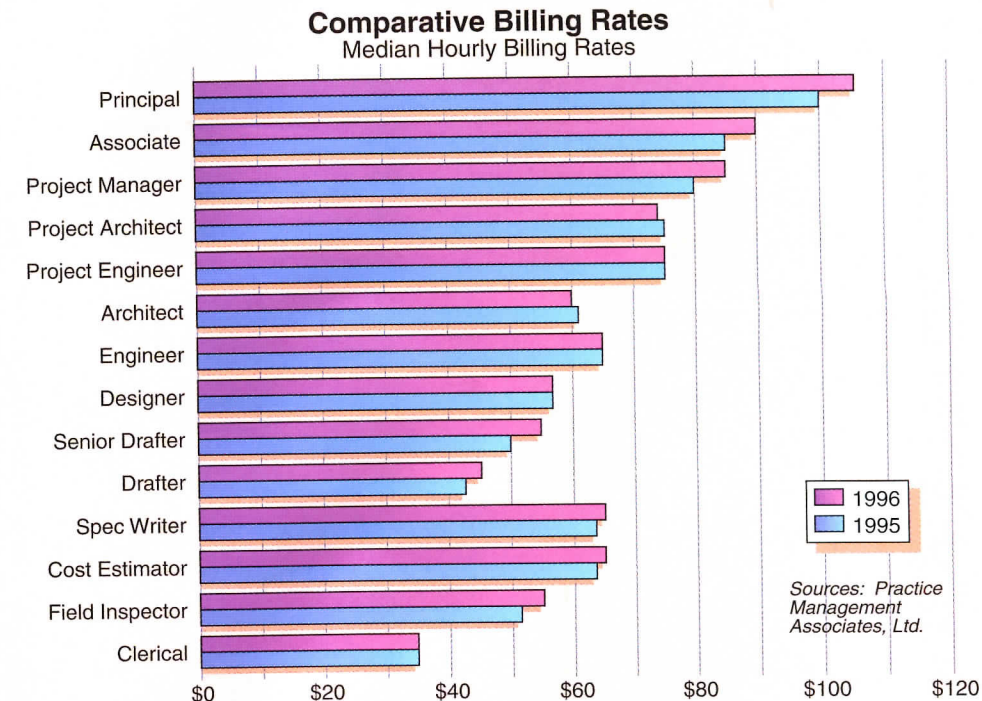
Owners appear willing to pay more for certain qualities or services: signature design, technological expertise, or an ability to deliver a wide scope of services. More important may be a firm's ability to negotiate fees and contract conditions. "The firms that are getting higher fees are the ones that aren't afraid to ask for them, and have a strategy for negotiating them," says PSMJ publisher Frank Stasiowski.

Caught in a highly competitive marketplace, some firms believe they can't push fees up. "Often our low fee is a major criterion in our selection," says Stephen Dietemann of Architectural Collaborative Services, a two-person office in Troy, N. Y. "We offer low fees simply because sometimes a low fee beats no fee." According to Fred Stitt, editor/publisher of the Guidelines series on professional practice, "Often it's firms that are small, young, or in a financial bind that fall into a pattern of not getting appropriate fees." There's no magic to breaking out of this cycle, says Stitt. He and others have long advocated a focused approach to improving contracts: gathering detailed information on what other firms charge, adding up what it costs to do the work (more predictable than many imagine), and learning better negotiating skills.

If fees are insufficient to cover the performance of the services, it can cause financial instability and increase liability problems for architects. "Adequate fees are an important way for architects to prevent or reduce the costs of claims," says Ava J. Abramowitz, a vice president at liability insurer Schinnerer Management Services. "According to a survey of our insureds, claims do occur when fees are too low to provide the required services or qualified personnel," she explains. "Our insureds told us a sufficient fee is a claims preventer. What may be short-term client savings are usually a long-term loss."

Government drives a hard bargain

While total revenues from government-sector work have increased, billing rates have fallen.



Overall, billing-rate increases match inflation. Though medians are reflected above, principals in small firms are able to bill only around \$100 an hour, while principals in

500-plus person firms are able to bill \$150. Architectural, engineering, and A/E billing rates are similar. Billing rates for A/E/Ps and corporate interiors firms are higher.

PSMJ's Stasiowski believes dollars per project are up because the government is becoming less efficient at managing architects and engineers. "Often the government is buying more total hours per project than originally negotiated due to internal inefficiencies that cause charges for change orders and extras," he explains. Government is also reacting to balanced-budget and anti-tax fever in two ways: outsourcing more work to consultants, including architects, while using its status as a major consumer of design services to drive hard bargains.

Negotiating better fees on public work is becoming more difficult, due to statutory limitations. According to PSMJ, 65 percent of firms reported fixed limits on billing rates, annual salary, and reimbursable costs. Many agencies also fix maximums on lump-sum architectural and engineering design fees.

Limitations may differ regionally or within an agency and may not be uniformly enforced.

High-effort tasks are often required on government projects, such as detailed cost estimates, written reports on design choices, or full-time site observation, further reducing the potential for profit. A government client may require use of a given CAD software, and require "deliverables" compatible with its hardware/software setup.

Despite such barriers, some firms are able to obtain higher fees and more favorable contract conditions on government work. Short Elliott Hendrickson, St. Paul, is a 300-person A/E firm that earns 75 to 80 percent of its revenues from public projects. Director of architecture, Lew Moran, believes that success depends on understanding the government's language, approach, and fee structures. An advertised fee of 5 to 6 percent of construction cost may appear to be unrealistically low, explains Moran, but the scope covered by the advertised services could be so limited that a profitable fee may be negotiated on the scope the agency actually requires.

William Fanning is research director at PSMJ Resources, Inc.

Fee bidding isn't going away

Competing for commissions on the basis of price remains one of the profession's knottiest problems. The good news is that the PSMJ survey reports a slight decrease in the practice. "This may be the first sign that fee bidding has passed its peak in popularity," reports Fanning. According to PSMJ, 68 percent of A/E firms and 43 percent of architecture firms participate in some kind of price competition, even as most professionals strongly oppose the practice as causing them to choose between delivering adequate quality and getting the job. Ironically, design firms appear to be guilty of that which they decry, increasingly using fee bidding when hiring consultants, says PSMJ.

PSMJ data over a 10-year period show fee



The good news is that the PSMJ survey reports a slight decrease in fee bidding. "This may be the first sign that fee bidding has passed its peak in popularity."

bidding rising and declining by building type over time. Typically, fee bidding increases in a market as construction volume falls. Firms feel the pressure to lower fees to keep experienced staff busy. Fee bidding appears to decline as firms move to more profitable types and as clients get poor results.

Price competition doesn't always drive fees down. Instead, many principals say they react to fee bidding requests by carefully circumscribing or reducing the scope of services to match the fees available. Some typical basic services, such as pre-design, are eliminated or provided only when clients request them, and are charged as additional services. Whether clients pay more through additional services or costly fixes in construction, the opportunities for real client savings are minimal, according to Stitt.

Scope of services and profitability

"The long term danger of fee competition," says Stasiowski, "is in the increased likelihood of clients viewing design services as a commodity." Indeed, clients who choose

designers primarily on a price basis are saying either that they don't see enough difference in the quality or service firms offer to merit different compensation, or they don't value better service or greater attention to quality that firms who charge higher fees presumably offer.

Some firms give clients greater choice over how fees are spent by using scope of services as a bargaining tool during contract negotiations. "As clients become more insistent on negotiating fees and contract conditions," says Robert Buford, managing partner at Robert A.M. Stern Architects, New York City, "we are becoming more careful about defining the scope of work and billing for extra services."

Other firms find that scope is another way for clients to drive a hard bargain. "For some projects, fees haven't changed much but we are being asked to provide more services for the same amount," says Lew Moran. One trend PSMJ's survey identifies is that fees for a standard scope of services have become

in large part "commodified." Firms achieve better contracts and fees by customizing or expanding services. A recent DPIC survey (previous pages) reports that firms of all sizes are offering one or more expanded services. The larger the firm, the greater the likelihood that expanded services are being offered. Smaller firms generate a larger percentage of their fees from these services when they do offer them. "In the future, 30 to 40 percent of architectural services may not be directly related to building a building; challenging the very idea of a basic scope of services," predicts Richard Hobbs, vice president of professional practice at the AIA. [For more on expanded services, see RECORD, February 1996, pages 32-35, 110.]

A wider range of services creates a corresponding range in methods to determine and contract for fees. Currently, lump-sum fees remain the most popular, but, says, Stitt, "An increasing number of firms are billing hourly for design development and construction administration, while charging a fixed fee for construction documents." He sees the trend continuing, predicting that more than half of projects will bill through this method within the next three years.

Another way for firms to increase profitability is to offer what Frank Stasiowski refers to as "knowledge-based services." He believes higher fees are going to firms that can offer highly specialized expertise, such as strategic facilities planning, asset management, or environmental and energy consulting. "Architects need to sell knowledge, not production," says Stasiowski. Charging on the basis of clients' assessment of the value of services, he believes, is the long-term key to increasing profitability. ■

To obtain copies of the 1996 Design Services Fee Survey (\$195), contact:
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he Web Takes Off

By B.J. Novitski

Compared to this time last year, the world of on-line information services has transformed itself, both quantitatively and qualitatively [RECORD, March 1995, pages 40-41, 113]. Until recently, most services were holdovers from the electronic "bulletin boards" (BBSs) popular among hobbyists in the 1980s. In these users dial into a computer to retrieve files or exchange messages with other users.

There are still dozens of such BBSs that specialize in construction-related information or CAD software. But increasingly, these self-contained dial-in services, such as AECNET, Northport, N.Y., are moving their content onto the emerging giant, the World Wide Web (<http://www.aecnet.com>). The Web is the graphic, easy-to-navigate portion of the Internet, the vast network that links large computers throughout the world. And it's not just the smaller BBSs that are losing ground

B.J. Novitski is a freelance writer specializing in the use of computers in architectural practice and education. She can be reached at bjn@efn.org

to the Web. The two largest commercial on-line services, America Online and CompuServe, have recently developed links that give their users a "gateway" to the Internet. At this writing, the access is still limited, but rapidly improving.

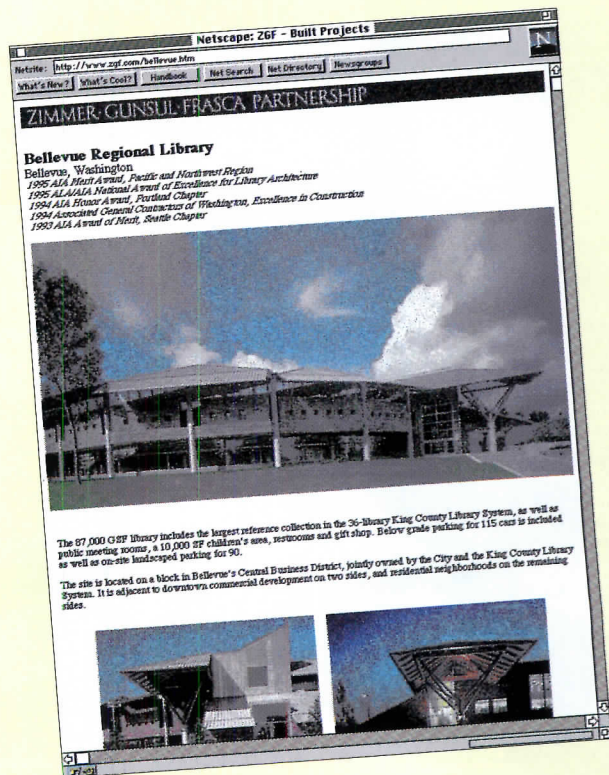
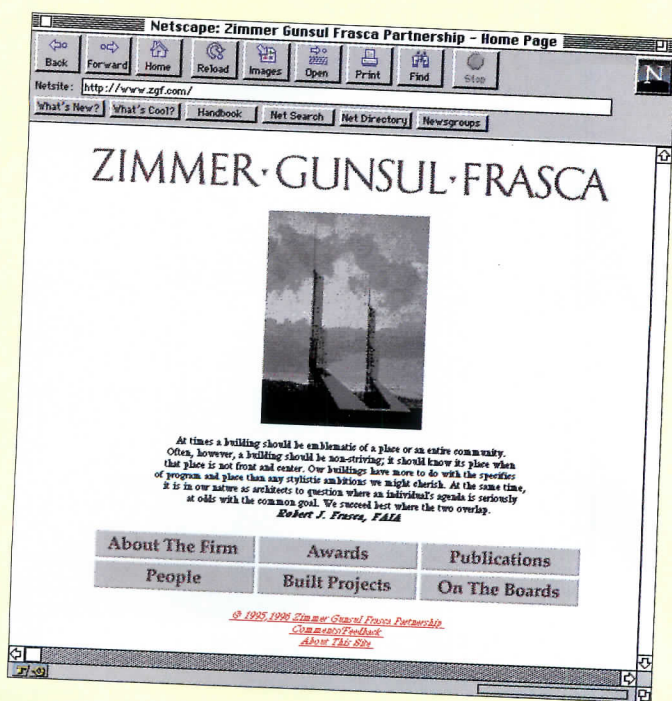
Suddenly, a huge amount of information is readily available. How will this help architects? The good news is that the new medium offers professionals an inexpensive way to publish—as well as read—vast quantities of information. The bad news is that finding useful material in all the Internet's vastness is not always easy. Many Web sites do not stand up under close scrutiny; behind their pretty pictures and superficial descriptions are few helpful specifics.

A wealth of resources?

The World Wide Web is potentially an important source of information from building product manufacturers. Several Web sites promise links to manufacturers' data, but most offer only names, addresses, and phone numbers. So far, there are few manufacturers' sites that are substantive. In an ideal

future, the Web will be a cornucopia, offering interactive design tools and CAD drawings and guide specifications for downloading to project files. In fact, the Web could become the primary source of technical information, replacing binders and catalogs. It will likely be a relatively inexpensive way for manufacturers to keep their data current, and increasingly easy for architects to use.

Sweet's Group Online (<http://www.sweets.com/>) and Architects First Source (<http://www.afsonl.com/>) are working toward this goal. [Sweet's is part of The McGraw-Hill Companies as is RECORD.] Of Sweet's nearly 6,000 on-line listings, 700 contain a one-page company overview, or "showcase." The Web site now offers all the information available on the SweetSource CD-ROM; including text, specifications, tables, illustrations, and drawings. But such a resource can never be complete until it contains Web links that at the click of a mouse move you directly to the manufacturer's own site. Architects First Source now offers only about 30 links. They can't offer many more until more manufacturers go on-line.



Though there has been a massive shift of electronic resources from private services to the World Wide Web, its great promise for architecture is far from being realized.

Interactive research

Hundreds, if not thousands of organizations, both public and private, now have Web sites. Many of them describe the organization, promote membership, and provide links to related sites, but don't offer much additional content. One site that offers much more is the Royal Architectural Institute of Canada (RAIC), sister organization to the American Institute of Architects (AIA). While the Web site (<http://www.aecinfo.com/raic/>) describes paper-based publications, symposia, research, and the practice committees that form the backbone of the organization, it also has useful interactive features available to members. For example, the Technical Enquiries area invites small-to-medium-sized firms to submit questions that are answered by an advisor sponsored by the National Research Council. Assistance is available for, among other things, defining technical needs, solving production problems, and acquiring expertise.

Purportedly offering technical assistance are hundreds of research centers' Web pages, but most describe their activities in terms so

general they provide little practical value for practitioners. One exception, the Rocky Mountain Institute (<http://solstice.crest.org/efficiency/rmi/index.html>), known for its pioneering work in the area of sustainable design and energy conservation, publishes actual research results, which are available for downloading at no charge. Typical guidance includes recommendations on how to design efficient residential lighting and how to retrofit existing windows for minimizing leakage and best solar gain.

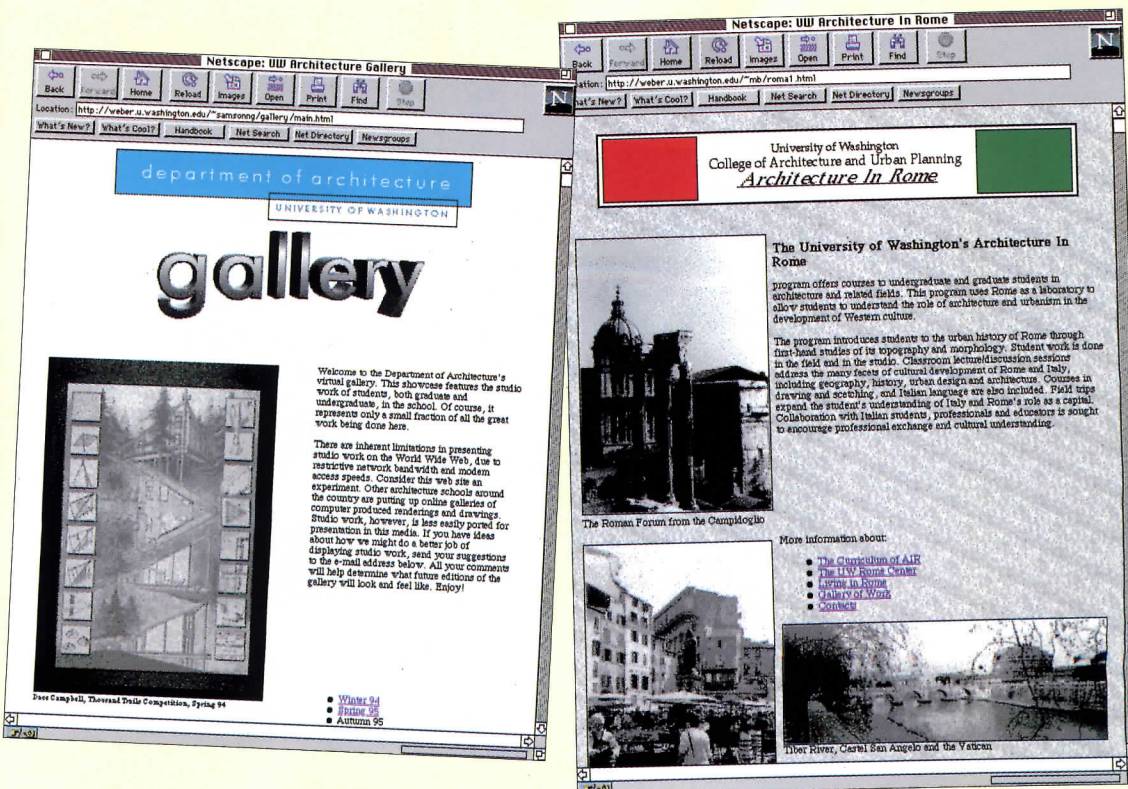
Codes and standards on-line

Standards organizations offer sites that vary greatly in usefulness. Non-governmental organizations like the American National Standards Institute (ANSI) and the International Organization for Standardization (ISO) depend on sales for financial support, so their Web sites do not offer free copies of standards. Instead, they publish on-line catalogs, complete with ordering information. In contrast, the Department of Defense Tri-Service CADD/GIS Technology Center electronically publishes its standards on the Web, which are available for downloading ([http://mr2.wes.](http://mr2.wes.army.mil/)

<http://mr2.wes.army.mil/>). The Center also invites visitors to comment on standards under development. At this writing, for example, it seeks input on architect/engineer CAD deliverables for firms contracting with Tri-Service. In fostering a dialog, Tri-Service is recognizing one of the strengths of on-line technology: it's easy for users to participate.

Not surprisingly, because the Web is still dominated by the technical vanguard, a disproportionate number of sites have been created by software vendors. These usually provide a combination of marketing and technical information. A vendor's site might describe the latest products and customer services, offer a demonstration version for free downloading, and give the e-mail address of technical support staff who can answer questions about the products.

One software developer that caters particularly to architects is Bentley Systems, makers of MicroStation CAD software and related tools. In addition to product literature and technical assistance, Bentley's Web site (<http://www.bentley.com/>) actively engages its



Zimmer Gunsul Frasca uses its Web pages to communicate to wired users as well as to show its work (opposite). Students of University of Washington architecture professor Brian Johnson mounted hand drawings on the Web as an experiment (left), and have tried out its potential as a long-distance design studio (<http://www.caup.washington.edu/courses/Arch499/>).

Not all the action has moved to the World Wide Web. There are still viable resources for architects on commercial and private services.

visitors, giving customers a "gallery" in which to display the work they've created with Bentley products. The site also announces Bentley-sponsored competitions.

Commercial services

Not all the action has moved to the World Wide Web. There are still viable resources for architects on CompuServe, America Online, and a few architecture-specific private services. Although they suffer from limited connections to the rest of the Internet, each has its strong points.

◆ *AIAOnline*, the several-year-old service of the AIA, has recently undergone a face lift, and is now available for Windows 3.1 (opposite). Now, AIAOnline can display color images including photographs, charts, and illustrated journal articles. Darrell Lewis, AIAOnline's director, says of the service, "It can provide a one-stop shop for news and information about the AIA and member services, project and business-development leads, publications and services, and issues that affect you and your business every day." Although the AIA also has a presence open

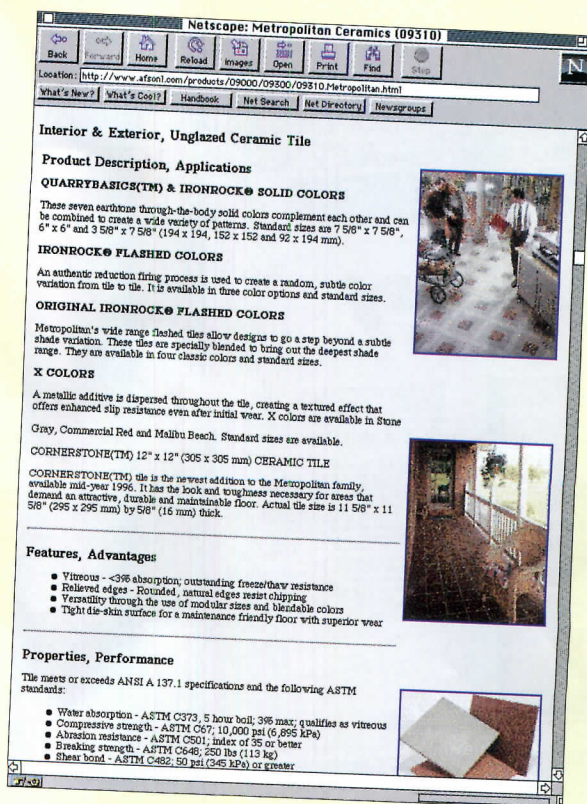
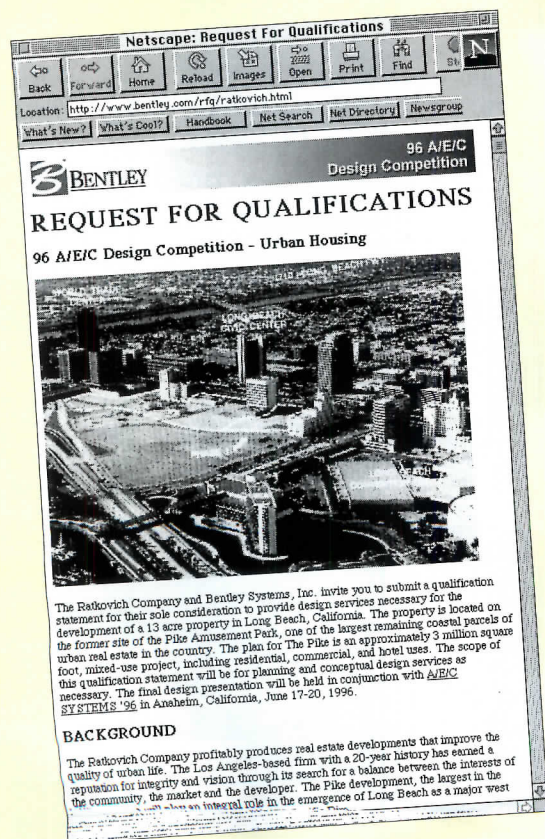
to all on the Web (<http://www.aia.org/>), it still maintains the private service as a member benefit, with resources not available anywhere else.

◆ *CompuServe*, now the world's second largest commercial information service, has long been the resource of choice for business professionals. Like the Web, it provides news and information, but unlike the Web, it abounds with interactive forums in which people "discuss" shared interests. Recently CompuServe established a forum just for architects (GO ARCH). Led by Oakland, Calif. architect Linda Joy Weinstein, it includes two dozen sections on topics such as client services, education, marketing, historic resources, and so on. Each topic has ongoing discussions and a library of related information. Additional public and private subforums will be available for organizations and manufacturers.

A new CompuServe operating system will give the architecture forum more graphic capabilities than have been available in the past, especially for live, interactive electronic

conferences. Weinstein explains: "This allows, for example, photographs or video to appear during conferences, like a slide show or full-featured video conferencing." She expects the forum to attract architects and related professionals as well as the interested public. "There is so much for professionals and laypeople to learn from each other," she says, "if we come down from the ivory towers occasionally. For instance, it would be invaluable for architects, builders, and building owners to be able to bypass the jargon of the Americans with Disabilities Act and talk directly to the disabled community about what their specific needs are and how we can provide for them in a creative and economically sound way."

◆ *America Online (AOL)*, the largest commercial information service, is also changing rapidly, with new graphics capabilities and links to the World Wide Web. Like CompuServe, AOL supports chat rooms, in which users can "talk" to each other by taking turns typing comments that appear on the others' computer screens. Although primarily a consumer service, AOL has forums on home



building and planning and one with a specifically architectural focus. On "PLACES for the Built Environment," users "meet" to discuss issues. (PLACES stands for planning, landscape design, architecture, construction, engineering, and specifications.) New links give visitors access to the Commerce Business Daily, Internet sites, and other construction-related forums.

◆ *Architecture Online*, for the more literary-minded, is from Princeton Architectural Press. Like AIAOnline, this service has a small public Web site (<http://www.designsys.com/pap>), but most of its bounty is available only through a BBS. Offerings include articles by architectural critics and historians, bibliographies, illustrated exhibition announcements, and chat rooms.

Princeton Architectural Press gives sample chapters and ordering information for its own books. To promote interaction, subscribers are encouraged to submit articles (including images and video), download other people's articles, leave messages for colleagues, and join book-group discussions.

Firms on the Web

A popular and fast-growing trend is for architecture firms to produce their own Web sites. At this writing, over 200 firms are listed on the AIA's index (<http://www.aia.org/archwww.htm>). In many cases, their Web sites are the digital equivalent of their marketing brochures (previous pages). Although few architects expect to attract clients this way (few have), some feel that without a Web site their technical credibility would suffer.

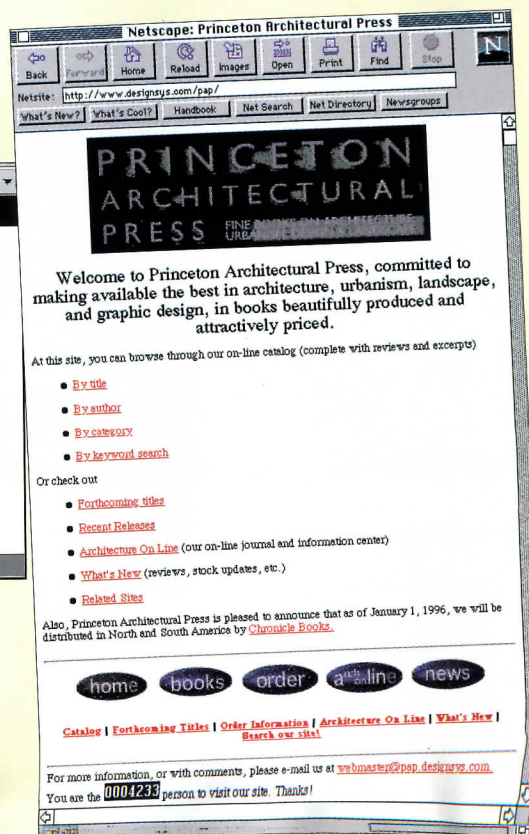
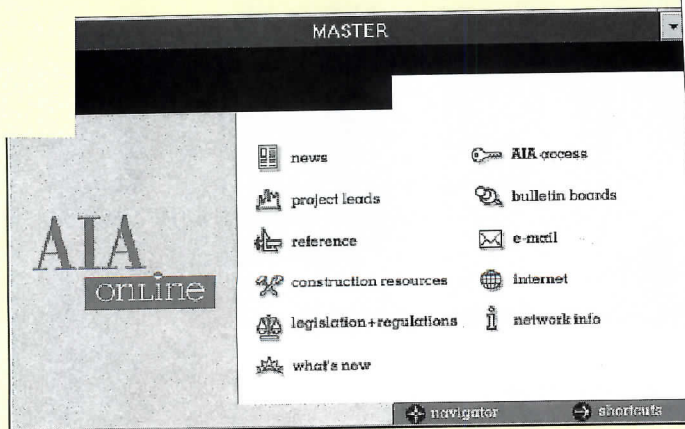
But there are other benefits. The sites can also serve as a centralized but private in-house resource for the firm's staff; prospective employees can be more selective in where they apply for work; and the firm provides a public service in educating visitors about architectural issues.

For these and other reasons, Zimmer Gunsul Frasca (ZGF) in Portland, Ore. has developed its own Web site (<http://www.zgf.com/>). In addition, says Ken Sanders, ZGF's associate partner and manager of information services, the firm is exploiting the medium to communicate with clients. ZGF is currently working

on a new campus building for a college that is already wired into the Internet. By publishing schematic drawings on its Web site, the firm can get feedback from a wider spectrum of the building's future occupants than through conventional meetings.

"Because these users are already on the Internet," says Sanders, "this is an excellent way to distribute information about the design-in-progress." A service, he hastens to point out, that is not appropriate for every client. In design projects that are politically sensitive or private for any reason, it would be a mistake to publicize preliminary work.

Because the Internet was born in universities, that is where it is most deeply entrenched. Nearly every architecture school in the country now has a Web site. Some, such as the University of Washington (previous pages), have tried ways of using the on-line environment that professionals could learn from, such as enabling long-distance collaboration. As ZGF's Sanders concludes: "This is a brave new world, and we're learning as we go." ■



Bentley Systems, Inc., uses its Web site for promoting a design competition (opposite left). Building-product manufacturer data is one of the most promising resources on the World Wide Web (opposite right). In the future, such Web sites could replace paper catalogs. Princeton Architectural Press links to its BBS (near left) as does AIA, which offers new graphics on members-only AIAOnline (far left).

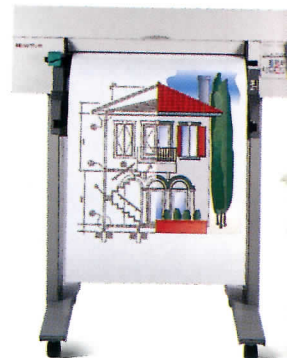
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All in the Family

By Steven S. Ross

Our reviews this month highlight a trend in software. As core products have become increasingly complex, vendors are relying more on standard "helper" packages. Need a text editor inside CAD? You can use Microsoft Word instead of one provided as part of the CAD package. Need a database? Use Microsoft Access. Need a spreadsheet? Use Excel.

There are three problems here. First, the "add-on" is almost always a Microsoft product. When other products such as the Lotus 1-2-3 spreadsheet can be used, it is often at a loss in functionality. Second, the "optimal" add-on is almost always for Windows. Thrifty DOS is being left behind—perhaps deservedly so, because it is a technical dead-end. But so is Unix.

Third, it is tough to synchronize versions of all the software. The two programs reviewed this month both take advantage of links to Excel, for instance. Both can link to Excel 5.0, but are happier with Excel 7.0. Buy one program and you'll pay for upgrades.

The advantage is that the data formats themselves are more "standard" and once everything is running, the system is a joy to behold (and often a joy to use)—even if it takes three times as much hard-drive space on your computer! Just make sure you hire a good systems integration expert or have a good dealer to keep track of it all.

AutoCAD LT for Windows 95

Vendor: Autodesk, 111 McInnis Pky, San Rafael, CA 94903, 415/507-5000, 800/964-6432, 415/507-5100 (fax), CompuServe (Internet)GO ADESK, <http://www.autodesk.com>.

Equipment required: Windows 95, 16MB RAM, or Windows NT, 32MB. Files take 35MB of disk space; allow another 30MB or so (beyond normal Windows swap file) for working files.

Cost: Street price under \$500; symbol libraries \$99 each; upgrade from older LT 2.0 (for Windows 3.1 or 3.11), \$129. (Call 800/435-7771.) LT 2.0 street price has been cut to under \$300.

If you are easing into CAD, or need a low-cost way to add AutoCAD-compatible seats or work-at-home seats, AutoCAD LT's new Windows 95 version may be for you. It doesn't run most AutoCAD add-ons (symbol libraries are an exception). But old gripes about having to master the sometimes abstruse AutoCAD are now obsolete; interfaces for all AutoCAD versions have been improved substantially.

Compared to other lower-cost CAD software, LT is more compatible with AutoCAD 13 files and has a more AutoCAD-like command structure (the interface is similar to AutoCAD R13, and can be modified to act more like R12 or R11). On the other hand, LT soaks up more machine resources than most CAD software in its class. In fact, there is no Windows 3.1 or 3.11 version of this upgrade; it requires Windows 95 or NT. And LT is 2D-oriented while many competitive products are fully 3D. LT will display 3D objects originally created in AutoCAD 13 and allow you to edit them. But it cannot create them.

Also, unlike some competitors in the under-\$1,000 market (but like full-blown AutoCAD), AutoCAD LT can open only one DWG file at a time. If you want to cut and paste among separate drawings, you have to open a second copy of LT (tricky if the drawing files are large or memory resources are anemic) or copy to the clipboard, close the source drawing, open the target drawing, and paste the clipboard's contents.

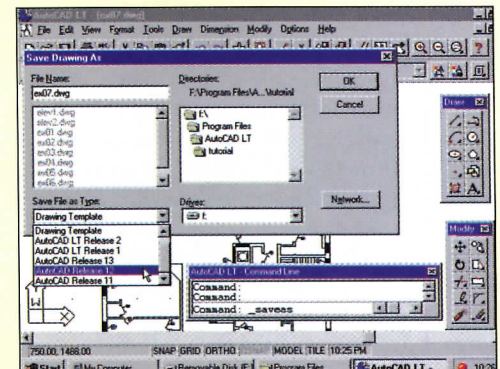
Indeed, the clipboard and OLE (Microsoft's Object Linking and Embedding) becomes particularly important in a package like LT, which doesn't have things like strong support for data built in. Generally, it all works well—you can link everything from bitmap images to spreadsheet tables. Likewise, LT drawings can be linked to other software such as Microsoft Word (that is, LT is an OLE server as well as a client).

There are some quirks, however. LT won't accept large documents all at once, for instance; it tends to stop after the first page (save as text instead, then import the text). LT has one neat feature that full-blown versions of AutoCAD itself don't have—a "property painter" that lets you pick up the formatting properties of an object—text,

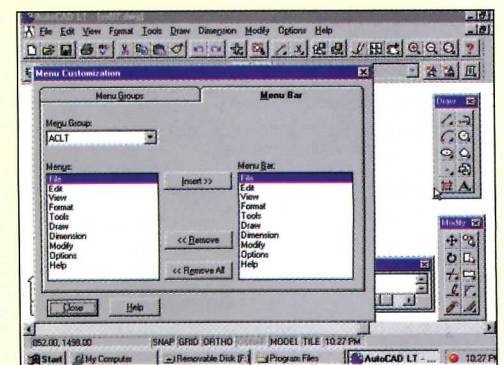
Two low-end programs with strong ties to high-end AutoCAD also need ties to other software for optimal use.

color, layer or linetype, for instance—and "paint" those properties onto other objects. It makes editing a breeze, even if the original was drawn in an illogical manner (with objects mixed on layers, for example) that defies easy grouping.

There are also many new productivity features compared to older versions of LT, including command interface, better text handling: (spell check; paragraphs-as-objects); vastly better dimensioning; ability to create complex line types that use symbols; MAPI (a mailing protocol) compliance (great for sending drawings over even a rudimentary office network); better TRIM, EXTEND.



With AutoCAD LT, you can easily save R11 and R12 DWG formats with the command File Save As Menu. Note the floating command line window; it can be docked at the bottom of the screen.



By customizing the menus, you can make LT look more like other versions of AutoCAD. For clarity of reproduction we captured these screens at a low 640 by 480 pixel resolution; you'd probably use a minimum of 1024x 768 to get plenty of drawing space on screen.

An old LT annoyance for those who used—and tweaked—symbols is overcome as well: You can now explode blocks with different inserted X and Y scale factors.

The clever XREF overlay feature—it allows you to use the current drawing to cross-reference other sets of drawings—is also in LT now. It allows different sets of drawings for different discipline specialists within an office. The improvements are well worth the upgrade from older versions of LT if you have enough machine power to run at least Windows 95.

Manuals: One large paperback; good on-line help files.

Ease of use: There's now a wizard to help set up new drawings. We like the organization of commands on the restructured menu system, but they are not the same as AutoCAD 13. You'll be creating palletes and icon bars on both platforms to make them look more alike. **Error-trapping:** Mainly oddities due to the evolution of AutoCAD 13 and LT along slightly different tracks. LT is fully compatible with AutoCAD 13 release c4; it will read earlier releases and convert them to c4 format. If you then read the file back to an earlier version, 13 won't read it properly. The problem arises because c4 and LT use an updated 3D (ACIS) modeling engine. To force LT to use the older ACIS entities, set the ACIS system variable to 1 in LT.

150 on Reader Service Card

Pro Builder 3D

Vendor: Softdesk, Inc., 7 Liberty Hill Rd., Henniker, NH 03242; 800/231-8574; <http://www.softdesk.com.9internet>.

Hardware/software required: Windows 3.1, 3.11, 95 or NT; 16MB of RAM; 40MB of disk space (plus another 75MB to run multimedia tutorials); CD-ROM drive and sound card strongly recommended. Excel 5.0 or 7.0 spreadsheet needed for estimating.

Cost: \$595 with modules for basic estimating, electrical, plumbing, hvac, kitchen and bath. Framing is an extra \$249. Includes 30 days free telephone support (measured as days after first call). Free CD with tutorials available by calling 800/231-8574.

Looking for a way to interact with clients, especially in those first few meetings, and bounce around design ideas in a way they can more clearly understand? Pro Builder 3D may be for you—although it was meant for builders who want to act like architects.

It has three basic modules—a footprint editor for outlining one floor at a time (or the roof) in plan; a modeler that automatically turns your footprints into a 3D wireframe model (you then apply color and surface treatments for realism); a drafter that allows you to add detail (it works with add-on modules to produce construction drawings).

Pro Builder 3D has a lot of polish—and well it should. The underlying drafting engine is Drafix, the first Windows-based CAD program (Softdesk bought the developer, Foresight). Other products in the line, aimed at amateurs, sell on the street for as little as \$40. Pro is in the middle—far more advanced in its features than the amateur toys, but not quite full-blown CAD.

