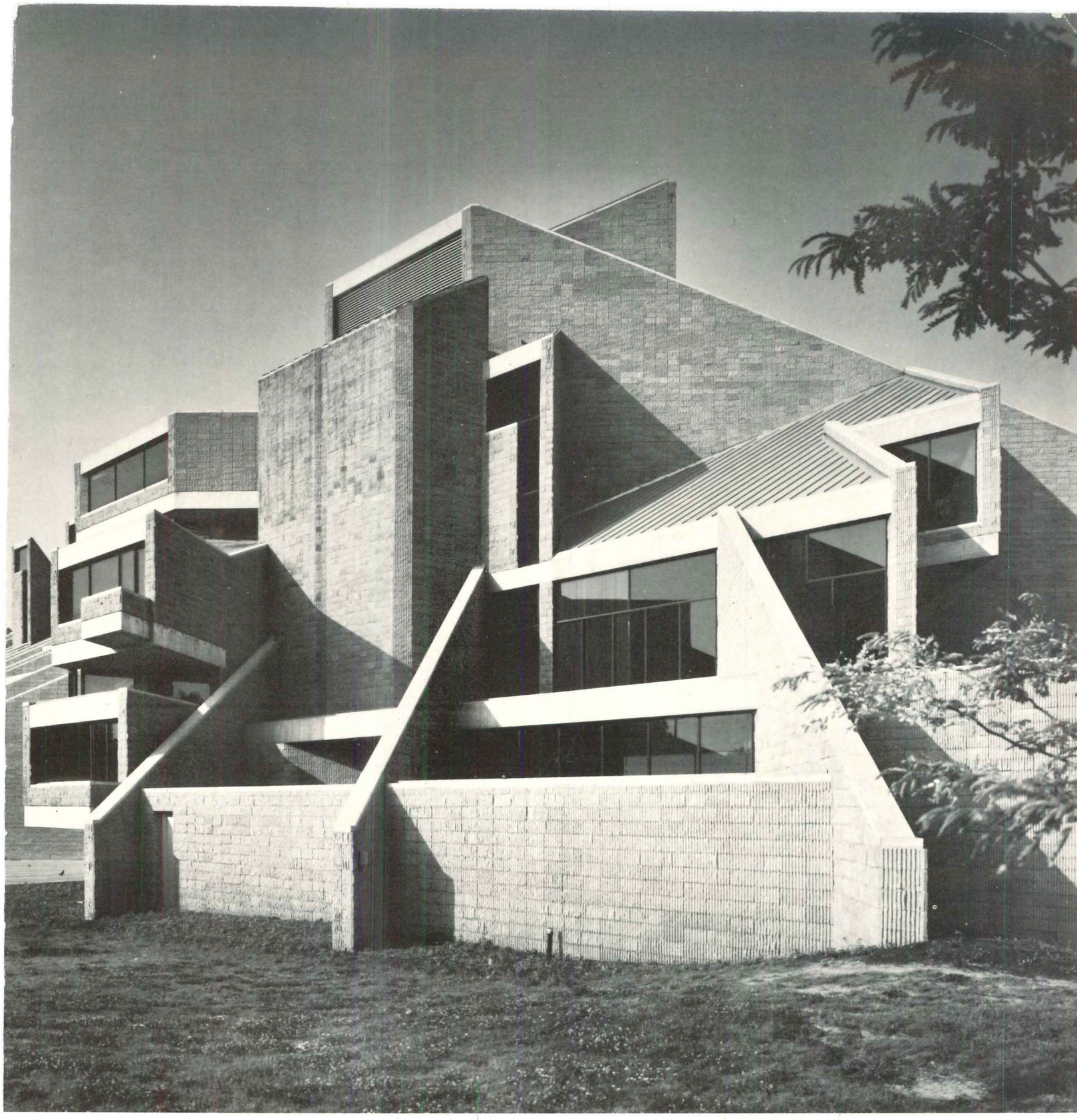


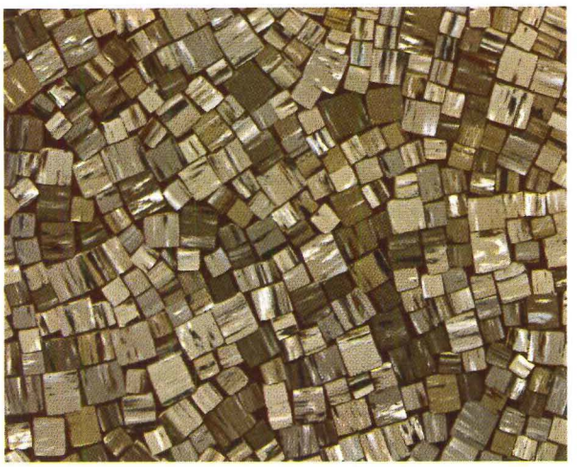
EARL W. BRYDGES PUBLIC LIBRARY, NIAGARA FALLS, NEW YORK, BY PAUL RUDOLPH

THE OIL-RICH MIDEAST: A NEW FRONTIER FOR PROFESSIONAL SERVICES?
COURTHOUSE DESIGN AND COURTHOUSE PRESERVATION
BUILDING TYPES STUDY: BUILDINGS FOR WASTE MANAGEMENT
FULL CONTENTS ON PAGES 10 AND 11
SEMI-ANNUAL INDEX ON PAGES 201-204

ARCHITECTURAL RECORD

JUNE 1975 6 A McGRAW-HILL PUBLICATION FOUR DOLLARS PER COPY

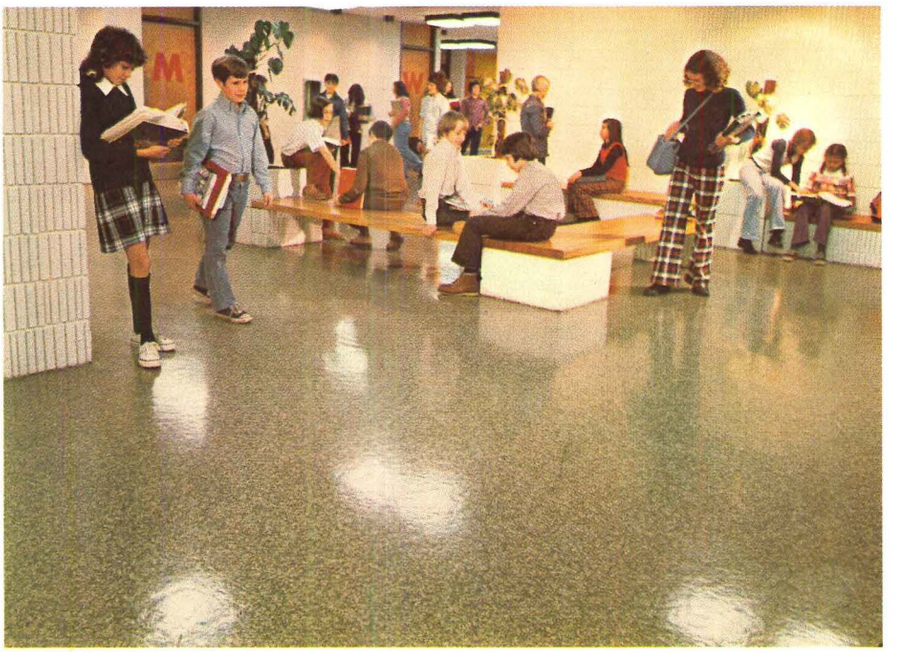
The Brigantine® floor from Armstrong. At Jonas Clarke Junior High School, it fights 777 kids a day and always comes back for more.



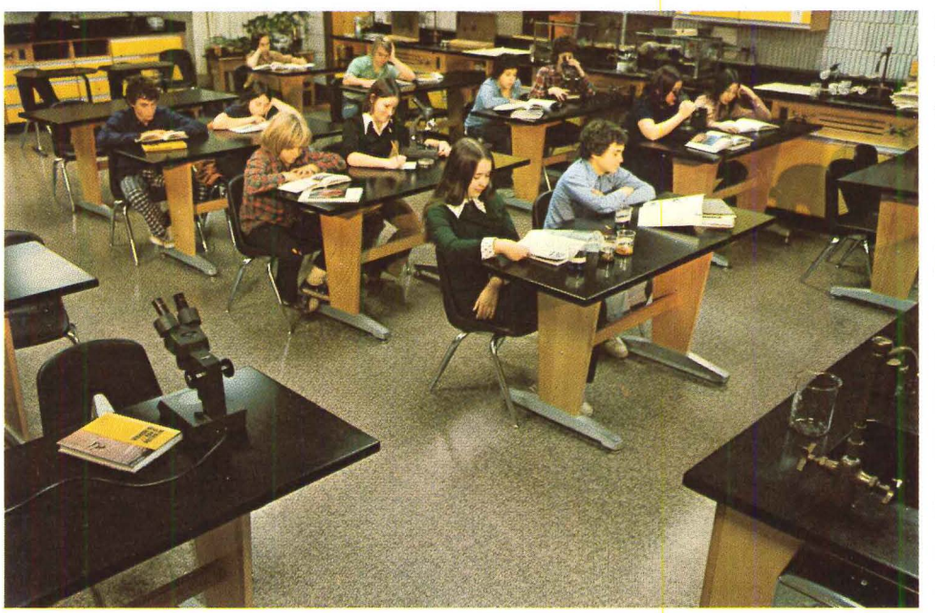
In a day's time, 777 kids can beat a floor covering senseless.

In a year's time, they can murder it.

But at Jonas Clarke Junior High in Lexington, Mass., the kids have met their match. In Brigantine Vinyl Corlon® from Armstrong. The sheet vinyl floor covering that's taken its punishment for two and a half years. And still looks almost as fresh and undaunted as the day it started out.



You'll find Brigantine throughout the school. In entrance halls, classrooms, labs, locker rooms, cafeteria. Where the kids track mud and snow on it, tramp busy feet on it, spill liquids and food all over it, do their darndest to make it roll over and play dead.



But for all its beauty, Brigantine is loaded with hardhearted practicality. Its vinyl composition is rugged enough for high-traffic areas. And since spills can't soak into Brigantine's

tough virtually nonporous surface, it's easy to keep sparkling clean. In fact, the high school's custodian will tell you that with Brigantine's dirt-hiding capability and a routine maintenance schedule, it's relatively simple to keep the floor looking its best.

Brigantine is available in a wide spectrum of colors that fit virtually any decor. And it comes in rolls 6 feet wide and up to 90 feet long, that not only make installation easy but eliminate a lot of seams. So if you need a floor that can take a beating and still look like a beauty with minimum care, you now know its name. Brigantine Vinyl Corlon. For more information, write Armstrong, 306 Rock Street, Lancaster, Pa. 17604.

Architects: Drummey Rosane Anderson, Inc., Wellesley, Mass. Flooring Contractor: M. Frank Higgins & Co., Inc., Boston, Mass.

FROM THE INDOOR WORLD® OF

Armstrong

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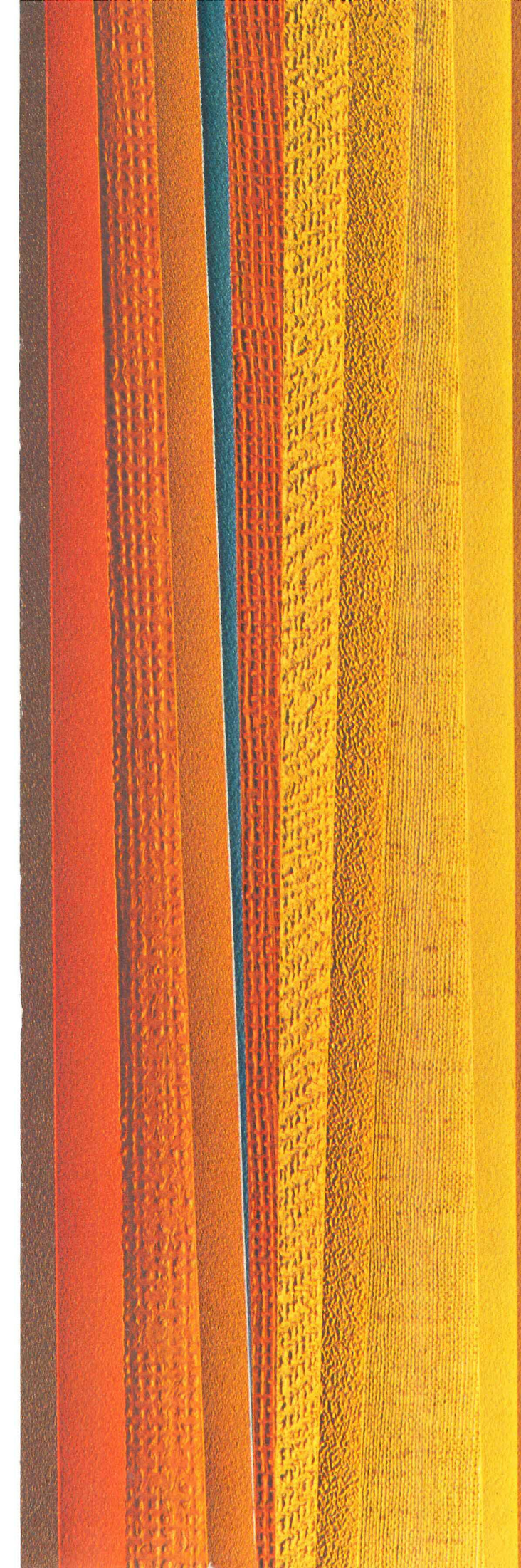

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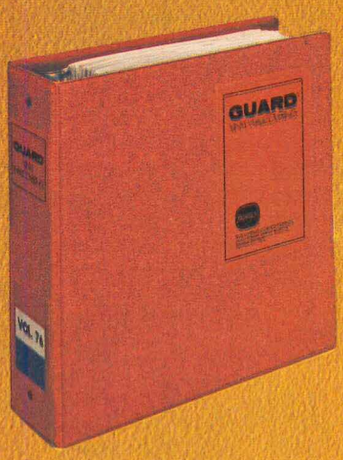

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Letters to the editor

Regarding your April Editorial, "Tweedle-dum; Tweedle-dee: where do they get those priorities?", our country hums on wheels, and the hum is more audible each year. Strangle highway construction, and we choke the trucking, tourism and automobile manufacturing industries as well as Ma and Pa Citizen's need to travel to and from work or shopping center.

True, the energy shortage is real; there is not enough to keep all those trucks and automobiles and all that new housing operating in the conventional, wasteful manner.

The answer is not to strangle industries. Rather, while searching for new energy sources, we should require all truck and automobile drivers to slow down and maintain their vehicles properly; and architects and consultants should be required to design for energy conservation (as discussed elsewhere in your April issue). In each case the cost of energy will increase, putting a further damper on waste.

W. Christensen, P.E.
Hershey, PA

Mildred Schmertz's article on Two Buildings, Two Architects, is an excellent piece of architectural journalism. The comparative method of architectural history is always a good one.

I feel close to both Ben Weese and Stanley Tigerman, for all they have in common is talent. But I feel especially close to the Weese results. Harry Weese may have had the last word when he stated some years ago, "human nature is the constant; doctrinal rationality is one thing, and human logic another."

John Sheehy
The Architects Collaborative Inc.

I read with great interest Brad Perkins' piece, "The Future of Professional Firm Management," in the March RECORD. His analysis of the pressures on the design profession was convincing and up to his established standards, I thought.

About the only point I would be inclined to quibble with or comment on was the statement under "Changes in the Market," where Brad said, "Fewer owners are searching for generalists." If we are talking about the recent past—say the last 15 to 20 years—I question whether or not any owner ever consciously searched for a generalist, or whether many firms attempt to portray themselves as generalists.

Owners, by and large, seem to be only too eager to attempt to classify their project under one or more specialties (whether or not they really understand the specialties), and then to structure the interview questions so as to assure themselves that a firm must somehow qualify itself as having had the necessary experience to handle the owner's "specialized" requirements.

This has resulted in one of the least productive aspects of professional services marketing—whereby a design firm feels called upon to dredge up every last project upon which it has even the most farfetched claim, in order to prove that its principals and staff have done more hospitals, or student unions, or filling stations, than any of its competition for a particular project.

This often evokes a related ploy, where the presentation team draws conclusions about its own work which "relates" to a potential job. I'm talking about such things as equating hospitals with college dormitories and hotels (which actually is not so farfetched) or building a case for industrial plant experience from bits and pieces of merchanization details in everything from an office building to a drive-in movie. Practically all of us have been guilty of at least some form of this con game approach to a potential client, especially when work is down.

I really didn't intend to get this far afield, since, as I prefaced all of this, it is not really a major point in Brad's piece. I wonder if the shaking-out process now underway (what Brad refers to as "a basic restructuring of the design professions") may not result in a better break for all concerned—including clients.

Gerre L. Jones
Gaio Associates, Ltd.

When reading your February issue, I was excited to see the inclusion of the Philadelphia Child Guidance Clinic in the article on medical facilities—but was extremely disappointed to see a large photo (upper left, pages 128-9) dominated by the play environment that I designed for them—with *no* credit given.

This environment is based on a modular system of wall and floor panels joined and supported by connector pieces that I have been developing and refining for several years.

Susan Neuhardt
Philadelphia, Pa.

Calendar

JUNE

15-20 Twenty-fifth Annual International Design Conference, Aspen, Colo. Contact: Mary Apple, IDCA, P.O. Box 664, Aspen, Colo. 81611. Telephone: (303) 925-4000.

18-20 NEOCON, contract furnishings exhibition, Merchandise Mart, Chicago. Contact: James Bidwell, Merchandise Mart, Chicago, Ill. 60654.

18-21 National Council of Architectural Registration Boards annual meeting, Waldorf-Astoria, New York City. Contact: NCARB, 1735 New York Avenue, N.W., Suite 700, Washington, D.C. 20006.

22-26 Decor International, contract furnishing and interior design exhibition, Olympia exhibition center, London, England. Contact: British Information Services, 845 Third Avenue, New York, N.Y. 10022.

23-July 4 Workshop on theory, history and practice of public celebration, Center for Advanced Visual Studies, MIT, Cambridge, Mass. Lectures, demonstrations and workshop sessions on the "innovation of civic scale visual events in the performance of public celebrations." Contact: Director of the Summer Session, Room E19-356, MIT, Cambridge, Mass. 02139.

23-25 Annual Convention of the Construction Specifications Institute, Rivergate Hotel, New Orleans. Contact: CSI, 1150 17th Street, N.W., Suite 300, Washington, D.C. 20036.

25-27 Pacific Coast Builders Conference, Fairmont Hotel, San Francisco. Sponsored by the California Builders Council. Contact: PCBC, Suite 1407, Russ Building, 235 Montgomery Street, San Francisco, Cal. 94104. Telephone (415) 981-1067.

JULY

31-August 2 National conference on "The Economic Benefits of Preserving Old Buildings," Olympic Hotel, Seattle, Wash. Sponsored by the National Trust for Historic Preservation and the city of Seattle. Contact: Michael S. Leventhal, Department of Education, National Trust for Historic Preservation, 740-748 Jackson Place, N.W., Washington, D.C. 20006.

AUGUST

11-30 International Congress on Metropolitan Development, Amsterdam, the Netherlands. Theme: "Metropolitan Planning and Implementation." Contact: Metropolitan Association of Urban Designers and Environmental Planners, Inc., P.O. Box 722, Church Street Station, New York, N.Y. 10008.

SEPTEMBER

15-17 Noise-Con 75, National Conference on Noise Control Engineering, National Bureau of Standards, Gaithersburg, Md. Sponsored by Institute of Noise Control Engineering and the National Bureau of Standards. Contact: Noise-Con 75, INCE, P.O. Box 3206, Poughkeepsie, N.Y. 12603.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER)

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"I asked the brick what it liked and the brick said, 'I like an arch.'"

Louis I. Kahn

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Architects: Callister, Payne & Bischoff

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Pre-insulated

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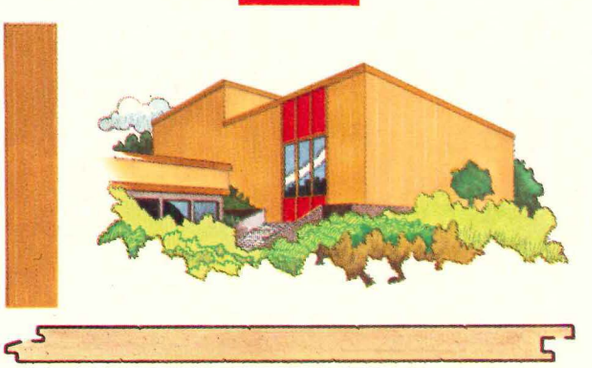

Inryco/wall PS
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30" wide, U-value: .080.

A one-piece, complete wall section that reduces field erection steps to a minimum. No wall system has fewer parts or can be installed faster. Isocyanurate insulation properties are excellent, and there is no metal-to-metal contact between inner and outer faces. Factory-installed seals at panel joints keep the weather out. Exterior appearance: attractive, flush, monolithic; eight long-life colors in Duofinish 500.™ Interior: bright, reflective, flush, white surface in Duofinish 100.™

Three new options for energy-saving design in wall construction

There is no single solution. The designer needs flexibility to meet the requirements of different structures. Inryco/wall's three versions help. Each type greatly increases a building's energy-conserving properties, but each permits a different approach to construction.

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We've prepared information that describes these three new Inryco/wall panels in greater detail. Get yours from your local Inryco sales engineer or send in the handy coupon.

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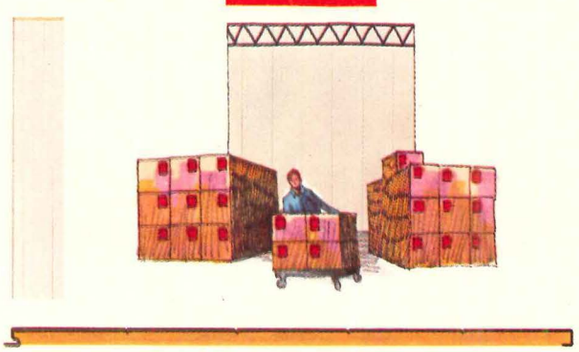

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For field assembly in combination with conventional exterior wall panels. Liner creates a flush, easy-to-clean interior wall surface with a long-life Duofinish 100™ white coating that enhances lighting levels. Erection is greatly speeded because factory-installed insulation eliminates the step of insulating in the field. Panels are strong, rigid, easy to handle. For the exterior, the designer can choose any panel from Inryco's broad line of conventional wall systems.

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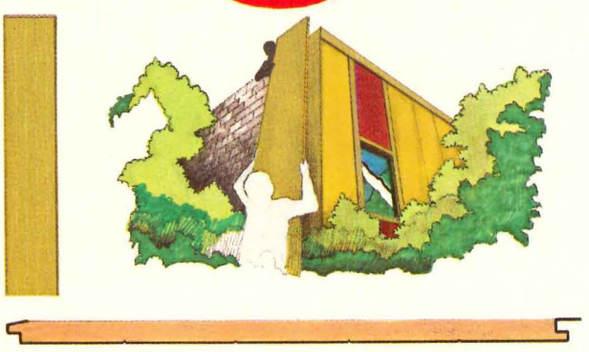

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Two ways to upgrade both the appearance and the energy-saving properties of older masonry or block structures. Face panel can be used either on the exterior or interior of a building. Used outside, the panel creates a contemporary, flush look with a choice of eight long-life Duofinish 500™ colors. Used inside, it covers unsightly wall conditions with a neat, flush surface and boosts lighting levels with its Duofinish 100™ white coating.

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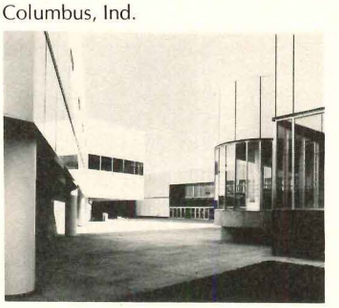

ARCHITECTURAL BUSINESS

JUNE 1975 ARCHITECTURAL RECORD

FEATURES

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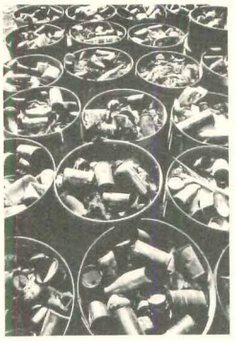


ARCHITECTURAL ENGINEERING

NEXT MONTH IN RECORD

Building Types Study: Industrial Buildings

Attention to the process of design has created a "completed esthetic" for three corporations' production facilities. One corporation in particular, Westinghouse, has developed a strong in-house philosophy about making their buildings more than just housing for machinery and reports that their programs have already produced important results in increased production and product acceptance. In July, RECORD will report on the work of architects involved in designing for these exceptional clients.

For more data, circle 7 on inquiry card

Energy conservation standards: we're getting closer to a rational solution

Just six weeks ago, RECORD held a Round Table entitled: "Towards a Rational Policy for Energy Usage in Buildings." To participate, we invited concerned architects, engineers, association officials, Federal agency people from GSA, FEA, NBS, and HUD, an economist, and some of the owners and developers who will have to live with the results of constraints on energy usage. More than 50 policy-making executives of manufacturers and producers affected by the energy problem audited the meeting. The proceedings of the day-long session will be analyzed in detail in our mid-August ENGINEERING FOR ARCHITECTURE issue. But some of the comments at the Round Table prompt this immediate editorial comment.
To wit:

Acceptable rules seem possible soon, so it seems vital not to "rush in"
There is just no doubt (and we didn't need the Round Table to tell us that) that the Administration and many state governments feel under a great pressure "to do something." The danger has always been that well-meaning legislators will—before informed professionals can work out a rational plan—rush into law not-yet-proven or fully developed proposed standards. In the face of a national commitment to conserve energy (which is more a political and economic than a technical problem) there is an urgency to "get on with it"—especially since we *know how* to reduce energy usage in buildings and *know we should* reduce energy usage in buildings.

Opposition to standards appears less, and the proposals seem close to acceptable
A few thoughtful and articulate members of the Round Table argued that voluntary action, or tax incentives and penalties, or the economics of the rising cost of energy could bring about the needed reduction in energy use in buildings. But the majority of participants clearly were less hostile to standards than the profession or industry people seemed just a few months ago. The reasons varied: Some argued that not enough of us will voluntarily conserve energy (or drive 55 mph) for "patriotic" reasons. A good proportion of the architects, engineers, and owners present expressed a willingness to design, build, and operate energy conserving buildings; but a reluctance to do so unless "the other guy" does the same—to avoid cost and competitive disadvantages.

At the Round Table, proponents of both ASHRAE 90P and various budgetary standards acknowledged the weaknesses of their approaches and the incompleteness of their data—but argued that they were steps in the right direction *as long as* the mechanism is clear for changing them as more data and insight are available.
The cases made at the Round Table:

ASHRAE 90P, frequently criticized (including on this page) as a prescriptive standard, does have some of the flexibilities of a "budgetary" or performance standard built in. The lighting section is indeed performance-based. The skin section—while prescriptive with respect to U-factor and solar gain—does permit substitutions resulting in the same total as the U's; though the process for demonstrating equivalency does seem fuzzy and complicated. But 90P does ignore two important factors: 1) ventilation load (too big a load to be ignored), and 2) the huge variations in load resulting from inefficient operation or maintenance of a building.

A budget approach based on actual measured use of energy put into the building, on the other hand, does take into account (and give credit to) efficient operation of a building, to efforts at heat recovery and it does, of course, give the free trade-off of design options so much desired by me and thee. But there are three big questions: 1) What's the budget—55,000? Surely not that low, for GSA arrived at that number by putting into its design for Manchester every tool or trinket in the energy-saving handbook. Wally Meisen agreed at the Round Table that 55,000 was at least semi-negotiable even for Federal office buildings. Question 2) What about budgets for other building types? Question 3) What about changes in energy usage caused by non-design factors—like a major change in occupancy, a major computer installation, or the fact of a very cold winter or a very hot summer.

Well, as I said earlier, this whole thing will be analyzed in great detail in mid-August. But a few personal views: I think we need standards because a) we should and must manage our energy resources as a matter of political and economic necessity, and b) that's not going to happen in a way that spreads the costs and sacrifices evenly unless everyone has to play by the same rules (or standards). Without being too sure about it, I think the best thing would be to accept 90P *on the clear understanding* that it is an interim standard to be revised—as soon as we know how—in the direction of an energy-usage budget approach.

—Walter F. Wagner Jr.

RESOURCES 76: An investment in insights

Who's for a little hard work at getting more work in 1976? Or put another way, where do we editors get off thinking that you should spend two and a half days, and quite a few dollars, to attend a workshop/conference which RECORD is holding, in Chicago, this October?

Here's where we get off . . .

These days building (or re-building) rises or falls on the rise or fall of interest rates. Dollars that used to flow to building, on the simple premise that there was a need, now pass through a network of valves which ignores what we used to think of as demand and diverts those dollars to other programs, priorities, and people.

Legislators write laws—some sound, some stupid, some just stupid sounding. Agency officials concoct hordes of new regulations and codes and standards. Builders and developers and lenders reel (almost as much as we) as their rules lurch and alter and, in turn, as the construction industry staggers. All of this is tied to the wierdest combination of inflation and recession to ever hit us.

So what do architects and other design professionals do? Some have been able to cope, some haven't

Some have suffered serious reduction of staffs and expectations. Some sit still, take it, and cower at the new constraints being imposed by economic, social and legislative change. Some have learned how to go on doing the work they want to do in the way they want to do it. We have given a lot of thought about what we can do, up and beyond getting out a magazine you can use and like, to help the profession in this perverse period. And . . .

What we're going to do is hold a major conference—a crash course about getting work in today's climate—called RESOURCES 76

Our conference is going to be a special one because, attending it, architects are going to get a lot of solid information and a lot of usable strategy about how to relate to and talk with people who control cash and let contracts and make up the markets.

Everyone who signs up for RESOURCES 76 is really going to know some things when it's over. One reason is that everyone will take a number of courses, just like back in college, right? So don't bring your tennis racquet or your better half. Just brace yourself for the kind of news you can use to get jobs with. For example:

- There'll be a three-hour course about what you need to know about new legislation, new regulations, new codes—all the elements of policy and procedure and law that are creating new channels for (and significant constraints on) the architect. The faculty chairman for this workshop-style slogging-session will be architect Robert J. Piper, a familiar face and voice in our field for some years by way of his association with the national AIA, later with Perkins & Will, and now as a director of the Northeastern Illinois Planning Commission. Legislative and agency liaison experts will help provide perspective on various funding programs which, properly approached, can actually mean work. A related general event panel—consisting of people who call the shots in government, and who generally determine who gets the work, and where—will clue conferees into the attitudes, tactics and concerns of this huge client sector.
- There'll be another three-hour course about the numbers that count—the changing equations of cost; and about what you need to know about life-cycle economics, value-engineering, the experience of major client sectors with the concept, and how life-cycling can be made to reconcile with the clients' on-going concern for a believable bottom line. The faculty will be a mix of architects and clients who have, against the odds of habit and expediency, made good design count *where* it counts—on the balance sheet. Professionals like the money-managers of Metropolitan Structures, or IBM, or Sears; with the officers of the development corporations of cities as varied as Milwaukee and Long Beach, or of states as varied as New York, Michigan and California.
- One of the persistent questions in these times is the future of small firms against burgeoning, fast-merging big ones. What is the economic crunch doing to both? How do they size up each other? How are manpower, pricing and management being effected? We've asked Llewelyn-Davies Associates to borrow Bradford Perkins; SOM, in San Francisco, to borrow Chuck Bassett; Peckham-Guyton, Mark Viets; the ELS Design Group, Barry Elbaseni—plus spokesmen from such exacting management firms as Arthur D. Little. It should be, in addition to a hard look at how different-sized firms keep their act together, something of a knock-down-drag-out debate about how size can or can't strengthen the hand of the architect.
- And what about new markets, both familiar and emerging? Ben Weese will talk about the upswing in opportunity (and funds) in the area of adaptive use of historic structures and districts; a panel from Educational Facilities Laboratory, including Alan Green, will talk about changing school finances; Bill Brubaker of Perkins & Will will talk about the allure, versus the actualities and realities, of Middle East work; Bertrand Goldberg will talk about the field of health-maintenance facilities; and we're asking Anthony Downs, of the Real Estate Research Corporation, to talk about the no-nonsense considerations of determining feasibility—a level of concern and decision which more architects would benefit from understanding.
- Other general-event panel discussions will include an anatomy of the Occupational Safety and Health Act so that, perhaps for the first time, its complex constraints and implications for the architect will be out on the table. OSHA administrators and a panel of architects, including Roger Lang, of Stahl-Bennett, will address this crucial topic.
- A similar session will explore the Environment Impact Statement as a new market in itself.
- Roger Starr, perhaps the country's most respected authority on housing (and funding for it) will discuss this most-abused segment of the building industry.
- There will be another panel dealing with developing strategies for achieving energy efficiency, cutting across, as all these panels inevitably must, the lines of design, marketing and engineering. So we've asked Joe Demkin, the AIA's staffer on energy to come.
- Some of the most important decisions are by the people who control the money. A panel of lenders is therefore being assembled—the top officers of leading commercial banks, insurance companies, and savings and loan associations. After all, if we can leaven the attitude of this group, improved design and durability will follow.
- On Tuesday, the first day of RESOURCES 76, George Christie, chief economist of McGraw-Hill Information Systems Company, and John Naisbitt, chairman of the Urban Research Corporation, will bring two of the clearest, most reliable crystal balls in our industry for a realistic look at the design dollars are going to be in 1976, and why.
- At a special reception and luncheon, given for conferees by RECORD, we have asked two of our field's most thoughtful and effective members—John Portman and Harry Weese—to get down to the tacks.

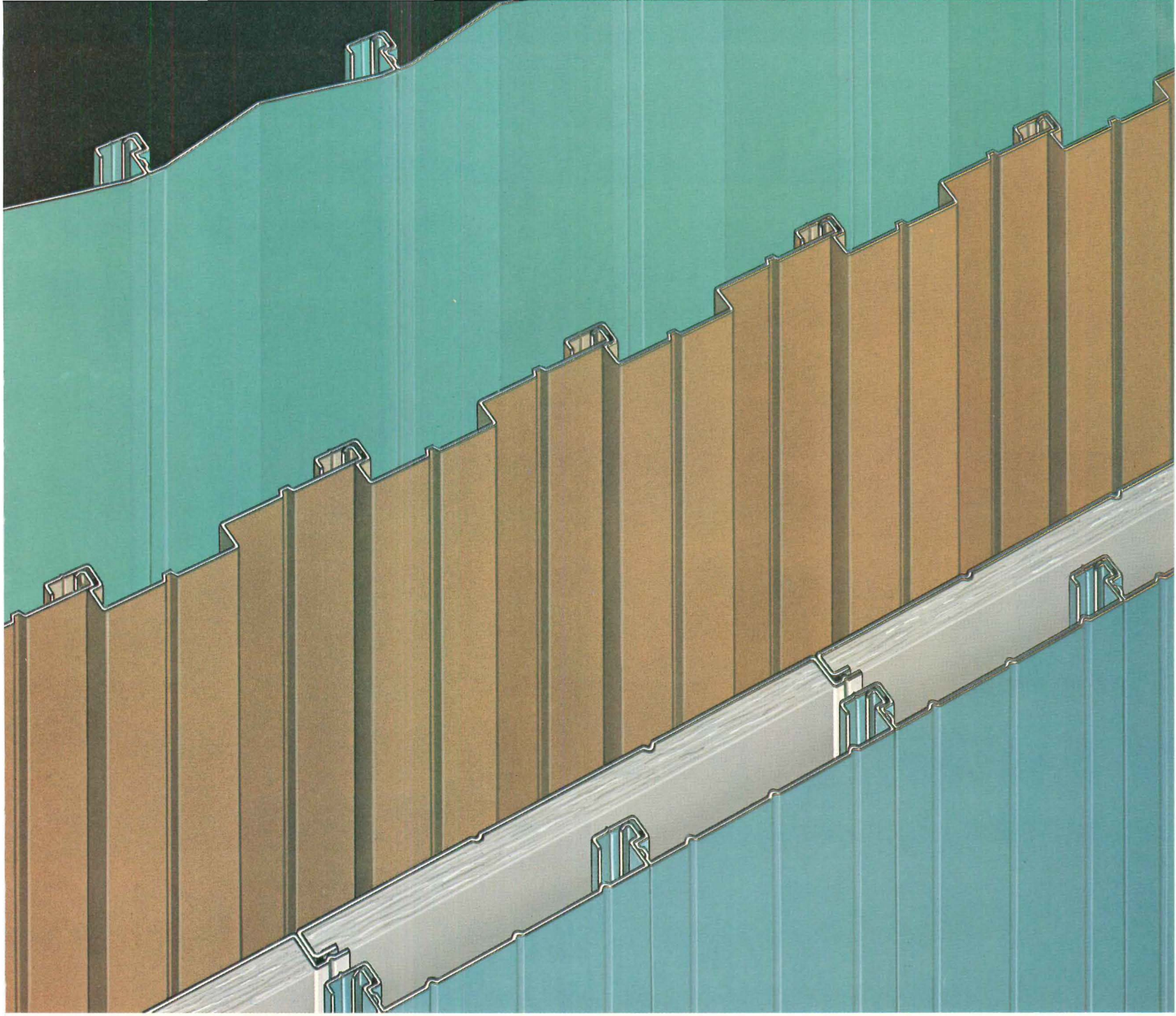
It adds up, we think, to an extraordinary investment opportunity—and we hope you will make the investment

RESOURCES 76 is to be held on Tuesday, Wednesday, and Thursday, October 28th, 29th, and 30th. The place: Center for Continuing Education, University of Chicago—which offers superbly efficient facilities for the meeting. The tuition will be $400. Rooms and meals are available at or near the center at far less than normal rates.

This is going to be a workshop—perhaps even a slaveshop. The program starts every morning at 8 o'clock and continues after dinner. We think this concentration of work is entirely appropriate. We're asking you to spend a fair amount of money and time to attend—and few architects have much spare money or time to spend these days. Neither do we. This is the project of a group of editors who are committed to architecture and architects—and we're really excited about the aborning excellence of a program that we intend to make immediately and directly useful to architects in getting more work in these difficult times and positioning themselves for the better market ahead. We're asking a lot of you; but we intend to offer a lot in return. You'll be seeing advertisements in future issues of the RECORD for RESOURCES 76, and you will be getting further information and registration material within the next few weeks.

In the meantime, if you want to become a charter participant, call either Bill Marlin at 212/997-4242 or me at 997-4565.

—Walter F. Wagner Jr.



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New Steelite Architectural Wall Panels

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Steelite roll-formed galvanized steel CFP Series Wall Panels, with long-life color coatings, are available **now** . . . in gages and thicknesses to meet your structural requirements and in living colors proven for weatherability.

Check with Steelite when you start planning your new building. For more information on CFP Series Wall Panels, call or write:

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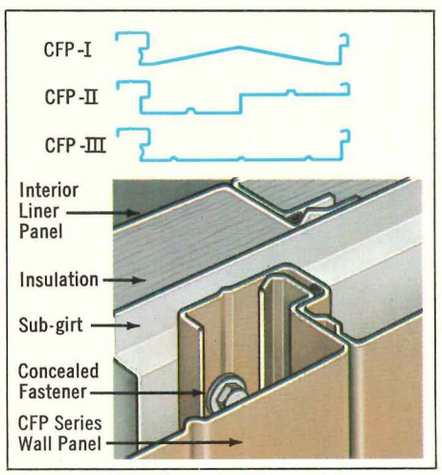

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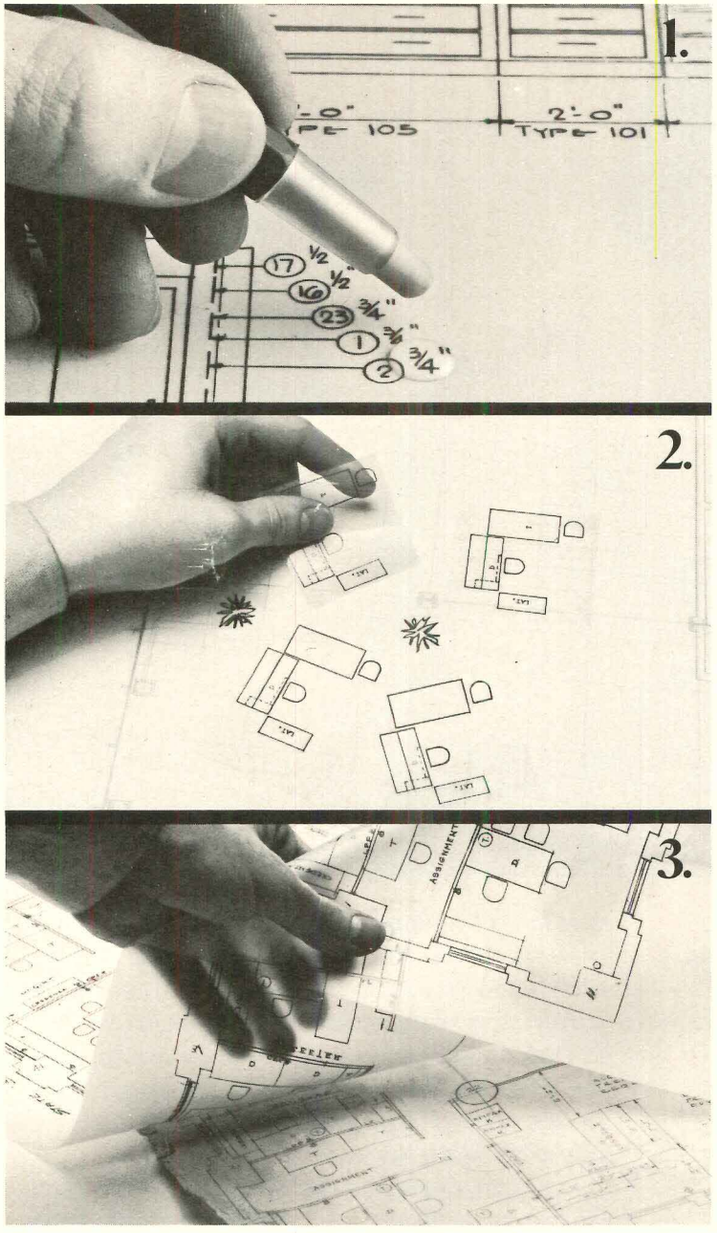

Shortcuts with Kodagraph materials can save hours of drafting time, job after job. **1.** Revising a drawing? Don't retrace the whole drawing. Make a second original on Kodagraph wash-off film. Wet-erase unwanted details. Then draw in the revision. **2.** Need to repeat the same design element a number of times? Don't draw it over and over again. Draw it once. Then make as many Kodagraph film or paper copies as you need. **3.** Restoring an old drawing? Don't redraw. You'll strengthen lines and drop out stains by making photographic reproductions on Kodagraph film. For more information on photoreproduction techniques, write Eastman Kodak Company, Graphics Markets Division, Dept. R5725, Rochester, N.Y. 14650.

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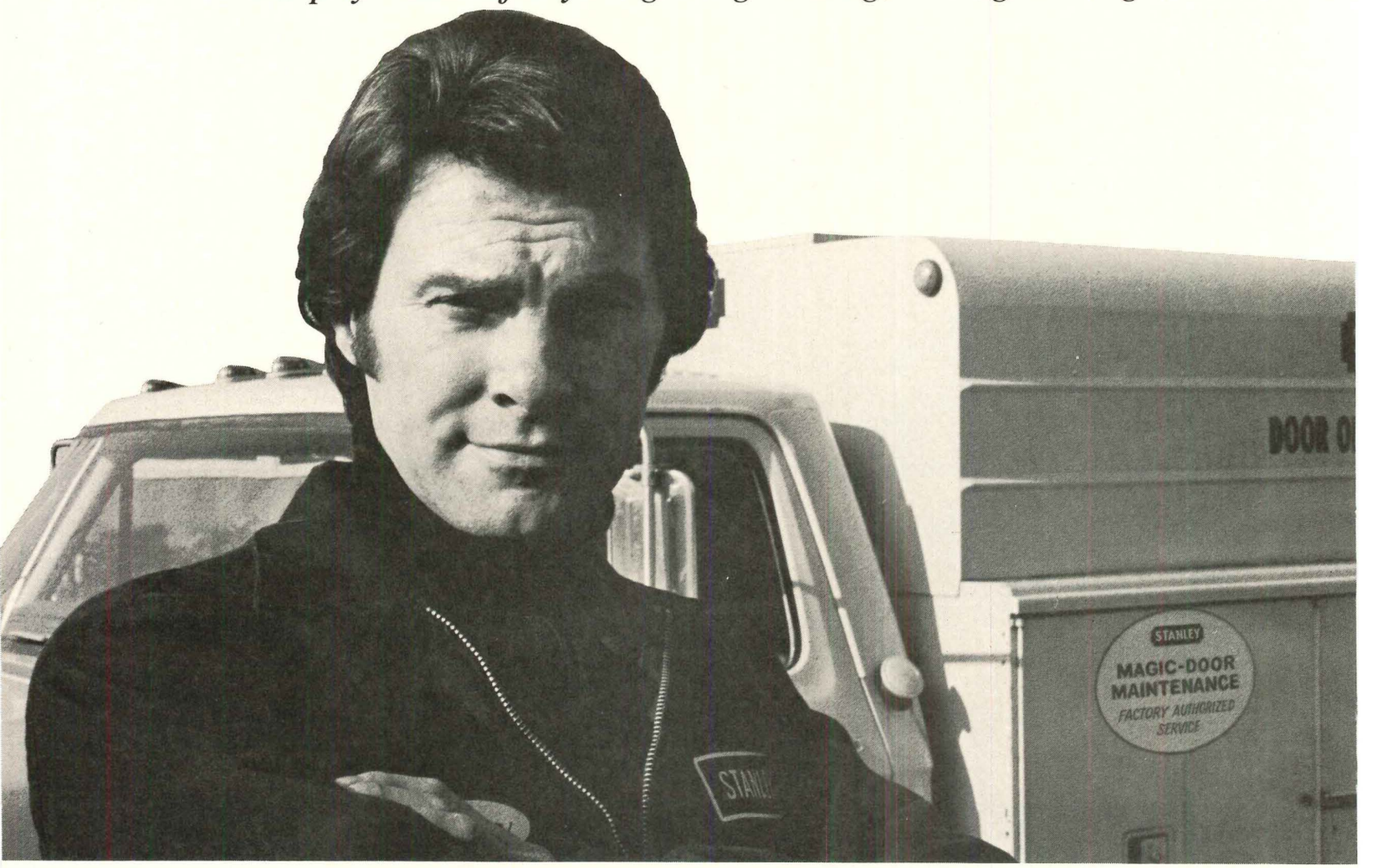
Stanley repeals Murphy's Law.

Murphy's Law: If anything can go wrong, it will go wrong.



We know you sometimes decide not to use automatic doors – and why. They take quite a beating. And that's where Murphy takes over... stirring up complaints your clients don't need. But ever since Stanley started its Planned Maintenance Program, Murphy's been taking a beating.

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Stanley offers you: ☐ A program of identical maintenance procedures for all automatic door equipment. No matter where in the world they are. ☐ Maintenance frequency schedules designed for your kind of equipment, your ways of doing business. ☐ Work outlines that tell you exactly what we do to keep your doors in top condition. ☐ Certified representatives, trained and tested to know their job. ☐ Periodic field inspection. To see that Murphy doesn't get his foot in your door. ☐ Emergency service. (A fleet of Magic-Door® service trucks helps you keep Murphy away.)

For information, write: Stanley Door Operating Equipment, Division of The Stanley Works, Farmington, Conn. 06032. Telephone (203) 677-2861. And ban Murphy forever.

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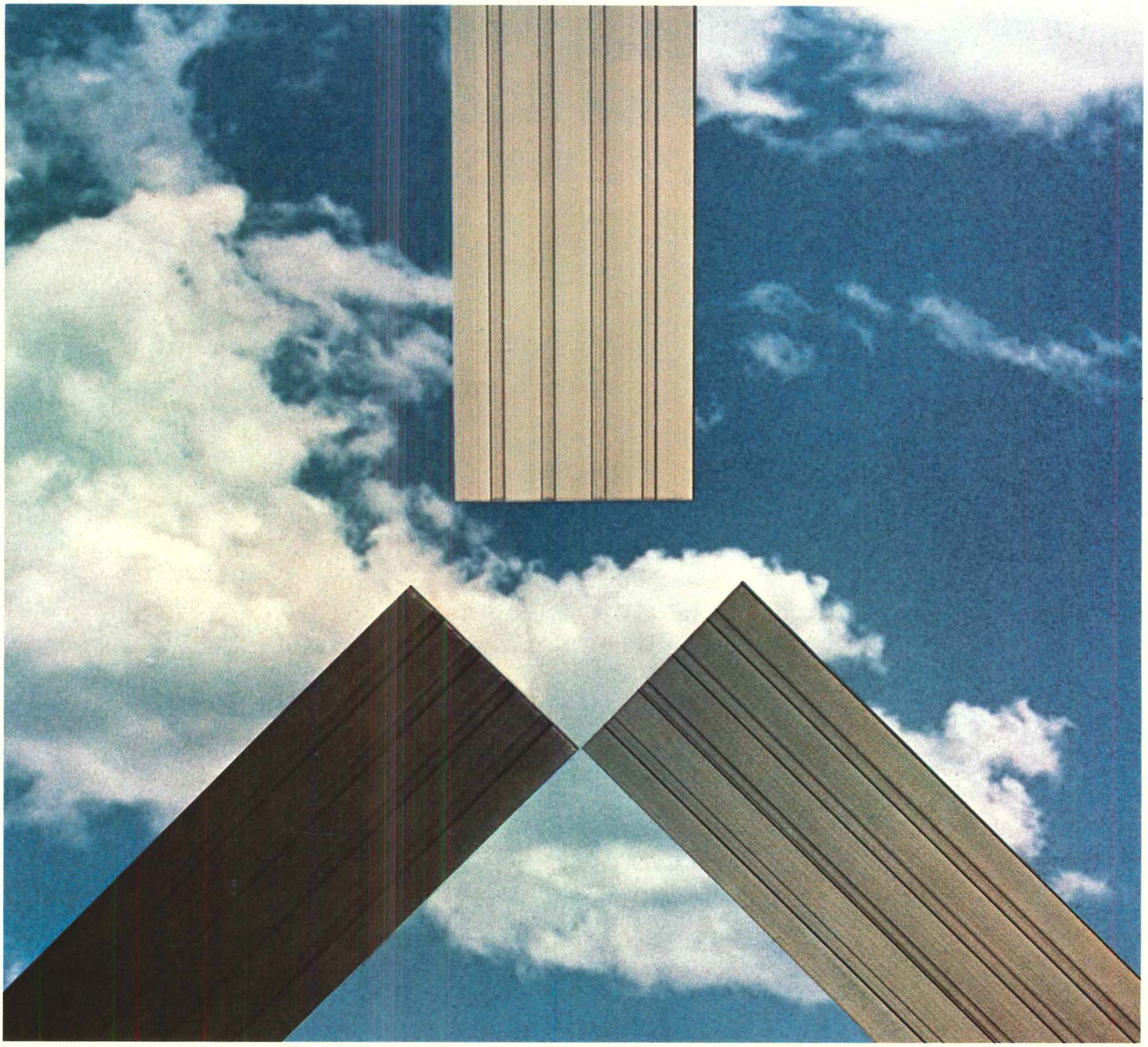

Now. From Alcoa.
Three fine Duranodic gray architectural finishes.
Why settle for less?

True grays. Subtle grays. Lightfast, hard-coat, abrasion-resistant grays. Integral grays achieved by using controlled alloys, a patented electrolyte and sophisticated anodizing procedures.

All three shades are now available to enrich your palette and increase your options. To add warmth and texture to a curtain wall, a skyline, a community.

Let us tell you about Duranodic† 322, 323 and 324. And about aluminum finishes in general. Including applied coatings.

Whatever your project, our reservoir of experience with wall systems, industrial roofing and siding and low-, middle- and high-rise building products could be of help to you. Especially if you involve us early.

Come to Alcoa.

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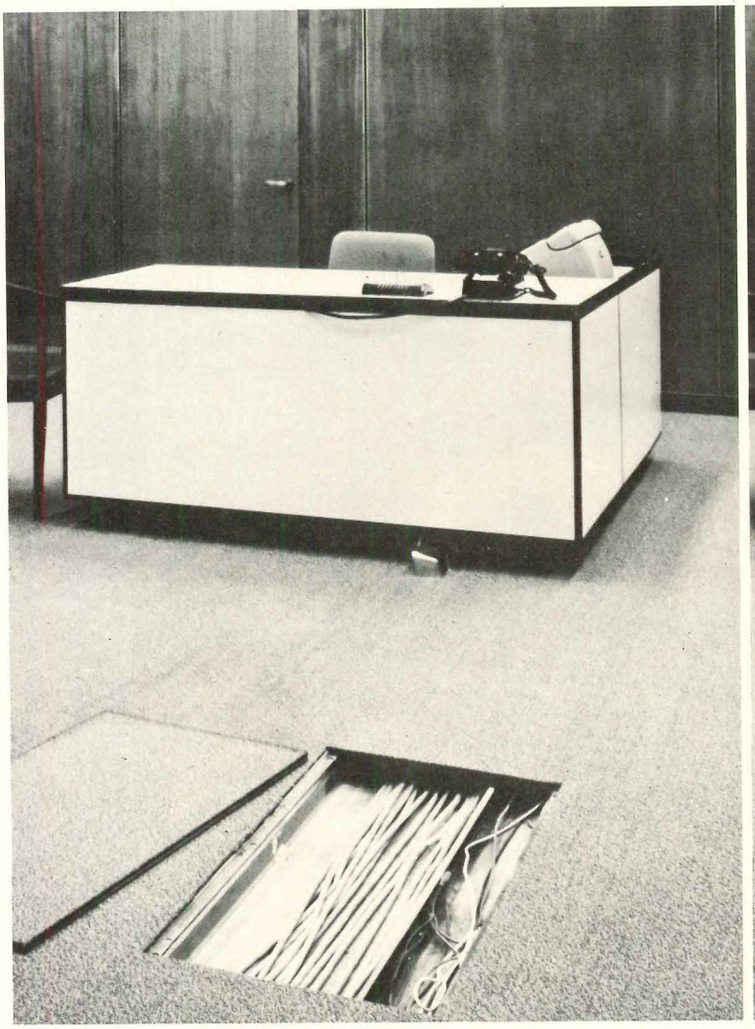

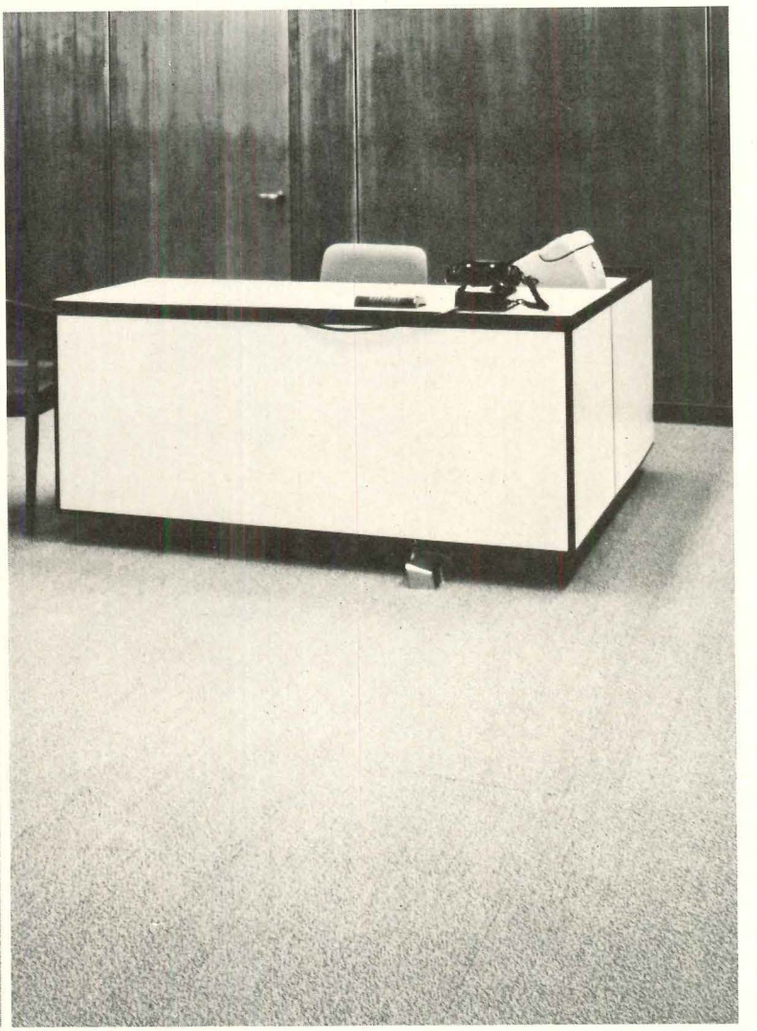

Before Powerbond came along, a breakdown in communication or power lines meant ripping up your carpeted flooring. Now you simply install Powerbond on top of underfloor duct plates, as was done in this installation. When necessary to get at the wiring, only the plate section need be lifted.

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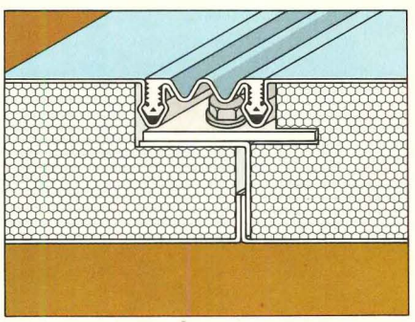
The new Alcoa Economy Panel doesn't look like an economy panel.

Why settle for less?

How much care can a manufacturer take when building something called an economy panel? When it's Alcoa, a lot. Quality control is the magic ingredient which makes these Alcoa® panels for low-rise buildings look and act more expensive than they are.

First of all, they're flat. Many low-cost panels are built like a peanut butter and jelly sandwich. Sheets are stuck to wet foam like two pieces of bread and allowed to dry. If they don't dry flat, you get a wall that wavers. Alcoa aluminum sheet is stretched flat and then bonded under both heat and pressure to a core which has first been sanded flat. Alcoa Economy Panels stand at attention.

Then there's the finish. Aluminum is one of the best known substrates for paint. And Alcoa Economy Panels have a Super Alumalure® finish, a tough fluoropolymer coating, which has been developed and refined over the years for a projected 20-year service life. There's a wide variety of colors for you to choose from.



Furthermore, these panels come in lengths up to 30 feet, can be easily erected from the outside with self-tapping screws. The fasteners are concealed with extruded vinyl gaskets. These panels allow work on more than one wall at a time, which can reduce erection costs. Aluminum's well-established durability helps keep maintenance low. And in the event of some mishap, a damaged Economy Panel is easily replaced.

Alcoa believes an Economy Panel must be built with a lot of care.

Why settle for less?

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Change for the better with Alcoa Aluminum

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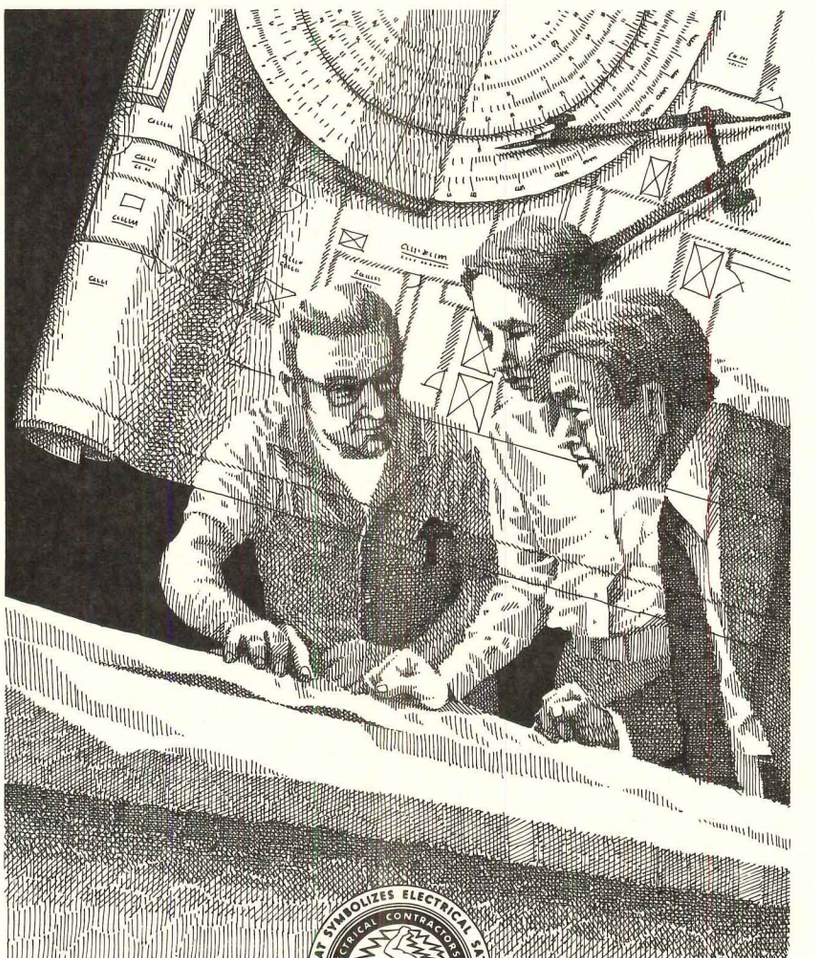
Professional electrical contractors. The electrical energy managers.

One thing you can be sure of in the current energy situation; clients are no longer taking electrical systems for granted. People who pay the bills now are concerned about the potential cost of future operations as well as the cost of installation. That goes for *all* users and specifiers: government, commercial, industrial, and residential. But you probably already know that.

You also know that electrical systems should be designed to operate as efficiently as possible, because when the time comes to install cable, conduit, and fixtures, it might be too late to save energy. That's why it could be helpful to work with a qualified electrical contractor early in the design stages of a project. Planning an efficient electrical system is a lot easier than trouble-shooting a fuel-waster after construction.

Professional electrical contractors can give you just the support you need. They're familiar with lighting, heating, communications, security, motors, standby and emergency power, automatic controls, and a lot more. You'll be obtaining the benefits of specialized manpower, the latest installation equipment, and professional job-management expertise. Can your clients afford anything less?

Professionalism doesn't cost. It pays.



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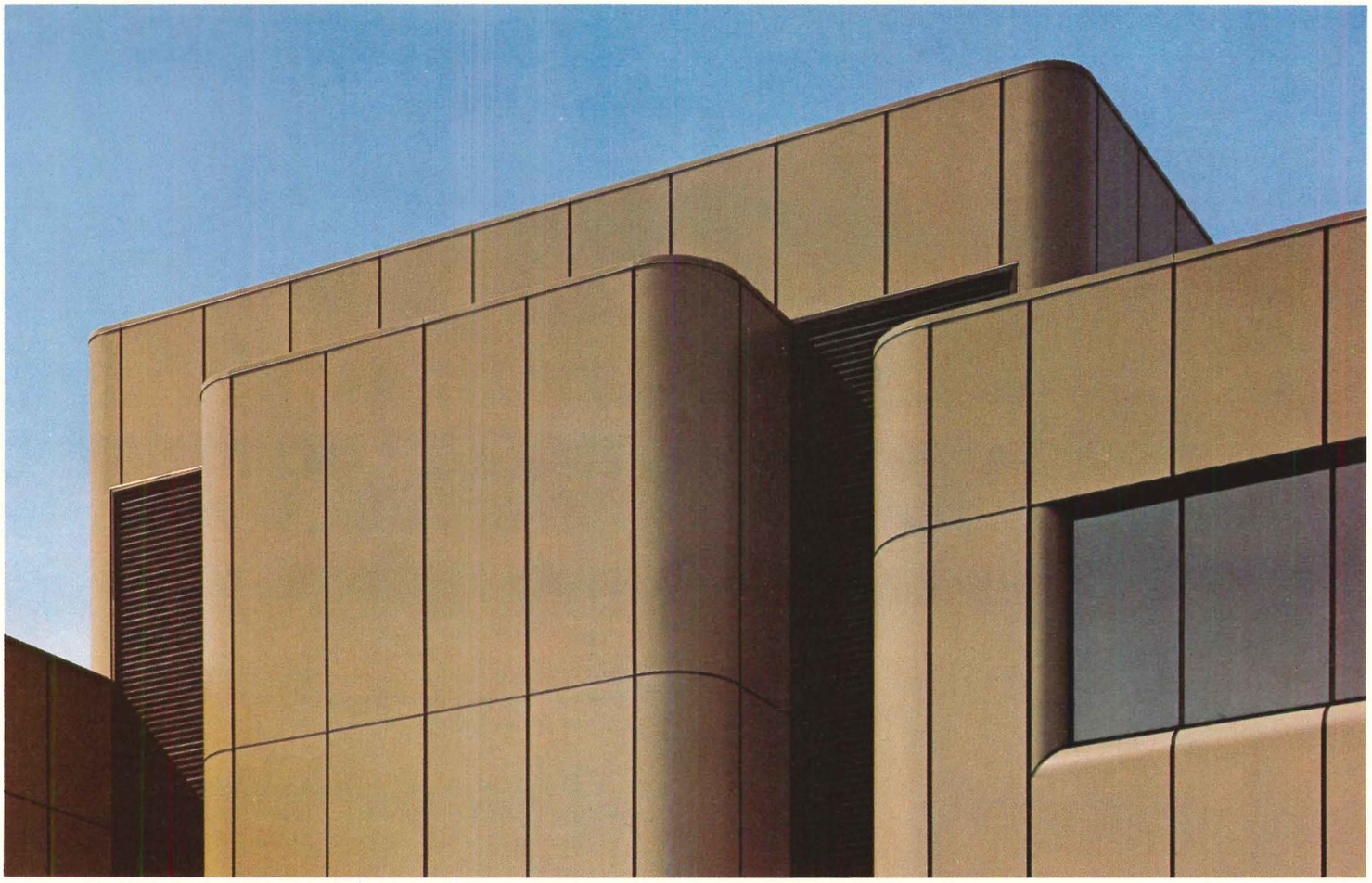

Project: Keen College Academic Building, Union, N. J. Architect: Robert Hillier, Princeton, N. J. Curtain Wall Erector: Whelan Mfg. Co., Trenton, N. J.

Versatile Alcoa Alply wall systems offer custom design flexibility.

Why settle for less?

You can design your own Alcoa Alply® wall system. Then work through an Alcoa-authorized wall system contractor who offers you single-source responsibility — everything from engineering to the completed wall system, in place, with integral fenestration, interior and exterior finish and thermal insulation.

No other modular wall system offers all these choices for low- to middle-rise buildings:

Exterior and interior skins: aluminum, stainless steel, hardboard, plywood, cement-asbestos — you name it.

Finishes: four standard finishes and 18 colors, including Super Alumalure® baked-on, factory-applied fluoropolymer enamels . . . Alumalure baked-on synthetic resin enamels . . . Alumilite† electrolytic coatings in natural aluminum . . . Duranodic† hard-coat finishes in three integral bronze shades and three new integral gray shades.

*The use of polyurethane, polystyrene and isocyanurate cores in these applications may present a fire hazard under certain circumstances. Consultation with building code officials and insurance agency personnel is recommended.

†Trade Name

Panel cores: polystyrene, polyurethane, isocyanurate* or other materials, depending upon project requirements.

Wide range of panel sizes: up to five feet wide, 18 feet long.

Variety of shapes: panels can be shop-formed to almost any three-dimensional shape desired.

Choice of joining systems: Alcoa's patented Snug Seam®, caulking, splines, battens or frames.

Variety of cutouts possible: to accommodate windows, doors, sloping grade lines, walkways, difficult contours, parapets.

Whatever you're designing, let Alcoa and its wall system contractors help. We know a great deal about wall systems, finishes, industrial roofing and siding and other low- and middle-rise construction problems. We can make things easier. Especially if you involve us early. For further information, write: Commercial Building Systems, Aluminum Company of America, 1090–F Alcoa Building, Pittsburgh, PA 15219.

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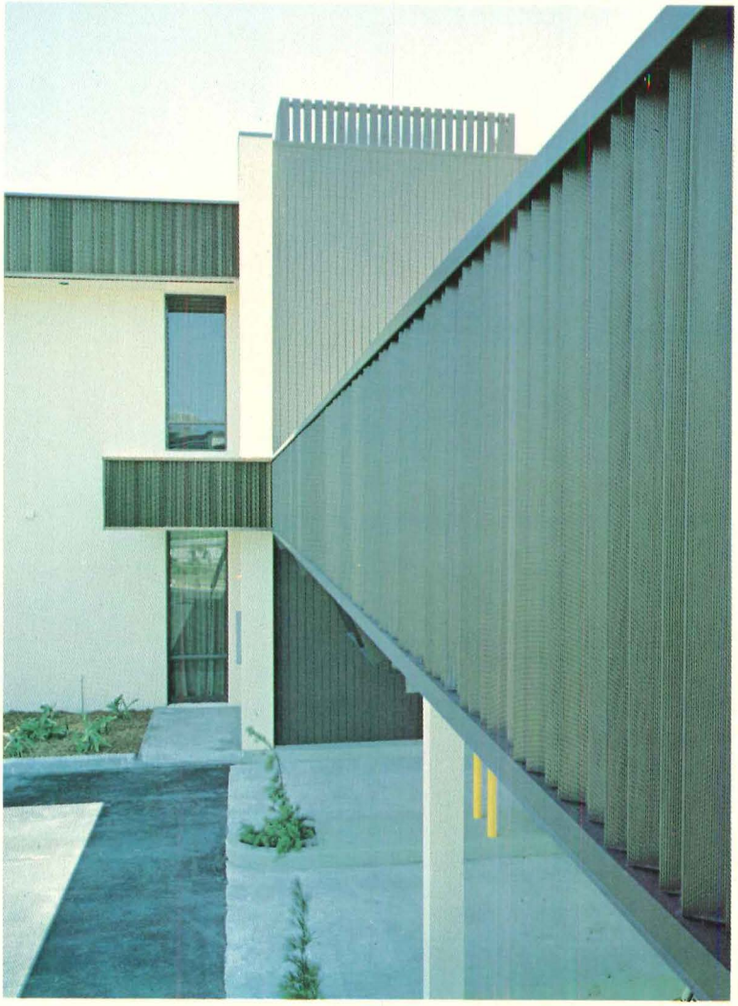


Project: Guardian Bank, Pinellas Park, Florida Architect: Robert Bernzott
Fabricator: J-C Products Corporation Applicator: Midway Glass Company

Project: Professional Building for Stebbins & Scott, Fort Pierce, Florida
Architect: Stebbins & Scott, A.I.A. Fabricator/Installer: Construction Specialties, Inc.

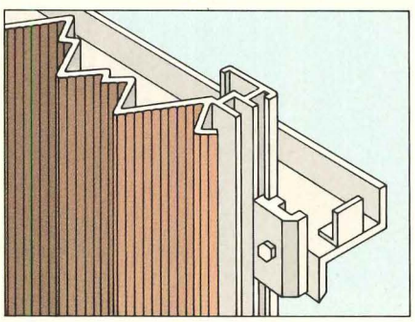
Strength and durability make Alcoa EZ Wall an excellent choice for facing or refacing.

Why settle for less?

You already know how EZ Wall brightens up facades, accent panels and fascia. How compatible it is with other building materials. Now let's concentrate on what EZ Wall can do for your budget.

You can put Alcoa® EZ Wall over an existing wall as easily as any paneling and get an unusual vertical effect that enhances the height of the surface. Because of its configuration and thickness, denting and scratching resulting from vandalism, installation, etc., are minimized. You can even use EZ Wall to create a smashing interior wall in a reception room.

And Alcoa EZ Wall has some additional advantages: 12-inch coverage per panel eliminates extra vertical joints required in metal wall systems with shorter coverage. It can be provided in lengths up to 44 ft, eliminating horizontal joints in many three-story applications. EZ Wall is designed to provide for thermal expansion and field tolerances. It's the only metal wall system of its kind available in acrylic, fluoropolymer enamel, anodic or Duranodic† finishes.



And now it offers a new option: EZ Wall also comes in an insulated version that provides a curtain wall.

Tell us your needs. At nominal charges, we can custom-design extrusions to accommodate a variety of building panels. And we can give you the benefit of our long experience with wall systems, industrial roofing and siding, finishes and low-, middle- and high-rise building problems. For more information, write Aluminum Company of America, 1075-F Alcoa Building, Pittsburgh, PA 15219.

†Trade Name

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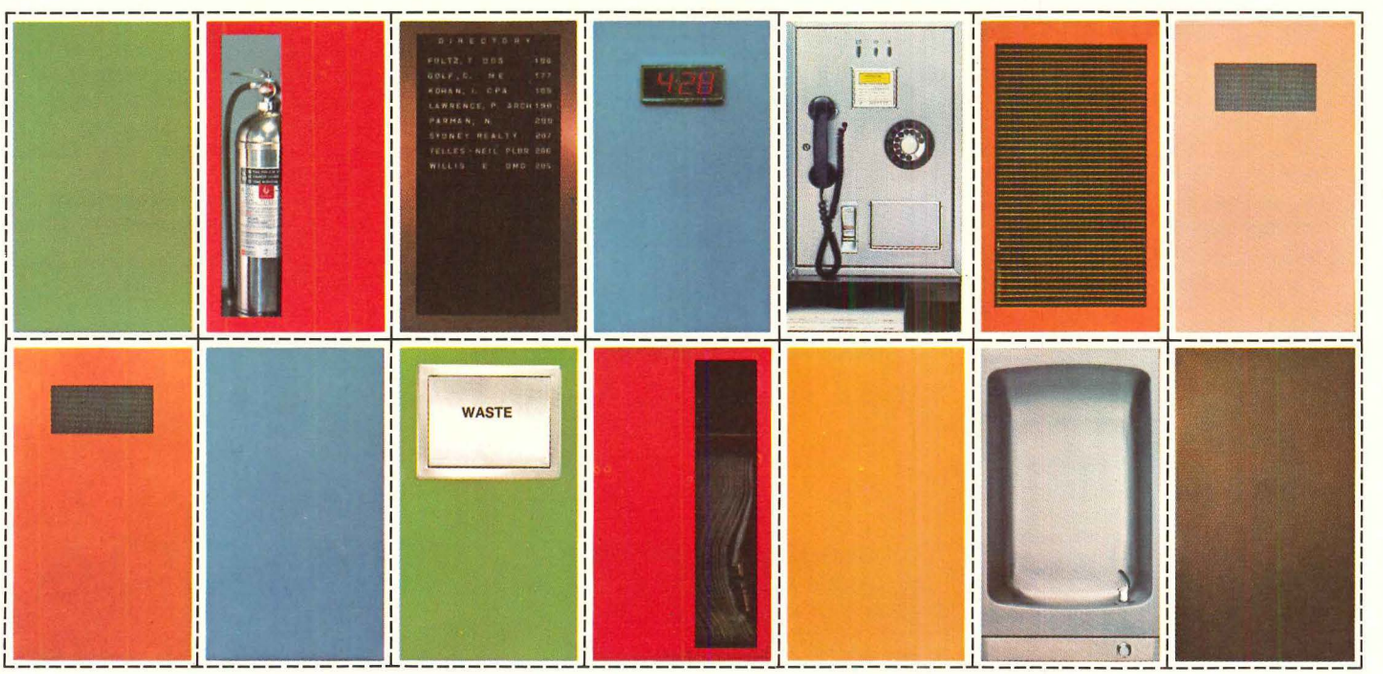
You design it.



We'll build it.

It's the Halsey Taylor Modular Service Wall System. And its wide selection of standardized, functional and decorative panels permits virtually unlimited design freedom. The finished wall centralizes architectural, mechanical and electrical service facilities in symmetrical groupings at any convenient location. It conserves space, reduces the number of isolated wall cutouts normally required and makes the location of critical building facilities —fire equipment, telephones, etc. —easy to remember.

Design latitude

You design your own wall system from an almost infinite variety of functional modules and colors. To start with, you have a choice of eight Polychrome colors, satin finish stainless steel or PATINA bronze tone stainless. Thus, your design latitude encompasses everything from bold, multicolored walls to any of eight solid colored walls. Or a satin finish stainless wall, a PATINA bronze tone wall or either material combined with colors.

Functional services which the wall system incorporates may also be arranged at your discretion: drinking fountains, clocks, directory boards, fire hose and extinguisher cabinets, fire alarm pulls, telephones, ash trays, waste receptacles, loudspeaker grilles and decorative filler panels. All functional components and panels are standardized. Virtually any number of building services may be incorporated in a single station, depending on the amount of wall space you're working with.

Cost

The simplicity of installation and the standardized 18" x 31¼" modules and framing make the cost of the finished wall system no greater than the installed cost of conventional service facilities.

For complete details and specifications, contact your Halsey Taylor Factory Sales Representative or write to Halsey Taylor Division, 1554 Thomas Road, Warren, Ohio 44481.

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Introducing Zonolite® Thermoclad.™ The logical insulation and finish method.

Thermoclad is an integrated insulation and finish applied to the outside of the building, for architecturally sound reasons:

☐ More efficient HVAC performance – because the structural wall is inside the insulation envelope, the building is maintained at a more stable temperature, reducing peaks in system operation.

☐ Full range of insulating values – down to 0.08.

☐ Less thermal stress – since expansion and contraction of the structure is reduced, building life is prolonged.

☐ More usable inside floor space – insulating the outside frees up space on the inside for increased area and income.

☐ Economical – competitively priced when compared with conventional wall designs.

The System

The Zonolite Thermoclad system consists of: (1) an insulation board laminated with a glass fiber mesh to provide strength and crack-resistance; (2) an adhesive to affix the board to the underlying surface; (3) a prime coat for strength and crack resistance; and (4) a pleasing architectural finish coat.

For New or Existing Work

Thermoclad is ideally suited for both new projects and renovation. Because the application is performed outside the building, disruption and unsightliness inside are eliminated.

Thermoclad makes sense functionally, aesthetically and economically. For further information contact your Zonolite sales office or send for brochure TC-1A. Construction Products Division, W. R. Grace & Co., 62 Whittemore Avenue, Cambridge, Massachusetts 02140.

ZONOLITE®
THERMOCLAD™

A plasterer demonstrates the ease and simplicity of the Thermoclad system, applied here over an 8 x 8 foot panel of exterior gypsum over metal studding. In the first photo, Thermoclad insulation, with its factory laminated fiberglass mesh, is applied to the gypsum board. In the second photo, the strong, cementitious prime coat is troweled over the insulation. And in the third photo, the attractive, textured finish coat is sprayed over the prime coat. Both prime and finish coats can be troweled or sprayed. The result is superior insulation and the attractive finish shown at the right.

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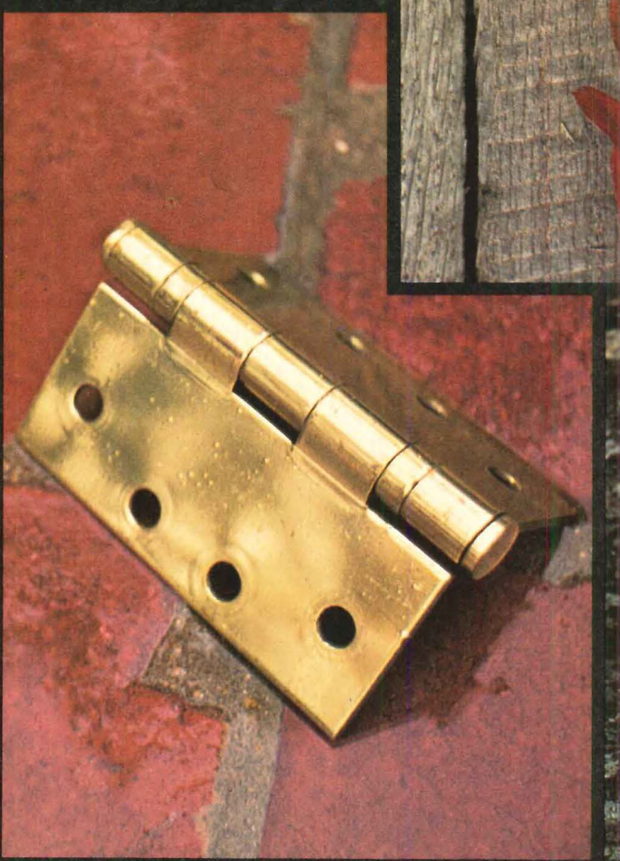
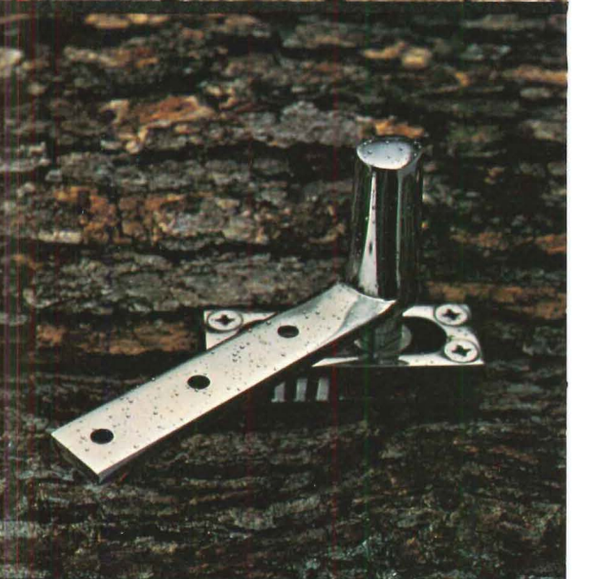
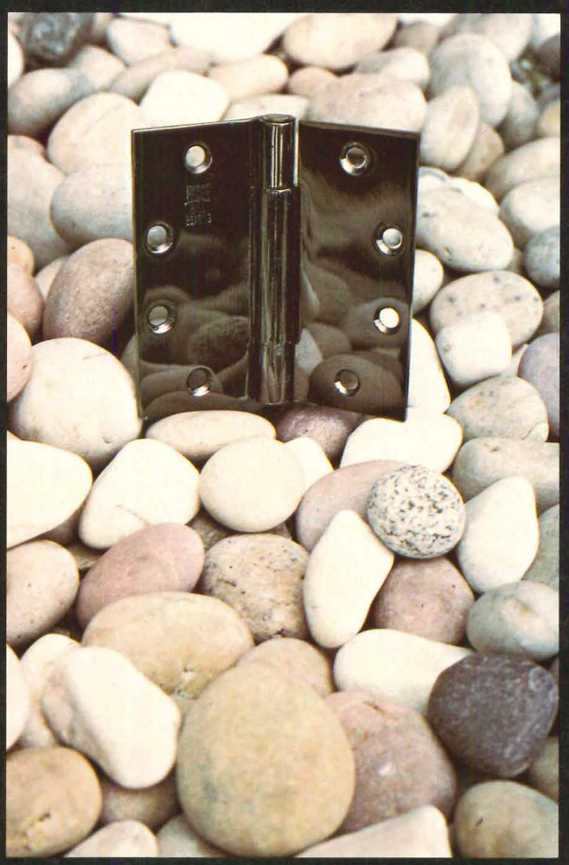
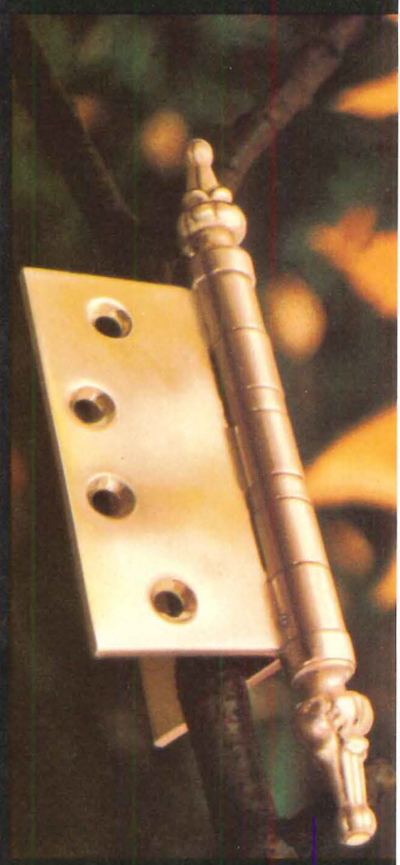
Anyone can make hinges, Hager creates concepts.

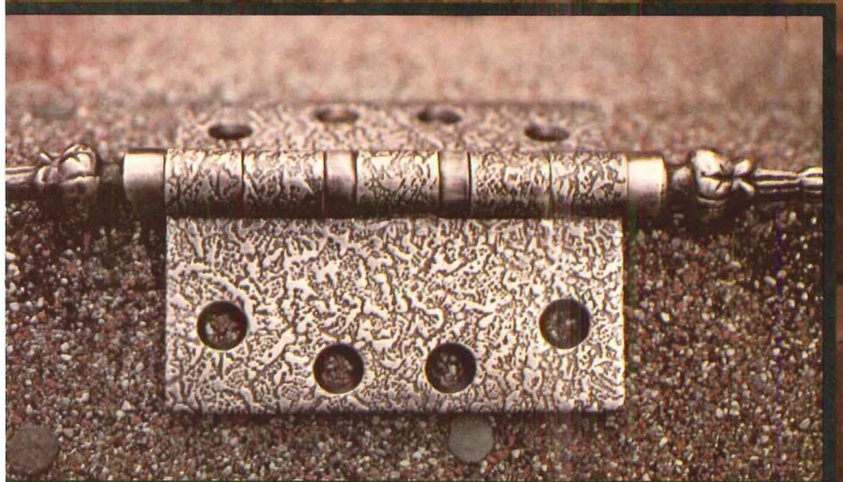




Hager has a hinge for any opening. Commercial, industrial and residential. You name the application, and Hager has a special hinge for it. Hager hinges come in a wide variety of popular decorator finishes. And you can add a beautiful decorator touch with a fine selection of distinctive hinge tips.







