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ARCHITECTURAL RECORD

JUNE 1978

6

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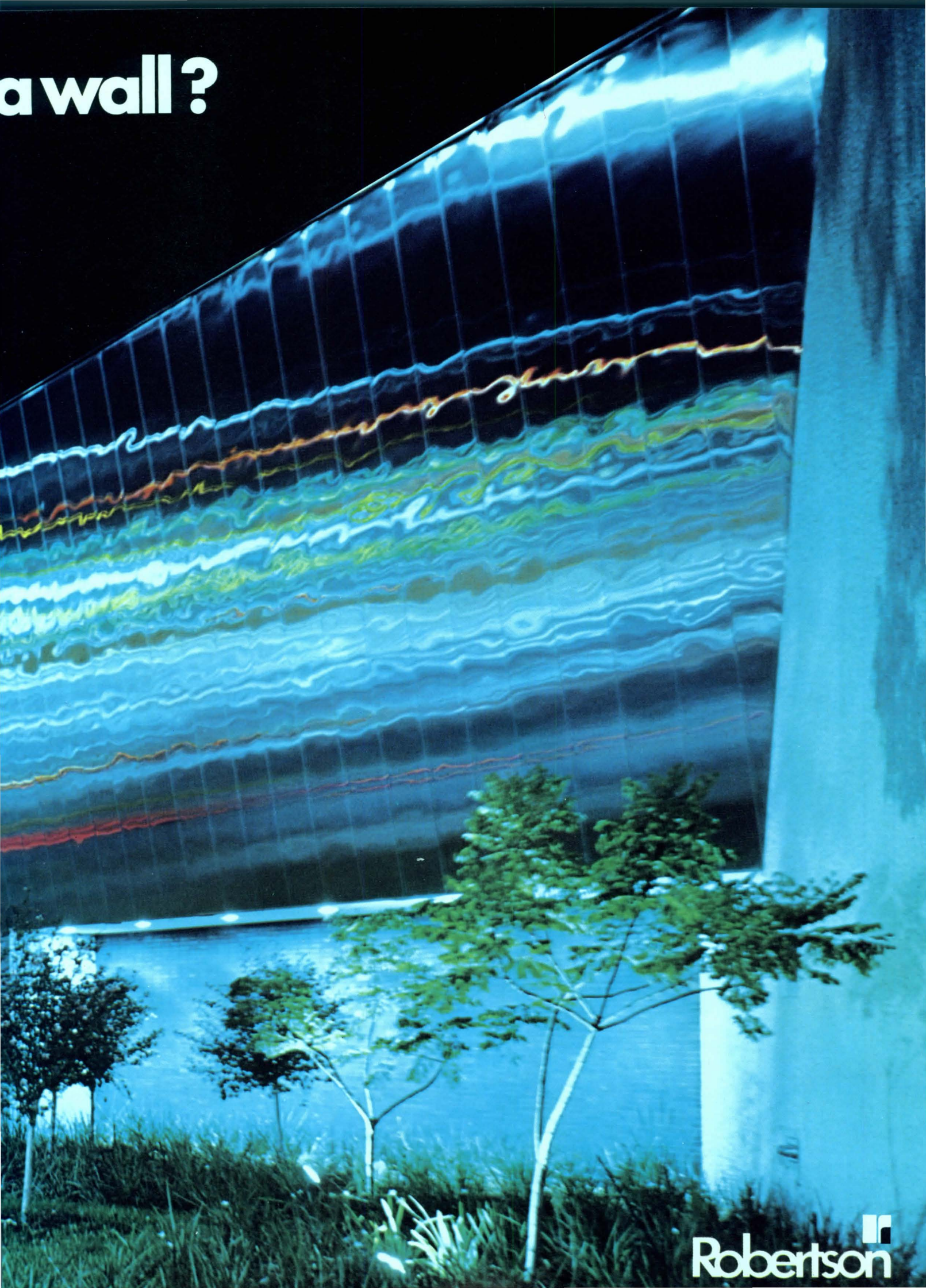
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Robertson

Letters to the editor

While we share Jean Paul Carlhian's concern for the nature and quality of our architectural present, we are appalled by his attitude towards our architectural past as represented by his position on the West Front of the U.S. Capitol. His article, "All is Not Quiet on the West Front" (RECORD, March 1978, pages 101-106), evidences a dated perception and understanding of contemporary national and international preservation practice.

Nowhere in his discussion of the restoration alternative does Mr. Carlhian give an indication of the criteria used to evaluate National Historic Landmarks, of which the U. S. Capitol is one. Rather than ridiculing the paint, stone and lack of historic events, he would have made a contribution by presenting a thorough evaluation of the West Front employing current national and international preservation criteria. Since Mr. Carlhian does not mention such criteria in the article, perhaps he is not aware of their existence. In addition, he omits any reference to the recently completed extensive interior restoration work on the original Senate and Supreme Court Chambers and other early areas of the U. S. Capitol. The Architect of the Capitol has demonstrated his ability to accomplish award-winning restoration projects on the interior of the same historic central portion of the Capitol, and we have faith in his ability to apply professional restoration skills to the exterior, especially the earliest surviving facade.

Having heard Mr. Carlhian speak at a recent National Trust conference, we are aware that as an architect he is most concerned with the role of a project's program in influencing the architectural design solution; however, we note his omission of any direct reference to the current master planning process under way for the entire Capitol complex and its ultimate influence in meeting the needs of Congress for more space by the proposed West Front extension. It should be emphasized that the proposed West Front extension will supply only a minuscule amount of the space required for Capitol needs. Thus, the oldest surviving Capitol facade should not be sacrificed without all needs studied, alternative solutions developed and costs investigated for various approaches. Costs should not be the overriding decision in this matter; we continue to believe that a functional and imaginative solution for Capitol

needs can be found—at the same time saving, restoring and using valuable early elements.

There is no "veil of timidity" spreading over architects—the American Institute of Architects has been the national leader for some years on the issue of preserving and restoring the U.S. Capitol's West Front. We trust it will continue to do so.

America has matured to the point of treating the restoration of the oldest surviving exterior elements of one of our most significant national buildings with as much thought and respect as is being given today to our state, local and other national landmarks. It is time to deal with total Capitol needs intelligently through a master plan, allowing Capitol use to continue while at the same time preserving and protecting its remaining early historic fabric.

*Russell V. Keune, AIA
Vice President, Preservation Services
National Trust for Historic Preservation
Washington, D.C.*

I thank you for publishing Jean Paul Carlhian's article on the West Front of the Capitol. It is the most intelligent, provocative and, in the end, tremendously thrilling piece of architectural journalism I've read in a long time. Carlhian's article left me with a dismal suspicion that the fear and loathing of change in the Capitol is but one offshoot of the more general fear and loathing that has come to greet change of any sort in our culture.

May I, then, suggest that the Congress seek its architects for this commission amongst my own generation, all of us still under 40. I believe that my peers and I have not only requisite talent and vision to tackle the West Front (as Carlhian suggests), but also the *gumption* to design a new facade that would honor the existing fabric of the Capitol and, much more importantly, would symbolize and honor *this* moment in "an age that still lives."

*Richard B. Oliver, Architect
New York City*

Wolf von Eckardt's comment (RECORD Letters, April 1978, pages 4, 56) on the article you published concerning the West Front of the Capitol seems not only unfair in itself, but unseemly when penned by the biographer of Eric Mendelsohn, whose incongruous modernistic additions to the Berliner Tageblatt building he so effusively praised. His caustic analogies with Chandigarh

continued on page 79

Calendar

JUNE

4-9 Building Officials and Code Administrators (BOCA) International 63rd Annual Conference; Marc Plaza Hotel, Milwaukee, Wisconsin. Contact: Joan Parker, BOCA, 1313 E. 60th St., Chicago, Illinois 60637.

11-16 The 16th annual Summer Institute on Historic Preservation, sponsored by Cornell University, in cooperation with the National Trust for Historic Preservation; Ithaca, New York. Contact: Kirk A. Cordell, Program Coordinator, Program in Urban and Regional Studies, Cornell University, 209 N. Sibley, Ithaca, New York. 14853.

11-16 28th annual meeting of the International Design Conference in Aspen, on the theme "Making Connections"; Aspen, Colorado. Contact: Mary Apple, IDCA, P. O. Box 664, Aspen, Colorado 81611, 303/925-7718 or 303/925-8684.

18-21 22nd annual convention of the Construction Specifications Institute; San Antonio, Texas.

20-21 The Engineers Public Affairs Forum; Capital Hilton Hotel, Washington, D.C. Contact: Engineers Public Affairs Forum, 1155 15th St., N.W., Suite 713, Washington, D.C. 20005.

26-30 Air Pollution Control Association (APCA) 71st Annual Meeting & Exhibition; Albert Thomas Convention & Exhibit Center, Houston, Texas. Contact: Public Relations Department, Air Pollution Control Association, P. O. Box 2861, Pittsburgh, Pa. 15230.

JULY

10-14 Seminar on Environmental Journalism, sponsored by Harvard's Graduate School of Design and the MIT School of Architecture and Planning; Harvard University, Cambridge, Mass. Contact: Lisa Underkoffler, Harvard University, George Gund Hall, 48 Quincy St., Cambridge, Mass. 02138.

10-11 Seminar, "Using Proven Design Technologies for Energy-Efficient Building Envelopes, Lighting, HVAC," sponsored by ARCHITECTURAL RECORD; Century Plaza Hotel, Los Angeles. Contact: ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, New York 10020. Phone: 212/997-3088.

22-25 The national conference of the American Society of Interior Designers (ASID), "Professional Directions '78"; The Washington Hilton Hotel, Washington, D.C. Contact: Ola M. Pfeifer, American Society of Interior Designers, 730 Fifth Ave., New York, New York 10019.

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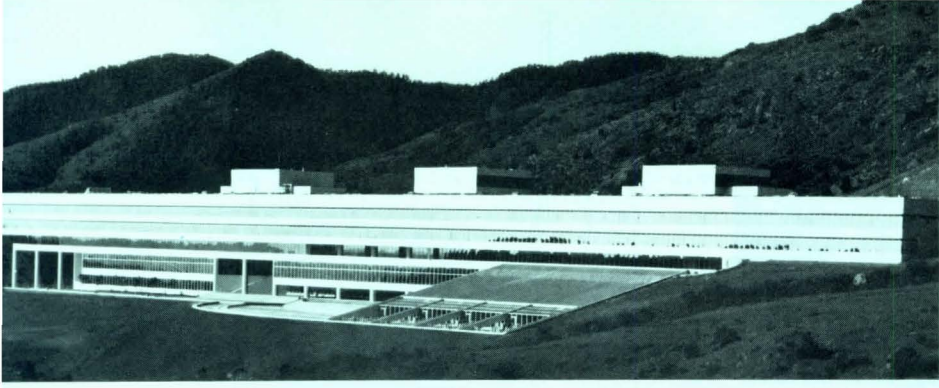
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Design education and the quality of design

As faithful readers of this page will know, I often write about the need for better design and more design emphasis and more promotion of good design within the profession. I'm sometimes aware that's easy for me to say: I don't have to meet competition from other architects or design-build firms, or make my office costs come out right out there in the jungle. So I was delighted to read a speech made by William Caudill, chairman of the board of Caudill Rowlett Scott, honoring long-time MIT dean Lawrence Anderson on the occasion of Dean Anderson being awarded the ACSA/AIA Joint Award for Lasting Achievement in Architectural Education (at the ACSA national convention in Tucson, April 7th).

Bill Caudill's speech is about design and the training of designers. It is an important speech because—as a host of clients and competitors know—CRS is no design boutique. There are something like 350 on staff, it offers an extraordinary range of sophisticated services from feasibility and programming to construction management, practices in (so far) 41 states and 12 foreign countries—and through it all (as a host of clients and competitors know) maintains a standard of design that is very high indeed.

Here—excerpted at length—is what Bill Caudill had to say about design and the training of designers:

"Design is the profession's weakness . . . Yet among all the disciplines involved in the design process, the architect is the only one capable of design. That's our uniqueness. From my viewpoint as a practitioner who has worked with hundreds of young people fresh out of the schools this past decade, *advanced* design doesn't exist. The schools seem to be doing a good job teaching *elementary* design and *intermediate* design. The trouble is we start too late and stop too soon teaching design.

"I asked Lou Kahn once, 'When should a person start design?' I was concerned about the trend of schools forcing students to wait two, three, even four years before starting to design buildings. His reply: 'About the fifth grade.' When we took away freshman design; when we stopped teaching sixth year design; when we put sophomores and seniors in the same studio competing on the same skill level; when we cut down design studio hours; when we let professors take design time to teach 'their thing'—sociological planning, design methodology, programming, urban problems, or whatever it might be—the design emphasis eroded.

"That's my cue to play the part of the mean old practitioner. My underlying question is: What happened to design? I think I know. For one thing there are not enough qualified design teachers! For another there is not enough time spent in design studios designing. Most schools got caught in the same old numbers racket the academicians loved to play during the 1960s—that 2+2+2 game, delaying design until the junior year, with the first professional degree being a Masters in Architecture. Even more deadly than the 2+2+2 game is the 4+3 game. Skills are not emphasized. Design methodology is more related to management. Everyone is trying to find a method to take the place of a good designer. No one has. Some are still trying.

"During the '30s, '40s and '50s, a Masters in Architecture meant something—six years of in-depth, solid design training. Only the best students were selected for advanced study. Now a Masters degree is as common as a Bachelor of Architecture was then. From the design emphasis, it's greatly inferior.

"I'm told that a design resurgence is beginning to occur at some schools around the country. Good news for this practitioner. I'm told that more schools are re-instituting the five-year design curriculum that permits fresh-people to take design their first year. What university then, with a master teacher, will offer sixth-year design for the exceptional, bright, talented people who want to be designer-type architects?

"Jim Foley, past president of the National Architectural Accrediting Board, says that the schools are going back to the undergraduate program with five years of design. He anticipates that most states will return to the four-day design-emphasis exam instead of the two-day test that any good liberal arts student can pass.

"We overreact. We overreacted in the '60s by trying to offer enough electives to produce the Renaissance man. We overreacted to Functionalism. Ended up in Formalism. Now the Modern movement is becoming a nasty word. We vilify great contemporary architects and scorn classic Modern buildings. But I suppose it's much better to overreact than not react at all. Maybe that's our strength.

"Let me outline my challenge to the ACSA. I can't speak for the AIA, I can only speak as one practitioner. Here's my practitioners' "Want List"—seven items to help us design and build functional, beautiful buildings.

"1. Continue to give the profession good manager-type architects. You are doing an excellent job. But hold down the numbers.

"2. Throw in a few more technologist-type architects to put us back on the leading edge. We badly need innovation, and innovation has its roots in technology.

"3. Our greatest "want" is designer-type architects. How nice it would be if you could give us potentially skilled surgeons of the architectural profession—with six years of solid design training—polished by a great teacher.

"4. Kill, if you will, the program which gives a student a professional degree in three years. You are turning out too many. They are smart, but lack skills. We can absorb a few, but very few. Professors love to teach beginning and intermediate design to graduate students. And the university doesn't want to lose easy money, so that program will be hard to eliminate. However, the profession can't handle the annual flood of graduates. During another fast-growing economy like during the '60s, perhaps we can. Right now we want graduates who are at a higher level of professional sophistication. Give us quality, not quantity.

"5. We would like more universities to go back to the program which requires five years of solid design training starting year 1. We are looking for a few top-flight designers.

"6. And give us at least three universities who offer sixth and/or seventh year design for those five-year graduates who have the special talent and inclination to develop even greater design skills.

"7. Help us practitioners—those misled, worn-out, frontline people—to fly out of the intellectual smog into clear skies toward meaningful destinations. We want more great teachers to teach us to fly and to be available to teach us to fly better as we get older and wiser.

I think the profession—practitioners and educators—has been operating on a 10 year learning plateau, seemingly making no advances. But: We continue to learn. I can give you no reasons, but I deeply believe our profession is ready to rise to another plateau. We're going to fly higher and faster."

Now you don't have to agree with all that Bill Caudill said—in fact, you will not be surprised to hear—some of the deans didn't. But coming from the founder and long-time leader of one of the country's biggest and most successful architectural firms, it is an important statement. I wish I'd written it . . . —Walter F. Wagner Jr.



**NO
ONE
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HAS
IT.**

The Supreme Court has struck down an ethical ban on competitive bidding by engineers, ruling that such a ban constitutes an unlawful restraint of trade. The decision, handed down in late April, brings to an end six years of legal resistance by the National Society of Engineers to Justice Department challenges. Details on page 34.

Construction costs increased nationally by 8.5 per cent between March 1977 and March 1978, according to the Dodge Building Cost Services department of McGraw-Hill Information Systems Company. The Pacific Coast and Rocky Mountain States, with a 9.7 per cent increase, were hardest hit, while the New England States registered the least increase at 6.5 per cent. Over the last six months of this period, the national increase was 3.3 per cent.

To lower the cost of lumber, and thus of new housing, the President would increase National Forest sales. In his address to the nation on inflation, President Carter proposed increasing the harvest of National Forest timber from the current 11.5 billion board feet per year to 13.5 billion board feet per year. Details on page 37.

With \$12.3 billion in new contracts, March construction rose 23 per cent above the March 1977 figure, according to the F.W. Dodge Division of the McGraw-Hill Information Systems Company. Commenting on the month's performance, Dodge economist George A. Christie noted that housing rebounded as the weather improved, public works contracting slowed as Round II of the Federal jobs program ran out, and commercial and industrial building came on strong "as everyone hoped it would." Housing contracts were up 15 per cent for the month, while nonresidential building, with "strong gains in stores, offices and factories," increased 18 per cent.

Frank J. Matzke, FAIA, has joined the National Institute of Building Sciences, where, as vice president-technology and programs, he will direct NIBS's technical research and program management. As a private consultant, Mr. Matzke has recently directed the Institute's program to advise and assist the Department of Housing and Urban Renewal in implementing energy conservation standards in new buildings. Earlier he served with the Illinois Capital Development Board, the Public Buildings Service, and New York's State University Construction Fund.

Lawrence B. Anderson, FAIA, was awarded the Joint Award for Excellence in Architectural Education given by the Association of Collegiate Schools of Architecture and the American Institute of Architects. Mr. Anderson is Dean Emeritus of the School of Architecture and Planning, Massachusetts Institute of Technology, where his former students include seven deans of architectural schools, 16 Fellows of the AIA, and five past presidents of ACSA.

Britain's Labor Party has adopted a policy calling for the nationalization of construction. Though no legislation has been drafted, architects, engineers and builders are concerned. Details on page 35.

The American Institute of Architects asks that Federal grants-in-aid for historic preservation be doubled to make use of matching funds now available from the states. (In a separate action, AIA called for more funding to assist and staff the Federal government's Advisory Council on Historic Preservation.) Details on page 37.

The California Council of the American Institute of Architects has named a full-time energy specialist: Charles Eley, AIA, of San Francisco. Mr. Eley, who has practiced as an energy management consultant, will represent CCAIA in State Energy Commission discussions, organize state and chapter energy programs, and work with CCAIA's continuing education program as it relates to energy.

Rice University, in Houston, has named O. Jack Mitchell dean of its School of Architecture. He succeeds David A. Crane, who resigned to enter private practice. Mr. Mitchell has been a member of Rice's architectural faculty since 1966, and organized the school's Urban Design Program. He has also engaged in private practice.

The newly organized Historic House Association represents the interests of private owners of historic houses, as well as of churches, schools, museums and commercial buildings. HHA will also provide members with information on sources of preservation money and techniques. James C. Massey has been named executive director. The organization, which received support from the National Trust for Historic Preservation, has its offices in the National Trust's headquarters at Decatur House, 740-748 Jackson Place, Washington, D.C. 20006.

The University of California offers a three-day Conference on Participatory Design, to take place August 18-20 on the Santa Cruz campus. Panelists will include psychologists, anthropologists, architects and planners. For information: Jeff Oberdorfer, Conference Organizer, University of California Extension, Santa Cruz, California 95064.

Deadline for entries in the Prestressed Concrete Institute's 1978 Awards Program is August 3. "Entries are easy to prepare," says PCI. "Most of the material you need is already in your files." For information: Prestressed Concrete Institute, 20 North Wacker Drive, Chicago, Illinois 60606.

Supreme Court, ruling against NSPE, allows engineers to bid on jobs

The Supreme Court in late April handed down a landmark decision for building designers—one that opens the possibility of a considerable alteration in the way architects and engineers practice.

In a case brought by the National Society of Professional Engineers against the Justice Department, the Court said that organized resistance to bidding on design services constitutes an unlawful restraint of trade. The Justice Department had challenged a ban on competitive bidding in NSPE's code of ethics.

The Court, by a 8-0 margin, said the code provision was a violation of the Sherman Antitrust Act and thus outlawed. Under Justice Department pressure, the American Institute of Architects dropped a similar ethics code ban six years ago. But the Institute and individual architects have followed developments in the NSPE case, and some contributed to a \$600,000 legal fund.

"We hoped the Supreme Court would set forth clear antitrust guidelines for voluntary professional associations which adopt standards that are higher than the law demands for the public health, safety and welfare," said David Meeker, Jr., executive vice president of AIA.

Mr. Meeker also said that the Institute continues to favor the selection of professionals on traditional grounds of qualification and reputation rather than price because "competitive bidding is not in the best interest of the client."

The High Court's decision did not say that designers must bid or that clients must seek prices before selection. It only said that peer pressure, enforced through a society's ethical code, could not be used to discourage bidding.

"It's a narrow legal decision," says NSPE general counsel Milton F. Luch, "but it will be read broadly."

Mr. Luch's fears may be justified. J. Hugh Nichols, a budget and fiscal planning executive in Maryland state government and the author of a price-as-a-factor law in that state, says other jurisdictions will join him in asking engineers to offer a fee figure when making a proposal.

"It's the buyers who will suffer," says architect Walter A. Meisen, Washington vice president of Daniel, Mann, Johnson & Mendenhall. He, along with many other designers, says pricing engineering services will lead to shoddy work.

The Court acknowledged that work quality could suffer if selection is based on price. "It may be, as petitioner NSPE argues, that competition tends to force price down and that an inexpensive item may be inferior to one that is costly," said Justice John Paul Stevens, speaking for the Court.

And Justice Stevens went on to say that "there is some risk that

competition will cause some suppliers to market a defective product."

But the threat of such a defective product, the Justice said, would not justify the Supreme Court's conferring "monopoly privileges."

This logic from the Court demolished NSPE's central argument—that a restraint was appropriate because it protected the health and safety of the public. This thesis continued: the traditional method of setting fees for engineering and architectural services is a reasonable method of forestalling the public harm which might be produced by unrestrained competitive bidding.

NSPE offered "ample documentation," the Court said, for its argument that the public interest may be harmed, but it is not the role of the Court to protect the public if doing so constitutes an unlawful violation of statutes.

The Court broadly hinted that NSPE—and other involved professional groups—does have an option. If it dislikes the Court's ruling, it can go to Congress and ask it to change the law so that the restraint contained in the code of ethics would be permitted.

Few in Washington feel such a legislative assault on the 88-year-old Sherman Act would be successful.

A question now is whether the Court's unanimous decision will jeopardize any other hard-won victories by the design professions. For instance, the attorneys general in the states of Missouri, Ohio, Arizona, Kansas and Maine are considering challenges to bidding bans by local affiliates of the various societies.

Moreover, the Brooks Law, which sets the "most-qualified" test for selection by Federal agencies, has already drawn fire from the General Accounting Office, the Justice Department and others. It, too, may be attacked and the Supreme Court's decision used as ammunition.

One fear of some designers is apparently groundless—that is the concern about treble damage suits that sometimes accompany antitrust findings. In this case, the government itself sought no damages. And if other parties should, they would have to show monetary losses traceable directly to the code of ethics.

That leaves the most potentially vexing question: will other buyers be swayed by the Supreme Court decision? Billy T. Sumner, a principal in the Nashville engineering firm of Barge, Waggoner, Sumner & Cannon, doubts that most buyers, such as those in local government procurement offices, will even hear, or care to hear, about the Court's ruling.

Burt L. Talcott, executive vice president of the American Consulting Engineers Council, has a similar view and states it even more strongly: "It is not anticipated that the NSPE decision will cause significant changes in engi-

neering practices or in the procurement of engineering services."

Mr. Sumner, however, vigorously supported the NSPE decision to fight the Justice Department and said the issue was so basic that contesting it was essential.

AIA Government Affairs Director Arnold J. Prima, Jr., claims a new competitive environment has taken hold in the wake of the decision. "It's a buyers-beware world out there now," he says.

In addition to concern that price competition will force designers to cut corners in order to meet price competition, there is a fear that some A-Es will engage in "defensive engineering"—overdesigning at the risk of higher construction costs—because it can be done more quickly.

Moreover, the A-Es point out that the cost of design services is seldom more than 5 per cent of the construction costs. But careful design work can considerably reduce construction costs.—William Hickman, *World News, Washington*.

Brookings economist calls LPW counterproductive

The government set out to stimulate the construction economy to the tune of \$6 billion two years ago, and most Federal planners say the effort was tremendously successful.

But there is another view. It is held by an economics professor who claims that the Local Public Works Program, credited with the Federal success, may actually have caused the postponement of as much as \$22 billion in local construction spending and resulted in a \$30-billion reduction in Gross National Product.

The economist, Edward M. Gramlich, writing in *The Brookings Papers on Economic Activity*, says local governments began to withhold their own discretionary construction spending when Congress began to discuss the LPW effort in early 1976.

They did so because the program under debate held the promise of 100 per cent Federal grants for local construction efforts. And because the debate was protracted and involved a time-consuming veto override, local government construction was at a standstill for most of a year, Mr. Gramlich contends.

The government did finally approve, first, a \$2-billion program, and later added \$4 billion more—all of it for 100 per cent grants to pay for local fire houses, sewer lines, highways and other local programs. The purpose was to stimulate construction employment in areas where the jobless rate is highest.

Mr. Gramlich ironically observes that the Federal government, which registered a \$49.6-billion budget deficit in fiscal 1977, supplied money to local governments that had a com-

bined budget surplus of \$29.2 billion during the same period.

He thinks a sizable percentage of the local government surplus can be attributed to the deferral of construction spending while they awaited Congressional action on LPW and while the allocation formula was being developed by the Commerce Department's Economic Development Administration.

By Congressional directive, only those projects which could be started within 90 days were eligible for the grants. Mr. Gramlich thinks these are the same projects the local governments would have undertaken anyway, and perhaps more quickly than they did with Federal funding. So instead of stimulating the construction economy, the result was an economy-dampening delay in construction starts.

Robert T. Hall, EDA's administrator, does not argue with Mr. Gramlich's basic conclusions, and suggests that the "perverse anticipatory effects" of the program "might be quite common for various types of government policy."

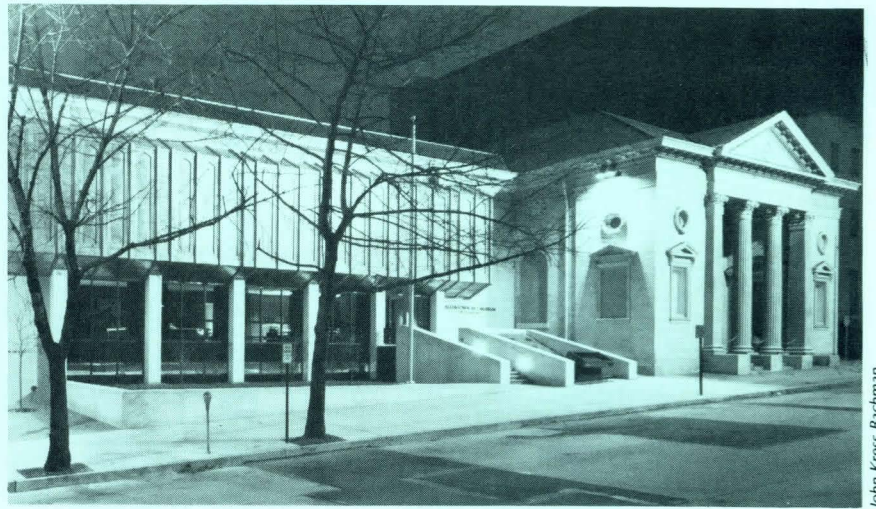
Arthur M. Okun, an editor of *The Brookings Papers* and former chairman of the Council of Economic Advisors, disagreed in part. He doubts that the public works deferrals caused by the program account for much of the local government budget surplus. At the outside, Mr. Okun believes, the delay could not have involved more than \$5 billion in construction.—William Hickman, *World News, Washington*.

Bad cess to preservation, cries Irish architect

Dublin should forget the idea of trying to preserve its Georgian buildings, the president of the Royal Institute of Architects of Ireland, Oscar Richardson, told Institute members in his recent inaugural speech. Instead, the city should be redeveloped with new buildings. Preservation, he said, has become a pantomime.

"There may be a dignity in death for people. There is little dignity in the death of a building. But how much less dignity is there in that travesty that would dress up our children, our buildings, in our grandmother's clothes and pretend that she lives, preserved in the formaldehyde of our timidity." Architects should be the midwives of the rebirth of Dublin city, he said.

"How much of civilization is there in that pantomime of Georgian housing that has resulted from a misunderstanding of the ideals of those dedicated persons who have nobly advanced the true cause of preservation and conservation in Ireland. I protest the negative view of the past that is concerned with conservation to the exclusion of creativity," Mr. Richardson concluded.—Aidan O'Sullivan, *World News, Dublin*.



John Kress Bachman

Room from Wright Prairie House goes on permanent exhibition at Allentown, Pennsylvania, Art Museum

In a happy meeting of circumstances, architect Edgar Tafel, a former Taliesin Fellow, was first instrumental in saving the rooms and appurtenances of an imperiled Prairie House by Frank Lloyd Wright and then was offered the opportunity of designing a museum to exhibit it.

The Allentown (Pennsylvania) Art Museum had, since the 1950s when it acquired 40 paintings from the Kress Collection, occupied the former First Presbyterian Church in Allentown, a Gothic Revival building that dates

from 1905. Subsequent acquisitions and an aggressive policy of borrowing for temporary exhibitions necessitated expanding the museum's display space.

Meanwhile, out in Wayzata, Minnesota, demolition threatened Northome, a Prairie House that Wright designed for Mr. and Mrs. Francis Little in 1913. Mr. Tafel and Don Loveness, a former client of Wright's, brought the matter to the attention of New York's Metropolitan Museum of Art, which bought the

house in 1972. The Met sold some rooms but kept the living room for itself and will install it in the museum's American Wing. The library went to Allentown.

The Allentown museum's three-story extension, stretching out from the flank of the church along a downtown street, places the Kress Gallery on its top floor in a space expressed by an overhanging projection.

The Wright room, installed on the first floor, has two ranks of tall, leaded-glass windows, one of which

(see above right) overlooks a fountain on the outdoor sculpture terrace, the other of which overlooks an interior sculpture garden.

The first floor also provides gallery space for temporary exhibits, while the lower floor, partly sunk below grade, houses classrooms and studios for an art school affiliated with the museum. The church building contains more gallery space, a library and museum offices, and, on its lower floor, an auditorium and workrooms.

British designers and builders oppose Labor Party's proposal to nationalize the construction industry

British architects are worried that plans of the ruling Labor Party to nationalize the country's construction industry will seriously dilute design standards if they become law.

"The kind of buildings that could emerge from a nationalized industry wouldn't be the kind that people would want," in the opinion of Patrick Harrison, secretary of the Royal Institute of British Architects. While construction has long been on the Labor Party's shopping list of industries ticketed for eventual public ownership, endorsement of the plan at the party's annual conference last fall made it a prime target.

Some 60 per cent of all building work in Britain is publicly financed, and a "good portion" of this is designed by private architectural firms. At the same time, nearly half of all architects who work in Britain are in some form of public employment.

The main thrust of the plan threatens the very life of major civil engineering contractors and materials suppliers with proposals to absorb them into a National Construction Corporation and a Building Materials Corporation.

Smaller builders would also be hit because the Labor Party wants to expand the scope of local government public works departments (known as Direct Labor Organizations, or DLOs) to permit them to compete for both public and private sector work throughout the country.

They are presently restricted to public works within their own areas.

While the bill makes no reference to bringing architectural firms themselves into public ownership, certain proposals in the plan will definitely affect their work, architects feel. Their main points of concern include:

- rationalizing building production (i.e., prefabrication, as well as the standardization of prefab units) to achieve greater building efficiency;
- centralizing the award and control of all public works contracts under a single agency, called the Public Procurement Agency;
- taking educational responsibilities out of the hands of various professional institutions (like RIBA) and centralizing them in a Construction Industry Training Board;
- encouraging the design-construct "package" contracts.

Some British architects worry that calls to standardize the design of structures could lead to bleak Eastern European-type architecture. "I see the standardization as having a bad effect on the quality of design," says RIBA Secretary Harrison. "There are strong signs that the British public wants greater variety, but these proposals lead to uniformity."

Mr. Harrison and others also feel that it is important to retain separate educational streams for the professions. "We would strongly resist efforts to lump everyone in to-

gether," he says. "Independence in education is directly related to the quality of design we can deliver."

Other architects fear that the bureaucracy generated by such a centralized system might stifle the profession. Comments a partner of a leading London-based firm: "We already deal with a Property Services Agency controlling all central government construction, which has a very substantial bureaucracy. Anything bigger is counterproductive."

Although common in many countries, the design-construct contract draws very low marks from UK architects. "It hasn't achieved the integration desired and it has been responsible for some of the worst design since the war," summed up Mr. Harrison.

Just what chance the Labor Party has of ever turning its nationalization plan into law is uncertain. So far, it is only party policy and has not even been drawn up as a formal bill. With the present Labor Government holding power only with the backing of the splinter Liberal Party, which is dead-set against any further nationalization, no take-over could occur until well after the next election, which must come before October 1979.

Many industry leaders feel there is little cause for concern. The proposal is "a non-issue," in the words of Peter Dunican, chairman of the Ove Arup Partnership, the A-E firm, and chairman of the National

Building Agency, a government-backed body that advises architects, engineers and builders on management and technical problems. The policy "will never become law because there is no support for it," says Mr. Dunican.

But other construction industry interests, mainly contractors and builders, take the threat seriously. They have banded together under the title CABIN—Campaign Against Building Industry Nationalization—to fight the plan actively. CABIN's most recent effort was to commission a public opinion poll on the subject. The results, released at the end of April, indicate that Mr. Dunican may be right. The poll showed that 70 per cent of the public and 85 per cent of those in the industry oppose the nationalization plan.

Moreover, many political sources note that, unlike coal mining or the power generating industry, the construction industry has historically attracted no more than marginal political interest.

Plans to nationalize the construction industry could easily be dropped if opposition got strong enough, builders feel. Others, however, fear nationalization could get through Parliament for precisely the same reason. "It could end up as a concession to the left wing of the Labor Party, given away because no one really cared about it," says one architect.—Ty Marshall, *World News, London*.



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Building Stone Institute gives its 1978 Tucker Award to Wisconsin architectural firm

The Building Stone Institute, a national association of quarriers, fabricators, dealers, installers and contractors, last year established the Tucker Awards to honor distinction in the design and construction of natural stone buildings. The award is presented in two categories—one category for buildings more than 25 years old, the other for buildings that have been

completed within the last five years.

