ARCHITECTURAL RECORD

Business Design Engineering
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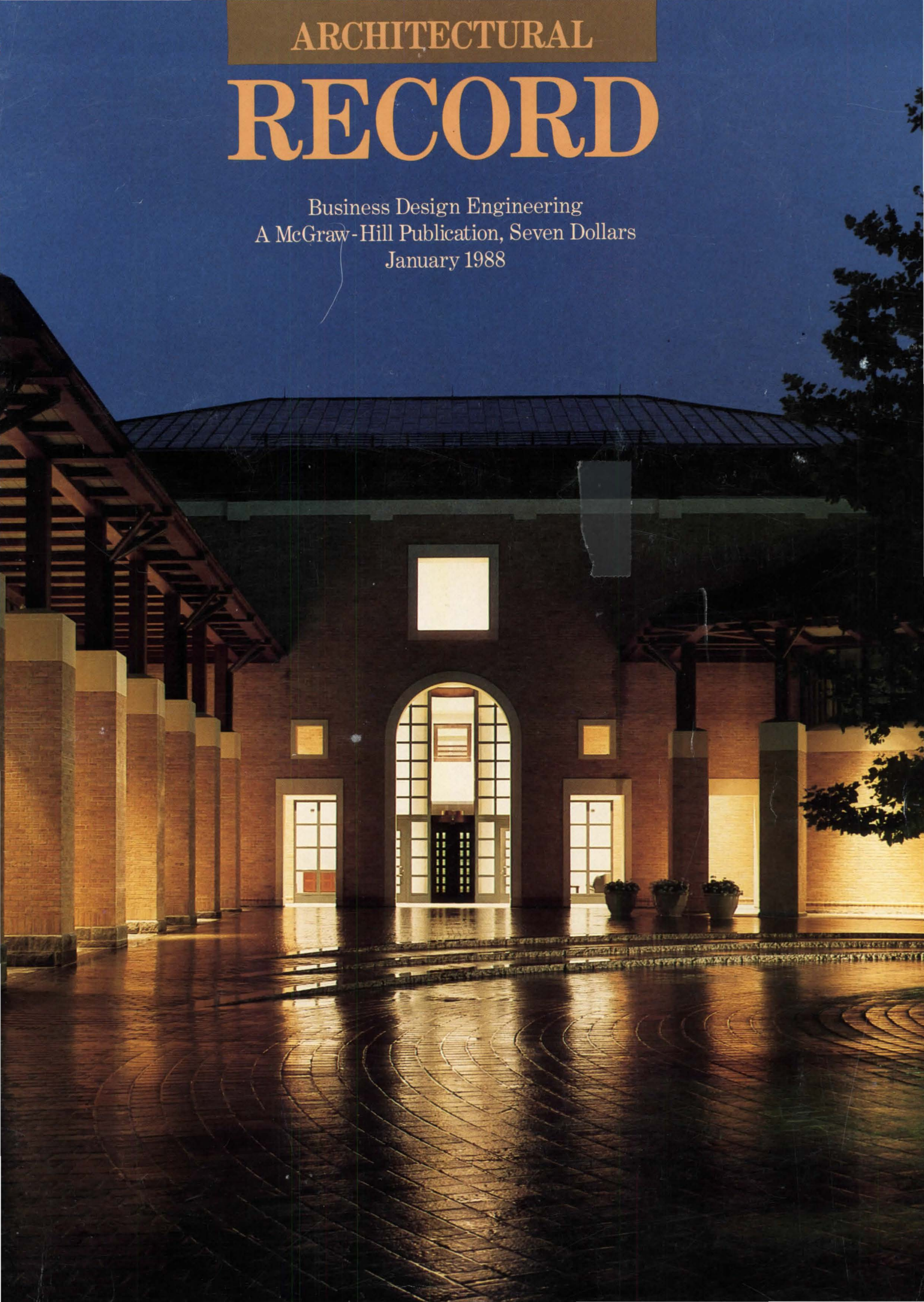
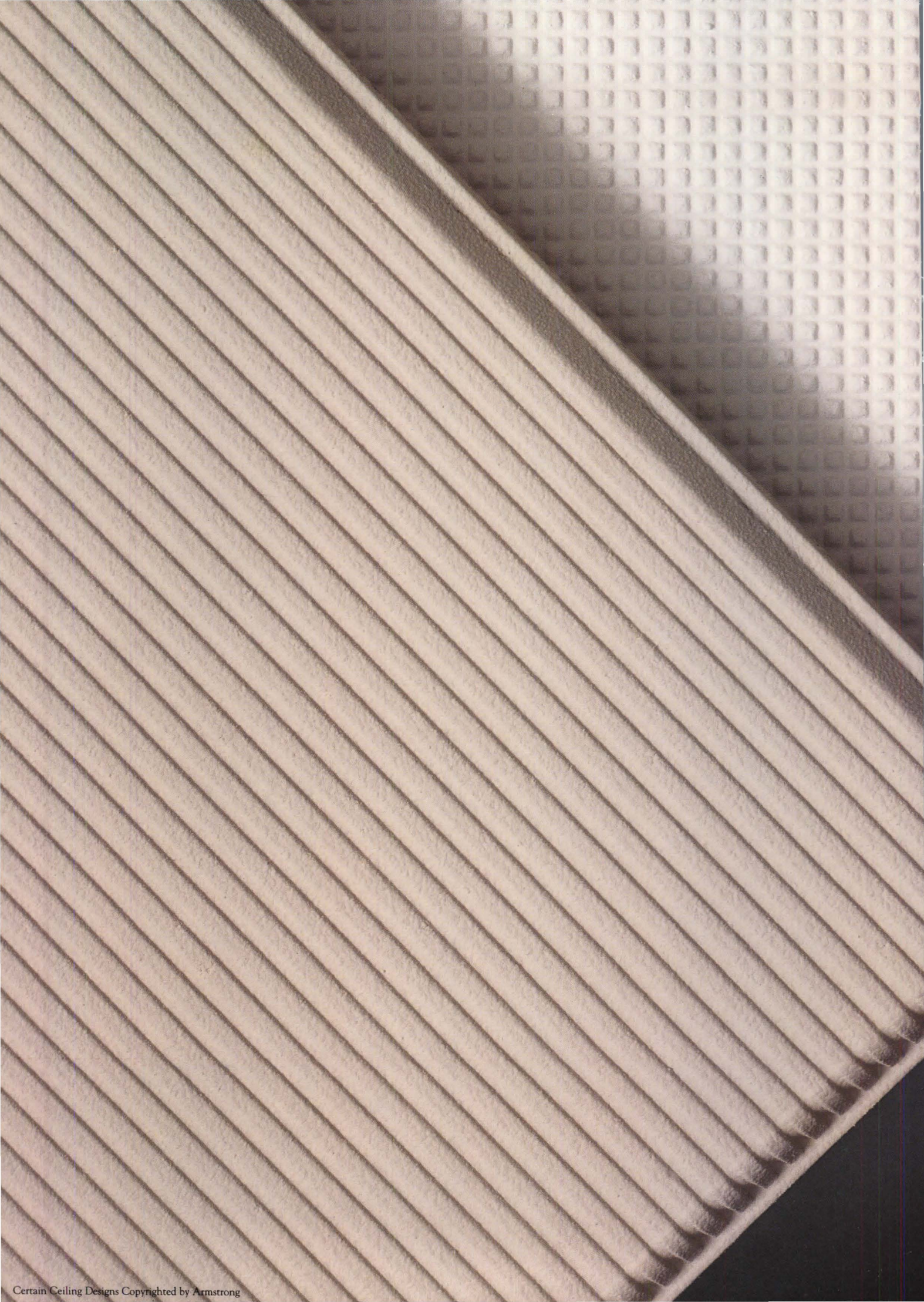
January 1988





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HOT SUN INT

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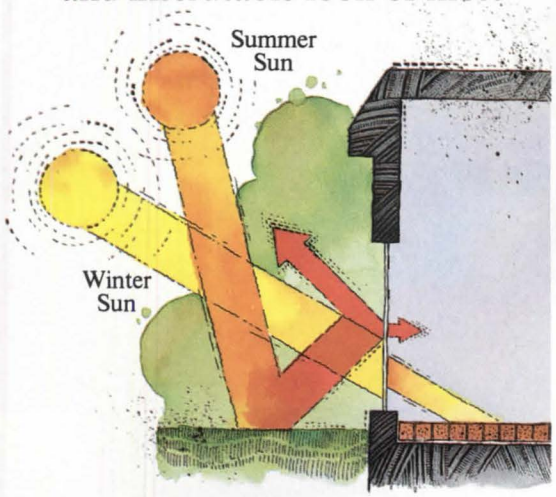
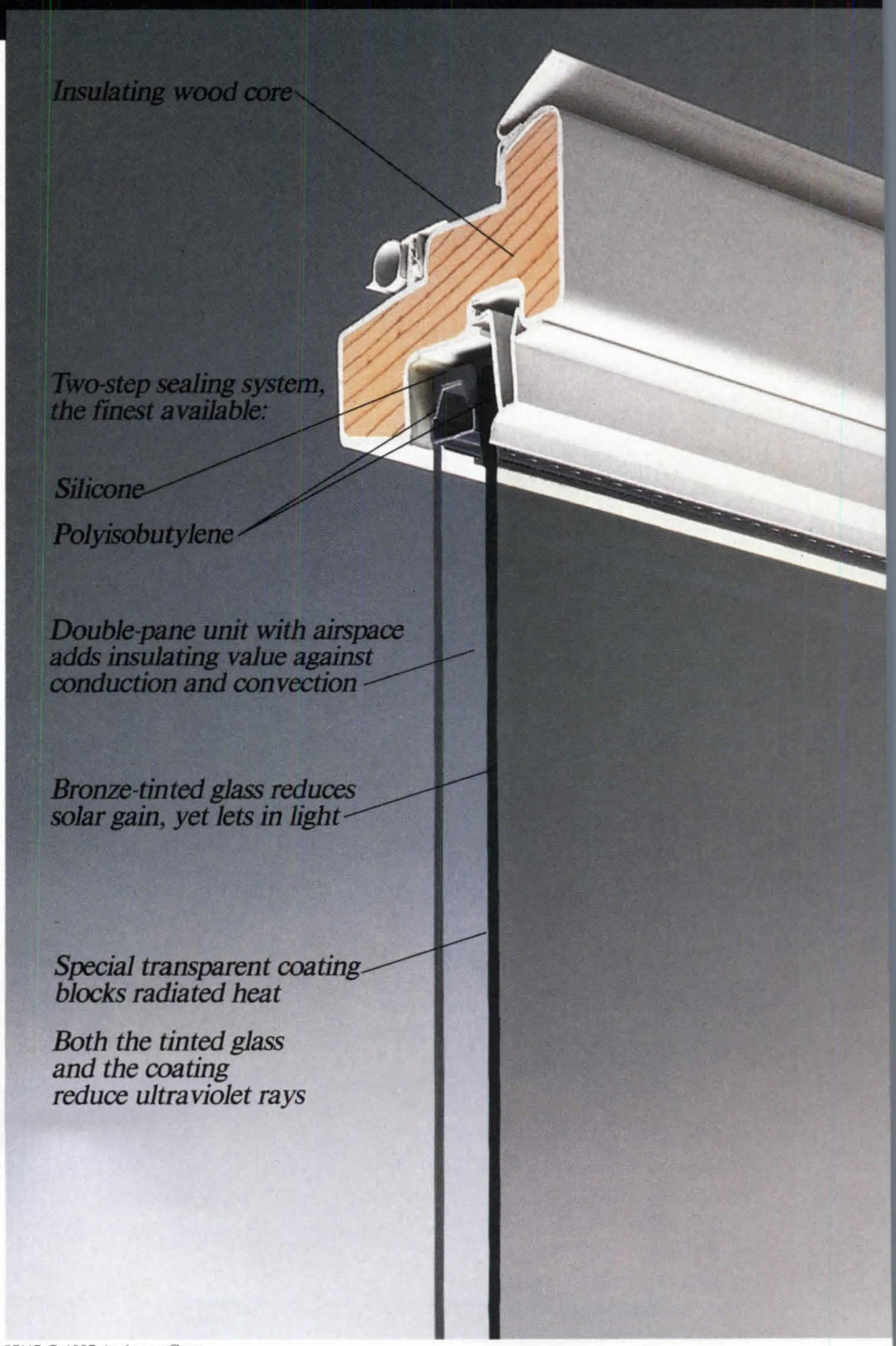
Now, Andersen has developed a window that reduces the sun's heat 2½ times better than ordinary single-pane glass, yet it lets in twice as much light as mirror-like reflective glass.

ANOTHER DESIGN OPTION, WITH WINDOWS THAT WORK.

Andersen® High-Performance Sun windows don't have the impenetrable and inscrutable look of most reflective glass. Yet for all their effectiveness against heat gain, they are able to provide more natural light, too. And, unlike most windows you find in commercial buildings, ours open and close.





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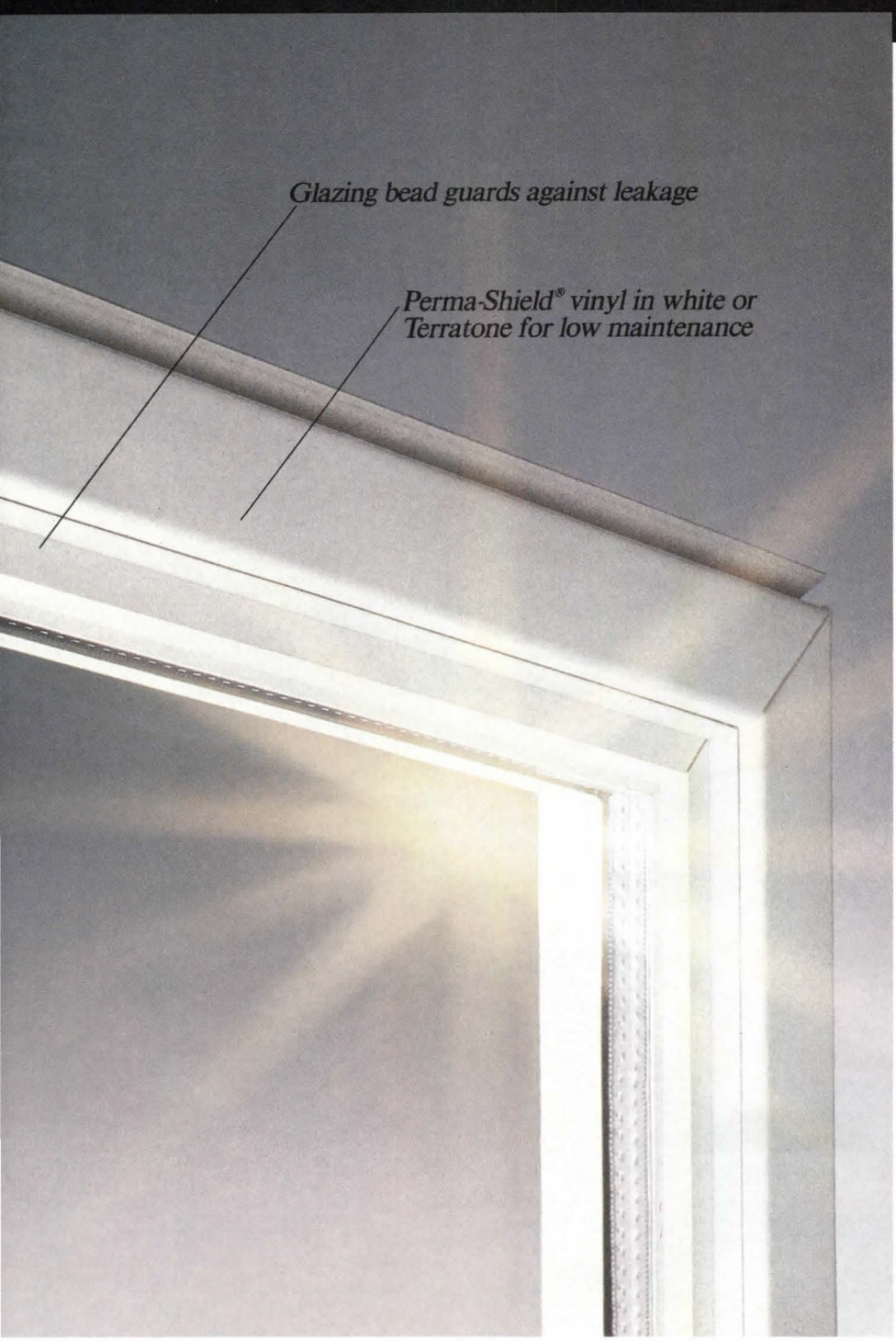
BETTER LOOKING FROM OUTSIDE. BETTER LOOKING FROM INSIDE.

These Andersen windows have a soft bronze tint that looks handsome from the outside, yet it doesn't distort colors for the people looking out. In fact, it makes these colors look much richer. The greens are greener and the blues are bluer.

NEW WINDOWS TURN COOL DAYLIGHT.



WHERE AND HOW. (IT'S NOT DONE WITH MIRRORS.)

It takes a truly remarkable window to control the awesome power of the sun. We call it the Andersen High-Performance Sun window. You can find out more about *what's* available and *how* it works by calling your Andersen distributor. And by consulting Sweet's File 08610/AND. Or write Andersen Corp., Box 12, Bayport, MN 55003.

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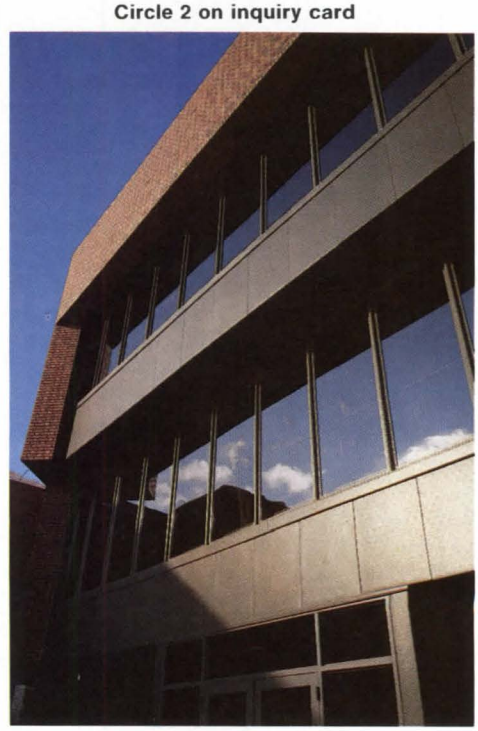

PLANTS FLOURISH, COLORS FADE LESS.

One more wonder. This window filters out 88% of the ultraviolet rays that fade fabrics, yet there's still plenty of visible light for people and plants to flourish. Add to all that two more pertinent points: these windows are eminently affordable and readily available off the shelf.

Come home to quality.

Andersen AW Windows · Patio Doors ™

Andersen

Letters

The recent reappearance of schools on architects' drawing boards and on the pages of ARCHITECTURAL RECORD [September 1987, pages 87-101] is, I think, cause for rejoicing. I write to express my admiration for the richness, achieved with simple means and modest budgets, of the schools shown.
William Buckingham
Basnight, Buckingham & Partners
Boston

As a physician and avid reader of your magazine, I was greatly disappointed by "The Picture of Health" [RECORD, October 1987, page 101]. Your comment on this Building Types Study decries the tendency of some modern hospitals to lose sight of their identity and imitate the commercial styles of office buildings and hotels. Why, then, must your survey celebrate recently built medical centers that have done just that?

Lakeland Medical Center in Texas may very well "mirror the shifting moods of prairie, lake and quicksilver sky" (as adequately detailed in six pages of photographs), but your article does little to bolster the claim of an "efficient physical plant."

Although the esthetic concerns of hospital construction are important factors in patient and employee satisfaction, they must never supplant design strategies that address the complicated dynamics of the hospital environment. Unfortunately, they sometimes do. And when they do, is it any wonder that patients and doctors are left with hospitals where operating rooms are built atop boiler rooms and emergency rooms are situated one-quarter mile and two elevator rides away from the nearest intensive-care unit?
David C. Wolf, M. D.
New York City

Re: "The apprentice system: should it make a comeback?" [ARCHITECTURAL RECORD, November 1987, page 9]:

Thank you for airing John H. Hartray, Jr.'s comments and for your positive view of them.

It is un-American that NCARB has ruled against aspiring young people taking the qualifying professional architectural exams unless they are degreed by an "approved" school. I am a *non*-degreed architect. I took the exams at the age of 47 (before the restricting rule was in effect) and passed on the first try. The ruling is a personal insult to my professional status. In effect, NCARB has said that someone (like myself) without an approved degree from an approved architectural school is not welcome in the club.

I attended school for seven years at night and on Saturdays. The courses, plus my apprenticeship training over these years, gave me the knowledge required to pass the NCARB exams. (I worked as carpenter, mason, electrician, plumber, painter, cabinetmaker, etc., over the years.)

An apprenticeship program should be coordinated with formal education. It is too much to ask a professional to admit apprentices to an office and to teach them all they require to be licensed.

AIA objected to the NCARB ruling when it was adopted. Their objections were short-lived. Your gallant editorial was a breath of fresh air after a period of *shameful* quiet on the subject.
Byron Rosenbaum, Architect
Riverside, Connecticut

Corrections

RECORD's story on the St. Thomas Choir School (November 1987, pages 116-119), inadvertently omitted credit to Donald Kaufman Color, the color consultant, and Robert Schwartz and Associates, the specification consultant.

Calendar

MSA VBPA ABP

Through February
Liberty: The French-American Statue in Art and History, an exhibit including original renderings and models; at the National Building Museum, Pension Building, Washington, D. C.

January 15-18
Open meeting of the American Institute of Architects Housing Committee, in conjunction with the National Association of Home Builders convention; in Dallas. For information: Anne Howell, AIA, 1735 New York Ave., N. W., Washington, D. C. 20006 (202/626-7429).

January 19 to February 18
Long Island Modern: The First Generation of Modernist Architects on Long Island, 1925-1960, an exhibition of drawings, photographs, and models; at the Octagon, 1735 New York Ave., N. W., Washington, D. C.

January 29-30
A regional workshop on seismic design for architects and building professionals, presented by the American Institute of Architects and the Association of Collegiate Schools of Architecture, sponsored by the AIA/ACSA Council on Architectural Research; in San Francisco. A similar program will be conducted in April in Boston. For information: AIA/ACSA Research Council, 1735 New York Ave., N. W., Washington, D. C. 20006 (202/785-2324).

February 4-6
Open meeting of the AIA Committee on Historic Resources, with a workshop in masonry restoration; in Washington, D. C. For information: Bruce Kriviskey, American Institute of Architects, 1735 New York Ave., N. W., Washington, D. C. 20006 (202/626-7452).

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MBCI Roof Accomplishes Architect's Goal on Texas School Project

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PROJECT REPORT

MBCI Ultra-Dek® Roof System Offers Maintenance Relief to San Marcos School

No Maintenance Expected

The San Marcos Consolidated Independent School District, San Marcos, Texas wanted its new school to have a virtually maintenance free roof.

The architect chose an Ultra-Dek® standing seam roof system from MBCI.

According to John Fowler, Administrative Assistant for Special Services for the school district, San Marcos has unstable soil conditions which cause buildings to shift and rise. This factor, coupled with extreme temperature changes which cause expansion and contraction of roofs, creates cracking in built-up flat roofs.

This unique roof system is attached to a floating clip system which is attached to the structural. The clips allow the roof to expand and contract during extreme temperature fluctuations. This means the entire roof membrane stays intact with no cracking or separating where water seepage can cause problems.

"Our flat roofs require a lot of maintenance in time and expense, Fowler said. "That is why we wanted a pitched, sloped metal roof for this new school building. We did not want to spend any time and expense on it," he added.

William "Moe" Johnson, of the architectural firm Pfluger Associates, agreed. "We used metal to design this gable roof to provide a classic look. The school district received not only a beautiful building, but also a long-life structure that will last for many, many years."

The school, Lorenzo de Zavala Elementary has 67,500 square feet of covered area and 6,500 square feet of canopy and bus area. It is one of the 50 buildings in the school district of 5,700 students. According to Fowler, the school district has a little under one million square feet

(continued on other side)

Project Facts

Project Name: Lorenzo de Zavala Elementary School, San Marcos Independent School District

Location: San Marcos, Texas

Roofing Contractor: Dyndhold Systems, San Antonio, Texas

General Contractor: B.F.W. Construction Co., Temple, Texas

Designer: Pfluger Associates, Austin, Texas

MBCI Preformed Metal: Ultra-Dek® standing seam roof system; "A" Panel on fascia and Artisan I for soffit.

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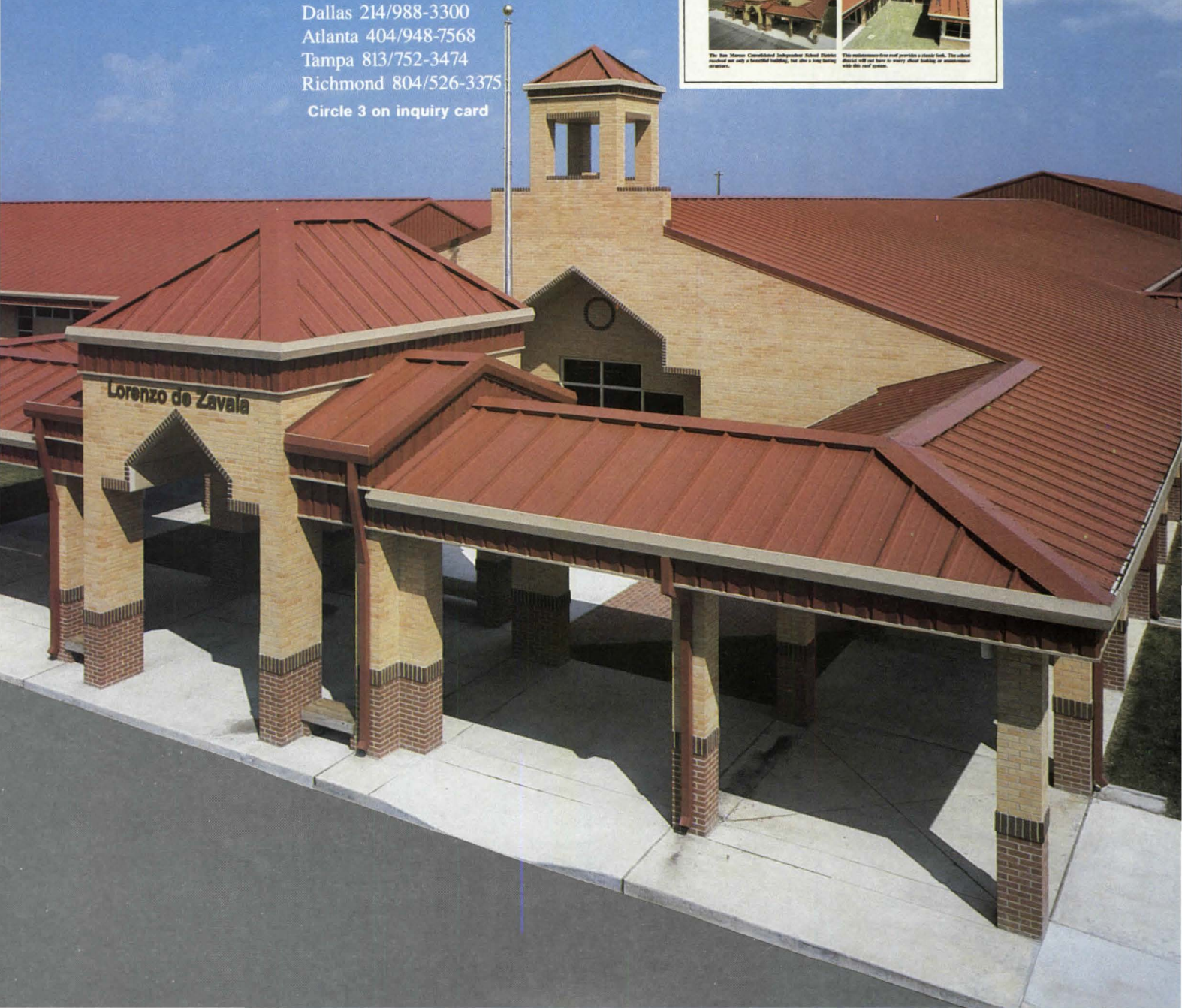

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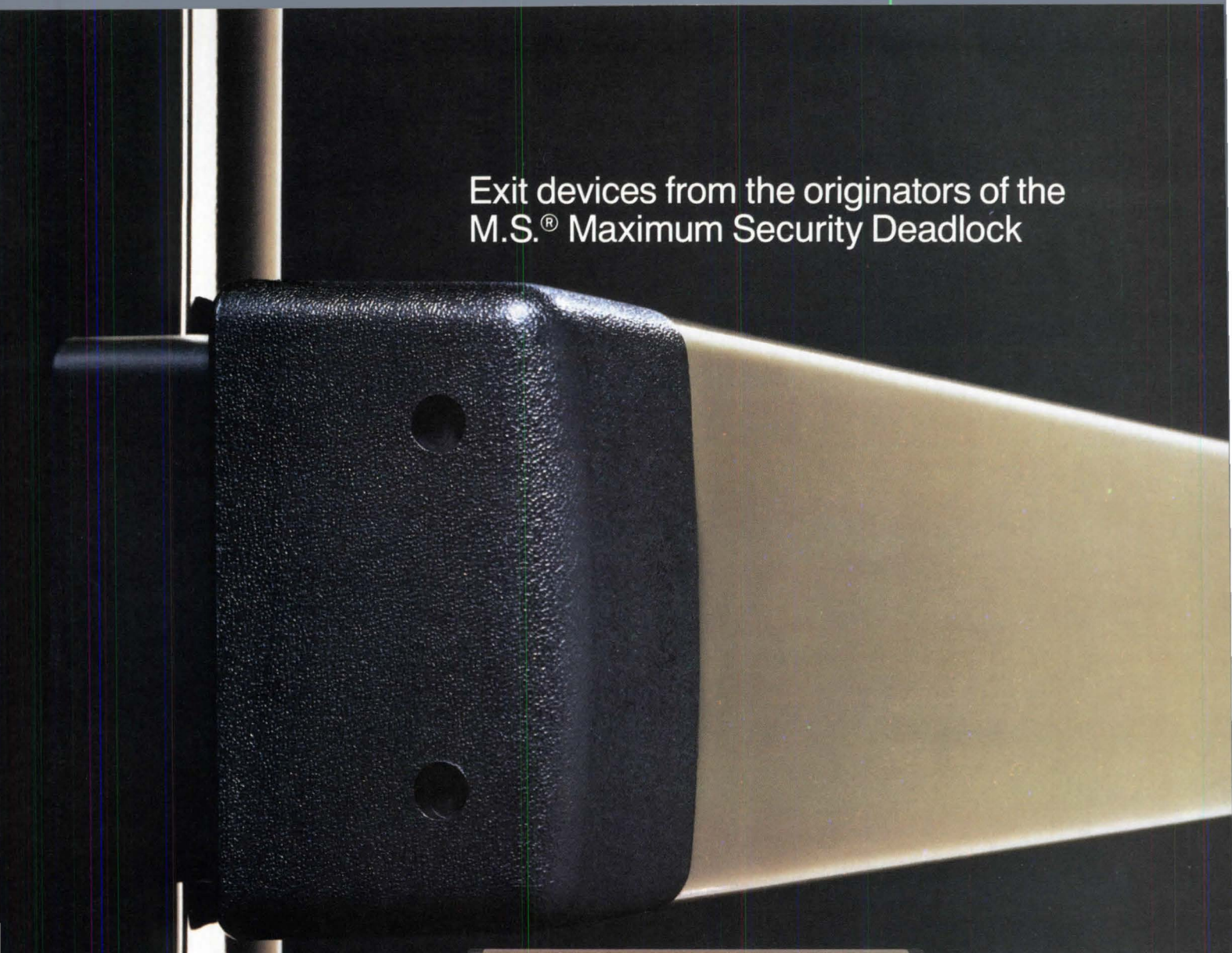

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Creating the ideal client

The cover story this month (pages 62-73) is about the New Jersey corporate headquarters of Becton Dickinson and Company, an international manufacturer of medical products. A brilliant reinvention by architects Kallmann, McKinnell & Wood of the suburban low-rise office building—a building type that has become relentlessly predictable in most of its manifestations—it is an assured and accomplished work of architecture. Such achievement requires architectural talent of a very high order, and a client who is more patron than customer, the ideal sponsor for whom architecture is not simply a service industry. Behind every fine building, whatever its type, is a top-level true believer who wants to build a work of art.

While thinking about such patrons as I was about to write the Becton Dickinson story, I wondered as I sometimes do why so few architectural firms ever find such ideal sponsors for their work. And why some seem to find them again and again. Why are the true believers so hard to find? How is one to be captured? And then I came across a relevant commentary from another field. The philosopher, novelist, and semiotician Umberto Eco, making a point about readers and writers, asserts that ordinary writers imagine a real reader and try to give him what the writer thinks he wants. But fine writers, on the contrary, invent their ideal reader as they write. According to Eco, "Writing is the constructing of the model reader through the text."

If a work of architecture is to transfigure the commonplace, the architect must begin by keeping a critical distance with regard to the client's initial program, being none too ready to fulfill its requirements. First, architect and actual client, in dialogue among themselves, must construct the model client through the act of imagining, designing, and then implementing his dreams. For Becton Dickinson, a dream of the dignity and pride of work became a spacious house, not unlike a Renaissance country villa, in a splendid landscape. A patron's vision, a humane reality. *M. F. S.*

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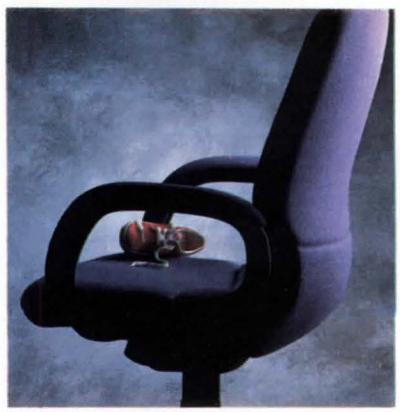

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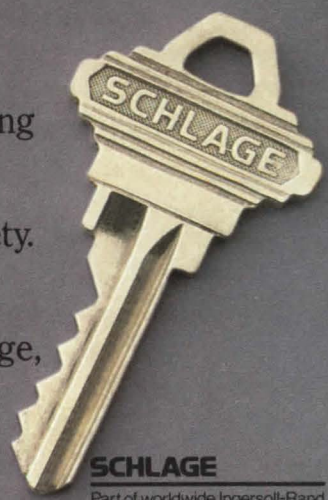

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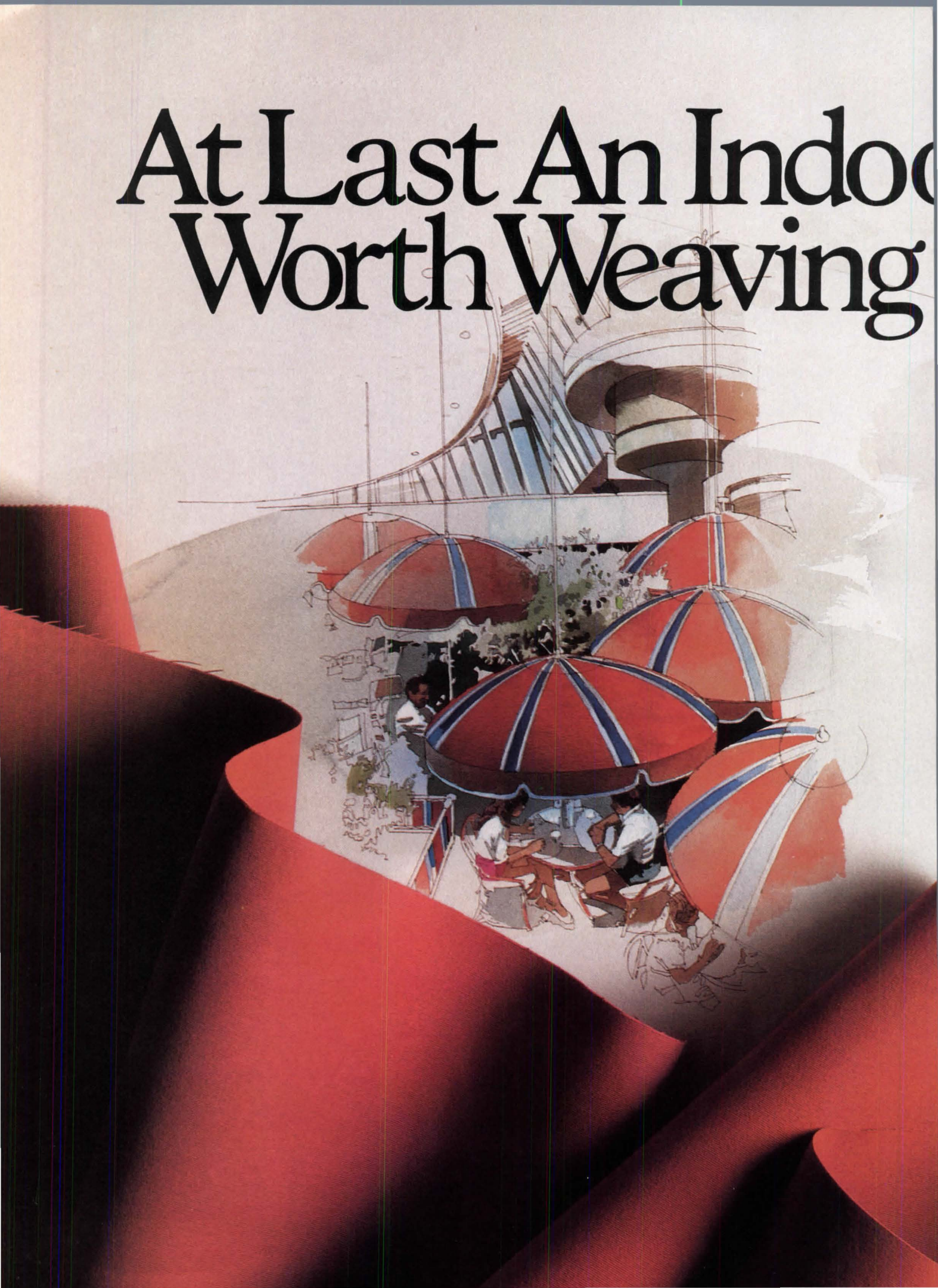

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FANTASTIC

The flame-like shapes pictured here form the roof structure for a multi-story electric power pavilion at the Tsukuba Expo. After dark, floodlights with rotating color create a vibrant effect of flickering flames. By day, the roof structure remains a striking eye-catching design, though quite different from its nighttime appearance. The white translucent fabric reduces daylight lighting requirements and conserves energy.

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The cardinal rule

Douglas Cardinal explains how an AEC design system fr turned his architectural vision into reality.

"I'm totally unreasonable," says Douglas Cardinal, architect of the Canadian Museum of Civilization near Ottawa in Hull, Quebec.

Given the scope and complexity of this $200 million undertaking, one can understand why the celebrated Canadian architect might say so.

"Initially, we were given four large volumes, about the size of New York telephone books, listing requirements for the museum," Cardinal explains.

The project involved the coordination of countless parties, including two Prime Ministers and their cabinets, government agencies by the score, and an army of structural, electrical, civil, and mechanical engineers and landscape architects.

It was more than an architectural challenge — it was a logistical challenge as well.

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"The free form of the geometry and the correspon ing offset calculations and layout requirements in the fi could not have been achieve with the technology of yeste day," says Cardinal. "Norma drawing boards could not d the job. All of our sweeping curves and forms would require a compass point in the next room or province."

Cardinal used the syste computerized database to c trol all of his design and reporting activities. The syst also offered precise control o each design element and its geometric position, propertie and relationships.

"All design and drafting work was processed by our Holguin system, from prelim inary sketches and schemati to the development of desig and final contract document

Above: Architect Douglas Cardinal, renowned designer of the Canadian Museum of Civilization. At right: his masterwork and the Holguin and Hewlett-Packard AEC system used to create it.

* The Holguin Corporation of El Paso, Texas is a value-added reseller of Hewlett-Packard.

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"The Holguin system is
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al recall," says Cardinal.
ou marry that with the right
e of the human brain, and
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cting expectations."

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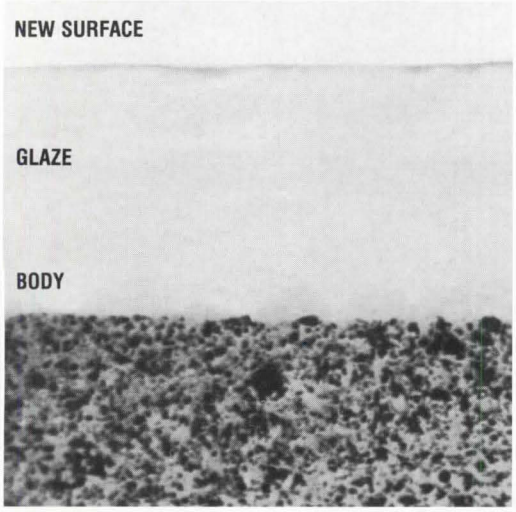
Canada Museums Construction Corporation Inc. - Project Managers
Société de construction des musées du Canada, Inc. - Directeurs du projet

Douglas J. Cardinal Architect Ltd. - Design Architect
- Architecte concepteur

MARAZZI *CHALLENGES TIME*

Microscopic Cross Section of Tile



Traditional single-fired technology captures microscopic gas bubbles in the glaze. As the surface wears, these pores open and dirt becomes trapped within. Marazzi's new process allows these gases to escape and a completely dense glaze results. Resistant to acids, solvents and detergents, "Marazzi Enduro" doesn't harbor dirt and can be completely cleaned with common detergents and water. After years of wear, "Ocean" and "Gloss" can actually be re-polished to their original luster with normal maintenance equipment.

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MARAZZI
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359 Clay Road

Study points to which types of clients will be the most active and what types of construction they will spend money on

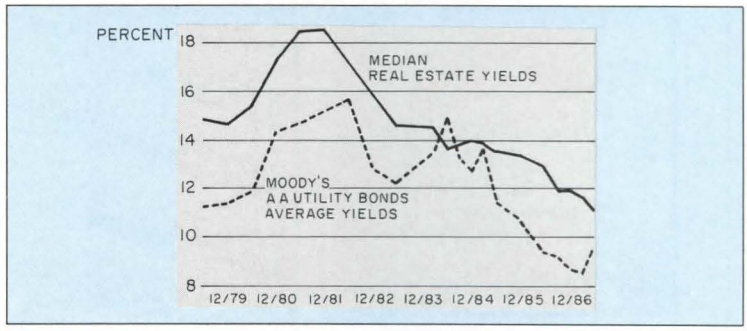
A recent survey of 90 real-estate leaders reveals that 1988 investment in certain types of projects may be surprisingly strong and that adverse developments in the stock market may help by funneling money into bricks and mortar. Even the gloomy office field gets a boost. "Quality, well-leased real estate is positioned to outperform stocks and bonds," according to George Puskar of Equitable, which manages over $26-billion worth of it and sponsored the study by consultants Real Estate Research Corporation. "In a downturn, companies cut back dividends but stop paying rent only as a last resort."

That is, assuming the property can be rented in the first place. To do this, the importance of design and construction quality is stressed. Indeed the survey predicts that the value of the top 25 percent of investment buildings, including offices, will go up in 1988, despite flat values for the middle segment and falling ones at the bottom. This will make that top segment a good bet, not only for investment but, presumably, new building. "All of the investment demand cannot be met."

Who will be investing and (possibly) building? "Large players and institutions best able to maneuver and engage in low-risk, low-return deals." The Japanese have outspent the combined total of all other off-shore investors over the past three years and are expected to continue this binge. Land developers will be in one of the few areas of strong real-estate opportunity while "hotels have the least interesting prospect."

The researchers are not as optimistic about pension-fund investment in 1988 as those they research. While fund managers themselves talk of reaching a 10-percent allocation (vs. 3.6 in 1986), "they are not likely to increase their share, nor should they at this stage of the real-estate cycle."

Where will the investment take place? New York, Boston, Washington, D. C., and Los Angeles are the favorites of those interviewed. "Possible business retrenchment could hurt recovery in overbuilt markets like Atlanta, Chicago, and even Dallas, which have been experiencing very healthy absorption," noted George Peacock, chairman of Equitable Real Estate.

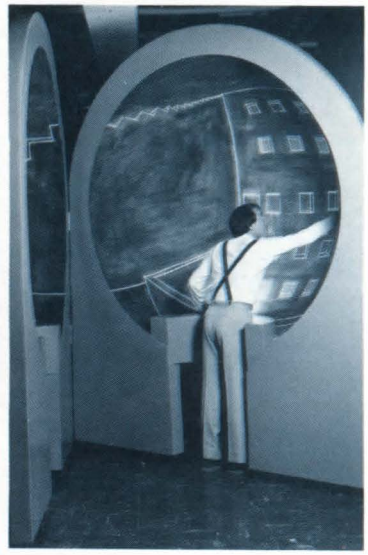


Whatever direction the economy takes as 1988 unfolds, investors will be looking for "a return to basics," thanks to tax reform. What are the basics, in case the heady years of tax concessions made us forget? Real cash flow based on real rents and real tenants. Less emphasis on riskier long-term yields and more on current ones when compared to development costs. "No matter how you put it, basics reflect an intense interest in cash and equity, rather than speculation," says the report. *C. K. H.*

Seeing is believing

Since its inception, students have been taught the theory of perspective on flat surfaces which distort images having more than three vanishing points. But North Carolina State University's School of design has been working on changing all that. Some time ago, Professor Duncan Stuart built something like a cyclorama—a large cylindrical blackboard inside which students could draw accurate perspectives with four vanishing points.

Recently, a former student of Stuart's, Raleigh architect Douglas Hulbert (photo), built and donated to the school a spherical blackboard molded of papier-mâché around an eight-foot balloon and finished with plaster. Now students can roll the two hinged halves open, step inside, and—using true six-point perspective—create spaces and planes converging in all directions.



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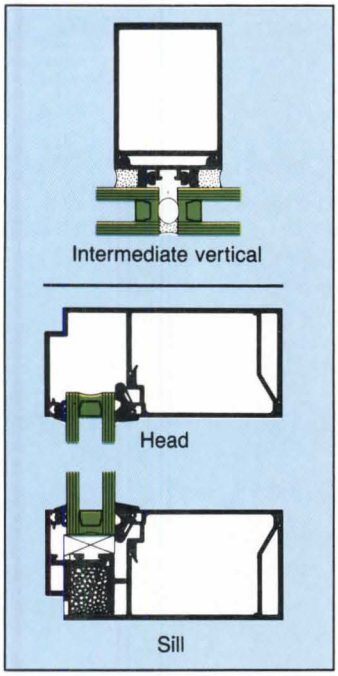

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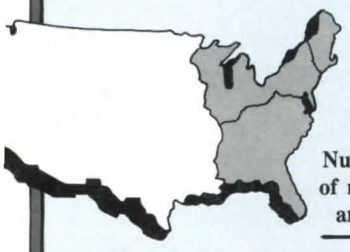
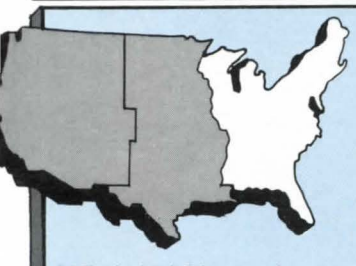
Construction costs: A reversal of accelerating rises

Summary of Building Construction Costs



Districts Eastern U. S.	Number of metro areas	7/87 to 10/87	10/86 to 10/87	1977* to 10/87
Metro NY-NJ	18	.89	5.99	1864.66
New England States	33	2.09	6.51	1813.31
Northeastern and North Central States	120	0.34	1.87	1703.39
Southeastern States	106	0.28	.90	1743.54
Average Eastern U. S.	277	0.56	2.32	1742.33



Western U. S.				
Mississippi River and West Central States	122	0.11	.86	1691.02
Pacific Coast and Rocky Mountain States	106	0.35	.85	1758.71
Average Western U. S.	228	0.22	.85	1722.49
United States Average	505	0.41	1.66	1733.37

* Using only cities with base year of 1977

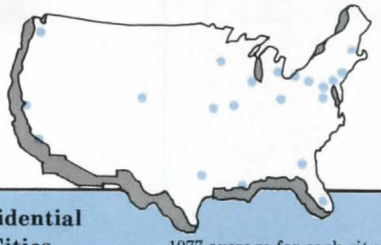
In the previous edition of this quarterly report (RECORD October 1987, page 39) covering April through June, there appeared to be a possibly alarming pattern of accelerating cost hikes that had begun in the final quarter of 1986 with a 0.20-percent rise. The succeeding two periods almost doubled the previous gains until, in that previous report, the rise stood at 0.68 percent. It is a relief, therefore, to find the national rise back at 0.41 percent for the most recent period for which we have information, the third quarter of 1987.

