ARCHITECTURAL RECORD

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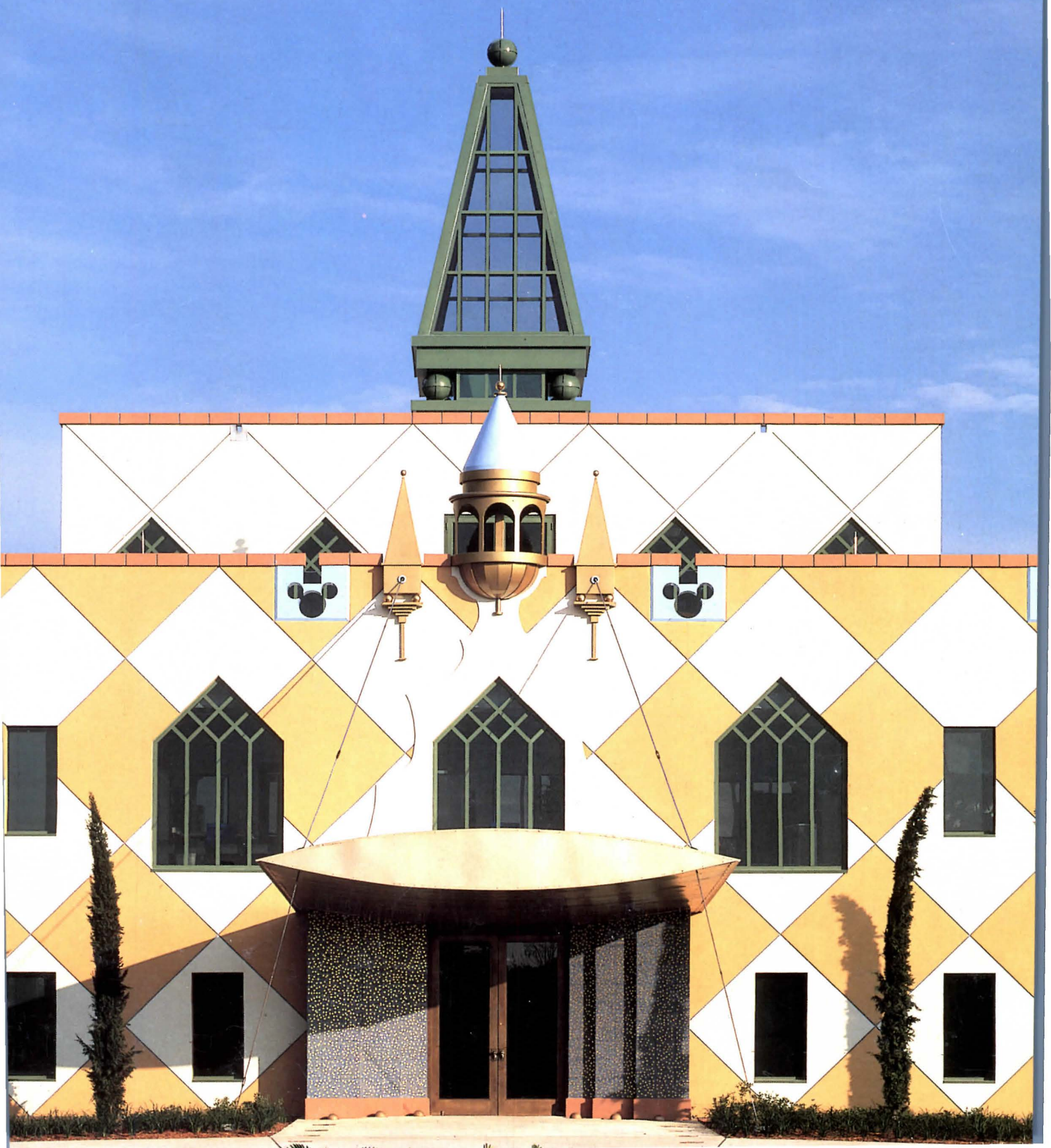

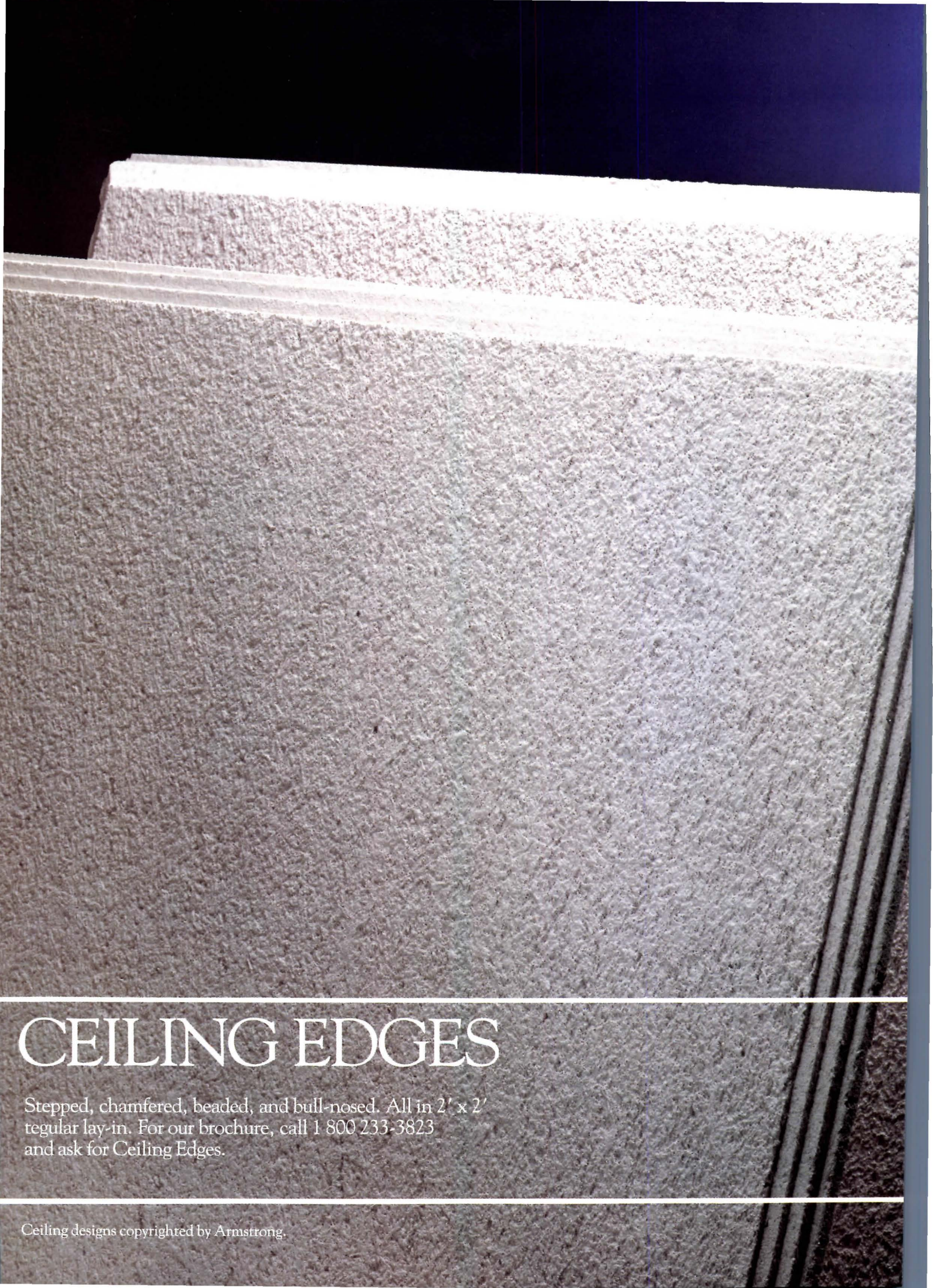
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Letters

I write to congratulate you on publication of the fine article by William Curtis [ARCHITECTURAL RECORD, June 1989, pages 108-117]! It is probably the first clear statement we have read which in these confused times distinguishes architectural work of essential quality and substance from so much superficiality. You have placed RECORD courageously ahead of other U. S. publications in taking this lead.

The following article on "The young Moderns" [pages 118-129] was an encouragement to the young.

John M. Johansen
New York City

Boy, you blew it. An attempt at broadmindedness, to be sure, but your assessment of the woman-managed firm [RECORD, June 1989, page 47 et seq.] smacks of machismo. While you admit that the partners of Perkins Geddis Eastman co-manage "more or less equally," you have taken pains to position the male partner squarely in the middle, standing, flanked by his female counterparts, who perch on his left and right like handmaidens. To ensure your point is not lost on even the dimmest of us, our hero busts right out of the picture in an ingenious cut-out.

Come on, boys and girls, let's play fair.

Maureen M. Delacroix
Richards Design Group, Inc.
Knoxville, Tennessee

RECORD*'s female editor, female managing editor, and female layout artist certainly had no intention of demeaning the female partners of the firm Perkins Eastman Geddis, nor had they any intention of implying that Mr. Perkins is a male chauvinist. Other readers, however, might find it demeaning if the female partners were to stand in attendance beside the seated male partner.*—Ed.

Part two of the conversation between Milton Lunch and Carl Sapers [RECORD, July 1989, page 41 et seq.] is most interesting and touches on one of the most sensitive and important issues facing our professions (engineering and architecture).

The issue to me is not whether engineers are qualified to be the prime professional or not, but the degree to which the prime professional properly executes his responsibilities. The actual management of design and construction is increasingly dictated by others: owners, contractors, and attorneys.

This trend is encouraged by weak project management on the part of the prime professional. We see too many projects assigned to managers too weak or too inexperienced to properly manage, direct, coordinate, and control a project. If this trend continues, it promises further, not necessarily beneficial, changes to our professions.

The challenge is for all design firms to recognize the responsibilities incumbent on prime professionals, and to dedicate personnel with the experience and talent requisite to execute those duties.

Stephen M. Sessler
Newcomb & Boyd
Consulting Engineers
Atlanta

Corrections

The photographs of River Center in San Antonio [RECORD, March 1989, pages 100-105] were taken by R. Greg Hursley.

The designers of the recreation center at Marietta (Ohio) College [RECORD, July 1989, page 57] are James Architects and Engineers, Inc., of Indianapolis.

Photographs of the Cellular Farm in North Castle, New York [RECORD, July 1989, pages 120-123] should have been credited to Peter Aaron of ESTO.

Calendar

September 12 to November 25
"50 Years of Collecting: Art at IBM," showing, among other things, architecture commissioned by IBM from Marcel Breuer, Mitchell/Giurgola, I. M. Pei, and Eero Saarinen; at IBM Gallery of Science and Art, New York City.

September 21-23
Seventh annual waterfront conference, "Urban Waterfronts '89: Waterfronts Distinctive/Choosing the Right Mix," sponsored by the Waterfront Center; at the Mayflower Hotel, Washington, D. C. For information: The Waterfront Center, 1536 44th St., N.W., Washington, D. C. 20007 (202/337-0356).

September 24-27
"Windpower '89," a conference sponsored by the American Wind Energy Association and the U. S. Department of Energy; at the San Franciscan Hotel, San Francisco. For information: 1730 N. Lynn St., #610, Arlington, Va. 22209 (703/276-8334).

October 2-3
"The Lighting Conference for Architectural Consultants," sponsored by Philips Lighting Company; at the Philips Lighting Center, Somerset, N. J. For information: Sherry Bachman, Philips Lighting Center Coordinator, P. O. Box 6800, Somerset, N. J. 08875-6800 (201/563-3600).

October 7
"Rethinking the Suburbs," a conference sponsored by the Baltimore Chapter, AIA, and the Maryland Institute, College of Art; at the Maryland Institute, College of Art, Baltimore. For information: Adam Gross, Ayers/Saint/Gross Inc., Architects, 222 St. Paul Pl., Baltimore, Md. 21202-2091 (301/347-9500).

October 12-14
Designer's Saturday, a conference and exposition on interior design; at the International Design Center, Long Island City, New York.

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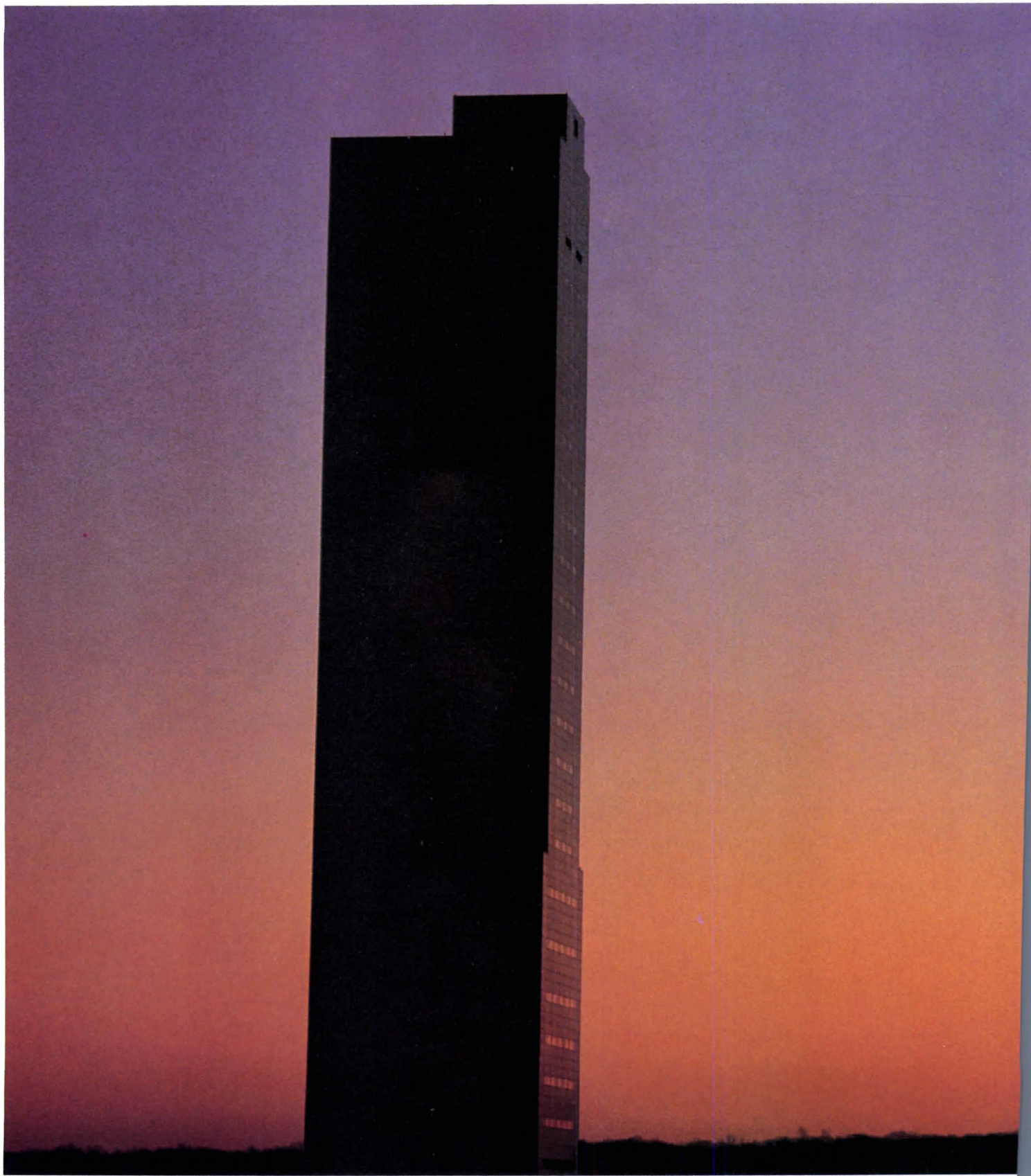
AD-DC

Our new editor-at-large: Donald J. Canty

Surprised? I'll explain. Soon after Don Canty resigned, last June, from *Architecture* magazine, I invited him to write on a regular basis for RECORD. Lucky for this magazine, he agreed. Known to most of you as an accomplished editor, writer, and critic, he was honored with the AIA criticism medal in 1983. Those of us with longer memories also recall an earlier distinguished career, most notably his 1962-1972 decade as founding editor of *City*, an outstanding magazine of urban affairs, published by Urban America, whose content ranged from planning and architecture to issues of race, poverty and government. During this period he wrote two books on urban affairs and edited a third. Coincidentally, Canty was also the founding editor, in 1959, of *Western Architect and Engineer*, published by McGraw-Hill. That career ended in 1962 when McGraw-Hill combined the magazine with the already venerable RECORD, newly acquired with the purchase of F. W. Dodge.

Canty, as RECORD's editor-at-large, will be based in Seattle. He will help us cover the Pacific coast, the Rocky Mountain states, and the Northwest as far east as Minneapolis. Although he has generously offered to write just about any kind of article we may need, and the offer has been gladly received, I look forward with special eagerness to the critical authority he will bring to our coverage of planning and urban design, particularly since among the trends RECORD sees for the next decade is a renewed interest in the role of the architect in shaping the city. Having Canty on the team will allow us to focus more sharply, more critically, and more frequently on the social, economic, and political questions that relate to architecture—housing, the slow-growth movement, new forms of zoning. His by-line will appear for the first time in our November issue. Welcome, Don. *Mildred F. Schmertz*



Construction economy update: A smaller-than-expected step backward

Buoyed by an earlier-than-expected downward trend in interest rates, housing has helped cushion the expected fall in building volume.

By George A. Christie

From the onset, the outlook for 1989 construction contracting has been negative. This sector had already stalled early in 1988 as the industry coped with its overdeveloped commercial markets and a freeze on federal programs. Then came the burden of higher interest rates between mid-1988 and mid-1989. The result: a small step backward for the building business.

In this second update of the Dodge/Sweet's Construction Outlook for 1989, the value of the year's contracting for new construction—the leading indicator of expenditures for construction put in place and for building-materials requirements—has been fine-tuned to $254 billion, a decline of 2 percent from the 1987/88 plateau of $258 billion. This last look at 1989 reveals a small upgrading of the year's construction potential. Previous forecasts issued in October and February anticipated a slightly steeper decline than 2 percent, but the earlier-than-expected retreat of interest rates has reduced the risk to the credit-sensitive one-family housing market by perhaps 50,000 dwelling units. Beyond that, little else has changed.

Limits to decline

As the construction industry weathers its first setback in six years (something of a record for continuous expansion, by the way), there are some features of the 1989 "interruption"—it hardly deserves to be called anything more menacing than that—which will prevent the decline from snowballing.

In each of the two previous cyclical reversals, one in the early 1980s and the other in the mid-1970s, the collapse of the construction sector was part of a general economic breakdown. Not so in 1989. In each of the previous circumstances the collapse of the construction sector was aggravated by extraordinarily harsh credit conditions. In one case the supply of mortgage money all but dried up. In the other, mortgage financing was available but only at prohibitive rates. Not so in 1989.

This time around, substitute slowdown for economic recession. And for credit crunch, substitute moderate monetary restraint. These differences are part of why 1989 construction contracting is still holding so close to its 1987/88 peak.

What's more, the freeze on public-works construction, another unusual aspect of the current situation, is serving as an unfitting stabilizer of the construction market. Public-works construction, like most other public programs, has been held close to its 1987 level of spending for the past two years as part of the effort to shrink the bloated federal deficit. But because 1987 was an all-time high for public-works contracting, this ceiling can also be seen as a steady $43-billion floor of public support at a time when private-sector construction has been softening. As the next recovery takes hold, however, the freeze on public programs will retard the growth of total construction contracting.

Most important, though, is that another period of monetary restraint has come and gone, and this time it did surprisingly little damage to the normally credit-sensitive building business. The Federal Reserve's delicately engineered slowdown of the economy may leave some lingering side effects on construction activity through the summer months, but with mortgage rates already down from their March-April peak, the main obstacle to a recovery of homebuilding has been removed. That should be enough to get total construction contracting back on an upward path during the second half of the year.

This reappraisal of second-half and full-year construction contracting will concentrate on three critical segments of the market: commercial buildings, public-works projects, and housing/institutional buildings. These categories will determine the timing and the strength of the next period of expansion.

Commercial buildings

Not surprisingly, commercial building continues to be the Achilles' heel of the construction industry. Through 1988, three consecutive years of decline had reduced the combined value of contracting for multifamily housing, offices, retail facilities, and hotels to $75 billion, 15 percent below 1985's boom rate of $89 billion.

In 1989, the adjustment to overdevelopment is continuing as a further decline of 7 percent will bring this year's total to about $70 billion. By the end of 1989 the commercial building market will be close to reaching a tenuous state of equilibrium. Although the long decline of contracting will finally have ground to a halt, there will be little reason to justify renewed expansion in 1990.

In previous Outlooks and their Updates, discussion of commercial buildings has focused on the progress being made toward re-establishing a healthier balance between the excessive stock of buildings created during the mid-1980s "tax shelter" boom, and the true need for space. And progress there is.

After three years of decline, contracting for the combined total of offices, apartments, and hotels finally crossed the 90 million square foot threshold in 1988. Below that level the market is capable of absorbing slightly more space than is being added by the combination of new construction, conversions, and removals. In 1988, vacancy rates at last began to fall.

During the first half of 1989, "underbuilding" of this group of commercial structures has proceeded at the annualized rate of 730 million square feet (offices at 210 million vs. an equilibrium rate of 250 million, apartments at 450 million vs. 550 million, and hotels at 70 million vs. 100 million) indicating further reduction of vacancy rates in all three categories. And now that the combined total of contracting for this trio has dipped almost 20 percent below the rate of absorption (i.e., the equilibrium rate), stability rather than further decline is the more likely course of future building. It will require at least two years at this low volume to bring vacancy rates to a viable level, however.

Retail building presents a variation on the tax shelter theme. It is hard to say how much of the nearly 20 percent decline of retail building since 1987, its peak year, has been the reaction to mid-1980s overdevelopment, and how much has been in response to the three-year decline of housing starts. (The demand for retail building is considered to be a derivative of residential development.) With the forces of both oversupply and weakening demand working against retail building, it is clear that a substantial further cutback of contracting for shopping centers, stores, and warehouses is called for if the traditional residential/retailing relationship is to be restored.

Public works

The potential for a small increase of highway/bridge construction in 1989, along with no gain (and possibly a small setback) for environmental work leaves the outlook for this year's total of public-works-construction contracting little changed from its 1988 value.

Federal budget austerity may be the dominant force acting on public-works construction, but it

Continued on page 35

Construction economy update continued from page 33

Prepared by the Economics Department McGraw-Hill Information Services Company George A. Christie, vice president and chief economist.

1989 National Estimates
Dodge Construction Potentials

Second Update July 1989

		1988 Actual	1989 Forecast	Percent Change 1989/88
Nonresidential Buildings				
Floor Area (millions of square feet)	Office Buildings	248	205	-17
	Stores & Other Commercial	561	485	-14
	Manufacturing Buildings	155	155	--
	Total Commercial & Manufacturing	964	845	-12
	Educational	128	122	- 5
	Hospital & Health	71	66	- 7
	Other Nonresidential Buildings	153	137	-10
	Total Institutional & Other	352	325	- 8
	Total Nonresidential Buildings	1,316	1,170	-11
Contract Value (millions of dollars)	Office Buildings	$ 21,647	$ 19,700	- 9
	Stores & Other Commercial	24,120	21,875	- 9
	Manufacturing Buildings	8,763	8,950	+ 2
	Total Commercial & Manufacturing	$ 54,530	$ 50,525	- 7
	Educational	$ 12,662	$ 12,675	--
	Hospital & Health	8,100	7,925	- 2
	Other Nonresidential Buildings	14,069	13,200	- 6
	Total Institutional & Other	$ 34,831	$ 33,800	- 3
	Total Nonresidential Buildings	$ 89,361	$ 84,325	- 6
Residential Buildings				
Dwelling Units* (thousands of units)	One Family Houses	1,003	975	- 3
	Multifamily Housing	466	425	- 9
	Total Housekeeping Residential	1,469	1,400	- 5
Floor Area (millions of square feet)	One Family Houses	1,691	1,639	- 3
	Multifamily Housing	485	442	- 9
	Nonhousekeeping Residential	74	69	- 7
	Total Residential Buildings	2,250	2,150	- 4
Contract Value (millions of dollars)	One Family Houses	$ 92,184	$ 93,250	+ 1
	Multifamily Housing	23,732	22,425	- 6
	Nonhousekeeping Residential	6,020	5,950	- 1
	Total Residential Buildings	$121,936	$121,625	--
Nonbuilding Construction				
Contract Value (millions of dollars)	Transportation Construction	$ 24,591	$ 25,125	+ 2
	Environmental Construction	18,056	18,075	--
	Total Public Works	$ 42,647	$ 43,200	+ 1
	Utilities	$ 4,305	$ 4,500	+ 5
	Total Nonbuilding Construction	$ 46,952	$ 47,700	+ 2
All Construction				
Contract Value (millions of dollars)	Total Construction	$258,249	$253,650	- 2
	Dodge Index (1982 = 100)	164	161	

*F.W. Dodge basis.

isn't the only one. It's true that since the Gramm-Rudman deficit target took over the federal budgeting process, there has been a tight lid on the funding of existing infrastructure programs as well as an absence of any new ones. The result: a monotonous annual total of construction contracting for public works, just under $43 billion in 1987, nother $43 billion in 1988, and nore of the same in 1989.

Within this unchanging dollar otal (which, incidentally, buys ess and less new construction each year) there is room for change in the mix of project types. But even there, opportunities are limited. In 1989, transportation construction (roads, bridges, mass transit, and airports) holds a slight edge over environmental work (water-resource development and waste-treatment facilities).

Highway/bridge construction, its funding securely rooted in user taxes, will eke out a 2 percent contracting gain this year. The 1989 federal budget, by now more than half allocated to state DOTs, provides for a nominal half-billion dollar increase for road building. This merely restores last year's cut, bringing the federal share back to where it was in 1987. State and local governments, which put up another one third of the total, are also having difficulty making ends meet from general revenue. But rather than pass up federal highway money due to a lack of matching funds, states are raising gasoline taxes. By mid-1989, 16 states had already done so, and others are expected to follow in the balance of the year.

Environmental construction will have to pick up in 1989's second half just to draw even with last year's $18.1 billion of contracting. Water-resources construction, which is predominantly federally sponsored through the Corps of Engineers and the Bureau of Reclamation, was not only lagging at midyear, but runs the risk of being easily curtailed in the event of a deficit overrun. Construction of sewer and waste-treatment facilities, the biggest category of environmental construction, is in the process of being weaned from EPA direct grants as its primary source of support in favor of newly created state revolving loan funds. Declining municipal bond rates will be a help during the transition, but no contracting gain is in prospect for 1989.

While the current total of $43 billion being spent on infrastructure development and maintenance remains at an all-time high, the lack of any increase since 1987 implies year-by-year shrinkage after adjustment for inflation. The deferral of transportation and environmental construction needs suggests that there must be a period of catching-up in the mid-1990s when the federal budget is closer to balance and/or state and local governments are better able to absorb the cost.

One-family housing and institutional buildings

With the decline of mortgage rates now a fact instead of a forecast, a lot of the suspense has been taken out of the second-half outlook for the credit-sensitive categories of building. The difference isn't very large, but the important thing is that it's in the right direction. The reversal of mortgage rates, coming as it did a little ahead of expectation, offers the opportunity to conclude this year's series of construction forecasts on a slightly more optimistic note.

The First Update of the 1989 Outlook (March) spelled out in detail the interest-rate assumptions which had been built into the previous October's forecast, specifically: " . . . it is assumed that the conventional fixed mortgage rate, currently at 10.75 percent, will rise to 11.5 percent by 1989:II/III, and decline thereafter. Municipal bond rates, presently at 7.5 percent, will follow a parallel course." Not a bad guess as interest rate forecasts go, but as it turns out, a bit on the conservative side.

The average rate for conventional mortgages peaked at the very end of 1989's first quarter at 11.25 percent. After drifting downward through April, the decline accelerated in May, leaving the typical conventional mortgage rate just above 10 percent by the end of the second quarter. Stability at this level would put the annual average rate between 10.5 and 10.75 percent, and promises a better second half for builders.

Municipal bonds, the vehicle for financing most institutional construction, reached a March high of 7.6 percent and were half a point lower by midyear, nicely paralleling mortgage money.

Demographics of the closing years of the 1980s with maximum growth of the

Continued on page 37

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Construction economy update continued from page 35

population taking place at ages 30 to 50, below 15, and over 65, are highly supportive of one-family housing, elementary schools, and health-care facilities, as experience has proven until just recently. The return of workable interest rates means a fuller realization of this potential. But with only half of 1989 left, some of this year's interrupted demand is bound to spill over into 1990.

Nevertheless, a better second half should make up for the first half's weakness, bringing 1989's full-year total contract value for one-family homes and institutional buildings at least even with that of 1988.

Regions

As the total of construction contract value shrinks in 1989, the strength of U. S. regional markets must be gauged by whether an area will be slipping by more or less than the 2 percent national average decline.

Northeast: –1%

The sizzling New York building boom finally fizzled in 1988 when commercial projects were cut back abruptly. The early months of 1989 brought a surprising rebound, however, sustaining this year's contracting without further significant decline.

North Central: –1%

Contracting in the North Central region has followed the national pattern of construction activity, plateauing at $52 billion through 1987 and 1988 after a five-year expansion. This region is headed for a small decline this year, concentrated mostly in commercial building.

South Atlantic: –4%

The only region to sustain uninterrupted expansion from 1983 all the way through 1988 is now the most vulnerable in 1989. A weak first-half rate of contracting (commercial building, again) indicates that the South Atlantic area will show this year's biggest decline.

South Central: 0%

Having gone its own (negative) way all through the mid-1980s, construction activity in the oil patch finally appears to have reached bottom. After a five-year decline, which reduced the region's contract value from $43 billion to $32 billion, 1989 offers the prospect of stability, if nothing better.

West: –2%

Another early drop-out from the mid-1980s building boom, contracting in the West turned down in 1987 following a three-year spree of multifamily housing development. In 1989, this region has been having difficulty sustaining last year's rebound which had a strong single-family-housing tilt.

On to 1990

The quarterly pattern of 1989 construction contracting ($253 billion; $251 billion; $253 billion; $258 billion) implies that the end of the 1988/89 decline was reached in the second quarter.

The retreat of mortgage/bond rates opens the way to modest improvement in 1989's third quarter, followed by a firmer pick-up in the fourth. Is this revival the beginning of a new era of expansion for the construction sector? Or is it merely the reaction to a brief period of credit restraint? That's the main issue for the 1990 Dodge/Sweet's Construction Outlook, appearing in RECORD in November.

1989 Regional Estimates

Dodge Construction Potentials

Second Update July 1989

Northeast	CT, ME, MA, NH, NJ, NY, PA, RI, VT	1988 Actual	1989 Forecast	Percent Change 1989/88		1988 Actual	1989 Forecast	Percent Change 1989/88
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$10,364	$10,425	+1	One Family Houses	$15,251	$15,425	+1
	Institutional and Other	7,161	6,800	-5	Multifamily and Nhskpg.	6,922	6,425	-7
	Total	$17,525	$17,225	-2	**Total**	$22,173	$21,850	-1
	Nonbuilding Construction	$ 9,777	$ 9,950	+2	**Total Construction**	$49,475	$49,025	-1

North Central	IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI	1988 Actual	1989 Forecast	Percent Change 1989/88		1988 Actual	1989 Forecast	Percent Change 1989/88
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$12,717	$12,075	-5	One Family Houses	$16,757	$17,700	+6
	Institutional and Other	7,541	7,525	--	Multifamily and Nhskpg.	5,659	4,975	-12
	Total	$20,258	$19,600	-3	**Total**	$22,416	$22,675	+1
	Nonbuilding Construction	$ 9,817	$ 9,875	+1	**Total Construction**	$52,491	$52,150	-1

South Atlantic	DE, DC, FL, GA, MD, NC, SC, VA, WV	1988 Actual	1989 Forecast	Percent Change 1989/88		1988 Actual	1989 Forecast	Percent Change 1989/88
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$12,469	$10,250	-18	One Family Houses	$23,515	$23,450	--
	Institutional and Other	7,023	7,000	--	Multifamily and Nhskpg.	7,696	7,600	-1
	Total	$19,492	$17,250	-12	**Total**	$31,211	$31,050	-1
	Nonbuilding Construction	$ 8,012	$ 8,075	+1	**Total Construction**	$58,715	$56,375	-4

South Central	AL, AR, KY, LA, MS, OK, TN, TX	1988 Actual	1989 Forecast	Percent Change 1989/88		1988 Actual	1989 Forecast	Percent Change 1989/88
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$ 6,076	$ 5,850	-4	One Family Houses	$10,109	$10,450	+3
	Institutional and Other	5,405	5,025	-7	Multifamily and Nhskpg.	1,475	1,575	+7
	Total	$11,481	$10,875	-5	**Total**	$11,584	$12,025	+4
	Nonbuilding Construction	$ 8,819	$ 8,875	+1	**Total Construction**	$31,884	$31,775	--

West	AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY	1988 Actual	1989 Forecast	Percent Change 1989/88		1988 Actual	1989 Forecast	Percent Change 1989/88
Contract Value (millions of dollars)	**Nonresidential Building**				**Residential Building**			
	Commercial and Manufacturing	$12,904	$11,925	-8	One Family Houses	$26,552	$26,225	-1
	Institutional and Other	7,701	7,450	-3	Multifamily and Nhskpg.	8,000	7,800	-2
	Total	$20,605	$19,375	-6	**Total**	$34,552	$34,025	-2
	Nonbuilding Construction	$10,527	$10,925	+4	**Total Construction**	$65,684	$64,325	-2

The law: The ability to practice as a corporation gains new impetus

While 18 states continue to prohibit architects and engineers from practicing as corporations, the most important hard-liner, New York, "has just had its wall crumble with a gap so wide an army could march through."

By Carl M. Sapers

In 1968, the American Institute of Architects commissioned me to survey the state registration laws applicable to architects, engineers, and landscape architects. My report was published in 1969. The section relating to firm practice was preceded by prefatory remarks, including Robert Frost's lines:

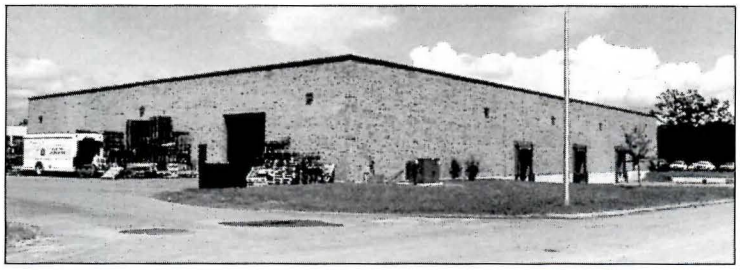
"Before I build a wall, I'd ask to know what I was walling in or walling out . . ."

Those lines came to mind as I observed how much effort had gone into framing architectural registration laws that would make it difficult for others to trespass on the practice. The irony was that many of those same restrictive laws had put obstacles in the path of architecture firms seeking to practice outside their home state. Of the 54 jurisdictions surveyed in 1969, only 26 permitted firms with normal business-corporation statutes to practice architecture. The remaining 28 either had an explicit statutory prohibition or had read statutory silence as prohibiting such practice.

Shortly after the survey was published, the National Council of Architectural Registration Boards adopted a legislative guideline permitting corporate practice, and the AIA withdrew its objections to it.

Twenty years have passed since the survey was published, and it is instructive to take a fresh look at the question. Thirty-six jurisdictions now permit architecture to be practiced by business corporations; only 18 prohibit it.

Mr. Sapers is a partner in the Boston law firm of Hill & Barlow. His clients include architects around the world. He is adjunct professor at the Harvard Graduate School of Design, where he teaches legal problems in design. In 1975, he received the AIA Allied Professions Medal and, in 1988, was elected Honorary AIA.



The clients for this warehouse raised a ruckus that may have opened the door to architectural corporations.

If one considers the incredible political and social ferment of the last 20 years, the movement toward acceptance of corporate practice could hardly be described as more than glacial. Steady, even eluctable change, but at no greater than deliberate speed.

Then, in December 1988, a stroke of lightning crashed across the sky when the highest court in the State of New York ruled that, while there was a clear prohibition against corporate practice by engineers or architects in the Empire State, a corporation could make an enforceable contract with an owner to furnish such services, provided only that it engaged a registered engineer or architect to actually perform them. Thus, no matter how pious the language used by the Court's majority, it now seems clear—and the dissenters make the point with abundant clarity—that practice hereafter in New York may be conducted as in its neighboring state of Massachusetts: Provided the project is under the direct supervision of a registered architect, a corporation may offer to render and, in fact, have performed under its contract, architectural services.

Because New Jersey, which, like New York, prohibits corporate practice, seems to have reached a similar conclusion as a result of some hard bargaining between its architecture board and its engineering board, the path to corporate practice opened up by the New York court decision may well harbinger a major gap in the stone wall erected by the 18 hard-line jurisdictions.

Here is what has happened

Clients named Claude and Leslie Charlebois made a contract with J. M. Weller Associates, Inc. to design and thereafter build a beer-distribution warehouse. The contract recited that the architecture and engineering would be carried out by one James M. Weller, P. E., incidentally the President of J. M. Weller Associates. After construction started, disputes arose between the parties over cost, design, and compliance to codes. Charlebois held back $600,000 in payments due under Weller's contract until the disputes were resolved. Weller brought an arbitration to collect the $600,000. Charlebois brought a court action to prevent arbitration on the grounds that the contract was unenforceable because Weller Associates was practicing engineering in violation of the prohibition against corporate practice in New York. The court treated the issue as involving engineering and architecture, and its holding is applicable to both disciplines. Both the majority and the dissent on New York's Court of Appeals agreed, *first*, that New York law prohibits corporate practice of engineering, and *second*, that a violation of that law results in grave civil and criminal consequences, including preclusion from recovering for the work performed.

In short, unless you can wriggle out of this tight corner, Weller, you lose all $600,000. Wriggle it did, and with remarkable success. First, Weller persuaded the Court's majority that where the professional services are incidental to the main contract, the main contractor may subcontract for those services without violating the law. Poppycock, said the dissent, no one can characterize the architectural and engineering design for the project as a mere incident of a larger work.

In any case, wrote the majority, Weller Associates never agreed itself to perform engineering or architectural services; James Weller, P. E., would do that individually "in the interests of the public health and welfare, and independent in that sense of unlicensed oversight." Moreover, he was subject "to the plenary regulation of the State [Registration Board]." The dissent said: "Inasmuch as an unlicensed business corporation may not practice architecture or engineering directly, it may not do so indirectly by retaining licensed professionals as that would be an evasion the law will not tolerate."

Charlebois et al v. J. M. Weller Associates, Inc., was decided by a four-judge majority with three judges dissenting. Difficult cases, so the epigram goes, make bad law. Imagine Charlebois walking off with his warehouse and $600,000 in his pocket. But, difficult case or not, an important hard-line state, perhaps the most important of the hard-line 18 states, has just had its wall crumble with a gap so wide an army could march through. It may well presage the ultimate end to the prohibition against corporate practice among the remaining hard-liners.

