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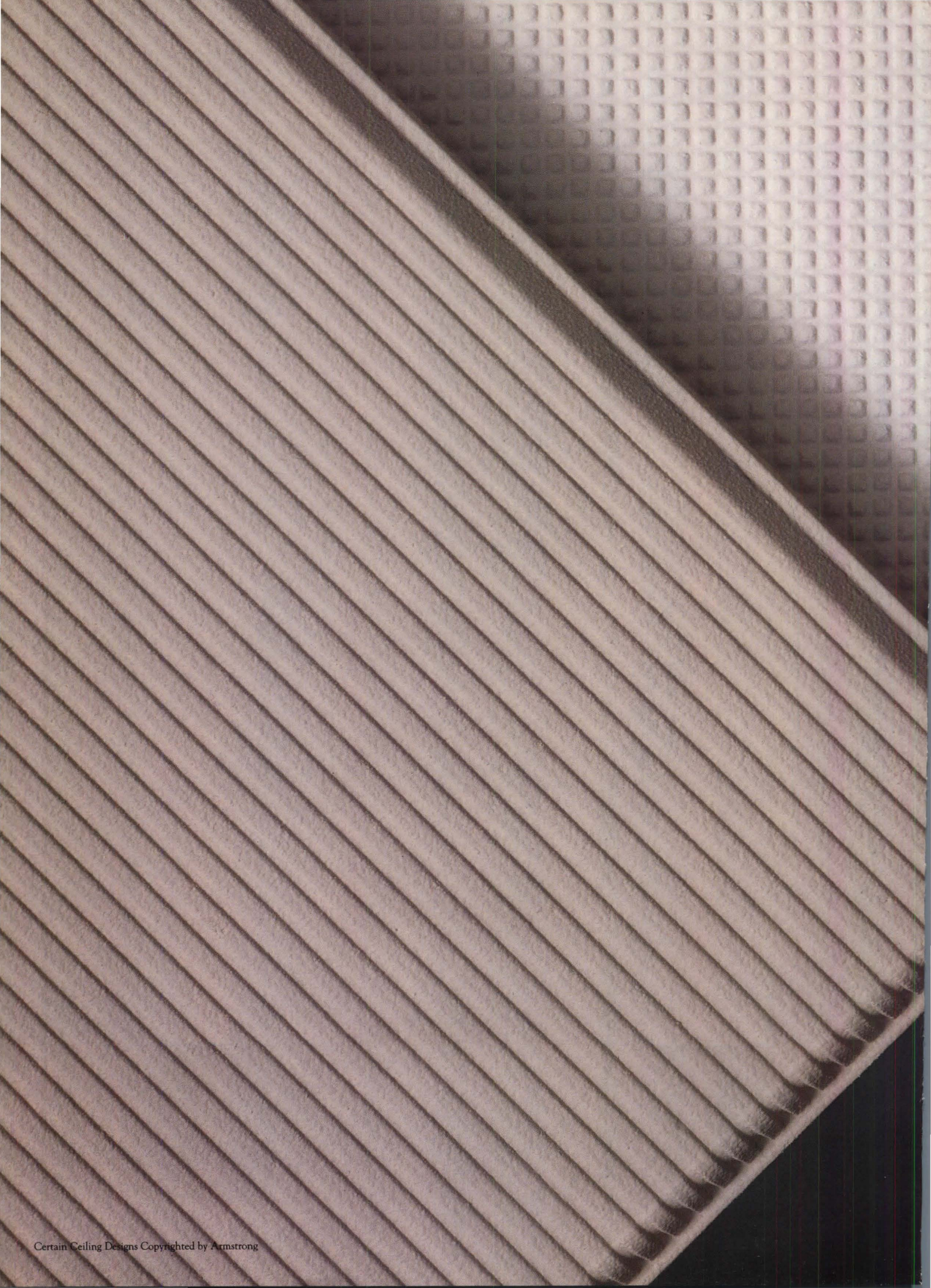

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Frank Gehry in his office. Photo: Eric Myer.

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Positioning

Is your firm getting the kind of commissions it wants? the kind of recognition? Maybe it's time to consider "positioning," a well established concept in the world of advertising.

JUST about every architecture firm has a kind of job to dream of getting: Those in small firms may yearn for something bigger than a house; the firm with a reputation for office buildings or apartments may seek something institutional; the health facilities firm may want the security that comes with diversifying into other areas of work.

All those firms trying to carve a niche for themselves—and make sure it is not too confining—would do well to consider the concept of "positioning." According to Al Ries and Jack Trout, authors of the book *Positioning: The Battle for your Mind* (McGraw-Hill, 1981; paperback from Warner Books), this concept was first used in print by them in 1969 to identify the "mental positions" occupied by competitors. Their subject was advertising, and they were stressing positions of companies or products, as perceived from *outside*. By the early 1970s, the concept was widely applied in publishing, and I recall discussions of the ways to "position" a magazine in the minds of readers and advertisers.

One effective device for analyzing your present position can be found in the matrix generated by The Coxe Group and David Maister (P/A, May 1986, p. 61). Their matrix shows all firms divided into three types by the ways they are *organized*, but this three-way split corresponds as well to the ways such firms are *perceived* by clients. The client who wants a personal or innovative approach will go to a firm positioned in his mind as the "Strong Idea" type; the one who wants a complex problem solved reliably will go to the "Strong Service" type; the one who wants a routine product will go for the "Strong Delivery" type. If they do otherwise, serious mismatches occur.

It should not be hard to identify your firm's place in the Coxe-Maister matrix. The crucial next step—by "positioning" strategy—is to locate likely rival firms on it as well, then see what you can do to give your firm some kind of perceived edge. This can involve reinforcing a recognized position, discovering an unfilled need to address, broadening your position (which Ries and Trout call "line extension"), or radically repositioning your firm.

Too often, firms try to alter their positions simply to gather more prestige. A firm with a sound reputation as a "service" or "product" firm will try to acquire additional merit as an "idea" firm, as well. So they will add to their staffs some recognized designers. Such moves seldom work out, because the acquired star is rarely accepted by the cadre of professionals that make service and delivery type firms effective, and because this attempted "line extension" suits neither the clients who want high creativity nor those concerned primarily with service and delivery.

To apply the positioning concept fully, you have to consider how your firm can reposition its competitors, simply by what you do and how you present that to the world. (A Ries and Trout example: The German beer that is the largest seller in the U.S. finds this distinction sharply devalued when a rival asserts that it is the largest-selling beer in *Germany*.)

Such marketing/advertising strategies may sound crassly commercial, but architects continually do such things, whether consciously or not—and have such things done to them. The firms that generated a public taste for Post-Modernism have surely been repositioned by the innumerable other firms now perceived to be offering the same style.

We should not leave the subject of positioning without considering the firm that is the subject of this special issue. The Gehry firm represents, in fact, a fine example of a clearly positioned one. Gehry's design approach has long been viewed by critics and other influential architects as experimental yet fundamentally practical, satisfying to both clients and users—after those first moments of shock. The only firms doing comparable design are younger ones in his region, who are readily perceived—despite national recognition for some—as his followers. Yet Gehry's position does not win him large-scale commissions in his city or, so far, any of the internationally sought-after jobs that go to his colleagues on prestigious boards and lecture platforms. It appears to me now (and I may be wrong) that to get such big bounty Gehry would have to change his methods and outlook, in ways that would compromise what he produces. Like many others, Gehry has a position that needs only maintenance and reinforcement. It's important to recognize good positioning when you've got it. ■

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Views

Barcelona Reflections
Congratulations on bringing out one of the most stunning issues of P/A in recent years [Aug. 1986]. Not only did "the most beautiful building built anywhere this year" grace its cover (Stan Abercrombie concurred on that in this month's *Interior Design*) but the editorial spelled out a big problem in contemporary architectural design—the lack of tenacity and dedication to one "set" of principles that is a prerequisite in creating anything lasting and beautiful.

The dazzling colors and textures of the Barcelona Pavilion as expressed in the photographs was a feast for my eyes, but not without some apprehension. Let us hope and pray that this does not bring about a plethora of buildings in the inadequately understood "Miesian style." Architects and academicians would do better to step out of their fixation for "figurative architecture" to rationalize the "Schinkel connection." One particular influence did not wholly contribute in producing the "set of principles" which made Mies's architecture great. One may note that there was an overlap in the time the Farnsworth house and the Crown Hall were being designed. It may be worthwhile to investigate the impact Lazsló Moholy-Nagy and Walter Peterhans had on Mies. His closest pupils, unfortunately, have chosen to build and not talk about him at all.

You do a great service, however, in publishing projects of Robert Stern in the same issue—a sumptuous illustration of "talking and building too much" at the same time. Personally, I deem it more appropriate to replace the label "free-style classicism" with "stir-fried architecture" to categorize his buildings.
Wazi Chowdhury
Berkeley, Calif.

I have often wanted to learn more about the pavilion which Peter Behrens once described as being possibly the most beautiful building of the century, yet your report of the Barcelona reconstruction came as a great disappointment.

The plan is too small, the scale can hardly be read; the juxtaposition of materials, contrast of colors and textures are nowhere indicated. There is neither section nor detail. The colored photographs are great, except the green marble is somehow turned blue. After all, P/A is a professional magazine, not some Sunday Supplement.
Chiu-Hwa Wang
Professor of Architecture
Tamkang University
Taipei, Taiwan, ROC
[In our opinion, plan, photos, and captions make the spatial and material juxtapositions clear. We should have given vertical dimensions: The floor-to-ceiling height is 3 meters—about 10 feet—throughout. The marble appears bluer than expected, but most of it shown is in shadow, which color film picks up accurately as bluish; the exterior view on page 61 shows a truer color. The statue's correct name is "Evening." The red curtain, missed by at least one reader, had not yet been hung when our photos were taken. The author's book on Bofill will be out in December.—Editors]

I read with interest the article on the Barcelona Pavilion but feel that a few areas of the article are misleading. While in Barcelona this spring, I had the good fortune of meeting Professor Juan Bassegoda Nonell, the famous Gaudí scholar and head of the Catedra Gaudí in Barcelona. During our talks, he mentioned that originally Mies was excited about the prospect that his pavilion was going to be reconstructed, and would assist in any way that he could. At that time, Mies was under the impression that the pavilion still existed in parts which had been stored in Spain, and that the pavilion would be reconstructed in a more advantageous site. When it became known to Mies that the original structure had been destroyed and that a new pavilion was going to be reconstructed at the original site, Mies forbade the reconstruction. Professor Juan Bassegoda Nonell has a copy of the letter from Mies.

In reconstructing the pavilion, the architects have made two small changes which probably would go unnoticed, except by a few astute preservation architects: 1) the architects used Phillips head screws which weren't used at the time, and 2) the north wall of the service annex was originally stucco in 1929 and has been reconstructed with travertine. Rumor has it that the workers didn't have enough travertine panels to complete the building before the deadline, so stucco was substituted.

Philosophically the important question is this: does someone have the right to reconstruct a building against the architect's wishes? My only hope is that someday someone will want to reconstruct one of my buildings. I'm sure I'd let them, regardless of the site!
Bill Latoza
Chicago, Ill.
[The question of reconstructing without the architect's permission—or altering or destroying without such permission—is strictly philosophical. Another factor here: The setting of the pavilion is being altered (P/A, Aug. issue, p. 28) to make it more sympathetic than the one Mies objected to.—Editors]

Cooper, Eckstut Cityscape
Notwithstanding a number of attractive elements and detailing in their work, it is hard to escape feeling that Cooper, Eckstut's kind of city planning (P/A, July 1986, pp. 98–105) is hardly planning at all but is really a kind of urban decoration. Looking at the plans for Battery Park City, the layout of the streets and avenues all focus on pretty waterfront vistas but there is no sense that the pattern corresponds to the normal flow and energy of human events.

And this is the basic thing. If you consider planning as the art of providing a framework for human activity, even in New York City's much criticized grid with its narrow long blocks feeding into the wide North/South avenues, you have a real division between the private spaces of the brownstone sidestreets and the public spaces of the avenues. If New York failed, it was in adequate control of its public spaces—everyone loves the sidestreets.

But in Battery Park City, there is no sense of this kind of structure. The avenues are massive without the population to feed them. It reminds me of modern day Vienna, a city scaled for an empire and now filled with the Austrian population equivalent of Detroit. BPC contains all the big bold formal gestures that architects yearn to make in the city itself, realized out of proportion in this up-scale yuppie ghetto.

We live in a façade period like the 1920s with a façade President, façade economics built on deficits, façade politics focused more on the unborn than the born, and façade architecture of which this, façade planning, is the accurate expression. It does not escape the old saw: Architects cover their buildings with mistakes, planners cover their mistakes with buildings.
Daniel Beekman, Partner
Wadsworth Terrace Equities Group
New York, N.Y.
[The Battery Park City plan shows small-scaled streets as well as broad avenues. These distinctions, as a continuation of the Manhattan street grid, will become more evident as development proceeds. "Façadism," as the reader calls it, is not a wholly negative attribute: Here, it generates a unified streetscape preferable to the isolated, competitive towers of earlier urban development.—Editors]

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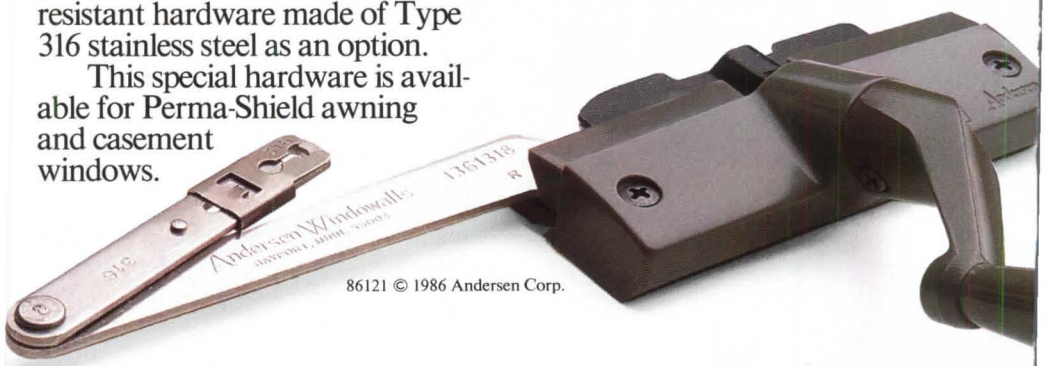

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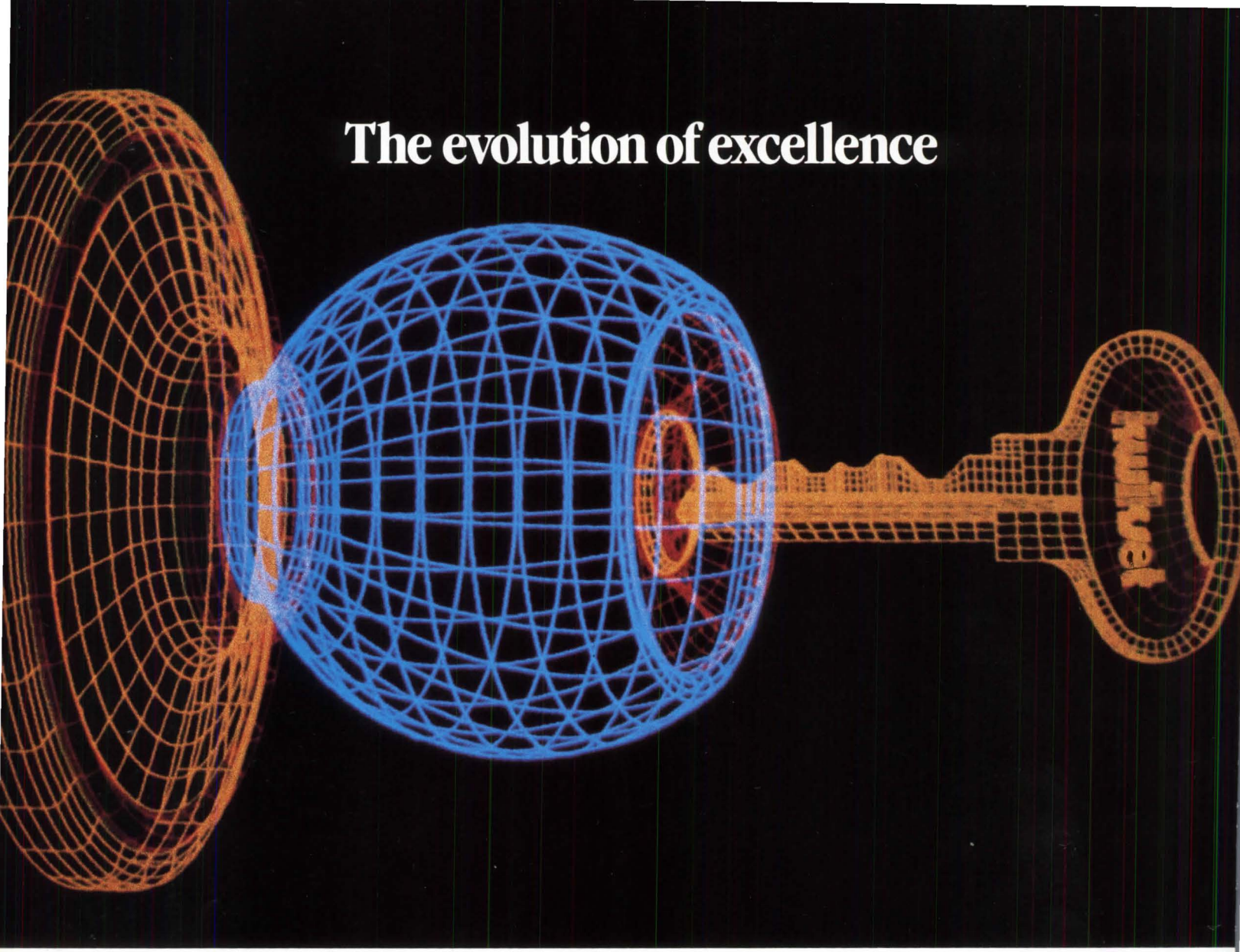

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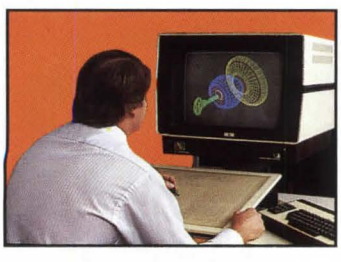

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P/A Reader Poll
Compensation

Although architects typically say they didn't enter their field for the money, they are dissatisfied with the profession's compensation generally. Variations in personal data and viewpoints reveal underlying economic patterns.

By a margin of nine to one, P/A readers agree that the architectural profession as a whole is inadequately rewarded. But the picture shifts a bit when they consider their personal compensation; one third of the readers responding felt satisfied with that. Least satisfied were the younger professionals and the women—who tend to be relatively new to the profession.

P/A's first Reader Poll drew more than 2200 responses, providing an ample pool from which to draw 1000 randomly chosen forms for analysis by Morrison & Morrison, marketing and research consultants. A "demographic" profile of these 1000 readers shows characteristics similar to the P/A subscriber list as a whole, except that—since the primary subject of the poll was obviously the architecture profession—a higher percentage of architects and architects-in-the-making responded than, say, interior designers or architects on corporate staffs. About 76 percent of responses came from readers in architectural firms (Figure 1).

Total Respondents	1000
Sex	
Male	859
Female	141
Professional Status	
Registered Architect	609
Architectural Graduate	279
Other	108
Years in Profession	
Under 3 Years	129
4-10 Years	373
11-20 Years	286
More than 20 Years	212
Role in Firm	
Owner/Principal	423
Project Manager	206
Staff Architect	175
Designer/Draftsman	139
Interior Designer	23
All Other	34
Type of Organization	
Architectural or A/E firm	759
Design Firm	90
Commercial/Institutional/Government	69
Engineering or E/A Firm	41
Other	41
Number of Employees in Firm	
1-4	305
5-9	170
10-19	175
20-49	148
50-99	72
over 100	125
Location of Firm	
Major Metro Area	573
City or Small Town	427

NOTE: Since total sample equals 1000 each 10 responses equals 1 percent (i.e. 141 answers from women represent 14.1 percent of total).

Figure 1 Composition of poll respondents

Compensation for Firms

While over 95 percent of readers polled felt the profession is inadequately compensated (Figure 2), the variations in answers reveal that the problem is felt more acutely by architectural professionals than those who work closely with them. Among the graduate and registered architects, and among all respondents who work for architectural firms, about 97 percent agreed on the inadequacy. Among those employed in engineering firms, only 90 percent agreed; among those employed in business and government, only 85 percent; among those who are neither registered nor architecture graduates (typically designers), only 83 percent—high majorities all, but clearly architects in firms have a darker view of their revenue situation than close outside observers.

When readers were asked for the causes of this shortfall (Figure 3), the factor considered most important was "misconception of the profession's value"—the issue behind last year's AIA theme of "Value Architecture." Every category of respondent put this cause first—the nonarchitects as well as the registered and graduate architects. The second most important factor—again among all categories of readers—was "competitive bidding among firms." This factor appears to gain in importance with the size of the respondent's firm: While it was seen as major by barely half of the respondents from small firms (1–4 people), its importance increased fairly evenly with firm size and was identified as a major factor by 67 percent of those in firms of 100 or more people. Apparently, those in large firms feel the impact of competition on fees more directly.

The other factors listed on the poll were seen as distinctly less crucial. "Overcrowded profession" was cited as a serious factor (though less serious than those above) mainly by those with the least experience and incomes (designer/draftsmen and those earning less than $30,000), and that suggests that they have in mind the competition they experience for jobs—and its effect on their own compensation—more than competition among firms, as such.

Competition from other professions was also not seen generally as a major fee depressing factor. It was apparently taken more seriously by those in firms of fewer than 20 people, less so in larger ones. "Declining demand for the profession's services" was *the least important* factor in everyone's view; respondents from larger firms gave it less importance than those from smaller ones; designer/draftsmen were more concerned about this than other respondents—again suggesting

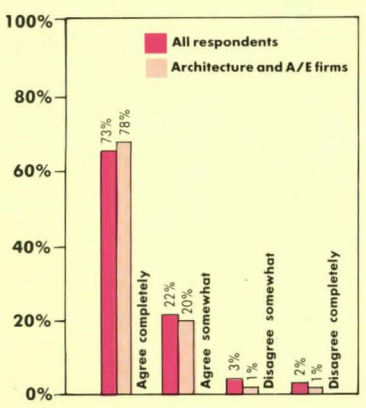


Figure 2 "Compared to other professions, architectural practice does not receive adequate compensation for services."

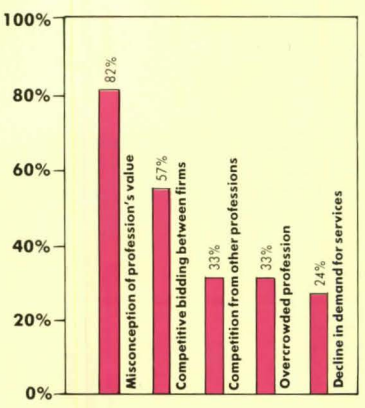


Figure 3 Factors judged very important in constricting architectural fees—by percentage of all respondents

worries about their personal prospects.

As consultants Morrison & Morrison point out, architectural professionals do not place the blame for disappointing fees on factors beyond their control. The cause most often cited—misconception of the profession's value—is an external problem, but one that could be substantially reduced if the profession were to mount a concerted public education campaign. The second crucial factor—competition among firms— demands an education effort within the profession, to convince practitioners that competitive fee-cutting hurts all professionals; fee guidelines should be established to the extent that "restraint of trade" laws allow.

The question on how fees were charged clearly showed fixed fees as the most common method for all firms, followed by straight percentage and "cost plus" (Figure 4). Significantly, 40 percent of designer/draftsmen "were not in a position to know" about fee arrangements. Fixed fees were most common among the smaller firms (used by 73 percent of firms under 20 people, but only about 64 percent of firms of over 20). Equity in the project was a form of compensation for only 5.5 percent of respondents.

		Years in Profession				Professional status				Role in firm				Location	
Income level	Total	Under 3	4-10	11-20	Over 20	Reg Arch	Arch Grad	Other	Owner Prin	Proj Mgr	Staff Arch	Int Dsgnr	Dsgnr Draft	Major Metro	City
Under $20,000	150	67	58	13	12	31	96	23	41	16	16	3	68	67	68
	15.0	51.9	15.5	4.5	5.7	5.1	34.4	21.3	9.7	7.8	9.1	13.0	48.9	11.7	19.8
$20,000 to $30,000	281	52	159	47	23	129	127	24	64	58	74	12	63	165	89
	28.1	40.3	42.6	16.4	10.8	21.2	45.5	22.2	15.1	28.2	42.3	52.2	45.3	28.8	25.9
$30,000 to $40,000	249	7	109	91	42	187	37	24	95	76	60	4	5	143	82
	24.9	5.4	29.2	31.8	19.8	30.7	13.3	22.2	22.5	36.9	34.3	17.4	3.6	25.0	23.9
$40,000 to $50,000	133	1	31	56	45	111	10	11	70	39	15	2	1	81	43
	13.3	.8	8.3	19.6	21.2	18.2	3.6	10.2	16.5	18.9	8.6	8.7	.7	14.1	12.5
$50,000 to $75,000	106	1	12	49	44	90	3	13	80	12	8	2	2	62	39
	10.6	.8	3.2	17.1	20.8	14.8	1.1	12.0	18.9	5.8	4.6	8.7	1.4	10.8	11.4
$75,000 to $100,000	48	—	3	23	22	37	4	7	40	5	2	—	—	32	12
	4.8		8	8.0	10.4	6.1	1.4	6.5	9.5	2.4	1.1	—	—	5.6	3.5
Over $100,000	33	1	1	7	24	24	2	6	33	—	—	—	—	23	10
	3.3	.8	.3	2.4	11.3	3.9	.7	5.6	7.8	—	—	—	—	4.0	2.9
Total Respondents	1000	129	373	286	212	609	279	108	423	206	175	23	139	573	343
Percent															

Figure 5 Income levels, by categories of experience, qualifications, function, and location

Personal Compensation

Personal income varied, as expected, by years of experience and role in the profession and whether the respondent works in a metropolitan location (Figure 5). There are also differences corresponding to sex, registration, and education (as Figure 5 shows) but these variations are largely attributable to the factors of experience and role in firms. (Differences between women and men are discussed in later paragraphs.)

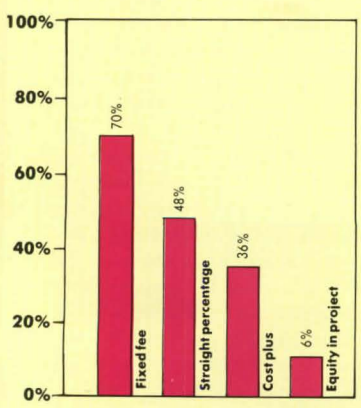
The income structure for architecture and A/E firms almost exactly matches that for the poll as a whole. Among the 25 percent of the sample who worked elsewhere, typical incomes varied both up and down. Those in design firms made on average almost $5000 less per year, with larger concentrations of respondents in the under $30,000 categories, fewer in the middle ranges, about the same small fraction (8 percent) making over $75,000. Those in commercial/institutional/governmental positions, on the other hand, made on the average $3000 more per annum, but their salaries were heavily concentrated in the middle ranges—$30,000 to $50,000—with much smaller percentages in the top and bottom categories of income; other poll statistics confirm that this is a field for experienced staff professionals, making solid incomes but with limited opportunities for advancement. The respondents who work in engineering or E/A firms make on average $5000 more per year, probably because those responding from this type of firm show, in general, several more years of experience than the sample as a whole (but since only 4 percent of the sample was from such firms, the data may not be conclusive).

Size of firm has no direct correlation with how much those people make. There is a higher concentration of respondents making under $20,000 in the smallest firms (1–4 people) and that proportion drops consistently with increasing firm size, but it appears that this is due to a shift only up to the next range, $20–30,000, with the total of employees making under $30,000 staying quite close to the overall average (43 percent) regardless of firm size. The numbers of respondents reporting incomes in the categories above $50,000 also remains remarkably constant regardless of firm size (about 19 percent of the total).

An increase in income over the past year was reported by 62 percent of readers responding (Figure 6). The larger the firm, the more likely that its members have had increases; the percentage reporting increases rose steadily from 47 percent in firms of 1–4 to 81 percent in firms of over 100. A higher incidence of increases was also reported from firms in major metropolitan areas (65 percent) compared to those in other places (60 percent). Decreases, on the other hand, were felt by very small percentages of those in middle-sized or large firms, by 10 percent of those in firms of 5–9 people, and by 26 percent of those in the smallest category of firms; this seems clearly related to the fact that the only "role" category that reported a comparable rate of decreases (22 percent) was the owners/principals group who, of course, comprise a high proportion of the smallest firms. The group experiencing the second highest percentage of decreases (9 percent) was the designer/draftsmen. Apparently, when pay has to be cut, the owners cut their own first, then that of their most junior employees, protecting their experienced staff members from decreases. At any rate only 6 percent of all respondents reported decreases of more than 10 percent.

Among those working outside of architectural or A/E firms, income changes for design firms followed a pattern similar to that of architectural ones. Readers in

(continued on page 21)



NOTE: Ten percent of respondents were "Not in a position to know."

Figure 4 Fee arrangements customarily used for architectural services

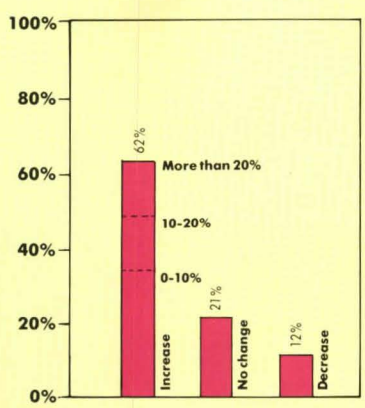


Figure 6 Change in income in the past year (all respondents)

% of Total Income	Salary	Bonus	Profit Sharing	Moon-lighting	Other business
1%-9%		121	66	124	83
10%-19%		112	54	105	91
20%-29%	12	26	18	43	30
30%-39%		14	8	17	23
40%-49%					
50%-59%	31				
60%-69%	46				
70%-79%	87	3	16	8	15
80%-89%	174				
90%-99%	329				
100%	269	—	24	—	7
Total reporting (out of 1000 respondents)	948	376	186	297	249

Figure 7 Sources of income, with percentage ranges

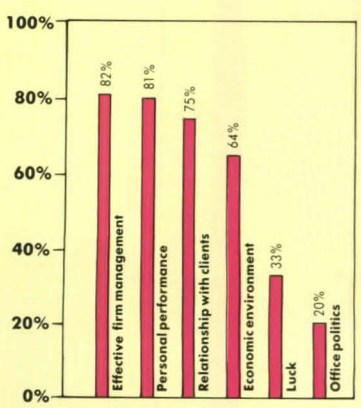


Figure 8 Factors judged very important in determining personal financial success

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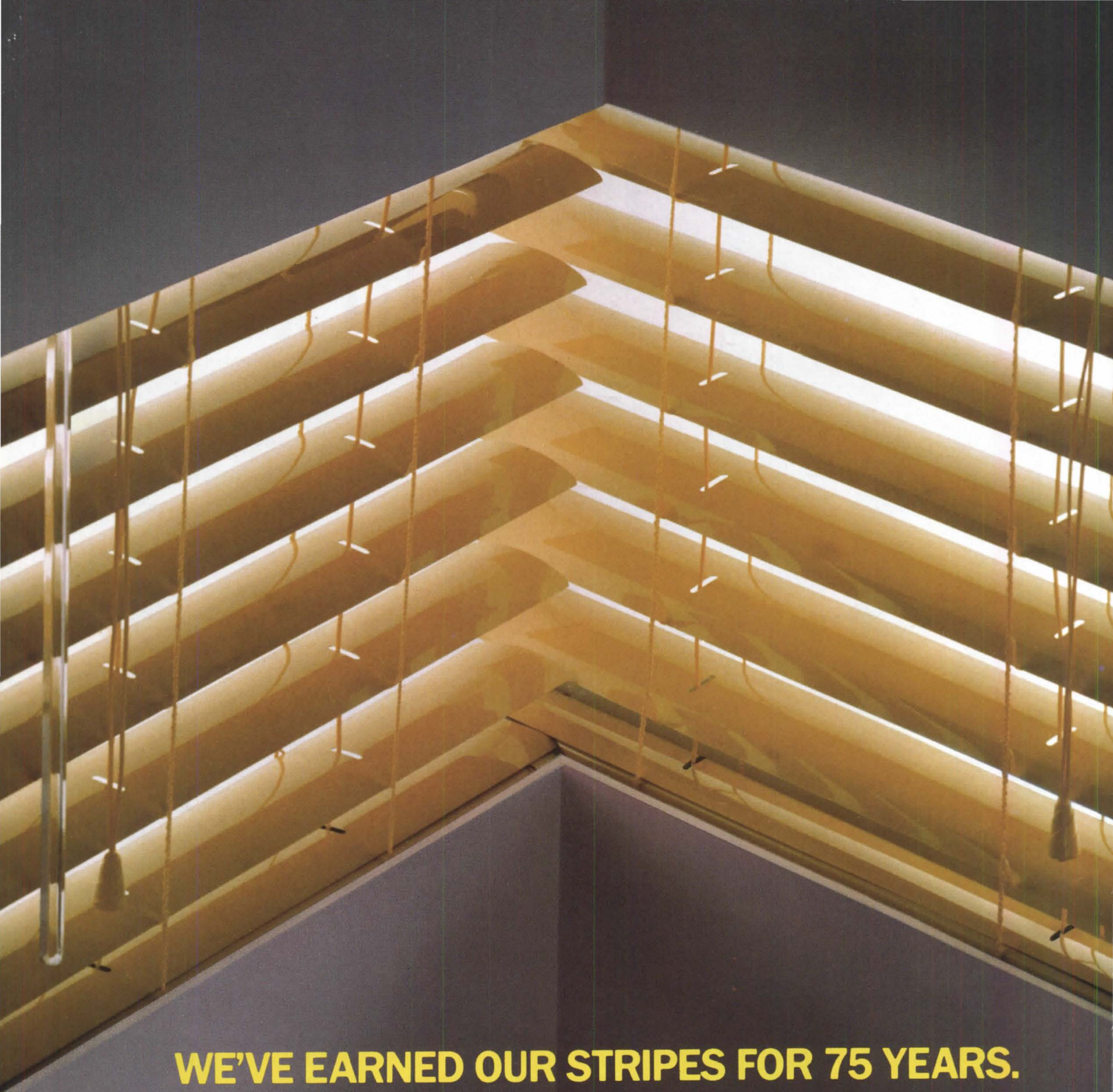

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the commercial/institutional/government category, as well as those in engineering firms, reported no decreases at all, but modest increases where they occurred, indicating a more stable overall income picture.

When asked about their sources of income, readers indicated that they depend on salary for about 90 percent of their income; only 1 percent earn more than half of their income from other sources (Figure 7). Moonlighting turned up as a significant source of additional income for all categories of respondents—even those in non-architectural firms; those with less than three years experience, not surprisingly, gained the smallest part of their income from this source. Bonuses, profit-sharing, and other business activities all made comparable contributions to that top 10 percent of income, with no discernible pattern in relation to other variables in the poll.

When asked what determines their personal financial success (Figure 8), almost all cited "effective management of the firm" as the primary one. The owners/principals group subordinated this factor (though still assigning it high importance) to the personal factors, "personal performance" and "my relationship with clients" (as did those with more than 20 years experience and those making over $75,000 per year, largely the same respondents). Almost all those polled put "the economic environment" in fourth place among these factors, not far below the first three. People unlikely to have personal contact with clients—designer/draftsmen, staff architects, and even project architects, gave this factor third position, above "my relationship with clients."

All respondents placed distinctly less importance on "luck," and "office politics" was on the whole ranked even below mere chance, but there were some significant variations among respondents on these factors. The importance of luck is felt most by the most junior professionals and drops with accumulated experience; women give it a rating corresponding to their overall junior status. The perceived power of office politics varies more sharply with experience: It is seen as very important by 30 percent of those with under three years experience, by only 14 percent of those with over 20. In terms of roles in the firm, there is a distinct break on this point between owners/principals, only 10 percent of whom consider office politics very important, and all others, whose percentages vary from 23 for project managers to 36 for designer/draftsmen. Here, too, the percentage of women considering this factor very important (30) seems to fit their experience and roles.

On the subject of factors affecting individual income, Morrison & Morrison observe that here, as on the subject of firm income, P/A readers concentrate on factors over which they have some control. It is reassuring to learn that, with more experience, architectural professionals place decreasing importance on sheer luck and put their reliance on real performance factors rather than office politics. On the other hand, owners/principals may be underestimating the power of office politics, considering the greater importance their employees see in it.

In judging their satisfaction with their own income, one third of the respondents as a whole were satisfied (Figure 9). The strongest variation occurred where satisfaction was compared with income. Among those earning less than $20,000, only 13 percent expressed satisfaction, and the degree of satisfaction rose steadily with income, reaching 34 percent for the $30,000–$40,000 group and topping out at 69 percent for those making over $75,000—the only group over half of which expressed satisfaction. It may sound like a truism for those with the highest incomes to express the most satisfaction, but it is not inevitable: At the highest levels of the profession, income apparently does catch up with expectations—or perhaps expectations have been scaled down by years of reality.

Women's Compensation

The issue of women's compensation seems to reveal a discrepancy between perception and reality. A majority of readers of both sexes agrees that women are "generally paid less than their male counterparts" (Figure 11). While the income statistics for women in our poll differ markedly from those for men, most of this difference can be accounted for by the sharply differing positions held by women and men (Figure 10). Women among the respondents were clustered at the low end of the experience profile, about one third reporting one to three years experience, while only 10 percent of the men fell into this category; at the most experienced end of the scale, only 4 percent of the female respondents had been in the profession more than 20 years, vs. 24 percent of the men. And women, in general, are more dependent than men on salary for most of their income.

Much of the difference in income reported between men and women in our poll can be attributed to differences in experience—but not all of it. If we compare the incomes of men and women responding to our poll by categories of experience (Figure 12), certain correspondences emerge: For both men and women with under three years experience, the largest number of respondents is making under $20,000; similarly, if we take those in the profession four to ten years, the largest block makes $20,000–$30,000 per year.

The income profiles are nevertheless not quite the same. If we return to those respondents with less than three years experience, we see that the proportion of women earning less than $20,000 is higher than among the men: Of the 45 women in this experience category, 27—or 60 percent—earn less than $20,000; for the men, the figures are 40 out of 84—or 48 percent. At face value, such data indicate differences—for instance, the median income for men in this experience group is slightly over $20,000 (since they split 48 to 52 percent around this figure), while for these women the median is slightly under $20,000. At the other end of the experience scale, 80 percent of the women with over 20 years experience report earning less than $50,000 per year, while the corresponding figure for men is 57 percent.

Morrison & Morrison caution, however, against drawing conclusions about male/female income differences from these

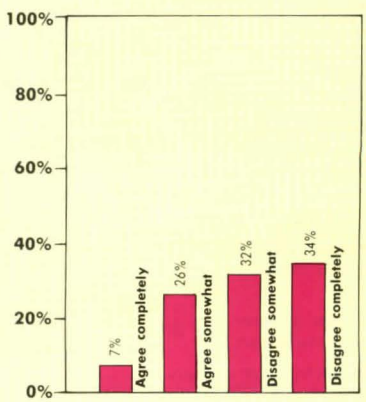

Figure 9 "At this point in my career, I am satisfied with my compensation."