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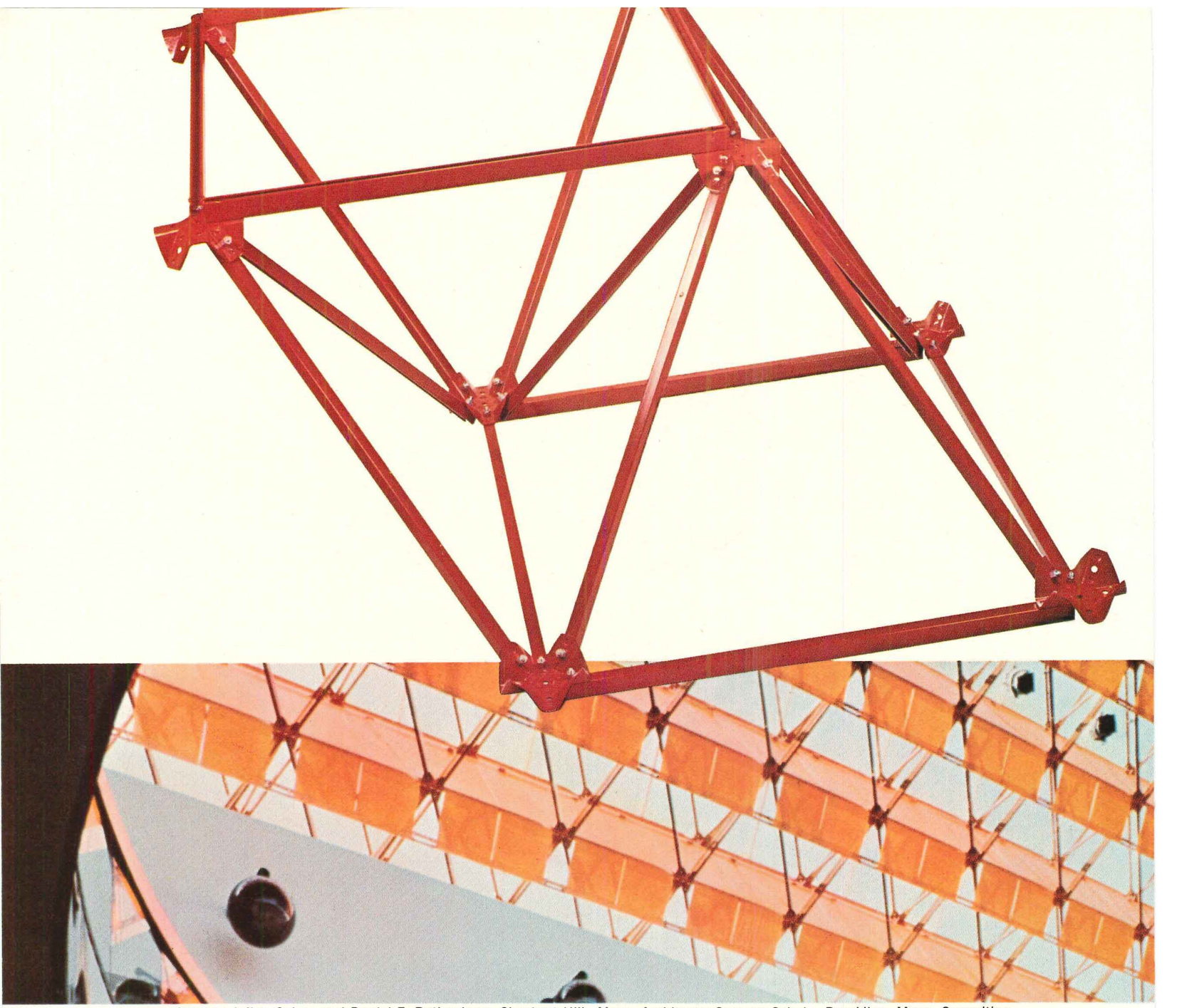

Owners: Julian Cohen and Daniel E. Rothenberg, Chestnut Hill, Mass. *Architects:* Sumner Schein, Brookline, Mass. *Consulting Architects:* Pietro Belluschi and Jung Brannen, Boston, Mass. *General Contractor:* Barkan Construction Co., Chestnut Hill.

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GTE SYLVANIA

With a professional program on the theme "Spaces for the Species," the AIA convention drew 3900 attendees to Atlanta, May 18-22. The 25,000-member AIA reported an attendance of 2000 members and their guests, for professional programs aimed at improving the architect's understanding of the ways in which people use spaces. The keynote address on this theme was given by physicist Heinz Von Foerster, professor emeritus in the department of biophysics, and engineering at the University of Illinois. Professor Von Foerster said "the dialogue of the architect with people is guided not so much by principles of esthetics as by those of ethics." Details of the keynote address and other convention activities appear on the next page.

John M. McGinty of Houston, Texas, was elected first vice-president and president-elect of The American Institute of Architects, at the 1975 AIA convention in Atlanta, May 18-22. Other new officers elected include: Elmer E. Botsai, Carl L. Bradley, and Robert L. Wilson, vice presidents; and Charles E. Schwing, treasurer. Mr. McGinty president-elect for 1976, is currently serving his second year as an AIA vice-president and was chairman of the 1975 convention. Details of the Institute officer elections and other convention activities are on page 34.

AIA resolutions passed at the 1975 convention include one on improved employer-employee relations. The resolution calls for architects to recognize the professional contribution of professional and non-professional staff, "share in the responsibility for their professional development, and treat them equitably." Other resolutions passed called for action on reviving the construction industry, aiding housing and minority affairs, and support for preservation of New York's Grand Central Station. AIA program cutbacks and "revenue-sharing" were also called for strongly. Details on page 34.

Nine honor awards for buildings of architectural excellence were conferred at the AIA convention. For details, see page 40. Other Institute honors went to Medalists Josef Albers; Peter Blake; Jane Jacobs; Yukio Futagawa; F. Carter Williams; Van B. Bruner, Jr.; Daniel Schwartzman; Gemini GEL; Environmental Research and Development Foundation; Cummins Engine Foundation; Davis, Brody & Associates; Georges-Henri Pingusson; and Carl M. Sapers. Details on page 34.

Representative Jack Brooks (D-Tex.) was among ten elected honorary members of the AIA. At opening ceremonies in Atlanta's Symphony Hall, May 19, the Institute conferred honorary membership status on the non-professionals in recognition of their outstanding contributions to the profession or allied arts and sciences. Rep. Brooks is known to professionals as the author of Public Law 92-582. Passed in 1972, the Brooks bill requires Federal agencies to select architects and engineers on the basis of competence and qualifications, subject to fair negotiated fees. Details of other Honorary Members appear on page 34.

The Austrian Broadcasting Corporation's ORF radio and television station received the R. S. Reynolds Memorial Award for distinguished architecture using aluminum. The building was designed by Gustav Peichl. Details on the next page.

The Urban Development Corporation of New York has announced four winners of the Roosevelt Island competition to design 1000 housing units on what was formerly Welfare Island in New York's East River. Photos of the winning designs appear on page 37.

The Construction Specifications Institute will hold its annual convention in New Orleans, June 23-25. With a theme, "CSI Offers Solutions," the convention will feature: George T. Heery, of Heery and Heery; Archibald C. Rogers, immediate past president, AIA; and Saul Horowitz, immediate past president, AGC. The convention will be held at the Rivergate and include 306 product exhibition booths. For more information on the convention, contact: Convention Manager, CSI, 1150 17th Street, N.W., Washington, D.C. 20036.

A U.S. District Court in Washington, D.C. has ruled that all U.S. waters come under control of the Army Corps of Engineers. In broadening the jurisdiction of the Corps from its historical responsibility for only navigable waters, the court has possibly opened the door for more complicated procedures for builders operating anywhere near water, because of the necessity of obtaining dumping permits from the Corps. Details on page 37.

The National Planning Association, Washington, D.C., predicts continued but shifting urban growth in the U.S. According to a report projecting population growth, the U.S. population will be 75 per cent urban by 1985, with cities in the South and Far West growing more rapidly than those in New England and in the Middle Atlantic states. Details on page 37.

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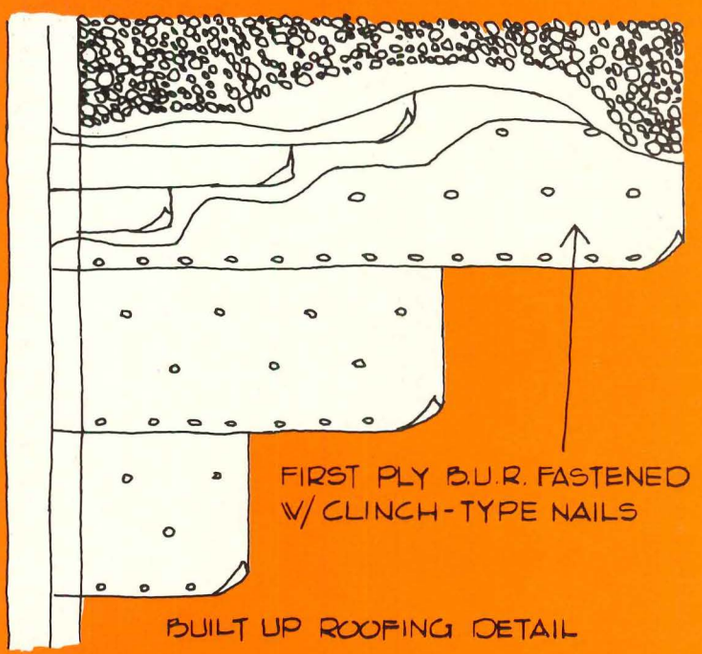

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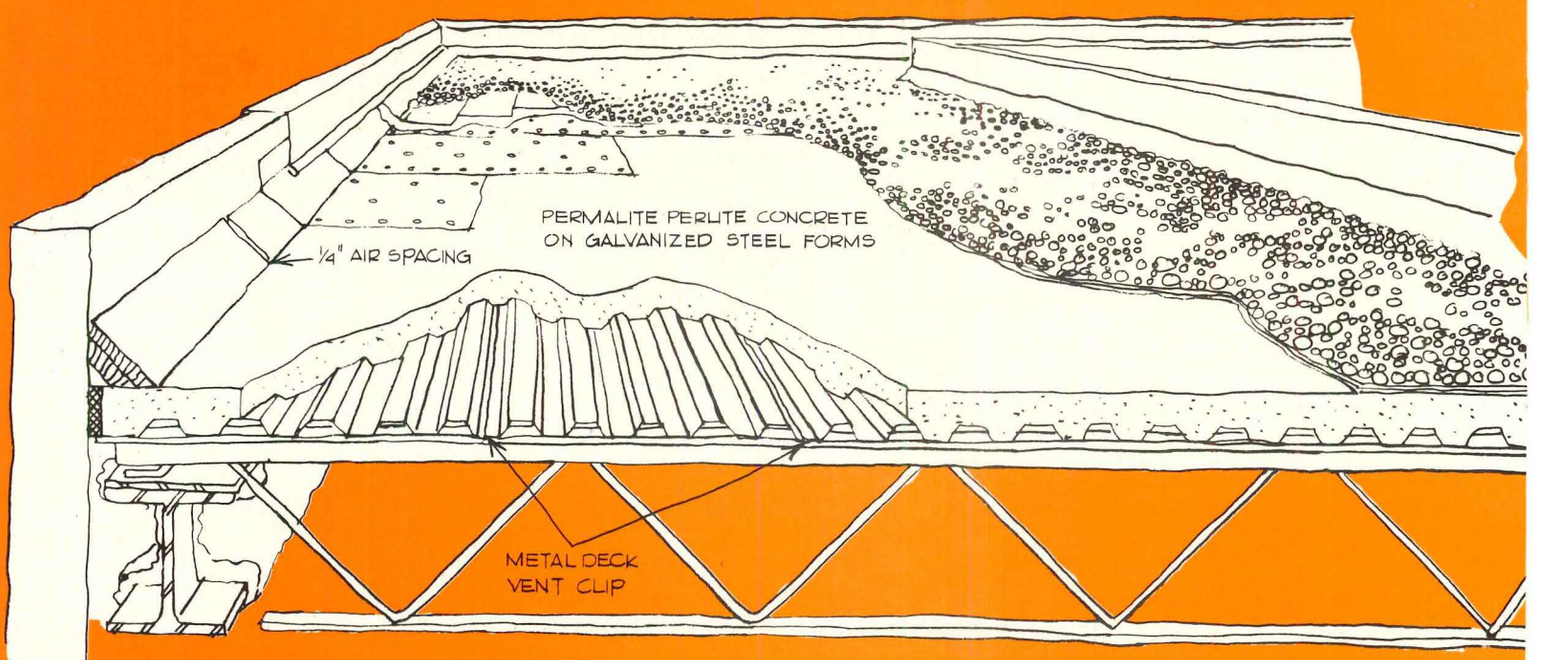

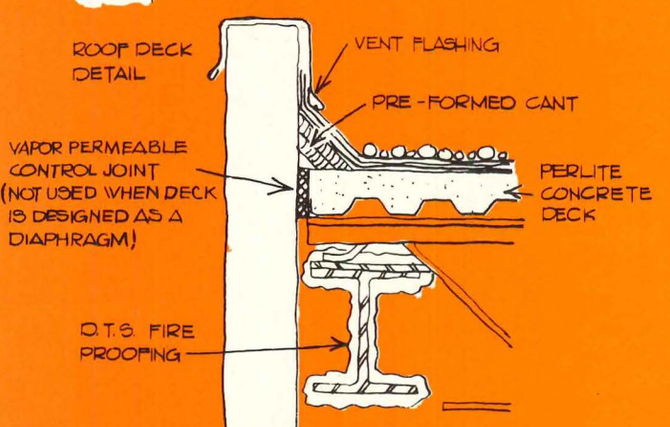

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NPA sees changes in urban growth patterns

The United States will become a still more urbanized nation in the next decade, but patterns of urban growth will change in significant ways. This is the conclusion of the National Planning Association, a privately financed research organization in Washington, D.C., which has projected metropolitan population trends to 1985.

NPA predicts that by 1985, 175 million, or 75 per cent of the nation's population, will live in urban areas, compared with 150 million, or 72 per cent, at present.

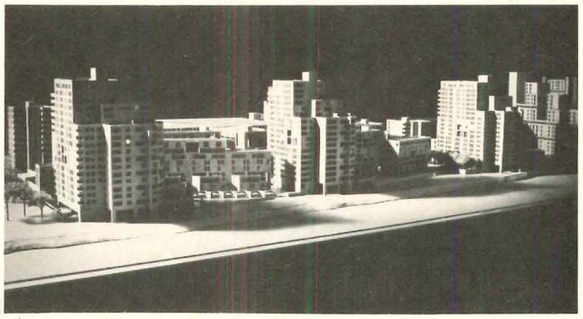
However, cities will grow more rapidly in the Far West and South than in New England and the Middle Atlantic states, where metropolitan areas tend to be older, more congested and more highly industrialized.

With some exceptions, cities which had populations of 2 million or more in the 1970 census will experience the most marked slowdown in growth rates. NPA projects New York City's 1985 population increase over 1970 at only 1 per cent, Cleveland's at 4 per cent, Pittsburgh's at 6 per cent, Philadelphia's at 9 per cent, St. Louis' at 10 per cent, and Boston's and Los Angeles' at 16 per cent each. NPA suggests that congestion and commuting distance, rather than sheer size alone, will put these cities at a growth disadvantage.

But two cities already having a population of more than 2 million will continue to grow at high rates. Washington and Houston are each expected to have 46 per cent more people in 1985 than in 1970.

In addition to these two cities, the most explosive growth is expected in such other large metropolitan areas (1 million or more in population) as Atlanta, Anaheim-Santa Ana-Garden Grove and San Jose, Calif., and Miami, Fla., and in such medium- and small-size cities as Orlando, Fla., Las Vegas, Danbury, Conn., Gainesville, Fla. and Bloomington, Ill.

Employment opportunities, historically the cities' chief attraction, will continue to be the major determinant in metropolitan growth, NPA points out. On the other hand, the strength of manufacturing job prospects will decline during the next decade, although the potential for service-type jobs and the availability of urban amenities will become much more important.—*Herbert Cheshire, World News, Washington.*



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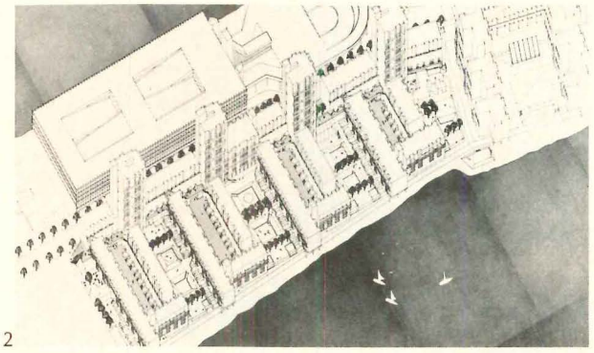

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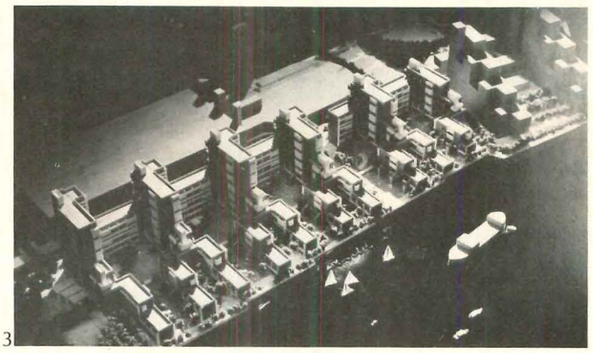

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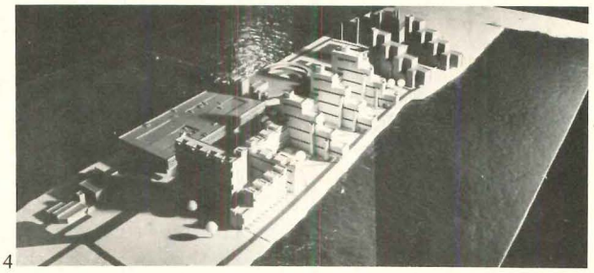

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Winners named in Roosevelt Island competition

The Urban Development Corporation of New York has announced four winners in a competition to design 1000 housing units for the Roosevelt Island project under construction in New York City.

The seven-member jury selected the designs of: Stern & Hagmann (1), New York City; Kyu Sung Woo (2), New York City; Sam Davis and the ELS Design (3) Berkeley, Calif.; and Robert L. Amico and Robert Brandon (4), Champaign, Ill. The four winning firms will share a cash prize of $22,500.

More than 250 entries were received in the competition to design housing for Roosevelt Island where 2100 units are already under construction, design by Jose Luis Sert, Cambridge, Mass. The Sert buildings are U-shaped, high at the island's center, and stepping down toward the riverfront. The only winning entry to depart from this massing was that of Stern & Hagmann, which consisted of higher sections on the riverfront, and curving forms around an irregular central open space.

The jury included: Mr. Sert; Alexander Cooper, an architect who is a member of the New York City Planning Commission; Sharon Lee Ryder, an editor of *Progressive Architecture;* Paul Rudolph, architect; Joseph Wasserman, architect; Franklin D. Becker, Cornell University Center for Urban Development Research; and Frederick P. Rose, a New York builder.

Because of UDC financial problems, there are no immediate plans to construct a winning project. However, if building were to be approved, the four winners would be asked to resubmit their designs.

25th Aspen conference will meet June 15-20

During the week of June 15th through June 20th, the 25th Annual International Design Conference in Aspen, Colorado, will explore the nature and variety of experiences in the designed environment, ranging from "mundane to ecstatic, destructive to creative, logical to intuitive." Separate days will be devoted to each one of the four levels of the experimental spectrum: the physical, intellectual, emotional and metaphysical. Participants will include: free-lance writer and design consultant Ralph Caplan; Richard Coss, psychologist, Gerald M. Feigen, journalist, surgeon and ventriloquist; James M. Fitch; Betty Friedan, a pioneer of the women's movement and author of *The Feminine Mystique;* Richard N. Goodwin, lawyer, former speech writer for President Kennedy, political scientist and author of *The American Condition;* Edward T. Hall, best known for his books *The Silent Language* and *The Hidden Dimension;* Sam Keen, consulting editor for *Psychology Today;* Jerome Lettvin, biologist, psychiatrist, electrical engineer and professor of communications physiology; George Nelson, industrial designer and educator; Josh Reynolds; Dr. Jonas Salk; behaviorist Albert Scheflen; Jivan Tabibian, social planner and social scientist; John Ware, Jr., educational psychologist; William H. Whyte, writer (*The Organization Man*) and professional people watcher.

For registration information, write to Mary Apple, IDCA, P.O. Box 664, Aspen, Colo. 81611. For information on Aspen accommodations, write or phone Aspen Reservations, Inc., P.O. Box 4546, Aspen, Colo. 81611; or phone (303) 925-4000.

Court ruling expands ACE control of waters

Starting new construction projects that involve filling in portions of the nation's wetlands will become more complicated in the future. Just how much depends on the outcome of a new squabble between the Army Corps of Engineers and environmentalists. They are battling over just how far the Corps should go in carrying out a court decision expanding its jurisdiction over the disposal of dredging and fill material into water.

The U.S. District Court for the District of Columbia ruled that Corps control over the disposal of dredged and fill materials should be broadened from its historical responsibilities for "navigable waters" of the nation to include all the "waters of the United States."

Expansion of the jurisdiction, the court said, is necessary if the Corps is to comply with the Federal Water Pollution Control Act Amendments of 1972; the suit that resulted in the court's decision was brought by the National Resources Defense Council, an environmental group. The Corps has now proposed four alternatives for putting its broadened mandate into effect.

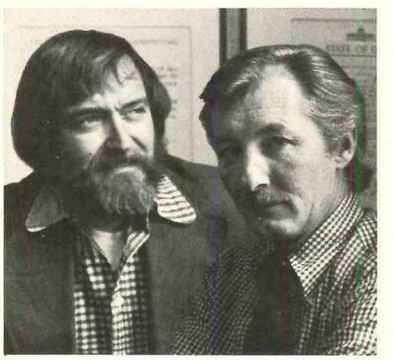
Aside from causing vastly more work for the Corps, any one of the alternatives will mean more complicated procedures for builders and contractors operating anywhere near water because of the expanded necessity to obtain dumping permits from the Corps. The heaviest impact probably would be felt in Florida and other Gulf Coast States and some other coastal areas, such as San Francisco Bay, but work along inland rivers and around the Great Lakes would also be affected.

In a controversial policy statement, the Corps said that under the expanded jurisdiction favored by environmental groups, Federal disposal permits could be required of a rancher enlarging his stock pond, a farmer deepening an irrigation ditch, or a mountaineer wanting to protect his land against stream erosion.

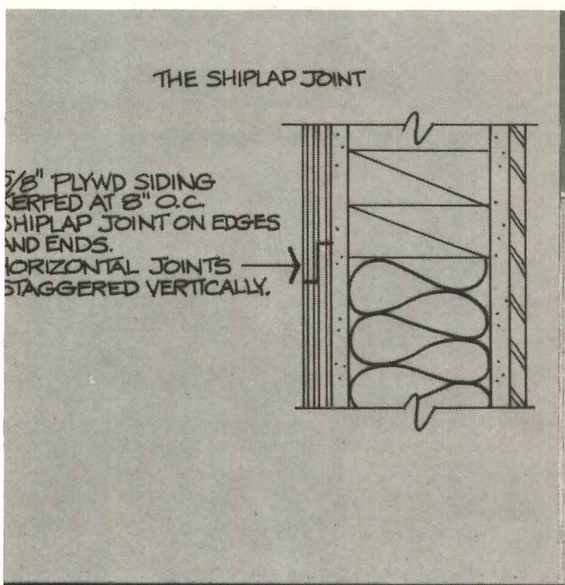
According to environmentalists, the Corps' statement is nothing more than an "outrageous scare threat." The Natural Resources Defense Council said the Corps wanted to make the regulations look so rigid that they would be suspended as unenforceable.

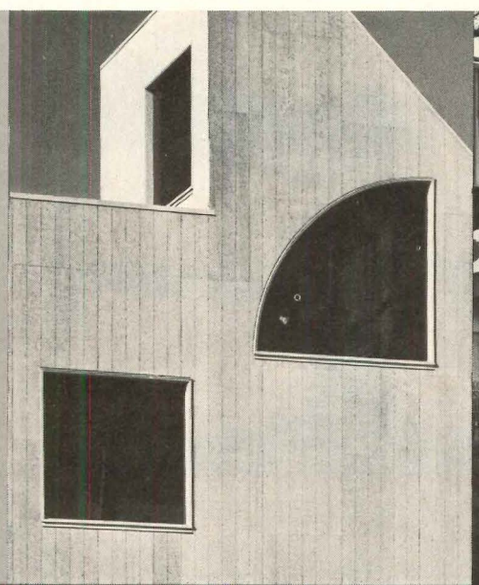
Without a doubt, the Corps is trying to define its new jurisdiction so as to limit its responsibilities. It favors inclusion of only those coastal waters subject to tidal action or reaching to the salt water vegetation line. Inland waters covered would be limited to navigable waters and their primary tributaries up to the headwaters, but in most cases a permit would not be required for the disposal of less than 100 cubic yards of dredged or fill materials.

The environmentalists want to extend the Corps' permit jurisdiction to all coastal and inland artificial or natural body waters used for interstate travel. —*William Hickman, Washington.*



Plywood gave three things to this Oakland restaurant: economy, texture, and a design award to Sandy & Babcock.





For steak, lobster and a whale of a sailboat view, you can't beat the Rusty Scupper in Oakland, California.

It floats over the water like a huge wood scow riding at anchor in the embarcadero.

The 1975 Plywood Design Awards jury was sufficiently impressed to give it a citation and a few chosen words: "This restaurant is a strong, simple sculptural form that makes the most of an excellent marine site."

The over-water building is 8,300 square feet on six levels, enough room for 250 young sea dogs put into port.

The "Scupper," only part of a large commercial and residential project, fits in beautifully with its neighbors at Portobello.

"Some of the exterior forms of the other building are repeated and orchestrated in this structure," said the architects, Sandy & Babcock, AIA, San Francisco.

Exterior of the building is 5/8-inch rough-sawn plywood covered with a semi-transparent stain.

"We selected plywood because of its economy, consistency of texture and durability in facing the waterfront elements," said Babcock.

To avoid the stacked appearance common to multi-story plywood walls, the architects decided against using "Z" flashing at horizontal joints. Instead, the plywood panels were horizontally staggered and all joints were shiplapped.

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Nine buildings earn AIA Honor Awards

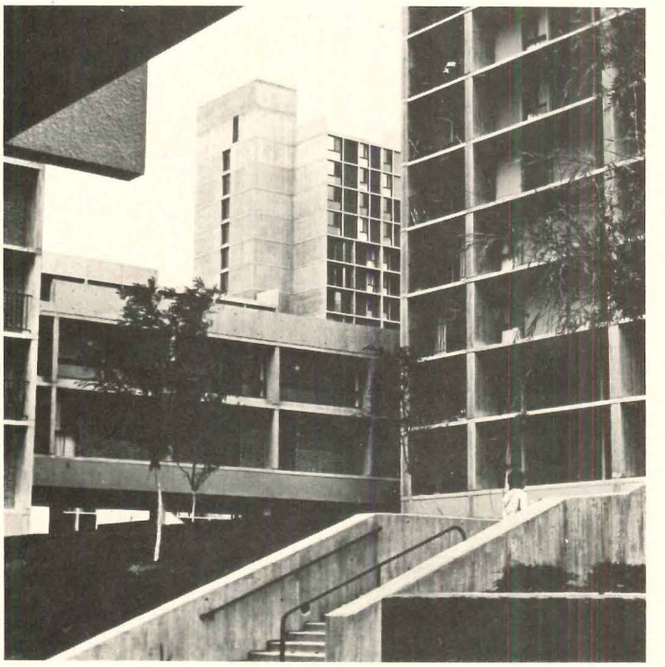
Nine buildings, from a classically elegant, one-story steel and glass newspaper plant in Columbus, Ind., to a dramatically sited, six-story concrete college art museum in Ithaca, N.Y., have been selected to receive the nation's highest awards for architectural excellence: the 1975 Honor Awards of The American Institute of Architects.

The winners also include two Minneapolis buildings—a block-square commercial center that features a 51-story tower and a skylighted plaza court, and a 1299-unit residential complex in an urban setting—as well as a Fort Worth, Tex. art museum and a Denver, Colo. office building. A second Columbus, Ind., structure, a new high school, was also honored. The awards were presented at the 1975 AIA Convention, May 18-22, in Atlanta, Ga.

The five-member awards jury, which was headed by New York City architect Richard Meier, AIA, noted in its report that it was interested in more than just the way in which the winning buildings related to their surroundings. "The jury was concerned about architecture's capability to endure as an object and as an idea, and in this way, its ability to affect the public," Meier reported.

There were more than 600 entries in the 27th annual awards program. After the jury reviewed the submissions, they selected a group for on-site inspection and then chose the nine Honor Awards.

The 1975 Honor Award winners are: 1) Cedar Square West (RECORD, December 1973), Minneapolis, Minn. by Ralph Rapson & Associates, Inc., Minneapolis, Minn.; 2) Hanselmann Residence, Ft. Wayne, Ind. by Michael Graves, Princeton, N.J.; 3) Columbus East High School, Columbus, Ind. by Mitchell/Giurgola Associates, Philadelphia, Pa.; 4) 88 Pine Street (RECORD, April 1975), New York, N.Y. by I.M. Pei & Partners, New York, N.Y.; 5) I.D.S. Center, Minneapolis, Minn. by Philip Johnson & John Burgee, New York, N.Y.; 6) The Republic, Columbus, Ind. by Skidmore, Owings & Merrill, Chicago, Ill.; 7) Park Central (RECORD, April, 1974), Denver, Colo. by Muchow Associates, Denver, Colo.; 8) Herbert F. Johnson Museum of Art, Ithaca, N.Y. by I.M. Pei & Partners, New York, N.Y.; 9) Kimbell Art Museum, Fort Worth, Tex. by Louis I. Kahn, FAIA, Philadelphia, Pa.



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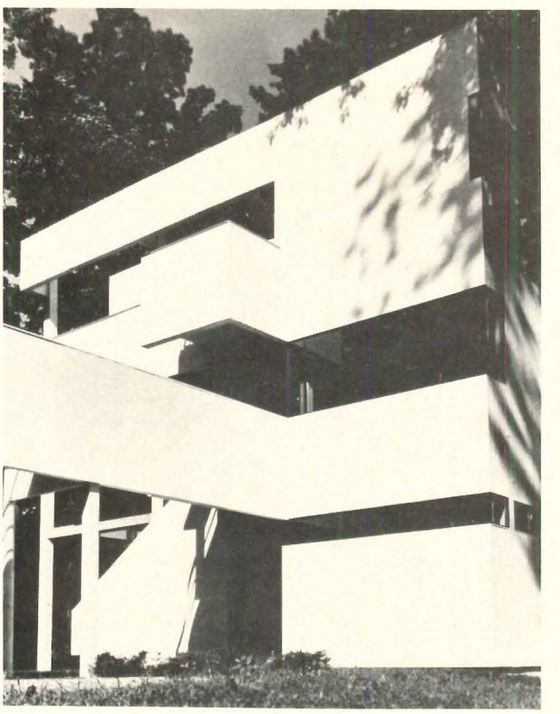

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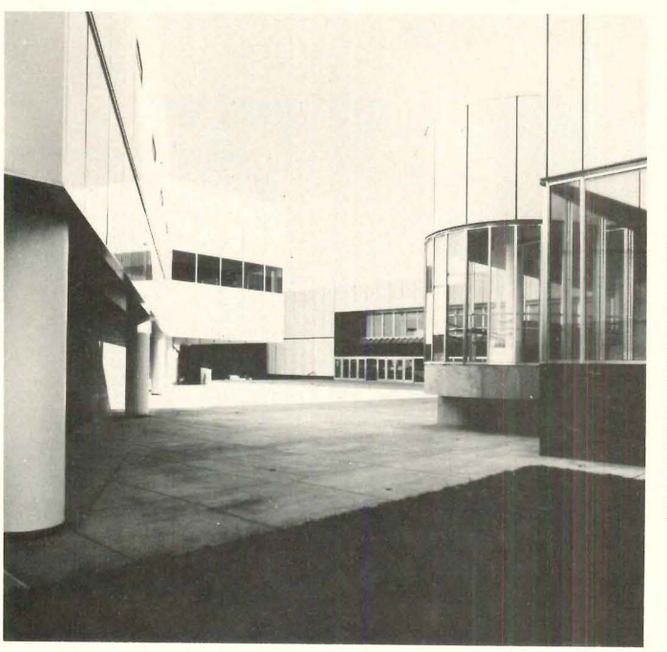

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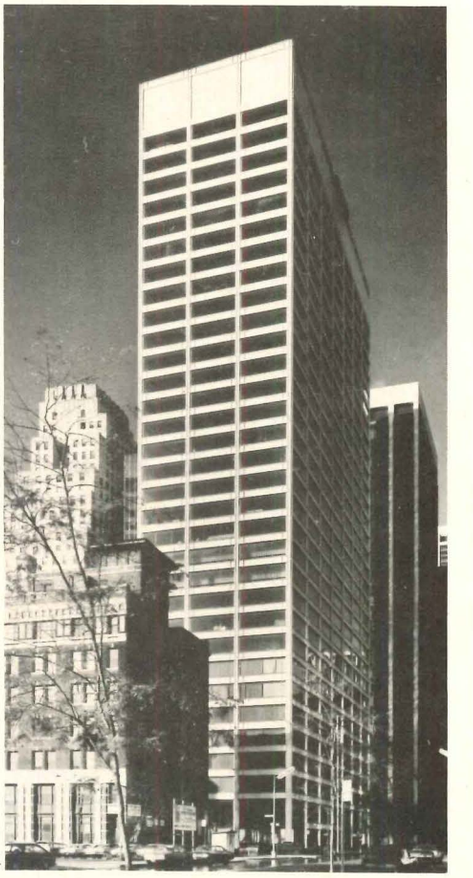

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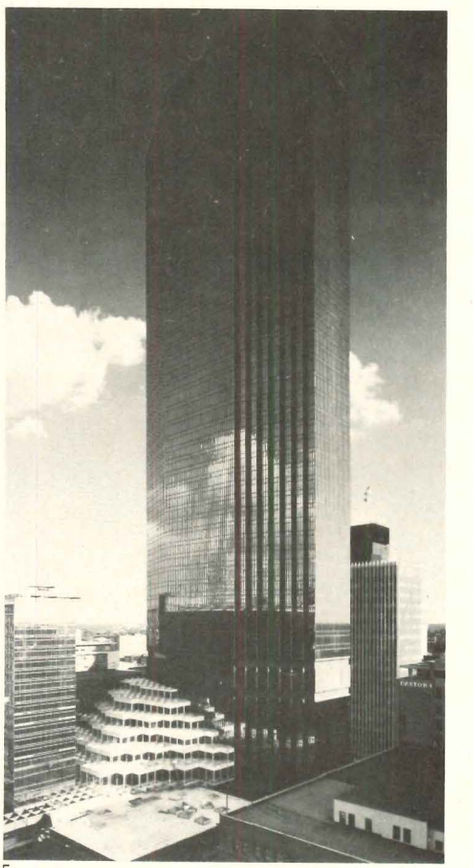

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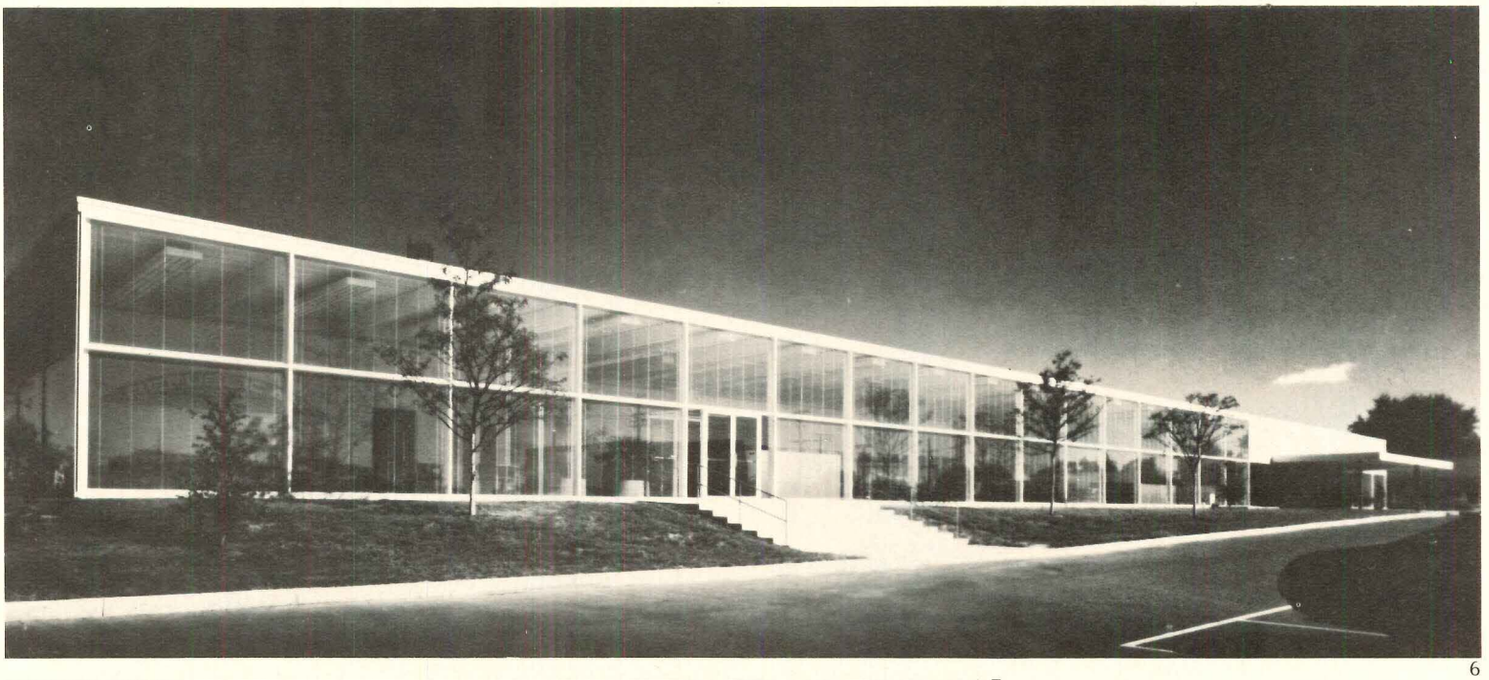

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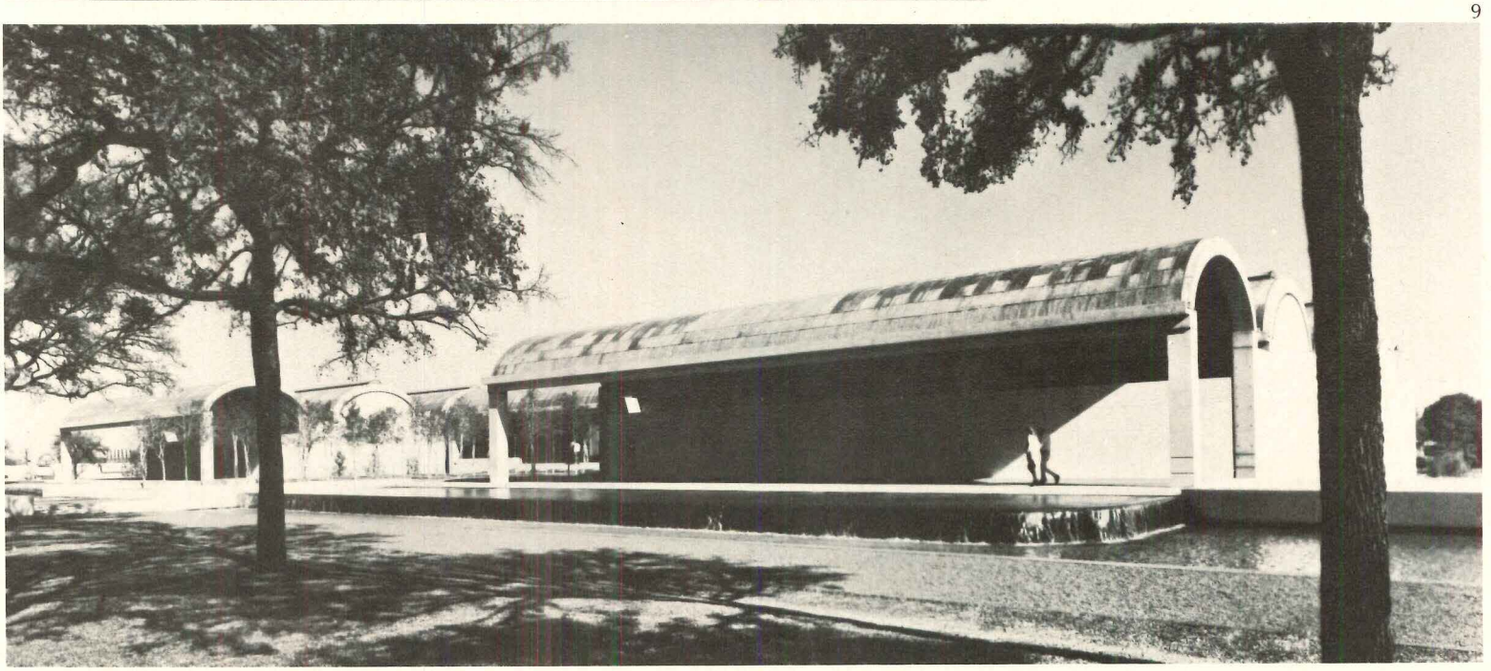

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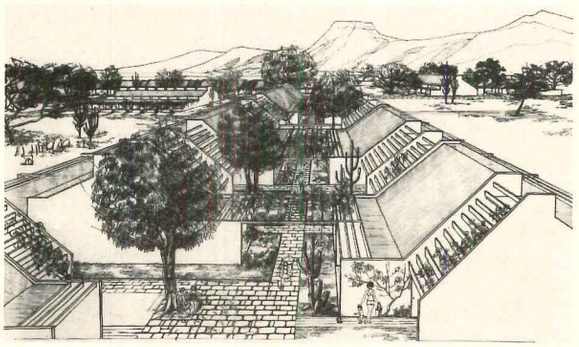
Colombian mining town takes UIA honors



The architecture department of Colombia's National University, largest in the country, has been honored by the International Union of Architects for a "humanized" mining town project. One of 250 entries from 80 countries, the Colombian design is the first to win international acclaim for this country. Carlos Martinez and Eduardo Londono, two of four National University professors who supervised the project, previously won South American recognition for a cement factory design at the Brazilian biennial art show at Sao Paulo.

Held once every three years, the UIA competition is open only to faculties of architecture, and the Colombian project was one of 20 to earn top honors. Argentina, Brazil and Cuba also received special mention, as did Carnegie Mellon University.

The National University design was commissioned by the semi-autonomous state development agency, the Industrial Development Institute (IFI), which owns a 190-square-mile coal concession on the windswept Guajira Peninsula in northeastern Colombia. IFI is developing the fields in partnership with the Peabody Coal Company to exploit 5 million tons of low-sulphur, high-caloric coal per year by 1980. A wild scrubland inhabited primarily by nomad Guajiro Indians, the peninsula is expected to undergo an economic boom when the IFI-Peabody "Cerrejon" fields come on stream.

In order to provide suitable housing for the coal miners, IFI contracted with six fourth-year architecture students at National to survey the best site for a new town. After a year's study, the students decided to expand the existing town of Barrancas (population 8,000) to accommodate 5,000 more workers and their families in a project designed to mesh architecture with the environment and local customs. Barrancas also is a social-economic pilot project for other mining towns, as Colombia is only now beginning to exploit its enormous coal fields, which constitute 67 per cent of Latin America's total reserves.

Student designers Etelinda Rolon, Osvaldo Perez, Felix Garcia, German Correal, Roberto Martinez and Gonzalo Castro chose Barrancas as the site for Cerrejon's housing development because they proved it would be more economical to build onto an existing town than to start an entirely new city. Barrancas also will receive a much needed economic boost by becoming the regional hub for jobs and services as the Cerrejon fields spawn a series of coal-related industries.

By enclosing the old and new parts of the town within a highway cross, the National University project is able to direct population growth towards the Rancherias River. Workers, technicians and professionals are integrated through a series of circles containing commercial and public services.

Design of the houses, which range in size from 577.8 to 1284.7 square feet, follows the incline of the surrounding hills with emphasis on trellised gardens and porches to give maximum ventilation in the hot, arid desert and allow the inhabitants to follow the time-honored Spanish custom of gossiping in doorway rocking chairs.

All of the 700 houses will be prefabricated cement structures to take advantage of nearby sand resources and reduce labor costs. Once a final exploitation contract between IFI and Peabody is approved, around mid-1976, construction will go forward in two phases; the housing development will be completed within six months at a cost of $1.1 million, and services and infrastructure will be finished within three years, also for $1.1 million.—*Penny Lernoux, World News, Bogotá.*

Nigeria awards planning job to New England firm

Combustion Engineering, Inc., has announced that the Ministry of Economic Development and Reconstruction, East-Central State of Nigeria, has awarded a $10.8 million contract to C-E Tec, Inc., a subsidiary in Waltham, Mass.

During the two-year contract, the Massachusetts architecture, engineering and planning firm will provide master planning for eight existing cities throughout the East-Central State, including Enugu, the state capital. The firm also will perform regional planning and erosion control studies throughout the state, as well as engineering studies connected with the location and design of urban roads and bridges, water systems and supply, and environmental health systems.

As part of the contract, C-E Tec will establish a Center for Regional and Urban Studies in Nigeria to develop local expertise.

A major university in the United States and a major university in Nigeria will participate in setting up the Center. The universities have not been selected as yet. C-E Tec is a family of professional firms of architects, engineers, planners, and environmentalists. The firms include CE Maguire, Inc. and ECO-DESIGN Inc. of New England; LBS & W, Inc., of the Mid-Atlantic States; Nelson, Haley, Patterson and Quirk, Inc., of the Rocky Mountain States; and Koebig & Koebig, Inc., of the West Coast. The co-project-directors for regional planning and urban design are Laurence Stephan Cutler, AIA, and Sherrie Cutler, AIA.

Puerto Rico plans housing for Pan Am Games

For the Pan American Games to be staged in Puerto Rico in the summer of 1979, the firm of Basora & Rodriguez, Planners, Engineers and Architects, has designed a 2,300-unit housing complex under the direction of Enver Azizi, AIA, Associate AIP, project architect.

The Pam Am Villa is the most ambitious single-stage condominium construction venture that has been undertaken in the Commonwealth under the sponsorship of the Department of Housing, Puerto Rico Urban Renewal & Housing Corporation. After the games, the project will become a moderate-income community.

The design has incorporated the tropical idiosyncrasies of Puerto Rico by the strategic use of wind funnels and moving window-walls. There will be a major, combined, multi-level structure housing community center, commercial center, and sports center. A system of "plazoletas" and linear playgrounds will interconnect communal recreation pools.

Three types of condominium residences are planned: terrace apartments, single-loaded mid-rises, and wind-conditioned, double-loaded high-rises. Project construction is scheduled to begin soon at the 60-acre site.

Academics and young professionals seek representation at Habitat 76

The United Nations Conference on Human Settlements: Habitat 76, which convenes in June 1976 in Vancouver, British Columbia, has prompted a group of academic and professional people concerned with human settlements to seek official representation at the conference. To that end, they are planning to hold an International Summary Conference shortly before Habitat 76, and in order to assure international representation a series of small-scale preliminary meetings is scheduled throughout the world, the first to be held in New York City June 13-14.

Some of the aims of the international Summary Conference are to begin a compilation of a library on human settlements, to bring together all the recent world research and projects on human settlement, and to formulate professional curriculum input. With the emphasis on student and young or emerging professional participation in this conference, the organizers hope to gather future professional leaders for a continuing dialogue within the framework of human settlement concerns.

For further information on this conference, contact Alan Forrest, Pratt Institute, School of Architecture, Brooklyn, New York 11205.

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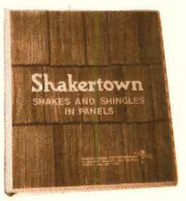

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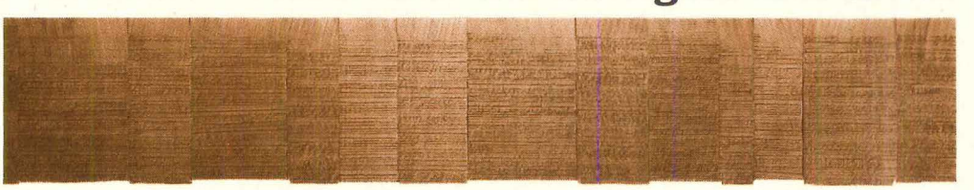

First Presbyterian Church, Berkeley, Calif. Architect: James Ream and Associates

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Before we freeze in the dark

THE ENERGY PRIMER: SOLAR, WATER, WIND AND BIOFUELS; *Portola Institute, Menlo Park, California, 1974, 200 pages, illustrations, $4.50.*

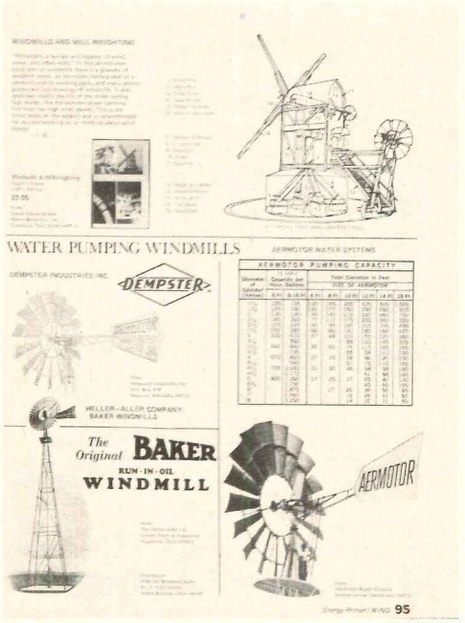
ENERGY CONSERVATION IN BUILDINGS: TECHNIQUES FOR ECONOMICAL DESIGN, *by C. W. Griffin; Construction Specifications Institute, Washington, D.C. 1974, 174 pages, illustrations, $20.00.*

Reviewed by Mark Simon

Until recently, concern with energy conservation and alternative energy sources seemed to most people to be simply a moral issue. It is now clear from an abundance of authorities, including the new National Academy of Sciences report on "Mineral Resources and the Environment" that we need to develop a "conservation strategy," for our energy supplies. Moral issues, however, will not generate such a strategy any longer; they have been eclipsed by a crisis. Most of the buildings we construct today can and probably will outlive the fossil fuel supplies they depend on. Whether or not a building should be energy conserving has ceased to be a moral issue and has become a matter of economic and survival sense.

With the depletion of fossil fuels and their inevitable rising costs, the maintenance and depreciation (life cycle) costs of buildings are demanding attention equal to initial construction cost. For instance, one used to hear that the slightly higher cost of electric heat was made up for by its relatively inexpensive installation. Now, the added cost of a solar heat installation is said to "pay itself off" in 10 or 15 years in fuel cost savings for many buildings.

The crisis seems to have come about so quickly that many architects and engineers are perplexed about how to react, and some hope it is a fad that will go away if they keep their eyes closed long enough. It is time for general re-education in two areas: energy conservation techniques (reducing the energy needs of buildings) and alternative energy systems (the multitude of means for collecting the diffuse energy of the sun as it manifests itself on earth through "solar, water, wind and biofuel" power). At the present time the former is more important, but more on that later. A delightful way to begin learning about the latter is to look into *The Energy Primer.* Live with it for a while. Its format is very similar to *The Whole Earth Catalog* also published by the Portola Institute. Like that book the *Primer* is not organized to be read straight through. It is for browsing through for hours and eventually establishing in an office or home library as a reference book, an essential catalog of resources. It differs from *The Whole Earth Catalog* in that each chapter begins with an introductory article. These are short, educational summaries of present-day techniques and equipment which enable individuals to develop simple independent energy systems for themselves. They are written to be understood by the layman (and it is hoped by uninitiated professionals). Following these, in the manner of *The Whole Earth Catalog,* are wonderful short reviews of equipment and information sources, books, research groups, and so on. Though the articles are aimed at the uninformed, the source catalogs should be highly welcomed by experts as well.



As mentioned before, the intention of *The Primer* is to provide individuals with information for helping themselves, independent of large-scale manufacturers, energy producers, and professionals. Chuck Missar, the solar editor, notes that "many large, well-established firms are becoming quite involved with solar energy research and hardware. These firms will be the leaders in many solar energy activities, since they have the capital, momentum and reputation to carry out successful research and development. Most of us interested in doing it ourselves will live off technological fall out from these firms." This prophesy should prove true, but at the present time it is instead the large firms that are learning from all the independent people like those who have developed the *Primer.*

The Energy Primer is essentially oriented towards alternative energy sources and equipment (other than nuclear energy, seen here as dangerous and actually, like fossil fuels, of limited supply). Though *The Primer* writers also repeatedly stress that our most important goal is reducing need and demand (much more important than increasing supply), it unfortunately offers scant information and resources for energy *conservation* techniques in buildings. It makes no sense to go to great lengths to develop new equipment when we can more easily lessen demand by design and common sense. Any future edition of *The Energy Primer* would be improved by a large chapter on conservation.

One book that provides a good introduction to this subject is *Energy Conservation in Buildings—Techniques for Economical Design* by C. W. Griffin, commissioned by the Construction Specifications Institute. Large in scope, it treats subjects ranging from insulating techniques and energy-conscious architectural design to new directions in mechanical systems such as heat recovery. This book is only a good start, however, because research and development in energy conservation have been extremely limited. Now that conservation has become an economic necessity, they are sure to increase. Like *The Energy Primer,* this book should be reissued occasionally, re-edited and brought up-to-date. Some of the techniques mentioned are fairly obvious and some are complicated—but they all help. Subjects are simplified into lists at important junctures, as if they are to be checked off in the design of any building. These, and what the author calls "Alerts" (direct on-the-job suggestions) are used perhaps to imply that the book be used as a professional handbook. The only part that should be considered as such is a useful appendix for doing life cycle costing. The rest of the book is an expansive introduction to techniques, but not a thorough manual.

These two books come from very different directions: C. W. Griffin's book, oriented towards the professional, sees conservation as a new economic tool and also as a way to "enhance the architects/engineer's already vital role in planning the urban environment." *The Energy Primer* was written to help individuals, living mostly in rural situations, to create energy sources by and for themselves. Conservation is held as a necessity here, but it is still seen also as a moral issue and a way to a self-sufficient life. As different as they seem, both books will be extremely helpful to both the urban professional and independent layman.

Mark Simon is an architect with Charles W. Moore Associates. He is currently working on a number of energy-conserving projects, including a solar-heated house and a wind-powered earth-berm house.

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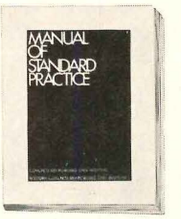

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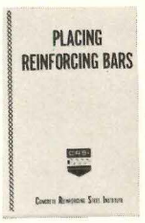

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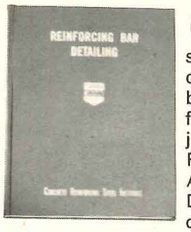

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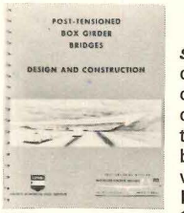

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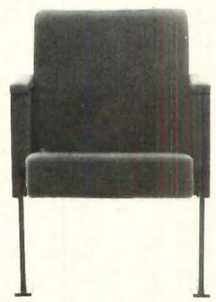

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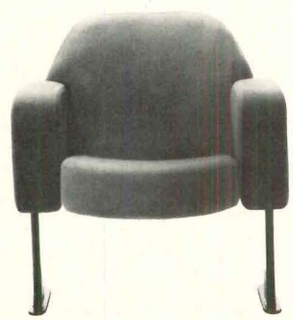

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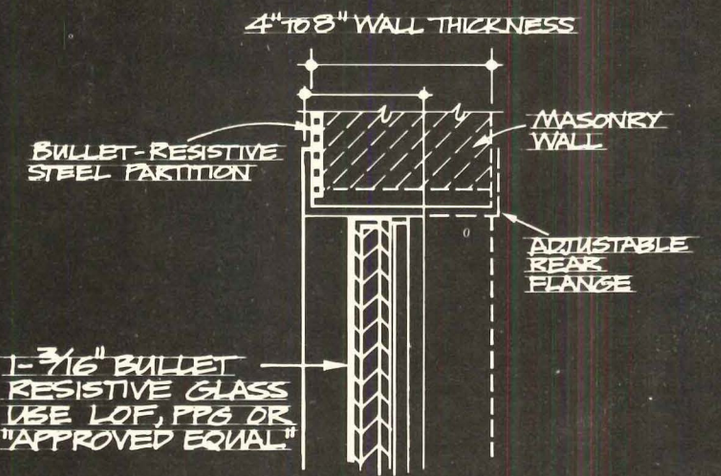

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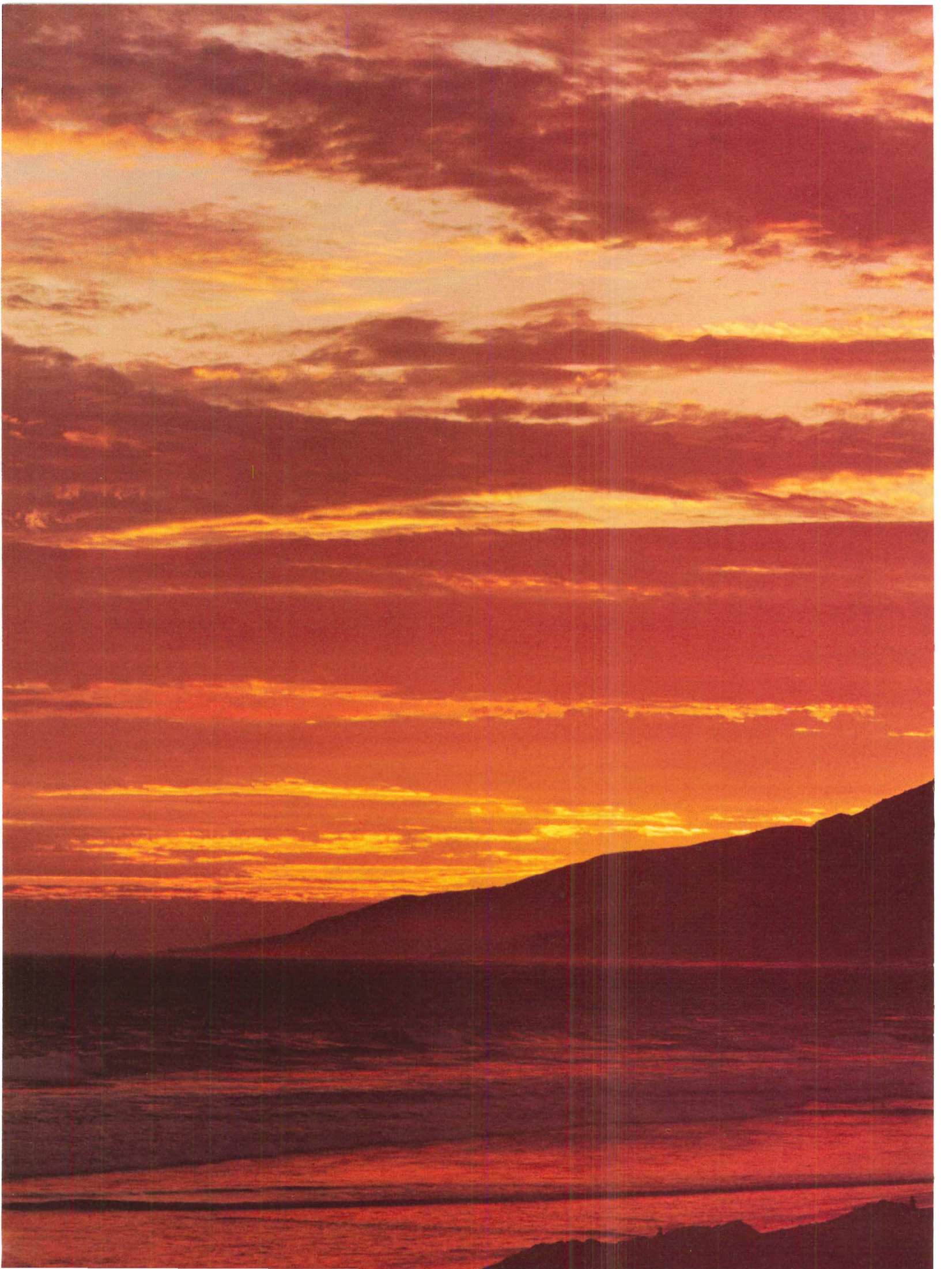

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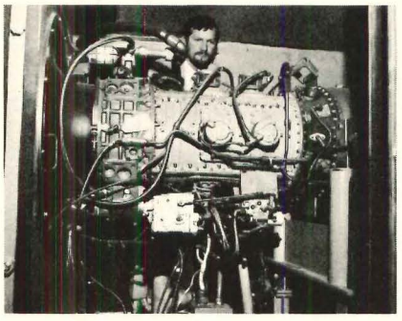

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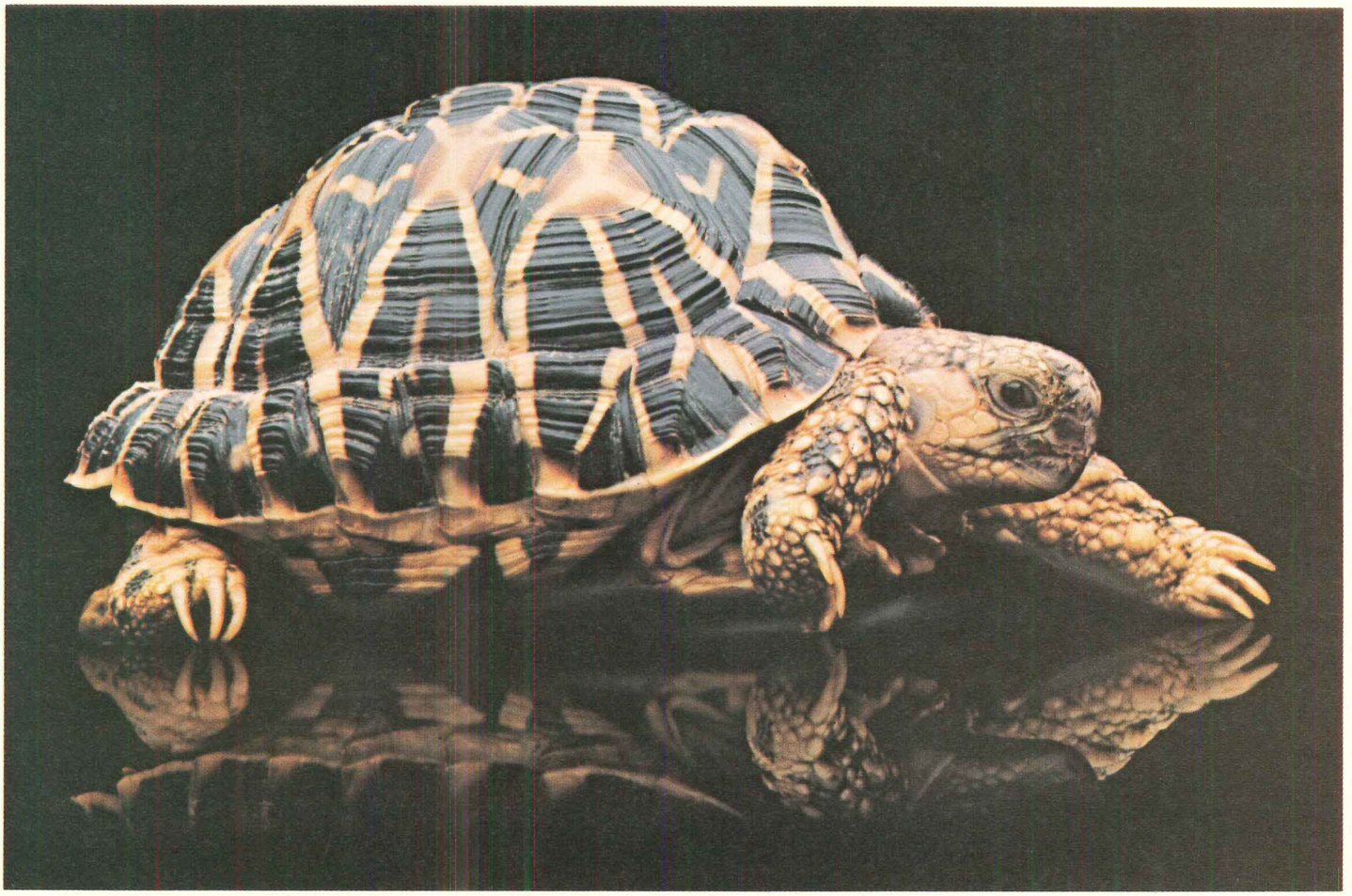

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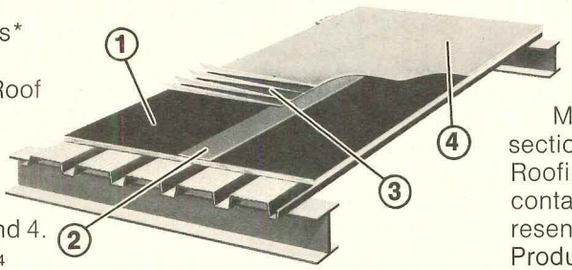

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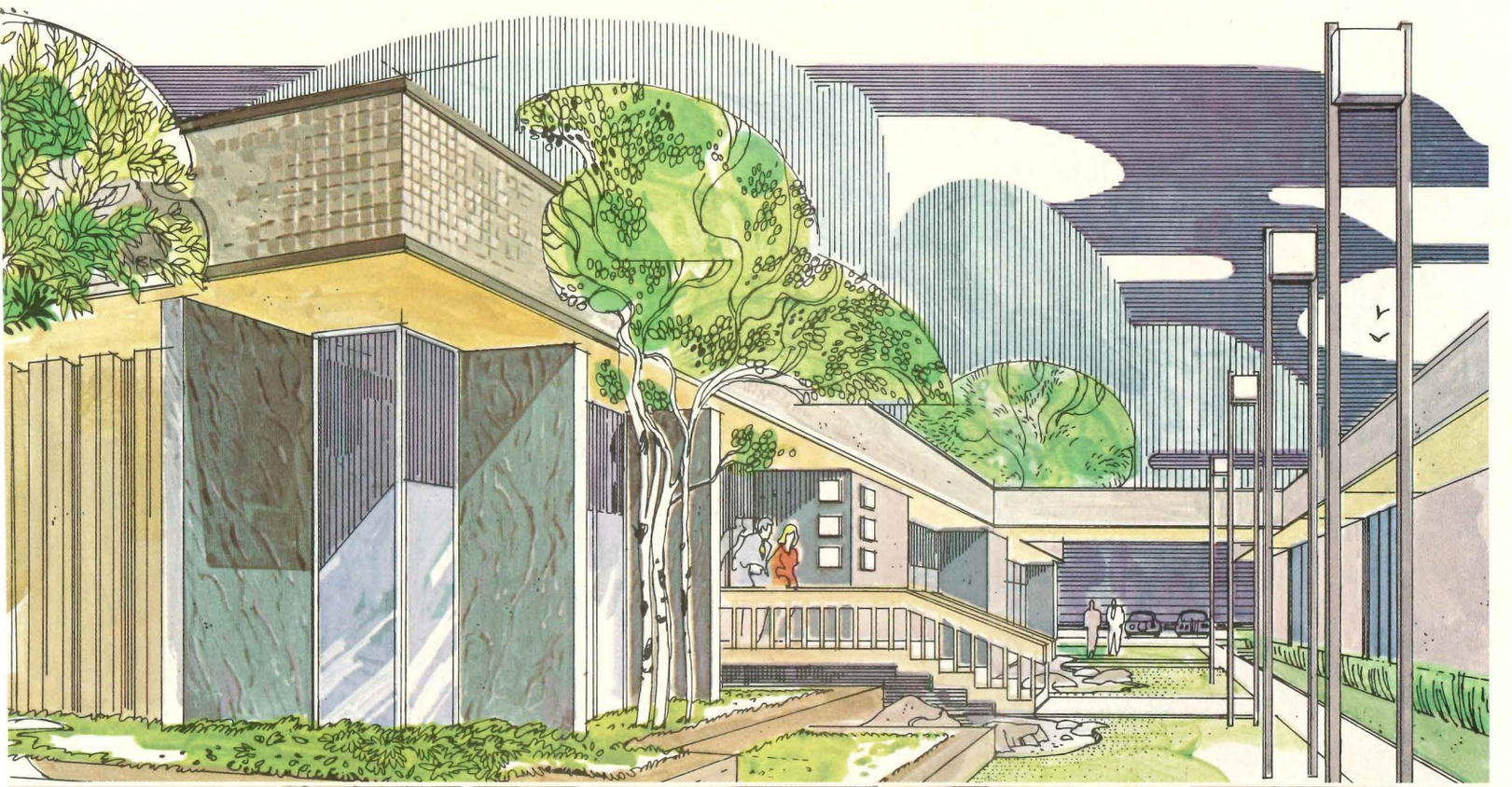

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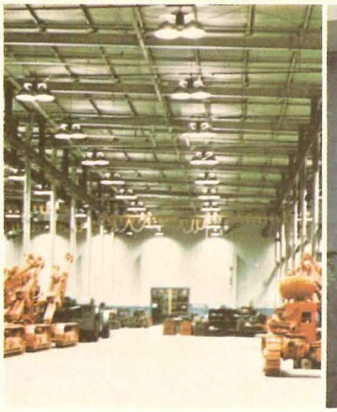

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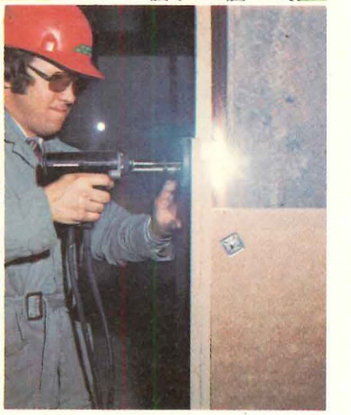

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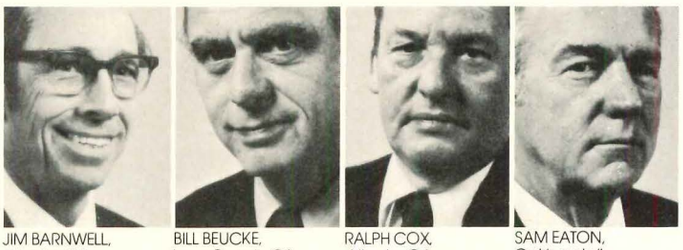

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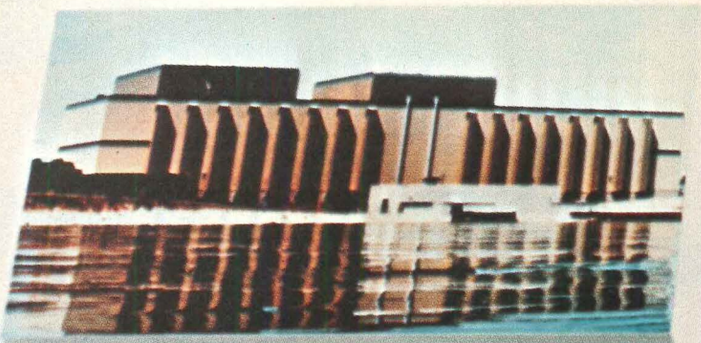

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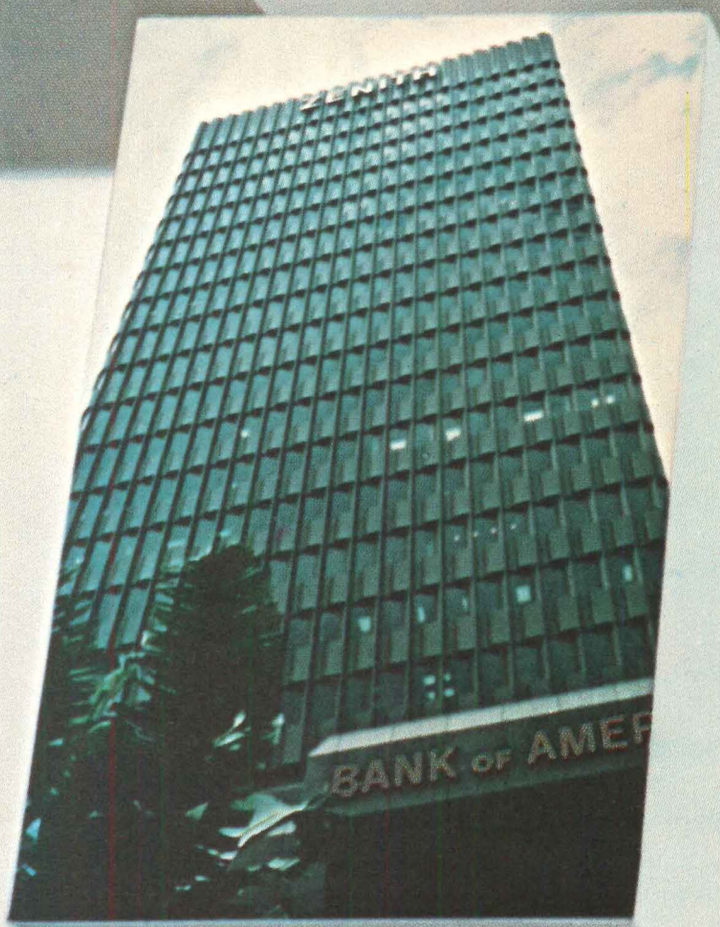

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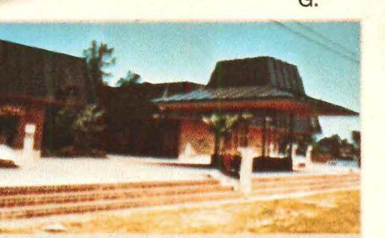

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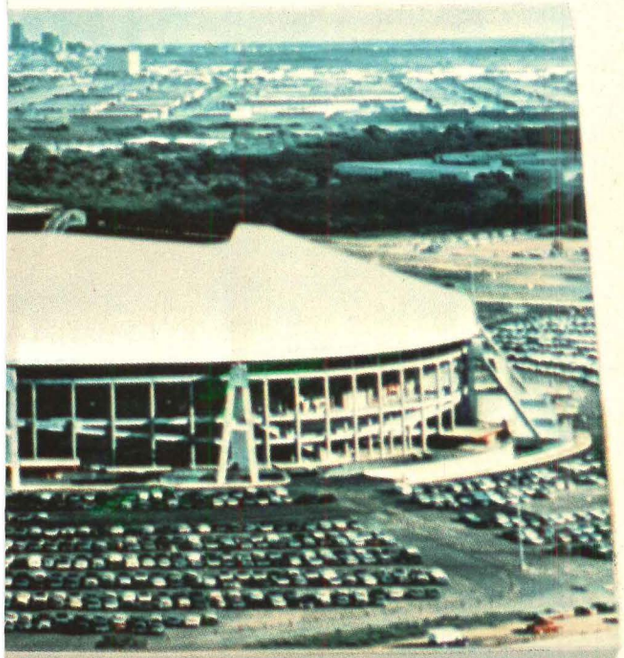

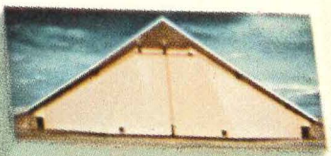

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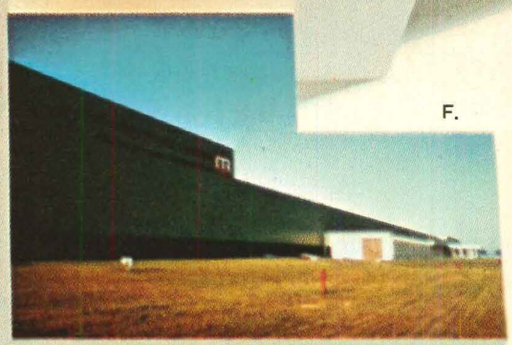

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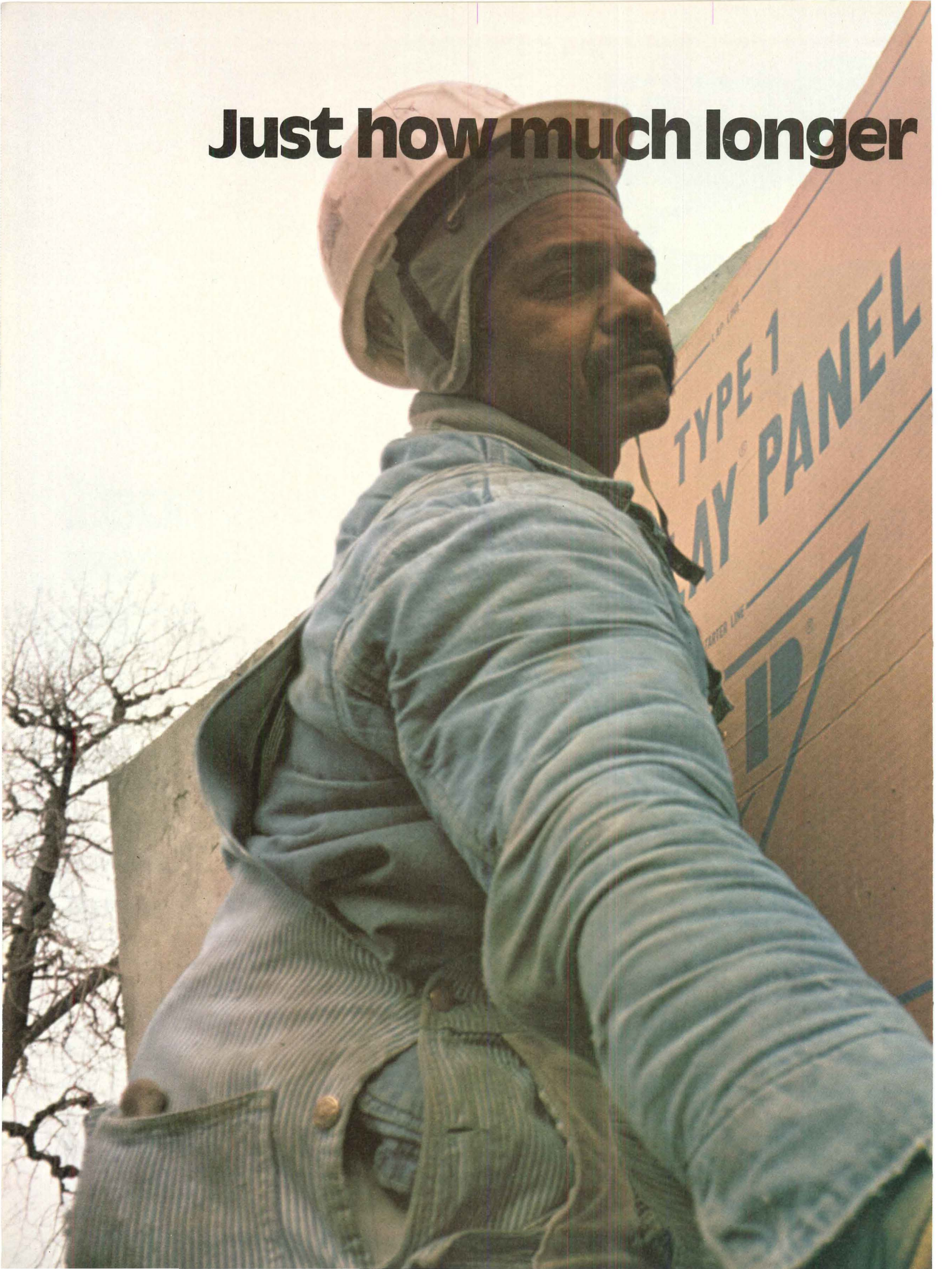

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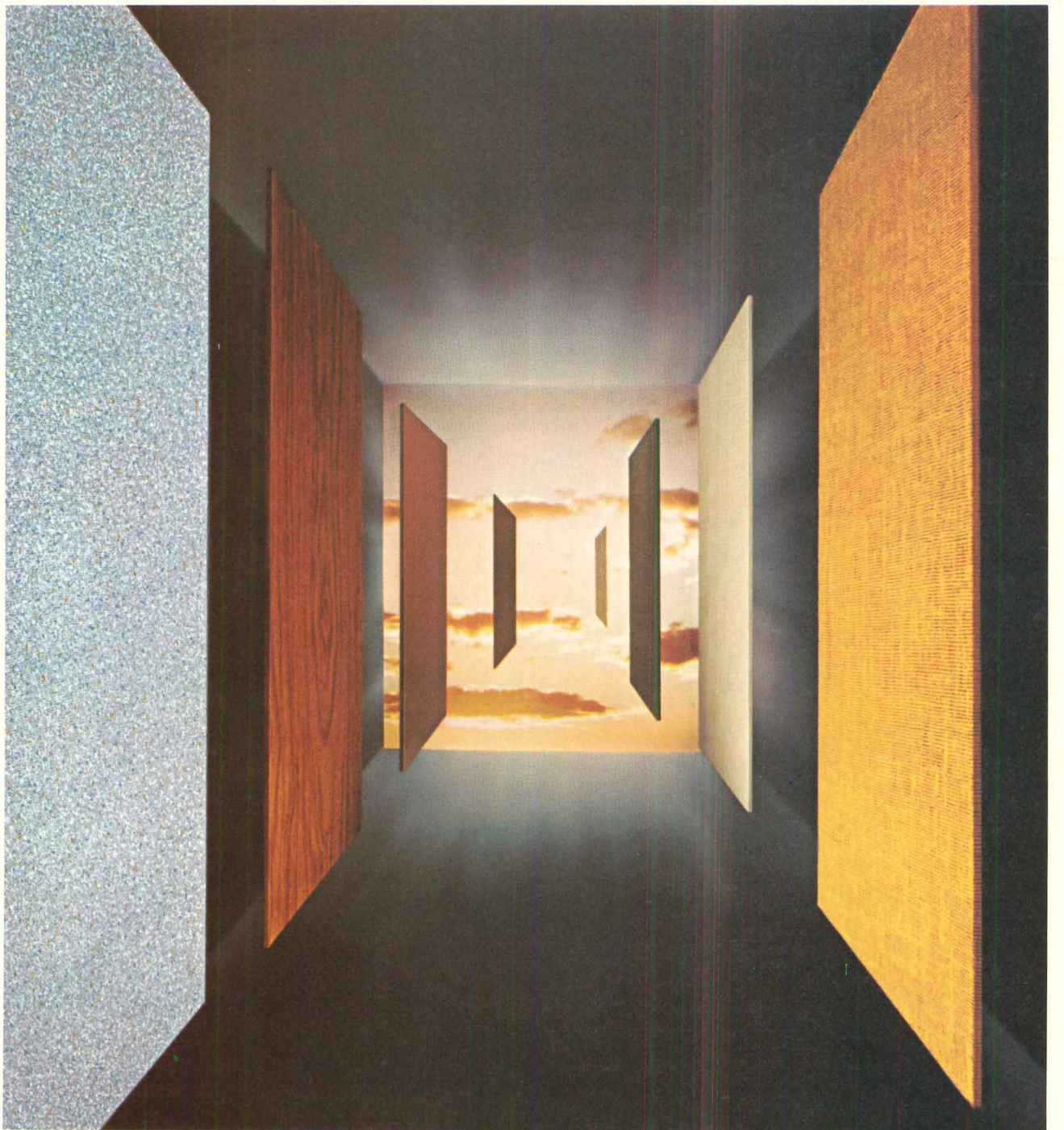

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The client-architect relationship in courthouse design

Complexity of architect-client relations in public work is compounded in—but not unique to—full-service commissions for courthouse design. The following observations and recommendations by Allan Greenberg, architectural consultant to the Judicial Department of the State of Connecticut, are extracted from his forthcoming book, Courthouse Design: A Handbook for Judges and Court Administrators, *commissioned by the American Bar Association Commission on Standards of Judicial Administration and copyrighted by the author. Planning guidelines from this book are outlined in the feature on courthouses beginning page 109.*

A recent visit to new courthouses in various parts of the country indicates that users' dissatisfaction with new court facilities was generally directed at the architect, even though the contractor or public works department may have been at fault. Further, there were similar frustrations on the part of some of the architects. They complained of uncooperative judiciary and public works departments, and lack of information and guidelines on which to base a design. This suggests that there may be a basic flaw in the architect-client relationship during the crucial programming and planning phases of courthouse projects.

Since this relationship is a function of the architect-client contract document, it would be well to examine the AIA standard form of architect-client contract, and raise two fundamental questions. First: "What is the proper relationship between client and architect?" Second: "Who is the real client?"

The first question relates to the definition of the respective responsibilities of the architect and client. The AIA contract states that, "The Architect prepares, for *approval by the Owner,* the schematic design studies consisting of drawings and other documents illustrating the scale and relationship of project components to *meet the Owner's requirements.*" The preamble notes that the architect "develops his best solution from the *Owner's criteria,*" and that the *Owner "must clearly describe his requirements* . . . and give prompt and thorough attention to all sketches, drawings, and documents submitted to him by his Architect."

The architect, furthermore, is "*entitled to rely on the accuracy and completeness of the services, information, surveys, reports, etc., furnished by the Owner, and cannot be held responsible for the errors contained therein.*" This depicts the traditional client-architect relationship in which the architect simply designs to a program issued by the client.

For today's complexities traditional roles need help

Inherent difficulties were succinctly formulated by Lord Richard Llewelyn Davies in the *RIBA Journal,* January 1961:

"Modern society is too complex for the architect to have an automatic understanding of what is wanted in a building; the client does not (always) know this either. . . . For many modern buildings there is no single client. Many people are concerned with the functioning of a hospital or a college (or a courthouse). Each may understand the workings of some part of it, but no one understands it completely as a whole. Again, the long life of buildings when compared with the rate of change of human organization, means that people often adjust their pattern of life or work to fit an old building. If they are asked to specify their needs for a new one they think in terms of an old and familiar environment, they cannot break out to see what they really want. Therefore, the client's brief is nearly always wrong, and a bad brief inevitably results in disastrous architecture."

This approach generally inhibits the range of alternatives considered and results in a new facility in which the general arrangement approximates the old structure. Other problems arise from the fact that most clients are unable to fully grasp the three dimensional implications of architectural drawings, and consequently it is difficult for them to review plans and request changes or adjustments. Further, the architect frequently lacks the requisite judicial experience to detect errors and shortcomings in the program.