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A multiformity of college buildings

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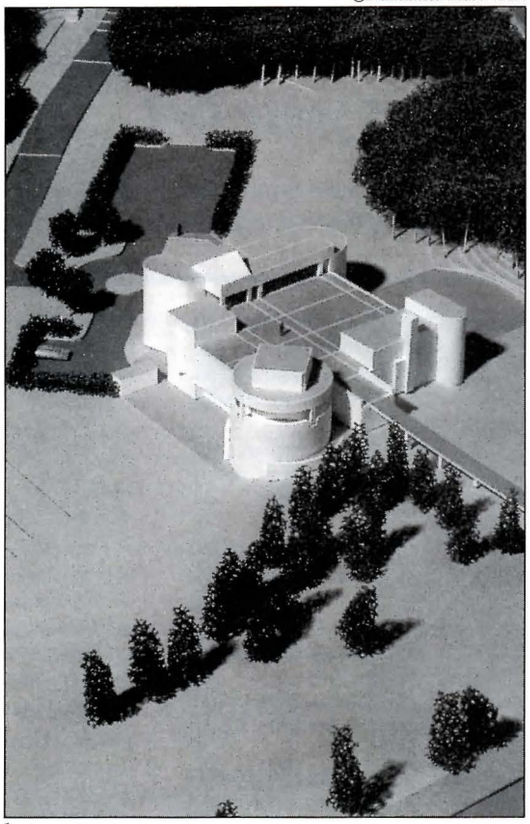

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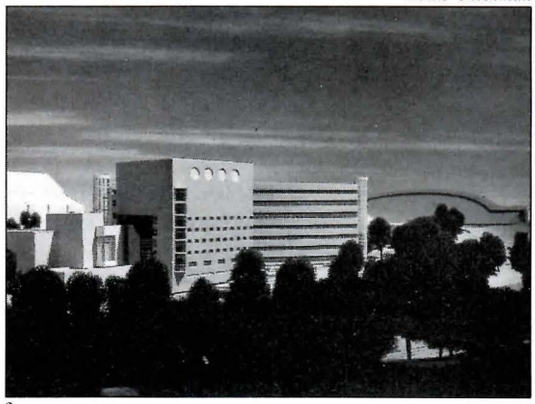
Louis Checkman



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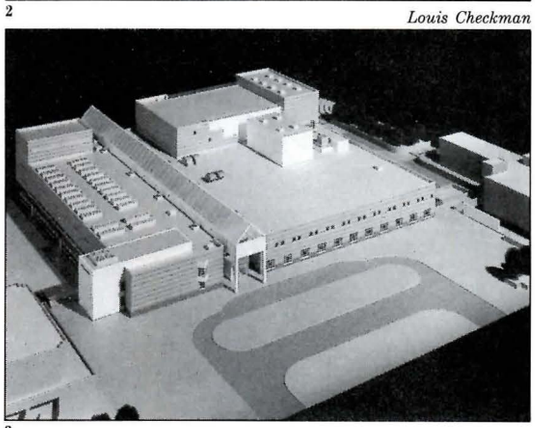


3

Though the architectural profession speaks of college buildings as a single building type, it is in fact only the owners that are typical of each other, not the buildings. Apart from the fact that they all belong to universities, that they all happen to have brick walls, and that they were all designed by Gwathmey Siegel & Associates, the three projects shown here have almost nothing in common.

The Center for Jewish Life at Duke University in Durham, North Carolina (1), will offer students the facilities for both worship and social activities. The articulated towers at three corners of the building will contain, severally, the sanctuary, the library, and the lounge, and are intended to give the building a villagelike silhouette that will suggest the diversity within. A 200-foot-long pedestrian bridge links the building to a major campus thoroughfare. Other facilities provided by the building include a multipurpose room, a dining room, a kosher kitchen, offices, and a ceremonial bath.

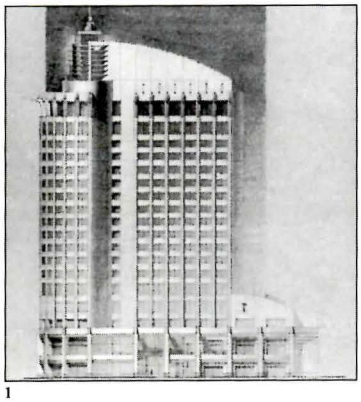
For Cornell University's College of Engineering in Ithaca, New York, the Center for Theory & Simulation in Science and Engineering (more simply, the Theory Center) will harbor science at the cutting edge (2). In addition to housing two new supercomputers, the building will provide laboratories in one large wing and hundreds of offices in a long sinuous building that intersects and passes through the lab wing. The building takes its form basically from considerations of topography and campus plan: the curving gray-brick office building with its strip windows follows the curve of Campus Road, while the red-brick laboratory wing with punched windows grazes the edge of Cascadilla Gorge. The architects intend the center to provide an architectural image for the future College of Engineering buildings.

The third college project in this collection represents still another building type—two building types in one building, in fact. For the State University of New York at Buffalo, Gwathmey Siegel devised a double building, the Theater Arts/Fine Arts Building (3), which are both divided and united by a two-story skylit atrium. The Fine Arts Department, housed in the wing with rooftop monitors, will contain the Student/Faculty Art Gallery, as well as studios and faculty offices. The Theater Arts wing, recognizable by the height of its stage house, will contain an 1,800-seat proscenium theater, a 400-seat drama theater, and a 200-seat screening room, as well as rehearsal theaters, dance studios, and backstage facilities.

New Performance hall in Fort Worth; The Architects Collaborative, Cambridge, Massachusetts, will design the Center for Information Technology at Gonzaga University in Spokane.

Justices. To be developed by Boston Properties for an estimated $130 million, the building will be rented to the federal government initially but will revert to government ownership within 30 years.

News briefs



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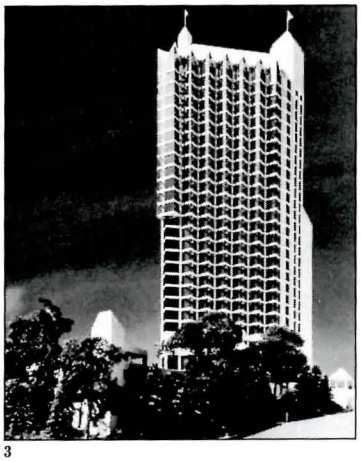


3

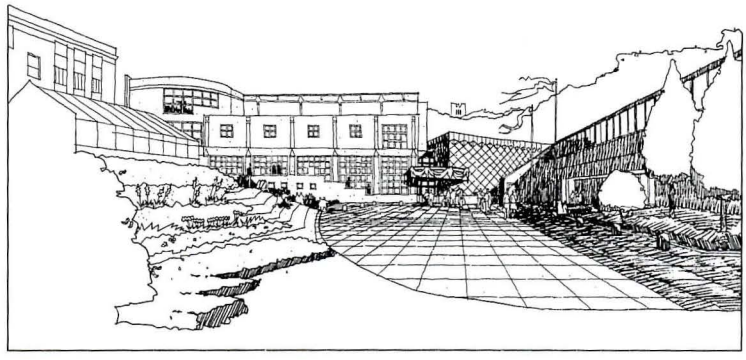
Manhattan Hotel in Tokyo (1) takes its name because of "the love affair with New York" felt by its owners, Chiba New Park Hotel Company, Ltd. The business hotel, designed by RTKL of Baltimore, with Kajima as the Japanese architect of record, will be built in Makuhari New Town on reclaimed land in Tokyo Bay. A light monitor on top of the 18-story building will use a high-tech combination of fiber optics and lasers for attention-getting lighting.

The Ritz-Carlton Hotel, Pentagon City (2) will cater essentially to business travelers. Designed by Chapman Coyle Chapman & Associates of Atlanta, the 345-room hotel emulates the Eclectic Classical style familiar around the nation's capital. The facility will be part of Fashion Centre, a mixed-use development in Arlington, Virginia, that will offer retail, office, and residential spaces.

In Niagara Falls, Ontario, a vacation hotel (3), as yet unnamed, will be built on the Niagara escarpment. Architect Robin Clarke of Toronto was quite conscious of the romantic location—"We haven't overlooked the obvious popularity of Niagara Falls as a honeymoon destination." Each of the rooms will command a view of either the Canadian or U. S. falls, and 20 rooms will offer views of both. At 25 stories, this will be the highest structure in Niagara Falls except for the observatory tower next door.

Newport Tower (4) in Jersey City, across the Hudson River from Manhattan, will be the tallest building in a development that will be called Newport. Designed by Ehrenkrantz, Eckstut & Whitelaw of New York City, who also master-planned the complex, the 37-story building will have two distinct facades: an abstract glass skin facing suburban New Jersey and a horizontal stone skin facing Manhattan.

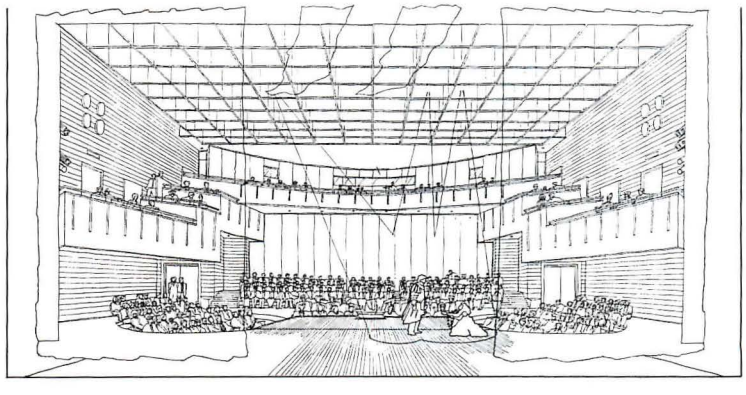
Different outsides, different insides



Whenever a new building must be inserted into an old college campus, the architect confronts especial problems of context—not only the sentiments of old grads but the architectural rights of old buildings. When designing the Performing Arts Center at Swarthmore College in Pennsylvania, Dagit-Saylor had to deal with Mitchell/Giurgola's Lang Music Building, which dates from the early '70s and which incorporated a knock-out panel in preparation for a building on this very site. At the northwest corner of the new building, Dagit-Saylor added a cube-shaped studio theater that swerves to join the music center's diamond-patterned building with a second-floor bridge and to create a major entry court for the two arts buildings (above). On the other two sides, the facades required a different composition in order to harmonize with the school's prevailing collegiate Gothic architecture. The exterior is finished with gray brick trimmed with cut stone to resemble stone buildings elsewhere on campus.

The interior needs of the performing arts facility are also diverse. The chief component is, of course, the theater, which with its support spaces occupies most of the building's volume. The theater, for which George Izenour was the design consultant, encompasses two audience chambers—a drama theater and a cinema; a concrete partition rises or sinks between them, making the two acoustically independent when raised but allowing the seating areas to combine when lowered. In the rendering below, the concrete wall at the back separates the two houses. The stage can also assume various conformations: the rendering shows a thrust stage, but the drawing also shows the ghost of curtains at the proscenium line.

Other facilities in the $11-million building include the studio theater, dance studios, and classrooms and offices for the English department.



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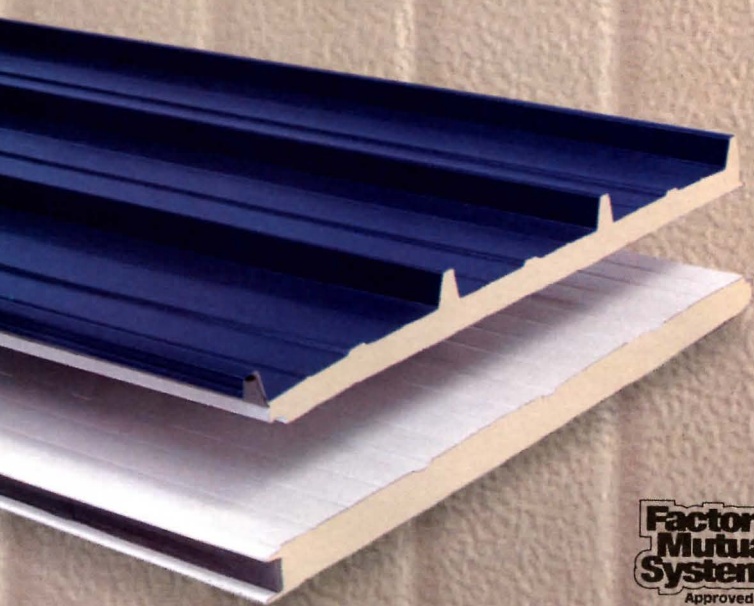

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A Vermont prototype for affordable housing

When the nonprofit organization Housing Vermont sought an overall solution to the problem of affordable housing in the state, it required, among other things, an architectural prototype. With the Bank of Vermont and the Bank of Boston as co-sponsors, it therefore held an invitational competition among New England architects, asking for a design that would offer flexibility to suit unknown sites, that would reflect the New England esthetic, and that would be affordable without looking cheap. The winning design, submitted by Boston architect Jeremiah Eck, is slated for construction in Norwich, Vermont, across the Connecticut River from Hanover, New Hampshire.

Eck's design certainly looks like a traditional Yankee house, with a steep roof, clapboard siding, bay window, and combined kitchen/dining room/family room. The design achieves affordability with its small size—873 square feet for three-bedroom units, 702 square feet for two bedrooms; with density—the designs can be strung together for two- or three-family houses or for larger condominiums; with low-cost materials—vinyl siding and window frames and asphalt shingle roofs; and with conventional detailing.

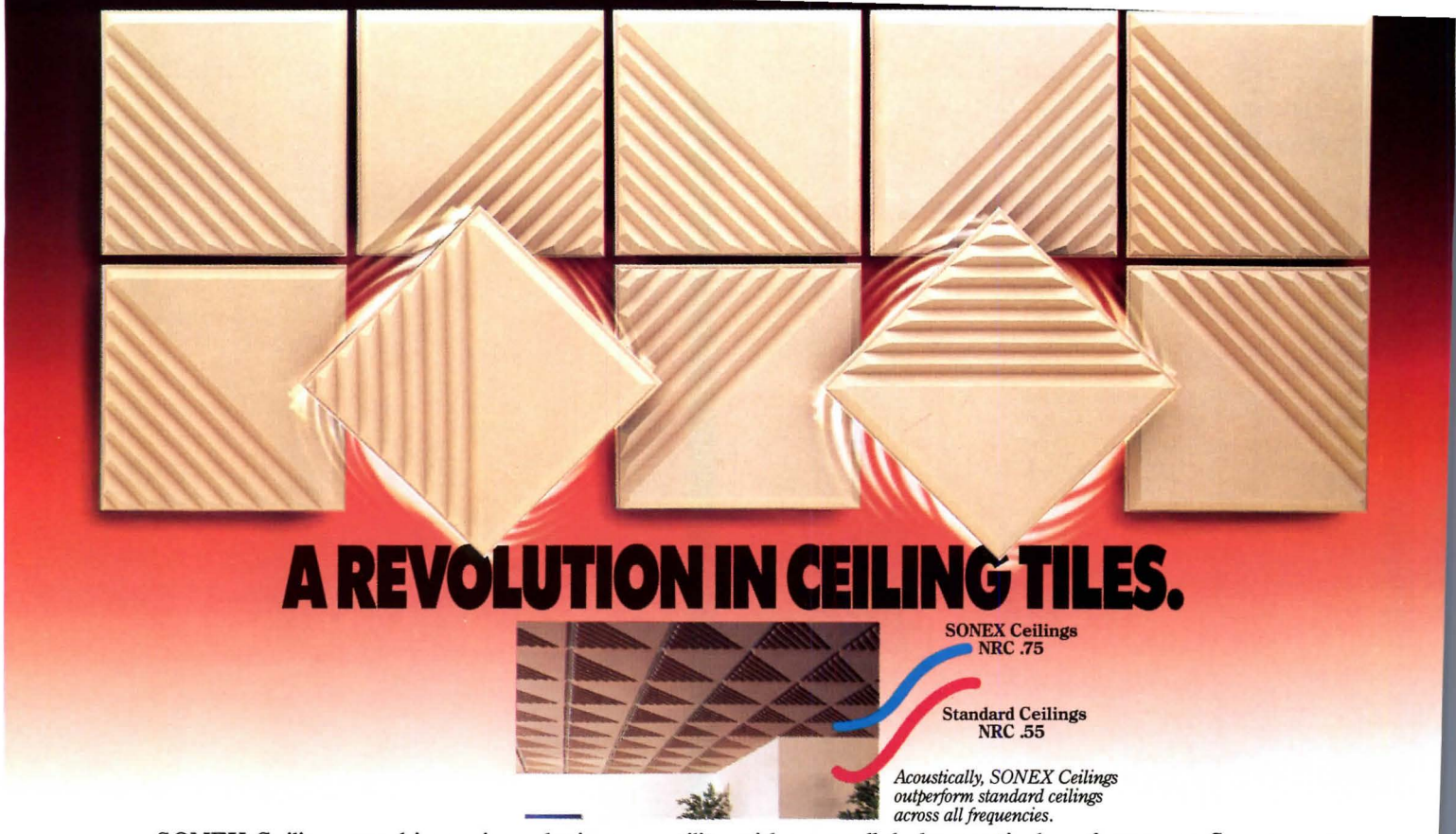
Jury members included architects Turner Brooks, William Duff, and Robert Knight, all of whom practice in New England, and Michael Richardson, president of Housing Vermont, a private nonprofit group that is an offshoot of the quasi-governmental Housing Finance Agency. In addition, and demonstrating the seriousness of Housing Vermont's efforts, the organization retained the services of a cost estimator and an energy consultant to grade the submissions. (Eck reports with some pride that he got a B in energy; there were no A's.)

Housing Vermont offers financial, legislative, and real-estate advice to town governments, and hopes to license these designs to private or public developers.

The artistry of architectural photography

The architectural photographer Cervin Robinson has taken 100 photographs for the collection of the Cleveland Museum of Art. Although one tends to think of museums as collectors rather than patrons, the Robinson commission was conceived by Evan H. Turner, director of the museum, and allowed the photographer a year in which to explore Cleveland's photogenic monuments and hidden places. The assignment also gave him ample time to choose the most propitious season and light for each subject.

The photograph shown at right, titled "Guardians of Traffic," shows sculptured pylons on the Lorain-Carnegie Bridge, looming above a house on West 17th Street. The museum will exhibit the photographs from November 22 to February 18, and a book about them will be published by the museum and Indiana University.



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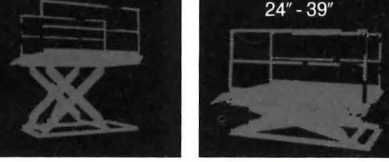

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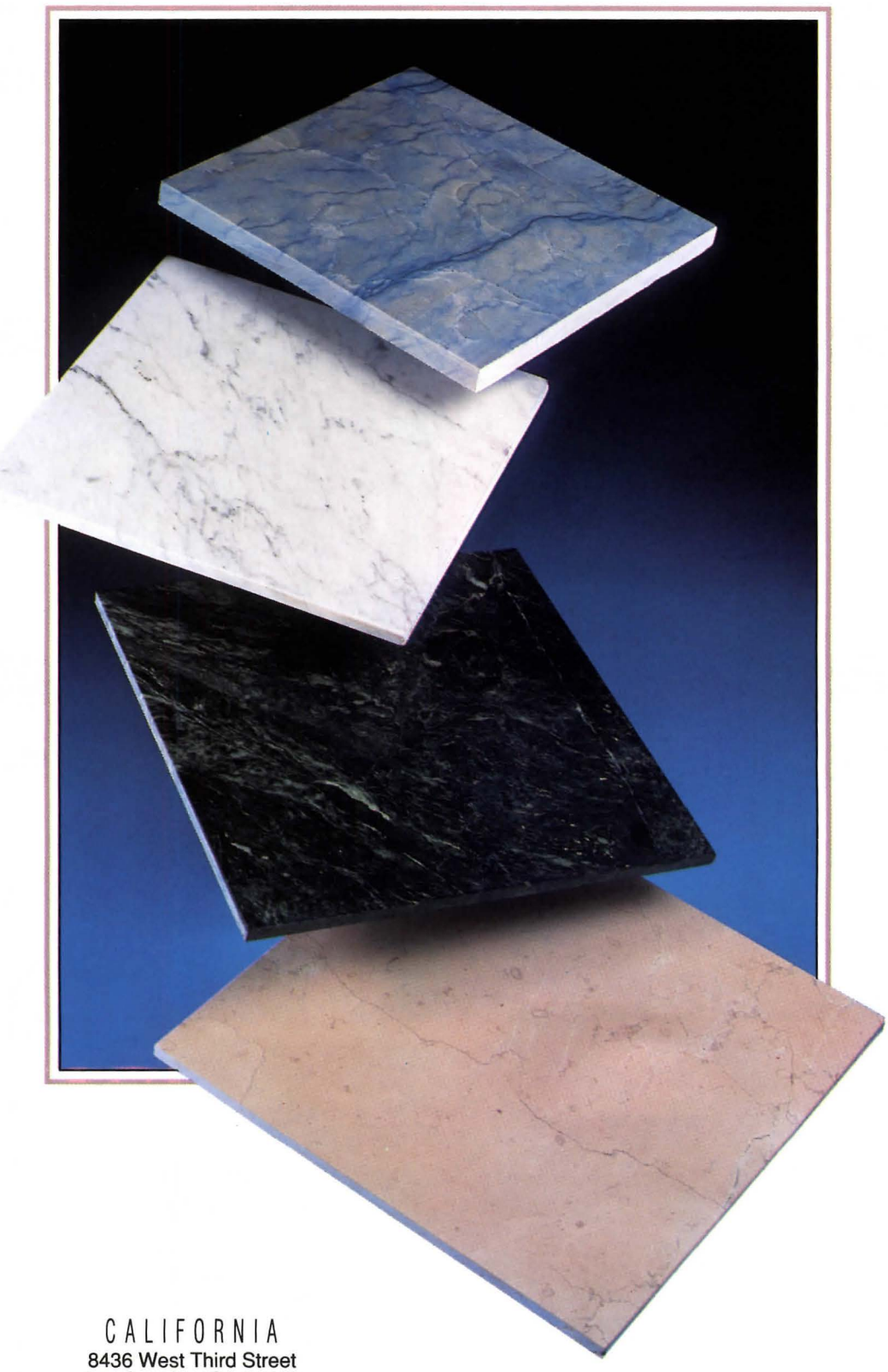

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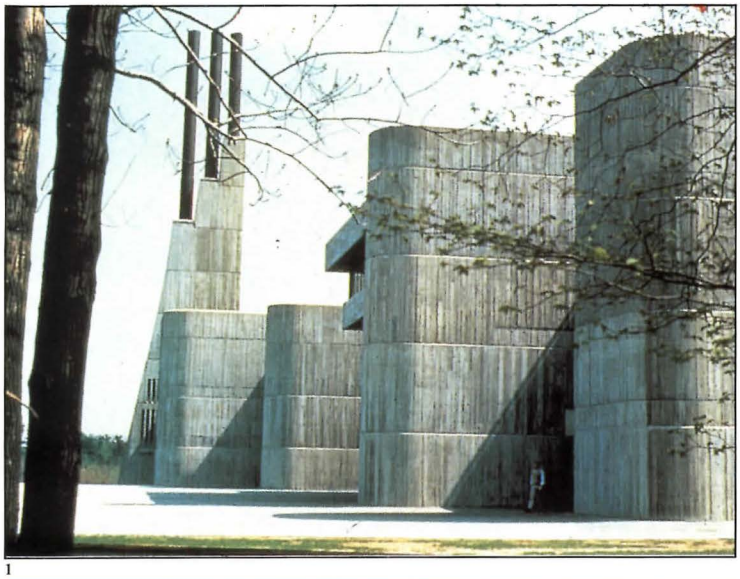
Design awards/competitions: Ontario Association of Architects Design Excellence Awards

At its centennial convention in June, the Ontario Association of Architects announced the winners of five Awards of Excellence and a 25-Year Award, as well as presenting an Award of Merit to Dunlop Farrow Aitken Cansfield, Inc., Architects and Engineers, for a senior citizen's care facility in Espanola, Ontario. Jurors were Barton Myers, of Los Angeles, as chairman; David W. P. Ellis, Sault Ste. Marie; Roch C. Belair, Timmins; Norman W. Critchley, North Bay; and Desh Malholtram, London.



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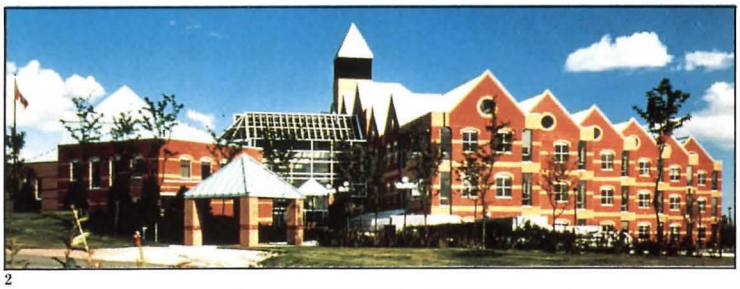

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1. Scarborough College, University of Toronto, Toronto; Page & Steele and John Andrews, associated architects. Recipient of the 25-Year Award, the building is, the jury said, "as provocative and interesting today as it was 25 years ago." At the time, the jurors added, it "was considered one of the first architectural expressions of a new esthetic."

2. H. J. A. Brown Education Center, Peel, Ontario; Shore Tilbe Henschel Irwin Peters, Architects and Engineers. An office building that also contains public meeting and theater facilities, the building was commended for "its clear conceptual planning." The jury also praised "its local motifs and geometrical forms that break down the scale."

3. Federation Hall, University of Waterloo, Ontario; Dunlop Farrow Aitken Cansfield, Inc., Architects and Engineers. The combination pub and concert facility, which serves 700 students, impressed the jury with "its elegant detailing and craftsmanship" and its "successful combination of high tech and traditional materials."

4. Research Building, Xerox Canada, Mississauga, Ontario; Shore Tilbe Henschel Irwin Peters, Architects and Engineers. The building houses analytical laboratories and ancillary facilities. The jury called it "a sophisticated high-tech building," and felt that "it makes a strong statement from its highway location and enhances the client's corporate image."

5. Alumni House, University of Guelph, Ontario; Moffat Kinoshita Associates, Inc., Architects. Of this renovation and expansion of a century-old sheep barn, the jury said that it particularly liked "the articulation of the existing picturesque rooflines," as well as "the careful attention to scale, color, and materials."

6. Queen's Quay Terminal, Toronto; Zeidler Roberts Partnership/Architects [RECORD, June 1985, pages 134-141]. A 1926 waterfront warehouse and train terminal was transformed into a combination of office, residential, retail, and cultural spaces with "an extraordinarily beautiful execution of the assignment." The jury especially praised the retail space.

Design awards/competitions: Building Stone Institute 1989 Tucker Awards

The Building Stone Institute, an international trade association of quarriers, fabricators, dealers, and installers, established its annual Tucker Architectural Awards program in 1977. The institute points out especially that the program's panel of judges are independent architects, without the participation of any member of the industry, and that the sole criterion is "excellence in concept, design, construction, and use of natural stone." This year's jurors were Peter S. Forbes of

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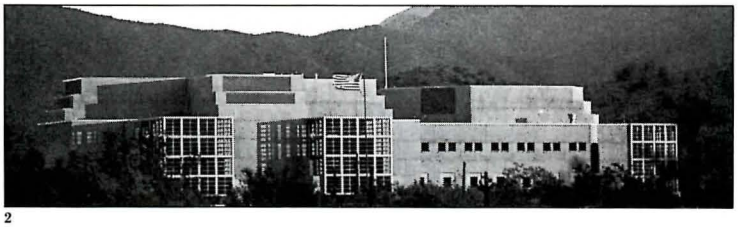

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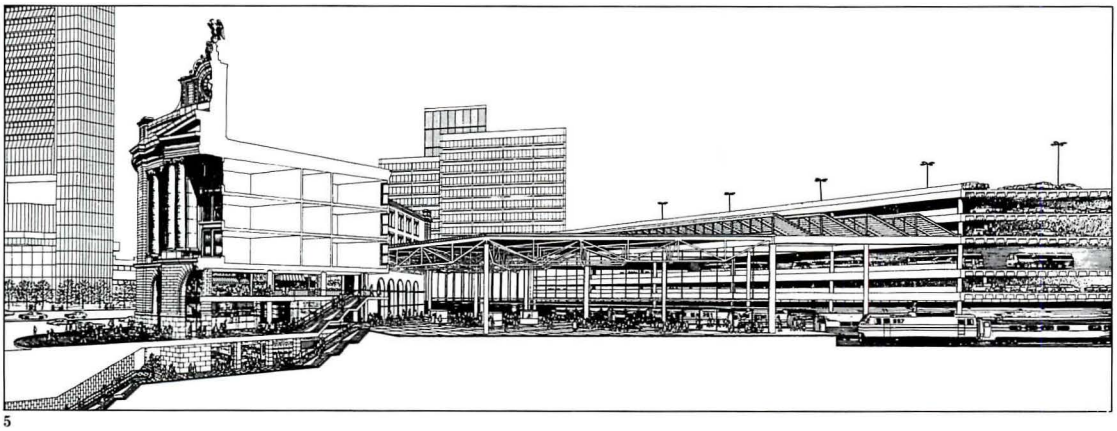

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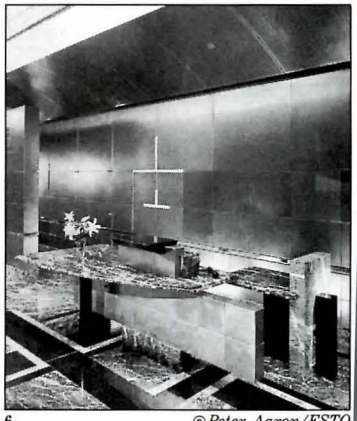

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1. MONY Financial Services—Lobby Renovation, New York City; Kohn Pedersen Fox Conway Associates, Inc., architect, New York City [RECORD, mid-September 1988, pages 94-98]. "A ferociously urbane, suave, and sophisticated project," the jury commented. "The craftsmanship involved in this project is breathtaking. The use of four different colors in the flooring is absolutely essential to the effect."

2. Mayo Clinic in Scottsdale, Scottsdale, Arizona; Ellerbe Becket, architect, Minneapolis. "We were impressed right off the bat with [the building's] massing, its color, and its relationship to the desert. . . .The architects made a really beautiful transition from the man-made to the natural environment."

3. Restoration, Indiana State Capitol, Indianapolis; The Cooler Group, Inc., architect, Indianapolis. "The architects deserve tremendous credit because of their relentless attention to detail. It was a heroic effort. This is restoration at its best," the jury felt. "They actually took up 2,000 flooring tiles to insert mechanical systems so they would not intrude on the original fabric."

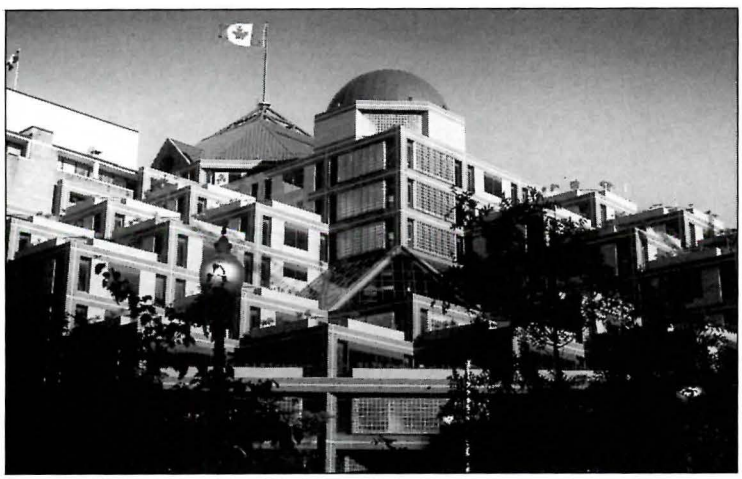
4. Swimming pool and outdoor shower on the Choptank River, Western Shore, Maryland; Rubenstein-Markewicz Architects, New Haven, Connecticut. "This could have been the most banal of all projects, and instead the architects turned it into an abstract landscape with enormous power. . . .The architects' drawings of the project have the same mystical quality as the project itself."

5. South Station Transportation Center, Boston; Skidmore, Owings & Merrill, Washington. The architects replicated "a piece of the building that had been designed but never constructed. . . .The hues and tones of the brick and stone are a perfect match with the existing architecture. In this kind of work—where you are not able to see where the new work begins—that is the highest praise."

6. Office for a private investment partnership, New York City; Kohn Pedersen Fox Conway Associates, Inc., New York City [RECORD, Mid-September 1988, pages 98-99]. "Its elegance is overwhelming . . . .By using the different grains, colors, and pattern in the floors and the walls, it uses

Peter Forbes and Associates, Boston, as chairman, and Steven L. Einhorn of Einhorn, Yaffee, Prescott, Albany, New York.

Of this year's 12 awards, all presented to projects completed within the past five years, six were in the category of nonresidential buildings, two were interiors, another two were restorations, one a residential building, and one a landscape design in a residential site.



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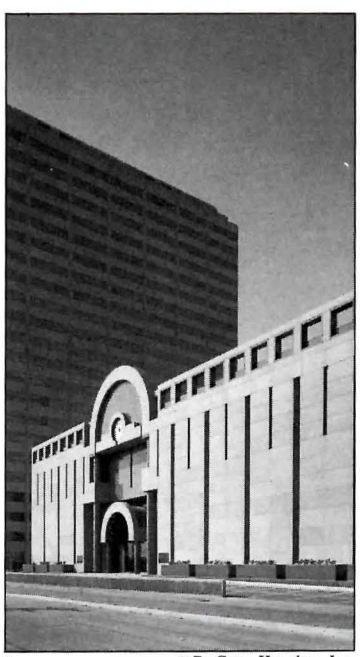

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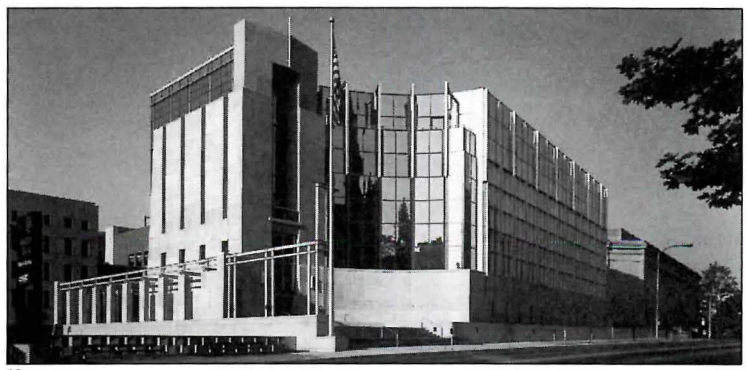

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11 *Laurence Barkan*

12

stone in a sophisticated way that enhances both the space and the material itself," the jury said.

7. Metropolitan Police Headquarters, Toronto; a joint venture of Shore Tilbe Henschel Irwin Peters and Mathers & Haldenby, Toronto. "This could have been a very ordinary police building. Instead, it has made an enormous contribution to the urban vitality of the city because of the energy and the spirit that was brought to it."

8. Heron Tower, New York City; Kohn Pedersen Fox Associates, New York City. "This is an elegant, extraordinarily urbane building," said the jury. "The stone skin is magnificently detailed—sort of like a finely tailored suit. It says 'New York.' It's a building with a powerful identity and yet it is a good neighbor."

9. Macy's Department Store, Dallas; Thompson, Ventulett, Stainback & Associates, Atlanta. "When you get up close, you can tell it is well put together, but what is appealing is that it presents a dignified facade at the speed of the highway. . . .a 70-mile-an-hour building."

10. Software Engineering Institute, Carnegie Mellon University, Pittsburgh; a joint venture of Bohlin Powell Larkin Cywinski and Burt Hill Kosar Rittelmann, architects, Pittsburgh [ARCHITECTURAL RECORD, March 1989, pages 78-83]. "This is a thoroughly professional and incredibly subtle job. . . .At some future date, observers may have a hard time figuring out when this building was actually built. In the best sense of the word, this is a really timeless building."

11. The Tennis Cottage, La Ana, Pennsylvania; Hess Associates, Inc., Stroudsburg, Pennsylvania. "This is a charming small-scale project that has been lovingly put together with the right degree of whimsy for the function. There is a nice playing with the overscaled elements of a large roof, an enormous arched window, and columns that open out onto the tennis court."

12. 3401 Walnut Street, The University of Pennsylvania, Philadelphia; Geddes Brecher Qualls Cunningham, architect, Philadelphia. "The mix of the limestone and the brick make the building very exciting and beautiful. [And the designers] left the street better than they found it. . . .To build a building that long and not have it either corny or oppressive takes real skill."

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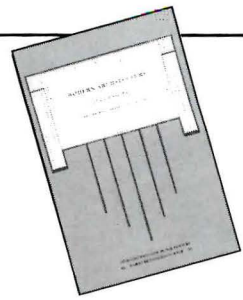

Modern Architecture: A Guidebook for His Students to This Field of Art, by Otto Wagner. Introduction and translation by Harry Francis Mallgrave. Santa Monica: The Getty Center for the History of Art and the Humanities, 1988, $29.95.

Reviewed by Carl Pucci

Some might maintain that the ideal architectural library should house only two kinds of books—those with no text, only careful visual documentation of buildings, and unadulterated original sources, i. e., architects' thoughts in their own words and drawings. Criticism would be banned as a serious pollutant, although this hard line, it must be admitted, might eliminate several favorite and provocative thinkers.

It is perhaps with this ideal in mind that the Getty Center publication program, edited by Julia Bloomfield, Kurt W. Forster, and Thomas F. Reese, has launched a series entitled "Texts and Documents" that promises to deliver some fine additions to any library. Offering English translations of previously unavailable texts (and including, however, that necessary evil, critical commentary), its first publication is a new edition of Otto Wagner's *Modern Architecture* originally printed in 1896).

The introductory article by Harry Francis Mallgrave (who is also the translator) is a concise presentation of the historical, social, and critical context of 19th-century architecture in Austria and Germany. Mallgrave traces critical debates from Schinkel to Semper to Wagner. He touches the ongoing debate among Classicists and Gothicists and mentions as subtopics nationalistic styles (such as Rundbogen) and scientific influences (Darwin's evolutionary theory, the technology of iron) that led eventually to Wagner's search for a historical, functional, and technologically appropriate style and the consequent "eruption of the Modern Movement."

Wagner's *Modern Architecture* developed over the years through several versions. The first edition, of 1896, is clearly addressed to his students. Scattered among polemical issues are more professional concerns: the proper education and role of the architect, the position of the State in the arts, sanitary treatment, and suggestions for city beautification. Only in the third edition of 1902 does he admit to "something of a manifesto."

What is fascinating about *Modern Architecture*, especially for those generally familiar with Wagner, are the disparities between his words and his built work. It is difficult to reconcile Wagner's didactic exhortations and intolerance for the past with the richness and complexity of his work at the Stadtbahn and Nussdorf locks, with his figurative sculpture, or with the wonderful botanical excesses of his majolica-clad apartment buildings, even if we remind ourselves that Wagner predates the anti-ornamental version of Modernism we have now inherited. *His* modern world is still replete with the decorative detail and sculptural agenda of a richer architectural scheme. But Wagner would somehow reinvent this detail "to harmonize with modern man." That he claims this new approach derives from utility or construction form was taken more on faith than put into practice, and one should not examine his works too closely for utilitarian or structural honesty. Undaunted by such inconsistency, Wagner closes with appropriate gusto, "ARCHITECTS . . . CHILDREN OF THEIR TIME." The proselytizing professor outstrides the brilliant practitioner. The voice of Wagner that comes through reminds one most of Louis Sullivan. There is the same stern, didactic call for ahistoric invention belying a beautifully florid hand. It is a voice that now reads as antiquated, even wistful from our perspective, but it is as clear as a bell.

Mention should be made of this book's production. There are several ways to resurrect works of historic value. One can reprint earlier translations uncritically, reproduce facsimiles, or, as here, translate in spirit a critical annotation of the original. It is to the editors'—and book designer Laurie Haycock's—credit that annotations (specifically a bracket calling attention to various edition emendations) do not take away from the book's readability or production quality. A symmetrical layout and changes in paper and type distinguish the original text, and paragraph markers derived from the 1902 version all make for a very pretty, yet scholarly edition. Minor quibbles might be made over the somewhat fussy outdents and lower-case subheadings that carry the notion of sotto voce a bit far.

And then there are a few facsimile pages of the original Viennese edition as a kind of final teaser. We are allowed glimpses of pages adorned with photographs and a relentless symmetry of alpha/omega, summer/winter, idealist/realist images that are intimately related to the text (Wagner himself did the original book design). The images hint at both the range Wagner hoped to encompass and the contradictions he willingly accepted, and are missed in the present version. It makes one long for the original.

Carl Pucci is a partner in the New York City firm Bumpzoid.

Cinegrammé Folie Le Parc de la Villette, by Bernard Tschumi. New York: Princeton Architectural Press, 1988, $19.95.
Five Houses, by Anthony Ames. Introduction by Thomas Schumacher. New York: Princeton Architectural Press, 1988, $24.95.
Buildings and Projects, by George Ranalli, with essays by Michael Sorkin and Anthony Vidler. New York: Princeton Architectural Press, 1988, $19.95.

