

Men

You could search forever and never find the right one. That's where we come in.

wome



Sketch by Carlos Jimenez for his addition to Museum of Fine Arts, Houston.

Next month

Building Types Study 723 features renovation. Projects include work by architects Joe Valerio, Smith Hynchman Grylls, Centerbrook, Hardy Holzman Pfeiffer Associates, David Brody & Associates, and Steven Ehrlich.

Also in February:

In The Profession

- Indicators
- Articles on roofing, rehab of commercial structures, new CAD developments.

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Arquitectonica International Corporation, Architect

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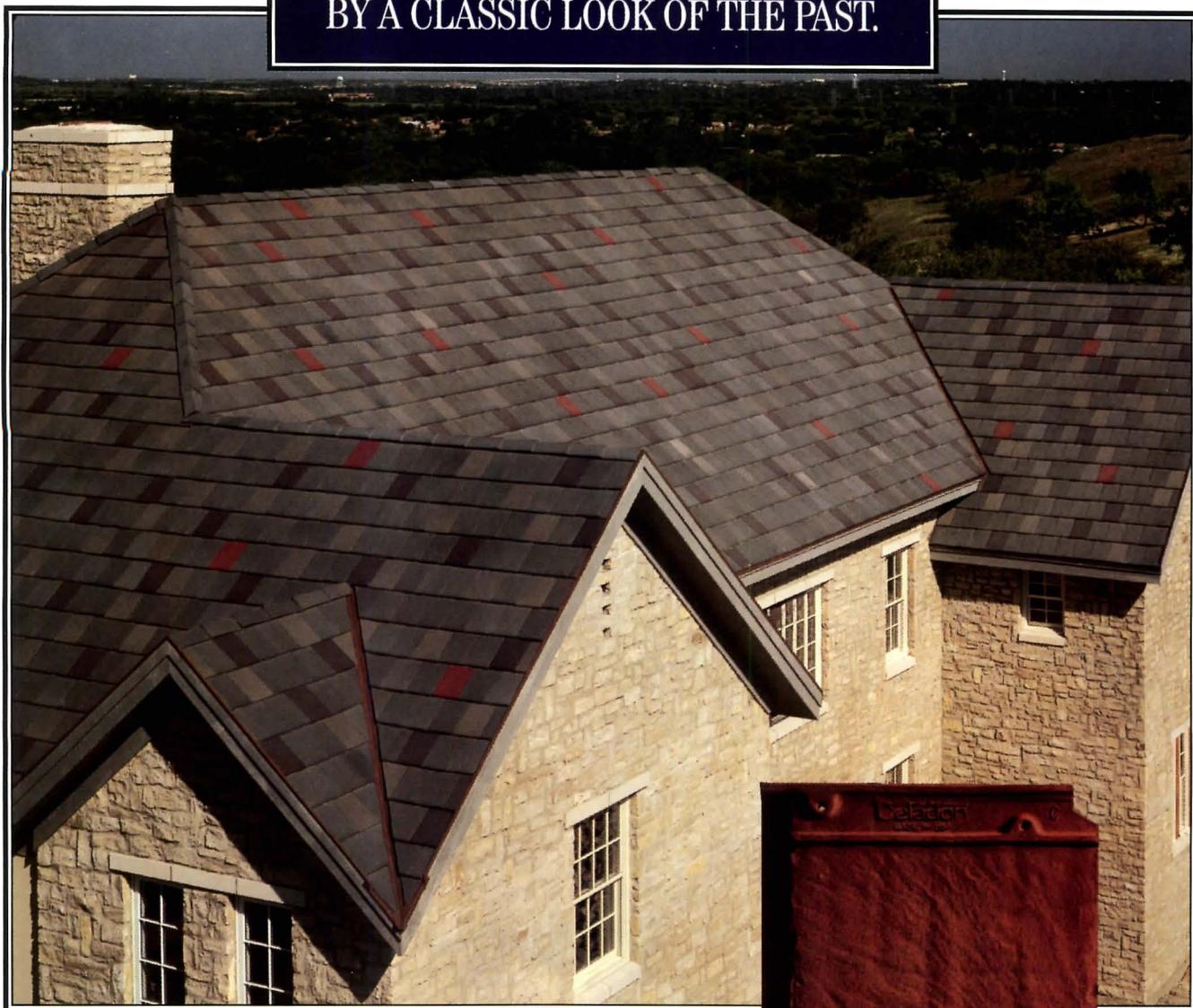
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Cover: *Bank of Luxembourg, Luxembourg;*
Arquitectonica International Corp., Architect
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Focus: HOPE Center for Advanced Technologies, Detroit, by Smith, Hynchman & Grylls Associates, Inc., architect (page 68).

Next month

Projects include work by architects Rem Koolhaas, Robert A. M. Stern, and Kallman, McKinnell & Wood. Building Types Study 724 features leisure facilities.

Also in March:

In The Profession

- Articles on design in the office, computerized practice, ceilings.

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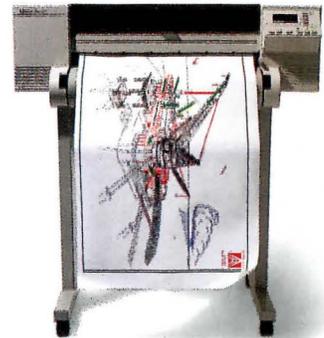
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Cover: Focus: HOPE Center for Advanced Technologies, Smith, Hynchman & Grylls Associates, Inc., Architect. ©Gary Quesada of Korab/Hedrich Blessing photo

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Canopy and Lobby Renovation Bridges Outside with In/Connector for the Capital/
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 New Concepts in Streetlighting, *by Christopher Hugh Ripman, RA*

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Cover:
 Scottsdale Mall, South Bend, Indiana
 SDI.HTI, Architect
 Craig Roeder and Associates, Lighting Designer
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A selection of custom colors, 7100 Series shown.

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Robert A. M. Stern's instant landmark on the Burbank freeway (page 72).

Next month

Record Houses includes U.S. designs by Turner Brooks, Frank Israel, Judith Sheine, Hariri and Hariri, Koning Eisenberg, Fredrick Phillips, and Dean Wolf, and two overseas houses, one in Tuscany by Ettore Sottsass, another in Switzerland by Gwathmey Siegel & Associates.

Also in April:

In The Profession

Features on small-town architectural practice; and on new approaches to kitchen and bath design.

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*Rem Koolhaas, Office for Metropolitan
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F.M. Delhay-Caille, Co-Architect*

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*Essay by Coleman Coker with
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Architects Out of the Loop?
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Finding a Needle in the On-Line Haystack
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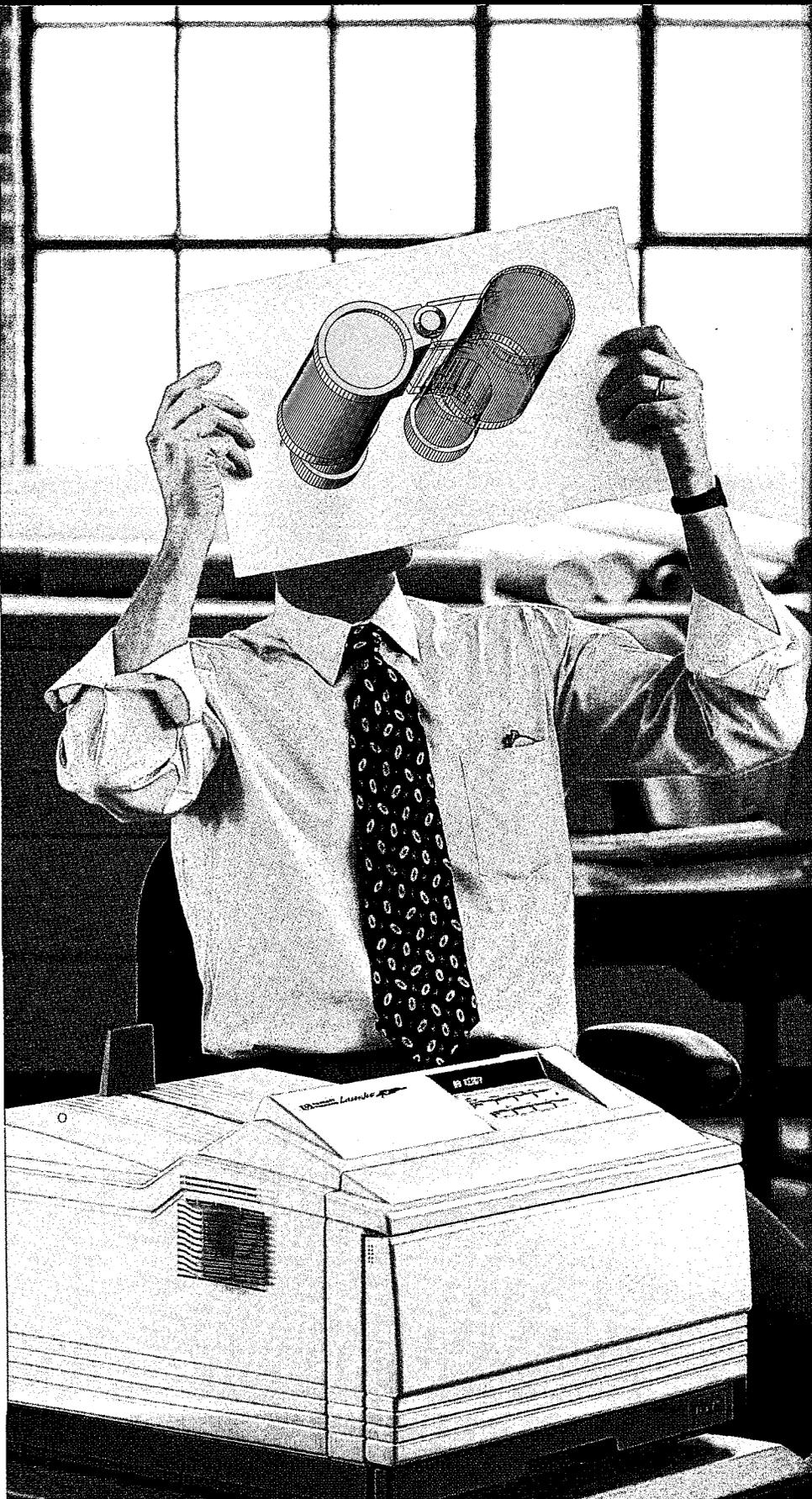
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Rem Koolhaas/Office for Metropolitan Architecture, Architect
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Frank Israel's contribution to the rebuilding of the fire-ravaged Oakland hills (page 82).

Next month

Projects include work by O.M. Ungers, Herzog & De Meuron, Renzo Piano, and Susan Maxman.

Building Types Study 726 features judiciary facilities.

Also in May

RECORD LIGHTING Supplement.

In The Profession

- ARCHITECTURAL RECORD's Second Annual Computer Delimitation awards.
- The digitizing of information and the design of research libraries.
- Reviews of new software and hardware.

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Brooks & Carey, Architect
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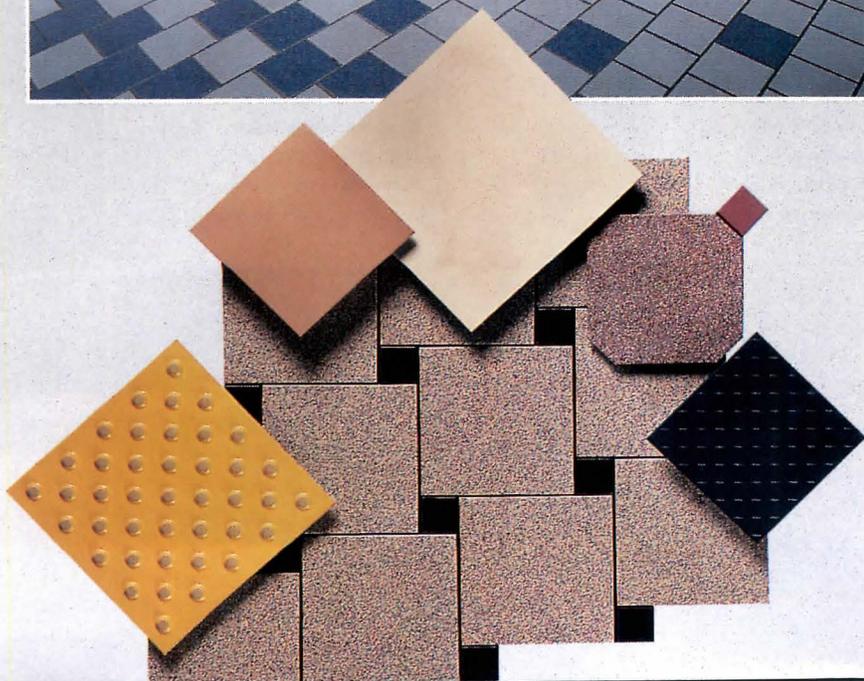
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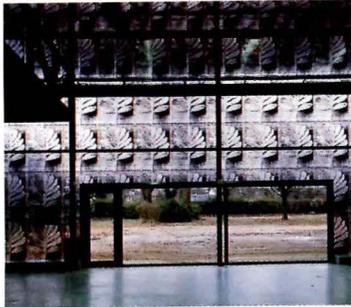


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A portfolio of work by Swiss architects Jacques Herzog and Pierre de Meuron (page 84).

Next month

Building Types Study 727 covers community facilities, and comprises a group of branch libraries, a children's center, a gymnasium and teen center, an aquarium, and a village hall. Also included is a feature on a renewed 100-year old town in Northern California.

Also in June

In The Profession

- Design and detailing of curtain walls.
- Specifications revisited.

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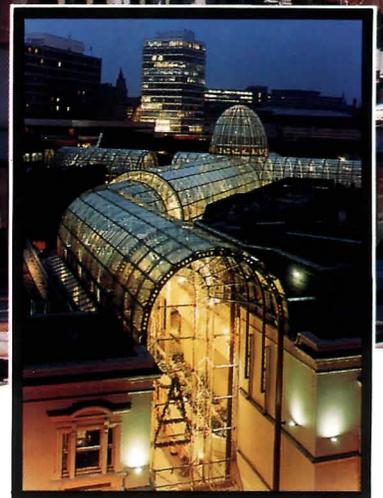
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*Cover: German Ambassador's Residence, Washington, D.C.
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Gerald Allen and Jeffrey Harbinson Architects and Lighting Designers

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Cover: Ahmanson Theater Reconfiguration, Los Angeles, California
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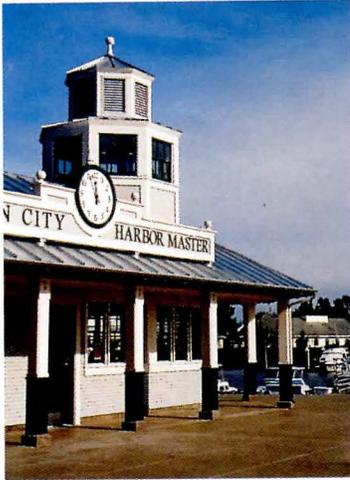
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Circle 110 on inquiry card



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Suisun City is a successful example of community-based redevelopment (page 106).

Next month

Educational facilities is the topic of Building Types Study 728. Innovative designs that meet emerging needs of a new generation of school children are presented through examples in Nevada, Ohio, New York, Massachusetts, Virginia, and California.

Also in July

RECORD's third PacRim supplement offers examples of architecture and country-by-country design and business practices in the 13 nations of the Pacific Rim, with a special focus on China.

In The Profession

- Mid-year reports on construction volume and financial outlook.
- Affirmative-action trends in the design professions.

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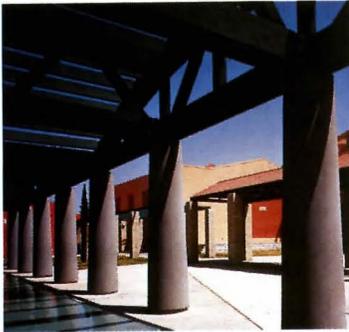
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Garfield Elementary School provides not only education, but a community focus (page 64)

Next month

Projects include work by Sir Richard Rogers & Partners, Perry Dean Rogers and Partners, Lee Skolnick Architecture + Design Partnerships and Bohlin Cywinski Jackson.

Building Types Study 729 features facilities for industry.

Also in August

RECORD LIGHTING Supplement

In The Profession

- Basics of stone selection
- Dispute Resolution: Claims are down, so where are the risks today?
- Coverage of new software and hardware at A/E/C Systems show.

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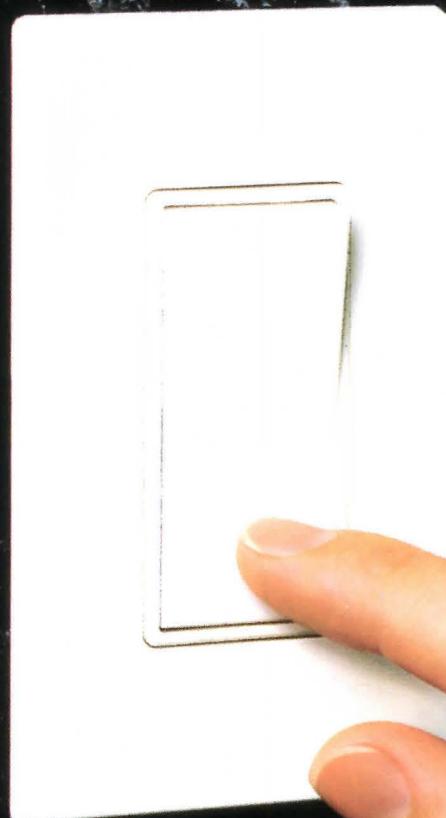
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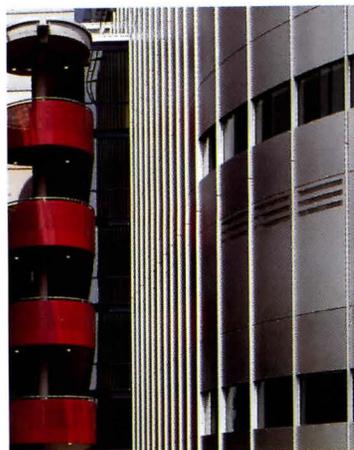


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 **LEVITON**



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Richard Rogers' new European landmark (page 70).

Next month

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Cover: *Creative Discovery Museum, Chattanooga, Tennessee*

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Las Vegas, Nevada
Freidmutter & Associates, Architect
John Levy, Lighting Designer
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Offices for Atlanta's "defender of the damned" (page 80).

Next month

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Design and technical advances in European curtain walls, including cladding and natural ventilation

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Valerio Dewalt Train Associates, Architect
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Richard Meier's Stadthaus lights up Ulm's central square (page 90).

Next month

Rock and Roll Hall of Fame and Museum, and Anderson Graduate School of Management, UCLA, both by Pei Cobb Freed & Partners. The National Corvette Museum, by Neumann/Smith and Associates. Chikatsu-Aska Museum, by Tadao Ando.

Building Types Study 731: Healthcare.

Also in November

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Cover: Deer Valley Rock Art Center; William P. Bruder, Architect
©Bill Timmerman photo

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William P. Bruder, Architect

The Intelligent Exterior

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*It Was Extravagant
Nobody Needed One
Everybody Wanted One*



1954 Philco

It was different by design.

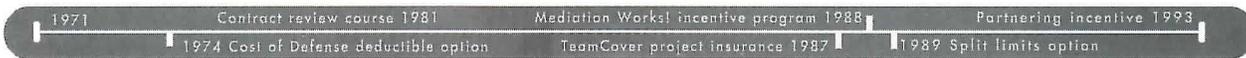
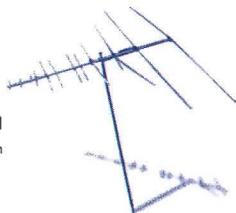
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I.M. Pei's Rock and Roll Hall of Fame and Museum (page 82).

Next month

1996 Desktop Directory of Building Product Manufacturers

Also in December

- Listing of product information in CAD format
- Annual Editorial Index

Cover: The John E. Anderson Graduate School of Management at UCLA, Pei Cobb Freed & Partners, Architect
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SUPPLEMENT ON LIGHTING INCLUDED WITH THIS ISSUE (U.S. and Canadian copies only)

It Changed Music

Music Changed The Generation

The Generation Changed The World



1963 Fender Stratocaster

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1971

Contract review course 1981

Mediation Works! incentive program 1988

Partnering incentive 1993

1974 Cost of Defense deductible option

TeamCover project insurance 1987

1989 Split limits option



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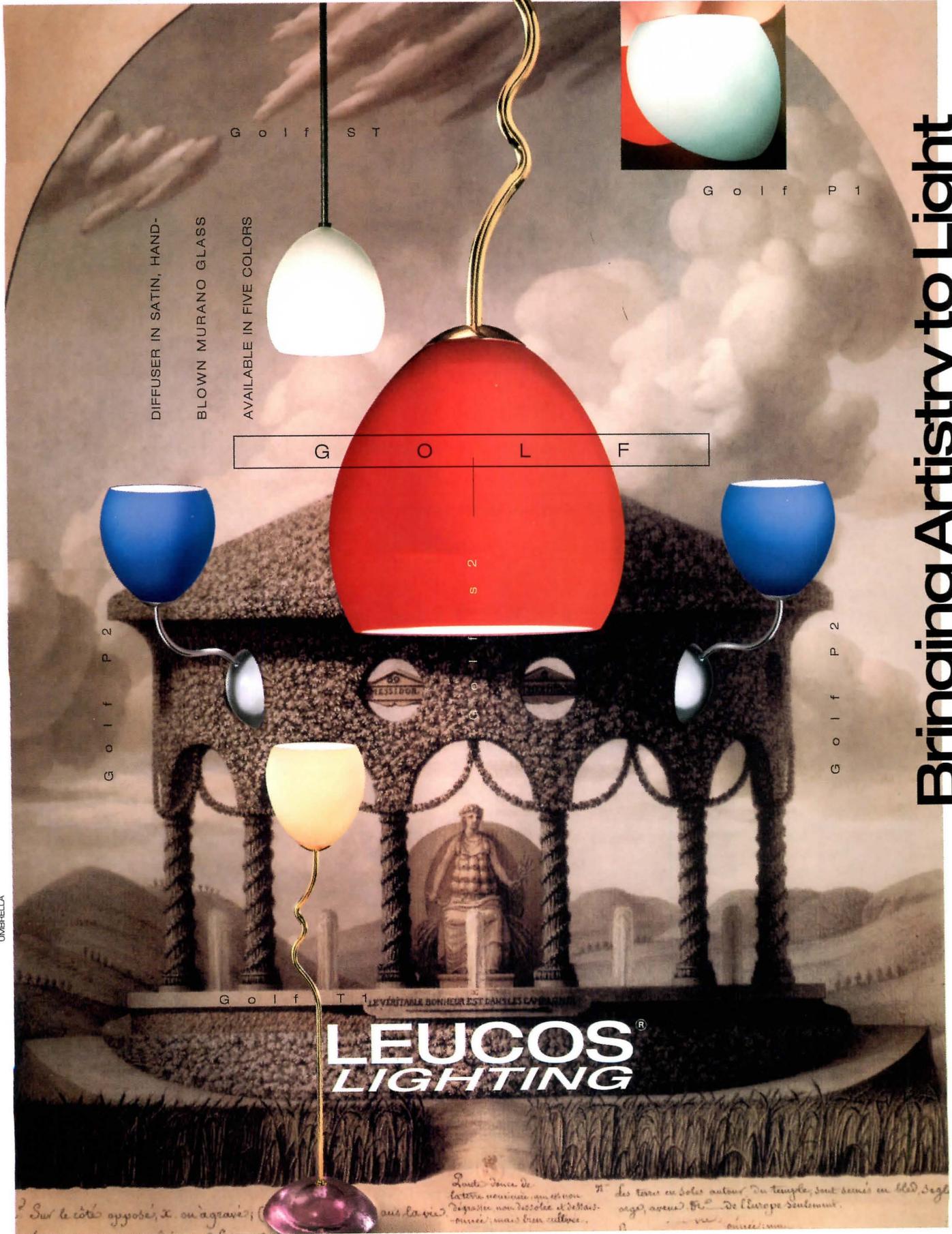
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Cover: Concourse A, Miami International Airport, Miami, Florida
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Bringing Artistry to Light

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Next month

A preview of the Disney-sponsored town of Celebration, Florida, master plan by Cooper, Robertson & Partners and Robert A.M. Stern Architects. Also, work by Aldo Rossi, Tanner Leddy Maytum Stacy, and Paul Andreu.

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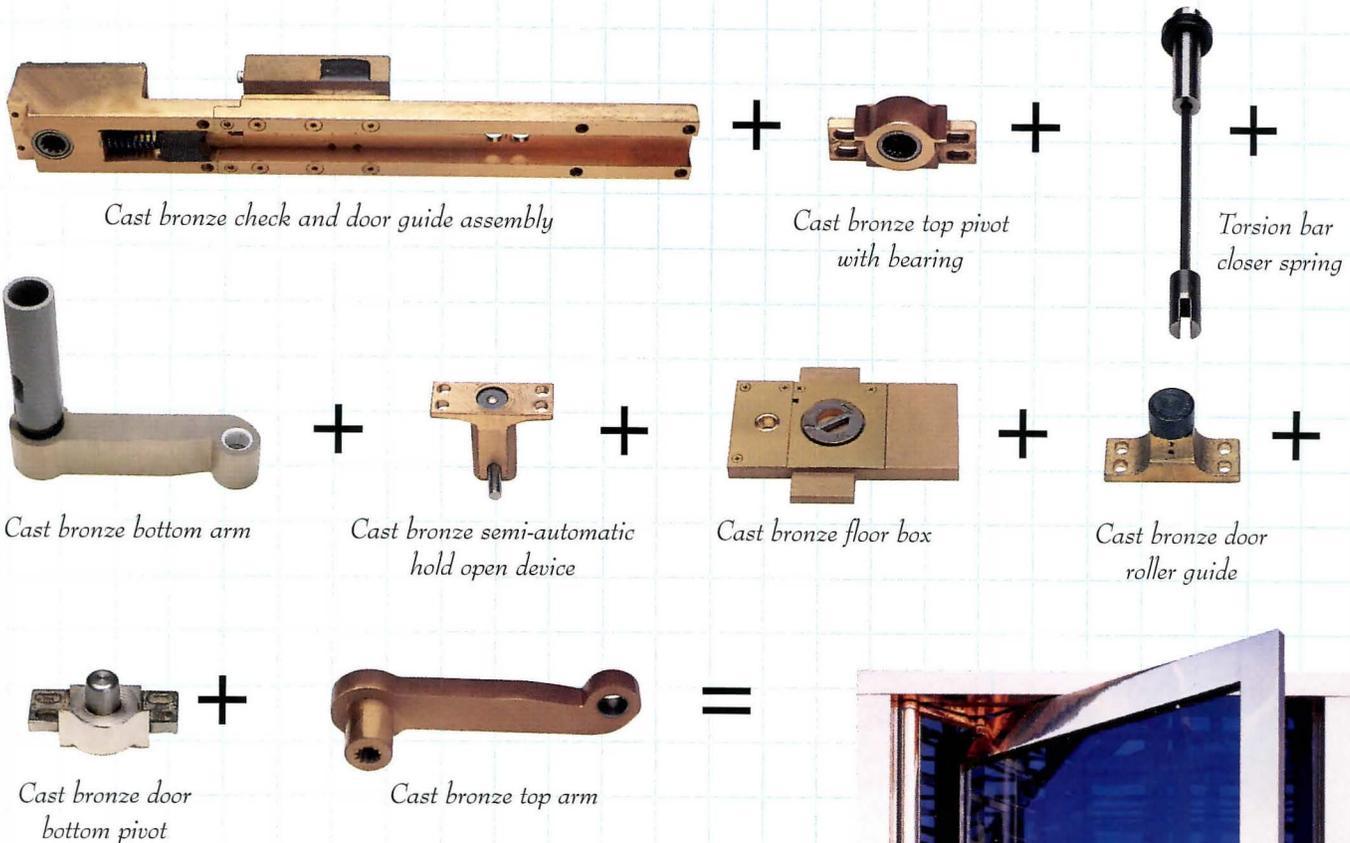
Sources of architectural building materials are listed using Sweet's Data Filing Format classification system

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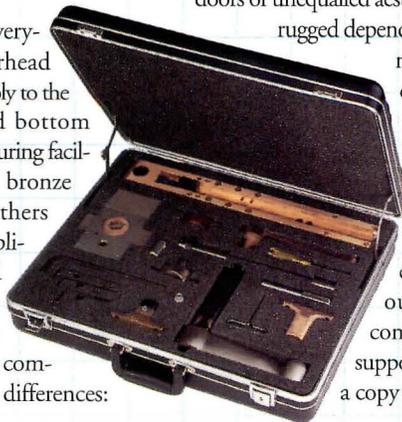
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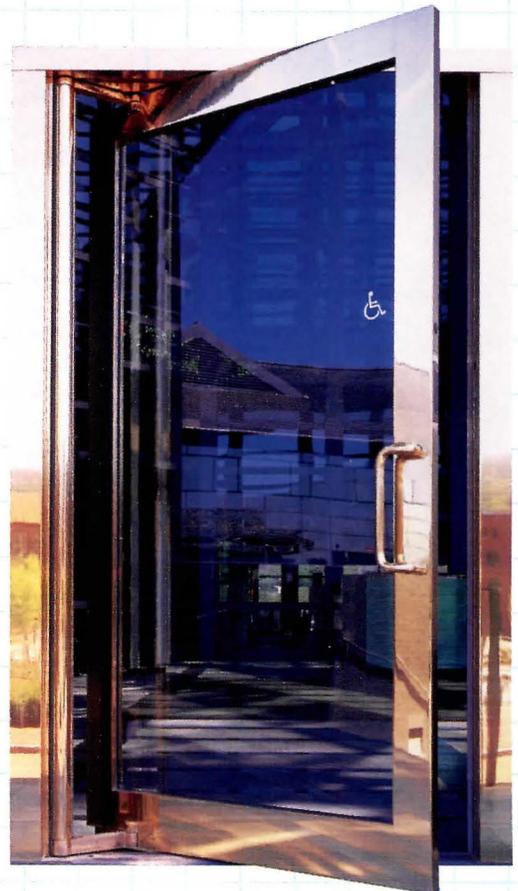


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Reader Rebuttal

I am writing, not to criticize your magazine, but to compliment you and criticize one of your letter-writers in Letters to the Editor [RECORD, November 1994, page 4]. The letter-writer, Jonathan F. P. Rose, criticizes your magazine for what you wrote about USAA Insurance Co.'s facilities in Tampa, Fla. [RECORD, July 1994, pages 56 to 61].

I take special exception to what J.F.P. Rose says, because he is sitting in Katonah, N.Y., and is pushing an effort to get "downtown." Downtown where?

Perhaps he needs to visit USAA's central office in San Antonio, Tex., where he will find out that they have built their own "downtown." I wish he would compare the life-style being lived by the folks at USAA to that of those in downtown-whenever-it-is that he is pushing. He might also take a walk around "downtown" San Antonio to check out the "culture."

Mr. Rose says that when offices are located downtown they are transit-accessible. USAA is transit-accessible. That employees living nearby can walk to work. I'd like to have him walk to work, in the San Antonio heat, even if it is downtown.

When ARCHITECTURAL RECORD shows architecture like the USAA [building], you are doing a much better job for architects than showing ugly downtown housing...
*Bobby Cadwallader
Greenwich, Conn.*

USAA 'Partnering'

Your story on our southeastern regional office [RECORD, July 1994, pages 56 to 61] points out that "a good part of the project's

success was due to a close working relationship among architect, contractor, client, and city." Missing from your article was how this "success" was actually achieved: *our emphasis on quality improvement and partnering.*

An active, project-specific Total Quality Management (TQM) and partnering process was actively embraced, implemented and championed by USAA and HCB Contractors. Our TQM efforts included training, formal partnering sessions, problem-resolution processes, statistical process control, quality assurance and recognition programs, fostered by HCB Contractors. The project received the Associated General Contractors two most prestigious awards: the Marvin M. Black Excellence in Partnering Award, recognizing the project which best exemplified the principles of total quality management and partnering; and the AGC/Motorola Build America Award, honoring the nation's most outstanding new corporate-office project built in 1993.

The success of our project exemplifies the quality and cost benefits which can be derived from continuous improvement through the implementation of TQM and Partnering in the design and construction industry.
*Ronald C. Roeder, Architect
Construction Project
Management
RO Project Manager
San Antonio*

January 27-30

National Association of Home Builders Show, Houston
Astrodome, Houston.

February 14

Networks Expo, Hynes Convention Center, Boston.

Through February 15

Exhibit of Zaha Hadid's recent projects, presented by the Architectural League. Grand Central Terminal, New York City.

Through February 26

"Inside the Large Small House: The Residential Design Legacy of William W. Wurster" looks at Bay Area architecture through 13 of his residential design projects, including Ghirardelli Square. University of California, at Berkeley. 510/643-6494.

February 19-22

National Roofing Contractors Assn. annual convention and exhibit, Ernest N. Morial Convention Center, New Orleans.

February 25-March 5

New England Home Show, World Trade Center, Boston.

February 26-28

Restoration 95 exhibition and conference, Hynes Convention Center, Boston. Call 617/933-9699 for more details.

March 15-17

WestWeek 95, Pacific Design Center, Los Angeles.

March 17-18

"Built Landscapes, Social Ideology and the Politics of Place" conference, Harvard GSD, Gund Hall. Call 617/495-2573.

March 31-April 2

Monterey Design Conference, Asilomar, Calif. This biennial retreat will explore "the magical and mystical aspects of creativity and technologies." Call Donalee Hallenbeck at 800/886-7714 for further details.

May 23-25

Lightfair International, Navy Pier, Chicago. Call 404/220-2217 for conference information.

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Many years ago, when I was in high school, I belonged to the school meteorological station. Our job was to issue accurate daily weather forecasts using nothing but a barometer, rain gauge, and thermometer in a region notorious for its fickle climate. To cover our collective posteriors, a typical forecast came out as follows: "Rain, with possible sunshine." It worked thoroughly: we were never entirely wrong, nor entirely right, but we always ended the day unscathed.

Economists as a breed do the same thing, albeit in a more sophisticated way. The great George Christie, with whom I used to lunch twice a year, and who served as chief economist for F. W. Dodge for 30 years, used to tell me, when asked how he felt about his track record, that he had done pretty well, thank you, by the simple expedient of linking his outlook to conditions and circumstances, buttressed by a vast database.

All of this encourages me to put on the table my own forecast for 1995:

1. "Green" design will continue to make slow headway, despite a great array of supporting but often contradictory resource information.
2. Architects will continue to be bashed for being unmindful of cost and time, mostly due to the sins of a few and the long time it takes to reverse a prevailing bias. In the end, but not this year, people will discover the truth, which no millions of dollars of AIA member dues poured into advertising will change, namely, that some architects can manage cost and time, some are creative and produce masterpieces, others are creative and produce junk, some are good at all of these things, and that persuading clients to hire an architect when they have to anyway by state law is like forcing people to use an umbrella when it rains. The millions could be far better spent on encouraging clients to use architects in that huge no-man's land of single-family houses, industrial and infrastructure work now in the tight grip of the developer-builder and the engineer.
3. Trash will continue to be America's greatest physical resource, since more of it is produced than any other material. It will trigger a large, profitable recycling industry whose products will penetrate into every sector of American business.
4. Project-delivery systems will proliferate to satisfy a broadening range of building scenarios, while self-interested hyping of design-build will continue to run well ahead of real advances.
5. Computers will continue to transform the practice of architecture by making possible vastly faster, simpler linkages between members of the building team, as well as between the inhouse drafting, cost estimating, spec writing, and materials-takeoff functions. Computer-illiterate employees will hit the ceiling—a glass ceiling.
6. Every client of any stature will champion environmental correctness, but must be closely watched to make sure it doesn't erect a highly energy-efficient structure in an open field, thereby requiring a new road, new utilities, and reached by cars using non-replaceable fossil fuel and spewing added toxic gas into the atmosphere.
7. Inspired by Uncle Newt, red tape will decrease. Leaner bureaucracies will include building departments which, encouraged by New York City precedent, will allow architects and engineers to obtain building permits without plan review by department examiners so long as they certify that the plans conform to codes and zoning. The downside is that tough environmental, ADA, landmark, and zoning regulations will suffer, endangering coastlines, wetlands, air quality, and historic architecture and engineering. But well-heeled landowners may find it



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Calendar continued from page 2

Competitions

- The Brick Institute of America and the AIA are calling for entries to their 1995 Brick in Architecture Awards Program, which this year includes a \$5,000 Charles Bulfinch Award. Entries are due January 16. Call 202/626-7586 or 703/620-0010 for details.
- Entries for the James Beard Design Awards for Best Restaurant Design are due January 31. Call 212/620-0182 or 212/620-7027 for rules and entry forms.
- The American Society of Architectural Perceptivists is calling for entries to its 10th annual exhibition of informal sketches and formal presentation drawings. Entries must be received by February 15. Call 617/951-1433 ext 225 or 206/622-3849 for details
- Design competition entries for the development of the Korean American Museum of Art and Cultural Center, Los Angeles, are due February 22, 1995. Fax 213/933-4766.
- National Institute for Architectural Education is accepting entries for the following student design competitions: Dinkeloo/AAR Traveling Fellowship—\$7,000 for four months of travel, of which \$3,500 is applied to two months at the American Academy in Rome. Entry deadline: March 1, 1995. Paris Prize: "Engaging the Edge"—Supplemental proposals for Manhattan's Hudson River Waterfront. Entry deadline: May 12, 1995. Universal Design Competition: "Challenged Ground"—Urban Housing and Community Outdoor Space on the Lower East Side of Manhattan. Entry deadline: June 8, 1995. Write NIAE, 30 West 22nd Street, New York, NY 10010 for entry forms and details, or call 212/924-7000; fax 212/366-5836.
- Entry forms for the Benedictus Awards for outstanding architectural projects with laminated glass are available from AIA (202/393-5247), ACSA (212/785-2324), UIA (011/331-4524-3688). Deadline: April 4, 1995. ■

Editorial continued from page 7

in their interest to maintain a tough regulatory climate.

