

Progressive Architecture

NOVEMBER 1987



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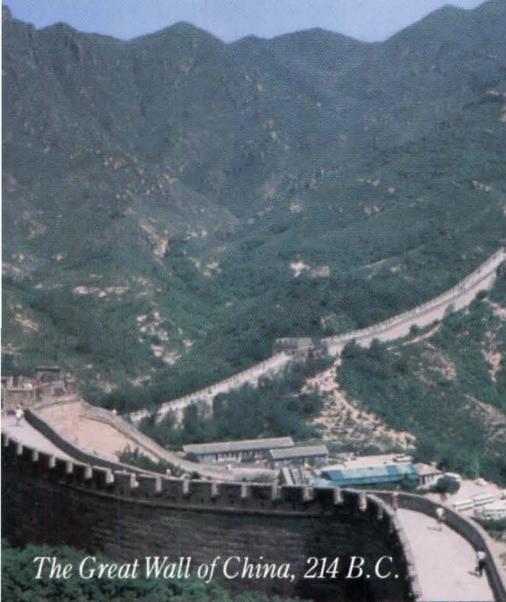
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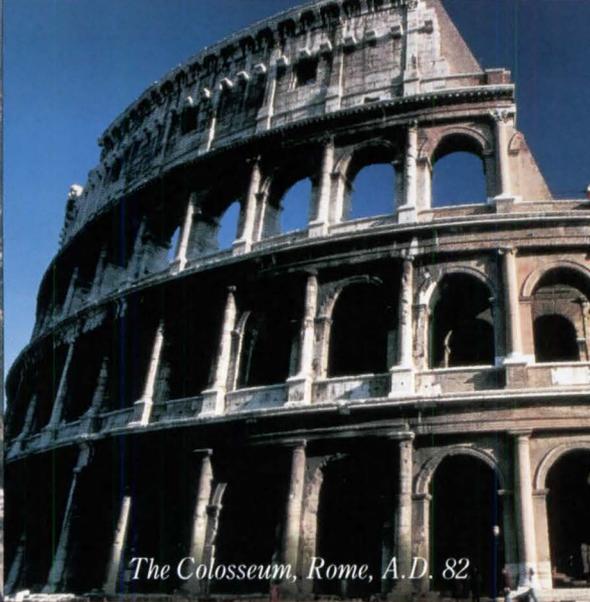


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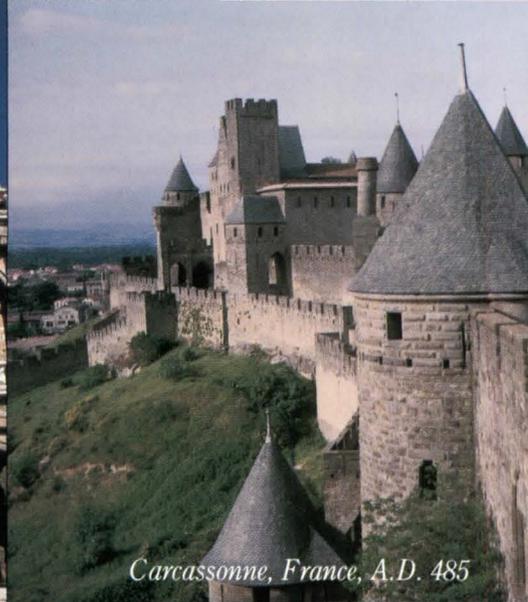




The Great Wall of China, 214 B.C.



The Colosseum, Rome, A.D. 82

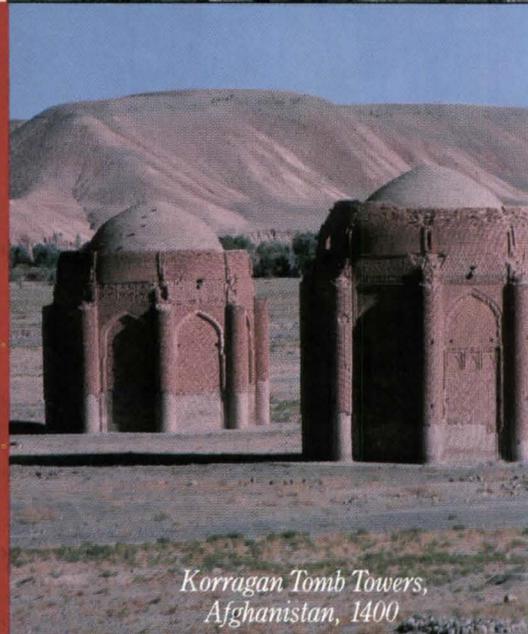


Carcassonne, France, A.D. 485



The Alhambra, Spain, 1238

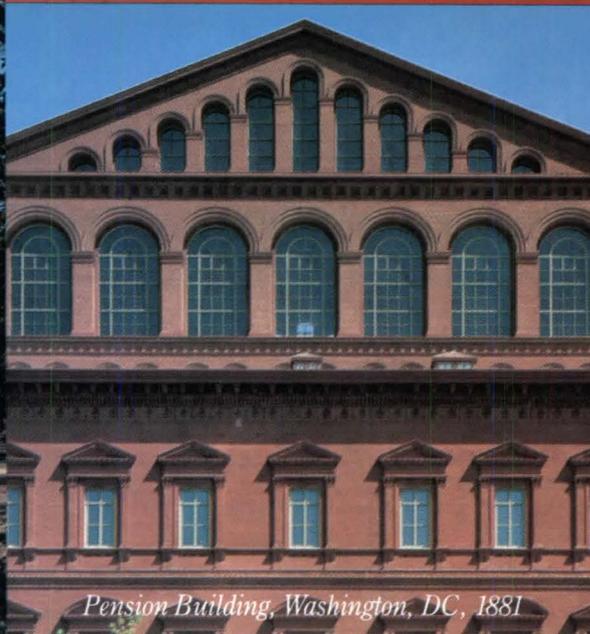
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*Korragan Tomb Towers,
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ABP  **ARCHITECTURAL DESIGN***Editor in Charge: Daralice D. Boles***95 A Grand Gateway**

Helmut Jahn's United Airlines' Terminal 1, at O'Hare Airport, Chicago, is striking in its grandeur as the arrival gate to the city. Murphy/Jahn worked in association with A. Epstein & Sons.

*Jim Murphy***106 P/A Inquiry: Parking Garages**The trends in parking garage design include an increased mix of uses and a greater contextualism. A general discussion of these trends is accompanied by examples. *Michael McCullar***THE LEGACY OF WRIGHT****112 Wright Prevails**The Meyer May house in Grand Rapids, Mich., a Frank Lloyd Wright Prairie House design, is restored by coordinator Carla Lind and architects Tilton & Lewis. *Susan Doubilet***118 The Selling of Frank Lloyd Wright**Record-breaking prices paid for original furniture by Frank Lloyd Wright, the controversial sales of his drawings and designs, and an expanding market for Wright reproductions beg the question: who owns the rights to Wright? *Daralice D. Boles***124 The First of its Kind**The Jacobs House I, in Madison, Wis., the first built example of Frank Lloyd Wright's visionary Usonian houses, has been carefully restored by Chicago architect John Eifler. *Pilar Viladas***128 P/A Technics: Redone Wright**Frank Lloyd Wright's daring use of materials has challenged the ingenuity of architects restoring his buildings. *Thomas Fisher***DEPARTMENTS****7 Editorial**

Data and Details

9 Views**15 P/A Reader Poll**

Fees and Encroachment

25 News ReportTwo New D.C. Museums
Corbu in Paris**41 Perspectives**

Report from Berlin

51 Calendar**73 P/A Practice**Computer plotters
Limited liability
Spec-writing decisions**149 Products and Literature****156 Building Materials****162 P/A in December****165 Job Mart****169 Selected Detail**

Ceiling canopy

170 Advertisers' Index**171 Reader Service Card****131**

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Cover

Tunnel connecting Concourses B and C, United Airlines Terminal 1 at O'Hare Airport. Design by Murphy/Jahn, neon sculpture by Michael Hayden (p. 95).

Photo: Timothy Hursley.

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Data and Details

Two subjects in this issue are related to broader contexts: the P/A Reader Poll to the economic situation of the profession as reported in a new AIA survey; the new P/A Selected Detail to earlier traditions of this magazine.

Data: Our publication of this month's P/A Reader Poll on Fees and Encroachment happens to coincide with the publication by AIA of its 1987 Firm Survey Report. Although gathered in different ways from differently chosen respondents, the data assembled through these two efforts correspond on certain broad questions and are complementary in the areas where they do not overlap.

While the P/A Poll is based on the responses of 1000 readers with various positions in architecture and related fields, the AIA Survey gathered responses representing 1800 firms owned by AIA members. While the P/A Polls focus on opinion, this one-time AIA effort sought primarily hard data.

Both surveys asked how firms' revenues for 1987 were expected to compare with those for 1986. AIA's report shows 62 percent of firms expecting a better "business performance" this year than last, 20 percent the same, and 16 percent poorer; the P/A poll's corresponding figures for "total fees" showed 46 higher, 39 "about the same," and 16 lower. Only the top two figures differ—perhaps in part because P/A's phrase was "about the same," partly perhaps because AIA's data were gathered in the spring, whereas P/A's were submitted in August, with more of the year completed and less leeway for wishful thinking.

While the P/A Poll asked several questions related to reliance on consultants and the pass-along of fees involved, the AIA survey reports mainly that the firms it covered pass through about 25 percent of gross revenues, and that of this amount 72 percent goes to engineers; the P/A poll shows the median portion passed along to be a fairly close 22 percent, then goes on to show how the percentage varies with several factors.

The AIA survey asks what percentage of revenue is generated by various kinds of work. Interestingly, new building design accounts for only 58 percent of total revenue, the rest earned from rehab and renovation jobs, interior design commissions, and other work; in terms of building types, office buildings account for 16 percent of all revenues, the biggest single chunk. AIA also extracts regional data, showing that this year the Northeast is the most prosperous region, with highest individual incomes and the brightest expectations, while the picture is most glum in the "West South Central" states, centered on Texas.

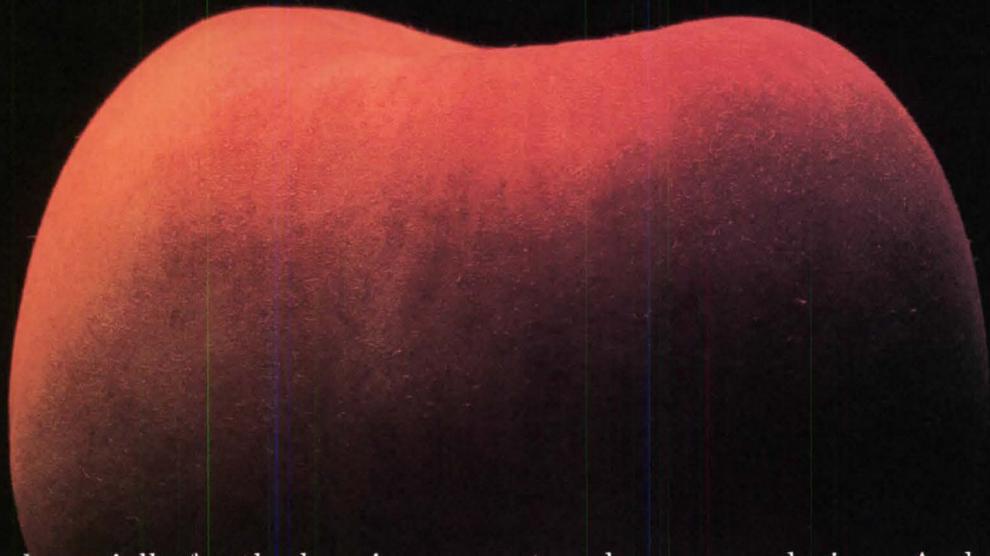
A more detailed report on this just-issued AIA Firm Survey will appear in next month's P/A News Report. For significant data and opinion on architectural firm fees and relations with consultants and competitors, see the P/A Reader Poll on pages 15–19.

Details: This month's issue of P/A marks the revival of Selected Details, for many years a popular item in this magazine. Although P/A has not published a Selected Detail page since 1972, readers have never stopped urging us to revive it. Although we have shown many pages of details within our regular feature articles on both Design and Technics, they have never quite replaced those pages dedicated to a selected detail-of-the-month.

The details to be shown on our revived Selected Detail pages may be extracted from one of the buildings featured in the issue or they may document an example from some other source. (This month's inaugural Selected Detail is drawn from an example shown in our May P/A Technics article on Ceilings.) Whether or not related to a project featured in the issue, these Selected Detail pages will regularly appear as the very last editorial page in the issue, just a page or two inside the back cover (page 169 in this issue). We know from experience that this is one of the easiest places to look for an item in a magazine, and we hope that this special page—long identified with P/A and absent too long from it—is something you will be looking for monthly. ■

John Morris Diefen

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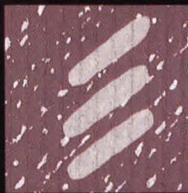


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Architect Selection I

Thanks for the excellent Editorial in the September issue of *Progressive Architecture* (p. 7). Your thoughts and insights were particularly helpful to me and my staff in our continuing effort to improve our proposal responses. I must say, though, I haven't ever considered a hardwood box!

*G. Lawson Drinkard, III, AIA
Partner
VMDO Architects
Charlottesville, Va.*

City Hall Dissent

I cut out the picture of Mississauga City Hall from the cover of the August 1987 P/A (pp. 69-79), and hung it on my wall with the caption, "A stunning example of adaptive re-use, this Ontario nuclear power plant was creatively transformed into a Catholic Church."

In the same issue, your "conventions" piece had Paul Gapp's assessment that "Post Modernism" had "... trickled down into the hands of less and less competent architects. . . ." If P/A wants to give an award to the most Stalinesque, overbearing, Neo-Classical head-trip of the 1980s, Mississauga City Hall would have my vote. The Past keeps putting its icy hand on our shoulder.

*Kenneth Caldwell, ASLA
Carey/Caldwell Partnership
Vashon Island, Wash.*

License with Titles

In a recent effort to put off reading any one of a number of texts I am accumulating in order to prepare for my landscape architecture registration exam, I picked up the September 1987 issue of P/A. I was quite interested, not to mention entertained, by the hoha over licensing and titular distinctions (Views, p. 11).

Imagine my surprise when I stumbled over yet another example of P/A's careless misappellation. You refer to Allan Greenberg's collaboration (Jekyll to his Lutyens) as "landscape architect Deborah Nevins" (p. 115). Deborah Nevins is *not* a landscape architect. Deborah Nevins is a

historian, a horticulturist, a designer.

*Deborah Pond
Unlicensed-landscape-architect-
intern
New York, N.Y.*



Award winner for use of stone: Norstar Plaza, Albany, N.Y.

Stone Awards Correction

P/A's article on the Tucker Awards of the Building Stone Institute (Aug., p. 26) reported nine winners, but omitted one of them from the list: Norstar Plaza, an adaptive reuse of the Albany (N.Y.) railroad station, by Einhorn Yaffee Prescott, Architects and Engineers, Albany.

Robbing St. Paul

As several readers have pointed out—and we really knew—the Cathedral of St. Paul (P/A, Sept. 1987, p. 153) is in St. Paul, Minn., *not* Minneapolis. Also, its walls are of stone, not brick.

Mississauga Credit

In the Mississauga City Hall (P/A, Aug. 1987, p. 69), the artist who designed and executed the Council Chamber ceiling was Sharon McCann.

License correction

Glenn Allen Neighbors, identified in our September Views column (p. 11) as unlicensed, has in fact been registered for over a year and is a member of AIA.

Name Correction

For the new Mission Bay plan (P/A, June 1987, p. 37), the project director for the San Francisco Department of City Planning is Alex Bash.



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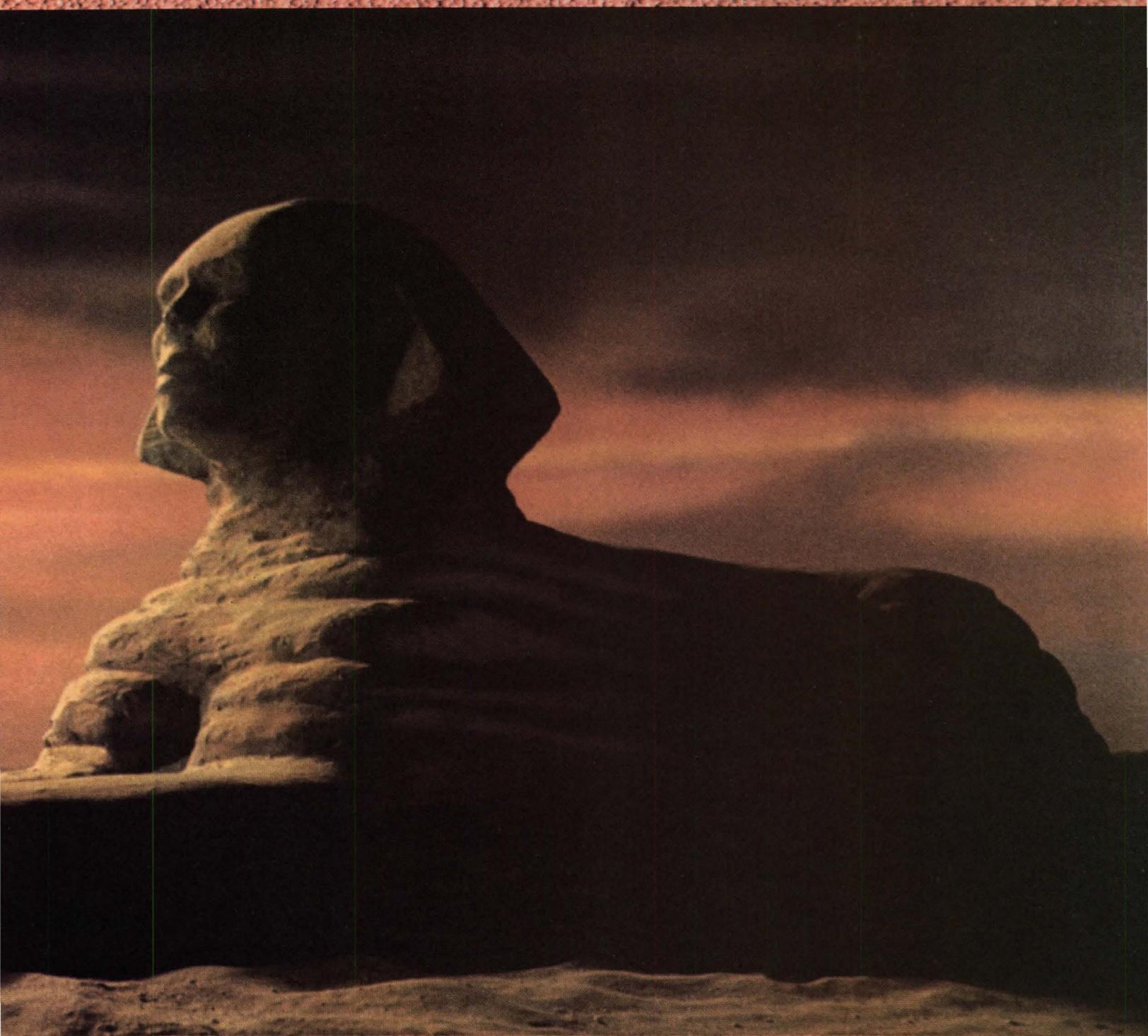
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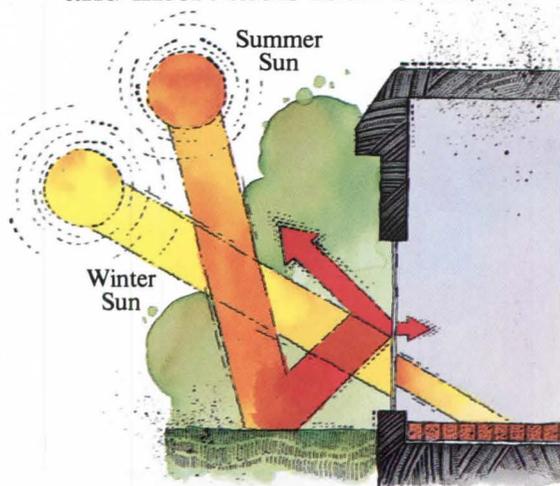
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Circle No. 348

P/A Reader Poll

Fees and Encroachment

By a large majority, P/A's readers believe that professional fees are inadequate, that too much of their income goes to consultants, and that other professions are increasingly stalking their turf.

"P/A readers believe that architects are losing ground to other professions and businesses, and that the level of competition has increased over the last five years." So conclude consultants Morrison & Morrison in reporting results of P/A's sixth Reader Poll. What's more, competition from other architects is also exacting a toll: "Although architects complain that fees are too low to assure good service to the client, at least half of all firms have cut their fees recently."

While most respondents recommend diversifying services as a competitive strategy, the number of added in-house services appears to have no effect on the percentage of fees passed along to outside consultants or on readers' assessments of their firms' competitive situations.

The Sample

A relatively high number of responses—1200, from which 1000 were drawn for tabulation—indicates that these linked subjects are of great concern to P/A's readers. Although the answers came mainly from owners/principals (68 percent of the sample), interest among other professionals is evident from the strong showings among project managers (17 percent), staff architects (9 percent), and other staff people (8 percent).

The great majority of responses (82 percent) came from those in architecture and A/E firms, with other respondents split between design firms (7 percent), engineering firms (4 percent), in-house professionals in business, institutions, and government (4 percent), and others (3 percent). Readers from small firms (1–9 people) accounted for 61 percent of the answers, those from medium-sized firms, 25 percent, and those from large firms (50 or more people), 14 percent.

Architects' plight (Figures 1–2)

By strikingly similar percentages in their responses, P/A readers believe that fees architects collect are too low (85 percent agree) and that architects are losing ground to other professions and businesses (84 percent agree). Respondents from architecture or A/E firms (82 percent of the sample) support these unsettling statements to an even greater degree (89 and 86 percent, for the respective questions). These perceptions hardly vary with size of firms or the number of in-house services they offer, but firms that pass relatively little of their fees along to consultants (under 10 percent) appear to feel less beleaguered, agreeing with these statements by somewhat moderate percentages of 75 and 77, respectively.

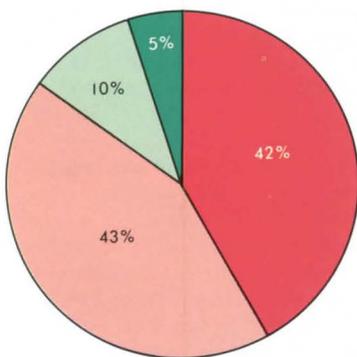
Sharing the fees (Figures 3–6)

Percentage of fees passed along to consultants appears to be not only a source of concern in itself, but an indicator of how dire a view architects have of their fees and competitive pressures. The reported percentages passed along divided fairly evenly into three ranges: low (up to 10 percent), medium (11–25 percent), and high (26 percent and up). Four percent of readers reported turning over a daunting 40 percent or more to consultants. Some 10 percent of readers—mainly staff professionals—could not report this statistic.

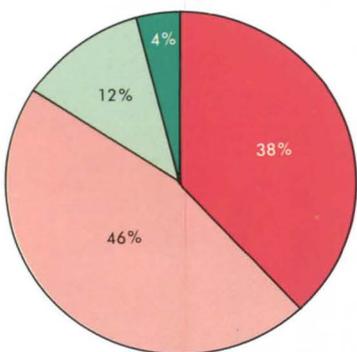
Of those who pass along over ¼ of their fees, 82 percent feel the amount is excessive. But even among those passing along less than 10 percent, 44 percent feel this way.

Medium-sized firms report paying most heavily for outside consultants, although 76 percent of them report offering at least two types of additional in-house services—typically interior design and another ancillary service (see Figure 14). Compared with smaller or larger firms, they seem to face the highest proportion of service demands that cannot be met in-house.

Although adding in-house capabilities would seem to ensure retaining a larger proportion of the fee, the consultants'

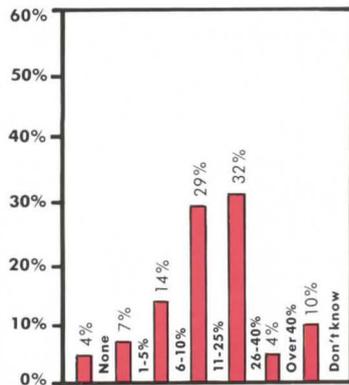


1 "Fees architects collect are too low to assure good service to the client."

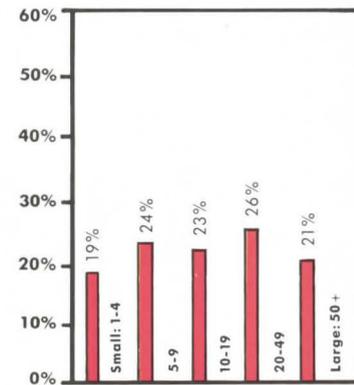


2 "Architects are losing ground to other professionals and businesses offering similar services."

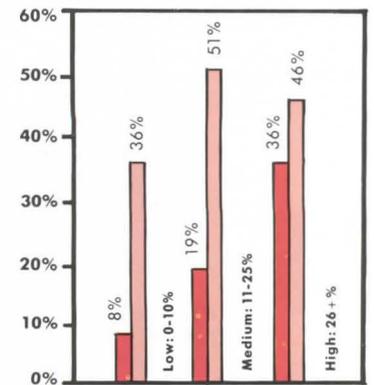
■ Agree completely ■ Disagree completely
■ Agree somewhat ■ Disagree somewhat



3 "Approximately what percentage of your firm's fees are passed along to consultants?"

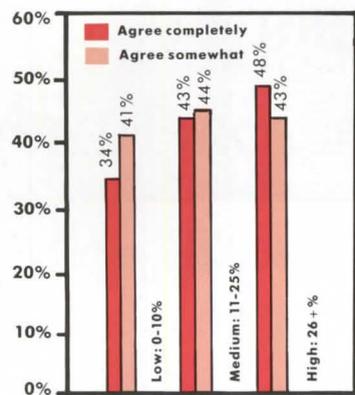


4 Median percentage of firm's fees passed along by size of firm.

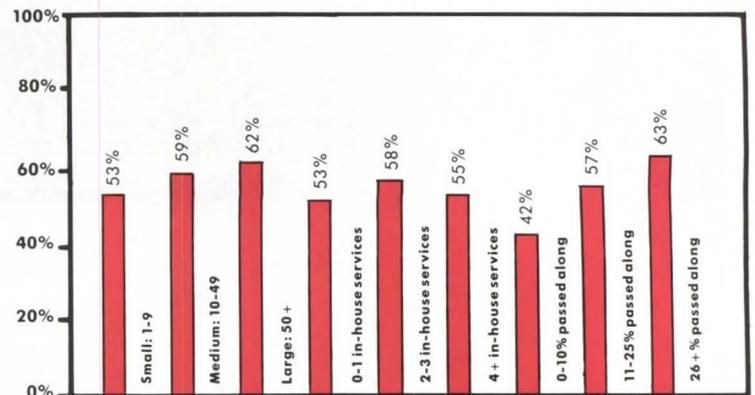


5 "Too much of fees architects collect are being passed along," by percentage passed along.

■ Agree completely ■ Agree somewhat



6 "Fees architects collect are too low," by percentage of fees passed on.



7 Firm has had to cut fees recently to win commissions, by size of firm, number of in-house services, and percentage of fees passed along to consultants.

share is not reduced appreciably for firms with larger numbers of in-house services. Observing the data, the Morrissons conclude: "Either firms are not diversifying in areas which can save them consulting fees, or clients are continuing to insist on use of outside services, or both of these factors are at work."

Indeed, 65 percent of all respondents agree that clients often request outside consultants because they do not trust architects' ability to perform some services. The percentage agreeing on this rises with the number of in-house services offered (from 59 percent for those offering the fewest, to 71 percent for those offering several), suggesting that those firms adding in-house services are responding to demands raised by complex projects, but do not catch up with the diversity of specialties that clients often require on such projects.

"Architects appear to accept the fact that a portion of their fees must be passed along to outside professionals," conclude the Morrissons, "since they exhibit a reluctance to offer some important services in-house. However, this heavy reliance on outside consultants clearly affects the firm's profitability and its ability to quote competitive fees."

Fee cutting (Figures 7-8)

Just one half of the readers polled report that they have had to cut fees recently in order to win commissions; 40 percent report that they have not; 10 percent—mainly staff professionals—just don't know. (Percentages in Figures 7 and 8 are based on the readers who could answer.)

In terms of in-house services, the firms with the fewest and the most showed less incidence of fee cutting than those apparently caught in the middle. And by a much more pronounced difference, the incidence of fee cutting

rose as the percentage of fees passed along increased. When asked if they had lost work recently because others have cut their fees, 64 percent reported that they had, a very large 23 percent did not know (indicating that clients are not open about the effect of fees on their decisions), and a very small 13 percent reported no such losses. As in the case of several other questions, the answers to this one appeared to vary strongly with the percentage of fees passed along.

Many more readers report that their competitors have gotten jobs by cutting fees than admit to getting jobs themselves this way. Allowing for some losses of commissions to less-than-professional enterprises, it would appear that some selective memory is at work here.

Fee prospects (Figure 9)

Notwithstanding their dim views of their fees and competitive position, P/A readers take a generally optimistic view of this year's fees compared to last year's. Overall, 45 percent expect an increase in total fees this year, 39 expect roughly the same, and only 16 percent anticipate a decrease. The small firms (1-9 people) have lower expectations than medium or larger firms, for which the data are quite similar, and the projected fees for firms that pass along

more than ¼ of their fees to consultants are distinctly less positive, with 24 percent anticipating a drop.

A brighter outlook for increasing fees is found among firms with higher numbers of in-house services. This is one of the very few benefits that this survey finds associated with diversification of the firm (another is improved resistance to fee cutting).

Stiffer competition (Figure 10)

Respondents to the poll believe, by a majority of 84 percent, that architects are losing ground to other professions and businesses offering competing services. Those in architecture and A/E firms are particularly convinced (86 percent), while those in other areas agree by a lower, but still substantial majority (74 percent). Those whose pass-along to consultants is low (0-10 percent) also see the situation as less extreme (77 percent agree).

Encroaching (Figures 11-12)

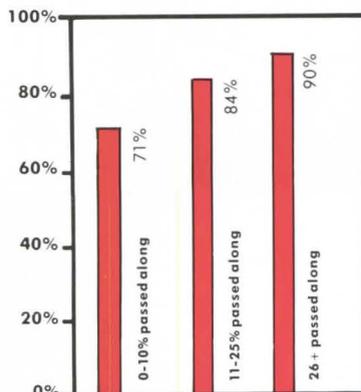
The perceived sources of encroachment vary considerably among firms, but there are certain overall patterns. The majority of readers, regardless of the type and size of their firms, regard design-build organizations as the most serious threat.

Among those from architecture firms, the ranking of threats—after design-build—varies with size of firm. Profes-

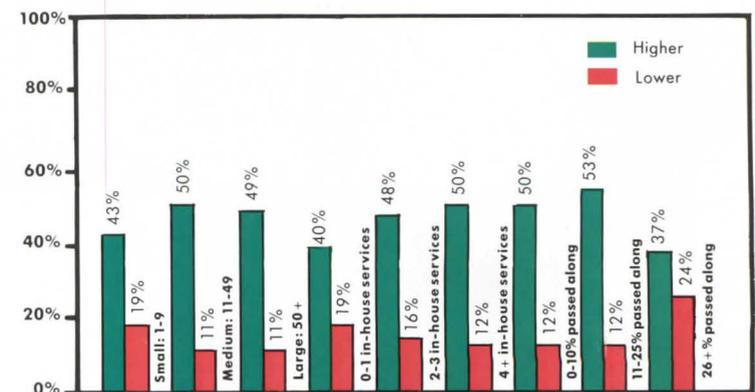
sionals from small firms see unlicensed architects as their second most serious source of encroachment (57 percent citing them), a source that recedes sharply in importance for larger firms (though even for firms of over 50, it is listed by 28 percent). Those from medium-sized firms see interior designers as their second-ranking outside competitors (52 percent citing them), but encroachment from this source is perceived similarly for firms of all sizes. Those from large firms identify construction managers as the second most important threat (44 percent citing them), and the perceived importance of CM's drops consistently with firm size (to 32 percent for small firms).

Engineers appear to be less of a threat to large firms (31 percent citing them) than to medium-sized and small ones (averaging 41 percent). In-house architects pose virtually the same moderate threat to firms of all sizes.

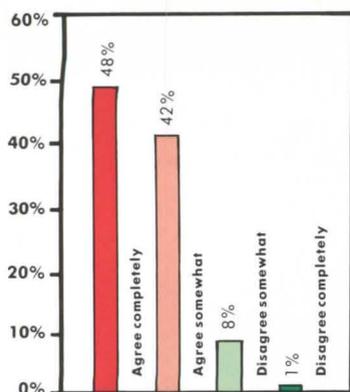
As the percentage of fees passed along to consultants goes up, so does the perceived encroachment from every quarter. The percentage of those perceiving no serious encroachment plummets from 17 percent for those passing along 0-10 percent of their fees to 3 percent for those passing along more than 25 percent. It appears from this that architects see encroachment



8 Firm has lost work because competitors have cut their fees, by percentage of fees passed along.



9 Compared to last year, firm's total fees are expected to be..., by firm size, number of in-house services, and percentage of fees passed along.



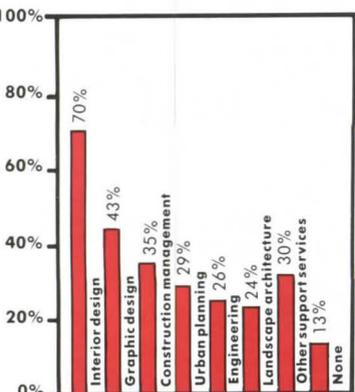
10 "The level of competition from other professions and businesses has increased in the past five years."

on their territory not just from those who compete with them for prime contracts with the client, but from those as well who sap their fees as their consultants.

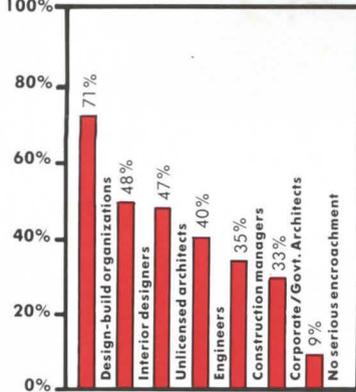
When asked to report on actual losses of commissions to those in other professions or businesses, respondents showed that their perceptions reflected actual experience fairly accurately. Understandably, the percentage reporting actual losses within a specified period is smaller in all categories than the percentage perceiving encroachment. In general, those from small firms were more likely than others to perceive threats that were not supported by actual experience this year. Also, those from firms that pass along more than 25 percent of their fees were most likely to perceive encroachment out of proportion to lost commissions.

Diversifying (Figures 13–15)

As a competitive strategy, diversifying the firm's services is favored by 73 percent of readers. There are few strong differences in the data reported for various groups: Those in the smallest firms (0–4 people) are understandably a bit less enthusiastic about diversifying (68 percent for it); staff architects are more positive about it than their superiors (76 percent in favor).



14 In-house service capabilities firms currently have.

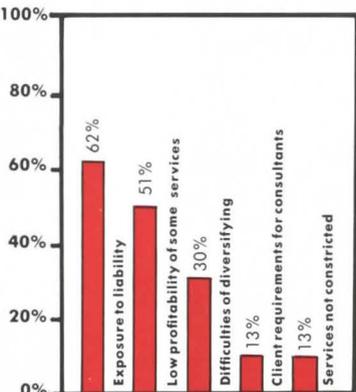


11 "Which professions or businesses do you feel are seriously encroaching upon services offered by your firm?"

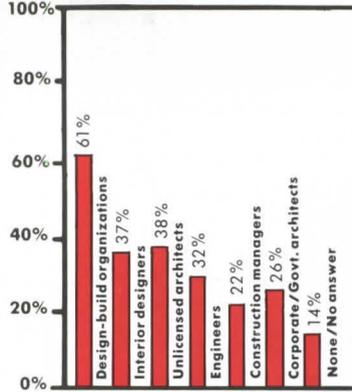
Among firms who already have the most added services (four or more) a tendency toward polarized opinion is indicated: A high 41 percent "agree completely" on expanding services, but relatively high percentages also disagree (22 percent "somewhat," 8 percent "completely").

In reporting their actual in-house services, 87 percent show at least one additional capability. About 40 percent of the total offer two or three such services, and about 30 percent offer four or more. Generally the larger the firm, the more numerous the services; the percentage reporting no additional ones at all drops from 24 percent for the smallest firms (1–4 people) to less than 1 percent for those with over 50 people. It is noteworthy that 76 percent of even the smallest firms offer at least one added service and 43 percent offer two or more. Among the largest firms (50 or more people), 54 percent offer four or more additional services, and only 8 percent provide only one. Medium-sized firms typically offer two or three additional services (reported by 42 percent of them), with 24 percent offering one or less, 34 percent four or more.

Interior design is by far the most common additional service for firms of all sizes. Engineering differs from the other services in the extent to which its inclusion



15 "Which factors are constricting the types of services your firm offers or is considering?"



12 "To which professions or businesses has your firm actually lost commissions in the past 12 months?"

varies with size of firm—from only 16 percent for firms of 1–4 people to 58 percent for firms of 50 or more, for which it is the second most common in-house offering.

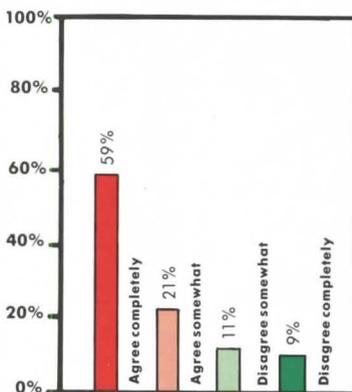
Diversification of firms' services is limited by various factors, 87 percent of the readers believe. Liability is a constricting factor to an appreciably larger proportion of those from firms that pass along more than ¼ of their fees (69 percent of them), suggesting that this concern is helping to perpetuate their dependence on consultants.

The factor of clients requiring consultants was cited by a relatively small 13 percent, but these percentages rise sharply with the number of services offered, from 8 percent for those offering one added service or less to 20 percent for those with four or more in-house services.

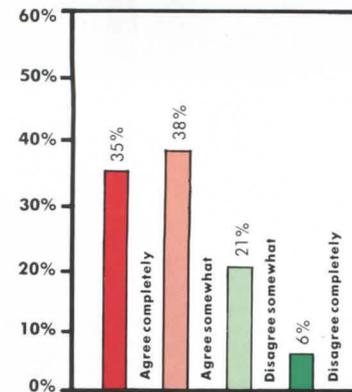
While only 13 percent, overall, felt free of constrictions on their services, this percentage rose, understandably, for those already offering four or more added services, to 18 percent. And for those passing along less than 10 percent of their fees, the percentage not feeling constricted rose to 20.

Licensing (Figures 16–17)

As a defense against encroachment, 80 percent of readers believe that architectural licensing



16 "Architectural licensing laws should be strengthened or better enforced to discourage encroachment."



13 "Architects should expand the services they offer to counteract encroachment."

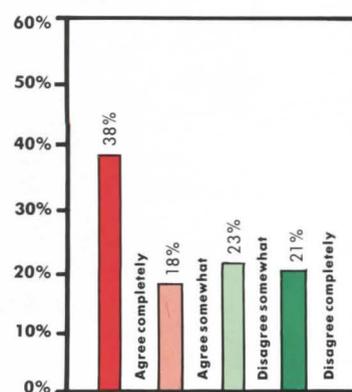
laws should be strengthened and better enforced. This figure rises to 85 percent for those from architecture and A/E firms, and it drops to 59 percent for readers in other situations.

On the question of licensing interior designers, readers were more divided, with 56 opposing their licensing and 44 percent seeing some justification for it. And the percentages show considerable polarization, with 59 percent taking the extreme positions. It appears that there is real difference of opinion on this issue, some apparently believing such licensing would hinder their firms from competing in interior design, and almost as many feeling that such licensing would strengthen the positions of qualified architectural firms.

Interdependence

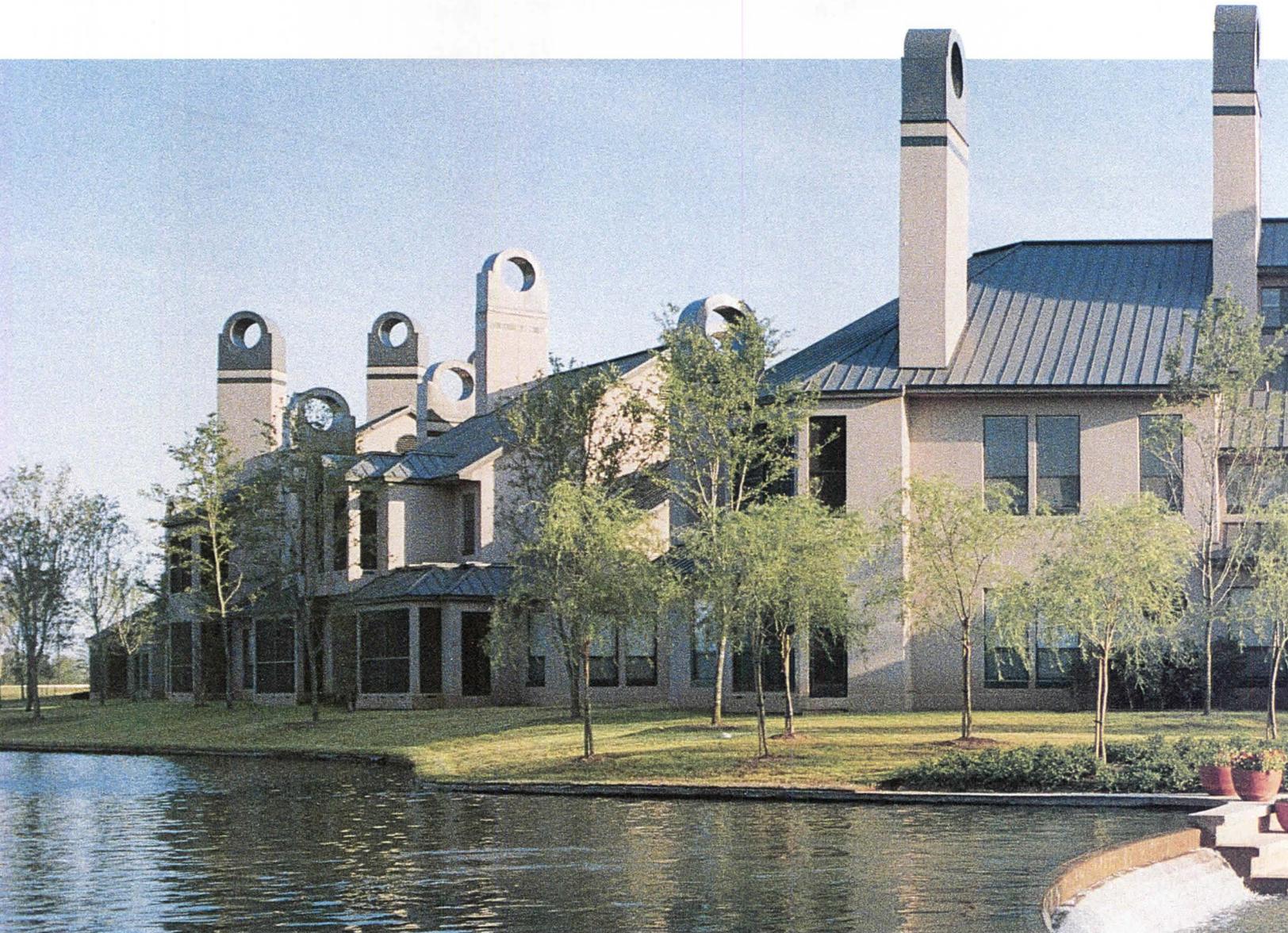
In reviewing the results of this poll, the Morrisons perceive a "cycle of interdependence" involving architectural firms and their consultants. While a very large 87 percent of all firms have diversified their in-house services to some extent, at least 95 percent are supporting some outside consultants. "At least in part," they conclude, "architects are contributing to the growth of the same professionals who may be independently vying for the same clients."

John Morris Dixon



17 "There is no justification for state licensing of interior designers."

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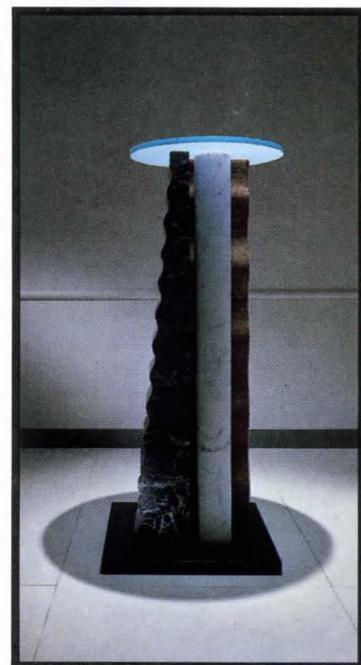
Kindergarten by Frowein & Spangenberg.

New architecture by foreign and local architects is reshaping West Berlin. See Report, page 41.

L.I. Modern: No Big Duck

It was the loss in 1985 of Modernist architect Pierre Chareau's 1946 studio for artist Robert Motherwell in East Hampton (P/A, Sept. 1985, p. 24) that led Long Island resident and *East Hampton Star* architecture critic Alastair Gordon into research culminating in the exhibition "Long Island Modern: The First Generation of Modernist Architecture on Long Island/1925-1960." The show, which ran from mid-August through September in East Hampton's Guild Hall Museum, will be installed at the American Institute of Architects, Washington, in January.