A look at the regional reports will bring further relief for some. Metropolitan New York and New Jersey regained the title of biggest cost gainer (with the only significant jump in the nation of 2.09 percent) from New England. The two regions have been trading the title back and forth for some time now and heavily weighting the national average. Most basic-material costs during the quarter were only fractionally higher. Drywall dropped by 0.01 percent, leaving labor to bring cost levels up in the predictable jumps negotiated in 1986.

Where are costs going? Following a major slump at the end of the period currently being scrutinized, a 6-percent rise in the value of new construction last October might point to costs following supply and demand back upward. But, since much of that rise was in nonbuilding construction, such as roads and bridges, it can be hoped that those materials used by architects in their buildings will show continued moderation.

(McGraw-Hill Information Systems Company studies are conducted quarterly by contact with union and nonunion sources, direct-mail suppliers, construction-labor consultants, and both general and specialty contractors in each city.)

Cost Information Systems
McGraw-Hill Information Systems Company



Historical Building Costs Indexes

Average of all Nonresidential Building Types, 21 Cities

1977 average for each city = 1000.0

Metropolitan area	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987 1st	1987 2nd	1987 3rd
Atlanta	1171.5	1712.6	1925.6	2098.6	2078.0	2360.6	2456.7	2448.7	2518.3	2561.9	2577.0	2584.7	2590.0
Baltimore	1018.4	1107.7	1304.5	1446.5	1544.9	1639.5	1689.7	1703.7	1743.8	1765.2	1788.0	1800.9	1790.7
Birmingham	1029.7	1142.4	1329.9	1407.2	1469.9	1468.1	1535.7	1594.7	1565.7	1587.4	1572.8	1568.3	1559.8
Boston	1028.4	0998.6	1236.0	1283.7	1432.5	1502.0	1569.9	1646.0	1721.0	1773.6	1806.2	1876.8	1881.8
Chicago	1007.7	1032.8	1199.7	1323.6	1344.7	1425.8	1439.5	1476.7	1528.0	1599.9	1599.1	1615.7	1607.0
Cincinnati	0848.9	0991.0	1323.9	1385.2	1350.4	1362.6	1430.8	1484.5	1486.6	1499.4	1512.0	1515.4	1507.7
Cleveland	1034.4	1040.8	1287.5	1388.2	1459.5	1511.4	1475.9	1464.0	1474.1	1525.7	1538.3	1549.4	1549.9
Dallas	1042.4	1130.6	1431.9	1481.9	1750.6	1834.3	1925.9	1958.0	1963.3	1973.9	1995.1	1984.8	1964.4
Denver	1038.8	1100.4	1495.6	1487.4	1632.2	1679.1	1800.1	1824.3	1821.8	1795.8	1778.5	1778.3	1749.5
Detroit	1018.1	1087.3	1275.3	1447.4	1580.3	1638.0	1672.1	1697.9	1692.6	1696.6	1690.8	1707.1	1701.2
Kansas City	1023.5	0951.5	1125.8	1233.2	1323.4	1381.8	1407.5	1447.1	1472.5	1484.7	1492.1	1490.8	1493.8
Los Angeles	1022.5	1111.0	1255.3	1387.5	1474.3	1503.3	1523.9	1555.1	1571.0	1609.7	1628.8	1664.7	1683.8
Miami	1004.5	1080.9	1330.1	1380.6	1369.1	1392.1	1467.6	1522.2	1540.6	1566.2	1567.7	1594.1	1598.8
Minneapolis	1060.2	1196.8	1286.9	1327.7	1442.6	1576.8	1624.6	1640.4	1661.0	1674.0	1691.6	1710.1	1688.7
New Orleans	1001.3	1138.8	1291.9	1505.7	1572.7	1616.9	1650.5	1691.4	1762.5	1760.2	1749.1	1737.1	1705.4
New York	1005.4	1043.0	1247.1	1319.4	1419.2	1491.8	1672.5	1747.2	1806.7	1899.9	1938.1	1970.5	1976.9
Philadelphia	1013.8	1074.2	1487.5	1539.5	1660.7	1769.4	1819.5	1922.1	1967.9	1992.7	1985.0	2029.6	2037.7
Pittsburgh	1016.1	1015.0	1227.0	1341.7	1493.2	1479.5	1497.2	1576.1	1611.0	1665.8	1668.7	1670.2	1662.5
St. Louis	1039.1	1198.8	1275.9	1320.0	1397.3	1451.2	1524.9	1625.5	1641.8	1647.4	1657.7	1668.2	1661.2
San Francisco	1083.2	1326.8	1473.4	1644.8	1776.4	1810.1	1856.8	1935.3	1961.8	1995.5	1993.1	2015.0	2000.2
Seattle	1142.5	1137.9	1373.4	1616.8	1814.9	1962.7	1979.0	1948.9	1937.9	1925.3	1915.4	1913.6	1894.6

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.) divided by the index for a second period (150.0) equals 133⅓, the costs in the one period are 33⅓ higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 divided by 200.0 = 75%) or they are 25% lower in the second period.

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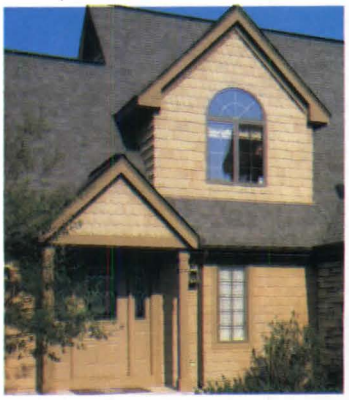

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Practice: Build Boston explores issues of national interest

The result of an ambitious collaboration begun in 1985 by the Boston Society of Architects, the annual Build Boston event has grown to be the largest regional trade show and conference for the design and construction industry in the U. S.

The three-day Build Boston conference and trade show last November got off on a high note with a registration of over 5,000 architects and others in the building-design and construction industry. And that high note never quavered despite rumblings from a construction market off its peak and a stock market still reeling from Black Monday. Besides benefitting from the drawing power of the 25 participating organizations, ranging from the American Consulting Engineers Council, to the Society for Marketing Professional Services, to the National Association of Home Builders*, the conference was held in conjunction with the annual AIA/ACSA reseach conference. The combined program got high marks for the number and quality of workshops and tutorials. A sampling:

How can architects run a profitable design firm?
While the four panelists (all from larger firms of between 30 and 500 people) may not have given the one definitive answer to a question that everyone seems to be asking these days, they did point out many routes to profitability that must be tailored to suit the profession's disparate firms.

"It's all in the client agreement," said moderator Wilson Pollock, a principal of ADD Inc. He advised architects to pin down exactly what they intend to do for the basic fee and make sure that anything else is a reimbursable. In order to know what production on a new commission will cost (and so that draftsmen do not wander off into unnecessary work later on), his office does cartoons of every drawing, including details, before the agreement is signed. He advised setting limits on the number and length of meetings and, if the client drags them on, billing on an hourly basis.

"Make it clear who is keeping track of time spent on a job and of prompt payments when they are due," said president James Sukeforth of Sasaki Associates. (He aims for 60-day receivables.) "Staff utilization at 85 percent means profit; 70 percent means trouble." His firm's target is 15-percent profit on gross revenues and, to control costs, the firm is setting up its own captive insurance company. It plans on trimming marketing costs to 5 1/2 percent of gross revenues (the national average, according to the Professional Services Management Association).

Keeping the entrepreneurial spirit alive as the young firm matures is the tactic of Moritz Bergmeyer of Bergmeyer & Associates. To do this, as his firm grows, it organizes semiautonomous subgroups of 20 or so people. "Individuals can see where they fit in and don't get lost in poché." How the groups are doing as a whole is summed up in monthly profit-and-loss statements. Yearly, 50 percent of the profits are split among the staff based on individual *and* group performance. "Whatever system used, if employees have a vested interest, you'll be profitable."

Putting the whole issue of profits in perspective, Dennis Roth, principal of Jung/Brannen, pointed out, "To make money, you need a commitment to do that but there are trade-offs that may not make profits [alone] that important. Occasionally, a very lucid designer can arrive at a good solution quickly. Even so, refinement of that design will cost your office money. Do you want profitability or survival?" In either case, architects should do work only with contractual limits, keep a healthy chargeable ratio of hours, identify what their clients want without spending a lot of time guessing, and go after and get large projects. "The fixed costs of production are about the same for a 20,000- or a 200,000-square-foot building," he stressed.

Other subjects discussed: Apply the retainer to the last payment, not the first. A cap on annual firm growth—say 15 percent—will help avoid quality-control problems. Limits on certain types of clients—housing developers and government in particular—will avoid payment problems. And, if you do government work, bill way in advance because, by the time the bills are processed, they will be about on schedule.

Fast-track design and construction: the problems and opportunities
Stressing the important role of the computer in fast-track design, principal Crawley Cooper of Jung/Brannen said that 70 percent of his firm's work was done under one form of fast-track commission or another. "Because any form means you award a construction contract on incomplete documents, the owner must understand the risks." Fast-track, he went on, means reorganization of the normal process in architects' offices. Programming, design, and construction on the same job can take place all at the same time. The advantage for the designer? The contractor does what the architect used to do—cost estimating and identification of potential cost cuts, if required.

To illustrate how different the new design-production process can be, he described his office's work on a building for a high-tech client (photo, next page). On a normal fast-track commission in his office, programming and schematic design will proceed as they always have, except they will overlap. It is at the point that design development would have begun that something entirely new is introduced: scope documents. Because of the vast amount of detailed information from past jobs that can currently be stored on computers, scope documents are plans that are sufficient for a contractor to make a cost commitment. Procurement documents follow, and these pin down subcontract prices. Construction documents, the old working drawings, wind up being more like as-builts.

To speed things along, there are 11 bid packages, the early ones prepared even while design proceeds: site preparation,

Seen at a distance, the fast-changing skyline belies an admirable capacity for growth that preserves a sense of place.

**Other organizations included the American Institute of Steel Construction, American Society of Interior Designers, Associated General Contractors, Historic Massachusetts Inc., and societies of architects from adjacent states.*

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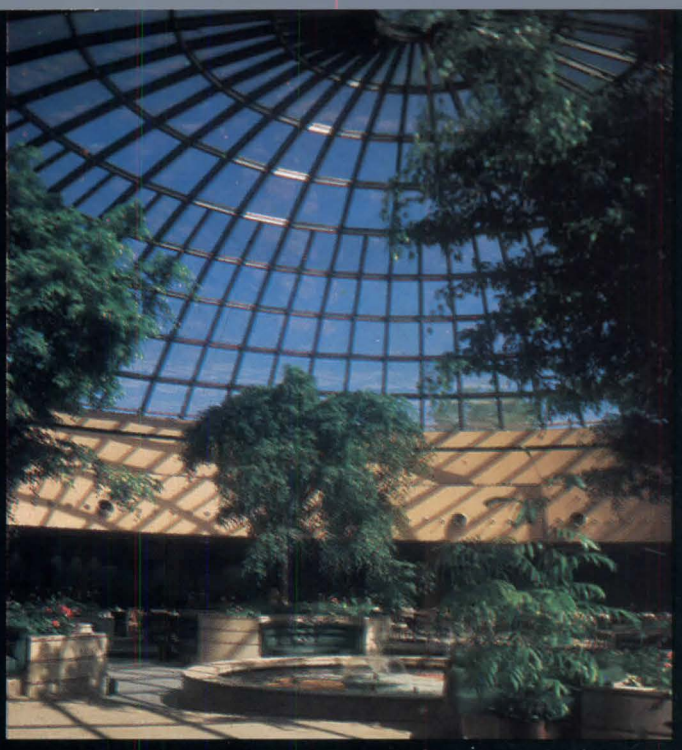

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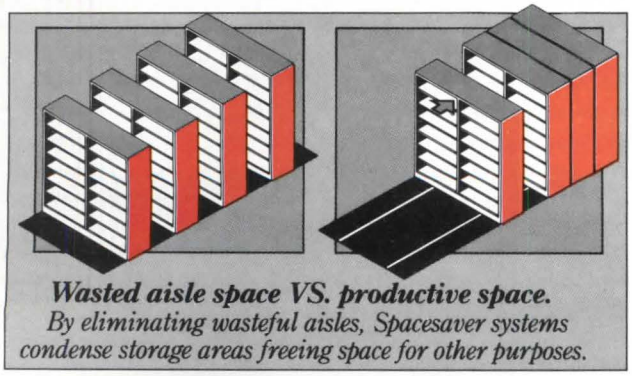

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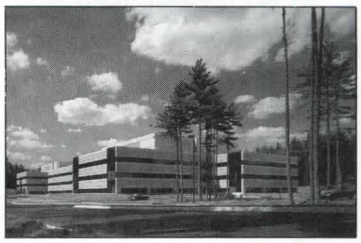
The required flexibility to do fast-track design was somewhat stretched by Jung/Brannen's experience on this building. It started as a headquarters, then was to be a research center and, on occupancy, was a regional service facility.



foundations, structure, hvac, vertical circulation, cladding, doors, interior finishes, special equipment, landscaping, and, furnishings.

Lawyer Chris Noble of Hill & Barlow pointed out that it is exactly because the contractor in this arrangement takes early responsibility for costs that problems can arise. First of all, he often isn't called a contractor anymore; he's called a construction manager. And when that term is used, there is generally mass confusion over what it is that he does. "Most clients and architects will throw out the old AIA general-contract agreement with its clear delineation of responsibilities."

If the CM guarantees price and takes responsibility for getting the building built, you almost have the traditional architect-owner-contractor pyramid but, chances are, the architect will have no control over the CM's performance. Worse yet, the CM can stand aside as a consultant only. "Then no one is responsible for getting the building built but the owner." Noble's advice? Don't get sidetracked by terminology. "Keep calling the CM a GC."

Better fees through perceived value

"Clients that look only at fees don't understand the range of services that professionals provide; they don't know what they need but can be brought around by being told," said Judith Nitsch of engineers Allen, Demurjian, Major & Nitsch.

"Architects have to overcome the public's perception that they are not interested in meeting schedules and budgets and can do this by expressing their interest up front," noted Robert Silver of architects Schwartz/Silver. "In order to deliver on their promise of meeting budgets, architects have to understand that their ability to affect costs is strongest at the inception of design," pointed out Richard Gourdeau, president of the Associated General Contractors of Massachusetts. Senior associate John Benson of Sasaki Associates advised, "Don't underestimate the importance of the interview and the chance to express interest in the client's problems by offering programmatic options." And, cautioned Silver, "Don't do free work, such as site evaluations, for unknown clients." If it's a known client, get a commitment that you will get the job if it goes ahead. "Send the client a bill marked 'credited to account' to show that the service had a value," added Benson.

Getting into print and advertising

Moderator Lois Boemer reminded her workshop audience that more than peer recognition follows the winning of a design award. Invariably such awards generate coverage of the winning projects in the popular press. "Get a clause in the architectural agreement that your client will mention your name in publicity he puts out," advised president Thomas Vogel of architects and engineers Symmes Maini + McKee. "And make friends with his public-relations people so they spell your name correctly," added co-moderator Melanie Nordquist.

How much are small starting firms spending on getting exposure? "I let the opportunities generate the budget," said Philip Hresko of architects Hresko Yost Associates. "Do what you must."

Selecting the clients you want and getting them to want you

Robert Brustlin of architects Vanesse Hangen Brustlin suggested a priority-client system. "There are always conflicting deadlines and demands for your time in any design office because, no matter how well you plan, clients will let you know their needs only at the last minute."

And which demands do you respond to first? Those of clients you want to want you most—clients who bring in the diverse building types that keep your office busy in cyclical swings, whom you get along with, who manage well and convey expectations in an orderly way, who understand the value of your services, don't shop around, and pay on time.

Promising more than you can or should deliver to secure clients in the first place can produce liability, said lawyer Larry Gainen of LePatner Gainen & Block. Don't promise untested or unfamiliar construction, use confusing architectural jargon to describe your services, or agree to do work for less than a full fee, with the result that you may give less than your full attention. Do be frank about costs. "If you can't help yourself, ameliorate the excesses of marketing by making a comprehensive contract." Include an integration clause: "This agreement supersedes all previous agreements." Then, if you have said that you will do everything that has to be done, spell out in the contract exactly what you will do.

"When God gave some the ability to visualize, he seemed to take away the ability to verbalize," said communications consultant Joan Capelin. "But you don't get anything in life unless you can ask for it. Look before you leap at a prospective client. Don't say: 'I'll get the work and worry about it later.' There may be no later." Keep asking: "What is it that you want" when preparing agreements. Many drafts may seem a waste of time, but they will be an ultimate saving if you and the client are communicating. If you're not, watch out. After the agreement, you must keep reassuring clients about all the things you do that they don't understand. "They're nervous because services are much more difficult to evaluate than products."

Legal issues and liability insurance for designers

Lawyer David Hatem, a partner in Posternak Blankstein & Lund, discussed how to protect your coverage. For instance, what do you do when you spot an unsafe condition on the construction site? "Don't talk to the contractor. Tell the owner," said Hatem. The AIA documents specifically give safety responsibility to the contractor. If you get drawn into such a discussion, you become party to his liability.

Hatem saw significant liability-insurance problems in design-build that could subject architects to not the laws of services but of products. He saw danger in improperly insured consultants. "Make sure their insurance is ongoing—not just for the year a claim is filed."

What constitutes a claim? "If you get an insulting letter from a contractor which is all personal rather than substantive, you may be tempted to answer back in kind. 'Now let me tell you a thing or two . . . .' Don't do it. Do call your insurance broker immediately." He must know of anything that even *might* turn into a suit. And, if it does, the letter must have been answered or the contractor can go after damages. "Let the insurer's lawyer do it; going to your own first could cause trouble.

"Avoid all guarantees in client contracts," continued Hatem. "Don't say you will perform to the highest standard of care. Ordinary contracts say 'ordinary standard,' which is safe but raises flags. Who wants ordinary care? Don't even mention standard of care." Say your insurance company won't let you. Which, by and large, is true. *Charles K. Hoyt*

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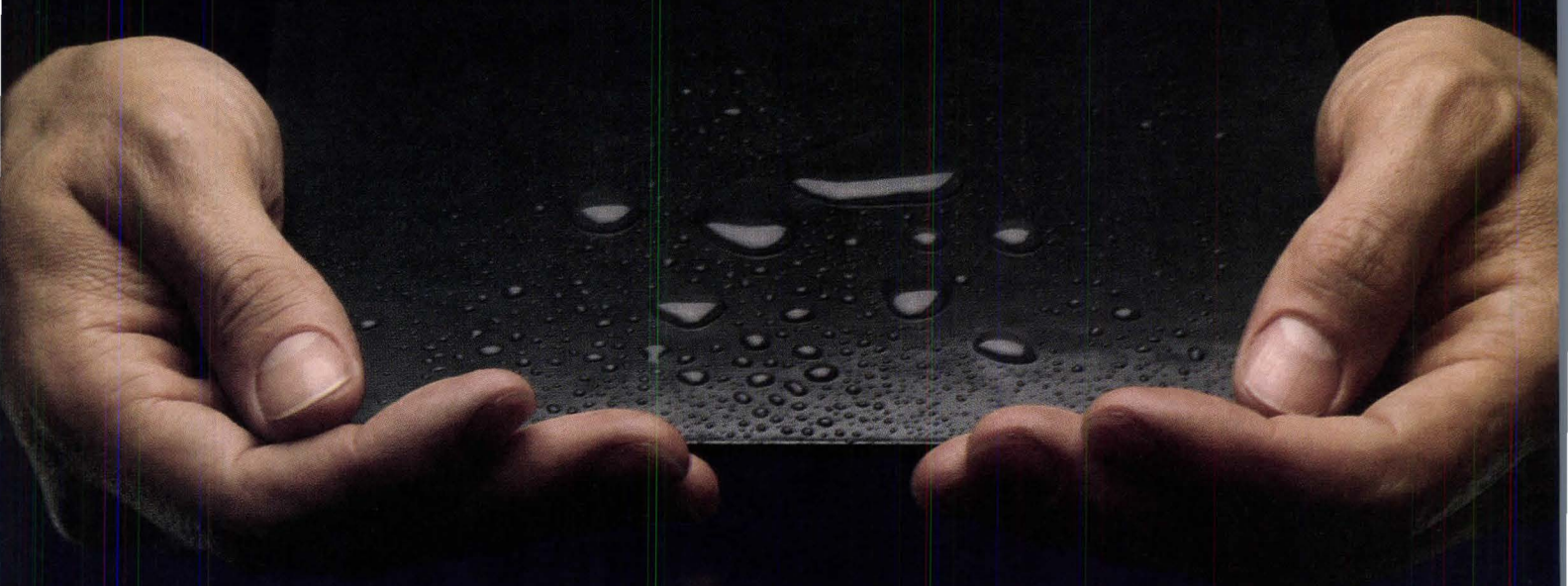

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Finance:
The economy will grow this quarter but watch out for rising interest rates

Despite continued health in the economy as a whole, borrowing costs may put a damper on most types of construction.

By Phillip E. Kidd

Throughout most of 1987, interest rates climbed steadily upward. That abruptly changed in mid-October. The Federal Reserve, seeking to avoid a financial collapse in the aftermath of the stunning October 19 plunge in stock prices, acted decisively by pumping liquidity into the financial markets. It worked. Confidence was restored and interest rates were driven sharply lower. In succeeding weeks, as the financial system regrouped and the economy sustained its momentum, interest rates began rising.

Although not forgotten, the stock market's nose dive is no longer the center of the nation's attention. Instead, businesses and consumers are studying the resurgence in the manufacturing, agricultural, and export sectors; the falling value of the dollar; and the November deficit-reduction accord between Congress and the Administration for indications of the future strength of the economy.

Normally, any contraction in fiscal policy would allow a more accommodating monetary policy, lessening tensions on interest rates. However, the deficit accord made up of tax increases, expenditure cuts, and asset sales totaling $30 billion, may not be sufficient to keep the 1988 deficit from inflating above the $147-billion 1987 deficit.

Obscured in the recent deficit debates is the 1986 Tax Reform Act's lifting of tax revenues in 1987 through the elimination of major-business and individual deductions, while only gradually lowering tax rates. In contrast, tax revenues are likely to dip in 1988, as fewer and lower tax brackets for individuals are implemented. Meanwhile, federal spending will continue to expand, because the accord relies much more on tax hikes and asset sales rather than on the $23-billion automatic expenditure slashing of the bypassed Graham-Rudman reduction plan. In turn, the federal deficit may be as much as $20- to $25-billion larger in 1988 than 1987. This will be a constraint on the Federal Reserve's ability to relax monetary policy.

Unfortunately, deciding whether to counterbalance a stimulative fiscal policy is not the only consideration the Federal Reserve will have to think about in the first half. The recovery of manufacturing and agricultural production and shipments abroad is improving business capital spending and boosting business credit demands. To prolong this positive momentum, businesses need affordable and less-volatile interest rates.

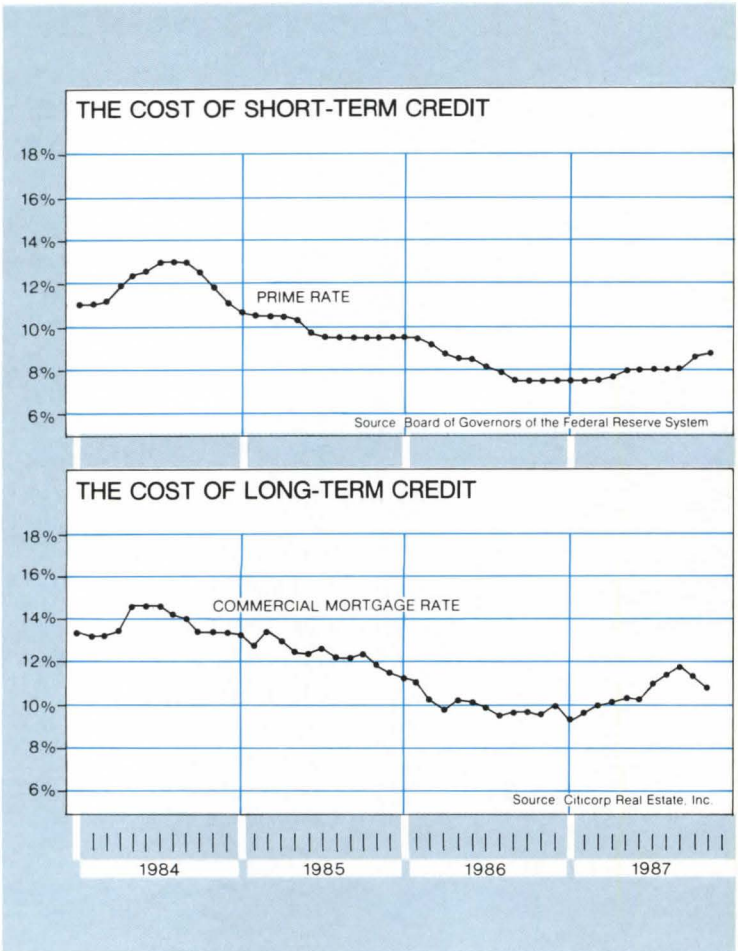
Here, the Federal Reserve and the economy may catch a break. Expanding business borrowings are hitting the market when consumer expenditures have not been growing very fast. Already worried about their high-debt levels, modest income growth, and pitiful savings efforts, individuals had been trimming outlays before the stock-market turmoil. Even if they did not feel its hurt directly, that event strengthened people's resolve to consume less, rebuild savings, and bring down indebtedness. As private credit demands weaken, business demands will pour into the market, pushing interest rates higher—but by much less than if both sectors were competing aggressively for funds.

One negative of revived production, which will plague the monetary authorities this year, is the specter of renewed inflation, arising from tightening labor and material supply and higher capacity-utilization rates. For the moment, such concerns appear overdrawn. Softening of employment in the service industries is freeing workers for manufacturing; and wage settlements so far have been moderate. Commodity prices are moving up, but they are still recovering from their long declines. And capacity utilization remains well below the 85-percent figure that usually signals trouble ahead. Nevertheless, nervous financial markets will periodically force interest rates abruptly higher on inflation fears, only to have rates drop when the scare passes.

Further complicating the interest-rate outlook is, despite moderation, the nation's inability to save and the steady erosion of the dollar's value. Consumer efforts to reduce debt and to build savings will be woefully inadequate to fund the increases in business and federal borrowings. Again, foreigners will be relied on to make up the shortfall. Worried about more deterioration in the value of the dollar, they will demand wider spreads over their own domestic rates to invest in U. S. financial instruments, placing persistent upward pressure on U. S. interest rates.

Attempting to balance these diverse forces, the Federal Reserve will pursue a defensive monetary policy. It will not deliberately restrain credit, but will only cautiously supply reserves, adding to the upward forces on interest rates. In the next three months, short-turn rates will fluctuate between 6.25 and 7 percent; 7- to 10-year governments between 9.75 and 10.5 percent; and mortgages between 10 and 11.5 percent. Interestingly, those ranges coincide with the levels that existed prior to October 19.

Although the economy will grow at a 2- to 2.5-percent real rate this quarter, interest rates may damp down construction.



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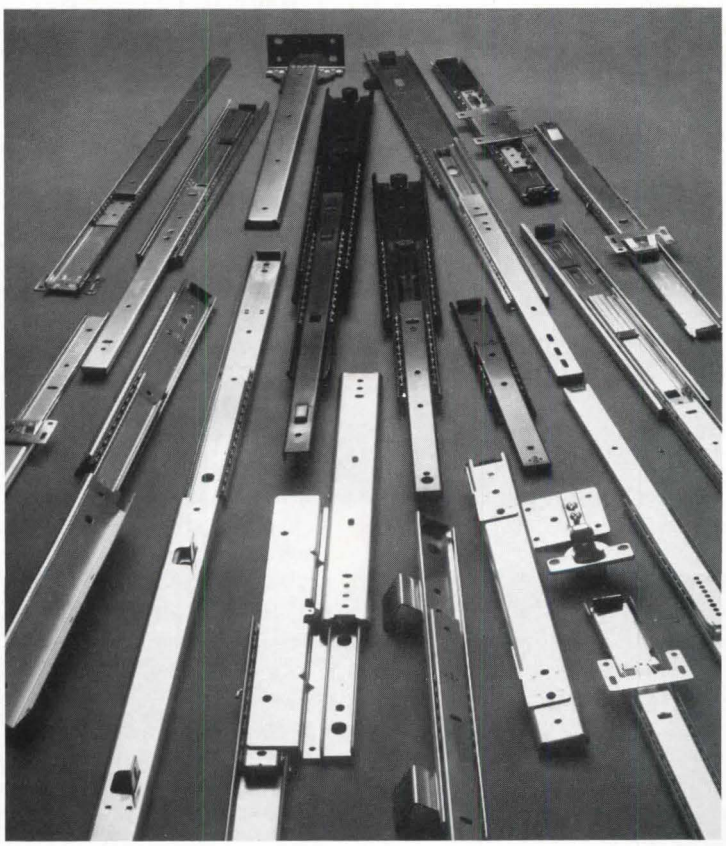

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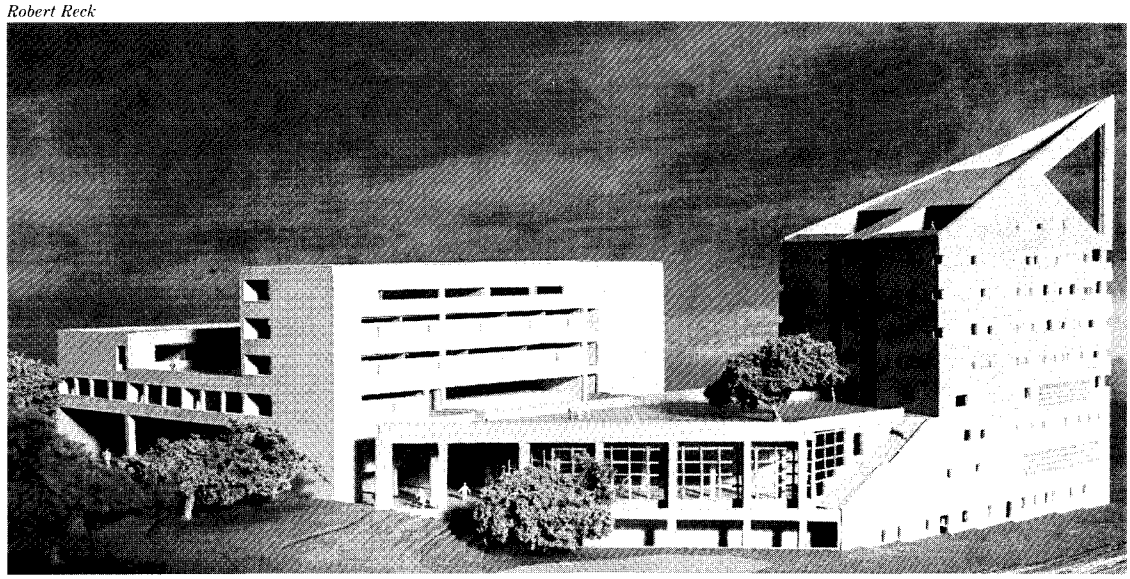
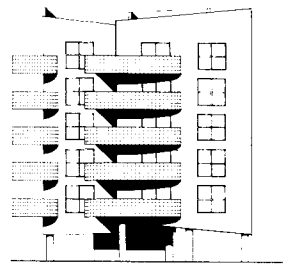
Predock at Cal Poly

Robert Reck

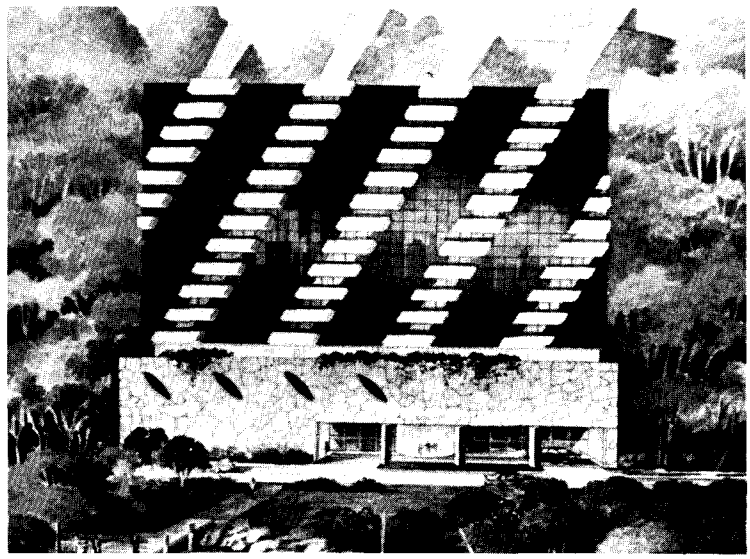


In the first design competition to be sponsored by any of the 19 campuses of California State University, Antoine Predock, of Albuquerque, has been selected to design a $24-million mixed-use building at Pomona, dubbed the CLA (for Classroom/ Laboratory/Administration). Premiated in an international invited competition among 54 firms, Predock's 182,000-square-foot CLA is a grouping of disparate elements—a wedge-shaped office tower to be clad in stone; a stuccoed, square teaching and experimental facility with an interior courtyard; and a glass-enclosed multipurpose base—that together are meant to create, in the architect's words, "both a gateway to the campus and window out onto the Pomona Valley." Construction is scheduled to begin during the fall of 1989.

Miami's northern lights



The Bronx-based Procida Construction Company, a family business, leaves design decisions to 30-year-old Mario Procida, who has an architectural degree. On his advice the company has invited Arquitectonica to lend its high-profile expertise to three development ventures: a five-story rental apartment building in Throgs Neck, N. Y. (top right); the flood-lighted River Club condominiums in North Bergen, N. J. (bottom right); and an apartment house in Edgewater, N. J. (not shown). Procida's trio will bring $32 millions' worth of Miami allure within the shadow of Gotham.



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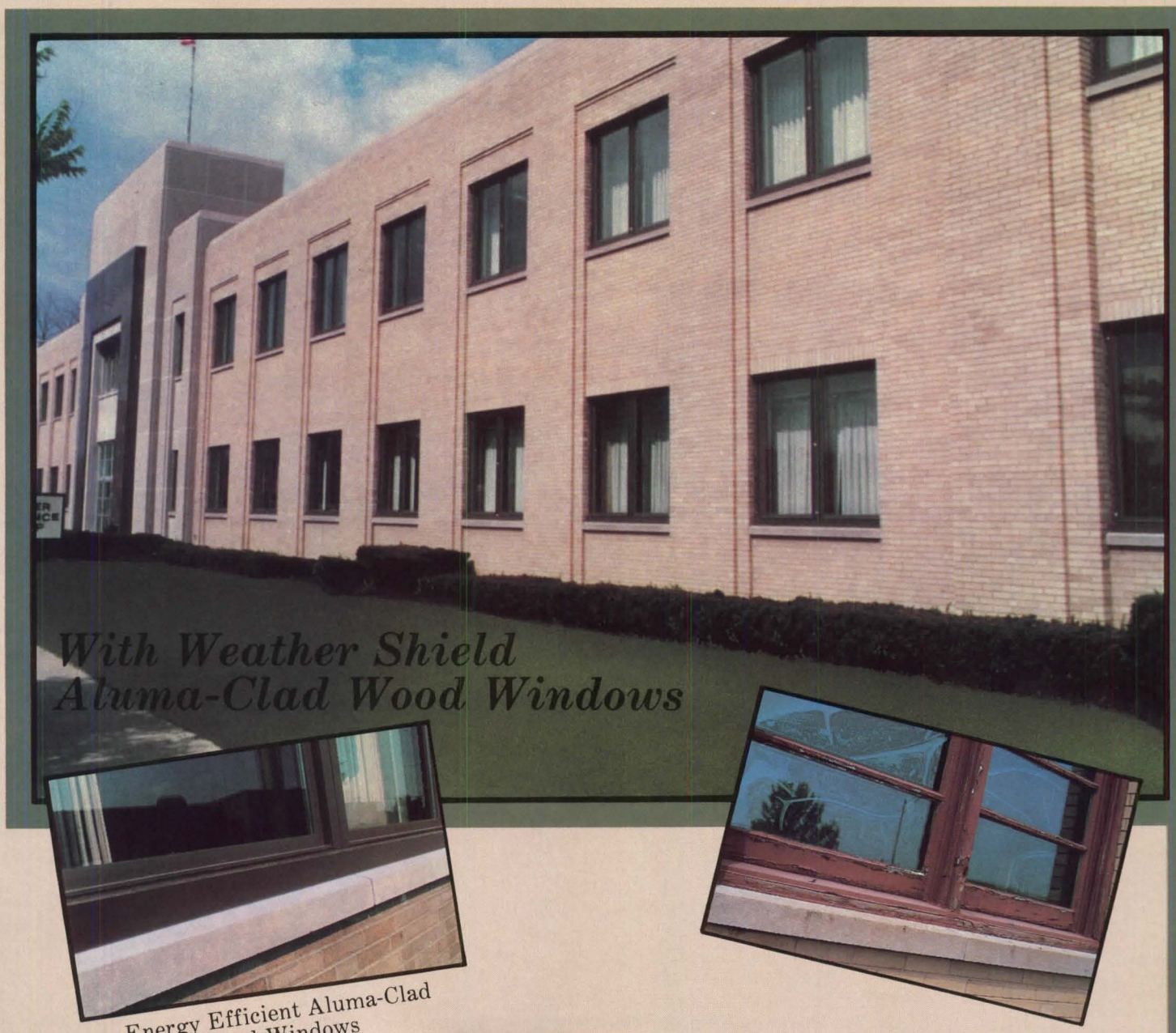

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News briefs

Steelcase, Inc., the contract furniture manufacturer, has purchased **Atelier International**, which will now join the Steelcase Design Partnership. Formed in June 1987, the group also includes Brayton International, Vecta Contract, and the Metropolitan Furniture Company.

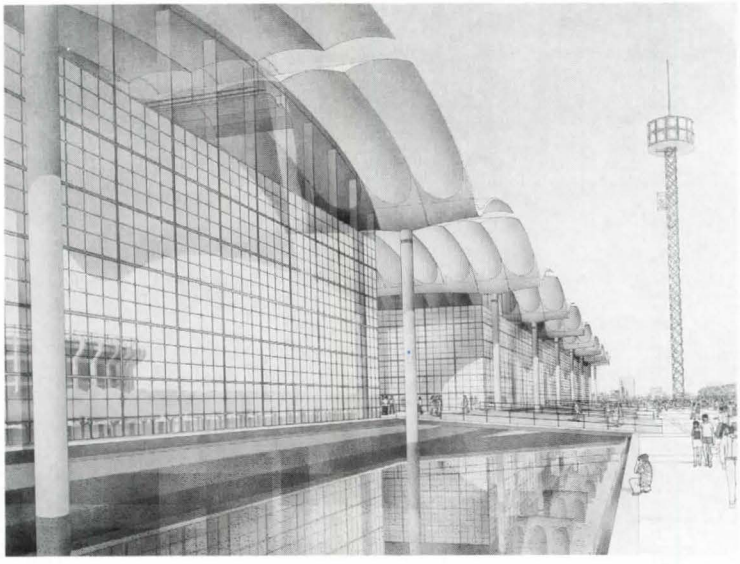
More **Steelcase** news: the company-sponsored restoration of the Meyer May House, designed by Frank Lloyd Wright in 1909, is now complete. Located in Grand Rapids, Mich., where Steelcase is headquartered, the house is open to the public.

Rincon Center in San Francisco, now midway through construction, is scheduled for completion in October. Designed by Pereira Associates, the $60-million mixed-use development is the first to be built since the passage of the city's Downtown Plan, which limits square footage of commercial office buildings. The project combines restoration of a historic post office with the addition of twin towers and, when finished, will occupy an entire block on lower Market Street.

The Custom House Docks development, to be located on a 27-acre site in Dublin, Ireland, will include a financial center, offices, 200 residential units, a conference center, and a hotel. Architect Benjamin Thompson & Associates, of Boston, will collaborate with London-based engineer Ove Arup & Partners on the project.

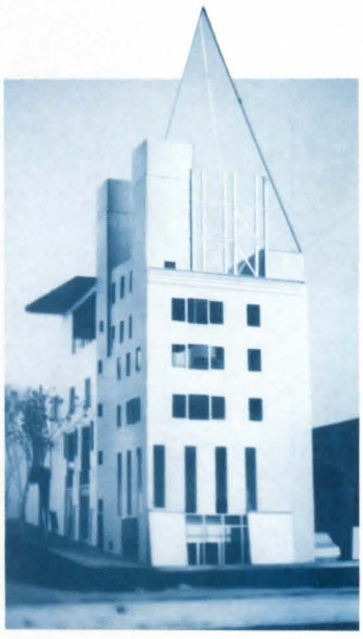
Harlem-on-the-Hudson is what The Ehrenkrantz Group & Eckstut is calling a $350 million development—to include 1,800 housing units contained in four towers, a 350-room hotel, a 75-slip marina, a cultural center, and shops—proposed for a riverfront site in upper Manhattan. To date, a developer has been selected for only one residential parcel; the remainder of the project is on hold.

Norman Foster's Radio City



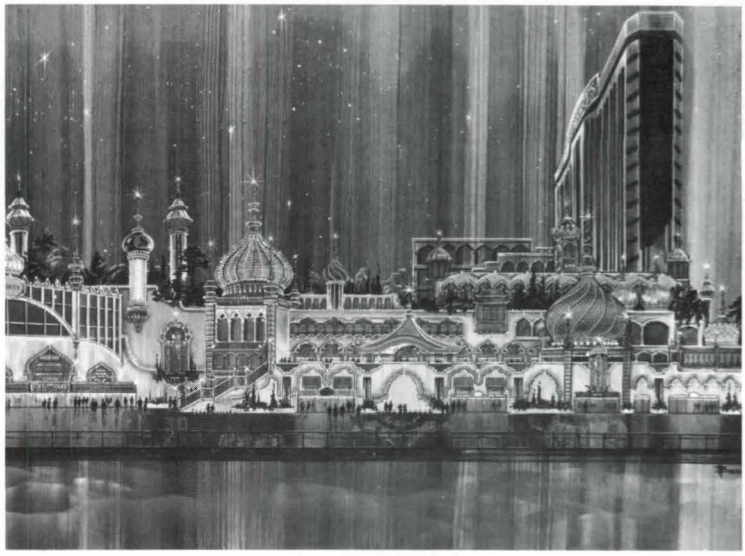
The proposed Televisa Radio Headquarters in Mexico City comprises four national television networks, seven radio stations, and other related video and movie affiliates. For this vast privately owned network, located next to a football stadium in the fashionable Coyoacán district, Foster Associates has designed a sprawling low-rise structure centered on a former rock quarry (which will be converted into a garden). The most notable feature of the 807,300-square-foot building is its exoskeletal framework, which, like the shed of Stansted Airport (RECORD, September 1987, pages 126-127), visibly expresses the relationship between columns and roof. Developed in conjunction with the engineering firm, Ove Arup & Partners, the structure consists of a series of precast concrete shells supported by 5-ft-diameter concrete columns on massive foundations, which respond to the earthquake-prone site. A secondary system of high-tensile steel cables positioned between the roof shells will act as inverted trusses in transmitting lateral forces across the structure to the ground. The exterior will be clad in glass and metal panels. *D. K. D.*

House of seven kitchens

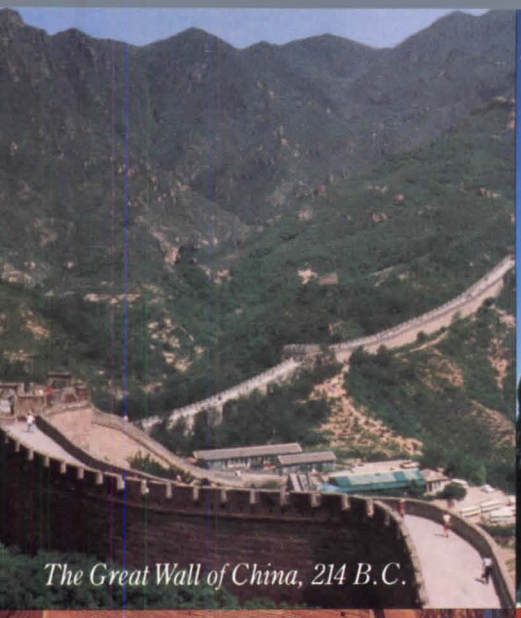


In the eclectic architectural climate of metropolitan San Diego, Smith & Others has bred a hybrid of its own. Dubbed the GoHome, the residential loft/office building satisfies the housing/working demands of untraditional family groups. "It's a shared house, but a flexible one," explains principal Ted Smith, who applies the label "undesignated" to the rooms grouped around communal kitchens which are offered to potential buyers. After three successful gambles in suburbia, the architect-developer is venturing downtown with a seven-kitchen unit (above).

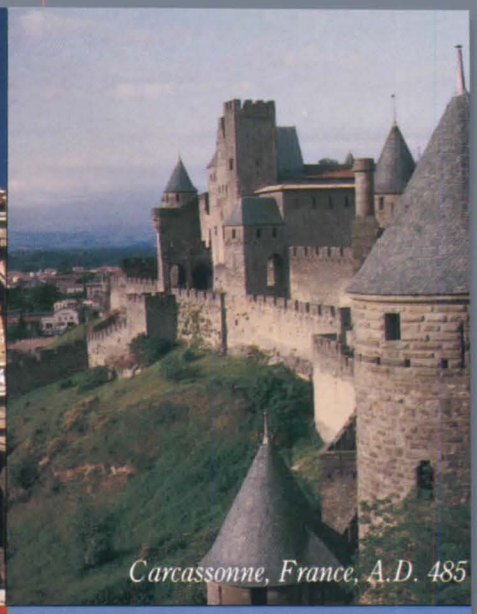
Trump's Taj Mahal

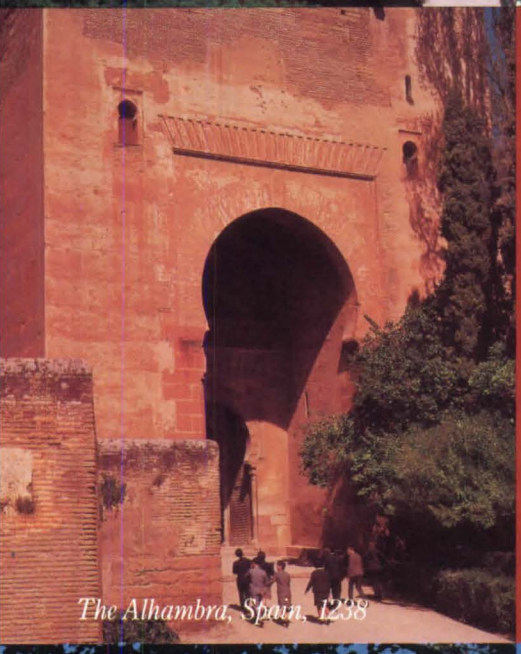


The $585-million hotel/casino now being built in Atlantic City for Resorts International CEO Donald Trump was modeled on the Taj Mahal. RI's house architect Francis Dumont chose his Indian prototype because it represents the "ultimate fantasy of fun."

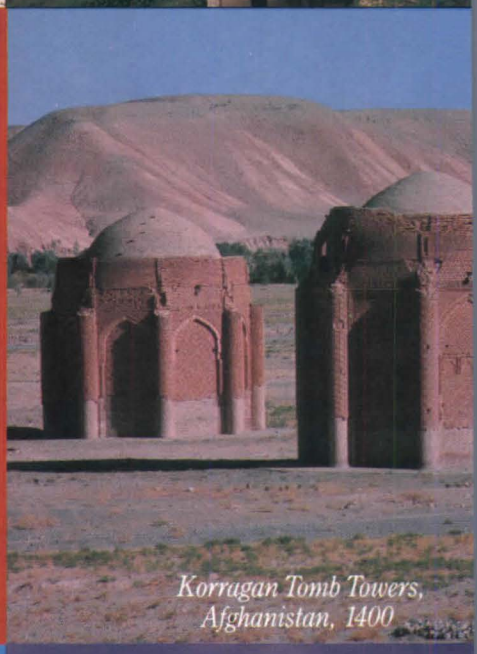

The Great Wall of China, 214 B.C.