	Female	Male
All Respondents	14%	86%
Annual Income		
Under $20,000	34%	12%
$20,000-30,000	36	27
$30,000-40,000	16	26
$40,000-50,000	6	14
$50,000-75,000	6	11
$75,000-100,000	1	6
Over $100,000	1	4
Professional Status		
Registered Architect	32%	66%
Architectural Graduate	45	25
Other	23	9
Years in Profession		
Under 3 Years	32%	10%
4-10 Years	42	37
11-20 Years	23	30
More than 20 Years	4	24
Role in Firm		
Owner/Principal	28%	45%
Project Manager	16	21
Staff Architect	18	17
Designer/Draftsman	24	12
Interior Designer	10	1
Other	5	3
Type of Organization		
Architectural or A/E Firm	65%	78%
Design Firm	19	7
Commercial/Institutional/ Government	8	7
Engineering or E/A Firm	4	4
Other	4	4
Number of Employees in Firm		
Small Firm 1-9	43%	48%
Mid-Size Firm 10-49	31	32
Large Firm 50 or more	26	20
Location		
Major Metro Area	62%	57%
City or Small Town	38	43

Figure 10 Distribution by sexes

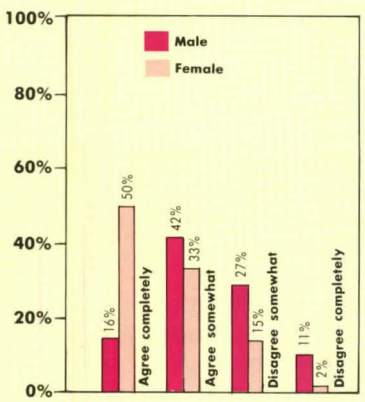

Figure 11 "Women in the profession are generally paid less than their male counterparts."

Income	Years in Profession			
	Under 3	4-10	11-20	Over 20
Under $20,000	27 40	17 41	3 10	1 11
$20,000-$30,000	16 36	27 132	7 40	1 22
$30,000-$40,000	2 5	12 97	8 83	1 41
$40,000-$50,000	0 1	1 30	7 49	1 44
$50,000-$75,000	0 1	2 10	6 43	0 44
$75,000-$100,000	0 1	0 3	1 22	0 22
Over $100,000	0 0	0 1	0 7	1 23

Number of women (Total: 141)
Number of men (Total: 859)

Figure 12 Women's income compared with men's

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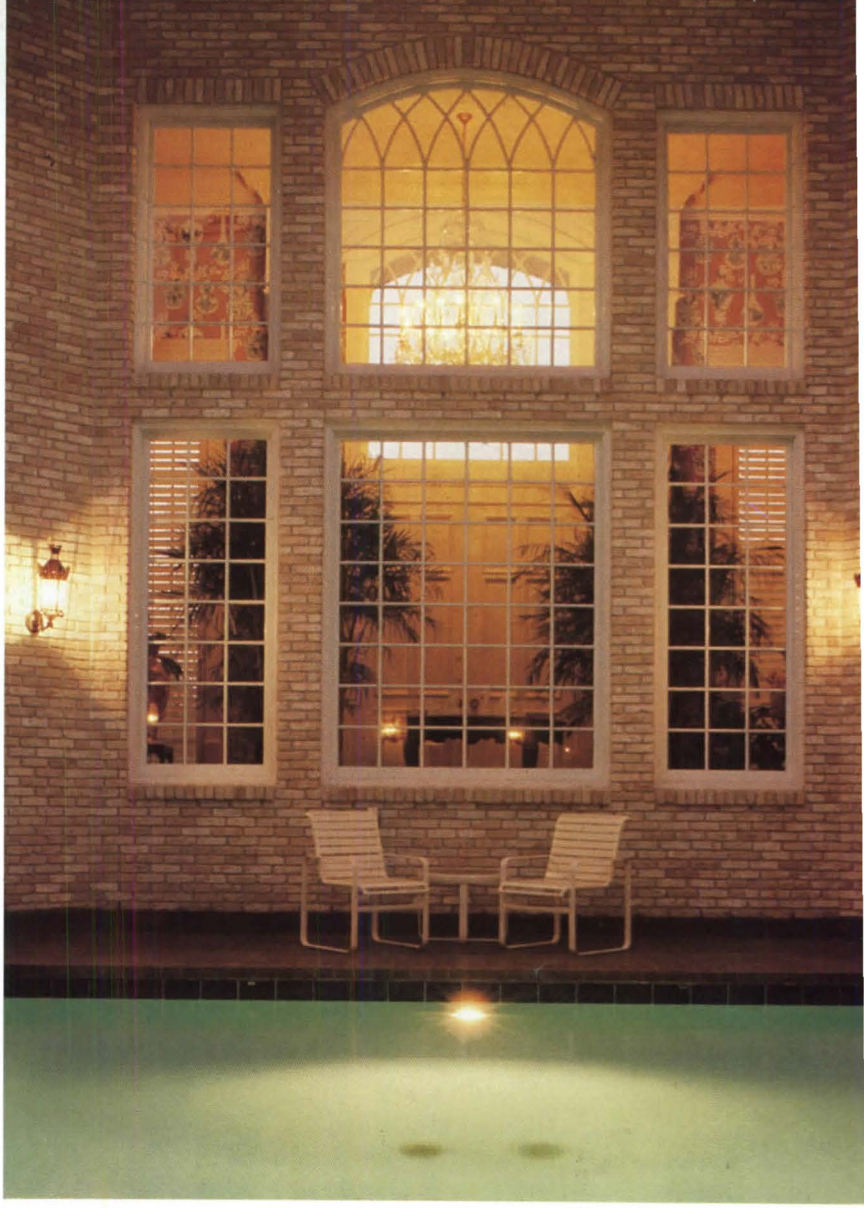

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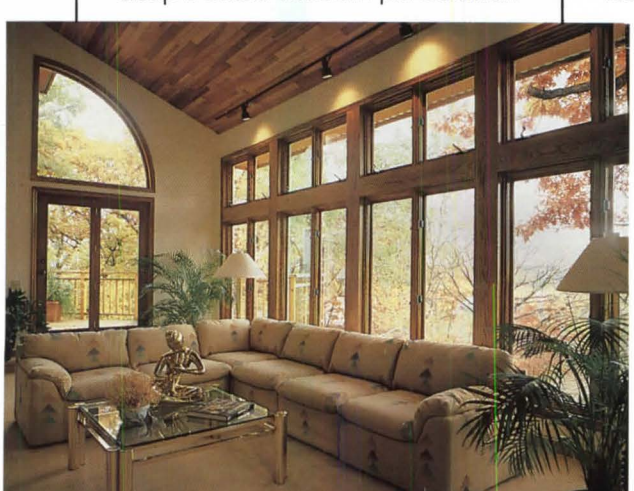

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International Furniture Competition

WINNING PROJECTS TO BE DISPLAYED AT MAJOR INDUSTRY EVENTS

PROGRESSIVE ARCHITECTURE announces the seventh annual competition recognizing outstanding furniture and lighting design proposals, not yet being marketed by any manufacturer as of entry deadline, January 9, 1987. The competition is intended to give the design professions a forum to express ideas about the next generation of furniture design, at a time when architects and designers are increasingly custom-designing furniture for their projects and manufacturers are increasingly open to fresh ideas. The competition is specifically aimed at furniture intended for use, but the design need not be constrained by existing production or marketing practices. Entries may be based on either fabricated pieces or project drawings. Designers are encouraged to consider the aesthetic and ideological implications for furniture design implied by the current concerns within architecture and other design disciplines.

WINNING PROJECTS will be published in the May 1987 P/A and they will be displayed at major industry events during the year. Winners will be honored in New York City at an awards ceremony in early May attended by press, designers, and industry manufacturers.

In addition to the exposure afforded the submissions, the competition will encourage further discourse between the entrants and respected furniture producers. Any ongoing discussions will, of course, be up to the individual designers and manufacturers, but benefit to both is anticipated.

SUBMISSIONS are invited in all categories including chairs, seating systems sofas, tables, desks, work stations, storage systems, lighting, beds, and miscellaneous furniture pieces.

THE JURY FOR THIS COMPETITION
Bruce Burdick, principal, the Burdick Group, San Francisco, Calif., industrial and furniture designer.
Paul Haigh, principal, Haigh Space Ltd., New York, architect and furniture designer.
Eva Jiricna, principal, Jiricna Kerr Associates, London, architect and furniture designer.
Michael Kalil, New York, interior and furniture designer.
Jeffrey Osborne, Vice President of Design, Knoll International, New York.

JUDGING will take place in New York City during the month of February. Designations of *first award*, *award*, and *citation* may be made by the invited jury, based on overall excellence and advances in the art.
[Turn page for rules and entry forms]

DEADLINE FOR SUBMISSION
JANUARY 9, 1987

Entry form
International Furniture Competition

Please fill out all parts and submit, intact, with each entry (see paragraph 11 of instructions).
Use typewriter, please. Copies of this form may be used.

ENTRANT:
ADDRESS:

ENTRANT PHONE NUMBER *(day):*
(evening):

CATEGORY:

ENTRANT:
ADDRESS:

DESIGNER(S) RESPONSIBLE FOR THIS SUBMISSION
(identify individual roles if appropriate):

I confirm that the attached entry meets eligibility requirements (paragraph 1-3) and that stipulations of publication agreement (paragraphs 4-6) will be met. I verify that the submission is entirely the work of those listed on this form (or an attached list as necessary).

SIGNATURE
NAME *(typed)*

FURNITURE COMPETITION
Progressive Architecture
P.O. Box 1361, 600 Summer Street,
Stamford, CT 06904

(Receipt)
Your submission has been received and assigned number:

ENTRANT:
ADDRESS:

ENTRANT:
ADDRESS:

ELIGIBILITY

1 Architects, interior designers, industrial designers, and design students from all countries may enter one or more submissions.
2 Design must be original. If found to be substantially identical to any existing product design, entry will receive no recognition.
3 Designer may be under contract to or in negotiation with a manufacturer for this design, but design must not be available in the marketplace as of entry deadline.

PUBLICATION AGREEMENT

4 If the submission should win, the entrant agrees to make available further information, original drawings or model photographs as necessary, for publication in the May 1987 P/A and exhibition at major industry events.
5 P/A retains the rights to first publication of winning designs and exhibition of all entries. Designer retains rights to design.
6 P/A assumes no obligation for designer's rights. Concerned designers are advised to document their work (date and authorship) and seek counsel on pertinent copyright and patent protections.

SUBMISSION REQUIREMENTS

7 ***Submissions will not be returned under any circumstances.*** Do not use original drawings or transparencies unless they are sent with the understanding that they will not be returned. P/A will not accept submissions with outstanding custom duties or postal charges.
8 Drawing(s) and/or model photo(s) of the design should be mounted *on one side only* of one 20″x 30″ foamcore board presented horizontally. ***Any entry not following this format will be disqualified.***
9 There are no limits to the number of illustrations mounted on the board, but all must be visible at once (no overlays to fold back). No actual models will be accepted. Only one design per board
10 Each submission must include a 5″x 7″ index card mounted on the front side of the board with the following information typed on it: intended dimensions of the piece of furniture, color(s), materials, components, brief description of important features, design assumptions, and intentions. This information is to be presented in English.
11 Each submission must be accompanied by an entry form, to be found on this page. Reproductions of this form are acceptable. All sections must be filled out (by typewriter, please). Insert entire form into unsealed envelope taped to the back of the submission board. P/A will seal stub of entry form in envelope before judging.
12 For purposes of jury procedures only, projects are to be assigned by the entrant to a category on the entry form. Please identify each entry as one of the following: Chair, Seating System, Sofa, Table, Desk, Work Station, Storage System, Lighting, Bed. If necessary, the category *"Miscellaneous"* may be designated.
13 Entry fee of $35 must accompany each submission, inserted into unsealed envelope containing entry form (see 11 above). Make check or money order (no cash) payable to *Progressive Architecture.*
14 To maintain anonymity, no identification of the entrant may appear on any part of the submission, except on entry form. Designer should attach list of collaborators to be credited if necessary.
15 Packages can contain more than one entry; total number of boards must be indicated on front of package.
16 Deadline for sending entries is January 9, 1987. First class mail or other prompt methods of delivery are acceptable. Entries must show postmark or other evidence of being en route by midnight, January 9. Hand-delivered entries must be received at street address shown here by 5 p.m., January 9.

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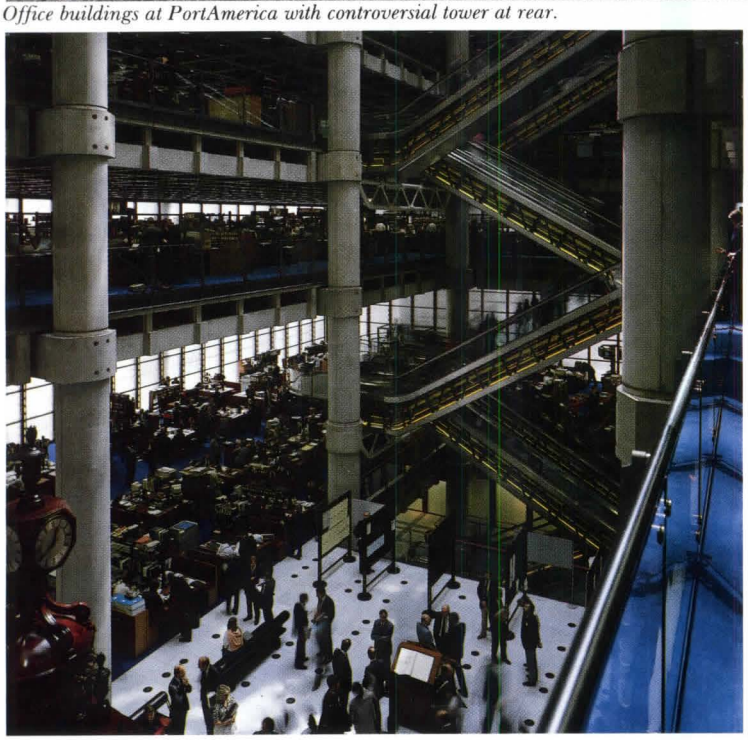
P/A News Report

Office buildings at PortAmerica with controversial tower at rear.



Alastair Hunter

Atrium in new Lloyd's of London.

Port in A Storm on the Potomac

When you land to the north on the main runway at National Airport in Washington, D.C., you sail alongside a large wooded area on the eastern banks of the Potomac River. On clear days from a right-hand window seat you see, just south of the Woodrow Wilson bridge, across the water from Alexandria, a swampy lagoon and one of the largest open green areas remaining in the national capital area. This is the future site of PortAmerica, a 480-acre, $1 billion project that will include luxury condominiums, shops, hotels, marinas, a Potomac River ferry terminal and, maybe, the tallest building between Atlanta and Philadelphia.

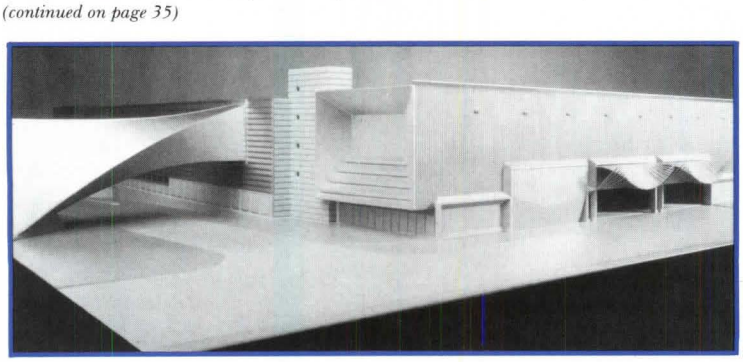
Designed by John Burgee Architects with Philip Johnson and

(continued on page 38)

Commentary: Richard Rogers at Lloyd's of London

The once universal dominance of British capitalism has shrunk in the late 20th Century to just one sector—financial services. It is no accident that this sector has commissioned the two most significant British architectural projects of this decade: the headquarters of the HongkongBank from Foster Associates (P/A, March 1986) and the new Lloyd's insurance market building from Richard Rogers & Partners, which opened officially this month. What may be more difficult to explain is why these clients have chosen to represent themselves in forms derived from the industrial manufacturing culture that has so conspicuously failed to flourish lately in the U.K.,

(continued on page 35)



DAM Frankfurt

Reichlin/Reinhart with S. Calatrava, Factory, in "Visions of Modernism."

GSD at 50: Having its Cake . . .

The Graduate School of Design, at fifty, was called upon by its parent institution, Harvard University, to fashion, and finance, for a rumored $100,000, an extensive party in September for its graduates, donors, and friends. The assignment: to celebrate its own achievements while honoring the University, whose 350th anniversary festivities were taking place the same weekend.

Charles, Prince of Wales, keynote speaker at the University's main convocation and focus of all attention, accepted the GSD's invitation to attend its first symposium on "The Future of the City." He also agreed to allow an anonymous award of $25,000 for urban design projects that advance "traditions of humanism" to carry the name of the Prince of Wales Prize.

At a reception, attended by Prince Charles and the Aga Khan, alumni guests and professional friends, staff and some faculty and students, a masterpiece of "pastry-architecture" in the shape of Gund Hall was cut with a T-square by Dean Gerald McCue and University President Derek Bok.

The Fiftieth celebration was rich. The excellent exhibition of drawings from the "Founding Decades," co-curated by GSD graduate Anthony Alofsin and former *Oppositions* executive editor Julia Bloomfield, was a visually stunning revisionist interpretation of the School's history. Here was physical proof

(continued on page 36)

Modernism in Frankfurt

The Deutsches Architekturmuseum opened its doors in 1984 with a panoramic exhibition of Post-Modernism titled "Revisions of Modernism" (P/A, Sept. 1984, p. 26). With "Revisions" now on world tour, DAM has inevitably acquired a reputation as a "PM" promoter. In the

(continued on page 34)

Pencil Points

Artists' housing **is the subject of a national design competition sponsored by Vision, Inc., and The Artists Foundation, with funding from the National Endowment for the Arts. The program calls for 12 residential units and common work space on a small urban lot. Bernard Spring, president of the Boston Architectural Center, will chair the jury. The sponsors intend to build the winning scheme. To register, send a $45 check payable to Vision, Inc., with name, address, and phone number to Michael Robinson, Vision, Inc., 219 Concord Avenue, Cambridge, Mass. 02138. Revised registration deadline is October 31.**

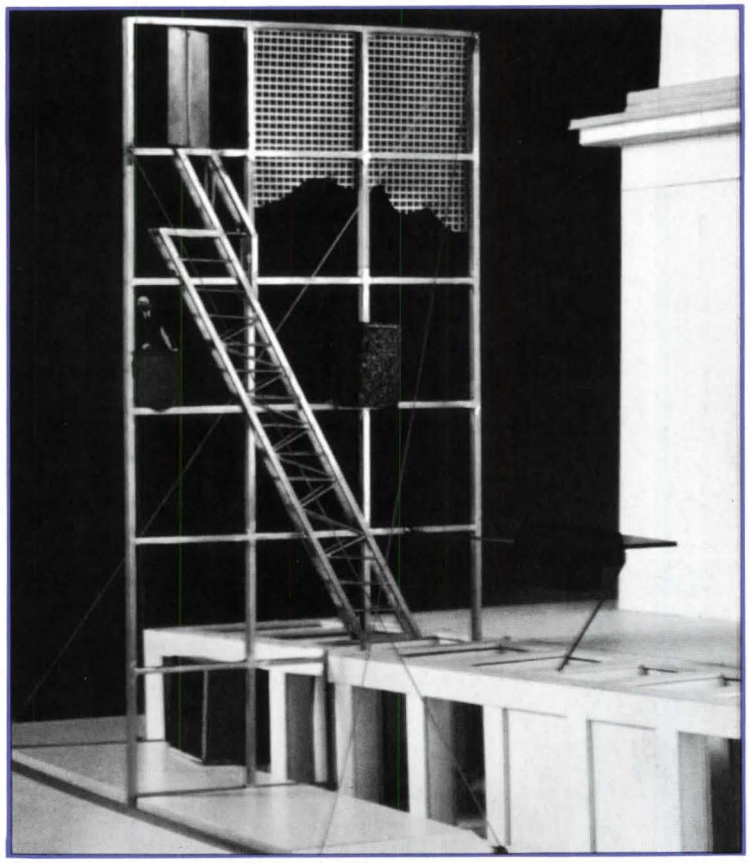
Leon Krier **has been named director of the new SOM Institute for Research on Architecture in Urbanism (P/A, July 1986, p. 23).**

Cesar Pelli **is designing the master plan for Fan Pier in Boston. Prospective architects designing individual buildings for the project include Pelli, Hammond Beeby Babka, Frank Gehry, Koetter Kim, Rafael Moneo, and Venturi, Rauch & Scott Brown.**

Alexander Cooper **has replaced Helmut Jahn as principal planner for Donald Trump's Television City in Manhattan (P/A, Jan. 1986, p. 25). Jahn remains as architect of the "world's tallest tower" proposed for the site; other buildings, however, are to be given to other architects to design.**

Hugh Stubbins **of The Stubbins Associates, Cambridge, Mass., has been selected as architect for The Ronald Reagan Presidential Library on the campus of Stanford University.**

Atlanta **joins the reheated race to build the world's tallest skyscraper with a 2015-foot contender proposed by inventor/pilot Thomas E. Crowder and developer Walter F. Young, brother of Mayor Andrew Young. The tower tops Donald Trump's proposed TV City skyscraper in New York (P/A, Jan. 1986, p. 25) and a French scheme for Phoenix, temporarily stalled while developer Georges Schriqui answers Federal Aviation Administration objections caused by his proposed tower's proximity to Sky Harbor Airport.**



DAM Frankfurt

Eisele/Fritz, Homage to El Lissitzky in "Visions."

Frankfurt *(continued from page 33)*
catalog preface, however, museum founder and director Heinrich Klotz denied partisanship, criticizing the simplicity of the Modernist/Post-Modernist polarity, and promising an exhibition of equivalent scale and ambition on Modernism. This summer, he delivered that second show.

With the help of ex-Archigrammers Peter Cook and Ron Herron, DAM's galleries were transformed for "Visions of Modernism: The Constructive Principle." Through nearly 700 drawings and models, many rarely seen before, the exhibition traced Constructivist and High-Tech tendencies from the Crystal Palace to Centre Beaubourg and the HongkongBank, via visionaries Buckminster Fuller and Archigram. Although self-consciously designed to redress a balance, the exhibition has unleashed considerable controversy concerning the DAM's version of Modernism, both its history and prospects.

From its opening gallery of Constructivist drawings from the Schushev Museum in Moscow to selections from DAM's own rich archive of Frei Otto, Konrad Wachsmann and Archigram (including the color originals of Peter Cook's 1964 "Walking City"), the exhibition is full of delightful discoveries and telling juxtapositions. Wider in scope and more revisionist in historical perspective than "Revisions," "Visions" sets out to isolate a continuous commitment to the frank display of technology as the key to a modern architectural idiom. This principal claim is announced in front of the museum itself, where the young Darmstadt firm Eisele & Fritz has erected a huge silhouette billboard "Hommage à El Lissitzky." Soviet Constructivism is for Klotz and his colleagues a Modernist threshold that has been underestimated, if not entirely neglected, by historians and exploited all too little by contemporary architects.

The heroes of the exhibitions are those who seek "synthesis" by mining the Constructivist language for wholly new, if not antithetical, ends. According to Klotz, in the work of Helmut Jahn, J.P. Kleihues, Jean Nouvel, Miguel Angel Roca, Lebbeus Woods, or Rem Koolhaas, "construction is the material of fiction." Projects such as Frank Gehry's Aerospace Museum in Santa Monica or Reichlin and Renhardt's Factory at Coesfeld-Lette, Switzerland, exploit modern materials and means to achieve ends generally associated with Post-Modernism: multivalent readings and historical references, as well as a frank acceptance of the fragmentary and incomplete.

In reaction to the exhibition's controversial interpretation of history and its contemporary prescriptions the magazine *Casabella* plans a special issue in which prominent historians and critics will respond. In its deliberate blurring of the boundaries between Modernism and Post-Modernism, "Visions" is far more provocative than the more equivocating "Revisions"; yet the show's historical substructure offers dubious and confusing support for its claims. The supposed cleavage between Constructivist and "white, purist abstracting" trends in early Modernism is hardly tenable, the result, it would seem, of an anachronistic projection of the "shades of gray" arguments of the 1970s into the 1920s. Objections multiply as one tests the show's didactic distinctions and curious omissions in an overly rigid schemata. Where are the Italian Futurists, the French pioneers of concrete, or more contemporary experimenters with continuous surfaces and plastics?

What does emerge in this 60-year chronology is the growing gap between contemporary technology and technological imagery in design. While Constructivism proposed an architecture at the limits of feasibility in post-Revolutionary Russia, Western High Tech of the 1980s celebrates a technology long surpassed in this age of information science. Foster and Rogers, for instance, continue to create compositions of oversealed and often redundant symbolic technology in an era of microchips and their diminishing scale. As Volker Fischer suggests in one of the catalog's most stimulating essays, the architecture of the computer age has yet to find a formal expression. ***Barry Bergdoll*** ■

The author teaches architectural history at Columbia University and contributes frequently to Progressive Architecture.

Boston Update: Johnson/Burgee

Even as two towers of International Place rose in Downtown Boston this summer, the rest of the project, designed by John Burgee Architects with Philip Johnson, ran into troubles that may eventually halve its square footage. Also, the block-long New England Life Building proposed by Johnson/Burgee for Back Bay is headed back to the courts this month. Although demolition on the site has been substantially completed, the advocacy group Citizens for a Better New England Life are optimistic that a more modest

Cary Wasserman

International Place under construction.

structure will replace the 1.3 million-square-foot design.

Court cases, rallies, and critical press have dogged both designs since their inception (P/A, March 1985, p. 27). Steady opposition has combined with a glut of office space to help halt or slow much new construction; the combination may be responsible for New England Life's decision earlier this year not to build one of its two proposed towers.

Suits have not, however, stemmed the advance of International Place. This summer its oversized edifices were sheathed with either strip windows or a pattern resembling Palladian wallpaper. The final tower faces new problems: In July, the state stepped in and stopped construction, arguing that its location would hinder plans to move a highway exit ramp, required for the forthcoming "burial" of the Central Artery. That issue has yet to be resolved. ■

Jane Holtz Kay

Cary Wasserman

"Palladian wallpaper" window pattern.

Lloyd's *(continued from page 33)*

and whose decline, indeed, some have attributed to the indifference of City investment institutions.

Actually, the decline of manufacturing and the growth of services in the British economy may be said to find in Lloyd's new building a metaphorical representation, for the new building itself is about nothing if not servicing. Its design can be said to represent the triumph of servicing over material substance, process over form, behavior over object, performance over style.

Lloyd's is not a corporate headquarters but a phenomenally successful private marketplace that has outgrown its housing three times in this century. By the 1970s, the underwriters again required more space for their transactions, which have always taken place within a single floor known as "The Room." Also impinging was the pressure of new information technology, whose electronic facilities could no longer be incorporated piecemeal and empirically. The directors looked to Rogers for a definitive solution to their problem, one that would ensure that they would never again outgrow their quarters or be outgrown by their technology.

The kind of technological

Lloyd's in the medieval City of London.

rationalism found in Lloyd's gains much of its appeal, indeed charisma, from claims that it can, through the fine analysis of functional criteria, find optimal solutions to defined problems. The building is swaddled in a massively persuasive technical discourse, yet its actual appearance is anything but the strict outcome of necessity. Furthermore, the failure to admit certain conflicts between the ideologies of architecture and of business leads to an irresolution and instability not only in the exterior of the new building but, most

Photos: Alastair Hunter

The barrel-vaulted atrium surrounded by extruded pipes and stairs.

tellingly, in the directors' rooms and boardroom.

The entire Robert Adam-designed boardroom has been transported from the old building, together with period furniture, and preserved in the new one like a beautiful casket in a high-tech frame. The move might be accounted simply a sentimental attachment to an institutional heirloom. Moreover, Adam's domestication and merchandising of Roman archaeology by means of interchangeable molds (still available from a London interiors firm) was an early antecedent of the prefabrication techniques upon which the new Lloyd's building is predicated.

But the rest of the floor on which the Adam room stands has also been given over to the "embellishments"—Doric columns and quilted doors—of the French interior decorator Jacques Granges. These classical pretensions suggest that although work may be done and money made in modern surroundings, its fruits and the good life are still ideally consumed in the traditional settings of aristocratic classicism and handicrafts. The kitsch and classical trappings of the executive rooms constitute a subversive criticism of the building housing them.

It is claimed that the kind of architecture found in the new Lloyd's is about honesty, frankness, visibility, and control. But these categories apply here only to mechanical matters. In fact there are many things in this building that are not admitted, not visible but repressed, and ultimately in some places out of control. Electronic facilities for communication and data processing are spread integrally and invisibly throughout the building. The point where these surface and manifest themselves is at each Syndicate's workstation, or "box," as it is traditionally known. User participation in the design of Lloyd's is nowhere

Detail of Lloyd's kit-of-parts façade.

more evident than in these boxes which, at the underwriters' insistence, were constructed of hardwood in the traditional format of stiff-backed pews facing each other across a long table.

The rationale behind Lloyd's runs broadly as follows: Just as the company is a confederal infrastructure of brokers, so the building is basically a concrete shelving stack designed to carry facilities that have a range of shelf-lives from short-term (computing) through longer term (elevators, toilets) to very long term (the Adam boardroom). In order to enable easy replacement of components, which comprise

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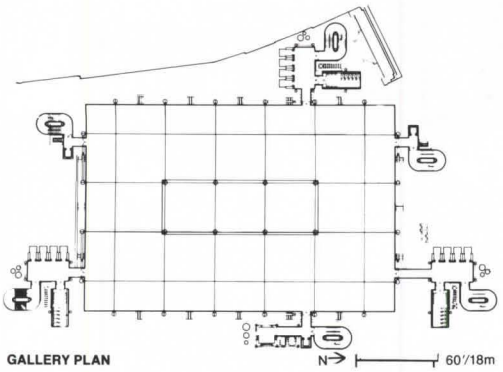


Lloyd's *(continued from page 35)*
a prefabricated kit of parts, Louis Kahn's distinction between servant and served spaces is intensively and comprehensively developed. But there is a profound difference between the display of services on the exterior, where their vertical distribution is exuberantly manifested in a display of ducts, cranes, and elevators, and their concealment in the interior, where their horizontal distribution across each level lies above ceilings and beneath floors.

The dramatic corner locations of service towers lend a picturesque quality to the building's elevations from the street, but the combination of a rational, orthogonal interior enveloped in an irregular, medievalized exterior finds its truest precedent in 18th-Century castellated homes, such as Robert Adam's Culzean Castle, which preceded the picturesque movement in England. The historic styles most suggested by the interior of Lloyd's date from the age of its founders at the end of the 17th Century: The Room's mezzanine and atrium hint at the four-square lucidity of Wren's city churches, with their galleries about the nave. The exterior, on the other hand, recapitulates the gawky, top-heavy baroque of Hawksmoor and Vanbrugh.

In the main, the interior of Lloyd's achieves a serendipity of "silent running." But this serendipity is literally swathed in irony on the exterior of the building, where every device of its maintenance is put on raucous display. It's as if the architects had decided to build a representation of the Second Law of Thermodynamics: In creating an enclave of order, you inevitably increase the disorder around it. Insofar as the exterior of a building says something about its interior, at Lloyd's we find that silence is represented by noise, simplicity by complication, emptiness by busyness. ***Brian Hatton*** ■

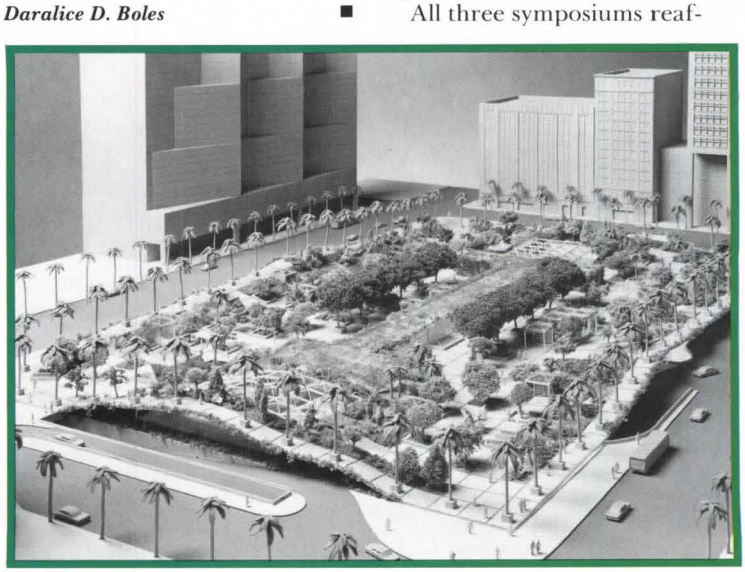
The author writes for the London-based publication Building Design.

SITE Selected for Pershing Square

James Wines of SITE Projects, Inc., describes his winning scheme for Pershing Square in Los Angeles as a "chessboard that allows artists, vendors, and community people to combine in a big civic game." Juror Craig Hodgetts calls it "Jeffersonian." Jury chairman Charles Moore feels it will be "a sanctuary."

The chessboard's 1000 squares, each 13.5′ x 13.5′, undulate in a pattern inspired by the Los Angeles topography of mountains surrounding the city. A trellis-covered promenade connects a crystal palace restaurant and an outdoor performance area at opposite ends of the five-acre space.

SITE, working in collaboration with architects Charles Kober Associates, engineers Delton Hampton & Associates, and landscape architects EDAW, Inc. and Burton & Spitz, competed against four other finalists (P/A, Sept. 1986, p. 23) for the $12.5 million commission. The Los Angeles Community Redevelopment Agency has contributed $6 million towards construction. Despite worries as to who will fund the remainder, all Los Angeles seems united in praise of SITE's scheme.
Daralice D. Boles ■



New model of SITE scheme, winner of Pershing Square competition.

Harvard *(continued from page 32)*
that the Graduate School, as constituted in 1936, successfully married preexisting departments of architecture, landscape, and city planning. Further, there was evidence that collaboration between the fields predated the Gropius era.

The exhibition, the most delectable of GSD offerings and the most lasting (a book is planned), was overshadowed, however, by the three symposiums. Media interest transformed the first symposium, a discussion of urban design, into the "Prince Charles Symposium." This misapprehension —for the popular event was sold out before the Prince accepted Harvard's invitation—was made accurate by the precision and sincerity of his observations in a discussion otherwise awash in generalized projections of megatrends. In extemporaneous remarks, Prince Charles wondered, "How do you design cities for the future?" He referred to Liverpool, "a decimated city with industrial decay on a scale you wouldn't believe," where "the tenant cooperatives' determination has created small oases amongst urban decay. People get on best when they live in village communities. (There) you have villages showing the actual style and interests of the people that live in them. Who plans, designs, decides? I wish I could stay here and pick your brains."

The second symposium on "Propositions and Practices: The Last Fifty Years of the Design Professions," defined such trends as the rise of contextualism and of ecological planning, the introduction of social and behavioral factors into design, and the use of new technologies.

All three symposiums reaffirmed that urban design resides wholly, and healthily, in Gund Hall. The mood was confident, bolstered by gifts from major local developers. The new confidence, however, stems greatly from recent changes in the curriculum and the student body. Reflected Henry Cobb, former chairman and author of some of the GSD's more experimental innovations in curriculum, "the events of the 1960s almost crippled architectural education. In the early 1970s, architectural education almost ceased. You cannot know how difficult it was to answer students' criticisms, their accusations of the corruption of urban design. The McCue era is the first time since the Sert decades that the GSD has any kind of self-assured identity. Today (at the fiftieth) the GSD, through symbols and rituals, is reaffirming architecture in the widest sense, including urban design."
Helene Lipstadt ■

Ken Hilgendorf

GSD's birthday cake.

The author, who writes frequently for Progressive Architecture, *resides in Boston.*

Riverwalk Opens in New Orleans

New Orleans' new marketplace, Riverwalk, opened over Labor Day weekend with a five-day extravaganza that included a Mardi Gras-style parade, marching bands, balloons, fireworks, and movies projected onto a barge in the Mississippi River. The latest in the series of Rouse Company Festival markets, this $58 million, 180,000-square-foot shopping/entertainment experience is located on the riverfront in the Warehouse District of New Orleans, occupying part of the site of the 1984 World's Fair.

Riverwalk is important to New Orleans for three major reasons. First, its completion attests to the skill and perseverance of the various parties involved—Rouse officials; Perez Associates, architects; and city officials who waded through the legal com-
(continued on page 38)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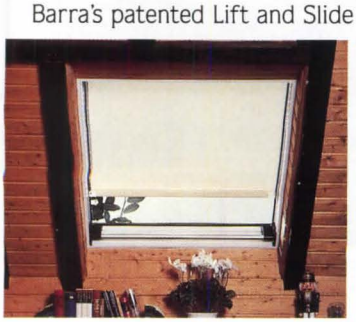

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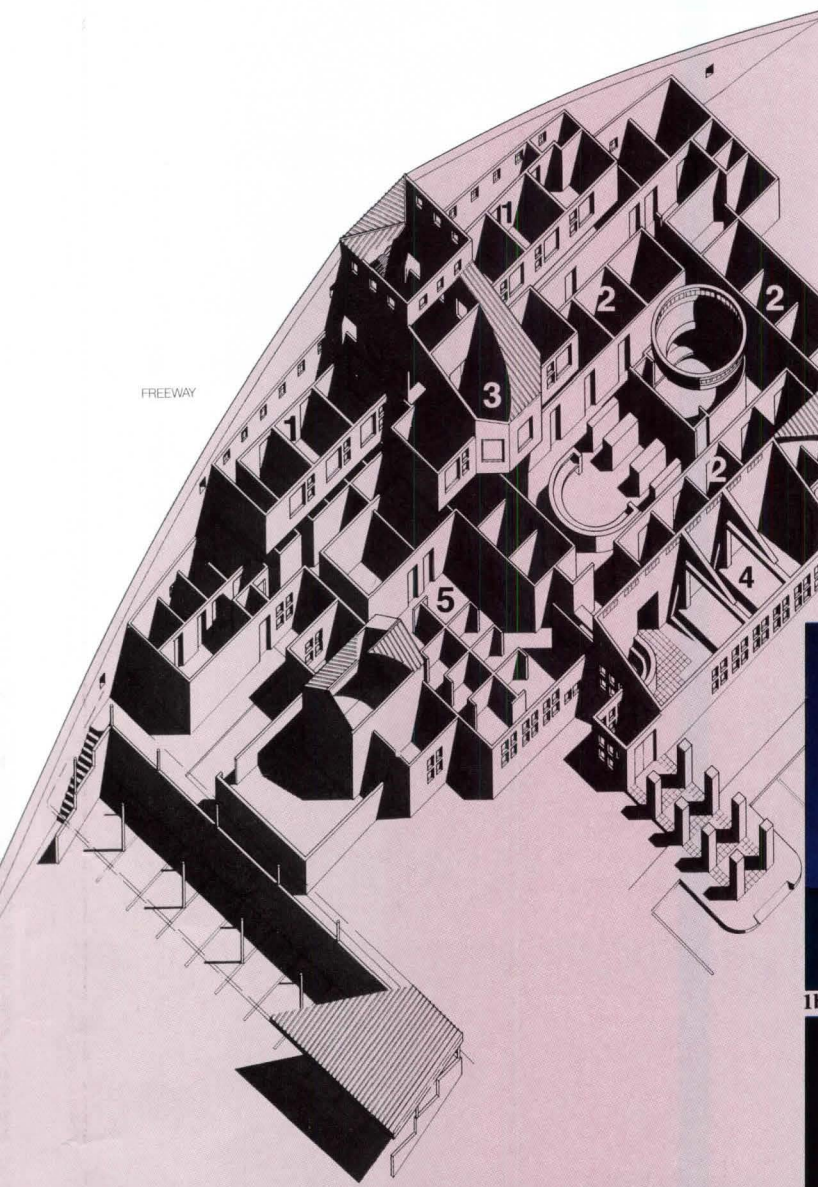
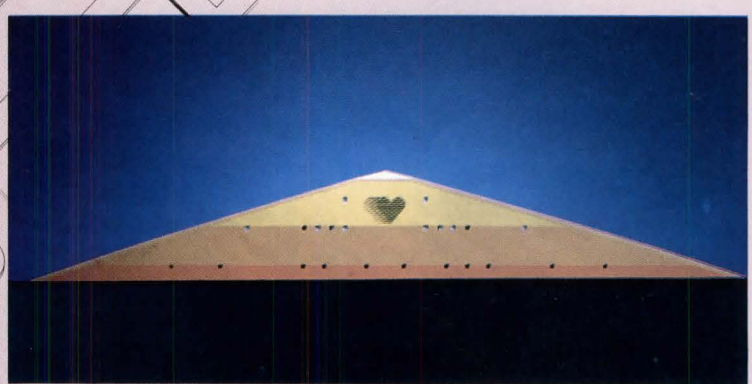
In Progress

The nine projects shown here range from a heart clinic to an elementary school, history museum, and convention center.