Reviewed by David Kesler

Bernard Tschumi's rumination on the competition-winning design for the Parc de la Villette, in Paris, is a valuable visual record of what the author claims is "the largest discontinuous building in the world." The project may be perceived as a park, a structure suggestive of the layered frames and industrial forms of oil refineries, or indeed as a miniature incomplete city. Tschumi conceives it as points, lines, and surfaces. Interlacing gardens and pathways are overlaid by a grid of follies—points—each of which is a hybrid, capable of housing a variety of nonspecific functions.

The red-painted steel forms of the follies seem inspired by the drawings of Jacob Chernokov, who produced some of the more lasting visions of Russian Constructivist architecture. But Tschumi proposes that the superimposed geometrical systems tie the project to larger issues of urban design.

One of the ironic aspects of theoretical books on architecture is their fundamental separation from built work. Architecture, like all art, must be experienced firsthand to be fully appreciated. It seems highly unlikely that the general public will read this

Continued on page 57

David Kesler, a designer based in New York City, was an editor of Precis 6.

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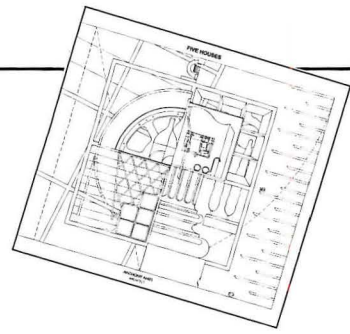

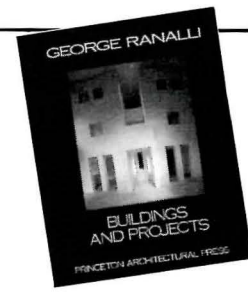

"manual" or even understand that "instructions" for understanding have been provided. Instead, one would expect the visitor to be enchanted by these curious forms. Children will run to the carnival-like follies, and perhaps this is, in the end, enough.

Anthony Ames is an architect interested in a measured interweaving of platonic geometries. Though the architect's built work constitutes a small and highly published portfolio, his oeuvre demonstrates a mastery of Corbusian language on a par with the 1970s work of the New York Five architects. Ames comes closest to a synthesis of the early work of Michael Graves and Richard Meier, especially in his use of rotated and shifted axes to link primary geometric masses. In the Hulse Residence, John Hejduk's House 10 is evoked in the way an exterior screen wall is detached from the body of the house and program elements, enclosed in geometric forms, project into the void between screen and building.

There is as well a subtle classicism in this house that is the most distinctive aspect of Ames's work. The pitched roofs, local symmetries, and thick-walled spaces are clearly not derived from the work of the Five, yet enrich aspects of their work by infusing it with highly abstract versions of traditional forms. Indeed, it is almost as if Ames has become an Atlanta-based New York Sixth!

In his foreword to the book, Ames defines pre-Modern space as "carved, anthropomorphic," and "objectified," and Modern space as "continuous, infinite," and "boundless." Ames's is a successful integration of these approaches, producing subtle variations on what has become an accepted and celebrated late 20th-century architectural style.

The best of George Ranalli's work is imbued with the poetic manipulation of apparently massive forms. The eloquent essays contributed to this volume by Michael Sorkin and Anthony Vidler illuminate the critical edge innate to Ranalli's work, connecting it to the underlying design principles of Carlo Scarpa and Louis Kahn.

Central to Ranalli's research is a fascination with the "institution" and its formal translation. The institution is the civic monument placed on what theorist Kenneth Frampton describes as "the space of public appearance," whether it be a town square or, as in this case, a living room. Both Sorkin and Vidler note Ranalli's concern with bringing the city into the interior realm. In the Callender School renovation, for instance, Ranalli created a "collective assembly of Facades." These function as interior building fronts on a "public" living space for each of the six apartments.

Perhaps no project in this monograph illustrates the capability of Ranalli's approach more than the New York loft, of 1986. This project, according to Vidler, takes on a certain resonance despite its use of gypsum board as a primary material. Vidler notes that "the qualities of light, surface modeling, and proportion are so managed as to endow even the smallest alcove with a sense of particularity."

Ranalli's work is torn by a tension between the abstractness of his forms and an almost historicist respect for the recognizably civic qualities of traditional architecture (his project to replace the tower in New York's Times Square stacks theaters in an unmistakably base-middle-top Beaux-Arts scheme). As Sorkin notes in the close of his essay, "Ranalli is engaged in a struggle for the space of architecture, for its very possibility."

The Architecture of Exile, by Stanley Tigerman. New York: Rizzoli, 1988, $40.

Reviewed by David Kesler

Stanley Tigerman's book is based on the assumption that "the cycle that delimits our state of exile, which began in paradise, may close now with our desire to return to the innocence of the original." Compared to the nihilistic overtones of Deconstructivism, the definition of *Paradise* as "the center [of meaning] in architecture" is surprisingly relevant.

The book may be seen in one sense as a concise overview of biblically inspired architecture from the first temples to 18th-century city plans. But its concerns go beyond architectural history to probe the way meaning in culture is created, disseminated and, over time, rediscovered.

Tigerman presents his theses in four extensively illustrated chapters named Sign, Challenge, Displacement, and Exile, which correspond to the four stages of the expulsion of Adam and Eve from Paradise. Sign focuses on Eden as "the first, and perhaps the only perfect paradise," and is illustrated with architectural images of the ideal, ranging from the Tent of the Tabernacle, as described in the Bible, to a cemetery as drawn by C. N. Ledoux. Challenge is akin to Adam and Eve's disobedience in eating from the Tree of Knowledge. The metaphor here is Solomon's Temple, an intentionally permanent masonry building, built in defiance of the biblically prescribed nomadic tent structure as the house for the holy ark. Displacement, says Tigerman, "is bracketed by the challenge that brings it into being and by the exilic condition it enforces . . . . The 'original' text [of Jewish scripture] becomes the 'old' [Testament] text, and so the necessity to reinterpret the original is anticipated." In architectural terms, Tigerman cites the entry columns to Solomon's Temple, Jachim and Boaz, the forms of which have been "displaced to other sites throughout history," from temples in Lebanon to Hawksmoor's Proposition IV for Queen's College. This dissemination of forms along with the often garbled associations to their original context fascinates Tigerman.

Similarly, exile refers to a recurring condition of man: "Alienation is the only ground accessible to an exilic state." Adam and Eve, after their expulsion from paradise, represent the alienation of man from God, prefiguring the death of God. There is an absence in the place where God existed, Tigerman reasons, because man never truly replaces God at the center, and he longs for a return to the stability of an imagined Paradise. Architecturally speaking, the basilica of St. Peter is described as a place with "an absent center" to be filled by the masses that come to pray. Le Notre's Plan of Karlsruhe is used to illustrate the Renaissance replacement of God by man—absence—as the center of the universe.

By demonstrating that alienation, which seems such a condition of 20th-century life, is not peculiar to our time, Tigerman strives for a "new innocence" in which the confrontation of our condition of exile can allow the architect to draw upon *experience* common to historical eras and our own rather than merely reconfiguring received forms. The concepts of Paradise and Exile are essentially abstract, and thus are not inherently form-specific. Tigerman thus returns us to the Bible as metaphoric origin for architecture in order to liberate us.

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Briefly noted

The Spirit of H. H. Richardson on the Midland Prairies, Edited by Paul Clifford Larson and Susan M. Brown. Ames: Iowa State University Press, 1988, $24.95.

Reviewed by Daniel Waterman

It is difficult now for us to grasp the impact that the work of H. H. Richardson had on architects and laymen when it first became widely known in the last three decades of the 19th century. Perhaps Richardson's work seems less remarkable to us today simply because we see his stylistic legacy everywhere. "Richardsonian Romanesque" once came to dominate the public and commercial architectural vocabulary in much of the country following his death in 1886, and its stylistic offshoots gave us many of the neighborhoods and historic districts that we now seek to preserve. *The Spirit of H. H. Richardson* reminds us of how a young, growing, and self-conscious region of the United States particularly identified with the freshness of Richardson's architecture. Comprising six insightful essays by regional architects, curators, and historians, the book traces the ways in which architects from the prairie states rapidly absorbed and transformed Richardson's innovations into a ubiquitous vernacular style.

Although Richardson built only four buildings in Chicago (the bulk of his work was in New England), this was the work disseminated across the Midwest. His Marshall Field Wholesale Store (1885) catalyzed his imitators, who filled block after block with variations. The book chronicles the best and worst of these efforts. Richardson's powerfully sculpted massing, delicately articulated masonry surfaces, and distinctly geometric monumental volumes turned out to be adaptable to a variety of projects, from the scale of the private home to the city hall and commercial warehouse. Some architects, according to Paul Clifford Larson, a contributor and editor of the volume, "pursued his archeological interests . . . others his penchant for simplification; some enlarged the exuberance of his detailing and others . . . his respect for primal volumes."

Regardless of which aspect of Richardsonian style these architects chose to quote, they all saw an idealism embodied in the work that caught the youthful spirit of states and cities that were emerging from an agrarian pioneer era and beginning to establish a civic and commercial persona. Few architects could successfully maintain Richardson's masterly synthesis of disparate elements, but, as the authors correctly point out, his followers, though frequently derivative, should not be treated as inferior. If anything, Richardson's work lent itself especially well to recombination and interpretation, and these buildings formed a rich urban tradition.

The book also challenges the long-held belief that Richardson's work was a precursor to Modernism, placing it instead in a delicate balance between the preceding style wars and the incipient Neoclassicism that would become the rage after the 1893 World's Columbian Exposition in Chicago. According to the essays, Richardson's style meant many things to many people: for Kansans it was a "simplistic" embodiment of a "diligent, hardworking society"; for Texans it was "self-consciously intellectualized" and "modern." To have embodied such divergent meanings, the Richardsonian spirit must have been strong indeed.

Daniel Waterman is a freelance writer in New York City.

Artists and Artisans, by Mark Swenarton. New York: St. Martin's Press, 1989, $35.
Tracing the Ruskinian tradition of Gothic Revivalism through its major practitioners—Philip Webb, William Morris, W. R. Lethaby, Raymond Unwin, and A. J. Penty—Swenarton shows the philosophical bases of that tradition to be related to German Romanticism, rather than seeing the return to crafts as a precursor to socialism, as others have argued. Quoting extensively from the letters and writings of these architects, he demonstrates both the zeal with which they mounted their attack on hollow materialism and the way that zeal for architectural "completeness" led to the excesses of the Modern movement.

Keeping Time, by William J. Murtaugh. Pittstown, N. J.: The Main Street Press, 1988, $25.
It may be surprising to learn that John Ruskin's dim view of restoration was that it meant "the total destruction which a building can suffer," adding "It's as impossible to raise the dead as to restore a building." Murtaugh, the first Keeper of the National Register of Historic Places, takes a rather more hopeful position in this thorough, if dry, account of the history and theory of preservation in America. Besides examining what preservation has meant at different times in its short history on these shores, he provides useful distinctions between various current schools of thought on the subject.

Georgian London, by John Summerson. New York: St. Martin's Press, 1989, $39.95.
This splendid volume, first issued in 1945, has been thoughtfully revised and expanded and beautifully redesigned and illustrated, making it a classic of its kind. Summerson evokes and explores the architectural climate of 18th-century London with fitting grace; his style is subtly dramatic and his language is witty and direct. Weaving together informed opinion and solid history, he tells the complex story of how London was gradually rebuilt after the Great Fire of 1666, and how the taste of both private and royal parties shaped a heroic period in British architecture.

The Rietveld Schroder House, by Paul Overy, Lenneke Buller, Frank den Oudsten, and Bertus Mulder. Cambridge: The MIT Press, 1988, $25.
Few buildings warrant an entire book on their creation, but Gerrit Rietveld's 1924 Schroder House, in Utrecht, is one such building. The primary-colored, open-plan structure has been lovingly restored, and its essential modernity still clearly shines through. A lengthy, at times mundane interview with the client's wife, Truus Schroder, helps place the building in historical context. Better, the book's crisp photography and uncluttered design ably convey Rietveld's dream of replacing a "brown" world with a "white" one.

Cowtown Moderne, by Judith Singer Cohen. College Station: Texas A&M University Press, 1988, $29.95.
Texas is not generally thought of for its homegrown Art Deco, making this profusely illustrated and well-researched look at the unlikely meeting of ziggurat and prairie a pleasant surprise. By limiting her inquiry to the effects of sudden wealth on a small town, Cohen shows how a sophisticated style was imported and integrated into the vernacular, with sometimes striking results. The numerous fine period photographs are more effective than the straightforward text in conveying how a handful of architects met the nouveau riche head-on to produce a modified Paris of the plains.
Scott Gutterman

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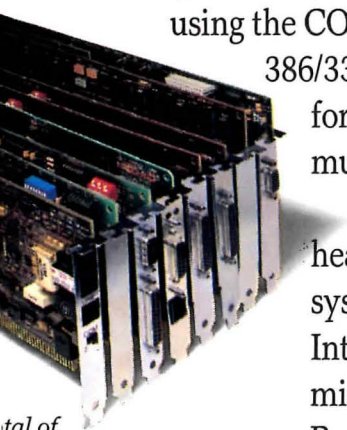

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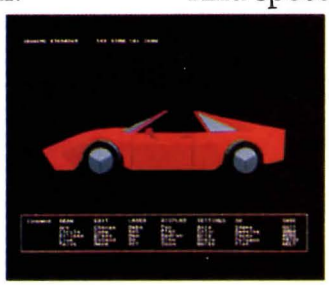

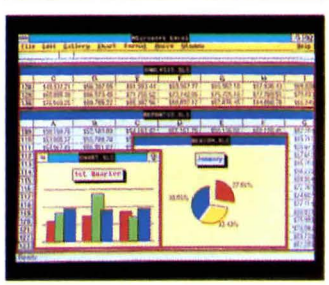

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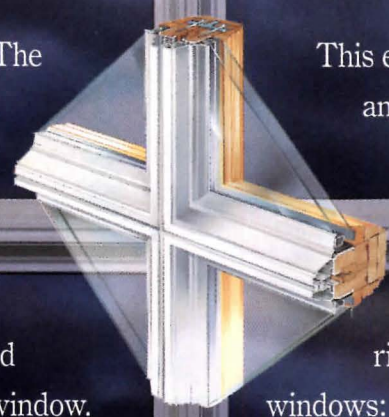

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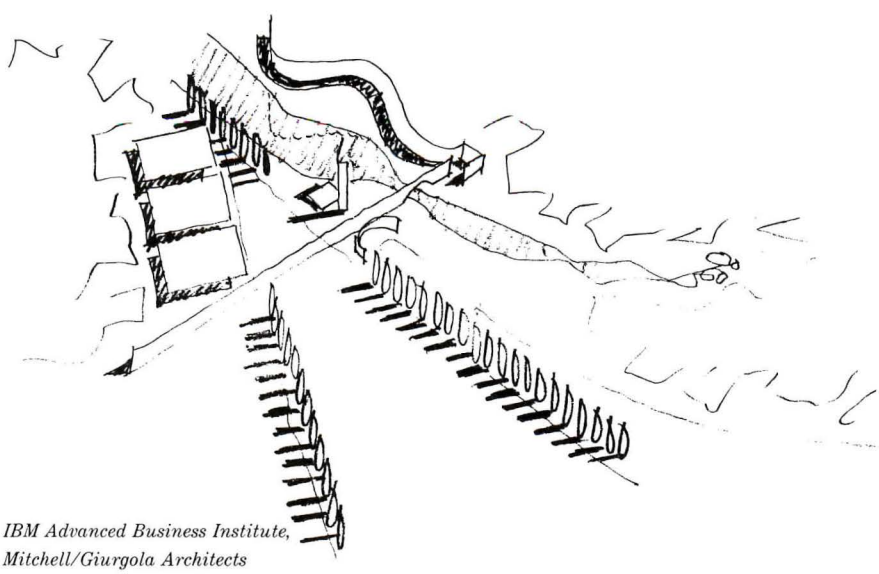
In this issue

Nothing is more gratifying than catching up with old friends whose work combines the sophistication of an experienced master and the freshness of a practitioner not long out of school. Among this month's featured architects who have elected not to rest on past esthetic laurels, Robert A. M. Stern probably had the most enjoyable assignment: the Walt Disney World Casting Center (cover and pages 66-71), a new employee-hiring facility in Florida whose idiosyncratic blend of Venetian Gothic imagery and space-age Modernism seems a far cry from the revival-style romanticism of Stern's residential architecture.

Richard Rogers, Norman Foster, and Nicholas Grimshaw are three celebrated architects whose names usually conjure up pictures of exposed mechanical systems, complex exoskeletons, and other machine-honed elements of British high tech. As our portfolio of their recent work reveals (pages 72-83), Rogers, Foster, and Grimshaw still derive architectural imagery from building technology. In all three featured projects, however, the arena of practice has shifted from high-end institutional and corporate commissions to more prosaic building types. Along the Thames, Rogers has transformed a 19th-century fish market into a financial trading floor and offices; near Heathrow Airport, Foster has produced a sleek spec office building using off-the-shelf metal components; and in London's dense Camden Town section, Grimshaw has created a mixed-use supermarket/housing/office project that is striking in its metal-based industrial vocabulary.

Back in the U. S., two American firms continue to refine their distinctive brand of Modernism. At 303 West Madison in the Chicago Loop, Skidmore, Owings & Merrill paid homage to the city's late 19th- and early 20th-century commercial landmarks without resorting to literal replication (pages 92-95). And in Rockland County, New York, Mitchell/Giurgola Architects gave IBM a management-training center (drawing below and pages 84-91) that fits in neatly with its rustic setting—and with IBM's corporate ethos of quiet good taste.

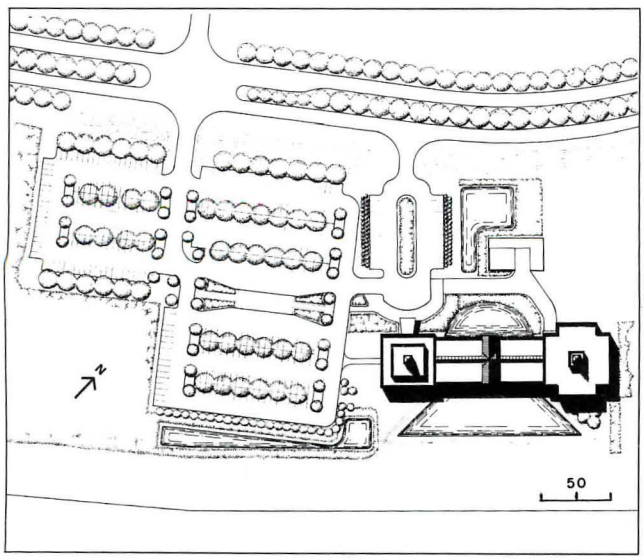
For this month's Building Types Study on shopping centers (pages 96-105), Grace Anderson examines a new retail typology called "urban villages"—mixed-use complexes that are reintroducing a generation of Americans raised on enclosed malls to the open-air pleasures of downtown.



IBM Advanced Business Institute, Mitchell/Giurgola Architects

Casting Center
Walt Disney World
Lake Buena Vista, Florida
Robert A. M. Stern Architects

Entertainment architecture



In a recent interview, Robert A. M. Stern described a series of conversations that he had with executives of the Disney Development Company during the design-development stage of the new Walt Disney World Casting Center. "They never told me how we should design the building," Stern recalls, "but they did keep reminding me that 'it has to be fun. Disney is *fun*.' "

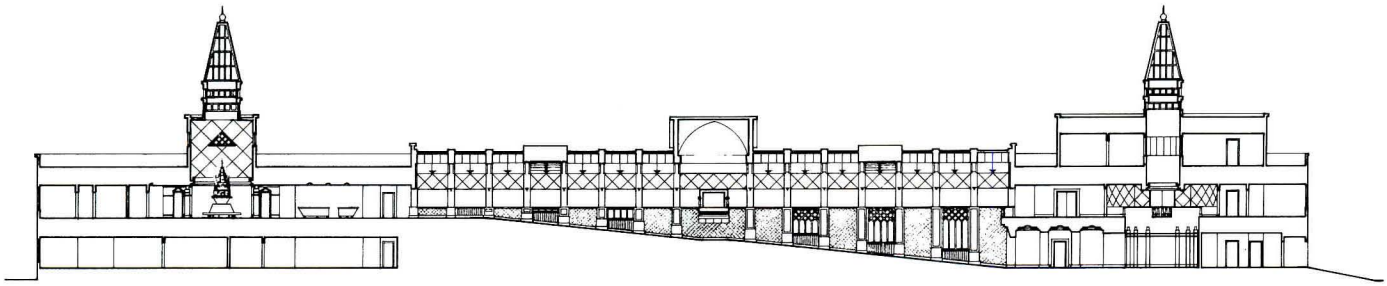
Fun, yes, but not frivolous. Like any successful corporation, the Disney Development Company tends scrupulously to the bottom line, even as it plans a series of eye-catching hotels, shopping centers, and office buildings near the celebrated Walt Disney Company theme parks and studios in southern California and central Florida. To attain its goal of "entertainment architecture," Disney has become one of the country's foremost corporate patrons of world-class architects. For example, in addition to Stern's Casting Center, Disney projects under construction near Orlando include Michael Graves's Dolphin and Swan hotels and a new Disney office building, designed by Arata Isozaki.

Located on 11 brushland acres alongside Interstate 4, the Casting Center is a 60,000-square-foot employment and employee-relations facility that Stern characterizes as "a back-office building sitting on the most front-office of sites." The two-story structure replaces a prosaic group of inaccessible buildings that Disney had previously used as a screening ground for its 30,000-member "cast." The center is meant to "give prospective employees the Disney magic when applying for a job," according to project manager Timothy Johnson—and, not incidentally, function as a highly visible billboard for potential cast members, local residents, and out-of-town tourists traveling the interstate.

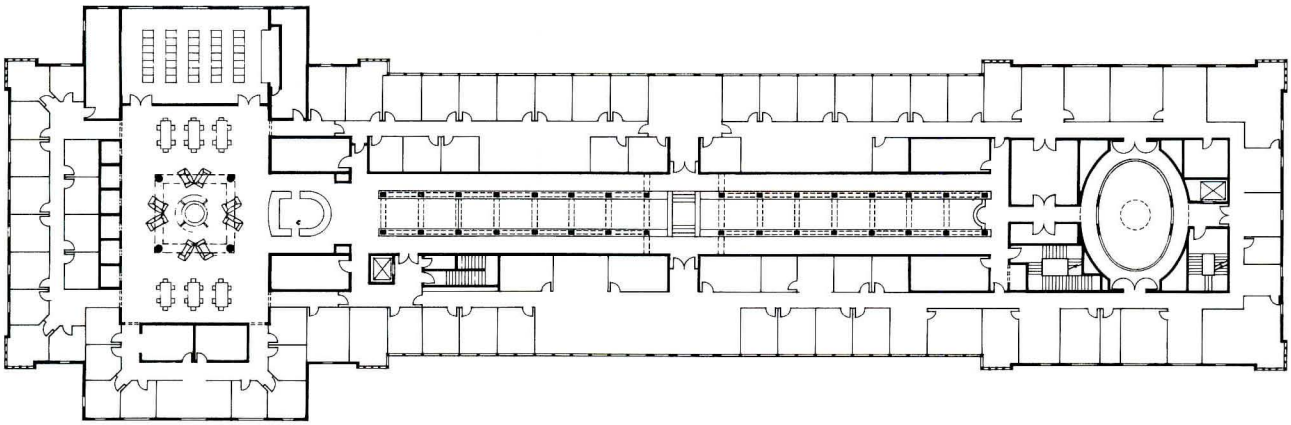
Toward these ends, Stern designed the 360- by 80-foot center as a seductive siren: a latter-day Doge's Palace framed in steel, articulated by Venetian Gothic windows and towers, and clad in diamond-shaped panels of polystyrene-backed exterior insulation. From the interstate, 5-foot-high gold-leafed letters atop 12-foot-tall Venetian "bollards" spell out the word "CASTING" (bottom opposite); from the parking lot, applicants enter the building under a cable-stayed aluminum canopy whose airfoil shape refers to the 1950s Jetsonian Modernist esthetic of Disney's original Tomorrowland in California (top opposite); and along the structure's parapet wall, bright-blue scuppers cut into the shape of Disney's most beloved character, Mickey Mouse, are a striking reminder that this is no ordinary suburban office building.

Once inside, visitors pass logically through a series of three major public spaces that are meant, says Stern, to "clarify Disney's hiring process and give it an architectural dimension." The first space is an oval rotunda that introduces applicants to the company through 12 gilded statues of illustrious Disney characters set atop tall bases. Job-seekers then ascend a 150-foot-long ramped atrium that directs the public into the heart of the structure without disturbing the privacy of the building's 250 employees. The ramp, which Stern acknowledges was inspired by the escalator that pierces Frank Lloyd Wright's Marin County Civic Center, is lined with engaging trompe l'oeil canvas murals depicting, on the freeway side of the atrium, Disney characters in a variety of highway-related predicaments and, on the side of the atrium facing the theme parks, scenes from the Magic Kingdom and Epcot Center. At the top of the ramp is the General Employment Lobby, an eerily dim information area where Disney personnel greet visitors. Here is where the fun ends and the serious task of applying for a job begins. *Paul M. Sachner*

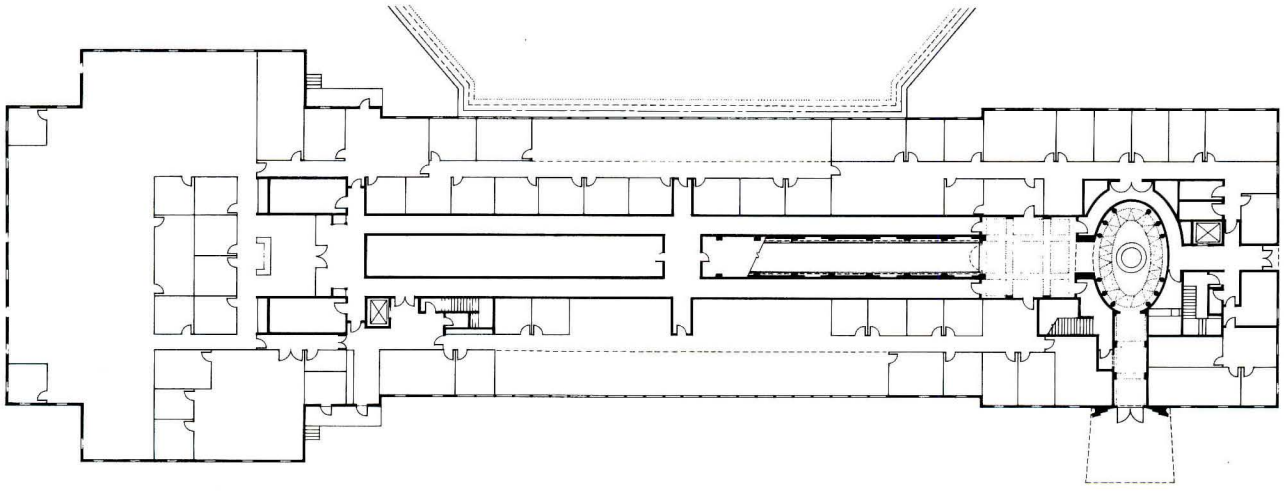
Robert A. M. Stern's whimsical iconography for the new Casting Center at Walt Disney World belies some serious corporate intentions.



LONGITUDINAL SECTION



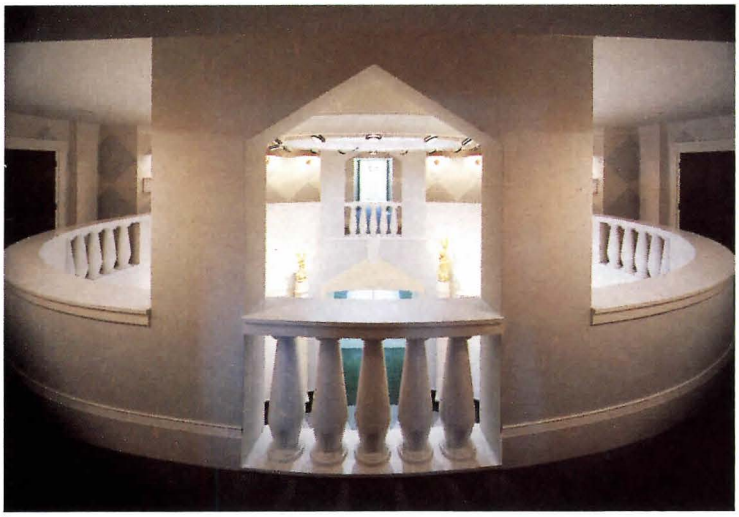
SECOND FLOOR



FIRST FLOOR

A 30-foot-wide oval rotunda (opposite and far right in plans) is the first event in a processional sequence of spaces that directs job applicants up a 150-foot-long ramp and into the General Employment Lobby (following pages). These public areas fill the building's core and are surrounded by private offices housing a variety of employee-related functions. The rotunda is illuminated by a skylit campanile and adorned with a patterned terrazzo floor and gilded polystyrene Disney characters mounted atop 12-foot-high fiberglass poles.

Casting Center
Walt Disney World
Lake Buena Vista, Florida
Owner:
Lake Buena Vista Communities, Inc.
Architect:
Robert A. M. Stern Architects—Barry Rice, John Ike, project architects; Augusta Barone, Austin Brown, Luis Fontcuberta, Michael Jones, Scott Shin, assistants
Engineers:
O. E. Olsen & Associates (structural); Tilden Lobnitz & Cooper (mechanical); Ivy, Bennett, Harris, & Walls (civil); Jammal & Associates (soils)
Consultants:
Zion & Breen (landscape); Ei/Environmental Image (graphics); Evans and Brown (murals); William Kreysler & Associates (3-D figures); Cline, Bettridge, Bernstein (lighting); Schenkel and Schultz (office interiors)
General contractor:
H. J. High Construction Co.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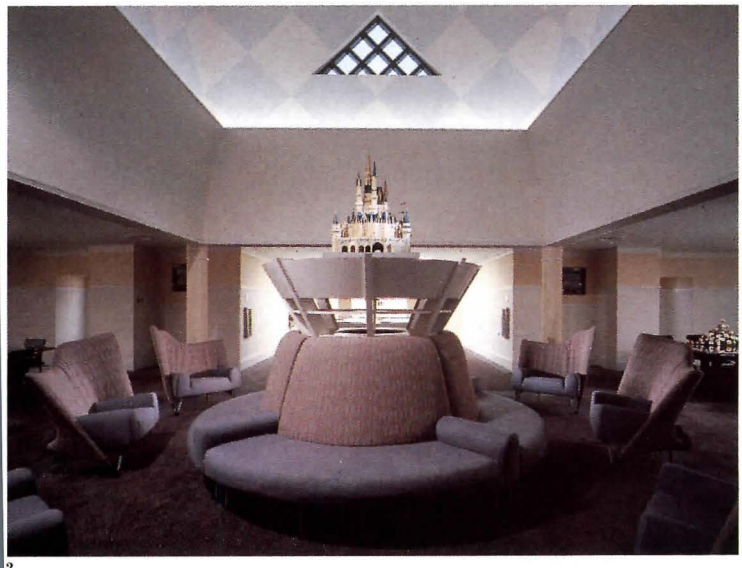
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3

Opposite: Characters from Peter Pan *soar above a bridge that features trompe l'oeil peeling plaster.*
1. Entrance rotunda balcony.
2. The General Employment Lobby, embellished with the original model for Cinderella's Castle in the Magic Kingdom.
3. Bronze doorknobs, adapted from Alice in Wonderland.
4. The skylit ramp, lined with trompe l'oeil canvas murals.
5. Upper-level view of the ramp.


4


5

Heroic transformations

Far too often, American architects mistake the work of Richard Rogers and Norman Foster as interchangeable cogs in the machinery of British high tech. But for anyone who's kept track of the former Team 4 partners' careers, their evolution has followed distinctly different paths. Although both derive imagery from building technology, Rogers's fondness for exposed mechanical systems, so exuberantly expressed by Lloyd's of London [RECORD, November 1986, pages 104-117], couldn't be more different from Foster's elegantly restrained structures, epitomized by the sophisticated exoskeleton of the Hongkong Bank. Still another facet of high tech is represented by the work of Nicholas Grimshaw. Though lesser known in this country than Rogers and Foster, Grimshaw has also contributed significantly to the development of the engineered esthetic. His 23-year-long practice has been based on the consistent design of clear-span structures, resulting in numerous awards for buildings such as a factory for Herman Miller (1976) and a printing works for the *Financial Times* (1988).

The members of this trio recently completed major projects in London that depart from their respective repertoires of building types. As usual, they developed their schemes in collaboration with Ove Arup & Partners, the creative engineering firm responsible for many high-tech icons [RECORD, September 1987, pages 122-133]. On the banks of the Thames, Rogers transformed a 19th-century fish market into a financial trading floor and offices for Citicorp with subtlety, elegance, and a surprising eye for historic detail (opposite). Along a canal in the heart of London's Camden borough, Grimshaw assembled a row of townhouses, a supermarket (top right), and office block. Unlike the well-serviced sheds of his past work, this multiuse complex grapples with the constraints of a dense, urban site. Near Heathrow Airport, Foster designed a speculative office building that deviates from his highly customized structures in its simplicity of low-cost components (bottom right). These architects have not only broken new ground in the continuing development of high tech, but have elevated everyday building types—offices, housing, and a supermarket—to an uncommon level of detailed precision.

Deborah K. Dietsch

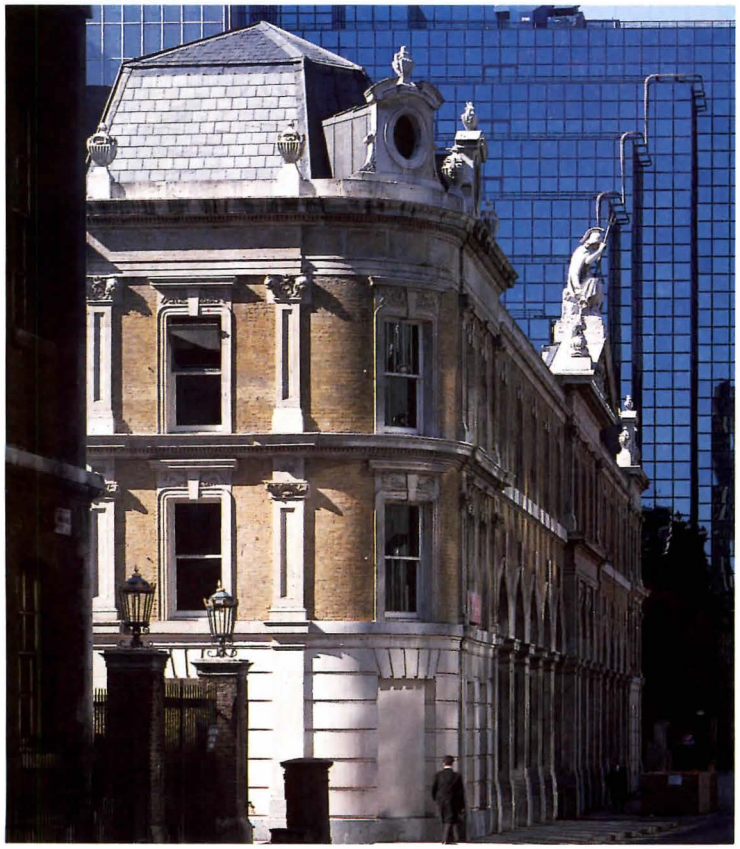
Sainsbury Superstore

Building B3, Stockley Park

Billingsgate Market

Billingsgate Market
London
Richard Rogers Partnership,
Architects

Changing markets



The Richard Rogers Partnership's sensitive renovation of the Thamesside Billingsgate Market into offices for Citicorp called for cleaning and repairing Horace Jones's 1875 masonry exterior (above), including a fish-topped weathervane (top).

Richard Rogers is hardly considered a preservation architect. But his new headquarters for Citicorp proves the high-tech maverick's ability not only to renovate a derelict 19th-century shed into a streamlined 20th-century workplace, but also to respect the spirit of its historic architecture. The subject of Rogers's transformation is Billingsgate Market, a building on the banks of the Thames that was enlarged and remodeled in 1875 by the City of London Architect, Sir Horace Jones. Once a thriving fish market, the French Renaissance style structure was vacated in the early 1980s and threatened with demolition until it was declared a significant landmark (officially, a "grade 2 listed building"). In 1985, the abandoned structure was acquired by Citicorp, an international bank attracted to the building's advantageous location within London's booming financial district.

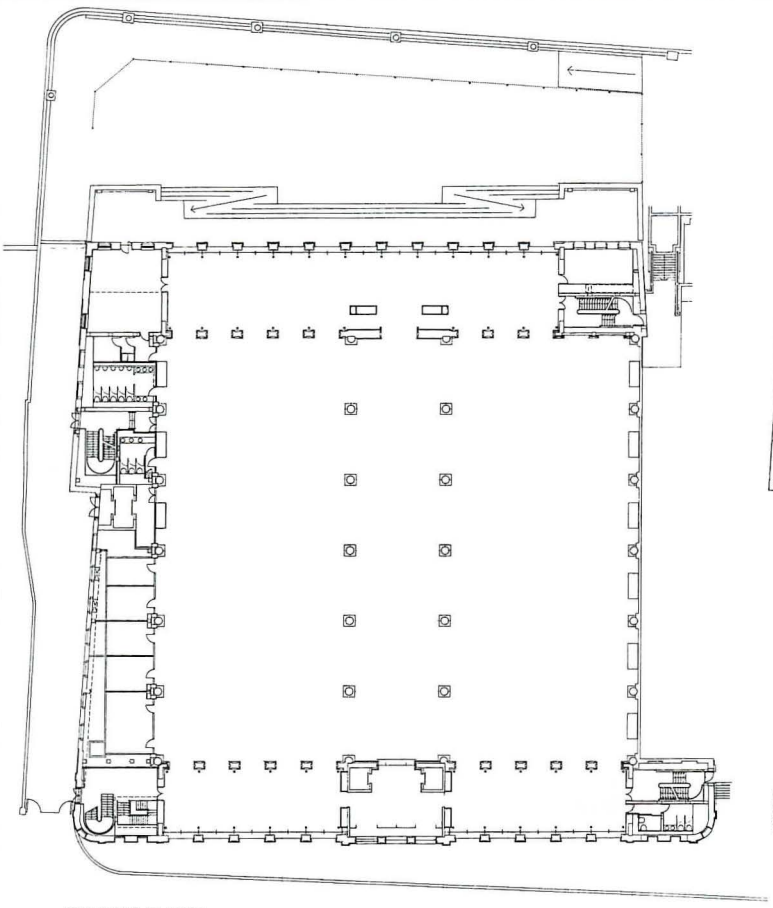
In furnishing his client with the requisite office space for financial transactions, Rogers capitalized on Billingsgate's generous, loftlike spaces with a minimum of intrusions. On the ground floor, he transformed a double-height central hall—originally used to display fresh fish—into the bank's showcase, a 30,000-square-foot trading floor visible from the street (opposite top). To gain more area for offices and conference rooms, the architect inserted an H-shaped mezzanine, including a suspended bridge in the center of the trading floor (opposite top), and refurbished a second-floor gallery, which once housed smoked haddock (opposite bottom right). In the basement, originally used as ice storage for shellfish, he subdivided the brick vaulted space into two additional floors of open offices (opposite bottom left) arranged around a double-height restaurant. Rogers connected all levels by inserting enclosed staircases at each corner of the building (plans page 76).

Designed in a high-tech idiom, the new elements are clearly distinguished from the old, but in a manner sympathetic to the industrial character of Billingsgate. In the main hall of the market, for example, tubular steel trusses supporting the mezzanine complement the adjacent cast-iron Doric columns and ceiling trusswork, reinterpreting their structural principles through contemporary means. Throughout the building, the architects carefully repaired and reinstated original elements following extant details. An internal masonry colonnade that had been altered, for instance, was reconstructed according to Jones's drawings, and missing or damaged moldings, grilles, and cast-iron columns were replicated in fiberglass. In the trading hall and offices, skylights were replaced with prismatic glass to reflect direct sunlight and reduce glare on computer screens.