Advanced? It reads and writes AutoCAD DWG files as well as DXF. Softdesk, the largest developer of add-on software for AutoCAD itself, wrote its own translators. You may have to tweak the system to get them to work right. We had trouble in a Windows 3.1 system with 16MB of RAM, but we were using more than 1MB for the software needed to capture screen images for publication. It converts wireframes into simply shaded solids—no photo-realism (although you can import photos as bitmaps), but the results are easily good enough to give clients a sense of what the design is all about.

The estimating module is awesome (you can produce a true bill of materials on it), but you must run it with Excel. The framing module was not ready at press time; its function is to draw studding and other framing elements the way they are built out in the field, by combining 2 by 4s or 2 by 6s with stock doors, windows and so forth.

There's a paucity of stair designs and roof types, and you can't directly model a curved wall, for instance. Improvements are promised for the end of 1996.

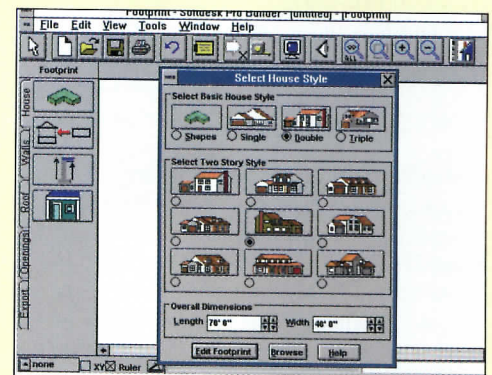
For those preliminary meetings, however, this is already a fine visualization tool; the only thing like it so far has been Virtus Walk-through and perhaps the old Alias Upfront or Facade. But none of these packages are as capable of producing the detailed designs that Pro Builder can. And, for small offices doing "brick and stick," Pro Builder can be the main CAD engine.

Manual: Sketchy 46-page pamphlet with great on-line help and two hours of terrific CD-ROM-based tutorials.

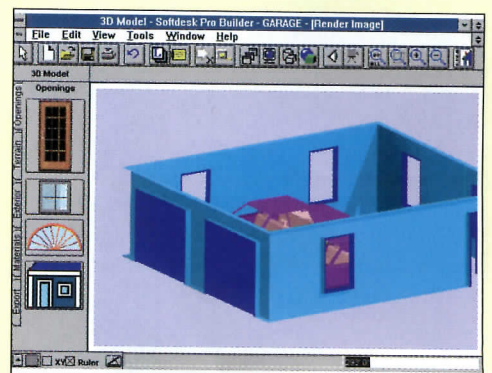
Ease-of-use: Not as intuitive as you might think. Practice for a day or two before performing in front of a prospective client. The program is an incredible memory hog; we like it a lot less in 16-bit versions of Windows (3.1 and 3.11) than in Windows 95 or NT.

Error-trapping: Good. It is easy to force re-renderings, and they are fast.

151 on Reader Service Card



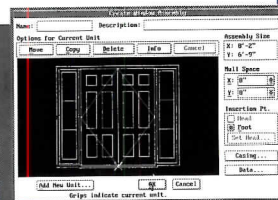
Pro Builder 3D lets you select a design style or create your own custom style.



A garage project after rendering.



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Circle 17 on inquiry card

NEW PRODUCTS

Washroom Compartments

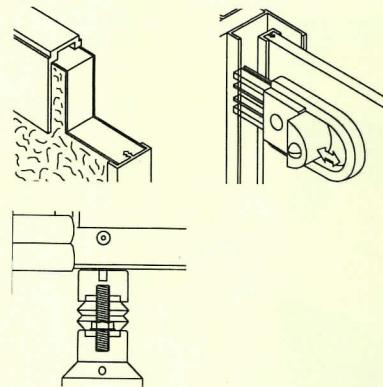
ADA accessibility provisions in effect since 1992 continue to be a major force in the design and manufacture of toilet compartments. Refitting public facilities to meet the needs of users in wheelchairs and others with limited mobility has pushed development of partition materials and installation hardware that better meet accessible-space and operating criteria, such as self-closing doors and one-handed, easy-grip locks. But partition manufacturers feel that many architects lack a clear sense of what meets ADA regulations, and that designers don't always know what will work within a given space.

Beyond accessibility, other trends include the increased demand for "modesty" partitions—those with overlaps that prevent observers from peering between door and wall into the occupied toilet stall. Reasons behind "no sight lines" include theft deterrence (a crook can't scope out the "best" time to snatch a purse); cultural or religious preference for ultra-privacy in locations such as a Malaysian shopping mall or a girls' yeshiva in Brooklyn; and, in casinos, to provide a totally private space for gamblers to count their winnings. The costs associated with maintenance—especially the partitions' ability to deter or hide graffiti or make its removal easy—is also a big factor in specifications, and is driving the use of more durable, higher-priced components. J.F.B.



152. Vandal-resistant panel surface

Textured fiberglass-reinforced plastic surfaces can withstand heavy abuse: an inner-city high school replaced painted-metal stalls with Thrislington compartments, despite the increased cost, for the material's superior scratch- and graffiti-resistance. Panels have an extruded-aluminum frame based on a single-piece headrail; floor supports adjust to level, provide gravity door closing, and anchor panels and doors. Slide lock has "in-use" graphic. 800/553-1600. Bobrick Washroom Equipment, N. Hollywood, Calif.



153. Solid-polymer partitions

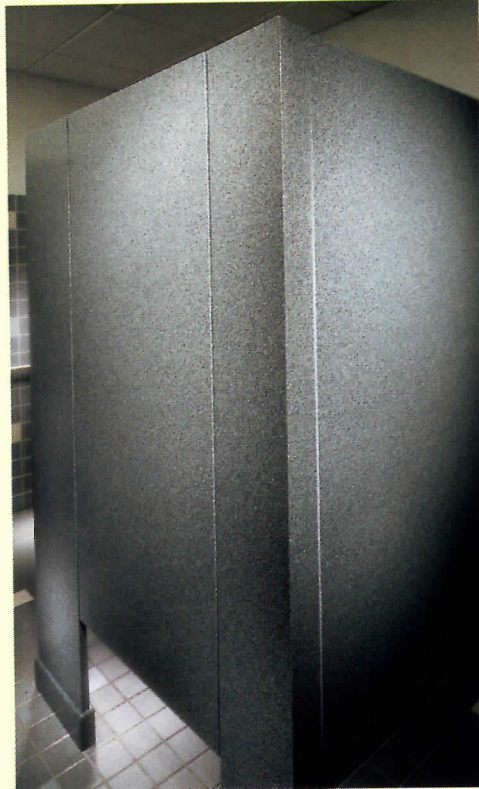
Made of compression-molded high-density polypropylene, Poly-Pro partitions can be specified in four mounting configurations, three hinging options (continuous, wrap-around, and integral), and a range of standard as well as custom colors. The installation pictured, a "Ladies" at the Arrowhead Pond hockey rink for Anaheim's Mighty Ducks, has compartments in a custom linen color selected to blend with other interior materials. Solid HDPE is especially suited for heavy-use, damp environments; the material is non-absorbent with a slippery surface feel that resists marking by pens and pencils. Doors and walls are individual pieces and one-inch thick, with a give that seems to make them practically "unbreakable." 410/740-8870. Capitol Partitions, Inc., Columbia, Md.



Partition manufacturers are offering new hardware and material options for compartments that conform to American with Disabilities Act accessibility guidelines.

154. Solid-surface partition system

Corian acrylic, developed for use as a surface material, needs to be reinforced at load-bearing points when used as a structural element in large, unsupported sheets, such as a partition or dressing-cubicle system. A major Corian fabrication firm, ShowerShapes worked with DuPont in developing an unobtrusive reinforcement technique that produces a sleek compartment with no visible hardware (right). Compartments are manufactured to order, incorporating factory-installed hardware and pilasters reinforced with a 6-in.-wide steel plate. Mounting base (top right) can be adjusted to conform to uneven floors, and has a Corian cover that slides down to conceal the fitting. Edges of divider panels and doors are reinforced to carry integral stainless-steel mounting brackets and hinges. ADA-required grab bars need to be indicated on supplied drawings, as divider-mounted bars require a reinforced panel. Fire-rated Class 1, the 1/2-in.-thick Corian sheets are non-porous, and will not allow graffiti markings to penetrate. Scratches are removed by light abrasives. 800/316-4989. ShowerShapes, Goleta, Calif.



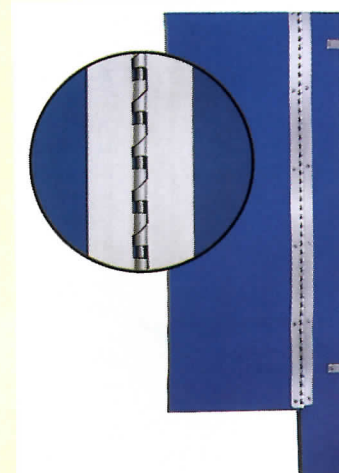
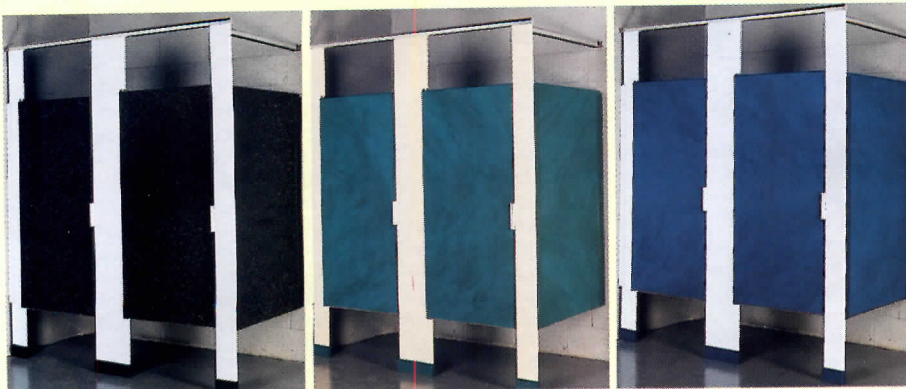
155. Integral-color plastic panels

The makers of Santana partitions, the original compression-molded HDPE cubicle, say that their plastic material is "hard enough to be durable, and soft enough not to break." Developed as a low-maintenance, cost-effective panel for restroom partitions and shower stalls in very-heavy-traffic areas such as stadiums, factories, and institutions, the Santana system now offers several appearance and functional refinements. The PolyBlend option (three possibilities, below) lets the designer select different solid-tone or stone-look colors

for the doors, panels, and pilasters of a single installation. The hinge pin is concealed within the inch-thick panel, and off-set from the strike to eliminate sightlines. The surface has a slickness that repels most graffiti implements; if the panels are eventually gouged (as with a screwdriver) the polymer can be "burnished" with a metal tool to restore the surface. Special 3/4-in. screws are used to fasten grab bars and other accessories onto the side walls of compartments without penetrating the panel. 800/368-5002. Santana Products, Inc., Scranton, Pa.

156. Self-closing stainless-steel hinge

Metpar manufactures toilet and changing enclosures in a range of materials, including stainless steel; enameled metal; a wood core faced with decorative high-pressure laminate; and solid phenolic for high-moisture environments. A new full-length hinge, made of stainless steel, gives all partition doors an ADA-compliant self-closing feature. The multi-cam hinge also permits emergency access and eliminates hinge damage from deliberate over-swinging of the door. 516/333-2600. Metpar Corp., Westbury, N.Y. ■





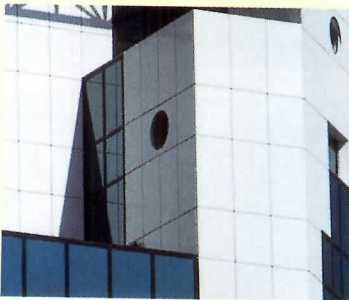
157. No-paint railing

The NT Normbau nylon-over-steel rail adds bright color and an abstract design element to educational settings, such as the Hawthorne Child Center by RAW Architects, left. Said to have superior UV-resistance, the 1/4-in.-thick integrally colored nylon surface meets fire codes; the rail itself is easily mounted on standard building substrates. 800/452-7925. W&W Sales Ltd., Nanuet, NY.



161. Hurricane-resistant glass

A glazing option that meets the large-missile impact and pressure-cycling test required by high-wind codes consists of a single light of standard annealed or heat-strengthened glass laminated with DuPont's SentryGlas composite. Shown here on an airport car-rental facility, the glazing also protects against smash-and-grab damage. 800/533-2080. Viracon, Owatonna, Minn.



158. Coil-coated cladding

Marketed under license, the Mirawall process produces solid-aluminum sheet with a powder-coat architectural finish said to equal the performance of coatings applied after fabrication. Lower in cost than ACM panels, the continuous-coil-coated sheets are described as perfectly flat, and meet the stringent European "Qualicoat" weathering tests—even in blue. Otefal Sud, Grassobbio, Italy.



162. Finnish soapstone tiles

Offered in two colors—a dove gray with white veining, and a higher-priced serpentine (green with white), soapstone is dense, non-porous, immune to acid and alkali attack, and silky and "warm" to the touch. As a floor, tiles are relatively slip-resistant, even when wet. Available in a range of sizes and gauges, honed or plain. 800/843-3473. Tulikivi U.S., Inc., Charlottesville, Va.



159. Prefabricated steel domes

A self-supporting hemisphere of Galvalume or painted-steel sections, domes come in diameters from 10 to 30 ft; special sizes to order. Each wedge-shaped piece has roll-formed edges that interlock with the next and are bolted. Originally silo tops, domes can be used on facilities such as child-care centers (left), offices, and homes. 519/884-2980. Demuth Steel Products, Waterloo, Ont.



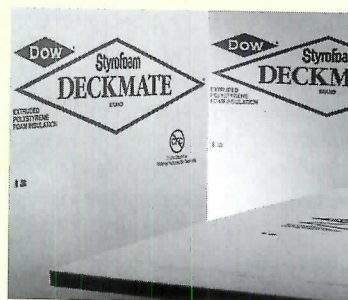
163. For roofs in a view

Normally white, off-white, or gray, Sarnafil's single-ply thermoplastic roofing membrane can be custom-colored for projects as small as 5,000 sq ft. The roof can complement materials used in the building exterior, and colors can create patterns or designs visible from higher floors of adjacent buildings or airplane flight paths. 800/451-2504. Sarnafil, Inc., Canton, Mass.



160. Rock (maple) of Ages

As his first institutional commission, Dakota Jackson designed three chair configurations—a 1,000-unit order—for the just-opened San Francisco Public Library. Built to "last forever" using robotically cut "warped" laminated Tupelo and maple, seating is clean, simple, and cost effective—and really very comfortable, say users. 718/786-8600. Dakota Jackson, Inc., Long Island City, N.Y.



164. Rated polystyrene

New configurations of Styrofoam insulation, Deckmate and Deckmate Plus are said to be the first extruded polystyrene products that meet UL requirements for direct application on metal decks. They don't need an extra thermal barrier, such as gypsum board, saving material cost and installation time; recyclable. 800/441-4369. The Dow Chemical Co., Midland, Mich. ■

Short takes

Sustainable forest management.

The Rainforest Alliance's Smart Wood program, said to be the largest sustainable forestry certification program in existence, has expanded its monitoring brief to encourage and reward the reuse of old wood. The non-profit conservation group will award its seal of approval to wood products that have been reclaimed or salvaged from acceptable sources. Lists of approved sources of both fresh-cut and old wood can be accessed on-line under "Resources" at www.rainforest-alliance.org/swr.htm. Or fax requests to 212/677-2187.

www.rainforest-alliance.org/swr.htm. Or fax requests to 212/677-2187.

Recent combinations.

◆ Smith Steelite and the H.H. Robertson unit of United Dominion Industries, both based in Pittsburgh, have agreed to combine their architectural and industrial construction-products businesses on a 50-50 basis. If finalized, the merged firm would be the largest U.S. manufacturer of metal wall and roof systems.
◆ Schuller Corporation, Denver (for-

merly Manville), has signed an agreement to acquire NRG Barriers, a leading maker of ISO [polyisocyanurate] foam roofing insulation headquartered in Portland, Maine.
◆ The owners of Cornelius Architectural Products, Pittsburgh, have acquired Forms + Surfaces, Carpinteria, Calif. Founded in 1964 as a single source for a broad portfolio of high-design architectural products, Forms + Surfaces will continue to provide doors and wall surfaces, hardware, and site furniture. ■

Building Types Study 739/Academic Buildings

Campus construction, currently at some \$3 billion per year, will soon be fueled by new demographic forces driving a change in direction and a growth in volume. Many current trends will continue; others will not.

Competition for enrollments has prompted administrators into luring students with new athletic, cultural, and social-gathering facilities placed in highly visible locations. The shoe is beginning to shift to the other foot, however, as candidates' numbers swell and admissions become more difficult. According to the U.S. Department of Education, 18-to-24-year-olds in universities, now above 8 million (compared to below 7 million in the mid-'80s), are expected to exceed 10 million by 2006—not including a growing contingent of 25-to-40-year-olds and part-timers. Higher-learning institutions must soon hustle to provide basic classrooms, labs, and electronic communications. Architects may well want to bless the busy children of the Baby Boom.

This month's Building Types Study (pages 66-99) focuses on several forces that will remain constant. Campus planning will continue as a driving force, as older colleges and universities, such as Stanford (pages 66-71) struggle to mend the ravages of scatter-dash outward growth from orderly quadrangular layouts. Campuses developed later, such as the University of Cincinnati (pages 86-91), search for an identity among thoughtlessly sprinkled buildings erected in a pot-pourri of mismatched styles. Included in these campus restructurings are new types of campus buildings that acknowledge changing uses. Harvard recently took this course by creating a computer-friendly student center (pages 94-99), complete with fast food, that offers a needed study alternative to a formal library setting. And architects will find even more work in basic classroom facilities.

Charles K. Hoyt

Continuing Education

This issue contains the fourth installment of the AIA/ARCHITECTURAL RECORD Continuing Education Series. After reading the two articles in the Pacific Rim Section series (pages PR28-PR33; PR34-PR37) identified by the distinctive round logo, reply to the questions (page 165) and check your answers (page 167). AIA members may fill out the self-report form in this issue (page 167) and send it in for two AIA Learning Units. Use the learning objectives below to focus your study.

Mark Scher

Mark Scher is AIA Director of Continuing Education Programs and Products.

Learning Objectives

After reading the NTT and Suzhou project articles and completing the exercises, you will be able to:

- ◆ Identify the expressive design elements that resulted directly from site, regulatory, or community conditions and explain the reasons for each.
- ◆ Describe two or more technical innovations incorporated into the project design.
- ◆ Cite two benefits to facility occupants resulting from the design decisions.

Manufacturers' Sources listed on page 157

Stanford Recaptures Lost Grandeur

Current planners, designers, and architects rebuild a romantic legacy to get ready for the next hundred years. They're capturing the spirit of the original buildings, which had been badly remodeled, and marrying current design concepts with tradition.

The Stanford Campus was one of the great inventions in the history of American schools, but nobody followed it once it had been laid down." That rueful statement by architect James Freed sums up the situation in which not only Stanford, but many American colleges now find themselves.

American universities were once like mammoth engines fueling American culture. That was where values and character were defined. The built forms used in that formation represented the most thorough realization of a utopian impulse at the heart of our society. As models for perfecting that vision, Frederick Law Olmsted laid out rough-hewn monasteries for founder Leland Stanford in what he saw as a grand, almost Eden-like landscape. Yet over the years those ideals disappeared as this university, like most others, turned into a factory of learning controlled by fighting academic camps.

Now that many of the land-grant colleges and the great universities founded by "robber barons"—from Leland Stanford (1885) to William Marsh Rice (1891)—reach their centennials, they need not only extension, but massive renovation. This scenario is giving these oases of higher learning a chance to reassess their campuses. Yale is spending hundreds of millions of dollars renovating its facilities, Columbia is building large new structures, state colleges from Illinois to California are engaged in large building projects, and Stanford is recreating the grandeur it had lost.

Three events have given Stanford the chance to reinvent itself. The most important of these was the 1989 Loma Prieta earthquake, which caused massive damage to the Stanford campus, especially to the original Romanesque arcade buildings designed by Shepley, Rutan & Coolidge as part of Frederick Law Olmsted's master plan. The Federal Emergency Management Agency (FEMA) provided \$40-worth of assistance, but the total cost of renovation was \$160 million, which Stanford raised from private sources. This let the university almost completely rebuild the original campus and, in the process, not only make the structures safer, but also bring them back to their original glory. One of the campus architects' most important decisions was to use the buildings as much as possible for their original purposes. Thus the "Language Corner" is now the site of several Humanities Department offices and classrooms.

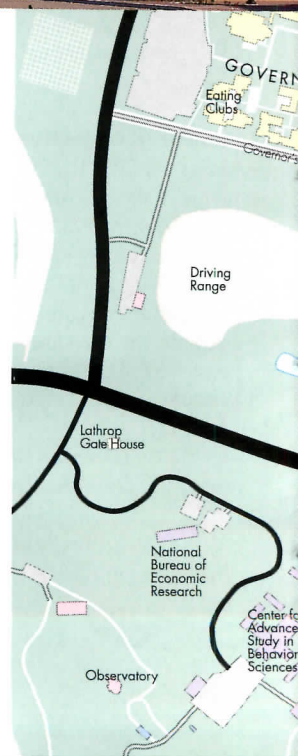
The second and third events were less monumental, but equally significant: the erection of the Littlefield Business School in 1988 on the until-then sacrosanct "oval" that forms the forecourt to the campus (center of site plan opposite) and the arrival of a new Campus Architect, David Neuman, in 1989. If the former event made people aware

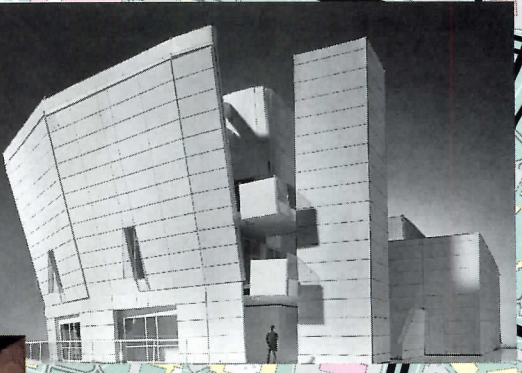
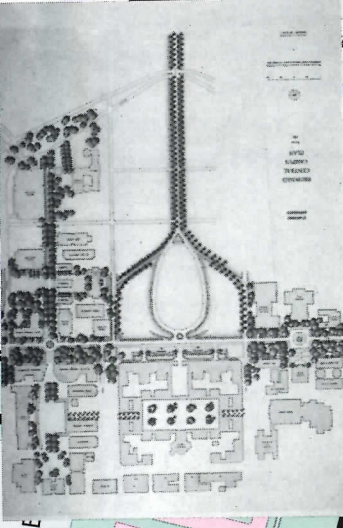
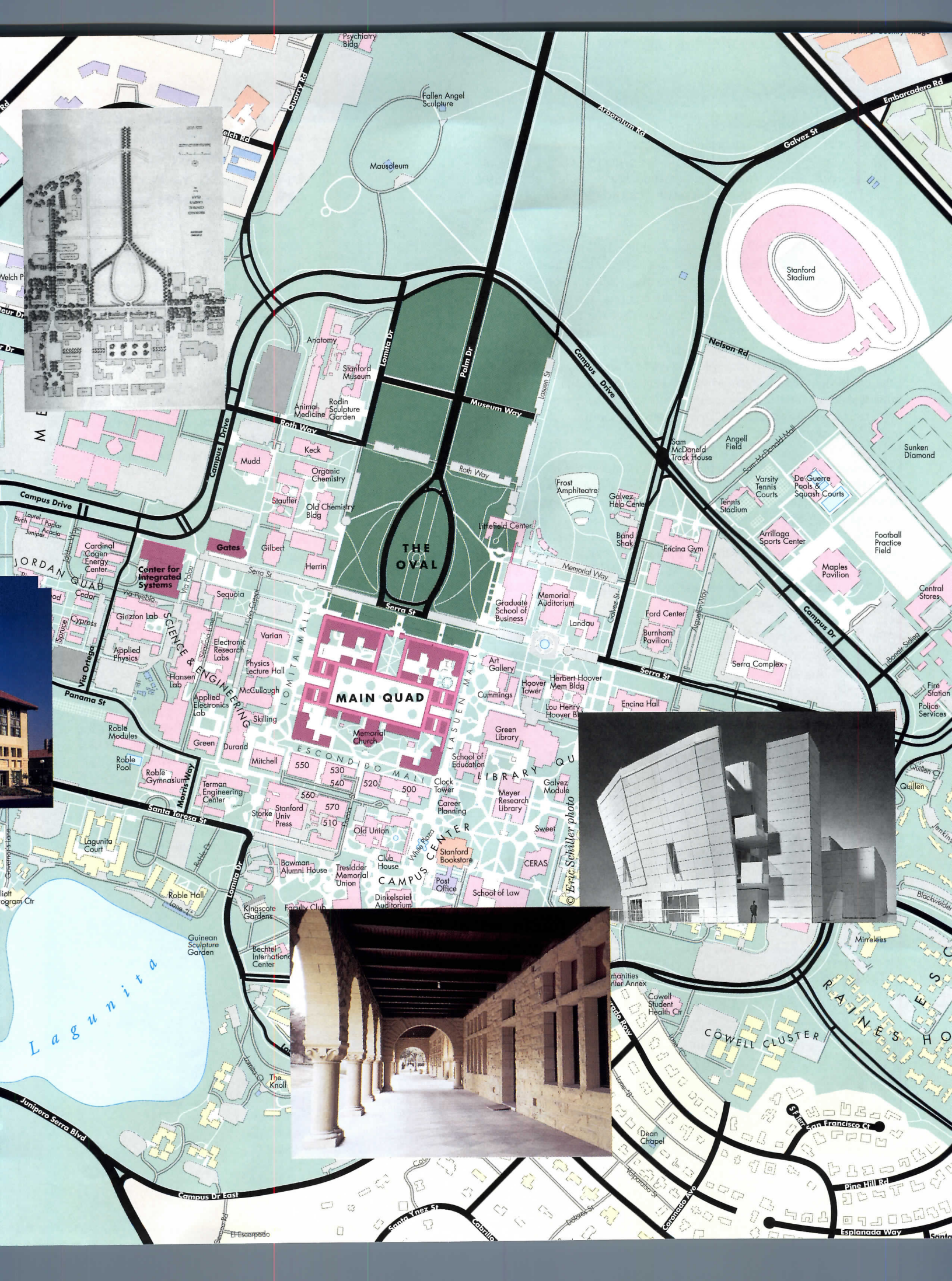
Continues on page 68

A new landscape plan (opposite page, top) reinforces the tight-knit campus center that Frederick Olmsted created in 1885. From it, Stanford had sprawled outward in an increasingly piecemeal fashion (large plan). New buildings (below) near the center (bottom) now bow to the original design language and quadrangle layout, while buildings farther away (far right) more freely adapt those values.



Peter Aaron ©Esto Photographics photo





Continued from page 66

of the disastrous course in which the campus was heading, the latter pointed the way towards a remedy. Neuman had made a name for himself at the University of California at Irvine by hiring architects such as Frank Gehry, James Stirling, and Charles Moore, but what he cared about most was the overall setting that would knit together their individual designs.

Neuman is a strong believer in two principles: buildings must be strong enough to hold a space and create recognizable landmarks, and the fact that "landscape is maybe more important than buildings." First, Neuman put a large sketch of the campus above his desk. It emphasized the strong, symmetrical cross axes dominating its lay-out. He then set about bringing order back to a campus overrun by pell-mell construction. Neuman persuaded the university to spend \$4 million ("almost all of it invisible") to replant and repave Palm Drive, the traditional major approach to the campus. He replanned the medical campus with view corridors and plantings, and is now implementing a plan to turn Serra Drive, the major campus cross-axis, into a landscaped mall.

The design of sites for future buildings will respect the old patterns, but take fresh approaches. "We didn't want to replicate the original quads," says landscape architect Laurie Olin about one example of his work at Stanford for Neuman, his design for the Science and Engineering Quadrangle, (page 70). "That would have detracted from its power." At the same time, Olin felt the need to extend the basic formal idea that Olmsted had decreed for the campus while meshing it with the "tartan of pedestrians and bicycles" that had over the years spread out over the campus.

Olin, Neuman, and architect James Freed of Pei Cobb Freed Partners in New York, saw the new construction as an opportunity to reassert *Continues on page 71*

The need for seismic strengthening and repairs gave Stanford the opportunity to restore the original campus buildings

From the outside, the structural and functional restorations Norman Pfeiffer of Hardy Holzman Pfeiffer Associates oversaw on the original Inner and Outer Quadrangles are a textbook example of the Secretary of the Interior's Standards for Historic Preservation. Walking through the arcades or through the Memorial Church, you have no idea that there have been major changes in the more than a century since their construction. The problem, says Pfeiffer half in jest, "is that it looks as if we didn't do anything. All those hundreds of man-hours, and you don't see any of it."

Where the public can't see it, there is massive new construction. Pre-cast, steel-reinforced columns hold up new concrete floors, paint and stucco hide the reinforcements, and new electrical wires snake through walls that seem impenetrable. "It's like reweaving a basket," says Pfeiffer. Some of the changes are more visible. Shotcrete replaces some of the original plaster, and the light fixtures are squeaky-clean replicas of an original the architects found in storage.

On the insides of the buildings, where previous renovations had divided the 17-foot-high spaces into warrens of offices, the new work merely cleans up and orders these accretions into a serviceable environment. The overall effect, though, is one of clarity, grandeur, and a sense of rightness. "We didn't invent a new architecture," says Pfeiffer. "We just took a position on every single item in the renovation separately."

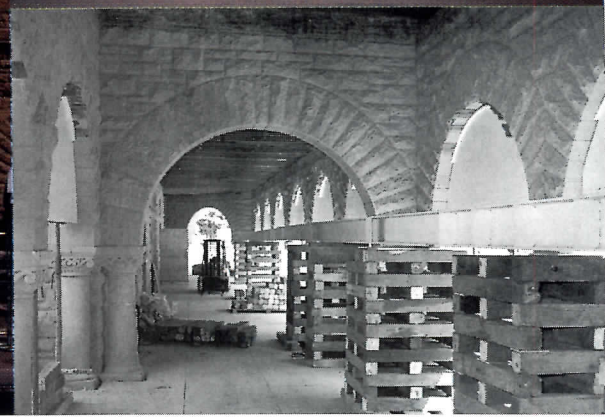


A large part of current efforts is to redesign the cross malls (left) to bring them back to Frederick Olmsted's intended formality.



Hardy Holzman Pfeiffer Associates' renovation of the original Stanford buildings designed by Shepley, Rutan & Coolidge included replacement of many bearing elements for seismic strengthening. Included were columns supporting the arcade around the main quadrangle (above and bottom left) and the facade of the Memorial Church (center left). Structural arches above the columns (bottom right) were reinforced from within to preserve the original stone work on the exterior (bottom left). In fact, renovation has been so skillful that observers are sometimes hard put to tell new from old.

© William Smith photo

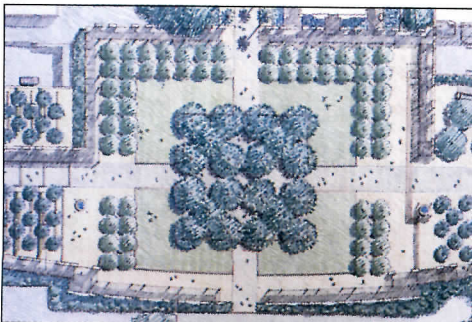


© Nibbi Construction photo

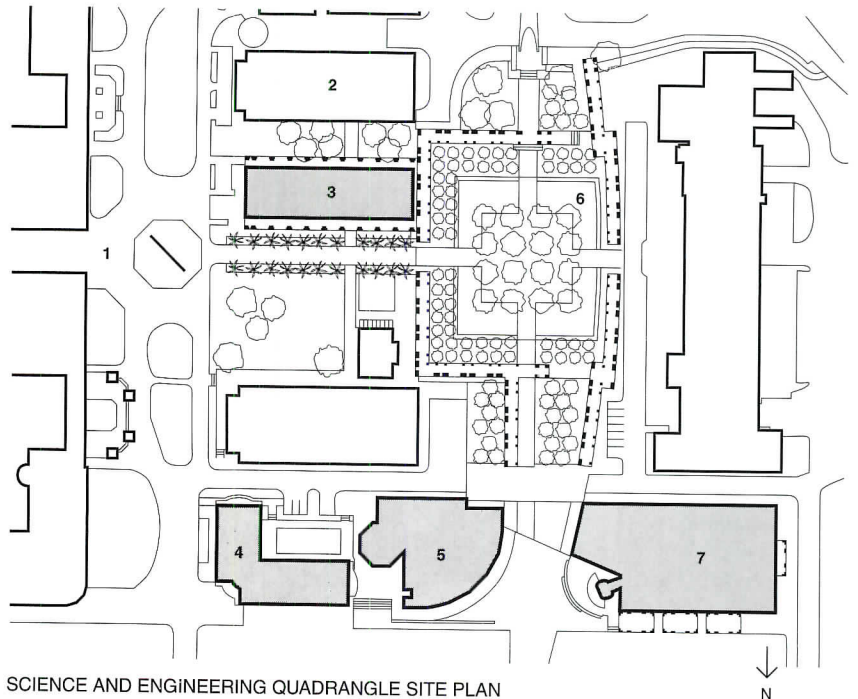
James Freed brings Olmsted into the 20th Century with his Science and Engineering Quadrangle

"Our first task was to establish where you are and where you are going," says architect James Inigo Freed of his design for the Science and Engineering Quadrangle. This complex of four new buildings ties together various classroom and office buildings to create a coherent home for the sciences at Stanford, but it also points the way towards the future reorganization and extension of the campus. If the new courtyard (below) establishes a sense of place, then the curved arcade at the west end of the quadrangle points the way (in a perhaps overly assertive manner) to the rest of the campus, which is currently expanding into a medical campus to the north and into the fields to the south.

The design of the buildings similarly reinforces and elaborates on existing conditions. The McCullough Materials Laboratory Annex and the Statistics Department Building are closest to the campus core. Their design tries to adapt the bearing-wall and gable-roof construction you find there to a modern idiom. The roofs "appear to float," says Freed, over stone-veneer walls. The Electrical Engineering Department Building and the Regional Teaching Facility then start to break open and abstract these forms into larger, geometric masses and expressive curves. The rectangular forms ("best for seismic strength," Freed points out) devolve into curves and angles that gesture towards the newer part of the campus. This rotation responds both to a more confused context, says Freed, and to the fan shapes of the lecture halls these structures house.



© Eric Schiller photos



The new Science and Engineering Quadrangle is an example of the more contemporary treatments intended by landscape architect

Laurie Olin for areas away from the traditional campus center. Still, it retains a formal character that ties it back to the older campus.

- | | |
|-------------------------------|---------------------------|
| 1. Link to main quad | 5. Teaching |
| 2. Materials Science Building | 6. New quad |
| 3. Materials Science Annex | 7. Electrical Engineering |
| 4. Statistics | |

Continued from page 68

the original order. Freed planned the buildings around an arcaded courtyard, which Olin then ordered into what he calls “an outdoor living room with a taut surface.” A slightly “cupped” grass plane holds loungers or participants in Stanford’s frequent outdoor classroom sessions, while Italian stone pines rising out of beds of gravel provide shade.

The whole design has a monumental appearance that continues what Freed calls “the more French and formal, rather than English” nature of the campus. His choice of the pines extends the “Mediterranean vocabulary” of the campus, says Olin, while the incense cedars and olive trees he wants to plant in groves to the north and south of the main courtyard recall the campus’s “agricultural roots as an experimental ranch.” Looking not just to the rolling hills and mountains that inspired Olmsted, but also to the agricultural wealth that underlies the carpet of technology now covering Silicon Valley, Olin imagines an “order that could extend off indefinitely,” serving to tie the campus to its physical and symbolic roots.

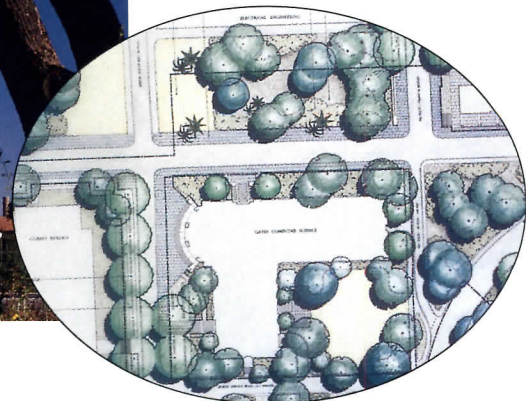
As at Irvine, Neuman hired famous architects. James Freed, Henry Cobb, Sir Norman Foster, Ricardo Legoretta, Robert A.M. Stern, and Antoine Predock have all done or are doing buildings for the campus. The point is not to make signature buildings, but to hire good architects who can, he says “extend the vocabulary of the campus” in a thoughtful manner. By making strong buildings rather than background objects that become a bland watering-down of the original (as John Carl Warnecke did on this campus for many years), and then working with the architects to use these designs to focus specific areas of the campus around nodes or groupings of buildings with a coordinated purpose as well as appearance, Neuman hopes to recreate the sense of the campus as a place of clarity, collegiality, and an almost didactic sense of rightness. *Aaron Betsky*

Robert Stern gave the Gates Computer Sciences Building an appearance closer to 19th-century intentions

The office of Robert A.M. Stern is extremely proficient in producing buildings that recombine the basic elements of a historic vocabulary, and the Gates Building bears this out. Working, like original campus architects Shepley, Rutan & Coolidge, in an extension of his house style, and drawing on historic examples that existed in climates similar to those of Northern California, Stern has clothed Stanford’s computer department in a Richardsonian Romanesque garb.

He then updated the forms into the industrial—if not the computer—age by such devices as using green-painted I-beams in place of wood rafters and window mullions. The L-shaped, \$12.3-million building contains a 48,000-square-foot program within its seemingly deep walls, and this density of uses shows. Inside, there is little relief from the low-ceilinged, cellular nature of the design, though the library provides light and views over the campus.