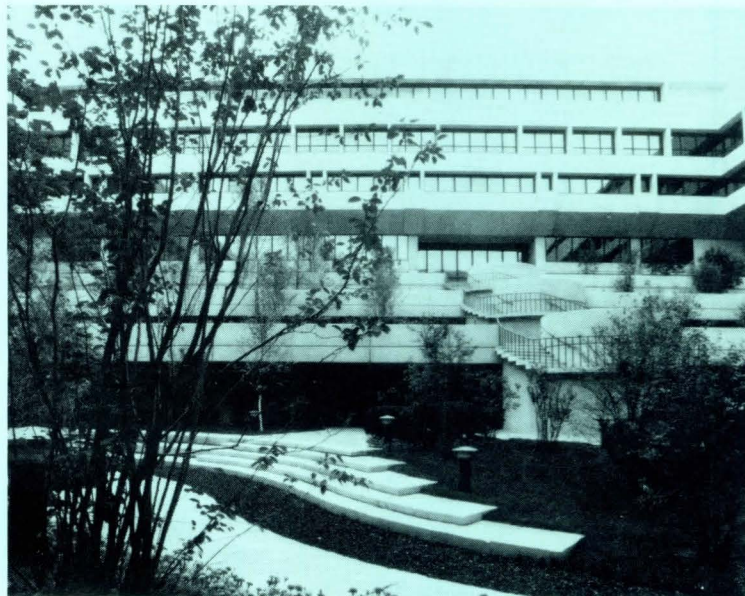
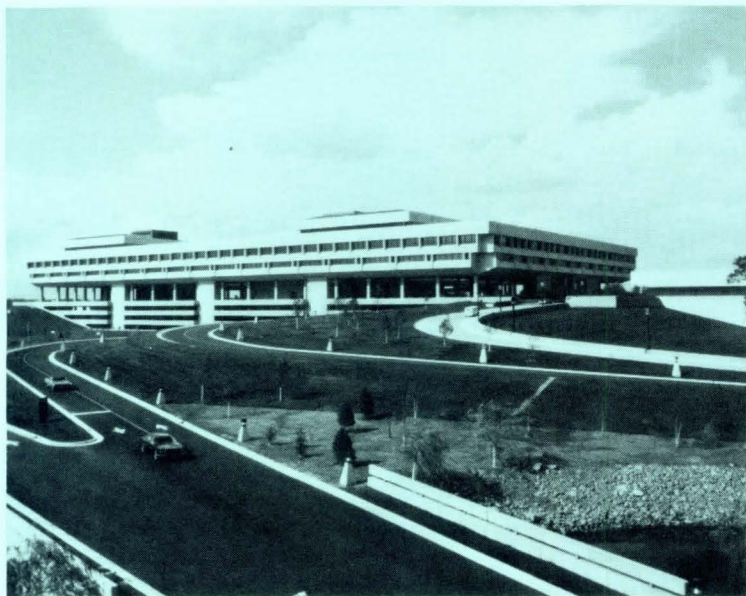
The 1978 Tucker Award for current buildings went to Flad & Associates, Architects, of Madison, Wisconsin, for the design of Sentry Insurance Headquarters at Stevens Point, Wisconsin. The building, faced with Winona travertine, was commended for its "warm, symbolic community character." Stone was

supplied and fabricated in joint venture by the Babcock Company and Biesanz Stone Co., and installed by CST Construction Company.

Awards for buildings completed at least 25 years ago went to the marble U.S. Supreme Court Building (Cass Gilbert, Cass Gilbert, Jr., and John R. Rockart, architects) and to the limestone Chicago Tribune Tower

(John Mead Howells and Raymond M. Hood, architects).

Members of the jury were Samuel Brody, FAIA, of the New York City firm Davis, Brody & Associates; John Johansen, FAIA, of the New Canaan, Connecticut, firm Johansen & Bhavnani; and Francoise Bollak, of the New York City firm Ulrich Franzen & Associates.



Massachusetts gets approval for coastal management plan

Massachusetts has become the first East Coast state to win Federal approval of its coastal zone management program, Governor Michael Dukakis announced late in April.

The plan provides \$1.2 million in funds from the U. S. Department of Commerce for local distribution over the first year. About \$340,000 will go directly to coastal communities for waterfront renewal studies, port and harbor development, planning and dredging evaluation. A major part of the program will plan for the on-shore impact of oil and gas exploration and for improvement of the region's fishing industry.

Approval followed a court denial of a temporary injunction for delay sought by the American Petroleum Institute and seven oil companies. Replying to the oil industry's charge that the program might delay exploration, Gov. Dukakis said, "This is not a plan to stop things." —Paul Giguere, *World News, Boston*.

To cut housing costs, Carter would cut public timber

President Carter thinks there might be "some relief" from the trend toward ever-increasing housing prices if the Federal government sells more timber from the National Forests.

In his address to the nation on inflation and how to control it, Mr. Carter proposed increasing the Na-

tional Forests' sale, probably to 13.5 billion board feet per year, as against the current rate of 11.5 billion board feet per year. Doing so, however, will mean increasing the budget for Federal foresters to prepare and reforest Federal woodlands.

In his own proposed Federal budget, submitted to Congress in January, the President suggested a reduction in the budget for Forest Service personnel. Congressional appropriations committees are expected to take events into their own hands and increase the budget for quicker harvesting.

Mr. Carter said that lumber accounts for "one-quarter" of the total costs of a new house. His thesis is that more Federal timber on the market will help control the increase in lumber prices.

The National Forest Products Association agrees with the move to increase National Forest timber sales, but says that President Carter is wrong on his figures. Actually, the Association says, wood building products account for 30 per cent of the construction costs of a house and 15 per cent of its selling price.

Gilbert L. Oswald, president of NFPA, says the increased harvesting should not be undertaken on a one-shot basis. "Industry must have confidence that future timber supplies will be available at a reasonably high level. Otherwise it will not make the investments required to expand and modernize to meet tomorrow's housing demands." —William Hickman, *World News, Washington*.

AIA pleads for more money for historic preservation

The American Institute of Architects wants the Federal government to more than double the amount it spends on historic preservation grants-in-aid to states.

Both the Congress and the Administration have been unnecessarily niggardly in spending for the preservation programs, the Institute claims. Gordon D. Orr, Jr., chairman of the AIA Committee on Historic Resources, recently told a House appropriations subcommittee that \$100 million should be appropriated for the Interior Department's recently organized Heritage Conservation and Recreation Service.

Only \$45 million were appropriated for the current fiscal year, even though another Congressional action authorized the spending of \$100 million. According to Mr. Orr, states have said that they are capable of matching up to \$430 million if the Federal government came up with its share.

"An appropriation of less than half the authorization appears even more parsimonious when the \$100-million authorization is exceeded three times over by state matching-fund capability," Mr. Orr said.

Mr. Orr says he is "simply at a loss as to why the executive branch historically chooses to exercise rigid budget restraint in this particular program area."

The grants-in-aid program for historic preservation serves four key

national policy goals, he said: job creation, energy conservation, neighborhood conservation and urban revitalization. —William Hickman, *World News, Washington*.

NIBS gets down to work with three major studies

Three studies of building technology and regulations are being launched by the National Institute of Building Sciences to lay the groundwork "for a more rational system of building regulations that could lead to savings easily running into the billions of dollars," according to NIBS president Gene C. Brewer.

The studies will cover the following areas:

- the collection, assembly, storage and dissemination of technical data for the use of the building community and regulatory agencies;
- existing methods for developing, promulgating and maintaining the performance criteria, standards and other technical provisions that are used as the basis for housing and building codes;
- the evaluation and prequalification of both existing and new technology for the benefit of producers, builders and users.

NIBS is a Congressionally chartered independent group charged with bringing order to building criteria, standards, codes and other regulations affecting the housing and building industries. —William Hickman, *World News, Washington*.

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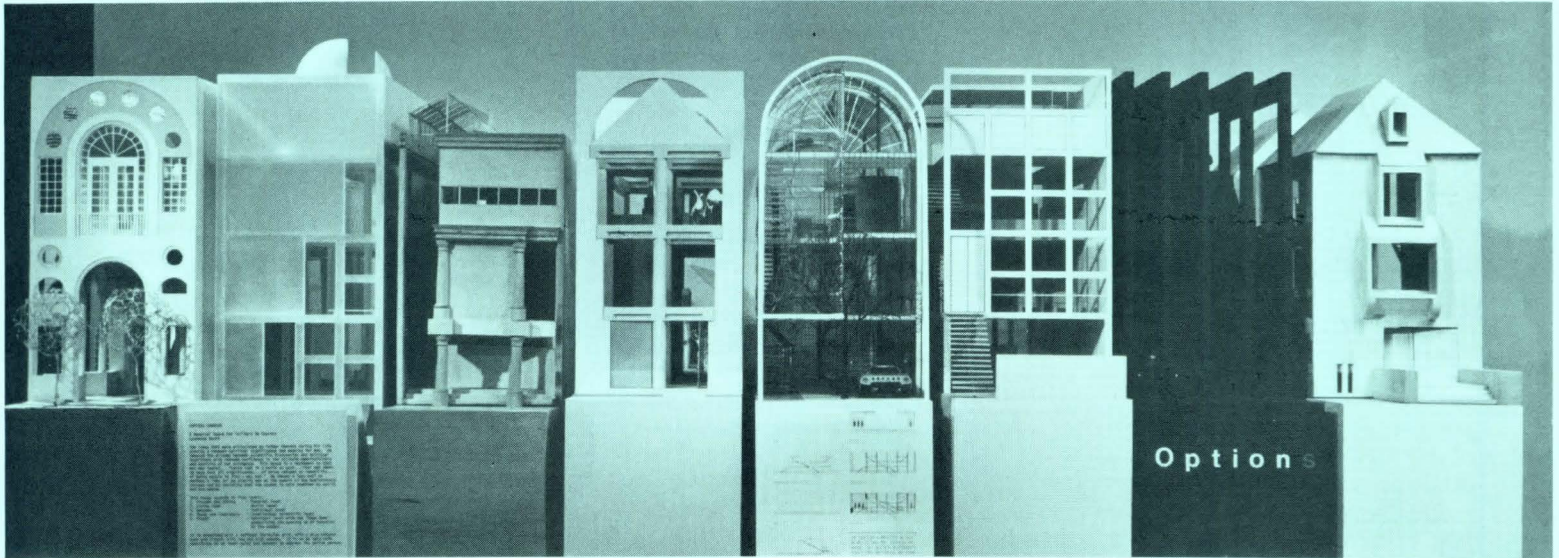
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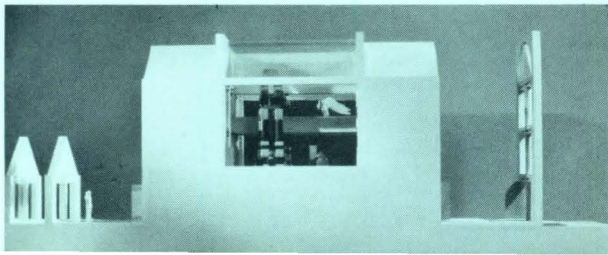
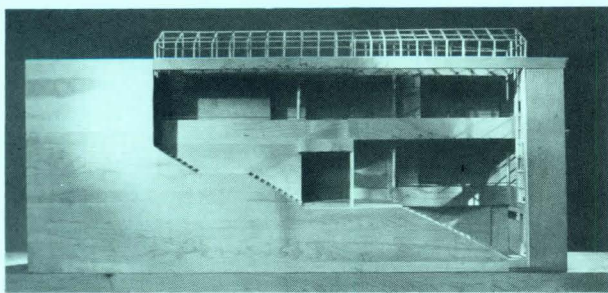
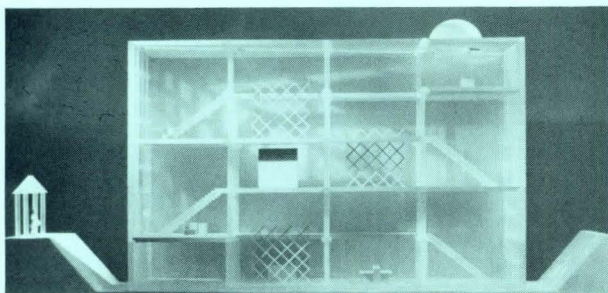
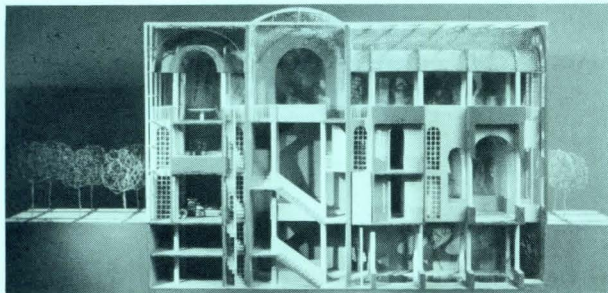
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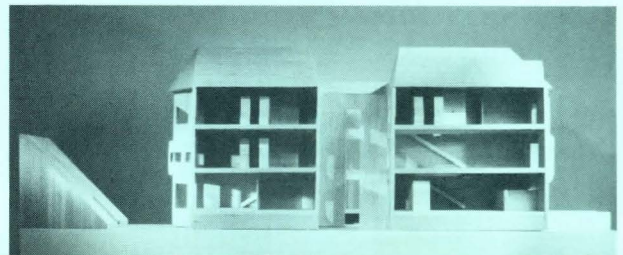
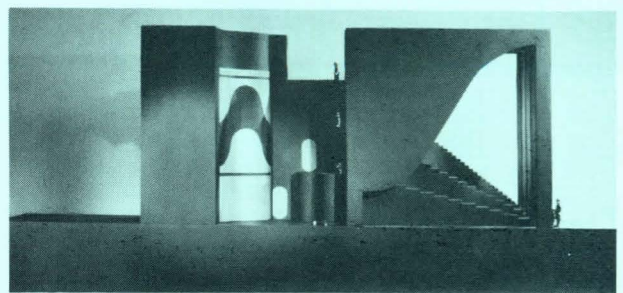
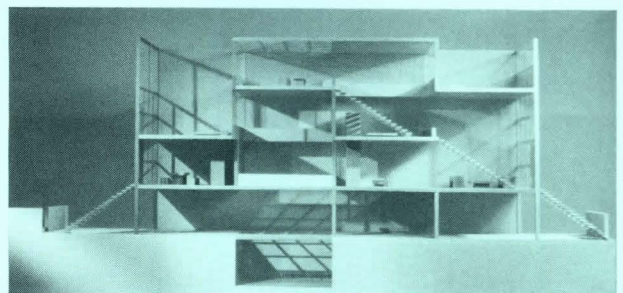
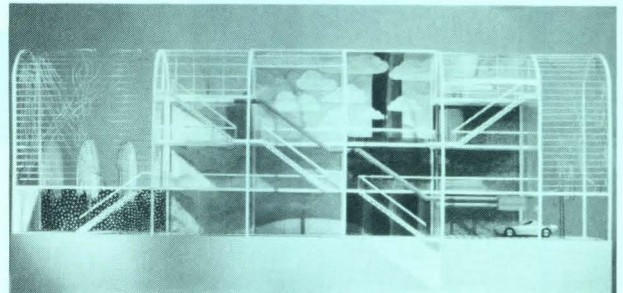
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The Chicago Seven, plus one, design an "exquisite corpse" to create a row of post-modernist townhouses



Reading from left to right, the townhouses shown here were designed by architects Thomas H. Beeby, Lawrence Booth, Stuart E. Cohen, James Ingo Freed, Helmut Jahn, James L. Nagle, Stanley Tigerman and Ben Weese—the so-called Chicago Seven, plus one (Helmut Jahn). The exhibition, called by one Chicago art critic "the group's long-awaited personal manifesto on the post-modernist movement," was viewed earlier this year at the Walter Kelly Gallery in Chicago. The participants in effect played the familiar parlor game in which each player successively draws part of a picture on a paper folded to conceal the adjacent parts of the drawing; the exhibition was titled *Le Cadavre Exquis* ("the exquisite corpse") after a sophisticated form of the game played by the Surrealists in Paris in the '20s. The only rules of the game in this case were that the buildings be typical Chicago townhouses—40 ft high on a 20-by-80-ft lot, with a side staircase—and that the architects work in mutual ignorance of each others' designs. The looked-for outcome, in addition to exhibiting the designers' individual architectural imaginations, would demonstrate the harmonious variety of a cityscape allowed to develop through minimally controlled "accident."



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Two architectural firms take top honors in the seventh annual Plywood Design Awards program

their jointly sponsored annual Plywood Design Awards program, the American Plywood Association and *Professional Builder* magazine gave two First Awards this year, each with a \$1,000 prize. In the commercial/industrial category, an award went to architects Taylor and Collum, Inc., of Atlanta for the Shenandoah Solar Community Center in the new town of Shenandoah, Georgia (1). The jury said of the building, whose

folded plate roof supports an array of solar energy collectors, "An excellent integration of structural and energy considerations through the use of plywood." Backen, Arrigoni & Ross, Inc., Architects, AIA, of San Francisco took a first award in the residential single-family category for a house in Orinda, California (2). Said the jury, "The sense of privacy from the street and the [house's] openness . . . would make this a

very pleasant place to live." Citations of merit in the residential/single family category went to (3) William U. Donald of Wittenberg, Delony and Davidson, Inc., Little Rock, for his own house; (4) Roland/Miller/Associates, Santa Rosa, California, for the Hall residence in Napa, California; (5) Paul Marti, Oakland, Missouri, for the Andrews residence in Chesterfield, Missouri; and (6) Steven H. Packwood, West Palm Beach,

Florida, for a house in Stuart, Florida. In the commercial/institutional category, citations went to (7) Walz and MacLeod, Architects, AIA, of San Francisco, for the offices of landscape architects Royston, Hanamoto, Beck and Abey, Mill Valley, California; (8) Durham Anderson Freed/HDR, Seattle, for the Miller Science Learning Center, Seattle Pacific University; and (9) Alan Hansen of Swaney Kerns Architects, Ltd., Washington,

D.C., for the Chairs and Company, Inc., store in Washington. The only vacation house to receive a citation of merit was a house in Stillwater, New Jersey (10), designed by architect Timothy Wood of New York. No award was made in the residential/multifamily category. Jurors were architects John D. Bloodgood, Des Moines; Victor Christ-Janer, New Canaan, Connecticut; and Sherwood Stockwell, San Francisco.



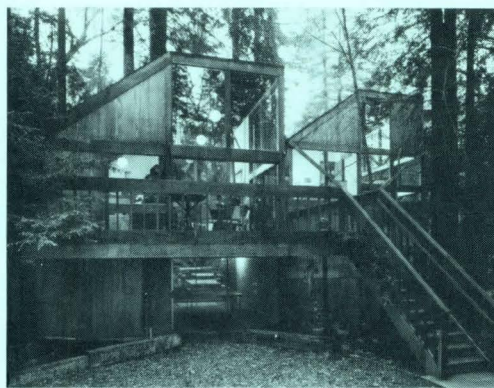
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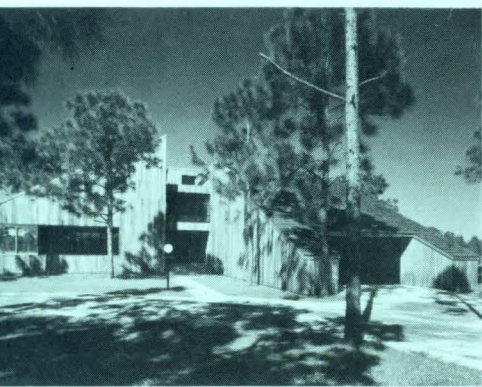
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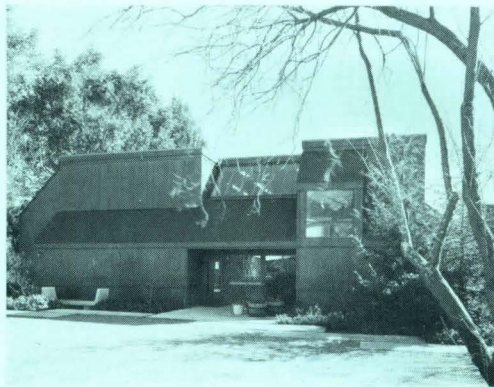
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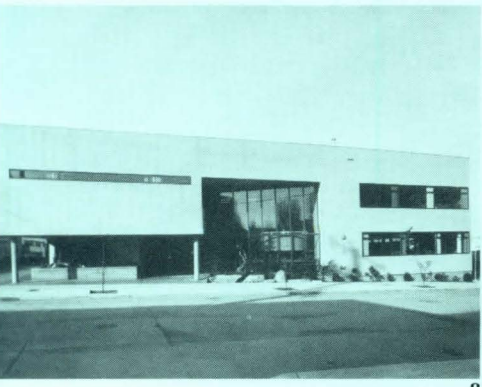
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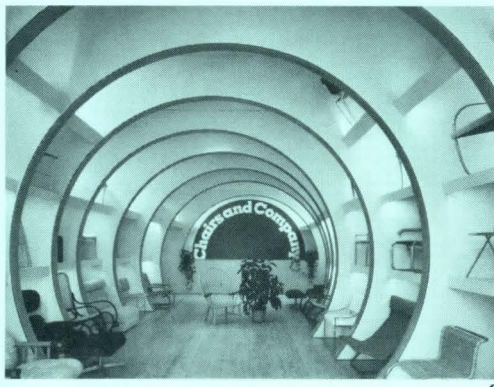
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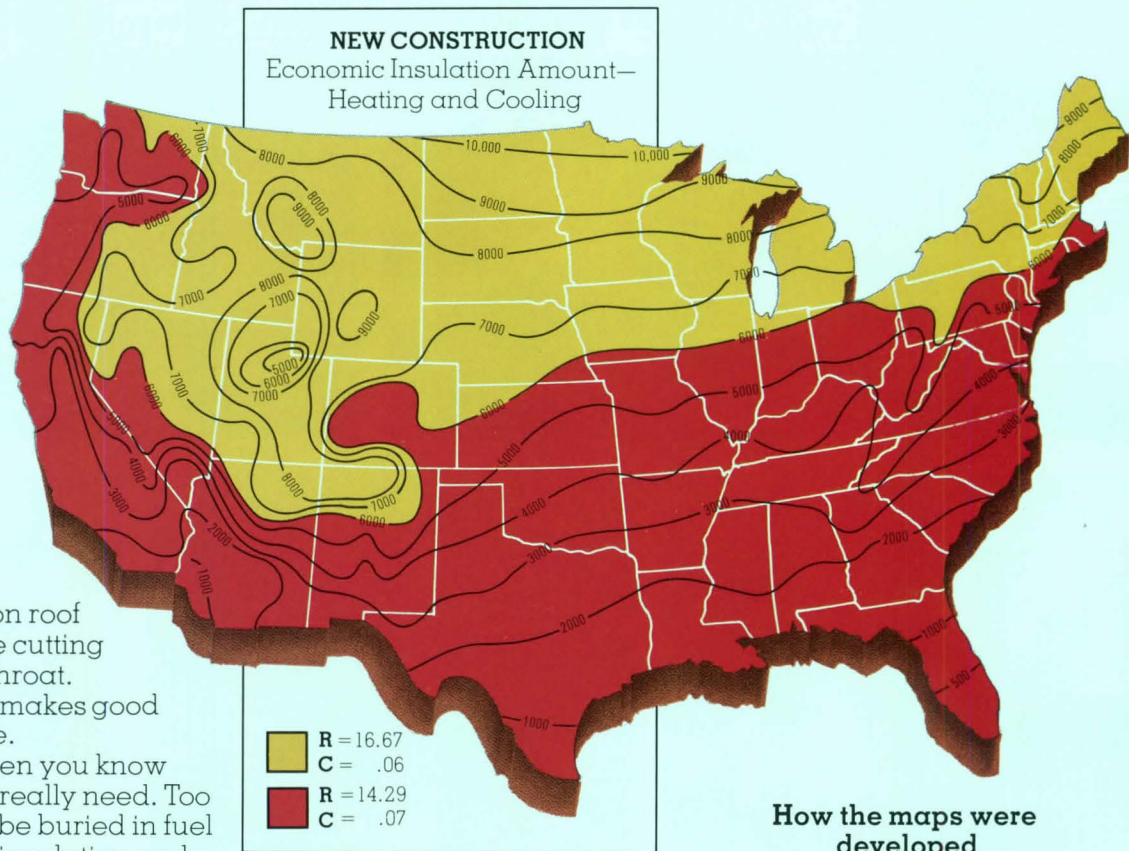


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How saving money on roof insulation is a quick way to go broke



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How to avoid going broke

Take a hard look at these two "Economic Insulation" maps. Using 7,000 degree-days, 500 cooling hours and 80°F temp. difference. The map for a new roof recommends an "R" of 16.67 ("C" of .06). Translated into energy costs a year, that's only \$25,000 to heat and cool this building. A savings of \$104,700 the first year and a possible reduction in equipment cost of \$1,500,000.

How the maps were developed

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Consider expanded services in light of expanded liability

Professional liability by definition means the liability imposed on professionals. Despite the skepticism of many architects, the law accords important legal protections to professionals to hamper the imposition of liability: the need for negligence to be proven, the requirement of expert testimony to establish the professional standard of care, the refusal to impose implied warranties on the rendering of professional services, among others. However, similar protections may not be available to a professional providing services in other than the traditional forms of practice upon which these defenses are based. With architects now considering many different business arrangements for utilizing their skills, the potentially serious liability risks associated with non-traditional project relationships can not be ignored. Proper judgments must be made about contract provisions, availability of insurance, and adequate fees to reflect the additional risks involved.

by Arthur T. Kornblut, Esq.

The legal principles applied to professional services, generally speaking, encompass a client/professional relationship in which the professional, for a fee, renders independent services to the client. The normal arrangement in which an owner retains an architect to design a project and then to serve as the owner's agent for administration of the construction contract finds substantial favorable acceptance by the law. Widespread perceptions of ever-expanding professional accountability are often refuted by court decisions reaffirming long-standing legal concepts limiting an architect's exposure to liability.

The court: traditional services do not imply warranties of results

As recently as February, 1978, the highest court in Minnesota (*City of Moundsview v. Waljarvi*) restated the oft-quoted rule that an architect only "implies that he possesses skill and ability, including taste, sufficient to enable him to perform the required services at least ordinarily and reasonably well; and that he will exercise and apply in the given case his skill and ability, his judgment and taste, reasonably and without neglect. But the undertaking does not imply or warrant a satisfactory result." The court then went further and explained in concise language the reasons why the law does not, in the absence of special circumstances or express contract terms, impose a warranty of satisfactory results on architectural services: "Architects, doctors, engineers, attorneys, and others deal in somewhat inexact sciences and are continually called upon to exercise their skilled

judgment in order to anticipate and provide for random factors which are incapable of precise measurement. The indeterminate nature of these factors makes it impossible for professional service people to gauge them with complete accuracy in every instance. . . . Because of the inescapable possibility of error which inheres in these services, the law has traditionally required not perfect results, but rather the exercise of that skill and judgment which can be reasonably expected from similarly situated professionals."

The court also rejected the plaintiff's contentions that strict liability (liability without fault) should be imposed on architects or that liability should result simply from a threshold finding that a building was somehow unfit for its intended purpose. The court noted, ". . . the keenest engineering minds can err in their most searching assessment of the natural factors which determine whether structural components will adequately serve their intended purpose. Until the random element is eliminated in the application of architectural sciences, we think it fairer that the purchaser of the architect's services bear the risk of such unforeseen difficulties."

When architects depart from traditional roles, certain legal advantages cease

As if to underscore the importance of the professional relationship normally existing between architect and client—and its nexus to the rejection of the doctrine of implied warranty which would impose liability simply for a defective condition in a building—the court attached a footnote to the foregoing statement. Referring to an earlier case in which damages were awarded for breach of implied warranty in the construction of a grain storage building, the court said, "The contract in question, however, was treated as a construction contract and not an architectural contract. This distinction for

warranty purposes between 'professional' services and general contracting services is well established. . . ."

When architects depart from their traditional roles and project relationships, the law does not seem willing to let the legal advantages given to professionals go with them.

In a recent case involving the cost of a sprinkler system pump under a design-build contract, a Tennessee Appellate Court contrasted that method of project delivery with the traditional approach. The court noted that the problem (the omission of the pump) was not the fault of anyone in particular but was due to this method of design and construction which inherently has a strong probability of details being overlooked. In ruling that the design-build contractor must bear the cost of the pump, the court concluded that a fixed price contract for design and construction "undoubtedly included some provision for such unforeseen expenses and losses." Thus, the risk of economic loss under a design-build contract in Tennessee is clearly different from that in a traditional approach in which the client must "bear the risk of such unforeseen difficulties," as noted in the Minnesota case above. At the least, the cost of unforeseen difficulties must be factored into a design-build contract.

A recent court definition of turnkey carries risks for design defects

Similarly, in another fairly recent case from a Federal trial court in Colorado, the term "turnkey" as used in the construction industry was defined. The court concluded that "'turnkey' imposes upon the contractor the responsibilities for design and the assumption of risks of defects and deficiencies in the design." While the courts seem quite willing to accord traditional legal protections to architects serving as architects, there is, conversely, no hesitation to look beyond the professional appellation to broaden the sphere of liability when non-traditional project arrangements are involved. For architects and other project participants, this broadened liability becomes an acute business problem because no or, at best, very limited liability insurance is available to protect against it. As with the law, the insurance industry quickly looks beyond the labels borne by the insureds to the essence of their relationship to projects and clients and the risks inherent in those relationships. There is little doubt that architects who engage in non-traditional forms of practice should anticipate uncertain treatment by the courts.

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

"Legal Perspectives" is published with the understanding that the publisher is not rendering legal service. If legal advice is required, the services of a competent professional should be sought.

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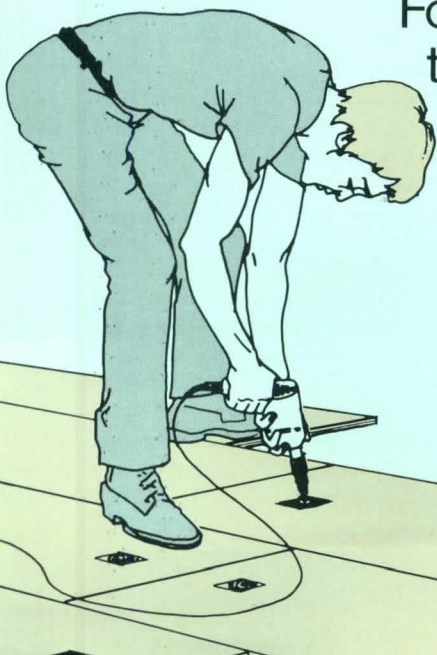
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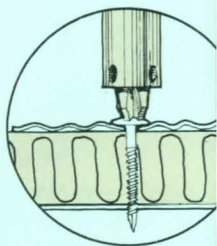
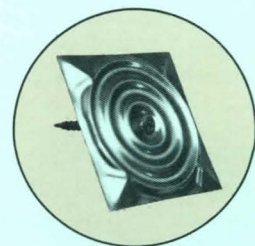
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Regional activity shows nonresidential building up everywhere

During 1975 and 1976, recovery of the construction industry was confined largely to homebuilding. For design professionals involved heavily in nonresidential building, this early "recovery" was more promise than reality. Last year, however, the pieces began to drop into place. The previous improvement in housing stimulated—as it always does—a surge of shopping center and other retail building in 1977. At the same time, rising industrial production finally absorbed enough excess manufacturing capacity to encourage a new wave of industrial building. And as a bonus, the Federal government, through its Local Public Works Act, pumped an extra \$6 billion into the construction market last year. A good deal of that found its way into schools, hospitals, and public administration buildings.

Coming together as they did, these developments took what had been exclusively a housing recovery and converted it into 1977's full-blown general building boom. To anyone involved with nonresidential building, this meant an 18 per cent gain in the value of new projects last year, and a 15 per cent increase in square footage!

This month's column offers a look at how nonresidential work is progressing in the four corners of the nation. We'll look at it three ways: the regional improvement in nonresidential building during 1977; some current differences in *per capita* nonresidential building among the regions; and the growth of *per capita* building since 1970.

Recovery of nonresidential building in 1970 was strong enough to produce a significant gain in contract value in all four regions—even reversing the five-year decline in the Northeast. The size of the 1977 gains followed the sun westward: 9 per cent in the Northeast; 18 per cent in both the Midwest and South; and 25 per cent in the West. For once (in recent years) the booming South, at 18 per cent was "only" average.

Commercial and industrial building was three-quarters of last year's gain

Commercial and industrial building, which was responsible for three-quarters of last year's \$5.3 billion gain in nonresidential construction contracts, showed consistent strength in all four regions with gains ranging from 23 per cent to 39 per cent.

Institutional building, up 8 per cent nationally in 1977, declined 3 per cent in the Northeast, but advanced between 10 per cent and 12 per cent in the other regions.

Current investment in nonresidential structures *per capita* highlights the difference between the Northeast and the other three regions with respect to the replacement and expansion of their stock of "structure capital."

Measured against the national annual average (\$163 of new nonresidential building annually for each of our 216 million persons),

the Midwest, the South, and the West were all at or above the norm last year. The Northeast stood alone, nearly 30 per cent below the national average for per capita investment in nonresidential structures. That represented a gap of well over \$3 billion—the additional amount of nonresidential building needed in 1977 to bring the Northeastern region on a par with the rest of the nation.

What's more, there is a qualitative difference in the type of nonresidential structures built in the Northeast and everywhere else which offers another clue to the vitality of these areas. If we think of commercial and industrial building as being "active" and institutional building as "passive" with respect to economic growth, then the ratio of one type of building to the other should tell us something about where each region is going. Not surprisingly, the highest ratio of commercial and industrial building to institutional building—1.3 to 1—was found in the South and the West. The Midwest had a one to one ratio last year, while the Northeast showed only 0.8 to 1—a ratio suggesting that in 1977 this region was building less for rebirth than for retirement.

Comparison of the 1977 regional distribution of nonresidential building with what it was back in 1970 shows that a lot of change has taken place in a short span of time. A review of the causes of this change now gives reason to expect greater stability in the future—and possibly even a modest reversal of the recent pattern.

Some of the supports to boom in the South and West may prove to be only temporary

Among the events that proved to be especially advantageous to the South in this period were:

Migration: Between 1970 and 1977 the South's population grew by 10 per cent (more than six million people). The Northeast gained only one per cent during all those years.

Government: Federal programs partly subsidized the sunbelt shift of the 1970s. Analysis of Federal support to cities shows that

between 1972 and 1977 Southern cities enjoyed increases in Federal aid half again as large as Northern (and Midwestern) cities.

Energy: The "crisis" of the winter of 1973/74 launched the petroleum industry on a massive expansion program. Billions were invested in new refining and processing facilities—mostly in Texas and Louisiana.

Other events of the 1970's proved to be selectively disadvantageous to the Northeast:

Recession: Because of their more highly industrialized economies, the Northeast and the Midwest regions were more severely affected by the recession of 1975 than either the South or the West. The Northeast was the last of the four regions to recover.

Finance: New York City's financial breakdown brought most types of construction to a halt in this biggest of all construction markets. What's more, its impact extended well beyond the city's limits, sending a wave of fiscal caution throughout the whole Northeastern urban corridor.

What's on the horizon that will change any of this? Certainly the basic migration patterns of the population—from the Northeast and Midwest to the South and West—will continue to prevail in the future. But the *rate* at which this basic movement takes place reached a peak in the early 1970's, and since 1973 has slowed noticeably. More recently, there's been a deliberate redirection of Federal aid programs to put more emphasis on older and declining cities of the Northeast and Midwest ("targeting" is the new buzz word). The recession of 1975 is now three years along in recovery—a recovery that has taken hold even in the Northeast. And after several years of "crash program" construction, the energy industries have pretty-well caught up and are settling back to a more normal pace of building. Finally, although New York City will be under tight financial constraint for a long time ahead, state and Federal support have avoided bankruptcy. The current revival of New York's key office building market is a good sign that the corner has been turned.

None of this denies that the overriding long-term development of the nation will continue in a southwesterly direction. Of course it will. But during the mid-1970s that basic movement was greatly accelerated by a set of mostly temporary circumstances which by now have run their course.

George A. Christie
Vice president and chief economist
McGraw-Hill Information Systems Company

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Some tips on ensuring the survival of a new design firm

In 1969, Cambridge, Mass., Architect Earl Flansburgh wrote in a *RECORD* article, "there is no good time to start a new firm, only better times." Most people would say that this is not one of those times, but even today new firms are opening and showing signs of success, just as many of the leading U.S. firms began during the 1930s. The overwhelming majority of new businesses, however—whether new gas stations or architectural firms—fail. The reasons can at times be traced to general economic conditions, but more often to bad management. Therefore, this article outlines some of the basic plans which must be made to ensure the successful initiation and survival of a new firm.

by Bradford Perkins

The first question to deal with is "when?" Normally there are three prerequisites: the skills, the ability to get work, and the necessary cash.

The symbol of the first prerequisite is a license. Flansburgh is right in saying "to attempt to establish an office prior to this is simply foolhardy!"

Of course, a license should be symbolic of something even more than the ability to pass a multiple choice exam. It should connote technical competence in at least the areas of service which the new firm will be offering. Unfortunately, no professional exam can fully test this. Any professional will grow with experience, but most new firms require a basic set of design, contract document, construction administration, business management, and client relations skills. If any one of the basic skills is missing, it might be best to find a partner who can fill the gap—and who can face living on short rations for a few years.

Equally important to the success of a new firm is the second prerequisite: a reasonable prospect of getting a continuing stream of work. Any firm—whether new or established—must have an edge. This edge might be a particular technical skill, a location in an area where there is a shortage of competition, personal contacts or friends and family who can make contacts, or some other factor which increases the odds of being selected. This factor rather than the general economy is the best indicator of when to start an office. One architect looking back on his own start said "By the time everyone agrees it is the right time to open an office, it is often too late."

