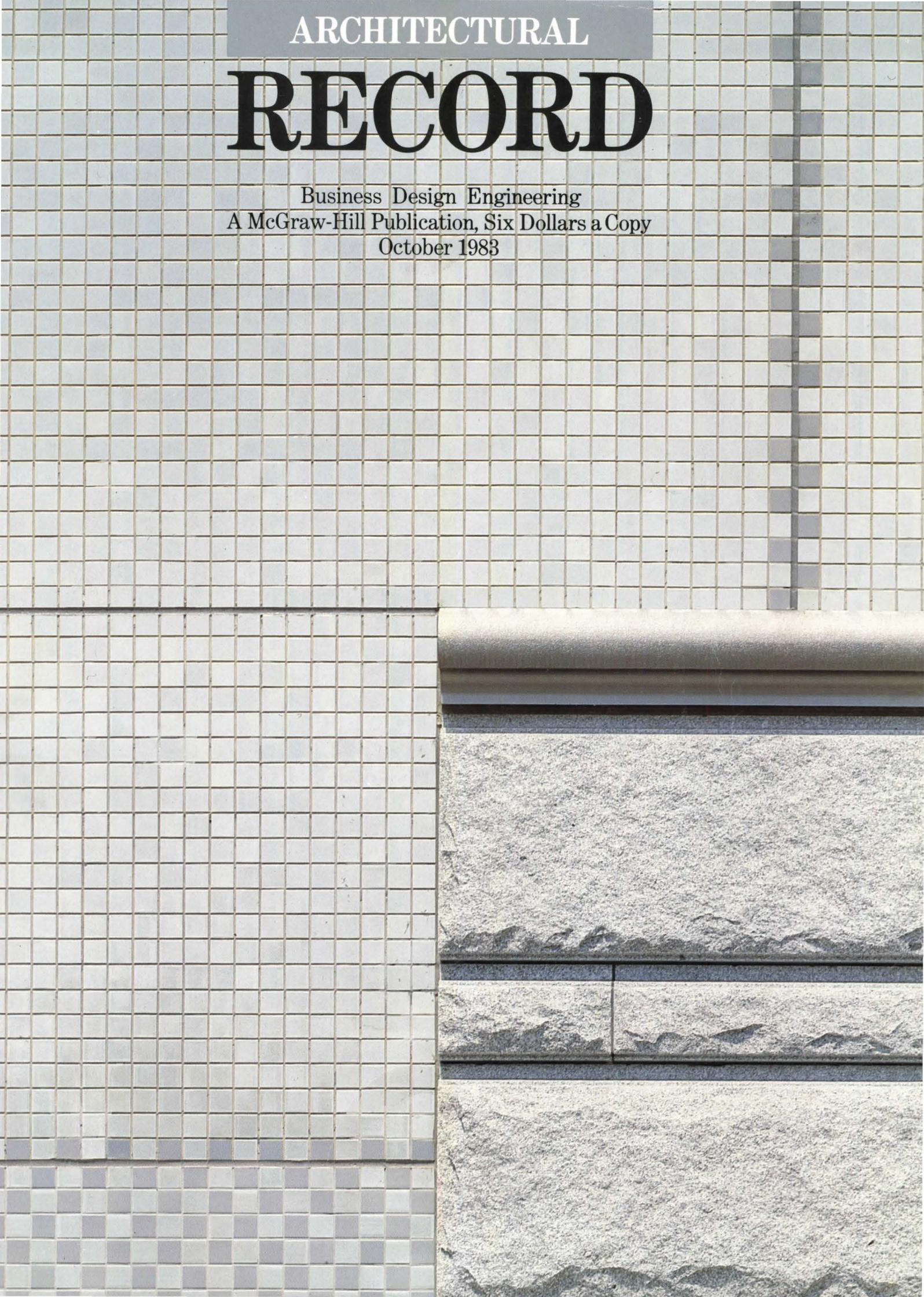
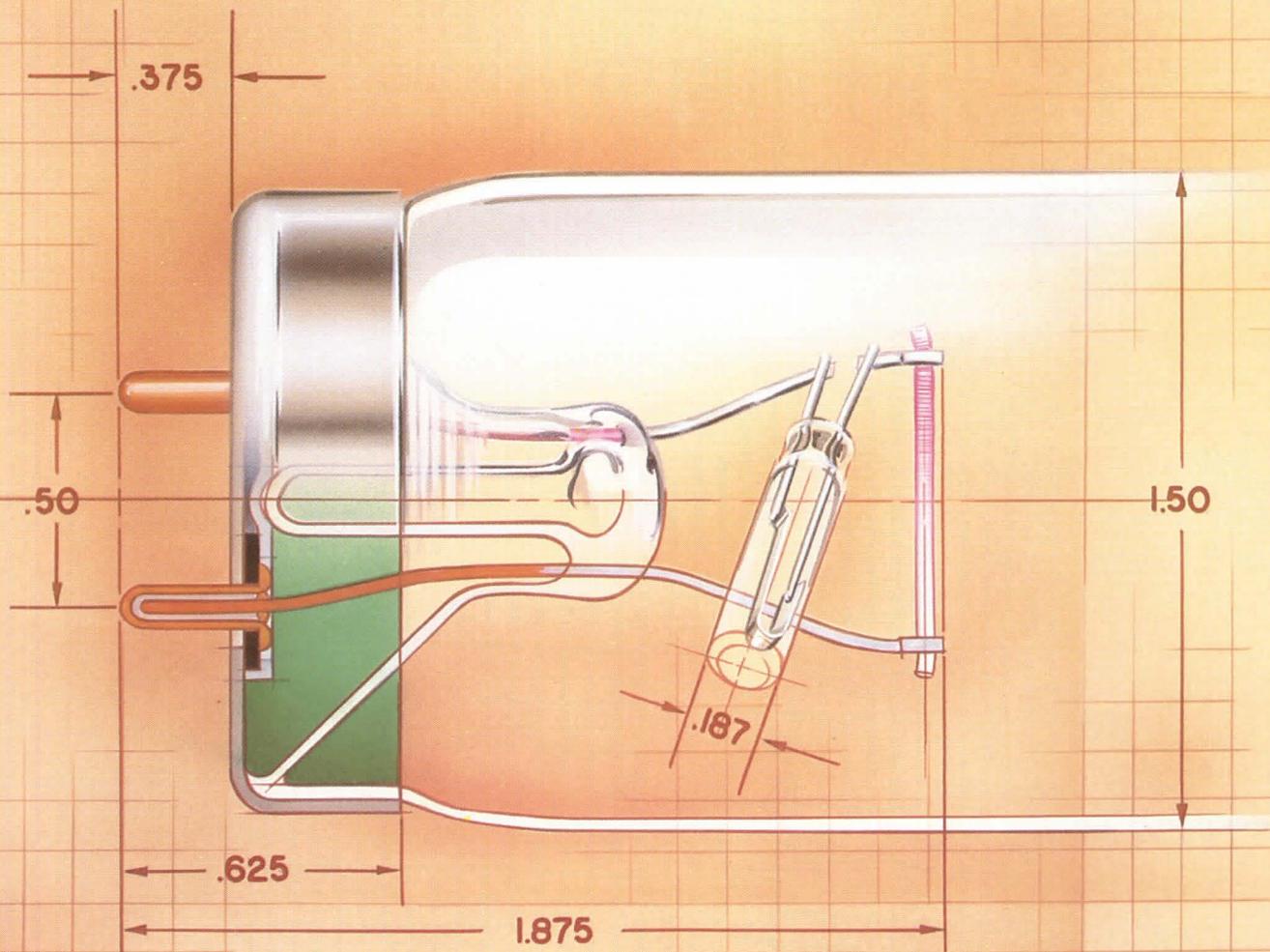


ARCHITECTURAL
RECORD

Business Design Engineering
A McGraw-Hill Publication, Six Dollars a Copy
October 1983



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The photo at left shows, soft, friable materials with poor adhesion are unable to resist normal job-site abuse. The result can be loss of fire protection capability.

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Characteristic Measured	Performance Standard	Test Reference
Impact Penetration	6 cm ³ maximum	City of San Francisco
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For further information or test results, contact W. R. Grace & Co., Construction Products Division, 62 Whittemore Avenue, Cambridge, MA 02140, (617) 876-1400.

GRACE

Your comment on the August 1983 editorial page about modern skyscrapers "...almost all have bases and middles and tops..." jogged my memory bank—at about 6.7 on the Richter Scale.

During a recent trip to Houston, a friend noted that of the new skyscrapers, either completed or under construction, he thought the Transco Tower was very nice "since it had been finished." The reference was made to the "top."

Maybe we in the design professions are truly starting to see the world beyond the eyes of our colleagues.

James A. Wafford, AIA
Foster, Henry, Henry and Thorpe, Inc.
El Paso

Reading your special issue, *Record Houses 1983* had its bright moments, but over-all I found the issue disappointing. If these are the best houses the profession can produce, I am concerned.

However, the real item which drove me to write this letter was the Frank Gehry house in Venice, California. I have no qualms with the house itself, especially since the client was so pleased. Instead I am surprised that you compared Mr. Gehry to an until-now-unknown "California lineage" of Charles Eames, Maybeck, and Greene and Greene. How dare you compare the exposed corner beads, 2x4 balloon frames, and sheet metal hangers with the artfully thought out and hand-sanded joints of Greene and Greene! ...
Douglas J. Pfendler
New York City

Re: Round Table on Housing [*Record Houses*, mid-May 1983], why is it in an era when communications are instantaneous, advances in technology spirited and responsive and when in less than two decades we will be in the 21st century—why are architects and builders having the same discussions they have had for almost a century?

Primarily because each in time and turn feels they respond to that elusive "marketplace," that each decides they are the "tastemakers," the "trendmakers." For the most part we spend most of our time at odds with each other, resulting in a serious case of a stifled industry full of fadistic trends and applied archaeology.

There was not one new idea in the pages of 8-point type, not a concept, just gripes ...
Here is a challenge for

ARCHITECTURAL RECORD. A housing competition! Multicategory. NOW!

There has not been a decent competition in years sponsored by a professional publication. And this time let's not bury it in the pages of our incestuous, self-serving publications. Let's have it out in the open, for all to see. We can influence the future if only we become as visible as the computer industry. I am certain that more time is spent selecting a computer or a car than consideration in the purchase of a home ...

E. "Manny" Abraben
E. Abraben, AIA RIBA & Robert Colavolpe, Architects, Inc.
Fort Lauderdale

Normally, if you look at something long enough and often enough you get to liking whatever it is you are looking at—or at least develop a tolerance for it. I certainly hope that you all get on to something else with your covers real soon. I'd hate to wind up liking what you have been pushing at us the last several months.

John L. Webb, FAIA
Bodman, Webb & Noland, Inc.
Baton Rouge

The article on the Saenger Theatre in the August issue is wonderful...even the tinny thunder. You deserve a...flourish of drums...for the superbly crafted layout and fine copy.

When we first saw the Saenger at the initial interview, John Holabird suggested that we not take the job because the theater was in such disastrous shape. There was a lot of blood, sweat and tears in turning it around. Your article provides a kind of satisfaction that such efforts are worthwhile and will hopefully spur other architects and municipalities to take the plunge.
Roy J. Solfisburg
Partner
Holabird & Root
Chicago

My compliments on the library building-types feature. Of course I confess my particular interest in the segment on the New York Public Library Periodical Room. The layout showed the Periodical Room at its sumptuous best, as well as effectively indicating the extensive plans for the future.

Richard Lavenstein
Rivkin/Weisman Architects
New York City

October 9 to December 23
"Shift: LA/NY," an exhibition of works by 17 artists who began their careers in Los Angeles but brought their expertise to New York City, contains more than 90 drawings, sculptures, paintings and video displays; at the Neuberger Museum, State University of New York, College at Purchase, Purchase, N.Y. 10577 (914/253-5575).

October 12-14
"Chautauqua in Mississippi: The History of the Small Town," a symposium sponsored by Center for Small Town Research and Design; at Mississippi State University. Contact: School of Architecture, P.O. Drawer AQ, Mississippi State University, Mississippi State, Miss. 39762 (601/325-2202).

October 13-17
Exhibition, "Surface and Ornament," winners of Formica Corporation's design competition and objects designed by invited entrants using *ColorCore*; at The Puck Building, 295 Lafayette Street, New York City.

October 13 and November 17
Course on construction of slabs on grade will be held in Washington, D.C., and Phoenix, Arizona, respectively; sponsored by the American Concrete Institute. Contact the Institute's Education Department, P.O. Box 19150, Detroit, Mich. 48219 (313/532-2600) for details.

October 17-18
Lightning Protection Institute meeting outlines new procedures for lightning protection quality control; at the Sheraton World Hotel, Orlando, Fla. For more details, contact: Lightning Protection Institute, 48 N. Ayer St., Harvard, Ill. 60033 (815/943-7211).

October 24-25
Second Annual Pacific Northwest Computer Graphics Conference, "Applications on the Leading Edge," includes presentations, exhibits, displays and films; at the Eugene Conference Center, University of Oregon, Eugene, Ore. 97403-1204 (503/686-5555).

October 24-26
Seminar for beginners on "Basics of Illumination." Contact: Independent Testing Laboratories, Inc., 3386 Longhorn Road, Boulder, Colo. 80302 (303/442-1255).

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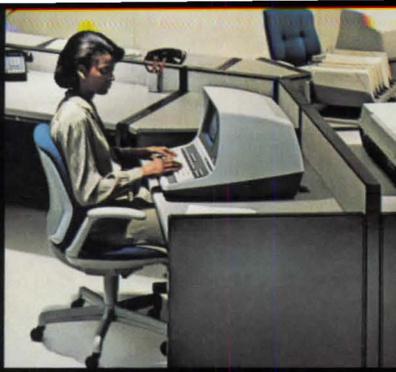
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Sat in on a thought-provoking conversation the other day. Associate editor Peg Gaskie arranged a discussion in the office with three architects who have a lot of experience in, and are very good at, hospital design—Michael Bobrow of Bobrow/Thomas & Associates in Los Angeles, Tom Payette of Payette Associates in Boston, and Joe Sprague, who is director of design and construction of the American Hospital Association based in Chicago. What provoked the thinking was not just the expertise of these three professionals in a difficult area of architecture, but their broad expertise in the whole field of health care—what kinds of health-care facilities need to be built, and what kinds don't; the fast-changing tactics of how you capitalize hospitals under Federal and other government incentives; the increasing need for care of the elderly; the increase in proprietary, profit-making hospitals as opposed to voluntary facilities and how that affects both health care and the design of health-care facilities; and the drive for efficiency in health care to slow the enormous annual increases in costs.

What these three professionals were talking about is not just meeting client needs, but understanding client needs perhaps before and perhaps better than the client—in the case of influencing what is happening in the health-care field.

Peg Gaskie's article, which she began researching with this mini-Round Table, is some months off—but consider a few of the ideas that were explored in the four-hour conversation with Messrs. Bobrow, Payette, and Sprague: Shouldn't capital-expense passthrough be permitted not on the basis of costs but on the efficiency of the nursing unit? The incentives for hospital administrators under previous subsidy programs called for expansion; now they call for outreach into the community. What are the implications for architecture? What are the design and the health-care implications of the vast increase in proprietary, for-profit health-care organizations? (The Hospital Corporation of America is now probably larger than the Veterans' Administration in the health-care field.) If the competitive market takes over the health-care field (as with the deregulation of airlines), how will the poor and elderly be served? On the other hand, won't the clients for-profit health-care facilities take a longer look at design for both greater efficiency (read lower costs) and more pleasant/less forbidding facilities as a way to attract patients? What happens to the education of medical students and interns if voluntary-care hospitals continue to diminish? Given the increasing need for care of the elderly (whose medical costs are estimated at eight times those of under 65s), what changes in hospital design are called for? Do we look for more health care in facilities less costly to build than a hospital—elderly housing or congregate living with nursing care, or hospices?

Well, enough. There's a moral: In this increasingly complex, complicated, fast-evolving world, don't more architects need to spend more time understanding the market for architecture—what needs to be built and why? Not primarily from the point of view of getting that next job (though no one can be against that), but from the point of view of creating better architecture through a better understanding of (or perhaps by anticipating) client needs. It's not just health care. How many architects have contributed to the fight for (or helped develop tactics to build) low-income housing? Consider this month's Building Types Study on preserving landmarks—via a new kind of nonprofit entrepreneur and some powerful new financial tools for saving worthwhile older buildings. Must we wait for clients (good guys or bad guys) to set the standards for buildings we need—and shouldn't we be doing some basic thinking about what is really needed? It's worth doing, it seems to me. *W. W.*



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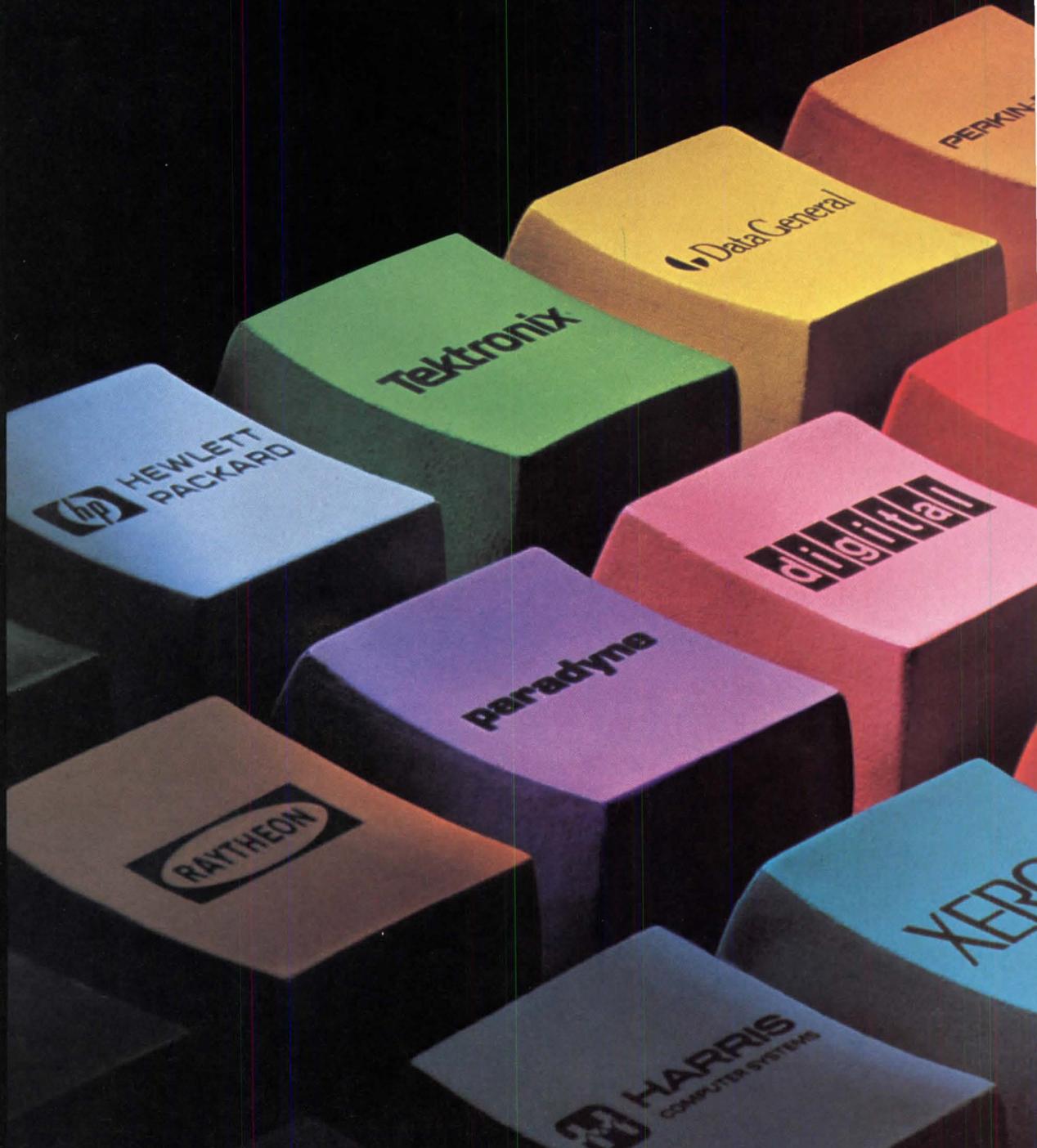
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Circle 5 on inquiry card

AIA to hold third biennial management conference

To be held October 27-28 in Kansas City, the conference is entitled "Post Survival Management: New Clients, Technology, Services, Practice." Featured will be presentations on long-term involvement in the life cycle of buildings, new computer-aided design and documentation technologies, new architectural services, new ownership-transition practices, the effect of government-funding cutbacks (a seminar led by Charles Sampson of the GSA), the participatory client (led by Russell Jordan, vice president of Marriott), designing buildings for computers, architects as developers, and preconstruction and postconstruction services. Speakers include AIA vice president R. Bruce Patty; T.H. Brooke, president of McCormick Construction Company; Edward Lawless of the Midwest Research Institute; M. Arthur Gensler; and Donald J. Hall, chairman of Hallmark Cards. For registration information, contact William Hooper at 202/626-7532.

Calling yourself an interior designer in Connecticut could bring problems

Acceding to pressures being exerted in many states by professional organizations, Connecticut has passed Public Act 347, which limits the use of the title "interior designer" to those persons who have either passed the uniform examination established by the National Council of Interior Design Qualifications, are registered architects, or have used the title for at least one year. The effective date was October 1, 1983, and any person using the title not in accordance with the act after that date will be subject to a fine.

National research effort on building-fire toxicity called for by NIBS

A task force of the National Institute of Building Sciences has issued a 21-page "state-of-the-art" report that summarizes the results of a year-long study and calls for a national research effort to ascertain the risks from burning building materials and contents. The NIBS board notes that some 80 per cent of deaths due to building fires are caused by the inhalation of smoke and toxic gases, that the death rate in the United States from such causes is many times that of most industrialized nations, and that as recently as 1976 some model building codes dealt with the issue by stating that building products should be no more toxic than wood, although there was minimal information on the toxic nature of even that common material.

Today, the situation is even more questionable because most model codes, without the presence of commonly accepted toxicity test methods or over-all fire-hazard-assessment models, have simply dropped limitations on toxic combustion products. The report also contains recommendations for the development of technical guidelines for product manufacturers, and includes recommendations for research that will improve smoke-control systems, and develop fire-risk assessment methods that integrate smoke toxicity, ignition, flame spread, and the amount and rate of heat and smoke release. The emphasis for industry compliance with standards is that it be voluntary.

The task force had some 75 members from major building organizations, and was chaired by Wayne P. Ellis of the H. B. Fuller Company and former chairman of ASTM.

Copies of the report, "Toxicity effects resulting from Fires in Buildings," are available at four dollars each from the publication department of NIBS, at 1015 15th Street N.W., Washington, D.C. 20005.

The recommendations come in the wake of administration attempts to curtail the research capability of that part of the National Bureau of Standards, the Center for Fire Research, that has been establishing industry standards (see RECORD, April 1983, page 35).

Meanwhile, New York State has been making some progress on this issue. As reported by Atcor, Inc., a manufacturer of electrical-system components and fire-sprinkler systems and a long-time advocate of such

standards, the legislature is considering minimum state-wide codes that would employ testing methods as recommended by a report commissioned by the state from the Arthur D. Little company and developed by Dr. Yves C. Alarie at the University of Pittsburgh. Copies of this report are available from Arthur D. Little Inc., Acorn Park, Cambridge, Mass. 02140.

NAHB plans convention and issues warnings

A four-day agenda given January 21-24 in Houston is planned by the National Association of Home Builders for their 1984 convention. The theme will be "more affordable ways to build, buy and sell in changing times." More than 700 exhibits are planned, and the convention is expected to draw some 45,000 attendees from the house-, apartment-, light-commercial-, and remodeled-construction fields.

The 110 planned education sessions cover business management and data-processing systems; diversification into the commercial sector; design for cost-effective and efficient building techniques; energy utilization; land development; current and projected financial methods and sources; remodeling and rehabilitation technology and systems; and marketing and sales procedures. NAHB also is presenting a special series of sessions designed for the remodeling and rehabilitation professional.

Meanwhile, NAHB president Harry Pryde has issued a statement that "this could be the shortest housing recovery in post-war history" if something is not done about interest rates and the effect that massive national borrowing can be expected to have on them in the long run. He set a limit of about 14 per cent as the upside tolerance point where construction could once again be expected to stop.

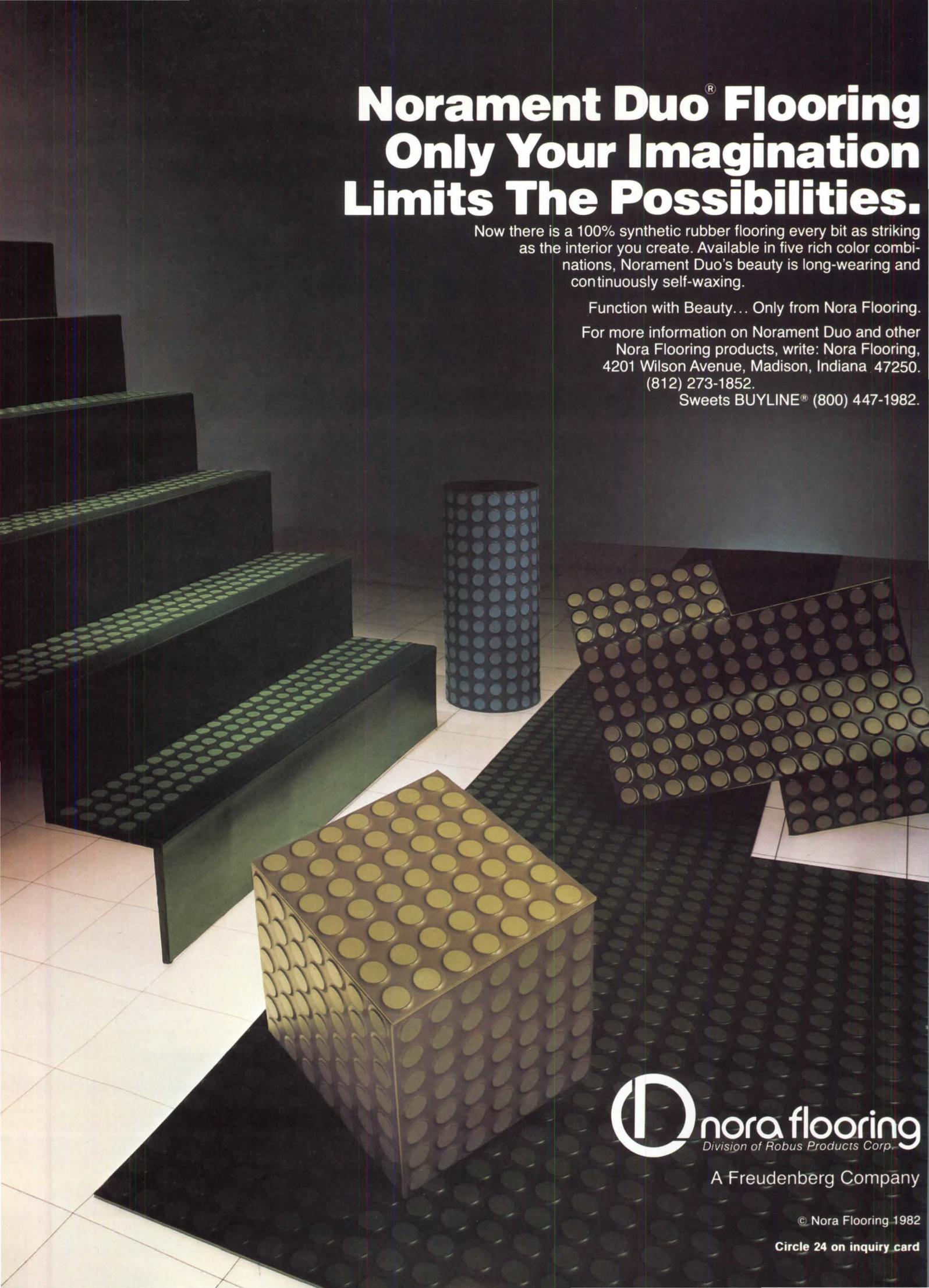
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Circle 24 on inquiry card

Economics: Interest rates should decline —but then watch out

By Phillip E. Kidd

During the summer, it became clear that the Federal Reserve had been tightening monetary policy for some time. Its action was an obvious reaction to the spreading nervousness throughout the financial markets that the previous easy-money policy could re-ignite inflationary pressures as early as 1984.

Interest rates, which started rising in the spring, responded by climbing even higher. In turn, fears that steadily advancing interest rates would abort the recovery in 1984 began surfacing. These worries illustrate the difficulties facing the Federal Reserve as it tries to promote economic expansion without fueling inflationary expectations.

Often the press today seems to treat this as a short-run issue that affects only the next year or two. Actually, the clash between economic growth and inflation control with the consequent pulling and hauling on Federal Reserve policy could be a decade-long battle.

Even a casual glance at our economy reveals many serious deficiencies that necessitate long-term solutions. To generate more employment, our industrial capacity needs extensive upgrading and enlargement to regain our competitive position in the world. This will involve enormous dollar amounts, some for our "smoke stacks" industries, but most for the growth industries of energy, communication, and hi-tech.

Simultaneously, and as vital, the nation's infrastructure—bridges, roads, sewer and water systems, etc.—will require a massive investment of funds for rehabilitation and additions. Meanwhile, the nation must find astonishing sums of money to help the disadvantaged, maintain the income of the retired, as well as prepare us militarily.

In effect, fiscal policy will not be changed easily, as growth in government expenditures (including state and local governments) continues to absorb huge sums of dollars to finance just these latter objectives.

Moreover, piled on top of these mammoth public and private investment requirements is the staggering demand for housing credit. The past year has amply demonstrated the enormity of that pent-up demand and the magnitude of activity that can take place in a short space of time when interest rates are low enough and mortgages are readily available.

Every one of these items requires long-term loans. Unfortunately, because of the

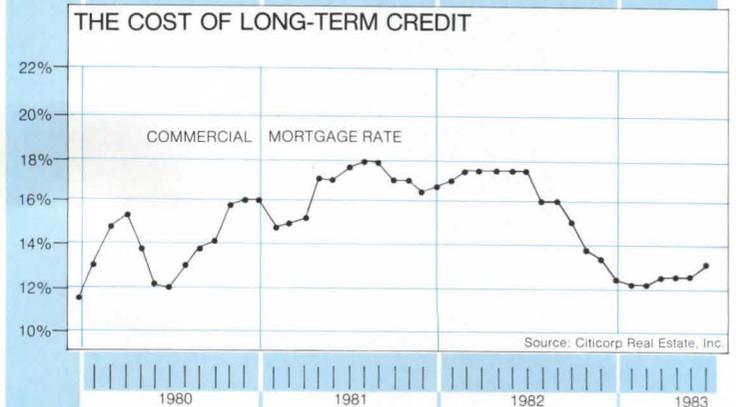
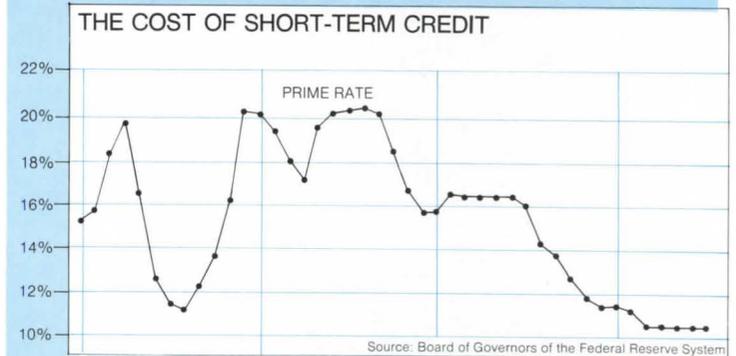
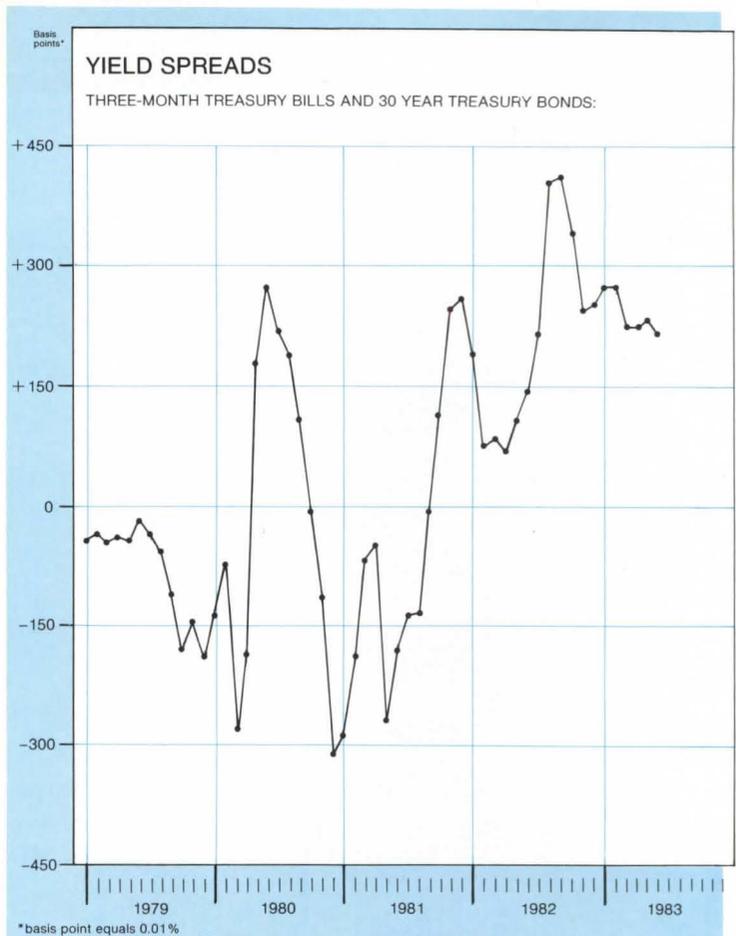
nation's low savings rate and the need to expand money gradually to avoid generating inflation, the supply of funds through much of this decade is likely to be well below the potential demand for credit. As a result, there will be an intensive competition for long-term credit, which will keep real interest rates much higher than in the past.

In this environment, the shape of the yield curve will be crucial. During the early 1980s when monetary policy was excruciatingly tight to break the inflationary spiral, the yield curve was inverted, creating a very large negative spread between short- and long-term rates (see top chart). With short rates so attractive, investors had little incentive to lend long, so the capital markets (bonds, mortgages, stocks) fell into another, but more moderate, round of firming this spring. Long-term rates quickly followed short-term rates higher, maintaining the wide (more than 225 basis points using Treasury yields) spread between them. Consequently, even with interest rates climbing, investors still found these spreads attractive enough to supply long-term funds, keeping the capital markets working.

Nevertheless, whenever yields advance, some businesses and consumers are forced to curtail their demands for loans. In particular, the housing market is vulnerable. This summer, mortgage activity slowed noticeably, as higher rates discouraged many potential home buyers.

Sometime this fall, with credit demands weakening and the financial markets finally convinced that the Federal Reserve is serious about avoiding a future flare-up in inflation, short-term rates will soften. Immediately, investors will rush into the bond and mortgage markets, seeking to lock up high rates. In turn, rates all along the yield curve will fall. As they drop, private demands, especially in the housing market, will revive. Meanwhile throughout this period, the Federal government will be soaking up substantial amounts from the financial markets. When the expanding private demand collides with that demand, the break in interest rates will end.

During the fourth and first quarters, short-term rates will drop back into the eight- to nine-per-cent range, while mortgage rates will retreat into the 12½- to 13½-per-cent area. However, once into the spring and summer



sales season, rates are likely to start backing up toward today's levels.

The zigzag behavior of interest rates foreshadows a very uneven pattern of economic expansion in the next 15 months. In particular, housing starts, after inching downward this summer, are likely to recover and begin moving higher this fall, but at a much slower pace than before. They generally will struggle upward in 1984, but with

occasional periods of slippage. Encouragingly, retail building, which usually lags housing by two quarters, is expected to add its weight to a construction recovery throughout the remainder of this year and 1984. All of this presupposes that the Federal Reserve neither tightens severely nor expands aggressively, but rather adds reserves as the economy needs them, thereby reducing inflation worries.



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Circle 25 on inquiry card

Computers: Using reprographics effectively with CAD

The second part of this article by Swanke Hayden Connell's computer expert tells how it is done

By Bradley Meade

The first part of this article (see RECORD, September 1983, page 29) described why Swanke Hayden Connell Architects decided to combine CAD and reprographics technology and what criteria were used for equipment selection. From our experience as described in that article, it was suggested that you:

1. Develop your firm's pinbar overlay and reprographic skills in preparation for a CAD system.
2. Use CAD for only what it does best, and use more traditional methods when they work better.
3. Plan every job to incorporate the flexibility to do this.

This article discusses the key issues of implementation that we faced and how we solved them.

The first problem is to get drawing layers to line up

Three terms must be defined.

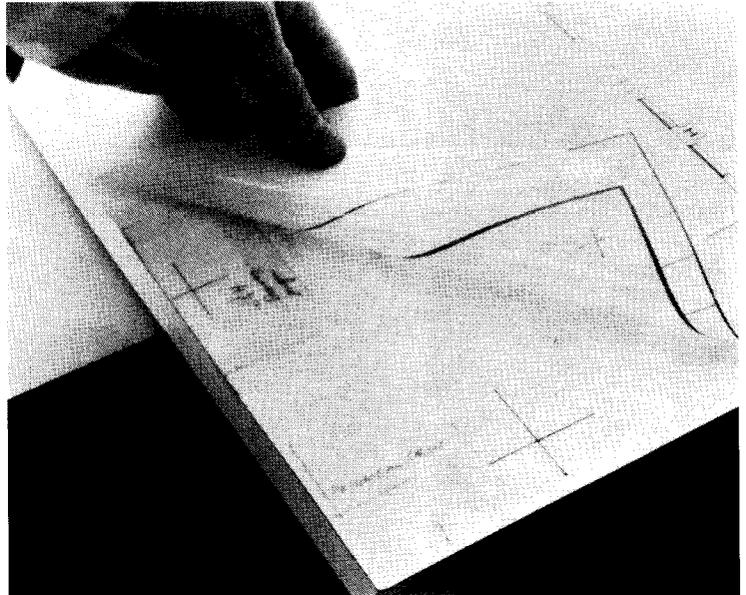
- A drawing that appears on the CAD screen consists of one or more *levels*.
- When using overlay (or pinbar) drafting procedures, each plotted or hand-drawn mylar sheet is referred to as a *layer*. A plotted layer may consist of one or many screen levels.
- A *plot* is a drawing produced by the CAD system.

Before acquiring our CAD system, SHCA completed a major project using the output from an outside CAD system. This system produced layered drawing components for integration with our manually drawn and/or systems-overlay drawings. This experience prepared the firm for acquisition of its own CAD system. During the project, overlay drawing layers produced manually within the office registered well. However, the CAD-produced layers did not align with the manually produced drawings and often did not even align with themselves.

Part of the problem was that plots were being made on nonstable materials. Some layers were as much as two feet out at one-eighth-of-an-inch scale. This was compounded by the drawings being sent from office to office through extreme weather conditions. Finally, no standard method of punching for the pinbar systems had been established.

The firm's reprographic experience and some careful research paid off in helping us analyze this problem. The following rules were established:

- Always use dimensionally stable material. (We used single-sided, four-mil mylar.)
- Use all such material by the same manufacturer.



- No wash-off mylars should be developed in a rapid access processor.
- Control ambient temperature and humidity conditions.
- Bring all materials up to the proper temperature and humidity before use (especially if they have been stored or transported through extremes in temperature and humidity).
- Use in-house or same repro facilities for all work to standardize methods and materials.
- Standardize sheet punching procedures.

If a drawing is to be used as part of an overlay drafting composite (whether using hand-drawn or plotted layers), it must be drawn on the same material by the same manufacturer. This assures dimensional stability and least resistance to light transmission. Since a pack of mylar can hold its temperature for up to 48 hours, mylar must be stored at proper temperature or the sheets must be spread out to speed the temperature and humidity adjustment period to assure proper registration. Once overlay registration problems have been solved, overlay procedures must be established.

Plotting each of the layers of a drawing separately has several advantages

- CAD and hand-drawn or systems-drafted drawings can easily be combined.
- Photo backup can be retained for each layer.
- An entire drawing need not be replotted if a change only affects one or two layers (reducing the plotter bottleneck).
- Repetitive work is drawn only once (e.g., background and cores,

sheet borders, etc.).

- Maximum flexibility is assured.
- Reprographic screening is possible.

Our CAD system allows up to 256 levels with 16 colors.

Establish a flexible standard for color and for level use

This:

- Assures standardization from job to job.
- Permits adding levels (in coded sequence gaps).
- Indicates which levels make up a given screen image, through on-screen coding.
- Facilitates operator's orientation.
- Supports working within a level.
- Supports multilevel library components.
- Simplifies checking and coordination.

As an example, SHCA uses level 10 for the building core and perimeter. Level 70 would include furniture, level 71 furniture dimensions and level 72 furniture-related text. Colors are assigned with the same consistency. Combining levels 10 and 70 provides a presentation drawing, while combining 10 and 70 through 72 provides a working drawing. Sophisticated variations of this theme are possible. This should make evident how important it is to acquire overlay drafting experience and to refine a method of approach before you buy a CAD system. Preparation like this also assures compatibility between CAD and manual methods.

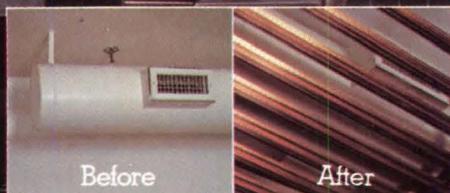
Understanding pre- and post-punching also helps in getting the layers to line up

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sheets slated for manual drafting are prepunched to assure proper registration. However, this procedure is not well suited for projects where CAD and manual systems drafting are reprographically combined.

Manually produced drawings use prepunched mylar while CAD-produced plots are postpunched after the plot is completed. For these projects, SHCA assigns only one of its pinbar punches (to avoid even the slightest variation in alignment). The postpunched method is as follows:

- Locate the registration mark on each sheet to indicate an area that must align on the plotter with a predetermined position of the pen using the optical scope (for pen plotters).
- Take care to assure vertical and horizontal sheet alignment. Once aligned, the sheet is systematically taped in place to avoid even the slightest movement with respect to the belt bed. Each drawing to be plotted contains four corner crosshairs. These are located on a computer level by themselves. The crosshairs are purposely not symmetrical so that it is obvious if a plotted level has been placed backwards on a pinbar.
- Make the plot next.
- Align the computer plot with the premarked crosshairs on the punched and punch the sheet. This sheet will then align with all other sheets for the project. Typically, several standard sets of crosshairs will be located on the punch corresponding to the various standard sheet sizes used by the office.