8. Architectural style will continue to favor the ordinary over the heroic—a phenomenon first forecast on January 18, 1970 by Ada Louis Huxtable—but it is only now gaining sway, bereft of dogma and depending instead on site, local culture, program, and personal whim. Ethnicity will make little headway in seeking to impose its form on function.

9. Diversity will continue to exert great pressure on meeting, through building and by other means, the basic needs of the poor, the old, and the sick, slowed only slightly by the November elections.

10. Philip Johnson will celebrate his 89th birthday with a five-hour tell-all interview on the Larry King show; Peter Eisenman will design five crooked buildings that look straight when viewed through funny glasses; and Michael Graves will put on the market a line of toasters made out of recycled T-squares and triangles.

Happy New Year 11111001011 (binary style)! *Stephen A. Kliment*

THE ARCHITECT'S BIBLES

Did you miss the listing of essential publications and associations published in ARCHITECTURAL RECORD'S December 1994 issue? It's a concise guide to information that should be on every architect's bookshelf. Now we're offering this text in a convenient-to-file reprint. Order your personal copy today for only **\$4.75**

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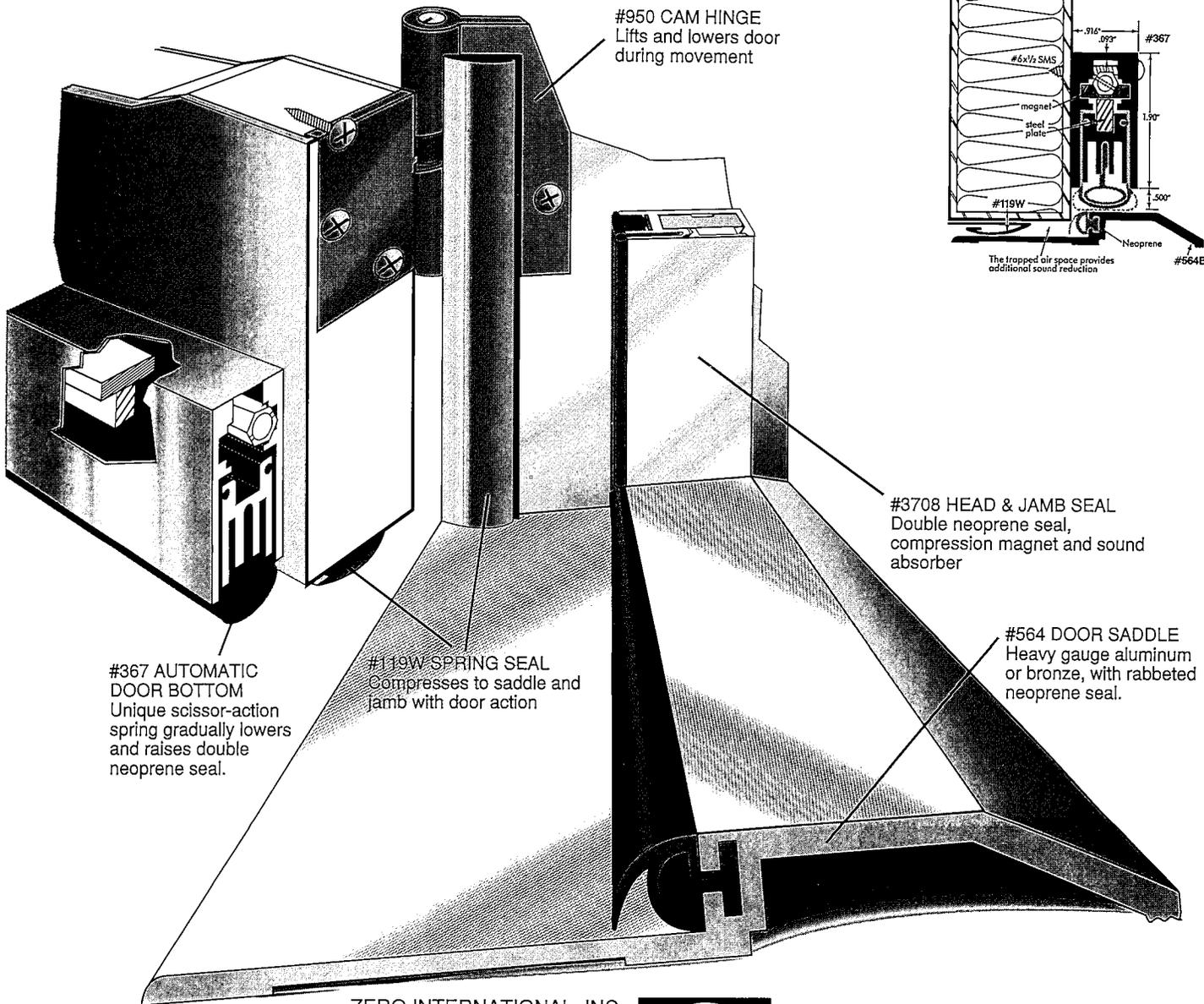
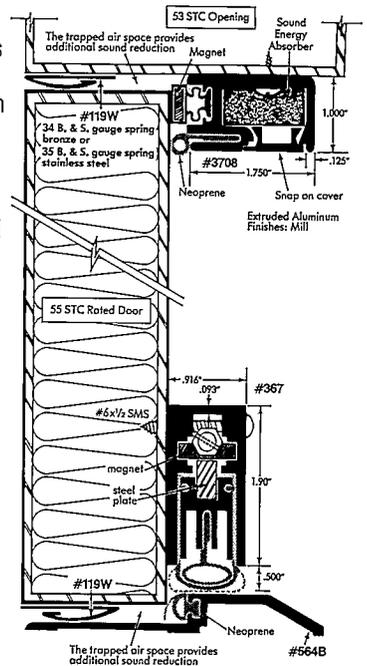
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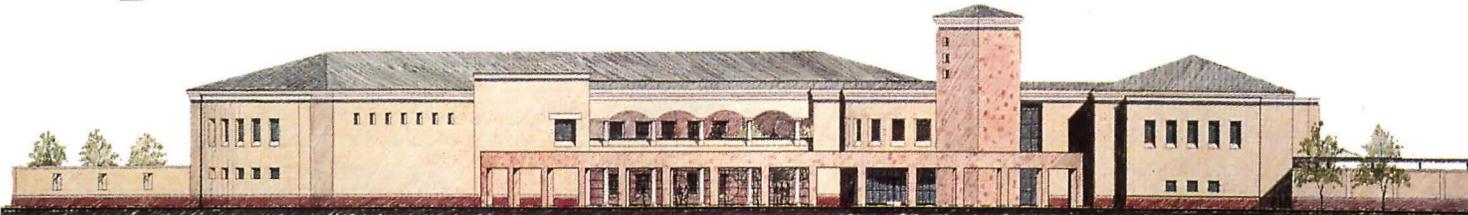


WHEN NOTHING ELSE
IS GOOD ENOUGH
FOR LONG ENOUGH

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Texas

A Bright New Face for Laredo's Finest



The site of a surplus Air Force base in Laredo, Tex., will soon be the home to another group of men and women in blue uniforms: police personnel. One half mile from a commercial strip at the edge of town, Wiginton Fawcett Hooker of Dallas and Ashley Humphries Sanchez of Laredo have designed a police station that balances contemporary

planning with a regional bent. The 61,000-sq-ft building has two main wings that are hinged together to form a V-shaped building. The wings embrace a colonnaded courtyard and the main lobby. Police, public, and staff are carefully separated: each group has its own entrance on one of three sides of the building. But the courtyard generously opens

up to the public through a series of outdoor spaces. An internal courtyard is separated by a covered arcade while a larger external courtyard is defined by a sweeping arc of freestanding columns—the “Commemorative Colonnade,” which is a memorial to fallen police officers. Construction on the \$4.6-million building begins this month. ■

Chicago

Calloway, Basie, Rawls Honored in Stone Resurrected



A retro-style cultural center will anchor the rehabilitation of a once-run-down community on the south side of Chicago. The Lou Rawls Theater—named for the Chicago entertainer who once lived in the area—will combine a theater with a library, restaurant, radio-TV station, and an adjacent roller rink. The design by Hanna Architects, Inc. is a nostalgic hybrid: a contemporary cinema/mall complex with a 1920s facade. Modeled on the Regal Theater that once stood on the site, the

building harks back to a time when the troubled neighborhood was an upscale black residential community. Among the jazz and pop-music greats who performed there were Cab Calloway, Count Basie, and Sammy Davis, Jr. Once lined with stately mansions, the street will now become a focal point of what the city hopes will be the resurrection of a long-lost neighborhood. Low-income apartments are also slated for renovation, and a shopping center will go up next door. ■

Chicago

Mies Landmark Endangered

The Mies van der Rohe-designed interior of the Arts Club in Chicago may be demolished. Preservationists have formed ad-hoc committees to block the razing (after the city's Landmarks Commission voted not to save it). So far John Buck, the developer, won't budge. Frank Gehry, James Ingo Freed, Robert Venturi, and Franz Schulze are among those architects who have signed a petition to save the area that was once called “the magnificent mile.” ■



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Steven Holl's Office Lull Followed by Commissions in Finland, Japan, and U.S.

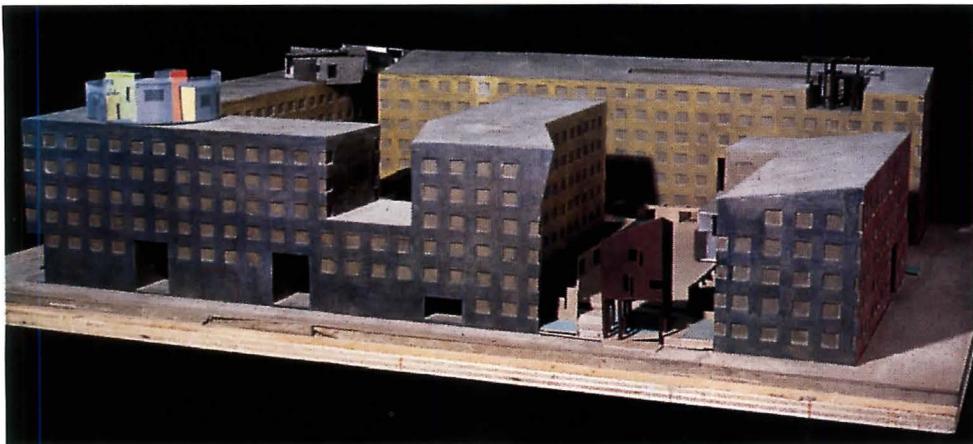
The '90s have been a time of mixed blessings for Steven Holl. The idiosyncratic New York-based architect won several major commissions—including a competition over the likes of Shinohara and Alvaro Siza for the Museum of Contemporary Art in Helsinki—only to see his designs put on hold.

This month, however, construction begins on the 190-unit Makuhari housing project in Chiba, Japan; his design for the Helsinki museum has been approved, and, at home, Holl is working on an addition to the Cranbrook Institute of Science—Eero and Eliel Saarinen's first jointly designed building.

At Makuhari, Holl was originally part of a grandiose plan to design an entire new village using world-renowned architects like Bernard Tschumi. But the project was halted when recession hit in 1992. Eventually, developers had to settle on a more humble plan: Holl's design will now stand at the center of a dozen banal housing blocks, albeit as part of a masterplan generously sprinkled with parks.

Taking his cue from Paris' Place Vendôme, Holl designed a repetitive outside frame and left the design of the apartments inside to the developers. He then focused on the project's public face. Vast openings were carved out of the perimeter block to create what the architect calls "a public/private hybrid" (photo 1). Inside, there is a community center, public viewing platform, and a tea house that hovers above a reflecting pool, with elaborate apartments seemingly carved into the roofscape. Tenants must enter the courtyard first, where they circle back and pass between private bamboo gardens before entering.

In Helsinki, Holl's awkwardly poetic architecture is also part of a broad urban vision. The Contemporary Art Museum is seen as an extension of a larger cultural belt reaching back to Aalto's Finlandia Hall. The new building is designed as two bars—one that is twisted and wrapped around the end of the other (2). The interstitial space at one end becomes a sweeping entrance and lobby (3).
Nicolai Ouroussoff



1



2



3

1995 AIA Awards Go to 13 Projects

The 13 winners of the 1995 AIA Honor Awards for Architecture are:

- The Farm, Soquel, Calif., Seidel/Holtzman, San Francisco, Architect.
- Center for the Arts Theater at Yerba Buena Gardens, San Francisco, Polshek and Partners Architects, New York.
- Berth 30 Container Terminal, Port of Oakland, Jordan Woodman Dobson, Architect/Engineer, Oakland.
- Teviot Springs Vineyard, Calistoga, Calif., William Turnbull Associates, Architect, San Francisco.
- Sunrise Place, Escondido, Calif., Davids Killory, Architect, San Diego and Studio E Architects, Associate Architect, San Diego.
- Hawaii's Plantation Village, Waipahu, Oahu, Spencer Mason Architects, Inc., Honolulu.
- Seiji Ozawa Hall at Tanglewood, Mass., William Rawn Associates, Architects, Boston.
- Advertising Agency Project, New York City, Vincent Polsinelli, Architect, New York.
- Jacobs Field, Cleveland, HOK Sports Facilities Group, Kansas City, Mo.
- Arrow International, Reading, Pa., Kallman McKinnell & Wood Architects, Boston.
- Cibolo Creek Ranch, Shafter, Tex., Ford, Powell & Carson, Inc., Architect, San Antonio.
- Westendstrasse I, Frankfurt am Main, Germany, KPF, New York City, Architect; Nagele Hofmann Tiedemann + Partner, Associate Architect, Frankfurt am Main.
- Hong Kong Stadium, HOK Sports Facilities Groups, Kansas City, Mo., Architect.

•Three students were awarded \$3,500 in cash prizes in the 1994 Student Design Competition sponsored by the Society of American Registered Architects (SARA). They were: Michael James Striegel, Georgia Institute of Technology (\$2,000); Brion M. Kean, University of Miami, (\$1,000); and Fred Patterson Mason, Jr., NJIT (\$500).

•Winners of the Portland Cement Association's Concrete Building Competition are: Antoine Predock, classroom/lab/administration building, Cal Poly; Ralph Allen & Partners, Century High School, Pomona; Simon Martin-Vegue Winkelstein Moris, Oceanside Water Pollution Control Plant, San Francisco; A. J. Diamond, Donald Schmitt & Company, Richmond Hill Central Library, Ontario, Canada; Lomax/Rock, Associate Architects, Rice Residence, Santa Monica. ■

Briefs



• Cesar Pelli (above) has won the American Institute of Architects Gold Medal. The Argentinian-born architect was cited for his ability to create commercial buildings "that speak with an urban and civilized voice." Dean of the Yale University School of Architecture from 1977 to 1984, he is best known for his design of the Museum of Modern Art expansion and the World Financial Center, both in New York City. Current projects include the new North Terminal Building at Washington International Airport.

• The Royal Academy in London has named Glasgow "UK City of Architecture and Design 1999." Glasgow won out over Edinburgh and Liverpool and is expected to reap \$160 million in generated income. The announcement, made by Richard Rogers, came after two years of heavy lobbying by the three contending cities.

• Completion of Frank Gehry's Disney Hall in Los Angeles will be delayed at least a year due to rising costs, and construction on the 2,300-seat hall has been halted. The cost of the project is estimated now at \$260 million.

• The Austin Company of Cleveland and the Duell Corporation of Los Angeles have been chosen to design and build a \$43 million "American-style" theme park in downtown Shanghai. The park—divided into Dutch, French, Swiss, and ancient Roman villages—will be a first for the People's Republic.

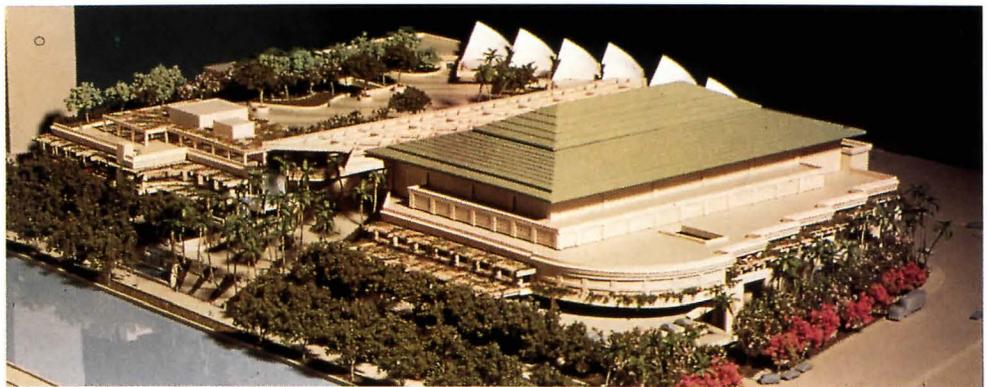
• The University of Wisconsin Milwaukee presented its Community Partnership Award to Robert Greenstreet, dean of the School of Architecture and Urban Planning, and a group of faculty and students for establishing the Inner City Studio. The studio trains city high-school students in building renovation.

• The Denver Art Museum is opening new galleries for its architecture and design collections. Five rotating galleries will house one of the largest U.S. design collections.

• Daniel Libeskind's proposal to renovate the monotonous housing blocks in East Berlin by using "ecological design intervention" (water treatment assessment, building orientation) has won him first prize in the international Landsberger Allee competition. ■

Pacific Rim

Hong Kong Harbor and Hawaii Home to Deluxe Convention Centers



Two giant Pacific Rim convention centers are in the works: a capacious SOM-designed convention center expansion perched on an artificial island in Hong Kong harbor and a sprawling, luscious extravaganza on Waikiki Beach in Honolulu. SOM's version of convention heaven in Hong Kong (top photo) sits 300 feet off-shore. A multilevel bridge links it back to the original structure, with a vast undulating roof enclosing the space. The project, including land reclamation, will cost

an estimated \$390 million. The \$200-million Waikiki convention center (bottom photo)—designed by Loschky Marquardt & Nesholm and engineered by Skilling Ward Magnusson & Barkshire—is said to be the biggest public-works project ever in Hawaii. Poised at the edge of the hotel district, the 1-million-plus-sq-ft building is a veritable indoor oasis, with cascading waterfalls, taro plant-filled ponds and towering palms. Construction on both centers begins this month. ■

New York City

Bob Stern Bats 500

This time Robert A.M. Stern's success has caught him by surprise: the response to his design for a prototypical home featured on the cover of *Life* magazine last June was so overwhelming that the designer had to whip up a set of construction documents. *Life* set up an 800 number and has sold over 500 sets of drawings at \$500 a pop. *Life* and Stern "will...consult" about other models-by-mail. ■



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Books from a Master Collaborator

Chambers for a Memory Palace, by Charles Moore and Donlyn Lyndon. Cambridge: MIT Press, 1994, 256 pages, \$30.
Water and Architecture, by Charles Moore and Jane Lidz. New York: Harry N. Abrams, 1994, 224 pages, \$60.

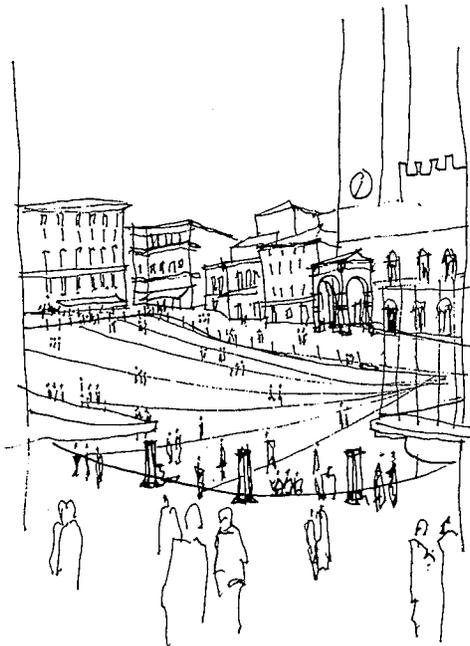
Reviewed by Nancy Levinson

One of the more extraordinary aspects of Charles Moore's career was its collaborative energy. Through four decades of peripatetic designing, teaching, and writing, Moore maintained close associations with former partners and students across the country, associations that resulted often in buildings and occasionally in books.

It is fitting, then, that his legacy, in the year since his death, includes not one but two noteworthy literary collaborations. *Chambers for a Memory Palace* reunites Moore with his longtime colleague and friend Donlyn Lyndon (their previous collaborations include the Sea Ranch condominiums of the mid-1960s and the 1974 book *The Place of Houses*). *Water in Architecture* brings together Moore's writing with the photography of Jane Lidz.

Chambers for a Memory Palace is the more substantial work. It is an engaging and heartfelt dialog between the two authors, constructed as an exchange of letters in which the architects trade observations on the design of places they love and believe to be significant and instructive. Moore and Lyndon structure their correspondence around a series of "themes" and "compositions," which they identify by architectural elements and by their actions or effects. Their themes, for instance, range from "Axes that Reach/Paths that Wander" to "Openings that Frame/Portals that Bespeak" and "Light that Plays/Shadow that Haunts/Shade that Lulls." Compositions include "Rooms that Define/Space that Leaks Up into the Light," and "Shapes that Remind/Ornament that Transmits, Transforms and Encodes."

To illustrate these themes and compositions, the architects draw on their experience as practitioners and their wide knowledge of world architecture; thus the letters contain discussions of Sea Ranch and the Beverly Hills Civic Center, but also of the Acropolis,



Of the main piazza in Siena, Italy, Lyndon writes, "The great slope of the Campo tips its users into view of each other and joins them together in a memorable communal scene."

the Alhambra, Italian hills towns, Machu Picchu, Stourhead, Japanese gardens, the Cranbrook Academy of Art, Ronchamp, and more. *Chambers* is modest in style and presentation; the authors present their ideas informally, even anecdotally, and illustrate them simply with their own free-hand sketches. But the book is as wise as it is understated, carefully balancing detailed descriptions of places with the kind of confident and provocative insights—on diverse subjects, including the difference between Christian and Islamic ideas of architectural order, the role of ornament in buildings and of openings in walls, the importance of complexity in life and art—that result from many years of designing, studying, and empathetically observing buildings and landscapes.

The correspondence conceit does become strained occasionally. It is unlikely that Charles Moore, in a letter to Donlyn Lyndon, would have felt the need to identify a famous 20th-century architect as "the Viennese Adolf Loos." Nonetheless, the letter-writing format works nicely; it gives the writing a warmth and immediacy too rarely found in books on

architecture. Indeed, what makes this book so delightfully distinct is its authors' readiness to respond to architecture emotionally and passionately, as well as intellectually, and then to trust their responses and share them with the reader. In the middle of Moore's learned and succinct discussion of the Acropolis, for instance, it is lovely to read that "[at] the point in the Propylaea where the view unfolds," the architect gets "weak in the knees."

At Princeton University in the 1950s, Moore wrote his doctoral dissertation on the topic of water and architecture. One of the chambers of his memory palace contains "Waters that Pool and Connect." *Water and Architecture* provided him yet another occasion to explore the subject he found so fascinating.

It would be easy to dismiss *Water and Architecture* as yet another lavish and lulling picture book, an expensive, large-format browse through such great but familiar places as the Trevi Fountain, the Villa d'Este, Venice, Bruges, San Simeon, Fallingwater, et al. Responses to photographs are, of course, very personal. Although technically impressive, Jane Lidz's color photographs, which make up the bulk of the book, seemed to this viewer over-pretty and predictable. Nonetheless, their presentation here is effective and intelligent, allowing us to make useful connections between, for example, Renaissance gardens and modern plazas, classical Greece and contemporary Hong Kong.

Moore's contribution of six graceful and erudite essays gives the book substance. Beginning with a history of the meaning of water in architecture, and progressing to subjects such as fountains, canals, rivers, and seas, his text combines interesting technical details (for instance, on the mechanics of fountain design) with discussions of how great (and sometimes anonymous) designers have used water's tactile and sensory qualities to make memorable places. These essays may provide inspiration as well. By the end of the book, when Moore writes that "[t]hrough the careful arrangement of water and architecture, we can create for ourselves a place in the nature surrounding us . . ." the reader may very well long to design a great water garden, and maybe a fountain or two. ■

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Drawn by Dana Little of Dover, Kohl



A village in suburban Dade County, Florida, designed by Dover, Kohl & Partners will be the first built under the county's Traditional Neighborhood Development Ordinance.

The New Urbanism: Toward an Architecture of Community, by Peter Katz. New York: McGraw-Hill, 1994, 288 pages, \$50.

Sometimes called "neo-traditional" planning, the work of Andres Duany and Elizabeth Plater-Zyberk, along with that of Peter Calthorpe, Daniel Solomon, and Elizabeth Moule and Stefanos Polyzoides shook up the architectural profession in the 1980s by daring to imitate the past. Reacting against the cul-de-sacs, strip centers, and developer "pods" of the post-World-War II suburbs, this new generation of architects and planners applied lessons culled from 19th-century American towns to places such as the town of Seaside in Florida, the Kentlands project outside Washington, D.C., and the Laguna West development south of Sacramento.

In *The New Urbanism*, Peter Katz provides an excellent overview of the ideas and work of these designers. While several books published in the last few years have covered similar terrain, this is the first to look at the full spectrum of neo-traditional planning under way in the U.S.—and not just the work of one or two of the key firms. It is also the most straightforward and best looking of all the books to date.

The book includes a series of short essays by key figures in the movement and then profiles 24 projects both built and on the boards. While the most prominent work of the new urbanists has been in the suburbs or exurbs, the book does a good job of showing some of the group's urban projects too.

Extensive use of color makes the site plans and drawings in *The New Urbanism* so much easier to read than the mostly black-and-white images found in Duany and Plater-Zyberk's own book, *Towns and Town-Making Principles*, published by Harvard's Graduate School of Design in 1991, and Calthorpe's two books—*Sustainable Communities* published by Sierra Club Books in 1991 and *The Next American Metropolis*, issued by Princeton Architectural Press in 1993. Katz's book also benefits from showing photographs of built projects like the Kentlands and Laguna West that were still on the boards when the earlier books came out.

Essays by Katz, Duany and Plater-Zyberk, Calthorpe, Moule and Polyzoides, and Todd Bressi in *The New Urbanism* do not break any ground left unturned by previous books, but together they offer a useful primer on the goals, principles, and techniques of this group of planners. But because all of the essays were written by either participants in the movement or advocates of it, the book lacks the critical distance that could have made it a truly analytical review of what the neo-traditionalists or new urbanists are doing.

A closing essay by Vincent Scully, Jr., does provide a more analytical look at the accomplishments and weaknesses of the movement, including comments on its mostly suburban focus and the dearth of affordable housing in its built projects. But Scully is the proud father figure of the movement, having taught Duany and Plater-Zyberk at Yale, and is hardly a dispassionate observer. My major problem with the essay is how similar it is to the one he wrote for Duany and Plater-Zyberk's 1991 book. *Clifford A. Pearson*

Making Better Places: Urban Design Now, edited by Richard Hayward and Sue McGlynn. London: Butterworth, 1993, 154 pages, \$45.

Reviewed by Katherine Kai-sun Chia

Assembled by Britain's Joint Centre for Urban Design (JCUD), *Urban Design Now* discusses contemporary approaches to practice and theory, looking at changing conditions in downtowns and on the urban fringe. Its all-encompassing title, however, is

misleading. Many of its contributors—professors and graduates of the JCUD—focus on issues that recall the City Beautiful and Garden City movements of the late 19th and early 20th centuries. Perhaps for Great Britain, which spawned these movements, the book represents a reasonable approach to repairing the damage recent growth has done to existing, often historic, urban areas. But in the U.S., where urban growth is often fragmented, sprawling, "stripped" or "malled," the book's focus seems less appropriate.

Urban Design Now avoids a rigorous analysis of the forces shaping cities today, other than social ones. Discussions are limited to a particular circle of names, with Kevin Lynch and Jane Jacobs being the inspiring figures. Many of the "good" examples shown in the book are of townscapes and rarely include buildings over five stories tall.

But by substituting the word "suburban" where "urban" is used, we can better appreciate the book's applications in the U.S. For example, in the context of the suburban, Ivor Samuel's essay on business and science parks becomes relevant to conditions in the U.S.

An essay by Georgia Butina Watson is the book's only historical overview of Britain's urban-design past; too bad it surfaces in the middle of the book. The essay also does a thorough job of comparing the evolution of the Canary Wharf and Broadgate projects in London to that of Boston's Central Artery. Other articles, however, read as urban-design-school primers or suggest methods whose applications are limited.

The book might be useful in the U.S. in its advocacy of participatory planning. Editor Richard Hayward presents two methods used by the JCUD to promote community discussion: "rationales," which are clarifications of a dialogue on paper; and "tissues," diagrammatic overlays of existing and envisioned conditions. These methods could help planners on both sides of the Atlantic lure more people into the process of urban change and elicit more complete visions of the places we build.

Katherine Kai-sun Chia practices with the Maya Lin Studio in New York.

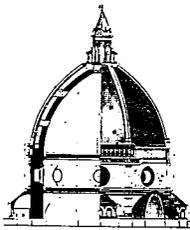
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**Rediscovering Art Deco U.S.A., A
Nationwide Tour of Architectural
Delights**, by Barbara Capitman, Michael D.
Kinerk, Dennis W. Wilhelm. New York:
Viking, 1994, 224 pages, \$40.

Reviewed by Felix Drury

Barbara Capitman was the lifeguard who sprang off Miami Beach in 1976 to rescue the city's Art Deco heritage and assist in the founding of Art Deco societies across the country. She died before her national survey of Art Deco art and architecture was complete, but two of her associates, Michael Kinerk and Dennis Wilhelm, continued collecting and sorting the amazing material which makes up this book. Most of the handsome photography is by Randy Juster.

What this book reveals is a thick, if unacknowledged, layer of brilliant design which produced an era's worth of buildings as entertainment. Forget the emergence of new structural systems, of serious social missions, of stylistic reincarnation; Art Deco tried to amuse, impress, and advertise much like the new world of Hollywood with which it grew up. Commonly thought of as superficial, American Art Deco has gone largely unrecognized. Ada Louise Huxtable is quoted in the book as saying, "Art Deco . . . is primarily the art of the skyscraper age. As such it is extraordinary that these structures have been systematically excluded from the modern architecture textbooks or relegated to footnotes."

The authors have created a chatty, wide-ranging book, somewhat like a scrapbook, revealing a mass of information about Art Deco without boiling it down over the flame of academic rigor. Who cares if all kinds of questionable material is thrown in? Better to give Art Deco imaginary roots even at the risk of drawing in Mies and Wright, than to leave it unclaimed by architectural history.

The authors have put the book together in a curious way: city by city, listed alphabetically, so the effect of regionalism is lost. They have also omitted plans and show most buildings in isolation. Text is seldom linked to illustration and much of the text is without illustration. Carping aside, just having this panorama of Art Deco U.S.A. is eye-opening and encouraging at a time when architectural design is floundering between beliefs.

Felix Drury is an architect in New Haven.

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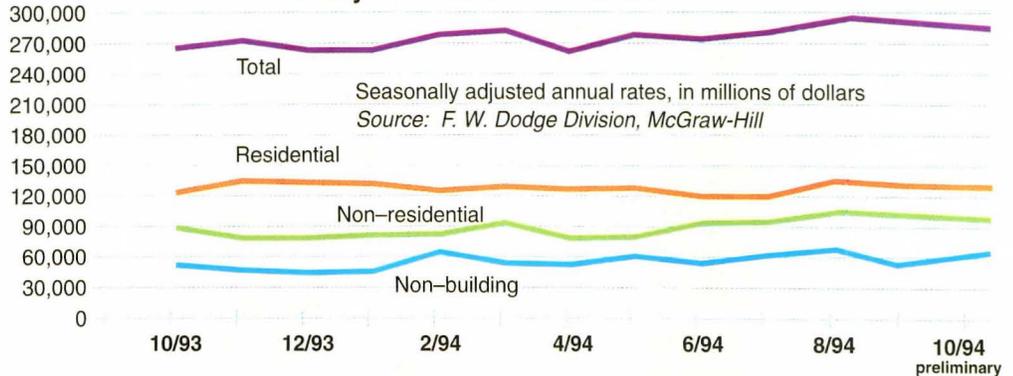
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Indicators

Housing drops; other categories slip

Reacting to rising interest rates, residential construction led the third-quarter slide in construction. The drop in single-family (below) was leavened somewhat by rising multi-family construction (bottom). Non-residential construction is slipping too—even once-robust retail weakened. Warehousing and manufacturing buildings continued to move up, as did public buildings (led by detention facilities), which reached their highest 1994 levels. Tax receipts are up, but tax-cut frenzy may limit new public building.

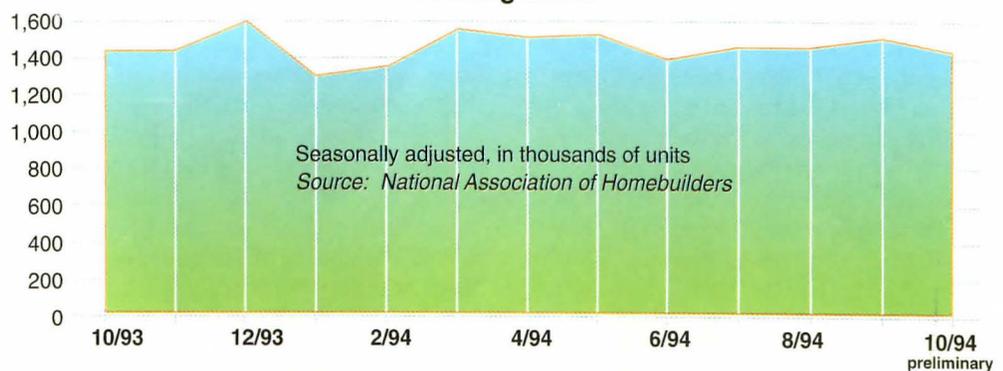
Monthly Construction Contract Value



Why the Fed is worried

Housing is supposed to be the most interest-rate-sensitive category of the economy. So why has there been only modest decline since the interest-rate boosts of May, August, and November? The Federal Reserve says it's because the economy is growing too fast, opening the door to inflation. Is there a reverse psychology at work, where builders and buyers are actually trying to lock-in lower costs before rates escalate more? If housing starts crash after the first of the year, the answer is yes. ■

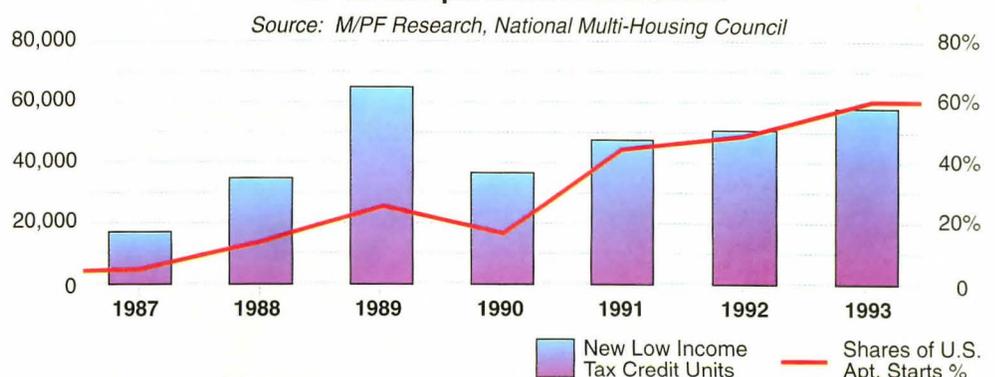
Housing Starts



Low-income tax credit is hot

In spite of the complexity of such housing deals (see page 30), the tax credit for low-income housing that Congress recently made permanent is responsible for much of the recent improvement in the moribund multi-family housing sector. Despite improvement, oversupply continues to plague the market-rate sector. But demand is strong for low-income units, marketed primarily to those earning from 30 percent to 80 percent of a metro area's median income. Developments that don't use tax credits rarely target buyers below median. ■

Tax Credit Apartment Construction



Short Takes

Budget cutters attack housing . . . As Congressional Republicans and Democrats battle to show who can cut the the budget most, housing appears a sure target. New public-housing units may be reduced to zero (from near zero); monies targeted at the "most distressed" existing public housing may also be slashed. (It's distressed because Congress neglected maintenance in the past.)
. . . and courts: A Senate report renews criticism of GSA's courthouse-building program, calling it lavish [RECORD, August

1994, pages 24-27]. Clearly much of this is posturing. (Tile floors lavish?) Architects will have to stick up for design that assures long-term quality. Are you there, AIA?