Line up a set of advantages before hanging out your shingle

It is impossible to generalize about the edge of all the new firms that have successfully been formed during the last several years, but some

examples help outline some of the techniques used.

Case 1: A young architect who has had five advantages which helped in his rapid build up of a small but successful practice: an office location in a growing suburban area, a family with local contacts in real estate, a technical understanding of the requirements of small-scale suburban developers, the experience and ability to provide a high quality service quickly, and a willingness to work for modest fees.

Case 2: A young engineer/planner who formerly was a local official in a medium-sized city. Since going into private practice, many of the people who used to meet and respect him as a public official are now his clients.

Case 3: An engineer, formerly a principal in a large engineering firm, left four years ago to open a practice to meet what he saw as a growing need—energy conservation consulting. Needless to say, the energy crisis, combined with his personal reputation, has helped his firm to a rapid start.

Case 4: A black architect in New York recognized the potential client base represented by the growing black business community. His, and others founded by other black's in the late 1960s, have also benefited by public agency efforts to support minority-owned enterprises with contracts.

Case 5: Several firms can trace the foundation of their practices to a single project opportunity which they were able to convert into a highly-publicized trend setting project. Good design can make an important difference. Perkins & Will traces its origins to a school superintendent willing to take a chance on a young firm—if they could get an experienced advisor (Eliel Saarinen).

Case 6: Many firms have, of course, been founded by staff leaving and taking one or more clients with them. Although it is a common practice, this cannot be recommended.

Whatever the answer is—a good location, good contacts, a big opportunity, or some

other factor—it should be something better than the chance to do a back porch or a fancy dog house (both of which Perkins & Will did in their early years). If the chance is not likely to help build ongoing practice, it is better to do such jobs on the kitchen table while working for an established firm.

Earl Flansburgh again notes: My favorite marketing axiom that "every contact, every project, every chance leads somewhere" is true, but it can be stretched to the point of diminishing returns.

It cannot be emphasized enough, however, that a firm must have some edge that will carry it during the intermediate term after the first few assignments. The ability to get a third, fourth and tenth job is just as important as getting the first and second. This is particularly true today when the next job is difficult to find in any field.

Have a minimum of four month's working capital in your pocket

Even if a new firm has work, however, there is still a third prerequisite—money. A new firm must have staying power in financial as well as marketing terms. At any point in the career of almost any firm it should have working capital equal to at least three and preferably four or more months of its average volume to finance accounts receivable, purchase supplies and carry the firm and its principals during slow periods. This could be as little as \$10-15,000 but often is more. In addition to the working capital needed, a new firm start-up will cost at least several thousand dollars more by the time one is through paying for legal and accounting fees, purchasing a line in the yellow pages, furnishing an office, and covering other start up costs. The final amount required is, of course, a factor of the number of founders, the amount of work the firm expects to have, the likely payment schedule, and the type of overhead the firm feels it must assume.

If an individual or partnership can satisfy these prerequisites, the next step is to complete a plan. A plan is as important for a small firm as it is for a large one. In the case of a new firm the key issues that the plan must address are: what kind of practice do the founders want to build, and how do they want to get there?

The answer to the first should be more specific than "survival" or a "chance to do good design and a variety of projects." The goals should identify targets such as whether the founders want to eventually have a large

Mr. Perkins is vice president and general manager of Perkins & Will offices in White Plains, N.Y., New York City, and Washington, D.C.

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practice handling large projects or a smaller local one where the founders can maintain control over all projects; what minimum level of personal income is important; does the firm want to become specialized; and similarly related questions. A high target may dictate a major city location, an office rather than a spare room in the founder's apartment, and a higher initial investment. A personal suburban practice, on the other hand, could be run at least initially from the founder's home.

No two firms will have the same goals. The type of goals might be the same for two firms—i.e. a target profit, a target number of new jobs leads, or a design award. The specific definition of each of these goals, however, might be very different. In case 1 above, for example, the goals might have been to have three private development projects under construction by the end of the year while in case 5 the goal might have been to obtain one publishable application of the firm's planning or design theories.

Set realistic marketing goals and avoid shot gun approaches

For a new firm the most difficult parts to plan are not goals but rather the implementation program. And of the implementation program elements, the hardest is usually the marketing effort. Not only is this due to the principal's lack of experience, but also because the firm's marketing objectives are ill-defined. There is a tendency to chase any lead and embark on a shot gun ("hello, world, I offer architecture") approach. A rifle is a far more effective weapon—particularly for a young firm.

A new firm must work hard to get widespread recognition of the firm's name and capabilities; but the efforts to meet people, send out notices of the office's opening, and identify potential clients must be directed toward a realistic aim. New firms usually concentrate on those projects that their more established competition might ignore, that draw upon the current skills of the new firm, and that will help build a base for more work in the future. In more specific terms this usually means:

1. Local work of relatively modest size requiring extensive personal attention. Remodelings, small additions, houses, and a number of other project types. Many newer firms concentrate, during their early years, on acting as advisors on small pieces of work that provide them with a reputation for competence, service and the other skills necessary for larger work.

2. Projects where family friends, personal contacts, or some other source will provide a friendly audience by the potential client. The value of such contacts cannot be overemphasized at any point in a firm's development, but they are critical in the early years.

3. Projects which draw upon the skills built up by the principals during their prior employment. Many firms are, of course, founded by individuals who leave to practice their specialty on their own.

4. Small projects for clients who may someday have larger work or who might introduce the firm to larger work. Neuhaus and

Taylor, (now, 3D/International) for example, is just one of many firm's that grew because of their early work for a young, struggling developer—in their case, Gerald Hines.

In practical terms, concentration on these project types means more than the principal's general efforts to meet people, be active in the community and other techniques to develop a general awareness of the firm and a network of contacts. It also means a formal campaign to meet the people—hospital administrators, local developers, members of the school board, corporate real estate managers and others—who are likely to need architectural services in the future.

Some firms suggest concentrating in the first years on the small private clients rather than the larger more traditional groups, such as schools or hospitals. Their argument is that a small developer can understand the advantage of using an equally small architectural firm willing to provide a highly personalized service. Larger clients, they argue, turn for most of their work to established firms.

While this argument is in many instances valid, it should not be used as an excuse for not contacting larger corporate or public clients. It is true that these large clients are not likely to hire a new firm for a major new facility, but several young firms have grown with the help of the remodeling jobs, small consulting assignments, and other work these clients prefer to give to small, local firms. Some of the divisions of IBM, for example, follow the pattern of some of these large clients by keeping a list of several local firms near each of their facilities to help on short-term projects too small to refer to the headquarters facilities staff.

Plow profits back into the firm immediately to grow important capital

Assuming that the new firm can begin to obtain a base of work, it must also set as a goal to build a capital base as well. Any growing firm consumes large amounts of money—to finance accounts receivable, major promotional efforts, and related requirements. Moreover, as a firm grows it must build a cushion to help it survive the inevitable slow periods. A great many new firms—in every field—have gone out of business immediately after an initial period of success because they did not recognize the need for profits and retained earnings.

Others have failed for the related reason that—after the enforced austerity of their start-ups—they could not control their overhead. At times you have to spend money—on promotional efforts, on staff, or other necessary expenses—to make money. As a general rule, however, a young firm should try to avoid the extra staff, the nicer space, or some other discretionary overhead expense, and plow the savings into the firm's capital or into well planned promotional efforts.

Profit in the early years is that amount over and above the principal's self-imposed starvation wages. Profit in the traditional accounting sense which would have the principals taking salaries that reflected their responsibilities and effort is unrealistic. Any new firm must be prepared to put out an effort over and above any reasonable level of compensation. My

father estimated that he and his partners earned 37 cents an hour on their first school project. This may not be just, but it is a fact of life. A new firm can rarely build an early reputation as the most experienced, but they can—and the successful ones usually do—build a reputation of giving more service for the money. As the architect in case 1 above said "You have to make sure your first clients want to proselytize for you—no matter what extra effort is required from the new firm. You can always justify the extra service as reinvestments of the firm's first 'profits'."

Set up an administrative framework that can grow with the firm

In addition to the objectives and plans for the key aspects of business development and finance, a new firm should begin with its administrative house in order. There never will be a better opportunity to set up files, insurance, partnership agreements, and other administrative details. To miss this opportunity is to open up the probability that they will come back to interfere with the getting and doing of work in the future. Therefore, as a minimum new firms should start life with the following:

1. A partnership agreement, incorporation, or other legal structure set up with the advice of an experienced attorney or accountant.

2. A simple, but comprehensive, set of books—again organized with the advice of an experienced accountant. This effort should also identify the person who will help keep them up to date—whether it is one of the principals, a secretary/bookkeeper, or a part-time accountant.

3. A basic insurance package. As a minimum this should include both professional and comprehensive liability. It might also include fire, major medical, valuable papers, and some other insurance necessary to soften the blow of a major catastrophe.

4. A filing system that works and will permit growth and change.

5. A set of production aids—reference material, standard details, sample specs, lists of local printers and suppliers, etc. to help simplify the first production efforts.

6. A full set of the basic promotional aids required to pursue the chosen types of work. This will vary, but in most cases it includes business cards, a simple brochure or description of the firm's experience, and resumes of the principals for use in proposals.

So if you have an edge, if your plan makes sense, and if you have successfully set up the framework for a well-administered office, it is time to hang out the shingle.

It is likely that the principals will have no lack of things to do the first day, but even before the first lull appears, it is worth remembering H.H. Richardson's answer to the mother of a boy who planned to be an architect.

"What," she asked, "is the most important thing in architectural practice?"

"Getting the first job," Richardson promptly replied.

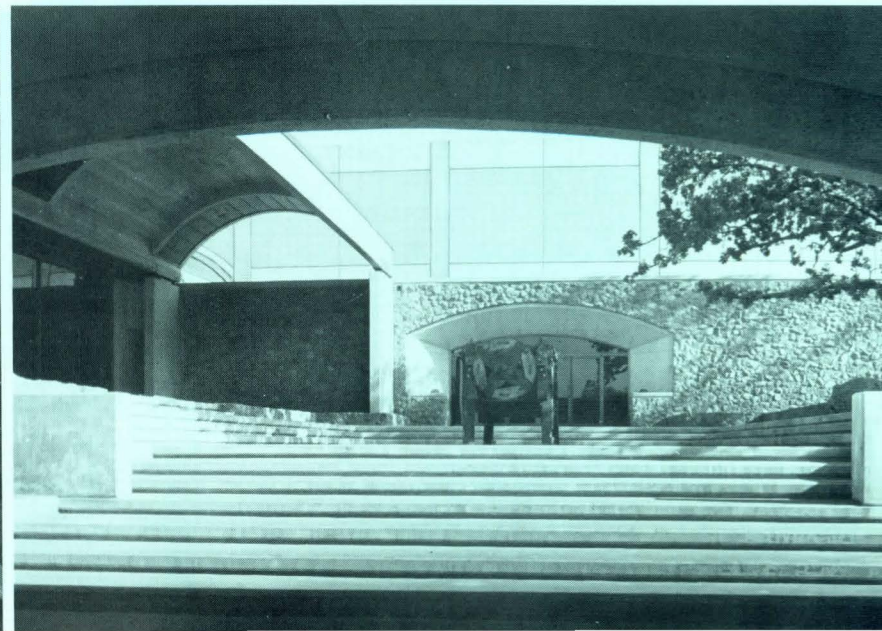
"Of course," she agreed, "but after that, what is most important?"

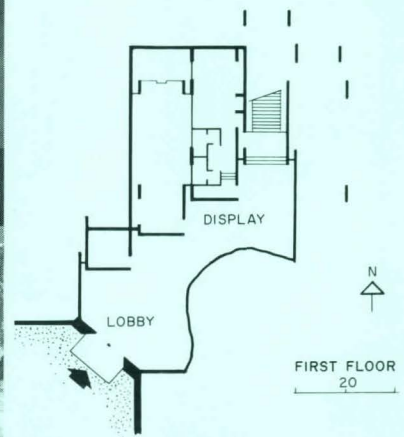
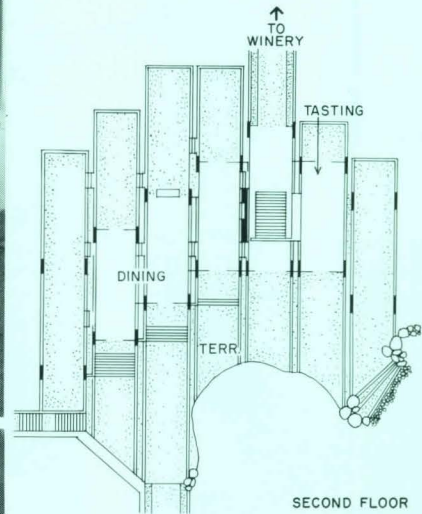
"Getting the next job," was Richardson's candid answer.

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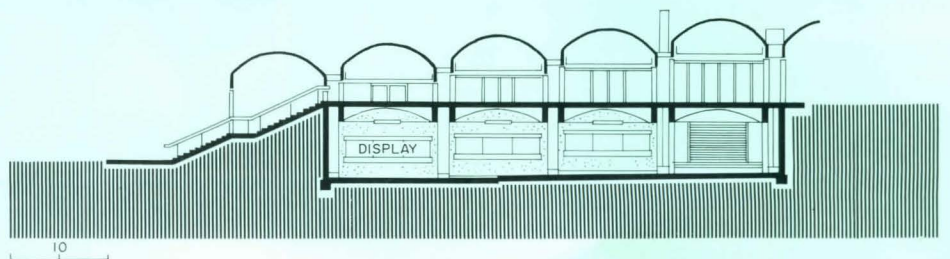
Kelley did, and here's why







A unique feature of the Domaine Chandon winery is the restaurant (with seating both indoors and outdoors)—the first restaurant in a winery in the region. In a total effort to maximize the visual effect of the barrel vault, glass enclosures were used and fluorescent lights were recessed into arc-shaped beams. The interiors are all of Douglas fir and the vaulted roofs are sheathed in weathering steel which will oxidize to a brown color.



CITICORP CENTER:

IF YOU
DON'T LIKE
ITS CROWN
LOOK AT
ITS BASE

Architects now working on the next generation of New York City skyscrapers should be paying close attention to Citicorp. Designed by Hugh Stubbins & Associates, it is the best new office tower in the city as of now. You don't have to like its top—a lot of people think it's arbitrary. (There was a rationale; page 108). You may not like its skin—some people question a shining building in a matte city. (I admire it—especially from certain angles and in particular lights). But you have to like the base. The church, plaza and galleria at the ground level of Citicorp form a truly humane space which actually *invites* ordinary people to use it, offering them such small pleasures as comfortable places to meet and sit, and bring their own food. It is not necessary to have money to spend to enjoy the public spaces of Citicorp; and depending on the time of day you see a sprinkling of older people relaxing at tables in the tree-filled, skylit atrium. And the church is there for quiet meditation.

Think of the plazas of the skyscrapers of the past decade, each empty except for its single correct, non-objective and non-objectionable sculpture of brightly colored bent steel—sensitively placed, of course. Think of the grudging, gloomy public space in other recent New York buildings—like the Galleria and Olympic Towers; public spaces put there by the owners in exchange for the profits to be made from higher floor area ratios granted by the City Planning Commission's incentive zoning program. Few citizens know that these empty concourses are supposed to be amenities, hard won by the Mayor's urban planners, for public enjoyment. But people know, because the architecture is inviting, that Citicorp is for them. Study Citicorp. Watch how people are responding to it already, with the plaza still unfinished and many of the shops not yet open. The story of how it all happened begins on page 114.

—Mildred F. Schmertz

Nick Wheeler



Stubbins sought
a unique image for
the Citicorp Center tower
in its midtown setting



The current generation of New York skyscrapers are look-alikes, sheathed in black with smoky glass. Their immediate forebears have dingy, precast curtain walls which have begun to take on the colors of the soot-covered facades of earlier skyscrapers and of the old brownstones and tenements. With a few stunning exceptions—the nearby Chrysler and Empire State buildings and (in the photo opposite) the Waldorf and the General Electric Building—all the roofs are flat.

To make Citicorp Center stand out against its neighbors as a recognizable and memorable corporate symbol, Stubbins decided to give it a light, bright, easily cleaned curtain wall with natural aluminum spandrels. And he wanted to do something interesting with the roof. There were economic, stylistic, functional and technological constraints however, to just how interesting the roof would turn out to be.

At today's prices, even if he had wanted to stylistically, Stubbins could never have made his roof silhouette as rich in fantasy and ornament, as for example, the Art Deco swordfish, complete with gills, which crowns the Chrysler building. Further, his no-frills banker client would not have allowed him to devise a roof shape which was expressive and fanciful but not practical. And Stubbins, still a member in good standing of the Modern Movement, would probably not have allowed himself the liberty.

Early in the design process he began to study the possibilities of a diagonally sliced pinnacle as a powerful mark against the sky. As a shape it had the potential of serving more than a sculptural function. An early scheme had two of them—one larger—going in opposite directions (page 114). At one stage of the design, the larger of the two was to contain over 100 terraced apartments—a dramatic idea for which the City refused to grant a zoning variation. Later in the design, Stubbins proposed that the slanting surface become a solar collector, but this proved not yet practicable. Stubbins believes that eventually, as solar technology develops, it will be.

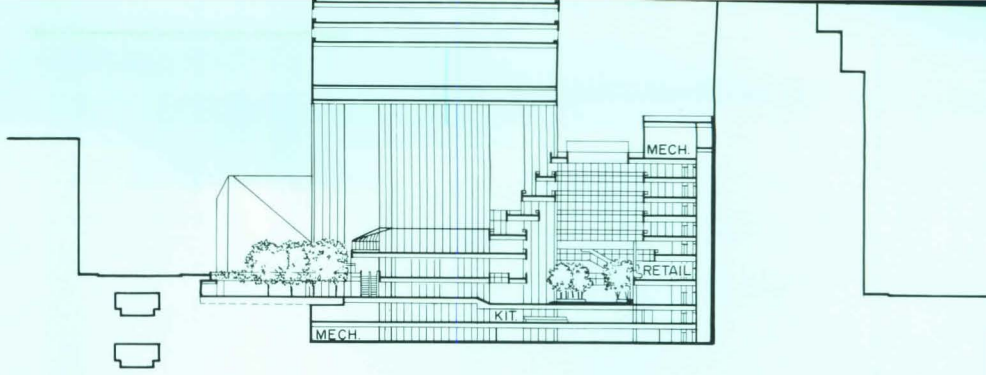


Norman McGrath photos



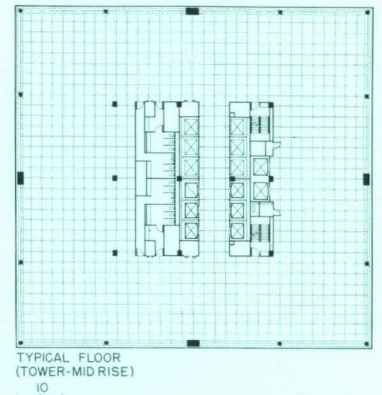
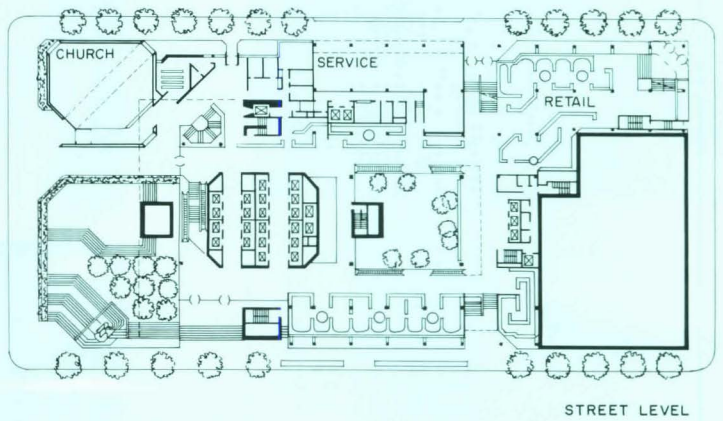
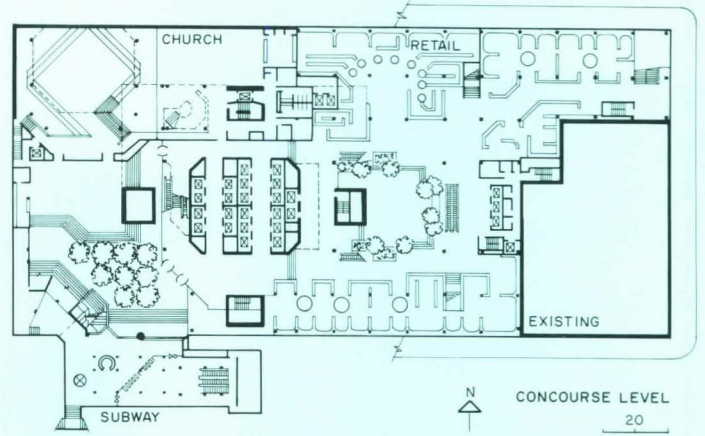


Not since the thirties, when the public spaces of the original Rockefeller Center were built, have New Yorkers been given community urban terrain of a quality equal to Citicorp's



The street environment of Citicorp Center is a triumph of urban design—the first project influenced and helped to fruition by the Mayor's Office of Midtown Planning that demonstrates convincingly what the Planning Commission's Urban Design Group has been trying to accomplish since its founding by former Mayor John V. Lindsay in 1967.

Credit belongs to Hugh Stubbins and his team, who from the beginning wanted to design a skyscraper which would relate to the street in a humane way; and to Reverend Dr. Ralph E. Peterson, pastor of the church rebuilt on the site, who also insisted that Citicorp Center provide ordinary citizens with places to meet, shop, eat and sit as well as worship. The top management of Citicorp, fortunately, were determined to meet their obligation to give the city fair return of handsome usable public space for the right to build at a floor area ratio of 18. The skylit galleria (opposite page and above) is open to the public who may bring their own food to the tables shown, or patronize the food shops adjacent to the court. There are several good restaurants and shops within the galleria (below). Office landscaping (right bottom) is used on typical tower floors.



George Czerna



George Czerna

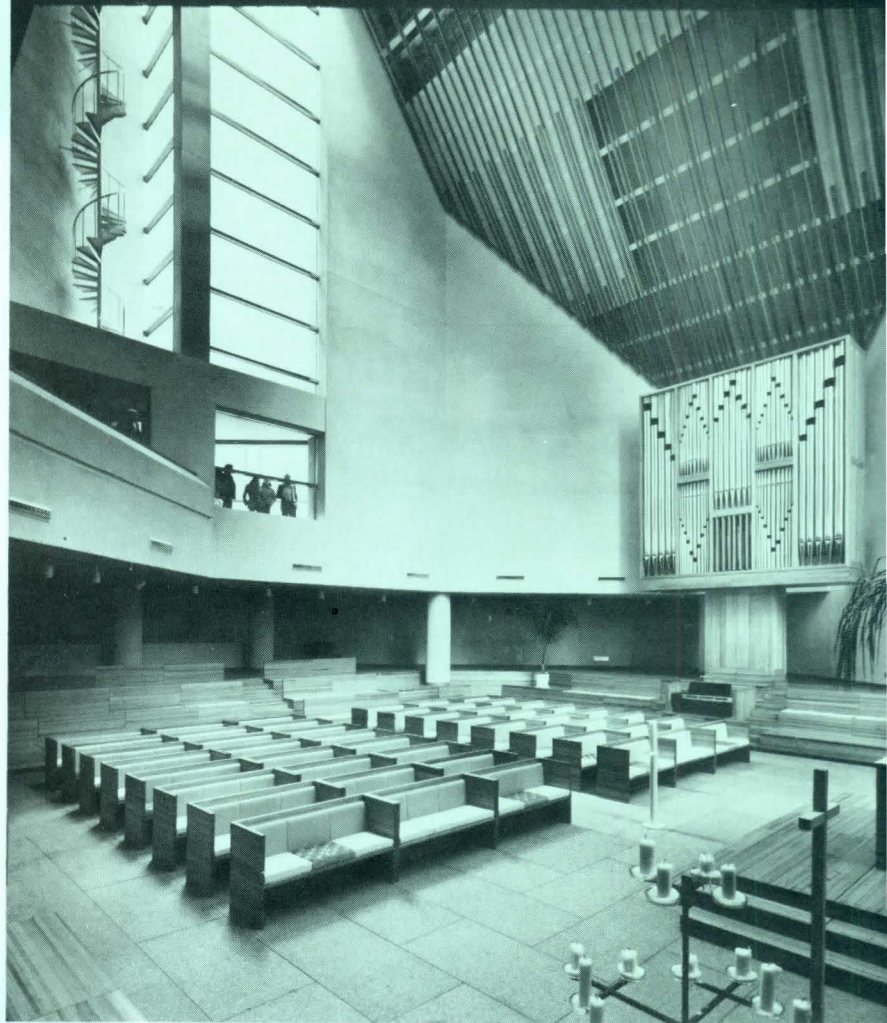
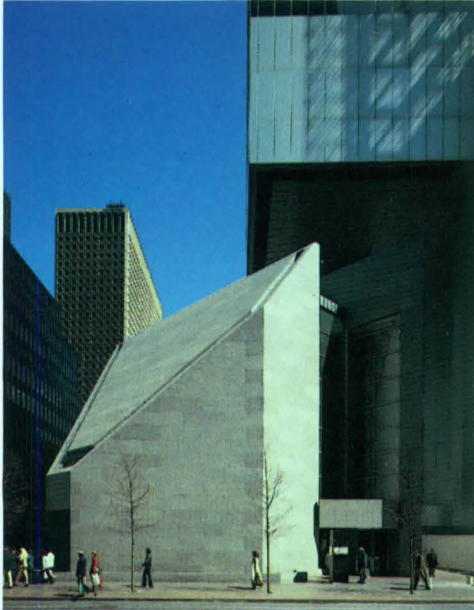


George Czerna

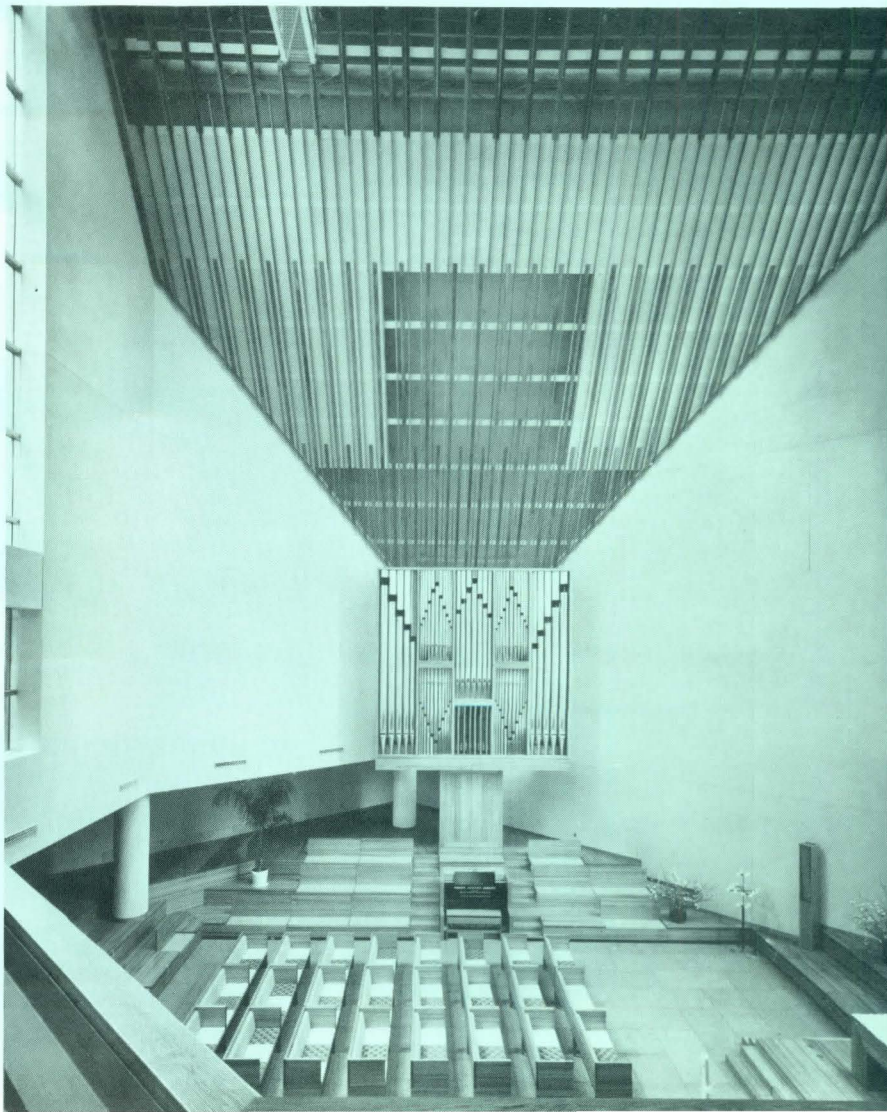


George Czerna

Four great columns hold
Citicorp Center high above the
street so that
a beautiful new church
could be open to the sky



There has been a Saint Peter's Church at the corner of Lexington Avenue and 54th Street since 1862. In 1971, Saint Peter's old church was sold to Citibank with the agreement that the Congregation could build a new structure on the same site. The lantern of the church (above) is at the upper plaza level. The sanctuary floor, however, is one story down, at the level of the lower plaza. The sanctuary is a magnificent surprise. Passers-by on Lexington Avenue look down and into it from a large window at the sidewalk. No one expects to suddenly come upon a church interior without actually entering a church—and many stop, look and find their way in. The church is almost always alive with concerts, jazz festivals, and religious services. Stubbins is responsible for the design of the church. The platforms, seating, and the altar and its fittings are the work of Vignelli Associates. The small chapel (below) has sculptures by Louise Nevelson.





From the outset, Citibank, Saint Peter's Church and their architect Hugh Stubbins proposed to give far more back to the city in public amenity in return for a floor area bonus than any developer had offered since the 1961 zoning ordinance

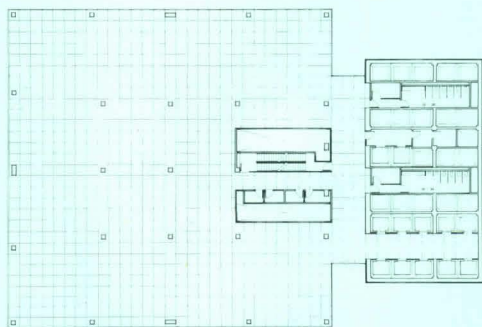
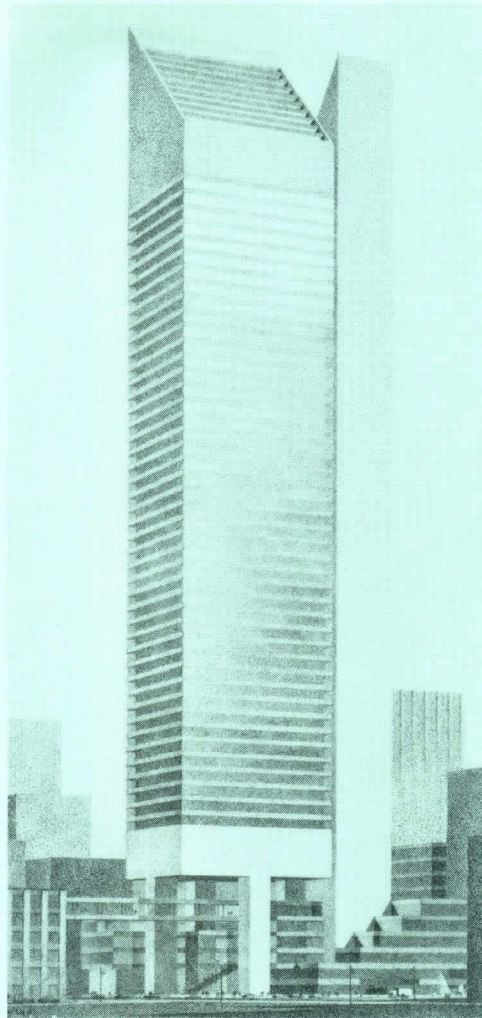
Citicorp Center as urban design

Back in 1970 Hugh Stubbins wrote to Henry J. Muller, a former vice president of the First National City Bank, which now calls itself Citibank. In his letter he set forth some of his first thoughts about what was then known as the office building/church project. Said Stubbins: "The new, slick, slab buildings that march up the avenues of New York and other U.S. cities are symbolic expressions of the Machine. They are anonymous—cool and inhumane. We must use the resources of big business, reinforced by moral and social ideas, to develop a new generation of office buildings planned for the community and expressive of the humanity of the individuals who use them. By revitalizing urban development with an emphasis on people, we could produce a more enjoyable place in which to live and work. Such a building might even be a source of inspiration for other cities.

"With the church as catalyst and the bank as supporter, we can design a new kind of place which all kinds of people will want to enter and become part of. While the church must have its own identity, I like to think how it could be enhanced and magnified if we combine it with a new kind of office building. I think furthermore that we should be able to see into the church from the outside, to see what is going on, be attracted and become part of it. There is a spirit stirring at Saint Peter's Church that could become a bright light in Manhattan."

In 1969 the Lutheran congregation of Saint Peter's Church voted to sell their property to the First National City Bank and agreed to the demolition of the original church. In return they received condominium ownership of over 45,000 square feet of new church space on the same busy corner at 54th Street and Lexington. Their contract with the bank gave the congregation the assurance that their new church would be a substantially freestanding building with "nothing but sky overhead." Profits from this transaction have helped pay for the new church.

From the beginning, the pastor of Saint Peter's, Ralph E. Peterson, knew what he and his congregation wanted the new church and Citicorp Center to be. In addition to serving the spiritual needs of the congregation, the church was to be a place of hospitality for anyone who wished however briefly to join in its activities. And he wanted the Citicorp Center environment to be as hospitable as his church. And so Peterson, like Stubbins, had much to do with persuading Citibank/Citicorp to develop an active marketplace



Initial scheme for site

combined with plazas for relaxation at the foot of its tower.

Most importantly, of course, Citibank/Citicorp itself has a highly developed sense of public responsibility. Its top managers were as interested as Stubbins and Peterson in finding a better way to insert their proposed \$150-million 59-story colossus into the mid-Manhattan gridiron. From the beginning, they were very responsive to the idea of developing a lively multi-level complex of plazas and shops at the street level and above and below. They knew that more than 40,000 people live and over 160,000 work within an eight minute walk of the city block it took them five years to acquire. With Bloomingdale's and Alexander's nearby, and magnets like the Waldorf Astoria and the United Nations in the vicinity, the area had long been a prosperous shopping sector. Citibank/Citicorp's managers had seen other good commercial neighborhoods decline, their web of small shops broken by the intrusions of skyscrapers preempting huge sites. The problem—as they were finding out and as more people now know—is that the large empty plazas lined with banks and automobile showrooms at the street level of these structures have too often heralded the death of the bordering streets.

Paying attention behind the scenes was the Mayor's Office of Midtown Planning and Development, established in 1969 and staffed by members of the Urban Design Group—a special team created in 1967 by former Mayor John V. Lindsay within the New York City Planning Commission. The Office of Midtown Planning, then under the direction of Jaquelin Robertson, had begun to try out the ideas which were eventually to become codified in the 1975 revision to the zoning ordinance.

The zoning incentives established by the Urban Design Group are devised to force a developer to provide and maintain truly lively and useful plazas and midblock gallerias in exchange for floor area bonuses. Back in 1970, however, it wasn't easy to get a developer to do anything imaginative with the street level space he traded for his profitable variances. On the contrary, most developers of a decade ago instructed their architects to design "keep-off" space without seating, trees, or amenities of any kind. Some of this so-called public space is hidden behind locked gates and unmaintained, and almost none of it was designed in such a way that the public feels free to use it.

From the outset, Citibank, Saint Peter's Church, and their architect Hugh Stubbins

proposed to give far more back to the city in public amenity in return for a floor area bonus than any developer had offered since the zoning ordinance became law in 1961. From the time the site had been assembled (Citibank bought the whole block between 53rd and 54th Streets and Lexington and Third Avenues, except for one parcel at the corner of Third and 53rd) even Stubbins' earliest designs had all the key elements which were later built: Included in addition to the office tower and the church were a seven-story low-rise building with shops and restaurants surrounding a skylit atrium, a through block arcade, and a sunken plaza with direct access to the subway.