Good standardized information resources are very important

The methodology established for creating CAD symbol libraries is probably the first significant step to developing productivity from your system. The procedure SHCA developed supports the plotting-by-layer concept discussed above.

First, a basic symbol library is created using standard office symbols. As described in the first part of this article, the initial library need not be large—only those symbols that you immediately know you will need. When each new job begins, appropriate elements from the basic library plus elements that can be reused from other projects are assembled to create a job library. Additional elements are created as required. An example of how this process works is illustrated in a typical floor plan in the first part of this article.

As each symbol for a

particular office is placed on the plan, nine levels of drawing result, seven from the symbol and two for the building core and perimeter. In turn, each of these levels can be separated, regrouped as required and then used to plot a layer such as the reflected ceiling plan.

Obviously, the more repetitive a plan, the more useful this concept and extremely high productivity can be achieved. In addition, better quality control and coordination have resulted using this approach.

Upon completion of the floor plan, each desired layer is plotted separately and then combined reprographically, often including manually drawn or systems drafted components.

Here are examples of early high productivity

Since the significance of the thinking and methods described is that they provide the basic tools to establish early high productivity through integration of CAD and systems drafting using reprographic technology, let's consider a few examples. A recent SHCA project had an extremely tight schedule for both design and production work for new offices for our client. The building core and perimeter were created by our CAD operator and plotted. As there was significant repetition in the plan produced, a master furniture library was created, plotted and several clear mylars were made in our reprographics shop.

The designers began to make a format of "paste ups" of furniture arrangements over a grid to be used as a guide by the CAD operators. When time came to transpose this work to CAD, it was observed that the "paste up" systems drafting plan was sufficiently accurate without transposing. This layer was reprographically composited with the CAD-drawn backgrounds. In a fraction of the time of either CAD-only or manual-only methods, the team completed the required design and production documents.

Recently, the first large project using this combined technology was issued for bid. In approximately eight months from commencement of design work, 800,000 square feet of office space was programmed (using our database management computer system), designed and working drawings were completed.

Most of the drawings in the set (192 drawings using approximately 600 layers) were a

composite of CAD and manual or systems drafting using reprographics technology to achieve the final results. As this article is being written, nearly 2,500,000 square feet of design and working drawings have been completed including work for eight major clients.

And there are side benefits to the combined methodology

Several side benefits resulted from the developments detailed above. As described in the first part of this article, the assignment of attributes to various components in a drawing (e.g., furniture systems) permits a "component inventory" capability using "intelligent symbols." Similarly, personnel, departmental and related records can be kept. As a result, SHCA can provide sophisticated facilities management services for our clients.

A second capability is the ability to provide calculation of net rentable areas for clients. An additional service includes being able to support tenant "enticement" programs. Future possibilities include construction management cost estimating and engineering services.

In conclusion, combining CAD and systems drafting methods using reprographic technology has enabled SHCA to achieve a high-efficiency level of design and production in a fraction of the time that we found possible by other methods.

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Legal perspectives: Who is responsible for construction safety?

The eminent attorney-architect demonstrates that the AIA General Conditions can save you from liability and a lot of headaches as well

By Arthur Kornblut, Esq.

Safety programs at construction sites weave a seamless web of concerns for architects (who try to define the proper scope of their responsibilities), for contractors (who are contractually responsible for site safety), for insurance companies (who have to underwrite and pay claims for workers' compensation insurance), and for government (via Federal and state OSHA-related programs). Despite the attention, safety at the construction site remains a serious problem, and construction workers continue to suffer injuries. Safety (or lack thereof) remains a fertile source of litigation.

In the May 1983 issue of ARCHITECTURAL RECORD (page 37), a recent Supreme Court of Oklahoma decision was reviewed which defined an architect's liability in regard to a construction-site accident that might have been prevented if certain information had been shown on the shop drawings. The court ruled that the architect's contract and the general conditions of the construction contract clearly exculpated the architect from any liability in regard to the allegedly missing information. Following closely on the heels of that decision, the Supreme Court of Kansas has analyzed an architect's duty for safety enforcement when hazardous conditions exist at the construction site. The results in Kansas were no less encouraging than those in Oklahoma (*Hanna and Pearman v. Huer, Johns et al*, April 20, 1983).

The plaintiffs in the Kansas case were two ironworkers employed by the structural steel erection subcontractor for a shopping-center department-store project. The architect, the defendant in this case, had been retained by the project owner for the customary range of architectural services, including general administration of the construction contract. The accident that led to the lawsuit occurred while the structural steel was being permanently secured; a steel tie joist, upon which one of the plaintiffs had been sitting, fell and knocked the other plaintiff to a lower floor and then into an elevator shaft. The tie joist should have been secured by a tie bolt or a tack weld, but had not been. In addition, the joist was not the proper length and had been fabricated for use in another part of the building.

At trial, the architect was the only remaining viable defendant.

The plaintiffs' theories of liability were: 1) the contract between the architect and the owner included the responsibility for safety precautions at the project, and 2) the architect was negligent in performing required duties. The architect's defense was predicated on the absence of any contractual duty to supervise or maintain safety standards at the site.

One problem confronting the architect in establishing a defense was the lack of a written contract with the owner. The architect's duties were described only in the contract between the owner and the general contractor. Fortunately, the contract documents for the construction of the project included the AIA General Conditions (Document A201). The court noted that there was no serious disagreement among the parties that the terms of A201 described the architect's duties during construction, and thus were part of the architect's oral contract with the owner. The plaintiffs contended that A201 made the architect responsible for safety because the subcontractor was notoriously sloppy and careless in its work, that the architect knew this, and thus the architect should be liable for the injuries.

There was considerable testimony about the careless procedures followed by the subcontractor. Representatives of the general contractor as well as the plaintiffs testified to this, but no one had ever advised the architect of the numerous problems being experienced with the subcontractor. The architect, on the other hand, testified that he visited the site to see how the construction was progressing and that he never made any inquiries about job-site safety because safety was not a part of his responsibilities. The architect stated that he knew the general contractor had a safety program and a safety man at the site and that he was satisfied with that knowledge.

The contractor's safety man testified that he was aware of the problems with this particular subcontractor and had tried to do something about them. However, his efforts to correct the problem were rebuffed. When he tried to prepare a report on the accident that gave rise to this suit, his superior told him to tear it up!

The expert witness who testified for the architect stated that an architect's contract administration, as contemplated by AIA Document A201, did not

impose a responsibility for safety practices. A major point on appeal by the architect was an instruction given to the jury by the trial court that stated that, under the contracts, the architect had the duty to make professional inquiries regarding safety practices and to inform the general contractor about significant safety violations, and that the architect had the further duty to report to the owner if the general contractor did not take reasonable measures to correct the conditions complained of.

The Kansas Supreme Court rejected the argument that the architect had a duty to be responsible for safety practices at the construction site. The court said: "Absent any showing that the architect affirmatively or by actions assumed such a duty, we find no responsibility in the employment contract." The court then reiterated the relevant provisions in Document A201, stressing that the contract specifically stated that the architect would not be responsible for exhaustive or continuous on-site inspections to check the quality or quantity of the work, and that the architect would not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work. From these and other provisions of the contract, it was clear to the court that it was the duty of the general contractor to provide and enforce safe working conditions.

Noting pointedly that these suits against architects in recent years may be based on a desire to find a "deep pocket" to more adequately compensate for serious injuries than can be recovered from contractors under the limitations of the worker compensation laws, the court reviewed the plethora of suits in other jurisdictions that have considered an architect's liability for construction site safety. The court said, "... the better rule is found in those jurisdictions which have refused to impose liability absent a clear assumption of duty."

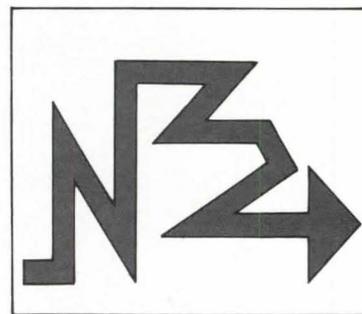
But, the court said: "We agree with the plaintiffs' contentions that if (the architect) had actual knowledge of unsafe practices he or she should have taken some action. However, evidence discloses that the architect was not advised of such practices." And, "As a professional, an architect cannot stand idly by with actual knowledge of unsafe

practices on the job site and take no steps to advise or warn the owner or contractor. Even in such a situation, however, the plaintiffs still bear the burden of showing the duty owed to them, a breach of that duty and that the breach was the proximate cause of the injuries suffered."

Once again, a court has looked to standard contract provisions and established common law principles to relieve an architect of liability for construction site safety. This court, however, included an important proviso—if unsafe conditions are actually observed or brought to the architect's attention, he cannot ignore this information. He must report to the contractor and the owner in an effort to have the situation remedied. It is not the architect's duty to cure the safety hazard, but he can not ignore it either. He must make a reasonable professional effort to get a responsible party to take some action.

Mr Kornblut is a registered architect and practicing attorney in Washington, D.C.

This article is published with the understanding that the publisher is not rendering legal services. If legal advice is required, the services of a competent professional should be sought.



From the Graphic Idea Notebook, by Jan V. White, published in Folio 1981.

The room with a better view.



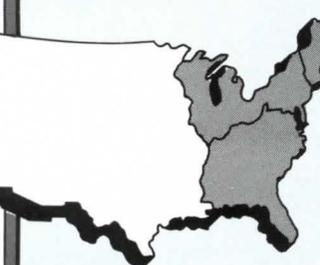
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Construction costs: Better news than anticipated —except for some housing costs

Summary of Building Construction Costs



	Number of metro areas	Districts Eastern U.S.		
		4/83 to 7/83	7/82 to 7/83	1977* to 7/83
Metro NY-NJ	18	1.66	6.62	1550.83
New England States.....	33	0.99	4.99	1516.43
Northeastern and North Central States.....	120	0.97	4.54	1572.40
Southeastern States	106	1.04	6.18	1612.45
Average Eastern U.S.....	277	1.04	5.35	1579.66



	Number of metro areas	Districts Western U.S.		
		4/83 to 7/83	7/82 to 7/83	1977* to 7/83
Mississippi River and West Central States.....	122	1.03	3.70	1567.20
Pacific Coast and Rocky Mountain States.....	106	0.64	3.39	1649.21
Average Western U.S.....	228	0.84	3.56	1605.32

United States: Average..... 505 0.95 4.54 1591.25

* Using only cities with base year of 1977

At the time of the last quarterly report based on a survey by the McGraw-Hill Cost Information Systems Division (see RECORD, July 1983, page 49), it seemed apparent that the economic recovery was putting immediate upward pressures on material and construction costs. The good news is that this upward pressure seems to have moderated—with the exception of those materials used in small-scale residential construction—due to increased competition by contractors, reasonable attitudes on the part of labor and the fact that there still isn't enough new construction to fill suppliers' and contractors' capacities.

The intense competition in the bidding of new contracts is the controlling factor in this quarter's construction picture. The recession has forced many contractors to bid jobs that were the province of more specialty-oriented contractors. As a result, some owners expecting bids from four or five contractors are finding bids from 12 to 15. This crowded bidding results in a slim profit margin, and is the primary indicator of the true nature of the current construction picture.

The construction union labor force, feeling the recession pinch and the pressure of open-shop growth, continues to make changes to work rules that will

increase productivity, and thus stabilize the labor part of the construction bidding process.

Most construction materials showed a modest movement indicating that recovery/recession forces are still running neck and neck. The exceptions were lumber and gyprock which rose in price, powered by the housing-market recovery.

For the period April 1983 to July 1983, the following material cost trends were reported: concrete was down 9 per cent; block was down 6 per cent; plywood was up 3 per cent; lumber was up 9.7 per cent; gyprock was up 5.7 per cent; asphalt shingles were up 1.4 per cent; reinforced steel was up 1.9 per cent; structural steel was up 1 per cent; conduit was down 1.7 per cent; and copper was down 1 per cent.

McGraw-Hill Information Systems Company studies are conducted quarterly by direct contact with union and non-union sources, direct material suppliers, construction labor consultants, and contractors in each city.

*James Stewart
Cost Information Systems
McGraw-Hill Information
Systems Company*



Historical Building Costs Indexes

Average of all Non-Residential Building Types, 21 Cities

1977 average for each city = 1000.0

Metropolitan area	1977	1978	1979	1980	1981				1982				1983	
					1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd
Atlanta	1171.5	1712.6	1925.6	2098.6	2175.9	2238.1	2090.6	2078.0	2208.8	2212.2	2302.0	2360.6	2503.5	2421.4
Baltimore	1018.4	1107.7	1304.5	1446.5	1485.7	1486.7	1600.5	1544.9	1567.8	1603.3	1615.9	1639.5	1683.8	1702.4
Birmingham	1029.7	1142.4	1329.9	1407.2	1420.0	1436.1	1463.1	1469.9	1502.5	1490.1	1478.2	1468.1	1491.0	1518.9
Boston	1028.4	0998.6	1236.0	1283.7	1321.3	1331.9	1413.5	1432.5	1463.5	1508.3	1495.3	1502.0	1553.7	1547.7
Chicago	1007.7	1032.8	1199.7	1323.6	1279.3	1315.8	1342.7	1344.7	1343.0	1376.5	1413.9	1425.8	1415.6	1433.3
Cincinnati	0848.9	0991.0	1323.9	1385.2	1348.2	1400.3	1400.7	1350.4	1353.5	1349.9	1361.5	1362.6	1376.8	1445.3
Cleveland	1034.4	1040.8	1287.5	1388.2	1402.0	1451.7	1454.2	1459.5	1449.4	1469.9	1511.4	1511.4	1462.1	1523.2
Dallas	1042.4	1130.6	1431.9	1481.9	1588.7	1685.0	1693.9	1750.6	1740.8	1765.0	1777.3	1834.3	1816.9	1847.8
Denver	1038.8	1100.4	1495.6	1487.4	1494.7	1522.2	1587.6	1632.2	1709.7	1724.0	1715.2	1679.1	1684.6	1745.9
Detroit	1018.1	1087.3	1275.3	1447.4	1446.6	1578.8	1579.6	1580.3	1589.8	1604.6	1627.1	1638.0	1649.5	1654.4
Kansas City	1023.5	0951.5	1125.8	1233.2	1236.1	1263.0	1262.8	1323.4	1284.3	1336.9	1384.5	1381.8	1347.4	1390.8
Los Angeles	1022.5	1111.0	1255.3	1387.5	1396.4	1457.2	1473.3	1474.3	1491.6	1507.0	1500.9	1503.3	1506.0	1506.1
Miami	1004.5	1080.9	1330.1	1380.6	1402.5	1395.0	1387.5	1369.1	1350.7	1357.5	1375.1	1392.1	1429.6	1458.9
Minneapolis	1060.2	1196.8	1286.9	1327.7	1328.0	1391.1	1433.2	1442.6	1450.8	1540.8	1572.8	1576.8	1586.2	1631.8
New Orleans	1001.3	1138.8	1291.9	1505.7	1528.4	1529.6	1560.4	1572.7	1573.2	1626.4	1631.3	1616.9	1618.0	1624.8
New York	1005.4	1043.0	1247.1	1319.4	1319.6	1326.2	1397.3	1419.2	1417.8	1472.6	1497.7	1491.8	1563.7	1623.1
Philadelphia	1013.8	1074.2	1487.5	1539.5	1596.6	1628.9	1634.2	1660.7	1676.9	1755.7	1762.5	1769.4	1754.9	1757.9
Pittsburgh	1016.1	1015.0	1227.0	1341.7	1369.0	1437.6	1450.3	1493.2	1526.7	1487.4	1458.4	1479.5	1486.7	1491.6
St. Louis	1039.1	1198.8	1275.9	1320.0	1323.4	1343.0	1379.2	1397.3	1399.5	1436.3	1433.8	1451.2	1453.5	1498.1
San Francisco	1083.2	1326.8	1473.4	1644.8	1650.8	1741.6	1763.9	1776.4	1777.0	1804.5	1813.8	1810.1	1814.1	1851.9
Seattle	1142.5	1137.9	1373.4	1616.8	1621.8	1672.3	1685.9	1814.9	1905.5	1968.8	1940.9	1962.7	1986.6	1982.7

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0 ÷ 200.0 = 75%) or they are 25% lower in the second period.

Glass-terpiece

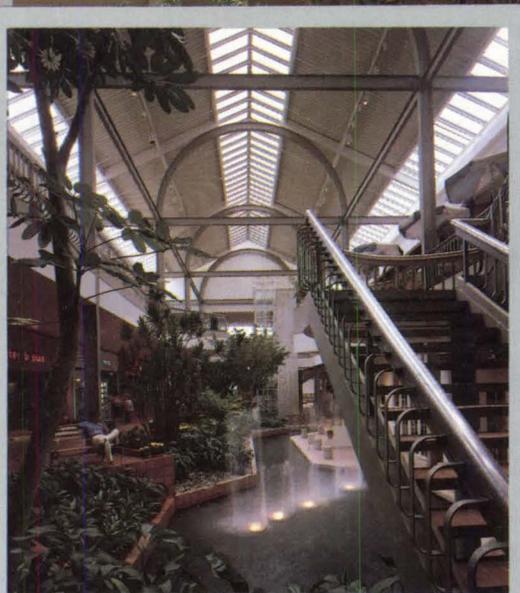
The beautiful new Collin Creek mall in Dallas' suburban Plano area is another evidence of Naturalite's expertise in glass skylights.

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Are renderings still important in our electronic age?

As a graphic tool for client presentations—and design as well—the answer can be a definite yes: an interview with Carlos Diniz

Call it rendering, architectural illustration or delineation, the time-honored art of setting a building down on paper in perspective view, with shadows, texture and shadings to show what the building will look like when it is built, is a painstaking effort that requires time, skill, manual dexterity and training if it is to achieve its essential purpose. Whether the result is a simple line drawing or enlists tone and color—tempera, charcoal, color pencils, casein or some other medium—it can often be crucial in obtaining client approval and in giving the designer a meaningful view of his or her creation.

The electronic age has brought designers a host of new graphics equipment, including video and computers, that can show seemingly endless views and design options for a given project. For presentations and in-depth studies, these media tend to rely on models—either as built by hand and then shot with a video camera or as “constructed” by computers. And these media can produce some very impressive results—by zooming in, “walking” through, and—in the case of video—by combining the model with shots of real people and places to give presentations animation and relevance. But these technological techniques still have their limitations. A recent interview in Los Angeles with renowned architectural illustrator Carlos Diniz brings to light some of the obvious and not-so-obvious advantages of rendering and why it is for many circumstances still the best answer to graphic understanding. Charles K. Hoyt

According to Carlos Diniz, what the renderer can and should do in both the design and marketing process has been clouded by misconceptions about renderers' professionalism and capabilities. “We've come a long way from the time when a client could walk in and try to tell us to ‘just fake something.’ Today, presentations are carefully scrutinized so that a project can come alive to the layman viewer. With a bad rendering or the limitations of model-photo techniques, the message about what it will really be like is only partially conveyed.”

Successful presentations must arouse enthusiasms through a sense of reality

Especially today, there are often many people who must come to agreement before a project can be built. Clients for big projects



must reach agreement among themselves (the contact, his boss, his boss's boss, the employees who will use the facility), and also, perhaps, with a parent company, the bank or banks that will provide the financing and government organizations that have an increasingly strong say in whether a project gets built or not. On almost any urban project, there are people who are concerned about the quality of their community—as well as community, civic and cultural groups—who all want to be convinced that the project will not bring adverse effects.

On this potential battlefield of very different visions and aims, the designer must get his message across in the most graphic manner possible to be successful and satisfy all interests and curiosities.

Assuming the designer has done his work well and that the design is indeed “right,” the design still has to be read as being right and no number of intricate massing studies can get this message across. “It's a question of flavor,” says Diniz. “For instance, anyone familiar with the site for project X knows it is surrounded by a particular variety of oak trees. They want to see the view with those oaks—

not maples, squiggles or, in the case of models, dyed sponges to believe the view is real. They are shown a view of the reception area. If they don't see a receptionist sitting there wearing the kind of dress they expect a receptionist to wear, they don't believe that view is real either—no matter how many pains have been taken to be accurate in every other respect which, of course, you, as a delineator must be.”

And Diniz is accurate, as can be seen by comparing his drawn views of projects and the final product. “But most architects just don't have the ability to draw that accurately—or if they do, they don't have the patience (or inclination) to belabor, for instance, the shape of tree leaves in the foreground and thereby to make the project real to the layman viewer.”

More than reality, a renderer can bring expertise on what to show prospective viewers

“The excitement of my profession is helping people to see,” says Diniz, who sees a major role of his profession as that of a communications consultant. “An architect who simply marks up a set of plans and sends them
Continued on page 47

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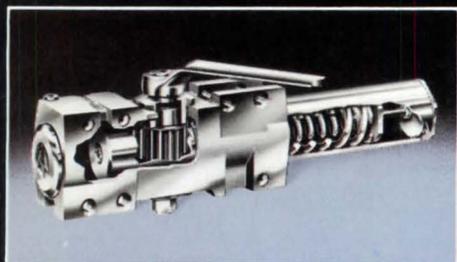


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A speculative office building in Washington, D.C. (top) for the Daon Development Company and designed by Skidmore Owings & Merrill is depicted in an angled view to show its relationship with the Scottish Rite Temple (foreground) and the distant White House. A new building for the South Street Seaport in New York designed by Benjamin Thompson and Associates is shown (center) with large crowds (including the mayor and the

architect) and bright banners to indicate its character in use. For Williams Square outside of Dallas (bottom), two main buildings of the new development designed by Skidmore Owings & Merrill are shown with emphasis on such natural features as a lake and Texas white oak in the foreground to give realistic ambience.

along with a note to show this or that view may be missing a lot," he says. For instance, a rendering that is to be shown primarily to community groups must show that a project does not disturb the existing scale and quality of the neighborhood. The architect has undoubtedly thought about scale and character, says Diniz, but he may miss the point entirely when he thinks about the way he would like the building seen in renderings. Conversely, a project built in a location without contextual value may be better off not shown in a rendering at all, but perhaps in a rendered elevation with a view toward some distant landmark as an accompaniment, as he recently recommended to a client bank. For another bank, Diniz counseled the client to feature a lesser elevation of the building because it faced a main street. "It's all in recognizing how the project will be seen by passersby," he says.

A sense of reality does not have to mean photo realism

Diniz's renderings are not realistic in the sense that, say, pre-photographic-era painters strove to show views as if they were photos. Instead, they are clearly renderings, but good facsimiles of the objects portrayed nonetheless, and they get across the idea of what is portrayed so that it *seems* realistic. And to some degree (less or more), the successful renderings of any renderer in the last quarter century have done the same thing. The result might be termed "selective realism."

It is in such a gray area of the craft that Diniz, and presumably others, gets personal satisfaction through self-expression. "If by art we mean self-expression," he says, "rendering is art." Delineators must show projects in all their great or grim reality, but it is the way in which that showing is done that art comes in. "It is something like the work of a musician: if you play Mozart, you must follow the score; only here you get to do some of the composing as well."

The professional rendering can be a design tool as well as a marketing one

Diniz estimates that about 50 per cent of the effort involved in producing a rendering is spent on the "mechanicals"—or on laying out the factual part of the rendering that makes it accurate and the buildings themselves realistic (a very different exercise from making them come

alive through the context of trees, cars, people, mood, etc.). This is generally accomplished by one of the "engineers" in his office, who has the primary contact with clients during production. Here, Diniz stresses the importance of the renderer's ability to interpret architectural information, and—as he puts it "get in bed with the client."

It is at this stage that architects are forced into thinking about things they may not have considered. For example, should the windows stand out or recede in the design and hence the rendering? Should the glass and mullions contrast with the wall surface or should they be similar? Should the mullions contrast with the glass?

While this is a sore point with some architects, the renderer, if he is good, should be able to make creative suggestions and to this extent may influence the design. Or the architect may decide to change certain elements of the design altogether when he or she sees the end result. To hold these kinds of changes to a minimum, Diniz asks architects to "sign off" on each stage of approvals, once decisions concerning how the building should look have been reached.

Diniz doesn't know the eventual impact of computers, but for now...

The process of rendering may keep you from being confused by options. While it is true that even the lengthy back and forth or interchange between the building designer and the renderer does not offer the full range of options that a computerized image may offer the designer at the touch of a button, it does offer the less tangible but very valuable input of human interaction and intuitive experience which—in the long run—may be a more direct and less confusing route to achieving a finished product.

The renderer is also able to make images look "real" with a few applications of broad pencil shadows, something the computer cannot do, and to show it in context of, say, a predominate hazy atmosphere or contrasted to the golden beech trees that the designer, renderer or both will only remember are there at the last minute.

In presentations, "the process of trying to walk laymen through a model photographically can become very complicated," says Diniz. Besides the fact that the resulting images will lack the

Continued on page 50



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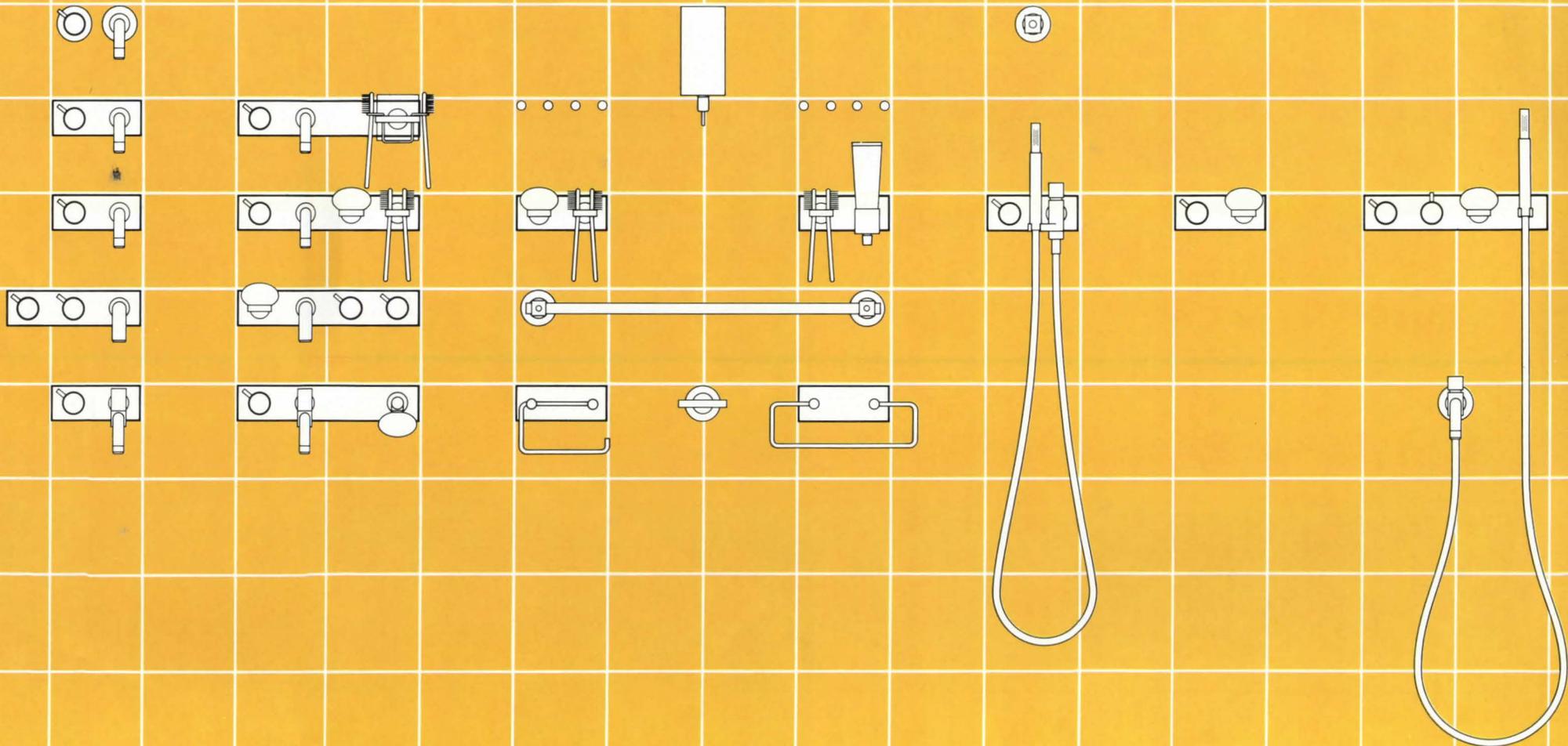
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everyday detail of people and embellishments that make them real, they may well wind up costing a great deal of money. The computer just can't produce economically yet, he says.

To counter some of the commonly conceived shortcomings of renderings in this competition, Diniz has developed two techniques that offer a great deal of flexibility in the use of the presentation material he turns over to a client. First, the large renderings are detailed in such a way that they can be "zoomed in on." Small parts, say people arriving at the entrance or a particularly interesting brick detail, may be blown up to create complete images.

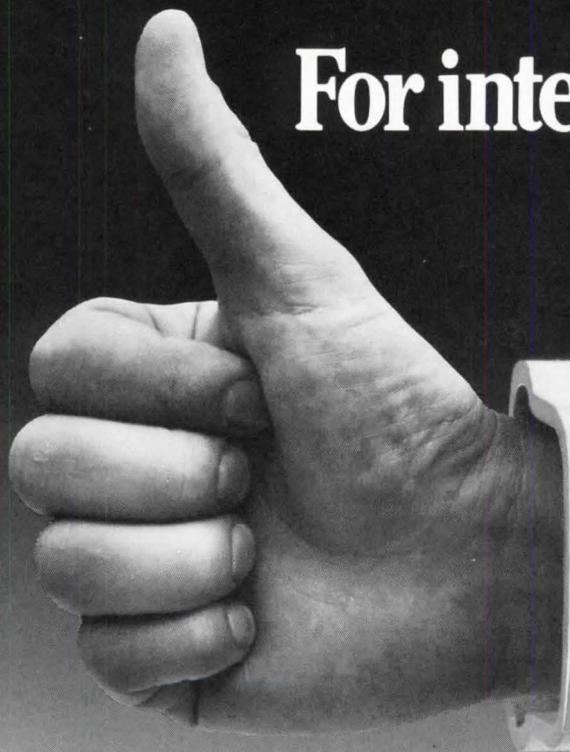
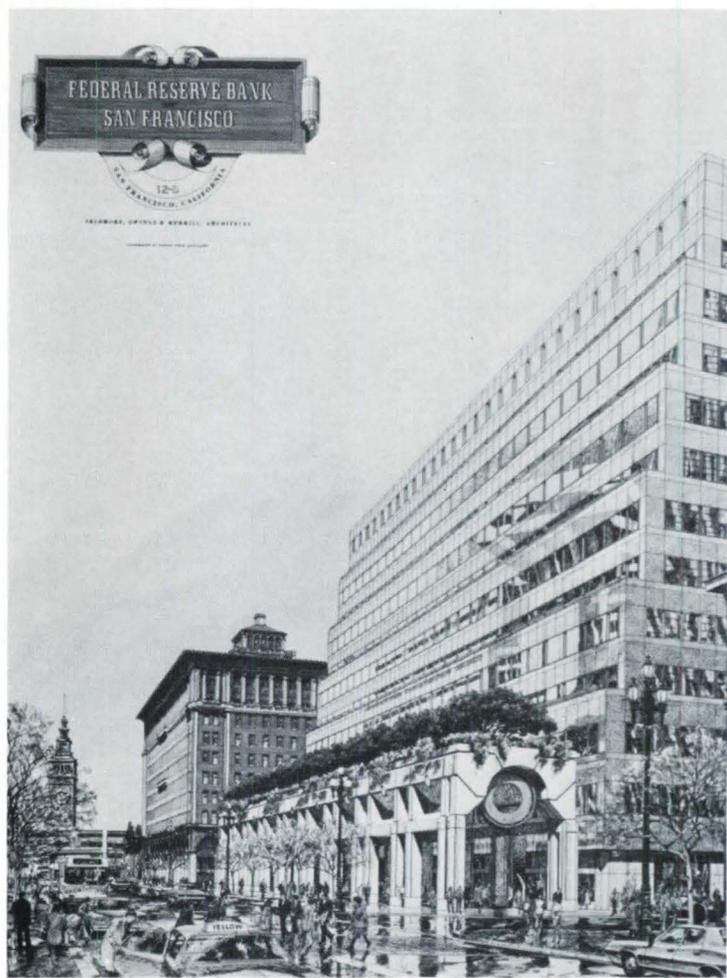
And then there are the "eight-by-eights," a series of quick colored sketches, eight-inches-square, that do essentially what the computer can do by "walking" the client through the project's spaces in sequence. These constitute about 60 per cent of Diniz's work at the moment, and are relied on particularly in situations where large numbers of people ("political situations," Diniz calls them) must be convinced.

While renderings are not free, there is plenty of justification for their cost
It is not unusual for a full rendering to cost in the

neighborhood of \$10,000 and, where several buildings are involved, as much as \$20,000 or more. These costs may seem high to architects, who may feel that they are losing something out of the building, such as better quality plumbing fixtures, that they might have been able to afford otherwise. Diniz feels that this not only denies the fact that a project might not have been built at all without the rendering, but the professional skill that is being purchased and the high cost of production.

"Not nearly enough qualified people enter the field," says Diniz, "and when you run a professional operation and have employees (he has 15) you have to be competitive." Diniz notes that, because of the time spent on "engineering," more than half of the cost of a rendering may be in payroll time, before any real artistry takes over.

Diniz decries the lack of competent people, and the fact that few architects who start out drawing well in school stick with it. "Many people who enter the field regard it as being somehow less professional than design practice. The trouble is that we have a lot of people who couldn't or don't make the effort to draw well in the first place, but go into the field anyway and cause the rest of us professional and imagery problems."



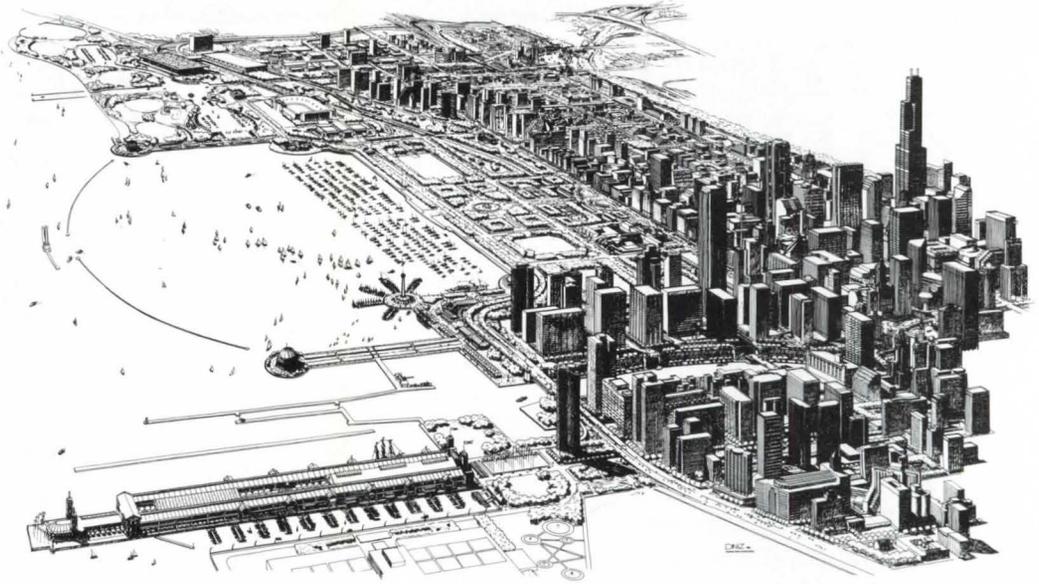
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The bottom line is that renderings are a viable marketing tool

There is little doubt that a good rendering is a good marketing tool to help the client to get the project built *and* to sell its merits during construction to potential users. It is for this reason that developers are often glad to foot the bill for rendering services (Diniz estimates that about 90 per cent of his work is paid for directly by the client), although the architect generally runs the show as far as saying what he or she wants. A long list of clients among the better-known architects and the larger developers and ranging from the Rouse Company to the Menninger Foundation to Skidmore Owings & Merrill testifies to the value of renderings in getting projects built and—in many cases—the developer clients can cite direct economic benefits, such as high sales or rentals before project completion. In increasingly competitive times, these are no small considerations.



In his rendering of the Federal Reserve Bank in San Francisco designed by Skidmore Owings & Merrill (left), Diniz demonstrates the art of showing the designers' intention that the arcade read as both part of the new building and as a part of the busy street life that it was intended to enhance. The rendering of the Chicago master plan by the Chicago

Department of City Planning (right) shows how carefully crafted delineation can show complicated concepts in easily-grasped, graphic ways. Shown here is the completion of Daniel Burnham's park plan of 1909 through formal landscaping and construction of the originally intended semicircular breakwater, reinforcement of the

existing cultural institutions surrounding the park through sympathetic infill construction and upgrading of connecting streets, construction of new office stock in the central business district and, especially, development of the North Loop area, given impetus by the planned World's Fair of 1992.

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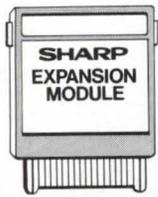
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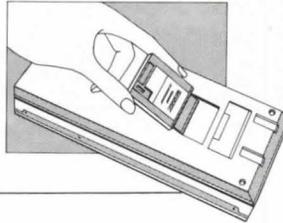
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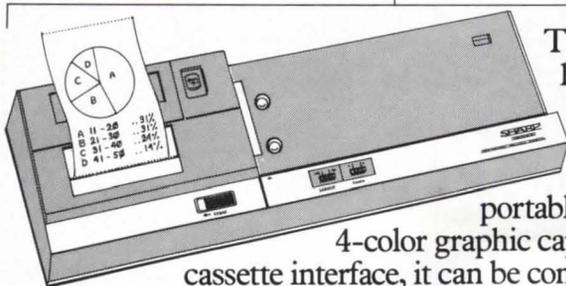
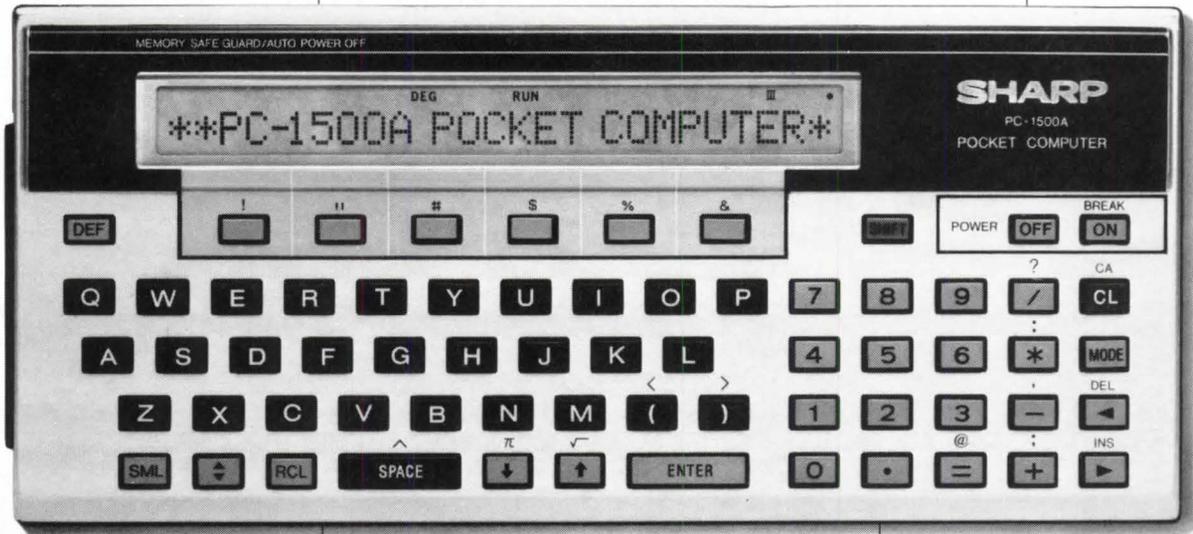
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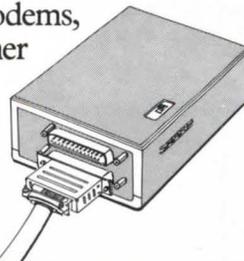
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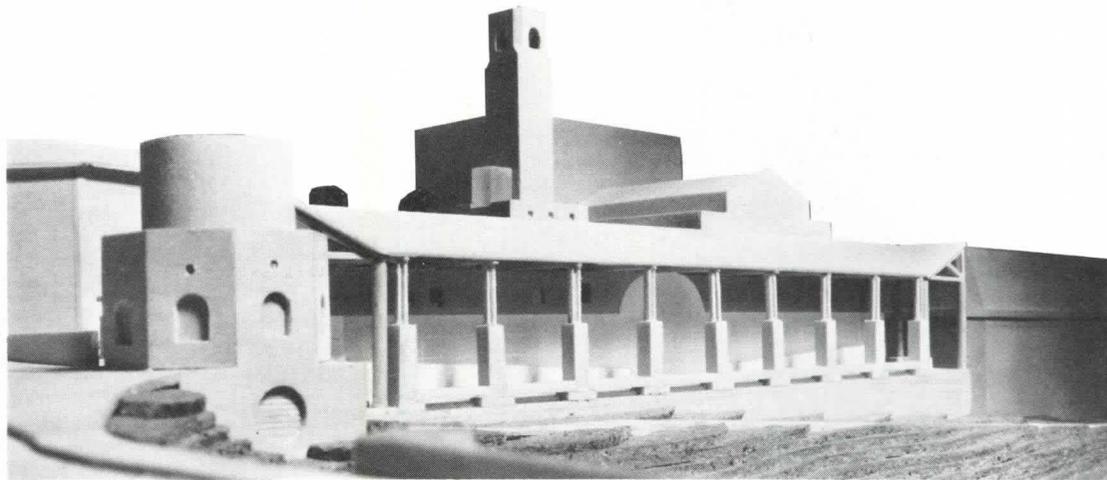
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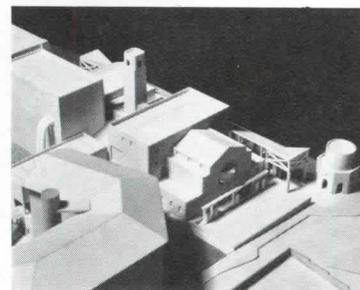
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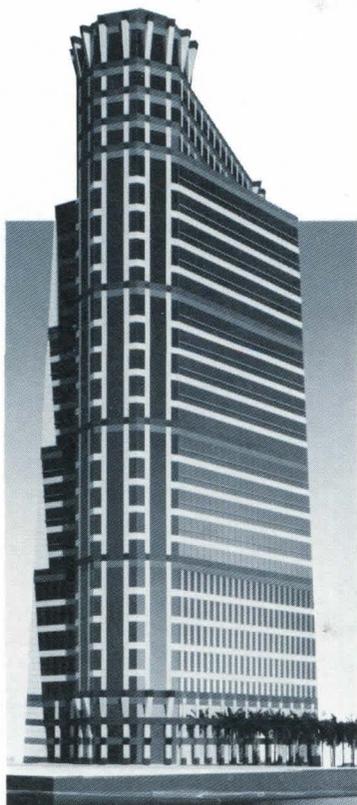
With projects at two other Ivy League schools—Harvard and Columbia—under their belts, James Stirling, Michael Wilford and Associates have unveiled plans for a new performing arts center at Cornell University. Situated atop the 140-foot-deep gorge of Cascadilla Creek and commanding spectacular views of Ithaca and the surrounding upstate New York countryside, the center will provide 70,000 square feet of performing, teaching, and office space in a building complex rich in allusions to earlier Romanesque Revival architecture at Cornell. The structure is planned in two phases. The first comprises a proscenium theater seating 500 on a main level and two balconies, in addition to a below-grade dance studio accommodating 200 people in

retractable bleacher seats. The second phase, which is contingent upon final university funding, will add a 180-seat flexible theater with multiple entrances to permit arena, thrust, alley, or proscenium configurations. This phase will also include a 100-seat forum for films and lectures, additional studio space, and offices. Entry into the center is through an open loggia overlooking the gorge. An octagonal pavilion housing an advance ticket office and refreshment stand will have two seminar rooms in its upper level and an illuminated sign announcing current productions. The visual focal point of the complex is a tall elevator tower that recalls the landmark Uris Library bell tower across the gorge. The primary facades along College Avenue and the creek



will be clad in limestone with brick stringcourses; the remaining elevations, by contrast, will be sheathed in brick with stone stringcourses. Joint architects on the project are Wank Adams Slavin Associates.