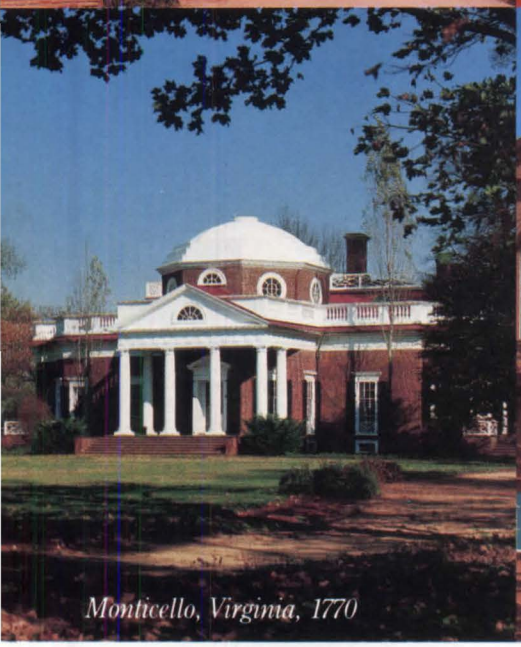

The Colosseum, Rome, A.D. 82

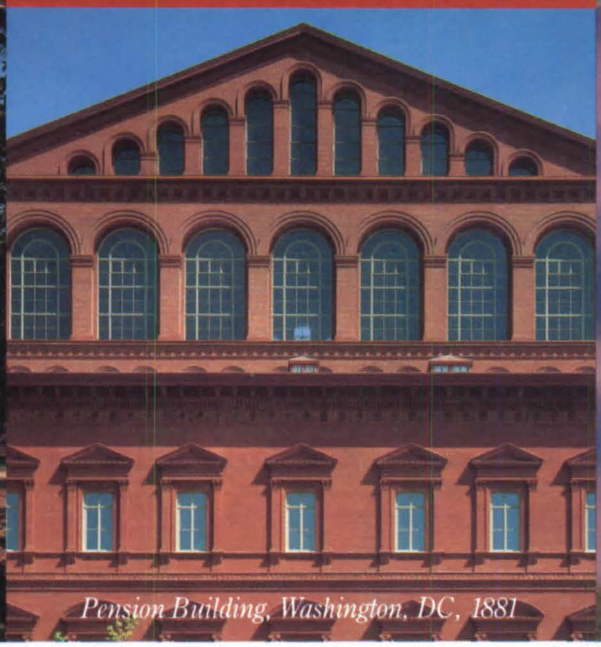

Carcassonne, France, A.D. 485


The Alhambra, Spain, 1238

Give an architect a brick and just look what can happen.


Korragan Tomb Towers, Afghanistan, 1400


Monticello, Virginia, 1770


Pension Building, Washington, DC, 1881


Tycon Tower, Virginia, 1986

For 2,000 years, architects have worked wonders with brick.
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News briefs continued

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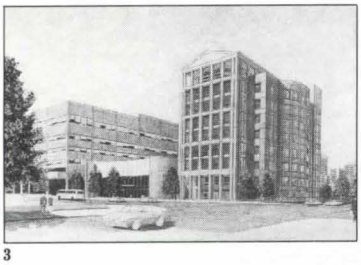

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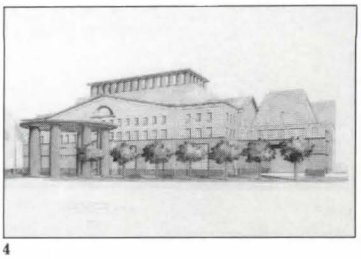

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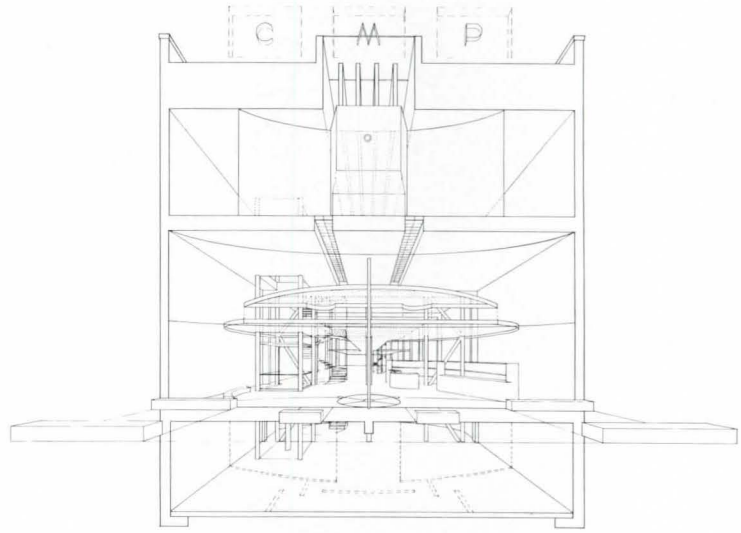
Boston's **Faneuil Hall** and the **Old State House** will undergo extensive restoration, including exterior repairs and interior spatial reorganization. The local firm of Goody, Clancy & Associates was selected by the National Park Service to design the renovation, which is expected to be completed in 1990.

The Olympia Palace II (1) is the 27-story sister structure to the recently opened Olympia Palace I in downtown Orlando, Fla.; both structures are part of a $200-million redevelopment of the city's downtown. The Nichols Partnership proposes to clad the office building's stepped facade in rose-colored reflective glass. Ground has just been broken for **Emerald-Shapery Center** (2), designed by C. W. Kim, in San Diego. The complex comprises an office block, contained in a cluster of five hexagonal towers, and a 450-room hotel, contained in a cluster of three hexagonal towers. Completion of the $100-million project, financed jointly by local Shapery Enterprises and the Japanese Tokyu Corporation, is scheduled for late 1989.

Shepley Bulfinch Richardson and Abbott, of Boston, has proposed a Neoclassical structure, complete with pediment, for the $17.5-million headquarters of the American College of Physicians located on Philadelphia's Independence Mall (3). Currently under construction, the 118,000-square-foot building will be finished in 1989.

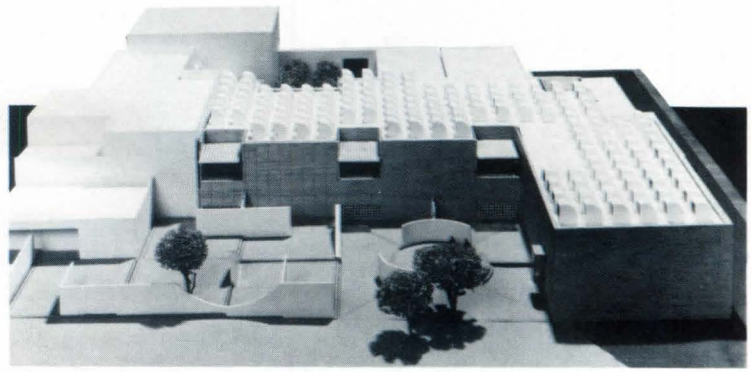
Michael Graves Architects has designed the new corporate headquarters of the Crown American Corporation in Johnstown, Pa. (4). The architect proposes a varied palette of granite to clad the $25-million, five-story structure, which is meant to be a "town showpiece," according to Frank Pasquerilla, chairman of the company. If all proceeds on schedule, Crown America will inaugurate the facility in the summer of 1989.

Photo finish



Stanley Saitowitz is converting a Kress Department store in suburban Los Angeles into the California Museum of Photography (for more on the San Francisco architect, see pages 74-79). Saitowitz conceived a thematic approach for the museum inspired by the meaning of the Italian word *camera*, or room. Visitors will enter through a narrow opening, framed by columns, into a two-story space resembling the inside of a camera, complete with a film spool-like balcony that will subdivide the hall into smaller galleries.

The next years in Jerusalem



Construction has begun on the Nathan Cummings 20th Century Art Building, intended to represent the final phase of the Israel Museum's long-range expansion plans. Designed by Danish architect Jørgen Bo (with Alfred Mansfield & Partners), the 49,000-square-foot pavilion will house modern painting and sculpture as well as the Museum's collection of photography. Clad in a Jerusalem stone, the three-story structure will surround enclosed courtyards. Topping out will coincide with the Museum's 25th anniversary in May 1990.

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Circle 27 on inquiry card

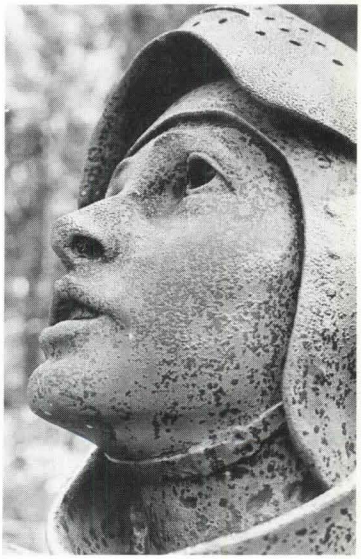
Combating monumental woes

The monuments and public sculptures of New York City suffer more than their fair share of abuse. Vandalism, acid rain, automobile emission, and pigeon droppings have taken their toll, as has the City's policy of endlessly deferred maintenance. The Municipal Art Society, a nonprofit organization devoted to beautifying New York, took note of this sorry state of affairs and, in 1985, undertook an innovative campaign to rectify the situation. The four-part initiative, called "Monumental Woes," began with the publication of a booklet featuring 20 of the city's most seriously damaged pieces of public art. Replete with photographs of pockmarked, grafitti-covered, and some headless statues, the booklet announced the second, most important, phase of the initiative, the Adopt-a-Monument program, which encouraged businesses and civic groups to sponsor the restoration of selected works. The third and fourth phases consisted, respectively, of an exhibition at the Urban Center depicting the beleaguered icons, and the preparation of a forthcoming book chronicling all of Manhattan's public art.

The program, which is run jointly by the Municipal Art Society, the Art Commission, and the Parks Department, has been a resounding success. Fifteen of the original 20 monuments put on display were adopted within the first two years, and New Yorkers are beginning to see the glorious results of their restoration. A heroic depiction of King Jagiello of Poland that presides near Belvedere Lake in Central Park, for example, has regained its original deep bronze hues, thanks to the efforts of the American Conservation Association. The Grand Marnier Foundation adopted the Joan of Arc monument on Riverside Drive (left and below).

The success of the program is bittersweet, in that it amounts to a de-facto admission on the part of the city that it cannot hope to care adequately for its wide array of public art. But with similar programs springing up in Chicago and Boston, the admission is one that other cities are also beginning to make. *Scott Gutterman*

Phyllis Samitz Cohen photos



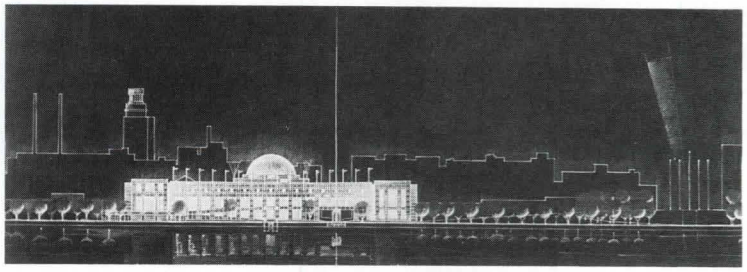
Joan of Arc statue, designed by Anna Hyatt Huntington in 1917, before restoration (above) and after (left).

Oregon's new convention center

Strode Eckert

Two 250-foot-high glass spires will rise amid the ever-denser skyline of Portland, Ore. The twin towers and their block-long low-rise base are part of the proposed $85 million Oregon Convention Center designed by Zimmer Gunsul Frasca Partnership—the firm responsible for several of the city's noteworthy architectural newcomers (for the latest—see RECORD, September 1987, pages 102-111). When completed in 1990, the facility will contain five exhibition modules of 30,000 square feet each and 29,000 square feet of meeting rooms.

Cultivating the Garden State



An aquarium designed by the Hillier Group will be the main attraction of a projected 75-acre park along the Delaware River in Camden, N. J., which is only part of the city's $100-million waterfront redevelopment program. The Princeton-based firm, in association with the Philadelphia Zoological Society, proposes a Janus-like building with two public facades: one directed across the river toward Philadelphia and one toward Camden. In addition to aquatic wildlife exhibitions, the facility will contain classrooms, laboratories, and restaurants.

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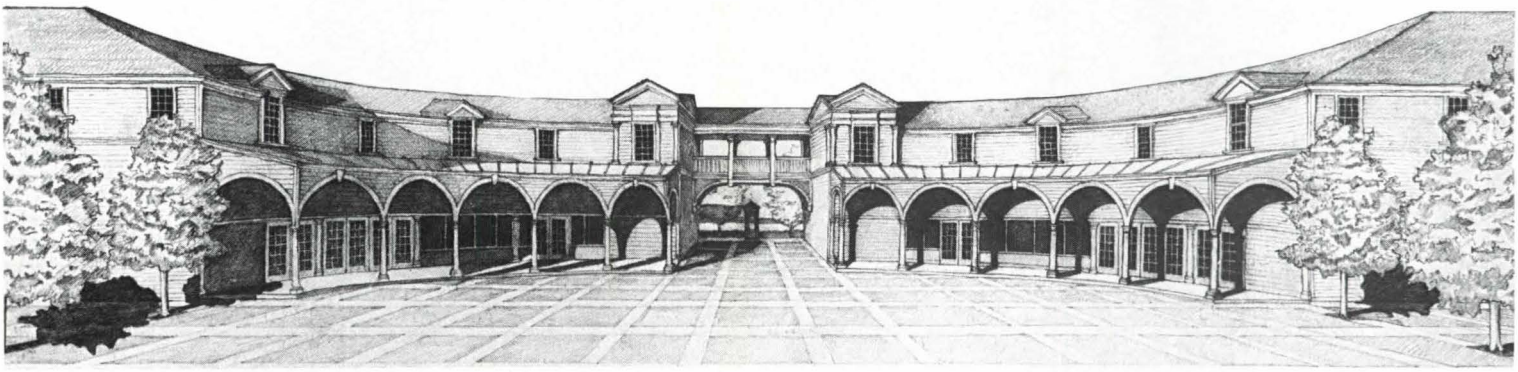
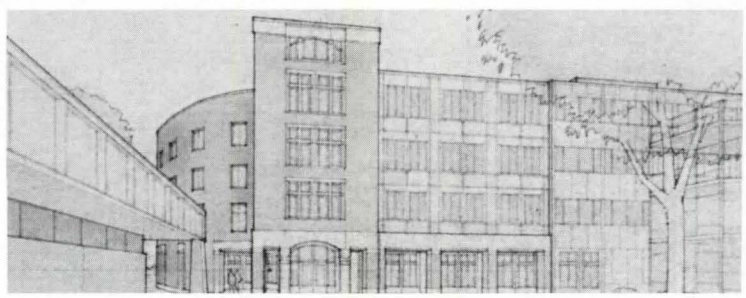
Making and remaking downtown



Most downtown developments seem to fall into two categories these days: On the the one hand, there's the intentionally evocative interpretation of old Main Street and, on the other, the unabashedly straightforward rendering of modern office towers and apartment blocks. Orr & Taylor's design for the Plaza and Village Common in Mashpee on Cape Cod, Mass. (above), and Roth and Moore's Arena in New Haven, Conn. (right), each represent one of these schools of thought. Currently under construction, the $1.9-million Mashpee Plaza (part of a combined civic, commercial, and residential plan geared to a local population that has grown 55 percent in five years) will contain shops, a restaurant, and offices behind a Classical loggia, gabled roofs, and dormers. The $93-million proposal for New Haven, on the square-block site of the former town arena, includes twin residential towers of 150 apartments apiece and two mid-rise office buildings—all clad in brick with stone trim—positioned at the four corners of the parcel. A landscaped courtyard, set atop an underground parking garage, will contain recreational facilities.

Outfitting the Ivy League

R. M. Kliment & Frances Halsband is at work on a pair of academic facilities: the Computer Science Building at Princeton University (top right) and the Mathematics Computer Science Building at Dartmouth College (bottom right). The building now underway at Princeton will form the first side of a quadrangle planned to fill out the eastern corner of the campus. On a more constrained site, the Dartmouth project entails renovation of existing facilities and the addition of a library, labs, classrooms, and offices to be contained in a curved wing and adjacent tower.



Competition calendar

• The Architectural League of New York has issued a call for entries to its seventh annual Young Architects Forum, open to designers and planners who have been out of graduate or undergraduate school for 10 years or less. "Hypotheses" is the theme for 1988. The deadline for submissions is February 27. For more information call 212/753-1722.

• The Industrial Society of America is seeking industrial designs of every kind as entries in its 1988 awards program. Entry deadline is May 6. For information contact Kristina Goodrich at 703/759-0100.

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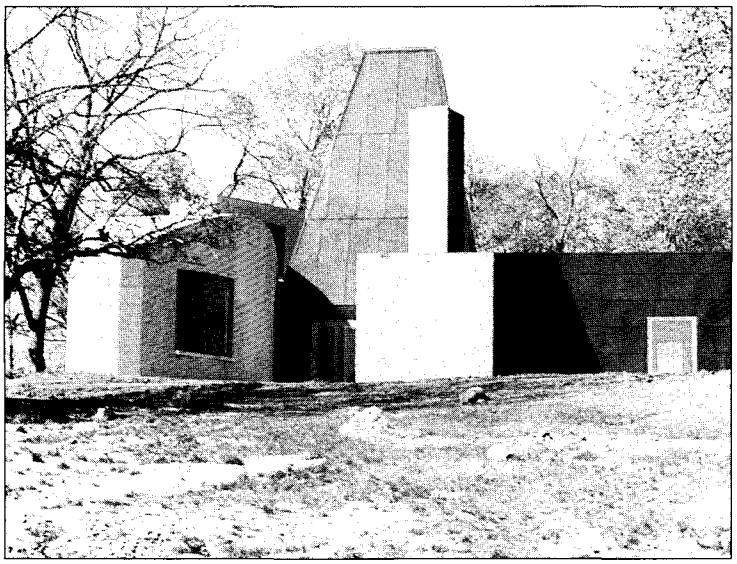
Design awards/competitions: Los Angeles Chapter/AIA 1987 Design Awards

Frank O. Gehry & Associates and Morphosis won both an Honor and a Merit Award apiece in the 1987 Design Awards program sponsored by the Los Angeles Chapter of the American Institute of Architects. Jury members Thomas Beeby, of Hammond Beeby and Babka, Jorge Silvetti, of Machado and Silvetti Associates, and Henry Cobb, of I. M. Pei & Partners, also selected four additional Merit Award recipients. Andrée Putman, Charles Pfister, and Claude Engle chose two Merit Award winners in the interior-design category.



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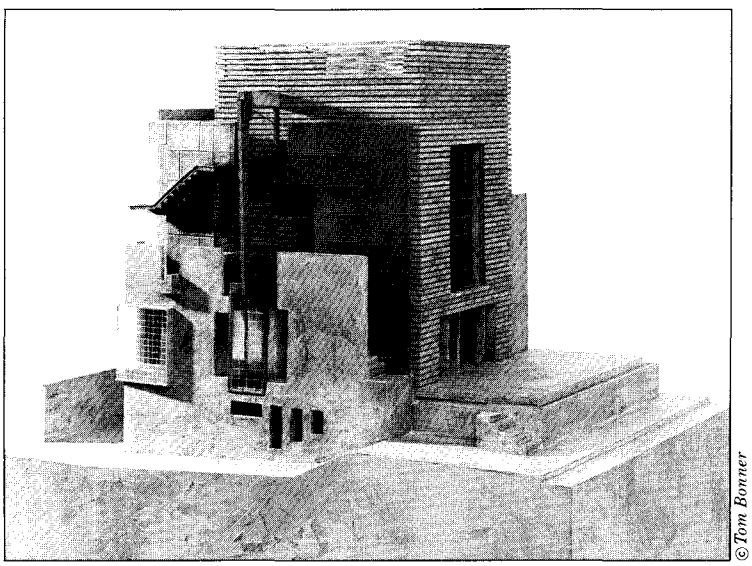

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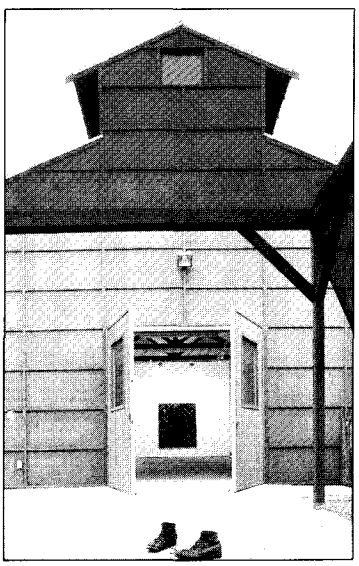

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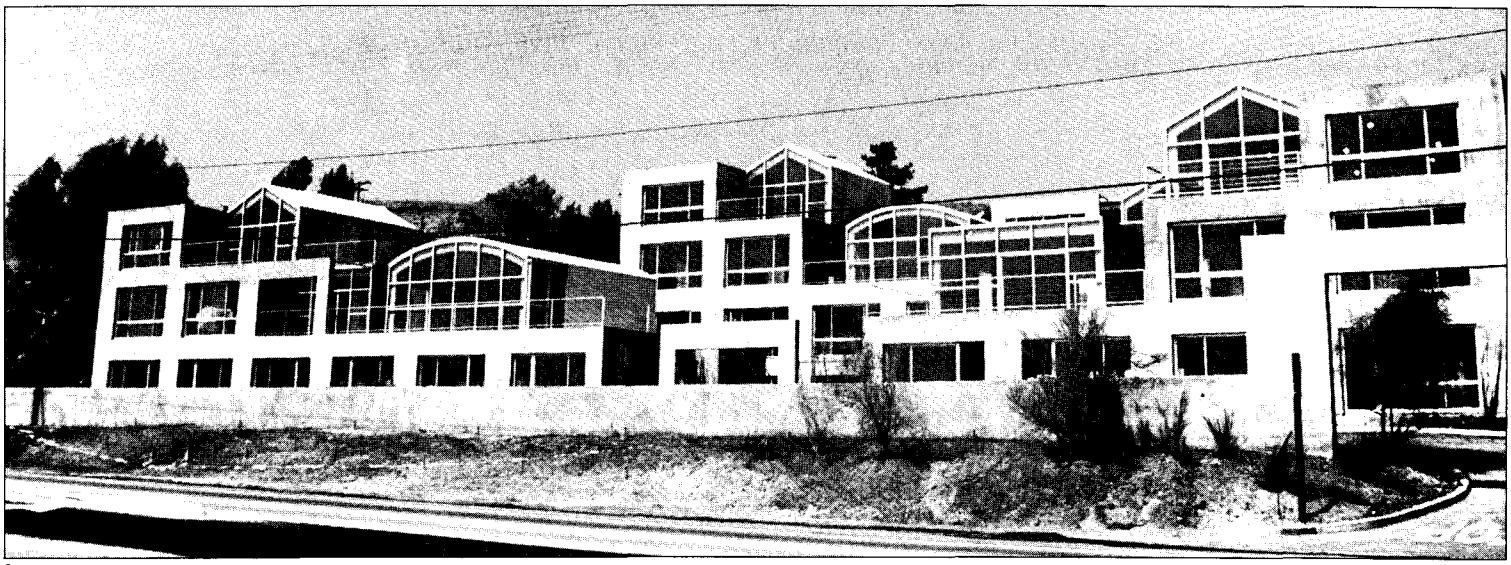
1. Winton Guest House, Wayzata, Minnesota; Frank O. Gehry & Associates, Architect (Honor Award). Serving as the guest house to a 1950s residence designed by Philip Johnson, a 1,500-square-foot lakefront retreat comprises individual rooms clustered around a pyramidal communal zone. The discreet volumes, clad in painted metal, prefinished plywood, and brick, form a sculptural assemblage of shapes and materials which the jury pronounced "poetic."

2. Unbuilt Residence, Santa Monica, California; Morphosis, Architect (Honor Award). The proposed renovation of an existing duplex incorporates 10 pieces of discarded machinery, which are intended to "present ideas of decay, tension, risk, balance, and possibilities leading towards a dystopian architecture," according to Morphosis principals Thom Mayne and Michael Rotondi. The jury praised the architects for "elevating the idea of a project to the realm of research."

3. Fishdance Restaurant, Kobe, Japan; Frank O. Gehry & Associates, Architect (Merit Award; see pages 80-87). Reacting to the visual cacophony of a waterfront site dotted with shipyards, double-deck expressways, and a 19th-century customs building, the architect designed a restaurant composed of three simple objects—a copper-clad spiral, a sloped-roof structure sheathed in metal, and a 70-foot-high representation of a dancing fish constructed from chain-link mesh. The jury called the sculptural signage "dynamite," noting that it "might become terrifying if it weren't in the context of the freeway, where it becomes a friendly monster."

4. Ed Moses Art Studio, Venice, California; Steven Ehrlich Architects (Merit Award). A gable roof flanked by clerestory windows admits ample daylight to the studio's generous work area. The architect employed a stripped-down barnlike esthetic, claiming that the design of the studio "is as much about what is *not* there as what is there."



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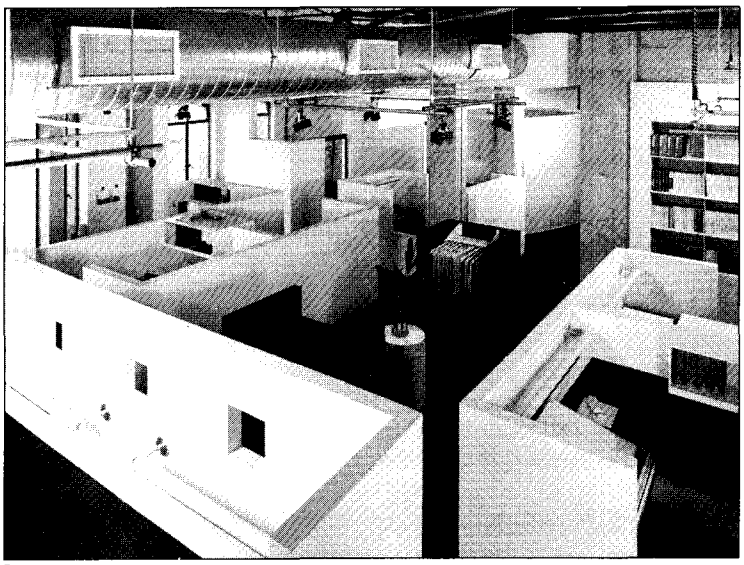

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5. Kate Mantalini Restaurant, Beverly Hills, California; Morphosis, Architect (Merit Award). A client's request for a "roadside steakhouse for the future" inspired Thom Mayne and Michael Rotondi to shoehorn a concrete box inside the existing building's steel frame, dramatically juxtaposing old and new. Extending beyond the confines of its cage, the dining hall is pierced by a 14-foot-diameter "orrery" (shown). A "stylus" at its base appears to have inscribed a section of the building onto a steel plate in the floor, which is intended to represent "the making or describing of the restaurant."

6. Office, Malibu, California; Goldman/Firth/Associates, Architect (Merit Award). The three 2-story buildings that form a 20,000-square-foot commercial office complex were arranged in a stepped configuration intended to suggest a village. Unpainted plaster surfaces, concrete pavers, and exposed interior wood beams contrast with galvanized metal roofing, aluminum wall panels, and stainless-steel railings.

7. Architect's Office, Los Angeles, California; Rachlin & Roberts Architects (Merit Award). For esthetic effect, the renovation of 4,000 square feet of office space in Los Angeles's historic Wiltern Center theater exposed the 16-foot-high ceilings and resurfaced floors in black epoxy. Private offices and other administrative facilities were housed under a curved drywall soffit, intended to recall the building's marquee.

8. McDonald's, Los Angeles, California; Levin & Associates, Architect (Merit Award). "Bridging the gap" between a ground-floor space in a 1927 Italian Romanesque building and a fast-food-chain client is how the architects describe their design of a McDonald's franchise. An elaborate plaster ceiling was restored and a mezzanine added above the kitchen to provide additional room for seating.

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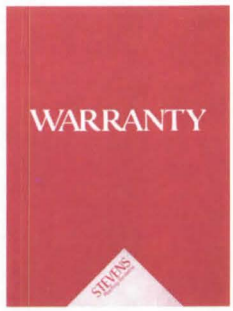

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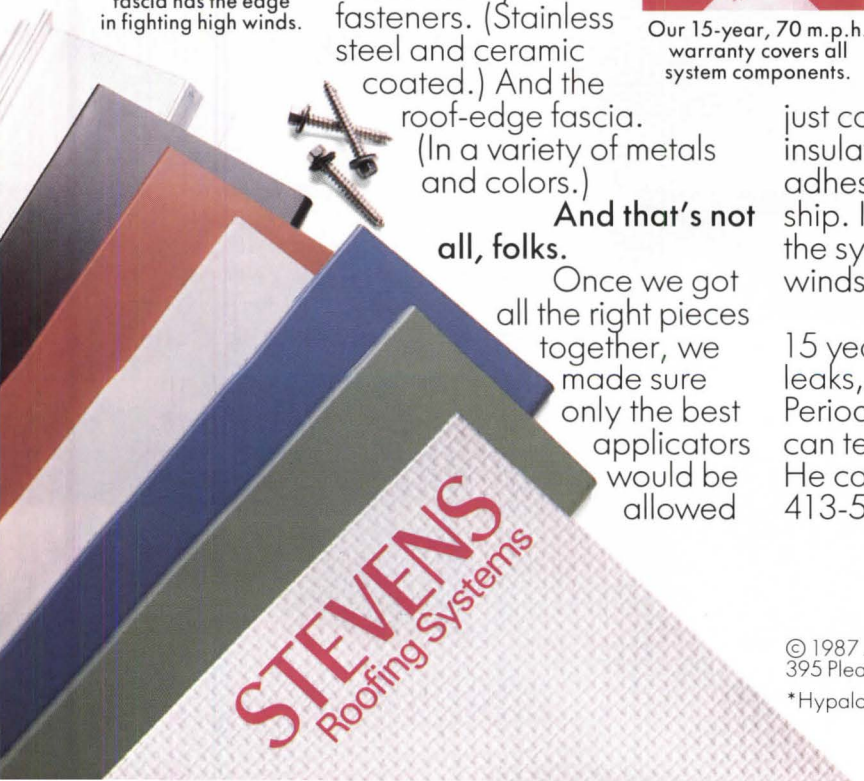

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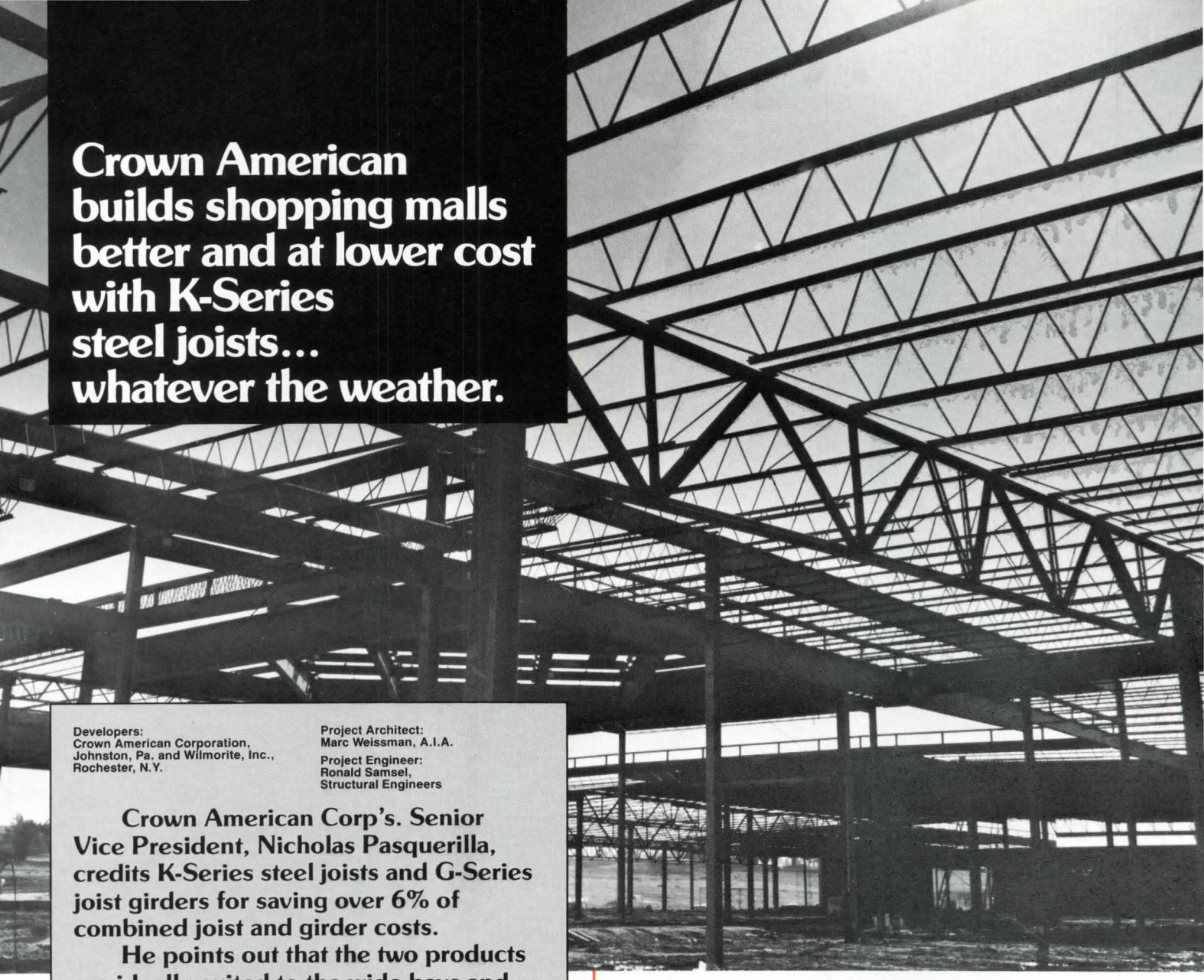

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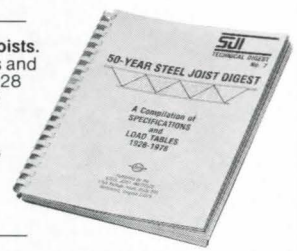

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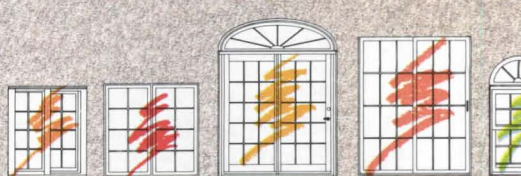

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Books

German Architecture and the Classical Ideal, by David Watkin and Tilman Mellinghoff. Cambridge, Mass: MIT Press, 1987, $50.
The Writing of the Walls, by Anthony Vidler. Princeton, N. J: Princeton Architectural Press, 1987, $35.

Reviewed by Thomas Matthews

As the 18th century waned, European reaction against social and decorative excesses of the Rococo found, in classical Greece, a new ideal that championed rationality, harmony, and simplicity. Architectural consequences included an enthusiasm for Doric purity that spawned the Neoclassical style. The change went deeper than esthetics, however. Building design became a language, a rhetoric self-consciously manipulated; Grecian forms embodied specific values and served particular ends. Architecture took an active role in the construction and representation of an emerging social order.

German Architecture and the Classical Ideal, by David Watkin and Tilman Mellinghoff, is an exhaustive catalog of Neoclassicism in Germany from 1740 to 1840. *The Writing of the Walls*, by Anthony Vidler, examines architectural aspects of Enlightenment thought in France from about 1750 through the Revolution. The two works could hardly be less alike in method and tone, the first empirical and inductive, the second hermeneutic and abstract. Both volumes, however, present this classic ideal and its architectural responses as esthetically eclectic, politically authoritarian, and adaptable to Europe's varying cultural demands.

Watkin and Mellinghoff present a straightforward history of style, standard in genre yet exemplary in execution. The data are thorough and well organized, and the plates are exceptional in scope. Enough biographical and historical background is offered to delineate the German context, but the focus remains resolutely on the buildings. The book never belabors the relation between culture and design, and analysis rarely ventures beyond description.

German Neoclassicism was not a vernacular style raised to greatness. Its earliest buildings were commissioned by State rulers from foreign, mostly French, architects. Around 1780, according to the authors, a Franco-Prussian mode derived from Ledoux coalesced in Berlin—"an imaginative revolutionary style defined by a reductionist vocabulary of sheerly modeled stereometric solids and sparse Greek Doric forms." It is epitomized by Friedrich Gilly's design for a monument to Frederick the Great (1797), which inspired the two greatest German architects of the time, Karl Friedrich Schinkel and Leo von Klenze.

The work and authority of these two men in turn stimulated the growth of Neoclassicism throughout Germany, and the authors have diligently compiled and copiously illustrated buildings of both masters and those of their disciples. Curiously, the components of Neoclassicism are never exactly specified, or precisely distinguished from, say, Classicism, Greek Revival, or neo-Grec—perhaps because "the fundamental Neoclassic desire" was less stylistic purity than "to create a new classical synthesis in which images culled from antique and Renaissance sources would combine suggestively in a landscape setting." In any case, a remarkably comprehensive gazetteer documents the extent to which the mode prevailed.

Esthetic choices consistently served political ends. Klenze's Walhalla (1830-42), for example, housed German heroes in a Doric temple erected, according to its patron, Ludwig of Bavaria, so "that the German might depart from it more German and better than when he had arrived." Greek motifs served to project the power and nobility of the unifying State. The later arrogation of Neoclassicism by the National Socialists testifies to the style's persistent usefulness as propaganda.

Enlightenment France faced different problems. As observers of an exhausted monarchy verging on collapse, French social theorists sought new bases for the legitimization of political power, and architects developed new forms to express them. Anthony Vidler, in *The Writing*
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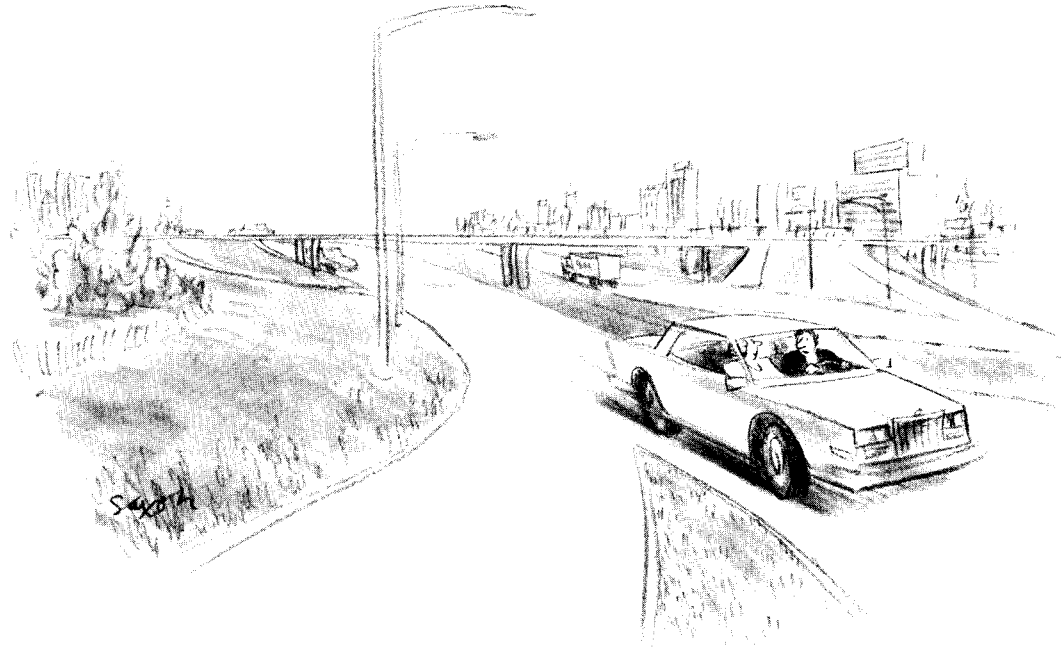

"You know, Felice, sometimes I worry that nobody's trying to preserve the natural beauty of our medians and cloverleafs."

Thomas Matthews is a freelance architectural writer who lives near Bordeaux, France.

Observations continued

of the Walls, examines "two domains [institutional reform and historiography] where, toward the end of the 18th century, architectural thought and social change intersected. Apparently separate fields, . . . both were concerned with the visual codes and symbols with which architecture represented its social purposes."

Vidler begins with an analysis of two different 18th-century views of the archetypal "primitive hut." The Abbé Laugier attempted to derive building elements strictly from material needs, while J.-F. Viel de Saint-Maux insisted on the symbolic origins of design. Though this debate between *philosophe* and *antiquaire* reappears in different guises throughout Vidler's analysis, it consistently centers on a struggle to define the relation between social custom and architectural form. Both schools advocated classicism, but, in contrast to the "reduced lexicon of structural elements," rationalized and strictly Grecian, prescribed by Laugier, the "antiquarian symbolic" approach permitted a more flexible *architecture parlante* ("speaking architecture") that ultimately undermined its own esthetic norms.

Actual building incorporated both programs. A "primitive functionalism" abandoned conventional programs to combine rational plans with "legible" facades. Vidler traces the articulation of this "new understanding of architecture" through factories, hospitals, prisons, Masons' lodges, and the "asylums of libertinage" envisioned by de Sade, Fourier, and Lequeu. Ledoux's saltworks, Vidler explains, embedded social control in a structural vocabulary, "developing a language of architecture that would endow industry and its operations with a symbolic code that reinforced both surveillance and community." More prosaically, designs for hospitals "simply added the reduced and dignified attributes of monumental Neoclassicism to a diagram otherwise established by an economics of spatial distribution." Architectural style became a language of images, visibly infusing burgeoning institutions with social meaning and legitimacy.

The Writing of the Walls is less a single argument than a series of related, but independent, essays. Vidler rehabilitates recondite characters (the Jesuit Lafitau among Canadian savages, the dilettante Seroux self-exiled to the Dark Ages) and reevaluates totemic figures (Winckelmann, de Sade). He explicates the complexity of Enlightenment debate without forcing conclusions, while subordinating the analysis of buildings and building style to the development of two arguments: the growing understanding of architecture as language and the progressive undermining of absolute norms (both architectural and social) by a widening world view. Vidler seems to conclude that one trend compensated for the other, as the mode of cultural intercourse evolved from custom to text.

In Germany, the classical ideal manifested itself in various styles; in France, diverse parties embraced classical ideals. In both countries style had become a self-conscious language that articulated—or concealed—deeper programmatic intentions. As the character of authority changed from monarchical and traditional to national and institutional, classical forms provided a continuity that transferred political legitimacy in visible ways. If that legitimacy is less coherent today, Neoclassicism is still, in a fragmented Postmodern guise, its facade of choice. These two books, in their different ways, document the nature and process of a social, intellectual, and architectural transformation whose effects are still powerful, and still incompletely understood.

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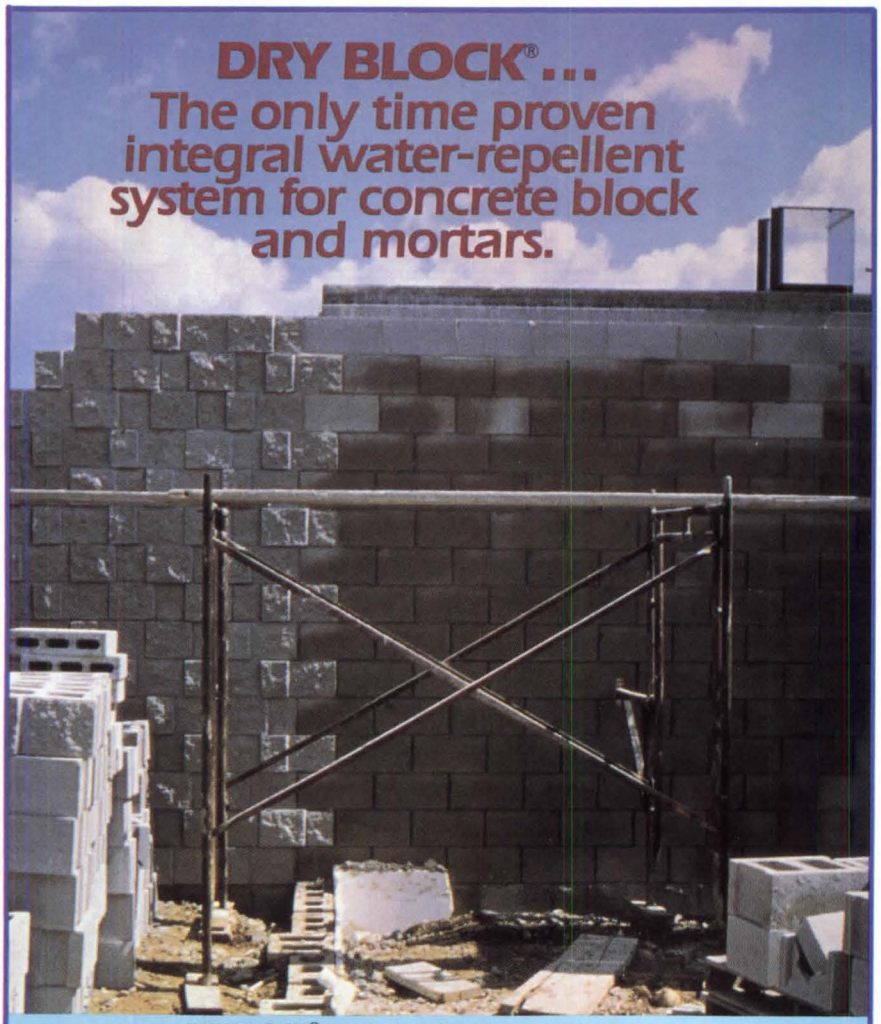

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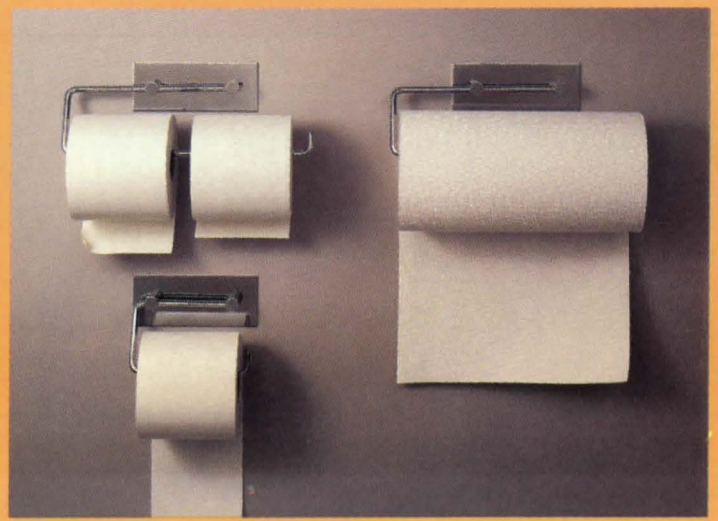

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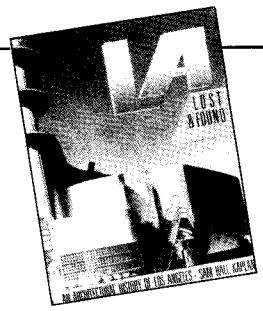

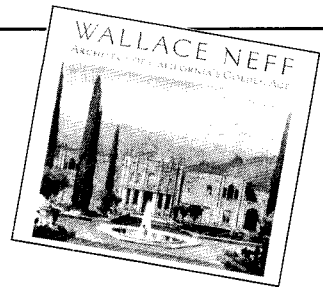

L. A. Lost & Found: An Architectural History of Los Angeles, by Sam Hall Kaplan. New York: Crown, 1987, $27.95.

Wallace Neff: Architect of California's Golden Age, compiled by Wallace Neff, Jr., text by Alson Clark. Santa Barbara: Capra Press, 1987, $50.

Reviewed by Douglas Gantenbein

Los Angeles holds tremendous sway over America's collective Zeitgeist. Once something happens in Los Angeles—be it skateboarding or Reaganism—it likely will spread. Everything, that is, except architecture. In this one area Los Angeles has been more sponge—albeit an enormously absorbent one—than fountainhead. The ways in which what Sam Hall Kaplan calls "the earth's first experimental space colony" absorbed and metamorphosed architecture alien to it is the theme of Kaplan's highly readable *L. A. Lost & Found.*

Unearthing the history of such a place is no easy task, as the Los Angeles of popular mythology apparently exists without a past—or even a present. It seemingly lives only in the future, whence it propagates fads that later plop down across the nation like fallout from an exploding galaxy of kitsch. But it is just what Los Angeles appears to lack—a sense of history—that Kaplan so admirably captures.

Not that the Los Angeles of the past portended all that much. A rough, barren place, it nonetheless had a single transcendent feature—its weather. As one 1880s real-estate agent allegedly said: "We sold them the climate and threw in the land." It was an easy sell. Fed up with intolerable summers and bitter winters, 120,000 settlers from the East rushed across the frontier in 1887 alone. Along with them came a panoply of architectural styles. As Kaplan points out, most of the early settlers soon became wealthy, either making a fortune in cattle or oil, or bringing it with them as rich retirees. They could afford to be extravagant, and did so in Classical Revival, Italianate, and Neo-Gothic splendor. Even styles frequently ascribed to early Los Angeles—the bungalow and its Craftsman variations, for example—began life as transplants.

Perhaps the closest thing to local expression in turn-of-the-century L. A. was the Mission style, championed by social arbitrator Charles Fletcher Lummis as a way to force the city to recognize its Spanish heritage. But in the stylistic hothouse of Los Angeles, it quickly degenerated from a chaste vernacular practiced by the likes of Irving Gill into a sort of mud-brick Neo-Baroque.

Kaplan's book pivots around his fifth chapter, "Dream Town," which explicates L. A.'s transformation into something more myth than reality, the product of a booming film industry that implanted the image of Los Angeles into the cerebral cortex of every movie-goer in America. What an image it was—of bogus Versailles palaces and roadside restaurants shaped like giant tamales. There were, of course, some exceptions—the Los Angeles Public Library, built in 1925, was a marvelous fusion of a Modernist ethic and the exotic sentiment of its city, but it was a rarity. Los Angeles, immersed in a dream of its own making, showed little interest in anything that smacked of reality, least of all in its architecture.

