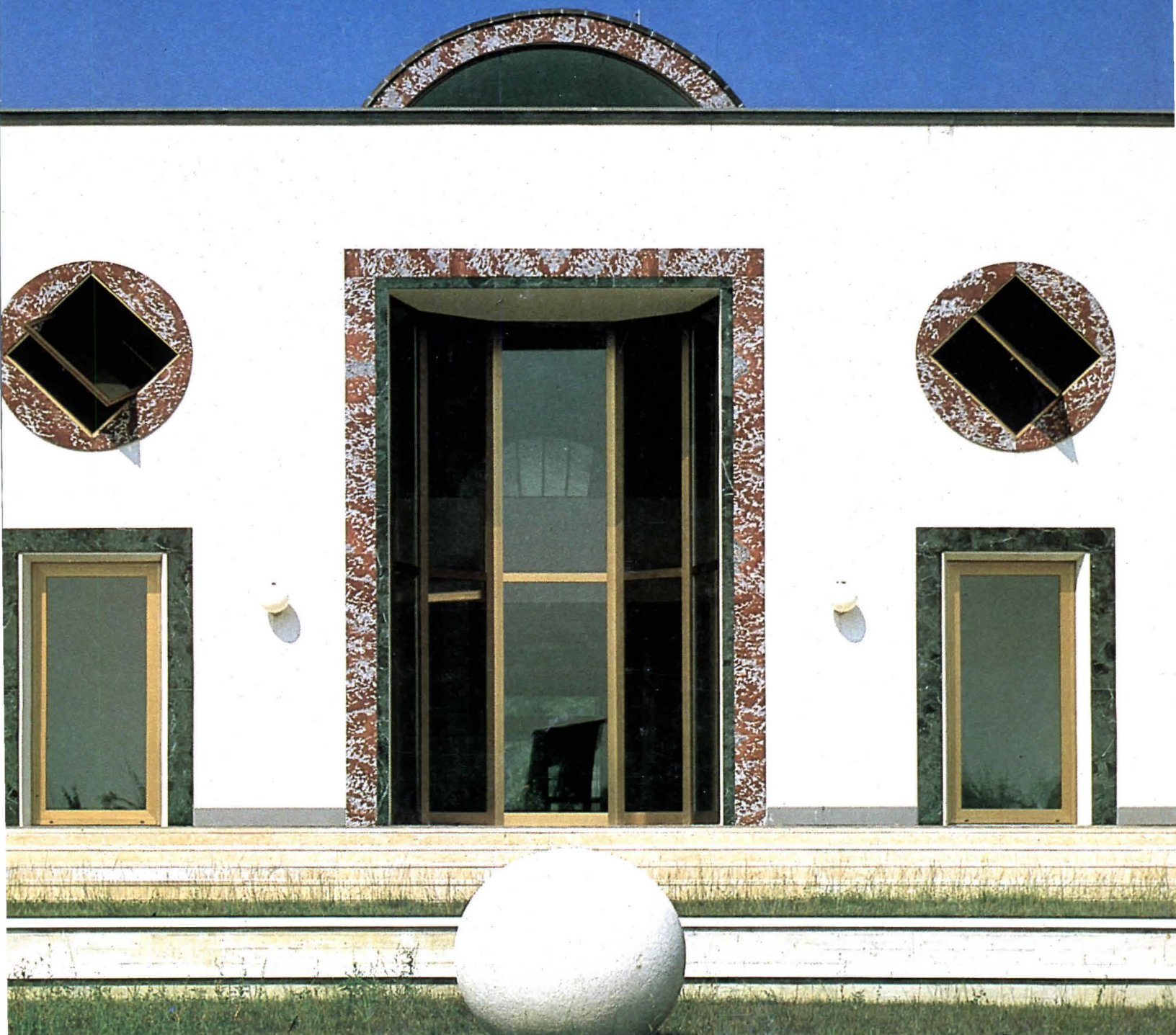
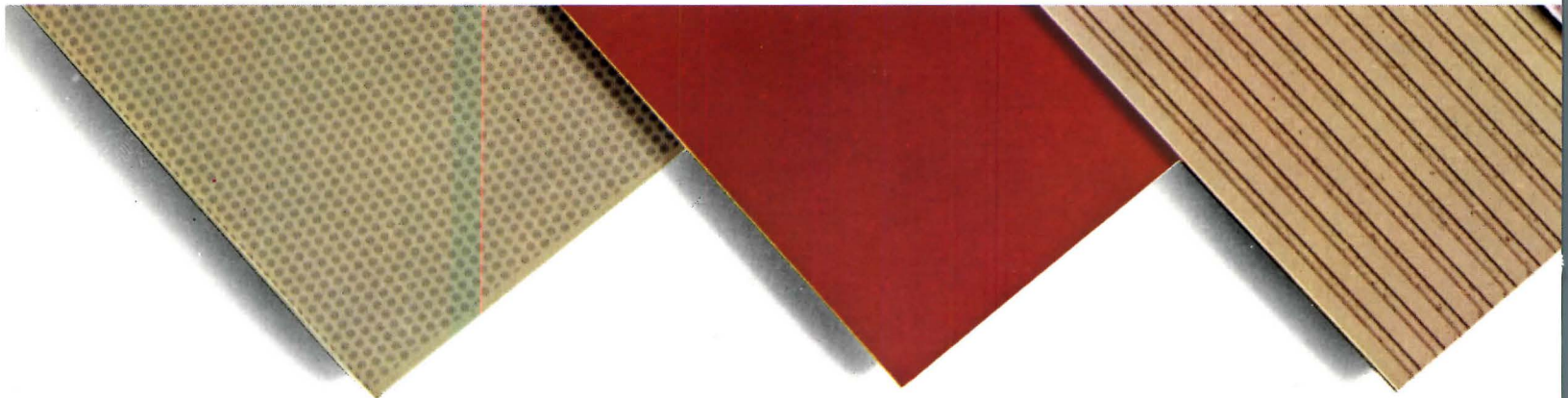


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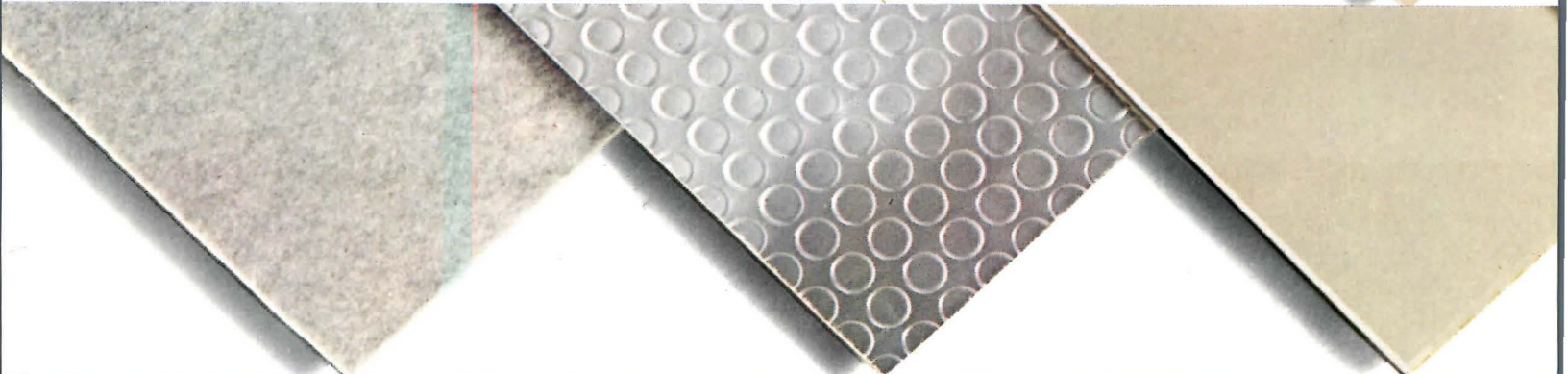
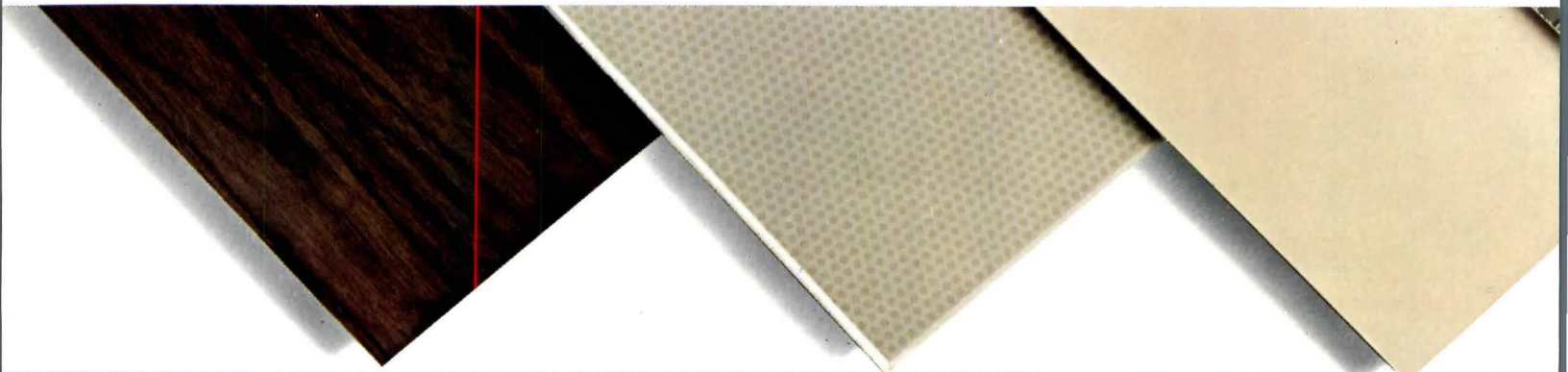
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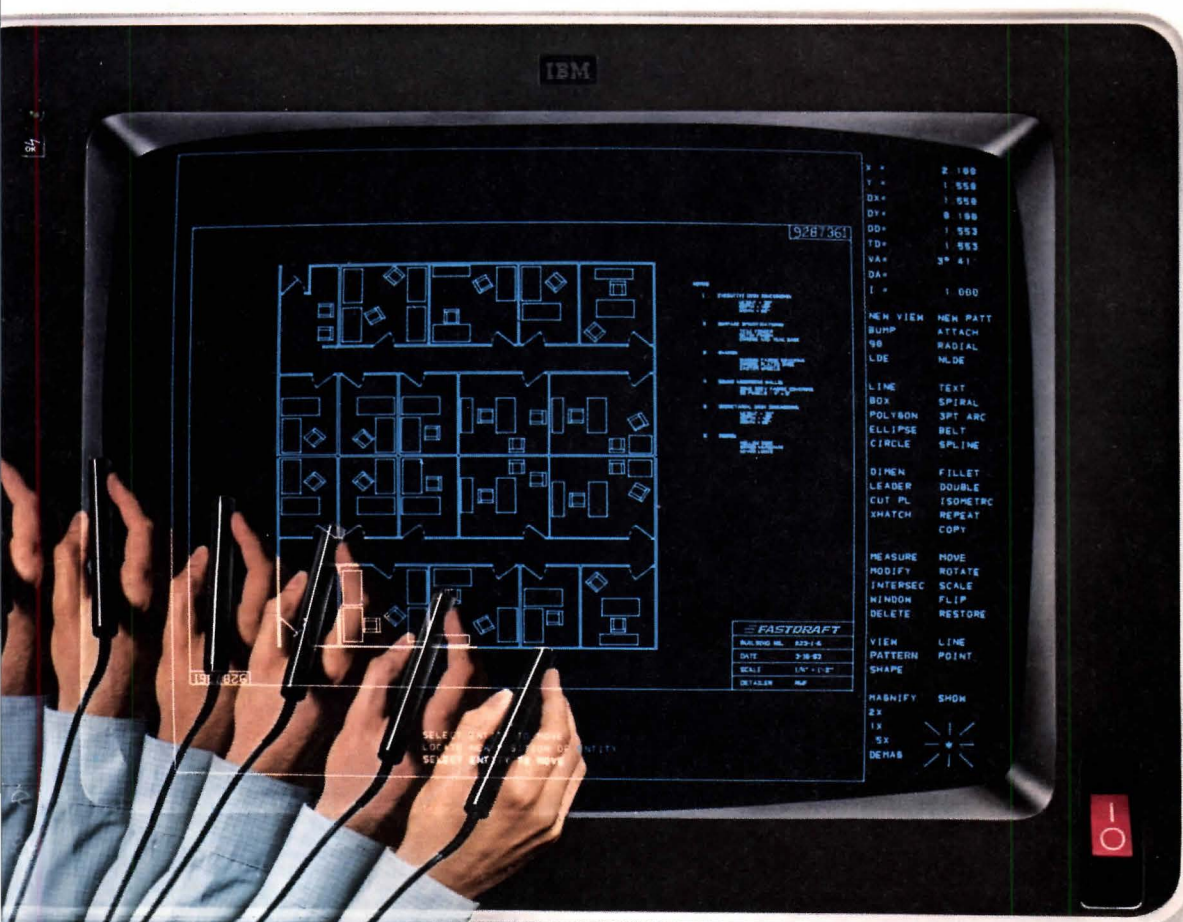
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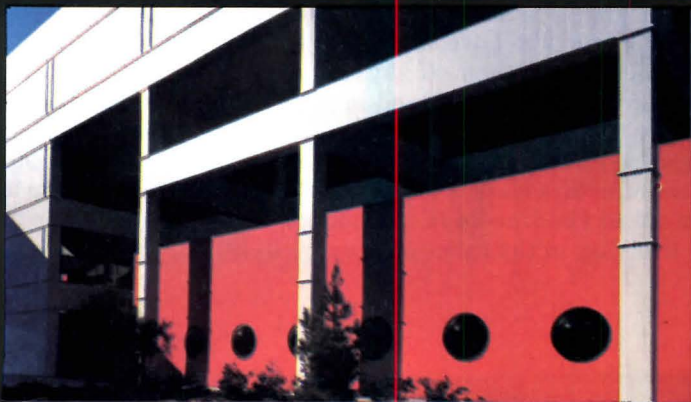
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1981 Regional Design Award, AIA

Architect: Jack Miller & Associates, Inc., Las Vegas.



Fair Tax Act would eliminate real estate investment incentives

A proposed measure that would simplify tax payment procedures, reduce taxes for those with adjusted gross incomes below \$25,000 and maintain existing deductions for home-mortgage interest and real-property taxes would also eliminate capital gains exclusions, stretch depreciation on income-producing properties to forty years and eliminate approximately 100 current investment preferences—many of which favor property investment. Of particular concern to architects and engineers, aside from credits for renovation of older buildings, are those other preferences that would go, although they currently encourage new construction, energy conservation or the sale of homes by persons 55 or older. Among those in the new construction category are the deduction of interest paid on mortgages over and above income from investment properties.

The product of two members of tax-writing committees in the House and Senate, Sen. Bill Bradley (D-N.J.) and Rep. Richard Gephardt (D.-Mo.), the measure has gained the approval of presidential contender Walter Mondale and has broad support in both houses. *C.K.H.*

Sixteen award winners in FAC-TV

Sixteen awards were given to films and videotapes submitted to FAC-TV, the fourth International Festival of Films on Architecture and Planning. Award winners were selected from over 130 entries submitted from the U.S.A. and countries throughout the world.

The Best in The Festival award was given to "American Picture Palaces," a 23-minute documentary about the heyday, decline and rebirth of the American picture palace. It was produced by the Smithsonian Institution in cooperation with the Theatre Historical Society of America. Karen Loveland is producer and Lee Bobker, director. A catalog listing this and other films from the program is available from FACT/USA, 491 Broadway, New York, N.Y.

Good news for architects—but not engineers

The Small Business

Administration plans to make more architectural firms eligible for a small business designation. A firm which receives such a designation becomes eligible to seek low-interest loans from the administration and also to compete for government contracts that are set aside for small businesses only.

Under present rules, architectural firms with gross billings of \$2 million or less, averaged over three years, are eligible for the small business designation in both the loan and procurement programs. SBA is proposing to raise that amount to \$3.5 million in a rule which will still be subject to public comment before becoming final. The procurement size standard for engineering firms, however, would shrink from the current \$7.5 million level to \$3.5 million, which is also the current cutoff for engineers seeking SBA loans.

SBA wants to raise the gross receipts standard for almost all industries and service operations to reflect the impact of inflation since 1975. The standard for general construction contractors, for example, would rise from \$9.5 million for loan programs and \$12 million for procurement programs to a flat \$21.5 million for both. In the case of specialized contractors—carpenters, plumbers, structural steel firms, electrical firms, and others—the size standard would rise from the current \$5 million for both loan and procurement programs to \$9 million.

SBA noted that it last made an adjustment in the gross receipts size standard in 1975. Since then, of course, firms have been losing SBA program eligibility because of the impact of inflation. The inflation adjustment SBA is now proposing is intended to remedy that.

SBA had no specific estimate of the number of additional architectural firms that would become eligible for the small business designation under its proposed new rule.

Aside from its general size standards, SBA maintains separate standards for firms that are owned by minorities or women, and these in turn have a broader eligibility for government contracts than regular small business firms under SBA's "section 8(a)" program. The agency plans to issue new procedures governing 8(a) size determinations later. *Herbert Cheshire, World News, Washington, D.C.*

Federal design commissions tied to increased authority for OFPP

A battle may be shaping up over the extent of power for the Office of Federal Procurement Policy, the Federal agency which oversees Federal procurement of goods and services, including about \$1 billion worth of architectural and engineering services annually.

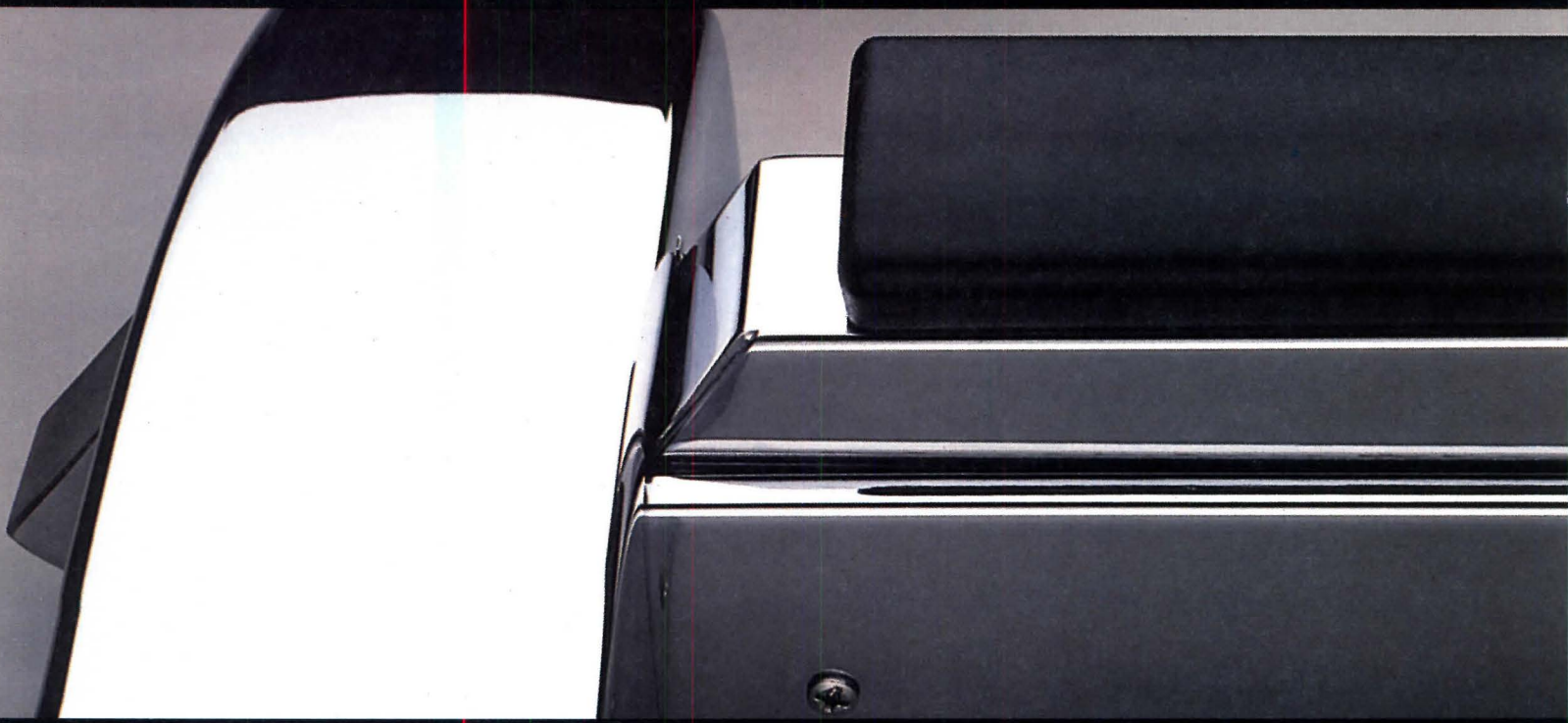
The House of Representatives has approved a bill to reauthorize OFPP for three years and increase OFPP's powers to coordinate the procurement policies of Federal agencies and to beef up government policy for contracting with private firms. The bill, introduced by Rep. Jack Brooks (D-Tex.), gives back regulatory authority that Congress took away in 1979. It would require each agency to name a senior official in charge of procurement and would also require OFPP Administrator Donald E. Sowle to find ways of testing "innovative" procurement methods within one year of the bill's enactment. A similar bill is under consideration in the Senate Government Affairs committee.

The OFPP's parent agency, the Office of Management and Budget, opposes the extension of OFPP's power, while former OFPP administrators support it.

OMB is backed by the Defense Department, the government's largest purchaser of goods and services, which says OFPP "can function effectively" without regulatory authority, according to a department spokesman. The General Services Administration takes a similar position.

The American Institute of Architects basically supports reauthorization of OFPP but has no formal policy on the controversial aspects. In general, AIA experts feel it's not really necessary for OFPP to regain regulatory authority, a view shared by the American Consulting Engineers Council. It believes the present small staff of about thirty could probably function better by defining policy only rather than issuing regulations as well because "it could give them a bigger work load than they can handle," according to a spokesman.

In a related development, the President's Private Sector Survey on Cost Control in a recent series of reports on how to cut government spending, recommended that more architectural/engineering work be contracted out rather than performed in-house as a means of achieving greater efficiency. *Peter Hoffmann, World News, Washington, D.C.*

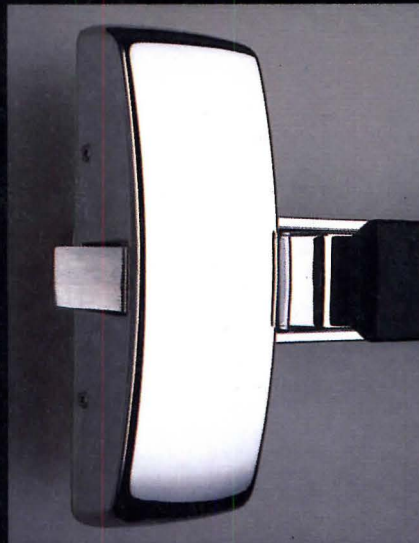
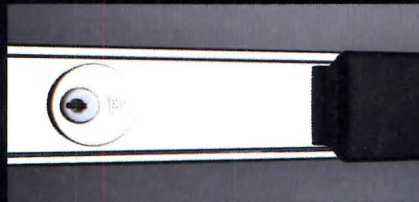


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Computers: The single-user workstation – A new concept that promises to benefit the design profession

By John C. Dill and Jon H. Pittman

The single-user workstation is a micro- or minicomputer, including CAD, devoted to use by one person, that has the capability of being hooked into a much more sophisticated network of computational resources, the expenses of which are shared with other users. Thus it has the advantages of offering high performance at low cost.

Systems of most interest to architectural firms are the so-called turnkey systems that include hardware, system software, and ready-to-use application software. Since turnkey suppliers are now starting to make use of the single-user workstation in their products, an understanding of the workstation concept will aid the architect in evaluating systems now becoming available.

The new concept combines the best of previous developments

From slow early systems that could handle only one task at a time, two parallel evolutionary paths developed. On one path, computers became larger and more powerful, capable of running several programs at the same time. To justify their high expense, these systems had to be used by many people, with a resulting slowdown of efficiency.

The second path was the development of the minicomputer, small and economical enough to be owned and used by one person. The minicomputer has good interaction and response, but no means of sharing expensive resources such as disks and printers. It also has relatively low computing power and memory capacity, so large, complicated tasks cannot be done.

The single-user workstation combines these two approaches by providing the responsiveness and control of the minicomputer with the sharing of data, programs, and resources of the large time-sharing systems. The key lies in the use of another technological development—very high-speed communications networks. Now single-user systems, called workstations, could be linked to form a network, with only a few special stations having large, expensive resources such as disks, printers, and plotters. In this way, each user has at immediate disposal sufficient computing power to tackle significant problems, but can still share with other users the cost of expensive components.

This approach was not possible

earlier, because the necessary technological advances have become available only recently.

The single-user workstation network consists of a collection of stations or nodes

Here's how it works:

- Each user has an individual workstation.
- All stations are connected by a very high-speed data-communication path, usually a direct wire link with a maximum separation between stations of a mile or two. Any station may transmit information to any other on the net. The combination of stations and communications path is called a local-area network (LAN).
- The network includes special stations, called "servers," to help support resources shared by all workstations: *File servers* have large disk drives for data and program storage, and may have tape drives for backup, etc. *Print servers* consist of printer(s) and plotter(s). *Gateway* is communications access to other resources, such as large central systems for very high-speed computation, very large databases, other networks, etc.

Understanding basic CAD uses helps in understanding what single-user stations can do

As outlined in "Computers: How do you jump in?" ARCHITECTURAL RECORD, August 1982, page 35, there are three categories of CAD applications: text development and production, data storage and retrieval (including analysis), and graphics development and production.

Text development and production includes specifications writing, architectural-programming documents, and feasibility reports. Data storage and retrieval includes facilities and equipment inventories, structural and environmental analysis, and cost analysis. Finally, graphics development and production includes applications such as drafting, architectural design, perspective generation, and structural and mechanical layouts.

Since the key to successful CAD systems is a central pool of data, accessible to all of these applications, it is vital to have a system that allows for sharing data, programs, and resources.