OSHA enters the IAQ fray: Though the causes of most indoor-air-quality problems remain poorly understood, OSHA is proposing rules requiring new hvac maintenance schedules, reduction of "hazardous" substances, and segregated ventilation for smoking areas. Conservatives are targeting the rules as overkill. ■

Sustaining the Environmentally Oriented Practice

By Karen Haas Smith

Can the advantages of sustainable design overcome the perception that it's difficult, hard to manage, and expensive? Can designers get paid for their time when sustainable strategies require greater effort?

Some views from the trenches: "It's a fight. Clients that really have decided to commit are few and far between," says Jim Hadley, who has been working for the past five years to develop a sustainable design practice within Wank Adams Slavin Associates, a medium-sized A/E firm based in New York. Harry Gordon, principal at the Washington, D.C., office of Burt Hill Kosar Rittelmann Associates, agrees. "If I depended on this to make a living, I'd starve." (Burt Hill, also a medium-sized A/E firm, has won awards and publicity as long ago as the early 1980s for passive-solar and daylighting projects.) "There are some environmental aspects to many of our projects but it's not a real large portion of our business—I'd say less than 50 percent," adds Gordon. "On the other hand, clients are substantially more interested than they were a few years ago, and we do get referrals because we're known in the field." Recent projects include the headquarters for National Public Radio, which sought

Karen Haas Smith, of Adelphi, Md., writes about business and technical issues in the construction industry.

"healthy building" design features consistent with a focus on energy conservation. Burt Hill is also doing a master plan for a low-environmental-impact development (i.e., no cars; no paved roads) on a South Carolina barrier island.

A unique clientele

The consensus is that sustainable design is still a thin, slowly emerging market. Some, however, see impressive gains. "The volume of work is rapidly increasing," enthuses Bill Browning of the Rocky Mountain Institute, Amory and Hunter Lovins' educational foundation, which now offers sustainable-design consulting services. Browning cites large, influential companies, such as The Gap, Banana Republic, Bank of America, Wal Mart, and Walt Disney that have committed to environmentally oriented projects. "We're swamped with work," says Paul Bierman-Lytle of New Canaan, Conn., an early convert and one of the movers behind the AIA's sustainable-design efforts. He describes his clients as mostly "very wealthy," having "an environmental philosophy, and seeking something they can really be proud of." (Example: Robert Redford.)

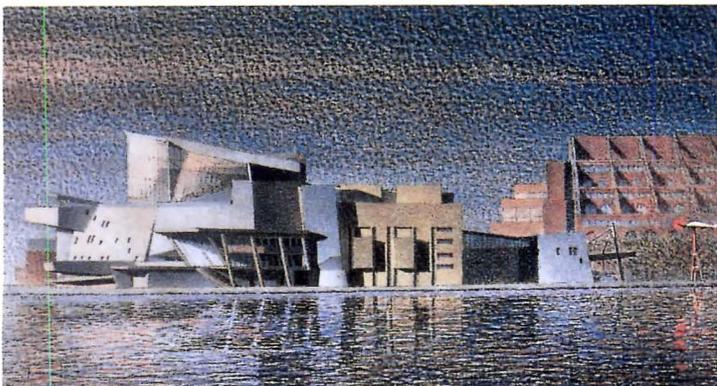
Less affluent clients are involved, too, but they tend to be corporate, institutional, government, and non-profit groups in which commitment to the environment is key to their mission. "We're a ways away from wide-

spread acceptance, but on the verge of an explosion of activity," says Carrie Collins, president of the Zebra Group, a Washington, D.C., marketing firm that specializes in firms associated with buildings and the environment. In some firms there's a split: The Croxton Collaborative, which arguably has the highest profile among "green" designers, is often approached by environmentally motivated executives. When it came to one office and production facility, however, the executives were "ambitious" while the building's manager was "the most pragmatic, bottom-line oriented person," reports Randolph Croxton. Croxton had to sell the manager on the energy-savings dollars, not environmental concerns or improved workplace quality.

Some markets are heating up

Sustainable-design advocates prefer a holistic approach that looks at everything from location and site orientation to the airborne emissions of paint and carpeting. Clients willing to look at projects this way remain unusual. Still, there are some hot spots.

• *Resorts:* "Eco-tourism is a good market for sustainable design," Hadley observes, "because the sites are far away from power, water, and sewer. They have to be done in a sustainable way, or they won't work." One of the early examples was Maho Bay Camps on St. John in the Virgin Islands, which Hadley designed in the 1970s for developer Stanley



In the design of a \$70-million addition to the New England Aquarium, exotic pumping and filtration systems offer the greatest sustainable-design opportunities. Sophisticated glazing

and daylighting will help the addition with its increasingly important environmental message (and take advantage of Boston harbor views). Boston architect Schwartz/Silver,



working with the Croxton Collaborative, found a way to re-use the hugely undersized existing building (buff-colored box in images) by connecting the addition with a ramp, extending the

existing exhibit path at the third level. Stacking two weighty tanks reduces the building footprint over the bay and lowers structural costs.

Some sustainable-design concepts are moving into the mainstream. Still, many advocates are struggling. What's the architect's role in maintaining the momentum of ecologically conscious design?

Selengut, who recently added a "Sustainable Development and Research Center" [RECORD, December 1994, page 21]. Now eco-tourism projects are one of the strongest client bases for most architects with credentials in sustainable design. "We feel a responsibility to expand the definition of 'eco-tourism,' which until now has been defined as low-impact travel to exotic locations," says Boston hotelier Tedd Saunders. Saunders, who has made his three Boston hotels models of environmental management, is a leader in encouraging profitable reduction of the hospitality industry's high level of energy and resource consumption. (Guests who don't mind using towels for more than one day save the Boston Park Plaza 29,000 gallons of fuel oil annually.)

• **Lighting Retrofits:** These are popular for many reasons: they may be relatively simple, and offer quick paybacks (often abetted by utility-company rebates). When lighting quality is also improved, user approval and productivity can skyrocket.

• **Indoor Air Quality:** "Indoor-air quality is becoming a very hot market," says Ellen Segal, president of Segal Environmental, a Washington, D.C., firm that offers energy, air quality, and sustainable-design consulting services. Productivity gains are also becoming more demonstrable even for sophisticated hvac retrofits [RECORD, May 1994 pages 34-35]. "The market was in remedial work, but

now it's proactive," claims Segal. Consultants that specialize exclusively in indoor-air quality also report that business is booming. Hillman Environmental Co. of Northern Virginia reports 30 percent of its business is IAQ-related, compared to 5 or 10 percent five years ago. Lena Gill, an architect with Healthy Buildings, Inc., of Washington, D.C., says her company has designed 2.7 million sq ft of new construction this year.

While the indoor-air-quality market is responding to widely publicized health concerns, fear of litigation is also a powerful force. Few of numerous "sick-building" lawsuits have made their way through the court system, with the notable exception of five EPA employees who won a settlement last year. Regulation, however, looms. The EPA is launching a voluntary IAQ program, and OSHA has proposed controversial regulations that could be expensive to meet (requiring special ventilation for office smoking areas, for example).

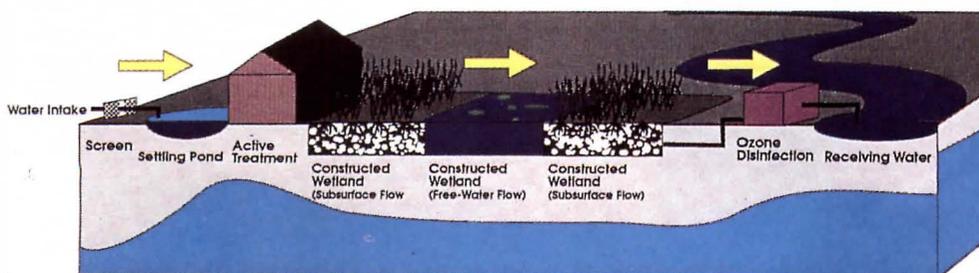
Still vaulting barriers

It's clear that some solutions are easier now. Steve Wood, of Pei Cobb Freed, feels that strategies incorporated in the firm's design for the American Association for the Advancement of Science (next page), are about to become standard developer fare. Nearly the same ideas were considered dramatic departures when first used together in

offices for the Natural Resources Defense Council [RECORD, October 1989, pages 128-133]. Other barriers remain:

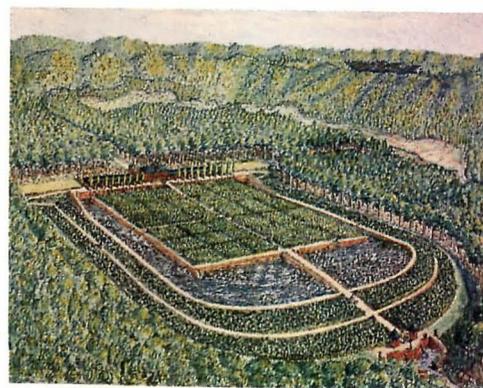
• **Allocating costs:** "Most things do cost more," says environmental architect William MacClay of Warren, Vt. "And it takes a lot of time to do enough research to actually know what you're doing." Though Amory Lovins, for one [RECORD, December 1992, page 16], has recommended that clients compensate designers for money-saving energy-efficient strategies, most architects—even those with demonstrable expertise—find few clients actually willing to pay for the extra effort required. Further, says MacClay, "there's the reluctance of clients, subcontractors, and contractors to do something they haven't done before. And problems with materials availability, and the greater lead times required for everybody. It's a pain in the neck for the architect, and more difficult for contractors and subcontractors."

• **Unproved, unavailable, and costly products.** Despite demand, the lack of credible product standards and consistent supply keep Home Depot from selling alternative products. "It's not going to happen that fast," says Mark Eisen, Home Depot's manager of environmental marketing. "We are stocking paints for chemically sensitive people in our San Diego stores, but even if we wanted to we couldn't stock them in all 350 stores nation-



Haymount, a 4,000-home new town, breaking ground in Spring and planned by Duany and Plater-Zyberk, adds an ambitious environmental overlay to the designers' continuing focus

on reducing auto trips. Key natural features were identified for preservation (including a bald-eagle nest). Design standards include porous pavements and built-in recycling.



A "constructed wetland" is part of Haymount's sewage treatment system (above). While "polishing" effluent, it offers habitat for wildlife and an educational opportunity.

"We have to lead clients to do what they wouldn't otherwise do," says Susan Maxman, former AIA president. "But this is just an extension of the contextual, client-centered approach I've always taken."

wide. The manufacturer couldn't possibly fill the demand."

At least one environmental consultant claims to be able to deliver sustainable buildings within standard price and schedule limits. "I have a background of 18 years as a developer of high-rise office and mixed-use facilities," Ellen Segal says. "I know what's viable. We have invested the time in getting a database on pricing and delivery times," especially on low-emissions paint and carpet, which she sees as sellable to developers. "You can't waste time with cottage industries."

• *Lack of client commitment.* "We had a potential client who wanted a green design for a supermarket, but they wanted to do it on the cheap," Hadley says. "They wanted to change a few specs and add some recycled materials and call it green. They didn't want to look at their own recycling. They didn't want to take a look at their energy systems. It was just a wallpaper [job]." Hal Levin, an IAQ consultant who publishes the respected *Indoor Air Bulletin*, says, "People grab at simple solutions." Observes Lena Gill, "Most people just don't understand what we do. It's a question of education."

• *Lack of architect commitment:* Ellen Segal explains: "Frankly, we haven't seen a lot of leadership on the part of architects. A few are on the cutting edge, but most are not as

knowledgeable as they should be. We'd like to see architects do a lot more. Brokers and clients are receptive, but their education is the responsibility of the architect." Gill doesn't think sustainable design will become part of every architect's palette. Architects who have done the homework and become expert will be doing much of the sustainable design work—as consultants to other firms. "It's part of the general trend toward specialization," she suggests.

How to be part of the solution

Over 1,600 architects are members of AIA's Committee on the Environment. Still, when the City of New York advertised recently for a designer with a background in sustainable design, many were interested but few were qualified. Bill Browning suggests that architects can educate themselves at minimal cost by becoming conversant with one or two issues at a time, applying them to each project that comes in. As the firm learns more, it can use the experience in a more integrated way as a normal part of practice.

Many architects say convincing clients to incorporate some environmental features is just another part of what they do. "Most people don't hire architects because they want design," claims Bill Reed, a Maryland architect who markets to "sustainable" clients, but pays the bills with conventional projects. "They have to hire us to get their

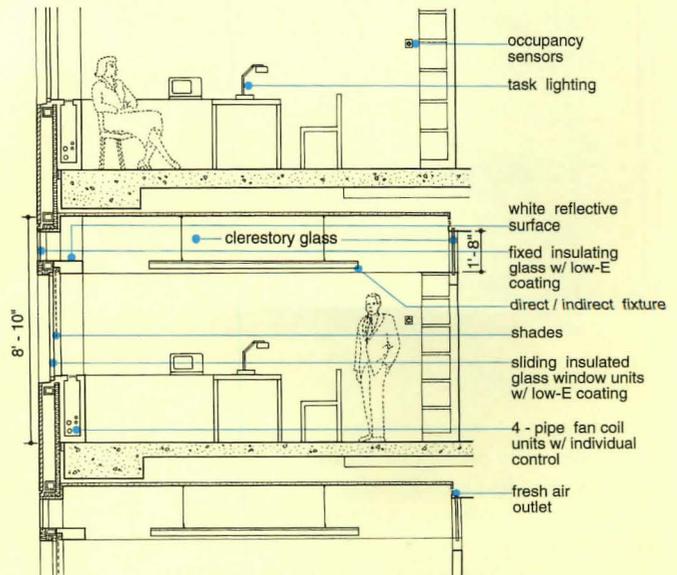
plans approved. So we see how much design we can sneak into a project. The same thing goes for the green stuff—it's an additional feature. We show them that it makes sense."

"We have to lead clients to do what they wouldn't otherwise do," agrees Susan Maxman. A former AIA president, she has had several successful green projects that are drawing more commissions. Maxman says she uses consultants heavily for the technical aspects of sustainable design. "We're not the technocrats. But I have always had a contextual, client-centered approach, and this is just an extension of that."

Where barriers are dropping

Hal Levin observes, "Some easy and effective things are being incorporated increasingly because people are coming to realize [such strategies] are not weird, and are not going to put a strain on budget and time. Commissioning is an example." By this Levin means a structured program (increasingly, a discrete phase of the project) to ensure that complex systems are installed, operated, and adjusted to meet design criteria. Failure to properly commission buildings has been implicated in many "sick" buildings. Commissioning is also key to realizing benefits from energy-conservation and daylighting strategies.

Manufacturers of environmentally responsible building products are working hard to



break out of the "premium price" and "cottage industry" molds. T8 fluorescent tubes and electronic ballasts are no longer exotic. Now the Forest Partnership of Burlington, Vt., for example, says it will market wood products drawn from sustainably managed forests through "major distributors" at the same prices as conventional products, beginning in 1995.

Sustainable design may get a boost as research has begun to recognize that some strategies have significant productivity paybacks (right). Indeed, Joseph Romm, a former research scholar at the Rocky Mountain Institute, says his book on the subject "couldn't have been written two years ago." (It's called *Lean and Clean Management: How to Boost Profits and Productivity*, and was just published by Kodansha International.) "There are enough companies to document the [efficiency and productivity] phenomenon," he says, "but most companies don't know about it, and aren't doing it. It is just emerging—like the quality movement was in the early 1980s."

And there aren't always easy answers. Though developer John Clark sought to move the neo-traditional development ethos to total sustainability (page 25), the Chesapeake Bay Foundation, a local environmental group sees the project (separated from existing towns) as opening a new avenue to sprawl. ■

In a new headquarters for the American Association for the Advancement of Science (opposite), architect Pei Cobb Freed, (with the Croxton Collaborative), is negotiating sustainable strategies within mid-range commercial-development cost constraints. The design, for example, notches the building mass to bring light deeper into floors, which is paid for by innovative use of daylighting (left—made tougher by low floor-to-floor heights in height-limited Washington, D.C.) The four-pipe, individually controlled hvac system is driven by a gas-absorption chiller—unusual in tenanted buildings.

The Productivity Payoff of Energy Conservation

Companies derive an unexpected dividend from energy-efficiency upgrades, according to a report, "Greening the Building and the Bottom Line": greater worker comfort and improved productivity. These dollar savings typically dwarf those of efficiency alone. The case studies were analyzed by Joseph J. Romm of the Department of Energy, and William D. Browning, of the Rocky Mountain Institute in Snowmass, Colo. The projects for the Reno post office, Boeing Company, Hyde Tools, and Pennsylvania Power & Light achieved their impressive improvements solely through lighting retrofits, which had the initial intention only of saving energy. Key to productivity was that lighting *quality* was upgraded at the same time as efficiency. Lockheed Building 157 was highly publicized

on its 1983 completion as a major daylighting effort, using a wide atrium and high windows (Leo J. Daly, architect/engineer). While daylighting techniques added \$2 million to the building's \$50-million cost, they paid back in just over four years. More impressively, officials credit the improved absenteeism and productivity for landing a \$1.5 billion contract. Both West Bend and NMB used energy-efficient lighting, high-efficiency windows, improved insulation, and a more efficient hvac system to achieve huge savings. Individually adjustable desk-based ventilation contributed notably to productivity and is highly prized by West Bend workers. NMB's environmental image has boosted business. Wal-Mart daylit only a portion of its "Eco-Mart" prototype, but found significant sales gains in that area. Contact RMI for the report (\$5): 303/927-3851, J. S. R.

Productivity and Energy Efficiency

Projects	Strategies	Energy Payback	Productivity Impact
Post Office, Reno, Nev.	Energy saving lighting retrofit	6 years; \$50,000/yr.	Mail sorting productivity up 6%; lowest error rate in Western Region
Boeing Co. aircraft assembly plant, Renton, Wash.	Fluorescent to metal-halide lighting retrofit	2 years; Reduced electricity use up to 90%	Earlier detection of imperfections (up to 20% in one area).
Hyde Tool blade fabrication area, Mass.	Conversion of fluorescent lighting to metal halide and high-pressure sodium	1 year	Increased detection of imperfections estimated to be worth \$25,000
Pennsylvania Power & Light engineering drafting area	Upgrade fluorescent lighting with high-efficiency lamps, ballasts, and fixtures	4.1 years; 73% drop in energy use	Drawing output improved 12%; absenteeism down 25%
Lockheed Building 157 Sunnyvale, Calif.	Daylighting	4 years; almost \$500,000/yr.	Absenteeism dropped 15%; productivity improved 15%
West Bend Mutual Insurance new office building, West Bend, Wis.	Efficient lighting, upgraded shell and mechanical systems, task-based air conditioning	0 (covered by utility rebates); 40% energy savings	Up to 16% improvement. With up to 6% attributable to task air conditioning
Wal-Mart store, Lawrence, Kansas	Partial daylighting and various "green" strategies	Commissioning problems cause reduced savings	Sales per square foot "significantly" higher in daylight portion
NMB Bank, new HQ, Amsterdam	Daylighting, simple passive solar, and heat recovery	3 months	15% lower absenteeism; "progressive" image

Architectural Concrete: A Hands-On Approach Pays

© John Sutton.

Architectural concrete goes against the grain of current construction practice. Instead of being made in a shop or factory, it is formed, placed—sometimes even mixed—at the building site. This is a crucial difference, calling for a unique approach in detailing and specification.

Poured-in-place architectural concrete has at least one face that is intentionally exposed-to-view as a finished surface. Since its heyday in the '60s, the consensus about concrete's durability and suitability has changed. Sam Harris, a partner at the Philadelphia firm Kieran Timberlake & Harris, sees concrete as "inherently less durable than most common stone." For building structures, he says, "We won't use concrete horizontally without protecting it with metal or other coverage." Indeed, exterior concrete, when it is used, is increasingly precast—assuring more-consistent shop quality control and easing assembly logistics. Michael Flynn, a partner at Pei Cobb Freed, a firm known for its brilliant use of concrete, says that architectural concrete is now only designed for interiors.

Today, Flynn says, "We're interested in improving conventional concrete with an eye to making it a positive player in the architecture," but not, he says, trying to attain the level of refinement represented by the firm's East Wing of the National Gallery in Washington.

Indeed, the consensus of experienced hands is that the designer should avoid preconceptions about surface quality, and work with what contractors are capable of. "Realistically, you don't get to reject concrete," explains Sam Harris. "You can remove a panel of stone or a section of brick that's unacceptable and replace it without the repair being visible. Concrete, you pretty much have to learn to live with what you get." Among the architect's duties is to define what visual qualities are acceptable and successfully communicate that through the contract documents.

What should concrete look like?

To expect poured-in-place concrete to achieve the consistent appearance of, say, limestone is unrealistic. The surface will more likely be acceptable if the designer takes advantage of



Cast-in-place construction met strict needs at the University of California, Davis, Quad District Parking Structure (HGHB Architects and Forell/Elsesser, engineer). 36-in.-

deep post-tensioned beams span 60 ft, keeping floor-to-floor at 10 ft. Inverted T-shaped shear walls and concrete ductile moment frames resist seismic forces.

some natural variation and inconsistency, and keeps in mind the distance at which the surface is viewed. "The industry is trying to say, stand 20 ft away, and evaluate the appearance," reports Paul Brosnahan, program director with AIA Mastersystems, in Washington. (He wrote *MasterSpec's* concrete sections.) "I don't know if architects are ready to embrace that."

The biggest enemy of surface quality, says Sam Harris, is "air bubbles [sometimes called bugholes] and honeycomb." Cracking also affects the surface quality, and, depending on severity, can also compromise long-term durability. Cracking can be minimized or controlled by proper mix, reinforcement, and panel design.

Proper vibration should eliminate voids. It's easier to obtain bubble-free surfaces, Harris says, by using smooth-surface forms. Some surface defects are readily disguised by board-forms or other patterned surfaces. Unsightly "cold joints" (where concrete that has partly cured forms a crack at the juncture of a later pour) can often be minimized by using panel sizes coordinated to the amount of concrete that can realistically be poured at once. Evenness in color is affected by how consistently mixes are made, by the conditions of the pour, and by the timing of form stripping.

Rather than try and specify an absolute quality for the finished surface, Michael Flynn tries to determine what mix will create the best quality given the contractor's skill level. He specifies that three mockup panels be made using actual structural walls (but ones that won't eventually be considered "architectural" surfaces). From these, Flynn can choose the best mix, and define an acceptable quality of workmanship that must be duplicated throughout the project. Some architects go farther. Reginald Hough, a prominent concrete consultant who has worked extensively with Pei Cobb Freed and others, recommends that architects make their own samples to convey the desired surface quality. These then become the standard bidders must meet. Harris proposes certification of vibration-machine operators, and requires that only certified persons do the work (much as engineers certify structural-steel welders).

The mix

The needs of structural integrity take precedence, but some mix elements affect the finished surface.

- *Portland cement:* White cement gives more color possibilities, says Brosnahan, and greys often are inconsistent. More important is precise matching of cement and colorants from batch to batch.
- *Fly ashes:* These are used to replace some

Achieving a desired finish for concrete that is exposed-to-view requires special attention to mix, formwork, and placement technique.

of the Portland cement in the mix, and not all of them are stable in color, says Brosnahan.

- **Pigments:** Quality has improved; they're worth considering.
- **Superplasticizers:** Reducing the amount of water needed, these are recommended to achieve a consistent surface. Additives that retard curing are often useful in avoiding unplanned cold joints, says Brosnahan. Superplasticizers used to accelerate curing (usually to beat cold weather) can affect appearance if the timing of form-stripping is not coordinated.
- **Air entrainment:** Whether done mechanically or through additives, entrainment is required where concrete is exposed to freeze/thaw cycles.

The formwork

"Draw it, and analyze whether it can be built well," advises Reginald Hough. He even recommends that architects participate in the design of the formwork. Superior concrete is best done in a close working relationship with the contractor, which may not be possible except in a negotiated-contract format where the concrete subcontractor can be involved early.

Architects should also design panels that are sized for realistic pours. Design pour joints so they'll be disguised. (Other joints to consider: reveals placed to "design" where cracking can occur; expansion joints.) Harris recommends pour lengths not to exceed 24 to 30 ft., and says that a typical floor height is a vertical dimension that is realistic to pour at once. The architect may call out the type of form ties and their location, and specify the way form-tie holes should be filled. The pattern of form-tie holes should not take precedence over locations that assure form tightness. Poor alignment of adjacent concrete panels usually occurs because formwork was not tight enough.

Designing panels that permit form re-use is critical to economy and schedule. Standard forms come in a variety of textures and are economical. On the other hand, a real board form (versus a "board-form" pattern in a stock form) will absorb moisture in varying ways, "which creates a patina," says Hough. The construction of forms, he continues, has a lot to do with how crisply corners, joints,

and reveals will turn out. "You shouldn't draw 1/4-in. reveals; you'll more likely get 3/4-in. or 1-in. reveals," he says. Form materials should be consistent, says Harris. "If you have a nice smooth metal form and use a ripped pine strip for a chamfer, you'll get a fuzzy, dull chamfer edge."

The process

Because it is so important to establish acceptable quality before pouring begins, a number of steps must be put in place, their elaborateness determined by the precision needed in the finished product.

- **Preconstruction meeting:** Hough suggests this be done "after the contractor has done basic planning, but before he commits to the formwork system. It should be after the submittal of concrete materials, but 30 days before starting the mockup." At this point all the involved parties can review and discuss difficult areas and understand the specified level of quality.
- **Mockups:** These are critical for securing agreement on overall appearance and technique. They should permit evaluation of color and surface consistency, formwork technique, and the contractor's ability to successfully avoid undervibration (which causes honeycombing), and overvibration (which causes the aggregate and the paste to separate).
- **Reinforcing:** Inadequate cover of reinforcing is commonly at fault when concrete spalls. Experts recommend a depth of 2-in. or more. Harris uses only epoxy-coated bars. Tie wires should not protrude beyond rebars (they'll rust, spalling the surface).
- **Curing:** Brosnahan notes that curing "unformed" surfaces (typically tops of horizontal planes), may proceed differently than formed surfaces, which can result in inconsistencies. Architects should also be wary of curing compounds, which can change the surface appearance, though usually only for a period of months.
- **Repairs:** Some architects regard repaired surfaces as worse than leaving defects alone. Brosnahan says the mockup can be used to choose an acceptable repair technique.
- **Finish treatments:** An acid wash or a light sandblast impart a desired surface quality to concrete, but both are constrained by environmental and safety issues. Paint will cover color defects, but will exaggerate surface irregularities. *James S. Russell*

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Kieran Timberlake & Harris used smooth forms for concrete at the University Center at East Stroudsburg University (RECORD, October 1993, pages 110-111). Granite coping stones protect horizontal surfaces exposed to weather.

Further Information

The following are available from:
American Concrete Institute
P.O. Box 19150
22400 W. Seven Mile Road
Detroit, MI 48210-0150
313/532-2600, fax 313/533-4747
Formwork for Concrete, 1989, fifth edition, 475 pages, \$113.50
Guide to Cast-in-Place Concrete Practice, 1991, 30 pages, \$26.75
Standard Tolerances for Concrete Construction and Materials, 1990, 22 pages, \$16.50

"The Secret to Quality in Concrete: Knowing Construction," by Reginald Hough, RECORD, March 1983, pages 129-135.

In a Growing Field, Nonprofits Call the Shots

By Charles Buki

Much of the housing being developed today for low-income people is dismal. Architects, with a unique capability to influence these projects, are both at the center of the best contemporary attempts to provide quality housing that is affordable, and on the sidelines of much of the rest of what is being developed. This apparent contradiction is the result of two basic realities.

- Many developers of low-income housing simply do not believe architects add value.
- The process of developing such housing requires highly specialized skills, which many architects lack.

In the face of these realities some extraordinary architecture has nonetheless been completed. What separates the good from the mediocre? And how can architects tip the balance in favor of quality? The answer is understanding assisted-housing practice, and offering the services housing providers value.

For many architects low-income housing represents a different way of practicing. But the rewards can be different, too. The projects discussed below are primarily developed through nonprofit community-development corporations (CDCs), which have become increasingly important in providing housing for people who fall well below median income. Some of the same techniques apply when working for either public-housing authorities or for developers of "affordable" housing (intended for clients who are close to median income). [For more on the categories of assisted housing, see RECORD, January 1994, pages 26-29]. The illustrated projects suggest various ways architects are making low-income housing work.

Quantity not quality is the focus

"Of course architects add value," argues Roger Bailey, of Bailey-Kline, a New Orleans firm that has recently begun working with nonprofits, "but not value that will ever be acknowledged as long as quantity, cost reduction, and the bottom-line are the only factors for assessment." The culture of nonprofits—

Charles Buki directs community-design programs at the Neighborhood Reinvestment Corporation in Washington, D.C.

which usually came into housing after many years of frustrating advocacy for underserved groups—is housing-unit quantity. This focus, says Bailey, "precipitates both a net reduction in the quality of the housing we do develop for low-income people, and a parallel opening for non-architects to insert themselves into the development process as de facto design authorities."

This focus is also encouraged by the National Affordable Housing Act of 1990, which, along with other legislation, made much more viable the development of housing through CDCs and the low-income tax credit. (Tax-credit projects are now a majority of the multifamily units under construction—Indicators, page 23). States are allocated a per capita number of tax-credit units. As the credit has increased in popularity, states are forced to score projects, with those that house the poorest, and the most for the least money, typically getting the nod.

According to Sam Davis, Professor of Architecture at the University of California at Berkeley and author of *The Architecture of Affordable Housing* (to be published this month by the University of California Press), the prevailing attitude views housing as a commodity. "Approaches tend to rely primarily on stimulating production." He sees such a focus as short-sighted, but recognizes such thinking dominates. "The result is a lot of housing that is affordable but little of which actually adds value to the community or inspires a necessary pride among occupants."

But the punishing cost picture is precisely what keeps more developers from using architects. Bob Santucci, President of Urban Renovators, Inc. of Arlington, Virginia, and a frequent consultant to the Enterprise Foundation says, "architects are not good cost estimators and they don't seem able to leave well enough alone. Architects never seem to understand the law of diminishing returns." Developers turn to stock modular homes for small projects and to contractors or construction managers for rehabs that involve primarily maintenance items. When architects are used, their services are often defined minimally. Many clients, for example, use architects for little more than to prepare the documents required to secure approvals.

How some architects remain essential

One successful architect whose projects connote pride of place appreciated by residents and neighbors alike is Eric Colbert of Washington, D.C. He attributes his success to four basic issues.

- *Make the best of the budget.* "We complete projects in partnership with experienced affordable-housing builders and get their advice early, in the design and construction-document phases," says Colbert. "We become essential because we add value the nonprofit can relate to."

- *Take a hands-on approach to officials.* "We primarily do rehabilitation, and getting old buildings up to the standards of new construction can be tricky and complex. Some elements will always be prohibitively expensive to change." The firm can't compromise safety and welfare issues, but meets with code officials before drawings are filed to seek needed concessions or get agreement on less-costly means for compliance.

- *Resolve conflicting needs.* "We understand the importance of keeping the end users in mind and involved during the design process. We meet with them regularly. We provide alternatives. We obtain feedback from them," says Colbert. "This requires quite a bit of re-ereeing." He adds, "The needs of tenants and the needs of the owner or developer are not always in sync with one another. Neither, many times, are the needs of the neighbors. When we insist on an architecture that creates 'pride of place' and 'pride of adjacency,' we invariably have to mediate the competing demands of different interests."

- *Improve whatever you can afford to.* Colbert's firm "takes advantage of any and all design opportunities." Even with the most modest renovation programs, there are important choices, including paint-color selection and hardware decisions, that can have a significant impact on the overall look and quality of the completed project. To meet budgets, Colbert encourages realistic compromises: It's routine to "convince our nonprofit group to defer some interior amenities in order to achieve a higher level of finish on the outside. Our argument is that the interior can be more affordably upgraded. The

Most nonprofit housing developers don't value architects if they can't solve their most difficult problems: the budget, the regulatory- and financial-review process, community resistance.

facade inevitably remains the same throughout the life of the building." (In another example, architect William Rawn has provided hookups for washers and dryers, but deferred the appliance purchase when the budget wouldn't allow both.)

Why architects are often undervalued

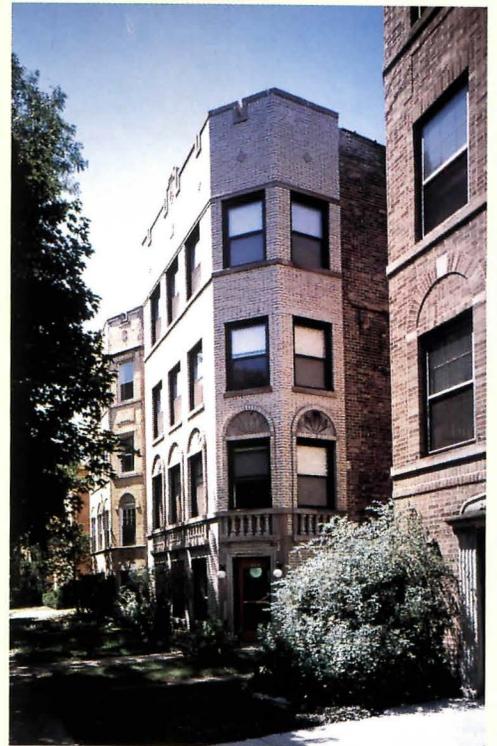
On balance, the average low-income housing developer considers architects to be costly and cumbersome—therefore expendable. They are skeptical that the profession that gave us high-rise public housing can make real contributions to community development at the grassroots level. In short, community developers lack confidence that architects can help them create useful affordable housing. "We need cost control and containment, and architects don't really help us get that," Santucci says.

The prevailing view is that architects add cost to projects, when the focus is more than ever on lowering construction expense. CDCs won Congressional backing of the low-income tax credit in part by promising to deliver units at lower cost. Further, the stunning financial complexities of low-income housing deals drain so much money in "soft costs" that little is left for bricks and mortar. (Up to 47 cents of every tax-credit dollar goes to syndicators and lawyers—a scandal Congress seems loath to address.) There's also little incentive for developers to balance first costs against operating or maintenance costs—unless the developers will also manage the completed project. Thus, the focus of low-income housing has moved relentlessly toward cutting construction costs.

There may be leavening factors. But what architects typically regard as their greatest strength (design) is not necessarily their greatest potential value to the nonprofit client. "Today's reality," asserts Ralph Lippman, who is Director of the Los Angeles office of Local Initiatives Support Corporation (LISC), is that "architects in the field have to both comprehend what it is the nonprofits are after, and make contributions less defined by the ingenuity of a design statement and more by their ability to meaningfully and cost-effectively integrate people into the design process." Adds Santucci, "architects are great at understanding



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Low-Cost Parade of Homes

Project: Single-family, detached homes in troubled Chicago neighborhoods.

Architects: Johnson & Lee, Ltd.

Process: What has been thought a quintessential suburban development device—the parade of homes—has been adapted by builders and the City of Chicago to promote reinvestment in neighborhoods plagued by outmigration. Most houses are three-bedroom, with simple but dignified massing, built on infill sites. Typical cost is about \$150,000; government aid comes in the form of property-cost writedowns. *J. S. R.*

Scattered-Site Success Story

Project: Scattered-site public housing, Chicago.

Architects: Bauhs & Dring, Ltd. (top); Nagle Hartray & Associates (bottom).

Process: Chicago's program of locating small public-housing developments throughout neighborhoods has been fraught with management problems. A court order brought in The Habitat Company, which has used HUD money to rehab and build new some 1,600 units using a variety of architects. Habitat values designs that fit in, winning over skeptical neighbors. *J. S. R.*

what the client wants and translating it into a form when they know the people they are working with. But most don't know low-income people very well, and thus have a tendency to design things that are unworkable in a high-security area in the inner city."

Santucci's views are important. He trains nonprofits around the country on ways to create low-income housing more efficiently.

When architects excel

Even critics, however, think architects can be very valuable. In Los Angeles, LISC has been evaluating 10 troubled neighborhoods with the National Organization of Minority Architects, the Coalition of Neighborhood Developers, and the Design Profession

The stunning complexity of low-income housing deals drain so much money in "soft costs" (as much as 47 cents of every tax-credit dollar) that little is left for bricks and mortar.

Coalition. "Many architects out here are very concerned with the problems of low-income people, and do very good work," Lippman comments. "After the riots, we were concerned about land use and zoning in some of the burned areas. Local architects with the Design Professional Coalition were instrumental in helping us get a start. These guys know the development process and the city bureaucracy—invaluable assets to any community developer."

Show clients you add value

Success in affordable housing requires the architect to recognize the developer's unique needs.

• *Nonprofits often don't understand the value of design.* Many nonprofits are aware of the work of talented architects, but are either unaware of how much a well-designed project can boost a neighborhood, or assume that such projects were funded at a much higher level than theirs. Thus, reminding clients what design can do—and showing tangible results elsewhere—should not be

overlooked. Nonprofits work in that delicate area between HUD minimum standards and tenant expectations. The architect can help the developer articulate to residents that there isn't money to do everything.