Guest Curator Gordon's agenda was clearly to bring to
(continued on page 28)



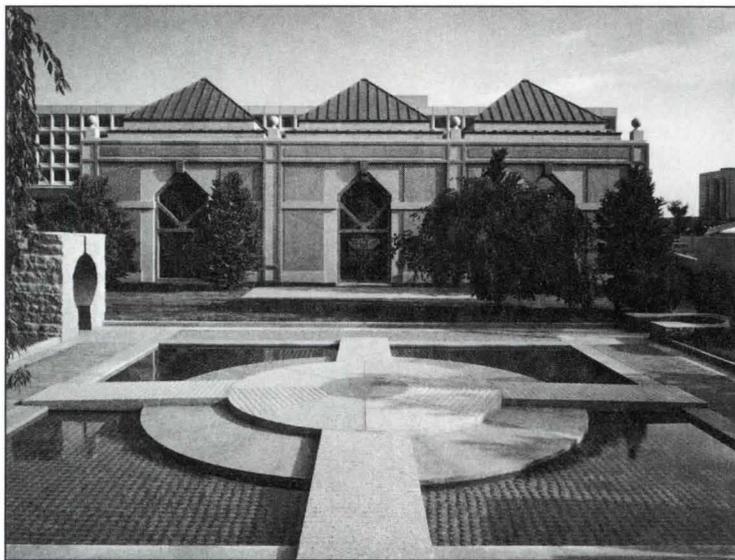
Santi Calce

Sottsass' marble and crystal pedestal.

Sottsass Furniture: Turning to Stone

A group of 26 new furniture designs by Italian architect Ettore Sottsass, Jr., is now on display at the SoHo branch of New York's BlumHelman Gallery, at 80 Greene Street. The show is a departure on two counts: It is the first furniture exhibition for the contemporary art gallery;

(continued on page 27)



Nick Wheeler

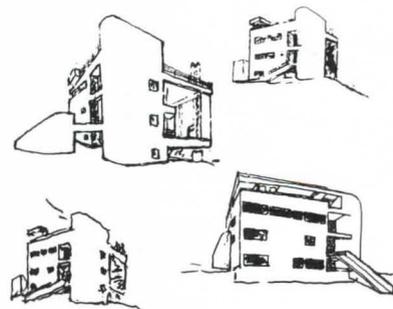
Entrance pavilion for the new Sackler Gallery in Washington.

Adding Two New Museums to the Mall

Two new subterranean museums for the Smithsonian opened to the public this fall. One can't really see much of these buildings from any outdoor vantage point, but if the little that is above the ground gives any indication of what might have been built on a larger scale, that may be quite all right.

Two blocks of simple geometric forms define entry pavilions, serving the Arthur M. Sackler Gallery and the National Museum of African Art. They are, in the words of Boston architects Richard Potter and Jean-Paul Carlhian of Shepley Bulfinch Richardson & Abbott, "domed [for the African gallery] and pyramidal [for the Sackler

(continued on page 26)



Corbu-style sketches by Richard Meier.

Views Of Corbu in Paris

What if the Modern/Post-Modern rift were bridged by none other than Le Corbusier? Just such a bridge was built at the Institut Français d'Architecture
(continued on page 28)

Pencil Points

Michael Graves is now endorsing Dexter shoes. The architect is quoted in a New York Times ad as saying, "When the people at Dexter showed me their shoes, I said 'Perfect, this is just what I mean about combining the classic and the contemporary.'" But a waist-up photo, taken in his Princeton office, begs the question: does Graves wear the product he endorses?

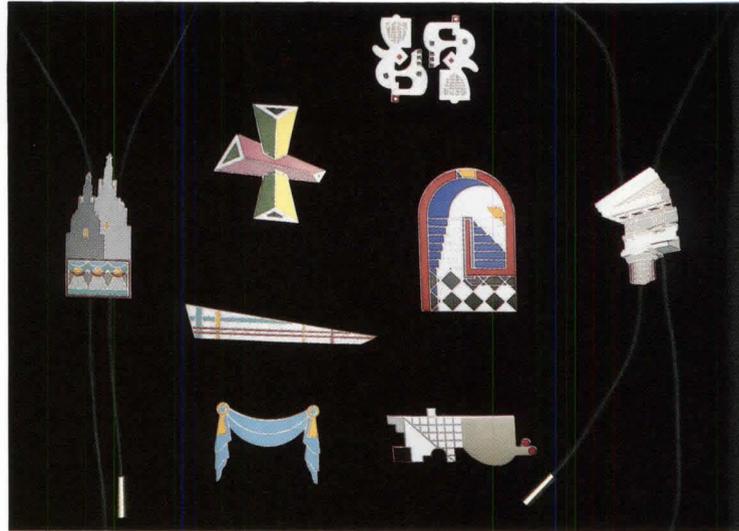
Carr, Lynch Associates of Cambridge have been selected to design the \$15 million North Park and Esplanade at Battery Park City in New York. Carr, Lynch will head a team made up of landscape architects Oehme, van Sweden & Associates, Washington, and Johanson & Walcavage, Brooklyn, with engineers Massand Associates, Bayside, N.Y.

Asbestos removal could cost the United States a staggering \$75 billion, says the National Institute of Building Sciences. NIBS argues that the hazards of asbestos should be abated where possible through maintenance, encapsulation, and repair programs outlined in its *Model Guide Specifications: Asbestos Abatement in Buildings*.

The city of Pasadena, Calif. has selected a joint venture of Robert A. M. Stern, Architects and The Ehrenkrantz Group & Eckstut, both of New York, to design the Pasadena Police Building and Jail, which will be the first new public building in the city's Historic Civic Center District in over 35 years.

James Rouse is the second living American to be named to the National Building Museum's Hall of Fame. The developer is honored for his "festival marketplaces," a tool of urban redevelopment applied successfully in over 60 locations, for his visionary town of Columbia, Md., and for his more recent low-income housing initiatives. He joins J. Irwin Miller of Columbus, Ind., who was the first Hall of Famer.

James Oleg Krushly has won the first annual Young Architect Award from the Philadelphia Chapter of the AIA.



Top to bottom, left to right: jewelry designs by Stern; Olabuenaga, Spear, Stern; Meier, Tigerman, Meier; and Olaguenaga.

Jewelry by Architects

If you're looking for an architectural Christmas present that won't break the bank, check your local museum shop or design store. Chances are they carry some or all of the architect-designed cloisonné jewelry collections of L.A.-based Acme Studio.

Acme President Adrian Olabuenaga has signed up eight American architects and 14 members of the Italian design group Memphis. His 10-month-old American collection numbers over 50 bolo ties, earrings, necklaces, and brooches, while the Memphis line, which debuted in 1986, includes over 100 designs. Robert A.M. Stern, Richard Meier, Stanley Tigerman, Laurinda Spear, and Alberto Olabuenaga, the jeweler's father, all have pieces in production. Designs by Cesar Pelli, Peter Eisenman, and John Lautner are due out in January, along with a second Memphis line, and a new series from the Italian design group Alchimia.

Also in January, Acme will release a new line of nine designs based on windows by Frank Lloyd Wright from the Domino's Pizza Collection (page 122).

"When we got started two years ago, we had to wake up a market," says Olabuenaga. "Ninety percent of the people we sell to had never handled jewelry, although they knew the names of our designers." Several pieces, including designs by Ettore Sottsass, Peter Shire, and Stanley Tigerman, have already proved themselves best sellers and are prime candidates for the Acme Classics line of limited-edition, sterling silver reproductions that will be released next March. Other classics are now in the making: Stern's San Remo

Brooch, for example, which is based on the twin towers of the famous New York apartment building, is featured prominently in the Smithsonian Institution's Christmas catalog.

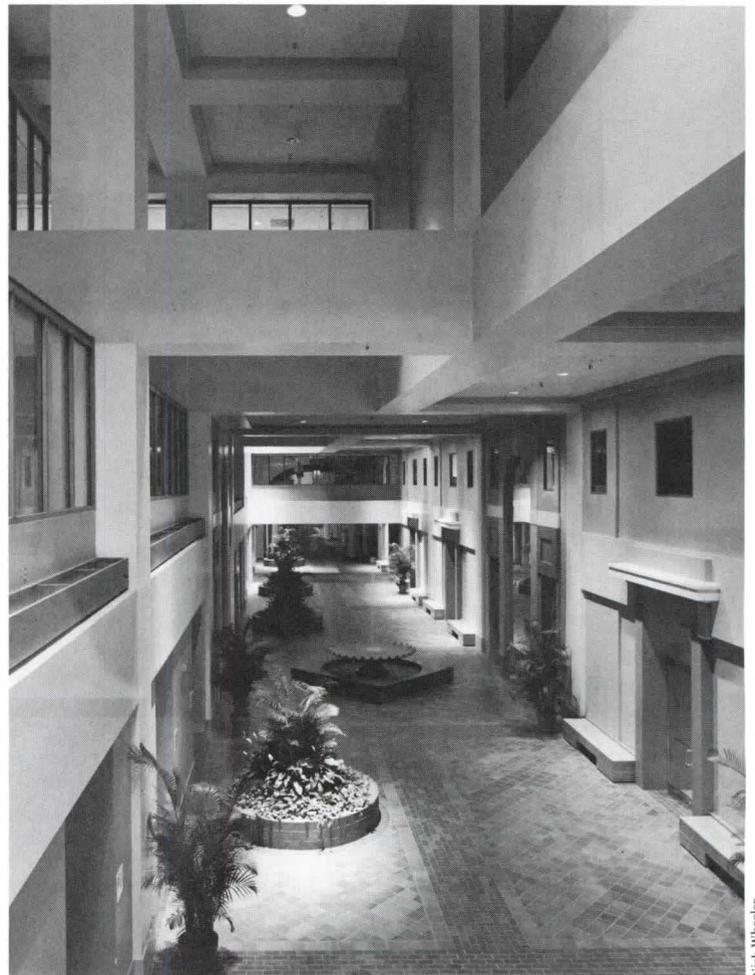
Nor are architects and designers Acme's sole source. A line of designs by L.A. artists will be expanded this fall with offerings from the New York art world. Even popular musicians are signing up. First out: designs by Devo. **Daralice D. Boles**

Mall (continued from page 25) collection] silhouettes" that mark the entrances to "buried treasure" in the spaces below.

They occupy a challenging site, on Independence Avenue, facing the Smithsonian's famous sandstone "Castle" building and flanked by its Arts and Industries Museum and Freer Gallery. The setting virtually demanded an underground solution, and the original concept by Japanese architect Junzo Yoshimura arrived at this very conclusion, preserving open space and vistas of the landmark Castle.

While faithful to Yoshimura's general scheme, the SBRA design dropped more specifically ethnic forms that were intended to symbolize the collections. Their solution purports instead to respond to forms found on the adjacent buildings, each of which is quite different from the other.

The resulting entry pavilions, although they comprise only four percent of the total built program, seem wildly out of scale in the handsome gardens that have been placed atop three subterranean levels of museum spaces. Their exaggerated geometries suggest caricature, with cartoonlike references to



Concourse connecting Sackler Gallery and National Museum of African Art.

Nick Wheeler

the shapes, colors, and details of the surrounding buildings.

The pavilions do, however, succeed in overcoming what the architects have called “the stigma of underground space,” by introducing large amounts of daylight and by creating an alluring enough means of descent into the below-ground galleries, which house collections of more than 7000 objects, as well as libraries, document collections, and the Smithsonian’s international learning center.

Architect Carlhian takes strong issue with the manner in which interior gallery spaces were “redisposed” by the Smithsonian’s exhibit design staff, resulting, he says, in a “cold perfection.” He wanted artifacts that could not be harmed by such exposure to be seen in changing conditions of daylight, and says that the curatorial staff needlessly blocked large sections of his skylights.

Carlhian also intended greater flexibility in the gallery circulation paths, which he believes now have the quality of “a rigidly directed labyrinth, where visitors must now swallow everything else in order to see some favored object.” His criticism is in fact an accurate assessment of these altogether conventional galleries. The Smithsonian staff also, he says, scrapped colorful decorative ceilings intended for the entrance pavilions, and even a large stained-glass window that had been fabricated and readied for installation.

His aim was to create a sense of ceremonial entry down into the collections, letting the pavilions themselves recede behind trees in the ground-level garden: “It’s vulgar, I think, to walk from the outdoors directly to the presence of the art objects. That happens only in [commercial] galleries where they’re trying to sell you something.”

“My problem,” he says, “was that for five years I had excellent relations with a client [former Smithsonian secretary S. Dillon Ripley] who was like a Medici; then, with months to go, there was a change [when Ripley retired] and in came a new man who runs the place like a senate. Suddenly we had a whole group of new clients, each with a different set of attitudes.”

Still, as comments for and against the design continue to issue from architects and those who write about architecture, visitors have been flocking to the galleries in large numbers, and by most accounts, they are enjoying themselves thoroughly.

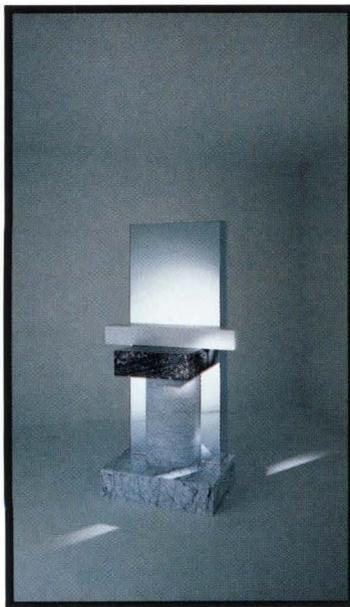
Thomas Vonier

Sottsass (continued from page 25) and it is the first collection of “art” furniture to be designed by the 70-year-old Sottsass, whose works range from computers and typewriters for Olivetti to provocative furniture for Memphis, of which he was a founder. Indeed, while Memphis is widely regarded as a polemical statement rather than a serious manufacturing effort, its products, however unconventional, were always intended for mass consumption.

Made of luxury materials such as marble and granite, the new pieces, some of which will be produced in very limited editions, include “curio cabinets, mirrors, chairs, tables, sideboards, pedestals, drink cabinets, and credenzas,” to quote from the architect’s inventory. While hardly understated in their forms and materials, these designs signal a departure from the Memphis aesthetic in that they comment as much on contemporary sculpture as they do on mass culture. Ironically, the exhibition gave Sottsass the chance to create a large body of work, something he couldn’t do with Memphis, for which he produced just a few pieces each year. Some of the pieces are quite large in scale; a “drink cabinet” is nearly eight feet tall. The stark, archetypal forms of the stone chairs recall the work of sculptor Scott Burton.

While many of the designs are complex in composition, they seem more coherent than most of Sottsass’ Memphis designs, which emphasized irony over clarity. The exhibition, which was organized by design consultant Jeffrey Osborne, closes at the end of December.

Pilar Viladas



Sottsass’ marble and glass mirror.



Restored rooftop gardens of Rockefeller Center.

Rock’s Gardens Restored

New York’s Rockefeller Center, now in the fifth year of a ten-year, \$200 million enhancement program, has recently seen completed the restoration of its four Fifth Avenue roof gardens. The gardens, totaling 2½ acres, lie atop the seven-floor Maison Française and British Empire Building, which frame the Center’s famous Channel Gardens, the Palazzo d’Italia, and the International Building North. The gardens are viewed by thousands of office workers in the buildings around them, as originally envisaged by architect Raymond Hood, who saw these gardens as an opportunity to convert dull rooftops into places of beauty, increasing the value of the office spaces overlooking them.

The gardens, planned in the 1930s by British horticulturist Ralph Hancock, had gradually changed over the years. Many old plantings had outgrown their original form, and new plantings did not fit the original plan. The Center’s garden manager David Murbach studied archival material and planned an authentic restoration, incorporating as well a new irrigation system.

Now the gardens are again sights for sore eyes. The northern pair are dominated by six-foot-tall euonymous shrubs, the southern pair by reflecting pools, which appear many times deeper than their actual two inches. Red geraniums, planted in the original Italian terra-cotta jardinières, give intense color to an otherwise subdued palette. Unfortunately, while eyes are free to roam the gardens, liability and maintenance problems preclude visitors—even office work-

ers—from walking on them.

Among the completed components of the Center’s enhancement program are the regilding of the statue of Prometheus and the addition of a modern steel-and-glass canopy to 30 Rockefeller Plaza. Soon to be completed is the restoration of the renowned Rainbow Room.

Susan Doubilet

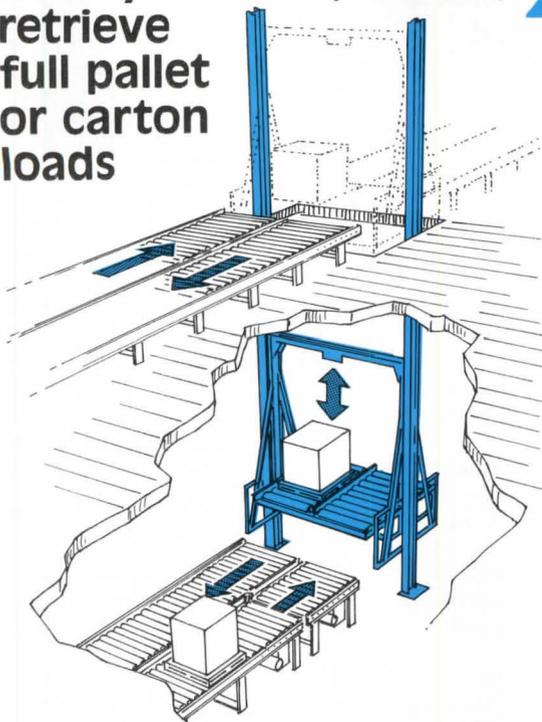
State of Illinois Center Update

After a \$10.9 million retrofit of its inadequate HVAC system, Murphy/Jahn’s State of Illinois Center in Chicago gained a reputation this summer as the coolest place in town. Consulting engineers Flack & Kurtz, hired by the state to analyze and correct the building’s mechanical problems, added a supplementary cooling system for the retail area, enlarged the building’s unique ice storage system, and installed stronger fans to push air through the building’s constricted duct systems. As a result, “the building performed fine,” according to Capital Development Board director Gary Skoien, despite an unusually hot July. “We even got a few ‘cold calls,’” he added.

While the building’s employees no longer have to battle chilly winters and one-hundred-degree summers, the question of who will pay for the costly repairs has yet to be settled. Illinois Attorney General Neil Hartigan has, on behalf of the state, sued Murphy/Jahn and architecture and mechanical engineering firm Lester B. Knight & Associates (the two firms formed a joint venture for the project) and several contractors for \$20 million, charging negligence (continued on page 28)

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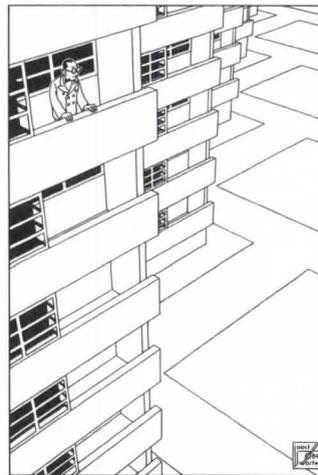
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Illinois (continued from page 27)
(P/A, July 1987, p. 25). "We fully intend to recoup every applicable dime from Lester B. Knight," said Skoien in announcing the suit last year.

Murphy/Jahn has filed a counterclaim which asserts that the joint venture agreement calls for Knight to assume responsibility for any mechanical problems. "We were not responsible for either the design or the observation of the mechanical system," said Murphy/Jahn attorney Paul Lurie.

Jahn himself noted that "no design changes in the building were required to fix the problem, only mechanical ones."

Meanwhile, Knight has filed suit against several of the contractors who installed the system. Said Knight attorney Michael Hasten, "If it's not working, it's not our fault." **Mark Branch** ■



Corbusier's Future, by Joost Swarte.

Corbu (continued from page 25) in a summer/fall exhibition that wholeheartedly celebrated the diverse and contradictory influence of those two creations—oeuvre and personage—of Charles-Edouard Jeanneret, born a century ago.

With a sense of humor and reasoned affection rare in discussions of Le Corbusier, 44 architects, cartoonists, and photographers of the most diverse tendencies offered demonstrations of Corbu's irrepressible presence in the late 20th Century. Unlike most of this year's Corbu exhibitions (see P/A, March 1987, p. 36; P/A, May 1987, p. 29; P/A, June 1987, p. 25) which have sought a certain critical detachment decades after the master's death, "Corbu vu Par . . ." ("Corbu, As Seen by . . .") revels in the particular and personal engagement of today's leading creators with Corbu's legacy. All of the participating artists were asked to select an

original work by Le Corbusier—a drawing, painting, or sculpture but not a photograph of a building—to be paired with a work of their own created specifically for the show. In addition, they were invited to submit photographs of two of their own built works, one recent, indebted in some way to Le Corbusier.

If some of this international showcase is predictable, the ensemble and individual "files," from architects as different as Michael Graves and Jean Nouvel, provide often unexpected answers to the show's main question: "Who is Le Corbusier?" Surprisingly some of the wittiest and most provocative contributions come from the most orthodox descendants. For instance, Pierre Facheux's modular clothes-stand with its parallel red and blue "pegs" carries shoes, clothes, and hats at their customary level on the human body and also sports poetic extras—an ashtray and a vanity mirror—at "normal" heights. The Marseille Unité, bête-noire of a generation of Corbu critics, turns out to be a favorite pet image, whether transformed into a habitable brise-soleil by Yves Lion or recalled poetically in the Smithsons' wooden "Noah's Ark."

The catalog (Mardoga editions) contains an equally eclectic collection of written reactions to Le Corbusier, including everything from analyses of pictorial space in the tradition of Colin Rowe to a new analysis of the handwriting samples the master himself regularly had analyzed, seeking a second opinion on that vital question, "Who is Corbu?"

Barry Bergdoll ■

The author, who teaches architectural history at Columbia University, is spending the fall semester in Paris.

L.I. Modern (continued from page 25) light a respectable, but largely unknown, collection of buildings (some destroyed). His exhibition was an effective assembly of original drawings and prints, models (a commissioned model of the Motherwell Studio made its point), photographs, and furniture. The installation, designed by Lee H. Skolnick, used a panel system whose construction reflected the lightweight aesthetic of the works themselves.

Explains Gordon, "Long Island's proximity to New York City (through which all new ideas passed) and its popularity as a vacation getaway combined to make it an ongoing workshop in new experimental design." Many (continued on page 30)

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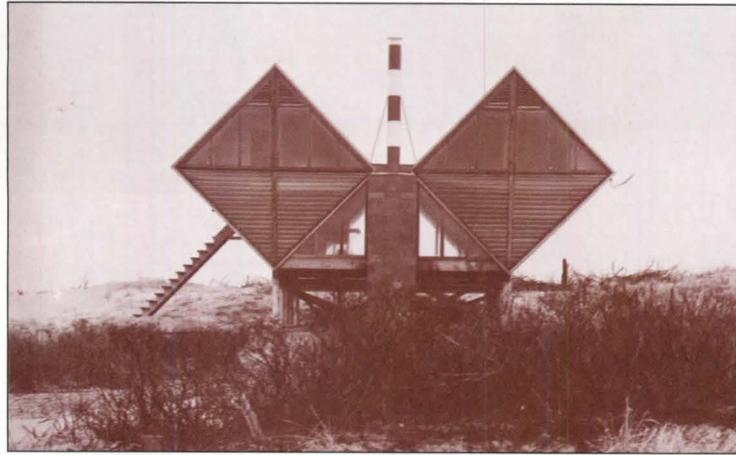


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L.I. Modern (continued from page 28) of the clients for these early houses shared their architects' progressive values, as is illustrated by the collaboration between textile designer and painter Frances Miller and architect Lansing Holden on the 1933 Bridgehampton house named "The Sandbox." Other innovative works in this "Bauhaus on the Beach" ranged from William Muschenheim's 1930 Hampton Bays bath houses, demolished by hurricane, to the one-room Canvas House in Northport of 1932 by A. Lawrence Kocher and Albert Frey, bulldozed in the 1950s, to the great 1931 International Style Tyng mansion in Southhampton by Peabody, Wilson & Brown, and Richard Neutra's "Windshield" of 1938 on Fishers Island, which was destroyed by fire. Works by architects such as Marcel Breuer, Philip Johnson, and George Nelson refined an evolving American Modernism. Even the more bizarre (perhaps one should say "spirited") examples, such as Abraham Geller's Pearlroth House of 1959 on Westhampton Beach, evoke a sense of site.

If the exhibition suffers, it is from an inconsistent catholicity.



Abraham Geller's Pearlroth House, 1959, from "Long Island Modern."

Courtesy Abraham M. Greller

Commercial structures, the World's Fair of 1939, and La Guardia Airport have more to do with support of New York City than with the Island itself; Eero Saarinen's 1962 TWA terminal, for example, is about other things.

There can be no denying that the automobile was a great catalyst in the emergence of Long Island as a recreational landscape. Yet this show overlooks roadside architecture. The famous Long Island Duck built in the 1940s near Riverhead—a near icon of architectural theory

—is missing from the show altogether. An aesthetic bias towards Good Taste was apparently at work here, at the expense of a broader view of the complete Long Island culture.

Moreover, for those who witness the steady conversion of the Long Island countryside into a suburban tract of overwrought residential "statements" and suffer the true horror of traffic from June to September, the main concern may not be the future of Long Island Modern but the future of Long Island itself. **Peter Papademetriou** ■

Terra Museum Opens in Chicago

If you consider the new Terra Museum of American Art a finished project, the six-story picture-box on Chicago's posh Michigan Avenue falls short on a number of points. But if you think of architect Larry Booth's design as Phase I of a three-part endeavor, then it shows great promise.

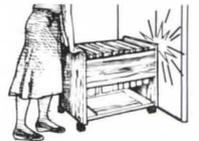
"I don't think it's a museum yet," says Mr. Booth of Booth/Hansen & Associates, Chicago. "It's an embryo—it's just the beginning."

His museum, which opened several months ago, houses selections from the personal art collection of businessman Daniel J. Terra (who is also U.S. Ambassador-at-large for Cultural Affairs) as well as visiting exhibitions. Terra's collection is particularly strong in 19th-Century American paintings, but weaker in modern art.

Booth has designed the museum around a central stairwell of alternating ramps and stairways that spiral toward an eyelike aureole in the ceiling. The stair will operate eventually

(continued on page 32)

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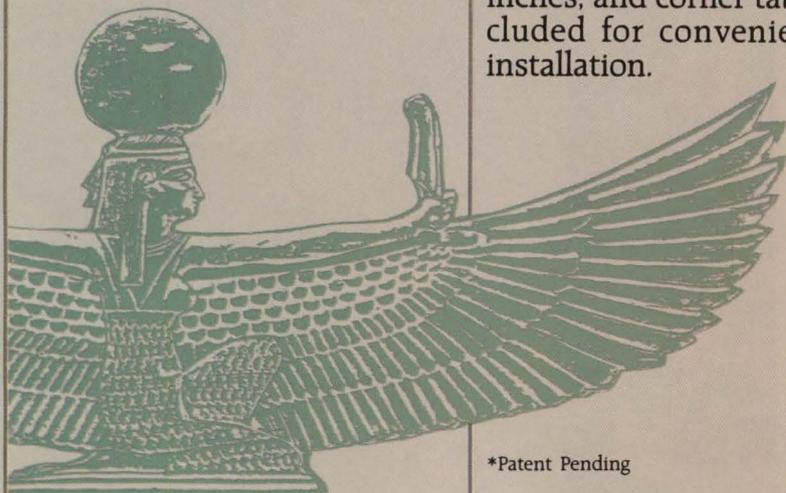
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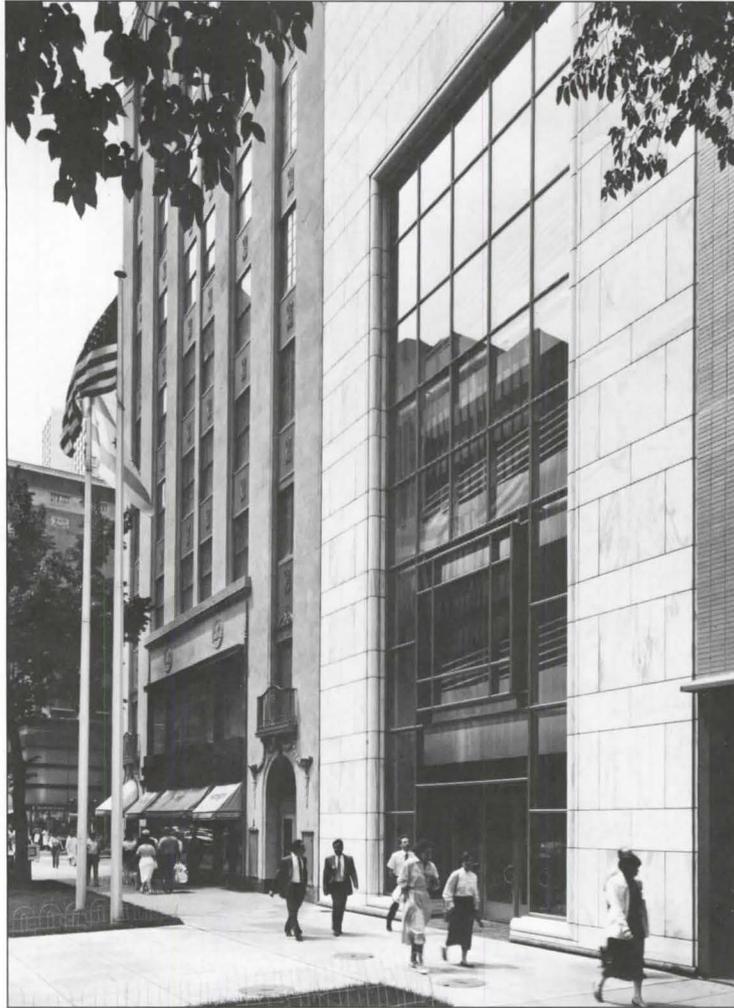
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Terra (continued from page 30) as the hinge between two wings of the finished plan. The wing currently open actually extends into several floors of an older building immediately south of the museum, where administrative offices are also located.

There is, however, nothing in Booth's design to suggest that, from the landings, visitors are required to make a sharp right and proceed through two sets of double doors and down a short hall before they finally reach the galleries. Moreover, stairways within the galleries make it possible to proceed vertically throughout all the exhibition space without returning to the central stair.

That's too bad, because if you don't climb that stair, you miss out on the museum's most significant architectural space and its big picture window, which dominates the façade of white marble, glass, and steel on Michigan Avenue.

Booth explains that subsequent additions will correct the problems inherent in building a museum in pieces, by re-connecting the dead-end galleries to the stair and balancing them with new galleries to the north. But Terra has not decided whether to use Booth/Hansen for the next two phases, and



Terra Museum on Michigan Ave.



Art on the landing in Terra Museum.

museum-goers will therefore have to wait to judge the end result.

In the meantime, however, there are some changes that can be made to improve the art-viewing experience. The museum staff is abusing Booth's design, fighting against it rather than exploiting its merits. Pictures are hung at junctures that cry out for the sculpture; monumental paintings perch uncomfortably on the stair landings; furniture is sparse and haphazardly positioned; and the gallery walls lack color that could lend visual interest. Terra told Booth he didn't want a museum where the architecture competed with the art. Booth complied, but heavy-handed hangings overwhelm his modest design. **Lisa Goff** ■

The author writes about architecture for Crains Chicago Business.

Photos: Wayne Cable

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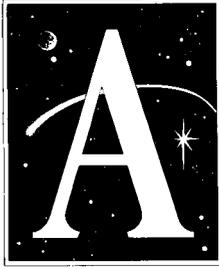
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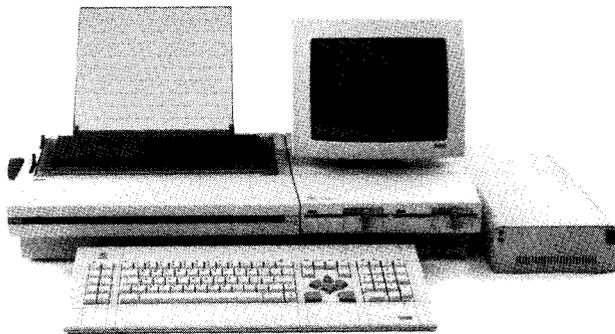
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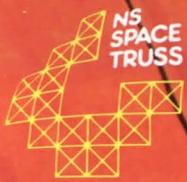


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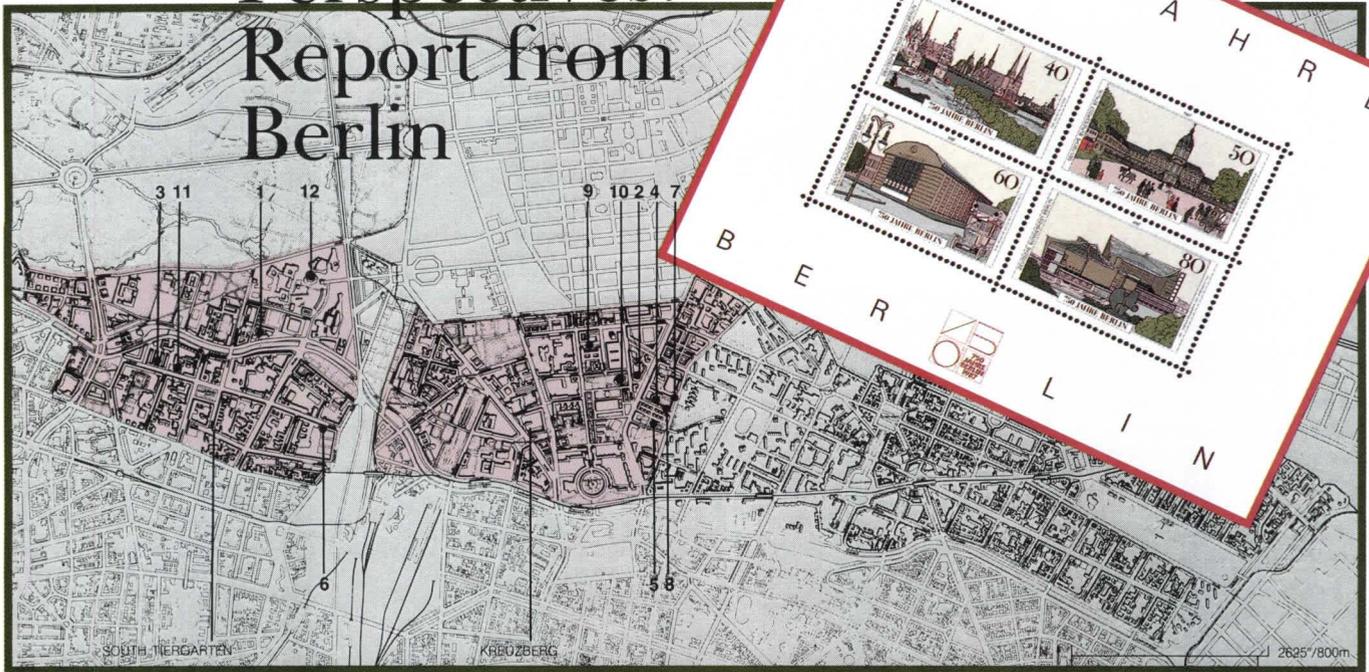


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Perspectives: Report from Berlin

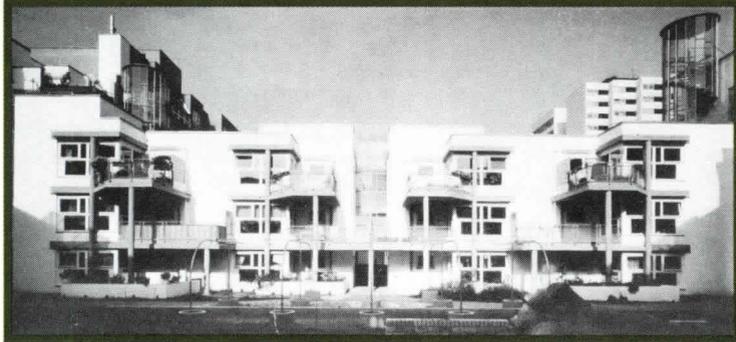


Map of West Berlin, showing illustrated projects. Inset: stamp commemorating city's 750th anniversary.



Robert Neiss

1 Science Center, Stirling & Wilford.



Lewe Rau

2a Housing, Herman Hertzberger.



H. Klappert

2b Housing, Hertzberger.

The End of IBA and After

This year, the 750th anniversary of the city of Berlin, also marks the conclusion of IBA, the International Building Exhibition in West Berlin. This article assesses the impact of IBA on its host city within the broader context of contemporary Berlin architecture.

Anticipating the end of the Internationale Bauausstellung Berlin (International Building Exhibition in Berlin, or IBA) in December, a closing exhibition was held this summer at Merkur Haus. Visitors to this formerly abandoned building in the Kreuzberg district were given a panorama covering almost a decade of building in West Berlin. The exhibition building's façade faces Kreuzberg itself, site of many IBA projects built in the shadow of the Berlin Wall. To the rear, the cranes, scaffolding, and workers on yet another IBA-sponsored construction site created a changing mechanical ballet that described how architecture is made in Berlin today.

The two views—the public city and the private construction



Lewe Rau

3 Housing, Gregotti Associates.



Lewe Rau

4 Housing, Arata Isozaki.

site—symbolize a dichotomy between the city and the individual building that IBA has never fully resolved. In the late 1970s, two early IBA projects by Rob Krier for Rauchstrasse and Ritterstrasse did organize new housing by various architects into cohesive, localized urban plans. But IBA's focus changed in subsequent projects from broad-scale planning of the inner city to infill projects in the Kreuzberg and South Tiergarten sections. As a result, new IBA buildings have little connection to one another but appear instead as members of a loose collection of new housing projects, sponsored by different developers with different aesthetic points of view.

Although Berlin is unique, its urban problems are shared by other contemporary cities. Before IBA, sections of Berlin resembled the more dilapidated parts of New York's South Bronx or New Jersey's Newark. And, like many other industrialized cities, Berlin has experienced the conflicts arising from two coexisting populations: one native and the other largely immi-
(continued on page 42)

Berlin (continued from page 41)
grant *gastarbeiters* (immigrant "guest workers") from more agrarian, developing societies. In retrospect, then, a more probing and critical approach by IBA's leadership to the problem of replanning the late 20th-Century city could have carried greater international significance.

A Survey of Contemporary Trends

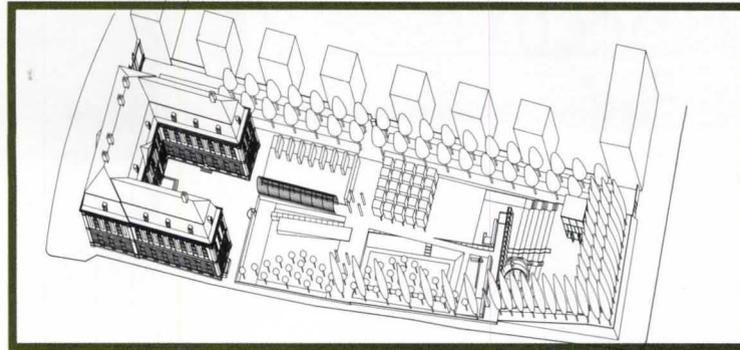
The host of IBA-sponsored projects recently completed or in construction shape a brief but remarkably comprehensive overview of contemporary trends in architecture. The playful and polychromatic Wissenschaftszentrum Berlin (Berlin Science Center) in South Tiergarten (1) by James Stirling and Michael Wilford, Associates, London—one of few IBA-sponsored office projects—is rising next to Mies van der Rohe's New National Gallery.

In Kreuzberg can be found a pair of opposites: the courtyard complex of Amsterdam architect Herman Hertzberger (2a, b) and Japanese architect Arata Isozaki's urban villa (4), which lies buried in a new courtyard behind the Victoria Insurance Building, surrounded by a number of IBA projects. Nearby, housing by New York architects Raimund Abraham and John Hejduk (9) is in the early stages of construction, as are large residential designs by Aldo Rossi of Milan, and Salvador Tarrago Cid of Barcelona.

Gregotti Associates' completed housing project in South Tiergarten (3) recalls many urban traditions—from the brickwork patterns of the Schinkel school, to turn-of-the-century apartment houses, to wintergardens—although its wall-like front overpowers two adjacent mews streets. A second infill block composed of the contributions of several architects, including Mario Botta, Christine Hawley and Peter Cook, and Christian de Portzamparc, will be completed in 1988. And behind the Berlin Museum, a new urban garden, designed by Berlin Modernists Kollhoff and Ovaska, is emerging (5).

Libeskind: The End of IBA

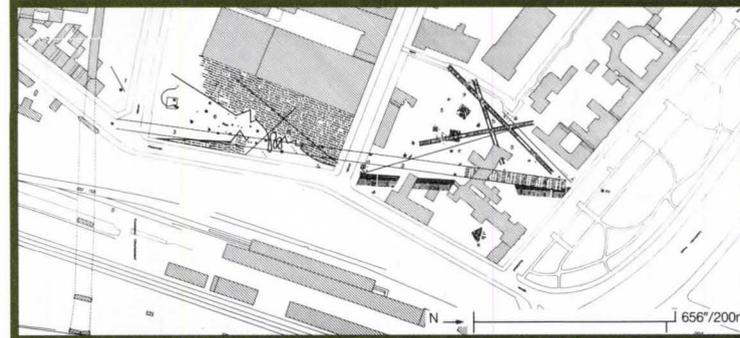
By winning one of the last IBA competitions, American Daniel Libeskind demonstrated how dramatically architectural tastes have changed in Berlin. Abandoning the Post-Modernism that characterized many earlier IBA projects, a jury selected Libeskind's proposal for a low bar



5 Garden behind Berlin Museum, Kollhoff and Ovaska.



6a Model of competition-winning design, Daniel Libeskind.



6b Site plan, Daniel Libeskind.



7a Former garage reused as kindergarten, Frowein and Spangenberg.



7b Kindergarten under construction, Frowein and Spangenberg.

building that rises dramatically out of the ground at an acute angle and spans obliquely across its three-block site (6a, b). Although Libeskind is noted for his abstract architectural drawings, the most powerful aspect of this entry was a series of architectural models. Wrapped in fragments of city plans and maps, their surfaces appear like delicate paintings, part text and part brush stroke.

IBA is now searching for a developer to sponsor and occupy the project, which includes housing, commercial space, child-care facilities, and a garden. That could be difficult: Libeskind's architecture would not appear easily adapted to the constraints of typical architectural practice. And, as IBA is scheduled to end this year, the sponsors' commitment to construction of this architect's work must be questioned.

In the weeks since the competition results were announced, the other participating architects have been invited by IBA to design smaller, specific buildings—a factory, kindergarten, housing, etc.—for the site. This pattern, while typical of many IBA competitions, could further jeopardize Libeskind's design: as programmatic requirements are met by these well-designed if less dramatic structures, Libeskind's radical, difficult project may become superfluous.

STERN-Sponsored Renovations

In addition to new construction, IBA has also sponsored the renewal of existing urban structures. This part of the IBA program, now independent and renamed STERN (an acronym which translates roughly as Society for Careful City Repair in Berlin) has had its greatest impact on Kreuzberg, a neighborhood populated by Turks, artists, and the urban underclass. Affecting both the public and private life of the community, STERN has repainted many of the area's once elegant historicist façades and modernized over 2000 apartments.

Treating Kreuzberg as a rich but untended urban garden, STERN has sponsored such provocative projects as the transformation of an unused parking garage into a kindergarten designed by Frowein and Spangenberg (7a, b). STERN plans to continue its often unconventional work of careful urban renewal after IBA ends, developing schools, community centers, and parks.

(continued on page 44)

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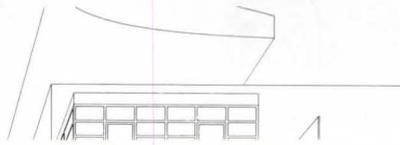
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Progressive Architecture 11:87 43



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Berlin (continued from page 42)

Assessing IBA

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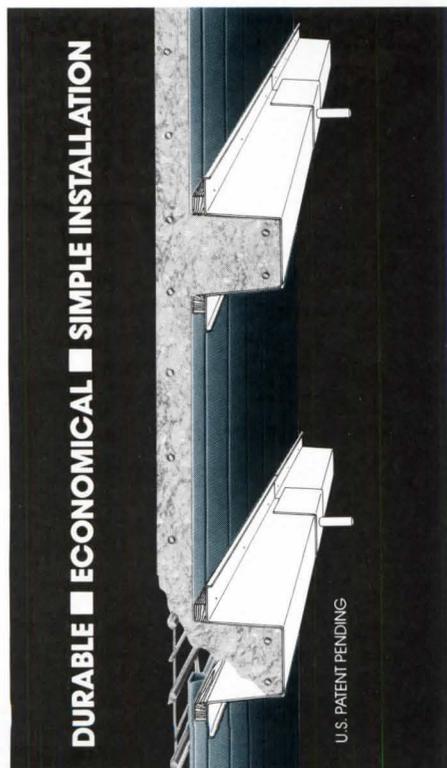
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P / A P E R S P E C T I V E S

Berlin (continued from page 44)

forum, adjacent to Scharoun's Philharmonie and Staatsbibliothek (Philharmonic Hall and State Library), the new theater is commemorated by a stamp celebrating the 750th anniversary of Berlin (p. 41).

Two important new museums were also announced this year. The West German government is now sponsoring a major competition for a Museum of German History to be located near the Reichstag. The results of that competition are to be announced next February. A second Museum for Motion Pictures is currently being designed by Herman Hertzberger, to be located in the Kulturforum.

New architecture, designed by a generation of younger architects, is also emerging, apart from IBA. These architects find the western, walled half of this schizophrenic city a ripe source for commentary. Although the concerns of architects working in Berlin today are not limited to describing the city, their projects often evoke the peculiar history and geography of West Berlin.

An apartment block by Hans Kollhoff (8), for example, is rich with historical and local references. The building's dark brick veneer recalls Eric Mendelsohn's use of the material, while a Lubetkin-like glass curtain wall fronts circulation spaces leading to apartments and wintergardens. The wildly sculpted roof suggests Corbusian form, while also responding gracefully to neighborhood apartment houses, which possess tall, pitched roofs.

Architects Brenner and Tonon, winners of an IBA competition, criticize the IBA program's priorities in their design (9), proposing a multiuse building layered vertically in section, from shops at the base to parking and finally apartments.

A kindergarten designed by Christof Langhof (10) mimics the city's natural and architectural topography to produce a subtle metaphor for West Berlin. Like the city, the structure is denser at the eastern edge, dissolving into bands of wood, grass, and sand that echo parks and lakes at Berlin's western border.

A second kindergarten, designed by Halfmann and Zillich (11) reflects that office's interest in "conceptual regionalism." Growing out of an existing fire-wall, the building is organized into two long sections (classroom and wintergarden) placed on either side of a masonry wall. Oriented towards true north,

the wall is a constant mark set against Berlin's changing urban landscape.