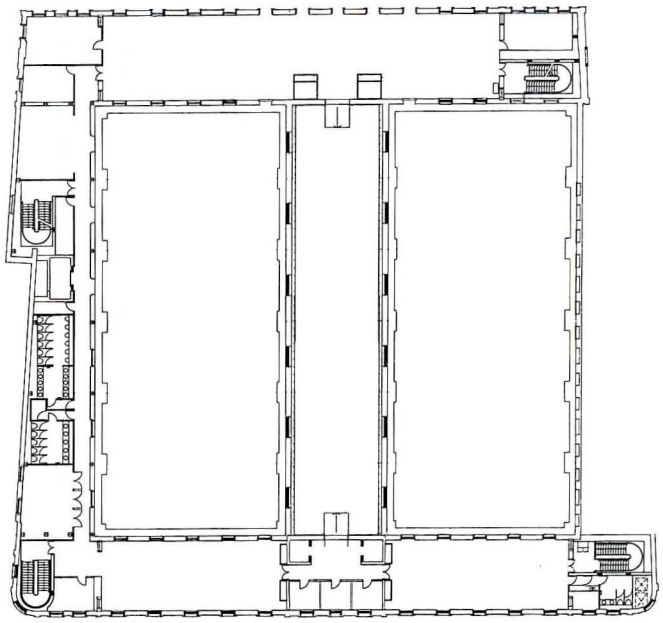
Billingsgate, of course, would not be a Rogers project without some evidence of "honestly" expressed services. Due to the historic stature of the market, however, the architect downplayed his exposed mechanical systems, servicing the trading floor with raised flooring and freestanding air-handling units, and suspending sleek air blowers above the entrance doors. He also wisely refrained from rendering the interior in his signature primary colors. Instead, the new structural insertions are crisply outlined in black and white to complement the neutral tones of the old shell, and walls refinished in subtly shaded polished plaster. Unfortunately, due to the 1987 stock-market "crash," Citicorp recently halted its planned expansion and has "mothballed" the converted market until it decides on its future use. Given Rogers's skillful renovation, Billingsgate deserves a far better fate than remaining an elegant, but empty, shell. *D. K. D.*

Rogers refurbished the original classically inspired elements of Billingsgate's main hall (below), adding a suspended mezzanine, prismatic glass skylights, and raised flooring for Citicorp's intended use of the space as a trading room. In the basement, the architect hung disc-shaped fixtures containing lighting, smoke detectors, and sprinklers (bottom left) from restored brick vaults. On an upper floor, he transformed a trussed gallery, formerly used for selling smoked haddock, into office space (bottom right).

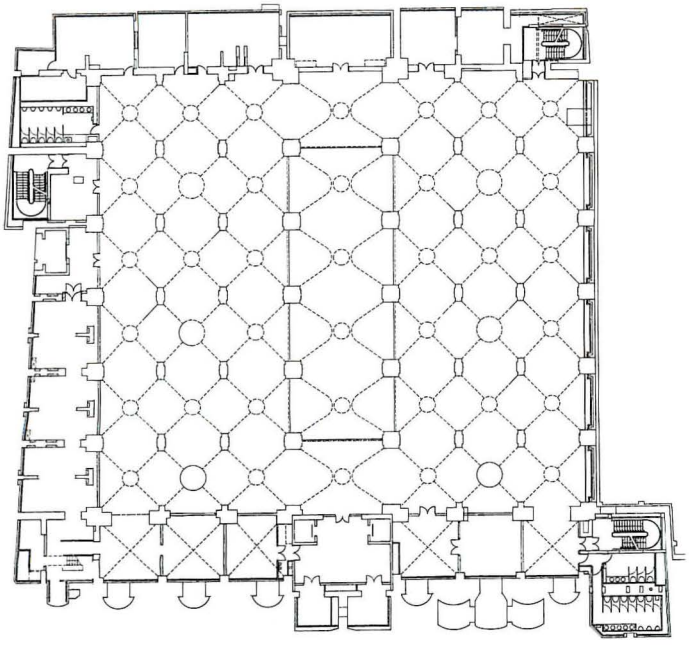
To gain more space for offices, Rogers inserted an H-shaped mezzanine level into Billingsgate's lofty bays (plan). Its central spine is constructed of a tubular steel truss system (opposite bottom left) suspended from existing steel arches that supports glass and steel balustrades (opposite top left). The architect's other additions include stainless-steel hot-air blowers exposed above the entrance doors (opposite top right) and freestanding air intake units in the trading room (opposite bottom right).



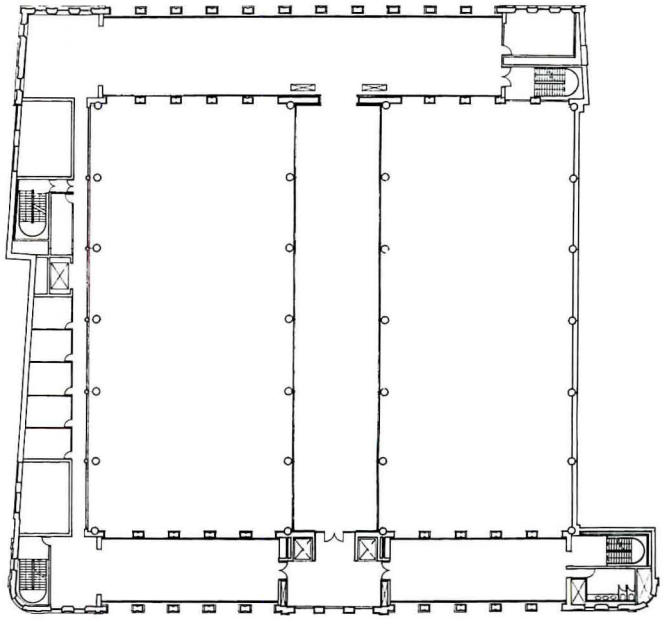
GROUND FLOOR



SECOND FLOOR

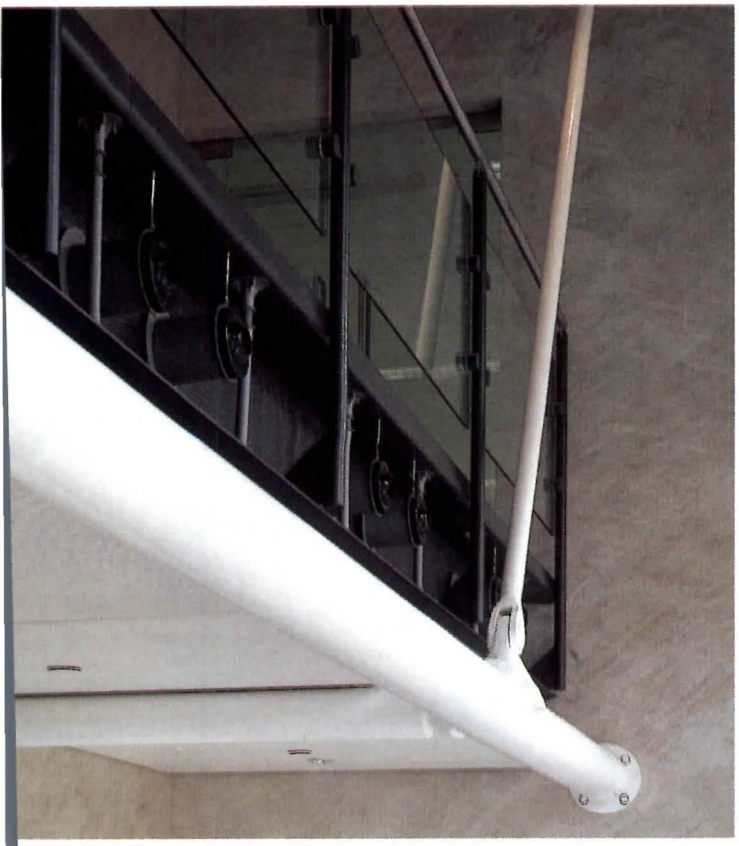


BASEMENT



FIRST FLOOR

Billingsgate Market
London
Architect:
Richard Rogers Partnership—Tom Alexander, Peter Angrave, David Bartlett, Pierre Botschi, John Cannon, Philip Chalmers, Tim Colquhoun, Mike Davies, Sally Draper, Marco Goldschmied, Ian Hopton, Shahab Kasmai-Tehran, Lester Korzilius, Coldagh Latimer, Mary Le Jeune, Amanda Levete, Kevin Lewenden, Avtar Lotay, John Lowe, Ernie Lowinger, Luke Lowings, Janette Mackie, Richard Marzec, Arif Mehmood, Malcolm McGowan, Natalie Moore, Frank Peacock, Mark Roche, Richard Rogers, Seth Stein, Peter Thomas, John Young, project team
Engineers:
Ove Arup & Partners (structural/mechanical); Crown House Engineering (mechanical/electrical subcontractors)
Cost estimator:
Hanscomb Partnership
General contractor:
Taylor Woodrow Management Contracting Ltd.



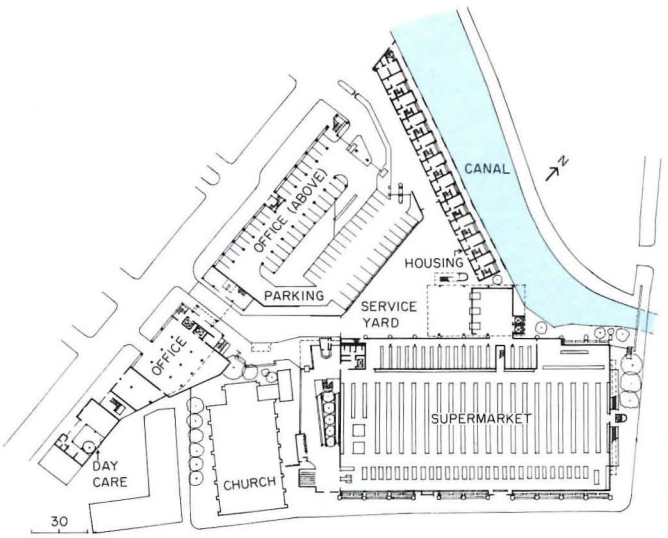
Sainsbury Superstore
London
Nicholas Grimshaw and
Partners, Architects

Urban encapsulation

Owned by J. Sainsbury PLC, a celebrated patron of contemporary British art and architecture, the Camden Town complex designed by Nicholas Grimshaw & Partners comprises a supermarket (above), offices (left in plan), and canalside housing (right).

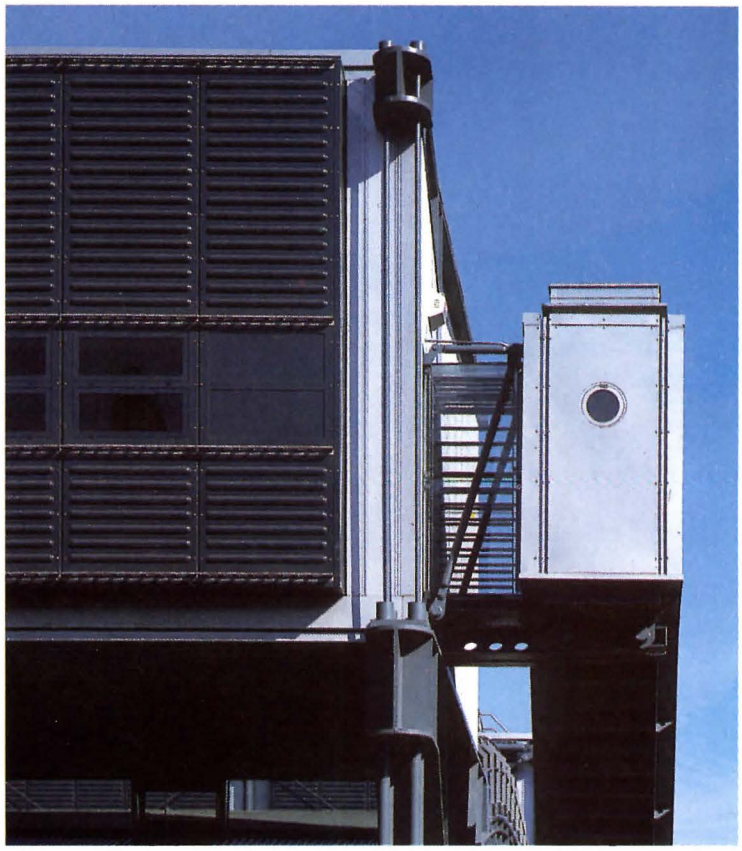
Nicholas Grimshaw takes a dim view of retail buildings. "They're usually a series of blank walls, loading bays, and refuse bins," he says, dismissing the standard construction of such buildings as unarchitectural "sheep's clothing." In countering this self-effacing stereotype, Grimshaw has not only created a strong architectural image for a new supermarket, but treated the building as a frontispiece for an entire urban block. The triangular site of the project, located within London's Camden Town, is bounded by two heavily trafficked streets and the Grand Union Canal, a pedestrian route through the neighborhood. The architect positioned the supermarket to front the busiest street and flanked the adjoining edges of the site with a row of townhouses facing the canal (bottom left), and an office block, which includes retail space and a day-care center. In between the buildings he allotted a service zone for the supermarket.

Although the assertive, aluminum-paneled volumes of Grimshaw's design are far from contextual, the structures maintain a scale sympathetic to the surrounding Georgian-period buildings. The most structurally explicit of the trio is the supermarket, designed to convey the industrial heroicism of 19th-century market halls. In creating a flexible interior, the architect designed a system of curved roof trusses that hang from cantilevered girders supported on concrete-filled steel stanchions (opposite bottom right) and tensioned by tie-rods (opposite bottom left), which are anchored to pile foundations. At the perimeter, this framework supports a second story of staff offices, support functions, and storage spaces (middle left), accessed by a pair of cascading staircases at the ends of the building (top left and opposite top right). Although the tie-rod "colonnade" and articulated bays create a rhythmic pattern along the street, the recessed, louvered storefront and somber gray panels appear inaccessible and ponderous, weighing down the building's structural expressiveness. The whimsically futuristic, capsulelike enclosures of the townhouses (opposite top left) are similarly dispirited by their northern orientation and windowless rear elevations, which abut the supermarket's loading docks. In raising the level of the ensemble's prosaic functions through structural elaboration, Grimshaw should have paid closer attention to the fundamentals of urban design. *D. K. D.*



The supermarket's structure is composed of girders (bottom right) tensioned by steel tie rods (bottom left) that support an upper story with projecting fire stair (top right). The capsulelike profiles of the rowhouses (top left) extend Grimshaw's industrial esthetic.

Architect:
Nicholas Grimshaw & Partners—Nicholas Grimshaw, Chris Nash, Neven Sidor, Mark Fisher, Hin Tan, Sally Draper, design team
Engineers:
Kenchington Little & Partners (structural); J. Sainsbury (mechanical); Ronald Joyce Associates (public health)
Consultants:
Henry Riley & Sons (cost estimator); Denis Wilson & Partners (traffic)



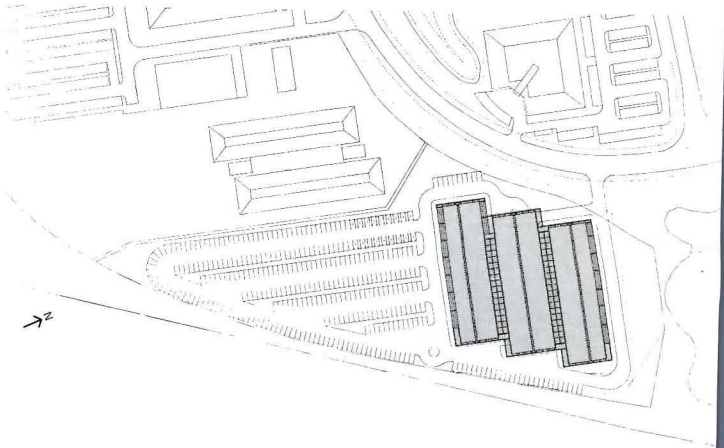
Building B3
Stockley Park
London
Foster Associates, Architects

Stock in trade

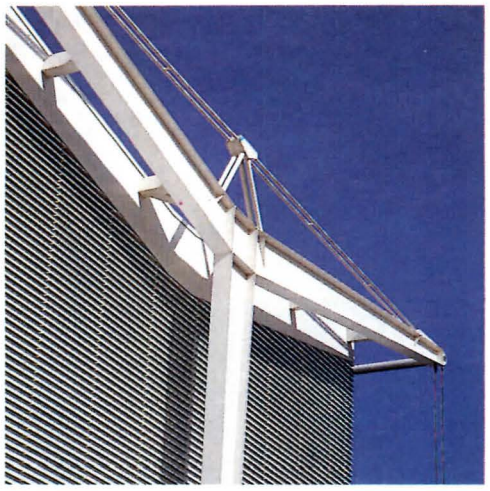
Its imagery may be based on industrial componentry, but the crafted art of high tech is equated more with pricey custom design than low-cost speculative office development. An exception is Foster Associates' building for Stockley Park, a new business park situated near London's Heathrow Airport. As one of three British firms commissioned to complete a master plan by Arup Associates, architects also responsible for designing 10 of the park's buildings, Foster designed his "shell and core" office block to comply with mandatory guidelines for pitched roofs and central atria. With characteristic structural élan, he managed to utilize these standards to best advantage and delineate a sophisticated building envelope that far outshines its neighbors.

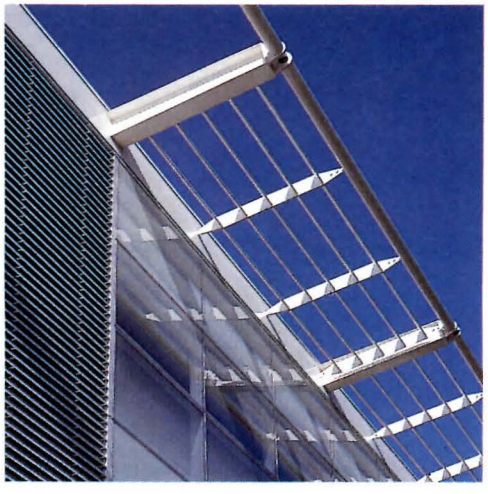
Located at the southern end of the park, the 120,000-square-foot building is assembled of three stepped-back sheds that are joined internally by two skylit stairhalls. Its flexible floor plan is designed to be subdivided vertically or horizontally for multiple tenants, with all services—toilets, fire stairs, mechanical rooms, and electrical transformers—stacked at the southern end of the building to prevent solar gain and mask views of a cement factory on an adjacent site. The building achieves Stockley Park's requirement for pitched roofs, albeit inverted, through a structural system of three Y-shaped frames. Expressed as freestanding members on the northern elevation, which contains the entrance (opposite top), and southern services facade (opposite bottom), they are composed of tapered steel sections pinned at the column bases and roof ridges, and braced above by horizontal cables and twin stainless-steel tie rods. The arms of these butterfly frames extend nine feet from the corners of the building to form sunscreens of aluminum louvers at the top of the east (bottom left) and west (top left) facades.

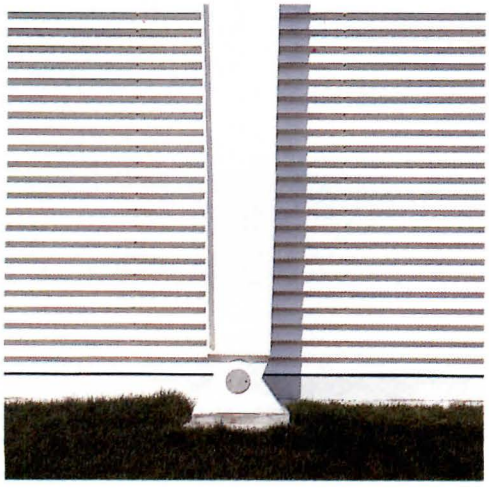
Foster clad his volumes with structural silicone double glazing mounted into aluminum transoms and steel mullions, which are designed with deep fin-shaped sections to resist wind loads across the north elevation. Finished in a gradational pattern of enameled dots to reflect heat and light, the fritted glass panels assume an ephemeral, shimmering quality when viewed from a distance. As with every Foster project, all components of the Stockley Park building serve a practical purpose—nothing here is superfluous. *D. K. D.*



Foster Associates' three-story spec office building at Stockley Park is designed to manipulate daylight. Exposed Y-shaped structural steel frames (below) support metal roof decking and ridge skylights above full-height atria between three bays. Sunscreens over the east (opposite bottom) and west (opposite top) elevations, and gradational fritted glass panels shade the building from direct sunlight. All service cores are located behind the southern facade (bottom), which is sheathed in powder-coated aluminum louvers.

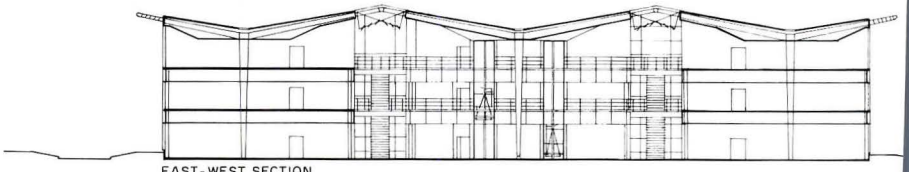


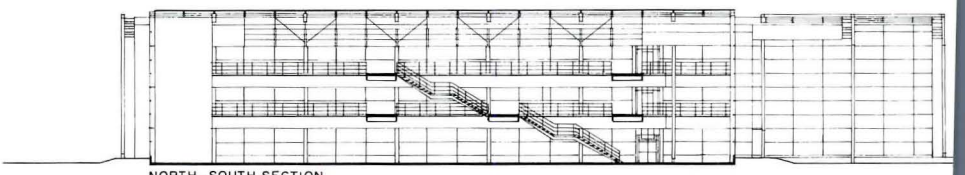


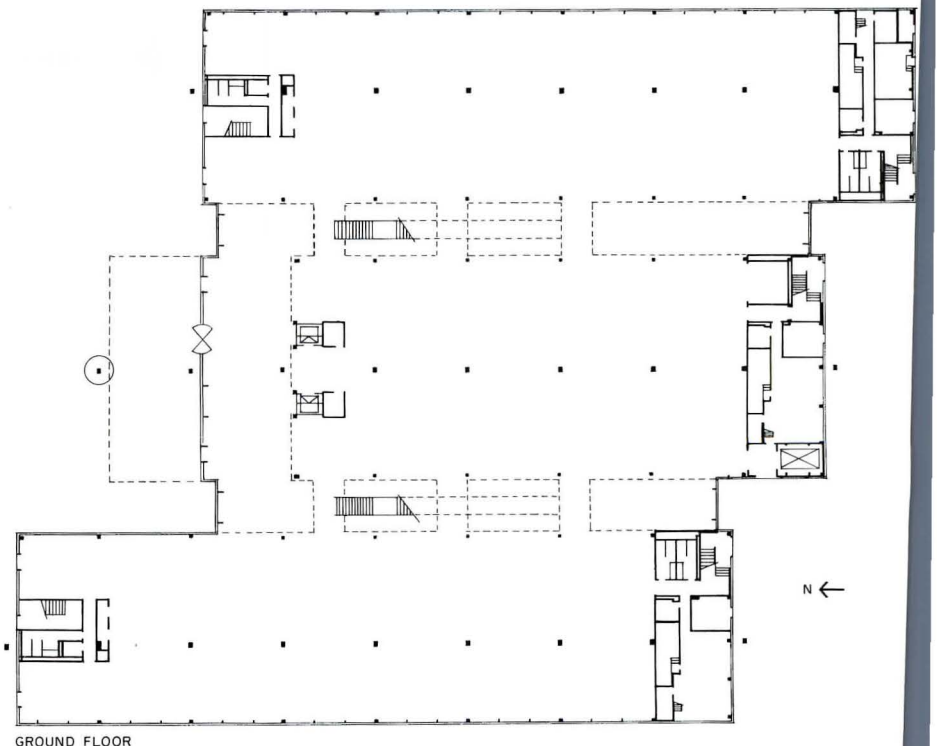


Every element of Foster's building exudes the architect's structural precision. Detailed views reveal (from top to bottom) the stainless-steel cables that tie down the arms of the external butterfly frames, the ridge connections and skylit atrium beyond, the extruded aluminum shades of the sunscreen that extends from the fascia, and the pinned connection at the column base of the exposed structural framework. On the west elevation (opposite), double-glazed panels are enameled with a gradational pattern of milky dots to diffuse daylight, creating a strikingly shimmering effect from a distance. The projecting sunscreens feature integral lighting between their flanges and are restrained by steel cables.

Building B3
Stockley Park
London
Developer:
Stockley Park Consortium
Architect:
Foster Associates—Marian Bonnetti, Chubby Chhabra, Norman Foster, Pauline Hanna, Richard Hawkins, Neil Holt, Richard Holyoak, Robin Parkington, Ken Shuttleworth, Mark Sparrowhawk, Chris Windsor, project team
Engineers:
Ove Arup & Partners
Cost estimator:
Davis Bellfield & Everest
Construction management:
Schal International Ltd.

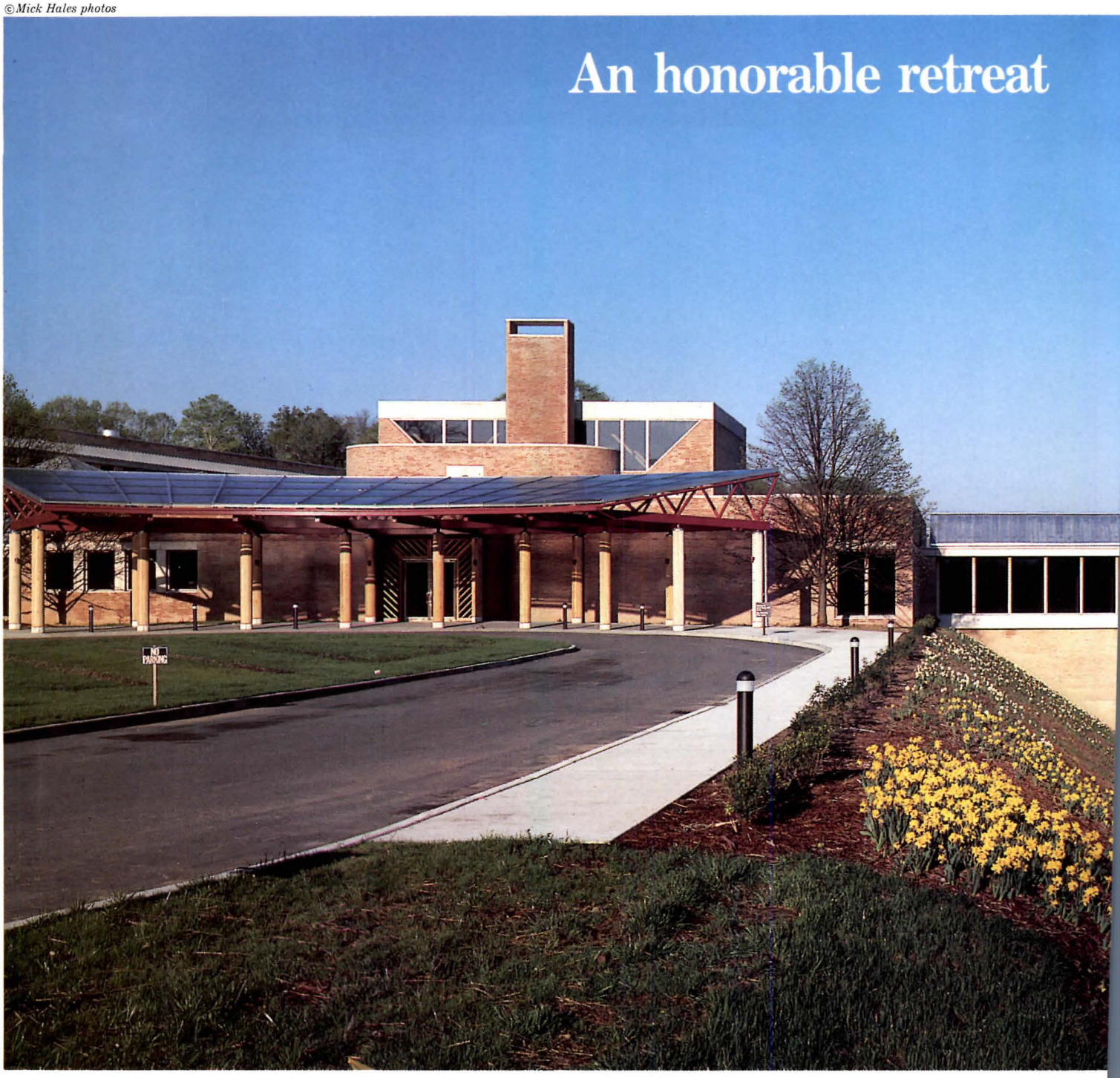

EAST-WEST SECTION


NORTH-SOUTH SECTION



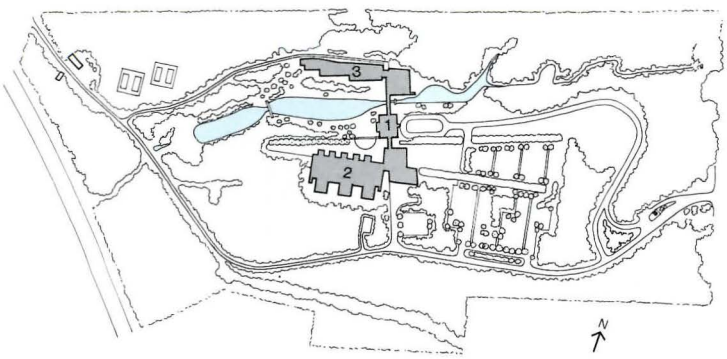
GROUND FLOOR

An honorable retreat



IBM Palisades Advanced
Business Institute
Palisades, New York
Mitchell/Giurgola Architects

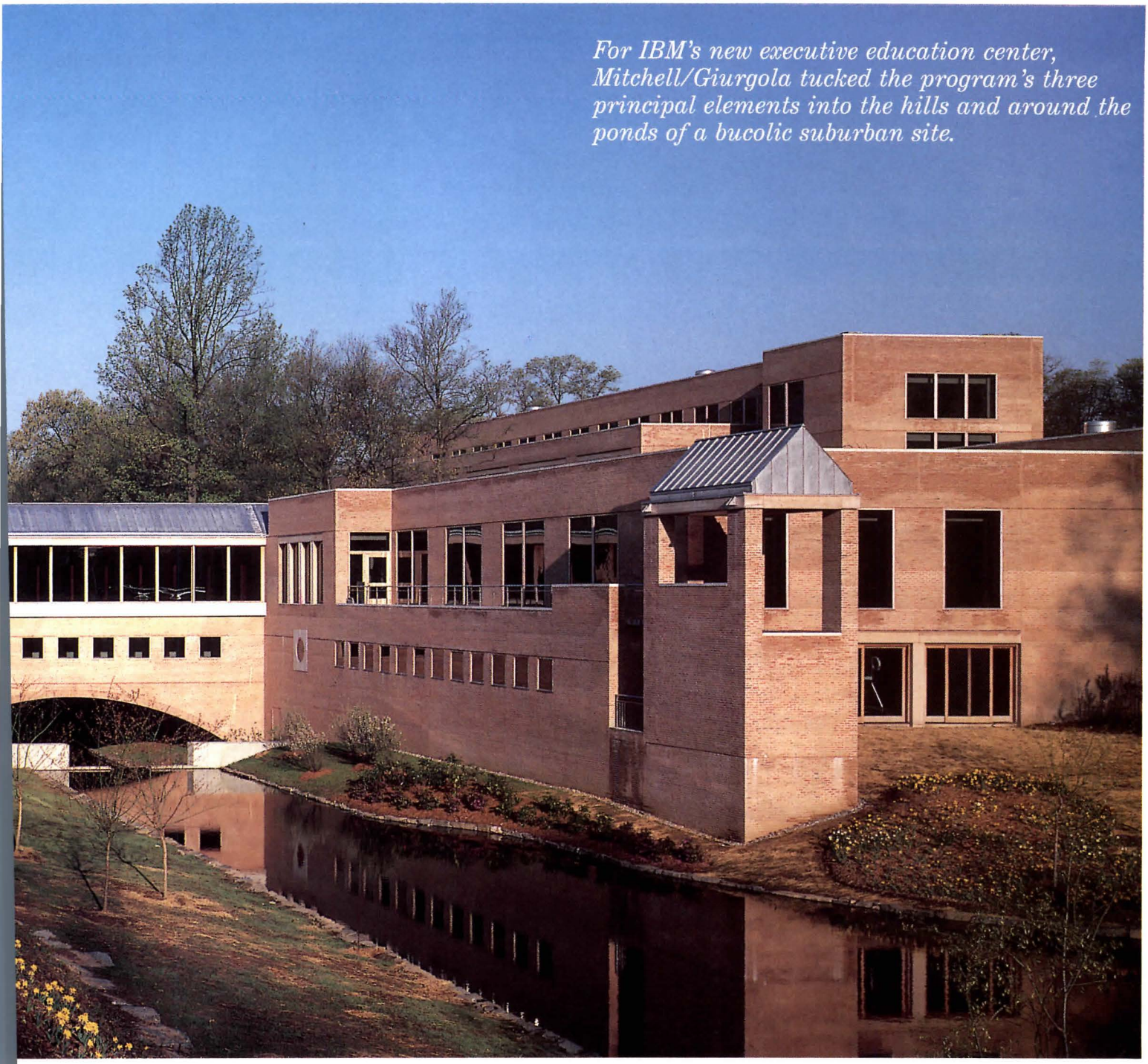
1. Reception
2. Education
3. Residential



Fitting in is the IBM way. Never one to rock the boat or call too much attention to itself, the company is a giant with impeccable manners and deep pockets. So it comes as no surprise that the IBM Palisades Advanced Business Institute, designed by Mitchell/Giurgola Architects, emanates a sense of good breeding and corporate wealth.

Secluded on a 106-acre site about a half-hour north of Manhattan, the project works architecture into landscaping until the separation between the two is comfortably blurred. Buildings nestle into rolling hills and embrace a series of ponds. Trees—in the form of two grand allées of Norway maples and Callery pears—seem to march from one end of the site, through the building, and to the rear of the property. Even inside, views of the outdoors are carefully framed.

"The building isn't a discrete object sitting on the ground," says partner-in-charge Romaldo Giurgola, "but is integrated with the site." When Mitchell/Giurgola drew up the project's master plan, it quickly settled on "the path of least disturbance" as the preferred approach to siting. "The idea was to push this building



For IBM's new executive education center, Mitchell/Giurgola tucked the program's three principal elements into the hills and around the ponds of a bucolic suburban site.

right up against mature trees and existing natural features," says Peter Rolland, the landscape architect who was involved in decision-making from the early planning phase.

Part hotel and part college, the center serves as an educational retreat for executives of companies buying IBM products. Because the center is a place where executives get away from their offices to learn, the client wanted a facility whose atmosphere would be more collegiate than corporate. To infuse warmth into the building, the architects specified a long kerfed brick with a soft red hue and materials like teak (for exterior trim) and mahogany and maple (for interior surfaces).

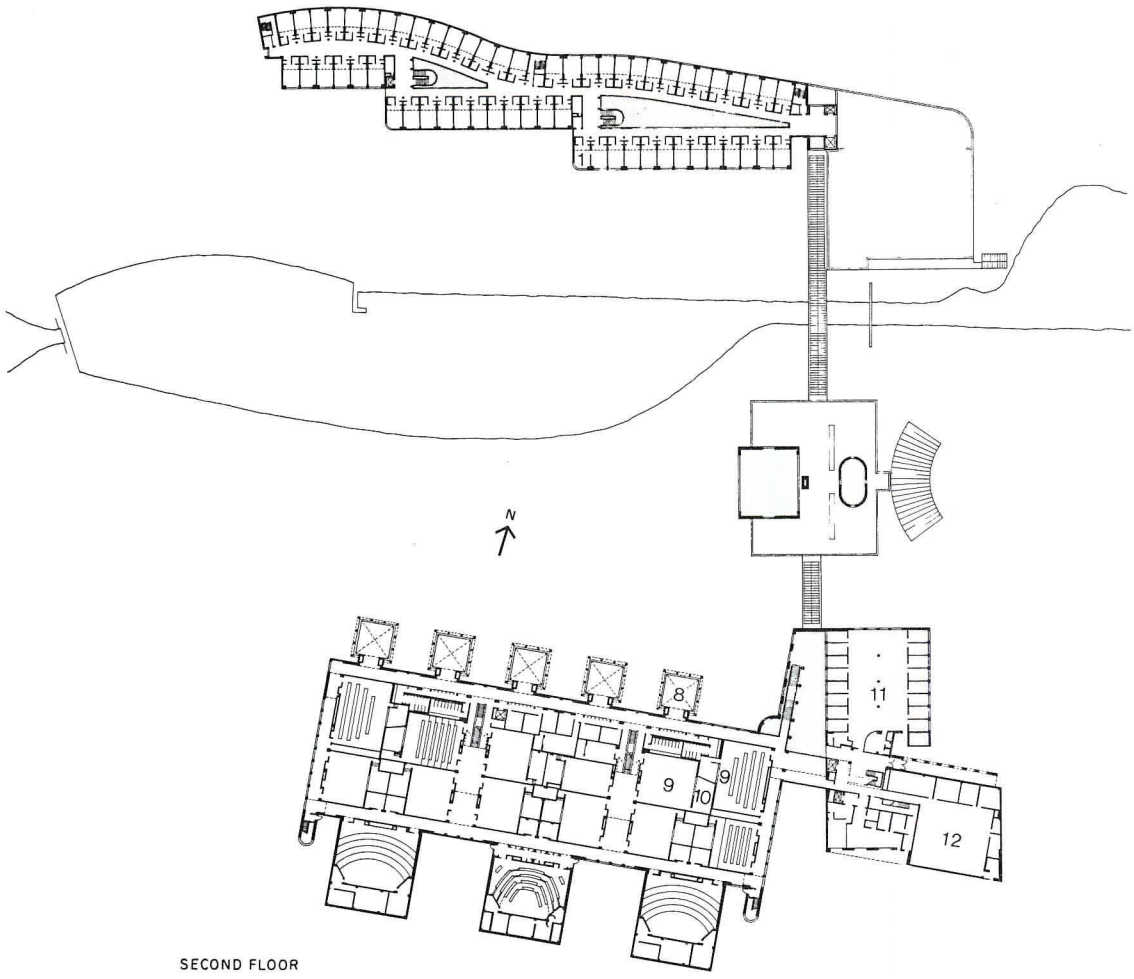
The architects broke the building down into three major wings—educational, residential and reception—to reduce the perceived mass of the complex. Then they wrapped these elements around three sides of the site's main water feature.

The residential wing, essentially a 206-room hotel organized around two triangular atriums, responds to its site by letting the contours of the land shape the curves of its north facade. The educational wing, which includes two floors of classrooms and one floor of offices for instructors, features a series of hip-roofed pavilions facing an interior lawn and the central ponds. The pavilions, with their hardwood ceilings and floors and generous glazing, serve as lounges, providing wonderful respites from the handsome (but windowless) classrooms.