Certain computing capabilities are necessary to perform all application tasks

These capabilities include:

- A high-resolution graphic display to allow the interactive display and manipulation of

design information. A fairly high resolution (the capability to display a large amount of information in a given physical space) is required to display visual images with a line quality that is acceptable to most architects. The capability to display color images may be quite useful to color-code graphic information and to generate realistic-looking images of designs.

- Graphic input devices allowing the architect to point to pieces of information or portions of drawings displayed on a screen. Such devices can be used to select a piece of information that is already being displayed or can be used to specify the location where a new piece of information is to be placed.
- Alphanumeric input capability to allow the architect to add textual information and commands to the application program and to deal with text development and production applications.
- Ability to share data with other users to allow several designers, engineers, and consultants who are working on the same project to have access to information on the current state of the project.
- A large amount of data storage since even a small architectural design project can involve large quantities of information.

The single-user workstation system offers a way to satisfy these needs

It does so with the following components:

A powerful local processor. Currently, many are of somewhat limited speed and capacity, dealing less easily with the 32-bit word-length needed for architectural applications. Processors now under development will be significantly more powerful. The processor should support virtual memory so that the programmer can work as if there were a very large memory without worrying about the size of the programs.

Large local high-speed memory. This has at least 1/2 megabyte, with the possibility of adding up to four megabytes, and virtual-memory support.

Local disk storage. This provides virtual-memory support and local-file support, with a capacity of five to 50 megabytes, although some designs do not require every station to have a local disk.

High-resolution raster graphics display. This has 512 x 512 pixels to 1,024 x 1,024 pixels or more. It will possibly have a specialized

Continued on page 29



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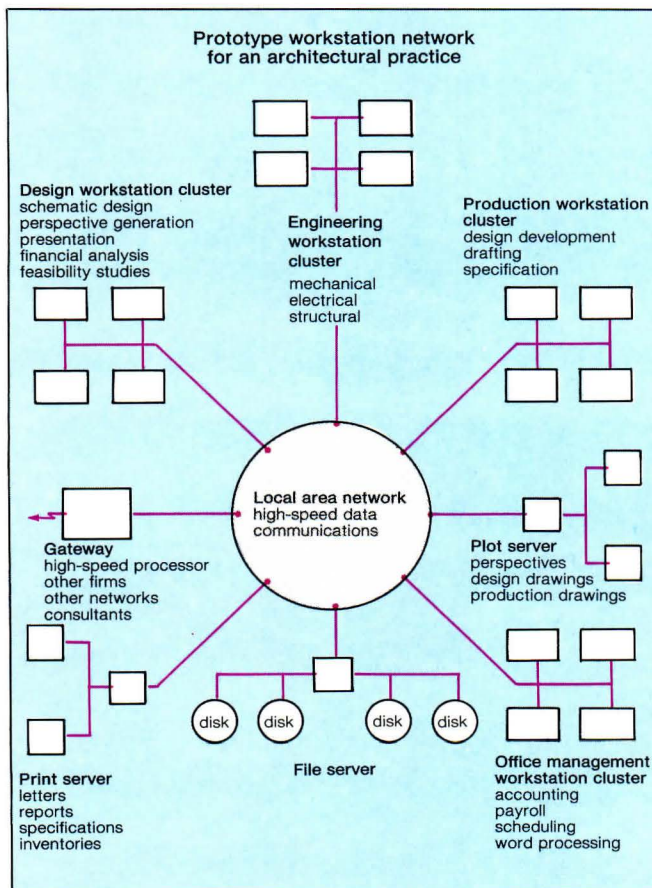
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The diagram shows individual workstations for the various disciplines found in an architect's office tied by a connecting network to the required information and production resources (the servers) to complete an automated CAD system. The network in turn can be tied to other networks and more sophisticated information resources via the gateway.

display processor for very fast hidden-surface removal and/or dynamic display. It may be black-and-white or color.

Interactive input devices. These include a keyboard and a graphics input device such as a digitizing tablet and stylus, mouse, or light pen. The tablet is especially useful in architecture, due to its digitizing capability. There may be a separate alphanumeric display for textual information.

The software includes:

An operating system. This software controls the allocation of resources and the execution of programs. Many current workstations use an operating system called UNIX. The operating system should be easy to use and should allow the workstation to operate efficiently.

High-level software development tools. These may include programming languages (PL/1, Pascal, or C), editors, and debuggers.

A window manager. This allows more than one drawing to be displayed and manipulated on the screen at any given time.

A graphics-software package. Examples are those proposed by SIGGRAPH CORE or GKS.

A good database management system. This stores, retrieves, and manipulates data. This database will most likely be of the relational type. Database management systems with integral graphics capability will become common.

High-level components. These might include menu builders and spreadsheet-analysis packages with integral graphics.

The human factors should be well thought out. This means that the workstation will be quiet enough to be acceptable in a normal office environment, with no special hvac needs. It should be designed for adjustable heights, tilt-swivel display surfaces and so forth. Printers and the larger noisy (and expensive) disks may need a special environment. Hardware and software maintenance should be readily available. And the design should provide that the failure of a single station will not cause failure of the other stations.

A primary advantage is the capability for incremental expansion

From the above description, you can see that the system allows for low initial cost and low incremental expansion cost, when compared with typical larger super-mini or mainframe

systems. A diagram of how this might work is shown on page 31.

Thus the smaller firm can start with a single station, some extra disk storage, and a printer/plotter. This may be easily expanded at very low incremental cost by adding stations. The larger firms, perhaps with an existing system, can also benefit by connecting a local area network into that system.

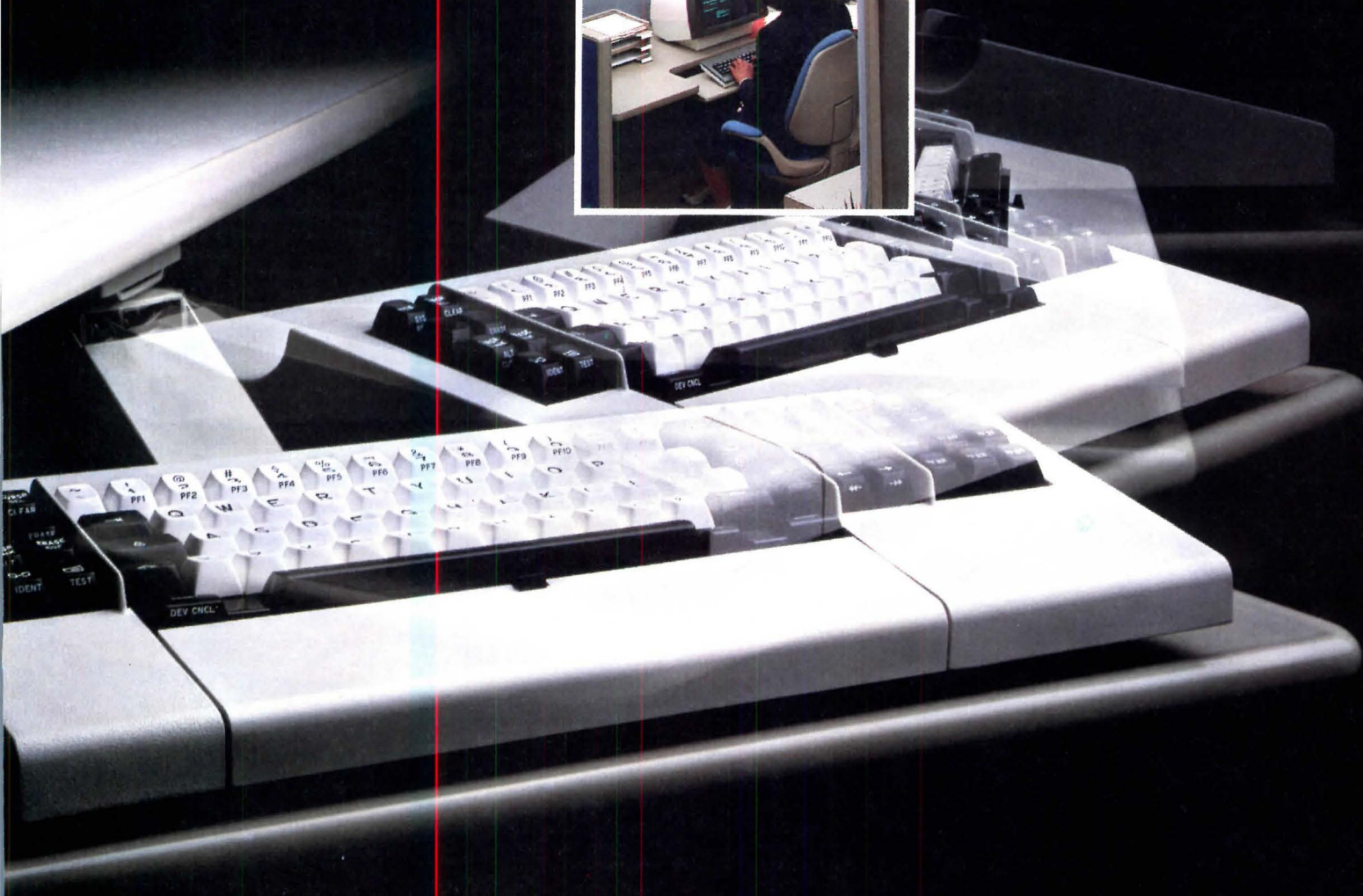
The single-user workstation, a relative newcomer in the computer-aided design marketplace, seems well suited for most architects' needs. Indeed, the specifications for a workstation could easily be developed from the requirements of an architectural application.

In choosing a system, consider whether it contains the latest technology

Different systems incorporate the latest technological advances to varying degrees. Among the advances that have made single-user workstation systems possible are:

- Very-large-scale integration (VLSI) that provides hundreds of thousands of components, such as transistors, on a single chip. Thus substantial computational power and memory is possible at low cost and with small space and power requirements.
- Disk technology that can now provide low-cost, high-capacity bulk memory for storing data and programs.
- High-speed data transfer. Recent developments in communication technology allow effective sharing of resources at 10 million bits per second, whereas a normal computer terminal on a time-sharing system transfers data at 1,200 bits per second.
- Reduced memory costs and new raster graphics technology to provide sufficient quality without expensive vector refresh devices. High resolution raster displays have been vital to the development of the single-user workstation.
- The capability to store data permanently and later retrieve it. This is necessary because of the large amounts of data involved in a design project and the need to occasionally refer to or revise that data. The ability to store data also allows the architect to form a permanent record of the design process that may be referred to for subsequent design work or in the event of litigation.
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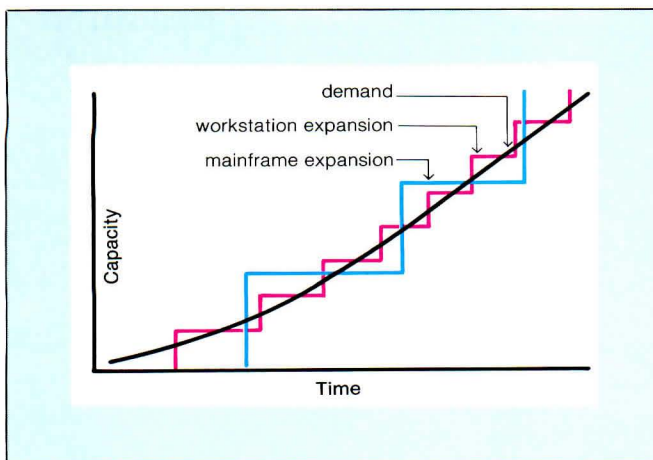
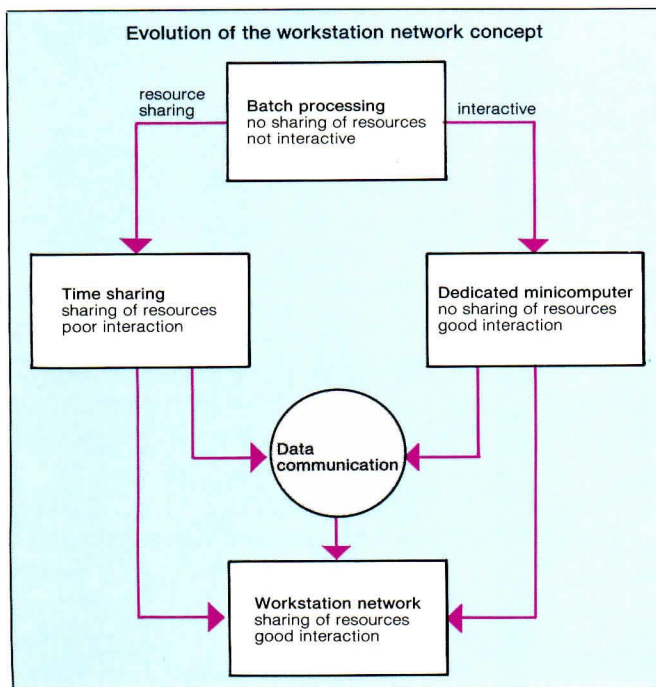
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The diagram below shows the evolution of the single-user workstation concept that developed from the original cumbersome batch processing equipment on two paths: time-sharing on the big computers and small individual computers with limited information resources.



The diagram above shows how the lower incremental expansion cost of a workstation approach means a closer match between computing capacity and demand without the extra cost of excess capacity or the lost opportunity cost of insufficient capacity.

Also consider how these capabilities are packaged

The package must be:

- Easy to use and to learn to allow architects to utilize the computer-aided design system in a natural way.
- Compatible with an office environment to minimize investment in physical facilities for the system as well as to allow the system to be in the same work space as architectural designers.
- Low in cost/performance ratio so that the average architectural firm can afford the necessary computing power.
- Capable of incremental expansion and sharing of expensive computing resources so that it becomes possible for a system to be introduced and later expanded for minimal cost.

It is clear that single-user workstations will have an effect on the system available to the architectural profession from the turnkey suppliers. And we believe that they will have a significant impact on the architectural profession in the next few years.

Glossary

Digitize. The process of converting positional information to numeric coordinate data.

Digitizing tablet. A flat surface with a stylus that can be used to enter coordinate data into the computer.

Light pen. Graphic input device that responds to light emitted from the displayed image.

Digitizing tablet. A flat surface with a stylus that can be used to enter coordinate data into the computer.

Local area network. Two or more workstations connected by a high-speed communications link. A network usually includes other resources such as printers, plotters, and large-capacity disk drives. Distance between workstations varies from a few feet to one or two miles.

Megabits per second. A measure of data transfer rate. One megabit is approximately one million bits (125,000 bytes). 10 to 12 megabits per second (mbs) is the current upper limit on data transfer across a local area network. At 10 mbs, the text of a typical issue of ARCHITECTURAL RECORD would take about .2 seconds to transmit.

Megabyte. A measure of computer memory or storage. Approximately one million bytes. One character can be stored in a byte. A number may be stored in four bytes. Thus, 250,000 numbers or one million characters may be stored in one megabyte. The text (not

including advertising) of a typical issue of ARCHITECTURAL RECORD would require approximately 1/4 megabyte of storage.

Mouse. Small hand-held graphic input device that can be moved over any flat surface to specify a location or change in location.

Node. A workstation or peripheral device (i.e. printer, plotter, or disk drive) in the network.

Pixel. Picture element. The smallest unit of a raster display scan line which may be varied in color or brightness.

Raster graphics display. Graphics display device on which images are produced like television image, i.e. a set of horizontal lines covering the entire display surface. Varying the color or brightness along each line results in the visible image.

Vector refresh display. Graphics display device on which images are produced by regenerating (refreshing) the image 20-40 times a second. Images consist of straight line segments (vectors) and look like line drawings.

Virtual memory. Scheme whereby the amount of memory available to a program may exceed actual physical memory size. In some computers, the actual physical memory might be one megabyte, but the program would have 24 megabytes of virtual memory available.

Mr. Dill recently joined the Cornell University staff as manager of the Computer-Aided Design Instructional Facility. He has been involved in interactive computer graphics since 1961, and has an extensive industrial background, having been involved with computer-graphics research and development at General Motors Research Laboratories since 1969. At General Motors he was active in the design of graphic systems for computer-aided design applications. Among his continuing research interests are device-independent graphics, man-machine communications, color graphics in computer-aided design, and business graphics systems.

Mr. Pittman recently joined the computer group at Hellmuth, Obata, and Kassabaum. Prior to that he was an assistant professor in the Department of Architecture at Cornell University, working with the Program of Computer Graphics on the development of computer-aided design applications for architects. In the past, he has worked on the development of computer-aided design and architectural computer applications for Skidmore, Owings, and Merrill, Structural Dynamics Research Corporation, and Harvard Medical School.

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Legal perspectives: Mostly good news on statute-of-limitations rulings

Restrictions on the period in which an architect or engineer can be sued for building-related problems vary by state

By Arthur Kornblut, Esq.

The past year or so has seen a substantial number of reported decisions involving the special statutes of limitations for claims arising out of improvements to real property—cases of particular interest to architects, engineers and contractors. Fortunately, most of the news has been good. More and more state courts are ruling that these statutes are constitutional and proper legislative enactments for the protection of those engaged in design and construction.

Within the last 18 months, decisions in at least 10 states have upheld these statutes while only two states have had their statutes overturned. A brief survey of these cases follows.

In Colorado, the case of *Yarbro v. Hilton Hotels* (1982) gave the state supreme court an opportunity to clarify the status of that state's special 10-year statute of limitations. In recent years, several lower appellate courts and Federal trial courts in Colorado had issued widely varying interpretations of the statute, with some decisions completely contradicting others. The *Yarbro* case arose out of the death of a guest at the hotel, which occurred eight years after the special statute was enacted and 17 years after substantial completion. Both the trial court and the state supreme court ruled that the statute of limitations protected the architect who designed the hotel.

The Supreme Court of Georgia has ruled that Georgia's eight-year statute of limitations is constitutional and that it covers a component of an electrical system as an improvement to real property (*Mullis v. Southern Company Services, Inc.*, 1982). In this case, an employee of a power company was severely burned while painting bushing caps on an air circuit breaker. The accident occurred because of a misunderstanding with the foreman about whether the circuit had been de-energized. A suit alleging negligence was filed against the designer of the system more than 10 years after completion of construction. The court ruled that the statute did not violate equal protection guarantees by protecting architects, engineers and contractors from suits such as this.

In Idaho, that state's highest court upheld the state's special six-year statute of limitations in *Twin Falls Clinic & Hospital Building Corporation v. Hamill* (1982). This case involved a claim by the owners of the hospital against the architect who

designed a second-story addition. Many of the problems in the claim involved separation and cracking of mortar. Seven years after completion of construction the owner had the brickwork dismantled and rebuilt. Suit was filed two years later. In rejecting arguments that the statute was unconstitutional, the court said that protecting architects and builders, but not owners, occupants and material suppliers, was legislatively permissible.

In a very recent case, an intermediate appellate court in Indiana has upheld that state's 10-year special statute in *Beecher v. Flat Rock Hawcreek School Corp.* (1983). Here, a student was injured in 1979 when he fell or was pushed through a plate-glass door in a school constructed in 1966. Suit was brought against the architect on the basis of alleged negligence in specifying nonsafety glass in the door. In dismissing the suit, the court rejected the plaintiff's arguments about constitutional violations.

In an important decision, because it contains an in-depth analysis of many of the legal issues that often arise in cases challenging the special statutes of limitations, the highest court in Massachusetts has upheld that state's six-year statute (*Klein v. Catalano*, 1982). The plaintiff in this case was a university student whose hand was severely injured when a plate-glass door shattered. The architect had delivered the design drawings in 1963, the university occupied the building in 1965, and the architect did not perform any services in connection with the project after 1967. The special statute was enacted in 1968, the accident occurred in 1976, and suit was brought in 1979. As with many of these cases, the court was not troubled by the fact that the effect of the statute was to eliminate a cause of action against the architect before it ever arose (i.e., the statute of limitations ran out before the plaintiff was injured). The statute simply eliminated those in the protected class (the architect) from among potential defendants.

In Minnesota, that state's supreme court has finally upheld the special statute for that state (*Calder v. City of Crystal*, 1982). The decision in 1982 involved a 1980 re-enactment of a 1965 statute that was held unconstitutional in a 1977 case. After the earlier statute had been struck down, architects and others in Minnesota returned to the legislature to work for

passage of a new statute with some changes to cure the constitutional defects in the earlier version. In the *Calder* case, the court ruled that the 15-year statute barred a city's indemnity claim against the designer of a water-drainage system; the claim had been brought 22 years after substantial completion of the system.

In North Carolina, an intermediate appellate court has ruled that the state's six-year statute of limitations is valid (*Lamb v. Wedgewood South Corp.*, 1982). As in the *Yarbro* case in Colorado, this case involved the death of a hotel guest. Here the death occurred 11 years after completion of the architect's services.

The six-year special statute of limitations in South Dakota was upheld by the state supreme court in *McMacken v. State of South Dakota* (1982). Here a student was injured when she fell down a stairwell in a college dormitory. She alleged the stair railing had been negligently designed and sought damages from the architect and others involved in the design and construction of the dormitory when it was constructed in 1964. The injury occurred in 1979.

In Tennessee, the state supreme court has reaffirmed the validity of that state's four-year special statute in *Harmon v. Angus R. Jessup Associates, Inc.* (1981). In this case, the plaintiffs were injured 12 years after completion of the original project and five years after an addition was constructed. The Tennessee courts have been notably supportive of the state's special statute, with several prior decisions relying on the statute to dismiss suits against design professionals and others. This case, however, was the first in which the plaintiffs mounted a direct constitutional challenge.

Finally, an intermediate appellate court in Texas has upheld that state's 10-year special statute of limitations in *Ellerbe v. Otis Elevator Company* (1981). In this case, the suit arose out of the death of a minor who fell down an open elevator shaft. The elevator, designed by engineers employed by the defendant manufacturer, had been installed in 1928. The death occurred 45 years later in 1973.

On the negative side of the ledger in 1982, the highest courts in Hawaii and New Hampshire overturned the special statutes of limitations in those states. The action in Hawaii was the second time the supreme court has so

acted. A statute first enacted in Hawaii in 1967 was struck down in 1973; the legislature re-enacted the statute in 1974, but it, too, has now been invalidated.

As can be seen from the brief descriptions of the facts given for the cases in those states where the statutes have been upheld, these statutes of limitations are a practical necessity for architects and others in the construction industry. With projects remaining standing for many years after the architects and builders no longer have any contact with them, the architects and others nonetheless remain targets for litigation whenever someone is injured or deficiencies appear. These statutes represent little more than a balancing of equities—after the passage of a reasonable period of time, those persons whose efforts bring buildings and other projects into reality ought to be free from the specter of unending liability. If no claims arise within the statutory period, it can be reasonably presumed that any claims that arise thereafter are due to a failure of maintenance, natural factors, or to a lack of care by the plaintiff, rather than because of negligence on the part of the architects or others. In any event, the statutes do not eliminate all lawsuits but only those against parties whose involvement with the project ended many years ago.

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

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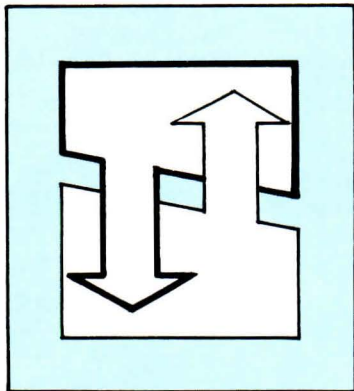


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Management:

Mergers may not work for every firm – but here's why two big ones got together



"Partnership," from the Graphic Idea Notebook, by Jan V. White, published in Folio 1981.

The merger of two companies or the acquisition of one company by the other can be ways for both companies to pool their resources and expertise to offer new strengths to clients, enter new markets, and also gain the muscle to recruit talented management and professional staff.

In January, the CRS Group, Inc., with these goals in mind, acquired all of the outstanding stock from principals Darryl Roberson, Charles Bowman and others, of the 14-year-old firm of Environmental Planning & Research Inc., better known as EPR, which will continue as a separate entity.

While we have seen many such mergers in the past, this one is unusual because both firms are known for similar high-level design orientation, are large and well established, have a broad base of clients in both geographic and building-type terms, and—in short—offer many of the same talents and capabilities that would normally mean that they could well survive on their own.

Why did CRS and EPR decide on this course?

There are fundamental differences between the two firms: The CRS Group offers architectural and engineering design, planning, programming and construction management to its clients. Its strengths are in management and getting large projects designed and built. It is also a giant in size, having approximately 1,200 employees in 27 U.S. offices and three international ones with headquarters in Houston, Texas. While the late Bill Caudill of CRS would tell you that the world is one market, CRS clearly has strengths in certain geographic areas, namely foreign countries and the South, Southwest and Central regions of the United States. It also has particular marketing strengths in the public sector.

EPR offers architectural design, interior-architecture design and space planning. Much of its practice is interior design and programming. While it is big as design firms go, it is not a giant, having approximately 235 employees in six U.S. offices and headquarters in San Francisco, and that only through the side effects of the acquisition. Clearly, it has marketing strengths in different geographic areas, namely the East and West Coasts of the United States.

So—despite similarities—the firms had complimentary strengths to offer each other.

Why was CRS interested in EPR?

EPR, with its strengths in interiors and programming, is in a position to capture a good part of the design-service market in the eighties. As was seen from the forecast (Update, RECORD April 1983, page 37), office buildings, a large part of construction activity in the seventies, are not likely to respond to the current upswing in the economy the same way that other basic construction types will; office buildings are simply overbuilt from the last round of heated construction activity. But this does not mean that companies will not continue to expand into the great backlog of unoccupied space that already exists in the favorable economic climate. Turnovers of tenants are routine, and the Building Owners and Managers Association estimates that office space is completely recycled in a given building every five to eight years. Technological advances, such as computers, mean that specialized design expertise in this area will be needed to accommodate the fast changes even for those companies that stay in one place. The advantages that a design firm with a solid interiors background can offer to a firm that has dealt primarily in architecture, project management and construction are obvious. EPR also has extensive experience in rehab, another fast-growing field.

Why was EPR interested in the acquisition?

Aside from giving EPR access to expanded marketing and CRS's different capabilities discussed above, the sale of EPR allowed the owners to capture immediately some of the firm's appreciation in value achieved through its growth over the last ten years and to have the financing and collateral for future expansion. It also brings a new level of management expertise from CRS for the kind of larger company that EPR found itself becoming.

What mutual benefits are to be realized?

The different expertise offered by each firm, recognizes the increasing specialization that many design firms are called on to offer. The merger not only helps in the actual production of projects, but in marketing the expanded firm's services as well. It also allows both companies to share the high costs of research and really sophisticated automation. And it allows a

broader choice of career paths and promotion possibilities for both companies' employees. The physical presence of each firm in different areas expands marketing capabilities because of the importance of this factor to some clients in their selection process (see Marketing, this issue).