A Thriving Architectural Culture

These young architects contribute to a vibrant architectural community that exists despite West Berlin's physical isolation. Local and foreign architects meet, browse, and gossip at Bücherbogen (literally "book vault"), an excellent architectural bookstore located under an S-Bahn station in Kreuzberg. The city is connected to the rest of West Germany by *Bauwelt*, a weekly, newspaper-style publication that gives an extremely thorough listing of competitions and available positions, together with articles and letters.

In 1987, a new, six-week Sommer Akademie (summer academy) opened in the AEG Kleinmotorenfabrik (Small Motor Factory) designed by Peter Behrens in 1912. Organized by seven Berlin architects, the academy featured lectures and classes taught by emerging architects from Europe, the United States, and Japan.

In an effort to encourage architects to live, work, and build in Berlin, the city's governing body, the Senat, organizes numerous small competitions. In the past year, a variety of building types, including a school, a gymnasium, an anatomy theater, and a train station, have been offered. As Berlin lacks a strong network of galleries or local publications, the Senat's competitions are a vital way for the city's young architectural community in particular to meet, display work, and discuss ideas. Located across from the Bauhaus archive, the Senat's building office typically exhibits all drawings and models submitted for each competition. It is out of this body of competitions that the next generation of Berlin architects will emerge.

Mary Catherine Pepchinski ■

The author is a New York architect now living and working in West Berlin.

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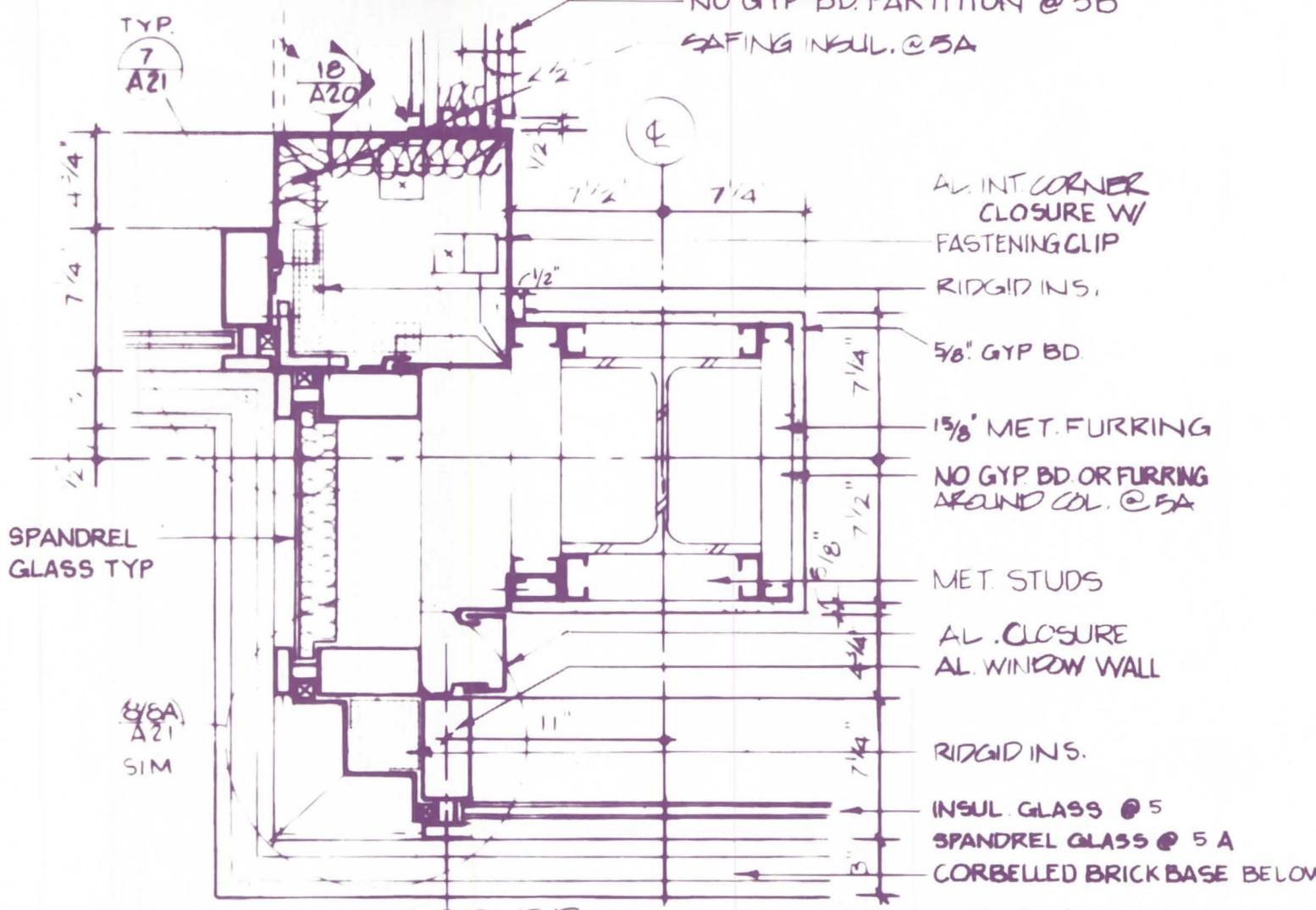
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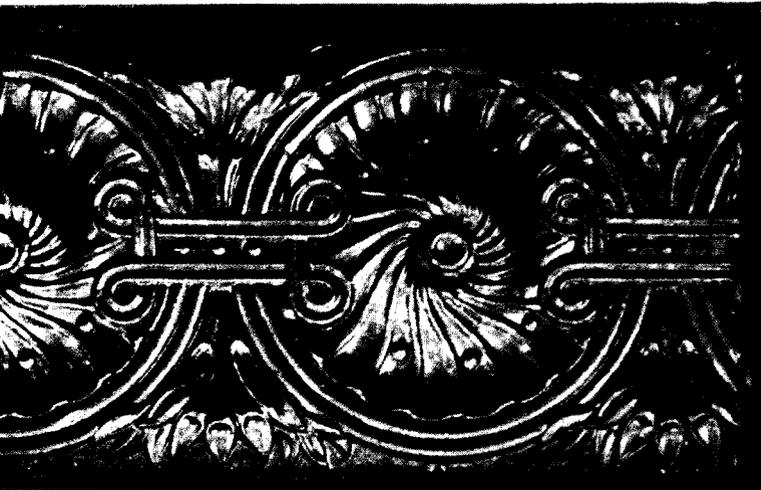
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Through November 20

The Chair Designs of Frank Lloyd Wright, including original chairs, drawings, and photos. Second floor Main Gallery, Art & Architecture building, Yale University, New Haven, Conn.

Through November 23

New York Society of Renderers' exhibition. Pen & Brush Society, New York.

Through November 28

House: Recent designs by Steven Holl, New York; Krueck and Olsen, Chicago; Mark Mack, San Francisco; Thom Mayne, Los Angeles. John Nichols Gallery, New York.

Through November 29

Furniture by Architects, including designs by eight leading architects. Linda Farris Gallery, Seattle, Wash.

Through December 12

Buckminster Fuller. Max Proetch Gallery, New York.

Through December 17

Renzo Piano. Chapelle de la Sorbonne, Paris.

Through January 4

Chicago Architecture, 1872-1922: Birth of a Metropolis. Musée d'Orsay, Paris.

Through January 4

Architectural Elements of the Pacific Islands. Brooklyn Museum, Brooklyn, N.Y.

Through January 5

Robert Adam and Kedleston: The Making of a Neo-Classical Masterpiece. The Octagon Museum, Washington, D.C.

Through January 10

Louis H. Sullivan: Unison With Nature. Erie Art Museum, Erie, Pa.

Through January 11

Le Corbusier Adventure. Georges Pompidou Center, Paris.

Through January 17

The Golden Age of Ottoman Architecture: Sinan, Sultan Suleyman's Court Architect. Metropolitan Museum of Art, New York.

Through January 31

Galveston Arches, with designs by seven leading architects. Cooper-Hewitt, New York.

Through February 14

Jasper F. Cropsey: Artist and Architect. New York Historical Society, New York.

November 21-December 18

Frank Lloyd Wright and the Johnson Wax Buildings: Creating a Corporate Cathedral. David Winton Bell Gallery, Brown University, Providence, Rhode Island (See P/A, April 1986, p. 27).

December 1-February 14

The Machine Age in America 1918-1921. High Museum of Art, Atlanta, Ga. (See P/A, Nov. 1986, p. 110).

December 8-March 28

The Function of Ornament: The Architecture of Louis Sullivan, National Building Museum, Washington, D.C. (See P/A, Nov. 1986, p. 26).

December 9-February 28

The Art that is Life: The Arts and Crafts Movement in America 1875-1920. The Detroit Institute of Fine Arts, Detroit, Mich. (See P/A, May 1987, p. 32).

December 13-January 31

Modern Jewelry: New Design, including pieces by Cesar Pelli, Michael Graves, Hans Hollein, Arata Isozaki, and Ettore Sottsass. San Francisco Museum of Modern Art.

November 15

Deadline, Rome Prize Fellowship Competition. Contact Fellowships Coordinator, American Academy in Rome, 41 E. 65th St., New York, N.Y. 10021 (212) 517-4200.

November 19

Registration deadline, Charles Street: An Urban Prototype.

Submissions due November 23.

Contact Charles Street Management Corp., 330 N. Charles St., Baltimore, Md. 21201.

November 20

Submission deadline, Fifth Annual Concrete Paver Design Competition. Contact David Smith, National Concrete Masonry Association, 2302 Horse Pen Rd., P.O. Box 781, Herndon, Va. 22070 (703) 435-4900.

December 1

Submission deadline, 1988 International Computer Animation Competition. Contact National Computer Graphics Association, 2722 Merrilee Dr., Suite 200, Fairfax, Va. 22031 (703) 698-9600.

December 1

Submission deadline, Contemporary Furniture Design Competition. Contact George Mesberg, Directional, Inc., 200 Lexington Ave., Suite 700, New York, N.Y. 10016 (212) 696-1088

December 17

Submission deadline, 1988 Presidential Design Awards. Contact Thomas Grooms, National Endowment for the Arts, Design Arts Program, Room 625, 1100 Pennsylvania Ave., N.W., Washington, D.C. 20508.

December 31

Deadline for written application requests, Rotch Travelling Scholarship. Contact Hugh Shepley, FAIA, Secretary, Rotch Travelling Scholarship, 40 Broad St., Sixth Floor, Boston, Mass. 02109 (617) 423-1700.

November 22-25

American Society of Landscape Architects Annual Meeting, Moscone Convention Center, San Francisco, Calif. Contact Alice Joseph, Ruder, Finn & Rothman, Inc., 444 N. Michigan Ave., Chicago Ill. 60611 (312) 644-8600.

December 1

Call for papers, 4th International Making Cities Livable Conference. Contact Suzanne Crowhurst-Lennard, Center for Urban Well-Being, P.O. Box QQQ, Southampton, N.Y. 11968 (516) 283-5880.

December 15

Call for papers, The City of the 21st Century. Contact Madis Pihlak, Conference Coordinator, Dept. of Planning, Arizona State University, Tempe, Ariz. 85287-2005 (602) 965-5898.

December 16-18

1987 Microcomputer Graphics Show and Conference, Javits Convention Center, New York. Contact Susan Werlinich, Expoconsul International, 3 Independence Way, Princeton, N.J. 08540 (609) 987-9400.

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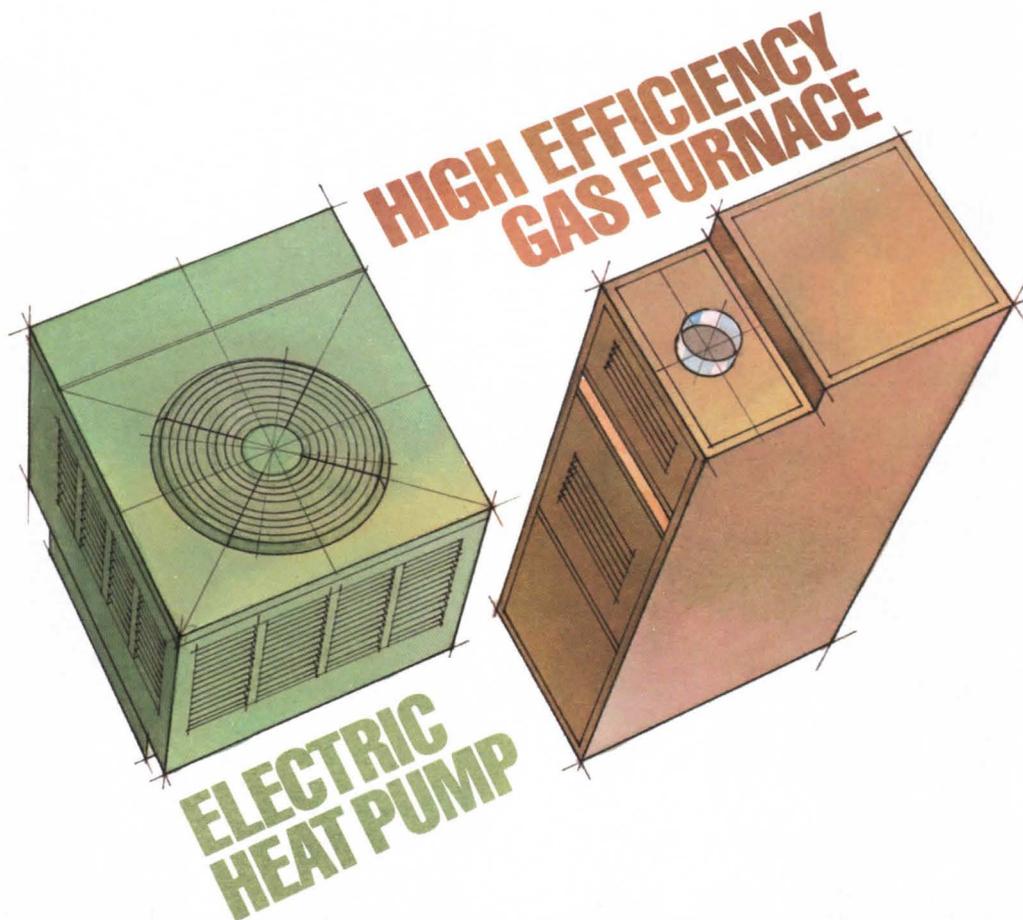
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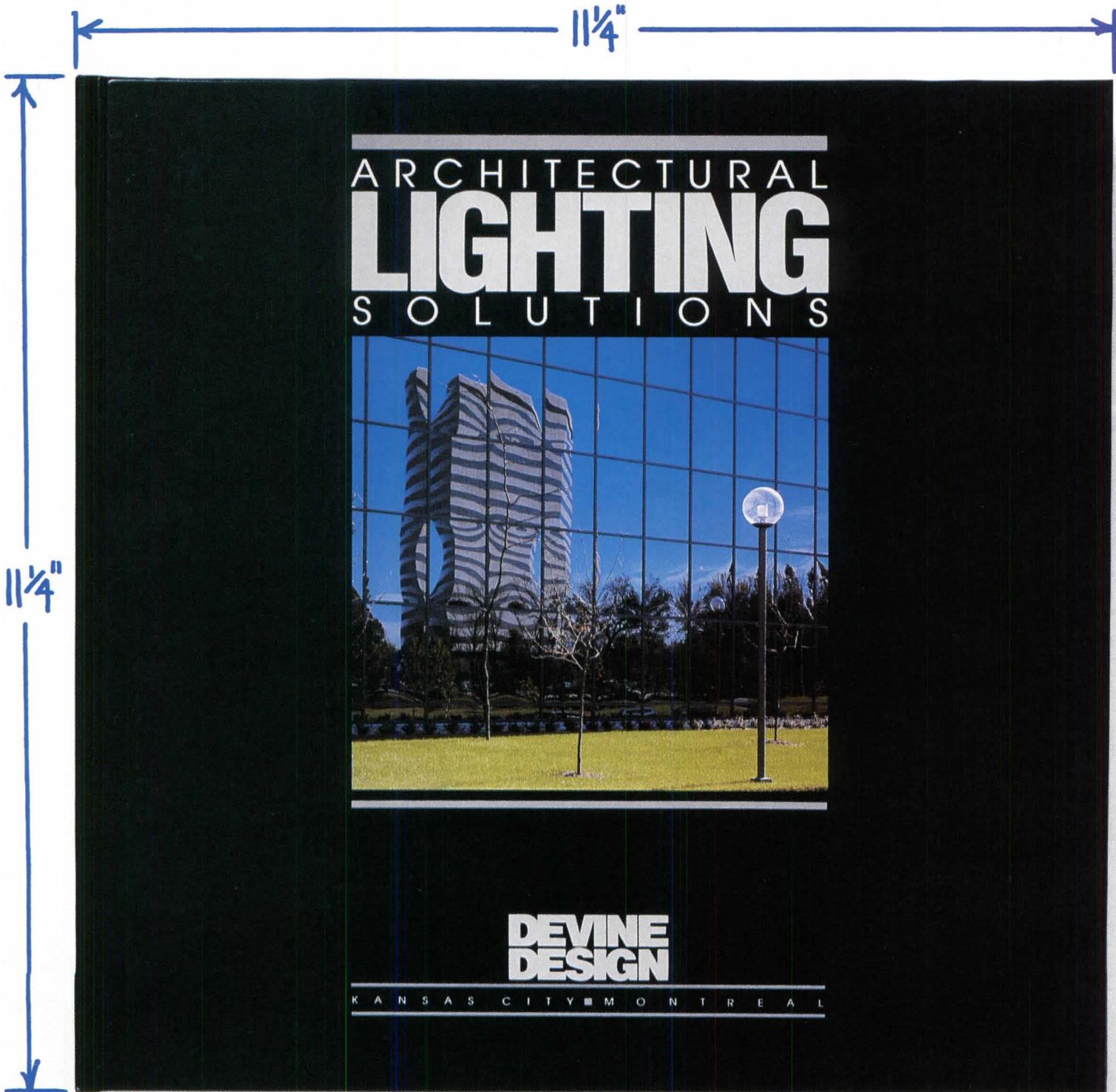
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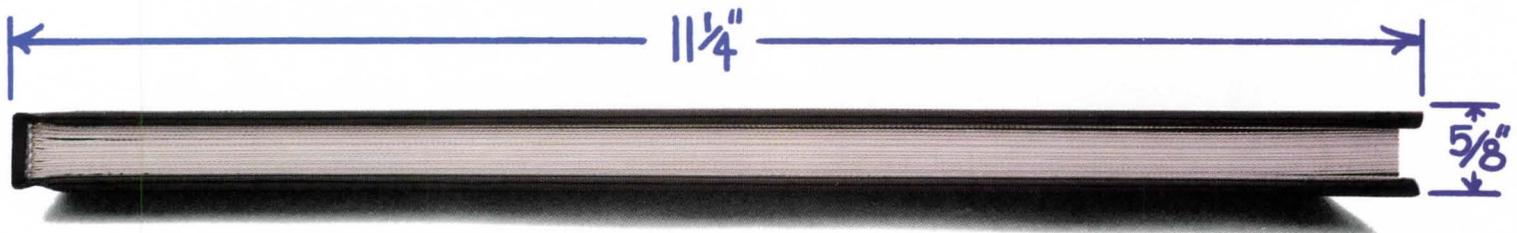
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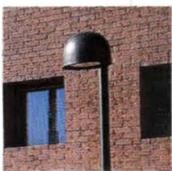
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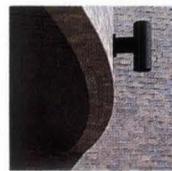
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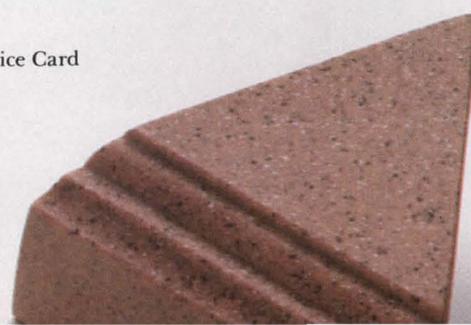
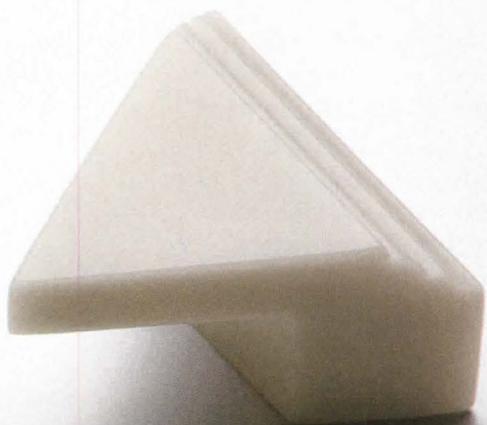
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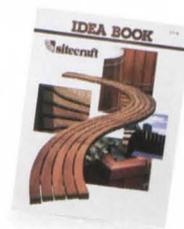


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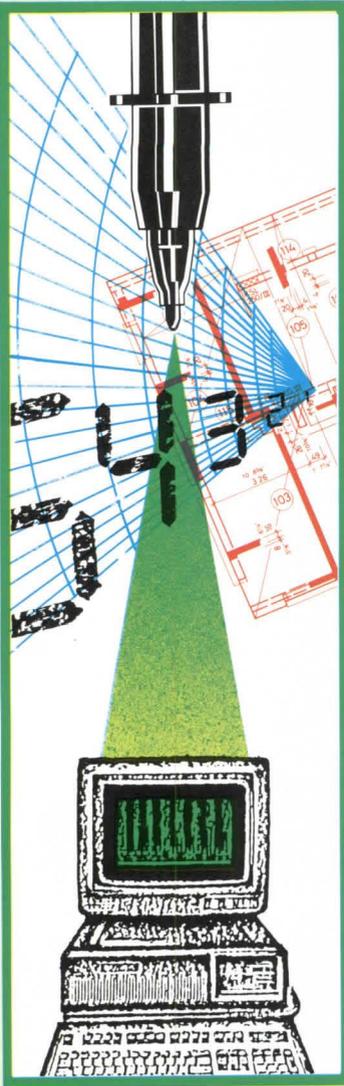
Who says imagination doesn't grow on trees.



Computers: Nicholas Weingarten lists the limitations of computer plotters.

Specifications: Walter Rosenfeld discusses the decisions necessary to write a spec.

Law: Norman Coplan tells how courts have limited liability.



Computers: The Plotter Problem

Architectural drawings are very dense, abstract representations of complex three-dimensional objects. As a result, they require the largest possible format, the greatest precision and resolution, the most colors or gray scales, the fastest plotting times and, of course, the cheapest price. No single plotter can deliver all of these features, and those that come close are often lobotomized by the current crop of CAD systems. This has created what we have termed the "plotting bottleneck." Entering information into a computer and displaying it on a screen is getting easier and faster, but transferring it to paper or film is beginning to require the patience of Sisyphus.

There are a variety of opinions and a number of misconceptions about how to relieve the plotting bottleneck. With pen plotters, the major limitation is the slow speed (about 8 inches per second depending upon viscosity, humidity, acceleration and plotting media) of liquid ink. In an effort to increase speed, most hardware and software vendors have turned to line sorting. This technique alters the order in which lines are drawn so that the plotter makes the least number of moves with the pen raised. Unfortunately, this does not appreciably improve performance since the lines are already partially ordered, and the pen, when raised, is often moving at top speed (usually 15 to 24 inches per second) anyway. Line sorting can also create undesirable side effects such as endpoint blobs and moiré patterns in closely spaced lines. Pen sorting, the ordering of a plot so that all lines with a common pen are drawn together, can also create problems. Fine pen tips, even with capping, can dry out while waiting for other pens to finish. Plotting a few lines at a time with each pen can solve this problem, but requires the suppression of pen sorting. Another difficulty

(continued on page 74)

Specifications: Order of Battle

According to the Construction Specifications Institute's Manual of Practice, the architectural drawings in a set of contract documents should show the location, identification, dimensions, and arrangement of materials, while the specifications should describe the required characteristics of materials, standards of workmanship, and methods of installation.

This division of responsibility is important in deciding what goes on the drawings and what should be in the project manual. Though some offices occasionally cross these lines by including schedules or job sign graphics with the specifications, in general the principles articulated by CSI are observed because they make sense in terms of what each type of document does best.

When the architect in charge does not personally prepare the specifications for a project, but relies on a separate specifier or specifications consultant, it is particularly important that the specifier become sufficiently familiar with what is in the building and what materials are intended to be used so that a correct and complete project manual can be produced. Enough time must be devoted to studying the drawings (in their various states of completion) and to discussing the materials of the project in detail with the project architect for the specifier to know the job intimately from his or her point of view.

It's not the same point of view as the project architect's. For the specifier, there's little concern about the number or location of toilets, the width of stairs or corridors, the placement of windows in the façade, or the footprint of the building on the site. What the specifier wants to know is exactly what materials will be used and how they go together. He or she wants to know the sizes and types of all ceramic tile in the building, wherever located, and what subsurfaces the

(continued on page 76)

Law: Statutes of Limitation

Limiting the time period within which a negligence suit against architects or engineers must be instituted or otherwise barred raises questions and issues distinctive to the construction industry. This is so because a defect in construction, which has its source in an inadequate design, may not manifest itself until many years after the professional design performance has been completed. Many state legislatures have recognized that it is not sound public policy to subject an architect or engineer to potential liability for an unlimited or indeterminate period following the completion of a building project. As a result, many states have placed statutory limitations on the time within which a suit must be commenced by an aggrieved party. These statutory limits have been challenged on constitutional grounds with varying success.

For example, Illinois adopted a statute of repose in 1965 which provided that "no action to recover damages for any injury to property, real or personal, or for injury to the person, or for bodily injury or for wrongful death, arising out of the defective and unsafe condition of an improvement to real estate, nor any action for contribution or indemnity for damages sustained on account of such injury, shall be brought against any person performing or furnishing the design, planning, supervision of construction, or construction of such improvement to real estate, unless such cause of action shall have accrued within four years after the performing or furnishing of such services and construction." This limitation was expressly written to exclude from its coverage "any owner, tenant or person in actual possession and control of the improvement at the time the cause of action accrued." Because of this exclusion, the statute was declared unconstitutional. The court ruled that an exclusion

(continued on page 78)

Computers (cont. from p. 73)

with pen plotting is the unreliable nature of liquid ink, especially when rendering small fine lines or text. Too many CAD users, trusting their plotters to faithfully complete reams of drawings overnight, have found 14-foot dimensions built at four feet.

The raster-based alternatives to the ubiquitous pen plotter also present limitations. Electrostatic plotters, for example, are very fast, but require substantial computer power and only plot on special coated paper or film. These media have a limited shelf life and are usually either very expensive or unworkable for hand modifications after plotting. Hand-workability should be stressed because a plot that cannot be modified by hand must be re-plotted in its entirety. Despite the speed of electrostatic plotters, a number of re-plots can place an enormous strain upon computer resources. The high cost (\$40,000 and up) of electrostatic plotters also brings into question whether they are a superior choice to three or four pen plotters driven by dedicated PC's. For the small to medium-size office, the advantages in redundancy, decentralization, and media selection may offset the limitations of liquid ink.

There are other devices beginning to be touted as the "answer" to pen plotting, including laser printers, ink jet sprayers, thermal transfer plotters, and film recorders. All are limited in drawing size, image quality, speed, and/or resolution. Despite this, many prospective buyers of PC-based CAD systems have been swayed by the photographic images that these devices produce. Remember that line drawings, computer synthesized models, and scanned real-life scenes are three entirely different types of images. A well-rendered copy of a photograph on a plotter does not guarantee that working drawings or ray-traces will be clearly reproduced.

Software Inadequacies

Despite these limitations, all of this hardware can produce images of great complexity and outstanding quality. What is usually missing is properly conceived software to take advantage of each device. The current limitations in plotting software fall into three categories: Inflexible control of the output device, lack of software emulations for missing hardware features, and poor interaction for efficient drawing production. The first two problems result from soft-

ware vendors writing code for the least common denominator among plotters, which neither takes advantage of the features in better plotters, nor provides software to make up for deficiencies in less capable devices. Economically, this is an understandable approach, but the lack of adequate interaction indicates either ignorance or neglect on the part of the software companies. The following suggestions should help prospective buyers of PC-based plotting software to separate the "adults" from the "adolescents" and to prod the software vendors into examining some new ideas in an often overlooked section of their products.

Inflexible Control

Parameter Setups: No word-processing package could be sold today if it was not able to set the parameters on a variety of printers and store these settings as both defaults and as attributes associated with specific documents. Furthermore, almost every software package that "speaks" to a printer permits the user to customize special command sequences to initialize the printer for particular tasks. Most plotters incorporate similar features for controlling pen speed, acceleration, toner density, or other parameters. Not only do PC-based CAD packages ignore many of these settings, but they often prevent the manual overriding of such parameters by the user.

Pen Control: Most pen plotters can interrupt their plotting and return to a "home" position so that the plot can be examined or the pens cleaned. We know of no PC-based CAD package that incorporates comparable software features. Such a capability would permit a user to specify a pause between pen changes (to restart the ink), between types of entities (to switch pens for small text or details), or after so many line segments (to examine the progress of a long plot).

Re-Registration: Many pen plotters will permit a pen position to be read by the software. This would permit a user to remount a plot with registration marks, place the pen over two or three of these marks, and ask the software to register a new plot to the existing one. We know of no PC-based CAD software that does this well enough to make an overplot indistinguishable from a single pass plot, yet the mathematics are well known and the hardware is easily capable of performing this task.

Down-loading Definitions:

Many output devices now contain enough memory to permit repetitive symbols and fonts to be sent initially to the plotter and activated by a single reference command. This can substantially reduce plot time, especially in cases where objects have large numbers of small line segments (detailed, small text for instance). Unfortunately, this hardware feature requires sophisticated software to manage the downloadable memory, and particular techniques will vary from device to device.

Inadequate Emulation

Halftone Lines: Traditionally many architectural drawings have relied upon halftone lines to indicate background data. While most raster-based plotters will support gray-level areas, few will produce halftone lines, even though both are accomplished through dithering, a process in which rasters of two shades are mixed to create the appearance of an intermediate shade. Halftone lines can be generated with little overhead by dithering while rasterizing, but the plotter manufacturers have failed to include this feature in their products and the software vendors have not seen fit to emulate it.

Complex Area Fill: Most raster-based plotters will fill enclosed areas with either solid colors, gray levels, or patterns, but these techniques are inadequate to reproduce the more sophisticated computer-generated images beginning to show up on computer screens. These require the areas to be filled with random textures or continuously graded shades. While such algorithms might be difficult to build into a plotter, they are already present in similar software for display screens. Once again, the PC-based CAD companies have not seen fit to apply these techniques to hard copy output.

Color Gamuts: As three-dimensional computer synthesized images become more prevalent there will be a need to coordinate output between a variety of devices. Unfortunately, monitors, film, and ink all have different color gamuts, which means that certain colors cannot faithfully be reproduced on all devices (fully saturated turquoise, for instance, cannot be displayed on a color CRT). Limitations in a particular device can often be overcome through dithering, but we have not seen any PC-based software begin to address this issue. We expect it to be a long time before the carefully

tuned image one sees on a display screen can be consistently and accurately reproduced on a hard copy device.

Improper Interaction

Filters for Overplotting: Pen plotters often skip a line segment, making it necessary to replot a piece of a drawing, registered to the overall image. With proper interaction, the user should be able to specify a limited area for re-plotting, useful for small changes to a drawing in which a portion of a plot is erased by hand. Software to filter out certain entities or particular text strings would also permit important features in a drawing to be singled out and overplotted.

Overriding Definitions: Displaying detailed symbols and complex fonts on an interactive screen can be frustratingly slow. Most users, therefore, use simple versions of these entities and replace them with more complex versions before plotting. Unfortunately, it may require many individual operations (or at least some fancy programming) to replace a large number of definitions on a complete set of working drawings. It would be far simpler to specify replacement at plot time and allow the software to automatically override the definitions in the drawing files with new libraries of symbols and fonts. There are very few PC-based CAD systems that include this feature as part of their standard package, and even fewer that provide software to manage the font and symbol libraries in any cohesive fashion.

Composing Sheets: Software for composing and compositing images is a valuable component of any publishing or animation system. Currently, the PC-based CAD packages leave this to the add-on vendors and the in-house programming wizards. In its simplest sense, a sheet compositor would enable users to interactively marry a number of drawing files and place them inside the borders of a pre-defined sheet. Consistent graphic elements such as title blocks, registration marks, graphic scales, and time stamps could be plotted automatically in appropriate locations and formats. These definitions could be saved and used on other plots in the drawing set as well. Such a system should also include features like automatic centering of sets of drawing files, layout of multiple drawings (i.e., detail sheets), and the automatic recording of file names in the margin of the drawing.

(continued on page 76)



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Computers (cont. from p. 74)

Some might say that this emphasis on hard copy is misguided since we will soon do away with paper altogether, and others might argue that drawings are the inconsequential by-product of the design process. To some extent, both positions are right, but no firm can now afford the resources to fully automate its practice. And it is inconceivable that a profession whose ideas are so often communicated (and too often judged) by its drawings, should not be concerned about wringing the greatest graphic quality and clarity from its CAD systems. **Nicholas H. Weingarten** ■
The author is a computer consultant in Chicago.

Specifications (cont. from p. 73)

tile is applied to in each case, not (just) the height of the wainscot in a particular room.

It follows, then, that communication between the specifier and the project architect, particularly in discovering items that have not yet found their way onto the drawings, is an urgent necessity. While outline specifications produced at the end of design development are a useful source of information, they are often made obsolete by later decisions during the working drawing phase. The project architect must be decisive and forthcoming in communicating the essential information the specifier needs. In response to the

specifier's probing questions, the project architect also must often make decisions that are as yet unconsidered.

The most important tool of that communication is, of course, the drawings themselves, and here we come to what specifiers sometimes call "the job captain factor." This critical factor, the way in which the production of working drawings is undertaken by the project architect, can have a great effect on the amount of time (and money) required to put together the project manual.

Experienced project architects direct the production of contract drawings in a systematic, predictable, logical sequence, sometimes even sketching the layout and

contents of each drawing before it is begun. The drawing production strategy selected is extremely important to the specifier because the order in which specification sections can be completed is completely dependent on the order in which decisions about materials and construction are made. There is a distinct penalty for going back and revising specifications to accommodate radically different materials or methods once a section of the manual has been written. The need to plan drawing production carefully is even greater when computer-aided drafting methods are used.

Plans and elevations are usually and properly done first to define the building for the client as well as for the contractor. But from the specifier's viewpoint, early attention also needs to be given to finish schedules, door and window schedules, wall sections, and important details. If the wall sections are done very late, for example, issues involving walls, windows, and roofs may remain unresolved for a longer time because it is usually in drawing them that the associated problems are recognized and worked out. While the specifier can help with some of the needed materials and methods decisions, the initiative should come from the architect. How the building will look is related to how it will be built, and in this latter group of decisions, the specifier has a special interest.

To avoid or postpone harder decisions, drafters can spend lots of time on room elevations and large-scale plans. These are of little help in conveying information about the building's construction. To make the building beautiful, it's easy to concentrate on proportioning the windows while neglecting the roof or to work on reflected ceiling plans and postpone the door jamb details. None of this helps get the project manual done.

What must remain in the forefront of the project architect's efforts is the need to deal with construction and materials questions at the earliest possible time and to get those questions answered and the answers recorded. Then both drawings and specifications can proceed with proper, complementary ease so that both will be completed in time for adequate review and coordination before bidding begins. **Walter Rosenfeld** ■

The author is an architect and specifications consultant in Newton, Mass.

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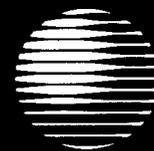
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Law (cont. from p. 73)

based solely on "status" violated the concept of "equal protection of the law."

In 1983, however, the Illinois legislature enacted a Statute of Limitations which provided that "actions based upon tort, contract or otherwise against any person for an act of omission of such person in the design, planning, supervision, observation or management of construction, or construction of an improvement to real estate shall be commenced within 2 years from the time the person bringing an action, or his or her privity, knew or should reasonably have known of such act or omission." The validity of this statute was

challenged in the case of *The People et al vs. Miller Davis Company, et al.*

A suit had been initiated by a public agency in connection with the design and construction of a college building. It was claimed that the architect, the general contractor, and the masonry subcontractor had all performed negligently and, as a consequence, the building had been subject to extensive leaks. These leaks commenced in 1975, approximately one year after a certificate of substantial completion had been issued. In February of 1977, the college's director of campus development asked the architect for his assistance in determining which of

the parties involved were at fault so that the college could be reimbursed for its damages. In March of that same year, the dean of the college wrote to the general contractor, detailing the college's belief that the damage was the result of faulty construction.

Based upon the foregoing, the trial court found that the plaintiff "knew of its injury by March, 1977 at the latest." Since suit had not been filed until 1983, all of the defendants moved to dismiss the action on the ground that more than two years had elapsed since the date the plaintiff knew of the acts or omissions of the defendants and that the action was barred by the 1983 Statute of Limitations. The Illinois Su-

preme Court upheld the constitutionality of the statute and dismissed the suit. In contrast to the earlier statute that it found unconstitutional, the court pointed out that this statute was not based upon status but upon certain "enumerated activities." The court said: "The burden is on a party challenging legislation to demonstrate that the legislation is arbitrary and unreasonable. Legislation which classifies on the basis of activity does so on the basis of differences as to the problem involved or the degree of harm applicable to the activity in question. The plaintiff has not demonstrated why it is unreasonable or arbitrary to classify construction activities separately for purposes of the Statute of Limitations."

The plaintiff also named the general contractor's bonding company as a party defendant. The court refused to dismiss the action against the bonding company on the ground that the issuance of a performance bond cannot be deemed to be engaging in the "design, planning, supervision, observation or management of construction" and thus did not fall within the protection of the Statute of Limitations.

The distinction between status and activity as the basis for a constitutional ruling can be questioned. The exclusion of an owner who must continue to maintain a defective structure from the protection of a statute that limits the exposure of design professionals is arguably a reasonable classification.

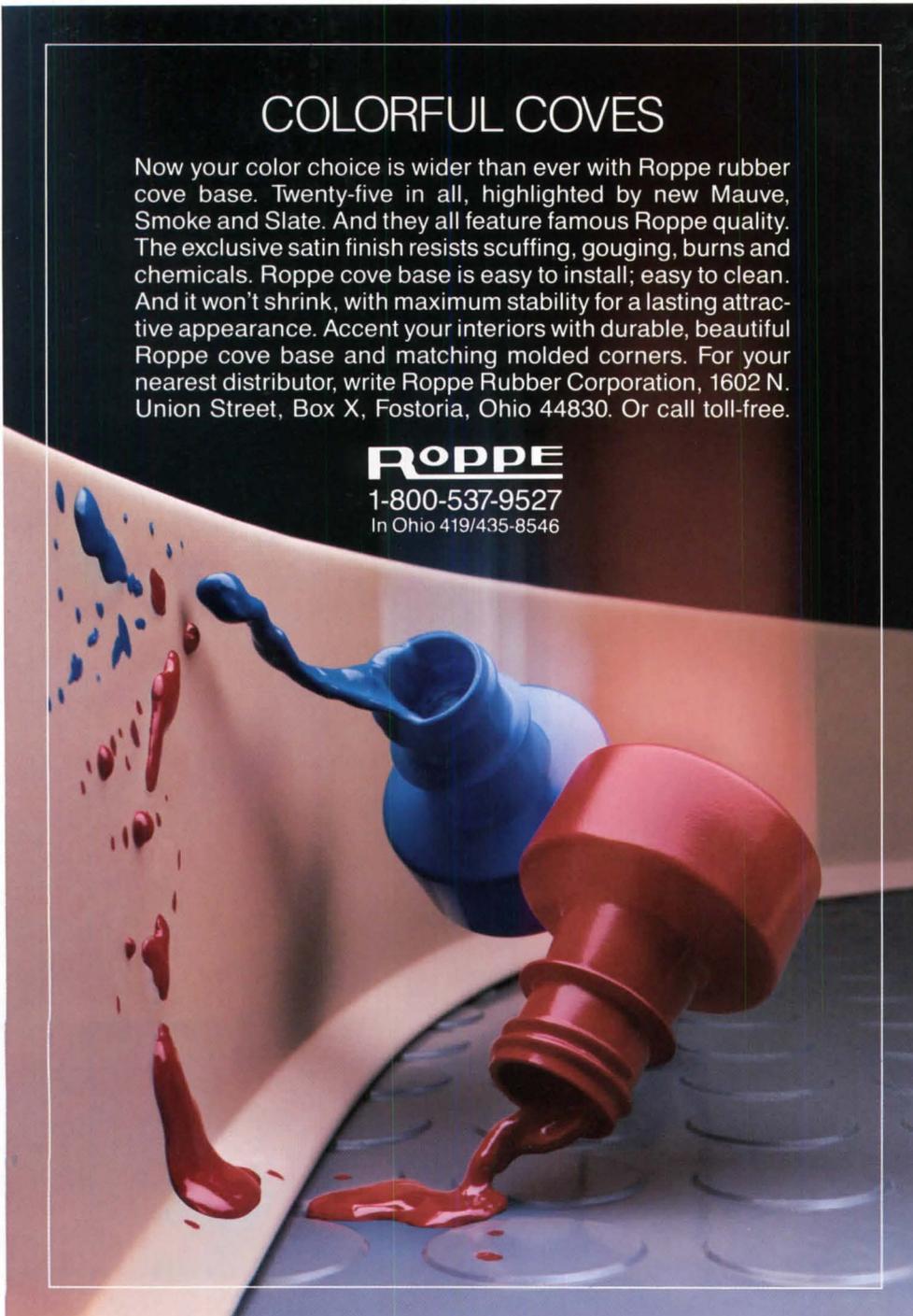
Norman Coplan ■

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

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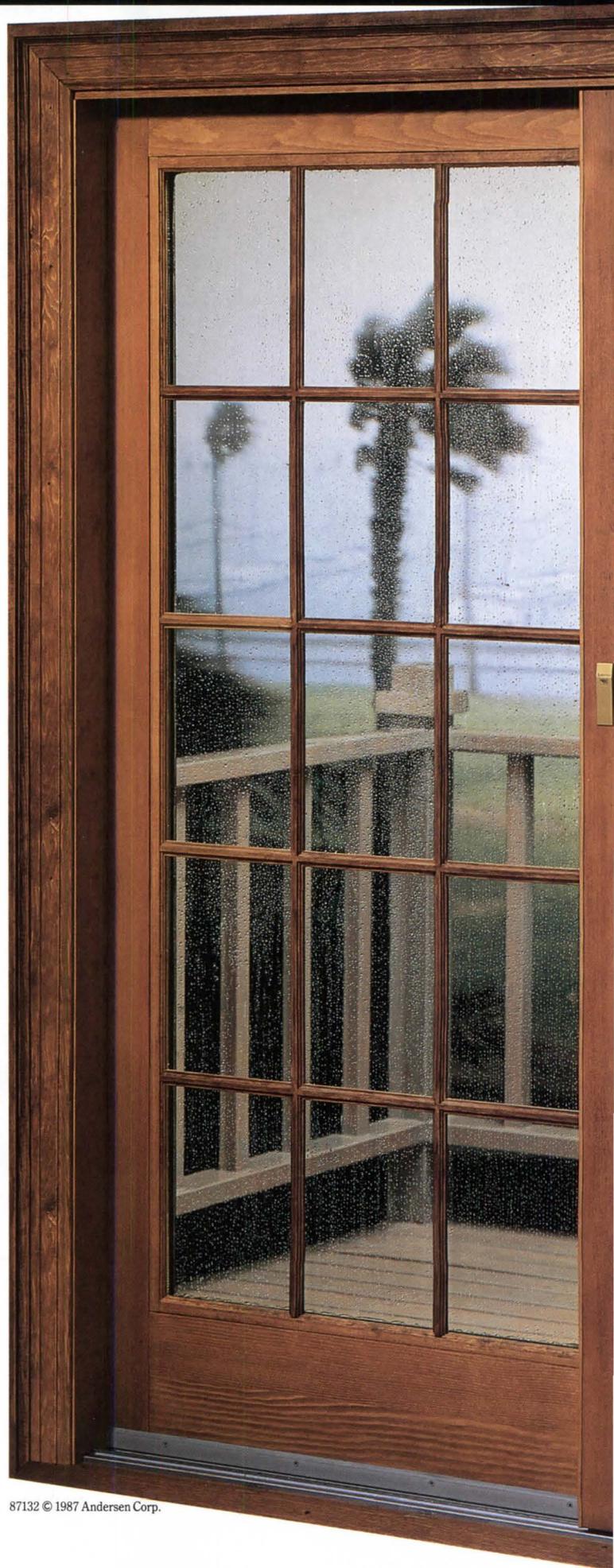


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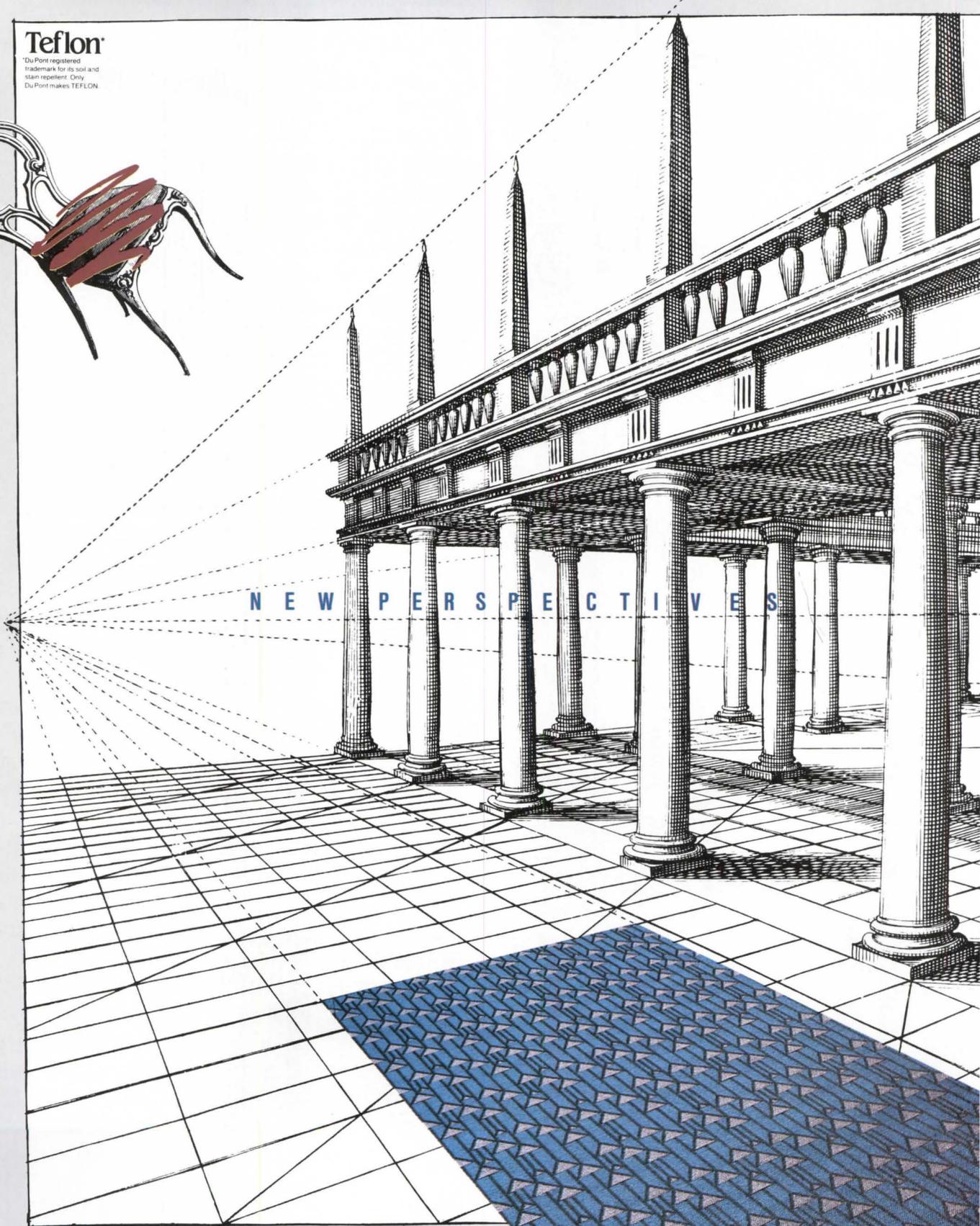
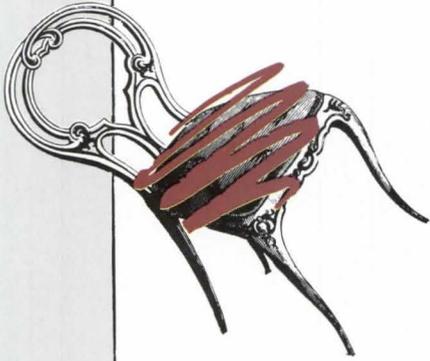
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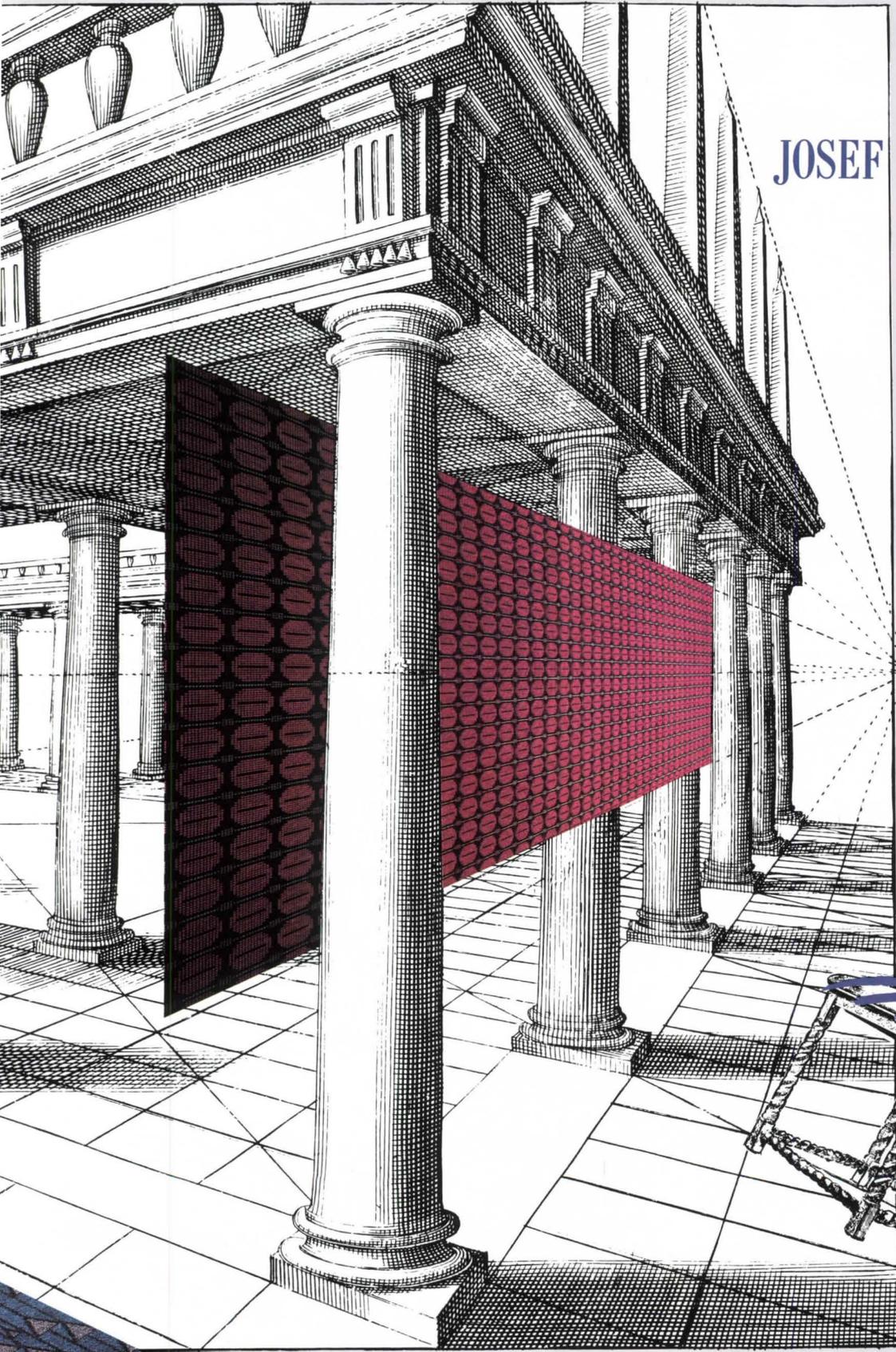
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Above: Architect Douglas Cardinal, renowned designer of the Canadian Museum of Civilization. At right: his masterwork and the Holguin and Hewlett-Packard AEC system used to create it.