It was clear to the Office of Midtown Planning that at last a project was going ahead that represented their best ideas about what would be good for New York. Throughout the design and construction process, Lauren Otis of its staff worked with W. Easley Hammer, the head project architect on Stubbins' team, to facilitate the project, arranging the necessary variances, coordinating the subway station design with the MTA, and acting as liaison with numerous other public agencies.

The great success of Citicorp Center as urban design should strengthen OMP's position in its efforts to tame the next generation of skyscrapers, now in design after a long hiatus. There is a danger that hard-pressed New York City needs the new giants so badly that in return for a gracious corporate decision to remain in Manhattan, the City Planning Commission will grant the obliging enterprise any zoning variance it wants without insisting too fiercely upon public amenities in exchange.

However, an encouraging sign that the urban designers are still interested in how skyscrapers meet the street occurred at a recent ceremony in New York City honoring AIA Gold Medalist Philip Johnson. Raquel Ramati, the present director of the Urban Design Group, presented him with a single yellow rose. It may have been the opening move to persuade Johnson to better relate the base of his proposed new AT&T skyscraper to the city's urban design goals (RECORD May 1978, page 34).

Citicorp Center as an object in the cityscape

The tower, surrounded by buildings constructed of materials which age (some of them not so gracefully) stands ageless, its brightness bisecting midtown like a shaft of sky. It is a building that must be kept clean

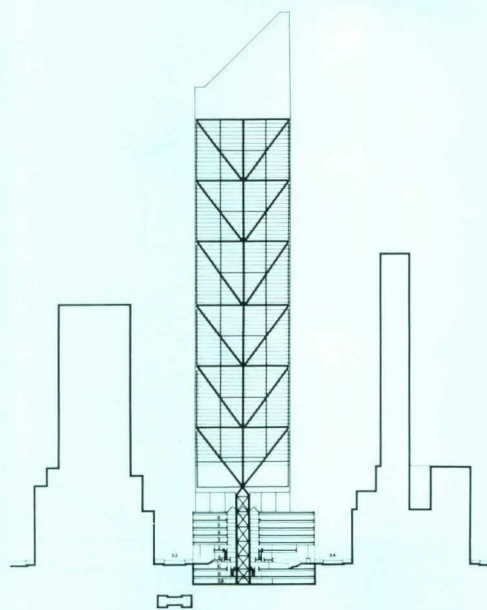
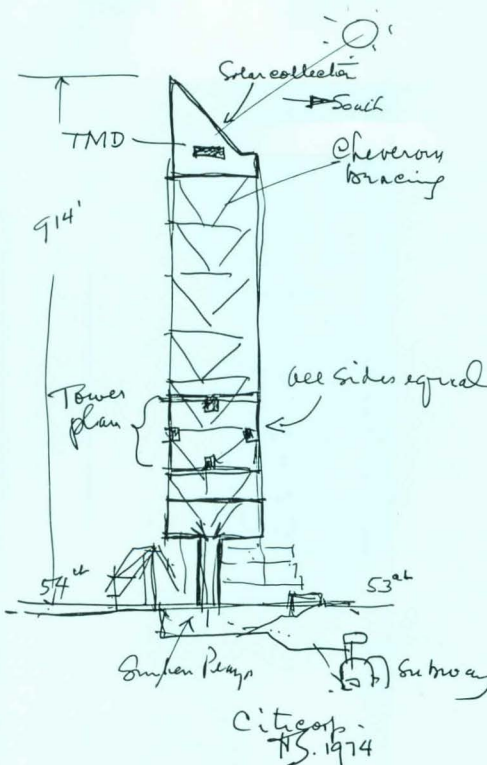


Diagram of structural frame



Sketch by Hugh Stubbins

and is easy to keep clean and shining because its glass windows and aluminum spandrels are on the same plane. The automatic washing machinery treats both as a single unit. It stands out, no question about it, and that was a conscious esthetic decision on the part of Stubbins and Citicorp.

The tower might have been even more spectacular, however, if its structural system had been expressed on the facades as in the John Hancock Building in Chicago. Architects don't do this any more because it costs too much money—too many different sizes of glass following the diagonal members and too much special insulation of the steel to offset movement caused by the difference in temperatures between the inside and outside surfaces. But the structural system by engineer William LeMessurier (note diagram) is not only handsome, but remarkable (RECORD, mid-August 1976, pages 66-71). Had it been possible to expose the frame, the massive size and awesome scale of the building would have been revealed—a truth perhaps too overpowering to behold. At least Stubbins appears to have thought so.

From the early design stages, Stubbins and the late Peter Woytuk—the associate who helped him most on the design of Citicorp Center—looked for ways to attenuate the building to make it elegant and slender. The initial scheme for the site as finally assembled placed the elevator and service elements in a detached core directly behind the main tower (see drawings). With this square footage out of the tower it became leaner and, in Stubbins' words "an exciting and beautiful form. The early scheme had the advantages of leaving the office floors more open for tenants to lay out as they wished; providing a potential fire refuge from the building; and permitting better circulation between the low- and high-rise building. Although the owners were very excited by the model, which also included a dramatic glass bridge across Lexington Avenue, they did not quite have the conviction to develop the concept with the funding and imagination it required. An influential factor was the potential rentability of the office space. Conventional office floors with a central core seem to rent more easily in New York.

"This is always an important consideration, and at the time we were designing, New York office space was going begging and we were working on the most expensive block ever assembled in New York."

Structural engineer William LeMessurier has pointed out, furthermore, that the first developed scheme with the offset core

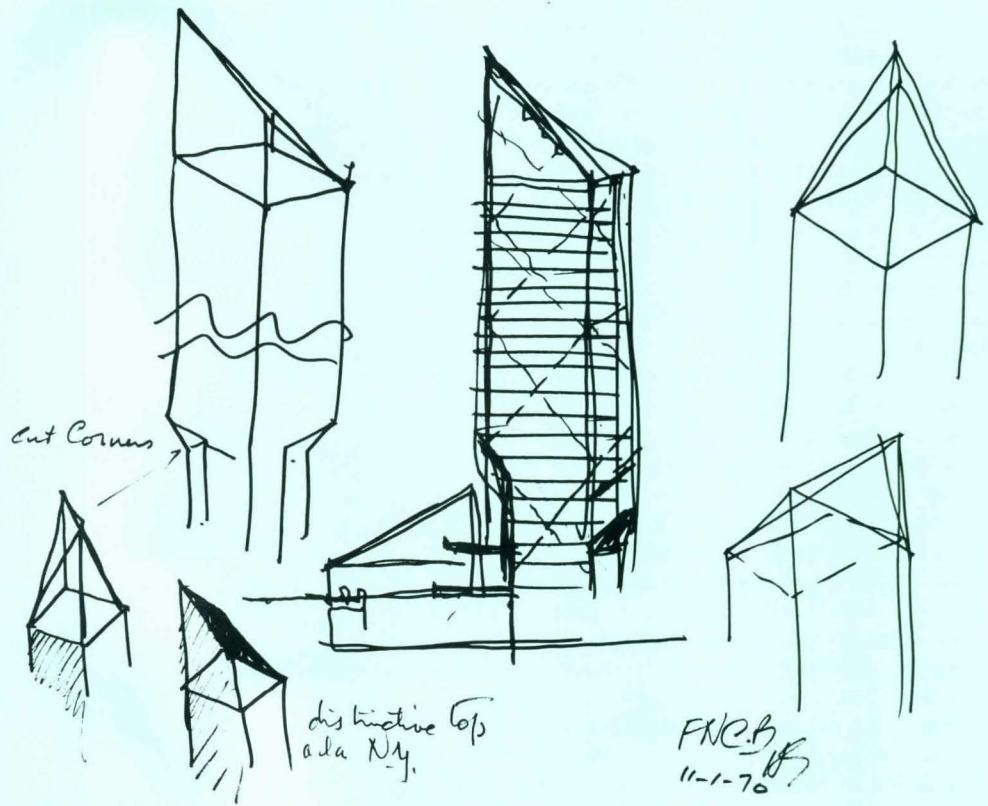
presented difficult wind bracing and other structural problems. The final single tower scheme permits a clean design which is very economical in its use of structural steel. The 915-foot-high wind-resistant columns are placed at mid-point under each face. By lifting the tower in this daring and imaginative way Stubbins and LeMessurier created the space in which Saint Peter's Church exists as a separate entity "with its own sky overhead." They also opened up the space at the ground. Since the tower touches ground at only four points, and since the columns are only 24 feet square, the design permitted the construction of the nine thousand square foot sunken plaza located twelve feet below the street level and interconnected with a new subway station.

Most of the building's load—half the gravity and all the wind load—is brought down the trussed frame on the outside of the tower. The remaining gravity load is carried by the core. The tower is divided into eight-story tiers (see diagram) defined by the steel chevrons that feed the loads into a mast column at the center of each face connecting to one of the four visible supports. The latter, according to LeMessurier, could have been designed to appear much thinner. They were made wider and deeper to enclose space for ductwork and stairs, and as the plans indicate there is room to spare inside them.

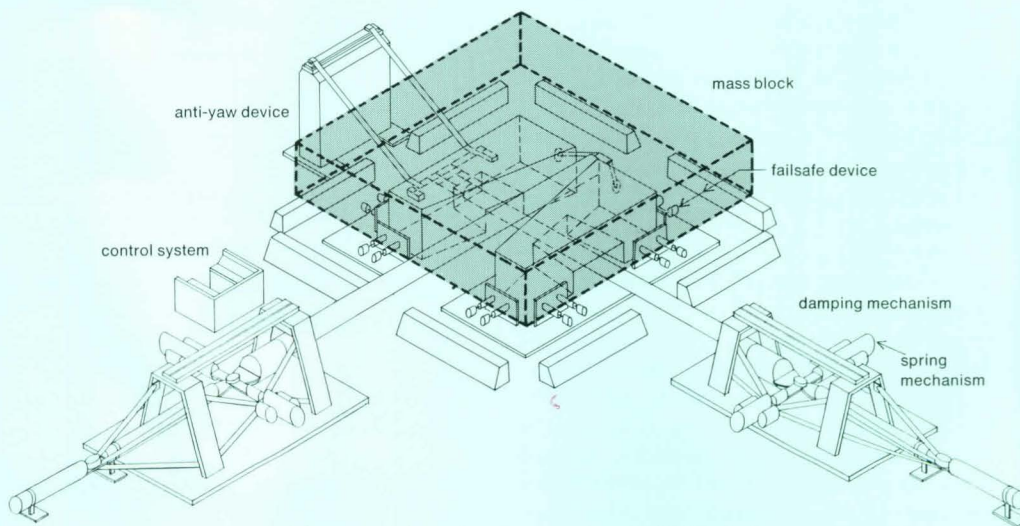
The big columns are not an honest expression of structure—since they are made of far less steel than they appear to be. The wide spandrel at the top of the columns is not "structurally honest" either—since it appears to be a beam transferring the tower loads to the columns. The giant piers and the wide spandrel are esthetic, not functional, choices to make the building look and feel right. Giant buildings need to appear to be heftily supported—and huge pilotis must at least appear to carry big beams. Good architects put art before the expression of structure every time, and Stubbins is no exception.

—Mildred F. Schmertz

CITICORP CENTER, New York City. Owner: Citibank/Citicorp. Architects: Hugh Stubbins and Associates, Inc.—principal architect: Hugh Stubbins; project architect: W. Easley Hammer; production architect: Howard E. Goldstein. Associated architects: Emery Roth and Sons. Consultants: LeMessurier Associates/SCI and the Office of James Ruderman (structural and foundations); Joseph R. Loring & Associates (mechanical/electrical and lighting of office space); Sasaki Associates (landscape); Vignelli Associates (graphics and design of church furniture and fittings). Construction manager: HRH Construction Corporation.



Sketch by Hugh Stubbins

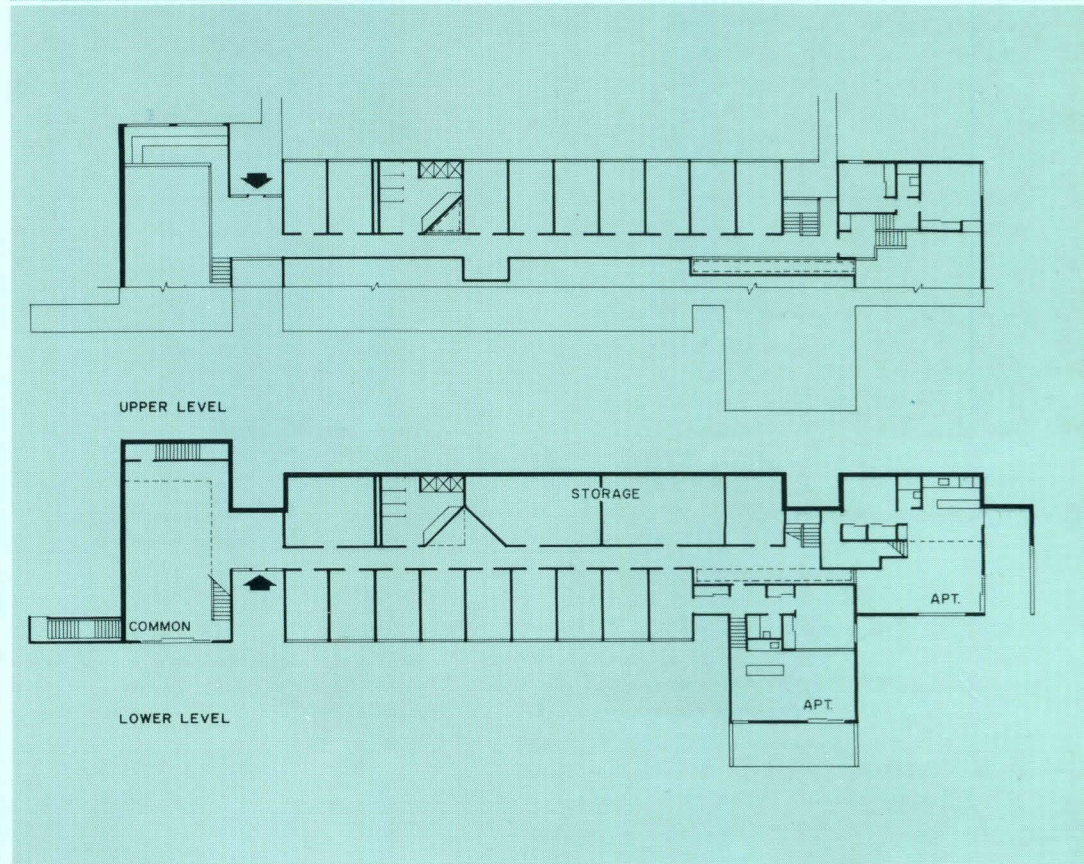
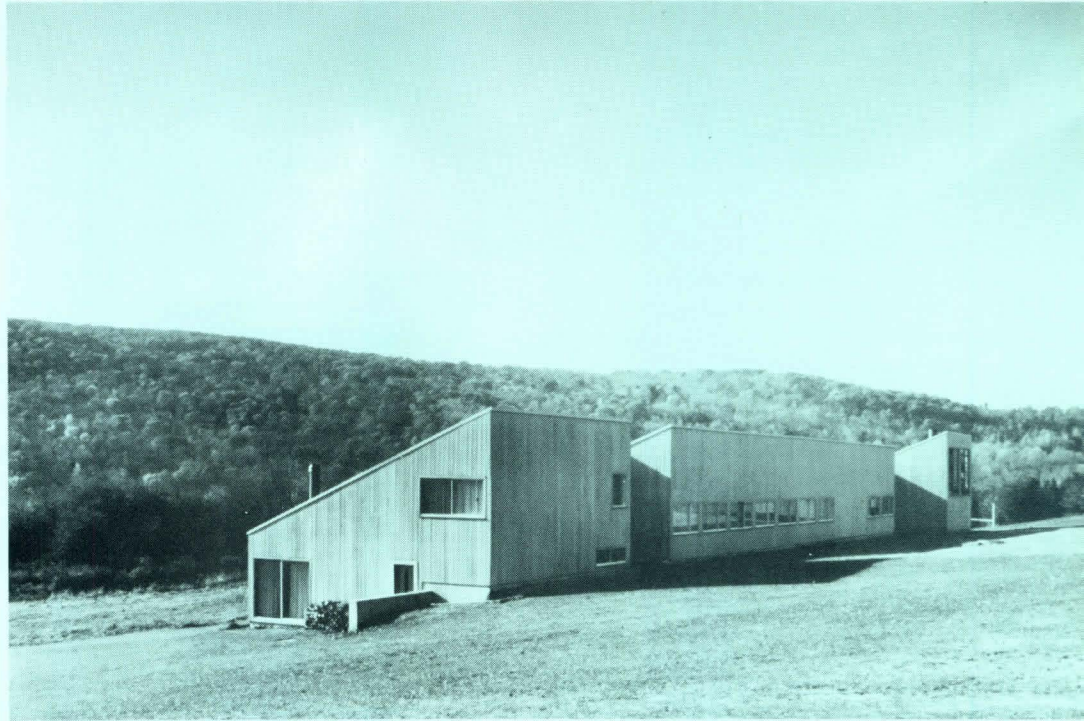


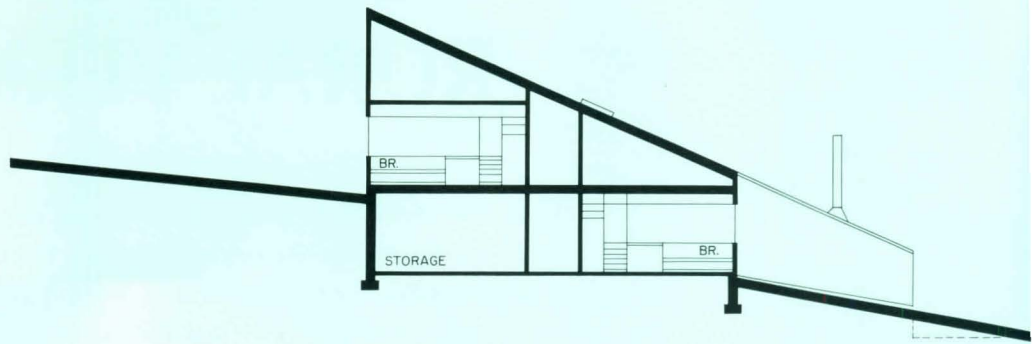
The tower is resistant to motion in high winds. Located at the base of the building's angled crown is a 400-ton concrete block, designed to move out of phase with the tower's motion. A series of pistons and spring mounts (diagram above) secure the block to the building. Should the building move, the block remains stationary for a moment, then moves in an opposite direction. This dampening effect reduces the building's sway by approximately 40 per cent. Called a tuned mass damper, it was developed by MTS Systems Corp.

DORMITORY IN A RURAL VERNACULAR

The dormitory shown below and on the following pages was designed by architects Copelin, Lee and Chen for the pre-preparatory Indian Mountain school in Lakeville, Connecticut. It is distinguished by a unique distribution of spaces, and by an informal character that reinforces a pastoral identity for the campus.

Norman McGrath





As seen in the plans on the previous page and in the section above, the distribution of rooms for the thirty-six boys and two faculty families is based on the concept of a double-loaded corridor. But the plan has been split into two levels. The advantages over the single-level plan: the elimination of the usual congested and noisy hallways, and the stepped form of the building, which not only takes advantage of the sloping site but greatly reduces the visible mass. Bathrooms, and storage and mechanical spaces occupy the low-cost volume excavated from the hill, and their location again helps in reducing the visible mass *and* in offsetting any added cost of the split-level scheme.

The shed-like roof and cedar siding of the 14,000-square-foot structure further contribute to a farm-like atmosphere on the campus, which was established by existing buildings—including a nearby barn and the white-painted, wood-clad main building. In addition to the dormitory, architects Copelin, Lee and Chen have designed an addition to the main building that reflects its separate character, as can be seen in the photo and plan overleaf. And they have established a master plan for the whole school, which calls for widely dispersed new construction. In all of their work for the school, the architects have been skillful and sensitive in furthering existing idioms.

In the dormitory, special elements such as the faculty apartments and a two-story common are used to break the linear repetition of the rooms and to further reduce the visible size of the building (see plans on previous page). The wood superstructure was built on concrete retaining walls, and the construction cost of the building was \$420,000, or \$30 per square foot. The exterior siding has been used for the interior walls in some of the public spaces, and carpeting has been used on the walls of corridors.

INDIAN MOUNTAIN SCHOOL DORMITORY, Lakeville, Connecticut. Architects: *Copelin, Lee and Chen*. Engineers: *Robert Silman & Associates (structural/foundation); Bernard Greene (mechanical/electrical)*. General contractor: *Community Construction, Inc.* (General contractor for student common on last page: *Gilligan Brothers.*)



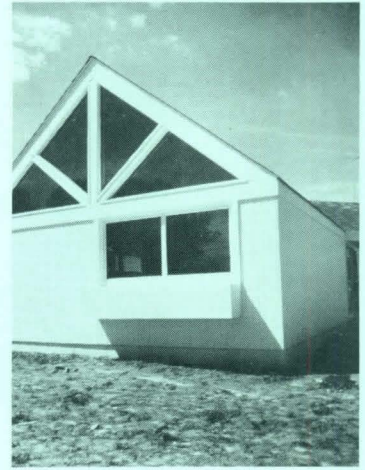


Norman McGrath

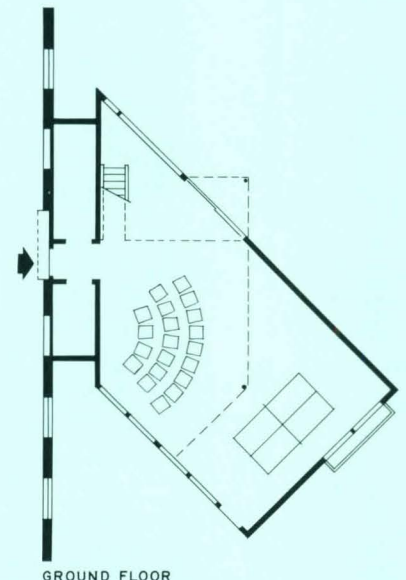


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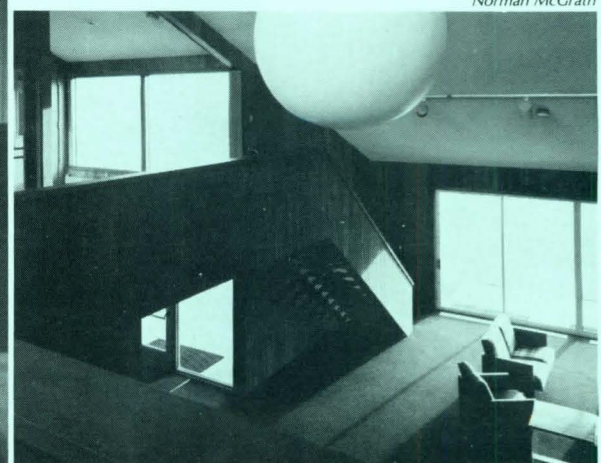


The commons in the new dormitory (photo left and below) functions as a large living room for the resident boys, and—being the full height of the building—serves as an orientation space to the system of internal planning. As part of the same architects' work for Indian Mountain, another student commons (photo above) and plan below, has been designed in a different but complementary vernacular to match the older main school building to which it is attached. In this addition, white-painted clapboard siding matches the existing buildings, and—aside from the dramatic clerestory in the gable—windows have been kept in scale.



GROUND FLOOR

Norman McGrath





Belton Wall

A PROGRESSIVE CENTER FOR A CONSERVATIVE CONGREGATION

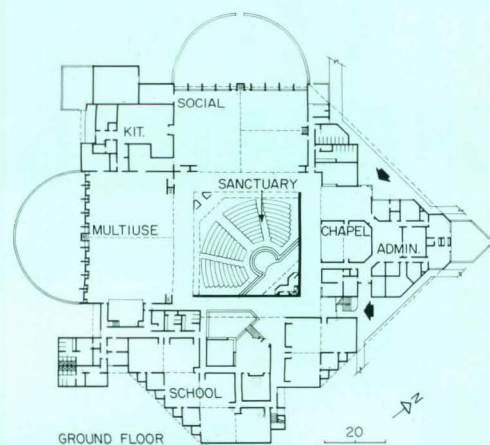
The Jacksonville Jewish Center in northern Florida has been designed by its architects Freedman/Clements/Rumpel Associates to provide a full range of community services to clients who—while embracing traditional religious standards—have been quick to accept the most forward-thinking architectural concepts.

In order to avoid the problems of surrounding urban growth at its previous facilities, the congregation of the Jacksonville Jewish Center has moved to new quarters on a semi-rural site of 37 wooded acres, which previously housed the Center's day camp. And to assure protection from future commercial encroachment, architects Freedman/Clements/Rumpel have not only located the new building at the center of its site, but have turned the building inward to relate to the central sanctuary, which is surrounded by a skylit street.

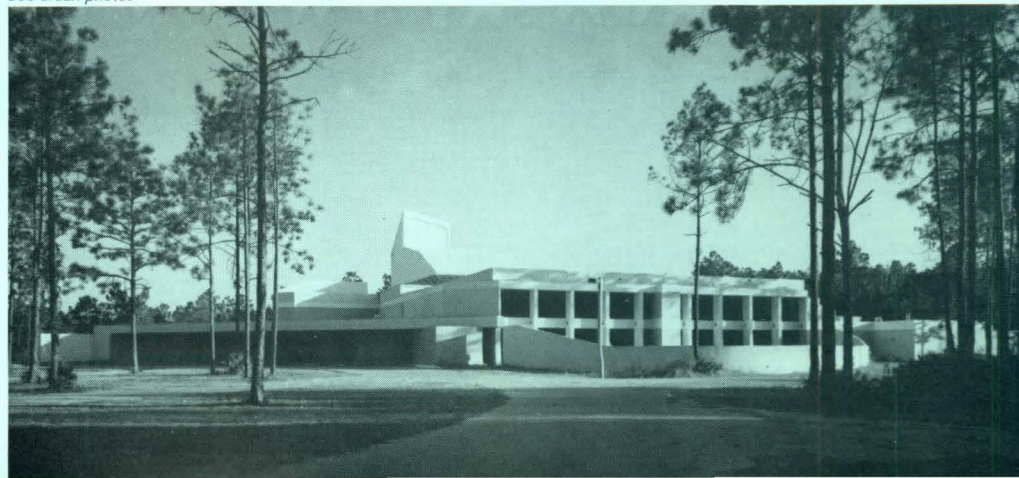
Because the Center provides a full range of community services such as schooling and social gatherings, flexibility in the required spaces to house the secular functions provided the architects with a convenient means of coping with a problem that affects all religious facilities: the seasonal changes in the number of worshippers to be accommodated in the sanctuary. (In the case of the Jewish Center, the variation in the size of the congregation ranges from approximately 400 persons to 2,000 during the High Holy Days.) Accordingly, the architects have enclosed the sanctuary with movable partitions—including that on the curvilinear track seen in the near photo at the bottom of the opposite page. This flexibility allows seating to be expanded into the social and multi-purpose rooms as needed.

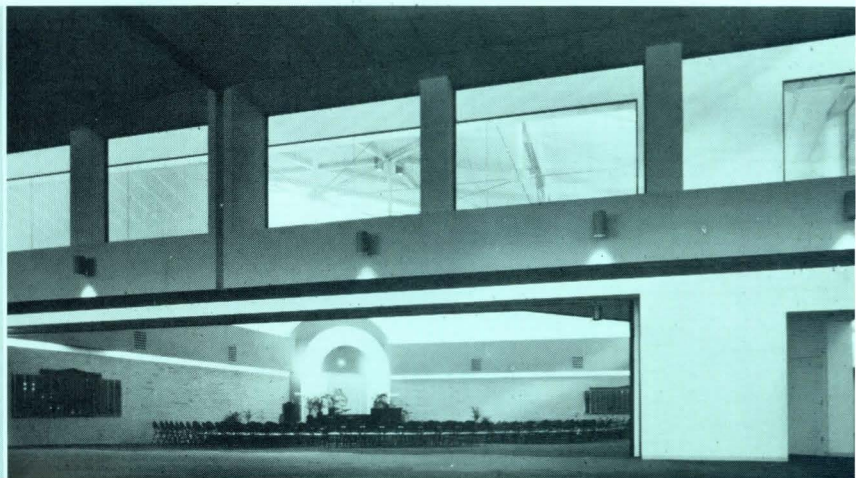
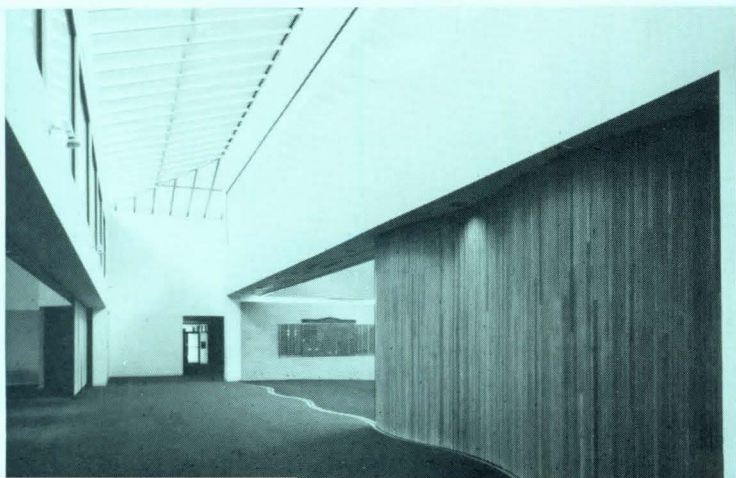
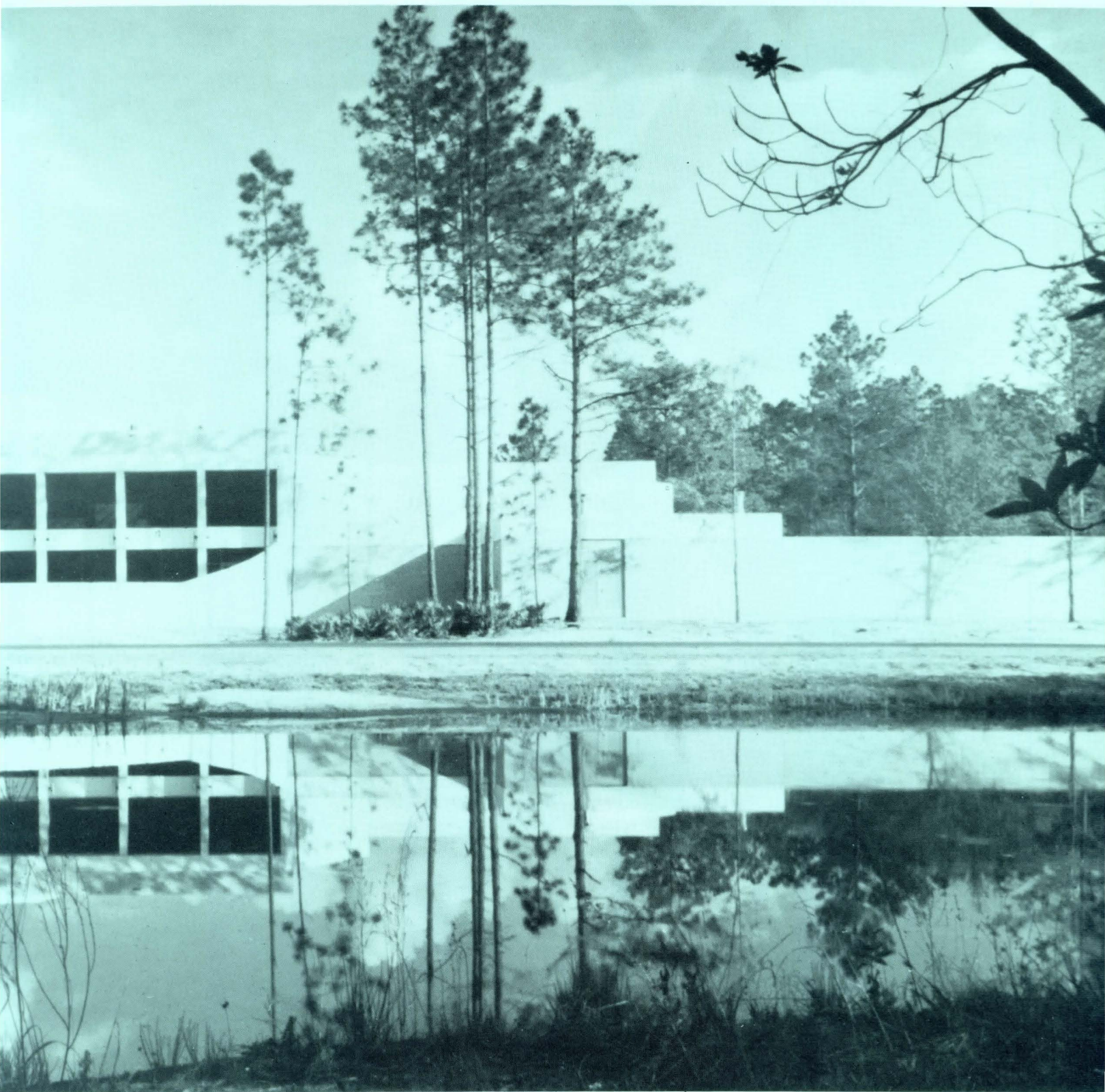
Besides the essential view of the bema from the "borrowed" spaces, views of the high roof over the sanctuary (supported by steel tension-rod trusses) are seen through glazed panels, and these views further a sense of inclusion in the focal activity. The steel structure is faced with stucco on metal lath and studs. The construction cost was \$2 million.

JACKSONVILLE JEWISH CENTER, Jacksonville, Florida. Architects: *Freedman/Clements/Rumpel—Architects/Planners/Inc.*—partner-in-charge: *Norman Freedman*; project designer: *Peter Rumpel*; project architect: *Harleston Parkes*. Engineers: *Morales and Shumer Engineers (structural/foundation/soils)*; *Wilder Associates (mechanical/electrical)*. Acoustical consultant: *Bertram Kinzey*. General contractor: *Daniel Construction Company*.



Bob Braun photos







Belton Wall



Bob Braun

Views of the bema and the tensile-steel-roof structure through the walls that enclose the sanctuary help to create a sense of continuity in surrounding spaces, when these spaces are used for overflow seating during High Holy Days. Planting, planned for the skylit corridors around the sanctuary, will further emphasize the sense of a "building within a building" desired by the architects.

CORRECTIONAL FACILITIES

BUILDING TYPES STUDY © 5 18

During the past decade in the United States, correctional facilities have come under the hot lights of public scrutiny and have been a subject of controversy and debate. There are not enough of them, they are too expensive to build and run, they are too brutal, they are too humane, they don't work, and so the arguments go. Small wonder, for at the very heart of the idea of correctional facilities—or jails and prisons, as they used to be called—lie basic and perplexing issues that are troubling not just because they are unresolved, but also because they involve the collision of heartfelt beliefs about morality and ethics, and even about social guilt and expiation. Incarceration, which can be seen as a benign alternative to the meting out of direct and brutal physical punishment, responds, of course, to society's need to remove from its midst people whom it sees as threatening in one way or another. But, on the other hand, many societies—including our own—feel the urge to make that removal somehow "humane," even for those who have performed the most inhumane acts.

Are these two things—confinement and humanity—in any way compatible? Other questions involve not the function but the ultimate goal of correctional facilities. Are they there to punish—to penalize a person for having done something in the first place, to keep him from doing it again, and to encourage others not to imitate him? Or are they places for rehabilitation and, as the name implies, correction? Added to all of this is the fact that many inmates in correctional facilities have been there before and will probably return again, because—in the opinion of some—the crimes they were sentenced for are not to them anything in comparison with the crimes they feel they have suffered at the hand of the society that imprisons them. According to this view, "correction" can best take place not within the prison walls but outside in the world at large. None of these many and contrasting views can be dismissed, but few of them have managed to become welded together into any kind of national consensus about what the functions and ultimate goals—much less the form—of a good correctional facility will be. Thus it can come as a surprise to virtually no one that, as public opinion seems to say, prisons don't work. How could they, since there is no general agreement about what they are meant to do?

But in recent years there have been several important developments that have at least begun to spur the debate forward. Perhaps the most significant is the intervention of the Federal courts in demanding facilities that are humane as well as secure. Paul Silver, of Gruzen & Partners, three of whose correctional facilities are shown on the following pages, says that "in effect, this development has forced action on the part of reluctant legislatures who would have been content to leave bad enough alone. Their action, while often begrudging, has in some instances created interesting challenges for architects. The questions of the degree of humanity and the degree of security create a conflict of the kind that is ordinarily resolved and clarified before design begins. Here, however, the architect finds himself caught in the thick of the battle, having to help direct the process in a rather unique way." But Silver is quick to point out that there are no pat answers: "If the architect is to produce an environment that is both humane and secure, what does 'humane' mean in this context? It is often seen as a static imitation of a middle-class life style, with furniture and windows that recall real houses in a fairly superficial way. But it all too often ends with the sad fact that the resulting environment is merely new in tone, lacking the traditional symbols of incarceration but creating new and subtle ones of its own."