High-style technology: A new Murphy/Jahn design for Los Angeles



Self-characterized by the architect as "a new synthesis combining elements of modern and traditional design," the recent buildings of Helmut Jahn, principal design partner of Murphy/Jahn, comprise one of the most provocative bodies of work on the current architectural landscape (see ARCHITECTURAL RECORD, January 1983, pages 102-115). For its first project in Los Angeles the Chicago firm has designed a 27-story, 225,000-square-foot office tower on Wilshire Boulevard in the city's Westwood district. The "romantic high-tech" feeling that pervades Jahn's other work is evident in the dramatic granite, marble, and limestone structure, which is set amid a landscaped grove of 36 full-size palm trees and is crowned by a flaring stylized capital 370 feet above the

street. Romanticism aside, however, the tower's ten full floors of valet parking are meant to accommodate the specific needs of present-day Los Angeles. Although the building's vehicular entrance is located at the rear, it boasts its own octagonal "auto lobby," ringed by a granite colonnade similar in scale to the pedestrian entrance on Wilshire. A subtle reference to Los Angeles, perhaps, is the proposed system of exterior lighting, which will cast beams beyond the roof line to compete with the ubiquitous studio search lights that roam the southern California skies.



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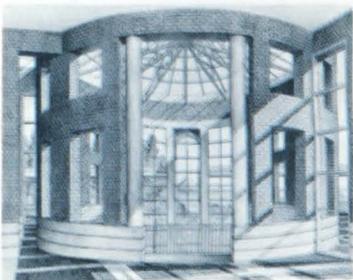


Although Carnegie Hall has played a steady role in the cultural life of the nation since its opening in 1891, the building has suffered over the years from less-than-perfect maintenance and from a series of unsympathetic alterations. In order to reverse nearly a century of haphazard physical changes in time for the building's centennial, the Hall's trustees drew up a nine-phase plan in 1979 for the complete restoration of the New York landmark. The first phase of this ambitious undertaking, recently unveiled to the public, focused on the Carnegie Recital Hall and included a new lobby and stairway for the 283-seat auditorium, a new box office, new elevators to replace a 90-year-old hydraulic system, and complete restoration of the recital hall

facade. Because there were no early photographs of the original lobby, architects James Stewart Polshek and Partners completed a hypothetical interior restoration employing such elements as Corinthian columns, ornamental metal balustrades, and other architectural motifs found elsewhere in the building. For the facade restoration, however, the architects were considerably more literal. A commercial storefront erected in the 1950s was removed and replaced by a Renaissance Revival archway that exactly matches an existing archway to its right. The elaborate brick and terra-cotta detail of the new arch is proof that traditional craftsmanship is still available—a fact that bodes well for the remaining eight phases of the Hall's rehabilitation.

Northwest Passage

The classic architectural forms of colonnade, rotunda, and pavilion are the basic design elements of a new music center at Pacific Lutheran University in Tacoma, Washington. Located on a steeply sloping wooded site, the academic facility will house a 600-seat concert hall, practice rooms, and offices within a 45,000-square-foot brick and concrete structure. Because one of the proposal's most important requirements was a pedestrian passageway linking the university's upper and lower campuses, architects Perkins & Will included in their design a stepped colonnade set on a diagonal to the center's eastern facade. A skylighted rotunda offers views of Mt. Rainier through full-height mullioned windows and functions as a lobby for both the instructional wing and the concert hall.



California contextualism



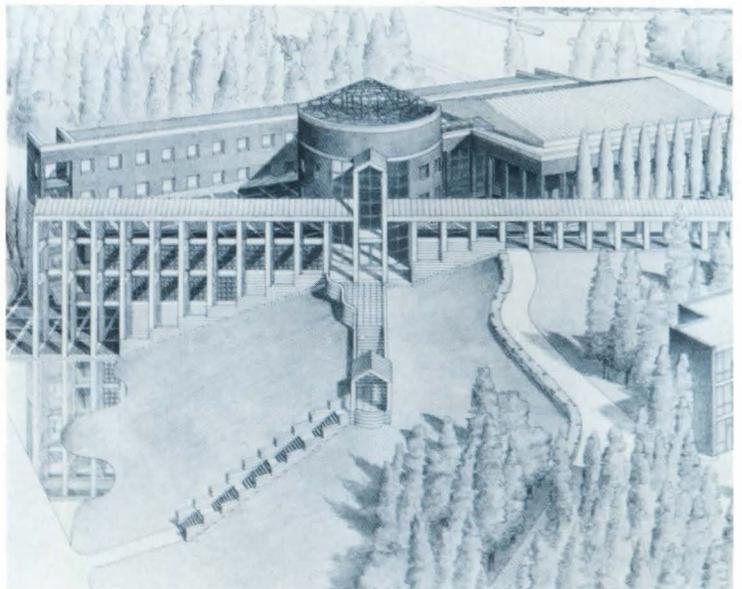
Heilbron Square comprises 27 condominium units, commercial space, and enclosed parking in a U-shaped structure located near the California State Capitol. The center derives its name—and some of its inspiration—from the adjacent Heilbron House, a late 19th-century mansard-roofed mansion. Taking their cue from this venerable neighbor, architects Swatt & Stein sought

to create “a small-scale urban village” around a private courtyard. The visual focal point is a corner bank unit that boasts a three-story, gray glass tower reminiscent of a 19th-century financial institution. Narrow clapboarding, bay windows, and peak-roofed massing recall the “workingman's Victorian” architecture of northern California.

Oakland center expands



Located on the shorefront of Lake Merritt, Kaiser Center Tower is the latest and most prominent development in a mixed commercial/retail complex that first opened in 1959 on a 15-acre site near downtown Oakland. The new office building will be sheathed in an aluminum and blue glass curtain wall that has a curvilinear profile echoing the sweep of the adjacent lake frontage. At 40 stories the tower will be the tallest structure in the East Bay region and will be linked to two existing buildings in Kaiser Center by a system of pedestrian skywalks. A city-approved master plan calls for the eventual construction of three additional office towers on the landscaped plaza. Architects for the project are the San Francisco office of Skidmore, Owings & Merrill.



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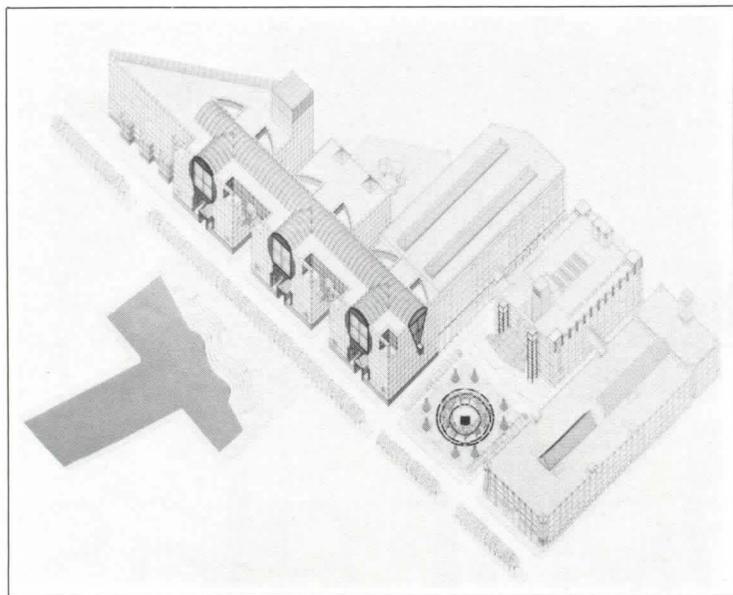
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Euterpe inspires Eli initiates



It may not look special to some, but to many graduate students at the Yale School of Architecture, the concert stage on New Haven Green represents an initiation into the day-to-day building process. The pavilion is the latest in a program of first-year projects begun by Yale in 1965. Students provide design and construction labor, while the client pays for materials. This year the City of New Haven required a concert pavilion that could be erected for the summer season, stored during the balance of the year, and constructed in such a way that would not alter the historic Green. The tubular steel system devised by the students has a grid of structural trusses that houses lighting and acoustical equipment beneath a canvas roof supported by diagonal steel cables.

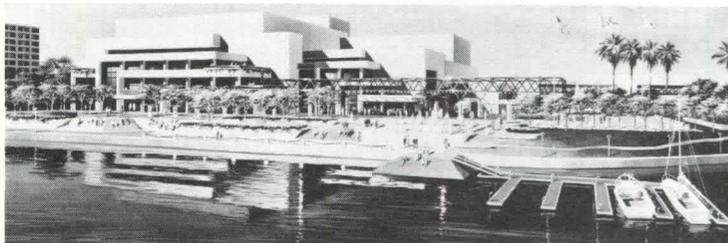
New York furnishings market has designs on Queens



The residential and contract furnishings community located on Manhattan's East Side may get a push even further east—all the way across the 59th Street Bridge into Long Island City, Queens. I.M. Pei and Partners have drawn up a master plan for the conversion of three former industrial buildings on ten acres into two million square feet of office and show room space for

manufacturers of furniture, floor and wall coverings, textiles, and other architecture-related products. Conceived as a possible alternative to the high rents and congestion of Manhattan, the proposed International Design Center is a joint project of the Pei office, Gwathmey Siegel & Associates, and the space-planning firm of Environetics International.

The Sunbelt moves center stage



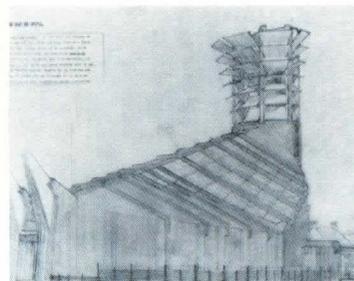
The proliferation of multiple-use performing arts centers in both large and medium-size cities continues, especially in the fast-growing metropolitan areas of the South and West where residents are demanding their place in the cultural sun. In Tampa the firm of McElvy Jennewein Stefany Howard has drawn up plans for a 273,000-square-foot facility that incorporates a 2,400-seat festival hall for major productions of music, theater, and dance; a 900-seat playhouse for smaller-scale events; and a 300-seat studio theater designed for both experimental and traditional drama in a variety of physical arrangements (photo top). Situated on a landscaped plaza along the Hillsborough River, the complex will consist of a precast concrete and glass structure

accented with painted steel-frame canopies and pedestrian walkways.

Meanwhile, ground has been broken in southern California's burgeoning Orange County for a performing arts center that may eliminate the need for local residents to make the 45-minute drive into Los Angeles for their cultural activity. Located on a five-acre parcel adjacent to South Coast Plaza in Costa Mesa, the Orange County Performing Arts Center (photo above) will include a 3,000-seat theater, along with a 1,000-seat playhouse to be built at a later date. The most distinctive design feature of the 203,000-square-foot complex is a monumental granite-clad entry portal framing a concrete and glass auditorium. Architects for the project are Caudill Rowlett Scott.

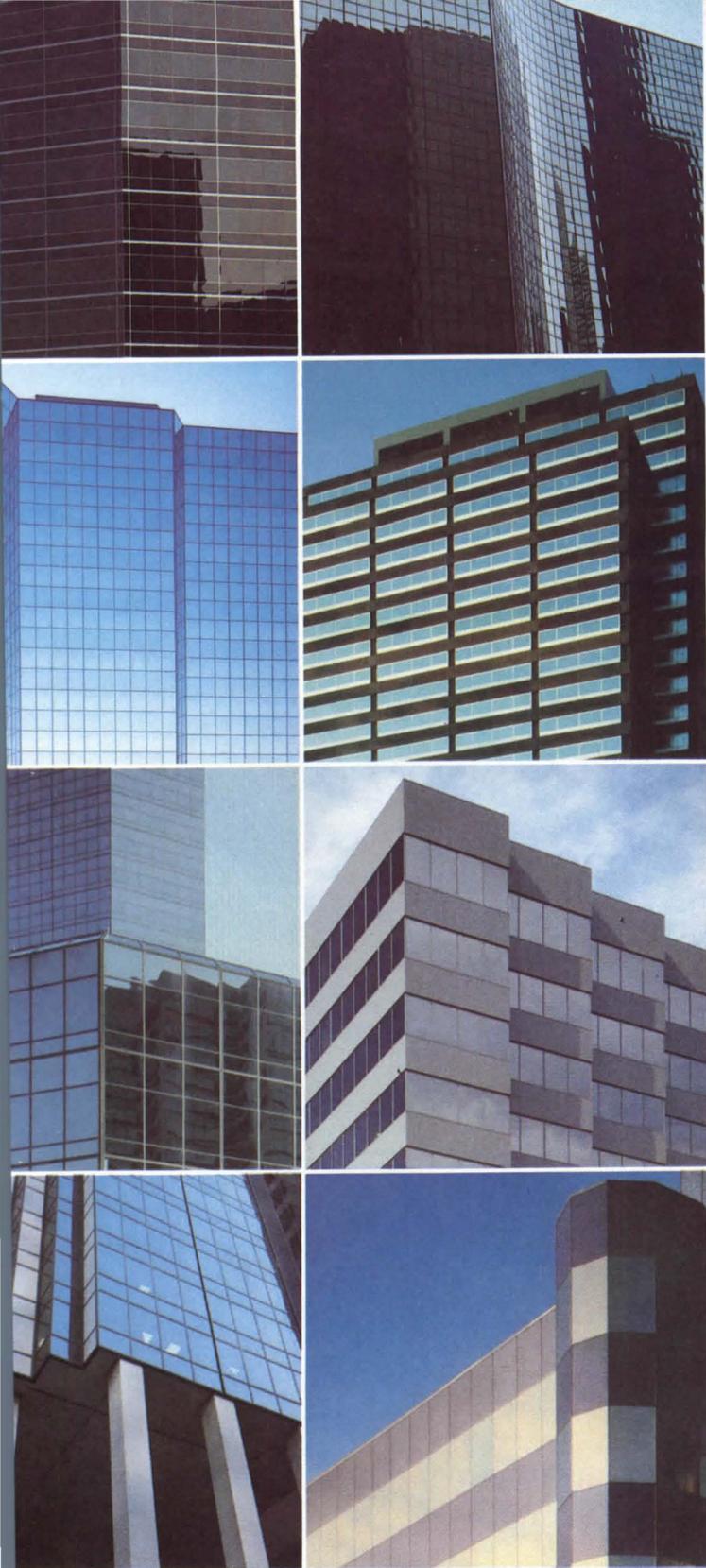
Dutch treat

An exhibition on early 20th-century architecture in The Netherlands will open on November 1 and continue through February 5, 1984, at the Cooper-Hewitt Museum in New York. Entitled "The Amsterdam School: Dutch Expressionist Architecture, 1915-1930," the show will bring together drawings, graphics, furniture, and photographs from public and private collections in The Netherlands that illustrate the social and artistic philosophy of this influential architectural movement. Also included in the show will be issues of *Wendingen*, a magazine written and designed by members of the Amsterdam School as a forum for their theories. A book published jointly by the MIT Press and the Cooper-Hewitt will accompany the exhibition.





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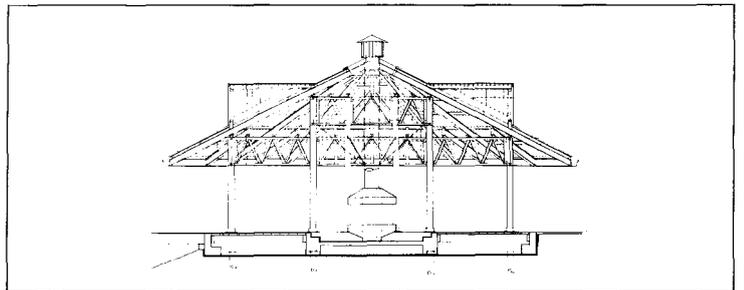
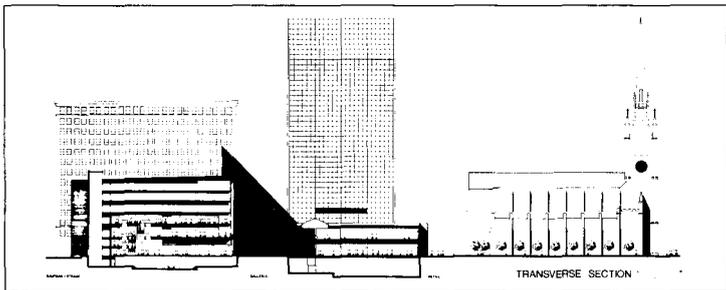
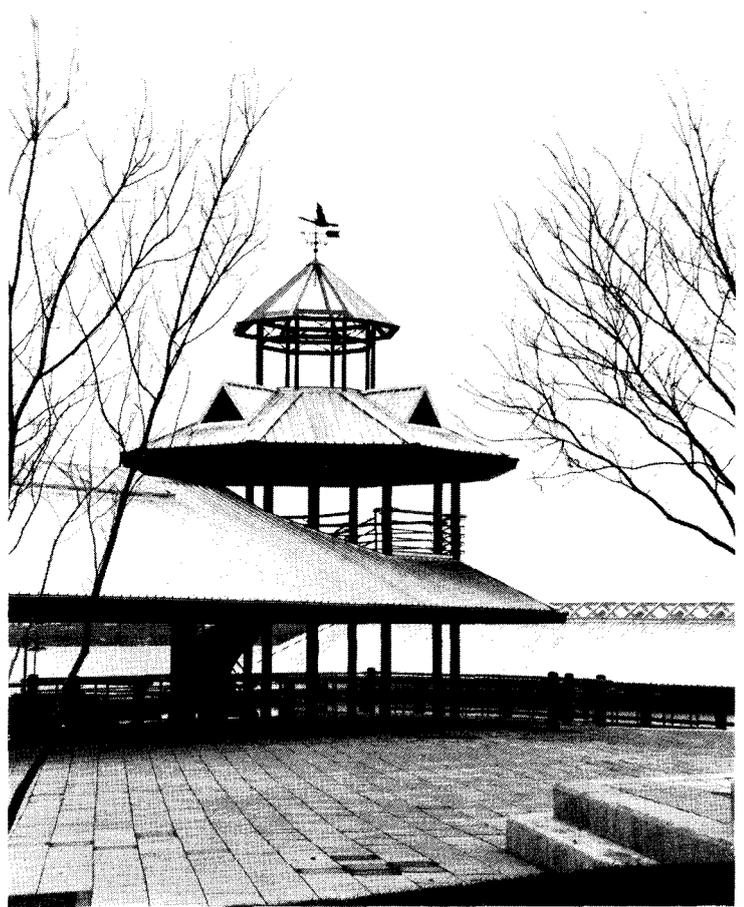
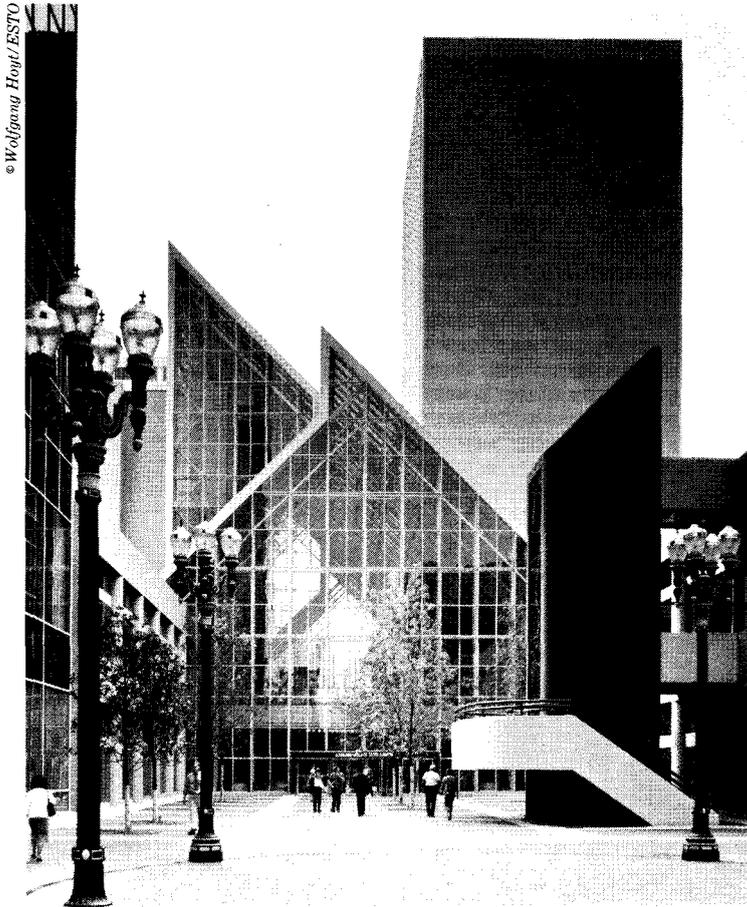
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Design awards/competitions: American Institute of Steel Construction 1983 Architectural Awards of Excellence



1, 2. The Louisville Galleria, Louisville, Kentucky; Skidmore, Owings & Merrill, Architects and Engineers. The Louisville Galleria is the centerpiece and unifying element of a mixed-use project that incorporates two new 26-story office towers, an existing department store, a 750-car garage, and the restoration of the historic Kaufman-Straus Building, an early 20th-century structure that was renovated to house office and retail space. Conceived as an all-weather enclosure for the complex's central circulation spine, the seven-story steel-and-glass

Galleria slopes sharply from the top of the Kaufman-Straus Building across a landscaped atrium and terminates at the second-floor level of the department store. The jury called the scheme "a very urban design solution" and praised the project for rejuvenating a downtown shopping street while creating a year-round space between structures that already existed.

3, 4. Gene Coulon Memorial Beach Park, Renton, Washington; Jones & Jones, Architects and Landscape Architects; KPFF, Structural Engineers. The mile-long lakefront shoreline of Renton, Washington had seen a number of industrial uses over the last century—barge loading, sawmills, log dumping, wartime ship fitting, and surplus ship storage—before the city fathers obtained voter approval of an \$8-million bond issue to revitalize the 57-acre site as a public park. For a combination of open and closed pavilion structures architects Jones & Jones developed a striking scheme that takes into consideration turn-of-

the-century waterfront building styles while incorporating the classic elements of a city park. Likening parts of the ensemble to traditional Scandinavian architecture, the jury noted that "the total use of steel is just what you would want for a pavilion. It fits its surroundings and [recalls] Victorian buildings in the Northwest." The material, moreover, most likely will prove to be an excellent foil against a persistent problem afflicting all public parks—vandalism.

A bus maintenance facility in Memphis, a series of park pavilions near Seattle, and an office tower in Houston are among the 13 winning designs in the 1983 Architectural Awards program of the American Institute of Steel Construction. Chosen from 166 entries, the projects illustrated below and on the following pages are characterized by variety, both of building type and of structural solution, and by their reaffirmation of the AISC program's stated purpose: "To recognize and honor outstanding architectural designs in steel and to encourage

further exploration of the many esthetic possibilities inherent in steel construction." This year's awards jury consisted of Gunnar Birkerts, FAIA, partner in Gunnar Birkerts & Associates; Wayne R. Bishop, AIA, vice president of design at Ellerbe Associates; Stanley D. Lindsey, Ph.D., president of Stanley D. Lindsey & Associates Ltd.; George M. Notter, Jr., FAIA, president of Anderson Notter Feingold Inc.; and George Schipporeit, AIA, chairman of the Department of Architecture at the Illinois Institute of Technology.



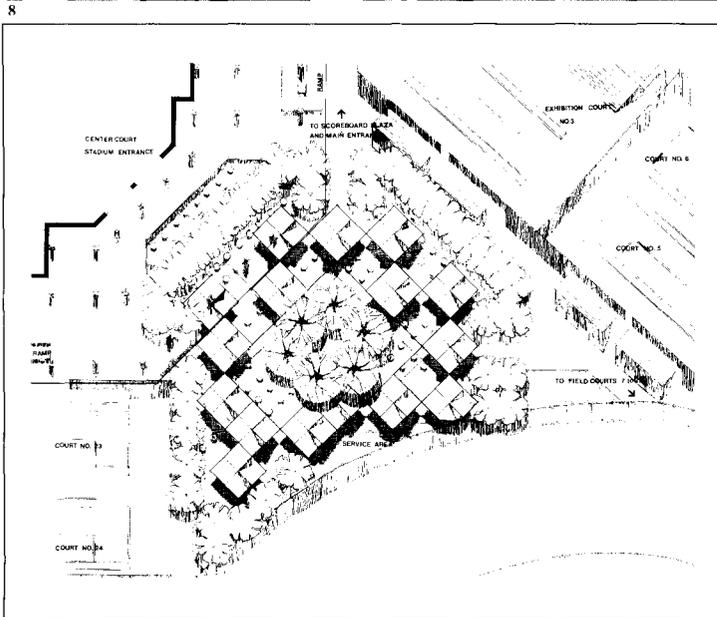
5, 6. United States Pavilion, Knoxville, Tennessee; FABRAP Architects; O'Kon and Company, Structural Engineers. The United States Pavilion at Expo '82 in Knoxville was the winning design in a national competition held by the Department of Commerce. As the largest pavilion at the fair, the permanent structure occupied a pivotal position in the over-all master plan; beyond that, however, the building was intended to be a gracious host structure and a good neighbor to the more modestly scaled national pavilions located nearby. In order to satisfy requirements of both size and respectfulness, FABRAP Architects designed a 450-foot-long, wedge-shaped building whose apparent bulk is diminished by the use of a transparent structural steel framework either left exposed or

clad in lightweight metal and glass. The architects visually reduced the volume further by cutting away a portion of the wedge to create an open-air amphitheater. In addition to noting that the utilization of prefabricated metal enabled the structure to be completed in time for the Expo opening, the AISC jury remarked that "the animation of the steel makes it feel like a fair building."



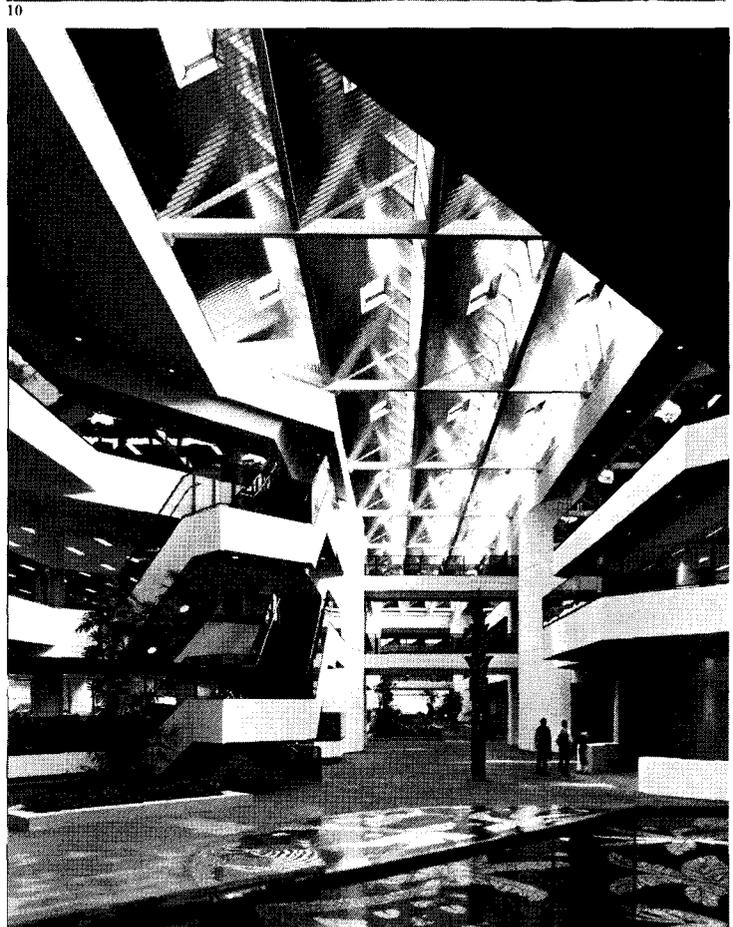
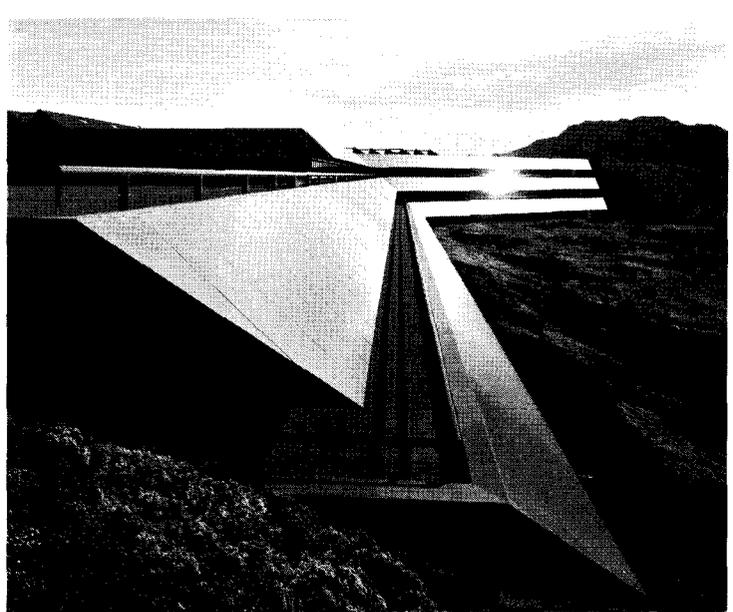
7. Allied Bank Plaza, Houston, Texas; Skidmore, Owings & Merrill, Architects and Engineers. Both in plan and elevation this 71-story, 1.5-million-square-foot office tower was designed to stand out among the ever-growing forest of skyscrapers in downtown Houston. The structure's unusual plan consists of two quarter-circles offset 15 feet from one another along their common edge—a design solution that exemplifies the freedom that architects have enjoyed over the past decade in the design of tall commercial buildings. The Allied tower is sheathed in a mullioned curtain wall of dark green reflective glass which, in

combination with the structure's curved sides, presents an image that the architects call "soft and sheer," in contrast to the angular masonry architecture prevalent in other Houston buildings. SOM employed a structural system of bundled steel tubes for its cost-effectiveness and design flexibility. The awards jury praised the appropriateness of all-steel construction for such a tall, slender tower.



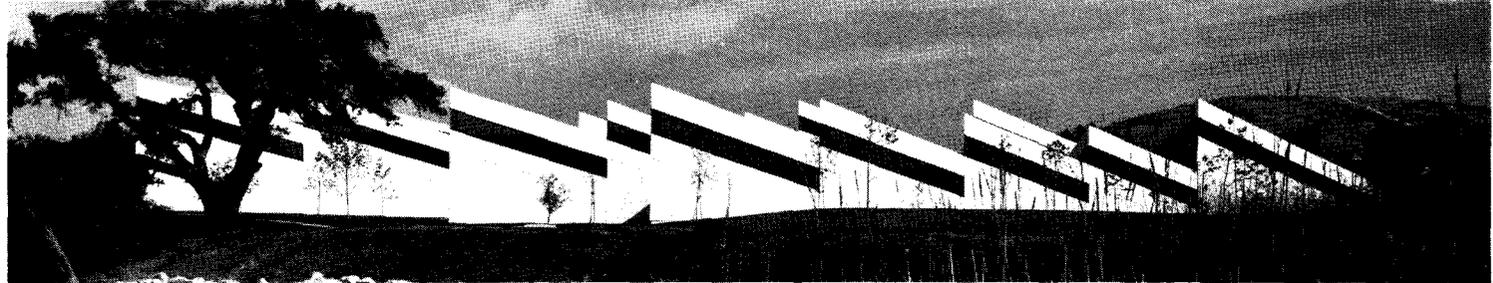
8, 9. **Village Market at the National Tennis Center, New York City;** David Kenneth Specter & Associates and The Schnadelbach Partnership, Architects; Jensen-Lewis Company, Structural Engineers. The Village Market is an outdoor restaurant facility used just two weeks a year in late summer during the United States Open Tennis Tournament in New York. Located on a tree-studded site adjoining the tennis stadium, the market stands at the crossing of two major pedestrian routes and consists of 16 identical steel and striped canvas shelters that resemble pinwheels. The shelters cover nine food stands, along with movable tables and chairs

arranged informally throughout the area. Strings of tiny white lights outline the painted steel framework, while a single bowl fixture in each module throws up light through the canvas to create a glowing surface of yellow and white when viewed at night from the stadium above. The jury praised the conception for its simplicity and noted how the scheme "provides a wonderful scale to an otherwise large open space."

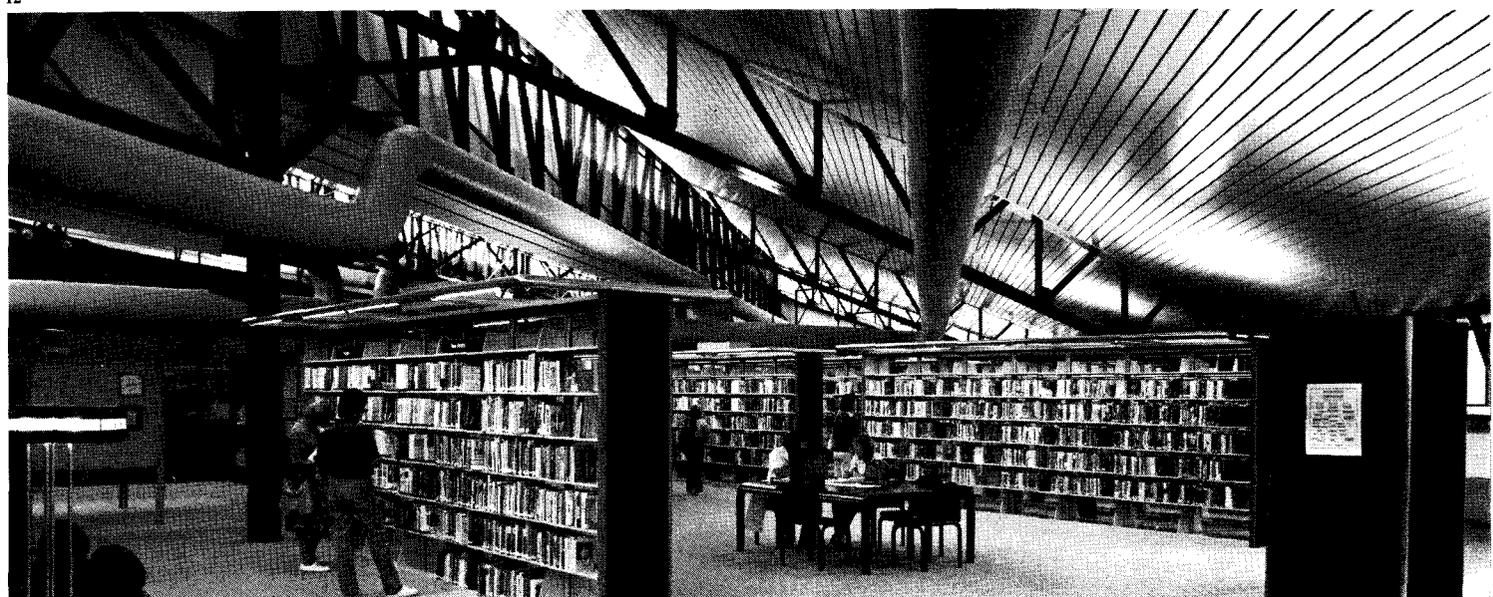


10, 11. **Prudential Insurance Company of America, Western Home Office, Westlake Village, California;** Albert C. Martin and Associates, Architects and Engineers. This 400,000-square-foot office building near Los Angeles was designed as a regional headquarters for a major insurance company. The architects sought to integrate the three-story facility into a plateaulike 64-acre site by setting the V-shaped structure into a hollow excavated from a low hill—a decision that the AISC jury praised. As a response to solar conditions in the area, the

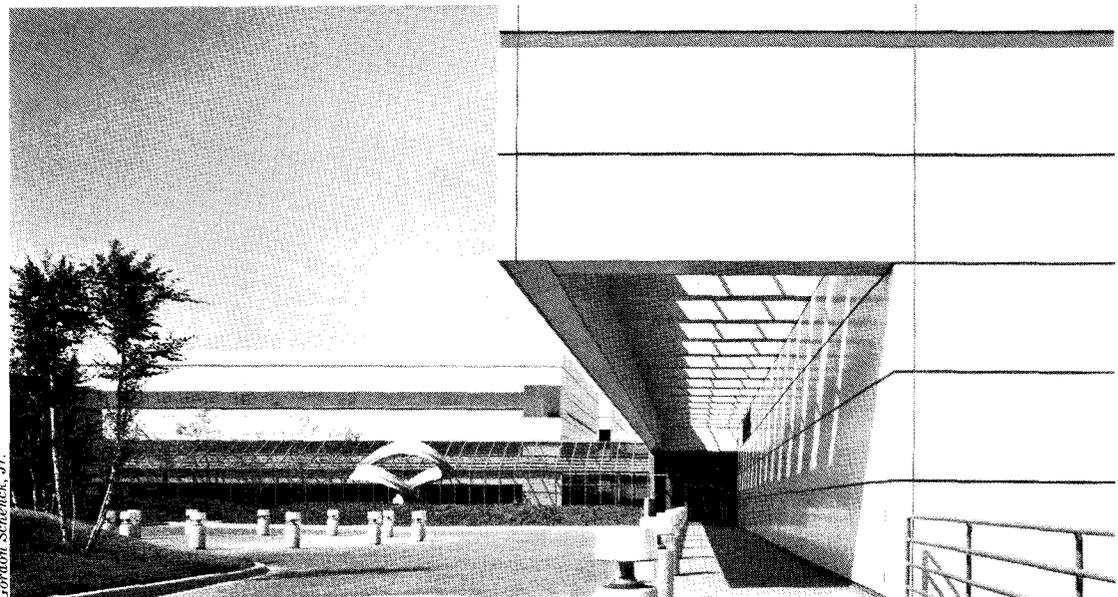
architects created a facade of smooth granite panels that extend six feet out over continuous tinted windows to form fixed sunshades. Where the two main office wings intersect, a full-height atrium with a highly polished reflective ceiling and cantilevered open stairway provides lighting for interior spaces and a focal point for circulation.



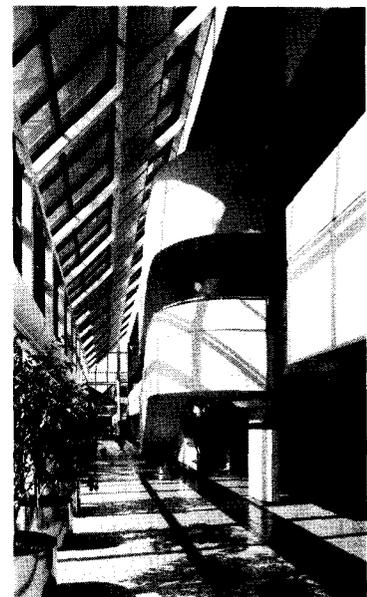
Balharzar Korub



Balharzar Korub



Gordon Schenck, Jr.



Gordon Schenck, Jr.

12, 13. **Thousand Oaks Public Library, Thousand Oaks, California;** Albert C. Martin and Associates, Architects and Engineers. The City of Thousand Oaks commissioned Albert C. Martin and Associates to design a single-story, 56,000-square-foot structure incorporating the community's library and public meeting facilities within a 44-acre park. Energy considerations were a key factor in the final design of the building: the high north face rises dramatically to admit large quantities of natural light through eye-level and clerestory windows while offering views of the impressive oak trees that give the city its name. White plaster-sheathed

walls on the remaining elevations, by contrast, shield the structure from the intense southern California sun. The large main library space is relatively column-free and was designed to allow numerous layout options. The visual potential of exposed structural steel and open ductwork on the interior is fully exploited. The jury's verdict: the library is "an excellent sculptural form. It has a personality."

14, 15. **IBM Information Products Division, Charlotte, North Carolina;** Thompson, Ventulett, Stainback & Associates, Architects; Ross H. Bryan, Inc., Structural Engineers. IBM's 800,000-square-foot manufacturing and research complex in Charlotte comprises a laboratory/administration building, two manufacturing buildings, a cafeteria, a warehouse, and a central utility plant—all situated on a rolling 1,300-acre wooded site. Relying on what might be considered a computer esthetic, the architects used crisp geometric forms sleekly finished with gray enamel-coated steel panels "to reflect the refined image of the manufacturer and his products."

15 The repetition of this facade material visually ties together the building ensemble, while two steel-framed spines—one for pedestrian usage, the other for movement of materials in and out of the manufacturing plant—provide efficient circulation. The AISC jury lauded the facility for its meticulous detailing and for the appropriate relationship between architectural form and client concerns.