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e says. "Throughout the entire commission of 15,000 drawings, we never used a drawing board."

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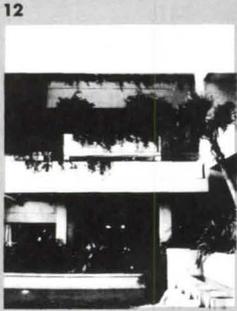
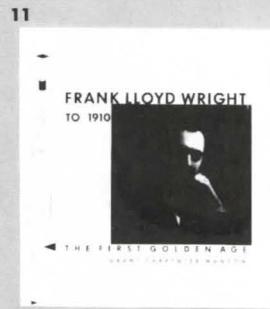
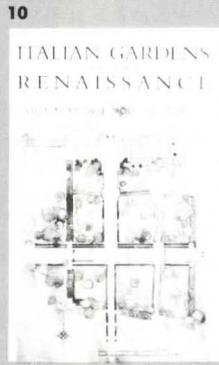
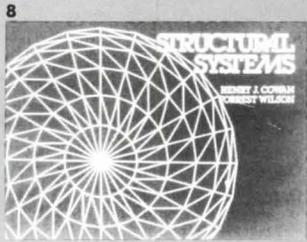
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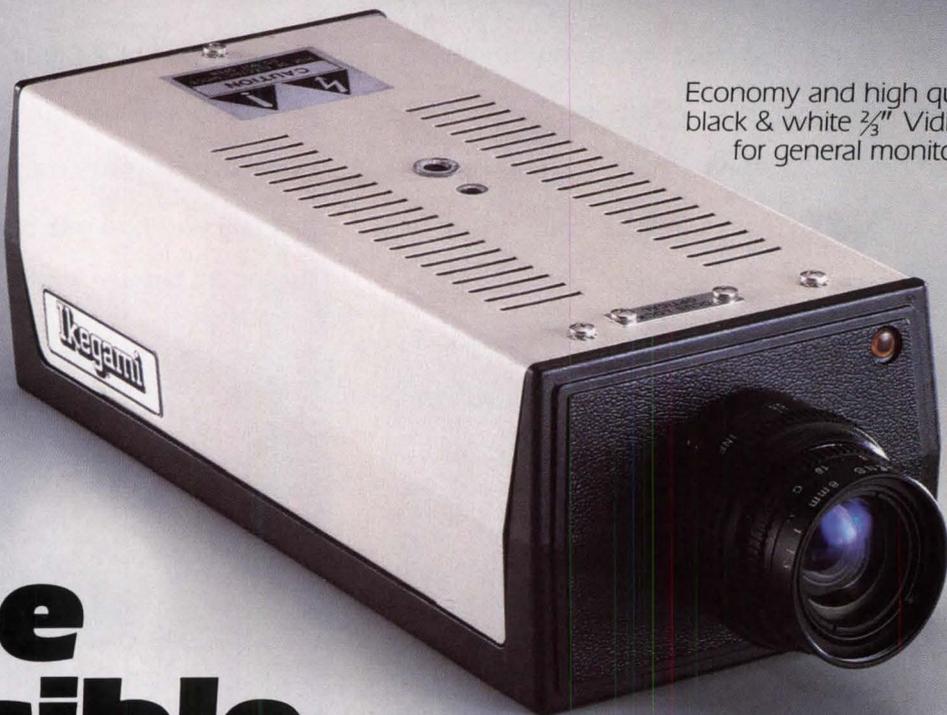
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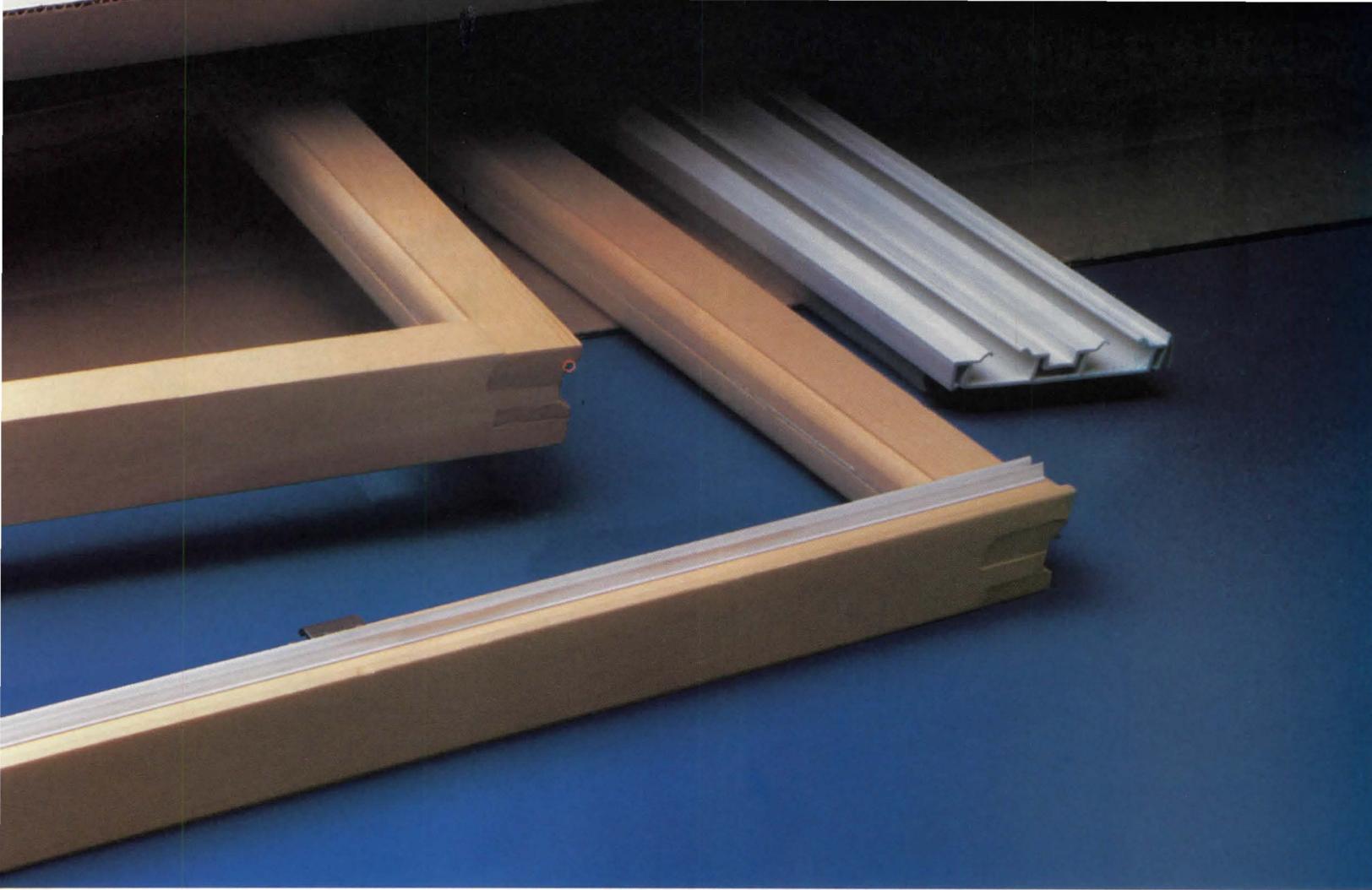


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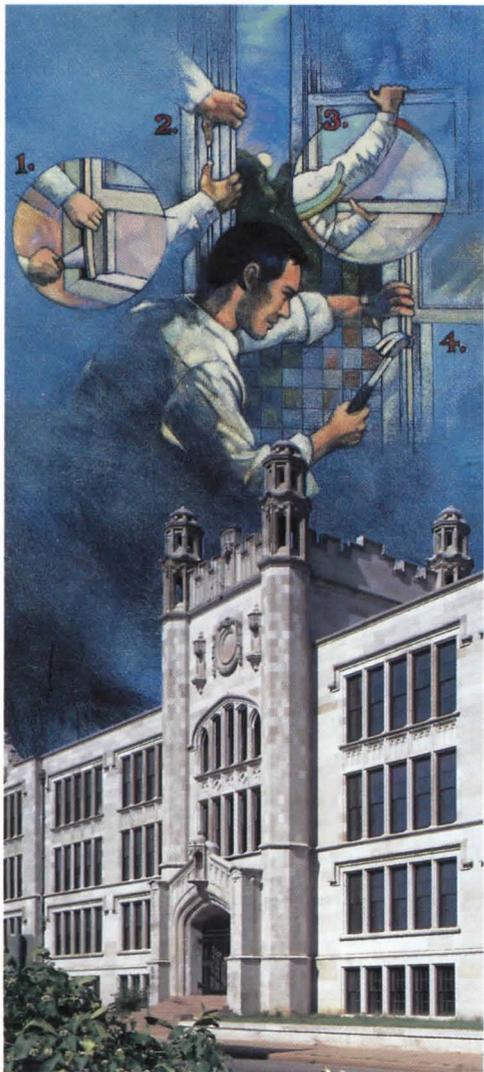
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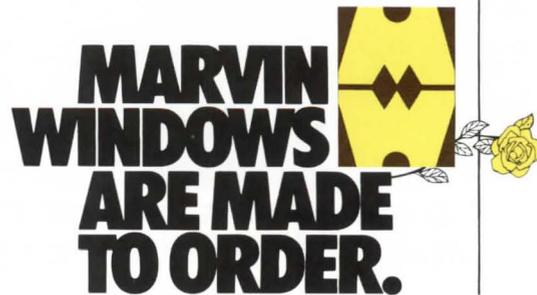
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Dejà vu

**United Airlines Terminal 1
O'Hare International Airport**



Murphy/Jahn

FOR those who traverse myriad airports each year, a certain ennui and no small amount of *déjà vu* set in any time we are about to board or leave an aircraft. In his design for the new United Airlines' "Terminal for Tomorrow" at O'Hare Airport in Chicago, Helmut Jahn has gone to great lengths to remedy these conditions, and has truly outdone himself. Murphy/Jahn was chosen by United as the design architect, and was associated with A. Epstein & Sons for parts of the engineering, construction documents, and construction observation. Jahn's initial design goal was to recreate the kind of gateway historically associated with great rail stations, to make the experience of leaving or entering a city memorable again; another reference—inadvertent, he says—is present, and will be taken up briefly later.

The design process, of course, did not begin with imagery. With the decision to align the ticketing and B Concourse facilities parallel to the airport access roadway, and then to align the C Concourse Satellite the same way, a list of givens emerged. The distance between the busy roadway and the aircraft apron was set, establishing the width of B Concourse; the requirement for simultaneous two-way

(continued on page 100)

At the departure level along the upper roadway, the canopy as constructed (top left) is a very pared-down substitute for Jahn's original proposal (bottom left). The mast-supported, undulating, and poetic earlier version had a stronger affinity to the details of the façade, like the cross-tie connection (top right), and to the expression of a canopy Jahn did on a nearby existing terminal facility. One minor, but unfortunate, late budget compromise resulted in squaring off the curved horizontal corners proposed for the lateral curbside baggage passages (above), making these tubes seem to have been slighted in the design process.

At night (facing page), the clear and fritted glass strips on the Ticketing Pavilion and Concourse B, foreground, reverse their daytime role and create striking patterns from above. Across the apron, waiting/boarding areas of Concourse C add their spill of light to that of the high mast outdoor lighting phalanx. Besides being striking visually, the facility is easily identifiable from the air on night approach.



**United Airlines Terminal 1
O'Hare International Airport**

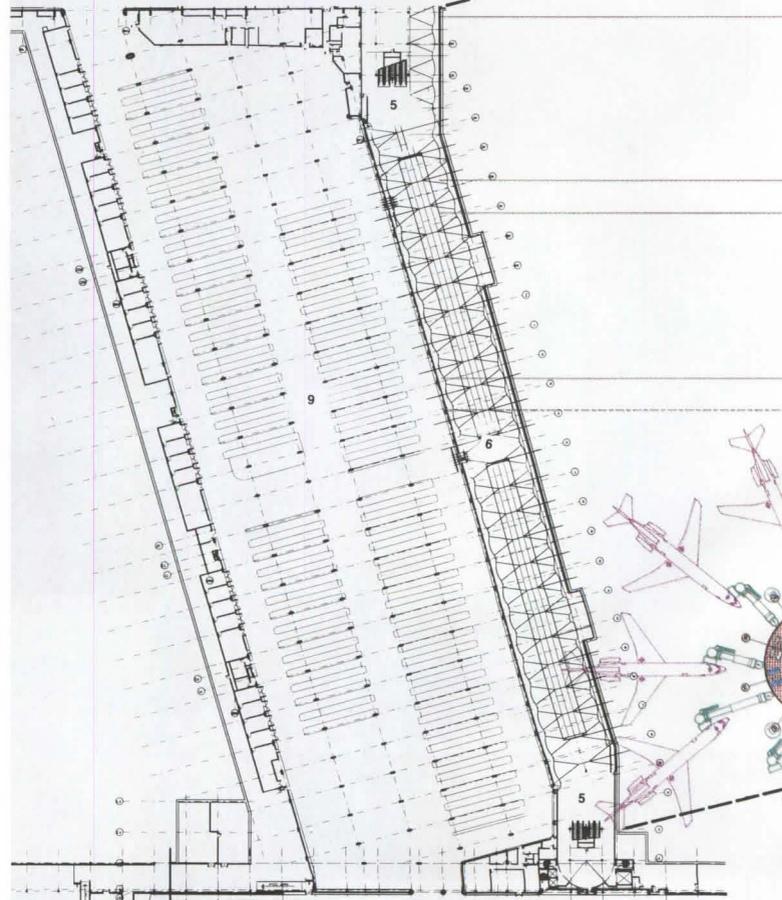
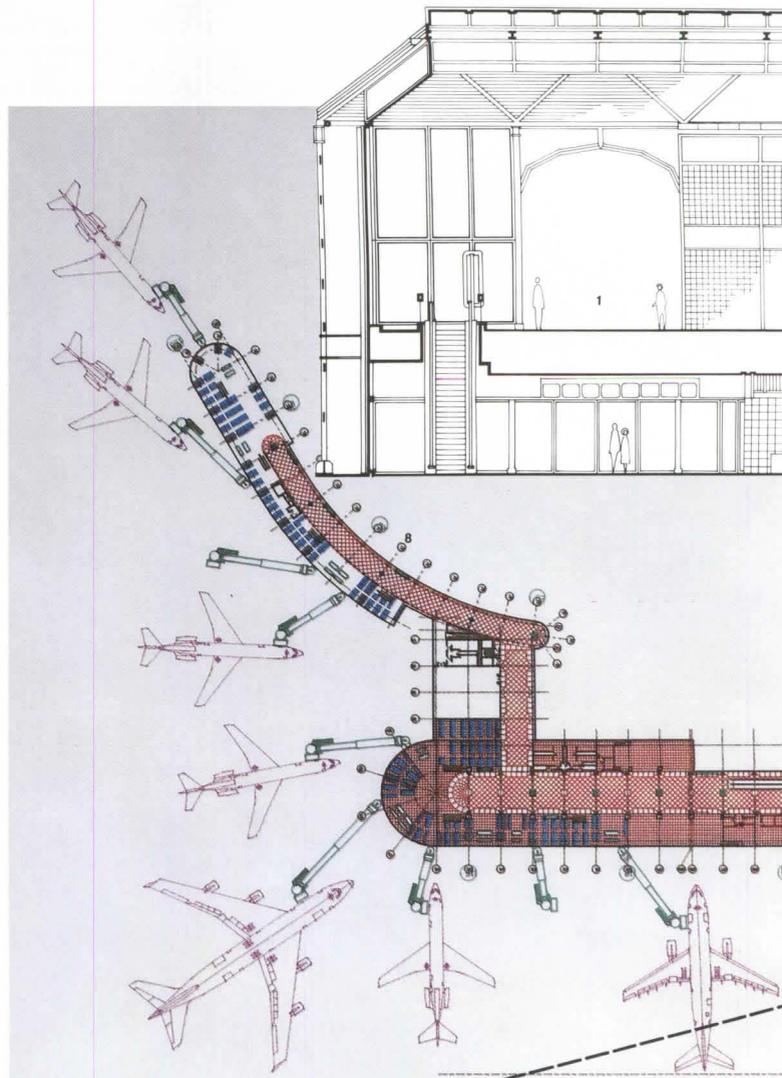


From curbside departure entrances (top), passengers pass through the spacious lobby to the 56 "flow-through" ticketing/baggage check stations in the Ticketing Pavilion (middle). Its patterned terrazzo floors, folded truss roof, and linear metal ceiling are set off by lowered planes defined by steel canopies over the counter areas, suspended from the roof structure by a carefully detailed rod and bracket assembly. Skylights along the full length of the ridge at each folded truss section are shielded from view by baffles, which also carry indirect night lighting.

Passenger waiting areas (above), lower in height, also have skylight/lighting baffles and

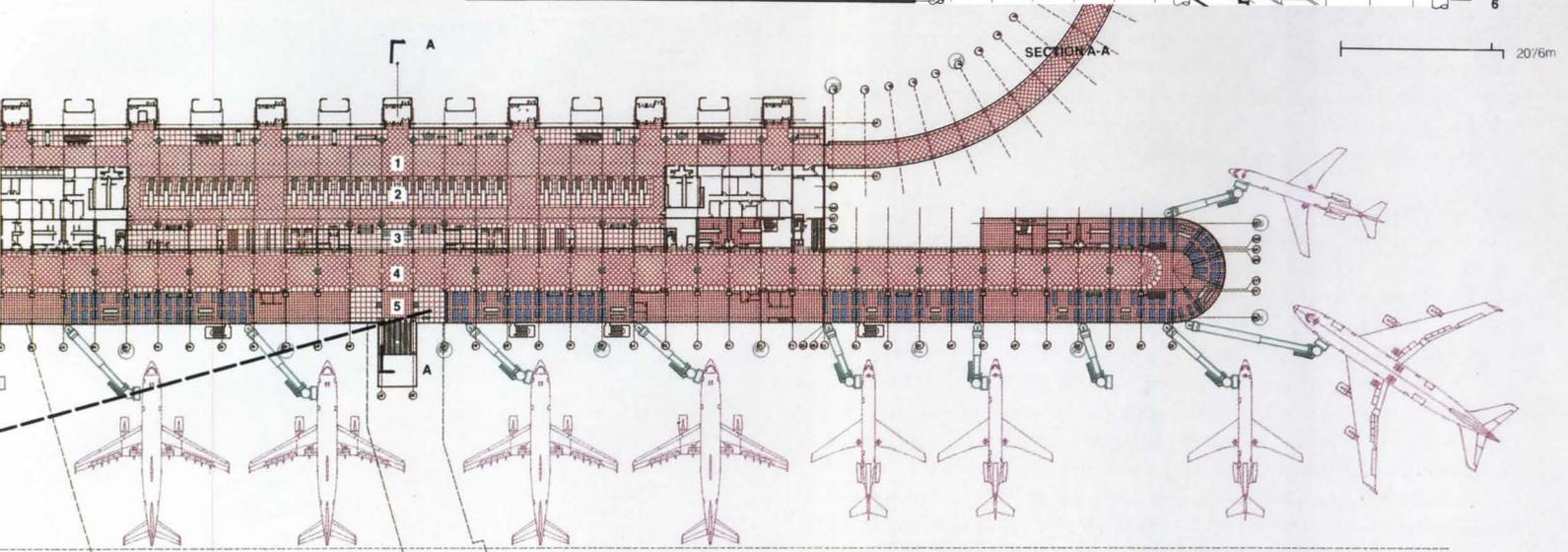
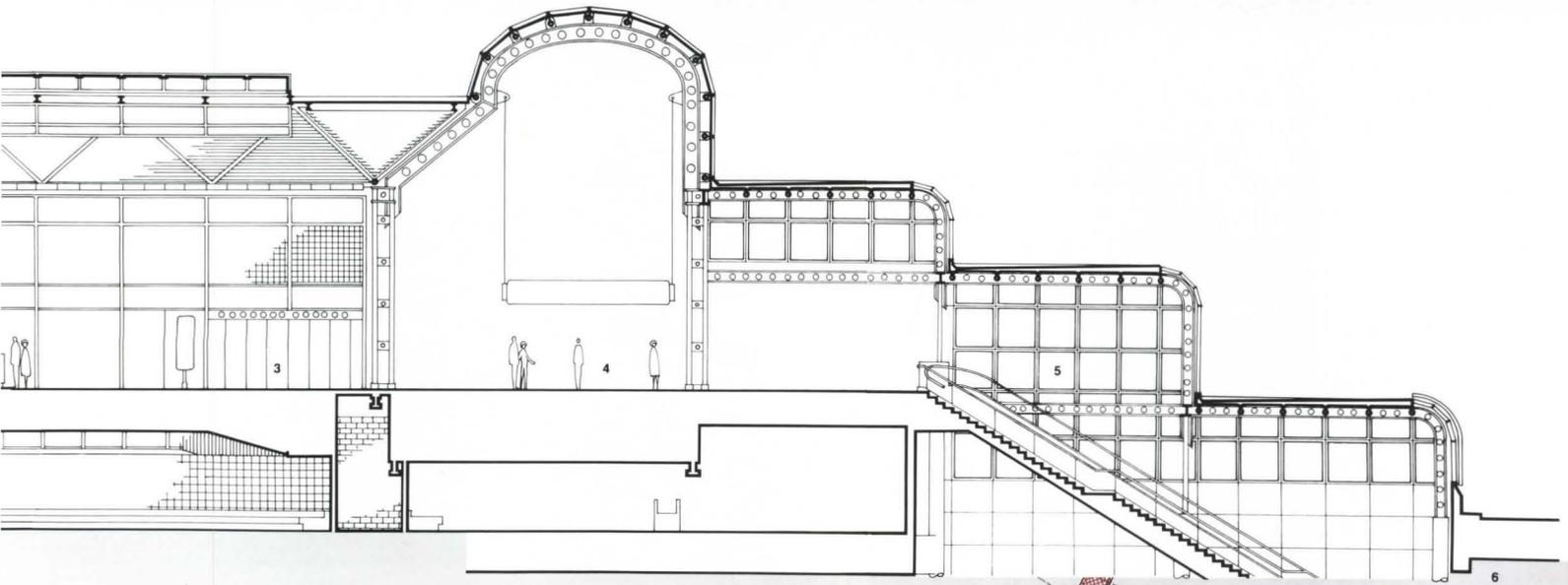
metal ceilings, parts of which have been adapted to serve as radiant heating conductors at the perimeter. The baffles over the podiums are designed to minimize direct glare and to provide indirect light at all times. Jahn and Nada Andric, Murphy/Jahn's interior design director, wanted to avoid the cliché of using United's orange, red, and blue logo and plane trim colors; the leaders at United agreed, and the colors do not appear in the facilities.

Below the apron, the immense baggage handling area and pedestrian tunnel between concourses (partial plan, right) comprise 300,000 square feet.

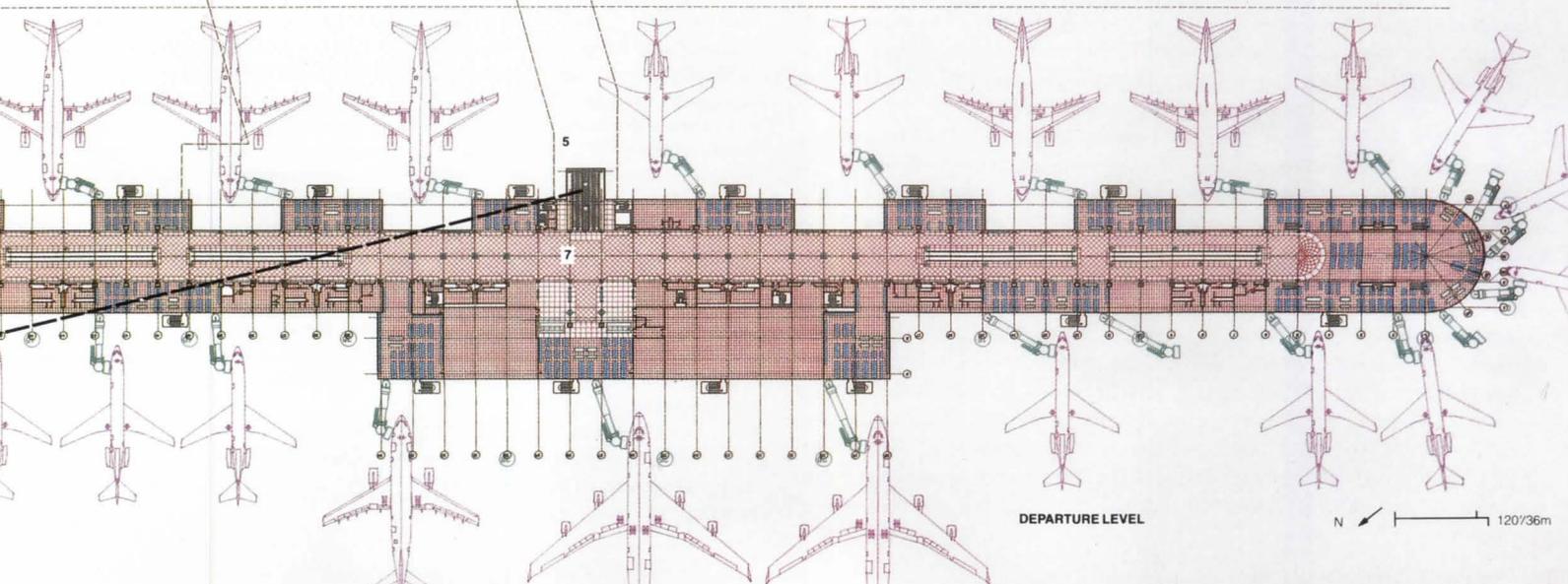


BAGGAGE HANDLING AND TUNNEL UNDER APRON

Stenkamp/Ballogg



- 1 LOBBY
- 2 CHECK-IN STATIONS
- 3 SECURITY
- 4 CONCOURSE B
- 5 ESCALATOR TO TUNNEL
- 6 TUNNEL BETWEEN CONCOURSES
- 7 CONCOURSE C
- 8 COMMUTER CONCOURSE
- 9 BAGGAGE HANDLING



DEPARTURE LEVEL

N

120/36m

United Airlines Terminal 1 O'Hare International Airport

(continued from page 96)

taxi operations of widebody aircraft between B and C established their distance apart. In order to maintain control tower sightlines to the aprons, the height of the structures was limited. Materials used for the new facility had to have the usual resistance to sun, wind, and rain, but additional jet blast, noise, and air-borne jet fuel also had to be considered. The legal and technical client for this undertaking was the City of Chicago; unofficially but obviously, as the major tenant, United had an equal interest in the development of this, their flagship facility in their headquarters city. For them, it had to be very special.

To this list, the architects added a few of their own goals. One objective was to have as much natural daylight as possible, but to avoid dark or mirrored glazing; dark was considered undesirable and mirrors unthinkable in an environment where visibility is critical. Clearly, the architects had no intention of repeating the all-too-typical dreary airport terminal environment. O'Hare, a long-term series of parts and additions by Murphy/Jahn's predecessor, C.F. Murphy Associates, is not without a certain grace and simplicity, at least in the ticketing area, but it was hoped that the new terminal spaces would be infused with a fresh lift for the spirit. To do that, the airline and the architects did a considerable amount of thinking about ways to take as much of the chore out of getting from the curb to the plane—or the reverse—as possible.

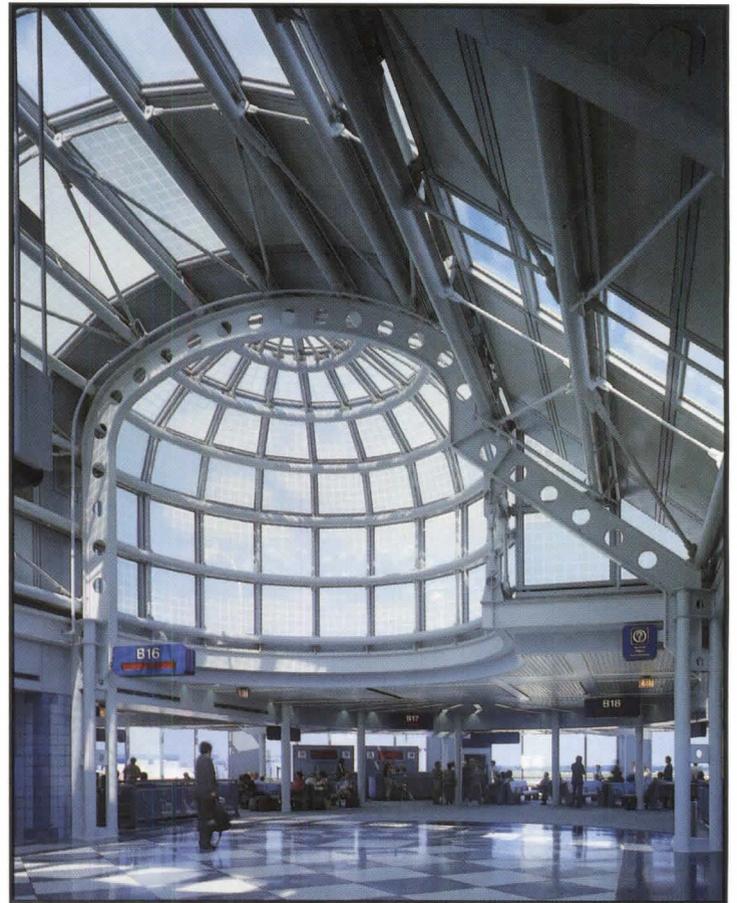
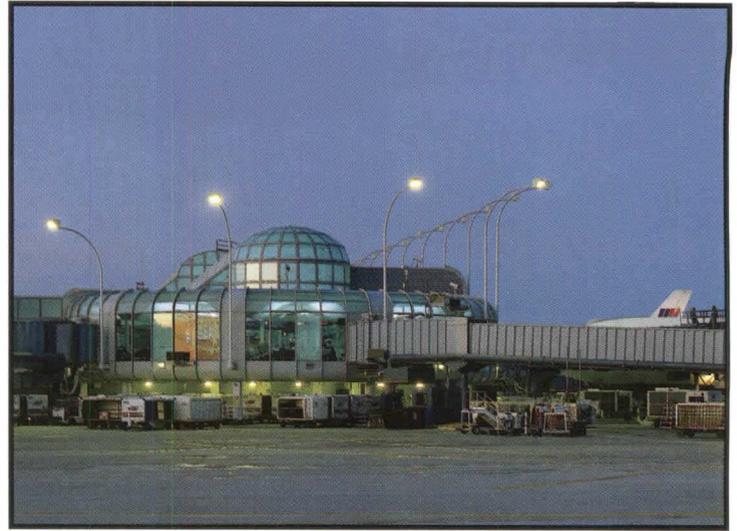
At Curbside

On check-in, baggage procedures from curb bag check to ticketing appear unchanged. Inside the terminal, however, ticketing, seat selection, and other baggage check procedures are performed at an unusual arrangement of 56 "flow-through" stations spread the full width of the ticketing pavilion. The result should be far less need to stand in long lines while the precious minutes before flight time fade away. This pavilion, with its cool colors, patterned terrazzo floors, and folded truss roof and apex skylights, feeds passengers directly to the security check stations and then directly into Concourse B.

Meanwhile, baggage has disappeared on its conveyors into what is said to be among the most advanced of handling systems in existence. Baggage tags, once carrying only the destination information and flight number, are now bar-coded like the food in supermarkets; this allows sophisticated laser scanning machines in the new baggage facilities to read the tag, no matter on what side of the bag it lands, and automatically send it to the right gate for loading. Located beneath the apron between concourses, the new facility handles all baggage from both sides, regardless of its gate destination.

If the departing passenger has missed the highly crafted steel detailing and ceramic frit-patterned glass thus far into the journey, entry into Concourse B will end that oversight. Accustomed to long dull passages, usually not too gracious with overhead space or materials, even the most jaded traveler is apt to be happily surprised and perhaps awed by Concourse B. It is a graceful, lofty, vaulted hall framed in steel arched bents resting on 8-inch steel pipe columns, clustered in varying multiples. Cladding these vaults is a system of insulated aluminum sandwich panels and insulated glass assemblies, both fritted and clear. Aside from its definite aesthetic appeal, the frit pattern on the glass puts an effective limit on the transparency of the glass, controlling heat and light gain.

At night and to varying degrees on dark cloudy days, the opaque panels and the fritted glass work the opposite way, reflecting the indirect HID light from fixtures just above the pipe columns. Light bouncing from the glass pattern prevents the gloomy black areas normally associated with glazing at night. The other aspect of the terminal that also may have gone unnoticed by the casual viewer is the fact that there is very little direct artificial illumination in the lighting design by Sylvan R. Shemitz & Associates for the entire complex. Shemitz calculated both the reflectivity of the panel and frit pattern and the daylighting benefits through the various materials, in conjunction with the overall lighting design. Palm trees originally shown in renderings, not universally approved, would have further filtered the light; so would the ficus trees suggested as an alternate, but Jahn pointed out that the density of these trees would



Terminal 1's curves in both plan and section are evocative of aircraft-related images, although Jahn says he did not consciously seek such imagery. The grandeur of the train stations and train sheds of the past was his stated intention. The aura is there, from the passenger's first steps into Concourse B (facing page), where the full array of finely crafted parts combines to produce a very exciting space-and-light experience. The aircraft image, however, is difficult to dismiss once called to mind. There is also a tendency to call the terminal complex "High-Tech," but the architects think of it more as a kit of parts, assembled, with variations, in similar ways, and do not consider it "Tech" at

all. The rod hanging device for the major signs here is similar to that already pointed out for the Ticketing Pavilion canopies.

At the ends of the concourses, the lower series of vaults turn into half domes (above) that become prominent accents both inside and outside. The fact that the steel on this departure level is exposed and not fireproofed is a testament to the successful fight with city codes. It was fought and won on the grounds that the buildings are fully sprinklered, noncombustible, and monitored around the clock.



Gates B14-B22
Baggage Claim Terminal **3 4**
Ground Transport
Rapid Transit To City
Parking **633**

B12

**First Aid
Nursery**

Elevator

Telephones
On Left
On Right

Baggage Claim
Terminal 3
Terminal 4
Rental Car
Taxi

United Airlines Terminal 1 O'Hare International Airport

day basis. Below the main level, the structure is fireproofed.

Terminal 1 is not a project in which it is possible to hide a poor symbiosis of architecture and engineering disciplines; it is obvious that Jahn and the structural engineers at Lev Zetlin Associates worked well together in an understanding of what the result should be. It has been noted that the structural expression so prevalent in the project—rounded forms, exposed ribs, and structural members with punched webs—recalls the structural parts of aircraft; this layer of meaning, says Jahn, was unintentional.

The mechanical and lighting facets of the facility represented other challenges. It was Jahn's desire that the mechanical systems not be on display any more than necessary, and pains were taken to make them disappear as thoroughly as possible. The sprinkler system is worked into the detailing of structure, light fixtures, and ceilings so as to draw very little attention. The lighting fixtures, design elements in themselves, have been carefully choreographed to complement the overall architectural expression.

Even though the buildings were fast-tracked, and virtually flew together, the assembly shows elegance in every detail. Steel connections and finishes could be the subject of a whole photographic essay in themselves. Joints, brackets, and end conditions have been taken past that point where they merely work, to become abstract sculpture. In addition to the structural steel, similar detailing has been focused on signage and on suspended frames such as the ones creating a lower "ceiling" plane over the ticketing and check-in functions in the pavilion and waiting areas. One end of the concourses will be continued in the following phase of construction; the other ends and turning points are marked by delightful apselike spaces reminiscent of 19th-Century conservatories.

A Punch List

It seems remarkable, given the speed of construction and the complexity of the design, that there are so few problems still to be resolved. There are a few, however, and they are being addressed. Chicago's record-breaking 17 inches of rain in August sorely tested Terminal 1 along with all other skylights and atriums in the area, revealing numerous leaks. Most of the leaks at the terminal, it seems, were in areas where the caulking work had not been completed, and an intense effort is being made to rectify the situation.

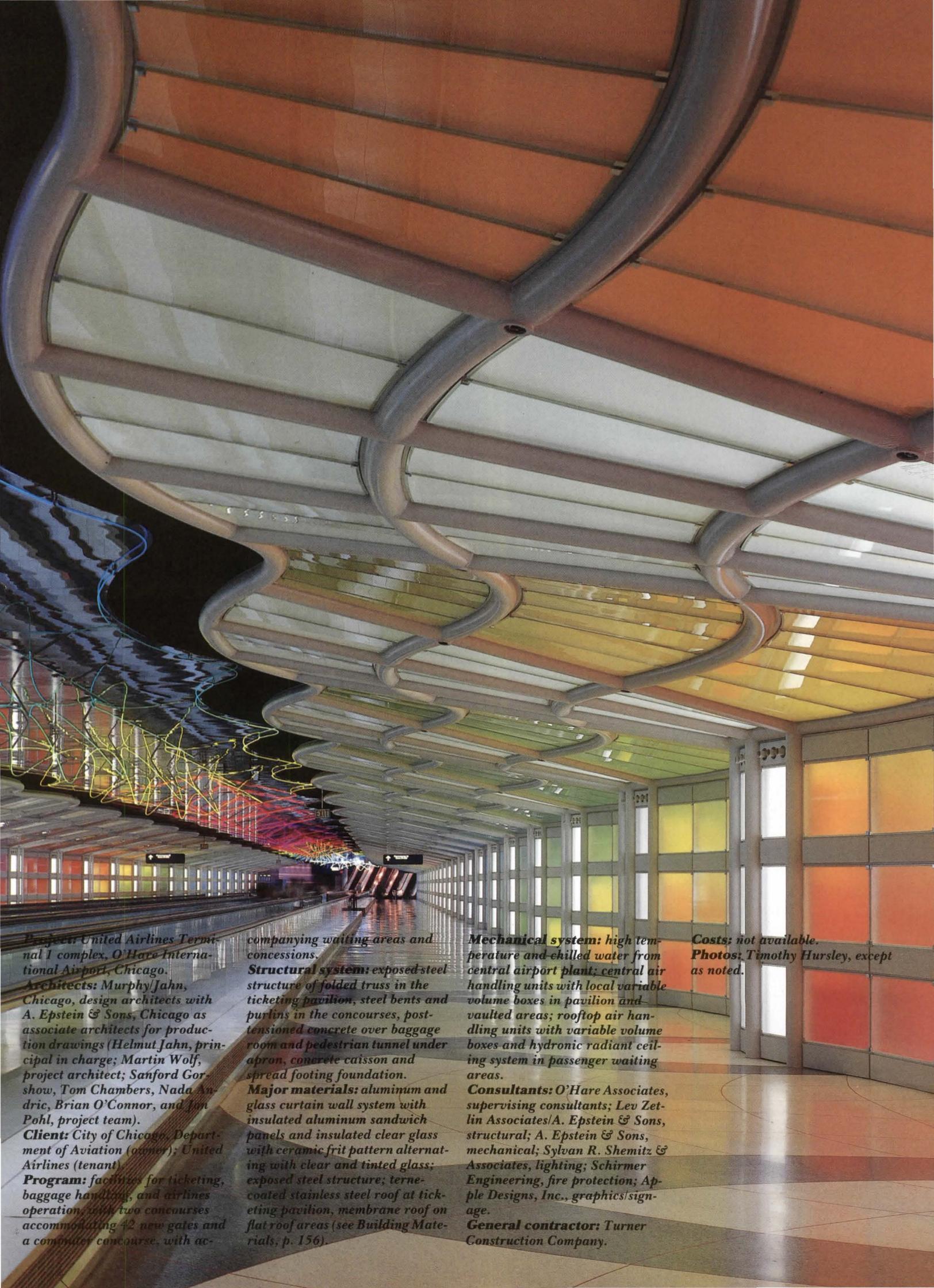
Two sun-related problems also showed up, one affecting the control tower, and one the United agents in the ticketing pavilion. Despite computer projections of sun direction and glare, some areas of glare have turned up to produce a problem for tower controllers; this involves about 27,000 square feet of glass—not a large percentage of the total. Initially, wax was applied to temporarily dull the surfaces, but measures are under way to acid-etch the offending glass panels. In the other instance, direct morning sun has caused difficulty for the ticketing agents, even though the glass in the front of the pavilion is fritted. Several solutions are being studied, including the on-site surface application of additional frit cover, or the replacement of the inside pane with double-fritted panes, or the use of movable shades. Temporary gray roll shades have been installed.