Why do the two companies think the merger will work?

Here, both companies' concentration on design works to advantage, because they both are speaking the same language. Both firms believe in the team system, so again they share a commonality.

How will they know that it has worked?

It will probably be some time before the success of the merger can be evaluated, and the tests will be the attraction that the new larger firm has for new clients, the effect that it has on repeat work and above all, on profitability. CRS is confident in the basic approach, having purchased other firms in the past, and having just completed an agreement to purchase the 1,700-person J.E. Sirrine Company, a North Carolina-based engineering and architecture firm. Of course, a merger such as this may disturb many architects and engineers who believe that "small is the way to go." But, Caudill said: "The difference in firms is the people, not size." And, if he is correct, the merger shows every chance of success. C.K.H.



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Marketing: The market-segmentation approach

An architect and a marketing professor show how a commercial marketing strategy could work for design firms

By Michael Noble and Kenneth Rohde

A standard marketing practice for many manufacturers is to divide their markets into broad segments that share certain attributes and to develop product, promotion, distribution and price strategies for each segment. For a design firm, this would mean developing design, promotion/communication, service and cost strategies for different groups of clients.

Just as with other producers of goods and services, design firms that want to position themselves for the marketplace of the future must improve marketing productivity and reduce costs. Market segmentation can help them accomplish this. To put it in perspective, however, it is helpful to examine the different market strategies different types of businesses use. In general, there are three ways to approach the market. First...

Businesses can treat the total market as one homogeneous unit

Although markets are typically composed of buyers with differing needs, the business ignores these differences and offers a relatively broad mix of product, promotion, distribution and price (figure 1). This broad mix is designed to meet the general needs of as many buyers as possible, but rarely satisfies the individual buyer's specific needs.

If this broad market mix strategy is successful, it is typically because price is low enough to compensate for the less-than-ideal match between what the market needs and what the business offers. Price is usually low because of the economies inherent in large-scale production, promotion and distribution—or because of the business's experience curve. This experience curve develops as businesses learn how best to produce, promote, distribute and price products and services and reduce the amount of time and resources devoted to completing these tasks.

The strength of this homogeneous market strategy, then, is its relatively low price. Its weakness is the imprecise fit between the market's product, promotion and distribution needs and the producer's offering.

For design firms, this approach is rarely used. Far more common is the second approach, in which...

Businesses can treat the market as separate buyers, each with differing needs
In what could be called a

heterogeneous market treatment, the business identifies and develops a separate market mix for each individual buyer (figure 2). Product, promotion and distribution are tailored to the needs of the buyer—usually at the expense of price. Because it's impossible to take advantage of the economies of scale and the experience curve, as in the homogeneous market treatment

discussed above, the business must charge more money. The strength of the heterogeneous market strategy is in the precise match of the market's product, promotion and distribution needs and the business's offering. Its weakness is the higher price.

Design firms, which tailor not only their designs, but promotional/communication efforts and services to individual

clients, traditionally fall into this category. There is however, a third possibility...

Companies can treat the market as a series of groups with common needs and wants

These groups of buyers with relatively similar, although not identical, needs are called market segments (figure 3). While the market offering may not match the needs of each buyer as well as the second market strategy or provide the same economies of scale and steep experience curves as the first, it does combine some of the strengths of both of these strategies. A business can tailor its offering to the needs of the market more precisely than in the homogeneous market treatment described above, while at the same time gaining some benefit from economies of scale and moderate experience curves. Thus its price can be lower than in the heterogeneous market treatment without sacrificing profits.

Design firms can adopt a similar strategy focusing on promotion and distribution

It goes without saying that the final design must be unique. This does not mean, however, that the design firm's market offering must also be unique. Within the markets of all design firms are client segments that have similar promotion (communication), distribution (interaction and delivery of services) and pricing needs. The design firm can develop marketing strategies to fit these needs.

Developing marketing strategies for client segments rather than separate strategies for each individual client makes it possible for the design firm to take advantage of experience curves and to reduce costs. The design firm will undoubtedly have to make some adjustments to fit the individual client needs within each segment. However, through the repeated use of a market offering, the design firm will learn what communications are most effective in reaching a client segment, what tradeoffs between price and services are acceptable, and how best to distribute its services to the client segment.

Various studies of consumer goods and services have shown that about 50 per cent of the total cost of the good or service is in its promotion and distribution. An objective assessment of the time a design firm typically spends communicating (promotion) and interacting with

Continued on page 43

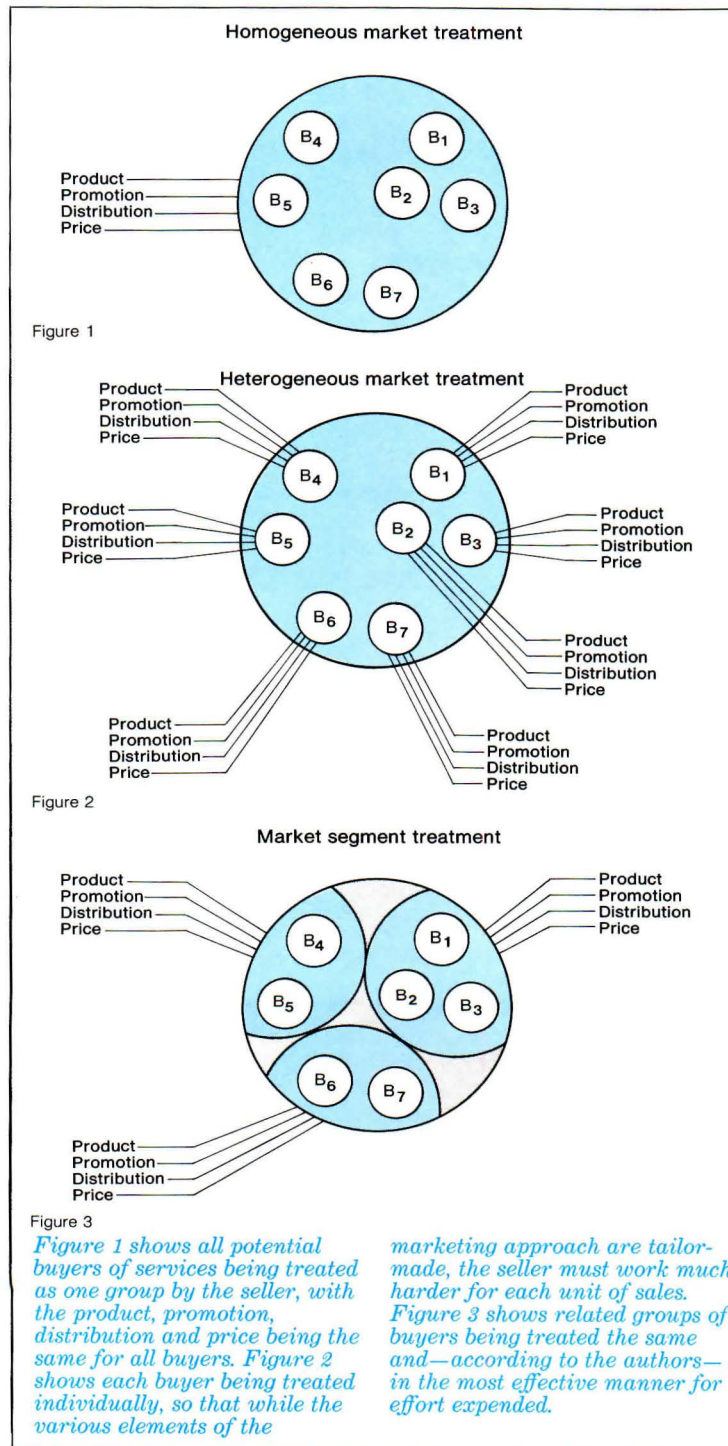
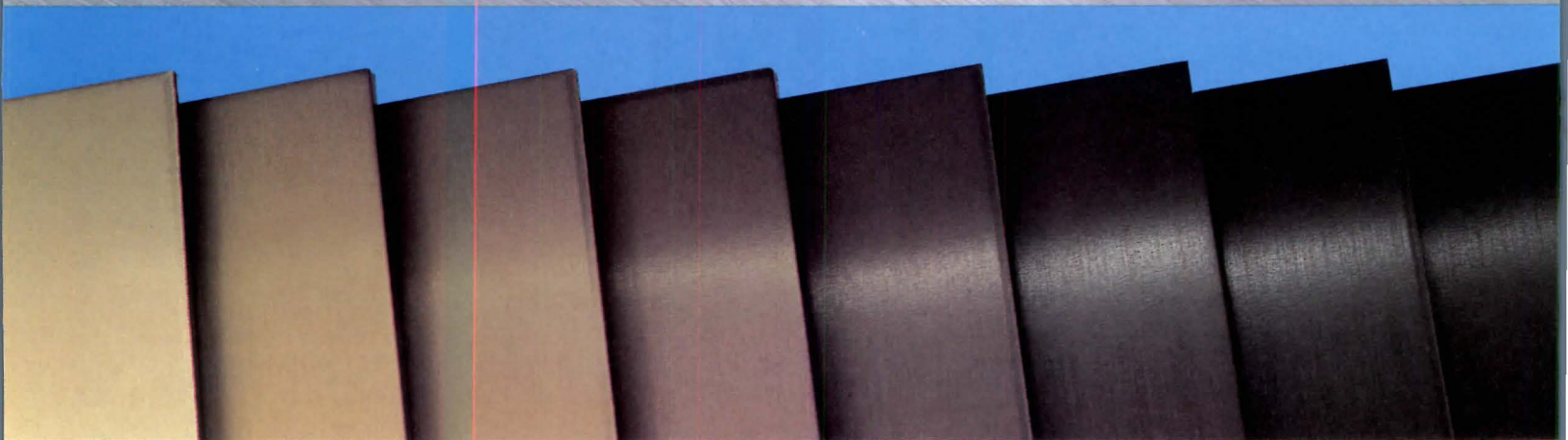


Figure 1 shows all potential buyers of services being treated as one group by the seller, with the product, promotion, distribution and price being the same for all buyers. Figure 2 shows each buyer being treated individually, so that while the various elements of the

marketing approach are tailor-made, the seller must work much harder for each unit of sales. Figure 3 shows related groups of buyers being treated the same and—according to the authors—in the most effective manner for effort expended.

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Insurance: Reducing your chances of a liability claim

In this third part of a series, a manager from the CNA Insurance Companies offers a checklist of ways you can decrease your exposure

By Michael Silchuck

These recommendations have been developed by the research department of Victor O. Schinnerer and Company, Inc. Schinnerer is the underwriting manager of a design-professional liability program offered for more than 25 years by the Continental Casualty Company, one of the CNA Insurance Companies. The recommendations were derived from examination of more than 50,000 claims filed against design professionals insured in the CNA/Schinnerer program.

You have the primary responsibility to assure that your firm is doing everything possible, from both a technical-design and business-management standpoint, to help prevent errors and situations that could lead to a professional liability claim being made against your firm. The commitment to practice effective loss prevention must involve every member of your firm, from the top down. It is hoped that you will compare this list of recommendations with your firm's current practices, and that you will also circulate this list in your firm.

Client acceptance

- Assure yourself that your client has the financial capability to undertake the proposed project.
- Avoid undertaking projects for clients who are prone to litigation.
- Avoid undertaking projects of a purely speculative nature unless the client has a proven record of completing such projects.

Selection of consultants

- Select your consulting professionals on the basis of their competence and ability to perform a specific project.
- Be certain that work performed by consultants is under written contract.
- Be certain that the contract with the consultant clearly outlines his responsibility.
- Be sure that your consultants have an adequate number of staff personnel.
- Be sure that your consultants have evidence of sufficient financial responsibility, such as their own professional liability insurance, for the project.

Performance by staff members

- Appoint a qualified and experienced member of your firm to coordinate in-house quality-control efforts.
- Establish checking procedures to detect simple errors and omissions in plans and specifications.

- Have the work of less experienced staff members carefully checked by a principal of the firm or by a responsible, experienced employee.
- Establish an office manual setting forth the duties and responsibilities of all positions in the firm.

Owner agreement

- Be thoroughly familiar with the terms of your agreement with your client.
- Be certain to have a written contract, preferably one of the NSPE or AIA standard forms, for every project, regardless of size. The completeness and language in these have been tested.
- Be thoroughly familiar with the rights, duties and responsibilities assigned to you in the general conditions of the contract between owner and the contractor.
- Use extreme care in modifying or supplementing standard forms of professional services contracts. Again, the language has precise meanings. Consult your lawyer concerning the effects of such modifications.
- Check with your insurance counselor about the effect that contract changes may have on your insurance coverage.
- Be certain that any changes in services to be performed are reduced to writing and made on the basis of an amendment or supplement to the original agreement with the client.
- Do not use nonstandard contract forms without consulting your legal counsel to determine whether such nonstandard contract forms impose responsibilities that you cannot or are not willing to assume.
- Be certain that the client understands that estimates of probable construction costs cannot be guaranteed.
- Be certain that the owner understands that an estimate of probable construction costs is not a promise to design the structure within a cost limitation.
- Make certain that all changes, directions or orders affecting fees, cost of the project or scope of the project are confirmed in writing.

Specifications

- Inform all project personnel concerning the proposed content of the specifications while the drawings are being prepared.
- Coordinate the preparation of the drawings and specifications throughout the construction documents phase.
- Begin preparing the

specifications when work on the drawings is begun, so that you can keep track of such items as tinted glass that affects agreed-to mechanical designs; do not wait until the drawings are virtually complete.

- Do not "over" specify or "under" specify; use just the right amount of text to communicate the project requirements to the contractor.
- Use standard specification language so that all parties will be able to understand what is intended by the written word.
- Review the text of all specifications carefully to ascertain whether it really reflects the intent of the design, and the items specified can meet the performance requirements.
- Beware of typing errors in the final version of the specifications.
- Consider subscribing to an automated master specification system.

Use of materials and equipment

- Do not use new materials or equipment without determining their suitability for the exact purpose for which you are specifying them.
- Do not rely on producer's sales literature regarding the suitability of new material or equipment.
- Do not rely on test reports furnished by the manufacturer, unless the scope of the test and the reputation of the tester are known.
- Make certain that the producer of new material or equipment knows how his product is to be used in your particular application.

Construction phase services

- Be certain that the owner understands that you are not and cannot be a guarantor of the contractor's performance.
 - Be certain that the owner understands that his greatest protection against faulty workmanship lies in the competence and integrity of the contractor he selects.
 - Avoid contractual language that might have the effect of making you responsible for the safety of personnel at the job site.
 - Be careful that all of your dealings and those of your field representatives are through the *general contractor and not* directly with subcontractors.
 - Do not disapprove of subcontractors except in an objective and factual way, such as previous proven failures to follow specs. This avoids any
- Continued on page 47*

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clients (distribution) would undoubtedly show a similar or higher percentage. It follows, therefore, that improving the design firm's productivity in promotion and distribution can make a substantial contribution to the profits of the firm.

A design firm might divide its market into six broad segments

These market segments might include three different types of clients: individuals, organizations and governments (either Federal, state or local). Each of these groups could be further divided into "sophisticated"—which we define as a knowledgeable client who has used design services in the past and is familiar with how to choose a design firm, the services provided, etc.—and "unsophisticated"—where the client is not knowledgeable and has not previously purchased design services.

In this example, the client segments are likely to have similar needs *within* each segment, yet differ from one to another in terms of (1) their ability to understand and use technical information, (2) their need to justify choice of design firm, and (3) their reactions to political influence.

Thus, marketing strategies can be developed based in part on the different needs of these client segments. Through repeated trials, the design firm will begin to develop an experience curve with one or more of these segments, increasing the firm's effectiveness, reducing costs, and making it possible to increase profits.

Market research on technical products has shown that unsophisticated purchasers are less inclined to purchase when they are provided primarily with technical information about the product. They're uncomfortable with technical information they do not understand or know how to use, and so they avoid buying.

Sophisticated purchasers, however, are just the opposite. If they are provided with the same technical information, they are more inclined to buy, for they know what is most relevant.

Borrowing from this product research suggests that sophisticated client segments, because of their past experience in the selection and use of design firms, are more likely to assess the firm on the basis of training, past designs, projects completed on time and within budget, awards and the like.

Unsophisticated purchasers of design services, however, usually find it hard to choose based on these relatively intangible factors and a technical assessment of the firm's record. Thus, factors such as the apparent understanding of the client and the client's needs tend to take on much greater weight than technical factors.

In the example above, the design firm faces client segments with increasing constraints in the selection process. The

individual client rarely has to justify his decision on selection of a design firm to anyone but himself. The typical organization client, however, must answer to some executive or board of directors, and the government client often must account to a superior, the public, and perhaps even some legal requirement that specifies how contracts are to be bid and negotiated. In short, the need to justify the selection is likely to weigh heavily in the decision of the organization and government market segments.

Here's how to use these factors to tailor your market strategies

The factors described above affect promotion/communication, fee and distribution strategies in various ways.

Promotion/communication.

The strategy that is likely to be most successful for individual clients is one that emphasizes understanding of the *client*; for organizations and government clients, however, it's one that emphasizes understanding of the *client's problem*. In either case, the communication should sound as though it were tailor-made for that specific client when in fact it was developed for a client segment or a related family of problems. Technical content should vary with sophistication of the problem, but as a general rule the organization and government segments will require significantly greater technical content than individual segments to justify the choice of the architect.

Furthermore, if a design firm cannot objectively justify its selection to the organization and government segments through information (*e.g.*, completed similar projects that were on time and within budget), the design firm might seriously consider using price as a substitute. For price, as we shall see below, becomes the dominant factor in justifying the choice of a design firm for most unsophisticated clients and, at times, for sophisticated clients as well.

Price. Various studies indicate that 60-80 per cent of a design firm's business comes from either repeat business or referral from past clients. One of the most controversial means for attracting and building a client base is to develop a price/service strategy that may sacrifice short-run profits in order to enlarge the group of past clients who will bring in 60-80 per cent of future business. Price, in this sense, can be viewed as an investment tool that is used to build a client base.

When it comes to price, design firms differ from other types of businesses because many architects view themselves primarily as artists rather than as business people and believe that the price of their services should not be a critical factor in transactions with a client. Price, however, is a very *tangible* piece
Continued on page 45



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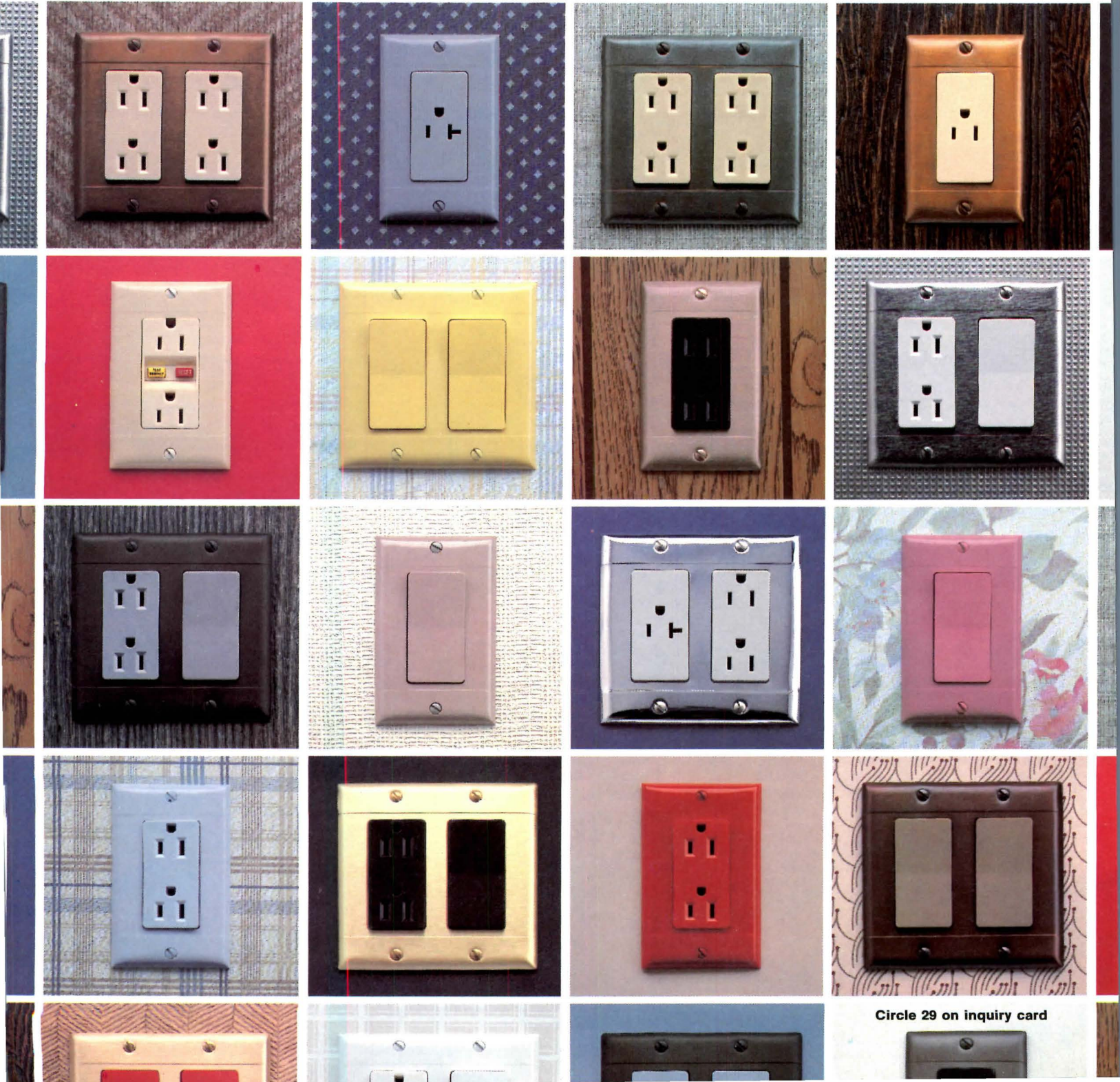
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of information that is likely to weigh especially heavily in the decisions of most clients.

Then, too, many design firms feel that their margins are already too low. But refusal to recognize the importance of fees in architectural decisions is short-sighted. Rather than fighting the importance of price, design professionals should develop market strategies that capitalize on its importance. The following example of a possible thought process of a relatively unsophisticated organization or government client shows how price can carry greater weight than a simple cost-benefit analysis would indicate:

"I must select an architect from this group of architects. Their background and experience appear equally sound. All have experience with the design of office buildings similar to my requirements.

"Although I prefer the past designs of architect A, I do not know how to justify my decision because the designs of architects B and C are also suitable and their price is lower. I know the differences in price are due in part to the slightly different services each architect proposes to perform, but I don't know how to weigh the relatively intangible cost-benefit of these different services. I and my supervisors can, however, measure price differences. If I am ever called on to defend my decision, I can point out that from a group of equally competent architects, I selected the one with the lowest price."

The foregoing is not meant to suggest that factors other than price are not also important in a client's decision process. For the unsophisticated client, however, the *relative* weight given price information is far heavier than many architects may suspect. And while architects may understand the justifications for differences in price, the unsophisticated client may not know how to measure these differences and may thus fall back on price itself.

Care must be taken in presenting price information, however, for the unsophisticated client may also use this information to measure the *quality* of those technical qualifications and credentials that he does not understand.

Distribution. For design firms, distribution is the physical delivery of designs, services, information and personal interactions with the client. And it too is a very visible factor that may become important in the selection of a design firm.

For example, many design firms fail to win a contract simply because they are not located in the project area. They may be the most competent, have moderate costs, communicate well, yet lose the project for political reasons or because the contract-letting body is worried about the degree of communication and accountability of a physically distant architect.

To counter the political problem, one marketing strategy might be to work out an agreement with a local architect for a joint venture. And to help reduce the "not-a-local-architect" problem, the strategy might be to schedule, as part of the proposal, a carefully planned series of communication checks during the design and construction of the project. An oral agreement "to keep in touch" is far less convincing than a detailed document outlining what will be reported on and when.

Let's assume that architect A and architect B are competing for a distant project. Both are roughly comparable in terms of competence, costs for services promised, etc. Architect A assures the clients that he will keep in close contact to inform them of the project's progress and to answer any questions. Architect B, in contrast, has a carefully planned reporting format that specifies what progress reports the clients will receive, when they will receive them, and what critical information each report will highlight. Furthermore, architect B has devised a systematic method for dealing with unforeseen problems that almost invariably arise in any building project. Which one would you choose?

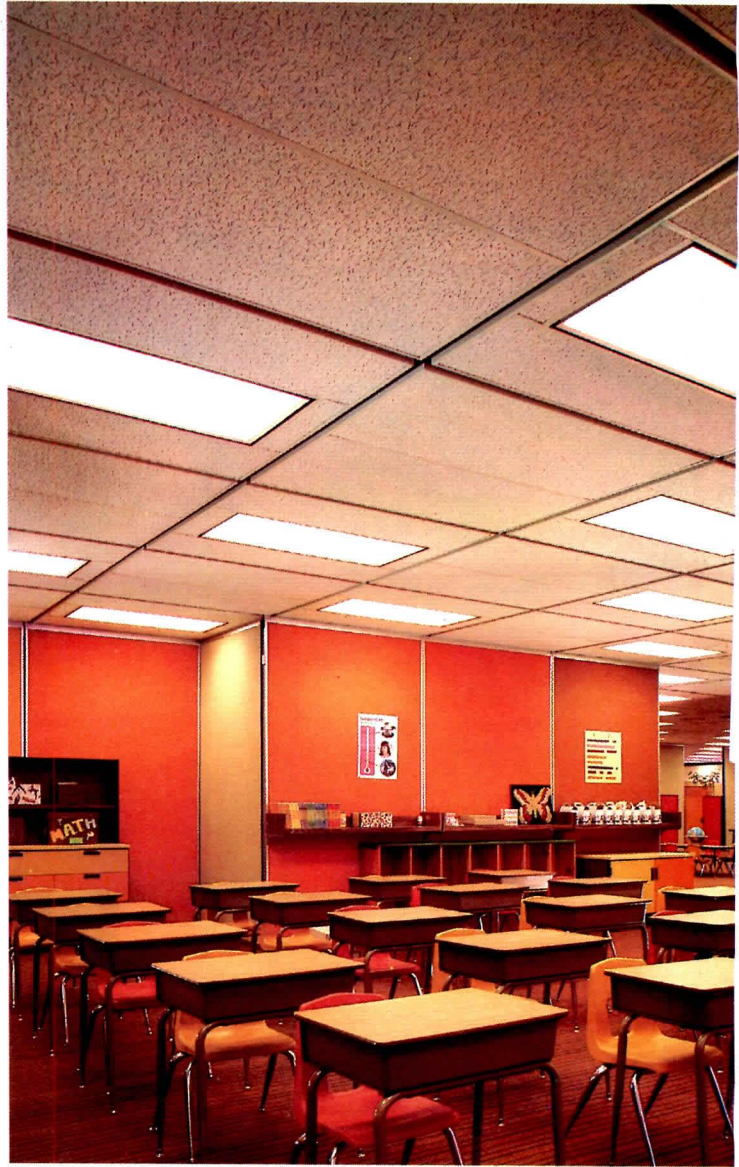
Improving productivity and reducing costs—vital strategies for the future

Obviously, design firms will not be able to universally apply the strategies suggested in this article. They should, however, think carefully about segmenting the markets most specific to their practice and developing marketing strategies to reach these client segments.