Architects, like Joan Goody of Goody Clancy in Boston, have repeatedly demonstrated the ability to design well and build affordably. With expertise in both the design constraints placed upon HUD-funded projects and in participatory problem-solving, Goody has been able to bring cohesion and flexibility to the design and development of public housing in Boston. Her knowledge not only of design, but of how communities fit together and what neighbors expect of one another, proved critical to the transformation of the Four Corners

neighborhood where the firm's Langham Court was built [RECORD, July 1992, pages 92-97]. Another example of work that is better known to architects and award juries than to nonprofit clients is the low-cost rehab of a landmark housing terrace in West Philadelphia by local architect Kelly/Maiello.

• *Clients often don't know the purpose of each stage of the design process,* and that decisions present both opportunities and pitfalls. For nearly all developers of low-cost housing, design decisions are seen as occasions that cost money, not opportunities to create a better product. Michael Pyatok, in Oakland, is a successful architect of low-cost housing in part because he's shown nonprofits the value in having several options to consider during the schematic-design phase.

A high percentage of rehab work requires that work be done while tenants are still occupying units. The architect can be invaluable in working with tenants so that disruption is minimized and residents are apprised of what they'll have to do to accom-

modate contractors. The architect can assist the contractor and owner in defining workable logistics and a doable schedule.

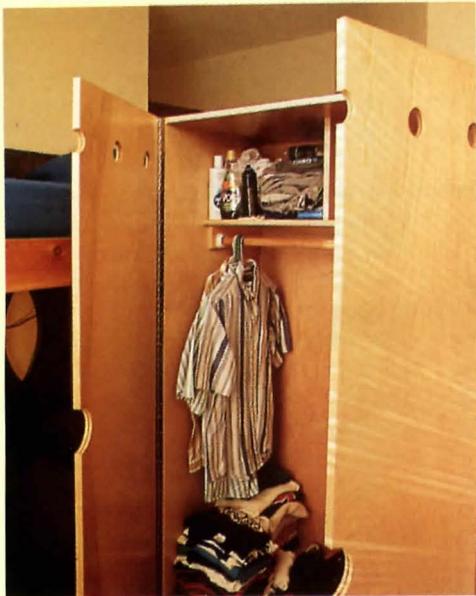
Architects can be key in assuring community acceptance of a project by recognizing broader community needs and making sure the developer knows that the project must respond to them. Nonprofits know that they obtain their imprimatur from the community, but sometimes they get distracted by the singular and sometimes conflicting concerns of a particular site and user group. While many architects respond to the visual quality of the physical context, residents and neighbors often react differently. A building configuration that appears to create opportunities for crime, or failure to fix a drug dealer-attracting abandoned building figure much higher on people's agendas than architectural amenity. Emmanuel Kelly sums up: "To do well, you have to understand the motivation of the community developer. You have to be able to establish a dialogue with the community, which requires trust. And above all, you have to be able to collaborate."

How nonprofit development works

Most nonprofit developers must assemble workable financial packages from several sources. It's the most difficult aspect of low-income housing development. The deals create real limitations on what can be designed, and architects who fail to understand the limitations consign themselves to irrelevancy.

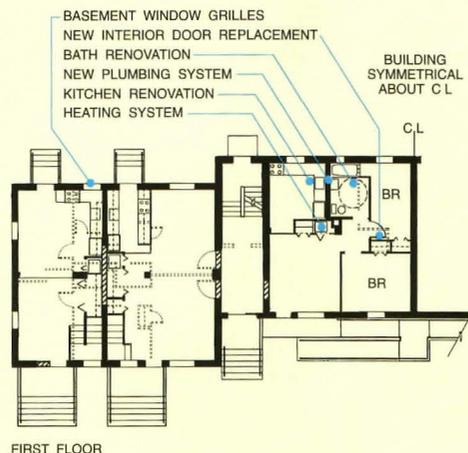
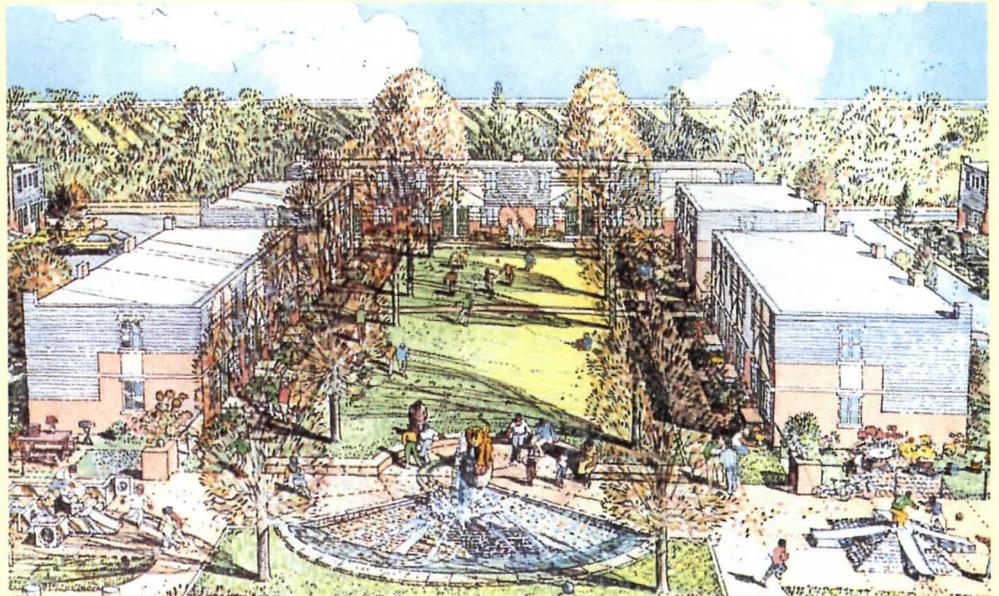
In San Francisco, Asian Neighborhood Design (AND) is an example of a nonprofit developing affordable housing that purposefully links a design focus with sound development principles. At a recent NEA Design for Housing forum, AND's Tom Jones, an architect, said "as with all community projects, good affordable housing must exist in several prevailing environments at once. Affordable housing responds to community forces, political forces, and governmental forces. To be an effective architect in this field, one must have a firm understanding of what land costs mean, how capital is formed, who takes risk, and how risk is mitigated."

Emmanuel Kelly agrees. "A working knowledge of the cost parameters and the funding

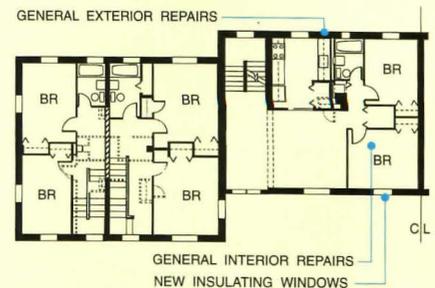


"Furniture" For Runaways

Project: Open Door Shelter, Chicago
Architect: Landon Architects
Process: Working with the tiniest of budgets, Landon Architects refit a battered Victorian-era three-story row house as a temporary shelter for runaways. The upgrade included private bedrooms (for parents with children), a kitchen, TV room, and counselors' offices. Peter Landon invented the bunkbed units shown to create semi-private sleeping spaces, so that up to 16 youths could be accommodated. The building shell was left nearly untouched, and the existing room layouts remain, though surfaces were upgraded. The bunk bed/armoires are made from wood-studs and plywood. *J. S. R.*



FIRST FLOOR



SECOND FLOOR

Rethinking the Project

Project: Passyunk Homes, Philadelphia
Architects: Kelly/Maiello with The Rothschild Company.
Process: The renovation of this World War II-era public-housing project has been on-again-off-again since 1989, but a \$12-million first phase of renovations is now in schematic design. It calls for the reconfiguration of three-story slab buildings into 40 units of townhouses. The project includes sitework, utility reconstruction, and new community buildings. The original construction defined public-housing minimums: uninsulated single-wythe concrete-block construction with flat, uninsulated roofs. The exterior walls will be insulated, then faced with brick

(pink in image top) and siding. Severely deteriorated kitchens and baths will be replaced (plans). Kelly/Maiello involved tenants intensively during the master planning phase. "We met with youth, with mothers, with seniors," says Emmanuel Kelly. "Residents, as well as PHA [Philadelphia Housing Authority] and HUD had to agree on priorities. The resident council was *very* vocal when things appeared not to be going the right way." For some years much of the energy was sapped, Kelly said, when promised renovations didn't go forward. The troubled PHA now has new leadership, and tenant groups are reinvigorated. Kelly is optimistic that future phases will be funded as well; the completed project should be \$80 million. *J.S.R.*

process is even more important than being a good designer. And it's this working knowledge that allows for partnerships to be created." To gain a broader understanding of the development process, it's important to understand the role of key development players.

What federal agencies do

•*HUD*: Both HUD and FHA have sets of design guidelines and space standards. They're known as HUD minimums but have become—in effect—maximums. They're widely regarded as outdated and inflexible.

"To be an effective architect in this field one must have a firm understanding of what land costs mean, how capital is formed, who takes risk, and how risk is mitigated."—Tom Jones

Recently HUD has offered greater flexibility for public-housing design, and permits inclusion of once-prohibited items (garages, for instance), as long as cost ceilings are met. Congress has pressured government agencies to put standards-making more in states' hands. If this happens, architects with multi-state practices will have to become conversant with each states' standards.

•*Federal Housing Administration (FHA)*: The agency backs money lent by commercial institutions, and its evaluators primarily assess loan-to-value ratios (not permitting the loan amount to exceed what the agency can reasonably expect to recover in event of default). If the architect adds amenities that overvalue a project in comparison to other properties in the neighborhood, financing is jeopardized.

•*Health and Human Services (HHS)*: Projects may use funds under federal grants such as the McKinney, intended to address the needs of the homeless, or funds for daycare or other on-site social services. Such projects then must meet criteria for each program (such as resident management). The nonprofit developer may not be familiar with the accompanying regulations. The

spaces needed for such functions not only affect the design, they may tip the cost balance away from viability.

What state and local agencies do

•*State Housing Agencies*. Most, at minimum, require adherence to the Uniform Building Code or HUD quality standards. Many offer financing themselves, and it is the states that administer the low-income housing tax credit. As the credit has become more popular, states have devised criteria for allocating the limited credits available. Some states score projects higher that house the most people;

others promote developments that house higher percentages of poorer people. This focus on quantity over quality or suitability has risks, however. By re-concentrating housing for the very poor, the ghettoization of social ills that doomed so much of the public housing stock may take place all over again. Though architects aren't to blame for this focus, they are often taken to task later when such projects fail.

Other states are taking a different tack, says James Tassos, Program Manager of the National Association of State Housing Finance Agencies in Washington, D.C. "As competition for scarce tax credits becomes more intense, some states are choosing to place greater emphasis on design issues as a way of making awards." (Oregon scores projects on solar orientation, siting, parking, attention to neighborhood context, drainage, and landscaping.) On the down side, such criteria can have the unanticipated effect of driving up the per-unit cost to the point where other funding sources find the project overvalued for its neighborhood.

•*Local Agencies*: Some offer financing, but the primary role is to administer building and zoning codes, and, in a more political way, to

deal with NIMBYism. In cities where neighborhood groups control the agenda, the architect will need to negotiate amenities that please neighbors without making the project unbuildably expensive.

Private lenders' priorities

The low-income tax credit and enforcement of the Community Reinvestment Act (which pushes banks into ignored neighborhoods) is creating much higher lender interest in low-income developments. Lenders, however, must still find the loan-to-value ratio acceptable. Typically, they're more comfortable lending on 80 percent of the project's value, or less. Bankers like amenities that offer "curb appeal"—that is, help sell the project in event of default. But they don't want design that raises the loan-to-value ratio to un-supportable levels.

Some banks are recognizing that they actually reduce their risk by financing more than one project in a troubled neighborhood. Each project moves the neighborhood one step further from instability.

The bottom line is teamwork

"Designing affordable housing," Sam Davis writes in his book, "requires imagining clear solutions to often conflicting ideas and input; it is the artful resolution of the multiple goals, aspirations, and expectations of many different people." Housing for nonprofits is a specialty that requires a considerable commitment of time to learn the ground rules, not all of which is readily compensated.

Pyatok, for example, anticipates community opposition before it gets rolling, and uses the schematic design process to meet neighborhood concerns. Successful designers show clients that they get what they pay for, and that they have choices. A knowledge of process dispels another common client fear: that architects make all problems (and all solutions) physical. And some architects create confidence in a much less tangible way. As Eric Colbert says, "for me, [success] is achieved through dedication to the cause." ■

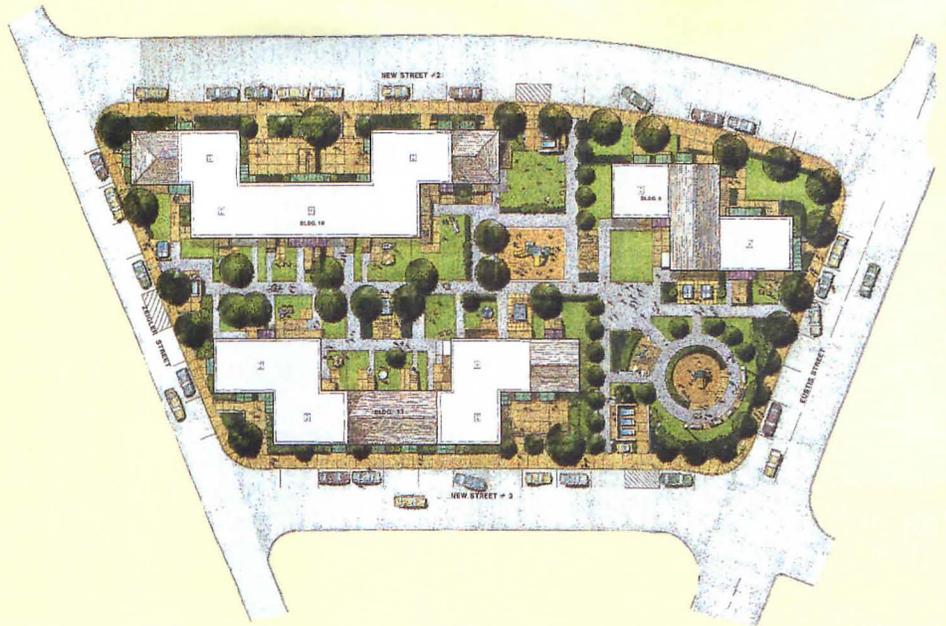


Mixing Uses in a Restoration

Project: Monte Cristo Hotel renovation, Everett, Wash.

Architect: GGLO Architecture

Process: Upper floors of this historic downtown 1920s hotel were converted to 69 apartments for tenants who earn 50 percent of median income or less. Financing for the \$7-million project combined low-income tax credits with historic-landmark tax credits. Mechanical, electrical, and seismic improvements were coordinated to avoid disturbing finishes of important public rooms. The building has also been fully sprinklered and made ADA compliant. The main lobby (above) has been turned into an exhibit space surrounded by public offices of community groups. The city and county earn income from renting the lobby and a ballroom for receptions. *J.S.R.*



Undoing the Sins of the Past

Project: Orchard Park Comprehensive Modernization, Boston

Architect: A joint venture of Lane Frenchman and Associates, Inc., and Hezekiah Pratt and Associates

Process: Orchard Park is a low-rise public-housing project dating from 1942. In HUDese, it's "severely distressed"—in poor physical condition with significant abandonment. The Boston Housing Authority is trying to duplicate successes achieved elsewhere in renovating public housing through a number of strategies. The unit sizes will increase on average 25 percent, while the number of units decreases by 36 percent. Stairs that once served up to 12 units each will be eliminated for security reasons. Most units will have their own entrances. Some city

streets will be extended through the project to integrate it better with the surrounding neighborhood. Other site areas will be reconfigured into demarcated back yards, front yards, or semi-private courtyards with a single readily observed entry. A new central commons will create a public area at a Family Investment Center, which will include recreation, health care, and other social services.

The rendering above shows the selected addition of pitched roofs and other elements that help to create a domestic image and a perceptible "ownership" by tenants (who are consulted in the design process). The clear division of public and private is shown in the partial site plan, top. *J. S. R.*

New Releases of Popular CAD Software Add Power But Hog Resources

By Steven S. Ross

This month we take a close look at Autodesk's new and long-awaited AutoCAD Release 13, and at Graphisoft's ArchiCAD 4.5.

AutoCAD 13 is one of the most powerful packages yet produced for the Windows and DOS world. ArchiCAD 4.5 is available in a Windows version, but started in the Apple Macintosh environment; it is now the most full-featured CAD solution for architects using the Mac.

AutoCAD remains a powerhouse for power drafting, but has been adding ever-more-sophisticated modeling and rendering features with each new release. ArchiCAD has been particularly strong in rendering and other aspects of presentation; its drafting features were improved greatly in this release.

In a sense, this split is due to the historical uses to which the Mac and Intel-CPU (DOS) platforms have been put. The DOS machines went to the drafting room, while those who used computers to design tended to use the Mac. It is also due to the fact that all platforms have been getting cheaper and vastly more powerful, and that more add-ons, such as fonts and printer/plotter drivers, now work through the operating environment instead of being tied to specific software. All this allows software developers to add more features to their packages without noticeably eroding speed.

It also has caused an interesting split in the marketplace on pricing. Autodesk, Graphisoft, and Bentley Systems (the MicroStation people) can command prices of \$3,500 or more—actually, with volume discounts, \$2,500 or so per seat in a large office—plus the cost of add-ons. If you need their features, you need them. Period. Besides, big packages need lots of user hand-holding and training; the support is built into the price. But as the less expensive packages, \$500 to \$800, get more powerful and user expectations rise, the big guys have to run fast to keep up.

What do you do? Analyze your needs carefully before you buy. And be willing to mix many vendors' wares in the same office.

AutoCAD Release 13

Vendor: Autodesk, Inc., 2320 Marinship Way, Sausalito, CA 94965; 800/964-6432; 415/332-2344; fax 415/491-8200.

Price: \$3,750 on CD-ROM, \$3,995 on 1.44MB disks. Upgrade from Release 12 is \$495; from earlier versions, \$695; \$100 off for CD-ROM version purchased prior to January 31.

Equipment required: IBM or compatible with at least an 80386 CPU with math coprocessor; 90 MHz Pentium strongly recommended. RAM requirements vary with operating system: 12MB for DOS (5.0 or higher), 16MB for Windows 3.1, 20MB for Windows NT 3.5. We recommend 16MB for DOS or Windows, 32MB for Windows NT. Minimum installation takes 25MB of disk space for DOS version, 35MB for Windows; allow more space—and allow for 64MB permanent swap file for Windows versions. CD-ROM drive strongly recommended for installation. Versions expected in 1995 for Digital Alpha (running Windows NT), Sun Solaris, HP-UX, SGI IRIX, IBM R/S 6000 (AIX for PowerPC CPU).

The long-awaited AutoCAD 13 is out in DOS, Windows, and (within weeks) Windows NT versions. It is a resource hog, but offers many new features for easier design and production drafting, and for hooking your drawings into databases. We reviewed it in DOS and Windows versions, on networks using Novell and Windows NT/Windows for Workgroups.

Experienced users, especially of the Windows versions, will find some commands in unfamiliar places. That's because Autodesk has chosen to adopt more standard Windows menu conventions. Nevertheless, you can customize icon toolbars and position them all over the drawing window. Even the command-line window now floats instead of sitting at the screen bottom.

There's solid modeling built in, including boolean operations. This allows designers to create rough 3D shapes for sections of buildings—or entire structures—to explore design options. Hard-line drafting can be added around the model. There's a utility included for converting older AME (Advanced Modeling Extension) models to the new ACIS standard. Autodesk warns that not all AME

constructs can be fully converted.

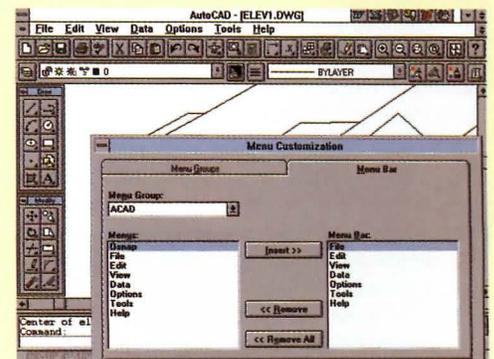
Taken together, the improvements make it easier for AutoCAD to be used at all levels in a practice—for conceptual design, production drafting, and tracking project details—and to share files on a network with other software and other, even older versions of AutoCAD.

A few warnings: AutoCAD 13 requires a large, fast computer. Whether you can phase it into an existing office over time—upgrading software and hardware as you go—depends on the nature of your practice and the compatibility of add-ons you use.

One thing is clear—now is the time to invest in a CD-ROM drive. Autodesk is charging \$250 less for the CD-ROM version and \$100 less for the CD-ROM upgrade. And the CD-ROM version comes with on-line, searchable documentation. Windows, Windows NT, and DOS versions are all on one CD-ROM disk in fact. So is AutoVision, a “lite” version of 3D Studio; it can be tried, then unlocked with an authorization code.

Release 13 has many “power drafting” features built in now—you no longer have to depend only on add-ons. The major new features:

- *Associative cross-hatching:* Shading in areas will automatically fill as the areas are edited. As in typical “paint” programs and Release 12, you can fill an area with a pattern



You can customize the AutoCAD 13 menus, even making them look like earlier versions. Useful for offices where many versions are mixed, as will be likely during phase-in.

AutoCAD 13 improvements mean it can be used at all levels in a practice—conceptual design, production drafting, project tracking—and to share files on another network with other software.

by clicking anywhere in the area. Unlike Release 12, exclusion boundaries and text are now sensed automatically.

• *Dimensioning:* Not only is setting up the area to dimension quicker (the commands are now easier to get at), but styles are more flexible (finally, stacked fractions) and can be set globally. There are good tolerancing styles built in, too—meant more for mechanical design than for architects, but good for the multi-disciplinary office.

• *Expanded entity set:* These include multiple parallel lines, NURBS (non-uniform rational B-splines—to describe complex shapes), true ellipses and elliptical arcs, and more construction geometry. You (and third-party add-ons) can create custom entities as well, including custom linetypes (some, such as wall insulation, are included with the shipped product)—even text within linetypes.

Having complex curves and linetypes as mathematical entities rather than collections of little lines (polylines) makes them easier to edit—and also makes file sizes smaller.

The construction geometry was a surprising joy. Essentially, you get two new line objects—Xlines and Rays. They extend to infinity in one or both directions and can be used as reference lines for hanging on other objects. You can set them up to find centers for objects, to become references for parallel lines, and so forth.

• *3D improvements:* Those who routinely draw and edit in 3D will see a lot of little changes that add up to more productive drafting time. Most importantly, you can draw entities in different User Coordinate Systems—whatever coordinates are easier for a specific entity and orientation—then edit them together. Two lines or planes that intersect anyplace in 3D space can be chamfered or intersect-trimmed, for instance.

You can now group objects by some logical relationship (desk and desk chair, window and hole in wall for window). Unlike block entities, you get access to individual objects. They are similar to selection sets (groups you establish by lassoing with the mouse), but with a logic you have to specify.

• *Straightforward text entry:* There's a good editor, a good spell checker, and full support for TrueType fonts and (as in AutoCAD 12) Adobe PostScript Type 1 (but not the latest Type 2). If you open a file for a certain font that's not available, you get a more-or-less automatic substitution.

• *Faster, more realistic shading:* A materials library and a surface-materials editor are included. Autodesk is clearly pushing animation; there's direct file exchange with 3D Studio in both directions.

AutoCAD continues to become more network-friendly, and to improve sharing of files with other software. For instance, one drawing can reference another. Use the

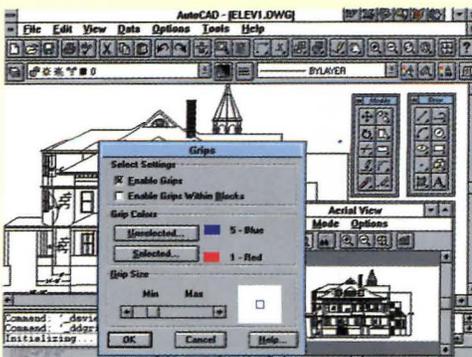
Xref command for this. (Not infrequently, people lose track of which drawing refers to which. AutoCAD does not like it when one drawing references another drawing and the second drawing references the first.

Autodesk has come up with a new command that allows you to break the circular reference without destroying a chain of painstakingly established referenced drawings. They call it the "overlaid" command.)

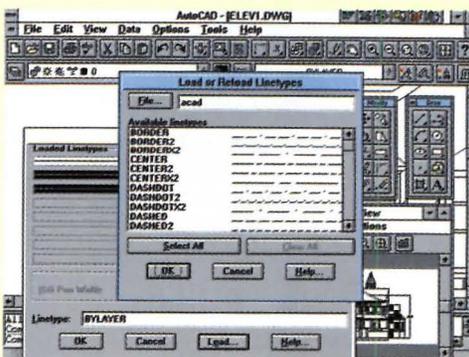
There's also direct reading and writing of Release 12 and AutoCAD LT files inside Release 13. Although Autodesk is not discussing it in any detail, this also means easy exchange with Release 11 as well; there were only trivial changes in file structure between 11 and 12.

Release 13 Windows versions also support OLE (Windows Object Linking and Embedding) in both directions. This is particularly important when you need to open a second drawing in AutoCAD and move back and forth between them. (Unlike version 12, you can only open one drawing in Windows or DOS in AutoCAD 13.) Using OLE, you open a drawing, select a piece of it to move to another drawing, close the first drawing, open the second, and link the first drawing's data to it. (However, we *did* run more than one copy of the Windows version in Windows NT at a time.)

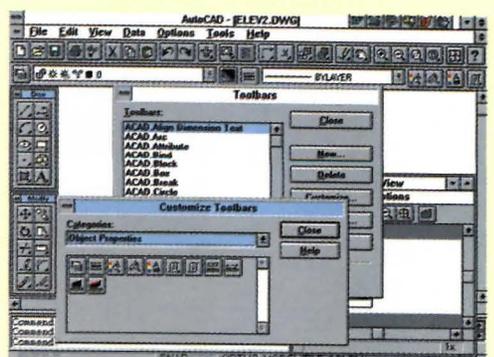
Is an upgrade worth it? It depends on what you do, and the cost and functionality of any add-ons you may have. Our impression of



Object grips can be customized as you go -- "loose" in widely spaced, large objects and "tight" in intricate details.



These are among the linetypes that come with Release 13. You can also create your own—similar to MicroStation.



Just as you can customize menus, you can customize toolbars (palettes with drawing-tool buttons).

AutoCAD 13 is that operation-for-operation it is slower than Release 12 (which itself was a bit faster than Release 11). But it is much easier to do many functions—dimensioning, customizing linetypes, editing existing entities—particularly 3D entities or entities crowded together.

You may already be using add-ons for some of these functions, in which case AutoCAD 13 may be faster and easier to manage. Or, you may be using an add-on for functionality Release 13 still does not provide—in which case you will be paying for two upgrades.

Autodesk and add-on suppliers say add-ons for Release 13 will be faster and more seamless, thanks to the new hooks AutoCAD has—the improved Applications Programming Interface or API. In theory this should be so. But Release 13 is too new for us to have spent any time with add-ons (many are due over the next three months).

If you're just graduating to the big leagues and you intend to stay with Intel-CPU equipment (Pentiums, 486's), do you go AutoCAD or MicroStation? Both have plenty of third-party add-on suppliers. AutoCAD has more—and with this release has gone a long way in catching up with MicroStation's built-in features and network-friendliness—but there is not even close to a complete overlap between the two families of add-ons. Thus, you will want to check on which third-party applications may be best for your situation. The bottom line: The choice may depend on

your dealer or on your need for a specific third-party add-on—and whether an add-on's potential file incompatibilities with other software matter.

Manuals: On-line help and 2,500 pages of printed documentation. There are separate paperbacks for DOS and Windows installation, huge command reference, huge user's guide, another 680-page customization guide, a great 72-page master index to all the guides, and a tutorial with a fair amount of architectural material.

Ease-of-use: Complicated program—lots of functionality, lots of commands. New users will welcome the Windows-standard interface. Old users can customize command hot-keys and icon toolboxes (palettes) so Release 13 works about like Release 12.

Error-trapping: Despite some impressive dialog-box help, you will have trouble keeping track of drawings on a network—they can be referenced in two ways (attached, which is the old way, and overlaid). You will have to “save as” Release 12 in a transitional period. Some add-ons will create custom entities that may or may not lose their intelligence [RECORD, August 1994, page 30]. Autodesk itself has one solution—WorkCenter (below). You might also want to look at third-party “manager” packages such as Cyco's.

300 on Reader Service Card

Autodesk WorkCenter

With all the major CAD vendors crowing about the network-friendliness of their wares, and CAD files—many referenced to each other—multiplying like kudzu on the nation's hard drives, the file-management software market is growing fast.

From a beta copy of Autodesk's WorkCenter, we got an idea of where Autodesk is going. Normally, you organize your drawings by disk directory. WorkCenter allows organizing by project, discipline, drafter, designer, design phase, revision number. It also allows you to search on specific criteria to track down a document. Some functions can be done within AutoCAD itself. You can print and redline—as with many third-party managers—and view both DXF and DWG files, track files referenced by other files, etc.

301 on Reader Service Card

ArchiCAD 4.5 for the Power Macintosh

Vendor: Graphisoft U.S., 400 Oyster Point Blvd., Suite 429, South San Francisco, CA 94080, 800-344-3468, 415-737-8665.

Price: \$4,450 (hourly rates available on experimental basis), second to ninth license for same office, \$2,670. Numerous add-ons including Atlantic Render; Zoom (modeling), energy calculations, land modeling, symbols.

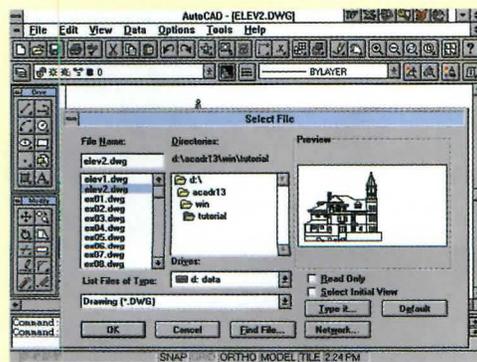
Equipment required: Apple Power Macintosh (other versions are available for Windows and for 600x0-CPU Macintoshes), 16MB RAM minimum, 40MB recommended; will run on 8MB of “real” memory if virtual memory enabled. System 7.1 or later.

We last looked at ArchiCAD in detail more than a year ago, in December, 1993—version 4.1 for Windows. Here we look at the upgrade in its Macintosh incarnation, Version 4.5. It offers many new features, particularly for drafting, database management, and file exchange with AutoCAD. As with AutoCAD, ArchiCAD is a resource hog—it runs well on a Macintosh 6100, the smallest Power Mac (and supports digitizers connected to the Apple Desktop Bus), but only with 16MB of RAM. We did, however, run it in as small a machine as a Centris/Quadra 610 with Power Mac add-on board and 8MB of RAM.

The added speed is matched by larger theoretical file sizes; Version 4.1's limit was 32,000 entities—characters, lines, other graphic elements. The limit is now 1 billion. The number of library symbol parts is now unlimited; it had been 2,000. (You can save in 4.1 format for backward compatibility if your file does not exceed size limits.)

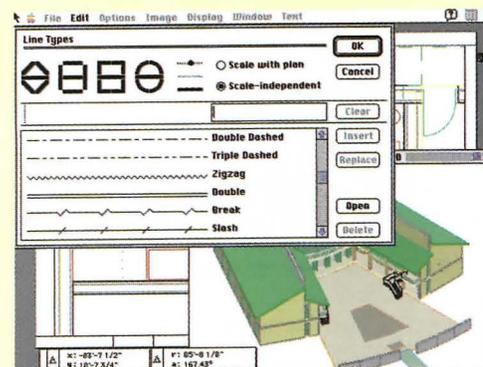
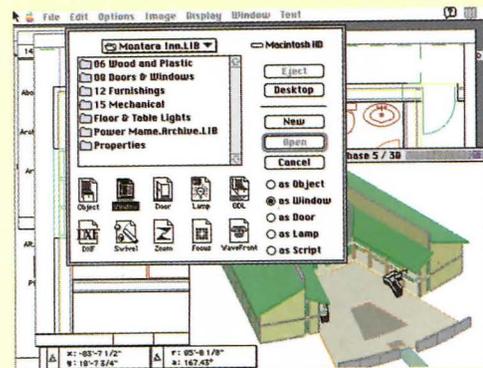
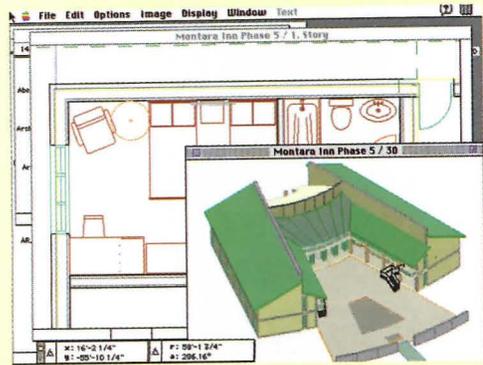
Each element gets a unique identification number that you can extract for data processing. There's also a new tool for custom or automatic labels displaying ID or user-defined text.

This version has many features that help you create 3D constructs, mainly in 2D. There's a “QuickView” window that lets you save and navigate through as many views as you want for easier recall. The Scale, Pan, and Zoom icons are now up front on the plan view. The project scale is on the plan as well.



Thumbnail images of files show up on the File Open dialog box. Our reviewers found this feature particularly useful for redlined drawings.

ArchiCAD's new 4.5 version for the Power Macintosh has many features to help designers create 3D constructs, mainly 2D. It runs well on the smallest Power Mac, the 6100.



Top: Shaded 3D view on top of 2D drafting window in ArchiCAD 4.5.

Middle: Symbol libraries are easy to manage.

Bottom: Linetypes available in the shipping product.

There's a Section/Elevation tool; you can draw staggered sections and elevations directly in plan. Sections and elevations are calculated automatically and displayed in separate windows. Walls, roofs, and slabs appear as fills on section with their original fill pattern.

Starting with version 4.1 you could trim walls to roofs. Now, clicking on any element calculates its intersection with any other element. Likewise, in 4.1, you can convert lines and arcs into walls by "space-clicking" on them. With 4.5, space-clicking on any polygonal element transforms the selection to any other polygonal element (roofs, slabs, walls) and saves the original. Roofs and slabs can be visible on other stories. When above the current story, they are editable.

You can cut an element with one click, create walls surrounding a slab, and so forth. There's a new block presentation that displays an ArchiCAD project as building blocks, so you can work quickly in 3D.

The new "continuous curve" tool draws continuous, tangential arcs of any radius. Windows and doors can be multiplied, dragged, and stretched to fit selected openings. Copy/Paste and other Edit Menu operations work from and to multiple floors. In fact, Copy/Paste carries attributes such as layers, colors, and materials. New Edit commands include Split Wall, Fillet, or Offset Polygons and Polylines. Dimension figures retain their position when relocated.

You can now merge project files completely, or a floor at a time, while managing layers, materials attributes and other characteristics. And ArchiCAD's 3D Geometric Description Language (GDL) now works with 2D symbols; it can automatically reflect changes in the 3D object. You can view the coordinate system in the editing window for symbols.

Text handling is more sophisticated; there's a search and replace command for any text window—GDL, Bill of Materials, project notes, etc. Also, content of text windows is no longer limited to 32,000 characters.

The plotter changes bitmap and TrueType

fonts to vector fonts, so you get the same size text on the output as displayed on the screen. PlotMaker documents can be hot-linked to the ArchiCAD floor plan, and updated automatically as you edit the plan. Fills can be handled as elements or as a whole by PlotMaker. In fact, hatching patterns can be associated to any textured material, such as brick or shingles, to realistically depict construction materials in perspective.

It is easier to create fly-throughs and perspective views with a camera tool" directly on the plan view. There's a new dialog for setting up axonometric views from any angle. And there's "vectorized" shadow-casting: the shadows are defined by polygons so their area can be accurately calculated in plan and elevation.

You can now define and locate any number of light sources in your project. Parallel, spot, and conical lights sources are available as 3D library items; you create or modify them like any other library symbol—and export them to many rendering packages, including ElectricImage, Atlantis Render, WaveFront, and RenderMan in their file formats. The DXF translator, already good, has apparently gotten better; it handles the DXF binary area.

Manuals: Paperback reference, Getting Started, GDL guides, and a quick reference to the library symbols. Tutorials are architect-oriented. They do not fully show the ease with which you can rough-out 3D conceptual designs.