Another development related to the attempt somehow to make prisons "humane," has produced smaller correctional facilities, as opposed to the foreboding gray institutions of the past, and in many cases these are not isolated but located within the hearts of large towns and cities. Fred Powers, of Hellmuth, Obata & Kassabaum, whose projects are also shown, points out that "the present trend is to locate facilities in areas close to families, to professional resources, and to employment opportunities so that there can be follow-up leads into employment once prisoners are released." Some communities have been known to object to this happening, while others have regarded the correctional facility as a source of employment, an industry, and therefore a worthwhile community asset.

The collection of buildings shown on the following pages represents the work of several architects in solving specific prison design problems. All reflect some or all of the trends already described, though none can be regarded as prototypical, since a prototypical solution has to be for a prototypical problem, and, as we have seen, that is yet to be defined. "I am concerned," Paul Silver says, "that all our tremendous efforts will achieve little if we do not understand the limits of our current accomplishments in the hope of striving for something truly significant. It seems to me that we must begin by acknowledging that true 'normativeness' may not be possible in an environment for incarceration, and that the best we can hope for is the reduction of the stress that comes with the loss of freedom."



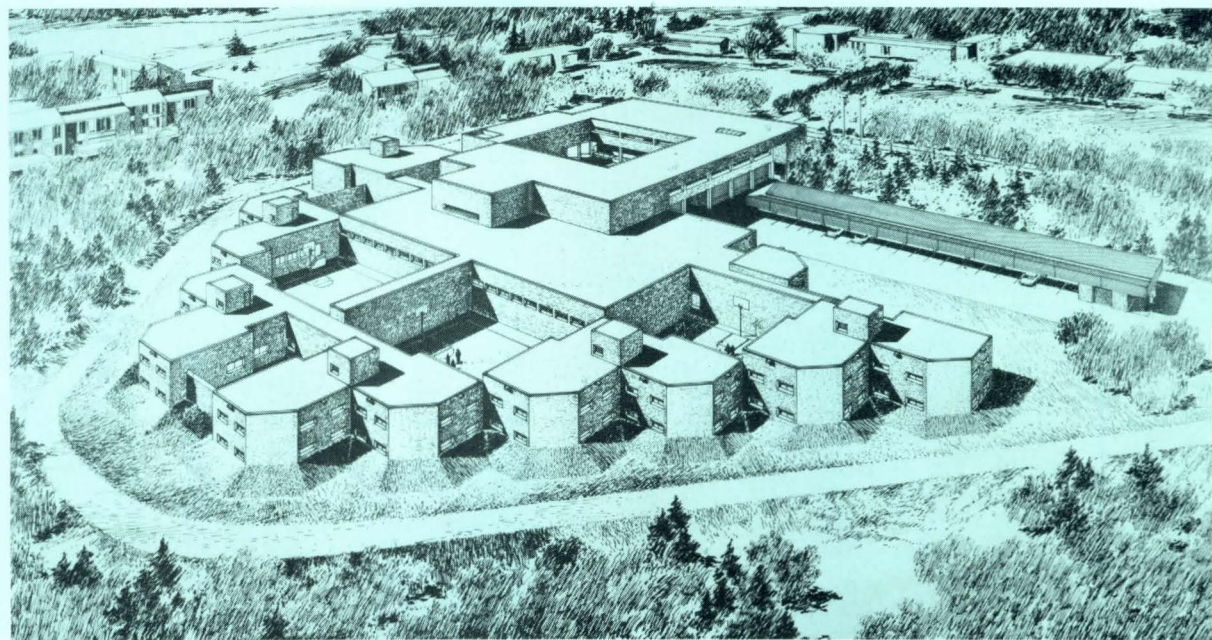
**WASHTENAW COUNTY
CORRECTIONS/LAW
ENFORCEMENT CENTER,
ANN ARBOR, MICHIGAN**

This facility is designed for a predominantly pre-trial population, but with some facilities for sentenced offenders. Housing 239 men and women, it is located on a 39-acre site bounded on one side by houses in the \$100,000 range and on the other by a major apartment complex. The architects therefore were very sensitive to height limitations, to creating a scale throughout that was compatible with the neighbors, and to providing the ample court-required outdoor exercise spaces with internal courtyards (see drawing, right) rather than a more spread-out campus scheme that a site of this size might have suggested.

The County Law Enforcement Center is

located close to the road, convenient to public parking and visually related to other County buildings on the site. A service yard serves as a buffer between this public area and the security areas. Adjoining the service yard is a building element containing admissions, processing and booking functions, and such central support facilities as library, classrooms, offices, the gymnasium, staff dining room, and clinics. Inmate housing units, enclosing outdoor exercise courtyards, are located on a series of terraces running down the sloping site. The outer wall of the housing units functions as the security perimeter, minimizing fences or walls.

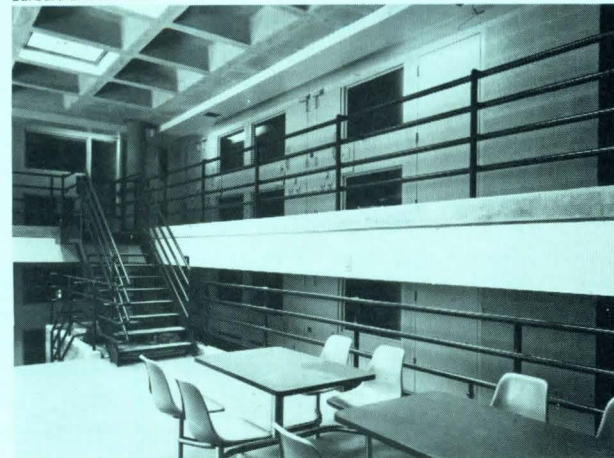
Housing units are divided into living units



Balthazar Korab photos except as noted

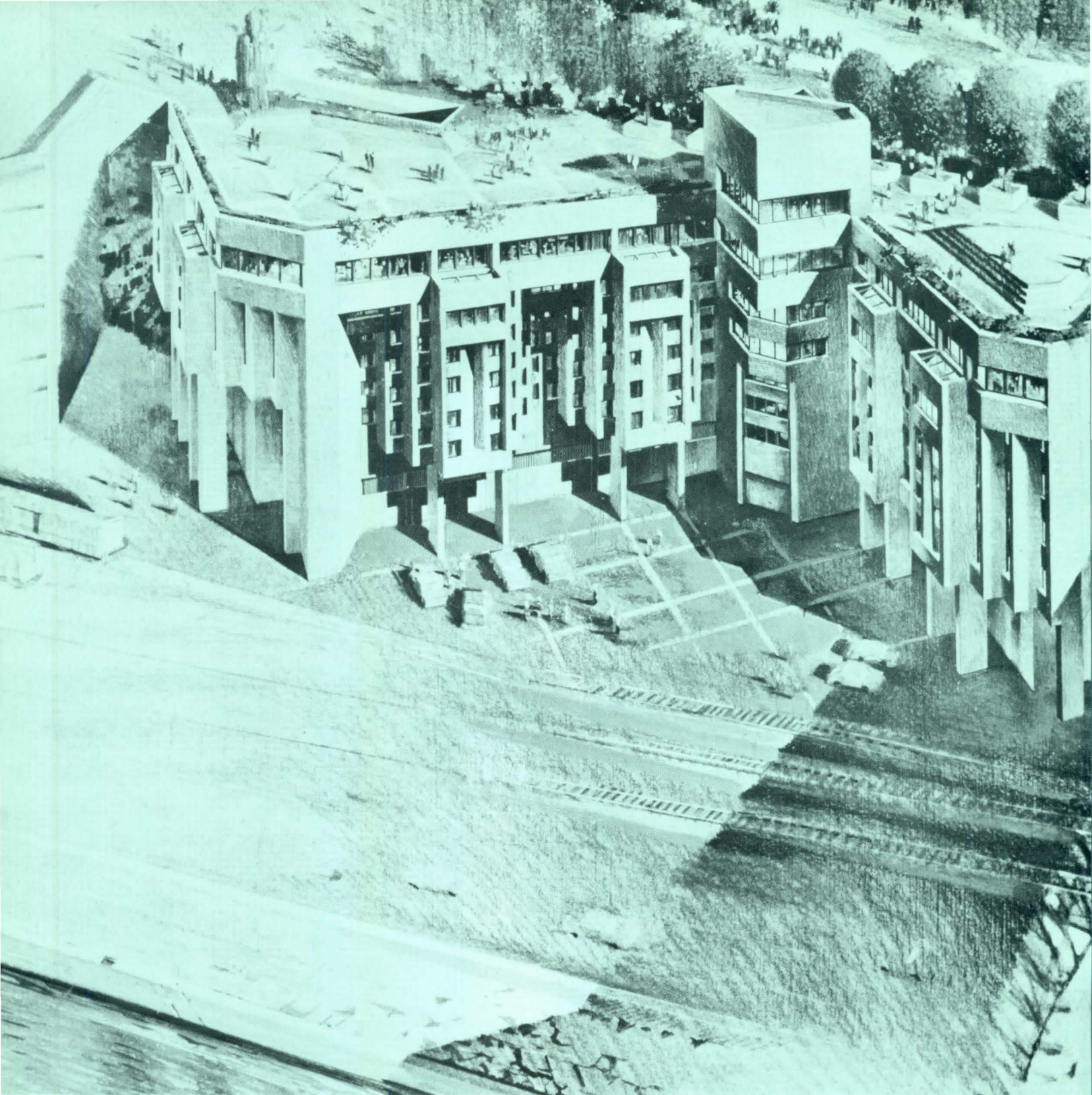


Barbara Elliott Martin



of 16 single-occupancy rooms grouped around a split-level living room—and meals, library service are delivered to these shared spaces. Two housing units—or clusters of 32 inmates—share a common day room opening to an outdoor court.

WASHTENAW COUNTY CORRECTIONS/LAW ENFORCEMENT CENTER, Ann Arbor, Michigan. Architects: *Hellmuth, Obata & Kassabaum*; *Colvin-Robinson Associates, Inc.*, associated architects. Engineers: *Jack D. Gillum & Associates, Ltd* (structural); *Ayres & Hayakawa* (mechanical/electrical). Civil engineer/landscape architect/interior design: *Hellmuth, Obata & Kassabaum*. General contractor: *Spence Brothers*.

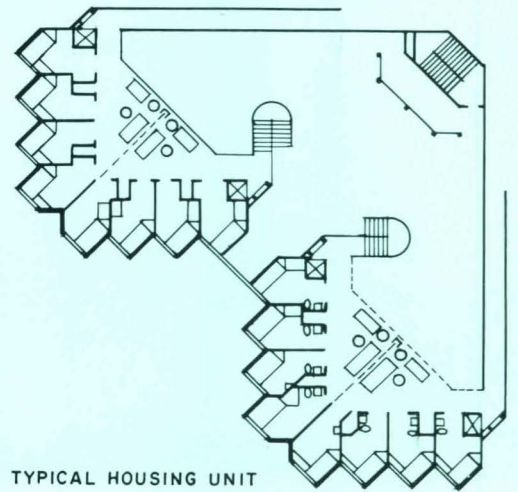
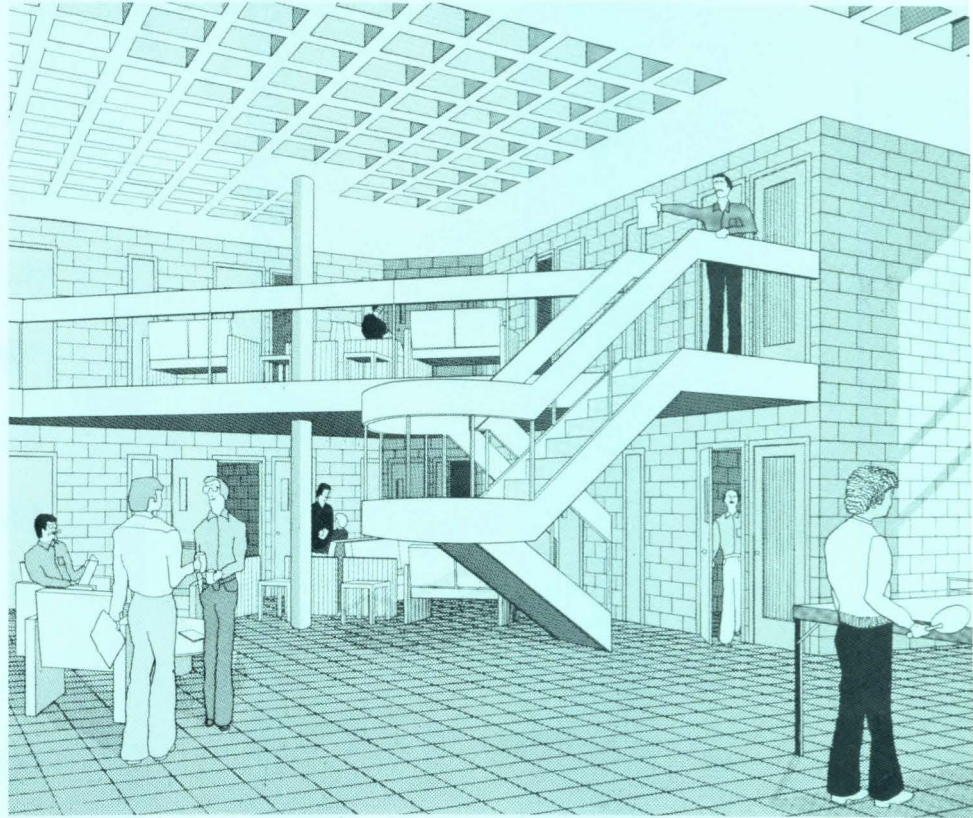
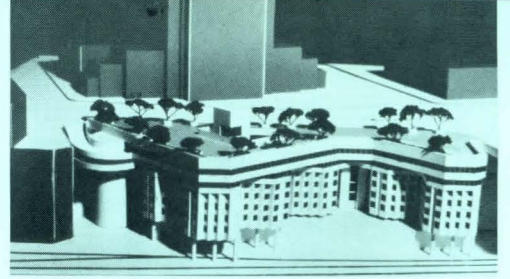
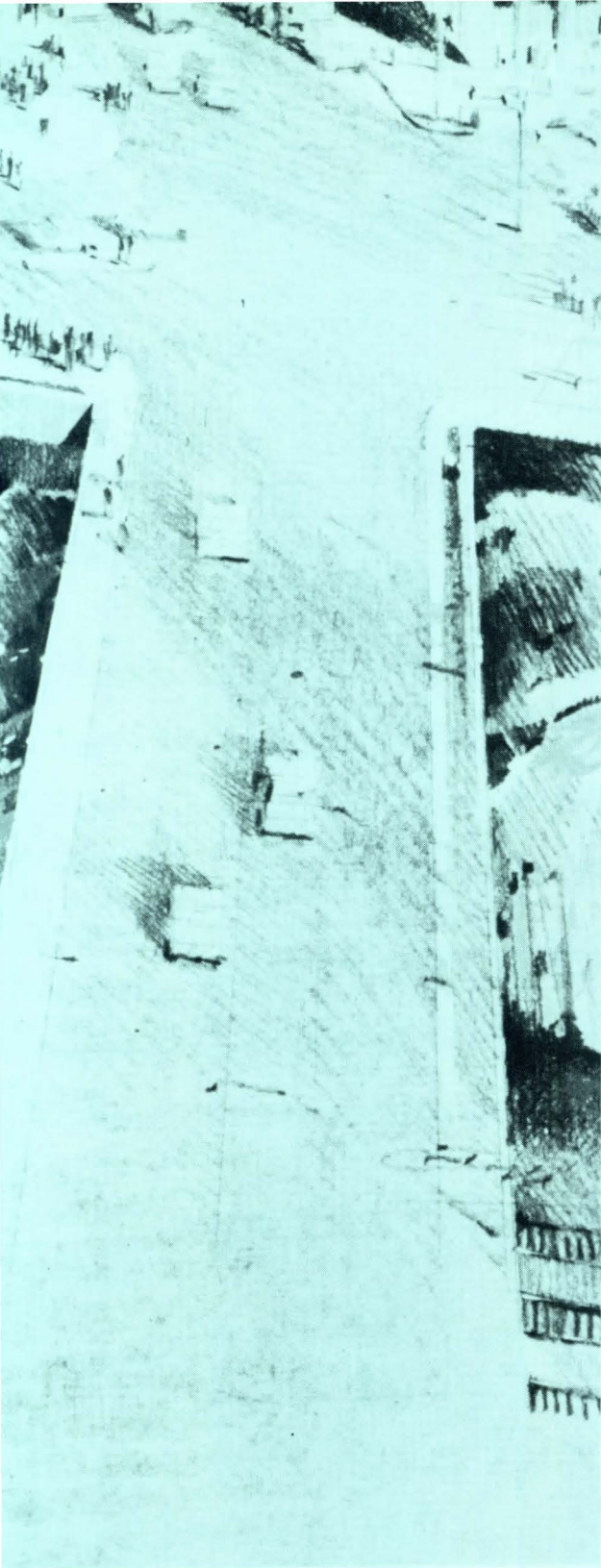


RAMSEY COUNTY DETENTION CENTER, ST. PAUL, MINNESOTA

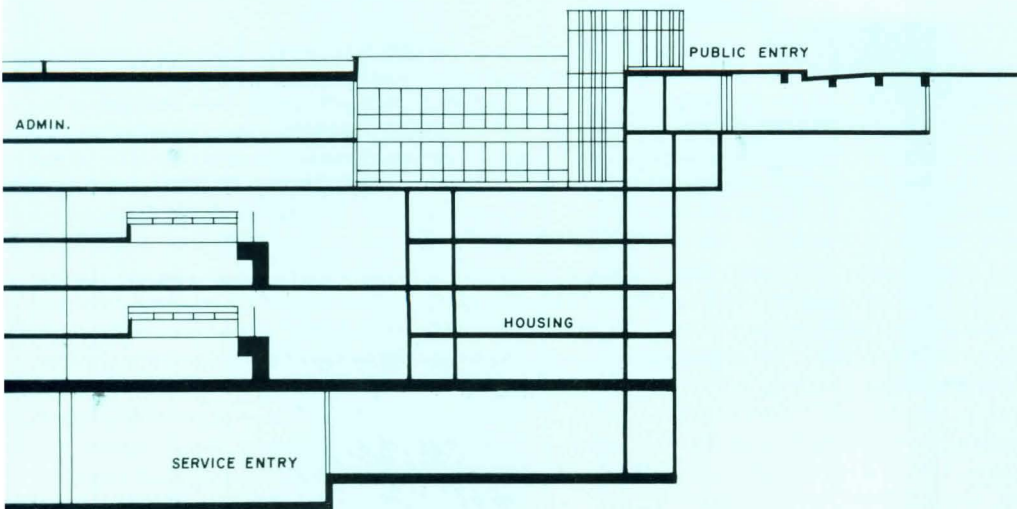
This facility is designed to house 150 inmates in a cliff-side facility overlooking the Mississippi River. It is intended only for short-term detention—average stays are 1½ days for misdemeanants and 10 days for felons. This short-term imprisonment played an important part in the design concept: it suggested that the facility should be subdivided, under a unit-management concept, into 16-room housing units, each with a day room and dining space. Each unit is 4,000 square feet in area. There is adequate space for games and exercise equipment in each unit, but there is no large indoor or outdoor recreation area.

Says Paul Silver of Gruzen and partners: "Here, more than in any other facility we

have done, the restrictedness of the living area raises important concerns. A unit of 16 rooms produces a relatively small total group living area. Doubling the unit size to 32 rooms would have produced twice the available free area, and possibly altered the 'compressiveness' of the environment; yet this would have made security more difficult and probably required mixing inmates detained for minor and more serious crimes—which is not desirable programmatically. The question remains: is 4,000 square feet enough space to house 16 people for two weeks (or perhaps more time for some) without negative depressive effects that could lead to extreme behavior? We really do not know."



TYPICAL HOUSING UNIT



The park on top of the facility (drawing above) is a public facility—an amenity that helped reduce neighborhood reluctance in accepting the facility.

RAMSEY COUNTY ADULT DETENTION CENTER, St. Paul, Minnesota. Owner: Ramsey County. Architects: The Wold Association—Fred J. Shank, principal in charge; Clarke D. Wold, project coordinator; Raymond A. Keller, project architect. Associated architects: Gruzen & Partners—Peter Samton, director of design; Paul Silver, director justice facilities; Virendra Girdhar, principal designer. Consulting engineers: Kirkham Michael Associates. Food service consultant: Van Hemerd Associates. General contractor: Steenberg Construction Co.

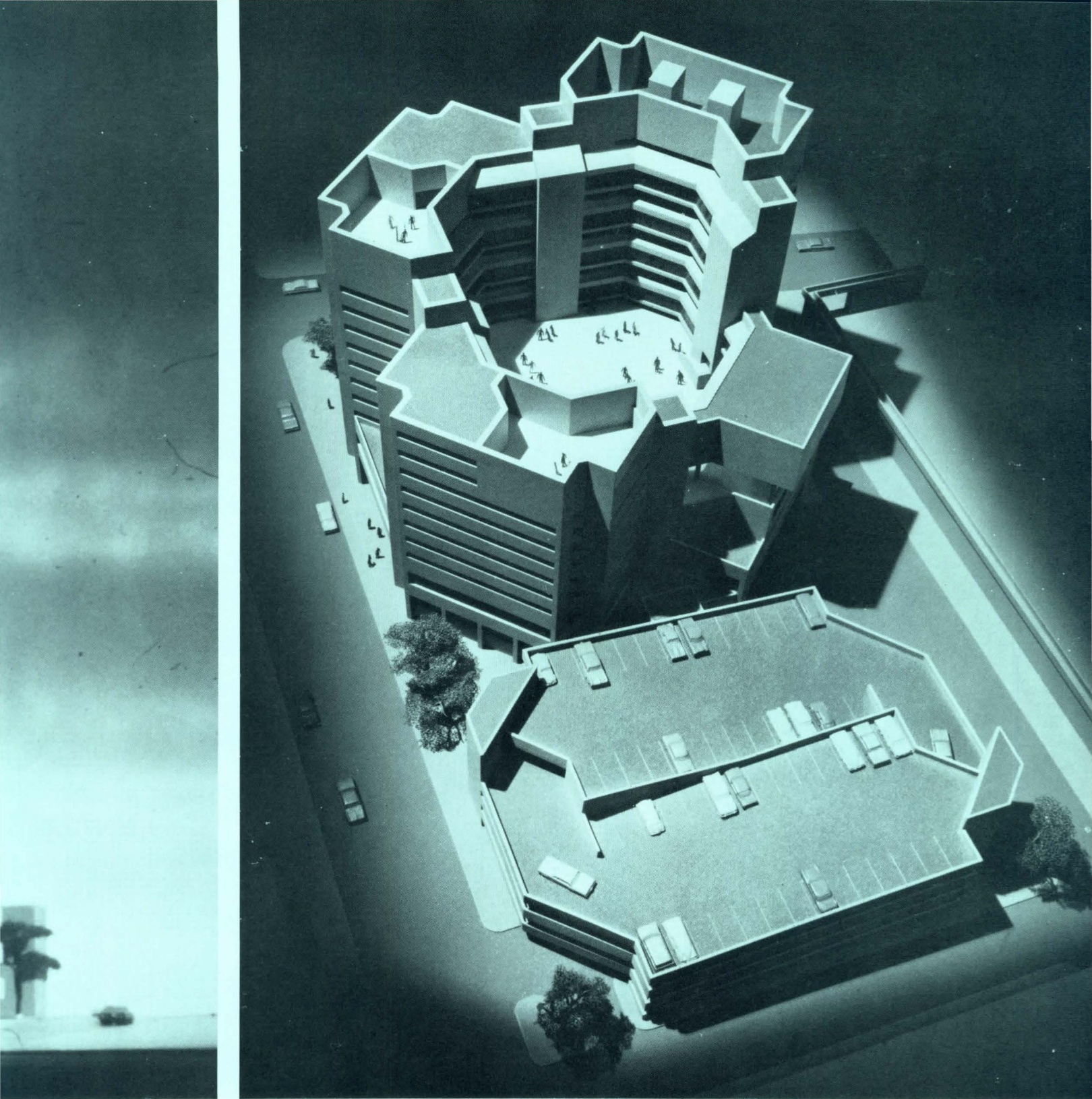


MARYLAND RECEPTION, DIAGNOSTIC AND CLASSIFICATION CENTER, BALTIMORE

This urban facility, designed for a population usually held for 30 to 60 days, deals with some of the concerns voiced by Paul Silver of the Gruzen firm on the previous page.

Like the Minnesota facility, this center is based on a unit-management concept—but here the unit is 32 inmates. And in addition to one large indoor recreation area, there are three outdoor spaces—best seen in the photo above right—made secure by building elements themselves. The largest space is in a central courtyard on the roof of the administrative and diagnostic floors, surrounded and secured by the living spaces. The two smaller spaces are on the rooftop, secured by building walls which also extend to enclose

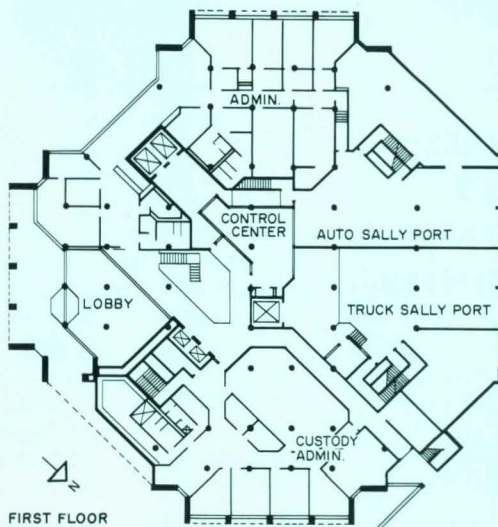
mechanical spaces. This design technique for acquiring outdoor space also met the architects' desire to create a building which would have minimum impact on the character of the residential neighborhood. Indeed, when complete, the new facility will be in scale and in character with new high-rise apartments planned for the area. The residential character of the center is also enhanced by the use of large windows (which of course work to minimize the sense of enclosure and confinement inside), and by the design of the lobby and public spaces. These street-side facilities are designed as important public spaces and will be furnished in a non-institutional way. In short—"perhaps to the limit of our current



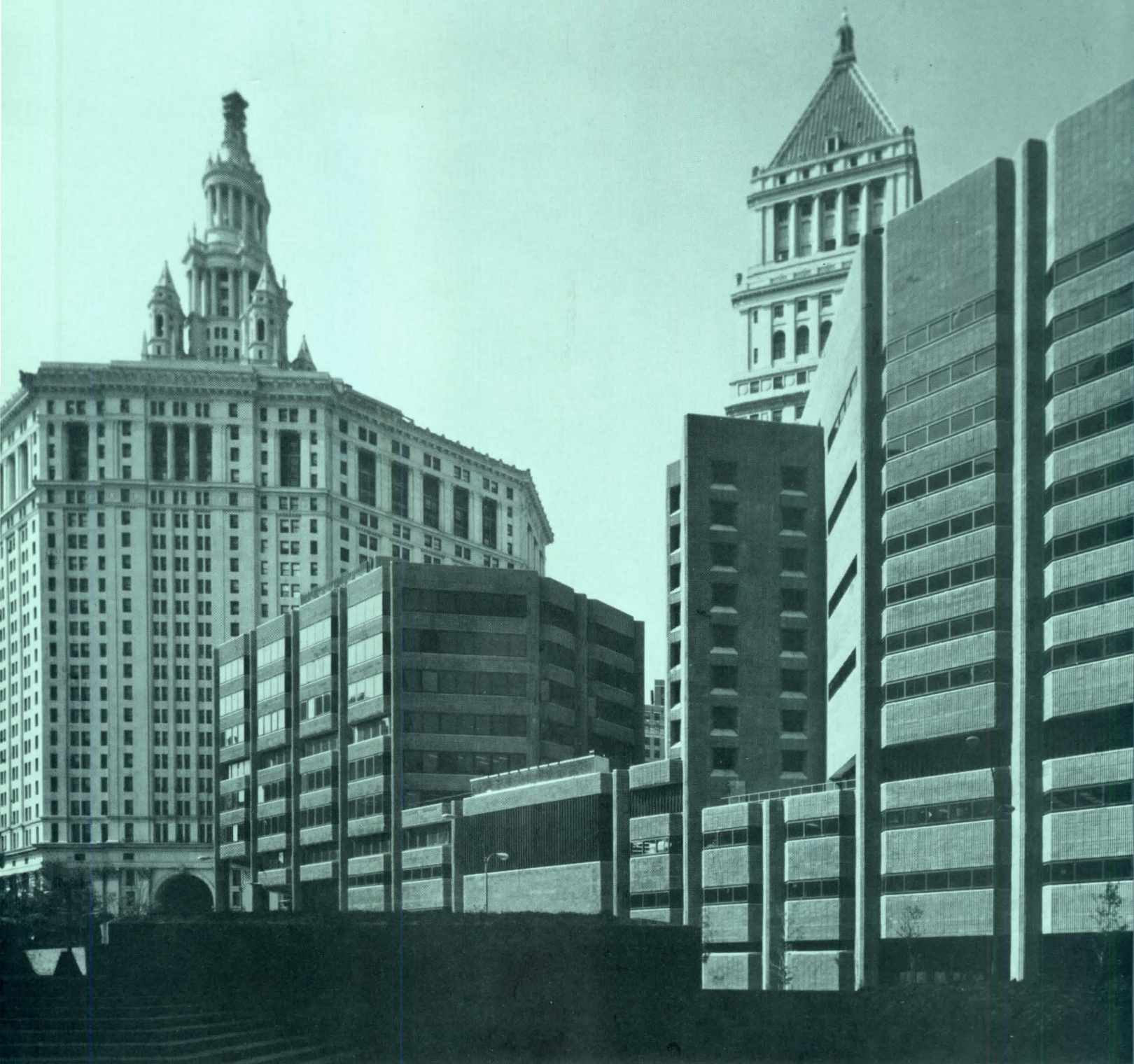
Louis Checkman

ability to provide a sense of freedom within while maintaining security," says Silver—the building reduces to a minimum the traditional symbols of incarceration.

MARYLAND RECEPTION, DIAGNOSTIC AND CLASSIFICATION CENTER, Baltimore, Maryland. Owner: Maryland Department of General Services. Architects: McLeod Ferrara & Ensign—William L. Ensign, principal in charge; Stewart E. Duval, project coordinator. Associated architects: Gruzen & Partners—Peter Samton, director of design; Paul Silver, director, justice facilities; Virendra Girdhar, principal designer. Engineers: Greene & Seaquist Inc. (structural); Syska & Hennessy Inc. (mechanical/electrical). General contractor: Baltimore Contractors.



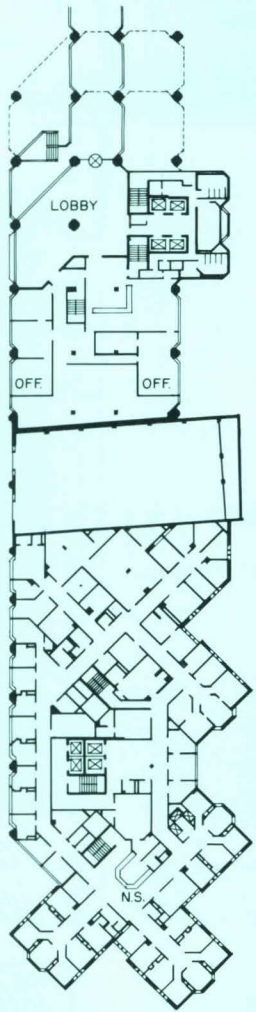
FIRST FLOOR



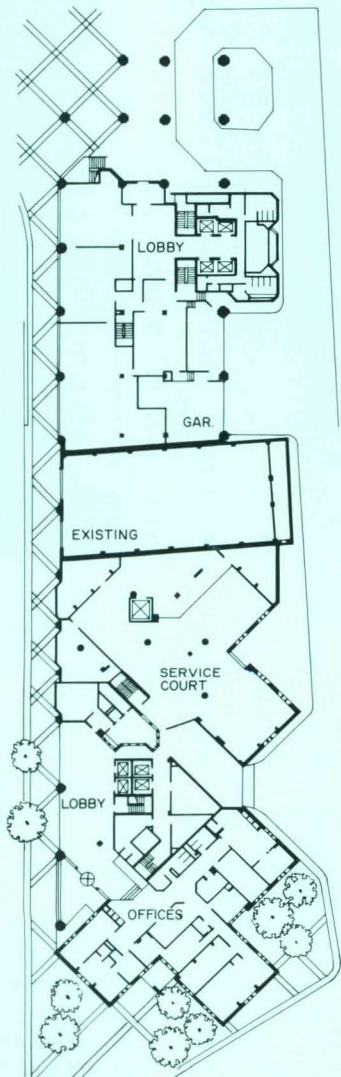
**FOLEY SQUARE
COURTHOUSE ANNEX:
ATTORNEYS' OFFICE
AND METROPOLITAN
CORRECTIONAL CENTER
NEW YORK CITY**

As a large correctional center located in a metropolitan area with high crime, this project represents a major effort to create a humane prison environment. The architects concentrated on reducing negative stresses associated with incarceration by creating a "normative" environment, according to architect Paul Silver, that gives a freedom of movement to the prisoner within an obviously limited area. To achieve this, the design included providing large open interior spaces, with extensive number of windows, decentralized dining areas, acoustical control to minimize noise, and a visually inconspicuous security system. Every detail was studied, including specifying non-traditional hardware.

FOLEY SQUARE COURTHOUSE ANNEX: THE OFFICE BUILDING FOR THE U.S. ATTORNEYS AND THE METROPOLITAN CORRECTIONAL CENTER, New York, New York. Owner: *General Services Administration, U.S. Department of Justice*. Architect: *Gruzen & Partners—Jordan Gruzen and Peter Samton, partners-in-charge of planning and design; Lloyd Fleischman, project director; Paul Silver, director of justice facilities; Gordon Vance, project manager; Robert Genchek, principal designer*. Engineers: *Strobel Associates (structural); Cosentini Associates (mechanical)*. Landscape architects: *M. Paul Friedberg & Associates*. Food service consultants: *Romano & Associates*. General contractor: *Castagna & Sons*.