1 PHYSICIANS' OFFICES
2 EXAM ROOMS
3 LIBRARY
4 RECEPTION
5 BUSINESS OFFICES



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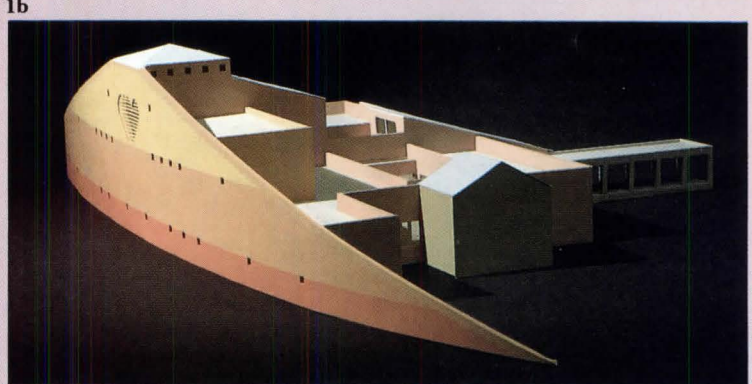

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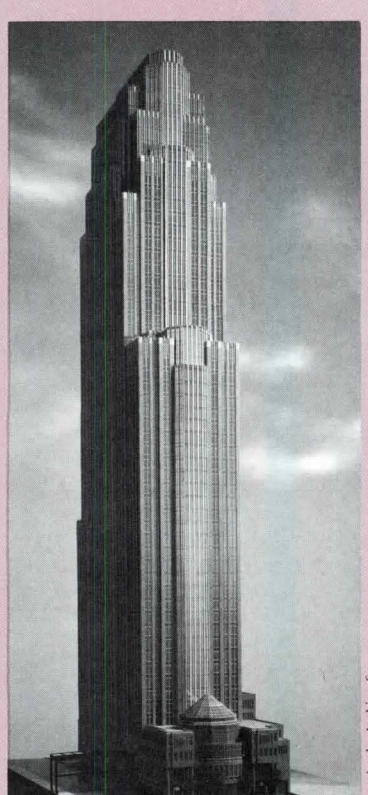
Photos: Robert Reck



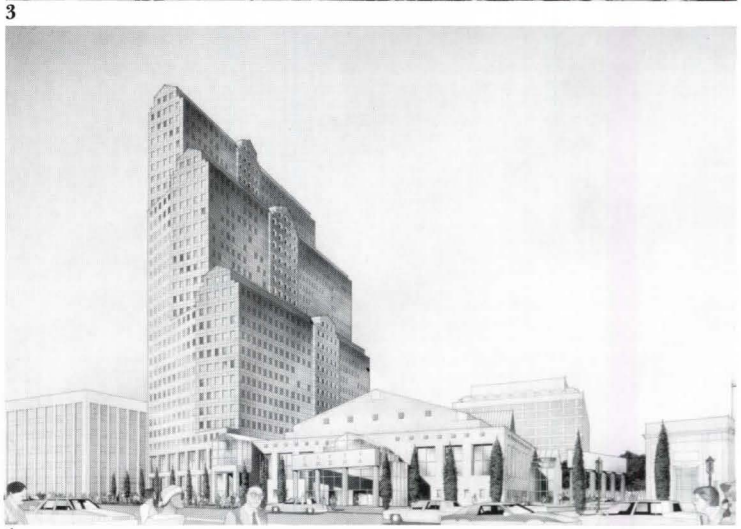
Drawing by Archigraf

2

1 New Mexico Heart Clinic, Albuquerque, New Mexico. *Architect: Antoine Predock, Albuquerque.* Sited on a freeway near a major medical facility, this clinic houses the offices of six cardiovascular specialists. The office "village" is protected from the highway by a monolithic masonry wall, while presenting a residential-scale assemblage to arriving patients. The doctors' offices occupy a second floor above examination and waiting rooms.

2 Norwest Center, Minneapolis, Minn. *Architects: Cesar Pelli & Associates, New Haven, Conn.* This elegant 57-story office tower, reminiscent of Rockefeller Center's RCA Building in New York, is the second tower designed for this site by Cesar Pelli. The project was revived by Gerald D. Hines Interests; Norwest Corporation remains the office tower's principal tenant. Artifacts saved from the old Northwestern National Bank Building, which occupied the site until its destruction by fire in 1982, are to be incorporated into the new tower; these include six monumental chandeliers to be hung in the new rotunda, sculptured bronze plaques and cast plaster medallions. The new tower's façade is composed of local Kasota stone and glass, accented with white marble and polished gold elements at setbacks. The building is to be completed by the summer of 1988.

3



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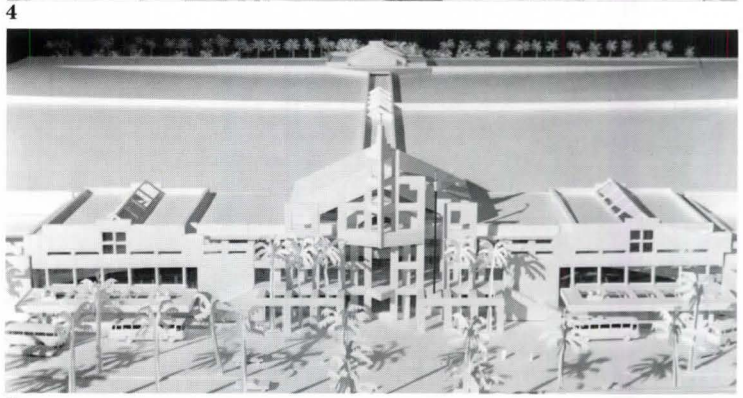

5

3 Washington State Convention and Trade Center, Seattle, Wash. *Architects: TRA + HNTB, Seattle; design consultant: Pietro Belluschi.* This 370,000-square-foot convention center spans Interstate 5, and its 60-foot-high, glass-enclosed lobby overlooks downtown Seattle and Elliott Bay. The 1 million-square-foot, phase-one development includes a 1000-car parking facility, a retail galleria connecting to a historic building that is to be restored privately as part of the project, and a major new park adjacent to Freeway Park. The second phase proposes an 800-room hotel and office tower adjacent to the convention center.

4 Trenton Center and Civic Arena, Trenton, N.J. *Architects: The Hillier Group, Princeton, N.J. and Clarke & Caton, Trenton.* The revitalization of New Jersey's state capital continues with this $160 million complex, which includes a 32-story office and hotel tower; a 10-screen movie theater and retail galleria; a 10,000-seat civic arena; and 20,000 square feet of exhibition space.

5 Miami Beach Convention Center addition, Miami Beach, Fla. *Architects: Thompson, Ventulett, Stainback & Associates, Atlanta, with Borelli, Frankel, Blitstein, Miami Beach.* This addition will provide Miami Beach with the largest exhibit hall on a single floor in the country, totaling half a million square feet. The program also calls for 70,000 square feet of meeting rooms and a new lobby concourse facing the ocean. The expansion is to be completed in early 1989.

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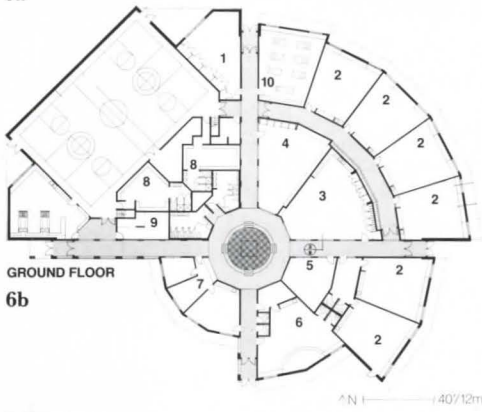

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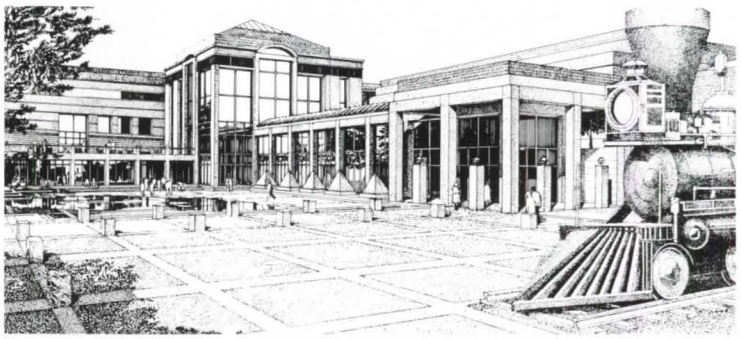

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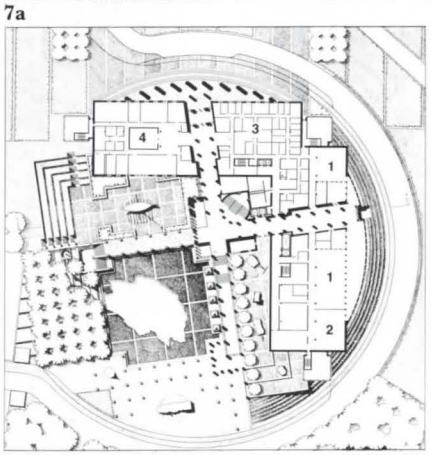

7b GROUND FLOOR

6 Sioux Valley Indian Reserve School, Manitoba, Canada. *Architects: Smith Carter Partners, Winnipeg, Manitoba; architectural consultant: Douglas J. Cardinal.* The fan-shaped plan for this K through 9 school in the Sioux Valley Indian Reserve is cut into four quandrants by north/south and east/west axes. At the point of their intersection is a common activity space, inspired by the traditional "power source" of Sioux communities. The higher gymnasium building forms an abstracted eagle, symbol of strength. The school is to be constructed with community participation.

7 Minnesota History Center, St. Paul, Minn. *Architects: Hammel Green & Abrahamson, Inc., Minneapolis.* Selected through a national design competition sponsored by the Minnesota Historical Society, this $50 million center occupies a site near Cass Gilbert's State Capitol precinct. Collections are stored below grade, with archival reference areas, including a teaching gallery and reading room, located at grade. Galleries and administrative offices are on the second floor. Construction is scheduled to begin next summer.

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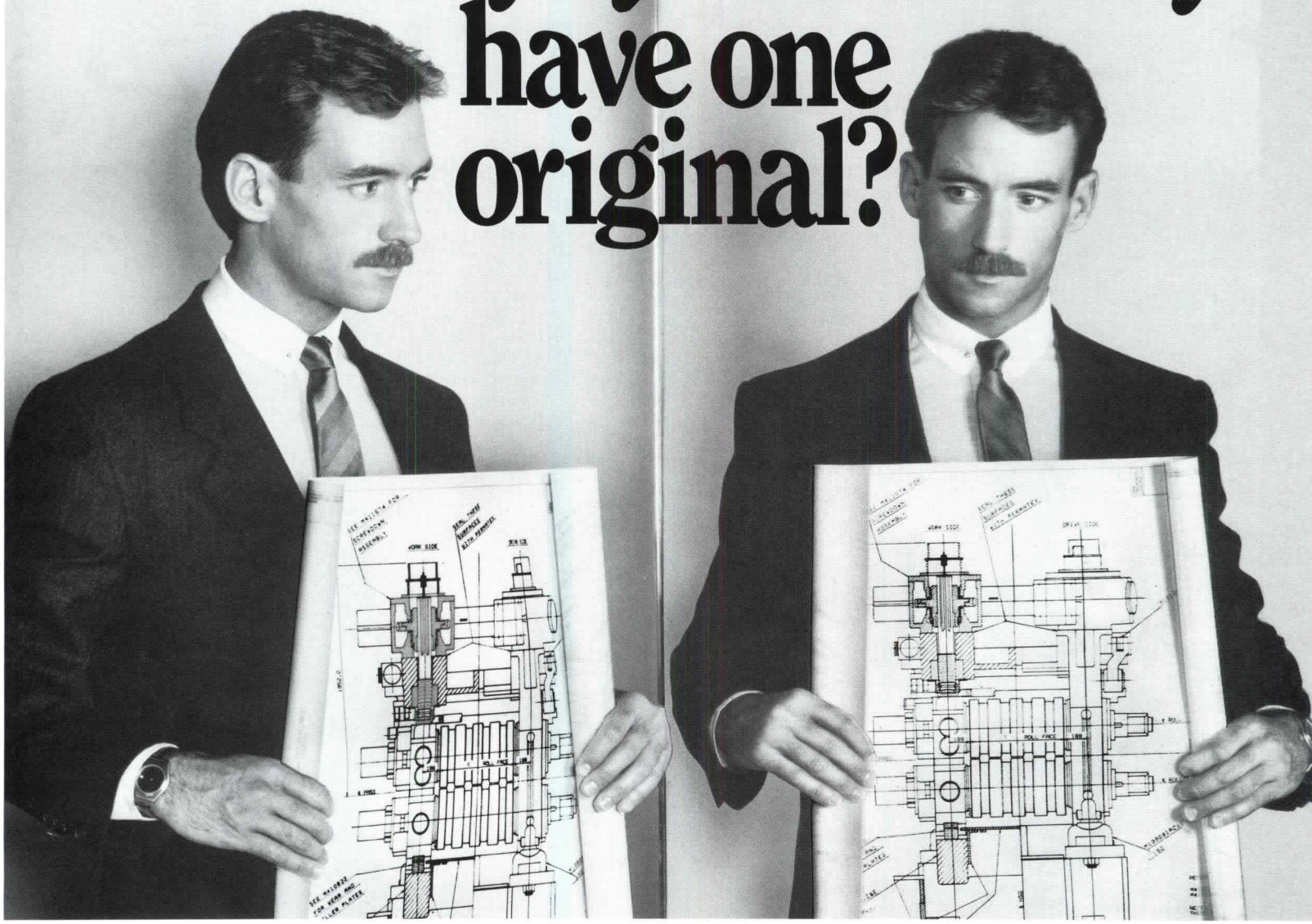

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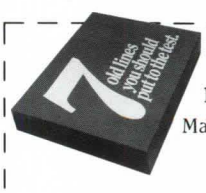

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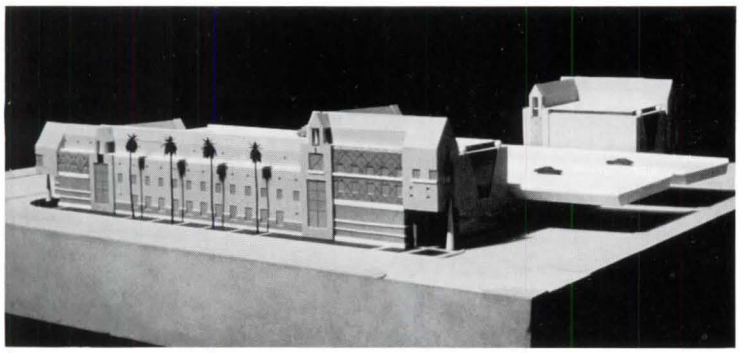

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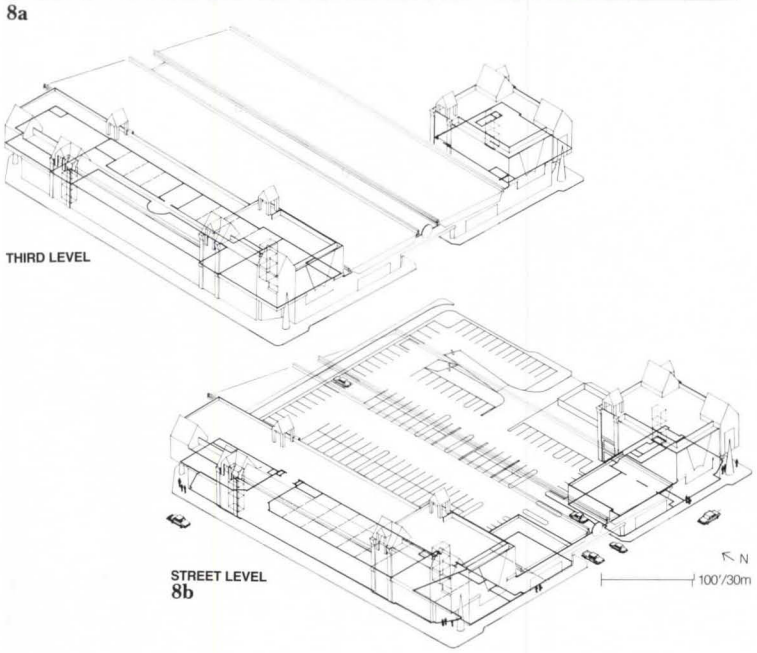

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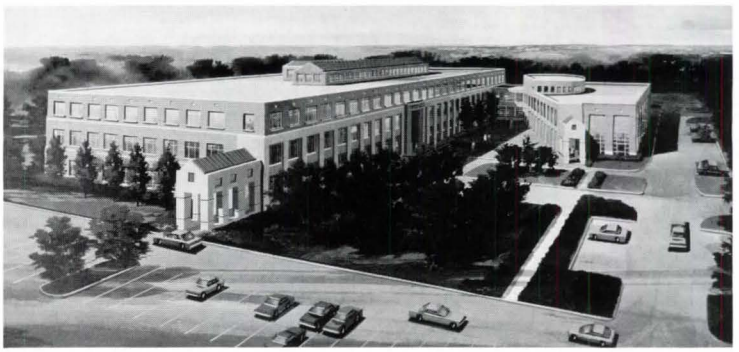

9

8 Sutter Square, Sacramento, Calif. *Architects: Leason Pomeroy-Felderman Associates, Los Angeles.* This skylighted, three-story retail arcade adjoins one of two four-story office towers that flank a freeway. The façades of the $4 million, 83,000-square-foot commercial center, now under construction, are to be constructed of concrete block, pigmented plaster, ceramic tile, green and gray glass, and ornamental metal. Sutter Square is one of several projects, including storage-locker facilities and manufacturing plants, proposed for sites along and beneath Interstate 80, a 20-year-old highway that bisects downtown Sacramento.

9 Central Bank of the South, Administrative Headquarters, Birmingham, Ala. *Architects: Kidd Plosser Sprague Architects, Birmingham in association with Morris Architects, Houston.* This 300,000-square-foot, $20 million brick and precast concrete structure will form the electronic nerve center for the statewide bank. Large, flexible floor areas surround a three-story skylighted galleria; a separate building houses public functions and training facilities. The complex is to be completed in early 1988.

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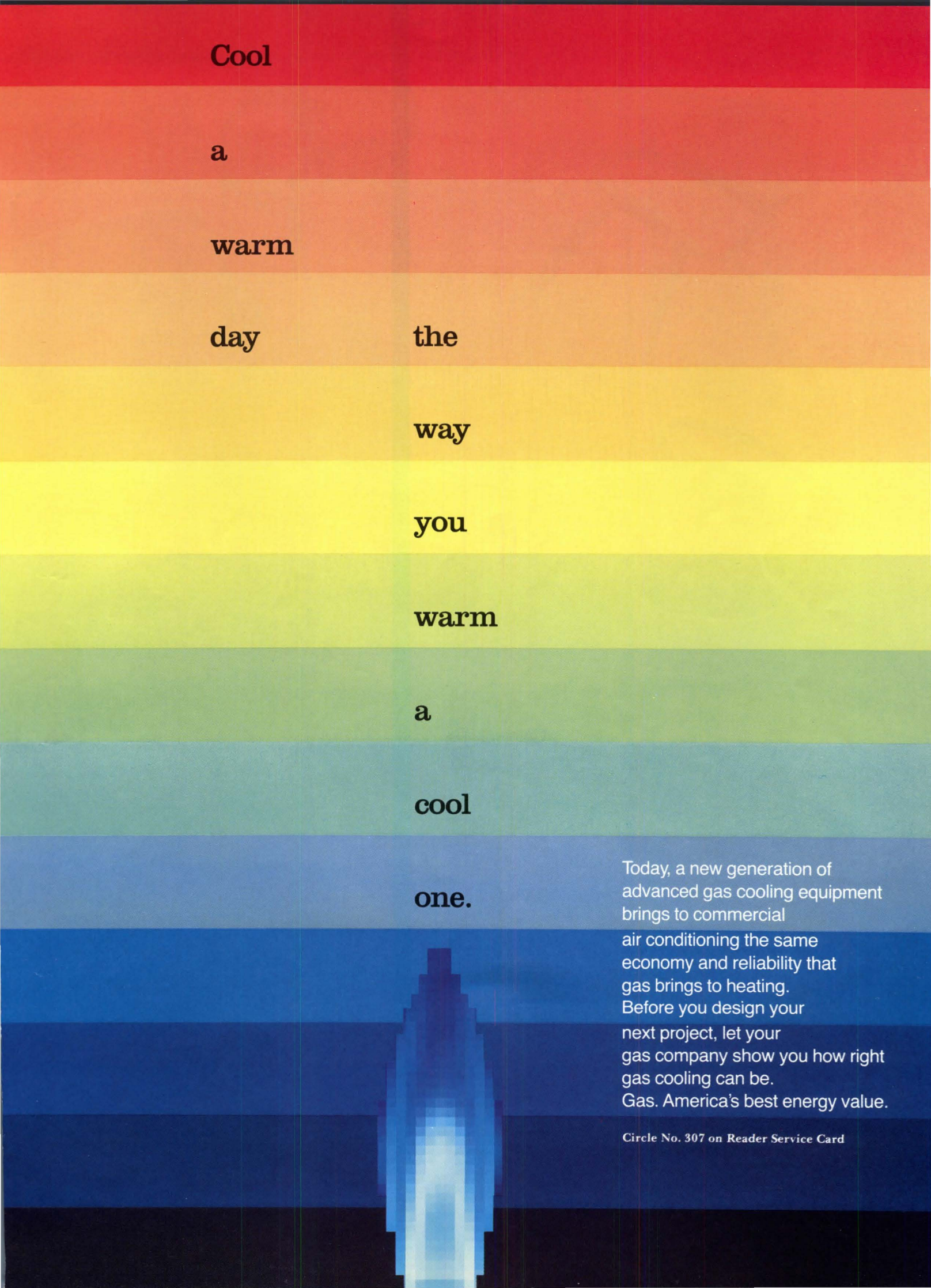

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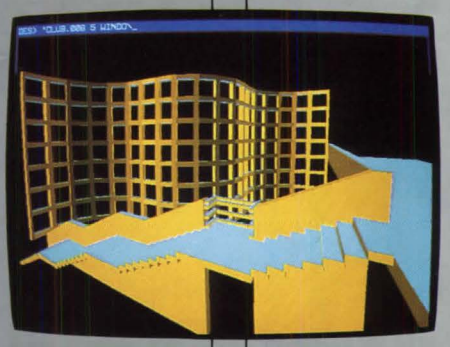

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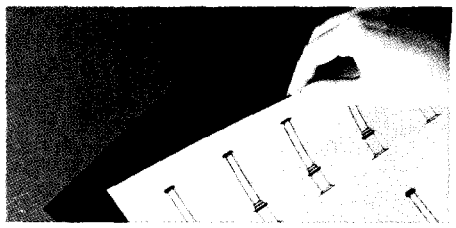

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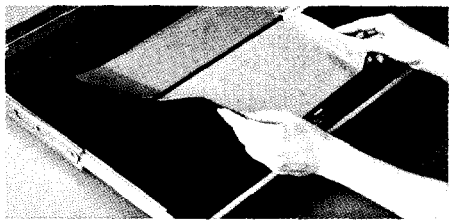

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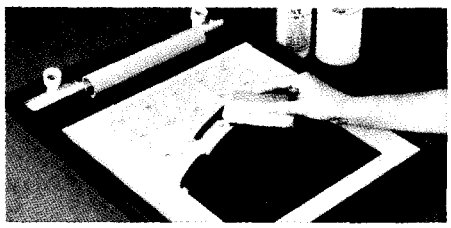

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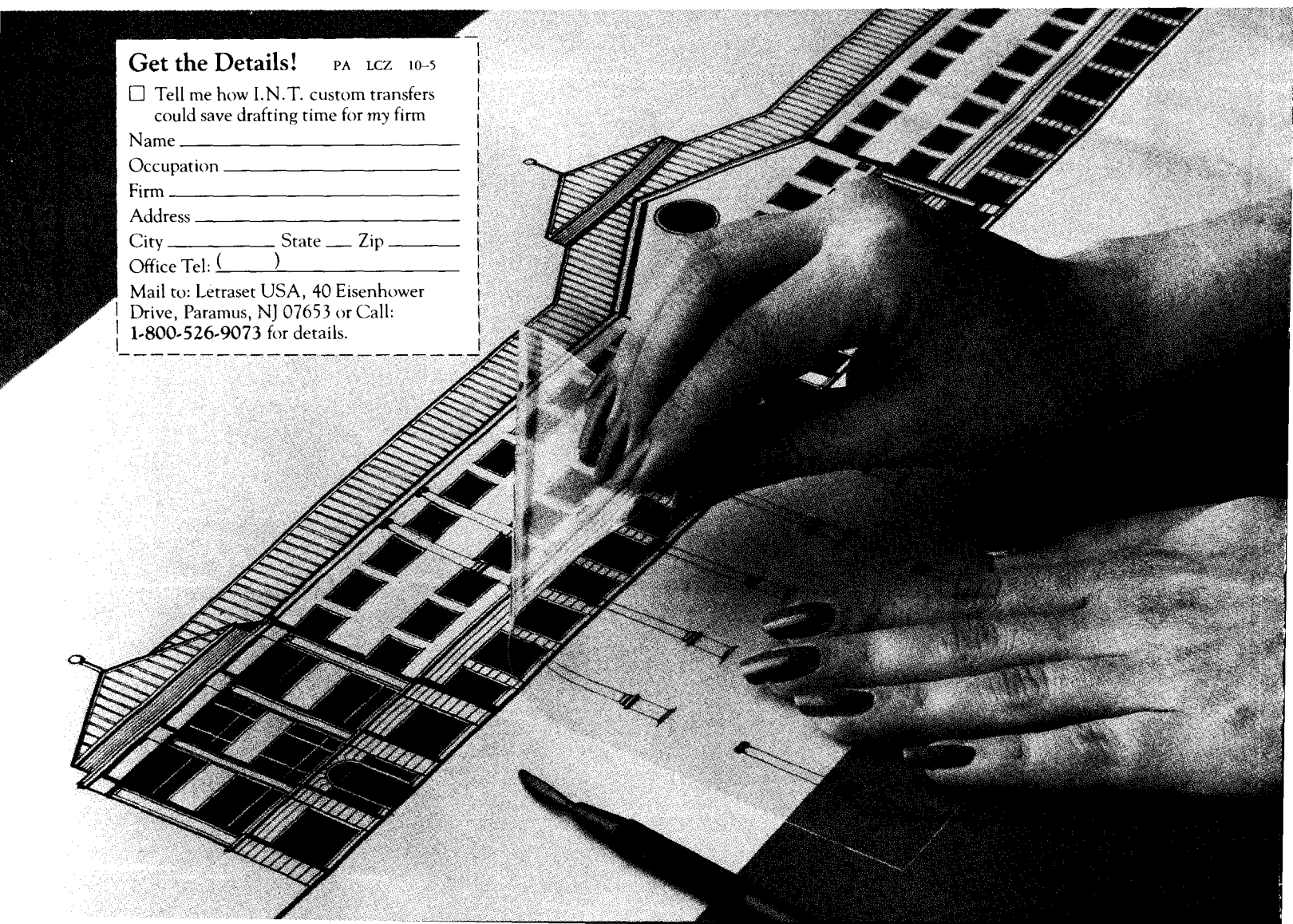
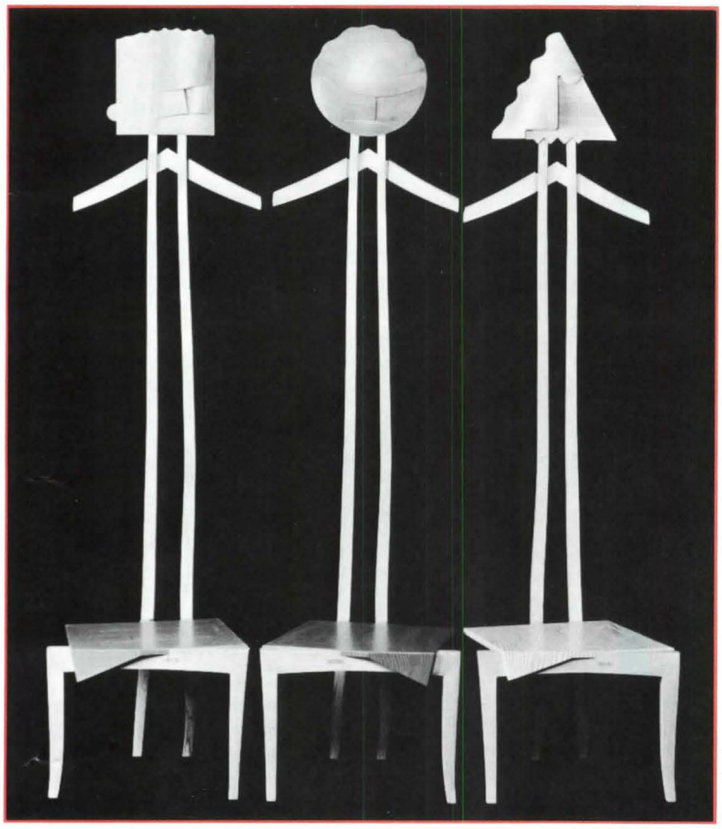


P/A Calendar



George Erml

Alphonse Mattia, Geometric Valets, 1986. From Craft Today, Oct. 26.

Exhibits

Through October 17
Hugh Stubbins and the Stubbins Associates: The First 50 Years. Gund Hall Gallery, Harvard University, Cambridge, Mass.

Through October 22
Vienna 1900: Art, Architecture and Design. The Museum of Modern Art, New York (P/A, Aug. 1986, pp. 23, 27).

Through October 26
Tokyo: Form and Spirit. Museum of Contemporary Art, Los Angeles (P/A, April 1986, p. 108; review, P/A, June 1986, p. 24).

Through October 31
Norman Foster: The Arts Centre and Mediathéque of Nîmes. French Institute, London (P/A, Feb. 1985, pp. 23–24).

Through November 2
The Building of UC Santa Cruz. Mary Porter Sesnon Gallery, University of California, Santa Cruz, Calif.

Through November 8
Viennese Design and the Wiener Werstätte. Galerie St. Etienne, New York (P/A, Sept. 1986, p. 38).

Through November 9
Visions of the City: City Life and Hugh Ferriss: Metropolis. Walker Art Center, Minneapolis.

Through November 9
Alvar Aalto, Furniture and Glass. Craft and Folk Arts Museum, Los Angeles (P/A, Nov. 1984, pp. 34–36).

Through November 9
Frank Lloyd Wright and the Johnson Wax Buildings: Creating a Corporate Cathedral. Herbert F. Johnson Museum of Art, Cornell University, Ithaca, N.Y. (P/A, April 1986, p. 27).

Through November 16
The Architecture of Frank Gehry. Walker Art Center, Minneapolis.

Through November 23
The Drawings of Friedrich Weinbrenner, Architect of Karlsruhe. Arthur Ross Gallery, University of Pennsylvania, Philadelphia.

Through November 23
Building a Borough: Architecture and Planning in the Bronx, 1890–1940. The Bronx Museum of the Arts, Bronx, New York.

Through December 1
Ornamental Architecture Reborn: A New Terra Cotta Vocabulary. National Building Museum, Washington, D.C. (P/A, Aug. 1985, p. 25).

Through December 21
New Architecture: Foster, Rogers, Stirling. Royal Academy of Arts, Piccadilly, W. 1, London.

Through December 28
The Architecture of Richard Morris Hunt. The Octagon, Washington, D.C. (P/A, May 1986, p. 28).

Through January 1
The Function of Ornament: The Architecture of Louis Sullivan. Chicago Historical Society, Chicago (P/A, Sept. 1986, p. 23).

Through January 4
Drawing Toward Building: Philadelphia Architectural Graphics, 1732–1986. Pennsylvania Academy of the Fine Arts, Philadelphia.

Through February 28
Bauhaus. MIT Museum, Cambridge, Mass.

Through March 2
Twentieth Century Design. The Brooklyn Museum, Brooklyn, N.Y.

October 12–April 19
American Furniture from the Kaufman Collection. National Gallery of Art, Washington, D.C.

October 20–December 19
Charles Moore Retrospective. Williams College Museum of Art, Williamstown, Mass.

October 23–January 11
In Pursuit of Beauty: Americans and the Aesthetic Movement. The Metropolitan Museum of Art, New York.

October 26–March 22
Craft Today: Poetry of the Physical. Inaugural Exhibition of the American Craft Museum, New York, N.Y.

November 9–January 4
Oskar Schlemmer. Walker Art Center, Minneapolis.

November 9–January 4
Gordon Matta-Clark: A Retrospective. Stadtisches Museum Abteiberg, Monchengladbach, West Germany.

November 16–February 16
Alexander Archipenko: A Centennial Tribute. National Gallery of Art, Washington, D.C.

November 20–February 10
Mario Botta. Museum of Modern Art, New York.

Competitions

October 17
Registration deadline, National Design Competition for Artists Live/Work Space. Send $45 registration fee with name and address to Michael Robinson, AIA, AICP, Vision, Inc., The Center for Environmental Design and Education, 219 Concord Ave., Cambridge, Mass. 02138.

October 31
Deadline, 1986 Wood Remodeling Design Award Program. Contact American Wood Council, 1250 Connecticut Ave., N.W., Suite 230, Washington, D.C. 20036 (202) 833-1595.

October 31
Pre-selection submission deadline, International Ideas Planning Competition for the New Town of Melun-Senart, France. Contact Etablissement Public D'amenagement de Melun-Senart, La Grange-le-Prevote, 77547 Savigny-Le-Temple Cedex, France (tel.) (1) 60 63 90 22.

November 1
Deadline, Second Classical America Competition. Contact Classical America, P.O. Box 821, Times Square Station, New York, N.Y. 10108.

(continued on page 54)

PRAIRIE AVENUE BOOKSHOP

Calendar *(continued from page 53)*
November 14
Deadline, International Interior Design Award. Contact IIDA

November 4–6
Training Course on Downtown Revitalization. St. Paul Hotel, St. Paul, Minn. Contact National

P/A Practice

Failures: Raymond DiPasquale reports on a wood truss failure.
Law: Norman Coplan discusses "vouching in," used to involve an architect in a dispute between owner and contractor.
Research: Thomas Fisher reviews a software study by Harvard's Laboratory of Computer Graphics.

Failures:
Wood Truss Roof

The wood truss is a building "workhorse." It is economical and efficient, easy to fabricate and erect, and allows clear spans with a minimum of material and weight. Although generally used for framing roof systems, it also has been used in long-span floor construction. Failures are often reported in the Northeast during the winter months when heavy, wet snow loads push roof systems beyond their ultimate capacity. In addition to overload, there are other factors that can precipitate a failure in a wood truss system. The case study below illustrates some of these factors.

1. The Problem

A 60-foot-long clear-span wood roof truss system collapsed about an hour after the last truss had been erected and the workmen had left the site. The trusses involved formed the lower section of a two-part "piggyback" type triangular truss with a final pitch of 7/12. Trusses had been erected with a truck crane and spreader bar, and were spaced 24 inches on center.

2. Background Data

Wood trusses are designed and made to order. The architect or builder specifies the overall profile of the truss and the live load (generally snow load) requirements. Orders are generally processed by lumber supply companies and fabricated either by them or by a specialty manufacturer.

There are several consulting firms that specialize in the analysis and design of wood trusses for the many lumber companies that fabricate these trusses in their own facilities. The truss designers assume that all the joints are pins and loads are applied only at the panel points or joints. The members are then designed in either pure compression or pure tension. Most of the analysis and design today is done by computer since it is fast and accurate and can handle secondary effects. Computer output includes a graphic diagram of the truss configuration along with the size of each member and notes about the connections. Most states require that the structural design be done under the supervision of a licensed professional so the document that the fabricator uses to make the truss usually has an appropriate seal. The actual fabrication, however, is seldom supervised by a licensed professional—a basic problem.

Even though designers assume that the joints in a truss are pinned or free to rotate, we know that, in actual fabrication, the connection is made with a gusset plate that provides some restraint or rigidity to the connection and that results in some secondary stresses during service loading. Some computer programs account for this restraint in the design of the members and the joint connection. The gusset plates are rectangular or square and made of light-gauge metal with either holes for gang nailing or pre-formed lugs that only require hammering to make the connection. The metal gusset plate detail allows the fabrication to proceed very quickly when joining the pre-cut wood members. (Some gusset connections are made with plywood, which is either nailed, or glued and nailed, resulting in considerably more restraint at the joint than that provided by the light-gauge metal plates.)

The other assumption made in the design of the truss system—that the loads, whether dead or live, are applied at the panel points—is also not completely satisfied in actual use since the sheathing is nailed to the top chord and load is applied continuously along the chord's length. This introduces local bending in the top chord. The same occurs if a ceiling is attached directly to the bottom chord. The full consideration of these secondary stresses in the final design depends upon the sophistication of the computer program. It is important that the end user, designer, and specifier understand that these conditions

(continued on page 58)

Law:
Vouching-In

The form "owner-architect contract" developed by the American Institute of Architects provides for arbitration of disputes between architect and client. However, as protection against being dragged into disputes between the owner and other parties, where the architect's involvement may only be peripheral, the AIA contract also provides that no arbitration between owner and architect shall include, by consolidation or joinder, any other party except by written consent. This provision prevents the owner from suing the architect as a third-party defendant in an arbitration proceeding instituted by the contractor against the owner. If, in such a proceeding, the contractor obtains an award of damages against the owner arising from some failure on the part of the architect to perform properly, the owner's only remedy is to institute an independent proceeding against the architect in an attempt to secure indemnification.

From the architect's point of view, barring consolidation or joinder in an arbitration proceeding is justified by a history that, prior to the adoption of such language, was replete with examples of architects expending great amounts of money and time in arbitration proceedings that primarily involved disputes between owner and contractor. However, an owner who is subject to a contractor's claim, allegedly based upon the performance failure of the architect, will obviously be frustrated if he cannot bring the contractor and architect into one arbitration proceeding and have all issues resolved at the same time. A novel legal approach to achieve this objective indirectly and to avoid the limitations of the language contained in the AIA form contract was recently attempted but rejected by the court in a significant decision, which undoubtedly will be wel-

(continued on page 63)

Failures *(continued from page 57)*
could cause overstressing which could result in performance failure of the truss.