A full-service alternative to the classic relationship

An alternative architect-client relationship is available for court systems that are not prepared to accept the responsibility of developing a building program or to review and approve plans. The architect can be retained to research, document, analyze, and synthesize the administrative and operational organization of the court, and to develop the program for the new courthouse. This is specifically provided for in the AIA Owner-Architect contract agreement as "Additional Services." This role for the architect has been defined by Michael Wong in *Space Management and the Courts: A Summary,* published by the U.S. Department of Justice, as a "comprehensive and systematic approach for deriving feasible solutions to administrative, operational, personnel, and spatial problems" to provide "alternative solutions, accounting for current and anticipated developments of a legislative, political, economic, and social nature." The architect now functions as both a programmer and a tutor, for the problem is no longer simply to design a building, but involves reexamination of the structure of the justice system.

This architect-client relationship raises extremely serious problems. First, many if not most architects lack experience in the field of operations research per se, and have even less knowledge of the complexity of the court's operations and the problems facing it. Second, it is unlikely that the judges and staff would accept this situation of delegated authority, whatever the architect's qualifications might be. Further, the tutorial proposition assumes that the courts have a completely fluid structure that is readily open to change, and that the pressures of day-to-day operations and bureaucratic inertia can be ignored. Third, in order for the architect to succeed in this role, it is essential that there be a substantial body of research that can be used to evaluate the advantages or shortcomings of any proposal. This does not yet exist, unfortunately, in the field of courthouse design. From the clients' point of view, projects in which the architect programs and reorganizes the facility, therefore, tend to be utopian, difficult to translate into reality, and arbitrary in their internal arrangement.

A joint programming effort should be developed

It is obvious that both the traditional architect-client relationship and the architect's forced role as judiciary systems consultant have serious drawbacks. Both client and architect have important knowledge and experience to contribute to the project, and a compromise in which the responsibility for developing the program is shared, offers advantages.

The notion of client-architect collaboration, while essential, is not in itself a sufficient answer. Guidelines to determine the respective input of client and architect to their joint task of preparing a program and set of plans for a building project must be established. A strategy to assign this responsibility is suggested in *A Managers' Guide to Operations Research,* by Russell L. Ackoff and Patrick Rivette (John Wiley and Sons, 1967). Basically,

when operations research specialists work on an executive problem, the knowledge of its content, provided primarily by management and operating personnel, is supplemented by study of the operations themselves. The researchers can then abstract the form of the problem and describe it in a mathematical model, upon which appropriate mathematical techniques can be brought to bear for a solution. It is in the formalization of implementation procedures that the solution is given meaning. Hence managers, operating personnel, and researchers must work together in joint venture if meaningful solutions to real problems are to be obtained.

This suggests four distinct operations—description, observation, abstraction, and implementation—that are relevant to the analagous architect-court task of programming and planning a building.

Description involves collecting information about the administration, operation, and organization of the court and is clearly a client input. It must include all current or long-range plans to improve the administration of justice.

Observation is the study of the Court's operation. It is the architect's task and it implies a responsibility to refer back to the client for more data wherever the description is inadequate or does not correspond to observation.

Abstraction is the process of synthesizing the information derived from the two previous phases into a set of principles on which to base the design of the new courthouse. This is primarily the architect's function but it is essential that the conclusions be jointly reviewed with the client.

Implementation involves the development of schematic design proposals which are then tested against data derived from description, observation, and abstraction until a satisfactory set of plans is developed. This again is primarily the architect's task, but the client has a crucial role to play in evaluating the various solutions and suggesting improvements.

Proposed changes in the architect-client contract

It is obvious that the relevant clauses of the standard architect-client contract discussed earlier can be more specific in the courthouse-programming situation. In particular, the sentence: "The Architect prepares, for approval by the Owner, the schematic design studies consisting of drawings and other documents illustrating the scale and relationship of project components to meet the Owner's requirements," must be broadened to encompass the more complex requirements of a *collaborative architect-client relationship.* The following is a suggested alternative in four clauses to replace this sentence:

1. The client will provide the architect with a comprehensive description of the organization and administration of the court and its related agencies, its projected growth, and any current and longer-range plans for administrative improvements or changes.
2. The architect, in conjunction with any consultants he deems necessary, will observe operation of the court and its related agencies, and request any additional information necessary for the development of a program.
3. The architect, and any consultants he deems necessary, will abstract the information collected under clauses 1) and 2) into a program. This will outline a set of parameters on which to base the design of the proposed building, a schedule of room sizes and a description of departmental and interdepartmental relationships. This will be accompanied by a written justification supporting the various conclusions. This document will be reviewed by the client and adjusted until it is acceptable to both parties, who will signify their approval in writing.
4. The architect will then implement this program by developing sets of schematic plans for review by the client. Both parties will again signify approval of the chosen solution.

If this collaborative architect-client relationship is to succeed, the client must voice all doubts, review all documents, and study alternate systems of spatial arrangement submitted until an optimum plan is developed. The architect must elicit information from the client until all aspects of the program are specified in sufficient detail, and suggest and explore new avenues of approach in courthouse design. Perspective drawings, scale models, and mock-ups must be used to help illustrate the concepts, ideas and layouts to the judges and court personnel, who may have difficulty reading architectural drawings. The success of the project will be a direct function of the zeal and cooperation of client and architect.

If courts are not prepared who then is the client?

Having established that the success of a courthouse design is largely dependent on close collaboration between the judiciary and the architect, the second question, *"Who in fact is the client?"* can be addressed. It has been assumed up to now that the occupant of the building, the judiciary, is the client, and in an ideal situation this would certainly be the case. However, in the case of public buildings a third party is involved. In most cities, counties, and states, the courthouse and all other public buildings, are assigned by statute to the custody of the commissioner of public works, who is responsible for all routine maintenance and new construction. Therefore, if the legislative body appropriates funds for the design and construction of a new or renovated courthouse, it is the public works commissioner who enters into contracts with the architect and builder. The right to review and approve plans, to negotiate with the architect, and to control the release of funds thus lies in the public works department, and not with the judiciary. The latter is then left without any *contractual basis* for collaboration with the architect on the design of its own courthouse.

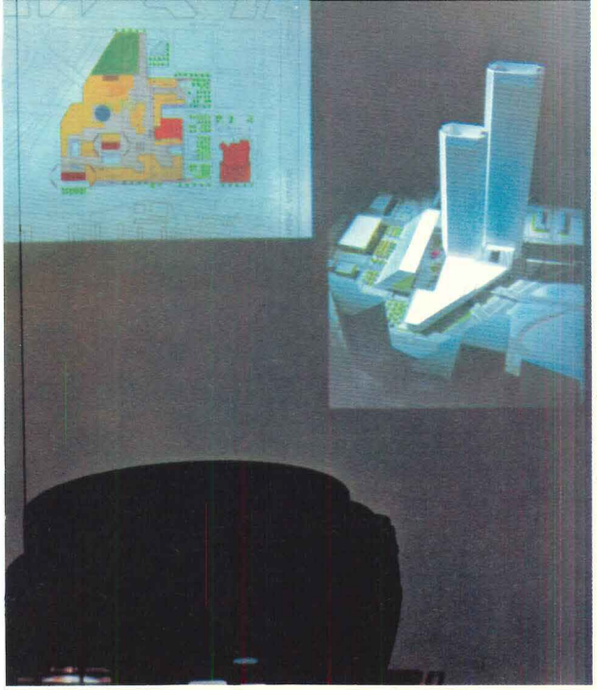
The weak negotiating position of the user traps the architect, judiciary, and public works department into an extremely difficult and cumbersome working relationship. Consultation with the judges and court personnel by the architect and public works department is apt to be perfunctory. The public works department usually has little knowledge of or interest in the court's operation, and presses for a simple and economical building that can be constructed with a minimum of delay. The combination of the pressures that result from the public works department's discretionary control over the payment of architects' fees, and the important role of political considerations in the selection of architects, tends to create a situation in which the architect may have little or no incentive to seek out the user's complaints or suggestions. Except when the architect is unusually dedicated, there is likely to be little input from the court system where it is not a party to the contract. In this respect the judiciary, being a separate branch of government, is worse off than agencies in the executive branch, of which the public works department is also a part.

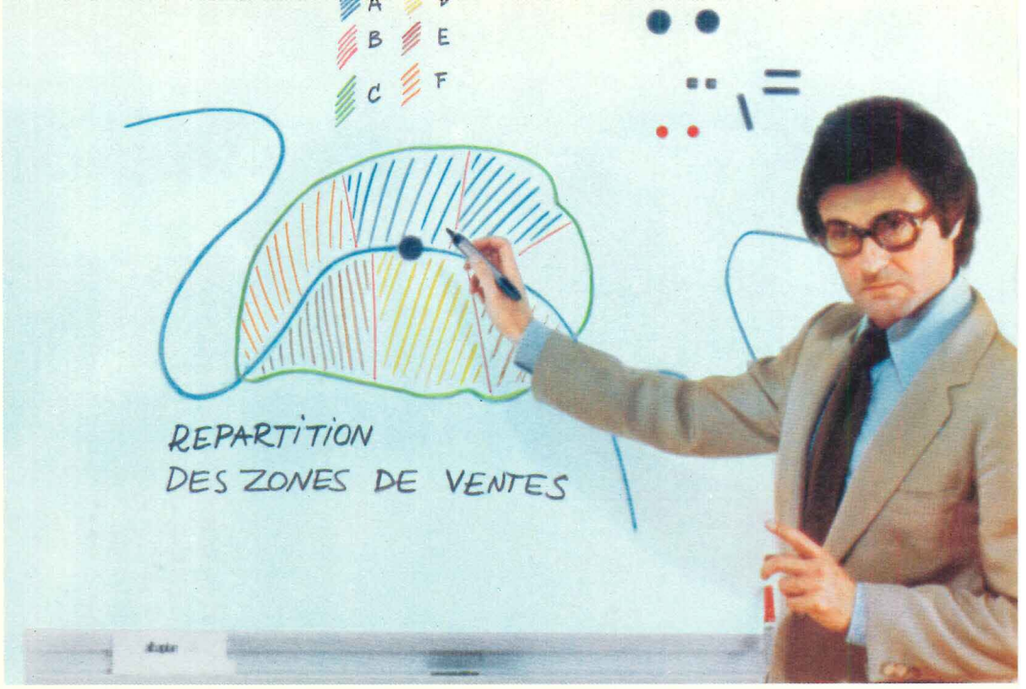
Three-way communication is essential to the process

There is an obvious need to formalize channels of communication among the architect, judicial system, and public works department. When the court is at odds with the public works department over some aspect of the design of the new building, the architect can be rendered inoperative by conflicting sets of instructions. In such case, the judiciary must realize that the problem does not lie with the architect, and must develop an appropriate strategy vis-a-vis the public works department. If it is the architect who is unresponsive or uncooperative, the complaint should be directed to the public works department as the "client," who can then issue the appropriate instructions to the architect. Courts, too, sometimes fail to recognize their obligation to cooperate fully. Situations of this sort require considerable tact and diplomacy on the part of all participants in the process.

It is imperative that the judiciary be involved in the project from the earliest legislative maneuvers. A mere consulting role usually means that the judiciary participates too little and too late. If possible, a clause stating that the plans must meet with the approval of the chief justice or chief court administrator should be inserted into the bonding bill or enabling act. If this is not possible, wording that stresses the importance of consulting the judiciary may be used, i.e., ". . . plans to be developed by the architect in consultation with the court. . . ." The ideal situation, of course, is one in which the legislature assigns the funds directly to the judiciary. The building project can then be administered by the public works department, but all expenditures and plans will require the approval of the chief judge or chief court administrator.

It is now evident that the answers to our two initial questions (What is the proper client-architect relationship? Who is the real client?) raise difficult problems. Close collaboration between the architect and judiciary is imperative to ensure the development of a functional and appropriate new courthouse. Yet, the judiciary is generally not a party to the contract between the public works department and the architect, and consequently has no standing in the matter. The resolution of this problem will require patience, tenacity, a readiness to cooperate, and a full understanding of all the factors involved. The responsibility to press for a solution must rest with the judiciary. That is the party with the most at stake.





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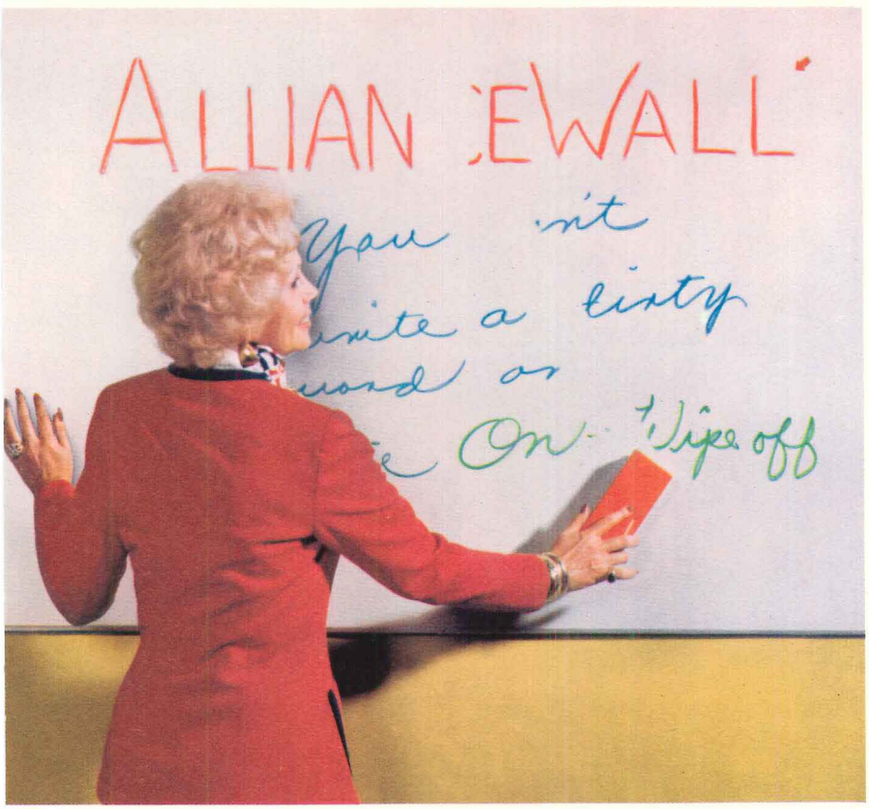

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New GSA system for construction management

The General Services Administration's Public Buildings Service has conducted many seminars and much research in developing the ideas of construction management across a broad front of policy and technique. The current phase of thinking and organization is set forth in a new edition of a 60-page manual, "The GSA system for construction management" dated April 1975.

One change from prior attitudes seems to be an implicit shift from what some have alleged to be a commitment to former general contractors in the role of construction manager. A statement, perhaps ominously made under the subheading "Problem areas," says "interested A-E's should have a capability to direct, coordinate and expedite day to day field operations of many separate contractors if they seek GSA construction management contracts." Another warning in this same section is that "buying-in, at or below cost, by firms or joint ventures that want to get a foothold in the expanding field of construction management is detrimental to overall services." Another: "meaningful involvement of CM's in design development has been difficult to achieve. For many CM's this is a new responsibility for which they must develop the experience and expertise." And, again germane to the design phase: "Conceptual estimating where design approaches are comparatively explored and evaluated is an area in which CM's should develop more expertise."

The general introduction regards the working relationship among owner, architect-engineer, and contractor as a "new team approach" that now makes possible the early formulation of critical project decisions on a more coordinated and objective basis while drawing on the "uninhibited experience and knowledge of the architect-engineer and the construction manager, both of whom are pledged to the owner's best interests. The old antagonisms are laid to rest and a new cooperative spirit emerges."

Despite the implication that the CM contract may now be open to qualified A-E firms, there is no history nor statement of policy regarding the possibility of a single A-E firm, however qualified, to act as both A-E and CM on a single project. The book envisions "a triumvirate of owner, architect-engineer and construction manager as a team with no prime participant, only indispensable members working side by side." The architect-engineer is in his normal design role, but "with estimates and advices of the construction manager" is required by his contract to design so that the project bidding is within the established cost limitation. In addition, the A-E firm in this system "must package the output of working drawings and specifications to fit the most advantageous packaging and grouping of separate construction contracts selected, while working within a strict schedule discipline." The thrust of the GSA policy is to encourage, if not enforce, the multiple contract, phased construction approach to project delivery.

Qualifications and procedures for selection of construction managers

One of the requirements of the GSA construction management contract is the mandatory use of the PBS computerized system called "Construction Management Control System" now expanded for use with the IBM 360 Computer System. The program tapes and a user manual are available from PBS at cost ($39.00). So far, there have been no rulings as to whether this provision is in restraint of trade. More detail of CMCS is given, next page.

There has been some modification in the GSA methods of qualifying and selecting construction managers. In general, the selection is based upon a two-step process: first, an invitation to submit qualifications of the firm through response to a detailed questionnaire (seven pages in the April GSA publication) and then a second invitation to submit a management plan with price of services. These submissions are processed and reviewed by an in-house GSA *ad hoc* committee, and the relative weights of a candidate firm's organization, management plan and price are scored in a formal way so that the price itself is not necessarily the prevailing factor in awarding a commission. It turns out that the weight of the price constitutes about 30 per cent of the score in a given proposal.

Following is a detailed outline of the selection procedure as presented in the April publication:

Project notice. When a project has been selected for construction management in conjunction with phased construction, generally those over $5 million in estimated construction cost, a CM project notice containing prequalification criteria is publicized nationwide through the Commerce Business Daily.

Request for qualifications submission. Under a two-step procurement procedure (1. qualifications, then 2. price with management plan) responding firms or joint ventures are furnished a Request for Qualifications Submission with the construction management contract and questionnnaire.

Evaluation of qualifications. The qualifications submissions received are reviewed by an *ad hoc* CM Evaluation Committee of at least three professional employees of PBS, considering independent inquiries of references furnished and other sources. The committee then competitively evaluates and scores each submission.

Request for priced proposals. The offeror with the highest evaluated score for qualifications, together with all other offerors within a competitive range (normally no fewer than 5 of the top-rated firms) are invited to submit priced proposals, management plans, and resumes of key personnel.

The offerors are also given an opportunity to attend a PBS group orientation session on the contract requirements, prior to preparation of their priced proposals.

Discussions with offerors. Following the opening of proposals and review thereof by the CM Evaluation Committee, discussions will be held with each offeror concerning its management plan. Offerors will be given an opportunity to identify areas requiring clarification, explanation, elaboration or other modification of their respective proposals. Each offeror firm will be required to have its proposed construction executive, construction superintendent, and CMCS (construction management control system) supervisor in attendance and participating in the discussions.

Besides showing comprehensively how the offeror proposes to accomplish the project, the management plan contains a listing of deliverables, which make up the lump sum contract price, and apportions the deliverable dollar amounts at their various input points on an activity network diagram with milestones. The master schedule of the CMCS, when implemented soon after the CM contract award, will incorporate the deliverables (a list of 20 management activities, see illustration) and other pertinent activities of the management plan. A monthly invoice printout of the payment due the CM based on apportionment of the deliverable costs contained in the priced proposal will then be produced.

Modification of priced proposals. Offerors who elect to modify their proposals as a result of the discussions, can submit a written modification before a closing date established by the chairman of the CM Evaluation Committee.

Evaluation of management plans is then conducted by the by the CM Evaluation Committee and scores determined.

Evaluation of price. The lump sum contract amount scores are then mathematically derived for each offeror.

Evaluation factors. Each of the three factors (1. qualifications, 2. management plan, and 3. price) will have maximum scoring weight approximately the same with slightly greater emphasis on the management plan.

Recommendation. All pertinent data and the recommendation of the CM Evaluation Committee are transmitted to the GSA central office for final ap-

proval of the highest qualified construction management firm or joint venture.

Award. After review of the recommendation, the Commissioner, PBS, authorizes award of the CM contract to the offeror having the highest total evaluated score.

Type of firm. GSA is looking for experienced firms or joint ventures currently engaged in the construction business, who are abreast of the latest developments in this fast-moving field and can furnish the broad array of quality services needed. Organization size is not determinant; small, medium, or large firms being acceptable. In short—it is not who will perform the work, but what quality services, personnel, and organization can be provided.

Notes on key clauses in the GSA contract

An index of clauses in the GSA contract for construction management is shown at right.

Those clauses in the contract that may stir some curiosity if not dismay on the part of architects and engineers have to do with the elements common to design and construction. Clause 5, for example, deals with the management plan for design and construction and stipulates that the CM shall develop a plan (including the schedule) for all three phases: design, overlap (a period beginning with the letting of the first bid in phased construction) and construction of the project. The management plan for the design phase is to be submitted within 30 days after award of the CM contract. Those elements of the management plan that apply to design schedule will have to be reconciled with the A-E firm involved.

Clause 6, on design development and review, enjoins the CM to familiarize himself thoroughly with evolving architectural and engineering plans and specifications and "make recommendations with respect to the site, foundations, selection of systems and materials and cost-reducing alternatives." It is not implied that these recommendations usurp design perogatives or preempt the specifying role of architects and engineers. On the other hand, the clause contains the enjoinder that: "He (the CM) shall submit to the Government such comments as may be appropriate concerning construction feasibility and practicality. He shall call to the Government's attention any apparent defects in the design."

The CM is also supposed to review each bid package as the A-E completes it and promptly submit to the Contract Officer a written report "covering action taken by the A-E with respect to suggestions or recommendations previously submitted. . . ." It is not hard to envision friction points in some of these provisions.

On balance, one can hope for the lubrication of good will and an instinct for survival at these friction points. Some perspective may be gained from a comment under the heading "trends to the future" stating: "GSA is convinced that communication, cooperation, research, feedback, flexibility and receptivity on an industry-wide basis must be the watchwords if the construction industry is to have a productive future in a world faced with continuing energy and material scarcities. The construction industry's key role in our national life makes these watch-words IMPERATIVE."—*W.F.*

A mandatory computerized Construction Management Control System

The PBS-CMCS, made up of sophisticated modules for 1) schedule, and progress control, 2) project cost control, and 3) project financial control, brings together, and presents in timely, organized formats the many different items of information which are needed to effectively manage a project. The reports are structured horizontally by the three information types and vertically by management level on a need to know basis that is oriented toward the user. Such a system can provide:

- Information when it is needed through the use of automated data processing techniques;
- Formats which are flexible enough to reflect the unique management requirements of a particular project;
- Formats so that the data developed in one part of the system (i.e. cost summaries) reflect the most recent data developed in other parts of the system (i.e. recent schedule changes for their impact on cost escalation, change orders, etc.);
- Arrow diagram networks identifying and controlling all activities from the start of design to the completion of construction;
- Detailed printouts covering every aspect of the design-construct process;
- Schedules expediting purchase orders, shop drawings, and samples;
- Cost data organized by building systems for use as meaningful design parameters;
- Cost data organized by trades to conform with construction bid and change order reviews;
- Financial reports to control fund availability, requirements and commitments, and payments.

LUMP SUM CONTRACT PRICE BREAKDOWN

Deliverables	Design (D) Phase	D & C Overlap Phase	Construct (C) Phase	Total
1. General Management	$	$	$	$
2. CMCS Narrative Reports				
3. CMCS Schedule Control				
4. CMCS Cost Control				
5. CMCS Financial Control				
6. Design Development/Review				
7. Long Lead Procurement				
8. Separate Contracts Planning				
9. Interfacing				
10. Construction Development/Review				
11. Final Plans/Specifications Review				
12. Market Analysis/Stimulation				
13. Solicitation of Bids				
14. Managing/Inspecting Construction				
15. General Conditions Management				
16. Safety Program				
17. Labor Relations				
18. Construction Changes				
19. Construction Claims				
20. Value Management				
TOTALS	$	$	$	$

Note: The D & C Overlap phase starts with award of the first separate construction contract and ends with award of the last separate construction contract.

Response to a request for priced proposal will include a management plan consisting of a narrative of strategy, a network diagram of activities by month and phase, and a lump sum contract price breakdown on the above form showing the apportionment of fee to each of twenty management activities and for each of three project phases: design, overlap and construction.

Basic operating requirements for the construction manager

The lump sum contract is negotiated as a contract for construction management services pursuant to Sections 302 (c) (10) and 307 of the Federal Property and Administrative Services Act of 1949, as amended. A lump sum price, ranging normally from 2 to 4 per cent of the estimated construction cost, is agreed upon as total compensation for the contract services. Reimbursement for the actual costs of certain designated services and general condition items is also provided. An effort is made to award the CM contract prior to the A-E contract. Following is an index of clauses in the CM contract:

1. Project
2. Definitions
3. General
4. Construction management control system
5. Management plan for design and construction
6. Design development and review
7. Long lead procurement
8. Separate contracts planning
9. Interfacing
10. Job-site facilities
11. Weather protection
12. Solicitation of bids
13. Market analysis and stimulation of bidder interest
14. Managing and inspecting construction
15. Monitoring submittals
16. Subcontractor or material vendor recommendations
17. Comprehensive safety program
18. Labor relations
19. Construction contract changes
20. Value management
21. Claims
22. Meetings and conferences
23. Home office support for job-site staff
24. Reimbursable services
25. General condition items
26. Reimbursable costs
27. Lump sum contract price
28. Payment
29. Staff (nonreimbursable)
30. Subcontracting
31. Federal, State and local taxes
32. Time for completion
33. Suspension of work
34. Changes
35. Pricing of adjustments
36. Disputes
37. Payment of interest on CM's claims
38. Termination
39. Partial termination for untimely performance
40. Covenant against contingent fees
41. Officials not to benefit
42. Convict labor
43. Prohibition against bidding
44. Utilization of small business concerns
45. Equal opportunity
46. Certification of nonsegregated facilities
47. Utilization of minority business enterprises
48. Minority enterprises subcontracting program
49. Listing of employment openings
50. Employment of the handicapped
51. Liability for damage
52. Accident prevention for general conditions work
53. Performance and payment bonds
54. Labor standards
55 Davis-Bacon wage rate decision
56. Home-town or imposed plan—minority hiring
57. Buy American
58. Examination of records
59. Cost accounting standards
60. Energy conservation and environmental protection.

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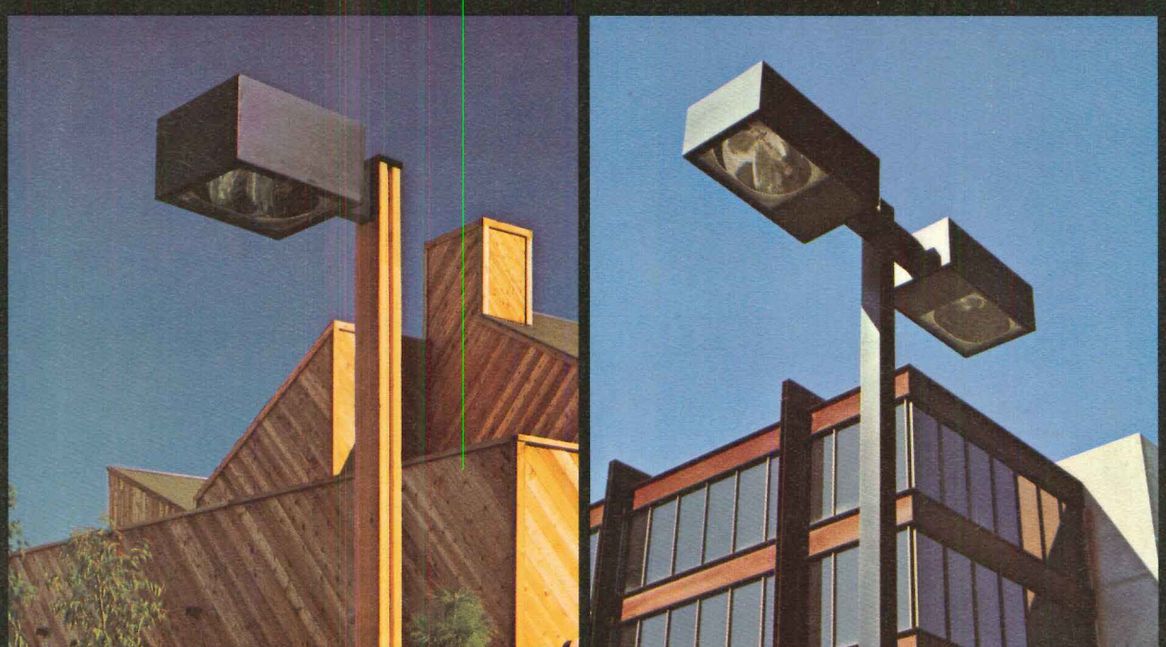

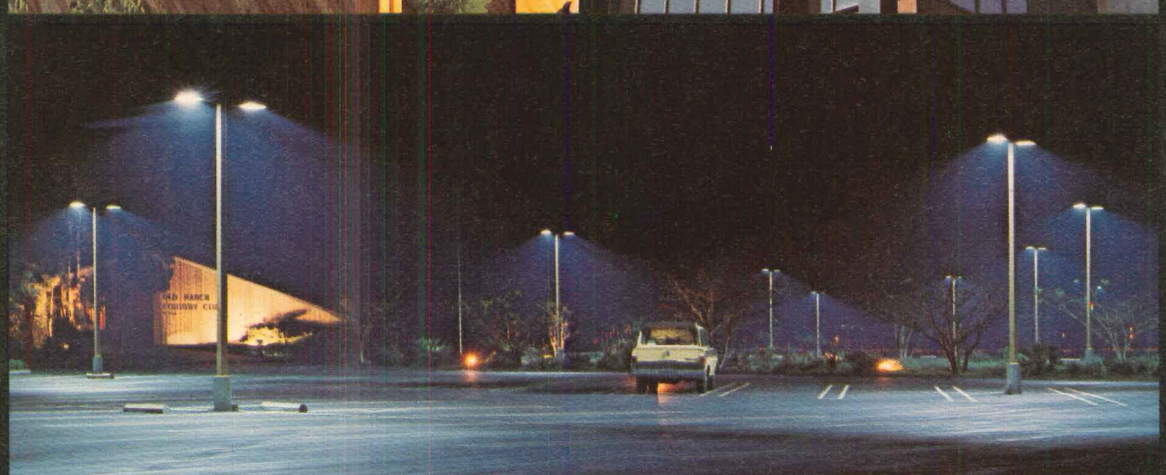

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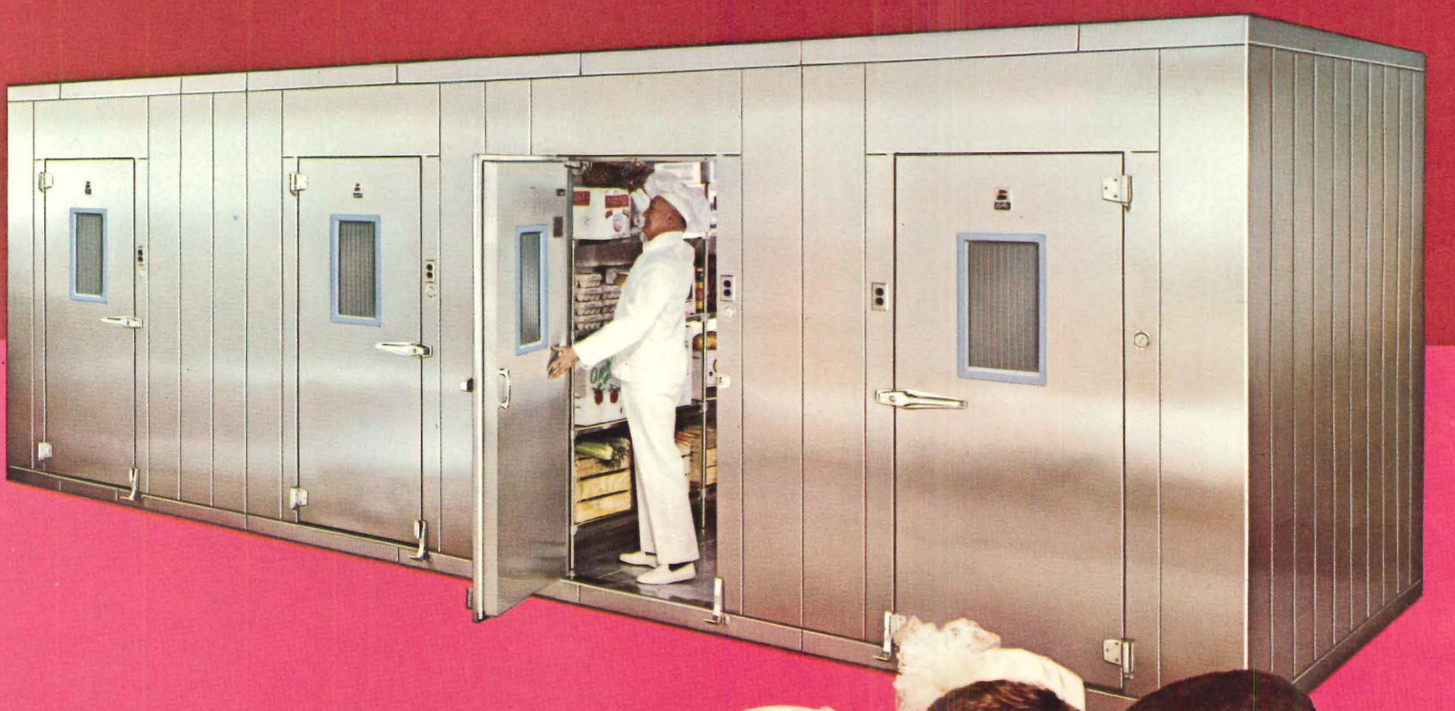

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Conceptual estimating, a technique using the systems approach

A building systems analysis can be used as a basic tool in estimating, value engineering and construction management during conceptual stages and through the design process. Given a written set of criteria, location and time schedule, the cost engineer can develop a reasonably early estimate using the systems approach. This has practical advantages over the traditional square-foot approach and the method of analysis by building trade, which are inadequate during times of economic uncertainty, especially for future costs.

A systems approach has been developed which identifies where costs are in a building and provides a basis for comparing these costs with known factors as the design develops. A breakdown of structural, architectural, mechanical, electrical and other categories into systems such as foundations, super-structure, exterior walls, piping, etc. (about 18 systems in all) can be further divided into logical component subsystems. A suitable computerized background of historical values, area ratios, configuration factors and quality standards provides a basis for accurate detailed analysis as the design proceeds. One such body of data and method exists in the combined resources of consultants Wood & Tower and the Dodge Building Cost Services of McGraw-Hill Information Systems Company and is condensed in a publication "Construction Systems Costs," which is updated annually.

Oliver D. Filley, executive vice-president
Wood & Tower, Inc.

INDEXES: June 1975 1941=100.00 (except as noted)

Metropolitan area	Cost differential	Current Indexes non-res.	residential	masonry	steel	% change last 12 months
U.S. Average	8.5	493.1	462.9	484.5	472.4	+ 7.79
Atlanta	7.5	592.4	558.5	580.9	569.3	+ 5.14
Baltimore	8.5	549.4	516.5	538.6	523.4	+ 4.33
Birmingham	7.3	445.7	414.6	432.6	430.5	+ 8.14
Boston	9.0	491.9	464.8	489.3	473.9	+ 6.35
Buffalo	9.1	541.9	508.9	533.0	518.2	+ 6.99
Chicago	8.3	548.3	521.3	528.1	521.0	+ 4.85
Cincinnati	8.8	526.2	495.2	512.6	499.6	+ 6.96
Cleveland	9.0	525.3	494.4	515.6	501.9	+ 5.35
Columbus, Ohio	8.2	507.9	476.9	500.7	486.7	+ 6.64
Dallas	7.9	494.2	478.6	485.1	476.7	+ 7.60
Denver	8.4	537.8	505.9	530.4	517.1	+11.38
Detroit	9.8	562.1	535.4	571.8	548.2	+ 6.70
Houston	7.4	453.9	426.2	442.2	434.0	+ 8.75
Indianapolis	7.8	444.6	417.5	435.1	424.7	+ 8.04
Kansas City	8.7	488.8	461.9	479.9	471.5	+10.39
Los Angeles	8.5	560.3	512.2	543.3	531.4	+ 6.28
Louisville	7.6	480.1	450.8	467.6	459.3	+ 4.85
Memphis	8.4	508.2	477.2	488.5	480.0	+ 9.58
Miami	7.9	507.0	483.0	492.5	481.6	+ 6.80
Milwaukee	8.7	564.4	530.0	556.2	541.4	+10.49
Minneapolis	8.9	521.1	490.2	513.7	501.8	+ 9.39
Newark	9.0	487.9	458.2	484.0	471.2	+11.99
New Orleans	7.5	471.0	444.7	465.5	453.8	+ 5.92
New York	10.0	537.7	499.9	526.6	514.5	+ 5.33
Philadelphia	9.1	538.9	513.4	535.9	521.4	+ 7.20
Phoenix (1947 = 100)	8.2	291.3	273.6	283.1	276.8	+10.04
Pittsburgh	8.9	481.9	453.4	478.1	462.6	+ 7.08
St. Louis	8.7	505.4	477.1	501.0	489.6	+ 8.44
San Antonio (1960 = 100)	7.6	188.1	176.6	185.1	180.2	+ 7.60
San Diego (1960 = 100)	8.7	209.2	196.5	205.3	199.9	+ 8.24
San Francisco	9.6	733.5	670.5	724.8	703.6	+10.63
Seattle	8.6	486.3	435.2	480.8	462.0	+ 7.90
Washington, D.C.	8.4	487.8	458.1	479.0	466.1	+11.55

Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York

Tables compiled by Dodge Building Cost Services, McGraw-Hill Information Systems Company

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL NON-RESIDENTIAL BUILDING TYPES, 21 CITIES 1941 average for each city = 100.00

Metropolitan area	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974 (Quarterly) 1st	2nd	3rd	4th	1975 (Quarterly) 1st	2nd	3rd	4th
Atlanta	321.5	329.8	335.7	353.1	384.0	422.4	459.2	497.7	544.8	555.2	556.7	573.5	575.0	583.8			
Baltimore	285.7	280.9	295.8	308.7	322.8	348.8	381.7	420.4	475.5	516.3	517.8	532.8	534.3	538.7			
Birmingham	265.9	270.7	274.7	284.3	303.4	309.3	331.6	358.3	402.1	405.5	407.0	419.7	421.2	438.6			
Boston	257.8	262.0	265.7	277.1	295.0	328.6	362.0	394.4	437.8	455.1	456.6	461.0	462.5	484.1			
Chicago	311.7	320.4	328.4	339.5	356.1	386.1	418.8	444.3	508.6	514.2	515.7	528.1	529.6	539.2			
Cincinnati	274.0	278.3	288.2	302.6	325.8	348.5	386.1	410.7	462.4	484.5	486.0	498.6	500.1	518.0			
Cleveland	292.3	300.7	303.7	331.5	358.3	380.1	415.6	429.3	462.2	490.3	491.8	508,0	509.5	516.6			
Dallas	260.8	266.9	270.4	281.7	308.6	327.1	357.9	386.6	436.4	453.7	455.2	476.4	477.9	488.3			
Denver	294.0	297.5	305.1	312.5	339.0	368.1	392.9	415.4	461.0	476.1	477.6	508.5	510.0	530.4			
Detroit	284.7	296.9	301.2	316.4	352.9	377.4	409.7	433.1	501.0	519.5	521.0	537.2	538.7	554.4			
Kansas City	256.4	261.0	264.3	278.0	295.5	315.3	344.7	367.0	405.8	435.6	437.1	443.4	444.9	481.1			
Los Angeles	297.1	302.7	310.1	320.1	344.1	361.9	400.9	424.5	504.2	514.3	515.8	531.3	531.8	546.7			
Miami	277.5	284.0	286.1	305.3	392.3	353.2	384.7	406.4	447.2	467.6	469.1	484.6	485.5	499.5			
Minneapolis	285.0	289.4	300.2	309.4	331.2	361.1	417.1	412.9	456.1	469.7	471.2	487.1	488.6	513.9			
New Orleans	256.3	259.8	267.6	274.2	297.5	318.9	341.8	369.7	420.5	437.5	439.0	440.6	442.1	463.5			
New York	297.1	304.0	313.6	321.4	344.5	366.0	395.6	423.1	485.3	497.4	498.9	513.8	515.3	524.1			
Philadelphia	280.8	286.6	293.7	301.7	321.0	346.5	374.9	419.5	485.1	495.7	497.2	517.0	518.5	531.5			
Pittsburgh	267.0	271.1	275.0	293.8	311.0	327.2	362.1	380.3	424.4	443.7	445.2	464.1	465.6	475.2			
St. Louis	280.9	288.3	293.2	304.4	324.7	344.4	375.5	402.5	444.2	458.7	460.2	475.2	476.7	497.5			
San Francisco	368.6	386.0	390.8	402.9	441.1	465.1	512.3	561.0	632.3	647.1	648.6	671.0	672.5	716.0			
Seattle	268.9	275.0	283.5	292.2	317.8	341.8	358.4	371.5	424.4	437.8	439.3	448.7	450.2	472.5			

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.

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Why are nonresidential buildings getting smaller?

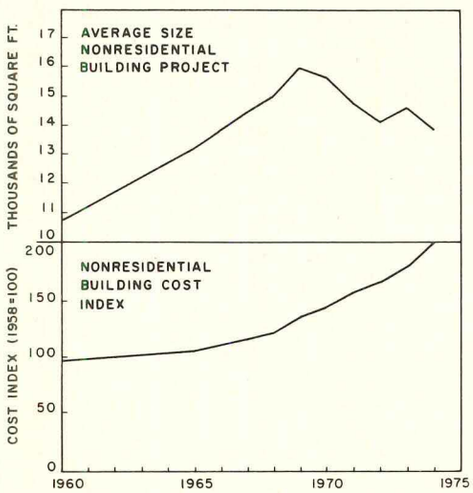
Average sizes of nonresidential buildings in square feet of floor area tend to diminish as cost indexes rise. To architects and engineers, this implies stronger cost control.

Consider this: If current trends continue shortly into the next century, the average size nonresidential building will be less than ten square feet in floor area! Impossible? Of course. But it does dramatize the fact that new nonresidential buildings have been steadily getting smaller since 1969. A new project in that year averaged about 16,000 square feet of floor space. By 1974 this figure had dropped below 14,000 square feet. Clearly, this is a trend that deserves closer examination.

As the accompanying chart indicates, throughout the 1960's the average-size nonresidential building gradually grew from under 11,000 square feet in 1960 to its peak in 1969. Since that year the floor space in the average nonresidential building has shrunk more than 13 per cent. And some of the drops have been far greater. For instance, since 1969 office buildings have dropped nearly 35 per cent in average floor space, university and college buildings more than 40 per cent, and high schools nearly 30 per cent. Stores and shopping centers slipped more than 25 per cent since 1970, their peak year. If you add in elementary schools, hospitals and health treatment centers, government administration buildings and houses of worship, the average floor space of these selected building types taken together has decreased more than 20 per cent from 1969 to 1974. What's more, by themselves they accounted for the entire drop in nonresidential building size, since the remaining types (industrial buildings, warehouses, and recreational buildings) have barely changed size since 1969.

When looking for the causes of the diminishing size of nonresidential buildings, the first that comes to mind is the economic slump we're experiencing. One would expect economic recessions to reduce the number of projects begun and the data bear this out. The number of starts of our selected building types (commercial, educational and institutional) rose during the '60s, fell during the 1970 recession, climbed again until the 1974 economic decline halted the upward movement. But this simply does not explain why nonresidential building and, more importantly, why our selected types have shown such substantial declines in average size.

So we must look elsewhere for our reasons. An examination of the statistics yields three forces that go a long way in explaining why floor space in nonresidential buildings has been shrinking: First, the changing mix of nonresidential building types has resulted in a shift to buildings that inherently are smaller. Second, within some building types, there have been changes in geographical location or patterns of demand that have resulted in smaller structures. Finally,—and most important—the rapid rise in construction costs has resulted in more economizing on the part of those who erect generally smaller buildings.



Data: McGraw-Hill Information Systems Company and U.S. Department of Commerce.

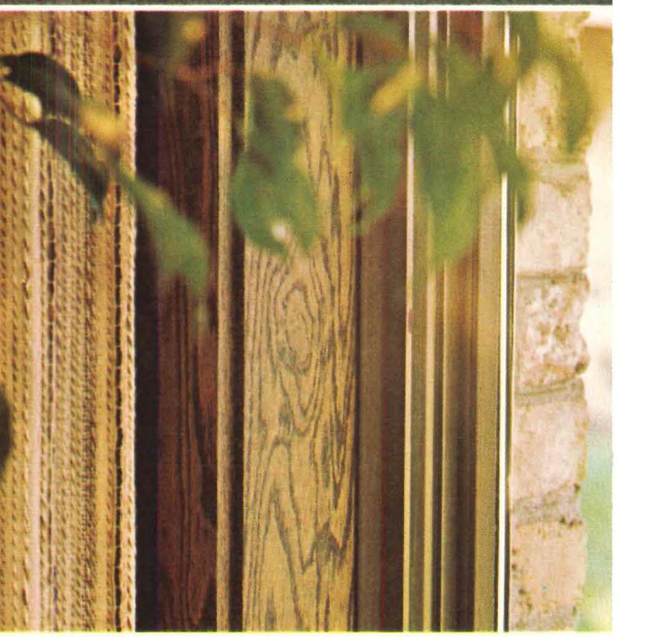
Among the variety of building types that make up the architectural market, the larger ones are represented by high schools, universities, and colleges, while the smaller ones include stores and local government administration buildings. From 1969 to 1974 the number of high school, university and college projects as a proportion of total nonresidential projects has declined slightly, while stores and government administration buildings have accounted for an increasing share of nonresidential projects. In the case of government buildings, the rise was sharp—over 50 per cent. It seems reasonable to conclude that this shifting mix of nonresidential types partially explains the drop in floor space.

When we examine individual building types more closely, some interesting trends show up. Office buildings are a case in point. Average floor space in this type grew throughout most of the 1960's, reaching a peak of more than 18,000 square feet in 1969. Many of the office buildings erected in the latter half of the decade were particularly large—the World Trade Center in New York City and the Sears Tower in Chicago are obvious examples. In fact, a lot of this construction activity was centered in urban areas where land is at a premium and buildings grow quite tall—increasing the floor space of the average project. But the 1970's brought a shift in location of office buildings. Proportionately fewer are being built in cities while more are showing up in suburban and exurban areas where smaller size buildings are in demand.

Shopping centers show a similar change. Among our selected commercial, institutional and educational building types, shopping centers are by far the largest in floor space. The average size shopping center grew more than 80 per cent during the '60s, reaching a high in 1970 of more than 90,000 square feet. Since then there has been a shift in the demand pattern for shopping centers from the large, regional kind to the smaller, neighborhood type. The impact of this shift on average floor space has been dramatic: almost a 30 per cent drop in square feet. It's fairly safe to conclude that these changing patterns of demand and location also help to explain the decline of average floor space.

Finally, and probably most important, rapidly rising building costs have led to much economizing. During the eight-year period from 1960 to 1968, nonresidential building costs rose less than 25 per cent, about three per cent per year. But from 1968 to 1974, only six years, this index soared nearly 65 per cent to roughly nine per cent annually. (See accompanying chart). The results of this inflation in construction costs should not come as a surprise. The law of supply and demand, so familiar to beginning economics students, would have predicted exactly what did in fact happen. Faced with rising prices people cut back on the amount demanded. In construction the number of projects hasn't declined but the "amount" demanded for each project—average floor space—has.

Will these trends be arrested soon? The answer to this question depends heavily on economic conditions. The first order of business is to break out of the current recession so that the cyclical decline in the *number* of nonresidential buildings being commissioned is reversed. But once building picks up again, it's equally important that construction costs be held to more moderate increases. That's what is going to halt the declining trend toward smaller average *size*. —*Henry C. F. Arnold*



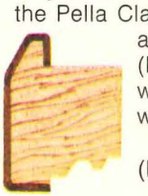
Outside, a low maintenance, acrylic coated aluminum exterior in one of 11 colors available.

In a Pella Clad Wood Window, all exterior wood surfaces are covered with an acrylic coated aluminum skin. An outside finish that is known for its durable, low maintenance qualities. Equally important, however, is the fact that our clad exterior lets you select colors, shapes and sizes that complement your plans. Naturally. Pella Clad Wood Windows. Available in three standard (a) and eight special colors. On our Casement, Awning, Double Hung, Fixed and Trapezoidal Windows.

(a)

Inside, the natural warmth and beauty you expect to find in a quality wood window.

While we recognize the need for a low maintenance exterior, we are also well aware of the natural warmth and beauty that a wood window contributes to a building's interior. So we were very careful to preserve these two qualities when we designed the Pella Clad Wood Window. For example, the exterior aluminum skin never penetrates the frame or sash (b). Leaving the natural insulating value of the wood intact. And the natural beauty of the interior wood surfaces completely undisturbed.



(b)

At Fingerhut's new headquarters, this Pella Clad window system blends in beautifully, inside and out.

Architect: Ackerberg and Associates Inc. Architects Builder: Nystrom Constructors Inc. Windows: Pella Clad Casement and Fixed Units

Afterward, the convenience of maintaining a center-opening Pella Clad Casement Window.

Routine maintenance is a factor to be considered. Because, in a lot of ways, it has a lot to do with your clients' ongoing satisfaction with their new structure. Our clad casement windows have a unique hinging system which allows the sash to rotate a full 90°, to the center of the frame (c). So the outside glass can be easily reached, and washed, from inside the building. And this same kind of built-in satisfaction is also found in our Awning, Double Hung and Horizontal Pivot Windows.

(c)

Pella Clad Sliding Glass Doors are as solid, as beautiful and as maintenance-free as a Pella Window.

Pella Clad Sliding Glass Doors combine the natural beauty and insulating value of wood with an exceptionally solid framing system. Welded steel T-sections (d) frame the glass in the slender wood panels. This prevents warping and keeps the panels aligned for smooth, easy operation. Pella Clad Sliding Glass Doors let you extend the view, without having to sacrifice inside appearance or comfort. They are weathertight, even under severe weather conditions. Available in all 11 colors.

(d)

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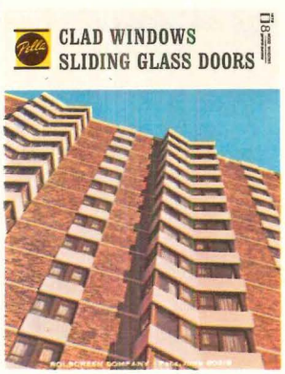
IR 50TH YEAR

For more detailed information, send for your free copy of our 24-page, full-color brochure on Pella Clad Windows & Sliding Glass Doors. See us in Sweet's Architectural File. Call Sweet's BUY-LINE number or look in the Yellow Pages, under "windows", for the phone number of your Pella Distributor.



Please send me your 24-page brochure on Pella Clad Windows & Sliding Glass Doors. I am specifically interested in: ☐ Double-Hung Windows, ☐ Casement Windows, ☐ Awning Windows, ☐ Sliding Glass Doors, ☐ Wood Folding Doors.

Name_____

Firm_____

Address_____

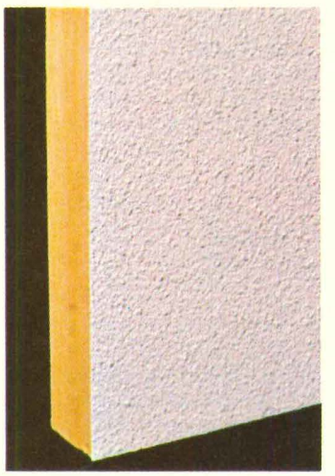
City_____ State_____ ZIP_____

Telephone_____

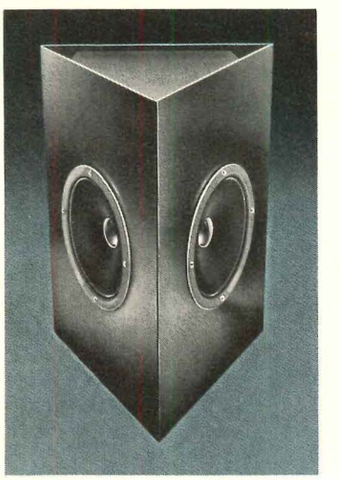
Mail to: Pella Windows & Doors, Dept. T31F5, 100 Main St., Pella, Iowa 50219.
Also Available Throughout Canada This coupon answered within 24 hours.

For more data, circle 46 on inquiry card

This beach has the 3 essentials Owens-Corning has the system



1. An acoustically non-reflective ceiling is a *must*—to keep sound from bouncing to other areas. An independent acoustical testing laboratory examined eight ceilings, including expensive coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board (left) in any standard exposed grid suspension system is *best* for achieving speech privacy at economical installed cost.



*Reg. T.M. O.-C.F.

for speech privacy in open offices. that puts it all indoors.

2. An unobjectionable background sound helps mask distracting speech. Special electronic speakers, installed in the plenum, make it possible to hear normal conversation clearly within defined areas, without being overheard in other areas.

3. A barrier or proper acoustical *screen* is needed to block direct transmission (and reduce reflectance) of speech into adjoining areas.

Owens-Corning has it all

Complete speech-privacy systems —including Fiberglas Nubby II Ceiling Board, masking speakers, and Fiberglas sound screens —are available from Owens-Corning.

For details, write: X. A. Meeks, Architectural Products Div., Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

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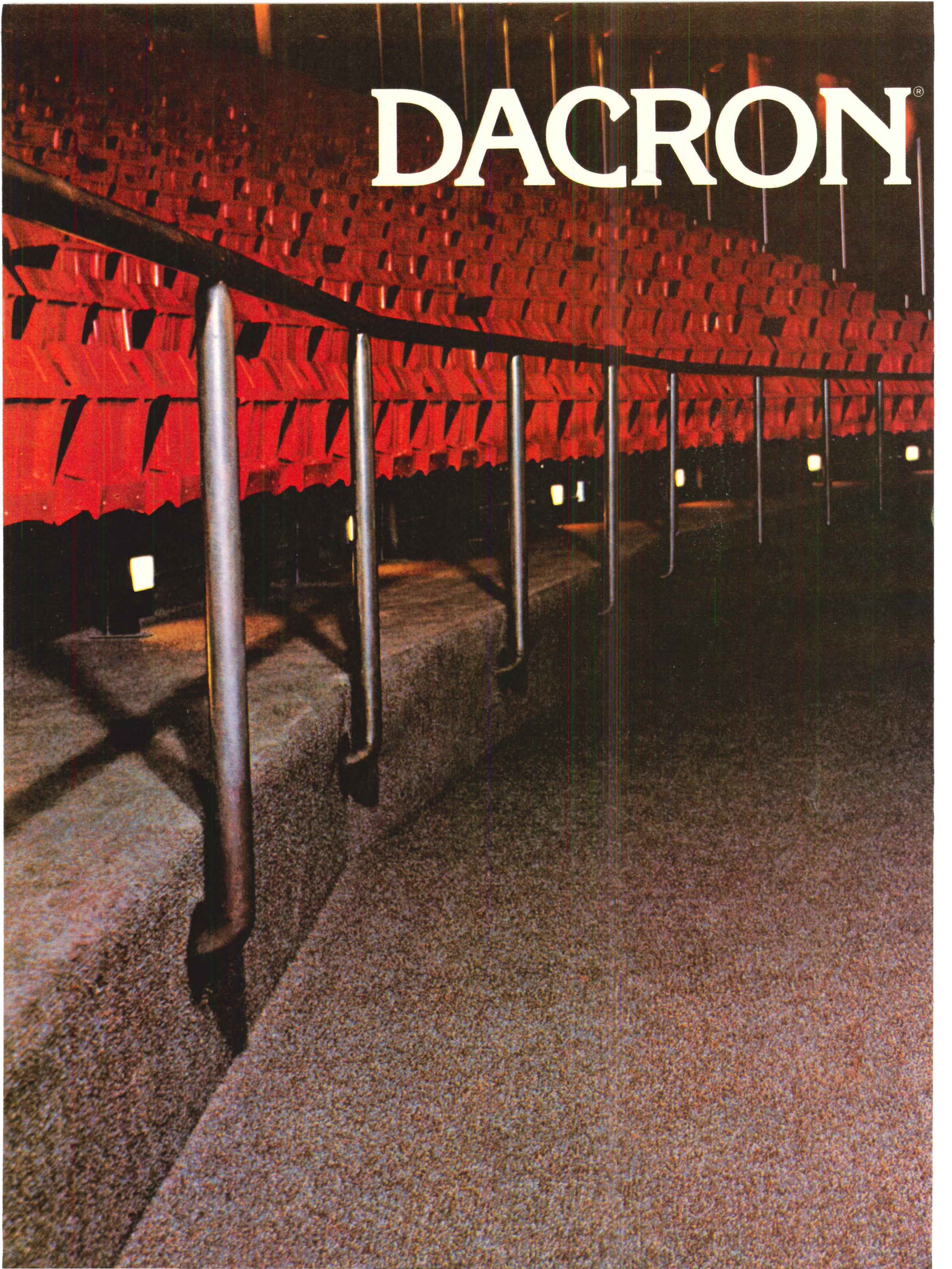
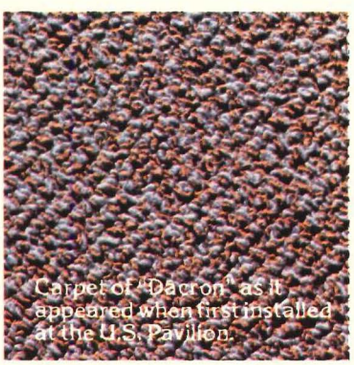
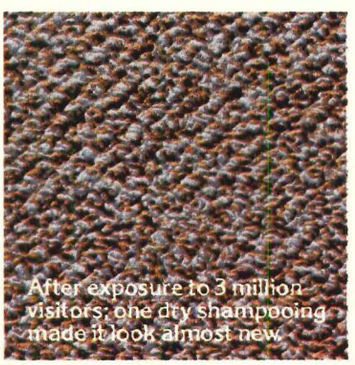

DACRON®

AND EXPO '74

This was a tough test for any carpet—particularly one with the look of wool.



Carpet of "Dacron" as it appeared when first installed at the U.S. Pavilion.



After exposure to 3 million visitors; one dry shampooing made it look almost new.

expo'74

This is the theatre in the U.S. Pavilion as it looked just before Spokane's Expo '74 closed.

The carpet here and in the adjoining exhibit areas had, by then, welcomed as many as 3+ million visitors. Yet it still looked almost new.

Its warm, spun-yarn look together with its ability to withstand tough abuse originally "sold" U.S. Department of Commerce officials on Dacron* polyester, recommended by Du Pont for commercial carpets.

From opening day on, performance of the carpet exceeded expectations. Maintenance was minimal: nightly vacuuming and occasional spot cleaning.

Until now, you have had to sacrifice durability in heavy traffic areas to get a look like this. But now you can specify a carpet with the look of wool; with durability comparable to nylon; soil hiding and cleanability meeting or exceeding the performance of all other "spun yarn" carpet fibers. And commercial carpet of "Dacron" is now available with built-in static control. Now there's a carpet that's got it all together.

You can specify carpet with pile of "Dacron." For full particulars, write Du Pont, Carpet Fibers Division, Rm. AR, Centre Road Building, Wilmington, DE 19898.

*Du Pont registered trademark for its polyester fiber.
Du Pont makes fibers, not carpets.

DU PONT
REG. U. S. PAT. OFF.

For more data, circle 48 on inquiry card

"A money-saving, space-saving DWV system." That's what Tyler RufWall™ delivered to the One U.N. Plaza Hotel.

United Nations Development Corporation, Owner

David Norkin, President of Norkin Plumbing Company, tells why RufWall was chosen for the 10-story, 350-unit hotel portion of Manhattan's newest combination 40-story office/hotel building.

"Rigid space requirements, narrow channels in the slab floors, and lack of storage space called for a compact DWV system. Tyler RufWall was the ideal solution.

"In addition to furnishing basic fittings for floor mounted back-outlet water closets, the RufWall units will pick up tubs which rough-in above the floor and still fit 2-inch pipe into 3-inch channel slots in the slab. And because the RufWall system uses less material than traditional XH class cast iron installation, costs were reduced. All in all, RufWall gave us just what we were looking for, a money-saving, space-saving DWV system."

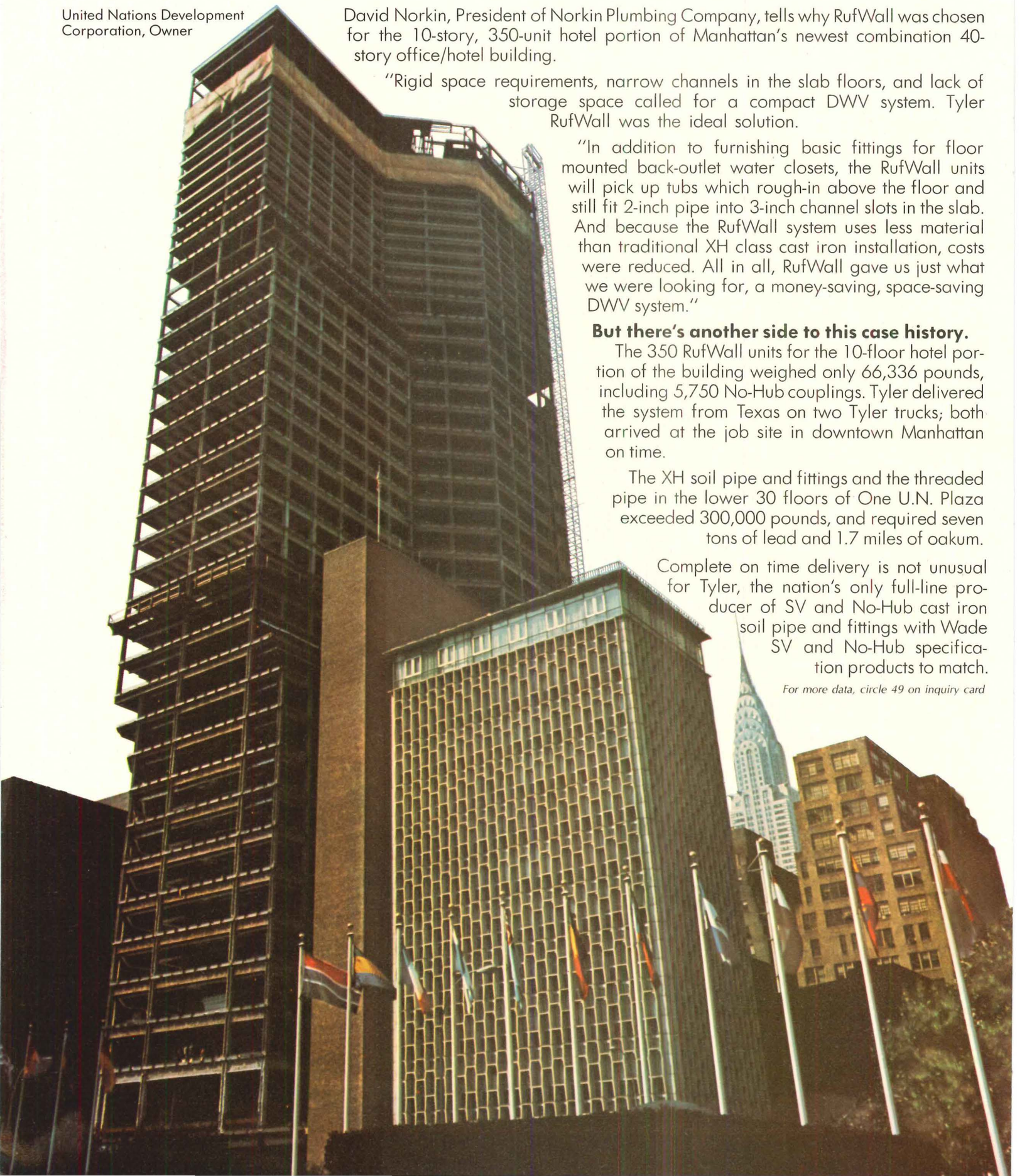
But there's another side to this case history.

The 350 RufWall units for the 10-floor hotel portion of the building weighed only 66,336 pounds, including 5,750 No-Hub couplings. Tyler delivered the system from Texas on two Tyler trucks; both arrived at the job site in downtown Manhattan on time.

The XH soil pipe and fittings and the threaded pipe in the lower 30 floors of One U.N. Plaza exceeded 300,000 pounds, and required seven tons of lead and 1.7 miles of oakum.

Complete on time delivery is not unusual for Tyler, the nation's only full-line producer of SV and No-Hub cast iron soil pipe and fittings with Wade SV and No-Hub specification products to match.

For more data, circle 49 on inquiry card



OFFICE NOTES

New offices, office changes

DAAS, Don Ayres Architectural Services has recently relocated from Topanga, Cal. to 19522 Independence, Huntington Beach, Cal.

The firm of **Architonics** has taken new quarters at 600 South Brown Street, Jackson, Mich.

Two Dallas, Tex. architectural firms—Harper & Kemp Architects and Iconoplex, Inc.—have merged to form **Harper, Kemp, Clutts and Parker,** 2020 Live Oak, Dallas.

The **Smith, Korach, Hayet, Haynie Partnership,** Miami, has opened an office at 931 McCallie Avenue, Chattanooga, Tenn.

Hellmuth, Obata, & Kassabaum has acquired Walker, Sander, Ford & Kerr of Princeton, New Jersey. The Princeton organization has become **Hellmuth, Obata & Kassabaum, P.A.,** 18 Nassau Street, Princeton, N.J.

The Hall and Goodhue Community Design Group has relocated to new offices at 100 Stevenson Street, San Franciso, Cal.

Rossetti Associates/Architects Planners are in their new headquarters building at 601 Washington Boulevard, Detroit, Mich.

Joel P. Blum, AIA, Charles E. Dyke, and Phillip G. Howard, PE, have formed **The Interdesign Group, Inc.,** with Jon D. Hollmann, AIA, AIP, named program and design director; P.O. Box 367, Indianapolis, Ind.

Marvin J. Cantor, AIA, has opened offices for the practice of architecture in Fairfax, Va. as **Marvin J. Cantor & Associates.**

Schaefer, Schirmer & Associates P.A., has announced the opening of their Albuquerque office, Suite F, 4010 Carlisle N.W., Albuquerque, N.M.

Gin Wong Associates has moved to larger offices at 1666 West Third Street, Los Angeles, Cal.

David W. Leonard AIA Architect has changed his firm name to **David Leonard Associates,** 309 Commerce Street, Kingsport, Tenn.

Gerard A. Van Leeuwen, former principal of Markham, Van Leeuwen & Associates, has established his new firm with offices at 2505 Congress Street, Suite "A," San Diego, Cal.

Architect **John M. Sampieri,** formerly with Danielian, Moon, Sampieri & Ilg, has opened his own office at 17905 Skypark Boulevard, Irvine, Cal.

The **Office of Eugene F. O'Connor, AIA, Architects,** has moved to larger quarters at 102 North Main Street, Hightstown, N.J.

The firm of Kidd and Wheeler, Architects has announced that G. Gray Plosser, AIA, has been made a partner and the name of the firm has been changed to **Kidd, Wheeler & Plosser** with offices at 2839 Culver Road, Birmingham, Ala.

Bretos and Napoli Associates, Ltd. has terminated their association. **Marcel G. Bretos** continues as architect/designer on an independent basis at his office at 140 East 28th Street, New York City.

M. Fred Taylor/AIA has relocated to new offices at 702 South Mendenhall Road, Memphis, Tenn.

Lloyd J. Lovegren & Associates is now **Lovegren-Loveland & Associates** with new offices at 1020 108th Avenue N.E., Bellevue, Wash.

The St. Louis architectural firm of Hoffmann/Saur and Associates has been dissolved. Two principals of the firm, Louis Saur, AIA, and William Obrock, have formed **Saur/Obrock Design Associates, Inc.,** located at 7777 Bonhomme, Suite 2020, St. Louis, Mo.

J. Gordon Turnbull has opened an office for the practice of architecture, planning and urban design at 2416 Webster Street, San Francisco, Cal.

W. A. DiGiacomo Associates Inc. has moved to new offices within the Atlantic Richfield Plaza to the Bank of America Tower at 555 South Flower Street, Los Angeles, Cal.

Thomas H. Landau, AIA, has announced the new name of his incorporated architectural firm—**The Landau Partnership, Inc.**—replaces the former Oxley/Landau/Partners, Inc., at the same offices, 10850 Wilshire Boulevard, Suite 210, Los Angeles, Cal.

The firm of Liebenberg Smiley Glotter & Associates, Inc., has changed its name to **Smiley Glotter Associates, Inc.,** and also has formed a subsidiary, **Medical Facilities Associates** to specialize in health-related architecture. The firm is located at 1021 LaSalle Avenue, Minneapolis, Minn.

Frederick J. Spitz and Leaford L. Blevins, Jr. have combined their offices to become **Blevins and Spitz, Inc.,** American Building, Shawnee, Okla.

Smotrich & Platt and Harold Buttrick have announced the formation of **Smotrich, Platt & Butterick,** 12 East 44th Street, New York City.

David Jay Feinberg, AIA, Architect, has established an office for the practice of architecture at 9161 Caribbean Boulevard, Miami, Fla.

B. David Sachson, formerly of R. M. Thomas and Associates, has opened his own architectural practice under the name of **B. Sachson and Associates,** located at 15210 Greenleaf Street, Sherman Oaks, Cal.

The firm of **Symmes, Maini & McKee, Inc.** has moved to new offices at 1050 Massachusetts Avenue Building, Cambridge, Mass.

Richard C. Goetze, Will F. Harrison and Andrew J. Kerr have announced the formation of the architecture and planning firm of **Goetze/Harrison/Kerr Inc.,** 370 Grand Avenue, Suite One, Oakland, California.

Der Scutt, AIA, Architect has announced his resignation from Kahn and Jacobs/Hellmuth, Obata, & Kassabaum. Mr. Scutt can be reached at 229 East 79 Street, New York City.

Georgius Y. Cannon, Architect, has retired and closed his office in Salt Lake City.

New associates, promotions

James R. Thomas, Jr., P.E., and **Charles W. Bowen, AIA,** have been made associates of the firm of George, Miles & Buhr, Architects, Salisbury, Md.

Landscape architect **Bruce Johnson** of Skidmore, Owings & Merrill, Portland, Ore., has been named a participating associate.

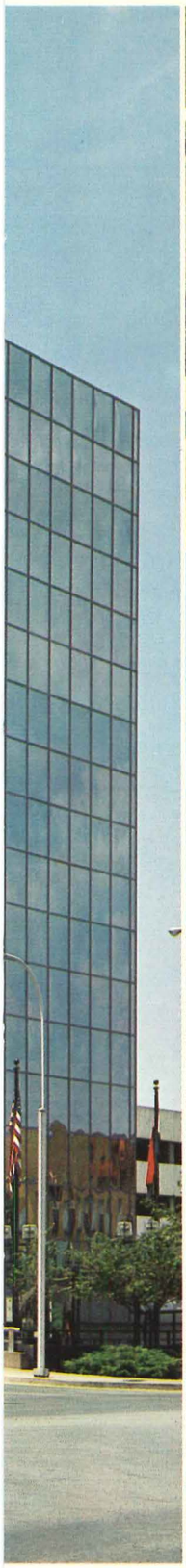
Kevin Platt has been named president of Sasaki, Walker, Roberts Inc., Sausalito architectural and environmental group formed by the merger of Sasaki, Walker Associates and James A. Roberts Associates.

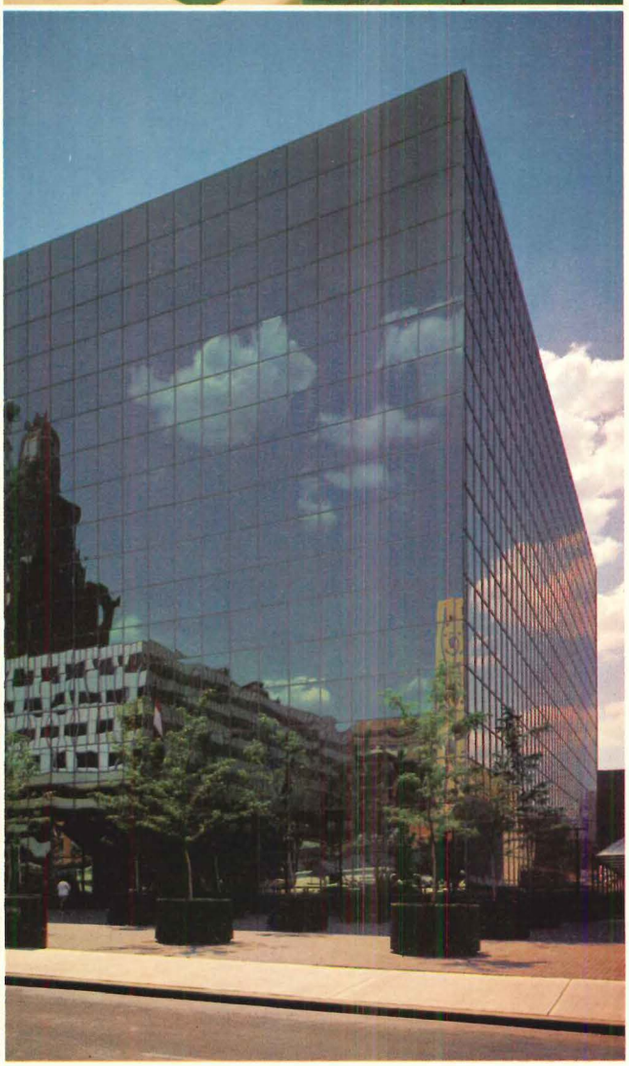
more Office notes on page 161

WE SHOWED TH

Executive Plaza, Kansas City, Missouri. Owner: Tower Properties Co. Architectural Firm: Hellmuth, Obata & Kassabaum, Inc.
Mechanical Engineers: Herman Blum Consulting Engineers, Inc.

EM IN MISSOURI.





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In fact, by choosing LOF high-performance Vari-Tran® in Thermopane® units over single-pane bronze tinted ¼" glass, Kansas City's Executive Plaza owners saved $79,067 in initial heating and air conditioning costs. The extra cost of this high-performance glass was more than recovered in energy-dollar savings (life cycle costing).

PEAK LOAD REQUIREMENTS REDUCED.

When compared to tinted glass with medium drapes, this LOF high-performance glass (with no drapes) reduced peak cooling load requirements by almost a million BTUH. It also reduced peak heating load requirements by over one and one-half million BTUH.

But Vari-Tran did more than just make Executive Plaza figures look impressive. It gave building tenants a comfortable working environment. And it showed Kansas City just how beautiful an energy-saving building can be.

LOF CAN HELP YOU.

After all, LOF has been bringing you glass for storm sash for over 40 years, Thermopane insulating units for over 30 years, and Vari-Tran coating since the mid-'60s.

If you want to save energy dollars with the right glass, one of our highly qualified architectural representatives will be glad to help you. Or you can write Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

LOF

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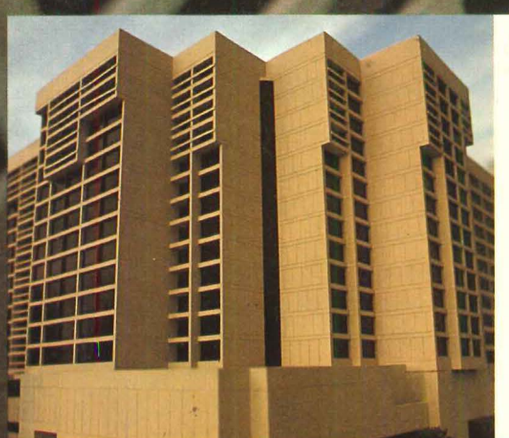


Omni International Complex, Atlanta, Ga.

Developer:
International City Corporation

Architects:
Thompson, Ventulett & Stainback, Inc., Atlanta, Ga.

General Contractor:
Ira H. Hardin

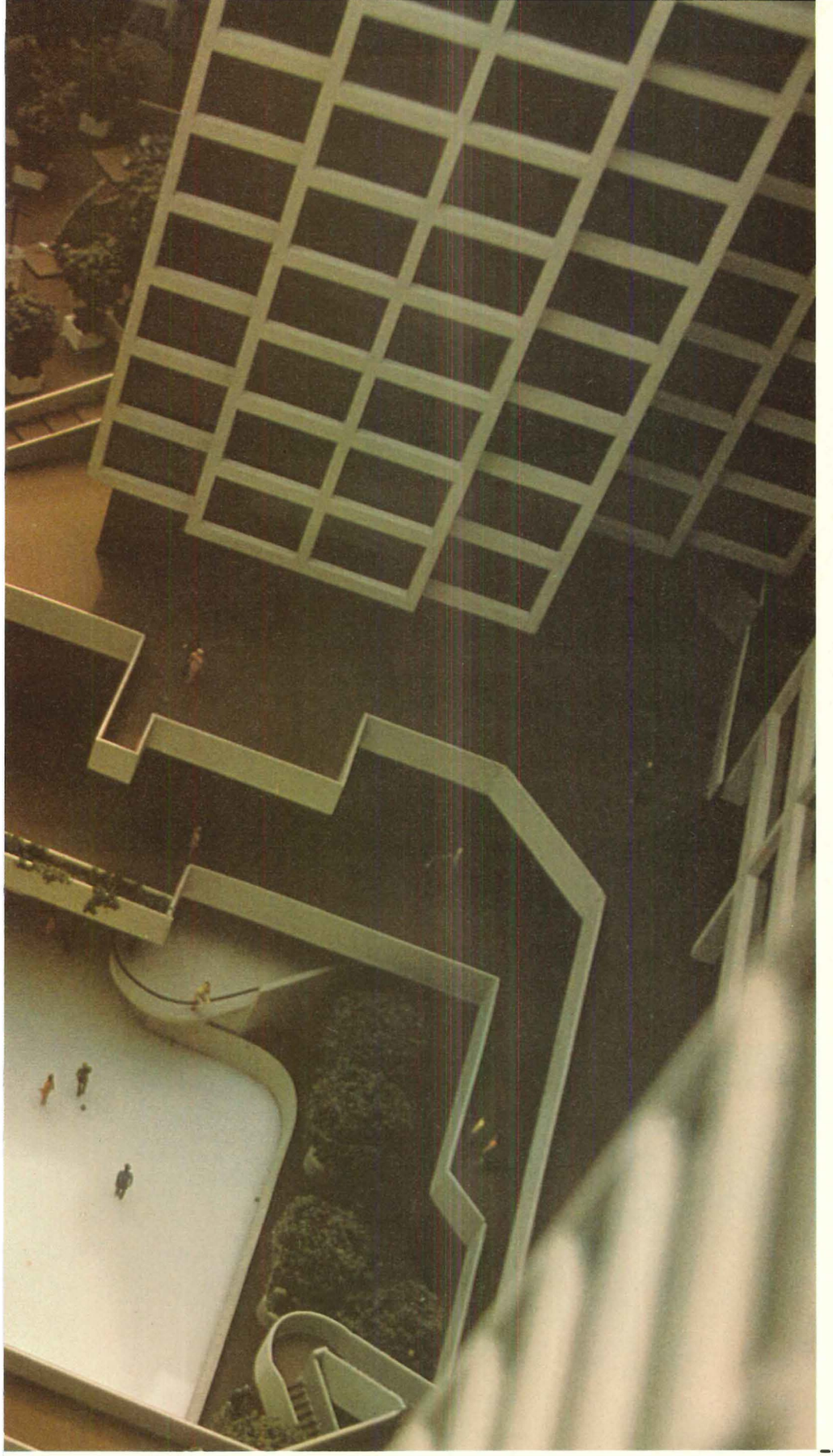
Curtain Wall Contractor:
F. H. Sparks Co. of Maryland, Inc.

Glass Contractor:
ACD Glass & Mirror Co.

6 Amarlite products specified for Omni International Megastructure

Omni International is a city within a city. Located on 5½ acres, the megastructure covers approximately 2,000,000 square feet devoted to work, sports, leisure, corporate offices, business facilities, retail shopping, dining, exhibitions, international banking, sculpture, hotel space (500 rooms), cinema and world trade.

The following Amarlite Aluminum architectural products were specified for this ultra contemporary structure: 245 exterior sliding doors (No. 703) which combine beauty with smooth operation and excellent weathering; 4-inch flush glazed glass holding system for entrance framing, ground floor, shops, etc.; 43 La Vista maximum vision doors;



PBS-380 on lower floors — a dry glaze system with a highly efficient thermal barrier and the PBS-383 which can be glazed from the interior; and the BTI-680, a stick system designed for high rise applications on which the architect desires a vertical accent and thermal insulation.

The Omni International is a kaleidoscope of activity within an environment unlike anything you've ever seen. The depth of the Amarlite line gave the architects, contractors and developers the peace-of-mind that comes with single source responsibility for the 6 Amarlite products specified.

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SAFE, SECURE AND BEAUTIFUL SAFETYLINE ENTRANCES

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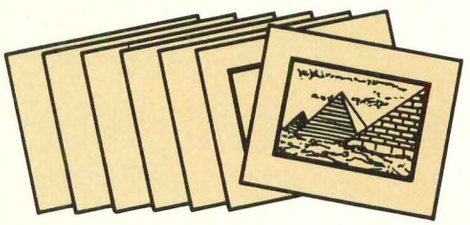
FREE Drawings of 7 Wonders of Ancient World.



Suitable for framing. Available to registered architects and consulting engineers.

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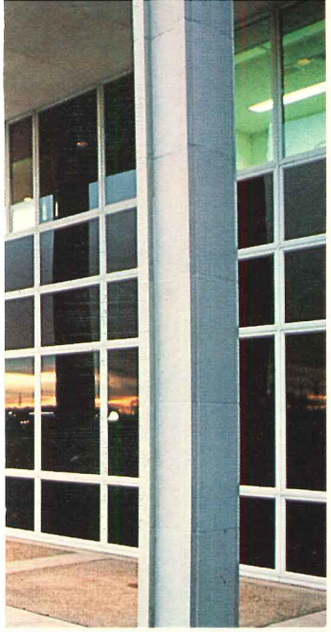
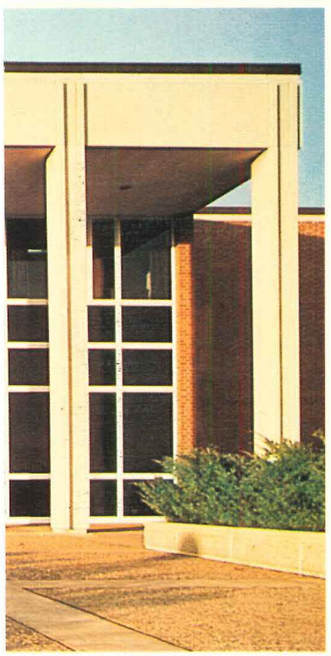
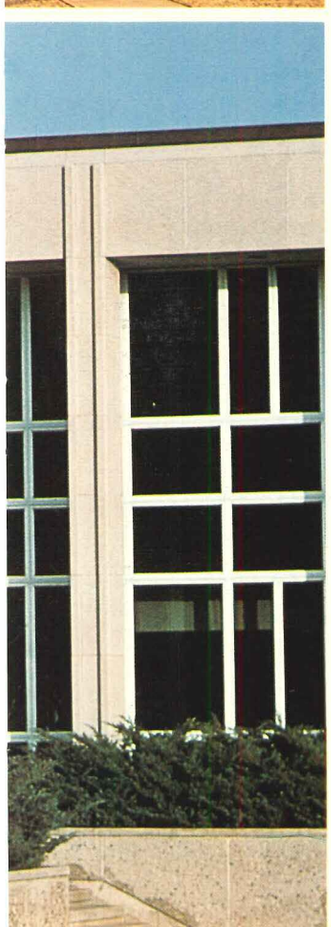
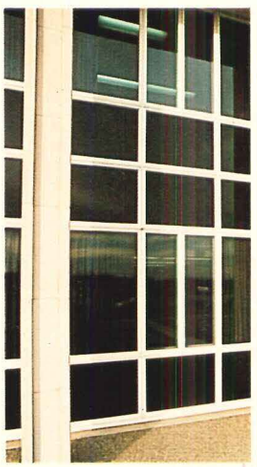


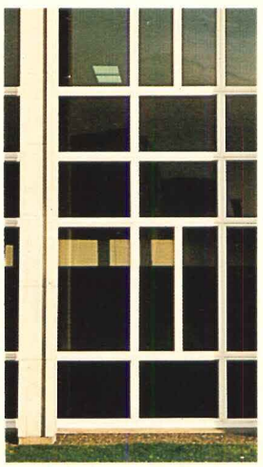




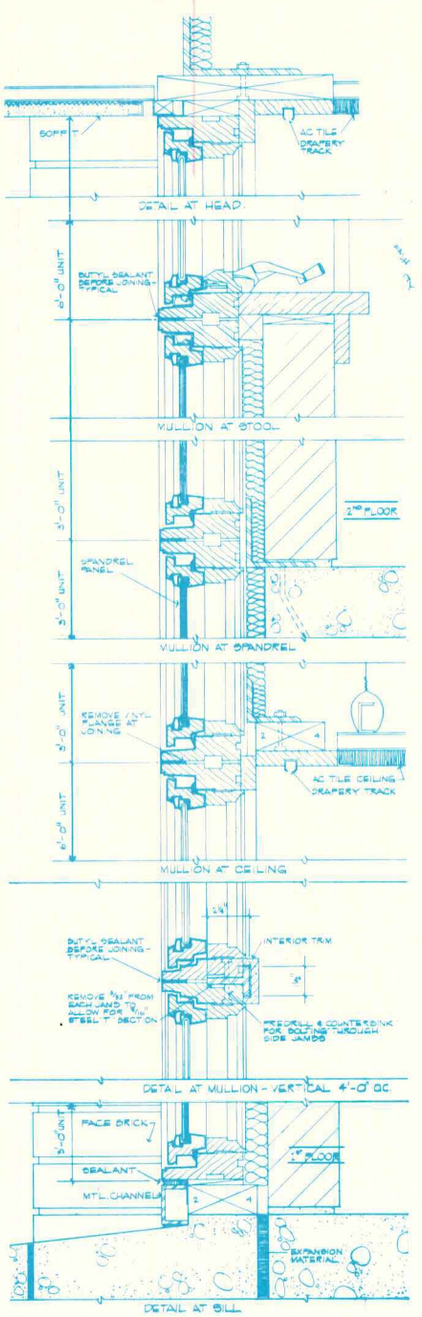
Six years ago Washington County took Andersen to court.



1969 Perma-Shield Window.



1975 Perma-Shield Window.



And we're still appealing.

Back in 1969, Washington County opened its dramatic new courthouse and government office building. And the first Andersen® Perma-Shield® Windows were put on trial.

Now, after six years of cold, snowy Minnesota winters and humid, sun-baked summers, Andersen's crisp, clean beauty is still appealing.