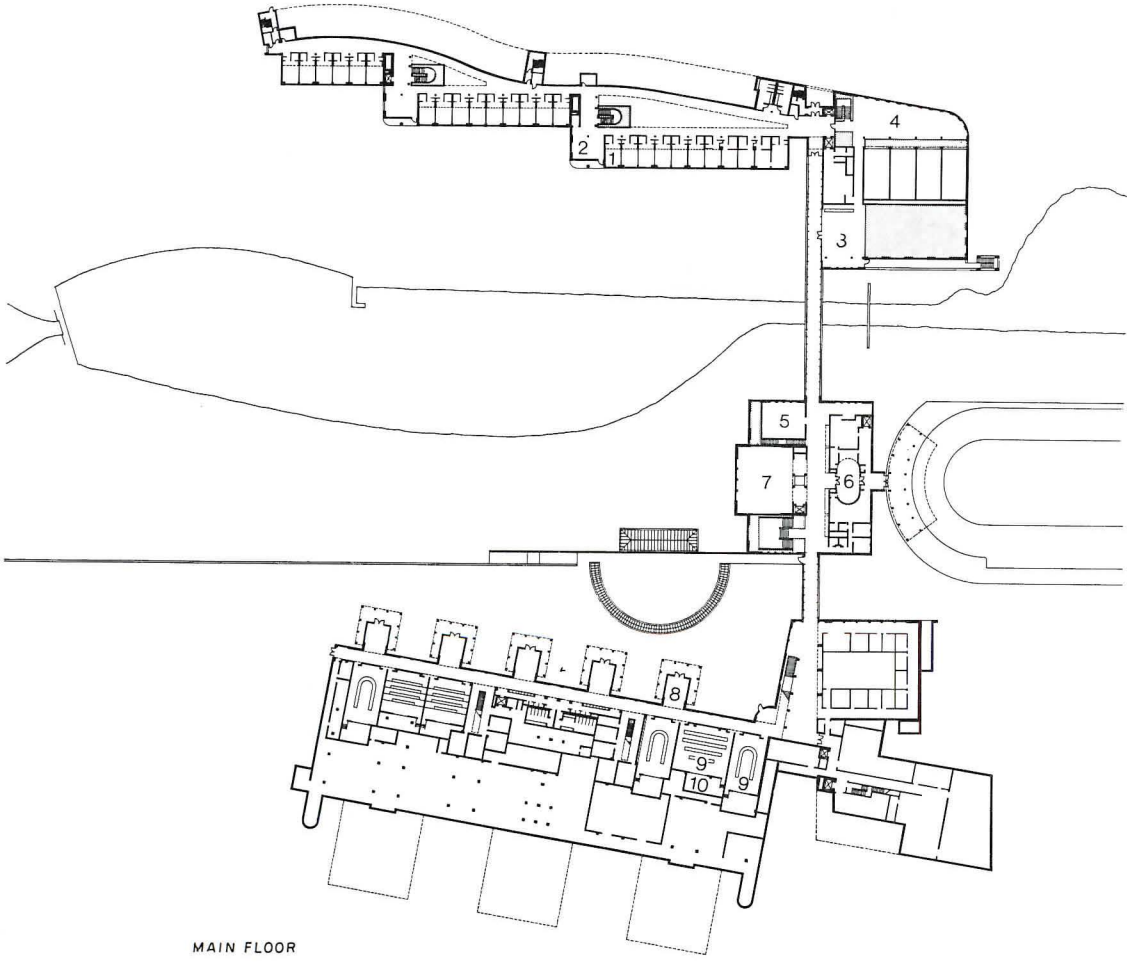
Acting as a bridge between the two other wings, the reception block also houses the grandest space in the complex—a three-story lobby whose flared clerestory windows echo the angled struts supporting its roof. Though equipped with an open fireplace and called "the living room" by Giurgola, this impressive room is just too big for the furniture or the people sitting here to look particularly comfortable. A similar problem diminishes the impact of the two-story lobby leading to the classroom area: instead of ennobling the people inside, it tends to belittle them (especially when there is less than a crowd on hand). More successful is the main dining room terraced into the hill below the educational wing. The bold curve of its skylight provides an elegant foil to the straight-lined architecture of the rest of the building and brings in dramatic arcs of sunlight. *Clifford Pearson*

A series of ponds (below and bottom right) serves as the focal point for the three wings of the IBM complex. "We treated the water as a public square with the buildings arranged around it," says Romaldo Giurgola. A curving canopy supported by teak-encased columns and painted steel beams greets visitors at the entrance (bottom left). To emphasize the integration of the manmade and the natural, the architects linked the reception and residential blocks with a two-story enclosed bridge (bottom right). As the building gets

closer to the water, its parts tend to get smaller in scale and less formal in function. For example, terne-metal-roofed pavilions and a skylit dining room (below and bottom right) break away from the mass of the main building and provide more casual spaces for coffee breaks and meals. The 206-room hotel wing (bottom left) steps back at its top floor to reduce its perceived height and is partially screened for privacy by a stand of trees. The architects designed the hotel block so it eventually could be expanded to 400 rooms.

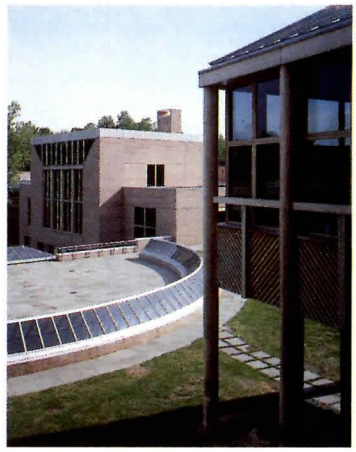


SECOND FLOOR



MAIN FLOOR

1. *Guest rooms*
2. *Small lounges*
3. *Café*
4. *Game room*
5. *Library*
6. *Entry/reception*
7. *Main lounge*
8. *Coffee pavilions*
9. *Classrooms*
10. *Rear projection*
11. *Administration*
12. *Computer room*



The plan (top left) shows an upper floor of the educational wing with large "Harvard Business School" classrooms and smaller ones, all with rear projection video. Rooms in the building's hotel are organized around two triangular atriums. The lower plan (left) reveals the main level of the reception block and a typical classroom arrangement in the adjoining educational block. A semicircular skylight and an outdoor terrace bring natural light into a main dining room (opposite top), which is set into the side of a hill. Stained maple service cabinets and all woodwork were designed by the architects. A coffee-break pavilion (opposite bottom) is one of five servicing the educational wing. Each pavilion has two levels, the upper one (shown) being larger to accommodate the larger classrooms on that floor. Interior window trim is mahogany, while exterior trim and column cladding are teak. The carefully proportioned window grid and material palette in these pavilions conjure up images of Japanese teahouses.

The north end of the dining room (top) maintains strong ties to the outdoors with glass and access to a landscaped terrace. A lobby to classrooms (middle) is shaped by the intersection of the reception block and the educational wing. Most hotel rooms (bottom) are identical 13- by 25-foot chambers that feature open-grid dividers, separate lavatories, and computer workstations. The heart of the reception wing is a grand space (opposite top) that Giurgola calls "the living room." A pair of wooden beams and dual sets of angled struts support a coffered ceiling, a structural system echoed in the room's fenestration. Indoor and outdoor views are framed for guests descending the main staircase (opposite bottom). Black granite treads, teak railings, and steel balusters exemplify the rich, but deliberately muted range of materials used in the building.

IBM Palisades Advanced Business Institute
Palisades, New York
Owner:
IBM Corporation
Architect:
Mitchell/Giurgola Architects—Paul Broches, partner-in-charge; Romaldo Giurgola and Mark Markiewicz, design partners; Dart Sageser, managing partner; Taylor Louden, Henry Ferretti, Carol Loewenson, Susan Stando, Stuart Crawford, Michelle Kayon, Cliff Balch, Tim Costello, Marion Weiss, David Esh, Agnete Bryndorf, Mark Thometz, Brad Cloepfil, Amy Philips, project architects
Engineers:
Severud-Szegezdy (structural); Syska & Hennessy (mechanical/electrical)
Consultants:
Peter G. Rolland & Associates (landscape architects); Francoise Bollack (furnishings); Fisher-Marantz (lighting); Hubert Wilke (audio/visual); Romano/Gatland (food service); Robert A. Hansen Associates (acoustical); Raymond Keyes Engineering (traffic, site, civil)
General contractor:
The Whiting-Turner Contracting Company

Chicago style

303 West Madison Street
Chicago, Illinois
Skidmore, Owings & Merrill,
Architects

Steinkamp/Ballogg

©Marco Lorenzetti/Hedrich-Blessing photos, except as noted

In many settings a building of 26 stories and 350,000 square feet would not be looked on as particularly small. In Chicago's bustling Loop, though, where behemoths jostle one another on every block, the new office building at 303 West Madison Street is notable for its restraint in dimension as well as demeanor. Both qualities flowed from a site that, at 72 by 190 feet, would yield a building with leasable floor plates only half the size the conventional wisdom held to be commercially viable. Abetted by a client willing to challenge that convention, Skidmore, Owings & Merrill went on to recognize and exploit the affinity of proportion between the building envelope permitted on the site and the early skyscrapers of the Chicago School, a likeness strengthened when the architects sought and won variances to eliminate such code-dictated 20th-century anachronisms as setbacks and a ground-floor arcade. The affinity continues in the assertiveness of the expressed structure framing broad Chicago windows, but becomes more tenuous in the composition and articulation of the building facades, which display an almost Deco sensibility.

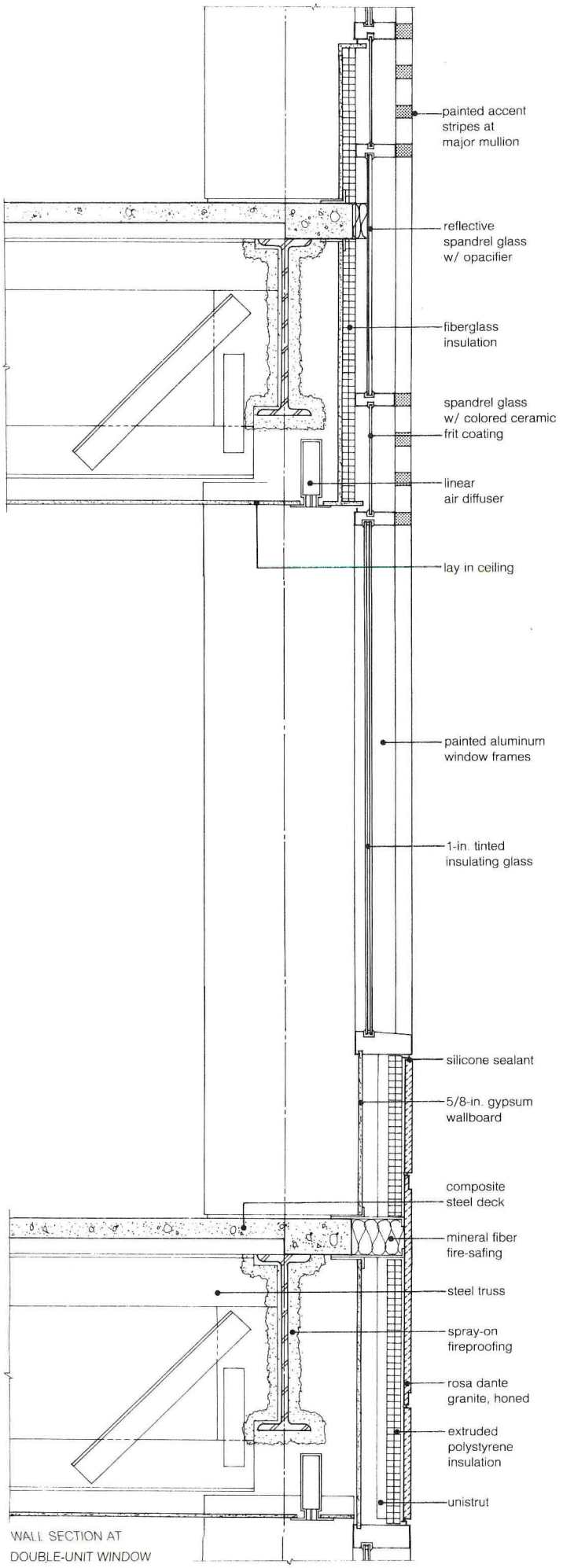
At the crown of the organizational triad, a two-story loggia with open-coffered roof wraps a penthouse; at the base, carefully detailed storefronts of dark metal, glass, and glass block set off well-defined entries—a deep-cut vestibule on the narrow end of the building, and a portico backed by a Wrightian stained-glass wall on the long side. A transitional third story introduces a shaft where three-part windows are paired above and below tinted and back-painted glass spandrels, setting up two-story divisions within the 20-foot column bays. (Mirror-glass "buttons" at the center of each refer, tongue-in-cheek, to the abutting tower [opposite].)

To add depth and shadow play, the principal facade shifts slightly at two points, breaking into a central element flanked by two-bay segments within a frame that also wraps around the building's sides. There the bold plaid of clear and colored glass, white window frames, and pink-gray honed granite that dominates the south face gives way to a denser pattern of single windows and spandrels striped with polished green granite.

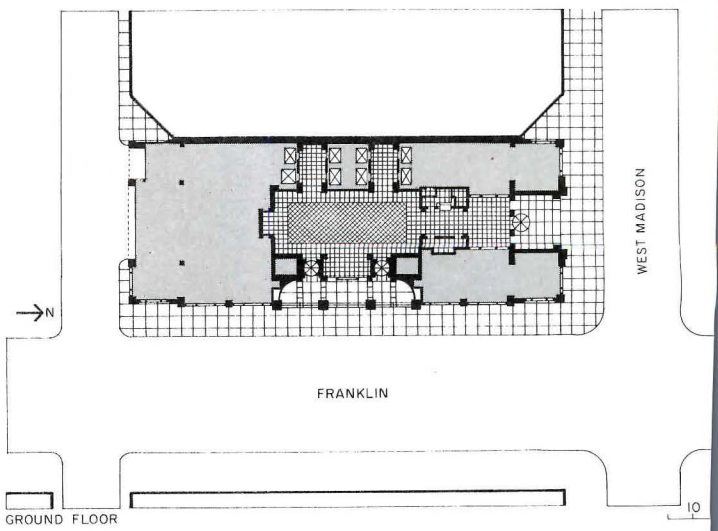
If the building's muscular frame pays homage to the past, its finely wrought surfaces place it at the forefront of its own time. The Messrs. Jenney et al.would be pleased. *Margaret Gaskie*

Steinkamp/Ballogg

Wedding classic Chicago School form with present-day technology yielded 303 West Madison a floor plate in which columns at 20 feet on center provide clear spans of over 50 feet between a service core pushed to the rear of the building and its outer face. On the west a facade of rosa dante *granite is lightened by two-story window panels patterned by white frames and mullions and spandrels of blue-green tinted, painted, and reflective glass. The north and south faces shift to windows seven feet high (against nine-foot ceilings)*

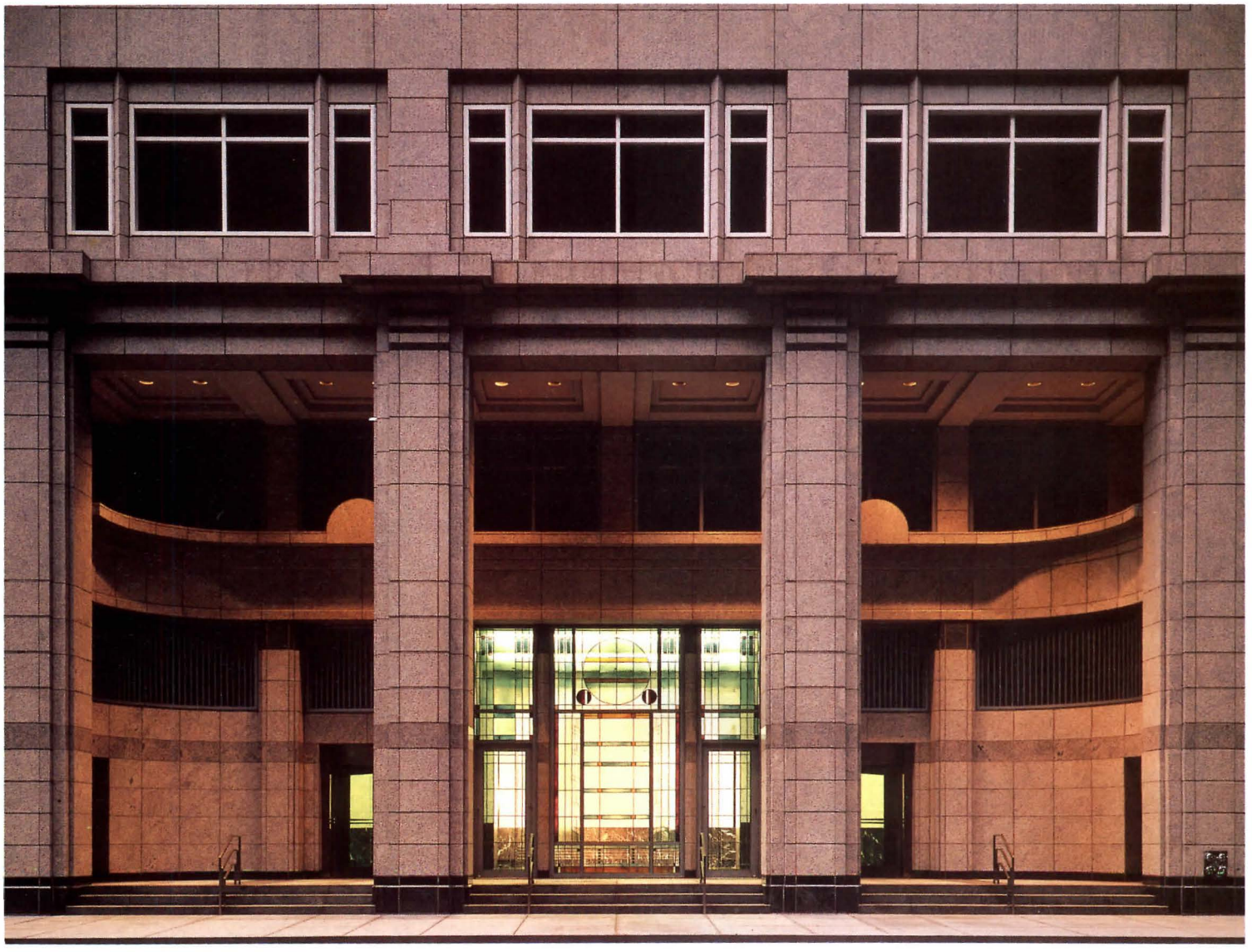


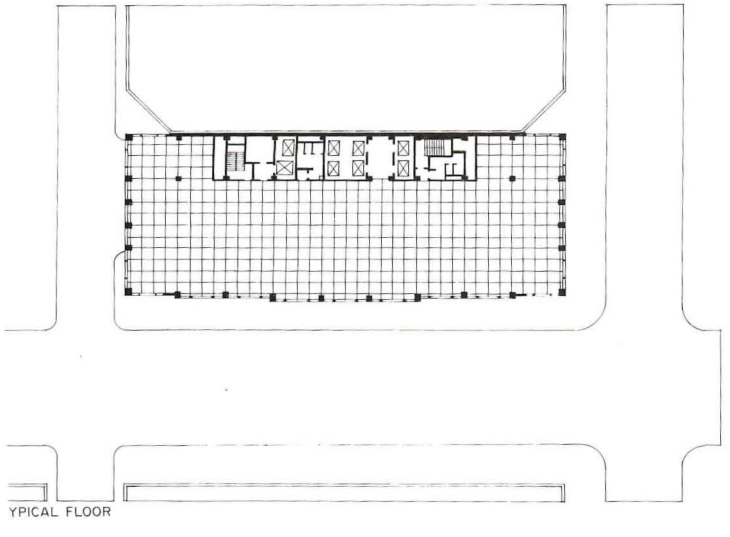
WALL SECTION AT
DOUBLE-UNIT WINDOW

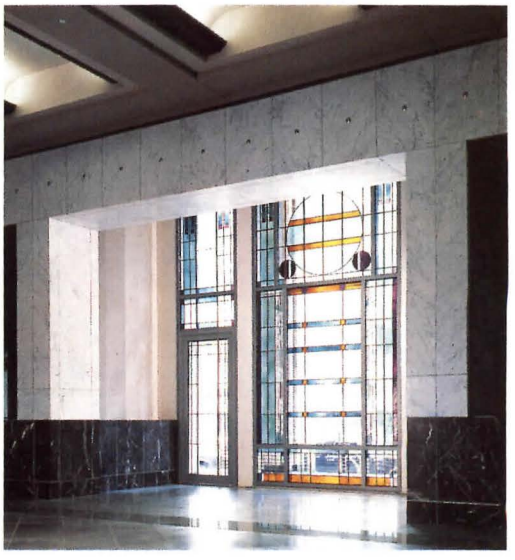


with spandrels of warm-gray and deep-green granite. Like its antecedents, the building brings both structure and ornament to ground level, where storefronts complement pedestrian activity. On the narrow end, a near-cubical vestibule diminishes in height as it extends past a newsstand and other service spaces before debouching to the lobby. Along Franklin Street, a curved portico (below) leads to revolving doors and a Wrightian stained-glass window wall that is also a prominent feature of the lobby interior.

303 West Madison Street
Chicago, Illinois
Owner:
Jaymont Properties
Architect/engineer:
Skidmore, Owings & Merrill—William Drake, project partner; Joseph A. Gonzalez, design partner; Alan Bombick, studio head; John Kelsey, project manager; Bernard Gandras, senior technical coordinator; Joseph Hollingsworth, Christopher Thomas, Elizabeth Ganser, design team
General contractor:
Schal Associates, Inc.







Downtowns revived

©Timothy Hursley/The Arkansas Office

©David Hewitt

Though most people have grown used to—in some cases, dependent upon—the enclosed shopping mall, the suburban building type has been a source of complaint and dissatisfaction almost from its inception back in the '50s. Despite their recognition of its convenience, shoppers have since learned about its less attractive qualities. It's too hermetic. Too much of a sameness. And once you get there—nothing to do but shop, which is nice for the retailer but not unalloyed joy for the rest of us.

In the '80s, when shopping has become a fashionable form of entertainment, the retail mall seems limiting. City governments and planners, furthermore, have from the beginning deplored the way malls bleed activity from downtowns, to their social as well as economic impoverishment.

Town centers, not shopping centers

The three retail centers considered in this study differ markedly in spirit, as well as in size and surroundings—big city, small town, sprawling suburbia. But their respective designers and developers all had a vision of comfortable, even old-fashioned, town centers. Though Underground Atlanta lies within sight of the city's downtown skyscrapers and Georgia's State Capitol, architect Sanford Nelson of Cooper Carry & Associates thinks of it as "urban village." Graham Gund considers his design for the Village Commons in South Hadley, Massachusetts (pop. 17,000), "a town that built up over time." And Princeton Forrestal Village, plunked down amid New Jersey office and research parks, is also named Village. Architect Richard Galehouse, with master planners Sasaki Associates, says that "the village idea was in our plan 15 years ago" as an alternative to the "boring" lunch-time and evening activities available to workers in office parks.

In most other respects, though, the three complexes differ. For one thing, the motive behind each development was distinct. At South Hadley, the impelling force came from Mount Holyoke College across College Street. Despite its undoubted scholastic reputation, the school learned that students were a little reluctant to come to a town where the "action" included not so much as an ice-cream parlor; even the much loved bookstore had burned in a recent fire that destroyed the minimal downtown that had been on this site. In Atlanta, the motivation and opportunity were somewhat akin to those in Massachusetts: the revival of a lost town center—the new center to be an improvement on the old. Atlanta, with a large complement of downtown convention facilities and hotels, was most eager to attract not only conventioneers but their families as well; the city had closed a large center, also known as Underground Atlanta, some years ago when it grew disreputable.

Office workers + housewives = suburban market

At Princeton Forrestal Village, on the other hand, the more familiar profit motive was at work. Along U. S. Route 1 in New Jersey, a suburban tract given over to corporate headquarters and laboratories, developer Scott Toombs perceived a retail and restaurant desert waiting to become a market. The population includes not only workers in the office parks but shoppers in Princeton and other nearby towns—the kind of shopper one might expect to see in a more conventional suburban mall.

Both the Atlanta and South Hadley developments were founded on literal town centers, but Princeton Forrestal Village is a fictive creation, an apparent town center waiting for a town to grow up

Though shopping has hardly lost its importance in either American society or the American economy, its best-known 20th-century building type may be evolving from the familiar enclosed suburban mall. Recent retail centers appear to engage a wider range of human activity and a wider definition of commerce than in the past.

around it. In addition to stores on the street, offices above, and a bank at the entrance, the center will have two "anchors," neither of them a department store: a Market Hall at one end for groceries and food service, and a hotel at the other end. Additionally, the center offers a white-tablecloth restaurant and a child-care center, and plans to build a health club. What's more, the township of Plainsboro, whose borders contain the development, has no town center and has found the new Village most suitable for parades and other community celebrations.

Each of these complexes was designed for outdoor pedestrian traffic, a clear departure from the weathertight shopping mall. All of them—including, rather surprisingly, suburban Princeton Forrestal Village—admit the existence of in-town vehicular traffic, although they also provide off-street parking. Atlanta, like the big city it is, expects many downtown visitors to arrive by foot, mass transit, or taxi.

Shopping for fun

Though all of these centers have mixed uses, the mix is different in each case. And though retail is a basic component of each development, in no case was it deemed the driving force. The Atlanta complex, which was developed by the city, takes the form of the newly fashionable festival market, which offers for sale domestic ornament and personal adornment rather than household and personal staples. Meant to appeal to conventioneers and other visitors even more than to townspeople, the center will offer assorted varieties of food and beverage service, evening entertainment in clubs and a theater, and offices.

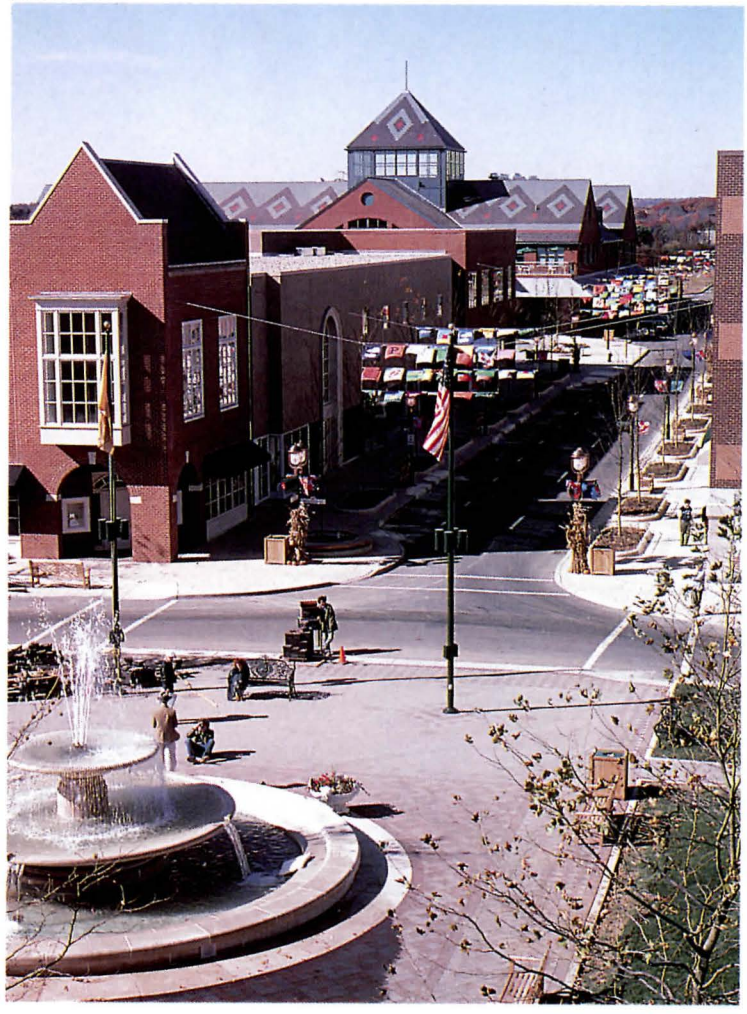
While Atlanta expects that only about 25 percent of the users of Underground Atlanta will be natives, at South Hadley, the Village Commons is expected to be widely used by citizens of South Hadley and nearby towns. In addition to shops, its functions include professional offices and service businesses, restaurants and a pub, two movie theaters, and apartments.

Moreover, and notwithstanding the realities of some of the interior planning, none of these complexes looks like a megastructure—Underground Atlanta re-uses the district's low-rise brick buildings, South Hadley emulates the residential scale of the surrounding town, Princeton Forrestal Village concocts the scale of a medium-sized city.

Since each of these centers was, so to speak, contrived at a stroke, even when they took the place of former centers, none of them is an old, established downtown, and, indeed, quintessential urban ingredients are sometimes missing. Only the South Hadley development, for instance, currently has permanent housing, although Underground Atlanta has plans for the conversion of an old commercial building to apartments, and there is a condominium development within walking distance of Princeton Forrestal Village. Underground Atlanta also plans to convert an older building into an all-suites hotel.

Apart from a post office across the street from South Hadley's Village Commons, none of these centers has access to governmental or other public buildings. Sasaki Associates' Halehouse has come to regret this absence at Princeton Forrestal Village. He points to the inclusion of such buildings as libraries and churches in similar developments designed by his firm, and roots the future inclusion of such buildings as schools and town offices, buildings that will serve local citizens as well as draw a new population of potential customers. *Grace Anderson*

©*Tom Bernard*

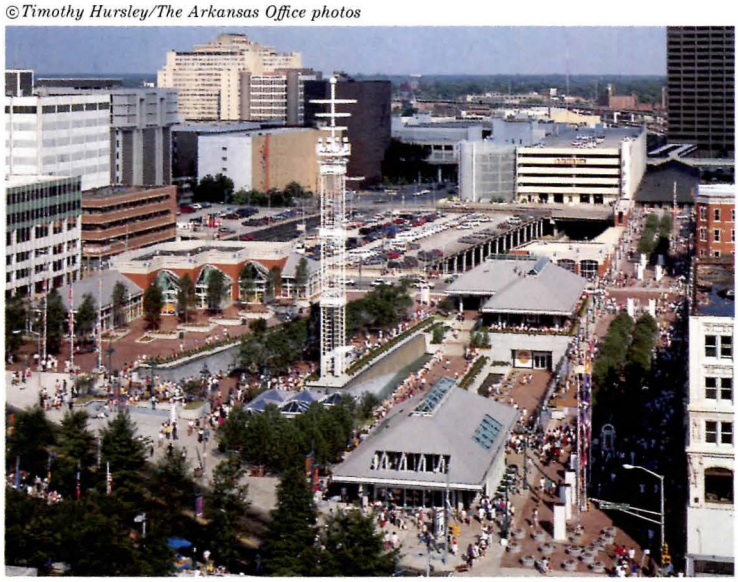


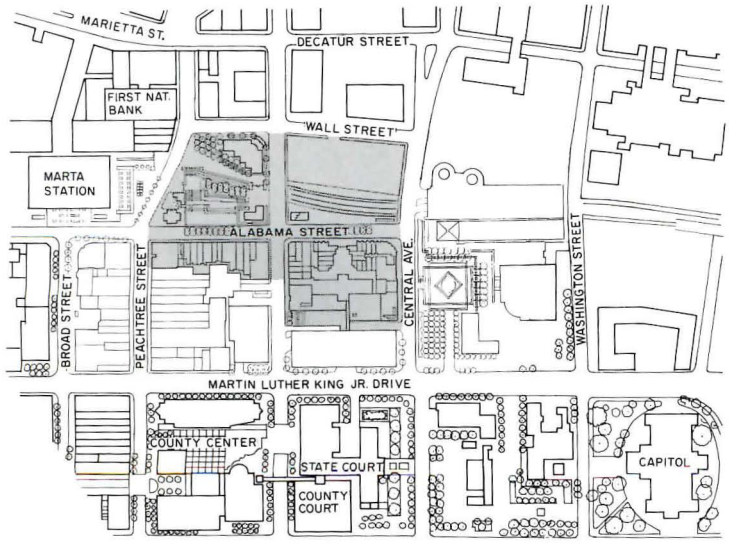
The three shopping centers considered in this study differ greatly in their respective characters. Underground Atlanta (opposite top) was designed to accommodate animated throngs at all hours. The Village Commons in South Hadley, Massachusetts (opposite bottom), offers a quiet welcome to residents and strollers enjoying the small-town atmosphere. Perhaps most surprising is Princeton Forrestal Village in New Jersey (above), a fictive medium-sized city that provides a wider range of sights and activities than the typical suburban shopping mall.

Underground Atlanta
Atlanta
Cooper Carry/Turner,
Joint-venture architects

Big-city village

©*Timothy Hursley/The Arkansas Office photos*





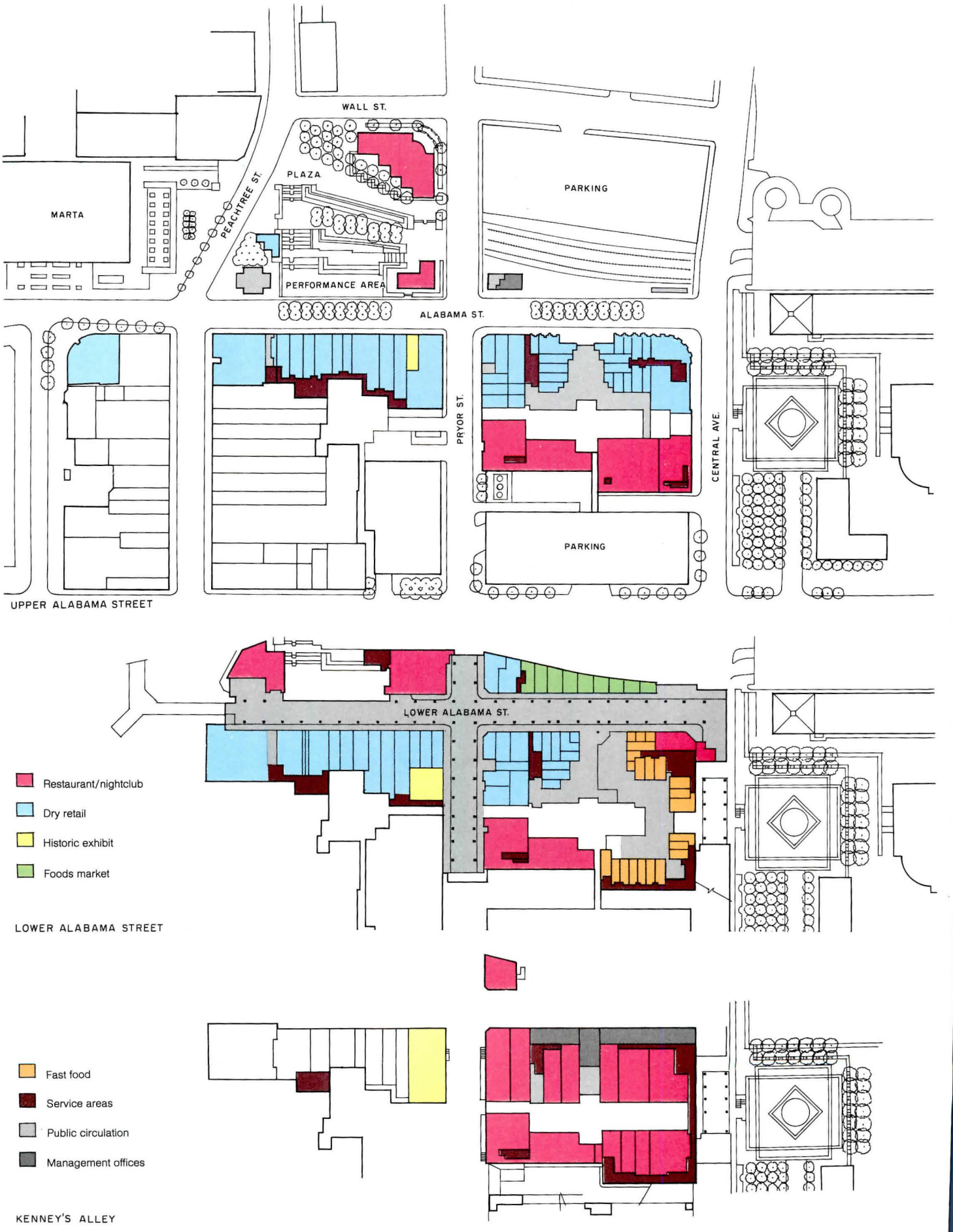
For all that it is a metropolis, Atlanta, too, has seen much of its downtown activity leave for the suburbs—the major offices remained and a couple of department stores, but much of the important retail business went to the suburbs, and evening entertainment gravitated to an outer urban district. This virtual abandonment of the downtown was more than ordinarily bad news for Atlanta. The city had gone to considerable trouble to attract convention facilities and large hotels, and as a result Atlanta is without doubt a popular location for conventions. But the conventions tend to be all business. Few family members have accompanied the conventioneers and, what is worse from the city's view, there has been little casual spending for food, drink, merchandise, or entertainment.

Underground Atlanta, a mixed-use complex, could scarcely be more precisely at the center of city activity: Atlanta's main thoroughfare, Peachtree Street, along the western edge; the downtown business and financial district to the north (top left); government buildings, including the State Capitol, to the south; and at the northwest corner, Five Points, a major commercial center since the Reconstruction period, and now a major stop for MARTA, the city's rapid transit system.

The entire six-block site of Underground Atlanta has been a commercial district since before 1900. In 1929, however, the city built a system of viaducts serving the second floors of the five-story buildings on this very steep site, thus entombing the sidewalk store fronts below for decades. This underground neighborhood was revived in the 1970s as a short-lived gas-lit early version of Underground Atlanta. Now, at the very lowest level of the present Underground Atlanta, architects Cooper Carry/Turner have restored, reconstructed, and been inspired by the 19th-century fronts as the main ingredient of an enclosed shopping mall (page 101). The architects and the city consider this as much museum as shopping area. Because for many years these lower-level shops commanded only lower-level rents, the facades suffered no "improvements," leaving the granite foundations, the cast-iron columns and fixtures, the etched- and stained-glass windows untouched. Some of the fronts were destroyed when MARTA built tracks and a station here, and the esthetic integrity was disturbed by the earlier Underground Atlanta, but most of the architectural components were still extant. Further, there existed many photographs and drawings of this odd netherworld.

Underground Atlanta encompasses a great deal more than a shopping center/museum, however. Most evident is the grand stairway (opposite), which connects Peachtree Street at the top with a performance plaza at the bottom. The wide pedestrian malls spreading eastward from the stairs emphasize public ease and conviviality with trees, chairs, and flower stands.

When asked whether he thought of retail as the driving force behind the development of Underground Atlanta, architect Sanford Nelson of Cooper Carry & Associates said flatly, "No. The driving force is the re-establishment of downtown." That being the case, shops and promenades, however appealing, only work during the day. For evening animation, the development includes Kenny's Alley, an inner enclave of balconies and arcades that offers restaurants, outdoor cafés, and entertainment. Round-the-clock liveliness is most effectively supplied, of course, by people who live in the neighborhood. Plans include the conversion of an 11-story building into a hotel and the conversion of a five-story building into apartments (center left). *G. A.*


WALL ST.
MARTA
PEACHTREE ST.
PLAZA
PERFORMANCE AREA
PARKING
ALABAMA ST.
PRYOR ST.
CENTRAL AVE.
PARKING
UPPER ALABAMA STREET
LOWER ALABAMA ST.
Restaurant/nightclub
Dry retail
Historic exhibit
Foods market
LOWER ALABAMA STREET
Fast food
Service areas
Public circulation
Management offices
KENNEY'S ALLEY

The underground part of Underground Atlanta (top) mixes existing and re-created elements of the 19th-century shop fronts that originally lined the district. The Victorian granite bases remain, and cast-iron columns were salvaged and repainted. The ceilings of the enclosed air-conditioned space are the soffits of the 1929 viaducts, which at the present street level (center right) provide entrance to stores and offices. At the core of the mixed-use complex, Kenny's Alley (center left and bottom), which includes restaurants and outdoor cafés, also provides nightclubs to attract evening activity.

Underground Atlanta
Atlanta

Owners:
Underground Festival, Inc., and Downtown Development Committee, City of Atlanta

Architect:
Cooper Carry/Turner, a joint venture—Sanford M. Nelson, principal-in-charge and design director; Walter T. Carry, project director; Lawrence G. Davis, Thomas Robbins, J. Ben Wauford, Nelson Brackin, project team (Cooper Carry & Associates); Louis Mosley, Diana Casey, David Bitter, project team (Turner Associates)

Engineers:
Armour, Cape & Pond, Inc., and Harrington, George & Dunn (structural); Brady & Anglin, B&E Jackson Corp. (mechanical, electrical, plumbing, fire protection); ATEC Associates, R&D Testing and Drilling (soils); P&G Corrosion Eng., Inc. (corrosion); Wilson, Ihrig & Associates, Inc. (noise and vibration)

Consultants:
Wiss, Janney, Elstner Associates (roofing, waterproofing); Jules Fisher & Paul Marantz, Inc. (lighting); Wm. Hobbs (fountain); CSX Transportation (transportation); Lowe Engineers, Inc. (building surveyors); Riley, Park, Hayden & Associates (property surveyors); New South Design Associates (graphics)

General contractor:
ICB/TWC, a joint venture

Small-town village

The Village Commons
South Hadley, Massachusetts
Graham Gund Architects

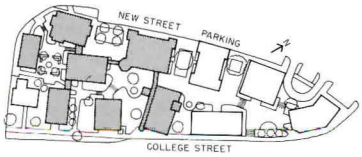
©David Hewitt photos

Though consciously planned as "retail village," Village Commons is in fact South Hadley's downtown, replacing a blackened empty lot. What little downtown had survived competition with suburban shopping malls—that is, a large independent bookstore and the college inn—burned down in 1986.