Only one other piece of Jahn's original vision for the terminal failed to survive budget reviews: the lyrical mast-supported canopy that was to have lined the roadway. Its perfectly respectable substitute is far more conventional, though cleanly detailed. It would be possible to construct the original version at a later date, and perhaps the clients will see the merits of that as the airport continues its extensive planning and expansion program. Murphy/Jahn has a continuing role in that overall effort, as well.

Although many contributed their talents to make this project successful, the ultimate credit obviously belongs to Helmut Jahn. Clearly one of the most prolific and adventurous of modern architects, Jahn has often challenged current tastes and created exhilarating spatial experiences. In Terminal 1, there seem to be no loose ends, no unresolved details, no parts that are at odds with the whole. This is pure Jahn, compromised very little and executed brilliantly. In this city where architecture has always been revered, the new United facility adds a welcome new dimension in design and spirit, an inspired gateway to and from The Friendly Skies. *Jim Murphy* ■



The tunnel between concourses, with neon art by Michael Hayden and multicolored backdrop behind undulating textured glass walls, occupies the traveler's attention on the trip to baggage claim or gate.



Project: United Airlines Terminal 1 complex, O'Hare International Airport, Chicago.
Architects: Murphy/Jahn, Chicago, design architects with A. Epstein & Sons, Chicago as associate architects for production drawings (Helmut Jahn, principal in charge; Martin Wolf, project architect; Sanford Gorschow, Tom Chambers, Nada Andric, Brian O'Connor, and Jan Pohl, project team).
Client: City of Chicago, Department of Aviation (owner); United Airlines (tenant).
Program: facilities for ticketing, baggage handling, and airlines operation, with two concourses accommodating 42 new gates and a common concourse, with ac-

companying waiting areas and concessions.
Structural system: exposed steel structure of folded truss in the ticketing pavilion, steel bents and purlins in the concourses, post-tensioned concrete over baggage room and pedestrian tunnel under apron, concrete caisson and spread footing foundation.
Major materials: aluminum and glass curtain wall system with insulated aluminum sandwich panels and insulated clear glass with ceramic frit pattern alternating with clear and tinted glass; exposed steel structure; terne-coated stainless steel roof at ticketing pavilion, membrane roof on flat roof areas (see Building Materials, p. 156).

Mechanical system: high temperature and chilled water from central airport plant; central air handling units with local variable volume boxes in pavilion and vaulted areas; rooftop air handling units with variable volume boxes and hydronic radiant ceiling system in passenger waiting areas.
Consultants: O'Hare Associates, supervising consultants; Lev Zetlin Associates/A. Epstein & Sons, structural; A. Epstein & Sons, mechanical; Sylvan R. Shemitz & Associates, lighting; Schirmer Engineering, fire protection; Apple Designs, Inc., graphics/signage.
General contractor: Turner Construction Company.

Costs: not available.
Photos: Timothy Hursley, except as noted.

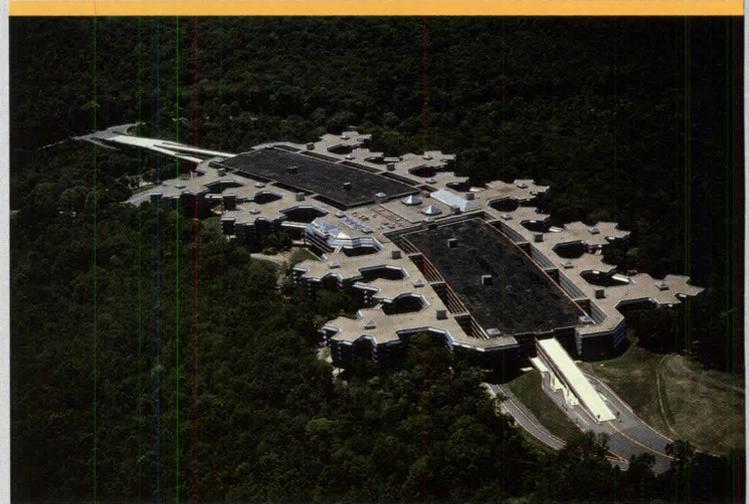
P/A Inquiry Garage Mechanics

The parking garage has become a major urban building, as respectful of its surroundings as it is varied in its functions.

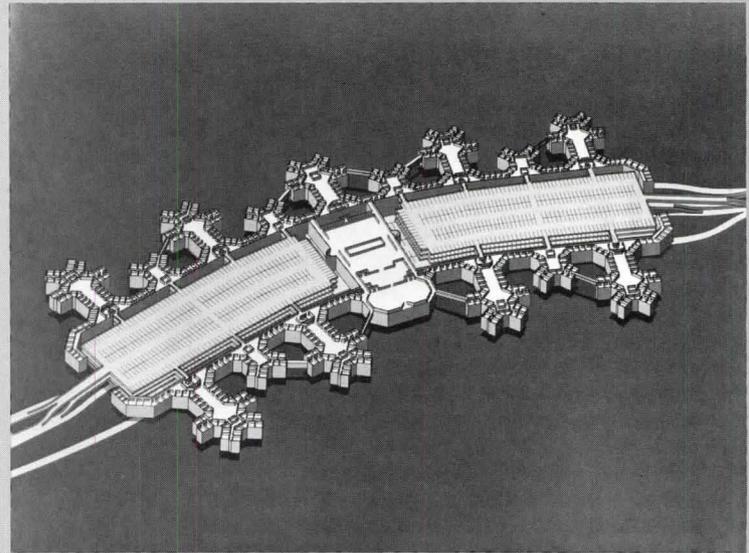
IN April of last year, during a symposium on a “new regionalism” at the University of Texas at Austin, architect Sinclair Black asked fellow panelists: Is it possible to design, say, a parking garage that reflects the culture, geology, climate, and social patterns of a particular place? Indeed it is, said architect Robert A.M. Stern, just as possible as it was in the 19th Century to translate the medieval Romanesque style into an appropriate design for a train station. “We have to stop worrying about parking garages being horrors,” he said, “and consider them, like everything else, as an architectural possibility.” Architect Elizabeth Plater-Zyberk agreed. Calling for a new regionalism derived from America’s unconquerable car culture, Plater-Zyberk said: “The parking garage has to cease being a minimal function building.”

At the time of the symposium, that was already being realized to varying degrees. The character of the parking garage has undergone changes in recent years that are, at once, substantive and superficial. Long considered a necessary evil in the context of urban architecture, the structure in which you leave your car may now be the place where you also shop, play racquetball, work, or go to the theater. Even when garages are used just for parking, growing numbers of communities are requiring that such projects be more contextual, that they not stick out in a setting of office buildings, houses, or historic storefronts.

The reasons for this are primarily economic. In some cases, working well as a container for parked cars is no longer enough for garages in downtowns, where high land values make it hard to justify not only surface lots but also garages dedicated to a single purpose.



1a

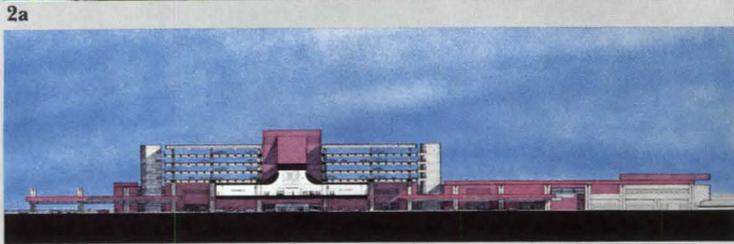


1b

1 Union Carbide Corporate Headquarters
Danbury, Connecticut
Kevin Roche John Dinkeloo & Associates, architects
Union Carbide’s headquarters is one of several Roche-Dinkeloo buildings that cleverly integrate a parking garage into the structure. Here, the garage forms the building’s core. Employees can drive up the appropriate ramps to their floors and park near the entrances to their offices, which project out into the wooded landscape from either side of the garage. Common areas and public spaces are in the middle of the building, dividing the parking structure in two. The architects cite not only the convenience associated with such an arrangement, but the

preservation of the landscape and environment around the building.

Other examples of such integration in the firm’s work include the New Haven Coliseum, where three levels of parking sit on top of the arena, preserving open space at street level; and the Richardson-Vicks corporate headquarters, where parking occurs both below the office structure and on its roof, reducing the distance employees have to walk to their cars.



Tim Hursley

Aerial Photos International Inc.

Nick Wheeler

2a

2b

3a

3b

2 McCarran International Airport
Las Vegas, Nevada
TRA Consultants
Edward P. DeLorenzo/BBA of Nevada, architects
Parking is a big money maker for airports and often a big inconvenience for travelers who have to walk long distances to their cars. An increasingly common solution to that problem integrates the garage with the terminal itself. At the new terminal at Las Vegas's McCarran airport, drivers proceed up spiral ramps at either side of the terminal to a multilevel concrete parking garage on the roof. Elevators and escalators provide pedestrian access to the terminal, while the garage's open perimeter provides a visual connection to the ground.

3 Quincy Adams Station
Quincy, Massachusetts
The Smits/Vitols Design Group, architects
This satellite parking facility is a kind of transportation machine. A ramp, connected to a nearby highway, gives commuters direct access to the 2200-car parking garage or to drop-off and pick-up space at the ground level. Elevators, escalators, and stairs connect the parking levels with a commuter bus terminal located in the central atrium and a commuter train station at one end of the facility. The building's architectural expression reflects its transportation function with streamlined form and horizontal bands of highly articulated rails, columns, and beams.

Owners want more of a return on their investment than can be generated by parking alone, and cities see benefit in the expanded tax base that a mixed-use facility can provide. Some cities, taking it upon themselves to provide garages, also view the availability of parking in structures sensitive to their surroundings as a lure for high-quality development.

Just as the parking garage is emerging as a bona fide work of architecture, however, the Tax Reform Act of 1986 may stifle the mixed-use trend, at least among public projects funded with tax-exempt bonds. According to transportation consultant Jean Keneipp of Barton-Aschman Associates, the previous tax law allowed as much as 25 percent of the cost of such a project to be used for purposes in which a private entity has an "entrepreneurial interest." Under the new tax law, that has been reduced to 10 percent. Cities may not be able to afford much retail or other uses in parking garages, Keneipp says. If they value the benefits of mixed-use above the benefits of tax-exempt bonds, they can always seek other means of financing, he adds, but the trade-off in such cases would be higher interest rates.

Nevertheless, the parking garage industry on the whole is on the rise, according to The Parking Market Research Company, which profiled the market in a 1987 study, "What's Going On Out There?" The report covered 750 multilevel parking decks of at least 300 spaces each planned for construction in the United States from 1986 to 1989—an estimated 55 percent of the parking garage market. "Need for parking spaces, especially in downtown areas, is growing at an incredible rate," the report summarizes. "Space is at such a premium, developers are forced to go up (or down) as the only way to create more space where land is . . . costly and unavailable. Parking decks are being shoehorned into any kind of narrow area, frequently replacing grade level surface lots with multilevel parking decks which provide space for five times as many cars in the same size land area." The combination of demand and low interest rates has stimulated the industry to the point where it will spend more than \$8.5 billion, not counting land acquisition, between 1986 and 1989, according to the report. "It's an enormous pie, with room for many companies to prosper."

What Parking Market researchers found, among other things, was that a typical parking garage has 964 spaces and 4.6 levels; is free-standing and made of concrete; took 24.11 months to build at a cost of \$7,205,777 or \$7468 per space; and has a sloping-deck flow system that provides for parking and driving on decks and ramps. The project would also have, as its lead designer, an architectural firm with experience in the building type as well as a parking garage consultant who specializes in it. Features are likely to include closed-circuit T.V. and high-pressure sodium lighting for safety and security and a computer system for keeping track of garage users.

The top five "user groups" for parking garages, according to the study, are: office workers, for whom 64.2 percent of garages are being built; shoppers, 55.1 percent; hotel guests, 12.5 percent; residents of multifamily dwellings, 10 percent; and hospital workers and patients, 7.5 percent. Most of the garages are being built by municipal governments, 43.5 percent; followed by private developers, 40.6 percent; hospitals (whose decks are the smallest, with 796 spaces), 6 percent; universities (whose decks are the cheapest at \$6680 per space, 4.6 percent; and airports (whose decks are both the largest at 1504 spaces and the most expensive at \$8045 per space), 5.2 percent. (The percentage of user groups adds up to more than 100, since decks are built for more than one user.)

P/A Inquiry Parking Garages

Designs for Parking

Before parking garages became such a booming market, designers typically clad them with wire mesh and concrete panels or steel or aluminum screens and left it at that. The idea was to soften the utilitarian features of the garage as inexpensively as possible.

Today, with aesthetics a bigger factor, designers commonly camouflage the inner workings of the parking garage, leaving only enough evidence at the entrance to clarify the building's purpose. Garages are taking on all manner of identities as a result, from the false Mediterranean storefronts of HKS Architects' Canal Walk Garage at Las Colinas near Dallas, to the residentially scaled "row-house" façade of Loeb Schlossman & Hackl's Holley Court Parking Facility in Oak Park, Illinois.

"The people in the area surrounding Holley Court," says architect Donald Hackl, "were very much concerned about the stereotypical parking garage image. I chose to think about the parking structure in the context of the neighborhood—immediately to the east and west are three-story condominiums built in the late 1930s, some designed in a kind of neo-Tudor revival style. I decided that it should look like something other than what it was, but give enough cues that people would recognize it as a parking structure."

Architects are even using utilitarian materials, such as wire mesh, in nonutilitarian ways to disguise garages. The client of the 1200 Ross parking garage in downtown Dallas wanted an exterior appropriate for the central business district. The solution of HKS Architects was to use a combination of wire mesh and steel tubing to create a seemingly opaque wall surface, which they then painted in subtle pastels to define top, bottom, and access points and to create "a playful, 'non-garage' appearance." The wire mesh wall also eliminated the need for mechanical ventilation and sprinkler systems.

Another approach to parking garage design is to go in the opposite direction, emphasizing the garage's utilitarian nature with a bold, sculptural statement in concrete or steel. Celebrating the nature of "garageness" can make sense in terms of ease of identification. Some designers feel that a place to park your car—even when it provides for a variety of other uses—should look like a place to park your car. Also, what other kind of downtown building, just by virtue of its function, can have a helical ramp spiraling down one end? Such contrast can be dramatic and useful, adding a certain visual zest to the cityscape.

An example of that is the Market Street Parking Garage in San Jose, California, by the Steinberg Group. The architects added three levels of parking, framed in steel because of its lighter weight, on top of an existing concrete garage. "Instead of trying to hide the cars," says architect Goodwin Steinberg, "we wanted to keep the garage as transparent and airy as possible, to let the cars be a part of the imagery, with their different colors and different shaped grilles, like a glass jar with jelly beans."

Another approach to making the garage look like a garage is apparent in the Sixth and Main facility in Louisville, Kentucky, designed by Lockett & Farley. Using cast-in-place, post-tensioned concrete, it has a soaring, beton brut quality that could never be mistaken for anything but a parking garage. "I think the conventional wisdom was, 'We've got to make this thing blend in down here because we've got brick arches and cast-iron storefronts,'" says principal-in-charge Dennis DeWitt. "The design group said, 'Well, yeah, that probably would be a way to go, but what if we did something else?'" They had almost every kind of parking garage in Louisville to refer to, from facilities that were completely enclosed to those with façade



4



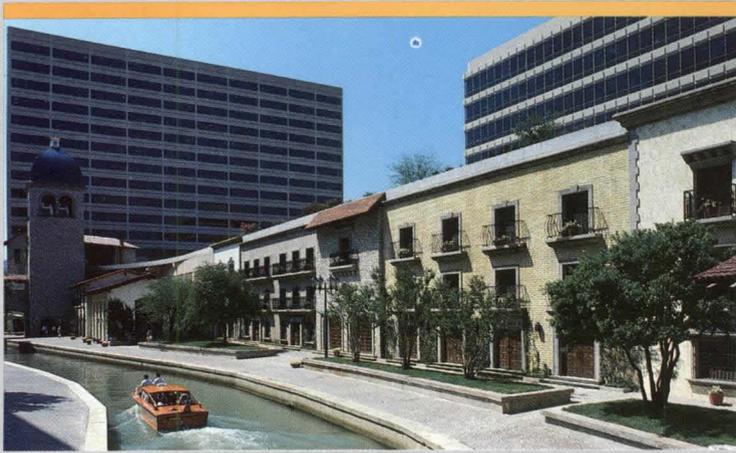
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4 Sixth and Main Street Parking Garage Louisville, Kentucky

Lockett and Farley, architects
One approach to parking garage design emphasizes movement. Here, the architects kept the garage floors level and placed the spiral ramps and the stair and elevator core, which contain the vertical movement, at the perimeter. The glazed stair enclosure further dramatizes the motion within. Implicit in this approach is the idea of making a garage look like a garage, with its wide bays, exposed structure, and unadorned surfaces frankly revealed. Here, that is done with a lightheartedness as if to say "We're a garage, but notice me and like me," says the architect.

5 Market Street Parking Garage San Jose, California

The Steinberg Group, architects
Another approach to garage design minimizes the structure in favor of revealing the cars within. Faced with the problem of adding three levels to an existing concrete garage, the Steinberg Group decided to use steel framing not only because of its lighter weight, but because of its thinner dimensions, allowing the chrome and colored metal of the cars themselves to serve as the visual relief. Corner stair towers and a ramped drum at one end tie the open upper levels to the tile-faced base.



6

Rick Granbaum



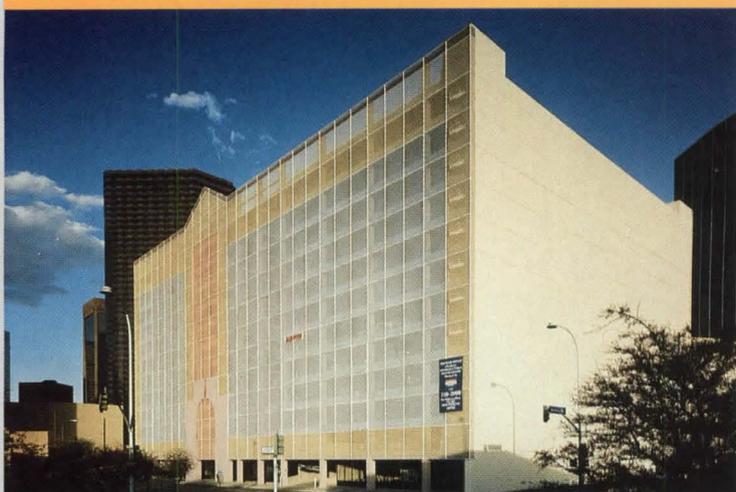
7a



7b

Tigerman, Fugman, McCurry

James F. Wilson



8

6 Canal Walk Garage
Las Colinas, near Dallas, Texas
HKS Architects

A third approach to the exterior expression of a garage is to disguise its function. The epitome of that is the false front façade, with its 19th-Century Texan vernacular ornament, disguising the parking garage at Las Colinas. While that seems incongruous amidst the modern office towers of that development, the façade effectively hides the garage.

7 60 East Lake Street Garage
Chicago, Illinois
Tigerman Fugman McCurry Architects

A more humorous example of the type is this garage, whose façade

mimics the front grille of a Rolls Royce. The lower two floors contain retail space and ramps to parking levels above. A statue serves as the hood ornament at the top of the central gable.

8 1200 Ross Parking Garage
Dallas, Texas
HKS Architects

A more abstract way of disguising a parking garage is exemplified by this project, in which wire mesh and steel tubing form a grid across the façade to obscure the building's sloping floors. The wire mesh is painted pastel colors to emphasize the edges and gabled center of the façade.

screens to “utilitarian-looking things that are garages and look like garages and make no other statement.” The designers decided to identify those features of the latter that detracted most from the building’s aesthetic appeal and prevented it from being in harmony with its architectural setting. Heading the list, says DeWitt, were sloping floor levels, which the firm avoided by putting the ramps on the ends.

Mixed Uses

Probably no other city has developed a heritage of high-style parking garage design more than New Haven, Connecticut, where the 1500-car Temple Street Parking Garage, a dramatic cast-in-place concrete structure designed by Paul Rudolph and completed in 1962, set a classic precedent. One reason New Haven seems so interested in parking garages has been its desire to encourage downtown revitalization. While some cities try to promote pedestrian activity and the use of mass transit downtown by actually limiting the amount of parking spaces, New Haven has used parking as an enticement to developers by providing it for them. “In the initial stages of redevelopment, the idea was for the city to build some parking to attract development into the downtown area,” says Tim Phillips, executive director of the New Haven Parking Authority. “As the development grows the policy may change, when other things start attracting developers. Now, we’re doing everything we can do to encourage development in downtown New Haven. Providing parking is one of those incentives.”

According to Tom Smith, assistant director of research at the American Planning Association, the idea of discouraging downtown parking originally was an air-quality issue, growing out of a directive from the Environmental Protection Agency in the mid-1970s. It was a weak policy at best, he says, since many cities came to see parking as a “powerful economic development tool,” a way to recoup retail losses that the downtown suffered at the hands of the suburban shopping mall in the 1960s. Some cities, like New Haven, began to build parking garages; others included ground floor retail and façade compatibility requirements in their zoning ordinances. Another trend in the location of parking garages, says transportation consultant Keneipp, will be caused by changing commuter patterns, which are focusing more attention outside the downtown area. The emphasis is shifting from commuting downtown to commuting from suburb to suburb, he says, which is likely to reduce the demand for conventional mass transit and increase the demand for suburban garages.

One model of the suburban parking garage is the remote “satellite” facility, the efficiency of which depends upon the mix of transportation modes serving it. An example of such a satellite garage is the Quincy Adams Station garage by the Smits/Vitols Design Group. The complex, tied directly by ramp to the expressway, includes parking for 2200 cars, train and bus stations, and drop-off and pick-up space. “We set up the program for movements,” says project architect Valdis Smits. “What does each part of this have to do with getting from A to B?”

The integration of the suburban parking garage with an office building figures prominently in the work of Kevin Roche John Dinkeloo & Associates. The Union Carbide headquarters in Danbury, Connecticut, consisting of a linear, 2911-car spine from which offices extend in clusters along both sides. “In the suburbs,” says architect Kevin Roche, “if you don’t solve (the parking problem) in the structure, you sacrifice land area for surface parking, which poses environ-

P/A Inquiry Parking Garages

mental problems and also problems for employees, particularly in the Northeast, who have to trudge through a lot of snow and mush in the wintertime. From the point of view of the office building, it should be surrounded by trees and landscaping rather than parking lots."

The challenge with mixed-use garages, be they in a suburb or city, is to integrate the parking function with a variety of other uses smoothly and efficiently. Some designers say that the wide-span dimensions of concrete parking structures make them especially suitable for this. The 17-story Congress Plaza parking garage in Houston by Morris* Architects evolved into a mixed-use Harris County Justice Center, with a 12-level, 750-car garage; jury assembly hall for 900 people; five courtrooms; and a 120,000-volume law library. "A normal office building might have spans of 30 or 40 feet," said project architect Andy MacPhillimy. "This had spans of 60 feet, and the size of the structural bay allowed us to work in the courtrooms very easily without structural modification. Space under the ramps was used for jury assembly, and the large open plan allowed easy layout of the stacks in the law library. The dimensions were very appropriate for other uses."

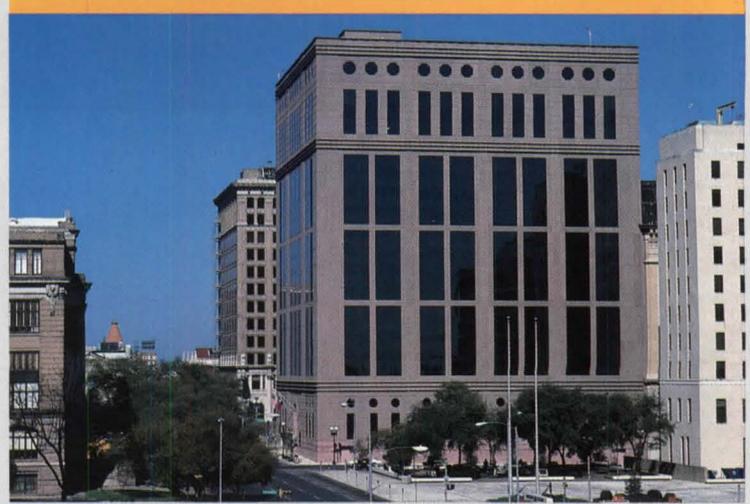
The Smoothly Running Garage

As the parking garage becomes aesthetically and functionally more ambitious, there is always a danger that its primary function will not receive the attention it deserves. To the parking consultant, there is beauty in a facility that works well, no matter what it looks like. How well one works depends on traffic flow and parking patterns, the placement of columns, the clarity of signage, the effectiveness of lighting, and how flexible the facility is in accommodating changing car sizes, which have been fluctuating—mostly downward—since the Arab oil embargo of 1973.

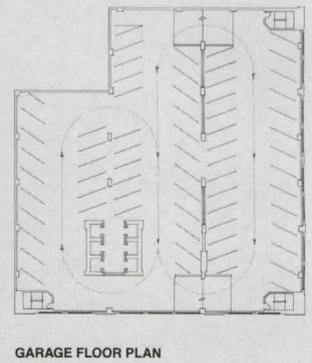
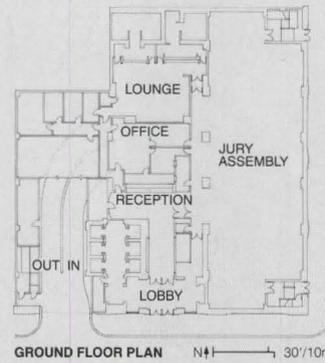
It is also important for the garage to be tough, says architect B.J. Meder of Walker Parking Consultants. "A parking garage has to stand up like a building, to carry gravity and wind loads like a building, but it also has to carry the stresses induced by traffic and thermal movements, much like a bridge does." It has to "move and breathe" like a bridge because of its exposure to the brutality of the elements and of the cars that drive in and out of it every day. Eighty percent of parking garage design is "durability engineering," he says, making sure that the compressive stresses in the structural system are sound—and not just sound enough to satisfy code.

The biggest problem in parking garage design is handling water, says Jim Staif of Intertech Engineers in Dallas, this year's chairman of the National Parking Association's Parking Consultant's Council. This is especially a problem where the winters are cold and long and cars bring a lot of salt-saturated snow into the garage. If proper drainage is not provided, Staif said, then structural problems can result—even with precast or cast-in-place concrete, which the vast majority of parking garages are made of because it is more durable and requires less maintenance than steel.

The 2400-car, weathering-steel structure atop the New Haven Coliseum, designed by Kevin Roche John Dinkeloo & Associates in 1972, shows what salt-laden snow can do to a garage. Little more than ten years after its completion, the garage's concrete decks began to crumble and fall to the streets below. The architects claimed (successfully in court) that the deterioration was the result of improper maintenance, while the city claimed that the flat-deck design did not allow for proper drainage. In any case, the facility has been all but closed down, and the New Haven Coliseum Authority is now trying to decide what to do with it.



9



10

9 Congress Plaza
Houston, Texas
Morris*Architects
Because of rising land values and stricter zoning ordinances in many downtowns, new parking garages almost invariably have a mix of uses. An unusual example of that is Congress Plaza. While it originally had a greater proportion of office space, the garage now occupies the middle 12 floors of a justice center. The jury assembly room, which demanded easy access from the street, is on the ground floor, while courtrooms, offices, and a law library occupy the topmost floors. Darkly tinted glazing disguises the varied heights of the parking levels.

10 Grove Street Parking Garage
New Haven, Connecticut
Herbert S. Newman Associates, architects
A more common mix of uses is that found in the Grove Street garage, with its 8000 square feet of retail space at the ground floor of a four level garage. Many zoning codes now require that retail space be provided along garages' street fronts to maintain pedestrian activity and prevent gaps in a commercial row. Recent changes in the tax laws, however, will make it more difficult to finance such mixed uses in public projects. Many cities also now encourage architects to make a visual link with a garage's context, as seen in the brick cladding and punched openings.



11a



11b



12

**11 Holley Court Parking Facility
Oak Park, Illinois**
Loebl Schlossman and Hackl, architects

While it involves a response to the materials, scale, and rhythms of adjacent buildings, contextualism does not preclude a variety of expressions. In this garage, the architects have abstracted the essential characteristics of neighboring buildings and repeated them on a series of façades applied to the perimeter of the concrete structure. The façades are pulled apart to reveal the garage's columns, emphasizing their visual role. Leaving at least 50 percent of the envelope open had the added advantage of eliminating the need for mechanical ventilation.

**12 East Bay Street Garage
Charleston, South Carolina**
Sasaki Associates, architects

Set within the historic district of Charleston, this garage takes a more literal approach to contextualism. While built of concrete, the garage is stuccoed to match the finish of adjacent brick structures and it is only three stories to match the height of surrounding buildings. The garage's openings, with their full-height aluminum louvers, recall the area's typical fenestration, with shuttered windows set deep within thick, masonry walls. High-ceilinged retail space fronts the street, completing the building's careful response to its setting.

David Clifton

Gabriel Benzar

Building codes, as far as parking garages are concerned, place too much emphasis on fire protection, consultants say, and not enough on security. Local codes that require fireproof- and soundproof-enclosed stairwells, for example, offer criminals an ideal place to hide. Studies also have shown that fire is not a common problem in parking garages. There is very little combustible material that is part of the garage itself, and the conventional open-air design allows the heat and smoke to dissipate quickly.

According to Takeo Koyamatsu, chief plan-check engineer for the International Conference of Building Code Officials, model codes have been modified in recent years in response to new findings about parking garages, although consultants may still be frustrated by local codes that have not been kept up to date. Code officials once viewed a parking garage mainly as a facility to house row after row of gas tanks. When fire does break out in a parking garage, Koyamatsu says, it tends to be contained and does not spread from car to car. With mixed-use garages, however, codes tend to be more restrictive because people remain in the facility, he said, along with the cars and their gas tanks. "The fear is of the chimney effect," Koyamatsu said. "It doesn't take long for fire to shoot right up through floor openings."

No matter how safe or contextual a parking garage is, says architect Clovis Heimsath, author of the book *Behavioral Architecture*, most people still find the buildings' cavelike entrances and interiors forbidding, hardly the impression a parking garage should convey. "The parking garage is an image of safe harbor and getting rid of your car," Heimsath says. "Immediately upon entering one, however, it becomes a place of disorientation. What if you try to make the passage exciting, dynamic, colorful, so you would actually look forward to the entry? What is the psychological response a person has? Until you make that sequence of entering a sequence to be looked forward to, a sequence that will be thoroughly benign, until you subtract the negative, the anxiety of not really being sure whether or not the top of the van is going to hit or if you're going to be mugged, until that is addressed, all the rest is window dressing."

Michael McCullar

The author is the architecture writer for the Austin American-Statesman, and a former associate editor of Texas Architect.

Acknowledgments

We would like to thank the following people for their contributions to this article: Dale Denda, The Parking Market Research Co.; Dennis DeWitt, Luckett & Farley; Roy Fewell and Takeo Koyamatsu, International Conference of Building Code Officials; Pete Ed Garrett and Andy MacPhillimy, Morris * Architects; Don Hackl, Loebl Schlossman & Hackl; Clovis Heimsath, Clovis Heimsath Architects; Daniel Jenny, Prestressed Concrete Institute; Jean Keneipp, Barton-Aschman Associates; Brian McSweeney, McSweeney Communications; B.J. Meder, Walker Parking Consultants; Tim Phillips, New Haven Parking Authority; Kevin Roche, Kevin Roche John Dinkeloo & Associates; Joe Shiffer, Herb Newman & Associates; Tom Smith, American Planning Association; Valdis Smits, Smits/Vitols Design Group; Jim Staif, Intertech Engineers; and Goodwin Steinberg, The Steinberg Group.

Wright Prevails

The following four articles examine the legacy of Frank Lloyd Wright. Shown first is the Meyer May House, restored by coordinator Carla Lind and architects Tilton and Lewis.

A SUCCESSFUL preservation project is like a good mystery story. The standard detective work is done, clues are followed, red herrings are avoided, surprise facts suddenly appear, and when the final piece falls into place, the totality has an integrity, an unexpected roundness, that is most satisfying. Right has prevailed.

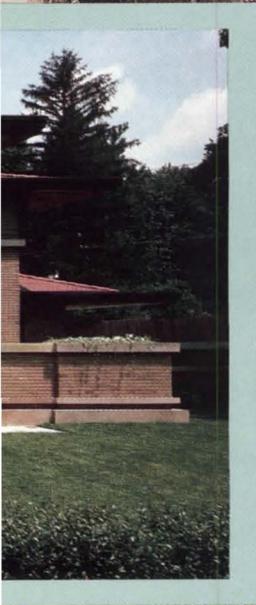
When preservation coordinator Carla Lind and architect John Tilton set out to restore the Meyer May house in Grand Rapids, which had suffered by alterations and damage over the years, their aim was, detail by detail, to recreate Frank Lloyd Wright's original 1909 work of architecture, to serve as a house museum open to the public and for occasional receptions by its present owners, Steelcase Inc. As they faithfully proceeded with the job, with the help of dozens of dedicated workers, they witnessed, bit by bit, the original golden unity reemerge.

The Background Facts

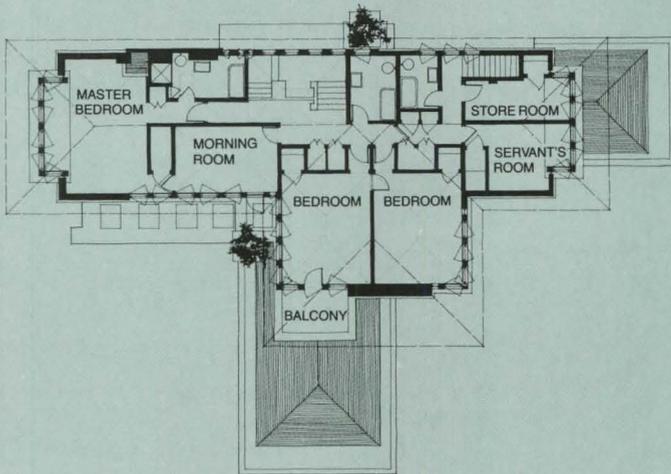
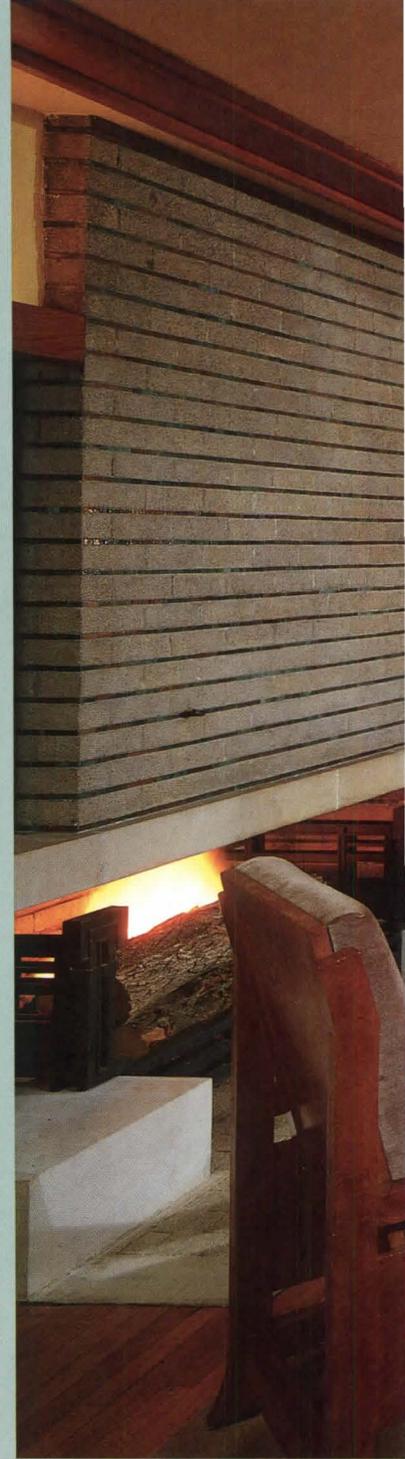
Meyer May, a retailing innovator, was the type of progressive businessman who was attracted to Wright's work, explains Lind, former executive director of the Wright Home and Studio in Oak Park. The American vision of a new relationship with the landscape, and the new vision of the broken box with both maternal warmth and paternal order (as characterized by Vincent Scully), must have appealed to him. Not only did May and his wife have their 3800-square-foot house itself designed by Wright, but almost every piece of furniture was designed either by Wright or his furniture design collaborator George Niedecken. For her research, Lind found only seven working drawings and several sketches of the house in the Taliesin archives; few books described this mid-size, late-ish Prairie House; but the Milwaukee Art Institute's Niedecken collection was most useful, as were the memories and photograph collections of May's children.

The principal street elevation (not the entrance elevation, which is on the opposite side) faces south (right), and it had suffered extensive damage. The large piers of the living room wall (facing page) had to be totally rebuilt; the enclosure added to the central veranda was removed; all cantilevers, having sagged badly, were rebuilt; and the original massing has been reaffirmed by the removal of additions at the site's east side. The decorative copper living room mullions (an early example of Wright's Mayan inspiration) and fascias are painted brown, in keeping with the original copper coating.

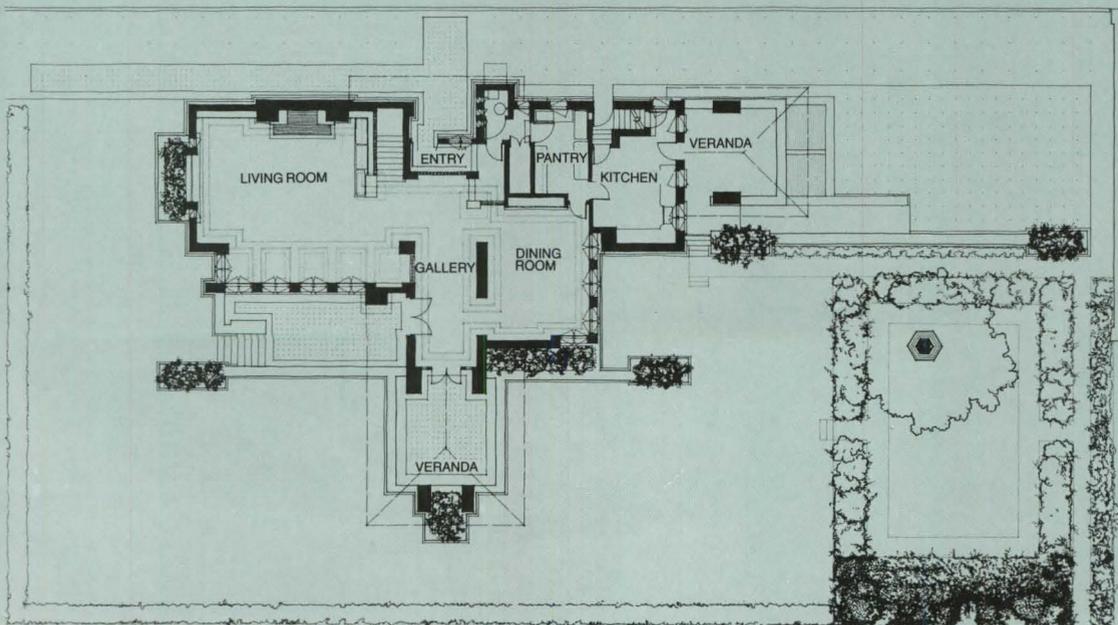




Meyer May House
Grand Rapids, Mich.



SECOND LEVEL PLAN



FIRST LEVEL PLAN

The living room (above) embodies the open nature of Wright's design, an openness carefully extended by the use of controlled views—views through screens, for example, to the central gallery and stairs (rear of photo above) and through windows, separated by strong piers, to the lawn and street beyond (photo top left). The latter photo includes notable Wright details: the window wall trim, the skylight, and the pier/terrace relationship. An alcove (right in background above) had been filled at some point with a furnace, its flue running up through one of the skylights.

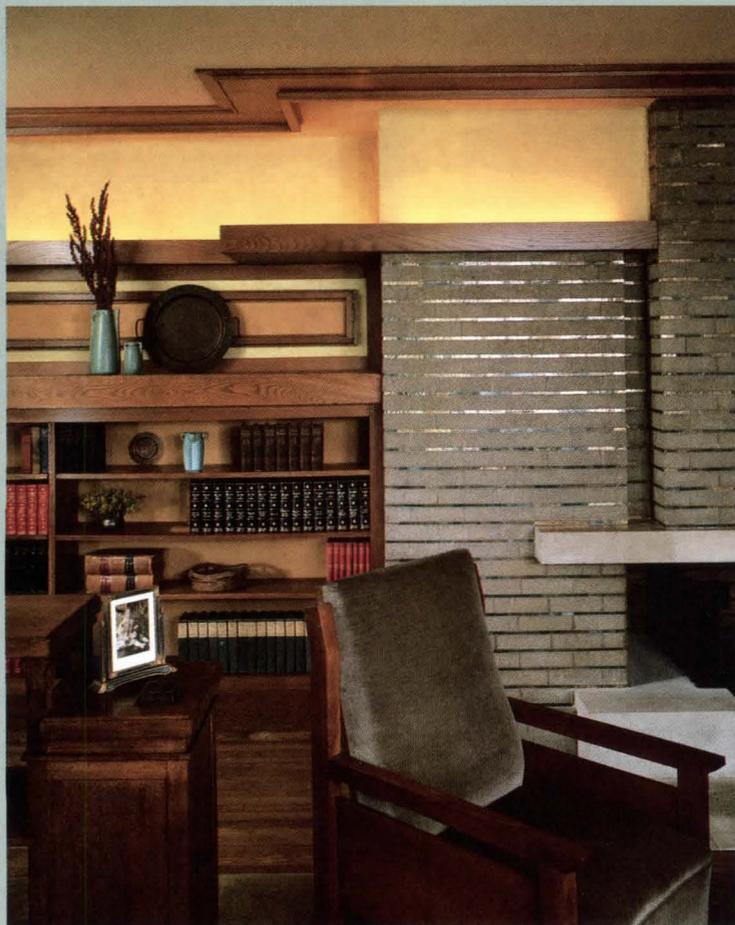
The horizontal joints of the brick fireplace (above and right) are filled with gold-fused glass tiles, which add to the warm glow of the room. In this house,



Wright used a standard, textured brick, not the smooth wirecut Roman brick he used in other Prairie houses, but the raking of the horizontal joints obscures the difference.

The furniture and furnishings in this house were for the most part designed by either Wright or by George Niedecken under Wright's supervision, and much of it has either been found and restored or carefully reproduced. The two chairs in front of the fireplace are original; their upholstery has been rewoven following samples in the collection of the Milwaukee Art Museum. The carpets have been rewoven from original drawings.

The dining room table (facing page, top right) was reproduced after careful detective work: Old photographs showed



its resemblance to the Robie house table (but with a different glass pattern for its lamps), but only after one of its legs was found was its scale ascertained. The table now stands again, creating by its integral lamp standards a little "room" within the larger dining room.



The Red Herring

The decision to restore the house to its 1909–1920 appearance was questioned by the Department of the Interior, which did not favor the removal of the large 1922 addition and the 1950s carport. But Lind and Tilton argued that it was the unity of the Wright design, not the ordinary record of a suburban house's gradual transformation, that was of importance here, and preservation tax credits were finally granted.

Spade Work, Clues, and Unexpected Finds

Step by step, the basic work was done: To solve the deflection problem, the roof was rebuilt, using a primarily steel superstructure. To solve leakage problems, a rubber membrane was incorporated under the new terra-cotta tiles furnished by the original producers. The water-damaged south wall of the living room was extensively rebuilt. And a fully concealed HVAC system and a 400-ampere electrical system were introduced.

The old glow reappeared: The interior white oak trim was stripped, refinished, and repaired, screens that had been moved or obliterated were reinstated, the damaged sand float plaster ceilings were removed and replicated, and plaster surfaces were repainted, often with one golden prairie hue stippled over a second. The art glass windows, restored, were reinstalled. The original Wright light fixtures were restored or reproduced, as were furniture pieces. Fabrics and carpets were rewoven following the full-scale drawings and yarn samples found in the Niedecken archives at the Milwaukee Art Museum. Linens, embroidered by the Bridens, residents of a local old-age home, and Arts and Crafts accessories were selected to complement the design. Meanwhile, the site was restored according to photos of the times, with a ramp for the disabled subtly incorporated.

From but two clues—one remaining leg, and its known resemblance to the Robie House table—the dining table was recreated. From an unexpected source—furniture consultant David Hanks fortuitously walked into a New York gallery and spied a watercolor rendering of the subject—the restoration of the Niedecken hollyhock mural between dining room and gallery was facilitated. Finally, an especially rich cache was uncovered: A group of 30 pieces of furniture from the house was found in the hands of one Grand Rapids family, and recovered for the restoration.

The Denouement

As the golden glow returned to the interior oak finishes and the deep eaves were seen to spread over the restored landscape, the integrated design of the Prairie House lived again. Wright prevailed. *Susan Doubilet* ■



The oak screen separating the central gallery (above) from the entrance door had been removed, but now—one half restored, one half reproduced—it has been reinstated in its original position. The mural on the pier separating the gallery from the dining room, obscured by coats of paint, has been restored by Jo Hormuth (inset) of the Chicago Architectural Arts Studio. Before the restoration began, all art glass—such as that in the master bedroom (top left)—was removed to be cleaned and repaired by Mike Mackenzie of Grand Rapids Art Glass (inset left). Only 6 of the 116 windows had to be rebuilt entirely.