Peter Aaron © Esto Photographics photos



Business School Connects To Distant Past



*Robert A.M. Stern Architects brings
Thomas Jefferson's ideals to the
University of Virginia's North Grounds.*

*Colgate Darden Graduate School of
Business Administration
University of Virginia, Charlottesville, Virginia
Robert A.M. Stern Architects, Architect
Ayers Saint Gross, Architect of Record*



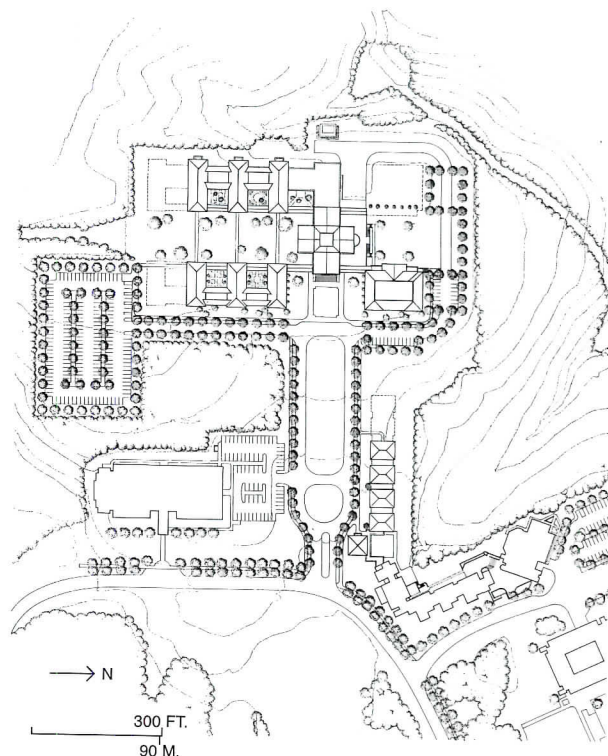
Prosperity is an appropriate image for a business school, and the new Colgate Darden School of Business Administration at the University of Virginia exudes that and more. While the 1990s have been typecast as less showy than the '80s, there's no false modesty in the school's new public image or in Robert A.M. Stern Architects' interpretation of the university's holiest of holies, the "academical village" of its founder, Thomas Jefferson, still a revered figure in Charlottesville.

Having outgrown previous North Grounds accommodations in a 1970s Hugh Stubbins structure, the Darden School, in an institution-wide rendition of teaching by the case method, sold its dilapidated, outmoded building to its neighbor, the law school, for \$6.5 million, setting its sights on a nearby 20-acre parcel, for which it obtained a long-term lease. The balance of the 220,000-square-foot complex's \$25.5-million construction budget came not from the state, but from private sources, and as Elaine Ruggieri, Darden's public relations director, points out, Stern's scheme of interconnected classroom, common, and library buildings interspersed with semi-enclosed gardens provides a welcome variety of "donor opportunities." More importantly, it complies with the University's Board of Visitors' 1991 mission statement regarding new architecture, which directs, in part, the restoration of "the Founder's vision of the reciprocity between the academic and the physical plan of the University." Or, as Robert Stern puts it, "a break with the recent [architectural] past to make connections with the distant past."

By relocating near its previous home, the school was able to retain use of accommodations for its profitable executive-education training program—bland Modern brick boxes that flank the eastern edge of the new enclave. A new Sponsors Hall marks entry to the Stern campus, acting as a gatehouse both between old and new and the transition between the profit- and education-minded aspects of the school. The Commons Building, with its grand reception rooms, commands center stage at the top of the hill, flanked by a library on one side and academic offices on the other. The office building and its twin, the classroom building, outline a grassy quadrangle that opens to a hilly, southern view (previous pages and opposite top).

While the grouping of brick structures around grassy plains is the most obvious reference to Jefferson, other invocations are more subtle. Combing three different types of brick work—the more intricate Flemish bond at prominent junctures, common bond at secondary places, and running bond everywhere else—the architects were not only able to meet a modest \$128 per square foot budget, but were also able to echo Jefferson, who, project architect Gary Brewer says, employed similar cost-savings technique in his buildings.

Authenticity to the Jeffersonian ideal, however, was mediated by the demands of new uses and construction techniques, proof that Stern's success in mining historical styles is based partly on scholarship, partly on invention. "When you are doing Neo-Classical work [these days] you are really relying on your subcontractors," explains Brewer. Though Jefferson's columns are plaster-coated brick, Stern's colonnades at Darden are painted, turned-concrete forms. Many of the brass light fixtures were custom-designed since historically appropriate fixtures, according to the architects, don't exist. That a complex modeled on Jefferson, whose presence often overshadows any architect on campus, would prove controversial among the forward-looking members of the local architectural community doesn't surprise Stern. "I recognize that architecture evolves," he says. "I just don't feel that the University of Virginia has to evolve at the same rate." *Karen D. Stein*



1. Existing dorm
2. Sponsors Hall
3. New dorm
4. Commons
5. Library
6. Faculty
7. Classrooms
8. Future auditorium
9. Future addition



The front lawn of the Commons building, which is flanked by the library on the right and offices on the left, is full on graduation

day (above). The south lawn (opposite top) joins offices and classrooms, interconnected by colonnades.

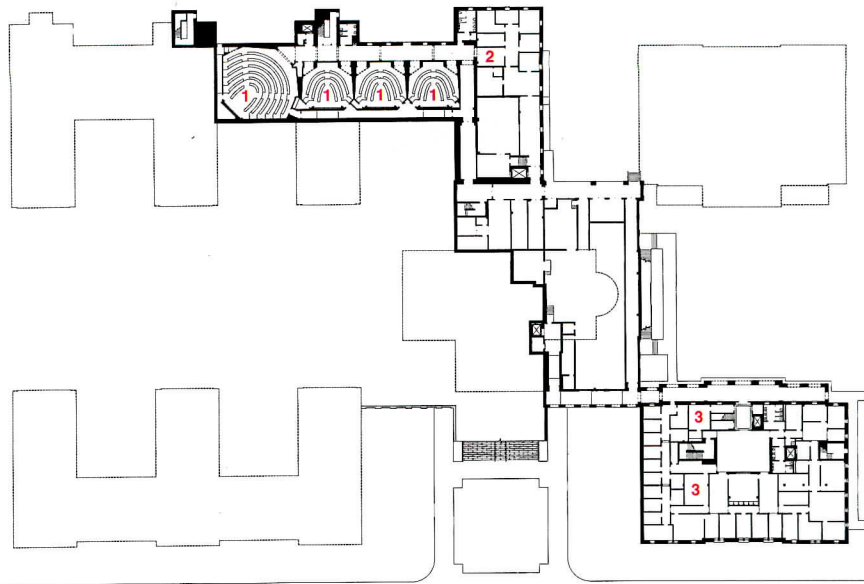




Robert A.M. Stern Architects' initial scheme for the new campus, a submission to an invited competition among three firms that also included Kallman McKinnell and Wood, and Allan Greenberg, showed a different arrangement of parts, namely the integration of classrooms and academic offices into a single volume located in the northwest quadrant.

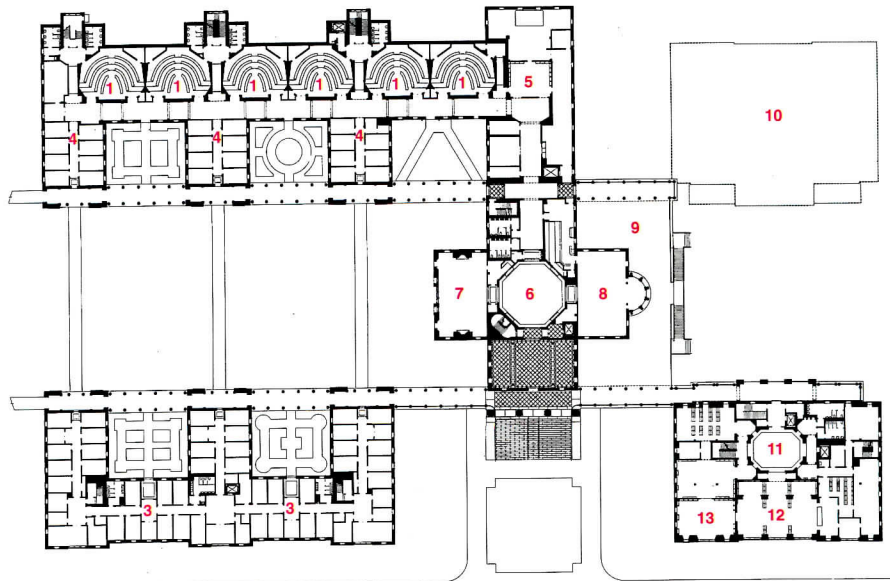
While Stern's team was selected because it had a "track record in doing Classical architecture," reports Neil (Pete) Borden, chairman of the building committee, modifications to its plan and building massing were the result of discussion with Darden officials. Part of the university's graduate-school-focused North Grounds, the Darden School was mandated both by the university's Board of Overseers and the Darden Foundation, which paid for the project, to endorse the landscape and architectural principles of the Jefferson core of the undergraduate campus. Says Borden of the particularly powerful influence of the Darden trustees—many university graduates—on a project that they, not the state, paid for: "Stern's design gave them a lot of reminiscence of their lives on the lawn."

The tree-lined approach to the Commons building culminates in "the forum," a top-lit rotunda, where students and faculty converge for a daily morning ritual of coffee and conversation (following pages). Adjacent are lounges and a cafeteria (left).



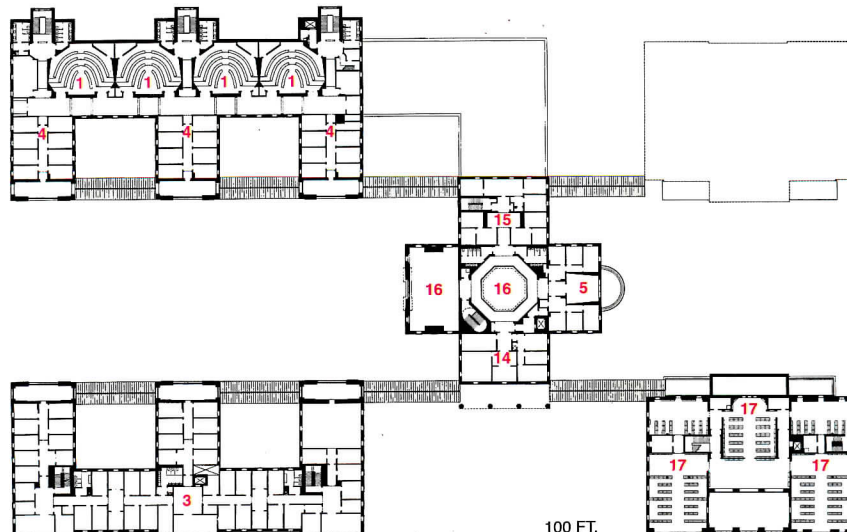
GROUND FLOOR

1. Classroom
2. Computer
3. Faculty offices
4. Group study



FIRST FLOOR

5. Student mail
6. Commons
7. Lounge
8. Dining
9. Terrace
10. Future auditorium/dining room
11. Library entry
12. Reference
13. Reading



SECOND FLOOR

14. Dean
15. Staff offices
16. Open to below
17. Library stacks

100 FT.
30 M.

Up Close

Challenges: Create a new home for the Colgate Darden School of Business at the University of Virginia, founded in 1955, that captures the Thomas Jefferson image. Maintain ties to existing facilities for the school's extensive executive-education program. Plan for long-term development of a 20-acre site.

Program: The first phase, now complete, comprises 220,000 square feet. The centerpiece of the project is the Commons Building, which contains reception rooms and student/faculty lounges. Adjacent are a 20,000-square-foot library, a wing of 72 faculty offices, and a classroom wing of 16 classrooms for 60 to 120 students interspersed with 46 study-group rooms. Future phases include a 400-seat dining facility and a 600-seat auditorium to the northwest of the Commons Building, named Saunders Hall.

Solution: A Sponsors Hall Executive Residence, with 60 additional guest suites, acts as a transition between new and old. The heart of the school commands the hilltop, echoing Jefferson's "academical village."



Credits

*Colgate Darden Graduate School of Business Administration
University of Virginia, Charlottesville,
Virginia*

Architect: Robert A.M. Stern Architects—Graham Wyatt, partner-in-charge; Gary Brewer, project architect; Adam Anuskiewicz, Joe Andriola, Augusta Barone, Bob Epley, John Gilmer, Michael Granville, Victor Jones, John Saunders, project team

Architect of Record: Ayers Saint Gross—Adam Gross, George Thomas, Sandra

Parsons, Brian Hanlon, John Holiday, Scott Master, Mary Maynes, Daniel McKelley, Earl Purdue, Sean Rosebrugh, Patrick Treff, project team

Landscape Architect: Robert A.M. Stern Architects—Robert Ermerins, Brian Sawyer, Sarah Newbery, project team

Interior Design: Forte Design—Suzanne Forte, principal-in-charge with Robert A.M. Stern Architects—Raul Morillas, Pat Burns, project team

Engineers: Hurt & Proffitt (civil); Dunbar, Milby & Williams (structural); Benner &

Fields (mechanical); Engineers, Inc. (electrical)

Consultants: McDevitt, Street Bovis (development manager); Kendall Associates (acoustic); Cline, Bettridge, Bernstein (lighting)

General Contractor: OMNI Construction; Colonial Mechanical (mechanical); Dorey Electric (electric)



EXIT

EXIT

Rescue Transforms Columbia Landmark

*Casa Italiana, Columbia University
New York City
Buttrick White & Burtis/Italo Rota
Architect*

Dark and dilapidated, the interiors of Casa Italiana, a Columbia University landmark, have been transformed into a shining, colorful, functional center for scholars.

Buttrick White & Burtis principal-in-charge Samuel G. White happens to be original architect Stanford White's great grandson. That brings a certain logic into the remaking of this 70-year old Florentine palazzo into an animated center for the Italian Academy for Advanced Studies in America, better known as the Casa Italiana.

It was radical surgery. Over half the building was gutted. A new, luminous, white marble-finish stair now winds its way from the entry level to the top, doubling on the way as a fire-stair. To offset the claustrophobia of small floor plates, the top three floors, which house offices and the *studioli*, or studies, open up to create dramatic vertical clusters of spaces through an ingenious interpretation of the New York City building code which limits inter-floor connections to two floors: a floor and a half is linked to another like it, via two-hour fire doors.

Key props in the new interior are color and lighting. To unify the spaces, the corridor walls of offices and *studioli* are glazed, using a color film sandwiched between two sheets of safety glass. Subtle color differences among offices are obtained by combining available film colors to create new colors. Lighting variety is yielded by a wide range of sources and applications, including direct and indirect, refracted and reflected, concealed and visible (such as the colorful Venetian glass fixtures in the top-floor loggia meeting room, top left photograph, overleaf).

"Communication was at the heart of the design," says Sam White. The design team worked for "easy and fluent connections among individuals and groups, spontaneous and organized, formal and informal," within the Academy and the world outside. One such connection was information. The grand library was dismantled and converted into a club. Replacing it was a virtual library, with each study space hooked online into the Columbia libraries and selected other systems. Remaking the Casa's dated service infrastructure yielded a seamless outcome: sleuthing uncovered hidden spaces and cubbyholes to house the compressors, transformers, raceways, and ductwork.

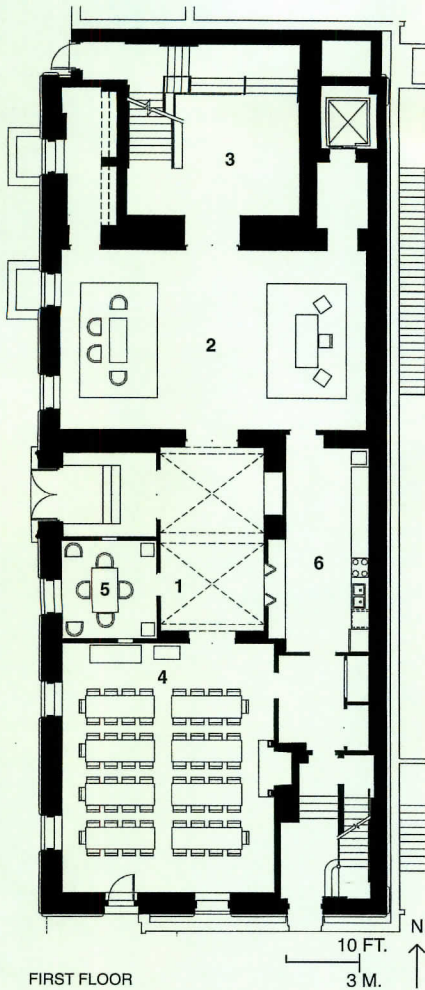
Bringing the Casa into a new era took 10 years. Director Maristella Lorch, a woman of charm and perseverance, devised an arrangement by which Columbia assigned title of the building to the Italian government under a lease-back deal. Italy pledged \$17.5 million to the University, including \$7.5 million for construction, with the balance used to endow Academy programs (author Umberto Eco will be the first scholar.) The story is one of a dashing result achieved under tough constraints of space, time, financing, and regulation.
Stephen A. Kliment



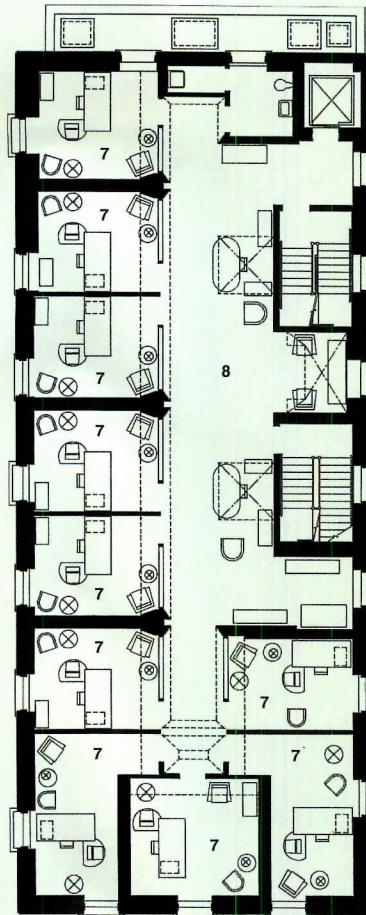
© Arch Photo, Inc., Eduard Hueber photos

The west facade (top photo) facing the Columbia campus is a 1926-vintage, late-phase McKim Mead & White Renaissance palazzo. The east front (above) bore the scars of an abutting but long demolished townhouse. To cover the scar, bricks from three suppliers were mixed to come close to matching the brick of the surrounding walls. The exterior underwent rigorous landmarks commission scrutiny. The stair (opposite) is light and luminous.

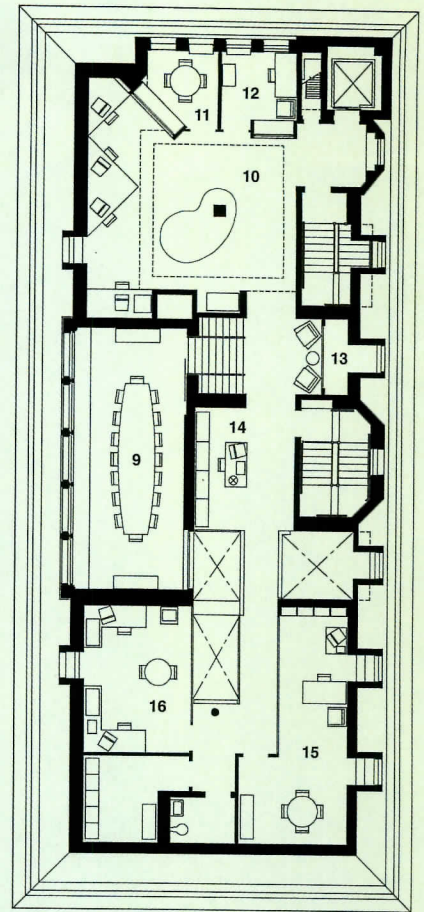




FIRST FLOOR



FOURTH FLOOR

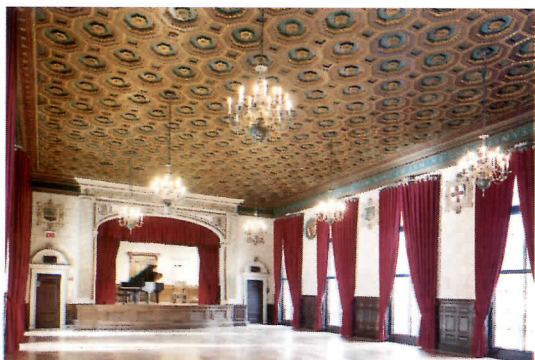


SIXTH FLOOR

- 1. Entry hall
- 2. Exhibition
- 3. Stair
- 4. Salone
- 5. Conference
- 6. Pantry
- 7. Studioli (studies)
- 8. Office area

- 9. Loggia
- 10. Open office area
- 11. Conference
- 12. Office
- 13. Lightbox
- 14. Reception
- 15. Director's office

- 16. Assistant
- director's office



The restored Teatro Piccolo (left) is an assembly hall with a finely detailed decorative ceiling. It faces onto a small planted court. To its arched windows was added a second layer of glazing for sound insulation from a heavily trafficked street.

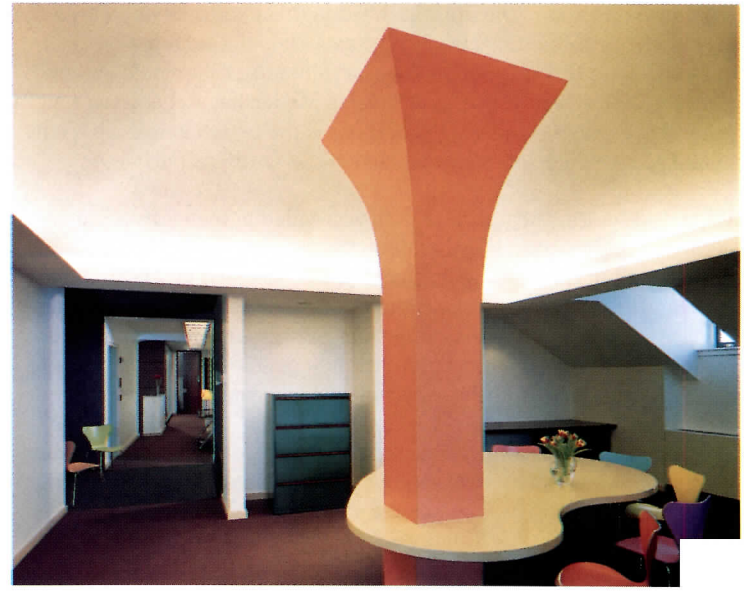
Credits

Casa Italiana
Columbia University
New York City
Owner: *Italian Academy for Advanced Studies in America at Columbia University*
Architect: *Buttrick White & Burtis/Italo Rota—Samuel G. White, principal-in-charge; Italo Rota, project designer; Sean Joyner; Perry*

Whidden, project architects
Engineer: *Ove Arup & Partners (structural, mechanical, electrical, plumbing)*

Consultants: *Ray Firmin Construction Cost Consultant, Amis, Inc. (cost); Jerome S. Gillman, consulting architect (building code); Cerami & Associates, Inc. (acoustical and A/V); Melanie Freundlich (lighting); Jules Fisher/Joshua Dachs Associates, Inc. (theater lighting); Charles Calderone Associates, Inc. (elevator); Evergreen Painting Studios, Inc. (decorative plaster/painting)*

Construction Manager: *F. J. Construction Company, Inc.*



LONGITUDINAL SECTION

1. Exhibition and
salone
2. Teatro piccolo
3. Former library
converted to club
4. Studioli (study
spaces)
5. Classroom
6. Loggia and
administration

The sixth-floor loggia, with its gold-leaf ceiling and Murano glass fixtures (top left), looks out over the Columbia campus. A colored film interlayer between two laminated lights of glass is subtly varied to bring animation to the floors of offices and studioli (top right and bottom left). On the sixth floor, the impact of a column is softened with a playful cover that conceals uprights at the ceiling (bottom right).

Filling in the Missing Link

*Washington University Psychology Building
St. Louis, Missouri
Skidmore, Owings & Merrill, Architect*

Architect Skidmore, Owings & Merrill has fulfilled a venerable campus's intentions with a fitting new entrance at Washington University's southern perimeter. And while clothing state-of-the-art laboratories in neo-Gothic dress may seem perverse, it suits this particular context.

The Gothic style is well established on Washington University's campus. In 1900, architect Cope and Stewardson produced a traditional quadrangle master plan that called for individual buildings' unity and a lack of "discordant contrasts." They specified the Gothic style for all buildings, citing it to be freest from design limitations and best for expressing "the life within through outward form." These architects' first buildings (top right) established a strong westward gate and set a tone for new campus architecture that would endure until the 1960s, when several utilitarian Modernist structures crept in around the campus edges. One of these is the low chemical lab (right in site plan), which left a gaping hole in the southern perimeter.

When Skidmore, Owings & Merrill was called in to design a \$20-million biology/psychology building, the architects saw the opportunity to fill in the missing link, screen the chemical lab from public view, and create a secondary campus entrance as well. And, with up-to-date sensibility, they took Cope and Stewardson's view of Gothic freedom and infused the concrete frame's granite and limestone cladding with an exuberance missing in early campus structures.

The regular 10-foot 5-inch spacing of engaged columns reveals a flexible modular interior that accommodates a range of layouts, typical of modern lab structures. Mechanical and electrical services ring the perimeter. Behind a high slate roof (opposite, top center), air-handling units exhaust and bring in fresh air through "dormers." Bay windows that terminate the main facade hold breakout areas with vending machines. Next to the entrance, the tower "keep," which seems inspired by the Elizabethan Hardwick Hall ("more glass than wall," as the contemporary ditty went) holds the main stair, where the architects have used an elegantly simple vernacular typical of the building's other interiors. *Charles K. Hoyt*

Credits

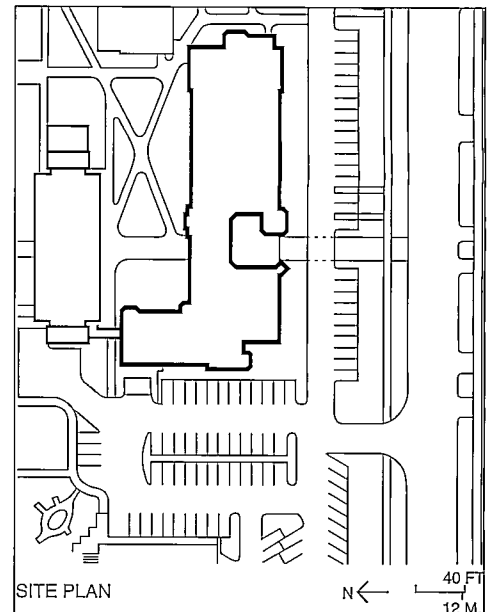
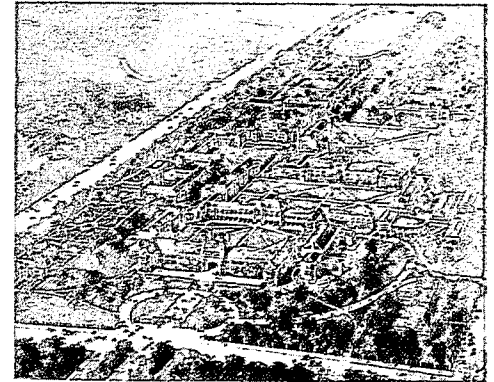
*Washington University Psychology Building
Saint Louis, Missouri*

Architect: Skidmore, Owings & Merrill, Chicago—Adrian Smith, design partner; Robert Wesley, managing partner; Raymond Clark, mechanical, electrical engineering partner; Stanton Korista, director of structural engineering; Brian Jack, project manager; Peter Van Vechten, senior designer; Bernard Gandras, senior technical coordinator; Gregory Soyka, technical coordinator; Charles Besjak, structural engineer; Paul Kiessling, mechanical director; Stefanos Peroustianis, piping engineer; Paul Kwong, electrical engineer

Associate Architect: Paradigm (field representation)

Consultant: GPR Planners Collaborative, Inc.—Josh Meyer

General Contractor: WBSI Constructors, Inc.



Monsanto Laboratory (left in plan) was built in the 1960s in jarring Modernist style to face Washington University's otherwise homogenous central quadrangle (far left), leaving a large gap in the campus's public face to the south. The new building heals this wound with facades of Missouri red granite and limestone that frankly reflect the modular plan within.

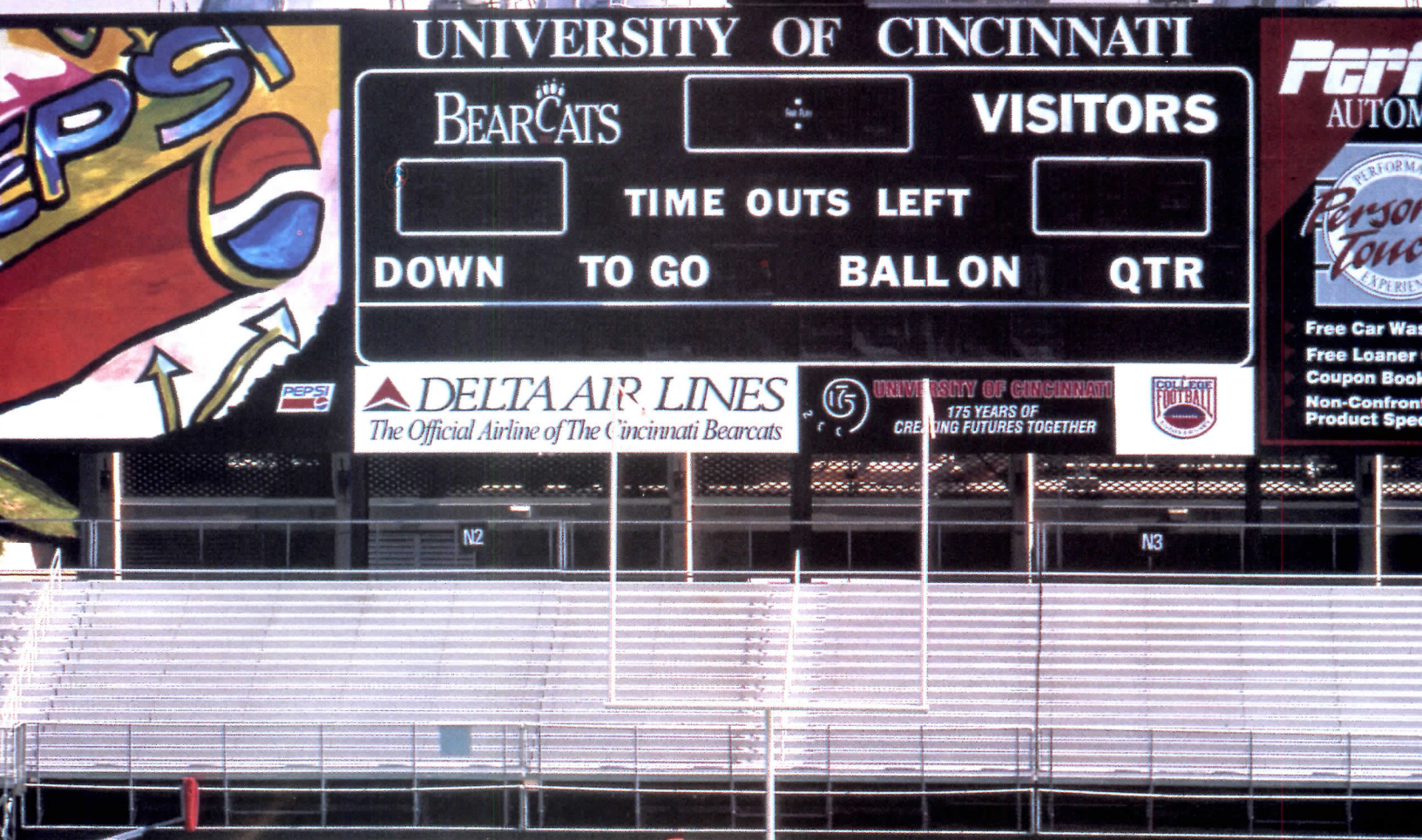


Joining Hands to Connect a Campus



A new landmark on the University of Cincinnati campus houses scientific research and fulfills an important master-plan role.

*Engineering Research Center
University of Cincinnati
KZF, Architect and Engineer
Michael Graves, Associate Architect
SH&G, Associate Architect and Engineer*



Campus architect Ron Kull describes his ambitious master plan for the University of Cincinnati as a grid-like system of “force fields” (see Up Close). A keystone of this plan is the new Engineering Research Center. Three major design firms with specialized expertise developed successful working relationships to resolve its complexities.

The new building’s users were not clearly defined when the university commissioned architect KZF to help in site selection and programming. Initially, the only requirement was for a facility where professors from diverse fields such as environmental biosciences and aerospace could carry out experiments with student help to further scientific knowledge. (Financing for these projects was to come through grants from public and private sources, part of which would go toward running the building.) To determine functional criteria, prospective faculty users toured other research facilities around the country and pondered how to make the building as flexible as possible, while still meeting exacting requirements. Their wish list included super-clean rooms for microelectronics with particle ratings down to class 10, vibration-free scanning-microscope environments, and non-polluting exhausts of contaminated air.

KZF brought in architect Smith, Hinchman & Grylls for its extensive experience with highly technical buildings and ability to offer the committee cost alternatives (such as a choice between piped liquid oxygen or moveable casework) within the \$26.2-million budget. Early money-saving decisions included placing vibration-free spaces, including clean rooms, on the ground floor to support the required extra-heavy structure and placing air-handling units under the roof (section opposite), so pollutants exhaust directly through bundled stacks in the conical towers.

But the professors wanted more than advanced technology in their 173,000-square-foot building. “High-profile” design was a surprise that meshed well with Kull’s master plan because of the highly visible, if narrow, site eventually selected (right, bottom) adjacent to the main engineering building. KZF called on a Cincinnati alumnus, architect Michael Graves, who designed a clear internal-circulation pattern that brings daylight into both corridors and offices and cuts through the building with a two-story lobby tying the building into the campus master plan (right, top). Graves clad the walls in blue stone and orange terra cotta, and used colored precast concrete lintels to span large openings. The barrel roof is copper. A high colonnade marks the main entry.

How did the relationships among three major firms work out? “It was almost intuitive at times,” says KZF manager of operations William Wilson, describing how each firm’s way of working became clear to the others. During design, representatives of the three firms met on-site for week-long workshops attended by representatives of the user committee, the university administration, and the state. The result? The architects received approvals quickly and completed design and construction documents within 11 months. Following this satisfactory experience, SH&G, Graves, and KZF are currently pursuing commissions in association with one or both of the other firms.

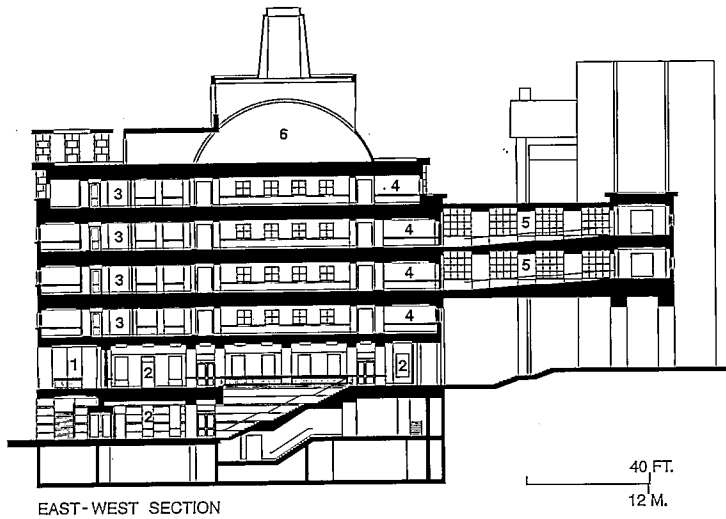
Would its users want anything different in the new research center? Professor Edward Grood, a member of the academic committee that determined requirements, says he would have liked to see a central corridor between labs (made difficult by the site’s restricted width), and more breakout and meeting rooms (given up to meet budget and to maximize basic-function spaces). “There are always trade-offs,” he notes. *Charles K. Hoyt*

© Steve Brooke photos except as noted

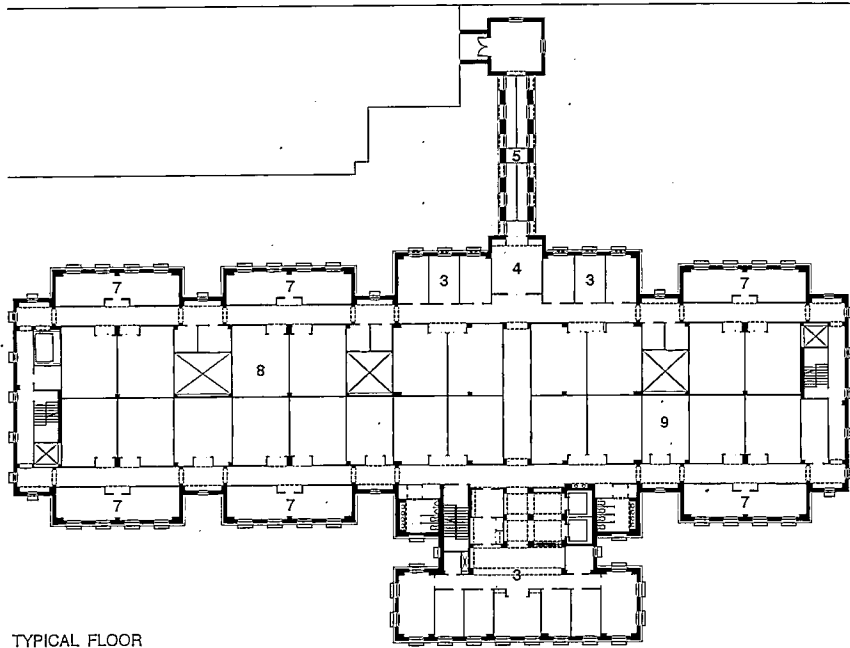


Architect Michael Graves aligned the building’s front entrance—marked by a colonnaded office pavilion—with a major campus entry road (above). Inside, an internal stair (and elevator for the handicapped) makes a transition to an upper pedestrian circulation system. A bridge (top) connects the research building with the main engineering facility.