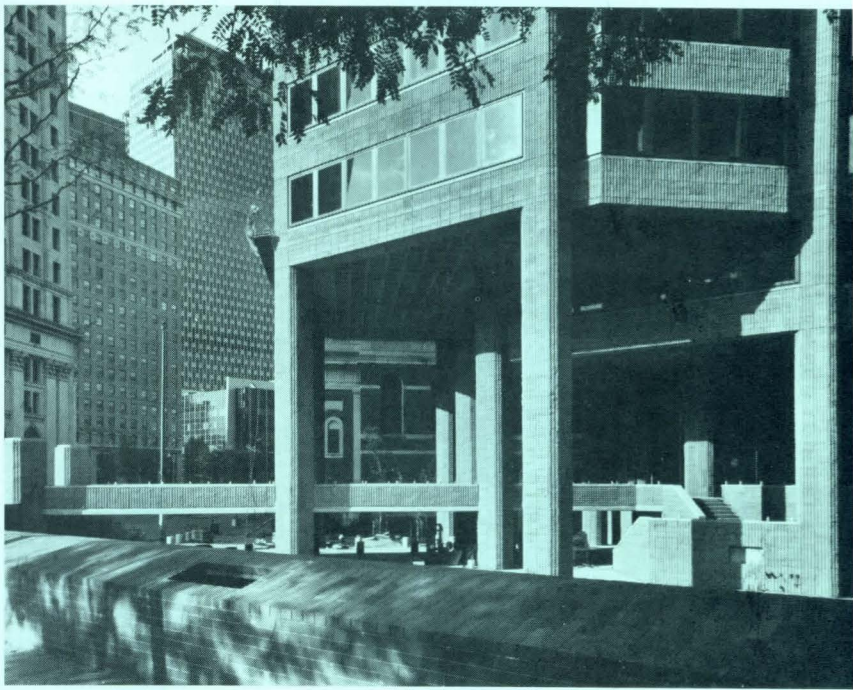


SECOND FLOOR (MEDICAL UNIT)

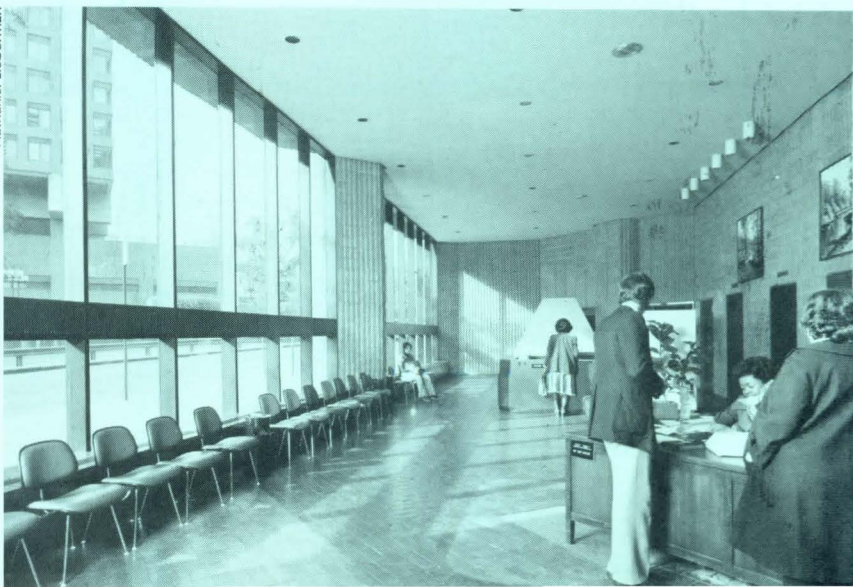


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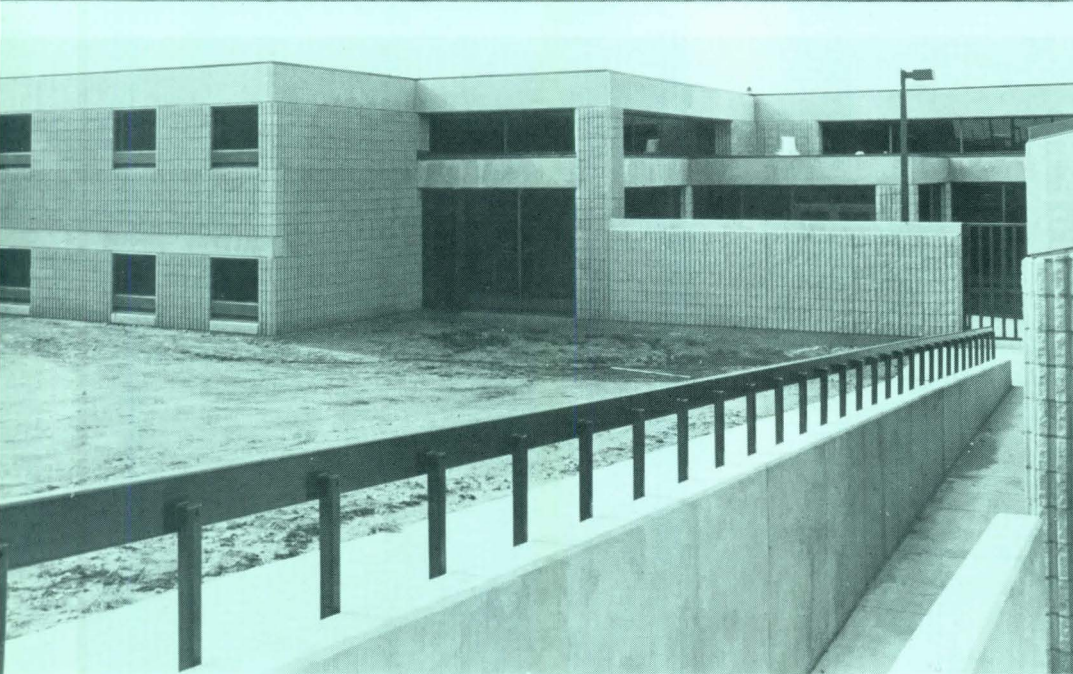
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Nathaniel Lieberman



David Hirsch photos except as noted



LEXINGTON ASSESSMENT AND RECEPTION FACILITY, LEXINGTON, OKLAHOMA

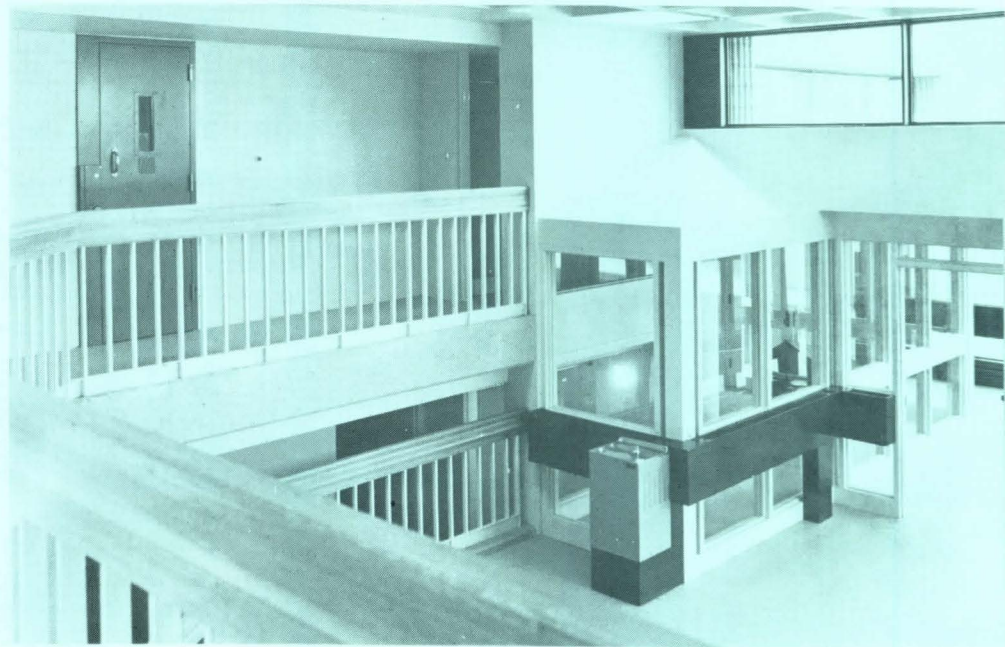
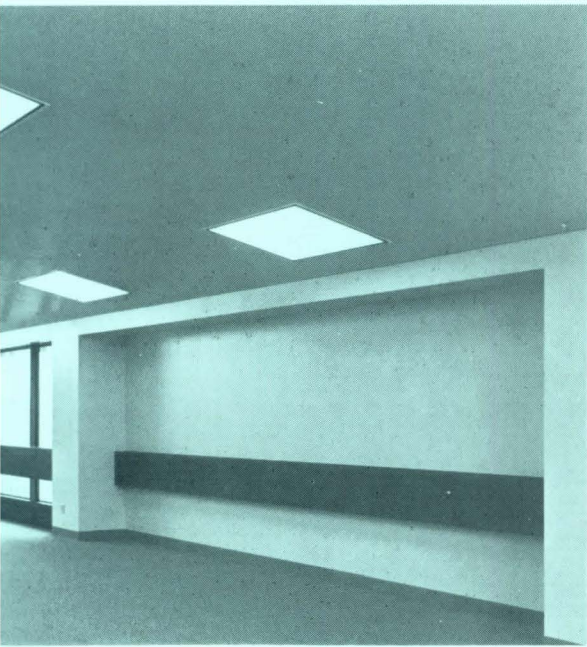
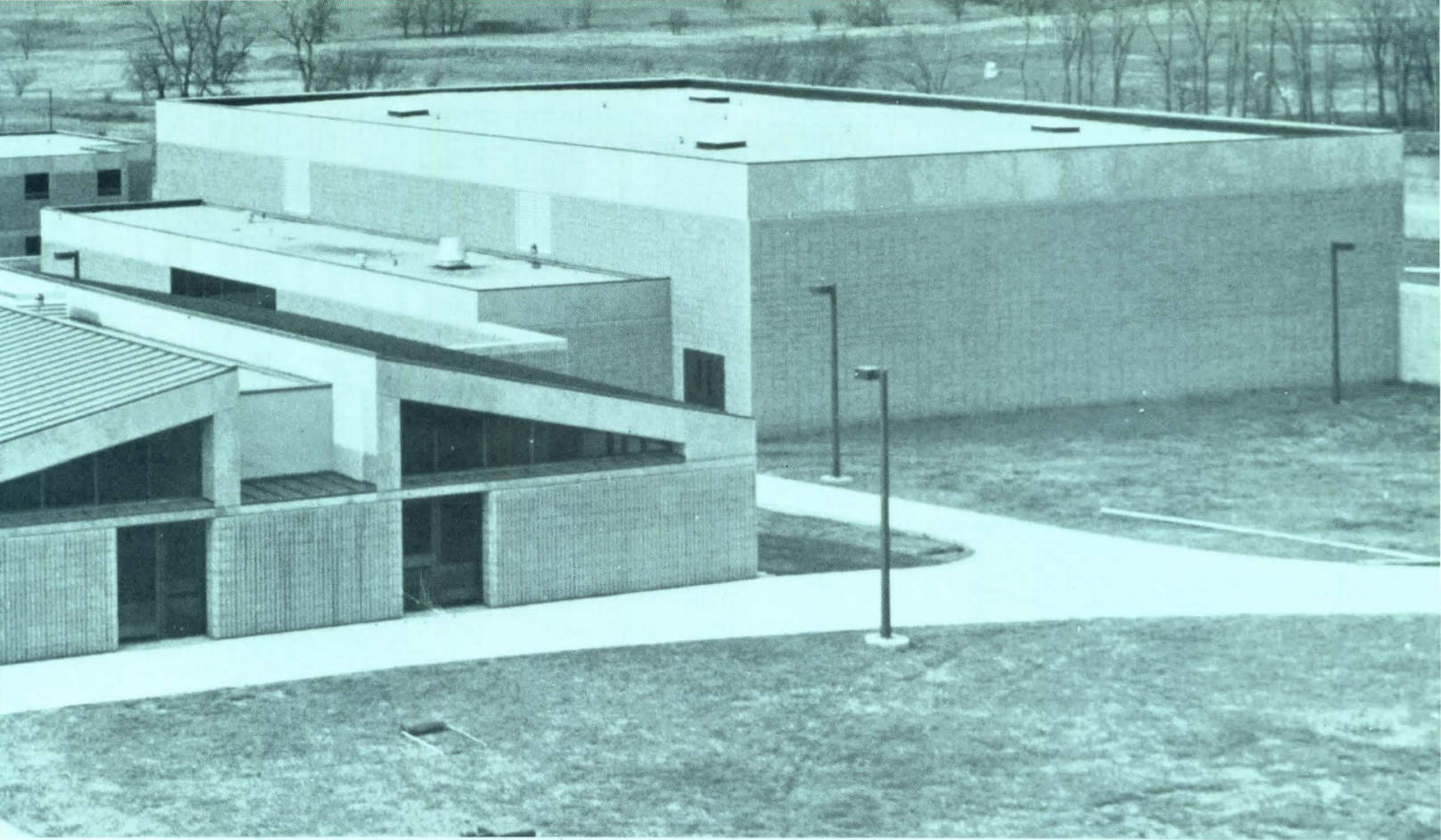
As the latest development at this regional correction center (which serves many counties in central Oklahoma), the housing units were designed as a prototype for the state's correctional system. This facility houses 240 inmates who are serving both short- and long-term sentences.

In appearance, the project is residential in scale and character. Each housing unit is comprised of two modules, linked to a separate education/vocational building which also contains the unit manager's office. Each unit houses 80 persons, but each prisoner has a private cell. The rooms are clustered in groups of 20 around a split-level day room. A central control room for each module

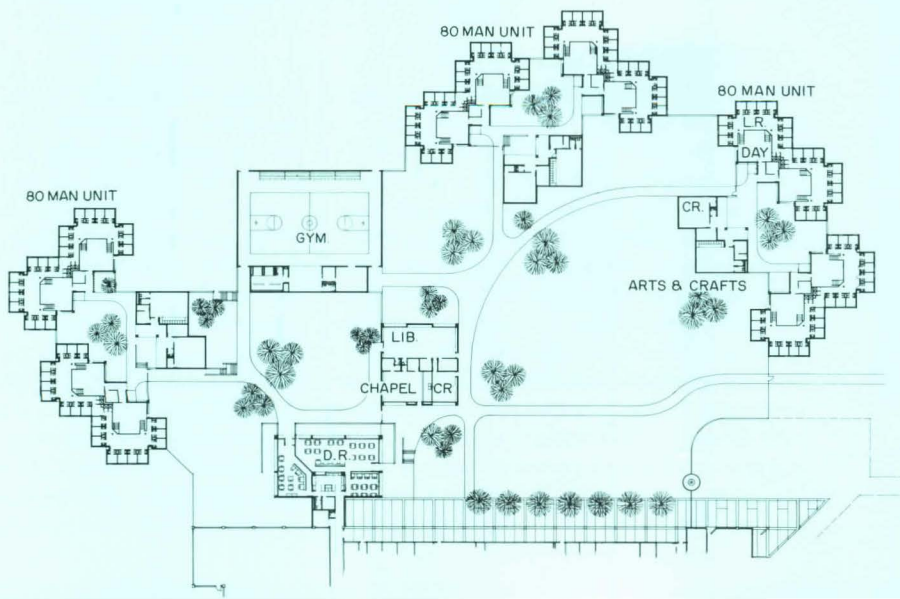
provides electronic monitoring of all doors and entrances.

One housing unit is set off from the other two for persons requiring special supervision, and can be isolated if necessary. Between this housing and the other units are common facilities of gymnasium, library, chapel, and dining hall.

LEXINGTON ASSESSMENT AND RECEPTION FACILITY, PHASE II, Lexington, Oklahoma. Architects: *Benham-Blair & Affiliates, Inc. and Hellmuth, Obata & Kassabaum*. Engineers: *Benham-Blair & Affiliates, Inc. (structural/mechanical); Hayakawa Associates (electrical)*. General contractor: *Harmon Construction Company*.



Kiku Obata photos





MENDOCINO COUNTY DETENTION CENTER AND JUSTICE COURT UKIAH, CALIFORNIA

This facility for sentenced misdemeanants is located on a highly unusual site—near a prominent residential area. The design, therefore, is highly responsive to the community.

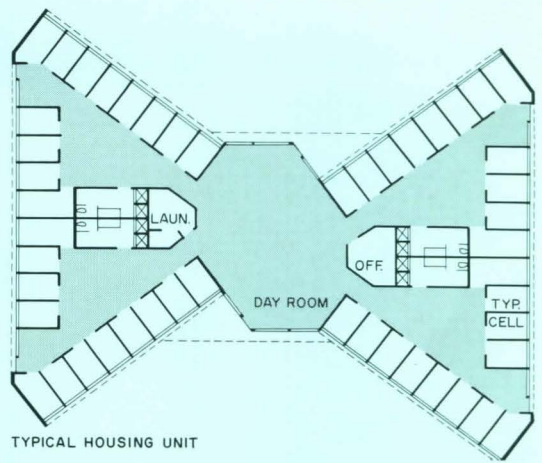
Four buildings form a pleasant mini-campus for both male and female inmates in a primarily minimum-security system (although there is an area designated for medium security). The men are housed in two residential buildings and the women are located in a building which also provides housing for men awaiting trial and administrative offices, infirmary and visiting rooms. The fourth building in the complex is for recreation and dining.

As a minimum-security complex, the cells are located along the perimeter, which is

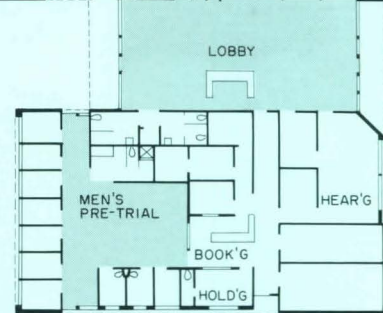
lined with windows. These cells surround an open area which leads to a central day room (along with laundry and counseling facilities).

In an effort to blend the buildings with the site and increase its acceptance by the neighborhood community, the design was kept simple, with appropriate scale and massing of the buildings, a wood exterior and covered walkways.

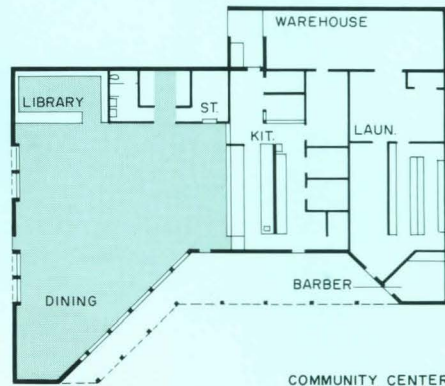
MENDOCINO COUNTY DETENTION CENTER AND JUSTICE COURT, Ukiah, California. Architect: *Kaplan-McLaughlin*. Engineers: *Anderson & Culley (structural)*; *JYA Design Associates (mechanical)*; *The Engineering Enterprise (electrical)*. General contractor: *Todd Construction Company*.



TYPICAL HOUSING UNIT

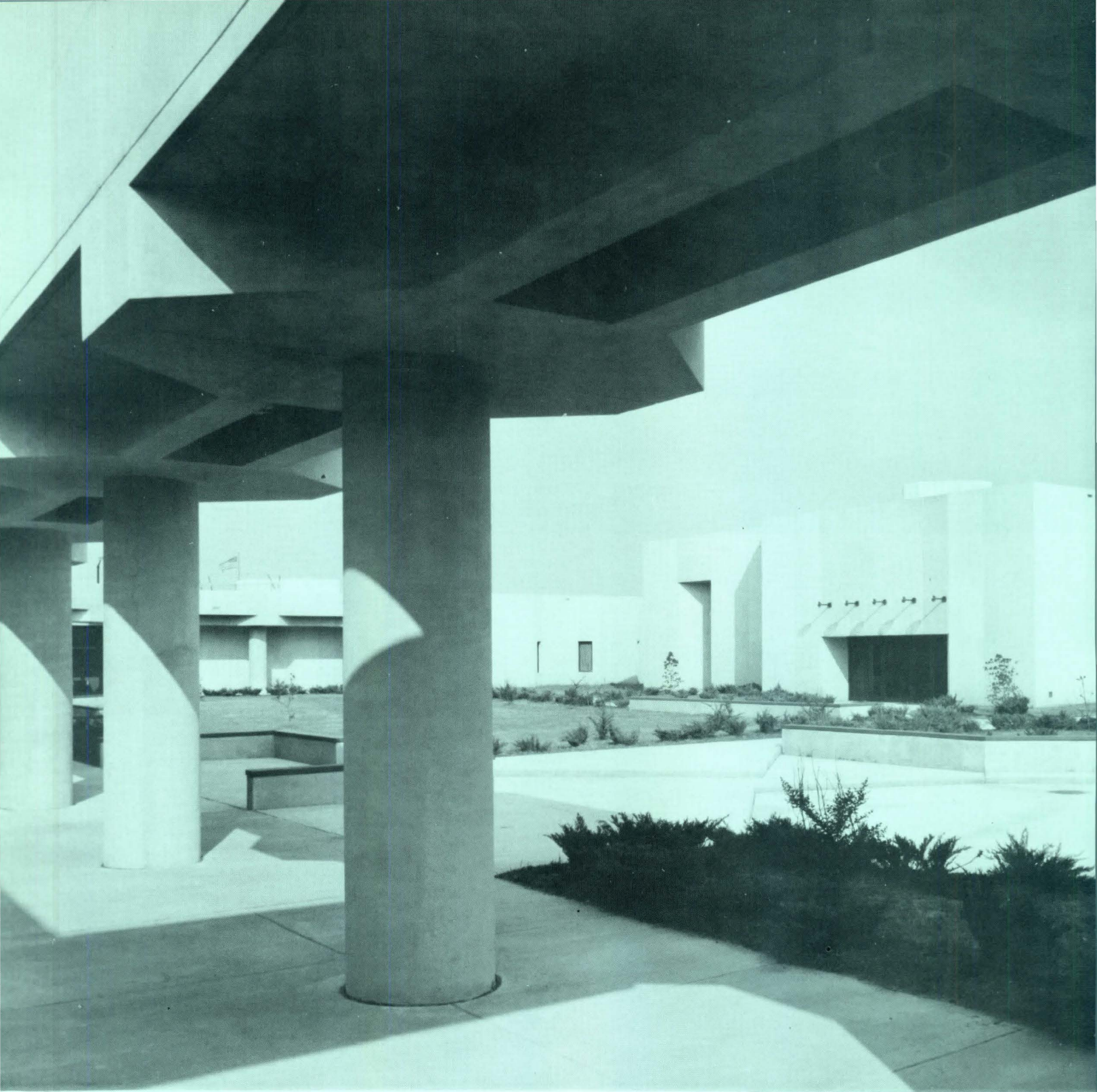


PROGRAM CENTER



COMMUNITY CENTER



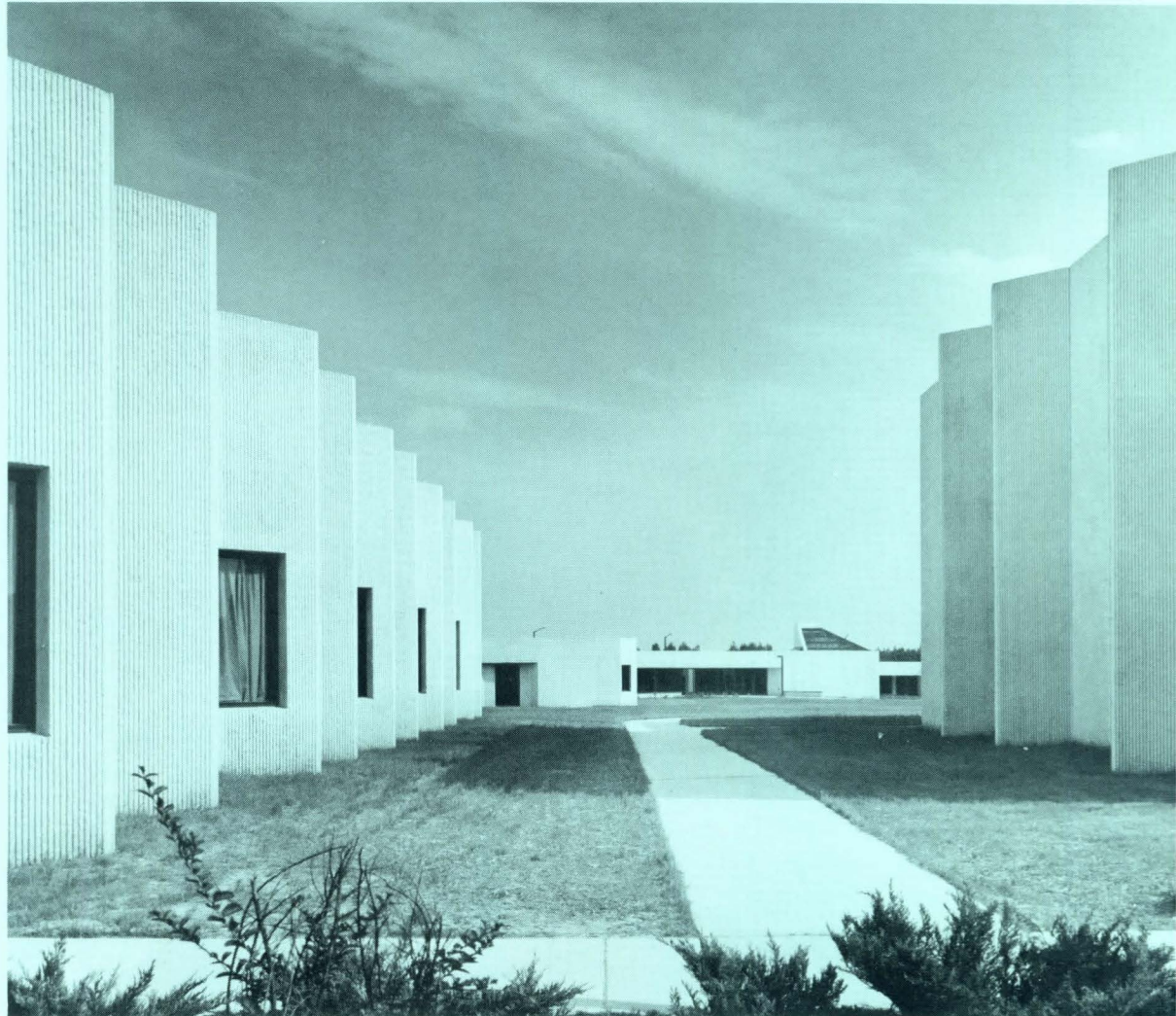
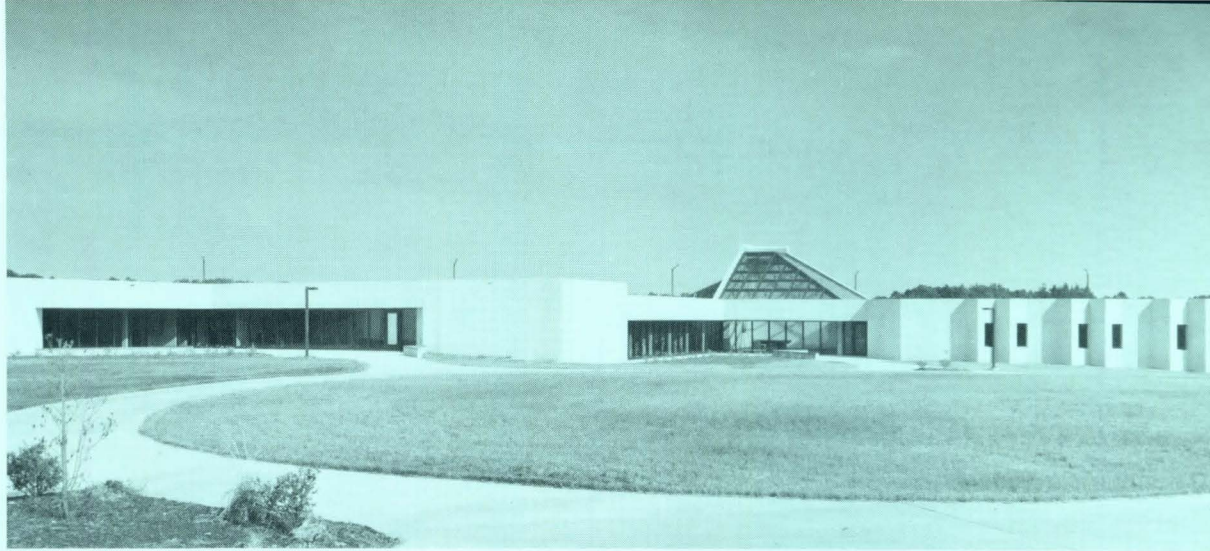
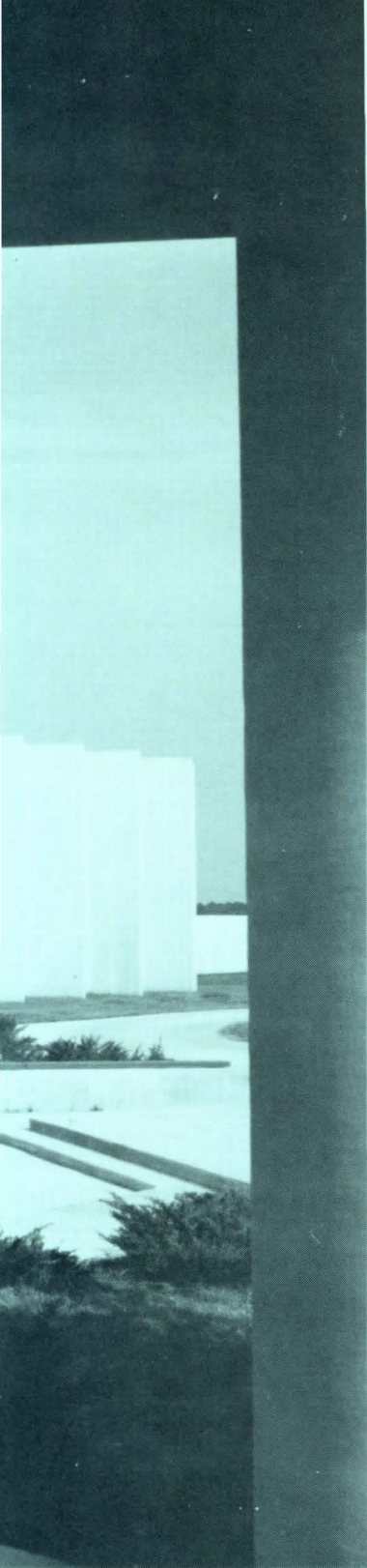


**FEDERAL
CORRECTIONAL FACILITY
BUTNER,
NORTH CAROLINA**

This medium- to high-security Federal correctional institution was originally conceived as a service facility to house mentally disturbed and otherwise abnormal inmates from other Federal prisons in the East. The goal was to design a complex that was more "humane" than prisons normally are—with less visible security systems, fewer inmates, and an over-all look that was not institutional or oppressive. To those ends, the traditional gun tower was eliminated, and only an irregularly octagonal double fence defines the outer perimeter. Three clusters of housing units designed for mentally ill inmates are located together on one part of the site (see model photo opposite), and most of the rest of the buildings help enclose an outdoor

space that is thought of as a kind of village green. With this "cottage-like" arrangement of buildings, though, adequate care was taken to make for adequate visual control of inmates by a minimum number of staff. The photo above shows the chapel and auditorium building in the center of the green.

FEDERAL CORRECTIONAL INSTITUTION, Butner, North Carolina. Owner: *United States Department of Justice, Bureau of Prisons*. Architects: *Middleton, McMillan, Architects, Inc.*—project designer: *Ronald W. Touchstone*. Engineers: *Frank B. Hicks Associates* (structural); *Mechanical Engineers, Inc.* (mechanical); *John Bolen Engineers* (electrical). General contractor: *G. C. Tandy Construction Co.*

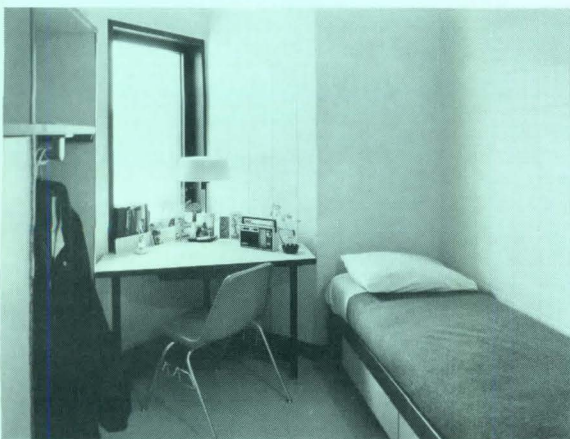


Gordon Schenck photos





Gordon Schenck photos



The top photo above shows a common area in one of the housing buildings. In the background are doors, made of wood, to individual inmates' rooms. In the foreground are doorways leading to showers and to toilets. The photo on the left is of an inmate's room—where, again, the attempt was to achieve as normal a look as possible. The windows are bent out in a saw-tooth pattern to relieve the rectilinearity of the inside and also to break up the long facade outside. The photo immediately above shows the main entrance to the facility through which everyone entering or leaving passes, controlled by the booth on the left.

Acoustical privacy in the open-plan office—updated

Nearly 40 per cent of all business furniture manufactured these days is, according to trade sources, of the open-plan type. The reasons for using the open-plan approach seem more compelling today than in the early '60s, when "office landscaping" was introduced as a means for improving communications and paper flow, and for opening up interiors visually. Today, two of the most persuasive reasons for going open plan are the ease of rearranging offices and the much lower cost for accomplishing this, compared with moving fixed partitions—perhaps 60 cents per square foot, versus 5 to 6 dollars.

But though the basic engineering, design techniques and products exist to provide acoustical privacy, the principles involved need to be better understood, and the tools more thoroughly applied, by architects and interior designers if occupants are to be satisfied with their acoustical environment. Of all the environmental considerations of the open office, acoustical privacy is the one that clients appear to be most concerned about, and are most intolerant of if conditions are unsatisfactory.

All three components—the ceiling, screens, and masking sound are important

Providing acoustical privacy in open-plan offices is of course a much tougher problem than for closed offices—the main reason being that with only screens rather than partitions to separate people, much of speech sound goes over the screen by reflections from the ceiling and by diffraction (bending) over and around the screen. In either closed-plan or open-plan offices, acoustical privacy is provided by attenuating sound with barriers, absorbing it with acoustical materials, and masking the remaining portion with background sound to achieve a

required degree of privacy. But with the open plan, a higher level of masking sound is required, electronically generated.

The most important component in an open-plan office for providing speech privacy is the ceiling, because speech sounds reflect readily from the ceiling into adjacent work stations. On the one hand, the ceiling has to be much more absorptive than in closed offices. But furthermore, the placement of lighting fixtures becomes critical, particularly if they are flat (hard) lensed units. A screen directly under a flat lighting fixture is in a poor location because the fixture is in a path in which reflected sound can occur.

The other architectural elements that affect acoustical privacy are the screens and vertical room surfaces such as walls, windows and columns. Screens have two basic functions: 1) to attenuate direct sound by impeding its path through and around, and 2) to absorb some of the sound that strikes them. The screens need to have a certain amount of mass and an impervious layer to attenuate direct sound. Because screens are only five or six feet high, and of limited width, sound bends around the tops and sides.

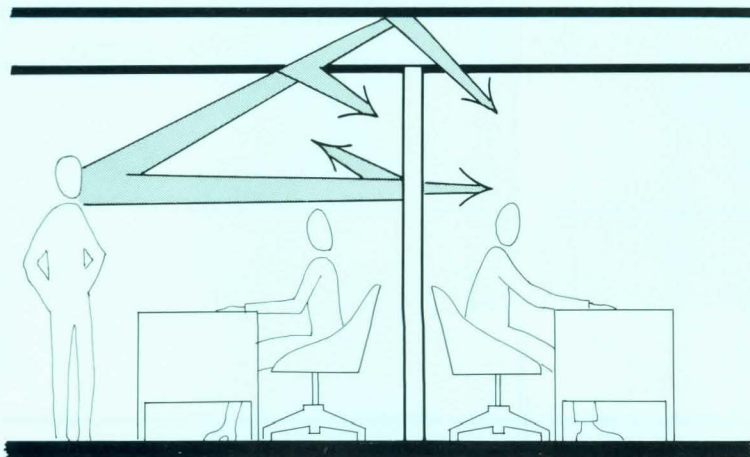
The efficacy of screens in attenuating direct sound need only be comparable to their efficacy in controlling diffracted sound—any further improvement in construction is wasted. The practical implication of this is that the screens needn't be as good sound attenuators as ceiling-high partitions. Screens having a Sound Transmission Class (STC) of 20 to 25 suffice. Common screen constructions for accomplishing both attenuation and sound absorption comprise two layers of fiberglass as a core with a septum of aluminum foil or hardboard between them.

Walls, flanking screens, windows and interior columns can degrade acoustical privacy if the speaker's voice is reflected toward the listener. When offices are near walls or large columns, speech privacy can be improved by putting sound absorptive materials such as fabric-covered fiberglass on them. While most carpets are of limited value for sound absorption in open-plan offices—though they are good for reducing impact noise of footfalls—a deep clipped pile sometimes has been used as a wall carpet. Acousticians recommend that, as a minimum, absorptive treatment should be applied in the region from 2 to 6 ft above the floor. Circular columns no more than 1½ ft in diameter require no treatment.

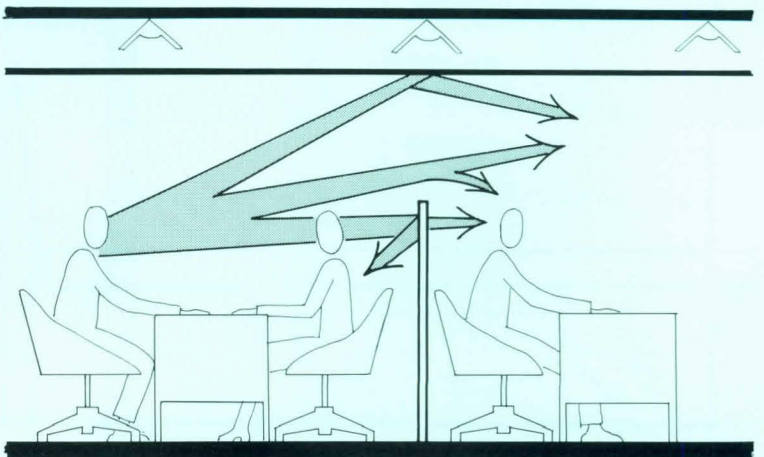
With a total open plan, the exterior wall may not be a good location for upper management personnel unless something is done about the windows; otherwise their privacy may be unsatisfactory. One solution is to tilt the glass so that unwanted sound is deflected to the ceiling or the floor. Drapes have to be heavy to do any good at all, and, of course, they must be closed when the office is occupied. Laboratory tests have shown useful attenuation from vertical window slats filled with 5/8-in. sound absorbing material. Absorbing screens placed as little as 3 in. from a hard wall were found in laboratory tests to be much less effective than screens tight up against the wall (no reflections around the screen).