16



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16. Chicago Board of Trade Addition, Chicago, Illinois; Murphy/Jahn, Shaw and Associates, and Swanke Hayden Connell, Architects; Lev Zetlin Associates, Structural Engineers. The new addition to the Chicago Board of Trade is, in the words of the AISC jurors, "a tribute to Chicago ... and a sympathetic response to the existing building." And in fact, the 584,000-square-foot structure is an exemplary translation of forms from the existing Art Deco building into a modernist vocabulary of glass curtain wall and lateral limestone screens. Built to house an expanded trading floor and offices for exchange members and staff, the addition has a quiet exterior that

belies the drama of both the frenetic bidding activity and the dynamic architecture within. Particularly impressive is a ten-story atrium rising from a "sky lobby" on the twelfth floor that functions as a transfer point between the two buildings. A glass shaft housing elevators extends into the recess of the skylighted roof and provides access to the perimeter offices.

17. Memphis Area Transit Authority, Memphis, Tennessee; Walk Jones & Francis Mah, Architects; Pickering Wooten Smith Weiss, Structural Engineers (RECORD, March 1982, pages 116-119). Located on a 23-acre site that was once used as a refuse landfill, the four-building complex for the Memphis Area Transit Authority provides maintenance services for the city's fleet of 350 buses. Although esthetic concerns were clearly at work in the selection of painted steel sheathing for the structure—a decision that created a pristine look for the repair facility—the architects also cite the need for passive solar cooling as a major design consideration. Because of heavy summer heat loads in the

Memphis area, a double roof system was designed to form a space of approximately nine inches for air circulation. This scheme allows solar gain to be exhausted by the natural convection of air through the cavity. The sloping roof takes in air at the lower soffit and as the temperature increases, it rises into the louvers of the exhaust turrets. In winter the louvers are closed and heat is recycled back into the building.

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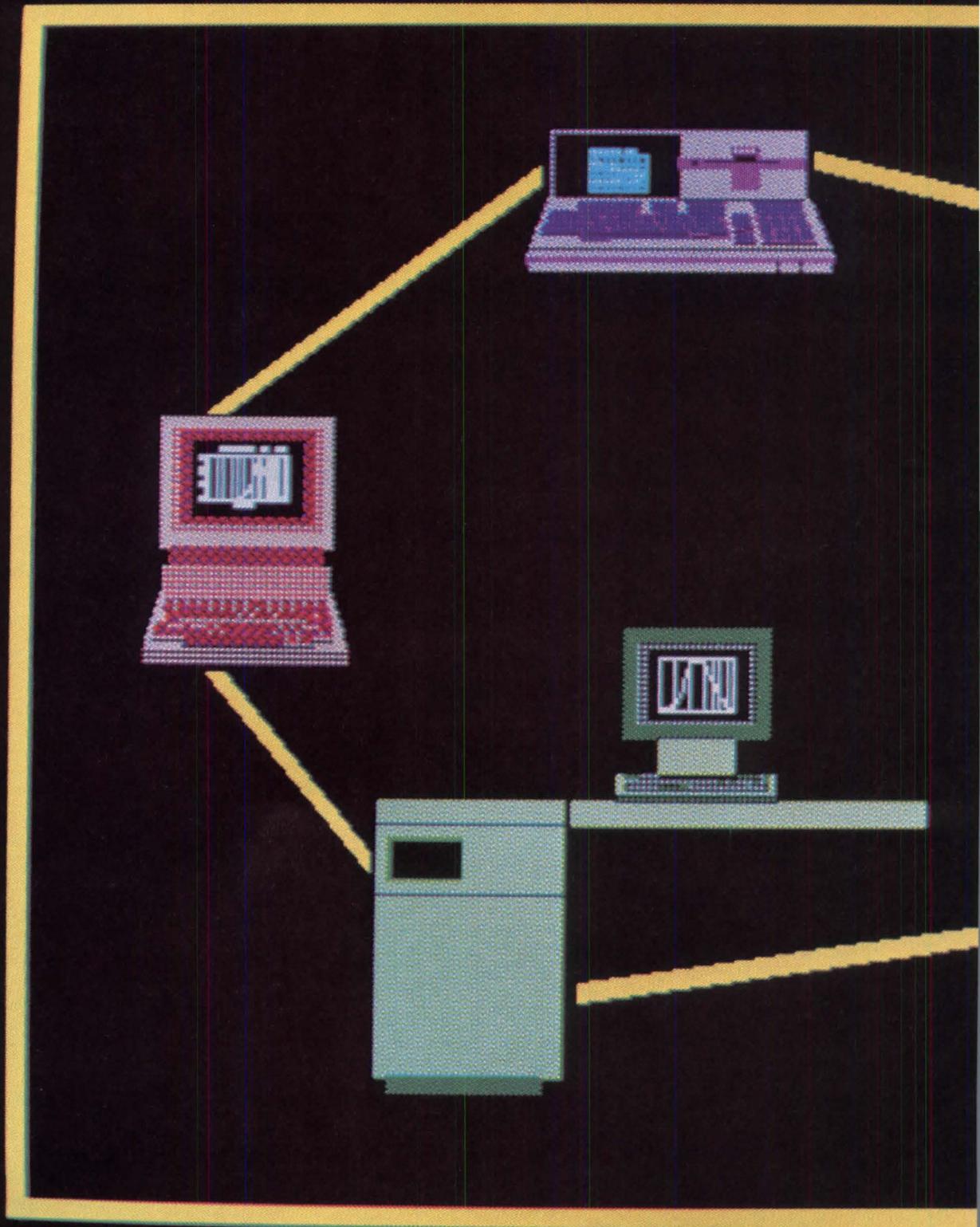
18. Tektronix, Inc., Clark County, Washington; Zimmer Gunsul Frasca Partnership, Architects; KPFF, Structural Engineers. Once associated primarily with shopping arcades, skylighted malls have been used with increasing frequency by architects in a variety of building types, including industrial structures. The ZGF Partnership incorporated a two-story, peak-roofed galleria into this 500,000-square-foot facility devoted to the testing, assembly, and marketing of oscilloscopes and related products. The standardized bent-steel exterior gives little indication of the grand interior spine which, although simply framed in lightweight painted steel, exhibits a dignity rarely associated with manufacturing facilities.

19. Scholl Corporate Headquarters, Memphis, Tennessee; Gassner Nathan & Partners, Architects; Pickering Wooten Smith Weiss, Structural Engineers. When Schering-Plough Corporation needed 50,000 square feet of office space for the divisional headquarters of its Scholl subsidiary, it decided to renovate part of a company-owned warehouse located in an industrial area of Memphis. To make the best use of the 18-foot-high space, the designers inserted a mezzanine that is structurally isolated from the building's existing framing system. White-painted steel framing members and pipe rails create a businesslike atmosphere in the open-plan office areas and in a circular staff lounge.

20, 21. White Marsh Mall, Baltimore County, Maryland; RTKL Associates, Architects and Engineers (RECORD, April 1982, pages 130-133). The Rouse Company commissioned RTKL Associates to design White Marsh Mall, a regional shopping center that encompasses 370,000 square feet of leasable retail space, a "specialty food court" for 22 shops with common seating, and five major department stores. The mall is meant to serve as the town center for a new residential community under development in an unincorporated area near Baltimore. Although a traditional straight-line design was selected for the two-story center, the architects placed the food court slightly off the primary axis to create, in effect, a village crossroads. Such design

elements as trees, brick paving, park benches, a town clock, and decorative columnar lighting reinforce the image of a main street. Exposed structural steel used in the fabrication of the skylighted roof evokes the steel trusses and corrugated metal decks of Baltimore's old waterfront buildings. The AISC jury cited the roofing system in particular as the element that "animates an otherwise conventional way of treating a shopping center."

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Big business preservation

By Nory Miller

The preservation movement began in angry and often futile protest by concerned citizens, architects and planners as wrecking balls swung toward favorite landmarks. These groups quickly mastered the tools of lobbying, government intervention and the ironies of a justice system that could stall demolition just long enough to rearrange the profit picture. Yet effective as these tools have been, they have as often failed because philanthropy, earnest concern and Federal subsidy were not enough.

What is new and what is making preservation work today is a different attitude and understanding on the part of preservationists. They have learned that to succeed they could not and should not depend only upon philanthropy or subsidy, but instead on the tools of the real-estate world—buying and selling their way to saved landmarks and rehabilitated neighborhoods. Groups in more than 50 towns and states have become successful preservation entrepreneurs, turning to the marketplace for what they could not get from the soapbox.

Indeed these preservation organizations have learned that—because they are tax-exempt and have access to noncommercial sources of funding—they can, in some situations, even be at an advantage in the hard-boiled and competitive realm of development, where success is lucrative and losses staggering. The skills needed and the maze of techniques to be mastered reflect not only the high stakes, but the intricacies of modern creative financing. The new tax laws have put the investment-seeking amateur on a par with charitable foundations and government largesse.

Finding funding is, however, only the first step. Next is deciding how to use it—choices that involve sizing up a project's chances for success, using legal tools such as districting, protective deed restrictions and, on occasion, some fancy corporate structuring. At bottom are some very simple choices: a group can buy buildings for resale, putting restrictions on how they are to be renovated; it can fix them up itself and rent them out; or it can run a business out of them itself. A group with less money can buy just the part of a building it's interested in, say, the right to have a facade restored and maintained. A group with no money can ask owners to donate that right (called an easement and generally entitling the owner to a tax deduction) or can fill a gap by finding buyers and tenants for market-stung landmark owners, possibly even collecting a broker's fee in the process.

Each of the four organizations discussed here has more than 10 years of experience. Their long-term successes, however, have not been achieved without hard lessons. Still, the results are encouraging: foundering commercial districts have become crowded magnets; whole neighborhoods have regained both their visual character and their pride; ingenious solutions have been devised for adaptive reuse of individual landmarks. Their accomplishments show what is possible both in residential and commercial areas, with and without foundation support, in little towns and vast metropoli by those with preservation in their hearts but a little of the gambler in their souls.

New York: Wheeling and dealing

New York is a tough town. It certainly can be for preservationists. Despite a heavy concentration of social, economic and political clout, the 10-year-old New York Landmarks Conservancy is only now making preservation headway in the city's hardball world of real-estate development. A spin-off of the Municipal Arts Society, the group, under the chairmanship of *New Yorker* critic Brendan Gill, has a glittering record as a successful advocate of adaptive reuse, including instituting the legal suit that eventually saved McKim, Mead & White's Villard Houses. But its original purpose was to buy landmark buildings and resell them either restored or with restoration assured. Its name, taken from the Nature Conservancy, expresses a well-founded admiration for that organization's shrewd entrepreneurial efforts on behalf of preserving wilderness.

The Landmarks Conservancy, finding itself without sufficient funds to get into New York's high-stakes real-estate game, has instead become sophisticated in intricate leveraging and brokering of deals in which it is, as often as not, only a third party. The most recent of these deals, unless the market changes appreciably, will even yield the big money it has needed to buy into deals in the future.

"When we first began," reminisces Gill, "we wanted a small project. Instead the biggest possible one was dumped in our laps." Cass Gilbert's 1907 Custom House was empty, and a committee of Wall Street financiers gave the Conservancy \$150,000 to try to do something about it. The Conservancy's suggestions were overturned when President Carter's GSA head, Jay Solomon, actively preservationist unlike his predecessors or followers, decided to keep the building for Federal use. Senator Daniel Patrick Moynihan pushed through a bill budgeting \$26.5 million for renovation. Then a new president took office. Almost a year ago, according to Conservancy Director Laurie Beckelman, Sen. Moynihan (also a Conservancy board member) heard a rumor that the building was on a list of surplus to be sold off, a rumor that the White House has since denied. Nonetheless, Moynihan pushed a resolution through the Senate requiring a Senate committee on which he sits to ratify any sale of the building and to be given a monthly status report on the project's development. To date, Beckelman

reports, the building has not been sold; neither have any status memoranda been given to the committee. The Custom House still sits unused as architects Marcel Breuer Associates and James Stewart Polshek & Partners continue trying to fit a 1984 renovation in a late-1970s budget.

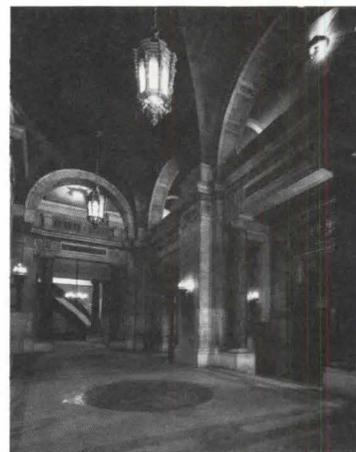
Almost simultaneously, the Conservancy became concerned with five derelict warehouses next to landmark Fraunces Tavern on the one intact 19th-century low-rise block in the financial district. "The owners," explains Beckelman, "tried to tear them down without permits. That gave us leverage." Four years and a new owner later, the Conservancy bargained the properties down to a mere \$550,000. Gill wryly observes, "As mendicants, we can get deals that developers can't." A quarter of a million dollar down payment was donated by Mrs. Vincent Astor and the rest arranged as a purchase money mortgage to be paid by the developer of the project. A consortium of developers and investors came forward to lease the buildings and negotiated a very favorable deal (more favorable, in fact, than the Conservancy would negotiate today). "We were afraid to delay because the structures were extremely rickety and no one else was interested," says Conservancy board member (and developer) Dan Rose. The developers took over the \$300,000 mortgage (paid off last May) and have up to 50 years to gradually pay back the \$250,000 to the Conservancy—without interest—and they have already pulled out their rehabilitation costs with a second mortgage. The buildings have undergone a \$4.5 million restoration outside, and renovation within, as apartments with shops below.

On its third time at bat, however, the Conservancy has not only saved buildings but found a source for its long-sought revolving fund, even though it is not, legally, in a major role. Another white elephant, the 1899 Romanesque Revival Federal Archives Building, was vacant and GSA asked the Conservancy for suggestions. The result is a deal turning the building over to a subsidiary of New York's Urban Development Corporation, the Archive Preservation Corporation, invented for the purpose. The corporation then leased the building to the Teitlebaum Group on a long-term lease. Teitlebaum invested \$50 to \$60 million to renovate the

warehouse into cooperative apartments with retail below, and over the next two to three years will pay \$3.5 million plus 8 per cent a year of the commercial rents to the Archive Preservation Corporation. (Federal law requires this money to be spent on behalf of preservation.) The Conservancy has a contract to administer the fund. It is a new kind of philanthropy—donated Federal buildings. (The city auctions surplus buildings to private developers.)

The other Federal philanthropy that makes this kind of restoration possible is a 1981 tax amendment that allows a 25 per cent tax credit for approved renovation costs of landmark buildings. The credit is so attractive that it took Teitlebaum all of two days to put together a limited partnership. Meanwhile, he paid \$175,000 to the Conservancy for brokering the deal, and with that money the Conservancy has begun an endowment.

As for the future, the Conservancy has just bought a 1740 farmhouse in East New York and hopes to move it to another part of Brooklyn. But, says Beckelman, "The hot thing today is syndication." She means not only private syndications like Teitlebaum put together for the Archive, but a new kind as well. Today, nonprofit organizations, and even cities that need renovation money, are looking to sell their buildings to tax-paying investors who can take advantage of the tax credit, with complicated arrangements for buying them back later. According to Beckelman, the new revolving fund will make it possible for the Conservancy not only to broker deals but to buy into them as well. "Nothing in New York costs only \$550,000 anymore [as did the Fraunces Tavern block properties]," she sighs. "We have to encourage others by doing studies, making restoration loans, arranging deals, buying pieces of buildings." But after 10 years of learning the ropes, they'll soon have the UDC's \$3.5 million with which to climb them.



The Conservancy's unusual approach to recycling landmarks has twice involved taking white elephants off the Federal government's hands. GSA changed its mind on Cass Gilbert's 1907 Custom House (top) at Manhattan's southernmost tip and decided to use the office space itself. The marble gallery (middle) and rotunda (opposite right) are slated for museum use. But nine years later the building is still empty. The Conservancy's involvement in the Federal Archives Building in Greenwich Village (above) has led to a long-term lease and the creation of a contracted fund (see text) that will put \$3.5 million at the group's disposal. The 1899 warehouse will become 347 cooperative apartments with retail and perhaps a theater below. Architects are Warner, Burns, Toan & Lunde.

Nathaniel Lieberman photos except as noted

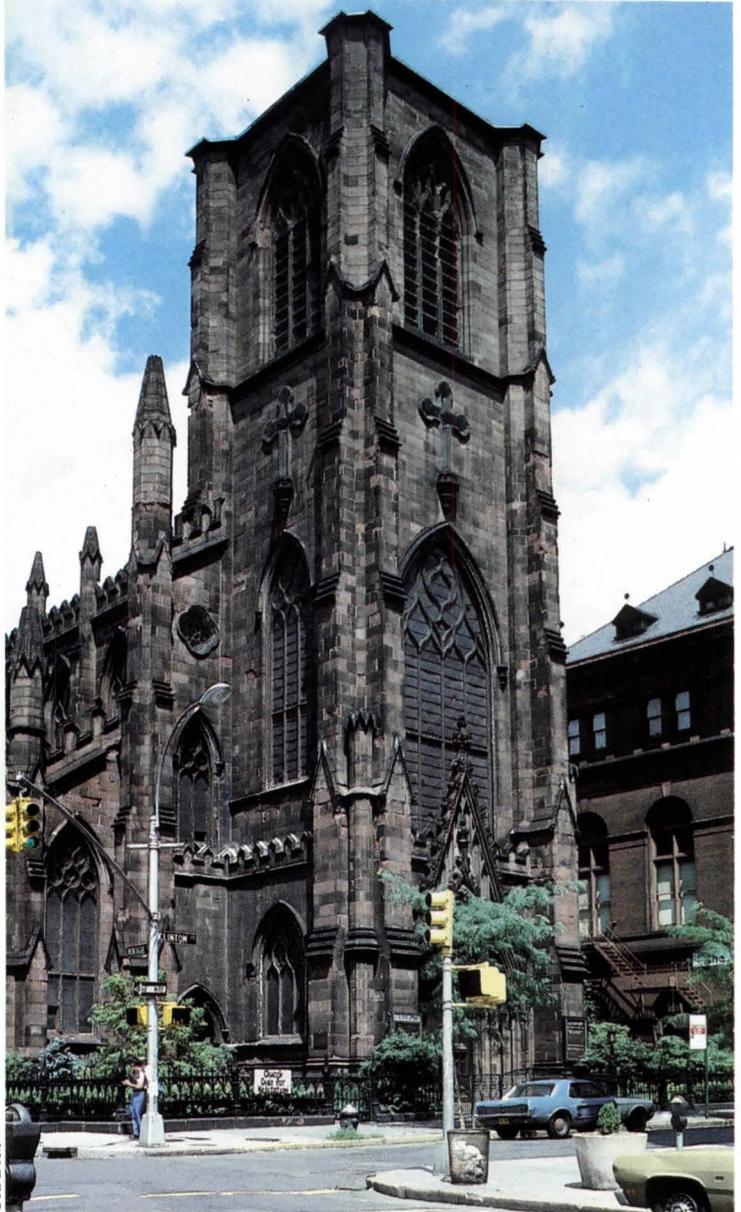
Stephen Zane

"In the 1970s," comments Conservancy chairman Brendan Gill, "the chief preservation task was railroad stations. Now it's churches." A state of dangerous deterioration attracted the Conservancy's attention to the Church of St. Ann and the Holy Trinity (below) in Brooklyn Heights, an 1844 Gothic Revival building by Minard Lefever with windows by William Jay Bolton.

The revitalization plan involves using the building as a performing arts center as well as a church. "Meanwhile," says director Beckelman, "we are trying to work out a syndication—attracting investors with restoration tax credits as well as charitable deductions." Hardy Holzman Pfeiffer developed the restoration plan.



Five 1880s warehouses on the same block as the historic Fraunces Tavern in Manhattan's Wall Street area (above and opposite left) were bought by the Conservancy in 1978 and leased to a consortium which has developed the buildings as one, with 7,000 square feet of retail at ground level and 42 apartments above. Stephen B. Jacobs & Associates were the architects. With contributions from a neighboring building that needed a zoning variance, sales-tax money and a city capital budget appropriation, the Conservancy is trying to pave the sidewalks around the project in bluestone, add period lamps and close adjacent Coenties Slip (a street) to make a pocket park.





Pittsburgh: Virtuoso preservationists



PHLF fought urban renewal on the city's north side with, ultimately, a half million dollar revolving fund. Along the Mexican War Streets (top), the foundation bought 30 houses, renovating most itself and renting them out both as houses and apartments. In the nearby black neighborhood of Manchester (opposite), PHLF helped the neighborhood organization use various Federal, state and city programs to effect renovation without displacement. The foundation renovated a handful of homes itself to set the pace. Above middle: Manchester's Langenheim house before restoration work. PHLF president Arthur Ziegler is standing second from left. Above: The same house at its rededication, after restoration work was completed.

The Pittsburgh History & Landmark Foundation (PHLF) is big business in a big business town. It began buying, restoring and renting out houses in wavering neighborhoods. Today, its biggest project is Station Square, a 41-acre ex-railroad depot, in which an estimated \$70 million has already been invested. At the helm is Arthur Ziegler, a former college English professor with a talent for entrepreneurial development and keen antennae for potential sources of funds. Pittsburgh is particularly well endowed in this area. Its great industrial princes have left behind foundations, corporate headquarters and wealthy descendants. Moreover, as a largely blue-collar town, it has had reasonable access to the Federal treasury. With such generous underpinnings, the Foundation has generally chosen to go in and do renovation work itself instead of acting as facilitator.

Founded in 1964, it has grown to a staff of 33 in five departments. Ziegler himself has spun out three personal subsidiaries: one for consulting, one for architectural design and the latest—Cranston Development Company—for large-scale adaptive-use projects outside Pittsburgh. PHLF began when dedicated local architectural historian James Van Trump brought together his then 26-year-old friend Ziegler with Pittsburgh's leading preservation-minded citizens. The combination of drive, concern and clout has earned PHLF the reputation of a group that delivers.

The 19th-century worker housing of the inner city was PHLF's first development target. Restoration was a way of fighting urban renewal. With what grew into a half million dollar revolving fund, the Foundation bought more than 30 houses, renovated and rented or sold them, spurring many others to do the same. Federal funds, channeled through the city and state, were put to use offering low-interest mortgages, exterior restoration grants, interior rehab loans and subsidized rents. In Manchester, a poor black area with a strong neighborhood organization, the goal, besides deflecting the bulldozers, was to translate tenants into homeowners. In the so-called Mexican War Streets (named after the battles and generals of that war), government funds were instrumental in helping homeowners combat "the gentrification effect." But renters

who couldn't buy, admits Ziegler, did have to leave—those qualified went to nearby elderly housing, others dispersed.

In Pittsburgh's South Side—long a neighborhood of mill workers—the threat was less urban renewal than door-to-door siding salesmen. So PHLF went door-to-door selling restoration, renovating a few badly worn houses as models. To stem the decline of its shopping street, one building was purchased and renovated while merchants were apprised of low-cost loans available to them.

The results have been sufficiently gratifying so that PHLF has all but pulled out of the neighborhood-saving business and is even trying to liquidate the properties it still owns. "Now we just concentrate on doing a model in a neighborhood," says executive director Louise Ferguson. Ziegler estimates the revolving fund at \$30,000 cash and a half to three quarters of a million dollars in equity.

Station Square was the project independent consultants said would never work. But terms couldn't be reached on an earlier site, since developed by others as the Bank Center and now ironically in bankruptcy. Across the Monongahela River lay the Pittsburgh & Lake Erie Railroad Station, on a site of 41 acres—70,000 square feet in five buildings including a grand Edwardian waiting room. In San Francisco lay the pacesetter, Ghiradelli Square. PHLF negotiated a deal in which the Foundation leased one parcel at a time as it was ready to develop it. After 50 years, it would earn half ownership. The lease was signed in 1976. Today, the terminal is a hugely successful restaurant, the freight house a collection of 55 shops and restaurants developed by Rouse Company graduates, the office buildings are renovated, and a six-story warehouse is now attached to the freight house with retail at ground level and offices above. A newly built parking garage has been added, docks for river boats and what PHLF's chairman calls "our biggest blooper"—a 300-room Sheraton hotel. While PHLF's staff and board are not advocates of purist restoration, they openly bemoan the "big red box with the swimming pool in the lobby." Across the road, PHLF has plans for 250 condominiums.

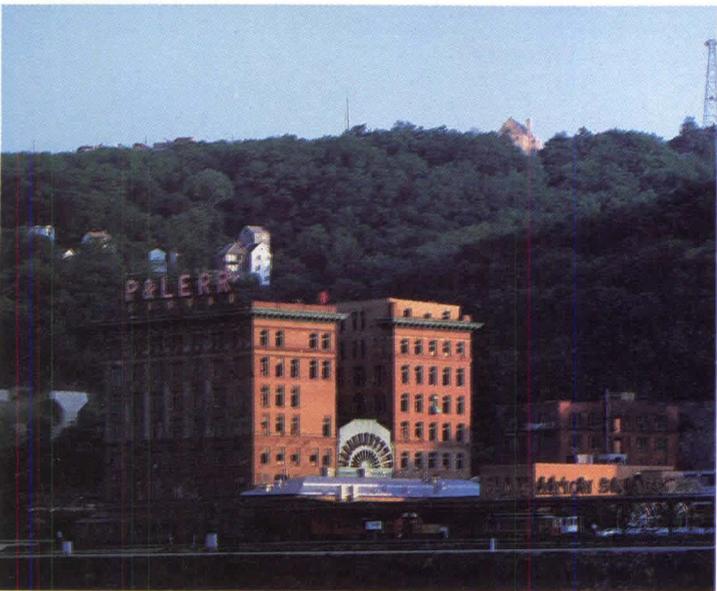
A \$5 million grant from the Allegheny Foundation let PHLF prime the pump for subdevelopers with site preparation and renovation work

on Station Square's key buildings. Altogether that foundation has put \$10 million into the project, the Federal government \$6.6 million. A special IRS ruling allows PHLF to accept money as a charitable foundation, pay taxes on Station Square as a business, and, as of 1988, funnel net profits back into PHLF. This year, says Ziegler, will be Station Square's first in the black.

How does the undoable become the done? Two things are needed, says Ziegler. First, the project needs "a special sense of turf on a large scale, with firm master control—the EPCOT principle." Second, the city in itself needs angels—"seed money of \$200 to 400,000 from city government, a businessmen's organization, a foundation; from there subsidy capital—either grants, government loans or interest write-downs from banks. You cannot do this kind of thing borrowing at prime."

Two years ago, PHLF changed its direction. It began to concentrate on education and technical assistance while the ex-college professor took his experience in preservation development to the marketplace. Throwing his hat in a ring that has long been dominated by James Rouse, Ziegler teamed with Columbus, Ohio developer Robert Kannuth Jr. as Cranston Development to do renovation and "festive retail" projects all over the country. He remains president of PHLF, but is involved mostly with Station Square and general policy. Day-to-day activities are directed by the new executive director, Louise Ferguson. "Pittsburgh has changed since we began PHLF," says Ziegler. "With the new tax breaks, all kinds of people are out there doing preservation."

Timothy Hursley photos



The office buildings and freight house of the abandoned Pittsburgh and Lake Erie Railroad Station and Lake Erie Railroad Station (left bottom) have become Station Square, Pittsburgh's "preservation-is-good-business" success story. PHLF acquired the property on a 50-year lease/own arrangement with the help of a \$5 million grant from the Allegheny Foundation and by doing considerable site preparation and renovation work itself, lured other developers to this isolated site across the Monongahela River from downtown Pittsburgh (left middle). Detroit restaurateur C.A. Muer opened the Grand Concourse restaurant (opposite right) in the Station's splendid Edwardian waiting room in 1978 to gross \$4 million in its first year. The pressure to expand its unexpectedly popular bar will be met with a glass-enclosed sidewalk cafe off a side door. The old railroad offices in the flanking wings are being renovated as 72,000 square feet of new office space. On the river edge are boat docks for the Gateway Clipper, a fleet of tourist boats. According to PHLF, more than \$70 million has been invested in Station Square, including \$10 million from the Allegheny Foundation and \$6.6 million in Federal grants and loans. The original five buildings (including two small office buildings renovated by PHLF itself) have all found new uses, a new parking garage has been built as has a controversial Sheraton Hotel. Still, many of the total 41 acres haven't been touched. Ziegler's plans now call for condominiums, a new development of 250 units aimed at middle-income families.





Arthur Ziegler's particular brand of canny entrepreneur and long-time association with the preservation community has led to a new venture that claims attention far

Galveston: In-town turnaround

If Galveston's recent history proves one thing, it is the possibility of turning historic buildings into hot commercial property right in the thick of everyday city life. Unlike Pittsburgh's Station Square, across a wide river from downtown, or Boston's Fanueil Hall, across a seemingly wider plaza, Galveston's 19th-century cast-iron district is an intact piece of the city isolated by nothing more perceptible than newer paint. Wedged in between Galveston's central business district and its active harbor, The Strand is now a thriving retail, office and residential area and a catalyst for the more bedraggled core. But until it was taken in hand by steadfast preservationists, its history paralleled the roller coaster fortunes of Galveston itself.

A barrier island with the shape of a cigar but the vulnerability of a match, it rose from pirate Jean LaFitte's hideout to a mansion-studded, cosmopolitan port in the 1800s. "Wall Street of the Southwest" was the nickname for The Strand. Then, Galveston's turn-of-the-century was washed away by a devastating hurricane that killed fully one-quarter of the population. While the island repaired its damages and added safety measures, sneaky inland Houston dredged a ship channel and drew off its main industry. Galveston's phoenixlike reappearance was a little shady—gambling and prostitution flourishing on tourist dollars and soldier pay. In 1954, the Texas Rangers shut it down—the military bases were mostly gone anyway. Galveston sunk into the doldrums. The Strand, its 19th-century heritage intact, was given over to flop houses, seamy bars, wholesalers and dead storage.

What were needed were angles and activists. Galveston had its share. But not everything worked. In 1970, the Junior League bought and restored two buildings, one as their headquarters. Nothing followed. In 1971, a bid to declare the area an historic district was angrily crushed by the property owners, a staunch Texan response to "government meddling." A new group, combining arts enthusiasts and members of the island's prominent families, decided a revolving fund was in order. One of them, Ed Protz, administrator of grants and programs for the Moody Foundation, found in his chairman Mary Moody Northern an avid and generous

preservationist. The first \$200,000 was granted. Over the years, another \$300,000 was given to the revolving fund and more than \$2 million to the organization.

Washington lawyer Peter Brink came to help them set up and stayed as director. The fund was located within the existing not-for-profit Galveston Historic Foundation. In the years since, the Foundation's staff has grown from one part-time to 25 full-time employees; its membership quadrupled. Eighteen buildings have been bought and resold. According to Brink, more than \$12 million for-profit investment has been generated, with another \$15 million on the boards; and another \$25 million in not-for-profit development is accomplished or underway.

But for the first four years, it was rough going. The Foundation hired Venturi, Rauch & Scott Brown to suggest street improvements that would help promote the area, spending fund dollars to implement some of them. The Foundation discovered that early prospective buyers were businesses (not developers) unused to arranging long-term financing—so the Foundation convinced nearby financial institutions, who had a stake in the area themselves, to offer \$1.6 million in lower interest loans. The Foundation also discovered real-estate brokers weren't really attuned to the unusual and complicated deals required—and took over brokering both deals and tenants, sometimes trading its effort for deed restrictions on properties it didn't own.

Deed restrictions are the Foundation's key to control. While The Strand is a national district, it is still not a local one, assuring preservation and sensitive restoration is a building-by-building process. GHF uses two legal instruments. The first is a buyer contract that promises approved exterior restoration and interiors renovated for active use by a certain time and a certain minimum expense. If the terms aren't met, GHF can do the work itself and put a lien on the property or demand liquidated damages in the amount that should have been invested, meanwhile reselling the building to someone new. The "damages" are pure profit for the Foundation and in at least one instance it has had to collect them. Additional restrictions placed on deeds prevent demolition, unapproved alterations or poor maintenance—in perpetuity. A

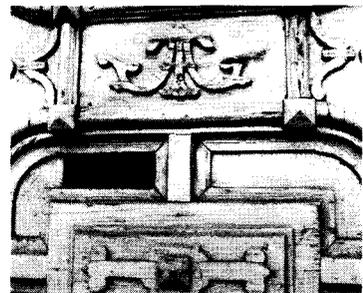
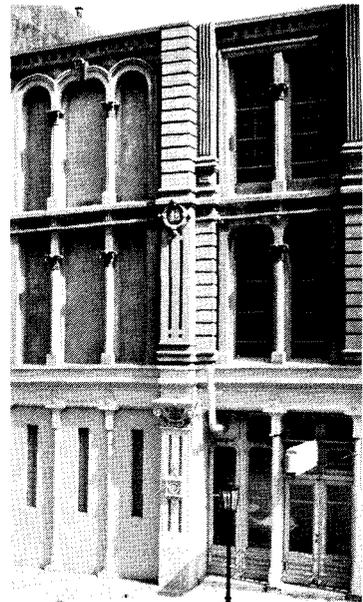
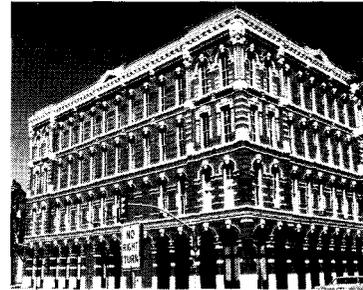
few years ago, GHF added a new restriction—no topless bars or other pornographic uses permitted, a reaction to the deterioration of New Orleans's Bourbon Street.

Price breaks, up to \$5,000 a building, on the first sales finally started clicking by 1975; two years later the fund was breaking even. Moreover, it has also specialized in linking buyers with every available dollar and tax advantage—from Department of Interior restoration and UDAG grants to tax-exempt industrial revenue bonds to the 1976 and 1981 tax breaks. Still, the area has only now begun to attract professional developers. "Most investors have had personal as well as business motivations," admits Brink. Even nationally known Galveston-born George Mitchell, energy and real-estate developer who bought all of GHF's holdings on parallel Mechanic Street and plans an elegant Victorian hotel, has done his Strand developing with wife Cynthia, not through his real-estate firm.

The question facing GHF today is, what next? With \$400,000 in its revolving fund and its charge all but fulfilled, it has its eye on the adjacent business center. It is lobbying to make both The Strand and the CBD tax-free zones, which require that local taxes get plowed directly into area improvements. However, it needs Moody Foundation approval to change the Fund's program. The length of the negotiations on this point reflect changes in the governance of that organization to philanthropists who favor medical research and the performing arts over preservation. But it is an enviable dilemma—finding an encore to success.

Two buildings within the historic district were badly burnt in a fire in August. One housed a disco and apartments; the other—a GHF revolving sale to George Mitchell—was scheduled for renovation this November. Mitchell says if the numbers work out he will rebuild it.

Of the 19 iron-front warehouses renovated along Galveston's wharf, many are by its leading 19th-century architect Nicholas Clayton (opposite right and below middle). The first restorations were done by the town's Junior League (Truehart-Adriance and Stuart Title buildings, opposite and below top respectively), but it was not until the GHF revolving fund that The Strand "took off."





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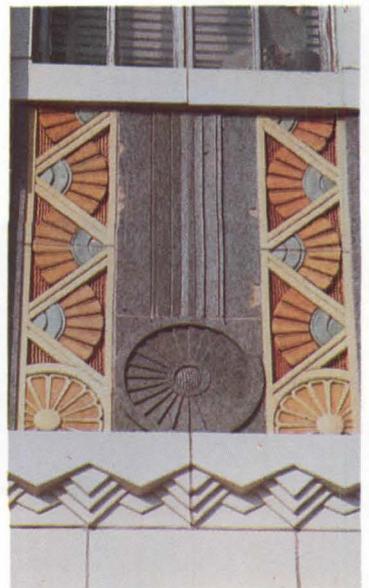
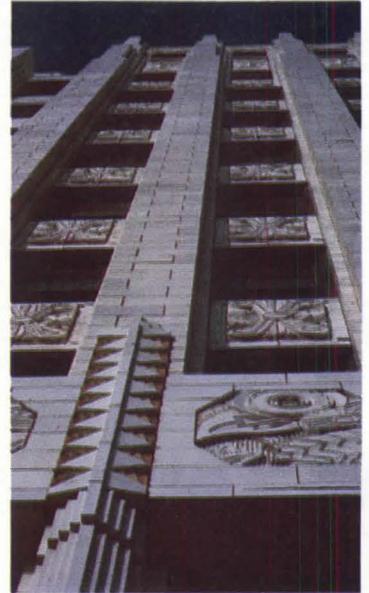
Taft Architects



Robert Lynch bought the Springer Building because it had belonged to his great-grandfather—and because an earlier Strand purchase had been “fun,” haltingly but eventually paying off. Lynch’s first purchase, he reports, required subsidized rents to attract initial tenants. The Springer, purchased as late as 1982, went more smoothly but still required that Lynch put 50 per cent of the project costs up front. “The

tax credit,” he says, “makes it easy to attract high-bracket investors, but the project didn’t have a positive cash flow until interest rates went down.” Taft Associates did the renovation work, putting four shops at ground and eight apartments above. (Pictured: a second level atrium corridor.) Renovation costs: \$31 per square foot.

One of the 10 wealthiest foundations in the country, Galveston’s Moody Foundation not only underwrote The Strand’s revolving fund but moved its own headquarters to the 10-story Art Deco Santa Fe Railroad building at one end of the street. On the ground floor it installed a railroad museum to attract still more visitors to The Strand. Brink estimates the investment at \$13 to 15 million.





Three years ago GHF branched into residential preservation. Galveston's fashionable High Victorian neighborhood—East End—had already been turned around by the private sector. The Foundation's efforts have been concentrated in a paint partnership program—offering free paint to those who provide labor—which has brightened more than 150 houses (some pictured above); a model rehabilitation of a 1910 Greek Revival house; a salvage

warehouse for ornament; technical advice and restoration loans; and one purchase that has been unsuccessfully seeking a buyer for four years. The techniques that made such spectacular turn-arounds of some Savannah and Pittsburgh neighborhoods aren't available, says residential director Gwen Marcus. "Ten per cent of Galveston's population is in public housing. There's just no extra Section 8 money for preservation."

Winchester, Va.: No-frills preservation

Winchester is a tiny town (population: 20,000) in the northern tip of Virginia, but the determination and ingenuity with which a small band of its citizens have tackled preservation is testimony to what can be done without major patronage or even a professional staff.

Through the accident of having slept through much of the Industrial Age, Winchester has much to preserve. More than 130 18th-century log houses remain and dozens of homes in other 18th- and 19th-century styles. Laid out in 1744, Winchester claims to be the oldest town west of the Blue Ridge. George Washington worked there as a young surveyor and was elected from there to his first public office. In recent years, the town that changed hands 72 times during the Civil War has regained prosperity as a county seat and tri-state medical center. These days, it is probably best known for the Shenandoah Apple Blossom Festival, an all-out affair attracting ambitious high-school bands from 15 states.

But despite the town's general well-being, it still has its wrong sides of the tracks. In just such an area, once known as Potatoe Hill, its colonial heritage had been gerrymandered into house-sized cold-water tenements stuffed with families and derelicts. Somewhere between deterioration and demolition, "Tater Hill" attracted the attention of the town's preservation organization—Preservation of Historic Winchester, Inc. (PHW)—and quickly became the group's most active and successful turnaround, showing the high impact of even a low-budget revolving fund at its best.

PHW was founded, as are so many such organizations, after a failed attempt to save an 1812 mansion from its destiny as a parking lot. That was in 1964. Eleven years and several losses later, the group decided that the best way to save a building was to buy it. Over the past eight years, "Tater Hill" has been recast; restorative inroads have been made in low-income housing and a helping hand has been lent to a worried downtown business center. Thirty-nine buildings have been purchased for resale since 1975.

To raise money for the proposed revolving fund, its first director Elizabeth Helm used the smallness of the town to advantage. She and others spoke to the Rotary Club, the City Council, "anyone who would let

us in." Out-of-town preservationists, including Pittsburgh's Arthur Ziegler, were brought in for advice and promotion of the idea to the public.

Meanwhile, Helm set up a prestigious board of financial advisors. Fund-raising techniques included the usual pledge drives, house tours, low-interest loans from the National Trust's revolving fund. But realizing this wasn't yielding enough cash quickly, Helm approached each of the four banks in town with a proposal for guaranteed loans: She signed 10 people to guarantee \$2,500 each and the bank extended a line of credit of \$25,000. As some guarantors were trustees of these very banks (and on PHW's advisory board), the idea snowballed. After two banks had signed up, the other two dispensed with guarantors altogether. There have been no defaults.

Quick turnaround has been PHW's real-estate technique—along with a willingness to take an occasional loss.

The important control technique is placing covenants on each of the buildings. The needed covenants were established "by trial and error," explain Katherine Rockwood and Patricia Zontine, respectively president and revolving fund director during its most active years. "At first, we required approval only on exterior renovations, with a time limit. But we've added restrictions as we went along—such as controlling the placement of electric lines, prohibiting sandblasting of brick or use of aluminum, and requiring colors to be chosen from an approved palette." Covenants also require houses to be opened for the fund-raising house tour every five years.

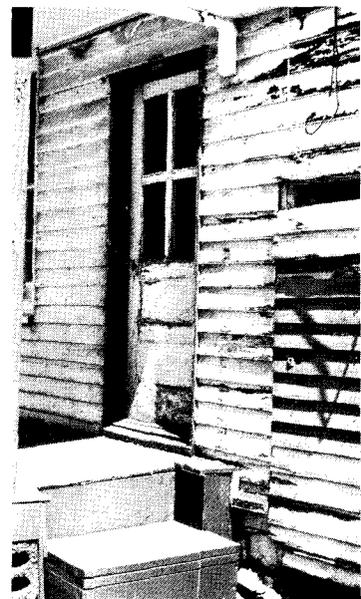
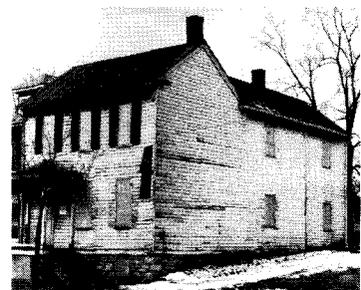
The PHW found that working closely with top realtors paid off, because the realtors knew immediately which houses were on the market, and could alert PHW to purchase them: 1) before slum landlords, 2) before they acquired a reputation as hard to unload, and 3) before the prices became known. To break even, PHW had to add commission, interest and administrative costs to the resale prices. One drawback of their avid purchasing: they sometimes drove up prices artificially. Since 1975, PHW has bought and sold 21 houses in the area and counts another 19 as spin-off, inspired by their intervention. They estimate more than \$2 million

has been poured into the houses in renovation. Assessments are up 268 per cent in contrast to the rest of the city's 49 per cent. One interesting point that is not typical in other cities: PHW has a rule that no one on the steering committee can purchase a property until either it has been on the market 30 days or PHW had considered and rejected it. "We don't want to be thought of as self-serving," Zontine emphasizes.