Design firms that develop and refine strategies that deal with client segments rather than starting from scratch with each client are likely to become more effective and efficient producers of design services. And although strategies will have to be tailored to individual clients, the degree of individual tailoring necessary will gradually be reduced as design firms develop families of strategies. When effectively applied, market segmentation will reduce costs and free architects to perform other tasks. An interesting paradox is that if architects would think and plan as business people, they would likely have more time to work as artists.

Dr. Noble is an associate professor of marketing at California Polytechnic State University. He is a former planning manager for the Bendix Corporation and does marketing consultation for professional organizations.

Mr. Rohde is a registered architect and a member of the AIA. He is also an MBA, a business-development consultant, and currently project manager for Keeble and Rohde Architects.



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- possible claim for defamation.
- Be certain that the contractor and subcontractors fully understand the agreed-on procedure for handling shop drawings.
- Do not approve shop drawings in a manner that indicates approval for other than conformance to the design concept of the project and compliance with the specifications and drawings prepared by you.
- Make certain that all instructions to the contractor are confirmed in writing.

Building codes and zoning restrictions

- Be familiar with all zoning laws, building codes and restrictions applicable to the project.
- Be aware of the fact that in most cases building code requirements are minimums.

Occupational Safety and Health Act

- If you do not have them, get copies of pertinent documents published by OSHA. Examine safety and health facilities in your office for compliance with the Act. Post required notices furnished by the OSHA Administration. Hold periodic meetings with your office staff to review safety and health requirements. If an inspector calls, be aware of the extent of his authority. Keep records of "recordable" injuries as required

- by OSHA.
- At the construction site, know your responsibilities as an architect or engineer. Instruct your own employees not to expose themselves intentionally to hazardous conditions during periodic visits to the site.
- Conversely, do not include a safety program in the project manual or the technical specifications. Do not interfere with the contractors' responsibilities to provide a safe and healthful work environment for their employees.
- Be aware of OSHA standards that affect design conditions. Review applicable building codes in conjunction with a review of OSHA standards to determine when the Act takes precedence. Advise the owner of budgetary adjustments caused by the Act's requirements.

Additionally, we would urge that whenever loss-prevention seminars are conducted by your professional liability insurer in your area, you take the time to attend. No matter how well you think you are running your business, you certainly can learn something to help prevent professional liability claims. Only by your taking the responsibility to prevent losses can the continuing upward movement of your professional liability premium be eased.

Mr. Silchuck is architects' and engineers' program account executive in the CNA Insurance Companies' professional liability division.

Office notes

Offices opened

Linda W. McGarity and Bruce A. Fehn announce the formation of McGarity Fehn & Associates, located at 4230 Villanova, Houston, Texas, for the practice of architecture, planning and interior architecture.

Gragg-Dumas and Associates, Inc. announce the opening of their new office for the practice of architecture and planning, located at Post Office Box 875, Summerville, South Carolina.

Edward L. Verkler, Sr. and Thomas E. Verkler announce the reorganization of their architectural firm under the name of The Verkler Partnership, located at 1323 Pioneer Parkway West, Suite C, Arlington, Texas.

Raymond J. Schultz has established a new architectural firm called ACI Design/Architects & Planners. It will provide professional architectural, space planning and interior design services. The office address is 3600 Woodview Trace, Suite 201, Indianapolis, Indiana.

Morris Bolter announces the opening of his new firm, Morris Bolter Architects, located at 835 Clybourn Avenue, Burbank California.

Firm changes

The Hoffmann Partnership, Inc. has named Timothy Reed a new partner and Paul Kasahara and Charles Barton as new associates.

Thompson Ventulett Stainback & Associates announces Jeffrey J. Folinus and Henry W. Spiker as associates in architecture and Holly S. Williams as associate in interior design.

Edward A. McDemus has been made an associate of Vitetta Group and Arthur F. Foran, III has joined the firm as manager of Studio Four.

John H. Kamus has joined the architectural firm of SHWC, Inc. as a project manager.

Harriman Associates, Architects-Engineers announces the selection of Barron E. Stallman to director of architecture, Lloyd L. Cushman to treasurer. Robert L. Thorpe has been appointed president.

Continued on page 66

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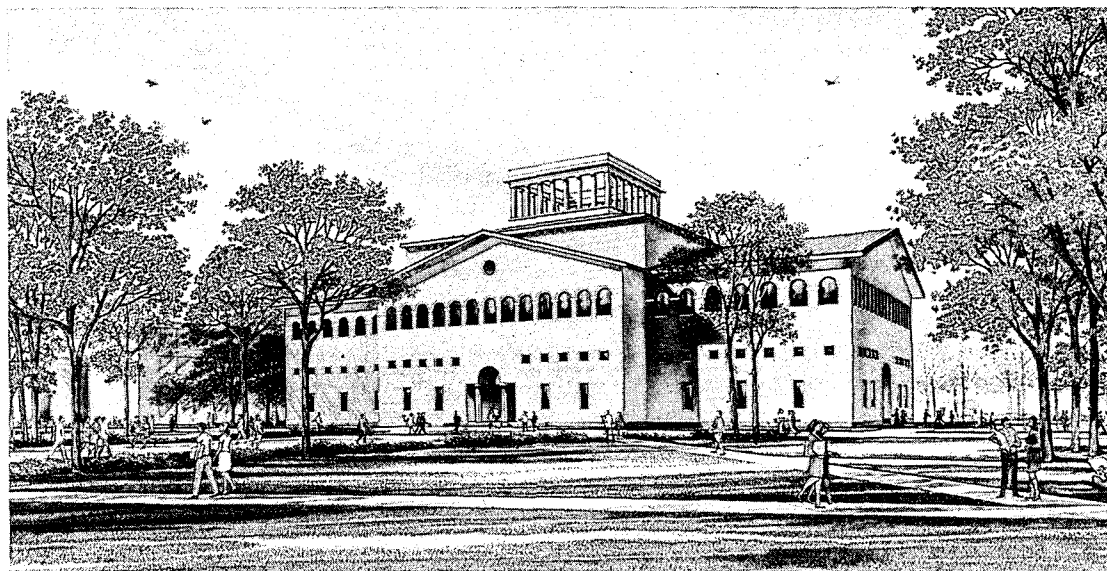
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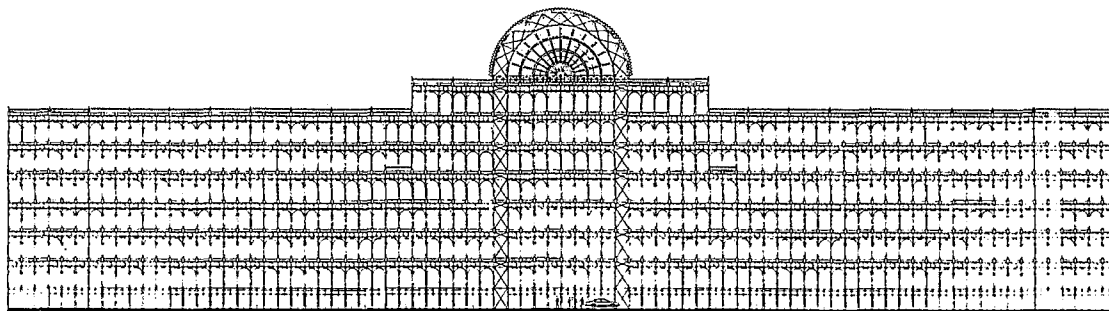
First it was Chippendale in New York, then Gothic for Pittsburgh, and now—18th-century France has inspired Johnson/Burgee's design for the new college of architecture building at the University of Houston. The four-story, 90,000-square-foot structure consolidating the school's teaching facilities will feature an austere brick and Indiana limestone facade

punctuated by rows of rectangular, square, and round-arched windows. Based loosely on Claude Nicolas Ledoux's House of Education in Paris, the structure will be crowned by a classical columned lantern that John Burgee notes "distinguishes it as the architecture building." The school is planned to straddle an existing pedestrian axis and serve as an open passageway

linking the university's parking area with the center of the campus. "This will be the prettiest building in Houston," Johnson says, "even though we have a few others I think are nice..."

Morris/Aubry are the associated architects.

...and for Dallas, a new Crystal Palace



Reflecting the ascendancy of the Southwest as a center of high technology, and literally reflecting the surrounding Dallas landscape with its hundreds of 6-foot by 14-foot silver-gray windows, the world's first large-scale computer products mart will be closely modeled on the 1851 London Crystal Palace, Joseph Paxton's great metal and glass monument to Britain's

Industrial Revolution. Dubbed "Infomart" by its developer and designed by Martin Growald of Growald Architects, the striking center will initially rise seven stories above the Texas plain and house 1.5 million square feet of office and showroom space. Like its English predecessor, Infomart will boast a central atrium running the building's full 400-foot length.

Why this particular architectural inspiration for a high-technology center? Said Growald in a recent interview with the *Sunday Times* of London: "We see computers as being the continuation of the first industrial revolution, so the Crystal Palace is an appropriate form for a building to house them."

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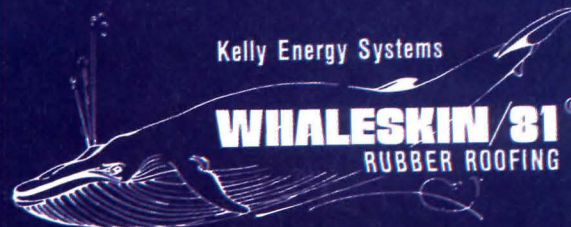


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A summer home for the Cincinnati Symphony

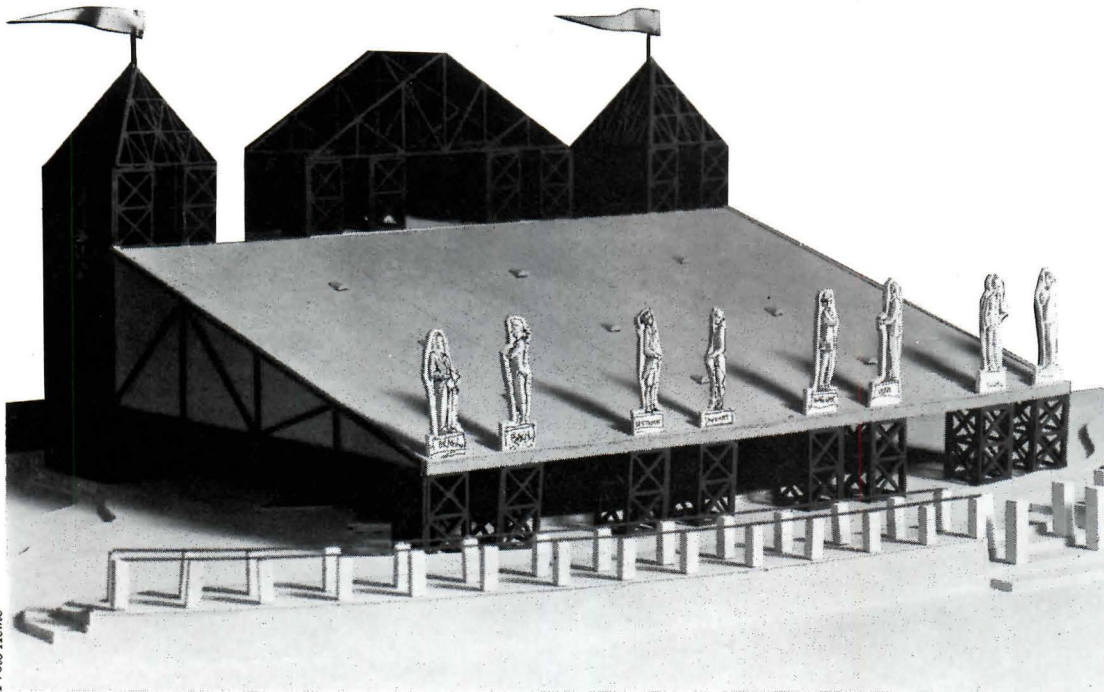


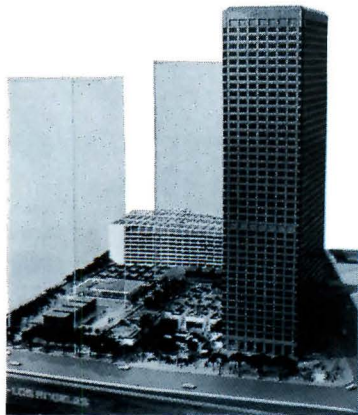
Photo Acme

Currently rising along the banks of the Ohio River in a recreational area known as Coney Island (no relation to its Brooklyn namesake), the first permanent summer home of the Cincinnati Symphony Orchestra will seat 4,500 people under a giant awninglike roof and 10,000 more spectators on a surrounding grassy berm. According to architect Michael Graves, the

design scheme evokes "thoughts of a congregation under a tent, a building by the river, and the relaxed atmosphere of a pavilion in the park." The structure's all-encompassing roof will be decorated with multicolored shingles and supported on two open-web structural steel towers that echo the ironwork construction of a nearby bridge spanning the Ohio. Flat-relief

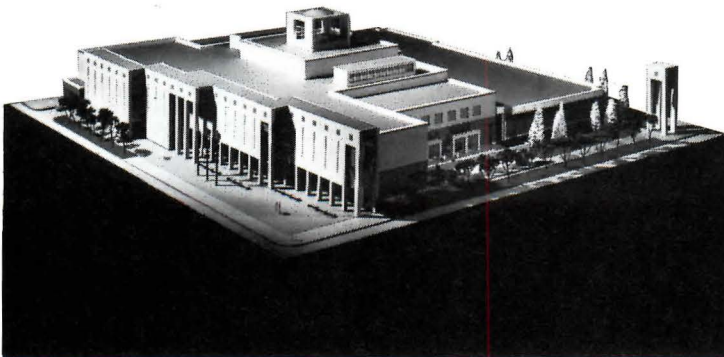
statues of notable composers will articulate the rim of the structure, which is designed for the presentation of both orchestral and popular music. Christopher Jaffe is the acoustical consultant.

NY bank builds LA branch



The ever-rising skyline of downtown Los Angeles will receive another push upward with the construction of Citicorp Plaza, a three-building office and retail development. The flagship structure of the complex, Citicorp Center, will be a 42-story, granite-clad office tower. Architects for the project are the Chicago office of Skidmore, Owings & Merrill.

A welcoming harbor for art in Anchorage



Frank Flavin

Who says there is nothing in Alaska but oil and snow? The expansion of the Anchorage Historical and Fine Arts Museum by Mitchell/Giurgola Architects in association with Maynard & Partch will provide the state's largest city with 95,800 square feet of new and renovated space for permanent and temporary exhibitions on Alaskan history and art.

According to M/G partner-in-charge Steven Goldberg, the four-bay, stepped configuration of the south-facing main facade is designed to catch a maximum amount of direct sunlight—a precious commodity in this northern metropolis—and offer striking views of the nearby Chugatch Mountains from the second-floor galleries.

Rome Prize Fellowships announced

The American Academy in Rome has announced its Rome Prize Fellowships program for 1984-85. American citizens are invited to compete for a limited number of one-year fellowships to work independently as members of the Academy's community of artists and scholars in the fields of architecture, landscape architecture, art history, classical studies, archaeology, and other humanistic disciplines. Fellows are provided with living and working quarters in Rome, most meals, a travel allowance of \$800, and a yearly stipend of \$5,400. The program also includes the National Endowment for the Arts and Graham Foundation advanced fellowships of six months for professionals in the fields of architecture, landscape architecture, urban planning, interior, industrial, graphic, set, and fashion design. Applicants for the six-month awards must have at least seven years of professional experience and be currently engaged in practice.

Deadline for applying is November 15, 1983. For information and application materials contact the American Academy in Rome, 41 East 65th Street, New York, N.Y. 10021.

A new commercial center in Texas

Situated midway between Dallas and Fort Worth, Texas Plaza is the core of a 90-acre mixed-use development site housing office, hotel, and retail space. The initial phase of the project comprises three 15- and 20-story office towers designed as bundled, peak-roofed prisms clad in blue-green glass and stainless steel, a hotel, and connecting retail plaza. Architects are The AiGroup, Inc., Architecture International.





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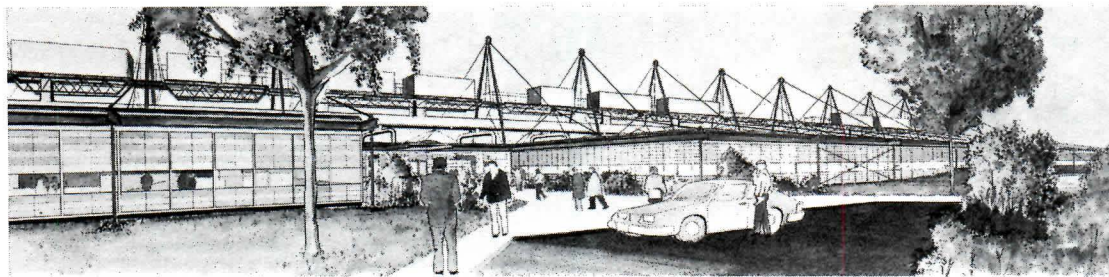
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Shovels obsolescent?



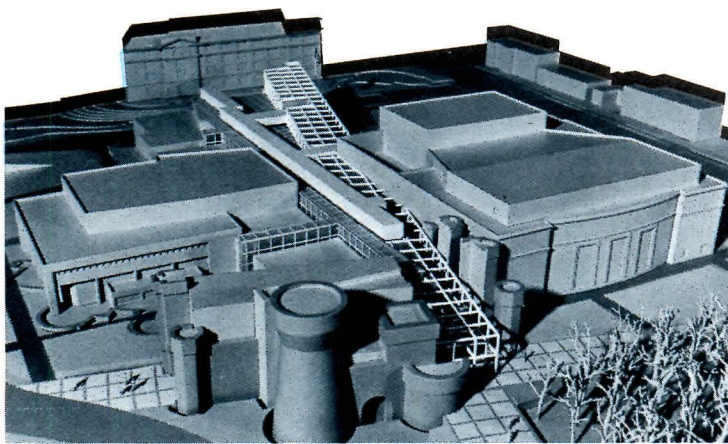
The residents of New Jersey thought they had seen it all recently when Governor Thomas Kean participated in the state's first teleconferenced robotic ground-breaking. The ceremony marked the beginning of construction on a new technology and science center for PA International, a consulting firm that specializes in, appropriately enough, high-technology clients.

Several hundred guests watched as Kean activated an industrial robot at the East Windsor site from his desk in Trenton.

The building for which the unnamed robot broke ground is the first American project of Richard Rogers, architect of the Pompidou Center in Paris, and is designed to house computer and telecommunications equipment for the firm's clients. The 42,000-

square-foot structure features an "exoskeleton" system, with all utilities, plumbing, and ventilation ductwork suspended from steel masts located on the roof. This system, notes Rogers, makes the building more "people-oriented" and allows for greater flexibility in creating interior spaces since room layouts are less affected by load-bearing walls and obstructive pipes.

A visual arts center for Ohio State

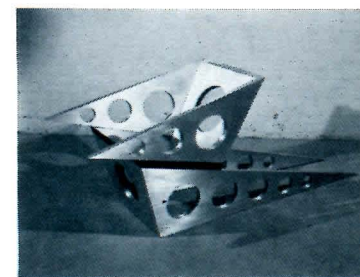


The result of a juried competition among five team entries by Ohio-based and out-of-state firms, the Ohio State University Center for the Visual Arts will provide 100,000 square feet of space devoted to exhibition, research, teaching, and performance. The winning scheme by Trott & Bean and Eisenman/Robertson employs sandstone towers and other fragments of an old armory that was one of the original campus buildings, along with a glass-enclosed diagonal spine linking the new structure with existing buildings nearby. In its report the jury praised the entry for "recalling a memory and invoking the future." It added that "the recommended solution is adventurous and challenging, yet deeply responsive to its campus setting."

From bedrock to Buck Rogers

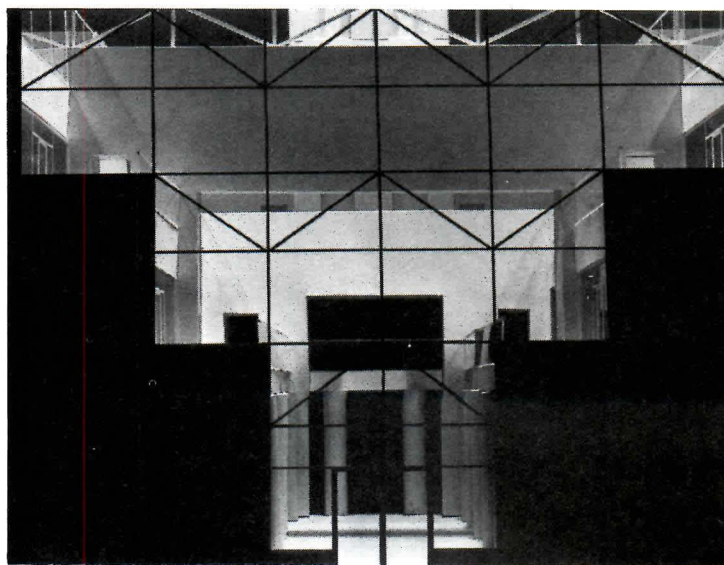
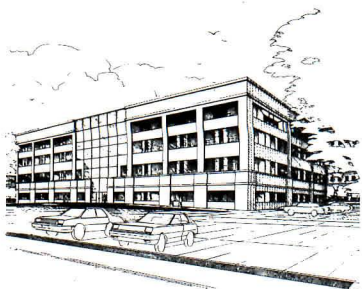
The distinction between artist and designer, never clear-cut, will be dissolved completely this fall with the opening of an exhibition of chairs by New York artist Scott Burton at the Fort Worth Art Museum. Burton's work in furniture design defies stylistic straight-jacketing and ranges from a primitive-looking lava rock seating unit that might have furnished Fred Flintstone's domicile to a polished aluminum lounge chair that gently spoofs futuristic notions of the 21st century.

Organized jointly with the Cincinnati Contemporary Arts Center, the exhibition will be on view in Fort Worth from September 25 to November 6 and will then travel to the Contemporary Arts Museum in Houston, where it will run from November 12 to January 9.



An ice cream factory goes high tech

A renovated ice cream factory in downtown Cincinnati will provide 120,000 square feet of office space geared to high-technology tenants. According to J.P. Chadwick Floyd of Moore Grover Harper, a "theatrical" approach was used in the redesign of the 1914 building: all offices open onto a central atrium that is organized as a series of receding, rectilinear proscenium arches, backlit by sunlight filtering through two multicolored glass skylights. Green, silver, and gold panels of glass arrayed vertically on the exterior produce a "banner effect," while a "cascade of silver glass" at the central entrance becomes transparent at night to reveal the atrium within. Associated architects for the project are Rabun, Hatch & Dendy.



Wasco's new architectural minimized Midway's

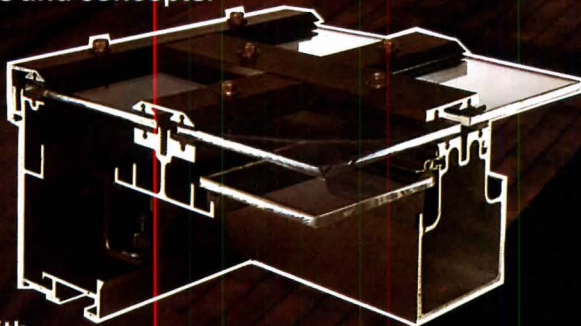
Spectacular skylighting systems are not new to Midway Motor Lodge. And yet, every time a new Lodge is constructed, Midway is faced with a monumental decision.

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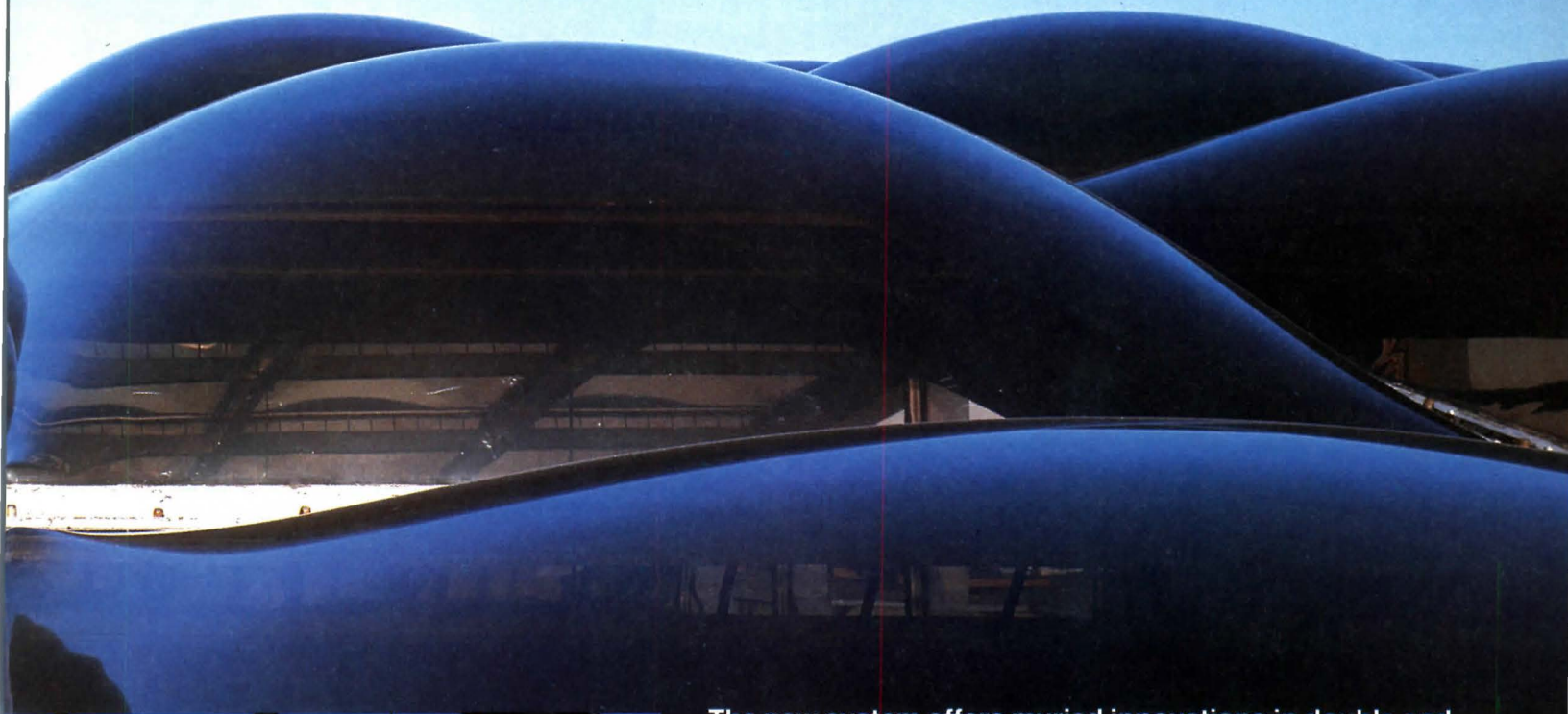
Wasco's dramatically different tubular architectural skylighting system met Midway's sophisticated specifications for the new Lodge in Indianapolis.