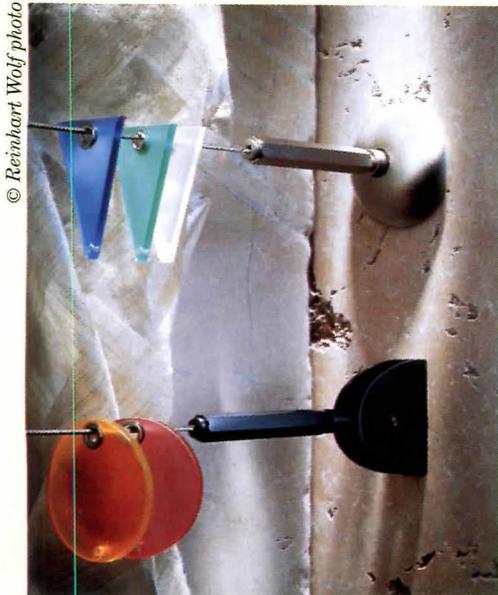
Ease-of-use: With this version, routine production drafting got a lot better—especially on a Power Mac. The modeling (you draw mainly in plan, and specify measurements in the third dimension; there are special tools for roofs, slabs, wall openings) and rendering/shading modules have always been a strong point.

Error-trapping: There's now a global undo instead of a story-based undo—the undo happens every place in a project file, no matter which window or building story the action was performed on. Drawing on an invisible layer now prompts a dialog box giving options to cancel, show the hidden layer, or choose another layer.

302 on Reader Service Card

THE PROFESSION New Products

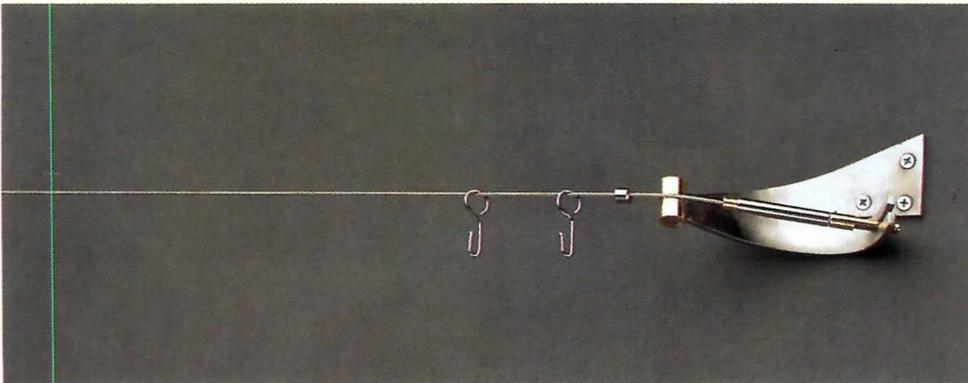
For House or Apartment



303a



303b



303c

303. Minimalist curtain rods

In Germany, the Blome Corporation makes decorative window hardware—curtain rods, brackets, traverse systems, and finials—with gemlike precision and great style. One of its sleeker, more architectural treatments uses stainless-steel cable as an alternative to a curtain rod. Blome's curtain wire, stretched between fittings mounted on wall or ceiling, is a versatile system with accessories, terminals, stops, and brackets that permit it to turn corners, span room-size spaces, even create a canopy-bed effect. The wire is tensioned by end brackets in styles from unobtrusive to anthropomorphic, many designed by Danish architect Jorgen Kastholm (303b). The weight of the hangings—whether velvet draperies, sheers, or unlined fabric—determines the span of unsupported cable possible in a given instal-

lation. Fabric is suspended from clips with their own decorative flair, such as triangles or discs of colored glass (303a) or just plain nickel- or brass-plated clips (303c). Blome Corp., Secaucus, N.J.

304. Expanded solid-surface line

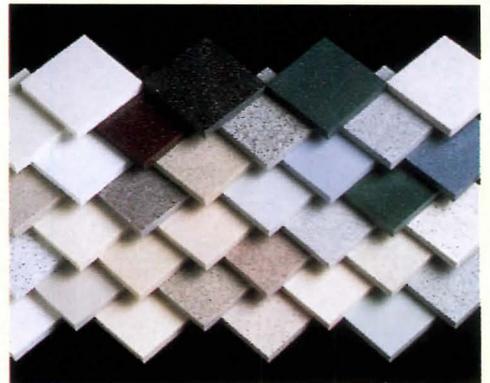
Gibraltar is a blend of polyester and acrylic resins in both solid colors and stone looks. Introduced in 1990, the line now includes sheet products in three thicknesses and 32 colors; prefabricated kitchen sinks and vanities; and accessories such as seaming kits, matching caulks, and trim strips. Sink bowls can contrast with countertops (304a) or match for a seamless look. A new 1/4-in. sheet thickness is suited to vertical uses such as tub surrounds (304b). Recently added colors extend the palette into deeper earth tones (304c). Wilsonart, Temple, Tex.



304a



304b

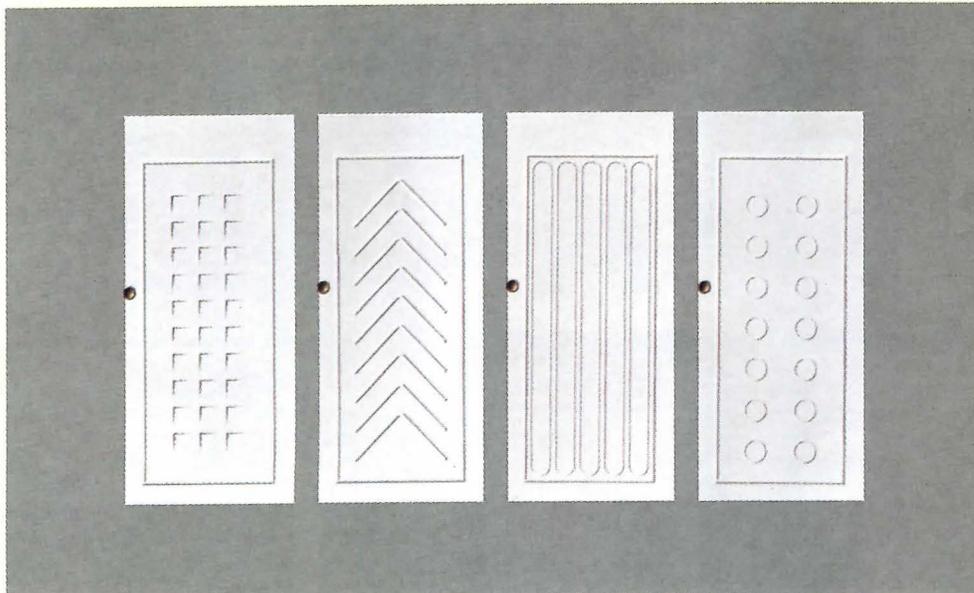


304c

305. Custom look; off-the-shelf price

Simpson's new Advent doors take advantage of the weather-resistant and easy-to-tool characteristics of Medex medium-density fiberboard, a formaldehyde-free particle-board said to machine easily and to have a very smooth, paintable surface. The MDF panels, held in a stile-and-rail frame, are carved in Gothic, Art Deco, Southwestern, or other patterns by CAD/CAM-controlled routers. Four of the 15 standard designs are shown here; unique patterns may be specified. Doors, which must be painted, are suitable for interior as well as exterior use in residential applications. Fire tests are planned. Widths range from 2 ft 6 in. to 3 ft 6 in., and heights up to 8 ft. Simpson Door Co., McCleary, Wash.

A selection of new products for today's home, ranging from a very upscale disappearing refrigerator to a bullet-proof door. Additional residential designs appear in this month's Product Literature pages.



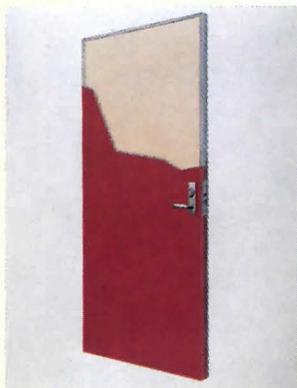
305



309a



306



307



308



309b

306. Forced-entry-resistant

The rugged Impervia door is made in several constructions, including one said to show little or no damage after a direct hit with a sledge hammer, and a door capable of stopping a bullet from a .44 Magnum. Made with colored and textured high-strength Lexan polycarbonate faces, a two-panel MDF core, and laminated-wood stiles and rails, doors will not dent or rust as abused steel doors may, and can be machined and trimmed on site like a wood door. Frames accept a variety of closers, full-length hinges, and extra-long screws. Oakridge Industries, Beltsville, Md.

307. Three-hour fire door

Series 2000 doors have an insulating foamed-in-place polyurethane core that is said to bond securely to the steel face sheets, stiles, and rails for extra rigidity. Models are avail-

able with three-hour fire labels for 16-, 18-, and 20-gauge doors as per ASTM E 152 and UL-10B. Fenestra Corp., Erie, Pa.

308. Accessible steel-door systems

The pry-proof Adjusta-Fit insulated-steel door and frame, modified for ADA compliance, is now offered pre-assembled in wider widths and low-profile thresholds, and meets ANSI 117.1 section 4.13 accessible-hardware standards. Door and frame are powder-coated galvanized steel; the assembly has a 1 1/2-hr fire rating and can fit stud-wall or masonry openings from 3 1/8- to 12 1/8-in. thick. Benchmark, Bridgeton, Mo.

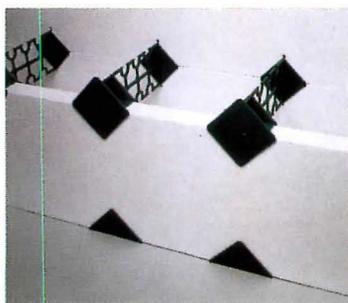
309. Icebox hide-and-seek

Sub-Zero has broken up the "big box" refrigerator into built-in-size modules: a system of cabinets and commercial-style drawers that

lets refrigerators—and freezers—be located almost anywhere in a home. Called the 700 Series, units are designed to fit in the same footprint as standard kitchen cabinets: 27-in. wide by 24-in. deep. This simplifies planning: there's no oversized refrigerator to "work into" room layouts. The line consists of two basic configurations: an 80-in.-high unit with a cabinet and two drawers, and a base module, with two drawers, that fits under counters (309a). The tall model can be all-refrigerator, all-freezer (with optional icemaker), or include both cold-storage functions; the two-drawer unit can be either/or. Compressors are hidden under the bottom drawer, and panels and handles to match the rest of the cabinetry can be mounted on the fronts. Appliances virtually "disappear" when the doors are shut (309b). Sub-Zero Freezer Co., Inc., Madison, Wis.



310. Medical-gas service
The Gallery Wall is a UL-listed, single- or double-sided medical-gas delivery assembly which installs inside interior partition walls. Gas outlets, flowmeters, and other devices are concealed behind a decorative framed picture (client supplied) mounted on a counterweighted steel frame. Ball-bearing slides permit quick access when the equipment is needed. Ohmeda Inc., Norcross, Ga.



311. Insulated concrete forms
A new leave-in-place system, the Diamond Snap-Form uses 2-in.-thick rigid EPS boards connected by lattice-and-bearing plate ties every 12 inches in both directions to create an 8-in.-wide cavity for poured concrete. Boards come pre-slotted for the ties and corners are pre-formed. Ties are configured to hold and position rebar; plate ends accept screws. AFM Corp., Excelsior, Minn.



312. All lined up
A special series of unglazed porcelain mosaic tile has been sized and colored to coordinate with 4 1/4-in. scored-pattern glazed wall tile so that mosaic designs can be continued from walls to floors with the grout joints aligned. Back-mounting sheets assist correct installation. Unglazed tiles may be used indoors and out, on walls, floors, countertops, and pools. Dal-Tile Corp., Dallas.



313. Jacquard upholstery
Serpentine (bottom) and Prairie-motif Archive are two of eight jacquard-pattern polyolefin weaves treated with Teflon stain repellent. Available in a total of 83 colors, the Class A fabrics are suitable for auditorium, health-care, and hospitality use. Additional flame-resist treatments let fabrics meet Boston and NY Port Authority standards. Douglass Industries, Egg Harbor, N.J.



314. Library furnishings
New reading tables are made with a laminate work surface; solid-lumber-core tops; and natural-oak edges, skirting, and legs to match existing Legacy shelving, carrels, and circulation desks. Tables in the shapes shown comes in a range of standard and custom sizes and heights for juvenile, youth, adult, and ADA compliance (25-in. to 32-in.). Bretford Manufacturing, Schiller Park, Ill.



315. Art-in-Architecture source
Architectural-glass artist Arthur Stern incorporated the Art Deco geometries and column details of an adjacent historic structure into leaded-glass windows installed in Baton Rouge, La.'s new R.B. Long Federal Courthouse. Although large (17- by 13-ft) and unified by their vertical elements, each section of colored and beveled glass is unique. Arthur Stern Studios, Benicia, Calif.



316. Graceful under abuse
Furniture designer Brian Kane used solid-metal rods for the arms and back of his Hyde Park benches, and set them on tubular-steel legs to withstand heavy use. The slatted seat may also be specified in metal rod for the most exposed sites, or in redwood, jarrah, oak, or maple for a corporate or resort environment. Landscape Forms, Inc., Kalamazoo, Mich.



317. Desktop document sharing
OmniShare allows designers in two locations to jointly view CAD or other drawings, discuss them, and mark them up with an electronic pen during a phone call. Combining the functions of both phone and fax, and priced in the \$2,500 range, the tablet plugs into a standard analog phone line. Up to 500 pages can be stored and manipulated. Hewlett-Packard Co., Palo Alto, Calif.

Short takes

GE to private-label light bulbs. The Justice Department has tentatively okayed General Electric's request to terminate a consent decree in force since 1911, following antitrust findings in the manufacturing of light bulbs before the first World War. *The Wall Street Journal* reports that ending the decree will allow GE to sell private brand and generic bulbs to compete with lower-priced imports.

Stretching. Carlisle SynTec Systems has bought the coatings and waterproofing business of Quaker Construction Products, Inc. Based in Oklahoma, the new division will make and market Carlisle's existing waterproofing products as well as rubberized asphalt membranes, elastomeric fluid coatings, and sealants for a range of building applications.

Lead-be-gone. NSF International (formerly National Sanitary Found-

ation) has published Sec. 9 of ANSI Standard 61, a new criteria on how much lead and other contaminants can be added to drinking water by "end-point devices" such as faucets, drinking fountains, and refrigerator ice makers containing brass materials.

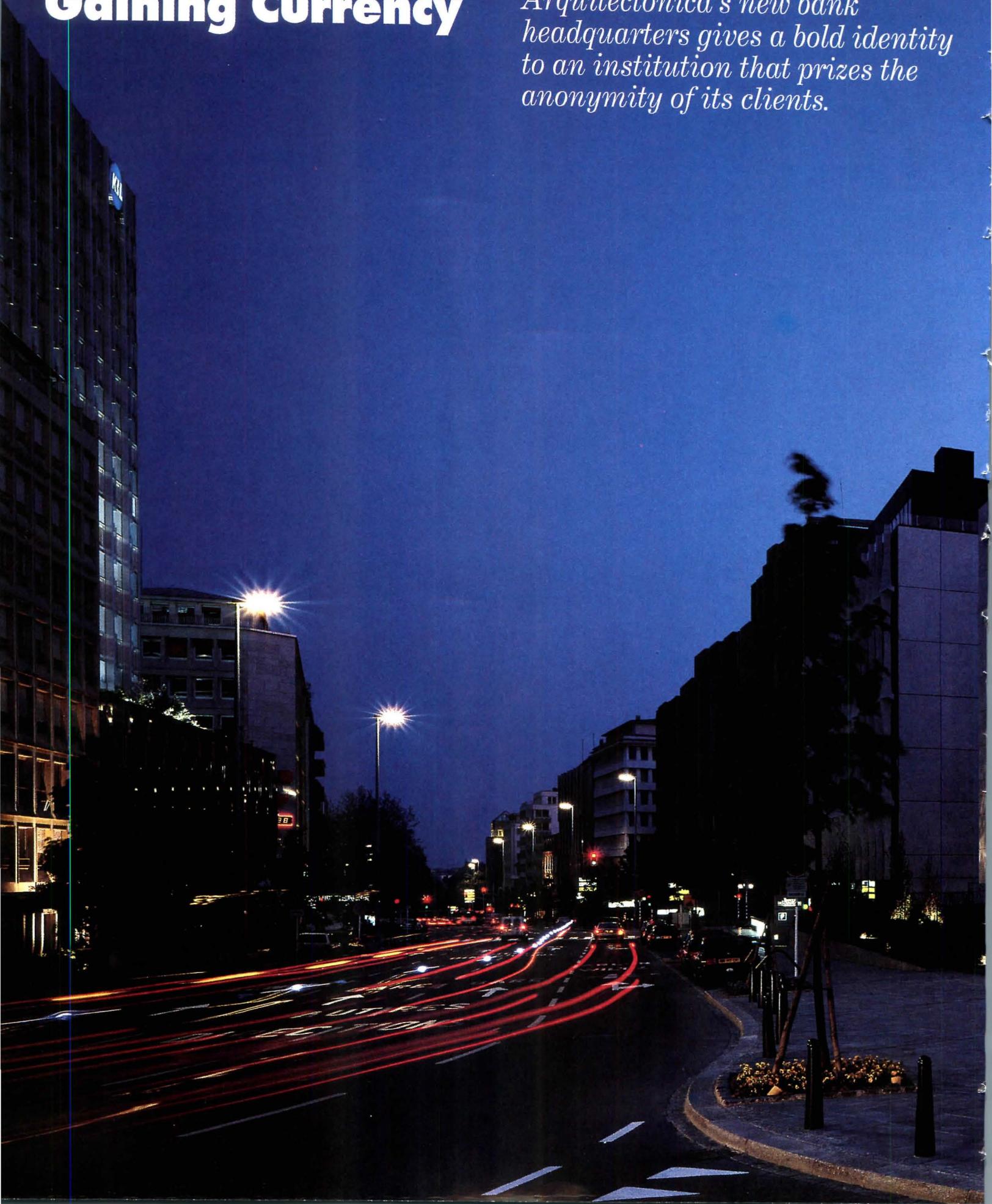
Must read. "How Superstore Sprawl Can Harm Communities—and What Citizens Can Do About It" costs \$16 from the National Trust for Historic Preservation, 202/673-4255.

While in no way educational buildings, all the examples in this month's feature section have a lesson to teach. "The gallery tells one what it is, how it was made, and what the act of making something means," writes RECORD correspondent Aaron Betsky of the Canadian Clay and Glass Gallery by Patkau Architects (page 64). John Patkau calls it a "didactic building." The same is true for Arquitectonica's Bank of Luxembourg (page 56), whose message is to "project and confirm the bank's values," according to principal-in-charge Bernardo Fort-Brescia. This month's Building Types Study, 722/Multifamily Housing, offers an enlightening look at how the future of housing is, in its diversity, looking increasingly like America itself (page 84). Carlos Jimenez's design of the Central Administration and Junior School Building at the Houston Museum of Fine Arts (page 70), the newest addition to the city's so-called arts district, is an instructive example of pedestrian-scale development. Richard Rauh's O'Neil Cinemas in Duluth, Georgia, (page 78) an artful conglomeration of corrugated metal set amid a confusing swirl of highway exit ramps and suburban shopping malls, shows us that, as its architect maintains, movie theaters are one of the few settings where people expect (or tolerate) the unusual. *Karen D. Stein*

*Manufacturers' Sources
listed on page 103*

Gaining Currency

Arquitectonica's new bank headquarters gives a bold identity to an institution that prizes the anonymity of its clients.



*Bank of Luxembourg
Luxembourg
Arquitectonica International
Corporation, Architect*



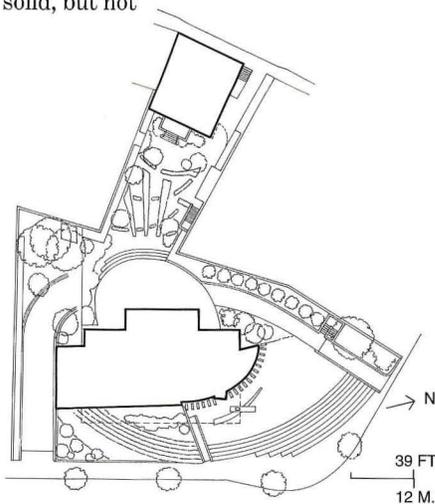


On the map, Luxembourg looks like a leftover of either Belgium, Germany, or France. Landlocked, the 998-square-mile state is smaller than our smallest, Rhode Island, but its proximity to centers of European wealth and its Swiss-like secrecy laws regarding banking have made the Grand Duchy's capital one of the world's fastest-growing financial-service centers. Along the road from the airport to a modest, mostly post-World War II town center is a mushrooming series of "shopping centers" anchored by signature outposts of some of Europe's biggest banks: Richard Meier's Hypobank and Gottfried Böhm's Deutsche Bank. The 70-year-old Bank of Luxembourg chose a different tactic and purchased the most prominent site downtown, where the main street, Boulevard Royal, makes a 90 degree turn.

To distinguish his institution from its some 230 competitors in the area, Bank of Luxembourg's Managing Director Robert Reckinger chose to give architecture "the role of ambassador carrying our public image...the role of a marketing tool." Having admired Arquitectonica's Banco de Credito in Lima, Peru [RECORD, February 1989, pages 90-99], he enlisted the Miami-based firm to "project and confirm the bank's values." Unlike the Banco de Credito, which projected exuberant self-confidence in the face of vast political and economic instability, the Bank of Luxembourg seeks to strike a balance between tradition and innovation.

Principal-in-charge Bernardo Fort-Brescia translated that charge almost literally, breaking the building into stable and dynamic shapes joined by a thick spine of services. "We needed to express that, in spite of the bank's long history, it is a progressive institution," says Fort-Brescia. A cantilevered stone box clad in local Chassagne stone aligns with the boulevard, and is punctured by almost flush square windows of amber-colored glass. A pie-wedge-shaped tower of tinted green glass echoes the curve of the street. Connecting the two volumes is a parallelogram of polished black granite, which resolves rigid setback requirements with the conflicting geometries of the block-deep site. Driving home the image of managed risk is an enormous boulder of raw granite from Normandy—a prehistoric megalith slid beneath the cantilever to mark the main entrance.

To accommodate the program while adhering to the permitted exterior envelope, seven stories of the reinforced-concrete structure are underground, including four levels of parking. Behind the main building, Arquitectonica replicated a nearby stone villa to complete the garden perimeter (bottom left). Landscape architect Jacques Wirtz used clumps of evergreens to repeat the radiating lines and curves of the main building. Throughout the interior, too, the contrast of what Fort-Brescia calls "stable" rectilinear forms and "plastic" curves is repeated, giving an overall image that is respectfully solid, but not overly staid. *Karen D. Stein*



©Richard Bryant/Arcaid photos



The Bank of Luxembourg occupies a prominent site along the city's main street. A curved glass tower acts as a pivot where Boulevard Royal turns from east-west to north-south (plan left). A garden designed by Jacques Wirtz connects the main building with Neo-Classical "twin" pavilions for dining/conference; the north pavilion is in fact an Arquitectonica-designed replica meant to complete the composition.

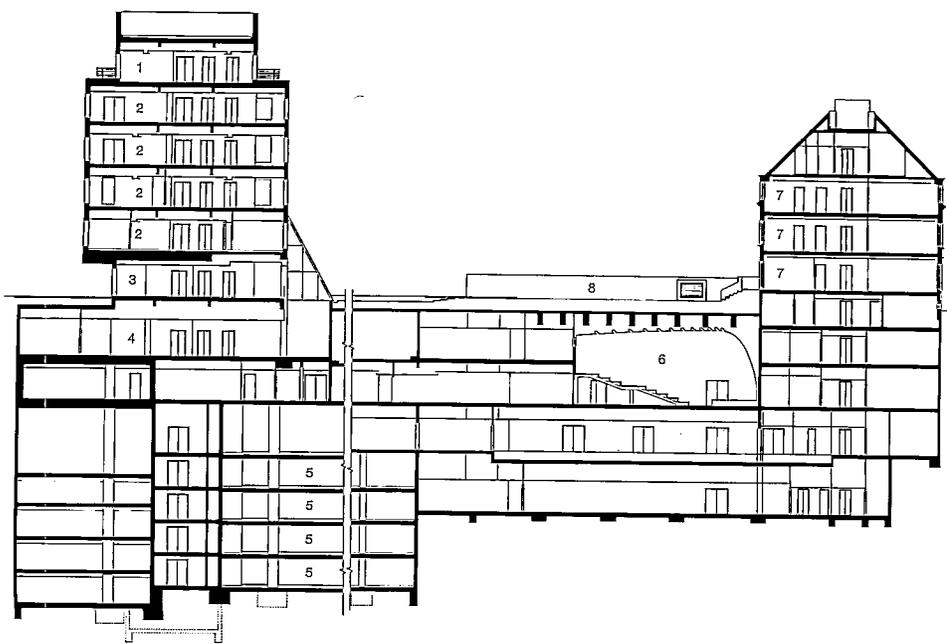


Up Close

Openness versus privacy. Establishing straightforward circulation routes in an institution that prides itself on the secrecy it provides its clientele is particularly difficult. Those unconcerned about being recognized use the main entrance on Boulevard Royal and descend to the central banking hall on an open hydraulic lift (top left) or via the more frequently used grand staircase that leads directly to the lounge (opposite). Lower-profile clients park in the underground lot and can ascend by elevator directly to the vault and private consultation rooms. Bank of Luxembourg confidentiality regulations also require that all desks be cleared at the end of the day so that nighttime cleaning crews are unable to glean any information about bank clients, even inadvertently. More public reception and dining areas are located in the villa at the back of the site, which is connected to the main building by an underground hall.

Inside the green-glass tower is a polished steel staircase that connects the reception area with trading floors above (bottom left). Another curved stair (opposite) and a small hydraulic lift that is more for visual effect than use (top left) join reception to the partially subterranean main banking hall. Here a waiting area is lit from above by a glass wall overlooking the garden. Banking counters line the north wall and offices for private consultation with bank officers are tucked beneath the front facade, separated by a block of elevators that allow officers to descend from their second-, third-, or fourth-floor offices without passing through the reception area. Curtain-wall mullions incorporate hot- and cold-water pipes to maintain a seamless effect.





- | | |
|--------------------|---------------------|
| 1. Board room | 5. Parking |
| 2. Offices | 6. Auditorium |
| 3. Entrance | 7. Reception/dining |
| 4. Private banking | 8. Garden |



In dealing with the dual nature of the block-deep site—spanning a central traffic artery lined with mostly six-story bland offices buildings and a byway of stone villas—Arquitectonica opted for two buildings. A showpiece along central Boulevard Royal and a replica of an adjacent mansion; these

are linked underground (section above). Inside the villa, which Fort-Brescia jokingly calls the firm's "first historicist design," are dining and reception rooms (photos above).

Lighting designer Georges Berne of Paris-based L'Observatoire 1 repeats the themes established by Arquitectonica's design. Exterior illumination highlights the uniqueness of each of the three main volumes (previous pages), and interior lighting combines incandescent and fluorescent fixtures to make bands of diffused light that echo the geometry of each room.

A conference table designed by Arquitectonica (opposite top right) and desks and book stands by Jean-Michel Wilmotte (opposite middle) are complemented by custom maple cabinetry. Maple panels also line auditorium walls (opposite bottom right).

Four levels of underground parking are located beneath private consultation offices and the vault (section above left), which contains deposit boxes, allowing clients who require anonymity to conduct their business out of sight. In fact, there are no security cameras to record who comes and goes.

Credits

Bank of Luxembourg
Luxembourg

Architect: Arquitectonica International Corporation—Bernardo Fort-Brescia, principal-in-charge; Andy Gruber project manager; Eduardo Luaces, project architect; Tom Bittner; Amauri Chacon, project team

Associate Architect: Bureau Cavallini

Engineers: Groupe Ingenierie Alsace; Schroeder & Associates

Consultants: Wirtz International (landscape); Jean-Michel Wilmotte (interiors); L'Observatoire 1 (lighting)

General Contractor: Compagnie de Constructions



Romantic Realism

*Canadian Clay and Glass
Gallery
Waterloo, Ontario, Canada
Palkau Architects*



ie craft of composing complex materials is the key to the construction of the Canadian Clay and Glass Gallery in Waterloo, Ontario. Designed by the Vancouver firm of Patkau Architects, this 18,600-square-foot sliver of concrete block, steel, and glass illustrates what it houses: the ability to transform raw materials such as sand and ore into works of art by taking them apart and recombining them into new forms. Just as concrete block is made out of cement and aggregates, and steel beams are forged out of iron, the glass displayed in the gallery is fired silica, and the ceramic pots are rough clay turned into smooth symmetrical forms. Strong instead of subtle, the gallery tells one what it is, how it was made, and what the act of making something means. "This is a didactic building," affirms John Patkau.

Patkau's firm, which has gained an international reputation for its expressive wood constructions in western Canada, originally won the competition to design the facility in 1986. At that point, the museum was to be a much larger structure with urban ambitions designed to house a complex of galleries, lecture spaces, and an actual glass-blowing studio. The gallery was to be the cornerstone of the development of this industrial area at the edge of town into a new civic center that would include Waterloo's city hall. Together with Barton Myers' Seagram Museum across the street [RECORD, April 1985, pages 138-145] and the existing distillery buildings behind that Postmodern masterpiece, it would form a park where industry, urbanity, and nature could mix in what Patkau has called an "alchemical process" that would reveal their common forms.

But the gallery was never able to raise the necessary funds, the distillery burned down, and the city hall was put on hold. The city did help the Gallery complete a building, but it is only a third of its original planned size. Gone are the aedicula-like elements originally positioned at the crossing of two axes. Instead, Patkau employed the layers of parallel spaces that mark much of the firm's current work, articulated by structural members and simple planes that are as complex as they are muscular. The building is "an imposing monument, much larger in scale than it is in terms of floor area," according to gallery director Suzanne Greening.

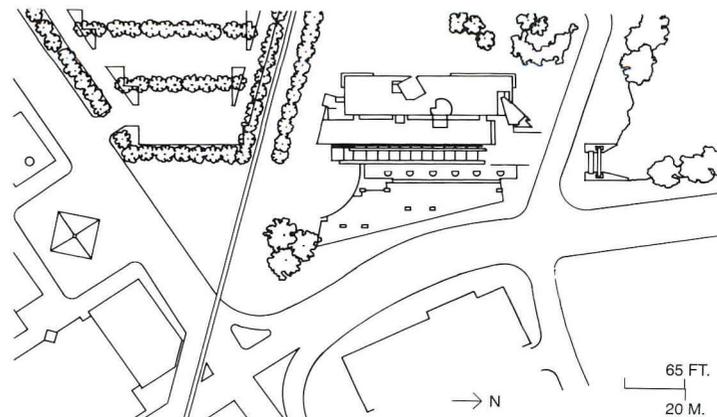
What Patricia and John Patkau have achieved is a condensation of both the program and of the industrial vernacular that shapes the context and subject of the building. The Gallery abstracts the metal and steel sheds of its neighborhood, and makes good use of the strong craft-orientation of Ontario. Influenced by the heavy industry that is still the economic lifeblood of the area, and carried on by generations of immigrant craftspeople, John Patkau describes the building as a "high-quality construction in metal and concrete, unlike anything you would find in the timber-based world we are used to." Patkau believes such a high level of craft in the use of strong materials offers "a resistance" to the ephemeral forms of a consumer-oriented society.

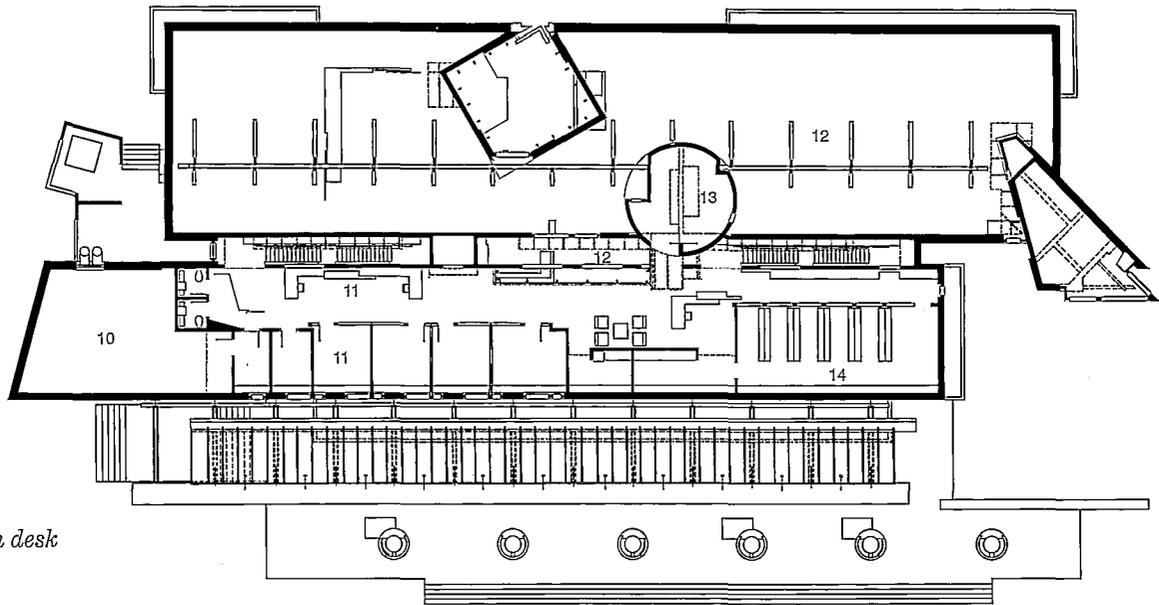
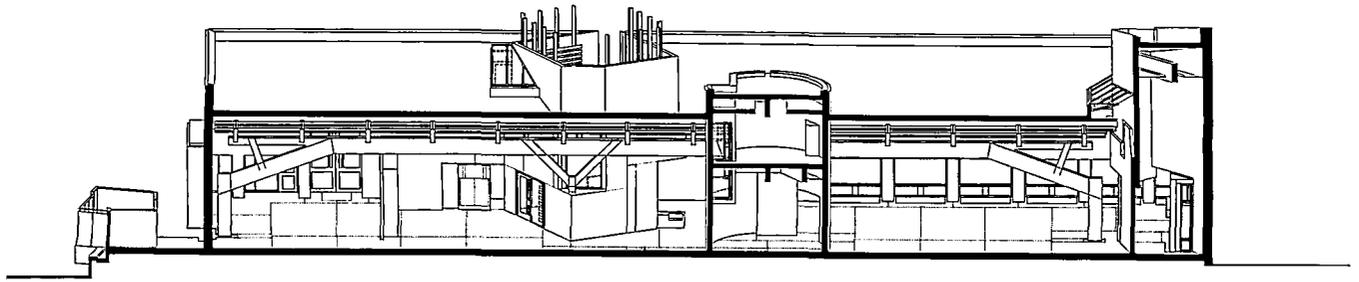
It also "emphasizes our original focus on the production of material" by showing the ways in which a building can reveal how it was made. Just as the spaces of the gallery are layered so the columns and walls are stratified accumulations of finished surfaces, supporting structure, and scrims. "Thus," says Patkau, "the composite nature of the building's construction starts to be comprehensible." "Those who walk in there to learn about glass and ceramics walk in and understand what the building is all about. They see the inherent connection between materials that started out in a different form and are now something else," says Greening. Her faith in the romantic realism of the gallery is a validation of the Patkaus' stark poetry. *Aaron Betsky*

© Steven Evans photos this page and opposite



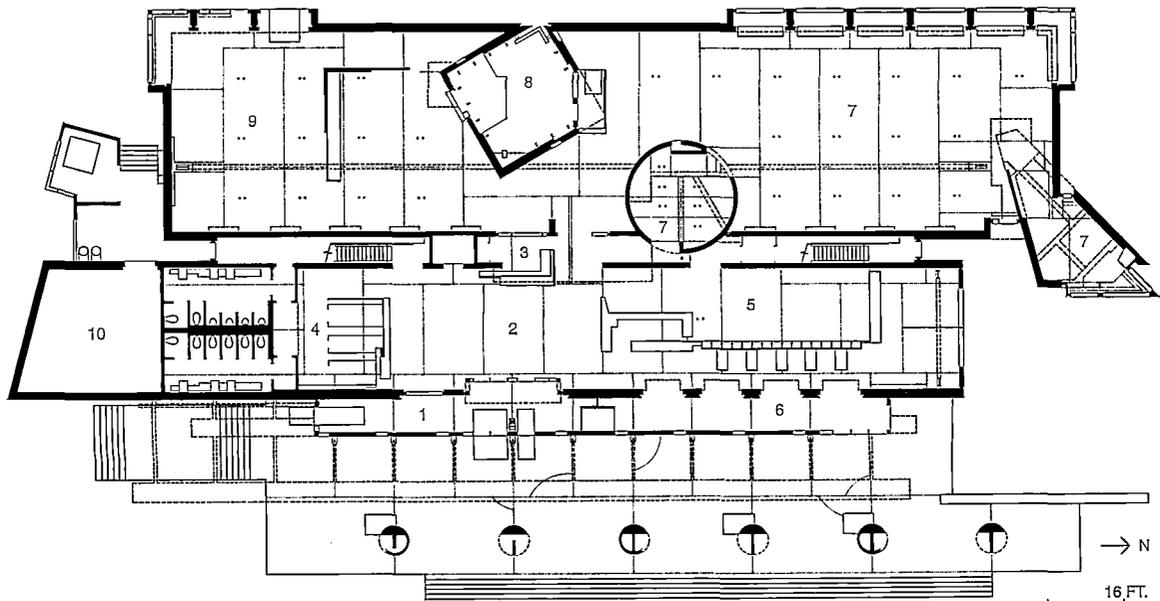
Located at the edge of Waterloo, Ontario on Silverlake, an artificial pond, the Gallery faces the city with a beacon-like, 38-foot-high tower through which one can see some of the collection. The entrance, aligned with the Seagram Museum across the street, is underneath a long canopy that will eventually offer a glazed introduction both to glass and the building's structure.