By 1980 the market "became a real damper," so Zontine turned PHW to renovating low-income housing with Community Block Funds and Section 8 subsidies. PHW also purchased and is renovating (with a state grant) a commercial building downtown. The deal (known as a "bargain sale") took advantage of its not-for-profit status. The appraised value was \$78,000, but the owner feared he could only get \$72,000. PHW convinced him to sell for \$68,000, trading \$4,000 in taxable income for \$10,000 in charitable deductions.

Meanwhile, Rockwood and Zontine have opened Preservation Projects, a consulting firm to advise nascent preserving groups. Key points to beginners include:

- 1) Pick a bad neighborhood, not the worst neighborhood.
- 2) Focus the money in an area that is highly visible, with plenty of good housing stock, selling under market, with a mix of rental and long-term residents.
- 3) Do a survey and have the area declared a national historic district if possible—buyers are attracted by the 25 per cent tax credits for renovation that result.
- 4) Have a small steering committee that can buy and sell without getting approvals; this is an entrepreneurial business, not a bureaucracy. For the larger board, a mix of hard workers and people with real social and economic clout is the goal.



The deteriorated 18th-century homes of Winchester's Potatoe Hill neighborhood were saved through PHW's W. Raymond Jennings Revolving Fund, named for the man who encouraged it and then died in a plane crash before its fruition. PHW's concern was sparked by the slum landlords who had permitted the rare homes to decay dangerously. Shown opposite right are four recycled and restored houses. Top left: A couple restored this Federal-style house from an unheated tenement with one bathroom for 13 families. Top right: Ex-PHW president Katherine Rockwood's home, a timber frame house circa 1785. Bottom right: Two (now joined) of Winchester's more than 130 log houses, characteristically covered with clapboard as a refined intown dwelling. PHW let the logs be exposed on its first purchase (Simon Lauck house, circa 1790, bottom left). This publicized the neighborhood's Revolutionary War landmarks but lost the owner his tax certification. Above: Representative of the area before PHW are these two houses—one (top) still on the market after three years; the other (bottom) next door to successful restorations. The problem? A badly depressed housing market forcing the organization in other directions.



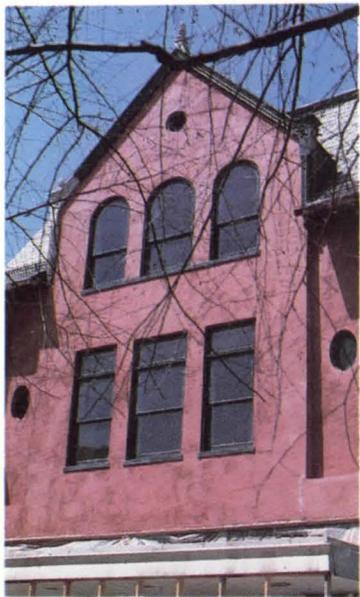
Nory Miller photos



The most PHW ever paid for a property, \$55,000, went for this 1840 mansion with 1880 additions. Taking advantage of the 1976 tax amendment allowing rapid (five-year) depreciation, the owners were able to profitably convert the building into nine middle- to high-rent apartments. In doing so, they accepted a long list of covenants

including PHW's first interior covenant protecting the sumptuous Victorian woodwork. A detail of the restored porch is shown opposite bottom photo.

Two years ago, PHW joined local merchants in their competition with a new regional mall by buying the 1887 Huntsberry Building. PHW removed a 1960s modernization (below top) and restored the upper floors (below middle) using early photographs. Its as yet unrealized plan—apartments above the store—has already influenced other downtown merchants to try the same.



Sensitized to the ironies of gentrification, and short of homebuyers for Potatoe Hill, PHW turned its attentions in 1980 to renovating houses in one of Winchester's poor black areas for its own residents. Using Community Development Block Grants, Section 8 rental subsidies and Virginia Housing Development

Authority loans, three duplexes and one freestanding house on South Kent Street were purchased, renovated and rented at rates—25 per cent of income—that area residents could afford.

Restructuring the corporate habitat



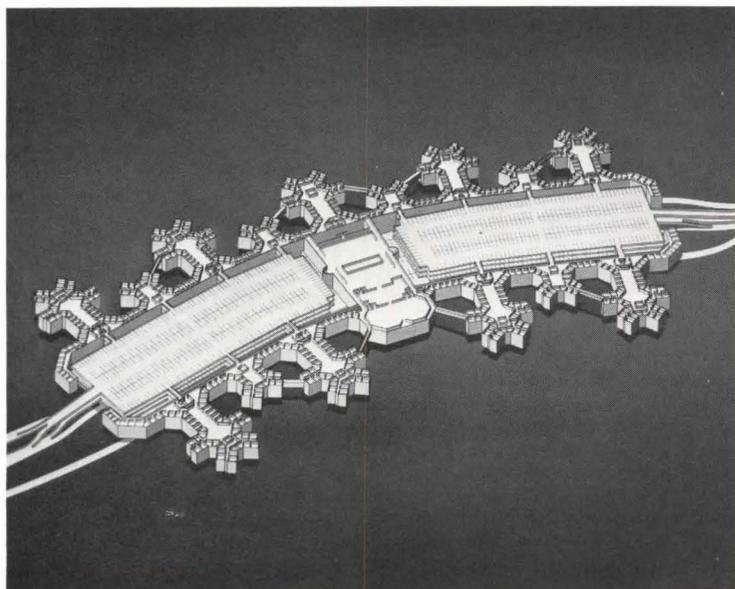
An airplane or helicopter affords the only vantage point from which one can fully comprehend the extent of the Union Carbide Corporation World Headquarters in Danbury, Connecticut. Though the obligatory aerial perspective results in part from the sheer size of the sprawling structure—a quarter-mile long, it houses 1.3 million square feet of office space and garage parking for 2,850 cars—the impossibility of ground-level panoramas is also by design. At their client's request, architects Kevin Roche John Dinkeloo and Associates have sited the aluminum-clad structure as unobtrusively as possible amid 645 acres of woodland. This low-profile rural complex poses a striking contrast to Union Carbide's former headquarters in New York, a 52-story International Style tower on Park Avenue. The company's still-controversial decision to sell the 1960 glass box and transfer its 3,000-person operations to "exurbia" presented client and architect with an opportunity to assess established conventions of corporate life, rectify long-standing impediments to productivity, and create a tangible inducement for regional managers to join the home office.

Rather than simply "turning a skyscraper on its side," as the project has sometimes been described, Roche Dinkeloo studiously avoided all preconceptions of office-building layouts—urban and suburban. The designers began by conducting over 200 hour-long interviews with Union Carbide employees, to ascertain the shortcomings of their existing work environment and the hoped-for advantages of new quarters. Among the aspects of the high-rise most commonly deplored was the distribution of graded perquisites: large offices, corner rooms, windows, private toilets, and expensive furnishings. The flexibility of modular wall panels and luminous ceilings was patently a dubious asset: Union Carbide spent as much as \$1.5 million per year on rearrangement of partitions and furniture occasioned by hierarchical change, even though upwardly mobile executives were often troubled by a sense of increasing remoteness and by unease at petty wrangling over status symbols. Working from the premise that most executives, regardless of rank, perform essentially similar kinds of tasks, Roche Dinkeloo proposed that all offices at Danbury be uniform in size, with exterior windows, and furnishings reflecting individual need and taste, not prestige.

Full-scale mockups indicated an optimal office size of 13 and one half feet square, dimensions that proved adaptable to many different layouts, including small conference-room use. By developing a wedge-shaped variant on this standard unit, Roche Dinkeloo was able to cluster offices and secretarial stations around central "resource centers" (plan overleaf). The deployment of 15 splayed office pods along the perimeter of multilevel parking garages stems from a pragmatic desire for compactness (much of the site is unusable wetland) as well as from Union Carbide's philosophical commitment to centralization. Corporate administrative functions and shared facilities—board room, reception lobbies, cafeterias, libraries—are concentrated in the core of the complex between the garages (see page 115.) Visitors and deliveries are channeled at ground level to interior roadways on opposite sides of the core (overleaf). Employees enter via motor ramps at either end of the building and park within 150 feet of their offices. Inside the pods, readily accessible skylighted staircases minimize elevator use. Other energy savings result from climate controls in each office and from abundant daylighting. The combination of ambient and task lighting also enhances the intentionally domestic character of office interiors (see page 114). Views of grassy courtyards and surrounding foliage suggest that one is inside a sleek tree house, belying the gargantuan scale of the entire complex. *D.B.*



Ronald Livieri (Kevin Roche John Dinkeloo and Associates) photos

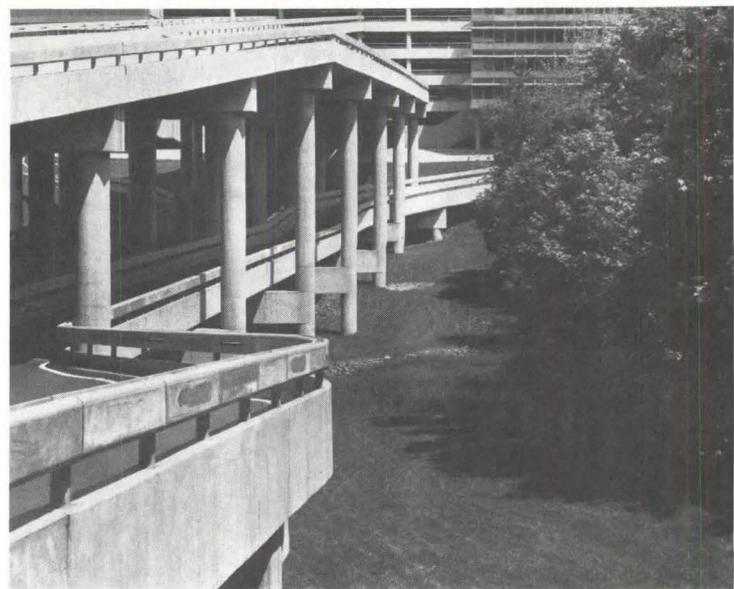
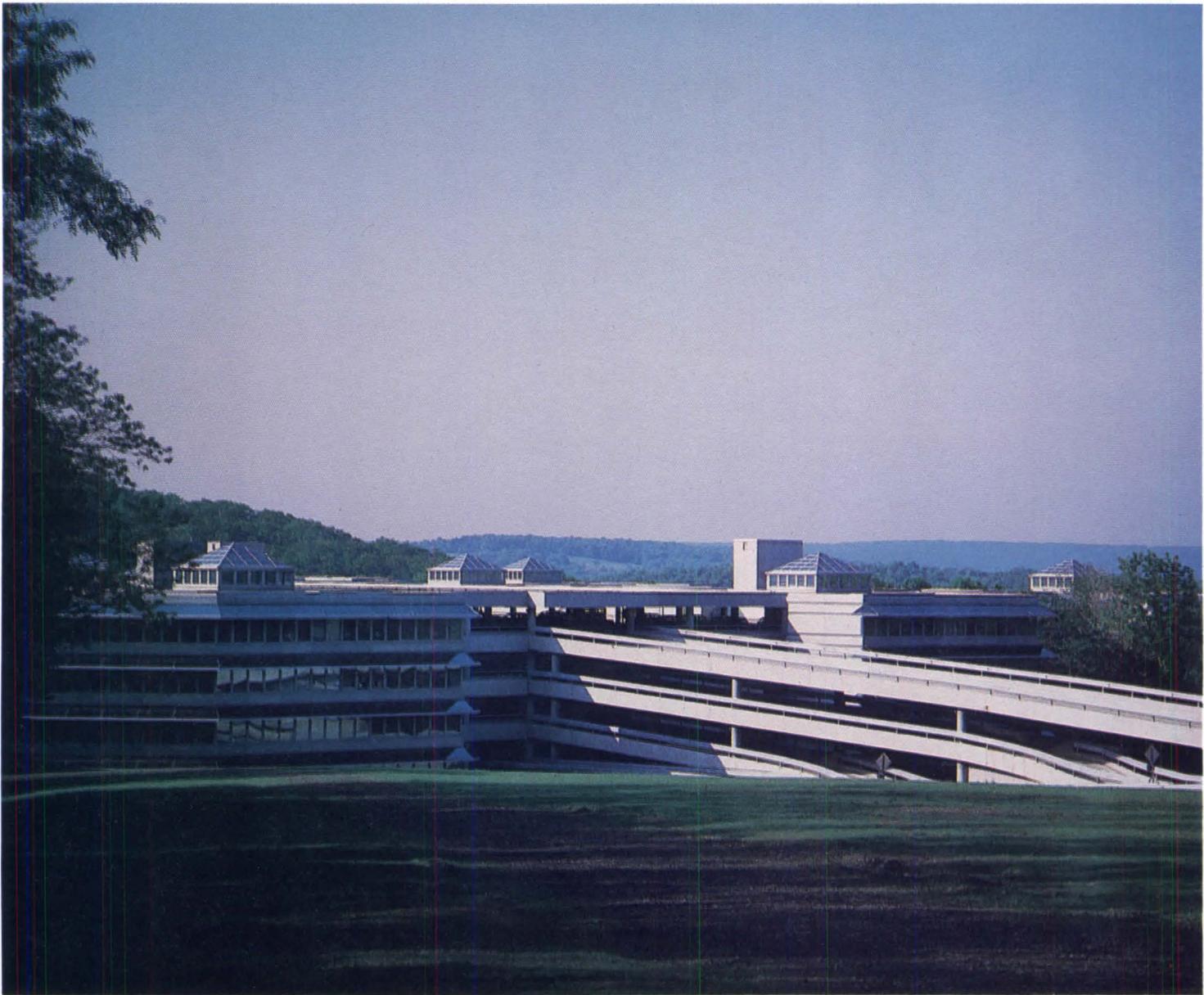


Union Carbide's decision in 1976 to move from New York to Danbury arose from concern with the wasted energy and scheduling problems of commuter-executives, and from a perception that New York's much-publicized crime, fiscal crises, and deteriorating public services made it difficult to recruit middle-management personnel from other parts of the country. In what was probably the largest such transfer ever accomplished, over 90 per cent of managerial staff elected to remain with the company, while approximately 60 per cent of secretarial and other support staff

stayed on. In all, some 1,150 employees found new homes in the vicinity of Danbury. Most live within a 45-minute drive of the headquarters, which is geared entirely to automobile transportation. Sited in a saddle of land surrounded by second-growth forest, the new complex is virtually invisible from nearby highways and residential subdivisions. Contours of the terrain governed the curvature of Roche Dinkeloo's plan. Union Carbide determined at the outset of the project that there should be no expansion at this site beyond facilities for 3,500 people.

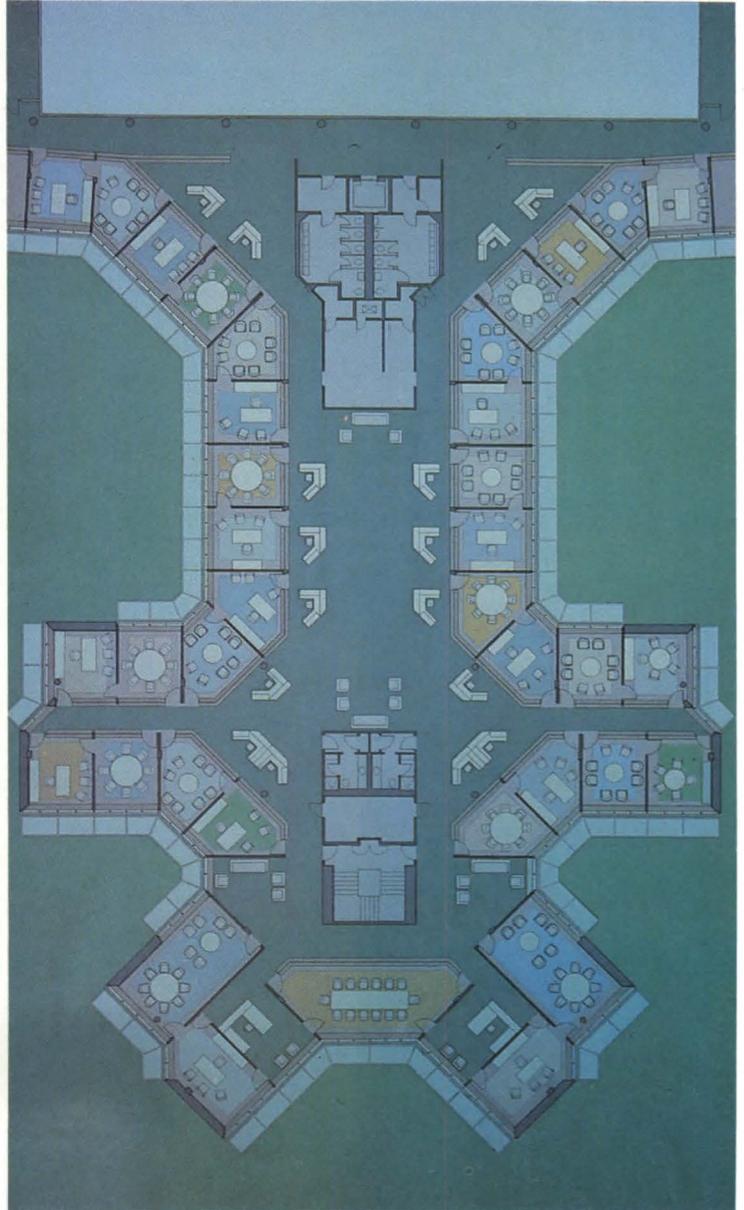
Open meadows by the approach ramps offer the only views that begin to convey the magnitude of the complex. Multilevel access roadways create the effect of a building straddling a spur of neighboring Interstate Route 84. Ramps enable employees to drive directly to the stories where their offices are situated and park near the entrances to their pods. Visitors follow a ground-level route to a

skylighted interior road (opposite above) outside the main reception area on the south flank of the central core. Visitor parking and central security offices are also located here. Another road carries delivery trucks to loading docks on the north side of the core. Besides meeting fire-code requirements, the 30-foot-wide interior streets provide natural ventilation. Glazed bridges link the parking garages and



offices. Insulated translucent panels along the inner corridors mask the view of tiers of parked cars (see also page 115, Figure 12). The plan detail indicates the variety of layouts possible in the perimeter offices. U-shaped secretarial work stations lining the corridors receive natural light through clear glazing above five-foot-high mahogany-trimmed file walls. Windowless "resource centers" in the middle of

the pods enclose supply depots, mail rooms, duplicating machines, file rooms, and conference areas with audio-visual equipment.



Overleaf: Once they had concluded that all executives should have offices of the same size, Roche Dinkeloo and Union Carbide agreed to offer employees a choice of furnishings to lend individual character to their surroundings. (The company found that the popularity of this program helped to overcome resistance to the headquarters move.) Custom-designed pieces were combined with stock furniture, light fixtures, prints, and textile wall surfaces to create 15 basic interior "packages," all available in alternate color schemes, and all identical in total cost. The 11 categories of artwork ranged from reproductions of Currier & Ives lithographs and antique maps to contemporary photographs. Prior to the move, full-scale sample rooms were installed in the New York headquarters, and office-planning

counselors helped employees evaluate their functional needs and esthetic preferences. Some 2,600 employees were interviewed, and the data collected were entered in a computer inventory used for all furniture orders. The typical offices shown overleaf (Figures 1-6) suggest the diversity of available options. Traditional period furniture (not shown) and a "Scandinavian" ensemble of Aalto chairs and custom-made table (Figure 2) were the least popular offerings. Most employees chose sturdy, restrained modern pieces with plenty of storage capacity (such as Figures 1 and 3). Floor lamps and ceiling and wall fixtures complement ambient illumination from up-lights mounted above hallway file-walls and window transoms (see Figure 3). Carpets are inset within hardwood borders to complete an effect deliberately

reminiscent of a private den or study. A heterogeneous assemblage of decorative elements also distinguishes the two cafeterias on the third floor of the center core (Figures 7-11). Here the ambience is closer to that of a suburban shopping mall than a house. Since the seclusion of the headquarters complex and the brevity of the half-hour midday break make it impractical for employees to eat lunch elsewhere, the cafeterias were designed to look like a series of different mini-restaurants. After leaving the shimmering marble-and-stainless-steel serving area (Figure 7), one can carry his tray to the softly lighted "club room" (Figure 9) or an airy trellised garden pavilion (Figure 10), both located within the main 925-seat cafeteria. A second dining facility, the 300-seat west cafeteria (Figure 8), offers a salad bar and views

over wooded hills. There are also 14 conference dining rooms on the fourth floor above the west cafeteria, adjacent to meeting rooms and the board room. Skylights brighten upper-level corridors (Figure 12).





7



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11



12



Owing to marshy ground and Union Carbide's dedication to preserving as much as possible of the existing landscape, Roche Dinkeloo mounted the building on exposed concrete columns. Precast slabs are 13 inches thick and walls are clad in aluminum panels with a sandblasted finish that softly reflects the colors of foliage. Chamfered panel edges reminiscent of rusticated joints help to unify horizontal fenestration and tinted glass awnings. These projecting screens were angled for maximal protection against summer sun and glare without impeding reflected daylight and sylvan vistas. Curtain wall panels and awnings were

erected as fully glazed units. Windows are pivoted to open although Union Carbide's operations department keeps them shut. Third-floor bridges connecting the extremities of fingerlike pods permit variable combinations among Union Carbide's 20-odd components (divisions, subsidiary companies, and overseas affiliates) and corporate departments. Because the basic parti obviates long-span enclosures, it was possible to reduce the floor-to-floor height of office areas from the standard 12-13 feet to nine feet, five inches, cutting down on the distances for vertical circulation.

The architects' landscape plan, as yet largely unrealized, calls for manmade rock formations under the elevated portions of the building and vines trained up the outer columns, to heighten the impression of a precisely tooled artifact hovering in the forest. Nature walks, an exercise trail, and playing fields draw office workers into Union Carbide's woodland preserve.



*Union Carbide Corporation
World Headquarters
Danbury, Connecticut*

Owner:

Union Carbide Corporation

Architects:

Kevin Roche John Dinkeloo and Associates—Kevin Roche, John Dinkeloo, James P. Owens, Jr., David Powrie, project architects

Engineers:

Weiskopf and Pickworth (structural); J.R. Loring Associates (mechanical/electrical)

Contractors:

Corbetta Construction Company (foundations and superstructure); W.L. Crow Construction Company (general construction); O & G Industries (site work)

Country life

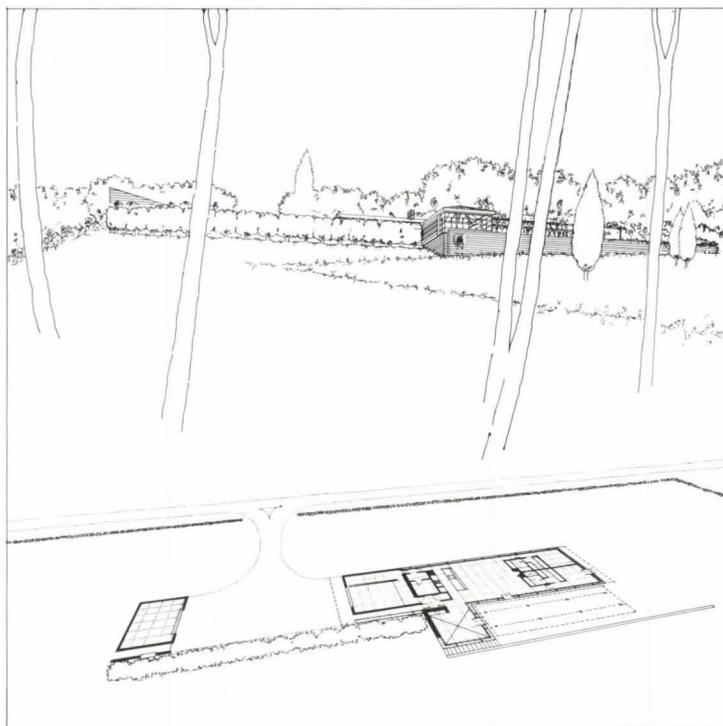
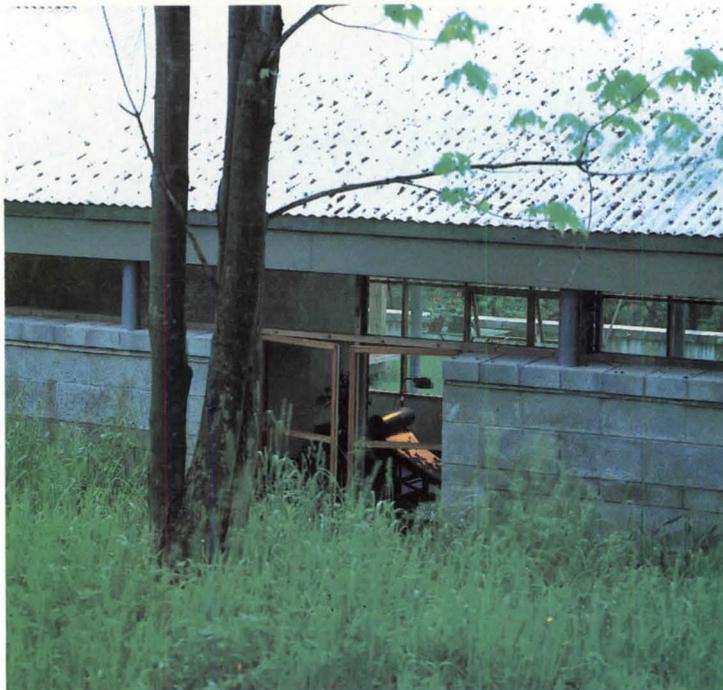


Raikes House
Roxbury, Connecticut
Redroof Design



"It looks like a Tuscan chicken coop," quipped one of the associates at Redroof Design, when principal Yann Weymouth unveiled the Raikes House scheme. And while the comment took Weymouth by surprise, he decided to consider it a compliment. For the design and construction of the house were indeed governed by the classic rural principles of economy, utility, and modesty.

"It's taking a vocabulary of ordinary materials and putting them together to make a grammar that makes the house," reports Weymouth. And if the vocabulary and grammar of a concrete block box with a corrugated galvanized steel lid on it are more commonly the vocabulary and grammar of light industrial buildings, that's all right with Lady Audrey Raikes, an Englishwoman who commissioned the 3,000-square-foot house in anticipation of her retirement to New England. Since she intends to use the house as a vacation residence until her retirement, the tough, unadorned materials were deemed welcome insurance against the ravages of neglect. And since her budget was not lavish, the relatively cheap concrete block and galvanized steel were deemed no less welcome insurance against cost over-runs. This latter was of some concern, owing to the considerable site work necessitated by the owner's request for "no changes in floor level." (Lady Raikes reports not being as nimble as she once was.) Which sounds like a simple enough proposition until one visits the site and realizes that Weymouth moved if not heaven at least a great deal of earth to satisfy the request. The house rests on a ledge overlooking a deep ravine. To prevent the visual sensation of teetering on the edge of a cliff, Weymouth pushed the house back into the hillside (photo top right), away from the reinforced concrete retaining wall (photo bottom right). The area between house and retaining wall could thereby be given over to a terrace which is partially protected by a pergola that terminates in a conservatory and potting shed. To maximize the view, and to allow sunlight into the hill-embedded house, the west facade is given over to a double-glazed window wall. One looks in through the neat cypress grid to the open plan living/dining/kitchen area which is flanked by a pair of bedrooms on the south, and a garage and wood storage area on the north. Although the plan is as simple as the concrete block is humble, Lady Raikes did not object. However, when it came to the furnishings, the line was drawn on simplicity and rusticity, as the leather-and-chrome classics of Le Corbusier strike a note of urbane sophistication. *But Weymouth* didn't mind; after all, an English Lady is entitled to a bit of luxury.



Raikes House
 Roxbury, Connecticut
Owner:
 Lady Audrey Raikes
Architects:
 Redroof Design—Yann Weymouth,
 partner-in-charge; Peter Coan,
 Philip Miller, Franklin Salasky,
 David Rohn, design team. Franklin
 Salasky, Barbara Anello,
 furnishings
Engineer:
 Robert Silman (consulting)
General contractor:
 Roxbury Contractors



The recent work of Arata Isozaki: Part I

By Martin Filler

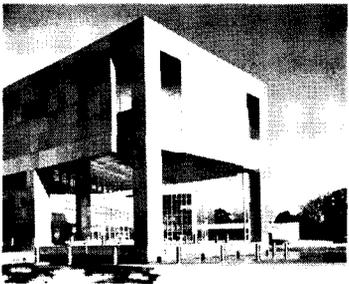
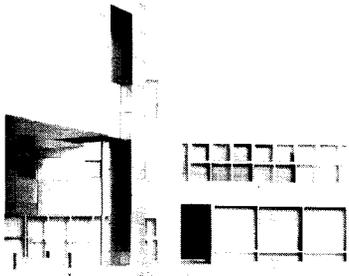
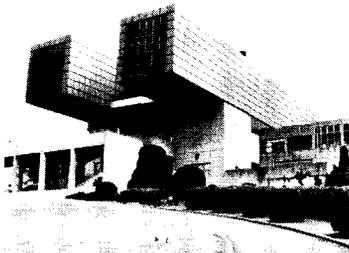
It is now 20 years since Arata Isozaki left the office of Kenzo Tange to set up private practice, and a decade since he began to emerge as a figure of singular importance in Japan's prodigious outpouring of architectural creativity. Any current discussion of architects of truly international stature inevitably includes Isozaki, for his body of work stands out as one of the most accomplished and influential in recent history. Reconfirming his high standing is Isozaki's remarkable output over the past five years, the most prolific portion of his career to date and quite possibly his most fertile as well. The Tsukuba Civic Center, completed last June and seen on the following pages, is not wholly representative of his most recent work, a larger portfolio of which will be published in a forthcoming issue. Whether Tsukuba signals the beginning of a new direction for Isozaki or remains only a brief detour will only be known as his career continues to unfold. But new modes of formal expression are not alien to him, and several times already he has struck off in radically different paths.

Thus we have successively known Isozaki the Brutalist (his earliest phase, from 1960 to 1970, when he was strongly influenced by the late period of Le Corbusier); Isozaki the Surrealist (another '60s guise that he has assumed several times since then); Isozaki the Technocrat (beginning in the mid-'60s and peaking with his Festival Plaza at Expo '70 in Osaka); Isozaki the Neo-Rationalist (first seen in his work in 1971 and typified by his Gunma Prefectural Museum of Fine Arts); Isozaki the Neo-Classicist (announced in his Fujimi Country Clubhouse of 1972-74 and continuing in a number of subsequent buildings); and now, as evidenced by the Tsukuba Civic Center, we meet Isozaki the Postmodernist.

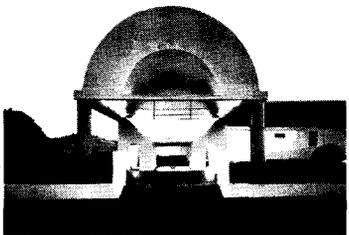
Arata Isozaki has never discarded or disavowed his past, but has subsumed it—in subtle and often metaphoric ways—into his new work at every point throughout his career. That is what gives his *oeuvre* a consonance that supersedes mere surface resemblance and imbues it with a true continuity of content that is most often associated with a more traditional serial development of forms and ideas. Isozaki once wrote that "the visual vocabulary of contemporary architecture has all been discovered," at once an admission of his considerable debt to history, but also a contradiction of his notable success in enriching that vocabulary. At the age of 52, he has developed his major themes with patience, thoroughness and clarity of vision. Now comes the segment of his creative life in which he can take those carefully explored concepts to their fullest expression, and perhaps establish himself (as many feel he will) as one of the enduringly important architects of our time. The years just ahead will prove the staying power of Arata Isozaki.

Martin Filler is editor of House & Garden and frequently writes criticism on architecture and design. Last May he traveled to Japan to see the architecture of Arata Isozaki, and his House & Garden profile of the architect and his work appears in the October issue.

Rosemarie Haag Blotter



Ishimoto photos



Four buildings that symbolize Arata Isozaki's stylistic development (from top to bottom): The Kitakyushu City Museum of Art, 1972-74; detail of the Gunma Prefectural Museum of Fine Arts, 1971-74; over-all view of the Gunma Museum; The Fujimi Country Clubhouse, 1972-74; Tsukuba Civic Center, 1979-83 (facing page), street-side portal of Nova Hall.



Tsukuba Civic Center
Tsukuba Academic New Town
Ibaragi Prefecture, Japan
Arata Isozaki & Associates, Architects





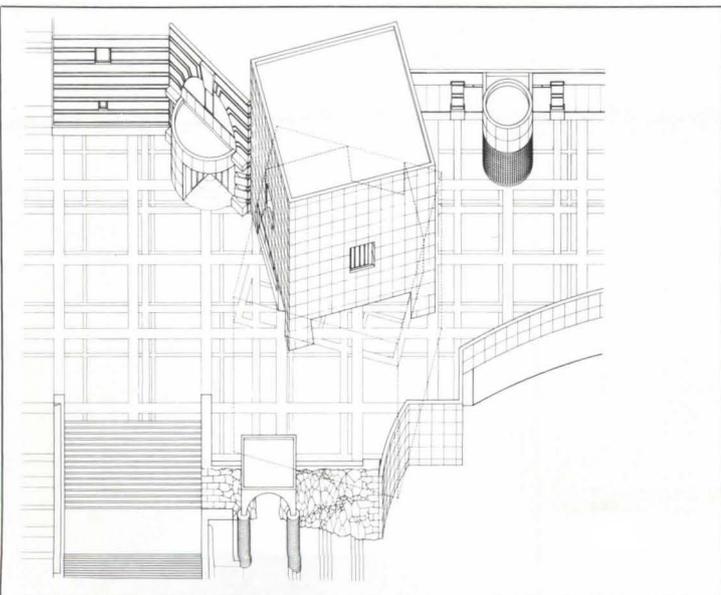


Tokyo is to Japan as Paris is to France: it is not just the country's greatest metropolis, but also its cultural and professional lodestone, which few among the talented and the ambitious are able to resist. But Tokyo—with a population approaching 12 million that makes it the third-largest city in the world—is so gigantic that its decentralization is not so much a matter of option as it is of survival. As part of a comprehensive plan to draw people away from the overcrowded capital, the Japanese government in 1966 unveiled the master plan for Tsukuba Academic New Town, a community for 120,000 inhabitants on a 4,000-acre site some 40 miles northeast of Tokyo.

The new town has been this century's most idealistic and least ideally realized urban planning type, largely for reasons of economics. New towns are unlike conventional suburbs in that they are meant to be economically self-sufficient, not mere dormitory communities which residents leave each workday to pursue their careers elsewhere. This, of course, has been easier to propose in theory than it has been to achieve in practice, since new towns are rarely able to escape the financial imperatives of the systems that create them. The Japanese authorities correctly realized that the new town of Tsukuba could not be truly independent of Tokyo without an integral employment base of its own, and the government therefore decided to provide its main industry: public higher education and government-funded research.

Centerpiece of the satellite city was to be Tsukuba University, construction of which began in the early 1970s with buildings designed by such major figures of the Metabolist group as Fumihiko Maki (ARCHITECTURAL RECORD, April 1977) and Kiyonori Kikutake. But as the decade drew to a close, it became obvious that something had gone very wrong at Tsukuba. The component parts of the sprawling new town had never meshed into a coherent whole: the immense, unrelated university buildings had come to resemble behemoths marooned in an alien wasteland; high-rise apartment blocks on the perimeter of the campus had all the charm, variety and humanity of American inner-city public housing at its worst; social amenities and cultural facilities of the most basic sort were virtually nonexistent.

Not surprisingly, the inescapable shortcomings of the Tsukuba Academic New Town's architecture and planning had seriously affected the perceived quality of life there. The new town had attracted only 30,000 inhabitants—a quarter of its projected size—and many employees of the university and the research institutes there refused to settle in Tsukuba, preferring to make the hour-long commute from Tokyo, thus defeating the basic reason for the ambitious development scheme. To remedy the situation, the Housing and Urban Development Corporation of Japan (a governmental agency akin to New York's Urban Development Corporation) decided to hold a limited competition for a new civic center that would give Tsukuba the focus, both physical and psychological, that it so desperately needed. Ten architectural firms were invited to prepare proposals: not designs, but rather written reports investigating the issues raised

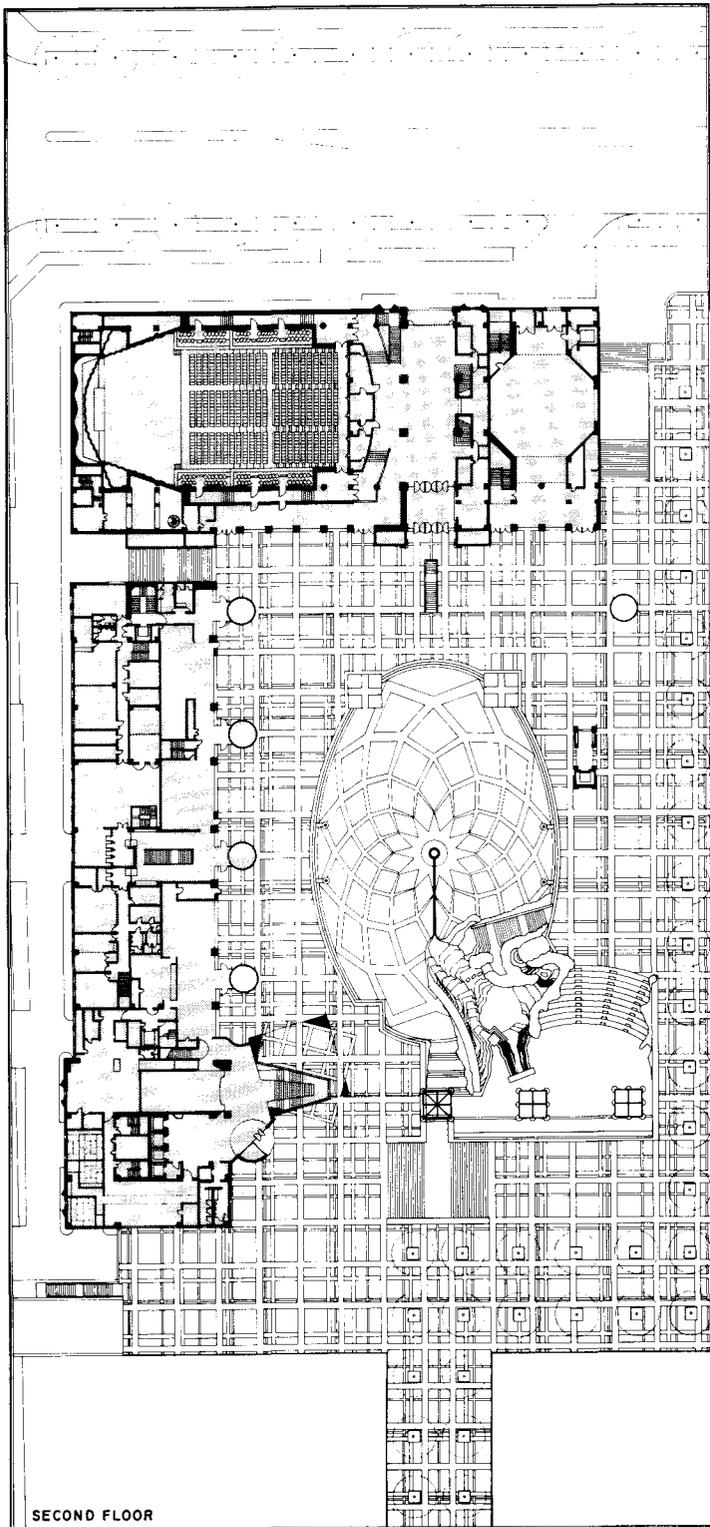


The Tsukuba Dai Ichi Hotel (top and facing page) anchors the north end of the civic center plan. The 14-story building has 115 guest rooms. It is entered from the plaza side (above) through a portal that combines a Mannerist surround intersected by a Modernist half-cylinder. The adjacent cubic wing recalls the inflected, raised pavilion of Isozaki's Gunma Museum. The paving pattern beneath the cube

(drawing, above) reflects the rotated form of the structure above it, superimposed on the plaza's overlapping grids. That upper level of the courtyard (facing page) is one story higher than the sunken oval center inscribed with the radiating star pattern of Michelangelo's Campidoglio.







Nova Hall (facing page) forms the south side of the Tsukuba Civic Center. The upper exterior of the hall is clad in titanium-glazed ceramic tile worked in a delicate checked-band motif inspired by the Vienna Secession. The northwest arc of the plaza is eroded by a stepped granite fountain with rough-hewn boulders selected by the architect at the quarry in Japan.

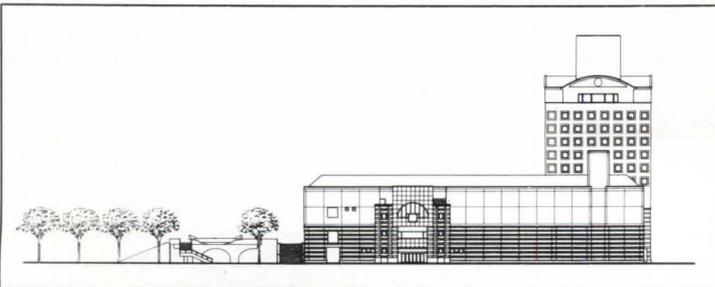
by the client's brief. Only one submission among the 10 stressed the difficulties inherent in the program rather than their easy solution. The bold gambit paid off, and the job was awarded to its author, Arata Isozaki.

The Tsukuba Civic Center, which was formally opened in early June, is Isozaki's largest executed work to date and his first multi-use complex on an urban scale. It is also a significant stylistic departure for a designer who thus far had avoided literal historicism, preferring a more abstract amalgam of references that give Isozaki's more characteristic buildings an evocative quality that transcends mere quotesmanship. The siting and massing of the Tsukuba Civic Center reflect Isozaki's decision to sidestep the question of context completely; no doubt he found it futile to attempt contextualism in a place where it does not exist. Therefore, the complex rises from its flat, nondescript surroundings with few gestures toward the setting, and no attempt was made to diminish its unabashedly monumental scale.