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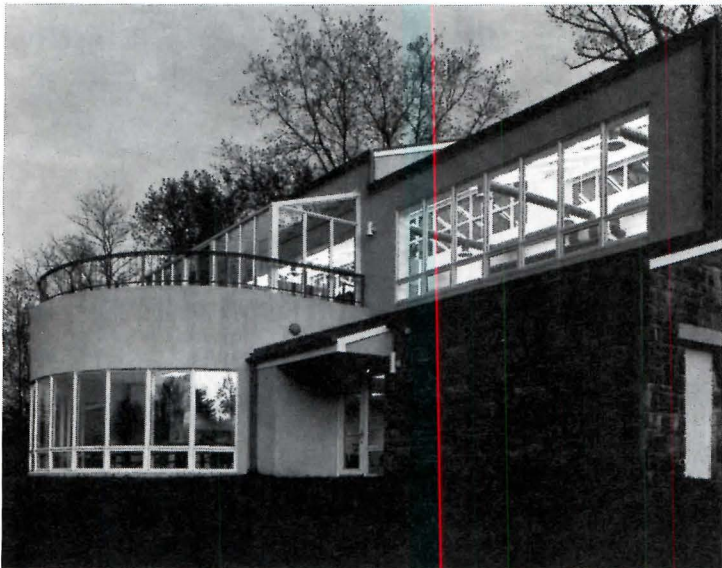
**Design awards/competitions:
Washington Chapter of the AIA
1983 Awards for Excellence in Architecture**



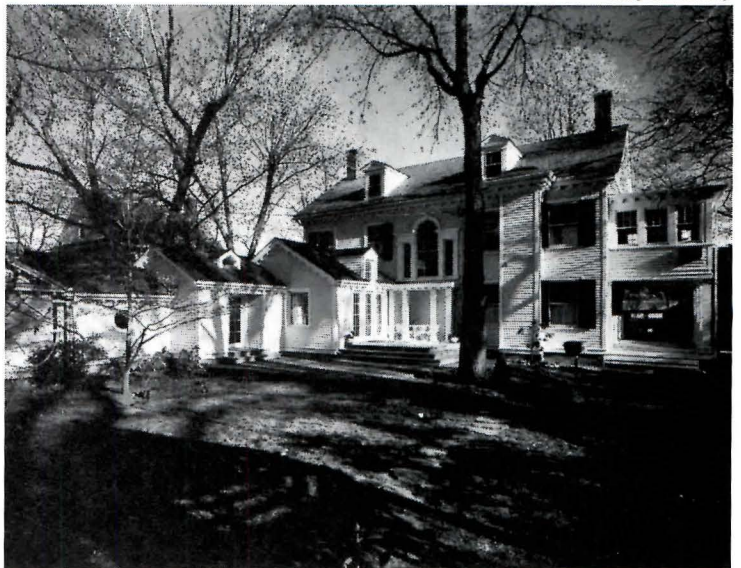
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Gary P. Fleming



Gary P. Fleming



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1. Foster Residence, McLean, Virginia; Hartman-Cox Architects. The owners of this country house wanted the architects to provide the maximum possible amount of informal entertaining space on a single level. Recalling a complex of New England farmhouses, the design strings out a series of separate volumes along site contour lines. Praising the project's modest scale, juror Ben Weese noted, "It is really a big building but it hides the fact."

2. National Gallery of Art West Building Renovations, Washington, D.C.; Keyes Condon Florance, Architects. The opening of I.M. Pei's East Wing enabled the ground floor of the 1941 gallery building by John Russell Pope to be reorganized thoroughly. The remodeled space contains galleries, a lecture hall, café, sales shop, and offices. Cast in a contemporary version of Pope's Neoclassical idiom, the design also relates to the original fabric through its plan; a circulation axis joining three ground-level entrances mirrors the main floor's enfilade. According to the jury, the success of the new interior is such that "it is all *integrated*. . .as though it might always have been there."

3. Norwood School Art and Music Building, Bethesda, Maryland; Keyes Condon Florance, Architects. Challenged to design a fine-arts facility that would relate to an existing structure, the architects also had to find less costly substitutes for the original building's stone facade and terra-cotta roof. Their choices were a limited stone veneer, stucco, and a clay-colored metal roof. The two-story structure terminates in a semicircular projection that echoes the terraced hillside site. The jury praised the architects' ability to expand on the strengths of the master plan within a limited budget.

4. Zapruder Residence, Chevy Chase, Maryland; Hartman-Cox, Architects. The need for more interior space and greater utilization of a suburban backyard determined the design of this addition to a Colonial Revival house. Conceived as three boxes, the addition connects the main house to a garage now renovated as a family room. Juror Jaquelin Robertson characterized this scheme as "a delightful rambling backyard addition, which is responsive to the old house as well as to the landscape."

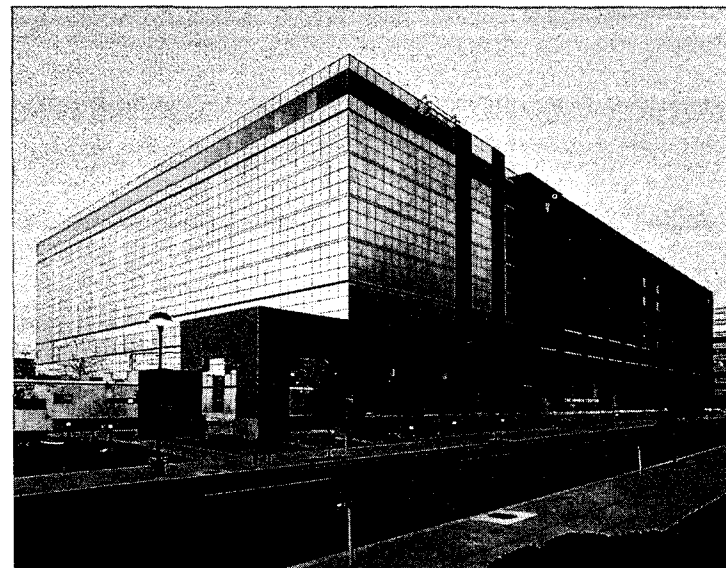
The Washington (D.C.) Chapter of the AIA has announced the selection of 13 projects to receive its Awards for Excellence in Architecture. Jury members who reviewed the 89 entries were: Carleton Knight, III, contributing editor for the AIA Journal; Jaquelin Robertson, dean of the University of Virginia School of Architecture and partner in Design Development Resources and Eisenman/Robertson Design; and Ben Weese, partner in Weese Hickey Weese Architects Ltd.

Awards news concludes on page 59, with the New York

Chapter of the AIA's 1983 Distinguished Architecture Awards Program. The New York awards jury consisted of Robert Campbell, architect and architectural critic for the Boston Globe; Joan Goody, partner in Goody, Clancy & Associates; and Stanley Tigerman, partner in Tigerman Fugman McCurry.



Robert C. Lautman

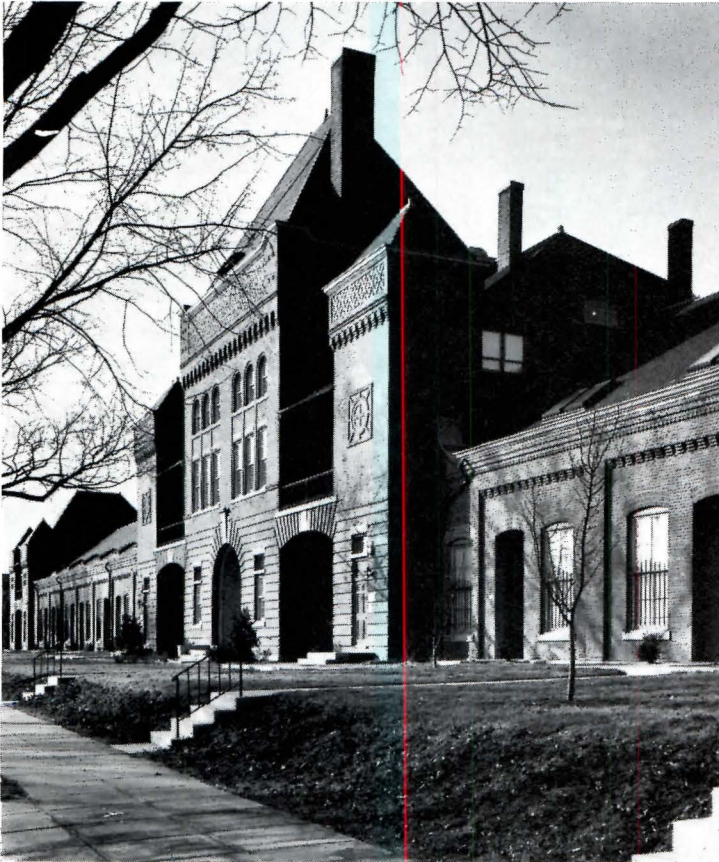


5. **University of Michigan Alumni Center, Ann Arbor, Michigan;** Hugh Newell Jacobsen, FAIA, Architect (RECORD, April 1983, pages 130-137). Steeply pitched roofs, exaggerated chimneys, and multicolored materials reinterpret the vocabulary of existing Collegiate Gothic structures on campus. Straddling a major circulation route, the new building respects the pedestrian's traditional right of way and places the alumni facility at the campus center, symbolically as well as physically.

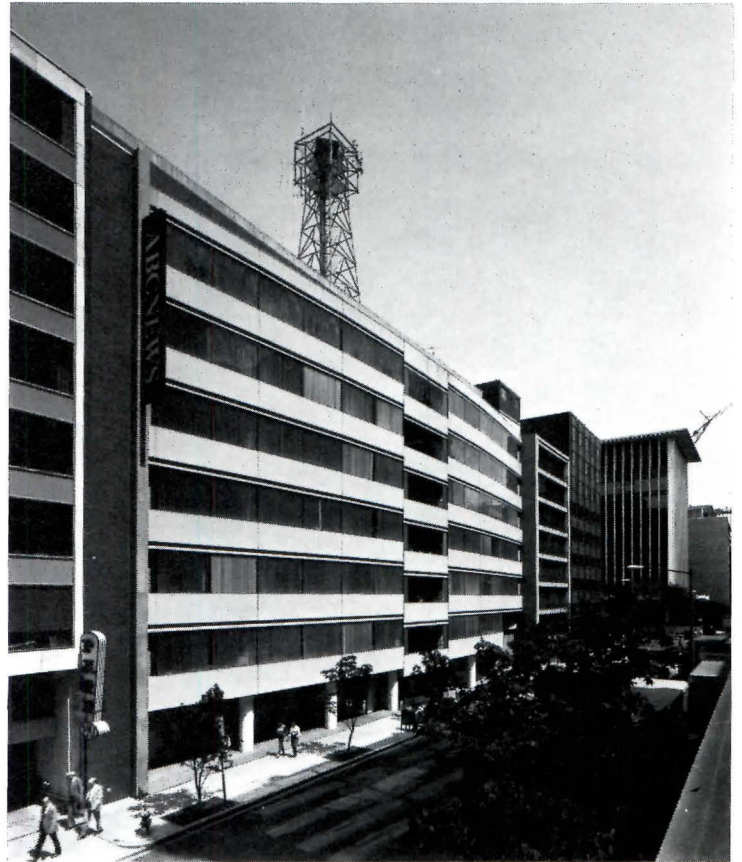
6. **Wagner Addition, Washington, D.C.;** McCartney Lewis Architects. The owners of this Tudor-style house wanted a family room added to the rear and a redesigned kitchen. The architects concealed a 1950s redwood addition by extending half-timbering and stucco behind the house. Located a step down from the original dwelling, the addition has a pitched roof with high windows and direct access to the patio outside. The jurors considered the design one of the most elegant small additions submitted for review.

7. **1217 E Street Office Building, Washington, D.C.;** KressCox Associates, P.C., Architects. The architects transformed a mundane 1920s warehouse into an elegant office building by creating a picturesque Neoclassical facade appropriate to the law firms the building now houses. This dramatic face-lift incorporates the original brickwork but embellishes it with projecting bays, a rusticated base, and limestone lintels, keystones, and a carved cartouche.

8. **The Design Center, Washington, D.C.;** Keyes Condon Florance, Architects. Spanning a full city block, the Design Center provides showroom space, a restaurant, and parking for furniture, carpet, and fabric manufacturers inside a recycled warehouse of the 1920s with a new glass-sheathed addition. Although the design plays on the contrast between the older building's almost windowless front and the addition's glazed facade, it links the two forms together by a running green tile stripe, repeated bay modules, and an arcuated brick base for the new structure. "It is urbanistically very sober," the jury remarked, "and yet as a merchandise mart it clearly has a sign out front, in the form of the new curtain wall."



9 ©Maxwell Mackenzie



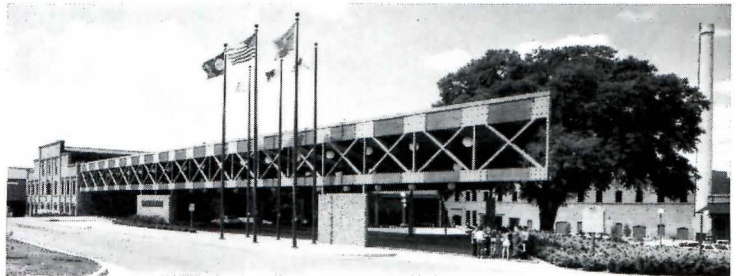
10 ©Jock Pottle



11



12 ©Harlan Hambright



13 ©Maxwell Mackenzie

9. The East Capitol Car Barn, Washington, D.C.; Martin & Jones, Architects. This landmark structure of 1896 originally housed offices and maintenance facilities for the city's trolley system. Converted to residential use, the building now contains 52 apartments. The awards panel was particularly impressed by the architects' ability to work within a developer's tight budget while creating a discreetly refined design. Facade changes were kept to a minimum and consist of the erection of skylights flush with the slate roof and the dropping of window sills to create entries.

10. ABC Washington News Bureau, Washington, D.C.; Kohn Pedersen Fox Associates, P.C., Architects. This building is distinguished from the typical Washington office block by a

subtly bowed front of painted aluminum and green glass, framed by two granite piers. The central bay's "dropped panels," which coincide with the reception areas on each floor, further enhance the design (technical areas are windowless or below grade). The jurors commended the simple materials, restrained forms, and beautifully executed details.

11. Van Ness Station, Washington, D.C.; Hartman-Cox Architects. Mounted atop a subway station, this speculative office building responds to the diverse architectural elements and site conditions of its context. While the station's tan brick, smoked glass, and horizontal lines relate to adjacent modern buildings, streamlined entrances and red brick stripes allude to Art Deco structures elsewhere in

the same neighborhood. The massing adapts to both the slope of the grade and the building's corner location by bending in the middle and stepping up from three to seven stories at the point of a major intersection. The jury found the design "particularly satisfying and quite low key."

12. Metrobus Garage Facility, Rockville, Maryland; Mariani & Associates, Inc., Architects. This maintenance facility for metropolitan buses "makes high tech of... what one expects to be an ordinary, utilitarian building." Carleton Knight observed. Its structure consists of long-span castelated beams, steel roof decks, and metal exterior panels. Functional considerations, such as rounded corners to permit easy vehicle movement, dictated the building's forms. Roof monitors,

commonly associated with older industrial buildings, house skylights, smoke vents, and mechanical equipment.

13. Columbus Trade and Convention Center, Columbus, Georgia; Arthur Cotton Moore/Associates, P.C., Architects. The clients chose to adapt an abandoned foundry for civic use. Echoing the older building's trussed interior space, the architects designed a similarly framed entrance canopy. An interior courtyard between the foundry and the entrance is both an amphitheater and an open-air exhibition and reception area. The jury cited the project as a model of architectural reclamation helping to stabilize an historic city center.



1 Norman McGrath



2 ©Nick Wheeler



3 Otto Baitz



4 ©Peter Aaron/ESTO

1. The North Company Houses, Sagaponack, New York; Paul Segal Associates, Architects. A framed conservatory of translucent fiberglass is the leitmotif of these three houses. In addition to customary domestic spaces, each house in the development contains an unheated conservatory paved with bluestone set in sand. This "room" offers functions usually absent from speculative house plans (studio, greenhouse, gymnasium, indoor/outdoor living room) at no expense in energy. Commending this scheme as "the most original of all designs submitted," the jury admired the "inventive, untrammled quality, fresh detail, softly daylight interior, and glowing presence at night."

2. The Time/Life Auditorium Conference Center, New York City; Davis, Brody & Associates, Architects. Through the introduction of folding walls and multiple entrances, an existing auditorium on the Time/Life Building's eighth-floor setback has become a highly flexible space. Areas can be used separately or combined for seminars, film screenings, banquets, and receptions. Activities spill out onto adjoining roof terraces which were repaved and planted. The jury characterized the design as "a reimagining of a somewhat similar Art Deco original, using asymmetries and other devices to refresh this style while reviving neglected virtues of the original such as roof terraces."

3. R.J. Reynolds Tobacco Company Building, Winston-Salem, North Carolina; Randolph R. Croxton, The Croxton Collaborative/Hamill-Walter Associated Architects (RECORD, January 1983, pages 98-101). This 1929 limestone tower by Shreve & Lamb is a masterly example of Art Deco, (a style that, reworked in various ways, predominated among submissions for the 1983 New York awards). Suave ornament executed in marble, nickel-silver, carved glass, plaster, and terrazzo relates the tobacco industry's history. The program stipulated the careful preservation and refurbishing of the building as well as a redesign of the interior to accommodate four stores and a reception area.

4. Nightfalls Restaurant, Brooklyn, New York; Voorsanger & Mills Associates, Architects. Faced with a partially completed restaurant, the architects had to work within the constraints of a predetermined spatial envelope: a series of awkward volumes with arched openings and a 20-foot-high greenhouse/skylight. The architects keyed their design to different phases of restaurant use, with a daytime dining room on the garden facade and a nighttime dining area inside the greenhouse. The bar (shown above) forms a glamorous pendant to the starlit winter garden.

YOU CAN'T



Libraries: the dawn of the information age

The imagery of “library” has undergone some vast, and often sudden, changes through time. And it looks very much as if we are on the brink of another—with technology-created quantity again the immediate cause.

Looking back, the pivotal points of change are fairly obvious. From the vaults of rare, chained manuscripts, Renaissance printing quickly led to increased, still prized, collections that were housed in such architectural treasures as Michelangelo’s Laurentian Library. This wave crested, perhaps, in such Baroque splendors as Vienna’s Imperial Library—where soaring halls are close-jeweled with fine bindings.

The flood of books from mechanical presses brought the concept of big stack areas, separate from still-grand reading rooms, and realized by the 1850s at the Bibliothèque Nationale in Paris, and at London’s British Museum Library. Storage and service problems mounted—but somehow the expressed drama of learning from books prevailed in the architecture designed to nurture it.

In our own times, more literacy, and more and more books tilted the library-planning scales toward concentration on the attendant functional difficulties, including economy-forced staff reductions; and architecturally, on “form follows function.”

Now, we seem to be at the edge of an absolute tidal wave of communications and information changes: history’s biggest output of books, plus microfilms and microdots, computers and satellite relays—“telematics,” as it is beginning to be called. It is affecting libraries, as storehouses of all that information, and creating much re-thinking, planning and construction—from rehabilitation to new libraries, from additions to new branches. And, above all, it is fostering debate on what library roles as public or university facilities are, or should be, and what eventual impact telematics and other innovations will have. This study focuses on four excellent examples (each of which has its own sort of drama) that perhaps typify a range of current concerns. They include a spectacular restoration of New York City’s main library (whose lions have come to be almost the symbol of “library”); a new small-town public library planned for later expansion; a new library and storage facility for Yale; and an NYU Business School library installed in an office building loft. It ends with some provocative thoughts on the potential future of libraries by Carlton Rochell. If form really follows function, let’s hope the drama of learning (books or not) will resurface, as it has before, in some vibrantly creative buildings in that future. *Herbert L. Smith, Jr.*



New York Public Library
New York City
Davis, Brody & Associates
and Giorgio Cavaglieri,
Joint Venture Architects

Rejuvenation for the grand dowager



The opulent, Beaux Arts splendor of Carrère and Hastings' great New York City library—designed in 1897, and opened in 1911—is currently being restored to near-pristine freshness from a frumpish state due to age and a raft of unbecoming expediences. A lot of the brilliance of the original rooms had been eliminated or obscured by inevitable grime and general deterioration, and by layers of alterations to cope with the always expanding need of more space for books, files and staff activities.

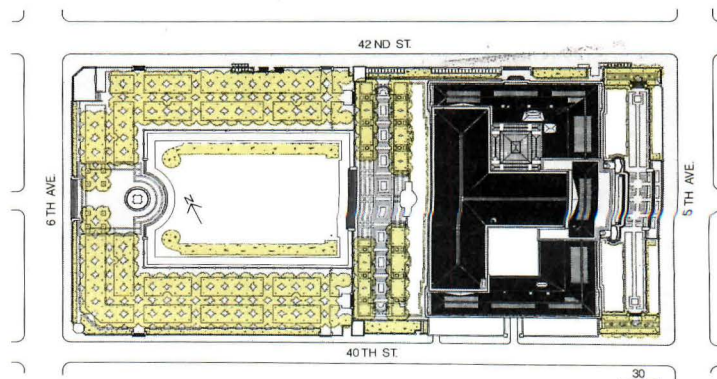
Already completed is the splendid restoration of the Periodical Rooms shown in the photos here and following pages. It is a masterful combination of direct refurbishing (with some newly-created matching) and skillful integration of new mechanical systems—all carried out by Giorgio Cavaglieri, an architect well known for his sensitivity in such work.

A long-range Master Restoration Plan—in a joint venture by architects Davis, Brody & Associates, and Giorgio Cavaglieri—has been developed to successively rehabilitate other rooms, with resources focused on those of highest historical priority (see drawings overleaf). A labyrinth of nonpriority spaces will be used to house up-to-the-minute technology to create an efficiently modern, as well as edifying, noncirculating research library. Innovations include new humidity and temperature control systems, wiring and lighting systems, and computer-based data systems. Separate studies are being made by Davis, Brody & Associates to improve operational locations and procedures.

Under the restoration plan, an existing library annex—located a few blocks away on West 43rd Street—will be used to alleviate the crowded conditions, and free up some of the rooms.

Apart from the interiors, the grounds at the main Fifth Avenue entrance will be revitalized under the plan into a major public plaza, with new planting and seating, and special facade lighting. The facade is also being restored, cleaned, pointed and patched by The Ehrenkrantz Group, architects.

Other studies are under way, too, by architects Hardy, Holzman, Pfeiffer Associates, to recreate Bryant Park, at the back of the library, into an active, pleasurable garden. All restoration is under the coordinating wing of architect Arthur Rosenblatt as director of capital projects for the New York Public Library, and who for some time has filled a similar function in the revamping of New York's Metropolitan Museum. If all succeeds as well as the Periodical Rooms, it's going to be a wonderful restoration for the city.