Ironically, it was during L. A.'s period of wildest growth, the 1950s, that Kaplan sees the city finally developing a seriousness of architectural intent. This was the result of the Case Study houses, a competition conducted by *Arts & Architecture* magazine between 1945 and 1960 to illustrate how modern design might meet the need for affordable and attractive housing. Architects who participated in the project were Richard Neutra, Eero Saarinen, and Pierre Koenig, among others. Particularly striking was Koenig's #22, a dramatic structure that took Philip Johnson's earlier Glass House and grafted it to a promontory with a 240-degree view of the city. Also emerging during this time was the California ranch house, which in the hands of Cliff May perfectly epitomized Southern California's relaxed, informal lifestyle.

The Case Study houses were perhaps the high-water mark of architecture in Los Angeles. Kaplan's chapters on the 1960s, '70s, and '80s are a litany of opportunities lost and landmarks destroyed. After so effectively evoking Los Angeles's past, Kaplan seems a little overwhelmed by its modern-day pace. His final chapters are his least effective, and he has little to say about where the city's architecture might be headed. Still, *L. A. Lost & Found* is a marvelous book, crisply written and filled with insight and anecdote. And many of its illustrations—a 1939 photo of a low-rise, whitewashed Wilshire Boulevard set against a clear Mediterranean sky, to name one example—are painful reminders of what a paradise Los Angeles once was.

The architectural designs of Wallace Neff were a paradigm of that earlier Los Angeles. Neff, who died in 1982, drafted houses for the city's glitterati over nearly 50 years. His work is covered in the elegiac *Wallace Neff: Architect of California's Golden Age,* compiled by Neff's son, Wallace Jr.

That Neff's client list included Douglas Fairbanks and Groucho Marx is not surprising: born to wealth, he was comfortable with the whims of his spoiled patrons. That Neff should have become an architect at all, however, was less predictable. As a young man he showed little interest in serious work and only squeaked into M. I. T., largely on the strength of a sketchbook he filled during years spent lazing around Europe.

As it turns out, he could not have asked for better training. Neff seemed to have an innate feel for adapting the California Mission style to his European-influenced sensibility. And while some of his designs were overly precious—the curving roofs he placed atop some homes gave them a cloyingly storybook quaintness—he could also manipulate blocks and planes into solid, forthright architecture. His design for opera diva Amelita Galli-Curci's house, for example, is a study in restraint, with its whitewashed facade simply penetrated by a door and two square windows, all comfortably tucked under a straight sweep of tiled roof.

Although Modernist contemporaries derided his eclecticism, Neff had the last laugh. His final project, a grand fusion of Georgian monumentality and Mission detail, was commissioned in 1970 by a wealthy couple dissatisfied with a house designed for them by another architect whose name is perhaps better known today than Neff's: Richard Neutra.

Given the size of his commissions, Neff could be faulted for not aspiring to something more than European motifs executed in adobe. But he understood that many of his clients gained their wealth by tapping common taste, not by superseding it. Neff's gift was to add a touch of grace that lifted his fantasy palaces above vulgarity.

Douglas Gantenbein is a freelance writer based in Seattle.


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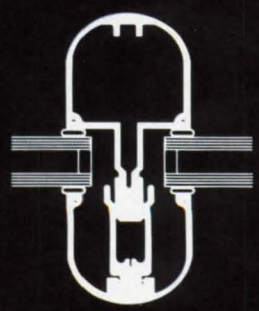

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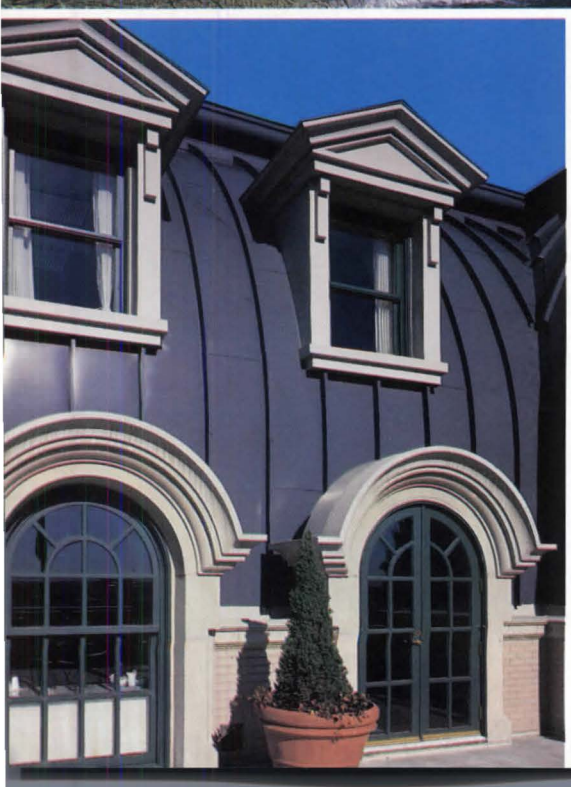

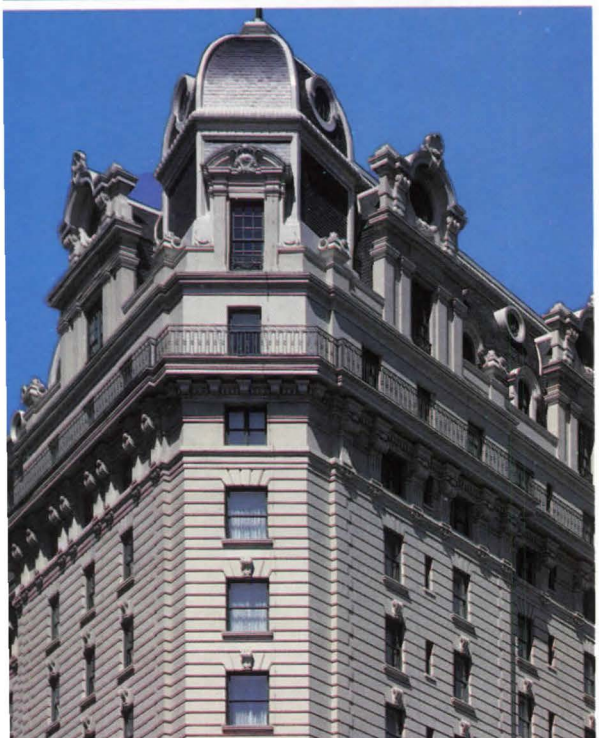

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In this issue

"Recollection and Invention," the title of our opening feature on an office building designed by Kallmann, McKinnell & Wood, might serve equally well as a comprehensive heading for all the articles that follow. In different ways, the projects we have assembled this month embody creative approaches to the workings of memory.

At first glance, Becton Dickinson and Company's headquarters (pages 62-73) obviously evokes a long tradition of country houses: a suitable image for a corporate client intent on coexisting comfortably with suburban residential neighbors. Closer inspection, however, reveals subtler, multilayered allusions to other sources, bespeaking the complex cultural matrix of the medical "knowledge workers" for whom the building was designed—as well as the architects' thoughts on their own place in history.

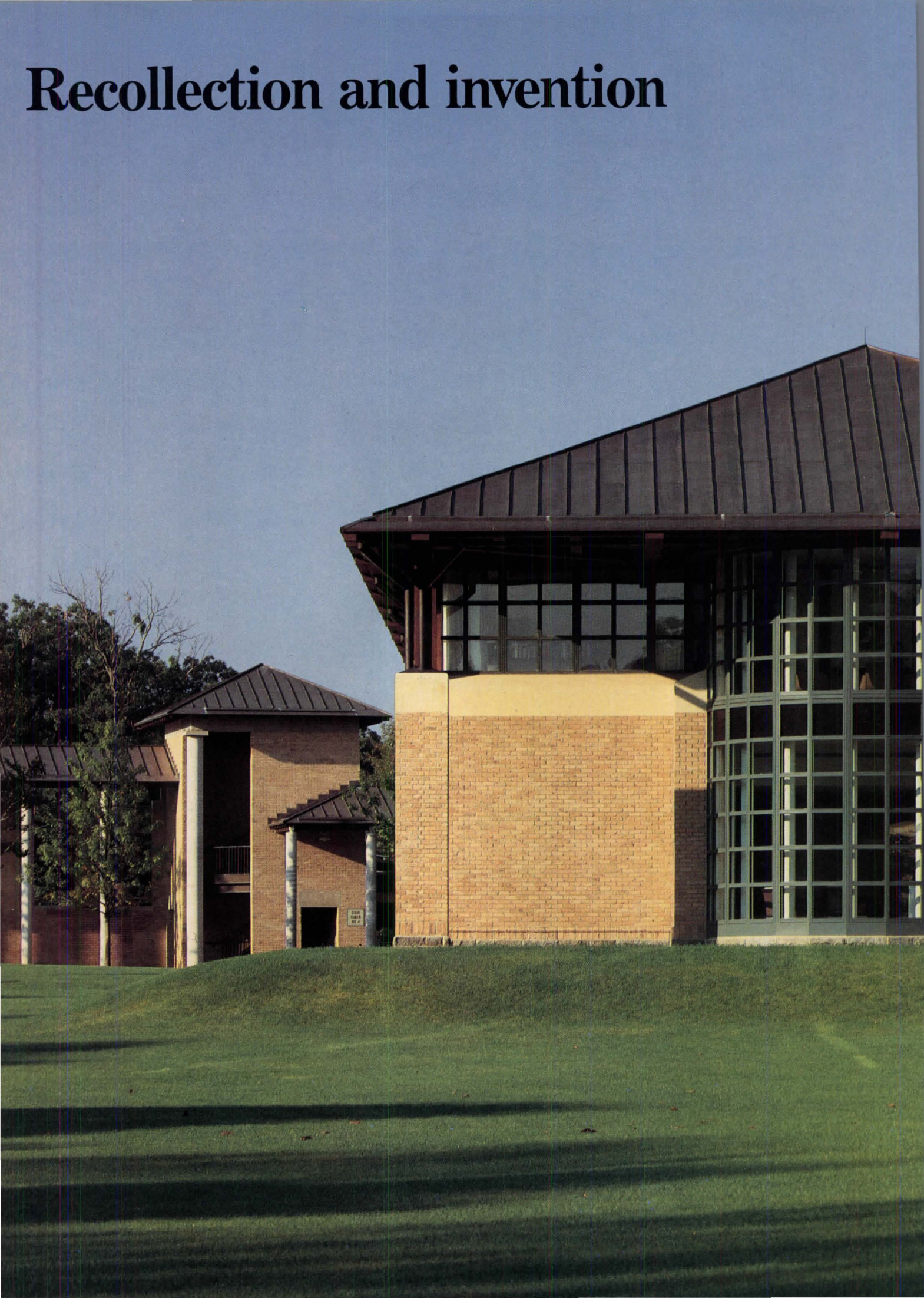
While acknowledging the past with a playful reference to the nearby Golden Gate Bridge, a pair of speculative houses outside San Francisco (pages 74-79) also reflects architect Stanley Saitowitz's continuing preoccupation with a theme that transcends time: the archetypal dwelling.

Discontented with the art-historical salvage expeditions in which he sees many of his contemporaries submerged, Frank Gehry dove deep into his own childhood memories for fresh imagery. The result, as built in Kobe, Japan (sketch below, and pages 80-87), adds a new chapter to architecture's longest fish story.

In our collective national autobiography, no images are charged with deeper symbolism than cozy front porches along a tree-lined Main Street and frontier encampments silhouetted against barren mesas and big sky. The polarity of these two icons and their relevance to two American communities lie at the heart of the college planning stories told in our Building Types Study (pages 88-101).

Sketch courtesy Frank Gehry & Associates.

Recollection and invention



Becton Dickinson and Company
Corporate Headquarters
Franklin Lakes, New Jersey
Kallmann, McKinnell & Wood,
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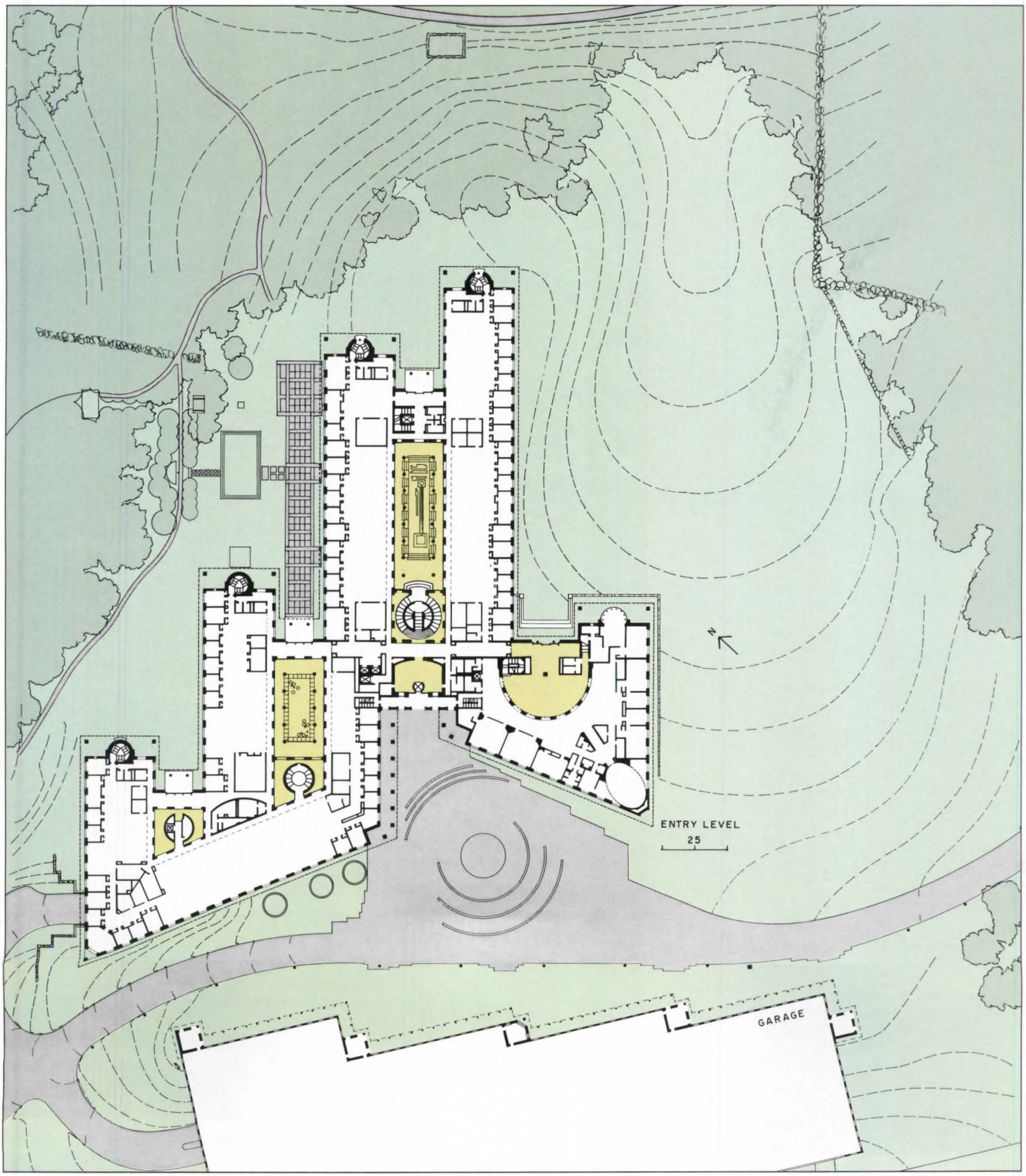
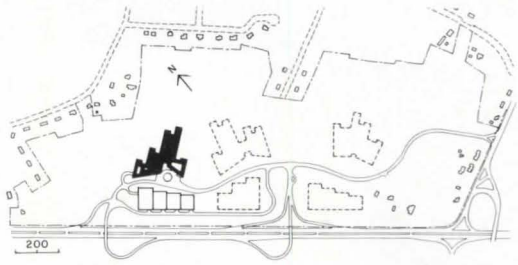
The client wanted a corporate office building that looked as though it could have been built any time in the last 1,000 years. The architects obliged by reaching deep into tradition, and transformed what they found into a work of bold originality.



Andrew Leonard



Every once in a while a building is designed and constructed that appears to fit no currently fashionable stylistic, critical, theoretical, ideological, or polemical categories, but is simply good. How are such works commissioned, designed, and made? In no set ways, of course, but it is nevertheless useful to study particular cases. What, for example, did it take to create the distinguished corporate headquarters building of Becton Dickinson and Company? Top-level executives dedicated to the creation of a work of art? Well, not at first—only later, as the project developed. A short list of celebrity architects in a design competition reviewed by a blue-ribbon jury? Not this time. Kallmann, McKinnell & Wood got the job by happy chance. An inexhaustible budget? Building costs have been withheld at the owner's request, but client and architects assert that these were within reason.

Before Gerhard Kallmann, Michael McKinnell, and Henry Wood joined the team, the key players were three: Becton Dickinson's chairman of the board, Wesley J. Howe; its vice president, Dr. Wilson Nolen; and the master planner and landscape architect Morgan Wheelock. Becton Dickinson's business—the manufacture of sterile, single-use disposable medical devices such as hypodermic needles and syringes (billions of them a year) and the production of high-technology diagnostic systems—is worldwide in scope, yet Nolen and Howe knew from the outset that they wanted an unpretentious headquarters. Nolen explains, "This was to be a place for 'knowledge workers.' Everything we make is consumed in the practice of diagnostic medicine, so we do not deal with consumers as such but with health-care professionals who identify directly with us. We didn't want the appearance of grandeur and affluence. We wanted a country house."

The problem was to find an attractive rural site close to New York City in a community that could be persuaded to accept a corporate headquarters in its midst. Becton Dickinson took options on several desirable sites, tried to get them rezoned to the densities required, and was turned down. Eventually, the company cast its eye on a rolling, wooded 14-acre site in Franklin Lakes, New Jersey. IBM was already in the township, but Becton Dickinson hoped for twice IBM's allotted square-footage per acre. No other commercial project had been permitted and the community was known to be hostile to further intrusion. "To top that," reports Nolen, "the elected mayor had run on a single issue: he would lie down before the bulldozers to stop development." Becton Dickinson realized that it had to find a landscape architect skilled enough to devise a site plan that could be taken before the authorities and approved.

Nolen's choice was Morgan Wheelock: "He had the feel of the site and he had just succeeded in putting a plan through Princeton in a very hostile environment. He came down from Massachusetts and got past that academic community. Morgy has style—and he had won the competition for the Queen's enclosure at Ascot. I thought that would help put him over with the local gentry." Not long after Wheelock began developing site proposals to earn the hoped-for rezoning, it occurred to the Becton Dickinson executives that he could help them with their choice of architect. Wheelock, and a number of others to whom they had turned in compiling their list of architects to interview, mentioned Kallmann, McKinnell & Wood, but since the firm was considered too small it didn't make the short list. As it turned out, however, late one afternoon in Boston, Nolen and his colleagues, having reviewed presentations from the last three architectural firms on their list, found some time left over. Before flying off in the corporate jet, they phoned KMW, found them in, and came to call. Recalls Nolen, "There were sketches all over the walls of their design for the American Academy of Arts and Sciences in Cambridge. It was love at first sight. We actually hired them before we even saw that building in person."

At the beginning of their involvement, KMW joined Morgan Wheelock in studying the site. Becton Dickinson's aim (in which it was finally to succeed) was to get permission to build to a level of more than 1 million square feet on the property as a whole. (The now completed first phase consists of approximately 300,000 square feet.) An early concept for the long, stretched site arranged the buildings like a necklace. "Suddenly," remembers Kallmann, "like a kaleidoscope when you shake it, this too-diffuse pattern rearranged itself in fewer but larger groups." For the first phase, the client had asked the architects for some very simple things: a plan with maximum perimeters so as many people as possible could have natural light, and a building that would be interesting to walk through, with handsome staircases. And it shouldn't be visible to the public at large.

The architects deliberately sought a certain ambiguity. "It was not to be about understanding everything just like that, from one point of view," says McKinnell. "We wanted the experience of the building to be episodic, to be about discovering things. And the building itself was not just to be an object standing in a lovely park. We wanted it to meld into the landscape. You will notice that at the end of each wing the roof juts forward, engaging the woods, and the final columns stand free in light and air. The great gift the management of Becton Dickinson is giving their people is this marvelous landscape, so we wanted the building to make the most of this setting in everyone's daily lives."

And the great gift the architects have already made to Becton Dickinson is a beautiful environment for work that is also a forceful prototype for the two buildings to follow (one of which is already under construction). Kallmann, McKinnell, and Wood are creating an authentic architecture, rooted in remembered tradition, yet filled with both practical and inspired invention.
Mildred F. Schmertz

Asked to reveal their architectural principles and sources, Gerhard Kallmann and Michael McKinnell offered Kallmann's most recent lecture notes, from which the following has been excerpted:

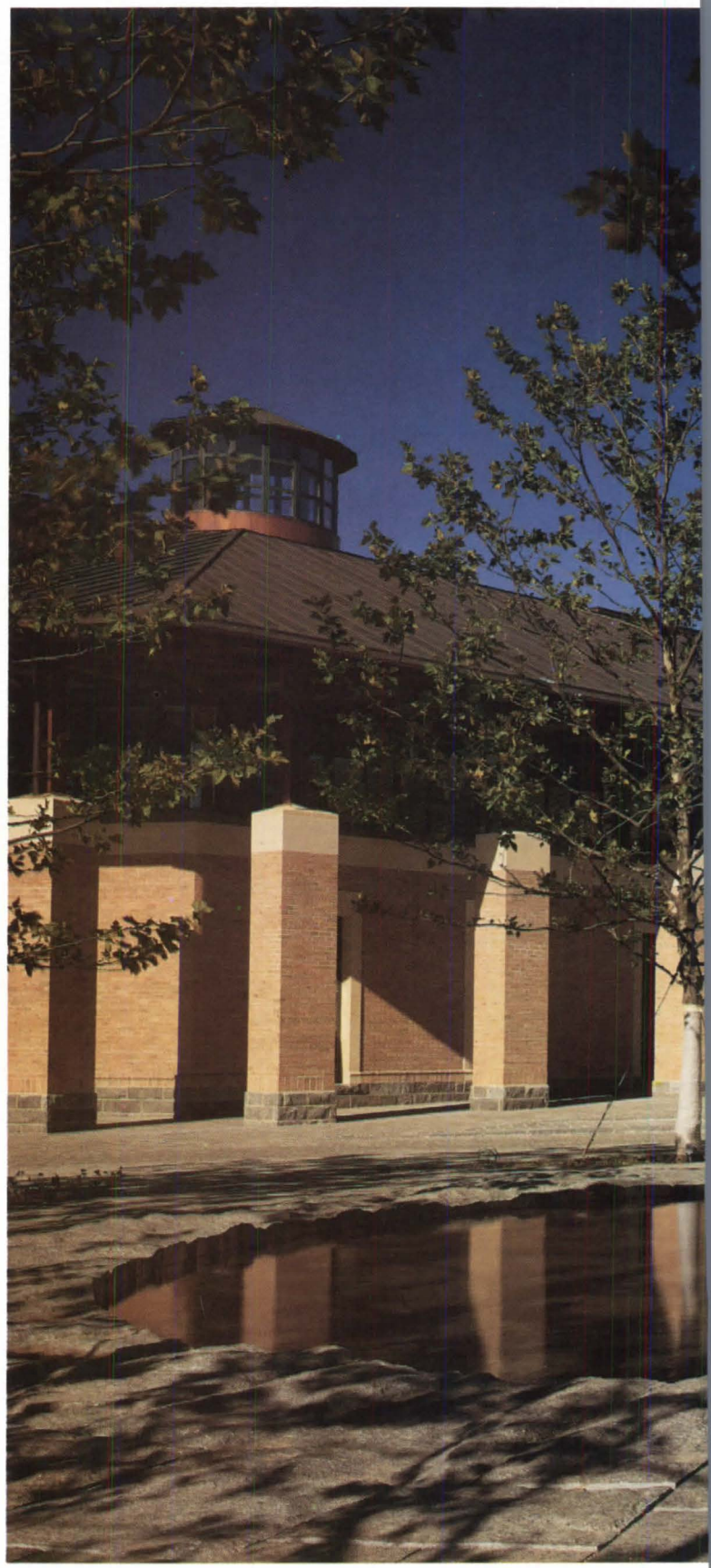
A few general observations may help to explain our objectives and the genesis of particular aspects of our architecture. Continuity, if such be a virtue, would be discernible perhaps in our preoccupation with certain issues, with themes which recur over a period of more than 20 years, and which have inscribed their traits on the physiognomy of our buildings . . . . Whilst there is that thread of continuity, we have resisted the safe haven of a rigid ideologic stance and have stayed away from tides of fashion, trendiness, and have jealously guarded our freedom of action against the dogma of an avant-garde or the pundits. We have also sought to protect our work process from too much observation and publicity, being apprehensive of its unsettling effect on architectural design . . . . Though we initially entered the Boston City Hall Competition with the idea of building an exemplar of the design theories we were communicating to our students, we

seem to have since moved away from a didactic architecture . . . . We nevertheless do not think of ourselves as pragmatists engaging in an uncommitted opportunistic design effort. We do not accept the artificial distinction and polarization between the dumb practitioner and the conceptually thinking architect-theoretician. Yet by avoiding the entanglement with dogmatic groups—the Whites, Grays, Postmodernists, Deconstructionists, or whatever—we have gained for ourselves the freedom to develop over the years our compositional repertoire, to take advantage of the creative encounter with new sites, new programs, the idiosyncracies of our clients, and our own and the time's changing sensibilities . . . .

I believe in an architecture which, like the mythological giant Antaeus, gains strength when it touches the ground, when it remembers in its iconic aspects the basic sheltering aedicular nature of architecture of which my teacher Sir John Summerson spoke, and its genesis in the act of construction and in the nature of materials that Wright, the Greene brothers, the Arts and Crafts architects of the 19th century, Kahn, and Scarpa believed in . . . . We are nevertheless irremediably linked to contemporary attitudes . . . . In our spatial organization we are using traditional sequential arrangements as well as modern free-flowing modes wherever they are relevant. In general, we favor the typological, over the aberrant, one-off solution, but allow the systemic to be deformed by the specifics of site or program to enliven the deadliness of schemata . . . . Characteristic of our work is the emphasis we place on the manner of building and the effect this has on the iconic development of the building's form and fabric. We are in this regard not so much interested in technical or in "high-tech" notions, but in the elevation of the act of building construction to the level of ornament and metaphor . . . .

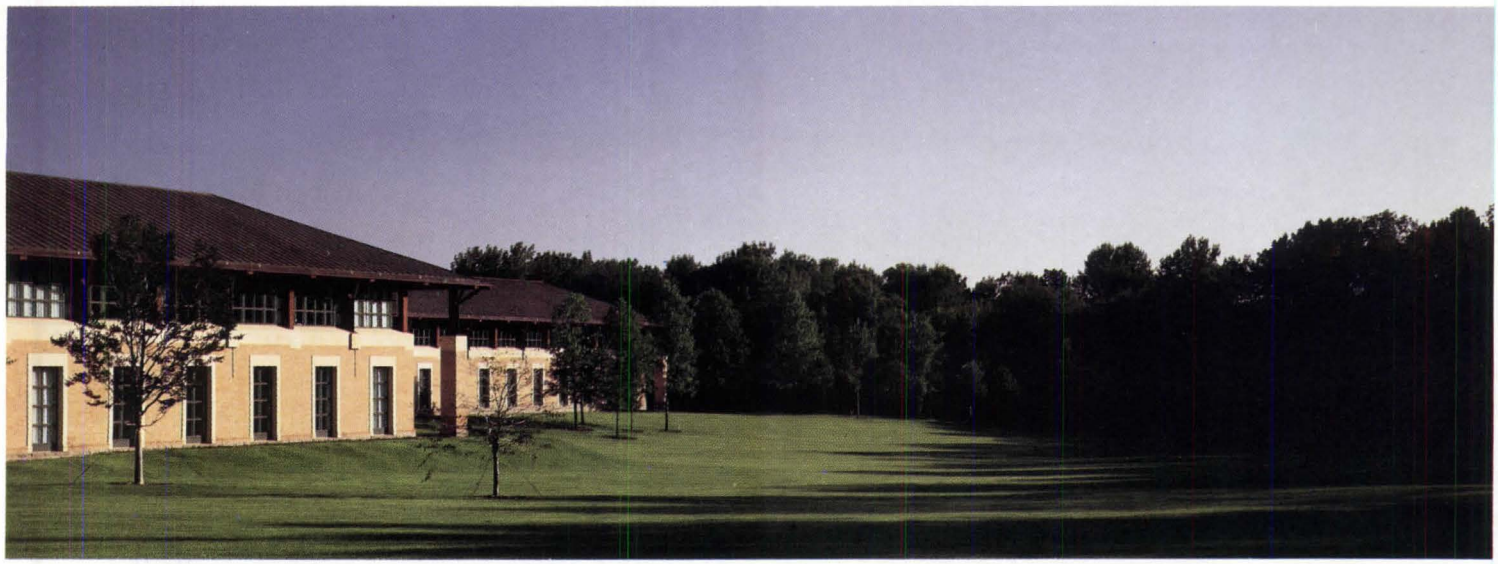
Finally, we share with our contemporaries the predicament of a latent historicism, the occupational hazard that accompanies the pursuit of continuity with antecedents in architectural history. Already in our earliest buildings, we have regarded allusions to the architecture of the past as legitimate, perhaps desirable. The inclusion and transformation of historical material, if not frivolously engaged in as travesty, I regard as serious attempts at making reference to an ancient, commonly understood codex, resonant of cultural memories. These are ways perhaps to heal the loss of memory that occurred in the heyday of the Modern Movement (if it was not part of its agenda), and potentials which a contemporary architecture can and should explore . . . . Whether our work is explicit or covert in this regard, in general I would say that the architectural imagination works with recollection as much as with invention. These are subtle and delicate matters, particularly in the work of two architects working together as Michael and I do. The associations which each brings to the process are of a personal nature, and are not necessarily the same, and are hardly ever discussed. A work of architecture of any depth has to be many-layered. It can be read and understood in different ways and on different levels . . . . All architects—I imagine all artists—have to come to terms with the conflicting pulls between modernity and tradition. The "demons of progress" and the ghosts of history are always peering over your shoulder, battling it out for your soul or, worse even, residing in it. And then there is the other struggle, a no lesser one, to do with the icon in your mind and its transformation as it enters the physical world and is translated into an appropriate and poetic language.

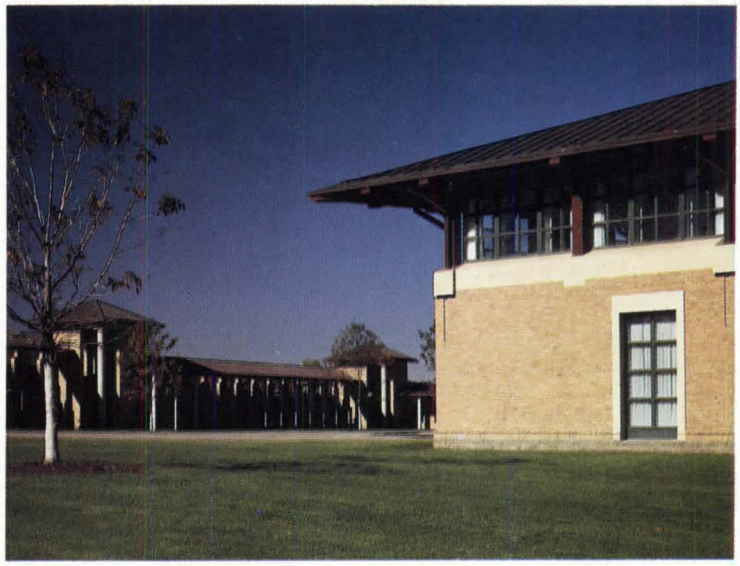
Approached by car, the rigorously classical principal entrance is only gradually revealed. Before arriving at the front-door drop-off, one first sees the modest row of poured concrete columns, brick screens, and simple copper roofs that conceal the garage. Then the grand brick colonnade of the west wing appears, marching at a right angle toward the Italian Renaissance facade. The east wing intersects this facade at a shallow angle, creating an asymmetrical courtyard given focus by a circular off-axis pool

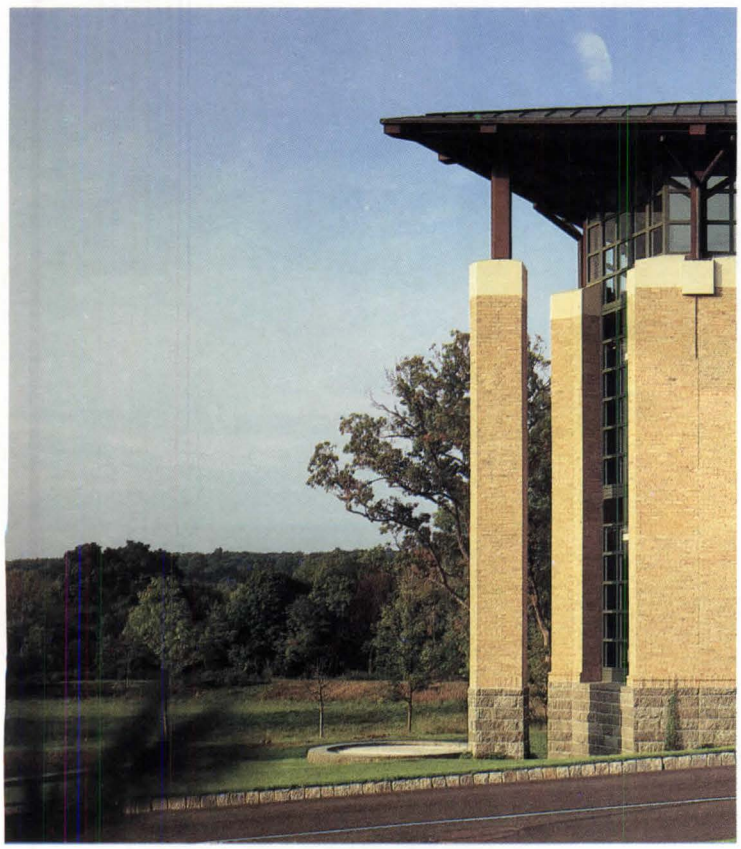


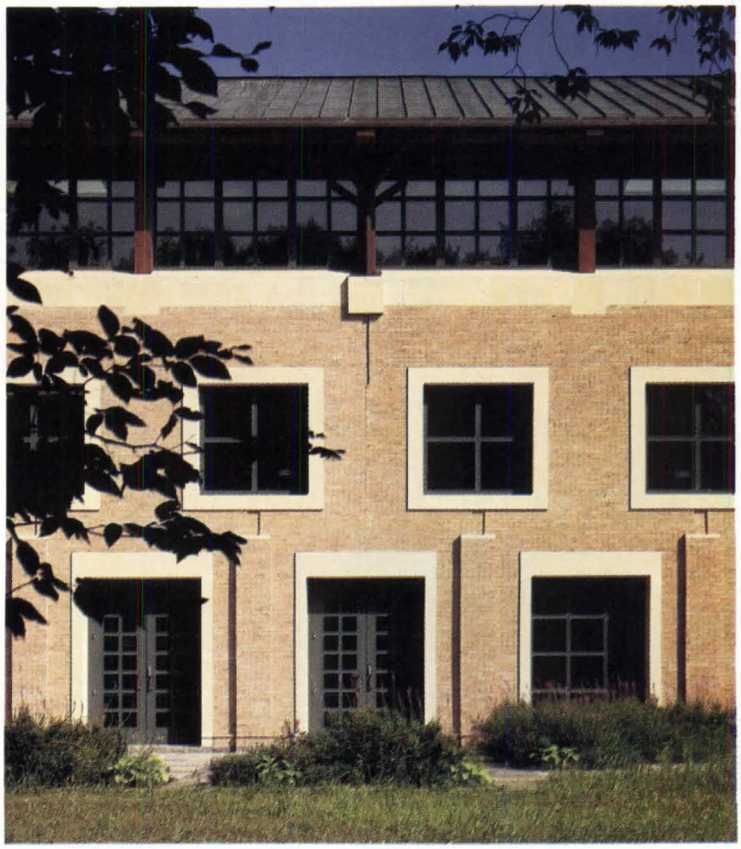
surrounded by plane trees. The bottom of the pool has an undulating granite surface meant to suggest a geological formation. Courtyard pavers and the building's base course are also granite. The rest of the exterior palette is simple, but enhanced by superior detailing and workmanship. Finishes include golden brick, limestone trim, aluminum-and-steel sash enamelled green, stained cedar casings for structural steel, and copper roofs. The oculus is one of two that illuminate the main circular stairs.

All photos ©Steve Rosenthal except as noted

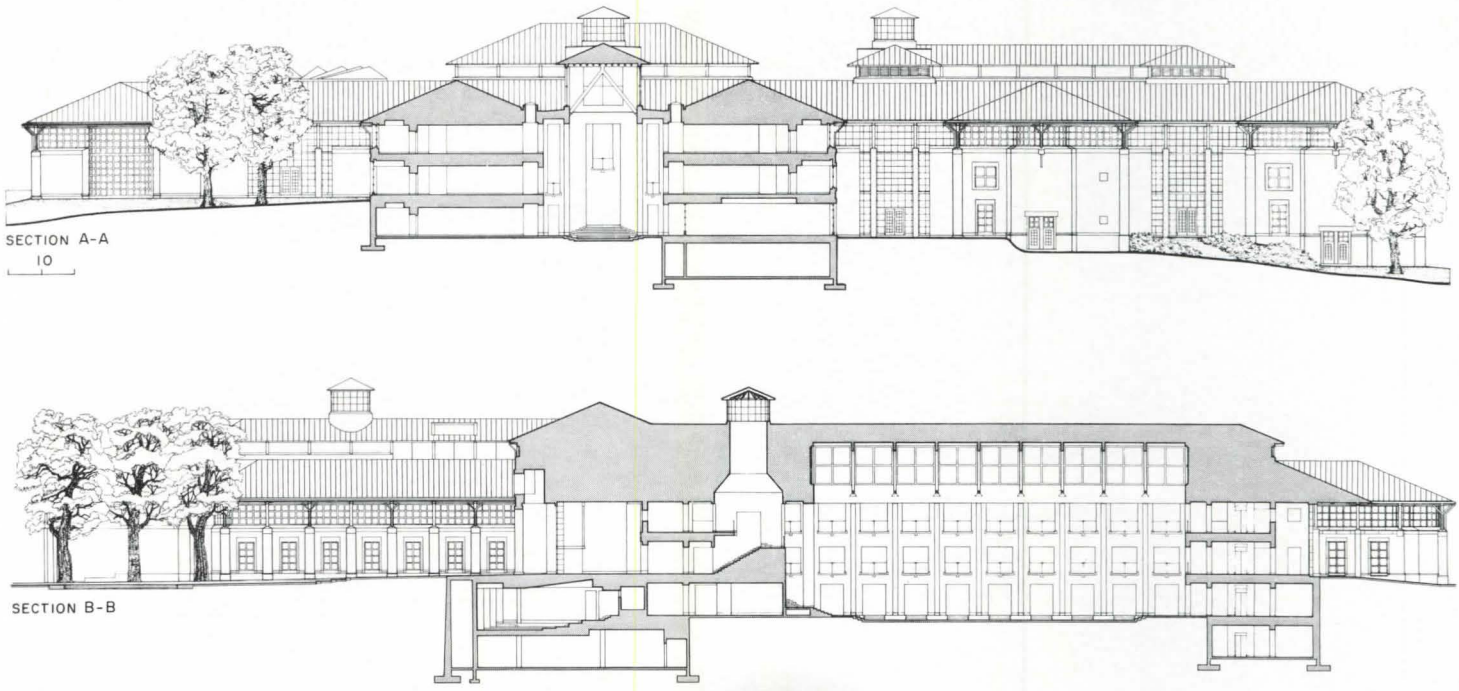


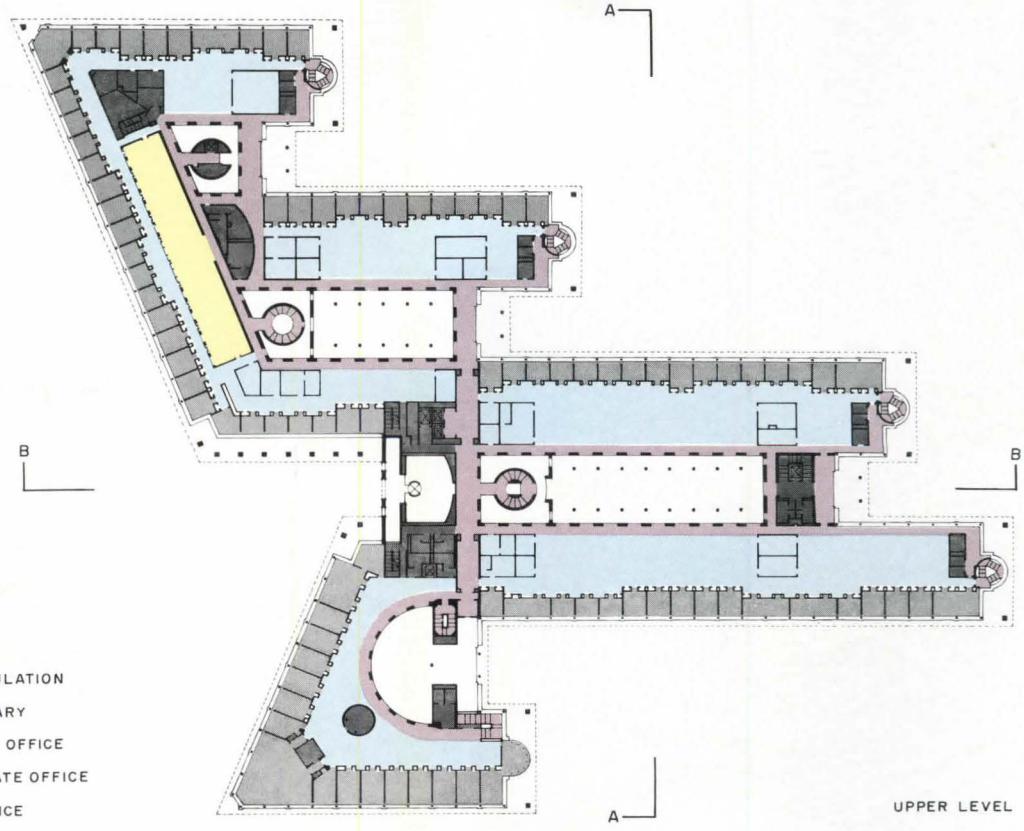


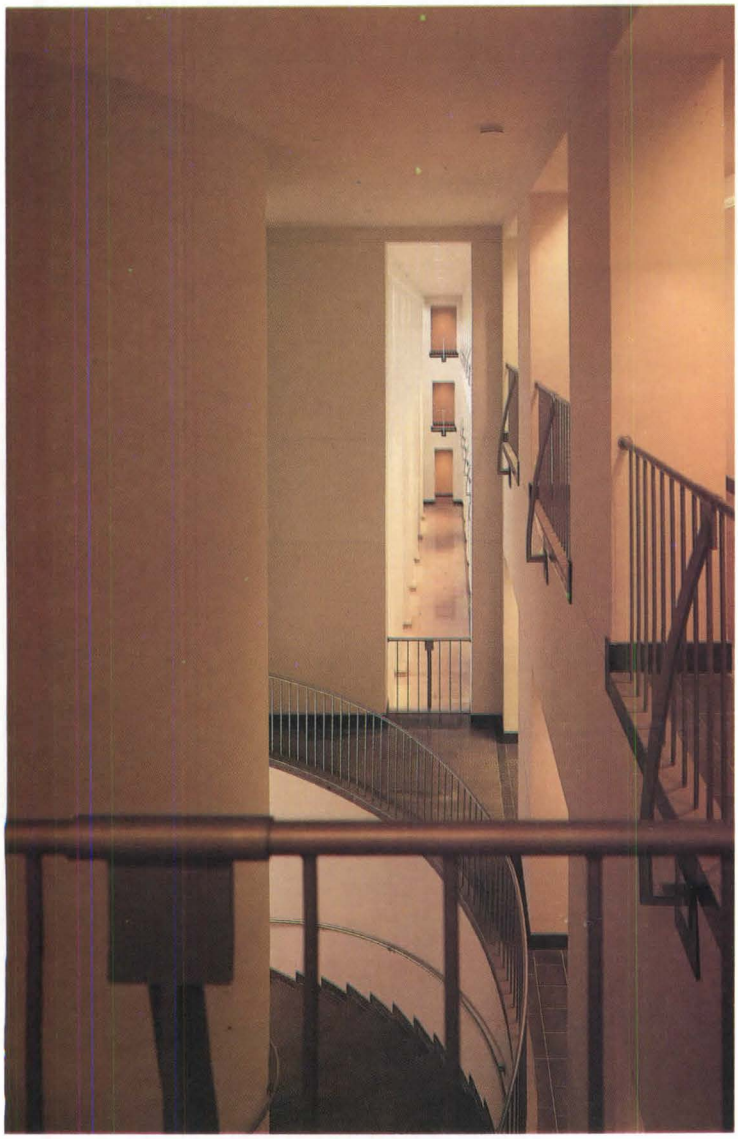




The plan resembles a handprint with four fingers extended toward the northeast, offering maximum window exposure with views of the lawn and surrounding woods. This orientation best captures the sun in its day-long trajectory. Perimeter offices enjoy either morning or afternoon light, and atrium clerestories illuminate the interiors during the greater part of the day. The easternmost wing on the upper end of the slope (photo opposite top) has two stories of perimeter offices; the rest have three. Three patterns of fenestration have been developed for these facades: French windows on the first floor, similar openings with a band of square windows above and centered between them, and square windows on the first floor. All three arrangements are topped by continuous windows under the eaves. Apses at the tips of the fingers (plan and photo center left) contain fire stairs. Every corner but one turns at a freestanding column (photo bottom left).







Stair-hall openings (top and bottom left) frame partial views of ceilings, corridors, and arcades. In each of two rectangular atria, three-story composite columns of the smallest feasible diameter support steel-framed pitched roofs and clerestories. (The circular stair towers pick up lateral loads, allowing the columns to be as slender as they are.) Both atria have flat wooden ceilings spanning pointed wood arches tied by steel bars. The sculptor Michael Singer designed the floor planes and the related ensembles of three-dimensional objects installed at ground level in each courtyard. The floor of the entry atrium (opposite) is intended to embody mystery; it is a "dig" which archetypically, in the words of the sculptor, "refers to antiquity, so that revealed layers imply an accumulation of meanings." The sculpture consists of interlocking segments of stone cut at varying depths and filled with plants and water, to suggest a recently excavated "find."

Near the entrance to the smaller of the two rectangular atria (top left), sculptor Michael Singer has placed a rusted old stone-quarry cart carrying a newly cut slab of granite. At the far end is a three-dimensional collage of building materials and antique tools. The executive dining room (below right) alludes to the spartan work of Charles Rennie Mackintosh, in response to the desire of Becton Dickinson's top management to disavow manifest luxury in its own quarters. Only areas accessible to all employees were allowed to be grand. These "public" spaces include a principal stair (bottom left), and the third atrium (opposite), a two-story skylit space, semicircular in plan, which serves as a lobby for the executive suite. Here the architects have invented a palm-treelike structure to support the skylights. Trusses in which the top chords are wood in compression and the bottom chords cable in tension radiate from a bud-shaped column capital. The photo was taken from a second-floor mezzanine overlooking the space.