It is set on a two-story podium that is considerably more articulated than the blank bases common in many Modernist buildings. The lower outer walls of the Tsukuba Civic Center are rusticated, quoined and detailed (in both granite and concrete) with a degree of finish that makes most other recent architecture of a historicizing nature—such as Michael Graves's Portland Building—seem downright sketchy by comparison. Most familiar of the podium motifs—and predictive of the numerous allusions to be found within the center—are pairs of rusticated columns (taken from those at the Royal Salt Works at Chaux by Claude-Nicolas Ledoux) framing the street entrances to the two major structures of the complex: the Tsukuba Dai Ichi Hotel (a 14-story, 115-room facility) and Nova Hall (a 1,003-seat concert auditorium).

An overnight visitor would enter the hotel between those columns and find himself in one of the most spectacular spaces in an over-all scheme that does not lack for decorative excitement. The entry lobby of the Tsukuba Dai Ichi Hotel is boldly striped with panels of gray and white Neopariés, a new crystallized glass material (manufactured by the Nippon Electric Glass Company) which Isozaki is the first architect of importance to employ. Floors of deep green Kijamon marble add to the opulent gleam that gives the reception area an intense glamour. Moving up a stairway replete with several cunning perspectival illusions, one comes to a *piano nobile* that gives onto the interior plaza around which the civic center is organized.

From there one ascends by elevator to the guest chambers and public rooms, including the several halls of various sizes designed for the wedding extravaganzas that account for a goodly proportion of the income of Japanese hotels. The interiors of the Tsukuba Dai Ichi are for the most part carried off with great skill, although there are occasional lapses, such as a large and poorly proportioned classicizing *trompe-l'oeil* marble pediment in the largest of the ballrooms. Better by far are the elegantly appointed cocktail lounge and a small restaurant on opposite



Set in a visually chaotic urban context all too typical of contemporary Japan (top), the Tsukuba Civic Center in effect turns its back on its surroundings, especially on the east facade (center). Isozaki's inverted L-shaped plan would allow for the eventual closure of the civic center into a quadrangle, although there are no plans pending to do so. The extensively detailed exteriors

(above), in contrast to nearby buildings, are both carefully scaled and monumental. The east facade (facing page) is rusticated up to the plaza level to emphasize the feeling of a continuous podium. The suavely curved aluminium-panel and glass-block bow window reiterates a favorite Isozaki theme; behind it is a bank.

sides of the hotel's top floor; the former has a mildly Moderne atmosphere that is suitably sophisticated, the latter a crisp austerity that reminds one of a virtuous Mackintosh tearoom.

Connecting the hotel with the concert hall (and completing the east side of the civic center's inverted L-shaped plan) is a four-story mixed-use building, the bottom two floors of which on the street side are rusticated, while its upper two floors are sheathed in the same aluminum paneling as the hotel and the silvery ceramic tile of the Nova Hall exterior. This linking structure—housing offices, a bank, a bakery, a coffee shop, and a McDonald's restaurant—also has a lower interior shopping arcade (level with the sunken oval center of the courtyard) along which one can walk to reach Nova Hall.

That destination is the most thoroughly satisfying part of the Tsukuba complex. The visitor comes into Nova Hall via a large rectangular lobby that can be entered from the plaza side under a large triangular clerestory window or from the street side under a pendant semicircular window, an intriguing geometric opposition. Forget the timid International Style Classicism or Painted-Pipe Pop of most American concert halls of the past 20 years: here Isozaki demonstrates how to create a theater interior that is at once imposing and inviting, traditional in feeling but contemporary in spirit, and imparting the sense of high occasion that is an important ingredient of any successful musical experience. The ceilings and lateral walls of the Nova Hall lobby are paneled with large squares patterned with lines expressing a projected, rotated cube, making the space into a brilliant reinterpretation of the multiple-cube rooms beloved in Neo-Classical architecture.

The auditorium itself is considerably less illusionistic but no less arresting. The clichés of concert hall design have been scrupulously avoided, and an atmosphere reminiscent of the least pretentious and most appealing music auditorium designs (Boston's Symphony Hall, Amsterdam's Concertgebouw) has been convincingly created. Steeply raked to allow the relatively small audience of just over a thousand an unimpaird view of the stage, the seating does not dominate in the way that it can in less strongly defined spaces. Isozaki has taken the highly unusual step of cladding the lower walls of the auditorium with rusticated granite; The upper walls are segmented vertically by vestigial classicizing pilasters, between which are mechanized horizontal louvers faced with fabric-covered, sound-absorptive panels, allowing a noteworthy degree of acoustic adjustment. The elegant aura of the hall, however, calls to mind most specifically the high-keyed and yet carefully calibrated emotion of the music of Richard Strauss, contemporary of the turn-of-the-century Viennese architects Isozaki so particularly admires.

After a concert, one might logically stroll out toward the great focal courtyard. The bi-level plaza centers on the sunken oval that is an inverted play on Michelangelo's famous design for the Campidoglio in Rome: here it is depressed rather than elevated in the manner of the 16th-century prototype atop the Capitoline Hill. The configuration of the space is particularly agreeable and

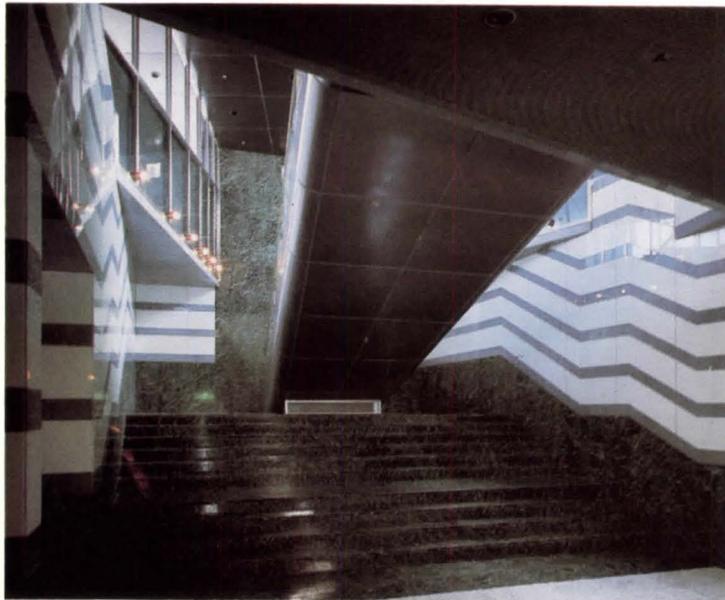
compositionally clever: an ellipse is a far more lively shape than a rectangle, and allows both axial and diagonal relationships with greater ease than any quadrilateral. Interestingly, the original scheme for Rockefeller Center's famous sunken plaza—now the ice-skating rink—was also ovoid. And as at Rockefeller Center, the lower portion of the Tsukuba courtyard acts as a real magnet for people, unlike many conventional plazas in which activity is concentrated around the perimeter of the space.

In contrast to the granite radiating-star pattern of the oval, the upper level of the Tsukuba plaza is paved with a series of overlapping grids—in granite and three shades of terra-cotta tile—that create a rich, plaidlike texture of implied depth that is far more interesting than the verbatim quote of Mannerist magnificence at its center. But the Rome of Paul III is not the end of the references to the work of other architects. Closer to our own day are Charles Moore's St. Joseph's Fountain at the Piazza d'Italia in New Orleans, which the stepped granite waterwork in the Tsukuba plaza greatly resembles, even if it is not built in the shape of Japan. As was the case at Rockefeller Center, the first proposal for the Piazza d'Italia was also in an elliptical form, but eroded, as it were, by the fountain at one end, very similar to the Tsukuba design as built. And at the north end of the oval are a pair of fat-columned pergolas quite like those sketched by Michael Graves in 1978 for his own house in Princeton.

The extensive quotation of extraneous, even foreign, sources is by no means alien to the architectural tradition of Japan: it has been a convention there for over a millennium, and even the greatest classical landscape designs in the gardens of Kyoto draw upon literary allusions from the ancient masterpieces of Chinese literature, or the travel experiences of the designer or his patron. And especially today, the Japanese architectural landscape readily admits external references of all sorts, with often jarringly illogical juxtapositions to be found throughout that society of profound contradictions.

Nevertheless, the individual and quite distinctive characteristics of Rome, Chaux, New Orleans, and an American Arcadia do not seem to be what was missing at Tsukuba Academic New Town. Thus, the cumulative feeling of Isozaki's borrowings comes closer than he could have intended to that of Neuschwanstein-in-Anaheim: Ironically, the new Japanese edition of Disneyland opened on the shore of Tokyo Bay not long before the Tsukuba Civic Center was completed. The latter, of course, is meant by its architect to draw upon a learned set of high-art precedents, as esthetically uplifting as the exemplars evoked by his great Japanese forebears. That Tsukuba reminds one more of a theme-park of architectural history is then not so much an indictment of Isozaki's approach as it is of what passes for historical allusion today.

Thus, Tsukuba's measure of success can be gauged more accurately by its transcendence of its details than by its dependence on them. The strengths of Isozaki's internal organizational parti in the end seem much more significant than

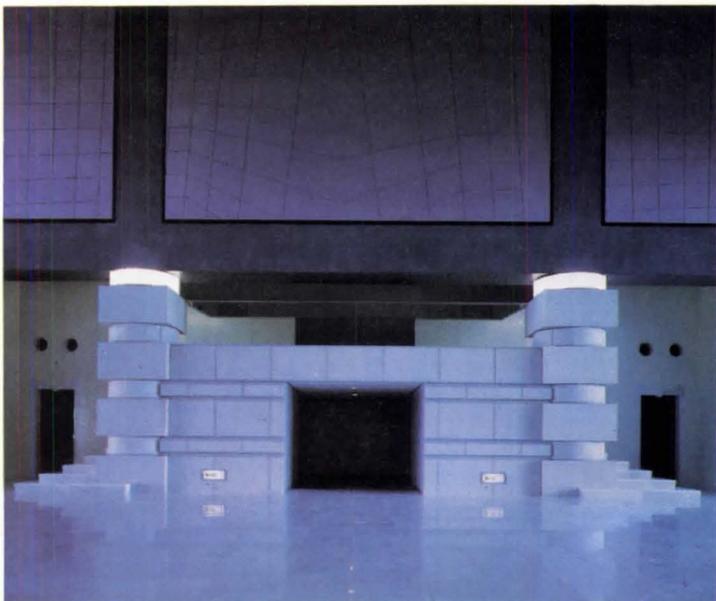


The interiors of the Tsukuba Dai Ichi Hotel are among the most dazzlingly distinguished in the recent history of a building type not generally associated with innovative design. The reception lobby (above) is banded with panels of gray and white Neopariés, a new crystallized glass material. At the far end of the lobby is a stairway (top) that leads to the piano nobile. The wedding room (facing page) is

an ultramarine cube ringed with concentric circles of lights in a symbolic cosmological pattern. If the room were depicted in the traditional Japanese okoshiezu format—with the walls folded away like a cutout paper house—the swags of lights on the walls would continue the circles of the ceiling.

The auditorium of Nova Hall (below and facing page) is entered through a handsome lobby (center), the walls of which are inscribed with a pattern of lines (drawing, bottom) based on projections of a rotated cube, the motif Isozaki played with in the cubic wing of the Tsukuba Hotel. The rusticated columns (center) are a particularly witty variant of those on the exterior: here, the uppermost discs

are light fixtures, dematerializing the sense of support at precisely the point at which it is most necessary structurally. The walls of the auditorium have mechanized louver panels that can be adjusted for acoustic correction for events ranging from lectures to symphonic concerts. Rusticated granite aids in sound reflection.



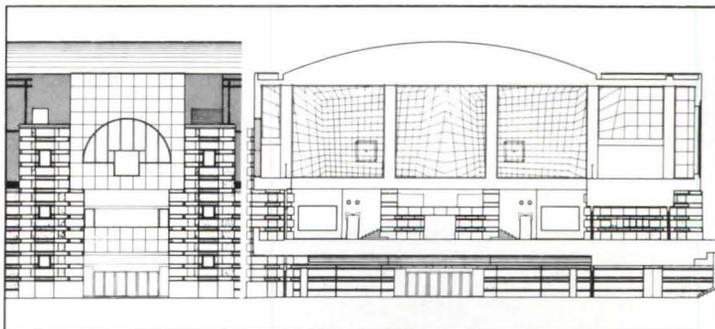
Tsukuba Civic Center
Tsukuba Academic New Town
Ibaragi Prefecture, Japan
Client:
Housing and Urban Development Corporation
Architects:
Arata Isozaki & Associates; Arata Isozaki, Suichi Fujie, Takashi Ito, Hiroshi Aoki, Makoto Watanabe, Hideo Matsuura, design team

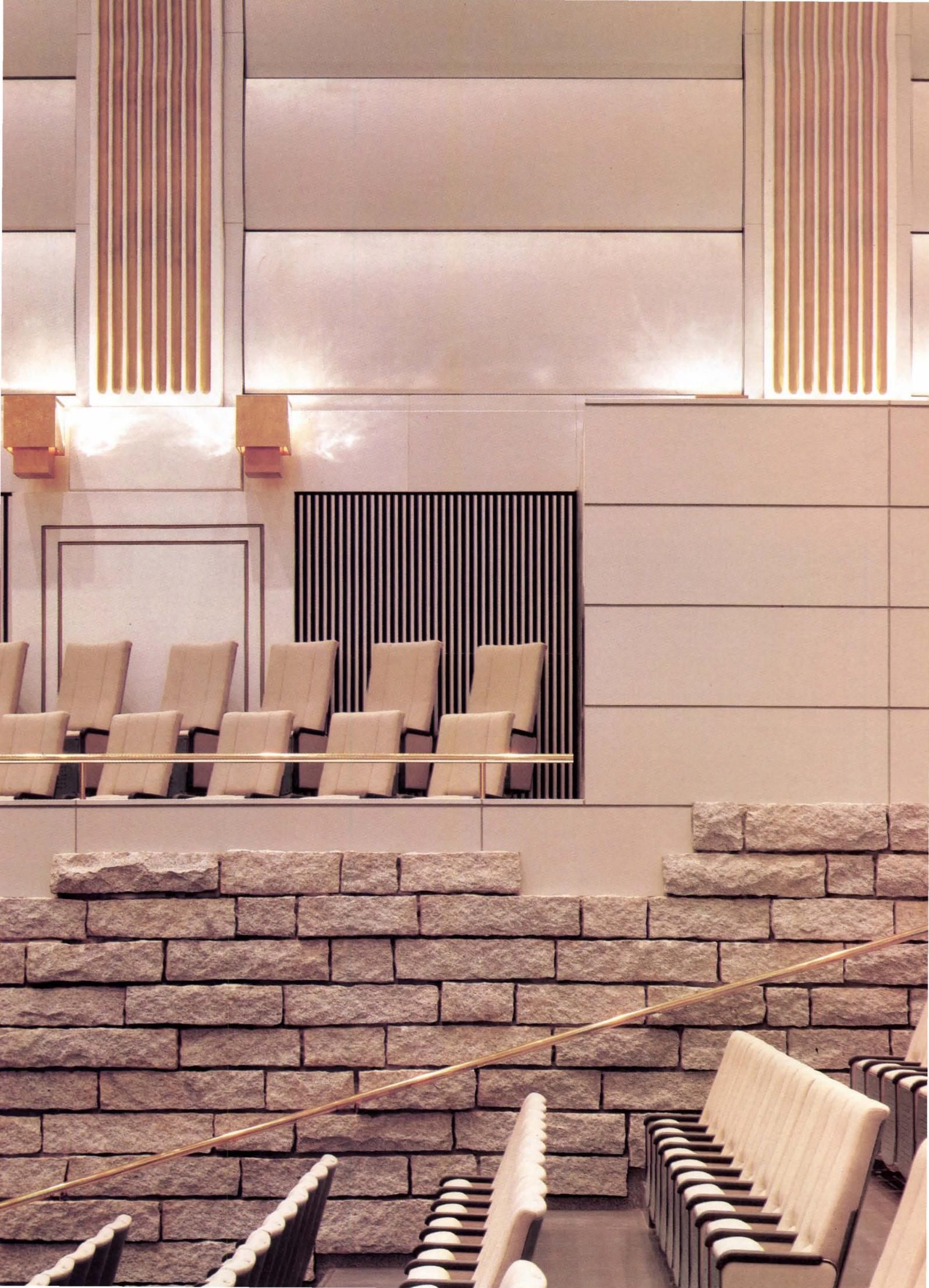
Engineers:
Toshio Kimura Structural Engineers (structural); Kankyo Engineering Co., Ltd. (mechanical); Chiyoda Engineering Co., Ltd. (plaza structure)
Consultants:
Shiro Kuramata (interior design); N.H.K. Technical Research Laboratories (acoustics); Keio Landscape Garden Planner Co., Ltd. (landscaping)
General contractor:
Joint venture of Toda Construction Co., Ltd.; Tobishima Construction Co., Ltd.; and Kabuki Construction Co., Ltd.

the surface weaknesses of the scheme. Isozaki is much too good an architect to become mired in superficialities, yet here he gives them so much emphasis that we cannot escape the shock of recognition—and, especially in his case, of regret. Kazuo Shinohara, one of Isozaki's most serious rivals of the claim of being Japan's most important living architect, in a recent interview characterized the Tsukuba Civic Center as "Isozaki's compromise with Postmodernism." Although that assessment is somewhat harsh (and reveals much about Shinohara's recent rejection of traditional forms in his own work), it nevertheless contains a germ of truth. Perhaps Isozaki was prodded into the pursuit of historical references by the criticism of Charles Jencks, who once wrote that Isozaki's architecture lacked a sufficiently allusive content. Perhaps Isozaki's awareness of himself as an international figure brought forth a response he felt more appropriate to a career being acted out on a world stage. Whatever the reason, the result is self-conscious to a degree most uncharacteristic of this resolutely original designer.

Here was a commission in which function and image were crucially interrelated: to give the new town a true sense of place it was essential to make it work not just as a series of buildings and sequence of spaces (which it does quite well), but also to have it serve as an authentic symbol of community (which it does considerably less well). The real question, of course, is could any design have given that to a town so completely devoid of presence? Conceivably not. Yet as absorbing as the Tsukuba Civic Center is as an impressive display of a broadly informed architectural intelligence, it does not provide Tsukuba with what it most acutely requires: a unique identity of its own.

That can be an insuperable challenge to an architect even in circumstances far more amenable than those at Tsukuba Academic New Town, and the outcome of this project should in no way reflect on Isozaki's considerable capabilities. Rather, the inadequacy of urban planning schemes adopted too late and with too little scope is the real problem. As we in this country see our own architectural horizon increasingly reaching the density of that of Japan's megalopolis, the warning should be clear: the best design talent and the best of planning intentions are not enough. Before we find ourselves at a similar impasse, we had better begin to develop a larger view, which the Tsukuba Civic Center's urbane mannerisms attempt to evince, but end up merely mocking.





Lighting those visual display terminals— in the cause of the operator's comfort

By Sylvan R. Shemitz, with Gladys Walker

Across the United States and around the world millions of employees approach visual display terminals every day. Machines are turned on, screens light up, work commences. But all is not well in the world of VDTs. One has only to look at the growing number of studies, being conducted in this country and abroad, on complaints of physical discomfort and emotional upset by VDT users to know there is much more involved in the installation of a VDT than just keeping it running. A host of problems, bracketed into that complex category of ergonomics—the study of man in relation to machines—are yet to be solved. Psychologists, behavioral scientists, engineers, and designers are all concerned, as well they should be. Fatigue, eyestrain, headaches, stress and depression are just a few of the complaints, in degrees ranging from mild to extreme, that they are hearing from over seven million VDT operators in the United States alone.¹

Even though the VDT is already as ubiquitous as the telephone in offices of all kinds, because of constantly decreasing costs the number of VDT units (or, if you prefer, CRTs or VDUs—Visual Display Units) will clearly continue to grow, as will the number of companion units such as microfilm and microfiche—five million more such units are projected for the United States alone in the near future. And as manufacturers continue to make their computers “smarter,” the scope of work of the VDT, and consequently the length of work time spent at the terminals, are both increasing at a significant rate. Unfortunately, so are the problems.

In all of the studies and independent research, there is one universal complaint: visual problems

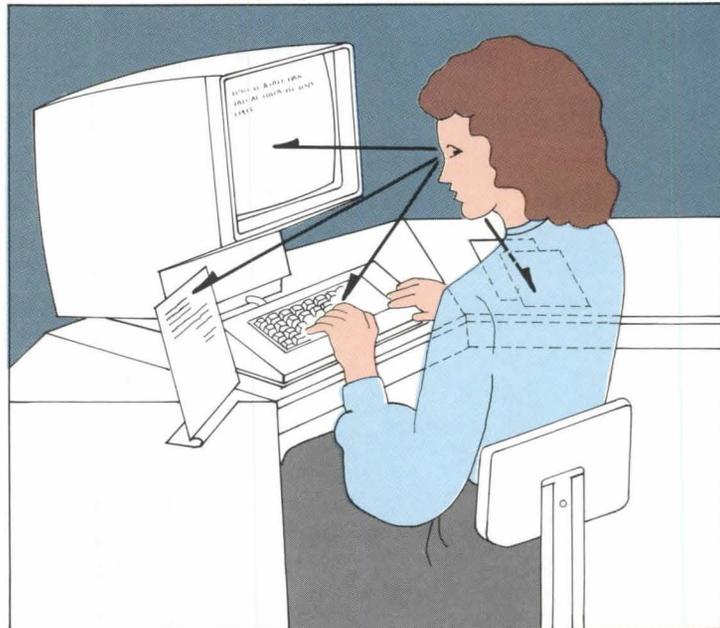
In one study, an alarming 91 per cent of the operators complained of eyestrain, 80 per cent had burning eyes, and many complained of a change in the ability to see colors.²

Yet the most conscientious employer, no matter how large or small his operation, would be hard pressed to find answers in today's literature. Studies made around the world, on site, using groups of all sizes, supply us mostly with contradictory and confusing advice. Experts in a wide range of fields have provided goals to be achieved, but no one has offered a definitive working solution to the visual problems.

In the majority of studies, the emphasis is on solving the problem of cutting down *glare* and *reflections* on the glass- or plastic-covered VDT screen. The studies tell us to: cover windows,³ use anti-glare coverings on screens,⁴ install hoods over screens,⁵ fit operators with special spectacles,⁶ use any one of a variety of lighting levels,⁷ and increase coffee breaks and mandate special work breaks for operators.⁸

What really happens to the worker in the new world of VDTs? After the first fascination with this new technology wears off, the operator begins to notice glare and see veiling reflections on his screen. Veiling reflections occur when interfering light or images reflect off the object you are looking at, and obscure what you are trying to see by reducing the contrast of the object.

Mr. Shemitz, a lighting designer and an electrical engineer, heads the firm Sylvan R. Shemitz and Associates in West Haven, Connecticut.



Glare, the other annoyance to be dealt with, occurs when the light source within your sight is much brighter than the objects you are viewing. This may be compared to the discomfort of seeing oncoming headlights on a dark highway. The most obvious sources of veiling reflections and glare are windows and light fixtures. So invariably the script goes like this: first, the daylight is screened out with drapes, Venetian blinds, or shades. Next, the light fixtures are shielded or screened to reduce brightness, which results in decreased efficiency and narrowed distribution. Finally, the VDT screen itself is "redesigned" with the introduction of a makeshift hood of newspaper or cardboard, or (among the more sophisticated users) with filters.

The degree of trouble to which operators go and the ingenuity used is mindboggling. At some large word processing installations, whole fluorescent lighting systems have been turned off and replaced by spotlights mounted on tracks, which create puddles of light in a sea of darkness.

Only one thing is wrong. *These alternatives do not work.* What they all create in the end are gloomy, isolated, and dungeonlike spaces, cut off from daylight and from a normal environment that includes visual contact with other people.

In addition to glare and veiling reflections, major visual problems can be traced to the task areas

The VDT operator is traditionally involved in four interrelated seeing tasks located in four immediate but different positions. They are: 1) the VDT screen; 2) the keyboard; 3) input (or source material area); and 4) output or reference area. Severe eyestrain results from high brightness contrasts in these interrelated areas⁹ and, from improperly positioned materials and equipment.¹⁰

The VDT worker complains of visual fatigue and irritability expressed as itchy or burning eyes, soreness, headaches, and lack of desire to read or watch television at night. We are only just beginning to discover the damaging psychological effects from stress and depression that can beset operators, particularly those working full time at terminals.

Eyestrain is caused by excessive action of the eye muscle. In order to understand and correct the eyestrain problems experienced by the VDT operator, it is necessary to understand the way the eye works: light enters the eye, then the eye focuses. For the first action the eye is equipped with an iris made of many tiny muscles, and containing an opening called the pupil. Much like the automatic light meter on a camera, the iris muscles adjust the size of the pupil to control the amount of light which enters the eye. The brighter the light or the greater the luminance of objects in view, the smaller the pupil opening. As the light diminishes, the pupil opening widens. With each change of light, the muscles of the iris must work. Stress,¹¹ headaches,¹² loss of concentration and irritability may develop when we force the pupil size to change too frequently.

The second problem relates to the need to focus on each task separately. Light rays entering the eye are bent, first by the

cornea (a protective layer), then by the aqueous humor (a fluid behind the cornea) and still further by the lens, which focuses on the retina, comparable to a camera's film. The retina sends the image to the sight center of the brain via the optic nerve.

In order to achieve this focus the eye must have the power of accommodation. Here is how it works: the elasticlike lens normally assumes a stretched position, in which it can focus on objects 20 feet away or more. When focusing on closer objects, the muscles relax and the lens bulges out, thickening to a point where it can focus the image on the retina and thereby send it to the brain.

In a typical four-task operation, the worker focuses first on input material, then the keyboard, then the screen, then output material, with each task at a different distance away from the eye. The continual change in focus compounds the eyestrain already caused by lighting contrasts.

To complicate the problem further, each operator brings his own visual deficiencies to the job. Add to this the fact that the range of accommodation decreases with age. By the mid-forties, most individuals can no longer see clearly at normal reading distances without the aid of glasses, and by 60, most people have very little accommodation capability.¹³

These problems of glare, veiling reflections, brightness, contrasts, and eye focus can be solved by better design and lighting of the VDT and the surrounding workplace

The first step necessary to creating a constant and controlled brightness contrast for the worker as he faces the task is to provide a vertical surface such as a panel or screen (for example, the panel of an open office unit) in front of the task area on which light can be evenly projected and controlled. The amount of light on the vertical surface in combination with the reflectivity of its surface determines its brightness. Such a surface, if below eye height when a person stands and above eye height when he sits, gives the worker an added share of the space and light above the surface instead of boxing him in. A properly organized floor plan allows for visual contact with other workers. Additional benefits of the vertical surface include the screening out of activities and sounds that make concentration difficult.

The next step is to determine the most effective type of lighting system. There are four basic systems currently in common use for large spaces:

1) Ceiling-mounted fluorescent lights that fill the whole ceiling with closely spaced lamps behind louvers, plastic or glass sheets—the so-called luminous ceiling. This is no longer a reasonable alternative in our energy-conscious society. Further, a luminous ceiling of sufficient brightness to provide adequate task illumination will produce an undesirable image or "veil" on the VDT, substantially reducing display visibility.

2) Ceiling-mounted lighting fixtures (photo 1 overleaf)—such as but not limited to troffers—when lensed for the purpose of dispersing light over a wide area are bright or glaring. They

contribute to the discomfort and irritation of the workers and inhibit the ability to see. (You can prove this when you are in such a space by looking at a distant object, then shielding your eyes with your hand. Immediately you will notice the increased clarity or visibility of objects at and slightly below your eye height.) In addition, such light fixtures are frequently imaged in the VDT screen.

3) Ceiling-mounted lighting fixtures shielded with lenses that narrow the distribution of light by concentrating it in a downward, approximately 90-degree cone do not create this problem, nor do fixtures equipped with low-brightness baffles or louvers. However, all downward directed lighting fixtures do leave the ceiling much darker than walls or panels. This system is ordered architecturally, but depressing to occupants.

If panels or screens are used, it is difficult, if not impossible, to place downward-facing light fixtures in perfect relationship to each panel so that brightness can be controlled (drawing A). Since it is necessary to provide brightness on the source material, keyboard, and desk or output/reference surface that is equal to that of the background of the VDT, one can quickly recognize the futility of this approach. In general, as photo 1 and drawing A show, ceiling-mounted systems simply do not work.

4) Upward facing, pendant- or panel-mounted fixtures (drawing B) are another alternative. But, like the luminous ceiling, if bright enough to provide adequate light on the keyboard, desk, etc., it is too visible in the screen.

A lighting system that does work lights the panel, the source material, the keyboard, the desk or output/reference area, and the surrounding space in the balance desired

By positioning a properly designed luminaire in front of the worker, all of the requirements can be fulfilled (see drawing C).

Its critical functional components are:

- a) the lamp;
- b) a baffle to eliminate direct glare;
- c) a low-brightness louver or diffuser to control the upwardly directed light so that people standing are protected from direct glare;
- d) a reflector to push the light out and down to the front of the work area;
- e) a lens, baffle or polarizer to inhibit veiling reflections; and
- f) a second reflector to push light to the panel.

Such equipment, now available from several fixture manufacturers and several manufacturers of open plan furniture, was first designed for Seagram (photo 2) as early as 1970—before the proliferation of terminals. It was positioned at the back of and above the desk. Arco (photo 3) is another recent installation not specifically related to VDTs.

The first major project to utilize such lighting in an environment planned for extensive VDT use has just been completed for Northwest Energy in Salt Lake City (photo 4, page 143). The lighting fixtures—designed by this office—are designed for easy movement fore and aft on sliders.

Still more sophisticated designs envisioned by the author, and for which patents are pending, incorporate (see drawing D):

- a) a baffle to reduce the amount of light striking the worker's clothes and thus reducing the reflections so caused;
- b) a two-part lighting system, one part fixed in a prescribed relationship to the panel behind the VDT screen, and the other movable in or out to adjust to the position of screen and keyboard; and
- c) a one-piece two-light system where one light is directed towards the panel by an appropriate reflector and the other light is directed to the keyboard.

Beyond lighting of the workplace, a VDT with a light background and dark symbols can also help visual problems of the operator

Recent studies show that this combination (sometimes referred to as "positive presentation") was significantly better than the dark ground with brilliantly illuminated symbols ("negative presentation").¹⁴ Even though most computers produced today feature the latter combination, new VDTs with positive presentation are available from almost all of the major manufacturers, and the screens of most existing VDTs can be reversed by an add-on switching device. (Many local sales offices seem not to be familiar with the positive presentation option; call the manufacturers' home engineering office.)

The studies cited maintain that the light background with dark symbols increase visual acuity and the depth of focus of the eye, in addition to reducing brightness differences between screen and hard copy. It also provides better adaptation conditions for the eyes in the frequent movements among the four task areas. Discomfort glare caused by veiling reflections is reduced. At least one study¹⁵ concludes that this combination is an "effective and ergonomically ideal method for avoiding reflections on the screen." (See photos 5 and 6, page 143.)

A simple experiment proves this theory. Place one piece of glass on a black sheet of paper and one piece on a white sheet. Hold them up and they will tell the whole story. The glass on the black sheet will reflect a far greater number of images and in greater intensity.

The light background screen will minimize the effect of almost all veiling reflections. The top of the case and the cowling enclosing the screen should be finished in a matte dark color to reduce reflection and to provide a visual boundary for the screen.

The next step in providing visual comfort for the operator is creating the proper brightness relationship between the task area and the surround areas¹⁶

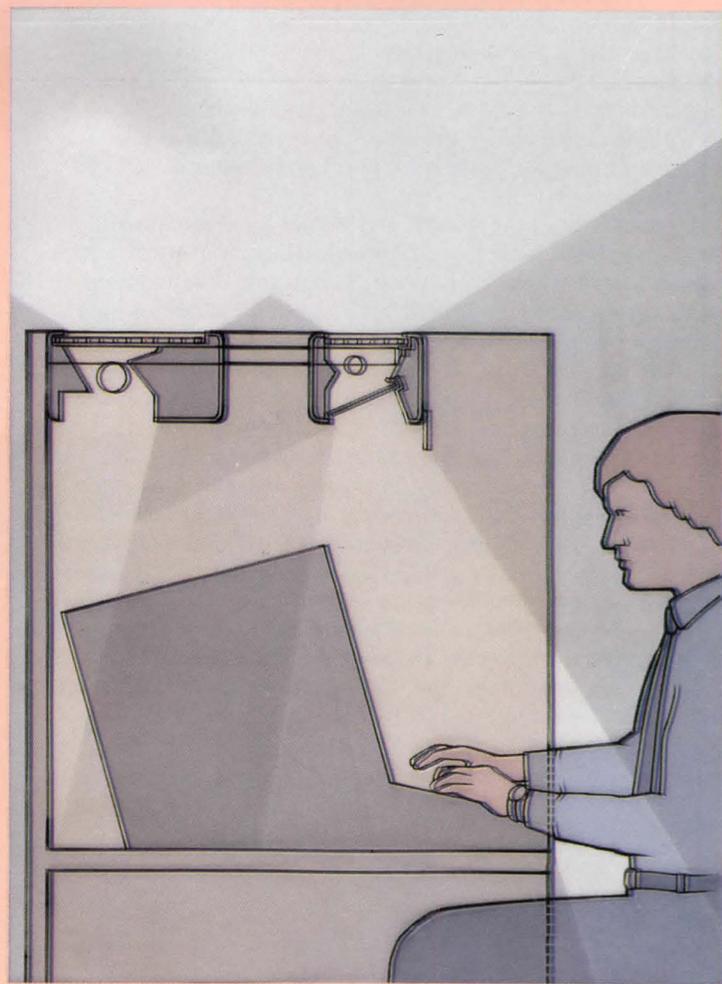
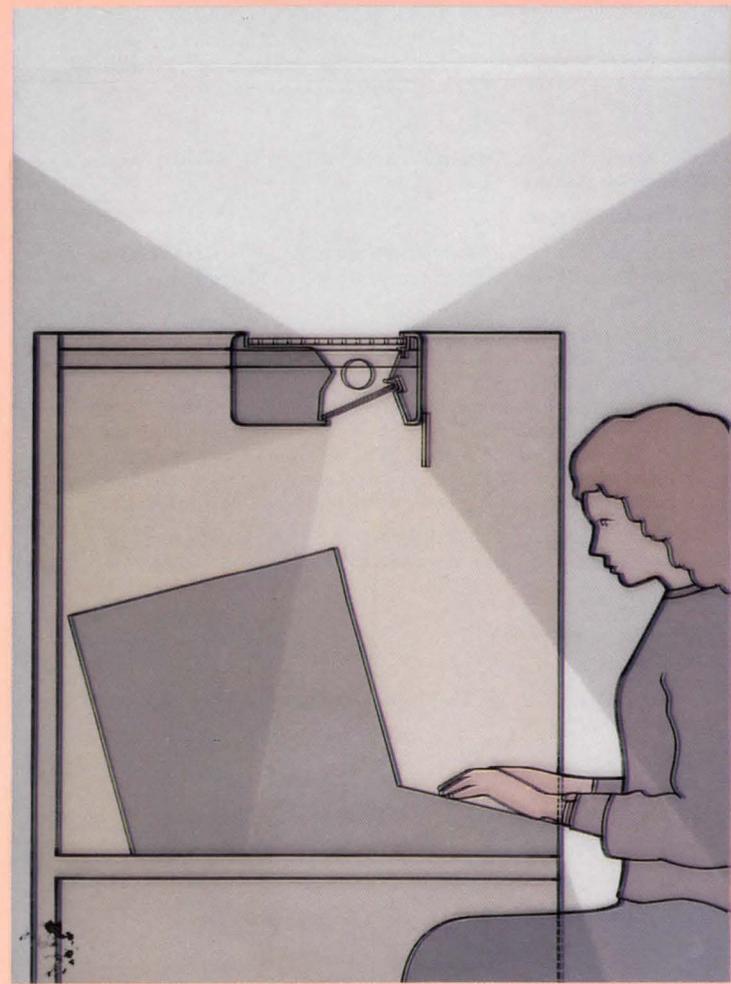
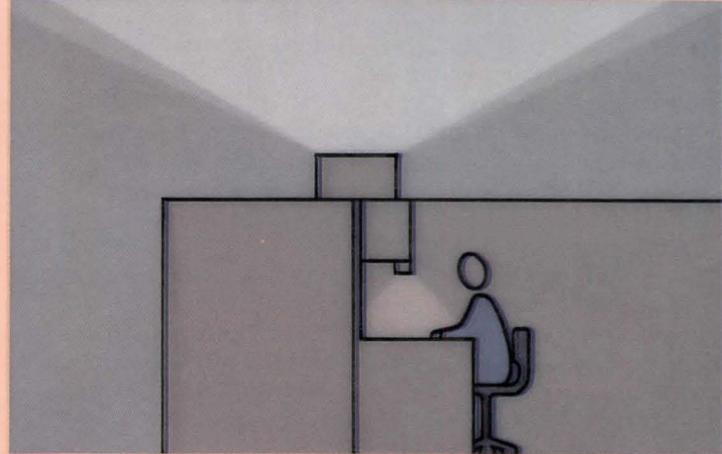
The only positive way to achieve this, as noted earlier, is to position a backdrop behind the workstation. The reflection factor of the backdrop should be 50 to 70 per cent and the horizontal task areas—the desk surface—should be in the range of 30 to 60 per cent. The light on the backdrop and desk should be adequate to make them no less than $\frac{1}{3}$ and no more than $\frac{2}{3}$



1. "Ceiling-mounted lighting fixtures—when lensed to disperse light over a wide area—are bright or glaring..." 2, 3. Near-ideal fixtures—though not the sophisticated system shown in drawing D below—are available from several manufacturers. Installations at Seagram (2) and Arco (3) illustrate this system, though they are not specifically related to VDTs.

A. "If panels or screens are used, it is difficult to place downward facing fixtures in perfect relationship to each panel so that brightness can be controlled." B. "Upward facing fixtures...if bright enough to provide adequate light on the keyboard are often visible on the screen..." C. "By positioning a properly designed luminaire in front of the worker, all of the requirements can be fulfilled..."

D. The ideal lighting fixture for a VDT terminal, an advance over the fixture shown in C, incorporates a baffle to reduce the amount of light striking the operator's clothes (which reflect on the screen) and a two-part lighting system with separate lighting directed at the background panel and at the VDT workplace (see text for details).



C

D

the brightness of the VDT.

The brightness ratio should be a maximum of 3 to 1 in the task areas and 10 to 1 in the surround area.¹⁷

There should be near-equal brightness on all four task areas, when measured on white paper, of 40 to 80 footcandles as measured by a light meter. The screen brightness should be tuned to be approximately equal to that of the paper tasks.

Then over-all brightness in the entire area should be controlled

Window brightness should be *controlled* by using filters or films, louvers or Venetian blinds, or by placement of panels, etc., *but should not be eliminated*. In new buildings, the use of tinted, glare-free glass is recommended.

Luminaires used should be glare-free and the ceiling above the operator should be illuminated so that a diffuse light fills the area and balances the brightness in the entire surround.

And even with the best lighting, workstation layout and furniture is critical

All of the above recommendations involve illumination. Yet eyestrain and fatigue will persist if focus is not taken into consideration. All materials should be carefully positioned so that they are located at a *radius from the eye equal to that of the viewing screen* (as, for example, in photo 4, the Northwest Energy installation, and in the drawing on page 138).

Furniture manufacturers who are aware of the unique positioning requirements of the VDT station have developed special devices, such as arm support platforms to hold the viewing screen, platforms placed below normal desk level for keyboards, and surfaces that tilt to eliminate reflections from paper tasks, or adjust to ease arm manipulations.

Well-designed chairs are also a must for optimal vision as well as posture, and for prevention of other musculoskeletal problems.

Components of the VDT station should have enough adjustment to accommodate operator preferences. Lack of control in this area is a stress factor. However, the degree of adjustment *should not* be great enough to disturb the lighting balance of nearby operators nor to allow misuse of the equipment.

Like many other developments in a high-technology society, side-effects are discovered after the fact. In the case of the VDT, these side effects translate into visual and muscular discomfort and psychological disturbance for the operator, and time and money lost for the employer in excessively scheduled work breaks. One study calls for mandatory rests of at *least* 15 minutes every two hours for operators with moderate visual demands, and as much as 10 minutes every hour for those with high visual demands.¹⁸ Another study reports that even when large producers of VDTs advise customers of ergonomic problems, very rarely are these human aspects really factored in by employers.¹⁹ Mandatory rest breaks, slowdowns, or errors caused by fatigue are extremely costly. Finding solutions to these

problems are important to managers who are concerned both with the well-being of staff and profitability.

Initiation of proper lighting seems to be a small price to pay for the returns: health and welfare, energy conservation, and cost reduction. A wide variety of people take over the task of selecting and installing VDTs. It is incumbent on all those—engineers, architects, lighting or interior designers—who influence the VDT environment to see for themselves, and then to implement solutions that embody good lighting sense.

¹ NIOSH Report (National Institute for Occupational Safety and Health), *Working with Video Display Terminals: A Preliminary Health-Risk Evaluation* (NIOSH, Division of Biomedical and Behavioral Science and the Division of Surveillance, Hazard Evaluations and Field Studies, Cincinnati, 1980).

² Michael J. Smith, Barbara G. F. Cohen, Lambert W. Stammerjohn, Alan Happ, *Select Research Reports on Health Issues in Video Display Terminal Operations*, "An Investigation of Health Complaints and Job Stress in Video Display Operations" (NIOSH, Division of Biomedical and Behavioral Science, Cincinnati, April 1981), Table 9a.

³ NIOSH Report, op. cit., p. 2.

⁴ Marvin F. Dainoff, *Occupational Stress Factors in Secretarial/Clerical Workers* (NIOSH, First-level Organizational Unit, Cincinnati, January 1979), p. 34.

⁵ NIOSH Report, op. cit., p. 2.

⁶ Dainoff, op. cit., p. 34.

⁷ NIOSH Report, op. cit., p. 2.

⁸ Ibid.

⁹ Lambert W. Stammerjohn, Michael J. Smith, Barbara G. F. Cohen, *Select Research Reports on Health Issues in Video Display Terminal Operations*, "Evaluation of Work Station Design in VDT Operations" (NIOSH, Division of Biomedical and Behavioral Science, Cincinnati, April 1981), p. 2.

¹⁰ Ibid.

¹¹ IBM, *Human Factors of Workstations with Display Terminals* (IBM, Human Factors Center, San Jose, California, 1979), p. 9.