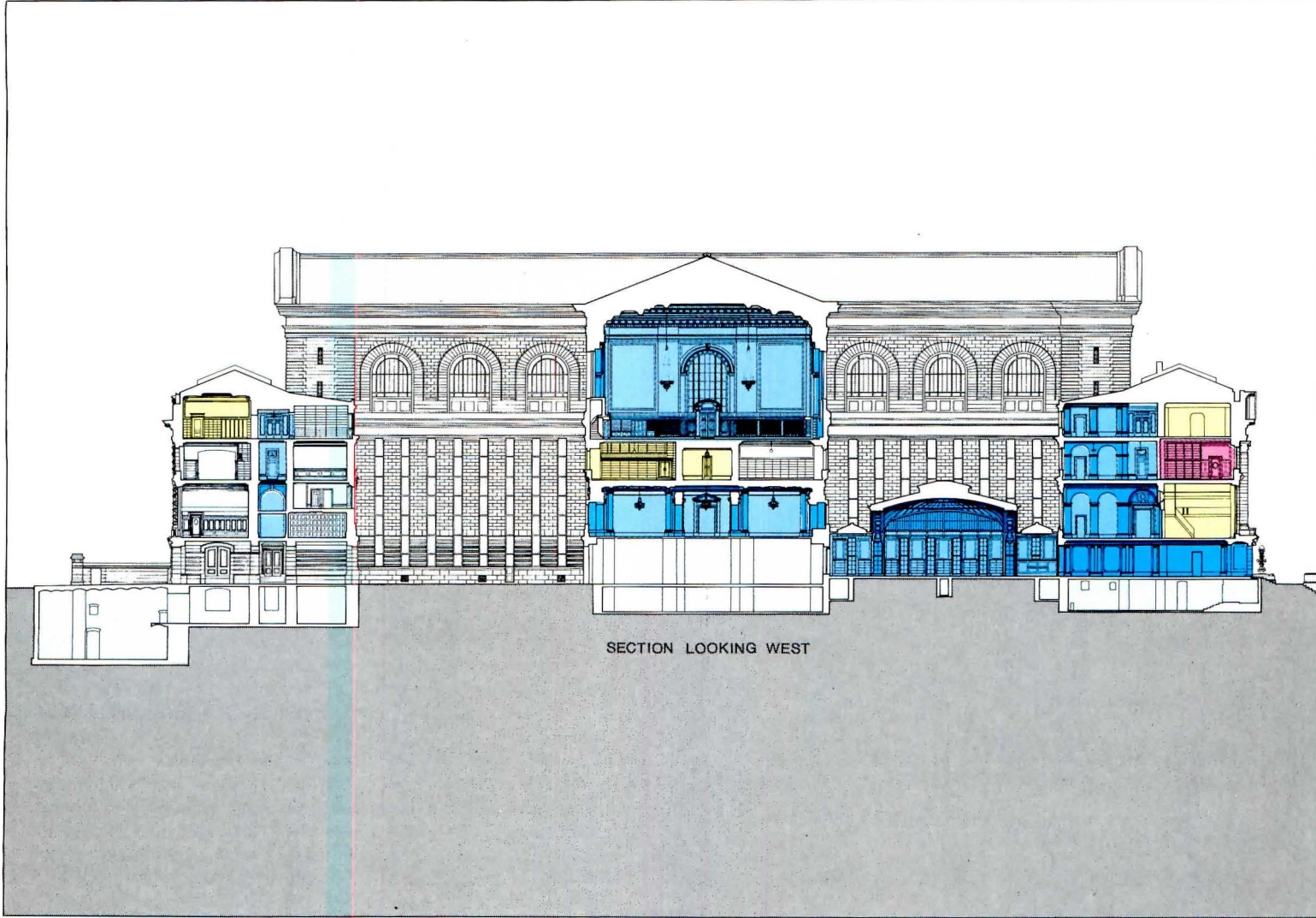


Peter Mauss photos

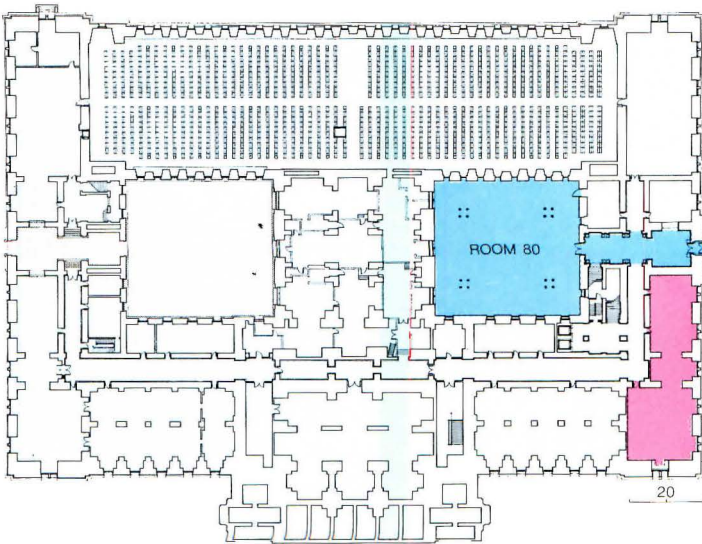
The lore surrounding the New York Public Library is almost endless—and fascinating. Some pertinent items were ferreted out by Arthur Rosenblatt in preparing for supervision of the restoration: the client played a strong role in the building's concept, and the library's success has been constant. Carrère and Hastings' scheme won by a competition, and was closely based on a sketch plan by then library

president John Shaw Billings. Their translation of that plan edged out such competitors as McKim, Mead and White—much acclaimed for the Boston Library of a decade earlier. Laurels for Carrère and Hastings led to opening-day attendance by such as President Taft and Andrew Carnegie, who endowed so many other libraries. It also led to unique honors for the architects: busts of each were

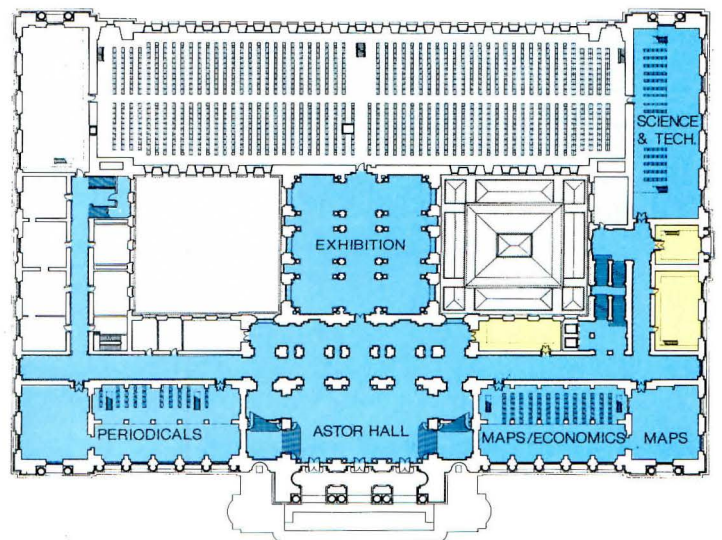
enshrined in the main lobby (and are there still); and John Carrère, who died of traffic injuries shortly before the opening, lay in state there as the first public event at the library. Billings' original concepts of how a library should work have held up remarkably—and at least some of the restoration effort is to re-establish his parti, as well as the exuberant realizations of the architects. In the new Restoration



SECTION LOOKING WEST



GROUND FLOOR



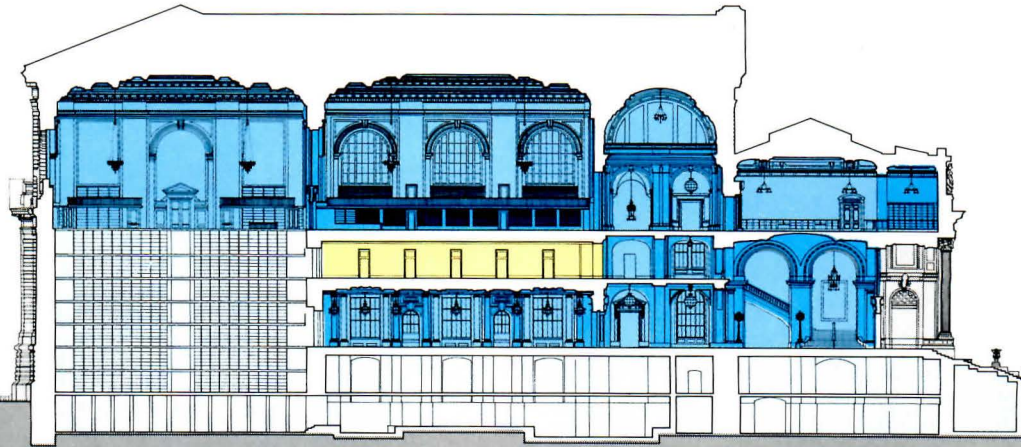
FIRST FLOOR

- FIRST PRIORITY RESTORATION
- SECOND PRIORITY RESTORATION
- THIRD PRIORITY RESTORATION

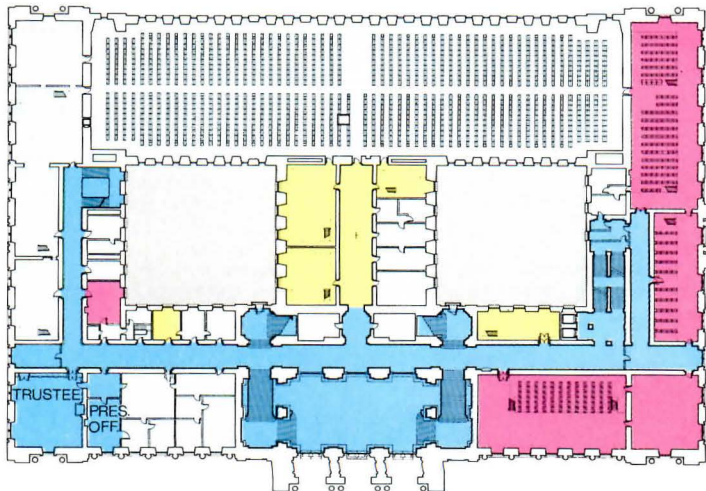
Plan, Davis, Brody & Associates and Giorgio Cavaglieri have placed first priority on retrofitting the spaces, and often the function, of the most imposing public rooms, entrances, corridors and stairs. As a first phase of that, current efforts are under way on the entrance floors, facade and front plaza—with an opening of late spring 1984 spurred by the library's energetic president, Vartan Gregorian. This

phase includes the Astor Hall lobby; the Exhibition Gallery, renamed the Gottesman Gallery (so long closed for office space); the corridors; and, soon after, the ground floor 42nd Street entrance and "Room 80"—a long-closed, remarkable room with a glass dome supported by painted cast iron, which is being reconstructed as a lecture and educational services room. A second

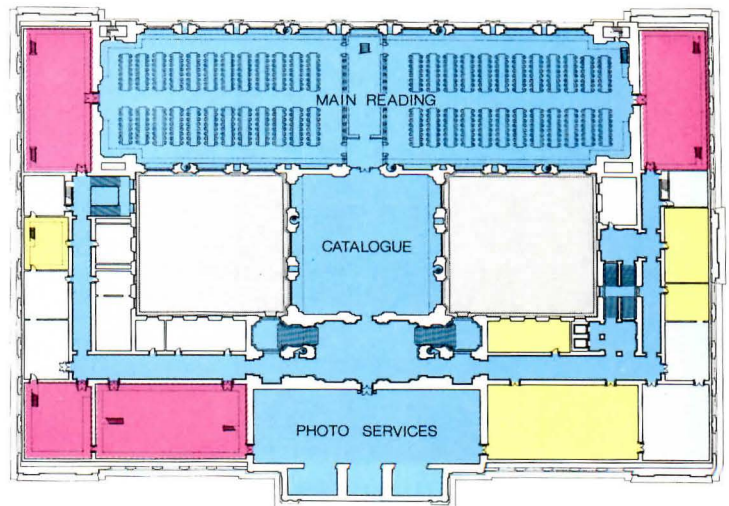
phase, for which schematics are now under way, concentrates on the third floor. This includes restoration of the current Photo Services Room at the front to its original exhibit function (probably Rare Books); the Catalog Room (with extensive computerization); and, finally, the enormous Main Reading Room.



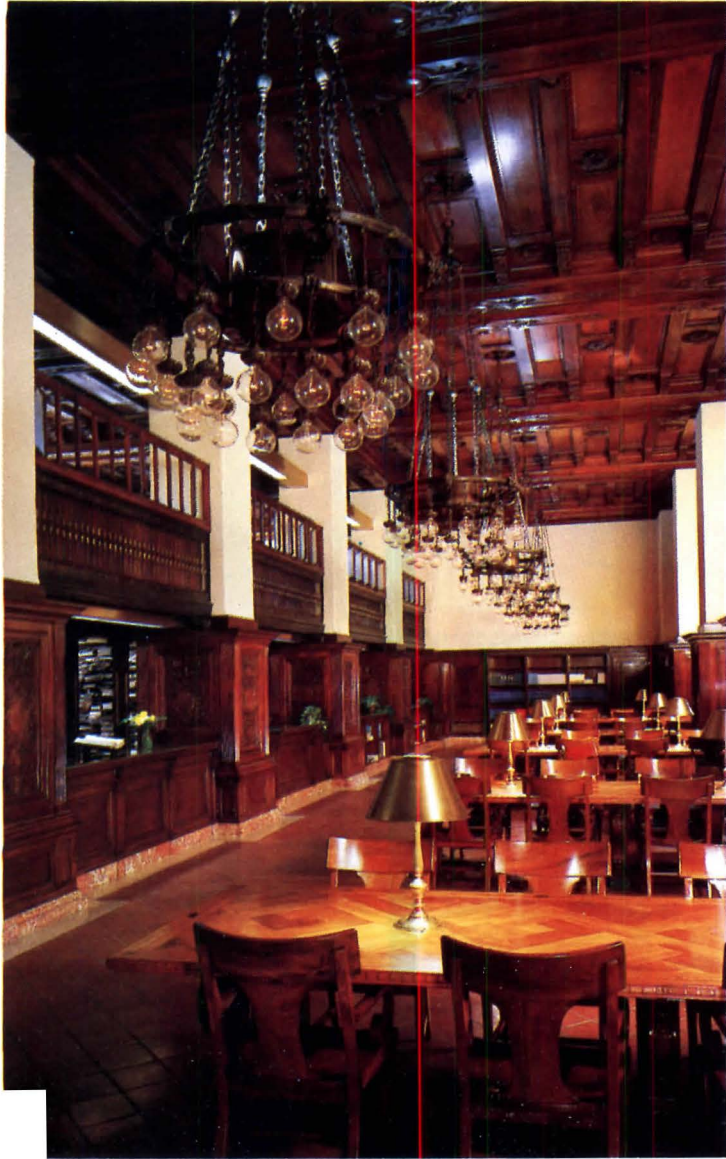
SECTION LOOKING NORTH



SECOND FLOOR



THIRD FLOOR



Giorgio Cavaglieri's recently completed restoration of the rooms of the Periodical Department resounds of patience and infinite care. The marble, walnut and brass surfaces, as well as Carrère and Hastings' original furnishings and fittings, were all cleaned, reworked, refinished—and matched where necessary. Such latter-day irritants as surface-mounted telephone and electrical wiring were removed



from the sumptuous ceilings, and added pipe braces were removed to permit paneled cabinet doors to function again. The rejuvenated rooms have been renamed for the late DeWitt Wallace, who worked on the first issues of Reader's Digest here, and gave a grant for the restoration. Compatible new touches include concealed lighting and hvac systems, and a series of 13 murals of New York publishing

houses by Richard Haas; shown opposite left, is the old Times Tower, and at right, the former McGraw-Hill building. The especially elegant room with the new murals is devoted entirely to reading and study, while the adjoining, balconied room (photo above left) also contains updated stacks, charge desks and the administrative area.



*New York Public Library
Fifth Avenue and
42nd Street Branch
New York City*
Owner:
New York Public Library

Periodical Department

Architect:
*Giorgio Cavaglieri—Joseph Sultan,
construction supervision; Deborah
Weintraub, Ann Falutico, Richard
Lavenstein, design team*
Engineers:
*Harold Hecht Associates (consulting
mechanical and electrical)*
Contractors:
*Turner Construction Company;
Cornelius Fitzgerald (electrical)*



Master Restoration Plan Phase I

Joint venture architects:
*Davis, Brody & Associates and
Giorgio Cavaglieri*
Engineers:
*Wiesefeld & Leon (structural);
John Altieri (mechanical)*
Consultants:
*Fisher Marantz (lighting); Hanna
Olin (landscape)*
General contractor:
A. J. Construction

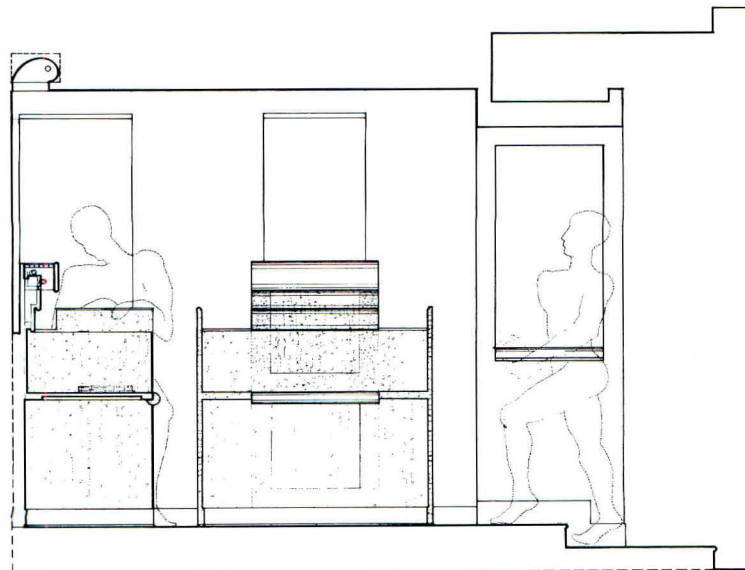
Metamorphosis of loft into library

Computers and classicism, soft colors and good lighting and, above all, careful, beautiful detailing of furnishings and architectural elements—all combine here to transmute a 25,000-square-foot office-building loft into a delightful, serenely efficient new library for the New York University Graduate School of Business Administration.

Location of such a leased space two blocks from the replaced, undersized library in the existing school was a radical decision, especially vis-à-vis permanence and student access. But it places the new facility well within the Wall Street area for added use, on subscription, by the surrounding business community. As the space is not owned by NYU, a stringent budget of \$1,200,000 for all construction, furnishings and stacks was set—and kept. To offset student inconvenience, a major design focus was to create a “destination” whose atmosphere and amenities would encourage a long stay.

To achieve that goal, architectural partner-in-charge Bart Voorsanger felt strongly that the central planning issue was the economic resolution of conflicting requirements: the creation of privacy in a public environment. “The competing forces mitigating against privacy are sometimes almost overwhelming and complex—all the issues of functioning, rapidly sorting visitors, new technologies, chronic understaffing, vandalism, theft and the increasing quest for data. What emerges is the ultimate fantasy of the librarian to operate with one staff member able to see all visitors simultaneously, with none hidden by stacks or ‘architecture.’ The canonical solution to this fantasy has, of course, already been built by Alvar Aalto, in 1932 in Viipuri (now in the U.S.S.R.): the simple, large, glazed, open room.” That did, indeed, solve some goals.

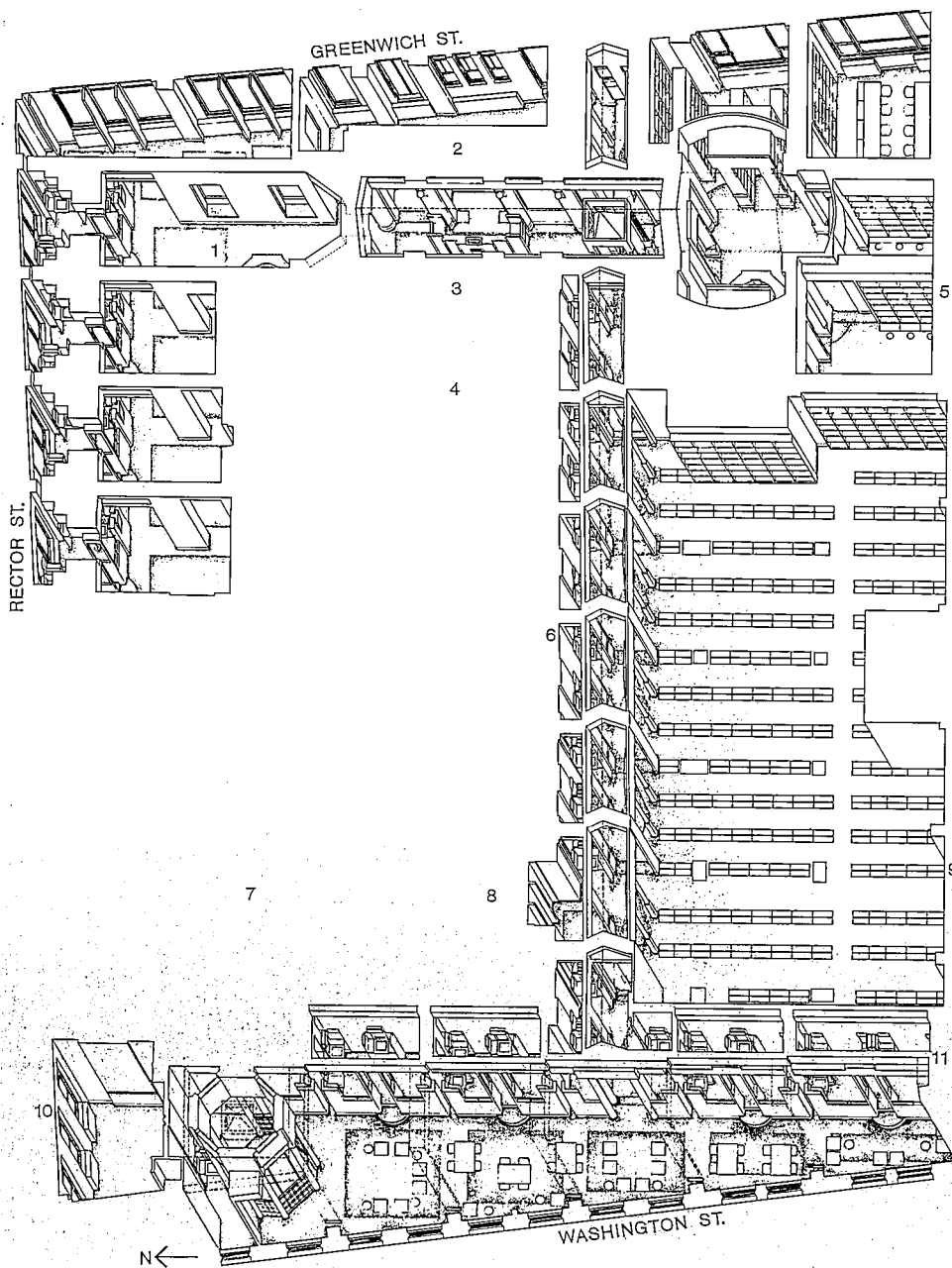
But this “fantasy” solution was, to start with, impossible on the loft floor, with its existing elevator shafts and lobbies, columns and service areas. Nor did such an open plan offer much to abet the sought-for sense of privacy for study and research, or the separation of the noisy, more public areas from quieter reading rooms. As painstakingly developed, the scheme for this new library goes a long way toward resolving the dilemmas. The plan is “horizontally layered” so that movement is from the most active, noisiest public areas, starting with the entrance gallery, to the most private and quiet study carrels at its farthest reaches. Proof of its effectiveness is strongly indicated by the observed fact that the more private areas fill up first—and remain quiet.



INFORMATION

RESERVE READING ROOM





1. Reserve Reading Room
2. Circulation
3. Entry
4. Building Lobby
5. Reference Rooms
6. Arcade
7. Administration
8. Seminar Rooms
9. Books
10. Conference Room
11. West Reading Room

The main circulation desk at the entrance (photo opposite, top right) visually connects the reference rooms (top left) and the Reserve Reading Room (center left) to permit some functioning of the library with only one or two staff members. Directions are clearly defined by such elements as an information kiosk (preceding page) from which other areas are indicated by strong graphics, and by an arcade of stacks and carrels (center right) which leads to the ultra-quiet West Reading Room (bottom photos). Raised study platforms, divided into carrels, are used in all reading rooms to separate them from general traffic. These rooms range the exterior, and have ceilings incised to increase the admission of light. Partitions and the classical architectural elements (which are becoming a hallmark of the firm) are of painted wallboard, while the custom-designed cabinetwork is of richer stuff: mahogany, lacquer, marble—and often with inlaid patterns (remarkable enough at an over-all cost of \$48.50 per square foot). The carpets continue the soft, tranquil colors used throughout, and are patterned to give direction and definition to various areas. The library houses 140,000 volumes and seats 360 researchers. It also provides desks for reserve books and career services, a current periodical room, seminar rooms, conference room and an administrative area. In addition to traditional card catalogs and a microfilm room, the library itself is computerized and linked with an automated circulation system to allow search of catalogs, not only of all of NYU's libraries, but also of the Research Library Group, an expanding network of research libraries in North America.

New York University
Graduate School
of Business Library
New York City

Owner:
New York University

Architects:
Voorsanger & Mills Associates,
Architects—Bartholomew
Voorsanger, partner-in-charge;
Margery Perlmutter, project
architect; Andrea Simitch, Stuart
Crawford, John Murray, project
team; Lizz Hardwick, Gabrielle von
Bernstorff, drawings

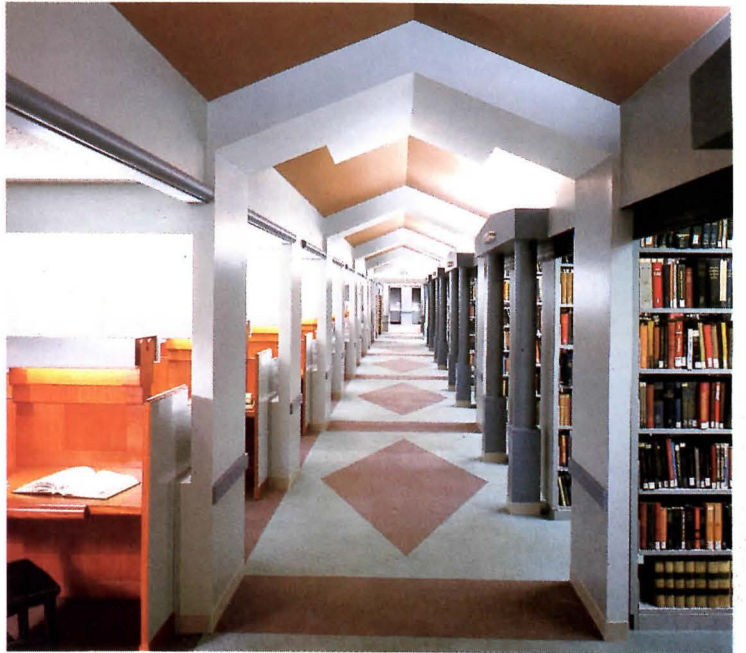
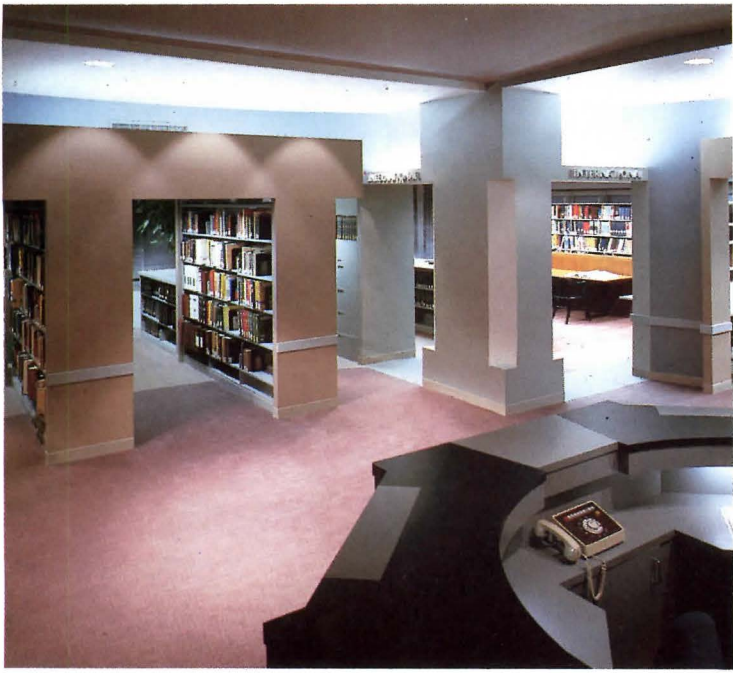
Engineers:
Jansen & Rogan

Consultants:
Zerline Jaffe (interior furnishings);
Carla Hall Design Group
(graphics); Voorsanger & Mills/
Lightspot Inc. (lighting)

General contractor:
Koren-DiResta

Cabinetwork contractor:
North American
Woodworking Corp.