Project: Meyer May house restoration, Grand Rapids, Mich.
Architect: Frank Lloyd Wright.
Restoration architect: Tilton & Lewis Associates, Inc., Chicago.
Client: Steelcase, Inc., Carla Lind, Steelcase Project Director.
Site: 16,300-sq-ft lot in the Heritage Hill Historic District.
Program: complete restoration of 3800-sq-ft house and furnishings to Wright's 1909 design. For use as museum and for corporate receptions.
Structural system: existing: cast-in-place concrete foundations, bearing exterior masonry walls, interior stud

partitions, steel beams, wood joists. New: structural steel roof framing for cantilevered hip roofs, wood rafter framing for window seats.
Major materials: face brick, art glass panels; stucco eaves and copper fascia; clay tile roofing; sand float plaster, oak trim and flooring (see *Building Materials*, p. 158).
Mechanical system: new HVAC system with four water-source heat pumps with heat exchanger and cooling tower; gas-fired boiler for supplemental heat. New underground electric and telephone services, with new distribution system fished through walls to replace knob and tube system.
Consultants: David Nederwald, landscape architect; Tilton & Lewis Associates, Inc., interiors; David A.

Hanks & Associates, furniture; Entela, Inc., structural; Steelcase, Inc., food service; Criner & Wedeven, Inc., mechanical/electrical; Robert Furhoff, paint analysis; Jo Hormuth, Chicago Architectural Art, mural restoration; Donald Kalec, furniture reproduction.
General contractors: Barnes Construction Co., Inc., Grand Rapids.
Costs: withheld at client's request.
Photos: © Jon Miller, Hedrich-Blessing.



The Selling of Frank Lloyd Wright

The Wright business is booming, in auction houses, furniture showrooms, book stores and gift shops. Brisk sales raise serious questions of public access, authenticity, and stewardship.

IN a rented warehouse outside Ann Arbor, Michigan, an artist turned furniture restorer and his assistant stand loose guard over the world's most extensive collection of Frank Lloyd Wright furniture. The plywood remains of Wright's 1953 model Usonian house are stacked against one concrete block wall. Massive crates labeled "Metropolitan Museum" testify to the recent arrival of the master bedroom from the Francis W. Little house (Wayzata, Minn., 1912). The battered wood frame of a Wright-designed sofa, manufactured by Heritage-Henredon in 1955, is upended on a work table, while in other rooms 10 to 15 windows and 40-odd chairs, sofas, and tables wait, tagged and ready for restoration.

These are the latest acquisitions in the celebrated and castigated collection of Thomas S. Monaghan, millionaire head of Domino's Pizza, whose sudden entry into the Wright arena two years ago turned that previously closed community upside down. In a brief 18 months, the Midwesterner's Wright holdings have grown from a scant 20 pieces to over 300. "The Domino's Wright Collection now exceeds those of the Metropolitan Museum and the Art Institute of Chicago," claims David Hanks, a New York decorative arts consultant who advises Monaghan.

Highlights of that collection include 29 windows from the Avery Coonley House and Playhouse (Riverside, Ill., 1907 and 1912), a dining chair from the Ward Willits house (Highland Park, Ill., 1901) purchased at auction for a record-breaking \$198,000, and the complete set of dining table and eight chairs from the now-demolished Joseph W. Husser House (Chicago, 1899), acquired privately in September for \$1.6 million. That price, the highest ever paid for a 20th Century American decorative art object, broke the previous record of \$595,000 paid for another Wright-designed dining room set only last June. Monaghan also owns the 1941 Usonian Snowflake House in nearby Plymouth, Michigan. Although only a fraction of his collection is on display in an overcrowded gallery at Domino's Farms in Ann Arbor, many of the prize acquisitions are touring the country in Wright exhibits. Several pieces are included in the exhibition "Frank Lloyd Wright: In the Realm of Ideas," which opens in January in Dallas, and a show drawn entirely from the Domino's collection will tour the country under the auspices of the Smithsonian Institution for two years, starting in 1989.

Sara-Ann Briggs, the harried curator of this volatile collection, worries that the new gallery now under construction at Domino's Farms will be outgrown before

its opening next fall. In addition to presiding over the completion of this new museum, which will also house Monaghan's fabled antique car collection and a Tigers museum dedicated to the Detroit baseball team owned by Monaghan, Briggs is also coordinating academic programs. Monaghan's fledgeling National Center for the Study of Frank Lloyd Wright has already hosted three symposiums on Wright, cosponsored by the University of Michigan. A fourth, on the topic of "Preserving Wright's Heritage," is planned for March 24-27, 1988.

This year, a \$20,000 matching grant, first in an annual program funding the restoration of Wright structures open to the public, was awarded by the newly formed Domino's Pizza Preservation Committee to Unity Temple in Oak Park, Illinois. Briggs also plans a documentation program recording all living Wright associates, clients, and friends on videotape, which she hopes to start this fall.

The Collector: Robin Hood or Robber Baron?

All this activity stems from a simple fascination for Wright acquired by Monaghan in high school. "I like Wright," the pizza mogul has told countless interviewers seeking the secret for this curious philanthropic infatuation. In fact, while his collection is comprehensive, Monaghan's own tastes tend towards the Prairie-Style Wright. His half-mile-long headquarters, designed by architect Gunnar Birkerts, stretches the Prairie house prototype to lengths even Wright could not have envisioned, with executive offices at one end and distribution at the other. The building's uses of brick, wood, and copper are reminiscent of Wright, as is its strong horizontality. "The vocabulary is Wrightian," says Birkerts, whose work tends typically towards a more monumental Modernism, "but the syntax is mine." Indeed, with the exception of the chairman's suite, the building's interiors are conventionally corporate, with Wright touches confined to the occasional framed rendering on the wall. Well-publicized plans to build Wright's unrealized Golden Beacon adjacent to the new headquarters were scrapped when it became apparent that the 1956 skyscraper design could not be adapted for modern office use without severely compromising the architect's intentions.

For her part, Briggs is anxious to ensure that none of the "mistakes" made early on in the collection's history be repeated. The Usonian house, for example, is, she says, "a sad situation." The house, built in 1953 for exhibition on the site now occupied by the Guggenheim

Museum in New York, had been thought lost until pieces turned up in the basement of a house in Westchester County, New York, in June, 1984. Monaghan bought the lot for \$107,500—his first really famous purchase—and promised to erect it at Domino's Farms. But a year later, when Briggs and company finally got around to inventorying their acquisition, they found a heap of rotting wood. Furniture paid for as part of the purchase was missing, and the remaining pieces represent barely 10 percent of the original. "We didn't look at it before we bought it," Briggs admits. "I think all it's going to do for us is to show us what materials were used, and that's about it."

Equally embarrassing, although perhaps less discouraging, is the case of a certain suite of furniture now banished to the warehouse. The owner assured Monaghan his table and two arm chairs were designed by Wright, but neither Hanks nor the archivists at the Frank Lloyd Wright Foundation, whose business it is to authenticate Wright designs, agree. They believe the furniture is more likely the work of Wright associate William Drummond for the Coonley Playhouse (page 133). As such, says Briggs, the suite can be used in the Domino's gallery to illustrate Wright's influence, but its estimated worth is now a fraction of the value accorded similar Wright designs.

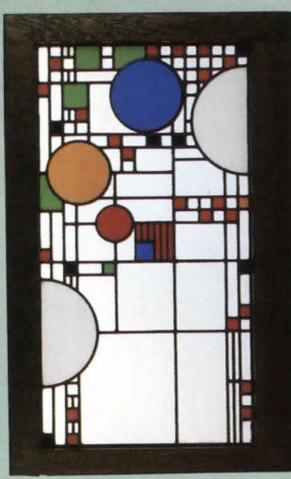
Monaghan himself still attends the occasional auction, most recently last December, when he bought out Christie's Wright offerings. ("He got carried away," says Hanks.) But it was Briggs herself who was responsible for Domino's most expensive and notorious acquisition, when she purchased an unusual chest of drawers designed for the Little house (Peoria, 1902) last June. Briggs arrived at Christie's with Monaghan's approval for a maximum bid of \$80,000—the top estimate issued by the auction house for the piece. She spent \$264,000, setting a new record for a single object by Wright. Legend has it that Monaghan's reply when asked about the discrepancy was, "It's better to ask for forgiveness than permission."

It is precisely that willingness to pay any price that has made Monaghan a lightning rod for critics who fear the fatal attraction of ever higher prices will prompt the owners of extant Wright houses to strip and sell. "These sales are encouraging people who own the houses to tear out what they have," says Bruce Pfeiffer, chief archivist of the Frank Lloyd Wright Foundation at Taliesin West in Scottsdale, Arizona. Acting on the advice of its Preservation Committee, Domino's no longer buys directly from home owners, but Briggs still fields at least 20 offers a week. "People come to us because of the newspaper coverage," she says. "But we want to encourage owners to leave the houses intact."

Yet it is the home owners, says Chicago architect John Eifler, who are the big losers in the auction game. Eifler, who is directing the restoration of several Wright houses (page 124), has watched his clients try to buy back furniture stripped by previous owners. "They can't keep up with the prices," says he. "Because of people like Monaghan, the furniture becomes an investment." Still, Eifler admits, Monaghan has made his collection available to scholars and architects. Eifler himself was permitted to measure the Willits chair so that it could be reproduced for that house's restoration. (Most museums, auction houses, and private owners refuse to grant that privilege.)

The Auction House: Arch Villain?

The chief culprit responsible for the Wright furniture inflation, say Eifler and others, isn't Monaghan or any other collector, but Christie's. That auction house is responsible by its own calculations for selling 95 percent of the Wright furniture that has come to market. "Monaghan has said he won't buy from the owners," says Eifler. "So the owners go to Christie's and then Monaghan buys." "The auction house won't release the name of the seller," says Briggs. "So we don't know if



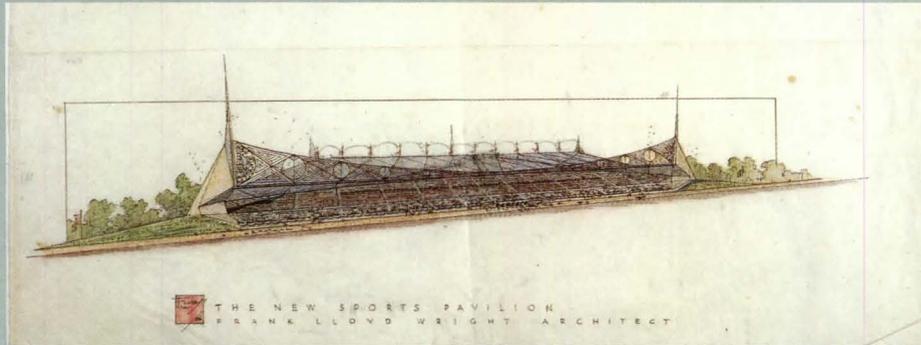
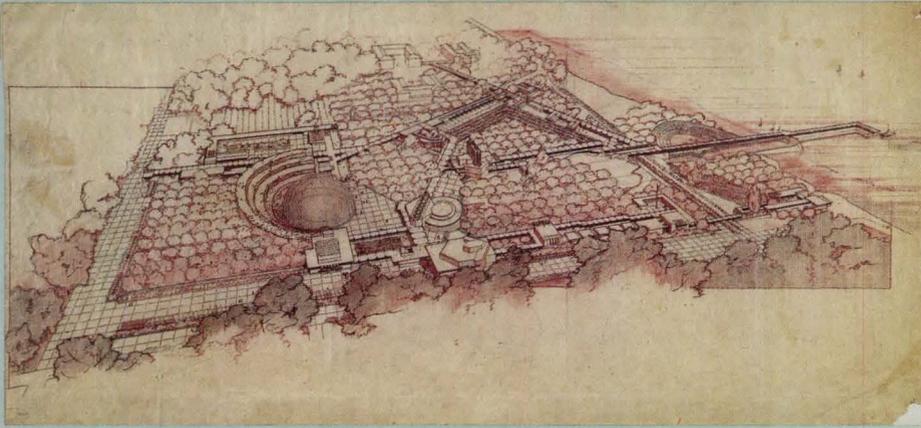
Photos: Greg Campbell

T-Shirt from the gift shop of the Domino's Pizza Collection of Frank Lloyd Wright (facing page). Highlights from the collection include (clockwise from top left) a window from the 1912 Avery Coonley Playhouse; a dining chair from the 1902 Ward Willits House; a sidetable from the 1936 Fallingwater; a side chair from the 1955 Trier House; and a 1902 urn. The Domino's headquarters (below), designed by Gunnar Birkerts, recalls Wright's Prairie Style homes.



Balthazar Korab

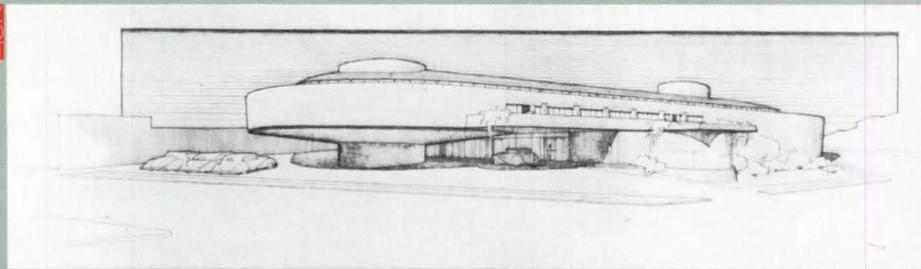
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Drawings from the Frank Lloyd Wright Archives depicting the Florida Southern College Master Plan of 1942 (top) and the New Sports Pavilion of 1956 (above) were among those put up for sale this fall at the Max Protetch Gallery in New York. While the FLW Foundation has drawn considerable fire for selling off pieces of its collection, an agreement with the

Getty Center for the Arts to duplicate the major portion of its archives will greatly improve access to that collection. Shown below are samples of the black-and-white photographs now on file at the Getty Center, duplicating drawings of the 1945 Adelman laundry and the 1899 addition to the E.C. Waller House in River Forest, Illinois (bottom).

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WRIGHT



it's the (home) owner or another buyer."

"We apprise buyers of as much information as we can without breaching the confidence of the owner," says Nancy McClelland, vice president in charge of 19th- and 20th-Century decorative arts for Christie's. "If we turned down that material, it would go underground. We've never been asked to sell furniture from a house that was going to be restored."

The "better us than them" argument covers all manner of supposed sins on the part of buyers and sellers alike. "The Metropolitan Museum's taking the Little house could be thought of as an outrage," says Hanks, "but the house was going to be demolished; so in that case they saved it. It depends on the circumstances." "If we don't buy it, someone else will," affirms Briggs. She maintains that it is better for the furniture to end up on public display at Domino's, than to disappear into another untraceable private collection. "Maybe Monaghan should amass everything; it's a kind of one-stop shop," says Eifler. "But what if there's a big crash in the pizza market? What is the permanence of Monaghan's collection?"

The FLW Foundation: Keepers of the Flame?

Questions of permanence also haunt the keepers of the oldest Wright collection—the Frank Lloyd Wright Foundation. Plagued by money problems, the Foundation shocked the architectural community two years ago when it opted to sell original drawings by Wright through the Max Protetch Gallery in New York. The isolated staff at Taliesin, unprepared for the avalanche of negative press, are still licking their wounds. "No matter what you do, you're criticized," complains Bruce Pfeiffer. "If you don't do anything, people criticize you for letting Taliesin fall down. If you sell drawings, people cry that you're breaking up the collection."

Yet it is precisely the use of proceeds from drawing sales to rebuild Taliesin that critics continue to find most objectionable. Pfeiffer's argument that those drawings selected for sale represent a mere fraction of the archive—100 out of 22,000—fails to convince those who feel the collection should remain intact and fear its dispersal through gallery sales into private hands. "These were drawings for which we have duplicates," says Pfeiffer. "Mr. Wright would often do two or three views until he found the one he liked best."

Some of the drawings, however, were considered by the Foundation itself to be "very important, very fine drawings," Pfeiffer continues. "We stipulated that those had to be sold to a museum." But if a drawing was considered important enough to demand a museum collection, why wasn't it deemed significant enough to keep in the archive? "Some are collaborative works, some by draftsman," says Pfeiffer. "The original with Mr. Wright's directions to the draftsmen is far more valuable. We're keeping those."

Not all observers are critical of the sales. "I think for a small private foundation trying desperately to maintain its collection, it was a decision one was able to justify, although not a decision I would have made," says Nicholas Olsberg of the Getty Foundation for the Arts. He sees a perverse sort of silver lining, claiming that the high prices commanded by their material have convinced Taliesin to improve security and storage of the collection. "They now know what they have and what it's worth." "We may not even sell the full 100 drawings," says Pfeiffer. (To date, 48 have been sold, with another lot scheduled for sale this fall at the Protetch Gallery.) "I would like to see that program taper off, because it doesn't do our image any good."

Olsberg's own program—the duplication of the major portion of the Wright archives, including correspondence, drawings, and period photographs of completed buildings—should help burnish that image by improving access to the collection. Complaints about accessibility are as old as the collection itself. "There was a general concern that the Taliesin collection was hard to use

The Frank Lloyd Wright Foundation 1942

The Frank Lloyd Wright Foundation 1987

The Frank Lloyd Wright Foundation 1987

The Frank Lloyd Wright Foundation 1987

and hard to get into," says Olsberg. "We're talking about an insular community suffering from acute paranoia. But they've done a remarkably good and conscientious job. That follows a number of years of serious decline. Bruce (Pfeiffer) had to put up a major struggle just to keep students from stealing drawings."

Praise for the present archives is echoed in other customarily critical quarters. "I don't really think Taliesin deserves all the negative criticism," says Eifler. "They kept all those things for years when nobody really gave a damn about them. Sure they're disorganized, and they've been removed from the world a little too long; but I've always found them very helpful." Briggs agrees. "We use Taliesin constantly to verify authenticity. I would say our relationship with the architectural firm is strained," she says, alluding to a falling-out over the Golden Beacon. (Monaghan first hired Taliesin Associated Architects for both the tower and the headquarters building, before turning to Gunnar Birkerts.) "But our relationship with the Foundation archivists is good."

Just as the drawings debacle draws to a close, controversy is heating up over a second Taliesin sale. It is property, not drawings at stake in Taliesin Gates, a guarded-gate development of 54 homes that will occupy 74 acres of the Taliesin West campus in Scottsdale, Arizona. "The idea of designing a community of Frank Lloyd Wright-inspired residences was an idea Mr. Wright conceived more than 30 years prior to the formation of the Taliesin Fellowship," says Foundation chairman William Wesley Peters, who designed the model home for Taliesin Gates. But the fact that Wright dreamed of such a community does not mean he would have welcomed it on his own doorstep. Indeed, this development epitomizes the wholesale suburbanization of the Sonoma desert that Wright himself so bitterly opposed.

Moreover, the simultaneous offering at Taliesin Gates of a limited number of unrealized Wright-designed houses with "Wright-inspired" designs by Taliesin Associated Architects blurs the very distinction the Foundation has pledged to uphold. And, as *San Diego Union* architecture critic Kay Kaiser has pointed out, the idea that a specific design conceived by Wright for a particular place and client can be relocated and reused contradicts the fundamental principles of Wright's work, whose "contextualism" predated use of the term.

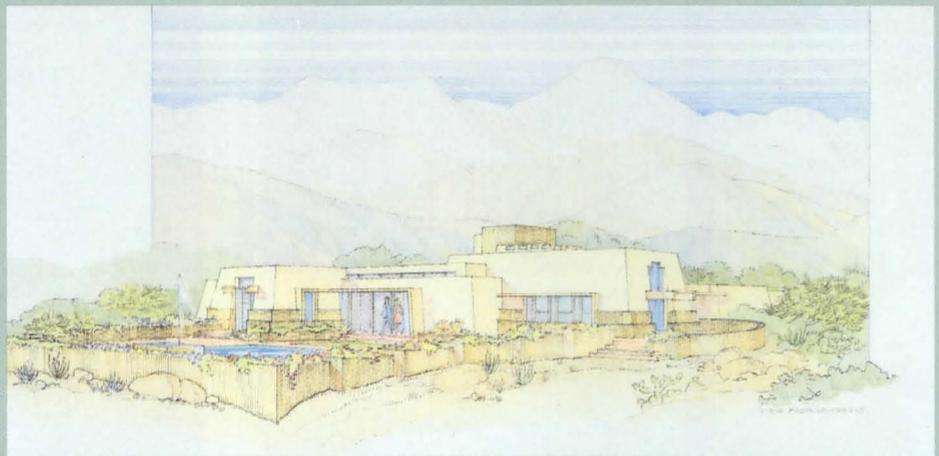
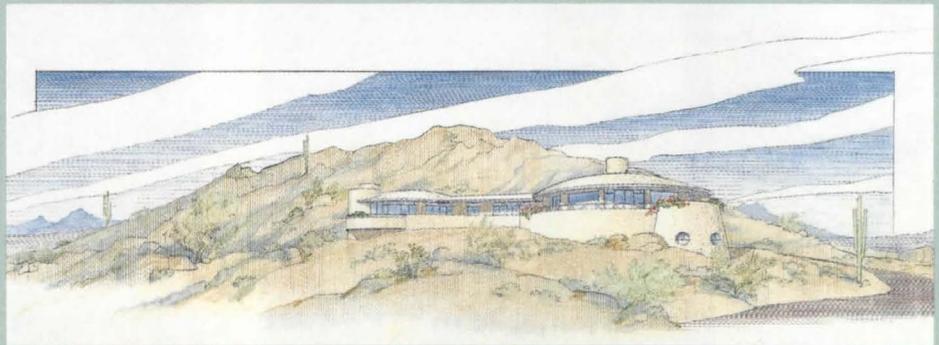
"Taliesin Gates Development Company," says its press kit, "was formed in order to showcase the work of Taliesin Associated Architects (TAA) as well as to augment funding for the Frank Lloyd Wright Foundation's expanding programs of architectural education at the Frank Lloyd Wright School of Architecture, the increasing activities of Frank Lloyd Wright scholarship and archive preservation, and preservation of the Taliesin facilities." Those several goals are not only incompatible but contradictory, say critics who charge that Taliesin is squandering its precious inheritance to support a faltering school and practice. Nor is this the first time deacquisitions have supported Taliesin in a time of crisis. Shortly after its establishment in 1940, the Foundation was forced to sell Wright's famous Japanese print collection to pay a \$1 million penalty for back taxes—the consequence, says Pfeiffer, of the architect's ignorance of tax law.

Wright's successors, who have inherited the architect's own embattled sense of self-reliance, remain ill at ease in the four-year-old role of a nonprofit organization. "We've always been very uncomfortable going out and asking for money," says Richard Carney, managing trustee of the Foundation. That reluctance is slowly giving way to a more vigorous pursuit of grants—including two successful bids for funding from the National Endowment for the Arts to restore Wright drawings. Yet even that laudable effort was overshadowed by charges that the Foundation had cynically used NEA funds to finance the restoration of drawings later sold at the Pro-



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Mark Bouschait



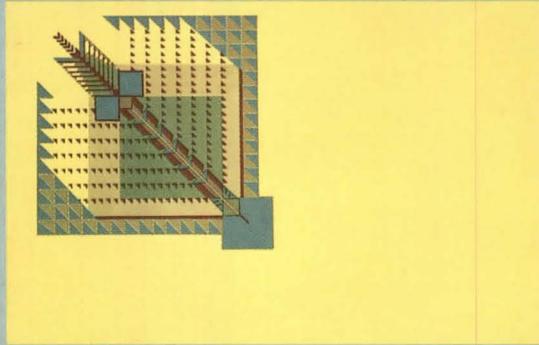
Taliesin Gates, a guarded gate community of 54 homes that will occupy 74 acres of the Taliesin West campus in Scottsdale, Arizona, will include both unrealized Wright designs and "Wright-inspired" designs by his successor firm, Taliesin Associated Architects. Shown here are three of the latter, including from top to bottom the completed "Focus House" by William Wesley Peters, and designs by

Tony Putnam and John Rattenbury. Proceeds from the development project will fund the activities of the Frank Lloyd Wright Foundation and its architecture school. Taliesin associates claim that Wright himself envisioned just such a community of Wright-designed homes, but critics charge it contradicts the architect's wish to keep his beloved Taliesin intact.

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Among the products sanctioned by the FLW Foundation are greeting cards from Pomegranate Publications (above) and the Schumacher line of carpets and fabrics. The Imperial Arrow rug (right) reuses the corner motif of a larger rug in the 1915 Imperial Hotel, while the Ennis Block and Chevron Repp fabrics (below, left and right) are adapted respectively from the concrete block pattern of the 1924 Ennis house and art glass from the 1904 Martin House.



Jim Koch

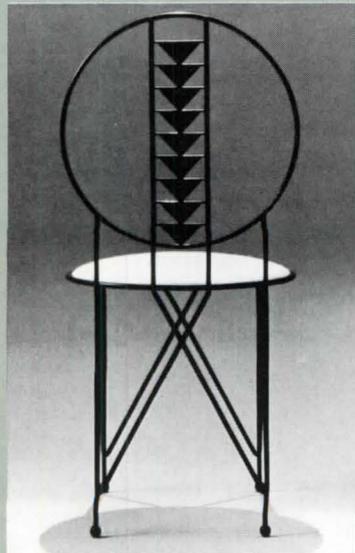


Hern Sachs

Designs © The Frank Lloyd Wright Foundation



Four of seven reproductions by Italian furniture manufacturer Cassina, a FLW Foundation licensee whose Wright line is marketed in this country by Atelier International Ltd., include the dining chair from the 1908 Robie house, shown at left with the dining table from the 1917 Allen house, and a chair and table designed in 1914 for Midway Gardens, Chicago (below, left and right).



Designs © The Frank Lloyd Wright Foundation



tetch Gallery. Pfeiffer emphatically denies the rumors, citing conditions of the grant.

Still, Taliesin's failure to choose between the roles of supplicant and salesman has made at least one potential benefactor chary. "They came to Mr. Monaghan asking for a million dollars to restore Taliesin," says Briggs. "Our position is that they should close the school and act as a museum or archive. How can they say we're trying to make something off the name of Frank Lloyd Wright, when they themselves are selling off their drawings and their land?" Briggs also wonders why Taliesin didn't apply for Domino's restoration grant, despite a letter of invitation. "I don't know why," says Pfeiffer. "Maybe I didn't know about it."

The Producers: Wright Boom Beneficiaries?

Just about the only money-making venture undertaken by Taliesin that hasn't earned universal opprobrium is its line of licensed furniture reproductions. The program simultaneously capitalizes on and counteracts the booming market for Wright originals. "We were anxious to get into the licensing program so that people could have these beautiful designs without touching the originals," says Pfeiffer.

Over the past two years, Taliesin has established licensing agreements with five manufacturers, each of whom enjoys exclusive rights to designs in its category. Thus Cassina in affiliation with Atelier International has the rights to all Wright furniture designs; Schumacher to carpets and wallpapers; Tiffany for china and tableware; Pomegranate Artbooks for illustrated calendars, posters, and notecards; and most recently Oakbrook Esser for leaded stained-glass windows, the first of which will be available next year.

The Foundation feels free to grant such exclusive agreements, for which it receives royalties, based on its own exclusive right to all Wright designs, granted by the architect in 1940. "Mr. Wright gave everything to the Foundation—his name, his work, and his future work," says Carney. "He became an employee of the Foundation."

Yet the Foundation's claim has not gone unchallenged. "If somebody goes and copies a Frank Lloyd Wright chair, they're stealing a design that belongs to the Foundation," maintains Carney. Counters Briggs, "I think we own the copyrights to the objects in our collection." While Briggs professes no plans to reproduce Wright furniture at present, her gift shop sells T-shirts, bookmarks, and stationery emblazoned with Wright designs. Jewelry based on Wright windows from the Domino's Collection will be available from the Los Angeles-based Architects for Acme for Christmas.

Two years ago, as its licensing program was just getting under way, the Foundation took steps to defend its turf in a suit against Chicago furniture manufacturer Thomas Heinz. The case was settled out of court, with both sides claiming victory. Heinz, whose offerings include reproductions of a frieze pattern, furniture, and Imperial Hotel china, agreed to cease using the copyrighted red square and imprimatur "Frank Lloyd Wright Association," but he remains free to reproduce and sell his material. For its part, the Foundation agreed not to sell directly competitive china, until after May 2, 1988. The two adversaries will go head to head in the marketplace this spring when Tiffany's authenticated version of the china goes on sale.

"I don't think we can stop anybody from copying designs," says Carney. "What we can do is say this is an authentic Wright design. Other manufacturers may be accurate but they are not authentic." Yet the Foundation itself has approved designs that are not strictly authentic, distinguishing these from the real article by the designation "Adapted from a Frank Lloyd Wright Design." Pomegranate's greeting cards and calendars, for example, are self-evident adaptations, but the Schumacher carpets and wallpapers represent a more subtle case. Although Wright had designed a line for

Schumacher in 1955, "the company didn't want to repeat that," says Pfeiffer. "They wanted to be able to say it was all new." The present line includes wallpapers patterned after a reflected ceiling plan and a stained glass window, and a carpet whose featured design blows up the corner motif of a larger rug in the Imperial Hotel. "I think in some ways they made a mistake," says Pfeiffer of the adaptations, "but they did what Mr. Wright himself did—he'd go and adapt something he'd designed years back. He never let a design go to waste." "Wherever possible we pursued straight reproductions," says Steven Kroeter of Steven Fields Design Associates, Chicago. Kroeter, the first to suggest a product licensing program to Mrs. Wright, now negotiates with product manufacturers and distributors on behalf of the Foundation. "Where we felt there was a precedent for adaptation, we approved it," he explains.

Pfeiffer himself recognizes the paradox inherent in the "one-off" reproduction and sale of individual pieces that were never intended to be seen outside of the houses for which they were designed. Of the Cassina line, which includes reproductions of the Robie House dining chair and a chair and table from Midway Gardens, Pfeiffer says, "now we are selling piece by piece. I would hope that we could come up with an ensemble someday."

That hope depends of course on continued growth in the market for Wright designs. Stephen Kiviat, president of ai, reports a "readily perceptible difference" in sales volume that is directly attributable to the widely publicized record-breaking sales of Wright originals at auction. "It makes people more comfortable paying the prices we charge when they see originals going for such astronomical figures." For the licensees, even bad press like that lavished on the drawings sales can turn to profit by increasing "brand name" recognition.

Still, Kiviat is cautious about the future, claiming that it is too early to tell just where the market is going. Although Cassina selected and prototyped 30 designs for reproductions, there are no firm plans at present to expand the line beyond the seven items now available. The Foundation, on the other hand, is bullish. "The other primary area we are exploring is lighting," says Kroeter, who expects to announce a new line of Wright lights in the next six months. "There might be additional things we discover in the archives, like Wright-designed dresses . . .," he muses.

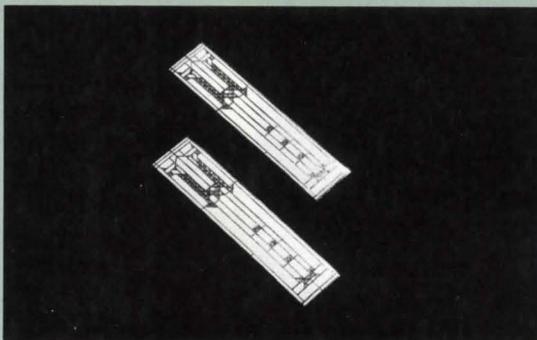
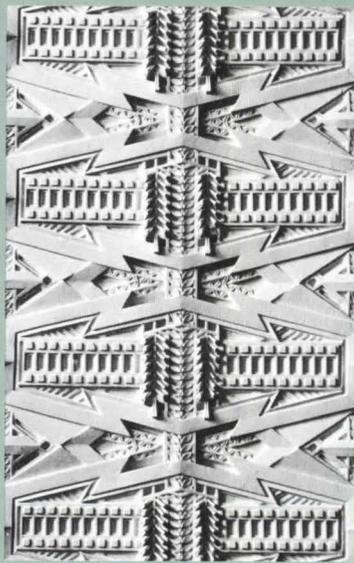
Briggs, while setting her sights on Christie's fall sale, believes that the market for Wright originals will taper off. "In another three or four years," she says, "there won't be anything left to buy. It will all be concentrated in the hands of a few collectors and museums."

The bust can't come soon enough for Eifler, who fears the continued "rape and pillage" of Wright homes. "Jack Nicholson owns a Frank Lloyd Wright-designed window. What does he think took its place?" he asks. These pieces were made to be in their houses; they're very specific. It is precisely the specificity of Wright furniture that, for Eifler at least, makes it unlikely that the Wright crisis will be repeated. "We're talking about one-of-a-kind designs, not a Stickley armchair," he says. Yet furniture pieces by Stickley, or by the Greene brothers, have set records of their own at auction, and the continued popularity of Art Deco designs proves the phenomenon of inflated decorative arts sales is not limited to the arts and crafts or "Prairie" periods. Even Monaghan is expanding his horizons. An exquisite Louis Sullivan screen from the Guaranty Building, picked up at a recent auction, stands out in his Wright warehouse. "It gives context to our collection," explains Briggs. And presages purchases to come?

Daralice D. Boles



Offerings from Tiffany & Co., authorized by the FLW Foundation, include (above, left to right) a coffee service, candlesticks, salt and pepper shakers, and a covered bowl.



Chicago furniture manufacturer Heinz & Co., whose Wright line is not authorized by the Foundation, offers (clockwise from above left) a wood desk lamp, china from the Imperial Hotel, a dining chair and frieze cast from the 1902 Dana House. Earrings based on a window from the Little House in Wayzata, Minnesota, now in the Domino's Pizza Collection (left) are being manufactured by Architects for Acme (see page 26).

Christopher Lowi

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Designs © The Frank Lloyd Wright Foundation

The First of its Kind

Frank Lloyd Wright's first built Usonian house is brought back to its former glory by John Eifler's careful hybrid of restoration and renovation.

IN 1936, journalist Herbert Jacobs and his wife Katherine asked Frank Lloyd Wright to design them a house for \$5000. In 1937, the Jacobses moved into their house in Madison, Wis., having spent \$500 more than they had planned, to add another room. (This became Jacobs House I when the family built another Wright house in Madison.) In many ways, it was a plain, small house, almost painfully economical, but luxurious in its sense of space, if not in the fact of it, and in its abundant natural light. It was the first built example of Wright's two-dozen-plus Usonian houses, moderately priced, energy-conscious dwellings intended for families from all walks of life. In fact, this was the last of these houses to be built for anywhere near \$5000, but it was the beginning of an experiment that was one of Wright's most important contributions.

The house's current occupant, art historian James Dennis, enlisted the help of Chicago architect John Eifler in restoring the house to its original state. Eifler took an undogmatic but careful approach to the project, using original materials where possible, and substituting contemporary ones where practical necessity dictated. The result is a delightful reminder that necessity is, indeed, the mother of invention. Spartan as the house is, it has such innate elegance that one has no trouble imagining Katherine Jacobs living "a simple, luxurious life" there.

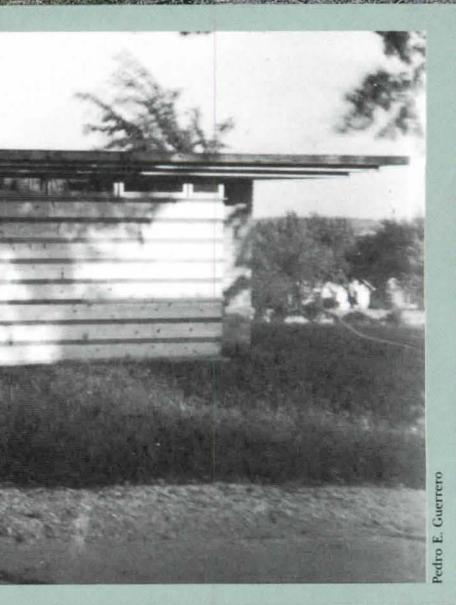
Pilar Viladas ■

From the street, the exterior of the Jacobs house (right, taken soon after the house was built) flouted architectural convention: no big front door (the entry is in shadow at right of carport); no garage; and most radical of all, almost no windows, save for a clerestory under the overhanging roof (facing page, after restoration). The structural piers (the one near the carport was rebuilt in the restoration) and central service stack were originally made of cull bricks from the Johnson Wax building; replacement bricks were cast to match the originals, including the specially designed corner bricks that created a quoin effect.

The pine board and redwood batten walls, which sat directly on the building's concrete mat (facing page, edged with

brick), were stripped of creosote that had been applied to the exterior by owners subsequent to the Jacobs family. A board-and-batten fence was added to the south end of the house soon after the early photo was taken. Over the years the original roof framing, which was not as stable as it could have been, was further strained by layer upon layer of roofing, added without removing earlier layers. Restoration architect John Eifler reframed the cantilever over the carport (and replaced the wood fulcrum under it), then covered the entire roof with single-ply roofing. While the house itself covers only 1560 square feet, the roofs and carport total 2800 square feet, thus creating a strong sense of shelter.





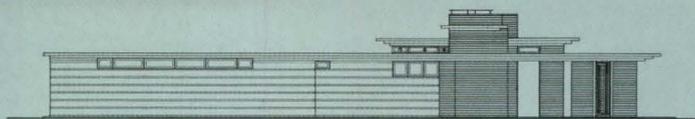
Pedro E. Guerrero

**Jacobs House I
Madison, Wis.**

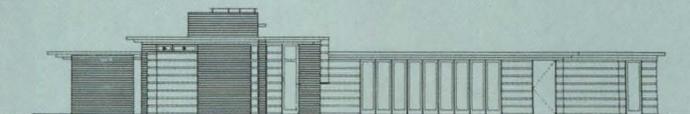


The solid street (west) elevation belies the expansiveness of the east side (facing page and right), with its row of French doors opening onto a large backyard. The corner doors (right) are mitered, eliminating a corner post; architect Eifler designed a crimped copper flashing sill for the pine doors, which are custom made, insulating glass versions of the originals. The concrete floor mat was another Wright innovation: It covered radiant heating pipes. The mat in the bedroom wing is original, but the one in the living/dining wing was replaced: instead of running iron pipes under the mat, polybutylene pipe was laid in the mat, atop a layer of rigid foam insulation. And since the tone of the integrally colored original concrete could not be duplicated, the floor was painted.

Inside the living room (above), the street wall holds bookshelves nearly to the level of the clerestory (shown with corner windows open). The built-in corner table is a replica of the original, which was built by Katherine Jacobs' brothers. Above the table is the Hiroshige print that was a gift from Wright to the Jacobses, who gave it to the current owner, James Dennis. The sectional seating was designed by Wright in the 1950s for *Heritage-Henredon*; the armchair was de-



NORTH ELEVATION



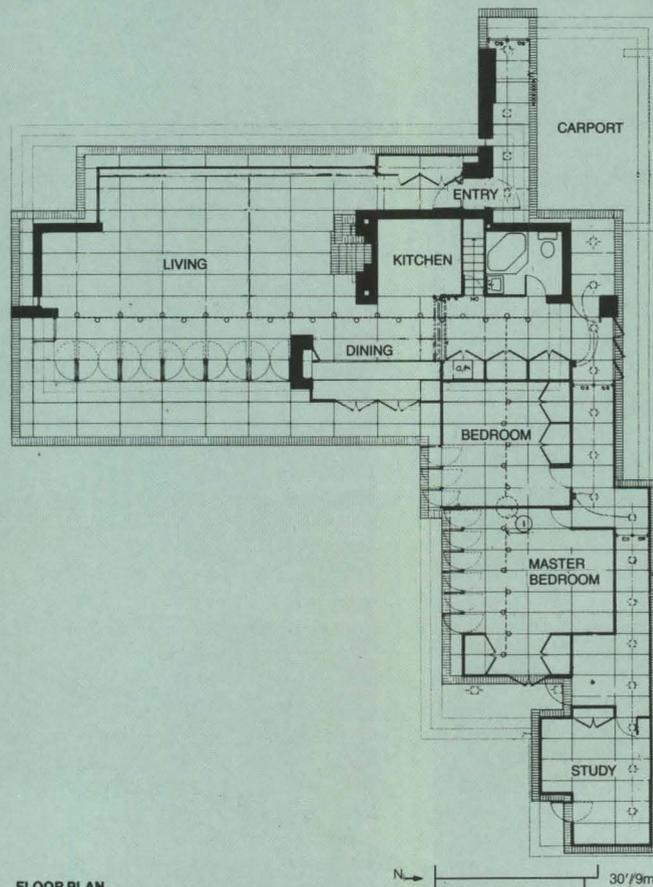
SOUTH ELEVATION



signed by artist Grant Wood, the subject of a definitive study by Professor Dennis. The original lighting, consisting of exposed painted metal conduit with bare bulbs radiating out of it, is still in use.

The windows in the dining area (exterior, above), originally designed to be flush with the wall, were later pushed out by Wright to make more interior space. The resulting bay was so weak structurally that Taliesin apprentices improvised brick piers to shore it up. (The original windows had also been replaced by a subsequent owner.) Eifler removed the piers and replicated the original windows, suspending them from the roof.

In all the rooms, the redwood ceilings were replaced. In the bedrooms, additional electrical conduit was installed by routing out the insides of the pine sandwich walls. In the living room, additional outlets were added with the new concrete floor mat. Throughout the house, defects in the original roof framing were corrected. New hardware was also installed throughout as "a practical necessity."



FLOOR PLAN

Project: Jacobs House I, Madison, Wis.

Architect: Frank Lloyd Wright, original architect; John Eifler, Chicago, Ill., restoration architect.

Client: James Dennis, Madison, Wis.

Program: renovation and restoration of 1560-net-sq-ft house, completed in 1937.

Structural system: masonry piers and plank supporting walls on concrete slab; wood roof joists; steel fitch beams.

Major materials: pine; redwood; brick, single-ply roofing; concrete (see *Building Materials*, p. 158).

Mechanical system: radiant heating; circulation pumps, gas-fired boilers.

Consultants: Nancy Kendrick, interiors; James Rademacher, heating and plumbing.

General contractor: Bradley T. Lynch, Envelope Design & Construction, Phase I (framing) and construction management; Jonathan Leck Carpentry & Cabinetry, Phase II (finish work).

Costs: withheld at owner's request.
Photos: Wayne Cable, except where noted.

Redone Wright

As the buildings of Frank Lloyd Wright are restored, his imaginative use of materials emerges as a key problem for preservation architects.

"ARCHITECTURE," Frank Lloyd Wright once said, "is the triumph of human imagination over materials." And triumph, he did. "Wright stretched materials to their limit," says architect John Vinci, "and sometimes beyond."

There were reasons for Wright's daring use of materials, especially in his early buildings. "Most were modest structures with small budgets," says Vinci. Many of Wright's experiments with construction were for the sake of saving money; Unity Temple, for example, built with a highly unusual method of setting concrete, cost half of what a conventionally constructed church would have cost at that time.

Wright also pushed the limits of materials, because those limits were not always known. To bridge some of the long spans in his early houses, for instance, Wright adopted a structural technique common in 19th-Century barn construction, where iron tension rods ran diagonally from the top to the bottom cord of a shallow truss or deep beam to reduce deflection at its center. Wright, however, often so reduced the depth of the structural member that the tension rods offered little vertical force, resulting in springy floors and sagging ceilings.

Principle, too, seems to have gotten in the way of practicality in some of Wright's buildings. He built the first Jacobs house, says architect John Eifler, "out of little sticks," a good idea that got out of hand when, in place of 2 x 12 joists supporting the flat roof, Wright stacked three 2 x 4 studs on edge and held them together only with gusset plates at each end.

Such uses of materials has created more than a few problems for the owners and restorers of Wright's buildings. Owners, for example, frequently face large maintenance and repair bills. Fortunately some of the most important early works, such as the Charnley house, the Dana house, and Wright's own home and studio, have been purchased by governments or non-profit groups and have benefited from considerable public funding or sizable private contributions. But most of the buildings remain in the hands of private, tax-paying owners. While many of them have tried to keep their buildings in good repair, some have shown themselves to be incredibly insensitive, as when the Tomak house was turned into a Mediterranean villa and the Coonley Playhouse, into a ranch house with sliding glass doors. The undoing of such "improvements" is the focus of several current restoration efforts.

A new and potentially more serious threat to Wright

buildings, now that a strong market exists for his designs (see p. 118), is the possibility "that people will buy Wright houses just to strip them" of their furnishings and accessories, says architect Harry Hunderman. That threat has already divided restoration architects over the issue of how best to preserve Wright's buildings and ornamental elements.

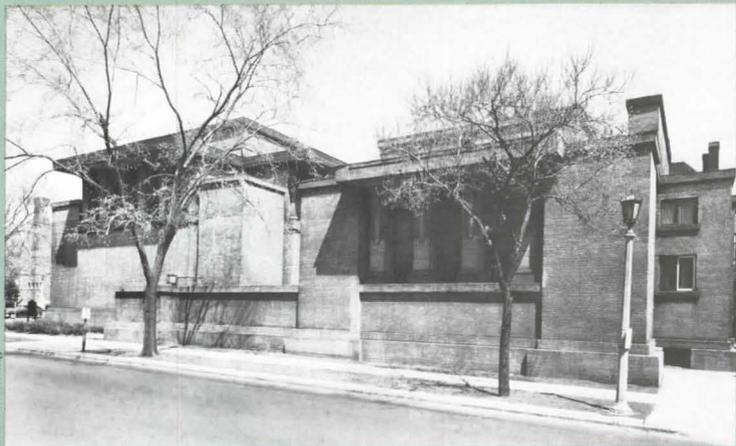
The owner of the Willits house, for example, recently removed some of the original art glass windows and sold them to a museum, using the proceeds to replace the originals with careful reproductions. The owner and his architect, John Eifler, argued that continued exposure to the elements would destroy the windows with their badly deteriorated frames, and that placement in a museum would ensure their preservation and increase public access. Opponents to the windows' removal countered that any removal of original elements harms the integrity of the structure.