3. The Cause

In failures of this kind, there are usually several causes of the *complete* collapse of the system, but only one "trigger" that sets the system in motion. An examination of the collapsed pieces "as they lie" is the only reliable way to determine the probable "trigger." At the time of installation, this roof structure consisted of closely spaced truss elements unsupported at the top and bottom chords. Since the roof sheathing was not yet in place and temporary bracing between elements was "nominally" attached to adjacent members, there were no elements in the system strong enough to buttress the momentum of a progressive collapse.

On the basis of the collapse pattern and the way the trusses had flipped over, it was possible to pinpoint the area where the collapse had begun. The direction and inclination of the temporary horizontal and diagonal bracing installed between the trusses also influenced the collapse. The investigation concentrated in the trigger location and implicated a specific truss that had serious material defects at one end.

Within inches of the first lower chord panel point at the end of this truss, there were two knots aligned in the lower chord approximately 1½" in size, and about 2½" apart. Directly above these knots, located in the web member which comes into the same joint, were two more knots of the same size and configuration. In general, knots decrease the strength of wood because their grain is at a wide angle to the grain of the wood and because the grain around them is distorted. In the lumber drying process, checking also can occur around knots because of stress concentrations that take place during drying shrinkage. The weakening effect of knots is greatest when wood members are in tension and torsion rather than in compression. Where shear stresses are present, a knot reduces strength not so much because of the shear stresses per se, but because of the diagonal tension that is produced as a result of the shear.

The stress situation in these trusses is anything but precise and straightforward. At the joint in question, the bottom chord was in tension, and the diagonal web member and the top chord were in compression. The gusset plate provided some joint restraint, so there were some local bending stresses (tension and compression in the same member) and shear stresses in the joint plate itself and in the members which met at the joint.

During the erection process, the trusses also are subjected to all kinds of erection stresses: stress reversals, torsion, out-of-plane bending, buckling, and localized stress concentrations. The truss members are absolutely unstable in a direction perpendicular to their own plane. When they are transported and lifted into place, they are invariably bent in the weak direction, so in addition to all the other stresses noted above, there can also be local yielding at the gusset plates. In some rare instances the metal itself yields. In most cases the wood yields (because it is softer) at the points where the connector lugs are driven into the wood. The connector is thereby loosened and, as was observed in the wreckage, is easily dislodged under slight impact.

4. Implications

Material defects in prefabricated wood trusses are manufacturer related, whether or not these defects are latent or obvious, and are the result of improper quality control prior to shipment. In this case, it may very well be that there were other factors that contributed to the *total* collapse of the system. Material defects in themselves do not necessarily lead to total system failure. When there is redundancy (alternate load paths) in the system, a structural member with a defect that is subjected to stress levels beyond its capability will fail *locally,* but the system itself will remain intact. During the early phases of the construction of any building, there is very little redundancy, so it doesn't take much of an irregularity to cause extensive damage. But a defect is a "defect," and if it does not result in a failure during the early life of the structure, it could cause a failure under full live load many years later, in which case the results could be more catastrophic.

Here, a more substantial temporary bracing system might have prevented the total collapse of the roof, but its adequacy or lack of adequacy was not the *primary* cause of this failure. The contractor was given guidelines by the truss manufacturer for bracing the trusses during installation. There was evidence in this case that the contractor did not follow all the recommendations; however, many of them, he did.

Inadequate bracing is often cited as the major cause of roof truss collapse during construction. This investigation, however, found several other areas of non-conformance with good practice and standard specifications. Some of the defects noted were:

- Use of lumber of inadequate dimension at joints where forces were high.
- Knots located in gusset plate contact area.
- Gusset plates not centered on several joints.
- Gusset plate lugs not adequately embedded in the lumber.
- Defective lumber used. Attempt to repair split lumber with a plate. Truss should have been rejected and never shipped to the site.
- Lack of fit-up at truss end.
- Inadequate connector sizes.

Poor fit-up of joint. Reduced lumber section at joint due to improper finishing.

In view of the material defect trigger and the many other deficiencies noted in the fabrication of the truss components, the truss manufacturer bore the burden of responsibility for this incident.

5. The Fix

Since the failure was confined to the roof system, the fix was easy. New trusses were fabricated and installed. Anchorage of the truss ends to the wood bearing walls was nominal at the time of the failure so the walls remained intact.

In the rebuilding, the contractor followed *every* recommendation promulgated by the Truss Plate Institute (TPI) for bracing the system. The trusses were long and high with unusual stability problems.

6. How To Avoid (A Checklist)

a. The architect or engineer should make a cursory "inspection" of the trusses at the time they are delivered and before they are erected in place. Things to look for:

- Use of inferior lumber. Since trusses are generally hidden from view, the fabricator may be tempted to use material with excessive knots or splits, or of a stress grade below that assumed in the design.
- Installation of the gusset plates. They have to be large enough to embrace all the members that meet at a joint. They have to be centered on the joint so that the lugs or nails are fastened to all the members in proportion to the forces that are transferred at the joint.
- Use of warped lumber or inadequately dried lumber. This can result in joint eccentricities or shrinkage distortions that can produce secondary stresses during service loading.
- Improper joint fit-up. If individual members are not cut to the correct length, the truss will be distorted in order to make the connection or too much gap will exist under the gusset. This again results in eccentricities and secondary effects.
- Knots in the vicinity of gussets. This is the basis for rejection.
- Damages during handling, shipment, and erection. The trusses are extremely flexible in the direction perpendicular to the plane of the truss and can be deformed during shipment on a flatbed trailer. During handling, they are often lifted in the weak direction. Stresses induced at the joints and in members during handling and erection can far exceed those experienced in real service; consequently there could be failure in the joint before the truss has ever been put in place. Look for loose lugs or nails, or deformed and bent gussets.
- Repairs made to damaged members. Reject them.

b. The design professional should *monitor* the installation without actually directing it. There are guidelines published by the Truss Plate Institute (TPI) spelling out, in detail, the recommended procedures for lifting, installing, and bracing wood trusses (see reference). Insist that the contractor follow them.

c. Check out the fabricator and his operation. Since trusses are relatively easy to make, many lumber dealers may be willing to fabricate them, but may not have the quality control procedures in place to assure a good product. When the manufacturer is under pressure to fabricate a large order in record time, quality control can suffer.

d. The specification for a truss is usually of the performance type. It does not dictate how the manufacturer will produce the truss but only that it will perform satisfactorily under service conditions. The performance specification should also insist that the design be produced

(continued on page 63)

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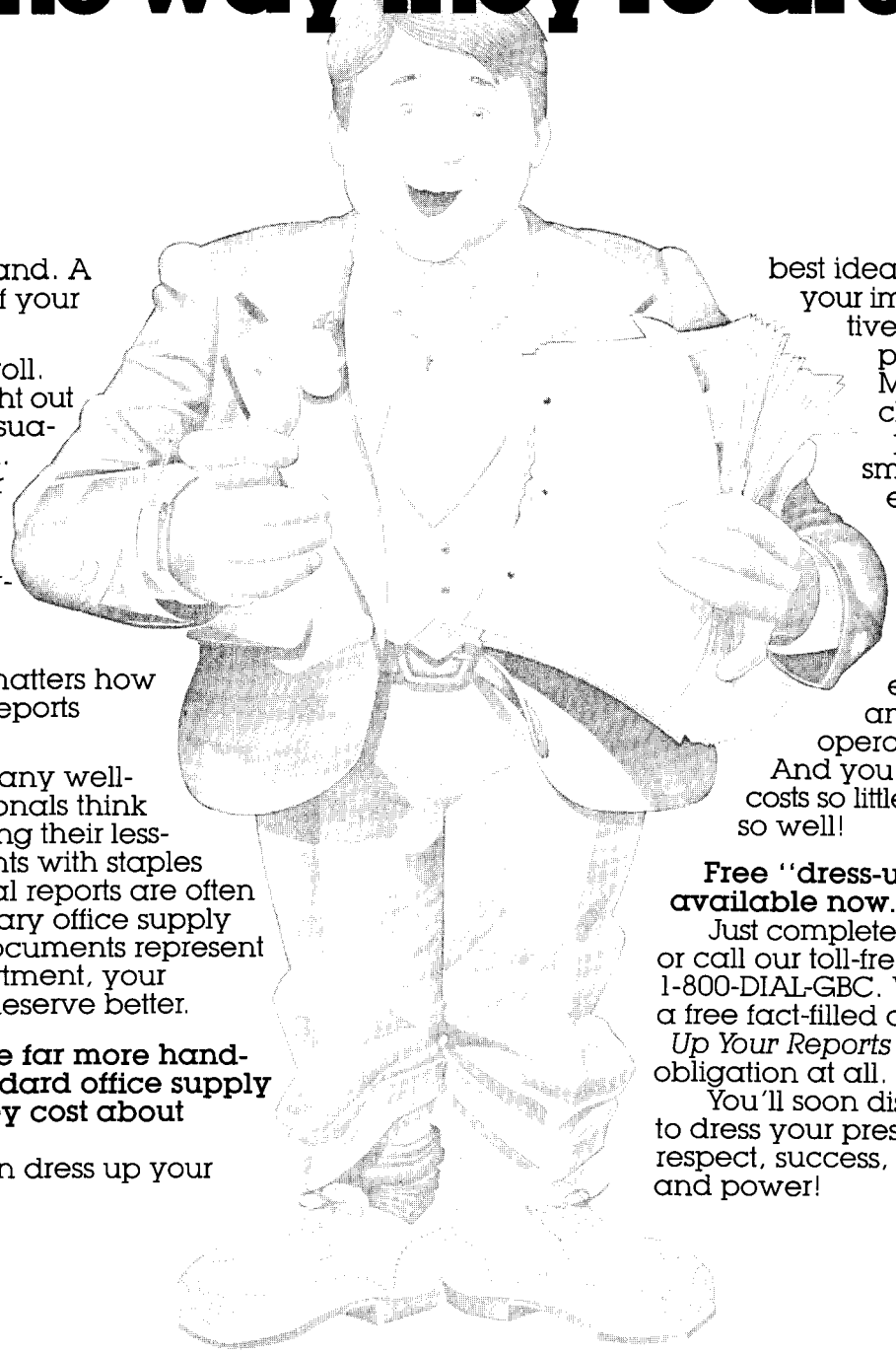

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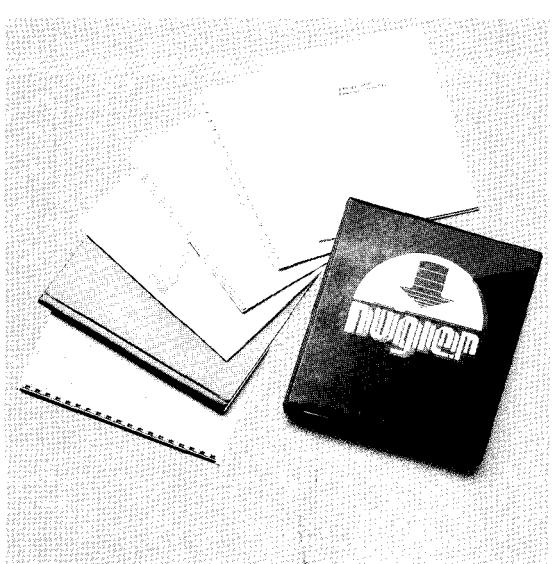

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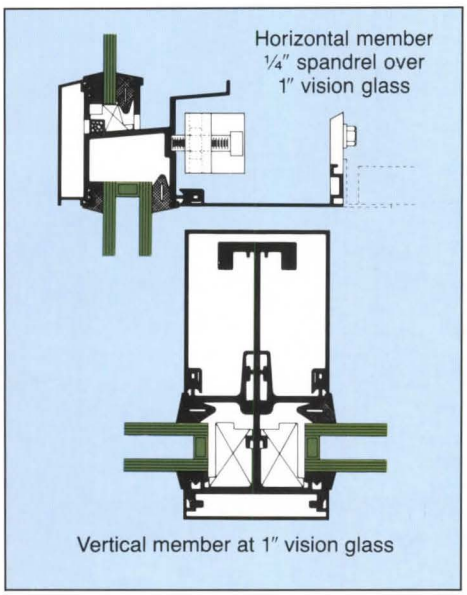

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Failures *(continued from page 58)*

and be *fabricated* under the direction of a licensed design professional (not necessarily the same person). The shop drawings representing the design of trusses are usually sealed by a professional, but having a professional direct the fabrication is something new.

The performance specification should be very explicit about the roofing and ceiling materials, and the loads to be applied to the top as well as the bottom chords. Sometimes information is sketchy and all the loads anticipated are not delineated. Failures have been caused by such underdesign.

7. Lessons To Learn

a. The potential for failure can begin during the very early life of a truss. Units that do not meet standards should be returned to the fabricator for replacement. Once the truss is incorporated in the job, it is very difficult to replace.

b. Bracing of trusses during installation is critical and often done in a haphazard manner. Almost all the failures of wood trusses during erection are caused by instability—and bracing is what prevents it.

c. The design professional has to get more involved with *every step* of the building process and develop a *total* approach that follows through the last detail. Depend on others, yes; but check on them! If you look at all the caveats on supplier's shop drawings, you'll soon realize that in the final analysis, the buck stops with the design professionals.

8. Legal Case Reference

No legal action was taken. The fabricator supplied new trusses and the contractor paid for the erection since there was some question that, if additional bracing had been installed, the failure may have been confined to a local area.

9. Other References

a. "Design Specifications for Light Metal Plate Connected Wood Trusses." Truss Plate Institute, Inc. (TPI), 583 D'Onofrio Drive, Suite 200, Madison, Wisc. 53719 (608) 833-5900.

b. "Bracing Wood Trusses: Commentary and Recommendations"; "Handling and Erecting Wood Trusses: Commentary and Recommendations"; "Quality Standards"; all published by the Truss Plate Institute, Inc.

c. "In-Plant Quality Control Procedures for Metal Plate Connected Wood Trusses"; "Code of Standard Practice"; both published by The Wood Truss Council of America, 111 East Wacker Drive, Suite 600, Chicago, Ill. 60601 (312) 644-6610. ■

Law *(continued from page 57)*

comed by the architectural profession: *W.J. Barney Corporation* v. *Long Island Jewish Hillside Medical Center*.

The contractor involved in this case had been engaged by the owner to construct an ambulatory care service area at a medical center. The contractor commenced an arbitration proceeding against the owner seeking damages of approximately $1,700,000. It was the contention of the owner that the contractor's claim arose out of delays allegedly caused by the architect and the architect's consulting engineers. The owner-architect contract provided that the architect would "indemnify and save harmless the Medical Center from and against all expenses, including but not limited to claims, liability, penalties, losses, fines, attorneys' fees and judgments resulting from the negligent performance of the services of the Architects, their agents, servants and employees under this Agreement." The owner, faced with contractual terms that prohibited him from bringing the architect directly into the contractor's arbitration proceeding or from commencing a separate arbitration against the architect and then consolidating the two arbitration proceedings, wrote a letter, through his attorneys, to the architect stating: "In view of the fact that (the contractor's) claims against (the owner) in this proceeding are based on alleged inadequate design and other acts and omissions of (the architect), the (owner) is entitled to indemnification. Accordingly on behalf of (the owner) we hereby *vouch* you into the arbitration proceeding and tender to you the defense against (the contractor's) claims."

The purpose of the letter was to commence a legal process known as "vouching in." This process is an archaic procedure little used today since most states have adopted a third-party practice that normally permits an indemnitee to implead an indemnitor in the same action or *(continued on page 65)*

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Law *(continued from page 63)*
proceeding instituted by the claimant. "Vouching in" is a common law procedure in which a defendant, by notifying his indemnitor of an impending suit based upon the indemnitor's inadequate performance and by offering him its defense, makes the judgment rendered against the defendant as binding on the indemnitor as on the defendant, whether or not the indemnitor participated in the suit or proceeding. Vouching a party into an action or proceeding does not technically make him a party to that proceeding and imposes no obligation on him to defend, although, if he is properly vouched in, he may be bound by the decision or judgment therein. If, in the case under discussion, the owner could bind the architect to an arbitration decision, even if the architect was not deemed a party in that arbitration, he would have skirted the restrictions contained in the owner-architect agreement and at the same time placed himself in a position to secure indemnification if the contractor secured an award against him.

The court concluded, however, that without a contract permitting vouching in, an indemnitor may not be vouched in to an arbitration proceeding. Although the court conceded that vouching in would not make an architect a party to the arbitration in violation of the owner-architect agreement, it might make the architect bound by any award made to the contractor against the owner. The architect then would be liable to the owner as if he had been a party to the arbitration. The court pointed out that, while the architect agreed to submit his disputes with the owner to arbitration, he had expressly rejected submitting to arbitration any dispute in which others' claims are also being arbitrated. It has long been the rule, said the court, that parties to a commercial transaction will not be held to arbitration as the forum for the resolution of their disputes without an express, unequivocal agreement to that effect. Absent such an explicit commitment, neither party may be compelled to arbitrate. Since the plaintiff did not agree to participate in an arbitration involving a third party, he cannot be compelled to do so indirectly through "vouching in" just as he cannot be compelled to do so directly through a third-party suit.

Norman Coplan, Hon. AIA ■

The author is a member of the law firm Bernstein, Weiss, Coplan, Weinstein & Lake, New York.

Research: Microcomputer Software

The Laboratory for Computer Graphics and Spatial Analysis at Harvard's Graduate School of Design has completed an extensive review of 63 microcomputer software programs. Supported by IBM, the research focused on software in ten areas: design representation, drafting, thermal analysis, acoustics, lighting, structural analysis, site engineering, real estate analysis, transportation planning, and geographic information systems.

The researchers identified and evaluated software most useful for design education. Because of that goal, some of the research, such as a study of design school curriculums, may have little relevance for practitioners. Some of its conclusions, such as the observation that many programs require advanced knowledge, also may not apply to specialists in a field.

Given those qualifications, the research has much to offer design professionals. It found, for instance, that most of the software analyzed suffered from difficult or confusing input and output, poor graphic capabilities, and unclear documentation—issues that affect all users, regardless of their expertise. The research also showed that the more limited the scope of the software, the easier it was to use. What emerges is a paradox. Microcomputer software vendors, as if to outdo each other by focusing on the most complex alphanumeric applications, have tended to neglect novice or graphically oriented users, some of the people most in need of microcomputer software.

The 19 volumes of the study are available separately or as a package from the laboratory at the GSD, 48 Quincy Street, Cambridge, MA 02138. ■

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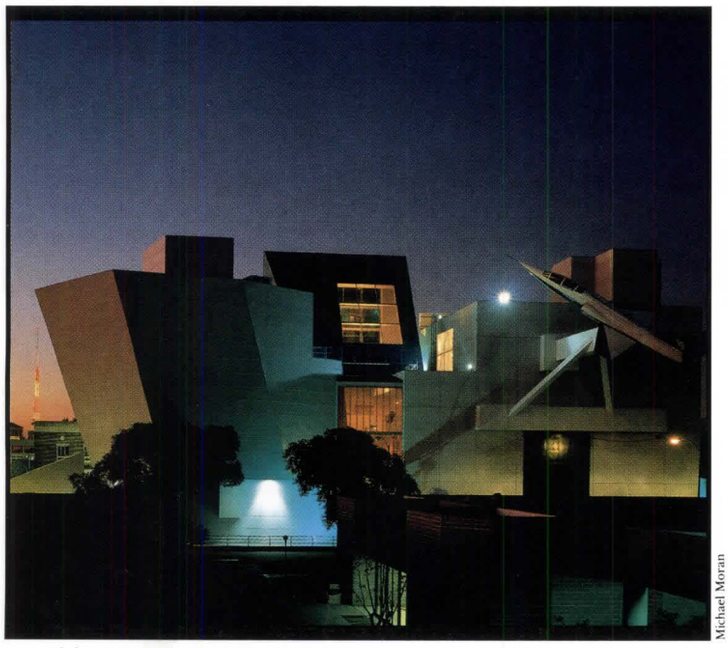
What You Know, You Question

Controversial, idiosyncratic, and highly innovative in his challenge of the traditional lines between art and architecture, Frank O. Gehry and his work are the focus of this issue of P/A.

Michael Moran

Mezzanine interior, Rebecca's, Venice, Calif.

Retrospective

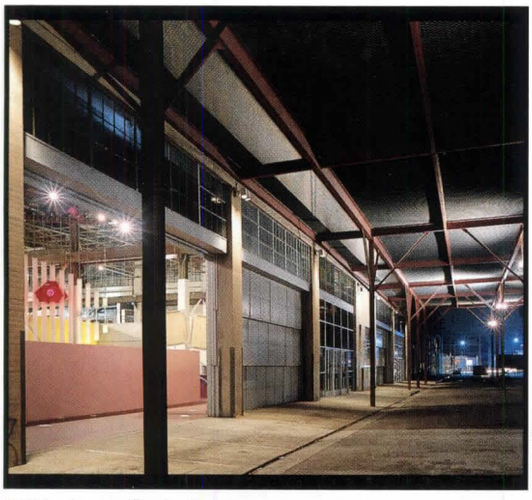


Michael Moran

***24** California Aerospace Museum*
Los Angeles, Calif. 1982–84

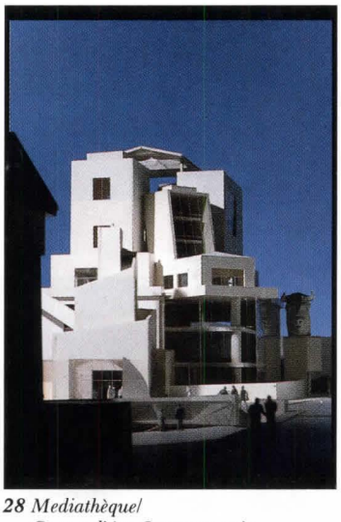
Michael Moran

***25** Loyola Law School*
Los Angeles, Calif. 1981–84

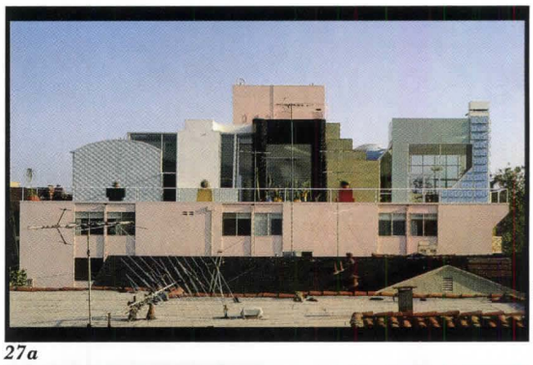


Michael Moran

***26** Temporary Contemporary*
Los Angeles, Calif. 1983



***28** Mediathèque/*
Centre d'Art Contemporain
Nîmes, France 1984



Michael Moran

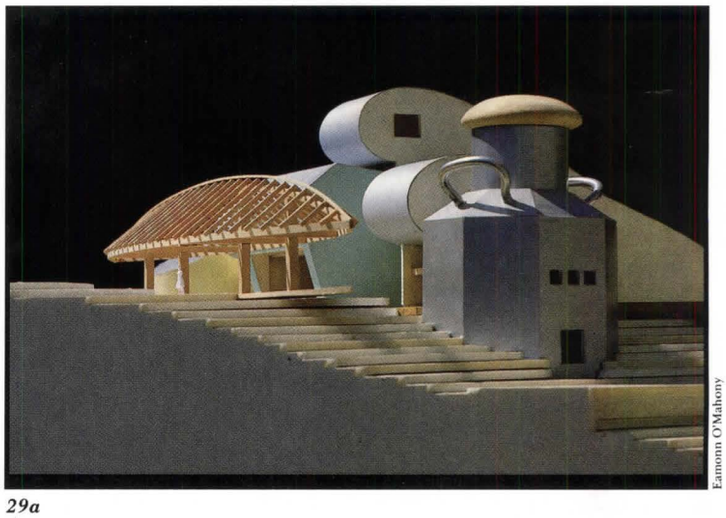
27a

Michael Moran

***27** Wosk Residence (also 27a)*
Beverly Hills, Calif. 1982–84

Eamonn O'Mahony

***29** Camp Good Times (also 29a), with Claes Oldenburg, Coosje van Bruggen*
Malibu, Calif. 1985



Eamonn O'Mahony

29a

In recalling some of Frank Gehry's earlier work, P/A correspondent Esther McCoy discusses the philosophy behind the firm whose buildings took the architectural profession by surprise.

HE had a blessed childhood in Toronto. His baby sitter was a blind boxer; the slot machines an uncle stored in the basement put Gehry in touch with the pop culture and made him the most popular boy in his class. When he came to Los Angeles at 17 it was like moving from one frontier town to another. In an uncle's bar in Hollywood he brushed against the boxing crowd, the movie crowd, and the gangster crowd.

His first easy knowledge of Los Angeles came from the cab of a Mack truck he drove while studying—first art, then architecture—at USC. When seen from an eminence, the miles of endless tract housing in San Fernando Valley, laid out on a grid between section lines, was dramatically monotonous. He saw how exaggeration can lift the commonplace to an art form. Others perceived this in time—painter Ed Ruscha, for one, drew on repetition of the commonplace. To isolate the commonplace is not easy; the eye refuses to see it. Gehry's path to it led past the lumber yard (constuction grade, the throwaway bin), to the cost sheet, to an office as unlikely as a three dollar bill.

From his first office in an old house across from the Greyhound terminal in Santa Monica, to the proper kind on San Vincente in Brentwood, to the light industry loft on Cloverfield Avenue, to the present one in Venice, they were one and all places that seemed just being reconverted or remaindered. As I walked into the Cloverfield loft one day, a puzzled delivery man asked me, "Are they just moving in or just moving out?"

They were just being comfortable, and that meant a constant interchange among themselves, and between architecture and the art objects in the office. The delivery man that day leaned against a 12-foot-high painted stake by Charles Arnoldi as if it were a post. Under the high truss, screen walls had been set up in the 5000-square-foot space, and on them hung three enormous canvases by Ed Moses, and a few Ron Davises, one an 8 x 10-footer in scale with the high space. You walked around a three-sided, head-height glass enclosure by Larry Bell to get from a table (made of corrugated cardboard) to a model of a beach house swathed in chain linking. The only art that had any semblance of museum treatment were five Frank Stella lithographs in Gehry's alcove office. It was live-in art. It was environment, not display. The flow of space was interrupted by endless pieces of corrugated paper tables, chairs, and just fantasies, and these were interrupted by work nooks as snug as the toe of a boot. Walking from one nook to another was as pleasurable as going from one Italian hill town to the next.

The uniqueness of the office went beyond the live-in art. Idle talk was also a way of life. Most offices have special departments for (or farm out) acoustics, lighting, department store display, and so on, as they do for engineering, soil analysis, traffic, etc. But as this is the sure way to discourage inventiveness, the whole Gehry office brushes against a problem.

Once Gehry gave a lecture series he called "The Available Technology." That said it: with the budget we have and the problem to solve, what are the alternatives to time-worn materials, practices, and forms? Asking such questions brought about a change in department store display. With the interiors of two stores to redesign for Joseph Magnin in 1968, Gehry drew upon the things learned in designing shows for the Los Angeles County Museum of Art. This was not a new route; Albini and Helg in Milan had found identical requirements for lighting art objects in museums and department stores.

Sound and light became Gehry's passions. He himself went to the experts and soon the whole office was talking light and sound. In the early 1970s, when the noise level from the freeway, air traffic, and the introduction of sound amplification made the old acoustical system of the Hollywood Bowl inadequate, the solution was not esoteric. It came from the lumber yard—Sonotubes were installed on the stage to improve the sound. The Neo-Classical aspect of these freestanding tubes, which have since been replaced by fiberglass spheres (Retrospective, 21), may well have led to the columns of the forecourt of the Loyola Law Building. Two other music shells, the Merriweather Post Pavilion in Columbia, Md., and the Performing Arts Pavilion in Concord, Calif. (8), were acoustically successful, despite the proximity of the latter to a freeway. Gehry threw up berms (asymmetrically, as does a volcano) to deaden traffic sounds. His favorite photograph of the pavilion shows it disappearing in the berms.

It was not the first—or last—time Gehry had minimized his work. For the 1964 Danziger Studio (2), he put a blank wall to the street and surfaced it with gray concrete plaster to make it cove into the sidewalk; he purposely used a rough finish to guarantee that it would collect dust from the traffic on Melrose Avenue. In this combined studio-residence, there are no eye-level windows facing the street, only screened courts. Interiors are lighted by clerestories in the 22-foot-high studio and by windows above eye level. In separating the studio from the rest of the plan, there are two strong, clear masses balanced by skylights escaping upward. Melrose is now an in-group street known for art galleries and pricey restaurants. Writing about it in the *1968 AIA Review*, I called it "a street on the make, with miserable buildings sitting there waiting for land values to rise." The street, I added, "does not receive many presents but the Danziger studio is one." Since 1968 the street has received another present by Gehry, the 1978 Gemini G.E.L. workshop and gallery (11).

"Available Technology" is the name of any young architectural office, not "the edge of absurdity," another Gehry description of his own work. Chain-link fencing fits both availability and absurdity. It was an answer, however, to a search that had plagued Gehry: where to find a translucent material tougher than glass. An office that could discover cardboard crating as a material for furniture is up to stretching from glass to chain link. In phase one it was used for screens, but in phase two the constructivist play began. Gehry said of the ten layers of chain link used at the Cabrillo Marine Museum (12), "The figures on the other side are ghostly. You can see into the souls of the people on the other side." Nothing is more ghostly than the cars inside the parking structure at Santa Monica Place (16); they shimmer into sight, then fade into ghostly presences behind the sea-colored steel links.

Of the many problems around to be solved, it is, as always, the small office with no research department, and no strict time allocation per job, that solves them. Greg Walsh, a former classmate at USC, who is Gehry's left hand and right eye, and who has been part of the office since it opened, once gave me a clue to their principles. He had taken me to see the 1971 Ron Davis house (4). He pointed out a bare electric meter on an exterior wall. Most architects would detail such items out of sight. "We don't do that anymore," he said.

It reminded me of Gehry's comment about asphalt paving he wanted in a front yard: "They'll add it later for parking so I want to get there first." (He had given the black top a roll at the end, like the capitals of an Ionic column.) The principle seemed to be: Don't overdetail, except when you think the owner may later have to depend on the aesthetics of a subcontractor when adding something. To a degree, this applies to many Southern California offices. Match Northern and Southern Californians on an architectural jury and the North admits the vigor of the South's ideas but deplores the detailing. The North now grants the vigor of Gehry's designs, deploring only the various spinoffs in Los Angeles and Orange counties. Chain link at Googie angles is now visible on many a back street. Freestanding columns bloom everywhere.

But it was only after Philip Johnson visited Gehry's art-laden office on one of his trips to the site of the Crystal Cathedral that Gehry was admitted to the east-west axis. His head is now in the line of fire.

Esther McCoy ■

Frances Howard Goldwyn
Hollywood Regional Branch Library
Hollywood, Calif.

Illuminated Manuscripts

To replace a public library building that was destroyed by arson, an unusual joint effort of city government and private-sector philanthropy was aided by Gehry & Associates, who produced a library that is inviting, comfortable, and surprisingly classical in its composition.

WHEN the Hollywood Regional Library was destroyed by arson in 1982, 80,000 books and an important collection of material on the film industry—not to mention a place that many members of the Hollywood community had often visited over the years—were lost. The books and the special collections could be, and were, replaced by private donations, but the building was another matter. Proposition 13 had severely reduced the capital spending program of the City of Los Angeles, so there was little hope of finding public money for the project. It was one thing to get private citizens to donate books and money, but who would donate a public library?

The answer came from the Samuel Goldwyn Foundation, a philanthropic organization founded in 1945 by the late movie producer to fund community service projects in Southern California, and which is headed by Samuel Goldwyn, Jr., president of The Samuel Goldwyn Company, the motion picture production and distribution company founded by his father in 1924. Sam Goldwyn, Jr., realized that the library's misfortune offered him the opportunity to give the Hollywood community what he calls "a state-of-the-art library," as well as a fitting memorial to his mother, Frances Howard Goldwyn, who was an avid reader and frequent visitor to the old Hollywood library. The Foundation offered to build the new library for the city and oversee the project until its completion. In this case, Los Angeles, represented by City Librarian Wyman Jones, would be the client, and the Goldwyn Foundation the patron. Part of the deal, however, was that the patron—not the client—would choose the architect, oversee the design and construction process, and deliver a completed building to the city. Goldwyn hoped to give Los Angeles an architecturally distinguished building, which was why he commissioned Frank O. Gehry & Associates, who had previously designed the Goldwyn Company's offices. He also hoped that the endeavor would offer a shining example of the possibilities of public and private-sector cooperation.

Both the client and the patron had strong feelings about what went into a state-of-the-art library. As City Librarian, and having acted as a consultant on 35 library building projects, Wyman Jones believed that "most public libraries are failures, because they aren't interesting enough, or because they don't function well—or a combination of the two." He was adamant on the subject of light. "One of the first failures of libraries is glare. But an interior shouldn't be dark and heavy. There should be natural light, no direct sun." While he left mattters of architectural design to Gehry and Goldwyn, Jones wasn't interested in what he called "the typical library, with nine-foot ceilings and pendant light fixtures." Neither, however, was he interested in a building that was difficult for visitors to "read." But he also believed that the new library should be inviting: "You should want to go there and stay there."

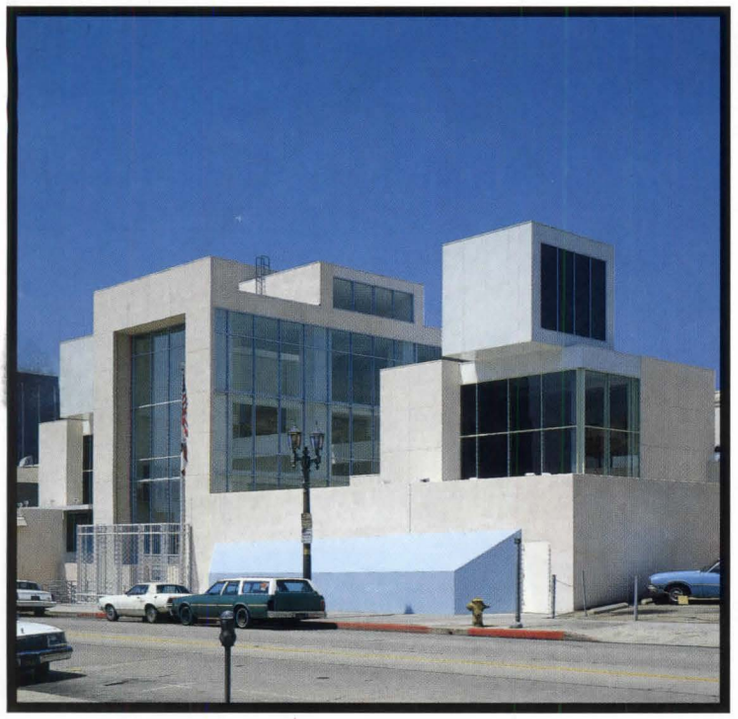
On that point, Sam Goldwyn was in total agreement. He felt that the new library should have the drawing power of the old movie palaces: "It ought to grab you and pull you inside." But he wasn't

(continued on page 84)

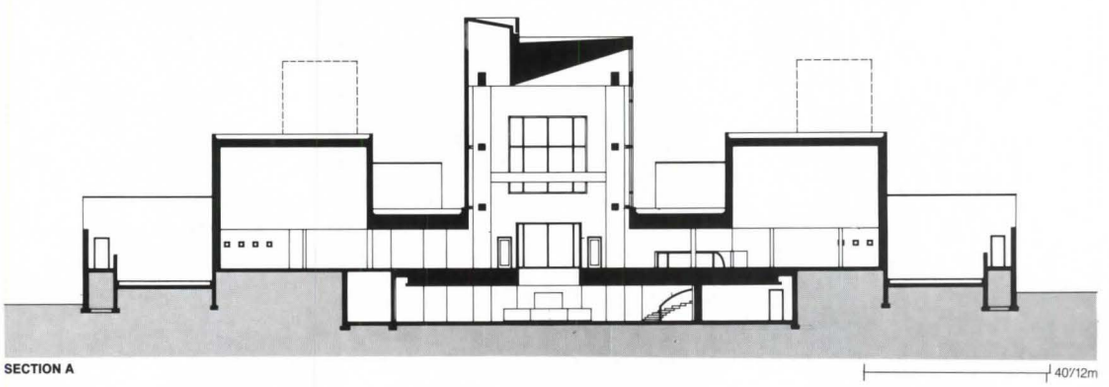
From Ivar Avenue, the façade of the library (right) rises behind the 15-foot-high security walls of stucco-covered concrete block (and anti-graffiti barricades covered in blue ceramic tile). The nearly symmetrical composition of the main floor (the entrance and ground floor are four feet below grade) comprises the tall central mass of the children's reading room, and the blocks of the two flanking adult reading rooms, which are topped by light-monitor "boxes" of painted metal. The boxes, which project over the east-facing windows of the reading rooms, double as sunshades.

From the street, passers-by are offered an inviting glimpse of readers in the main-floor rooms (facing page). Concrete-block retaining walls surround the main-floor structure of rigid steel frames (to allow high volumes and long spans) and lightweight metal-stud infill; the roof is wood and wood joists. A smooth-finish stucco is used for the exterior building walls, while a rougher textured stucco is used for the outside security walls, skylight enclosures, and projecting walls.

Frances Howard Goldwyn
Hollywood Regional Branch Library

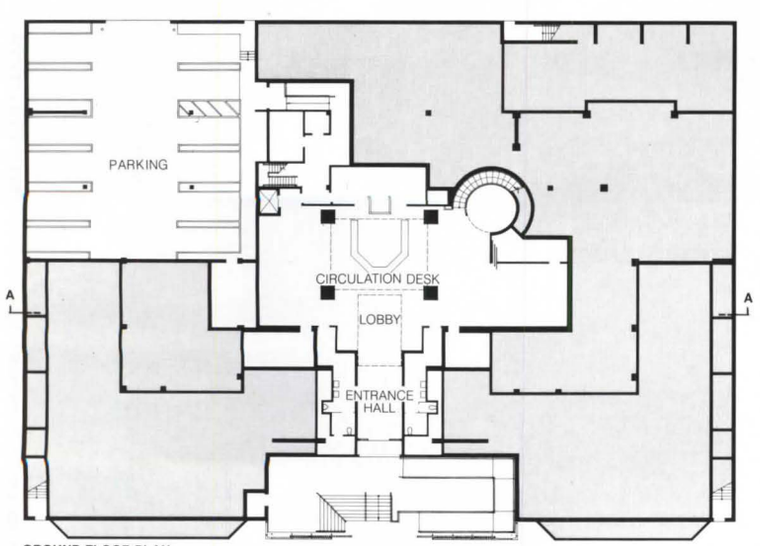


Maximizing daylight while minimizing glare was a primary concern in designing the library. On-site sun studies made it clear that only north and east glazing were possible (although there is a south-facing clerestory on the south wall of the central pavilion, above the children's reading room, and a west-facing window above the main-floor reference desk). Metal canopies shade the outer corners of the two side reading rooms (corner of north reading room, facing page), and Gehry was going to place them atop these pavilions as well, but he felt they looked too thin, and turned them into the light-monitor boxes. The reading rooms sit in shallow reflecting pools (facing page) that were Gehry's solution to the problem of landscaping—or rather, the lack thereof (the city vetoed his suggestion for a palm garden, saying it would be too costly to maintain). The combination of the window placement, the solid south-facing walls, and the pools creates a series of varied views from each reading room. The library's arrangement of boxlike forms makes it blend easily with the low-rise commercial and industrial buildings in its immediate vicinity (above right), and the color scheme—a light peach for the stucco and a pale green for the painted metal boxes and window frames and mullions—suits the light of Southern California.