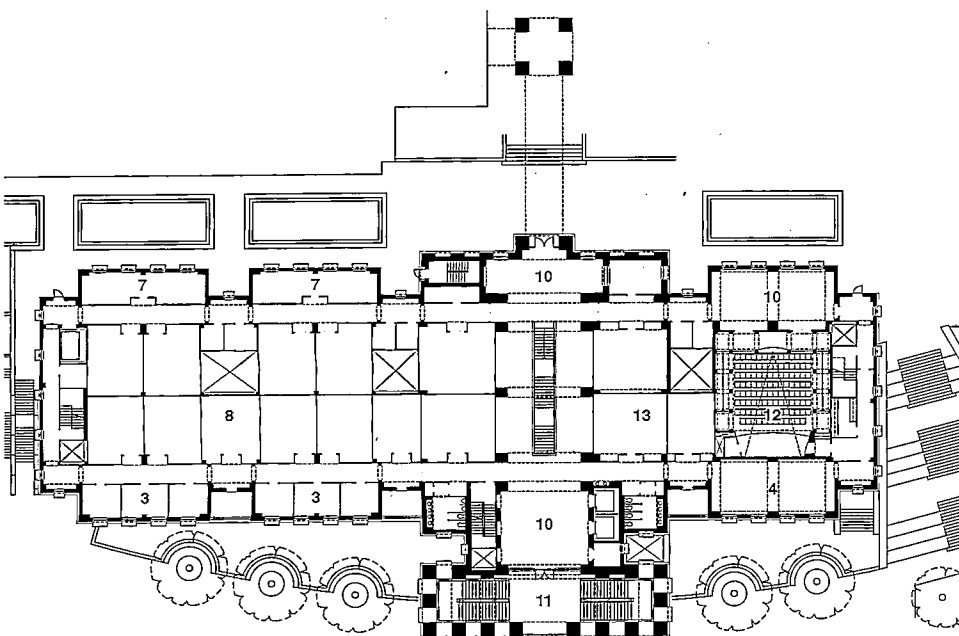




EAST-WEST SECTION



TYPICAL FLOOR



Up Close

"More than half of prospective students make up their minds about enrollment in the first five minutes of seeing campuses they've chosen as candidates," notes university architect Ron Kull. Cincinnati's campus had become less than inviting. From a polite line of 19th-century buildings on a wooded ridge (left in site model), the campus had grown to a sprawling cacophony of haphazardly sited buildings in every conceivable style infilled with paved roads and parking.

Program: Give the campus functional and visual coherence through a system of infill construction while greatly increasing open green space and pedestrian circulation.

Solutions: Kull overlaid the existing plan with grids (or force fields) generated by the alignments of major existing buildings and site features. Prominent among them is the diagonal orientation of the U-shaped stadium. Its open end faces a ravine sloping down toward the isolated medical campus (upper right in model), suggesting a major pedestrian axis connecting the two areas. A large green will become part of these landscaped walks, replacing a parking lot in front of the Engineering Research Center (opposite, top left). Parking is moving into a garage now under construction. The center is the culminating view on another critical axis—the entry drive onto the main-campus from the east (right in model). The master-plan's "signature building blocks" in design or construction or built, include a performing-arts center; a medical-arts building at the entrance to the northeast campus, and the arts and architecture school.

Statistics: Planned student population: 3,500 students. Campus area: 164 acres. (Ohio State University with a similar number of students has 1,600 acres.)

- | | |
|-----------------------------------|----------------------------|
| 1. Loggia | 7. Graduate student office |
| 2. Lobby | 8. Wet laboratories |
| 3. Administration/faculty offices | 9. Dry laboratories |
| 4. Meeting room/lounge | 10. Lobby |
| 5. Bridge | 11. Loggia |
| 6. Mechanical | 12. Lecture Hall |
| | 13. Seminar rooms |



© Richard K. Joesch CAM-TECI Photography

Typical floors are split into wet labs to the south (top left) and dry labs to the north (above). Exposed utilities in both sections are routed around the ceilings and plugged into as needed from below in anticipation of frequent room reconfigurations to meet the needs of changing users and experiments. These overhead feeds allow partitions to be standard stud and drywall, the most economical construction to move when it does not contain pipes, wiring, and ducts.

Interchangeable casework units in wet labs were a cost-engineering option chosen by the users over piped liquid oxygen. The

hung units allow for easier maintenance—a major consideration in all planning. Exterior and interior windows allow deep penetration of daylight within lab areas. A major pedestrian axis on the campus master plan passes through the research center's lobby (opposite) where it makes a one-floor grade change from front to back.

Credits

Engineering Research Center
University of Cincinnati
Cincinnati, Ohio

Owner: The State of Ohio
Architect and Engineer: KZF
Incorporated—Donald L.
Cornett, project manager and



principal-in-charge; William H. Wilson, project architect; John R. Sheringer; Joseph C. Nader, project mechanical engineers; Jon A Bennett, project structural engineer; Joseph P. Oppold, project lighting and electrical engineer; William B. Sandmann, project electrical designer; Donald L. Schumer, site representative

Associated Architect: Michael Graves, Architect—Michael Graves, design principal; Thomas Rowe, senior associate-in-charge; Keith McPeters, project manager; Mary Yun, job captain; Saverio Mango, Andrea Wang, designers

Associated Architect and

Engineer: Smith Hinchman & Grylls—Andrew Vazzanio, planning principal; Jeff Hausman, project manager; John Flynn, lab architect; Stanley Mah, electrical engineer; Eric Kirkland, mechanical engineer; Stephen Kirk, costs and value engineer

Consultants: Hargreaves Associates (landscape); RWDI, Ltd. (wind-tunnel testing)

Prime Contractors: Monarch Construction (general); Banta Electric Contractors, Inc. (electrical); Peck, Hannaford, & Briggs Company (mechanical); Stark Plumbing (plumbing); Dalmation Fire, Inc. (fire protection)

Lab Science Does Live

*Tomanek Hall, Fort Hays State University
Hays, Kansas
Horst, Terrill & Karst, Architect
Stecklein & Brungardt, Associated Architect*

Fort Hays State University's physical sciences departments teach students living over an enormous geographical area from a compact, modest new building.

To reach the student population over a vast 48,000-square-mile area with science classes, Fort Hays State University has turned to interactive teaching video (ITV). Three ITV lecture halls in newly completed Tomanek Hall have camera positions at the rear of the rooms, and over the benches where instructors conduct experiments. Students in remote locations are also on-camera and their questions are answered in real-time. Computer technology is totally integrated in the physical sciences labs, where computers have been installed in custom wet-lab casework, and see-through fume hoods allow instructors to supervise students at work (lower opposite).

Overall, the 45-degree triangle footprint for the building responds to specific site issues, extending the campus quadrangle to include this building (site plan below), and keeps established views and pathways between buildings clear. The chosen building form also admits daylight into departmental offices and nearly all the laboratory spaces through the northeast-facing sawtooth-shaped exterior wall. The building exterior is clad with Indiana limestone. *Charles Linn*

Credits

Tomanek Hall

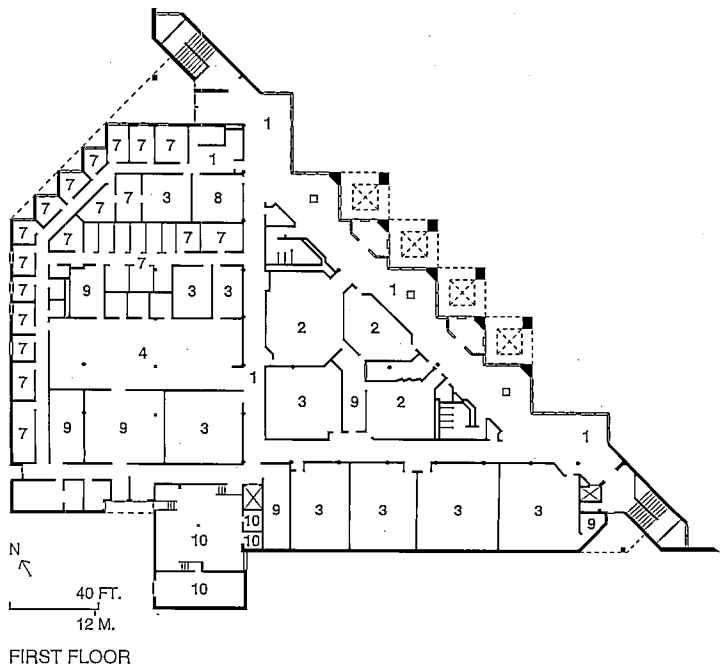
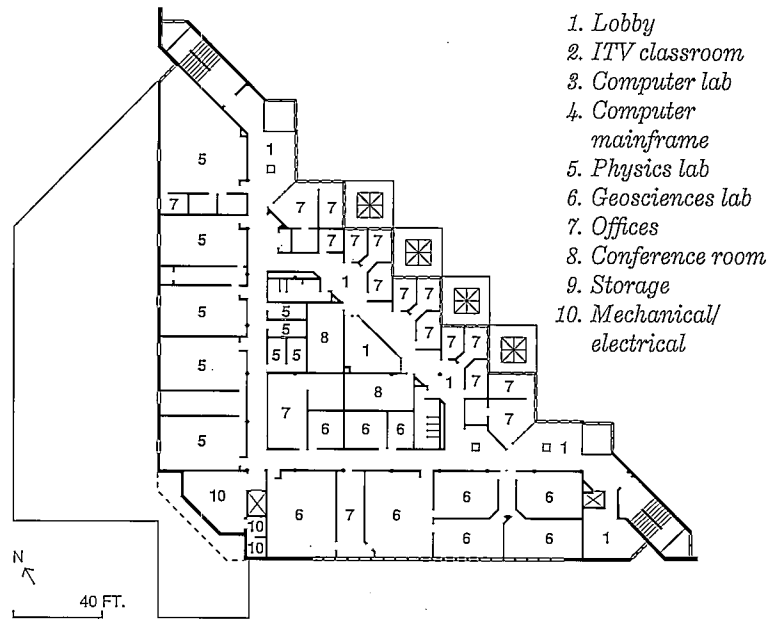
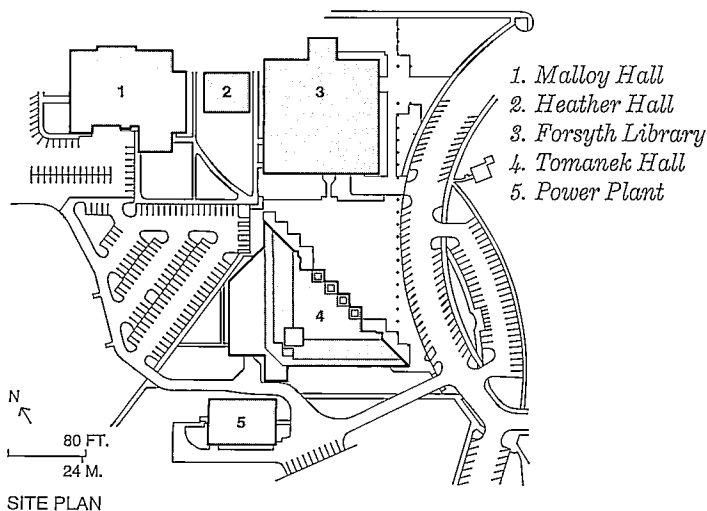
Fort Hays State University, Hays, Kansas

Owner: *State of Kansas*

Architects: *Horst, Terrill & Karst—Gary Karst (project designer), Mark Franzen (project architect), Steven Scannell (specifications), Charles Smith (job captain)*

Associated Architects: *Stecklein & Brungardt—Alan Stecklein*

Consultants: *Finney & Turnipseed (structural); Hoss & Brown (mechanical/electrical)*





Harvard Hub Takes On New Aura

Memorial Hall, Harvard University
Cambridge, Massachusetts
Venturi, Scott Brown and Associates,
Architects

A team of architectural firms brings out the best historic qualities in a Harvard landmark while providing for bright, active, up-to-date uses that the original architects never envisioned.

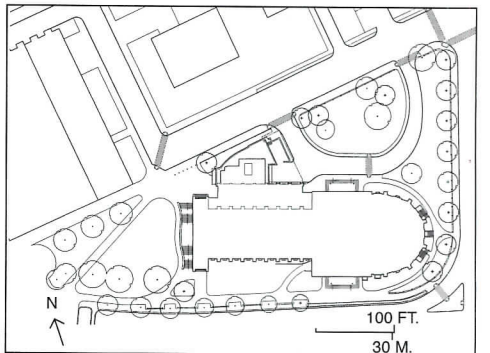
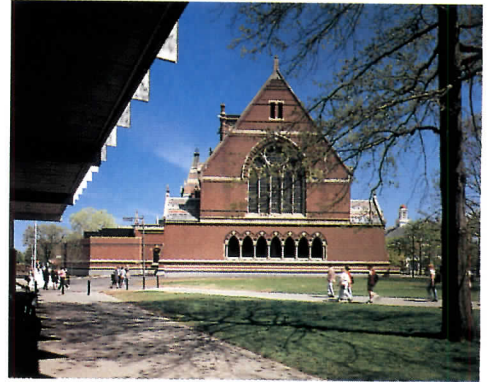
In section, it is lively, one might say almost Postmodern. Upstairs is a grand college dining hall hung with portraits of illustrious alumni, paneled in oak, lined with stained-glass windows, and crowned with hammerbeam trusses; here one feels powerfully the institutional presence and history of America's oldest university. Downstairs is a casual eatery, a pleasant, low-ceilinged space with linoleum floors, whose infrastructure accommodates cables that link to the Internet, and decor featuring, not collegiate memorabilia, but LED screens that typify the speed and ephemerality of contemporary life. The building that contains these counterpoints is Memorial Hall at Harvard University. Built in the 1870s to commemorate Harvard's Civil War dead, it is, says the project's restoration architect, Robert Neiley, "the finest example of Ruskinian Gothic in America." But the building, designed by William Ware and Henry Van Brunt, had been for years underused. Once the college dining hall, the great space became an exam room, and the basement housed such uses as the university radio station and B.F. Skinner's lab of behavioral research.

Several years ago, Harvard's campus planners, in collaboration with Venturi, Scott Brown & Associates, began transforming Memorial Hall from a neglected monument to a center for campus life. Today the great dining room (overleaf) has become Annenberg Hall, where first-year students eat, and the basement is reborn as Loker Commons, where students, faculty, and staff can buy lunch and espresso, and find numerous (but never enough) outlets for their laptops. "There was pressure to create a student center," says Philip Parsons, Director of Planning at Harvard. "But, in these multicultural days, it seemed better to make a place where the entire university community would feel welcome."

VSB & Associates (working with a team of consultants, including Neiley's firm and Bruner/Cott & Associates) have taken two complementary routes. Upstairs, where a lobby still holds memorial plaques, the architects emphasized restoration over invention, making these spaces function in 20th-century terms while altering as little as possible the powerful and idiosyncratic architecture. They removed awkward modernizations, such as mercury-vapor lighting (replacing it with period-style fixtures), cleaned and restored finishes, completely replaced hvac systems, and built an addition housing a kitchen that serves several thousand meals daily. (The restoration is fastidious but not stuffy: On one entry door, for instance, there remains the carved name "Hendrix.") Downstairs, VSB's approach has been freer; here the architects have worked to achieve an almost loft-like neutrality, a space, in Robert Venturi's words, "not arty-architectural but generically flexible." They separated the linear space into distinct zones through minimal means: An interior wall separates coffee house from food concessions; a series of partitions makes the booths along the southern wall private. Carefully designed lighting accentuates these

Continues on pages 96

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The curvilinear service wing (photos above) is a new addition, as is the commons entrance (opposite). Venturi designed the serpentine walls to contrast with the angularity of the Victorian building, distinguishing new from existing construction and blending potential intrusions into the landscape. Brick banding on the new walls echoes that of the original building, but—again to differentiate new from old—it is flat, not round.



zones: Along the south wall high windows admit daylight; the busy central area is lit from above with warm-white fluorescents and incandescent spotlights; and the interior "street" bisecting these areas is marked by fluorescent tubes with colored gels.

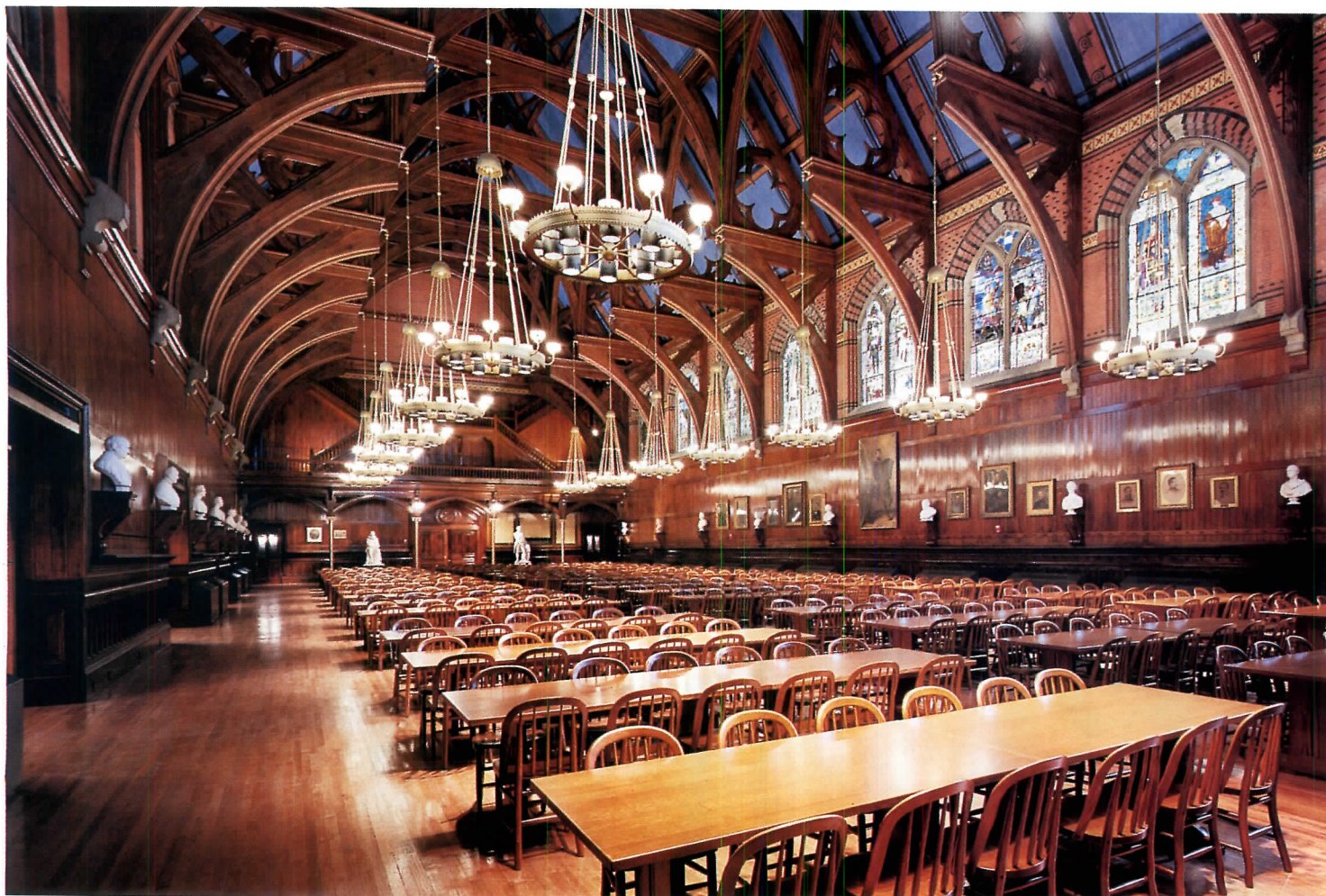
The designers worked to make Loker's identity owe less to architectural setpieces than to campus activity and, especially, communication. The space encourages copious communications in various modes, from low-tech tackboards to Internet hookups and LED boards. Venturi, with his interest in architectural iconography, sees the LED displays as part of a continuum that includes temple hieroglyphics and basilican mosaics. He writes: "Can it be said that the sparkle of pixels in Loker Commons corresponds to the glory of vitraux in the dining hall upstairs? In the basement of Memorial Hall, contemporary electronics succeed revivalist craft." (Philip Parsons suggests playfully that Loker, with its tackboards, menu posters, and electronic displays, points to a new design motto: "Mess is more.") Is Loker Commons an Ivy League food court—a further sign of the accelerating commercialization of society? This question troubled both the university planners and the architects, who believed that Loker should feel not like a retail outpost, but like a particular place at Harvard. And indeed it does: Loker is distinguished from the typical food court especially by what it lacks. Here one finds not brand-name concessions, but pizza and tacos; not Muzak, but rock and jazz selected by students and staff; and, most important, not shoppers grabbing snacks, but students studying. In term time, Loker can seem like an outpost of the library, and it's often hard to find a seat. *Nancy Levinson*



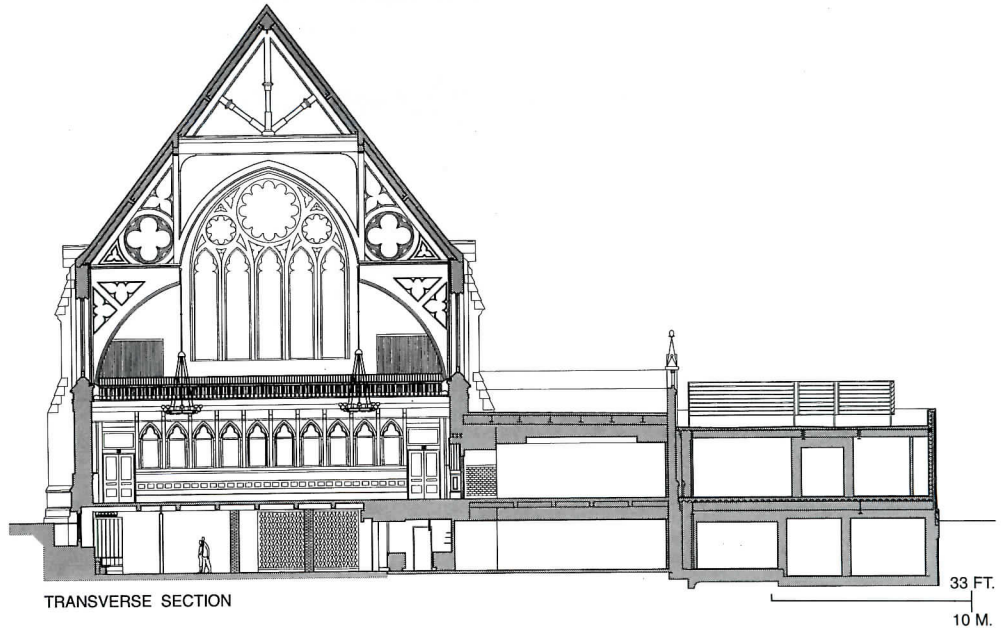
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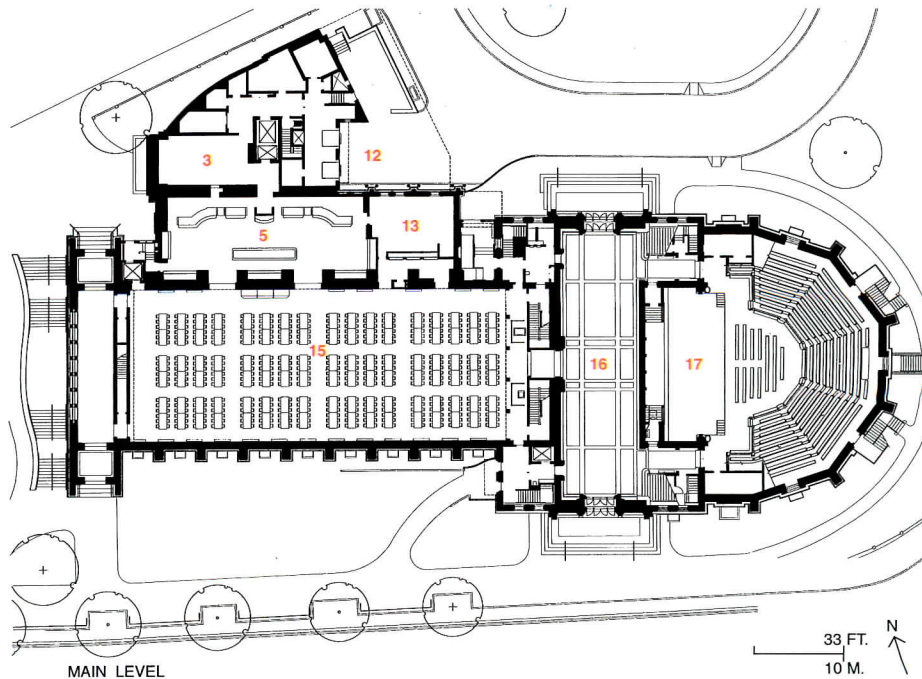
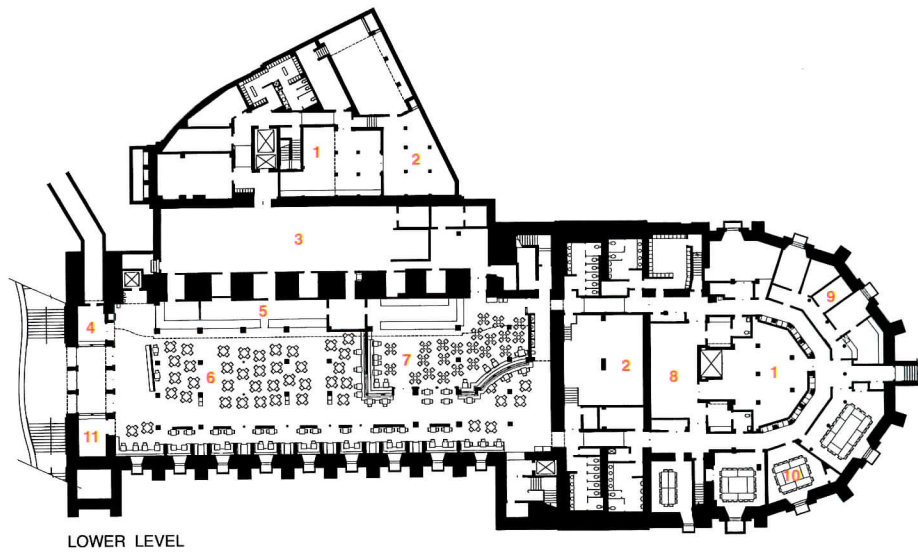
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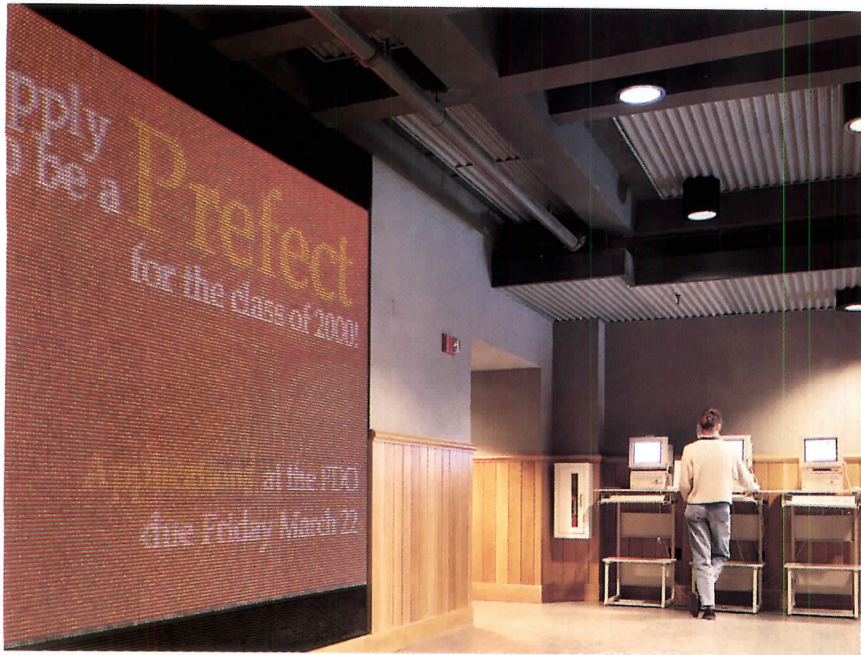


Upstairs/downstairs: For many years, the dining hall's painted ceiling was a dark mystery. New fluorescent uplights in fixtures matching originals now uncover it (opposite, bottom). Stained-glass designers include John LaFarge and Frederic Crowninshield. Downstairs (opposite, top), Loker Commons features poetry selected by students.

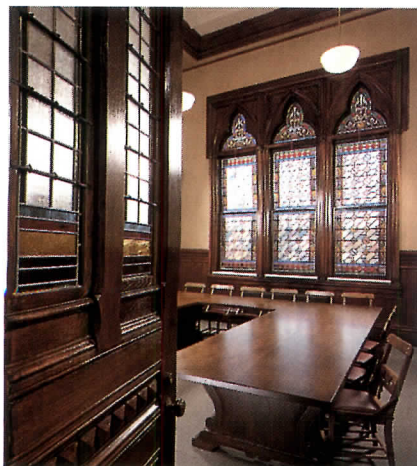


1. Storage
2. Mechanical
3. Kitchen
4. Copy
5. Servery
6. Commons
7. Coffee house
8. Green room
9. Offices
10. Seminar
11. Newstand
12. Loading
13. Dish washing
14. Box office
15. Dining room
16. Transept lobby
17. Theater





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Up Close

An underutilized campus landmark presented opportunities for restoration above ground and renovation in its basement, where new uses recognize current patterns of study.

Program: Restore dining hall for approximately 1,300 first-year students; new commons for the University community; restore amphitheater for lectures and concerts; new kitchen; 10 seminar rooms; several offices; new rehearsal space; new green room; restore lobby (called the "transept").

Solution: For the main level and above, fastidious restoration, while weaving in up-to-the-minute support systems. For lower level, a new space with deliberate restraint contrasting with the highly decorated architecture above.

Statistics: 36,000 square feet of renovation, including the entire lower level and, on the main level, the servery and stairs; 34,200 square feet of restoration and 7,800 square feet of new construction. Cost: \$18.8 million including kitchen equipment.

Loker features two LED boards: the frieze above the food counters and a screen at the end of the main passage (top, bottom right, and opposite). Both are programmed by students, literally making Loker into interactive architecture. Adding to the smorgasbord of communications are computers, available to all, hooked up to the Internet, and several large bulletin boards.

Credits

*Memorial Hall, Harvard University
Cambridge, Massachusetts*

Architect: Venturi Scott Brown & Associates—Robert Venturi, partner-in-charge; Dan McCoubrey, project manager; Richard Stokes, project architect; Hidenao Abe, Joseph Herrin, Jeff Hirsch, project team

Associated Architect: Brunner/Cott & Associates

Restoration Architect: Robert G. Neiley, Architects

Engineers: Keast and Hood Company (structural); BR+A Consulting Engineers (mechanical, electrical); Robert W. Sullivan, Inc. (fire protection/plumbing); Birchfield Food Systems, Inc. (food service); The Halvorson Company, Inc. (landscape); Fisher Marantz Renfro Stone (lighting); George Izenour (theater); Acentech Incorporated (acoustics/audio visual)

General Contractor: A. J. Martini, Inc.



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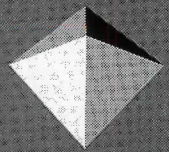
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More than 700 people are expected to attend the fourth annual professional design/build conference on October 10-11 in the nation's capital, according to conference planning chair Grant McCullagh, FAIA of McClier Corporation, Chicago. Cosponsored by the Design-Build Institute of America and The American Institute of Architects, the nation's premier design/build conference will bring together owners, practitioners and leaders from industry and government to explore design/build's enormous opportunities and continuing challenges.

The Conference will have four distinct "tracks," with six sessions in each track: Approaches and Strategies; Architectural Projects; Civil and Industrial Projects; and Project Delivery and Finance. Attendees will be free to choose from among a series of special presentations, case studies and how-to seminars within any of the tracks, including:

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One year from now, sovereignty over Hong Kong will pass back to China after 99 years of British rule. Although a political event, it symbolizes what is happening in architecture too. Asian architects trained abroad are returning to their native countries to participate in a building boom that is perhaps the biggest in history. Power, wealth, and technology are shifting from the West to the East. This year's Pacific Rim Section chronicles some of this change: from country reports that discuss native architects coming home to an article on Suzhou Garden Villas, designed by U.S.-raised, Hong Kong-based architect Nelson Chen. Architects go where the action is.

Clifford A. Pearson
Editor-in-Charge

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Portfolio 2
Country Reports 5
Rapid Construction 26
NTT Building 28
Suzhou Villas Garden 34



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Projects From Around the Region

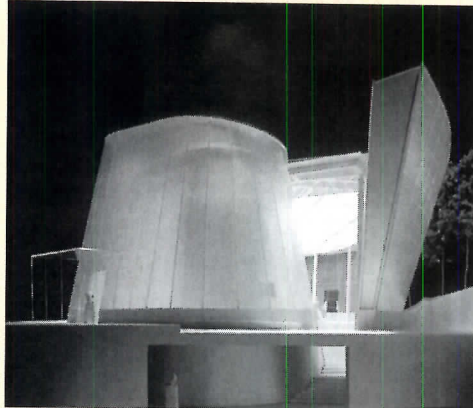


**Beijing American Center
Beijing, China**

Rafael Viñoly Architects (N.Y.)

Project type: Office building with retail.
Design concept: A freestanding cube with a central service core and exterior concrete moment frame, the building was designed to be a landmark in the rapidly developing eastern section of Beijing. Open at the top and bottom, each facade lets sunlight hit recreational terraces on upper floors and retail floors below grade.

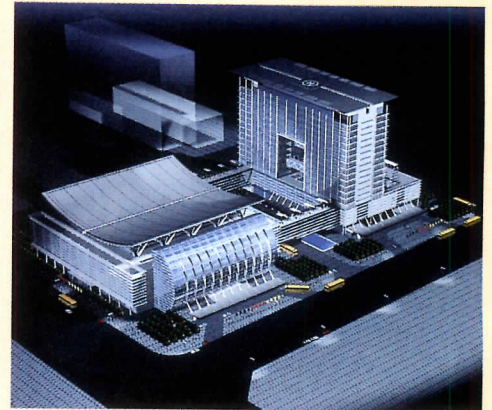
© Jock Pottle/Esto



**Rodin Museum at Samsung Plaza
Seoul, South Korea**

Kohn Pedersen Fox Associates (N.Y.)

Context: One part of a KPF-designed plan to connect the existing Samsung Headquarters with two neighboring buildings, the museum is the culmination of a series of renovated office lobbies and outdoor spaces.
Design concept: Walls of conically curved glass supported by glass structural fins wrap around sculptures by Auguste Rodin and allow views from both inside and out.



**Taegu Trade & Product Exhibition Center
Taegu, South Korea**

**Leonard Parker Assocs. (Minneapolis)
and Korea Architects (Taegu)**

Context: Set in the country's third-largest city, this 1.8-million sq-ft complex will be just minutes away from an enlarged international airport and a high-speed rail station when all are completed.
Key components: An 18-story office building and a six-level convention center will be connected by underpasses and skyways.

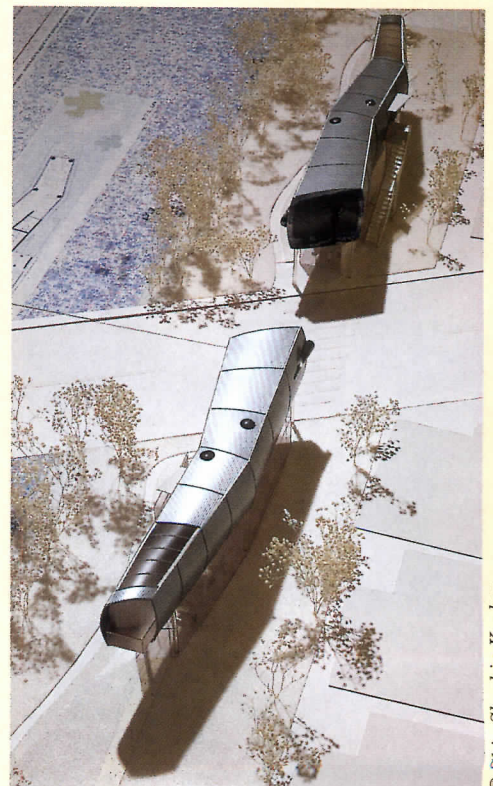


**AMA Tower
Manila, Philippines
Perkins & Will (Chicago)
Luis & Associates (Manila)**

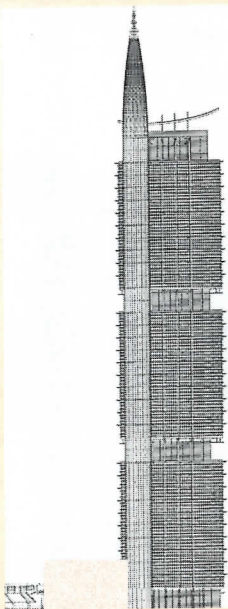
Project type: Office building with retail.
Size: 441,000 sq ft; 37 stories above grade.
Location: In the Mandaluyong area, one of the fastest-growing parts of metro-Manila.
Main components: Thirty-two office floors sit above retail on the first and mezzanine levels, while six levels of parking and mechanical rooms are tucked below grade. An office/residential penthouse tops off the building.

**Video Sento
Tokyo, Japan
Klein Dytham Architects (Tokyo)**

Program: Bathhouse, health club, café
Concept: A modern version of the traditional Japanese bathhouse or sento, this 2,300 sq ft building is sliced in two by an existing road on a narrow site. The division into halves offers the chance to provide separate facilities for men and women, and to project videos onto the frosted-glass walls on opposite sides of the road.



© Shin Shashin Koubou



© Adrian Velicescu/AV



TNB Corporate Tower
Kuala Lumpur, Malaysia
RTKL Associates (Los Angeles)
GDP Architects (Kuala Lumpur)

Size: 65 stories, 1.38 million sq ft.
Main components: A 65-story glass-and-stainless-steel office tower for K.L.'s electric company attached to an 80-story metal-screen-clad service tower with shared facilities such as auditoria, dining rooms, and exhibition hall housed in smaller buildings at the base of the towers.



Olympia Plaza
Hong Kong
Wong Tung & Partners (Hong Kong)

Project type: Mixed-use tower with retail, restaurants, and office space.
Main components: A 25-story, 225,000-sq-ft building is divided into three parts: a shopping podium, a seven-story midsection with restaurants and kitchen spaces, and 14 floors of offices. The \$53-million building is scheduled to be completed by March 1999 and will include large signage on its lower levels.



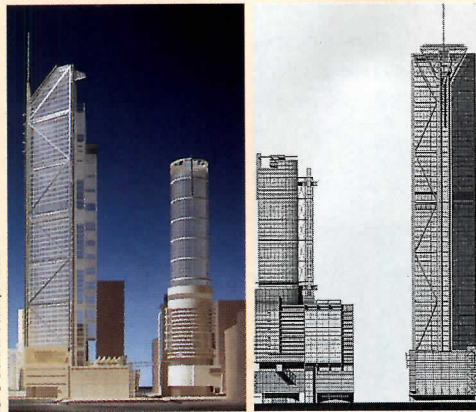
Korea Development Bank
Seoul, South Korea
DMJM/Keating (Los Angeles)
Hee-Rim Architects (Seoul)

Location: Prominent site on Jeoudo Square near the National Assembly Building.
Design concept: Two office wings and a heavy cornice at the ninth floor help define the adjacent public square, while an oval-shaped glazed banking hall serves as the visual focus. A nine-story atrium links all the components of the 1-million-sq-ft complex together.



Pusan Dang-gam Housing
Pusan, Korea
Hak Sik Son (Santa Monica and Seoul)

Program: Low- and moderate-income housing, plus commercial, recreational, and daycare facilities being built by the government housing board on a hilly site.
Design concept: "Fingers" of construction engage fingers of the forest, and buildings cluster on ridgelines rather than in valleys to reduce surface erosion. Most buildings face south to catch sunlight.