Carpeting:
Gundolt



Billerica Public Library
Billerica, Massachusetts
James C. Hopkins Associates Inc., Architects
Crissman & Solomon Architects Inc.,
Consulting Architects

A dramatic step for a fledgling library

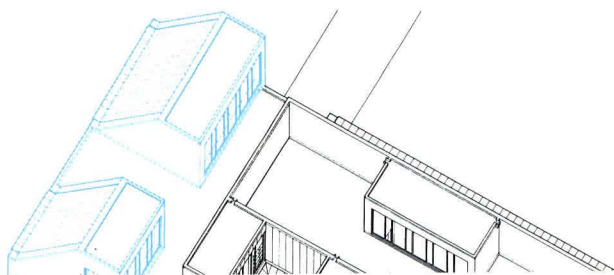


As artfully simple, crisp and direct as the traditional New England character, this small public library for the small town of Billerica, Massachusetts, is the antithesis of the older grandeur of New York City's public library—but is certainly more typical, in size and budget, of most of the new libraries currently being built, and a much more likely type of commission for the typical architectural firm.

The plan and organization of the library is strongly reminiscent of those built across the country in earlier years, many under Carnegie grants: a fairly open plan, with a separate children's section, designed for a minimum staff—and thrusting towards Aalto's later, totally open Viipuri scheme. Here, the main checkout and control functions are in a central one-story entrance lobby connecting the adult and children's divisions, with good visibility of each, as well as of both back and front public entrances. In addition, each section is planned with its own "information center," and the main staff workroom has a glass partition for continued supervision. Stairs to the mezzanine open stacks and balconylike study carrels are in full view of all. A sizeable storage room backs this second-level stack area, and a smaller one is directly below. An additional service stair is located at the end of the building and gives direct access to these nonpublic storage and work spaces on both levels. A centrally located elevator provides for the handicapped and for heavier book-load transfer.

As a first step, only the main adult library and the entrance lobby have now been constructed, with the two-story-high rooms of the children's wing postponed because of funding. That wing, when built, will house both the children's stack area and a multipurpose room designed as a story-telling and project area, as well as a community meeting room which can function separately when the main adult section of the library is closed. These two construction stages have been placed to one side of the ample site, providing space that could allow for future expansion.

The site faces the Town Green, and is surrounded by historic buildings of varied styles, ages and materials. The height, mass and setback of the new library were carefully studied to relate—in a manner reflecting its own era—to the general streetscape. The materials also echo the region: waterstruck brick and sloping copper roofs. The strong forms of the roofs not only fragment the building mass into a row-house scale, but create a dramatic, light-struck, three-story interior.



A sensitive storehouse for burgeoning knowledge

Seeley G. Mudd Library
Yale University
New Haven, Connecticut
Roth & Moore Architects

This elegantly detailed building, the newest of Yale's library system, combines a government documents center (a Federal depository readily accessible to the public) and what could have been, with less sensitive handling, a formidable warehouse: a storage library (with very limited access) to shelve a massive overflow of 1.6 million books from Yale's other libraries.

In contrast to the usual trend to store ever-growing amounts of books—especially those seldom called for—in relatively remote locations, this facility is on-campus. Such a location facilitates access for all to the documents center, and for the faculty and special researchers who have access to the storage stacks; but above all, its proximity permits a maximum 24-hour retrieval of stored books via a regularly scheduled van service. For those familiar with Yale, the site immediately adjoins the brick and stone-trimmed Hammond Hall of 1904, and is across surrounding streets from the soaring curves of Eero Saarinen's Ingalls Rink of 1958, a residential area and the recently completed Donaldson Commons of the School of Management—a very mixed bag of architectural styles, uses and scales.

In height and materials, the library was selectively related to its most immediate neighbor, Hammond Hall, which can be seen in the background of the large photo at right. The new building is three stories high, with a full basement level and a mechanical penthouse occupying the front roof-top bay; the rest of the roof is designed to accommodate a future fourth floor for added stack storage. The ground floor is devoted to the documents center, and to control and book circulation functions of both sections of the



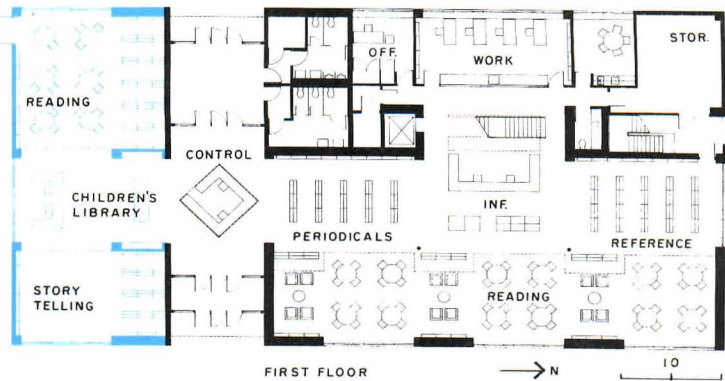
Trimly complementing its neighbors in an old New England town center, this first step in building a new library (the second phase is shaded in the drawings) achieves quiet drama with bold, light-scoop roofs and a big, three-story interior. It contains about 11,000 square feet of space and cost \$925,000, with funds for design and construction provided by a Federal EDA grant.

Billerica Public Library
 Billerica, Massachusetts
Owner:
 Town of Billerica, Massachusetts
Architects:
 James C. Hopkins Associates Inc.
Consulting architects:
 Crissman & Solomon Architects Inc.—Lawrence C. Bauer,
 principal-in-charge

Engineers:
 Zaldastani Associates, Inc.
 (structural); Richard D. Kimball
 Co. (mechanical); Robert W.
 Sullivan Inc. (plumbing); Lottero &
 Mason Associates (electrical)
General contractor:
 Scaldini, Inc.



©Steve Rosenthal photos



A sensitive storehouse for burgeoning knowledge

Seeley G. Mudd Library
Yale University
New Haven, Connecticut
Roth & Moore Architects

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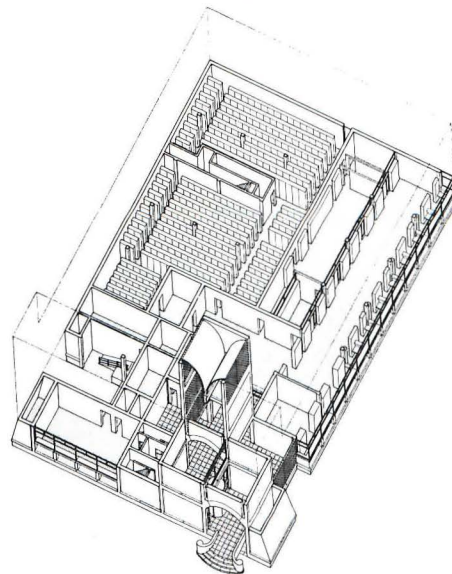
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Exterior walls are water-struck brick laid in Flemish bond, with carved buff limestone trim. The basic structure is poured-in-place reinforced concrete using warm-tone cement with a light sandblasted finish. It is left exposed throughout to form a grid that—in an unassertive, Louis Kahn-like manner—becomes a major esthetic expression and quietly but effectively breaks up the great blank mass of the windowless storage spaces. And a light touch of Baroque bravura in the carved limestone of bandcourses and spandrels, and of the voluted railings and the lighting bollards at the entrance add a discreet yet lively relief to a handsome building.



© Steve Rosenthal photos

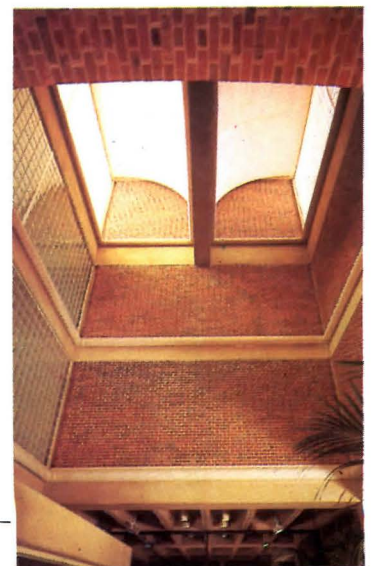
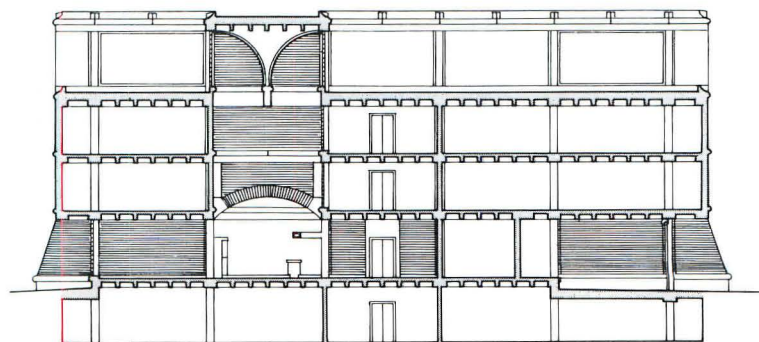




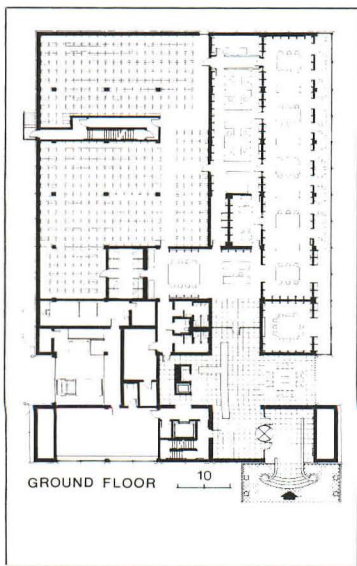
Seeley G. Mudd Library

The main focus for the public areas of the library is a four-story-high bay flooded with diffused light from a curved-roofed clerestory (photos and section below). The materials and design treatment of the exterior continue into this area—which contains a lounge and the main control and circulation desk—via the corner entrance porch. Other interior walls are ground-face block or white oak paneling;

floors in principal rooms are red granite or carpeting. The basic parti for the building evolved from a thorough investigation of the optimum structural bays, and included study of such factors as standard stack units, aisle width, lighting, column size, floor loading and possible future uses of space with changing library technology—all to compact the 1.6 million books into a minimum of economical

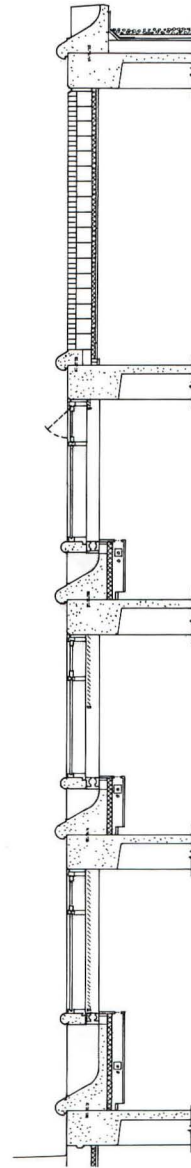
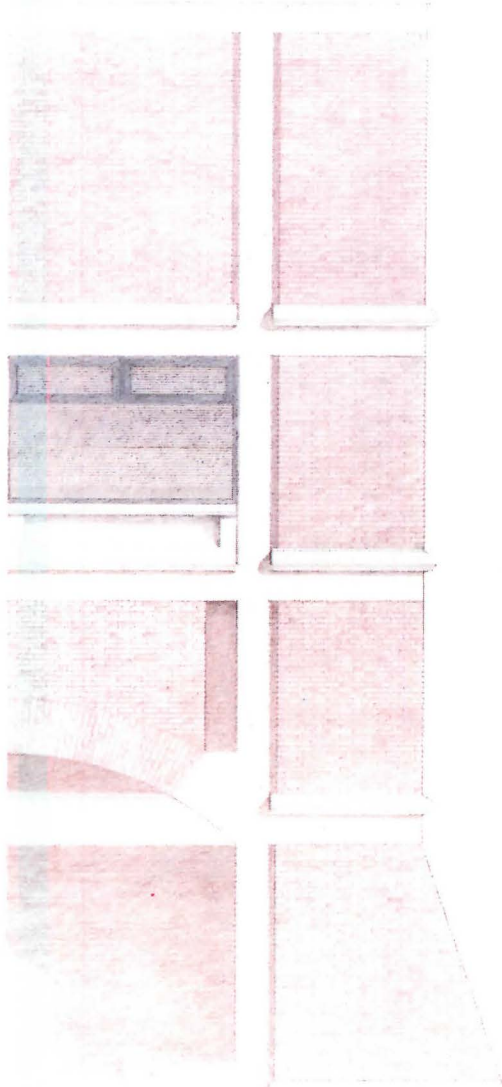


space. The Government Documents Center on the main floor and its sizeable reading room (photo and plan below) are pleasant, efficient and well lighted. Windows have been limited to this level, and to special rooms on floors above, to minimize heat gain and detrimental sunlight on books in the stack areas. Floor slabs are cantilevered on the sides to house an air-distribution system.



Function, proportion and esthetic impact of all building details have been thoroughly studied, and include such niceties as carved limestone spandrels shaped to allow fresh air to enter via horizontal air vents—yet preventing theft of books by dropping them out. Warm air is vented through operable sections at the ceiling. The building is fire-resistant and heavily insulated. Heating and cooling is by a gas-

fired air-handling unit; hot-water fin-tube radiation is used to provide supplementary heating at the limited glazed areas. The roof is designed to accommodate active solar collectors in the future. The total cost of the building was \$6.7 million; the principal donors were the Seeley G. Mudd Fund, the Pew Memorial Trust, William W. Wise and Waldo Avery.



Seeley G. Mudd Library
 New Haven, Connecticut
Owners:
 Yale University, New Haven,
 Connecticut
Architects:
 Roth & Moore Architects
Engineers:
 Spiegel and Zamecnik (structural);
 vanZelm, Heywood, & Shadford
 Inc. (mechanical/electrical);
 Clarence Blair Associates (civil)
Consultants:
 Zion and Breen Associates
 (landscape architects); Sylvan R.
 Shemitz & Associates (lighting)
General contractor:
 Tomlinson-Hawley-Patterson, Inc.



Designing tomorrow's libraries

By Carlton C. Rochell

What are the questions librarians must answer before architects can start designing new shops for us? Even simple ones, like "Where do we put the books?" or "Where do we put the people?" aren't answerable at the moment. It is possible, even likely, that there will be bookless libraries, and peopleless libraries, too. Librarians are no better at predicting the future than architects and engineers, and all we can say with any certainty now is that libraries of the future are going to be nothing like libraries of the past, and less like each other than libraries are today. Their forms, we assume, will relate to their functions, determined by the needs of the populations they serve—populations quite different from each other and from the populations libraries serve today.

Libraries are, or should be, close to the center of society, and what happens to society—to universities, to industries, to public education, to urban neighborhoods, and to rural communities—will shape its libraries. What happens to both society and libraries will reflect the technological shift now under way, a change with long-term implications equivalent to the Industrial Revolution's.

Clearly, I am talking about telematics, the marriage of computer and communication technology and the dawn of what is being called the "information age." There is no question that the future towards which today's video games, home computers, two-way cable, videotext, teletext, databases, and robotics are leading us will dramatically change society and change with it the nature, if not the mission, of libraries.

The two issues to consider, before speculating about how we are going to package our libraries, are the technological changes within libraries themselves and changes in society that will result from broader application of the new technology. How are the historic missions of libraries—acquiring, organizing, preserving, and

disseminating information—being changed?

Most back-room functions—acquiring, cataloging and processing books and other material—are now wholly or partially automated in a good many libraries. Computers have taken over circulation control and reserve systems for most large libraries too. At New York University, we are among the first to replace our card catalog with an on-line catalog and user-friendly terminals to help our patrons locate materials.

Resource sharing via telematics is becoming increasingly important. Not only does NYU subscribe to hundreds of commercial databases in the sciences and social sciences, arts, humanities, business and law, but also it is linked together with more than two dozen other major research libraries and a number of specialized libraries in the Research Libraries Group (RLG). Using a mainframe computer located in Palo Alto, California, RLG has a database that will eventually contain most of the holdings of its member libraries.

Today, the best our patrons can get through our on-line catalog, the RLG network or commercial databases are citations that tell them where to find the information they seek. But full-text retrieval will become more practical as computer capacity grows and costs fall. Today, only a few databases actually provide complete text, but more and more books, encyclopedias, business and financial publications, scientific journals and newspapers are being fed into systems.

The technology that allows us to share materials more easily can also help us to preserve them, for a major problem of libraries today is saving books and other materials from deterioration. The Library of Congress is presently experimenting with full-text storage on videodisc and will have half-a-million pages in this format next year, all material targeted for preservation.

What's important to recognize now is that the impact of telematics on the physical shape of libraries isn't going to be felt at once. There are now more books being published, bought, and circulated by libraries than ever before. Collections at research libraries like NYU's (with more than three million volumes) are growing as fast as ever—doubling their size every 15 to 20 years.

In a decade or more, however, physical expansion will probably

cease, as libraries computerize catalogs, convert threatened material to videodiscs, acquire more scientific and technical material from on-line sources, and create telematic networks that link the library with dormitories, offices, and laboratories across the campus and around the globe.

Bill Welch, Deputy Librarian of Congress, suggests that even today a small college might find it more cost-beneficial to convert its entire collection to videodisc rather than build a new facility to house it. The collection could then be stored in some remote and inexpensive location and material transmitted directly to campus desk terminals or to a small center that would function as the library.

It is not far-fetched to imagine that, with rapid and inexpensive facsimile transmission just over the horizon, seldom-used research material will be warehoused in regional facilities designed for that purpose. This would, of course, reduce the storage demands on all libraries in the region.

These are the ways that technology is most likely to change large research libraries and university libraries. But what happens to public libraries will also reflect the impact of telematics. What the new technology is most likely to do is to divide our society into an information-rich and an information-poor, into those who live in "electronic cottages" and have access—via home information systems and videotext—to more information than they can possibly consume, and those who lack telematic resources and are denied access.

Clearly, such a division will create more problems for society than simply the need to design libraries that can serve these two separate populations. But it is likely that public libraries will serve the information-rich by operating videotext systems of their own (as some libraries in Britain now do). These libraries, linked to the telematic homes within their communities, would be close to *peopleless* and have little call for material in non-telematic formats.

Libraries that would serve the information-poor, however, if they were to serve that population appropriately, would need to provide all the telematic services available in the homes of the information-rich, as well as material in more conventional formats. In other words, they would need books and bookshelves, along with

terminals and a full range of database services.

What does all this mean in terms of design? It means, for one thing, that libraries should continue to be designed in some ways as they are today, not as museums but more like department stores, using modular concepts that allow maximum flexibility in the use of interior space. If anything, design should make possible the conversion of library space to other purposes. Clearly, the new technology demands adequate floor grids and conduits for coaxial cables, fiber optic cables, and various other kinds of transmission lines. Provision should be made for antistatic carpets in certain areas, electrical outlets everywhere, and ergonomic furnishings.

Design should also incorporate what we have recently learned about the physical requirements of library materials:

- Better control of light is needed to keep ultraviolet radiation from accelerating deterioration of library materials. At the same time, the lighting must allow for the study of a 15th-century manuscript, a microfilm, or a computer terminal.
- Better control of temperature and humidity is essential to preserve not only books, but film and computer tape and equipment. Filters should remove particulate matter from the air.
- Better fire and, equally important, water protection is essential, like a water-alert system or sprinklers that not only are automatically activated, but automatically deactivated.

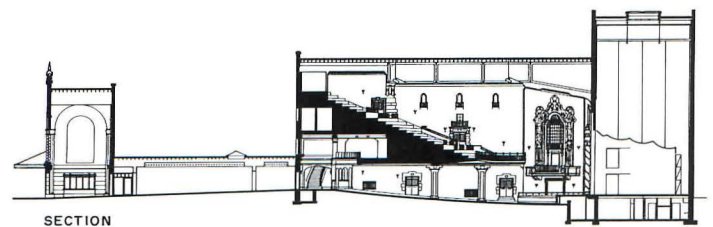
Several recent developments in libraries and library design provide a few clues to future library needs and applications. At Clarkson College in Potsdam, New York, the new Education Resource Center uses, in addition to new technology, compact storage for seldom-used books and journals in stacks on tracks with push-button access that allows for twice as many books in the same amount of space. At the Menlo Park (California) Public Library, a corner is given over to computers where patrons practice programming and play games. It is noisy, and as one older user observed, "The library reminds me of a pool room of years ago because that was the *local hangout for kids*. Now they hang out at the computers." At the Arlington County (Virginia) Public Library, a public access cable TV channel is broadcasting regular instructional programs.

So there you have it—books, bytes, the BBC. You figure it out!

Carlton Rochell has been dean of libraries and the NYU Press at New York University since 1976. Prior to that, he was director of libraries for Atlanta, Georgia. He has been directly involved in the construction of several major libraries and a number of branches. Doctor Rochell speaks and writes frequently in the area of technology and communications and is advisor to a number of national and international organizations on the subject.



Howard N. Kaplan © HNK photos



SECTION

A vaudeville palace stages a comeback

You can almost hear the tinny thunder of the pit piano and the flourish of drums. . .

First opened in 1925, the heyday of vaudeville and the silents (and of innocent architectural excess), the Saenger theater in Pensacola served in its prime as the seat of local culture. As built, the vaudeville house was an ornate wedding cake iced in plasterwork troweled on with blithe disregard for consistency of period or style: baroque columns framed its proscenium; flamboyant Spanish Revival ornament surrounded the boxes and crowned the entry tower; French-inspired scrollwork embroidered ceiling panels and grilles.

Over the years, however, successive modernization blighted large areas of the theater, sapping its exuberance. The boxes were stripped away to improve sight lines for wide-screen movies. The elegant entry foyer, and the arcade linking it to the auditorium, were encrusted with layers of ceramic tile and plastic laminate. And the building as a whole succumbed to time and neglect: no longer "period"—just old. In 1975, its physical decline exacerbated by economic decline, the house closed its doors.

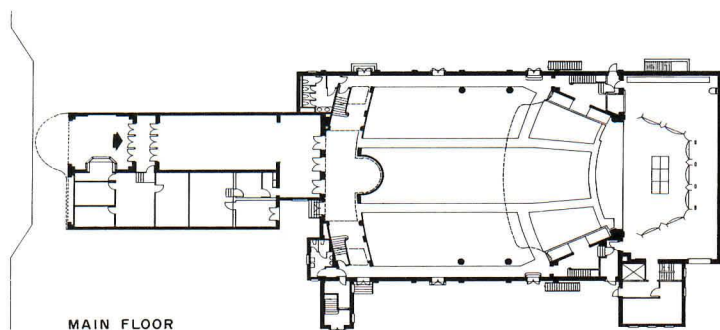
But happily not for the last time. Recognizing the charm underlying the depredations of the years, the city of Pensacola in partnership with the University of West Florida undertook to recast the theater in its original role as a cultural center—in this incarnation a community center for the performing arts—with a starring part in the city's downtown revitalization.

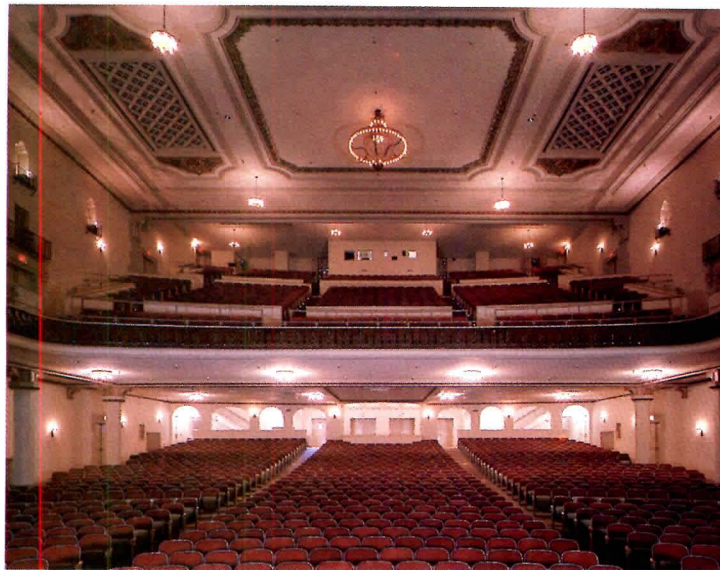
For architects Holabird & Root, the revival of the vintage structure was a performance in two acts: the selective restoration of its richly embellished shell, and the insertion of the state-of-the-art systems required by present-day stagecraft. The restoration effort focused on the entry foyer, where delicate stencils and the original ticket booth were recreated, and on the lobbies and auditorium, where extravagant details long dimmed were returned to their former splendor. The arcade, scarred beyond renewal by past "improvements," was renovated as a neutral interlude between old (the auditorium) and new (a semicircular marquee that reflects the arch of the tower window). The passage is enlivened, though, by dropped ceiling panels lit by blue neon scrollwork, broadly patterned after one of the rococo panels in the auditorium, that picks up the blue of the marquee sign.

You can almost see the old house preen for its second half-century at center stage in its community. *M.G.*



Upper and lower lobbies at the rear of the Saenger theater auditorium are punctuated by graceful arcs that repeat the curve of the marquee and carry to the undersides of the beams the blue of the exterior signage. On the main level the flat semicircle, formerly given over to drinking fountains, now has the happier role of providing readily accessible seating for the handicapped.