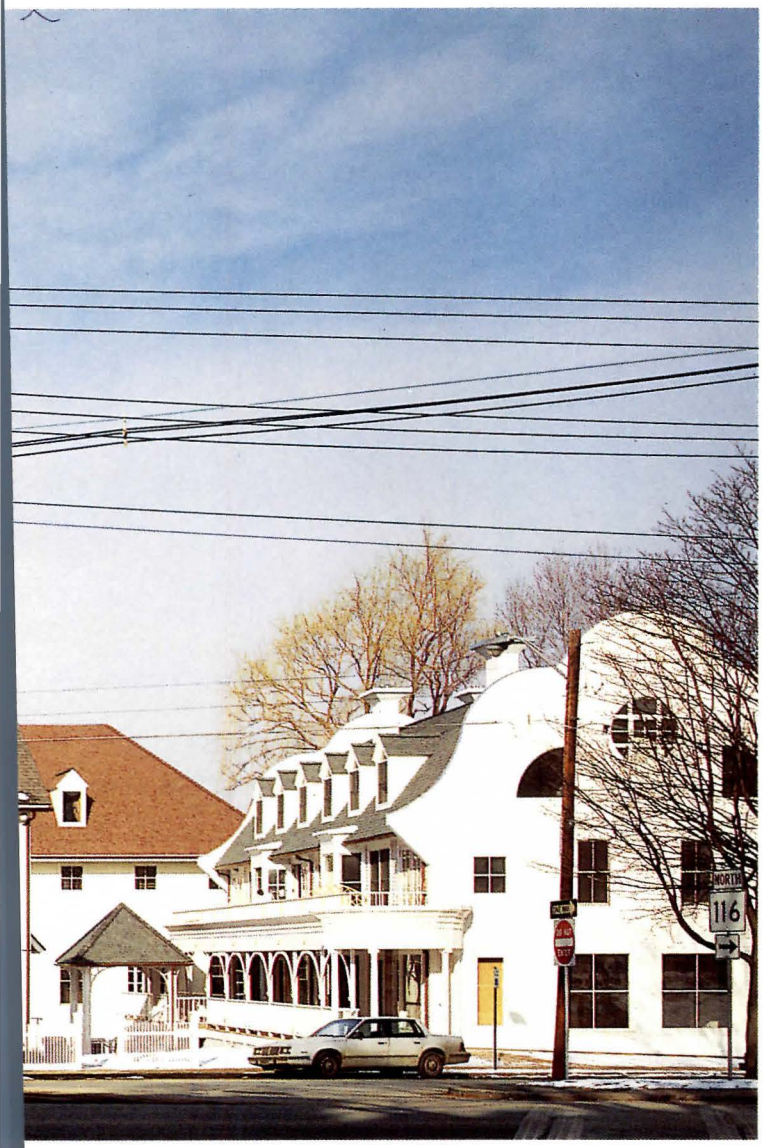
What appears an extemporaneous collection of New England buildings is a two-phased development; seven of the proposed eleven buildings have been completed. Moreover, what appears an unrelated collection of buildings constructed over time can be recognized from the inside as a single megastructure. The several buildings are connected with each other by second-floor bridges, which allow access to the handicapped throughout the complex; a gallery entered from the street (at right in the photograph above) leads past stores to a bridge that gives access to the movie theater at the back of the site. Below grade, service tunnels connect the building elements with a loading dock on the lower parking lot, concealing deliveries to stores and kitchen. Thanks to the site's sharp slope, not only the loading dock but the sunken parking lots are largely hidden from view.

One of architect Graham Gund's major intentions at the Village Commons was to offer users the kind of open, easy pedestrian circulation that one associates with small towns, and to replace the kind of control one senses in many malls with a more comfortable opportunity to choose direction. Although the several buildings are scattered seemingly at random around the site, the visual axes are deliberately skewed to compose views of the inner buildings from outside the complex. Brick paths, courtyards, and stairways join the buildings and allow users either to scurry or saunter around the center.

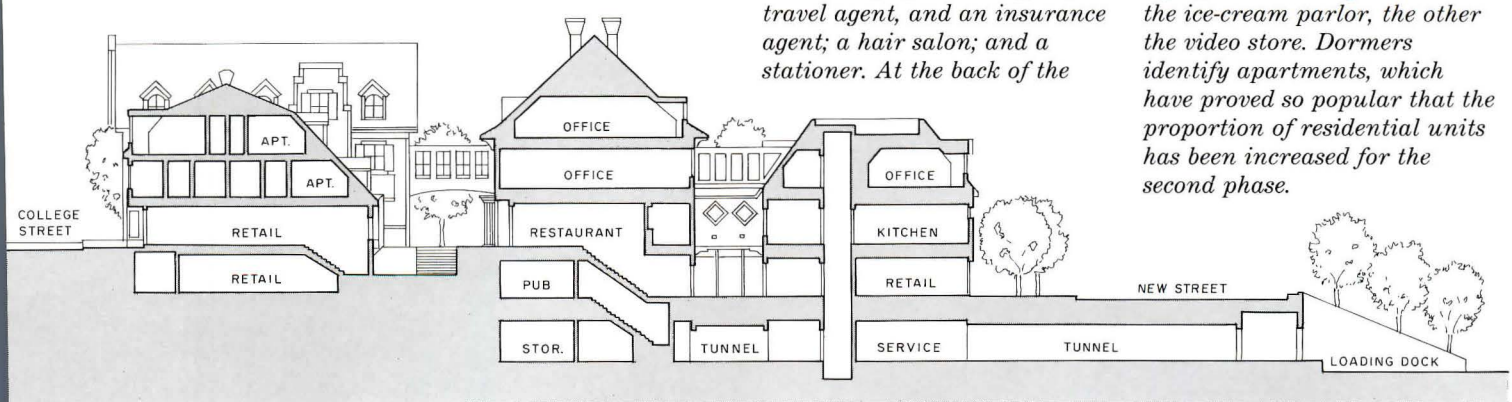
The mélange of facilities at Village Commons is a carefully constructed small-town mix of shopping, offices, and services. The building elements themselves differ one from the other, finished in white and cream clapboards or tongue-and-groove siding and ornamented with outsize New England and Queen Anne features modeled on local buildings. The citizens of South Hadley had sorely missed their burned-down bookstore and inn, and the bookstore was the first building completed in the new complex (at far left on the College Street front above). *G. A.*



The Village Commons at South Hadley
South Hadley, Massachusetts
Owner:
Center Development Corporation
Architect:
Graham Gund Architects—Graham Gund, principal-in-charge; Gerard Frank, associate; Christopher Clark, George Coon, Diane Kasprowicz, George Warner, Andrew Wen, project team
Engineers:
Chaloff/Barnes, Inc. (structural); Zade Company (mechanical)
Consultants:
O'Connell Engineering and Financial (development consultant)
General contractor:
Western Builders



The buildings seen from College Street (large photograph) include, from left to right in front, the bookstore, as well as physicians' offices, a travel agent, and an insurance agent; a hair salon; and a stationer. At the back of the site, one sees the restaurant with its arched dormers, and the theater building. At a corner of the site (bottom right), one building contains the ice-cream parlor, the other the video store. Dormers identify apartments, which have proved so popular that the proportion of residential units has been increased for the second phase.



Suburban village

Princeton Forrestal Village
Plainsboro, New Jersey
Bower Lewis Thrower,
Architects

The mixed-use shopping center at Princeton Forrestal Village represents the clearest example shown here of the evolving nature of the building type. It is, like most shopping malls, located in the suburbs, but that fact just about concludes their similarities. Although the development, in operation for about a year and a half, has not wholly succeeded, both the developer and the designers think not of failure but of fine-tuning.

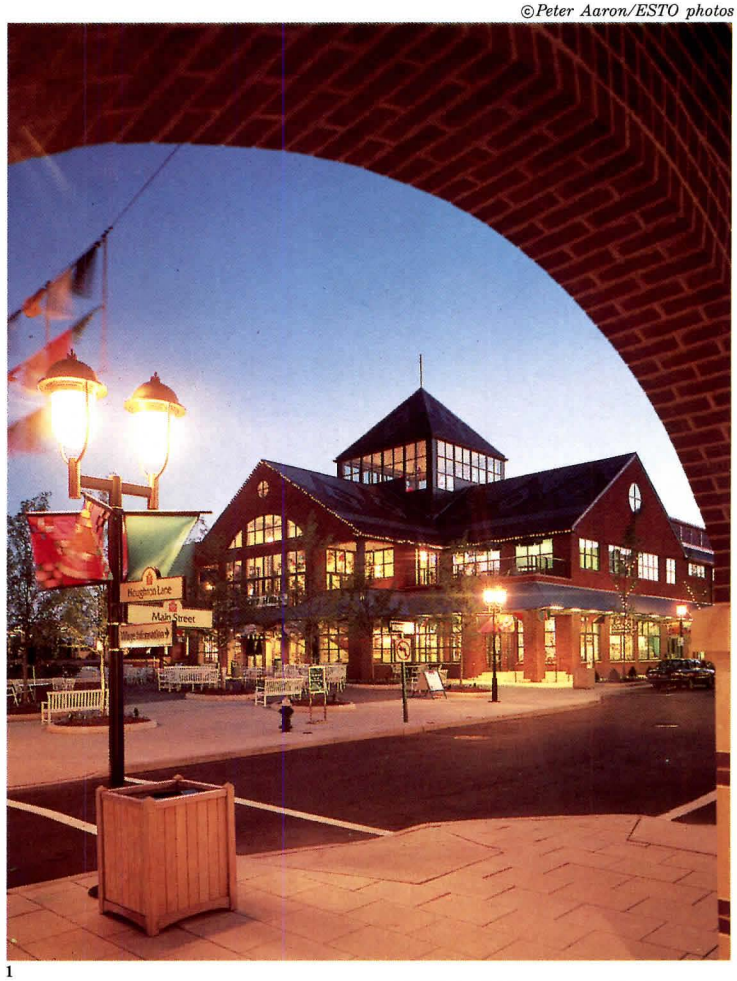
The most obvious departure from the expected is perhaps the physical openness, in which users must deal directly with the elements. Not only do they walk from store to store along sidewalks, but they can drive on streets to plan their shopping routes, to drop off elderly or handicapped companions, or even to park briefly. The bulk of parking space, however, is located around the outside of the village. (At present, the fine-tuning process has the designers and the developer considering awnings or some sort of weather protection short of overhead enclosure.)

Further, Princeton Forrestal Village has no anchor department store, another significant departure from customary shopping center practice. Ordinarily one, or perhaps two, major department stores—stores that will serve as primary destinations for potential customers—complete the retail roster. Here, the hotel and Market Hall, which sells foodstuffs, are at opposite ends of the shopping village. While they act as planning anchors, neither of them has great retail potency. (The developer contemplates the addition of a destination store.)

The win-loss record of the retail shops is mixed as yet. Some observers think that the quality of the proffered merchandise may be too upscale for the market, although one posh clothier says that his sales here are three times higher than they were in downtown Princeton. Planner Richard Galehouse of Sasaki Associates reports that one diagnosis of the slow start is that the design of the entrance, just off the main highway, is overly discreet; autoists may have difficulty identifying the complex as a shopping center, possibly mistaking it for a private corporation or academy.

Other elements in the mix, however, have shown a degree of success. The operation of Market Hall has worked, and the upstairs offices, intended for professionals and other small services, are now about 60 percent rented. And the hotel is a smashing success, catering to visiting business people and doing a steady business in conferences and training programs.

Designing the initial eight buildings for the village, architects Bower Lewis Thrower aimed for traditional character without quaintness. As architect John Bower describes the design process, the streets, squares, and brick facades, though they use the same palette of materials for the sake of consistency and cost, were designed and detailed by different teams within the firm, and the teams compared notes only afterwards. *G. A.*



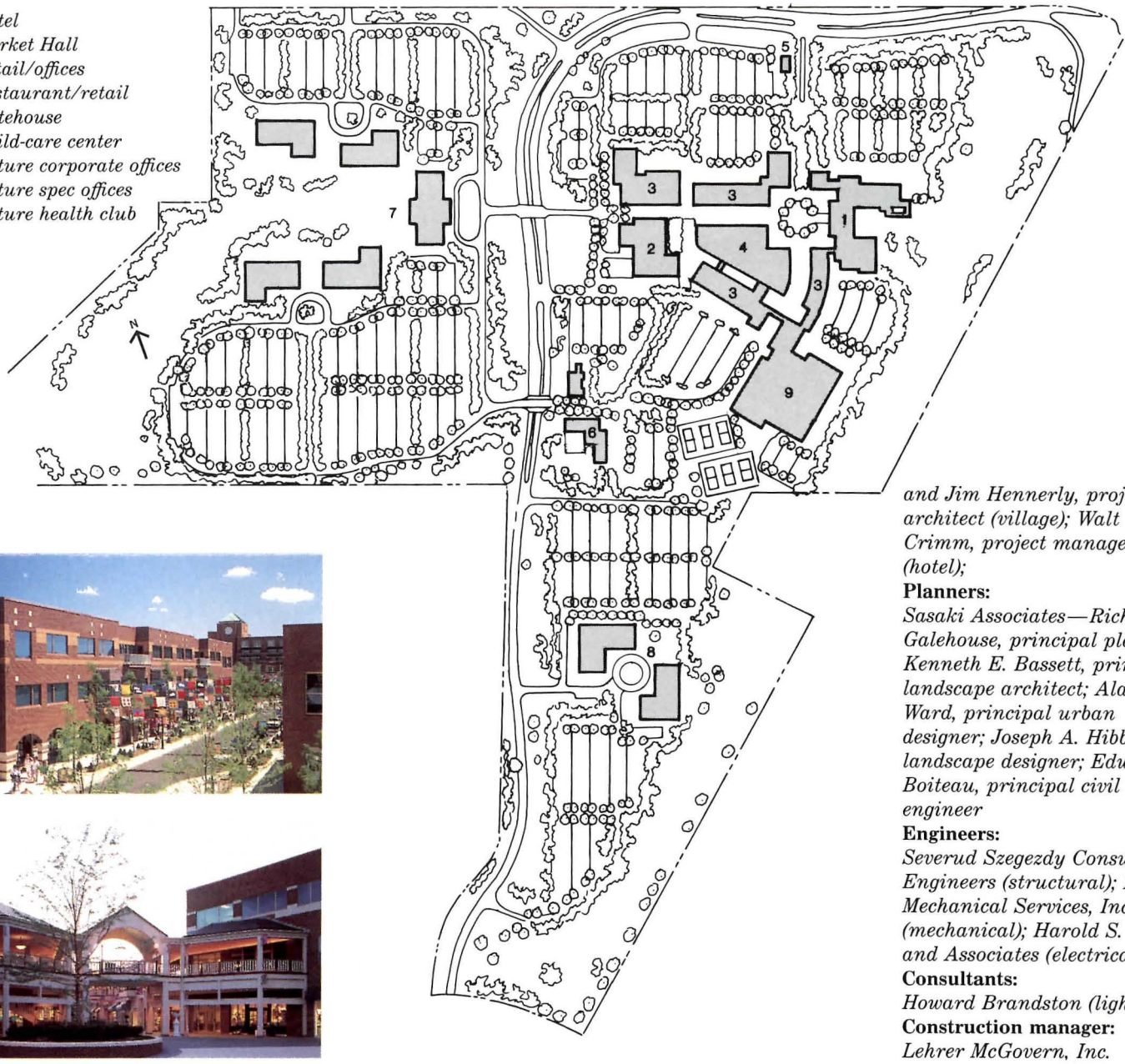
1

2

The Market Hall, identified by its patterned roof (1), and the hotel with its identifying clock tower (2) stand as anchors at either end of Market Street (3), a vehicular thoroughfare. The hall faces Market Plaza, a casual open space that contrasts with the more formal Village Square in front of the hotel (6). Stony Brook Row (4 and 5) is restricted to pedestrians, and balconies provide some protection from the weather. So that the second-story shops will not suffer isolation, their balcony has access on grade to parking.

Princeton Forrestal Village
Plainsboro, New Jersey
Developer:
Toombs Development Company
Architect:
Bower Lewis Thrower/ Architects—John A. Bower, Jr., and Arthur W. Jones, partners; Paul Steege, project manager,

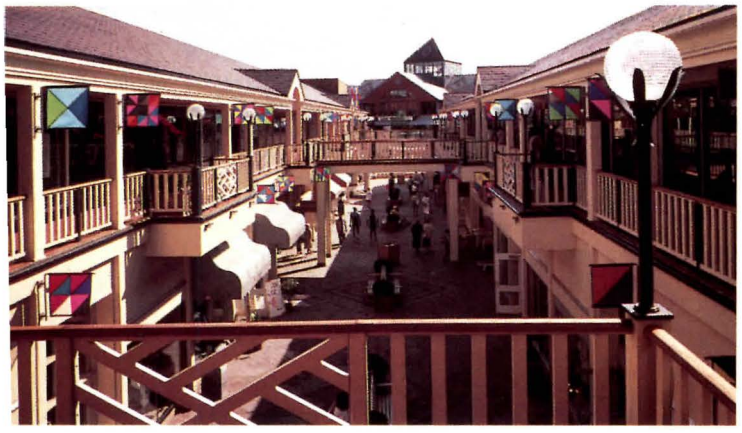
1. *Hotel*
2. *Market Hall*
3. *Retail/offices*
4. *Restaurant/retail*
5. *Gatehouse*
6. *Child-care center*
7. *Future corporate offices*
8. *Future spec offices*
9. *Future health club*



and Jim Hennerly, project architect (village); Walt Crimm, project manager (hotel);
Planners:
Sasaki Associates—Richard F. Galehouse, principal planner; Kenneth E. Bassett, principal landscape architect; Alan L. Ward, principal urban designer; Joseph A. Hibbard, landscape designer; Edward B. Boiteau, principal civil engineer
Engineers:
Severud Szegezdy Consulting Engineers (structural); E&S Mechanical Services, Inc. (mechanical); Harold S. Cohen and Associates (electrical)
Consultants:
Howard Brandston (lighting)
Construction manager:
Lehrer McGovern, Inc.

3

4




6

The critical issues of structural strength, weatherability, formability, and configuration of precast panels are all contingent on finish character, but as three examples show, that choice is not always easy.

Taming béton brut

Jack Pottel

Charles Alexander

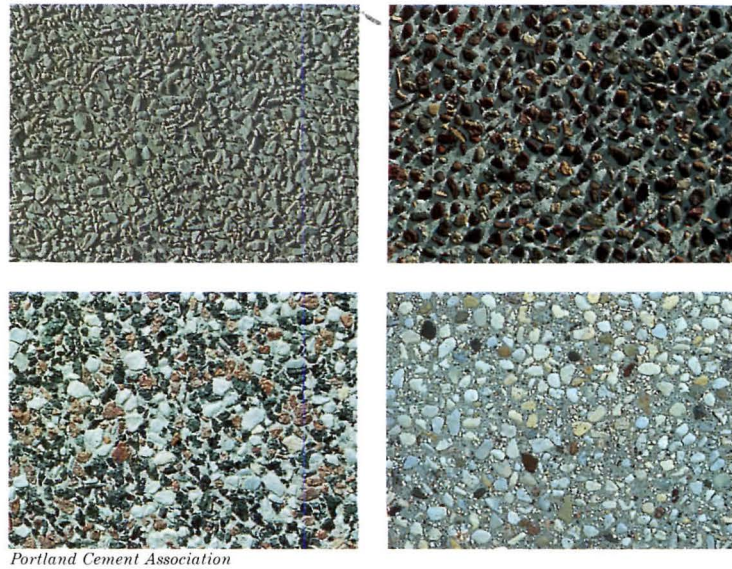
The Hyatt Regency *is clad in panels in which edges were conveniently hidden by Georgian-style decorative articulations (below). The 47-ft columns for the skylit interior courtyard were cast in three separate pieces, then assembled prior to shipping (above).*

There was a time when the New Brutalism of the 1960s seemed to be taken too literally. Architects used concrete in great, thick bush-hammered slabs, and built enormous overhangs and complex, cavelike interiors. While that era is largely past, precast concrete of a much more refined nature is increasingly seen as a versatile cladding material that will survive the number-crunching of budget-driven commercial and institutional projects. And the industry is changing as well: "We're more willing to listen to the architect's view of the project," says Leo Angelantoni of Pre-Con, a panel fabricator. Though manmade, concrete has qualities that are more similar to the variations inherent in natural materials than to off-the-shelf products. A successful panel, according to Sidney Freedman of the Precast/Prestressed Concrete Institute (PCI), "must look the way it's supposed to look from the distance it will actually be seen." The range of panel finishes is extraordinary, from polished as-formed surfaces to exposed aggregates as large as 7 in., but not all panel fabricators, which are usually businesses covering a limited geographical area, can produce a given finish quality.

Understanding the way a panel will read can be tricky, affected by the color of the aggregate (if visible), the color of the matrix (which is affected by the color and proportions of both its cement and fine aggregates), the depth of any aggregate exposure, and the way the aggregate has been exposed. The use of retarders delays curing so that a layer of matrix can be removed from around the aggregates by a water stream; acid etching removes a thinner layer of cured matrix; mechanical honing or bush hammering removes both cement mix and aggregate in an even rougher pattern. With consistency sometimes difficult to achieve, Freedman recommends that owner, architect, and precaster should use mockups to come to a consensus on acceptable variations in finish color and texture, the maximum size and occurrence of defects such as voids ("bugholes"), and acceptable methods for repairing defects. Precasters will usually cooperate on a prebid basis even on a fast-track project, according to architects interviewed for this article, because such a procedure reduces the risk of expensive and time-consuming on-site panel rejection. Weatherability, concrete strength, connection details,

Continued on page 108

Jack Pottel

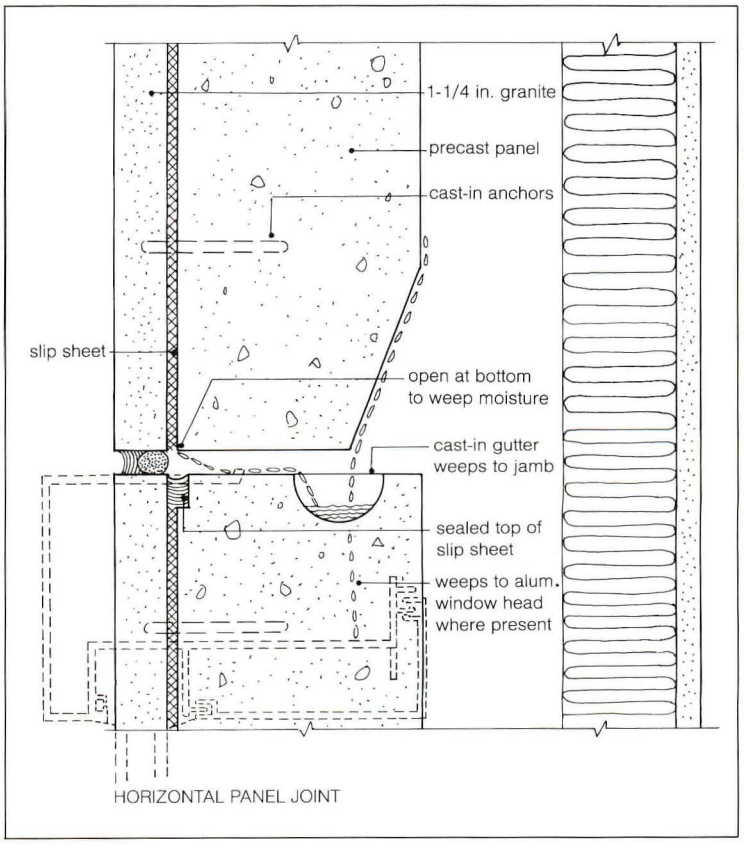


Portland Cement Association

125 Summer Street *has monumental entrances which, to avoid a veneer look, were detailed so that panels would turn an outside corner and continue into a 2-ft-6-in. return without a joint (below right). Achieving the same quality of finish on a face and a return has traditionally been extremely difficult, but Pre-Con pours from multiple directions and rotates the forms during curing to assure even dispersal of cement and aggregate. A separate mix was poured first (1-1/4-in. thick in most locations) as a facing, with a structural-concrete mix added only slightly later, before a cold joint could form.*

Architect:
Kohn Pedersen Fox—Sheldon Fox, partner-in-charge; Arthur May, design partner; Charles Alexander, Geraldine Pontius, Michael Green (Greenwich Hyatt Regency); Glenn Garrison, John Lucas, Gregory Waugh (125 Summer Street);
Construction manager:
Turner Construction
Precast concrete:
Pre-Con

Gregory Waugh photos



Continued from page 106

and formability cannot be worked out until the color and texture of the panel is approved, so the desired finish effect must be established early. Mockups are useful as well to test panel-connection details, insertion of windows and other accessories, and to check sealant suitability, acceptable variations in tolerance to adjacent panels, and horizontal bowing.

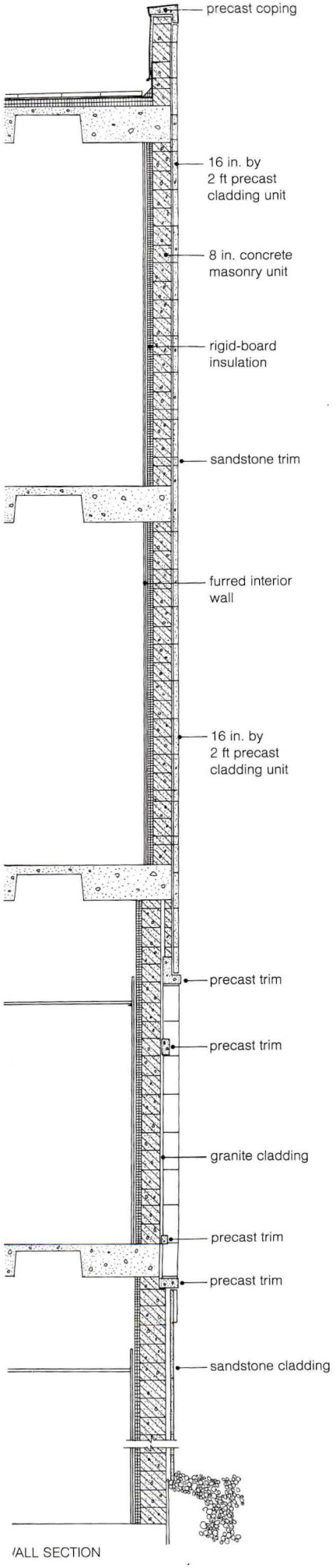
The 400-room Hyatt Regency Hotel, in Greenwich, Connecticut, taught Kohn Pedersen Fox how versatile precast concrete can be. The four-story structure is both framed and clad in precast (page 106). Walls dividing rooms on the second floor are actually upturned beams spanning ballrooms and restaurants below. The acid-etch-finish exterior panels were configured to back up the brick infill. The same fabricating firm, Pre-Con, of Brampton, Ontario, was also selected to make panels for 125 Summer Street, a 495,000-square-foot office tower nearing completion in Boston (page 107). "In Boston we took advantage of what we had learned in Greenwich about the detailing of columns and how big panels can be," says Gregory Waugh, project manager for KPF. Pink Stony Creek granite was selected to match Boston's South Station, across the street, and precast was used as an accent to get a reading similar to limestone. The architects initially looked at a metal truss system to support stone and precast, but it became difficult to coordinate attachment of both items with the aluminum-and-glass curtainwall. The fabricator ultimately persuaded the building team to use precast as a backup as well as trim. The steel had to be designed to support the heavier curtainwall, coordination made possible by early involvement of the precaster. Finding a mix that was cost-effective and visually appropriate required numerous samples, however. The building team looked at combinations that included ground limestone, white sand and white cement, rose quartzite, and pigmented additives before settling on a straightforward combination of white and gray sands. Segments of columns and a 6- by 8-ft mockup panel were cast to assess consistency. Approved panels were kept at both the factory and the site for verification.

Conventional wisdom among precasters is that bigger panel units are more economical because shipping and installation costs can be reduced. Yet when it came time to produce the Hillier Group's competition-winning design for Arizona State University's School of Architecture and Environmental Design, in Tempe, smaller turned out to be better. Hillier's design partner, Alan Chimacoff, sought a ruddy stonelike appearance and devised a basic grid of 16- by 24-in. units to organize the design's complex fenestration, arcades, and pergolas. Close up, the deeply incised joints of the units read "thicker" than they really are—as intended—on elevations enlivened by brightly painted metal sunscreens, granite tiles, and local Sedona Red sandstone (photos this page and opposite). The associated firm, Architecture One, of Phoenix, worked with local precasters who concluded that the skin was too complex to economically aggregate the units into large panels. The winning bidder, a Colorado firm, concurred and cast all of the pieces separately—a process that still required 45 separate molds.

The PCI's new second edition of *Architectural Precast Concrete* (PCI, 175 West Jackson Boulevard, Chicago, Illinois 60604, 312/786-0353) includes an extensive discussion of color and finishes. The Portland Cement Association offers *Color and Texture in Architectural Concrete* (PCA, 5420 Old Orchard Road, Skokie, Illinois 60077, 312/966-6200). *James S. Russell*

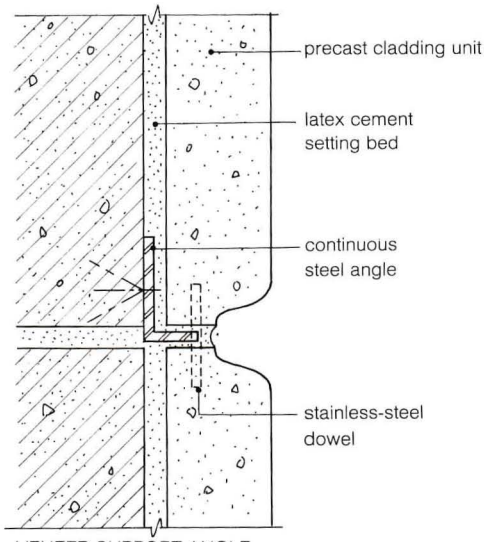
Arizona State's new school of architecture *has panels laid up against a concrete-masonry-unit backup and adhered with a latex-modified portland cement intended to accommodate local thermal movement within each unit (section opposite). Horizontal reinforcement locks the wythes together, and stainless-steel dowels tie the cladding units vertically (opposite middle right). As an additional method of support, relieving angles were placed every 12 ft vertically (opposite middle left).*

Alan Chimacoff photos

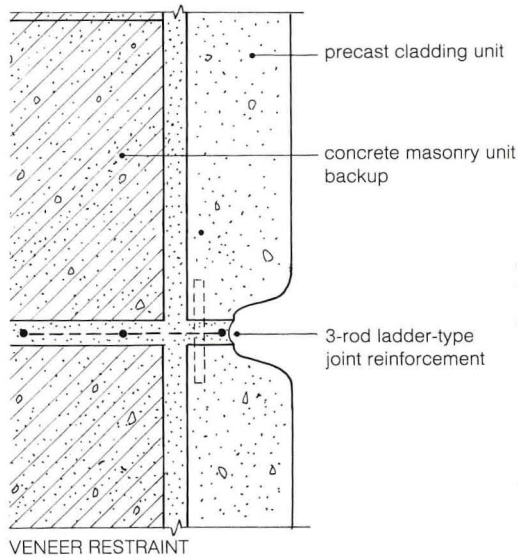


/ALL SECTION

Architect:
The Hillier Group—Joel C. Spaeth, principal-in-charge; Alan Chimacoff, principal, design; Guy Geier, principal, management; Douglas P. Harvey, Keat Tan, Eric Baker
Associated architects:
Architecture One, Ltd.—Frank Roberts, vice-president; Will Craig, project manager; Dean Sulzer, job captain
General contractor:
Okland Construction
Precast fabricator:
Smith/Wolf Construction



VENEER SUPPORT ANGLE



VENEER RESTRAINT

The Austin Hansen Fehlman Group has learned that artful manipulation of tilt-up concrete slab casting can be esthetically rewarding as well as cost-effective.

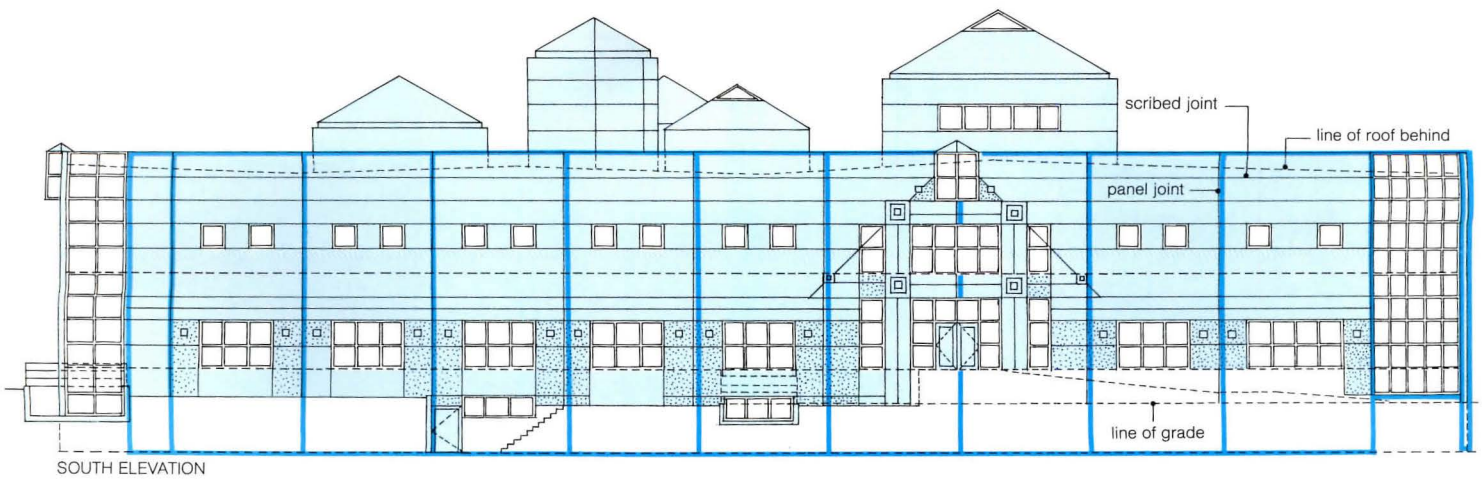
Not just for warehouses anymore

©*John Durant photos, except as noted*

Tilt-up concrete has always seemed like one of those technologies with a lot of interesting unexplored possibilities, though it has been a system largely confined to the uninspired office/warehouse combinations that everywhere line suburban freeway corridors. Having previously worked with the building technique, the Austin Hansen Fehlman Group saw it as one that could be handsomely adapted to fit the Scripps Clinic, a project in an office and research park near La Jolla, California.

Tilt-up can be seen as a method of precasting (see previous story), but the crucial difference is the onsite casting of panels, which are then hoisted into place using a crane. The process pays off when the building slab itself becomes the mold face, saving the costs and limitations associated with mold fabrication, factory production schedules, and shipping to the site. Unfortunately, finish and color options are far more limited than with other techniques, and complex shapes are difficult to cast on site.

Working very closely with the concrete subcontractor, "we stretched the technology to the limit," asserts Randy Robbins, vice president at Austin Hansen Fehlman. Many three-story panels were cast, with the lowest third of the panel acting as a basement retaining wall or foundation wall (drawings below); two stories is normally as high as panels are cast. Most tilt-up structures use low-cost floor and roof framing of glue-laminated timber and plywood; this was deemed insufficiently rigid for anticipated loading. Instead, the architects developed a square structural-bay system (with, on average, 32-ft spans) so that a steel-building manufacturer's standard column-and-bar-joist system could be used with concrete-over-metal decking for upper floors. Details throughout are extremely simple (drawings right), reflecting both the client's tight budget and a climate so mild that the mass of the concrete panel and the interior air space supply the insulation values required by code. To prepare the floor slab, penetrations (for interior columns, for example) were boxed over and covered with a thin coat of concrete to form a flat, unblemished mold. The simplicity of the panel forms is belied in the complex articulation of the final project. Careful use of scribed joints, paint colors, and glazing (some of which is simply spandrel glass over blank panel areas) fits the project into the existing campus of cast-in-place structures. *J. S. R.*

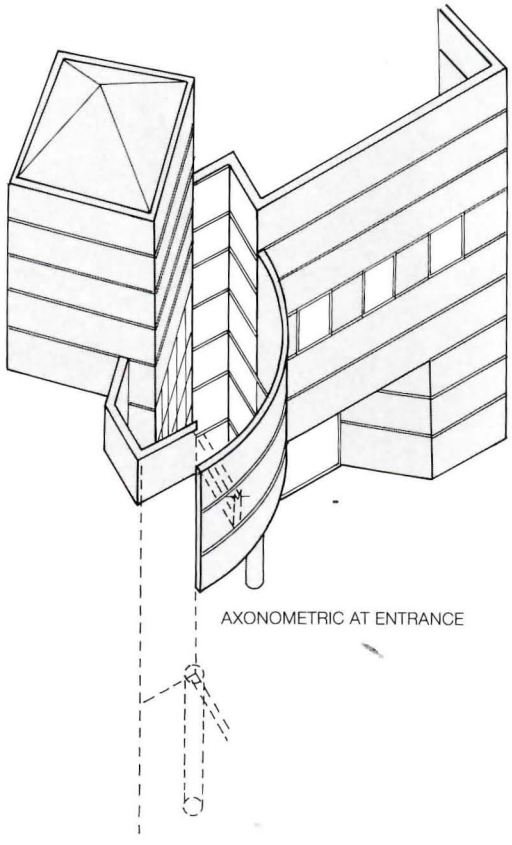


SOUTH ELEVATION

The Scripps Clinic
Carmel Mountain Ranch, California
The Austin Hansen Fehlman Group, Architects

The architects had hoped to pour all of the panels for the Scripps Clinic on the floor slab, using bond breakers so that additional panels could be poured in a second layer. Ultimately, a number of panels were poured on a separate pad in the parking lot to avoid the expense of multiple pours. A light waterblast treatment was applied to areas of the finished wall for further definition.