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MegaWorld Place
Manila, The Philippines
Skidmore, Owings & Merrill (N.Y.)

Location: In the Makati area.
Main components: A 66-story office tower rests on a podium containing parking, food court, and health club. An external super-structure (like the one SOM used for the Hancock Tower in Chicago) maximizes rentable space of office floors. An adjacent 46-story tower includes 19 floors of residences and a 24-story hotel.



Gateway Gardens
Jakarta, Indonesia
Timothy Seow Group (Singapore)

Project type: Condominium and service apartments.
Design concept: Inspired by the split gates or *candi bentar* found in front of Balinese temples, the architects devised modern forms that recall the old buildings' jagged edges and strong vertical lines. The majority of the apartments face north or south to reduce heat and direct light from the sun.

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China

Uncertain Politics Don't Stop Foreign-Trained Architects From Returning Home

GNP, 1995: \$739.86 billion

GNP growth, 1995 (forecast): 9.9 percent

Projected GNP growth, 1996: 8.5 percent

Inflation, 1995: 18 percent

Population: 1.23 billion

(Source: *Economist Intelligence Unit*)

Economic overview: China's economic growth has slowed from the breakneck double-digit rates that characterized the past decade. Steady growth, however, continues against a background of political uncertainty and regional disparity in development. China's GNP grew 9.9 percent in 1995, down from 11.8 percent in 1994 and 13.4 percent in 1993.

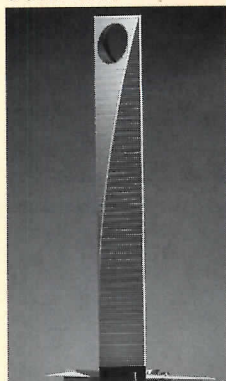
According to *New China Quarterly*, Prime Minister Li Peng has targeted development of the construction industry, "one of the major pillars" of growth, as a national goal. Inflation, which raged above 20 percent two years ago, hit single digits this year. This reduction is due largely to short-term measures, and many economists doubt the government's ability to control long-term inflation.

Politics: With Deng Xiaoping, China's long-absent paramount leader, in extremely fragile health, there is much talk about the power base of his hand-picked successor, President Jiang Zemin. Jiang seems to be solidifying his hold on power, but the true test will come once Deng finally passes away. Recent Chinese military exercises near Taiwan, China's claim to sovereignty over the Spratly Islands, and the return of Hong Kong in 1997 and Macao in 1999 to Chinese sovereignty are all events that have the potential of unsettling things further.

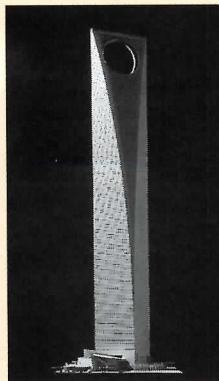
Shifting geography: Although major coastal cities such as Shanghai and Guangzhou, and the capital, Beijing, continue to be focal points for development, the government is encouraging development of inland regions. Many companies, both foreign and domestic, are beginning to take advantage of government incentives, and lower land, labor, and operating costs in cities such as Suzhou and Tianjin, and smaller cities in the interior. Although special economic zones such as Shenzhen have boomed in the last decade, high land-acquisition costs—driven by the



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Mori Building in Shanghai, by KPF (above); Ning Bo Cultural Center by Shenzhen Univ. Institute of Architectural Design with Qingyun Ma (top) as project architect.

government's need to subsidize infrastructure development—are making these zones less attractive to foreign investors.

Better planning: Many Chinese architects feel the government is placing too much emphasis on attention-getting high-rise projects at the expense of more critical needs. These same designers also recognize that the dearth of regional land-use regulations hinders long-term development. Regulations, when they do exist, are often sacrificed for immediate economic benefits. As a result, agricultural land and open space surrounding cities are disappearing rapidly.

Market changes: To slow down its overheated economy, the government began tightening its monetary policy and restricting certain types of development in recent years.

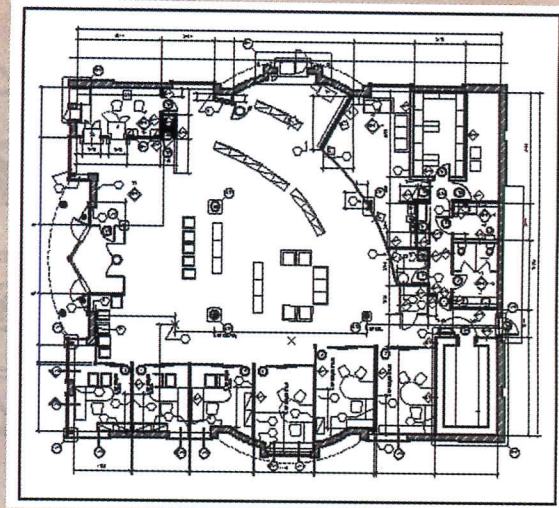
In 1995 the government placed a moratorium on luxury hotel projects. Due to the large number of office projects recently completed, there's a glut of office space in many major cities. Developers such as Tokyo-based Mori Building, however, are confident the long-term office market in China, particularly Shanghai, is stable. Mori and a Japanese consortium commissioned Kohn Pedersen Fox to design the Shanghai World Financial Center which will be the world's tallest building at over 1,500 feet high. Construction will begin in 1997.

Coming home: With the government encouraging foreign-trained professionals to come home, architects such as Paul Chen and Henry Wu have returned from the U.S. Chen and Wu, who started Haipo Group Architects, Planners, and Engineers, in Shanghai in 1993, recognize that the market has slowed since they returned. "Developers are more hesitant, many projects are on hold, and land is becoming less readily available," says Chen. "However, the market is still good." Foreign architects are finding more restrictions limiting their participation in projects. A recent Shanghai regulation prohibits foreign architects from producing construction drawings, reserving the work for design institutes. At the same time, local design institutes are catching up with foreign firms, say some Chinese architects. Qingyun Ma, an architect who completed graduate studies in Philadelphia and worked in New York for several years before returning to China, says that during 10 years of joint ventures, Chinese design institutes absorbed a great deal of expertise. According to Ma, these institutes are often able to better anticipate local clients' expectations and deliver projects at a fraction of a foreign architect's fee. As private Chinese architects working with local design institutes, Chen and Wu face some of the same problems as foreign firms—protecting design integrity while meeting requirements set by the program and client. But as Shanghai natives, Chen and Wu understand and operate within the local market as insiders, which few foreigners can do. *Greg Hall in Hong Kong*

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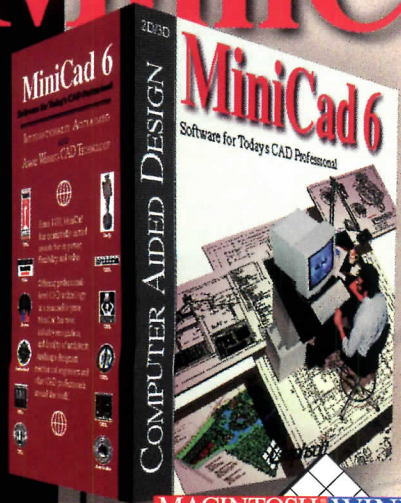
Labels in drawing include: 1 1/2" Minimum Cover, 12" Concrete Wall, #5 Bars @ 12" E.W.E.F. (Typical), 6" Depth Stone (See Options in Spec.), 1 1/2" PVC Sillows 4'-0" O.C. @ Base & Head as Indicated, 2 1/2" Concrete on 9/16" Steel Deck, 5/8" GWB (Where Indicated), Block Wire Chase as required to attach Wood Base as Indicated, Continuous "L" 6x4x5/16" (Typical), Adjustable Anchor Inset w/ 3/4" Bolt @ 30" O.C. (#425/427 Heckmann or eq.), Steel Joist Size and Direction Varies (See Structural Framing Plan for Details), Steel Joist Size and Direction Varies (See Structural Framing Plan for Details), Alternate Wire Chase Construction, 1x6 Oak Chase Cap (Typical), Expansion (Typ.), 3-Piece 5 1/2" Oak Base (Typical), Continuous "L" 6x4x5/16" (Typical).

| SCHEDULE | | Materials/Finish | |
|----------|----------------|------------------|--------|
| # | Room | Base | Trim |
| 101 | Living Room | 1x6 wd | 1x4 wd |
| 102 | Kitchen | 1x6 wd | 1x4 wd |
| 103 | Breakfast Nook | 1x6 wd | 1x4 wd |
| 104 | Rear Vestibule | 1x6 wd | 1x4 wd |
| 105 | Spa Room | 1x6 wd | 1x4 wd |
| 106 | Bath w/ Shower | 1x6 wd | 1x4 wd |
| 107 | Side Foyer | 1x6 wd | 1x4 wd |
| 108 | Laundry | 1x6 wd | 1x4 wd |
| 109 | Mud Room | 1x6 wd | 1x4 wd |
| 110 | Tool Room | 1x6 wd | 1x4 wd |
| 111 | Garage | 1x6 wd | 1x4 wd |
| 112 | | 1x6 wd | 1x4 wd |
| 113 | | 1x6 wd | 1x4 wd |
| 114 | | 1x6 wd | 1x4 wd |
| 115 | | 1x6 wd | 1x4 wd |
| 116 | | 1x6 wd | 1x4 wd |
| 117 | | 1x6 wd | 1x4 wd |
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| 119 | | 1x6 wd | 1x4 wd |
| 120 | | 1x6 wd | 1x4 wd |
| 121 | | 1x6 wd | 1x4 wd |
| 122 | | 1x6 wd | 1x4 wd |
| 123 | | 1x6 wd | 1x4 wd |

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Deregulation and Infrastructure Investment Drive Economic Transformation

GDP, 1995: \$173.7 billion

GDP growth, 1995: 7.3 percent

Projected GDP, 1996: 7.8 percent

Inflation, 1995: 9.4 percent

Population (estimate): 200.8 million

Sources: *Economist Intelligence Unit, Bank Indonesia, Central Bureau of Statistics*

Economic overview: Having transformed itself from an agricultural and mining-based economy into one in which manufacturing and construction provide the prime engines for growth, Indonesia is on the verge of becoming a newly industrialized country. Growth rates in excess of 6 percent per year are expected to be sustained for at least the next several years and to permit a steady increase in per-capita GDP from around \$845 in 1994 to about \$1,350 by 1999. This growth in income, combined with the intensive investments being made in human, infrastructural, and industrial development, will result in a transformation of the economy by the end of the decade.

Long-term prospects: The country's growth prospects beyond 1999 will be strengthened by its extensive natural resources—oil, mineral, and agricultural commodities—and a growing domestic consumer market of some 200-million people. The government's current attempts to reduce inequalities in wealth and distribution will also provide a stimulus for long-term growth. In addition, considerable efforts are being made to expand transport, communication, and power-generating facilities to reduce infrastructural bottlenecks; the sector was given a major boost in 1994 with the start of an on-going program of government deregulation which opened up the economy to foreign investment. This process of economic openness continues today. For example, the government last year approved \$39.9 billion in foreign investment, up from \$23.7 billion in 1994. A planned move into high-technology businesses could also help to transform the economy.

Office construction: An increase in the number of foreign-invested companies in the capital since deregulation began has ensured high occupancy levels and a dramatic increase in the construction of grade-A buildings in Jakarta in the last five to 10 years. About 1.54 million square feet of office space was completed in the first half of last year and another 8.9 million square feet is currently under construction, more than 90 percent of which is grade-A.

Retail construction: A strong performance by domestic retailers and growth in consumer-spending power has seen the amount of retail space in Jakarta rise from less than 32.4 million square feet 10 years ago to more than 172.8 million square feet this year. More than 32.4 million square feet of space was opened last year alone. Domestic retailers have flourished as an emerging middle class has adopted shopping as a favorite activity. Growth by foreign retailers, though, continues to be severely restricted by a government ban on direct investment in the sector. Licensing deals are helping to alleviate the problem, but many malls are suffering due to a lack of top-name foreign anchor tenants.

Housing construction: As Indonesia continues its progress toward industrialized-nation status, an increasing percentage of the population is moving from traditional compound housing into apartment blocks and condominiums, a move also fueled by a growing number of expatriates brought in to service foreign-invested companies. Approximately 7,880 multifamily housing units are expected to come on line this year, including 1,106 units delayed from 1995 completion.

Subway: Chronic congestion on Jakarta's roads has finally led to plans for a subway from the city center to the southern shopping and residential area of Blok M. Construction is due to begin in 1997 and the project is expected to cost around \$1.3 billion. In the meantime, nearly 10-million vehicle trips are made every day in Jakarta, a city of 9-million people. With public trains and buses overcrowded, a subway has long been overdue.

Spotlight on the "golden triangle": Fifteen years ago only a handful of high-rise buildings marked the central business district, the so-called "golden triangle" bounded by Jalan Sudirman, Jalan Gatot Subroto, and Jalan Rasuna Said. But from 1980 to 1995, total office space in the district grew from 3.73 million square feet to more than 27 million square feet. By 2007 the Jakarta property market will have taken another quantum leap. Currently under construction is an ambitious plan to develop a fully integrated superblock project in the heart of the Indonesian metropolis. Called the Sudirman Central Business District (SCBD), the scheme will incorporate a swath of modern



Jakarta Stock Exchange, by Brennan Beer Gorman, rises in a new business district.

offices, hotels, and apartment towers designed to transform the center of the city. The \$4-billion SCBD project—brainchild of PT Danayasa Arthatama, a wholly owned subsidiary of the publicly listed Jakarta International Hotels and Development—will provide 27 million square feet of new space, enough room for 200,000 people and 20,000 cars. Launched in September 1992, eight of the 24 lots on the 111-acre site have been committed, and the land is already marked by some impressive buildings: the brand new Jakarta Financial Tower and neighboring Stock Exchange Building (above), designed by Brennan Beer Gorman Architects of New York, and the Bank Artha Graha Tower.

More to come: Some of the other buildings scheduled to come on line in this city-within-a-city will include hotels operated by Conrad Hotels and Omni Marco Polo. SCBD will also include a hospital, a fire station, and a flood-protection scheme, plus a sophisticated traffic-management system. "This area is the future financial heart of the city," claims Djohan Sutanto, vice president and director of the company behind the development.

Nigel Simmonds in Bali

© Justin Van Soest

Sluggish Economy and Relations with China Cloud Forecasts

GDP, 1995: \$260.7 billion

GDP growth, 1995: 7.58 percent

Projected GDP growth, 1996: 5.5 percent

Inflation, 1995: 3.68 percent

Population: 21.3 million

Economic overview: While the government has taken measures to curb a further slump in the construction industry, economic analysts remain skeptical about forecasts for a quick recovery. The economy is currently sluggish due to a reduction in the growth rate of private consumption. A 5.24 percent increase in consumption in 1995 was the smallest since 1987. Factors such as a decline in real wages, rising unemployment, and a 27 percent dive in the stock market last year have all led to the present reduction in speculative property trading. Non-economic factors—most notably deteriorating ties with mainland China—have also affected Taiwan's economy. On a brighter note, the government is liberalizing the economy in an effort to enter the World Trade Organization. The ruling Kuomintang party's goal is to transform the island into a regional operations center for Southeast Asia—a goal that will involve building manufacturing, shipping, financial, and transportation hubs.

Building sector: Construction should pick up as more foreign companies use Taiwan as a springboard to the China market. The housing and office markets are weak, but retail construction may pick up soon. A glut of housing led to a 27 percent drop in permits for new residential units in 1995, after decreases of 13 percent in 1994 and 14 percent in 1993.

Architecture in transition: "Taiwan is chaotic, full of energy, but not really organized," says architect Chin Pai, a principal at Haigo Shen & Associate. "In architecture too, anything goes." But Taiwan is in a transitional period, Pai explains, with local architects working with foreign firms and benefiting from a transfer of technology. Since the last real-estate bubble burst in 1990, competition among architects has become fierce and many firms have expanded their scope of services to bring in new work.

Courting controversy: Architect C.Y. Lee has designed some of the most prominent—and controversial—buildings in Taiwan. His firm's blending of East and West has resulted in buildings that defy categorization and invite debate. His Hung Kuo Building in Taipei, for example, is a 17-story structure with sloping



Hung Kuo Building in Taipei, designed by C.Y. Lee, has elicited strong opinions from architects and the public.

terraced sides, a "sky lounge" halfway up, and a style all its own. Some architects have called the building a "landmark," while others have criticized it for not blending into the urban fabric. Lee says its planning and building methods are Western, while the East inspired its angled form and use of light and space. "The Chinese have a saying, 'Light gives forth life,'" says Lee. The firm is working on the T.C. Building in Kaoshiung, which will be the tallest building in Taiwan when completed in 1998. Described by Lee as a "Super Column," the 85-story building will meet the sky with a lotus-flower top. To his critics, Lee says the building was not designed to conform but rather to set a trend. *Eva Liu in Taipei*

South Korea

Foreign Competition Sparks Debate

GDP, 1995: \$456 billion

GDP growth, 1995: 9.0 percent

Projected GDP growth, 1996: 7.5 percent

Inflation, 1995: 4.7 percent

Population: 44.6 million

Economic overview: As expected, 1995 marked a turning point for the Korean economy, combining low inflation with strong markets both domestically and internationally. After three years of falling prices, the stock market gained almost 30 percent. A *downturn in corporations' capital investment* and a growing import-debt ratio, however, indicate less prosperous times ahead.

Real-estate markets: Having been burnt by overbuilding in previous years (especially in the residential sector), developers are becoming more prudent. The bankruptcy of a few large construction companies reverberated throughout the industry. As a result,

companies are diversifying—adding commercial, leisure, and mixed-use complexes to their development portfolios. Major capital projects, including high-speed rail stations and international airports, should trigger another period of big development projects.

Global profession: The buzzword for 1995 was *seggyehwa*—Korean for globalization. Foreign architects—including Norman Foster, Richard Rogers, and Frank Gehry—have recently been awarded some major commissions. Competition from foreign architects, though, has provoked debate. Most Korean practitioners support the open-door policy, expecting it to be a catalyst for advancing the field. Yet the argument that "blind reliance on foreign experts by private corporations as well as by the public sector is to be guarded against" was made by a leading journalist, Homi Yoon, and caused quite a stir.



Winning design for the National Museum, by JungLim Architects of Korea (above), beat out 341 entries from 59 countries.

Spotlight on competitions: The hottest topic of the year was the international design competition for the National Museum, which drew 341 entries from 59 countries. The winning design came from JungLim Architects, one of Korea's top firms. October is the deadline for entries to an international competition for a rail station in Pusan, sponsored by the Korea High-Speed Rail Construction Authority. *Jinai Kim in Seoul*



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Housing Remains Strong In Both Private and Public Sectors

GDP, 1995: \$62.7 billion

GDP growth, 1995: 8.9 percent

Projected GDP growth, 1996: 7-8 percent

Inflation, 1995: 1.7 percent

Population: 2.98 million

Economic overview: After two years of double-digit growth, the Singapore economy expanded by 8.9 percent in 1995. Growth was led by the manufacturing sector—particularly the electronics industry. Interest-rate cuts in the U.S. and the return of foreign investors to the stock market should benefit the Singapore economy this year, although the country is likely to see slower growth due to continued pressure on costs and competitiveness.

Construction: Growth in the construction sector slowed considerably to 8.5 percent in 1995, down from 17 percent in 1994. Reasons cited by the Ministry of Trade and Industry include shortages of some building materials and completion of several major construction projects in 1995. In terms of demand, the building industry experienced a record year in 1995, with a total of \$11 billion worth of contracts awarded to both the public and private sectors—a 30 percent increase over the value of contracts awarded in 1994.

Singapore's Construction Industry Development Board estimates \$10 billion worth of projects will be awarded in 1996.

Private housing: Residential construction is currently one of Singapore's strongest industries. Contracts awarded rose 13 percent in 1995 to \$2.5 billion, while the total stock of private residential properties stood at 127,187 units in the third quarter of the year. Another 81,062 units are expected to come on line during the next eight years—a completion rate that is nearly 2.5 times the historical rate.

Public housing: Singapore is unusual in that 87 percent of its population lives in public housing sold at subsidized rates by the Housing and Development Board (HDP). Contracts awarded for HDB apartments in 1995 rose 34 percent to \$2.9 billion, a record high. The record was partly due to a drive to upgrade existing HDB buildings, with more than \$356 million awarded for this purpose.

Office buildings: Contracts awarded for office construction fell by 14 percent in 1995 to \$786 million, reflecting the cautious mood of developers. One million sq ft of new office space came on-line in 1995, bringing total stock to 15.5 million sq ft. Nonetheless,

demand should remain strong with occupancy levels projected at 93 percent through 1996.

Public sector and industrial: Construction of public-sector office buildings was down for the second year, with the value of contracts awarded in 1995 decreasing 35 percent to \$79 million. Other institutional construction, however, grew 30 percent, with \$1.1 billion worth of contracts awarded. Strong demand for industrial properties pushed up contracts in this sector 38 percent to \$330 million.

Spotlight on a second downtown: A key part of the government's Revised 1991 Concept Plan calls for the development of a second downtown on reclaimed land in the Marina South area. Goh Chong Chia, principal of TSP Architects & Planners and president of the Singapore Institute of Architects, wants to see the plan reworked, with more involvement from the private sector. "The development could be more sustainable and ecological," states Goh. He envisions a design that relates to Singapore's tropical climate and multicultural heritage. "We have an opportunity to create a totally new city on virgin land. You can really start from scratch and the possibilities are tremendous." *Carol Clark in Singapore*

Philippines

Political Stability and Economic Reform Provide Platform for Major Developments

GDP, 1995: \$76.6 billion

GDP growth, 1995: 4.8 percent

Projected GDP growth, 1996: 6.5 percent

Inflation, 1995: 8.1 percent

Population: 67 million

Economic overview: The Philippines continues to make up for lost time, amid new optimism that growth will be sustained. Needed reforms in the foreign investment and tariff systems are going forward, opening the economy to more international competition. *Foreign investment* shows up mostly clearly in accelerated growth of manufactured exports and in a building boom that is transforming Manila's skyline.

Politics: The Philippines has a noisy democracy that sometimes frustrates even the Filipinos. But beneath the tumultuous surface, the political situation under President Fidel Ramos is more stable than it has been in over

a decade. Economist Bernardo Villegas of the University of Asia and the Pacific says that with increased political stability, continuity in economic management is likely, regardless of the outcome of presidential elections in 1998.

Real estate: Manila property markets are strong. But Monique Pronove of Jones Lang Wootton says the office market in the central Makati district may become saturated as 21 buildings (more than 6.48 million sq ft) are completed between 1996 and 1999. In addition, 2.86 million sq ft of new retail space are due for release in 1996. Demand has been increasing for mass-market housing, as Filipinos upgrade their standards of living.

Local light: One of the Philippines' most celebrated architects is Francisco T. Mañosa, whose Modernist work is rooted in Filipino vernacular and involves innovative use of local materials. His "Coconut Palace," for example,

is a whimsical residence supported by 122 inverted coconut trunks and finished with coconut-fiber carpets and coco-wood parquet.

Foreign players: American architects have associated with local firms and are working on Manila's four largest urban developments: the 38.5-acre Rockwell Center (by SOM and Palafox & Associates), the 603-acre Filinvest Corporate City (by the SWA Group and Ildefonso P. Santos & Associates), the 2,470-acre Boulevard 2000 (by HOK International and PROS), and Fort Bonifacio (by HOK and PROS and W.V. Coscolluela and Associates). Major infrastructure initiatives for roads and a light/mass railway system are scheduled to be completed by the year 2000. Manila's mayor, Alfredo S. Lim, says he would like to "make metro Manila the trading center of Asia," a sign the city has set its sights high. *Zofia Rybkowski and John Seel in Hong Kong.*

High-Rise-Office and Infrastructure Projects Fuel Building Boom

GDP, 1995: \$80 billion

GDP growth, 1995: 9.5 percent

Projected GDP growth, 1996: 8.3 percent

Inflation, 1995: 3.5 percent (estimate)

Population, 1995: 20.1 million (estimate)

Economic overview: The Malaysian government's recently unveiled five-year plan for 1996 to 2000 anticipates annual economic growth of 8 percent during this period. Prime Minister Mahathir Mohamad has said his government will allocate \$64.2 billion for development over the next five years, a figure equal to 11.5 percent of the GNP. During the previous five-year period, the government spent 14.8 percent on development. The lower figure in the new plan reflects the government's determination to reduce the size and role of the public sector.

Economic diversification: The country's economy, which used to be commodity-based in the 1980s, is now more diversified with manufacturing playing a key role. Manufacturing is expected to grow at a rate of 16.9 percent annually in the next five years and to account for 37.5 percent of the GDP in 2000, up from 33.1 percent in 1995. The government's long-stated vision is to achieve "developed nation" status by the year 2020.

Avoiding bottlenecks: The latest five-year plan recommends that infrastructure be developed ahead of demand to avoid the bottlenecks that have frustrated Malaysians during the past decade. In the next five years, 25 major projects will be privatized, including ports, hospitals, new expressways, and Penang's new Light Rail Transit system.

Reaching for the skies: On the back of nine continuous years of high economic growth, Malaysia is experiencing a major construction boom. Kuala Lumpur, the capital, is the focus of much of this activity. The 100-acre Kuala Lumpur City Center (KLCC) project on the former site of the Selangor Turf Club begins to come on line this year, with the twin Petronas Towers—designed by U.S. architect Cesar Pelli—due to open at the end of 1996. At 1,485 feet, the towers are the world's tallest buildings and, with a price tag of \$800 million, they didn't come cheap. The towers, whose floor plans are shaped like eight-pointed Islamic stars, will hold 4.14 million square feet of new office space.

Office boom continues: Ten other major office projects are set to open this year in K.L., resulting in another 2.31 million square feet

hitting the market. An additional 3.53 million square feet are projected for 1997. A more modestly scaled new tower is the 27-story Central Plaza, designed by the Malaysian firm T.R. Hamzah & Yeang. With its cascading terraces, planter boxes, and sunshade devices, the building continues architect Ken Yeang's exploration of adapting tall buildings to tropical climates. The massive supply of office space, though, is an area of concern and has led the authorities to put on hold applications for 20 more towers as they grapple with the city's chronic traffic problems.

A new capital: The relocation of all federal government departments presently located in K.L. to a new administrative capital called Putrajaya will go ahead in 1998 and construction of the \$7.9-billion project is now underway. Infrastructure and groundwork are progressing and the first buildings should be completed in August 1997. Planned as a "garden city" with green space integrated with its design, Putrajaya will eventually accommodate an estimated population of 570,000, including some 76,000 public-sector employees and 59,000 private-sector workers with jobs in the new town. Moving the government bureaucracy out of congested K.L. should ease the burden on existing infrastructure.

K.L. in transit: "No one anticipated the scale of growth that Kuala Lumpur is now experiencing," says the former president of the Malaysian Institute of Architects, Hj Esa Bin Hj Mohamed. To remedy this situation, massive investment is being channeled into infrastructure in the capital. The bulk of K.L.'s integrated transportation system should be fully operational by 1998, in time for the prestigious Commonwealth Games. Major components of the new public transit network are: 1. the Light Rapid Transit (LRT) system, which will be a metropolitan commuter-train service connecting the city center with the densely populated suburbs and which will have its first phase (comprising two lines and 20 stations) starting up later this year; 2. the KTM Komuter, a double-track commuter train system that is already operational and that covers 153 kilometers from Rawang to Seremban via K.L. and from Sentul to Port Klang; 3. the People-Mover Rapid Transit (PRT) system comprising 16 kilometers of elevated rail service in the downtown area of K.L.; and 4. the Express Rail Link (ERL), a



© Courtesy T.R. Hamzah and Yeang

Central Plaza, by T.R. Hamzah & Yeang, is one of many new office buildings in K.L.

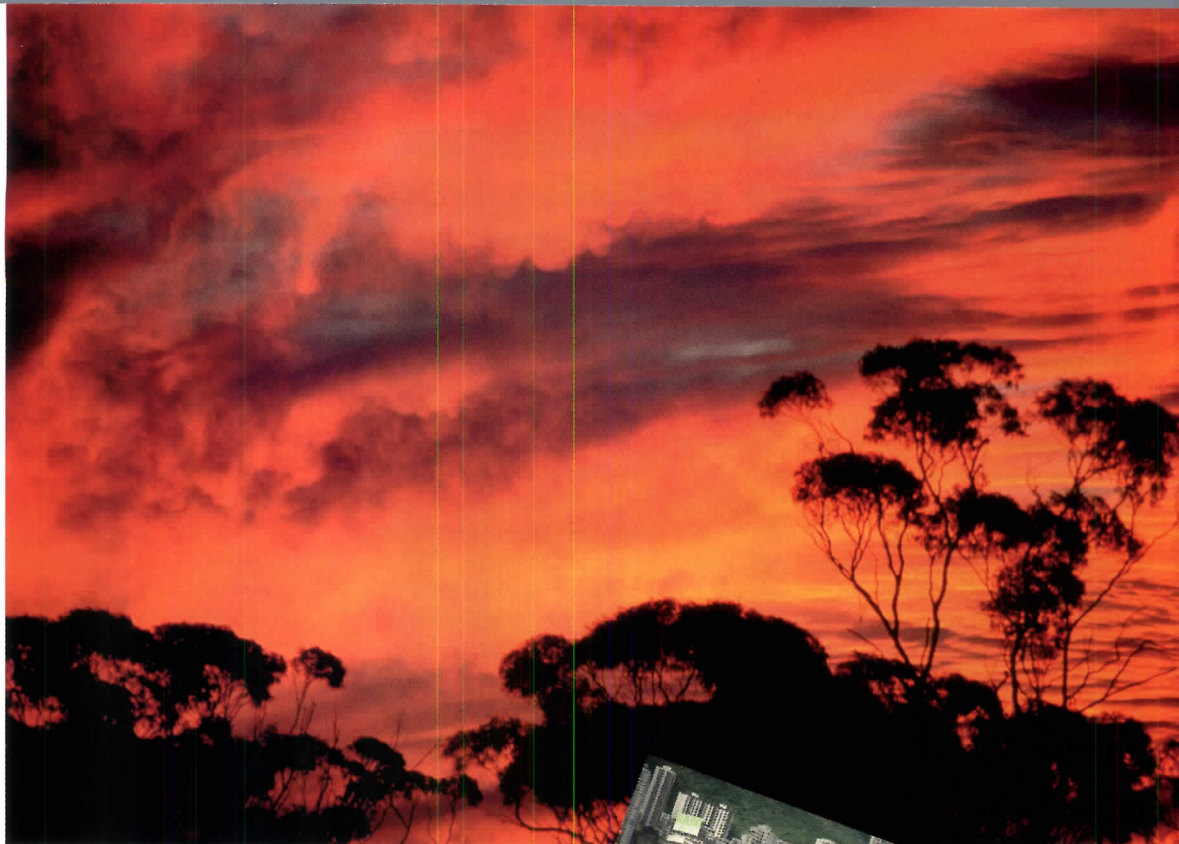
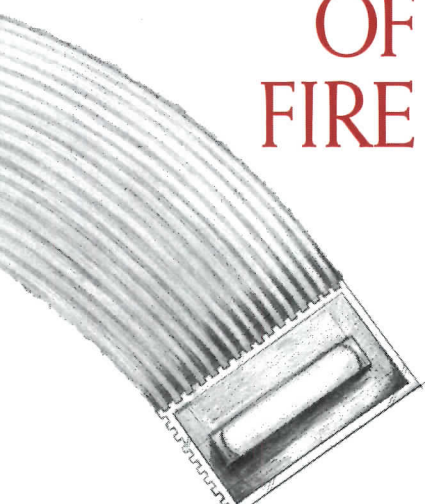
train service that will connect K.L.'s central station with the new Putrajaya Administrative Center and the new K.L. International Airport (KLIA) now under construction [RECORD, July 1995, Pacific Rim pages 34-37]. Designed by Kisho Kurokawa Associates in association with Akitek Jururancang (Malaysia) Sdn Bhd, KLIA is a giant \$5.14-billion project located south of K.L. at Sepang. Plans call for the first phase of the project to handle 25 million passengers per year and be completed by early 1998.

Southern renaissance: Another high-growth region is the southern state of Johor, which is feeding off rising land and labor costs in neighboring Singapore. A new bridge under construction will complement the existing causeway linking Johor to Singapore and add impetus to the industrialization of the Malaysian state.

Foreign competition: As in most Asian nations, architects in Malaysia are wary of the influx of foreign design consultants. "How can we get the best out of them?" asks Parid Wardi Sudin, dean of the faculty of built environment at the Universiti Teknologi Malaysia in Johor, implying that not all designs by foreign architects have been successful. In assessing any design, Hj Esa notes, one should ask, "Is it appropriate? Is it sensitive to promoting local industries and local talent?"

Return voyages: One result of the current building boom is a shortage of architects, notes Parid Wadir. Another consequence is the return of a significant number of young Malaysian architects from abroad. New practices set up by these returning architects—including Designmatrix, Architron Design Consultants, ZLG Design, and DNA Consultants—are beginning to make waves. *Robert Powell in Singapore*

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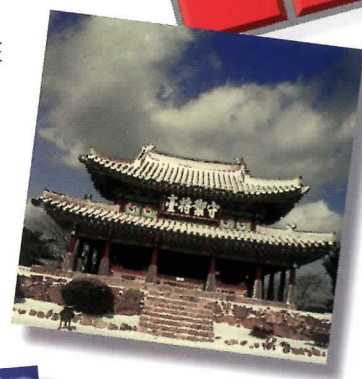
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Bumpy Road to Economic Recovery Includes Some Highs

GDP, 1995: \$332 billion (Australia); \$59.5 billion (New Zealand)

GDP growth, 1995: 4.8 percent (Australia); 6.1 percent (NZ)

Projected GDP growth, 1996: 3.5 percent (Australia); 2.6 percent (NZ)

Inflation: 4 percent (Australia, 1996); 2.9 percent (NZ, 1995)

Population: 18.1 million (Australia); 3.59 million (NZ)

Economic overview (Australia): The Australian economy's slow climb out of the recent recession is apparently leveling off, with GDP growth dropping from 4.8 percent last year to 3.5 percent projected for this year. Inflation should also drop, as the 4 percent rate so far in 1996 subsides to a projected 3 percent in 1997. Unemployment has begun to inch down from 8.9 percent in 1995 to 8.5 percent in the first quarter of 1996, too late, though, to stave off a landslide swing to the conservative Liberal-National Coalition in national elections in March. After 13 years in power, the Labor Party was swept out of office.

Economic overview (NZ): New Zealand is going through its own post-recessionary fluctuations, with its robust 6.1 percent jump in GDP last year expected to be followed by a more modest 2.6 percent increase this year. Inflation, though, is stable at just below 3 percent, as is unemployment at 6.1 percent.

Money matters: The currencies of both countries have made gradual gains against the U.S. dollar and the Japanese yen. After some hiccups, foreign investment in the two countries is increasing, with money coming increasingly from Southeast Asia. Foreign investors are shifting from real estate to commercial services such as waste treatment, transport systems, and communications.

Construction: Many business leaders see regional building booms on the horizon for both countries. In Melbourne alone, \$6 billion worth of building starts are set for this year and large construction companies there anticipate the need to bring in labor from less active states. In New Zealand, non-residential building starts were up 22 percent in 1995.

The architectural profession: In general, architects are cautiously optimistic, although the profession seems to be getting squeezed from a couple of different sides. The threat of project managers muscling in on the traditional role of architects has receded, but competition from other professionals remain.



DCM's design for Melbourne's Grollo tower was a winner with the public.

The Association of Professional Engineers, Scientists and Managers, which has been successful in unionizing engineers in Australia, is trying to establish a new union for architectural employees; managers of architectural firms are considering how to respond.

Olympic competition: Planning for the 2000 Summer Olympics in Sydney has already begun, with the Australian-British consortium Bligh Lobb winning the bid to design the main stadium and the New South Wales state government announcing plans to oversee eight redevelopment projects on the shores of the river leading from the city to the Olympic site. The governmental Olympic Co-ordination Authority is currently assessing bids from developers to build the Olympic Village, which will occupy a former military site and eventually become a suburb of some 10,000 residents. The office of the Government Architect will review all Olympic projects.

High-rise competition: The biggest controversy to spill over to the general press has been the proposal by developer Bruno Grollo to put up the world's tallest building in Melbourne. Grollo has lured two prominent Australian architects—Sydney-based Harry Seidler and the Melbourne firm of Denton Corker Marshall (DCM)—to compete in designing the tower, which will be built over old rail yards in a proposed urban park on an extension to Collins Street, Melbourne's premier avenue. Seidler's design is a tectonic structure of triangulated sections rising 1,650 feet (120 stories) and glazed to appear gold at dusk [RECORD, July 1995, Pacific Rim page 24]. DCM conceived the building as a slender, four-sided obelisk 2,250 feet tall (137 stories), set on four sets of twin corner columns and a central core (above). The developer seems to have enjoyed all the publicity and exhibited models and drawings by the two competing architects to prompt reactions from the public. Eighty percent of the visitors polled at the exhibit preferred the DCM design. *Ian Perlman and Graham Jahn in Sydney*

Not Yet A Tiger, But Ready to Grow

GDP, 1995: \$56.3 billion

GDP growth, 1995: 9.5 percent

Projected GDP growth, 1996: 8.8 percent

Inflation, 1995: 12.7 percent

Population: 74 million

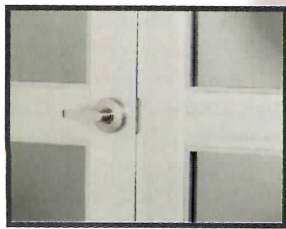
Source: DRI/McGraw-Hill

Economic overview: After a couple of years of investment euphoria, a more realistic view of Vietnam's potential is setting in. Although \$19 billion in foreign investment has been pledged in 1,400 projects, only about \$6 billion has entered the country so far. According to DRI/McGraw-Hill, "What was once viewed as Asia's next 'Tiger' economy is losing some of its roar, as party leaders stress the importance of keeping the socialist political agenda." But GDP should keep growing at close to 9 percent a year until 2000 and the country's fiscal deficit has been reduced from 10.4 percent of GDP in 1989 to 2.6 percent in 1994. As a result, inflation has been mostly tamed, going from triple digits in 1988 to a low of 5.3 percent in 1993. Since then, food prices and shortages of construction materials pushed inflation to 14.4 percent in 1994 and 12.7 percent last year. The rate should remain around 14 percent in 1996.