Becton Dickinson and Company Corporate Headquarters
Franklin Lakes, New Jersey

Architect:
Kallmann, McKinnell & Wood, Architects, Inc.—Michael McKinnell, Gerhard Kallmann, Henry Wood, principals; Hans Huber, S. Fiske Crowell, Jr., senior associates; Lynn Hopkins, Emily Kuo, Avi Lothan, Susan Shaw, Cary Tamarkin, Tim Techler, design team; Peter Bacot, Ted Szostkowski, garage design

Engineers:
Zaldastani Associates, Inc. (structural); Cosentini Associates (mechanical/electrical/plumbing); Andrew Marshall, Jr. (civil/site)

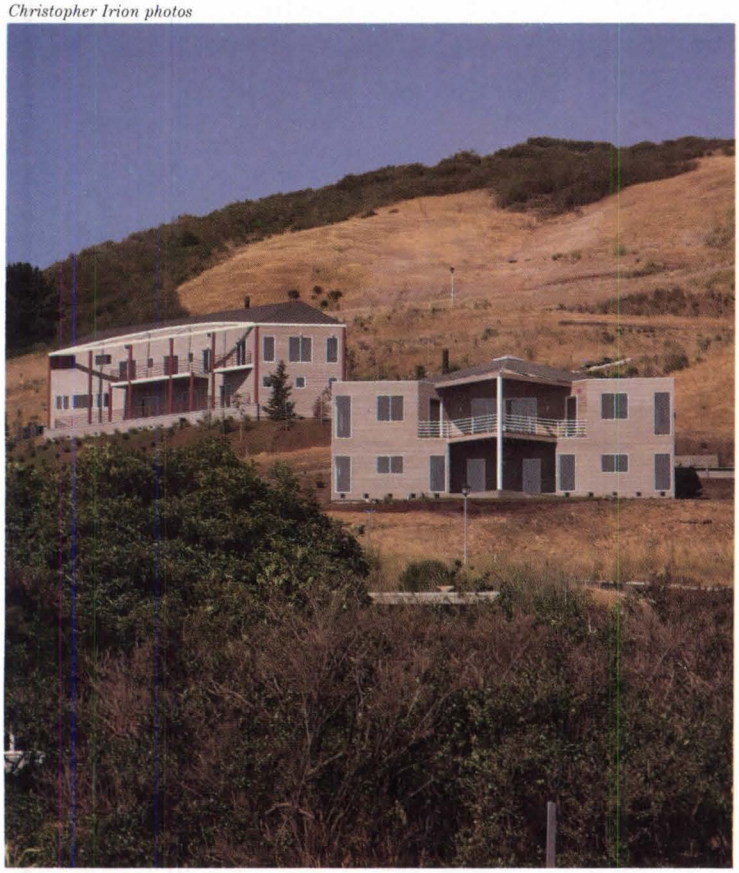
Consultants:
Morgan Wheelock, Inc. (master planner and landscape architect); Gensler Associates, Architects (N. Y.), with Kallmann, McKinnell & Wood, Architects, Inc. (space planning/interior design); Todisco Associates, Inc. (specifications); Michaels & Colburn Associates, Inc. (food service); Bolt, Beranek & Newman, Lewis S. Goodfriend & Associates (acoustics); Rolf Jensen & Associates, Inc. (codes); Jules Fischer & Paul Marantz, Inc., Terry Chassman, Inc. (lighting); Wolf and Company (cost); Mary Lanier, Inc. (art)

Construction manager:
Gilbane Building Company

Tiburon Shores
Tiburon, California
Stanley Saitowitz Architecture

Calculated risks

Christopher Irion photos



The expansive curved facade of the house on Lot Six reflects its commanding elevation on the hillside (above, left), while the ship's-prow porches of the building on Lot Eight (right) correspond to the outline of the corner site.

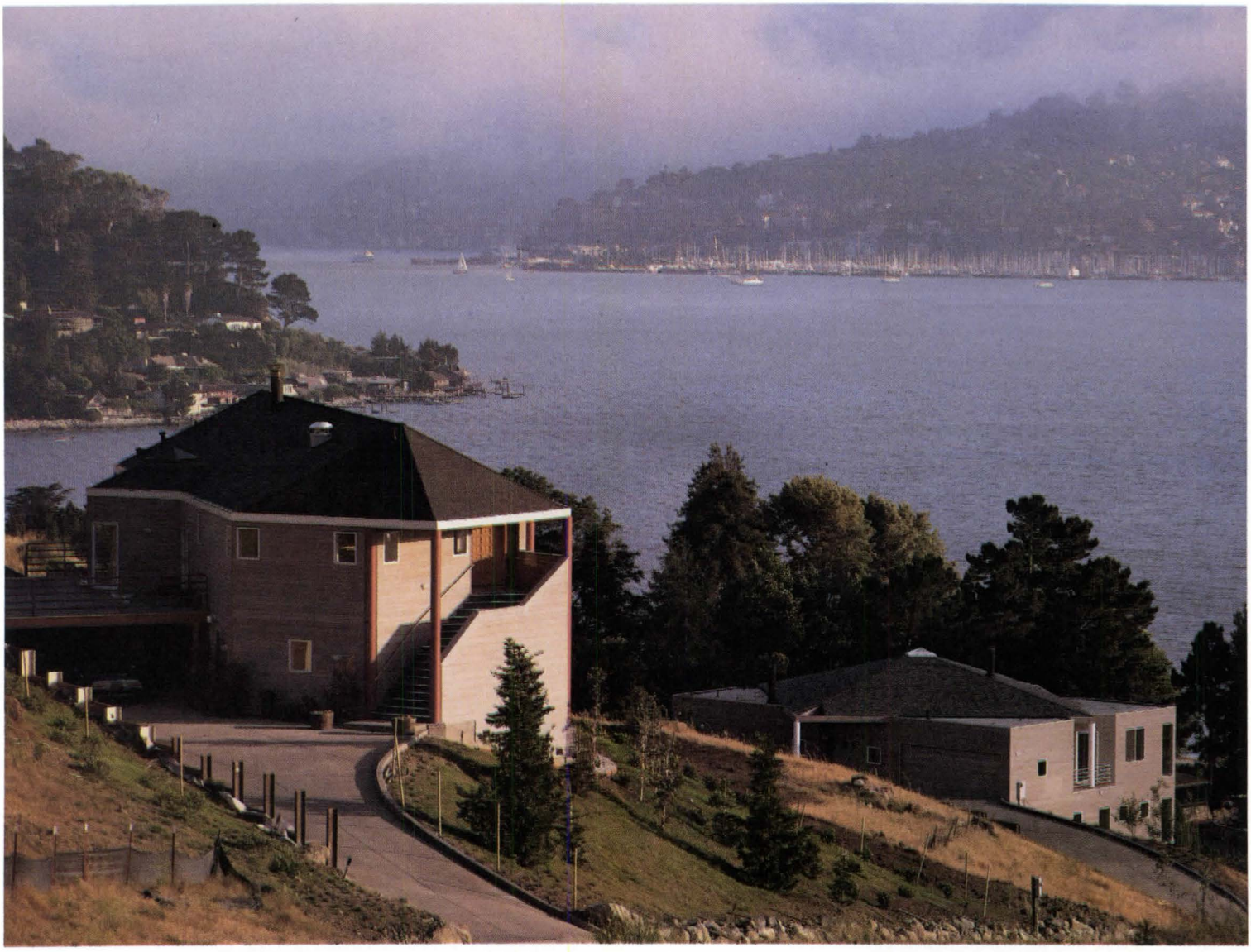
The realtor's promotional literature may extol the domestic charms of a pair of "luxury homes" perched on the hillside of an "exclusive community" outside San Francisco, but architect Stanley Saitowitz is more modest about his aspirations for the spec development in suburban Marin County: "I just wanted the chance to design eight houses at once." Unfortunately for Saitowitz, even such simple demands have been difficult to meet. Ever since the scheme's conception by a local businessman, Tiburon Shores has been plagued by unforseeable delays. The project was interrupted first in April 1986 by a town moratorium on all new construction, and again last fall, after the Supreme Court of the United States declared the ban invalid, by a fiscally conservative client who in the aftermath of the stock-market crash suddenly found that speculative building had lost its allure. To date, only two of the intended eight units have been completed, and prospects for the remaining six are as unpredictable as future interest rates.

Other architects of Saitowitz's caliber might have shied away from working with an inexperienced developer, but Saitowitz recognized the opportunity for what it was: a chance to work at a larger scale than before. Understanding his client's preoccupation with the bottom line, the architect realized that he would have to keep esthetic effects to a minimum. As the starting point for both houses, Saitowitz returned to an idea of the archetypal dwelling that he had explored earlier in his design for a demountable sukkah, a ritual pavilion for the Jewish festival of Sukkot (RECORD, February 1987, pages 100-103). Although Saitowitz was able to draw upon more than 5,000 years of tradition for the sukkah, at Tiburon Shores he appropriately tapped more immediate sources—namely, the spare Shingle Style of early 20th-century Bay Area architecture and the exigencies of a steep site.

To express his chosen theme of simplicity, Saitowitz devised a kit of parts—geometrically shaped volumes, horizontal redwood siding stained a muted gray, metal railings, and stock windows in different shapes and sizes—that could be variously assembled for the entire proposed community. Layered and interlocking shapes were modified for the two finished houses according to their locations. The rectangular house on Lot Six, located on the uppermost parcel of the development (far left in photo), got a grand, bow-shaped front facade intended, visually, to continue the curve of Richardson Bay below. Framed by steel columns painted Golden Gate red, the house borrows imagery from the bridge, which is barely visible from the outdoor staircase and upper deck. The house on Lot Eight, which occupies an angled corner parcel, mimics its position on the property with a triangular projection of covered porches (near left). This unit is set into the slope, giving its front facade a presence on the hillside equal to its neighbor's, even though its interior is actually smaller (3,800 square feet vs 4,700). Inside both houses Saitowitz pared down details, allowing the eventual buyers to suit their own taste by installing such amenities as oak floors, lavish bathrooms, and "gourmet" kitchens, which are now virtually de rigueur for the affluent homeowner.

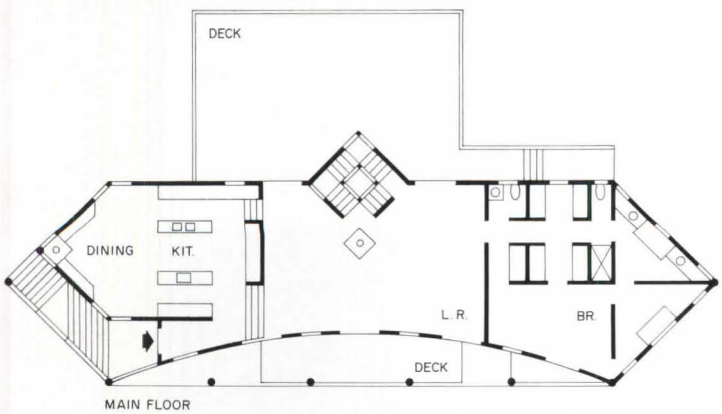
This open-ended approach has proved successful: Lot Six has attracted such prospective buyers as a member of the rock group "38 Special," and Lot Eight a professional couple. Saitowitz is currently designing a third house for one of the vacant lots sold off to another private buyer by the original developer, who was eager to liquidate some of his assets. This more elaborate "custom job" may soon upstage its neighbors. *Karen D. Stein*

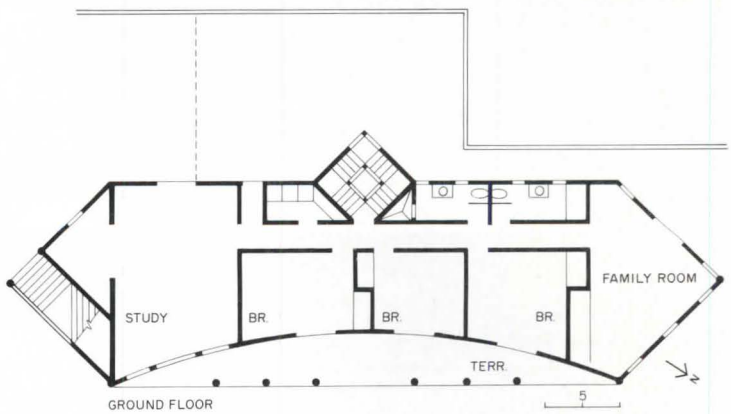
San Francisco architect Stanley Saitowitz continues his examination of the "archetypal dwelling" in an unlikely building type—the spec house.



One enters the house on Lot Six from the back on the second floor, via stairs that wrap around one side (below and opposite, top left). On a clear day, the stairway provides a glimpse of the Golden Gate Bridge (as does the living-room deck—opposite below).

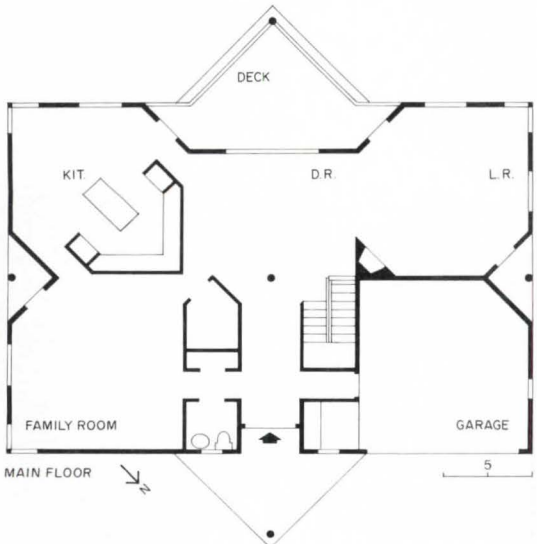
Realizing that the view was an important selling point for his developer-client, architect Saitowitz framed it, and the entire front facade, with steel columns painted to match the bridge. In addition to a combined living/dining area, the entry level also contains the



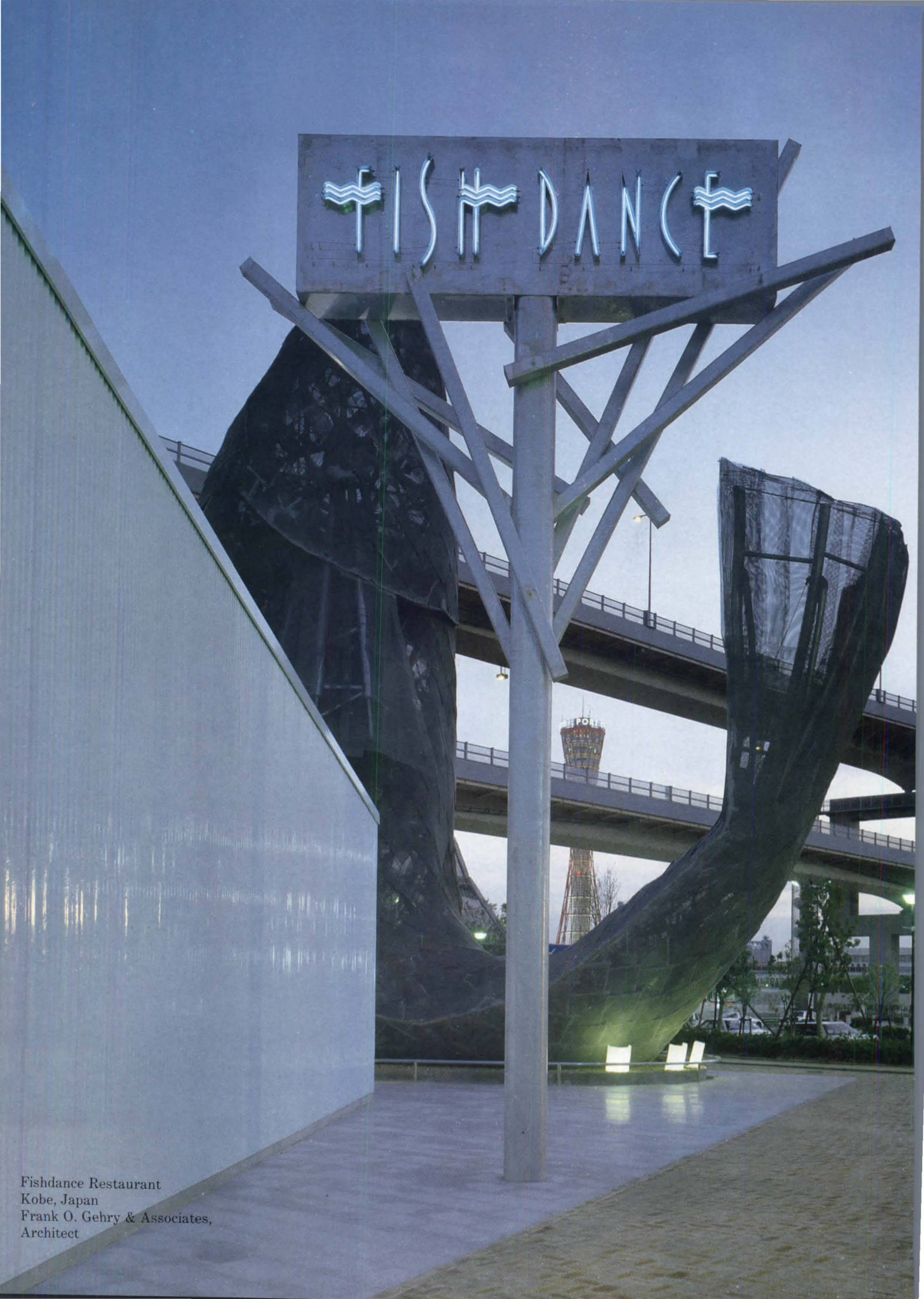


master bedroom suite, complete with its own private deck, and a professionally equipped kitchen—enclosed respectively inside the triangular ends of the structure (plans opposite). A skylit stairwell, which projects over the four-car garage, leads to lower-level bedrooms, bathrooms, and playrooms. A rear deck overlooks a small semi-enclosed garden.

Saitowitz took advantage of Lot Eight's slope by designing a house that expands volumetrically as it steps downhill. Like its neighbor, the house is entered on the top floor, and visitors are greeted by a view of Richardson Bay. Upstairs, Saitowitz grouped closets and bathrooms around the foyer (bottom right), and downstairs, fitted them along a retaining wall.



Tiburon Shores
Tiburon, California
Owners:
William Goldberg (Lot Six); Appel Venture (Lot Eight)
Architect:
Stanley Saitowitz Architecture—Stanley Saitowitz, principal-in-charge; Rob Lamb, Ulysses Lim, Daniel Luis, and Britt Schlinke, project team
Engineer:
Dominic Chu
Landscape architects:
Pete Walker and Martha Schwartz
Consultant:
Michael Gabel & Associates (energy)
General contractors:
Vion Construction (Lot Six); Appel Venture (Lot Eight)



Fishdance Restaurant
Kobe, Japan
Frank O. Gehry & Associates,
Architect

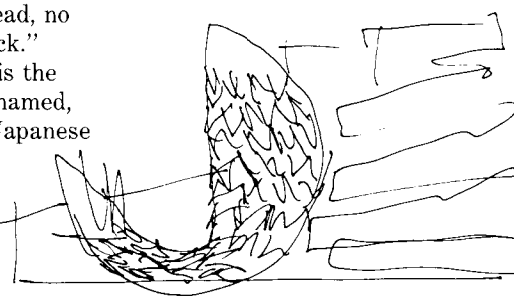
Catch of the day

By Charles K. Gandee

Obsessed by memories of elusive beauty, Frank Gehry casts his line for a graspable ideal of pure sculptural form.

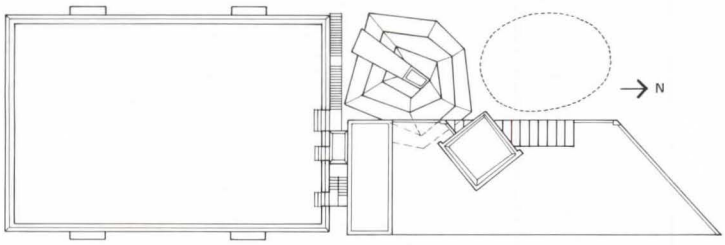
Once upon a time there was a little boy in Toronto who loved Thursday more than any other day of the week because that was the day his grandmother would take him to market to buy a live carp. It wasn't the morning's marketing with grandma that filled the little boy with delight so much as the afternoon spent frolicking in the bathtub with the carp—sadly doomed since the family menu always included gefilte fish on Friday night. Time passed, and the little boy grew up into a famous architect, but he never forgot those joyous Thursday afternoons.

In lectures and in interviews Frank Gehry retells this curious autobiographical anecdote as a preface to any discussion of his current projects. The tale is an appropriate point of departure, since fish, in one form or another, figure prominently in much of the California architect's work of the 1980s. Why, after 50 years, did fish resurface in Gehry's professional life, and what, leaving Freud aside, could this possibly mean? "The fish thing started because of Postmodernism. I got upset with people regurgitating the architecture of the past, which has its origins in anthropomorphism, so I said 'well, why not go before man . . . to fish.' That's the way my head works. So I started drawing fish." And once he started, he couldn't stop. It seems that everything Gehry touched from 1981 onward turned to fish. There have been fish columns and fish pylons, fish lamps and fish water goblets, fish sculptures and fish building proposals . . . . As might be expected, the architect's clients have not necessarily shared his appetite for fish, and with a few notable exceptions—most particularly, the *ColorCore* lamps—the designs in this motif remain unrealized. But Gehry persisted with the fish, just as he persisted earlier with chain-link fencing: "Once I start something, I pursue it . . . to see where it leads." This specific pursuit has led toward a sculptural ideal: the architect now regards the fish swimming through his sketches as a "symbol of unachievable perfection." Since such clarity is a high priority in Gehry's architecture, the fish form—pure, abstract, fluid, buoyant—is not all *that* far-fetched as a paradigm. At the Walker Art Center retrospective of the architect's work last year, for example, visitors entered the galleries Jonah-style through a Moby Dick-size fish that Gehry maintains is "the best thing I've ever done." Maybe it is, but even if it isn't, the lead-coated fillet (no head, no tail) displays the architectural power of Gehry's "fish shtick."

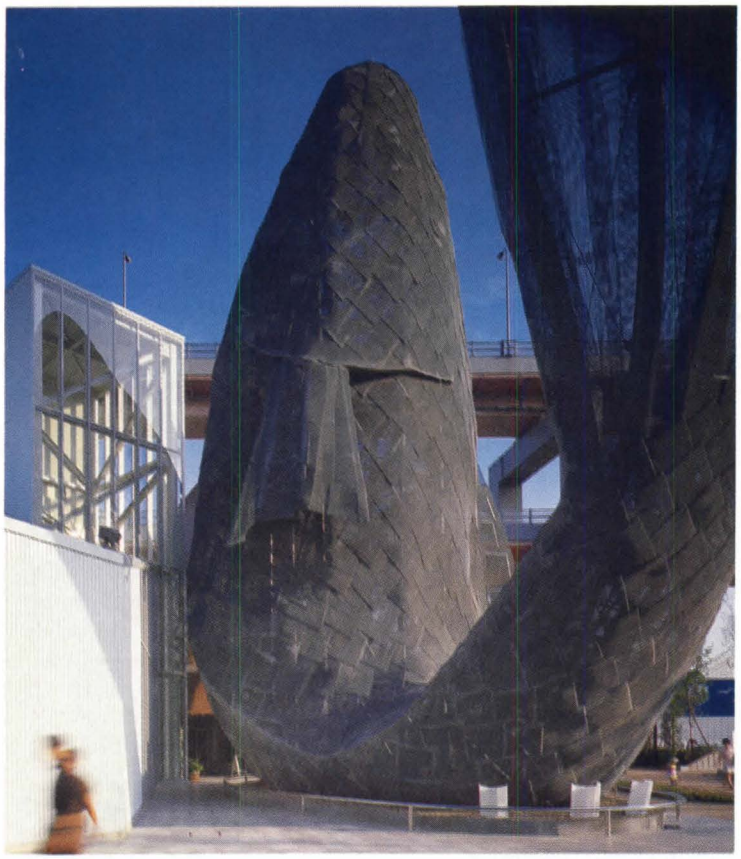


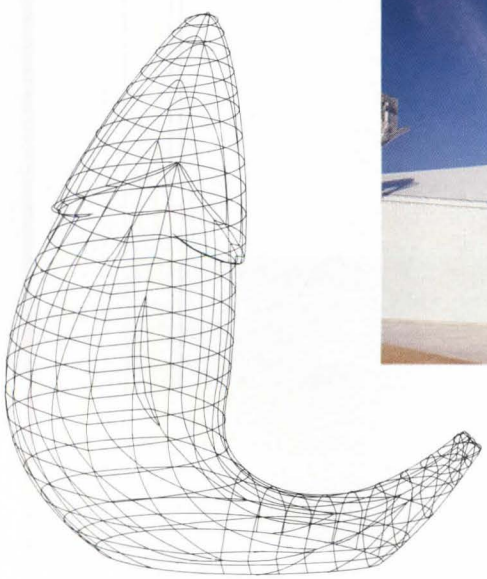
Less strictly architectural, at least in the spatial sense, is the whole fish he prepared for a restaurant in Kobe, Japan—named, appropriately, Fishdance (opposite). Commissioned by a Japanese client, Gehry's design explores the purely sculptural side of his favorite animal. The architect also dipped into his own portfolio for the restaurant's formal composition—Fishdance effectively partners Gehry's 1972 Ron Davis Studio with his 1983 entry in *Follies: Architecture for the Late-Twentieth-Century Landscape* (an exhibition at the Leo Castelli Gallery)—though this is only another instance of the ongoing development of established themes that is itself a Gehry trademark. At present, as in Fishdance, those themes are unorthodox materials, a conspicuous fascination with construction, a marked preference for dissecting a program into distinct parts that are then housed in discrete objects, and, of course, fish. Of the latter, Gehry concludes: "I suppose I should have gotten bored with fish by now, but I haven't." He's not alone.

Charles Gandee is editor-at-large of House & Garden.

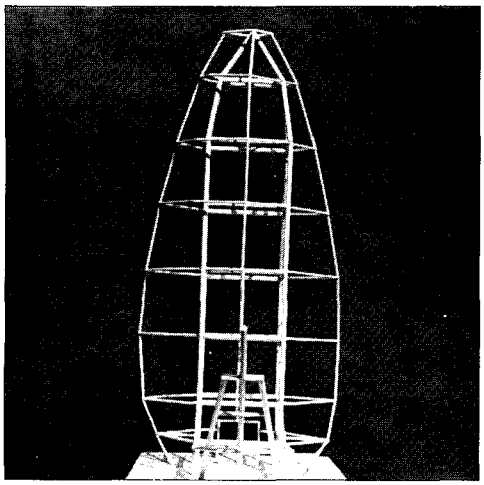


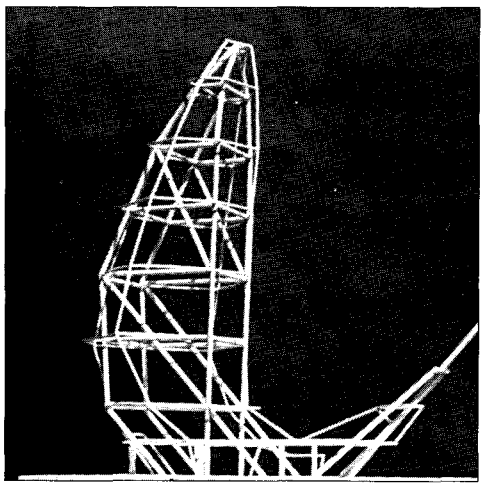
Rising 65 feet above a granite plaza, Frank Gehry's biggest fish to date appears to be flinging itself toward the Kobe freeway (top right). The architect maintains, however, that the spectacle of a leaping restaurant is hardly alarming amid the anything-goes Japanese cityscape. Gehry was committed to cladding the fish in his beloved chain-link fencing, but concerned that the material's transparency would compromise the solidity of the form. He achieved the desired effect by using a double layer of small-gauge chain-link mesh cut into diamond-shaped panels. To refine structural details, consultant Joel Stearn sent a maquette of the fish to Troy, Michigan, where an automotive-design computer was called into service to generate drawings such as the one shown below. Though fish are Gehry's first love, he has acquired a minor interest in snakes, which he attributes to the influence of artist Richard Serra. The copper-clad coil adjacent to the fish (site plan above and photo opposite), speaks of that interest. It also houses Fishdance's bar and take-out counter.

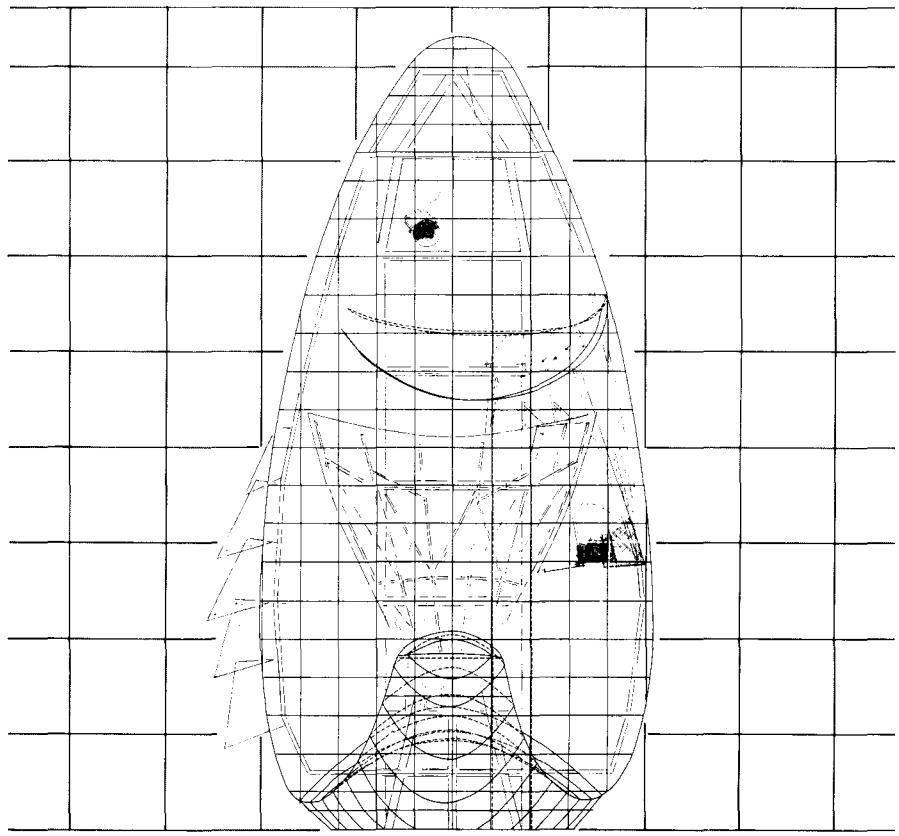


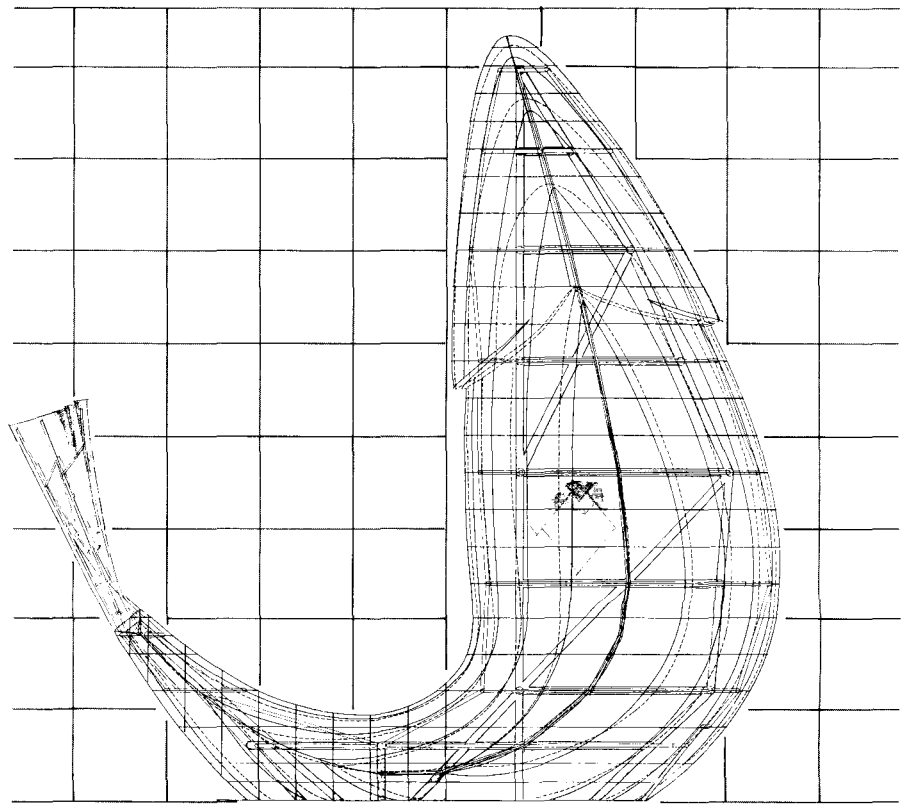


After Frank Gehry completed his scheme for Fishdance, associate Greg Walsh headed off with the model to Japan, where he stayed for six weeks while engineering and working drawings were executed. The architect insisted that his fish have "fullness of form and the feeling of movement"—qualities far easier to capture with graphite on paper than with galvanized steel in the round. The technical realization of the fish testifies to the ingenuity, resourcefulness, and speed of Gehry's Japanese collaborators: Fishdance was constructed in a



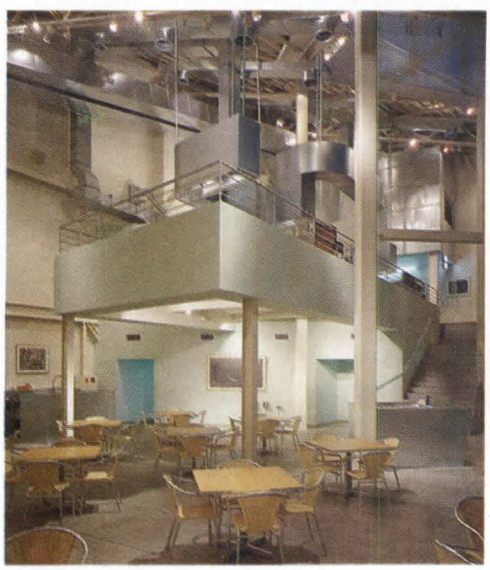


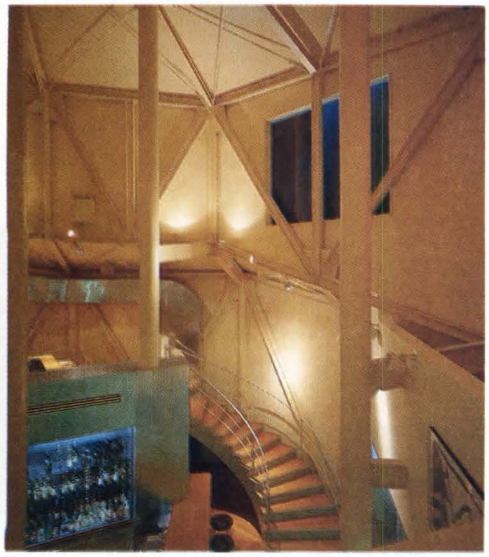


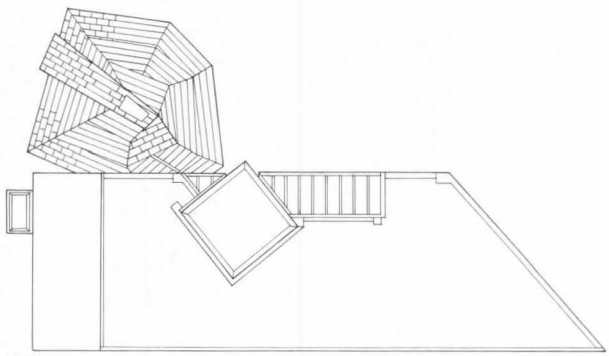


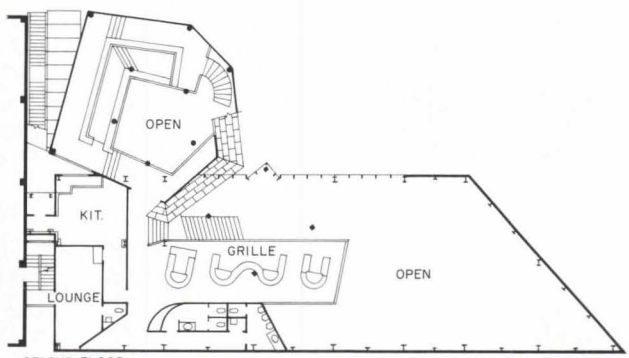
breathtaking six months. Viewed now through the glass-and-aluminum curtain wall of the restaurant proper (opposite), the finished fish recalls the eerie underwater worlds of Jules Verne and H. G. Wells. Gehry admits that "it's precarious to do this stuff because it can become kitsch so quickly... it's hard to do things like eyes and tails. But I like trying because Claes Oldenburg told me it was impossible."

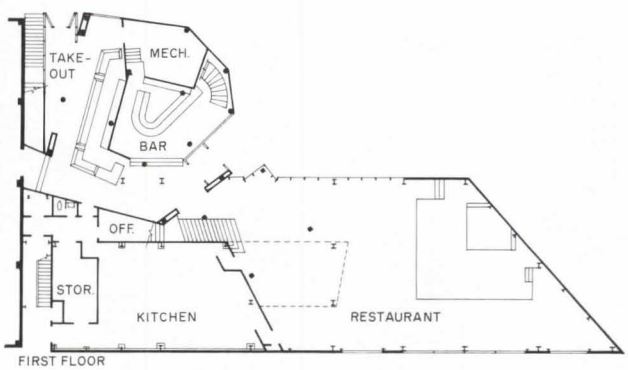
Gehry customarily favors the raw to the finished, the rough to the slick, the exposed to the hidden. At Fishdance, structural, lighting, and hvac systems are all on full view within the painted corrugated metal walls of the main restaurant (top and middle below) and the flat-seam copper enclosure of the "snake" (bottom and opposite). Intriguing perspectives result from Gehry's taste for assemblages, even collisions, of discrete building parts which are unconventional in both form and materials.











Fishdance Restaurant
Kobe, Japan
Owner:
The World Company and the City of Kobe
Architect:
Frank O. Gehry & Associates—Frank Gehry, David Denton, Greg Walsh, Tom Buresh, Edwin Chan, Dalia Jagger, Charles Dilworth, Sergio Zeballos, Fred Ballard, Mitchell Lawrence, Bryce Thomas, design team
Associated architect:
Takenaka Komuten Co. Ltd.: K. Kadokawa, project manager; M. Yamamoto, job captain
Engineers:
Takenaka Komuten Co., Ltd. (structural); M. Tanaka (mechanical/electrical); Y. Morita, Y. Nakasako, A. Tsuda, J. Nanno, E. Minamitami, project team for the World Company; S. Okuda, project manager for the City of Kobe
Consultants:
Y. Oka (lighting); Joel Stearns/New City Editions (fish implementation)
General contractor:
Takenaka Komuten Co., Ltd.—O. Hayashida, job superintendent

Environmental studies

© Kent A. Snell, Tom Crane Photography Inc. photo

Ursinus College in Collegeville, Pennsylvania, and Western Wyoming College in Rock Springs, Wyoming, are not just a continent, but worlds, apart. One of a dense cluster of villages on the upland fringe of Philadelphia, Collegeville is, as its name suggests, a classic college town that grew up along with Ursinus, a 1,200-student liberal arts school founded in 1869. Rock Springs, at a population just over 19,000 the largest town in a county more than one fourth the size of Pennsylvania, is a high-desert mining center whose development coincided with the advent of the railroad and accelerated with the '70s energy crisis. The college there, begun 20 years ago in a high-school basement, now occupies a 287-acre,

© Greg Hursley photo

3,000-student campus on a plateau high above the town and is expanding to triple that enrollment.

Different as they are, the colleges share symbolic as well as literal prominence in their communities, and have honored the bond in recent buildings that respect and reinforce the identities of both college and town. At Ursinus, the route led to the past, with the sensitive restoration of a row of 19th-century houses used as student residences. Western Wyoming College looks to the future. Bypassing ill-suited borrowed forms, its tectonic language speaks fluently of the rugged terrain and raw climate, as well as the college's aspirations, and offers an authentic vernacular for the region. Margaret Gaskie

For beauty, for history...

Residential Village
Ursinus College
Collegeville, Pennsylvania
Dagit • Saylor Architects

The drive along Main Street, the principal artery through Collegeville, Pennsylvania, is, for a memorable two blocks, a journey into nostalgia. On one side of the road, venerable trees dapple a broad swath of manicured lawn that unrolls a green carpet to the gray-gold fieldstone buildings of Ursinus College. On the other side stands a coffee-table-book compendium of domestic architecture spanning from 1810 (a dignified stucco manse that is the third-generation descendant of a tiny one-up, one-down cottage, its twisting stair and cavernous fireplace with brick baking oven still intact) to 1928 (a creamy-yellow-iced, dormered, one-and-a-half Cape Cod built from a Sears kit of parts). The intervening years are represented by a catalog of modest to grand, Federal to Victorian, brick houses adorned with deep, spreading, columned and spindled verandas and intricate gingerbread; spiky turrets, mansard roofs, and gable piled on gable; slim shuttered windows and lucent stained glass.

The backward trip in time, though, is brief, with a U-turn in 1984. The houses in this cordial convening of town and gown are in fact the hem of the gown, acquired by the college over the years through purchase, gift, and bequest. In the frugal, make-do fashion President Richard Richter acknowledges has long characterized Ursinus's approach to its physical plant, the houses had promptly been put to use as student dormitories—a deployment that speeded their aging. Nor were the flaws only cosmetic: falling roof slates and crumbling woodwork were accompanied by leaky envelopes, antiquated wiring and plumbing, and, in most, single stairs.

Although it was the obvious course, ripping the houses down and replacing them with a proper residence hall was resisted by some who prized both the historic value of the evocative Main Street ensemble and the educational and social value to a liberal arts college of student living focused on small, intimate groups. As a result, Dagit • Saylor (already known to Ursinus for the "cameo" restoration of the college President's House) was asked to look afresh at the campus housing issue as a whole. The firm complied—and in the process of analyzing alternative sites backed into a master-planning commission. But partner-in-charge Peter Saylor plumped from the first for preservation, seeing the meeting of college and village as a precious relict of the classic college town implied by Collegeville's very name.

Encouraged by the architects' house-by-house survey and ensuing feasibility and cost studies, the administration decided to revamp one house as a pilot—"to see what lurked behind the walls," Saylor says—then opted to preserve the other 10 properties. New construction was limited to a roomy, skylit art studio (a fourth-generation add-on to the 1810 Fetterolf House, now home to Ursinus's art department) and an addition to a side-street house, Musser Hall (pages 94-95), which replaces student rooms lost in the renovation process and partially encloses the landscaped garden and parking areas that now spread a continuous backyard behind the Main Street grouping.

Saylor describes the bulk of the work as "selective deconstruction," though the painstaking and sensitive renovations entailed highly selective construction and reconstruction as well. Along with necessary structural repairs, the houses were stripped of accretions—out-of-period porches, sheds, garages—and decades of every-three-years white paint, baring the underlying brick. Exterior detailing was restored or replaced, shutters were resurrected from basements where they had been ignominiously knocked together into storage crates, and porches that had disappeared over the years reappeared—though in an abstracted form meant to suggest but not mimic the original architecture.

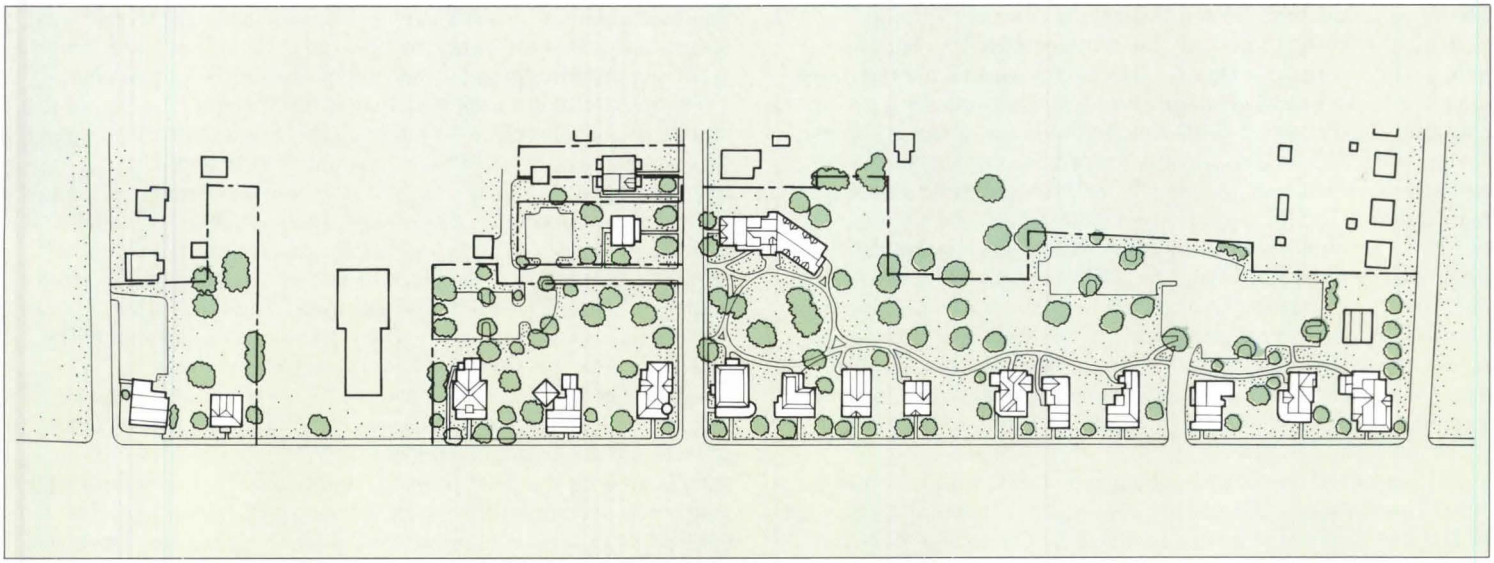
The most striking aspect of the restored strip, however, is the abundant color it brings to a townscape where houses, whatever their provenance or substance, are universally and often inauthentically white. In contrast, the college's two-block village sports, in addition to its mellow spectrum of brick tones (including a snappy example of Arts-and-Crafts patterning), a unified but various palette of accent colors to underscore the houses' often elaborate trim. Keyed a deliberate tone too low for true Victoriana and sparked with white, the blending hues meld the houses in a gentle rhythm of contrast and repetition.

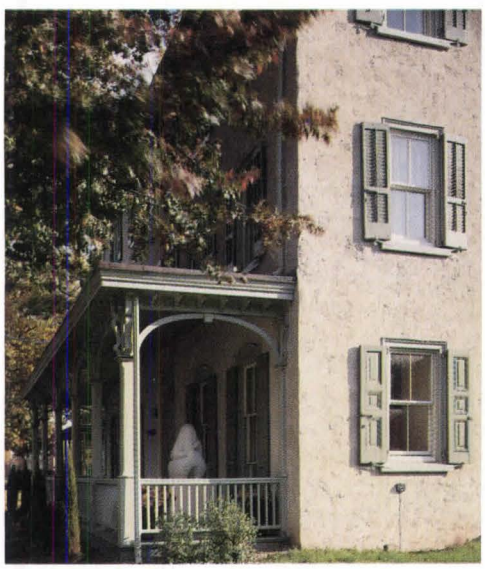
Interior renovations were more problematic, demanding a delicate balance between achieving maximum occupancy and preserving the distinguishing features of each house—a task complicated by the need to install bulky enclosed fire stairs while reserving existing stairways as second exits. Where possible, the original living areas, many boasting ornate fireplaces, handsome moldings, or stained glass, continue in that use, and such items as carved mantels and paneled doors were rescued to serve in new locations. Back-of-the-house spaces such as kitchens, laundries, baths, and bedrooms, however, were wholly updated, as were mechanical and electrical systems. Although additions—everything from a modest porch sheltering a back stoop to individual rooms to an entire wing—were inevitable, they were carefully designed to harmonize with, but stand distinct from, the existing buildings. Care was taken also to avoid second-class facades by addressing all four sides of the houses, with particular attention to the rear elevations facing the common garden.

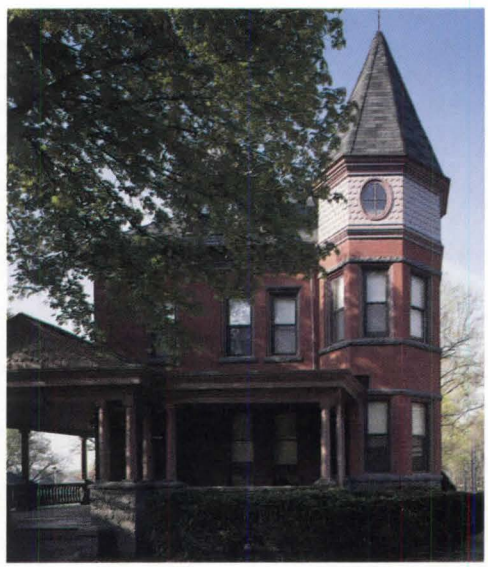
Not surprisingly, students greeted what the college now terms a "residential village" so enthusiastically that places are assigned by lottery. In addition, President Richter believes, the project has fostered a sense of stewardship among its residents, and heightened the esthetic sensibility of a student body traditionally oriented to the sciences. What Ursinus had not fully anticipated was the applause of the community. Ironically, the college has voluntarily and single-handedly forwarded a cause it rejected some years ago, when it opposed a tentative proposal to make the entire town a historic district, thus removing from college control the sizable plot of land occupied by the then-motley collection of houses. Even then, Collegeville was eyeing with trepidation the advance of a now-completed highway that would bring Philadelphia, a short but previously tortuous 25 miles away, into commuting range, trailing in its wake shopping centers and housing developments to infringe on the region's lovely woods and rolling farmlands, and the serene small-town life represented by Main Street.