SECTION A

40'/12m



GROUND FLOOR PLAN

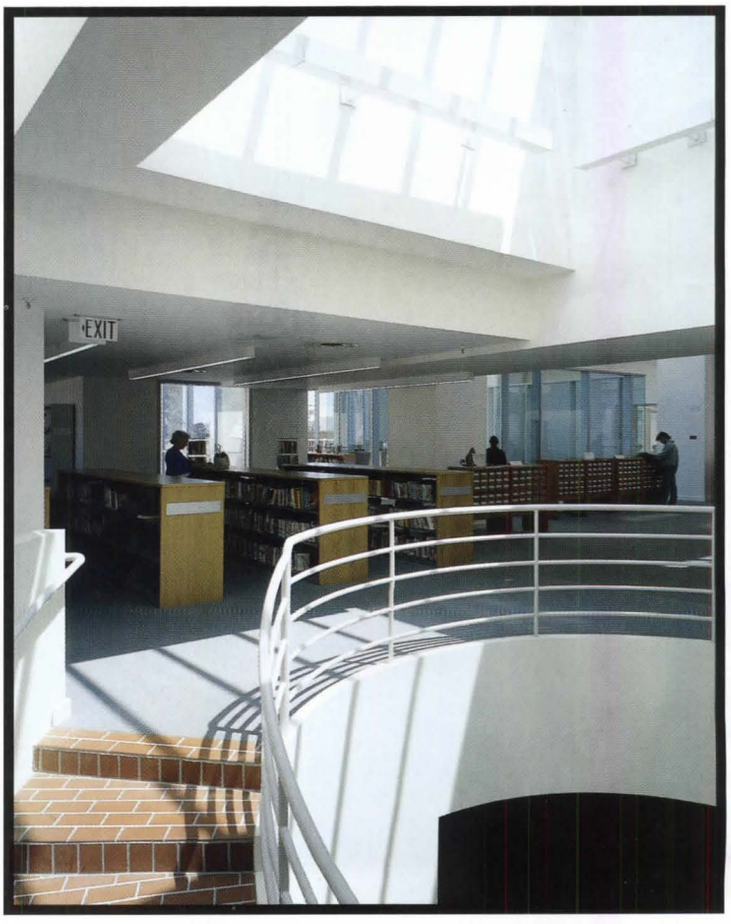
MAIN FLOOR PLAN

N→ 20'/6m

Frances Howard Goldwyn
Hollywood Regional Branch Library

The space of the ground-floor lobby and circulation desk (below left) were kept to a minimum, to allow more space for the reading rooms. The light well above the lobby opens to the main-floor children's reading room and card catalog (facing page); its thick glass walls deaden noise floating up from the floor below. The sweeping stair at the back of the lobby leads directly to the main floor, where it is topped by a skylight (below right, with stacks visible at left).

In the two adult reading areas (the north, above left), visitors can sit out in the tall, open space or under the shelter of the metal canopies. Oak tables and chairs surround benches covered in colorful ceramic tile patterns. In the central children's reading area (above right), furniture is smaller scaled, in marked contrast to the soaring space of the 40-foot-high room. Artificial lighting is supplied by metal halide fixtures, uplights atop the stacks, and pedestal lamps at the reference and circulation desks. In keeping with the history and spirit of the Hollywood movie community, the library's only artwork consists of oversized painted replicas of vintage movie posters (as well as a few original posters). At night (overleaf), the library, illuminated from within, becomes a glittering jewel box in the cityscape.




CARL LAEMMLE Presents
"THE PHANTOM OF THE OPE
LON CHANEY
Starring
With NORMAN KERRY, MARY PHILBIN ARTHUR EDMUND CAREW
and 5000 Others
DIRECTED BY RUPERT JULIAN
UNIVERSAL'S MASTERPIECE


FREEWAY STORES
LIVE GIRLS TOTALY NUDE ON STAGE


GONE WITH THE WIND

Rebecca's is a living laboratory for many of Frank Gehry's experiments in form and materials. The view through the bar area toward the entrance (right) reveals two painted tin crocodiles, 16 *feet and 19 feet* long, which are illuminated from within—another variation on Gehry's well-known fish and snake lamps. They are suspended from a ceiling littered with pastel flotsam and jetsam, against the backdrop of the backlighted orange onyx mezzanine over the bar, which is slightly sunken (above, inside bar). The copper-clad, octagonal dining pavilion, like the entrance portal and the mezzanine structure, relates to Gehry's concept of a landscape of buildings within a building. The windows along the Pacific Avenue side of the restaurant (not shown here) are blacked out and adorned with tarantula murals by Ed Moses. While the interior is most dramatic at night, its colors and textures also glow by day (top, view past corner of bar, through entrance, to dining area).


EXIT

see the line, but I'm not an artist, I'm an architect." At Rebecca's the line is indeed too blurred to see.

The project's architectural given was the ground floor (two stores

P/A Awards Update
ICS/ERF
University of California, Irvine

P/A Awards Update
Malls of Academe

A university computer and engineering science complex, for which Gehry & Associates won a P/A Design Citation in 1984, is part of an ambitious master plan to bring a new generation of architects—and a new architectural outlook—to a sprawling, 1960s-vintage campus.

From the campus ring mall, a view (above) of the north (front) side of the ICS/ERF complex shows the three-story, natural cement-stucco computer and engineering research building at right, and the two-story, light-green, smooth-finish stucco classroom building at left. Between the two buildings is a courtyard (site plan, overleaf), at the back of which is located the administration/faculty office building, which is joined to the research building by a galvanized metal stair tower. The research and classroom buildings were placed on the edge of the mall to establish their identity on campus. The large dark-green stair on the front of the classroom building leads up to the main lecture hall, the entrance to which is shaded by a canopy (facing page) that rests on a fat, galvanized metal column and branchlike struts.

"THE ugliest building on campus," says one student, of Frank Gehry's new $1.5 million Information & Computer Sciences/Engineering Research facility at The University of California at Irvine. "Looks like a hardware store," says another.

"I don't have to like it," comments UC Irvine Chancellor Jack Peltason. "But it's important that people come to see." Associate Vice Chancellor and campus architect David Neuman declares that "the ICS/ERF building is very positive for Irvine. We need a different sort of architecture here."

Gehry's building is certainly different. Set on the outer edge of the campus's circular ring mall (part of William L. Pereira & Associates' original master plan), behind a pair of typically lumpish engineering school blocks built in the glum, concrete University of California style of the 1960s and early 1970s, the now-completed phase one of the proposed three-phase ICS/ERF complex is a tonic to the eye and a lift to the spirit.

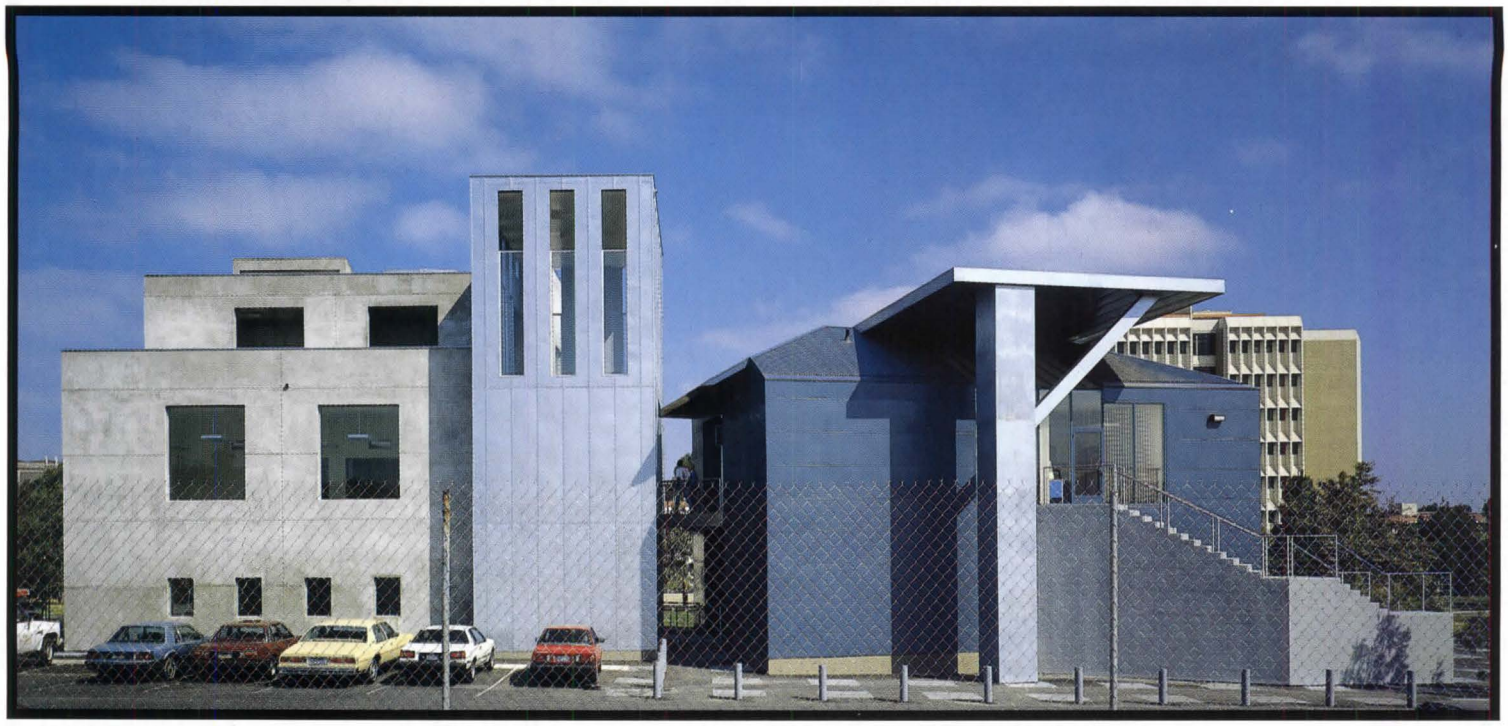
The small (18,000 net square feet) Gehry composition holds its own on the UCI campus by sheer force of personality. Organized in three pavilions—one each for computer and engineering research, faculty offices, and general assignment classroom space—the design makes the most of its minimal mass and mundane materials.

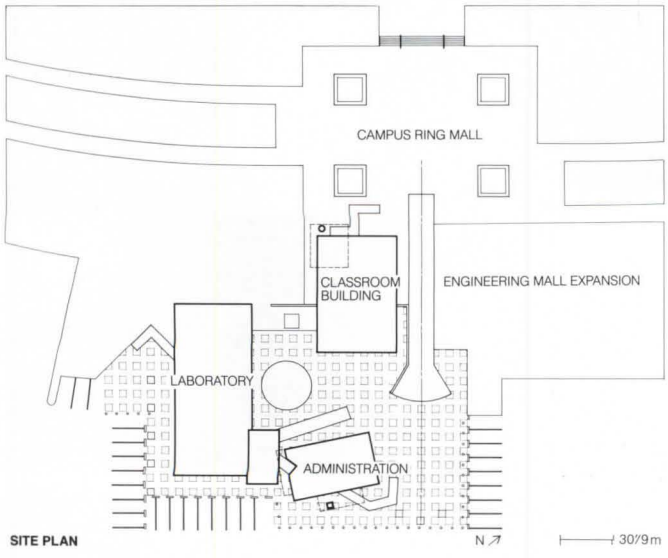
The double-story, light-green classroom block sits forward on the ring mall, detached from the inside-out "L" formed by the setback junction of the other two pavilions. The research wing, a three-story, gray stucco box, is joined to the faculty offices' gray-blue metallic cube by a galvanized sheetmetal-clad stair tower. The tower's bulk is lightened by open vertical slits that call to mind the arrow-launching apertures of a medieval fortress. The bold shaft of the central stair not only joins the administration and research buildings, but also anchors the complex to the back of the site. Without it, the separate ICS/ERF pavilions would look like boxes afloat in the parched terrain surrounding the campus.

Other outside stairways sprout from all three sections, flying off at angles to the main blocks. This complex composition is further dramatized by jutting sunshade canopies and witty gestures, like the bright orange tongue of the main staircase edge licking the walls of its silvery metal cage. A wide ramp up the left-hand side of the classroom section, ending in an asphalt plateau, will create a central axis when projected later phases of the ICS/ERF complex are in place by the early 1990s.

The classroom block's two ground-floor classrooms open directly off the campus mall. Putting the building right on the edge of the circular road and walkway helps mark the mall's perimeter, which is otherwise confused by the recessed frontages and poor definition

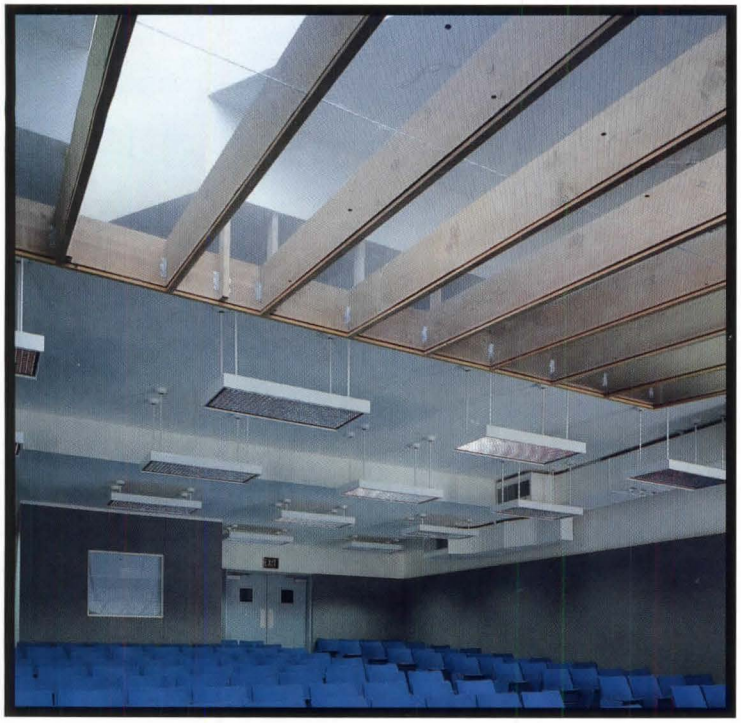
(continued on page 94)

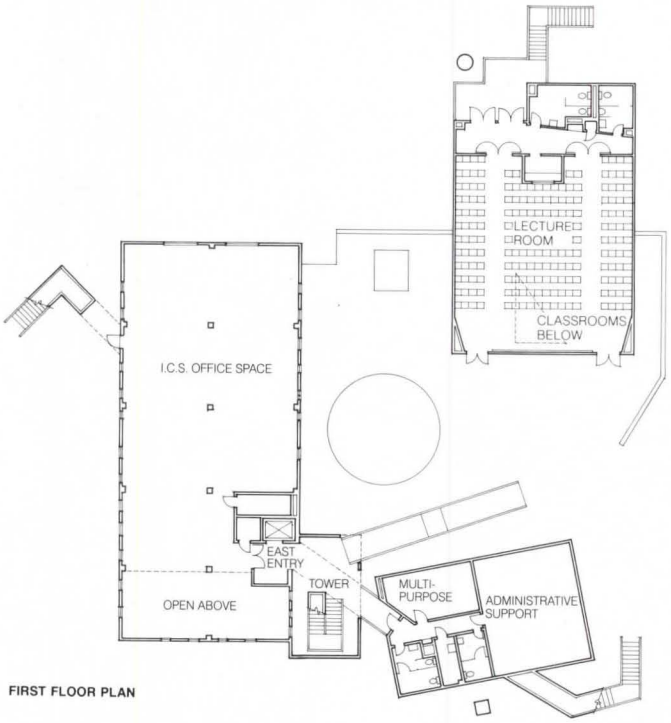




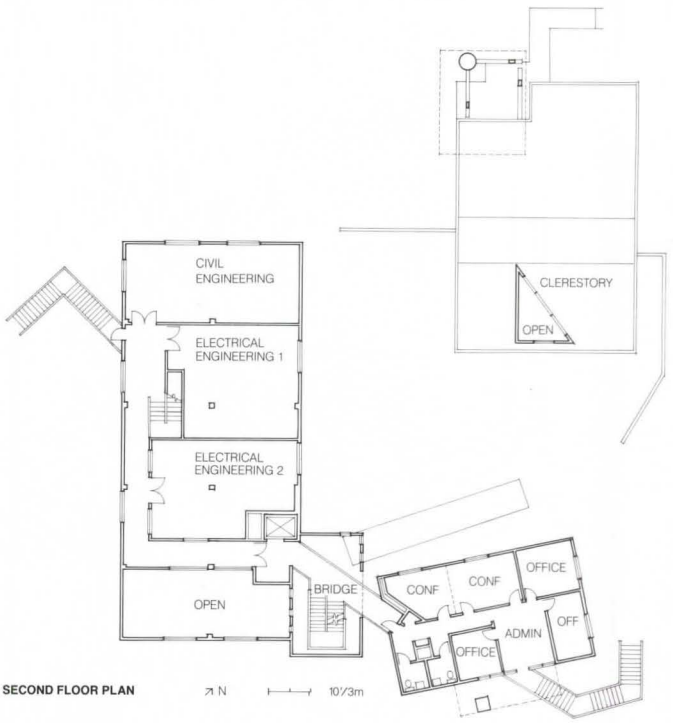
SITE PLAN

A view of the east side of the complex (above) shows the clerestory box atop the classroom building, the corner where the research and administration buildings connect to the stair tower (closeup, facing page), and the pitched metal roof of the painted-metal-clad administration building. Another exterior stair juts off from the south (rear) side of this building (top), and its canopy, which rests on a square metal column, is intended to form a pair of "bookends" with that of the classroom building. The architects had originally wanted to use a different material on each building to make them as distinct as possible, but budgetary considerations mandated a minimal material palette, so metal and two different stucco finishes were used.





FIRST FLOOR PLAN



SECOND FLOOR PLAN

of existing structures. Gehry wanted to emphasize further this hard edge with an extension wall that continued the classroom block's façade, but budgetary constraints denied him this option. On the first floor is a 150-seat lecture room with bright blue seats, lighted by a big skylight box. A large porch, capped by a bold lid resting on a fat metal-clad column, leads to a dark-green outside stair constructed of wood frame and painted plywood.

The faculty office building is a metal-clad box capped by a pitched metal roof. This block provides space for workshop modules, faculty offices, and conference rooms. A second-floor, glass-walled section in this block has an east-facing porch, which shelters vistas of the undeveloped acres of the surrounding Irvine ranch.

The three-story stucco research wing provides 10,000 square feet of flexible loft space, which is illuminated by big punched windows. A double-height space at the back of the building is topped by an open terrace.

In typical Gehry fashion, all finishes are simple and utilitarian, including seminautical touches like the steel pipe railing, cables, and turnbuckles used in the stair balustrades. Interior partitions are

In the research building (top right, looking north from second-floor west lobby), interiors were designed as flexible loft space. Eighteen-inch-thick floors support the vast amount of computer equipment necessary for research projects in fields such as computer "architecture," software technology, and artificial intelligence. The budget for interior finishes and furnishings was extremely tight. In the large lecture room (top left), campus-standard light fixtures are suspended from a Gehry-designed wire-glass sound reflector. Wherever possible, large windows, clerestories, and light monitors (atop the research building) bring abundant natural light into the buildings, including the dramatic volume of the galvanized metal stair tower (facing page, second-floor bridge, view toward research building).

white-painted drywall, which is already showing signs of wear in student scuff-marks and the inevitable scribbling. At a construction cost of $105 per square foot, including site work and landscaping, the ICS/ERF building is "a lot of space for our dollar," says campus architect Neuman.

Gehry comments that "the ideas I used at UCI developed out of the pavilion-type layouts of Loyola Law School and some of the houses I've designed in the past few years." These houses include the 1983 Norton house in Venice, Calif., and still-unfinished residential projects such as the Benson house in Los Angeles, the Sirmai-Peterson house in Thousand Oaks, Calif., and the Winton guest house in Wayzata, Minn. But the ICS/ERF complex is, like Loyola, an urban design seeking to enhance and exploit an essentially civic environment—and one that is undergoing major changes at that.

UCI, like the 88,000-acre totally new city of Irvine to the north, has had to invent itself out of emptiness. The 1510-acre Irvine campus was planned by Pereira in the early 1960s. Conceived as a grand ring mall around a central park, his long-range scheme, updated in 1970, featured six radiating spokes with each segment of the ring serving a separate academic discipline. Pereira's master plan aimed at establishing a "heart and sense of place (in the) open and undeveloped landscape." Built mainly in the monumental Parthenon-modern manner Pereira favored for public buildings in the 1960s, UCI's original structures seem to be striving for some kind of cultural weight in the scrubby wilderness.

Campus architect Neuman's influence seems crucial in Irvine's evolution from an architecturally mediocre campus into a more urbane and visually provocative one. In the eight years he has been at UCI, Neuman has increasingly persuaded an aesthetically conservative administration to take some flyers in design.

Apart from Gehry, the roster of architects who have built, are building, or will build at Irvine reads like a who's who of current stars. Charles Moore with UIG designed the university extension building. Moore Ruble Yudell and Ratcliff Architects are planning a psychiatric hospital. Robert Stern has developed a master plan for a fine arts village. Arthur Erickson is working on a $40 million biological sciences complex. Venturi, Rauch & Scott Brown are designing a home for the graduate school of management, and Eric Moss is at work on a housing office.

Other architects who have built or are building at UCI include Robert Kennard, Bobrow Thomas, Kaplan McLaughlin Diaz, and MBT. UCI has a plan to develop, design, and construct $350 million worth of projects over the next eight years, half of which have already been funded.

"We now have outstanding architectural short lists," Neuman says with justifiable pride. "Design is a hot topic on campus these days." Neuman talks bravely of Irvine's "discovery of character," by which he means that each spoke of the campus wheel is engrossed in a search for its own focus in the abstractions of the master plan. "That's why we need highly resourceful and individual designers," he says. "The administration appreciates this, without necessarily loving every new building we commission." Indeed, as Neuman points out, Gehry's new building does arouse passions—both pro and con.

Gehry says, however, that Pereira liked his ICS/ERF design. A year or so before his death late last year, Pereira, as the consultant on campus development, supported Gehry in his presentation to the administration. "It's time now for the next generation to have its say," Pereira is reported to have urged at the time. "Frank was one of my best students at USC in the 1950s, and he worked in my office for a spell. He's a true original." Pereira would probably have been pleased to know that Gehry was recently chosen to carry out his proposal for the phased expansion of the ICS/ERF complex, which has all the promise of becoming a minor masterpiece. ***Leon Whiteson*** ■

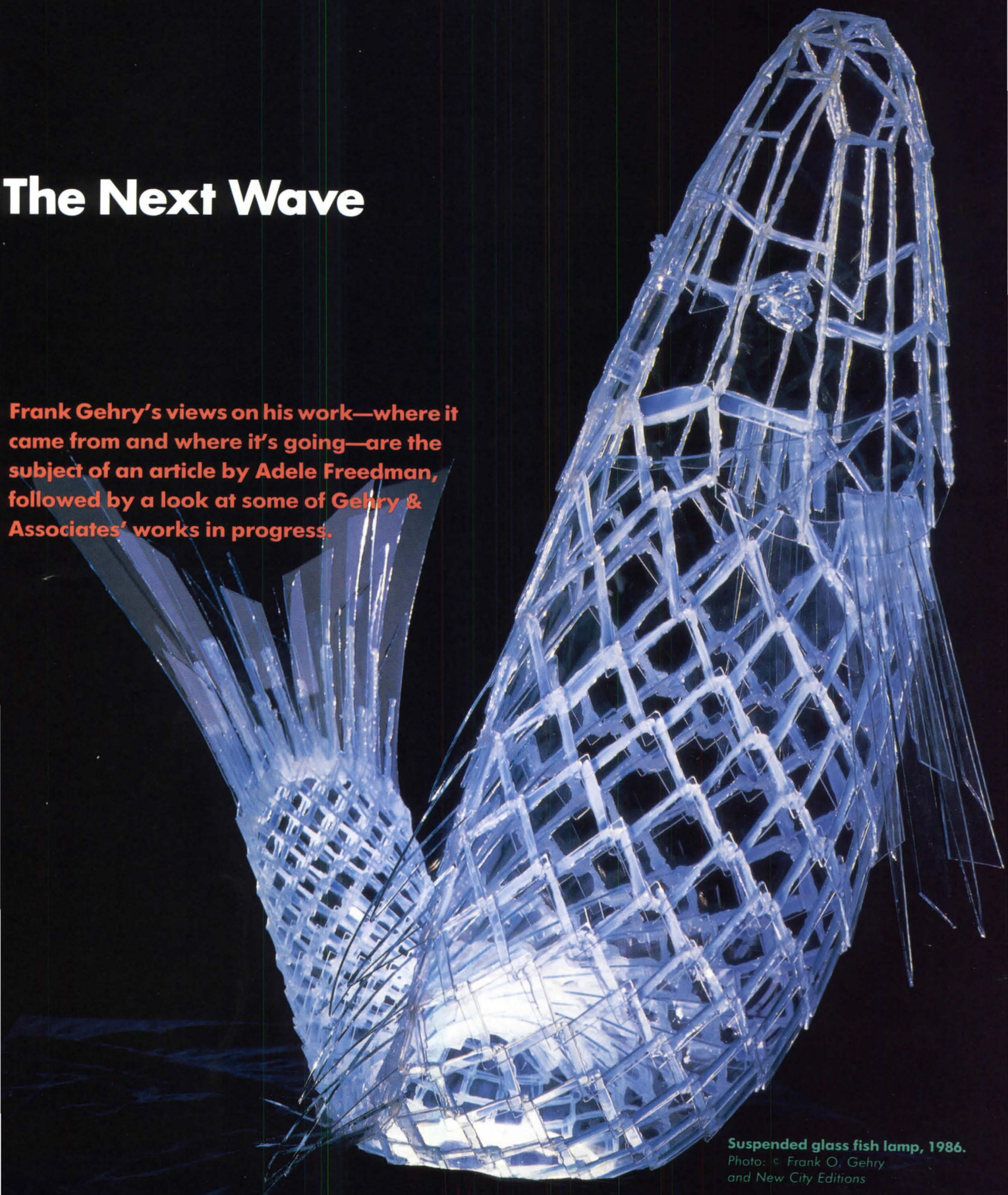
The author is the architecture critic for the Los Angeles Herald-Examiner.

The Irvine Campus, which grew out of the vast wilderness of the old Irvine Ranch in the 1960s, provides a rather monotone backdrop for Gehry's buildings (above), but the ICS/ERF complex is only one of many new projects being undertaken by the university in order to bring what Associate Vice Chancellor and campus architect David Neuman calls "highly individual and resourceful designers" into the school's building program.

Project: *Information and Computer Science/Engineering Research Facility, University of California, Irvine.*
Architect: *Frank O. Gehry & Associates, Venice, Calif. (Frank O. Gehry, principal in charge; Robert G. Hale, project architect, design; Sharon Williams, project architect, construction; David Kellen, job captain; John Claggett, Rene Illustre, Carroll Stockard, Patricia Owen, design team).*
Client: *University of California, Irvine; David J. Neuman, Associate Vice Chancellor.*
Program: *18,000-sq-ft facility, which includes a 10,000-sq-ft laboratory/office building, a 4000-sq-ft administration building, and a 4000-sq-ft classroom building, on a site across the ring mall from the central campus.*
Structural system: *concrete slab on grade; concrete footings; steel rigid frames in lab/office building.*
Major materials: *rough cement plaster, stucco, corrugated painted metal, galvanized sheet metal, gypsum board (see Building Materials, p. 133).*
Consultants: *SWA Group, landscape; Kurily & Szymanski, structural; Store, Matakovich & Wolfberg, mechanical; BBN Laboratory, acoustical.*
General contractor: *Architectural Design Services.*
Costs: *$1,850,000.*
Photos: *Michael Moran.*

The Next Wave

Frank Gehry's views on his work—where it came from and where it's going—are the subject of an article by Adele Freedman, followed by a look at some of Gehry & Associates' works in progress.



Suspended glass fish lamp, 1986.
Photo: © Frank O. Gehry and New City Editions

Gehry doesn't presume to tell people what to think, but he is offering a way to think and something to think about.

interesting than Classicism. That's intuitive. I don't sit around making up the charge against Classicism—Neo-Classicism."

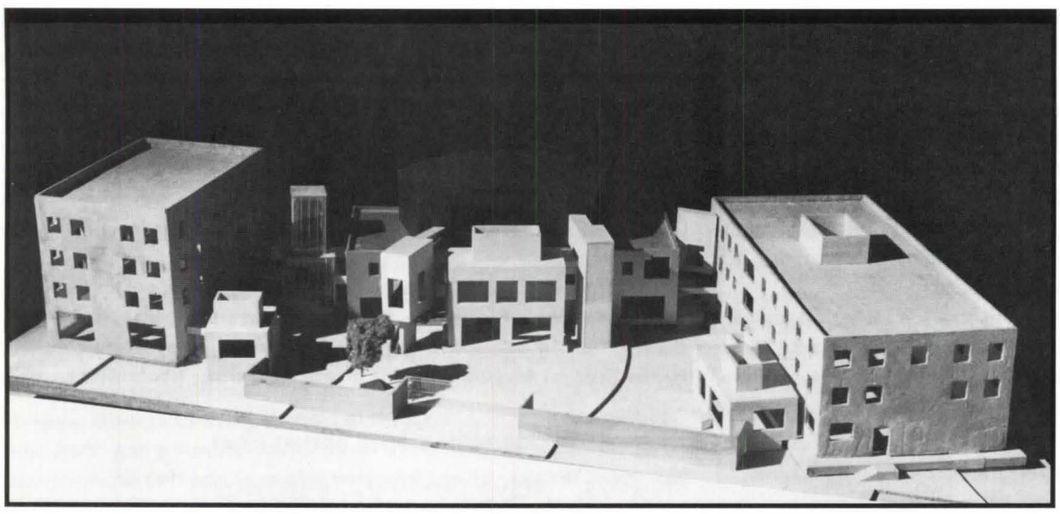
But he's done it anyway, and he's done it his way. So who is Frank Gehry? He's the chain link, the cardboard, the fish, the angel of death. He's whatever it is that's being denied but will not go away. *Adele Freedman* ■

The author is the architecture critic for the Toronto Globe and Mail.

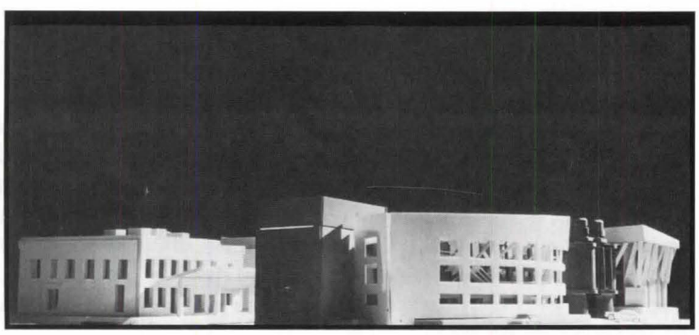
"I'm very up-front," Gehry says. "I'm not trying to seduce a client. I won't tell them I'll do something they want if I'm not

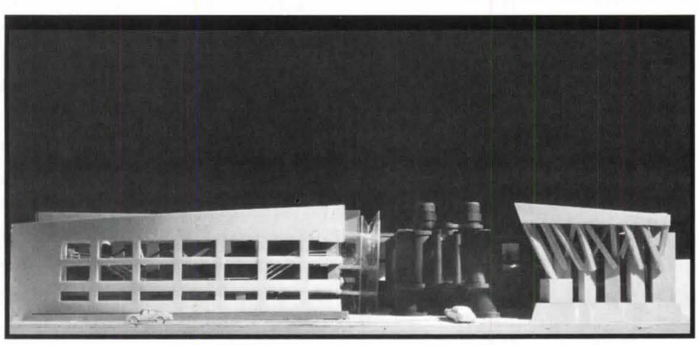
having with himself ever since Charles Jencks applied the word Post-Modernism to describe and promote the work of architects such as Charles Moore and Michael Graves, for whom eclecticism is the wave of the future. Gehry admires Graves for "sticking his neck out and taking a lot of flak," but he has no reverence for the imagery in his work. "I'm committed to the 20th Century," he

In Progress

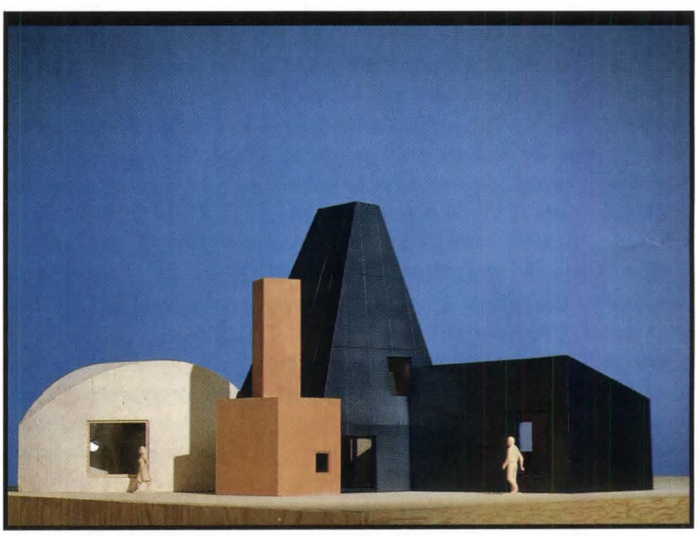


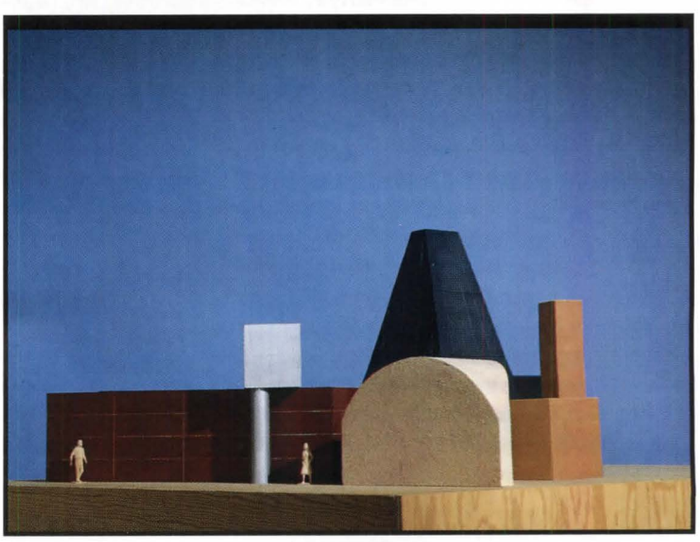
Yale Psychiatric Institute, New Haven, Conn. (left). This $10 million, 60,000-square-foot facility houses a population of 80 patients, most of them severely disturbed adolescents. The complex is made a village community, a microcosm of the real world. Common rooms for art classes or group therapy are pulled away from the main dormitory blocks and articulated as separate structures around a courtyard, inspired by Yale University quadrangles. The internal organization of the three patient buildings—two clad in stucco, one in silver-colored metal—reflects levels of treatment, from closed units for the most severe cases to open, apartment-style living quarters. The ground floor of one building is given over to commercial space, another to administrative offices. Occupancy is scheduled for January 1989.





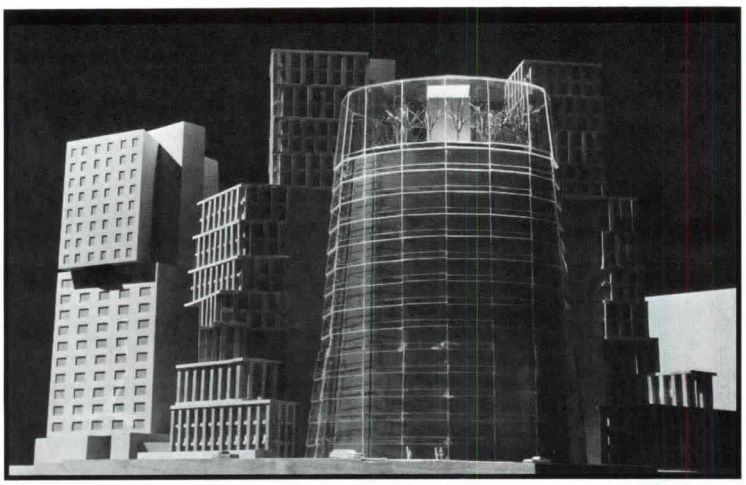
Main Street Building, Venice, Calif. (above). This three-story, 75,000-square-foot office building sits atop three underground stories of parking for 300 cars. The stucco-clad L-shaped building, to be completed in December 1987, will be occupied entirely by the Chiat/Day advertising agency. Casting about for a centerpiece for his site plan, Gehry tried a pair of mock binoculars designed by Claes Oldenburg for a previous collaboration—a performance piece in Venice, Italy. The struts appended to one wing are similar to those used at Newbury Street (facing page), but exaggerated in response to the overscaled sculpture.

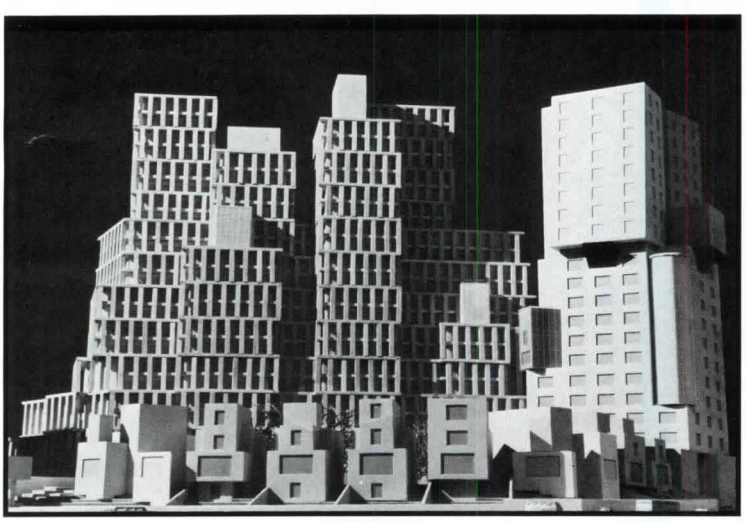


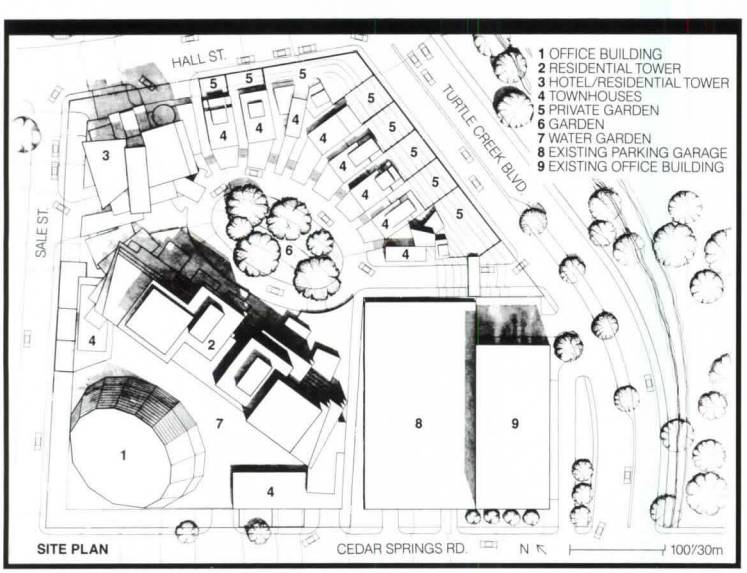


Winton Guest House, Wayzata, Minn. (right). In this 1600-square-foot guest quarters for a house designed by Philip Johnson in 1952, Gehry avoids the problem of competing architectural styles by treating the guest house as sculpture. His abstract forms are distinguished by shape and material—Kasota stone, brick, painted metal, and plywood. While related to earlier projects such as the Loyola Law School or the Wosk House, in which Gehry articulates pieces of program as discrete parts, the Winton design is composed of opaque, sculpted solids that disguise rather than reveal structure. The house is to be completed by Thanksgiving.