Besides attenuation by barrier and absorption of sound, the designer has another variable at his disposal for decreasing the sound of speech, and that is distance between speaker and listener and orientation of the speaker. Sound level decreases approximately 6 dB (decibels) each time the distance between speaker and listener is doubled. The likely

In closed-plan offices, acoustical privacy is ensured mainly through the use of full-height partitions. (An above-ceiling barrier also may be required.)



In open-plan offices, a more-absorptive ceiling and electronically-generated masking sound make up for speech that goes around and through screens.



sound level of conversational speech at a distance of 3 ft is 60 dB (as measured on the A scale of a sound-level meter); a raised voice would register 66 dB, and a loud voice, 72dB. (The more correct terminology for these values is 60 dBA, 66 dBA and 72dBA.)

Outdoors, speech energy is 9 dB less behind a speaker than in front of him. This suggests that orientation may be of some help in reducing the sound level of speech, but the designer needs to realize that he may not be able to depend upon desk and screen location, nor on the direction the speaker may face. At least occupants should not face one another.

A rule of thumb given by acoustician R. Kring Herbert is that a minimum of 80 sq ft per work station is required for normal privacy, and 200 sq ft for confidential privacy. In typical open-plan offices, the distance between individuals ranges from 9 to about 12 ft.

Because open-plan offices have only partial-height barriers (screens), they need more background (masking) sound than closed offices—which many times rely on the background noise of air-conditioning systems. Masking sound cannot be much higher than 50 dBA without resulting in dissatisfaction. Above this level speakers tend to raise their voices.

Masking sound is achieved by using electronic random noise generators to drive loudspeakers concealed above the ceiling. Air-conditioning noise will not do because its sound level may not be high enough, its frequency spectrum may not be what is needed, and it may be interrupted. The frequency spectrum of masking sound needs to be shaped to mask speech with the least distraction. This can be achieved if the spectrum is shaped similar to that of speech. The masking sound must be uniform throughout the office space and continuous so that occupants will not be conscious of it. Furthermore, it is not wise to have some areas of the building quieter than others, though if some areas require more masking sound than others, a transition area can be provided.

Masking sound systems can be either central or self-contained. The latter are best suited to small areas for which a central system might be too expensive. Some acousticians say

the dividing line is at about 10,000 sq ft. Often, in large systems, two-channel electronic noise generators are used to make the masking sound less noticeable, with speakers alternating in a calculatedly irregular pattern to offset auditory overlap. Electronic masking sound systems cost between 50 and 75 cents per sq ft of area served.

Various techniques improve effectiveness of the ceiling and reflecting walls

As noted earlier, ceilings need to be absorptive in a way that reduces reflected sound. The ceiling must be highly absorptive at the angles of incidence of between 30 to 60 degrees that commonly occur between work stations, and at the frequencies that contribute most to speech intelligibility. The component of speech at 2,000 Hz (Hertz, or cycles per second), for example, contributes much more to speech intelligibility than the component at 500 Hz. And absorption in an open-plan office is not as predictable from the noise reduction coefficient (NRC) of the material based upon standard test procedures, because NRC averages absorptivity at all angles.

Also, as mentioned earlier, care must be taken in locating ceiling lighting fixtures (or, alternatively, in locating screens) and with the physical construction of the fixtures. Screens should not be located directly under flat-lensed lighting fixtures. If this cannot be avoided—for example, in renovation work—the acoustician may feel that sound-absorbing baffles at the ceiling are necessary. Manufacturers Life Insurance Co. could not have converted its head office in Toronto to an open plan without this kind of solution, other than by replacing the perforated metal pan ceiling installed a number of years ago for radiant heating and cooling. The acoustics consultant, R. Kring Herbert of Ostergaard Associates, developed a special shallow acoustical baffle, installed on a 5- by 5-ft grid, that effectively diminishes ceiling reflections.

Consultants Bolt, Beranek and Newman designed a series of unidirectional baffles nested between the structural cross members of the open-plan offices of Ginn & Company in Lexington, Massachusetts, when the architect

decided to eliminate a hung ceiling. Speakers for the masking sound had to be specially designed to distribute sound evenly. An interesting sawtooth fenestration scheme was developed to minimize the effect of reflected sound from the glass: windows were set perpendicular to the exterior line of the building, and the walls, surfaced with cement-fiber plank, were sloped back at about 30 deg. Sound reflected off the angled glass is absorbed by the "soft" walls (see RECORD, mid-August 1974, page 97).

Another approach that appears to have acoustical merit is the use of fins on lighting fixtures to diffuse sound. A.C.C. Warnock of the National Research Council of Canada tested two prototype commercial luminaires, and the results suggested that the finned plastic units can provide "useful improvement over a simple flat sheet of plastic."

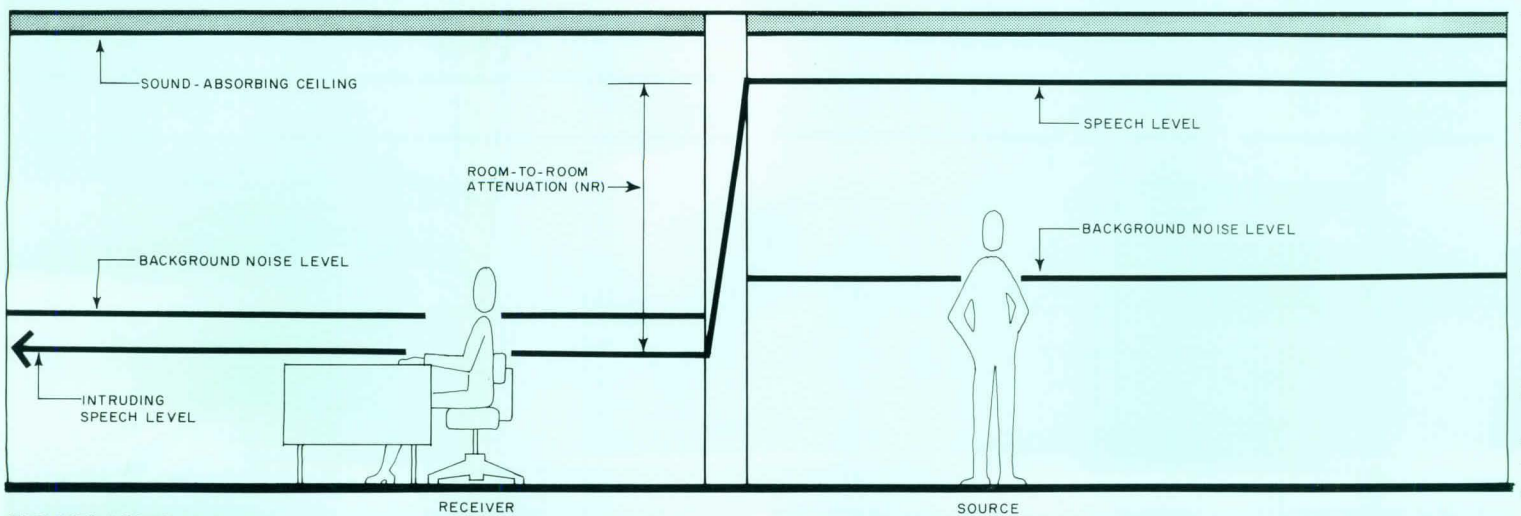
Open-bottom parabolic reflector luminaires do not produce adverse reflections. Furthermore, recessed, lens-type luminaires in coffered ceilings circumvent this problem.

Screen dimensions, location are important, as are the materials that stop sound

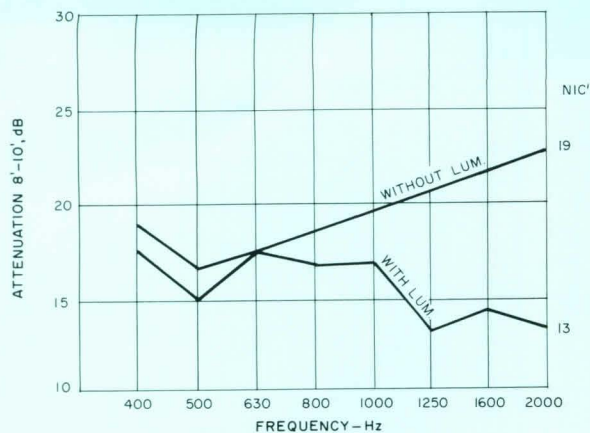
The architect and his consultant must pay particular attention to the size, shape, location and construction of acoustical screens.

Screens must be between at least 5 and 6 ft high. If they are under 5 ft, speech privacy deteriorates rapidly; when they are over 6 ft, appearance suffers, and most occupants cannot see the open space when they stand up. Screens must also be wide enough to avoid losses in attenuation caused by sound bending around the edges. An 8- to 10-ft width appears to be effective; beyond 10 ft, much less attenuation is gained. Preferably, screens should rest on the floor because large cracks under them let sound through. If they must be elevated, the opening at the floor should not be much more than an inch. When the direction of speech sound is over the screens, making them more absorbent adds only a dB or so to the attenuation in sound level. But when the voice sound has a flanking path—e.g., when a person turns toward an opening and his speech can be reflected off a screen outside his space and into

In closed offices, speech level and background noise are constant. The partition attenuates speech such that its level is below that of background noise

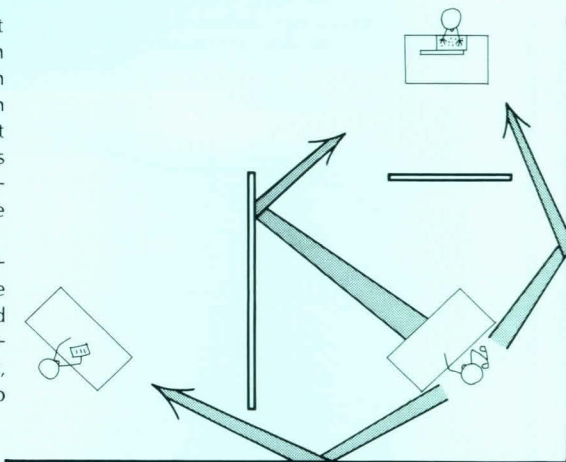


ENCLOSED ROOMS



Flat-lensed lighting fixtures, if they act as reflectors of speech sound, can deteriorate privacy in an open-plan office. The graph shows attenuation between zones for a ceiling without luminaires and for one with luminaires for a worst-case situation, i.e., measurement directly below the center line of a continuous row of luminaires.

Flanking paths, right, also can seriously lessen speech privacy. Corrective steps would include covering hard surfaces with absorptive material, arranging screens to block flanking paths, and abutting screens and walls to keep sound from getting by.



a neighboring space—absorptive treatment of the offending panel is imperative, and should have NRC of about 0.80. Some acousticians caution that an open-plan office can be made too sound-absorbent, resulting in an oppressive feeling; to avoid this they recommend that highly absorbent materials not be used indiscriminately.

Speech Privacy Potential: the newest method for evaluating the system components

Procedures for predicting and evaluating speech privacy have evolved since 1962 when a method for determining speech privacy in buildings, based upon the use of the Articulation Index, was presented by Cavanaugh, Farrell, Hirtle and Watters of Bolt, Beranek and Newman. Articulation Index is the percentage of words that can be understood from a speaker using conversational voice. Most recently (1972) the Public Buildings Service of GSA introduced a test method and performance specification for Speech-Privacy Potential (SPP), developed by Richard Hamme of Geiger & Hamme, Inc. The SPP is a single number of 60 that must be equaled, or surpassed, by the sum of the interzone attenuation and the background masking sound, viz:

$$SPP = NIC' + NC_{40} \geq 60; NC_{40} \leq 40.$$

Interzone attenuation, called NIC' , is the decrease in sound level between speaker and auditor that is achieved by a combination of absorptive ceiling, screen barrier attenuation, and distance. At present a SPP of 60 is the

maximum achievable using acoustical materials on the market which have a maximum NIC' of 20, and with the constraint that the masking sound cannot be greater than that of an NC-40 spectrum-shaped background ($20 + 40 = 60$). With these values, and assuming conversational speech, Hamme states that the Articulation Index is at least 0.1 or less, (less being better), yielding normal privacy or better.

A modified and simplified approach to the Bolt, Beranek and Newman speech-privacy calculation was introduced in 1965 by Robert W. Young of the U. S. Navy Electronics Laboratory. It uses the standard single-number rating for full-height walls (Sound Transmission Class, STC) and the A-weighted background noise (A scale of a sound-level meter) in the listening space.

The simplified procedure has been further modified for application to open-plan spaces and appears in *Noise and Vibration Control*¹ by L. L. Beranek, and in convenient work-sheet form in *Concepts in Architectural Acoustics*² by David Egan.

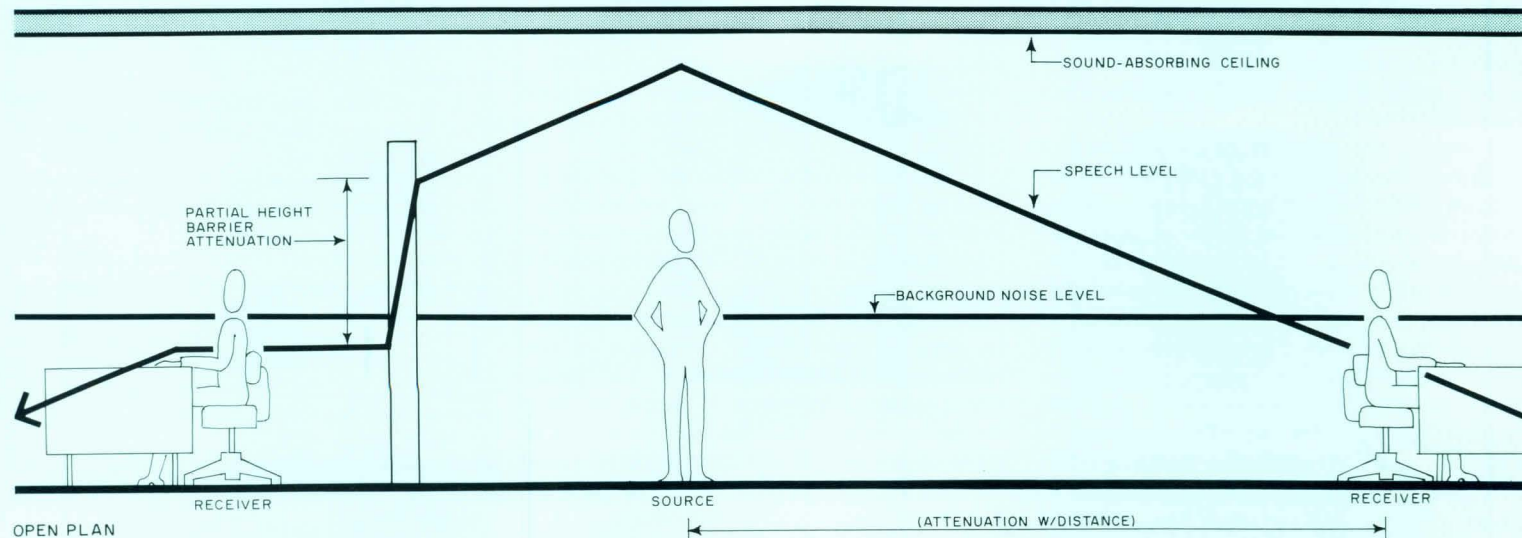
In addition to being applied to Federal buildings, the PBS Speech Privacy Potential method has been used by manufacturers as a basis for ratings (NIC' numbers) for ceiling materials and screens. The SPP method is an outgrowth of earlier research that Hamme had done on the efficacies of ceiling materials and screens for open-plan spaces. As a start, he set up a test on the roof of a building to determine the attenuation of speech provided by a 5-ft

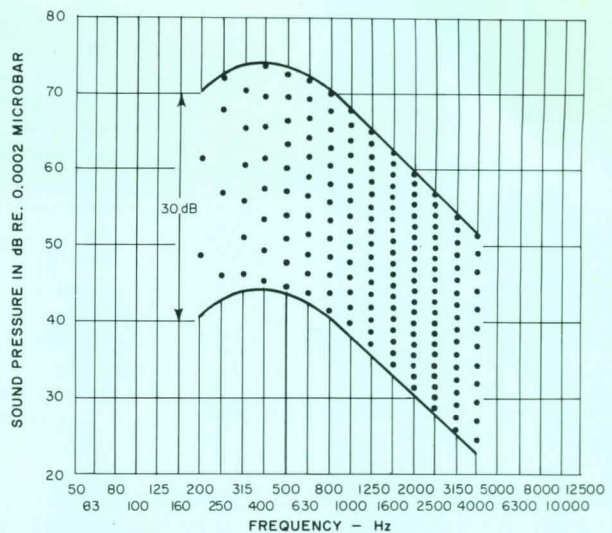
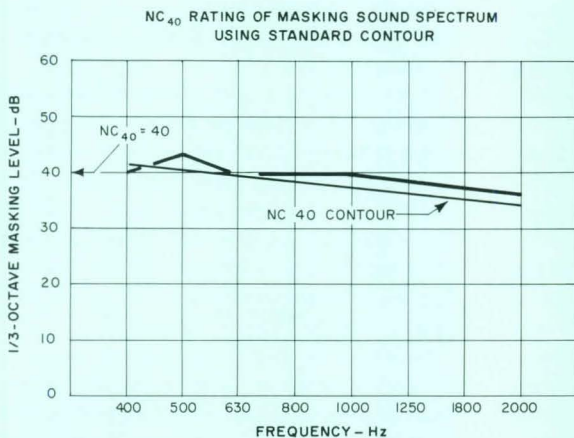
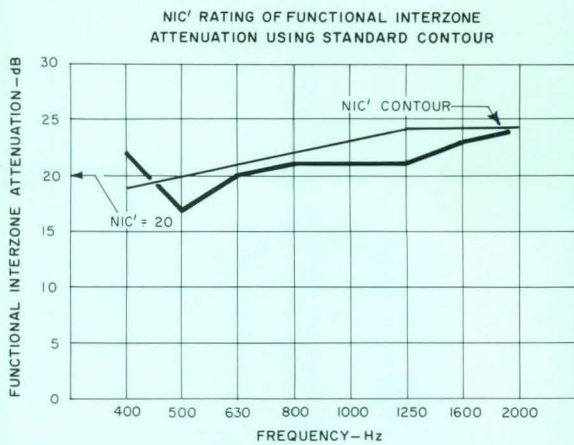
high screen under the open sky, and this was found to be a $NIC' = 23$, in effect, a theoretical maximum.

Both subjective and objective tests are included in the Hamme method for integrated ceiling and background sound systems, screens, and the flanking-path effect of screens. The subjective test requires three jurors, one of whom is the speaker, one, the listener, and the third, monitor of a speaker. If the listener judges the background noise to be acceptable in quality and to provide satisfactory privacy, the system of ceiling and masking noise is approved. If either or both the quality of the background noise or the degree of privacy are deemed unsatisfactory, then the listener and speaker have to go through a set series of procedures, varying the sound level and the spectrum of the masking sound. The jury rotates until each of the three has performed all three functions. The test applies to laboratory mock-ups, prototypes and field installations. It is permissible to replace two of the jurors by using pre-recorded speech.

With the objective test, separate sound level readings are taken of random noise (rather than speech) that has been attenuated by the absorbing ceiling and the screen barrier, and of the background sound that will be used to mask it. The readings are taken at 1-ft increments along a survey path on the opposite side of the absorbent screen from the loud-speaker, and the results are averaged to give a single number. To obtain ratings, the plotted

In open-plan offices, sound absorbency of the ceiling is a very important factor. Speech level decreases with distance. Masking sound is constant throughout.





Graphs at left illustrate the PBS method for rating sound-absorbing ceiling materials (or screens) and background masking sound. For ceiling materials, the NIC' contour is moved until the maximum single deviation of the attenuated speech sound does not exceed 4 dB, and the sum of all deviations does not exceed 16. The rating number, NIC', is determined by where the attenuated sound curve crosses the 630 Hz line. For masking sound evaluation, a comparable procedure is followed, except the reference curve in this case is that of NC-40 background noise.

The graph above illustrates the Articulation Index approach for determining speech privacy. The concentration of dots indicates the relative contributions of the various frequencies of speech sound to intelligibility. Interzone attenuation (effect of absorbing ceiling, screens and distance) reduces the level of speech sound; and masking sound "covers" it. The number of dots still remaining after interzone attenuation and masking have been taken into account gives the Articulation Index. If there are 10 dots left, AI is 0.1, and privacy is considered "normal."

values, which occur every one-third octave band from 400 to 2,000 Hz, are compared with two different reference curves—one called an NIC' contour, and the other an NC-40 contour. The first rates the attenuation of airborne sound from one zone to another (interzone attenuation). The second rates the background sound.

The NIC' contour is the same as the Sound Transmission Class contour used for determining transmission of airborne sound through partitions presented in ASTM Standard E413-73.

To determine the rating for background sound, the plotted data is referenced to the NC-40 curve, which is one of a family of noise criterion curves long used to specify the maximum noise level for different kinds of spaces.

The major difference in the application of these curves in the Speech Privacy Potential tests (PBS-C.1 and PBS-C.2) from their traditional usage is that the permissible deviations of the plotted points from the contour curves have been halved compared with the deviations normally allowed.

Prior to the existence of the PBS method of Speech Privacy Potential (SPP), acousticians utilized methods based upon A-scale-weighted measurements of sound levels or upon the Articulation Index (AI). Many acoustics consultants still prefer these methods. The use of dBA readings greatly reduces the number of measurements needed because one measurement encompasses all speech frequencies. Some acousticians argue, however, that dBA readings are insensitive to different shapes of masking sound. Whether this makes a significant difference in practical application depends upon how critical the application is, and on

the judgment of the investigator. The Articulation Index method, many acousticians contend, provides the most accurate approach for determining speech privacy because it is based upon the concept that the total intelligibility of speech is the sum of weighted contributions from different frequency bands of speech—in other words, AI specifically recognizes that some frequency bands contribute more to speech intelligibility than others.

Several questions need to be resolved, some pertaining to the PBS method, and some pertaining to all. One question is whether a Speech Privacy Potential as high as 60 is always needed. The Construction Research Council, whose members are from both private and public sectors, has developed a performance specification for the Integrated Ceiling Subsystem that requires an SPP of 60 for "speech privacy with voice at normal level," but allows an SPP of 57 when "speech privacy is not critical, but intrusion from a distance is controlled." This less-stringent requirement allows less costly ceiling materials to be used and perhaps eliminates electronic machinery costs.

The preferred spectrum (or spectra) for masking sound also is still open for discussion. With other office noises present, some acousticians wonder whether NC-40 masking sound is needed.

Finally, more research is needed, the industry says, to improve the correlation of test methods and actual experience. To cite an example, acoustics research people at Armstrong determined that the level of speech of three talkers used in their investigations was 60 dB, not 65 dB, used in the ANSI standard (long-term, broad-band RMS levels).

Though an ASTM standard has not yet been promulgated, task groups are at work on systems, interzone attenuation and screens, and a task group will be established on masking sound.

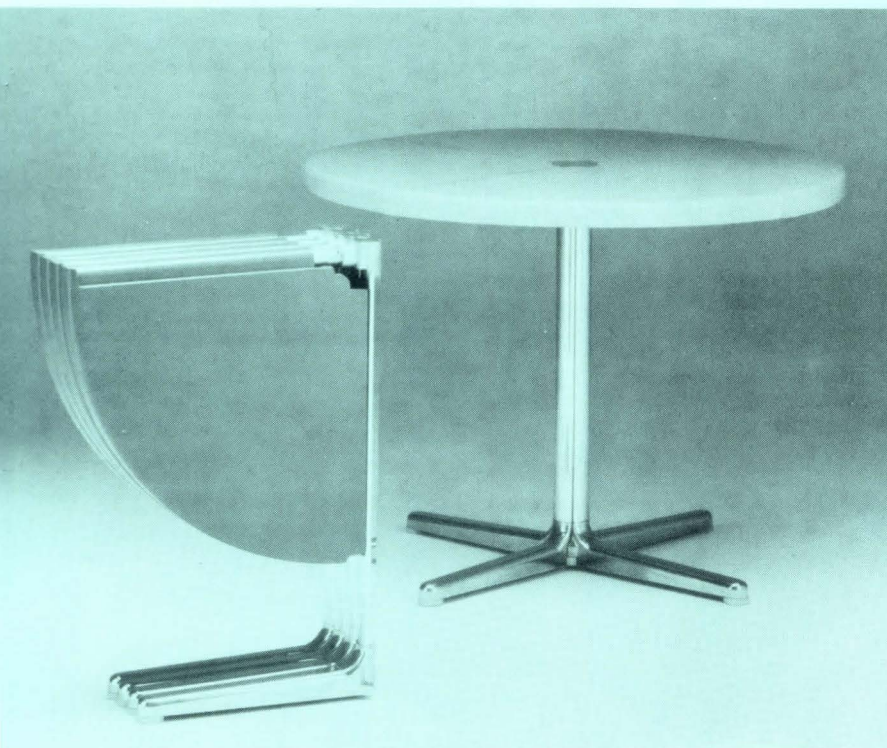
Architects should recognize that the acoustical environment for open-plan offices is a system, and that all the elements are interdependent. The weakest link in the system is controls. For example, reflections from unblocked windows or lighting fixtures can deteriorate what otherwise could be executive privacy to clerical privacy.

Success of acoustical privacy in the open-plan office depends not only upon materials and systems, but upon having the right people involved: 1) a good space planner, 2) an acoustics consultant, and 3) an office manager who recognizes the consequences of changes in furniture arrangement, and of altering masking sound, and who has the authority to make his decisions stick.

References

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- Egan, M. David, *Concepts in Architectural Acoustics*, New York: McGraw-Hill Book Company, 1972, pp. 103-118.
- ASTM Task Group E33.04.C, "Acoustical Environment in the Open-Plan Office," *Standardization News*, Vol. 4, No. 8, 1976.
- Herbert, R. Kring, "Planning Acoustics for the Open Office," *The Office*, March 1978.
- Warnock, A.C.C., "Studies of Acoustical Parameters in Open-Plan Offices," *J. Acoust. Soc. Am.*, Vol. 63, No. 3, March 1978.
- Technical publications of Armstrong, ("Speech Privacy in Open-Plan Offices") and Owens-Corning Fiberglas Corp.

For more information, circle item numbers on Reader Service Inquiry Card, pages 231-232



Handsome portable, foldable table and matching chair introduced at NEOCON

Castelli Furniture Company of Italy will introduce at NEOCON a newly-designed collapsible table (left) that could be used in both the home or the office. The portable, foldable table can be stored conveniently because its four-section top can be lowered on hinges around the supporting base, into a handsome, compact unit. The table comes in round and square shapes and coordinates with the stackable "Plia" chair (right), both designed by Giancarlo Piretti. The table top is constructed of rigid polyurethane; the supporting base is polished aluminum alloy. ■ Castelli Furniture, New York, New York.

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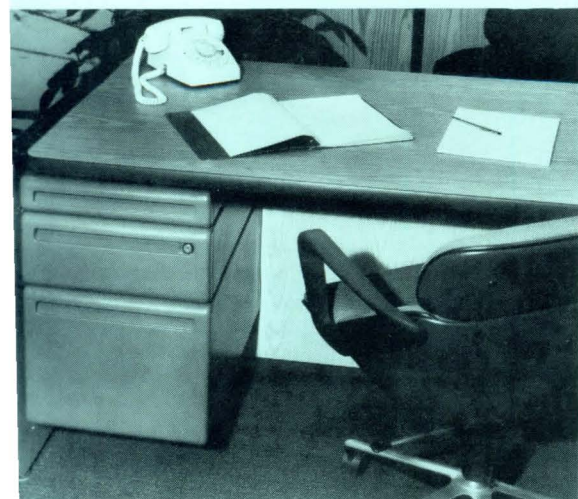


Portable office accessory system designed for safety



A modular drawer system has been designed to serve the "UniGroup" furniture collection. The all-steel unit can either be suspended beneath a work top or freestanding and mobile. Offered in three stacking drawer/case modules, the system provides for any combination of 3-, 6- and 12-in. drawers. Rounded corners are for safety. ■ Haworth, Inc., Holland, Michigan.

circle 301 on inquiry card



Design elegance and simplicity important visually for open plan furniture

This office chair system was designed specifically for use in open-planned offices where a design continuity is important due to high visibility of furniture. Six variations comprise the "Paradigm Series"; each a compact scale, particularly good for work stations found in the open

plan. Metal bases and arms can be finished in either mirror chrome or brown epoxy coating; upholstery is vinyl, glove leather or fabric. ■ Stow/Davis, Grand Rapids, Michigan.

circle 302 on inquiry card
more products on page 153



Redwood.

Luxury effects with lower-cost grades.

The economy grades of California's luxury lumber are a practical means of enhancing the appeal and value of outdoor areas of large-scale building projects.

Construction Heart, Construction Common and Merchantable redwood, popularly called garden grades, are priced far lower than kiln-dried grades. The natural knots and sapwood streaks in garden grades are particularly suited to those amenities that make outdoor space more useful and attractive, more pleasant and more saleable.

For decks, trellises, fences, screens, sunshades, benches—even storage sheds and cabanas—the lower cost grades of redwood add the rustic beauty and weatherability of this prized natural building material, at a price your budgets can accommodate.

So whatever your forthcoming projects—commercial, civic, or residential—be sure to include redwood in your plans.


For data on specifying redwood, see the Redwood Landscape Guide in Sweet's, or write us at Dept. S.

Poolside area (above) at Miller Creek Homes in San Rafael, California, is made more inviting and livable with fencing, cabana and trellises of naturally textured redwood.

IBM office building facade is warmed and softened by use of rustic redwood window grilles and bridge.

Architects: Don Knorr and Associates



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Redwood—a renewable resource.

For more data, circle 70 on inquiry card

For more information, circle item numbers on Reader Service Inquiry Card, pages 231-232

WINDOW BLINDS / A color selector provides solid chips in each of the 60 colors available in "Bali" thin window blinds. There are also 16 twin-color duplex blind samples, with matte white on the reverse side for exterior color uniformity. The selector itself is composed of one-in.-wide "Bali" blind chips, each six in. long, mounted on a chain ring in color order. ■ Marathon Carey-McFall Co., Montoursville, Pa.

circle 400 on inquiry card

MARBLE TILE / Room settings demonstrating the versatility of Italian marble in residential applications, are pictured in a color brochure, which explains how supplying marble in 6- by 6- by 1/4-in. easy-to-handle tiles reduces material and labor costs. These genuine marble tiles are said to be as simple to install as ceramic tile; cutting, drilling and shaping are done with ordinary hand tools. Nine sample marble colorings are pictured. ■ Bufalini Marble Corp., New York City.

circle 401 on inquiry card

PLUMBING FIXTURES / A full line of bath and kitchen fixtures is presented in a 34-page color booklet. Tubs, basins, and toilets are pictured in "Idea Starting Bathrooms"; space-saving fixtures are featured in powder rooms. Faucets and other fittings are also shown. ■ American-Standard, New York City.

circle 402 on inquiry card

ENERGY-SAVING GLAZING / A new line of residential glass that can reduce the cost of cooling a home by blocking the sun's heat is introduced in a four-page brochure on *Sunglas*. Said to be the only solar-control glass available in the traditional single-glazing thickness, *Sunglas*' subtle green tint provides a more natural view while admitting more daylight than darker tinted glasses. ■ Ford Glass Div., Dearborn, Mich.

circle 403 on inquiry card

WOOD MOLDINGS / The decorative potential of wood moldings and trim is demonstrated in a design and installation guidebook, "From tree to trim". The 48-page booklet includes simple, traditional applications and contemporary super wall graphics, all said to be easily put up using miter box and saw. Copies are available for \$1.50 from Wood Molding and Millwork Producers, Dept. TT48, PO Box 25278, Portland, Ore. 97225.

CHIMNEY DESIGN / A 12-page catalog contains data needed to design and install chimneys, breeching and chutes using standard UL-listed components. Also included is information on engineered, free standing stacks which are fabricated in diameters up to 12-ft. ■ Van-Packer Co., Buda, Ill.

circle 404 on inquiry card

GYPSUM WALLS/CEILINGS / The composition of the various kinds of gypsum wallboard, their uses, handling and installation is discussed in a 36-page manual. Using diagrams and photographs, the guide takes the drywall mechanic step by step through recommended gypsum wall and ceiling techniques, explains terminology, and details and possible problems and their solution. ■ Gypsum Assn., Evanston, Ill.

circle 405 on inquiry card

CONCRETE COMPOUNDS / Benefits, application recommendations, and physical characteristics for concrete admixtures and sealers are given in data sheets on *Pozzolith-HE*, for accelerating set; *Master-seal 66* curing and sealing compound; and *MB-AE 10* admixture for entraining air in concrete. ■ Master Builders, Cleveland, Ohio.

circle 406 on inquiry card

HISTORIC PRESERVATION GUIDE / "Wallpapers in Historic Preservation" is a new publication prepared for the preservation handbook series of the Office of Archeology and Historic Preservation of the National Park Service. The 60-page book has extensively illustrated and annotated chapters on historic wallpaper technology; a survey of paper styles and their use; and applications and sources for appropriate wall-papers within a restoration project. Priced at \$2.20 a copy, the handbook (#024-005-00685-1) is available from the Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 20402.

FIRE PROTECTION PRODUCTS / Each product in this 70-page, loose-leaf catalog is fully described as to function, UL and/or FM approvals, how it is furnished, optional features, etc. Included are cabinets, hose and accessories, extinguishers, valves, connections and specialty items such as sprinkler heads, signs and nozzles. Competitive fire protection equipment is shown in a product comparison guide. ■ Potter-Roemer, Los Angeles, Calif.

circle 407 on inquiry card

LIGHTING POLES / A 28-page "Pole Selection Guide" features more than 16 styles of lighting poles for sports and high-mount, area and architectural applications. Options and accessories are shown; a color chart displays *Lektrocote* powder coated finishes. Wind loading information includes a detailed Iso-Tach wind map showing steady and gust velocities across the U.S. ■ Hubbell Lighting, Christiansburg, Va.

circle 408 on inquiry card

LIQUID CONTAINMENT LINERS / *Nerva-Tite* flexible PVC membrane linings are said to provide absolute integrity with zero seepage even where shifts in the substrate strong enough to heave or crack rigid linings may occur. An illustrated product brochure shows how the linings prevent effluent seepage and pollution of ground water from landscape lagoons, irrigation lakes, and industrial ponds, etc. *Nerva-Tite* is available in 72-in.-wide rolls, and can be supplied in factory-fabricated liners of up to 20,000 sq ft. For larger installations, several widths may be lap-joined on site with a contact adhesive. ■ Rubber & Plastics Compound Co., Inc., Long Island City, N.Y.

circle 409 on inquiry card

PLYWOOD SIDING / More informative grade-trademarks classify plywood siding according to categories of repair and appearance characteristics, and are explained in a guide to "303" speciality sidings. This is said to make it easier for architects and builders to specify the most appropriate siding grade for each project. ■ American Plywood Assn., Tacoma, Wash.

circle 410 on inquiry card

ALUMINUM MAINTENANCE / A voluntary guide specification describes in detail safe and practical ways of cleaning, maintaining and protecting architectural anodized aluminum, both newly installed and weathered surfaces. The guide recommends that the cleaning of aluminum be integrated with window and other cleaning schedules for efficiency and economy, with a wipe-on protective coating applied after maintenance to preserve the aluminum. Entrances, store fronts, window and door frames, curtain walls, mullions, handrails and hardware are covered by the guide. Price: \$2.00 a copy. ■ Architectural Aluminum Manufacturers Assn., 35 East Wacker Dr., Chicago, Ill. 60601, Pub. No. 609.1.

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UC-5-BC refrigerator has a blower coil cooling system with automatic off-cycle defrosting and condensate evaporator in condensing unit compartment. Two adjustable stainless steel shelves are provided.