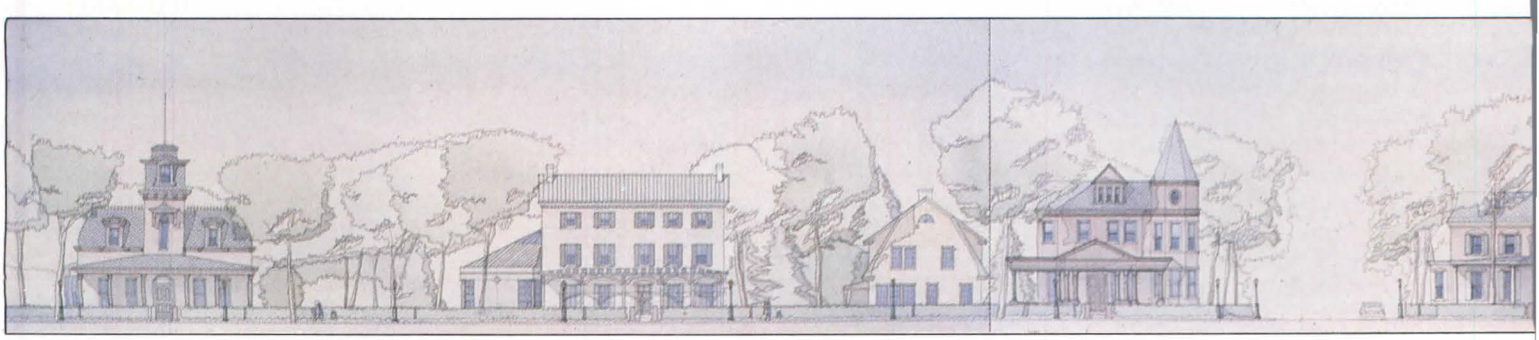
In a climate ripe for preservation, Ursinus's recapitulation of the town as it was made palpable to Collegeville and neighboring communities a vision of their towns as they might be. Already, the college observes a "halo effect," and the architects are often queried by seekers of proper trim colors for houses no longer white. When the first houses were restored, the mayor sent a letter of thanks "on behalf of the residents of Collegeville." But it was the editor of the Pottstown *Mercury*, a local newspaper, who waxed rhapsodic: "Main Street's legacy . . . will grace the lives of several more generations of Collegeville residents. It's a victory for beauty, for history, for excellence." *M. F. G.*

No architectural gems sparkle among the restored Main Street houses (drawing at bottom and plan below). Some are nondescript. But together they embody a capsule history of the area's domestic architecture and symbolize the town's 119-year-long relationship with the college across the street. Lately restored and renovated, the dwellings each house 12 to 20 students, for whom the educational value of small-group living was broadened by bringing to Fetterolf House (photos far left middle) the college art department and a









new studio—the fourth extension of the original 1810 cottage. Similarly, Musser Hall, expanded by a new wing (pages 94-95), serves as the college's international house. Despite previous use of the houses as makeshift dormitories, their poor condition and lack of fire stairs forced extensive interior renovations, though distinctive existing features were preserved where possible. Exteriors were returned to as-built condition by stripping their brick of white paint, removing inauthentic accretions, and restoring or replacing period details.

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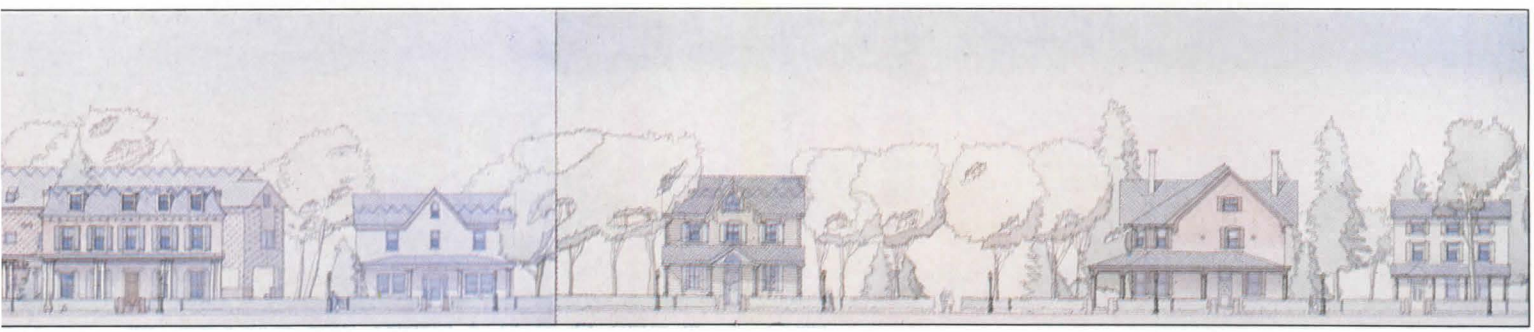
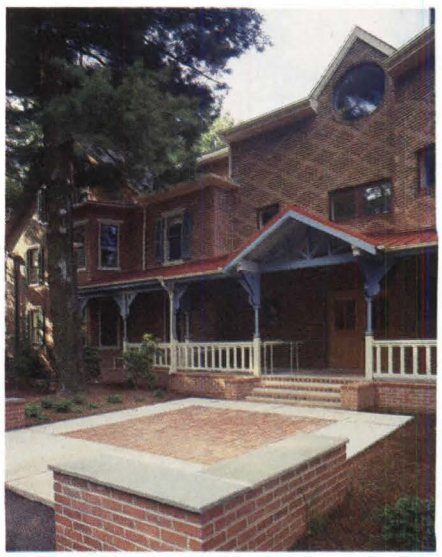
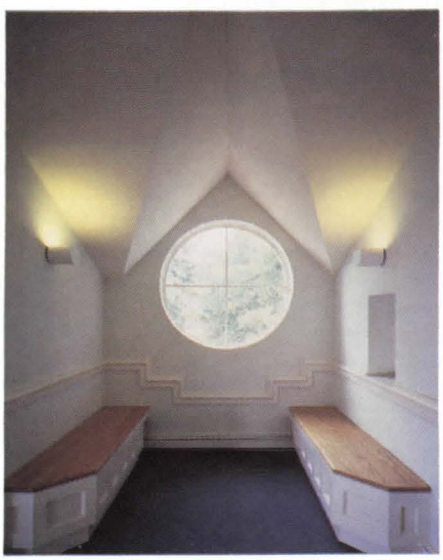


Capacity lost in renovating the Main Street houses was recaptured in a 50-bed addition to Musser Hall (below), whose location around the corner preserves the row's integrity and defines the backyard commons that lends it focus and recreation space. New and old wings are joined by a spreading red-roofed porch with a gable marking the entry, seconded by a top-floor oculus (bottom). On the interior, the wings meet at a bay-windowed living room (opposite) that, like upper lounges (bottom opposite), matches the charm of the old wing with simplified but generous moldings and banquettes, and adds garden views. Save for reticent gables, however, the new wing declines to ape the old, instead seeking affinity in small-scale detail. Medallioned, basket-weave brickwork, for example, relieves the flat facade and recalls both the variegated brick of the attached house and the patterning of another nearby, combining with the stylized columned porch and "decorative" forked downspouts to capture the spirit of the original ensemble.

Peter Olson photos



Residential Village
Ursinus College
Collegeville, Pennsylvania
Architect:
Dagit • Saylor Architects—Peter M. Saylor, partner-in-charge; D. William Gregg, associate-in-charge; Reed Axelrod, project architect; Ben Kreger, Joanne Aitken, Patrice Lynch, Timothy Lisle, Ian Scott Gordon, David N. Snyder, Daniel J. Freeman, Heidi M. Boise, staff architects
Landscape architect:
Robert J. Fleming
Engineers:
McCormick, Taylor & Associates, Inc. (structural); Paul H. Yeomans, Inc. (mechanical/electrical)
General contractor:
Gorski Construction Company



Schooled in adversity

Western Wyoming College
Rock Springs, Wyoming
College Planning Associates,
A Joint Venture, Architects

Until recently, such renown as Rock Springs, Wyoming, (pop. 19,458) enjoyed came from national exposure on an early '70s segment of TV's "60 Minutes," which immortalized the town's retrogressive style of Wild West governance, a vintage blend of corruption, vice, and gunfighting. In the winter of 1981, however, the town staked a more enduring claim to eminence. At a time when economic thunderclouds had sent taxpayers in many communities scurrying for cover, the voters of Sweetwater County, an enclave of some 41,000 settlers in an area larger than New England, passed a $42-million bond issue to expand the Rock Springs campus of Western Wyoming College, which in 20 years had grown from classrooms in a high-school basement to a campus accommodating some 3,000 students.

The joint-venture planning team's direct charge was to triple the college's physical plant in anticipation of a like increase in enrollment, with emphasis on programs of special importance to the community: performing arts, sports, and technical education. Beyond the implicit hope that the college would embody the aspirations of a fast-growing territory, the agenda harbored the need to reconcile new construction with a campus best described as unprepossessing, and tame a uniquely forbidding environment.

To an eye conditioned by gentler terrain, or a mind's eye on which Wyoming's imprint is the picture-postcard grandeur of the Tetons to the north, the high rocky desert that stretches across the southwestern corner of the state is as alien as the face of Mars. Prey to the fluid forces of wind and water, the land seems, like the minute hand of a clock, imperceptibly to move. Its vegetation is sparse, spiky, and so stunted even the indestructible sagebrush is a dwarf variety known as "desert bonsai." The climate, natives joke, is July and winter. Rain is infrequent; snow falls early and often; and for eight months of the year freezing winds from the mountains to the west sear the landscape, dropping temperatures below zero and mocking the benignity of the high plain's crystalline air and intense sun.

Rock Springs, which emerged from this hostile terrain when the railway penetrated the desert, is a small-town assemblage that would be at home anywhere in the country. Here, however, the familiar forms seem tentative and insubstantial, discomfited by the fierce indifference of their surroundings.

The mismatch of natural and built environments was shared by the original buildings of Western Wyoming College, which huddled on the upper plateau of a high mesa that dominates the town's every approach. Drawn timidly aloof from the western cliff edge, the loose aggregation of one- and two-story '60s-schoolhouse-style structures denied its literal and symbolic prominence, turning to the community a toothless void bracketed by a trio of undistinguished dormitories to the north and a water tower on the south. Worse, the porousness of the composition—a misguided gesture to open space and views—drove students outdoors to travel between buildings, and exacted spendthrift energy demands from the poorly insulated buildings themselves.

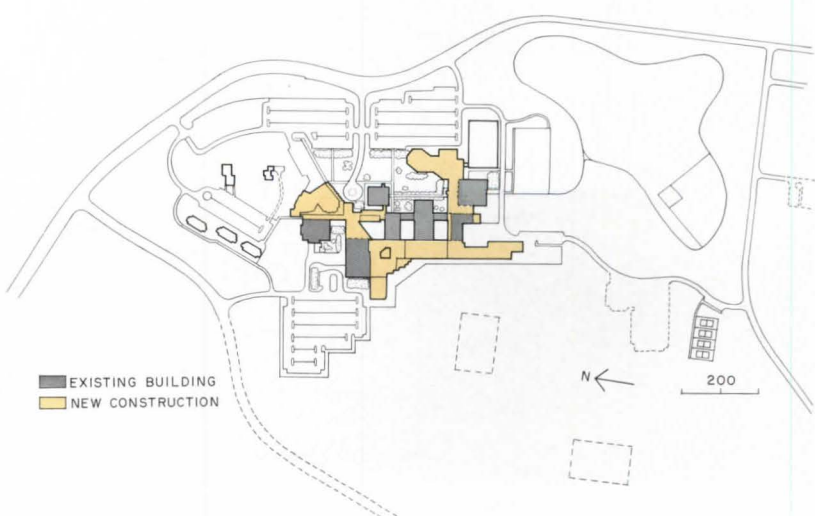
The expansion plan deftly repairs these defects of imagery and utility, while retaining and retrofitting the still-viable existing structures. Its genius, however, lies in the added program elements, whose design and disposition lucidly express the planners' respect for the unforgiving climate and rapport with the bleak beauty of the land. To preserve the natural landscape of the 287-acre campus bluff, expansion was confined to the 23-acre saddle already occupied by the college. With new facilities folded around the old, both were integrated in a compact but relaxed megastructure. On the interior, a network of "streets" provides protected circulation and some of the campus's liveliest spaces, including student gathering places at "street corners" dotted through the campus. In addition, the complex seals once-unusable gaps between buildings to form wind-shielded sun-pockets where students can bask in shirtsleeve comfort (plan, page 100).

Following the site's contours, the campus wears two faces. At the approach fronting on the flat eastern plateau, the large, complex volumes of new physical-education and performing-arts facilities (not yet completed) frame an irregular facade interspersed with landscaped lawns and niches bordering the collegiate *sine qua non* of a Great Lawn. The original classroom buildings at the campus core are used primarily for general studies, merging on the south with the physical-education complex. The new additions link the existing varsity gymnasium with an extension containing a new gym, handball courts, and a swimming pool enclosure, whose stepped profile gives the complex a distinct eastern edge and mediates the differing scale of the gyms and the low classroom structures. On the north, the original two-story library (now given over to arts instruction) and the performing-arts wing frame the formal entrance to the college. From the main entry a skylit, glass-walled thoroughfare (lined by such "downtown" spaces as student government offices, the campus radio station, and the bookstore) reaches diagonally west to the lobby of the new academic complex, and beyond to the adjoining atrium-commons that is the focus of the college's private life. The bulk of the academic structure houses, in addition to commons-centered activities and the library, the workaday spaces of engineering classrooms and shops, augmented by laboratories and other science-instruction facilities concentrated on two lower floors of the jutting, west-facing wing topped by administrative offices.

The academic complex presents itself to the town 200 feet below as a continuous, unapproachable, though highly visible, outgrowth of the escarpment it edges. Nonetheless, for the community it is this reclusive barrier, rather than the receptive front-door buildings, that has become the iconic symbol of the college. Spanning the full width of the plateau, the taut horizontal mass rises from ground-floor windows framed by an engaged arcade whose rhythm and sweep evoke the frozen motion of the landscape. The building profile also reprises the upward surge of the mesa in its modulated ascent from the 700-foot reach of the trades wing on the south to the three-story corner section, where it angles sharply around a draw and steps steeply down the town-facing westward slope.

The natural allegory continues in the strata-like coloration of the two-toned brick facade, with accents in the vivid rust-red of ferrous soil deposits and the subdued sage-green of desert scrub, but a new theme is introduced at the skyline. Adding a resonant image of settlement, a staccato streetscape of house-form monitors—actually modeled on the clerestories and coal tipples of the region's old mining sheds—strides briskly along the building's spine, spilling sunlight to the street below during the day and warming the night with glowing beacons. At the structure's inner angle, the glow kindles to a blaze of light pouring from the glass-and-steel fretwork of the commons—by day an intricate crystal springing from the structure's joined arms like the glittering heart of a geode struck from its flinty case. *M. F. G.*

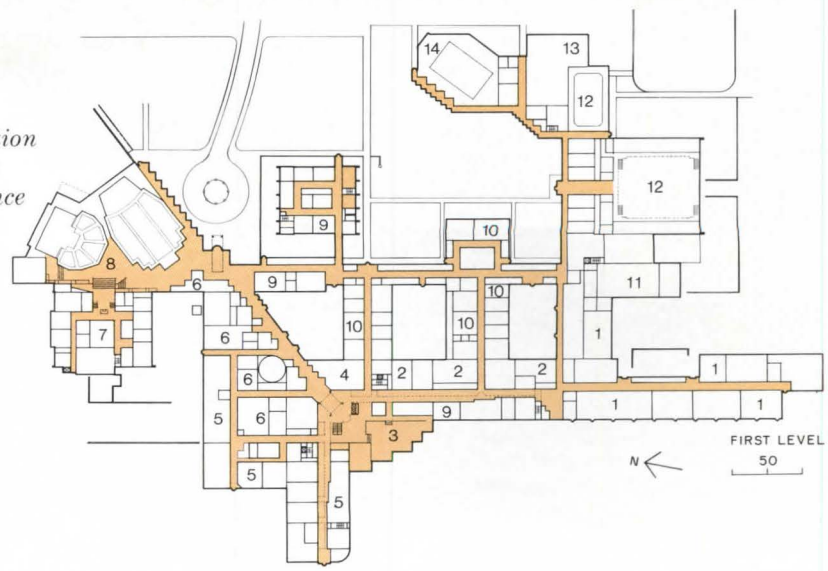
Reinforcing the escarpment it edges, the academic complex (below) forms a wind-shield for the central campus's checkerboard of buildings and courtyards, and the open lawns embraced by physical-education and performing-arts facilities at the eastern approach. From a leisurely 700-foot-long stretch of high-ceilinged shops in the trades wing on the south, the long, ground-hugging mass rises to a second-floor library surmounting ground-floor classrooms, then climbs to three stories before angling sharply down the western slope.



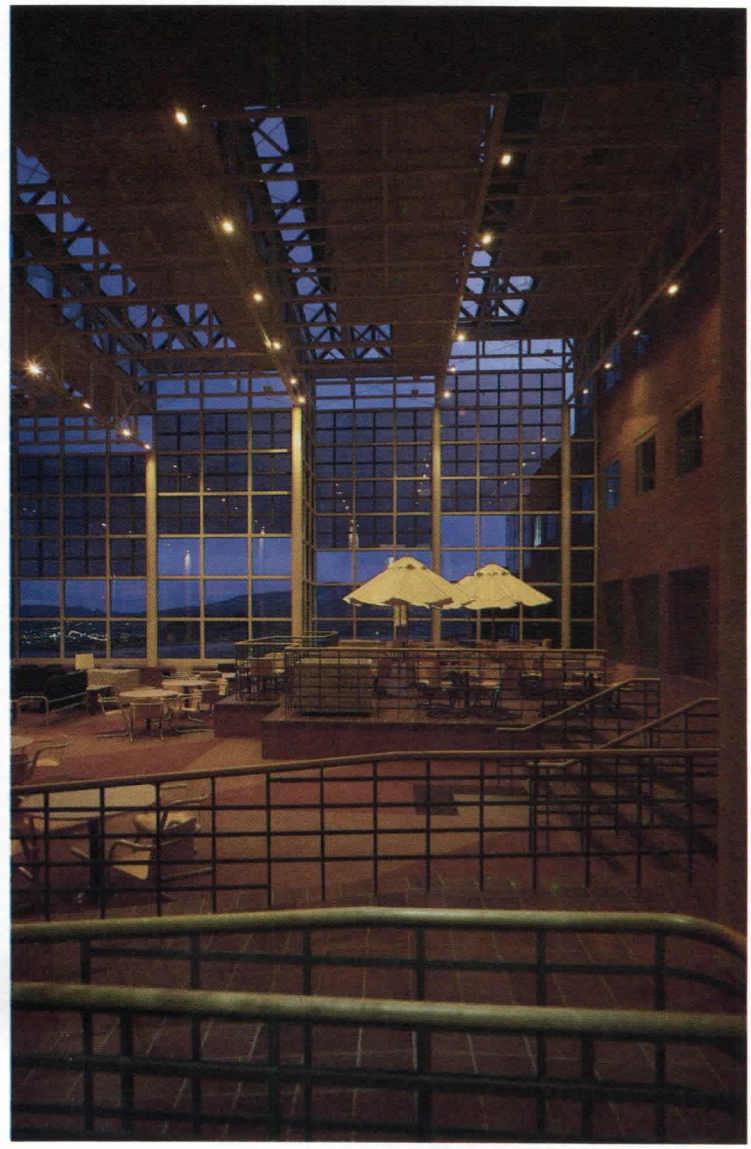
The coppery matte-surfaced brick cladding of the engaged arcade framing ground-floor windows shifts above to a sandy semi-glazed brick, a layering that emphasizes the building's horizontality and scales it to smaller existing structures. The bands also echo the striations of the rocky surround, while gray-green accents at spandrels and gable ends suggest the muted palette of desert plants. The natural harmony is counterpointed, however, by gabled rooftop light monitors and the crystalline cascade of the corner commons.

The vitality of the street is heightened by the roof monitors' outpouring of daylight. Uplighting at night mimics sunlight bounced to the monitor ceilings from the sills of deep-set windows. At the building corner, a vertical circulation lobby rising to the top-floor administrative suite (below left) overlooks the two-story library/classroom passage (below right). Between monitor-capped reading rooms at each end (left opposite), the library is divided to allow light to fall to the street below, and rejoined by glass bridges

1. *Trades and industry*
2. *Engineering/library*
3. *Commons*
4. *Bookstore*
5. *Sciences/administration*
6. *Arts/student services*
7. *Arts/dining/conference*
8. *Performing arts*
9. *Arts*
10. *General studies*
11. *Physical plant*
12. *Gym*
13. *Childcare*
14. *Pool*



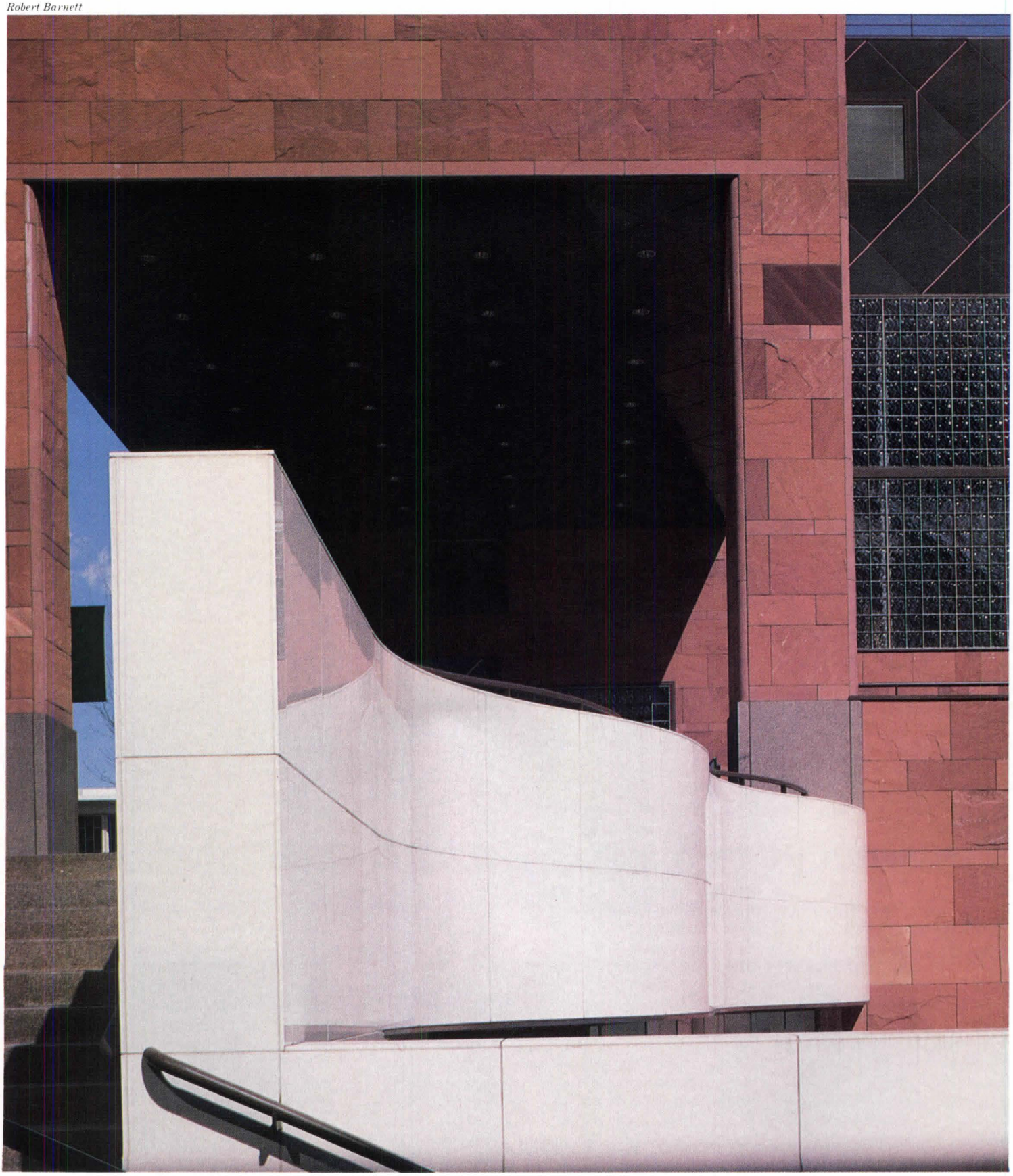
interspersed with projecting seating bays. Like the exterior, the interior climaxes in the airy cage of the commons and its stunning panorama of the mountains (below right). Because it is the campus living room as well as a showplace, sun penetration is adroitly controlled by the disposition of clear and tinted glass and the orientation of the skylights. The dramatic stepped profile graduates from the low-ceilinged intimacy of a lounge to an ebullient three-stories over the raised terrace of the Butch Cassady Memorial Grill.



Western Wyoming College
Rock Springs, Wyoming
Architects:
Campus Planning Associates, A Joint Venture
Sasaki Associates, Inc. (master planning and schematic design; landscape architecture; civil engineering; physical education, arts, and childcare facilities)—John B. Orcutt, principal-in-charge (architecture); Nelson Scott Smith, design partner; Hideo Sasaki, consultant; Richard F. Galehouse, principal-in-charge (planning and programming); N. Perry Chapman, planning and programming; Joseph A. Hibbard, landscape design; David A. Mittelstadt, site project manager; John B. Hawes Jr., architecture project manager; Henry S. Ricciuti, Leonard J. Staffa, Ella Svirsky, Heather Thompson-Ryan, Paul L. DiBona, John D. Barry (graphics), project team
Anderson Mason Dale (programming; academic, science, and trades facilities; library; commons)—John D. Anderson, principal-in-charge (programming); Ronald L. Mason, principal-in-charge (design/new construction); Curt Dale, joint-venture project manager; Martha Bennett, Thomas A. Gilmore, Donald R. Grody, Mark A. Outman, project team
BKLH Group (programming; interior design)—Timothy L. Kathka, Gary Loptein, principals-in-charge
Engineers:
KKBNA, Inc. (structural); Bridgers & Paxton Consulting Engineers (mechanical); Sol Flax and Associates (electrical); Chen and Associates (soils)
Consultants:
Bolt, Beranek and Newman, Inc. (acoustics); Alfred Scholze Associates (lighting); Rolf Jensen & Associates (life safety/code); Earl Walls Associates (laboratory); Parker Associates (telecommunications); Cini-Little Associates (food service); MIRA (educational programming); Associated Construction Consultants (cost estimating); ASCS (specifications); Johnson-Fermelia & Company (surveying); Milton F. Johnson (aquatics)
Construction manager:
Barton-Malow, Inc.
Contractors:
Bingham Mechanical of Wyoming (mechanical); Howard Electric (electrical)

When a building virtually comes alive by way of its highly animated materials, architects are bound to want a closer look. The details at the Museum of Contemporary Art in Los Angeles are a case in point.

Robert Barnett



The art of construction

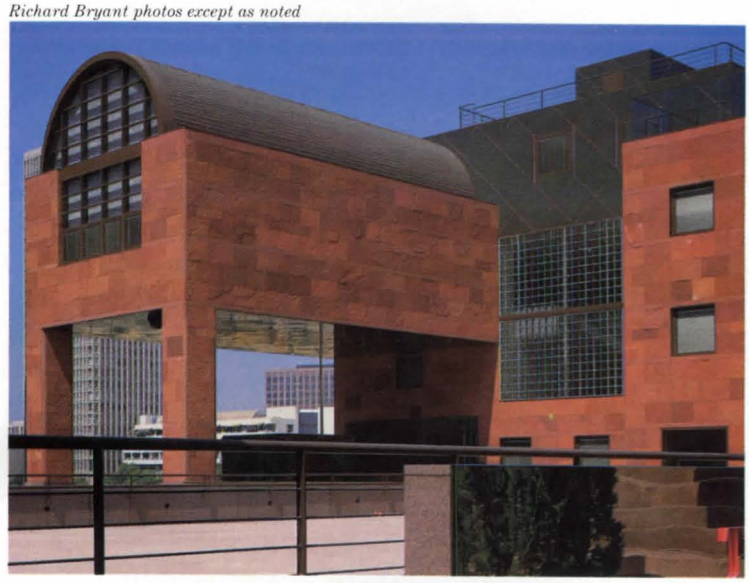
The art-of-making is never far from an architect's mind. However, some practitioners are more deeply concerned with the techniques and materials of construction than others. Among leading international figures, Arata Isozaki demonstrates one of the most profound commitments to the expressive potential inherent in building systems and materials, his projects deriving their strength from a rational approach to structure, light, and surface. Both intelligent and sensual, Isozaki's buildings have the power to move us and to charm. Since architects are bound to want a closer look at his first major project in the United States, the following pages concentrate on the craftsmanship at the Museum of Contemporary Art (MOCA) in Los Angeles.

The remarkable circumstances that gave rise to the building are now familiar. In 1979 the city of Los Angeles's Community Redevelopment Agency (CRA) offered for development an 11.2-acre site of uncommitted land on Bunker Hill. As a routine policy, the CRA stipulates that between 1.0 and 1.5 percent of the total budget of any development within its jurisdiction be set aside for the purchase of a work, or works, of public art. Although this policy was originally intended to result in the acquisition of art for placement in or near a new city building, it was interpreted for this project, through the initiative of Mayor Tom Bradley and the CRA, to provide funds for the construction of MOCA. The contract to develop the site was awarded to Bunker Hill Associates. The partnership regarded the museum with such enthusiasm that, in addition to providing $23 million for the construction of the MOCA building, it contributed $1 million in support of the museum's endowment.

The developers did, however, present one small obstacle. The location they designated for the building was within an existing five-story parking garage. The museum came to occupy two stories carved out of the top of the existing structure, with new construction held within the air-rights envelope of the site. The MOCA building, therefore, had to conform to the structural grid and shear walls already established. Isozaki continued the use of reinforced concrete, established by the garage, as the structural material for his scheme, developing a series of shear walls, bearing walls, waffle slabs, and post-tensioned beams to define the underlying volumes of the building (steel was used to frame the roofs over the galleries).

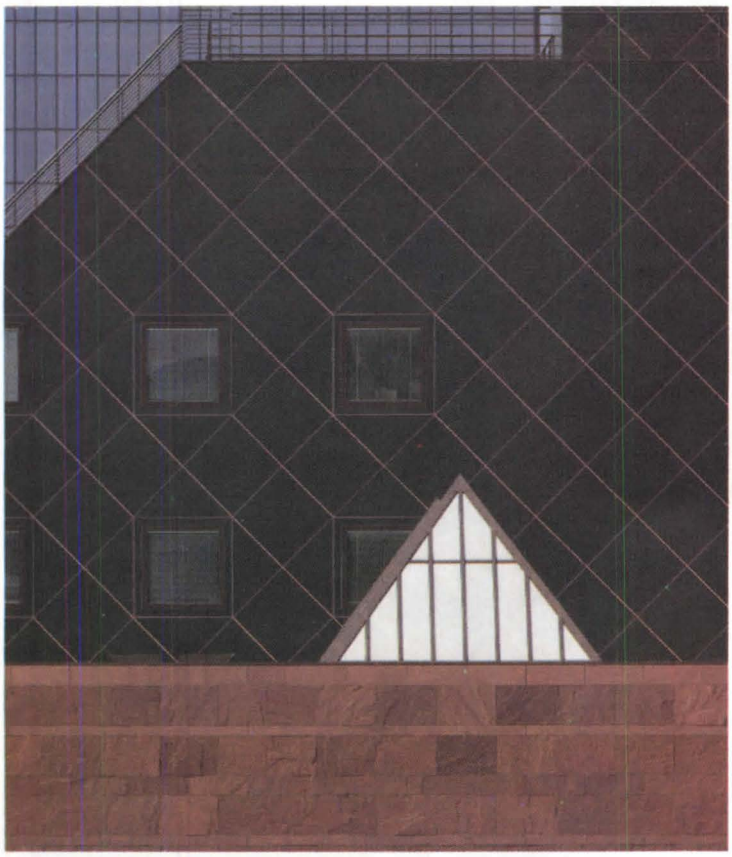
The critical role of coordinating all construction concerns was entrusted to the Los Angeles office of the Gruen Partnership. As explained by the project architect, Robert Barnett, Gruen's responsibility was to translate the Isozaki design into built form, which was a considerably more sophisticated undertaking than the usual production of working drawings and construction administration. Understandably, much of the building's technology had previously been developed by Isozaki in Japan around local codes and construction practices. Importing these methods to California required extensive research and testing to adapt the technologies for approval by our authorities, and to make them acceptable to the local construction industry. Gruen was instrumental in forging the close collaboration required between fabricators and designers to produce MOCA's innovative systems and unique materials. Taken together, the many productive relationships mark the difference between merely "making" and the "art-of-making." We are all the beneficiaries of this creative (and diplomatic) process when we visit this splendidly crafted museum. *Darl Rastorfer*

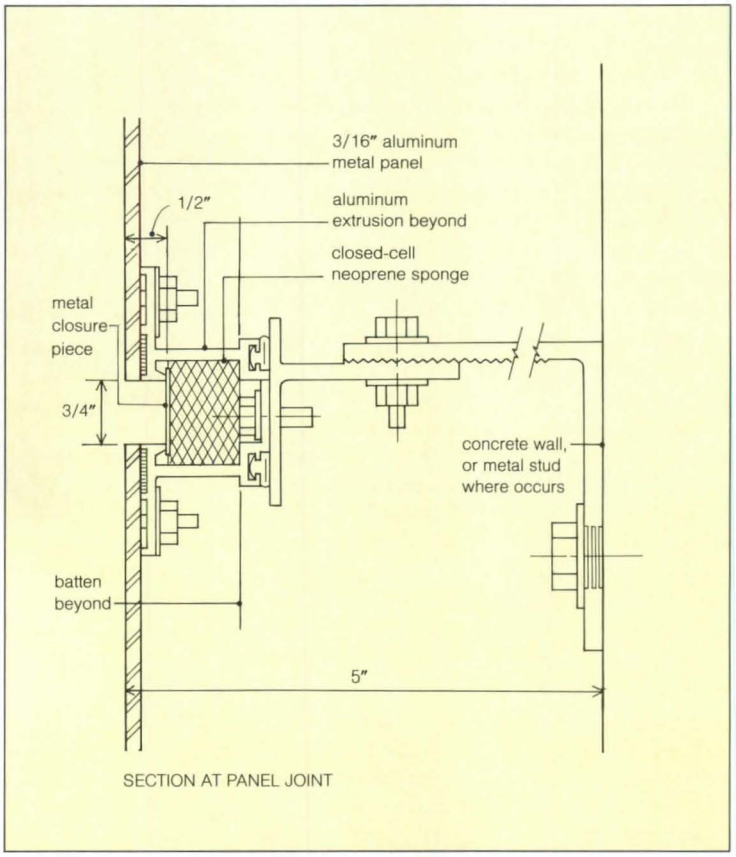
Richard Bryant photos except as noted



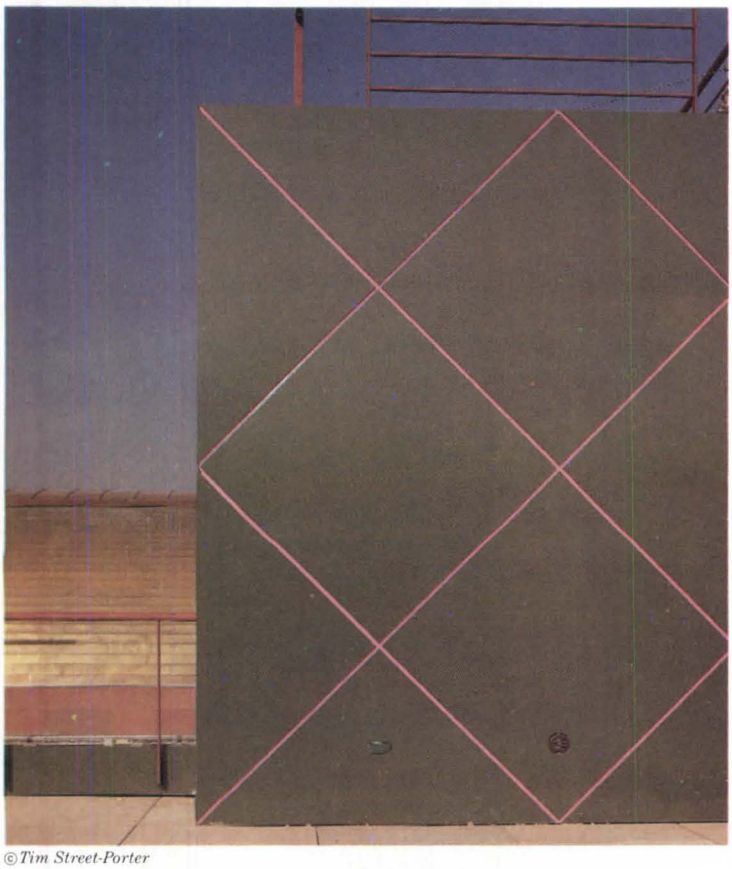
The single most memorable building material at MOCA is its red sandstone from India. Conventionally set with a strap-and-anchor system tied to concrete walls, the cladding is laid in alternating bands of cleft and honed-finished material. In the strong light of Southern California, the difference between rough- and smooth-surface finishes is shown to great advantage (bottom photo this page). The brilliant white wall at the entrance (opposite), sporting Isozaki's signature "Marilyn Monroe" curve, is made with a material that only recently has been introduced to the United States. The material is a form of crystallized glass manufactured by Nippon Electric Glass. At MOCA, the material is treated like a veneer, and is attached to the underlying concrete wall like the sandstone. It is, however, less than 1 in. thick, considerably stronger and more durable than natural stone, and can be formed in curvilinear shapes. It was chosen for its purity of color and its high sheen. The same surface is used at the entrance to the galleries (page 108).

Metal panels are placed high in the composition, reducing the apparent weight of the building as it ascends. The pink joints separating diagonally arranged 6-ft-square panels were dimensioned to be clearly read. As illustrated in the drawing below, the pink closure piece forming the joint is locked into place with a compressed neoprene gasket. Otherwise the system is typical, with clip anchors set in concrete, and a subframe bolted to the clips. Panels are joined at the corners with a miter detail (bottom left).





SECTION AT PANEL JOINT



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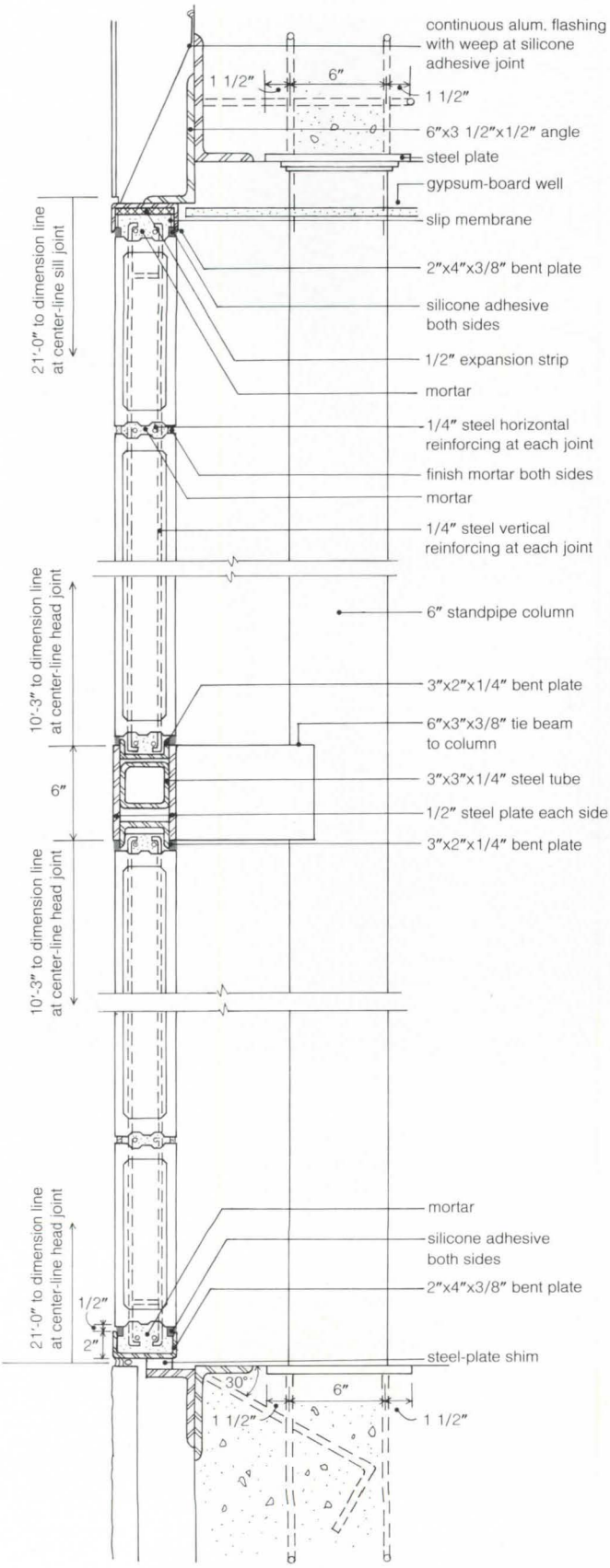
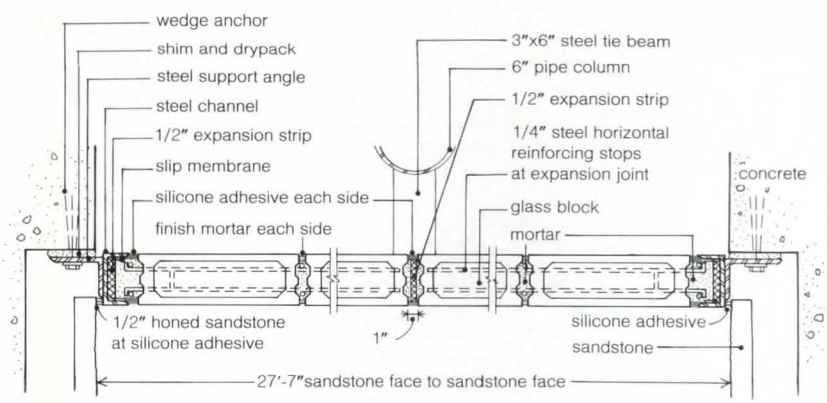
Robert Barnett

A system supporting the 20-by-30-ft glass-block wall at the stairway was derived from a Japanese prototype. In it, ladder-type reinforcing rods run within each vertical mortar joint. This network is tied to horizontal reinforcement at the top, bottom, and midpoint of the wall opening. The two hollow columns at the interior stabilize the wall at its midpoint. The system allows all block, even at the perimeter, to be fully exposed. The oversized block itself (12-in. square) was designed by Isozaki.

Robert Barnett

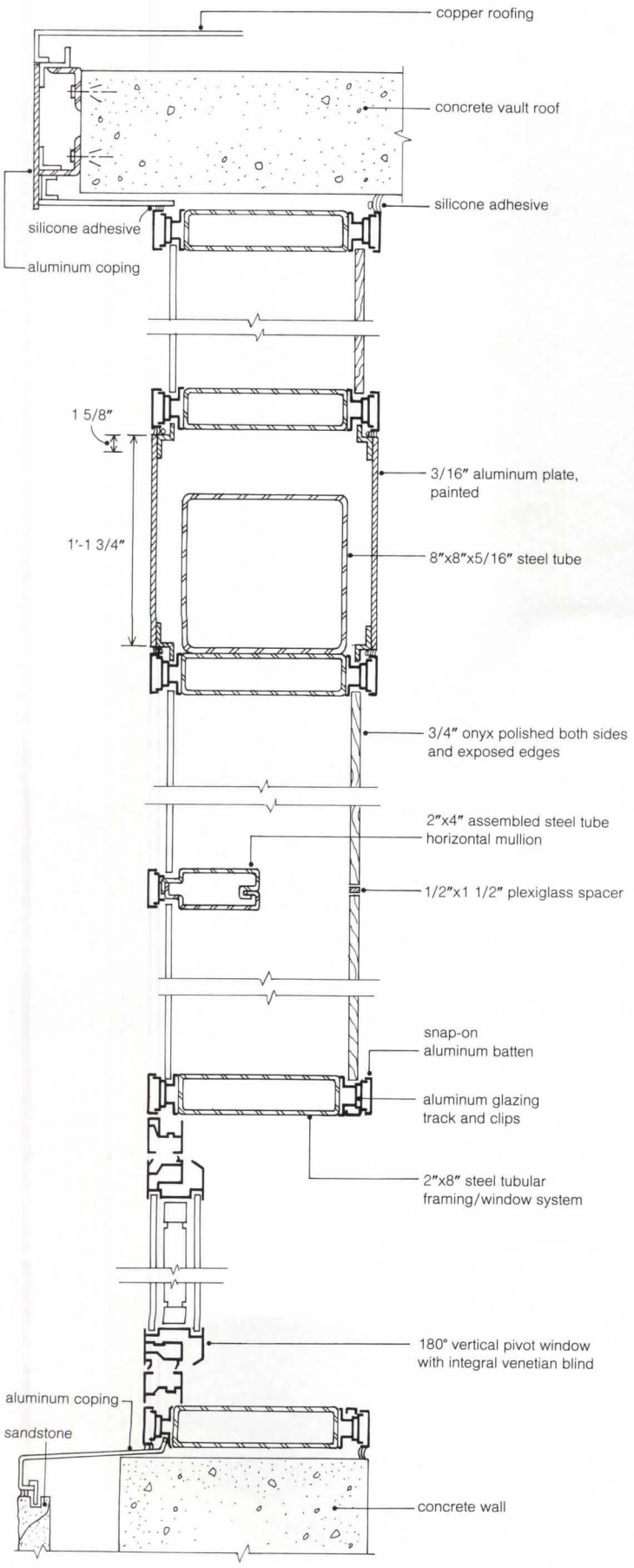


VERTICAL SECTION AT GLASS BLOCK WALL



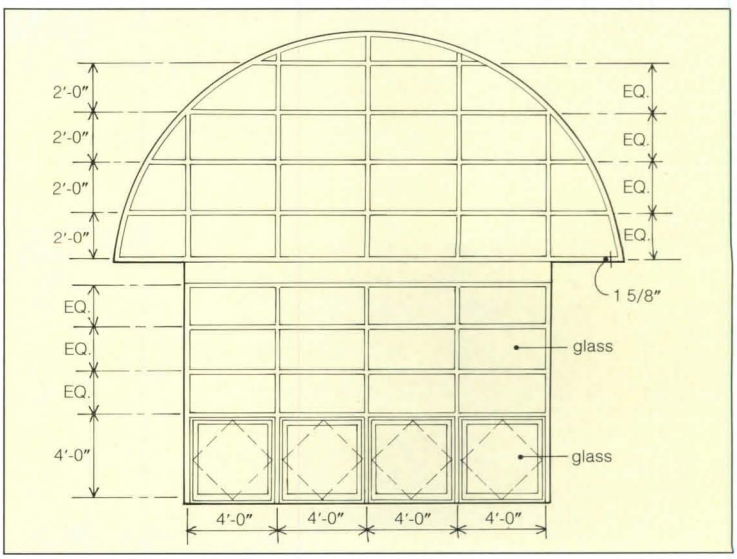
HORIZONTAL SECTION AT GLASS WALL

The library light, filtered through a curtain wall of translucent stone, has a calm, somewhat mysterious presence. The onyx used to create this effect presented a number of technical challenges. The stone's structural characteristics are inconsistent. Therefore, a conservative stance was taken in dimensioning the material and in designing its support and anchorage system. Also, onyx is not easily detailed for weathertightness. Therefore, an outer membrane of glass, with conventional mullions, provides the seal to the building



VERTICAL SECTION AT LIBRARY WINDOW


Robert Barnett



envelope (window section, and bottom left photo below). No mullions are used on the stone surface. Instead, plexiglass spacers run along horizontal joints, allowing weight to be transferred downward from one stone panel to the next. To reduce the amount of weight carried by each stone, panels are held to the frame by a compression gasket that transfers some of the stress directly to the vertical support. In the bottom panels, operable units with vision glass offer views to the courtyard below.