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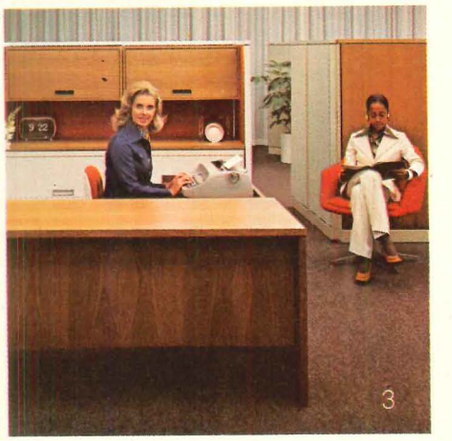
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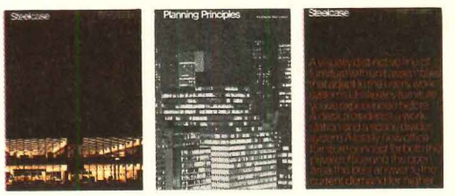

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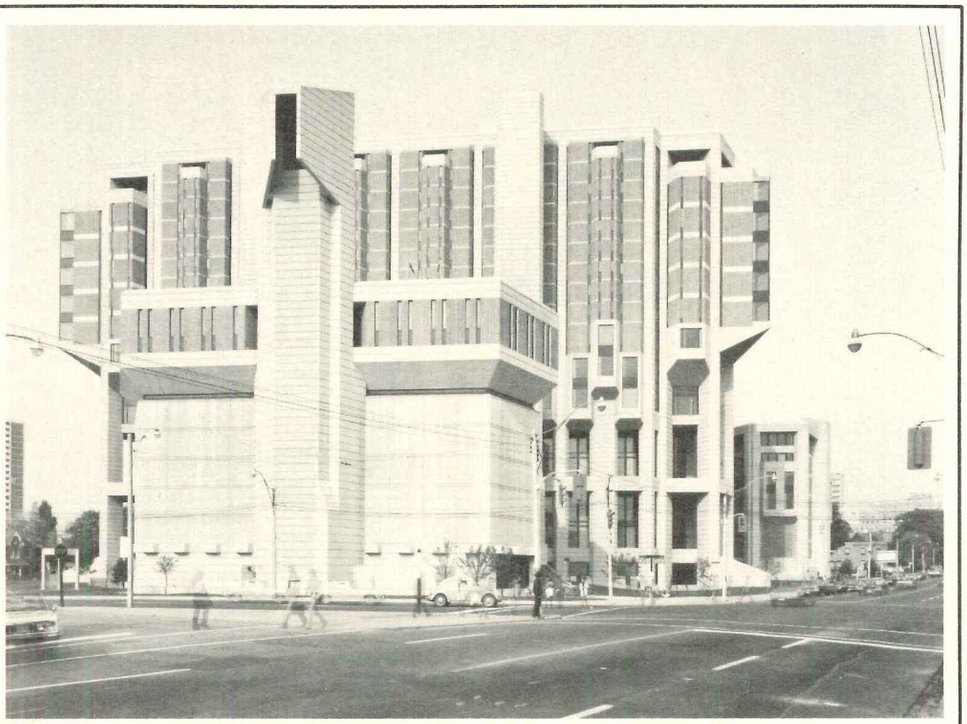
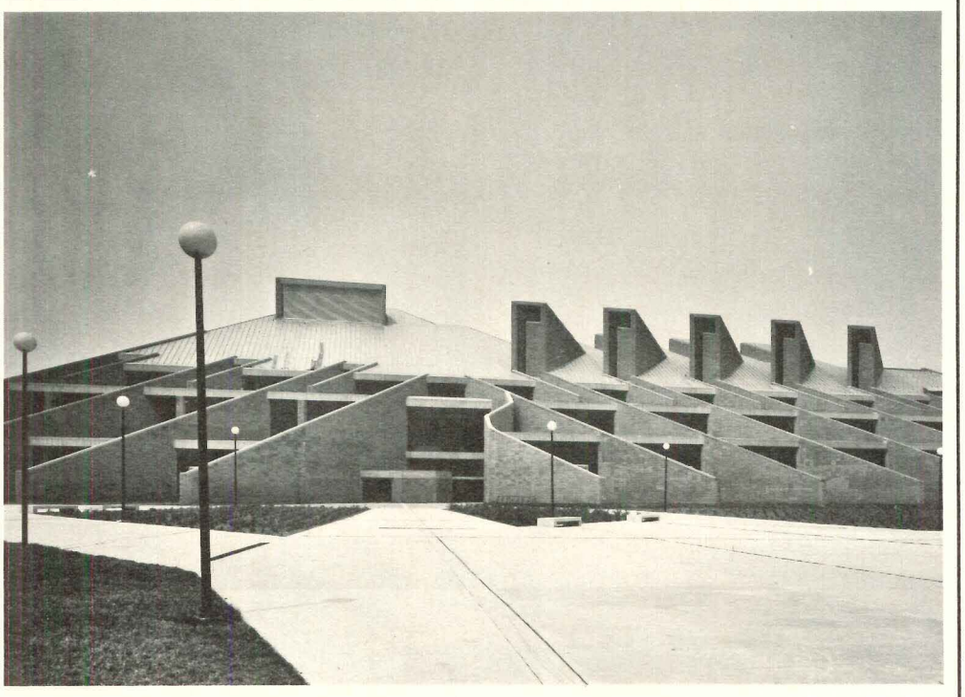
TWO LIBRARIES





Architects Mathers and Haldenby of Toronto and design consultants Warner, Burns, Toan, Lunde of New York have recently ended a 14-year project—the programming, design and construction of one of the largest libraries in the world at the University of Toronto (top). There have been vast social, political and economic upheavals since this library, now called "Fort Book," was begun and today, with hindsight, the architects might have done it a little differently—but not much. Architect Paul Rudolph's small library for the city of Niagara Falls is more fanciful, less controversial. It has been included for its formal ideas, some of which could be applied to improve libraries everywhere.—*Mildred F. Schmertz*

A NEW HUMANITIES LIBRARY FOR THE UNIVERSITY OF TORONTO

Geoffrey Frazer photos

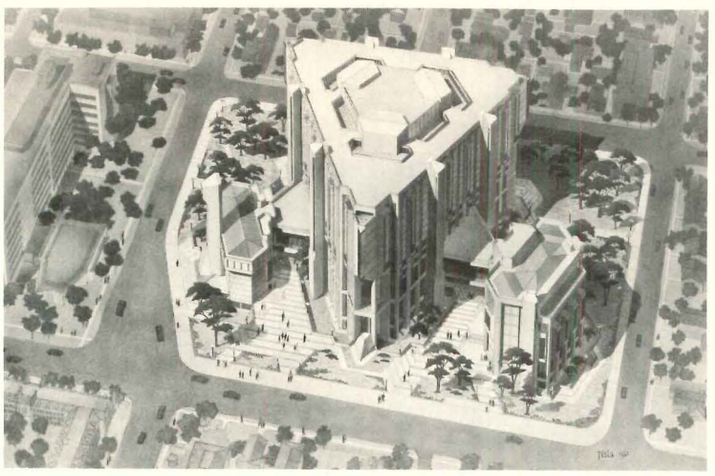
In the 14-year interval between the beginning of the programming and designing process for the John P. Robarts Research Library for the Humanities and Social Sciences and its official dedication last spring, there were profound changes in the social and political attitudes toward higher education in Ontario. Back in 1960 the provincial government wanted the University of Toronto to have a graduate school in the humanities which would be commensurate with those of Harvard, Cornell, Princeton and the like. It was hoped that more young Canadian scholars would do their graduate work in Canada rather than in the United States.

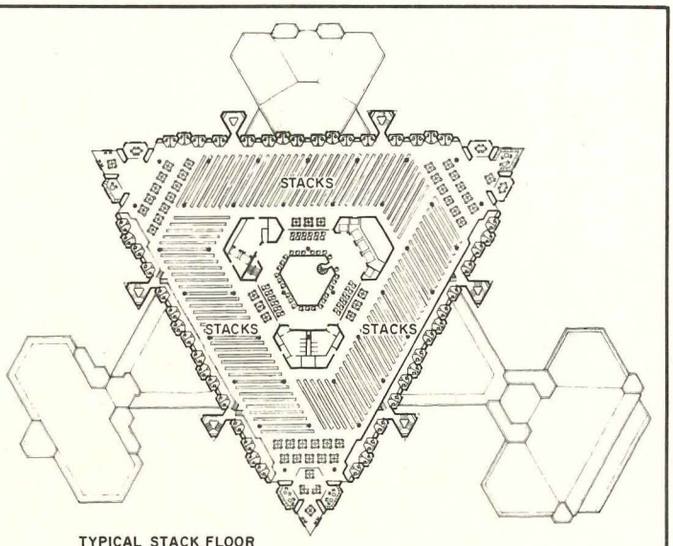
A library is, of course, the central learning resource for the humanities, and since this library was to serve the entire province of Ontario, a four- to five-million volume facility was decided upon. The provincial government provided the money—and the budget of $41.7 million was generous.

By the time the University got around to actually building the library, however, the great waves of student rebellion had broken upon Berkeley and Columbia, and Toronto felt the backwash. The idea of education as a positive value lost favor in the province, and voters began to resent being taxed for it. Many were demanding the increased Canadianization of the construction business and opposing the outflow of cash to the United States. Because other provincial institutions of higher learning were expanding their library facilities, others questioned the need for a central facility of the size of Toronto's. University officials had begun to say: "We better build it quietly—with rubber hammers."

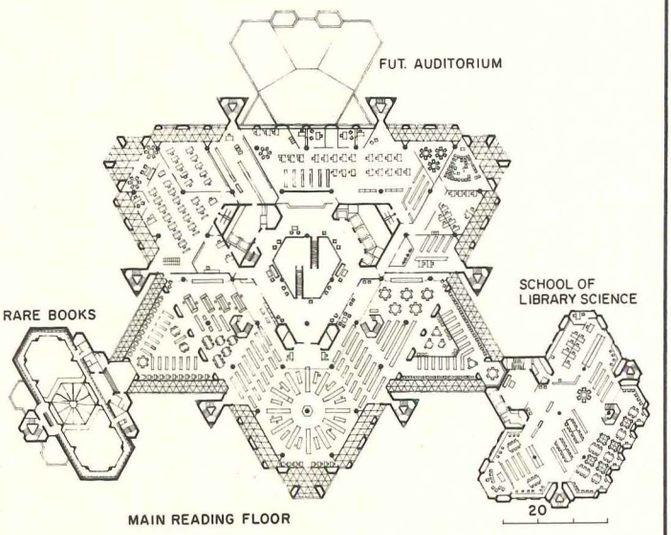
According to architect Toan: "It is a lesson of educational expansion, as well as of urban renewal, that it is difficult to establish goals over a long period of time when there is so much rethinking going on." The architects were working within a master plan prepared by John Andrews, which called for the con-

The building consists of a central triangle containing the main library with its reading rooms, technical services, stacks and carrels, a rare book wing and a library school. A fourth element, the auditorium, has not been built. The entire scheme is based upon a triangular module. The architects developed five basic schemes including the final triangulated *parti*. The latter was selected because it gave distinction as a special space to each of the principal elements—library, rare book wing, and school—and because the triangular shape as used in the main library generates a lot of interior space and exterior surface. Each stack floor (see section) has a perimeter of study cubicles—three stories of cubicles for each two floors of stacks. The rows of stacks are slanted in plan in such a way as to reveal their contents as one moves through the building. The stacks, therefore, have more of the appearance of accessibility, than is offered by right-angled placement.

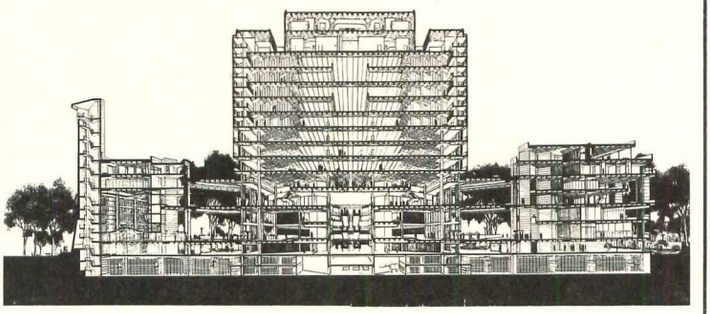




TYPICAL STACK FLOOR



MAIN READING FLOOR



struction of a large number of buildings around the new library that were to be similarly massive in scale. A huge linear parking garage was to serve as a new campus wall to the west, and dormitories and two additional colleges were to have been built between the garage and the library. The architects envisioned a lot of movement toward and through the library from this direction. None of this development can now be expected to occur, and the library will appear stranded and out of scale with its 19th century surroundings for some time to come.

Unfortunately also, the entire project was bid approximately $\$1/2$ million over the budget and the money was taken out of the site work. As the rendering above indicates, the site had been contoured to provide a series of levels gently leading up and through the ground level of the building and on to the rest of the campus. Instead, an abbreviated stair was put in its place. The building now meets the ground in an awkward way and the idea of its becoming part of a larger circulation system has been abandoned for the present.

"If we had known the building was going to stand alone, we would have simplified it," said architect Toan. "But after all, we designed it in the sixties when surface treatments were less restrained." Actually the exterior expression of the library complex is more straightforward than not. Defined on the facades of the main library are the tiers of study carrells, the fire stairs and the multi-storied spaces.

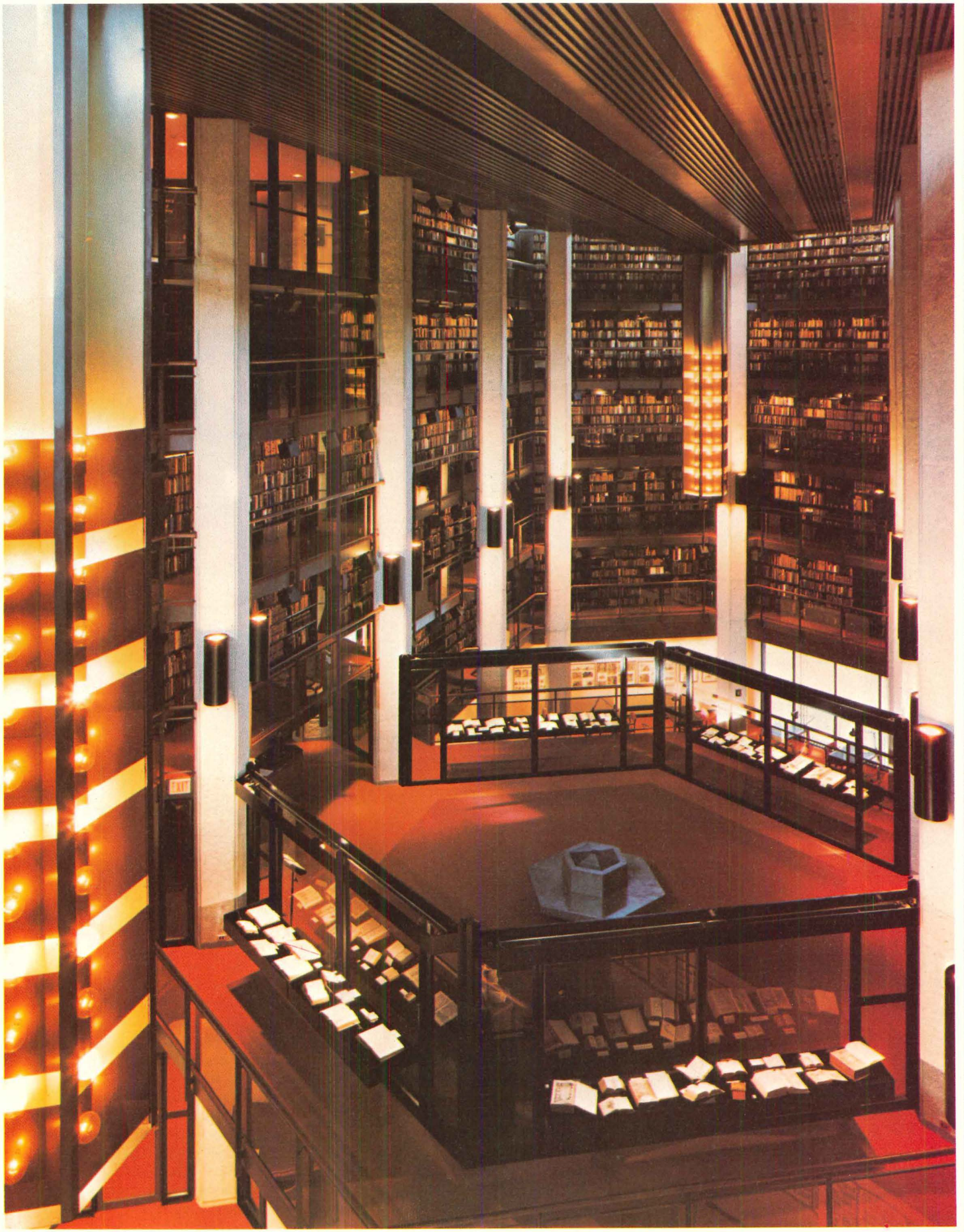
Critics of the library assert that it is too large, too concentrated, that it should have been more open and accessible and that the books should be more readily available like paperbacks in a drugstore. To this Danforth Toan replies: "I am too old-fashioned to accept this. It is worth collecting human knowledge. It cannot be conveniently collected in a lot of small places. Smaller collections require the duplication of material because a single book may cut across a number of classifications. The scholar must not be asked to exam-

The library was constructed of poured-in-place concrete and precast concrete. It has been beautifully built for approximately $34 per square foot as bid in 1967. The ceilings throughout the structure are triangulated waffle slabs. The main floor (below) is completely open and can be entered from two sides. It contains reading rooms, a cafeteria and displays. This level interconnects with the rare book wing and the library school. The main reading room (left) is one of a series of multi-storied spaces of a scale and quality rarely to be found in a contemporary university facility. The rare book library has a magnificent central space (opposite page). Because of the nature of this collection, the books in this building are arranged in open galleries surrounding a high central space so that most of the collection is visible from the main floor.

JOHN P. ROBARTS RESEARCH LIBRARY FOR THE HUMANITIES AND SOCIAL SCIENCES, University of Toronto, Toronto, Ontario. Design consultants: *Warner, Burns, Toan, Lunde.* Architects: *Mathers and Haldenby.* Engineers: *C.D. Carruthers & Wallace* (structural); *H.H. Angus & Associates* (mechanical/electrical). General contractor: *Cape-Ryco.*

ine books which are widely dispersed. His whole process is one of filtering, sorting and accumulating. Do we provide for the scholarly mind? Is this too elitist? This is a decision society must make. At the University of Toronto, the decision was made on behalf of the scholar."

In response to the criticism that the library is too monumental Toan argues: "Well, it had to be monumental. It holds more than 50 million pounds of books and documents. I am glad they call it Fort Book. A library must be a stronghold of its own content. Books can't stand a lot of light or humidity. There is the problem of theft. Books are gold. The cost of that collection is three times the cost of the library complex itself."



A PUBLIC LIBRARY FOR THE CITY OF NIAGARA FALLS

The Earl W. Brydges Public Library is located on the main street of the city of Niagara Falls, in a depressed section. It is hoped that Rudolph's distinguished design for the library will help serve as a catalyst for the general upgrading of the area. A nearby convention center by Philip Johnson has been invested with the same hope, and so has a recently completed office building by Gordon Bunshaft of SOM.

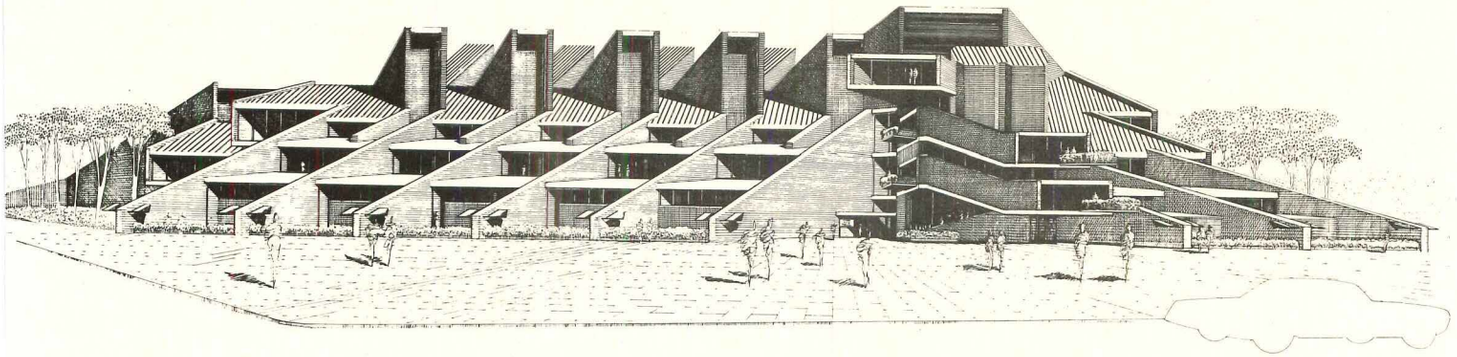
The $5.1-million library is a highly visible focal point at the conjunction of several secondary streets which converge into the main traffic artery. It was originally designed as part of a superblock which would contain a school, its playground and a small park. Unfortunately the school (designed by others) was allowed to expand into the area reserved for the park, so Rudolph's original site concept has been considerably compromised. He has succeeded, however, in achieving his fundamental idea which was that the building should be open and welcoming to the citizens of the city.

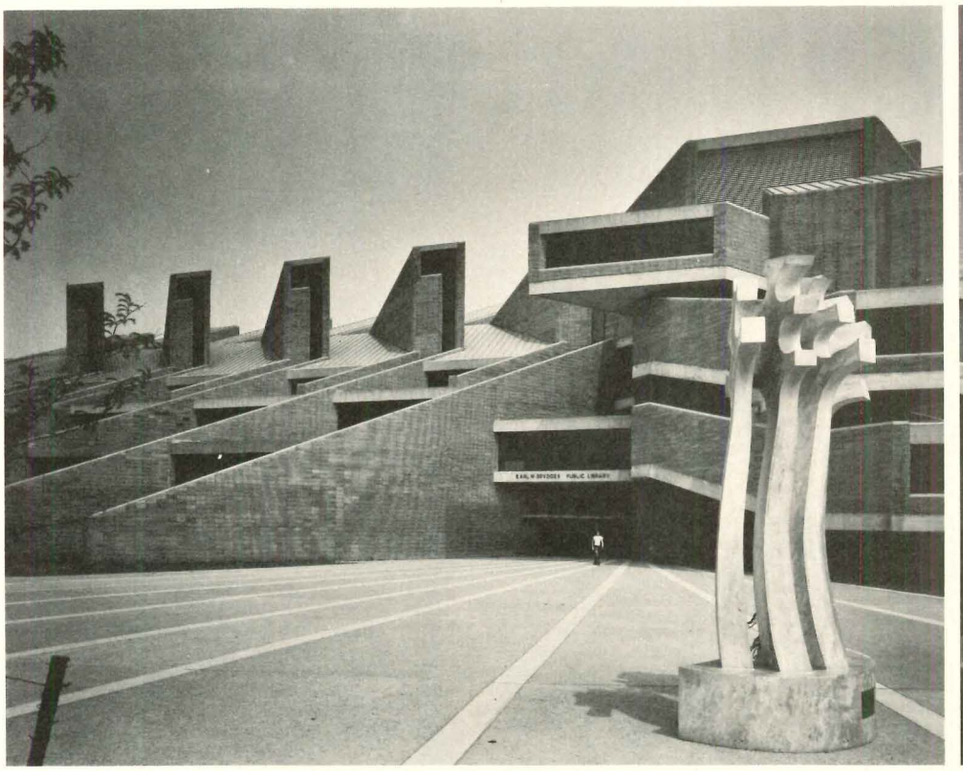
The broad plaza (above and right) has splayed walls which draw the public in. These sloping walls reduce the apparent scale at the plaza level and in combination with the pitched roof give the building a friendly, almost domestic look. Within the building there is soft, glareless light, attributable in part to these splayed and sloping walls which extend beyond the glass infilling walls, screen the glare and increase the feeling of being enclosed and protected inside.

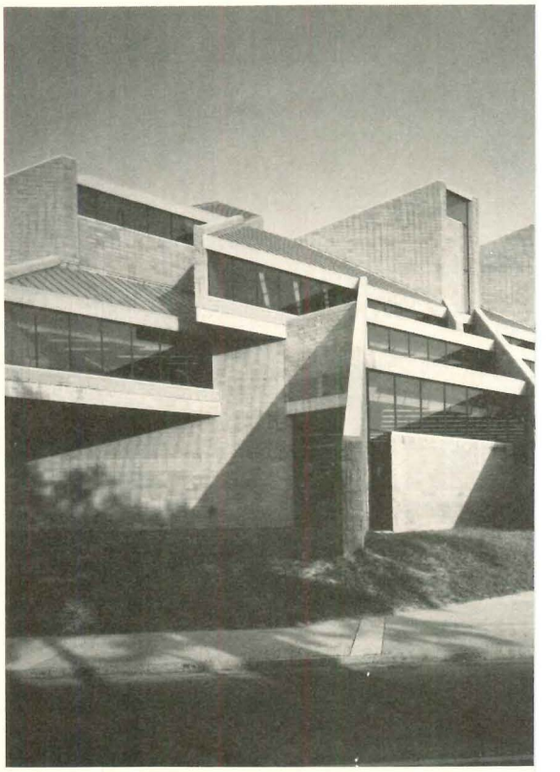
The lively and exciting exterior silhouette suggests a man-made hill actively carved and penetrated in an effort to improve upon nature. The line in which the building meets the sky is animated by the clerestories which are angled in several directions to catch the natural light.

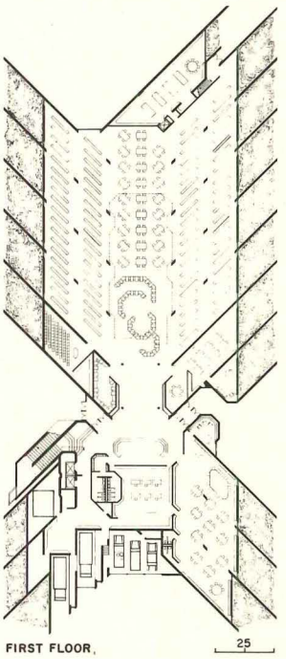
The library as constructed is similar to Rudolph's initial concept (compare the rendering and the photograph taken at the same angle). Rudolph later gave the entrance a better scale. The sculpture, added by the client, was not part of the original plaza design.

Joseph W. Molitor photos

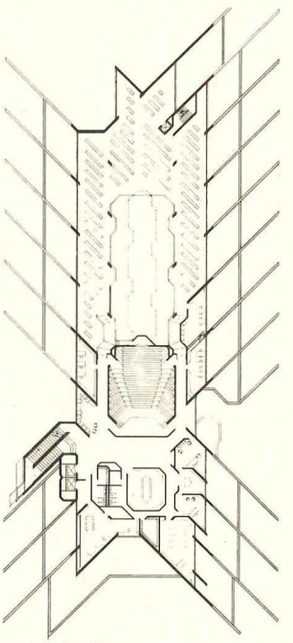




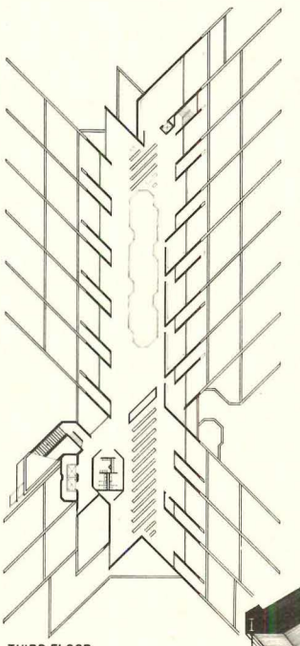




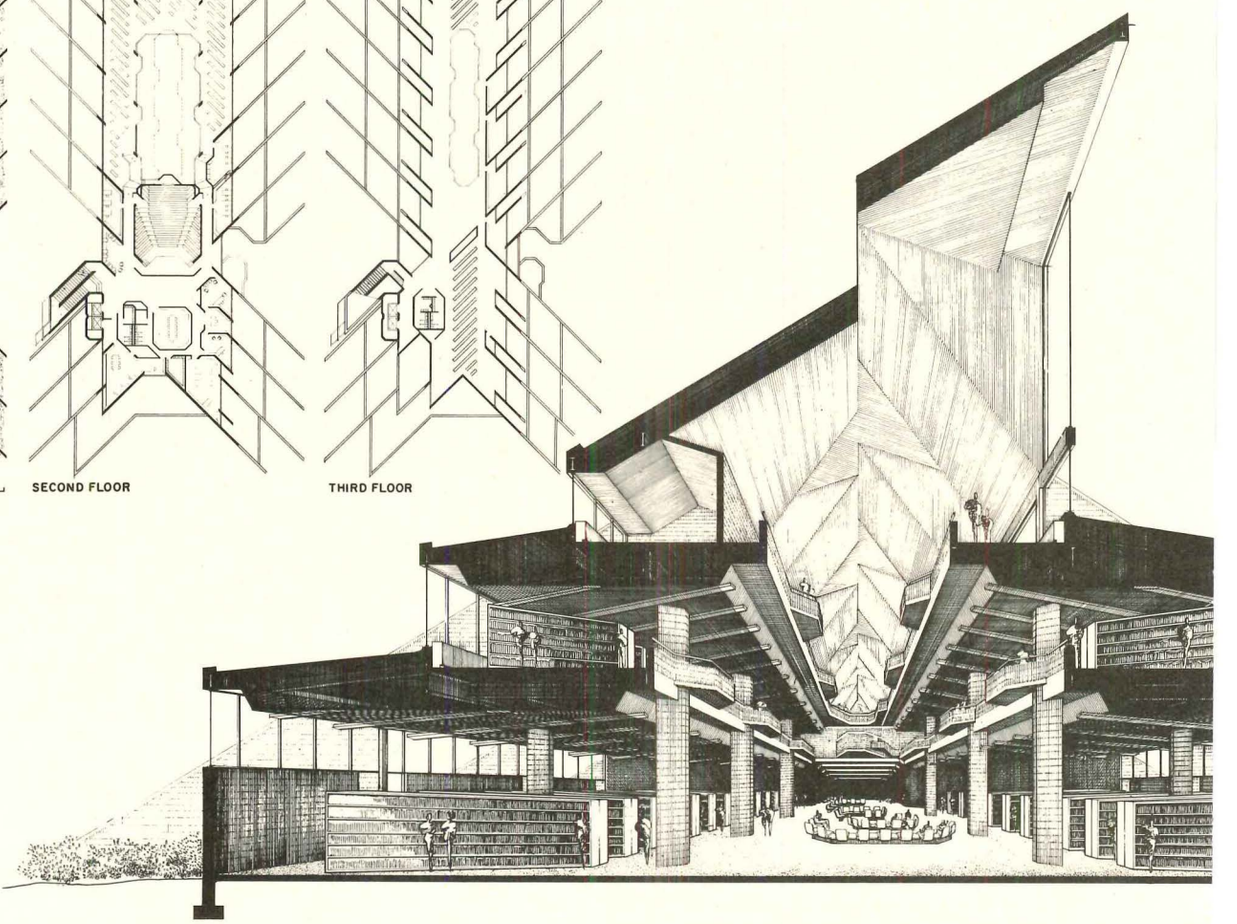
FIRST FLOOR 25



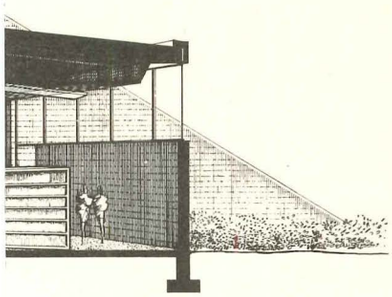
SECOND FLOOR

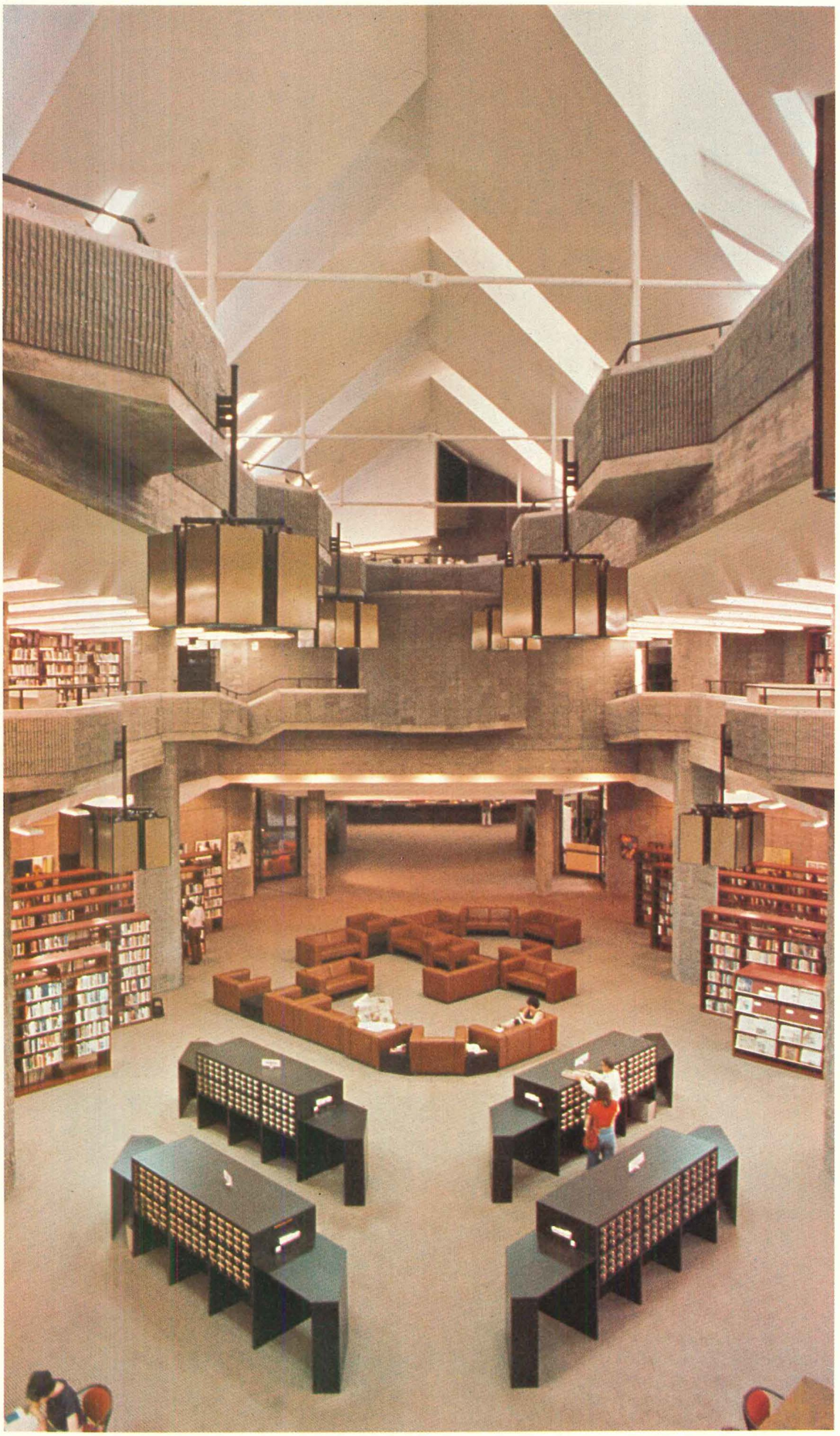


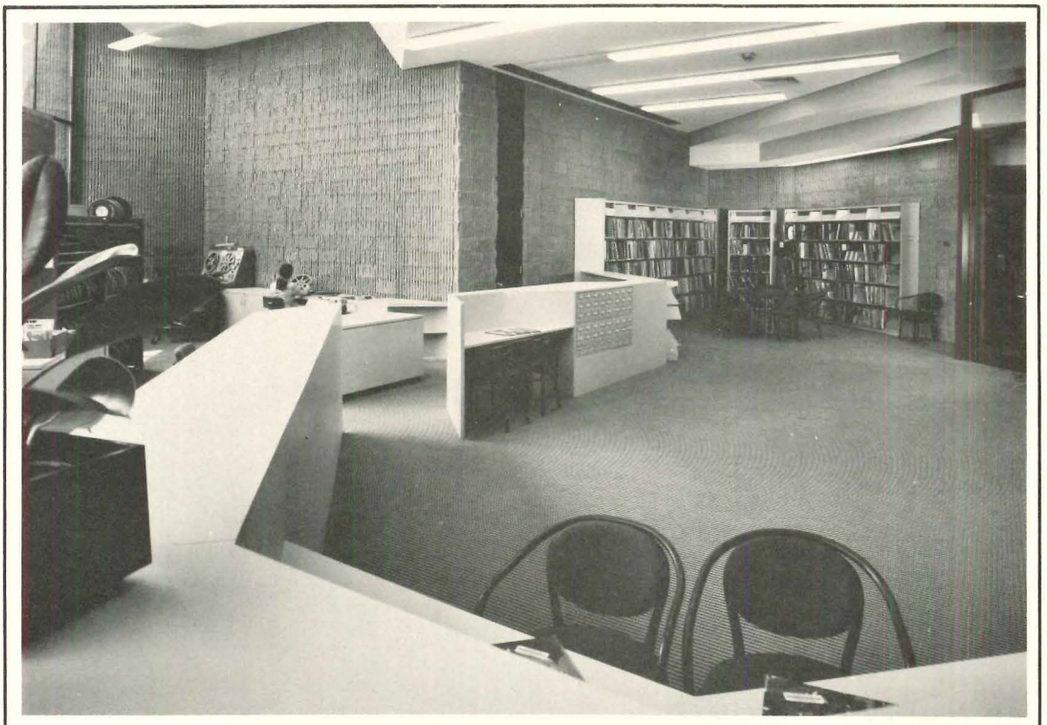
THIRD FLOOR



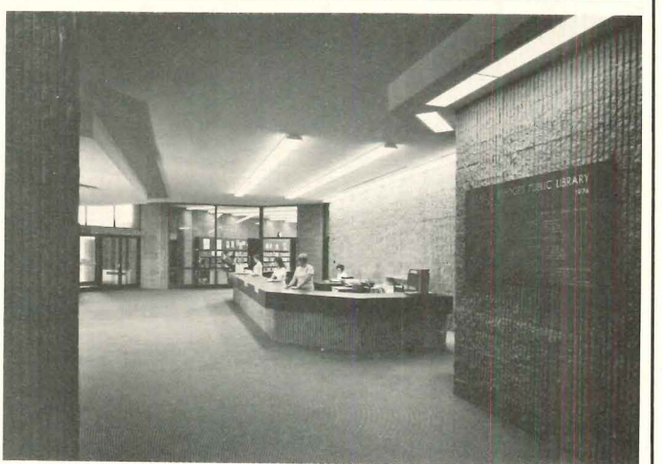
Upon entering, one has immediate access to the directory, the main circulation desk, the general circulation space, display cases, lockers, stairs, elevators, copying machines and toilets. This central space leads directly to the main reading room (right) or to the children's library (next page). As the section and photographs suggest, the three-story-high main reading room is a handsome and dramatic space, which has been only slightly marred by the oversized suspended lighting fixtures which the client insisted were needed. Rudolph believes that the daylight from the clerestories combined with the fluorescent strips under the projecting mezzanine would have provided adequate light for the central space. The book stacks are placed at angles to the main axis of the room exposing books rather than stack ends. While the library may appear to be an all masonry structure, the columns are of steel, clad with a striated concrete block. Steel tie rods resolve the outward thrust of the roof. The rest of the structure is of concrete block with poured-in-place beams and slabs.







Shelving has been housed in cases designed by Rudolph and edged with copper-finish mylar. Copper sheathing is used on the table tops in the reading room. Shown are work areas (top), the children's library (middle) and the desk in the main circulation area.



EARL W. BRYDGES PUBLIC LIBRARY, Niagara Falls, New York. Owner: *City of Niagara Falls.* Architect: *Paul Rudolph—project manager: Terrance Mullen.* Engineers: *Lev Zetlin* (structural); *Walter Sherry* (mechanical/electrical). Consultants: *Bolt, Beranek and Newman* (acoustical); *Mohrhardt and Ulveling* (library planning). General contractor: *Albert Elia Building Co.*

THE OIL-RICH MIDEAST:

The new frontier for professional services?

Most of the photos in the following article are by architect Der Scutt, who is well traveled in the Mideast and who has just returned from his latest trip.

Suburban Riyadh: "waiting for housing?"

is this the new client?

Symbolizing the often-present wall between architects and the pyramids of bureaucracy in Mideast governments, Saudi Arabians open the University of Petroleum and Minerals designed by architects Caudill, Rowlett and Scott.

With so many architects and engineers from the United States involved in work in the Mideast, less adventurous professionals may reasonably wonder if they are missing untapped opportunities. But, before he or she purchases a plane ticket to seek out "the new client", here are a few points to consider:

Professional services from the United States are in continuing demand, but . . .

Firms that are new to the area will not be as easily accepted today as they were only a few years ago. The competition from all nations has become too sharp. "The days when American architects were treated as kings are gone." Still, according to Hans Neumann, president of Perkins and Will International: "The prestige of the American professional is unexcelled." This thought is seconded by many with good cause: the fast pace, with which Arab and Iranian leaders want to develop their countries, can only be facilitated by those offering the greatest efficiency.

These leaders are also conscious of their image, and the superficial image that many want—for better or for worse—is that of America. According to Dr. Charles Adams, Director of Islamic Studies at McGill University: "They have a love-hate relationship with us." Especially, the Arabs do not like many Americans' demeaning attitude, but their money now evens the score. One cynic comments that they would like U.S. technology by remote control, without the U.S. presence, which is disrupting to their entrenched patterns—"Our unshrouded women are considered practically naked."

Even so, all evidence is that the Arabs prefer doing business with Americans, because most are honest and open. For many years, the buying patterns of the American-Arabian Oil Company has strongly influenced those of the Saudi Arabian government, which is currently spending money at the rate of $200 million a month, and the amount is going up fast and steadily. The government employs American advisers at every level. The flow of materials and equipment to all of these oil-rich countries has reached a record-breaking, accelerating rate; who will determine the results?

While the immediate potential is enormous, it will require ambition

To obtain their goal of national self sufficiency and desirable living conditions for all of their people, each of these developing countries has a long way to go. Despite national incomes that have recently become staggering, almost all of the populations live in deplorable conditions, and almost every commodity is imported.

In Saudi Arabia, the last five-year plan produced 175,000 units of housing in a country variously estimated to contain between 3 and 8 million people. In an announcement in *The New York Times* on April 19, 1975, Crown Prince Fahd Bin Abdul-Aziz stated that the next five-year plan would find every citizen in comfortable housing with running water and electricity. While the actual goals of the next five-year plan may not be so optimistic, all kinds of projects to be built in the Mideast are conceived on an enormous scale (some can be measured by a cost in excess of a billion dollars). And there is an obvious reason; according to Saudi Planning Minister Isham Nazer: "There isn't a moment to be lost." The national economies must become self-sufficient and diversified before the oil income disappears.

Accordingly, much government work (which is most of the Mideast work) is going to firms which have a proven capacity—on their own or in consortium. There will be many commissions for smaller-scale work, but the already sharp competition will rise inversely to size.

It will not always be easy to identify a possible client

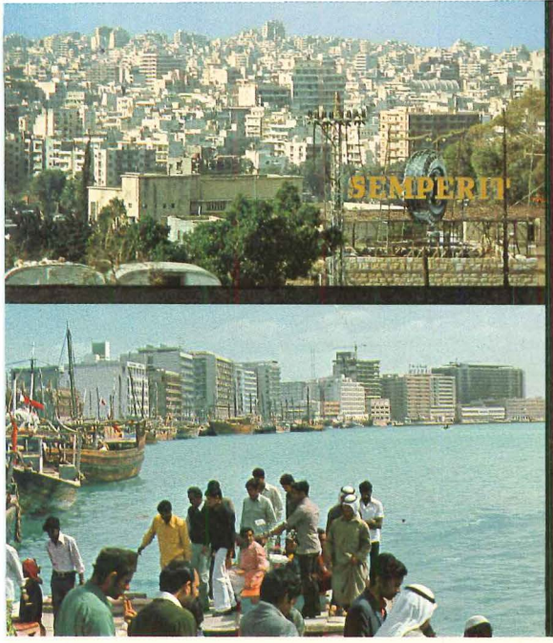
Ostensibly, a client may be a representative of the government in his country, although this is not necessarily the full situation. The governments' present dependency on Western management techniques causes alliances with public and private organizations in almost every major city of Europe and America.

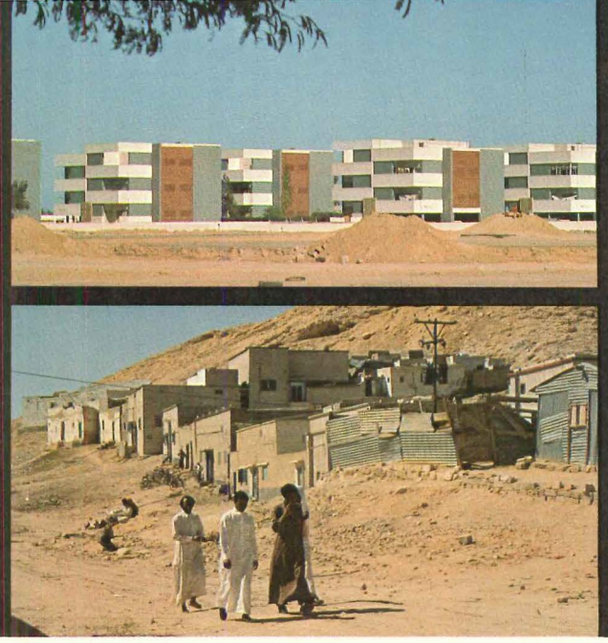
It is possible to meet "half" of a Mideastern client in New York City (where there are U.S. banks managing Arab development, corporations in joint venture on Iran's industrial projects, and the boards of various nations' American universities) or in Livorno, Italy, where the U.S. Army Corps of Engineers manages a volume of Saudi Arabian construction that will exceed $4 billion by 1980. Marriott, Hyatt, Sheraton and Holiday Inn build and operate hotels for local governments and private developers; Inter-Continental has about 15 hotels in design or construction in the area. Private developers and contractors from the U.S.—including Bechtel, Turner, and Starrett—are building many Mideastern projects on a "turn-key" basis. All of these organizations, and many more, commission or recommend architects and engineers.

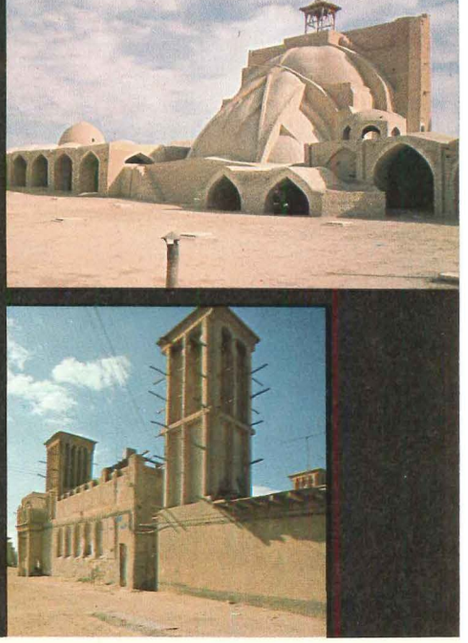
Still the decision maker in awarding most professional service contracts will be the local owner, in both private and public work. As no Mideastern capital has a telephone book (Tehran has a partial listing in Farsi), individuals are difficult to identify and locate. A list of officers in financial institutions and ministries is contained in the Middle East Financial Directory and can be obtained by sending a request and 8 pounds sterling to the Directory at 84 Chancery Lane, London WC2A 1DL. However, the person whose title indicates responsibility may not be in actual charge. Iran is reorganizing the national civil service to create a clear chain of command, but—as in Saudi Arabia— the Minister for Communications may be responsible for highways.

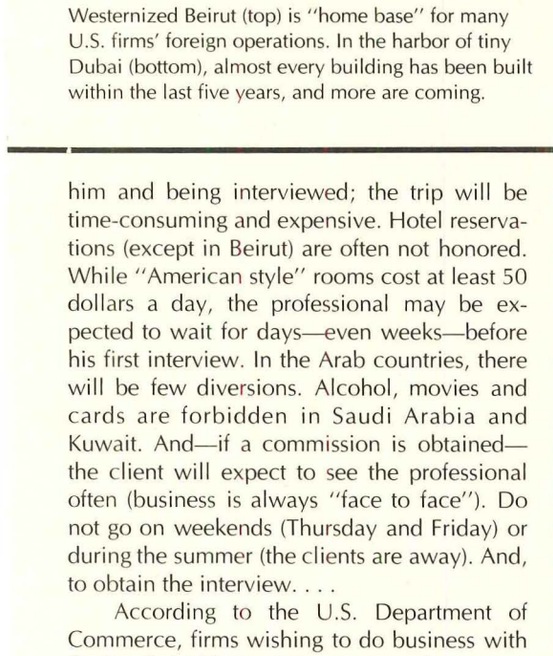
But, recognition of the client will do little good if that client is not reached

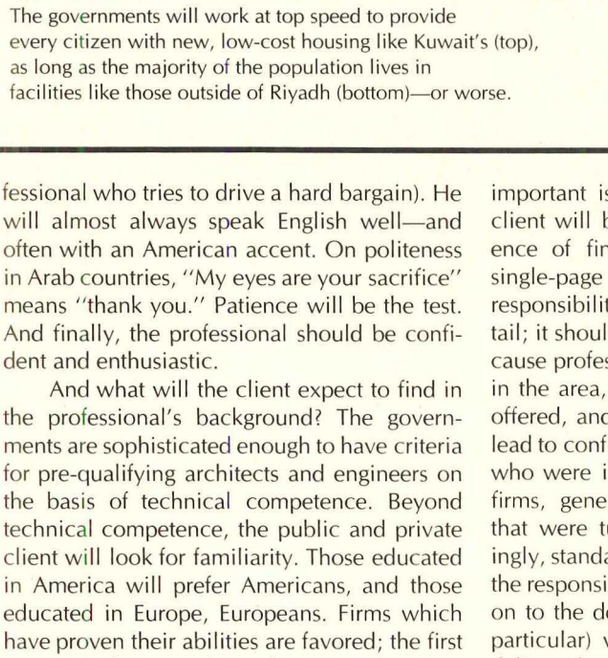
It will be almost impossible to obtain a commission from a Mideast client without going to

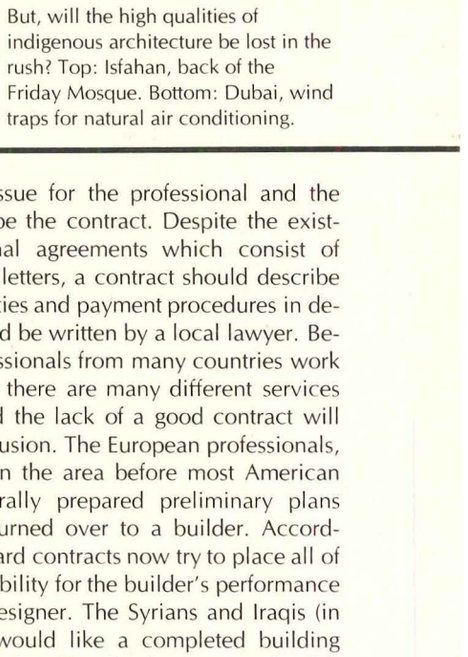












Westernized Beirut (top) is "home base" for many U.S. firms' foreign operations. In the harbor of tiny Dubai (bottom), almost every building has been built within the last five years, and more are coming.

The governments will work at top speed to provide every citizen with new, low-cost housing like Kuwait's (top), as long as the majority of the population lives in facilities like those outside of Riyadh (bottom)—or worse.

But, will the high qualities of indigenous architecture be lost in the rush? Top: Isfahan, back of the Friday Mosque. Bottom: Dubai, wind traps for natural air conditioning.

him and being interviewed; the trip will be time-consuming and expensive. Hotel reservations (except in Beirut) are often not honored. While "American style" rooms cost at least 50 dollars a day, the professional may be expected to wait for days—even weeks—before his first interview. In the Arab countries, there will be few diversions. Alcohol, movies and cards are forbidden in Saudi Arabia and Kuwait. And—if a commission is obtained—the client will expect to see the professional often (business is always "face to face"). Do not go on weekends (Thursday and Friday) or during the summer (the clients are away). And, to obtain the interview. . . .

According to the U.S. Department of Commerce, firms wishing to do business with the Saudi Arabian government must have a national as a representative, and the key to success or failure hinges on the choice. This can be said to be true to a greater or lesser degree throughout the area. Good agents can arrange everything from visas to ministerial appointments; they will know of upcoming contracts and stand up for their absent employer. The Commerce Department does not report that agents will also negotiate any gift required to obtain the work, which is an accepted practice throughout the Mideast—to the point that it is sometimes included as an item separated from the professional's fee in applicable contracts. (The Department has a "Near East Action Group" in Washington.) According to others, the agent is effective only through his personal contacts, and the wrong choice can lead to an expensive dead end.

On finally entering the interview, the professional *must* understand the traditional procedure. At least one architect, Ellerbe's president Ken Mahal, is known to have taken a course offered by Harvard in Switzerland. Business is never discussed until the social amenities are observed; the process may take hours. The potential client will be painfully polite (by tradition), probably embarrassingly intelligent and shrewd (he will respect the professional who tries to drive a hard bargain). He will almost always speak English well—and often with an American accent. On politeness in Arab countries, "My eyes are your sacrifice" means "thank you." Patience will be the test. And finally, the professional should be confident and enthusiastic.

And what will the client expect to find in the professional's background? The governments are sophisticated enough to have criteria for pre-qualifying architects and engineers on the basis of technical competence. Beyond technical competence, the public and private client will look for familiarity. Those educated in America will prefer Americans, and those educated in Europe, Europeans. Firms which have proven their abilities are favored; the first project is the critical one for any architect or engineer. Specialists (in, for instance, hospitals) will find a more "ready-made" market for services.

And the client will be looking for performance. He will want firms with an established presence—capable of on-going responsibility for their work. On the religious issue, Israeli firms are doing work in Iran, and firms with Jewish principals are doing work throughout the Mideast—despite the official stance to the contrary.

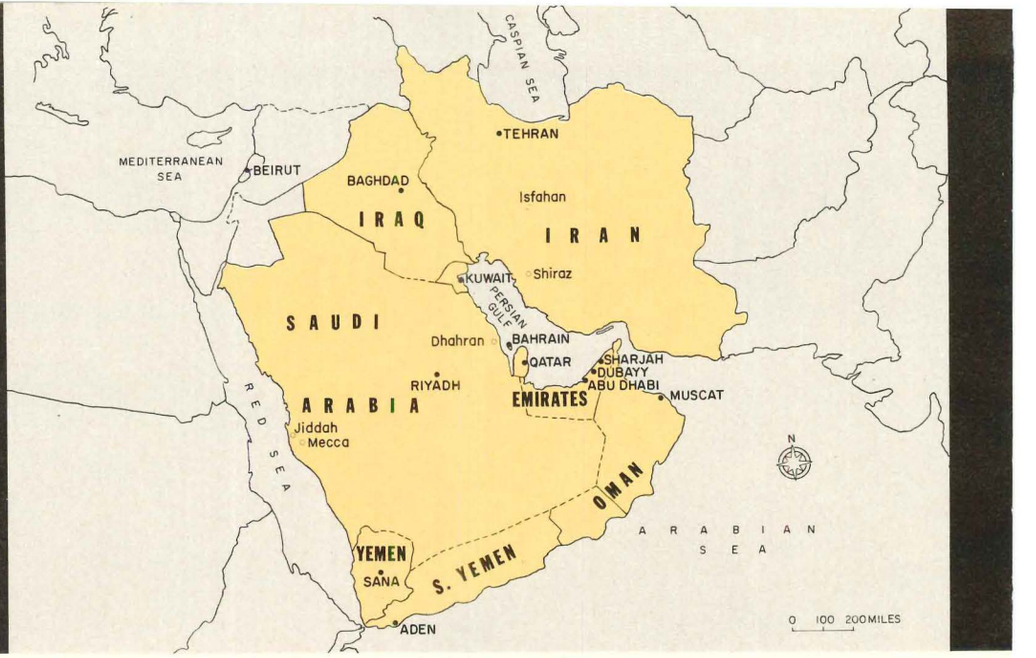
Although the first one may be negotiated at a disadvantage, the contract is all-important

After the polite interview has ended, many professionals from all over the world are using tactics to obtain contracts which more than one observer describes as "cut-throat." Some Iranians (in particular) have not been slow to exploit this situation—issuing multiple letters of intent for single projects, and using preliminary designs by one firm for completion by another. Still, a signed contract is collateral for a loan for up to one-third of its value in most Arabian banks, and—after signing—it is not uncommon for the professional to receive up to another third as payment for starting the project.

When a commission is received, the most important issue for the professional and the client will be the contract. Despite the existence of final agreements which consist of single-page letters, a contract should describe responsibilities and payment procedures in detail; it should be written by a local lawyer. Because professionals from many countries work in the area, there are many different services offered, and the lack of a good contract will lead to confusion. The European professionals, who were in the area before most American firms, generally prepared preliminary plans that were turned over to a builder. Accordingly, standard contracts now try to place all of the responsibility for the builder's performance on to the designer. The Syrians and Iraqis (in particular) would like a completed building delivered under a "turnkey" system, and architects are taking this responsibility—on their own or in consortium with developers. But, there is an obvious danger in turnkey: there is no way to know what a building will finally cost. Material and equipment can double in cost in one day, if they are in demand (and can be found).

Most contracts in Arab countries are written according to Lebanese law, which prevails except in the Emirates, which use British law. But it is possible to call for arbitration by the International Chamber of Commerce in Paris or the Institute of Engineers in London. Professionals have successfully called for protection clauses on losses due to acts of war, God and devaluation. In those countries that do not have freely convertible currencies, the design fee should be paid in dollars, although—without a devaluation clause—money may be lost (most Mideast countries severed their currencies' links with the dollar early this year). A good contract will describe the machinery for payment which—in the case of government work—can be circuitous and—in any case—possibly delayed. And finally, a government contract must clear all of the necessary regulations and agencies *after* signing to become legal.

There is no one market



Each country and state is culturally unique, and relative areas of land are not directly related to needs or to the ability to cope with needs.

And—when it is all over—the first work will probably cost the designer money

Since the first project is the critical one in securing future work, architects and engineers will want to make a special effort to assure its success. At the same time they will be working in unfamiliar circumstances with contracts (negotiated at a disadvantage) that usually do not provide reimbursement for research, consultants or travel. Still, on-site supervision is much more critical than in the U.S., and consultants on everything from the survival of plant life to concrete mixes will be required. There are few construction standards and minimal records on temperatures and wind (see page 108). As for extra costs being absorbed, almost every architect, contributing to this article, stated that their total fees were approximately the same or below comparable base fees at home.

Does the future potential warrant all of this effort?

At their present rate of expenditure and income, Saudi Arabia, Kuwait, Qatar and the Emirates would hold a recently estimated 333 billion dollars in reserves by 1980, which is more, by a half, than those held by the entire world today. But this amount will probably not materialize because of the accelerating rate with which these countries are rushing toward development for self-sufficiency, before the oil disappears—possibly by the year 2000. If the area remains politically stable, the potential for construction should go on for some time. After every citizen and organization is decently housed, there will be redevelopment to meet the "revolution of rising expectations." But it is not likely that the West will participate as strongly as at present. The number of technically trained Saudis (estimated at 2,500) is exceeded by the number *currently* in Western schools. Iran requires local participation in any business venture and the other countries encourage it. In all of the countries, capabilities are bound to catch up with demand. If the situation still seems worthwhile. . . .

"The most important thing is to know where you are going"

There is no homogeneous demand for architectural or engineering services in the Mideast. The character of the potential client and his needs is extremely different in every country. According to George Rice, former head of McKee-Berger-Mansueto's Beirut office: "The assumption that the countries are alike is the most common mistake of Western businessmen—as incorrect as lumping the United States, Mexico and Canada." An expectant professional will want to know the pertinent characteristics .

The most pronounced difference is between Iran and the Arab countries. To relatively judge each block's long-range economic importance, an oil company executive states that—at present—the West could survive without the production of oil in all of the Mideast and African countries except Iran and Saudi Arabia (the leader). While Kuwait has produced oil at almost half of the rate of Saudi Arabia, the latter's known reserves are infinitely larger. Until recently, the gross national product of Iran approximately equaled that of all of the Arab countries together. But it has a much broader economic base, and the quadrupling of oil prices has thrown the balance to the Arabs. On the short range, one of the most important determinates of the ability to build buildings, is the national income per capita. Here, the smaller Arab states clearly take the lead. The Emirate state of Abu Dhabi had the world's highest per capita income in 1974: $28,000 for each man, woman and child (vs.$4,500 in the U.S.). Kuwait had a lesser per capita income, but one that is still approximately ten times larger than Saudi Arabia's. The other United Arab Emirates, and Qatar and Bahrain had substantially larger proportional incomes (in descending order) than the two larger countries.

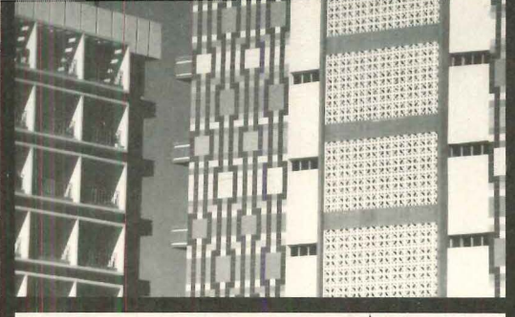
Islam, the common religion, has different influences on each country. In Saudi Arabia, where the King is also the Defender of the Faith for all of Islam, the influence colors almost every sentence and act. There are few legal diversions of any kind, and public executions (including stoning) are common. Westerners are not exempt from unusual punishments and are considered at fault in (for instance) every automobile accident. Accordingly, theft, drunkenness and adultery are almost unknown. Women, who are segregated in public, cannot work in offices. Secondary escape routes for women are still commonly provided from every room. But there is evidence that strict segregation may disappear, as it has in a new hotel in Riyadh. Kuwait is similarly conservative while the citizens of the Emirates are considerably more tolerant. They have a reputation for independence and influence by the English. There is an endless demand for new hotels in all Arab countries, as these serve as the only social centers.

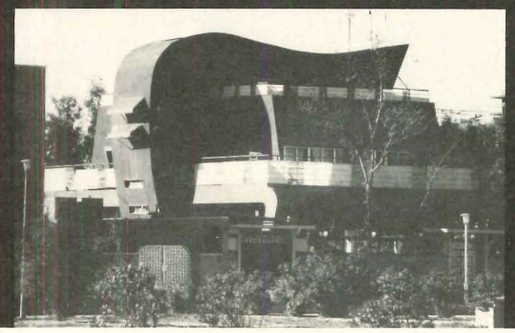
The country least influenced by Islam is Iran, which allows many religions, and where the high rate of theft causes at least one architectural office to keep live-in servants. "Everything disappears: light bulbs in new buildings and reinforcing rods from construction sites." Urban women are active in the professions and fully Western. Comparing the two largest countries:

Saudi Arabia

The gross national product in 1974 was about $46 billion, of which more than half was oil income: and its growth is 25 per cent a year (the fastest in the world). Only estimates of the population exist: 8 million (by the government), 3 million (by resident foreigners). Although the government is making every effort to broaden the base of income with industry and exploration for gold and iron, it is making little effort to conserve fuel or water. Many new buildings have little insulation or sun protection despite normal 110-degree temperatures; the only source of water for the capital, Riyadh, is a fossil aquifer which will be emptied if ways are not found to fill it. A massive

A boulevard in "culturally liberal" Abu Dhabi (top) waits for expected development similar to that in the downtown of "strict" Kuwait (bottom).





High-rise housing (top) and a typical private "villa" (bottom) in Kuwait; the variety of character is as diverse as the architects and clients.

Women flee the camera in "modern-appearing" Dubai, while a stylistically traditional royal palace in Riyadh contains every current standard for Westernized comforts. The contrasts in life-styles are unnerving for Westerners.

influx of Western technicians and foreign laborers (about 50 per cent of the total) has caused shortages of everything and is bound to have a long-term effect on strict local customs. Construction firms representing 47 different countries work in the capital which—along with Mecca (forbidden to non-Muslims) is the heart of the conservative regime. Jiddah is more Westernized, but is too isolated for the conduct of government business.

While interested in value for their money, the Arabians are far more concerned with "status-image" in their buildings than the Iranians. Construction costs on two hotels in Riyadh and Mecca have been $150,000 a room and another building in Rijadh is described by its architect as the most expensive per-square-foot project in the world. While there are building permits, they are not required for construction by the government or any of the 5,000 princes; it is impossible to know the real volume of construction.

As developed by the Central Planning Organization (which includes 10 Stanford Research Institute consultants), the new five-year plan calls for government spending on construction of $27 billion a year by 1980—compared to three at present. While much of the new construction will be on heavy-industrial installations and the support systems of roads and sewers, all types of buildings (particularly housing) are included. A draft transportation report by government consultants recommends four new airports and the improvement of 17 more. As reported by *Engineering News Record,* military installations will include two Navy bases to cost $1 billion, an army base to cost the same, and five others whose cost will total nearly another $1 billion. A new industrial city on the Persian Gulf is planned to cost $10 billion. An Arab Investment Company has been created to stimulate private housing construction by forgiving the last 25 per cent of mortgages. Two massive medical facilities see (RECORD, page 41, May 1975) are the first of a series expected to be built by 1980.

Iran

In 1974, the gross national product was $41 billion; the population was 31 million people, who are multiplying at an accelerating rate of almost 4 per cent (compared to Saudi Arabia's steady 1.3 per cent). The country is clearly feeling the pressures (and possible assets) of the mid-twentieth century West.

Until recently, the government has been in debt to support a program of development, which (with increased oil revenues) has been rebudgeted to equal that of Saudi Arabia in 1980. The capital city alone, Tehran with 4 million inhabitants, may be more populous than all of Saudi Arabia. The basically rural population is moving to the cities, and moratoriums on construction have been necessary because of developed-land and material shortages (which have dictated a masonry-braced steel construction for low-rise buildings). In order to diversify the pressure on Tehran, the government has established eight new industrial centers around the country. Isfahan (page 103), long regarded as important for its older architecture, has implemented a development plan (which includes a subway) limiting the population to one million people. To the south, Shiraz is in a similar situation.

While this is the 2001st year of Persian monarchy, private development is much more usual than in most Arab countries. Because of speculation, small sites for residences in Tehran can cost up to $150,000. "Everyone is crazy for profits." Accordingly, there is much more "shopping around" for professional services than there is anywhere else in the Mideast, and there are many more competent nationals to handle the demand.

Iran's pressures for speed in development are the greatest in the Mideast. Architects have been called in as foundations were in excavation. But the country is sophisticated enough to have its own critics who question their emerging environment: In the words of architect E. Nader Khalili, "a national architecture can and will emerge."

Are currently involved professionals happy with their experience?

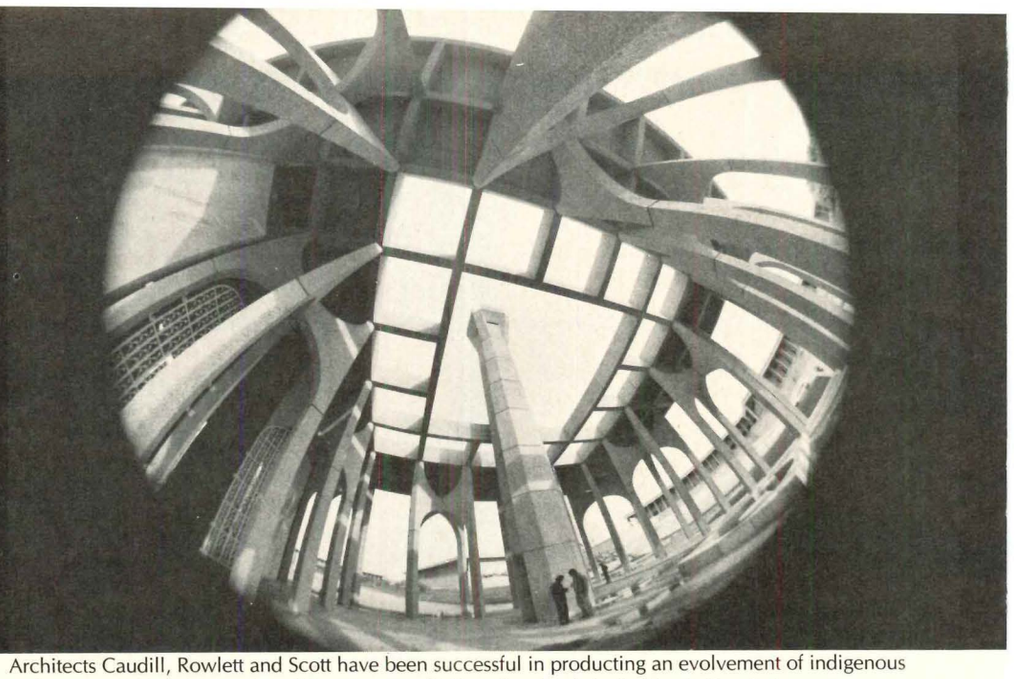
In order to do work in the Mideast, it will be necessary to have an office there or to make frequent trips. What have been the experiences of some of the architects, engineers and consultants who are there regularly? The consensus is that everything is expensive, scarce and difficult. A minimal house, by Western standards, is $1,000 a month in Saudi Arabia, and it can take up to three days to place a telephone call out of the country.

While Beirut and Tehran are the most Westernized cities, Beirut is favored for foreign offices because it is not the victim of the highest inflation and does not bias Arabs who regard Iran as a more foreign country. Beirut is the only city in the Mideast where living costs and conditions don't require salaries for Westerners that are up to two and a half times normal for the U.S. (some local draftsmen are available everywhere, but local labor laws make it difficult to terminate employment). But, the competition in Beirut is stiff, as it is estimated to contain up to 4000 architectural offices—some employing 500 people. High costs and local personnel shortages have caused Western joint ventures within joint ventures. Because of bad communications of every form, it will be necessary to have field offices, or affiliates on projects of any size.

Part of the problem in finding out about the Mideast is getting people to discuss their activities there. Aside from the obvious cause of warding off competition, there is—according to one architect—"a ridiculous net of political veils" whereby work cannot be published. There is a "mania" about security, on completed buildings, and a love of waiting for the official announcement on others. One New York City architect, who denied having any work in the Mideast, is at work on a project of 10 million square feet in Tehran.

■ Architect John Welsh heads the Beirut office of construction managers McKee-Berger-Mansueto, who also have offices in Kuwait, Abu

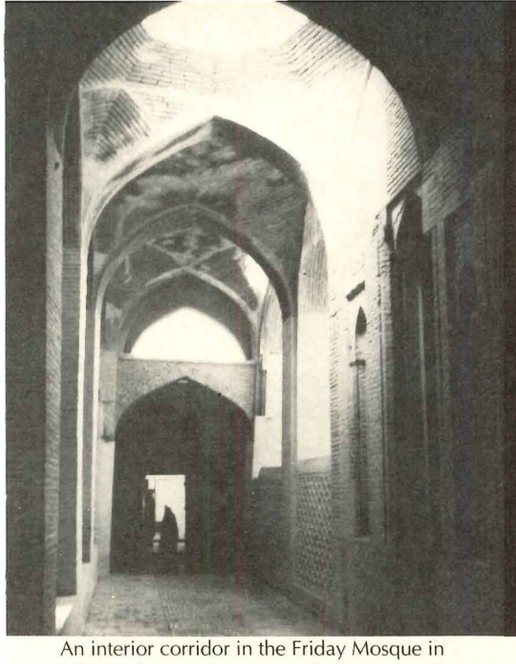
learning from experience



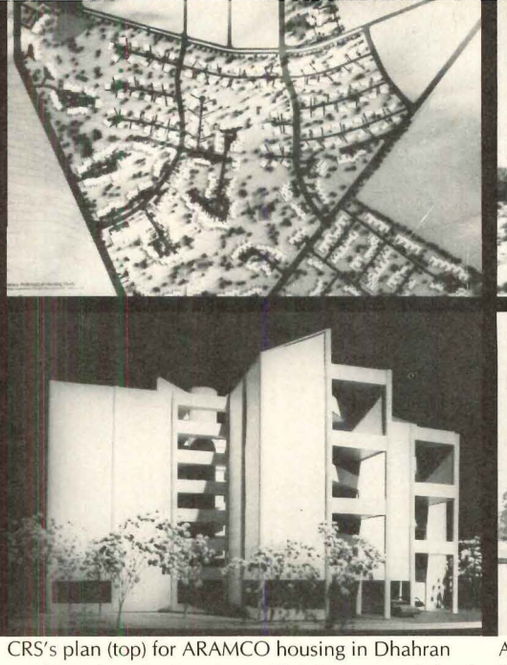
Architects Caudill, Rowlett and Scott have been successful in producting an evolvement of indigenous architecture in their University of Petroleum and Minerals; visual similarities to the photo at right are obvious. But much of the new architecture (as seen on the last page) has not been so successful.

Dhabi and Saudi Arabia. He said that much of their work is for governments, although there are seven or eight outstanding proposals to private developers. In Algeria, MBM is organizing a construction company for growth to some 56,000 employees. On their construction projects, MBM strongly believes in the turnkey process as the most effective method of producing what the clients want: completed projects. George Rice of MBM says that construction management is completely new to the Mideast, but the need is enormous.

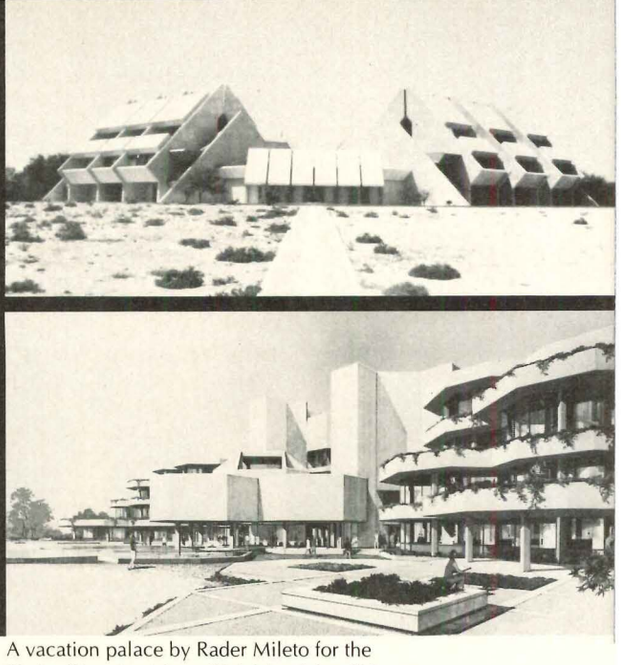
- Engineer E. C. Kobbs handles business development of Middle East work for Caudill, Rowlett and Scott (CRS in 1964 was one of the first firms in Saudi Arabia, and the firm is working on projects of costs totaling close to $1 billion with an equal amount pending). Clients include the governments of Qatar, Bahrain and Saudi Arabia; plus ARAMCO and the Corps of Engineers. He credits the firm's success to their interdisciplanary skills, including construction management which is in growing demand. Detailed drawings are found to be more important than in the U.S.—contrary to Mideast practice. CRS/DA maintains an office of about 20 persons in Beirut and has an associate office in Riyadh with Rashid Engineering.
- Kathleen Kelly has just returned from Saudi Arabia (RECORD, October 1974; she was formerly with UDC) with a team of landscape architects consisting of Terry Schnadelbach, William Johnson and Grace Kirkwood. She says that, for the landscape architect, the area is unexplored territory. "There isn't even a list of plants that grow there or can survive." The sun and constant wind are predominant factors. Most of the top layer of soil is not sand, but many materials including cement; every soil is saline." The team's findings will be available shortly as a report.
- Hans Neumann is president of Perkins & Will International and maintains a Tehran office, with Iranian partners, of up to 80 people. Production work on larger projects is done in the Chicago office. Among the current projects are the Jondi Shapour University for 12,000 students on the Persian Gulf, a resort, and two hospitals. A new town on 3,000 acres near Tehran (photo, right) was carefully planned by P&W to consider traditional patterns of local life. But—according to Neumann—this plan was rejected by the clients because it was not Western. "They didn't want to hear the word bazaar. It was a shopping center. Many decision-makers are making the same mistakes that the West has, but the results will be worse."
- Architect Hugh Jacobsen, whose library in Cairo (RECORD, May 1974, page 120) is under construction, does not maintain a local office. He estimates that the library will take four years to build: excavations were made completely by hand. "Workers live on buildings as they go up." The library was dedicated with sacrifice of a water buffalo.
- Architect Walter Rutes is a vice president of Inter-Continental Hotels, which is building many facilities in the area. Its hotel in Abu Dhabi (photo right) was designed by Ben Thompson: "When the Sheikh saw Thompson's original model, he doubled the size of the project and moved it to a prominent position on the harbor. Our clients want good architecture that reflects local traditions (which are not always what Americans think they are)."
- Architect Michael Moss, partner in Haines Lundberg & Waehler, says that—despite a 20-year involvement in the Mideast—the firm is opening its first permanent office in Beirut which will have about 10 people. He states that the clients want American expertise which usually includes producing design here. Short schedules can be met with multi-disciplinary teams working on the site.
- Architect Gyo Obata has just returned from Iran where he was asked to produce a schematic presentation in Tehran in three days. Hellmuth, Obata and Kassabaum are opening an office in Beirut with Benham Blair and Abbot Merkt.
- Architect Hugh Stubbins is designing a technical school in Iran. He does not have an office there but is associated with an Iranian architect. Contrasted to others' experience, he was able to do a thorough program. On design, he says: "They wouldn't have hired me, if they wanted an indiscriminate application of U.S. standards."
- Jim Shilstone of the Architectural Concrete Consultants says that the only key to construction's success is on-site study. "You have to go back to fundamentals, when there are no standards for anything. How do you make concrete when the water is 100 degrees and full of salt?"
- Architect George Batori is an associate of Rader Mileto in Rome, which designs projects in both Iran and the Arab countries. They have recently completed a palace for the Shah of Iran, and have a Horsemanship Club under construction in Riyadh (photos, opposite); and much of their current design work is for various U.S. hotel corporations. "The lack of environmental data everywhere, except Iran, will make the job more difficult." They anticipate construction to take about two years.
- Architect John Harkness of TAC was responsible for the University of Bagdad at a time when the firm had offices in Rome and maintained day-to-day contact with Iraq by phone (communications could have been helped by TAC personnel who speak the language—the office gives courses). The success of their Kuwait Fund Building (photo, opposite) is partially attributed to good on-site management. TAC has a small office in Kuwait.
- Architects who have gone to work for local firms find living conditions difficult and expensive. Alluringly high salaries are sometimes "eaten up" by the costs of self-preservation. On professional satisfaction, one unhappy employee writes, "My feelings oscillate between excitement from planning a really big project and despondency from having circumstances keeping me from doing a professional job. Everyone on a team does his thing."



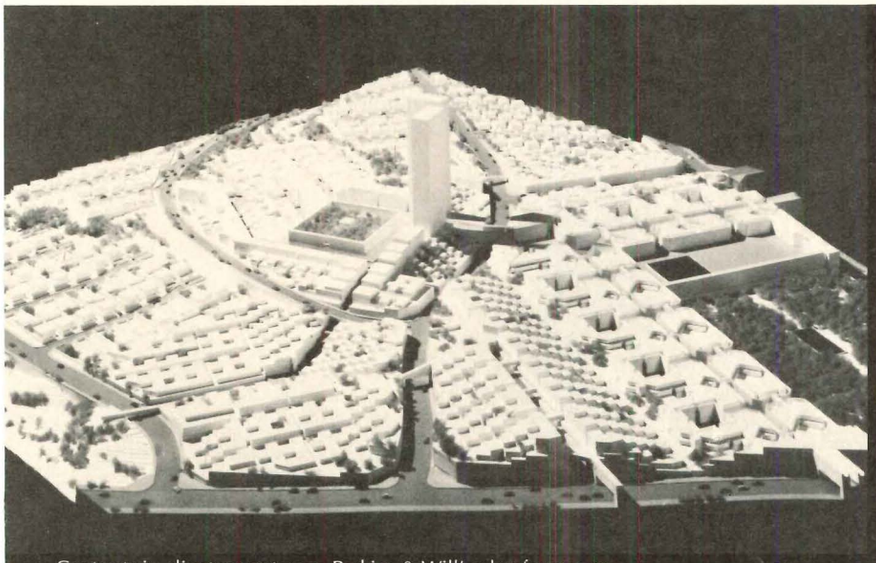
An interior corridor in the Friday Mosque in Isfahan characterizes some of the best qualities of indigenous architecture.



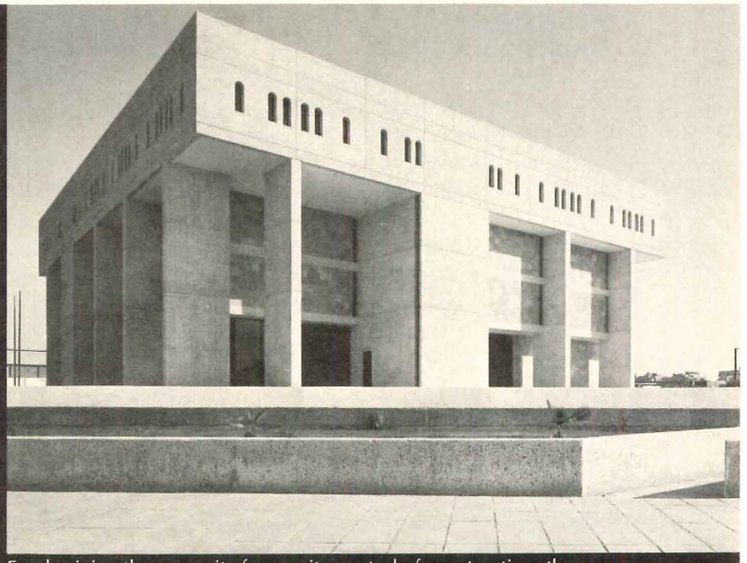
CRS's plan (top) for ARAMCO housing in Dhahran combines low-rise housing, which is characteristic of the area, and high-rise (bottom). It also combines tight-knit planning with more open Western concepts.



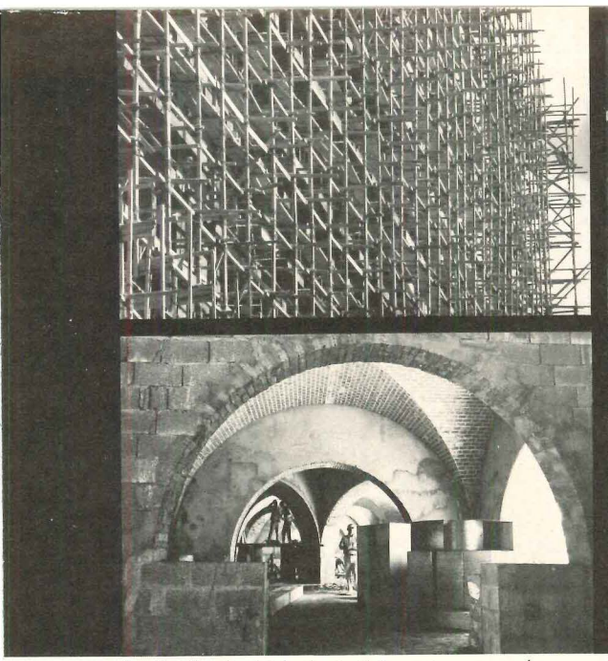
A vacation palace by Rader Mileto for the Shah of Iran (top) is on Kish Island. Jondishapur University (bottom) is by Perkins & Will.



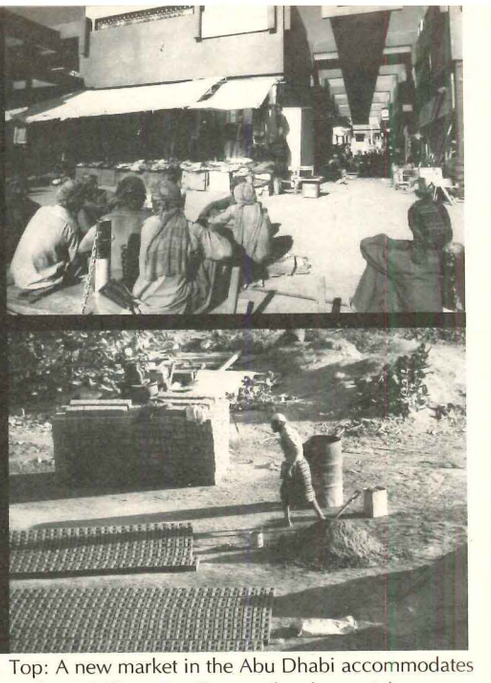
Contrasts in client acceptance: Perkins & Will's plan for a new town near Tehran (above) was rejected by the clients because of its reliance on traditional living patterns, while Ben Thompson's Abu Dhabi hotel (bottom) for Intercontinental (which prides itself on indigenous design) was doubled in size when the pleased local owner saw the first model.



Emphasizing the necessity for on-site control of construction, the architects TAC for the Kuwait Fund Building (above) and Rader Mileto for the Horsemanship Club in Riyadh (below) are producing successful, finished products—despite construction limitations (see next page).



Scaffolding for high-rise buildings, is commonly tied together with rope (top). A Tunisian hotel (bottom) by Ahrens di Grazia Frizzell successfully utilizes local construction techniques.



Top: A new market in the Abu Dhabi accommodates traditional life-styles. Bottom: local material shortages are created by low-volume production, as in the making of concrete block in Jiddah.

Are Western services relevant to the Mideast?

The pragmatist will say that any services that are desired are important. But—while there is no doubt that there is much to be done in raising the average Middle East standard of living—it is possible that the Western professional will over-achieve—by imposing alien standards on countries with their own unique cultures. With the exception of Iran, which has seen some evolvement, Westerners are helping countries that have their own high and varied standards leap into the twentieth-century Western concept of alikeness. While thinking Americans ponder the desirability of our own rapid development, the changes in the Mideast are infinitely swifter and more radical. Hans Neumann says: "They need an immediate warning before they destroy their heritage."