UC-5-F-BC freezer is equipped with automatic timer electric defrost. Capacity—5.4 cu. ft. (155 ltr.)



UC-5-CW* refrigerator with cold wall cooling system is equipped with push-button defrost, automatic reset and condensate evaporator. Capacity—5.4 cu. ft. (155 ltr.)

UC-5-F-CW* freezer is equipped with manual hot gas defrost. Capacity—4.6 cu. ft. (130 ltr.)

UC-5-CW-E refrigerator has the same interior features as the UC-5-CW but modified to make it *totally explosion-proof*. Capacity—4.9 cu. ft. (140 ltr.)

*With explosion proof interior only.



UC-5 features a two-tray ice cube cooling system with manual defrost and stainless steel defrost water tray. The cooler section has two adjustable stainless steel shelves. The entire UC-5 series features polyurethane insulated thin wall construction and air-tight neoprene thermo-break door seals. Capacity—5.4 cu. ft. (155 ltr.)

Jewett also manufactures a complete line of blood bank, biological, and pharmaceutical refrigerators and freezers as well as morgue refrigerators and autopsy equipment for world wide distribution through its sales and service organizations in over 100 countries.



For more data, circle 71 on inquiry card



PREVENTIVE MEDICINE

Atlanta's St. Joseph's Hospital prescribed a sure remedy for its cold bare floors: a Zeflon 500™ Solution Dyed Nylon carpet that looks like wool, hides soil, controls static and has a long life expectancy.

Dow Badische's new high-performing Zeflon 500 Solution Dyed Nylon heather is the only BCF nylon that imparts the soft luster and color clarity of wool to contract commercial carpets. Because the fiber is solution dyed, it produces exceptional color uniformity as well, eliminating side-to-side color matching problems—a big plus in large installations such as this one of 12,000 square yards.

The hospital carpet shown here has been tested and Performance Certified by Dow Badische for extra-heavy traffic use. It has a unique soil hiding property and is treated with a special soil retardant finish for easy cleaning. Even difficult hospital stains can be removed, for

Zeflon 500 is not harmed by harsh cleaning agents. The carpet also carries the Zefstat® anti-static warranty for the life of the carpet and the Zefwear® 5-year durable carpet warranty.

Carpets of Zeflon 500, as well as contract commercial carpets made of other Dow Badische yarns and blends, are available in a wide selection of styles. See them in our Carpet Selection and Specifications Guide.

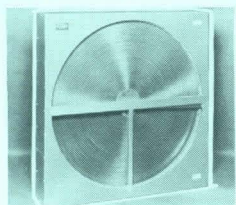
For your copy, call or write Dow Badische Contract Carpet Consultants Service, CREATE* Center, Williamsburg, Va, 23185. (804) 887-6573.

**PERFORMANCE
CERTIFICATION**



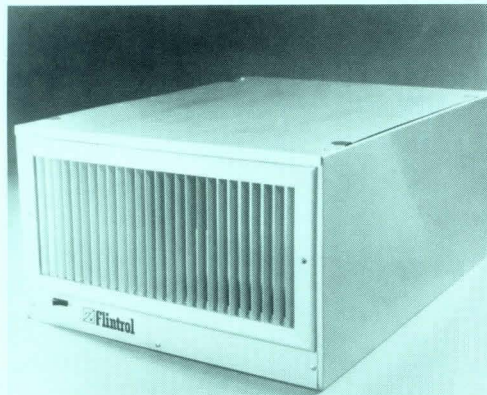
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Dow Badische produces acrylic and nylon fibers and yarns especially engineered for carpets of beauty and performance.

ROTARY HEAT EXCHANGER / The *Regoterm* heat



exchanger features a rotor made entirely of aluminum; its efficiency will not lessen with age. A microporous structure has been created on the surface of the aluminum itself, and enthalpy efficiencies of 80 to 85 per cent are claimed for the *Regoterm* unit, which is also available as a sensible heat exchanger only. Sensible and enthalpy units are available in seven sizes for airflows from 1000 to 50,000 cfm. ■ Flakt Products, Inc., Ft. Lauderdale, Fla.

circle 304 on inquiry card



ULTRAVIOLET AIR PURIFIER / Said to be especially suited for use in food and drug processing centers, hospitals, and other areas where airborne microorganisms threaten human health and product quality, the "F1-1P6G" air purifier draws interior air over a series of ultraviolet germicidal lamps and returns it to the room virtually germ-free. One unit treats an area of up to 3500 cu ft. The ultraviolet light is not visible from outside the anodized aluminum housing. A disposable pre-filter, which removes many larger, inorganic particles such as dust and lint, is replaced every three to four months as needed; the ultraviolet lamps are rated for 7500 hours of service. ■ Flintril, Inc., Jonesboro, Ark.

circle 305 on inquiry card



OVERHEAD FANS / "FanDangle" overhead fans are designed to save energy and control temperatures by re-distributing warm ceiling air down to floor level. Their 52-in. sweep diameter is said to make them effective wherever ceiling heights exceed 12-ft., as in manufacturing plants, warehouses, repair shops, churches, indoor sports facilities, etc. Ceiling-mounted fans recirculate heat generated by lighting systems and production processes, as well as solar energy absorbed through the roof; they speed temperature recovery after opening of large doors or night shutdown and help keep floors and machinery dry by controlling humidity. "FanDangle" units are UL-approved, and are available with either two-speed or infinite speed controls. ■ Chase Industries Inc., Cincinnati, Ohio.

circle 306 on inquiry card

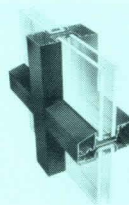
ELEVATOR CABLE DESIGN / A polyurethane ring



for elevator hoisting machine sheaves, *Cable-Save* inserts are expected to double the life of elevator cables. Sheaves are grooved, wheel-like units over which elevator hoisting cables are laid. The polyurethane rings are placed in these grooves, eliminating metal-to-metal friction and reducing wear. *Cable-Save* inserts are said to provide a smoother, quieter ride and less car vibration; they require a minimum of lubrication and should last as long as the cables. These inserts are offered on this manufacturer's mid- and high-rise elevator systems. ■ Otis Elevator, Div. United Technologies, Farmington, Conn.

circle 307 on inquiry card

STOREFRONT FRAMING / Designed specifically for



one-in. insulating glass, the "Arcadia DGF" storefront system provides for 1/2-in. penetration of glass into the frame for extra safety and to accommodate installation variances. The 2 1/2-in. by 4 1/2-in. framing meets all codes and specifications, including those of SIGMA, FGMA and the Uniform Building Code. The storefront is flush glazed; installation is with anchor clip or screw anchor. An adjustable bulkhead compensates for floor variations up to 1-in. Standard finishes include clear anodize, bronze and black. ■ Northrop Architectural Systems, City of Industry, Calif.

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more products on page 155*

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Hope's does it best**

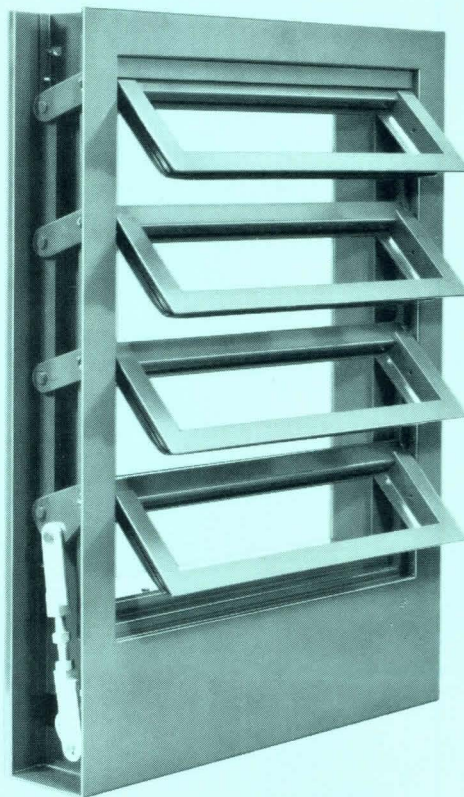
**The Hope's
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A man in a dark jacket is shown in profile, looking upwards and to the right. He is standing in front of a large, white, curved panel that appears to be part of an elevator interior. The background is a dark, metallic-looking surface.

New Otis cab interior designs can change with the seasons.

"Hang-on" panels fit across-the-line elevator duties; give you almost unlimited design freedom.

You can now specify the same interior design for a hydraulic, geared or gearless elevator system without paying custom prices. That means you can change cab decor throughout a building, or around a complex of buildings, at any time without a major expense.

An extremely wide variety of horizontal or vertical panels of laminate can be mixed or matched. Baked enamel shells, car fronts and the suspended ceilings can also be varied in design and decorative finish.

Every cab is designed with the special needs of the handicapped in mind. Operating panels are set low so they can be reached from a wheelchair. Door openings and closings can be adjusted for extra dwell time. Braille/Arabic markings, multi-stroke gongs to indicate car direction and audible signals to indicate floors passed and served are available as options. Entrances carry both U.L. and B.O.C.A. fire test labels.

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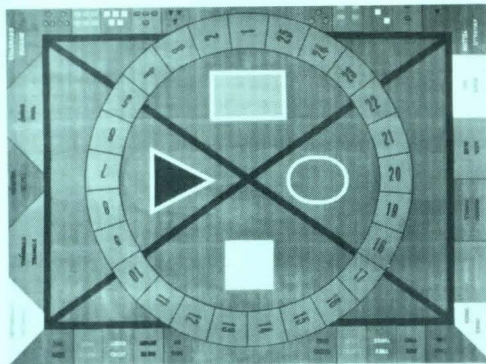
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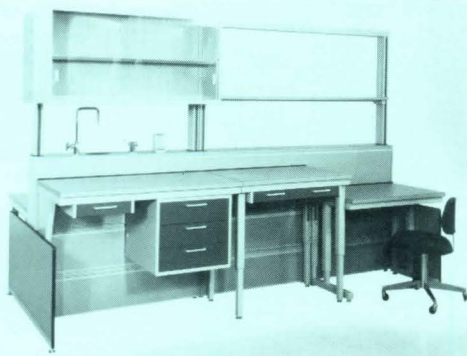
EDUCATIONAL CARPET / Available as either a bound 9- by 12-ft rug, or, with pattern repeats, for wall-to-wall installation, the "Motivation Mat" was designed by a professional educator to help young children learn colors, geometric shapes, numbers, etc. The carpeting also may serve as an indoor play surface; manufacturer's literature suggests a number of learning activities and games. Brightly colored and labeled in English and Spanish, the "Motivation Mat" is made of Antron III nylon in a level-loop tufted carpet with a dense, foam-rubber back cushion; woven jute or synthetic backing is available for special contract installations. Both configurations are designed for maximum fire retardation. The pattern shown is the first of several educational carpet designs for schools, day care centers, homes, etc. to be available this year. ■ Edu-Carpets, Div. Griffin Textile Enterprises, Inc., Tunnel Hill, Ga.

circle 309 on inquiry card



MODULAR SEATING / Designed by Claudio Cadei and manufactured in the United States, the "Camacho" seating series is built around a 1-in.-thick base board; back construction is 3/4-in. steel tubes bolted to this base, connected by steel springs. Polyurethane foam and polyester provide soft, resilient support. Upholstery is top and French seam stitched for durability; a large selection of fabrics and leathers, or COM, may be specified. The "Camacho" contract line consists of an arm chair, armless module, corner unit, right- and left-arm module, and ottoman. ■ The Fortress Collections, Los Angeles, Calif.

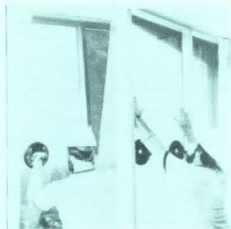
circle 310 on inquiry card



LABORATORY FURNITURE / Multiflex laboratory units were developed to permit the design of work stations to meet the specific, functional needs of each lab procedure, and to be easily adaptable to the individual requirements of each user. ■ Hamilton Industries, Two Rivers, Wis.

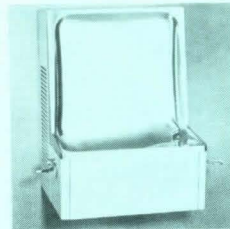
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RETROFIT GLAZING / Intended to convert existing single pane windows of commercial buildings into energy-saving insulated units, this retrofit glazing system bonds a high-performance clear, tinted or reflective glass panel to the existing window glass. A sealed dry air space separates the two glass panes; trim moldings are installed to the indoor window frame to harmonize with the existing sash. Cost savings over installing entirely new window units are said to be substantial, especially for buildings with 5000 sq ft or more of window area. ■ PPG Industries, Pittsburgh, Pa.



circle 312 on inquiry card

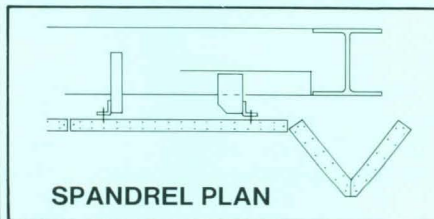
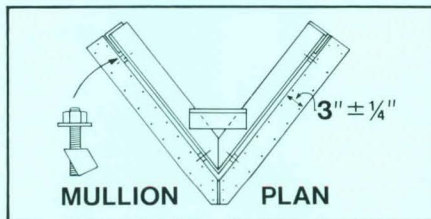
BARRIER-FREE COOLER / Designed for persons with restrictive physical handicaps, "Model WC7A-1" water cooler has ample headroom and rounded corners to prevent injury, with lever handles on both sides allowing either-handed operation and easy use by those with limited hand or arm mobility. The cooler mounts 34-36 in. above the floor and projects 18.5 in. from the wall for access from a sitting position. Standard cabinet finish is "Desert Mesa Tan"; the cooler is available in all-stainless steel or other colors. ■ Halsey Taylor Div., King-Seeley Thermos Co., Freeport, Ill.



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more products on page 157

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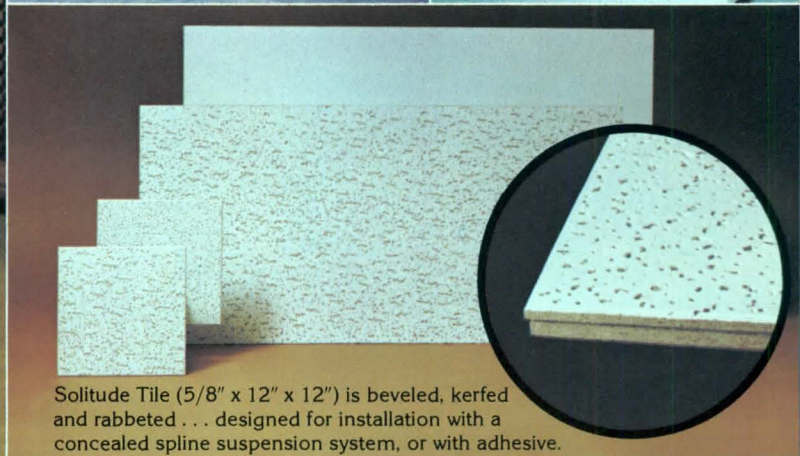
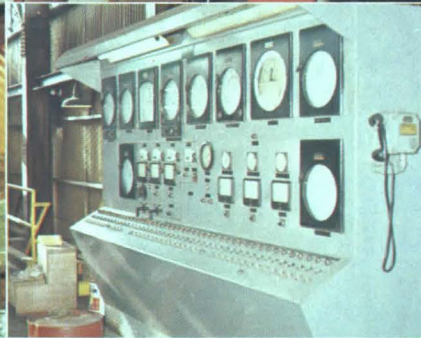
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X-RAY SCREENING / Compact and portable, the

Dynafluor X screening machine detects weapons or other hostile items, stolen parts or tools, etc. when used at entrances or exits of offices or industrial areas. It can be used in mailrooms to detect letter bombs: any container up to 24-in. wide by 12-in.-high by 27-in.-deep can be screened. The low dose *Dynafluor X* has a bright, easy to read image, with one-button control and semi-automatic enclosure procedure for fast operation. ■ Security Systems Group, Philips Electronic Instruments, Inc., Mahwah, N.J.

circle 314 on inquiry card

TABLET ARM CHAIR / The plywood "Triangle"

chair has been designed by Robert De Fuccio for a variety of school, auditorium and conference applications: hinged, the tablet arm may be slipped on or off depending on whether a writing surface is required. A ganging device, made of rigid PVC, mounts to the sled-based chair frame and can be installed in-field; it attaches and removes without disturbing other chairs which may be aligned in rows. ■ Stow/Davis Furniture Co., Grand Rapids, Mich.

circle 315 on inquiry card

CONCRETE RESURFACER / "Plastic Rock" is said to

be easily applied over concrete and wood floors without roughing or cutting of the old surface; it is troweled on over deteriorating concrete to produce a skidproof, sound-deadening and shock-absorbing industrial traffic surface. Packaged in two factory-proportioned units for on-site mixing, "Plastic Rock" applies like cement and dries overnight. ■ Randustrial Corp., Cleveland, Ohio.

circle 316 on inquiry card

ATTIC VENTILATOR / The "Cyclone 520"

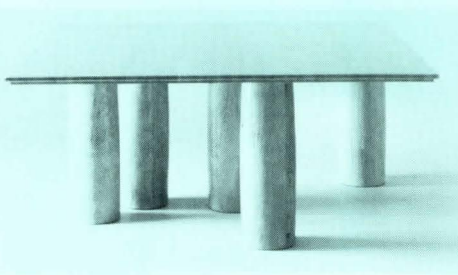
power attic vent is suitable for both builder and remodeling applications; it is said to provide effective ventilation of about 1500 sq ft at an economical cost. Operation of the roof-mounted unit is thermostatically controlled; an optional humidistat control is available. ■ Leigh Products Inc., Coopersville, Mich.

circle 317 on inquiry card

AIR DUCT CONNECTOR / A UL-181 Class 1 flexible

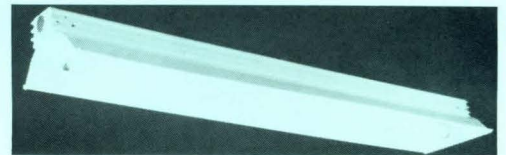
air duct connector, constructed with a steel helix between layers of aluminum copolymer laminate, the *Norflex CFM* may be used in air-conditioned spaces, or where insulation is not required. The 30-ft connector is available in standard diameters of 4- through 18-in., and installs over oval or round connections. ■ General Environment Corp., Sherman Oaks, Calif.

circle 318 on inquiry card



TABLES / Italian marble is the main design element in the "di Colonnato" group of round, square or rectangular dining or conference tables. The supporting marble columns are intended to be placed at will in different configurations; there are suggested placings according to size and weight, but the final disposition is up to the client. Tops may be ordered in marble or glass. ■ Atelier International, Ltd., New York City.

circle 319 on inquiry card



FLUORESCENT FIXTURES / Said to provide highly efficient task lighting for industrial and commercial applications, the "Task Lite" series features symmetrical or asymmetrical reflectors of heavy gauge aluminum. The symmetrical model shown above distributes horizontal illumination for supplementary task lighting of assembly lines, inspection stations, looms, and other industrial work areas. Asymmetrical units give vertical light patterns more suited for library stacks, blackboards and electrical switchboards. Fixtures use one or two 40-watt fluorescent lamps. ■ GTE Sylvania Indoor Lighting, Reidsville, N.C.

circle 320 on inquiry card
more products on page 159

COMPARE

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Spacer: roll formed Lock Seam aluminum tubing. Custom manufactured in house by Twin Pane to assure complete quality control.

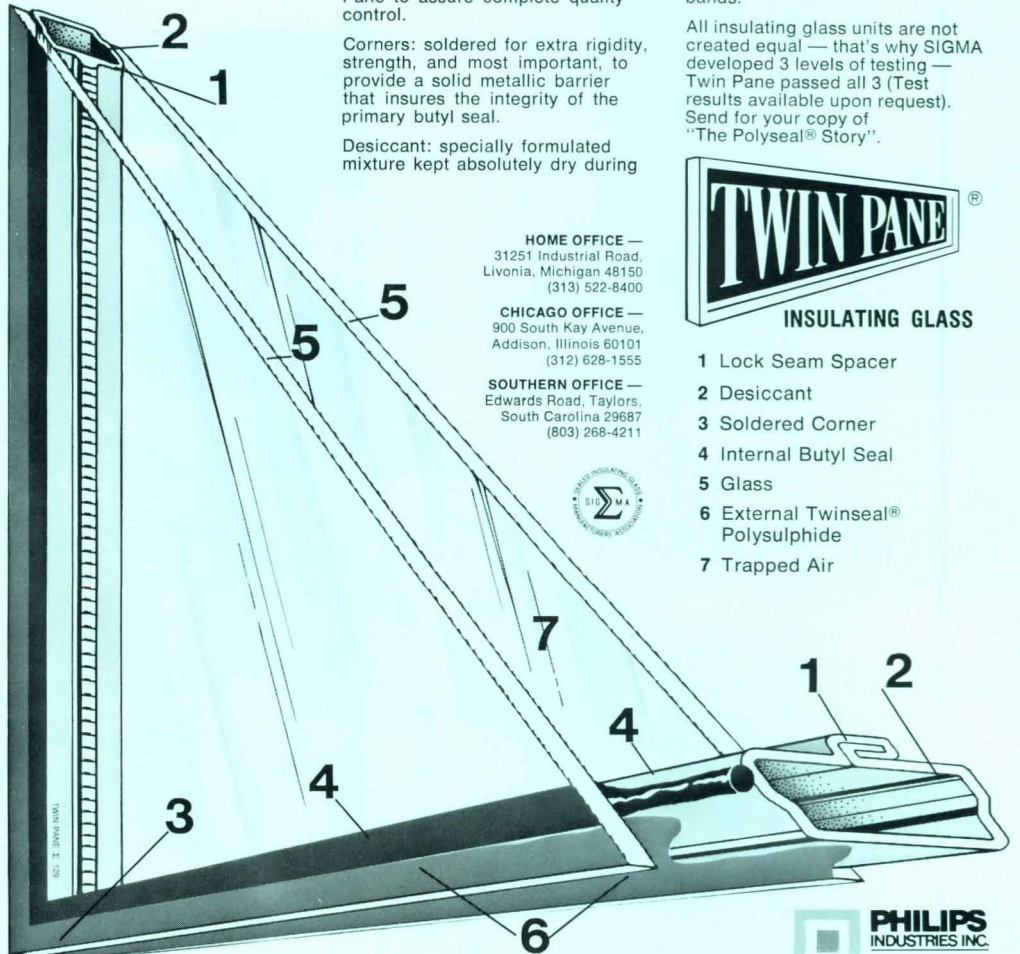
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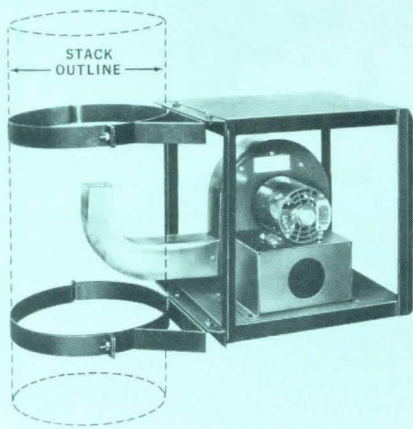
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INDUCER FAN / Designed to promote cleaner burning in the combustion chamber of any fuel burning unit, with balanced draft, the *Jetdraft* air jet pump fan provides immediate relief for toxic, high temperature, and/or corrosive exhaust fumes, and reduces air pollution by the proper balancing of stack drafts regardless of outside weather conditions. The *Jetdraft* fan allows construction of narrower, shorter chimney stacks, and is also easily installed in existing flues. There are no moving parts in the exhaust stream, reducing necessary maintenance on the pump fan. ■ *Jetdraft* Div., Wm. R. Dewey Co., Birmingham, Mich.

circle 321 on inquiry card

METAL LAMINATE / Said to have the working characteristics of standard high-pressure laminates, *Mettle-Mica* is a solid metal decorative material with a smooth, even finish. It can be cut, routed, sanded and machined with standard laminate tools, and is applied with the same adhesives. *Mettle-Mica* is available in two finishes, Satin Clear and Satin Brass; it comes in custom sizes up to 48- by 120-ins. in a standard thickness of .025. ■ The October Co., Inc. Easthampton, Mass.

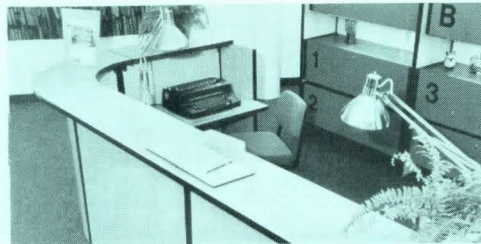
circle 322 on inquiry card

HID LUMINAIRE / The *Magnuliter III* HID outdoor luminaire features a *Powr-PanL* ballast, socket and component cartridge said to lower operating and servicing costs. The plug-in ballast offers a power range to 400 watts in mercury, metal halide and high-pressure sodium. Luminaire housing has a water-tight, vandal resistant door for access to the *Powr-PanL* cartridge. Dual specular or diffuse reflectors are *Anodal* finished for light control; the entire *Magnuliter III* luminaire has significantly reduced weight and windloading over previous systems. ■ *Hubbell Lighting Div.*, Christiansburg, Va.

circle 323 on inquiry card

FLOOR TILES / The mottled, irregular glazed surface of these wall and floor tiles provides extra slip resistance; the clay tile body is frostproof for use even in areas exposed to severe weather conditions. The "Antique" series tiles are 4- by 8- by 5/16-in. in size, and are available in brown, olive, "Desert" and "Beach" tones. ■ *Gail Ceramics*, Orange, Calif.

circle 324 on inquiry card



COUNTER TOPS / The 15-in.-deep counter caps shown replace the previous 20-in.-deep series; they mount on top of straight or curved 40-in. panels. The line includes straight counter caps ranging from 1 ft to 10 feet in length. Two different corner counters, one to mount atop a curved panel, and the other to fit on two 40-in. panels which are at 90 degrees to each other, are also available. Five-in. plastic cantilevers in soft white and dark neutral colors are supplied with the counter caps. ■ *Westinghouse Electric Corp.*, Architectural Systems Div., Grand Rapids, Mich.

circle 325 on inquiry card

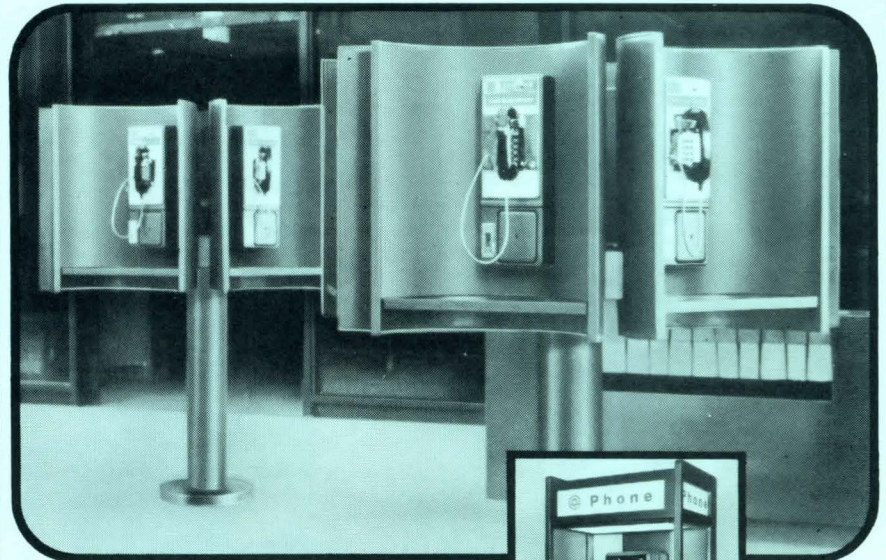


BENCH SEATING / Four different length benches have been added to the "Radius" series of contract seating and tables. An 8-in.-thick foam cushion rests on a solid oak or walnut base; the 17-in.-high bench comes in 48-, 60-, 72- and 96-in. lengths. The "Radius" bench is offered in a variety of upholstery fabrics or COM. ■ *Mueller Furniture Corp.*, Grand Rapids, Mich.

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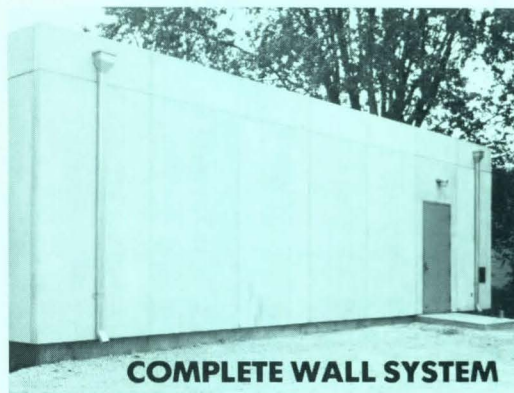
HIGH RISE



1 The permanence and appearance of pre-cast concrete at one-eighth the weight. Window wall unit was glazed and insulated in the factory offering substantial cost savings at the job site. Insulation was installed within the panel without any loss of floor space. Architect: Simpson, Usher, Jones, Inc., Anchorage, Alaska. Manufacturer: Olympian Stone, Redmond, Washington.



2 Intricately detailed one piece shape. Lightweight but with no plastic materials to burn or yellow. Architect: Warren, Knight & Davies, Birmingham, AL.



3 Functional modular design by Sverdrup and Parcel. Floor to roof panels. All panels same shape and size and removable. Manufacturer: Cem-Fil Corporation, Nashville, TN.

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See Sweets General Building
(Architectural File) 7.5/Cem

For more data, circle 81 on inquiry card



SOLAR HOT WATER / Three manufacturers have combined their product components in the "Sun Set" solar water heating system, which consists of two flat-plate collectors housing integrally-finned aluminum tubing; a solar water heater; and a conventional water heater, plus the necessary hardware. The "Hydrocore" solar heater uses a cascade-type heat exchange: transfer fluid heated by the sun in the collector flows down into and through a distribution tray and "cascades" all around the outside of an inner tank, transferring heat into the potable water. The cast iron turbine pump that circulates the transfer fluid is controlled by a differential thermostat. "Sun Set" collector panels weigh only 67 lbs; an automatic drain-down removes water from the collector area whenever temperatures are too low for efficient operation. ■ Rheem Water Heater Div., City Investing Co., Chicago, Ill.

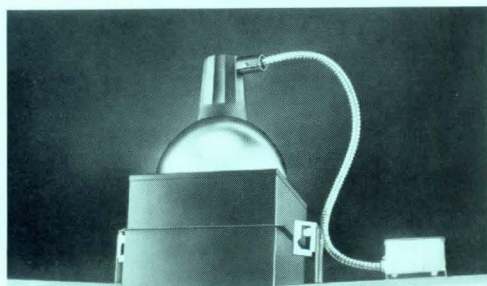
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ENERGY MANAGEMENT / The "Model 810 Load Commander" is a micro-processor-based real time management system used to monitor and control electrical consumption in commercial and industrial applications. The unit is



programmable for time-of-day metering or sliding window techniques, alarm outputs, and remote set point control. Fault monitoring is built-in; memory and quartz crystal clock have 14-day battery backup. The "Load Commander's" four-load capacity can be expanded by adding peripheral I/O units. ■ Pacific Technology, Inc., Renton, Wash.

circle 328 on inquiry card



DOWNLIGHTING / The hidden source incandescent/HID fixture shown is designed to complement fluorescent parabolic troffers with wide, even illumination and low brightness control. The series is available in three square apertures: 6-, 8½- and 11½-in.; the 11½-in. size replaces a 12-in.-sq tile. A full range of lamps can be used, including "R" and "PAR" types to 500 watts, and general service lamps to 300 watts. *Alzak* color finishes available are bronze, gold, black and pewter grey. Models offered include recessed and surface units, in open aperture and prism lens configurations. ■ Kurt Versen Co., Westwood, N.J.

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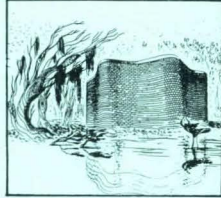
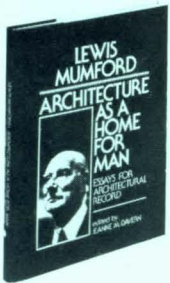
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Edward C. Berounsky and Ramon G. Perez-Alonso have formed ARCHITEKNICS, 2000 South Dixie Highway, Suite 101-B, Miami, Florida.

Arthur C. Danielian and Thomas B. Moon, principals of Danielian, Moon & Associates, have elected to pursue their practices separately. Danielian Associates remains in suite 210 at 3848 Campus Drive, Newport Beach, California and Tom Moon & Associates now occupies suite 203 at the same address.

Alvin Z. Levine and B. S. Seegel have formed Levine/Seegel Associates with headquarters at 1901 Avenue of the Stars, Century City, Calif.

Maui Architectural Group, Inc. announces the opening of their new office in Kahului, Maui, Hawaii, located at 33 Lono Avenue, Suite 170. Principals are now James C. Hestand, Hugh J. Farrington and Alan Lowrey Brown.

Roy C. Neumann announces the opening of a new office for the practice of architectural and allied design services at 325 East Washington Street, Iowa City and in Muscatine, Iowa.

Harold L. Ogburn and Andrew D. Steever have formed a new partnership, Ogburn & Steever Architects, located at 129 West Trade Street, Suite 500, Charlotte, North Carolina.

William Alonzo Romberger, Architect has formed his own practice located at 830 Southeast Third Avenue, Delray Beach, Florida.

Stevens & Wilkinson Architects Engineers Planners Inc. are pleased to announce the establishment of a Columbia, South Carolina office, The Crawford/Clarkson House, 1622 Bull Street, with Robert T. Lyles as director and J. Lesesne Monteith, administration and design.

Firm changes

Daniel E. MacLellan has been named project manager for Blom Engineering Corporation. Joe Piccolo has joined Blom as director of construction administration.

E. Loyal Pankretz has been appointed department head of the industrial division of Carter Engineers.

Daniels and Zermack Associates, Inc. has named Albert J. Vegter vice president in charge of research and study reports.

Frederick C. Richter has been named director of design for Ellerbe.

Endevor, Inc. has announced the appointment of Jeffrey N. Baron as associate vice president and principal of the corporation.

Freidin Kleiman Associates is pleased to announce the appointment of Ivan Bolcek as an associate.

Arthur Froehlich has restructured his Beverly Hills firm and entered into a partnership with Morio Kow. The firm is known as Froehlich & Kow Architects, 383 South Robertson Boulevard, Beverly Hills, California.

Fujikawa Conterato Lohan and Associates takes pleasure in the designation of the following as associates in the partnership: Joseph M. Antunovich, Gary L. Bonikowski, Thomas W. Howell and James M. Walsh.

George, Miles & Buhr announce the admission of Charles W. Bowen and James R. Thomas, Jr. as partners.

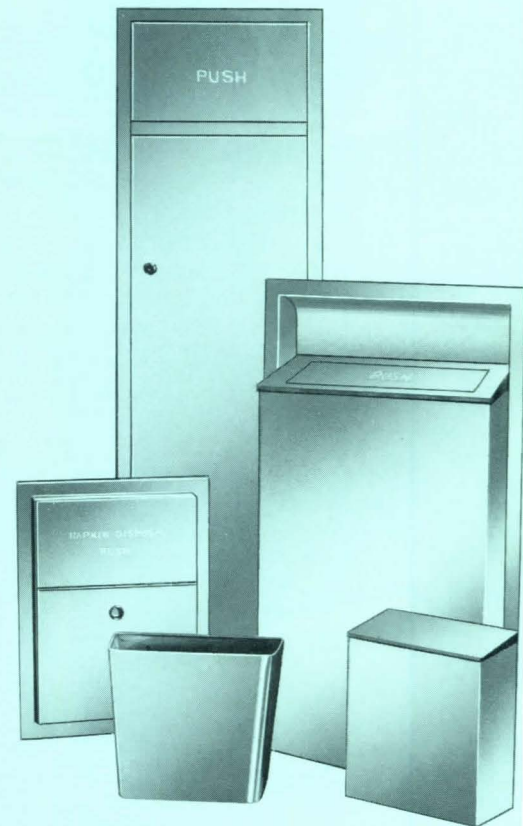
Harry J. Harman will be a consultant to the architectural and engineering firm of Horace Ginsbern and Associates.

George E. Newman has joined the firm of Golemon & Rolfe, Architects as a project manager.

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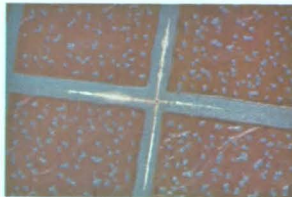
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