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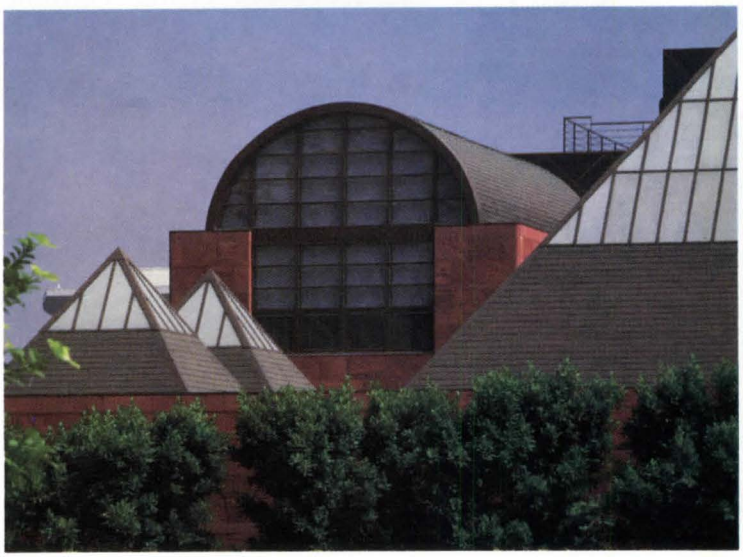
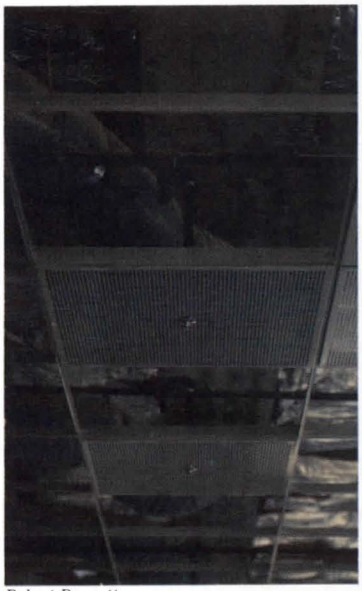
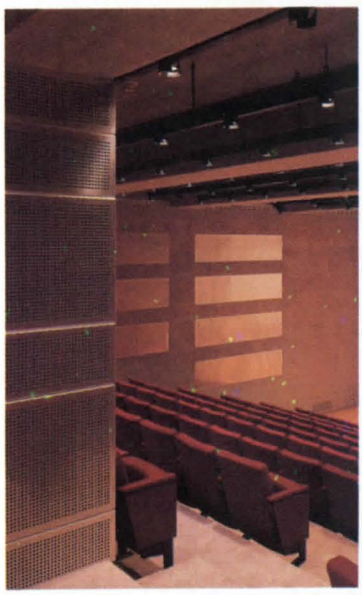


Crisp metalwork at all entrance lobbies, elevator cabs, the auditorium, and the board room presents a textural contrast to rougher surfaces such as granite and architectural concrete. The integrated suspended-ceiling system at entrances (below) is unusual both for the large dimension of its panels—3-ft square—and for the proportion of circular perforations to solid surface—50 percent. These features necessitated using rather thick sheet metal (1/8 in.), backed with ribs, to curtail deflection. Many things come together in this ceiling. The perforations provide acoustical control. In conjunction with fiberglass batting insulation above (opposite, upper left), they soften the sound in an area otherwise composed of hard, reflective surfaces. The same

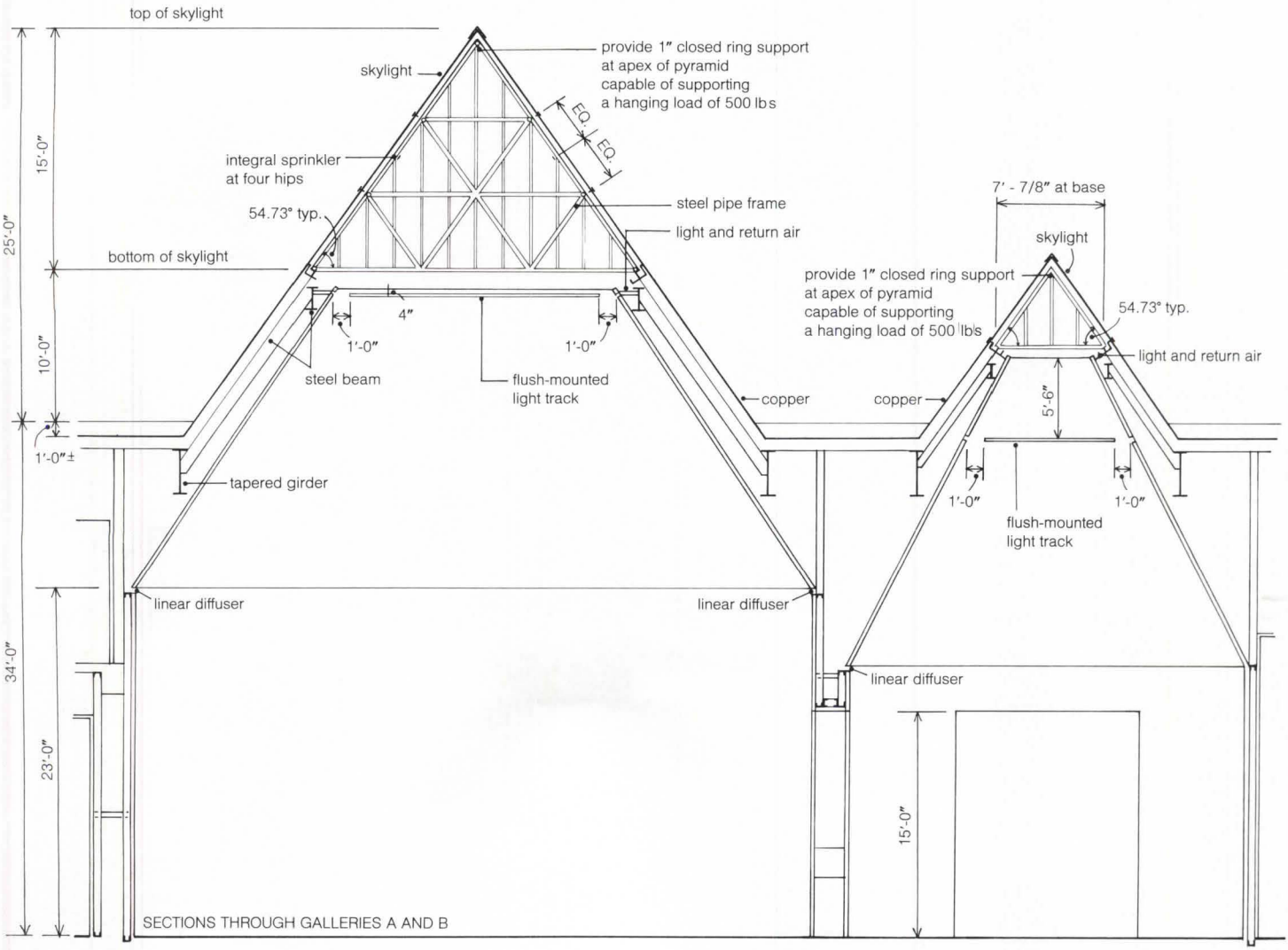
perforations serve for both air supply and return. The trim, reflectors for recessed downlights, and the sprinkler heads were selected to coordinate with the aluminum of the panel—a milled material with a clear lacquer coating. Perforated metal acoustical panels, also backed with absorptive fiberglass, were used in the walls of the auditorium (below, lower left). These too were specially engineered and fabricated for the project. In the board room (below right), a unique light fixture was designed by Isozaki in collaboration with lighting designer Paul Marantz. Here, perforations are used to diffuse integrated electric light. The metal on the back wall is perforated at the level of the vault and solid paneling below. As elsewhere, this aluminum is milled with a lacquer coating.



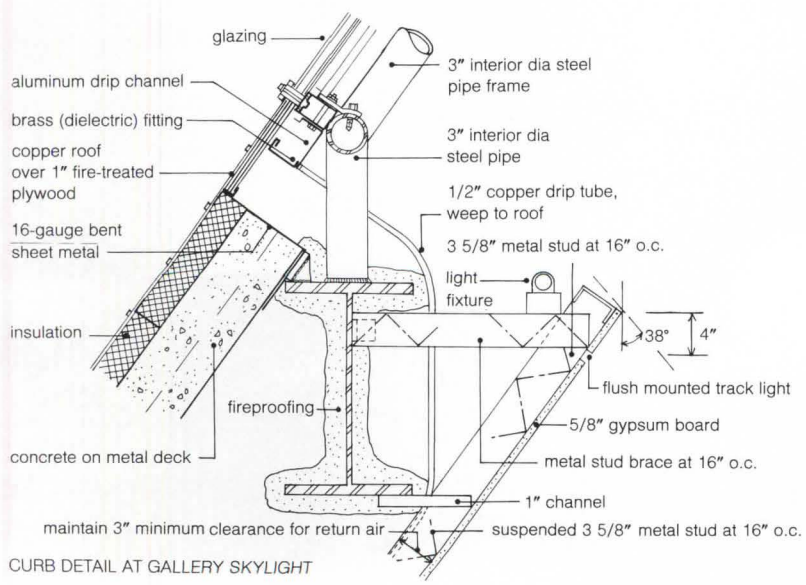
Robert Barnett



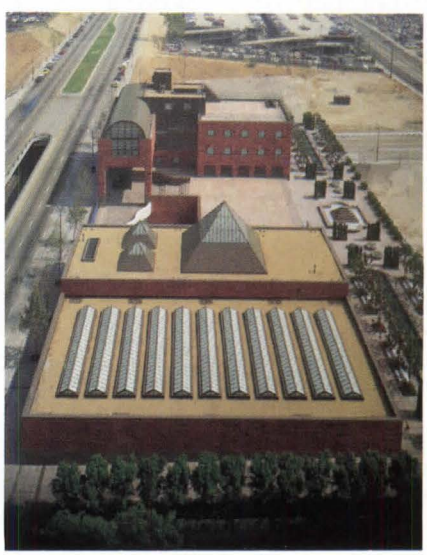
Geometry and light govern the sequence of spaces that comprise the galleries. The most spectacular space is under the grand pyramid (left portion of room section below, and opposite, upper left photo). The lower half of the pyramid serves as a baffle to the light; the upper half, a luminous surface. Here, in the skylighting in the smaller twin pyramidal galleries (opposite, lower left), in the galleries housed beneath the expansive, wedged-shaped ceiling (opposite, top right), and in the north galleries that incorporate traditional laylights, an innovative glazing product from West Germany was used. The product, OKA-LUX, has been used in recently constructed European museums. MOCA is the first building in the United States to use the material: the clients specifically requested it. OKA-LUX has an acrylic inner layer comprised of hollow fibers (like plastic macaroni) and a layer of fiberglass sandwiched between, and laminated to, two layers of glass. The perimeter is sealed so that the composition performs like an insulated



SECTIONS THROUGH GALLERIES A AND B

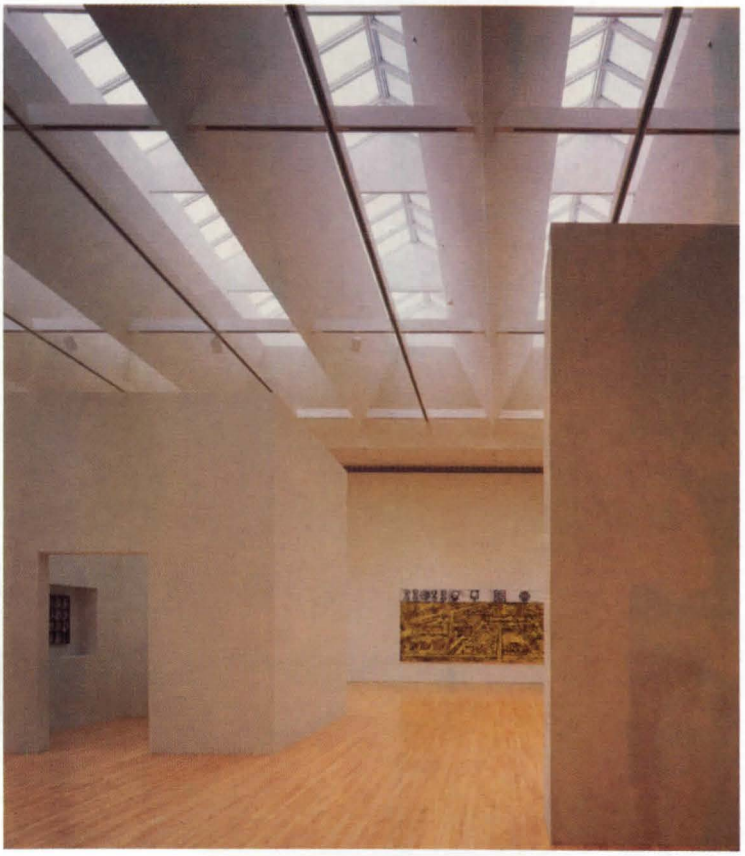


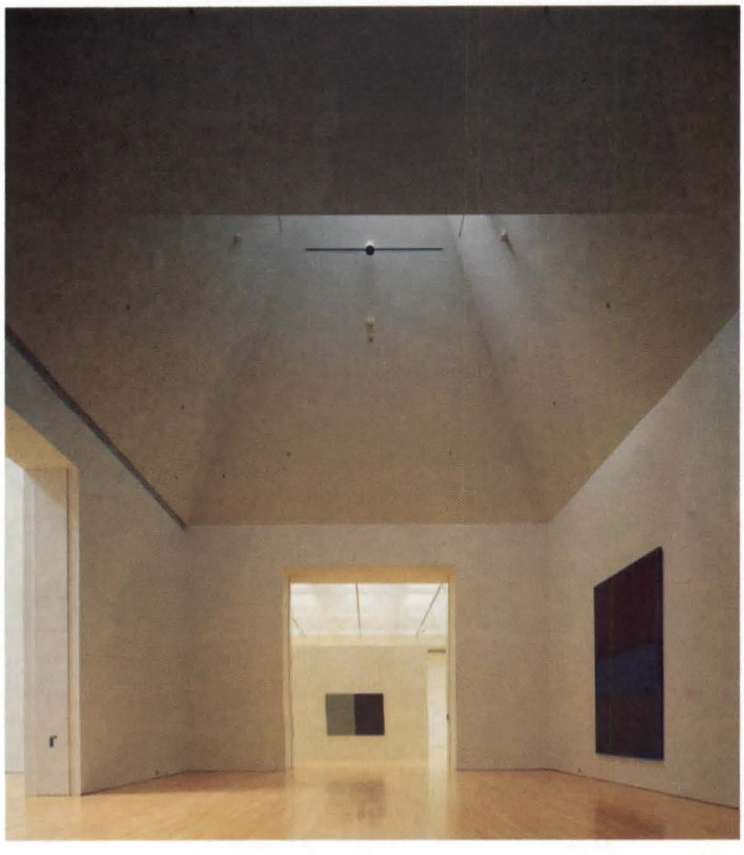
CURB DETAIL AT GALLERY SKYLIGHT

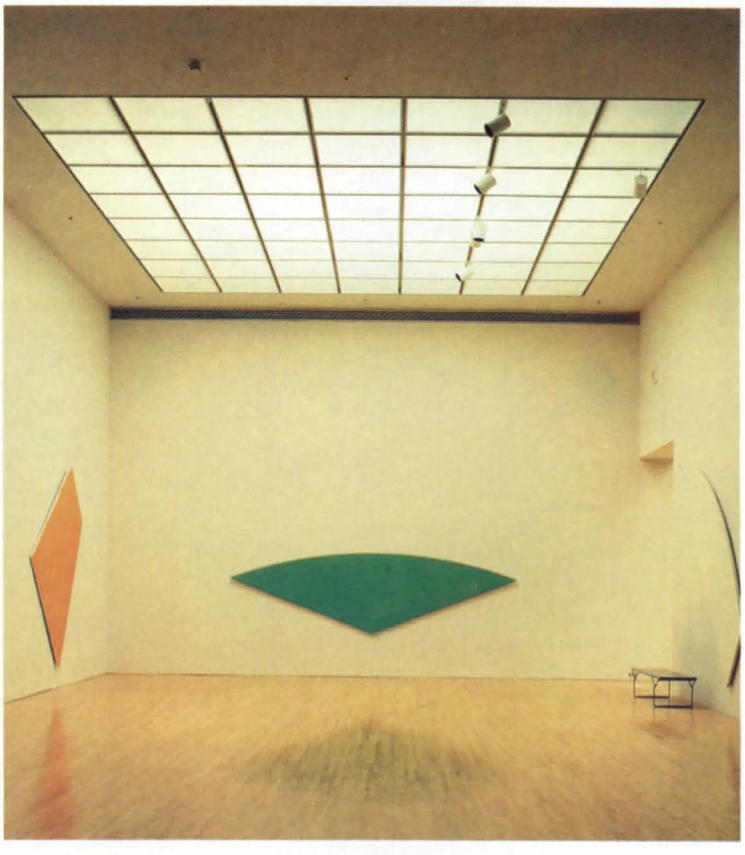


unit. The hollow-fiber, acrylic inner layer is loose. This layer filters the light, screening out ultraviolet while it insulates and contributes to the unit's shading coefficient. But the acrylic does not affect color, and transmits most of the sunlight it receives.

The Museum of Contemporary Art
Los Angeles, California
Developer:
Bunker Hill Associates
Museum architect:
Arata Isozaki & Associates
Architect:
Gruen Associates, Los Angeles
Engineers:
John A. Martin & Associates (structural); Syska & Hennessy (mechanical)
Consultants:
Jules Fisher & Paul Marantz, Inc. (lighting); Bolt, Beranek & Newman (acoustical/ audiovisual); Chermayeff & Geismar Associates (graphics) Gage-Babcock & Associates (fire protection); ABM Security Consulting; Marcy Goodwin, Nancy Rogers (interiors)
General contractor:
HCB Contractors







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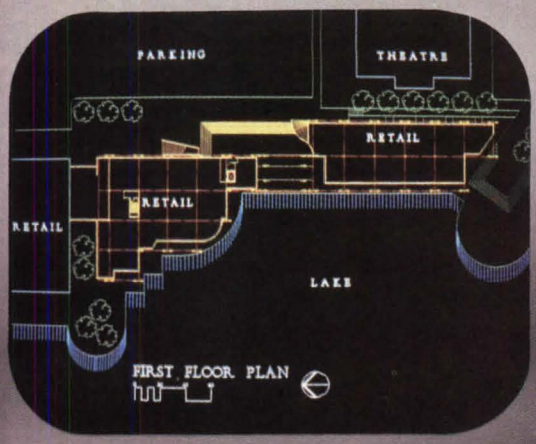
Finally, a CAD system created expressly for architects and building design professionals.



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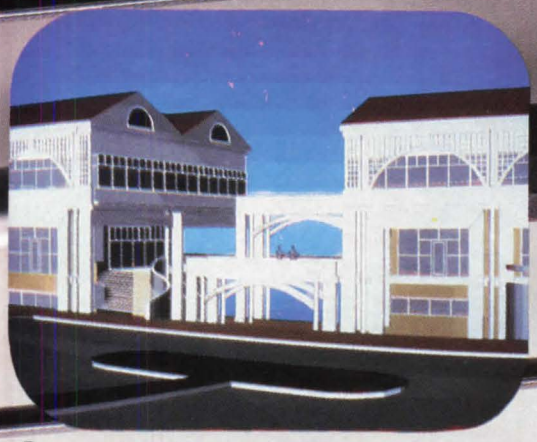

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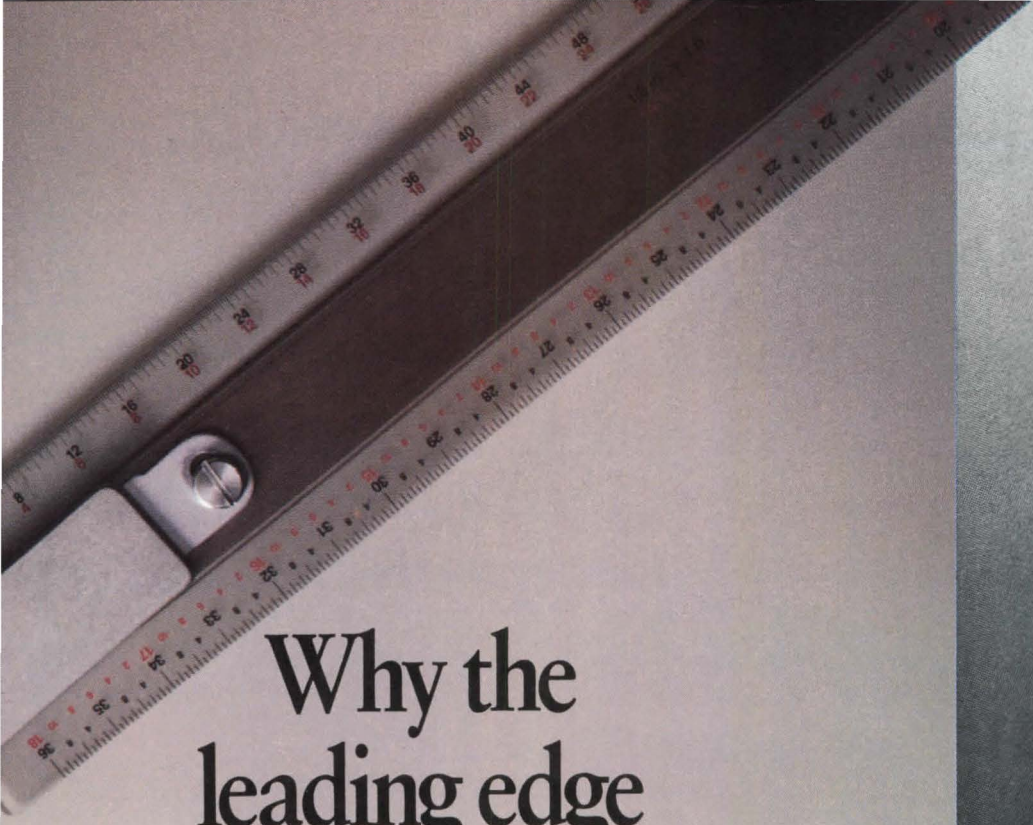

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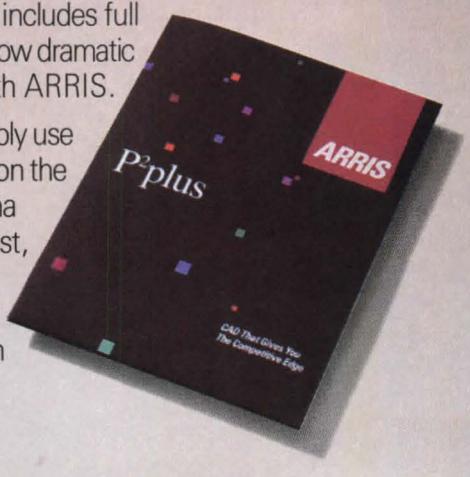

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New lights for old

A design team that included the architect, developer, window contractor, window fabricator, and technical and preservation consultants worked together—in one year, start to finish—to develop, manufacture, and install a new industrial sash.

Refuting conventional wisdom about fast-track design-by-committee, a collaborative effort has produced an esthetically pleasing and cost-effective new building component: a window system suitable for renovated lofts. Led by project manager Amir Man, of Huygens DiMella Shaffer and Associates, architects for One Forty Nine at Boston's Charleston Navy Yard, the design team (see credits, opposite page) dealt with a number of specific fenestration problems in adapting this 650,000-sq-ft industrial structure into office and retail space for a private development firm.

The World War I-vintage reinforced-concrete structure (a National Historic Landmark) had 500 window openings, each with four, side-by-side steel-framed units, with true divided lights held in narrow (7/8-in.-wide) cove-bead muntins. The two center units, with 20 lights each, included an operable, 6-light hopper; each 16-light outer unit was fixed. After an on-site inspection in 1984 failed to find any useable sash, the architects decided to replace the windows completely, and to lower the parapet height to improve the view for the new office tenants.

Among the options initially considered were single-pane mullioned steel windows (which required an expensive interior storm sash to meet energy-conservation requirements), and large insulating-glass units within the four-part division, with grids applied to give the appearance of the old multiple-light windows. The false-muntin design was rejected as historically inaccurate (a prime concern of the Boston Redevelopment Authority, landlord of the Yard) and structurally unsound, thereby possibly voiding the glass manufacturer's warranty.

The team decided to design a custom, divided-light system, setting small, double-paned, tempered-glass insulating units into new aluminum mullions only a bit wider than the original ones. A major design concern was to match as closely as possible the sight-lines and shapes of the original steel muntins while providing weep holes and channels to draw out built-up moisture.

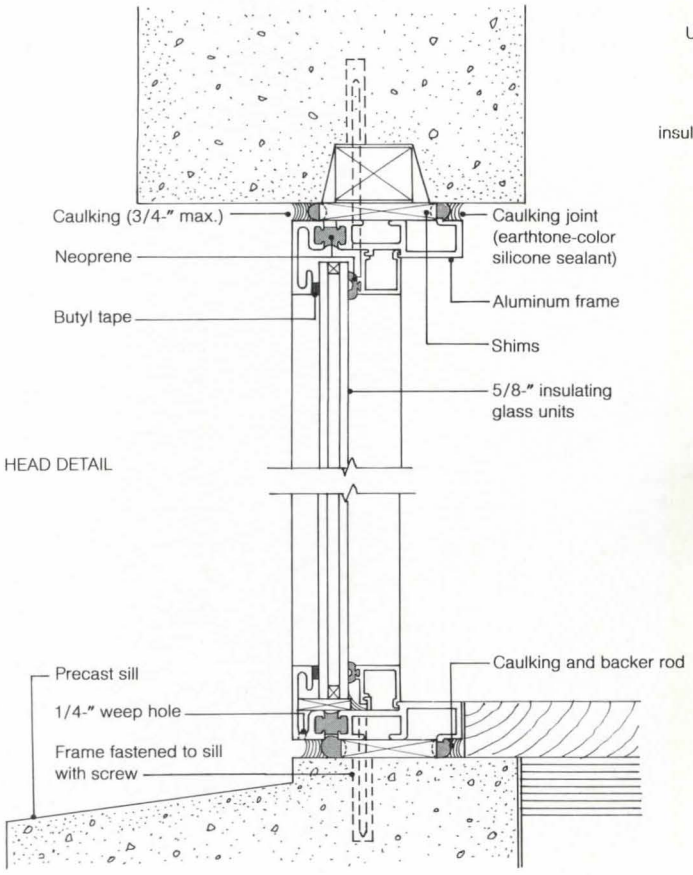
The actual number of divided-light panes within the 500 openings was reduced, reflecting the increased height of the new frames, but the vertical orientation of the glass was retained. The structural capacity of the aluminum frame precluded a 6-light ventilation hopper; a smaller one, of 1 to 3 lights, was feasible, but considered too expensive for a speculative office building. The nine different custom extrusions used in the various window configurations have frames .020-in. thicker than standard. Some windows on the upper levels and at corners needed steel reinforcing rods to meet high wind-load requirements.

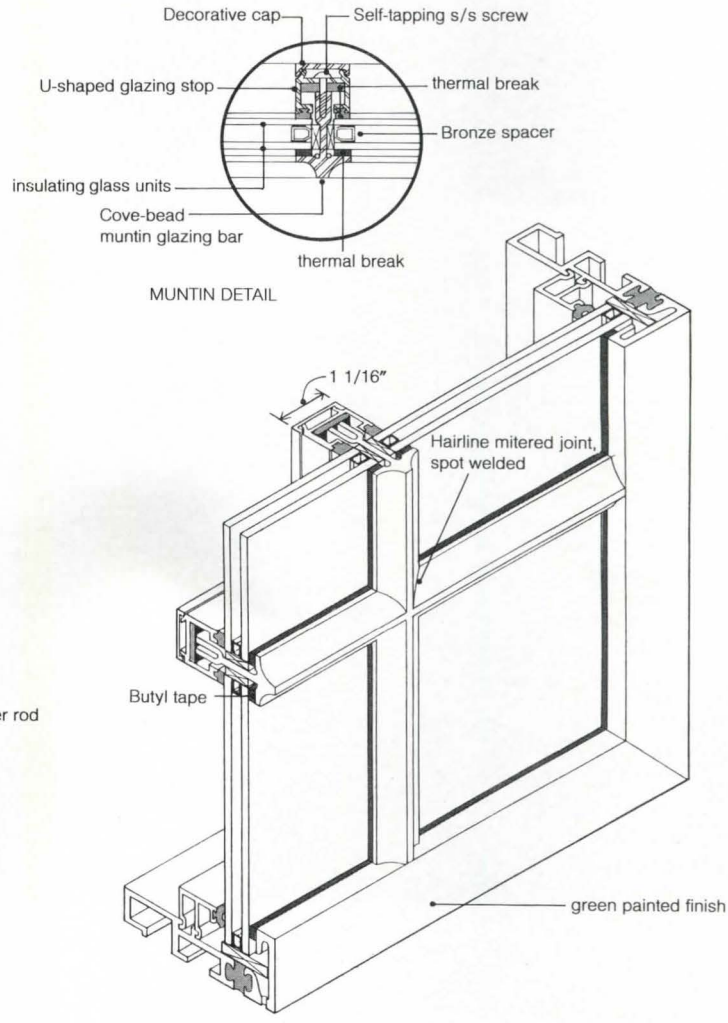
Horizontal muntins continue across the window unit for strength, and are attached to vertical muntins with hairline miter joints secured with spot welds. The designers elected to paint frame and mullions green, to blend with other windows in the Navy Yard and to minimize the thickness of the muntins when viewed from the interior. A full-scale mockup of the final design was approved as an A-3 high-performance commercial window. Tests measured structural strength, the efficiency of the weep-hole system, and resistance to air and water infiltration. The National Park Service and the Boston Redevelopment Authority reviewed the window for historical appropriateness. The cost for window development, manufacture, and installation averaged about $29 per sq ft.

Joan F. Blatterman

The original nongalvanized steel windows had deteriorated beyond repair (left). Extensive rusting and racking of frames had damaged the concrete sills and jambs, and the uneven openings impeded installation. Dimensional detailing of the frame caulking joint allowed for irregularities in opening sizes. The new custom-extruded window system (above and opposite top) retains the appearance and sight-lines of the original industrial sash. New precast-concrete sills were installed, and the aluminum frame was bolted directly into the masonry surround.

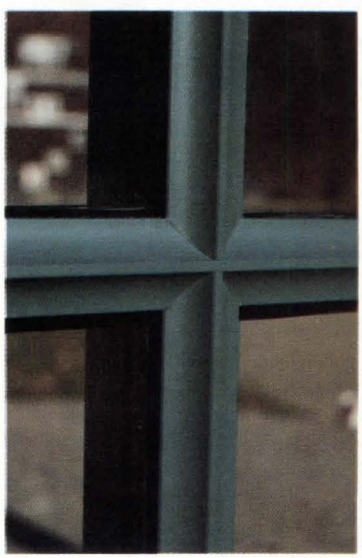
David Hewitt





The head and sill sections (above) show the insulated glass units held in the 1 1/2 in.-deep frame. Tempered glass meets Boston Fire Department requirements for emergency access, and eliminates the need for smoke vents in the tenant spaces. The muntin assembly, shown in the right hand drawings, consists of three extruded sections. The exterior muntin has a cove-bead profile only 1 1/16-in. wide, with a slotted leg extending between the glass units. The interior muntin, a U-shaped glazing stop, is connected to this leg by self-tapping screws concealed with a snap-on cover, a skylight technique that contributes to the strength of the assembly. Neoprene wedges, gaskets, and butyl tape form a thermal break; the only short circuit is at the screw connection. Bronze-colored spacers minimize apparent intrusion into the field of vision. The muntin profile (right) shows the hairline miter joint, sealed with silicone.

One Forty Nine at the Navy Yard, Boston
Owner:
Navy Yard Biotechnical L.P./ The Raymond Group



Original developer:
The Congress Group
Restoration architect:
Huygens DiMella Shaffer and Associates, Inc.
Construction manager:
Morse/Diesel, Inc.
Consultants:
Thompson and Lichtner (window and facade restoration); The Dallas Laboratories (performance testing); Heritage Group (preservation).
Window manufacturer:
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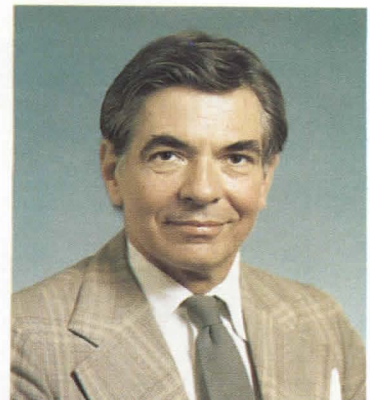


Software reviews for architects

By Steven S. Ross

AutoShade 1.0

An add-in program that operates with AutoCAD version 2.6 and higher, allowing the addition of lighting and shading effects and the creation of computerized "slide shows" to AutoCAD drawings.
Equipment required: IBM PC, XT, AT or PS/2 family computer or compatible; 640K, hard disk (a minimum of 20 megabytes recommended); coprocessor chip (8087, 80287, 80387). Most graphics-display monitors are supported directly, at least in MDA, CGA, EGA, PGA, or Hercules mode. A laser printer equipped with Postscript driver (color or monochrome) can serve as a convenient hardcopy-output device, or AutoShade can create "rendering files" as 256-color or continuous-color art. AutoShade also works with AutoCAD's own Autodesk Device Interface.
Vendor: Autodesk, Inc., 2320 Marinship Way, Sausalito, Calif. 94965. (415-331-0356).
Price: $500.

Summary
Manual: Clearly, even entertainingly, written. Takes users through a simple tutorial and explanation of AutoShade features. Installation advice is sketchy, however. New AutoCAD users—those trying to install AutoCAD and AutoShade for the first time—will probably find the instructions impossible, unless they have a firm grasp of PC-DOS or MS-DOS.
Ease of use: Excellent.
Error-trapping: Good. But there are some places users can go astray. It is possible to create a "filmroll," or collection of scenes for shading, without actually specifying scenes themselves. AutoCAD will also overwrite existing filmroll files with new files of the same name, but without keeping a backup file.

First, the disappointing part: AutoShade does not work totally within AutoCAD. Some AutoShade functions, like other AutoCAD add-ons, can be accessed from AutoCAD's own menu. Those functions are used to add lights and "cameras" (viewpoints) to an existing AutoCAD drawing, to create "scenes" in which specific "cameras" and lights are centered on specific views, and to combine the scenes into "filmrolls." The user then exits AutoCAD and invokes AutoShade from the operating system. (It helps if all the AutoCAD and AutoShade files are in the same subdirectory.

Now the good part: The scenes created in AutoCAD are not inviolate. Once inside AutoShade, users can move cameras around, change their lens, focal length, change surface reflectivity and light intensity, change the order of scenes for a final presentation, and even clip or crop the image (in depth as well as height and width, to knock out foregrounds or backgrounds). AutoShade is also quite fast. The tutorial describes using AutoShade with an interior (an office work area). That scene can be read off the filmroll, checked by having AutoShade draw a quick wireframe view, and fully shaded—all in less than five minutes.

For the illustrations in this review, I used a far more complicated drawing, the familiar one of St Paul's Cathedral that comes with AutoCAD itself. To prepare the art for AutoShade (after installing it into AutoCAD), I read the drawing into AutoCAD, then invoked ASHADE on the AutoCAD menu. This brought up the AutoShade command choices. At this point, you can locate lights and cameras on the drawing by specifying their coordinates at the AutoCAD command line. This is recommended in the AutoShade manual.

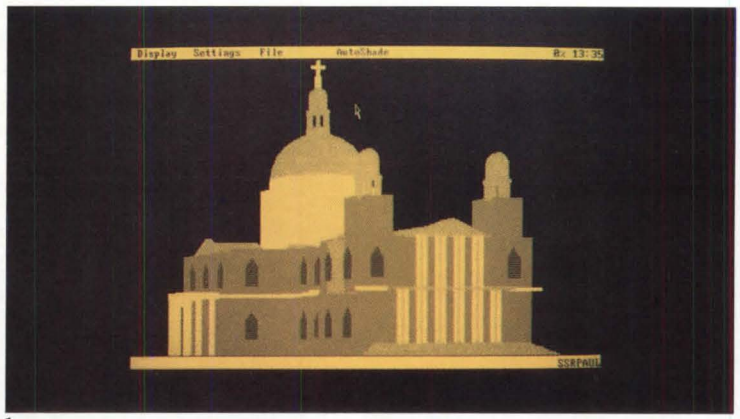
After lights and cameras, choose the "action" option on the menu. You are prompted to create a "filmroll" and name a "scene." You can make as many scenes as you want, up to the limits of disk space. Each scene takes a bit more disk space than the original drawing, so it is easy to create a filmroll larger than a megabyte. You specify which lights and cameras to use for each scene, and what parts of the drawing should be central.

Once all the scenes are made, you save the filmroll, quit AutoCAD, and rev up AutoShade.

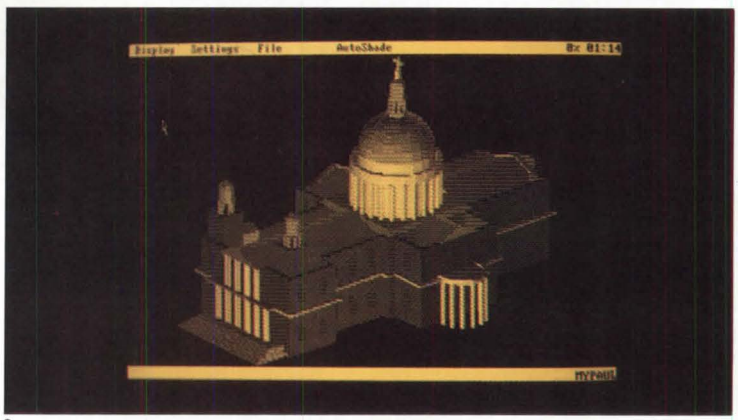
Shading a full view of the cathedral using the "fastshade" option took about five minutes on an AT compatible running at a standard speed of 6 MHz, with a standard Hercules monochrome card (no graphic accelerator board). Using the "fullshade" command provides a more accurate rendering, but takes much longer to draw on-screen. A full view of the cathedral took an hour to show, mainly because the software continuously went back to the hard disk. Putting the filmroll into a RAM disk (in memory above the 640K that can be directly accessed by PC-DOS and MS-DOS) cut the time by two-thirds.

The effect is that of sticking an interior, or even an entire building, inside a giant photographic studio, with all the lighting and camera equipment

Drawing of St. Paul's Cathedral using several variations of AutoShade. 1. "Fastshade" option, low-contrast view. 2. Bird's eye view using wide-angle 10-mm lens.



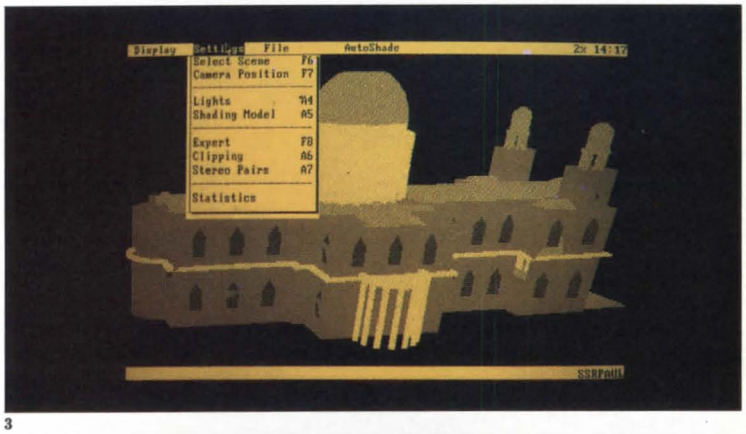
1



2

Steven S. Ross is past president of CCM, an educational software company in New York City, and now teaches journalism at Columbia University, where he also runs a large computing laboratory for students. He is often consulted on quality-assurance matters; his latest book, Construction Disasters: Design Failures, Causes and Prevention, *was published by McGraw-Hill in 1984.*

3. 45° off ground, showing AutoShade menu, using 20-mm lens.
4. A higher-contrast view of St. Paul's using "fullshade." Note small difference between it and fastshade.



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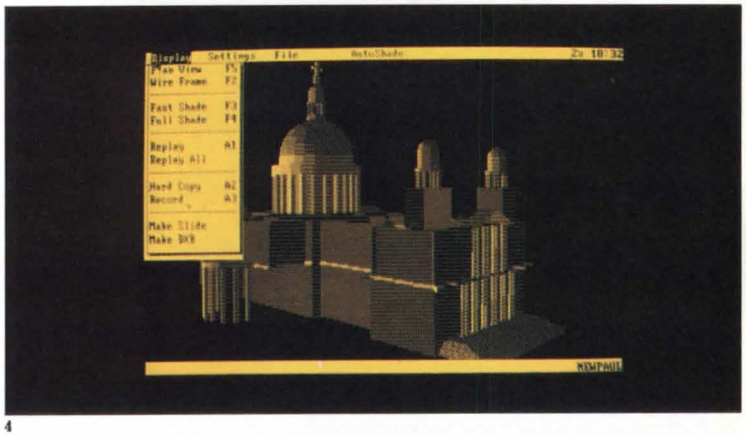


4

you could ever desire. How about a 5-mm lens for ultra-wide, ultra-distorted views? Compressing or extending contrast scales? Users can even create stereo pairs that can be viewed with a stereoscope or transferred to slides for a 3-D effect. AutoShade can spin out color separations for printing.

AutoShade helps the inexperienced user, too. Target the camera into empty space, and the software suggests a correct aiming point, or perhaps suggests moving the camera backward to take in a wider view. If you are a beginner using fairly inexpensive, slow equipment, say a $3,000 AT clone, you can write an AutoShade "script" of commands in sequence to make and save pictures, or to run an automated "show," all unattended.

AutoShade wireframe perspective renderings can also be inserted back into AutoCAD. A perspective, for instance, can be placed into the title block of a floor-plan drawing, or plan views can be extracted from a 3-D AutoCAD model. For those with color systems, especially the IBM PGA board, the riches become embarrassing. AutoShade includes an interactive color design program that allows users to play with 256 colors—each with a separate setting for hue, brightness, and saturation.

One minor annoyance: Pointing devices directly supported by this version of AutoShade are the Microsoft Mouse, a joystick or Koala pad, or keyboard cursor keys. Like many AutoCAD users, I use a digitizing tablet, an option that would have been neater had it been offered.

Menu-driven bill-of-materials processor and documentation-control system is relatively cheap and easy, and could be useful in smaller offices.

BMP: Bill of Materials Plus, version 5.0

A menu-driven bill of materials processor and documentation-control system that can (with the optional A2B package) read data from AutoCAD drawing files. The software requires only the simplest of IBM or IBM-compatible equipment to run.
Equipment required: IBM PC, XT, AT, or PS/2 computer or compatible; 128K; two disk drives (a hard disk is strongly recommended to hold project files). PC-DOS or MS-DOS version 2.1 or later, 132-column printer (a cheap dot-matrix printer with compressed print capability will print 132 characters across a sheet 8.5 inches wide).
Vendor: C. R. Smolin, Inc., 7760 Fay Avenue, Suite J, La Jolla, Calif. 92037 (619-454-3404).
Price: BMP: Bill of Materials Plus is $995. The A2B AutoCAD to BMP interface is an additional $195. A good demo of both systems together is $50.

Summary
Manual: Good.
Ease of use: Fair. The software is menu-driven and fast compared to alternatives such as programming your own system in dBase III. No on-line help available. When picking ranges for parts sorting, there's no confirmation of the beginning and end of identification numbers in a database. All add-on programs can be run from a common menu.

Error-trapping: Fair. It is impossible to enter duplicate numbers, parts names, and so forth. Unless a part name or assembly number is entered exactly, however, no match will be found. There's a good disk-based audit add-on available to keep track of changes (DAUDIT, for $195). But it, in turn, requires another add-on (E-Z-MRP, a materials requirements forecasting package, $1,495).

The vendor does not recommend running the software on a network (for simultaneous entry of data from two terminals, for instance) because there's no internal data locking. That is, there's no sure way for the software to detect changes made in the database from one terminal while the other is accessing the files. The database can, however, be password-protected, either to allow users to update data, or to view it only. Vendor warns that running out of disk space in the middle of a job can lead to data loss.

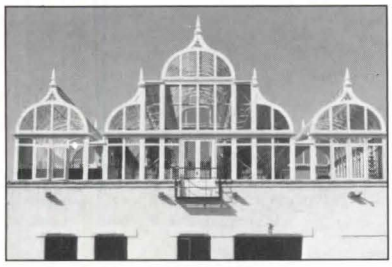
Small offices that have moved beyond using the computer only for word processing and billing, to CADD, soon run into a bottleneck that isn't immediately obvious to those still doing everything by hand: It is tough to reflect a change in the design drawings in the final materials list.

At first, the office will probably treat the task the same way it was done before CADD came along. That is, specifications will be read off the hardcopy, and retyped into a word-processing file. But the ease of playing with designs on a computer screen tends to lead to more design changes. Clients expect them, too. And the manual retyping—a task that seems innocuous when most other tasks are manual as well—looms as a bigger problem than ever.

BMP offers one approach to the problem for smaller offices. It is certainly not the only approach, but it is relatively cheap (both for the software and the hardware), proven in the field, and relatively easy. The program was originally created for manufacturing, where components and subassemblies come into the warehouse and

Continued on page 124

MACHIN
Architecture in glass



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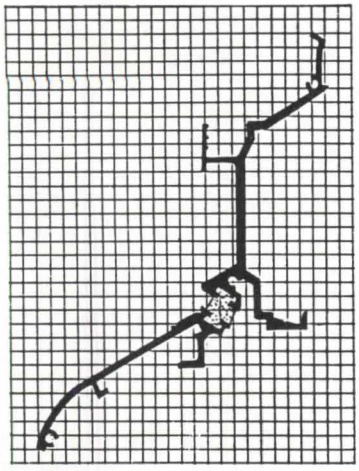

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Continued from page 123

final products emerge from the assembly line. Thus, there are add-on modules for capacity-planning and for materials-purchasing that are of limited usefulness to architects.

The core program is BMP: Bill of Materials Plus. It creates and maintains a list of parts, suppliers (even alternate suppliers), and prices. It can keep track of changes, and print out parts lists in a pleasing, indented-column format. The database can hold a description of each part (as long as 60 characters), can reference a specific drawing, and sort parts into broad classifications (structural steel, concrete, and so forth).

The software comes configured with column headings that are good for controlling quality of incoming assemblies and matching them to drawings. These can be changed by the user to reflect architectural-office terminology.

There are limits to the flexibility, however. Each part can have costs allocated for labor, materials, and overhead, with a separate allocation for subcontractor payments. But each cost item can be no greater than $999,999.99—fine for small projects, but not for recording big-ticket costs in a structure running, say, $5 million or more.

The BMP database consists of five separate files, sharing a common "extension" (the last three letters in the filename). The extension is the name of your file. So filenames are limited to three letters or numbers. A 1,000-record file (for 1,000 parts, perhaps) takes up about half a megabyte on a hard disk.

If you are using AutoCAD (any version that has the ADE-2 feature), and you are careful about setting up your drawing "attributes" file, you can have the AutoCAD drawing do some of the data entry for you, through A2B.

Continued on page 150

1	Exxon
2	General Motors
3	Mobil
4	Ford Motor
5	IBM
6	Texaco
7	E.I. du Pont
8	Standard Oil (Ind.)
9	Standard Oil of Cal.
10	General Electric
11	Gulf Oil
12	Atlantic Richfield
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Computers: Beyond working drawings

Three-dimensional architectural modeling and full-color simulation can change the way designers see, develop, and evaluate building designs.

By M. Stephen Zdepski and Glenn Goldman

Work by three professors, the authors and Filez Ozel, with their students at the New Jersey School of Architecture has integrated microcomputer graphics into that school's mainstream design curriculum. The mechanical means has been two aging off-the-shelf software systems—one that first creates wire-frame models and another that "paints" them to create solids, as well as draw in a more freehand fashion. However the models were achieved, the results point to profound changes in the way that future architects can view the design process—changes that will ease the transition between the initial conception and the final construction documents and preserve the impetus of that first inspiration. C. K. H.

Representing buildings by a single model, rather than plans, sections, and elevations, integrates design decisions usually separated by numerous drawings at different scales. The right computer system allows the designer to jump directly from a freehand sketch to a study that will let him see the results from all sides—and go on to develop his concept without backtracking. Viewing a design from many vantage points presents buildings and their surroundings as sequences of spaces and events as they will be seen when built.

The direct relationship between formal design issues, the analysis of design constraints, and the nature of computer modeling suggests that systems may be at least as important to the study of basic design and theory as they have been to technical drawing.

Why modeling capabilities beat two-dimensional drawings

Architects fundamentally deal with relationships in the design process—between the building and its environment, the building and its technology, its esthetic and function, etc. The layman chooses a new chair or wall color because he likes them. An architect chooses them because of their relationships to other characteristics of a room, which he needs to be able to see. For this reason, computer systems that are designed to draw in two dimensions, rather than create building models, tend to be highly abstract as design tools. Moreover, they have a technical-drawing library and vocabulary.

When a design is in its beginning stages, when ideas are most vague, and the variables most complex, a computer model assists in the construction of architectural concepts and decisions. It is at this time that the ability to jump from concept to model is most critical. Even the simplest wire-frame models illustrate the many concepts and interrelationships associated with beginning design.

Would Monticello have been the same if Thomas Jefferson had seen this computer model before it was built? Even the rendering technique has a subtle impact on perception.

Does modeling really spur creativity?

The transition from a personal design process and way of representation to a specific software system results in a controlled design process. But at NJSA, rather than mask the individuality of design work, the dynamics of computer systems encourage students to generate a greater variety of design concepts than in the conventional design studio setting. Having undertaken numerous architectural projects with both computer and noncomputer design, they have produced more variety of form, concept, site organization, and imagery with computers.

This is not to say that computers hinder traditional drawing skills. The free association between hand and eye when sketching early design concepts and forms is not simulated by computers. Even the most sketch-like software, known as "paint," does not replace the ease of those first inspirations usually carried out in soft pencil on yellow tracing paper or napkins. This may be the result of designers' previous education but, so far, our selection of computer software has not provided a viable alternative.

One reason is that, because of the exactness of the computer model, there is little ambiguity in its graphics. This tends to diminish adapting a drawing in ways not initially expected as you go along—a central mechanism in freehand sketching and the design process itself. However, once the concept is established, the early three-dimensional models, which change views dynamically, are, in themselves, a new form of conceptual drawing.