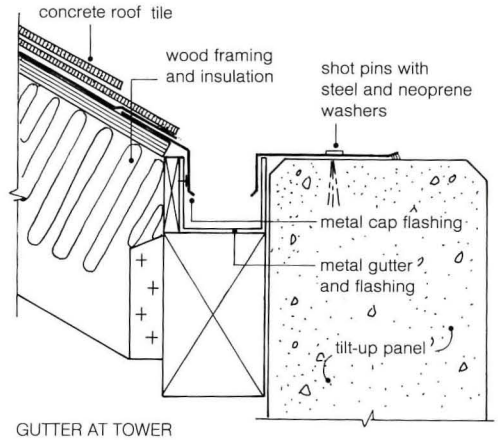
Architect:
Austin Hansen Fehlman Group—Don Hansen, principal-in-charge; Doug Austin, Randy Robbins
Contractor:
Koll Construction Company
Concrete subcontractor:
Riley J. Presser



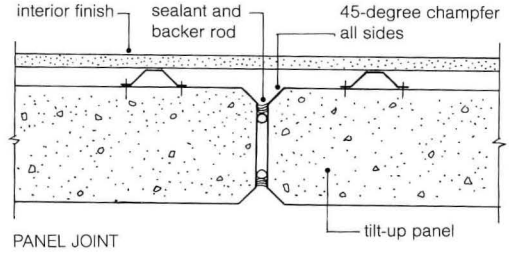
AXONOMETRIC AT ENTRANCE

Randy Robbins

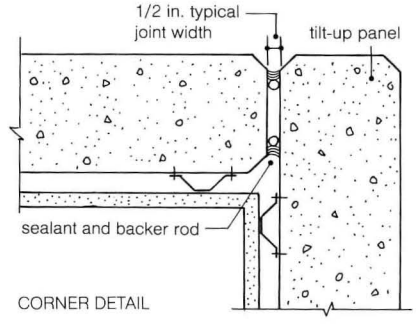
Randy Robbins



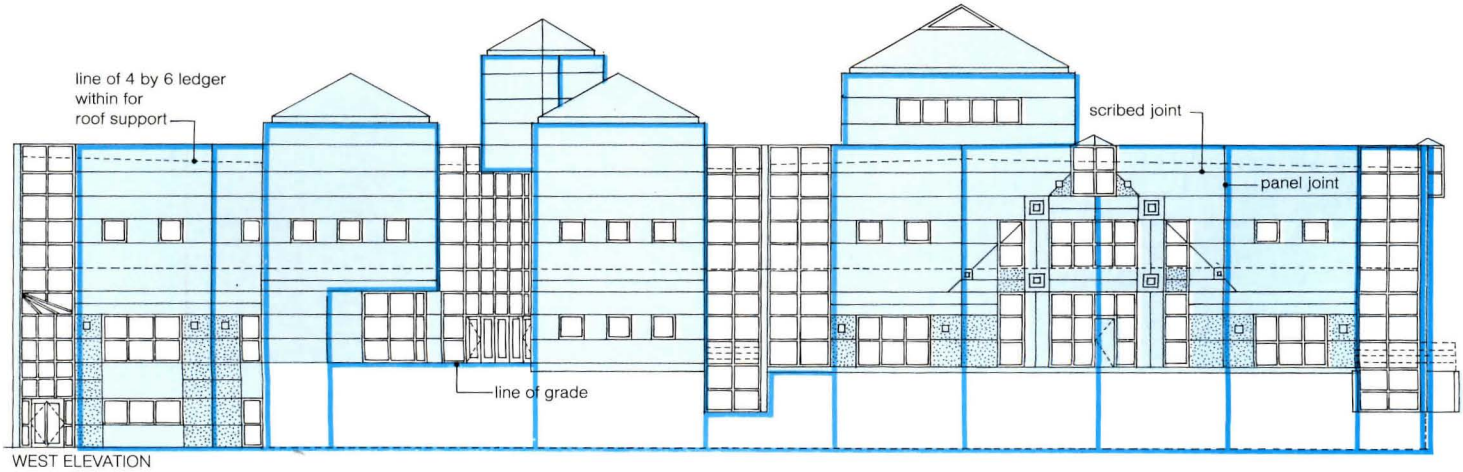
GUTTER AT TOWER



PANEL JOINT



CORNER DETAIL



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New products

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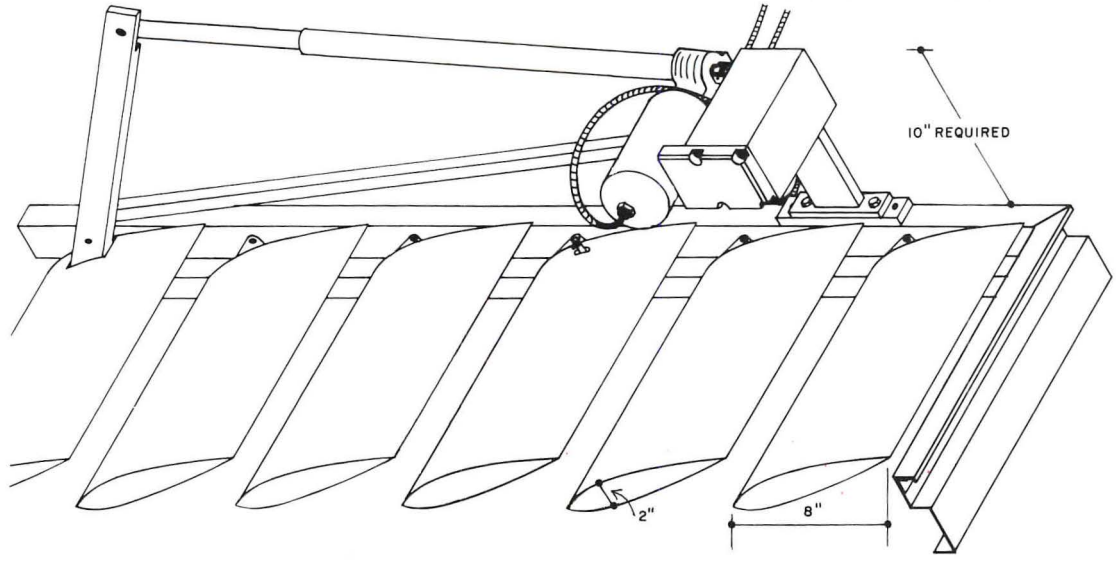
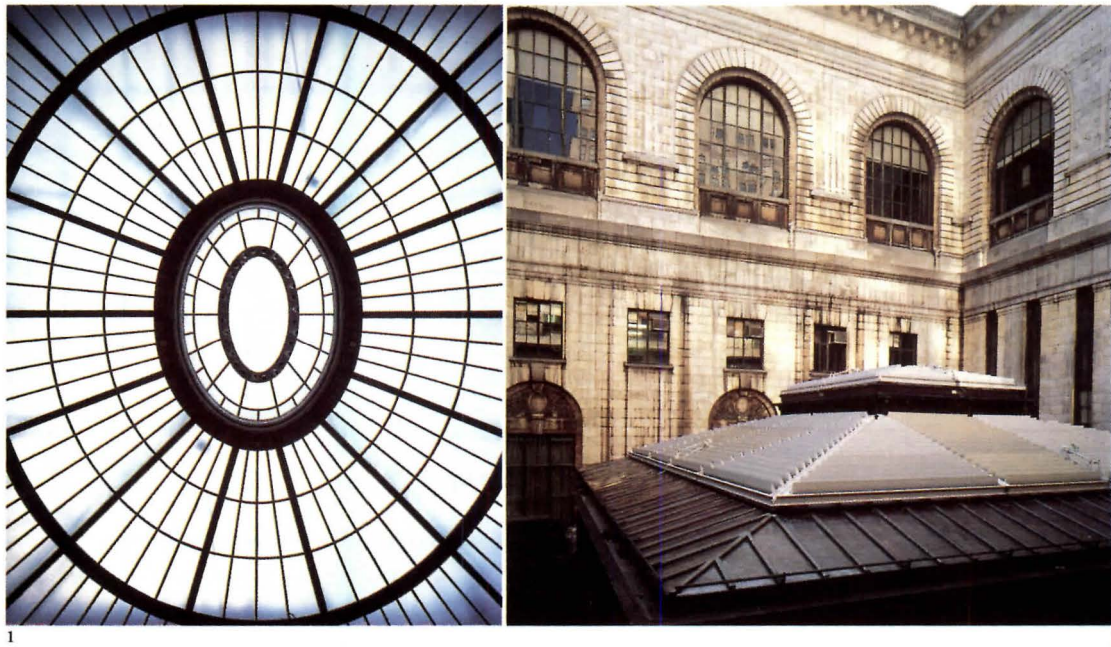
1. Davis, Brody & Associates used electrically operated louvers above the rotunda skylight of the New York Public Library's Bartos Forum to darken the space as needed for visual presentations. The detail, top, illustrates the airfoil design and compact motor and drive-rod assembly. The Moore Co., Marceline, Mo.
Circle 300 on reader service card

2. Design architects Odell Associates selected shade-tracking louvers for daylight control in the banking atrium of the NCNB Building in Tampa. Twelve- by twelve-ft modules were installed directly under the glazed roof. Although the spacing of the open blades lets viewers in the office tower look down onto the banking floor, the shade-tracking slats eliminate glare on CRT screens below. Brown Manufacturing Co., Oklahoma City.
Circle 301 on reader service card

More products on page 123





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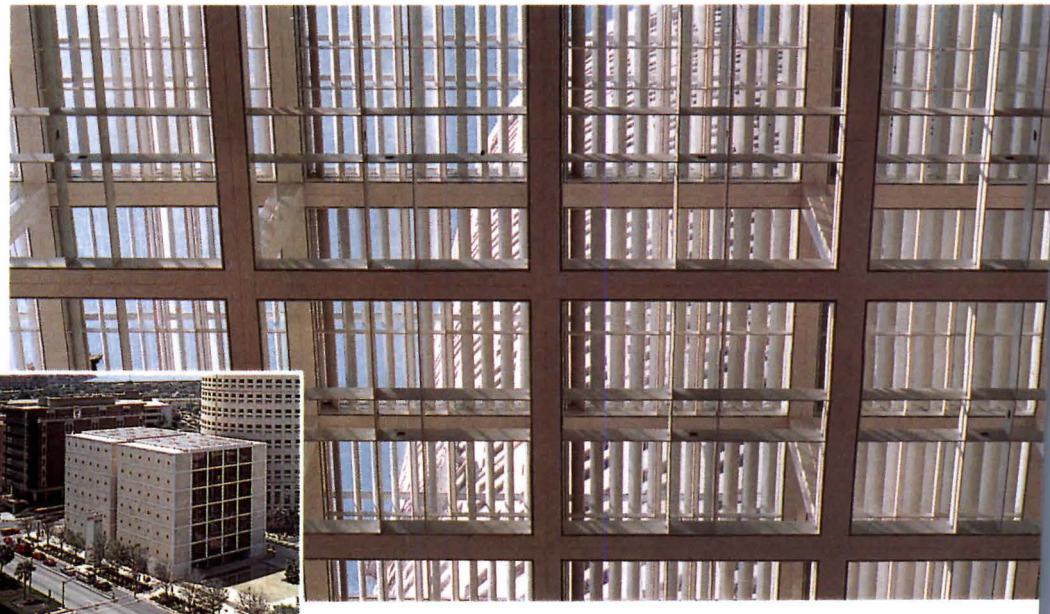

2

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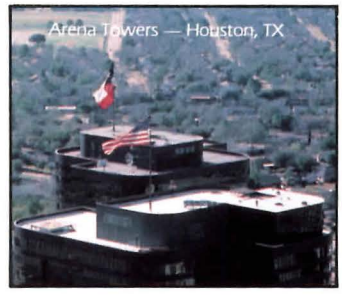

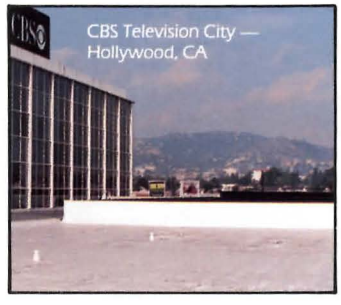

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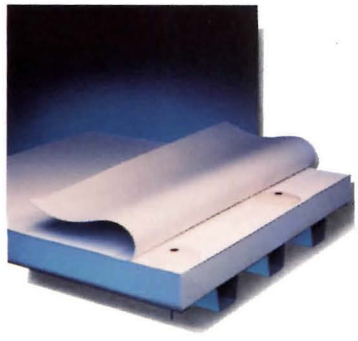

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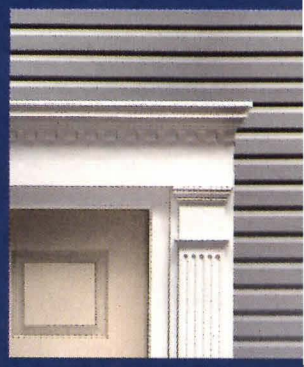

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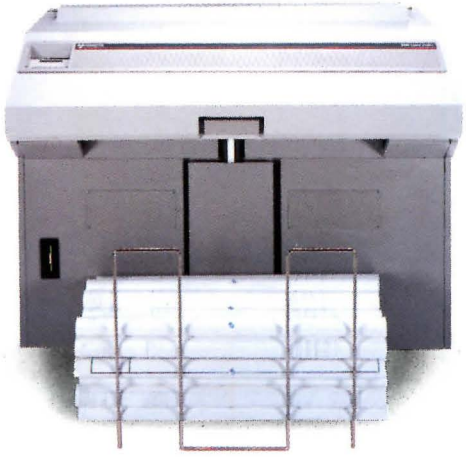

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Software review for architects

By Steven S. Ross

Architrion II, Series 4, Release 1.0

A 3-D drawing, shading, modeling, and bill-of-materials package for the Macintosh. This upgrade from Architrion 4 allows full use of color. Architrion is one of a new generation of CAD packages that calls for blocking out a wall or building mass, then modifying the mass to design the structure. This "object-oriented" alternative to adding to the design "piece by piece" allows smaller files and faster operation. There is no simultaneous updating of a 2-D file from 3-D, or vice-versa. But the links between 2-D and 3-D are strong enough in actual use.

Equipment required: Macintosh Plus, SE, II or IIx series, fixed disk. The 4.0 series runs on any Macintosh model from the Plus on up to larger machines. The 4.2 series runs only on Macintosh computers that have a math co-processor. The II series (Mac II, IIx, IIcx) comes with a co-processor standard; one can be added to SE models. Digitizers are supported, but most users will be happy with just the Macintosh mouse. A wide range of plotters are also supported, with resolution up to 0.025 mm (25 microns), along with various Apple LaserWriter and ImageWriter printers. The $2,495 price includes 30-day telephone support. One-year technical supports costs $295 and includes telephone support and access to its forum on MacNet.

Vendor: Gimeor, 420 10th St., S. E., Washington, D. C. 20003.

Manuals: Adequate. There's a good tutorial. There are many misprints in both the tutorial and the reference manual—and even, occasionally, in on-screen prompts.

Ease-of-use: Architrion is acceptably fast, and has all the needed tools.

Error-trapping: Architrion uses a hardware lock on the SCSI port. Starting most modules of the software is impossible without it; the 2-D module may start without the lock, but files on the fixed disk will be corrupted. As with other software protected this way, if the lock comes loose during a drawing session, you will probably lose the file.

The built-in Quantifier module allows users to pull a bill of materials (or such items as volumes for hvac calculations) out of the 3-D representation, but not the 2-D. It is possible, and even likely, to make changes in 2-D that have not been imported back into 3-D. Thus, plots off the drawing will look fine, but the Quantifier will give inaccurate values.

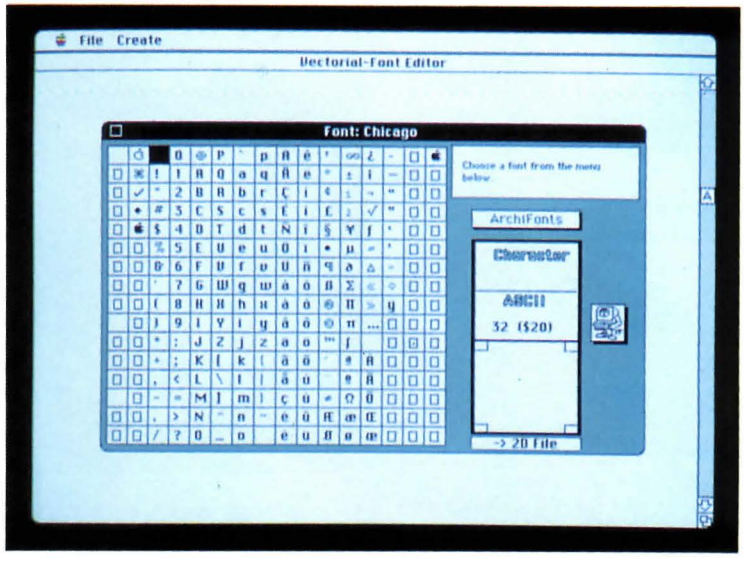
Review

Architrion is launched from an opening menu Gimeor calls a Minifinder. Because the Minifinder, not the individual 2-D and 3-D modules, keeps track of changes in libraries and default values for a specific job, users may want to create entirely separate Macintosh folders, each containing the job's drawing files and the four megabytes of associated Architrion files. You can get by if you only want to move the job's specific Minifinder and libraries with the job's drawing files. But that requires a more sophisticated knowledge of computer files than most Macintosh users want to handle. Fortunately, Architrion drawing files themselves can be quite small, unless you insist on building the drawing line-by-line instead of by punching holes into a volume.

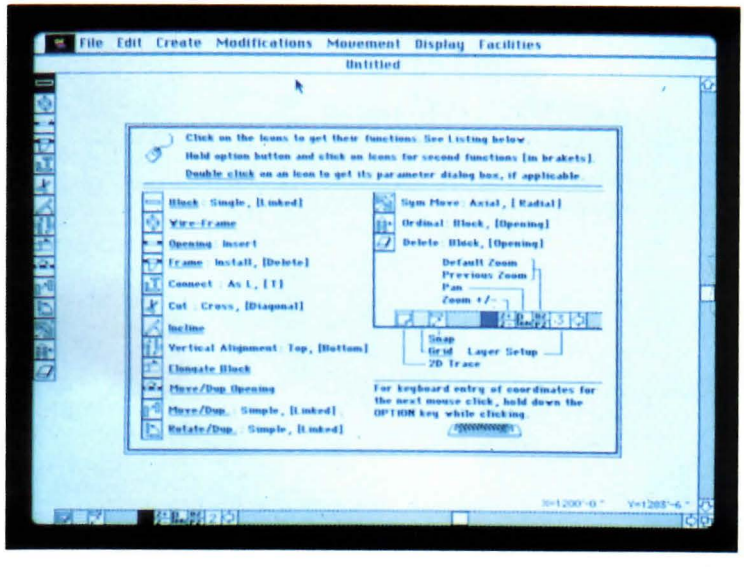
There's an Undo function that allows canceling your last action only. You cannot "undo and undo;" the object must be redrawn.

Continued on page 119

Mr. Ross is a prominent computer consultant and a regular contributor to RECORD.

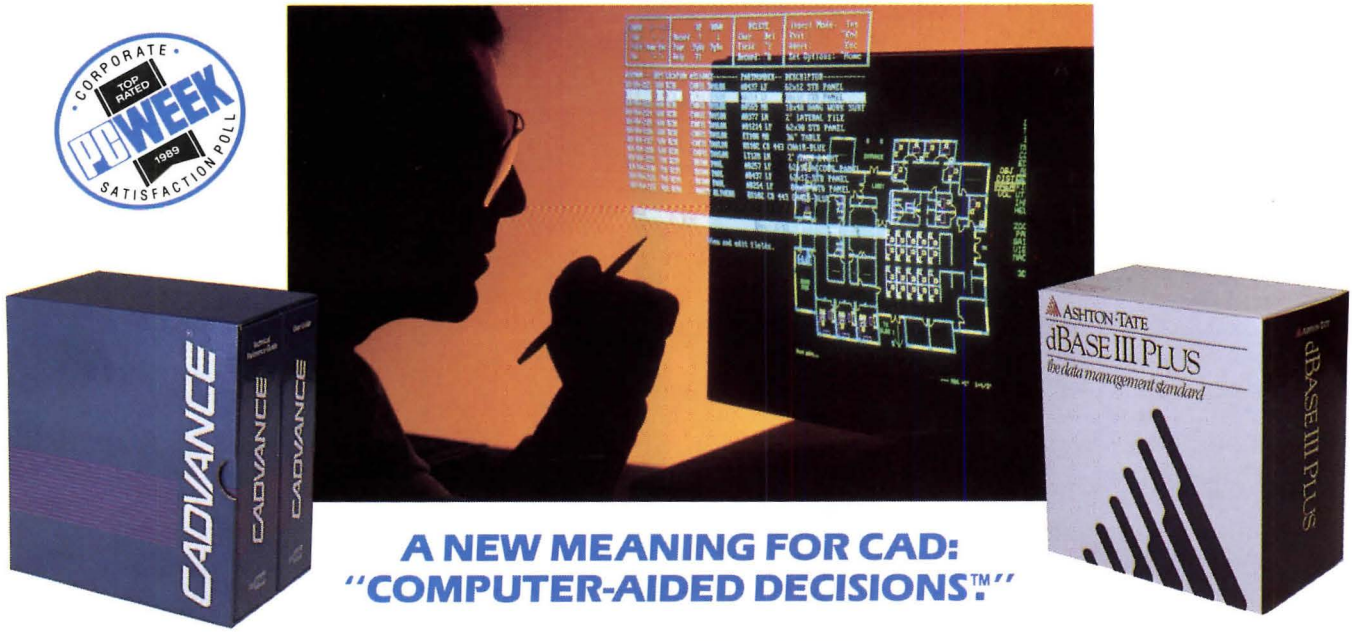


Architrion's font editor lets you take a character from an existing font and modify it. The screen shows characters from a standard font that comes with the package. The cursor is set on "space," which is ASCII 32 decimal, 20 hexadecimal. Notice that the characters above 127 decimal (toward the right in the matrix) do not all correspond to characters in IBM's standard character set.



Help with icons is invoked from the "apple" pull-down menu. When you want to change an icon default value, double-click on it before using it to draw with.

THE CADVANCE/dBASE CONNECTION.



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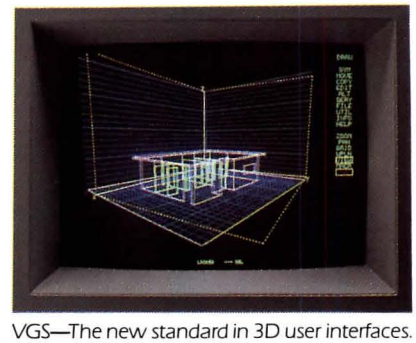

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	CADVANCE	AutoCAD	VersaCAD	MicroStation	CADKey
Overall Performance	1	3	4	3	2
Relative value	1	4	5	3	2
Ease of installation	1	3	4	4	2
Documentation quality	1	2	4	3	2
Product support quality	1	3	4	2	5

*Information from "Survey Shows Stiff Competition in High-End CAD" from PC WEEK, June 19, 1989. Copyright ©1989, Ziff Communications Company. VersaCAD is a registered trademark of VersaCAD Corp. AutoCAD is a registered trademark of Autodesk, Inc. MicroStation is a registered trademark of Intergraph Corp. CADKey is a registered trademark of CADKey, Inc. CADVANCE, Computer-Aided Decisions, and VGS are registered trademarks of ISICAD, Inc. dBASE is a registered trademark of Ashton-Tate.

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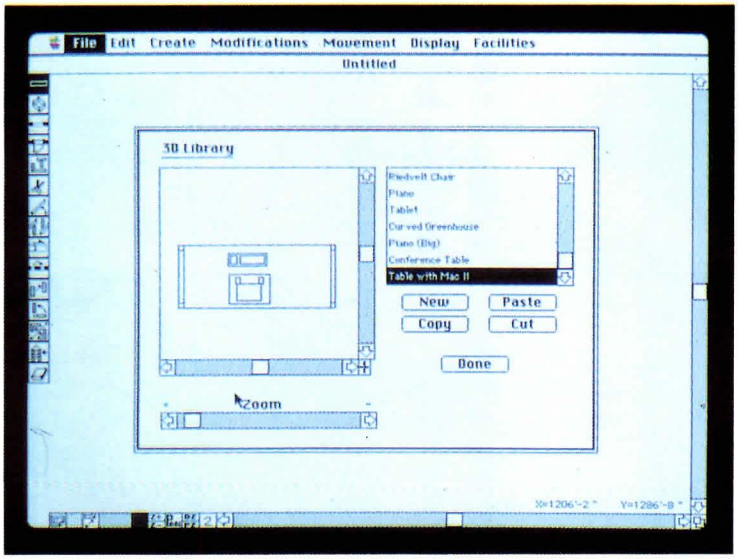
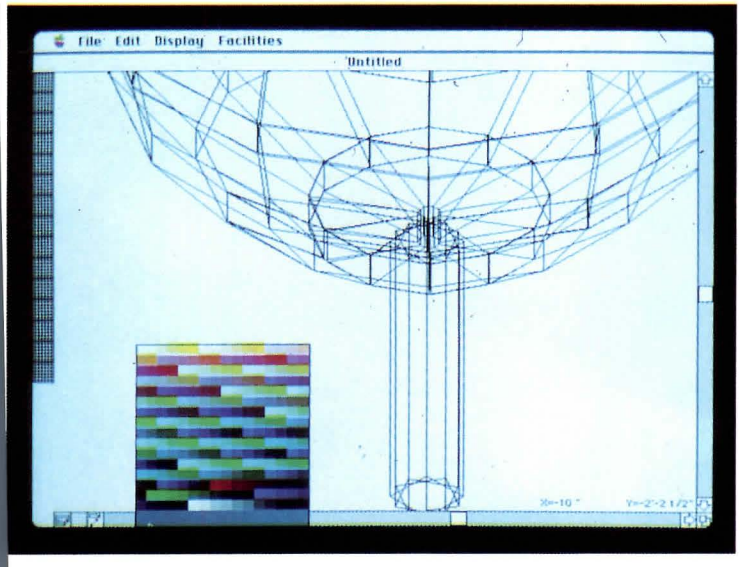
Because Architrion II uses separate modules to handle 2-D and 3-D, each module is smaller and runs faster—an interesting compromise.





Library images are fully visible on screen, one at a time (top). They can be zoomed and panned in the library window. Change the colors of the lines you draw by invoking the color icon at the bottom of the screen (bottom photo). You can't move icon palettes around the screen, but in use, it does not matter.

Architrion does not create backup files. You are prompted to change your mind if you wish to overwrite an existing file, and you can, instead, save the file under a different name.

The 2-D translator bombed several times while translating 2-D DXF files into Architrion Series 4 format. We are not sure if the problem was due to the original files, but DXF files translated from both AutoCAD and VersaCAD showed problems, and we did manage to translate one file after an earlier bomb.

Architrion is not yet the most widely used Macintosh CAD package in this country, although it is the leading package in France and has a wide following throughout Europe. But as we travel around North America talking to architects who have not yet plunged into CAD, the Macintosh and Architrion seem closely linked in their minds. Architrion is a feature-laden package offering 3-D capabilities. It is easy to learn (at least in comparison to such software as VersaCAD and AutoCAD). It is tailored specifically to architects' needs. And it stores data in such a way as to make good use of Macintosh strengths and weaknesses.

But is it good enough to form the software backbone of an architectural practice? The answer is a qualified yes, at least for smaller practices, handling small- to medium-size projects.

As with many packages offering 3-D capabilities in this CAD generation, Architrion actually uses separate modules to handle 2-D and 3-D. And as with many of them, a change in 2-D is not automatically reflected in the 3-D representation. Nor is a change in 3-D automatically reflected in the 2-D views. Packages like AutoCAD 10, which *do* handle 2-D and 3-D together, run slowly on the Macintosh, and require a fairly hefty investment in add-on boards (especially graphics accelerator cards) and extra memory to run well on MS-DOS or PC-DOS computers.

Architrion offers an interesting compromise. Because the modules are separate, each module is smaller and runs faster. Because the linking is not firm, Architrion allows users to make a change in 2-D, then import the 2-D drawing to 3-D as an underlay, and continue editing the 3-D drawing on top of the 2-D import. There are eight layers allowable in the 3-D module, and 256 in 2-D.

There are four library systems. Gimeor provides some items for each library, and more can be created by the user. When you add an object or a group of objects to a library, then use the objects in the drawing, you can globally edit all of the objects at once (inserting a different style desk or door, for instance) by editing the object in the library.

The 3-D library contains items such as stairs and chairs. Any object you draw in 3-D yourself can be added to the library as well.

The 2-D library contains (as you might expect) 2-D objects. Representations of plantings, cars, people, plumbing fixtures, and so forth are supplied with the software. Any object you create in the 2-D module can be added to this library.

The fonts and symbols library includes, of course, fonts. Specialized symbols such as hvac returns are treated the same as letters and numbers—that is, they are symbols in a font, rather than objects in an object library. But they can be edited to appear as if they are objects in a library.

There is also a frame library of objects created in plan, elevation, and section (such as door and window frames) that are really 2-D, but can be inserted into 3-D drawings.

It sounds more complicated than it is, however. The one architecture student we tested Architrion with (for an interior-renovation project) said she felt more comfortable with the package as long as she thought in terms of cutting and assembling a foam-board model, instead of in terms of conventional drafting. She had been using MacDraft on the Macintosh, and had not used any MS-DOS or PC-DOS CAD software.

As is typical of packages that

Continued on page 121

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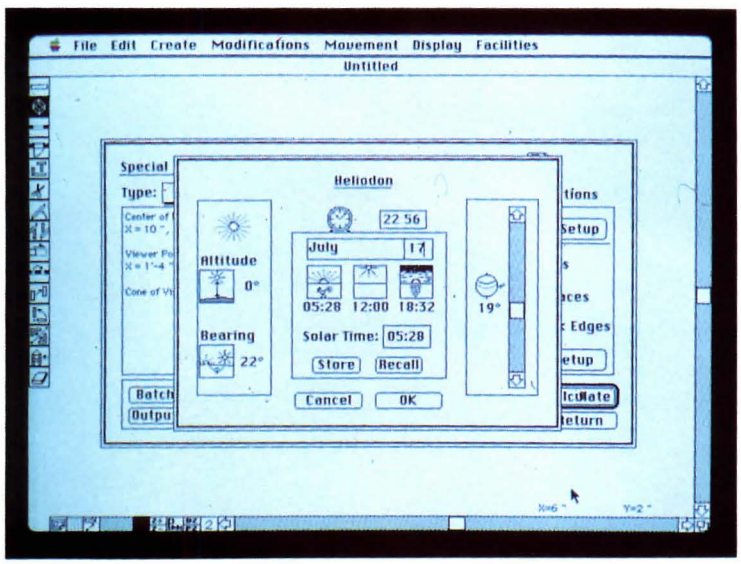
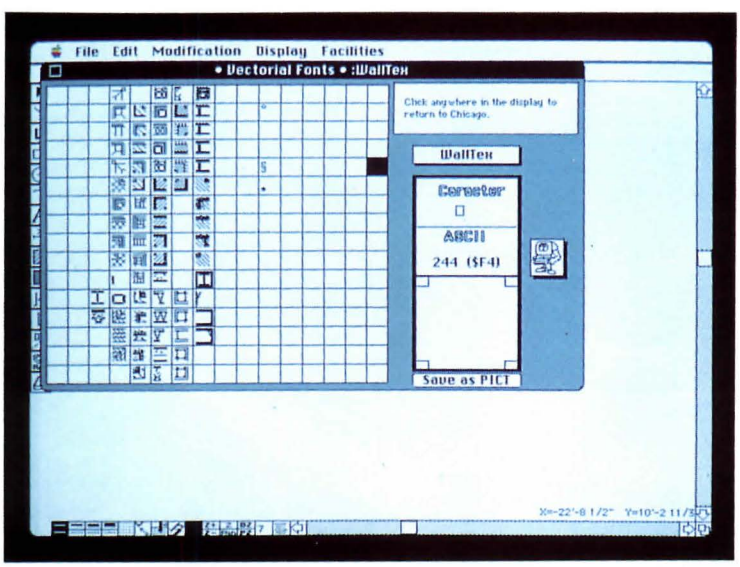
Software reviews continued from page 119

A sophisticated package with a short learning curve, Architrion II gets the most out of the Mac's strengths while minimizing weaknesses.





Setting the date, time, and latitude for solar shading of a solid model (top). Wall textures are "font" symbols (bottom).

allow a bill-of-materials takeoff, the drawing is done in real-world dimensions and then scaled for printing or plotting.

There are practical limitations for large projects. Each 3-D design occupies a cube 32,000 units on a side. You project the 3-D views onto 2-D surfaces that are also 32,000 units on a side. Say you are working on a brick-and-stick condo project, and set the work unit at 1/2 inch. Then the overall project can be 32,000 times 1/2 inch, or more than 1,300 feet maximum. If the project requires more detail (say, a grid of 1/8 inch) then the biggest dimension in the drawing will be only about 330 feet.

Thus, it may be difficult in some cases to use Architrion to handle construction details and site planning in one drawing. Instead, the site plan would be on a different scale. A scale of 1 foot per unit would allow a site plan about 6 miles square. But a tall building, done to 1/8-inch scale, would be no higher than 330 feet in a single drawing, and (because the ground plane is in the center of the imaginary cube) really only half that height.

Units can be switched from English to metric and back again with no loss of accuracy in the overall drawing. Fill patterns can be simple shadings, or complex patterns representing brickwork and so forth. The patterns will scale properly as the drawing orientation and plotting scale are changed.

A translator is included that moves 2-D drawings back and forth between Architrion, DXF, and Macintosh PICT formats. The translator also converts Architrion files to a text format that can be picked up by spreadsheet and database software. The 3-D translator only moves between different versions of Architrion and text. There is a separate translator for library objects. As already mentioned, we found it a bit flaky.

Note that these translators are separate program modules, reached through the Architrion Minifinder. Unlike some Macintosh packages, you cannot place an image on the clipboard and expect to find it in PICT format later. But you can paste a PICT drawing (or a drawing translated from PICT) into your work, from the drawing-frame pull-down Edit menu.

Drawing tools are reached through palettes to the left and bottom of the screen. Lines can be hidden manually, or automatically. To speed up things in a complicated drawing, you may want to use the manual Hide Block command first. Walls are drawn as blocks, either in 2-D or 3-D. They can be moved together afterward, with intersections well defined. This is *not* as fast or as intuitive as using VersaCAD Mac (with its numerous options for representing walls in 2-D plan view), or using AutoCAD with the 2-D AEC or GEOCAD add-ons.

But once you are thinking in 3-D, things change. You draw a wall as a three-dimensional object, then punch holes in it, for windows and doors, with single lines, as if you were using an X-Acto knife to cut through a board.

The 3-D views available offer a nice balance between functionality and speed. There's axonometric, complete with solar shadowing (you pick the latitude, month, and time of day), isometric, conical perspectives, and spherical "fish eye" available. Only one view is available on-screen at once, but switching between views is fast for a Macintosh, because the underlying files are small and object-oriented.

In short: Architrion II is a sophisticated, capable package with a short learning curve, that gets the most out of the Macintosh's strengths while minimizing weaknesses. But there are problems with maximum physical project size and with insuring the integrity of the 3-D database that should give pause to those who might consider using it as the only CAD software in a large office, on large projects.

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Dallas 214/988-3300	Indianapolis 317/398-4400

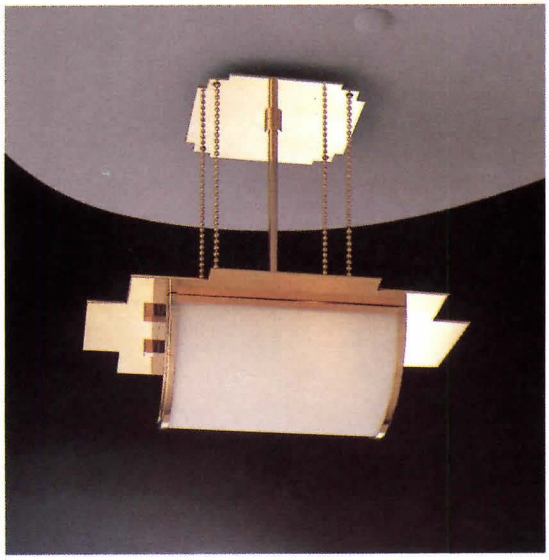
Project: Coral Oaks Golf Course, Cape Coral, FL
Architect: W.R. Frizzell Architects, Inc., Ft. Myers, FL
Roofing Contractor: Crowther Roofing Co., Ft. Myers, FL

Circle 46 on inquiry card

For more information, circle item numbers on Reader Service Card

Family feeling
Representing the third generation of a New York lighting family (her grandfather developed one of the very first fluorescent lamps), Sandy Littman combines an architectural education with a genetic predisposition toward illumination. Even the whimsical names of the fixtures seem to position them as part of an extended family—Betsey W. Uplight, or Randolph Lantern.

Her new collection for American Glass Light comprises over 250 pieces, a total that includes styles offered in several different configurations, such as pendants, sconces, and lanterns. The large-scale contract fixtures are made of solid brass in a choice of finishes. Light sources, either standard incandescent A lamps or compact PL fluorescents, are carefully placed behind the sandblasted white glass shades to eliminate hot spots. The firm also works with architects and designers to develop custom luminaires.
More products on page 133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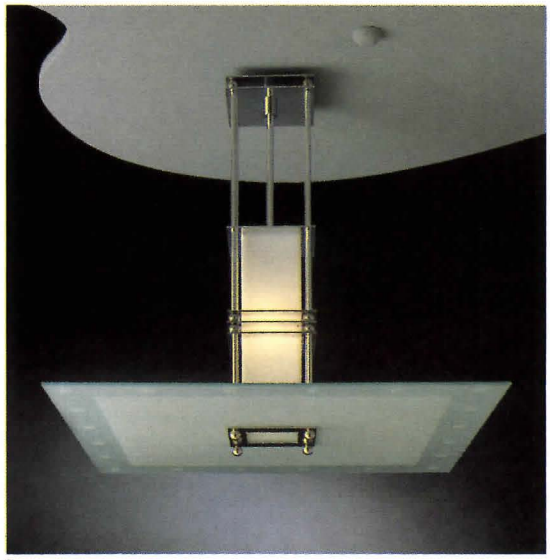
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3


4

1. Peabody Uplight
Polished brass pendant measures about 20-in. deep.
2. Jeffrey C. Uplight
A hanging fixture has a 24-in. square of painted glass set below a glass-shielded vertical light source.

3. Betsey W. Uplight
A graceful glass shade comes in 22-, 32-, and 48-in. diameters.
4. Randolph Lantern
Vertically oriented fixtures measure 10- by 30-in.
American Glass Light Co., Newburgh, N. Y.
Circle 302 on reader service card

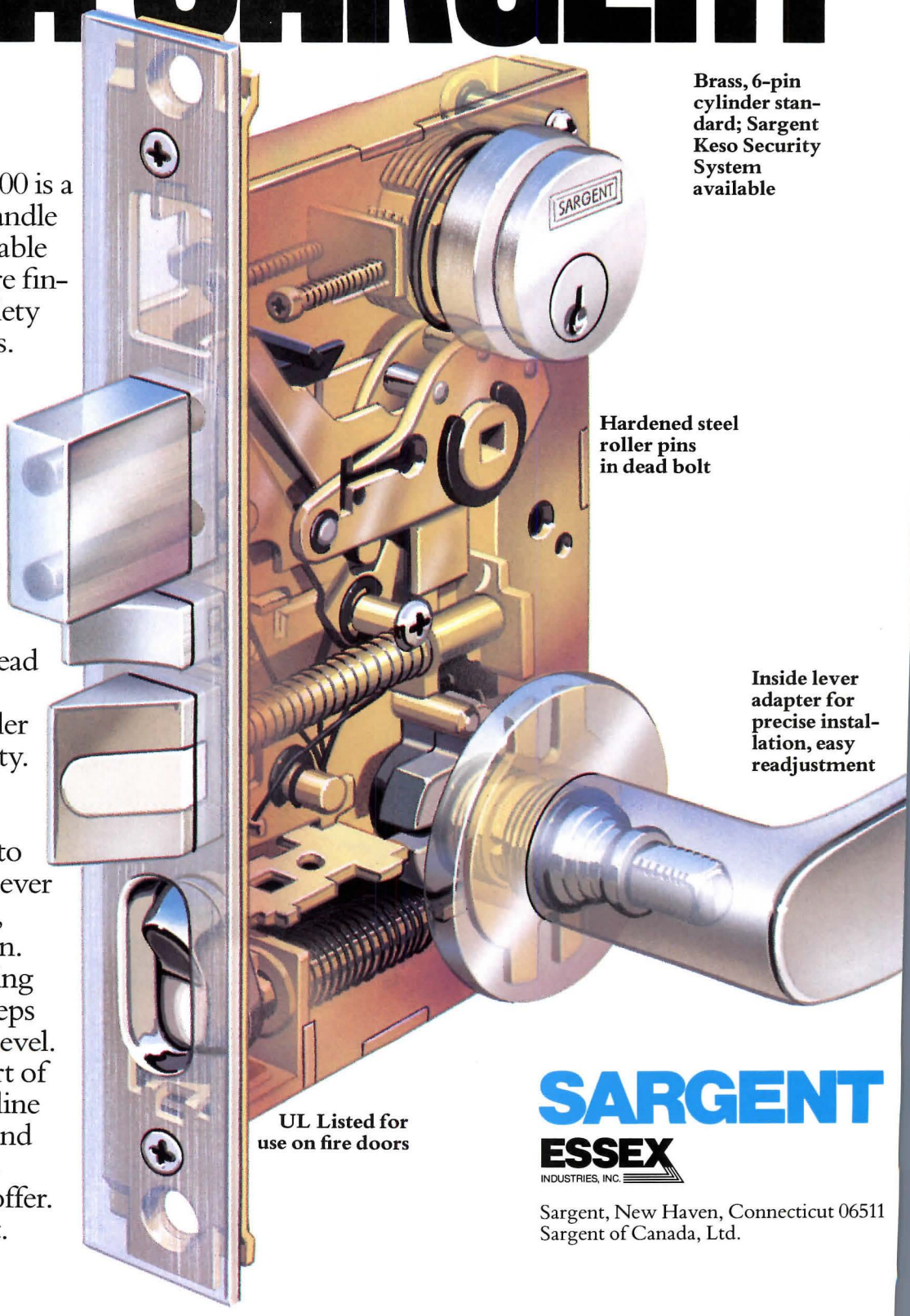
THE HEART OF A SARGENT

On the outside, the 8100 is a cleanly styled, lever handle mortise lock. It's available in all popular hardware finishes, with a wide variety of lever handle designs. The 8100 offers you lasting beauty and years of flawless performance.