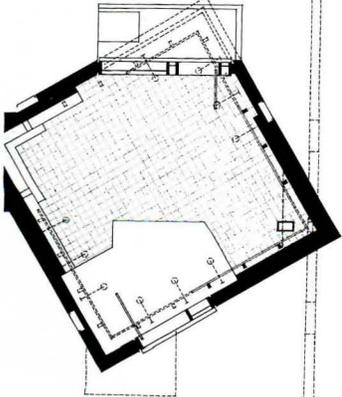
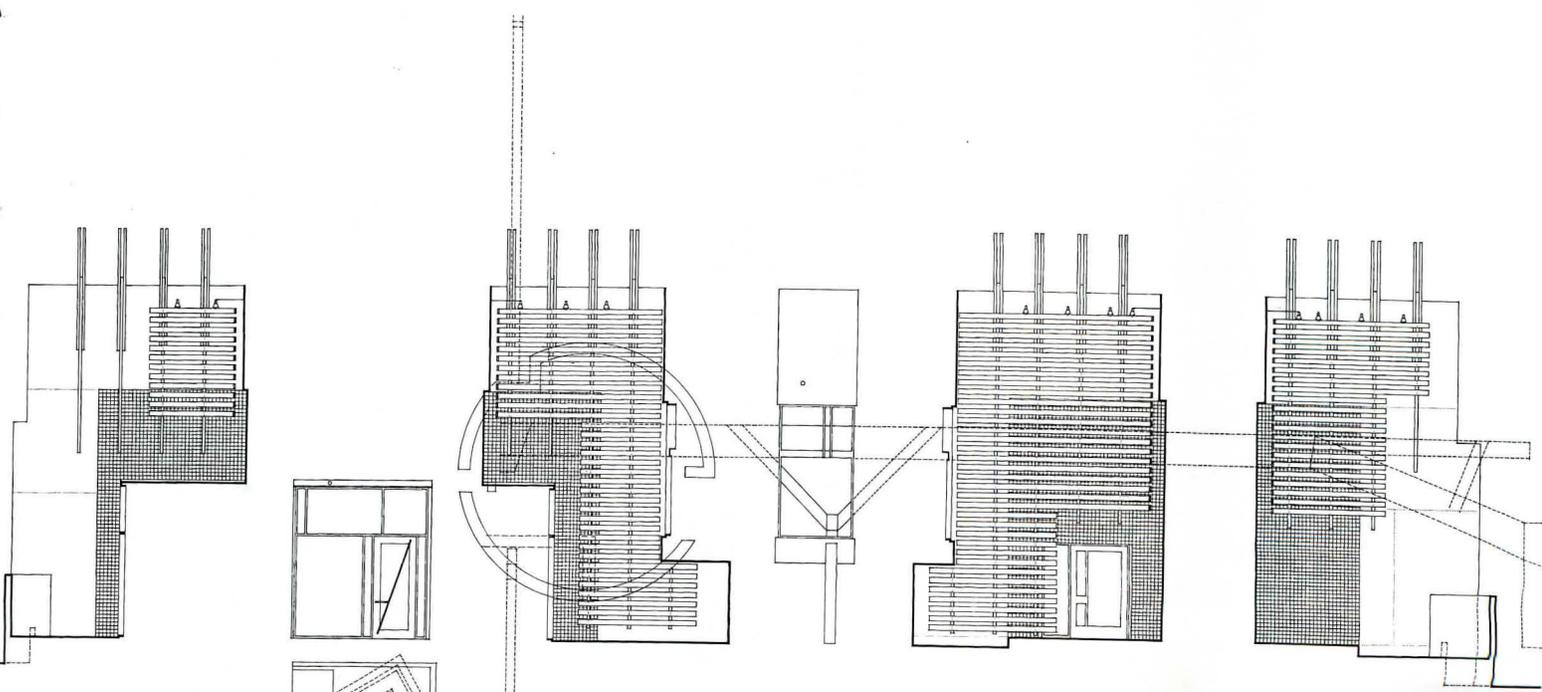
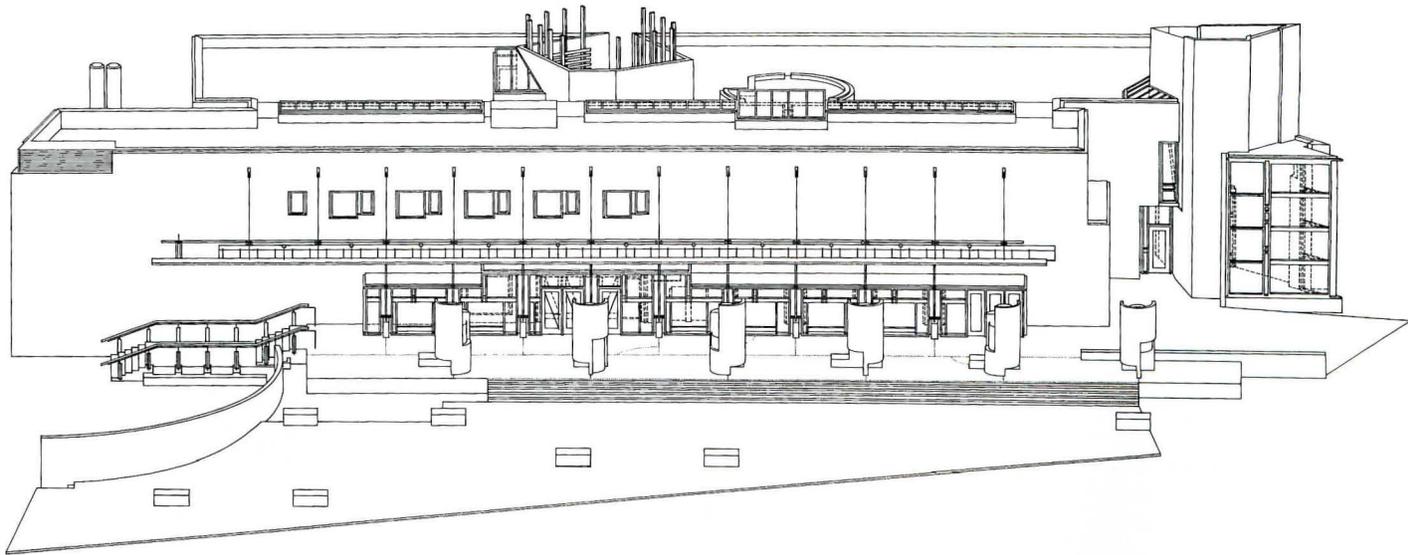
UPPER FLOOR

1. Entry
2. Lobby
3. Information desk
4. Coat room
5. Gift shop
6. Tea room
7. Gallery
8. Courtyard gallery
9. Support facilities
10. Mechanical
11. Offices
12. Open
13. Board room
14. Library



MAIN FLOOR

→ N
16 FT.
5 M.



↓ N
 16 FT.
 5 M.
 COURTYARD
 INTERIOR ELEVATIONS

Up Close

Totemic structures. The parallel spaces that house the gallery's functions are interrupted by what the Patkaus call "totemic" structures. These include the round demonstration workroom and reading room, and a square outdoor courtyard influenced by the architects' admiration of the work of Morphosis. These are the end points of the visitor's path through the layers of construction of the building. The monumental columns that state the order of the building stand in front of a series of bold poured-in-place concrete forms that define this as a museum. The backdrop gives way to a highly articulated metal canopy that serves as one of the Patkaus' sig-

nature porches. A wood-framed glass wall forms a screen that reduces these compositions to human scale, admitting one to a broad hallway where a gift shop, information desk, and other introductory functions are located. Upstairs are offices and a library. Beyond lies the open gallery space with ceilings that reach up to 24 feet. Here the structure does not disappear, but becomes more abstract until one reaches the didactic objects that house lessons of how glass and ceramics are made. As visitors move through the layers of the building, they are always looking out to inside through the

Materials are the medium as well as the message here. The simple palette includes poured-in-place concrete whose weep holes have been left unplugged, a rough textured concrete block, dark-painted steel that frames large expanses of glass, and some wood accents. These materials are seen in separate planes, so that the window assemblies, for instance, seem to slide out from behind the concrete-block walls, and the poured-in-place frame becomes visible above the interior walls.

This layering culminates in the interior courtyard, where closely spaced wood slats build up a skeletal wall whose vertical supports, slit into separate parts, reach up beyond the roof line. Baffled light from clerestories washes the rough materials, emphasizing their texture, while the circulation paths and functions confront one with the composite nature of every form: the staircases are tucked into the wall, and the rear window will eventually house a moveable glass shelving system that will support layers of glass displayed as art. The scale of the interior is as monumental as that of the exterior—emphasis is on construction rather than on type or function. These elements allow viewers to understand the relationship between the scale of the construction and their own size.

Credits

*Canadian Clay and Glass Gallery
Waterloo, Ontario, Canada*

Owner: *City of Waterloo*

Architect: *Patkau Architects—John Patkau, Patricia Patkau, Michael Cunningham, Tony Griffin, Peter Suter; design team*

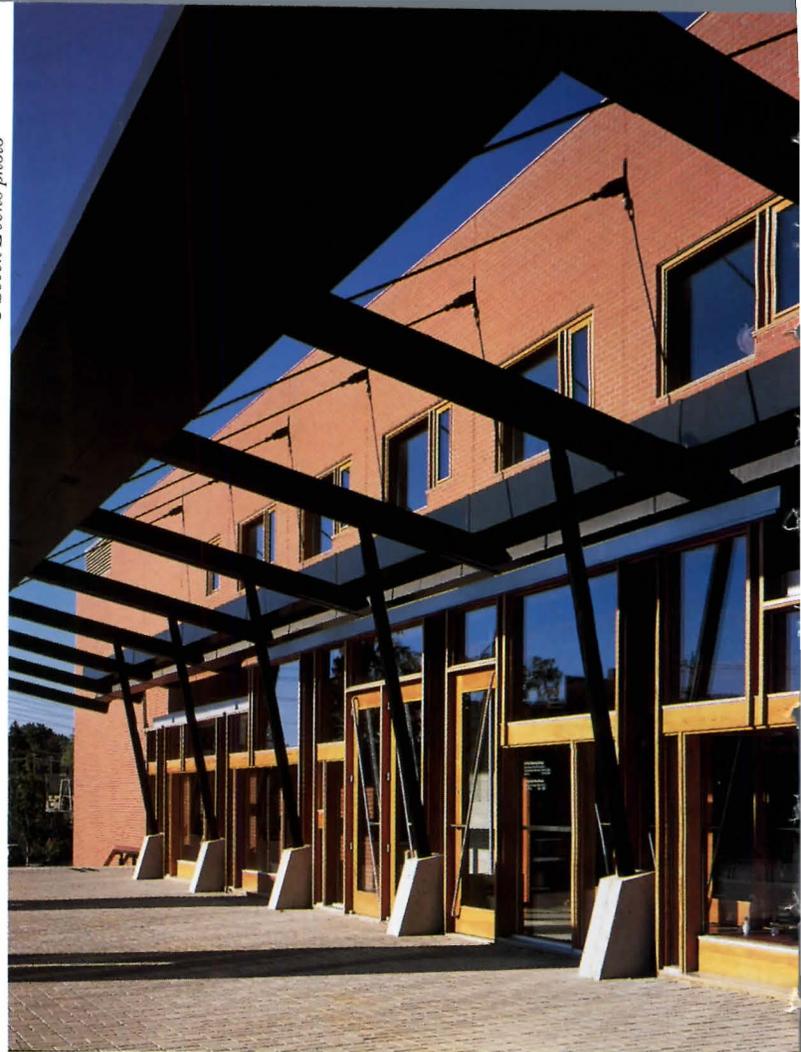
Associate Architect: *Mark, Musselman, McIntyre, Comb Architects*

Consultants: *C.Y. Loh Associates (structural); Coanda engineering/Keen Engineering (mechanical); Sze Straka Engineers (field representatives); R.A. Duff and Associates/ Coanda Engineering (electrical); Gabriel Design (lighting)*

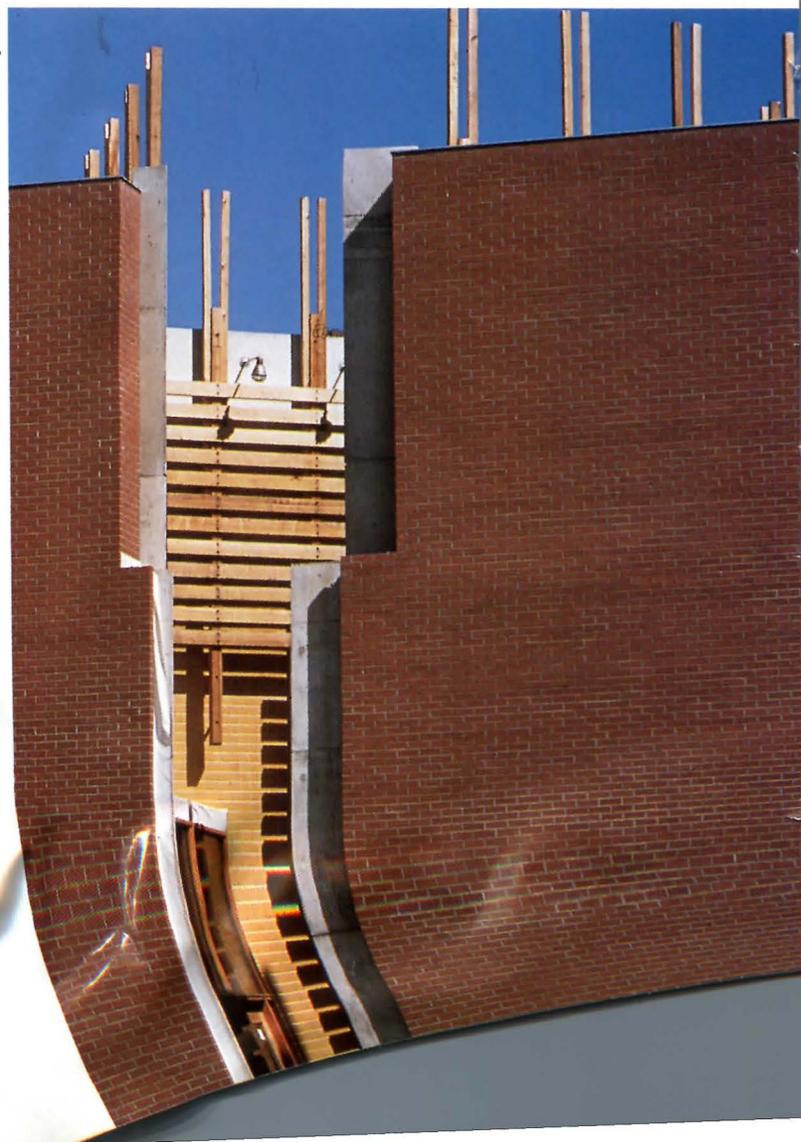
Landscaping: *City of Waterloo*

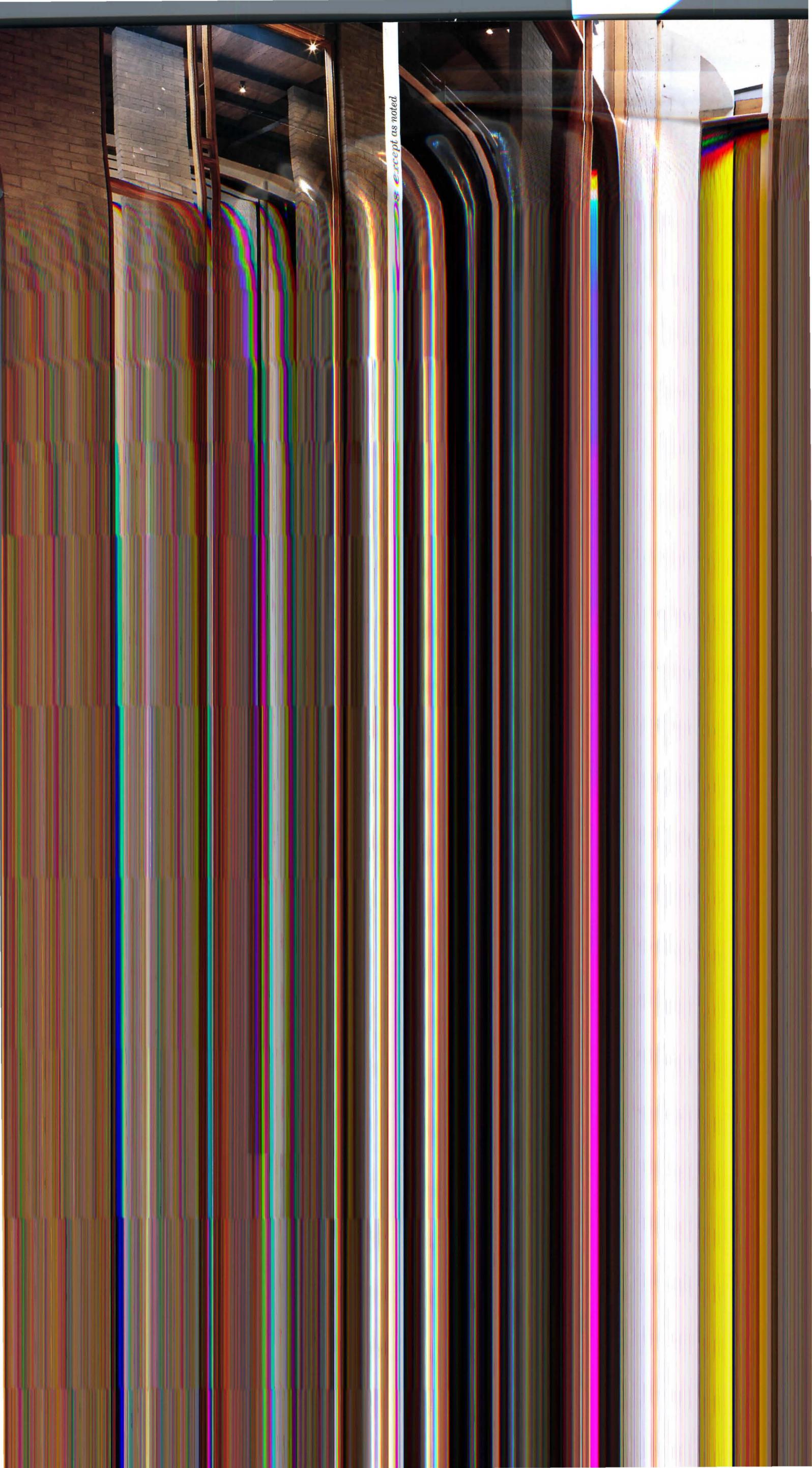
General Contractor: *Ball Brothers, Ltd.*

© Seven Evens photo



© Patkau Architects photo





except as noted

Arts Campus

The newest unit of Houston's emerging arts campus is an urbane presence scaled to the pedestrian.



© James Donn photos except as noted.



© Paikau Architects photo right



Arts Campus

The newest unit of Houston's emerging arts campus is an urbane presence scaled to the pedestrian.



*Central Administration and Junior
School Building, Museum of Fine Arts, Houston
Carlos Jimenez Architecture Studio, Architect
Kendall/Heaton Associates, Inc.,
Associate Architect*





osely focused around the Lillie and Hugh Roy Cullen Sculpture Garden (Isamu Noguchi, 1986), the Museum of Fine Arts, Houston has built over the years an “arts campus” based on a master plan by Venturi, Scott Brown & Associates. Rather than stuff all the varied institutional functions of a modern museum into one megastructure, the Venturi plan accommodates a variety of individual buildings of diverse functions forming an urban campus setting. The Central Administration and Junior School Building by Carlos Jimenez Architecture Studio is the newest and most urbane of the ensemble. The building’s civic-minded presence on the street encourages a pedestrian promenade around the neighborhood of art institutions.

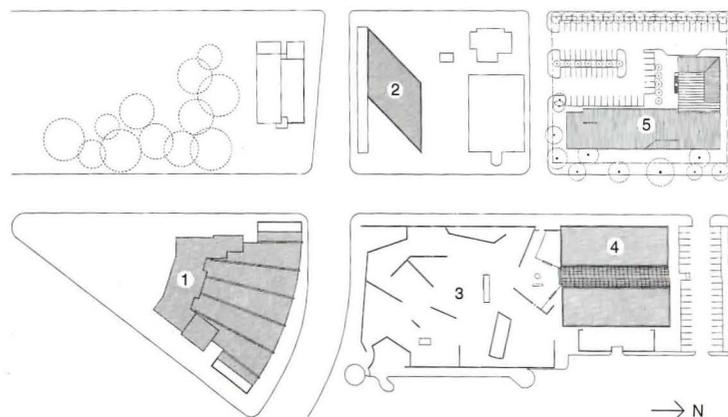
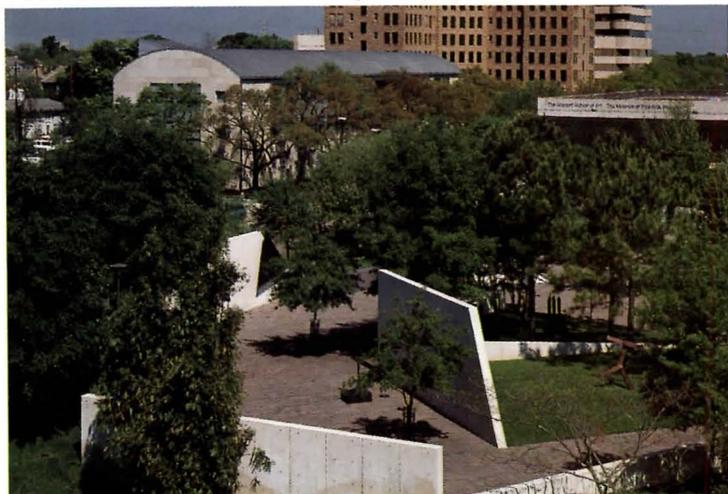
The original Neoclassical museum (William Ward Watkin, 1924) was gracefully enlarged with exhibit halls by Ludwig Mies van der Rohe (1958-1974) using forms deriving from Crown Hall at IIT, with its over-the-roof steel girders. The gentle bow of Mies’ Brown Pavilion follows the curve of the street and radiates a centering presence that makes the campus idea work, connecting and drawing in the dispersed branches of the museum. To round out the “campus,” designs are under way by Rafael Moneo for new galleries to exhibit the museum’s 19th century collections, to be completed in 1999.

Clad in limestone like the original museum and Mies’ additions, the Central Administration and Junior School Building fronts directly on the street behind a screen of mature live oaks. In a manner very unusual for Houston, the parking lot is in the back, pleasantly landscaped and usable as an outdoor plaza. A covered vehicular drop-off leads directly into the school wing. The two wings of the L-shaped 60,000 square-foot plan reflect the dual program of the facility. The three-story block facing the street houses all the administrative departments of the museum, previously confined to Mies’ basement and other scattered sites. The two-story wing, extending along the side street, consists of art studios and classrooms, all receiving north light.

The vertical open space of the lobby joins the two wings like a dog run and can be used by either the administration or the education branches for public functions. Although each wing has independent entrances and internal organization, this shared space both unifies the building and mediates between two functions which otherwise have little in common. Administrative floors are planned with perimeter offices whose partially glazed interior walls admit natural light into the central open work areas. In the education wing, studios line an interior street, a meeting place for school activities, and display space for student artwork.

Although the largest of Jimenez’s designs to date, the museum project retains the clarity of organization and simplicity of form that’s consistent throughout his work. Jimenez notes that, contrary to the common expediencies of today’s inexpensive, throw-away buildings, “the new museum building illustrates a commitment towards building more durable structures that can resist the vicissitudes of fashion and program. Buildings remain not in the vertiginous present but in the gradual unfolding of their futures. Architecture becomes the residual, yet ever-present space in between.” *Gerald Moorhead*

© Paul Hester and Lisa Carol Hardaway Photographers photos.



1. Existing Museum of Fine Arts
2. Contemporary Arts Museum
3. Cullen Sculpture Garden
4. Glassell School of Fine Arts
5. The Museum of Fine Arts Administration and Junior School Building

Behind the sculpture garden (top photo), the reflective skin of the Glassell School of Art, S.I. Morris Associates, 1978) contains the outgrown art-education studios that in part necessitated the new project across the street (above). Wedged into the Museum’s properties is the shiny parallelogram of the Contemporary Arts Museum (Gunnar Birkerts, 1972), rounding out the so-called “arts district” (see site plan).



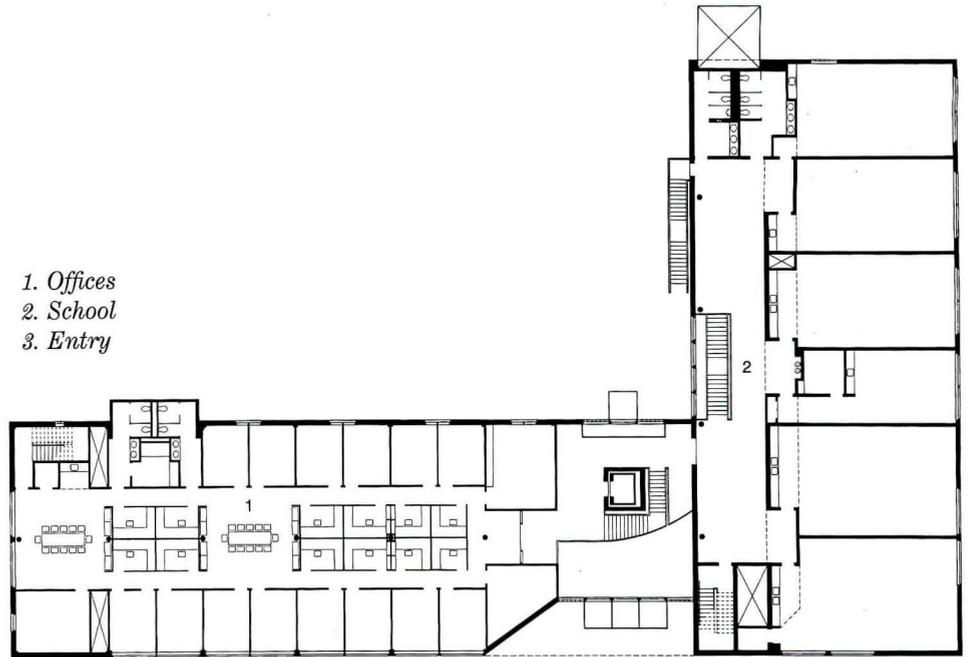
Jimenez has foregone his typical palette of vivid colors for the subdued tones of limestone and clear anodized aluminum. The simple volumes are crisply detailed. Windows are either ganged together and held flush with the stone face or treated as singular, deeply punched openings.

Vertical bands of glass block and clear glass define the lobby that opposite, top left). At the street entrance (opposite, top right), the full height of the lobby draws the occasional pedestrian in, an appropriate civic scale but not overbearing.

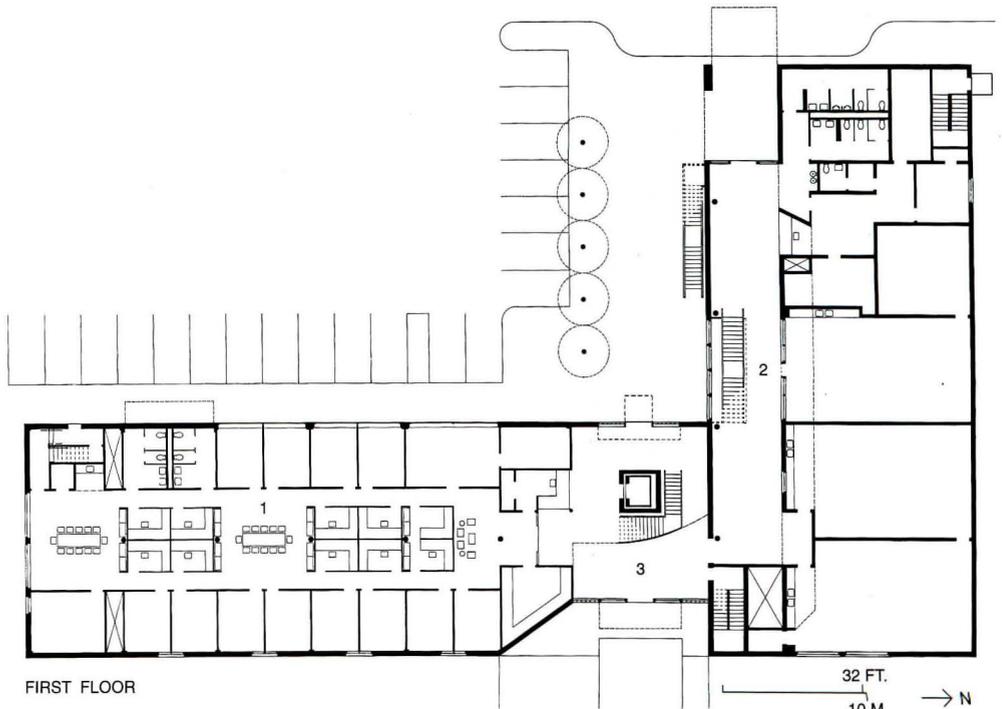
The student drop-off canopy (opposite, lower left) leads directly into the "internal street" that organizes the education wing. The aluminum engaged tower in the background contains toilets, hanging over the wall like the latrine of an old medieval fortress. The restrained complement of material—stone, steel, aluminum, glass—is simply detailed, as seen at the court wall of the education wing (opposite, lower right.)

The design manages to eschew any cues to trendy fashion, stylistic references, or even geometric abstraction. The directness of the forms and spaces is calmly satisfying, the materials solid and rich without being ostentatious.

1. Offices
2. School
3. Entry



SECOND FLOOR



FIRST FLOOR



Filled with light, the transparent three story high lobby is an airy link between the wings (opposite). The marble-clad elevator shaft, the only instance of a precious material in the building, is loosely wrapped by the glazed stair (top left and right).

Seemingly quiet and uncluttered in these photographs, the internal street (lower left) is normally raucous with children, colorful artworks taped to the white walls. Office areas (an office is shown at lower right) are calmer but also filled with light and activity.

Credits

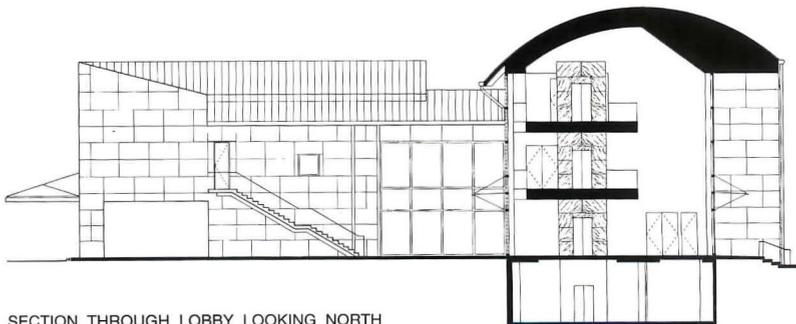
Central Administration and Junior High School Building
Museum of Fine Arts
Houston, Texas

Architect: Carlos Jimenez Architecture Studio—Carlos Jimenez, designer; John H. Bowley, Robert Fowler; Eric Batte, project team

Associate Architect: Kendall/Heaton Associates, Inc.—Bill Kendall, Larry Burns, Warren Carpenter; project team.

Consultants: C.B.M. Engineers, Inc. (structural)—Joe Colaco, Prudencio Febre. I.A. Naman + Associates Inc., (MEP)—Tom Bay, John Spa. Walter P. Moore and Associates, Inc. (civil)—Edwin Frederichs. Dennis Wright & Associates Inc. (landscape)—Dennis Wright. Fuller Dyal & Stamper (graphics)—Herman Dyal, Curtis Roberts. Buescher Inc., project management—James Buescher

General Contractor: Miner Dederick Companies—John Czapski, Dan Shead.



SECTION THROUGH LOBBY LOOKING NORTH



Strip Stopper

CINEMA



*An attention-grabbing theater
practically halts traffic
and literally turns around
a failing suburban mall*

*O'Neil Cinemas
Duluth, Georgia
Richard Rauh Associates/Architects*

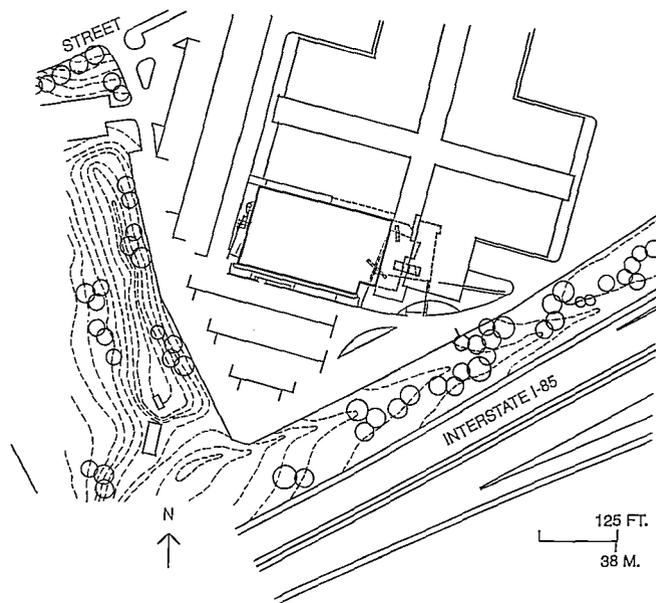


The site is north of Atlanta in Gwinnett County—during the late 1980s, the fastest-growing bedroom community in the U.S. Like many new suburbs, the entire county centers around a single sprawling mass of giant shopping malls and clogged highways that replace traditional town centers. Says architect William Rauh, “It’s all a tribute to shopping frenzy.” Alongside one such highway lined with closely packed competing signs for individual concessions, the nearly vacant 10-year-old Duluth mini-mall stood little chance of attracting business. It presented its back to passersby, complete with loading docks. The new owner called in Rauh’s firm for consultation. The architects recommended that he replace blank walls on the highway side with an enticing tenant noticeable enough to make drivers take the next exit and loop back over circuitous access roads—and create alongside a new, highly visible mall entrance.

Enter O’Neil Cinemas, a national chain with experience operating second-run theaters in shopping centers. O’Neil was a natural fit. Economy-ticket houses generate a lot of traffic, offering many film choices and running them only so long as there’s the interest to make showing them profitable. With virtually no budget to advertise elsewhere, second-run theaters rely on signs displaying titles to lure spur-of-the-moment viewers. And because movie-goers tend to use parking at night, they are a natural complement to daytime shoppers. But, in the surrounding checkerboard of neon signs, simply adding more wouldn’t be enough. O’Neil, not accustomed to putting up theaters that got attention as *buildings*, was hesitant after analyzing Rauh & Associates’ recommendations, but was willing to be convinced that architecture could be its attention-getter.

First, the architects demolished most of the existing mall’s highway side and replaced it with a 26,000 square-foot building with 1,808 seats in 12 auditoriums. They carved a new theater lobby out of a former dead-end mall corridor, which they rerouted around the lobby where it leads to the new retail entrance (see plan). The corridor is closed off by means of roll-up security screens after shopping hours. Finally, a new unified facade stretches more than 400 feet across the entire complex, concealing loading docks behind a mall-sign wall (right in site plan). The vast scale does more than hold its own against its hodgepodge surroundings.