Preservationists also have battled over the question of whether subsequent alterations to Wright buildings should be maintained. There was considerable disagreement, for example, about the decision to restore Wright's home and studio to its configuration of 1909, the last year he lived and worked there, since that demanded the removal of later changes that Wright himself made to the building. Other Wright buildings have presented a similar dilemma. Architect John Vinci, when he removed an inappropriate 1950s addition to Wright's Coonley Playhouse, decided to put back an addition to the building designed by Prairie School architect William Drummond rather than return to the original Wright structure.

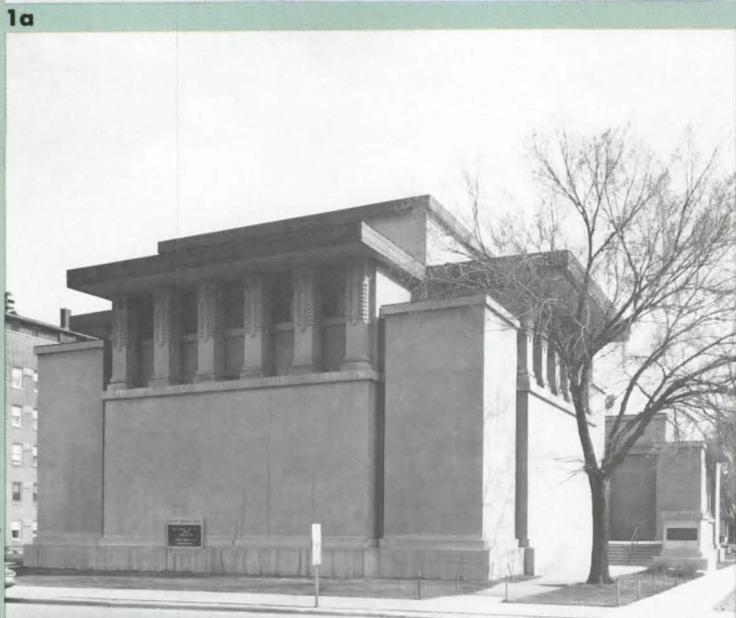
It is Wright's unorthodox use of materials, however, that has confronted preservation architects with some of their toughest choices: Should deteriorated materials be replaced with original or new, more durable products? Should necessary interventions be hidden or frankly revealed? Should fragile elements be left as is or removed or covered to reduce exposure?

The following case studies show the range of possible solutions to such quandaries. What is striking about these examples is their faithfulness not only to Wright's architecture, but his definition of it, for these projects themselves are a triumph of imagination over materials.

Thomas Fisher ■



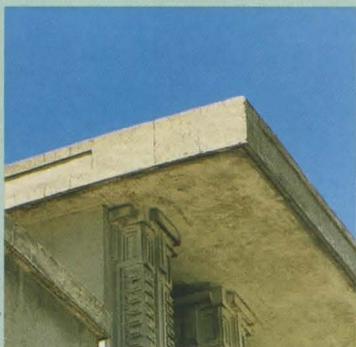
Hedrich-Blessing



Hedrich-Blessing



Wiss, Janney, Elstner



Wiss, Janney, Elstner

**1 Unity Temple
Oak Park, Illinois
Wiss, Janney, Elstner Associates,
preservation architects**

Reinforced concrete construction was a relatively new technique when Frank Lloyd Wright used it, in a highly unusual manner, for the Unity Temple. Wright had the inner and outer faces of six-inch-high forms parged with cement and the rest of the forms then filled with a relatively dry concrete. As soon as the concrete had initially set, the forms were removed and the cement surface was floated and then washed with a muriatic acid solution to expose the aggregate, **1a, 1c**.

By the early 1960s, that cement surface had begun to lose its adhesion, so the church had it coated with a bonding

agent that obscured the original finish, **1b**. Further cracking by the early 1970s led to the sandblasting of the exterior and the application of Gunitite and a linseed oil sealer.

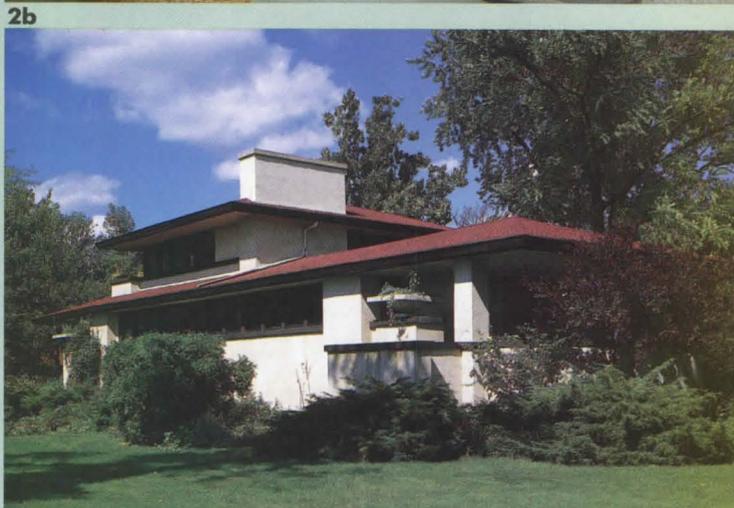
The problems continue. The Gunitite surface is now cracking and the linseed oil has turned black, **1d**. Wiss, Janney, Elstner Associates have been hired to document the history of the building's fabric and to make recommendations for its preservation. Whether to maintain the previous repairs or restore, in some way, the original surface is just one of many questions that they face.



Sternkamp Bullogg



John Vinci



Sternkamp Bullogg

**2 Tomak house
Riverside, Illinois
Office of John Vinci, preservation
architects**

For the stucco in his early houses, Wright often used a high lime mix, with a carefully chosen aggregate to give color to the unpainted material and a carpet floated finish to create as smooth a surface as possible.

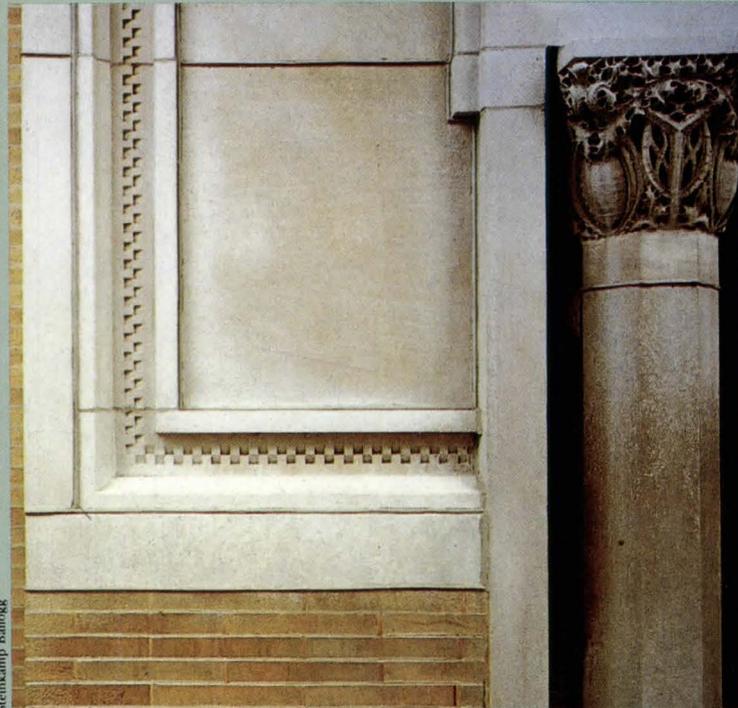
Such were the conditions under which the stucco was originally applied at the Tomak house, **2a**. Unfortunately, subsequent owners of the house, in the process of turning it into an ersatz Mediterranean villa complete with round-headed windows and overscaled Classical balconies on the interior, had the exterior refinished with a highly textured, speckled stucco, **2b**. The current owners, with the

advice of John Vinci, have had the interior decor removed and the exterior completely restuccoed.

In some places, that restuccoing entailed removing the original finish down to the wood sheathing, **2b**. Elsewhere, a binder was used to adhere new stucco directly over the old textured finish, replicating the original unpainted, carpet floated finish, **2c**. Here, as in many preservation projects, the best and often least conventional solution involves returning to the original materials and techniques.



3a



3b

3 Heller house
Chicago, Illinois
Office of John Vinci, preservation
architects

Brick, as a cladding material, was another favorite of Wright's. While he used long, thin Roman bricks in many of his early houses, he also occasionally used more conventionally sized brick and had it pointed in a way that emphasized its horizontality, often by deeply raking the horizontal joints and striking the vertical joints flush.

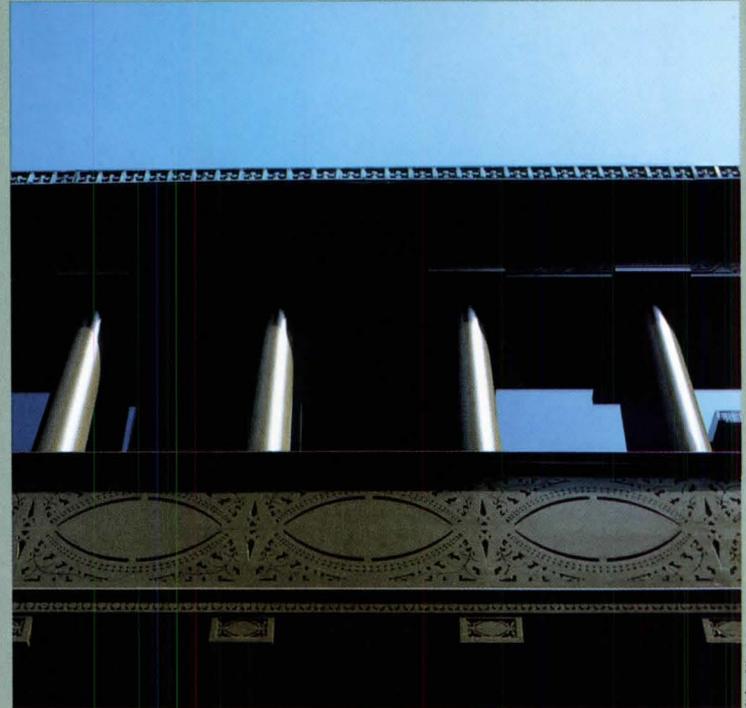
The Heller house, **3a**, shows one stage in Wright's experimentation with pointing. It uses conventionally sized gray and buff-colored bricks. A mortar analysis by the Office of John Vinci determined that the horizontal joints were not raked back,

but concave and colored white, while the vertical joints were flush, with a buff or gray-colored mortar between the buff and gray-colored bricks, **3b**.

The pointing of the house's limestone base also was a surprise: Wright used black, beaded mortar joints. As in the use of white joints in the brick, the black joints in the limestone show Wright resorting not to shadows, as he did in other buildings, but to color contrast as a way of highlighting masonry joints.



4a



4b

4 Charnley house
Chicago, Illinois
Office of John Vinci; Skidmore,
Owings & Merrill, preservation
architects

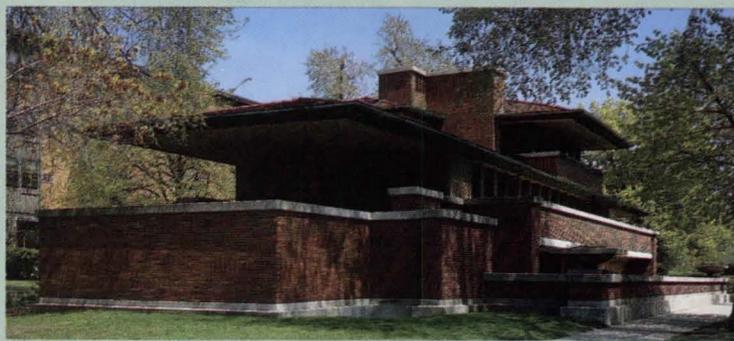
The Charnley house is currently undergoing an extensive restoration by Skidmore, Owings & Merrill for use as headquarters of the SOM Foundation. Some previous repairs to the house, however, had been made by the Office of John Vinci. One such repair was to the balcony that projects over the front entrance, **4a**. Originally open, although with no obvious means of drainage, the balcony had been enclosed at a later date, and its unusual incised wood face, made of yellow pine and painted to resemble brownstone, had begun to fall apart.

Rather than make an exact duplicate of

the original balcony face, whose incising had been obscured after years of repainting, Vinci decided to make a new template based upon the geometry of original pattern. The result is a much crisper rendition of the panel's Sul-livanesque pattern, **4b**. While it would have been easier to trace the pattern from the largely intact panel, John Vinci argues that rediscovering its geometry is more true to the original. "Reproduction," he says, "was an important aspect of the Arts & Crafts movement." In tracing the panel, "we would have been just replicating the mistakes made on the original."



5a



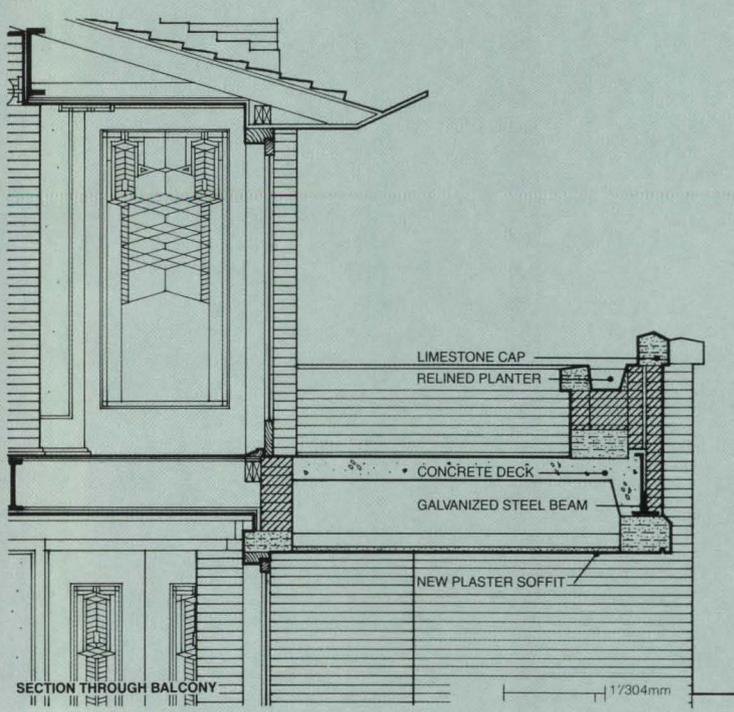
5b



5c



5d



5e

**5 Robie house
Chicago, Illinois
Office of John Vinci, preservation
architects**

Stories of Wright's cavalier approach to structure are legion. So too are the stories of his avoiding the use of steel in some of the long cantilevers in his houses. The Robie house disproves all such tales. Its structure is carefully detailed and has generally stood up well over the past 80 years. And it makes extensive use of steel to support both the broad cantilevered roofs and the long spans of the balconies, **5b,5c**.

It was in the latter—the long, second-floor balcony that runs nearly the length of the living and dining rooms—that the steel has presented a problem. Wright had placed a steel I-beam at the balcony edge to span the distance. Above the

beam stood the brick balcony face, the balcony deck, and a built-in, metal-lined brick planter.

Leaks in the planter and in the balcony wall eventually corroded the beam, which, as it expanded, began to crack the balcony's brick face and its limestone caps, **5a**. John Vinci, working as a consultant to the house's owner, the University of Chicago, had the balcony dismantled and a new galvanized steel beam installed in place of the original, **5d**. He also had a new waterproof membrane and concrete deck installed, the brick planters rebuilt with new liners, the balcony drains unclogged, the stucco soffit reapplied, and the brick parapet and limestone caps rebuilt, **5e**.

One of the difficult parts of any restoration is when some new element, not found in the original, is added to protect a

building's physical integrity. At the Robie house, Wright drained the roof and gutters with spouts located over grade-level cisterns. Not only had the cisterns become clogged, but there was an insufficient number of spouts to handle the run-off from such a large roof. Vinci added leaders in a few inconspicuous places along the façade, bringing them down along brick piers through the new balcony deck.



Jon Miller, Hedrich-Blessing

6a



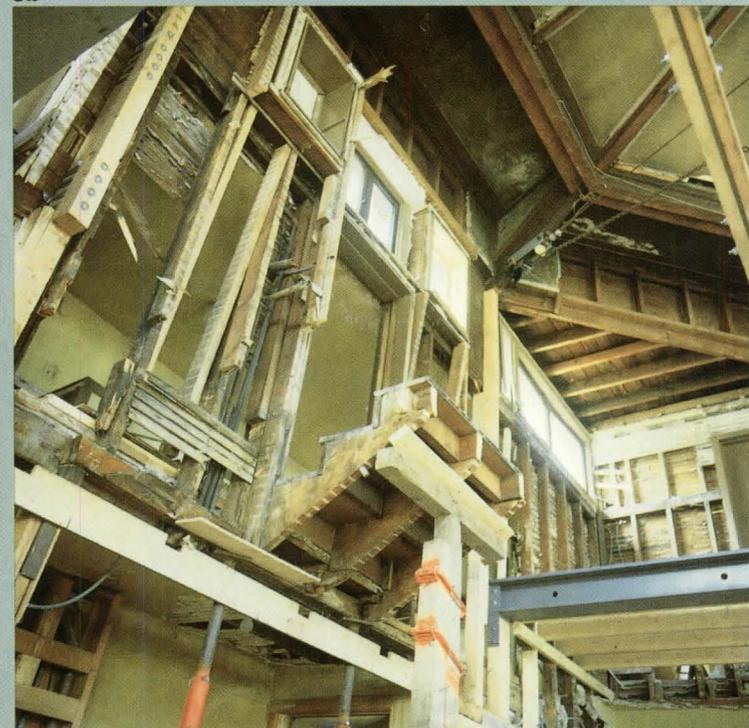
Jon Miller, Hedrich-Blessing

6b



John Vinci

6c



John Vinci

6d

**6 Frank Lloyd Wright home and studio
Oak Park, Illinois
Office of John Vinci, Robert A. Bell Architects Ltd., Fred C. Burghardt, preservation architects with The Restoration Committee of The Frank Lloyd Wright Home and Studio Foundation**

If there was any one building that Wright felt at liberty to experiment with, it was his own home and studio. One area in which experiment clearly had a financial motive was the construction of the foundation under the studio. Instead of building a continuous foundation, Wright inserted brick posts into the site's clay soil, on top of which he set timber grade beams. There was no basement initially, although later, a pit was dug in the clay under the studio to accommodate a furnace.

By the time the restoration of the studio had begun, the grade beam had rotted and the brick pier foundation was clearly not usable. Perkins and Will's structural engineers designed a steel harness to support the entire studio while a new, continuous concrete foundation was installed, **6c**. The new foundation is completely concealed and is a much more secure base for the building, **6a**. The grade beam detail, says architect John Vinci, was an attempt by Wright "to keep his buildings low to the ground. It's a direct, simple solution that can work, but it must be carefully maintained and kept free of foundation plantings."

To restore the studio and make it safe for visitors, the preservation architects had much of the interior taken apart and steel inserted behind woodwork and within the depth of the balcony, **6d**. "The

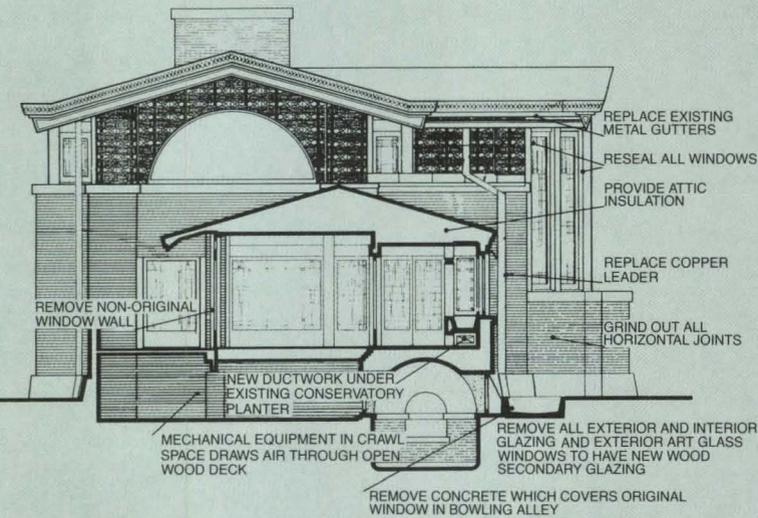
mezzanine floor," says Vinci, "is now about 12 inches rather than 4 inches thick and supported completely by steel. The chains are now fake."

Another structural experiment in Wright's studio was the chain harness supporting the mezzanine, **6b**. The harness was connected to roof beams that were insufficient to carry the load and tied to a mezzanine floor composed of 2 x 4 joists, **6b**. "Wright," says John Vinci, "may have thought that connecting the chains would make the structure act as unit." Instead, severe deflections in the roof beams were the result. Wright made the problem worse when he had the roof of the second-floor octagon raised and the windows enlarged, which made the whole structure tend to twist. Tie rods were added to some beams to try to reduce deflections, but that did not help.

"What saved the studio," notes Vinci, "was the floor that Wright added when he converted the studio into a living unit. It acted as a diaphragm, holding the building together."



7a



SECTION THROUGH CORRIDOR AND BOWLING ALLEY

7b



SECTION THROUGH ENTRY HALL AND DINING ROOM

7c

**7 Dana house
Springfield, Illinois
Hasbrouck Peterson, preservation architects**

The Dana is about to undergo a complete restoration funded by the State of Illinois, **7a**. The first phase of the work involved the completion of an exhaustive historic structures report, a type of study that the architects recommend for every restoration project. "Historic structures reports," says Bill Hasbrouck, "allow you to get much more accurate estimates and schedules. Restoration doesn't have to be full of surprises."

The second phase of the project will involve the insertion of new HVAC, electrical, fire, and security systems. Here, the ample amount of interstitial space in Wright's plans and sections has come in handy; pipes and ducts will be run

through crawl spaces and behind woodwork, while the existing radiator cabinets will be used to conceal forced air registers, **7b**. Where plaster must be taken down to insert pipes, it will be matched with new plaster, mixed with a matching aggregate found in St. Louis and finished with a wood float.

Later phases of the work will include the conversion of the carriage house into a reception center that will include a bookstore, meeting room, and mechanical room; and the restoration of the interior finishes and exterior envelope of the house, **7c**.



8a



8b

**8 Coonley Playhouse
Riverside, Illinois
Office of John Vinci**

The adaptive use of a Frank Lloyd Wright building presents another set of problems. In the case of the Coonley Playhouse, a small building designed as a kindergarten, its use as a residence necessitated some alterations. Unfortunately, those done in the 1950s were not very sympathetic; the entire interior, including the ceilings and woodwork, were wallpapered, and two wings with sliding glass doors were added to either side of the main block, **8a**.

The current owners have removed the wallpaper and largely restored the original interior, and they have removed the two side wings. The dilemma they presented to their architect, John Vinci, was

how to preserve the Playhouse and yet still increase the amount of space. What Vinci did was not just to restore the original Wright building, but to reconstruct an addition designed by Prairie School architect William Drummond, the details of which were surmised from old photographs, **8b**. Vinci then took the more controversial step of building a mirror image of the Drummond addition on the other side of the central block. The result is very much in keeping with the spirit if not the letter of the original.

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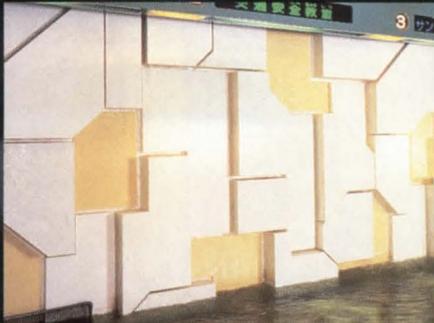
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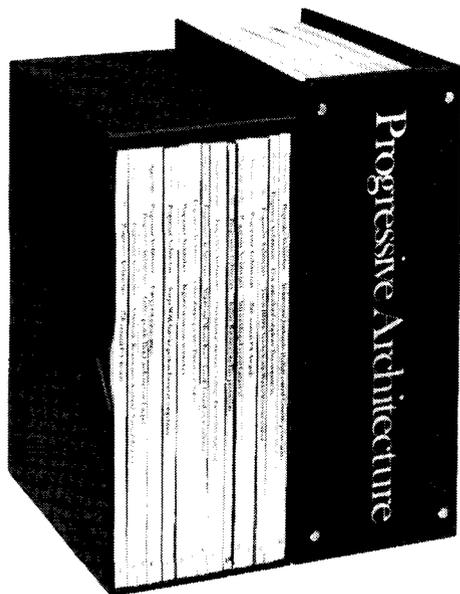


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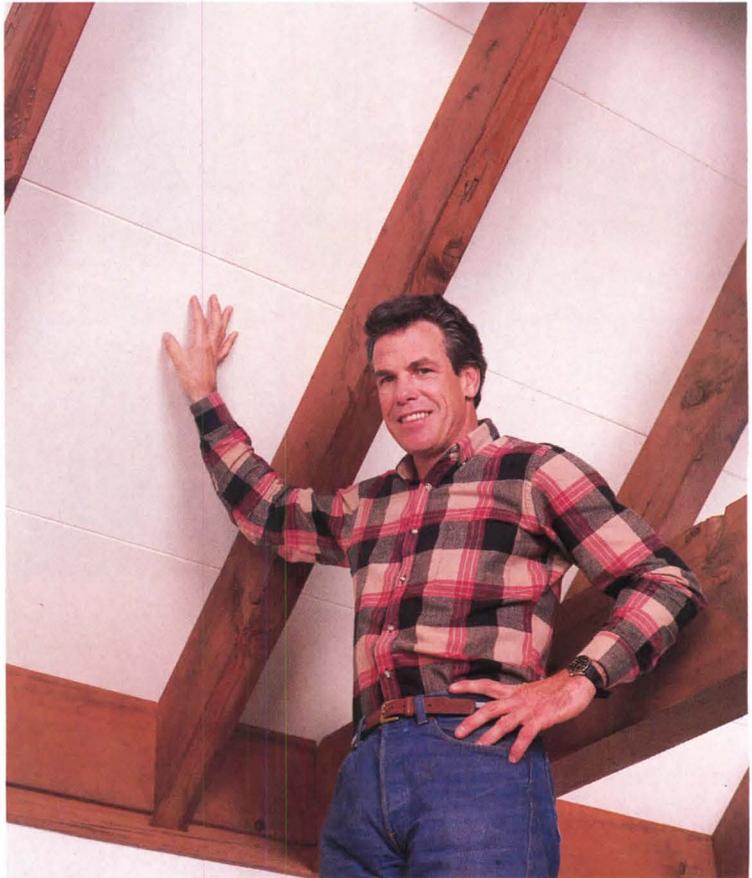
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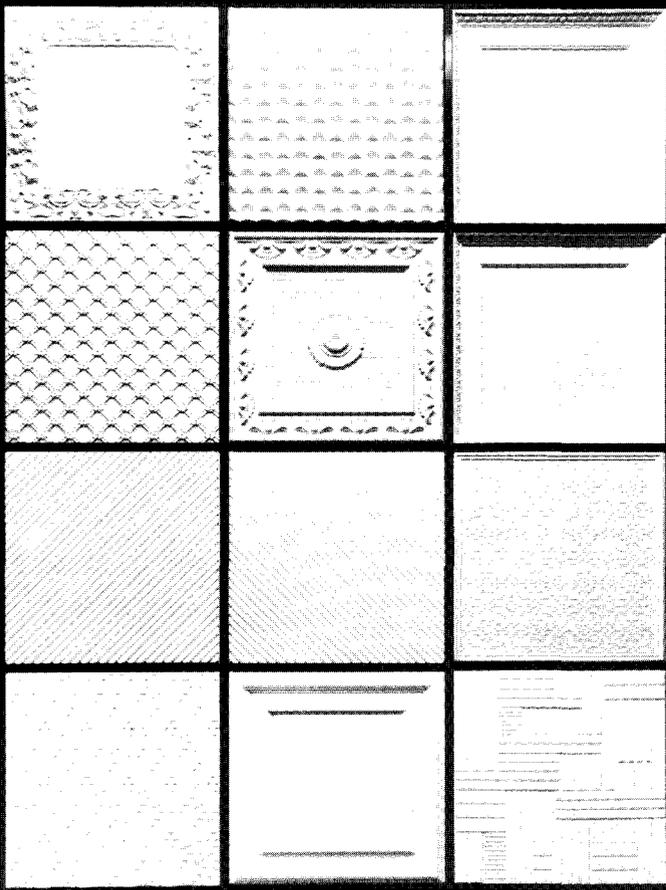


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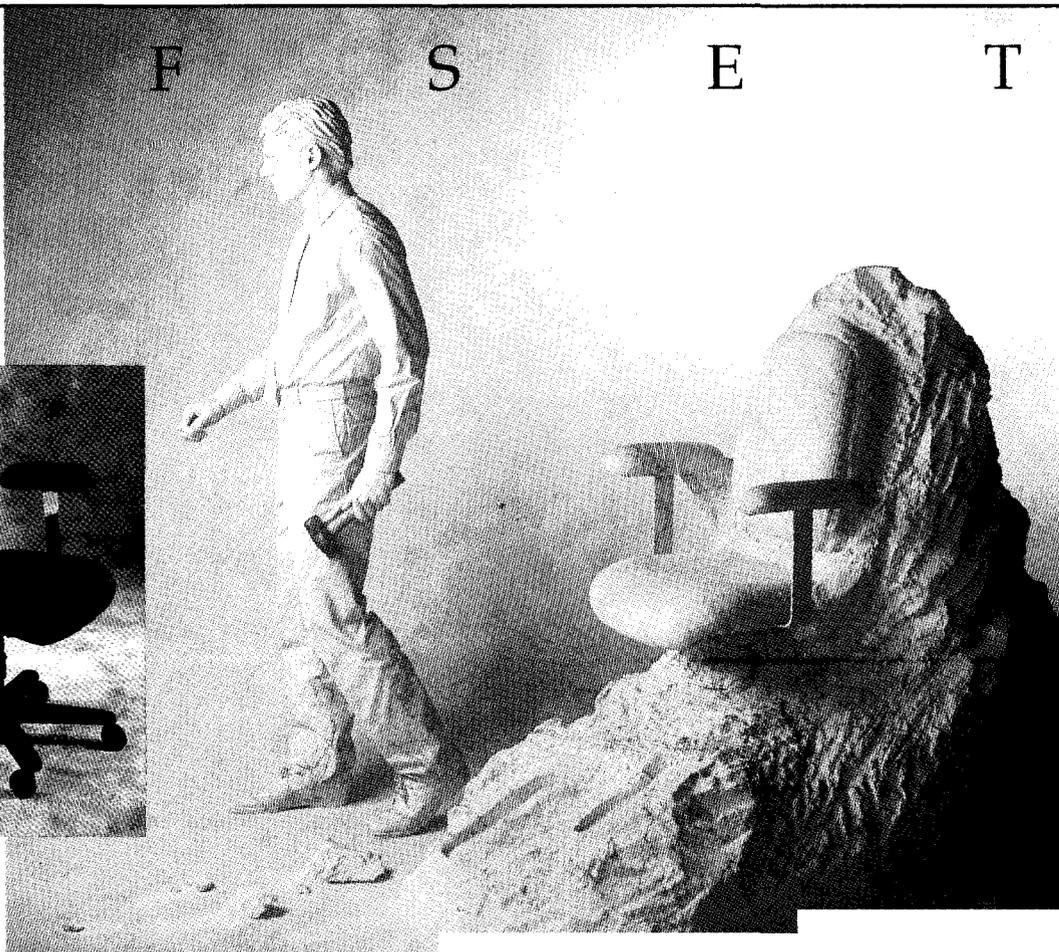
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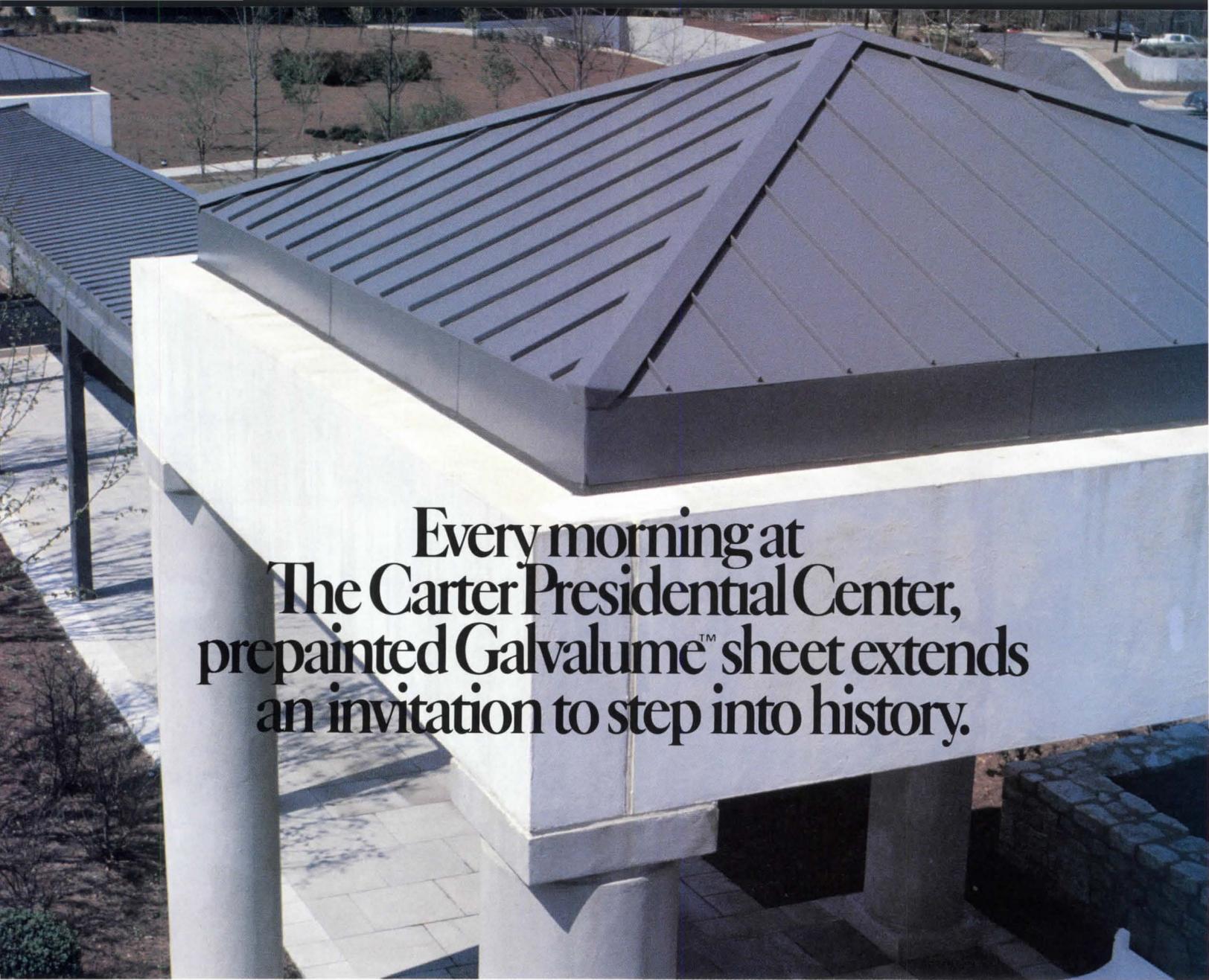


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Architect: Jova/Daniels/Busby—Lawton/Umemura/Yamamoto, Architectural Joint Venture, Atlanta, GA. General Contractor: Beers Construction Co., Atlanta, GA. Roofing Contractor: Tip-Top Roofers, Atlanta, GA. Component Manufacturer: MBCI, Houston, TX. Walkway roof panels: MBCI Craftsmen Series SB-12 Architectural Panels, Charcoal Gray.

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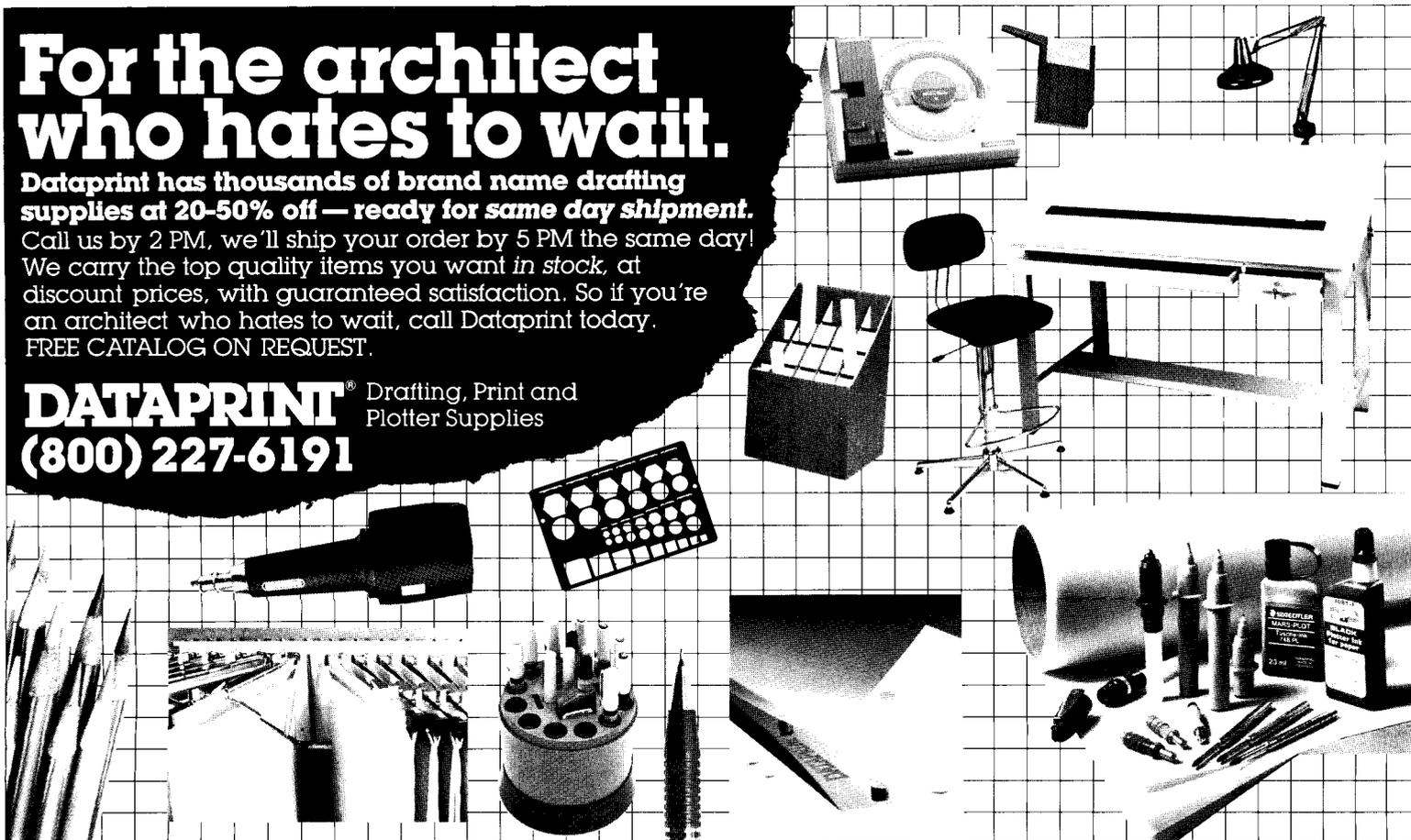
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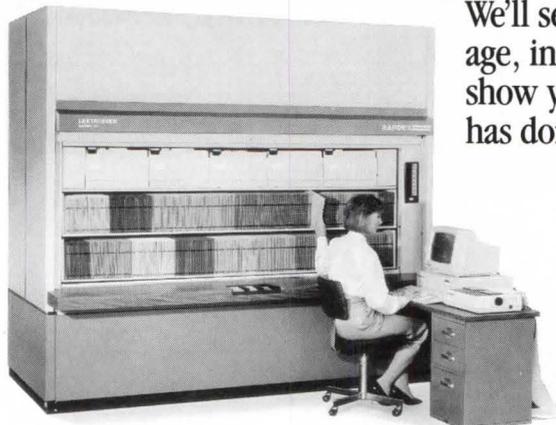
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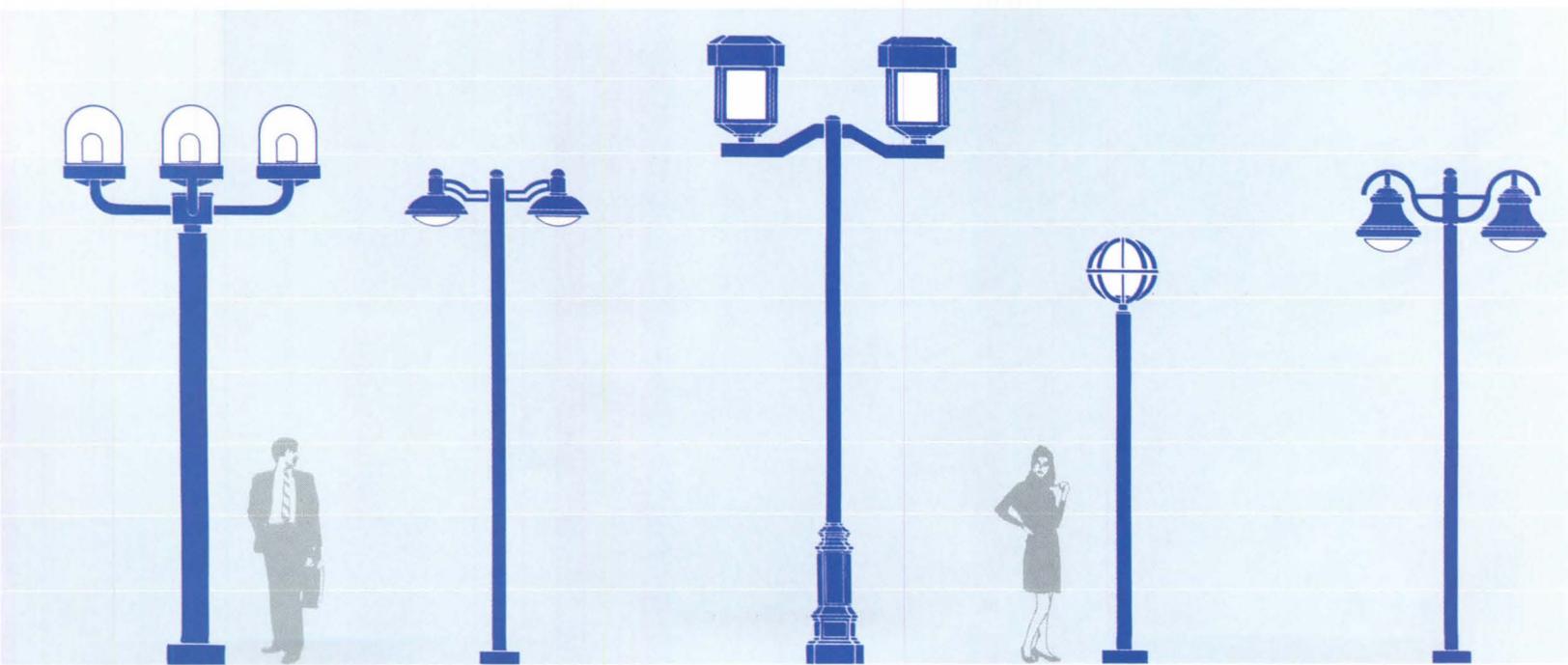
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Special Products and Services



The American Craftsman Collection by Robin Whitten, comprises five designs, each a combination of natural fibers for texture and beauty and man-made fibers for strength and durability. The group includes: Cats Eyes in five colorways; Rapture in six colorways; Rollover in oyster white with accents of black and bright white; Silk Twill silk tweed in six colorways; and Watercolor Cord in natural colors. All fabrics are 54 inches wide and have a Class A fire rating. Robin Whitten Design.

Circle 100 on reader service card

Touchcom electronic directories feature crisp, colorful graphic images. They have an unlimited capacity for names, are easy to use, and have remote update capabilities. The directories look like color TV monitors installed in freestanding kiosks or wall-mounted enclosures. When touched, the monitor displays tenant names, detailed maps, and other useful information. An IBM PC-compatible console allows tenant names to be added, modified, or deleted and automatically transmitted to each directory unit. Digital Techniques, Inc.

Circle 101 on reader service card

Structural Glazed Facing Tile is illustrated in a 24-page guide that has product descriptions, specifications, and installation information. The fired-on finish won't fade and cannot be damaged by fire, abrasion, acid, or steam cleaning. It meets FDA standards for cleanability and imperviousness to acids, oils, and caustics. Special configura-

tions for special needs such as seismic and security tile and acoustical tile products are available. Stark Ceramics, Inc.

Circle 200 on reader service card

The direct digital control system on Trane central station air handlers saves installation time and provides more accurate, efficient control of air handlers. An illustrated 32-page catalog explains features and advantages of the DDC system and provides details on proportional integral derivative control strategy, control system sequence of operation, applications, control module menu, and hardware options. It also discusses typical installations, selection, customer wiring connections, and mechanical specifications. The Trane Company.

Circle 216 on reader service card



A professional light box in a table-top portable model features adjustable side bars that enable the user to square up the light box. A durable plate-glass working surface with plexiglass diffuser offers cool, even light diffusion. Screw mount legs adjust the slope and have rubber feet to protect cabinet or table surface. Models range in glass size from 21" x 25" to 38" x 51". Foster Manufacturing Company.

Circle 103 on reader service card

Lo Pro™ Drapery Track Systems for commercial use are described in a 16-page, full-color catalog. It includes installation photographs, specifications, pricing, and drapery fabrication instructions. The tracks are one-third inch thin for a clean look. The baton can be placed in front or behind the drapery and can-

not twist or break off. There are four sizes of tracks available. Coral of Chicago.

Circle 201 on reader service card

CADScanning service converts manually created engineering drawings into an electronic format for use in computer-aided design (CAD) computer systems. The service converts drawings several times faster than manual methods, at a cost saving of 40 to 60 percent. The CADScanning service can reduce by a third the time it takes to enter a drawing manually. After scanning, each drawing is reviewed, edited, and proofread to ensure that every drawing element is correct. Weyerhaeuser Information Systems.