Politics as usual: Vietnam's reintegration with the world economy took major strides last year as it joined the Association of Southeast Asian Nations and established diplomatic relations with the U.S. The nation's leaders continue to promote the economic reform process begun in 1986 known as *doi moi*, but a delicate balance between reformers and socialist ideologues could be upset at the Eighth Communist Party Congress this summer. Bureaucratic red tape, archaic tax and legal systems, and economic inequalities are further obstacles to foreign investment. In addition, the nation's badly deteriorated infrastructure must be greatly improved.

Planning ahead: There is a recognition among Vietnamese architects and planning authorities that the country's urban areas must develop in a more responsible manner than did cities in other parts of Asia, says John Kriken, a partner at Skidmore Owings & Merrill/San Francisco and the chief planner for the giant Saigon South project underway outside Ho Chi Minh City. Although it's hard for a poor country to say no to developers, the nation's architectural community is aware of the need to preserve the historic hearts of Hanoi, Ho Chi Minh City, and Da Nang. *Clifford A. Pearson in New York*

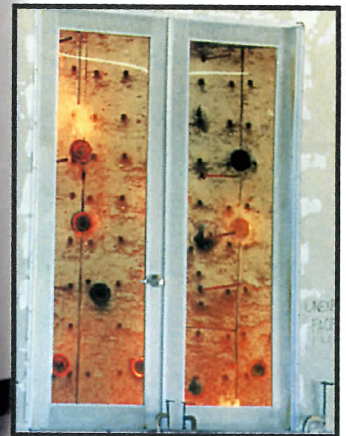
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Building Boom Clouded By Oversupply and Traffic Congestion

GDP, 1995: \$164 billion

GDP growth, 1995: 8.6 percent

Projected GDP growth, 1996: 8-8.5 percent

Inflation, 1995: 5.7 percent

Population: 59.1 million

Economic overview: Thailand's economy is continuing the roughly 8 percent annual growth that it has sustained for the past several years, and the indicators are that the rate will be maintained for the immediate future. Last year's performance was marred by inflation rising to 5.7 percent, a figure blamed largely on domestic agricultural prices increasing due to disastrous nationwide flooding in 1995, as well as on worldwide trends. Most economists believe inflation will decline in 1996. Public investment in the current year is expected to rise from 35.5 percent of total government expenditures to 38.7 percent, with the main projects being the construction of a new international airport and six-lane highways.

Construction activity: From appearances alone, construction seems to be booming, and Bangkok's skyline continues to change almost before one's eyes. In reality, the situation is less buoyant than in the past. Last year, developers had to cope with the rising cost of building materials and higher interest rates, while the property market struggled with oversupply. Little is likely to change in the short term.

Housing and office construction: In the housing sector, unoccupied units totaled 303,038, or 14.5 percent of the total, compared to 11.8 percent in 1994. About 1.7 million square feet of office space in Bangkok was built in the first half of 1995. A further 42.5 million square feet is scheduled to enter the market before the year 2000, with 64 percent of that currently under construction.

Building trends: There is growing use of advanced building technologies, in particular prefabricated or pre-cast components for housing projects. Such technology is important to developers who need to reduce costs in a competitive market. At the same time, home buyers are becoming more concerned about the construction quality and durability of their homes, factors which in Asia have traditionally not been as important as in the West.

Environmental sensibilities: Another trend is toward "green" developments, for

both housing and commercial buildings. At the forefront is Plan Estate and sister company Plan Architects, which have to date developed three housing estates designed according to environmental principles. "We make use of natural surroundings and create designs which make the project as energy efficient as possible," project manager Trirat Jarutach told a local property magazine. "Through the use of designs with high roofs and raised floors [traditional Thai elements], the houses are well ventilated" and therefore cooler. Trirat added that "We have our own target group made up of those who are tired of city living and want to be in touch with nature. We will stick to this concept with all our projects in the future."

Cultural sensitivities: The main topic of debate among architects these days is infusing Thai cultural identity into modern buildings. Houses that employ traditional devices such as steeply pitched roofs and proper sun shading partly address the issue, but the matter becomes more complex with high-rise properties. There is much talk, but little consensus. And some of the dialog is negative. For example, in a recent competition run by the Association of Siamese Architects, the judges dismissed buildings with glass curtain walls, apparently because they were considered inappropriate to the culture and climate. This was despite the fact that two entries were impressive headquarters buildings of major banks.

Following the West: Chaiwat Wachpanich, a principal of Plan Architects, says Thais must change the way they approach the built environment. "Thai culture takes the easy way. It is our responsibility to look at architecture more seriously," says Chaiwat. Certainly, much recent building has been a pastiche of what was being done in the West five to 10 years ago which, ironically, many Thais see as new and therefore desirable regardless of culture, climate, or other considerations.

User-friendly design: Architect Ongard Satrabhahndu, who studied at Cornell and Yale and worked in the U.S. in the 1960s before returning to Thailand, says architects have to do a better job of responding to the needs of users and the public. Speaking of high rises and the needs of pedestrians, he states, "At least we could make the visible part more friendly. Everyone talks about the skyline, but

Siam Commercial Bank complex (below), designed by Robert G. Boughey, is set in the fast-growing suburbs north of Bangkok.



I think the crucial part is the first eight stories; that's what people see close up."

Adopted son: After more than 20 years in Thailand, Bangkok-based American architect Robert G. Boughey is now a fixture on the local architectural scene. His latest project, the Siam Commercial Bank (SCB) complex, combines office, retail, and public space into a lively urban place. Modern in structure and style, the curtain-wall buildings at SCB—including 37-story and 23-story office towers—subtly allude to Thai architecture by etching a jagged roofscape against the sky, says Boughey. And by providing open space around the buildings and a huge atrium inside, the complex shows how mixed-use developments can contribute to the public realm. Having lived in Thailand for so long, Boughey has seen the country's architecture become increasingly sophisticated. Gone are the days when "getting an auspicious number of steps into a building, for example," was part of the architect's job, says Boughey. "The outlook is much more international now."

Continual change: What Boughey finds challenging about Bangkok is the continual change. "Thai architecture has out-grown its original context," he says. The scale of projects keeps getting bigger and bigger. But with no solution to Bangkok's infamous traffic chaos in sight, the trend for major building development to move away from congested downtown areas is likely to accelerate. Much new development is occurring in the suburban corridor north of Bangkok—an area that now has 27 percent of the metropolitan area's total office space. *John Hoskin in Bangkok*



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The Chinese Are Coming! The Chinese Are Coming! Will It Make Any Difference?

GDP, 1995: \$143 billion

GDP growth, 1995: 4.6 percent

Projected GDP growth, 1996: 5.1 percent

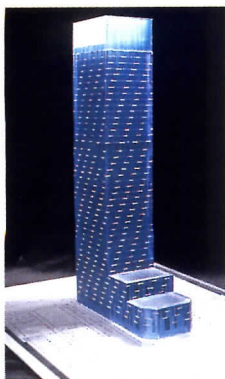
Inflation, 1995: 6.7 percent

Population: 6.1 million

Economic overview: After suffering a slowdown in 1995, Hong Kong's economy is showing signs of recovery. Last year's growth rate of 4.6 percent (a five-year low) is likely to rise to 5.1 percent this year, driven by stronger private consumption and healthier property markets. Hong Kong's prosperity will also benefit from continued growth in China, where monetary and investment policies are loosening up after the government's success in controlling inflation. With the 1997 transfer of sovereignty approaching, Hong Kong is set to reclaim its role as China's largest port and most important financial center. The city's geographical advantages and its management know-how are likely to keep economic growth at about 5 percent through the turn of the century.

Politics as usual: With the transition to Chinese rule set for July 1, 1997, handover issues dominate Hong Kong's political scene. Disputes still crop up between British and Chinese authorities and the potential for a damaging loss of confidence cannot be ruled out. However, the power transfer is likely to have only minimal impact on the territory's economy and property markets. Most key areas of Sino-British disagreement, such as funding for the new \$20-billion airport and the structure of the court of final appeal, have already been resolved, and the remaining differences are increasingly on symbolic issues such as the nature of the handover ceremonies. China has made it clear that it will make certain changes after it takes over, such as replacing the legislative council formed

Office building (right) is one of Rem Koolhaas' first projects in Hong Kong.



through electoral changes that Beijing did not recognize. But these moves have been expected for so long that the business community is prepared for them. In most areas, China has emphasized its desire for continuity in Hong Kong's affairs.

Architects and 1997: Dr. Raymond Wu of the Special Administrative Region Preparatory Committee (Professional Sector) says, "There are both threats and opportunities in Hong Kong and China." At the present time, many Hong Kong architecture firms rely on China projects for 50 to 60 percent of their revenue. But with a possible influx of mainland Chinese architects after 1997, the Hong Kong architectural profession may be facing overcapacity for the first time in recent years (an unfamiliar feeling for a profession that had to create a new architecture school just five years ago to meet demand for architects). Dennis Lau of Dennis Lau and Ng Chun Man Architects and Engineers says, "The competition is coming in bigger numbers... than us. But there are still less than 30,000 architects in China." Although the number of architects in China is growing, "we still have at least five years to [sharpen] ourselves against the competition." The Chinese government has agreed to recognize the need for all professions in Hong Kong to maintain their own set of standards. Consequently, the Hong Kong Institute of Architects will administer a new examination, starting this September, that all architects—including foreign-licensed ones—will have to pass. Despite such issues, representatives from American firms with branch offices in Hong Kong appear to be unfazed by the transition. Says Gregory Yager, vice president of RTKL in Hong Kong, "American architecture firms bring American design and expertise. That will be the same whether we set up an office in Hong Kong, Beijing, or Shanghai."

Construction activity: A long-standing joke in the territory is that so much land is being reclaimed that people will soon be able to walk across the harbor. Vast tracts of added land are reconfiguring the Hong Kong and Kowloon harbor fronts, earmarked for rail and highway projects and for huge office/retail/hotel developments such as the \$5-billion Central airport rail terminus. Much of this development is connected with the new airport at Chek Lap Kok, designed by Norman Foster and scheduled for completion in early 1998.

The opening of Chek Lap Kok will allow Hong Kong's existing airport to be redeveloped. Plans are already underway to reclaim most of nearby Kowloon Bay to build a major residential/commercial development.

California dreaming: After a slump since mid-1994, the residential property market is recovering and rising incomes are driving demand for higher quality housing. While the classic cruciform-plan residential towers continue to sprout up throughout the territory, Hong Kong architect Ma Leung & Associates is pioneering a California-style community called Palm Springs. Comprising multi-story duplexes and a theme strip with stage-coach scenes from the Wild West, the development is a novelty for Hong Kong Chinese who normally squeeze a family into tiny high-rise flats. The project exemplifies a movement to greater diversity in residential design.

Harbor view: One of the first projects to be built on Hong Kong's newly reclaimed land is a major extension to the Convention and Exhibition Center, now jutting out into the harbor in the Wanchai district. Designed by Skidmore, Owings & Merrill with Wong and Ouyang of Hong Kong, the building is inspired by the uplifting image of seabirds in flight over water. The project is to be completed in time to serve as the stage for the 1997 Sino-British handover ceremonies.

Get thee to a nunnery: One of the most unusual projects underway in Hong Kong is the 356,400-sq ft Buddhist Chi Lin Nunnery, which is being built in an authentic Tang Dynasty (618-907 A.D.) manner, with *dou gong* brackets and ornamented ceramic tiles. The building, designed by local architect Don Pan & Associates, is an anomaly in contemporary Hong Kong.

Delirious Hong Kong: Dutch architect Rem Koolhaas, whose Office of Metropolitan Architecture (OMA) has been making waves in Europe for more than two decades, founded OMA Asia in Hong Kong with Aaron Tan in 1994. The firm's first crop of buildings—three commercial towers ranging from 25 to 45 stories—is currently under construction and is due to be completed in 1998 and 1999. "OMA Asia is fascinated by the urban conditions in Hong Kong and we are trying to weave ourselves into this dynamic flux," says Tan. *Zofia Rybkowski and John Seel in Hong Kong*

Economy Shows Signs of Life As Public Building Leads the Way

GDP, 1995: \$4.95 trillion

GDP growth, 1995: 0.4 percent

Projected GDP growth, 1996: 2.7 percent

Inflation, 1995: 0.3 percent

Population: 124 million

Economic overview: In the second half of 1995, the Japanese economy began to show signs of recovery from its prolonged recession. In 1996, this trend is expected to continue and "growth is likely to accelerate," reports Salomon Brothers in Tokyo. While public spending was the main engine of growth in 1995, both the public and private sectors are now contributing. In particular, corporate sentiment and profits have shown a marked improvement. The return of the yen to an exchange rate of more than 100 to the U.S. dollar from a peak of nearly 80 to the dollar in mid-1995 has been a relief to Japanese exporters. Meanwhile, although deflation appears to have ended, there are no signs of inflation on the horizon.

Politics: In the political arena, the Liberal Democratic Party's Ryutaro Hashimoto took over as prime minister in January, but there continues to be considerable uncertainty as the opposition New Frontier Party intensifies its resistance to the ruling coalition. A general election must be held by 1997, but could be called any time.

Commercial building: Private-sector construction in 1995 grew for the first time in four years, based on orders for the top 50 general contractors in Japan. The growth was a modest 1 percent, but larger increases are expected this year and in 1997. "Compared to a year ago, there is quite a lot of activity, particularly in the retail and entertainment areas," reports Michitaka Yamaguchi of RTKL International in Tokyo. Land values, though, continue to fall, with average prices of commercial and residential real estate decreasing by 9.8 percent and 2.6 percent, respectively, in 1995; the drop was particularly steep in the urban centers of Tokyo, Osaka, and Nagoya. The generally held opinion is that commercial real-estate values have yet to hit bottom.

Residential building: Housing starts declined 6.4 percent in 1995 and are expected to fall another 2.1 percent in 1996, says Salomon Brothers. That is despite a rebound in the beginning of 1996 driven in part by all-time-low interest rates offered by the state-run Housing Loan Corp. The agency's

basic loan rate is now just 3.1 percent. "There looks to be more residential work for architects this year because of the increase in Housing Loan Corp. lending," observes architect Kazuhiko Namba, who specializes in residential design. In addition, many Japanese are expected to buy homes this year in anticipation of an increase in the consumption tax from 3 percent to 5 percent. Within the housing sector, prefabricated homes, both domestically manufactured units and imported ones, continue to gain in popularity. In each case, more competitive prices and better resistance to earthquakes are the drawing cards.

Public works: Public-sector construction took a big leap in 1995 due to a surge in government spending aimed at stimulating the economy. Based on the activities of the top 50 general contractors, orders were up 16 percent. Public-sector construction will continue to increase this year, predicts BZW Securities in Tokyo, but the rate of increase will be only around 4 percent. While cultural and recreational facilities are still being commissioned, the scope of government-sponsored work for architects is gradually broadening to include civil-engineering projects, public-housing complexes, and welfare facilities.

Public sector primes the pump: Japan is undergoing a public-building boom of unprecedented scale. Towns and municipalities across the country are in the process of building not only cultural facilities, such as museums and concert halls, but also schools, community centers, government offices, and transportation centers. And thanks to recent changes to broaden the range of job-procurement methods, such as an increase in the number of open competitions, architects young and old are benefitting from the new commissions.

Broadcast design: The five architects who founded the Tokyo-based firm Mikan are one such example. Prior to establishing their office in 1995, each of the designers had small firms of their own. By pooling their resources, the team won the competition for the Nihon Hoso Kyoku (NHK) Broadcast Station in Nagano City, about 185 miles west of Tokyo. Designed as a facility for the 1998 Winter Olympics, the 65,000-square-foot building will become the public broadcaster's regional headquarters at the close of the games. As a building with both

© Shigeru Hiraga



© Courtesy Kengo Kuma and Associates



Public building competitions won by young firms include: the NHK Broadcast Station in Nagano City by Mikan (top), and the Awaji Service Area by Kengo Kuma (above).

public and private roles to play, the broadcasting center had to be open and accessible to visitors, but at the same time secure for NHK business and operations. Mikan's winning design gangs all of the technical facilities together below grade, freeing the entire ground floor for public uses such as a restaurant, a cafe, and an information hall. Administrative offices are on the upper floors.

Dramatic pit stop: Kengo Kuma, another young Tokyo-based designer, has also been successful in pursuing public work. Kuma is currently working on the Awaji Service Area, a commission he won through a competition last August. The new facility will be situated at the foot of the Akashi Channel Bridge, which will connect Awaji Island and the city of Kobe with the world's longest suspension bridge when it is completed in 1998. Designed to be as transparent as possible, the glazed 54,000-square-foot building is a viewing platform for the dramatic structure and doubles as a pit stop with rest areas, shopping arcades, and food courts for weary travelers. An engineering feat in and of itself, the unusual building boasts a 39-foot-deep cantilevered roof along its length. Anchored by toilet blocks at either end and supported by only the slenderest of columns in-between, the daring roof structure is one of the first of its kind to be built in Japan after the devastating Hanshin earthquake of January 1995. *Naomi Pollock in Tokyo*

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Beating the Clock: Rapid Construction in Asia

By Katherine Kai-sun Chia

In the boom cities of Asia these days, construction seems to move at two speeds: fast and faster. Developers know that time is money, so reducing construction schedules is always on their minds.

Essentially, there are three ways of speeding up construction: 1. using new technologies, 2. employing project-delivery methods that allow more than one function to go forward at the same time, and 3. throwing lots of bodies at a particular task. In the past, this last method was the one most often chosen by Asian builders, because labor was cheap and advanced technology was scarce. Although labor is still much less expensive in many Asian markets than in the West, it is no longer the cheap resource it once was. As a result, Asian builders are relying more on technology and efficient project management and delivery to beat the clock.

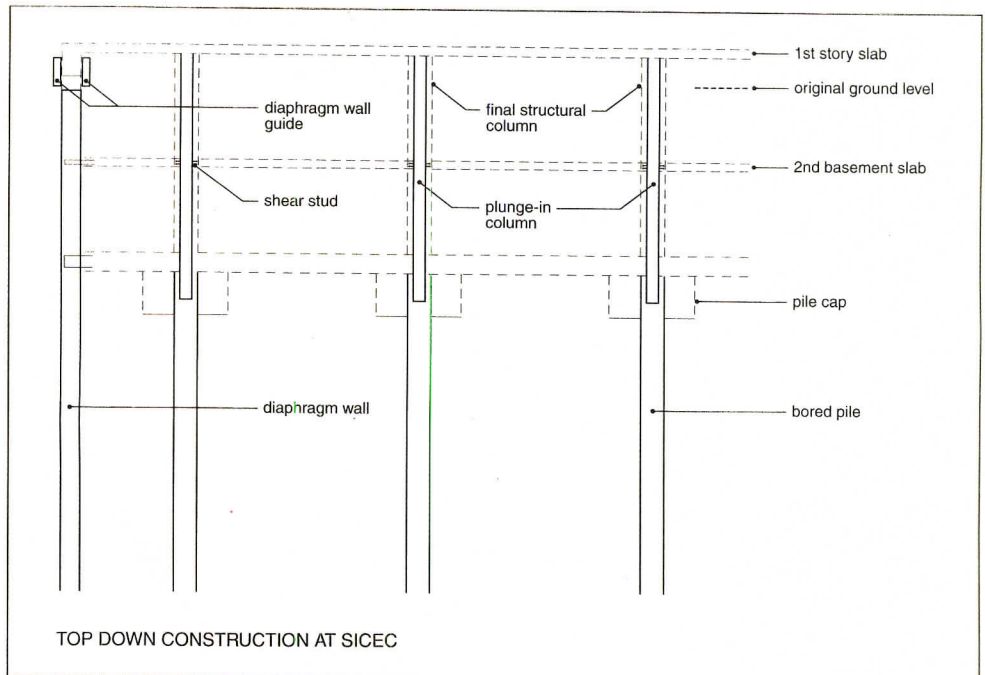
According to architect Kevin Low of GDP Architects in Kuala Lumpur, "Rapid construction is popular here for the simple fact that it is the only practical way to work, given a time-short, work-intensive schedule which developers as a whole impose in a region where business opportunities abound. Rapid construction, aside from being popular in Asia, would be the adopted form of practice in any rapidly growing region of the world."

As in fast-track jobs everywhere, short schedules affect both the design and construction processes. Construction of foundations and even superstructure might begin before a complete set of construction documents has been produced. As a result, the architect may need to resolve design and construction issues as the project is going up.

"Top-down" construction is one of the more recent innovations in rapid-construction technology and has now been implemented on a variety of big projects with much success, especially in Singapore and Hong Kong.

The process works like this: First, support pilings are installed and a reinforced-concrete platform, which will later become the

Katherine Kai-sun Chia, is an architect and principal of Desai/Chia Studio in New York.



In the top-down construction used at the Singapore International Convention and Exhibition Center (left and drawing above), the ground-floor slab was built in an E shape, which allowed excavation to the first basement level to be done mostly in the open

© Ian Watts

building's ground floor, is erected at grade. The contractor then proceeds to build up and down simultaneously—erecting the forms for the next floors above while excavating for the basement and foundation levels below. Diaphragm walls form the permanent perimeter of the basement. Overall, construction time for a building's superstructure and basement can be cut by as much as 25 percent since they are built simultaneously.

Architects and contractors often develop hybrid rapid-construction methods to meet

tight construction deadlines. The goal is to have as many components of the project under construction at the same time.

For example, Tsao & McKown Architects of New York City, in association with DP Architects of Singapore, used top-down construction in combination with traditional ground-up reinforced-concrete methods and prefabricated roof components for the Singapore International Convention and Exhibition Center at the Suntec City development [RECORD, May 1996 pages 86-95].

"The great benefit of top-down construction was to advance the schedule for the construction of the superstructure by at least six months," says Graeme Forrest Brown of Maunsell Consultants, an engineering firm.

To speed up construction further, Maunsell developed a "plunge-in method" in which steel columns were inserted into wet concrete on top of the 339 bored piles, thereby fixing the columns in place as the concrete cured. The plunge-in columns served as temporary support for permanent formworks at the first level and above, allowing the top-down construction to proceed, says Ian Watts, senior resident engineer on the project.

For the roof, the architects designed a 570-foot-by-475-foot space-frame that was made of components prefabricated in Korea while the building frame was being completed. The components were delivered to the top floor of the completed structure, quickly assembled, and the entire roof was lifted into place.

Using high-strength concrete is another strategy often employed when building schedules are tight. Cesar Pelli's 1,500-foot-high Petronas Twin Towers in Kuala Lumpur (K.L.), used Grade 80 (about 11,600 psi) high-strength concrete for the first time in Malaysia. (A metric system, the grade levels measure Newtons-per-square millimeter. The standard grade in Malaysia is 40 to 50. Changes in the ratios of basic ingredients and admixtures, such as fly ash and silica fume, increase the grade strength.)

Structural engineers Thornton-Tomasetti of New York developed the composite framing in which the vertical core and columns were cast in concrete for stiffness, while the floors were made of composite-metal decking and steel infill beams.

Jump and slip forms

Two of the most commonly used methods for speeding up construction are "jump forms" and "slip forms." Both are used for straight "up and down" concrete structures with repetitive floors. The forms support themselves on the work completed below them.

In slip-form construction, concrete is poured into the form (generally, made of steel) and

allowed to set. The form is loosened, slipped up to the next floor, re-tightened, and the process begins again. This method is typically used for flat-slab buildings with simple, continuous structural walls and columns.

Jump-form construction involves a form that is actually a machine. After the concrete has set, the form jumps outboard of the building and onto the next level, supporting itself on the work just completed. Generally, the form lifts itself up mechanically and is adjusted and leveled manually. Like slip forms, the jump-form method is used mostly for repetitive floors, but has the advantage of being able to accommodate more complex plans.

Self-climbing forms were employed for the cores, columns, and beams of the Petronas towers in Kuala Lumpur, since there was little space on the site for more cranes; portions of the perimeter were cast with steel and plywood jump forms. High-strength concrete allowed Pelli to reject the popular structural tube and design a building perimeter that appears column-free from the outside. The towers' 16 columns, hidden on the outside by a scalloped curtain wall, form a 152-foot-wide circle at the base and are spaced two times farther apart than is typical in concrete-tube structures.

Using unitized cladding in K.L.

Prefabricated building components also assist in speeding up the construction process (as long as they do not involve extensive lead times) and often complement other rapid-construction methods. Malaysian architect Ken Yeang of T.R. Hamzah & Yeang has explored the use of new window-cladding methods and unit-type systems which involve pre-formed frames with glass and integrated sunshades so the window and the cladding can be installed as one component.

Yeang used such a "unitized" cladding system to speed construction of his 27-story Central Plaza in K.L., completed in May. The entire external wall panel, consisting of frame and glazing, was fabricated on the ground, hoisted up, then clipped onto the floors.

Muang Thong Thani, a new city outside of Bangkok, designed by Nation Fender Architects of Australia, includes 27,000 apartments

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At the Petronas towers (above), high-grade concrete and self-climbing forms helped erect the world's tallest buildings faster.

in a combination of three-story blocks and towers ranging from 14 to 30 stories.

Initially, the towers were designed to have precast floors and poured-in-place walls. To speed up construction, the contractor Bouygues-Thai, a French firm, decided to use bearing walls and "tunnel forms." The forms allow the walls and floors of each modular apartment to be precast as a unit on the ground. The entire unit is then lifted up by crane and attached to the support structure. The low-rise housing was built at the same time using 27 precast panels per dwelling.

Ken Yeang is also experimenting with fabric and tent structures. The Guthrie Pavillion clubhouse in Selangor, Malaysia, set to begin construction this summer, will utilize a pneumatically supported fabric structure for the roof. With three German companies prefabricating the roof membrane and structural steel cables as the superstructure is being built, months of construction time will be saved and better quality control achieved for technology that is unavailable in Malaysia. ■

Pushing the Envelope

*NTT Shinjuku Head Office Building
Tokyo, Japan
Cesar Pelli & Associates, Design Architect
Yamashita Sekkei, Architect of Record*



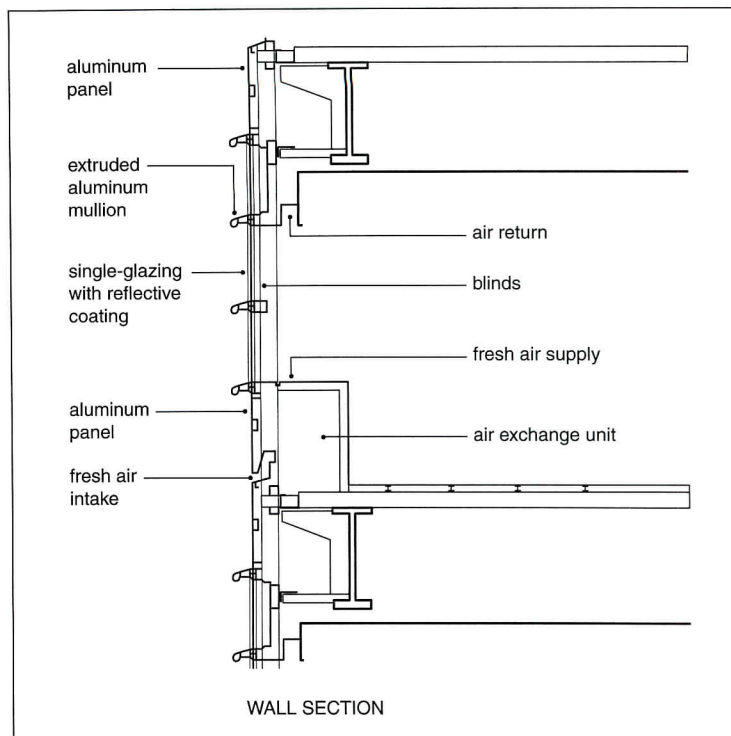
Saddled with site conditions and restrictions that would have driven many architects to despair, the new NTT Head Office Building in Tokyo shows how Cesar Pelli & Associates was able to turn challenges into design opportunities. Located in Shinjuku, one of the fastest growing parts of the city, the 30-story tower and its low-rise “special purpose” building are just a stone’s throw from Kenzo Tange’s new City Hall on one side and a residential neighborhood on the other.

Consider the constraints. Planned elevated and subterranean highways, an overhead pedestrian crosswalk, and two existing microwave transmission corridors severely limited where the building could be sited. At the same time, the city’s sunshine-access regulations, which stipulate that buildings may not cast shadows on nearby homes for more than three hours a day, restricted the high-rise portion of the facility to a triangular volume. Views in one direction were set to disappear as a new commercial tower was built, while views in a second direction would be blocked if NTT decided to expand in the future. On top of it all, Japanese building codes demand a service core larger than those in the U.S. “This was one of the tightest and most difficult building envelopes I have ever worked with,” says Cesar Pelli.

While other architects might have just pushed the office tower to one portion of the site, Pelli and his associates seized on the situation as an opportunity to create a plaza, an unusual amenity in Tokyo. And instead of designing a simple triangular-shaped tower, the architects honed the building into an elegantly curved structure. The huge core, with its generously sized mechanical rooms, seismic dampers, and firemen’s elevator (in addition to the usual fire stair), was pulled away from the rest of the tower (rather than placed in the center of it) so the office area could fan out in an uninterrupted arc. By placing the core where future buildings would block views, the architects minimized the impact of such losses. Most importantly, the core was seen by the architects as a way of expressing the nature of the building and the client’s business—telecommunications. “We wanted the core and the skin of the building to present a high-tech, mechanistic image appropriate for NTT,” says Gregg Jones, a design team leader.

Each of the key service components—mechanical rooms, restrooms, fire stairs, and employee lounges—is clearly expressed on the exterior of the building so the core reads as a series of sculptural elements rather than one large block. By pulling these services away from the mass of the building, the architects were also able to open up views from the lounges, bring sunlight and fresh air into the restrooms, and daylight into the fire stairs. Another innovative twist that served both esthetic and functional purposes was the use of beveled steel bands on the curtain wall of the mechanical rooms, which direct air up before it comes into the building, reducing the chance of water infiltration.

In the office portion of each floor, a sense of openness was reinforced by keeping partitions low and structural columns to a minimum. The steel-frame structure’s round steel columns and hefty 31-inch diameters were dictated by the spans across the office space and Japan’s stringent seismic code, but they have little impact on sight lines or spatial flow. The building’s skin is comprised of slightly reflective single glazing with aluminum curtain-wall panels coated with metallic-grey fluoropolymer paint. Four rows of projecting aluminum fins shield the strip windows from the sun. For the comfort of NTT employees, the office portion of the building has a fan-coil air-treatment system along its perimeter, which supplements the central hvac system and is controlled by office workers. Indeed, the building turned out to be so impressive on completion, that NTT’s top brass decided to move their offices to the new tower. *Naomi R. Pollock*



Nitsuo Matsuo

The sleek forms of the NTT building stand in contrast to the simple rectilinear towers found in most of Tokyo (opposite). Also unusual is the large garden separating the office tower from the 45,000-sq-ft “special purpose” building, a welcome amenity in a city with little green space



Photos by Momma Kamekita except as noted

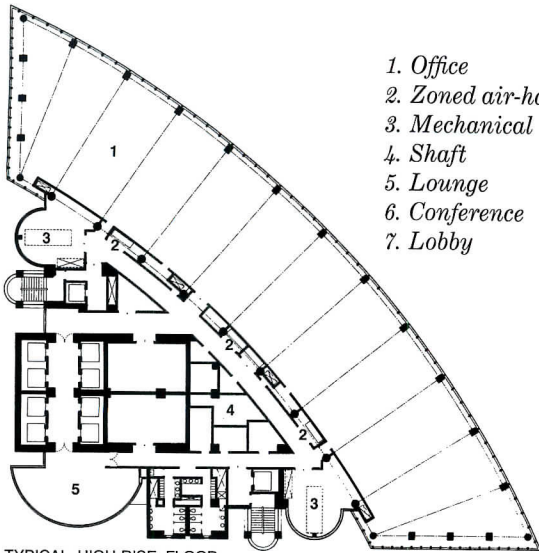
(above right). The office tower’s curtain wall (section above) is shaded by projecting metal fins (four per floor) on the outside and blinds on the inside. A perimeter air-handling system lets the curtain wall breathe by conditioning air as it comes in.



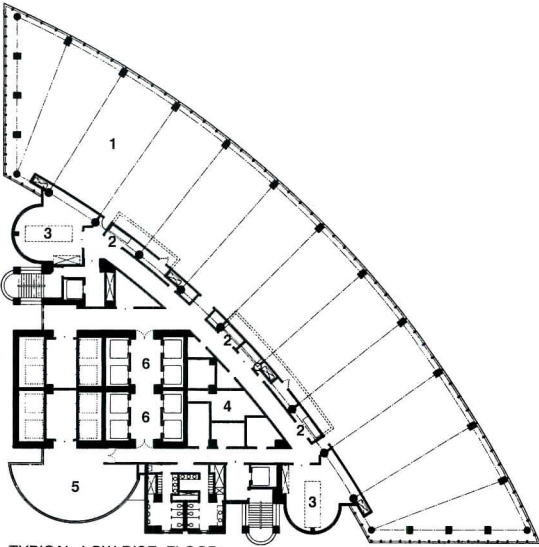
Continuing Education

For learning objectives and instructions, turn to page 65 in complete edition.

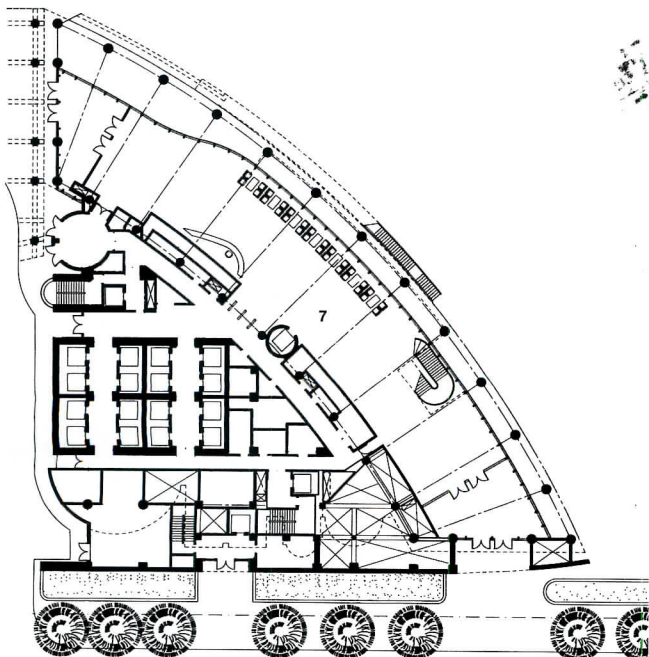
1. Office
2. Zoned air-handling unit
3. Mechanical
4. Shaft
5. Lounge
6. Conference
7. Lobby



TYPICAL HIGH-RISE FLOOR
(LEVELS 18-26)



TYPICAL LOW-RISE FLOOR
(LEVELS 10-16)



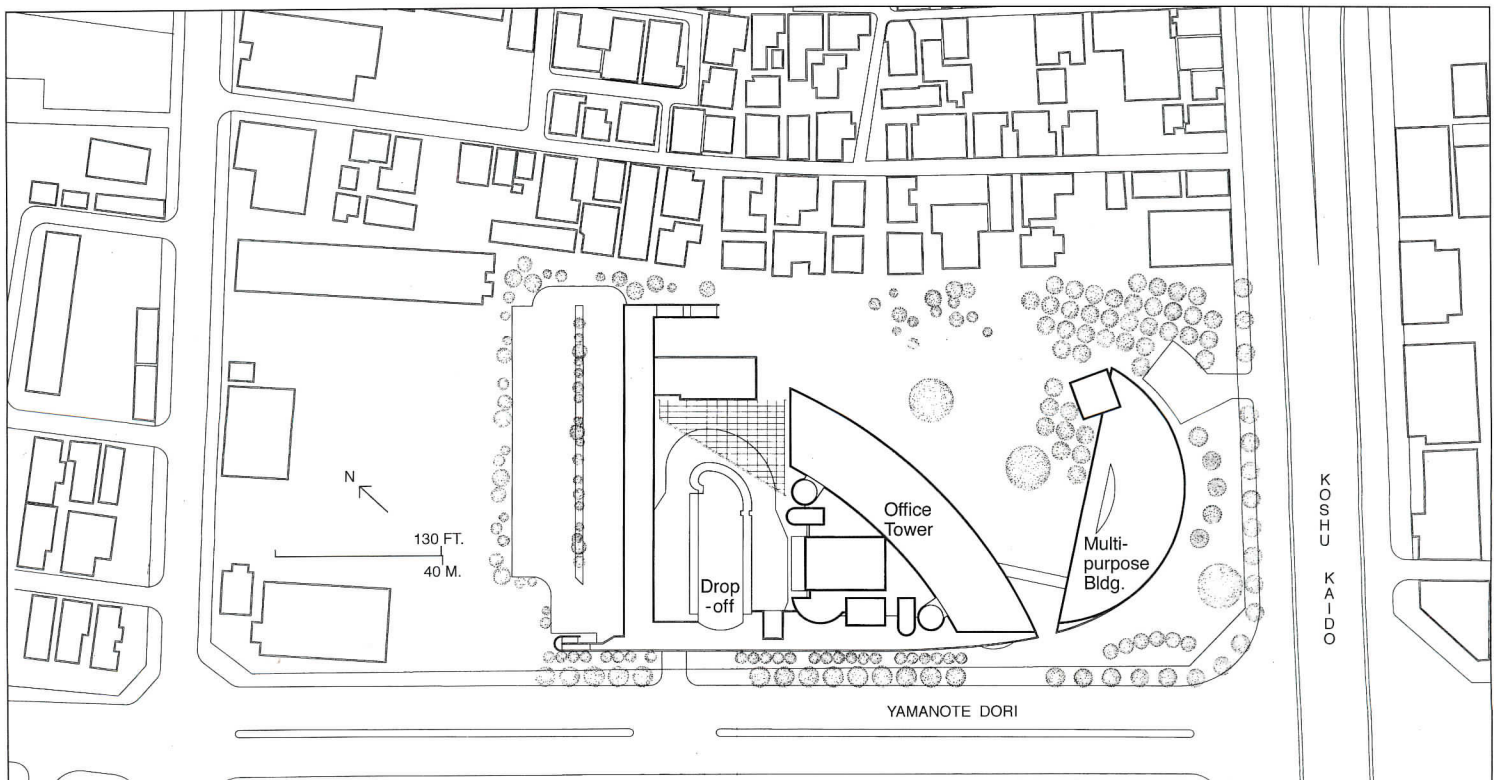
GROUND FLOOR

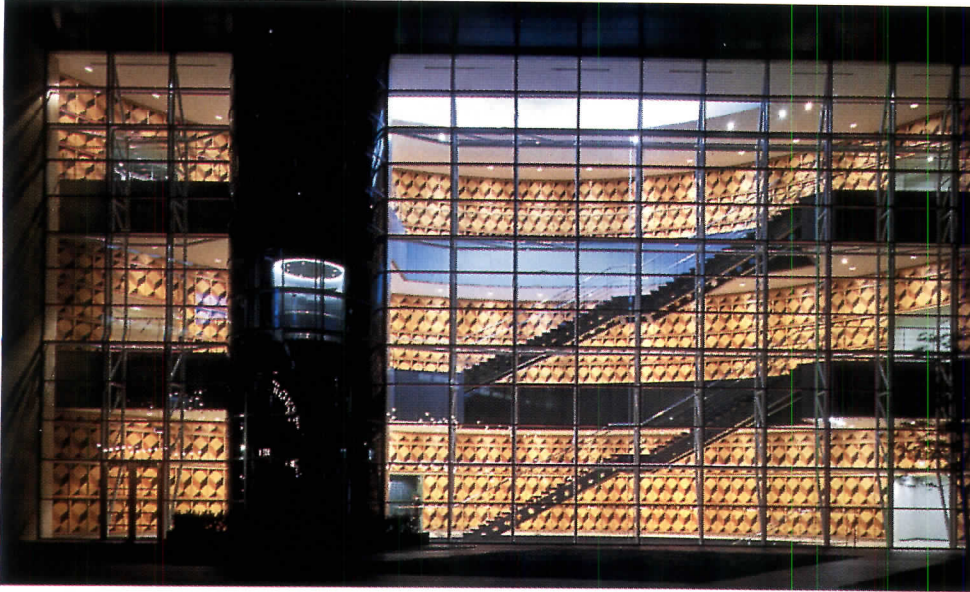
N
16 FT.
5 M.