¹² Dainoff, op. cit., p. 12.

¹³ John E. Kaufman and Howard Haynes, ed., *IES Lighting Handbook: 1981 Reference Volume* (Illuminating Engineering Society of North America, New York, 1981), pp. 3-8.

¹⁴ E. Grandjean and E. Vigliana, et al., *Ergonomic Aspects of Visual Display Terminals* (Taylor & Francis, London, 1960): E. Grandjean, "Ergonomics of VDUS: review of present knowledge," p. 11; G. W. Radl, "Experimental investigations for optimal presentation-mode and color of symbols on the CRT screen," p. 127; D. Bauer and C. R. Cavonius, "Improving the legibility of visual display units through contrast reversal," p. 138; G. W. Radl, "Visual display units: present status of ergonomic research and applications in the Federal Republic of Germany," p. 274; O. Ostberg, "Accommodation and visual fatigue in display work," p. 42.

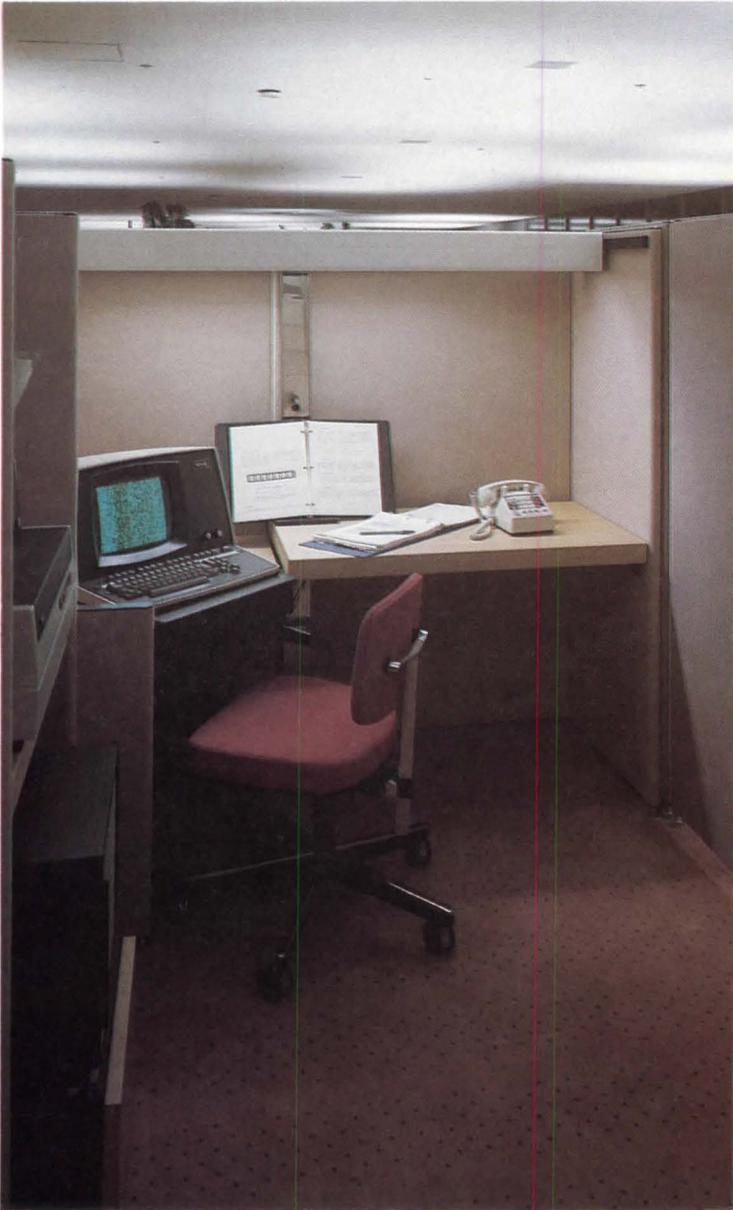
¹⁵ Grandjean et al., op. cit.: G. W. Radl, "Experimental investigations for optimal presentation-mode and colors of symbols on the CRT screen," p. 134.

¹⁶ Dainoff, op. cit., p. 15.

¹⁷ Kaufman, op. cit., pp. 3-8.

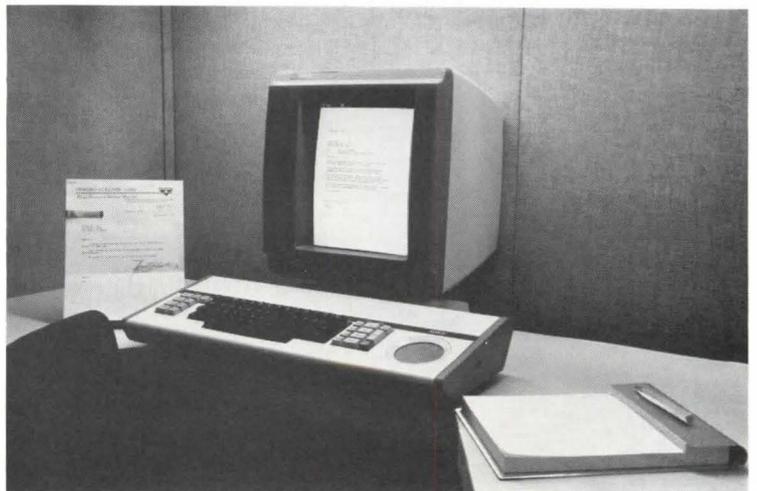
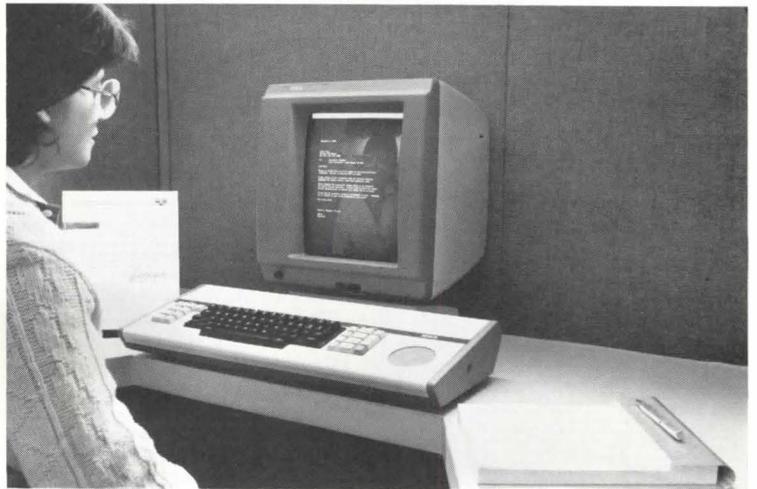
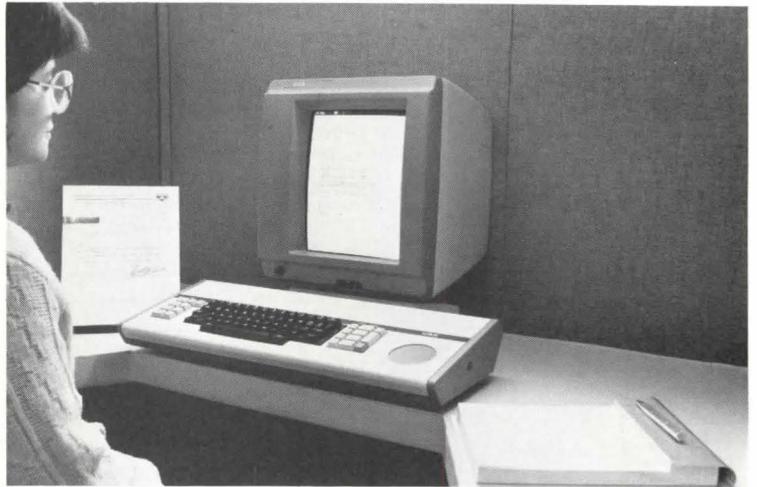
¹⁸ NIOSH Report, op. cit., p. 2.

¹⁹ Grandjean et al.: F. Margulies, "Trade union aspects and experience with work on VDUS," p. 242.



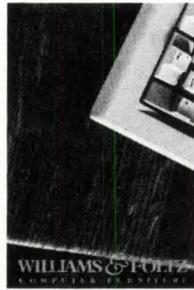
4. VDT lighting at Northwest Energy in Salt Lake City, a pioneering installation by the author incorporating good workplace design and advanced fixture design. 5, 6. A VDT screen with dark letters on a bright screen, recommended by the author, compared with the conventional light letters/dark

background combination. 7. Near-ideal workplace layout, with input data, keyboard, screen, and output area that are almost equidistant from the eye.

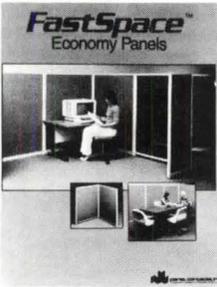




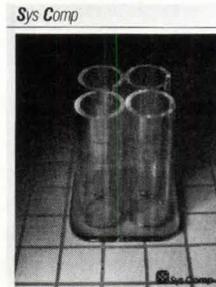
Aluminum composite sheets
A color brochure covers the uses of *Alucobond*, material consisting of two thin aluminum sheets with a thermoplastic core. Photos show its use in signs, exhibits and interiors. Technical data and information on standard colors and finishes are included. Consolidated Aluminum, St. Louis, Mo.
Circle 400 on reader service card



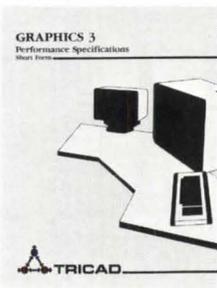
Wood computer furniture
Terminal tables, printer stands and storage units are illustrated in a 4-page color brochure. All pieces are made of solid oak. Tables featuring dropped keyboard surfaces and carts are included. Williams & Foltz Computer Furniture, Inc., Berkeley, Calif.
Circle 406 on reader service card



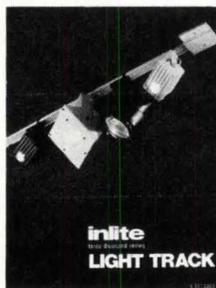
Acoustical panels
A 4-page color brochure features the *FastSpace* line of acoustical panels. Different types of available panels are shown in photos and a diagram illustrates panel configurations. Specifications are included. Panel Concepts, Inc., Santa Ana, Calif.
Circle 401 on reader service card



Turnkey computer systems
A 4-page color brochure covers this company's computer systems library and applications. Among the applications described are building programs, construction management, electrical power systems and land development. Typical screen displays are shown. Sys Comp Corp., Santa Monica, Calif.
Circle 407 on reader service card



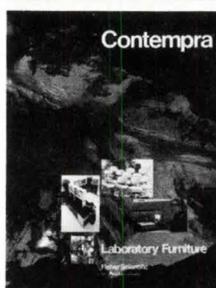
Interactive CAD
Performance specifications for the *GRAPHICS 3* interactive CAD system are covered in a 22-page brochure. Diagrams show how the elements of the system interact while the text describes a variety of applications and options. Environmental specifications are included. TRICAD, Milpitas, Calif.
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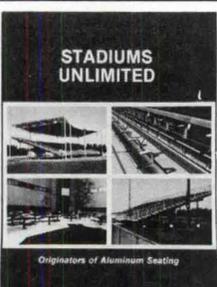
Track lighting
The *3000 Series* of track lighting is featured in a 4-page brochure. Track components, including an adaptor and the mounting system, are illustrated. Photos show several lamp types, including canopy-style fixtures. Fittings and fixtures come in white and matte black. Inlite Corp., Berkeley, Calif.
Circle 408 on reader service card



Automatic shade rollers
Veroroll automatic roller mechanisms are featured in a 6-page color brochure. Diagrams illustrate roller construction and different mountings. Data on the thermal performance of shades made by the same manufacturer are included. Verosol USA, Inc., Pittsburgh, Pa.
Circle 403 on reader service card



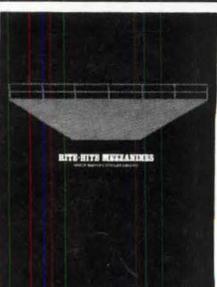
Laboratory furniture
A color catalog includes over 1,000 furniture and accessory items for industrial, clinical and educational laboratories. Steel, wood and plastic laminate-surfaced furniture as well as sinks, fume hoods and safety fixtures are shown in photos and diagrams. Fisher Scientific, Pittsburgh, Pa.
Circle 409 on reader service card



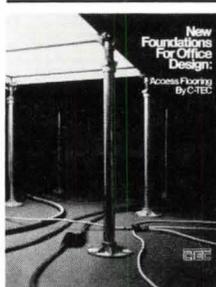
Bleachers and benches
A line of aluminum stadium seating and site furnishings is illustrated and described in a 1983 catalog. Photos show typical installations while diagrams show suggested seating plans. Guardrail, footboard and decking details and specifications are included. Stadiums Unlimited, Inc., Grinnell, Iowa.
Circle 404 on reader service card



Carpet
Carpet Selection for Health Care Facilities is a brochure that covers carpets and acoustics, thermal insulation and bacteria control. Color photos show installations. A performance certification program is described and a classification chart is listed. Badische Corp., Williamsburg, Va.
Circle 410 on reader service card



Mezzanines
Mezzanines designed to use wasted space are featured in a 12-page brochure. Diagrams show various types of mezzanines as well as components. The brochure is accompanied by a column capacity table to assist designers in determining the necessary structure. Rite-Hite Corp., Milwaukee, Wis.
Circle 405 on reader service card



Access flooring
An 8-page color brochure describes the advantages of welded steel composite core floor panels. Photographs and section details illustrate panel characteristics and construction. Panel performance data are included. C-Tec, Inc., Grand Rapids, Mich.
Circle 411 on reader service card
More literature on page 153

Andersen® in the storefront keeps you in the forefront.

Specifying Andersen® windows tells everyone involved you're a front runner.

It lets the client know you've taken positive action on his two biggest concerns: Energy and maintenance.

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And Terratone, the warm, earthy hue, matches material and mood.

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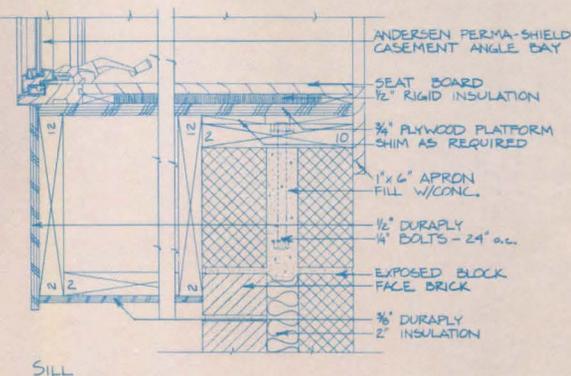
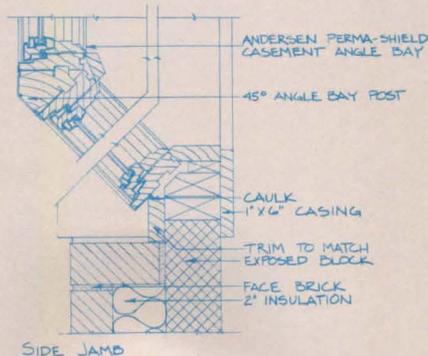
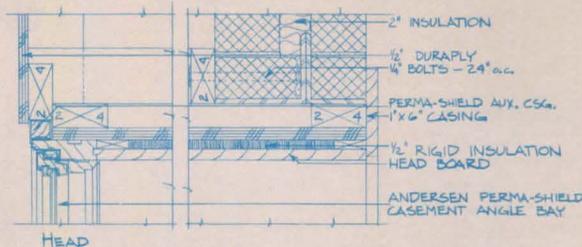
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Architect:
Lawrence Frazier, Architects
East Hartford, Connecticut

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New products

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item numbers on Reader Service
Card, pages 209-210

High style, medium price

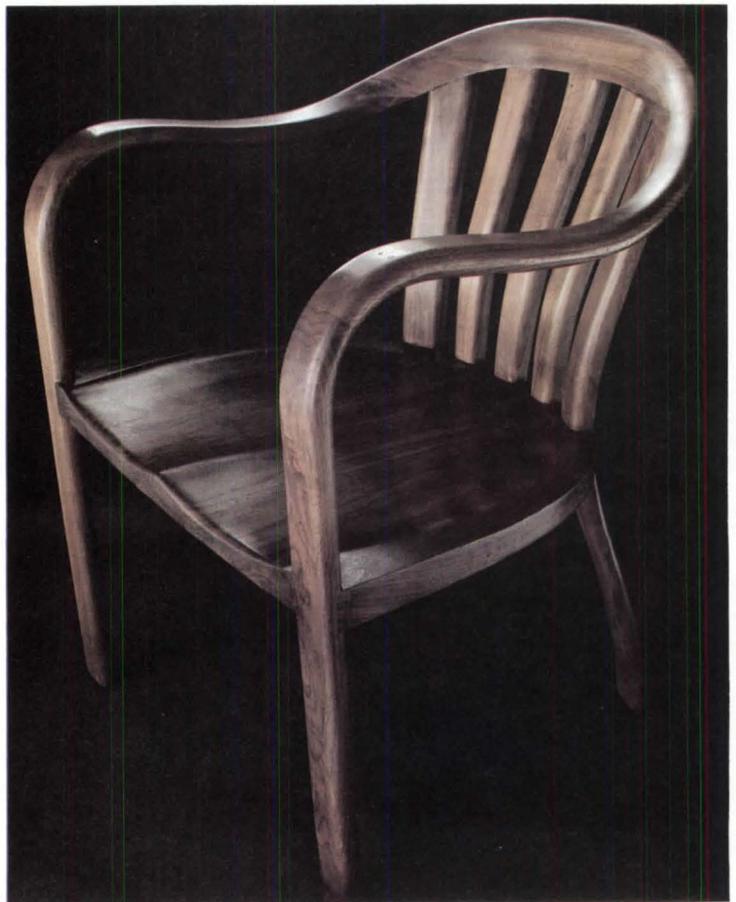
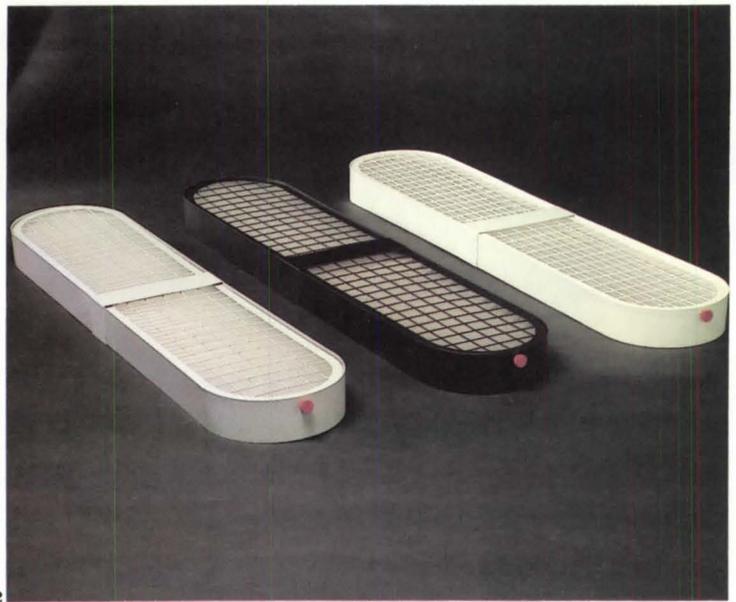
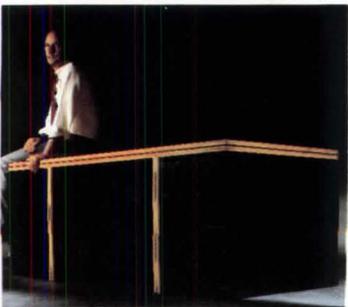
"I'm still enamored of the Bauhaus idea of well-designed objects for mass production," notes Kenneth Walker, president of The Walker Group. That premise is the underlying philosophy of a series of his firm's designs now being introduced to the contract market by several manufacturers. Although Walker and his associates have been designing furnishings on an ad hoc basis since the firm's inception 13 years ago, it was not until 1981 that The Walker Group developed its first major product line—the *Pinstripe* series of desks, credenzas, and tables that ICF began manufacturing last year (1).

More recently, the firm completed a group of 50 lighting fixtures, created in joint venture with David A. Mintz, Inc., that Lightron unveiled early this year. The designs include the *GRIDTRON* system of luminaires contoured to house 34W or 40W, U-shaped fluorescent lamps (2), as well as the coolly elegant *D-TRON* series of track lighting units intended for both commercial and residential interiors (5).

Even more ambitious than these two ventures, however, is the recent agreement among four contract manufacturers—Karastan, Scalamandré, Nevamar, and Franciscan Tile—and The Walker Group to produce a design- and color-coordinated system of carpets, fabrics, laminates, and ceramic tile that had its debut at NEOCON this year (3). Finally, the firm has just completed work on the *Courthouse Chair* (4) that is designed in a "transitional" mode based on the historic Bank of England chair. Gunlocke will introduce this collection in 1984.

Although The Walker Group may not approach the extremes of the Bauhaus, the firm's commitment to collaboration and to sound design at a moderate cost is as relevant today as it was 60 years ago.

Circle 300 on reader service card
More products on page 161





Architectural details
Moldings, medallions, mantels and spandrels are among the details featured in a 12-page color brochure. Photos show installations and close-ups of the details, which are also illustrated in diagrams that include dimensions. Focal Point, Inc., Atlanta.
Circle 412 on reader service card



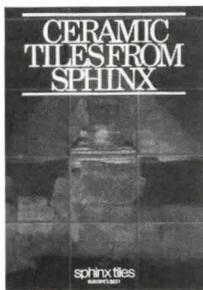
Ceramic tiles
Glazed and unglazed vitreous and nonvitreous commercial and residential tiles are featured in a 28-page color brochure. Applications and dimensions accompany photos of individual pieces. Typical installations are also shown. Specifications are included. Villeroy & Boch, Inc., Pine Brook, N.J.
Circle 418 on reader service card



Office furniture
Domino natural beech furniture is covered in a 22-page color brochure. Wardrobes, desks, tables, cabinets and credenzas are shown in photos of typical settings. In addition, each item is shown individually with listings of design features and dimensions. Workbench Contract, New York City.
Circle 413 on reader service card



Bath fixtures
Fittings and accessories coated with colorful enamel epoxy are featured in a 6-page color foldout brochure. Specifications include diagrams with dimensions of basin-deck- and wall-mounted fittings. Available colors are shown. Hastings Tile & Il Bagno Collection, Lake Success, N.Y.
Circle 419 on reader service card



Tiles
A wide variety of interior wall or bathroom floor tiles is illustrated and described in a 20-page color brochure. Several of the series are shown in photos of typical installations. Dimensions are included. Sphinx Tiles U.S.A. Ltd., Fairfield, N.J.
Circle 414 on reader service card



Decorative grilles
Several models of decorative grilles are shown in detail and installation photos in a 20-page brochure. Installation details as well as information on applications and finishes and specifications are included. Construction Specialties, Inc., Cranford, N.J.
Circle 420 on reader service card



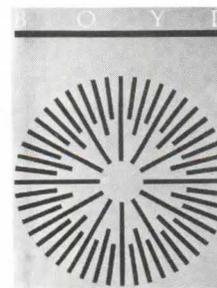
Greenhouse/skylight shades
A 4-page color brochure covering *Trackstar* and *Pacifica* shades for skylights and greenhouses includes photos of installations and listings of solar control and thermal properties. A price list is also included. Home & Castle, Inc., Canoga Park, Calif.
Circle 415 on reader service card



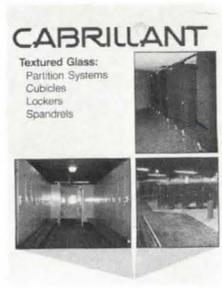
Building material
A 12-page color brochure describes *Quazite*, a new material claimed to be as formable as fiberglass, have twice the bending strength of granite and be as impermeable to liquids as glass. Applications are illustrated and described. Quazite Corp., Houston, Texas.
Circle 421 on reader service card



CAD
Perspective drawings that may be achieved with the *McAuto Building Design System* are illustrated in a 6-page color brochure. Photos showing the system in use as well as an extensive description of its capabilities are also included. McDonnell Douglas Automation Co., St. Louis, Mo.
Circle 416 on reader service card



Light fixtures
Floor lamps, wall brackets, chandeliers and lanterns in a wide variety of styles are displayed in a catalog from Boyd Lighting. Dimensions are listed by photos of lamps. A price list includes the type of bulb used and finishes for each model. Boyd Lighting Co., San Francisco, Calif.
Circle 422 on reader service card



Textured glass cubicles
Tempered, 8mm-thick, *Cabrillant* glass for use in partition systems, lockers and cubicles is featured in a 4-page color brochure. Photos show typical installations and diagrams illustrate applications. A color chart is included. W & W Glass Products Ltd., Spring Valley, N.Y.
Circle 417 on reader service card



Roof windows
A 20-page guide to installing this manufacturer's roof windows includes information on necessary tools, roof design, the use of built-up flashing and building a light shaft. Line drawings illustrate each section. Roto Frank of America, Inc., Old Saybrook, Conn.
Circle 423 on reader service card
More literature on page 155

CONWED

SYSTEM 2™ furniture system. Start with the classic beauty and warmth of wood, together with a contemporary palette of fabric colors. Add patented task lighting and designed-in compatibility with the needs of the electronic office. The result is System 2 from Conwed.

This state-of-the-art design is integrated with the industry's most complete range of products and services to maximize the efficiency and effectiveness of the work place. From ceiling tile to wall panels, from office furniture to lighting, every element is considered for its effect on the total environment. We call this disciplined approach Intérics, the science of creating environments that work.

To learn how Conwed can put the science of Intérics to work for you, stop by our New York showroom during Designer Saturday.

St. Paul Offices/Showroom: Conwed Tower, 444 Cedar Street, St. Paul, MN 55164

Chicago Showroom: Merchandise Mart, Suite 929, Chicago, IL 60654

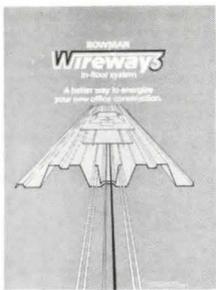
New York Showroom: A&D Building, 150 East 58th Street, New York, NY 10155



INTÉRICS

The science of creating environments that work.

Circle 63 on inquiry card



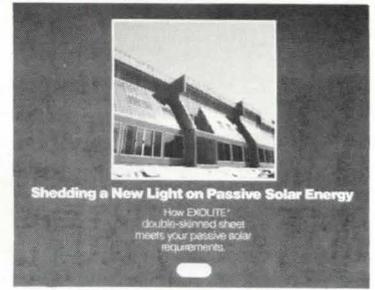
In-floor electrical system
An information kit containing two color brochures describes *Wireway3*, an electrified composite floor deck system designed to simplify the laying of power, light, and communication lines in nonresidential buildings. Details of the system's impact on cost and construction schedules are included in the package, which also has a step-by-step guide to installation. Bowman Construction Products, Heidelberg, Pa.
Circle 424 on reader service card



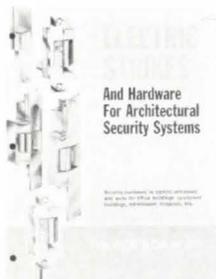
Glass
A complete line of tempered and insulating glass products is described and illustrated in a 20-page color booklet. Performance and specification charts provide information on glass manufactured for both exterior and interior applications. Hordis Brothers, Inc., Pennsauken, N.J.
Circle 427 on reader service card



Custom furnishings
A modular system of storage components for hospitals, laboratories, schools, and offices is described in a 16-page color looseleaf portfolio. Diagrams and photographs show sample room layouts, and a technical sheet covers installation data. Monitor, Tacoma, Wash.
Circle 428 on reader service card



Passive solar sheathing
EXOLITE is a line of double-skinned acrylic or polycarbonate sheets designed for passive solar application. The system is featured in a 10-page color booklet that describes and illustrates its components and uses. CYRO Industries, Woodcliff Lake, N.J.
Circle 429 on reader service card
Continued on page 157



Security hardware
A 4-page pamphlet illustrates and describes this manufacturer's line of electric strikes and other high-security architectural hardware to control entrances for commercial, residential, and institutional buildings. The strikes are designed for locking and unlocking doors by push buttons, toggle switches, or card-access devices. Folger Adam Co., Joliet, Ill.
Circle 425 on reader service card

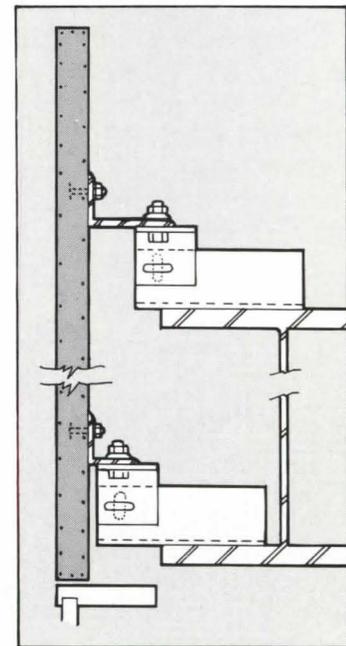


Material handling directory
The national trade association representing manufacturers of mechanized material handling products has published a 48-page directory organized in 2 sections. The first contains a listing of companies arranged by product group; the second comprises an alphabetical listing of association members and descriptions of the products they manufacture. Material Handling Institute, Pittsburgh, Pa.
Circle 426 on reader service card

Multi-faceted.



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Skidmore, Owings & Merrill
Architects
New York, NY



A virtual jewel whose multi-faceted shape is defined with hard-edged precision in polished Sunset Red granite from Cold Spring. This maintenance-free exterior steps up fifty-two stories with an elegance and strength that no other material can match.

Your designs can take shape in any of Cold Spring's 16 colors and four finishes. For a 20 page, full color catalog showing all that Cold Spring has to offer, just call 800-328-7038. In Minnesota call 612-685-3621. Or write to the address below.

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Circle 64 on inquiry card

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The name to write for the roof that's right.

EPDM/FIRESTONE

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EPDM/Firestone means membrane materials that are the result of more than twenty years' of research and performance testing throughout the world.

EPDM/Firestone means roof systems conceived and engineered to resist long-term environmental exposure.

EPDM/Firestone means three separate roofing systems with the flexibility to conform to the designer's concept.

EPDM/Firestone means economy of installation and economy of operating costs throughout the roof's life-cycle.

But perhaps most importantly, EPDM/Firestone means a complete system which stands behind your roofing system. From top technical assistance to manufacturing capability to a comprehensive warranty program,* EPDM/Firestone means a roofing system that's right for your job.

Ask for our comprehensive technical manual. It contains complete information about how EPDM/Firestone is the right specification for your roof. Just write

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INDUSTRIAL PRODUCTS COMPANY



Division of The Firestone Tire & Rubber Company

The name to write
for the roof that's right.

* Five, ten, and fifteen-year warranties available.

Circle 65 on inquiry card



Industrial heaters

A 122-page catalog introduces a new line of fluid heat transfer systems, as well as other types of industrial heaters, controls, and accessories. Photographs and diagrams illustrate each system, and a technical data section assists manufacturers and engineers in the calculation of thermal requirements. Wellman Thermal Systems Corp., Shelbyville, Ind.

Circle 430 on reader service card



Computer products

A 96-page color catalog offers a full line of computer and word processing supplies. Laminated oak furniture and a group of accessories designed for microcomputers are among the over 200 new products described and illustrated. MISCO, Inc., Marlboro, N.J.

Circle 433 on reader service card



Elevator/escalator repair

Maintenance contracts for this manufacturer's elevator and escalator systems are explained in a 16-page color brochure. The purpose of the program is to replace worn parts and make minor repairs to prevent major breakdowns. Westinghouse Elevator Company, Short Hills, N.J.

Circle 434 on reader service card

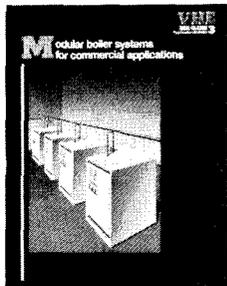


Glass block

A 4-page color brochure describes the features of this manufacturer's line of glass block replacement windows and walls, including pre-assembled panels. Photographs depict typical installations. Pittsburgh Corning Corp., Pittsburgh, Pa.

Circle 435 on reader service card

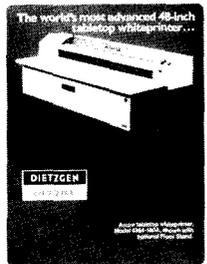
Continued on page 159



Gas boilers

A 6-page fold-out bulletin describes this company's new VHE modular system of gas boilers for apartment, commercial, and institutional buildings. In addition to explaining the various control options available for sequencing the boilers, the bulletin features venting diagrams, primary-secondary pumping recommendations, boiler ratings, and specifications. Weil-McLain, Michigan City, Ind.

Circle 431 on reader service card



Whiteprinter

The Arrow is a new 48-in. tabletop whiteprinter that produces blue, black, and sepia copies from translucent originals at speeds up to 20 ft. per minute. Designed for small-to-medium production needs, the unit is described and illustrated in a 4-page color brochure that includes specifications and recommended diazo print materials. Dietzgen Corp., Des Plaines, Ill.

Circle 432 on reader service card

Fancy Cuts™ Idea Kit

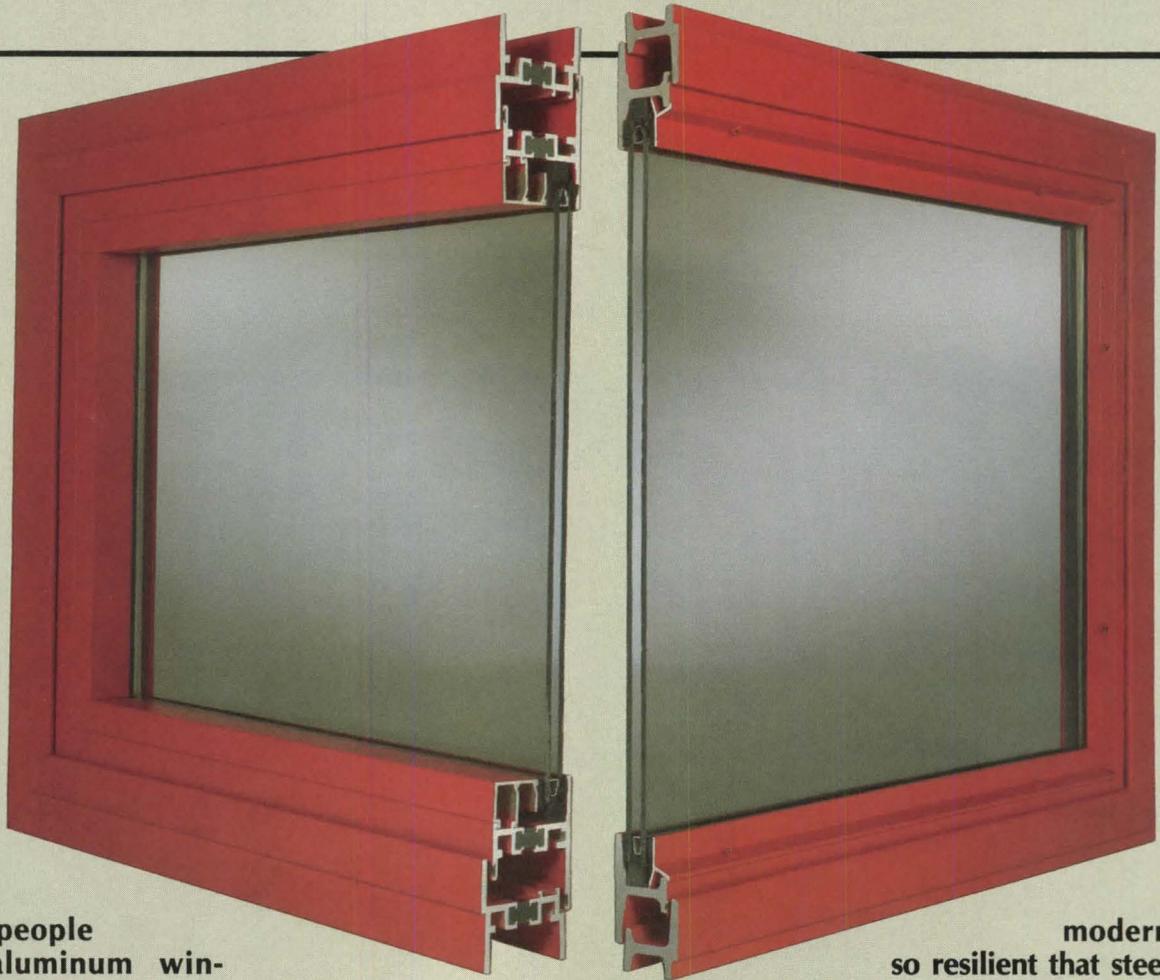
Architect:
Alex Sasonoff

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Our free Fancy Ideas kit shows how some of America's leading architects bring texture and elegance to their interior and exterior designs with Fancy Cuts shingles. Ask for it now! Call Joe Hendrickson at 1-800-426-8970 or write: Shakertown Corporation, Dept. FC, P.O. Box 400, Winlock, WA 98596.

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WHICH ONE?



Some people make aluminum windows. A few make steel. But only Hope's manufactures both. That's very important because these two windows have little in common and getting straight facts could change the way you specify. The difference in sight lines and visual mass is obvious. What is not so obvious is just as important. For example, the steel window is three times stronger than the aluminum one. And there are differences in resistance to racking and durability. Both these windows have been finished with PVC, a

modern coating so resilient that steel windows can survive the harshest environments without surface degradation. What these windows do have in common that seems most surprising to so many is thermal performance. The steel window without thermal breaks delivers equivalent performance to the aluminum windows with thermal breaks. One company knows the real facts about both windows because one company makes both windows. Before you decide which one is right for your project, call Hope's.

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ARCHITECTURAL PRODUCTS INC.

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custom manufacturers of steel windows, aluminum windows, steel casement doors, security windows, fire rated windows and other architectural elements

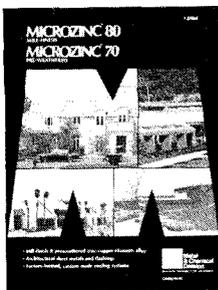
**IDEAS-
PRODUCTS-
SOLUTIONS**



WINDOWS
FLOORS
PATIO DOORS

Windows and doors

Photographs of sample installations both in this country and abroad highlight two color brochures on this manufacturer's TROCAL series of PVC windows and doors. Text and charts outline the products' energy conservation and sound-insulating qualities, while section diagrams reveal details of construction. Dynamit Nobel of America, Inc., Rockleigh, N.J.
Circle 436 on reader service card



Metal roofing

An 8-page color brochure and accompanying specification sheet describe the preweathered Microzinc 70 and mill-finish Microzinc 80 lines of architectural sheet metal and roofing systems. Photographs depict sample installations. Ball Metal and Chemical Division, Greeneville, Tenn.
Circle 439 on reader service card



Vinyl-coated fabrics

Naugahyde 2/200 is a new vinyl-coated fabric that meets or exceeds major code test specifications for flammability and smoke generation. An 8-page brochure illustrates grain and color options and gives the results of fire tests conducted by several regulatory agencies. Uniroyal, Inc., Mishawaka, Ind.
Circle 440 on reader service card

Church windows

This manufacturer of custom-made new and replacement aluminum windows specializes in products for religious buildings. A 12-page catalog describes single- and double-glazed models—some of which are designed to accept stained glass. J. Sussman, Inc., Jamaica, N.Y.
Circle 441 on reader service card
Continued on page 171

**NOISE
CONTROL**

PRODUCTS AND SYSTEMS



Noise-control products

A 60-page catalog describes this company's line of fabricated metal noise-control devices designed specifically to meet OSHA-mandated worker safety regulations for facilities in the food, beverage, and pharmaceutical industries. In addition to product photographs, the catalog has acoustical data, a list of OSHA noise-control standards, and a glossary. United McGill Corp., Groveport, Ohio.
Circle 437 on reader service card



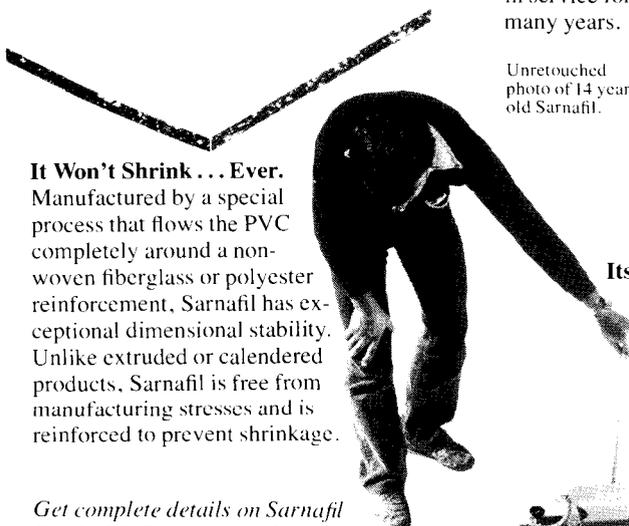
Security system

A product data sheet describes the Cardkey PASS-3000, a programmable computer-based security system designed to control entry of up to 10,000 card holders while monitoring such alarm and environmental conditions as intrusions, fire, flood, light, and temperature. The sheet illustrates components and lists system specifications. Cardkey Systems, Chatsworth, Calif.
Circle 438 on reader service card

Sarnafil® Single-Ply Roofing
NO SHRINKAGE NO EMBRITTLEMENT
NO PROBLEMS

Outside of accidental damage and improper design or installation, there are only about three things that can happen to single-ply roofing membranes • They can shrink and as a result tear or pull away, causing leakage • They can become brittle or deteriorate with age • They can fail at the seams due to inadequate seam bonding. Sarnafil PVC roofing membrane is the best protection you can get against any of these potential problems.

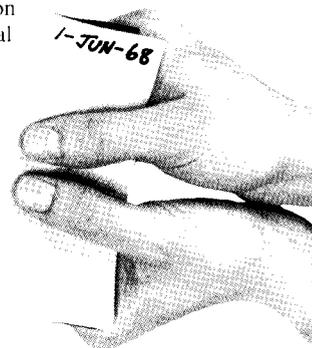
Enlarged section of Sarnafil shows reinforcing fibers.



It Won't Shrink... Ever. Manufactured by a special process that flows the PVC completely around a non-woven fiberglass or polyester reinforcement, Sarnafil has exceptional dimensional stability. Unlike extruded or calendared products, Sarnafil is free from manufacturing stresses and is reinforced to prevent shrinkage.