Circle 104 on reader service card

Sunwall 54™ Carmel wallcovering, inspired by natural masonry textures of the American West, is suitable for office, hospitality, and related applications. Carmel is Type II vinyl and has a Class A fire rating. The 54-inch wallcovering is offered in 20 colorways based on sunset tones on stone. Sunwall of America.

Circle 105 on reader service card

Sunfix® Glassteine glass blocks, manufactured in Germany and available here, are shown in an eight-page color brochure. There are 37 blocks shown, many with surface designs, in squares, rectangles, and circles. Plain blocks are also available. Most are offered in a choice of sizes, and there are several in bronze tones. Glass Blocks Co.

Circle 202 on reader service card

Electramount ceiling recessed video system keeps large-screen video projectors and screens out of sight. It is available in four sizes to accommodate almost any ceiling-mounted video projector. Optional controls allow for independent or tandem operation from any location in the room. Draper Shade & Screen Co., Inc.

Circle 106 on reader service card

(continued on page 150)

Products (continued from page 149)



The Synthesis chair was designed by Christian Duc for C. et MB. It is metal with elastic straps and is available in gray. The seat is 17½ inches square; height is 31¼ inches. Furniture of the Twentieth Century.

Circle 107 on reader service card

The Horizon™ sprinkler provides an attractive appearance and dependability. All models qualify for use as institutional sprinklers. Horizon is available in standard, Quick/Response, and residential models. The standard line includes pendent and extended coverage models. Finishes include chrome, stainless steel, brass, white or Navajo white, and black chrome, with matching adjustable escutcheon ring. Viking Corporation.

Circle 108 on reader service card

Sport-Flex maple hardwood flooring is constructed with foam expansion joints that enable it to resist buckling problems caused by humidity fluctuations. The system can be installed at or below grade level over existing synthetic flooring. Each slat of northern hard maple is adhered to the subsurface. Sport-Flex flooring is delivered factory sanded and needs only light sanding before the finish is applied. Applications include basketball and racquetball courts, aerobic and dance flooring, gymnasiums, health and fitness centers, and sports arenas. Horner Flooring Company.

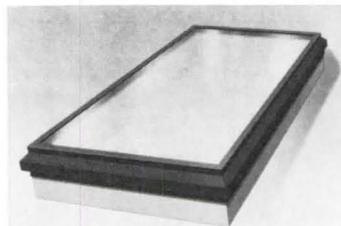
Circle 109 on reader service card

Blue Styrofoam™ insulation for walls, foundations, and roofs, is covered in a 24-page brochure. It is a tough, extruded polystyrene foam insulation having a structure that provides the material with its distinctive properties. The brochure discusses physical properties and product applications, and provides specifications. Dow Chemical U.S.A.

Circle 203 on reader service card

Sign catalog covers cast, fabricated and cut-out letters, custom plaques, and logos in aluminum, bronze, and brass. Other products in the 24-page catalog include post and panel, plastic, handicapped and interior signage, crosses, and caducei. Mills Manufacturing Company.

Circle 204 on reader service card



Stationary roof windows in two new longer sizes have a natural wood interior and a low-maintenance exterior prefinished in Terratone™ (earth tone) to match the company's other product lines. Both windows are 6'-¾" long; one is 1'-10" wide; the other is 2'-5⅞" wide. High-performance glazings are available in tempered and high-altitude varieties with metallic coatings that block radiated heat. Andersen Corporation.

Circle 110 on reader service card

YA YA HO, a sleek, German-engineered lighting system, is composed of four elements that drape over two parallel wires, with power generated by a transformer that reduces 110-voltage to 12 volts. The halogen lighting elements are both horizontally and vertically mobile, creating a versatile system. Five individual sets are available, and all elements are interchangeable. Tech Lighting.

Circle 111 on reader service card

The ET716CK seven-day switch provides lighting control based on both time of day and ambient light level. The photo sensor can be remotely mounted up to 2000 feet from the time switch, using low-voltage bell wire. An electronic delay prevents loads from switching on and off because of sudden changes in light levels. The switch is easy to program and a battery back-up protects the information for up to 24 hours. Day repeat allows a day's schedule to be repeated on other days of the week, without using additional set points. Intermatic, Inc.

Circle 112 on reader service card

(continued on page 152)

Central Park Luminaire

Leaf patterns sculptured along elliptical shell loops ornament the Sentry SCP luminaires that now light up New York's famed Central Park. At night they're energy-efficient light sources equipped with brilliant H.I.D. lamps. By day they're a classic period-piece design with high vandal resistance. Available with New York Type B or other decorative post. Write or call for information.

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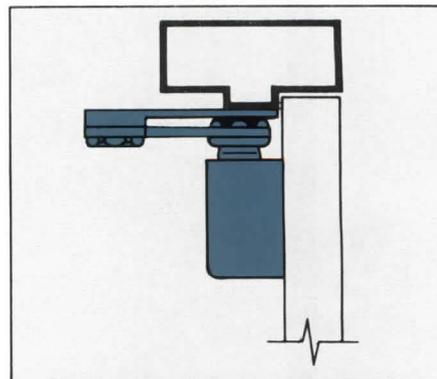


Union Station, St. Louis, MO; H.O.K., Architects, St. Louis

Restoration of Union Station in St. Louis is said to be the largest adaptive reuse project in the country and one of the most dramatic. Attention to detail was critical to the success of the project. Even the door closers for the main entrance, a high traffic area in the mammoth structure, had to meet strict per-

formance criteria. Cush-N-Stop®, a 4110 series Smoothee closer was specified. These heavy duty closers have a built-in limiting stop preceded by hydraulic back check to cushion the opening swing of the door. Their efficient operation, easy regulation and durability have been proven after many

years in the field. For more information, see Sweet's Section 8. Or, in U.S.A., contact LCN Closers, P.O. Box 100, Princeton, IL 61356; (815) 875-3311. In Canada, Ingersoll-Rand Door Hardware, Mississauga, Ontario LE5-1E4; (416) 278-6128.



LCN CLOSERS

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Products *continued from page 150*



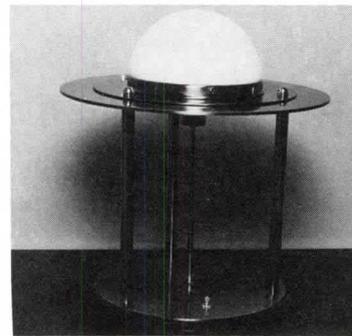
The Durable Nylon collection, woven of 100 percent Zefron Nylon, is suitable for upholstery, panels, and wallcovering. The 54-inch-wide fabric is a four-style collection, with fifteen colors in each style and exceeds industry standards for wear and maintenance. Ametex Contract Fabrics.
Circle 113 on reader service card

The Avonite Designer Gemstone Collection has been expanded to four colors: Venetian White Agate, Lapis Blue, and Emerald Jade, in addition to Rose Quartz. Marbled Golden Travertine has a finely patterned, granular surface with veining shaded from deep amber to pale honey. Arctic White granite's pale gray field is dappled with a random overall pattern of blue-gray and white granulation. Avonite.
Circle 114 on reader service card

Trem-Span traffic bearing system is a continuous expansion joint seal for sealing major expansion joints on horizontal deck surfaces. It provides a durable, watertight seal for expansion joints in parking structures, plaza decks, and pedestrian walkways. Trem-Span provides long-term protection against water penetration and has the durability to withstand the punishment associated with vehicular traffic, snow removal equipment, and chemicals used for ice and snow melting. Tremco.
Circle 115 on reader service card

Washroom Hardware, a 340-page catalog, includes detailed design information, technical specifications, full-color photographs of typical installations, and a full reference section about washroom hardware. Catalog 802 combines the traditional color catalog with a technical reference section. It also includes Federal Handicapped Standards, graphs, charts, and tables. A two-page index lists information by both product and model number. Tubular Specialties Mfg., Inc.
Circle 205 on reader service card

Will-Seal™ 50/50 is an easy to install, watertight sealant system for expansion joints on highways, parking structures, and bridges. The system consists of: an impregnated, self-expanding, foam sealant with membranes permanently bonded within the foam; an epoxy adhesive; and splice sealant. The system is rated for a full ± 50 percent joint movement. Will-Seal Construction Foams.
Circle 116 on reader service card



The Half Moon lamp, designed by Sheila Kennedy and Frano Violich, is made of brushed steel and white opolo glass. It is available as floor lamp, two wall sconce versions, a suspended ceiling lamp, or a table lamp. Ainsley Lamps.
Circle 117 on reader service card

The Prolite Sr.™ for larger architectural dimming applications, will hold up to 12 dimmer modules in any combination of Single 6.0kw, Dual 3.6kw, or Quad 2.4kw dimming capacities. It is capable of dimming standard and low-voltage incandescent, quartz, standard or dimming ballast fluorescent, and neon or cold cathode lighting fixtures from the same cabinet. It has a locking front door, fully magnetic branch breakers, split or single feed, and overheating protection. Electronics Diversified, Inc.
Circle 118 on reader service card

Skylight Design Guidelines Handbook describes the opportunities for energy savings and good lighting design offered by skylights. The 120-page manual explains how to integrate skylights with other building elements and shows how to estimate the energy and dollar savings possible. These guidelines apply primarily to manufactured, off-the-shelf skylights for commercial applications. The manual is available for \$50 from AAMA, 2700 River Road, Des Plaines, Ill. 60018.
(continued on page 154)

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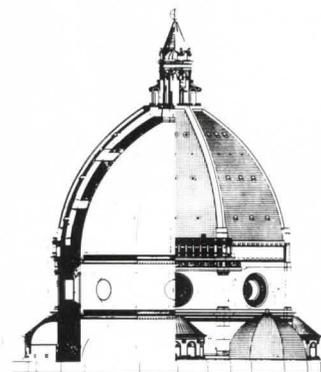
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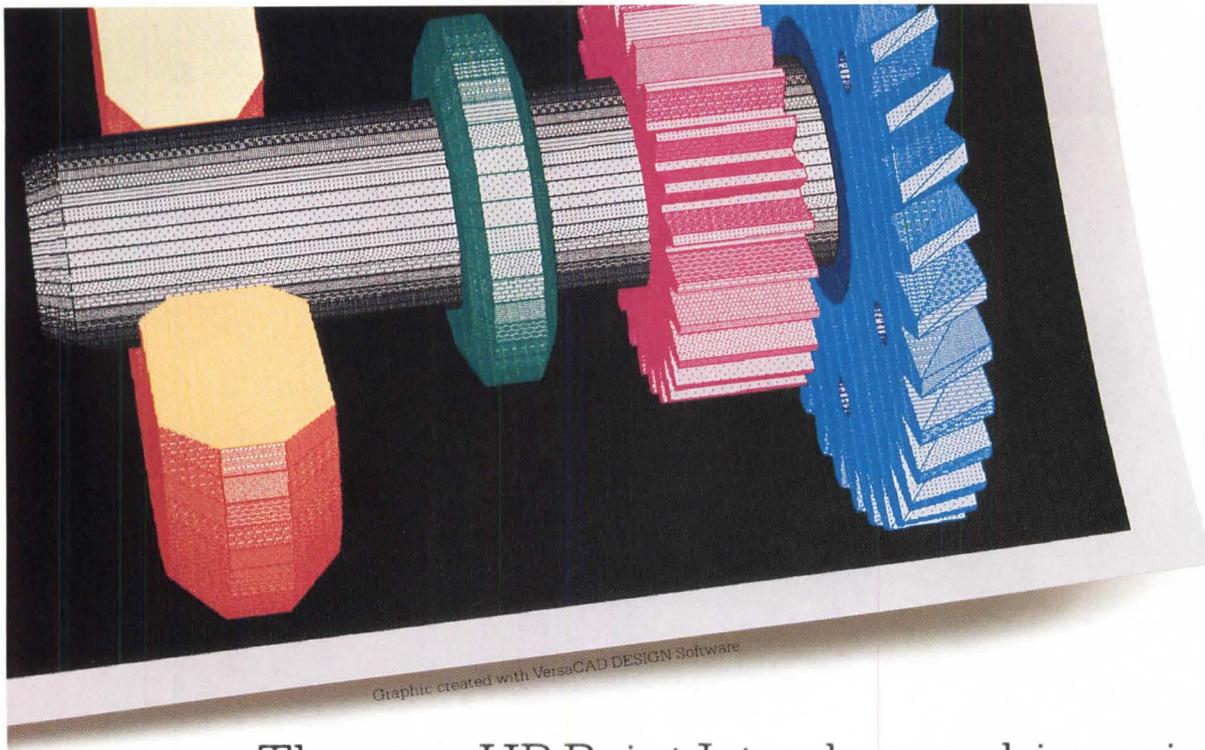
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Products (continued from page 152)



Fabric Durasan prefinished gypsum wall panels combine gypsum wallboard with soft, woven-texture fabrics. The 20 versatile "heather-look" colors allow designers and specifiers to use textile design and color without the expense of field applications. Each UL-rated panel is laminated and has fabric-wrapped square edges for precision butting and panel-to-panel alignment during installation. Fire-Shield gypsum cores can be specified. Gold Bond Building Products.

Circle 119 on reader service card

Vertical Reciprocating Conveyors for installation in existing elevator shafts offer multiple-level access. The lifts provide safe, efficient, low-cost vertical handling in older, multilevel buildings; installing in existing

shafts reduces costs even further. A 20-page, four-color catalog provides information on the company's complete line of VRCs, safety requirements, and planning guide. Pflow Industries, Inc.

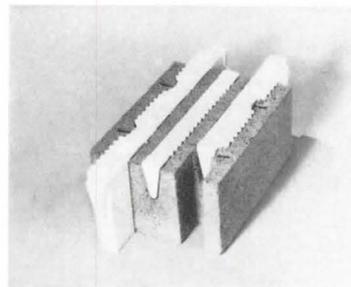
Circle 206 on reader service card

Grinnell Sprinkler Systems & Equipment catalog details the company's complete product line including: Aquarius flush sprinklers, bulb and solder type sprinklers, special purpose sprinklers, accessories and nozzles, alarm and supervisory devices, and valves. Included in the 32-page, four-color catalog are system schematics for wet pipe, dry pipe, electro-spray deluge, and electro-spray preaction systems. Grinnell Fire Protection Systems Company.

Circle 207 on reader service card

Rolling Doors and Grilles brochure discusses these categories plus operators. The 24-page catalog covers each product with illustrations and description. There are specifications and detail drawings. Operation is manual, chain, crank, or motorized. North American Rolling Door, Inc.

Circle 208 on reader service card



The IMSI Block Wall System combines concrete block and expandable polystyrene insulation inserts, which yield a strong masonry wall with a thermal rating of R-18. The block contains two 3/4-inch conduit holes that run vertically through the insulated or grouted block and align with the blocks immediately above and below. A feature of the IMSI wall system is the ability to preplan the electrical wiring or to install it at any later time. Insulated Masonry Systems, Inc.

Circle 120 on reader service card

Plaster in a Roll is a gypsum-impregnated flexible wallcovering for concealing cracks and other wall problems. It is suitable as a replacement for conventional plaster in new construction or in remodeling and repair jobs. An 18-page publication

covers basic uses, physical properties, installation, and maintenance procedures. Charts show the results of fire hazard classification, toxicity, impact resistance, breaking load, and tear strength tests. Flexi-Wall Systems.

Circle 209 on reader service card

Rubbergard roofing systems of EPDM are described in a 16-page brochure. There are loose-laid ballasted, fully adhered sheet roofing, mechanically attached sheet roofing, Fastrac mechanically attached sheet roofing, and inverted EPDM sheet roofing. Each is illustrated, and charts provide physical properties of EPDM membrane and EPDM Formflash. Firestone Building Products Company.

Circle 210 on reader service card

Lighting guide presents over 400 lighting products: TechTrac Marquee strip lighting, TechTrac MR11 low-voltage halogen fixtures, a new range of halogen wall scones called Maya, and torchieres. It also offers a series of chandeliers, Startube, and Startape. Starfire Lighting, Inc.

Circle 211 on reader service card

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Dual glazing on a line of aluminum windows is available with a fully removable or a hinged operable interior light. Interior and exterior glazing can be glass, acrylic, or polycarbonate. Where vandal resistance is a consideration, acrylic or polycarbonate exterior glazing resists damage from rocks and other airborne objects. Venetian blinds can be mounted between interior and exterior lights. Win-Vent Inc.

Circle 121 on reader service card

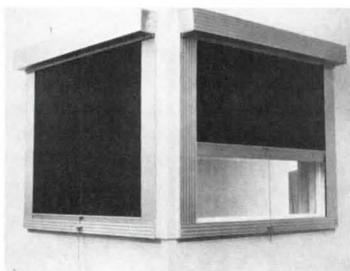
Cierra double-hung clad wood window has a clear-grained western pine interior ready for stain or paint. The outside is fully clad with maintenance-free aluminum. The waterproof glazing system seals glass and sash, preventing water penetration. Thermal plastic rubber high-performance weather stripping locks out air infiltration. An option is Heat Mirror™ or Sungate 100 high-performance glass. Louisiana-Pacific Building Products Division.

Circle 122 on reader service card

Holography is being used to show architect's models. New techniques enable holographers to record relatively large objects, such as architectural models.

One 39" x 39" hologram the company produced depicts the architectural model of a corporate headquarters that appears to have a depth of ten feet, three feet in front of the surface, and seven feet behind. Holaxis.

Circle 123 on reader service card



Lite-Tite shades are vinyl-coated fiberglass housed in extruded, anodized aluminum frames and attached to a roller mechanism at the top of the frame. They are completely lightproof, providing protection in light-safe environments such as photo labs, laser surgery centers, heat catherization labs, art galleries, and computer rooms, where both light control and heat control are important. The shades are easily cleaned and sanitized. They are offered in a variety of colors. O.C. Steele Co.

Circle 124 on reader service card

Conservation, restoration, and rehabilitation of older and historic buildings are covered in a list of books available. There also are books on structural analysis and inspection, masonry conservation, and wood, and NPS preservation briefs that explain recommended methods of rehabilitating historic buildings in a manner consistent with their historic character. PRG.

Circle 212 on reader service card

The AP-3 Wall System uses a 36-inch-wide panel incorporating two 18-inch modules. Two-inch-deep double ribs create shadow lines, which are enhanced by cover strips in contrasting colors. The ribs also add strength and durability. The brochure provides specifications on general facts, panels, material, and erection, as well as drawings of the panel and cover strip and a chart showing the six colors. Atlantic Building Systems.

Circle 213 on reader service card

Omnispension™ dual-rotating steel carriers for Modernfold operable walls, are nested one inside the other and suspended from an all-steel track. The walls move smoothly through long spans or L, T, or X intersections.

The system permits rapid alteration of partitioning needs. Omnispension track design conforms with ceiling grid systems, allowing right angle turns to become commonplace. Modernfold.

Circle 125 on reader service card

The 4000 plus fluorescent troffers are available in all standard architectural sizes and are compatible with most ceiling types. The troffers can be fitted with flush steel, flush aluminum, or regressed aluminum doors. Other features include mitered door frames, rolled edge construction, wiring adapter plates, and T-bar lock clips. Columbia Lighting.

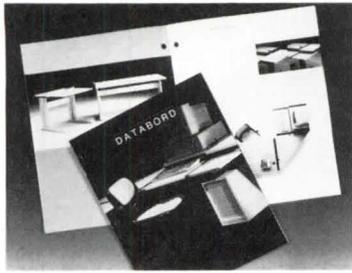
Circle 126 on reader service card

Ambassador Nova/Novatex coordinated expanded vinyl and 100 percent nylon contract upholstery fabrics are offered in 19 colors. Ambassador Nova is a flame- and mildew-resistant expanded vinyl with an antistatic finish. Novatex is 100 percent Antron™ nylon that is Scotchgard® protected for soil and stain resistance. It has a flammability UFAC Class 1 rating. Morbern U.S.A. Inc.

Circle 127 on reader service card

(continued on page 156)

Products (continued from page 155)



The DataBord 920 System of computer support furniture is ergonomically designed to reduce eye strain, back problems, and uncomfortable reaching. It allows the operator to adjust screen and keyboard surface heights separately. It is a fully expandable modular system that can be adapted to meet changing requirements. Accessories can be integrated into the system to create a unified work station. All wiring is concealed for safety and aesthetic appeal. Krueger, Inc.

Circle 128 on reader service card

Floor-loading considerations for customizing high-density mobile storage systems are covered in a 16-page guidebook, No. SC-8706. It is intended to acquaint architects, structural engineers, and space planners

with system configuration and layout alternatives for existing buildings and new construction. It discusses dead and live loads, flexibility of system rail layout, rail load distribution, relocating of systems within bays to meet allowable load capacities, and typical floor conditions. Spacesaver Corp.

Circle 214 on reader service card

Commercial Sheet Vinyl and Tile Catalog for 1987 features Tarkett's full line of commercial sheet vinyl and vinyl floor tile in installations. Color photo swatches, complete product descriptions, and recommended application information are provided for each product section. Detailed price information on approximate installed price per square foot, technical specification data, maintenance instructions, and warranty are included. Tarkett Inc.

Circle 215 on reader service card

BIOTEC workstations have independently adjustable surfaces for the VDT screen and keyboard and recessed controls for easy operator access. Details include adjustable seating, keyboard surface, palm support, footrest, and tilting VDT platform to reduce fatigue. Over-

head organizers, undertable pedestals, and shelf units place reference materials within easy reach. Units are available in oak, walnut woodgrain, and putty finishes or combinations of the three. Hamilton Sorter Co.

Circle 129 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.

United Airlines Terminal 1 Complex, Chicago (p. 95). Architects: *Murphy/Jahn, associated with A. Epstein & Sons, Chicago.* Concrete spread footings, deck concrete, and exterior paving: McHugh. Concrete caissons: Millgard. Steel frame (pipes, rolled sections, and built-up sections): Mosher Steel (prime, metal floor deck); Marine Iron & Shipbuilding, Sprague Iron (subs). Aluminum mullions, insulated sandwich panels, aluminum and glass skylights and doors: Flour City Architectural Metals. Insulating glass w/frit pattern: Falconer. Steel architectural panels: MTH Industries. Structural glazed facing tile: Hanley Brick. Hollow metal in-

terior doors: Firedoor. Terrazzo: Caretti/Metropolitan (joint venture); Capitol/Marblette (joint venture). Perforated linear metal ceilings: Alcan Building Products. Terne-coated stainless steel roof (ticketing pavilion): Follansbee Steel. Single-ply roof: DuPont Hypalon, by J.P. Stevens Roofing Systems. Waterproofing/sealants: silicon, Dow Corning Corporation. Insulation: Thermafiber, USG Corporation. Paint on structural steel: epoxy primer, TNESEC; aliphatic polyurethane, Pittsburgh Paints. Hinges: Hager and Lawrence. Locksets: Corbin. Door closers: LCN. Panic exit hardware: Von Duprin. Public address system: ALCHA. Carrier delivery system: Webb Industries. Pneumatic tube distribution and cash systems: Translogic. Illuminated signage: Federal Sign. Baggage conveyors: Boeing Airport Equipment. Hydraulic elevators, moving stairways and walkways: Otis Elevator Company. Painted architectural steel stairs w/terrazzo treads: MTH Industries. Concourse indirect metal halide lighting, and indirect fluorescent washers in hold rooms: Morris Kurtzon. Hold rooms indirect metal halide and fluorescent (continued on page 158)

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Building Materials (cont. from p. 156)
 lighting: Sterner. Metal halide light sources: Osram Corporation. Exterior high pressure sodium lighting: Crouse Hinds. Electric distribution: Commercial Light Company and Roberts Stage (joint venture). Water closets and urinals: Eljer. Toilet stalls: Sanymetal. Water fountains: Haws. Sprinklers: Star Sprinkler Corporation, Reliable Sprinkler. Variable air volume boxes, fin tube baseboard units, and air handling units: Advance Mechanical and Reliable. Radiant ceilings: Airtite, MCC Powers. Nylon cut pile carpet: Durkan. Seating: Krueger. Ticket counters: plastic laminate casework, Jensen. Podiums and backscreens, plastic laminate casework, American Woodcraft. Miscellaneous public counters: metal and wood casework, Barsanti Woodwork and Carlson Store Fixtures. Flight and baggage information displays: Phillips & Brooks.

Meyer May house restoration, Grand Rapids, Mich. (p. 112).
Architects: Tilton & Lewis Associates, Inc. Tile roofing and pavers: Ludowici-Celadon. Waterproofing: Grace Products. Insulation: Owens-Corning. Paint: Benjamin Moore. Intercom: Aiphone. Fire and intrusion detection: Pyrotronics. Snow-melting gutter: Raychem. Lighting: Sterner, McPhilben, Kim, Lucifer. Circuit breaker boards: Square D. Plumbing fittings: Chicago Faucet Co. Heating system: American Air Filter, Weil-McLain, Bell-Gossett. Environmental control systems: Honeywell. Carpets: PWV Studios. Reproduction lamps: P.A. Fiebigger, Grand Rapids Art Glass. Upholstered furniture reproductions: Ralph Rye. Reproduction casegoods: Interior Woodworking Corp. Reproduction fabric: Scalamandré.

Jacobs House I, Madison, Wis. (p. 124). *Architect: Frank Lloyd Wright; John Eifler, restoration architect.* Redwood: California Redwood Association. Single-ply roofing: Celotex. Fiberglass insulation: Owens-Corning. Custom windows and French doors: Aspen Woodworking; Curtis Platt; Bradley Lynch. Insulating glass: Lake City Glass. Flooring: Burke Flooring. Floor paint: Lindsay Finishes. Hardware: Stanley Building Products. Door bolts: Builders Brass. Cremona bolts: Baldwin Hardware. Radiant heating pipe: Shell Building Products. Tables: Wilson St. Woodworks. Upholstery fabrics: Artlee; Ben Rose.

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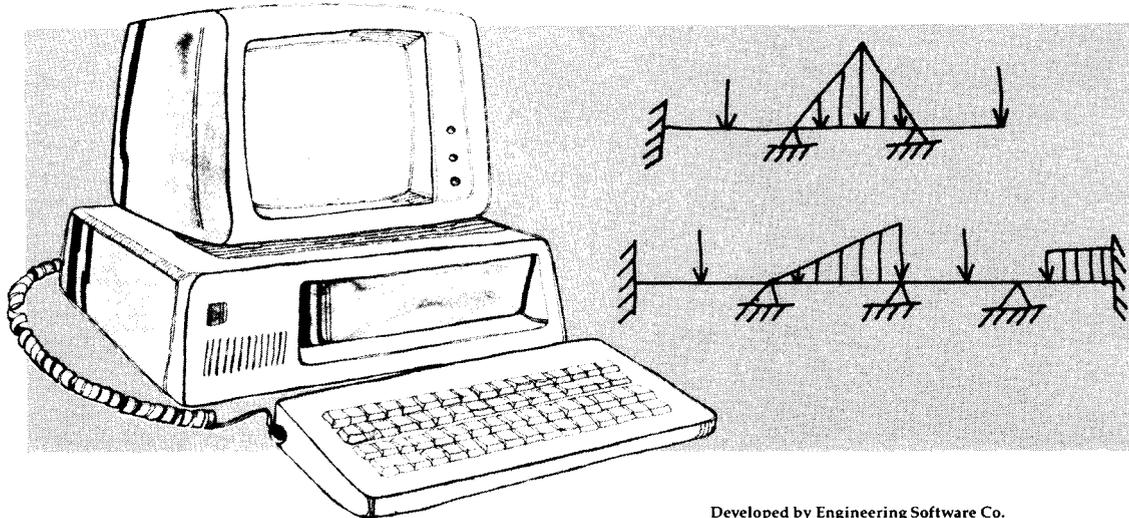


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Malibu, California, house by Richard Meier & Partners.

The Image of the House

The December issue will feature six houses, each of which pursues a different architectural vocabulary and offers a different setting for domestic life. They are: two California houses, one by Richard Meier & Partners and the other by Barton Phelps, an Arkansas house by Fay Jones and Maurice Jennings, a Minnesota house by Frank O. Gehry & Associates, an Illinois apartment by Krueck & Olsen, and a Connecticut house by Jed Johnson/Alan Wanzenberg & Associates.

Also in December

Another feature will focus on spec-built mansions, with Princeton, N.J., as a case study. An expanded products and literature section on residential items also will be included in the issue.

Future Issues

The January P/A will present the winners of the 35th annual P/A Awards program as well as a timeline of the competition since its beginning in 1954. February's issue will feature several past award winners, now complete.



Randolph Tower/Chicago, Illinois
White terra cotta surface is shown
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Letter of interest, resume and the names of three references should be submitted to Professor Leon Glicksman, Room 3-433, Department of Architecture, MIT, 77 Mass. Ave., Cambridge, MA 02139 by November 15, 1987.

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NORTH DAKOTA STATE UNIVERSITY, Department of Architecture with programs in Architecture and Landscape Architecture is seeking applications for the position of Department Chairperson. The Department has a student body over 300. The position is a full-time appointment divided between teaching and administrative duties. The Chairperson will be appointed as a senior faculty member, beginning July 1, 1988. Minimum requirements: professional registration in Architecture or Landscape Architecture prior administrative and teaching experience totaling at least ten years and a Master of Architecture and/or Landscape or related field. Salary commensurate with qualifications and experience. For further information contact Chairperson Search Committee. Applications must include an outline resume; expanded resume; and names, addresses, and telephone numbers of at least four professional references. Applications until January 31, 1988 or until a qualified candidate is hired. Send applications to: Vincen Hatlen, Chair of Search Committee, Department of Architecture, P.O. Box 5285, Fargo, ND 58105-5285. NDSU - AA/EO Employer.

Department of Architecture College of Architecture, Art & Planning

Position: Assistant, Associate, or Professor of Architectural Design. The Department of Architecture is seeking candidates at the Assistant, Associate, or Professor level for positions in Architectural Design. Candidates must be qualified to teach architectural design as well as courses in another area of the curriculum, such as building construction, architectural theory, profession of architecture, design communication, etc. Appointment criteria will include previous teaching experience, scholarly preparation, creative work or research in design, Academic scholarship and administration are obligations of these positions. Rank and salary are commensurate with experience. Curriculum vitae and supporting materials must be submitted to:

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Application deadline: December 15, 1987. Interested candidates should send a letter and complete curriculum vitae along with the names of three references to the Chair of the Search Committee: Dr. Thomas F. George, Dean; Faculty of Natural Sciences and Mathematics; 411 Capen Hall; State University of New York at Buffalo; Buffalo, New York 14260.

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FACULTY POSITION

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EOE/AEE

The Department of Architecture, University of Florida, anticipates several full-time tenure track positions for Fall, 1988, as described below. Teaching, professional experience, and research activity are preferred for all positions. All positions require a professional architectural degree and a Master's or Ph.D. degree. Rank and salary commensurate with qualifications and experience.

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ATTENTION: ARCHITECTURAL FIRMS

New York City is soliciting qualifications from architectural firms to design two new state-of-the-art 100 bed juvenile detention facilities to replace Spofford Juvenile Center, NYC's only secure juvenile facility. The basis for design will be the Department of Juvenile Justice's facility program. The goal of this high priority \$50 million plan is to provide an enriched environment for adolescents within a facility that is both secure and programmatically effective.

Firms are sought with a record of innovative, responsive, high quality design work; experience need not include design of secure facilities.

Responses are limited to:

- a) Federal Forms 254 and 255;
- b) Firm's brochure;
- c) Portfolio of relevant design work including plans, sections and elevations;
- d) Brief description of firm's design philosophy relative to this project;
- e) Production capability.

Submissions are due by 12:00 noon, November 30, 1987 at the Department of General Services, Municipal Building, 15th Floor, 1 Centre Street, New York, NY 10007, Attention: Mark Walker.

Firms which in the opinion of the City possess the experience, personnel and capability to design the facility will be asked to submit comprehensive proposals.

Edward I. Koch, Mayor
Hadley W. Gold, Commissioner
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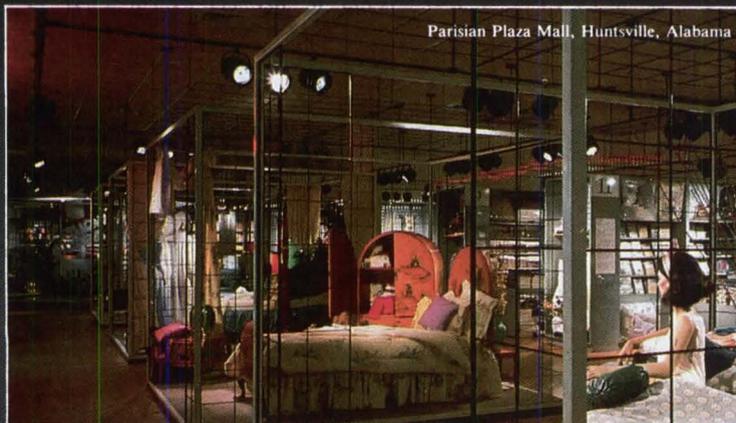


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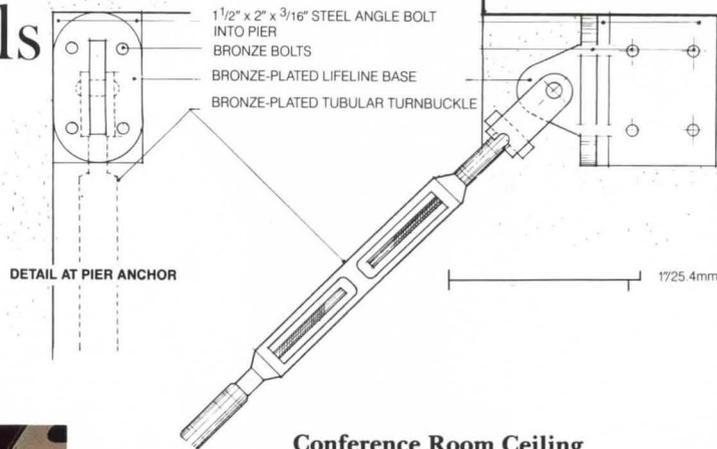
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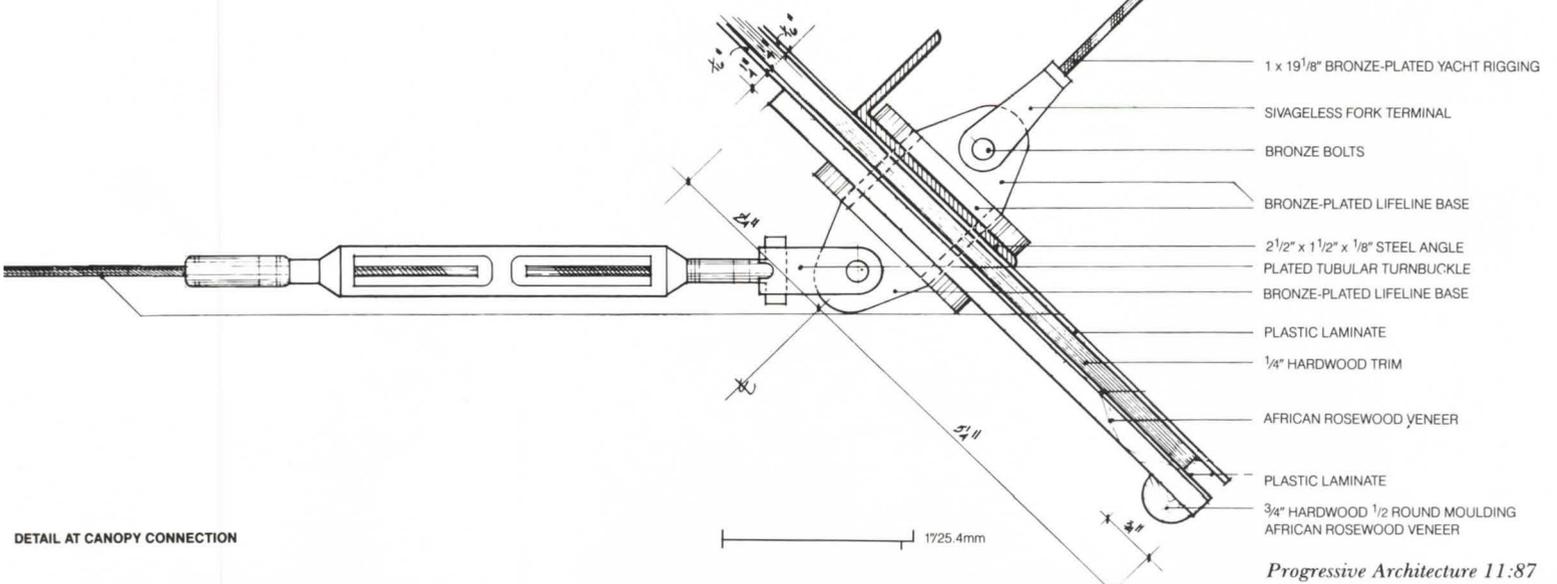
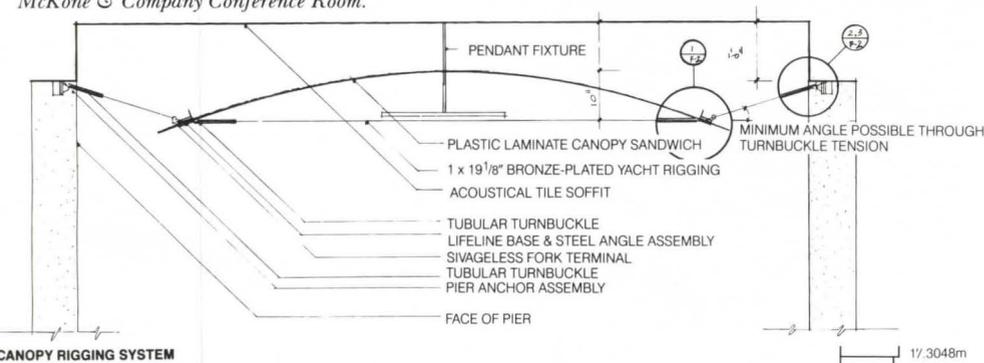


McKone & Company Conference Room.

Conference Room Ceiling
McKone & Company
Las Colinas, near Dallas, Texas
 Natsios & Lee, in their design of a conference room for the advertising and public relations firm of McKone & Company, were asked to innovate and to use materials by some of McKone's clients, such as Wilsonart and S.R. Wood. They did so with great aplomb. The room has a secondary ceiling that consists of 1/4-inch plywood sheets, faced in two different laminate patterns and edged with an African Rosewood veneer, supported from above and held in compression by bronze yacht rigging. Track-mounted wall panels slide, automatically, into slots in the ceiling.

Major Materials: Plastic laminate: Wilsonart. African Rosewood veneer: S.R. Wood. Bronze yacht rigging: Manhattan Marine Supply. Paint: Benjamin Moore. Pendant fixtures: Boyd.

Chas. McGrath



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Page No. Circle No.

Above View, Inc. 140 **300**

Ajusto Equipment Co. 140 **301**

Alumax/Magnolia Div. 31 **302**

American Gas Association 63 **308**

American Stair-Glide Corp. 140 **310**

Amoco Fabrics & Fibers Co./Carpet Yarn . . . 153 **304**

Amoco Fabrics & Fibers Co./Patchogue
Plymouth Div. 76 **303**

Andersen Corp. 12, 13, 80, 81 **305, 306**

Architectural Area Lighting 148 **307**

AT&T International 800 Service 77 **001**

B.I.A.—Brick Institute of America 4 **311**

Best Western International 158 **002**

Bethlehem Steel Corp. 141 *****

Borden Films 40 **312**

C/S Group C4 **314**

Canon Micrographics 139 **313**

Chemstar, Inc. 86W **315**

Cheney Co. 142 **316**

Chicago Metallic Corp. 159 **317**

Columbus Coated Fabrics—Sunwall/Suntex . . 8 **318**

Columbus Coated Fabrics—Guard 157 **319**

Commonwealth Aluminum/DeSoto 33 **320**

Compaq Computer Corp. 55-62 *****

DPIC Companies 54 **321**

Dataprint Corp. 142 **322**

DesignTex 82, 83 **331**

DeSoto/Commonwealth Aluminum 33 **320**

Devine Lighting 66, 67 **332**

Door and Hardware Institute 164 **324**

Dover Elevator Systems, Inc. 47 *****

Dryvit Systems, Inc. 20, 21 **325**

DuPont Co.—Antron 10, 11 **326**

DuPont Co.—Cordura 35-38 *****

DuPont Co.—Corian 134, 135 **327**

DuPont Co.—Hypalon 91 **328**

DuPont Co.—Silver Slicks 48, 49 **329**

Elliptipar, Inc. 142 **334**

Epic Metals Corp. 46 **333**

Fashion, Inc. 45 **335**

Forms + Surfaces 6 **336**

General Binding Corp. 143-145 **337**

Hewlett Packard Co. 154, 155 **339**

Hewlett Packard Co./Manufacturing
Systems Group 84, 85 **341**

Homosote Co. 138 **340**

Ikegami Electronics U.S.A., Inc. 90 **343**

Integrated Ceilings, Inc.,
USG Interiors, Inc. 147 **342**

Advertiser

Page No. Circle No.

Kardex Systems, Inc. 146 **344**

Kawneer Co., Inc. 43, 68, 69 **345, 346**

Kentile Floors C3 **347**

Kim Lighting 14 **348**

Kimball Office Furniture Co., and Artec 94 **349**

LCN Closers 151 **350**

LOF/Glass 75 **351**

Ligne Roset 87W **352**

Marvin Windows 2, 3, 92, 93 **353, 354**

Herman Miller, Inc. 52, 53 **355**

Minolta Corp. 34 **356**

National Partitions & Interiors, Inc. 158 **003**

Nevamar Corp. 70, 71 **359**

Nippon Steel Corp. 39 **360**

Pella/Rollscreen Windows & Doors 22, 23 **361**

Pflow Industries, Inc. 28 **364**

Prestressed Concrete Institute 29 **367**

Progress Lighting 24, 168 **365, 366**

Progressive Architecture Bookstore 86, 87 *****

Progressive Architecture Statement
of Ownership 150

ProSoCo., Inc. 9, 163 **362, 363**

Roppe Rubber Co. 78 **368**

Roto Frank of America, Inc. 32 **369**

Saddlebrook 136, 137 **371-373**

Sargent 50 **370**

Sentry Electric Corp. 150 **376**

Shaw-Walker 88, 89 **375**

Sitecraft 72 **378**

Steelcase, Inc. 64, 65 *****

Symposium for Health Care Design, Inc. . . . 152 **357**

Syracuse University 152 *****

TWA 79 *****

Tectum Inc. 30 **379**

United States Gypsum Co. C2, 1 **380**

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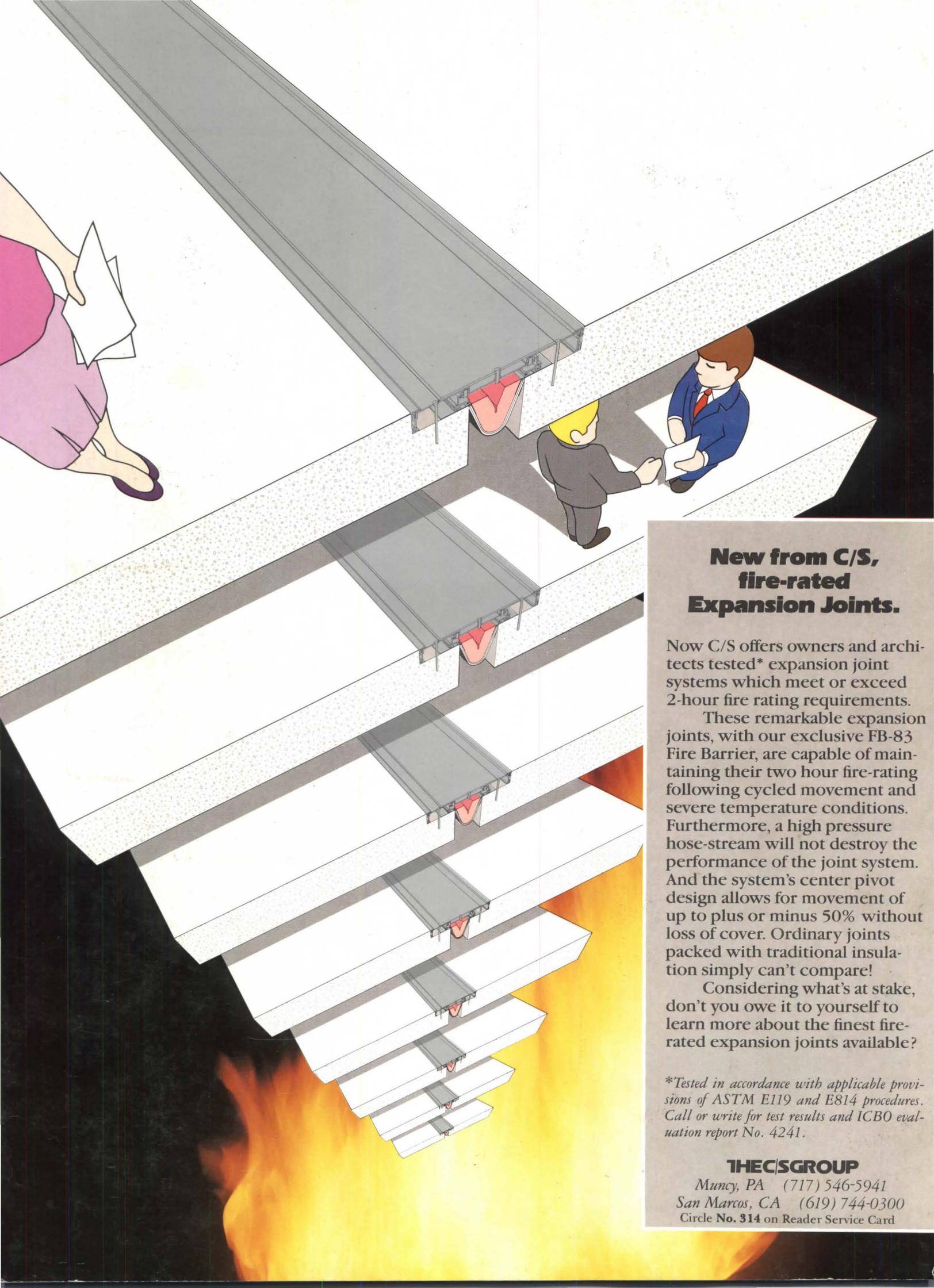
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