While the photographs on this and the last two pages typify the best examples, much of the recent construction by Westerners is poorly planned and built, and its designers have copied the appearance of (for example) Miami in the 1950's—despite a relatively unencumbered ability to produce good architecture. And these buildings have sometimes been built to house programs that never materialized (such as hospitals without staffs—or high-rise buildings without operable elevators).

According to another architect with local experience: "One of the big problems will be moving too quickly without proper analysis." Projects are commonly doubled and tripled in size during design, and often there can be no redesign of basic support facilities or a new relationship of the parts.

Unfamiliarity with planning requirements and construction limitations is a common problem for many foreign professionals. U. S. architects are just not accustomed to the special requirements generated by social mores. For example: the circulation patterns and duplications of facilities required for segregation of the sexes can add 30 per cent to the area of a building. Where hotels are social and business centers, they require unusual support facilities such as vast storage areas. Royal boxes and machine-gun emplacements are required in public spaces.

On construction, a U.S. consultant says that architects can be "badly burned." Orders for expensive materials from the West take up to six months for delivery, and bad roads with weak bridges sometimes make transportation next to impossible. "Standard specifications used in the U.S. are useless. What you are used to here, you have to assume is not there." Other observers report that local contractors change plans on whim, and that labor—although still cheap—is practically non-existent.

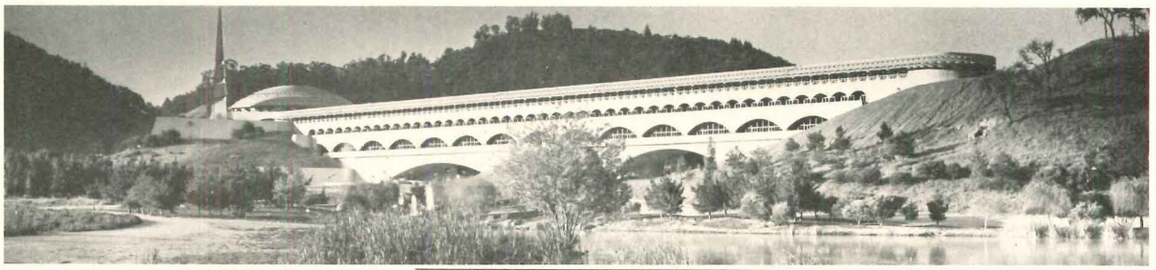
The most dissatisfying experience for many designers will be the lack of accustomed perimeters, which leaves a sense of operating in a vacuum. Where do you site a building in flat sand as far as the eye can see? An architect reports that he is working on school buildings without a program and has no time to establish one. Colin Buchanan and Partners did a master plan for Kuwait four years ago, and that plan has remained in a locked room ever since. Director of Kuwait Planning, Ghazi Sultan, states that the bureaucracy is unable to translate the plan into activating legislation because the plan is not understood. While a height limitation has been imposed in the capital (see photo, page 103), most construction continues totally uncontrolled.

Still, many architects believe that the opportunities to do relevant and satisfying projects exist. One states that—because the client is often a powerful individual—it is easier to discuss alternatives and processes. Others state that the chances of realizing a project as it was conceived are far better than elsewhere. Some clients appreciate what concerned professionals are doing, and—in every case—they have the money to pay for good architecture. And—as a last quote: "Just because rain is unpleasant while asleep in the open, it is important that basic needs are not met indiscriminately."

—Charles Hoyt

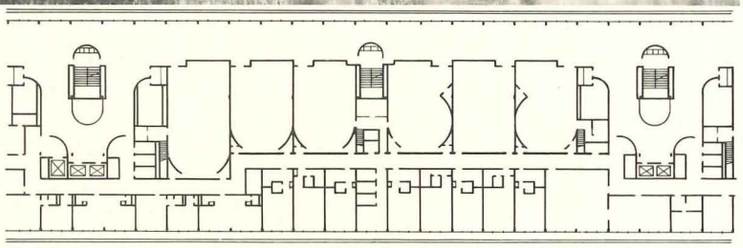
COURTHOUSES—PROBLEMS AND OPPORTUNITIES FOR INVENTIVE DESIGN

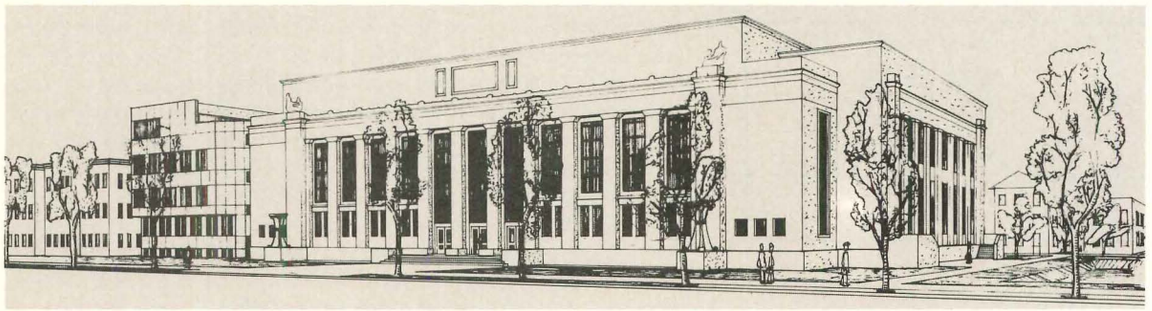
The essays on courthouse design which appear on the following pages are important not just to architects who have, or expect to get, commissions for designing a new courthouse or renovating an older one. Two experts in the field have written from their own experience with courthouses, which provides an unusual range of programming techniques, design resources, and approaches to public clients. Together these essays provide an enlightening look at the entire range of the practicing architect's concerns—whether they be focused on an old building or a new one, and whether the building be a courthouse or other civic structure.



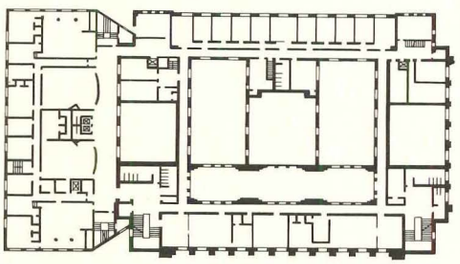
Dandelet

Marin County Civic Center, by Frank Lloyd Wright, consulting architect, Aaron G. Green.

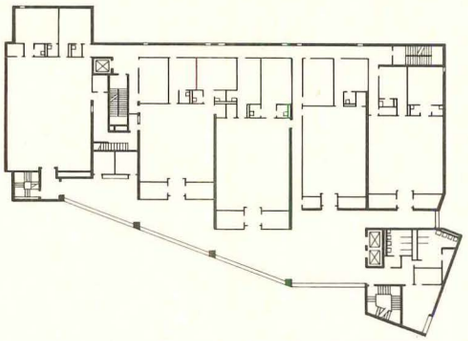




Hartford County Courthouse, proposed addition, by Allan Greenberg.

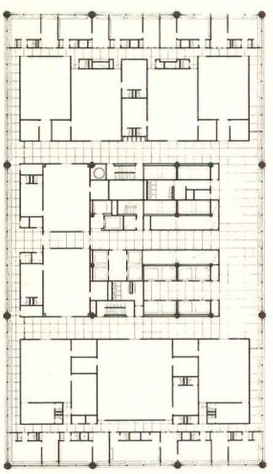


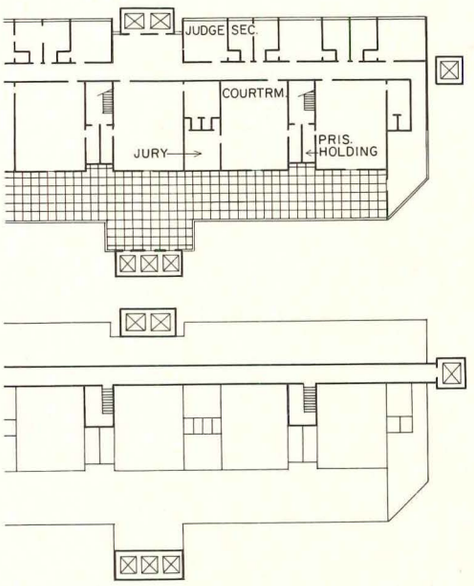
Waterbury (Connecticut) Courthouse, by Joseph Stein & Associates and Louis R. Fucito & Associates.



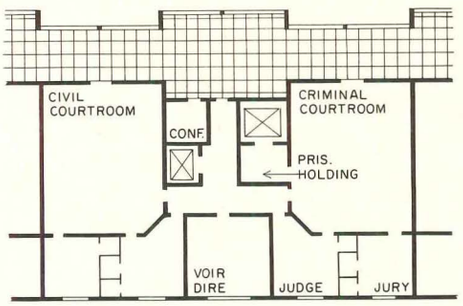
Chicago Civic Center, by C. F. Murphy & Associates

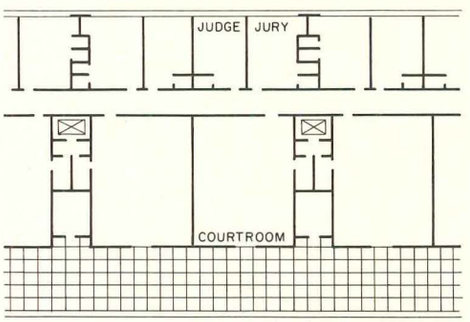
Hedrich-Blessing



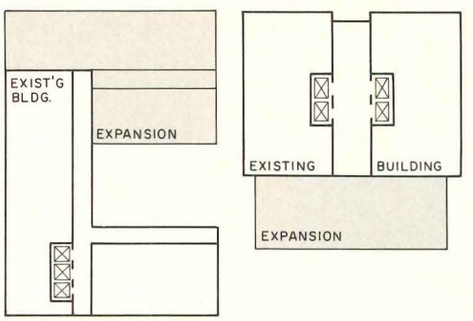


Horizontal circulation (see above). On the lower level are corridors for the public and for the court staff, each with its own elevators. Courtrooms and jury rooms are between the corridors, judges' chambers across the private one. Prisoners are brought in by a third corridor on the upper level.
Vertical circulation (below). Small private lobbies serving pairs of courtrooms are reached by elevators for court staff and for prisoners.





Jury deliberation rooms (above). These can be placed on the outside wall of the building when a horizontal circulation system is used—if there is no objection to the jury walking across the private corridor to reach them.
Future expansion (below). Two diagrams show the schematic possibilities for adding onto a courthouse building without disrupting its operations.



Introductory guidelines for planning a modern courthouse

by Allan Greenberg

The physical organization of the modern courthouse has been completely transformed by the enlarged scale of its operations and the growth of its administrative staff. The problem is not simply one of providing additional courtrooms and office space to cope with an increased case load; it is that the original architectural and functional arrangement of most older courthouses cannot support the court as it now functions, and becomes a hindrance to efficient operations, security and public safety. What is required is a new set of planning guidelines on which the design of new courthouses can be based.

Administrative and judicial functions require very different kinds of space

The first guideline provides for the separation of the administrative and social-service departments from the courtrooms and their associated functions. The latter include judges' chambers, hearing rooms, jury assembly and deliberation rooms, conference rooms and law library. The court's administrative and social-service departments require flexible office space in which the layout of partitions can be altered to respond to administrative or procedural changes. The courtrooms and their associated spaces, on the other hand, are unlikely to change during the life span of the building.

The architectural and engineering characteristics of flexible and permanent space are, of course, quite different, suggesting their separation onto different floors in a multi-story building, or into zones in a one-story courthouse. Normal office partitioning cannot be used for court functions because it is difficult to obtain acoustical privacy. Where acoustical privacy is required, special precautions must be taken which tend to eliminate flexibility. The walls must penetrate the suspended ceiling and be sealed against the structural slab. Pipes and ducts are specially insulated, and the movement of air must be planned to inhibit the transfer of sound. This means that the air-conditioning system has to be tailored to suit a particular layout of rooms, and a change in partition layout requires revamping the whole system. Since permanent spaces serve for the life of the building and since changes are difficult and costly, the information given to the architect about these spaces must be comprehensive and minutely detailed.

Multiple circulation systems are needed in courthouses

Separate systems of corridors, lobbies and elevators must provide access to the courtrooms for the public, for prisoners and for judges, jurors and staff. In most courthouses built before 1950, public spaces are used by judges, jurors, attorneys, staff and sometimes even prisoners to reach the courtrooms or judges' chambers. Today, considerations of convenience, efficiency and security require that segregated circulation areas be provided.

The horizontal system provides lobbies and corridors to connect *all* the courtrooms on each floor with public, staff, juror and prisoner elevators (see diagram at the left). The public has its own bank of elevators and its own lobby. A private corridor at the rear of the courtrooms is used by judges, staff, and jurors for access to judges' chambers, offices, courtrooms and, if necessary, voir dire (preliminary questioning) rooms. The connections between the private corridor and public lobby must be monitored by a receptionist in order to control access and maintain security. Prisoners use a special corridor, located on a mezzanine level directly above the private corridor, to reach the courtrooms. A staircase connects this corridor to a prisoner holding room adjacent to each courtroom, and a special prison elevator provides vertical circulation from the cell block to the courtroom floors.

The vertical circulation system provides two separate private elevators to serve a series of courtrooms stacked one above the other. One elevator is used to transport prisoners from the cell block to a prisoner holding room adjacent to the courtroom. The other is for the use of judges, jurors and staff. It opens into a private lobby which provides access to the judge's chamber, the rear of the courtroom and, if necessary, a voir dire room. A connection to the public lobby is available for attorneys and members of the public who have appointments to see a judge.

The resulting pattern is of pairs of courtrooms, stacked one above the other on successive floors of the building, grouped around a private staff elevator and lobby. This arrangement has a formative impact on the planning of the rest of the building, since the space on any non-courtroom floor will be interrupted by these private elevators. In the jury assembly room, they must be clearly marked in order to avoid jurors arriving at the wrong courtroom.

The vertical system is best suited to judicial systems in which judges travel on circuit. In this case, a set of resident chambers must be provided for the judges who live in the judicial district. This is in addition to those behind each courtroom for the use of the sitting judges, most of whom will travel to the courthouse from another judicial district. The resident judges' chambers are best located away from the courtrooms, on another floor of the building, preferably near the law library.

The vertical system provides good access between the courtroom floors, the law library, the pool of judges' secretaries, and the various departments of the court. The judges' secretaries serve both sitting and resident judges, but are best located near the resident judges' chambers away from the busy courtrooms. Each department must be planned in proximity to the private elevator core serving the court-

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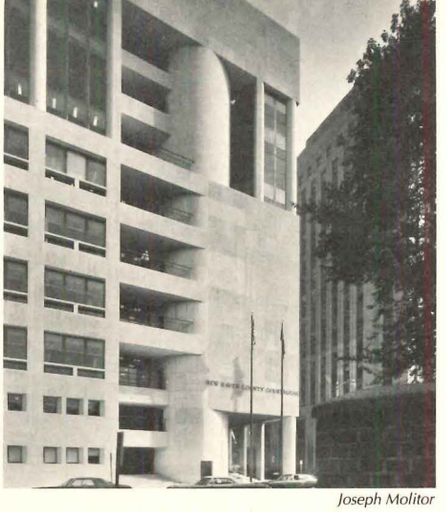
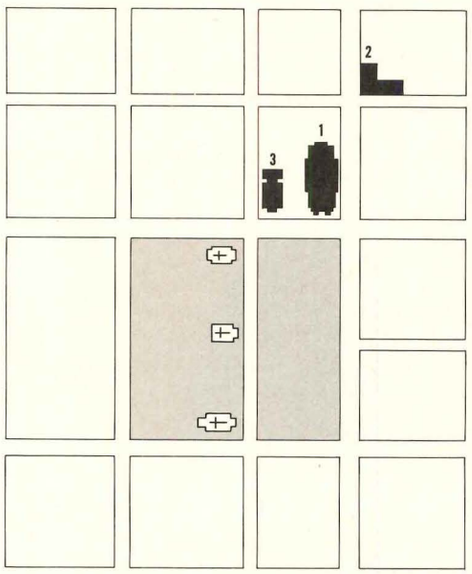
Allan Greenberg is Architectural Consultant to the Judicial Department of the State of Connecticut and the author of a forthcoming book, Courthouse Design: A Handbook for Judges and Court Administrators, *commissioned by the American Bar Association Commission on Standards of Judicial Administration.* *This essay, and the essay on the architect-client relationship on pages 65-66, are excerpted from Mr. Greenberg's book.*

Gerald Allen



Joseph Molitor



Musical chairs on the New Haven Green

In 1965 the Connecticut Judicial Department was faced with the problem of obsolete facilities and a major shortage of courtrooms and office space in New Haven. The three courts, the higher and lower trial courts and juvenile court, were located, in the City Hall Annex, the Old County Courthouse (1), and a late nineteenth century house. A three-phase solution was developed by the State Judicial Department and Public Works Department. The *first phase* was to plan and construct a new 165,000 square foot building for the higher trial court on a site (2) across the street from the Old County Courthouse. *Phase two* was to move the lower trial court out of the City Hall Annex into the Old County Courthouse. This robust building of 1913, by William Allen and Richard Williams, is based on the design of St. Georges Hall, Liverpool, by Harvey Lonsdale Elmes. To date $250,000 has been spent on a new roof membrane and refurbishing a splendid stained glass barrel vault over the three-story central lobby. A major renovation of the building is in planning. The *third phase* of the plan calls for the acquisition of the New Haven library building (3) by the state, and its conversion into a juvenile courthouse. A study indicated that the building, an excellent Cass Gilbert structure of 1908, could be adapted to the needs of the Juvenile Court with only minor modifications to its splendid interior spaces. This phase of the plan is waiting for completion of the new city library which is part of a government center complex, designed by Paul Rudolph. This game of musical chairs has resulted in the preservation of two important buildings on this historic New Haven Green, and also saved the taxpayers some hard-earned dollars. The estimated cost of the completed complex will be about $16 million.

rooms which are used to hear its cases so as to provide for the convenient movement of personnel and documents.

The horizontal system is appropriate when judges are assigned their own courtrooms on a permanent basis. Its main drawback is that jury deliberation rooms are interior, windowless spaces. If there is no objection to the jury walking out of the courtroom, across the private corridor, to jury deliberation rooms on the exterior side of the building, this problem can be circumvented. (See diagram.)

The height of the building is also an important factor in choosing between the horizontal or vertical circulation system. Because of the cost of extra elevators, the vertical circulation system is not suitable to a building of less than six floors.

The circulation system is an important factor in selecting appropriate locations for the various functions and departments in the building. The optimum location depends on interdepartmental communications, public convenience and security, as well as on factors like the volume of visitors and the frequency and nature of the transactions that take place. All this information must be systematically recorded and classified on the basis of priority. One of the most important considerations is that circulation routes in the courthouse should be self-evident.

Architects and court administrators often overlook the fact that the majority of people, especially jurors and witnesses, are in the building for the first time. In many new courthouses, the public experiences considerable difficulty locating both the people and the services they need. When members of the public constantly stop to ask for directions it is a sure sign of a poorly planned building. The majority of visitors usually have destinations in administrative or social service departments. If these are all concentrated on the lower floors of the building, public access is considerably simplified. Some departments may even want a separate entrance directly off the sidewalk.

Centralization has the additional advantage of limiting traffic on courtroom floors to people directly concerned with court proceedings, thereby improving security. The courtrooms should occupy the midsection of the building. The library, judges' chambers, jury assembly room and other areas which require some privacy can be assigned the upper floors. This arrangement results in a division of the building into three zones—office areas, courtrooms and private areas.

Interdepartmental proximity requirements are also an important factor in selecting locations for the various departments and functions. Certain departments require direct access to the private circulation system serving the courtroom for the movement of both court records and personnel. These include the offices of the clerk and the prosecuting attorney, and other departments depending on local circumstances. The segregation of jurors from the public is necessary for efficient control over their movements and to preclude any contact with plaintiffs, defendants, their friends, witnesses, attorneys or other interested parties. For obvious reasons, the connections between the segregated circulation routes and public lobbies must be minimized and carefully controlled. In addition to these "process" factors, the shape and size of the site, the character of the surrounding environment and the zoning restrictions can impose severe limitations on the building's shape, height and floor area, restricting the number of options available for locating departments.

Ways to provide for future expansion in new courthouses

Although future developments are not always predictable, many changes in the court can be anticipated with sufficient certainty to warrant provisions being made to accommodate them in the new building. These may include the creation of new departments, the merging of older ones or, at a smaller scale, the adoption of microfilm for storing records. The initial phase of expansion (10-15 years) is best included in the new building. A difficult question to resolve is whether to provide this space on one or two floors that remain unused until needed, or to distribute it in smaller units on each floor of the building. In the office areas, it is advisable to provide an additional safeguard by making generous initial space allocations. The movable partitions can be rearranged to accommmodate additional person-

nel and equipment as the work load increases. Provision for eventual expansion by new building also requires careful thought. The circulation system and elevator locations must be planned at the beginning in order to achieve a good and economical connection to a future addition to the courthouse.

Public convenience should be a major design consideration

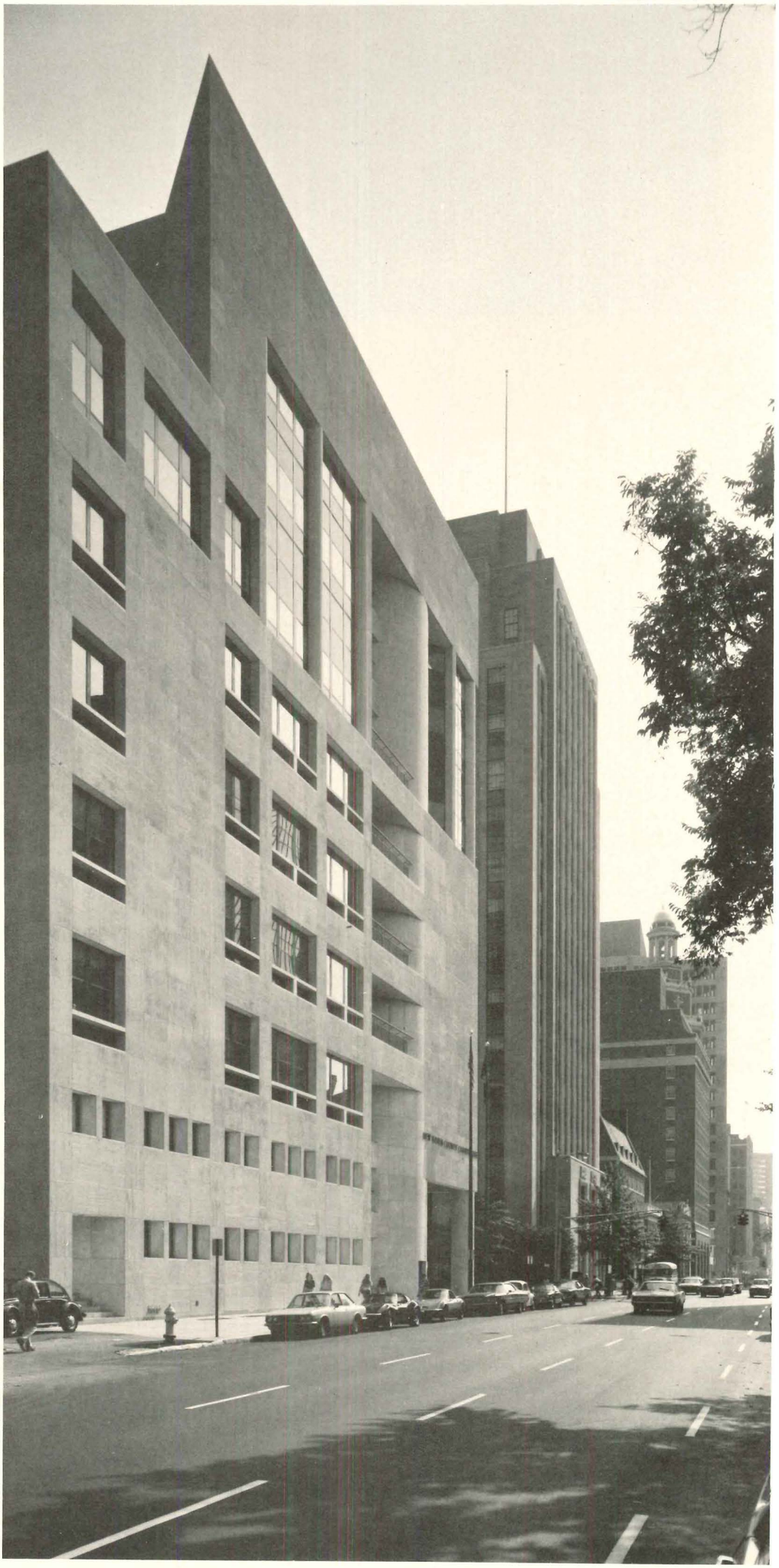
The public is composed of a large number of people who infrequently visit the courthouse as witnesses, litigants and spectators. The circulation routes and spaces used by each group must be studied, and additional information on user expectations obtained by questionnaires and interviews, and by consultation with the staff who deal with the public in each department. The following guidelines are useful to the consideration of public convenience and satisfaction:

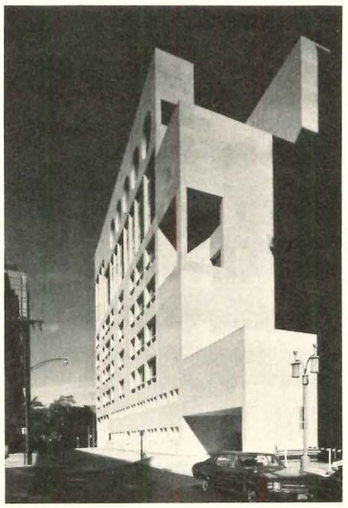
- Functions serving large numbers of people should be grouped on the lower floors of the courthouse. In addition to elevators, an open stair or escalator should be used to provide direct communication between these floors.
- An information booth should be located at the main entrance to the courthouse, and at other locations, such as the jury assembly room and witness lounge, where large numbers of people gather.
- A clearly legible, color-coded system of directories and signs should be prominently displayed. The location of offices, courtrooms, witness lounges, jury assembly rooms, toilets, information stations, vending machines, snack bars and telephones must be indicated.
- Spaces for a wide variety of activities such as reading, working, conversation, games and watching television should be provided in jury assembly rooms and witness lounges.

A voice amplification system should be provided in all large courtrooms to assure that the public and press can hear the proceedings. Comfortable seats and coat racks are also necessary in the spectator area.

At this point, a cautionary note must be sounded, for it is all too easy to become preoccupied with technology, operations research and long-range trends and projections, and to overlook the physical and psychological well-being of the staff and public in the courthouse building. This human factor, with which the fourth planning guideline is finally concerned, is difficult to articulate with precision, but it must be considered. The problem is more than simply choosing comfortable chairs and providing sufficient toilets. A basic question must be asked: "What kind of human environment is best for the particular transactions that take place?" Factors like the absence of noise and distraction, adequate and comfortable lighting, convenient places to sit while waiting, and windows in areas where they will be most appreciated must be considered in order to assure that each space is comfortable and pleasant, and well suited to its particular function. The architect and the building committee, moreover, must take specific steps to gather information on user needs by in-depth interviews with courthouse staff, who should be asked to study the plans and models and suggest improvements.

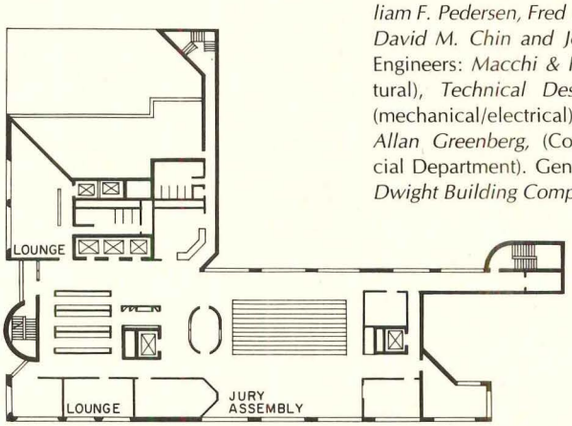
Joseph Molitor photos



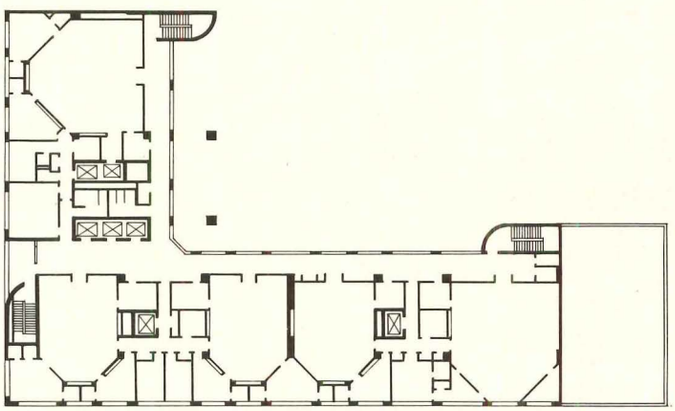


The new New Haven County Courthouse is a monumentally simple building. Its limestone facade, built close to the sidewalk, continues the line of one of New Haven's major streets (photo opposite page). The main entrance is at the corner of the building (photo right), and it leads into a large ground-floor lobby with public elevators and a reception desk (plan below). General offices are on this floor. The courtroom floors above are arranged according to the vertical circulation scheme described on the previous page—with small private lobbies (and private elevators) generally serving pairs of courtrooms. The private elevators also reach the jury assembly room on the top floor. A law library is on the next to the top floor, and is shown in the photo below right.

NEW HAVEN COUNTY COURTHOUSE, New Haven, Connecticut. Architects: *William F. Pedersen & Associates, Inc.—project architects: William F. Pedersen, Fred B. Bookhart, Jr., David M. Chin and John W. Persse.* Engineers: *Macchi & Hoffman* (structural), *Technical Design Associates* (mechanical/electrical). Consultant: *Allan Greenberg,* (Connecticut Judicial Department). General contractor: *Dwight Building Company.*



NINTH FLOOR



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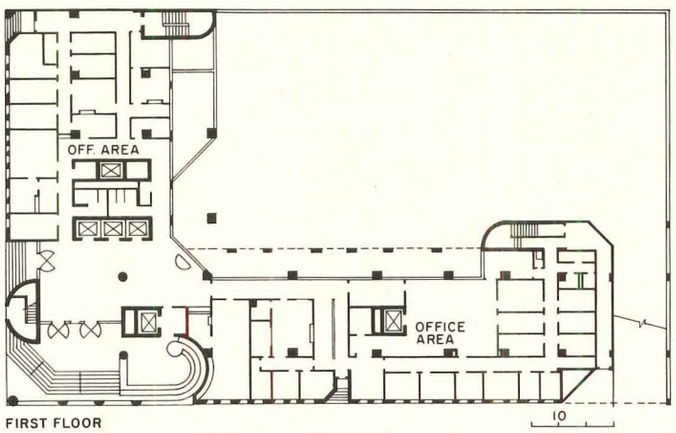

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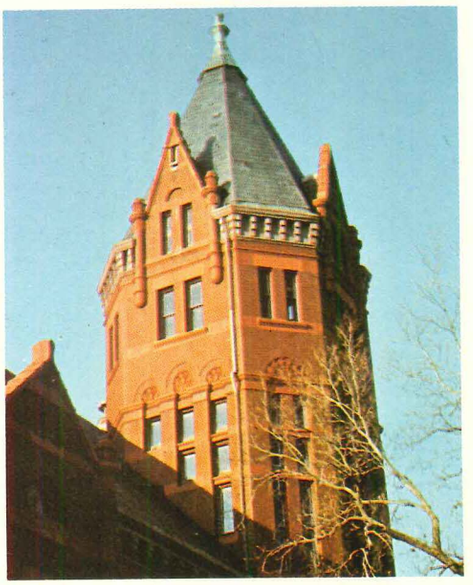
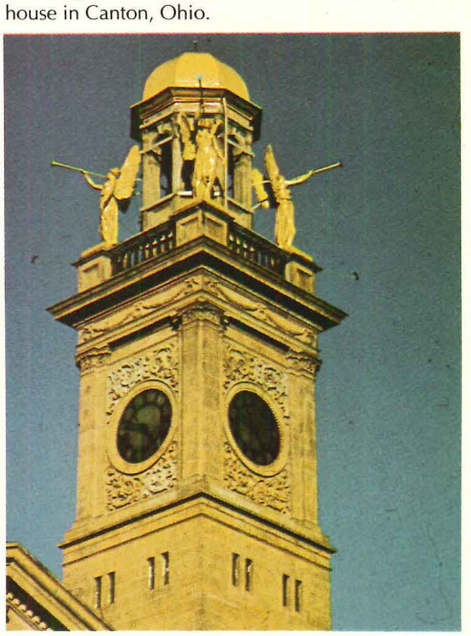


Details of the Marshall County Courthouse in Marysville, Kansas, one of nine Midwestern county courthouses selected for feasibility studies at the University of Illinois Chicago Circle Campus.

Courtroom in the Warren County Courthouse, Warrenton, Missouri. Below, Trumpeters of Justice adorning the clock tower of the Stark County Courthouse in Canton, Ohio.



The county courthouse: rediscovering a national asset

by Ben Weese

It is important in the Bicentennial year to study the American courthouse as a functioning building type of the highest symbolic order. Certainly no other building type has such wide-spread impact on local history, because of its monumental quality and its location, which make it a real symbol of the physical and social organization of countless American communities.

During the last half of the nineteenth century and the first few years of the twentieth, particularly fine court buildings were erected by many counties, especially in the Midwest, which was just then coming into its own economically as well as politically. The county's judicial and administrative offices were housed in a centrally located building in each county seat. Thus county seats were important locations, and the courthouse was carefully sited on the highest hill or the most prominent central square where often their cupolas and towers could be seen from the farthest reaches of the county. In their pomp and style, the courthouses represented a visual locus surrounded by the region's chief commercial buildings. It is because of these factors that the monumental older courthouse cannot be replaced, for without it the town itself loses definition and cohesion.

During the past ten years, nevertheless, we have lost scores of these majestic structures. Throughout the Midwest, noble and opulent reminders of the civic pride of our forebears have fallen to the wrecking ball. Numerous courthouses are threatened today, and more will become endangered in the next few years.

On the surface, there are two reasons for the recent number of courthouse preservation problems. In many cases, generations of deferred maintenance have finally taken their toll, and the buildings have developed serious code violations as well as deplorably seedy appearances. Oftentimes, however, maintenance-related problems are cosmetic in nature, and comparatively easily remedied when objectively approached.

More serious are problems caused by the changing functions of modern county government, coupled with rising county population. Courthouse architects of the nineteenth century could not foresee the changes which have taken place in recent years in county services. Buildings which quite adequately housed governmental services of county courts, clerks, recorders and tax offices are today stretched to the bursting point by the addition of county health departments, welfare offices, motor vehicle license offices, veterans' affairs offices and agricultural extension agents. Some counties in the path of urbanization have added personnel to the point where the old building is overwhelmed.

Ben Weese, of Harry Weese & Associates in Chicago, is an architect who energetically champions old buildings of all kinds (RECORD, December 1974, pages 126-130) and also designs new ones (RECORD, April 1975, pages 83-90).

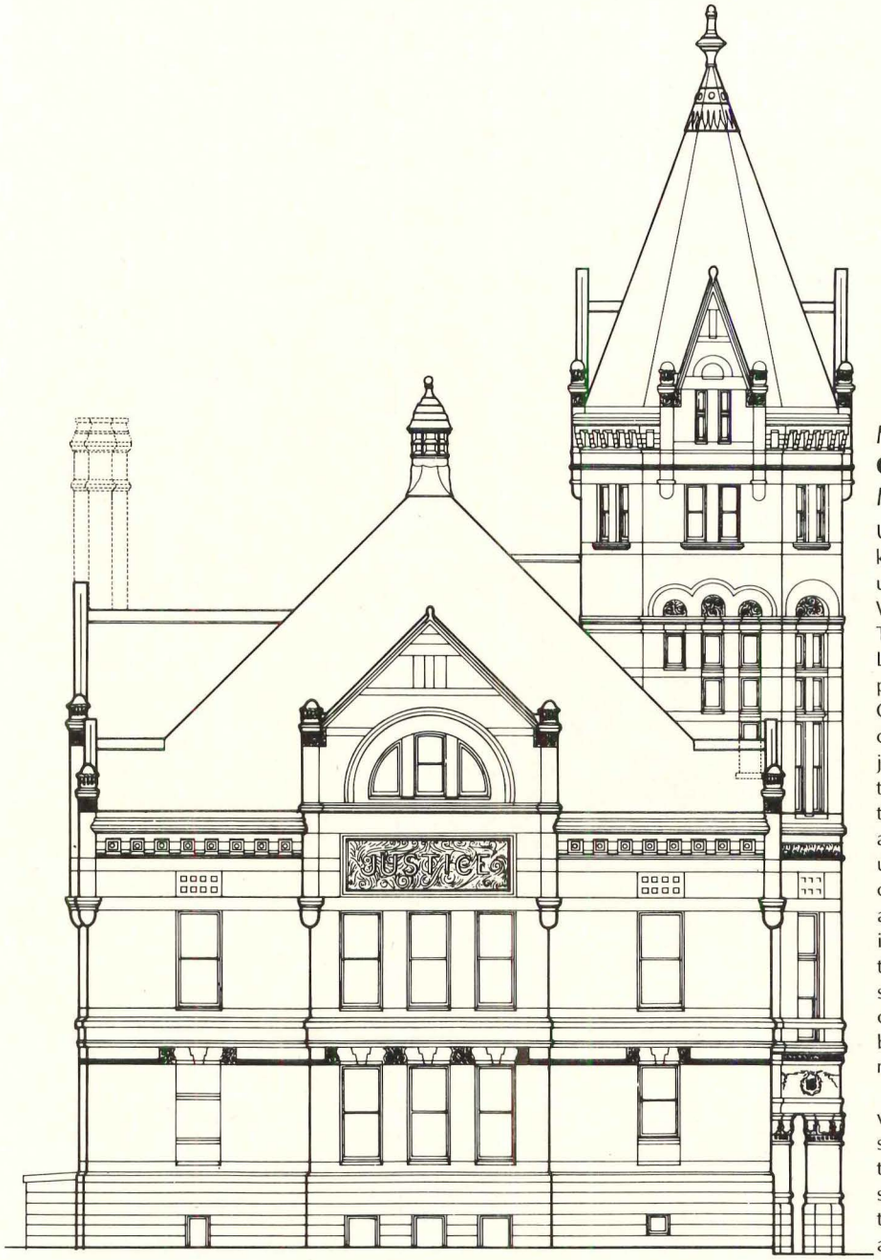
Nevertheless, why is one county able to rearrange and accommodate its growth and changing needs in a refurbished old courthouse, while another with identical problems ends up replacing its majestic showpiece, its monumental heart, with a faceless, standardized one-story office building devoid of civic dignity? The very fact that this is happening in some counties and not in others calls for more coordinated study of a problem which lends itself to literally thousands of analogous situations, not just in the Midwest but throughout the entire country.

It is our contention that the key element in the preservation of courthouses is the attitude of the architect and the people involved. For too long, architects and citizens have looked at these older buildings as white elephants—liabilities instead of assets. It takes imagination to find solutions to the vexing problem of accommodating modern needs in an older space, and too often architects have taken the easier path of starting from scratch. But in an age of increasing visual standardization in which we are daily losing our sense of time and place, we must begin to find ways to keep our very important landmarks.

This, then, was the rationale behind the Historic Courthouse Project, a cooperative effort involving the National Endowment for the Arts, the National Trust for Historic Preservation, the University of Illinois Chicago Circle Campus and Harry Weese & Associates. Over 1000 counties in 13 Midwestern states were surveyed and asked to participate in the study. From the responses, we were able to narrow the scope of the project to a study of courthouse space management in counties experiencing both increasing and decreasing growth. We elected not to become involved in eleventh-hour hopeless cases, nor was stylistic excellence a major factor in the selection process. While each possesses its individual problems, all nine courthouses chosen for intensive study represent fairly typical conditions, so the results should have wide application everywhere.

Each courthouse was assigned to teams of fourth- and fifth-year architecture students at UICC, acting as "paraprofessionals" under the supervision of a group of professional advisors, including Mr. Michael Lisec and myself, of Harry Weese & Associates.

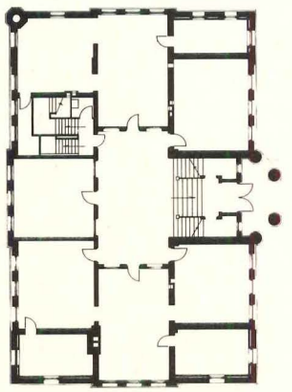
Prior to the teams' field visits to the subject courthouses for interviews and on-site investigations, the entire group made a joint field trip to seven counties in Illinois to develop a background understanding of the problem. Team visits to the selected courthouses involved interviews with all county officials, on-site photography and data gathering, meetings with local historical societies, interested individuals and inevitably the local media. A wealth of data was brought home, sorted and weighed, and mutual problems were compared. Repeat trips were made when necessary. One county required a special visit by Don Anderson, of The Engineers Collabo-

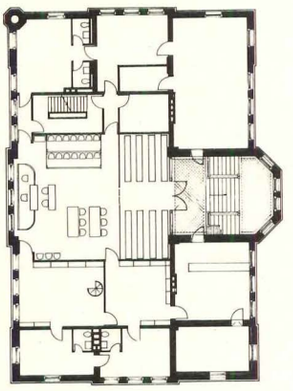


Marshall County Courthouse, Marysville, Kansas

UICC students Richard Latkowski and Gerhard Rosenberg, under the direction of Ben Weese (and with the advice of The Engineers Collaborative, Ltd.), developed a renovation proposal for the Marshall County Courthouse that, according to current growth projections, will be able to satisfy the County's space needs through 1990. The study, which advocates a versatile adaptive use rather than precise historical reconstruction, begins with a thorough replanning of existing floors in the building, and then proposes either the construction of new annexes or a conversion of existing adjacent buildings to accommodate ultimate space requirements.

The Courthouse, which was built in 1891, is a brick and sandstone faced structure with terra cotta trim, and it was designed by the Milwaukee architectural firm of Henry C. Koch and Company.





rative, our consultant structural engineer. The students were then asked to develop preservation action strategies which could be returned to their para-clients, the county commissioners, as completed feasibility studies.

Although in the beginning these architecture students were not necessarily committed or interested in questions of preservation strategy, they have made a very mature response to a complex, difficult, and sometimes negative situation. These 19 emerging professionals have received their first in-depth training in a highly skilled but largely uncharted area: that of professional architectural preservationist. The training they have received will help them meet the growing demand for knowledgeable and sympathetic professionals in this field.

One of the chief goals of this effort was to find out what it will cost to save buildings. Unwise counsel in the past has called for major surgery that bankrupts and compromises the patient beyond recognition.

Rule One is that the old building, constructed in an era of cheap labor and high quality craftsmanship, was better built than new buildings, given reasonable maintenance (or even none!). Old buildings withstand the test of time.

Rule Two is to not intervene beyond what program and common sense require. Naturally, accommodations to public safety and codes must be made, but an overzealous effort at "sanitizing," automatically dropping ceilings, closing off the grand stair or the central cupola are misguided. "Compensatory" code requirements can be negotiated so that public safety, access for the handicapped, etc., can be accommodated without losing the original grandeur and concept of the building. Minimal intervention is a hallmark of a competitive final cost.

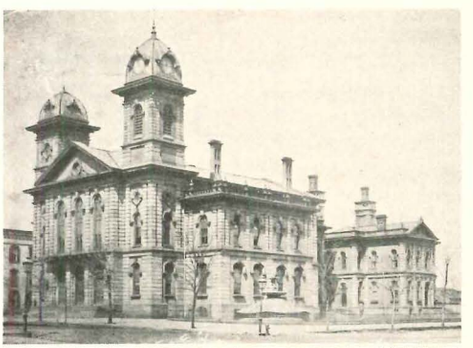
As mentioned earlier, it is possible for court functions to continue to be accommodated in these buildings. In some cases, however, a series of unplanned changes over the years had resulted in too much space devoted to dead storage (election machines, old records, etc.) or completely unused areas such as attics. Here, a comprehensive plan was developed that focused on the total space available. Minimal alterations resulted in greatly increased space. In other cases, light steel mezzanine floors were added between floors (often 10-20 feet clear) with no structural problems, because of the massive masonry walls.

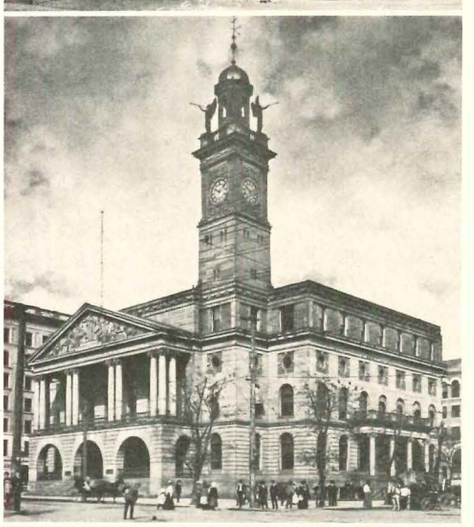
A word here about extensively modifying the interiors of an historic building: in many counties all the resources were spent on the exterior shell and thus the buildings have virtually no internal decor. In these cases sympathetic embellishment is appropriate to sensibly renovate a building. In general, exterior maintenance on these axial, symmetrical buildings is the prime need. Most often additions—unless underground or sensibly linked—are a defacement. In all our records and data on courthouses, we cannot unqualifiedly recommend one successful example of an addition.

In the first place, expansion should be considered within the interior of the courthouse itself through better space utilization,

Warren County Courthouse, Warrenton, Missouri

In their feasibility study for the renovation of this building, students David Lencioni and Wayne Miller first tackled minor structural problems like a sagging second floor and a wobbly cupola on the roof. Then they turned to replanning the space inside, and to developing a courthouse "campus" plan by renovating the buildings on Warrenton's Main Street. They confidently predict that the county's space requirements can be met in this way.





Stark County Courthouse, Canton, Ohio

Because of the unusual enthusiasm with which their initial feasibility study was greeted by county officials, students Robert Klute, Thomas Meredith and John Pohl continued their work and submitted a second-phase proposal in March of this year, and will submit a final proposal this month.

The Stark County Courthouse, as the adjacent photographs attest, has already gone through a series of renovations. The original building was begun in 1868; by 1893 it was no longer large enough to accommodate all of the court and clerical functions of this growing county, and it was more or less completely remodeled by Cleveland architect George F. Hammond. Further minor alterations have brought the building to its present-day state.

Klute, Meredith and Pohl's scheme calls for preservation and restoration of the building's exterior, its main lobby and at least one courtroom; the remainder of the interior would be remodeled in a contemporary manner. All county functions not directly related to the courts would be removed from the courthouse and housed in existing adjacent buildings or new ones.

mezzanine construction, or attic expansion. Secondly, many county services unrelated to the traditional court functions do not have to be housed under one roof and can easily be physically separated. This is the basis for the "campus" concept, already practiced successfully by numerous counties throughout the country. Through this method, counties expand into available nearby commercial buildings which are often themselves of architectural merit. This commitment to the traditional central downtown location is critical, for the alternative is to move to the edge of town or to an off-center location where the whole pattern of historic community growth is abandoned and a devastating suburbanizing influence takes hold. Gone is the memorable image of the majestically imposing building, replaced by a courthouse, which is easily confused with any new shopping center.

With an arsenal of strategies, a sympathetic "client/user," and a dedicated and sensitive professional, I submit that the clarification and solution of the courthouse problem is possible. In our Bicentennial era, it is the American people who benefit from the daily presence of the historic courthouse as a continuing symbol of our heritage of justice and democratic government.

This joint project involving the University of Illinois Chicago Circle Campus, Harry Weese and Associates, and the National Trust for Historic Preservation represents the first attempt to find broadly applicable answers to a wide-spread problem: making the grand, impractical and extravagant courthouse of another era suitable for the vastly changed conditions of modern life. The results of the study clearly show that most courthouses can be preserved if people are motivated. But county commissioners are a conservative lot who generally have little experience or understanding of historic preservation. They rely on their paid expert, the architect, to render a professional judgment. We hope the methods we have developed will motivate both architects and county officials to explore fully and imaginatively all possible ways in which the architectural gems of the past can remain in service for the future.

As important as the preservation of these civic monuments is the sensitizing of the student architects to view the architectural extravagances of the past as essential anchors to keep us steady in an ocean of prefabbed standardization. Even if they are never involved again in a courthouse, the students who participated in this exercise have had their eyes opened to the possibilities for imaginative reuse of many older buildings to enrich the fabric of our lives.

To call further attention to the preservation of historic courthouses, county officials and architects will be invited to a national conference on the subject, sponsored by the National Trust in December 1975, and a summary publication of the project results will be published for wide distribution by 1976. Perhaps the emphasis which will be put on the noble ambitions of previous generations during the Bicentennial years will stimulate all of us to assure the preservation of our temples of justice.

BUILDINGS FOR WASTE MANAGEMENT

▪ "Mount Trashmore" is what residents of Arlington Heights, Illinois, affectionately call their proposed 90-foot-high sanitary landfill.

▪ New Yorkers remember with little fondness the offshore blanket of floating sludge that threatened to close area beaches for a period last summer.

▪ Many Nevadans feel an understandable anxiety about the Federal government's current proposal to set aside an area of desert south of Las Vegas for use as a national repository for nuclear wastes—wastes that include plutonium-239 and other radioactive residues that must be isolated from Man's environment for at least 200,000 years.

These are but three local manifestations of a complex national problem, a problem affecting architects as both citizens and professionals, a problem now approaching crisis proportions as decades of mounting consumerism—coupled with shamefully careless disposal practices—begin to present their bill for payment. What can design professionals do? Plenty, if they learn how.—*Barclay F. Gordon*

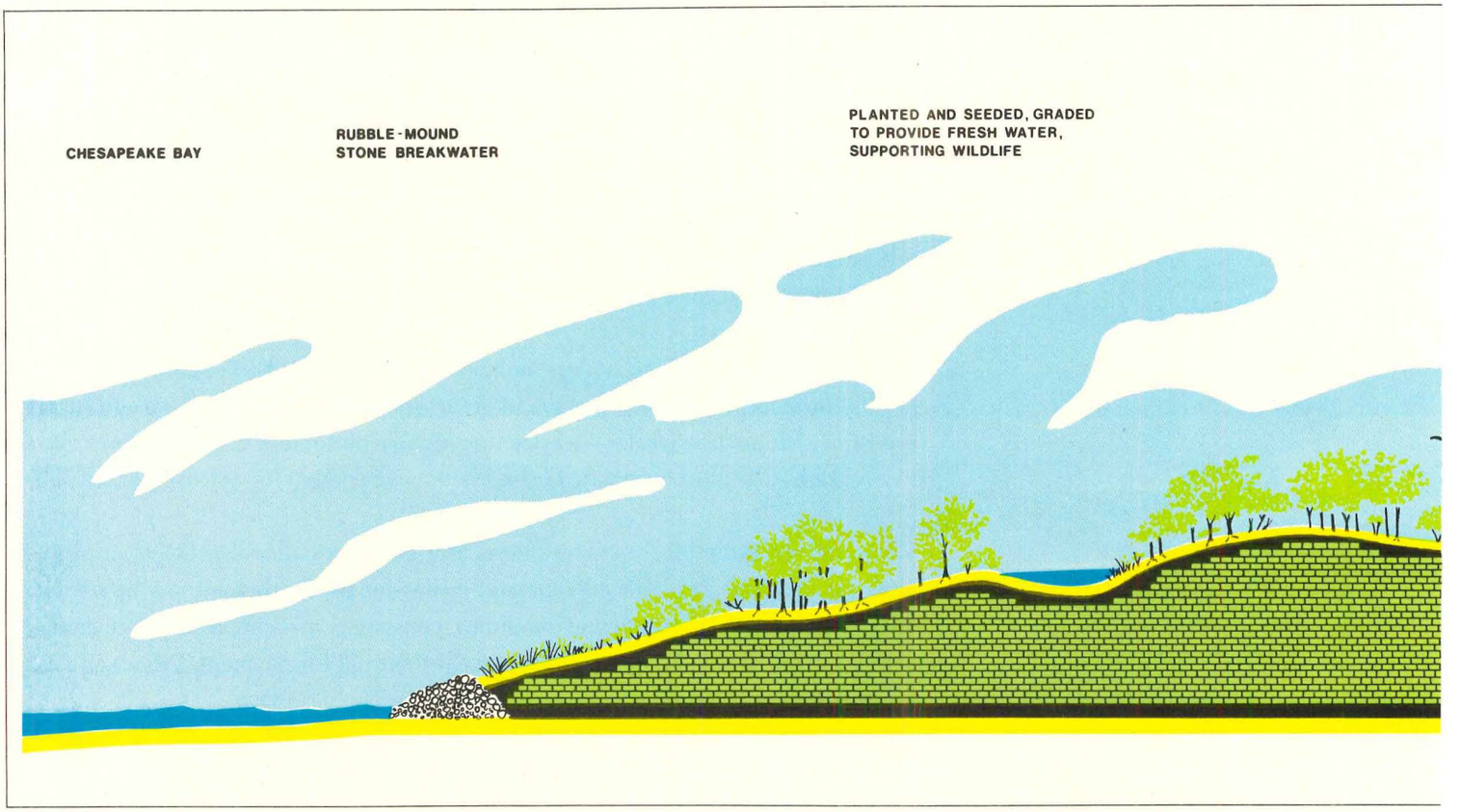
1 SOLID WASTES

For most of us the problem ends when the toilet flushes or the garbage truck disappears down the street. In truth, the problem is just beginning. The relevant figures are these: Americans now discard about 4.5 billion tons of waste annually. Of this gargantuan stream, agricultural, mining and industrial wastes make up by far the greatest bulk, but the volume of municipal solid wastes from our urban centers now approaches 200 million tons per year and its reduction and disposal have become increasingly difficult and expensive. Approved landfill sites around metropolitan areas grow scarcer every year and most municipal incinerators, though they reduce the volume for landfill by upwards of 90 per cent, do not meet contemporary pollution abatement standards and are being phased out as quickly as possible. The cost of equipping older incinerators with wet scrubbers and electrostatic precipitators has often proved exorbitant.

The U.S. Environmental Protection Agency is looking into methods of choking down the flow at its source. The Agency is considering legislation that would eliminate packaging redundancies. It is also studying proposals to mandate a longer life for appliances and other manufactured durables. But most important, through its Office of Solid Waste Management, EPA is beginning to put itself squarely behind various systems for resource recovery—systems that treat the solid waste flow as a national resource, mechanically recover most of its valuable components, and utilize the combustible portion for energy production.

Resources recovery systems have a "front end" and a "back end." Both are important for long-term economic feasibility

The stream of municipal solid waste is extremely heterogeneous. It includes some of most everything: metals, plastics, wood, glass, textiles, paper, food and yard wastes. In Madison, Wisconsin, two years ago, it included a live mortar shell and in New York, three crates of live lobsters. Though the potential salvage value in the waste stream has long been recognized, until recent years both the recovery technology and the economic incentive have been lacking. Now both are developing rapidly. Subsidiaries of a number of technically-oriented corporations (Monsanto, Union Carbide, Raytheon, American Can, Occidental Petroleum and others) are developing proprietary systems for resource recovery—systems that shred, sort and separate out valuable materials (principally glass, ferrous and non-ferrous metals) for resale to secondary users. This is the "front end" of the waste management concept and 30 or more such systems are



Into this grand throwaway each year go 71 billion cans, 38 billion glass bottles and containers, 7.6 million television sets, 7 million cars and trucks, 35 million tons of paper. . . . A salvage technology now exists for recovering much of this material—and thus a new building type, urgently in need of design input, seems about to develop.

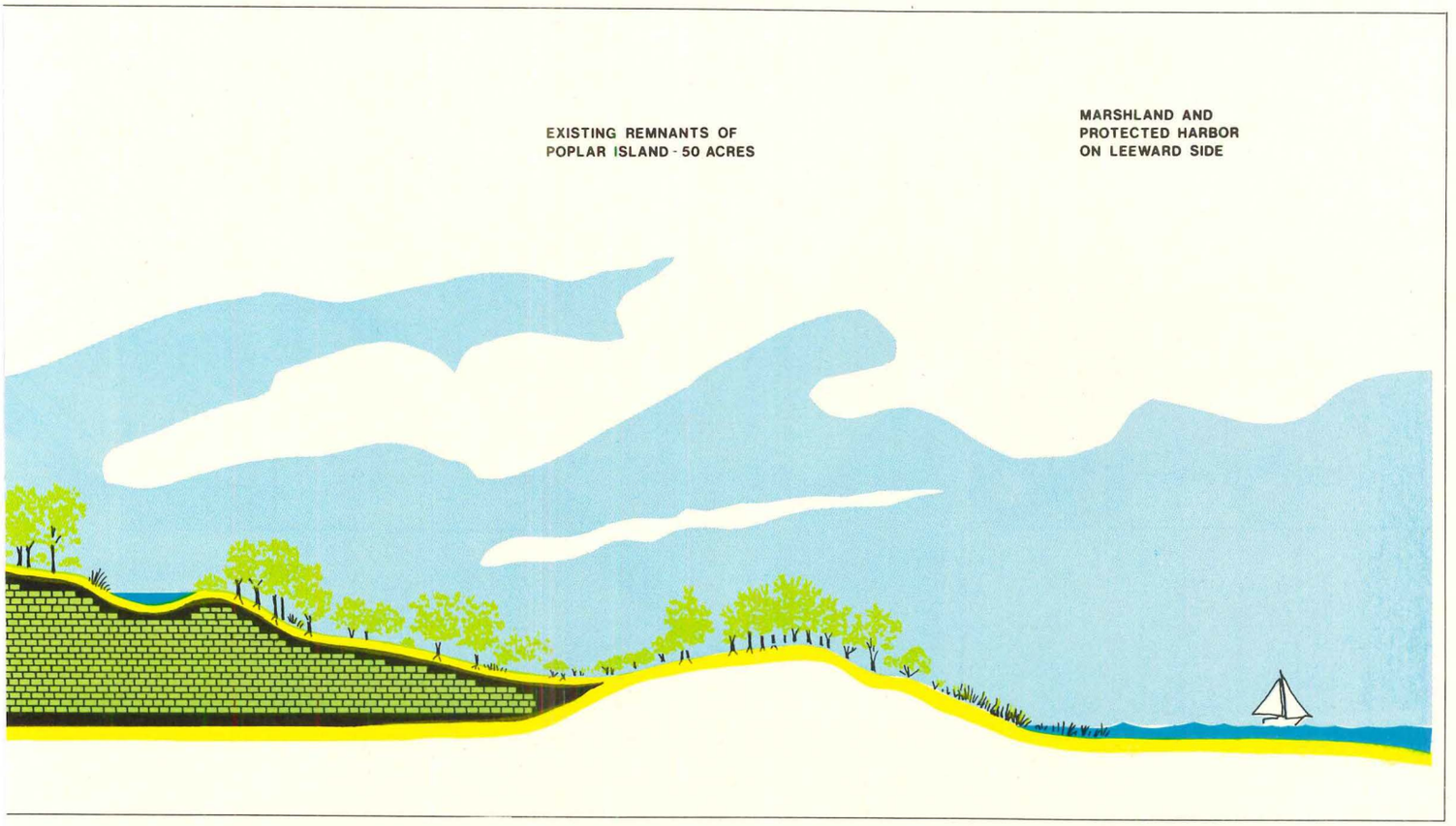
now offered in the United States. After initial sorting in an air classifier, the light fraction (paper products and other light organics) can be cleansed of further impurities, reshredded to smaller size and used as fuel (either alone or in combination with fossil fuels) to generate electricity or steam. This energy recovery potential is the "back end" of solid waste management. "Front end" systems now seem economically attractive only in regions that a) generate at least 750 tons of solid waste per day (population ± 350,000) and b) pay upwards of seven dollars per ton for conventional disposal. When the "back end" can also be made to produce revenue, the seven dollar floor can drop to under four dollars.

A number of installations are now either on-line, in shakedown, or:

- In Nashville, Tennessee, a heating and cooling plant is now in operation that uses solid waste as fuel to generate steam which serves a 21-building, downtown, high-rise complex. Designed to handle 720 tons of refuse per day, the plant, which recovers only energy, will be expanded by 1978 to handle 1500 tons per day—or the entire volume of municipal solid wastes generated by that city.
- In St. Louis, Missouri, the Union Electric Company (with a grant from EPA) is experimenting with the use of shredded refuse as a supplementary fuel for generating electricity. In two modified coal-burning boilers, each with a generation capacity of 125 megawatts, the plant will consume about 300 tons of refuse per day at a saving to the city of about two dollars per ton over standard incineration as a means of disposal. The installation is now being enlarged to receive 8000 tons per day.
- In Baltimore, Maryland, Monsanto's "Landgard System" is being utilized in a new plant that employs a pyrolysis process to generate fuel gas which in turn is converted to steam for sale to the Baltimore Gas and Electric Company. When operating at capacity, the plant will consume 1000 tons of solid waste per day and revenues from the sale of steam and recycled materials are expected to exceed $1.5 million per year.

Mining the solid waste stream: a mixed metaphor but Midas wouldn't have minded

The aggregate value of materials salvaged from municipal solid waste is difficult to compute owing to the fluctuations of the marketplace and to the many variables involved. Estimates by The National Center for Resource Recovery, Inc. are conservative but put the total at $992 million. In terms of energy potential, the light fraction, if



converted to steam, could produce revenues of about $363 million. Even using the most conservative estimates, the potential value of the municipal solid waste stream is enormous. And the corresponding savings to cities over more conventional means of waste disposal could be dramatic.

Problems, of course remain. Some are technical but most are economic. The difficulty so far has been in establishing firm, long-term markets for recovered materials and refuse-derived energy. But here too progress is being made. Among cities either committed to or seriously studying municipal waste as a source of electricity are: New York, Chicago, Philadelphia, Detroit, Washington, D.C., Boston, St. Louis, Baltimore, Cleveland, Milwaukee and San Diego. Future vectors point toward specialized industrial parks located on a regional basis and centered on facilities for resource recovery. Connecticut is now embarked on a program to build ten such centers across the state.

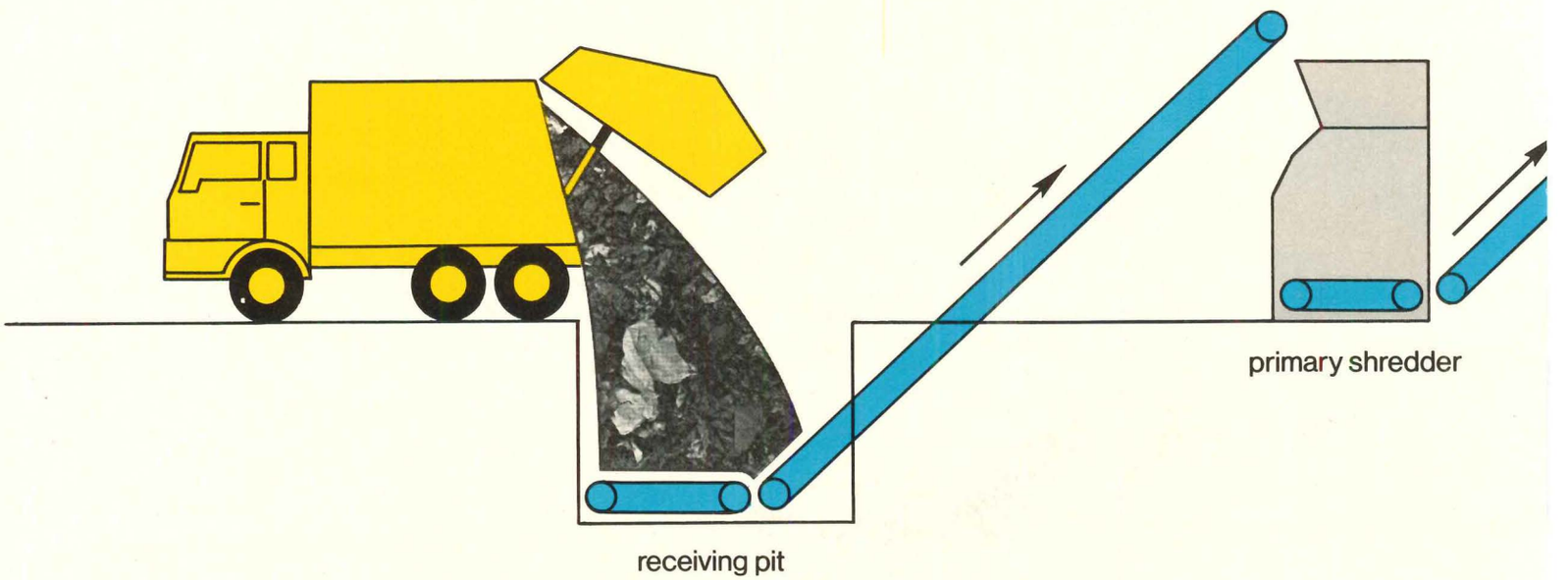
Other applications for solid waste, some more familiar to architects, are now under study

Pictured above is a section through the proposed reconstruction of Poplar Island in Chesapeake Bay. Already severely eroded by wave action, the island and its wildlife will soon disappear. If the objective is to save the island, its owners, The Smithsonian Institution, must find a practical way to suspend erosion. Seadun, Inc., in conjunction with environmental engineers Camp Dresser & McKee, Inc., are proposing to rebuild the island using shredded, baled and encapsulated municipal solid waste as the basic building block. A heavy stone seawall will protect the bales which would be barge-delivered. Costs for this reclamation could be offset—to some extent at least—by revenues from local government for collecting and processing municipal solid wastes.

A new building type may therefore emerge

Existing examples, as the reader will expect, are mostly first-generation, engineering prototypes that appear—at least to the architectural eye—as little more than three-dimensional embodiments of process flow diagrams. But as these structures proliferate, as their impact on the economy grows, as they intrude more conspicuously on the public awareness, more input from the design professions will almost certainly follow. In some instances, as at the Bridgeport, Connecticut plant by Albert C. Martin & Associates (pages 120-121) it already has.

BRIDGEPORT RESOURCE RECOVERY FACILITY

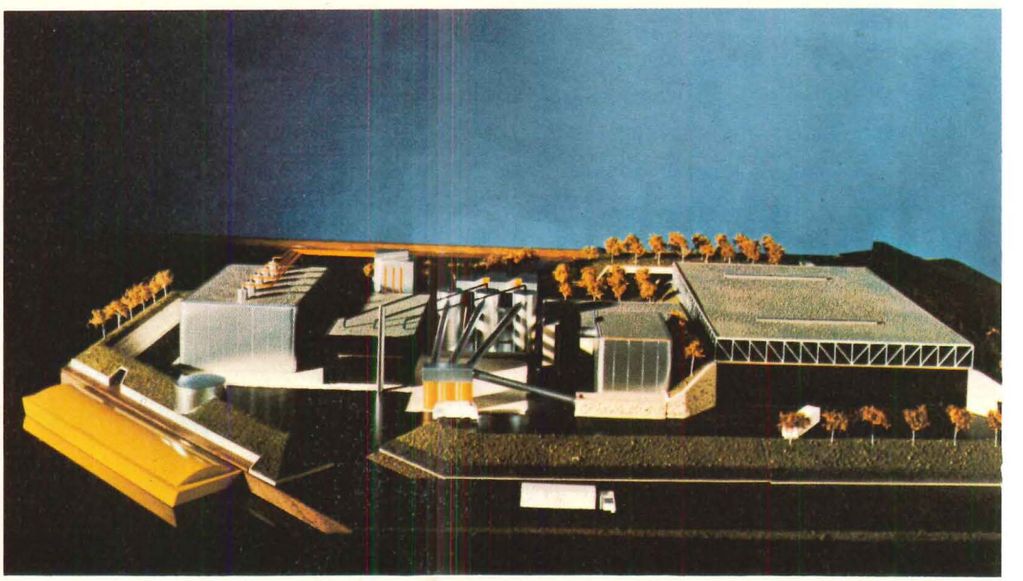


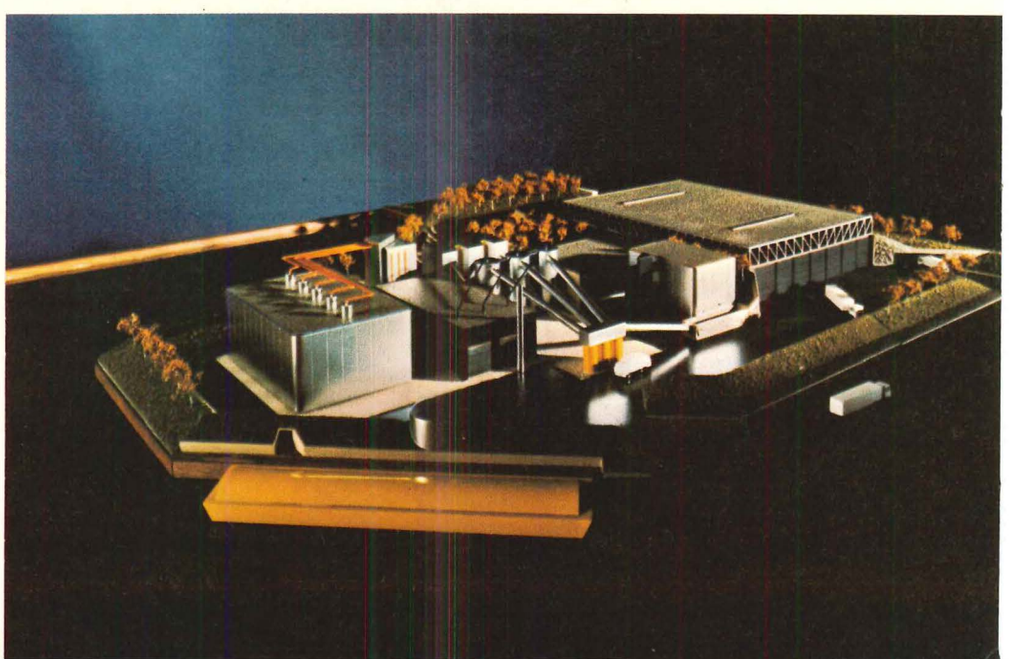
Garrett Research and Development Company, Inc., a subsidiary of Occidental Petroleum, has developed a system that combines front-end recovery with a back-end conversion which produces oil through "pyrolysis"—decomposition by heating in the absence of oxygen. The first application will be in a relatively small (200 tons per day) facility about to be constructed in El Cajon, California. The California plant, largely funded by an EPA grant, will produce a low-sulphur oil with a fuel value about three-quarters that of Number 6 fuel oil, and also a low-sulphur char somewhat less efficient in burning than coal. The front-end will recover glass, ferrous metals and aluminum.

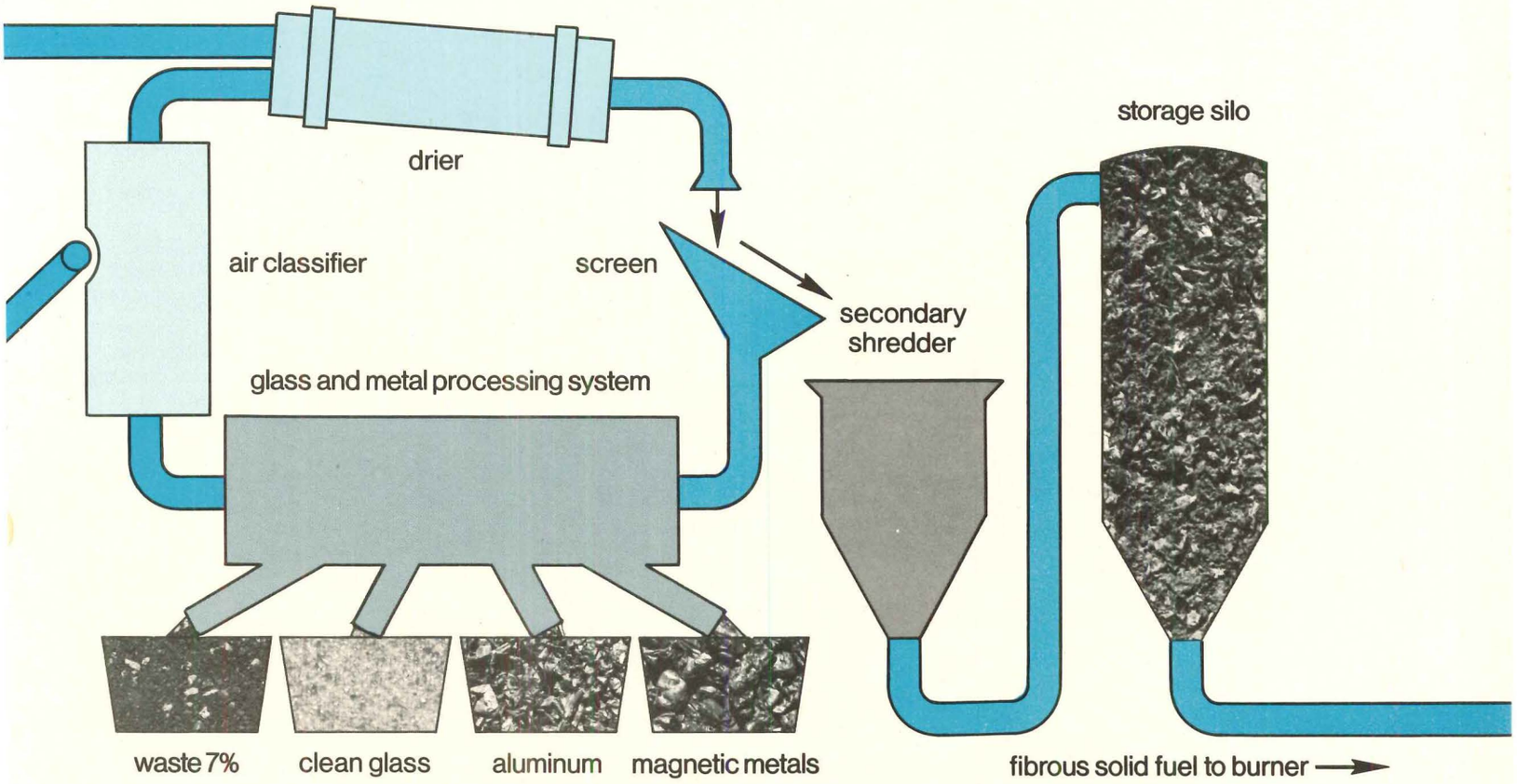
A second installation (photos right) will be constructed at Bridgeport, Connecticut. Designed by Albert C. Martin & Associates, the Bridgeport facility will be less complex than El Cajon's, but will be very much larger, having a planned capacity of 1800 tons per day. Funded by the Connecticut Resource Recovery Authority, the Bridgeport facility will also recover glass, ferrous metals and aluminum, but the light, organic fraction will not undergo pyrolysis. Instead, after reshredding the light fraction will be sold to Northeast Utility's Devon Power Plant for direct combustion. The pyrolysis module can be added at a later time.

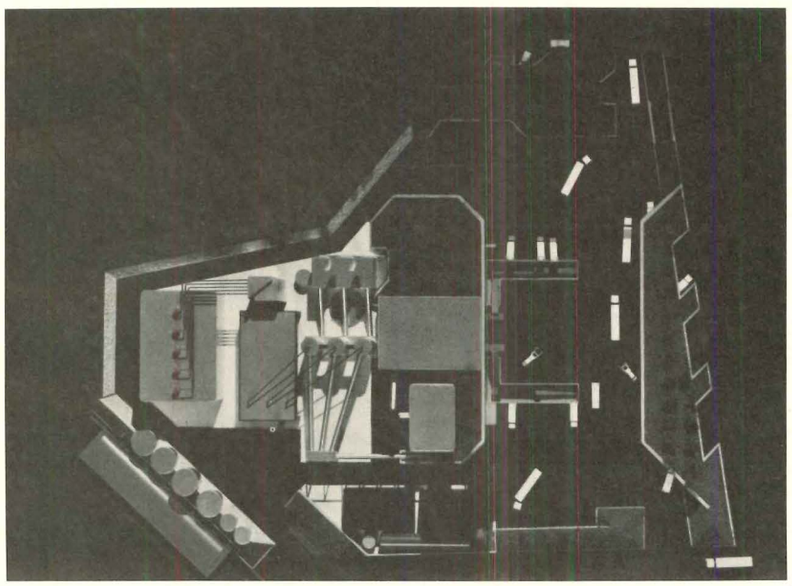
Heavy demolition wastes, sewage sludge, chemical wastes, and bulky items (larger than 12 by 7 by 3 feet) will not be processed. Costs for processing and disposal will run in the $10-12 per ton range, but about half of these costs may be recovered by the sale of salvaged materials and fuel products.

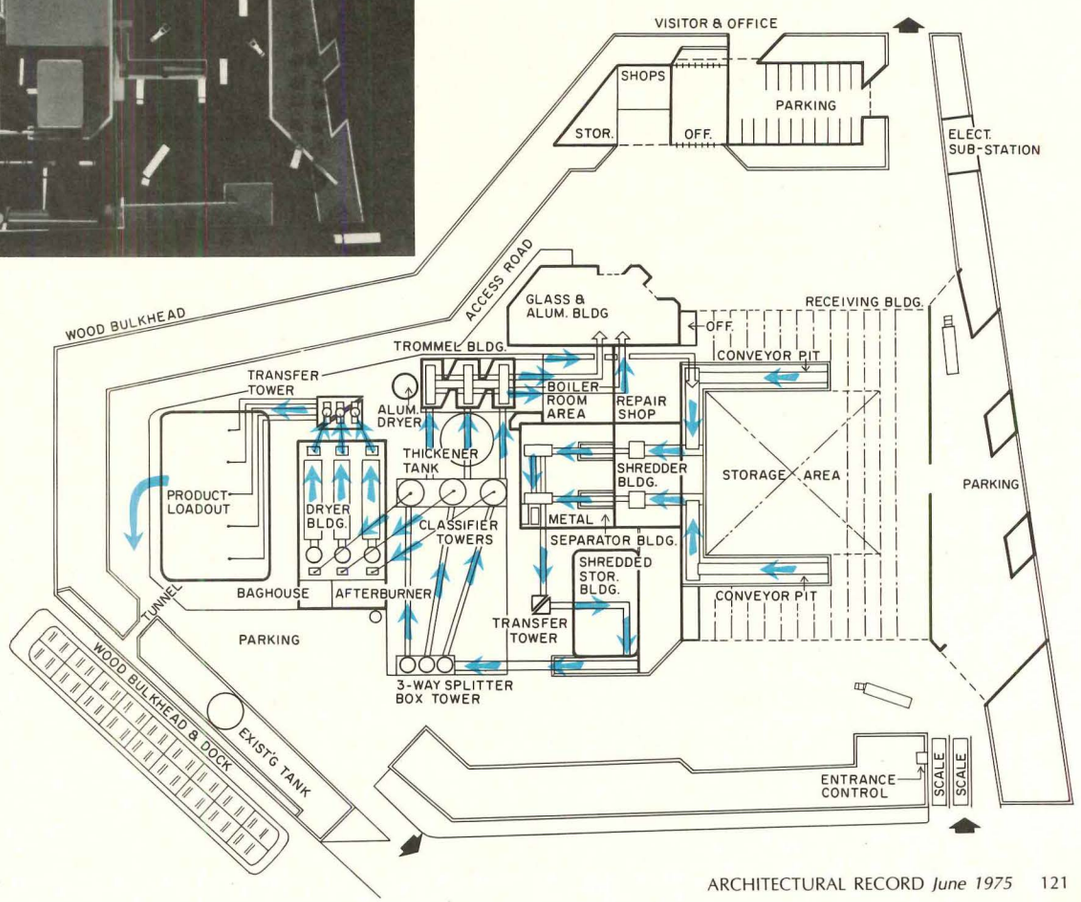
BRIDGEPORT RESOURCE RECOVERY FACILITY, Bridgeport, Connecticut. Owner: *Connecticut Resource Recovery Authority.* Architects: *Albert C. Martin & Associates* (recovery facility); *Environmental Design Group* (transfer stations). Systems contractor: *Garrett Research & Development.*







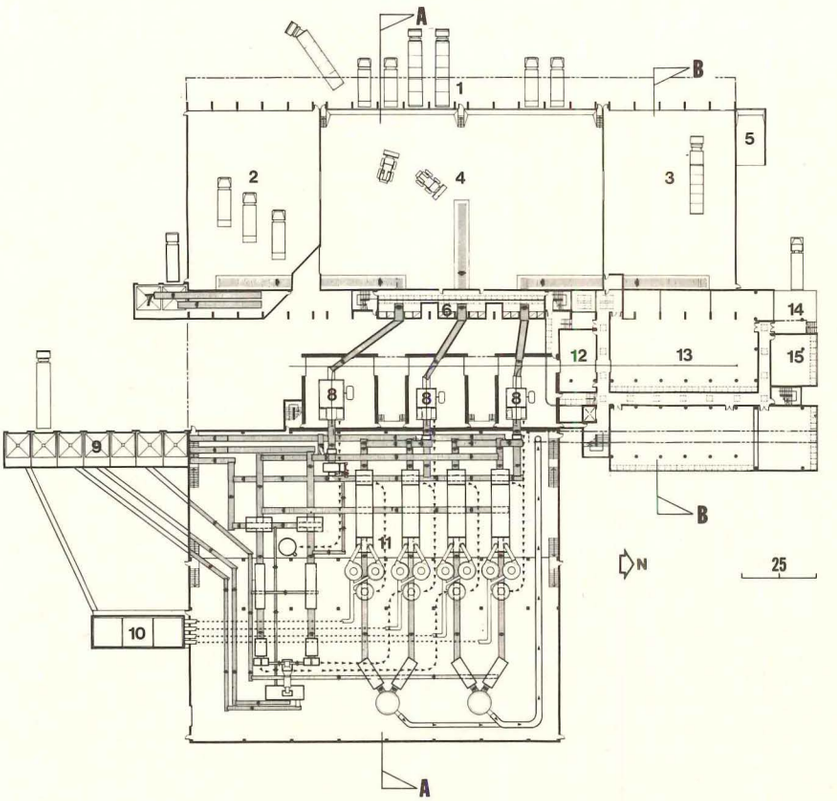




The diagram above shows, in simplified form the process flow for the Bridgeport, Connecticut facility. From the receiving pit, at left, raw refuse is conveyed to a primary shredder where materials are reduced to a uniform, 4- by 4-inch size. From here they pass into air classifiers which sort the heavy (non-organic) fraction from the light (organic) fraction. The heavy fraction is then sorted into its ferrous, non-ferrous and glass components by magnets and specific density chambers. After further cleaning and—in some cases—pulverization, it is prepared for resale.

The light fraction, after air classification, is dried, passed through screening to a secondary shredding operation where it is reduced to a 2- by 2-inch size. It is then stored for sale to the Northeast Utility's power plant.

RESOURCE RECOVERY PROJECT



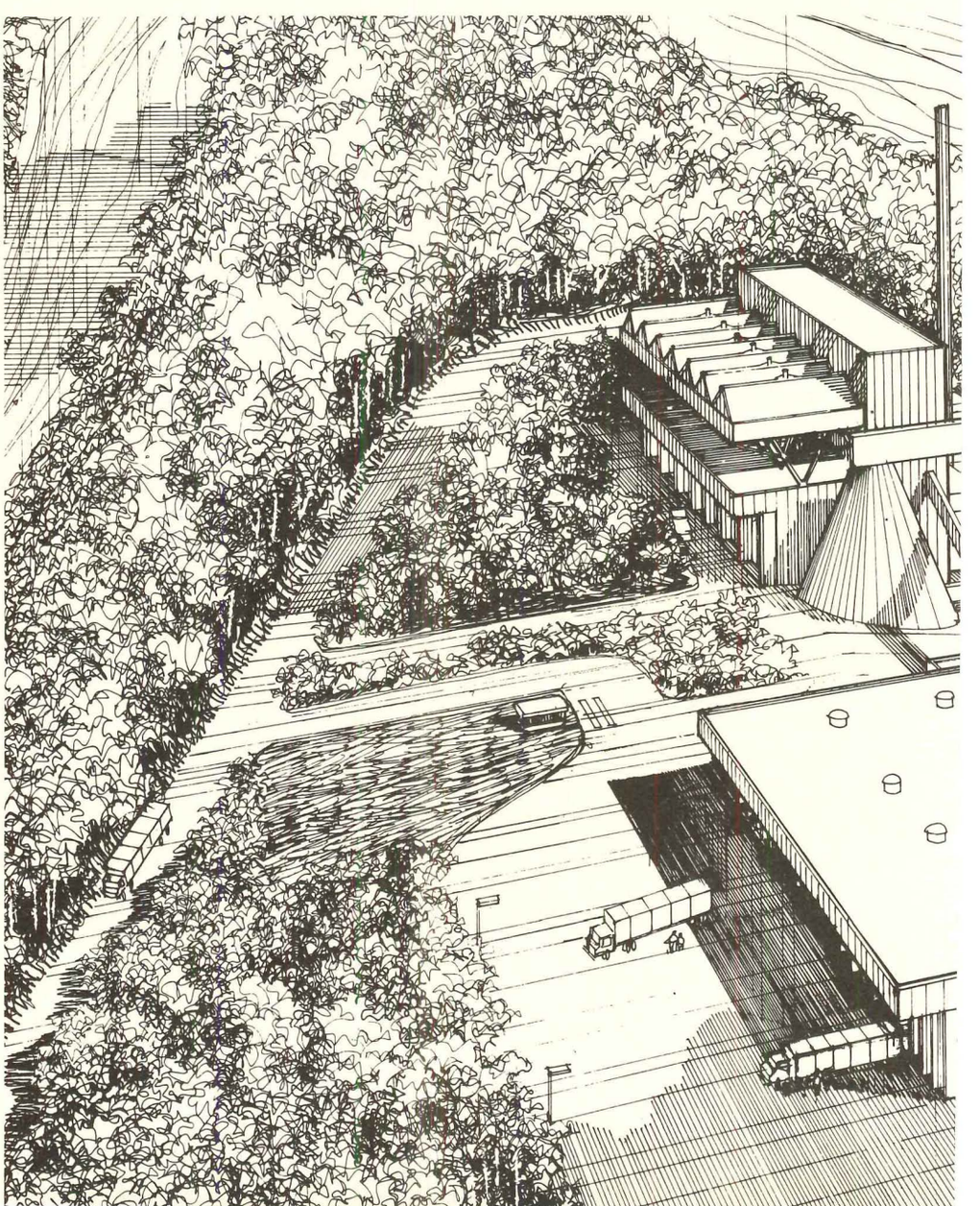
1 TIPPING FLOOR APRON
2 INDUSTRIAL REFUSE STORAGE
3 MUNICIPAL REFUSE STORAGE
4 TIPPING FLOOR
5 QUENCHING AREA
6 PAPER PICKING STATIONS
7 RECOVERED PAPER BINS
8 SHREDDERS
9 RECOVERED MATERIALS STORAGE BINS
10 BAGHOUSE
11 PROCESS BUILDING
12 SMALL PARTS STORAGE
13 MECHANICAL AND MAINTENANCE SHOPS
14 WOMEN'S LOCKER ROOM
15 MEN'S LOCKER ROOM
MECHANICAL CONVEYORS
AIR CONVEYANCE
AIR RETURNS TO BAGHOUSE

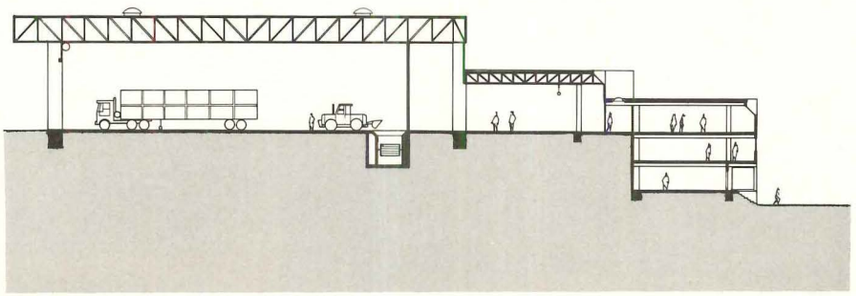
This resource recovery facility is typical of waste management proposals made to various potential clients by the Clean Communities Corporation of Boston—one of a number of private companies now actively entering the field of solid waste management.