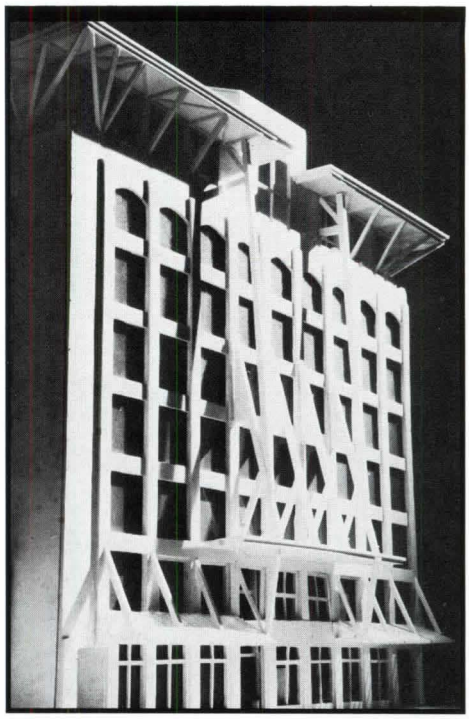
360 Newbury Street, Boston, Mass. (right). The first three floors of this renovated commercial building will be dedicated to retail, the fourth and fifth to offices and art galleries, and the top three, including a new eighth floor treated as a giant cornice supported on treelike struts, to offices. The building's two principal brick façades on Massachusetts Avenue and Newbury Street are to be reconstructed. The former "rear" façades, one facing the turnpike, are to be completely reconfigured, the present concrete infill stripped and replaced with a lead-coated copper grid. Gehry's metaphor is that of two buildings, one wrapping up and over the other. The corner niche of the new, eighth floor will be occupied by a Claes Oldenburg sculpture. The $9.5 million building is now under construction.







SITE PLAN



Turtle Creek Development, Dallas (left). This preliminary design for a mixed-use complex on Turtle Creek Boulevard proposes three towers and eight townhouses, with four levels of parking underground. An oval, glass-skinned office building is flanked by another gridded office tower and a similar residential condominium building stacked atop a 100-room hotel.

Photos: *Eamonn O'Mahony*

Sirmai Peterson House, Thousand Oaks, Calif. (above). This 3600-square-foot residence is composed of a main building housing the dining room, den, kitchen, and navelike living room, and two satellite structures for the master and guest bedrooms. Views to and through the house have been carefully orchestrated. From the entrance, three dramatic vistas extend through the living room with its exposed roof joists, diagonally across the den to the ravine beyond, and out to a terrace. The main house and stairwell are roofed in unpainted galvanized sheet metal; cladding is stucco. The house should be completed by March 1987.

1a

HOK

P/A Technics
Sports Coverage

Covered stadiums are in demand by spectators and teams alike. They represent, not just the power of cities and the profitability of professional sports, but the prowess of designers able to enclose ever larger volumes with roofs ever lighter in weight.

ONLY seven North American cities have enclosed stadiums for professional sports, most of which date from the mid-1970s or early 1980s. Interest in such stadiums, however, has grown rapidly in the last few years. At least a dozen cities have covered stadiums under study or in construction, and other municipalities are expected to follow.

Several factors explain such interest. Climate, according to architect Ronald Labinski of HOK's Sports Facilities Group, prompted the early domed stadiums, most of which were either in extreme southern or northern cities. "But climate," adds Labinski, "is no longer the major motive—it's image."

The construction of a new, covered stadium usually requires between $75 to $100 million. For a city to undertake such a venture is "an expression of its civic power and enthusiasm," says engineer Horst Berger of Horst Berger Partners. In cities such as Cleveland and Saint Louis, proposals to build new stadiums are, indeed, seen as a way of upgrading their image.

What these stadiums symbolize, though, is not just the vitality of a city, but support for its professional teams. Following the Baltimore Colts' move to Indianapolis, in part because of that city's new Hoosier Dome, the enclosed stadium has become a new bargaining chip in the politics of professional sports. St. Petersburg and Phoenix have begun construction of covered stadiums with the hope of luring teams away from cities that, in turn, are planning stadium improvements to keep their teams at home. At stake here is more than just sports. The possession of a professional team confers upon a city a status and importance far more valuable then the cost of a stadium.

That covered stadiums also make a profit only increases their appeal. "Open stadiums," says architect Ronald Turner of HNTB's Sports Facilities Group, "used to be a financial drain on communities; many facilities were dark over 200 days a year. Enclosing a stadium increases not only the number of event days, but the revenue." It also "creates opportunities for new kinds of events," says Ronald Labinski, "such as the paper airplane flying contest in Seattle's Kingdome."

A turning point in the financing of enclosed stadiums came in 1982. "Because of changing federal policies," says engineer David Geiger of Geiger Associates, "municipalities began to pull out of stadium projects. Developers, recognizing the potential profitability, have since taken the lead, sometimes with little involvement from the city."

The stadiums themselves are just part of the attraction for developers. The amount of related construction, such as hotels and restaurants, that stadiums can stimulate, and the amount of money stadiums can generate for a community are enormous. "One Superbowl game," says Ronald Labinski, "can bring $100 million into a city."

Home Runs

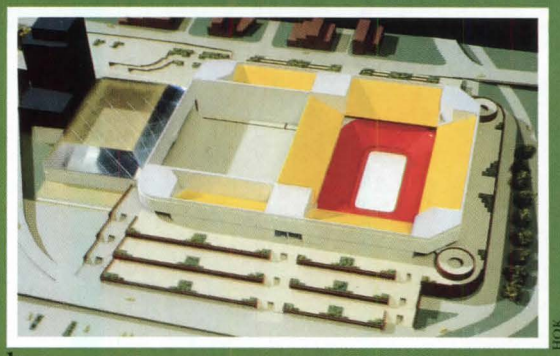
With so much at stake, the proper location and siting of a stadium is critical—and inevitably controversial. Some people argue that stadiums belong in downtowns, or at least in urban locations. "Stadiums," says Ronald Turner, "can stimulate the revitalization of a downtown and can take advantage of a city's existing infrastructure." Implicit in this argument is the idea that, as a symbol of a city, a stadium should be in that city. A few miles can make a big psychological difference, as New Yorkers discovered when the Giants moved across the Hudson to the New Jersey Meadowlands.

Others see benefits in both suburban and urban locations. "Different cities have different needs," says Ronald Labinski. "The suburbs allow less expensive surface parking and ease the assembly of the necessary 150 acres. But urban locations often don't require the building of dedicated highways and parking areas, allowing the stadium to occupy as little as 12 acres."

Factors other than access and acreage can affect location decisions. Barry Wyerman of Owens-Corning Fiberglas, in a paper delivered at a recent international symposium on architectural fabric structures, cautioned that, because of the low sound transmission class of the fabrics now used to enclose stadiums, "high exterior noise levels from airplanes, highways, or other sources will be heard within the structure (and) . . . high noise levels during sports events or rock concerts will be


HOK

1b


HOK

1c


HNTB

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Horst Berger

2b

heard outside the structure . . . lead(ing) to complaints from residents living near(by)."

Once a site is found, placement of the stadium requires care. The recent trend toward retractable roofs, in particular, makes the orientation of the stadium an important design consideration. Baseball fields should have the sun behind the batter, with the third base line running approximately north-south. In football, the sun should be parallel to the 50-yard line at half time, which "in most North American cities," says Ronald Labinski, "requires that the field run northwest-southeast at about a 45-degree angle."

The easy access and evacuation of spectators also affects the siting of the stadium. "It's best," says Labinski, "to load the stadium from all sides, with a walking distance of no more than one-half mile from the furthest parking space to the building." Parking structures, he adds, can reduce that distance, although "it's hard to justify them unless there are other nearby facilities that need parking."

Getting Seated

The trip from the car to the seat, if it isn't getting shorter, at least has become more convenient. "Before about 20 years ago," says Ronald Turner, "not much attention was paid to the areas behind the stands. Now, concourses have become much wider, and concession areas more sophisticated, with elaborate kitchen facilities. Concession booths and toilets also have become more numerous to reduce time waiting in line, with video displays of the game to make the wait less aggravating."

The wait to evacuate a stadium has more dire consequences. "Most building codes don't address stadiums adequately," says Labinski, "so, for each project, we conduct time/exit analyses that take into account such factors as the number of people exiting, the capacities of the openings, and the rate of movement on concourses and ramps. We aim for a complete evacuation of a stadium in 15 minutes."

While convenience has led to an increased use of escalators, ramps remain the primary means of vertical circulation in stadiums. "Spiral ramps," says Labinski, "work well because they have fewer landings, accommodate vehicles more easily, and allow a faster, safer movement of people. The drawbacks are that they take up more space and are more expensive than switchback ramps."

Once spectators arrive at their seats, creature comfort takes over. The best example of that is the now widespread use of private viewing suites, complete with wet bars and plush furnishings. Stadium owners, at both the professional and collegiate sport level, have eagerly built such suites because of the revenue they generate. In some stadiums, suites rent as high as $100,000 to $150,000 a year.

Ordinary spectators' seats, too, have become more plush. Because interior surfaces no longer need be weather-resistant in enclosed stadiums, more comfortable theater-type seating can be used. Retractable roofs won't affect that trend much, since many will close upon demand.

No amount of convenience or comfort, though, can compensate for a poor view of the field. The roughly square field of baseball is best viewed from V-shaped stands centered on home plate; the rectangular football and soccer fields, from rectangular stands centered on the 50-yard line. While single-purpose stadiums allow the optimum viewing, most stadiums accommodate several sports, requiring the use of movable stands. Here, no two stadiums are alike. Some have bleachers that telescope out from under the permanent seating; some, movable stands that wheel into place; and some, permanent tiers that change in shape or orientation. The trade-off seems to be between the amount of movable seating and the proximity of seats to either the baseball or football field.

The construction of stadiums usually involves a poured concrete structure supporting precast concrete tiers. But, "that depends upon the availability of materials and labor at a given location," says Michael Kerr of the construction firm of Huber, Hunt & Nichols. "If labor is expensive, we might switch to a steel structure; if the quality of local precast isn't good, we might switch to poured concrete stands. There is no set method."

Rainchecks

If the design of concourses and stands has followed an evolutionary course, the design of stadium roofs

The proposed New World Center in Columbus, Ohio (1a, b, c), designed by HOK's Sports Facilities Group and Geiger Associates, will feature a movable two-tier seating and concourse section. When fully extended, that section will form a 65,000-seat football stadium; when partly extended, a 15,000-seat arena and a 200,000-square-foot convention center; and when completely retracted, a 300,000-square-foot convention center. Adjacent to the structure will stand additional convention center facilities and parking for 3500 cars. A Takanaka truss roof (see P/A, Aug. 1984, pp. 94–99) would span the entire stadium, 100 feet above the field.

The proposed covering of Arrowhead Stadium in Kansas City by HNTB's Sports Facilities Group and Horst Berger Partners (2a, b) will have a saddle-shaped cable roof. The roof system, patented by Berger, will have two layers of cables running perpendicular to each other. A compression ring and compression struts between the two layers keep the cables in tension.

The Hoosier Dome in Indianapolis (below) has an air-supported roof. Designed by HNTB and Browning Day Mullins & Dierdorff, it stands on a 12-acre site and seats 61,000 for football, soccer, and track events. The air supported roof, designed by Geiger Berger Associates, utilizes David Geiger's patented idea of skewed symmetry. The roof's cables run perpendicular to the corner tangents of the stadium, and are kept in tension by the perimeter compression ring and by a few pounds of positive air pressure. To maintain that pressure, the stadium has pressurized doors, air locks at truck docks, and additional fan rooms. To avoid heating or cooling the entire volume, conditioned air is directed to the seating areas.

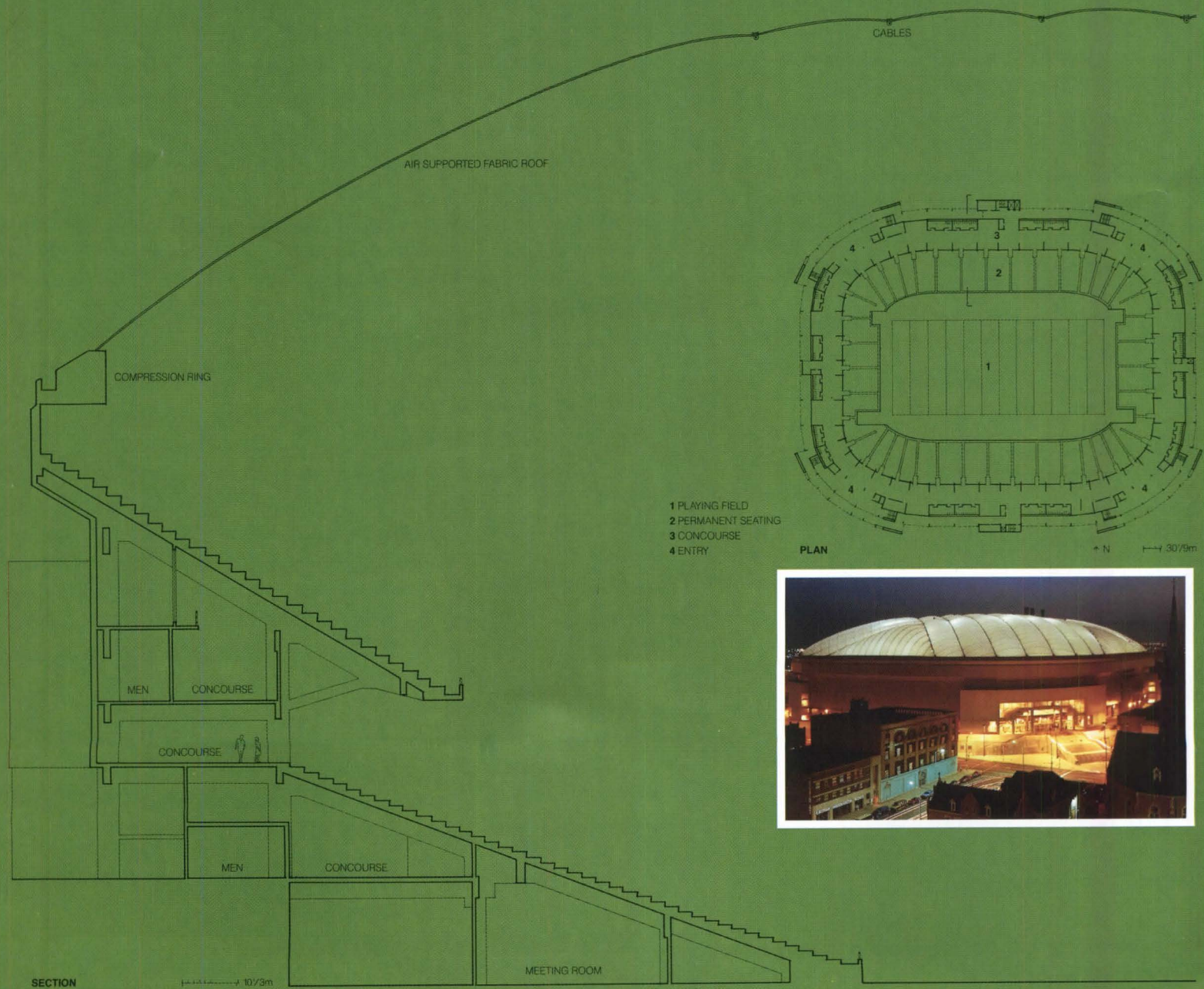
has been outright revolutionary. "Most engineering projects involve the selection of accepted design practices from handbooks," says Horst Berger. "These roofs demand a totally different approach; everything must be invented, requiring skepticism of every design decision."

The first enclosed stadiums used steel or reinforced concrete domes. While they offered the advantage of conventional technology, such roofs were expensive, heavy, and difficult to waterproof. The glazing and trusswork of stadiums such as the Astrodome also created so much pattern that outfielders would lose fly balls amidst all the visual clutter.

Such problems led to a second generation of air-supported stadium roofs, the largest of which were designed by David Geiger. To make these structures work with the flat-sided, superelliptical shapes often used for stadiums, Geiger developed and patented the idea of skewed symmetry, which ran the cables in the fabric dome perpendicular to the tangents of the curves' symmetry points. That "equalized the size and load of cables," says Geiger, "and freed the architect, since it worked regardless of the stadium's shape." Geiger later discovered that, as long as the cables in the center of the dome were perpendicular to the tangents, the cables along the perimeter could vary somewhat in their angle, simplifying their connections at the compression ring. The result was a very lightweight and inexpensive structure, capable of almost any span.

Air-supported roofs, though, had their problems. Their concave inner surface and the fabric's reflectance of high frequency sound made the stadium interiors so noisy that football teams have considered using radio transmitters and receivers in their helmets. Fabric inner liners or banners have reduced the noise somewhat, but they have not eliminated the focusing of sound inherent in such shapes. Also, the few pounds of positive air pressure necessary to support the roof required that the stadiums have revolving doors, air locks for trucks, reinforced elevator shafts, and additional fan rooms. That added not only expense, but inconvenience.

But the real decline in popularity of air-supported stadium roofs, at least in the U.S., came with increasing litigation. Some projects have had several lawsuits stemming just from damage to the



fabric during construction. Deflations of the roofs after completion, caused by malfunctioning or poorly operated mechanical or snow removal systems, led to further lawsuits. While Geiger sees their continued use overseas, "air-supported stadium roofs have had it in a society as litigious as the U.S."

Enter the third generation of enclosed stadiums, just now being designed and completed. They have fabric roofs supported, not by air pressure, but by tension cables held taut either by large masts or arches, or by smaller compression struts and a compression ring. Both David Geiger and Horst Berger have been involved in the engineering of these cable domes, and both have patents or patents pending on most of their designs.

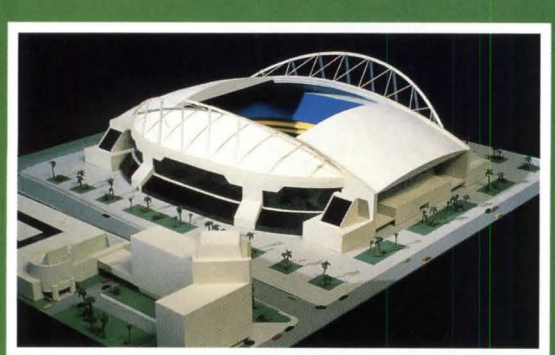
The advantages of cable domes over those air-supported are many. Cable domes are more easily insulated, rigged with catwalks, darkened with black-out curtains, and retracted during pleasant weather. They also can take greater snow loads and demand less exacting maintenance. Their higher cost and greater demand for on-site labor remain their major drawbacks, although the elimination of the equipment and details required for pressurization makes them competitive with air-supported roofs.

High Tech Tarpaulins

The first fabric roofing used on large stadiums was Teflon-coated fiberglass. While fiberglass has an extremely high tensile strength, much of that strength is lost if exposed to moisture. The Teflon coating, a polyfluorocarbon resin made by Du Pont, provides that moisture protection as well as resistance to most chemicals, high temperatures, and ultraviolet light. "The projected life of the fabric," says John Dunn of OC Birdair, "is 25 to 30 years. It passes all the accelerated weathering tests, and, in its first installation—now 14 years old—the material shows no signs of deterioration." With flame spread and smoke developed ratings of 5, it also meets the code definition of a noncombustible material.

The drawbacks of Teflon-coated fiberglass are its higher material cost and lower translucency than the competition, and its tendency to crease and thus lose strength if not shipped and handled carefully. Still, among large stadium roofs, it remains the most frequently used material.

The recently approved Phoenix Stadium by HNTB and Horst Berger Partners (below) will be one of the first retractable roof enclosed stadiums. Patented by Horst Berger, the stadium roof will consist of two tilted arches with steel trusses connecting them to a perimeter compression ring. The steel trusses will be in compression as the arches are built, but will then become tension members once the cable-supported roof is installed and loaded. The central, retractable portion of the roof will contain a fabric-covered steel frame, 480 feet long and 380 feet wide, that will move along a track, supported and stabilized by cables. The stadium will accommodate 73,000 for football, 47,500 for baseball, 19,000 for basketball and hockey.



HNTB

This baseball stadium designed by HNTB (below), not yet announced, will have a cable dome designed and patented by Horst Berger. The dome will contain radial steel-truss arches springing from a perimeter compression ring. Supporting the arches will be compression struts, as large as 18 inches in diameter, that will be supported, in turn, by cables kept in tension by the compression ring and the struts themselves. The struts and cables, during construction, will act as scaffolding, supporting the arches as each segment is installed. Another version of the cable dome, patented by David Geiger, has concentric rings of cables and struts that are supported by radial cables running from the top of one ring to the bottom of the next.

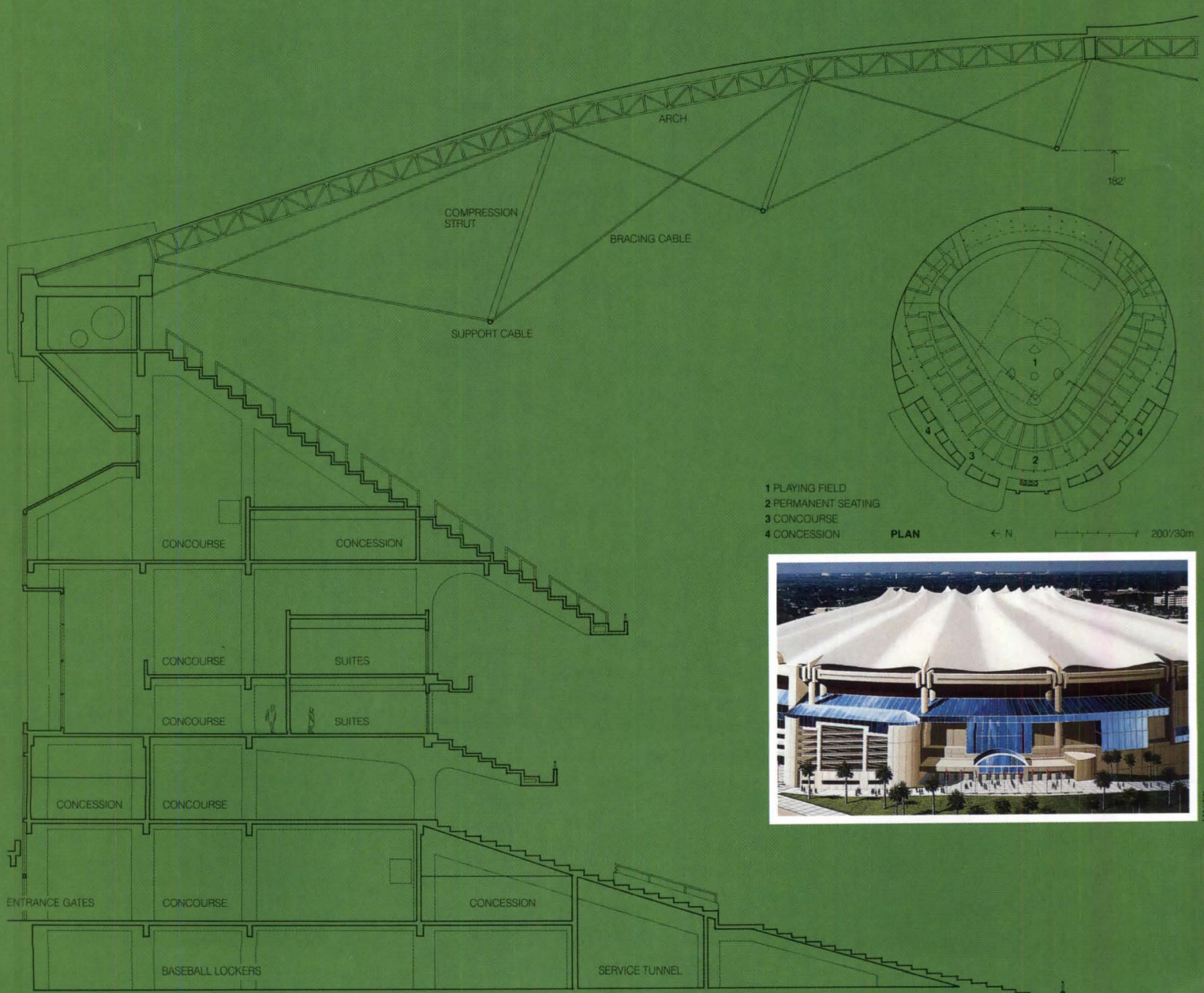
Its major competitor is silicone-coated fiberglass. Silicone also protects the glass fibers from moisture, and also resists ultraviolet light, high temperatures, and most chemicals. Its advantages over Teflon-coated fabric are its higher translucency (up to 80 percent), its greater pliability (simplifying shipping and handling), and its lower material cost. The higher translucency, in particular, allows natural turf to grow in enclosed stadiums and provides high daylight levels, even when double layered and insulated.

Yet, silicone-coated fiberglass too has some drawbacks. For example, it is more difficult to repair than the Teflon-coated glass because of its adhesive-made joints. (Teflon fabrics have a thermoplastic outer layer that allows the heat welding of joints.) And when the material first became available, some people questioned its flame spread characteristics and a tendency to look dirty. However, the material now "passes all of the major fire tests," says Pam Strickland of ODC, "such as ASTM E-84, 108, and 136. And it is now available in a white pigmented fabric that will counter any perception of it looking dirty."

A third type of fabric—vinyl-coated polyester—has yet to be used on the largest stadiums because of its shorter life and greater attraction of dirt than either silicone- or Teflon-coated fiberglass. But "that will change," says Bala Venkataraman of Seaman, "now that we coat the fabric with Tedlar, a polyvinylfluoride film made by Du Pont. Pigmented Tedlar extends the life of the vinyl close to 20 years, and as a homogenous film, it is self-cleaning." With the lowest material cost, "Tedlar-coated vinyl polyester," adds fabric roof consultant Todd Dalland of FTL, "offers the greatest cost benefit of these fabrics."

Whether it will replace the fiberglass fabrics on large stadiums is another question. To match the translucency of Teflon-coated fiberglass, the vinyl polyester must use a nonpigmented Tedlar, which has a life of only 15 years. The polyester also has a greater elongation , which, while predictable, may present problems over very long spans with large loads. As David Geiger puts it: "The jury is still out on these newer fabrics."

The verdict, however, remains good for the stadiums those fabrics enclose. "For the last few years," says John Dunn of OC Birdair, "there's been an average of one enclosed stadium built each



year—a rate that will probably continue." Add to that the interest among European and Pacific Rim cities for enclosed stadiums, and, as Ronald Labinski says, "the market for them looks very strong."

It's not a market in which many architects will work. A few architectural, engineering, construction, and fabrication firms design or build most of the large stadiums—a specialization that is probably inevitable given the complexity and expense of the building type. But it's a market that has put architecture very much in the public eye. "What other type of building," asks Ronald Labinski, "will make headlines on both the sports and the front page?" Motivating that public interest is not just boosterism for the city or the team, but, says Horst Berger, "an almost mystical interest in these stadiums. They are the cathedrals of our time."

Thomas Fisher ■

Acknowledgements

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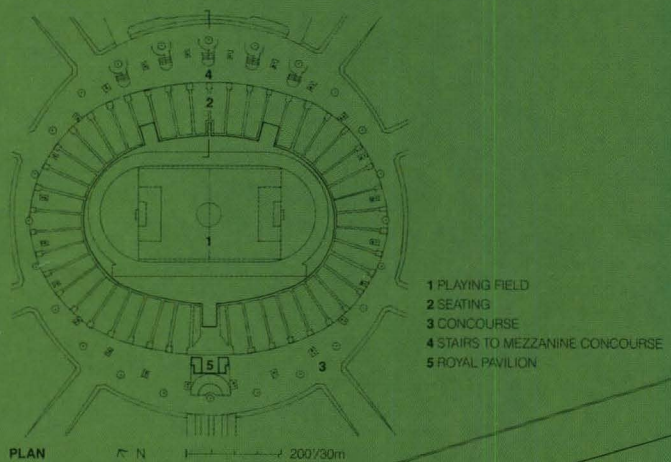
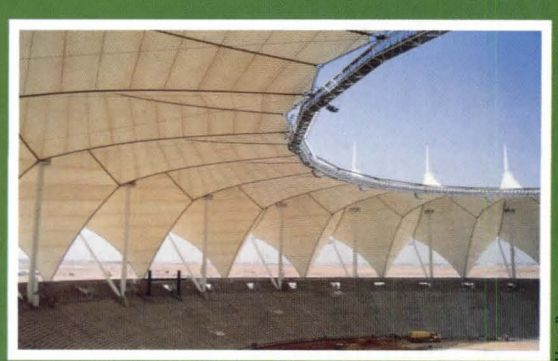
Further Reading

One of the best recent publications on architectural fabric structures is the proceedings from a 1984 international symposium available from the Architectural Fabric Structures Institute (1800 Pickwick Avenue, Glenview, Ill. 60025-1377). A magazine that occasionally covers topics related to enclosed stadiums is *Industrial Fabric Products*, published by the Industrial Fabrics Association International (345 Cedar Building, Suite 450, St. Paul, Minn. 55101 (612) 222-2508). Probably the best source of current information on covered stadium projects is *Engineering News-Record* (McGraw-Hill, 1221 Avenue of the Americas, New York, N.Y. 10020). *Time-Saver Standards for Site Planning* (McGraw-Hill) contains layouts of sports facilities.

The stadium at Riyadh, Saudi Arabia (below), was designed by Ian Fraser, John Roberts & Partners of London, with Geiger Berger Associates providing the engineering for the fabric roof. Because of the climate and client requirements, the fabric roof does not cover the stadium's playing field, even though the structural system is more than capable of spanning the roof's 945-foot diameter. Each of the stadium's 24 bays has a sail-shaped fabric stretched between one upright and one tilted mast. Cables stabilize the fabric and masts. The perimeter of each bay is open to enhance cross ventilation. Demand for such elements as concession booths, private suites, and press boxes is less in Saudi Arabia.

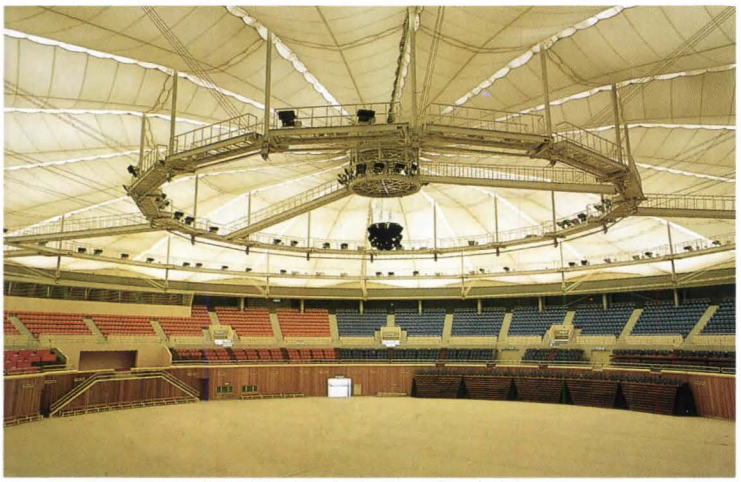


1 PLAYING FIELD
2 SEATING
3 CONCOURSE
4 STAIRS TO MEZZANINE CONCOURSE
5 ROYAL PAVILION



Horst Berger

Technics-Related Products



Interior of Fencing Hall, 1988 Olympic Stadium, Seoul, Korea.

Vestar™ architectural fabrics combine glass fiber with the weather protection of silicone polymers. The fabrics are resistant to UV degradation, temperature extremes, moisture, and most chemicals. Weighing an average of less than half a pound per square foot, the fabric enables savings in structural support systems. An eight-page brochure provides a table of typical properties and outline specifications. ODC, Inc., Subs. of Dow Corning Corp.
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Shelter-Rite® synthetic fabrics are used for architectural applications such as air structures and tensioned membrane structures. The material has a base woven of Du Pont Dacron polyester coated with vinyl and clad in Du Pont Tedlar® PVC. It withstands extremes of weather and temperature as well as the effects of atmospheric contaminants. Seaman Corp., Industrial Fabric Div.
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Tedlar® PVC cladding on outdoor vinyl fabrics makes them more resistant to the effects of weather, soil, and fading. The cladding is available as a clear, UV-screening film and as a pigmented film offered in more than 20 colors. Both films help to reduce cracking and embrittlement of PVC-based fabrics. A simple patch kit will allow fabrics protected by Tedlar to be repaired on site. The film does not burn readily or support combustion. Du Pont Company, Finishes and Fabricated Products Dept.
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Portomod® structures come in a variety of membrane colors and fabricated patterns to blend into the environment or to stand out. They install quickly with unitized galvanized steel trusses and sectionalized roofing membrane. Trusses also handle electrical conduit, pipe ducting and sprinkler systems, lighting, temperature control systems, and insulation. Seaman Corp., Building Systems Div.
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'Creating Permanent Fabric Structures' discusses design considerations, advantages, applications, and structural choices. A series of color photos show installations serving a variety of uses. A table provides winter and summer thermal and optical properties of Sheerfill architectural fabric roof systems using single, double, and triple membranes. OC Birdair.
Circle 201 on reader service card

Unistrut® space frame brochure describes three systems intended to meet a variety of structural requirements. Detail drawings show sections and structural supports, and color photos show each system as it was used in actual buildings. Specifications are provided for the three types. Unistrut Corp.
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Spandomes are clear-span membrane structures with structurally independent wall and roof sections. Walls can be vertical, made of many types of building materials, and have openings of any size. A roof can be used alone, supported at ground level, but is usually raised, supported on corner tripods. A four-page brochure explains Spandome features and provides specifications. Span Systems, Inc.
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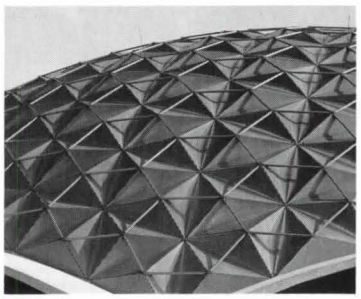

Geodesic and aluminum domes offer clear-span construction using less material and labor than conventional structures. They reflect unwanted heat away on the outside and reflect needed inside heat inward. Maintenance costs are minimal and silicone sealants keep the structures watertight. The domes have been used for auditoriums, museums, commercial buildings, and athletic arenas. Temcor.
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KSL Sports Light is designed to light action on the playing field without impairing the view of either players or fans. The easily installed lighting offers cool operation, a range of beam patterns, a built-in air filter system, and easy maintenance. An eight-page brochure describes the lights and provides photometric information and recommended layouts for football, baseball, and softball fields. Crouse-Hinds Lighting.
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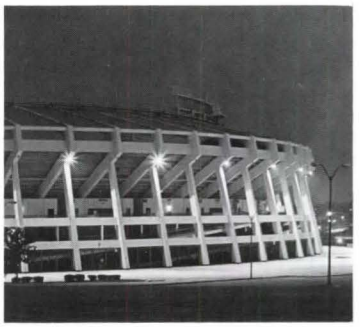

The Powr·Spot floodlight system for arena lighting uses 1500-watt Multi-Vapor metal halide lamps. More energy efficient than incandescent lamps, they provide more than three times the amount of light for each watt of electricity used. In the Atlanta/Fulton County stadium, the Powr·Spot lighting system uses 774 floodlights, compared with 1608 floodlights in the old system. Two overlapping arrangements were designed by GE to meet the requirements of both football and baseball. General Electric, Lighting Systems Dept.
Circle 106 on reader service card

Air-supported and tensioned membrane frame structures are described and illustrated in a four-page brochure. Air structures have two basic stress-relief systems: a biased steel harness or an integrated polyester web for buildings that are frequently relocated. Tensioned frame structures are segmented parallel arch clear spans with canted end arches. Components of each type and accessories are included in the descriptions. Air-Tech Industries, Inc.
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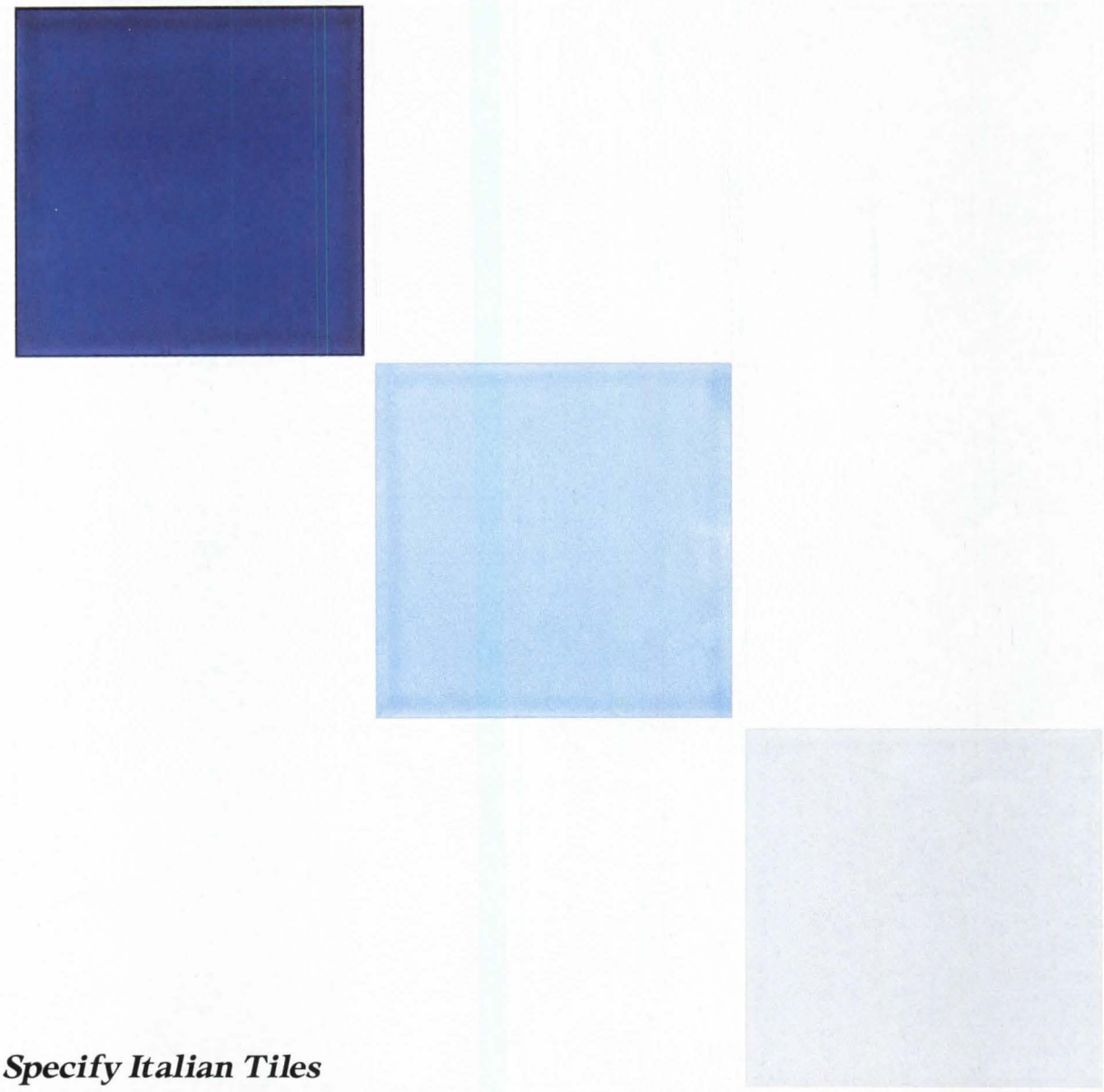