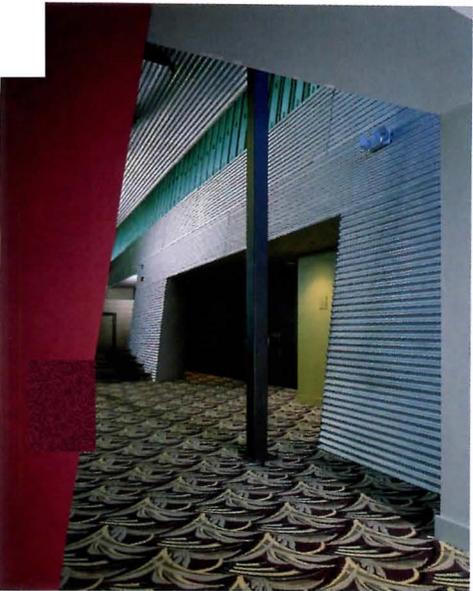
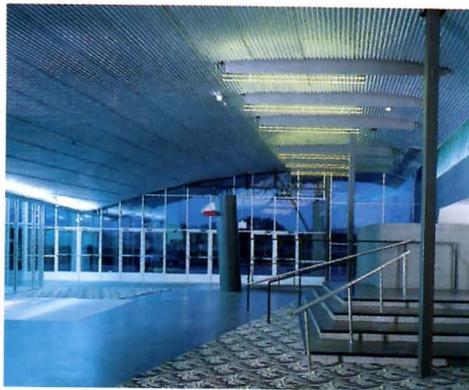
In this land of concrete block and stucco, the architects’ choice of corrugated-steel wall and roof panels was another major factor in making the facade stand out. Three patterns, ranging from 3/8- to 1 1/2- inch ribs, are finished in factory-applied silicone-polyester paint or a clear finish, producing a silvery natural color. They cover both the new steel auditorium structure built on slab-on-grade and the remaining masonry structure, producing a light, bright relief from the surrounding norm. The effect is enhanced by a 194-foot-long massive round gutter across the auditoriums, lit at night by continuous fluorescent billboard lights which produce, in Rauh’s words, “a Star Wars light saber.” His firm’s choice of unusual cladding did not come without its problems. Despite careful detailing on construction documents, workmen referred to the material as “chicken-coop fixings,” and tried to drive attachments through it at random, starting new holes when previous attempts failed to reach home. Deliverers ran their trucks over unloaded bundles. (To learn how the architects and construction managers overcame this obstacle, see *Up Close*.) Given these problems, the fact that the building came in at \$55 per square foot became a real achievement. Commenting on the building’s avant-garde appearance in this solidly middle-class milieu, Rauh observes that cinemas are among the few settings where people expect the unusual. *Charles K. Hoyt*



One of the architects’ tasks was to keep motorists from losing track of the new building once they had spotted it from the Interstate. While they loop back on circuitous access roads, they have in sight the sculptural form created from an exit and secondary access (bottom photos) located at the opposite end of the new auditorium block from the main entrance and exit.

The composition includes a free-standing fiberglass-reinforced plastic panel, which seems to float before its more-solid background. The new theater main entrance (top photo, center) is carved out of the masonry construction in a high bay of the original mall. A new entrance to the mall is located to the right.





Up Close

A material ahead of its time. When architect Richard Rauh saw workmen randomly punching fasteners through the lobby ceiling, ignoring carefully detailed placement drawings, he ordered them to take it down and lay it out on the ground. Then he, himself, put pieces of tape on the proper locations. Despite the problems Rauh had getting workmen and delivery people to treat corrugated steel with respect (see text), he believes that attitudes as well as technology are changing. He and construction manager Fred Gaines stressed to the crew and other staff that the cinema must be a showcase building which they could bring their families to with pride. Technological innovations included leaving edges of sheets exposed at corners and sealing joints with neoprene gaskets instead of the usual angle covers.

Credits

O'Neil Cinemas

Duluth, Georgia

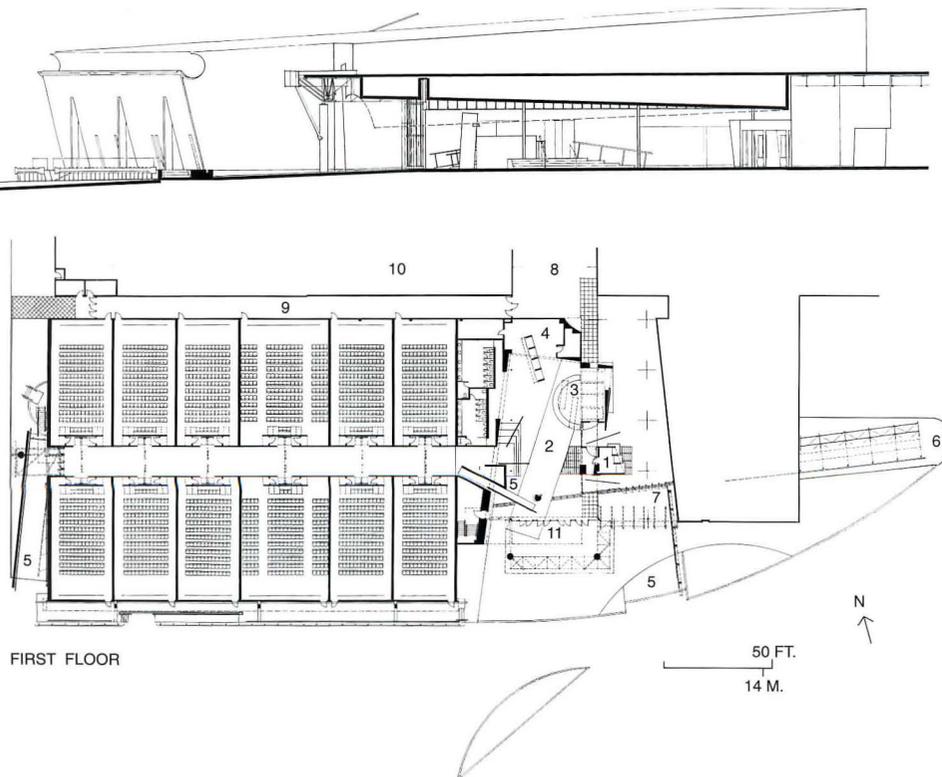
Client: *O'Neil Theaters, Inc.—Steve Moss and Juan Nevarez, representatives*

Architect: *Richard Rauh & Associates/Architects—Richard Rauh, principal-in-charge of design and management; Ann Fitzgerald, principal-in-charge of technology and production; Randall C. Miller and Rob Miller; design assistants; Henry Anderson, Miguel Baeza, Blaine Bonadies, Molly Cherney, Jonathan Elmore, Mark Gardner, Karen Lightsey, Ellena Lin, Steven McCall, Richard Powell, Randy Zaic, project team*

Engineers: *Uzun & Case (structural); B&A Consulting Engineers (mechanical and electrical); Columbia Engineering (civil); United Consulting Group (testing)*

Consultants: *Irwin Seating Company (seating); Kirby Building Systems (pre-engineered steel frame); James L. Cox & Associates (door hardware); Jon Bajon, Inc. (cinema equipment)*

Construction Manager: *Gaines Construction, Inc.—Fred Gaines, field manager*



- | | |
|------------------------------|---------------------------|
| 1. Tickets | 8. Original mall corridor |
| 2. Lobby | 9. Auxiliary exit |
| 3. Concessions | 10. Original retail space |
| 4. Video games | 11. Main exit |
| 5. ADA ramp | |
| 6. Mall sign | |
| 7. Mall and theater entrance | |



Coming: Housing That Looks Like America

Having slept for seven straight years, the multifamily housing sector awoke slowly in 1993 and took a look around. Like Rip van Winkle, it discovered that many things had changed during its prolonged slumber. Gone were the passive-loss tax write-offs and the accelerated depreciation schedules that had fueled much of the building frenzy of the early 1980s. Gone too were many of the Baby Boomers, who were now reaching middle age, raising families, and buying houses rather than renting apartments.

But the landscape was not without bright spots. One of the largest waves of immigration in U.S. history had swept a new generation of renters to the nation's shores and an aging population had created demand for retirement housing. At the same time, a rising divorce rate and a growing acceptance of alternative households had brought about a pool of people who were either single again or were looking for housing in which more than one family could live together.

While changing demographics have created new opportunities, total demand for multifamily housing remains far below the peaks hit in 1985 (when about 700,000 dwelling units were started) and 1972 (when more than 1 million were started). Rock bottom was hit in 1992, when less than 200,000 units were built. Having increased 14 percent in 1993 and then 23 percent the next year, the multifamily sector is set to grow 7 percent this year, according to F.W. Dodge. That will push starts to 240,000 units.

Perhaps the most important force shaping the multifamily market today is the changing ethnic mix of America. Of the 22-million increase in the U.S. population in the 1980s, 8.7 million—or nearly 40 percent—was due to immigration, states a report by the Joint Center for Housing Studies of Harvard University. Because immigrants have

higher birth rates than other Americans, their growing numbers have forced the Census Bureau to significantly adjust its forecasts for the next century. Instead of seeing the U.S. population leveling off at 300 million in 2030, the Census now says it will grow steadily for at least the next 50 years, hitting 350 million in 2030.

From gateway cities to suburbs

Since immigrants tend to have limited incomes, they usually rent rather than buy housing. But William Apgar, executive director of Harvard's Joint Center for Housing Studies, explains that these people also tend to be hardworking and ambitious. "Many immigrants push into home ownership relatively quickly," says Apgar. "The long-term pattern is for them to go from gateway cities to the suburbs." Their immediate impact, though, has been to offset what would have been an even greater decline in rental housing in the 1980s and '90s.

The 1980s also witnessed a diversification of household types, says Peter Rowe, dean of the faculty of design at Harvard's Graduate School of Design and author of *Modernity and Housing*, a book published by MIT Press in 1993. "The traditional family" of two married parents with children "is only 27 or 28 percent of the U.S. population," states Rowe. As a result, housing types appropriate for households headed by single parents or for divorced parents with parttime kids—to mention just two—will have to be built.

As recent immigrants move up the economic ladder and into the suburbs and as families continue to fracture, residential densities will increase in suburban areas, says Rowe. Single-family houses will be subdivided into multiple units, "granny flats" or accessory apartments will be added to single-family neighborhoods, and some older office buildings and industrial structures may be converted into



© Hedrich-Blessing



Residents range in age from 2 to 95 at the Nathalie Salmon House, an intergenerational project designed by Nagle Hartray Associates on Chicago's North Side (left). At San Pablo Commons in Emeryville, Cali-

fornia, Pyatok Associates also brought different generations together by placing two-story family townhouses above retail and one floor of apartments for senior citizens on top of it all (above).

Changing demographics and household patterns are reshaping the housing needs of North America. Architects are responding with new designs.

housing. "You'll see more innovation in mid-range-density housing," says Rowe, "where 30 to 35 units are built to the acre and each has direct access to parking and the outdoors." Rowe also sees a reaction against the Modern movement's faith in standardized design and its belief that centralized agencies are the best way to deliver housing. "Today there is a more contextual response to the massing, scale, and materials of housing and more concern for housing's impact on the streetscape," states Rowe. At the same time, there is greater reliance on the private sector and local organizations to deliver housing.

Breaking through the barriers

In the past, American society has often segregated people by race, class, and age. Although great barriers remain, a number of local organizations and developers are quietly bringing different kinds of people together. By building smaller and on scattered sites, some groups are able to overcome community resistance to low-income housing. (See "Garcia Apartments," page 90). Other groups are building housing that brings different generations together. In Chicago, for example, Housing Opportunities and Maintenance for the Elderly recently completed the Nathalie Salmon House, which combines family and student apartments with ones for the elderly (opposite, left). As designed by Nagle Hartray & Associates, Salmon House breaks free of the institutional mold of much elderly housing and stands as a handsome addition to its neighborhood. A similar program of intergenerational housing is behind San Pablo Commons in Emeryville, California, designed by Pyatok Associates (opposite, right). The four-story building will have 14 family townhouses above retail, with 11 penthouse flats for seniors on the top floor. Ironically, U.S. law prohibiting discrimination based on age is forcing the client, the city's Commission on Aging, to jump through some awkward legal hoops. To designate some apartments for seniors, the client will

have to develop the top floor as a separate project with its own funding and elevator. All residents, though, will mix on the ground floor in a meeting room, rear courtyard, and building entrance.

A housing model from Scandinavia

Although not focused specifically on mixing age groups, the so-called cohousing movement proposes communities in which residents share certain facilities such as kitchen, dining, and meeting areas, while retaining their own dwelling units. Begun in Denmark about 20 years ago, the cohousing approach is now being tested in North America. In Sacramento, California, Kathryn McCamant and Charles Durrett, architects who are partners in the CoHousing Company, worked with a group of 25 households and architects Mogavero Notestine Associates to create Southside Park in an inner-city neighborhood (below left). The mixed-income, multi-ethnic community has helped revitalize an area where fading Victorian houses sat next to crack houses.

While some groups are bringing new notions of community to housing, others are re-examining it from a building-systems point of view. For several years, Stephen Kendall, vice president of a firm called Technology + Economics and an associate professor of architecture at Marymount University in Virginia, has been extolling the virtues of the "open building" system, in which the architect designs a structural and mechanical framework and residents build their own units within this. Just as commercial developers find it more efficient to let tenants fit out their own office space, residential builders could reduce their risk of miscalculating the needs of the marketplace by constructing flexible building systems within which residents could shape their own apartments. In Japan, the Osaka Gas Company built an experimental housing project, called NEXT21, that employs such an open-building system (below right). Clifford A. Pearson

© The CoHousing Company



Southside Park is a 25-unit cohousing project in Sacramento, California, that includes a 2,500-square-foot common house and other shared amenities such as a garden, a play area, and a workshop. Built in an inner-city

neighborhood of aging Victorian bungalows, the new community offers a mix of low-, moderate-, and market-rate houses on a 1.3-acre site. The architect for the project was Mogavero Notestine Associates.



Built by Osaka Gas as a demonstration of innovative building technologies, NEXT21 employs an "open building" system as well as new approaches to reducing energy consumption and waste production.

The building's architecture was designed by Yositaka Utida and the SHU-KOH-SHA Architectural and Urban Design Studio, while the design system for the 18 apartments was created by Kazuo Tatsumi and Mitsuo Takada.

© Y. Takase

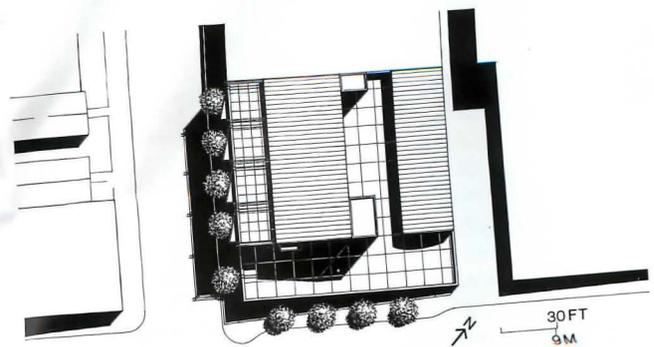
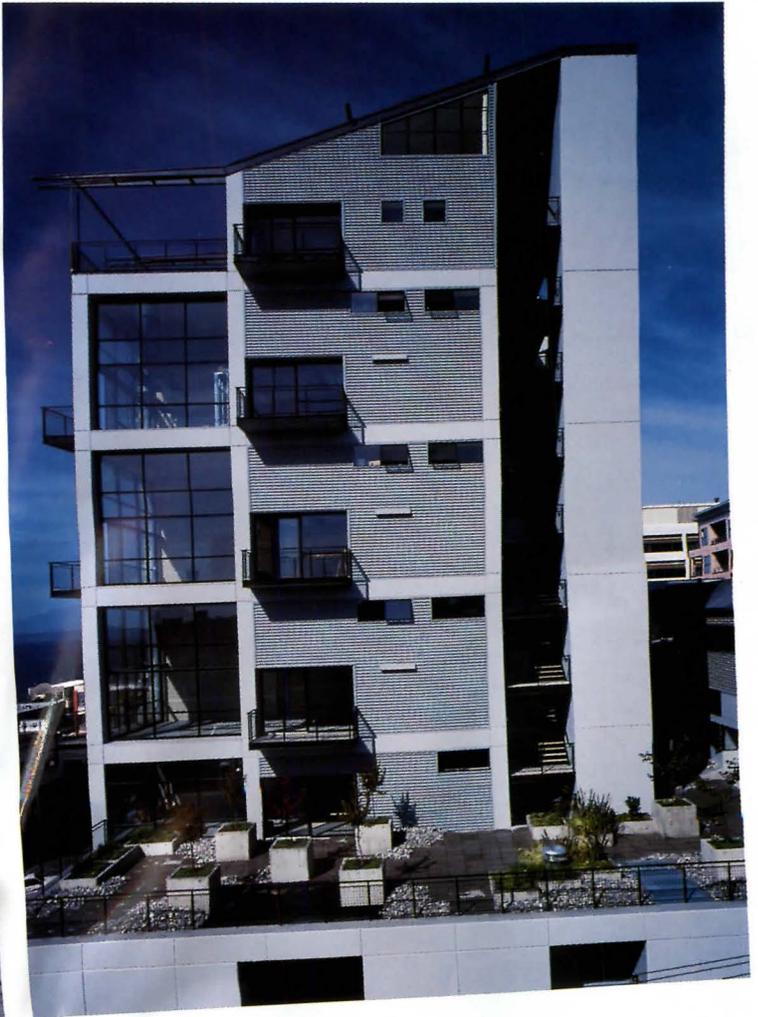
Banner Building

Seattle, Washington
Weinstein Copeland Architects

Just like old industrial loft buildings and new office towers, the Banner Building in Seattle provides a basic structure and a design vocabulary, but lets residents build out their own spaces. Designed for artists who want to live and work in the same place, the condominium project offers rough two-story units with concrete floors, access to all utilities, and great views of Puget Sound. An owner's manual, written by

the building's architect, describes the workings of the building and explains requirements for all construction done in the individual units. While such an arrangement is common with commercial projects, the Banner Building breaks new ground by bringing it to the residential market. In the process, it delivers a more flexible and less expensive form of housing that appeals to urban professionals as

© Michael Shopenn photos



well as artists. The idea was to provide "good bones" on which the residents themselves could build, says Ed Weinstein of Weinstein Copeland Architects. "The building is the framework within which artists can work," adds Weinstein. Although old loft buildings have been converted into live-work spaces in Seattle for many years, the Banner Building is the first new project designed for this purpose. With

its unconventional program, it is not surprising that the project's original developer, Koryn Rolstad, is not really a developer at all, but an artist with enough determination to bring together the necessary money and players. Rolstad, who runs an architectural sculpture studio called Bannerworks, wanted to create a community where art and commerce came together and where struggling artists

could live with more established ones. To that end the project has three major components: a midrise condominium tower with 14 two-story live-work studios, a two-story rental building with four subsidized and two market-rate apartments, and a multi-level base with parking and commercial space. Rolstad herself bought one of the two penthouse studios on the top floor of the tower and has her

Bannerworks operation ensconced in the base of the building. While the penthouse units have 2,400 square feet of living space, the other for-sale studios have 1,800 square feet on two levels. Units are bought as raw space with concrete floors on metal decking and utilities running up through walls. In the rental building, apartments were finished by the developer with 600-square-foot subsidized units



While the midrise tower and the project's base (photos opposite) are concrete-frame structures, the two-story rental building (left in photo above) is wood-frame. The Banner Building's west facade takes advantage of great views of Puget Sound by featuring two-story expanses of commercially available curtainwall with low-emissivity glass (right). By using standard products and inexpensive

materials such as concrete and corrugated metal, the architects kept construction costs down to \$65 a square foot and gave the building an industrial character in keeping with its neighborhood. At the same time, the architects used the building's mass to give it a presence on the skyline.

on the first floor and 1,200-square-foot market-rate units one flight up. Located in a transitional neighborhood north of downtown, the building proudly recalls the area's industrial past in the frank expression of its concrete frame and its use of corrugated-metal siding, metal balconies, and exposed rainwater pipes. Commercial and retail space on the lower levels link the project to its site, creating

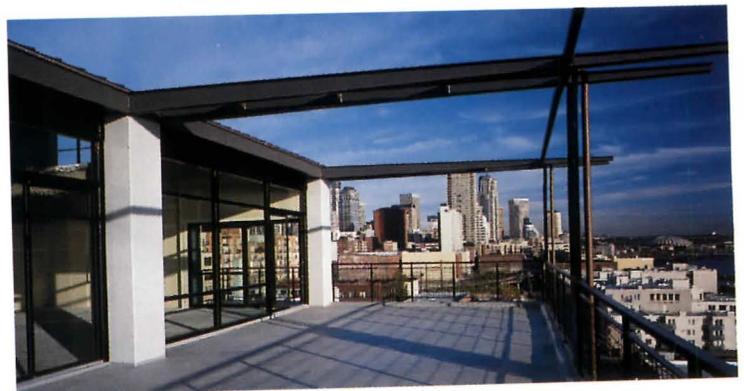
common ground for the building's artists and the area's other residents. Although large concrete panels on the base of the south side of the building are a bit stark right now, plans call for them to be enlivened by murals painted by residents. In fact, participation by residents in enhancing common spaces is as much a part of the project as their role in shaping their own living areas. A courtyard

between the two residential buildings and a terrace on the roof of the condominium tower are intended to be landscape works in progress, changing over time. In addition, Weinstein extended corridors to eight feet wide and kept them outdoors so residents could install their own art and plantings. Outdoor circulation helped keep construction costs down to \$5.8 million (or about \$65 per gross square foot).

But a tight budget also eliminated sun screens that Weinstein designed for the building's west facade, forcing residents to block the afternoon sun with internal devices such as blinds. Although it just opened in the fall of 1994, the Banner Building has already won some design awards and is attracting the attention of other developers interested in targeting niche markets such as artists and young professionals. *C.A.P.*



To help create a sense of community, the project includes a variety of shared outdoor spaces such as a central courtyard (above) and a rooftop terrace (right). Outdoor corridors were also made wide enough (8 feet) to let residents congregate there. Private balconies off live-work studios are angled to ocean views (above right).



Credits

*Banner Building
Seattle, Washington*

Owner: *Hadley Holdings Corp.*

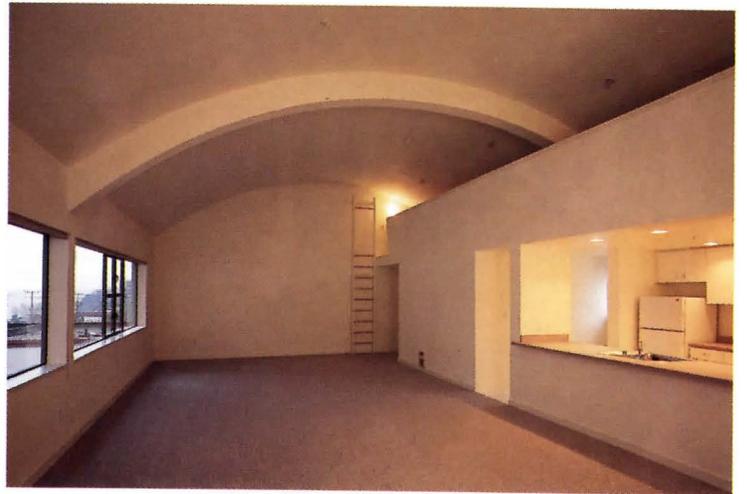
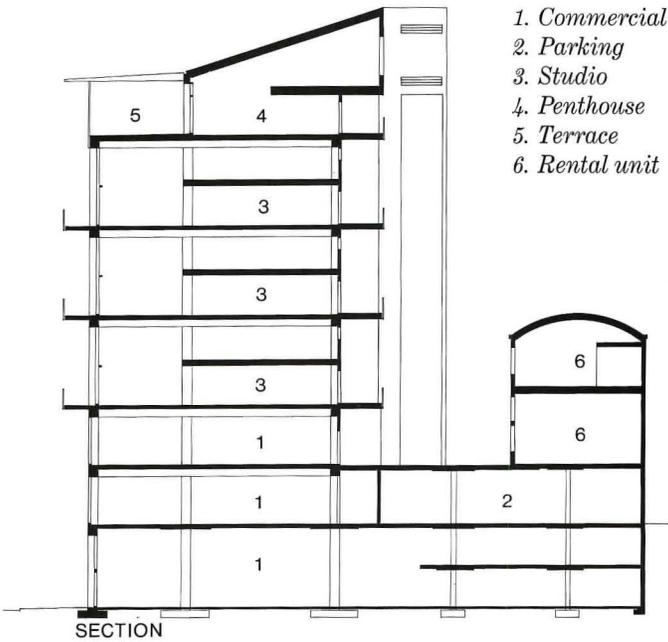
Architect: *Weinstein Copeland
Architects—Ed Weinstein,
partner-in-charge; Milton Won,
project manager; John
Eggleston, Robert Nishimori,
Judith Swain, design team*

Engineers: *Ratti Swenson*

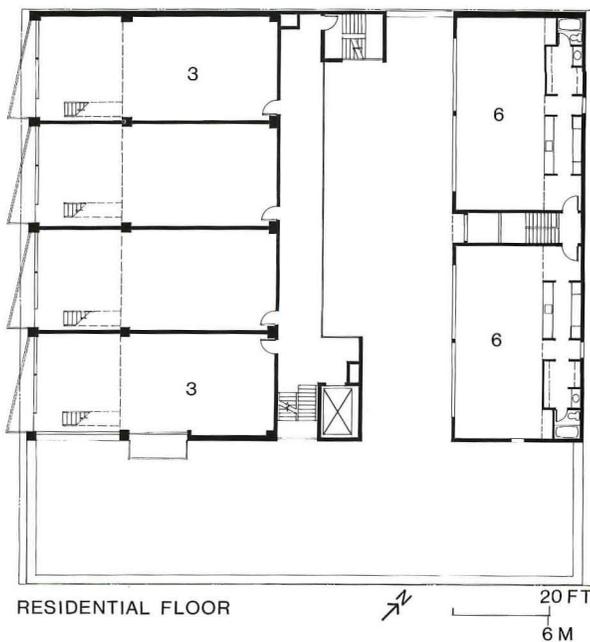
*Perbix (structural); Bush, Roed
& Hitchings (civil)*

Landscape Architect: *Harvard
& Associates*

General Contractor: *Hadley
Holdings Corp.—W.G. Clark,
construction manager*



For-sale studios are bought as raw space with concrete floors and sheetrock walls (top). Utilities run through walls at multiple locations to provide flexibility in apartment layouts. Typical units have 1,200 square feet on one level and 600 square feet on a mezzanine. In a rental building, units are finished spaces with either 1,200 square feet (above) or 600 square feet.



Garcia Apartments

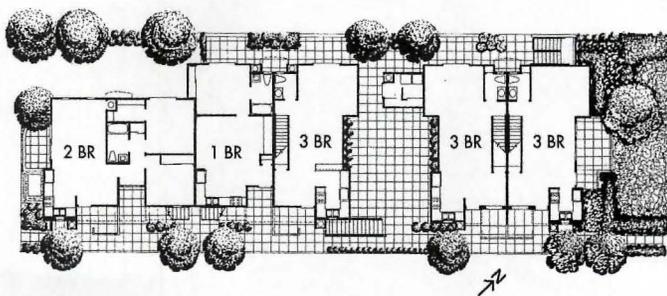
Santa Monica, California
William Adams Architects

© Douglas Hill photos

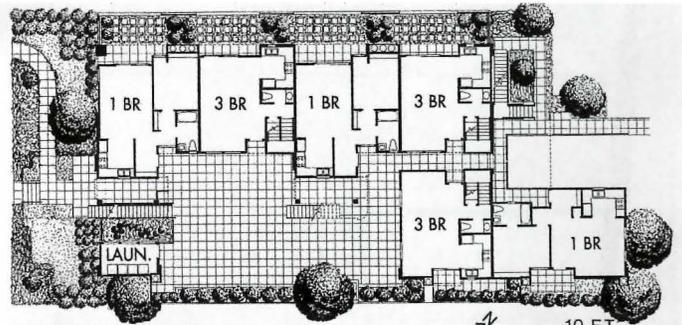


A good example of infill housing, the Garcia Apartments provide 30 affordable dwelling units on four separate sites. By respecting the small-scale character of the surrounding neighborhood and limiting each cluster of housing to just seven or nine units, architect William Adams was able to overcome the existing community's "not-in-my-backyard" response. Built for the Community Corporation of Santa

Monica, an arm of the local government, the project incurred construction costs of just \$66 a square foot—a figure that is impressive considering the underground parking built for each cluster. All of the clusters were built at the same time by the same contractor and used a common kit of parts. Each of them, however, has its own quirky identity and its own way of responding to its immediate

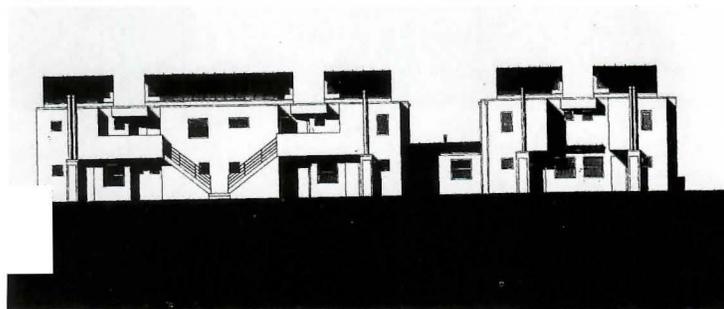


FIRST FLOOR SEVENTEENTH ST.



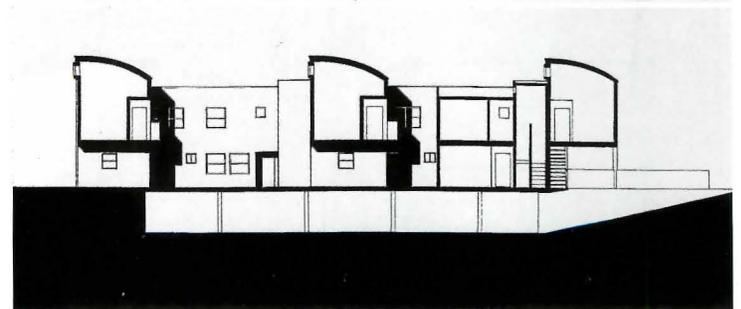
FIRST FLOOR FIFTEENTH ST.

10 FT
3 M



Seventeenth Street. This project's massing helps provide a transition from one-story houses east of the site to two-story apartment buildings to the west. Curved roofs here made it the

most expensive of the four clusters, but also give it a unique identity.



Fifteenth Street. While the other clusters have seven dwelling units, this one has nine—thereby reducing the cost per square foot. A wider lot here allowed the architect to combine the courtyard with the

required side yard, creating a more spacious and successful outdoor gathering place.

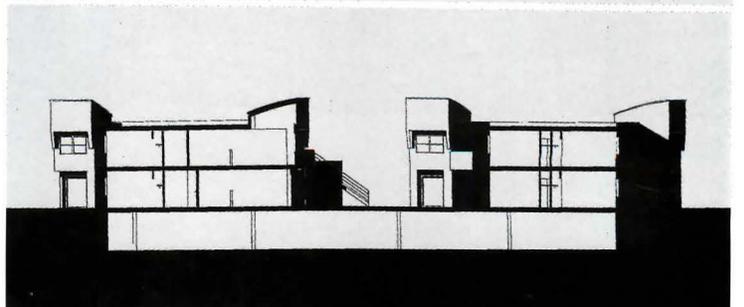
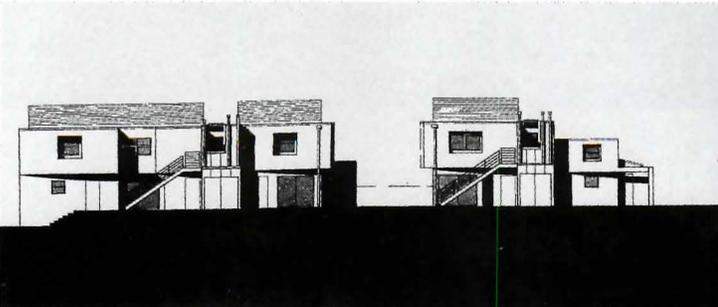
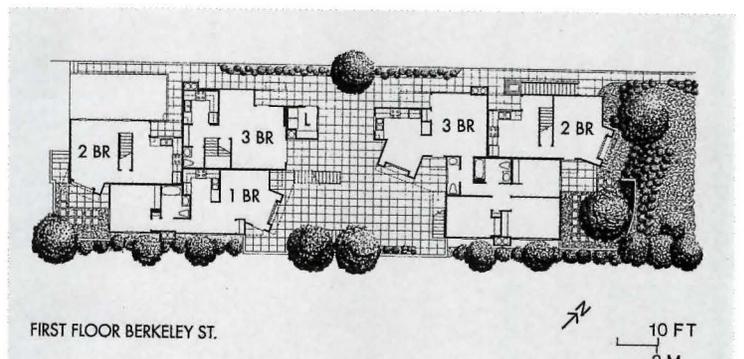
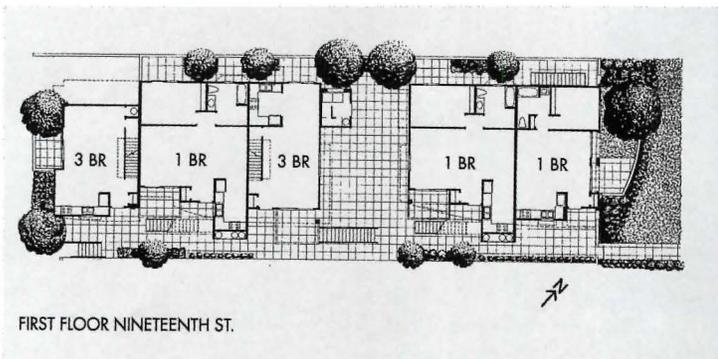
neighbors. Adams' basic scheme was to build one- and two-story wood-frame structures above concrete parking and organize them around an open courtyard. Since access to and from the underground parking is from the courtyard, it is easy for residents to see who is coming and going. This arrangement helps promote a sense of community and security. A shared laundry room off the courtyard also brings residents

together. All of the courtyards face south to expose more of the residences to sunlight. By combining one- and two-story structures and using different colors of stucco, Adams reduced the apparent scale of the clusters so they fit in with nearby single-family houses. Although the basic forms of the dwellings are simple and repetitive, each cluster has a few unique features such as curved or raised roofs

and metal siding that help imbue it with its own identity. Each cluster has a mix of one-, two-, and three-bedroom units, ranging from 650 square feet for one bedroom apartments to 1,200 for three-bedroom units. Because one-bedroom units are more likely to be rented by elderly people, they are located on-grade and use the legally required side yards as outdoor extensions of living areas. C.A.P.

Credits

Architect: William Adams Architects—William Adams, George Proctor, Eric Odor, designers; Pam Chandler, project architect; John Adams, assistant; Mark Dizon, drawings
Engineers: Parker Resnick Structural Engineers
Landscape Architect: Raymond Hansen
General Contractor: Burns Pacific Construction



Nineteenth Street. Although the predominant exterior materials used at all of the clusters are inexpensive ones such as stucco and paint, the architects found that by using

more expensive ones (like the galvanized sheet metal here) sparingly, they could add a sense of richness and character to the buildings.

Berkeley Street. While the other three clusters of Garcia Apartments are located in the Pico neighborhood, this one is within about a mile of the others. Neighbors' initial fears about the

project were overcome by keeping each cluster small and respecting the character of the area.

Kitsilano Project

*Vancouver, British Columbia
Neale Staniszkis Doll Adams Architects*

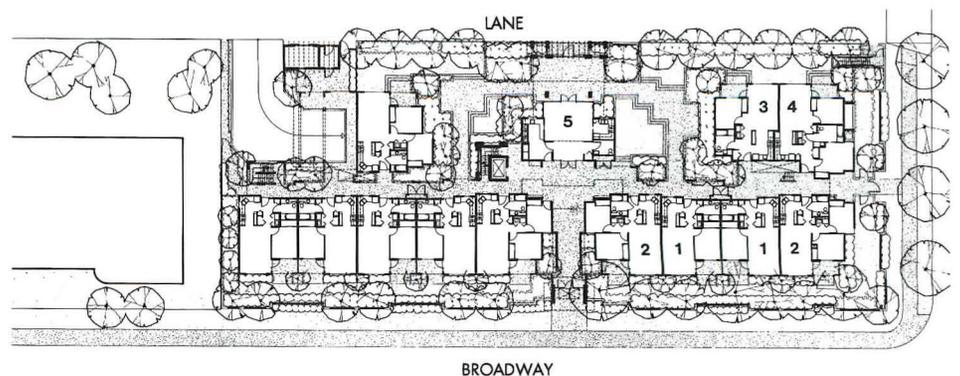
A direct outcome of changing demographics, the Kitsilano Project is a multi-site effort by the Canadian government to build appropriate housing for an aging group of World War II veterans. The project incorporates many of the latest ideas on designing housing for the elderly and included the residents in the decision-making. The project began in 1990 when the federal government decided to redevelop

housing it had built in 1946 for returning veterans. The old housing was mostly two-story walk-up apartment buildings designed for young families and was no longer properly serving the needs of the original residents, many of whom still lived in the same units and were now around 70 years old. While guaranteeing existing residents apartments in the new project, the government, through its

© Simon Scott photos



1. One-bedroom
2. Two-bedroom
3. One-bedroom adaptable
4. Two-bedroom adaptable
5. Common facility



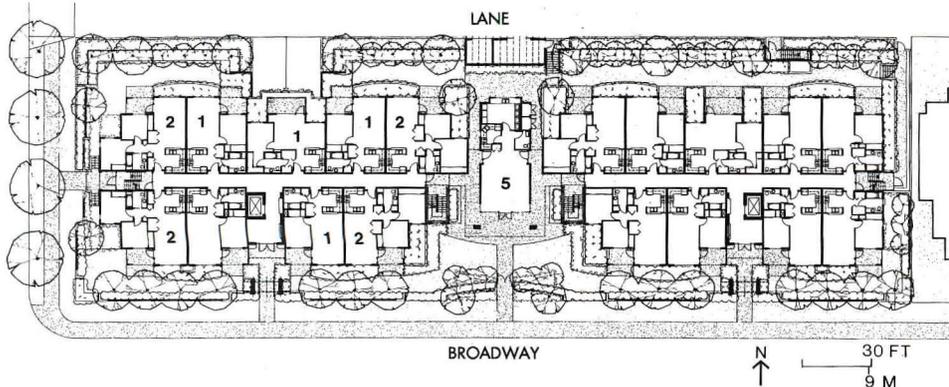
Canada Mortgage and Housing Corporation (CMHC), decided to replace old buildings on 16 sites with higher density structures on five of those sites; the other 11 sites would be redeveloped as housing for other groups. Neale Staniszki's Doll Adams Architects was hired to masterplan the entire project and design the first two buildings. A key concept behind the design of the buildings, says Derek Neale, was

“aging in place”—creating apartments that adapt to the needs of residents as they get older. As a result, all apartments are free of steps, have flush door sills, and are equipped with grab bars and easy-to-grip hardware. Kitchens and bathrooms can be adapted for wheelchair accessibility. Every effort was made to give the units and buildings the look of conventional housing. The first building is a four-story wood-

frame structure with external corridors connecting 29 one-bedroom units, 19 two-bedroom units, and seven units specially equipped for wheelchair access (photo and plan, opposite). Parking for 48 cars is underground. The second building, across the street from the first, has 41 one-bedroom units, 21 two-bedroom units, underground parking for 34 cars, and indoor corridors (below). C.A.P.