Designed for a site in Haverhill, at a bend in the Merrimack River, the plant has a projected capacity of 1700 tons per day and will recover glass, ferrous and non-ferrous metals. If built as proposed, secondary users would locate plants on-site or nearby. The light fraction, after shredding and air classification would be converted to steam and sold to the Massachusetts Municipal Wholesale Electric Company for power generation in their adjacent turbine plant—a 20-30-year contract that might substantially lower the cost of electrical service in this region. Supporting facilities, like an on-site power generator and a sanitary landfill for plant residues would also be provided at a site close by.

Camp Dresser & McKee, with an architectural staff of 25, have worked with care to site the plant in a compact fashion, to provide buffers of vegetation where needed, to propose grading in a manner that disrupts the natural drainage as little as possible and to mass the projected structures in ways that are architecturally forceful, but compatible with mixed surrounding uses.

SOLID WASTE RESOURCE RECOVERY PROJECT, Haverhill, Massachusetts. Engineers: *Camp Dresser & McKee, Inc.*

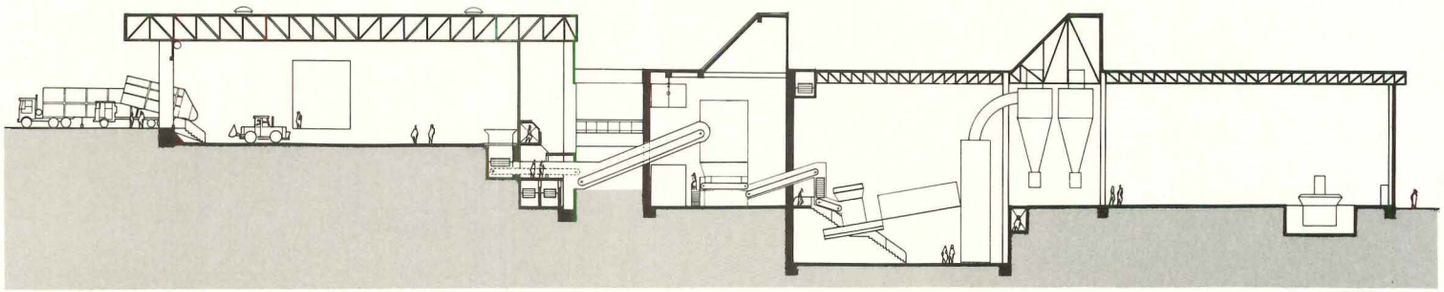




SECTION B-B

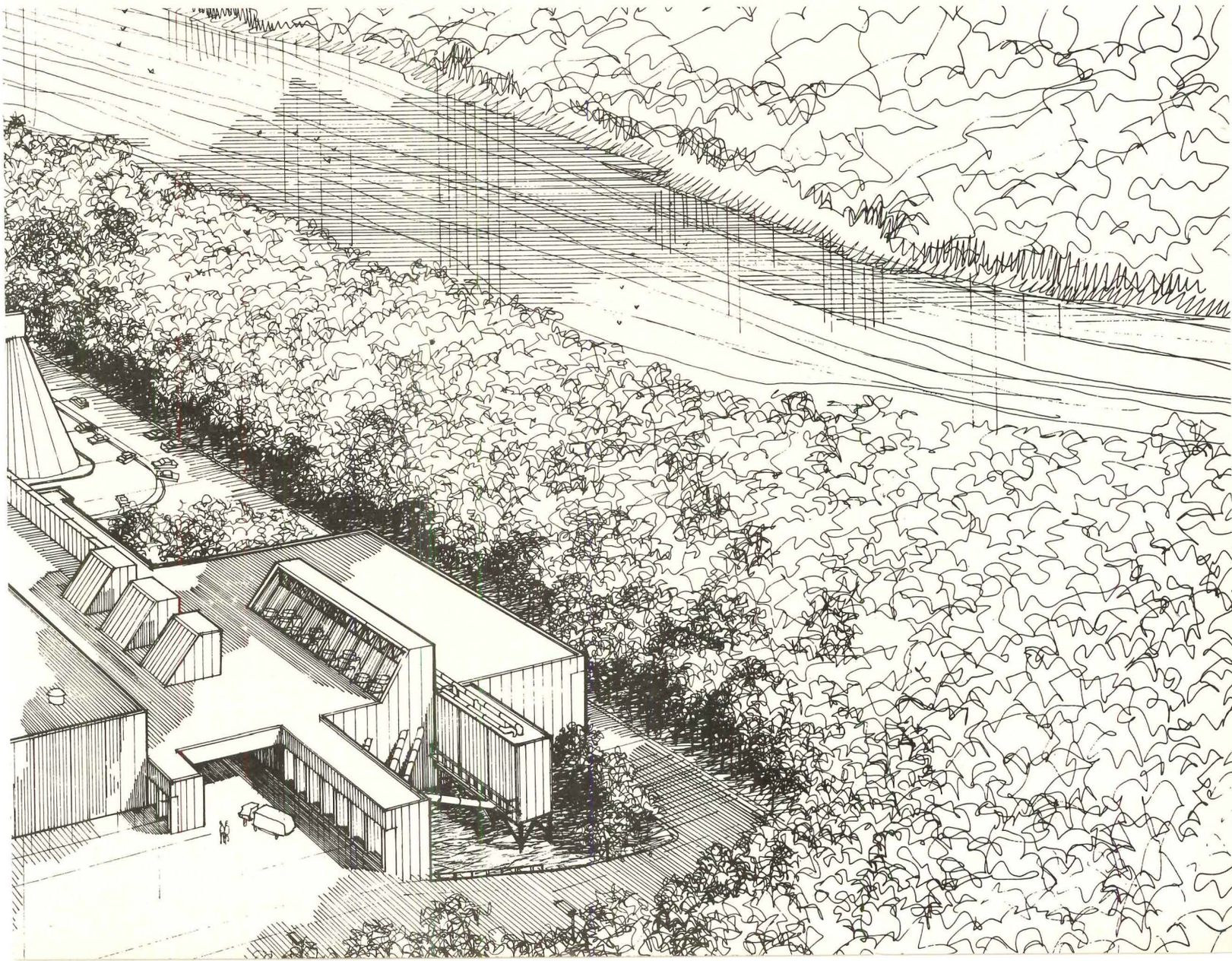
Section A-A (below) cuts through the resource recovery facility to expose the process flow. Trucks deliver raw refuse at left. By means of a tipping floor, it is transferred to mechanical and manual paper-picking stations. From here, by conveyor, it reaches a primary shredder. Separation and recovery is accomplished in the middle bay.

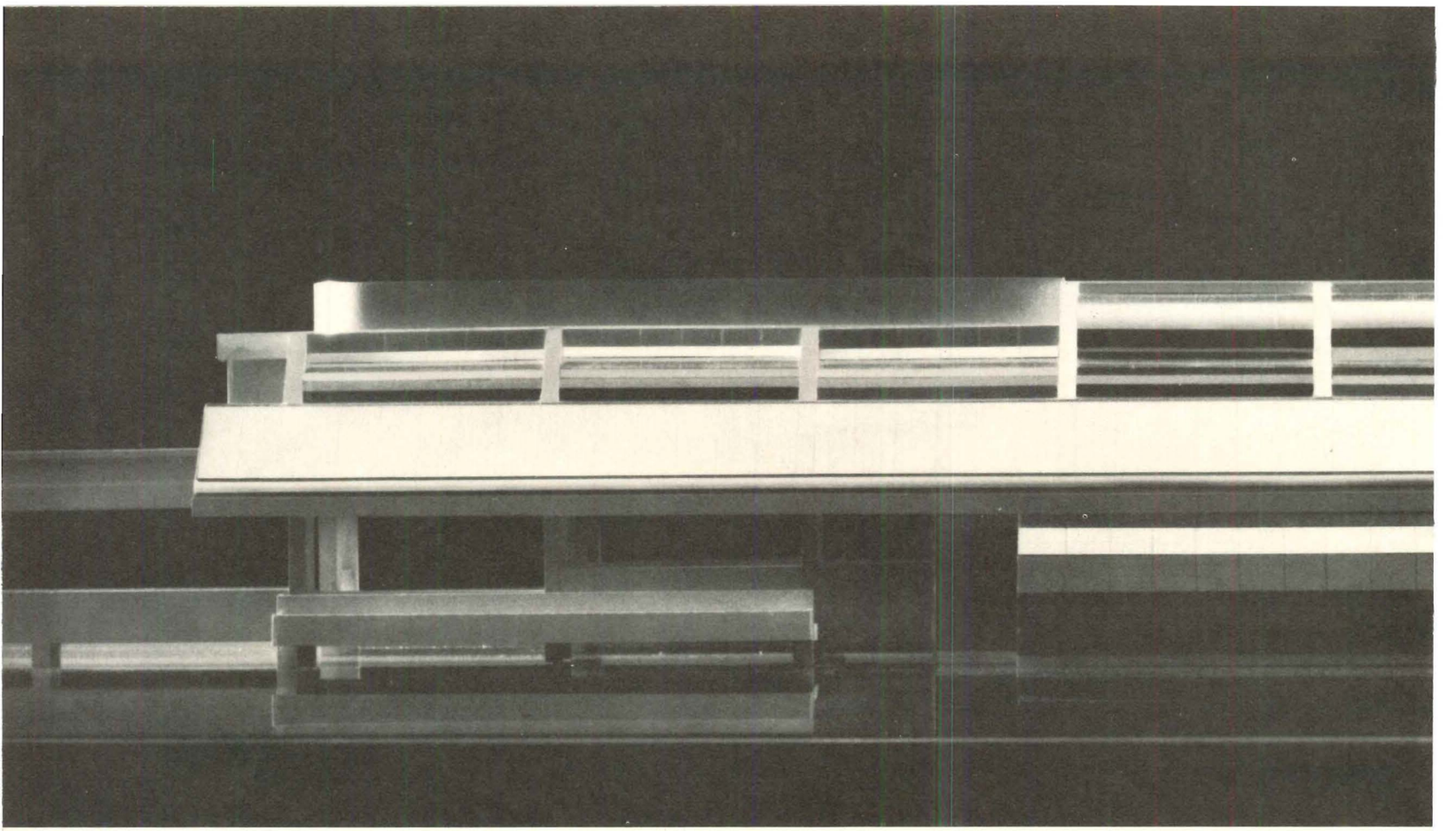
Rendering below shows recovery facility in the foreground, turbine power plant at rear. Cone-shaped elements are storage bins for shredded refuse awaiting conversion to steam.



SECTION A-A

25





2 WASTEWATER

When the Federal Water Pollution Control Act Amendments were promulgated in 1972, some environmentalists thought they heard the rumblings of a Trojan horse approaching. Certain of the Federal provisions were difficult to interpret and enforceable only after long delays in the courts. But about its general intention there could be no doubt. The nation's waterways would be cleaned up within about a decade and a tremendous volume of new construction would be necessary to achieve this goal.

Discounting industrial water consumption entirely, the average American now draws 60-75 gallons of water per day. Of this volume, over 90 per cent finds its way into the nation's sewage systems where by definition it becomes wastewater and where it begins the reprocessing that will end in its return to the water supply. The organic solids and other waste residues removed during this processing produce a dry weight of 3/10 of a pound per person/per day—an irreducible minimum that implies incineration. The actual figure is substantially higher since sludge for landfilling usually has a water content of 25-40 per cent. But by any measure, when multiplied out across a population of more than 200 million, water volumes become titanic. Both the methods of wastewater treatment and the modes of sludge disposal will interest us here and in the pages that follow.

The aim of wastewater treatment is massive recycling.
The techniques are mostly Nature's own—but greatly speeded up

Though treatment varies considerably according to local requirements, even in the buildings shown here, the reader may find this simplified lexicon helpful.

Pretreatment: coarse screening of raw wastes, comminution (grinding) and finally grit removal.

Primary clarification: removal by gravity separation and by skimming of 90 per cent of all settleable solids and 60 per cent of suspended solids.

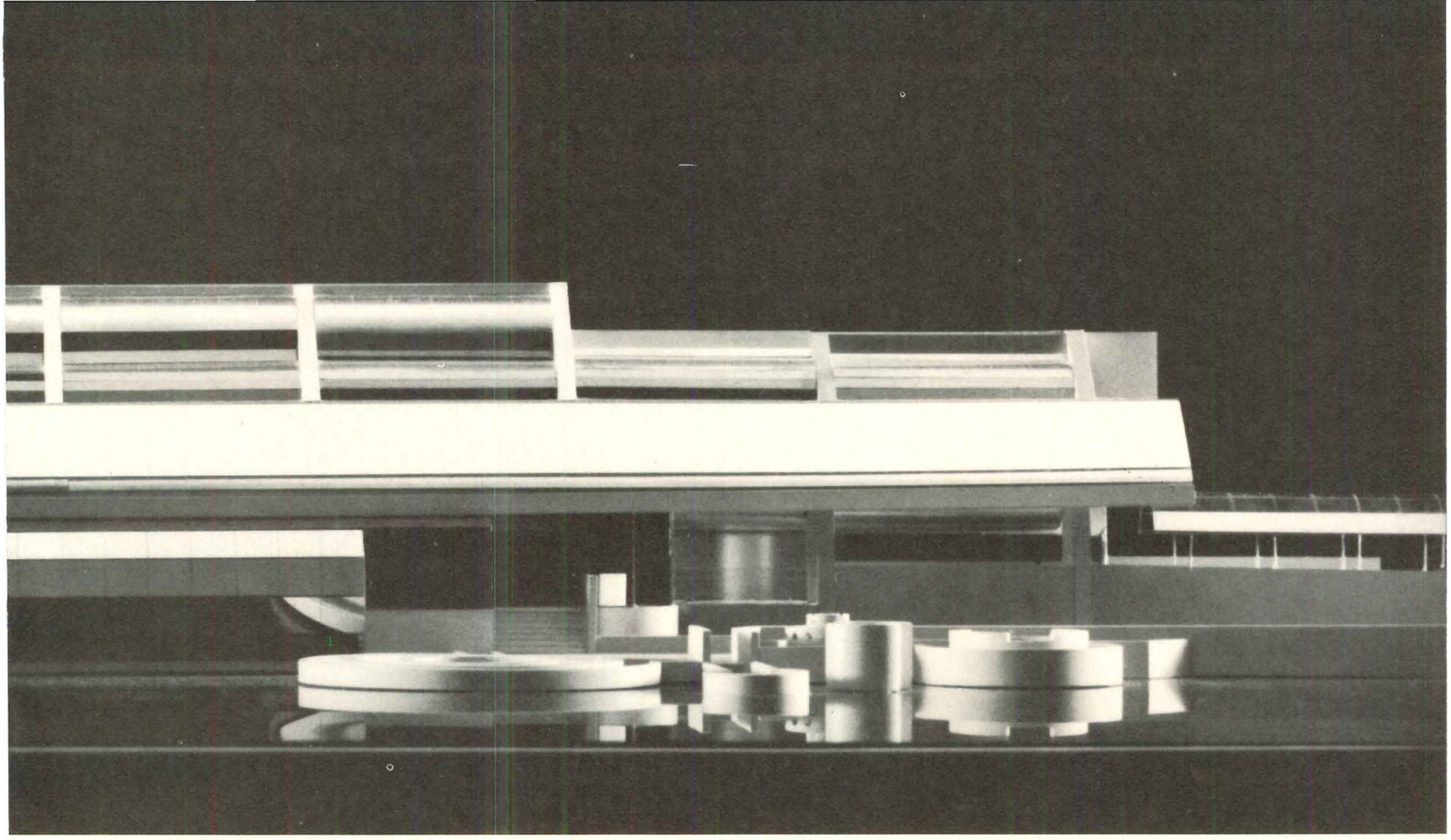
Aeration: organic reduction or decomposition by bacteria usually in the presence of oxygen.

Secondary clarification: Gravity settling of 30-40 per cent of the remaining suspended solids—some formed during aeration.

Disinfection: treatment of the clear liquid with bacteria—killing chlorine before final discharge into a receiving body of water.

When tertiary treatment is indicated by high concentrations of phosphorous, lime is often used as a precipitant to achieve phosphorous removal. This final step nearly doubles the cost of combined primary/secondary treatment.

Sludges from primary and secondary clarifiers are pumped into anaerobic digesters where methane gas can be collected and where a thickened, stable residue is produced. This residue is then dewatered—usually in a centrifuge—and is readied for disposal at some nearby sanitary landfill.



Sludge disposal, once thought of as a comparatively simple matter, now poses serious challenges both economic and environmental

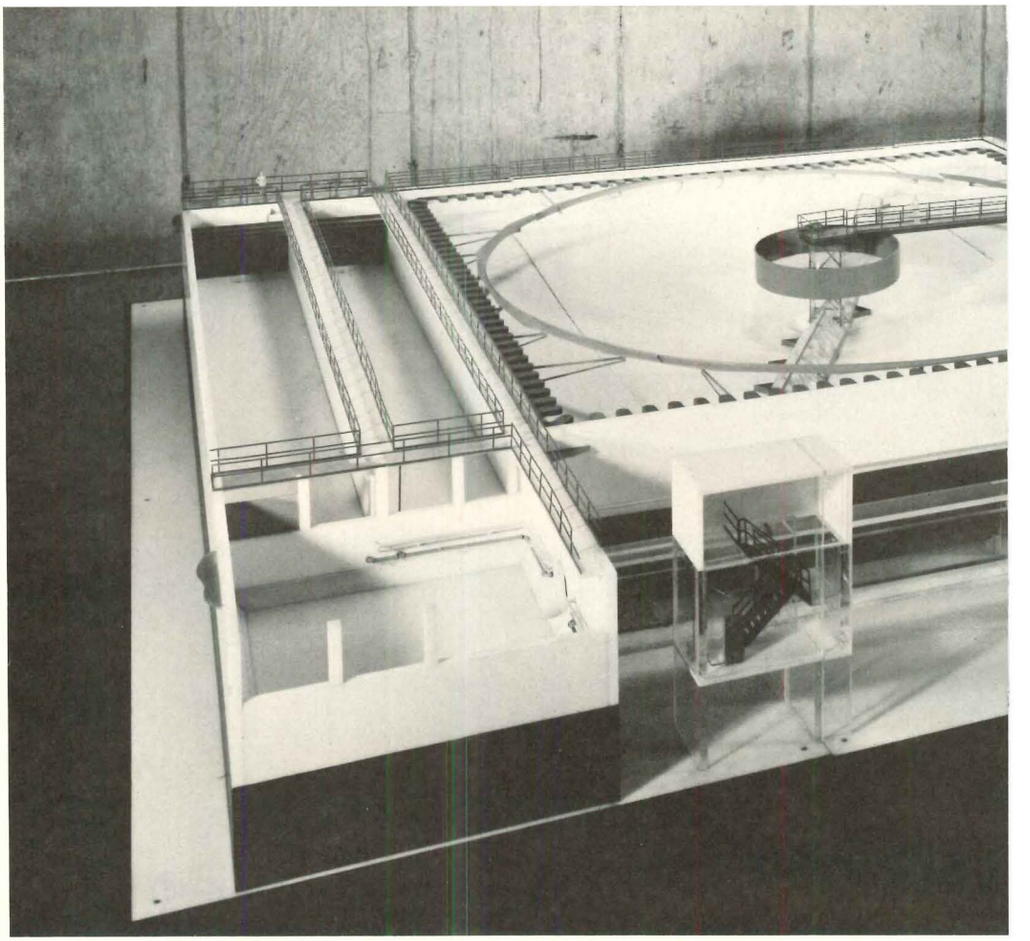
Sanitary landfilling, at a site with adequate safeguards against leaching or the build-up of volatile gases, costs between 70 cents and $5 per ton and is still the preferred method of sludge disposal. But, unfortunately, many landfill sites are sanitary in name only and, as the number of close-in sites around urban centers has dwindled, proposals to transport sludge to neighboring counties or states have proliferated. Most such proposals have been aborted by high transportation costs or by the vociferous objection of recipient communities. In Illinois, however, sludges from the city of Chicago are now being piped to agricultural land at the center of the state where they are applied to the earth as a soil conditioner. But even here, serious risks appear to be present. Dr. Anton Kalinske of Camp Dresser & McKee joins other experts in warning that the sewage sludges of contemporary, industrialized societies contain potentially harmful concentrations of too many toxic elements to be indiscriminately returned to the soil. Chief among these toxicants are the heavy metals—most notably cadmium—which creep unmonitored into the waste stream from plating establishments and other small commercial users. Cadmium is a highly toxic element almost impossible to remove during processing and, if applied to agricultural lands for a prolonged period, will almost certainly start showing up in the food chain.

Timetables and end-of-pipe numbers are changing. So is the public's readiness to accept indifferent design

Effluent standards are being upgraded under a blitz of Federal, state and local regulations. New treatment facilities are presently under construction and many more will certainly follow as the freeze of Federal dollars now seems to be easing. For any community, these are large projects, usually more costly than a new library, museum or local shopping center. They are becoming just as visible also, and the kind of 1938 brick and coping details that typify existing facilities have lost their acceptability.

Those architects who have been willing to work as consultants to engineers are already having a considerable impact on the design of wastewater treatment facilities. The Sepulveda plant (photo above and RECORD, May 1975, pages 118-119) by DMJM is a good case in point. More design input must follow if these buildings are to reflect their importance to a community or be thought of as more than unwelcome neighbors.

METROPOLITAN SEWAGE TREATMENT PLANT EXPANSION



The planned expansion of the Metropolitan Syracuse Sewage Treatment Plant in Onondaga County, New York will give this facility an 80 MGD capacity and will provide secondary and tertiary treatment of combined municipal and industrial wastes for the city of Syracuse and surrounding regions. Among the industrial users that will be served are chemical, pharmaceutical, electronics and metal finishing industries.

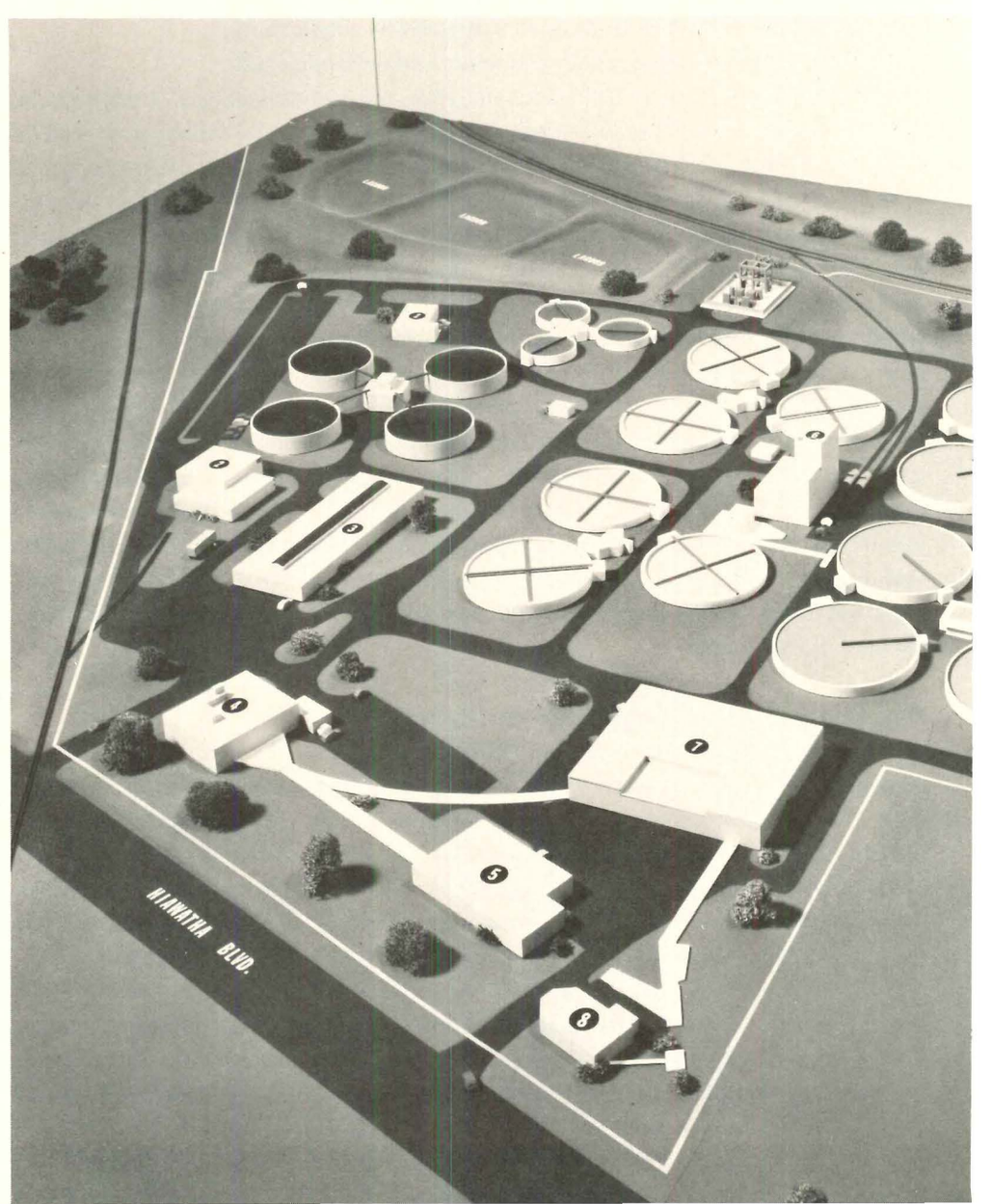
Due to site conditions, the plant will be constructed on 4,000 steel piles each driven over 250 feet into grade. The present primary tanks will be modified for use as tertiary treatment (phosphate removal) units. The existing digesters will be fitted with gas mixing equipment. The existing grit chambers and pumping equipment will also be modernized.

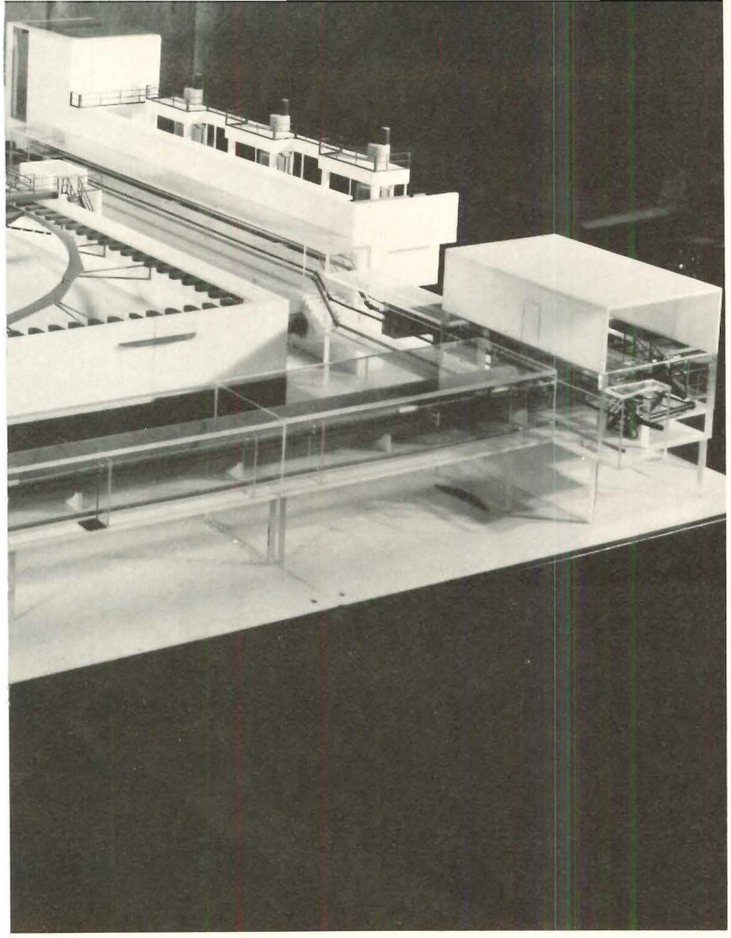
An interesting technical feature of the plant is the anticipated use of industrial waste in the treatment process. Through an agreement with Allied Chemical Corporation, lime waste from their nearby Solvay Process Division will be pumped to this plant for use in the tertiary stage. Dewatered sludge will be returned to Allied Chemical which operates a local landfill site.

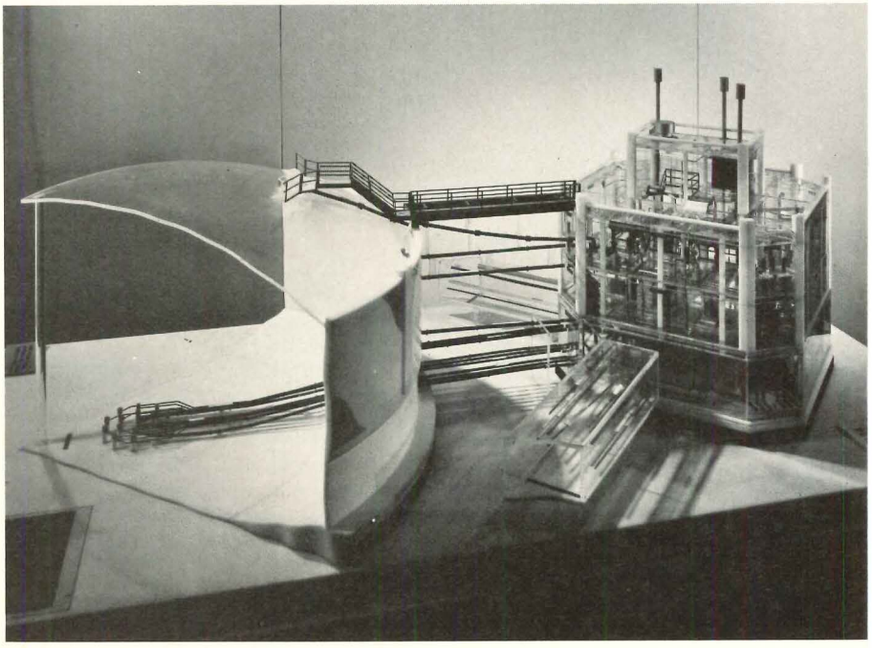
Engineers O'Brien & Gere, who designed the new facility, used ⅜-inch models of all major components during design to avoid piping interference, to assure adequate clearances, to simplify review by client and regulatory agencies and ultimately to reduce construction costs.

These helpful models notwithstanding, construction costs are likely to run as high as $130,000,000.

METROPOLITAN SEWAGE TREATMENT PLANT EXPANSION, Syracuse, New York. Engineers: *O'Brien & Gere.*

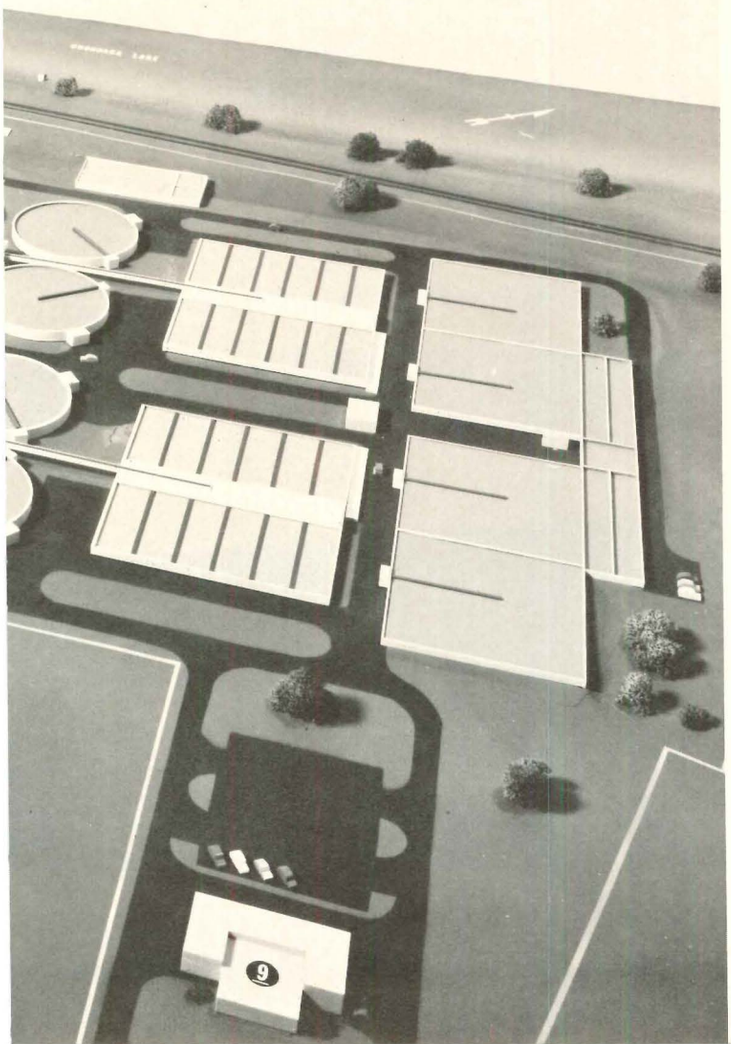




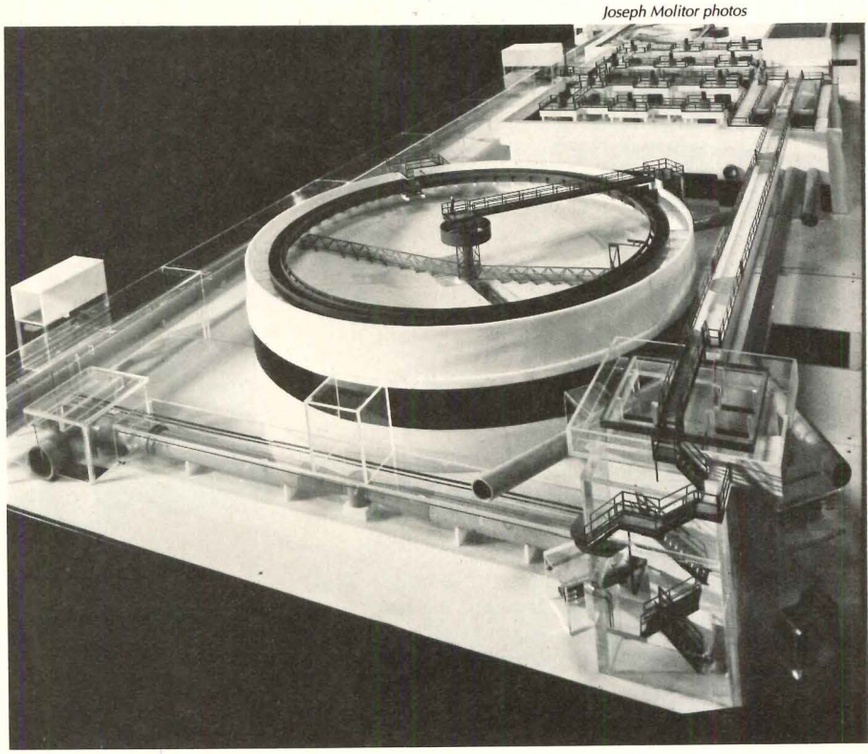


Site photo lower left:
1. Sludge process building
2. Plant maintenance building
3. Maintenance garage
4. Administration building
5. Existing screening and grit building
6. Plant operations building
7. New screening and grit building
8. Harbor Brook pump station
9. Sewer maintenance building

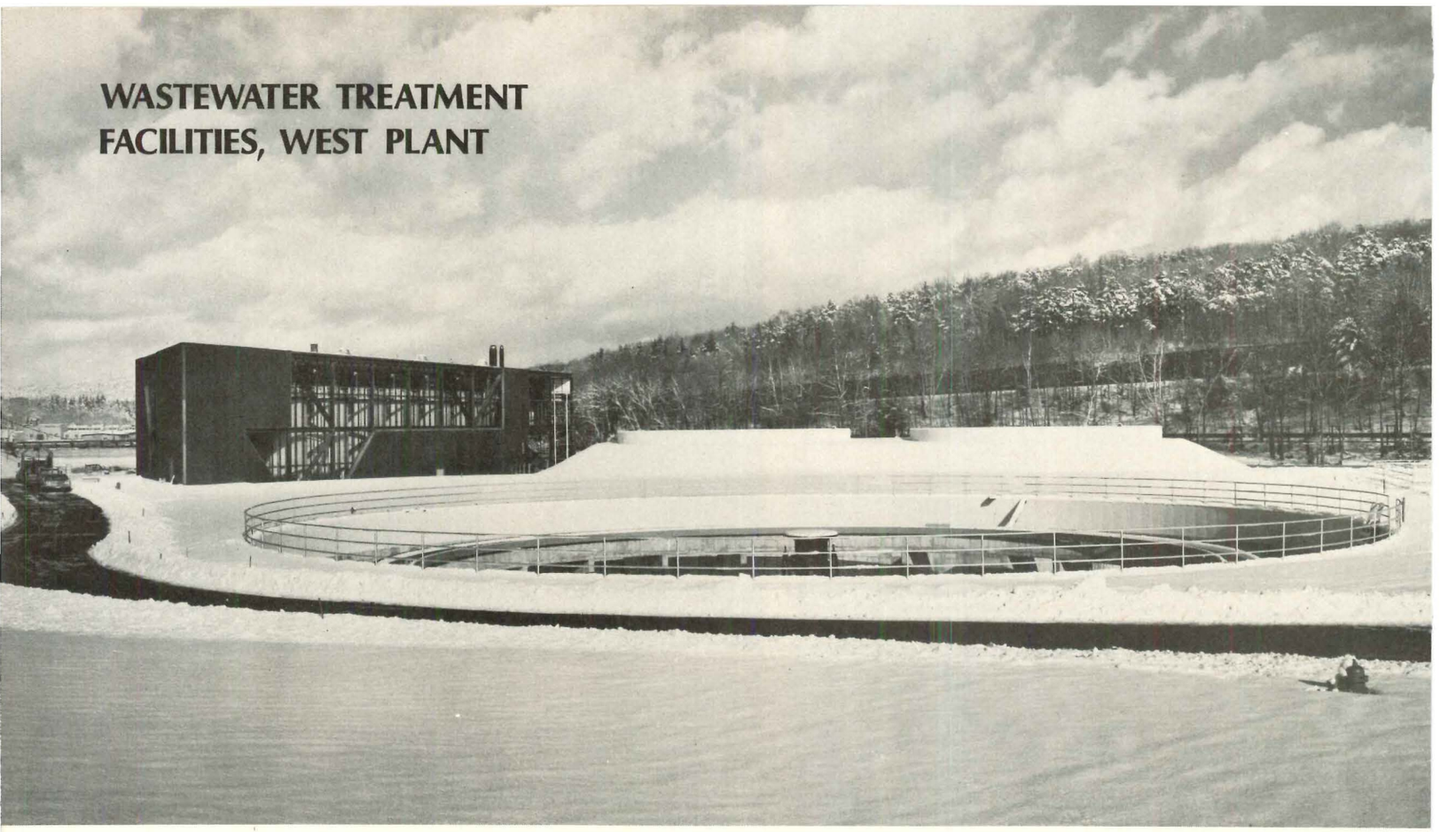
Photo upper left shows model details of (left to right) chlorine tanks, secondary clarification basin, and aeration complex. Photo above shows cutaway of a sludge digester tank with its control facility at right. Bottom photo shows primary clarification basin in foreground, aeration complex at rear.



Joseph Molitor photos



WASTEWATER TREATMENT FACILITIES, WEST PLANT

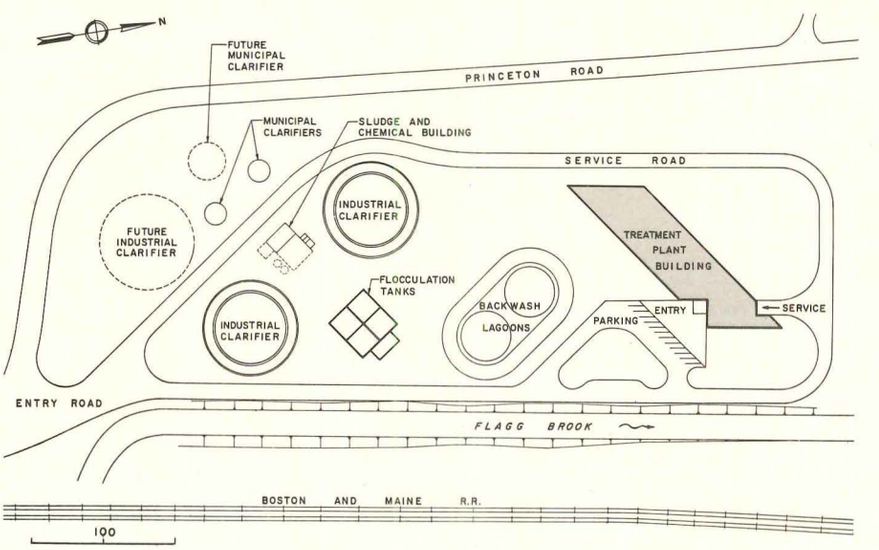


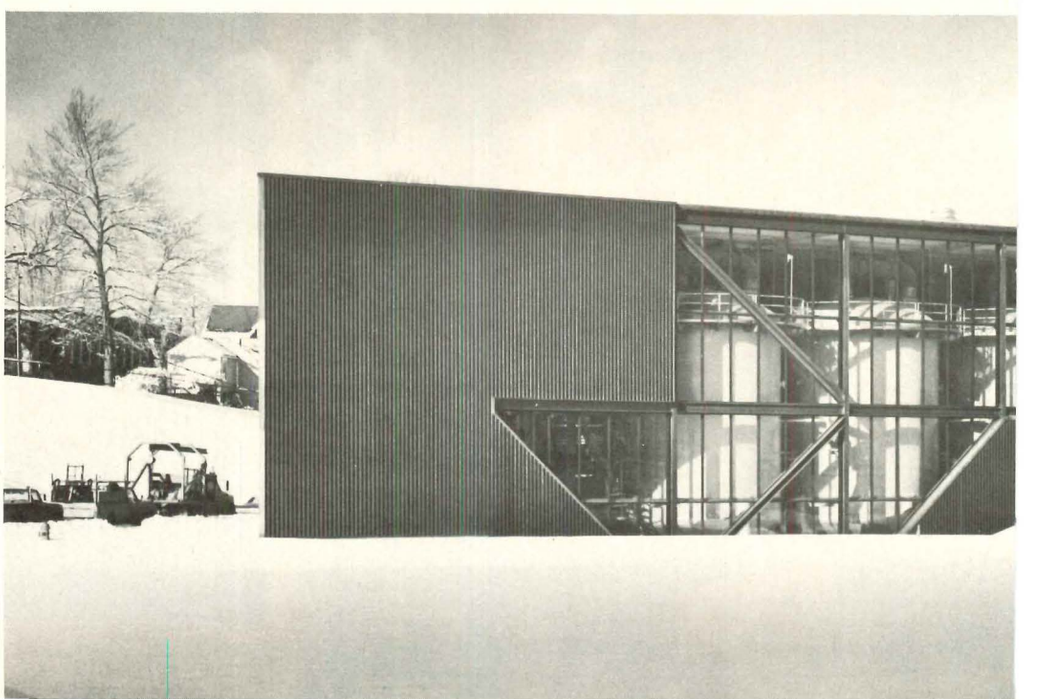
For years this site in Fitchburg, Massachusetts, at the headwaters of the Nashua River, served as a sludge-holding pond for paper wastes from local mills. When it was drained, a 10-foot-thick blanket of wet pulp remained and had to be removed prior to construction. The stream that fed the pond was rechanneled to the edge of the site. What remained was a narrow site, depressed at one end, and bounded on two sides by water.

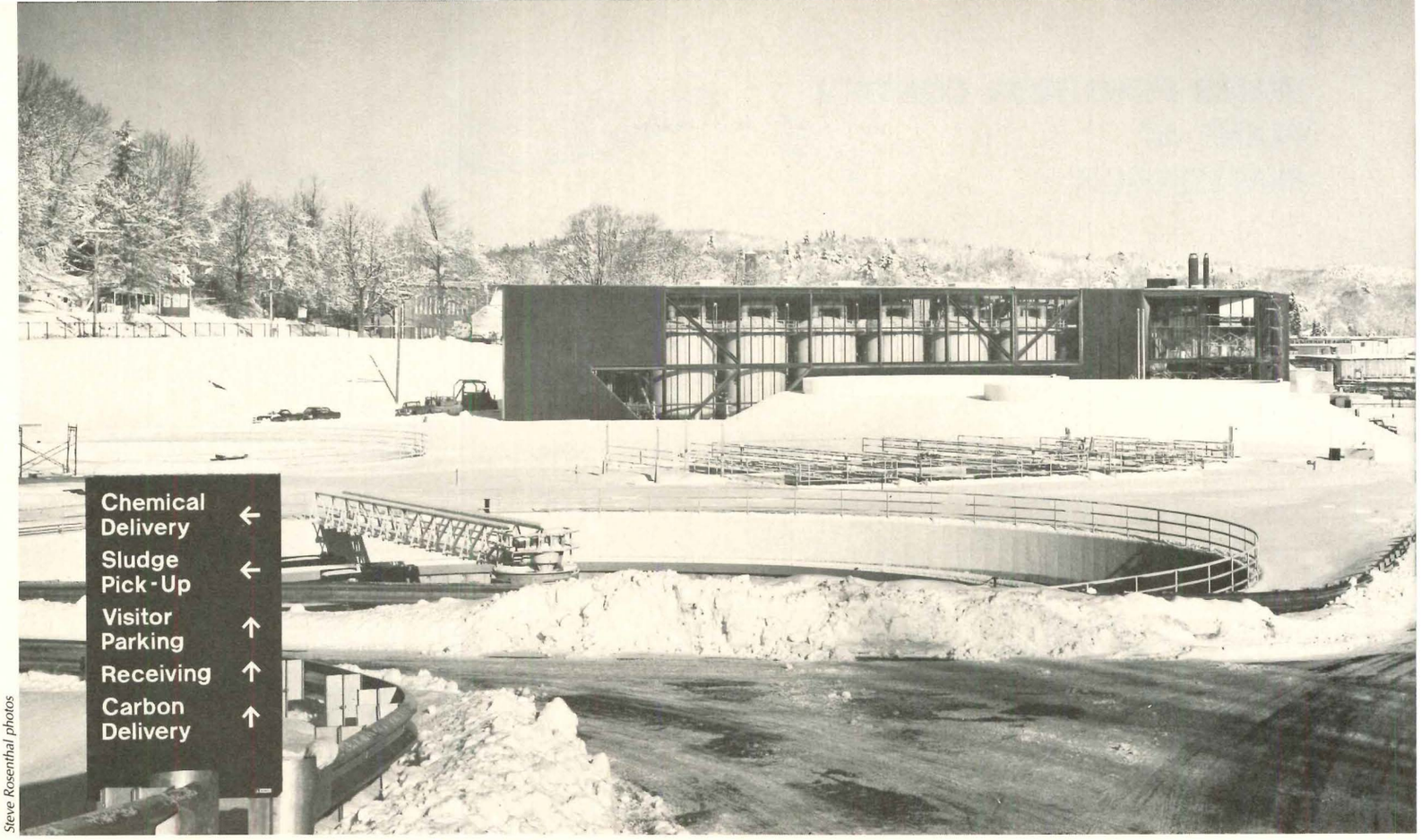
Architects Johnson-Hotvedt, working with engineers Camp Dresser & McKee, devised a diagonal process flow pattern in response to the site geometry and let the building fall logically, at the end of both the flow and the site. Because the process treats industrial wastewater, chiefly from two papermills, the engineers selected an activated carbon treatment system. The heart of this $10.6 million system is a nest of 12 tall, granular carbon filters. The architects enclosed these filters in a weathering steel structure that reflects the diagonal site geometry both in plan and elevation. The pattern of the X-bracing was used to produce glazed openings in the siding that expose the nested carbon cylinders and admit natural light in large doses. Other materials were selected with a view toward durability and easy maintenance: glazed block for interior partitions and seamless epoxy flooring.

The West Fitchburg plant is a simple but convincing argument for architect/engineer cooperation in this neglected building type. Working in tandem, they achieved together what neither might have achieved alone.

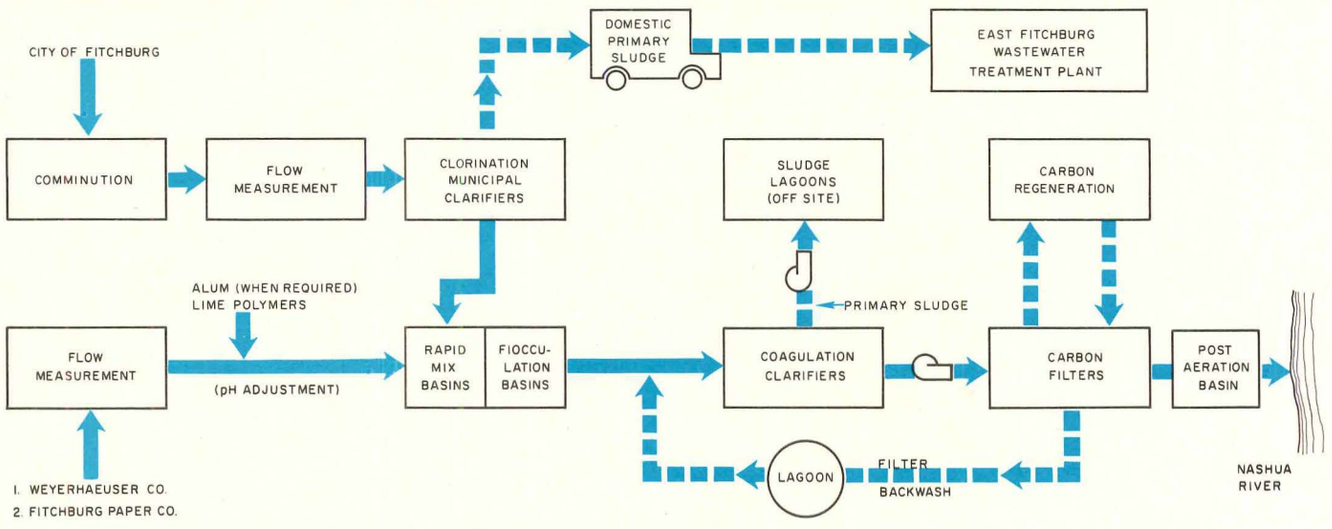
WASTEWATER TREATMENT FACILITIES, WEST PLANT, Fitchburg, Massachusetts. Engineers: *Camp Dresser & McKee, Inc.* Architects: *Johnson-Hotvedt* —Robert Pillsbury, designer. Contractor: *Fontaine Brothers.*



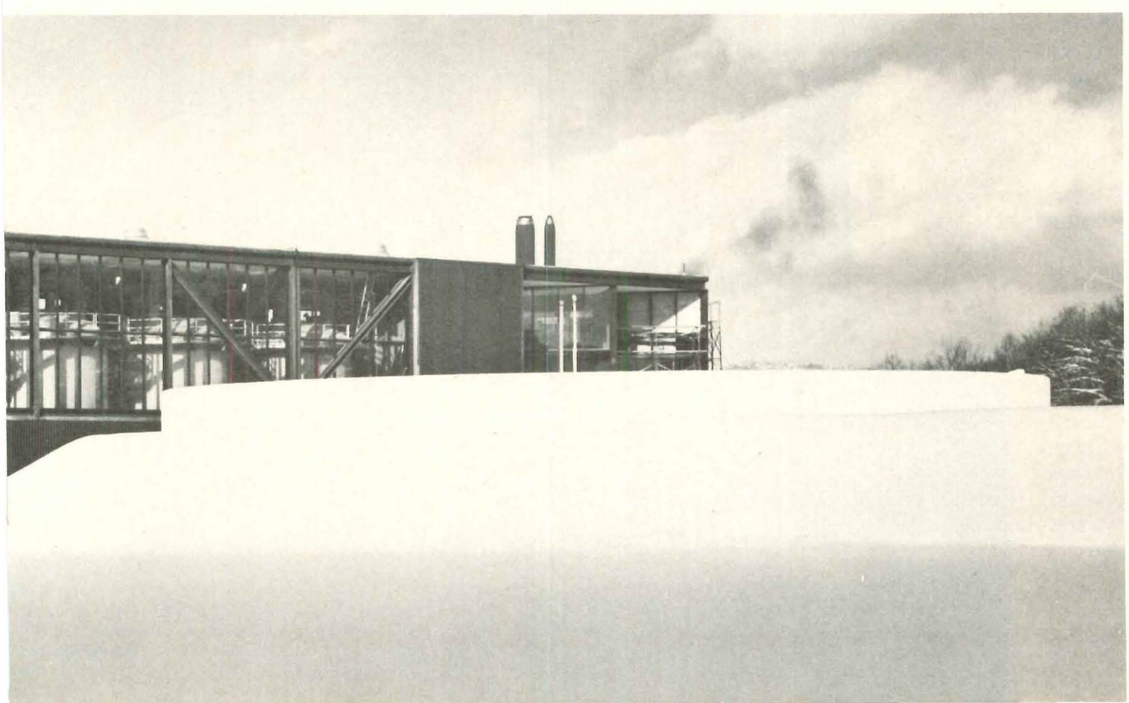




Steve Rosenthal photos



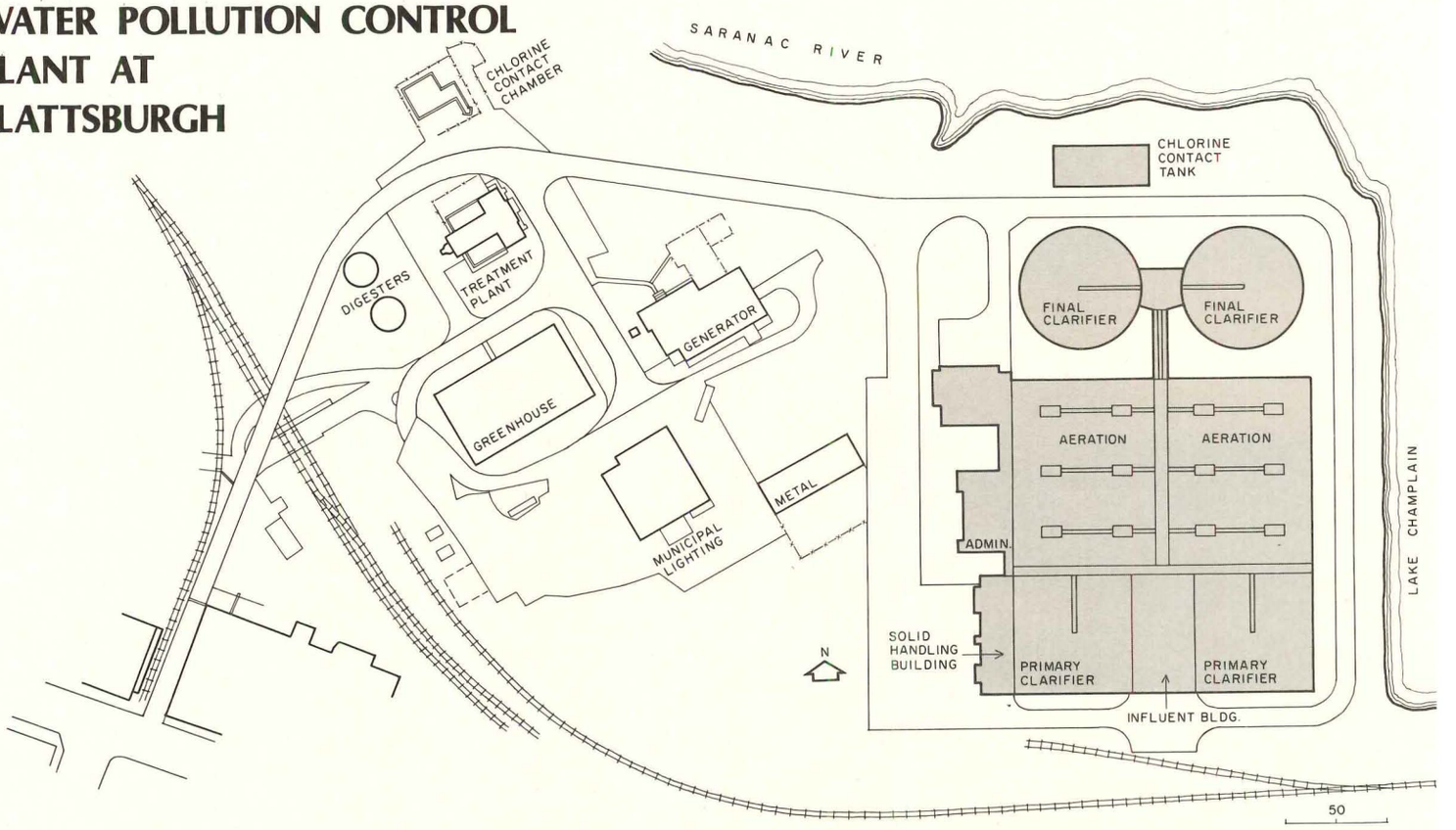
PROCESS FLOW DIAGRAM FOR WEST FITCHBURG WASTEWATER TREATMENT PLANT



This 15.3 MGD facility is part of a two-plant system for the Fitchburg region. Here at West Fitchburg, industrial wastewater will be processed using an advanced wastewater treatment for removal of organic solids. After passing through flocculation basins, the wastewater passes through the carbon filters which are operated in parallel even during backwashing and carbon regeneration cycles.

This physical/chemical process was selected over more conventional treatment because it achieves a better effluent quality and better color removal. Together with the East Fitchburg facility, this plant makes a measurable regional contribution toward the planned cleanup of the Nashua River.

WATER POLLUTION CONTROL PLANT AT PLATTSBURGH



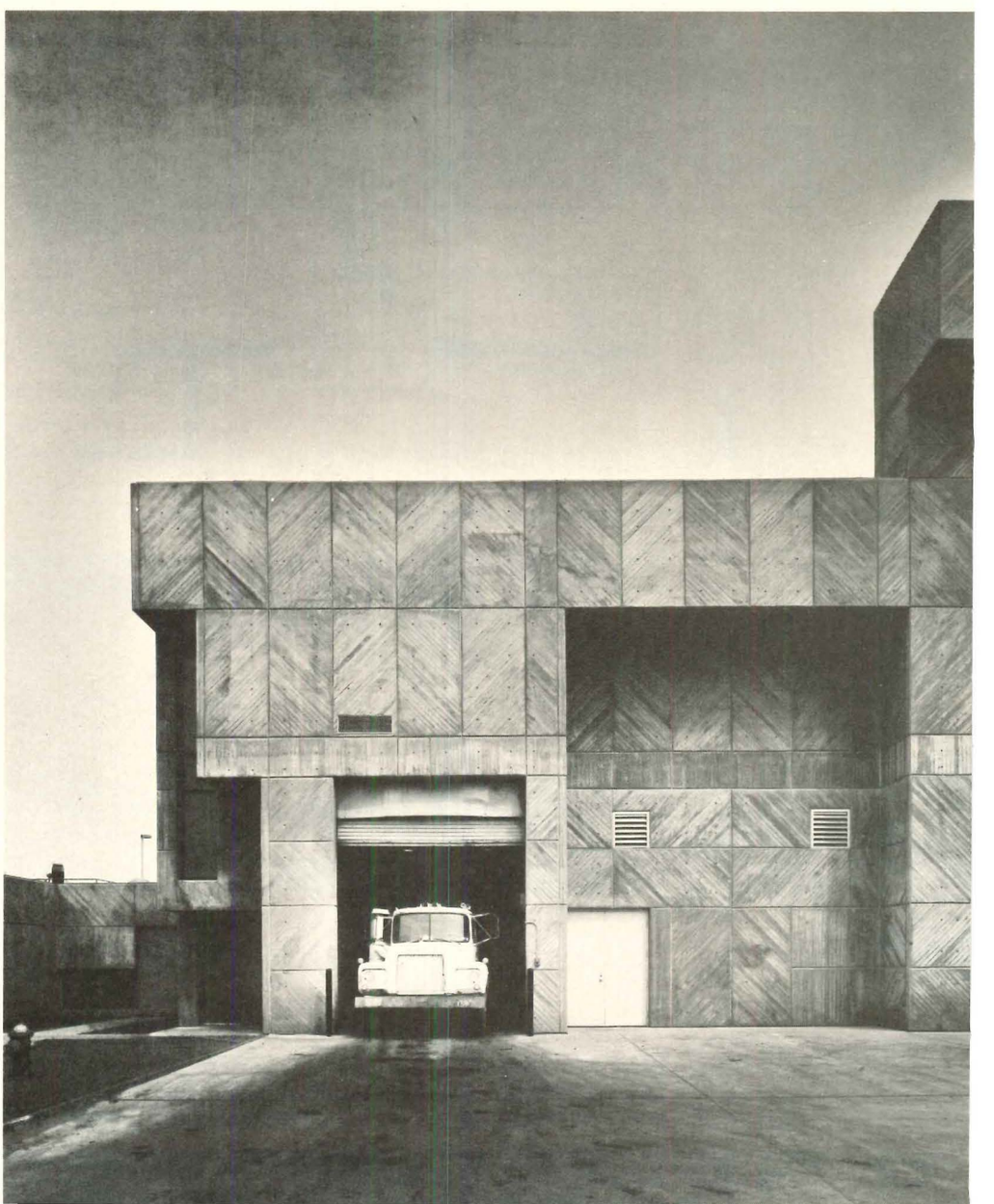
Because this new water pollution control facility is located adjacent to one of Plattsburgh's nicest residential neighborhoods and also next to a popular boating and recreational area, unusually high esthetic standards were adopted for its design. Engineers O'Brien & Gere and architects Macknight-Kirmmse worked with a tight site to produce a compact and orderly solution that masses the principal enclosures into a few powerful, concrete forms. The exteriors are board-formed, cast-in-place concrete, sealed and left natural in color. The roof structure is a waffle slab with all piping and ductwork left exposed and color-coded. Finishes throughout are modest.

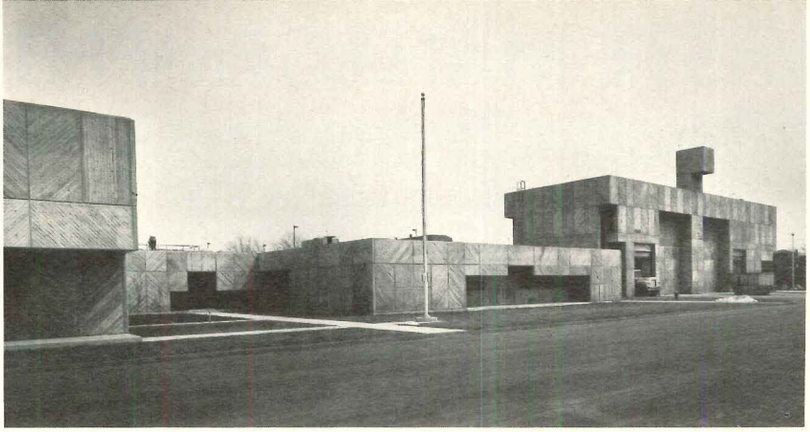
The basic treatment process for this 16 MGD facility, which serves not only the city of Plattsburgh but a branch of the State University, a nearby Air Force Base and several local industries as well, includes pre-treatment, primary clarification secondary treatment, final clarification and chlorination prior to discharge of the effluent into the Saranac River and Lake Champlain. The dewatered sludge is trucked to a nearby landfill.

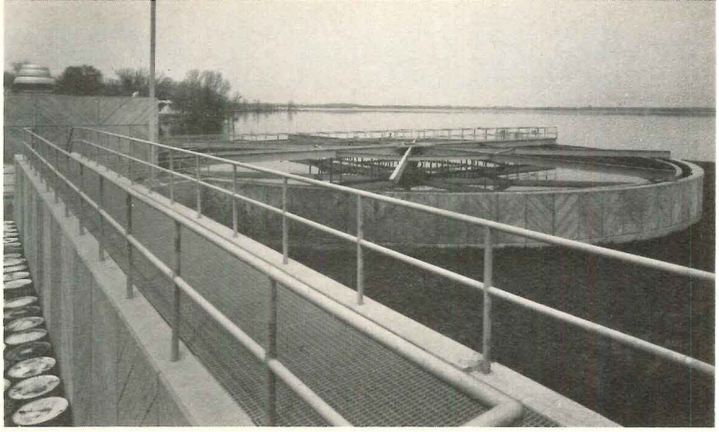
The design input and architectural quality present in this facility have not gone unnoticed. Last year, Plattsburgh's water pollution control plant received awards from both the New York State AIA and the American Concrete Institute.

Cost for construction was about $12 million with state and Federal funding providing just over half.

WATER POLLUTION CONTROL PLANT, Plattsburgh, New York. Engineers: *O'Brien & Gere.* Architects: *Macknight-Kirmmse—R.T. Kirmmse, partner-in-charge, William Slivers, project architect.* Contractor: *McElwee Courbis Construction, Inc.*



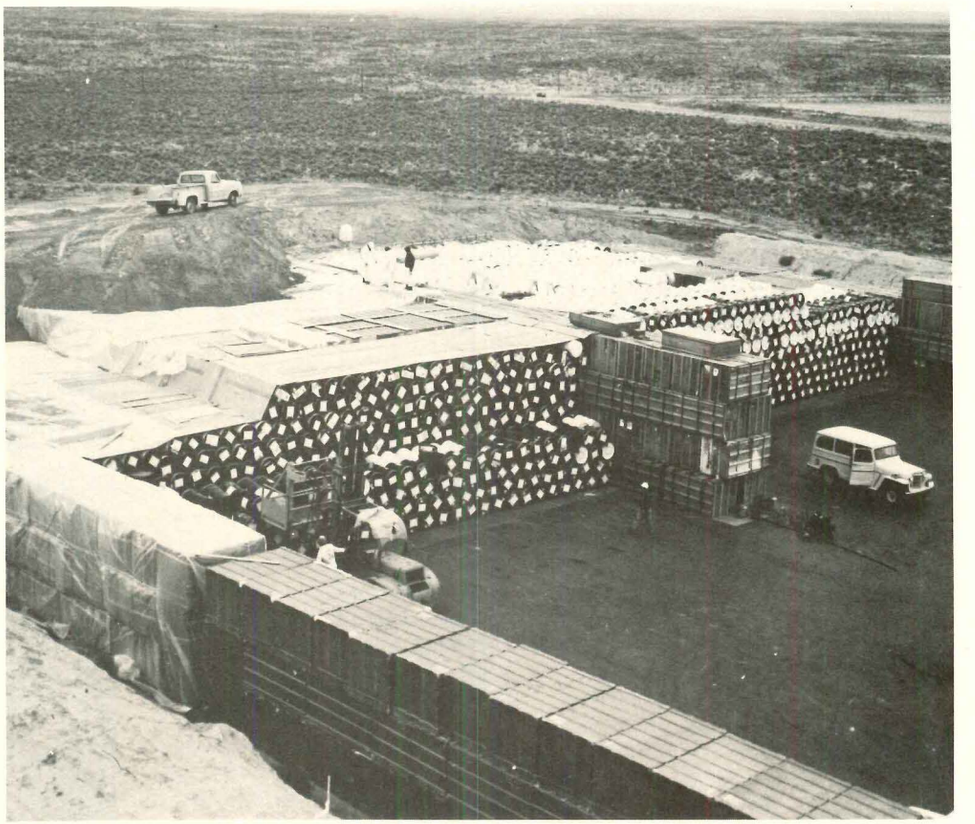




Pre-treatment (1) consists of coarse screening, comminution and grit removal. Primary clarification (2) follows during which 90 per cent of the settleable solids and over 50 per cent of the suspended solids are removed by gravity. The sludge is then stored for later dewatering by centrifuging. Aeration (3) is the next step in the wastewater flow and during six hours in the aeration tanks, organic materials undergo bacterial decomposition in the presence of oxygen. Sludge from the aeration tanks is then channeled into secondary clarifiers (4) where 35 per cent of the remaining suspended solids are removed. The treated clear liquid then flows into chlorine contact tanks (5) prior to its release.

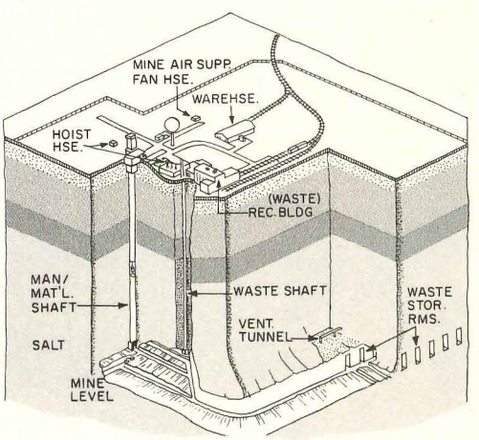
Joseph Molitor photos

BUILDINGS FOR WASTE MANAGEMENT



3 HAZARDOUS WASTES

No one is quite certain what all the risks are in handling and disposing of the nation's growing inventory of hazardous wastes. The yet-unresolved problem of nuclear waste disposal, now under careful study, is the most vexing and dramatic.



BEDDED SALT PILOT PLANT

Hazardous wastes fall into various categories with different requirements for safe storage and some debate among scientists about environmentally-sound methods for their disposal. When DDT, for instance, was recalled from the general market, existing inventories of that pesticide were collected in small caches around the country for ultimate disposition by incineration. One such depot, in Hingham, Massachusetts, holds 20,000 gallons stored in metal containers that are isolated in an abandoned ammunition bunker. Though container deterioration may soon become a serious problem, the state has not yet appropriated the funds required for suitable disposal. Other pesticides present similar problems. Manufacturers of 2-4-D are storing some of their wastes in drums in a remote area of southeast Oregon. The Air Force is presently requesting permission to destroy 2.3 million gallons of Herbicide Orange by incineration at sea.

Because they are so extremely hazardous—and the duration of that hazard so incredibly protracted—nuclear wastes are frightening, but their storage is anything but casual. Virtually none of the nuclear wastes from existing reactors has received final processing. Low-level wastes contained in metal drums are buried in retrievable form at several carefully supervised sites across the country (photo above). Wastes with high level radioactivity are now collected, converted from liquid to granular form in a process called "calcination," and stored in double-walled steel containers (mostly in Hanford, Washington) awaiting final disposal by a method as yet uncertain and at a time and place so far not specified. The U.S. Energy Research & Development Agency (formerly AEC) has examined alternate modes of disposal and rejected burial under the ocean floor, under the Antarctic ice cap, and in space. The Agency presently inclines toward disposal undergound at great depth in geologic salt deposits (drawing at left). One such projected site in Kansas has been rejected because it could not be guaranteed against leakage. Two other sites are now under study, but final decisions await the findings of an expanded environmental impact study the Agency is now preparing.

The Agency has proposed interim storage in Nevada, at a site (perhaps ironically) called Jackass Flats, where double-walled steel canisters, coated with concrete, would stand in retrievable form on the desert floor.

Research, now in its early stages, looks toward methods of reprocessing these wastes in breeder reactors and, in effect, closing the loop. The key will be in greatly reducing the half-lives of these residues which at present must be isolated, for all practical purposes, until the end of time.

Integrating sprinkler systems with the ceiling plan

by Michael Nelson, Head, Fire Protection Department
Meyer, Strong & Jones, P.C., Consulting Engineers

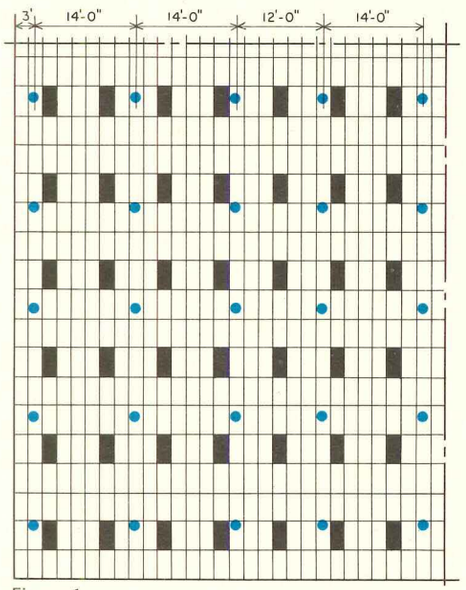


Figure 1

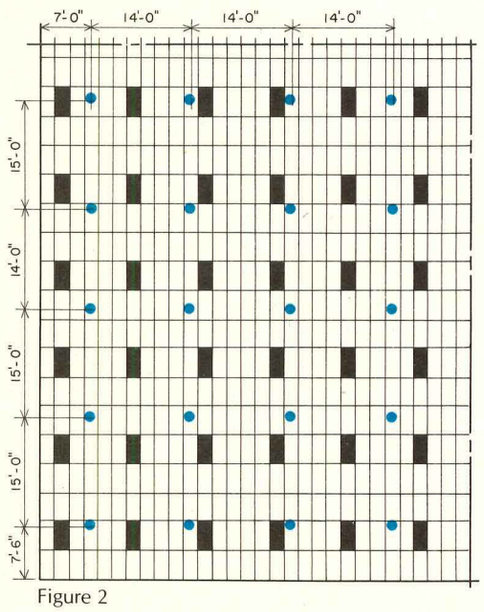


Figure 2

The maximum spacing of sprinkler heads is limited by code to 15 ft on center, though architectural considerations will often reduce this figure. Nonetheless, as these hypothetical reflected ceiling plans demonstrate, proper location of heads will reduce the number required. Spacing shown in Figure 1, a typical solution, requires 25 heads. Spacing in Figure 2 achieves functional effectiveness with only 20.

In the wake of public concern—one may even say public clamor—about life safety in tall office buildings, many states and municipalities have adopted more stringent codes for fire protection in high-rise offices and other buildings. Sprinkler systems are an integral part of these new codes, which in many cases require sprinklers throughout buildings classified as light hazards.

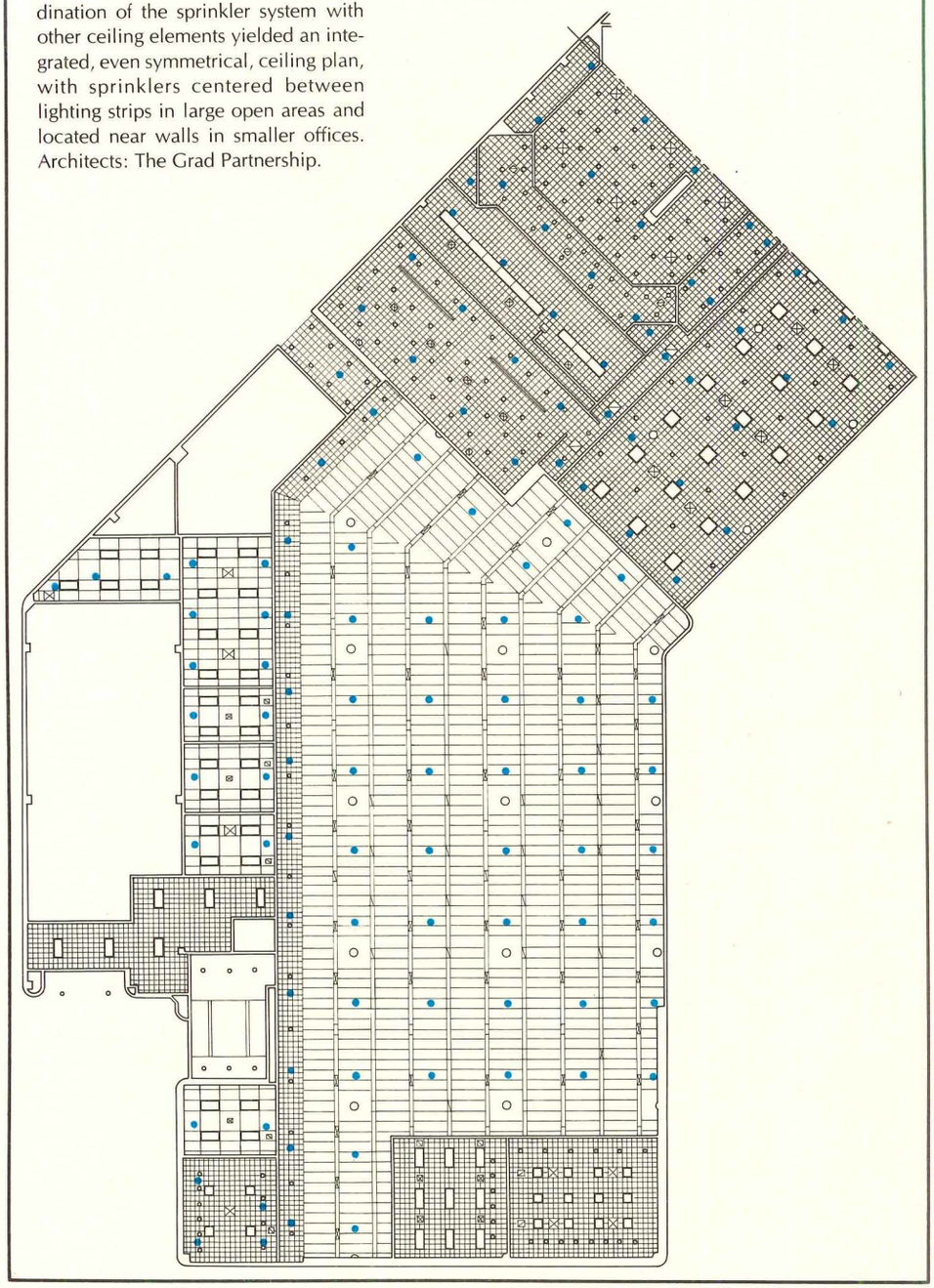
To accommodate these systems, the architect is advised to consider them early in the design process. Customarily, the preliminary design of a high-rise building establishes a module for partitions, lighting and other ceiling elements. Too often, no effort is made to include sprinkler heads in this ceiling plan, and the engineer must later insert them into a fixed pattern. This belated procedure results in an inefficient system that provides a low area of coverage per sprinkler head, requiring more heads than optimum design would, and creates an untidy ceiling pattern.

Recent revisions in NFPA Pamphlet 13 allow more flexible design approach

Most municipalities in this country use the National Fire Protection Association's Pamphlet 13, "Installation of Sprinkler Systems," as their guide in drafting codes. Originally, Pamphlet 13 concentrated on warehouses and other structures where fire hazards are high. Recent revisions and additions, however, take a broader view of fire protection, encompassing realistic requirements for high-rise offices and other buildings with a low-density rating, and adjusting standards to take into account the increasing use of hydraulically designed sprinkler systems—that is, custom-designed systems rather than standardized systems based on NFPA's generalized schedule of densities. Though standard-density systems may be necessary and esthetically acceptable in warehouses, they are often "overdesigned" for office space.

Among the changes in Pamphlet 13,

At Nabisco Global Headquarters in East Hanover, New Jersey, early coordination of the sprinkler system with other ceiling elements yielded an integrated, even symmetrical, ceiling plan, with sprinklers centered between lighting strips in large open areas and located near walls in smaller offices. Architects: The Grad Partnership.



Sprinkler heads vary in design for reasons of esthetics and purpose, and vary in price according to their complexity. The pendent sprinkler head (1) is the least expensive, but may be undesirable in office space because the entire head projects about 4 in. (This dimension varies with the manufacturer.) The unit price of this head, installed, is approximately $100. (As with all figures reported here, this unit price will vary from region to region.)

The recessed sprinkler head (2) is merely a pendent head installed in a recess cup. This leaves about 2 in. of the head exposed below the ceiling. The recessed head is also reasonable in cost, running about $110 per head installed.

The flush sprinkler head (3) is flush with the ceiling except for the fusible link, which projects approximately ¾ in. The deflector, held by chains or a piston, drops down when the link fuses. Because of higher material and labor costs, the flush sprinkler head costs about $130 installed. It is used to a great extent in office buildings because of its unobtrusiveness.

A variation on the flush sprinkler head (4) replaces the fusible link with a glass vial of liquid that expands under high temperature. The deflector is in this case exposed.

The concealed sprinkler head (5) is recessed into the ceiling and covered with a flat plate that can be colored to match finish materials. (It cannot be painted later, however.) The concealed sprinkler head has a unique two-step action: when spring hooks melt, the plate falls off, exposing what is in effect a flush head; the temperature of the fusible link has already been raised by contact with the flat plate. Although it is relatively expensive—about $150 per head installed—the concealed sprinkler head is specified quite frequently for such areas as reception lobbies and executive dining rooms.

An on-off sprinkler head (6) has no fusible link, but rather a sensitive metal element that will turn off the flow when heat subsides. This head is intended for use in areas, such as computer rooms and tape vaults, where water damage must be kept to a minimum. The unit price is about $170 installed.

Chapter 7, "Hydraulically Designed Sprinkler Systems," has been updated and revised to conform to the latest ideas in hydraulic design, and a new chapter, Chapter 8, on "High-Rise Buildings" has been added. Another beneficial change in Pamphlet 13 is the elimination of the requirement that piping be pitched; in earlier editions, a wet-pipe system was required to pitch ¼ in. per 10 ft of run. Further, under the revised guidelines, piping may be embedded in a concrete slab. Still another simplification in the revised pamphlet allows a single riser to serve as both standpipe and sprinkler riser (see drawing, page 136).

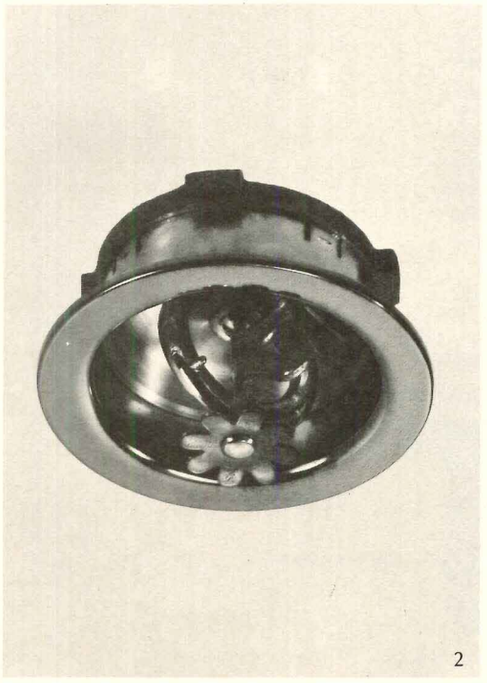
Probably the most important change in Pamphlet 13, however, is in Chapter 2, "Water Supplies," which contains a new table, 2-2.1(B) (shown below), a guide to determining density for hydraulically designed sprinkler systems. NFPA's schedule for standard systems, set forth in Table 2-2.1(A), requires appreciably greater volumes of water, and thus larger pipes, than the new table.

The standard high-rise office building, with its center core and open planning, is classified a light hazard. According to table 2-2.1(B). a design density of 0.10 gpm psf is required to control fire in a light hazard area. For an area of 1,500 sq ft, one multiplies 1,500 by 0.10 to find a 150 gpm sprinkler flow requirement. This is the basic criterion for a hydraulically designed sprinkler system; after determining this requirement, the designer can size the fire pump or house tank, or both, accordingly. A comparison of hydraulically designed sprinkler systems with standard systems shows the required flow rate to be considerably less in the first. More important, a hydraulically designed system allows a reduction in sprinkler pipe sizes.

Pounds of Combustibles per sq ft	Corresponding Heat Release BTUs per sq ft	Design Density Gallons per Minute per sq ft	NFPA Hazard Class
10	80,000	0.10	Light
15	120,000	0.15	Ordinary—Group 1
20	160,000	0.20	Ordinary—Group 2
25	200,000	0.25	——
30	240,000	0.30	Ordinary—Group 3

Table 2-2.1(B), NFPA Pamphlet 13, "Installation of Sprinkler Systems"


1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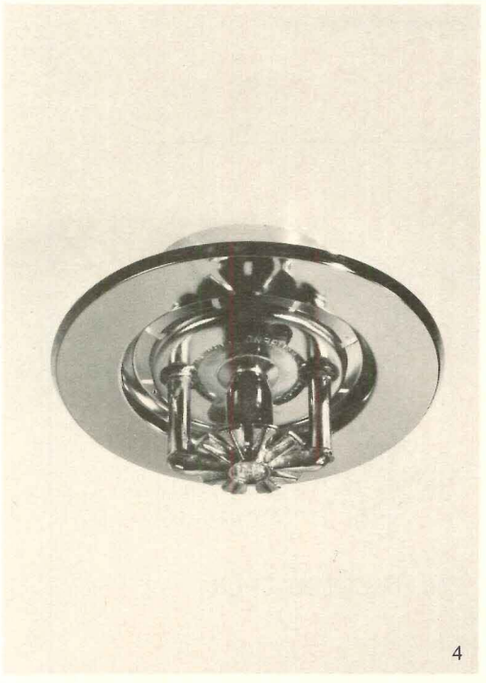
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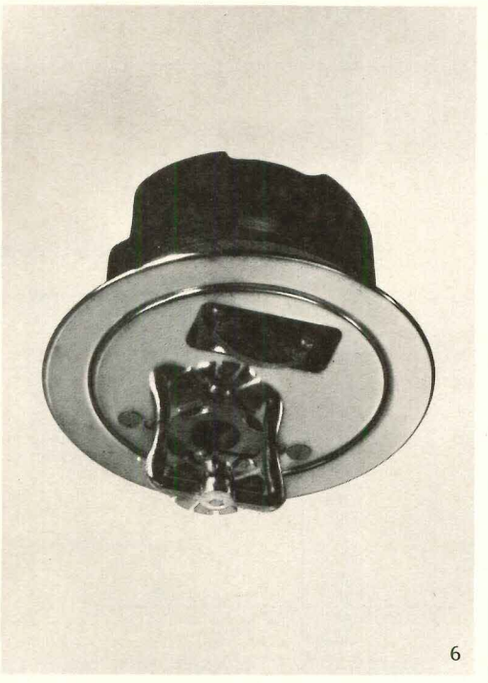

6

Calculated spacing of sprinkler heads serves the ends of both economy and esthetics

When the basic design criteria have been established, the designer can develop the spacing of sprinkler heads. A sprinkler head yields a maximum coverage of 225 sq ft, permitting heads to be set on 15-ft centers maximum, with no more than 7½ ft between the head and a wall. Further, sprinkler heads should be at least 1 ft away from any light fixture or ceiling grille. If there is a break in the ceiling line, such as a change in room height, this must also be taken into consideration, and can usually be accommodated by adjusting the space between heads.