Inside, the 8100 is a fortress.

It has three separate bolt mechanisms – a dead bolt, latch bolt and guard bolt. The dead bolt's one-inch throw and hardened steel roller pins enhance its security. The 8100 mechanism easily withstands the excess torque applied to lever handles. A new lever adapter means precise, trouble-free installation. And a heavy duty spring inside the lock case keeps handles permanently level.

The 8100 lock is part of the complete Sargent line of locks, exit devices and door closers. Each has what no one else can offer. The heart of a Sargent.



SARGENT

ESSEX INDUSTRIES, INC.

Sargent, New Haven, Connecticut 06511
Sargent of Canada, Ltd.

Circle 47 on inquiry card

Product literature: concrete materials

For more information, circle item numbers on Reader Service Card

Concrete anchor system
A binder-format design guide supplies technical data on steel channel anchors set in poured-in-place or precast concrete that are said to ensure flexible and high-strength point-load placement. Halfen Inc., Charlotte, N. C.
Circle 400 on reader service card

Concrete formwork
A guide to using plywood concrete forms includes selection and maintenance advice, design and engineering data, and illustrates patterns, textures, and formwork options. American Plywood Assn., Tacoma, Wash.
Circle 401 on reader service card

Shotcrete construction
A four-page brochure outlines the engineering, analysis, and application services offered by this manufacturer's Shotcrete Division. Master Builders, Inc., Cleveland.
Circle 402 on reader service card

Curved formwork
A 16-page booklet includes color photos that demonstrate the flexibility of the Redi-Radius system of forming fixed or variable concrete radius walls. Economy Forms Corp., Des Moines, Iowa.
Circle 403 on reader service card

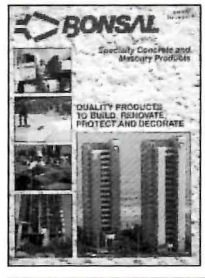
Concrete weatherproofing
A brochure explains how Aqua-Trete protects non-wearing concrete and masonry substrates, particularly split-face and other low-density CMU's, from water-induced damage. Hüls America, Piscataway, N. J.
Circle 404 on reader service card

Moistureproofing treatment
A selection guide introduces Atmost, a non-darkening silane treatment said to protect concrete and masonry walls without harming glass or aluminium surfaces. L & M Construction Chemicals, Kennett Square, Pa.
Circle 405 on reader service card

Concrete stain
A water-based waterproofing sealer, Canyon Tone Stain W has pigments that correct natural imperfections in the concrete or masonry surface without altering the texture. United Coatings, Greenacres, Wash.
Circle 406 on reader service card

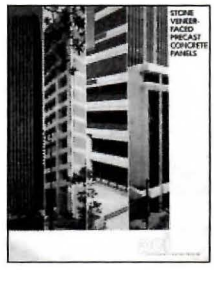
Elastomeric coating
A technical guide explains how Enviro-Crete decorative coatings expand and contract with minor substrate movement and protect against driving rain, freeze/thaw cycling, and UV damage. Tnemec Co., Kansas City, Mo.
Circle 407 on reader service card

Precast/prestressed system
A design brochure on the totally precast/prestressed Stack-Wall building system illustrates apartment and healthcare facilities with color photos and typical floor plans. High Concrete Structures, Denver, Pa.
Circle 408 on reader service card



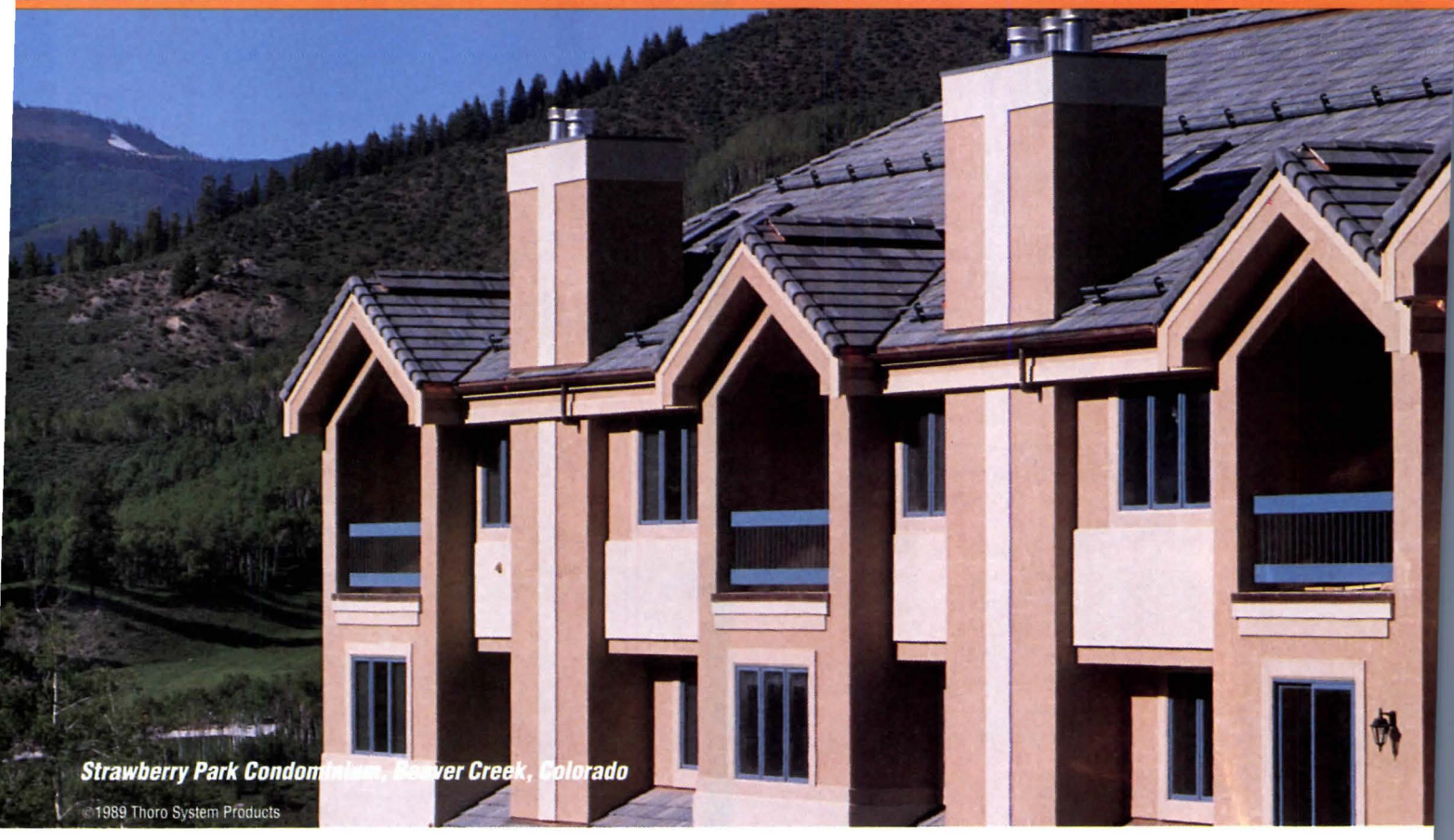
Specialty concrete products
An eight-page technical catalog presents the performance, appearance, and application characteristics of Surewall and Bonsal products for concrete and masonry. W. R. Bonsal Co., Charlotte, N. C.
Circle 409 on reader service card

Exposed aggregate
The esthetics of various levels of stone aggregate exposure, and the advantages of concrete retarding agents in achieving them, are illustrated in a six-page color brochure. Fosroc-Preco, Plainview, N. Y.
Circle 410 on reader service card



Stone veneer panels
Recommended design and attachment procedures for precast veneer panels are included in an illustrated guide. Precast/Prestressed Concrete Institute, Chicago.
Circle 411 on reader service card
Literature continued on page 127

DEMANDING EIFS APPLICATIONS DEMAND THOROWALL®



Strawberry Park Condominium, Beaver Creek, Colorado

The Colorado Rockies are a challenge, both to the contractor and his construction materials. The exterior insulation and finish system for "Strawberry Park" Condominium in Beaver Creek, Colorado was up against some pretty demanding conditions. Bitter cold winters. A short construction season. Premium quality finish requirements.

ThoroWall® was chosen as the cost-effective, energy-efficient insulating wall system that stands up to the Colorado winters. And looks terrific year-round, year after year.

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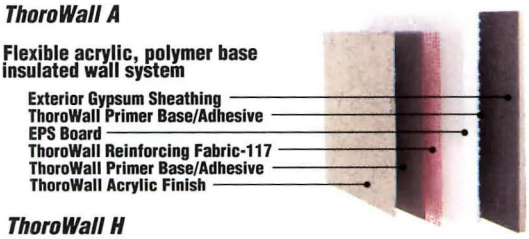
ThoroWall A

Flexible acrylic, polymer base insulated wall system



ThoroWall H

High impact, high build, insulated wall system

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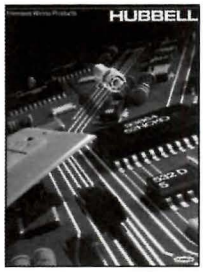
THE COLORS AND FINISH YOU WANT. THE QUALITY YOU EXPECT.

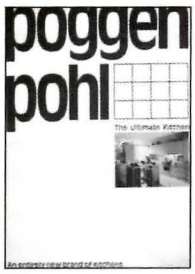
Product literature *continued*

For more information, circle item numbers on Reader Service Card

Natural stones
Marbles from France, Italy, and other countries, quarried worldwide and stocked in Illinois, California, and Maryland, are illustrated in a six-page selection folder. Old World Tiles, Granite & Marble, Inc., Chicago.
Circle 412 on reader service card



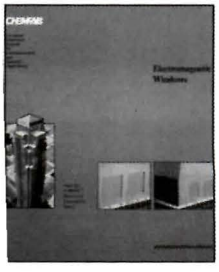
Premises wiring
Power, communications, and data devices for delivery systems that include undercarpet, power poles, rated poke-throughs, floor boxes, and surface raceways are explained in a 20-page catalog. Hubbell Inc., Bridgeport, Conn.
Circle 413 on reader service card



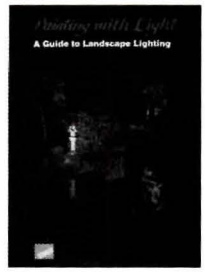
Kitchen storage
A color booklet from a German cabinet source describes various accessories such as tray holders, hanging rails, and appliance workstations that unclutter the kitchen. Poggenpohl U.S., Inc., Tampa, Fla.
Circle 414 on reader service card

Loading-dock equipment
Tips on the most efficient way to lay out truck-dock facilities are given in a product catalog; levelers, vehicle restraints, and dock shelters are described. Serco, Dallas.
Circle 415 on reader service card

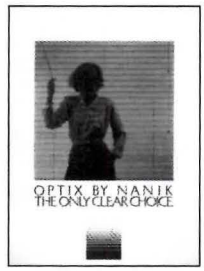
Medical furniture
A 32-page catalog illustrates examination tables, specialty seating, casework, and accessories in medical-suite settings, showing upholstery and panel colors. Ritter Medical Products, Versailles, Ohio.
Circle 416 on reader service card



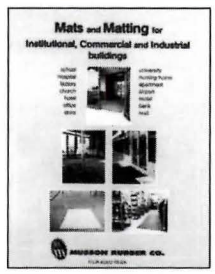
Electromagnetic windows
Creative solutions that shield rooftop communication antennas from view are illustrated in a color brochure. Raydel screens are made of a Teflon/fiberglass microwave-transparent composite fabric. Chemfab, Buffalo.
Circle 417 on reader service card



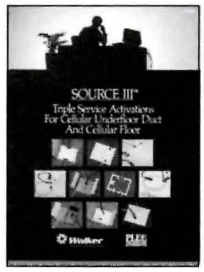
Landscape lighting
A color booklet entitled "Painting with Light" explains several exterior techniques such as up-lighting, silhouetting, and moon lighting, and illustrates 26 landscape fixtures. Stonco Lighting, Union, N. J.
Circle 418 on reader service card



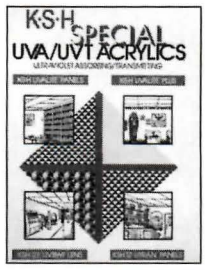
Transparent blinds
Optix view-preserving window treatments, made of tinted Lexan plastic, filter out all incoming ultraviolet light, greatly reduce glare, and provide privacy without darkening the room. Nanik, Wausau, Wis.
Circle 419 on reader service card



Special floor coverings
A 20-page brochure describes indoor/outdoor carpet and walk-off, comfort, and anti-static mats, explaining how they reduce maintenance of heavily trafficked floors. Musson Rubber Co., Akron, Ohio.
Circle 420 on reader service card



Power distribution
New Source III service-activation devices, introduced in a four-page catalog, work with both recessed and flush cellular distribution systems. Walker, Parkersburg, W. Va.
Circle 421 on reader service card



UV-protective lighting lens
A booklet on the Uvalite panel explains how the lighting-fixture lens material filters and absorbs ultraviolet and other possibly damaging light wavelengths, and suggests its use in museums. K-S-H, Inc., St. Louis.
Circle 422 on reader service card

Resort furniture
Photographed on the Riviera, a 36-page catalog presents Triconfort chairs, tables, and lounges for outdoor areas. Materials used include molded resin and tropical hardwoods. Allibert, Inc., Stanley, N. C.
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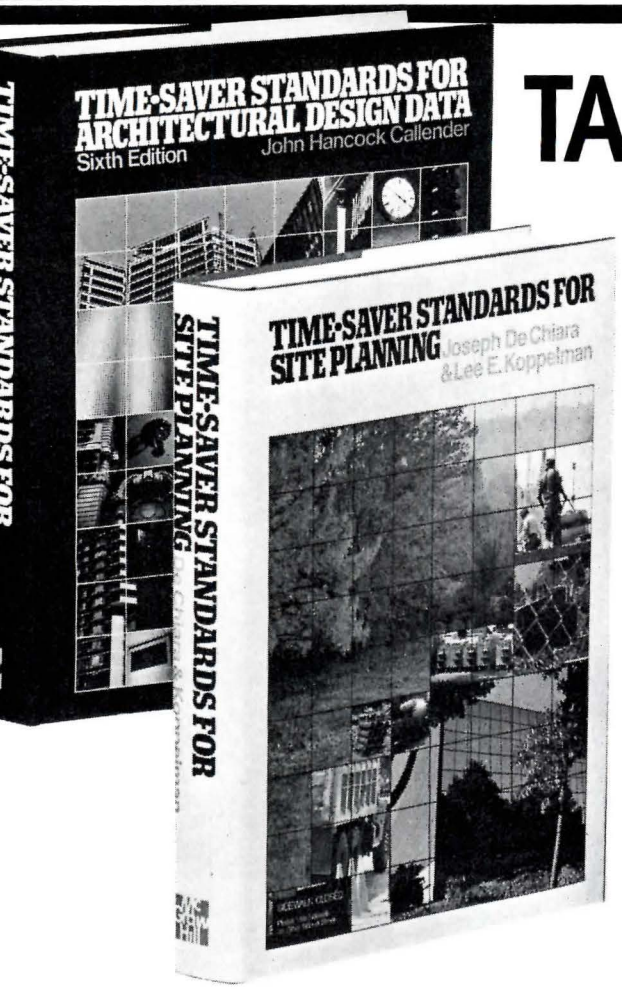

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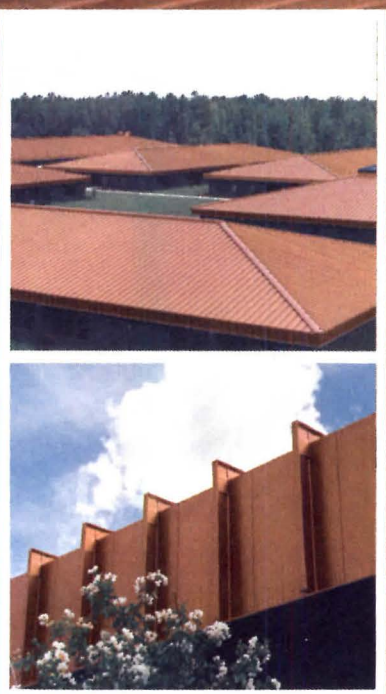

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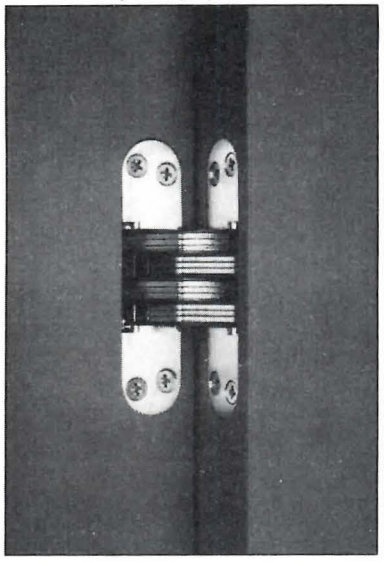
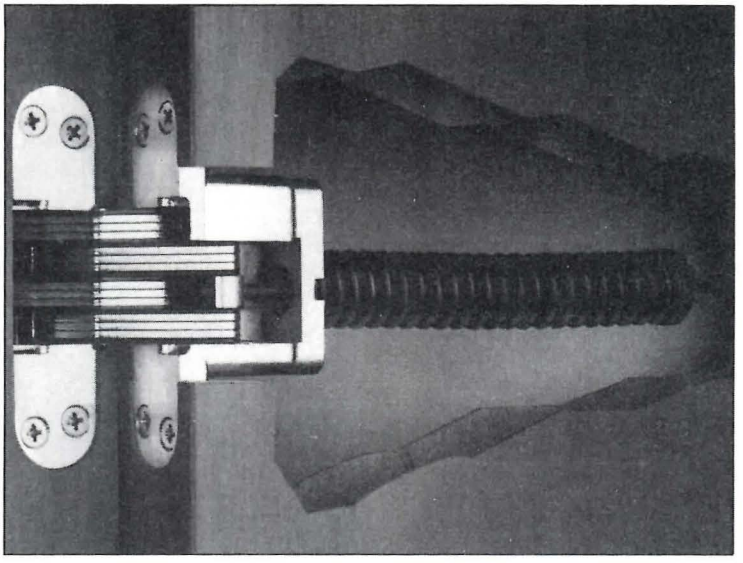
Continued from page 123





Concealed closer
A new Soss hardware line, the Invisible Closer functions both as a hinge and as a closer, with a backplate and spring concealed within the door itself. A router template facilitates installation of a deep, full mortise; devices can hold a 500-lb. door. The closer spring is completely adjustable in place with an allen wrench without removing any parts. Universal Industrial Products Co., Pioneer, Ohio.
Circle 305 on reader service card
Continued on page 135

FRC panels
Profile 6, a nonasbestos version of a popular industrial siding, was used to create Depression-era ambience for the Cannery Row Garage, Monterey, Calif. The fiber-reinforced cement panels have a 2 1/8-in.-deep corrugated profile that strengthens the lightweight material, allowing wider purlin and girt spacing with fewer fasteners. Eternit, Inc., Reading, Pa.
Circle 303 on reader service card

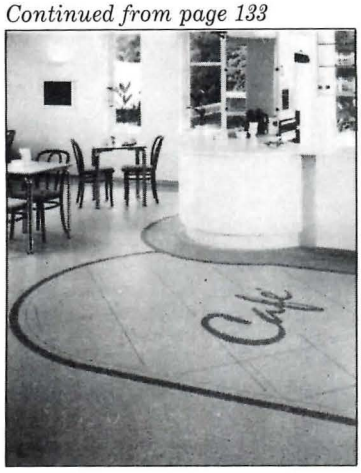
Vhiteprinter
)esigned to operate at speeds of p to 40 feet per minute for eavy-volume production equirements, the new 454 cavenger Plus console-model rinter is said to be virtually dor-free. Blu-Ray, Inc., Essex, onn.
ircle 304 on reader service card

RECORD HOUSES 1990

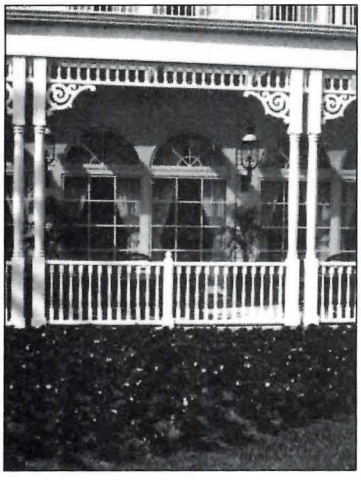
The editors of ARCHITECTURAL RECORD announce the 35th annual RECORD HOUSES awards program. This program is open to any registered architect; work previously published in other national design magazines is disqualified. There are no entry forms or fees, although submissions must include plan(s), photographs, and a brief project description—bound firmly in an 8 1/2- by 11-inch folder—and be postmarked no later than October 31, 1989. Winning entries will be featured in the 1990 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue.

Submissions should be mailed to:
Deborah K. Dietsch
ARCHITECTURAL RECORD
1221 Avenue of the Americas
New York, New York 10020

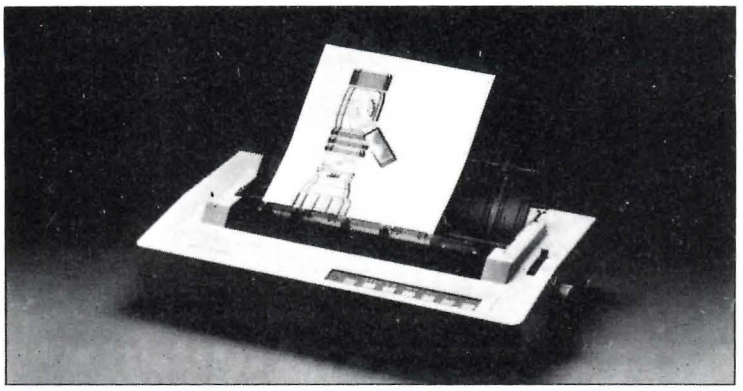
Continued from page 133



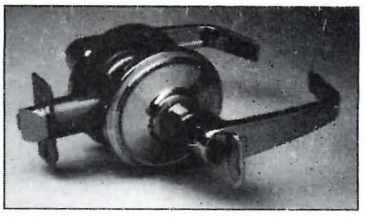
Sheet vinyl flooring
A new line, Eminent sheet vinyl is a variegated, granite-look pattern offered in 16 colorways that coordinate with other Tarkett floor products. It is recommended for commercial, healthcare, retail, and educational floor applications. Tarkett Inc., Parsippany, N. J.
Circle 306 on reader service card



Engineered plastic millwork
The ornate railings of the Disney Grand Floridian Hotel, custom-designed to duplicate the look of Victorian-era wood gingerbread, is an example of new construction applications for fiber-reinforced plastics. The extremely low-maintenance Modar 816 resin is fire retardant, with low smoke and combustion toxicity values, and may be painted. ICI Americas, Inc., Wilmington, Del.
Circle 307 on reader service card



Printer/plotter
A combination raster/vector plotter, the JetPro 360 monochrome ink-jet printer produces E-size check plots, B-size final drawings, and high-quality word-processing texts. Houston Instrument, Austin, Tex.
Circle 308 on reader service card



Entry lockset
The Winston keyed lever lockset is UL-listed for multifamily, residential, and commercial use, meets most standard code requirements for handicapped access, and may be easily re-keyed without removing the lock. Kwikset Corp., Anaheim, Calif.
Circle 309 on reader service card
Continued on page 137

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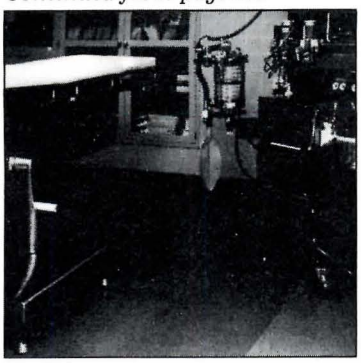
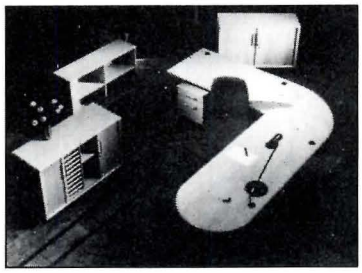
Continued from page 135



Seamless flooring
The Colorquartz acid- and alkali-resistant floor is now available in nine colors made of pigments ceramically bonded to inorganic quartz granules. Particularly suitable for medical and laboratory floors, Colorquartz has built-in antiskid properties. 3M, St. Paul.
Circle 310 on reader service card



Computer tables
Ash natural-wood veneer has been added to the five laminate colors previously offered on Generation III workstations and other office furniture. Custom ergonomic designs are a specialty. Human Factor Technologies, Londonderry, N. H.
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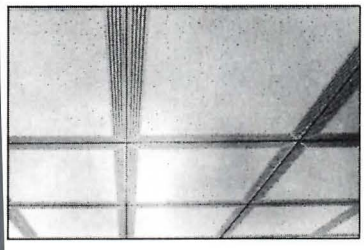

No-grid-look ceiling
The Geometrix ceiling is described as a visually integrated system that uses screen-printed designs to eliminate almost any distinction between the ceiling panel and the 1/8-in.-reveal suspension grid. There are five different geometric patterns, all in 2- by 2-ft perforated acoustic tile. USG Interiors, Inc., Chicago.
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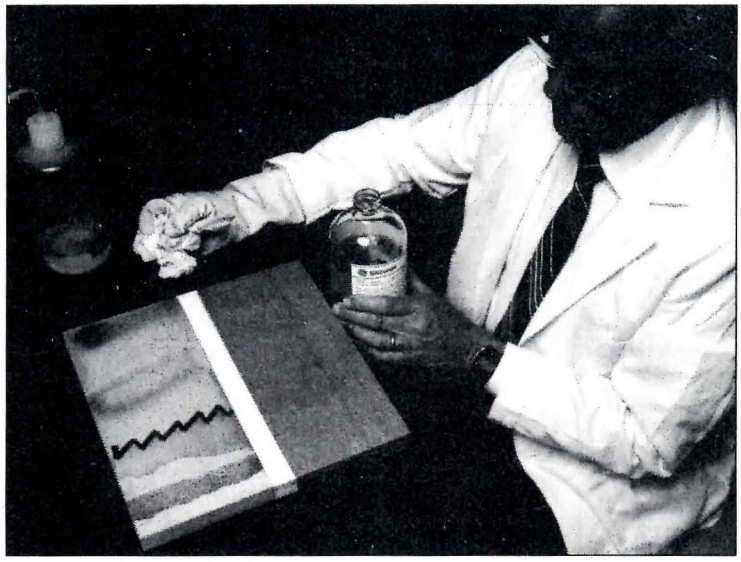

Masonry protectant
A vapor-permeable silicone product, TSR 219 penetrates the surface of stone, concrete, and other masonry to cure in the presence of atmospheric moisture and provide long-term stain resistance. Dirt and many pollutants wash away with rain; paints, oils, and permanent-ink graffiti may require high-pressure water or a mild solvent for ghost-free cleaning. TSR 219 can be used on new or old walls and traffic surfaces, is not glossy, and will not yellow. GE Silicones, Waterford, N. Y.
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A CODEWORKS PROFILE

"CODEWORKS enforces consistency as well as thoroughness..."

John Sorce is Senior Director of Architecture for Reynolds Smith & Hills, a Jacksonville, FL architectural, engineering and planning firm with over 1600 employees. Founded in 1941, Reynolds Smith & Hills has recently become one of the Hunter Companies.

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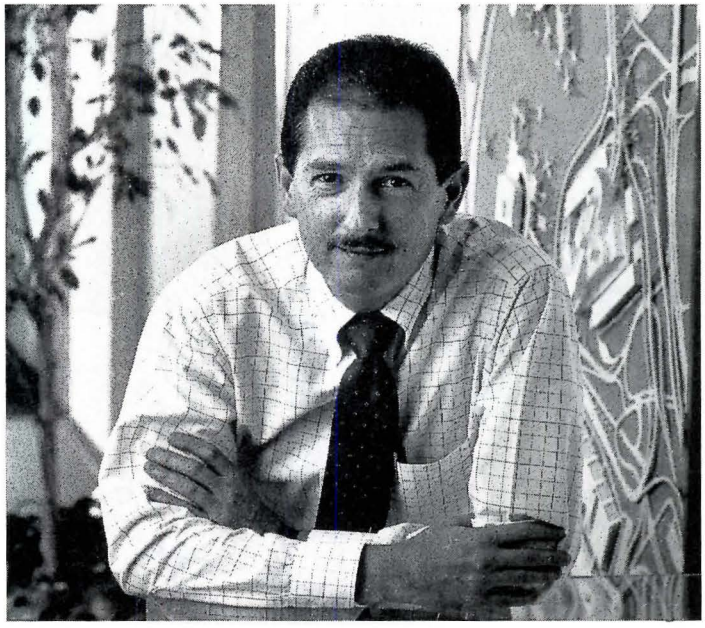

even with a checklist, each was a little different. CODEWORKS enforces consistency as well as thoroughness for each project."

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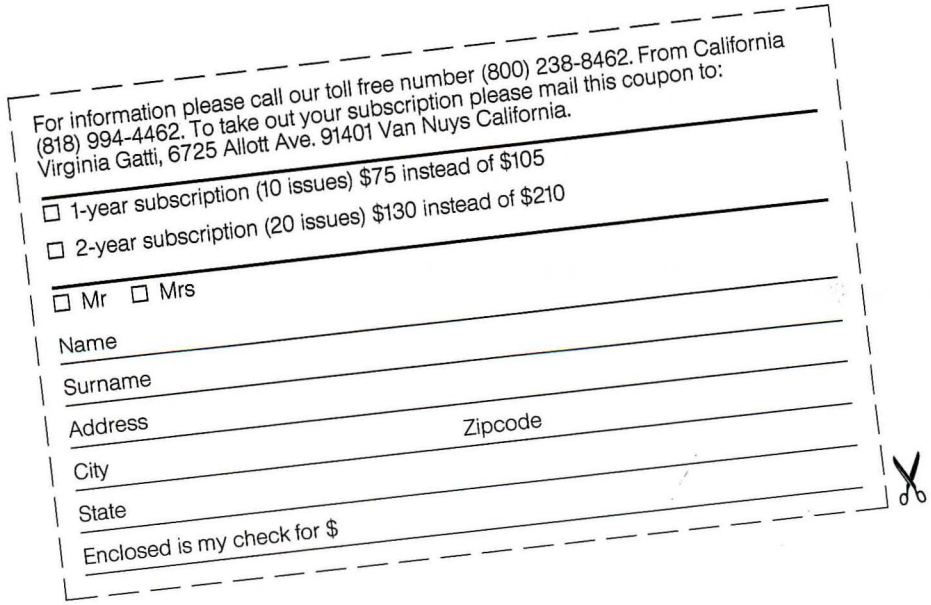

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Manufacturer sources

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

Pages 66-71
Casting Center, Walt Disney World
Robert A. M. Stern, Architects
Pages 66-67—Exterior insulation finish system: Dryvit System, Inc. Entrance: Ellison Bronze. Inc. Aluminum-framed windows and skylight: stick system by Kawneer, Inc.; custom fabricated by Florida Glass. Tinted glazing: LOF Glass. Airfoil awning and turrets: Pleus Brothers.
Page 69—Terrazzo floor: Leva's Marble and Terrazzo. Balustrade: custom by architects.
Page 71—Birch-veneer doors: A. G. Mauro. Locksets: Sargent Mfg. Co. Custom brass door knobs: Ann Paul. Seating: Torso Chairs by Paolo Deganello for Atelier International. Upholstery: Jack Lenor Larsen. Banquette: custom by architect, fabricated by The Elizabeth Co. Lighting: Poulsen Lighting, Inc. Murals: Evans and Brown Co., Inc. Carpet: Suncraft. Paints: Sherwin-Williams.

Pages 84-91
IBM Palisades Advanced Business Institute
Mitchell/Giurgola Architects
Pages 84-88—Brick: Glen-Gery. Teak-framed windows: Duratherm Window Corp. Glazed entry canopy and skylights: Boehm Mfg. Co., Inc. Entrance doors: Ellison Bronze. Columns: Dixie Pacific. Paints: Benjamin Moore & Co. Bluestone pavers: Bergen County Cut Stone. Terne-coated stainless-steel roofing: Follansbee Steel Corp.
Page 89—(top) Custom cabinetwork: Haggerty Woodworking. Recessed downlights: Lightolier, Inc. Carpeting: Collins & Aikman. Ceiling tile: Armstrong World Industries, Inc. Dining tables and
Sources continued on page 149

There's not much that's typical about this office building.

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In fact, the main entrance is easily recognized. It's under what appears to be a giant red metal water slide. Inside, however, the mood changes. Visitors and tenants reach their offices after passing through a charming courtyard with waterfall, meandering pool, lush vegetation, waterside seating, and contemporary sculpture.

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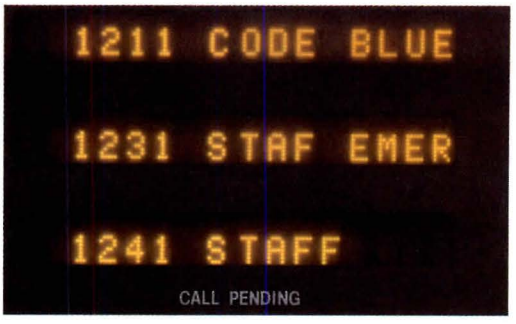

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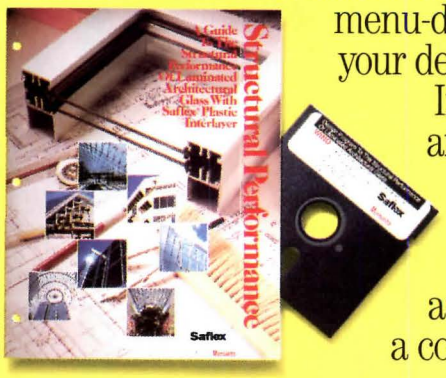

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Continued from page 141

chairs: Thomas Moser; Atelier International. Upholstery: Stratford Hall. (bottom) Chairs: Atelier International. (Goteborg). Tables: Cumberland.

Page 90— (bottom) Standing lamp: Nessen. Chair: Brickel. Faucets: Speakman. Custom casework: Loughman Woodworking.

Page 91—Tub chairs: Stendig (Aura). Wing chairs: C. I. Designs. Railing: Central Metals.

Pages 92-95
303 West Madison Street
Skidmore, Owings & Merrill, Architects
Granite cladding: Campolonghi. Elastomeric roofing: American Hydrotech. Aluminum windows and entrance: Harmon. Tinted and reflective glazing: Ford Motor Co., Glass Division. Clear glazing: Viracon. Granite flooring: Fredia.

Pages 98-101
Underground Atlanta
Cooper Carry/Turner, Joint-venture architects
Metal roofing: Armetco. Ridge skylights: Super Sky Products, Inc. Fountain: Wm. Hobbs, Ltd. Area lighting fixtures: TrimbleHouse. Site furniture: British American (wood benches); Canterbury (metal). Railings: Berger Iron. Paints: Porter. Exterior insulation finish system: INSUL/Crete Co., Inc. Pavers: Foy Brick Co.

Pages 96, 102-103
The Village Commons at South Hadley
Graham Gund Architects
Asphalt shingles: GAF (Timberline). Wood-framed windows: Marvin Windows. Siding: Cedar clapboards. Paint: PPG Industries, Inc., Coatings & Resins Group. Wall-mounted lights: Bega. Pole luminaires: Sternberg Lanterns, Inc.

Pages 97, 104-105
Princeton Forrestal Village
Bower Lewis Thrower, Architects
EPDM roofing: Firestone Building Products, Inc. Composite roofing tile: Duracem. Wood windows: Camden Millwork. Aluminum windows: Boschan. Glazing: LOF Glass. Aluminum entrances: Vistawall Architectural Products. Area luminaires: Sterner.

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ENTER YOUR INQUIRIES:

6. When the recording says, "Enter (next) inquiry number..." enter the first Inquiry Selection Number, including symbols, from your list below. Ignore blank boxes. Wait for the prompt before entering each subsequent number (maximum 17 numbers).

1. ☐☐☐☐ # #
2. ☐☐☐☐ # #
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15. ☐☐☐☐ # #
16. ☐☐☐☐ # #
17. ☐☐☐☐ # #

END STAC SESSION:

7. When you have entered all your Inquiry Selection Numbers and the recording prompts, "Enter next inquiry number," End the call by entering:

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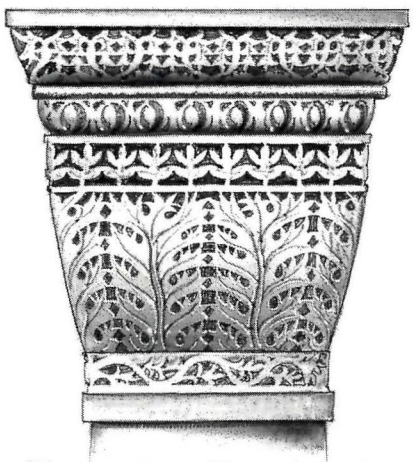

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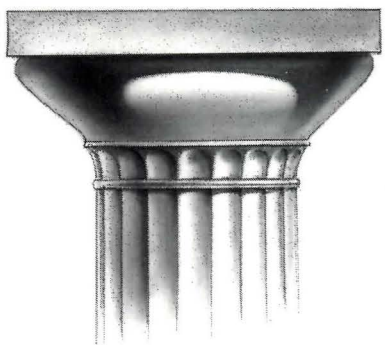

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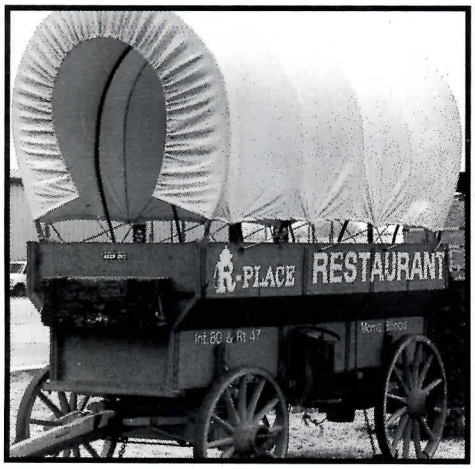

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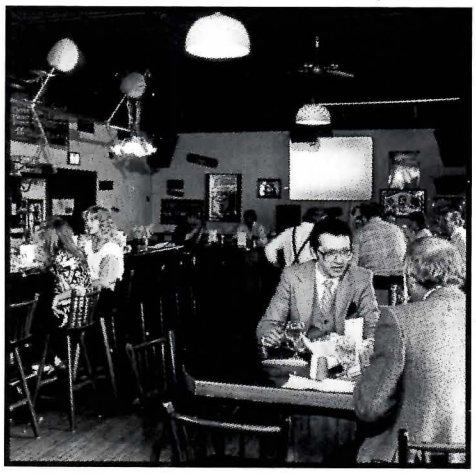

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