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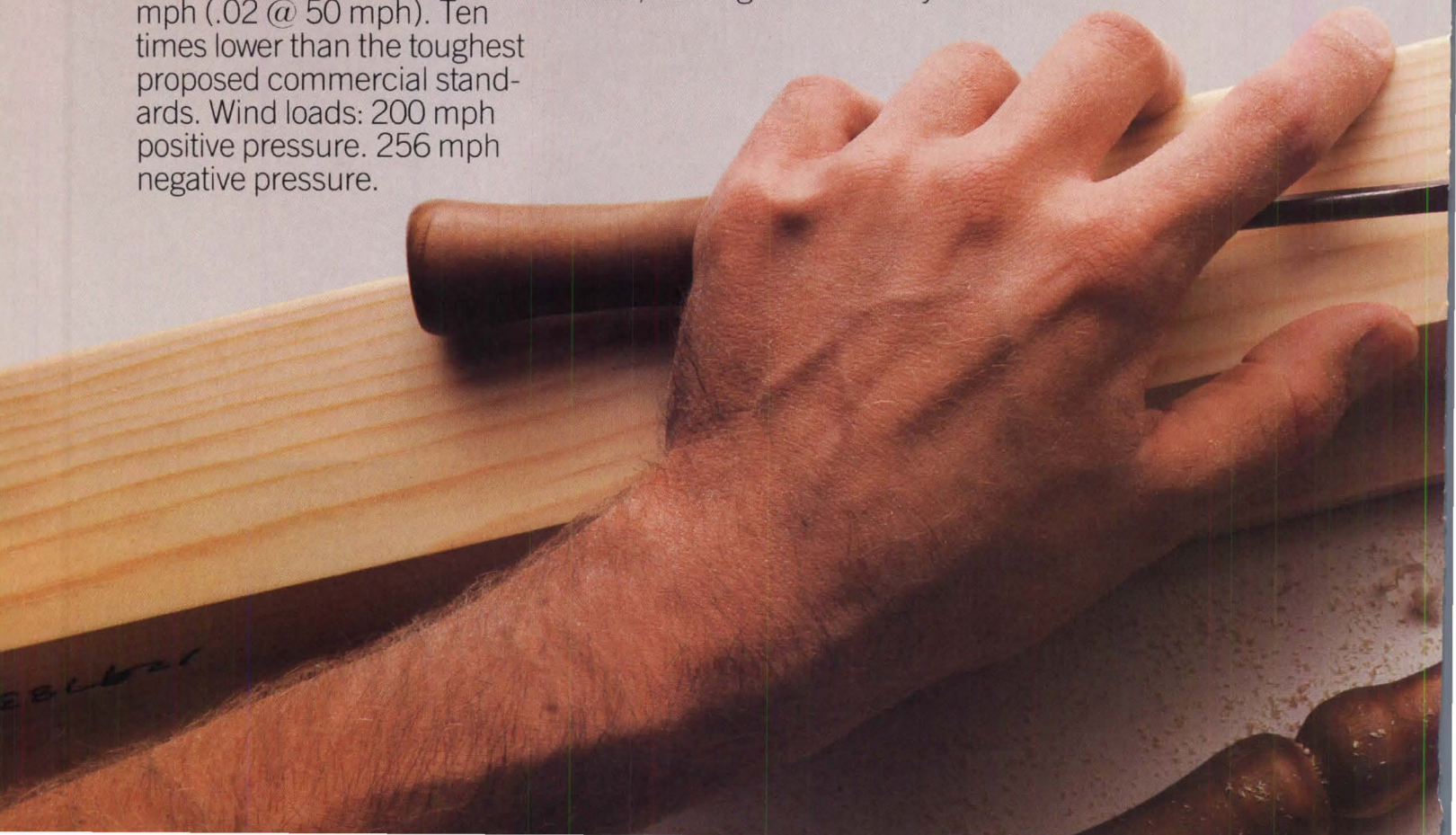

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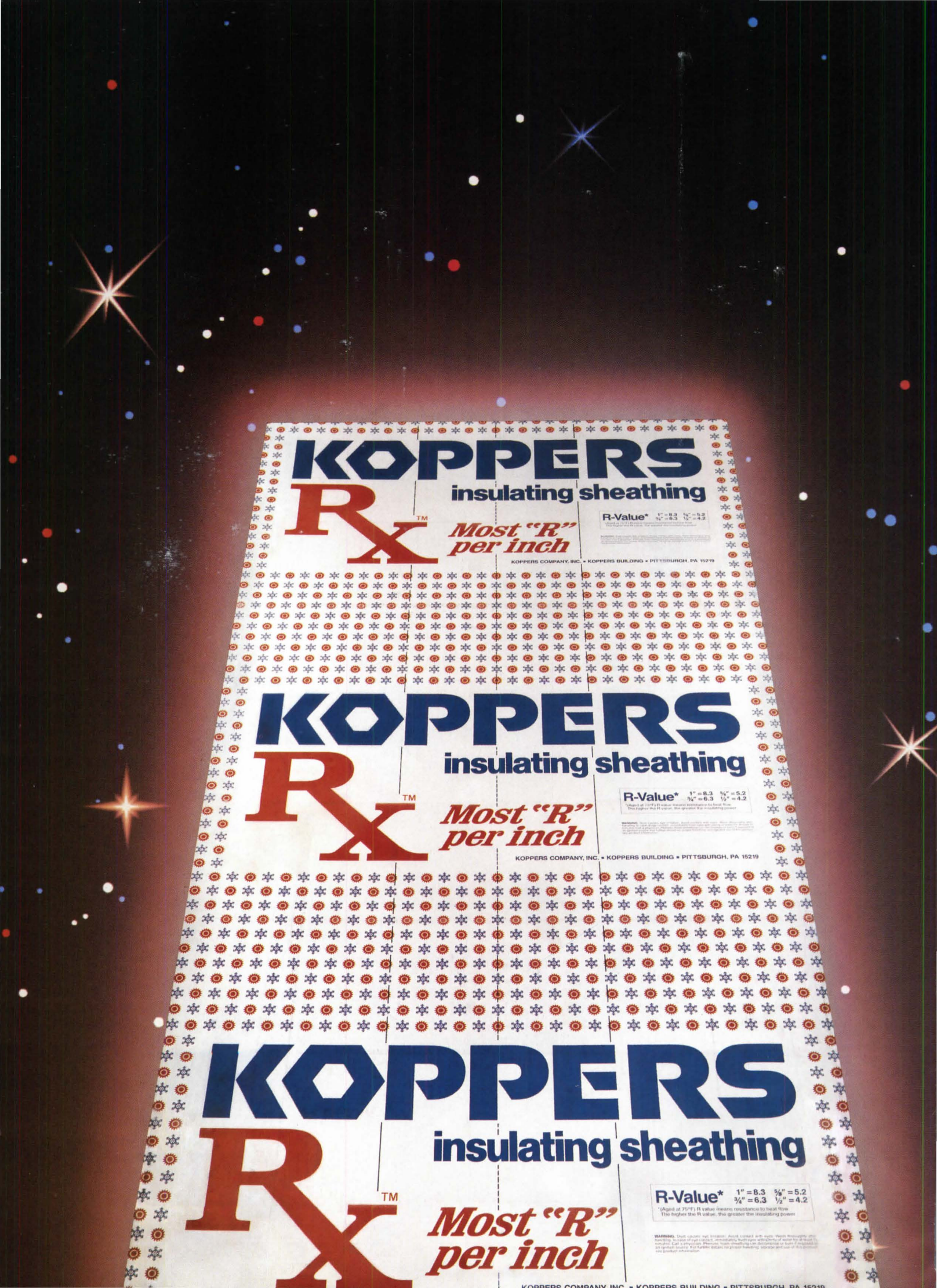
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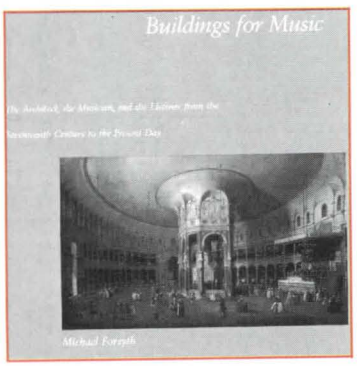
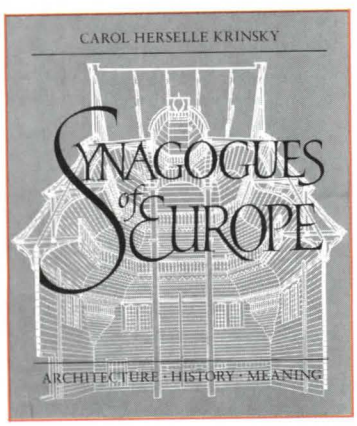
Books

Buildings for Music: The Architect, the Musician, and the Listener from the Seventeenth Century to the Present Day *by Michael Forsyth. Cambridge, The MIT Press, 1985, $30.00.*

Synagogues of Europe: Architecture, History, Meaning *by Carol Herselle Krinsky. New York, The Architectural History Foundation, and Cambridge, The MIT Press, 1985, $50.00.*





Of Symphonies and Synagogues

Buildings can simultaneously be categorized by describing the evolution of the various ways they have accommodated similar programs and by describing the historical circumstances that produced those programs. Two recent examples of such an approach, Michael Forsyth's *Buildings for Music* and Carol Krinsky's *Synagogues of Europe*, exhibit both the strength and the limitations of such a method. They succeed in providing annotated and alluring catalogs; they fail where they do not provide a convincing enough narrative or mythology to validate the project of assembling such a catalog.

Forsyth's *Buildings for Music* provides a plethora of pictures and a thorough, and one must assume correct, technical analysis of public rooms used for listening to music. But while the images convince us of the beauty and variety of the spatial variations on the simple box for listening, the text gives only a scientific rationale, which explains the horseshoe and the shoebox, the glittering opera spectacle and the austere shrine to the composer, all in terms of decibels. One is never sure how to judge these buildings. The reader receives neither a broad cultural picture, nor the critique of the composition or design of buildings one expects from an architectural history.

The sudden appearance of profitable rooms devoted exclusively to listening to music for its own sake marks the starting point of the volume. Yet why did the gentlemen of England begin to demand such rooms? What defined their design? If one is to believe Forsyth, only the happenstance of which entrepreneur converted what space to meet a sudden and mysterious demand for concert halls started the traditions of this type. And even though he remarks that the first such building, which opened in 1675 in London, was described as "a great room . . . with proper decorations as a theater for musick," he does not explore the tantalizing notions of what a "theater for musick" might mean to a new urban gentry escaping the allegorical masques of the Stuart courts, or what might make the architecture "proper" for such an audience.

Perhaps such criticism goes beyond the scope of this work. The problem is in the expectations raised by the integrated design, lavish presentation, and breezy text. Forsyth keeps promising to set his buildings in their context, and then reverts to such evasive phrases as "interesting" and "interrelated," interspersed in a panoramic and often scattered narrative of the opening of building after building devoted to the evolving tastes in concert going. The complex evolution of opera and opera houses, which served as a metaphor for debates leading to the French Revolution and which displayed the relationship between changes in social mores, technical advances, and architectural modes, is exhibited in the following manner: ". . . first, the opera houses were built for known musical demands, and second, they were built as a projection of the current social needs associated with operagoing. The two are interrelated, and, interestingly, changes in social habits would themselves affect the acoustics."

Forsyth sees every built form as a reflection of the needs of a new type of musical composition, instrument, or audience. He discusses at length how Haydn adapted his music to the hall in which it was to be played, and how Wagner's Bayreuth hall increased the mystery and impressionistic feeling of the music by hiding and muffling the orchestra. But nowhere does he relate the German and English churches and rooms in which Haydn's music was played to contemporary architectural themes, nor does he comment on the bizarre mixture of neofolk architecture, eclectic spacemaking, and technological imagery of Bayreuth. In fact, he does not even describe the spatial or ornamental characteristics of these buildings in any detail. By the end of the book, one is left with endless speculations on the meaning of acoustical experimentation and its influences on current building practices, and one must believe that our orchestra halls always have looked and sounded as they do. The type has been subsumed by the criteria that define it.

Carol Krinsky's *Synagogues of Europe* is much clearer in its structure and purpose. Rather than promising the chronologically arranged technical themes Forsyth sets out, this volume is divided into a thematic introduction, a chronological survey, and an illustrated catalog of prototypical synagogues from most countries in Europe from the Middle Ages to the present. And even though the examples might be as far separated and as couched only in the footnotes of commission and construction as Forsyth's, here the author makes no claims otherwise.

Krinsky identifies several internal and external determinants for the evolution of the Jewish religious type in its European diaspora. The space of the synagogue is opened up in the tension between the bimah, or place from which the Torah is spoken or sung, and the ark, the shrine to the unseen origins of Jewish law. This space, both centered and elongated along a devotional axis, then must always remain hidden from an alien and suspicious outside world, generating its own light and solidity from the mysteries revealed only in the abstract language of the Torah. At the same time, the appearance of this hidden sanctuary both conforms, because of direct or indirect peer pressure, to prevailing architectural tastes and appears exotic, not of its place or time. Krinsky ably delineates these themes, though she does not sufficiently reference them to the wealth of examples that follow the chronological exploration of the issues.

What is fascinating is to watch

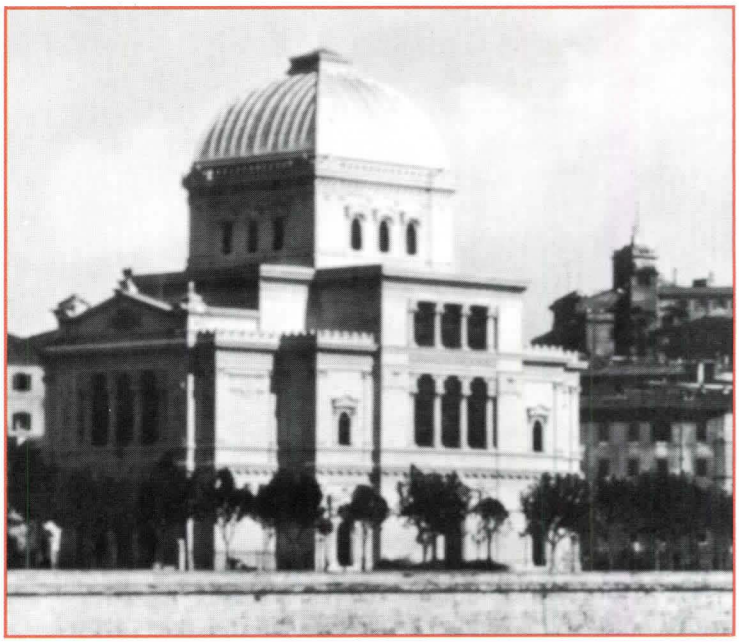
(continued on page 118)

Books *(continued from page 117)*
the transformation of the same basic plan, the same tensions between hidden and revealed, known and imagined, received order and wishful escape, appearing through the wooden structures of the Pale, the stone shelters of Spain, the cultured churches of Holland, the Moorish extravagances of emancipated Germany, and the archaeological Modernism of England. The synagogues of the schtetls, or villages, recall the austere power of the pioneer home and the Protestant Church, reminding one of the nonrepresentational abstraction of architecture. The giant temple on the Oranienburgerstrasse in Berlin is an opulent cathedral of a monied congregation meeting for social purposes, yet its eclectic grandeur must have made even these polite German Jews sense the structural difference represented by their history and private memories.

What hampers *Synagogues of Europe* is not the author's solid exposition of the type, but the lack of documentation of the type. The black-and-white photographs preserve glimpses of a culture whose very adaptability doomed many of its structures, and which even at the point of its assimilation was destroyed. Peering at the damaged documents reproduced from Poland, Hungary, and Russia, one can only wish for images to match the description by El Lissitzky of a synagogue he visited in 1916: "It is like a child enveloped by a netting, opening his eyes upon awakening and being startled by insects and butterflies glittering in the rays of the sun . . . the whole structure . . . is full of a few simple colors, giving you the impression of a world alive and blooming."

That world is now lost, which is why it is perhaps easier in this book to imagine and mythologize the type. Without a scientific description of the kind of tent or tabernacle that might have best housed a certain number of people, one reads this typological catalog like a magically real enumeration of the kind of synagogue that might have been. One almost wishes that Krinsky had not illustrated the few disheartening post-War synagogues included in the book.

Krinsky's book does not make easy reading or looking, as the Forsyth volume does. One is left to make up stories, as one is in the volume on musical buildings,



Costa and Armanni, Tempio Israelitico, Rome, 1901.

but one is constrained neither by a vague chronological promise nor by a technical dogma. *Synagogues of Europe* is thus closer to realizing the potential of typological analysis. By collecting fragmentary facts, images, and a structure given by the evolving relationship between function, user, and designer, the author has set the stage for the exploration of the forms of an architectural project in terms of the mode of self-representation of both the culture that produced these structural artifacts and of our myth of that culture. ■

Aaron Betsky

The reviewer is an architect and architectural journalist working for Frank O. Gehry & Associates in Los Angeles.

Overall view of the structure showing the adaptability of concrete masonry to "period" architecture. Featured in the facade are split face concrete masonry integrally colored burgundy, gray scored units and accents of "waffle" block and glazed face units in blue and green.

The building layout responds to seismic design requirements. The concrete masonry interior corridor bearing walls act as a shear wall in the longitudinal direction. The same burgundy colored split face concrete masonry and gray scored units used for the exterior provide design continuity.

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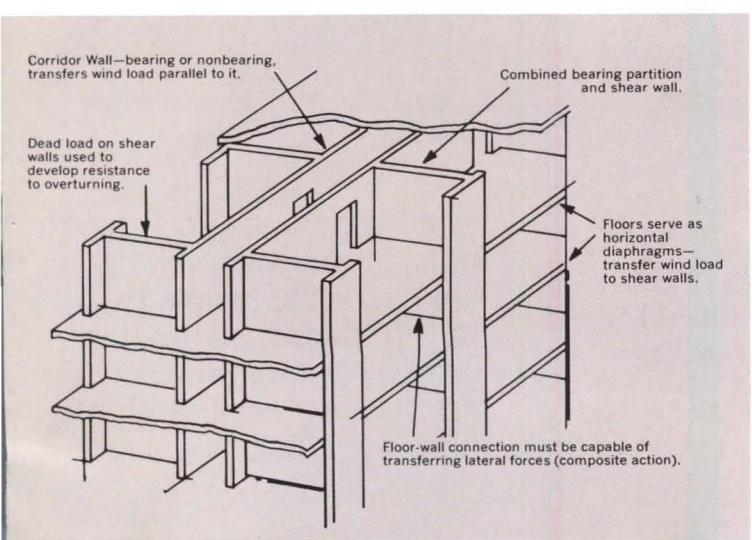
Project facts: Owner, St. Louis Volunteers of America Elderly Housing, Inc.; Architect, Henderson Gantz Architects; Engineering Consultants, William C. Carr, Inc., Structural; Financing, U.S. Department of Housing & Urban Development; Site area, 1.1 acres; Masonry cost $8.57 psf (based on 44,000 sq. ft.—30,000 sq. ft. for exterior walls, 14,000 sq. ft., interior walls. Cost includes materials, labor, cleaning & sealing).



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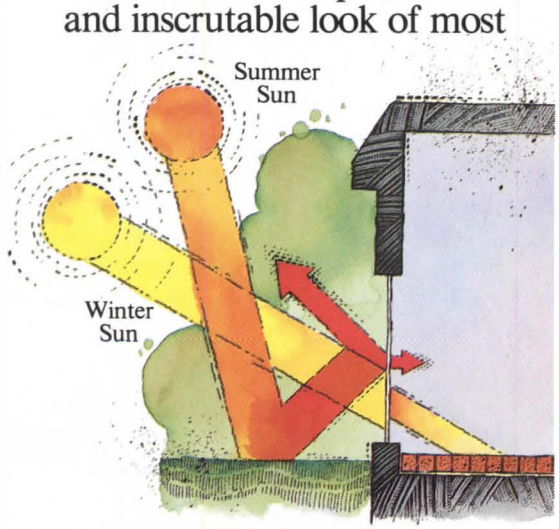

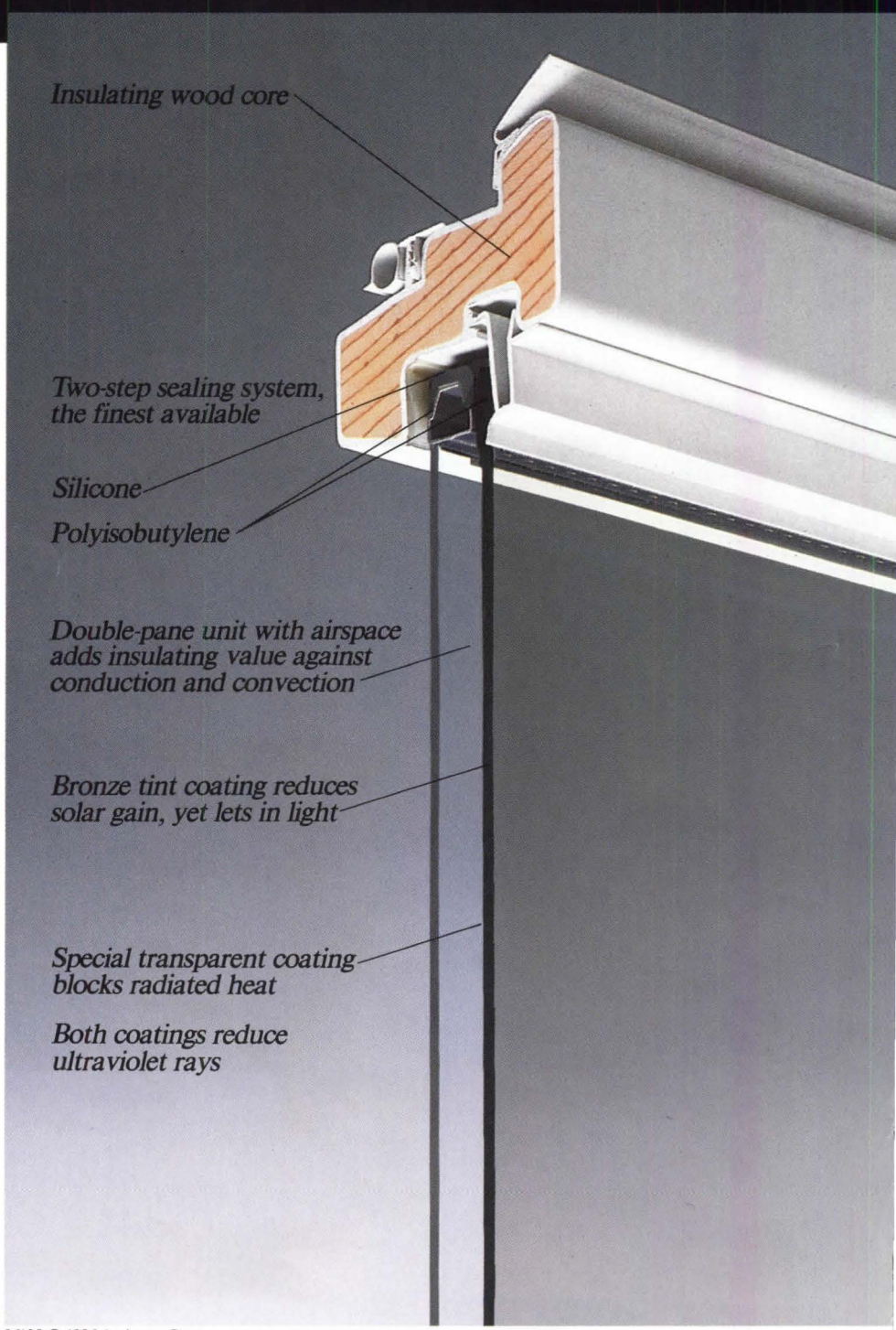

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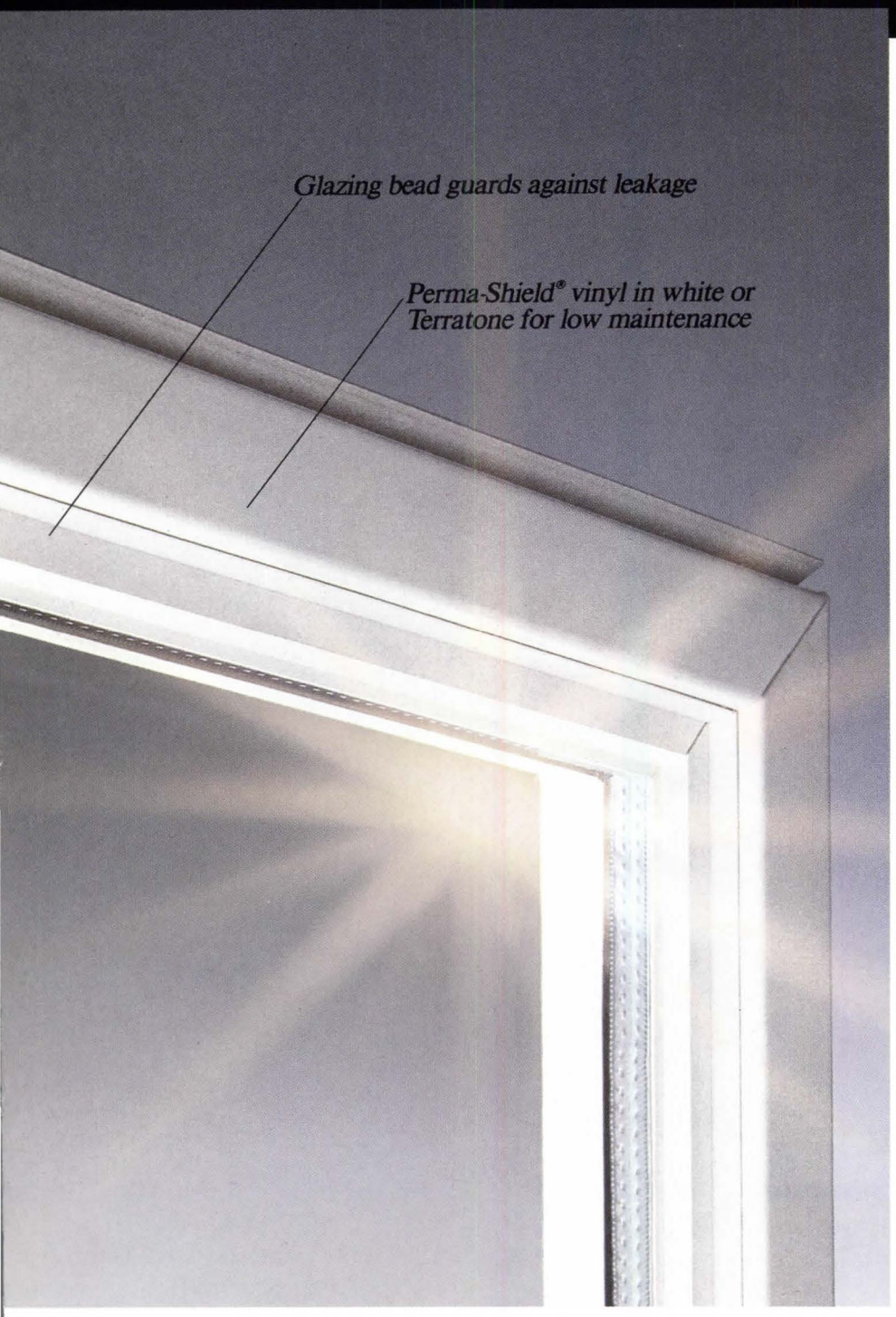

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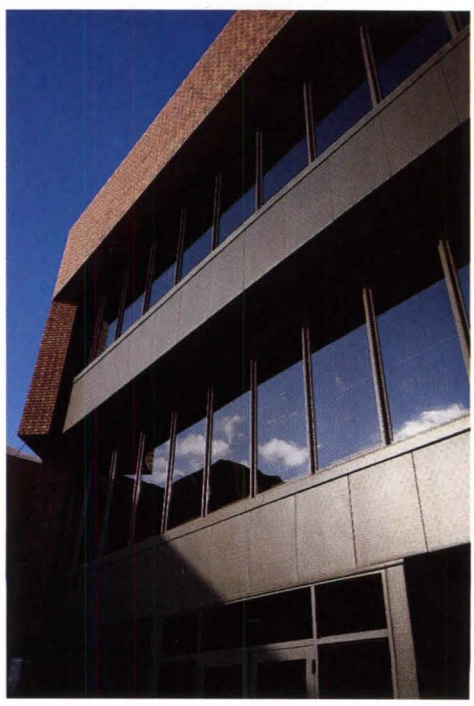

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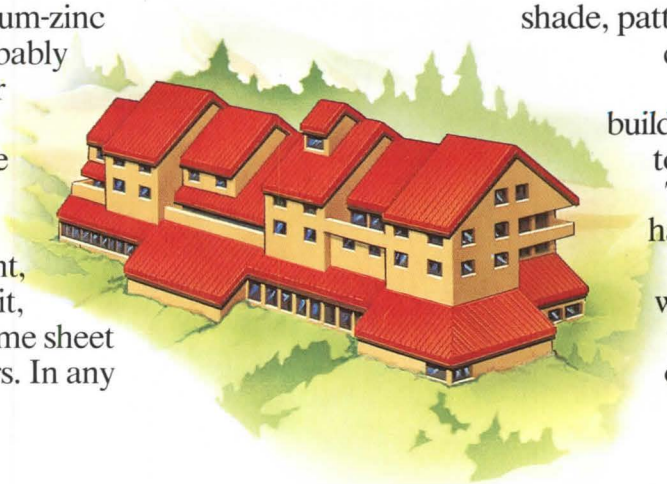

stucco, brick, stone, glass, or wood.

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Building design concept by Michael J. Fitzpatrick, A.I.A., Architectural Alliance, Columbus, Ohio. "Galvalume" is a trademark of BIEC International, Inc.

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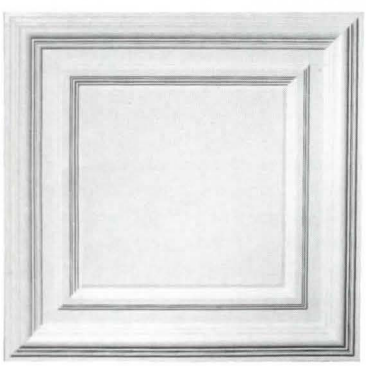
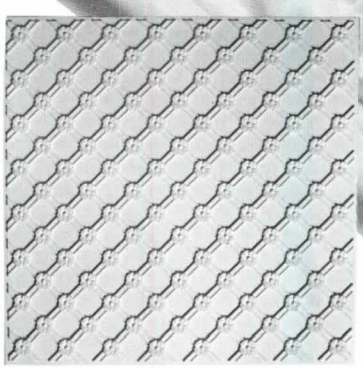
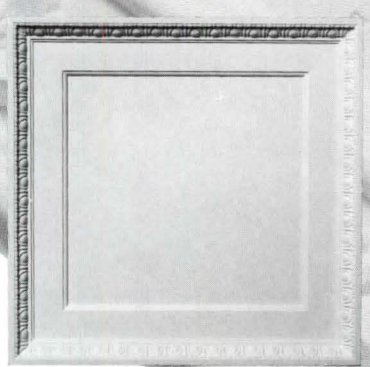
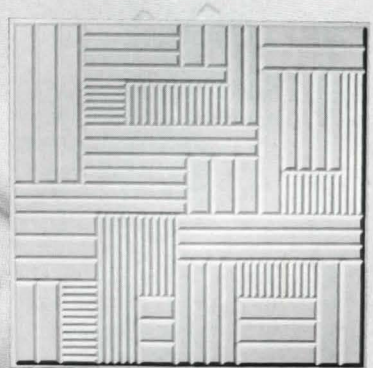
New Products and Literature









Ceiling Systems

The M.I.R. Series is a coffered ceiling system just introduced by Columbia Lighting that uses a variety of trim pieces to create a built-in appearance. The coffers are four feet square and nine inches deep, allowing their integration with standard hung ceilings. The trim pieces vary from wood to polished or stepped metal and disguise one-inch-diameter fluorescent lamps around the coffer's perimeter. Made of steel, the coffer pans have a textured, painted surface. Five-foot-square coffers and custom trim pieces also are available. Columbia Lighting.

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Ornamental ceiling tiles are designed to fit into standard 2′ x 2′ commercial grid systems. The panels are manufactured from gypsum cement, glass fiber, and other noncombustible aggregates. They have zero smoke spread, zero flame spread, and zero fuel contribution, and will not release toxic fumes. Relief patterns vary from ½ inch to 1½ inches, depending on design. There are ten standard designs, with custom designs available. The material cuts easily to accommodate lighting, venting, and sprinklers. Each tile weighs approximately eight pounds. Above View Inc.

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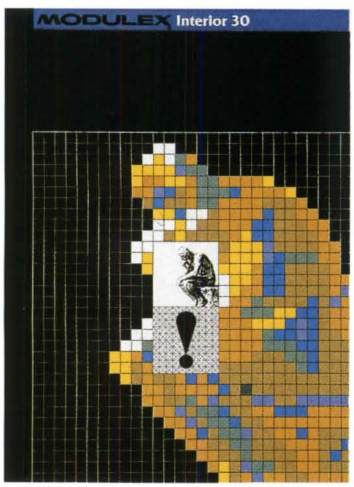


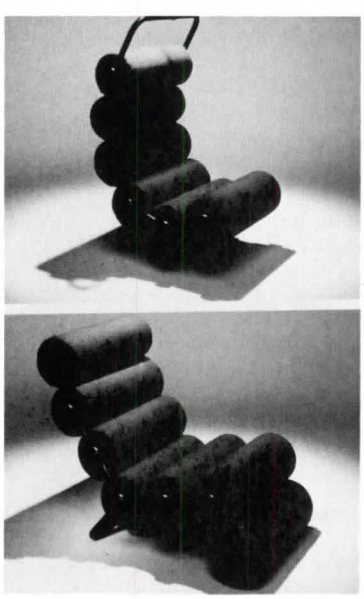
Interior 30 brochure of interior signage demonstrates the flexibility and contemporary design of the system in office, academic, large-scale corporation, retail store, and manufacturing plant settings. In 1985 it won the IBD/Product Design Gold Award for innovative design. Modulex, Inc.
Circle 207 on reader service card

Greenhouses for Living is a guide to buying and building residential sunspaces. It includes a directory, by states, of sunspace builders and dealers, an update of solar energy and tax credit information, and an article about the greenhouse as an investment. Copies at $12 each, including postage and handling, are available from Steven Winter Associates, Inc., 6100 Empire State Building, New York, N.Y. 10001.

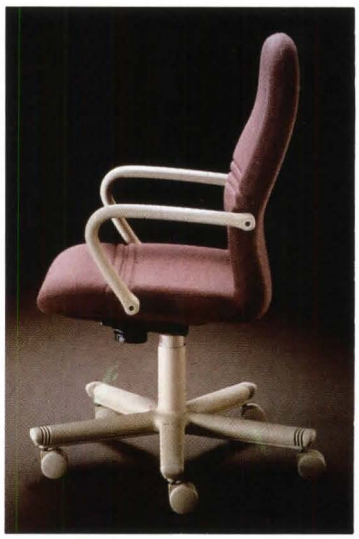
Architectural Accents for the bath are made of solid brass. There are widespread lavatory fittings, tub sets, shower sets, two- and three-handle diverters, Roman tub sets, and bidet fittings, as well as single-control shower fittings or tub/shower diverter fittings, tank lever handles, trip waste, and overflows. Matching accessories are made of solid brass in all the same finishes and color combinations as the fittings. There are single or dual metal finish combinations and colors with bright metal accents. Black, white, and almond color finishes are bonded under high temperatures to solid brass. Artistic Brass.
Circle 107 on reader service card

Cascade body dryers, STAFA Model WD 50.11S, promote comfortable, efficient drying of the entire body, usually within 2½ to 3 minutes. They reduce towel service costs and are more hygienic than drying with towels. Dryers are easy to install and draw only 8.6 Amps at 220 VAC, 60 Hz. Maintenance consists of a periodic cleaning of the air-intake grill and fan blades to remove any accumulated dust or lint. OM Driers.
Circle 108 on reader service card

Drainable blade louvers of extruded aluminum have a blade brace on the underside of the louver blades on spans in excess of 72 inches and at invisible mullions for support to assure proper alignment and prevent flutter. Vertical mullions can be either visible or invisible, depending on architectural considerations. Horizontal mullions are invisible when the louver is viewed from the front and have jambs cut on an angle between the blades to allow natural joining. Selection data and construction details are provided in a 12-page catalog. Dowco Corp.
Circle 208 on reader service card



The High Roller chair is adjustable to any position by interlocking the frame position to fit body contours. Foam rollers are available upholstered in red, yellow, medium gray, or black, with coordinating anodized aluminum frame in red, medium gray, or black. Customer's own material can also be used. There are one-person and two-person versions. Benton Brothers Systems.
Circle 109 on reader service card



Contura Collection additions, designed by Robert/Bernard Associates, include management, taskworker, and guest chairs. Interactive articulation of seat and back allows the management chair to move with the user. Adjustments include tilt tension control, tilt lockout, and auto-lift or pneumatic lift seat height adjustment. Taskworker chairs have seat and back of plywood and molded polyurethane foam. Seat height adjustment is pneumatic or auto-lift. Both have dual-wheel casters on a five-prong urethane base, with shock-absorbing bumpers. The Gunlocke Company.
Circle 110 on reader service card

MAX CAD workstation starts with a basic table around which other units can be added for a customized space. Tables, worksurfaces, shelves, hutches, accessories, and panels can be combined to make a single workstation or an entire office. Interchangeable components make future changes possible. There are several styles and sizes. Hamilton Industries.
Circle 111 on reader service card

Porcelain stoneware consists of granite-colored unglazed ceramic floor tiles and coordinated glazed wall tiles. Sizes are 4″ x 4″, 4″ x 9″, and 6″ x 6″. Several trim shapes are also available. The brochure shows tile colors and provides technical data and specifications. Forms & Surfaces.
Circle 209 on reader service card

Tile catalog includes three new lines: Seascapes two-glaze tile; companion Deco inserts; Bravo, quarry tile in a variety of sizes; and a complete line of decorative inserts. The 28-page catalog offers trim shapes, color charts, descriptions, and specifications. Mid-State Tile.
Circle 210 on reader service card

Roll-up doors with no overhead track provide more room for storage and fork-truck access to the door opening. There are two sizes. The DS-200 door is for openings up to 16′ x 16′. The DS-100 door is for openings up to 10′ x 10′ and is available in push-up operation only. A two-coat baked enamel paint system, which inhibits rust and corrosion, is available in white, tan, or brown standard colors, with other colors available on extended lead times. Door Systems Inc.
Circle 112 on reader service card

The Modular Vault uses easily assembled panels to create vaults rather than site-poured concrete. Vaults are available with a UL Class I or II rating against tool or torch attack. Panels are made of a concrete composition that is compacted to a uniform density. The modular vaults weigh only a fraction as much as site-poured units. They are expandable in any direction or they can be moved to another location. LeFebure, Div. of Kidde Inc.
Circle 113 on reader service card

Steel and aluminum windows brochure illustrates several styles including fire-rated and detention windows. There is a reversible model that pivots to permit cleaning from the inside. Casement doors are also available. Any of several finishes can be specified. Hope's Architectural Products.
Circle 211 on reader service card

Custom metal panel systems for roofs, fascia, mansards, soffits, and screens are described and illustrated in an eight-page color brochure. There are standing seam, batten and panel, flush panels, Scantiles with the look but not the weight of clay tiles, and shingles with the texture of shakes. Drawings show details of installation and there are photographs of roofs. Specifications and design notes are included. Perma-Clad.
Circle 212 on reader service card

'The Certainteed Roofing Collection, An Architect's Specifier,' combines residential roofing shingles and color selections in one manual. The product line offers a wide choice of colors and shingles for new construction and remodeling. For a copy write on professional letterhead to Marcia Trotman, CertainTeed Marketing Manager, P.O. Box 860, Valley Forge, Pa. 19482.
(continued on page 132)

Nothing tops a Hi-Tuff™ roof.