Early involvement of the sprinkler system designer in the process of ceiling design will enable him to approach maximum coverage in spacing sprinkler heads—and the cost savings can be substantial. Figure 1 (shown page 133) is a typical reflected ceiling plan, to which sprinkler heads were added after the ceiling pattern was developed. Maximum spacing and a uniform layout could not be established.

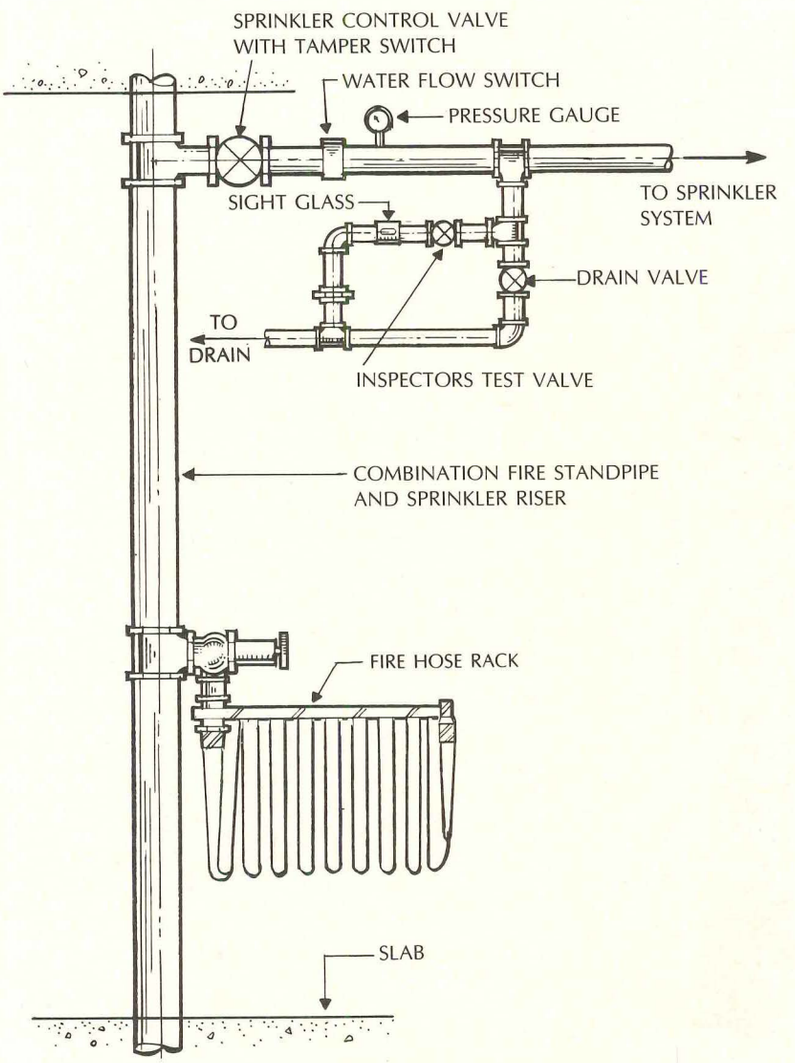
Figure 2 is a reflected ceiling plan with sprinkler heads integrated with the total design. It utilizes maximum spacing in both directions, and generally achieves a uniform appearance. Furthermore, this integrated design results in considerable savings in the cost of the sprinkler system.

To get an approximate estimation of these savings, let us assume that each of these plans represents a quarter of a typical high-rise floor. The first plan shows 25 sprinkler heads, or 100 heads per floor. The second shows 20 sprinkler heads, or 80 heads per floor. Assuming further that this is a 40-story tower using flush sprinkler heads at a unit cost of $130 installed, the cost of the first set of heads will be $520,000 (100 x 40 x $130), while the cost of the second will be $416,000 (80 x 40 x $130). The cost saving—$104,000, or an even 20 per cent—is a persuasive argument for the consideration of sprinklers in preliminary design.

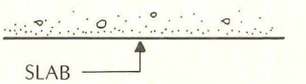
At the Nabisco Global Headquarters in East Hanover, New Jersey, we were able to incorporate the sprinkler system during preliminary design of the building. At a series of meetings involving the owner, Nabisco Corporation, the architect, The Grad Partnership, the engineer, Meyer, Strong & Jones, and the owner's insurance agent, design criteria for the sprinkler system were discussed, and the spacing of the heads, water density and various other matters were agreed upon. One example of the cost benefits resulting from such early analysis of sprinkler needs was the insurer's allowance of a special service fire pump—that is, a 300 gpm pump instead of the standard general service 500 gpm pump—for a saving of $2,000.

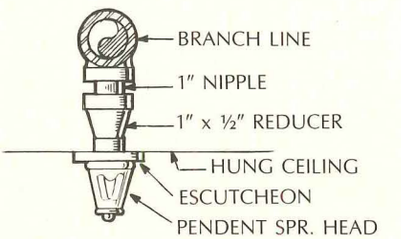
Because the ceiling plan is generally one of the last things the architect designs, the layout of sprinkler heads requires two sets of drawings. First, and before a reflected ceiling

A recent change in NFPA's requirements for high-rise buildings allows the fire-standpipe system and sprinkler system to be combined, eliminating the need for separate risers, Siamese connections and fire pumps. Combined riser (below) is usually installed in the fire stair so that valves and alarms are accessible to both fire department and building maintenance crew.



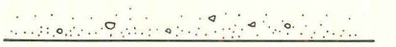
COMBINATION STAND- PIPE AND SPRINKLER VALVE ASSEMBLY

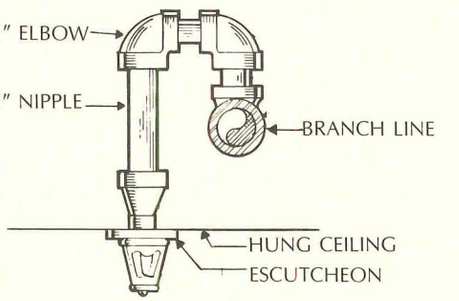




DIRECT CONNECTION

Sprinkler head connected directly to piping (above) makes no allowance for future relocation. A swing connector (below right), though initially more expensive, may save costly changes if partitioning should be altered.





SWING CONNECTION

plan is available, engineering drawings are made to show piping, valves, alarms and so forth, as well as *approximate* locations of sprinkler heads. These drawings carry the instruction "for exact location of sprinkler heads, refer to the architect's reflected ceiling plan." When the reflected ceiling plan becomes available—and because swing connections (see above) are installed to allow flexibility in positioning heads—the architect is able to indicate the *exact* location of each sprinkler head. At Nabisco, the plan achieves maximum spacing—225 sq ft per head—in many cases, both in small rooms and in large open spaces.

An important consideration, often overlooked when the sprinkler system is hastily designed, is the need for flexibility in locating sprinkler heads. Tenants in rental offices often require that partitions be repositioned—and when partitions are moved, at least some sprinkler heads will have to be moved. In the case of fixed heads, connected directly to branch piping with a nipple and reducer (see above), these changes will entail substantial labor costs. A swing connection, on the other hand, (above) can be installed to anticipate relocation. Although elbows and additional nipples increase their initial cost, the gain in flexibility and the promise of future savings may well justify the installation of these fixtures.

Some alternatives to the wet-pipe system—and some compensations for sprinkling costs

Although the wet-pipe system is standard in most office areas, special circumstances may require special systems. At a loading dock, for example, or in any area where piping will be exposed to freezing temperatures, a dry-pipe system will be required. This system is simply a network of pipes filled with compressed air instead of water, with a stop valve at a water source that is located in a heated area. When the sprinkler head fuses, the air pressure drops, causing the stop valve to open and the piping and open sprinkler head to fill with water.

Computer rooms and other areas where water damage must be kept to a minimum may call for a pre-action sprinkler system. This system uses fire, heat and smoke detectors in conjunction with a dry-pipe system. The smoke detector activates an alarm to give early warning. At this point, the sprinkler system begins to fill with water; when the sprinkler head fuses, the water discharges. For additional protection against water damage, the on-off sprinkler head may be used in conjunction with this system.

Although sprinkling high-rise buildings undoubtedly increases their cost, it is heartening to find that many codes offer cost-cutting benefits in other areas if the building is sprinklered throughout. Many codes permit increased floor areas and additional stories, while others allow increased distances between exits, fewer fire-rated partitions, and a wider range of interior finishing materials.


InterRoyal
Step into the InterRoyal show room
See how exciting office furniture can be

Working environments

When it comes to planning and furnishing an individual work space or an entire office—InterRoyal has it all. Seating, desks, storage units and landscape systems to make today's office environments attractive, flexible, efficient.

See this furniture and equipment at InterRoyal show rooms in New York, Chicago, Los Angeles, Seattle, Dallas, Atlanta. In Canada: Galt, Toronto, Montreal. Or see your InterRoyal distributor.

Shown on cover: 8000 Line desk and Forberg II.

Openscape...a comprehensive InterRoyal system of effective, problem-solving furniture and equipment. Panels in standard widths can be joined in infinite variety to create any desired floor plan geometry.

Openscape allows the creation of work areas that can be shaped and re-shaped to changing office needs. Openscape work surfaces, end panels and finishes give all the options and elegance of custom design.

InterRoyal

Many types of InterRoyal seating are compatible with Openscape components. Series 2600 chairs are shown here.

InterRoyal's new Shell Chair line is available in a wide variety of styles, fabrics, vinyls and shell colors. Shown is an executive swivel/tilt arm chair.

Modular flexibility of Coordinates systems equipment allows optimum utilization of costly floor space.

InterRoyal Coordinates—an integrated system of lateral filing cabinets, desks, work surfaces... form individual coordinated work stations.

Investments in efficiency

InterRoyal

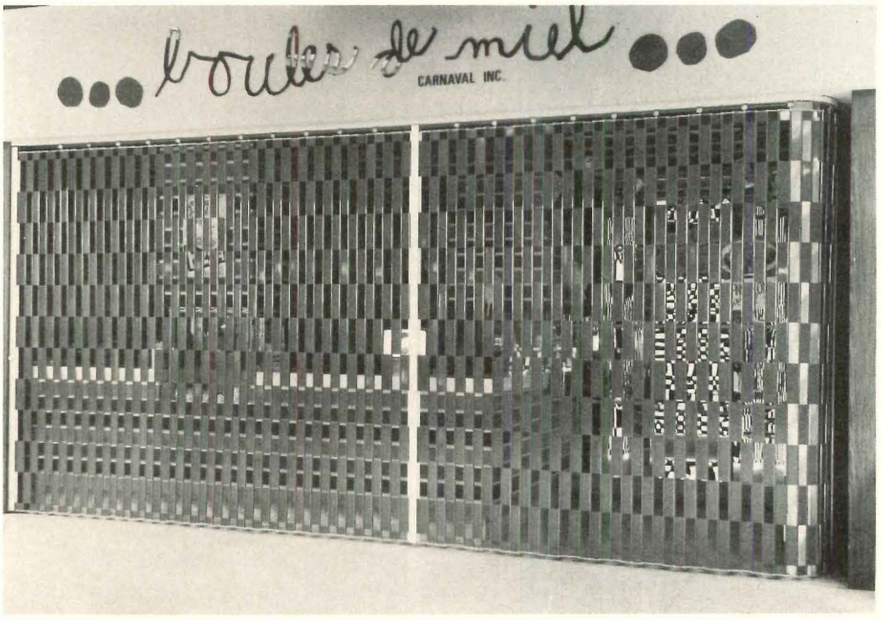
InterRoyal's 6000 Line provides a complete range of desks and related furniture for every level of employee —from clerk to executive—and for every work station need.

Our 8000 Line desk and credenza are typical of InterRoyal functional design. 8000 Line also includes matching single pedestal desks, return units, and tables.

InterRoyal Forberg II chairs form a total seating system, with desk, conference and secretarial models on a range of multiple function pedestals.

InterRoyal
One Park Avenue
New York, N.Y. 10016
(212) 686-3500

For more information, circle item numbers on Reader Service Inquiry Card, pages 209-210.



Decorative side-sliding security grille turns corners

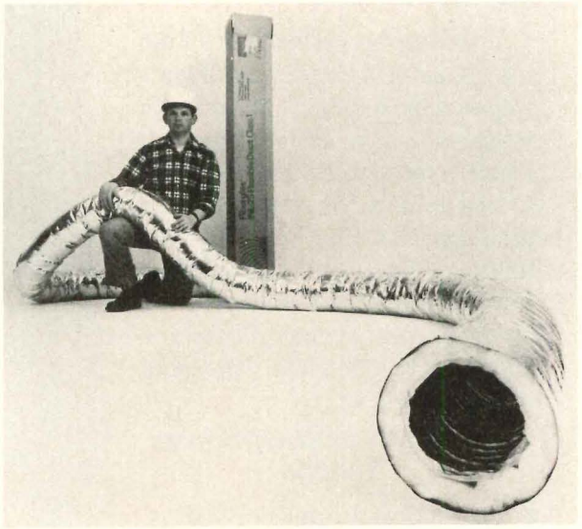
For storefronts, malls and institutions, this side-sliding grille features full base security with no floor track. Available in colorful selections of anodized or *Duracron* finishes or impact-resistant plastic, the grille can slide or bend around corners to allow design flexibility as well. The company states the manually operated grille is easily custom fitted for positive security for stores, shopping malls, schools, hotels, hospitals, banks, etc. A color catalog is available upon request, and an architectural and sales advisory service is available throughout the United States. ▪ Dynaflair Corp., Melville, N.Y.

Circle 300 on inquiry card

Twenty-five-foot-long flexible duct introduced

A new, lightweight flexible duct for use as air duct or connector on supply and return lines has been introduced by the company under the name "INL-25." The duct is recommended for residential, commercial and industrial installations. The impervious inner air barrier carries out two functions: it reduces condensation, and it is the actual air carrier. The duct is also fully insulated, and a reinforced vapor-barrier jacket prevents job site snags and does not contract or expand under temperature changes. The wall thickness is 1 in., and inside diameters range from 4 to 16 in. ▪ Owens-Corning Fiberglas Corp., Toledo, Ohio.

Circle 302 on inquiry card



System for estimating "reads" blueprints

According to the company, the "Model CS-1" digital totalizer is designed to eliminate hand counting and measuring from blueprints. Coupled to a Monroe calculator (right), the "CS-1"—set at the proper scale—traces the blueprint and automatically stores the linear footage in the calculator. Probes mark the blueprint when desired in one of ten colors. ▪ I.S. Industries, Collingswood, N.J.

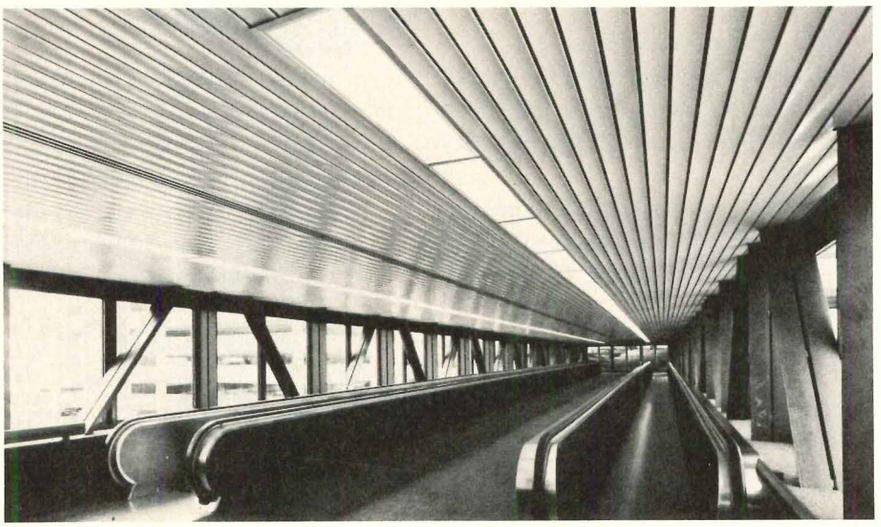
Circle 301 on inquiry card

Louvered ceiling now in three configurations

The producer of the slender "Riviera" window blinds has redesigned the firm's *Ecol-O-Vane System* aluminum louvered ceiling, which is now offered in three configurations. Snapped into place on aluminum runners mounted on ceilings or walls, the louvers can be suspended from finished or unfinished surfaces. ▪ Levolor Lorentzen Inc., Hoboken, N.J.

Circle 303 on inquiry card

more products on page 145



How to Keep Your Building from Being Branded a Firetrap.

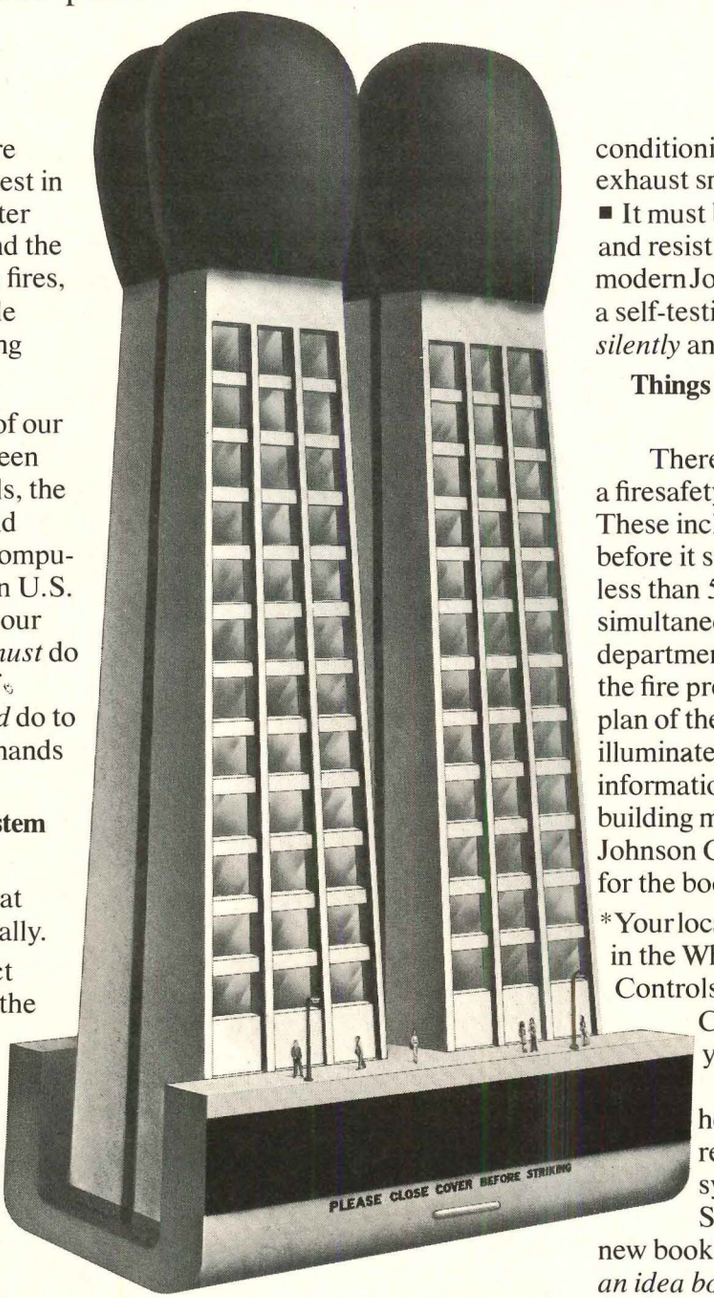
A report to executives from Johnson Controls.

Per capita losses from fire in the U.S. are the highest in the world, 5 times greater than Japan. This grim fact, and the fear associated with high-rise fires, has spawned a rash of firecode provisions that are bewildering building executives.

This report on the state of our fast-changing firecodes has been prepared by Johnson Controls, the people who have designed and installed more than half the computerized automation systems in U.S. buildings. (It tells you what your building's firesafety system *must* do now. It also tells you some of the things your system *should* do to keep pace with firesafety demands in years ahead.)

Things Your Firesafety System Must Do

- It must detect smoke *or* heat and give the alarm automatically.
- It must automatically direct elevators to the ground floor the instant an alarm is sounded.
- It must put firemen in full command of elevators and communications systems with a fire control panel made operative only by a fire department key.
- It must provide firesafe islands within the building. These can be formed automatically by fire doors that close when the fire alarm goes off.
- It must talk to people on every floor, telling them where to go, what to do, when, and why. A Johnson Controls firesafety system can achieve this by broadcasting pre-recorded or live voice commands.
- It must exhaust deadly smoke and gasses, responsible for most fire deaths. Call your Johnson Controls office* to find out how your air conditioning system can be used to exhaust smoke from the fire area.
- It must be able to test itself and resist the onslaught of fire. A modern Johnson Controls system has a self-testing capability that works *silently* and *continuously.*



Things Your Firesafety System Should Do

There are other vital functions a firesafety system should perform. These include anticipating a fire before it starts, giving the alarm in less than 5 seconds, processing simultaneous alarms, calling the fire department automatically, locating the fire precisely, projecting a floor plan of the fire floor onto an illuminated screen. For more information on how to make your building more firesafe, call your Johnson Controls office, or write for the booklet offered below.

*Your local Johnson office is listed in the White Pages under Johnson Controls or Johnson Service Company. If there's anything you'd like to ask us, just call.

Find out more about how you can meet new regulations with a firesafety system that pays for itself. Send for Johnson Controls new booklet, *"Firesafety Systems: an idea book to help you cope with changing codes."* Write to J.J. Bartoletti, Manager, Firesafety Systems, Johnson Controls, Inc., Reference G-1, P.O. Box 423, Milwaukee, Wisconsin 53201.

JOHNSON CONTROLS Prime source of problem-solving systems.

For more data, circle 55 on inquiry card

OFFICE LITERATURE

For more information, circle item numbers on Reader Service Inquiry Card, pages 209-210.

SOUND DOOR SELECTION / A new bulletin featuring a simplified chart method of identifying any specific noise problem and selecting the right STC rated door to correct the problem also provides specifications, drawings and descriptions of industrial acoustical doors. ▪ Clark Door Co., Inc., Cranford, N.J.

Circle 400 on inquiry card

SPRAY-ON INSULATION / A spray-on insulating, fireproofing and soundproofing system is featured in a four-page color brochure with architectural diagrams of specific applications. ▪ Therma-Coustics, Inc., Colton, Cal.

Circle 401 on inquiry card

WINDOW DECORATING / The 40-page booklet contains full-color photos of room settings, hints on decorating with blinds, and instructions for laminating and painting designs on the blinds available in over 100 colors and patterns. They can also be made up in stripes as well as solid colors. The slender "Riviera" blinds are said to be effective in sun control and act as a thermal barrier at the window. ▪ Levolor Lorentzen Inc., Hoboken, N.J.

Circle 402 on inquiry card

SELF-LOCKING FASCIA / A new eight-page illustrated brochure on *Tremline* fascia and flashing systems includes design ideas; detailed application drawings; suggested CSI Format, Division 7, specifications; performance specifications; and installation drawings and instructions on modular, self-locking fascia and flashing systems. ▪ Tremco, Cleveland, Ohio

Circle 403 on inquiry card

PLASTIC PIPING HANDBOOK / A pocket-size manual of plastic piping contains information to help properly choose and install plastic piping. Some of the main topics include selecting plastic according to installation requirements, detailed step-by-step instructions on solvent welding, adapting plastics to other materials, important considerations with ABS and PVC drainage systems, and tips about the installation of CPVC hot and cold pressure piping. ▪ NIBCO Inc., Elkhart, Ind.

Circle 404 on inquiry card

CARPET ADHESIVE / The catalog sheet describes the product's one coat application for firm bonding of all carpet backings to any floor surface. Detailed is a releasable adhesive feature that permits easy removal of carpeting any time after installation without strenuous clean up problems. ▪ Ni-Chem International, Chicago, Ill.

Circle 405 on inquiry card

PLAYGROUND EQUIPMENT / There are 185 new products for parks and school playgrounds in the company's 1975 catalog of therapeutic play equipment, pre-school equipment, and a modular concept in wood playground products. The 102-page catalog covers climbers, swings, saddle mates, slides, park equipment, mall furniture, bike racks, sports equipment including bleachers, buildings and shelters and mobile recreation. All of the playground equipment is certified by the Nationwide Consumer Testing Institute, Inc., to comply with the proposed safety standards developed for recreational equipment in use in public parks and playgrounds. ▪ Game Time, Inc., Eden Prairie, Minn.

Circle 406 on inquiry card

CORRUGATED METAL TUBING / "Bend-A-Flex" corrugated tubing is available in special-neck designs and interrupted corrugations in tubing up to 100 feet long. A booklet suggests applications for fluid connectors, vent lines, lube lines, heat transfer applications and more. It can be supplied in a variety of metals to cope with temperature, chemicals and solvents. ▪ Flexonics Div., UOP, Bartlett, Ill.

Circle 407 on inquiry card

DUCT INSULATION / A new data sheet on *Microlite* fiberglass duct insulation which is used on the exterior of rectangular and round sheet metal ducts in heating and cooling systems includes facts on fire safety requirements of NFPA and FHA and data on compliances with government specifications. ▪ Johns-Manville, Industrial Products Div., Denver, Colo.

Circle 408 on inquiry card

SPECIAL EDUCATION PLAY EQUIPMENT / An extensive line of new rehabilitative play equipment for special education and institutional use appears in a 12-page catalog covering scientifically designed units and systems for helping children with physical, mental, emotional or learning disabilities. Also highlighted are slides, balance beams, basketball backstops, trampolines, playground equipment and a therapeutic swim/training pool. The catalog also contains a section discussing equipment needs for specific handicaps and special education programs for schools, hospitals and park districts. ▪ Thera-Play Products, Long Island City, N.Y.

Circle 409 on inquiry card

WOOD FLOORS, WALLS / A new brochure presents detailed architectural specifications, renderings of various standard patterns and general ordering information for floor and ceiling custom wood patterns. ▪ Surface Concepts, Inc., Los Angeles, Cal.

Circle 410 on inquiry card

ICE RINK GUIDE / A 28-page ice rink buying guide explains the different kinds of ice rink refrigeration systems with cost and feature comparisons. City planners, athletic directors, architects, engineers and contractors are the intended audience for this guide to planning a new rink or modernizing a present ice skating facility. ▪ Holmsten Ice Rinks, Inc., St. Paul, Minn.

Circle 411 on inquiry card

PLUG-IN RECEPTACLE / The company has announced the publication of a bulletin on its plug-in *QWIK-GARD* receptacle ground fault circuit interrupter. Designated the "GFRP-115," the UL-listed unit provides Class A ground fault protection at either two or three prong receptacles. Features of the "GFRP-115" include: test button, fault light, reset button and an indicator which shows when the ground pin is retracted. Also included in the four-page bulletin are brief descriptions of the *QWIK-GARD* direct-wired receptacles and circuit breakers. ▪ Square D Co., Lexington, Ky.

Circle 412 on inquiry card

SOUND COLUMNS BROCHURE / A 12-page brochure is offered as a guide to the selection and installation of sound columns. Copy and diagrams depict various sound problems and their solution, and specifications and photos of actual case studies are included. ▪ Argos Sound, Genoa, Ill.

Circle 413 on inquiry card

LIBRARY FURNISHINGS / A new, fully illustrated price list featuring the company's line of coordinated library furnishings contains information on displaying and shelving materials, controlling materials and

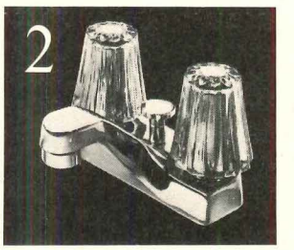
more literature on page 159

For more data circle 56 on Inquiry Card

Three ways you can help conserve our most precious natural resource:

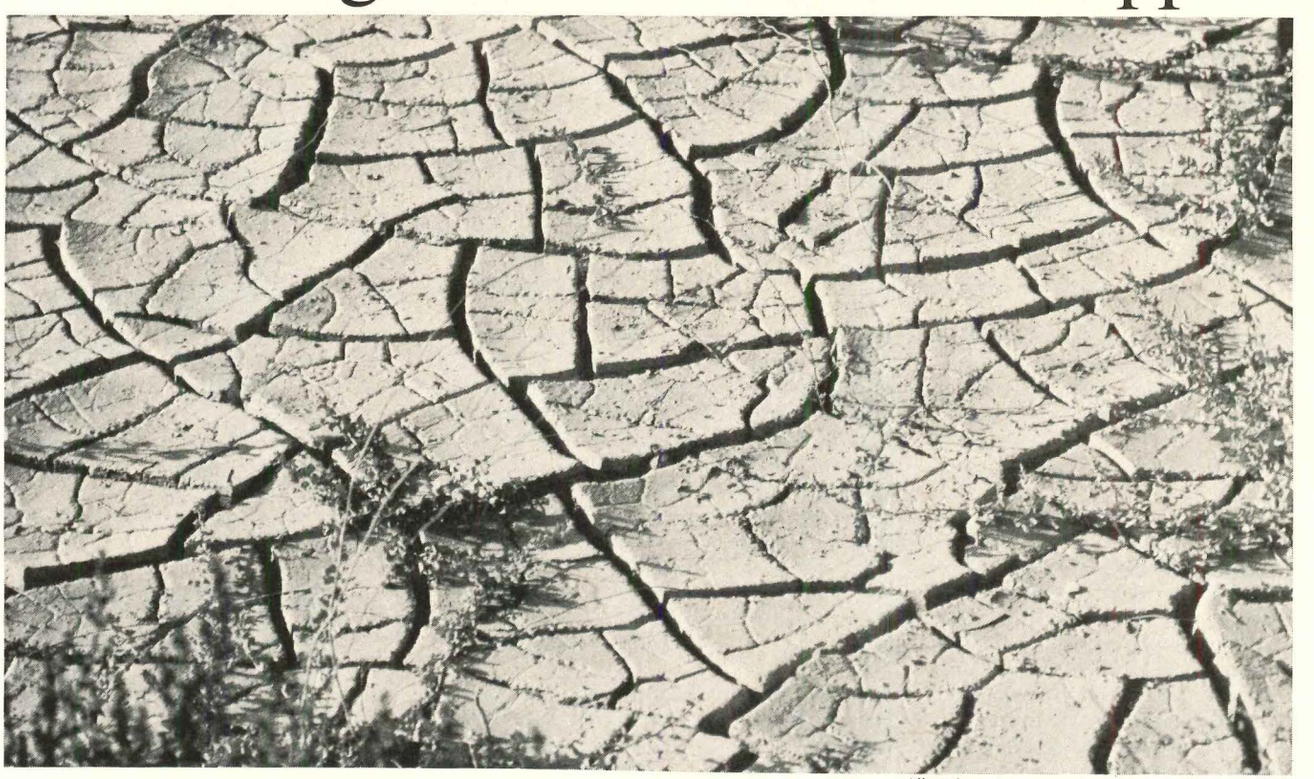
1. Start installing the toilet that uses ⅓ less water. Designed to flush efficiently with a minimum of water, our Water-Saver Cadet Toilet can save the average family of four over 15,000 gallons of water a year!

2. Switch to Heritage Fittings with flow restrictors on kitchen, lavatory and bath/shower fittings to limit flow rates to 3.5 gallons per minute or less, depending on pressure.



3. Use Aquamizer on any American-Standard shower-head without a volume control, and cut water consumption per minute by more than 50%.

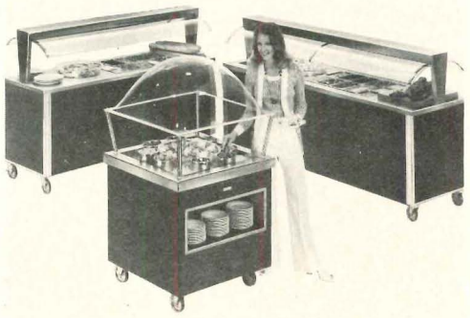
The shortage that doesn't have to happen.



All product names are trademarks of American-Standard.

AMERICAN STANDARD

For more data, circle 57 on inquiry card



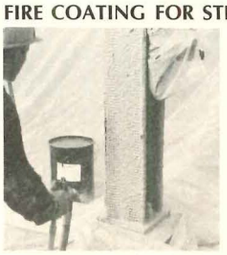
MOBILE SALAD BUFFETS / Three sizes and styles, available in either freestanding or drop-in models, include a refrigerated dish well, self-contained refrigeration unit for the salad and condiment areas, and a recessed well for chilled dishes. The walnut grain, vinyl-clad steel body is topped with a stainless steel service area, and a curved plexiglass canopy. ▪ Precision Metal Products, Inc., Miami, Fla.

Circle 304 on inquiry card

ELASTOMERIC ROOF COATINGS / The company has developed several "Roof-Flex" systems for protection of sprayed urethane foam insulation, and in addition to protecting the foam from attack by ultraviolet light, these coatings are said to withstand ponding water and temperatures in excess of 200 degrees F. Coatings have over 500 per cent elasticity to bridge cracks which may develop due to movement of the substrate and freeze/thaw cycles. ▪ Carboline Co., St. Louis, Mo.

Circle 305 on inquiry card

FIRE COATING FOR STEEL / A fire and corrosion protective coating engineered for structural steel, *CHARTEK 59* is a weatherable, lightweight material approved and classified for exterior use by Underwriters Laboratories, Inc. In the UL tests, the material protected structural steel for 1½ hours in fires of 1800 degrees F. It is a solventless, two-component filled epoxy intumescent coating. When reinforced with CHARLOK mesh in coats 0.15 to 0.4 in. thick, the product provides up to two hour protection (based on extensive tests in pit and ASTM E-119 fires). ▪ Avco Systems Div., Lowell, Mass.

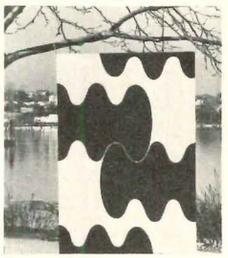


Circle 306 on inquiry card

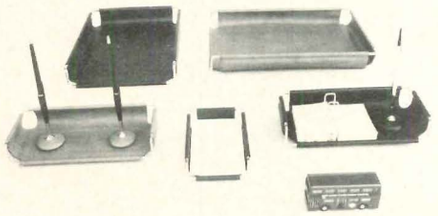
ELEVATOR CONTROL / The control provides a minimum floor-to-floor time capability maintaining smooth, consistent acceleration and deceleration. Conventional systems are said to provide plus/minus 10 per cent speed control (which has been accepted as an industry standard). *Accu-Flite* uses a closed loop speed control that regulates the elevator to within plus or minus 1 per cent independent of load. The control also uses electronic leveling that brings the car in flush with the floor without any releveling necessary. ▪ Haughton Elevator Div., Reliance Electric Co., Toledo, Ohio.

Circle 307 on inquiry card

READY-TO-HANG BANNERS / Banners with brilliantly colored graphic themes are based on the Fujie collection of Japanese prints recently introduced by the company. The ready-made banners, which are packaged in shipping tubes, can be chosen from among eight patterns in a total of 21 colors. Each one is a repeat or more of a giant graphic design or an over-all pattern, ranging in size from 52 to 64 in. by 4 ft. ▪ Isabel Scott Fabrics, New York City.



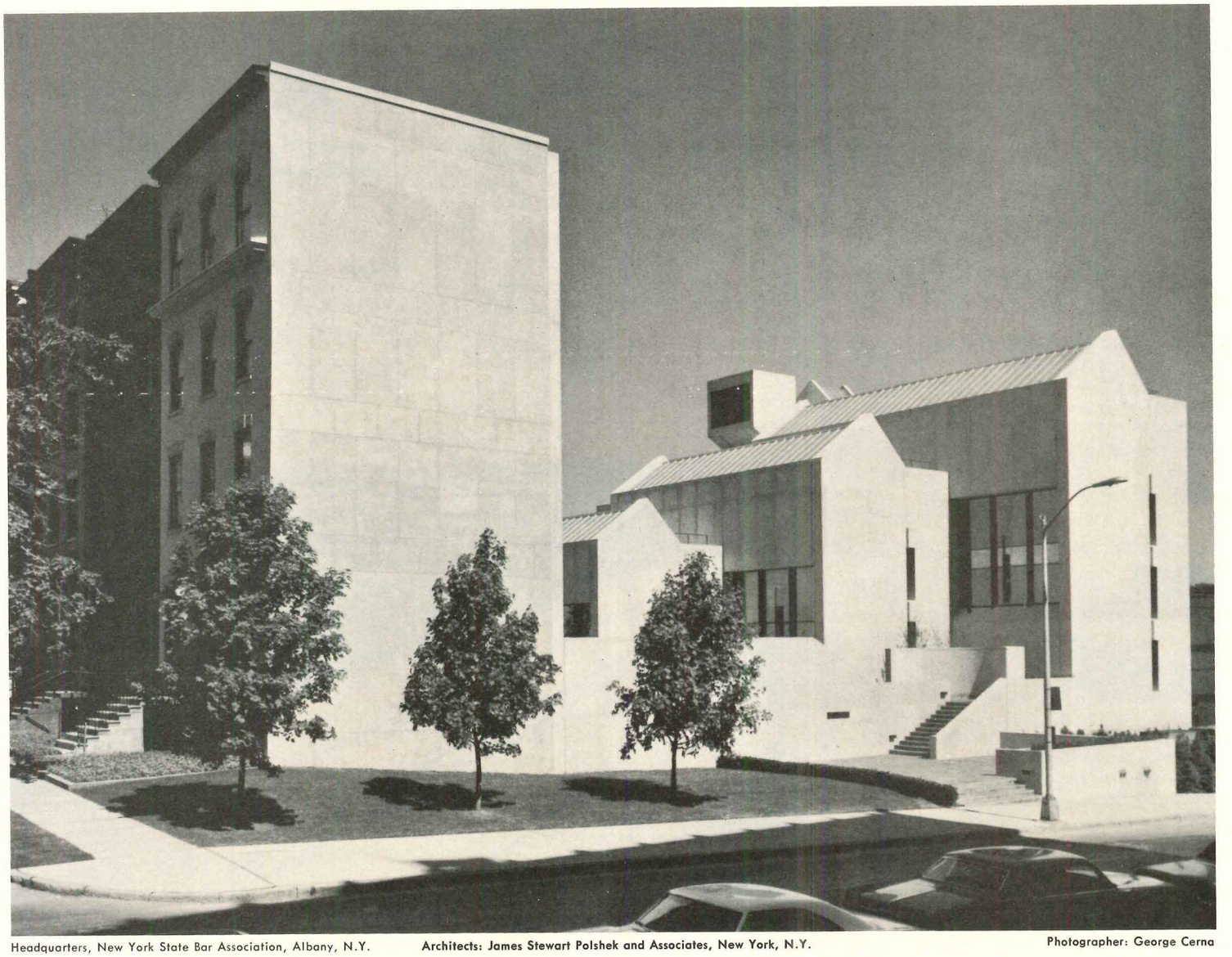
Circle 308 on inquiry card



LEATHER DESK ACCESSORIES / The *9000 series* desk accessories combine top grain leather, either tan or black, with polished chrome. ▪ Peter Pepper Products, Inc., Gardena, Cal.

Circle 309 on inquiry card

more products on page 147



Headquarters, New York State Bar Association, Albany, N.Y. **Architects: James Stewart Polshek and Associates, New York, N.Y.** Photographer: George Cerna

TCS . . . and a "lesson in civilized architecture"

"The headquarters of the New York State Bar Association," as a most distinguished critic recently wrote, "is an object lesson in how to build intelligently, sensitively and well . . . In a happy alliance, the lawyers and the architects, James Stewart Polshek and Associates, have preserved a row of handsome 19th-century town houses and incorporated them, not as a false front, but as a working part of a completely and strikingly handsome contemporary complex built behind them. The words that come to mind are skill, imagination and taste, qualities not encountered too often on the urban scene."

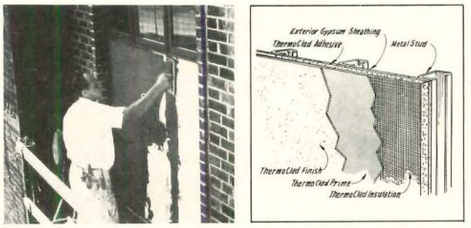
We at Follansbee Steel are particularly gratified that Mr. Polshek specified TCS (Terne-Coated Stainless Steel) for all pitched-roof areas on this outstanding building in which originality of design and integrity of site are so felicitously coupled.

FOLLANSBEE STEEL CORPORATION
Follansbee, West Virginia

For more data, circle 59 on inquiry card

OFFICE CHAIRS / Shaped for back support, and designed for people who spend most of the day at a desk, the "430" chair series has been expanded to include models with a four-arm chrome-plated steel base. Users now have a choice of executive swivel-tilt, swivel, side and secretarial posture chairs with either the new base or a five-arm nylon-coated base. The chrome bases are offered in polished, brushed or ember chrome. ▪ Steelcase Inc., Grand Rapids, Mich.

Circle 310 on inquiry card



EXTERIOR WALL INSULATION / A new insulation and finish system that goes on the outside of building walls, *Zonolite Thermoclad* is suited to both new construction and renovation of existing buildings. It is said to offer excellent insulation, weathering and durability properties. *Thermoclad* consists of four components: (1) a styrene foam insulation to which a fiberglass mesh has been laminated to provide strength and crack-resistance; (2) an adhesive to adhere the insulation to the underlying wall surface; (3) a prime coat which contributes strength and supplies a base for (4) the finish coat. Typically, wall and ceiling contractors apply the system. ▪ W. R. Grace & Co., Cambridge, Mass.

Circle 311 on inquiry card

OFFICE SEATING / Called the "Forberg II", the chair is offered in a range of multiple function pedestals and is available in a variety of styles and materials with a contemporary base. ▪ InterRoyal Corp., New York City.

Circle 312 on inquiry card

more products on page 149

What if they have to get out in a hurry?

Where there's a possibility of fire, cushioning foam of Du Pont Neoprene means potentially more evacuation time.

Cushioning materials in areas of public assembly need no clanging cymbals to attract attention. They have attention—from federal authorities, local fire marshals and commissions who have a hand in setting fire codes. Foam of Du Pont Neoprene is attracting attention, too, because it provides outstanding performance on two crucial counts:

- First, Neoprene foam can be used to design chairs with high resistance to flame ignition.
- Second, if ignited it exhibits a lower rate of heat generation and flame propagation than do other common cushioning materials.

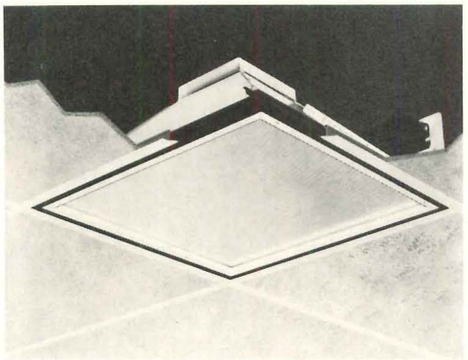
In addition, Neoprene foam lets you design durability and comfort into even the most irregular seating styles. Resilient Neoprene foam does not harden or crumble on aging, stands up to oils, most chemicals and cleaning fluids as well as moisture and temperature changes.

When you specify foam cushioning of Du Pont Neoprene, you get a material that's proven itself by more than 16 years of service in public seating and bedding applications where the possibility of fire is of significant concern—in schools and ships, airplanes and auditoriums, trains, theatres and hospitals.

For more information on suppliers of Neoprene foam cushions or finished seats made of Neoprene, write: Du Pont Co., Room 24354, Wilmington, DE 19898.

Cushioning Foam of Du Pont Neoprene

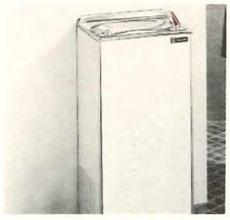
DU PONT
REG. U.S. PAT. OFF.



RECESSED SODIUM LIGHTING / Recessed square lighting fixtures designed to accommodate 100-, 150-, 250- and 400-watt high-pressure sodium lamps are available for interior applications with improved lighting efficiency due to the increased lumens per watt and spacing-to-mounting-height ratios, according to the company. The recessed fixtures are available in static or heat removal models for operating savings, and all units feature prismatic glass refractors; extruded aluminum door frames that hinge and latch from either side; *Alzak* reflectors; and grid or flange mounted ceiling types. ▪ Guth Lighting, St. Louis, Mo.

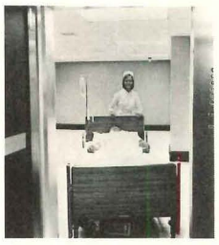
Circle 316 on inquiry card

RE-DESIGNED WATER COOLERS / The company has revised its water cooler line to include frame modifications that utilize wrapper build-up construction. In this method, all panels are shipped completely assembled to the cooler resulting in a strong unit when shipped and affording the additional advantage of installation speed up. On floor models, the compressor, condenser and fan motor have been relocated at the bottom of the cabinet affording accessibility to operating parts for servicing. Besides the standard grey-beige vinyl side panels, six mix-or-match colors are now available for the front panel. A complete cabinet in stainless steel or bronze-tone enamel is also available and through an exclusive arrangement with St. Charles Kitchens, cabinet colors in a choice of 18 custom enamel finishes are offered. ▪ Elkay Mfg. Co., Broadview, Ill.



Circle 317 on inquiry card

HOSPITAL ELEVATOR / A line of pre-engineered hospital-type elevators for mid-rise institutions is called the *GO-LINE 4500.* The elevator car can accommodate a bed and life-support equipment, and the extra space also permits an attendant at either end. In-car controls have been lowered and rearranged for use by handicapped persons in wheelchairs. Control systems may include logic modules to operate elevators in modes increasingly required in health-care institutions, such as emergency hospital and priority service, emergency power operation and special emergency service. Other features include in-car electrical outlets for emergency operation of life-support systems, light diffusers to reduce glare on bed patients, and provisions to connect paging and music systems. ▪ Otis Elevator Co., New York City.



Circle 318 on inquiry card

more products on page 155

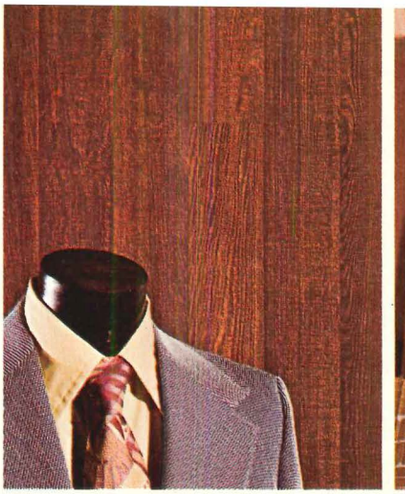
How to reduce Life-Cycle Costs in Decorative Surfacing

Evaluate Wilson Art Laminated Plastics

Start with initial costs. Project life-cycle costs—as far as 15 to 20 years ahead. We believe you'll find Wilson Art laminated plastic looks better all around.

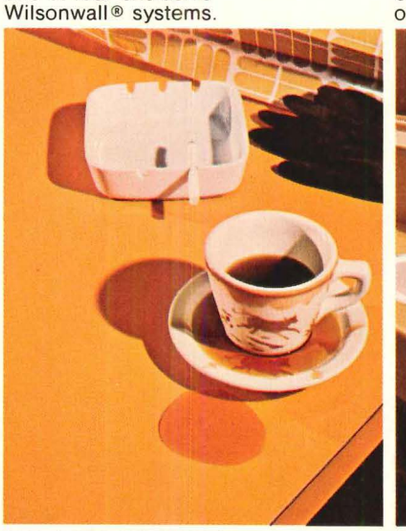
Installs in a variety of vertical or horizontal applications (no problems here). Is virtually maintenance free (saves labor costs). Provides wide esthetic choices (absolute design control). And Wilson Art is easy to specify. For walls, doors, fixtures or tops.

Wilson Art looks good, for a long time, for very reasonable costs.



BEAUTY: Specify from 257 esthetic choices in Wilson Art, used here in one of four exclusive Wilsonwall® systems.

DURABILITY: Wilson Art shrugs off kicks, bangs, scuffs. It is ideal for elevator cabs, hallways or fixtures.



MAINTENANCE FREE: Wilson Art's clean, hard, tough surface resists stains—wipes fresh and new-looking quickly.

SANITARY: Forget grout or mortar repairs. Wilson Art's decorative surface looks good for many years.

IMPACT RESISTANT: Dor-Surf®—Wilson Art's extra-thick surfacing material needs no kick- or push-plates.

LONGEVITY: Wilson Art woodgrains, patterns and solid colors outlast most other decorative surfacing materials.

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When the chips are down, you can depend on Wilson Art.

Wilson Art® LAMINATED PLASTICS

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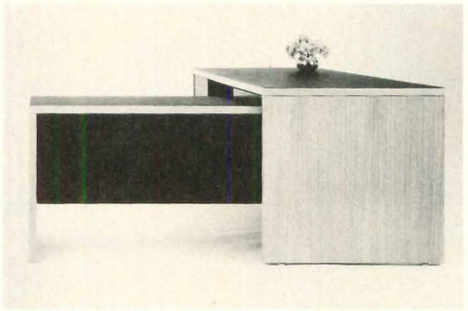
For more data, circle 66 on inquiry card

PRODUCT REPORTS *continued from page 153*

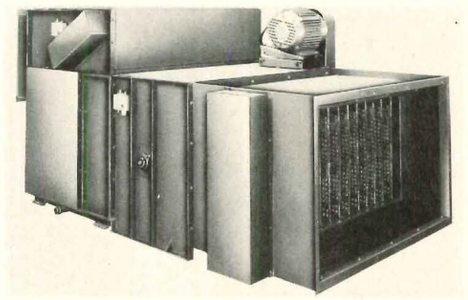
MODULAR SEATING / To be featured at NEOCON 1975, the "Infinity" collection uses polyethylene for horizontal and vertical support elements, and chrome fasteners. Seat and back cushions, held in place with *Velcro,* are foam and *Dacron* offered in a selection of coverings. A single chair, two-seat and three-seat sofa can be freestanding or combined in a continuous arrangement. ▪ InterGroup Collection Ltd., Chicago, Ill.

Circle 319 on inquiry card



DESK SERIES / A single new desk series featuring 12 different and distinct groupings is available in three different leg styles and four basic finish combinations. This will enable end-users to specify one basic desk, but with desk top sizes ranging from 30 by 48 in. to 36 by 72 in., the new series can be used for both secretarial and management functions. The three leg styles available are panel, post and open and are detachable and interchangeable. ▪ Sunar Ltd., Waterloo, Ont.

Circle 320 on inquiry card



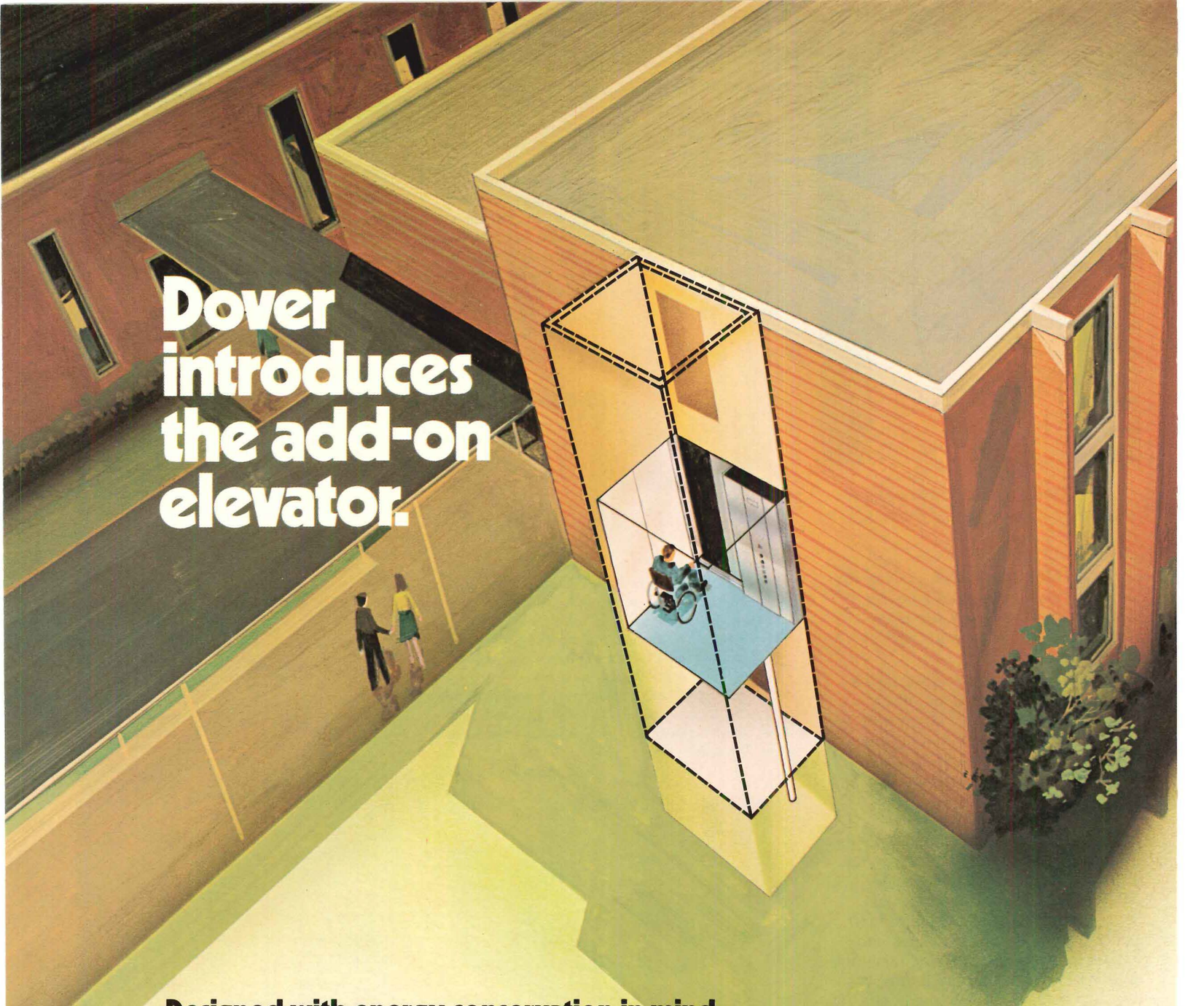
CENTRAL STATION AIR HANDLERS / These electric heat units are available in 16 sizes from 600 to 54,000 CFM and augment the company's hydronic and direct expansion lines of similar size. Each unit ships as a factory-assembled package. The electric heat coils of the air handler line are available for temperature rise ranges from less than 10 degrees F to 90 degrees F in the hot deck of blow-through units. Four control options—3, 6, 10 and 18 heating steps—are available. ▪ The Trane Co., La Crosse, Wis.

Circle 321 on inquiry card

SUPER-SOFT SEATING / Among seating units being introduced for the June NEOCON exhibit in Chicago are these with belt and loop details. The arm bolsters are attached, and the seat cushion and back pillows are loose. The upholstery is elevated on a plinth base available in wood or mirror chrome. This series is made in lounge chair, two-seat and sofa sizes. ▪ Marden Mfg. Inc., Chicago, Ill.

Circle 322 on inquiry card

more products on page 157



Dover introduces the add-on elevator.

Designed with energy conservation in mind.

Here's the answer to the need for providing elevator service for two and three-story buildings that were designed without elevators or with too few elevators.

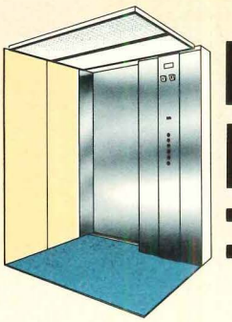
It also satisfies most requirements for providing vertical transportation for the handicapped in educational, institutional and other buildings.

The Dover IVO-15 Elevator can be installed in a stairwell or a shaftway erected at the end of a building corridor, usually at less cost than any other method of adding elevator service.

It requires no machinery penthouse or deep excavation and imposes no vertical load on the existing building walls.

The Oildraulic® power unit and control system is the finest in the elevator industry, providing smooth, quiet travel, accurate floor leveling, and dependable operation. Both motor and oil reservoir are sized for economy and energy conservation.

The IVO-15 can be used in new buildings too, of course. And for taller buildings, other Dover Oildraulic and Traction Elevator models are available to assure you of quality vertical transportation. For more information write Dover Corporation, Elevator Division, Dept. A, P. O. Box 2177, Memphis, Tenn. 38101.

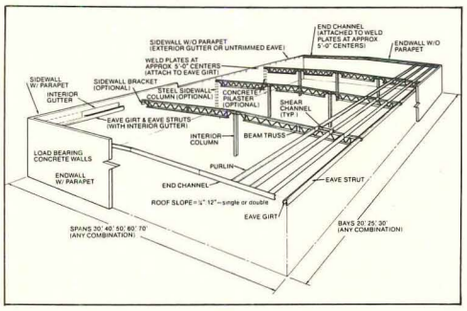


DOVER ELEVATORS

DOVER

For more data, circle 69 on inquiry card

PRODUCT REPORTS *continued from page 155*



DIAPHRAGM ROOF-STRUCTURAL SYSTEM / A metal diaphragm roof and structural system is designed to use a pre-engineered metal roof and structural components with load bearing tilt-up or precast concrete walls. The roof acts as a diaphragm in transferring seismic or wind loads to load-bearing walls, using a patent-pending shear channel and the company's exclusive *Lock-Rivet* fastening system. The *Butlerib II* roof system used is UL-listed for Class 90 wind uplift. The standard primary structural system consists of a single- or multi-span trusses in 10-ft increments, from 30 to 70 ft or combinations thereof, up to a maximum width of 240 ft. ▪ Butler Mfg. Co., Kansas City, Mo.

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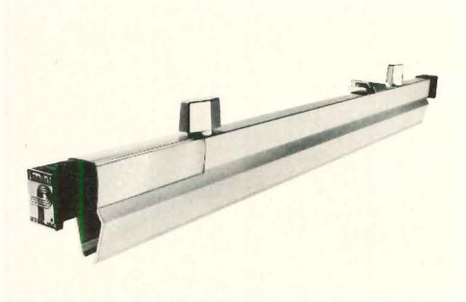

PRINT BINDER / A special binder for pivot filing that cannot be dislodged when being moved features a spring clip that locks into the steel mounting plate of vertical pivot filing units. The ridged edges of the clamp securely grip the sheets without punching holes or stapling plans together. Each individual binder has a 1-in. jaw capacity and can hold a recommended maximum of 100 prints, charts, maps or plans of any size. ▪ Plan Hold Corp., Irvine, Cal.

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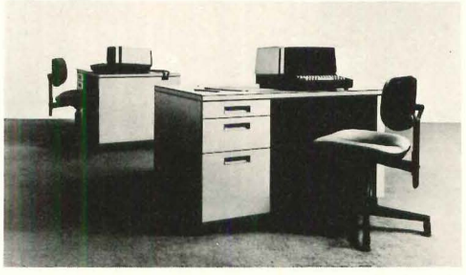

CUBE DESKS / A special purpose 26½ in. high desk designed to accommodate computer terminals, word processing equipment, microfilm readers and other desk-top electronic equipment affords the user a 30-in. deep working surface in widths of 45 or 60 in. Both right- and left-handed pedestal models are available. Base of the pedestal has been designed to permit concealment of electrical junction boxes, and desks and consoles in the line are available in 23 enamel finishes. Bases are black or polished stainless steel. ▪ GF Business Equipment, Inc., Pittsburgh, Pa.

Circle 325 on inquiry card

Take it from Dave Lennox . . .

NOW, YOU CAN DESIGN YOUR OWN

NIFTY WEATHER MACHINE.

The new Lennox DSS1 system lets you design your own single zone HVAC package. For commercial rooftop installations, it offers extraordinary flexibility . . . efficient operation and service . . . exceptional energy savings . . . and consequent cost savings.

Here are a few of the many DSS1 options that give you the right size, right energy, right cost for your application.

- Dual range selection (26 & 30 ton cooling; up to 770,000 Btuh heating).
- Two-speed, first stage compressor saves energy.
- Heat recovery package (allows recovery of heat from refrigeration in supermarkets and restaurants; controls humidity without losing heat).
- Power Saver™ package (allows use of outdoor air for cooling).
- Power Saver II™ package (allows recovery of heat from lighting).
- Return air fan and exhaust fan (allows finer air balance).
- Electric heat (oil, gas & hot water systems at your option).
- Solid state, energy-saving control system.

Get the facts. Find out how you can design your own heating and air conditioning package with our new, unique single zone system: the DSS1. Write: Lennox Industries Inc., 572 South 12th Ave., Marshalltown, Iowa 50158.

LENNOX® AIR CONDITIONING • HEATING

"Attaboy, Dave!"

Nifty problem-solving ideas from Lennox.

For more data, circle 72 on inquiry card

OFFICE LITERATURE *continued from page 143*

seating readers, and over 400 products and accessories. Also available is a brochure on bookstacks, featuring ideas and installations around the country. A section of the brochure introduces distributive education equipment, manually and electrically operated mobile stack storage systems and an open plan school and office system. ▪ Educational Products Div., Reflector Hardware Corp., Melrose Park, Ill.

Circle 414 on inquiry card

POCKET PAGING TERMINAL / A brochure on the company's new "E-38" paging terminal describes how this unit permits customized system design while featuring building block system growth in paging systems requiring 90 to 870 call codes. Key features discussed include a variety of access methods, *Group Alert,* call transfer option, and priority interrupt system. Specifications are included. ▪ Multitone Electronics Inc., Springfield, N.J.

Circle 415 on inquiry card

LIGHTING FIXTURE CATALOG / This four-page catalog contains illustrations and specifications on the "W2C48" 4-ft fluorescent lighting fixture and the "W2C96" 8-ft fluorescent light fixture. Included are exploded views, photometric data, lamp dimensions and complete electrical specifications. These floodlights are said to offer up to 90 per cent savings in energy requirements over conventional lighting systems. Typical applications are parking areas, loading docks, marinas, building fronts, warehouses, and outdoor recreation areas. ▪ Magnaray International, San Gabriel, Cal.

Circle 416 on inquiry card

PLUMBING SPECIFICATION GUIDE / Designed to create a uniform format for the writing of specifications, the new plumbing specification guide is sponsored by the Plumbing Industry Progress and Education Fund of Los Angeles, and is available free of charge to architects and plumbing engineers in Southern California. ▪ P.I.P.E., Los Angeles, Cal.

Circle 417 on inquiry card

VANDAL-RESISTANT SIGNS / A new line of vandal-, weather-, and chemical-resistant signs, featuring images and messages subsurface-embedded in fiber-reinforced polyster (FRP), has been developed by the company. Designed for silk-screen reproduction from camera-ready art, single or double face signs are available in opaque or transluscent single sheets, gloss or non-gloss matte. Sizes range to a maximum of 12 by 4-ft and thicknesses from $^1/_{32}$ to ¼ in. Additional information is available from the company. ▪ Jas. H. Matthews & Co., Pittsburgh, Pa.

Circle 418 on inquiry card

PHOTOGRAPHERS / The 1975 Directory of Qualified Photographic Studios, published by the Professional Photographers of America, Inc., indicates general and special classifications together with addresses and phone numbers for each of these studios. Architectural photographers are included. ▪ Professional Photographers of America, Inc., Des Plaines, Ill.

Circle 419 on inquiry card

ENERGY-SAVING EXTERIOR PANELS / A 16-page catalog for 1975 contains a special section with technical drawings showing dozens of different energy-saving porcelain-on-steel panels. Another section of the catalog is devoted to the company's new dustless writing system "Rite-On, Wipe-Off." Panels can be used as writing boards, projection screens and bulletin boards. All interior panels are guaranteed for 50 years, never require painting and are virtually maintenance free. ▪ Alliancewall Corp., Wyncote, Pa.

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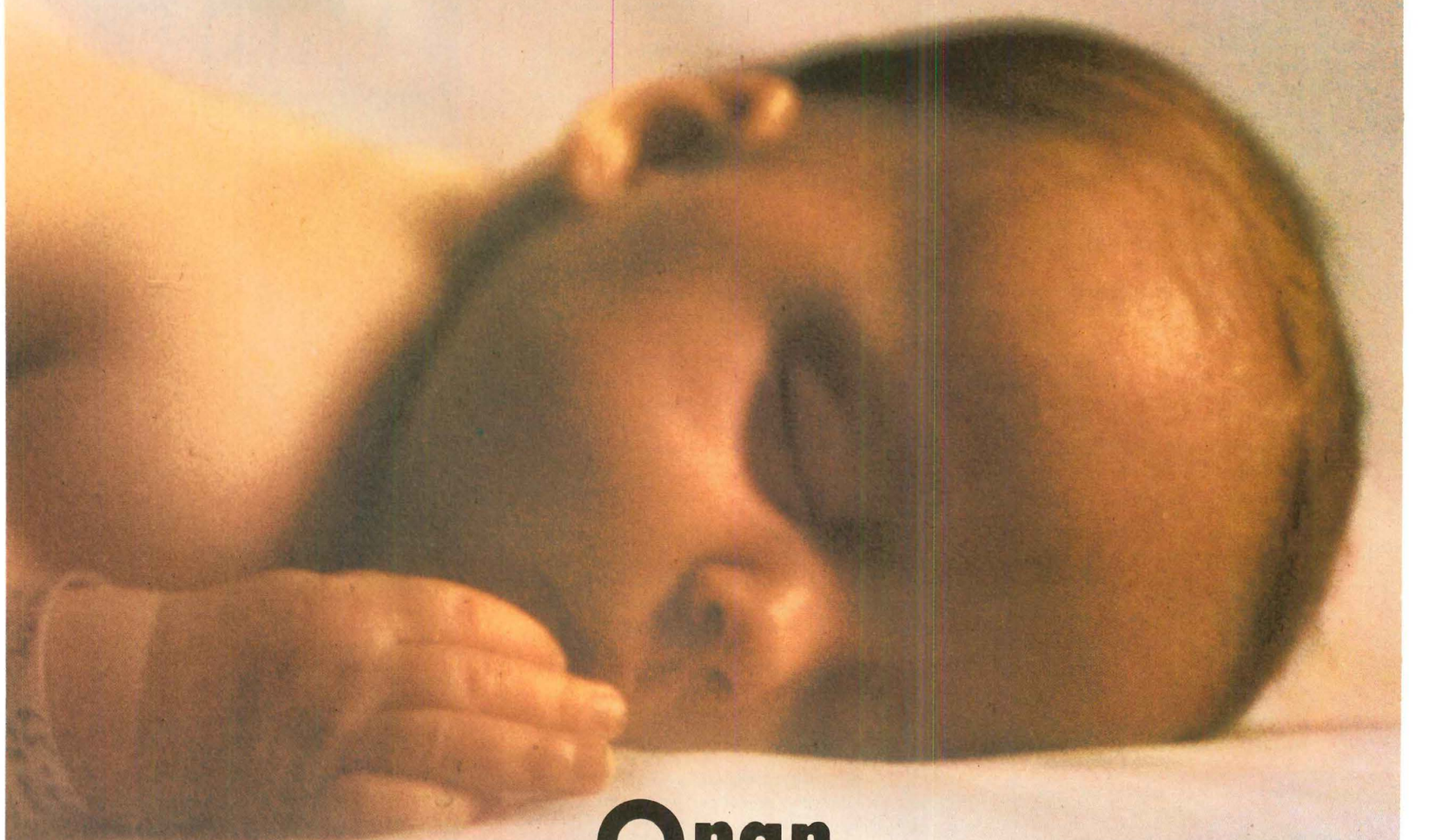
Standby power can be critically important during a commercial power outage — especially in a hospital, where it can mean the difference between an emergency and a disaster.

That's why we're so meticulous in the design, manufacture, and testing of our emergency electric generating systems. Like the one recently installed in the Gaston Memorial Hospital in Gastonia, North Carolina. If there's a power failure of any kind, this system goes on automatically to keep lights and vital equipment operating. Four 450-kilowatt engine/generator sets and automatic transfer switches are electronically synchronized to deliver a total of 1.8 million watts. The units can also operate independently of one another.

It's another example of Onan power on demand . . . the same kind you can get for *your* building or factory. Just call an Onan Distributor. Or write: Onan, 1400 73rd Ave. N.E., Minneapolis, Minn. 55432.

Security is 1.8 million watts standing by



Onan®

Power on demand for the Secure things in life.

For more data, circle 74 on inquiry card

Bernard Johnson Incorporated, Houston, has announced that **William E. Ferro,** AIA has joined the firm as director of architecture.

Edward L. Reichert has been named director of production for the Houston firm of Calhoun, Tungate, & Jackson.

Lawrence C. Bauer, AIA has been made an associate of Crissman & Soloman Architects, Newton, Mass.

Walter Padgalskas and **Emmanuel Aguilera** have joined the Los Angeles architectural and planning firm of Gin Wong Associates as project architects.

The New York and New Jersey firm of Gruzen & Partmers have elevated three architects to associate positions: **Paul Willen, AIA,** senior associate; **Burton W. Berger, AIA,** associate; **James W. Cascardi, AIA,** associate.

The firm of David N. Yerkes and Associates, Washington, D.C. has announced that **John W. Parker,** AIA, has become a partner in the firm.

Donald R. Slack has been named an associate of the Denver architectural firm, Crowther Kruse McWilliams.

Steven Coffey has joined Pearce Corporation, St. Louis, as a project architect.

Boyd C. Wagner, Inc., Architects/Engineers, Reading, Pa. has named **Richard E. Hunter,** R.A. as the head of their architectural division.

Rogers and Vaeth, Inc., Columbia, Md., announced the appointment of **Richard L. Anderson** as vice president and director of design and **John J. Keczmerski** as director of planning.

Kenneth Balk and Associates, Inc., St. Louis, has announced the appointment of **Denis Hackett** to associate.

Herbert K. Gallagher, president of The Architects Collaborative Inc. headquartered in Cambridge, Mass., has announced the appointment of three new senior associates and four new associates. Elevated to senior associates were **Basil Hassan, Richard Sabin,** and **David Sheffield.** The new associates are **Robert Barnes, Sergio Berrizzi, Richard Puffer** and **Ms. Gail Haviaras.**

The architectural and city planning firm of The Hall and Goodhue Community Design Group, with offices in San Francisco and Monterey, announced that **Robert Stedman Betts** has been made an associate member of the firm.

Hoberman & Wasserman p.c., New York City, announced that **Linda Myers** has joined the firm as director of planning and development.

Tom Lewis, president of Lewis Associates, Inc., Orlando, Fla. has recently announced the promotions of **Leonard S. Feinberg** and **Downing B. Young, Jr.** as associates and **Robert H. Burke, Jr.** as a principal and partner.

Hugh Stubbins and Associates, Inc., Architects and planners of Cambridge, Mass. has appointed **Hugh A. Stubbins, III** and **Howard E. Goldstein** as associates of the firm.

Meyer, Strong & Jones has announced the appointment of **Melvin Epstein, Fred Lindquist** and **Tim Tsang** as associates.

Odell Associates Inc., Charlotte and Greensboro, has named **David N. Weed** as an associate in the firm.

HOW MUCH WATER WOULD THE WATER SAVERS SAVE IF EVERY WATER CLOSET WERE AN EMBLEM WATERSAVER?

1,752,000 gallons each year on 200 units

And, the Emblem is Eljer's regular production model water closet. No premium charges for watersaving. No special orders. Every Emblem uses less water per flush than some of the extra-cost "watersaving" closets.

The Emblem uses much less per flush than the 3.5 gallons stipulated by water conservation codes. And, savings over ordinary closets average a gallon and a half per flush.

So, in a 200 unit apartment building, assuming four residents per apartment and four flushes per day per resident, the Emblem can save 1,752,000 gallons of water every year. That's $1,594 savings** per year on water and sewage bills. And, as costs go up . . . so will the savings.

Gallons Per Flush*			
Emblem Model	**Water Pressure 20 psi**	**40 psi**	**60 psi**
Round	3.16	3.20	3.05
Elongated	3.05	3.12	3.16

You will conserve precious water, ease the demands on sewage systems and save on operating costs at no extra cost with the Emblem. Why would anyone buy any other water closet?

*As tested by Dynamics Testing Laboratory, Toledo, Ohio.

**Based on a 91¢ average cost per thousand gallons in 5 major cities.

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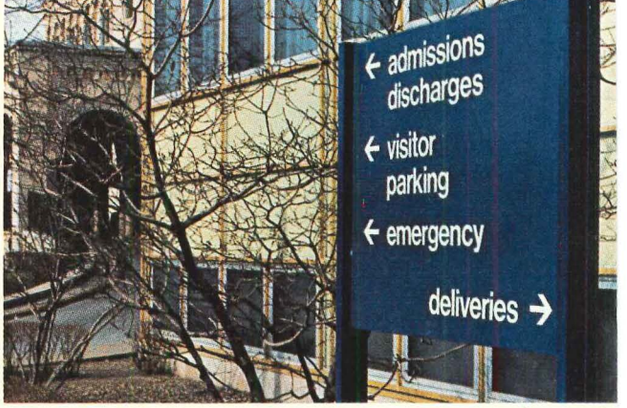

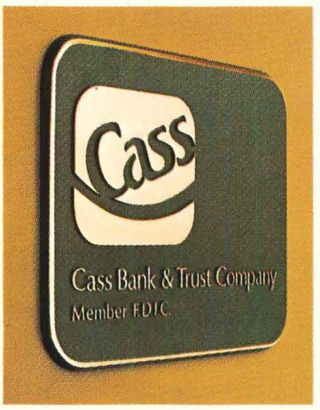

AFTER YOU DESIGN THE "WHAT" LET US HELP YOU DESIGN THE "WHERE."

Our staff can begin work on your signage system as early as the building blueprint stage. We start with a survey/analysis: (1) to evaluate the needs of the users of your building and; (2) to determine your requirements for a system that complements the color, textural and spatial themes you have created.

We analyze all exterior and interior traffic routes—parking lots, building approaches, entry ways, hallways, elevators, etc. Plus secondary routes such as connecting corridors, alleys and aisles. We then develop a coordinated signage system for the entire complex.

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If you create your own signage graphics—as many architects do—we can join your project at the fabrication phase and follow through from there.

Our design and production capabilities encompass every type of architectural signage: simple vinyl legends; damage-resistant NOMAR fiber-reinforced polyester panels; post and panel assemblies; plaque signage of metals and plastics; metal letters in a complete range of styles, sizes and finishes; and fiber-reinforced polyester monoliths, opaque or illuminated.

The design latitude of these materials is practically unlimited, whether we work from your graphics or ours.

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Identification Systems

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PPG GLASS GAVE BLUE CROSS AND BLUE SHIELD OF COLORADO THE BEST COVERAGE.

Their new Denver headquarters presented problems.

The site dictated one thing, and the owner's business another.

PPG Solarban® 550 Twindow® insulating glass helped solve the architects' dilemma. Beautifully and efficiently.

The building is the landmark the owner wanted, and certainly big enough to meet his everyday practical demands.

Yet, for all its size, it is still a graceful neighbor to the smaller buildings in the area.

Visually, its bulk seems to retreat. An effect the architects achieved by using muted-toned reflective glass. And by setting the building back from the street.

But esthetics were not the only consideration. Because of the site, the building had to have an east-to-west orientation. Which created solar heat gain problems. So they needed performance, too. And PPG Solarban 550 Twindow insulating glass gave them the best of both. (Its shading coefficient of 0.24 reduces solar heat gain 76% compared to single-glazed clear glass.)

And since the glass performed so well, they were able to use a lot of it and create view spaces that do justice to Colorado's magnificent vistas.

In short, the glass gave everyone concerned with the building—the owner, his employees, the architects, even the neighbors—something to be happy about.

And we think it can have much the same effect on your building.

Find how PPG Solarban 550 Twindow insulating glass—or another in our family of High-Performance Glasses—can help you combine esthetics and efficiency for truly remarkable effects. Write for our book "Architectural Glass Products," or refer to Sweets Architectural File, Catalog Code 8.26/Pp. PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

Owner: Blue Cross and Blue Shield of Colorado
Architect: URS/The Ken R. White Company
Design Consultants: Muchow Associates Architects

PPG: a Concern for the Future

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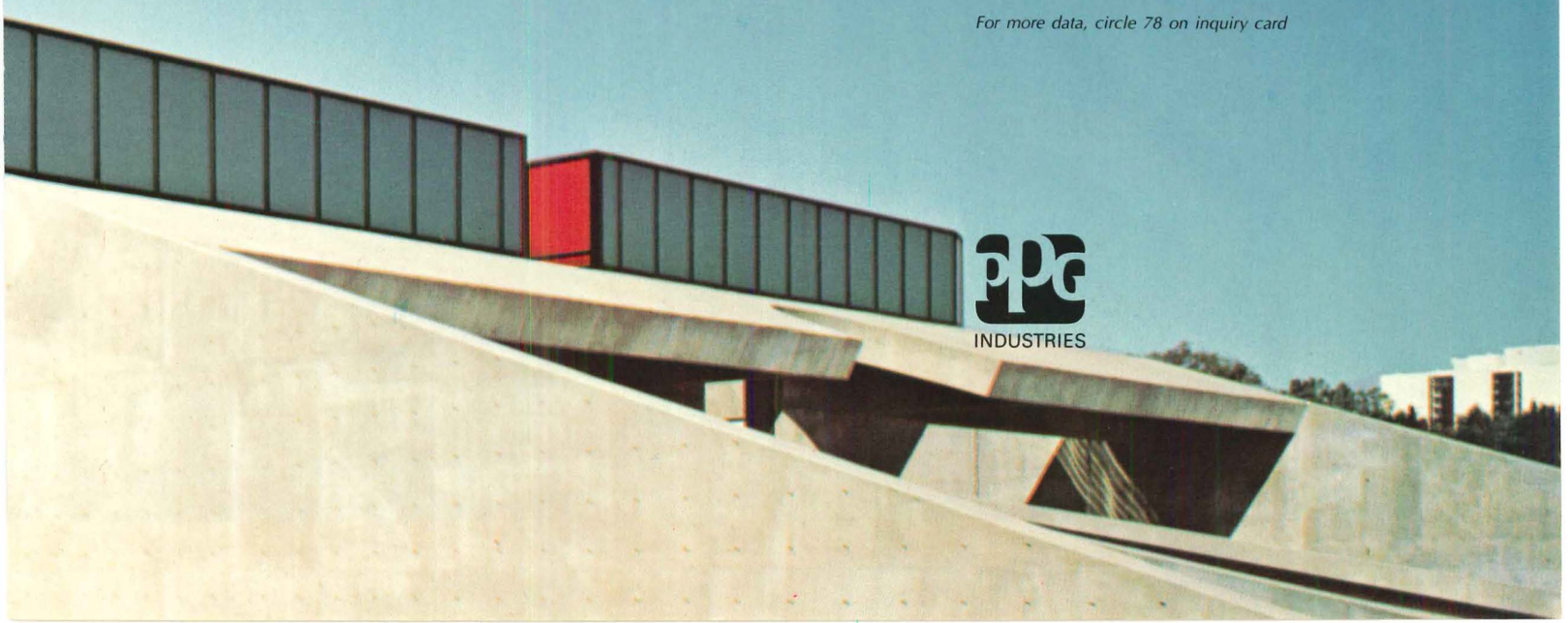

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They're Simmons project managers. And we'll loan you one when you give your commercial furnishings assignment to Simmons.

From that moment on, he's the only representative of any supplier you'll have to deal with. That's because Simmons Contract Division, working with other Simmons divisions and subsidiaries, can supply virtually everything for your interiors. From lamps and accessories to furniture to carpeting, bedding, wallcoverings and more.

Now you don't have to go through all the headaches and hassle of dealing with dozens of salesmen and suppliers. Your Simmons project manager will coordinate every phase of your furnishings project. From preliminary design consultation through the last delivery and setup.

Duane, Bob, Jim and Hank are ready to go to work for you right now. Whichever one is assigned to your project, he'll save you hours of grief and inches of paperwork. To get him started, contact Ed Parrish, Simmons Contract Division, Merchandise Mart, Chicago, Illinois 60654
(312) 644-4060

SIMMONS

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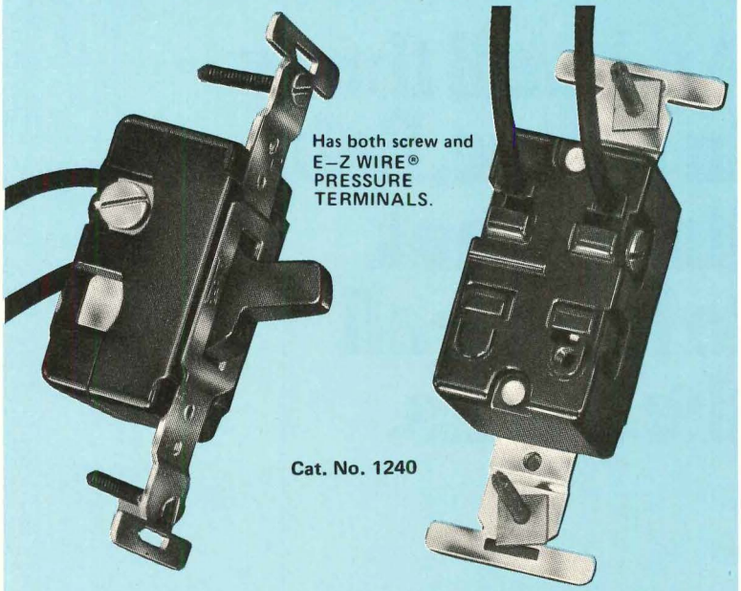
SWITCHES

Why the Eagle TOUCH-A-MATIC® Switch is the safest, most dependable choice for your electrical specifications.



How it works:

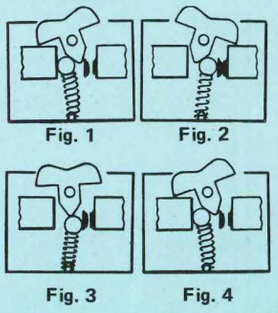


Fig. 1. switch in "off" position (contacts open). As switch lever is rotated, actuating ball compresses the coil spring, but ball must pass pivot point of lever before it can close the contact. As it passes the pivot point it has maximum momentum and closes the contact points positively and rapidly. All independent of hand action (Fig. 2.). As the switch lever is rotated in the opposite direction, Fig. 3, the ball is depressed and slowly releases some spring tension on the contact arm, permitting the contact points to open enough to break the arc slowly. Then as the ball passes the pivot point it completes the cycle (Fig.4.).

The Eagle Heavy Duty Touch-A-Matic Switch operates on a completely different principle than the generally used cam-action switch. This principle is specifically designed for AC use.

Touch-A-Matic is a ball bearing and spring patented principle that assures a fast make and a slow break, (which is independent of hand action); so that arcing is prevented. This means a safer switch action – and less erosion of the contacts, so that the switch lasts longer. In fact, the rigid overload and endurance testing program which Eagle Touch-A-Matic switches must pass is equivalent to turning the switch on and off twice a day at full load for 40 years.

Eagle Touch-A-Matic Switches have both screw and E-Z WIRE® pressure terminals, which permit faster installation at lower cost. Touch-A-Matics are Specification Grade, UL listed and meet Federal Specifications and OSHA standards. Available in Single Pole, 3-way, Double Pole, 4-way; 15 and 20 Amp,120-277V AC only (½ HP, 120V AC), in brown and ivory; and white in some styles. Lifetime Guarantee.

For more information on Touch-A-Matics and the complete line of Eagle wiring devices, send today for a copy of our catalog.

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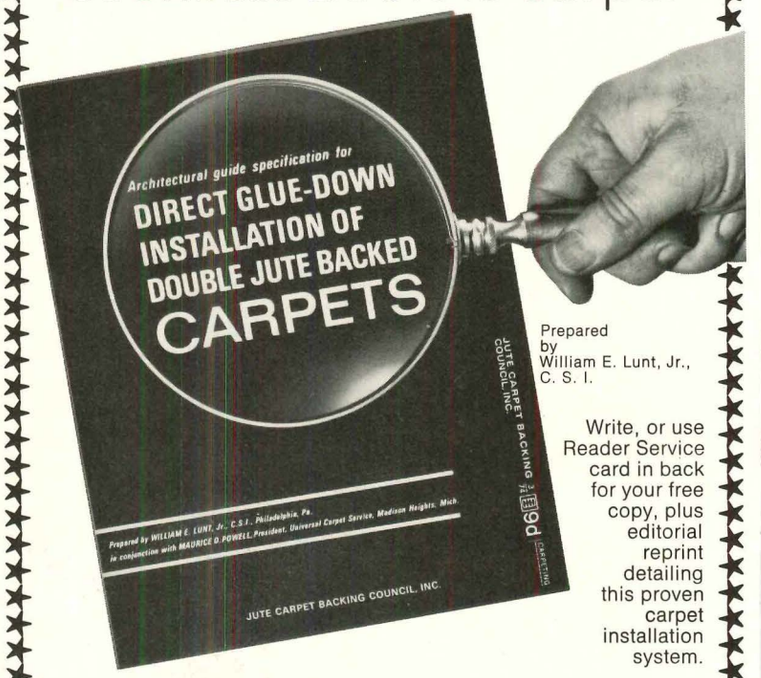
The guide spec that opened countless doors to carpet



Prepared by William E. Lunt, Jr., C. S. I.