Because site and regulatory restrictions pushed the high-rise building off to one side of the lot, space was available for a landscaped plaza. Designed by Diana Balmori, the plaza is a playful environment that is a counterpoint to the more technologically driven architecture of the buildings (below and opposite). The "special purpose" building (left in photo opposite) houses NTT showrooms, an athletic club, and a medical clinic. Because the office tower's service core is so large, the architects pulled it away from the work area rather than placing it in the center. This allowed the office space on each floor to flow without interruption, taking advantage of views and providing the open work setting that Japanese corporations prefer (plans left). Only top executives get individual offices. Large cable shafts in the core and 4-in.-deep access flooring provide space for wiring. Semi-circular "refresh" rooms on each floor are lounges with views to Mount Fuji. Facing south, these lounges are shaded by metal fins that project farther than those on the office portion of the tower.



© Toru Waki





Space flows either out or up in key NTT interiors: horizontally in the office tower lobby (left below) and vertically in the atrium of the special-purpose building (opposite and left top).

Credits

NTT Shinjuku Head Office Building
Tokyo, Japan

Owner: Nippon Telegraph and Telephone Corporation

Design Architect: Cesar Pelli & Associates—Cesar Pelli, design principal; Fred Clarke, project principal; Jun Mitsui, Gregg Jones, David Chen, design team leaders; Kevin Burke, Karen Koenig, Hiroataka Otsuji, Masami Yonasawa, Douglas McIntosh, Roger Schickedantz, Roberto Espejo, Ruth Bennett, Scott Aquilina, designers

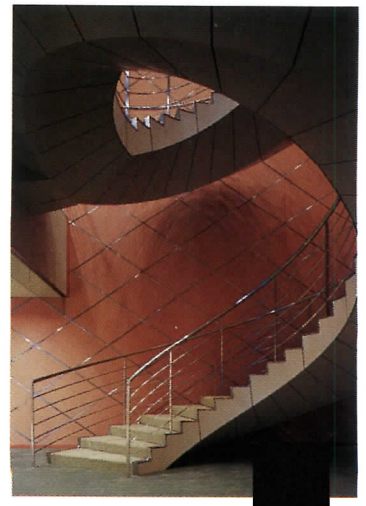
Architect-of-Record:

Yamashita Sekkei—Rintaro Murata, architect-in-charge; Katsuhiko Oozeki, Eiichi Takahashi, Masohito Katsume, Masayoshi Tsumoto, Kouji Watanabe, Masazumi Yoshida, project team

Engineer: Yamashita Sekkei (structural, mechanical, electrical)

Consultants: Balmori Associates, Soma Landscape Planning Co. (landscape); H.M. Brandston & Partners (lighting)

General Contractor: Joint venture of Taisei Corp., Kajima Corp., Overseas Bechtel Inc., Takenaka Corp., Fujita Corp., Hazama Corp.





Updating a Chinese Tradition: Canal-Side Living

Architects from Hong Kong and China design a new community outside historic Suzhou that borrows from the past but employs contemporary style and construction.

Balancing the demands of contemporary life with respect for tradition is one of the key challenges facing architects working in history-laden parts of Asia. Such a balancing act is even more delicate when the setting is Suzhou, China, the “Venice of the East,” a city 60 miles west of Shanghai famous for its canals and exquisitely tended gardens. In both the planning and architecture of Suzhou Garden Villas—a 30-acre new community that will eventually include 372 apartments in 6 highrises, 88 single-family houses, and a 120,000-square-foot retail/recreation center—Wong Chen Associates of Hong Kong and the Suzhou Architectural Design Institute adopted a design approach of extending the historic fabric of the old town while at the same time updating it. “We wanted this project to be distinctively Chinese without resorting to clichés,” says Nelson Chen, the New York-raised, Hong Kong-based design architect of Suzhou Villas.

Located in a new development zone west of the old city that was originally farmland, Suzhou Villas is being built in phases by a private developer from Hong Kong in an equity joint venture with the local government of Suzhou (a typical arrangement for such projects in China). Phase I, which comprises two 16-story apartment buildings, 20 single-family houses, and the entire shopping center, was completed last year. A second phase with two 18-story apartment towers and 20 individual homes will be finished by the end of this year. The timing of additional phases will be determined by sales of the units. Priced at about \$350,000, the 3,000-square-foot houses have attracted mostly foreign executives working for companies such as Siemens, Philips, and Sony that have facilities in the area. The two- and three-bedroom apartments, which range from \$100,000 to \$150,000, are affordable to affluent Chinese, as well as expatriate executives.

Encouraged by the client to draw from the traditions of Suzhou, Wong Chen planned the development around new canals that would connect with the city’s existing network. “Our client, C.F. Tao [chairman of New Heritage Development], told us ‘A house is not a house in Suzhou unless it has a garden and a canal view,’” relates Chen. In a

characteristic improvement of old ways, the project has canals with their own filtration system, so the pungent aroma hanging over much of Suzhou is fortunately missing here. Where two main canals meet, the planners created a semi-circular marina that serves as a gathering place for people to sit, talk, and watch boats.

From the main access road on the south edge of the site, the project unfolds in three zones—the most public uses (shopping and recreation) closest to the entrance, the most transit-dependent (apartments) in the middle where they can be close to stores and bus stops, and the most private (single-family living) aligned along small canals to the north. Because Chinese tradition calls for homes to have southern exposures, the architects developed a Y-shaped configuration for the high-rise buildings, in which two apartments on each floor face due south while the other two units face either southwest or southeast. For the single-family houses, the architects devised two variations of each of three plans so no matter which direction the front door faces, the main living areas always look south.

While the shopping center and apartment towers are standard in their concrete-frame and brick-infill construction, and don’t break any new ground in terms of their architectural expression, the single-family houses show a level of sophistication rare in China. Having pioneered low-rise alternatives to Hong Kong’s high-rise culture at two large developments in the New Territories, Wong Chen had a wealth of experience fitting single-family houses together to form attractive streetscapes, ensuring privacy for all units, and creating a sense of community. Kit M. Chung, the owner’s architect for this project, says “This has become a special community and people from the area come to visit the restaurants and enjoy the marina.”

For Suzhou Villas, the architects designed three different kinds of houses: a “villa” unit with a square footprint and American-style double-height entry hall, a “canal” unit with greater frontage on the water, and a “courtyard” unit with a more traditionally Chinese plan that wraps around a central outdoor space. By using all three kinds of houses on each block, Wong Chen was able to create streetscapes with a sense of variety and to avoid views from one house into another. The plans also provide a variety of outdoor spaces—gardens, courtyards, and balconies—that overlook the canals and make water an appropriate symbol for the entire community. *Clifford A. Pearson*



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*Suzhou Garden Villas
 Suzhou, China
 Wong Chen Associates, Architect
 Suzhou Architectural Design Institute,
 Associate Architect/Engineer*



Model photograph (opposite right) shows the project at completion with six apartment towers and 88 single-family houses. The first two towers and the shopping center (opposite left) are the most public face of the new community. Like the larger buildings, the houses on canals are reinforced-concrete-frame structures. The individual houses come in three basic types:

a two-story "villa" unit (left) with 2,875 square feet, a "courtyard" unit (above) that has 2,900 square feet and is the only single-story scheme, and a "canal" unit (following page top) that is the largest plan with 3,060 square feet. The masterplan calls for the courtyard units to be used only at the end of each row and for the other two units to be varied within the rows (below).





While inspired by the canal buildings in old Suzhou (below), Wong Chen Associates wanted to strike a balance between the American-style houses increasingly popular in China and traditional building forms. All of the houses are concrete-frame structures with painted plaster over brick infill, glazed roofing tiles, and granite trim.

Each of the models blends East and West in different ways. The two-story "canal" model, for example, combines the gable roof and simple footprint found in many Suzhou houses with a long balcony and California styling (left top). The "courtyard" model (left middle and bottom) is more overtly Chinese with a circular doorway leading from a central yard to the canal. Although almost all the buyers are foreign business executives, the courtyard house has been the most popular and has prompted the developer to build more of these models than originally planned.



© Clifford A. Pearson



Credits

*Suzhou Garden Villas
Suzhou, China*

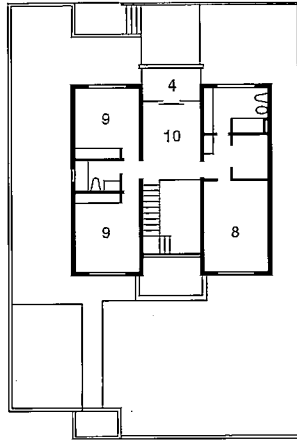
Client: *New Heritage
Development, Hong Kong, and
Suzhou Garden Villa
Development & Management,
P.R.C.*

Architect: *Wong Chen
Associates—Nelson Chen, design
architect/principal-in-charge;
Jun Santos, project
architect/design; Eric Sau,
project architect/production;
Peter Gorer, project
architect/administration; M.S.
Chan, project manager; Marc
Fyson, Alan Hui, Rachel Seno,
B.S. Tang, project team*

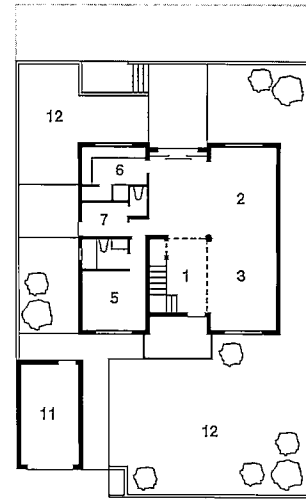
Associate Architect/Engineer:
*Suzhou Architectural Design
Institute*

Consultants: *Wong Chen
Associates (structural); Kelvin
Tam & Associates
(mechanical/electrical); Suzhou
Gardens Administration Bureau
(landscape design)*

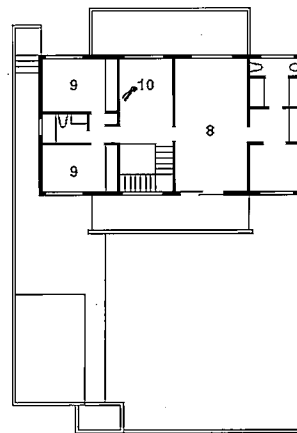
Contractor: *Plant Construction
& Engineering Bureau, Beijing
Railway Ministry*



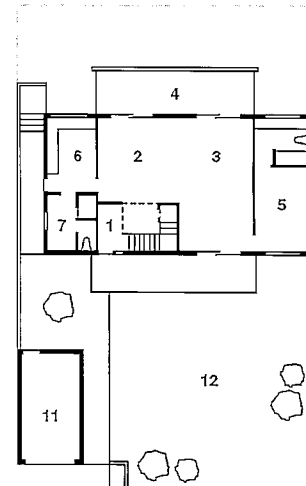
SECOND FLOOR - VILLA HOUSE



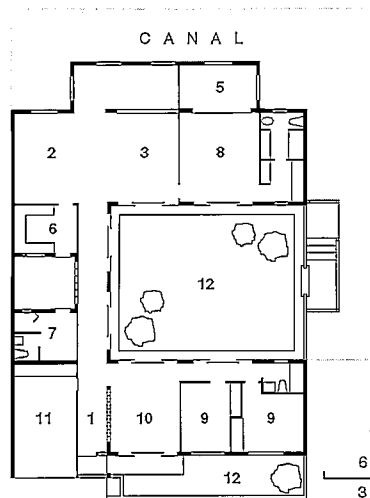
GROUND FLOOR - VILLA HOUSE



SECOND FLOOR - CANAL HOUSE

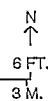


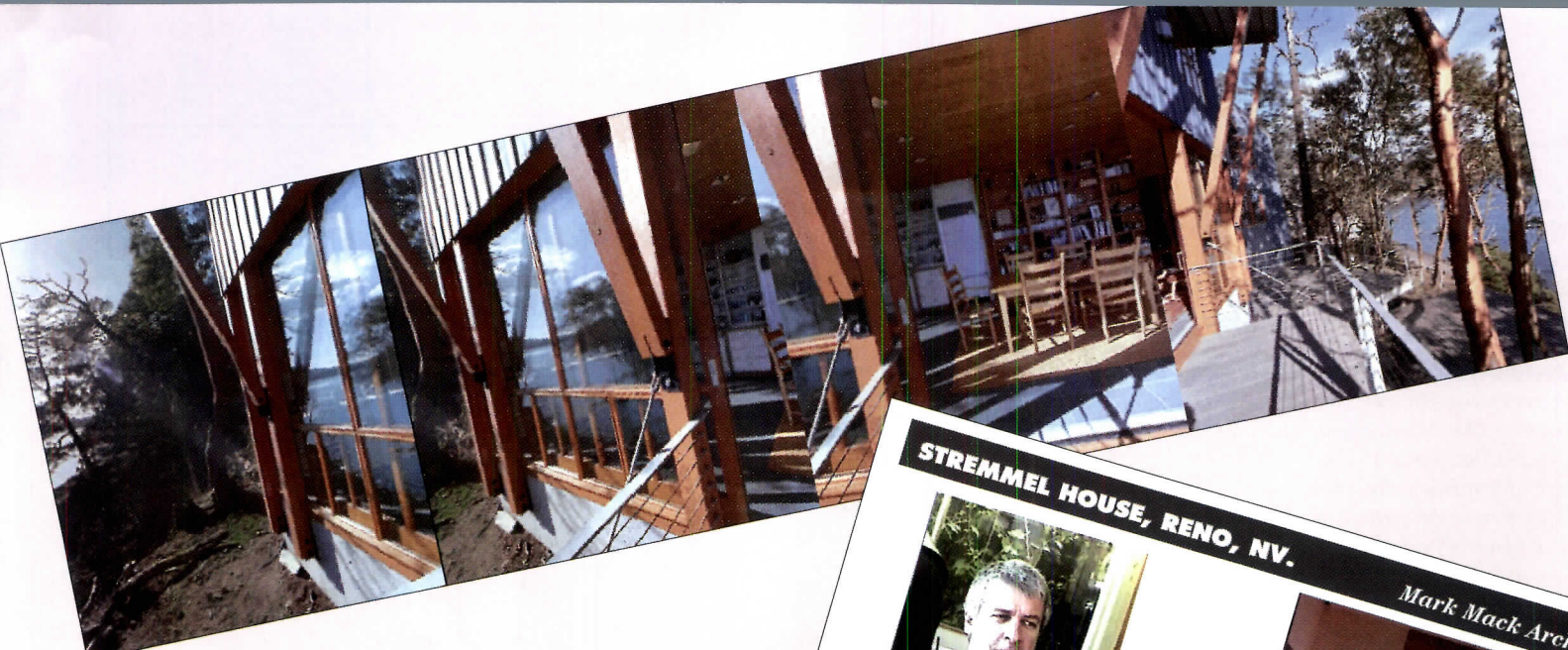
GROUND FLOOR - CANAL HOUSE



GROUND FLOOR - COURTYARD HOUSE

1. Entry
2. Dining
3. Living
4. Balcony
5. Study
6. Kitchen
7. Utility
8. Master bedroom
9. Bedroom
10. Family
11. Carport/garage
12. Garden





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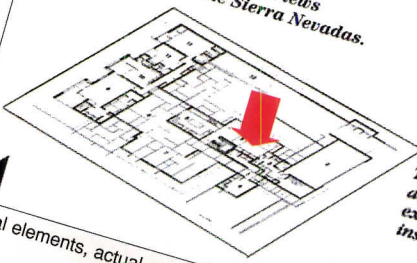
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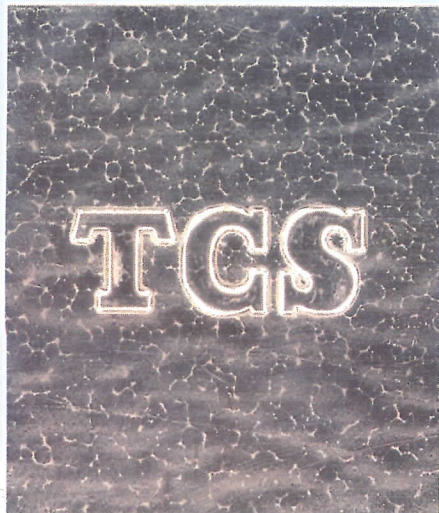
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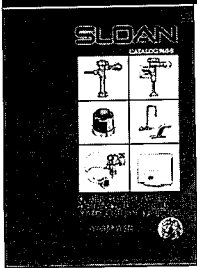
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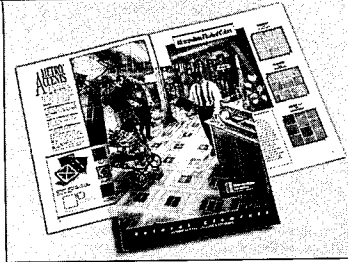
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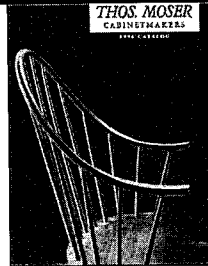
200. Rugged fittings

Sloan's 12-page architectural catalog highlights flushometer plumbing valves, and explains water-saving and abuse-resistant features such as non-hold-open automatic shut-off, tamper-proof stop caps, germ-killing Bio-Gard coatings for flush handles, and ADA-compliant Optima sensor-operated fittings. 708/671-4300. Sloan Valve Co., Franklin Park, Ill.



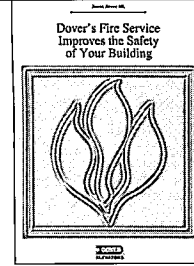
201. Tile for any weather

An eight-page catalog shows tile in heavy-traffic areas such as schools and malls, illustrates the current color range, and introduces glazed decorative inserts for Ironrock and Metro unglazed-tile floors. Describes how "flashed" colors, created by reduction firing, vary subtly from tile to tile. 216/484-4387. Metropolitan Ceramics, Canton, Ohio.



202. Maine-made furniture

A new 32-page catalog, offered without charge, illustrates all 110 standard Moser pieces; details the maker's craft approach to finely made, durable wood furniture; and introduces Windward, a new contract-oriented line of casegoods, tables, and seating based on common design elements. 800/708-9703. Thos. Moser Cabinetmakers, Auburn, Me.



203. Elevator-service upgrade

Dover says its Fire Service upgrade, a microprocessor-based addition to existing elevators, increases building safety and value while decreasing liability. A brochure explains how the equipment adapts to most types of elevator-control and hall-call systems, including those made by other manufacturers. 601/393-2110. Dover Elevators, Memphis, Tenn.



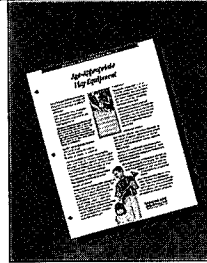
204. Coordinated walls

A new interior-design system matches the 63 colors offered in Acrovyn wall-protection products—handrails, crash rails, bumpers, and corner guards—with over 275 Genon vinyl wallcoverings. There are at least three distinct patterns that work with each "anchor color" of the rails and guards. Swatches available. 800/233-8493. C/S Group, Muncy, Pa.



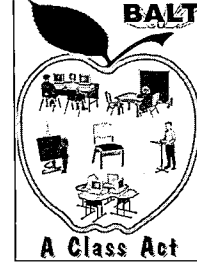
205. Classroom lighting

A less-costly version of this maker's Envision optical system, the EN1 Lightvent luminaire can work within the tight budgets typical of institutional projects. Illumination is primarily indirect; three perforation-pattern options allow a measure of downlighting. Brochure cites photometric and finish data. 510/845-2760. Peerless Lighting, Berkeley, Calif.



206. Play-area planning

The first in a series, a Playguide bulletin discusses age-appropriate play equipment, covering safety concerns and the physical, cognitive, and social-skill levels characteristic of various ages. Prepared for school personnel, park designers, and others involved in specifying playground equipment. 800/328-0035. Landscape Structures, Inc., Delano, Minn.



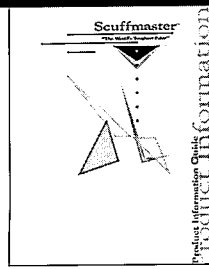
207. Classroom furnishings

A 12-page catalog illustrates storage units, training and library tables, study carrels, space dividers, display pieces, and seating constructed in a range of sizes for children in grades K-12. Colorful furnishings are made of solid maple, maple veneers, and decorative laminates; prices listed. Balt, Inc., Jacksonville, Tex.



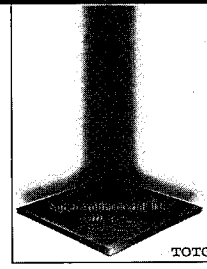
208. Washroom accessories

Plumbing fixtures for schools, factories, and secure facilities are shown in a 12-page catalog. All finish options and dimensions are given for wash-fountains, multiple-station lavatories, metering faucets, and low-flow shower systems, and space-saving "all-in-one" units for health-care and detention use. Bradley Corp., Menomonee Falls, Wis.



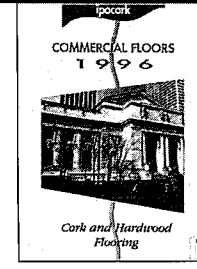
209. Multicolor wallcovering

Described as a waterbased aliphatic urethane fortified with Kevlar, Scuffmaster is said to be an exceptionally durable paint for heavy-traffic, abuse-prone settings indoors or out. Decorative options include strings, knock-downs, metallics, pearl-like finishes, and solid colors; can be touched up. 612/454-0546. Master Coating Technologies, Eagan, Minn.



210. Antibacterial tile

Photoactive technology allows tile and other treated surfaces to remain relatively free of bacterial growth, even in the busiest, least maintained public washroom. Tile glazed with Toto P-TOF also resists the formation of stains and odor. A bulletin explains how the process works, and suggests applications. 714/282-8686. Toto Kiki USA, Inc., Orange, Calif.



211. Contract wallcoverings

An eight-page catalog describes the product-performance and decorative advantages of vinyl wallcoverings in heavy-use settings. Colors coordinate with carpeting, flooring, and laminates from major sources; custom patterns available on order. Sample books offered. 201/489-0100. Genon Wallcoverings, Hackensack, N.J. *Continued on page 152*

Europe practice continued from page 41 seemed to want American-style skyscrapers. "That's now over," he says. And, American architects, reared in a business climate that relies on proven methods more than critical thought and intellectual exploration, compete at a disadvantage for the cultural and public projects that have won recognition for Europeans such as Santiago Calatrava, Renzo Piano, Norman Foster, Jean Nouvel, and Rem Koolhaas, to name only a handful of Europe's current star players.

Northern welcome; southern brushoff
The profound economic and cultural differ-

ences that still divide the countries of the European Union also affect where Americans can successfully practice: the work is predominantly in northern Europe, where largely countries seem to have a natural affinity for American ways of doing business. There's a corresponding lack of penetration in the south, including France.

Development is weaker on the Mediterranean rim, where projects of a sufficient scale to attract American firms are fewer and local economic and government policies can be more Byzantine. John Burgee and Philip

Johnson's twin leaning towers became an all-too prominent emblem of speculative hubris in Madrid. Now nearing completion, they stood for years as bare, steel-framed evidence of a money hemorrhage reputedly perpetrated by the Kuwaiti investors' corrupt local managers. Italy, mired in political turmoil, never fully realized its last prestige redevelopment—the 1992 exposition in Genoa—even with local architect Renzo Piano in charge.

Mediterranean countries have seen megaprojects like Spain's 1992 World's Fair and Olympics as both attention-getting and economic-development tools. In Portugal, SOM London is building an arena and observation tower for the 1998 Lisbon World's Fair.

The British market, surprisingly, has not been easy for Americans to penetrate. London is one of the world's principal exporters of architecture but, prior to Canary Wharf, virtually no foreign work had been built there since the 1930s. Together with Venturi, Scott Brown's addition to the National Gallery, Canary Wharf became a symbol of national decline and the surrender to American values. This reaction led directly to a new appreciation for the local architects of the high tech school that had long enjoyed acclaim abroad.

Despite these obstacles, work in Europe offers opportunities. KPF's Poliso reports, "European clients are terrific. Most are very interested not only in monetary return, but in ideas, in advancing architecture for the sake of what it contributes socially and physically to the environment." Fees are generally higher as well.

European firms, such as Piano's Building Workshop or Sir Norman Foster and Partners, as well as the engineering firm of Ove Arup and Partners, have pioneered in the development of international practices that reflect a new global interdependence, with a network of offices, each of which may be quite small (Arup has more than 50) and international staffs. Many were first-project offices, which have learned to fend for themselves after the original project was completed. KPF seems to be following this model with its London bureau, which works independently but in close coordination with its only other office in New York City. The KPF model allows the possibility for ideas and innovations to flow in both directions. Such cross-pollination, if more widely practiced by other firms, could strengthen American architecture as well.

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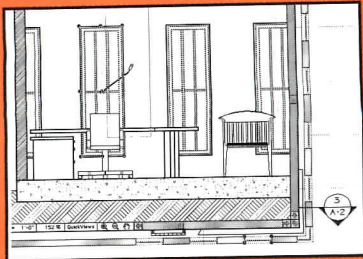
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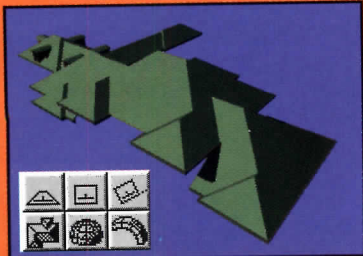
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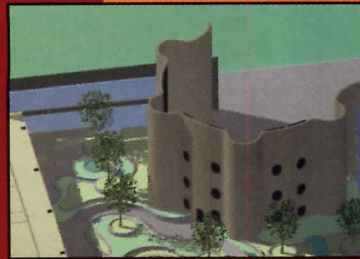
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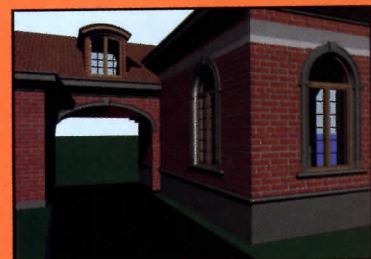
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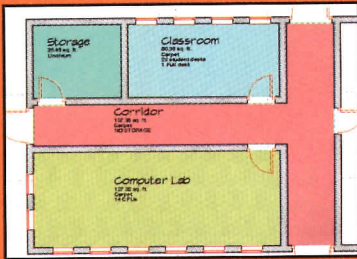
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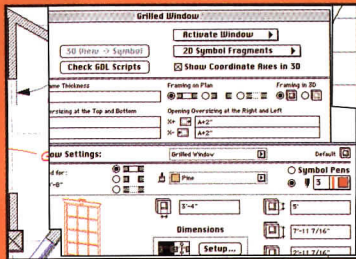
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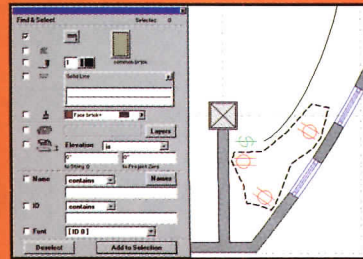
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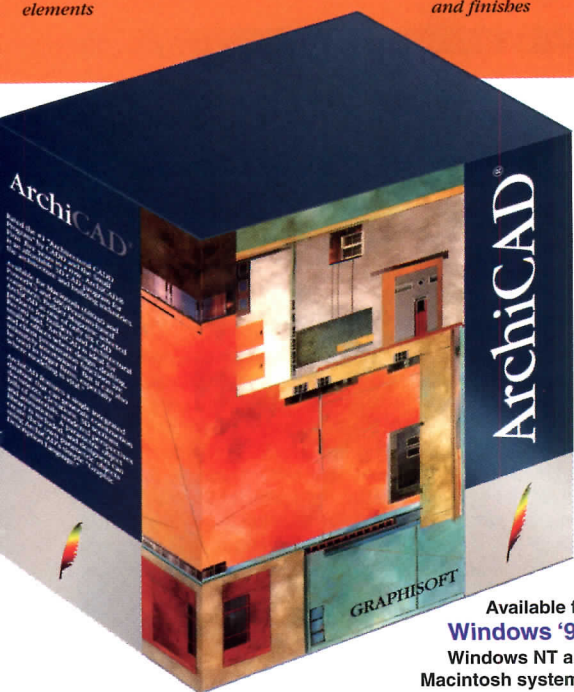
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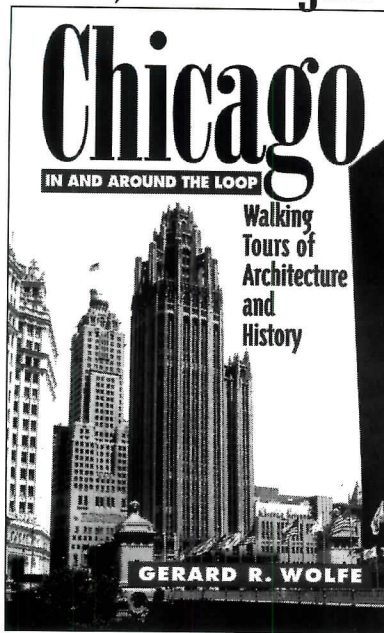
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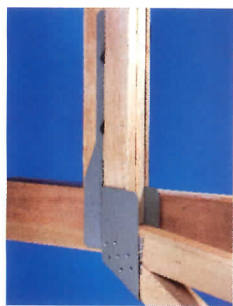
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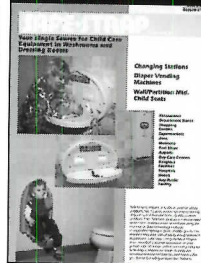
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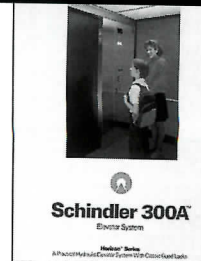
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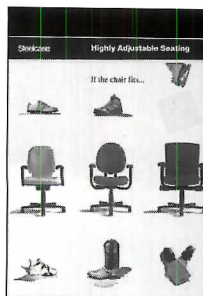
212. Diaper-change aid

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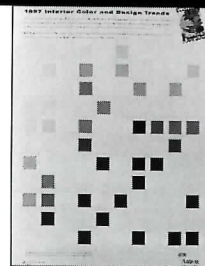
213. Elevators for schools

A color booklet covers Schindler's 300A elevator line, three lifts with building-type-specific design and control options. The Horizon series is a single-car hydraulic elevator for up to four levels; cab and weight features meet the operational needs of small office buildings, clinics, schools, and churches. 201/984-9500. Schindler Elevator Corp., Morristown, N.J.



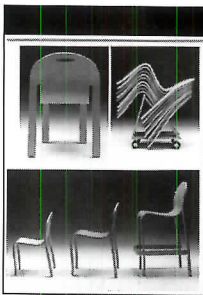
214. Adjustable task seating

A brochure describes Sensor, Criterion, and Rapport, three lines of highly adjustable chairs "that support the most demanding work environments," and meet different body-type and task-specific adjustment needs. Also, a web site that discusses workplace issues: <http://www.steelcase.com>. 800/333-9939, x701. Steelcase, Inc., Grand Rapids, Mich. *



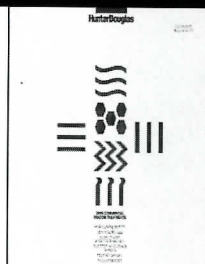
215. Carpet-color coordination

A 1997 Interior Color and Design Trends forecast, exploring the latest directions in commercial styling, helps architects and designers select carpets and related finishes. Study is available as a poster-format chart, as well as on-line at the Antron site: <http://www.dupont.com/Antron.html>. 800/4DUPONT. Du Pont Co., Wilmington, Del. *



216. Molded-plywood seating

Illustrated catalog pages give dimensions and upholstery options for two restyled Bodyform Chairs, widely specified for school and college use. Part of an extensive seating and table line designed by Peter Danko, Bodyform chairs are also available in a child's size. 717/244-5252. Danko Div., Persing Enterprises, Inc., Red Lion, Pa. * Product Data on CAD disk



217. Window treatments

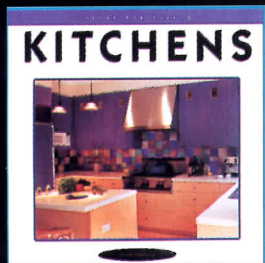
A 34-page architectural catalog illustrates all types of window products, including classic roller shades in new, semi-opaque fire-retardant fabrics, insulating honeycomb shades, and motorized vertical blinds in fabric or vinyl. Gives solar-control, insulating, and fire-label data on all treatments. 800/727-8953. Hunter-Douglas, Inc., Upper Saddle River, N.J. ■

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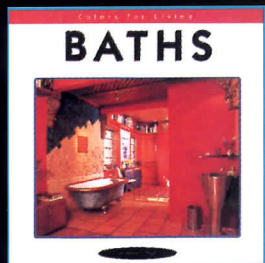


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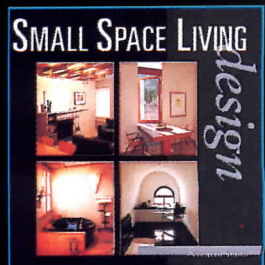
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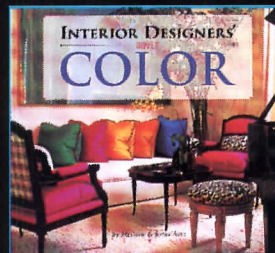


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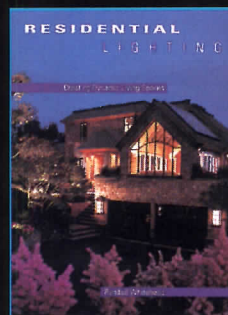
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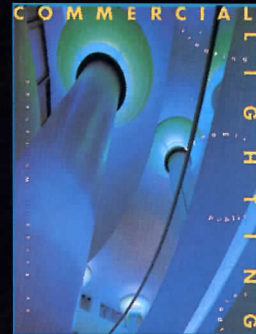
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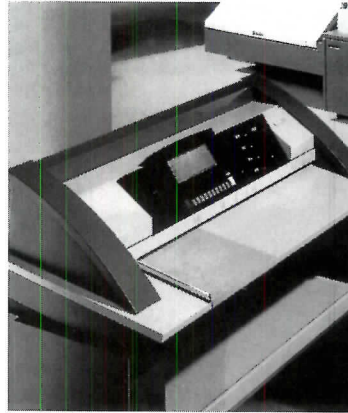
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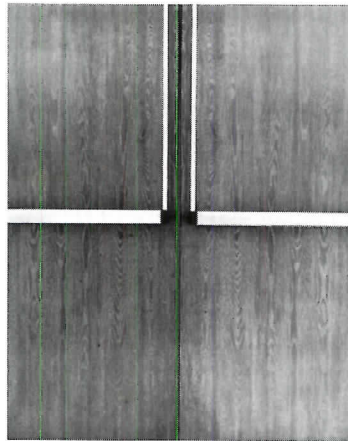
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Continued on page 156

Calendar

August 5-September 13

Photographic exhibition of the 1996 AIA Honor Awards at The Octagon, 1799 New York Ave., NW, Washington, D.C. 20006. Fax 202/879-7764 for more information.

August 6

"An Evening with Frank Lloyd Wright," a one-man performance featuring Lyman Shepard at the National Building Museum, Washington, D.C. Call 202/272-2448, fax 202/272-2564 for details.

September 28-30

The Door and Hardware Institute's convention and exposition takes place in Cincinnati. Call 703/222-2010 or fax 703/222-2410 for more information.

September 25-29

"Frank Lloyd Wright's Influence on Architecture in the Northwest," to be held in Seattle, will feature authorities on FLW; comments from architects such as Frank Gehry; and tours of houses not usually open to the public. Sponsored by the Frank Lloyd Wright Building Conservancy; call 312/663-

1786, fax 312/663-1683 for details.

October 16-20

Three exhibits and conferences, "Restoration/Chicago," the National Trust for Historic Preservation, and the Fall Antiques Show, will run in conjunction at Chicago locations: the Navy Pier and an adjacent exhibit hall for the Restoration and Antiques events, the Palmer House Hotel for the National Trust Conference. Call 508/664-8066, fax 508/664-5822 for further information.

Competitions

◆ The deadline for entries to the "Excellence on the Waterfront" awards is Aug. 1. There are seven project categories to choose from as well as a Waterfront Plans category. Call 202/337-0356 or fax 202/625-1654 for details.

◆ Entries for Wolverine's annual Finish First Exterior Design Contest must be post-marked by August 31. Submitted projects must have been completed between Jan. 1, 1995 and Aug. 31, 1996, using at least one Wolverine vinyl exterior product. For infor-

mation or an entry form, call 800/521-9020.

◆ Submissions to the Boston Society of Architects' annual competition, "Unbuilt Architecture," are due by Sept. 19. The contest is open to all practicing architects, architecture educators, and students throughout the world. Call BSA at 617/951-1433 ext. 232 for details.

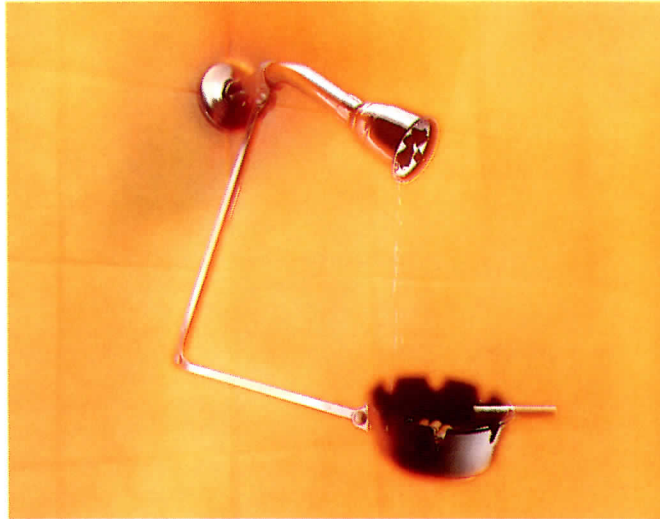
◆ Entries for the Sapporo (Japan) Dome Design and Build Competition (a covered stadium for soccer games) must be received by Aug. 20. Fax: City of Sapporo 81-11-211-3030, phone 81-11-222-3076 for further information.