Building owner: Capital Improvement Board of Managers of Marion County, Indiana; Architect: Howard Needles Tammen and Bergendoff; Roofing contractor: North American Roofing Co., Inc.

The 122,000 square-foot roof atop the massive Market Square Arena in Indianapolis, Indiana, home to the Indiana Pacers of the NBA, is now protected from the elements by a new Hi-Tuff single-ply roofing system.

Hi-Tuff is the ideal roofing for the unusual dome-shaped structure. Its brilliant white surface greatly improves the appearance of the Arena and the downtown skyline. The reflective surface provides energy savings, too.

Hi-Tuff is securely fastened to the Arena roof deck by mechanical attachment. It was laid down over an old foam roof, adding very little weight and retaining the insulating value of the foam.

And Hi-Tuff, based on weather-resistant Hypalon* synthetic rubber from Du-Pont, has seams that are fused by automatic hot-air welding, forming one continuous watertight skin over the entire Arena dome. The simplicity of the system helped the contractor complete the job on schedule.

So when you're looking for a new roof, look to Stevens. Because nothing tops a Hi-Tuff roof.

For more information about Hi-Tuff, and an actual hot-air welded sample, write to J.P. Stevens & Co., Inc., Stevens Elastomerics/Roofing Systems, Northampton, MA 01061-0658, or call 413/586-8750.

Circle **No. 358** on Reader Service Card

*Registered trademark of Du Pont

STEVENS
Roofing Systems

Celeste carpet is made of two-ply Ultron 3D nylon with a yarn blend that creates a feel much like wool. It is available in 30 colorways and ten multicolored styles with delicate background shades and "confetti" predyed accent yarns. For residential use, it has a dense pile with a thick homespun look. Collins & Aikman.
Circle 114 on reader service card

The HG Series door hardware of pull and push/pull handles has a variety of streamlined shapes, sizes, and finishes. Pulls and bars are made of 1¼-inch-diameter tubing in a wide choice of metals. Hiawatha, Inc.
Circle 115 on reader service card

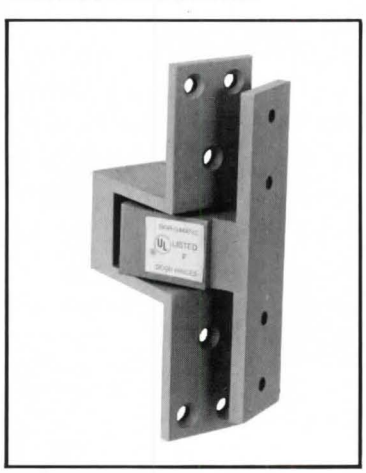
Spirit II Naugahyde® includes 34 classics from the Spirit of '76® plus 34 new colors. It was developed to coordinate with laminates, carpeting, and wallcoverings to maintain a color scheme throughout a project. BeautyGard™ top coat offers surface abrasion resistance and longer wear life. The material's soft hand and ease of maintenance make it a suitable upholstery fabric for hotel lobbies, restaurant dining areas, hospital waiting rooms, and other commercial areas. Uniroyal, Inc.
Circle 116 on reader service card

Fibertherm™ window systems of fiberglass are thermally insulating and have a low expansion/contraction rate. The material does not warp, twist, rot, shrink, or dent, and does not become brittle in cold weather nor distort in high temperatures. Colors are white or brown, but the frames can be painted. Alta Therm Industries Ltd.
Circle 117 on reader service card

Nelfort Natural Stone Carpet from Holland is made from smooth pebbles graded and sorted according to size and color, then combined with epoxy resins and applied to a thickness of ¼ inch. Quartz and epoxy resins bonded together form a durable surface that will last for years. There is an almost limitless choice of natural blends and colors. It can be laid on any stable, rigid, clear, dry subfloor, such as concrete, and provides a nonslip surface even when wet. It is suitable for outdoor use and will withstand a wide range of temperatures. Atlantic Trade & Transport Consultants, Inc.
Circle 118 on reader service card

Sure-Lites Stick SLS 4 is a one-piece, self-contained unit that allows a standard fluorescent lighting fixture to operate as an emergency light for up to two hours. It fits into most 4-foot lighting fixtures and under normal conditions functions like a fluorescent lamp. In an emergency, the unit will supply standby battery power, maintaining enough illumination for safe evacuation from commercial, institutional, and public buildings. Nickel cadmium batteries with a solid state charging and switching circuit provide years of trouble-free protection. Halo Lighting.
Circle 119 on reader service card

The Blade™ high-cut-off fluorescent lighting uses a series of metallic panels to create a gridlike louver. In combination with the company's "EP" Trofer, The Blade provides economical, low-glare lighting. It is available in black, bronze, white, off-white, or aluminum, and comes in sizes from 2′ x 2′ to 3′ x 5′. H.E. Williams, Inc.
Circle 120 on reader service card



The pocket pivot hinge enables fire doors to "vanish" into walls, allowing wider, less cluttered corridors. On cross corridor doors it positions the door flush in the wall pocket, out of the corridor. It can be used with the company's concealed floor closer mounted in the pocket for a completely concealed installation. The pivot is available in steel prime coat and several plated finishes. Dor-O-Matic.
Circle 121 on reader service card

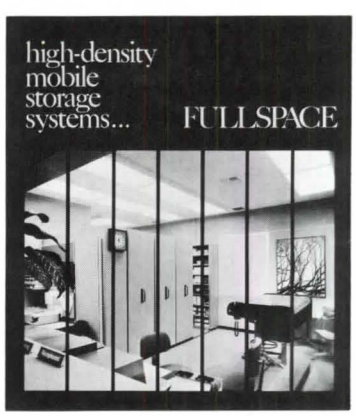
Kaleidoscope laminate series of multicolored pointilist nondirectional patterns offers palettes of subtle color and visual texture. The four basic colors are blue, beige, gray, and white, available in Textured Finish with ARP Surface® for extended wear, and in Mirror Finish. Nevamar Corporation.
Circle 122 on reader service card

Prestige 4 Collection of 70 textile wallcoverings offers high styling, subtle colors, and unique weaves. In the group are chevron and herringbone weaves, natural fiber woven and warp lay patterns, bouclé wovens, satin weaves, and 100 percent linen washable wallcoverings. Patterns and colors are coordinated for virtually unlimited design possibilities. The wallcoverings are available by the yard—many Scotchgarded—and are Class A flame rated. Prestige Wallcoverings.
Circle 123 on reader service card

COC (Customer's Own Color) wallcoverings allow the architect and designer to specify special color vinyl, colored flexible wood, and selected woven textile wallcovering products. The first COC series features solid color vinyl in a variety of textures (100 yards per color minimum order for Types I, II, and III weights). Color standards can be submitted in paint, laminate chip, fabric, or carpet, and samples will be sent for approval of color and texture. S.R. Wood, Inc.
Circle 124 on reader service card

VIP Hy-Flex 2100 waterproof coating is designed for use over exterior masonry, stucco, precast or cast-in-place concrete, brick, and metal. Its combination of internal and external plasticizers provides 300 percent initial elongation and long-term flexibility and weatherability. VIP Hy-Flex 2100 is easy to apply, has good hiding properties, covers 75–100 square feet per gallon, and cleans up with water. It is available in 15 standard colors and white, and it can be tinted to match any custom color. VIP Enterprises, Inc.
Circle 125 on reader service card

'Select for Success' is a comprehensive ten-page guide to the successful selection of architectural and engineering consultants. Members of the Society for Marketing Professional Services have drawn on the first-hand experience of SMPS national membership to develop information on proven successful selection procedures. The results are written in simple English, easily comprehensible and readily usable by facilities managers with responsibilities for selecting consultants. The Society for Marketing Professional Services.
Circle 213 on reader service card



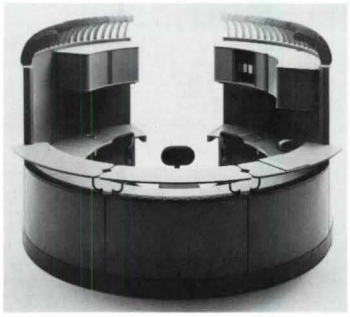
Fullspace high-density storage systems brochure covers light-, medium-, and heavy-duty mobile shelving. It discusses maximizing shelf space by eliminating fixed aisles, and includes information on design, storage capabilities, floor load considerations, architectural constraints, and safety features. The brochure offers advice on rail placement and fitting a mobile storage system into existing space. Lundia.
Circle 214 on reader service card

Europa II appliances have gray surfaces with accents of pinstriping. The group includes ovens, cooktops, a dishwasher, hoods, and a trash compactor. Cooktops are made of tempered glass with four burners, two with built-in temperature controls. The dishwasher uses steam to loosen soil before washing with water. An eight-page brochure illustrates the appliances and provides information about dimensions and electrical requirements. Thermador/Waste King.
Circle 215 on reader service card

Architectural Hardware catalog covers door stops, bolts, pulls and plates, closers, knobs, and levers, as well as cabinet hardware. The eight-page catalog includes descriptions, illustrations, and a list of finishes available. H.B. Ives.
Circle 216 on reader service card

Greenhouse brochure illustrates several models, both attached and freestanding. Several feature a 44-inch radius curve and have sliding doors and vent awning windows. One-inch thermal glass is standard. Units are 100 percent thermally broken. Roofs are made of tempered and laminated safety glass; vertical panes are tempered glass. Accessories include fans and insulating shades. Solite Solar Systems.
Circle 217 on reader service card

Structural Glazed Silicone (SGS™) Systems, described in a catalog, create a seal designed to impede water and air infiltration. Essential to good SGS systems installations are proper joint design and tooling, curing time, compatible cleaners and primers, and suitable handling methods for glazed frames. O'Keeffe's Inc.
Circle 218 on reader service card



Space system walls can be used for a single work station or a whole office. The system has a curved wall, a straight wall, and a flexible wall called Snake that can be curved in any desired radius, which can be combined in many configurations. Three walls range from transparent to opaque, with four types of windows in the opaque walls. There are vertical and horizontal wiring channels and several hang-on components. A series of fins accents the curves of the partitions. Sacea.
Circle 126 on reader service card

Elastoprene™ Compression Seals architect's guide and installer's manual includes specifications, definitions of terms, and construction and installation procedures. The seals are used in expansion joint fillers to prevent water from penetrating the joint and entering the infrastructure. The 20-page manual reviews improperly formed concrete joint installation, splicing metal retaining frames and top cover plates, cross, tee, and L intersections, and changing directional planes. MM Systems.
Circle 219 on reader service card

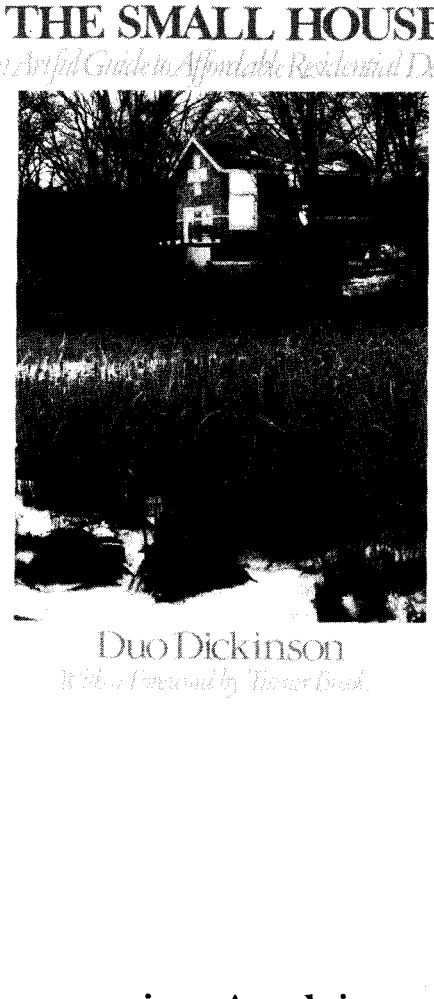
Building Materials

Major materials suppliers for buildings that are featured this month as they were furnished to P/A by the architects.

Rebecca's, Venice, Calif. (p. 85). *Architect: Frank O. Gehry & Associates, Venice, Calif.* Onyx: Brunner Pacific. Lighting: Capri. Marble and granite table tops: A.G.I. Table bases: L&B Manufacturing. Wood chairs: L&B Manufacturing. Custom booths: Kress Interior Systems. Vinyl upholstery material: Hallmark Fabrics.

Frances Howard Goldwyn Hollywood Regional Branch Library, Hollywood, Calif. (p. 76). *Architect: Frank O. Gehry & Associates, Venice, Calif.* Drywall: U.S. Gypsum. Aluminum window sections, skylights and doors: U.S. Aluminum. Hollow metal interior doors: Security Metal Products. Overhead aluminum doors: Atlas Door Corp. Built-up membrane roofing: Flintkote. Elastomer waterproof coating: Pacific Polymers. Fiberglass insulation: Manville. Movable metal partitions: Advanced Equipment Corp. Interior paint: Dunn Edwards. Hinges: McKinney. Locksets: Sargent. Door closers: Sargent; Rixson. Panic exits: Pemko. Other hardware: Stanley; Folger Adams; Baldwin. Lighting: Cole; Prudential; Thorn Lighting Co. Plumbing fixtures: American-Standard. Toilet partitions: Fiat. Water fountains: Haws. HVAC: Carrier. Carpet: Bentley Mills. Furniture: GF; Haller Systems; Harbor Furniture. Wood chairs: Jasper. Blinds: Levolor. Blackout shades: Fabco.

Information and Computer Science/Engineering Research Facility, University of California, Irvine (p. 90). *Architect: Frank O. Gehry & Associates, Venice, Calif.* Roofing: Flintkote. Insulation: 3M. Exterior paint: Kynar. Interior paint: Sinclair. Plumbing fixtures: American-Standard.



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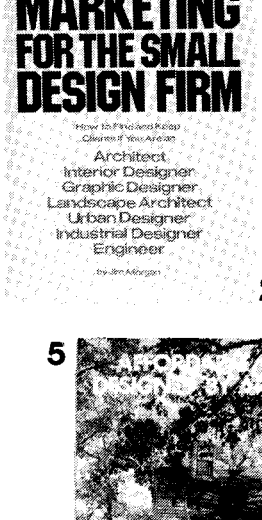

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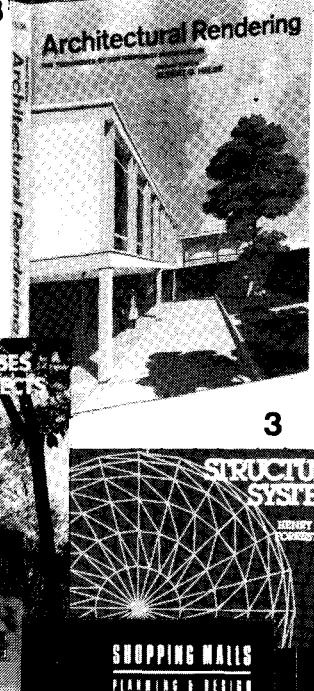

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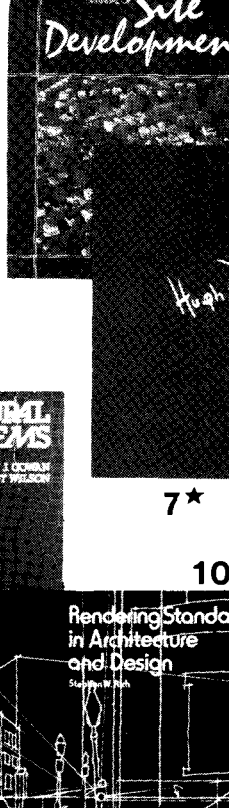

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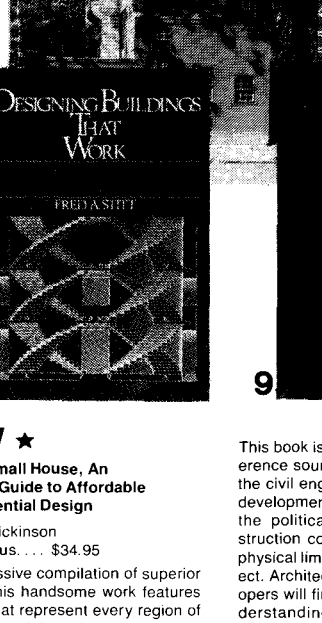

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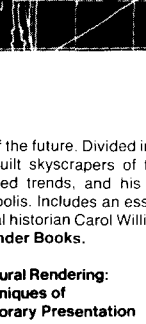

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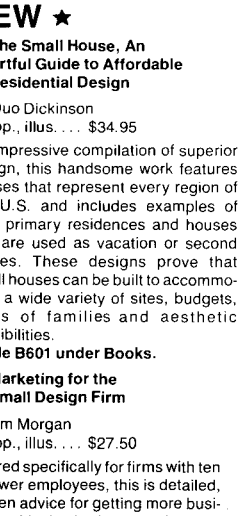

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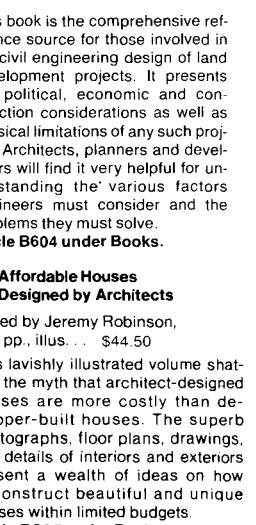

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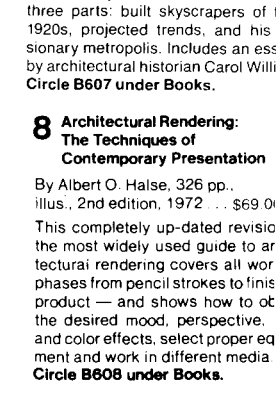

10

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To receive books, circle appropriate numbers on the Reader Service Card in the back of this issue. Payment must accompany orders being shipped to P.O. Box numbers. Please allow 6-8 weeks delivery. Prices subject to change.

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600 Summer Street
PO Box 1361
Stamford, Ct. 06904

P/A Back issues

A limited supply of the following issues of P/A are available at $7.00 per Copy. **Check MUST accompany order!** Connecticut Residents Add 7½% Sales Tax.

September. . . . .Interior Design/Audio-visual Rooms
August . . . . . .Barcelona Pavilion/Stern Residential/Office Lighting
July . . . . . .Houses/Housing/Roofing
June. . . . . .Moneo/Alexander/Computers
May . . . . . .Middleton Inn/Housing Rehab/Furniture Awards/High-tech Labs

NEW ★

1 The Small House, An Artful Guide to Affordable Residential Design

By Duo Dickinson
196pp., illus. . . . $34.95

An impressive compilation of superior design, this handsome work features houses that represent every region of the U.S. and includes examples of both primary residences and houses that are used as vacation or second homes. These designs prove that small houses can be built to accommodate a wide variety of sites, budgets, sizes of families and aesthetic sensibilities.
Circle B601 under Books.

2 Marketing for the Small Design Firm

by Jim Morgan
159pp., illus. . . . $27.50

Geared specifically for firms with ten or fewer employees, this is detailed, proven advice for getting more business with the budget you have to work with. Sample charts, forms, checklists, letters, tips for better promotion and more.
Circle B602 under Books.

3 Structural Systems

By Henry J. Cowan and Forrest Wilson
256 pp., illus. . . . $18.95

This is a comprehensive guide to preliminary structural design using a minimum of mathematics and numerous illustrations to describe structural forms and their mathematics. It has a strong emphasis on graphic presentation and is an instant-access reference to structural design. Full consideration is given to the internal and external forces that a building must withstand, and the interaction of structural and environmental design.
Circle B603 under Books.

4 Practical Manual of Site Development

by B.C. Colley, R.C.E.
220pp., illus. . . . $37.50

This book is the comprehensive reference source for those involved in the civil engineering design of land development projects. It presents the political, economic and construction considerations as well as physical limitations of any such project. Architects, planners and developers will find it very helpful for understanding the various factors engineers must consider and the problems they must solve.
Circle B604 under Books.

5 Affordable Houses Designed by Architects

Edited by Jeremy Robinson,
168 pp., illus. . . $44.50

This lavishly illustrated volume shatters the myth that architect-designed houses are more costly than developer-built houses. The superb photographs, floor plans, drawings, and details of interiors and exteriors present a wealth of ideas on how to construct beautiful and unique houses within limited budgets.
Circle B605 under Books.

6 Designing Buildings That Work

by Fred A. Stitt
244pp., illus. . . . $37.50

Designers, architects and others concerned with buildings can improve upon the building plan process by using "*high speed* design" rather than the hit-or-miss intuitive planning methods of the past. Proven techniques for predesign, programming, planning methodology, planning rules of thumb and systematic problem solving.
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NEW★

7 The Metropolis of Tomorrow

By Hugh Ferriss
200 pp., illus. . . . $35.00

The 1920s through the 1950s Hugh Ferriss was America's most celebrated architectural artist. Ferris draws and discusses the skyscraper and presents his romantic vision for a humanistic city of the future. Divided i
three parts: built skyscrapers of
1920s, projected trends, and his
sionary metropolis. Includes an ess
by architectural historian Carol Willi
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8 Architectural Rendering: The Techniques of Contemporary Presentation

By Albert O. Halse, 326 pp.,
illus., 2nd edition, 1972 . . . $69.0

This completely up-dated revisio
the most widely used guide to ar
tectural rendering covers all wor
phases from pencil strokes to finis
product — and shows how to ob
the desired mood, perspective,
and color effects, select proper eq
ment and work in different media
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9 Shopping Malls: Planning & Design

by Barry Martland
183 pp., illus. . . . $49.95

This book presents a dynamic and
idly evolving building form, con
trating on two aspects — design
impact. Analyzing over one hun
examples of malls, the author tr
the way in which their design
evolved. Amounts to the most com
hensive and up-to-date study avai
on this subject.
Circle B609 under Books.

10 Rendering Standards in Architecture and Design

By Stephen W. Rich
340 pp., illus. . . . $17.95

Organized for quick reference,
book shows how to make dra
rapidly and accurately. Easy-to
charts and step-by-step instruc
guide you through each phase o
spective development. Clear
nations of special terms he
understanding theories and me
presented.
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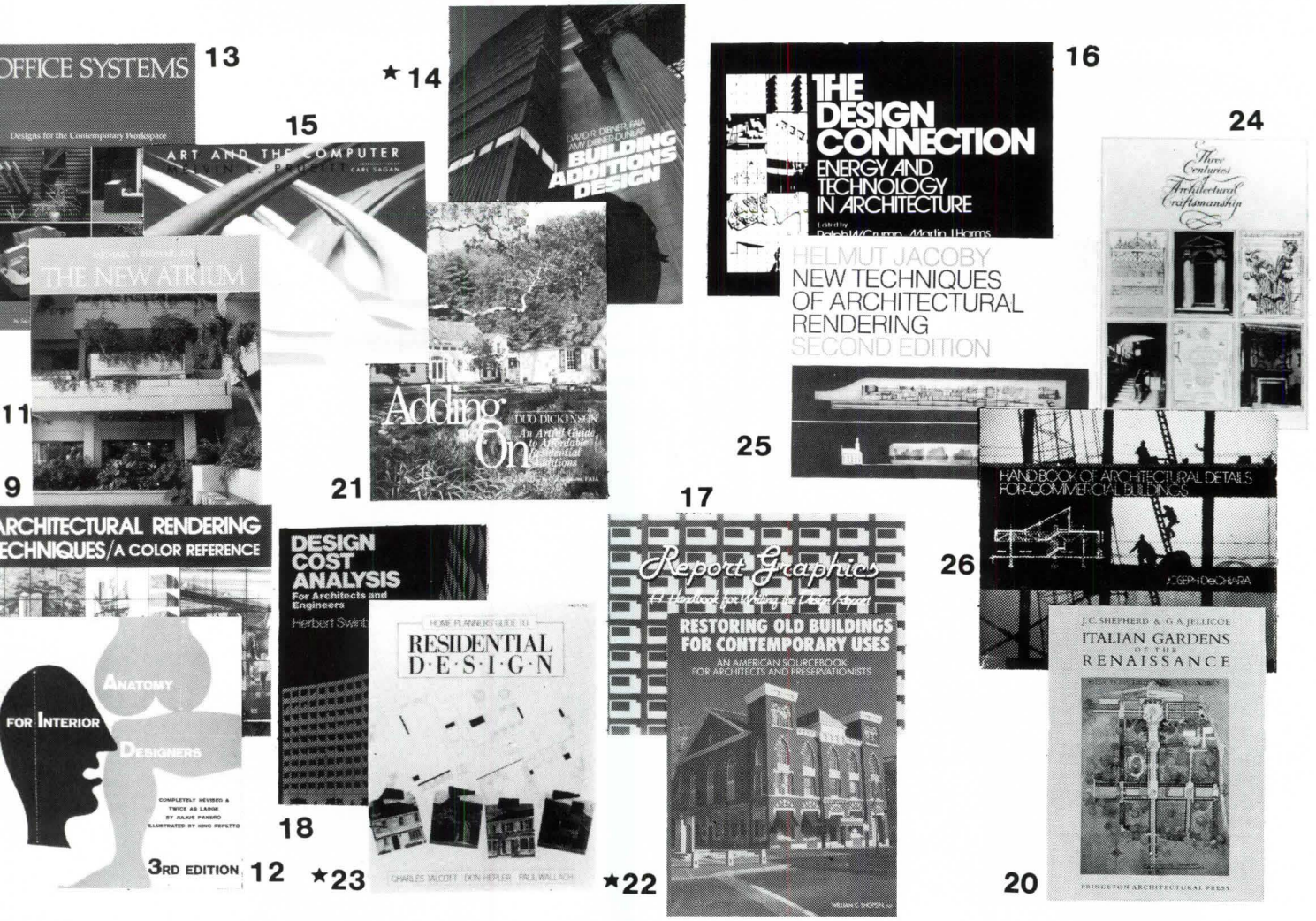

The New Atrium

ichael J. Bednar, AIA
pp., illus. . . . $37.50

thorough coverage of the role
e new atrium in urban planning,
itectural design, and historic
ervation, this guide vividly dem-
rated the exciting and versatile
gn possibilities of large-scale
. The author shows how atria
be utilized to enhance the de-
of cities and make them more
le, investigates current techni-
and code considerations, and
yzes the potential of the atrium
nergy conservation.
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Anatomy for Interior Designers, 3rd Ed.

lius Panero
p., illus. . . . $19.95

book has always been considered
proof that statistics need not be
nd that a useful reference book
e a joy to use. New text and
onal drawings are informative
umorous. Covers areas on verti-
irculation, lighting, hardware,
, windows and openings.
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Office Systems

ndra Edwards & the Editors of
rial Design Magazine
., illus. . . . $49.95

book encompasses both the
ms and individual components
ding manufacturers and in-
s: partitions; furniture for elec-
workstations; storage
ns; chairs; tables; filing cabi-
ighting fixtures; accessories.
otos are complimented with
ons supplying designers
, design firm and client, de-
the purpose of each piece or
n component.
B613 under Books.

NEW★

14 Building Additions Design

By David R. Dibner, FAIA &
Amy Dibner-Dunlap
204 pp., illus. . . . $39.95

This book will help architects, engineers and building owners make better decisions about whether or not to build an addition to a nonresidential building, and once that decision is made, about how to do the job in an efficient, economical way.
Circle B614 under Books.

15 Art and the Computer

By Melvin L. Prueitt
246 pp., illus. . . . $35.95

Provides a report on some of the fine works of art being produced by artists using computers. It discusses problems in computer picture production and explains how they have been solved. Also demonstrates various methods of displaying scientific data and mathematical formulations that often turn out to be quite aesthetic.
Circle B615 under Books.

16 The Design Connection

Edited by Ralph W. Crump
and Martin J. Harms
184 pp., illus $26.95

This book probes the relationship of formal architectural design to both building technology and human values. Locational, climatic, cultural, and historical viewpoints are all considered in depth. It bridges the gap between architectural theory and practice.
Circle B616 under Books.

17 Report Graphics, A Handbook for Writing the Design Report

By Richard L. Austin, ASLA
159 pp., illus. . . . $26.95

Step by step this book shows how to develop and combine artwork, specifications and written text into reports that "sell." It even explains how to organize and present audiovisual reports. No other source currently available can help you create more distinguished reports.
Circle B617 under Books.

18 Design Cost Analysis for Architects & Engineers

By Herbert Swinburne,
317 pp., illus. . . . $35.95

This first-of-its-kind book shows architects and engineers how to analyze and estimate the costs of building construction during the design stage when the potential for controlling costs is greatest.
Circle B618 under Books.

NEW★

19 Architectural Rendering Techniques: A Color Reference

by Mike W. Lin, AIA
253pp., illus. . . . $40.00

This book will help you turn out high quality architectural illustrations quickly, easily and confidently. It demonstrates proven techniques for clearly expressing a wide variety of architectural forms that satisfy client preferences.
Circle B619 under Books.

20 Italian Gardens of the Renaissance

By J.C. Shepherd & G.A. Jellicoe
144 pp., illus. . . . $45.00

Originally written in 1925, still stands today as the classic work. Traces the evolution and development of Italian garden design from the early Renaissance work of Michellozzi, Bramante and Rossellino. Twenty-six of the finest and most important Italian villas are featured, each with plan and principal elevations.
Circle B620 under Books.

21 Adding On

By Duo Dickinson
177 pp., illus. . . . $35.00

This book offers a multitude of ideas to help both architect and homeowner. Rejecting the inevitability of standardized design solutions, the author proves that the thought and care of good design can create unique, effective and beautiful improvements that meet today's needs.
Circle B621 under Books.

NEW★

22 Restoring Old Buildings for Contemporary Uses

By William C. Shopsin, AIA
208 pp., illus. . . . $29.95

Begins with a discussion of preservation as a specialized professional discipline and as a part of general professional practice. Other chapters: physical & climactic contexts of a project; gathering historical information & physical data; assembling experts; getting approval on projects; and evaluating structural condition for continued, extended or new uses.
Circle B622 under Books.

NEW★

23 Home Planners' Guide to Residential Design

by Charles Talcott, Dan Hepler &
Paul Wallach
218 pp., illus. . . . $19.95

This guide demonstrates ways to ensure that the design of one's home is functional, technically feasible and aesthetically pleasing. Filled with helpful tips and realistic guidelines, the book explains the basic principles of residential design and provides step-by-step procedures.
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24 Three Centuries of Architectural Craftsmanship

by Colin Amery
240 pp., illus. . . . $21.50

A carefully chosen series of drawings that demonstrate, by showing the details as well as the whole nature of the buildings, the skills of the craftsmen and the skills of the architect. Buildings included from the 17th, 18th and 19th centuries and examples are taken from the domestic and public building worlds.
Circle B624 under Books.

25 New Techniques of Architectural Rendering

By Helmut Jacoby
167 pp., illus $17.95

This book contains a broad, international selection of architectural drawings that represent the most outstanding modern contributions to the field. Mr. Jacoby has given consideration to examples that interpret architectural designs in detail, for the layman as well as the specialist.
Circle B625 under Books.

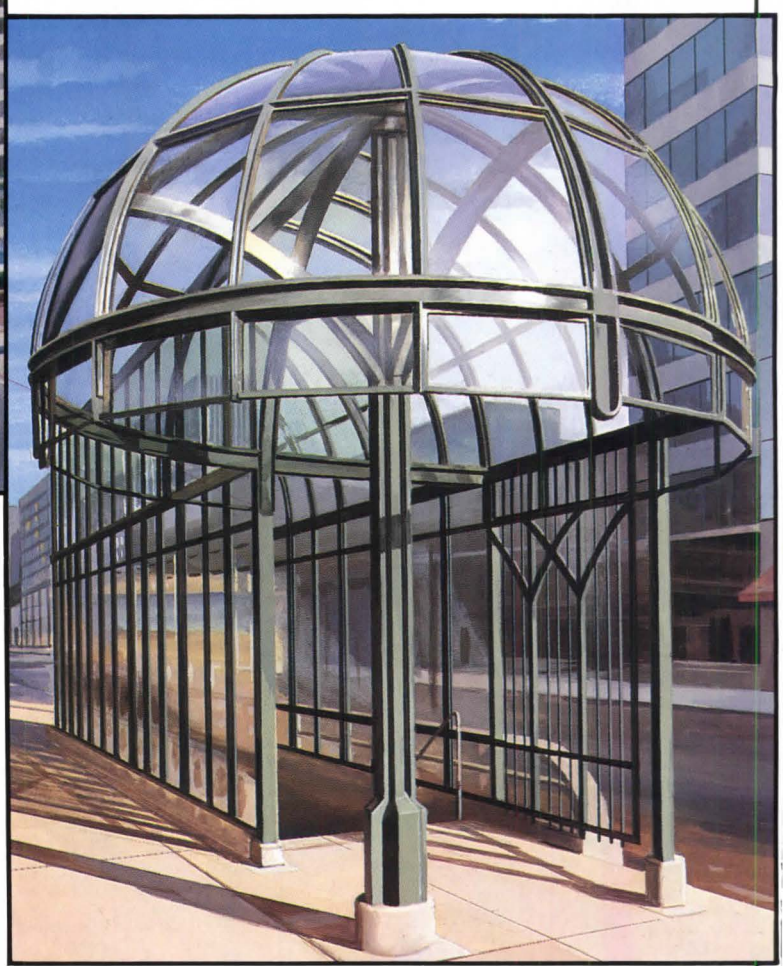
26 Handbook of Architectural Details for Commercial Buildings

By Joseph DeChiara
506 pp., illus. . . . $69.50

This Handbook illustrates and examines the full range of architectural details currently used for commercial buildings. Part I features plans, elevations, and sections for office buildings, banks, retail stores, theaters, and more. Part II concentrates on architectural details. Practicality and realism are stressed.
Circle B626 under Books

Crystal Plaza, Arlington, Va.

Flat or Bent Laminated Glass.



11th Street Station, Philadelphia, Pa.

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Choose Slopelite™ flat laminated glass for its safety features, scratch-resistance, solar control, and easy maintenance. Or choose Bentlite® bent laminated architectural glass to enhance your building's glazing design. Both are available in single or monolithic units made with a clear, bronze or gray polyvinyl butyral (PVB) interlayer. And both are code approved for use in overhead locations. For safety and versatility in overhead glazing, choose flat or bent laminated glass.

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P/A in November

Tim Street-Porter

Museum of Contemporary Art, Los Angeles, by Arata Isozaki and Gruen Associates.

Isozaki's Museum in Los Angeles

The bold geometries of Tokyo architect Arata Isozaki have taken their place in downtown L.A., in the Museum of Contemporary Art (Associate Architects: Gruen Associates). Designed to be the centerpiece of a high-rise office development, the $23 million structure gains presence through form and materials such as the rough-faced red sandstone. Inside, galleries of imposing scale have refined systems of skylighting.

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Future Issues

December will bring P/A's first Information Sources issue, a guide to all the information you need. And in January, P/A will publish its 34th annual P/A Awards issue.

P/A Job Mart

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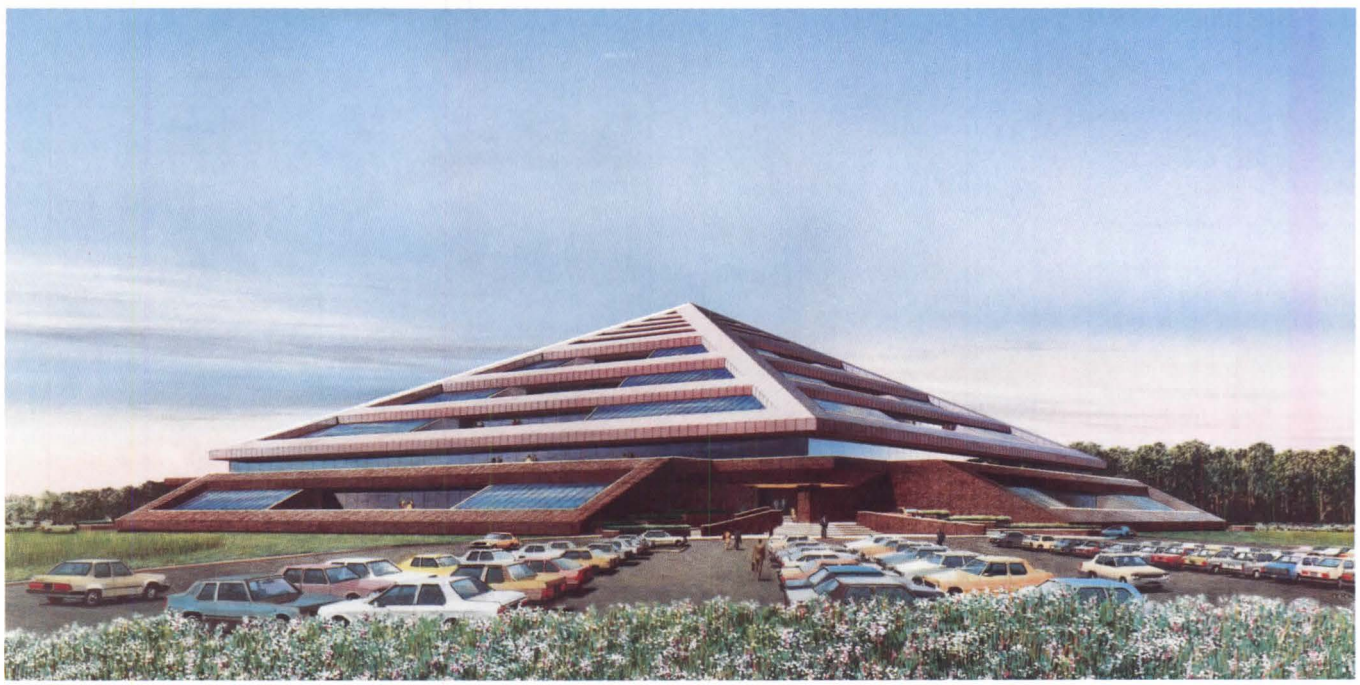

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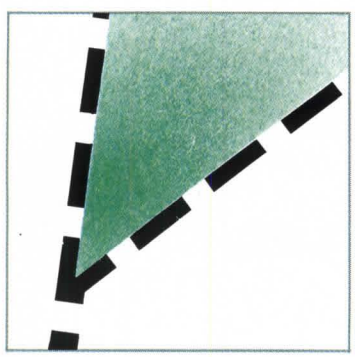

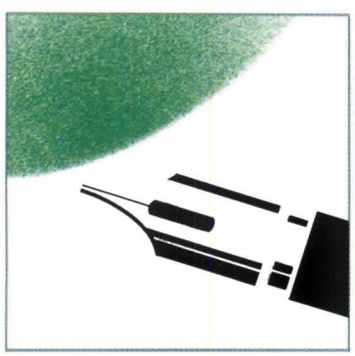

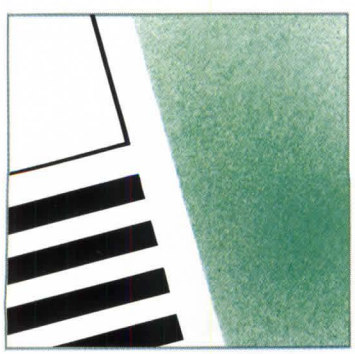

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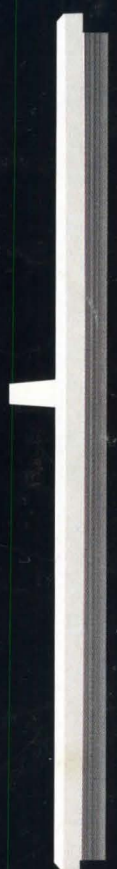

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