Because of computer models' limitations, one hopes that the desire and need for students to develop old-fashioned drawing skills will actually increase. The understanding of the built environment, the mechanisms which give it form, the concepts and theories by which it is created, and the development of personal design philosophies all have a long history of sketches and notes made both in the field and in the studio.

The computer model does not close the gap between thought and graphic representation. It is probable that one freehand sketch is remembered longer and more accurately than a series of computer images. Therefore the summation of freehand visual notes and sketches may continue to provide the fundamental basis for the development of one's *mental* library of architectural ideas and remembered experiences.

The three-dimensional model is most effective in linking freehand sketches to conventional drawings, color illustrations, and simplified animations. Rather than requiring one to proceed from freehand sketch to plan and section drawings, the computer model permits the immediate illustration of the sketch in three dimensions of even the simplest early design concepts. Students suggest that this often minimizes the loss of original intent. Three-dimensional modeling, when coupled with paint software, tends to lead the design process away from the technical aspects of architecture into the arena of illustration. Traditional CAD software tends

1987 index

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Readers using this index will find buildings entered in at least three ways: by architect's name, by building or owner's name, and by building type (banks, medical facilities, schools, etc.). Projects featured in Building Types Studies are identified by the abbreviation BTS before the page number.

Continued on page 136

The ease of creating design alternatives often frees the student whose basic architectural judgement may be weak from dogmatic allegiance to a bad idea or decision.

to lead the design process into technical development, sometimes prematurely.

All the design choices offered become an advantage

For those students who take to computer modeling, the creation of many choices becomes a way of finding the best solution and ultimately its architectural purpose and meaning. The easy and somewhat impersonal means of creating design alternatives with the computer often frees the student whose basic architectural judgement may be weak from dogmatic allegiance to a bad idea or decision. With few exceptions, design students using computers develop more design alternatives for a given problem than they would in a traditional studio.

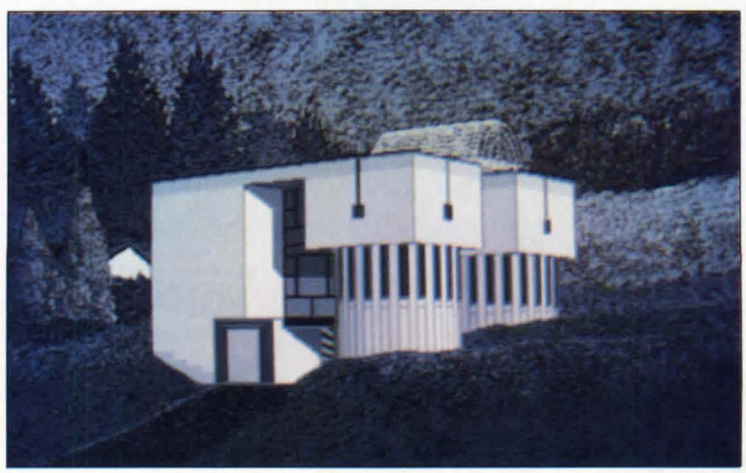
Often, the primary advantage of computer modeling is considered to be the representation of complex drawings. At the early stages of design, the computer-graphics systems are just as powerful in their creation of three-dimensional models as the CAD systems are powerful in their ability to draw and other computer programs in their ability to analyze.

One studio afternoon can bring a student through the development of dozens of design alternatives. Rather than being asked to work on another approach and present it tomorrow, students can develop alternatives immediately and interactively with the studio critic. Also, students can more directly interact with each other in the design process. They do not hesitate to change their fellow students' computer work, whereas they will rarely touch another student's drawing in a conventional studio. The number of idea/design/evaluation cycles increases manyfold. This means the student needs to know the direction in which he is heading. With a few computer commands, a design can be radically transformed into a completely different concept.

Three-dimensional computer modeling increases the understanding of spatial relationships and color and can produce more detail

First, the computer model is a single entity, not divided into numerous scales of site, building volume, and detail. Secondly, the student can "walk" around and through the building in a realistic spatial sequence. The completeness and accessibility of any view in a computer model presents a building and its environment in a way which is more closely associated with real-life experience. The sense of scale and proportion can be considered from eye-level views throughout the design, rather than through abstract axonometric drawings.

Before, a student could design only what he could draw, even though his ideas might exceed his graphic ability. If he could not draw quickly and easily in three dimensions, his buildings became an assembly of plans stacked one upon the other. The computer model permits the development of architectural complexity with relative ease.



Illustrating the point that students are not afraid to work on one another's computerized designs even though they would never touch one another's drawings, the projects on these pages are mostly the collaborations of third- or fifth-year students at the New Jersey School of Architecture.

Therefore the question "What is appropriate?" becomes more important than "How do I draw this?"

The study of color in architecture, formerly often ignored in design studios or minimized, can be easily integrated into the design curriculum. Students are able to create, evaluate, and propose a variety of detailed designs which consider color as fundamental. Students evaluate different color schemes as they adjust different palettes and view different schemes instantly, without having to redraw the design. As a result, we have found that color is considered less as a rendering technique and more as a means of expressing the character of a building.

As in conventional design processes, students take building designs from the general to specific details. This is probably as much a result of prior training as it is the system. In fact, the computer could permit the early generation of building designs with very detailed elements called from an existing library of building components. The very first representation of a design could include a level of visual detail not available through conventional means. The simplest of room concepts has the potential to include elaborate furnishings, wall texture, color, and other details.

If the computer is to be a design tool, rather than used only for presentation, it must be as accessible as the sketchbook, or drawing table. Architectural design is still accomplished away from the computer, but the majority of student work always remains inside the machine, immobile without it.

When the student relies upon a plotter, film recorder, or color printer for a final product, the "final product" aspect of the design studio also changes. Multiple copies and their mechanical production diminish

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The evolution of design may be more obscure than in conventional studios; this can be confusing to a designer who has not developed a clear direction or philosophy.

the preciousness of presentation. The final product is only a portion of the design as it is stored within the computer and as it is understood by the student. Rather than the final presentation being the totality of the design, all information known and considered, the final presentation is only a selection of a representative sample of the entire design. Students quickly prefer to include dozens of views, all of which are three-dimensional, rather than the limited vocabulary of plan, section, and elevation.

Student work that is presented at the level of wire-frame or hidden line 3-D model is graphically uniform. Design-review discussions speak much less of graphics, per se, and focus instead upon design concept and intent.

A few cautions

The ability to explore pattern, symmetries, and other ordering principles encourages the organization of buildings based on formal, geometric ideas—sometimes at the expense of the function. A primary constraint of computer modeling is that students must have a clear organizing concept to start with. Designers who have a strong grasp of such formal ideas as the hierarchy of use and spaces find the computer system a more productive and manageable medium. But those with lesser ability in abstract thinking find it virtually impossible to use the computer to design directly.

The most difficult, or most limited, use of the graphics systems results from employing the software solely as a pictorial tool. Based on our experience with students during only one semester, weaker students do *not* develop their ability to think abstractly as a result of using the computer. Possibly, over a long period of time, they might. (All students who have used the software with unlimited access clearly use it much more fluidly and directly).

Also, the freedom to make forms can limit thinking on design development. Building systems and construction detailing especially tend to be neglected instead of growing along with the basic concept.

Computer simulation is most appropriate to certain types of architectural problems that use repetition, transformation, and variation. These are major architectural principles and their use in computer systems is a natural part of architectural design, not a system restriction. However, architectural design studios which emphasize personal design methods or processes and nonrepetitive building characteristics, or involve high degrees of programmatic consideration, may not be the most appropriate for three-dimensional modeling.

In some ways, once the computer model is "painted," it is similar to the traditional Beaux-Arts watercolor, including only information about the surfaces of the building, but suggesting little about structure, mechanical systems, or construction. Also, if designs are first developed from a library of detailed objects, they may be accepted more because of their visual detail than their quality. Illustrations that look complete tend to be accepted more easily than those under development. Regrettably, the computer-based studio gives all students the ability to create finished presentations of incomplete or ill-considered concepts.

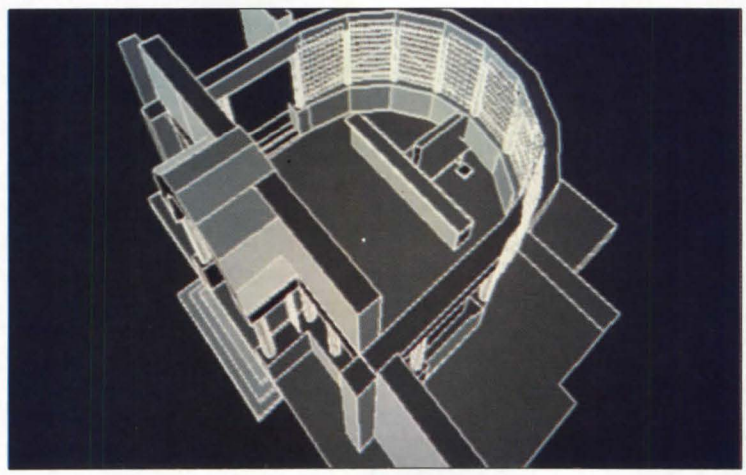
Computer modeling is more intense, more demanding, than traditional studio work. Many designers justifiably "burn out" after six or seven hours.

One of the clearest changes in the process/product relationship is the virtual elimination of intermediate presentations. Every stage, every alternative, of the design is immediately available as "presentation." Without external review, the design process can proceed uninterrupted without points of review or analysis.

This, of course, is not necessarily an advantage. The various stages of design are more easily masked by the computer system. Because of the rapid change and updating of a building model, there are often few records kept. There is no pile of yellow sketch paper on the floor. Therefore the evolution of design may be more obscure than in conventional studios. Again, this can be confusing to a designer who has not developed a clear direction or design philosophy.

Clearly, the advantages outweigh the drawbacks

It is the impact of the new media upon the way we view, model, and evaluate our architectural work that may change architecture and architectural education. The direct integration of analysis in the design process may do this. And when analytical systems (structure, economics, etc.) become integrated, the computer system itself will provide knowledge beyond the level of traditional practice.



Student work chosen by the authors shows the broad range of results possible with computers, including stylistic expression. The endless variety of images that can be created may produce unexpected results—or not even meet the original program.

TCS and the Corporate Ediface

Procter & Gamble General Office
Cincinnati, Ohio
Architect: Kohn—Pedersen—
Fox Associates
New York, NY
Roofer: Imbus Roofing Company,
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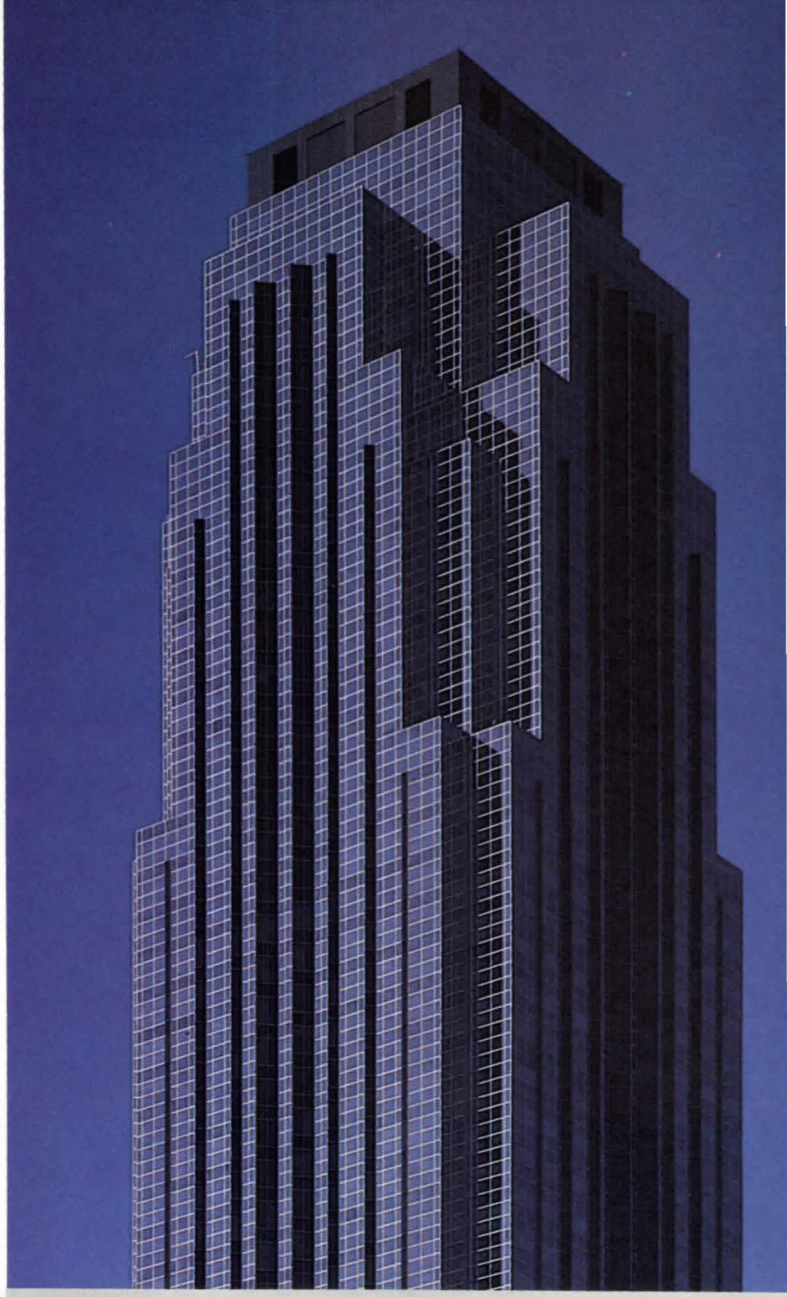

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The building type for 1988 is **HOUSING**, which includes, but is not necessarily limited to, the following categories:

1. Government- or privately sponsored low-income housing;
2. Subsidized mixed-income housing (if the project includes market-rate units, at least 50 percent of the development must be reserved for low- or middle-income tenants);
3. Shelters for the homeless;
4. Shelters for victims of abuse;
5. Housing for the blind, the elderly, or the physically disabled;
6. Housing for the mentally disabled;
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More than one project may be submitted. There are no entry fees or forms, but each submission should include color photographs of the completed project, reproductions of plans, and a one-page project description—all bound firmly in an 8 1/2- by 11-inch folder. A brief statement from the client or user, a report from a civic body, and articles from local newspapers attesting to the significance of the project to the community may be included in support of the submission.

Deadline:
All entries must be postmarked no later than **May 1, 1988.**
Submissions should be mailed to:
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ARCHITECTURAL RECORD
1221 Avenue of the Americas
New York, N. Y. 10020

Publication:
Winning entries will be featured in the November 1988 issue of ARCHITECTURAL RECORD. Other submissions will be returned or scheduled for a future issue.

For additional information, call Paul Sachner at 212/512-3088.

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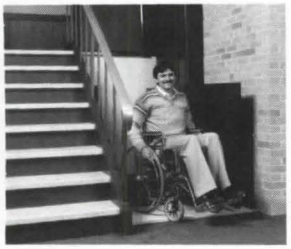

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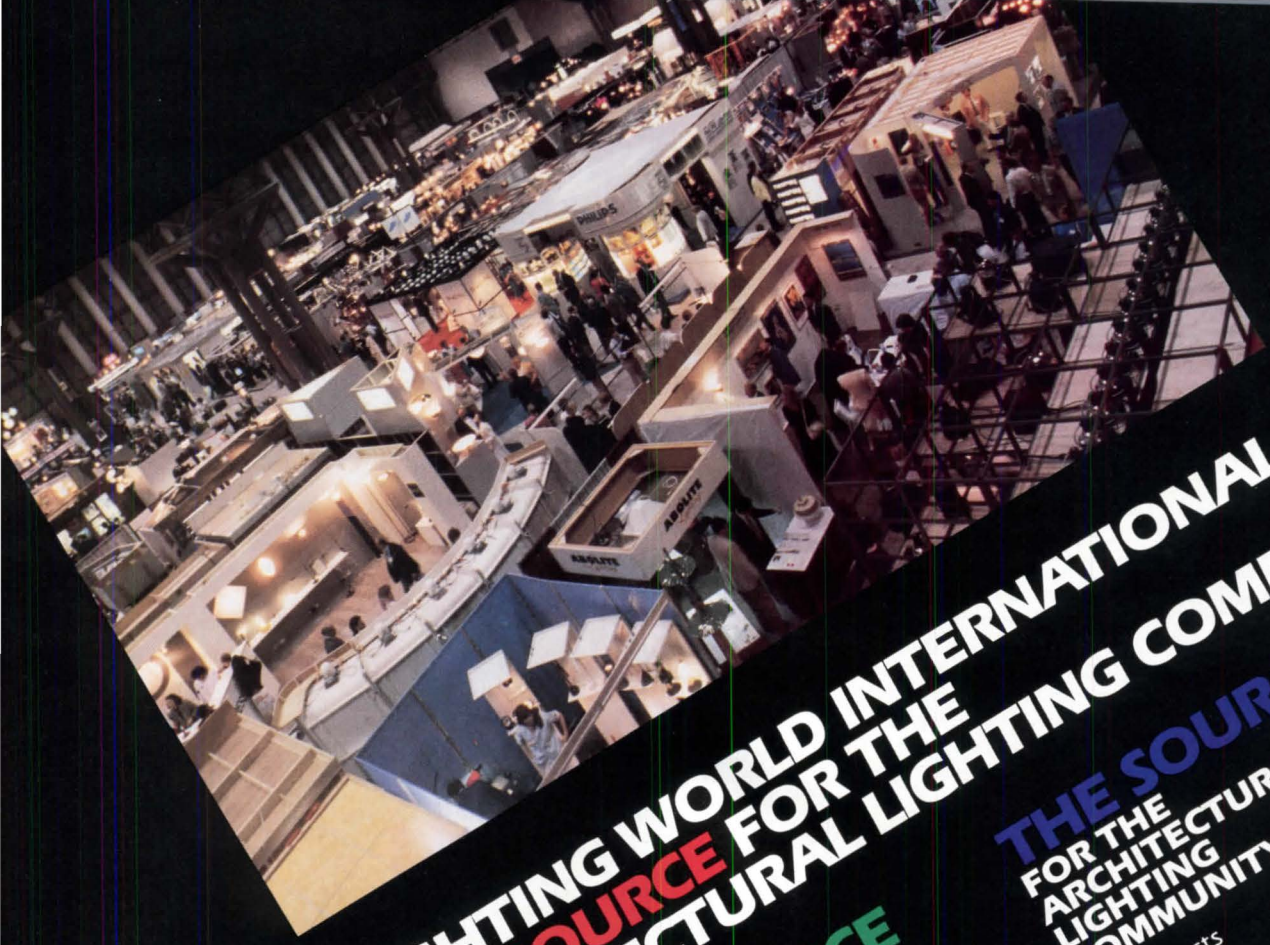

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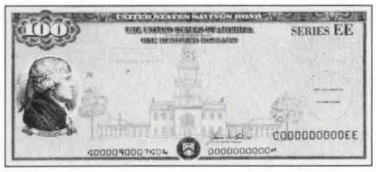

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Continued on page 152

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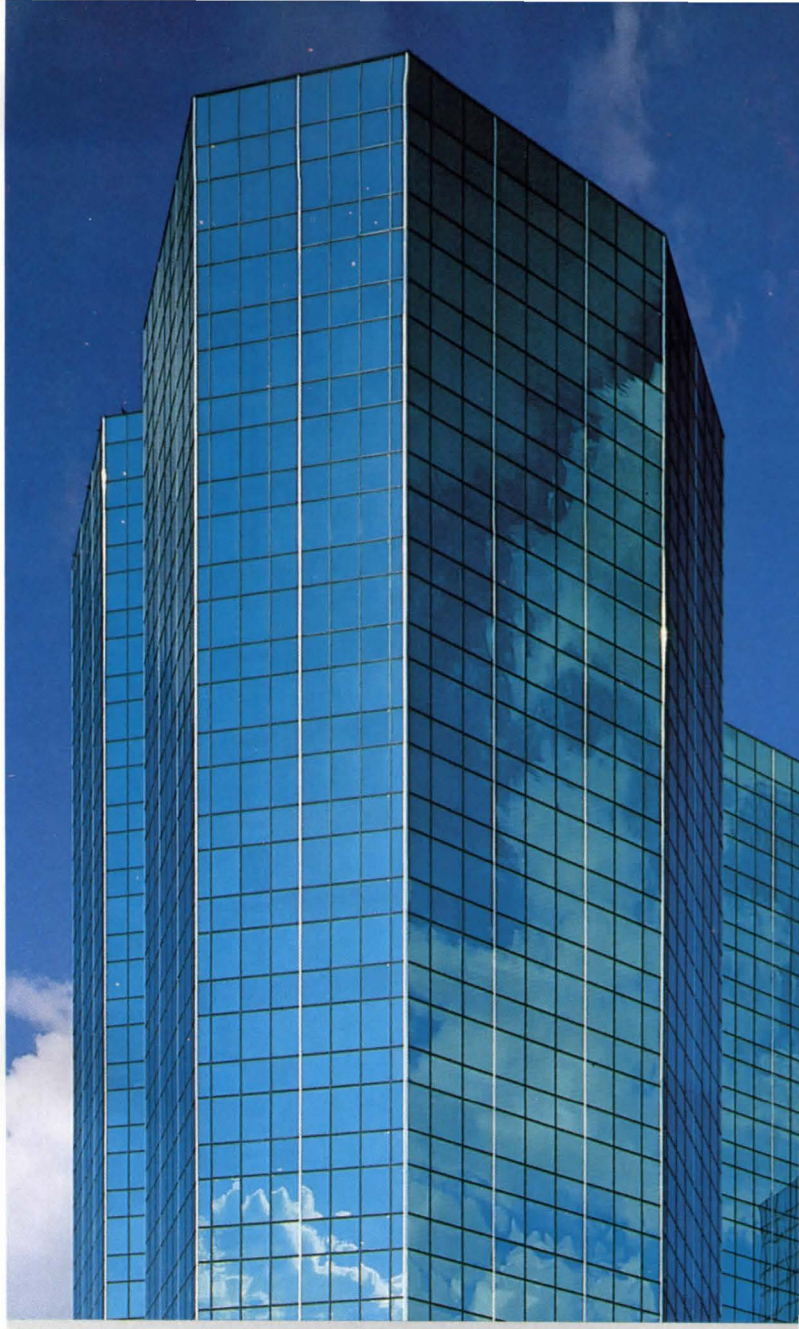

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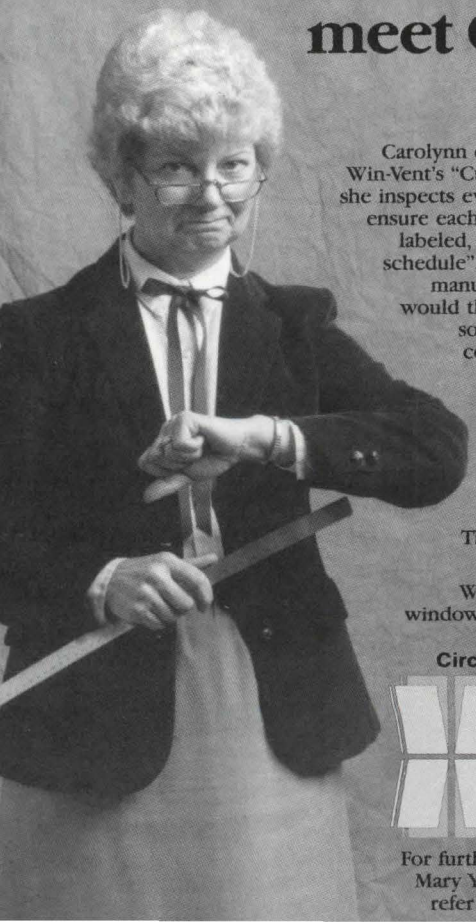

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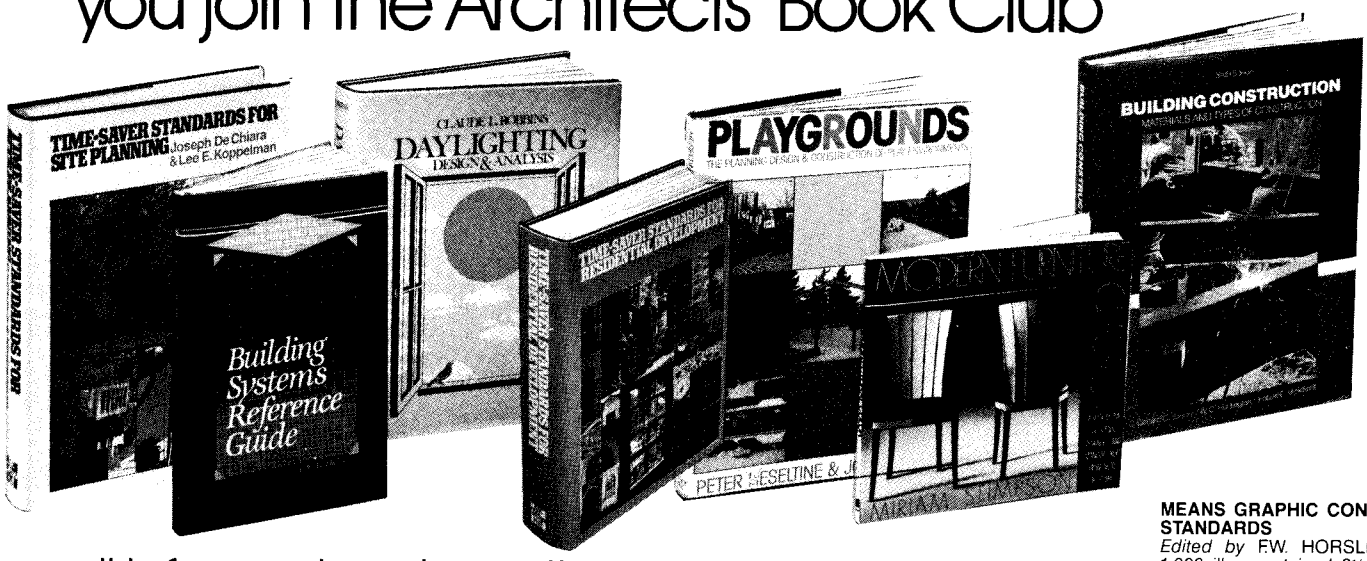

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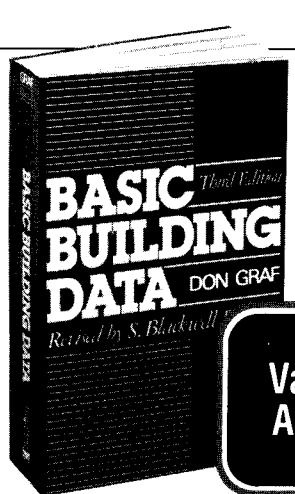

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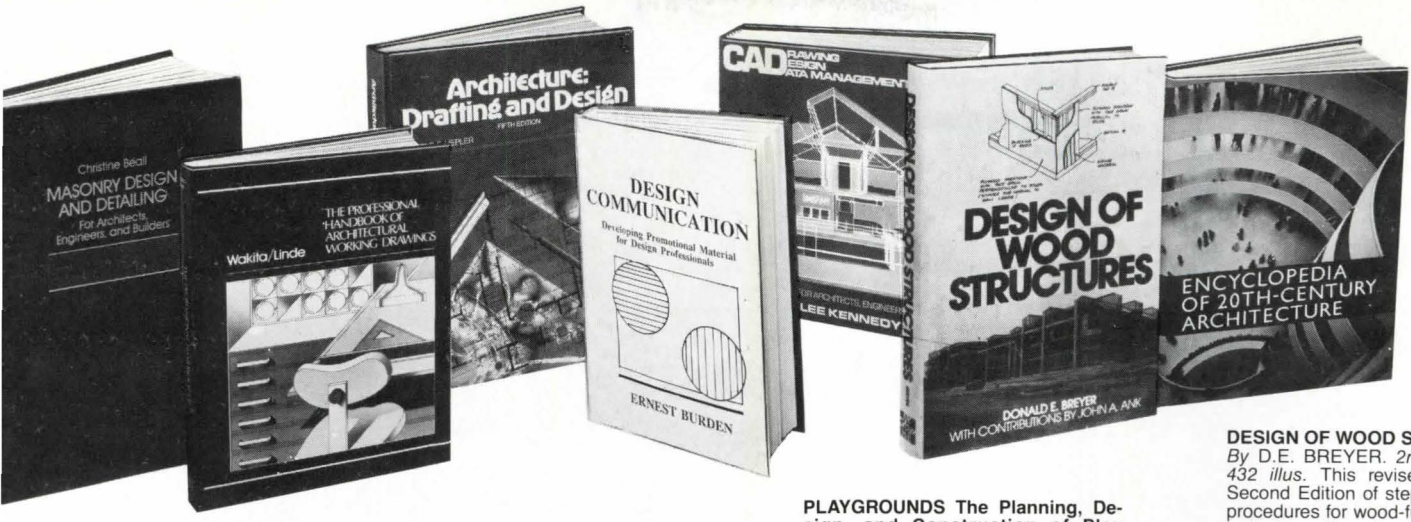

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New products: Finnish functionalism

Alvar Aalto and Marimekko still reign supreme over Finnish design, as revealed by Habitare '87, held in Helsinki last fall. New Finnish furniture and fabrics continue to reflect the country's functionalist tradition of spare forms and material "honesty" with a few Postmodern twists. The bentwood technique developed by Korhonen for Aalto's furniture is being applied to its Scheletro *series (4), and Pauli Blomstedt's tubular steel esthetic re-emerges in designs such as the* W *chair from Lillyriver (9). Bright colors, as evidenced by Juvart's* Pisara *line (7), and birchwood mark a refreshing change from the black metal chic that continues to dominate Italian and French furniture design.*
Deborah K. Dietsch

1. Portable chair
Designed by Hannu Kahonen, the lightweight *Trice* chair folds into a 40-in.-long carrying case. The frame is constructed of double-reinforced fiberglass, and the seat is made from a nylon-like fabric. Moform, Helsinki.
Circle 300 on reader service card

2. Woven rug
Palmikko is a line of rugs and wall-hangings designed by the manufacturer's managing director, Eija Rasinmäki. Woven from a cotton warp and linen-like polypropylene weft, the rugs feature subtly variegated colors and textures. Kutomo Rasinmäki, Helsinki.
Circle 301 on reader service card

3. Sideboard
The *Artisan Collection* sideboard designed by Matti Halme is offered in a 2-, 3-,or 4-door version. The birch finish may be specified in natural or black. Polardesign, Helsinki.
Circle 302 on reader service card

4. Bentwood chairs
The strip-laminated birch *Scheletro* chair series, designed by Kari Asikainen, is produced using the bentwood molding techniques first applied by the manufacturer to Aalto's designs. The chairs can be ganged and are available in matte or glossy finishes. Korhonen, Helsinki.
Circle 303 on reader service card

5. Tables
The *Duetto* series, designed by Pirkko Stenros, combines modular components to create dining tables, coffee tables, or desks. Square, triangular, and rectangular tops are finished in gray, white, or black plastic laminate with molded polyurethane edges, and the metal legs are available in chrome, black, or gray finishes. Muurame, Salpakangas.
Circle 304 on reader service card

6. Fabric
Ensilumi is part of the *Sydäntalvi* collection created by Fujiwo Ishimoto. The tie-dyed-like pattern is printed on cotton. Marimekko, Helsinki.
Circle 305 on reader service card

7. Chairs
The *Pisara* line of chairs comes in three sizes, including a model designed for children. The solid birch frames and form-pressed birch seats and backs are available in primary colors, as well as white, black, and natural finishes. Juvart, Juva.
Circle 306 on reader service card

8. Aalto fabrics
In addition to its renowned line of Aalto-designed furniture, the manufacturer carries a range of cotton fabrics designed by the Finnish master and his wife, Elsa, in the 1950s. The line includes *Siena* (right), *H- 55* (left), and *Patio* (center). Artek, Helsinki.
Circle 307 on reader service card

9. Stacking chair
The *W* chair designed by Pentti Hakala and Hannu Kähönen derives its name from the shape of its tubular steel frame. The arms and back are constructed from laminated plywood, and the seat of molded plywood. Lilyriver, Toija.
Circle 308 on reader service card
More products on page 146.


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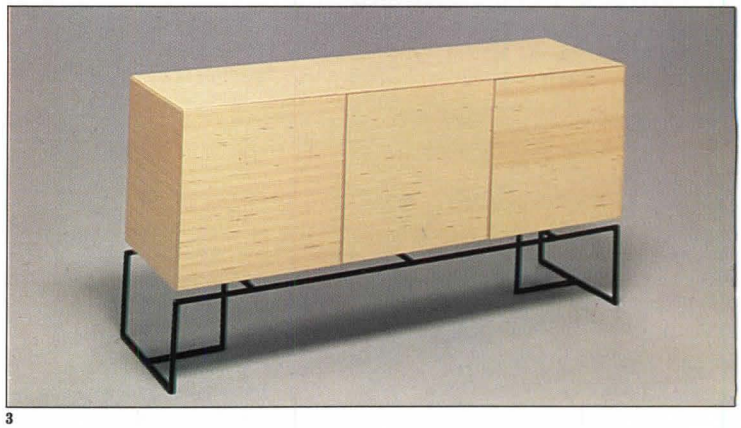
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For more information, circle item numbers on Reader Service Card

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Jussi Aalto

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Jussi Aalto

9

At the pinnacle of the Opryland Hotel Conservatory's lush indoor Victorian garden are angle bay windows, custom built for the hotel.

When Opryland Hotel asked Norco to design some special windows, the results were grand.

Some would call it a tall order…building windows for Opryland Hotel that are in perfect harmony with their Conservatory suites.

But Norco measured up and built custom windows, fine tuned on both the exterior and interior to capture the Conservatory's lush mood. The Conservatory is over two acres of architectural wonder – Victorian gardens with winding trails, bubbling brooks and tumbling waterfalls.

Crowning the Conservatory's elegance are Norco's custom Angle Bay Windows,

Norco's sweeping angle bays complement the southern elegance at Opryland Hotel Conservatory suites and give guests a breathtaking view of the Conservatory.

designed with authentic True Divided Lites, evoking the rustic charm of the Old South.

A high note for each suite.
Each upper level suite is graced with one or more Norco Angle Bay Window, blending with the romantic appointments, giving each guest the impression he is staying in a stately Southern mansion. And each Norco Angle Bay Window was designed to create a floor-to-ceiling wall of windows, set precisely at the right angle to give a glorious view of the Conservatory.

Grand results brought Norco back for an encore.
Opryland Hotel's newest expansion, the Cascades, is set for completion in 1988. It is another major, skylighted interior space even larger than the Conservatory. Its 839 additional rooms will enlarge the hotel to 1,896 rooms.

Norco's Custom Angle Bay Casement Windows will again be center-stage in the addition.

Norco's performance on the original construction phase was so impressive that Opryland Hotel brought Norco back for an encore.

Uncompromising quality, on-time delivery and Norco's capability to build windows to Opryland Hotel's exacting standards (at a surprisingly affordable price) are some of the reasons Norco windows are again at the top.

Norco can make your imaginative window designs a reality. Call or write today.

Besides meeting all the practical maintenance requirements of a modern hotel, the windows had to fit perfectly into the Conservatory's lush setting.

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New products *continued*

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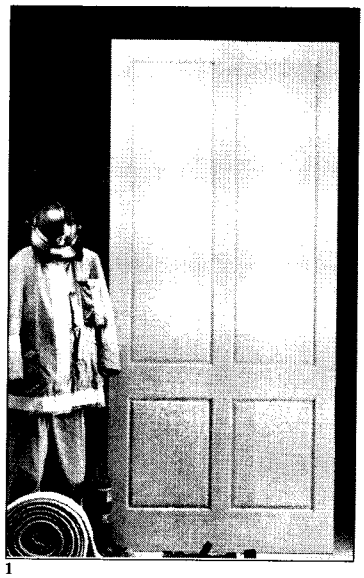
1. Wood-finish fire door
The *Phoenix* door, made of Douglas Fir or veneered red oak over a fire-resistant core, comes in 4-, 6-, and 8-panel plain, carved, and custom designs. It has a 20-min fire rating in sizes as large as 9-ft-high by 4-ft-wide. Nord Co., Everett, Wash.
Circle 309 on reader service card

2. Patterned marble tiles
Each *Collezione Bi Marmi* tile is formed of natural marble pieces bonded into 12- or 18-in. squares without backing or resin joints. Designs can be selected to create unique flooring patterns that can be installed like standard tiles, permitting the use of luxurious patterned marble without the significant expense of on-site stone cutting. Trans Ceramica, Ltd., Elk Grove Village, Ill.
Circle 310 on reader service card

3. Wood-plank flooring
An addition to this line of acrylic-impregnated hardwood floors, *Tupelo Wood Plank* has a strongly defined grain set off by six different stain colors, such as plum and pistachio. Flooring comes in various shapes and lengths for herringbone and other patterns. PermaGrain Products, Inc., Media, Pa.
Circle 311 on reader service card

4. Wool-blend upholstery
Mondrian, designed by Hazel Siegel, meets strict flame-retardancy and durability standards. The shaded jacquard pattern is woven of wool and acrylic, and comes in 10 *Teflon*-finished colorways. DesignTex Fabrics, Inc., Woodside, N. Y.
Circle 312 on reader service card

5. Preset dimming control
The *GRAFIK Eye* controls up to 2000 W of lighting divided into four preset illumination zones. The thin-profile housing has a locator light, and fits into a standard 4-gang switchbox. Lutron Electronics Co., Inc., Coopersburg, Pa.
Circle 313 on reader service card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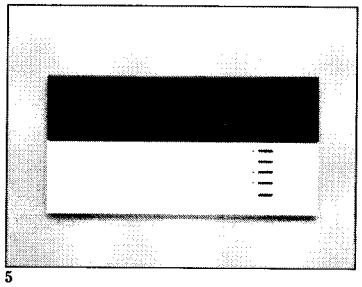
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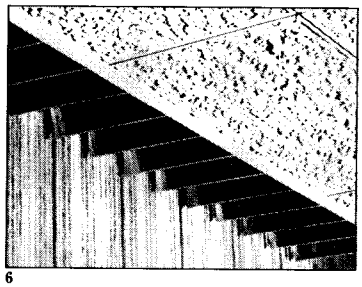
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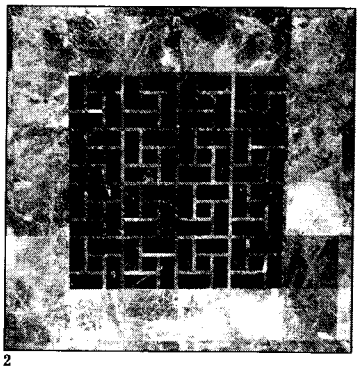
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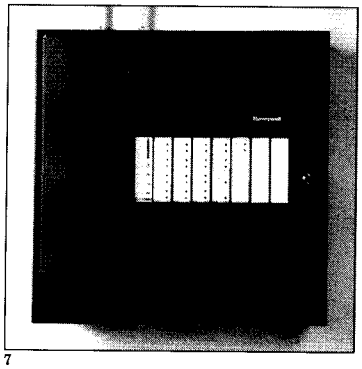
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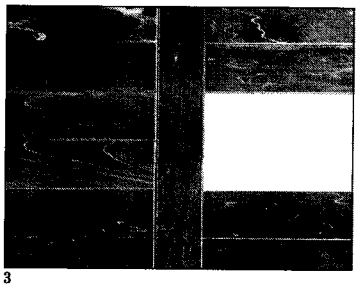
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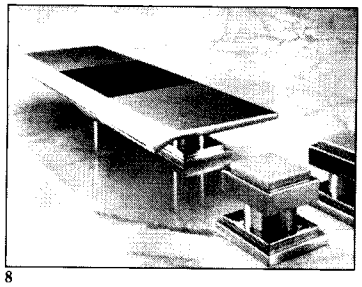
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6. Perimeter lighting
Described as an advanced architectural recessed linear light, the *RP System* provides a continuous line of shadowless illumination around the perimeter of a room. The fluorescent lamps overlap for uniform brightness; plug-in fixtures may be specified with parabolic louvers, corner angles, ceiling trims, and air-handling options. An ordering program provides complete specification information from run length, corner, and selected option data. Lithonia Lighting, Conyers, Ga.
Circle 314 on reader service card

7. Fire-detection system
An extension of *DeltaNet* computerized building management, *Fire and Security Plus* is an interactive system, using sensors that continuously transmit analog data on an area's heat and smoke level to a microprocessor for analysis. At the operator's terminal, each alarm is identified by sensor type (photoelectric, ionization, thermal, security, etc.), location, the nature of the fire condition, and instructions for responding to the emergency. The system is said to significantly reduce the incidence of false alarms, as the trigger point of the sensor can be adjusted based on changing conditions of space use. Honeywell, Inc., Minneapolis.
Circle 315 on reader service card

8. Bath faucets
Lavatory, bath, and shower fittings from the *Continental Collection* include *Sophie*, the curved-neck faucet shown here. All are lacquer-coated solid brass, available in standard colors of brass, chrome, gold, nickel, copper, white, and black. Luwa Corp., Builder Products Div., Charlotte, N. C.
Circle 316 on reader service card

Product literature

For more information, circle item numbers on Reader Service Card

Door fittings and accessories
An 8-page catalog highlights the *Normbau Design System* of railings, handles and knobs, bath fittings, and other accessories, made of solid-color nylon. Color photos show products in use; dimensional drawings are provided for all hardware. Normbau, Inc., Addison, Ill.
Circle 400 on reader service card

Freestanding mezzanines
Pre-engineered structures available in 16 standard sizes are described in an illustrated catalog. Constructed of heavy-gauge steel in lengths from 16 to 62 1/2 ft, mezzanines come as a complete package, ready for on-site, bolt-together assembly. Standard mezzanines offer a choice of deckings, including plywood and steel bar grating, and various configurations of stairs and landings, railings, and gates. Wildeck Mezzanines, Inc., Waukesha, Wis.
Circle 401 on reader service card

Modified bitumen roofing
A color brochure explains the reasons for the success of modified bitumen roofing systems, illustrating completed projects. Dual-modified bitumen manufactured with the correct core material is said to ensure stretching in the installed roof, allowing for a range of building motion. The literature discusses the impact of full-surface heat-welding on wind uplift resistance, pertinent applications of modified bitumen roofing, and gives warranty and finish information. Rhoflex, North Branford, Conn.
Circle 402 on reader service card

Laminated-frame chairs
Three models of the *Laminette* stacking chair are now available on a quick-ship basis. A color folder providing dimensional and specification information on the beechwood-framed chair also contains swatches of 8 wool fabrics offered for the upholstered seat and back. Westnofa USA, Inc., Niles, Ill.
Circle 403 on reader service card

Soils reinforcement
The first of a series of technical brochures on various aspects of the construction technique developed by French architect and engineer Henri Vidal, the 20-page *Development and Worldwide Application of Reinforced Earth* describes retaining walls, bridge abutments, sea walls, dams, safety dikes, and similar structures. A new system is the "green wall," where shrubbery or ground cover planted at each level of the structure will eventually hide the concrete, creating the appearance of a green hillside. The Reinforced Earth Co., Arlington, Va.
Circle 404 on reader service card

Folding chairs
Front Row Seats are steel-frame folding chairs that can be custom-imprinted with logos, school emblems, or other graphics. A color brochure describes two chair lines, the *700 Series*, with padded seats and backrests, and the *400 Series*, with thicker polyfoam padding. Chairs may be ordered with permanent or detachable ganging clamps; applications include sports arenas, convention centers, and corporate meeting rooms. Krueger, Inc., Green Bay, Wis.
Circle 405 on reader service card

Wooden columns
Designed for indoor and outdoor use as structural members or as decorative elements, *Chadsworth* architectural columns are constructed primarily of Ponderosa Pine and Clear Heart Redwood. A product brochure illustrates the five Classical Orders available to meet custom specifications, and explains how the work of the 16th-century architect Giacomo da Vignola influenced their structural design. Chadsworth, Inc., Atlanta.
Circle 406 on reader service card

Awning fabric
A sample of *SunSure* woven PVC fabric is supplied in a 4-page brochure, along with color photos of all standard striped and solid-color patterns. Text stresses the UV-, water-, and mildew-resistant features of the 61-in.-wide commercial awning material. Fire-retardant treatment is available at no extra charge. Twitchell Div., Ludlow Corp., Dothan, Ala.
Circle 407 on reader service card

Bath fixtures
Illustrated in an 8-page brochure, *Sweetbrier* and *Caprice* china fixtures and reinforced acrylic tubs have fired-in decorative banding. Accessories such as towel bars, shelves, and soap dishes are offered to match the fixtures. Also shown are the *Dolphin* toilet, bidet, and basin, replicas of fixtures that won a Golden Award for design at the Philadelphia Centennial Exhibition in 1876. Armitage Shanks, Kilgore, Tex.
Circle 408 on reader service card

Site furnishings
Benches, trash receptacles, and planters for both interior and exterior sites are presented in an 18-page color catalog. Units come in a variety of aggregate, wood-grain, or screen-printed panel faces. A new product line of oak planter, bench, and receptacle combination units bolt together to form custom seating arrangements. Clean City Squares, Inc., St. Louis.
Circle 409 on reader service card

Interior adhesives
A 16-page color catalog describes a complete line of adhesives, mastics, and sealants. Products are classified under eight application headings: resilient flooring, carpet, cove base, wood flooring, construction, acoustical tile, wallboard, and fiberglass-reinforced panels. There is a section on ceramic tile installation, mortars, and grouts. W.W. Henry Co., Huntington Park, Calif.
Circle 410 on reader service card

Underfloor raceway
A new distribution configuration specifically designed for shallower-depth, 2 1/2-in. concrete floors, the *Cell-Duct* raceway is introduced in a 12-page technical brochure. *Cell-Duct* provides three-service flush floor fittings to accommodate two duplex receptacles, and many low-tension cables; activating one opening gives access to all three service raceways. Reported savings in both material and installation costs are substantial. Square D Co., Palatine, Ill.
Circle 411 on reader service card

Insulating security shutters
A new 8-page architectural catalog shows *Roll-A-Way* shutters on residential, commercial, and institutional buildings. Detailed instructions cover the commonest methods of installation and are illustrated with scale drawings that can be incorporated into project blueprints. New applications for the energy-efficient, secure shutters include countertops, storefronts, and room dividers. Roll-A-Way Insulating Security Shutters, St. Petersburg, Fla.
Circle 412 on reader service card

Wood entry doors
Seven styles of recently introduced *Pella* oak entry doors appear in a 12-page color brochure, along with coordinated transoms, sidelights, and decorative glass options. The oak surface comes prefinished with a three-step process said to double the life of the final finish. Cutaway drawings explain the *Warpguard* laminated construction method, which virtually eliminates warping and weather infiltration. Rolscreen Co., Pella, Iowa.
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Continued from page 124

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Pages 66-71—Limestone: Vetters. Brick: Belden. Granite: Cold Spring. Aluminum curtain wall, windows, entrance: Alumiline Co. Skylights: Fisher. Mahogany windows and paneling: Vaughn Co. Bronze leaders: Heritage Arch. Metal.
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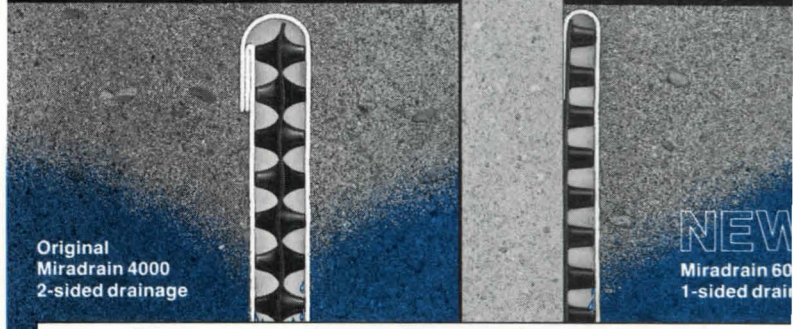

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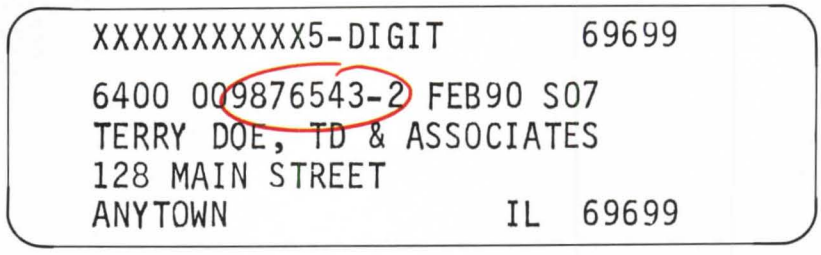

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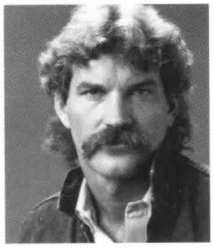

Thomas J. Bolin, ASID
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