◆ The 1996 San Francisco Prize, a competition for the redesign of the plaza at the Phillip Burton Federal Building, will award the winners a stipend to pursue further development of their winning project. Submissions are due Aug. 29. Fax Paul Andrade, Competition Project Manager, General Services Administration, 415/522-3316, for details. ■

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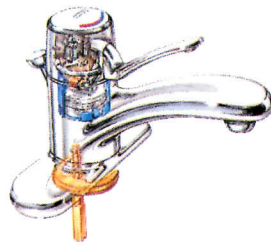
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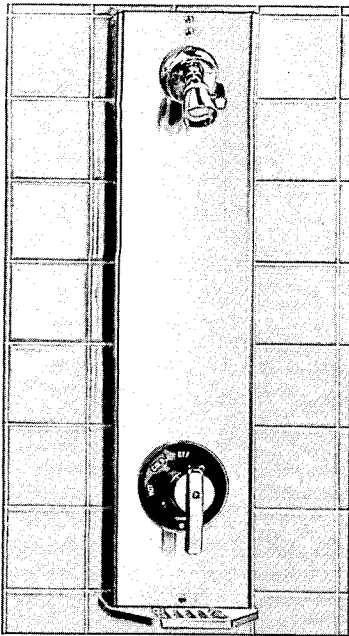


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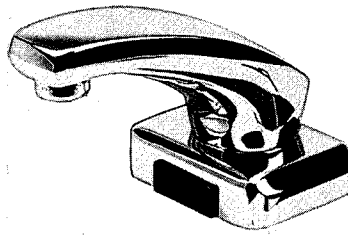
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New Products *continued from page 154*

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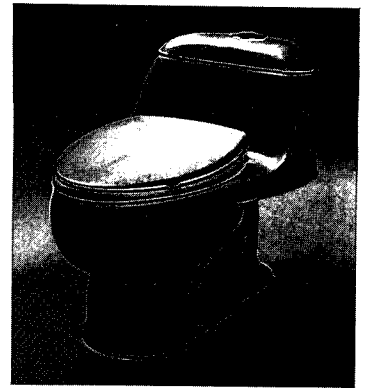
169. Shower-control upgrade
The Hydropanel II adapts to institutional showers where in-wall piping doesn't exist. The stainless-steel module conceals mixing valves (either pressure-balance or thermostatic anti-scald) and simplified piping, and offers several control-handle and shower-head options. 708/673-6700. Powers Process Controls, Skokie, Ill.



170. Hands-free faucets
Sensorflo faucets are said to have several features that make installation easier, such as brass plumbing connectors that swivel and fail-safe low-voltage couplings for the infrared sensors. For public facilities, faucets can save as much as 85 percent of the water consumed by conventional faucets. Sanitary in use; meets ADA accessibility guidelines. 302/764-9100. Speakman Co., Wilmington, Del.



171. One-piece, low volume
One of three new contemporary-styled toilets from this Japanese manufacturer, the Prominence toilet (right) was designed by Ayse Birsal, and will accommodate the bidet-like Zoë seat as well as standard elongated seats. The push-button-operated siphon-jet gravity flush needs 1.6 gallons of water; all interior and exterior surfaces (even the back) are glazed. Meets the most stringent state and local codes. Brochure details all models, available in round- and elongated-bowl versions. 714/282-8686. Toto Kiki USA, Inc., Orange, Calif.



172. Low-profile toilets
A one-piece, 1.6-gallon toilet with a gravity-operated flush, the Rialto Lite (shown left, with bidet) is described as "priced to fit most any budget." The water closets stand under 23-in. tall, allowing vanities to extend over the toilet tank if desired for extra counter space. Fittings such as flapper valves resist aggressive water; china available in many Kohler colors. 414/457-4441. Kohler Co., Kohler, Wis.

173. Child-size washbasin
The low-maintenance, space-saving Express lavatory is now made in a lower-height "Junior" version for day-care centers, elementary schools, and other children's facilities. Units can be ordered in two- or three-child configurations; all have no-touch metering faucets and need only one set of plumbing connections; integral soap dispensers are optional. 414/251-6000. Bradley Corp., Menomonee Falls, Wis.

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Here are answers to some commonly asked questions:

Q: When will ARCHITECTURAL RECORD become the publication for members of the American Institute of Architects?

A: Beginning with the January 1997 issue, AIA members will receive a subscription to *Architectural Record* as part of their member benefits. *Architectural Record* will continue to serve non-members as well as engineers, owners and other design professionals.

Q: I'm currently a subscriber and an AIA member. What happens when my subscription expires in 1996?

A: If your subscription is up for renewal in 1996, you can request a pro-rated renewal that will extend your subscription through December, 1996. If your subscription extends into 1997 *Architectural Record* will contact you in December, 1996 concerning your remaining balance.

Q: How do I get a subscription to ARCHITECTURAL RECORD?

A: Just call 1-800-525-5003 to place a new order or e-mail *Architectural Record* @ mporders@mcgraw-hill.com. Please include *Architectural Record*, the # of years of service and the price, 1yr-\$59, 2yrs-\$105, 3yrs-\$129, your name, company name and address plus phone, fax, e-mail address. If you're an AIA member, ask for our special discounted offer.

Q: Does ARCHITECTURAL RECORD have a new CD-ROM product?

A: Yes. *Architectural Record* has a CD-ROM "Virtual Tour" of the 8 feature houses from April 1996 Record Houses. It is available for \$19.95 plus shipping. To order call 1-212-512-4635.

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McGraw-Hill Construction Information Group

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Manufacturers' Sources

For your convenience in locating building materials and other products shown in this month's feature articles, *RECORD* has asked the architects to identify the products specified.

Pages 68-79

Colgate Darden Graduate School of Business Administration, University of Virginia
Robert A.M. Stern Architects, Architect
Ayers Saint Gross, Architect of Record
Brick: Old Virginia Brick (handmade); Bratti Masonry. Wood cladding: Architectural Millwork, Inc. Wood-framed windows: Weather Shield, Inc. Wood entrances and interior doors: Weyerhaeuser. Locksets: Marks U.S.A. Columns: Dupuis; Arban (exterior); Hartmann Sanders (interior). Custom woodwork: Key Wood Working; Architectural Millwork, Inc. Resilient flooring: Forbo Industries (Marmoleum). Carpeting: Lees Commercial; Hokanson; Stark. Exterior fixtures: Michaels Lighting. Interior lighting: Baldinger.

Pages 80-83

Casa Italiana, Columbia University
Buttrick White Burtis, Architect
Wood windows and exterior doors: The Woodstone Co. Laminated-glass lightbox: fabricated by The Rudy Art Glass Studio. Glass: Viracon. Interlayer: Monsanto (Opticolor). Laminated glass at stairwell: Sentinel Group. Statuary White marble: Port Morris Tile & Marble Corp. Stair-step lights: Cole (custom); Bega. Metal doors: Acme Steel Door. Lever handles: Modric; Omnia. Closers: LCN. Cabinetwork: Bauerschmidt & Sons. Exterior luminaires: Spring City. Carpeting: Durkan; Karas-

tan. Tables and desk chairs: Vecta. Conference table: Poltrona Frau. Side chairs: ICF Louvered fluorescents: Linear Lighting. Downlights: Edison Price. Special metallic paint: DuPont; Crescent Bronze Powder Co. Sconces and chandeliers: Artimede (VeArt).

Pages 84-85

Psychology Building, Washington University
Skidmore, Owings & Merrill, Architect
Granite: Cold Spring Granite. Limestone: Bybee Stone Co. Slate roof shingles: Evergreen Slate Co. Windows: Winco Window Co. Glazing: HGP Industries. Terrazzo: National Terrazzo & Mosaic Associates.

Pages 86-91

Engineering Research Center, University of Cincinnati
KZF, Architect and Engineer
Michael Graves, Associate Architect;
SH&G, Associate Architect and Engineer
Precast: Southeast Precast Corp. Brick veneer: Glen-Gery. Stone: Briar Hill. Aluminum-composite panels: Alply. Copper cladding and standing-seam roof: Overly Mfg. Co. Single-ply roof: Carlisle Syn-Tec. Windows: Wausau Metals. Glazing: Viracon. Metal doors: Steelcraft. Rolling doors: Kinnear. Acoustic ceilings: USG Interiors, Inc. Slate flooring: Vermont Slate. Laminate surfaces (casework): Wilsonart; Formica Corp. Paints: Glidden. Wall tile: Dal-Tile. Carpeting: Patcraft. VCT flooring: Armstrong World Industries. Elevators: Dover. Fluorescent lighting: Lithonia.

Pages 92-97

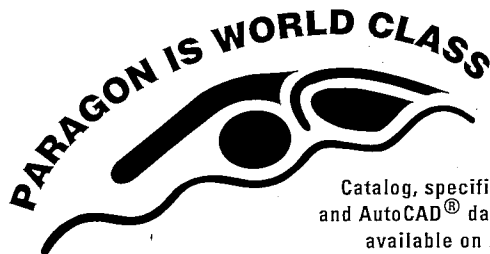
Tomanek Hall, Fort Hayes State University
Hay, Kansas
Horst, Terrill & Karst, Architect
Stecklein & Brungardt, Associated Architect
Limestone: Harding & Cogswell Corp. Curtain wall, windows, and entrance: EFCO Corp. Metal roofing: MM Systems Corp. EPDM roofing: GenCorp. Glazing: Libbey Owens Ford (Solar Bronze). Tile flooring: Summitville. Resilient flooring: Azrock. Lighting (all interior fluorescent): Lithonia. Laboratory ceilings: Armstrong World Industries. Casework: Fisher Hamilton Scientific. Paints and epoxy coatings: Sherwin Williams. Wall-mount exterior lighting: Devine. Site furnishings: Landscape Forms, Inc.

Pages 98-103

Memorial Hall, Harvard University
Venturi, Scott Brown and Associates, Architects
Single-ply roof: Firestone Building Products.
Annenberg Hall—Chairs: Eustis Enterprises.
Tables: Charles Web. Chandeliers: Baldinger.
Loker Commons—seating: KI (Verso Poly chair).
Downlighting: Staff. Linoleum: Forbo. Carpeting: Karastan. Ceilings: Alpro. Cabinetry: Anthony Galuzzo. Paints: Sherwin-Williams. Laminates: Wilsonart. LED displays: Sunrise Systems. ■

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Circle 32 on inquiry card

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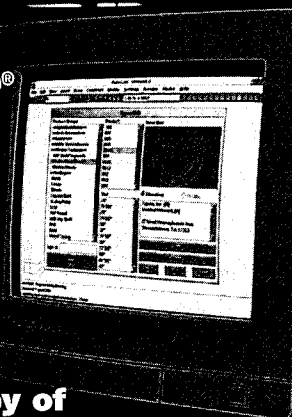
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Manufacturers' Spotlight

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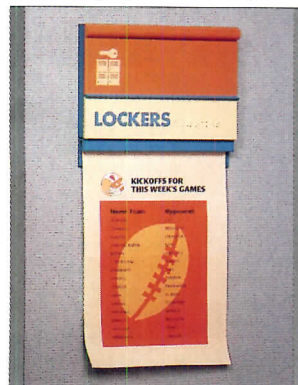
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After July 15 FAX (416) 635-6588

Formglass Inc.

Circle 76 on Inquiry card

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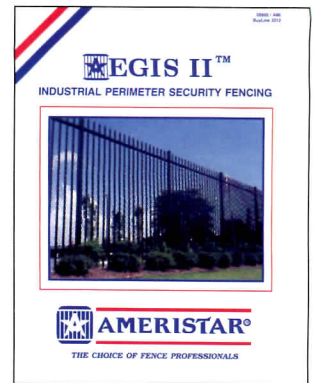
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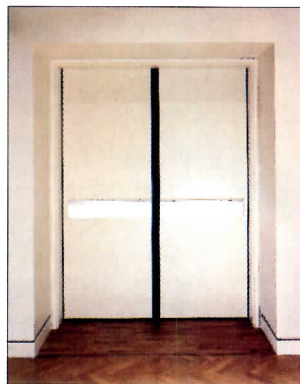


Aegis ornamental fence systems feature strong Forerunner™ rails, internal retaining rods, & specially designed panel brackets. Aegis II industrial ornamental fence offers the strongest security ornamental fence available in today's market. Aegis holds the distinction of having its fence systems specified by more architects & builders than any other in the market. Both industrial & residential brochures are available upon request & include data on structure, design, & options available. Panel design is a component system for easy shipping. For additional information & a free 8-page brochure, call (800) 321-8724. P.O. Box 581000, Tulsa, OK 74158-1000. Fax# (918) 835-0899

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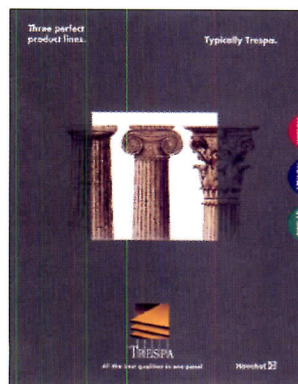
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Manufacturers' Spotlight

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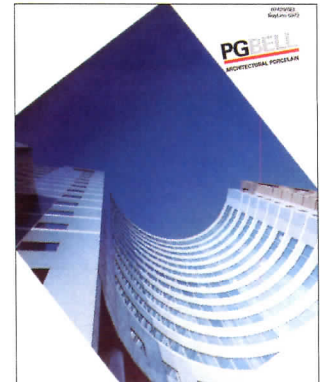
Now Certified for beams and columns for ratings up to 2 hours! A/D Firefilm permits the designer to use the appearance of exposed steel with the steel fully protected from fire. It is applied as a thin-film coating 0.4 to 3 mm (0.02 to 0.12 in.) thick. During a fire A/D Firefilm expands to form a meringue-like layer up to 100 mm thick, which insulates the steel from the fire. The topcoat is available in a wide choice of colours.

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PG Bell

Circle 86 on Inquiry card

Strong-Tie® Connectors for Wood Construction



The most complete catalog in the timber connector industry, *Wood Construction Connectors*, is a necessary reference for specifiers, building officials, architects, and contractors. It includes updated specifications, load charts, application drawings, and building code acceptance information - plus information on holdown anchorage design, and on available custom hanger options. Eight new products are introduced this year.

For a copy of the 1996 catalog (C-96H), write Simpson Strong-Tie Company, P.O. Box 10789, Pleasanton, CA 94588.

Simpson Strong-Tie

Circle 87 on Inquiry card

Helifix 'Dryfix' Wall tie system



Helifix stainless steel wall tie system is a simple and very effective stainless steel remedial wall tie, engineered specifically for the repair and reinforcement of defective walls. The Helifix tie is versatile, easily installed, and has been comprehensively tested and proven. Helifix provides the ideal solution for defective walls requiring stabilization and is the most effective remedial wall tie system available.

Helifix Ltd.

Circle 88 on Inquiry card

Accessible Lavatory Insulation

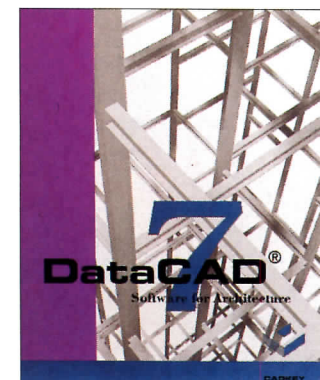


A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use, sample specifications, drawings and color choice are all summarized in this easy to understand catalog.

Plumberex

Circle 89 on Inquiry card

New DataCAD® 7



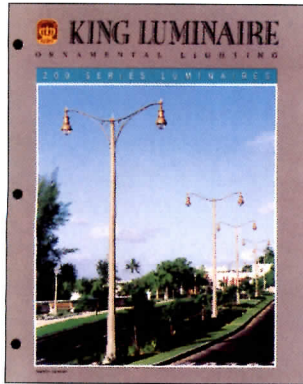
Award-winning DataCAD allows you to professionally draft, edit, and prepare precision construction documents. From 2D drawing to 3D modeling, DataCAD offers effective and affordable solutions for designers needs.

Cadkey Inc.,
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Manufacturers' Spotlight

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UNICEL

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W&W Sales Ltd.

Circle 93 on Inquiry card

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Atlas Door Corporation

Circle 94 on Inquiry card

New Fireplace Tested as a Wall Furnace



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Heat-N-Glo

Circle 95 on Inquiry card

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Hoover Treated Wood

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Modern Buildings require modern wiring solutions. That's what Wire Management Ideas is all about. Case histories. Research reports. Emerging trends. Product news and reviews. Everything you need to "future proof" your buildings. And make your job easier. For your complimentary subscription circle the inquiry card.

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Patio Enclosures, Inc.

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Manufacturers' Spotlight

High Performance Drop Diffuser System

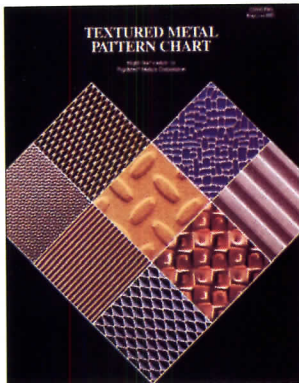


Exclusive Air Diverter design by Custom Curb, Inc., provides super-low resistance, quiet operation and excellent air distribution. It reduces installation costs and eliminates expensive duct runs. Offers maximum comfort and efficiency in ceilingless applications such as retail/outlet stores, manufacturing plants and other places where air distribution poses problems. Factory assembled. Various models offered including Low-Profile. 1-800-251-3001.

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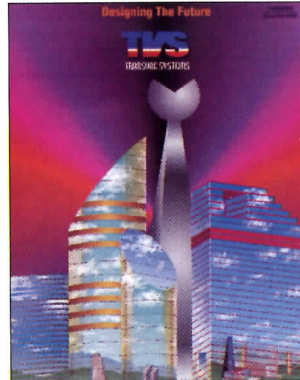
Rigid-Tex® metals combine beauty and durability in any interior or exterior applications. Dozens of patterns to choose from, including custom designs. For elevator doors and interiors, column covers, walls, ceilings, entrances, signage and trim. Available in a wide selection of metals, colors, finishes, gauges and sizes.

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Rigidized Metals Corp.

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Hunter Douglas

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Classic Columns by Melton Classics

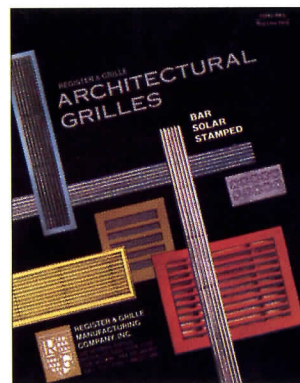


From the Clear All Heart Redwood Classic™ column to the DuraClassic™ Poly/Marble column to the FRP Classic™ Fiberglass column cover to a full line of stain-grade columns, Melton Classics offers a product for every architectural millwork need. Constructed in keeping with the Classic Orders of Architecture, the Melton Classics column line is second to none in quality, authenticity, availability and tradition - and yet is affordably priced. Call us toll-free at (800) 963-3060 for a free catalog or quotation.

Melton Classics

Circle 104 on Inquiry card

Decorative Grilles

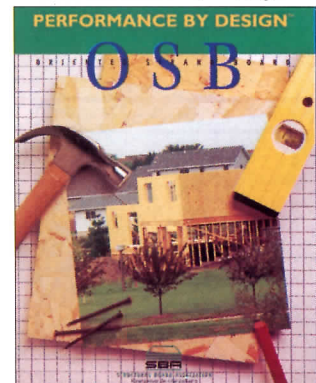


Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille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

Register & Grille Mfg., Co.

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OSB Performance By Design



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call (416)730-9090 or fax (416)730-9013.

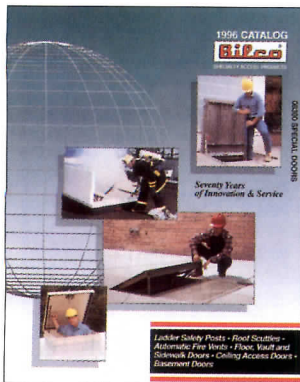
Structural Board

Circle 106 on Inquiry card

Manufacturers' Spotlight

To Advertise: Call 1-800-544-7929
Fax: 212-512-2074

The Bilco Company



The Bilco Company announces the availability of its full 1996 catalog featuring roof scuttles, fire vents, floor, vault and sidewalk doors and the LadderUP (R) safety post. This 24-page catalog also features the company's new fire rated floor door and new domed automatic fire vent. Catalog is complete with cross sectional details and architectural specifications on all products.

The Bilco Company

Circle 107 on Inquiry card



Manufacturers of custom metal cabinetry specializing in:

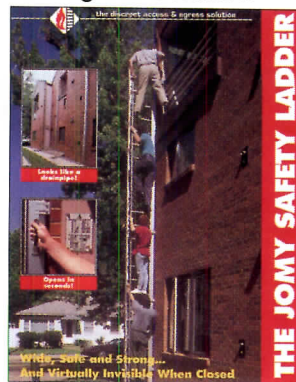
- * Radiator enclosures for steam & hot water systems.
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In business since 1934 serving residential, commercial, public & institutional building owners & renovators. For a free brochure 1-800-543-7040.

Arco Mfg. Company

Circle 108 on Inquiry card

The Discrete Access & Egress Solution



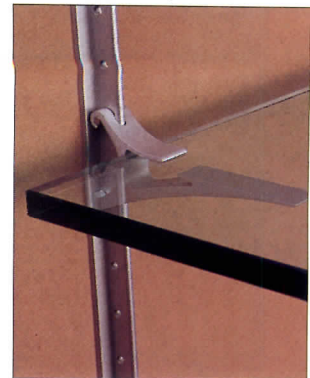
Security requirements, space constraints and esthetic considerations are a few of the problem solving applications for the JOMY Safety Ladder. The ladder's discrete appearance makes it an ideal solution for access and egress requirements. The ladder looks like a drainpipe when closed, but opens to a heavy-duty ladder with slip resistant rungs and a safety rail.

Jomy Safety Ladder Co.,
1728 18th St., Ste 201
Boulder, CO 80302
Phone: 800-255-2591

Jomy Safety Ladder

Circle 109 on Inquiry card

Parallel Design Partnership Limited



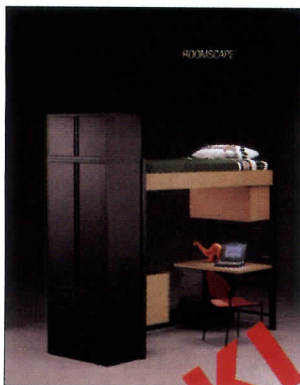
"ellen's brackets", an anodized-aluminum shelving system designed by M Ali Tayar, provides an elegant alternative to existing bracket-and-track systems. Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8-in. thick and 10-in. deep. Wall-mounted tracks permit 1 1/2-in. adjustment of wood, glass or plexiglass shelves.

For more info phone
Parallel Design
Tel: 212/989-4959
Fax: 212/989-4959.

Parallel Design

Circle 110 on Inquiry card

Furniture Flexibility



RoomScope™ Allows For Student Resident Room Furniture Flexibility.

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For more information, contact
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Green Bay, WI 54308-8100
(800) 424-2432.

KI

Circle 111 on Inquiry card

Halos Series



The Halos series is available in a variety of styles and finishes. Shown here is the HLN-329Z-DP1 which is 32" in diameter and 38" in overall length. The etched acrylic donut above the spinning provides a luminous halo around the fixture. The finish is a combination of brushed aluminum and brushed chrome. The lamping is available in either energy-saving compact fluorescent or incandescent.

The Original Cast Lighting Inc.
6120 Delmar Blvd.
St. Louis, MO 63112-1204
Tel: 314/863-1895
Fax: 314/863-3278

Original Cast Lighting

Circle 112 on Inquiry card

Graffiti Proof Panels



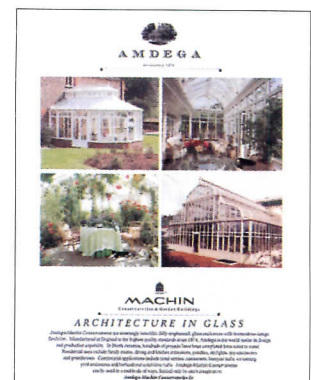
Mapes Industries manufactures a complete line of architectural panels with a graffiti proof finish of porcelain enamel. The panels are available in both porcelain on aluminum or steel in a wide variety of colors. The panel applications include window replacement, curtain wall, soffit and ceiling projects. The panels are an ideal solution for high traffic/abuse areas such as schools and institutional buildings. For a free sample to test, please

Toll free
800-228-2391 or
fax 800-737-6756

Mapes Industries, Inc.

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Conservatories



Amdega - Machin Conservatories' new 1996 brochure is now available. The Amdega line is recognized for creating the finest traditionally styled conservatories since 1874. The Machin line is reminiscent of the graceful & romantic structures of previous centuries. A wide range of designs and styles for residential and commercial applications are featured.

Call 1-800-922-0110
for more information.

Amdega-Machin Conservatories

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Manufacturers' Spotlight

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in Use Worldwide!

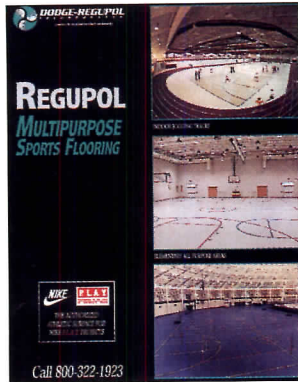


We pioneered mechanical pushbutton access controls and continue to be the world leader in this type of security. Our locks help secure The Pentagon, U.S. and Canadian embassies, McDonalds Restaurants, plus major universities, banks, and airports around the world. We offer a wide range of models and styles to fit many applications. Most anything presently secured by a key can have the security and convenience of a pushbutton lock.

ILCO UNICAN CORP.,
Simplex Access Controls Division,
2941 Indiana Ave., Winston Salem,
NC 27105 U.S.A. Tel: (910) 725-1331
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Unican/Simplex Access

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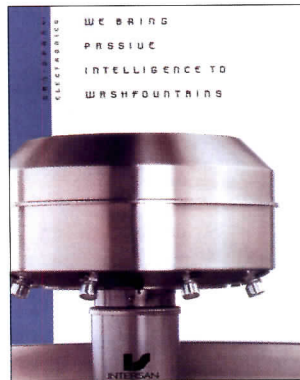
This unique dual-durometer system consists of a prefabricated rubber basemat covered by a 2 millimeter thick high quality seamless polyurethane top layer. Unlike fully poured-in-place or single ply surfaces, Regupol Multipurpose Sports Flooring guarantees uniformity in thickness and density giving the athlete a dimensionally stable platform for a safe and consistent athletic performance. The basemat durometer can be custom engineered during manufacturing to meet specified performance characteristics including those for basketball, volleyball, tennis, indoor jogging tracks, aerobics, physiotherapy and general use, including cafeterias.

Call 800-322-1923
for free information and samples.

Dodge -Regupol

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SANISPRAY



The SANISPRAY electronic washfountains are equipped with INTERSAN's battery operated passive broad detection system. This passive detection system is the ideal solution for hands-free operation of water and soap, which prevents contact with soiled and/or contaminated fixtures. The system functions on human warmth, and is unaffected by skin color, darkness, sunlight, noise or foreign objects.

Intersan

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The Soffi-Steel™
System



Grice Engineering, Inc. supplies prefabricated modular steel concealment enclosures/soffits for fire sprinkler piping, HVAC, and electrical wiring. The Commercial system provides concealment for educational facilities (schools, administration buildings, dormitories), hospitals, apartment buildings, and hotels. The Institutional system includes prisons, jails, and psychiatric wards. Both systems are custom designed to project specifications.

For additional information, contact
Grice Engineering @ 800-800-3213.

Grice Engineering

Circle 119 on Inquiry card

**Nevco Scoreboard
Company**



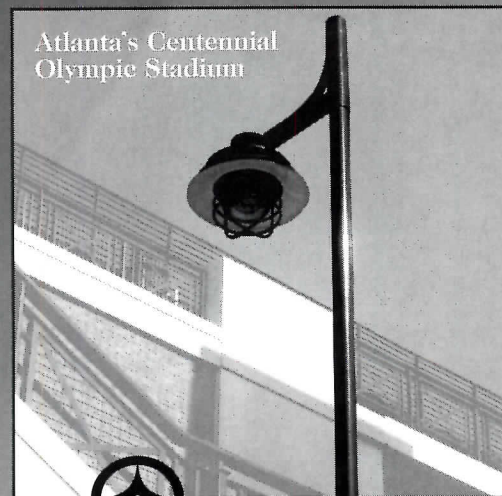
Nevco Scoreboard Company has been manufacturing scoreboards for sports since 1934. Our scoreboards are UL Listed/CSA Certified and are designed to fit your budget. We also offer a five year guarantee. Be sure to get a copy of our latest free Catalog No. 62 featuring our new scoreboard models before making your buying decision.

Phone: 800-851-4040,
Fax: (618) 664-0398.

Nevco Scoreboard Co.

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Dozen
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Luminaire
Styles**

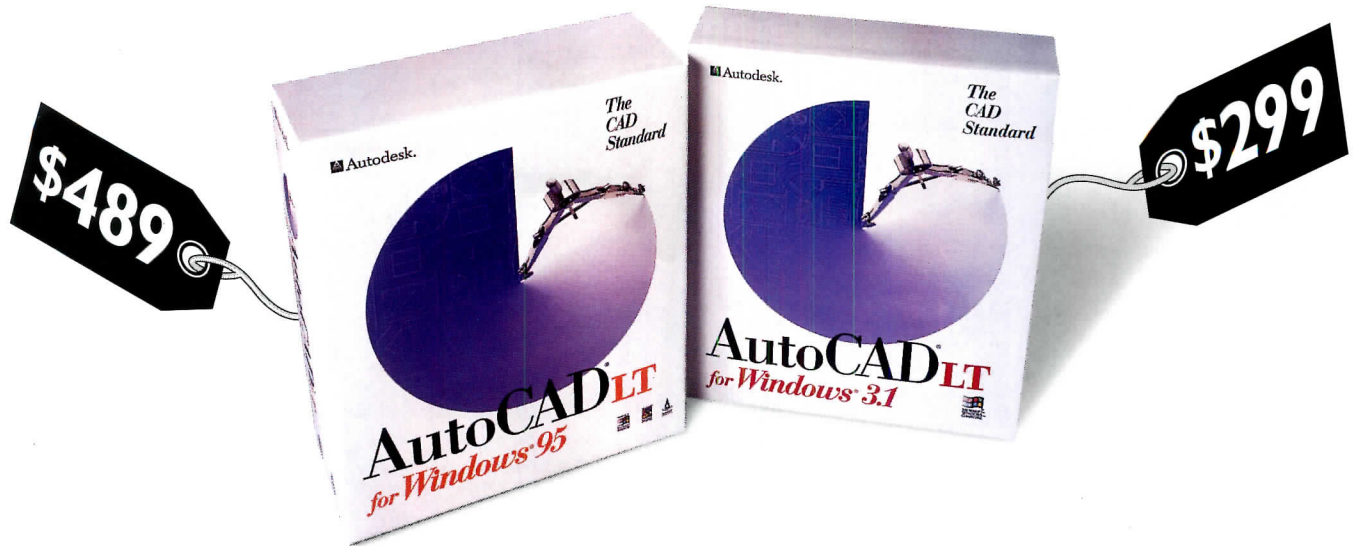
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New AutoCAD LT for Windows® 95



Provides all the benefits of Windows 95 and Office™ 95 compliance, including Windows NT™ support. Based on AutoCAD R13. Powerful CAD tools such as NURBS curves, advanced geometry and complex linetypes. Plus set-up wizards, a property painter and real-time pan and zoom make it easier than ever to use.



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True AutoCAD Compatibility



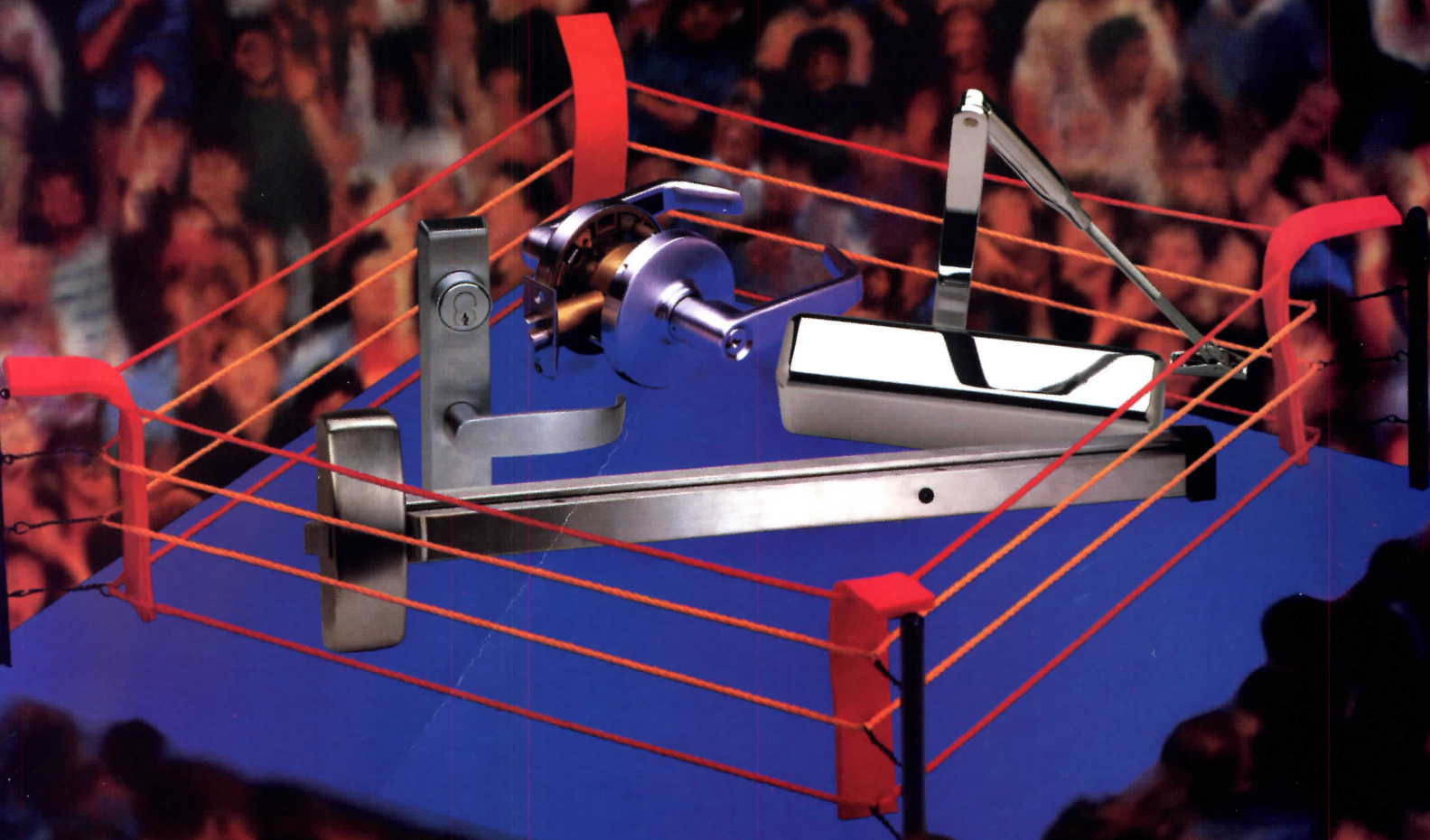
Other CAD packages claim to read and write .DWG, but in reality they can only translate it. AutoCAD LT's native .DWG file format means that you can share files without worry. No long waits as your files load, no ballooning file sizes and no translation errors.

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Circle 39 on inquiry card

WATER-MANAGED EXTERIOR FINISH SYSTEMS: THE FUTURE OF STUCCO EXTERIORS.

The future of EIFS isn't about sealing out water. It's about letting it escape if it ever penetrates a system's exterior. Water-managed type EIF and DEF Systems are designed to do just that – making them more practical to install and more reliable in performance than regular "barrier" type EIFS.

Fact is, barrier EIF Systems were designed to seal water out. And they work. That is, until water seeps behind the system through and around windows, roof flashings and other penetration points. That's when the limitations of "barrier" EIFS become evident: they can also seal water in, causing permanent damage not visible from a home's exterior.

Without sacrificing the stucco-look appeal, or insulation benefits, Water-Managed Exterior Finish Systems perform like an EIF System with one crucial difference. They give water the means to escape if it should ever penetrate the system's exterior.

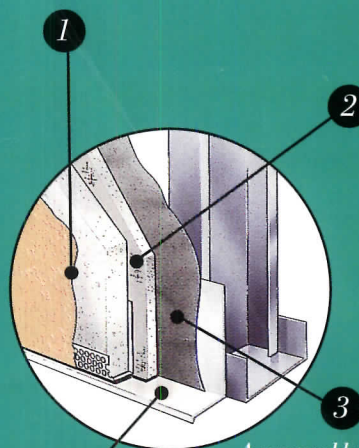
This "water in, water out" premise isn't new to the construction industry. It's the basic concept behind conventional exterior cladding such as aluminum and vinyl siding, and even the predecessor to barrier EIFS, portland cement stucco.

The fact is, windows are not waterproof. And independent tests reveal that even perfectly installed windows can eventually leak. Factor in ineffective sealants and poor detailing and it's only a matter of time before water gets in.

By incorporating water-durable substrates, vapor permeable components, flashing and drainage planes, Water-Managed EIF Systems make sure water gets out. Safely. Surely. And without damaging a home's water-sensitive framing and sheathing.

For complete details and specifications on Water-Managed Exterior Finish Systems, or a technical paper outlining the results of our exterior systems research, call 1-800-USG-4YOU, or visit <http://www.usgcorp.com>. It's the kind of information that can put your mind at ease.

Stucco-look exterior finish, with or without insulation, provides pleasing aesthetics and design versatility in a system that's practical to install and reliable in performance.



DUROCK™ cement panels are the most durable substrate in an exterior finish system. They won't trap water or vapor, delaminate, soften or deteriorate should water penetrate the system's exterior.

A permeable water barrier serves as an additional drainage plane for water that has entered the wall cavity.

Flashing provides the final component in managing water effectively. This water-exit device, central to Water-Managed EIF Systems, prevents damage to a home's water-sensitive framing and exterior sheathing.