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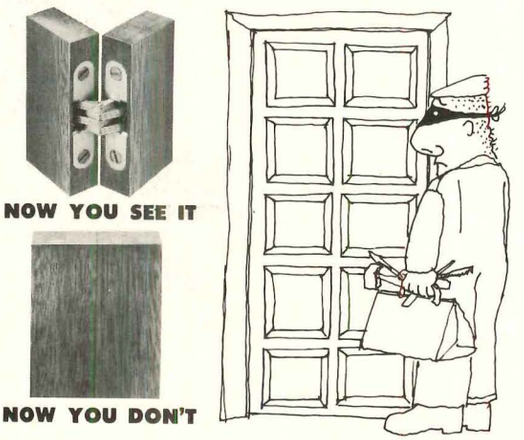


Tamper-proof hinges that hide

Soss Invisible Hinges can't be seen or tampered with when a door is closed. Hinge bodies are mortised into the door and jamb to discourage any intruder. Specify Soss invisibility for beauty *and* security. Our new catalog includes application and installation ideas on all 20 models. Look for it in Sweet's, or write to Soss Mfg. Co., Div. of SOS Consolidated Inc., P. O. Box 8200, Detroit, Mich. 48213.

the SOSS Invisibles

For more data, circle 82 on inquiry card

Colorstyle doors add beauty to the Washington scene

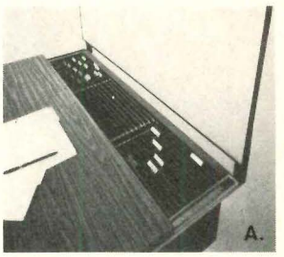
Style and beauty plus ruggedness make Ceco steel doors attractive to architects in Washington and throughout the country. Ceco doors meet every functional need. Use them as a "package" to accent your design. Ceco doors and frames are prepared for simple erection in minutes. And both are prepared for quick and solid attachment of hardware. Ceco doors and frames are tough and stable—won't warp, swell, shrink or rot. You gain the advantages of durability and trouble-free performance. Our Colorstyle doors have factory-baked quality finishes, kept fresh in poly bags. See Sweet's, or consult your local Ceco office.

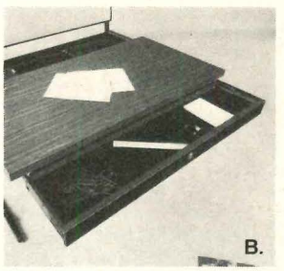
CECO steel doors

The Ceco Corporation • 5601 West 26th Street • Chicago, Ill. 60650

"The door people"

For more data, circle 83 on inquiry card





Try convenience for a change.

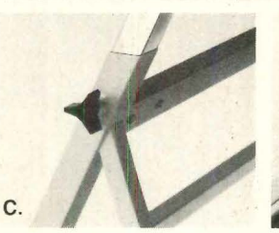
Just two highly functional units... and finally you have things the way you've always wanted them.

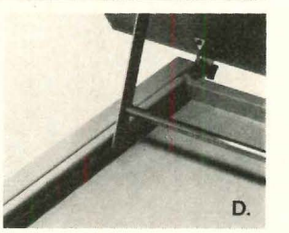
First—our Designer II drafting table. It gives you all the features of a fully automatic model. Height adjusts from 30" to 37" and can be angled to 9 pre-set positions with one hand ease. The Aero/Core top is warp-proof, super-smooth and held with sure rigidity.

Second—our companion Design/Desk sits right at your elbow. Gone is the age-old reference space problem.

Cost? It's low.

Our latest catalog has the details. Send for your free copy.





A. *3-section file in Designer/Desk holds manuals, letter and legal sized papers* **B.** *Designer/Desk's full width tool drawer.* **C.** *Two wing knobs allow quick, sure drafting table height adjustments.* **D.** *Deep sheet storage beneath board surface*

PLAN HOLD
TIMES MIRROR
17621 Von Karman Avenue.
Irvine, California 92705

For more data, circle 84 on inquiry card

YOU NOTICE NEENAH CASTINGS AROUND THE WORLD

Architects, designers and planners know Neenah castings are found in Pakistan, Kuwait, Turkey, South Africa, Argentina, Bahamas . . . and from Paris to Pittsburgh.

They know Neenah makes the finest quality castings: from gray iron manhole covers . . . to ductile iron airport drainage grates . . . to decorative tree grates . . . and a complete line of building castings.

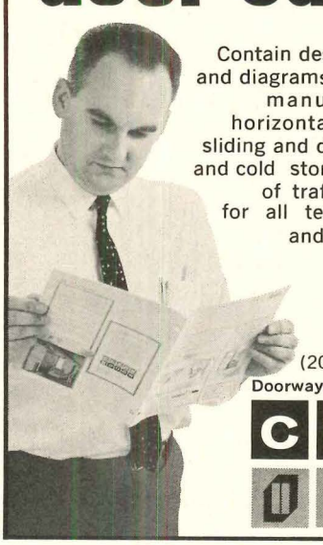
But did you know Neenah has thousands of design variations to choose from? Over 100 years of experience? Three modern plants?

Write or call for the most complete construction castings catalog, Neenah's Catalog "R", 6th edition.

NEENAH FOUNDRY COMPANY

NEENAH, WI 54956 Phone: 414-725-3041
Jobbers in most principal cities

Free industrial and cold storage door catalogs



Contain descriptions, specifications and diagrams of power-operated and manual, single and double-horizontal sliding, bifold, vertical sliding and double-swinging industrial and cold storage doors for the control of traffic, handling of material for all temperature requirements and the elimination of noise. Write or call now!

Clark Door Co., Inc.
69 Myrtle Street
Cranford, N.J. 07016
(201) 272-5100 Telex 13-8268

Doorway specialists since 1878

CLARK DOOR

For more data, circle 86 on inquiry card

For more data, circle 85 on inquiry card

This popular Haws thirst-appeaser adds to your project appeal . . . gives a refreshing drink of water when it's most appreciated. It adds to the eye-appeal of your project. Rugged Haws pedestal concrete fountains come in beautiful natural stone colors in either light sandblast or exposed aggregate finish. And, they're equipped with all of the latest Haws vandal-resistant features. **They're built to last . . . designed to please!** Write: HAWS DRINKING FAUCET CO., 1441 Fourth St., Berkeley, Ca 94710.

HAWS® Since 1909 **DRINKING FOUNTAINS**

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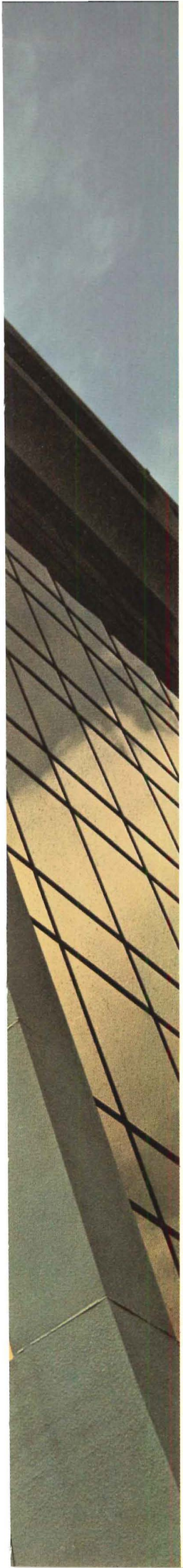
Thirsty-People Pleasers...

Model 3120 with an exposed aggregate finish. Square or circular models in 30″, 36″ or 42″ heights; freeze-proof models available.



Sizzle Fizzled

The sun shines bright, big and bright . . . deep in the heart of Texas. A real sizzler. A real potential problem for glass enclosed buildings. To keep people under glass cool and comfortable, you need help . . . material help. Like C-E Polarpane "20" Reflective Insulating Units.

C-E Polarpane's remarkable ability to reject such a large percentage of total solar energy puts the fizzle on sizzle. And the Lister Office Building in Houston, Texas is a beautiful example in C-E Polarpane #2016 Gold.

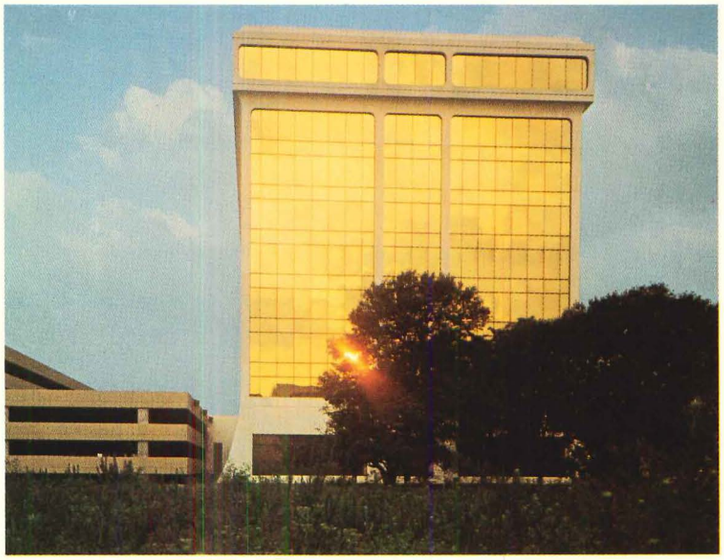
Only 16% of the sun's heat that would get through plain ⅛ inch glass will be allowed inside by the C-E Glass Insulating Units. Total indoor heat gain is only 37 BTU/hr per square foot. A very comfortable level.

Cooler people are more efficient people. And efficiency gets another boost with the visual comfort provided by the low 20% visible light transmission. Very easy on the eyes.

In heating season, a low .31 "U" value means that this Polarpane will retain more than ⅔ of room heat. Very effective against winter cold.

Performance like this cuts initial investment in air conditioning, heating and ventilating equipment. It means additional savings every year by reducing the requirement for electricity and fuels which are bound to become more expensive or harder to obtain in a situation of energy crisis.

To learn more about C-E Polarpane "20," see the C-E catalog in Sweets: 8.26/CE. For additional information, contact our local representative or write C-E Glass, 825 Hylton Road, Pennsauken, N.J. 08110, (609) 662-0400.



Architect: Hoff, Blackstone & Strode, Houston, Texas
Glazing Contractor: Binswanger Glass Co., Houston, Texas

CE GLASS
COMBUSTION ENGINEERING, INC.

For more data, circle 88 on inquiry card

Guaranteed maintenance-free roofs

New, pre-engineered application of zinc

Southeastern Bible College Chapel, Lakeland, Fla.; Architect: Setliff-Regnvall

MICROZINC 70®

(Batten and Standing Seam LOK Systems™)

- ☐ Guaranteed 20 years
- ☐ Preformed components minimize error, reduce cost
- ☐ For enduring beauty in roofing, fascia, gravel stops
- ☐ Self heals scratches and cuts
- ☐ Snap-lock components provide air flow
- ☐ Air space insulates, saves energy
- ☐ On-site labor greatly reduced
- ☐ Easily soldered if required

Send for our newly revised Sweet's Catalog

Ball® CORPORATION **Metal & Chemical Division**

GREENEVILLE, TENNESSEE 37743

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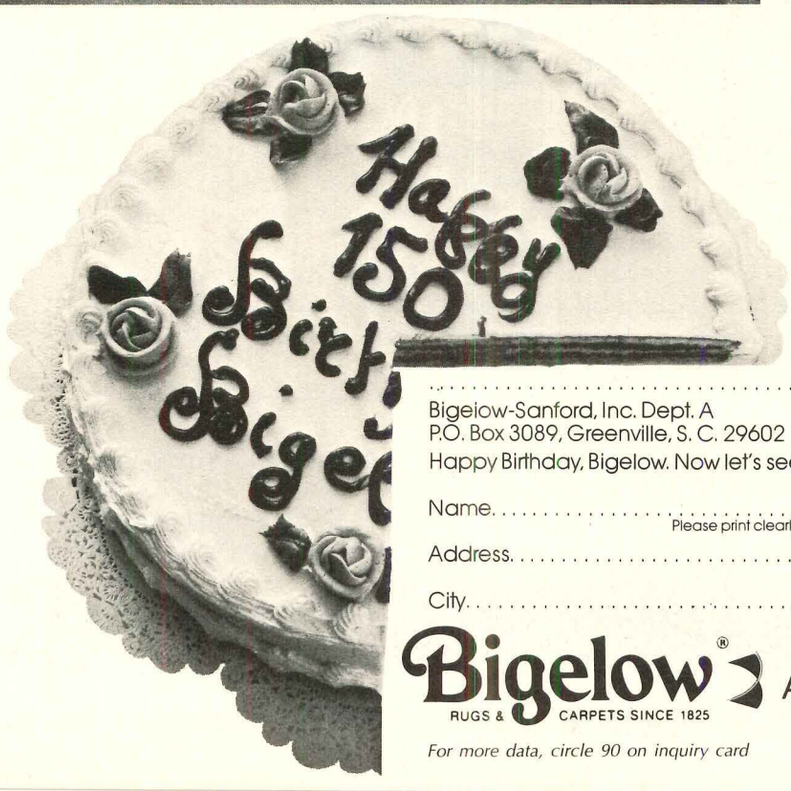
Office after office after office gives the business to proven carpet by Bigelow.

If you're doing an office job, you can create your own specifications for the carpet you want. And we can make it for you.

However, we have another suggestion. Why not specify carpeting that's already proven it can take the hard use (not to mention abuse) an office staff deals out. Carpet that's repeatedly demonstrated it can take a beating year after year after year.

Bigelow has that kind of proven in actual office use carpeting ready for you in a wide selection of styles and patterns. Carpet that is the result of research and development combined with the realistic experience gained in hundreds of office installations.

And speaking of experience, what better proof than the fact that Bigelow is now celebrating their 150th Birthday. From 1825-1975, Bigelow—America's most experienced carpet maker. We can give you the best advice, the best in everything to do with carpets because we've been doing it longer and doing it better than anyone else.



Bigelow-Sanford, Inc. Dept. A
P.O. Box 3089, Greenville, S. C. 29602

Happy Birthday, Bigelow. Now let's see what your 150 years of experience can do for me on an office job.

Name..... Title.....
Please print clearly.

Address.....

City..... State..... Zip.....

Bigelow®
RUGS & CARPETS SINCE 1825

AMERICA'S MOST EXPERIENCED CARPET MAKER

For more data, circle 90 on inquiry card

ONLY 43 DAYS AFTER WEAVER GAVE THE ORDER, VULCRAFT RODE INTO GRAND PRAIRIE, TEXAS.

Weaver and Vulcraft had teamed up many times before.

That's why it came as no surprise to anyone when Weaver Iron Works, a large steel fabricator, called on Vulcraft to help them take on a big job they were doing for the Vantage Companies.

The job was the Parkway Distribution Center. It was located in Grand Prairie, Texas, midway between Dallas and Fort Worth. The complex itself was to be composed of five separate buildings covering a spread of 34.9 acres. To be used for offices, distribution and manufacturing facilities.

So Vulcraft acted fast to get steel joists and joist girders to Weaver. So fast that only 43 days after they got the order, they rode into town with hard, cold steel.

The first shipment of this 746,852 square foot job had arrived right on time. Everyone had a lot to smile about.

The Vantage Companies above all.

Delivery was quick as lightning. That meant more money in their pocket, less money paid out for rising construction costs.

The joists themselves were specially designed by the experts at Vulcraft to meet the load requirements of this specific job. So Vantage saved again.

And with lightweight joist girders on the job, Vantage could even sit back and enjoy the wide open spaces. Since supporting columns could be placed farther apart, allowing for larger bay areas.

That's what happened when Vulcraft and Weaver got together in a Texas town.

It can happen to you. To give the order, just contact your local Vulcraft representative. Or write Vulcraft, P. O. Box 17656, Charlotte, North Carolina 28211 for your Joist & Joist Girder Guide. (See Sweets 5.2/Vu.) Or call (704) 366-7000. But do it now.

Because the faster you give us the business, the faster we deliver the goods.

Open web design allows ducts, pipes and wiring to pass directly through the steel members.

Increased spans and larger bays result from computer design of joists and joist girders.

The simplicity and light weight of Vulcraft joists and joist girders make erection fast and easy.

Lighter weight columns can oftentimes be used with joist girders. And that's a big advantage.

Ease and speed of erection with Vulcraft products enabled the first building to be under roof in 19 days.

717 tons of joists and 433 tons of joist girders were used in this 746,852 square foot job.

Vulcraft joists and joist girders helped Vantage in a Texas town. They can help you with a job too. Large or small. Anywhere.

VULCRAFT

A Division of Nucor Corporation

Developer: Vantage Companies
General Contractor: Vanco Construction, Inc.
Architect: Thomas E. Cook
Consulting Engineer: Arnold & Burch
Steel Fabricator: Weaver Iron Works, Inc.
Steel Erector: Bob McCaslin Steel Erection Company

For more data, circle 91 on inquiry card

versatility

Only the patented Smok-Chek IV™ provides it all:

Hydraulic door control with positive electromechanical hold-open . . . field adjustable hold-open force . . . adjustable stroke, latch and backcheck without extra charge . . . optional built-in dead stop . . . eliminates projection above door frame . . . can meet all code requirements, with unimpeded exits . . . features modular design for repair without takedown . . . offers field-proven detector . . . is approved for open area fire detection in patient sleeping rooms up to 600 sq. ft. in area . . . allows you to select closer sized for door and draft conditions . . . can be used with butts, pivots or throw-clear hinges . . . used with surface or concealed closers . . . is fully systems compatible.

You would expect no less from:

RIXSON-FIREMARK, INC.

9100 W. Belmont Ave., Franklin Park, IL 60131
In Canada: Rixson-Firemark (Can.) Ltd.

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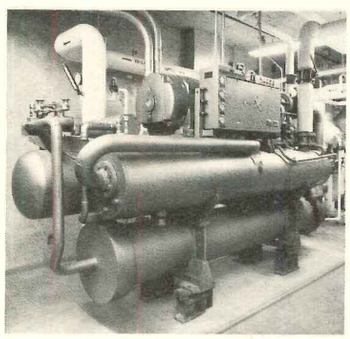
Dunham-Bush air cooled condensers on roof of Management Systems Corporation Computer Center, Salt Lake City, Utah

Dunham-Bush saves Management Systems $4,035 per year in heating, cooling costs.

(A Case History: Air Cooled Condensing vs. Water Cooled Condensing)

Here's an example of how your heating-cooling operating costs can be lowered when you get Dunham-Bush involved early in the design stage. Before your design is frozen—while you still have a choice of equipment and system design—we'll work with you to evaluate options. To make sure the system is designed to your specific needs and optimum year 'round savings.

For example: Two Dunham-Bush Rotary Screw Compressor Packaged Chillers provide air conditioning for the 50,000 sq. ft. computer center at Management Systems Corporation in Salt Lake City, Utah. Heat generated in the computer rooms is recovered and re-distributed throughout the building. Condensing is handled by four Dunham-Bush Low Silhouette Air Cooled Condensers.



One of two Dunham-Bush PCX-230-0 direct drive Rotary Screw Compressor Packaged Chillers in equipment room at Management Systems Corporation Computer Center.

Why air cooled condensing? Because it is a logical choice where water is unavailable or costly and water treatment costs are high.

Compared with an equivalent water cooled condensing system, Management Systems Corp.'s annual net costs savings amount to $4,035.

Before your design concept is frozen—while you still have a choice of heating-cooling systems—call Dunham-Bush. You might be our next case history. Contact your Dunham-Bush Sales Office listed in the Yellow Pages, or mail the coupon.

☐ Please send more information on Dunham-Bush Rotary Screw Compressor Packaged Chillers and Air Cooled Condensing. AR 6-75

☐ Please have representative call me.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____

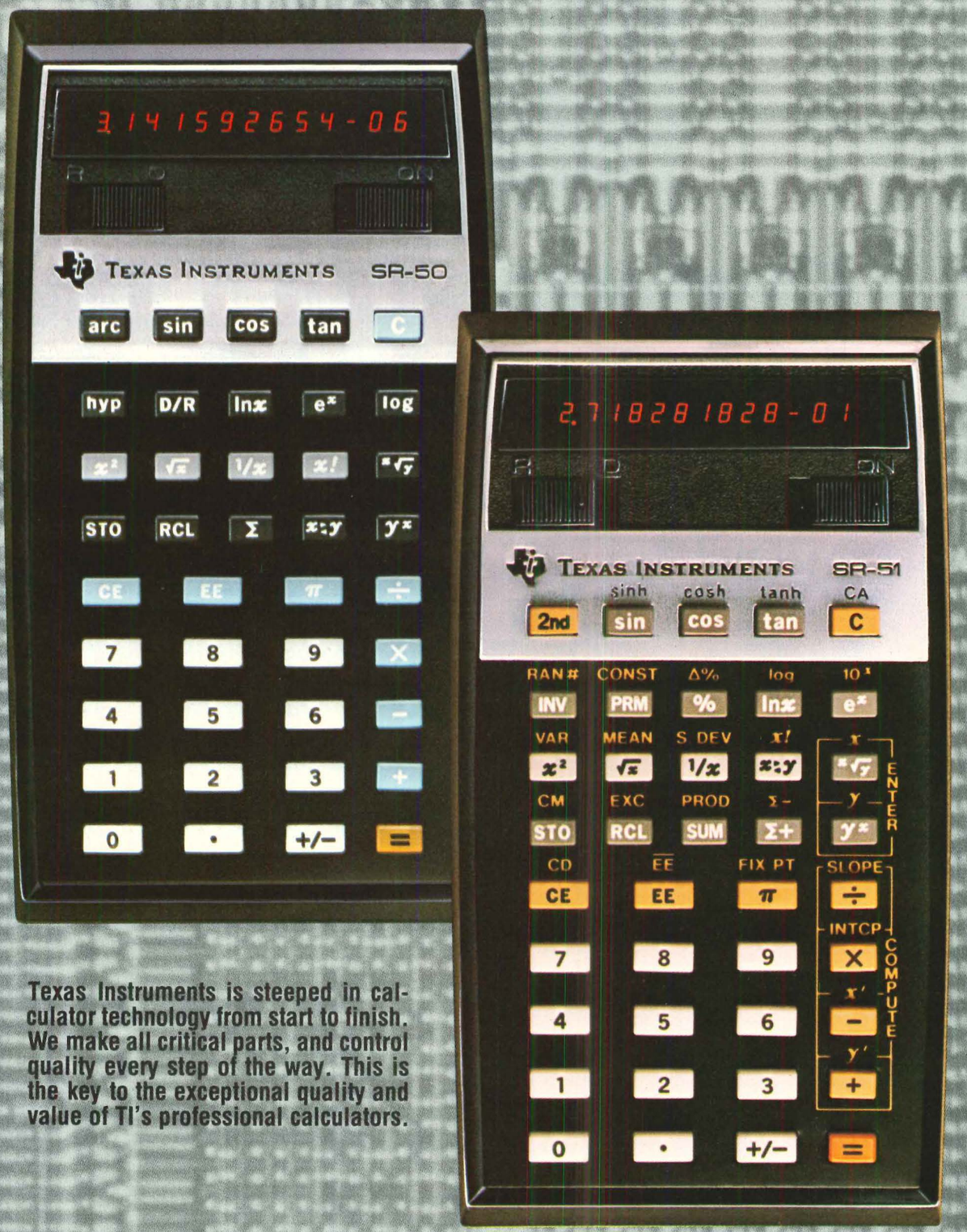
DUNHAM-BUSH, INC.

175 South Street, West Hartford, Conn. 06110

One of The Signal Companies

For more data, circle 93 on inquiry card

The SR-50. The SR-51.



Texas Instruments is steeped in calculator technology from start to finish. We make all critical parts, and control quality every step of the way. This is the key to the exceptional quality and value of TI's professional calculators.

Capability. Quality. Value.

The technological achievement under the keyboard is still the reason TI's professional calculators offer so much quality and math power for the money.

Engineer. Scientist. Businessman. Student. If you're doing more than basic mathematics in your field, consider an SR-50 or SR-51 from Texas Instruments.

Both deliver answers you can trust – quickly and efficiently – to problems ranging from simple arithmetic to highly complex calculations. You don't have to learn special entry methods or difficult-to-master key sequences. There's a better way – TI's algebraic entry system lets you key your problem just the way you would say it. Naturally. You don't worry about losing data in stacks, or keeping track of what is in each stack, or remembering if the stack is full. The way you learned math is the way it's done. On both the SR-50 and SR-51 – you can command tremendous math power with confidence – from the beginning. Power and accuracy you can really put to work.

Answers are calculated to 13 significant digits, rounded off and displayed to 10. And for maximum accuracy, all 13 are held inside for subsequent calculations.

Scientific notation is automatic when you need it. For numbers as large as $\pm 9.999999999 \times 10^{99}$. Or as small as $\pm 1. \times 10^{-99}$.

For a closer look at real math power, delve into the list. You'll see for yourself the SR-50 is a lot of calculator for the dollar. And the SR-51 does everything the 50 does and a lot more: Mean, variance and standard deviation. Linear regression. Percent and percent difference. Has a random number generator. And, offers 20 preprogrammed conversions and inverses.

Quality – it's built in right from the start. Texas Instruments designs and manufactures every critical component. From high-purity silicon semiconductor materials to integrated circuits to light-emitting-diode displays to circuit boards to keyboards. So, we design-in and control quality – not just monitor it – at every level: Materials. Components. The complete system.

FUNCTION	SR-51	SR-50
Log, lnx	yes	yes
Trig (sin, cos, tan, INV)	yes	yes
Hyperbolic (sinh, cosh, tanh, INV)	yes	yes
Degree-radian conversion	yes	yes
Deg/rad mode selection switch	yes	yes
Decimal degrees to deg.min.sec.	yes	no
Polar-rectangular conversion	yes	no
y^x	yes	yes
e^x	yes	yes
10^x	yes	no
x^2	yes	yes
$\sqrt{x}$	yes	yes
$\sqrt[x]{y}$	yes	yes
1/x	yes	yes
x!	yes	yes
Exchange x with y	yes	yes
Exchange x with memory	yes	no
% and Δ %	yes	no
Mean, variance and standard deviation	yes	no
Linear regression	yes	no
Trend line analysis	yes	no
Slope and intercept	yes	no
Store and sum to memory	yes	yes
Recall from memory	yes	yes
Product to memory	yes	no
Random number generator	yes	no
Automatic permutation	yes	no
Preprogrammed conversions	20	1
Digits accuracy	13	13
Algebraic notation (sum of products)	yes	yes
Memories	3	1
Fixed decimal option	yes	no
Keys	40	40
Second function key	yes	no
Constant mode operation	yes	no

To assure you reliable performance, every calculator is subjected to severe environmental and reliability testing prior to release to production. In production, every one is thoroughly tested, then "burned-in", then thoroughly tested again. If there's any problem, we want to find it before it gets to you.

Inside, steel machine screws anchor all important structural elements – plastic welds and glue fastenings aren't good enough. A double-tough Mylar* barrier keeps dust and moisture from getting under the keyboard. The case is high-strength, injection-molded plastic designed to take a beating. It's a quality calculator. And you know it as soon as you get your hands on one. The heft and solid feel tells you it's a fine-quality instrument even before you press a key.

The SR-50 and SR-51 are human engineered, too, for maximum comfort and efficiency. For a hand or a desktop. Keys have positive-action, tactile feedback. And the bright, wide-angle displays are easy to read at your desk or on the go. Slim. Compact. Light. In your briefcase or on your belt, you'll hardly notice just 8.3 ounces.

Technological leadership and quality craftsmanship are why Texas Instruments can offer so much value at such low prices: $109.95 for the SR-50. $179.95 for the SR-51.

20 Preprogrammed Conversions

FROM	TO
mils	microns
inches	centimeters
feet	meters
yards	meters
miles	kilometers
miles	nautical miles
acres	square feet
fluid ounces	cubic centimeters
fluid ounces	liters
gallons	liters
ounces	grams
pounds	kilograms
short ton	metric ton
BTU	calories, gram
degrees	gradients
degrees	radians
°Fahrenheit	°Celsius
deg.min.sec.	decimal degrees
polar	rectangular
voltage ratio	decibels

See them at your nearest TI calculator retailer. Or, send for our new fact-filled color brochure. It details the outstanding capability of both the SR-50 and SR-51 with full feature descriptions, sample problems, entry-method considerations and more. Circle the reader service number. Or write, Texas Instruments, M/S358, P.O. Box 22013, Dallas, Texas 75222

82051

TEXAS INSTRUMENTS
INCORPORATED

*Trademark of DuPont

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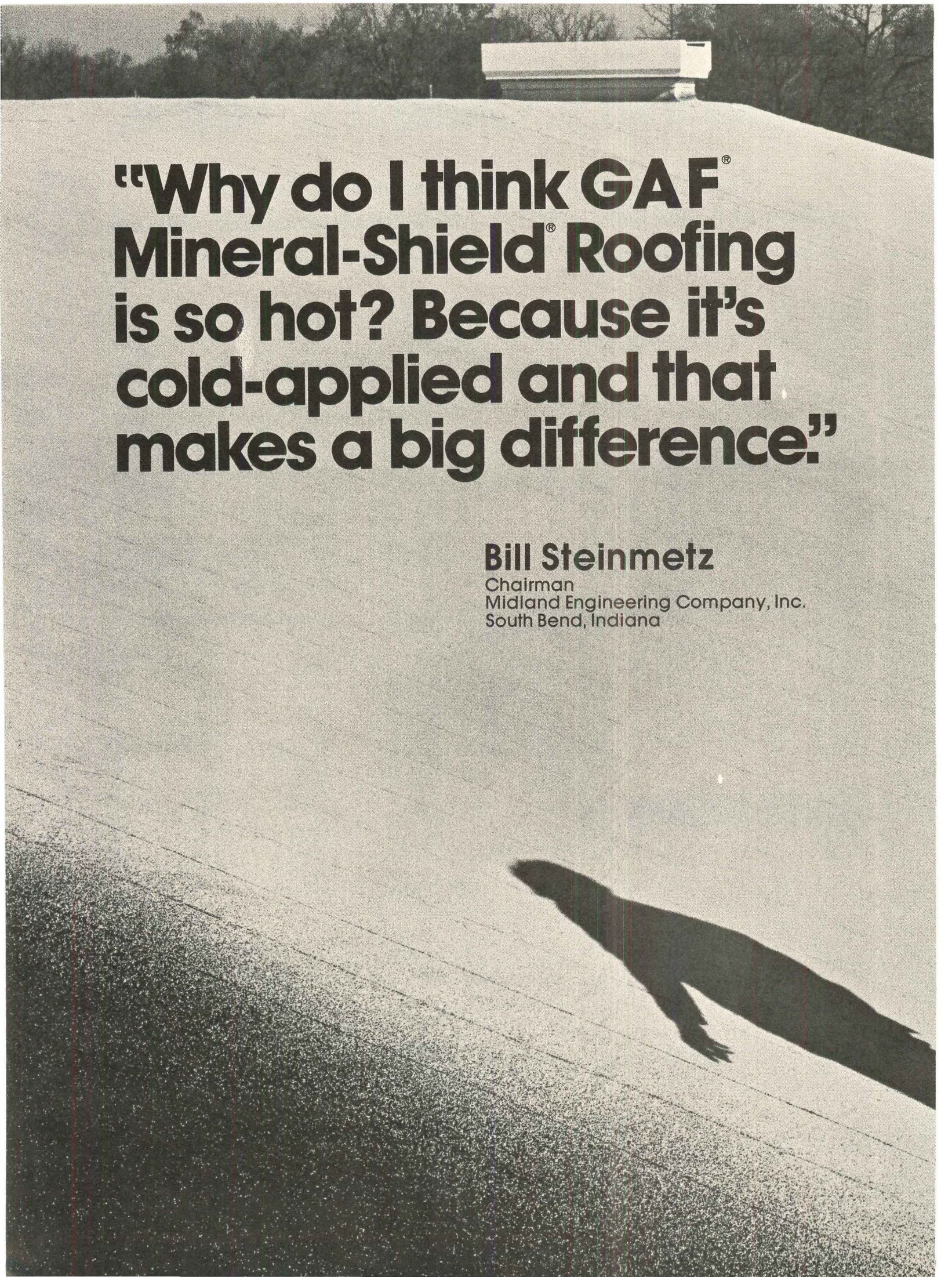
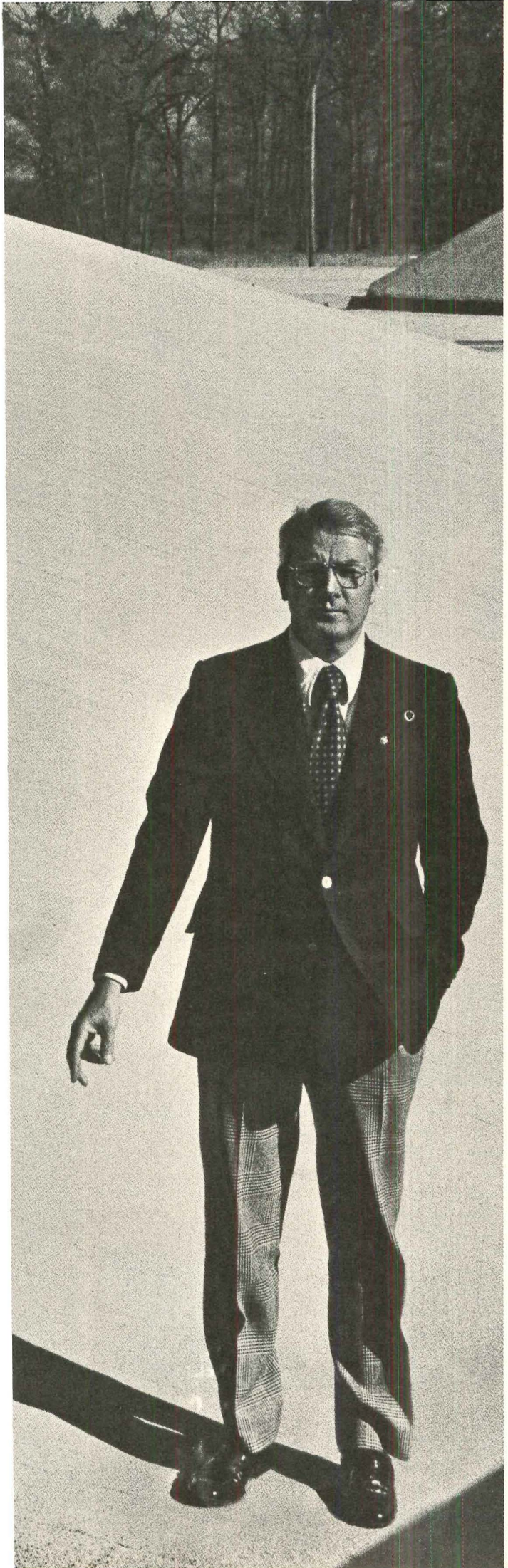


"Why do I think GAF® Mineral-Shield® Roofing is so hot? Because it's cold-applied and that makes a big difference."

Bill Steinmetz
Chairman
Midland Engineering Company, Inc.
South Bend, Indiana



"A play on words, hardly," Mr. Steinmetz continues. "We've been thinking cold around our company for over six years now. With some 400 cold process roofing jobs under our belt, we know that Mineral-Shield roofing performs. Not only can we recommend it with complete confidence to our customers, but we have also found through our extensive job experience that there are many advantages and benefits to the roofing contractor.

"Because Mineral-Shield is cold-applied, the need for heating kettles and tankers is eliminated. Also gone are hot luggers, felt layers, and gravel spreaders. In fact, a contractor's job equipment needs are reduced substantially and the cold process application equipment can easily be towed to the job site by conventional pick-up truck. The economics of this are obvious...less handling, faster job set-up, less equipment maintenance, not to mention the elimination of lost time due to accidents or burns.

"What really sold us on GAF Mineral-Shield Roofing system is that it works! And after all, that's the name of the game whether you're looking at it from the point of view of the owner, roofing contractor, or architect."

GAF Mineral-Shield is a modern cold-applied built-up roofing incorporating multi-plies of roofing membrane plus layers of roofing mastic and a surfacing of white mineral granules, usually applied by mechanized spray equipment. All components—roofing membrane, mastic and granules—are factory-finished under rigid GAF quality control. A Class "A" Underwriters' Laboratories Rating is available. Guaranteed by GAF when applied according to published specifications.

GAF Corporation AR65
Industrial Roofing and Waterproofing,
140 West 51 Street,
New York, New York. 10020

☐ Please send me further information on GAF Mineral Shield Cold-Applied Roofing.

☐ Please have a representative call.

Name _____

Firm _____

Address _____

City _____ State _____ Zip _____

GAF® Mineral-Shield® Roofing

GAF®

For more data, circle 95 on inquiry card

Construction costs. The Battle of the Bulge.

Time. Labor. Materials. The high cost diet that'll bulge a construction budget. Trimming that costly bulge in washroom construction is the beginning of Bradley Washfountain savings.

Bradley Washfountains save time with rapid delivery for remodeling and fast track schedules. Only 3 plumbing connections to provide washing capacity for 2 to 8 people. Uncomplicated, fast installation that cuts the high cost of labor. And a Bradley equipped washroom has lower component and material costs than a lav-equipped washroom with the same capacity. It all adds up to a total savings of 46% to 73% on construction costs. Plus reducing the amount of space needed for washing facilities by an average of 25%.

Increasing washroom efficiency and decreasing washroom construction costs. That's a Bradley Washfountain. And that's how you can trim your construction costs. By contacting your local Bradley representative. Or write for more information on the complete Bradley line. Bradley Corporation, 9107 Fountain Blvd., Menomonee Falls, Wisconsin 53051.

Bradley BRADLEY **Cuts down on costs.**

For more data, circle 96 on inquiry card

If we tried to solve all your material-handling problems with a single system, it would be like trying to fit square pegs into round holes. So we developed a wide range of systems, to fill the needs of virtually any hospital.

And we back our product with expertise that helps us tailor our material-handling equipment to your building instead of requiring that you plan your building to fit our systems.

We work with you to determine the best system or combination of systems for the job you want done. We gather facts and figures on costs and cost-savings. We design the system down to the last nut and bolt — and can even employ computer simulation to prove that our plans will work as well in actuality as they promised to on the drawing board.

We provide full installation if required . . . train hospital personnel in proper and efficient use of the system . . . and remain on hand during start-up and operation to make sure all the bugs are out. To assure that they stay out, AMSCO offers you a nationwide network of service technicians for preventive maintenance or repair.

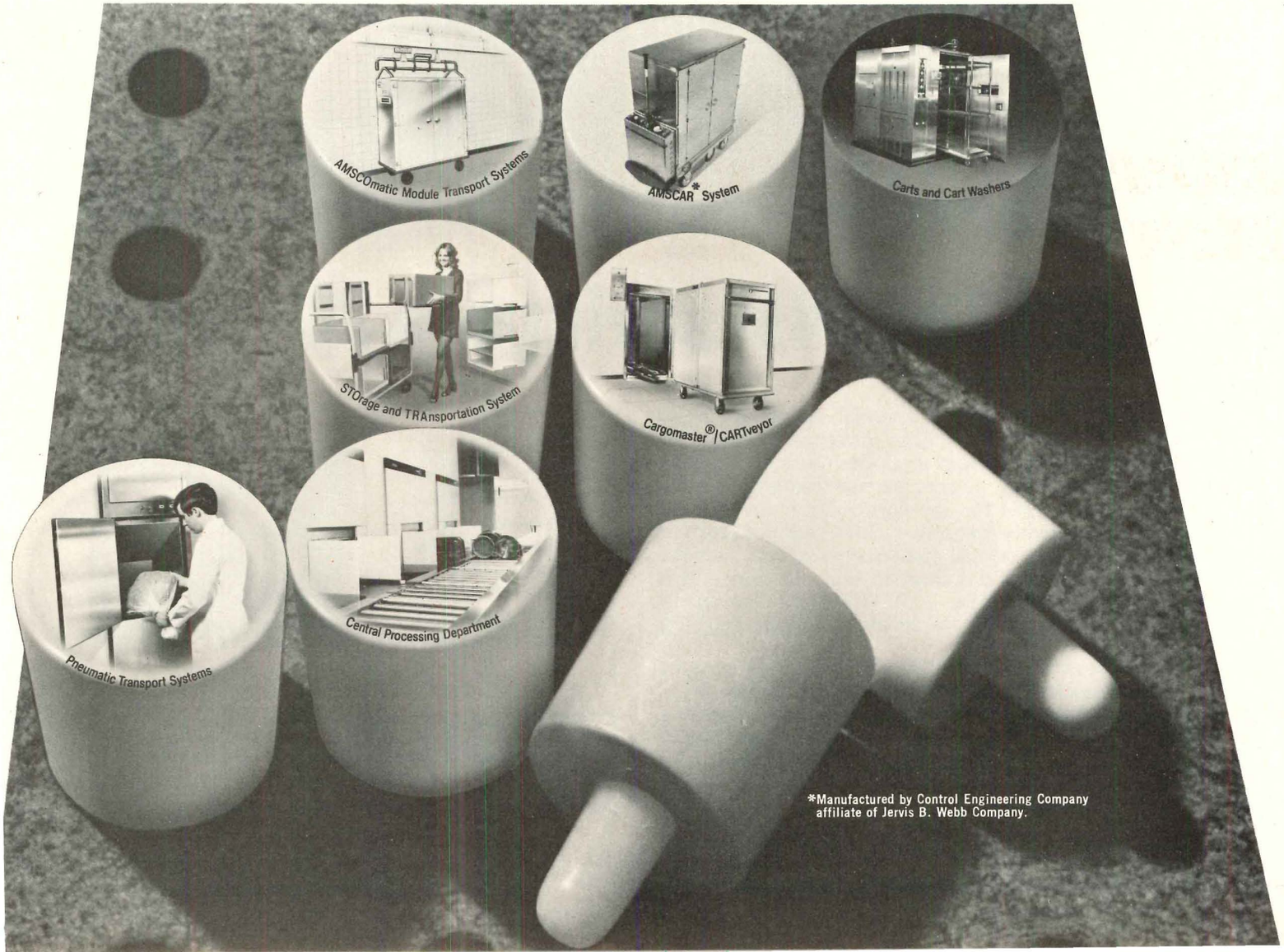
When it comes to material handling for hospitals, we may not have all the answers. But we're working on them.

AMSCO SYSTEMS

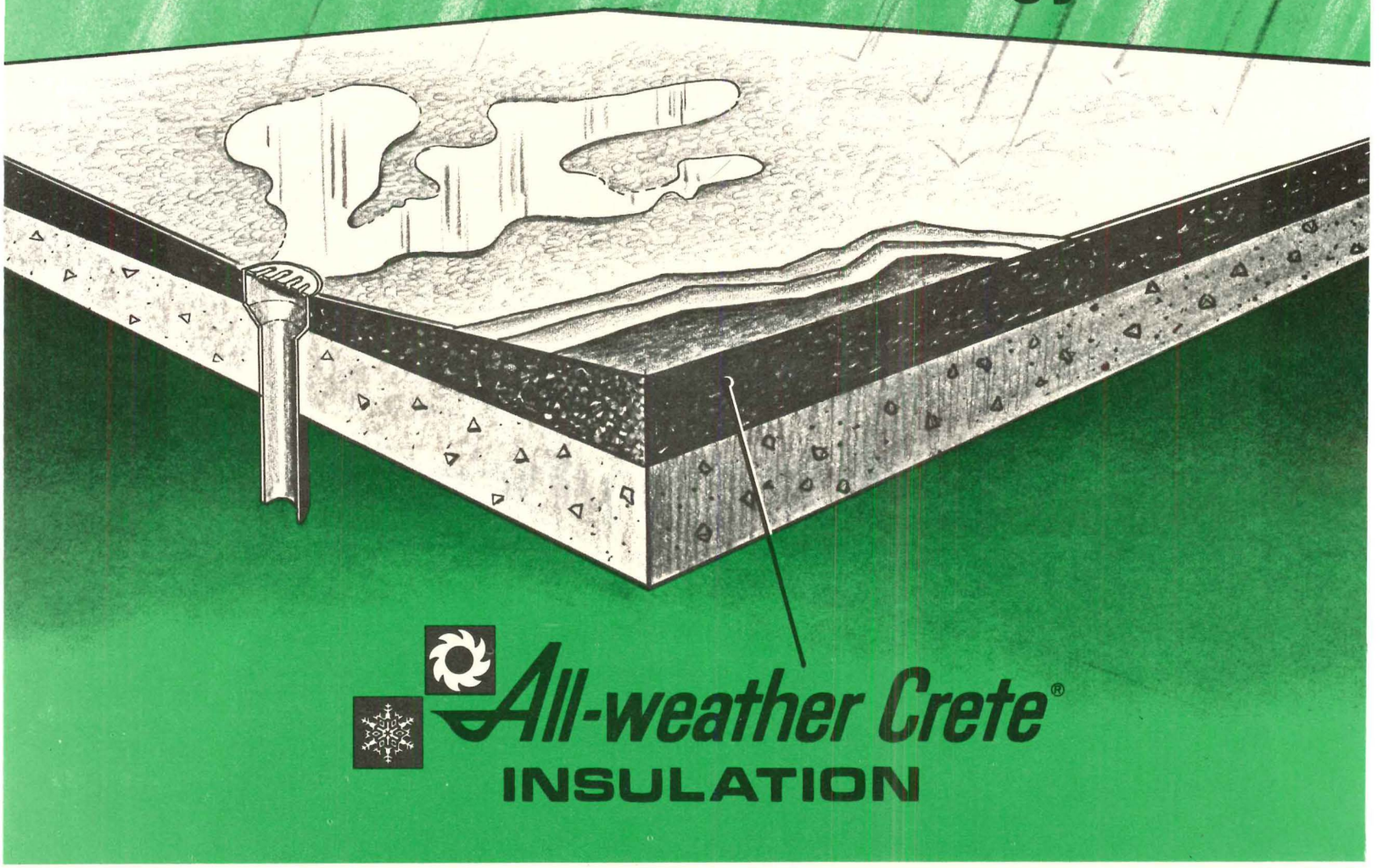
Division of American Sterilizer Company

For more data, circle 97 on inquiry card

hospital planner, proceed from here



the roof deck that conserves energy!



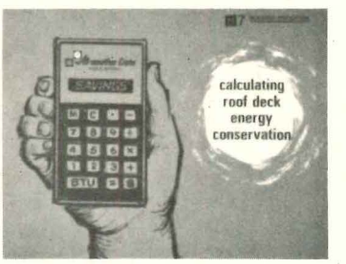
All-weather Crete®
INSULATION

Up to $134,340* savings in 20 years!

Even though the dollar and thermal savings for every building are different, similar dramatic savings are achieved on every All-weather Crete insulated building. It's important! Many owners are now requesting architects to figure costs for the construction process and also costs on yearly operation. All-weather Crete not only provides exceptional fuel/energy savings, but the added thickness provides positive slope to drains. It is also completely seamless — it is applied dry and it transmits vapors. These are all aids to longer roof life.

*This represents the total 20 year savings when using 4" of All-weather Crete in lieu of 1" of rigid or 2" of wet-poured insulation on a 50,000 sq. ft. deck. Therms saved - 288,400; KW/Hrs. saved - 890,000. These figures were taken from an engineering study developed by a professional engineer at a prominent university. Source available upon request.

Figure the thermal and cost savings on your next job. Compare insulations. Do this with the technical workbook, "Calculating Roof Deck Energy Conservation". It's free to architects and engineers. Contact Silbrico Corporation.



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Last year a lot of building owners, architects and engineers were in the dark about fire protection. Until they came to Viking.

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We've done them all. Right down to a design which can keep a lot of money from going down the drain. And all this experience means we can help you get your next job done right, too. And show you how to save money in the process by recommending a knowledgeable contractor near you.

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We'll shed some light on your fire protection needs.

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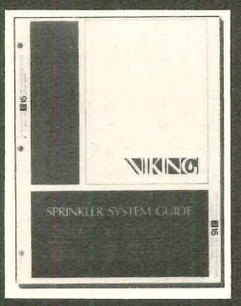
Ask for Gary Begg.



Write for this helpful 32-page book "Viking Sprinkler System Guide". It's packed with information every building owner, architect and contractor should have.

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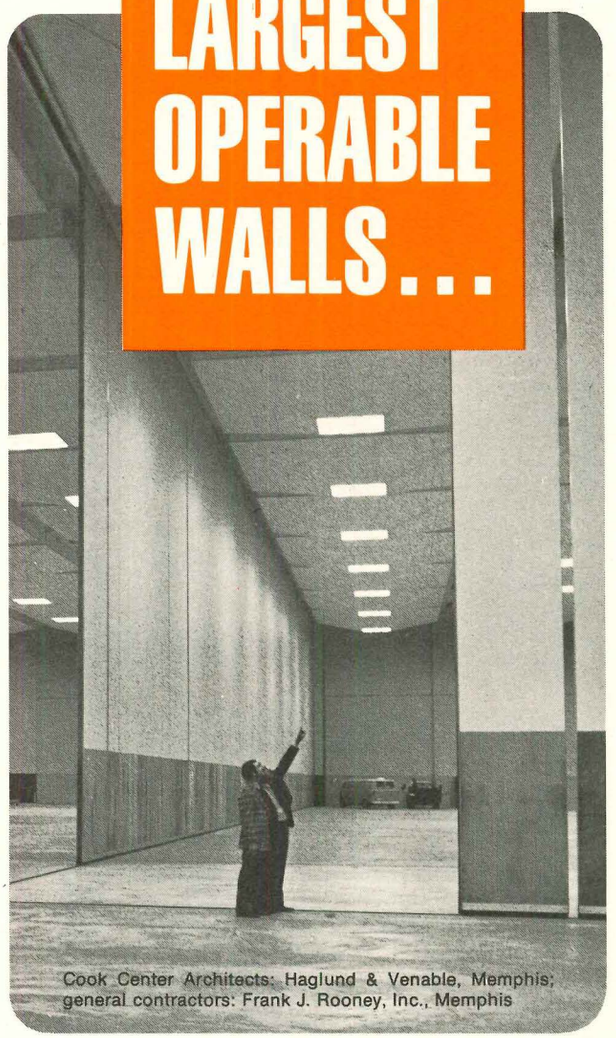
WORLD'S LARGEST OPERABLE WALLS...



Cook Center Architects: Haglund & Venable, Memphis; general contractors: Frank J. Rooney, Inc., Memphis

by Richards-Wilcox for New Memphis Convention Complex

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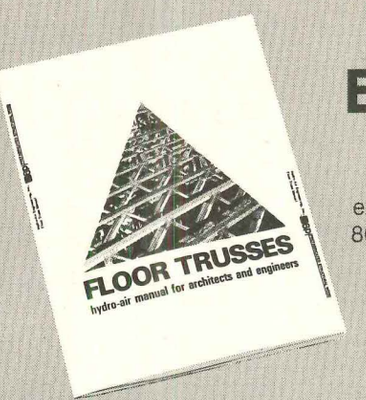

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University of New Mexico, Albuquerque
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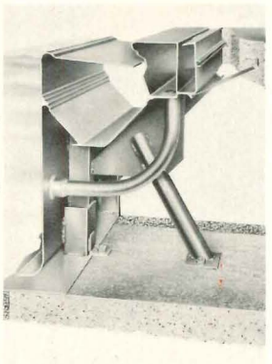

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NATIONAL SWIMMING POOL INSTITUTE

For complete information and technical literature, write Dept. AR-6

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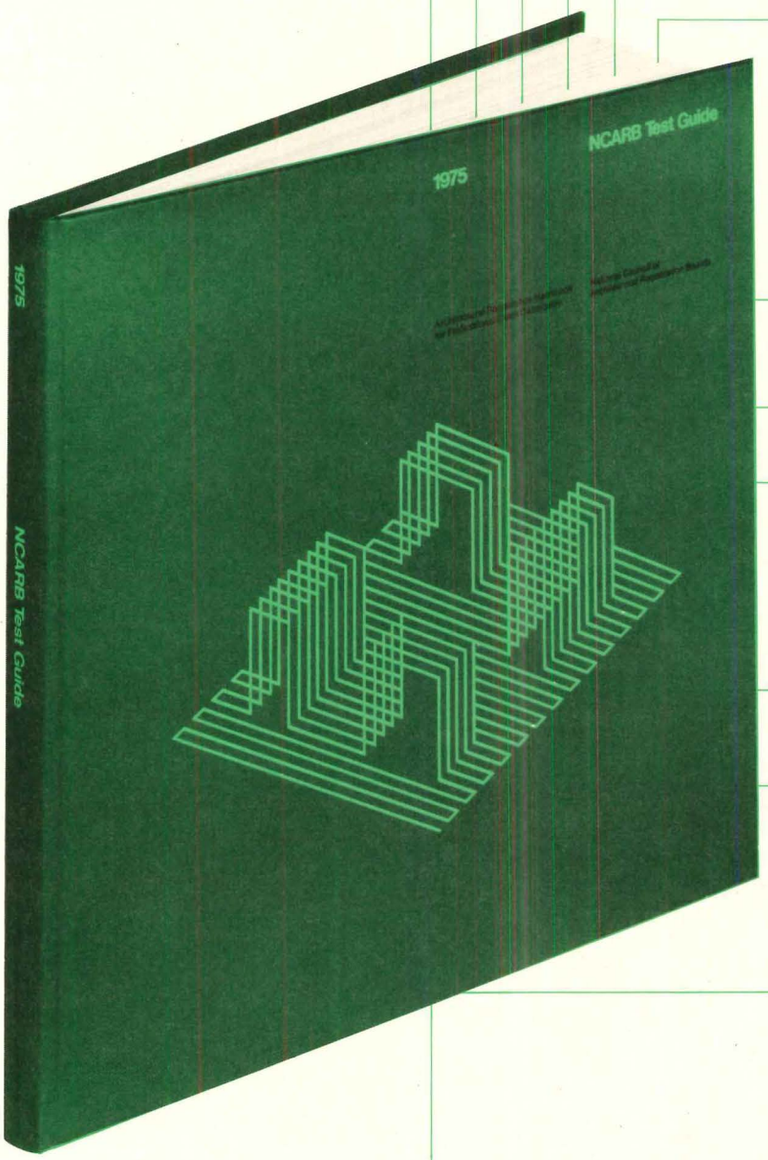

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FLEXCO T.M.

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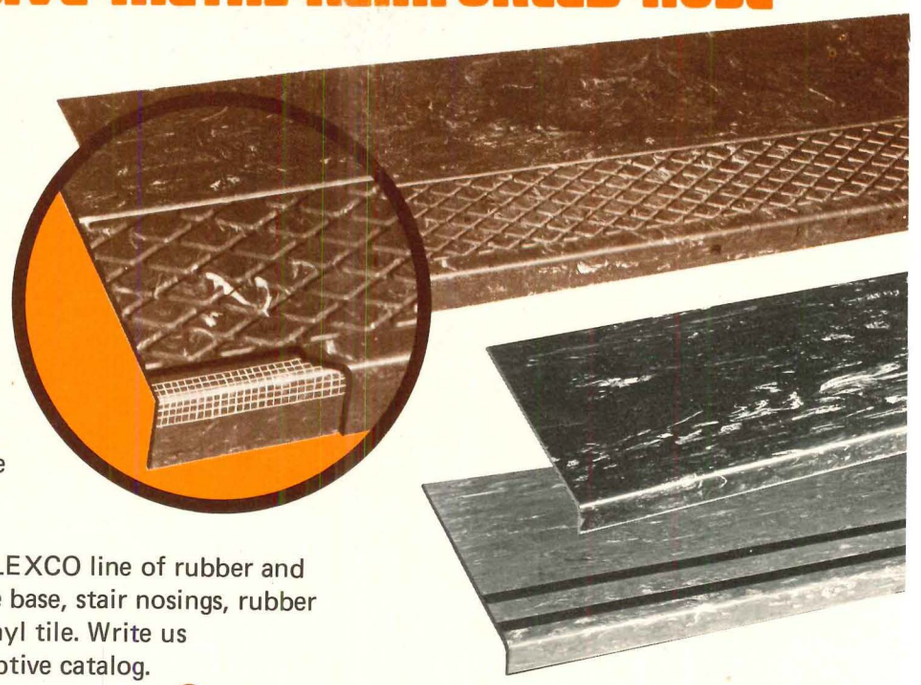
Since the nose of stair treads receive the hardest wear and the most strain under heavy traffic, doesn't it make good sense to reinforce this area for added resistance to wear and damage? That's why FLEXCO Rubber Treads have a grid of high tensile strength metal molded into the nose at the point of greatest stress. And this added protection doesn't cost a cent extra!
FLEXCO Rubber Treads are made of tough high grade rubber in 1/4" and 1/8" gauges! Diamond design safety treads, smooth treads and smooth design with Carborundum Safety Strips are made in a full range of sizes up to 72" long. Eight modern color styles.



You should know more about the FLEXCO line of rubber and vinyl stair treads, cove base, stair nosings, rubber tile and conductive vinyl tile. Write us for samples and descriptive catalog.

SEE OUR CATALOG IN SWEET'S

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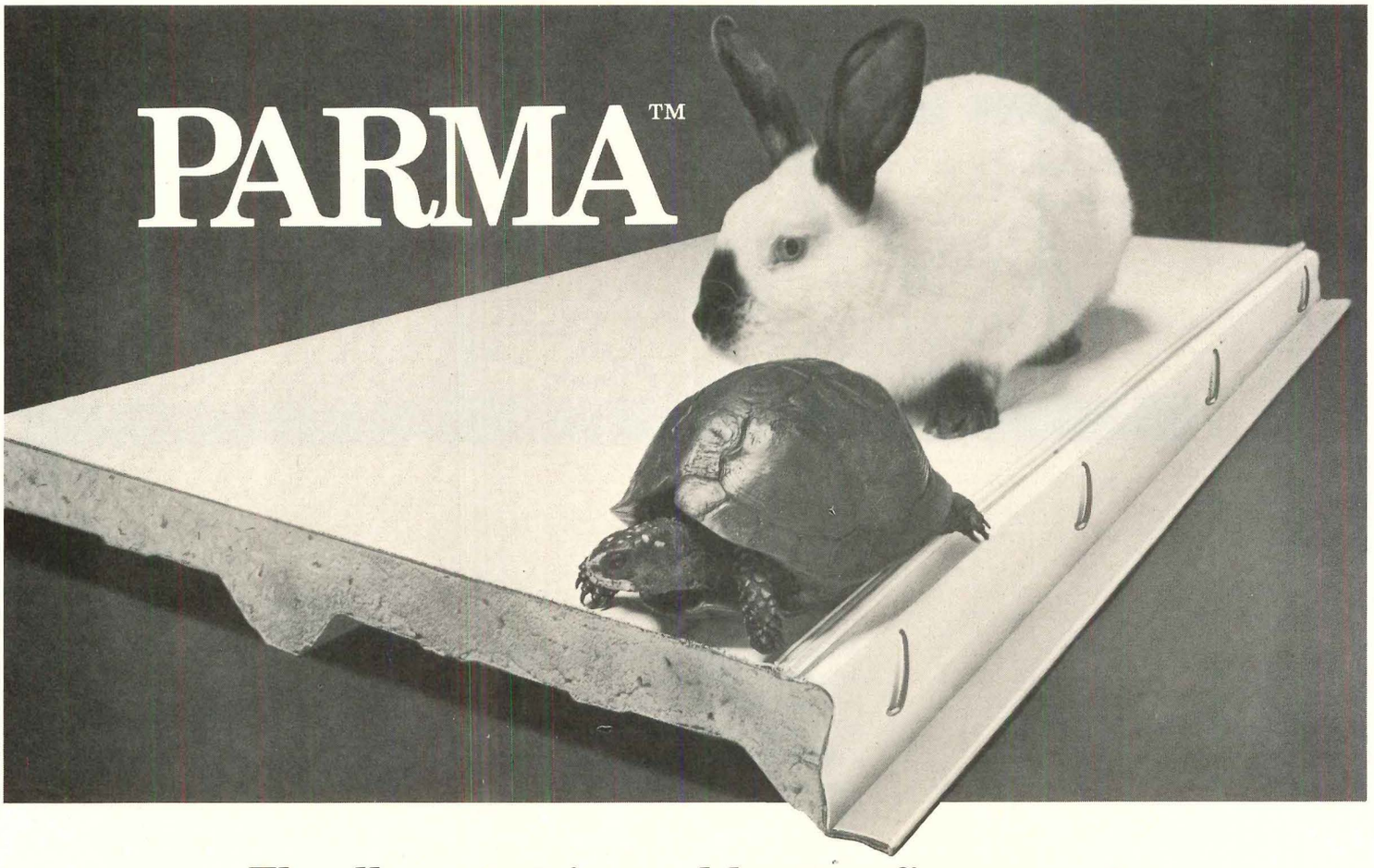

The all new tortoise-and-hare roofing concept.

The concept.

When a tortoise comes from the "factory" its roof is a single weatherproof system. Like the tortoise's shell, Parma Roof is a strong, long-lived single weatherproof system. It's factory constructed, factory quality controlled and it arrives on-site as composite panels. Panels that literally zip together to form a smooth, uninterrupted, tough weather shield.

Because it's a composite dry roof system, it goes together rabbit fast: faster than field-built-up roofs. And it goes up in all types of weather.

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The interior face of Parma is steel. The insulation core is high density isocyanurate foam. The exterior face is a Hypalon® membrane, factory-laminated to steel.

There are no exposed metal surfaces or fasteners. The unique zipper closure provides a positive seal with no mastics or sealants. Panels, joints and flashing are actually heat-welded together and become a single unit. Yet panels "float" independently under expansion and contraction. And a Parma Roof weighs almost 80% less than conventional field-built roofing.

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Parma Roof has been scrupulously tested for conformance with current roofing product standards. The test results proved that Parma is a match for the toughest building codes. In addition, Parma Roof has a U factor of .09 with .05 U factor obtainable.

All test results were substantiated by an independent laboratory and are available upon request.

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Parma simplifies your job. Just specify live load, joist spacing and trim preference. Parma will arrive as you specified it, ready to install. Plus you get the reassurance of single source responsibility for total roof performance.

Parma conserves energy. Very often the size of heating and cooling equipment can be scaled back because of Parma Roof's efficiency. In terms of Life-Cycle Costing, Parma keeps bad weather out, conditioned air in so long-term energy costs go down.

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All things a roof has never been before.

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Wherever heels and wheels
take a terrific toll,
you can use glue down carpet
without a cushion.
It's a safer surface wet or dry,
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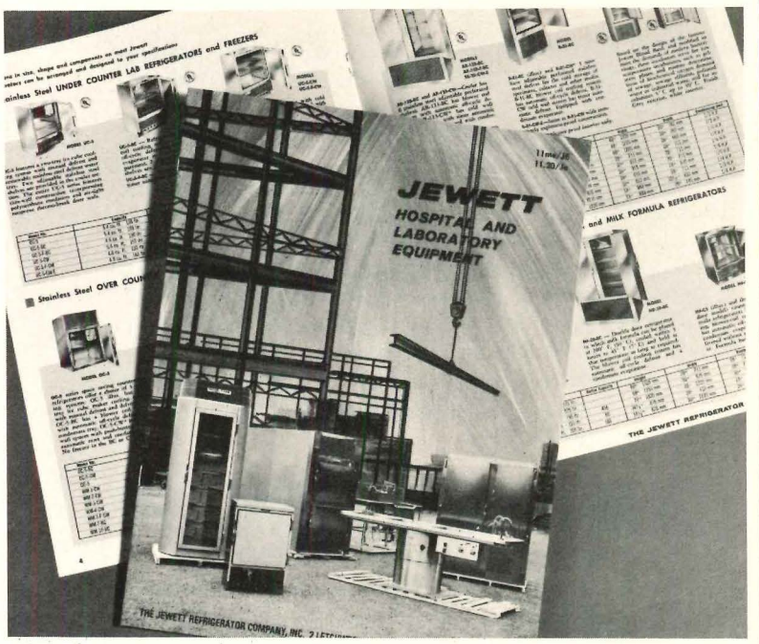
It deadens sounds.
Has more aesthetic appeal.
Less wheel impedence than a
cushioned carpet.
And it costs less to install,
to maintain (about 58% less
than a tiled surface)
and to replace.
Your contract distributor or mill
can help you choose the carpet
that will best meet your spec.



New health-care equipment catalog shows dimensions in metric as well as in inches

Health Care Equipment Catalog describes and illustrates Jewett's comprehensive line of stainless steel refrigerators and freezers for hospital and lab installation, as well as autopsy and morgue equipment. The line includes free-standing, counter-top, undercounter, and wall-mounted models. The new 8 page brochure includes metric as well as English dimensions and temperature ranges.

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The Air Washer uses a patented design based on impingement combined with a water spray to trap all air borne particles into a removal bag for easy disposal.

There are no moving parts. . .practically no maintenance. Air Washer offers vibrationless, trouble free, operation and it is easy to install anywhere.

For information on the new ECI Air Washer, see Sweets file 11.25EA, or contact ECI Air-Flyte Corp.

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This precoat is better for glue down carpet.

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NIAX process precoat locks fiber tufts in a carpet on a par or better with vinyl, testing out at about 17-20 pounds tuftlock or almost twice the locking power of latex. For glue down, it effectively eliminates the need for and cost of secondary backing. Like vinyl, urethane can be installed below grade or outdoors. But unlike vinyl, there is no shrinkage or plasticizer migration problem, so lower cost adhesives will usually work. Of course flammability characteristics are dependent on the particular carpet tested. Urethane burns with less smoke than SBR latex or vinyl foam. Get the facts on NIAX process precoats and frothed foam cushions for contracts installations.

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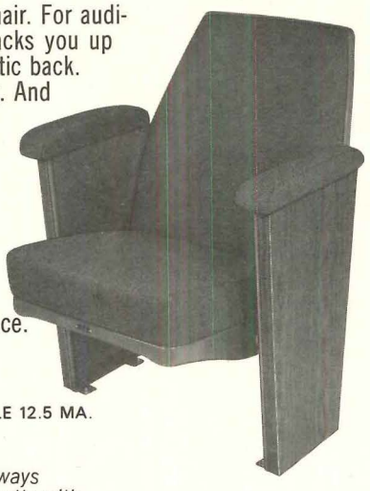

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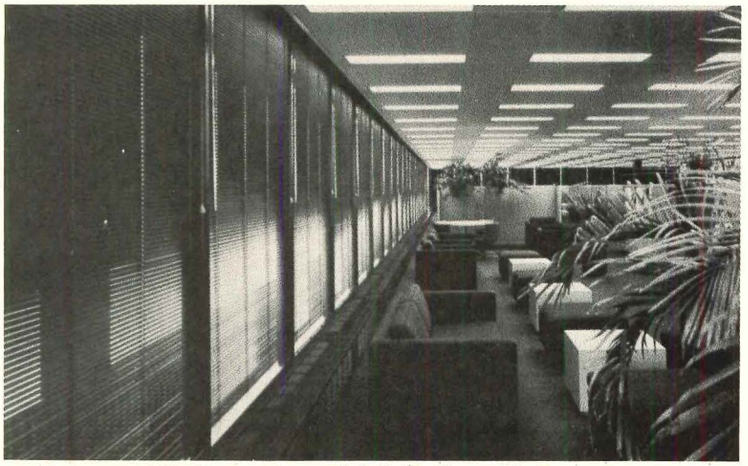

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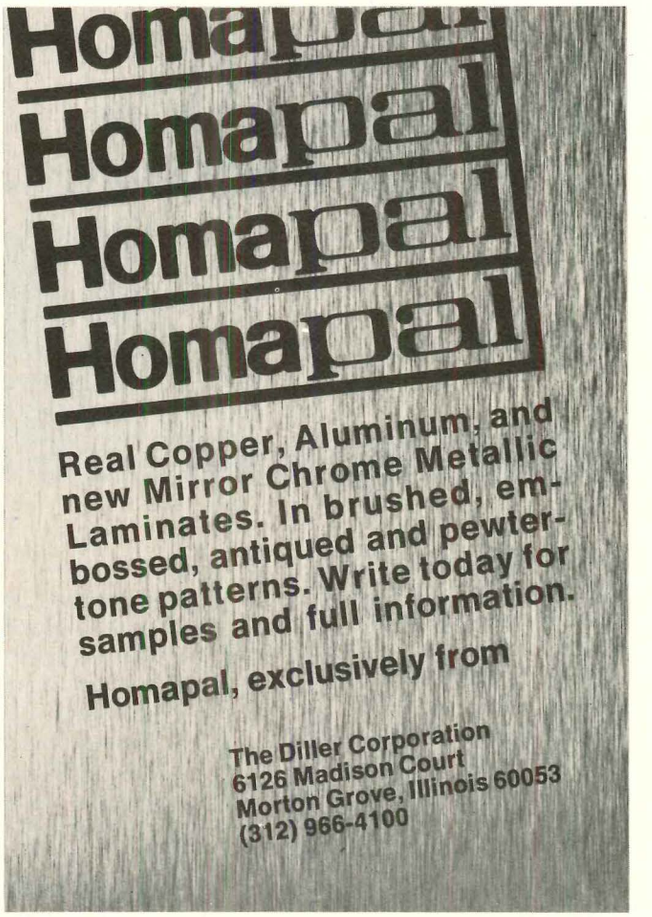

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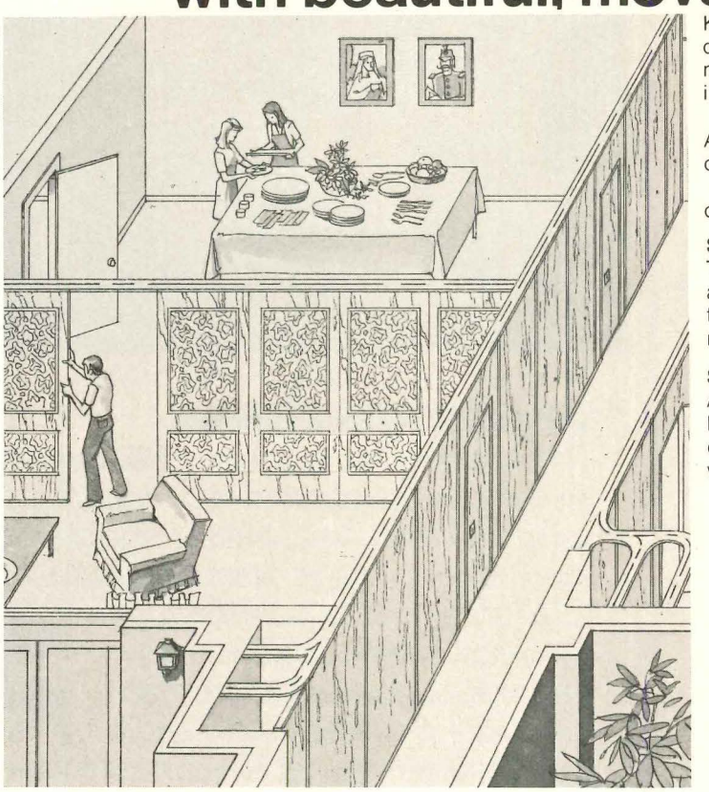
Large areas become smaller rooms in minutes with beautiful, movable Kwik-Wall

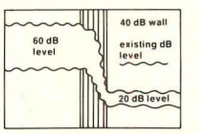


Kwik-Wall is the beautiful way to design flexibility into space division. Kwik-Wall provides the size of room a restaurant needs—when they need it. For any occasion—from an intimate gathering to a convention banquet.

Kwik-Wall is the permanent look in movable walls. Attractive, durable and sound retardant. Available in both operable, track-mounted and free-standing, portable partitions.

Choose the exact finish to complement any decor from over 1500 designer facings.

Sound-retarding privacy
Two models feature acoustical STC ratings up to 46 making every room truly private.



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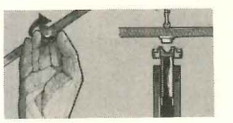
A new portable system has been specially designed to interface with soft ceilings.



The permanent look in movable walls
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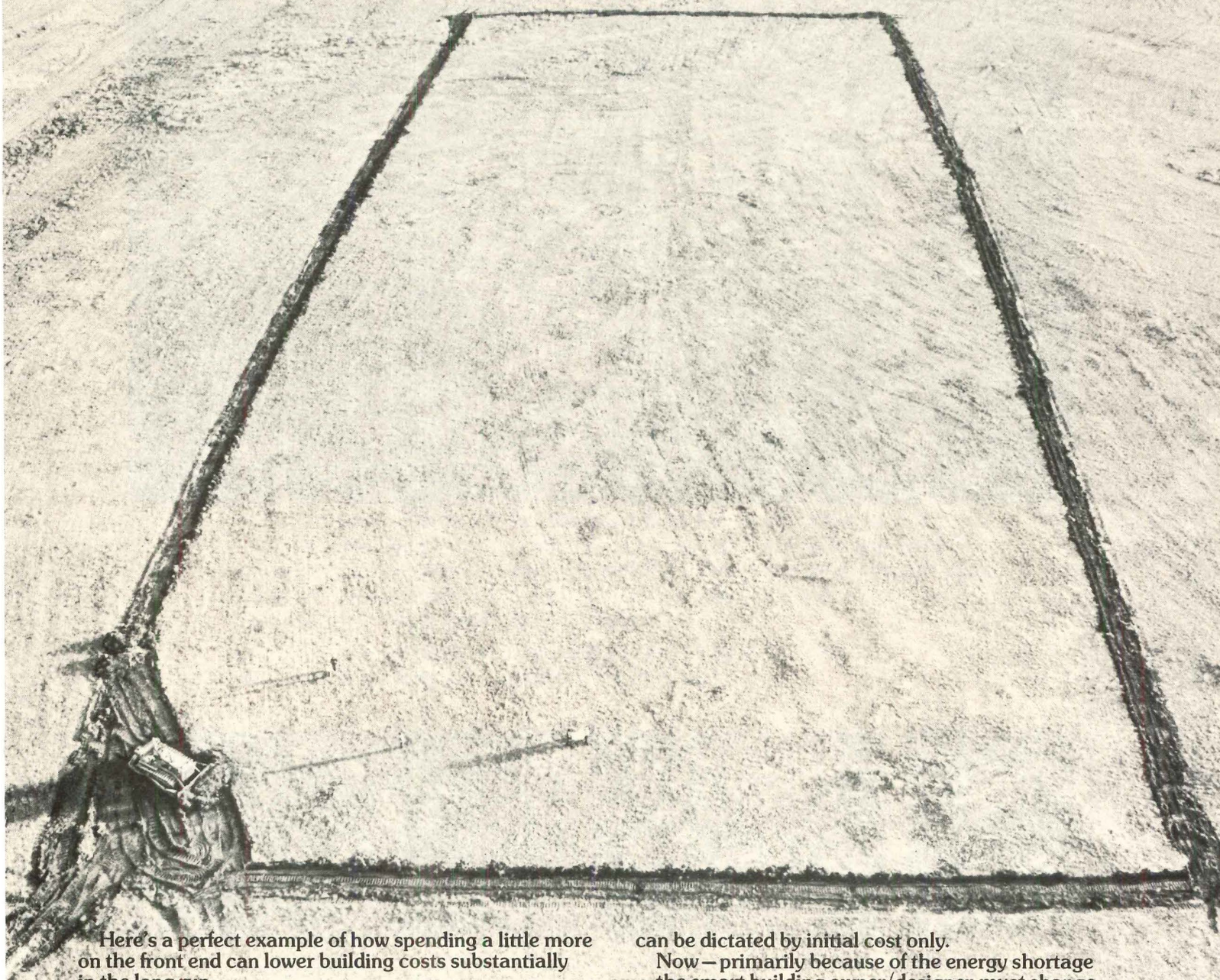
Fesco-Foam™ roof insulation will save the owners of the building on this site $21,800 the first year and $70,514 in 20 years.*

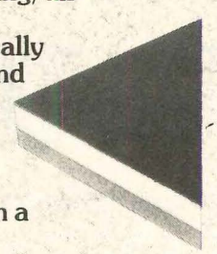


Here's a perfect example of how spending a little more on the front end can lower building costs substantially in the long run.

Assume a 200,000 square foot, single-story office building in Denver, Colorado.

By simply upgrading the roof insulation to J-M C-10 Fesco-Foam, at a one-time added cost of $70,000, a savings of $90,000 can be made in heating/air-conditioning equipment alone.*

Fuel costs will also go down dramatically — with savings of $1,800 the first year and $50,514 over the 20-year life of the roof. This is based on an escalation of 10% in fuel costs for the next 5 years. Net savings will add up to $70,514 with a present worth value of $40,629 based on a 10% interest rate.*



Gone are the days when building design can be dictated by initial cost only.

Now — primarily because of the energy shortage — the smart building owner/designer *must* change design criteria... must look beyond the cost of erecting a building and consider everything that will affect the total cost over its projected life.

Which means the building will probably cost more to begin with. But it's an investment that will pay off in savings and comfort in the years that follow.

If you're in doubt, ask us for proof. Call your nearby J-M District Office or contact Peter McCracken, Johns-Manville, Box 5108, Denver, Colorado 80217, (303) 770-1000.

The single-source built-up roofing system.

*Savings are based on optimum design criteria. Actual savings may vary depending on calculations.

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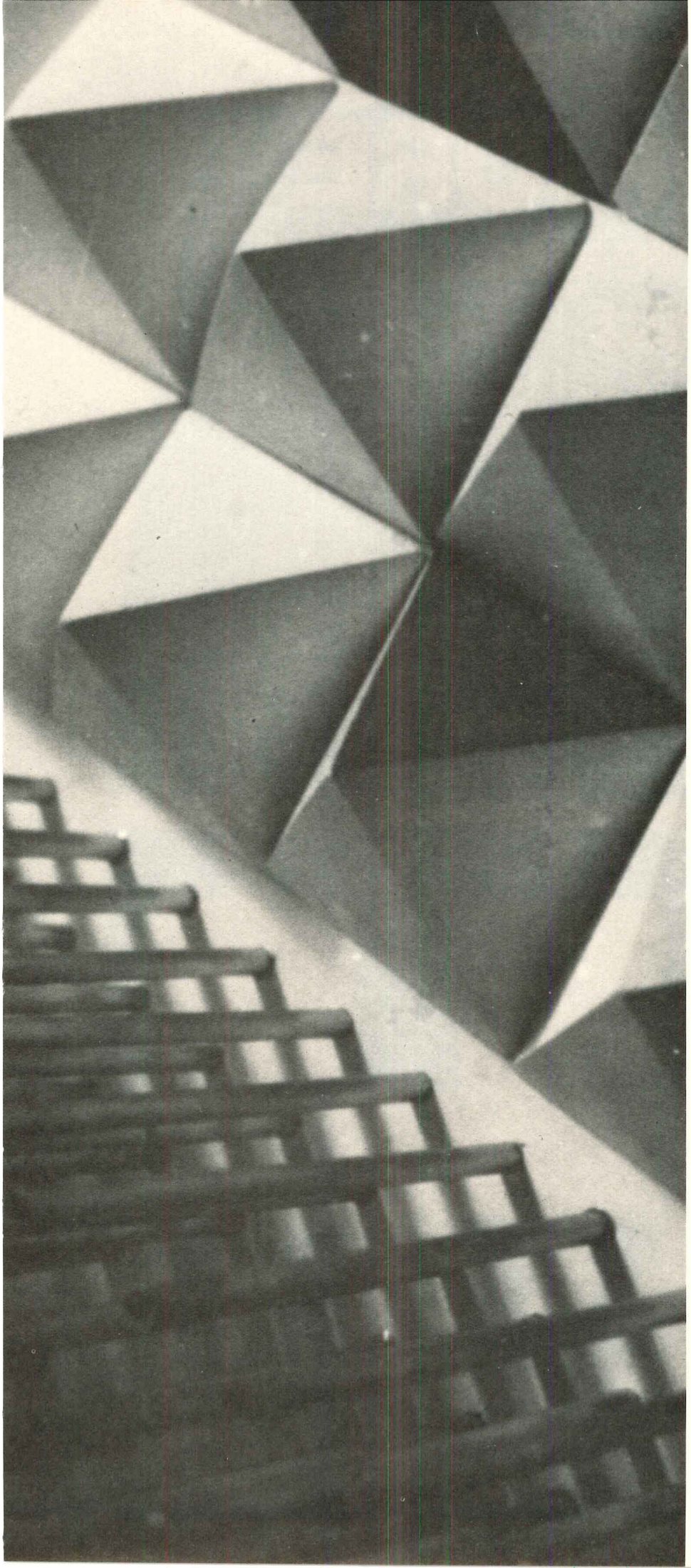

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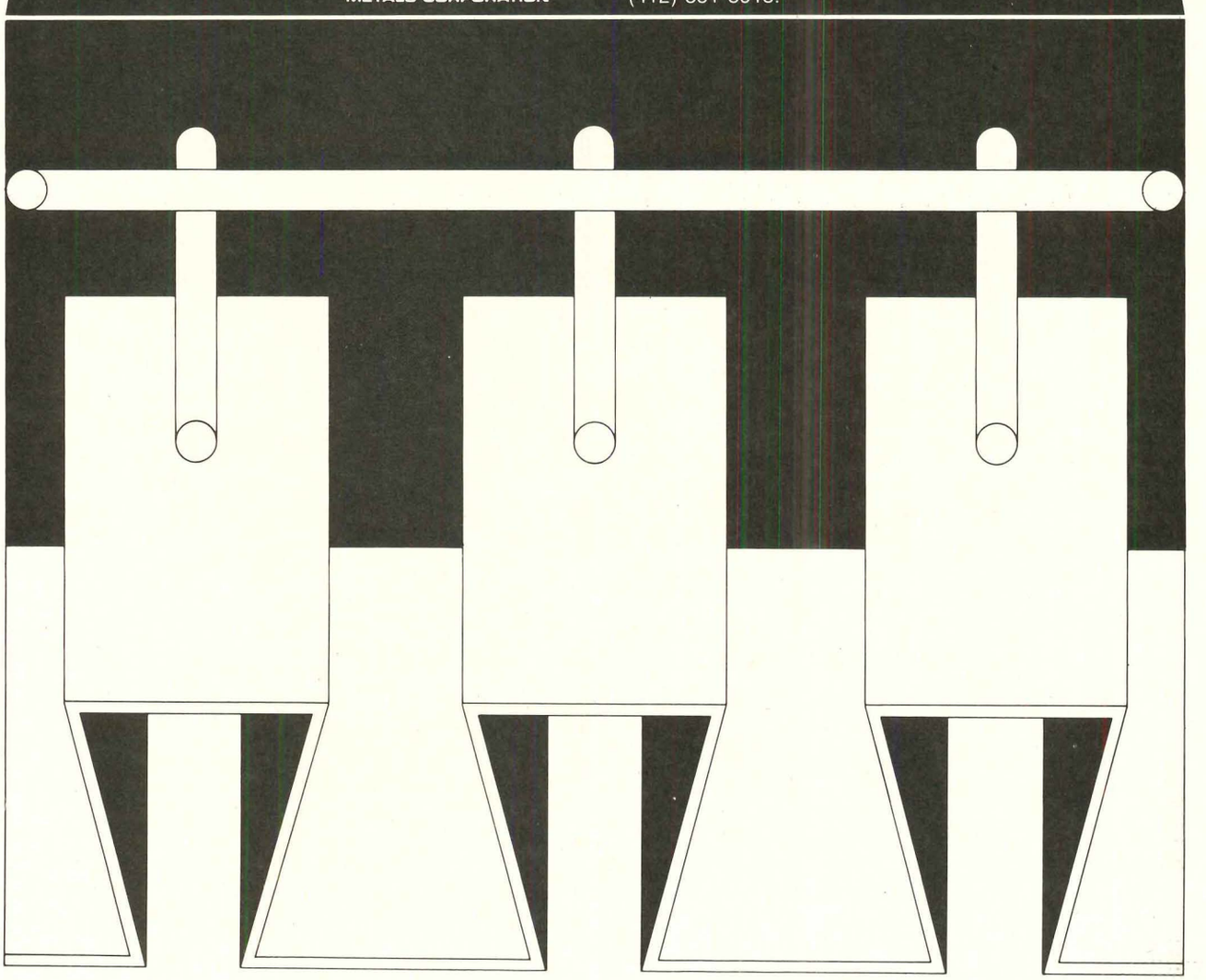

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VOLUME 157
JAN.-JUNE 1974

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Readers using the index will find buildings entered in three ways: by architect's name, by building or owner's name, and by building type (banks, hospitals, schools, etc.). Other categories cover subjects in the engineering section (concrete, lighting, prefabrication, etc.). ABBREVIATIONS: AB—Architectural Business; AE—Architectural Engineering; BA—Building Activity; BTS—Building Types Study; CM—Construction Management.

S

T

U

V

W

ADVERTISING INDEX

Prefiled catalogs of the manufacturers listed below are available in the 1975 Sweet's Catalog File as follows.

A Architectural File (green)
I Industrial Construction File (blue)
L Light Construction File (yellow)
D Interior Design File (black)

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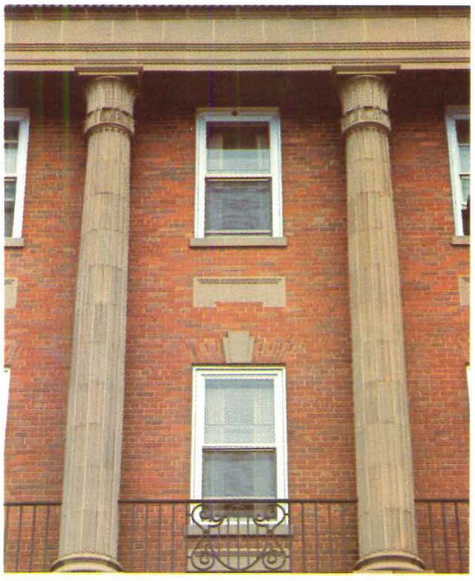

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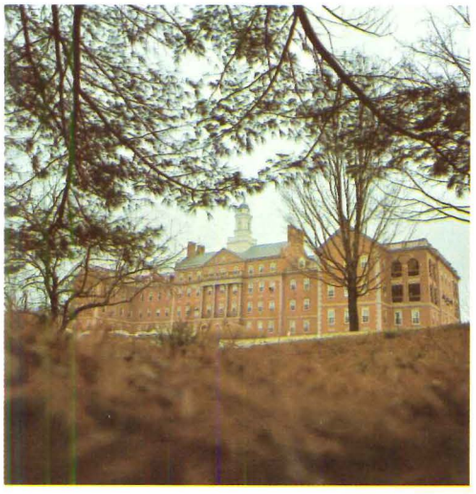

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