Credits

*Kitsilano Project
Vancouver, British Columbia*
Architect: Neale Staniszki's Doll Adams Architects—Derek Neale, partner-in-charge, Richard Fouchard, David Ooyevaar, project architects
Engineers: Steven Lerer Engineering (structural); Caulfield Mechanical Design (mechanical)
General Contractor: Barclay Construction



Product Literature/Residential

For more information, circle item numbers on Reader Service Cards.



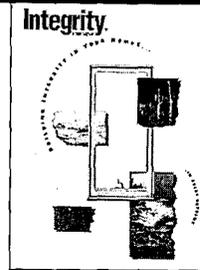
400. Mortise locks

Arrow heavy-duty locksets meet the security requirements of the New York City Housing Authority as well as other large multifamily owners. A 10-page mortise-lock catalog gives installation details as well as ANSI, Federal, UL, ADA, and other code-compliant locks. Drawings show all functions offered for the one-size-case product. Arrow, Brooklyn, N.Y.



401. Adjustable door frames

An eight-page brochure on prefinished steel-door drywall frames includes finish, fit, and specification information on systems for high-abuse, commercial, residential fire-rated, and multifamily-residential applications. Frames and casings come in stainless steel and polished brass as well as standard poly-coated steel. Timely, Pacoima, Calif.



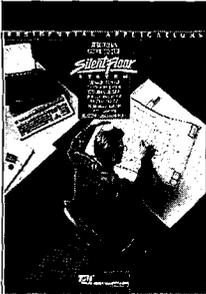
402. Wood/composite windows

A new line for Marvin, the Integrity window is made with a bi-component structural frame: pine interior and a pultruded-fiberglass composite exterior. Intended for single- and multifamily housing, the low-maintenance windows come in bow, bay, awning, picture, and casement styles. Will not rack or warp. 800/862-7587. Integrity From Marvin, Warroad, Minn. *



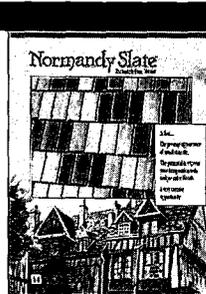
403. Spa-buyers checklist

Brochures and technical bulletins written for both the consumer and the designer highlight the appearance, performance, and long-term maintenance benefits of Lucite XL continuous-cast acrylic sheet, said to capture mold details well when thermoformed. Charts display range of deep spa colors available. ICI Acrylics, Wilmington, Del.



404. Engineered wood guide

A maker of composite joists, headers, beams, and columns explains the Silent Floor: using TJI joists and Micro-Lam and Parallam members, correctly installed floors will not squeak. A 28-page catalog gives span, loading, and bracing data for floor and roof assemblies, design properties, and connections. 800/628-3997. Trus Joist Macmillan, L.P., Boise, Id.



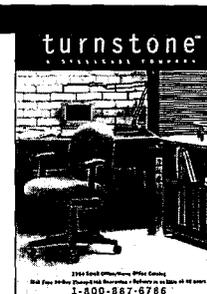
405. Normandy-slate roofing

Monier now offers cementitious slates said to replicate the appearance of the randomly sized smaller tiles used on roofs in northern France. A folder shows many of the subtle color blends and accents available in the incombustible, freeze/thaw-resistant tiles. Trim pieces such as ridges and hips available in matching colors. Monier, Orange, Calif.



406. Textured acrylic finish

A heavy-bodied synthetic stucco, Uni-Tex is said to resist extremes of weather, salt spray, and freeze/thaw cycling. The water-based coating system, for exterior use on plywood, board, and masonry, should cover substrate imperfections and has a 300-percent elongation to resist hair-line cracking. Comes in 30 colors. United Coatings, Greenacres, Wash.



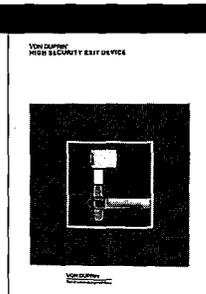
407. Home-office furnishings

Steelcase's new small-business division's catalog starts off with "5 hot products for under \$300": adjustable task seating, computer and conference desks, movable easels. Includes 48 pages on economical, ergonomic furniture and accessories specifically for the budget and space needs of the small home office. 800/887-6786. Turnstone, Wyoming, Mich.



408. Wood-look steel entry

Described at the "first stainable steel entry door that looks, feels, and stains like real oak," the Royal Perma-Door has a 22-gauge steel face over a solid insulating core. Hinges permit on-site door adjustments that provide a tight fit in the frame. Faces are finished in a naturalistic oak grain pattern and an easy-to-stain surface. Taylor Door, West Branch, Mich.



409. Pilfer-proof exit

Series HS98, a rim-type exit device, meets building security requirements as well as life-safety and fire codes. A four-page brochure explains how the exit integrates with automatic deadbolts, key cylinders, and other types of access-control systems to provide single-motion egress while remaining resistant to attack by burglar tools. Von Duprin, Inc., Indianapolis.



410. Bringing light inside

For both homeowners and architects, a 36-page *Complete Guide to Roof Windows and Skylights* illustrates all Velux products, and shows how to transform attics into living areas, create energy-efficient sunrooms, improve home ventilation, and build a skylight shaft. Details correct flashing for all roof types. 800/283-2831. Velux-America, Greenwood, S.C. *



411. Architectural doors

A new 38-page catalog covers all types of multiple-ply and stile-and-rail entrance and passage doors, with particleboard, fire-rated mineral, hollow, and acoustical cores. Illustrates veneer species, patterns, finishes, and standard light configurations. Free spec binder. 800/369-3667. Weyerhaeuser, Marshfield, Wis. *
Continued on page 97

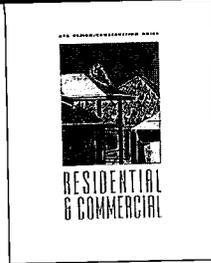
* Product Data on CAD disk

Product Literature/Residential



412. Vertical lifts

One of a series of new product guides, a color brochure highlights features of the Custom-Lift winding-drum elevator and the Custom-Ryde hydraulic lift, designed for the 50-ft-travel and limited-use requirements of homes, churches, and clubs. Photos show all standard cab configurations; wheelchair widths available. Waupaca Elevator Co., Inc., Waupaca, Wis.



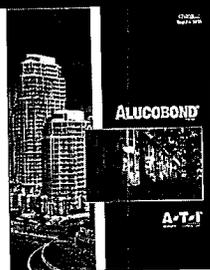
413. Structural panel systems

A 60-page design guide stresses the sustainable advantages of North American-grown wood products. Discusses performance standards, appearance and exposure grades, fire resistance, and loading and construction details for APA-rated floors, walls, roofs, and other systems. Excellent diagrams. American Plywood Ass'n., Tacoma, Wash. *



414. Cedar-shingle siding

Shakertown says its new offset end-joint configuration on two- and three-course panels recreates the seamless look of individually nailed shingles. Offered in both Heritage and Colonial (all-edge-grain) shingle styles, panels are said to install rapidly. Free architectural design kit offered, 800/426-8970. Shakertown, Winlock, Wash.



415. Aluminum-panel cladding

A color brochure on Alucobond material shows before-and-after photos of applications on high- and low-rise commercial, school, and multifamily projects, as well as brand-new exteriors and interiors. Both standard and fire-labeled panels come in a range of coil-coated and anodized finish options, and conform to any radius, angle, or shape. A-T-I, St. Louis.



416. Apartment locksets

The S200 interconnected entrance lock is said to reinforce the S-Series keyed lever with the extra security of a heavy-duty deadbolt, and allow panic-proof exit by simultaneously retracting the latch bolt and deadbolt by the inside lever. A "moderately priced" lock, S200 meets Grade 2, life-safety, and ADA requirements. Schlage Lock Co., San Francisco.



417. Security door viewer

For hotels as well as multifamily units, a UL-listed viewer lets occupants see clearly from four angles—straight ahead, below, and up and down the corridor—by rotating the eyepiece. Made of steel with a pyrex lens, it will not compromise the fire rating of door assemblies. Rudolph-Desco Co., Englewood Cliffs, N.J. *Continued on page 99*

* Product Data on CAD disk

For more information, circle item numbers on Reader Service Card.



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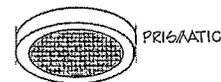
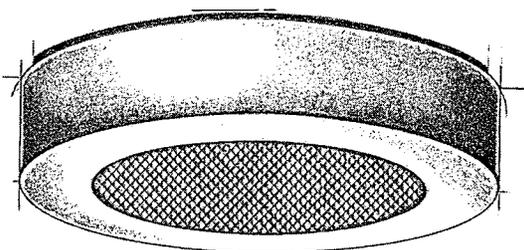
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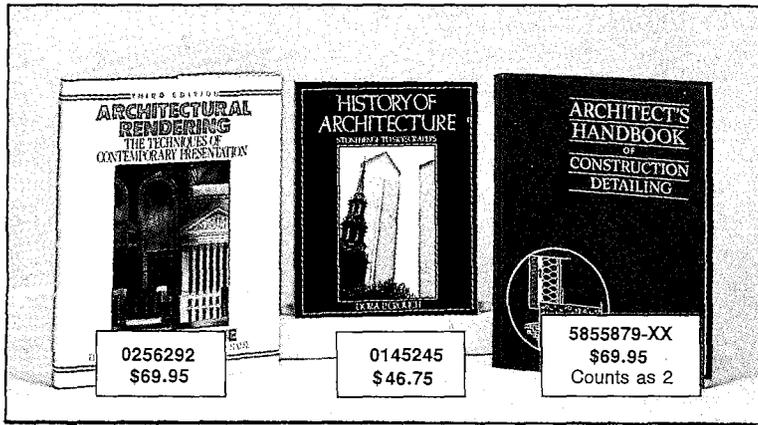


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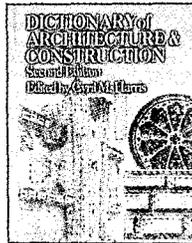
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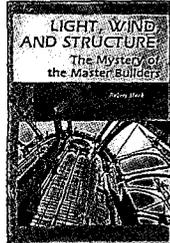


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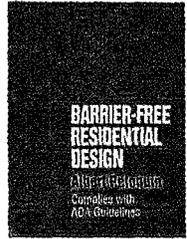
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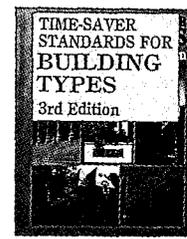
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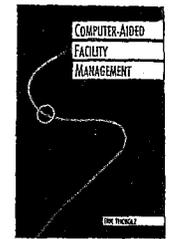
0358680 \$44.95



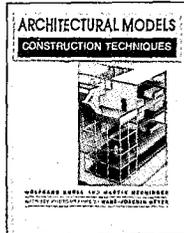
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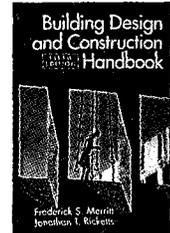
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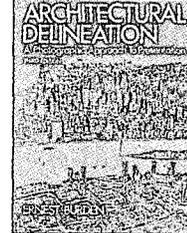
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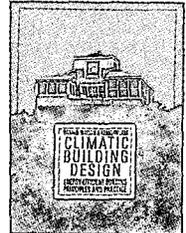
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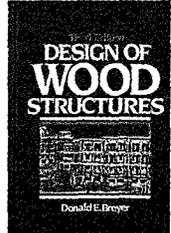
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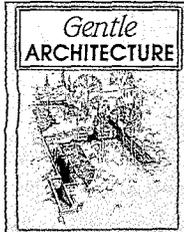
068488X \$31.95 Softcover



0076782 \$63.00



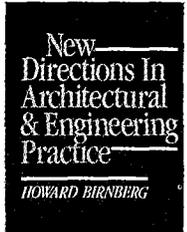
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0692572 \$24.95 Softcover



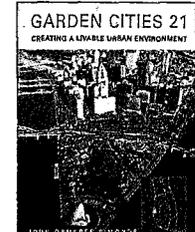
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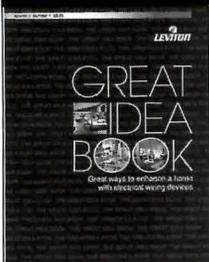
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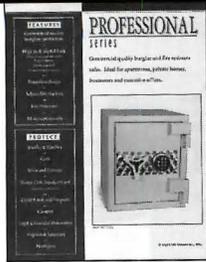
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AR195

Product Literature/Residential



418. Planning for power
A room-by-room guide shows how to select and locate wiring devices—outlet boxes, light switches, phone jacks, occupancy sensors—to get the best use from them in any home. Schematics suggest placement ideas that add comfort, convenience, and security, while still meeting code requirements. Fax requests: 800/832-9538. Leviton Mfg. Co., Little Neck, N.Y.



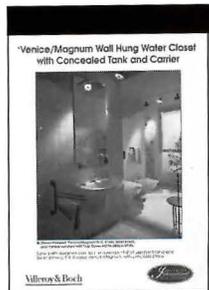
419. Residential jewelry safes
A smaller version of burglar-resistant vaults found in diamond-dealers' offices or banks, Empire safes are designed to fit into closets or alcoves, or under desks—easily accessible, but too heavy (over 200 lbs) to just cart away. Digital-keypad locking. Some offer fire protection. *Safe at Home* booklet gives selection tips. Empire Safe Co., Inc., New York City.



420. Special-door hardware
A four-page brochure demonstrates how specialized track, hangers, and other fittings work on folding doors, sliders, room dividers, pocket doors, and shutters in residential applications. Product choices include hinges and pocket doors that "widen" doorways enough for wheelchair passage. 800/837-5664. L.E. Johnson Products, Inc., Elkhart, Ind.



421. Custom-tile sampler
New specification kits offer hands-on samples of three custom-cut ceramic tile lines: Crossquilt, replicating patchwork in porcelain; Crosstyle fit-together geometric shapes; and examples of water-jet programs that reproduce almost any custom design in ceramic-tile increments as small as 2- by 2-in. Crossville Ceramics, Crossville, Tenn.



422. Wall-hung water closet
A brochure on the Venice/Magnum water closet (a Villeroy & Boch bowl with U.S.-made flush mechanisms) explains how the 1.5 gpf unit saves floor space, meets code with a 1/2-in. water supply and 3-in. outlet, and offers easy access for maintenance. ADA-compliant. 800/837-0092. Burgess Int'l., Romulus, Mich.



423. Douglas-fir doors
A color catalog illustrates all styles of Bend doors, including exterior designs with decorative-glass lights and transoms, carved panel and French doors, and eight different panel configurations for interior applications. Gives full design and specification data. 800/877-9482. Jeld-Wen, Klamath Falls, Ore.
Continued on page 101

For more information, circle item numbers on Reader Service Card.

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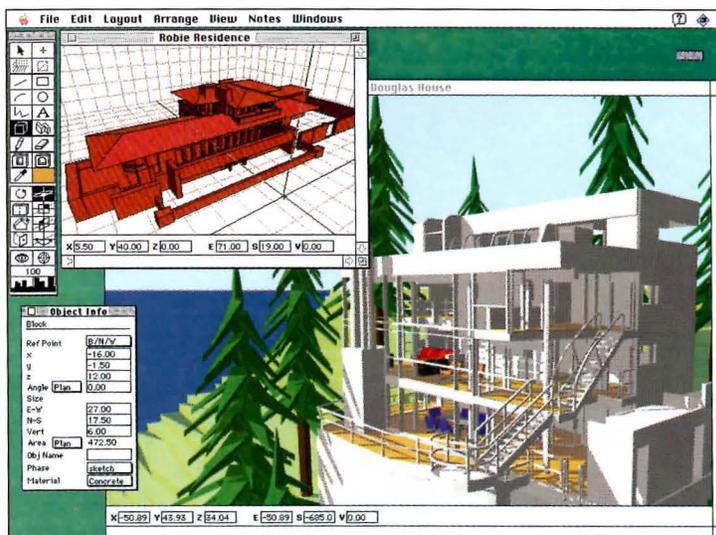


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Product Literature/Residential



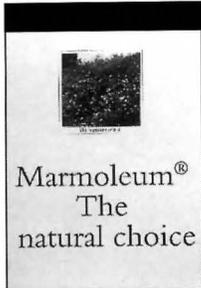
424. Hurricane-resistant glazing

An architectural guide explains how wind-generated positive and negative pressures damage structures, and explains new wind and impact codes designed to prevent rapid depressurization from broken windows. Describes SentryGlas composite and Butacite laminated glass as passive, economical, and unobtrusive protection. DuPont Co., Wilmington, Del.



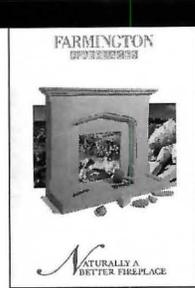
425. Compact no-vent fireplace

A new model hearth is described as ideal for apartments because of its lower BTU output and a small chassis that needs less than 4 sq ft of floor space and projects only 15 in. into a room. Standard features include log set, mesh firescreen, and a built-in oxygen-depletion sensor. Meets ADA specs. TEMCO Fireplace Products, Nashville, Tenn.



426. Back to linoleum

Made with linseed oil, pine resin, wood flour, and cork, easy-to-inlay Marmoleum linoleum floorcovering is said to be biodegradable and environmentally benign. A catalog includes product and installation photos, illustrations of the 68 available colors, and outlines the low-maintenance procedures required. Forbo Industries, Hazleton, Pa.



427. Limestone surrounds

A British source of Bath and Cotswold stone offers fireplace mantles and surrounds carved in styles that range from simple to ornate styles, with prices in the area of \$2,000 for standard designs. A brochure gives typical dimensions, plans, and elevations. Farmington Stone Ltd., Cheltenham, U.K.



428. How to design hardwood

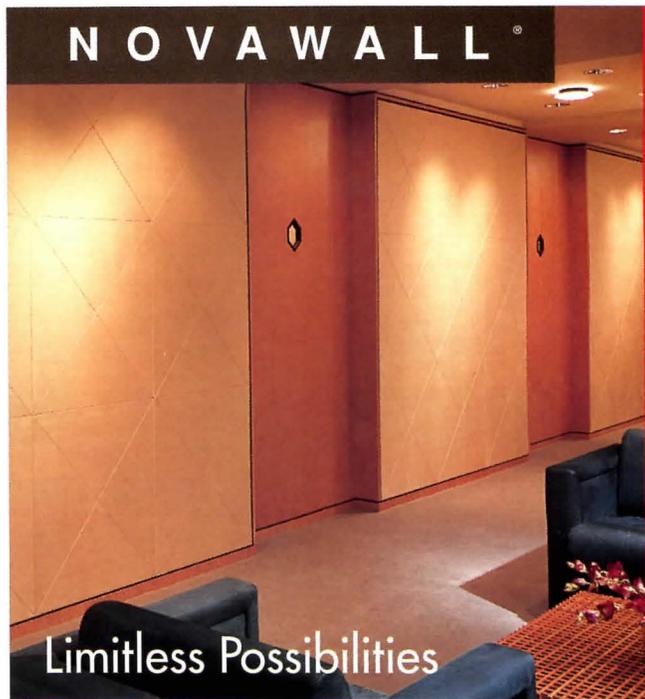
An eight-page folder, *Managing Natural Contraction and Expansion in Hardwood Products*, is the first issue of Tips & Techniques, a new series of technical brochures published to help the architect and residential builder work better with wood. Illustrates the best way to lay a wood floor on a concrete slab. The Hardwood Council, Oakmont, Pa.



429. Garage door systems

Individual catalog inserts describe the available size and panel-design options offered by a line of four- and five-section wood and steel residential garage doors. Vision lights and insulated security windows may be specified on both raised-panel and flush-style doors. Panel configurations may be customized. Wayne-Dalton Corp., Mt. Hope, Ohio. ■

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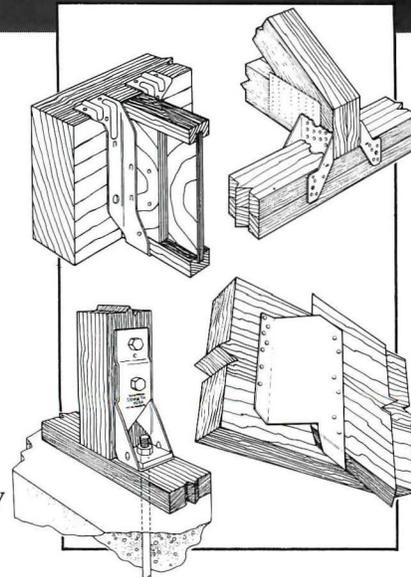
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Rules

Projects delineated can be real, potential, or speculative, but they must not have been previously published in a design or computer journal as either editorial or advertising. Images prepared solely for promotional use by manufacturers are also ineligible. An entry may be prepared on any platform, using any hardware, software, or output device. There are no entry fees. Submit hard-copy (maximum size 11 in. by 17 in.), 35mm slides, or VHS cassette (the latter only for animations).

Submit single images, except where a suite of images is essential to describe the imaging concept. Each entry must include the project and computer information requested on the form below. Entries must be received by Monday, March 6, 1995. Entries accompanied by a stamped, self-addressed envelope will be returned. Fax queries to James S. Russell 212/512-4256.

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James S. Russell **COMPUTER DELINEATION AWARD** ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, NY. 10020

Manufacturer 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 56-63

Bank of Luxembourg
 Arquitectonica International Corporation, Architect
 Bureau d'Architecture F. Cavallini, Associated Architects
 Cladding and interior stone: Zimbabwe black granite, Lanhelin gray granite, Chassagne stone: Jacquemart & Trigatti. Curtain wall and aluminum-framed windows: fabricated by Gartner. Amber and green-tinted glazing: Vegla. Gray glass: Fabulor. Glass and stainless-steel entrance: Metallerie Pierre Croisean. Wood doors, reception furniture: B&B Italia. Desks: Unifor (designed by Jean-Michel Wilmotte). Roofing slate: Toiture Du Nord. Ceramic-tile flooring: FloorGres (Aporio Stone). Security cameras: Vicon. Elliptical lift: Verbano. Elevators: General Technic Otis (Europa 2000). Lighting: Zumtobel; Erco; Mazda; BEGA; Leucos.

Pages 64-69

Canadian Clay and Glass Gallery
 Waterloo, Ontario, Canada
 Patkau Architects
 Brick: Canada Brick. Metal cladding: Alcan. Membrane roofing: Prospex Roofing. Insulation board: Dow Chemical Co. Windows: Truelite Industries. Skylights: Architectural Plastics Ltd. Wood windows and doors: Honsberger Lumber, Inc. Tile: Olympia. Lighting: Metalumen. Elevators: Dover Elevators.

Pages 70-77

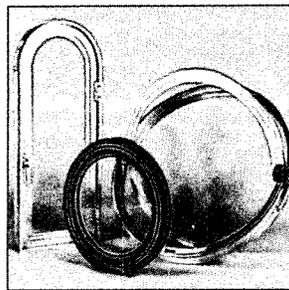
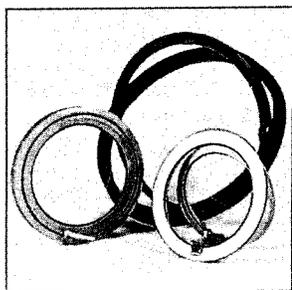
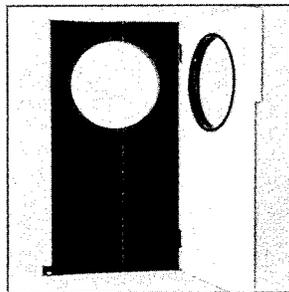
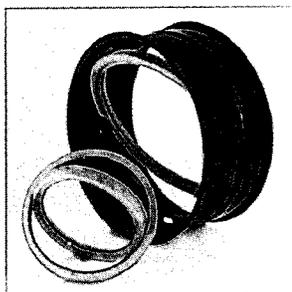
Central Administration and Junior School Building, Museum of Fine Arts, Houston
 Carlos Jimenez Architecture Studio, Architect
 Cladding: Indiana Limestone. Weatherproofing sealant: G. E. Silicone. Natural-anodized corrugated aluminum curtain wall: Honea Sheet Metal, Inc. Pre-weathered standing-seam Galvalume roof: Architectural Building Components. Circular grille: Louvers & Dampers, Inc. Glass block: Pittsburgh-Corning Corp. Low-E glazing: Libbey-Owens-Ford. Entrances and windows: Kawneer Co., Inc. Bollards: McGraw-Edison. Metal-halide uplights: Prescolite. Paints: Devoe & Reynolds.

Elevator: Schlinder Elevator. Granite pavers: reclaimed from site. Interior sun-control blinds: Levelor. Stair railings: Julius Blum; installation by Berger Ironwork.

Pages 78-83

O'Neil Cinemas, Duluth, Georgia
 Richard Rauh & Associates/Architects
 Corrugated-steel panel cladding and galvanized-steel vaulted ceiling: McElroy Metals, Inc. Flattened-steel mesh: McNichols Co. Storefronts and entrances: Kawneer Co., Inc. Formed-aluminum fascia: Greba Metal Products, Inc. Custom-formed corrugated gutter: fabricated by Curveline, Inc. Translucent FRP sheets: Lasco Panel Products, Inc. Rolling grilles: Cornell. Interlocking concrete pavers: Paver Systems, Inc. Steel windows: AmWeld. Glass: PPG Industries, Glass Group. Door hardware: Sargent, Div. of KIDDE, Inc. Gasketing: National Guard Products. Acoustic ceilings: USG Corp. Special wall finish: Zolatone Process, Inc. Pile wallcoverings: General Felt Industries, Inc. Adhesive: Laticrete Int'l. Carpeting: Mohawk Commercial. Downlighting: Lithonia. Fluorescent signlighters: Nulite. Strip lighting: Litelab. CFL fixtures: Norbert Belfer. Low-continued on page 107

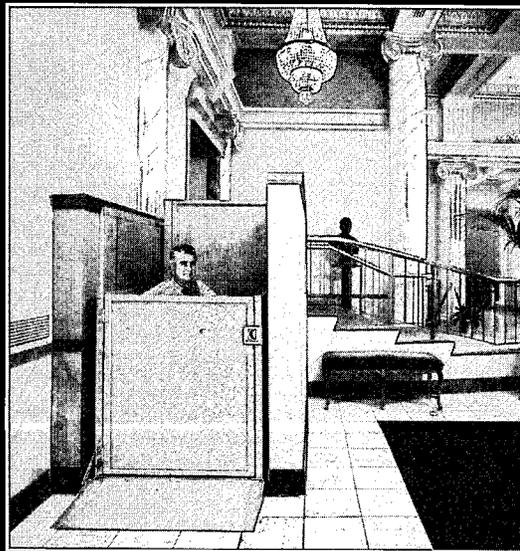
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NO, HE'S NOT a retired superhero.

But a few months ago he accomplished a rather outstanding feat, removing 85 100-pound steel doors faster than a speeding bullet.

As the Harley Ellington Pierce Yee Associates project architect for a \$3 million addition to the Infectious Disease Containment research facility at Michigan State

SweetSource also showed Gordon exactly where to find additional information in his Sweet's Catalog Files. Which led him to Sweet's BuyLine® Service. Which put him in touch with the manufacturer's rep. Who put samples in his hands. From which Gordon finalized his specs, becoming, in this very swift process, a former man of steel.

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University, Gordon had a lot of materials to specify, including 85 doors and frames.

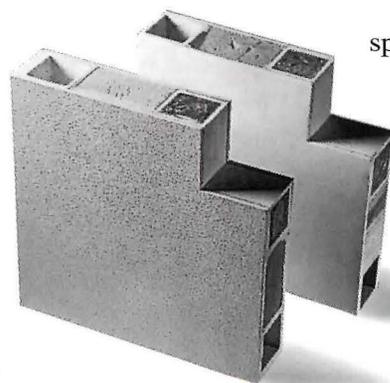
But in a facility where the rooms are washed down daily to control bacteria, steel doors last, at best, five years. So Gordon had to find an alternative.

He turned to the fastest way to find alternatives: the SweetSource® CD. He selected "doors" and saw "glass fiber doors" among his choices. He immediately found a manufacturer of fiber-reinforced plastic (FRP) doors with sizes to fit the specs.

Gordon Kostin, like many architectural, engineering and construction professionals, regularly uses both SweetSource and Sweet's Catalog Files to find and specify materials.

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Manufacturer Sources

continued from page 103

voltage exterior lighting: BEGA. Uplighting: Hydrel. Incandescent flood lights: WF Harris Lighting. Neon accents: Goble Signs.

Pages 86-89

The Banner Building, Seattle, Washington
Weinstein Copeland Architects
Curtain wall and entrances: Phoenix Glass, Inc. Wood joists: TrusJoist-MacMillan. Metal siding: ASC Pacific (Mini-V-Beam). Built-up roof: Firestone (APP 160). Liquid-applied roofing: Neogard. Metal roofing: Berridge Mfg. Co. Windows: Columbia Aluminum Products. Sliders: Sunview. Garage doors: Atlas. Locksets and exits: Precision Hardware, Inc. Elevator: Dover. Lighting fixtures: Lithonia; Progress; Gotham; Caribbean; Perimaliter; Ceilingway.

Pages 90-91

Garcia Apartments, Santa Monica, California
William Adams Architects
Exterior stucco: Omega Products Corp. Colorant: Ameritone. Metal roofing and siding: Bethlehem Steel Co. (Galvalume). Aluminum-framed sliding windows: Milgard. Locksets:

Schlage Lock Co. Entrance lighting: Hubbel (NRG 806). Landscape fixtures: Dabcco.

Pages 92-93

The Kitsilano Project, Vancouver
British Columbia, Canada
Neale Staniszkis Doll Adams, Architect
Modified-bitumen roofing: Soprema, Inc.
Steel-framed glass roof: custom by architects, fabricated by Barclay Construction Ltd. Metal-faced plywood cladding: Weyerhaeuser Co. (Panel 15). Acrylic-stucco finish: Dryvit Systems, Inc. Laminated glass (balcony rail): Tempa Glass. Split-face block: Lafarge. Exterior doors: Decor. Windows: National Aluminum Products. ■

Corrections

- Primary architects involved in the Roosevelt Island Octagon Tower restoration [RECORD, November 1994, page 12] are: Tanner Leddy Maytum Stacy Architects and Margaret Helfand Architects in association.
- The credits for the Department of Ecology Headquarters [RECORD, October 1994, pages 96-101] should have included the Berger Partnership as landscape consultant, and Gensler and Associates as responsible for interior conceptual planning.

• The credits for the San Francisco Museum of Modern Art [RECORD, November 1994, pages 74-83] should have noted that S. Leonard Auerbach & Associates was the theater consultant. Leonard D. Auerbach was not the acoustical engineer.

• Alert reader Tom Hans corrected an error in the October RECORD. On page 23, we cited Susana Torre as the first architect to head Cranbrook since Eliel Saarinen. In fact, Glenn A. Paulsen, FAIA, served as both President of the Cranbrook Academy of Art and as architecture faculty member from 1966 to 1970. A well-known architect in private practice in the Detroit area, he was a student of Louis Kahn at the University of Pennsylvania, and worked on the American Embassy in London as a Senior Designer with Saarinen's Bloomfield Hills firm. ■

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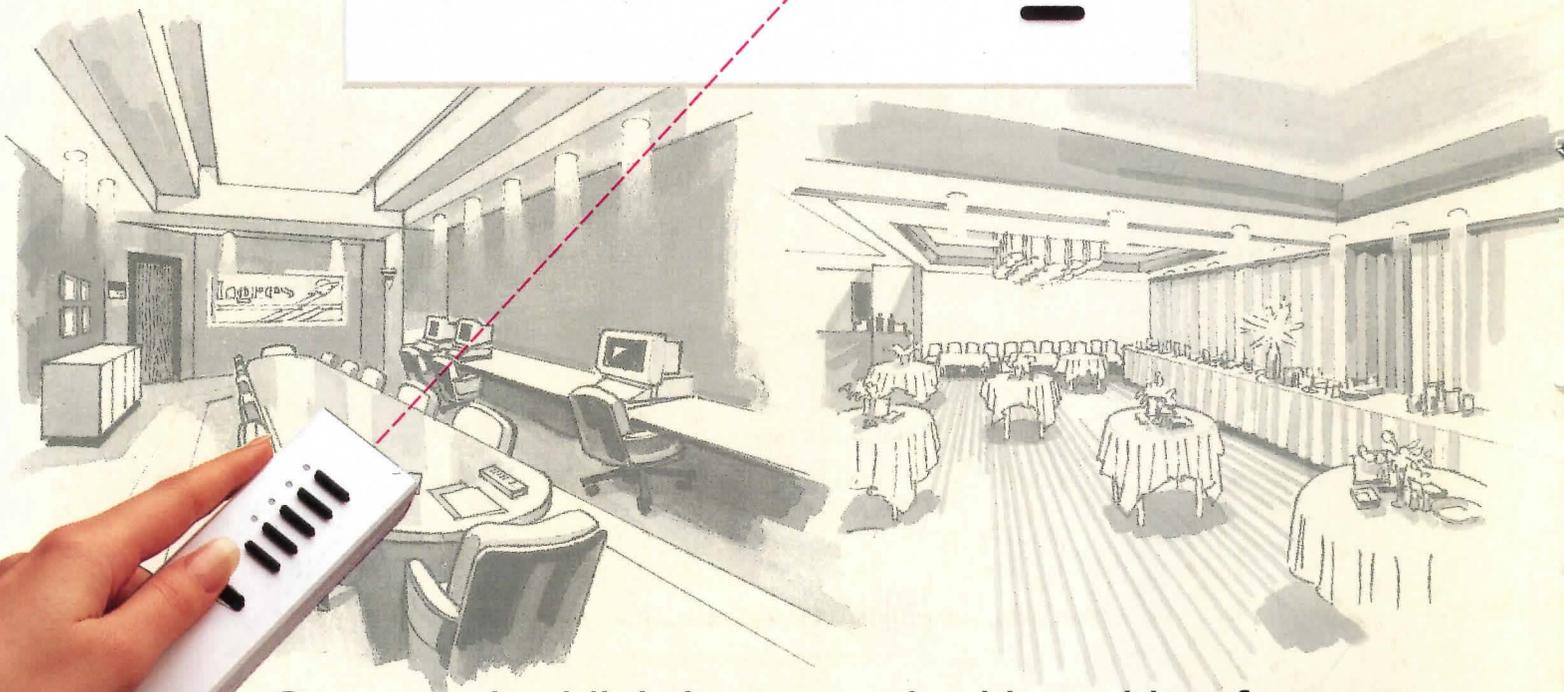
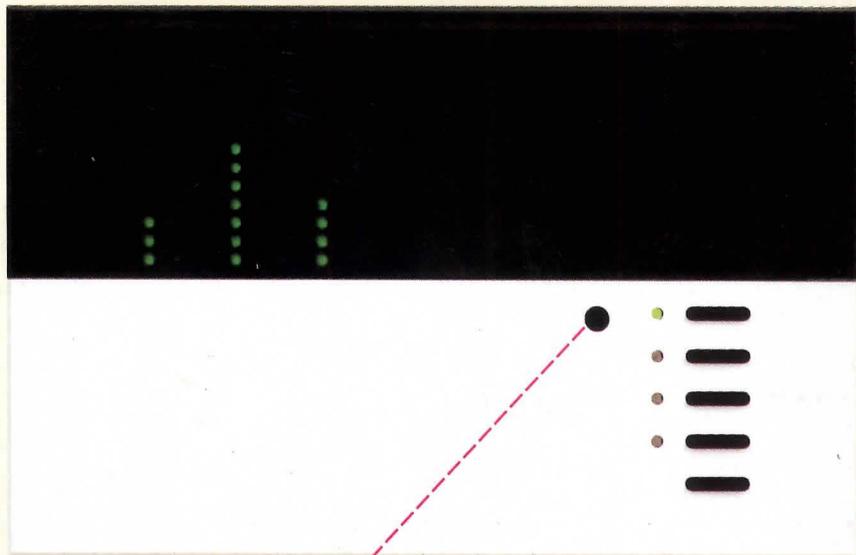
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