Get complete details on Sarnafil Single-Ply Roofing. Circle the reader's service number or write today for our illustrated brochure. Sarnafil (U.S.) Inc., Canton Commerce Center, P.O. Box 380, Canton, MA 02021.

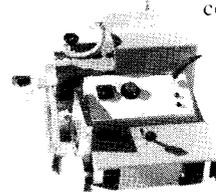
It Won't Get Brittle or Deteriorate with Age. The only way any manufacturer can make this claim is to have actual installations in place for many years in all climatic conditions. Sarnafil PVC membranes retain their plasticizer even after years of service. Samples taken from early installations retain their original pliability and can be folded or even creased without surface cracking. The excellent aging properties of Sarnafil membranes allow the fusion of new material to membranes that have been in service for many years.



Unretouched photo of 14 year old Sarnafil.

Its Seams Don't Depend on Adhesives, Chemicals or Sealants. Hot-air-welding fuses overlapping sheets of Sarnafil into a continuous leakproof roof. There are no adhesive or chemically bonded seams to fail and no additional costs for chemical or adhesive seam bonding materials. Manufacturers of other roofing membranes recommend hot-air-welding as a means of correcting gaps in adhesive and solvent-

welded seams. Sarnafil gets it right the first time!



Sarnafil® Reinforced Membranes
"Living up to the promise of single-ply roofing"

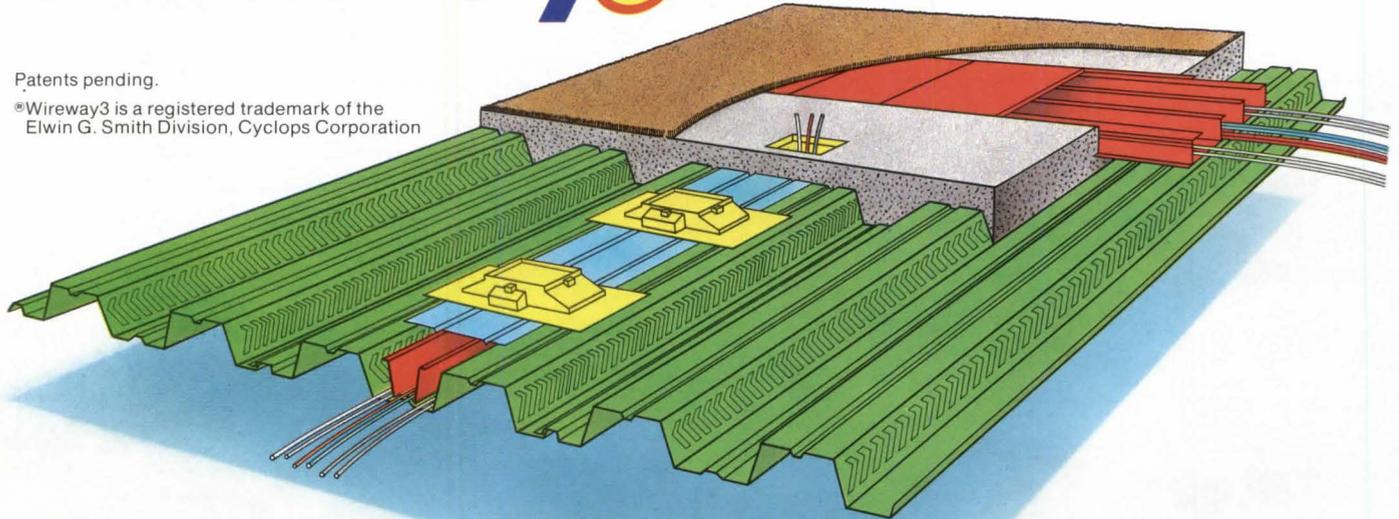
Energize your floor system

BOWMAN

Wireway³

Patents pending.

®Wireway3 is a registered trademark of the Elwin G. Smith Division, Cyclops Corporation



A state-of-the-art innovation that goes *beyond* the common approach to in-floor electrical systems.

The Wireway³ system is designed with quite a few unique, technically advanced and cost-effective features that deliver outstanding design flexibility in office landscape...before, during and after construction.

The Wireway³ system offers many added benefits:

- Tenant-friendly, allowing fast, simple and cost-effective means to add or change outlet locations.
- Long-term potential for growing high tech office equipment requirements.
- Blue-chip feature in both owner-occupied and speculative office buildings.
- Value-added construction feature that will easily pay for itself in a short time.

The bottom line for the Wireway³ system is a 10- to 20-percent cost savings on your next electrified floor system.

If you would like more information on Bowman's Wireway³ system, (or our new high performance composite floor decks) contact Bowman Construction Products, and we'll tell you how we can energize your floor system for a lot less labor and money.

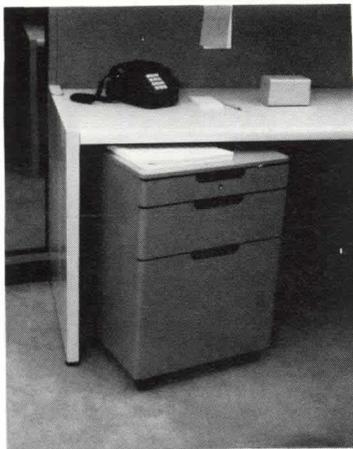
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ELWIN G. SMITH DIVISION

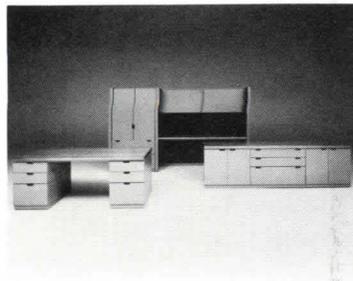
Circle 69 on inquiry card



Mobile pedestals

Pedestals which can be moved wherever needed come in 20- and 30-in. depths and 15- and 19-in. widths. EDP printout storage is handled by 15-in.-high pedestal drawers where filing may be side-to-side or front-to-back. Harter Corp., Sturgis, Mich.

Circle 301 on reader service card



Office furniture

The *Habitat 25* series desk features half cylinder storage compartments on either side. The compartments have adjustable shelves and contoured doors. Other components of the series are credenzas, file units, wardrobes and occasional tables. All are available in 14 high-gloss or low-glare colors, five woods and five burls. Intrex, Inc., New York City.

Circle 302 on reader service card



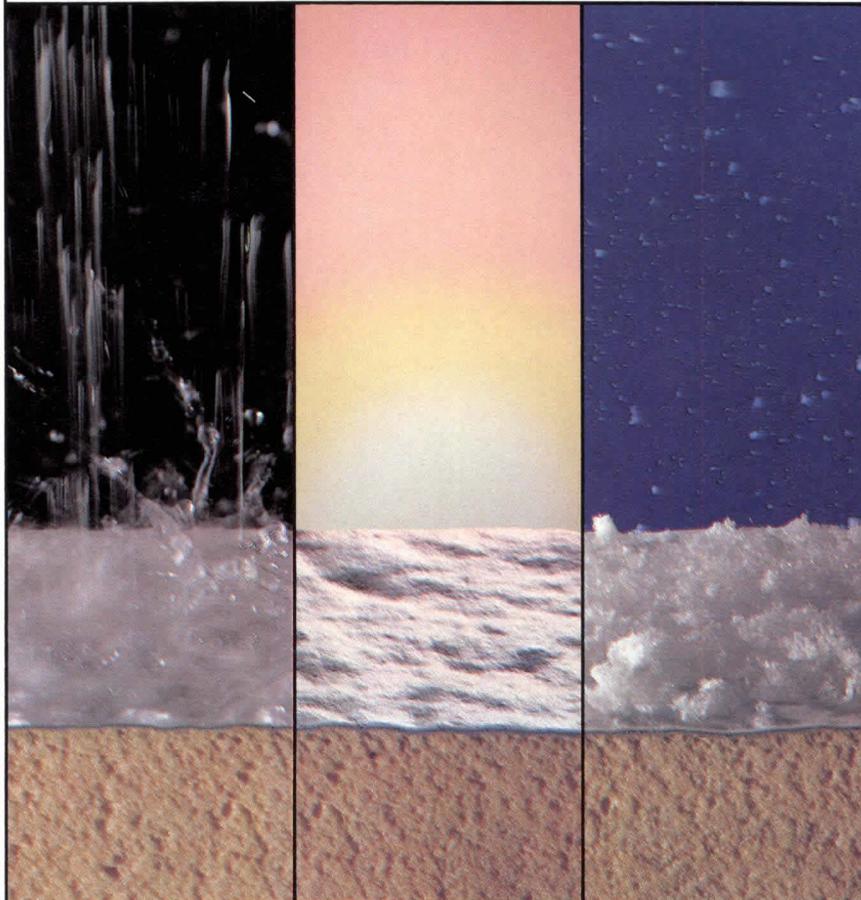
Office system

Petri Tinta is a system of pedestals and storage units designed to work with a range of fabric panels and wood tops to fit modules previously established by this manufacturer's open plan. Units come in 15 color finishes, including metallics, selected to complement existing wood finishes. iil international, inc., Weston, Ontario.

Circle 303 on reader service card
Continued on page 163

For Urethane Foam Systems

GEO THERM™
The all-weather
roof coating that lasts.



Geotherm elastomeric roof coating gives long-term protection whatever the weather. Developed from Rhoplex™ EC technology, Geotherm tacks off fast and resists dirt pickup for years. Our Geotherm/urethane foam system has a high R value and is UL Classified*. Protect yourself from roof problems. Call today!

PHYSICAL PROPERTIES—CURED

Tensile strength at maximum stress (increases with weathering):	308 psi (unaged)
Elongation at break:	620% (unaged)
Hardness—Shore A:	73
Permeability (ASTM E-96-A):	.041 perm inch
Mildew growth:	None (2 years exterior)
Low temperature flexibility:	Passes 180° bend at 34°F (1 year exterior)
Service temperature range:	-70°F to 200°F



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*Cements and coatings for built-up roof-covering materials classified by Underwriters Laboratories, Inc., as to external fire exposure only.

Circle 70 on inquiry card



It's a whole new floor game at Anaheim Stadium.

An Endura rubber-studded slip-resistant self-waxing floor. A floor that can take the rough treatment crowds of sports fans dish out every game day. And come back looking better every time.

Nothing stands up to scratches, cigarette butts, spilled sodas or even the crushing weight of a forklift, like Endura.

Available in 11 standard colors, custom colors, circles, squares, low or high profiles, and smooth textures.

Find out more. Call the Sweet's Buyline (800) 447-1982.

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Circle 71 on inquiry card



JET BLACK

CHOCOLATE

VINTAGE

CHARCOAL
GREY

DEEP BROWN

PUTTY

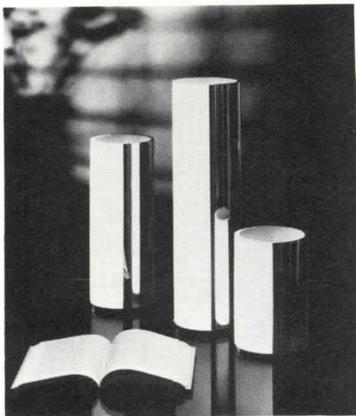
FOREST
GREEN

TERRACOTTA

NITE BLUE

PEWTER

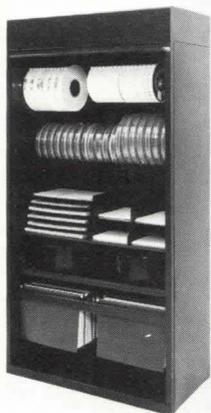
B



Fluorescent table lamps
Three lamps are composed of prismatic acrylic diffusers and aluminum extrusions. The metal portions are available in polished chrome or brass, or black finishes. Lamps are 6 in. in diameter and come in heights of 9, 15 or 18 in. Architectural Supplements, Inc., New York City.
Circle 304 on reader service card



Office furniture
Executive Editions is a collection of modular units, including desks, open and closed shelving, file cabinets and accessory storage units. Components are constructed of mahogany solids and veneers. Helikon Furniture Co., Taftville, Conn.
Circle 305 on reader service card



Electronic media storage
The *Emtech Storage System* is a metal cabinet system developed to accommodate such items as magnetic tapes, disks, cassettes and printouts. Cabinets are designed to allow easy retrieval of material when needed. GF Business Equipment, Inc., Youngstown, Ohio.
Circle 306 on reader service card
Continued on page 165

The power. And the glory.

When it comes to energy savings, you can shoot for the sun with a Lindal Cedar Home.

Design flexibility is the key. You can opt for passive energy savers such as thermal windows. Or go to the state-of-the-art in passive solar design with Heat Mirror™ windows and a greenhouse.

There are lots of other reasons to build a Lindal Cedar Home. Value. The drama of post-and-beam construction. The warmth of Western Red Cedar.

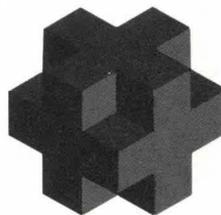
But perhaps the best reason is this. You'll glory in the power Lindal gives you to design a home you can live with for a long long time.

Send \$5 for our beautiful new planbook to Lindal Cedar Homes, Dept. V03, Box 24426, Seattle, WA 98124. In Canada, Dept. V03, Box 2080, New Westminster, B.C. V3L5A3.

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LINDAL CEDAR HOMES

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Petro-Lewis Yield Plus Fund II

A unique series of limited partnerships formed to purchase oil and gas production payments from a specified portfolio of producing	properties plus engage in development drilling activities on those properties.
Production Payments for Quarterly Distributions	Plus Long-Term Economic Life



Minimum Subscription—\$2,500 in most states (\$2,000 for Qualified IRA Plans)

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Bradley products deliver long-lasting, worry-free performance in high-usage washrooms.

When a washroom fixture works, you never hear about it. When it doesn't, you never hear the end of it. That's why Bradley products are designed to provide durable, long-lasting performance, year after year.

As a matter of fact, there are Bradley Washfountains that are still in active use after more than forty years. And kids defending school titles are soaping up in the same

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Long-lasting, durable performance is the key to everything Bradley makes. Safety fixtures. Metering faucets. Modular wash centers and a full line of washroom accessories.

Up front planning with a

Bradley
CORPORATION 

Bradley rep will assure peak function and operating cost savings for any application. He will translate long-lasting product performance into peace of mind for you, once the job is done. To find out more about how Bradley can make your high-usage washrooms work better longer, contact: Bradley Corporation, 9101 Fountain Blvd., Menomonee Falls, WI 53051. 1 414 251-6000.

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Restores the "Grand" to Grand Central Station.



SURE KLEAN PLAYS A MAJOR ROLE IN URBAN FACELIFT

Carbon, atmospheric dirt and pigeon droppings obscured the eighty year old limestone face of New York's Grand Central Station. SURE KLEAN products were put to work to restore the exterior of the weather-worn landmark back to a natural, 'like new' appearance.

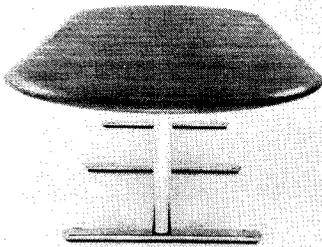
For more information
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ProSoCo, Inc.

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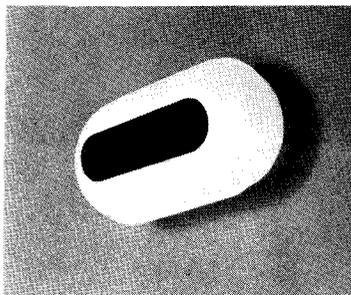
Conference tables

The 1450 conference table group comes with oak, walnut or laminate tops in round, oval, rectangular and boat shapes. It features mirror chrome bases with black trim in either cross or tee configurations. Cumberland Furniture Corp., New York City.
Circle 307 on reader service card



Terminal table

The terminal surface of this adjustable table measures 16 1/2 in. by 48 in. and has adjustments for height, tilt and horizontal movement. The keyboard surface has a height adjustment and pulls out horizontally. Surfaces are in natural oak or almond *Formica*; all tables have black vinyl edges. Howe Furniture Corp., New York City.
Circle 308 on reader service card

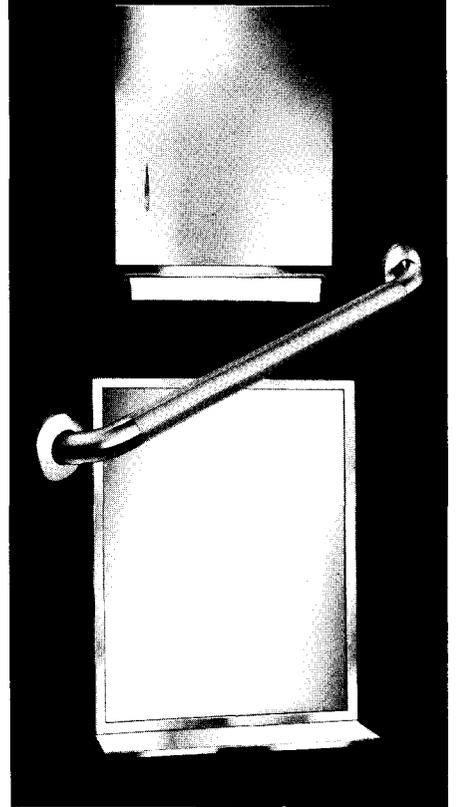


Lighting

Clissi is a wall fixture that mounts directly to a junction box. It has an oval plexiglass cover with concentric ribs, which surrounds a black enameled socket. Atelier International, Ltd., New York City.
Circle 309 on reader service card

Continued on page 167

Bradley accessories finish the job better.



Long-lasting performance. It looks better every day.

This is where Bradley accessories start: solidly designed and quality-crafted stainless steel products. Good looks with good choices — including a line available in over a dozen contemporary colors for easy coordination.

And where do they end up? In the same places Bradley fixtures do — high-usage wash areas that need reliable performance, resistance to vandalism, and continuous maintenance savings.

Bradley accessories will do the job from the day you install them. With every passing day, they'll look even better. And so will you.

For more information call your Bradley rep today, or contact Bradley Corporation, 804 East Gate Drive, Mt. Laurel, NJ 08054, 1 609 235-7420.

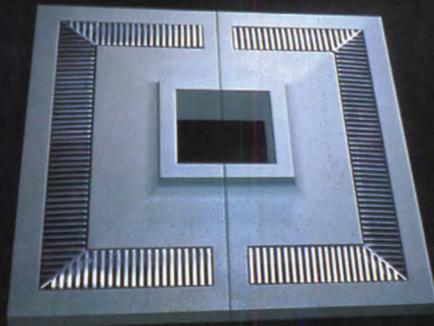


We get the job done better.

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CANTERBURY INTERNATIONAL 1984

We couldn't wait!



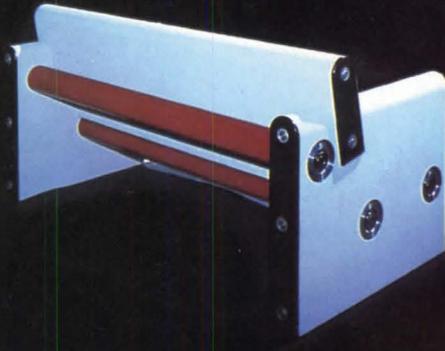
Jardin Tree Grate/Square



Jardin Tree Grate/Round



Jardin Bench



Jardin Bench



Jardin 100 Bollard



Jardin 200 Bollard



Jardin 300 Bollard

JARDIN GROUP — Concrete additions.

Canterbury furniture and accessories, designed for public use. New additions in 1984 include seating, planters, light standards and clocks.

CANTERBURY INTERNATIONAL

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There's a lot worth saving in this country.

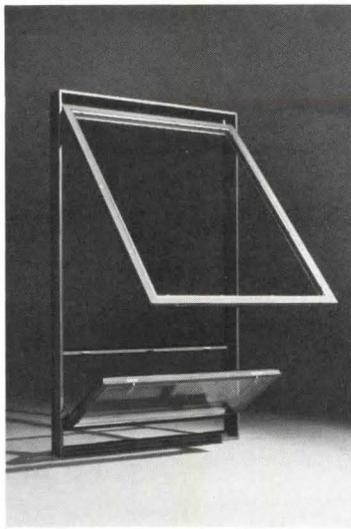
Today more Americans who value the best of yesterday are working to extend the life of a special legacy.

Saving and using old buildings, warehouses, depots, ships, urban waterfront areas, and even neighborhoods makes good sense. Preservation saves valuable energy and materials. We can also appreciate the artistry of these quality structures.

The National Trust for Historic Preservation is helping to keep our architectural heritage alive for us and for our children.

Help preserve what's worth saving in your community. Contact the National Trust, P.O. Box 2800, Washington, D.C. 20013.

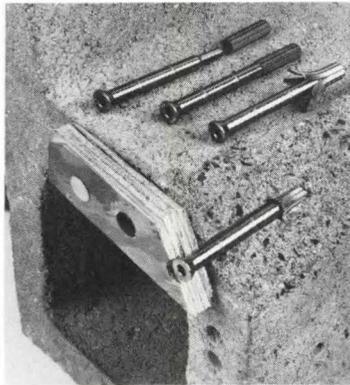

National Trust for Historic Preservation
 Preservation builds the nation



Windows

The *Clad Monumental* window series features aluminum on the exterior for low maintenance and wood on the interior for its insulating and esthetic value. The 0.062-in. extruded aluminum, with a baked enamel finish, is designed to protect wood frame members from weathering. The 2½-in.-thick sash assembly has 1½-in.-thick wood members to control condensation, and the meeting rail is a 0.125-in. extrusion to withstand heavy wind loads. Thirteen glazing options are available, including double and triple glazing. Four types of units are available: in-swinging casement, hopper, top-hinged, and fixed. Pella Windows and Doors, Pella, Iowa.

Circle 310 on reader service card

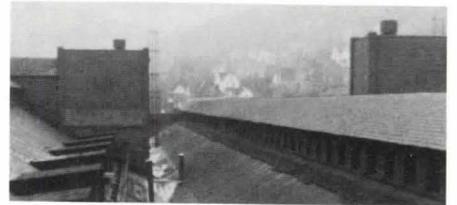


Anchor bolts

The *JAWbolt* is a solid steel anchor bolt that opens, bends and sinks the anchor's teeth toward the direction of insertion. Depending on the type of *JAWbolt* used, load-bearing capacity is claimed to be up to 3,430 lb. The device is available in lengths of 1½ in. and 2¾ in. for the ¼-in. diameter, and 3¼ in. for the ⅜-in. diameter. It comes with half-rounded heads in finishes of black corrosion-proofing or plated brass, bronze or chrome. Jaw Manufacturing Co., Reading, Pa.

Circle 311 on reader service card
 Continued on page 171

The real beauty of a Robertson retrofit is much more than skin deep.



BEFORE ROBERTSON



AFTER ROBERTSON

Robertson Versacor® prefinished panels give this new roof multilayer defenses against acid rain and other corrosives. Robertson can take single-source responsibility for a complete roof and/or facade retrofit, from analysis through design and engineering to manufacturing and installation... right over your existing structure. The investment pays off in lower energy consumption... less infiltration... longer life... and better looks. Ask your local H. H. Robertson representative or contact J. J. Flanagan, H. H. Robertson Company, 400 Holiday Drive, Pittsburgh, PA 15220; (412) 928-7638.

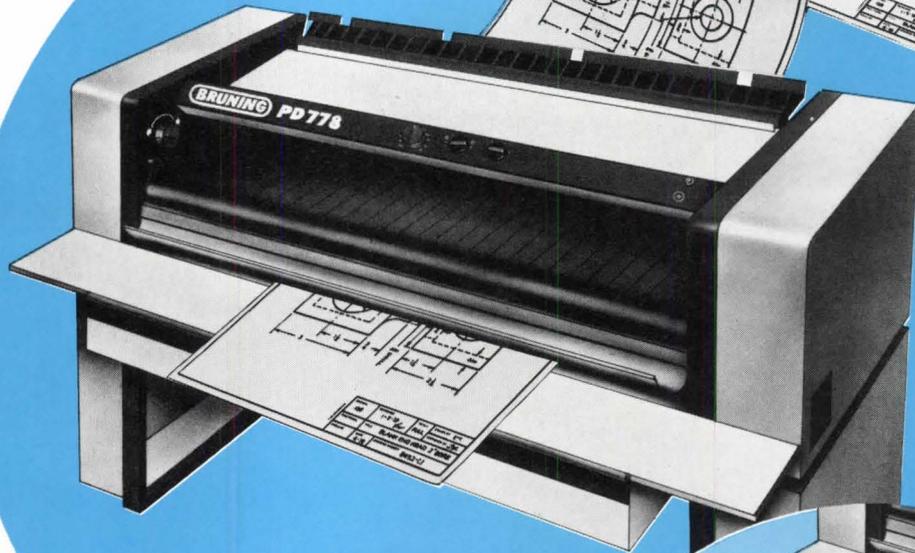

Robertson
 One of a continuing series of
 Robertson retrofits

WABCO, Wilmerding, PA
 WABCO Air Brake Division, Wilmerding, PA

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Another First from Bruning!

The new PD778 engineering copier is the first to combine big machine production features with convenience, non-ammonia operation, and automatic separation.

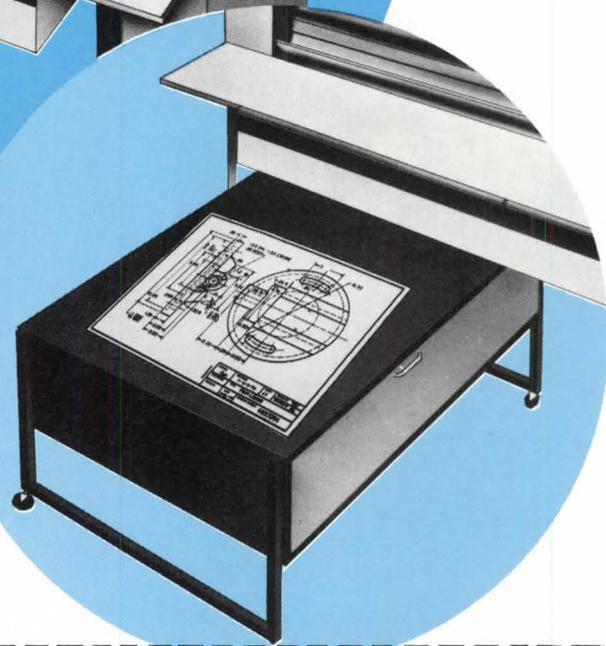


Seven fluorescent exposure lamps offer the convenience and economy of "On/Off" operation while providing real production muscle.

Mobile taboret stores supplies and doubles as work surface—rolls under machine out of the way when not needed.



Bruning's exclusive PD process does away with ammonia and venting. See Bruning innovation in a PD778 copier demo—learn how inexpensively you can rent one!



1800 Bruning Drive West, Itasca, Illinois 60143,
Telephone: 312-351-2900

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FREE road atlas at PD778 copier demo.
Send in this coupon now...

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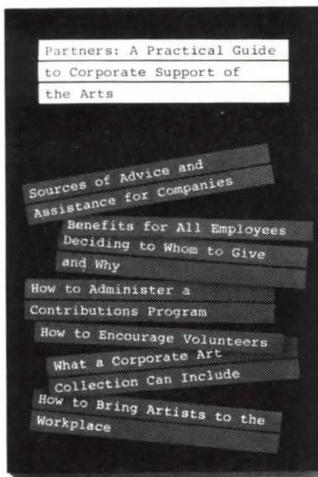


Do something selfish. Support the arts.

We are speaking here of business support of the arts, and what it can do for your clients, your employees and your company.

In a word, lots.

Because in addition to the rewards that the arts have to offer society, there are rewards that the arts can and will offer business. Very real, very tangible rewards. All very much in your company's self-interest.



To learn how to go about getting them—or, as the case may be, how to go about it better—there's **Partners**.

Partners is the first practical guide to corporate support of the arts. And for anyone who has anything at all to do with the arts—or would like to—it's indispensable.

In it, you'll find dozens of examples of how business and the arts have helped—and continue to help—one another. Detailed information. No-nonsense advice. Sources to turn to for guidance. Specifics.

Partners: A Practical Guide to Corporate Support of the Arts. For more information and prices, write us today at the address below. And see how much your business can get from supporting the arts.

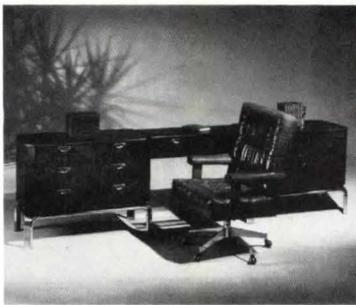
It's one of the few things in this world that's selfish and selfless at the same time.

Partners.

The first book on supporting the arts that doesn't leave everything to the imagination.

Partners is published by the Cultural Assistance Center, Inc., a nonprofit service organization established to promote and assist cultural institutions.

Write the Cultural Assistance Center, Inc., 330 West 42nd St., New York, N.Y. 10036.



Furniture

The **Aurora** collection includes desks, credenzas, cocktail tables and seating. It features brass bases and hardware and comes in either an olive ash burl or a lacquer finish in a wide range of colors. John Stuart/John Widdicomb, New York City.

Circle 312 on reader service card



Lounge seating

The **DeFuccio** lounge seating collection features molded plywood and solid wood frames. Replaceable seat and back cushions come upholstered in any fabric from this manufacturer's lines of nylons, wools and wool blends. Thonet, York, Pa.

Circle 313 on reader service card

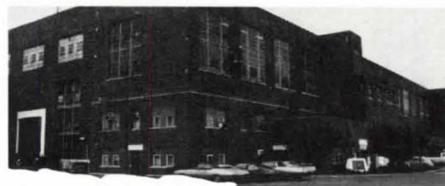


Track light extensions

Extension wands, which allow track lights to be set at different levels, come in 18-, 36-, and 48-in. lengths. They fit any of this company's ceiling mounted **Power Trac** installations and may be used with its solid-state low-voltage adapters and "featherweight" lampholders. Wands are available in white or matte black finishes. McGraw Edison, Rolling Meadows, Ill.

Circle 314 on reader service card

The real beauty of a Robertson retrofit is much more than skin deep.



BEFORE ROBERTSON



AFTER ROBERTSON

Before, the building suffered from deteriorating looks, energy loss, and weakening structural clay tile walls. A Robertson retrofit improved appearance, added insulation, and even stabilized the weak walls with a specially designed girt and outrigger system. Robertson wall and roof retrofit systems work so well because they're lightweight, economical, easy to insulate and easy to erect right over an existing structure. Robertson can be your single source for a beautifully efficient building. Just ask your local H. H. Robertson sales representative or contact J. J. Flanagan, H. H. Robertson Company, 400 Holiday Drive, Pittsburgh, PA 15220; (412) 928-7638.

Robertson

One of a continuing series of Robertson retrofit projects

Westinghouse Electric Corporation
Power Generation Division, Lester, PA

Circle 76 on inquiry card

GET TWICE THE INSULATION EFFECTIVENESS WITH ENERMASTER™ ROLLING DOORS

Compare for yourself...

Atlas Enermaster puts in twice the insulation.

It's simple. More insulation means more energy saved, which means a shorter payback period for owners and a more comfortable working environment for employees.

At 1-1/2 inches deep, Enermaster slats are almost twice as deep as any rolling door. At twice the height, they reduce by half the number of slats in a conventional rolling door—doubling the amount of protection provided because they're completely filled with insulation.

And that's not all. Atlas Enermaster is the only rolling door that incorporates a full 3/16 inch thermal break between the exterior and interior faces of the slat . . . a positive barrier against energy loss due to conduction and convection.

And Enermaster's "foamed in place" polyurethane insulation is the single most effective insulation available

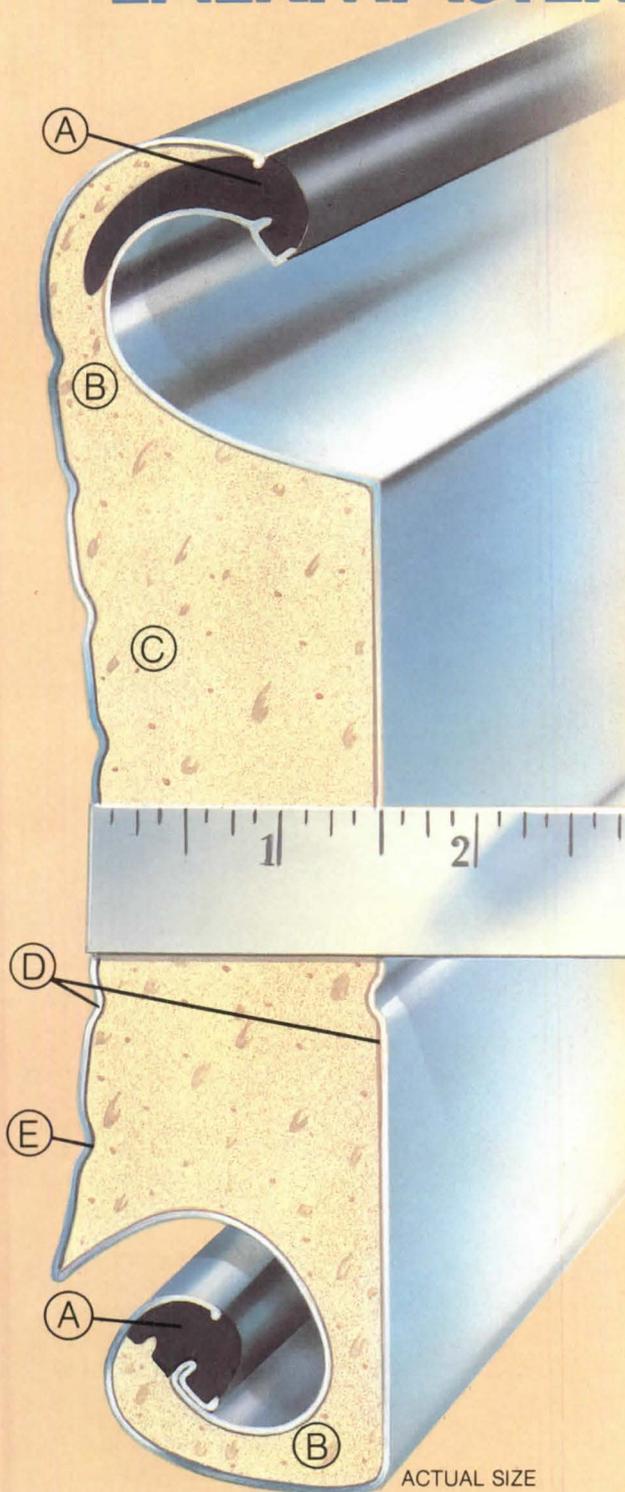
today. Most effective because it has the highest resistance (R), and lowest conductivity (K) of all common insulators, and because it's "pumped" in under pressure, expanding into and filling every space inside the slat. It's a total system, giving you more insulation, better insulation and an effective thermal break. . . all without giving up the storage compactness of a rolling door.

With Atlas you get a quality product, a national network of distributors and installers, a complete line of rolling doors and grilles and other unique options.

Call for more information or write to Atlas Door Corp.,
116 Truman Drive,
Edison, N.J. 08818,
(201) 572-5700.

ENERMASTER™
Insulated Rolling Doors for
Total Energy Protection

Circle 78 on inquiry card



ACTUAL SIZE

- A** 3/16" minimum Thermal Break
- B** Insulation Fills Slat Interlocks
- C** 1-1/2" "Foamed In Place" Polyurethane Insulation
- D** Two Faces of Galvanized Steel Protect Insulation
- E** Insulation "Bonds" to Metal

atlas

ATLAS DOOR CORP.
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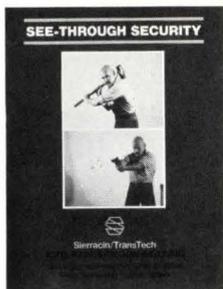
U.S. business and associated groups contributed the dollars the Ad Council needs to create and manage this remarkable program. Advertisers, advertising agencies, and the media contributed the space and time.

Your company can play a role. If you believe in supporting public service efforts to help meet the challenges which face our nation today, then your company can do as many hundreds of others—large and small—have done. You can make a tax-deductible contribution to the Advertising Council.

At the very least you can, quite easily, find out more about how the Council works and what it does. Simply write to: Robert P. Keim, President, The Advertising Council, Inc., 825 Third Avenue, New York, New York 10022.

Ad Council A Public Service of This Magazine & The Advertising Council.

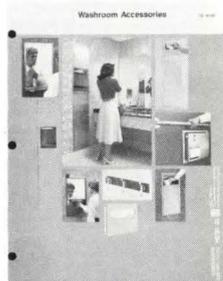
The cost of preparation of this advertisement was paid for by the American Business Press, the association of specialized business publications. This space was donated by this magazine.



Security glazing

A 16-page brochure features *OmniGard*, *OmniLite* and *OmniArmor* glass-clad polycarbonate security glazings. Diagrams illustrate the products' composition and charts list their properties and specifications. Photos show several installations as well as vandal- and fire-resistance and ballistics tests. Sierracin/Transtech, Sylmar, Calif.

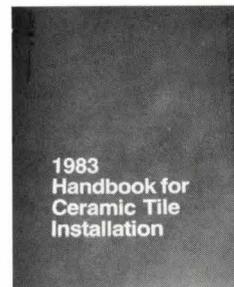
Circle 442 on reader service card



Washroom accessories

A 44-page catalog features wash centers, dispensers, receptacles, mirrors, shelves and combination units. All are shown in photographs accompanied by descriptions with product dimensions. Hand dryers, grab bars and coat hooks are also shown and described. Bradley Corp., Mt. Laurel, N.J.

Circle 443 on reader service card



Ceramic tile

The *1983 Handbook for Ceramic Tile Installation* is designed to standardize ceramic tile installation specifications, give quick reference details, outlines and charts and cover most methods and conditions. Materials for setting and grouting as well as special products, such as mounted tile and pregrouted ceramic tile sheets, are covered. A section on renovation is also included. Tile Council of America, Inc., Princeton, N.J.

Circle 444 on reader service card

The real beauty of a Robertson retrofit is much more than skin deep.



BEFORE ROBERTSON



AFTER ROBERTSON

It's much more than just another pretty facade. A Robertson retrofit can cut heating and cooling costs . . . stop water and air infiltration . . . and improve your building's appearance. Dramatically. Robertson will do it all, from a retrofit survey and energy analysis through design, manufacturing, and installation. Just ask your local H. H. Robertson representative or contact J. J. Flanagan, H. H. Robertson Company, 400 Holiday Drive, Pittsburgh, PA 15220; (412) 928-7638.

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Robertson retrofits

Stewart International Airport, Newburgh, NY
Architect: Abbott-Merkt & Co.
General Contractor: VRH Construction Co.
Owner: Metropolitan Transportation Authority of New York

Circle 76 on inquiry card

Cutlass Ciera Holiday Coupe. This car says a lot about style, and says it beautifully.

Yes, America's fastest growing mid-size has a lot to say about style. In a number of ways.

Just look at its simple aerodynamic grace. The special padded formal roof. The special accent stripes.

And that's just the beginning. The list of standard equipment proves beauty is more than skin deep. With electronic fuel injected four-cylinder engine, MacPherson strut suspension, rack-and-pinion steering, and more.

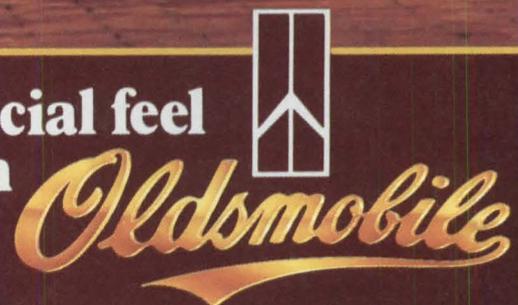
Plus over 45 available options so you can order it any way that suits your style. A style that includes everything from custom leather in the seating areas to a new electronic auto calculator located in the console.

The Cutlass Ciera Holiday Coupe says it beautifully, again for 1984.

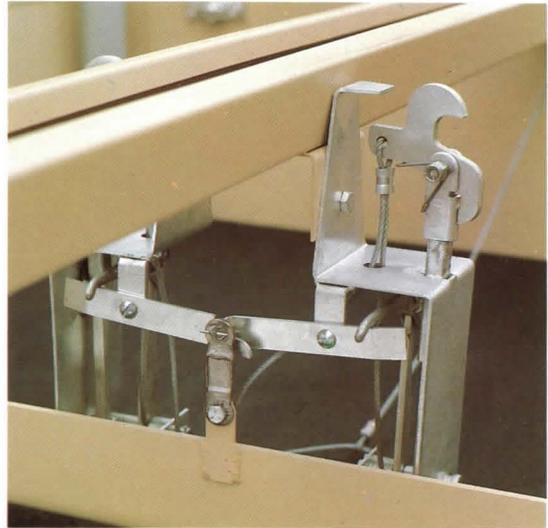
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 in an



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Send for a copy of Bilco's Automatic Fire Venting Guide. Answers questions about venting, and helps you determine vent sizes and spacing.

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DOORS FOR
SPECIAL SERVICES

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When you specify a Bilco automatic fire vent, you call for an insulated, gasketed, heavy gauge product that is built to last . . . a vent equipped with the patented Bilco Thermolatch™ positive hold/release mechanism.

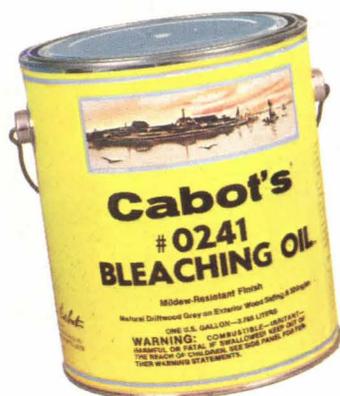
The Thermolatch™ mechanism assures prompt release when activated in an emergency. And, just as important, it prevents accidental opening at other times due to wind uplift forces or vibrations. This is Bilco quality, the quality that means dependability, long service-life and complete satisfaction for your client.

Sixteen standard types and sizes of thermally activated vents with UL and FM labels are available, as well as custom sizes, and many designs and modifications for special requirements.

For the Natural Weathered Look...



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- **Preserves wood.**
- **Protects wood.**
- **Mildew-resistant.**

Cabot's[®] Bleaching Oil

This fine product is a favorite of architects, builders, and homeowners. When applied to untreated wood, Cabot's Bleaching Oil actually bleaches the wood, imparting a delicate gray tone that weathers in a few months to a natural driftwood gray. This effect, heretofore found only in seacoast areas after years of exposure to salt air, is now attainable anywhere in the country. Cabot's Bleaching Oil, a refined and clarified creosote oil with bleaching ingredient, is suitable for all exterior wood: shingles, siding, and clapboards.

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