*Saenger Theater
Pensacola, Florida*

Owner:

Saenger Management Board

Architects and engineers:

Holabird & Root—John Holabird, principal-in-charge; Roy Solfsburg, project designer; John Heidbreder, interior designer; Rob Steffen, project architect

Associate architects:

The Bullock Associates

Consultants:

Lyle Yerges (acoustics); George Petterson (stage rigging); Paul Tyler (stage lighting)

General contractor:

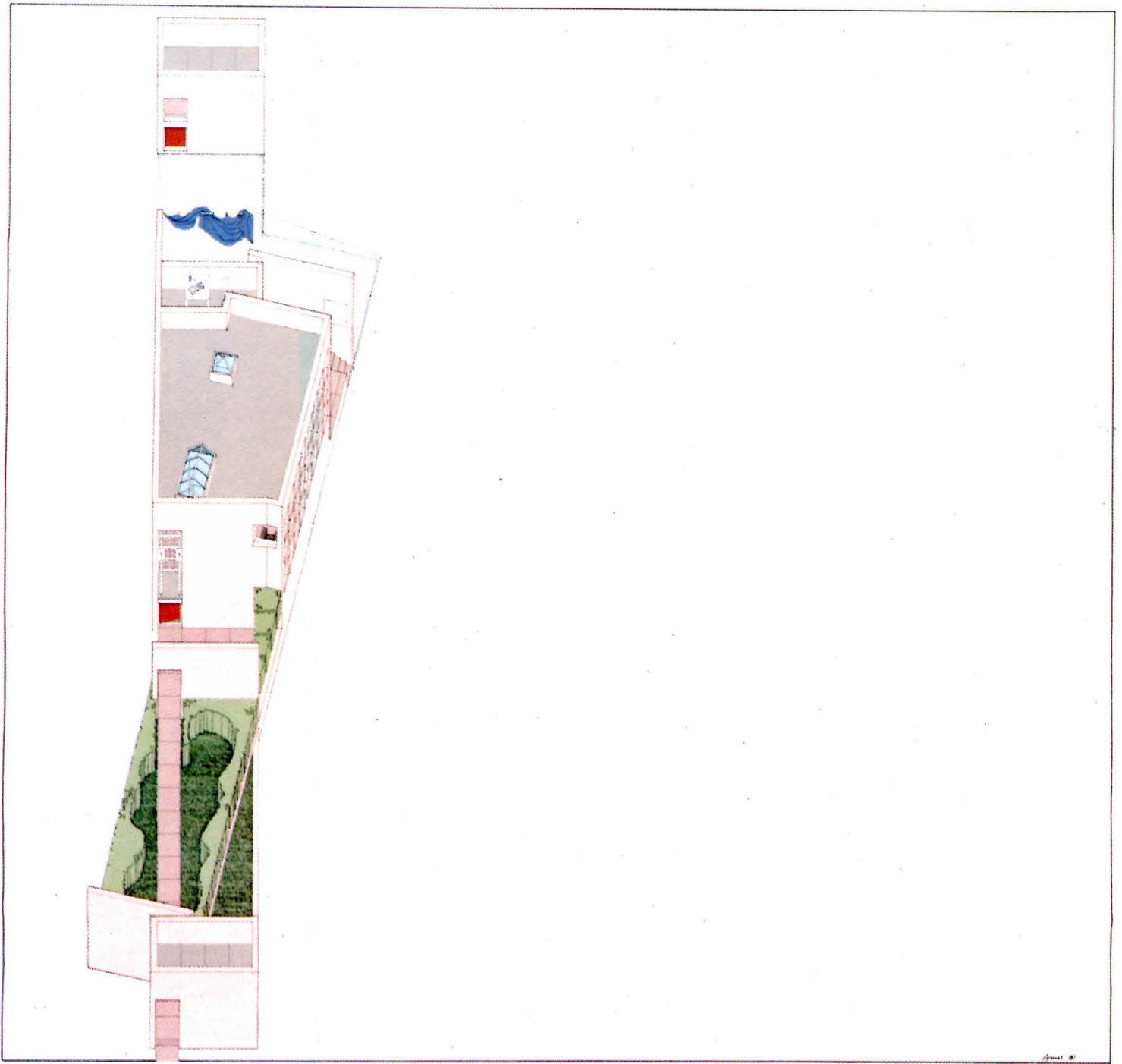
Martin-Johnson, Inc.



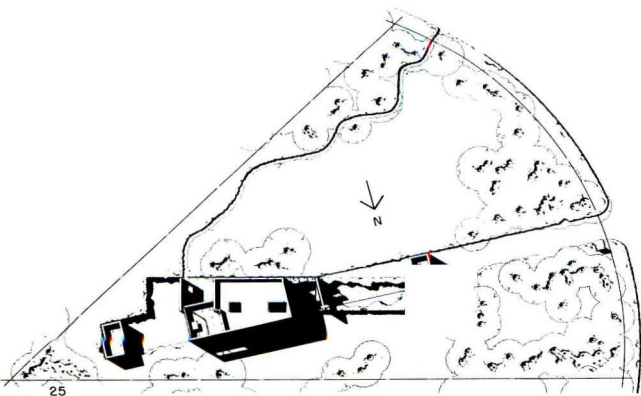
Though meticulously restored to recapture in spirit as well as in detail the élan of the '20s design, the theater auditorium and lobbies are calmed to '80s sensibilities by a backdrop of grays relieved by sparse accents of red and blue and more generous splashes of gold—a palette that brightens the space while maintaining the contrast between light colors for broad painted areas and darker tones for

the ornamental plasterwork. The original lighting fixtures were retained and rewired, and the existing 1,761 seats reupholstered. Far from original, however, are extensive renovations of the antiquated electrical and mechanical systems and the additions of up-to-the-minute stage rigging, lighting, and sound equipment.



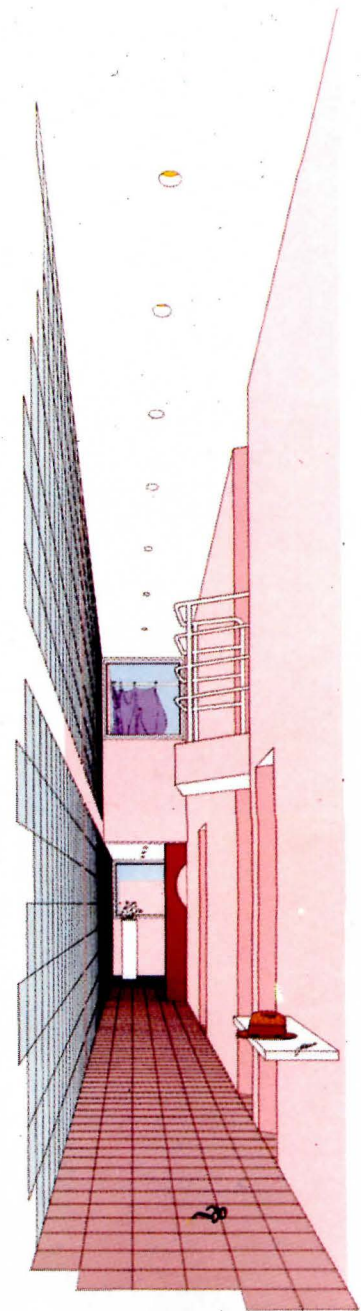


Anthony Ames, architect/delineator



The beauty of Anthony Ames's drawings is the first thing to strike a viewer—the line, the composition, the color, not to mention the viewer's delighted recognition of a new handwriting. But if style is always determined by an individual eye and hand, behind it there always lies a well-stocked mind pursuing a search. Ames, who practices in Atlanta, has studied history and the writings of many theorists (in both conversation and drawing he refers often to Corbu, Mies, Stirling) and he contemplates, almost compulsively, the two-dimensional meaning of drawing and the three-dimensional impact of architecture.

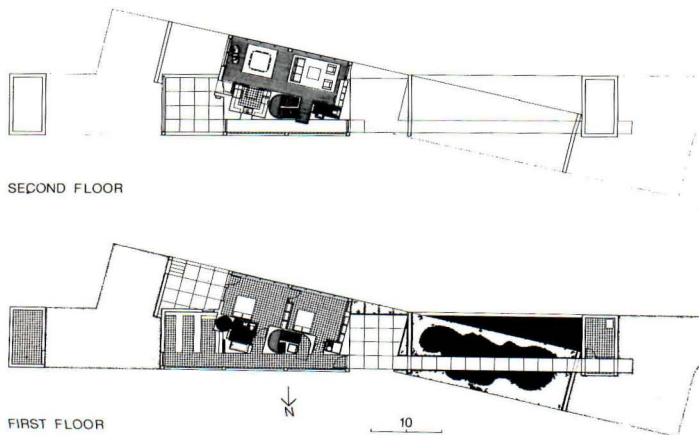
At the moment, Ames is occupied with the rotation of one plan within another. The device inevitably leaves some space around the edges of the rotated element, space overlapping that in the surrounding element. Ames calls these overlapping spaces "poché," a term initially confusing to those who remember *poché* as a draftsman's thick black bearing walls. In current parlance, the term focuses rather on the shaped spaces that premodern builders carved out of stone walls for stairs and niches. The modern *poché* area may be similarly used or may just be left empty around shaped spaces in main living areas. *G. A.*



Pauls 80

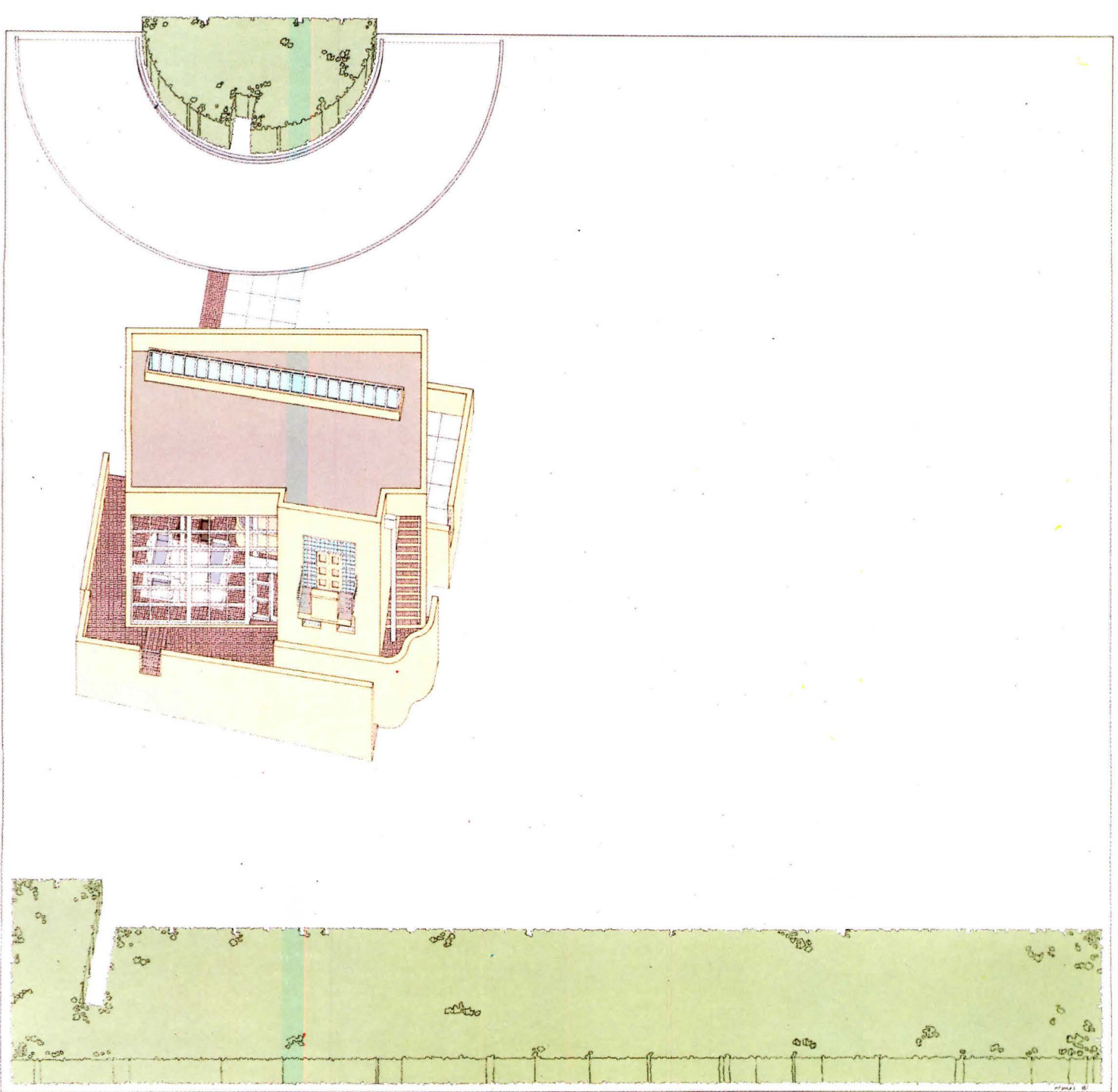
Villa Chang, Augusta, Georgia

Anthony Ames drawings; Margaret Minor, assistant

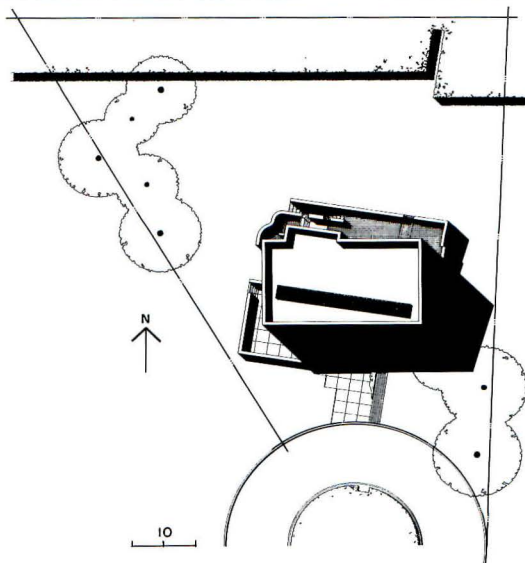


Ames planned the Villa Chang in Augusta, Georgia, as two long swaths, crossing densely at their middles and growing less dense at their extremities. One swath encloses a straight processional way from gatehouse and garden through the house to a doghouse at the rear. The other swath encloses free-flowing formal living spaces. The densest part of the plan occurs where the two swaths overlap in

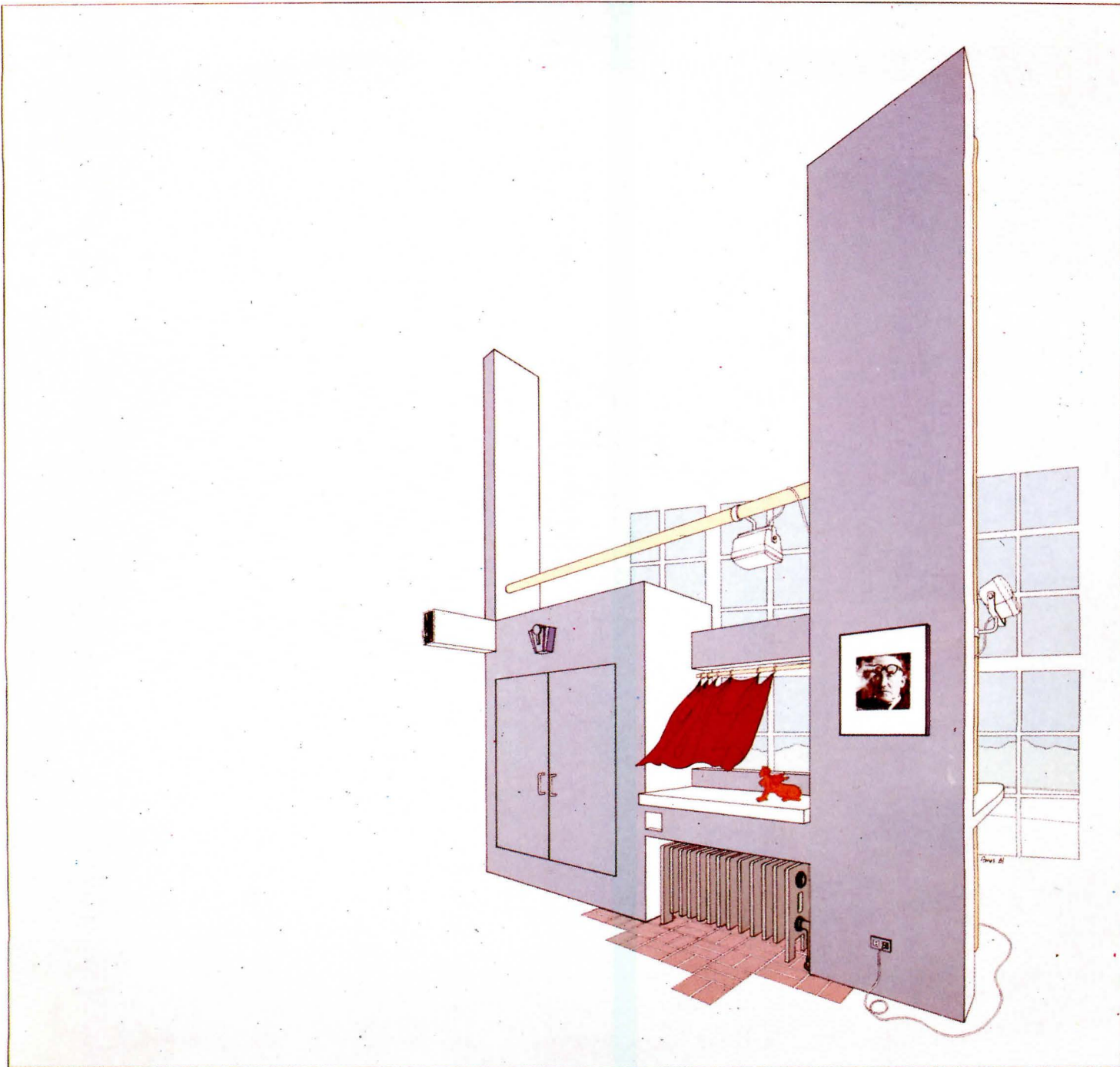
the "poché" area. Treating this much as premodern architects treated thick stone walls, Ames carved out such regularized service spaces as kitchen, bathrooms and horseshoe stairway. In a bow to two of his preceptors, Ames included as props Le Corbusier's hat and glasses and James Stirling's watch.



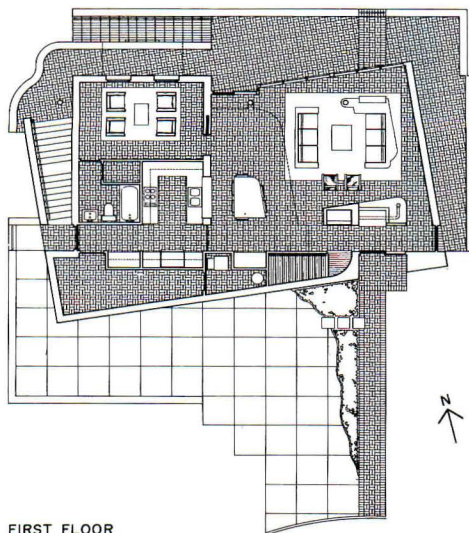
Pickering House, Laurel, Mississippi



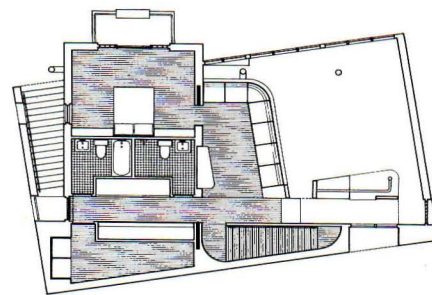
The Pickering house in Laurel, Mississippi, was designed for a young couple that shares with its architect "vague notions of what modern architecture is, was or should be." To occupy a trapezoidal lot on a circular cul-de-sac, the house takes its major siting line parallel to a hedge at its back. Across a rectangle thus oriented, Ames drew a line, more or less arbitrarily, from the center of the cul-de-sac to the hedge, a line visually reinforced by the entrance path, by contrasting pavement on the terrace floor, and by notches clipped out of the terrace wall and the hedge. Rotating the rectangle within freestanding walls, Ames effected interesting and telling spaces in the front and rear courtyards. Inside the rectangle, the rotation encourages one of Ames's favorite juxtapositions: the defined premodern space of kitchen and



library within their walls, and the undefined modern space of living and dining rooms flowing, theoretically, to infinity as it spills through a glass wall to the terrace. The poché area created around the junction of the two elements is less regularized than that at Villa Chang (preceding pages) to contain on one side a funnel-shaped staircase and on the other a storage room and mechanical space tucked under a like shaped interior staircase. Between the front door and the living room, a freestanding heliotrope object contains a coat closet and a window to the living room. The revealed radiator recalls a time when technological objects were thought of as objets d'art.

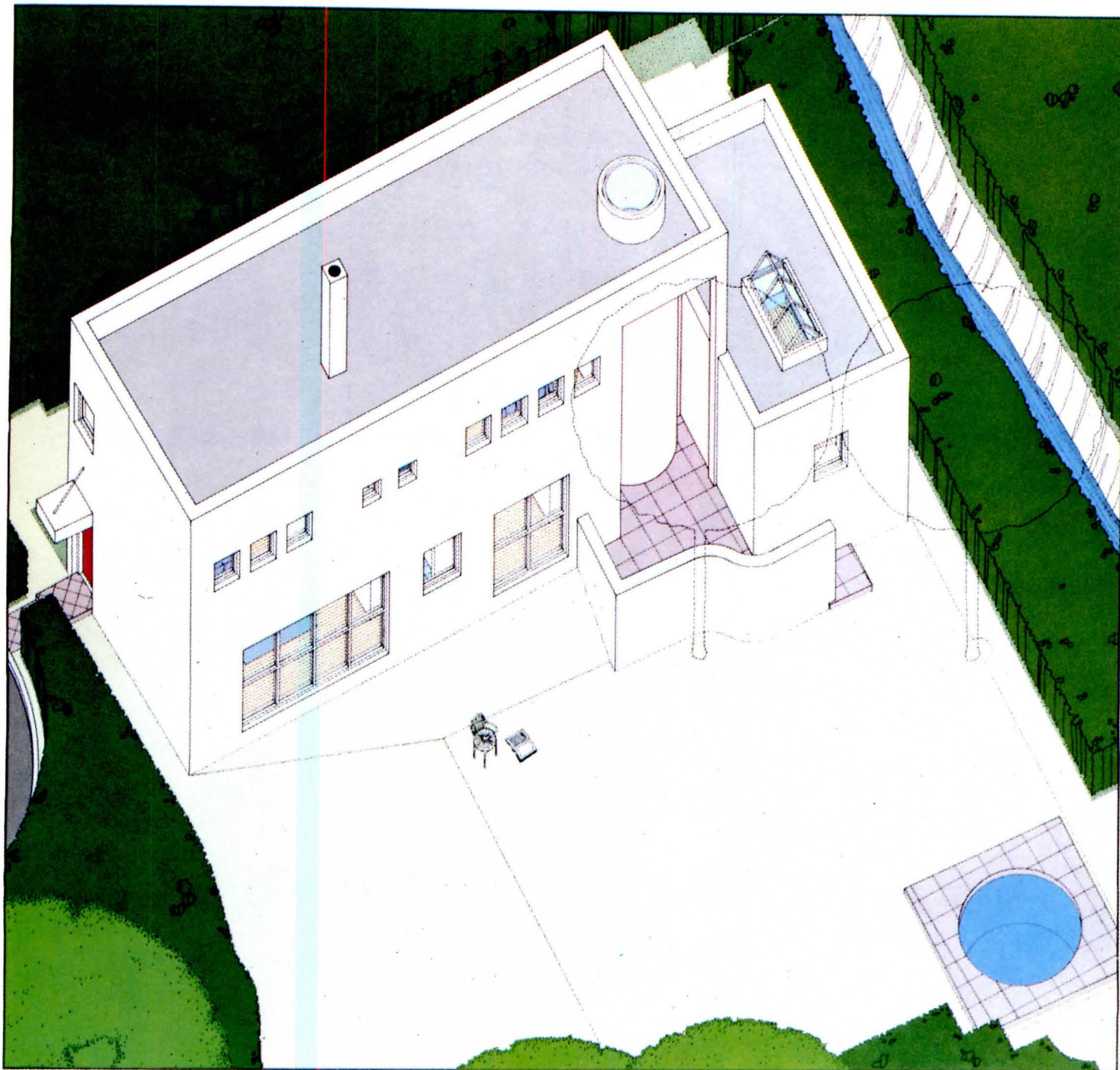


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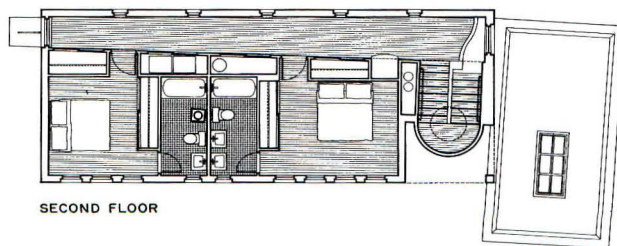
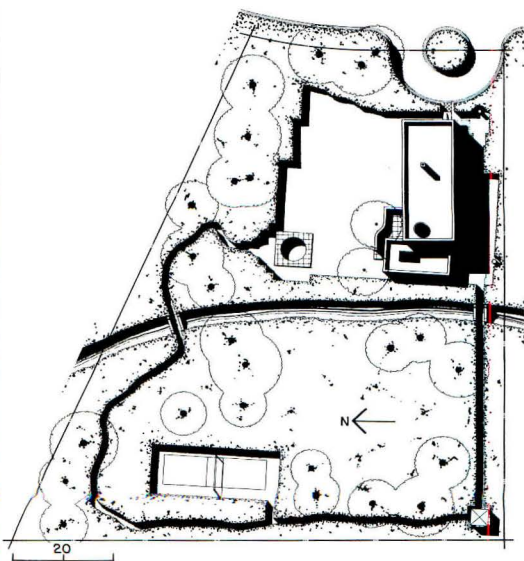


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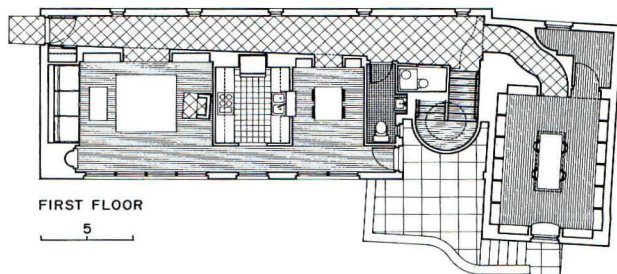




Villa Augusta, Augusta, Georgia

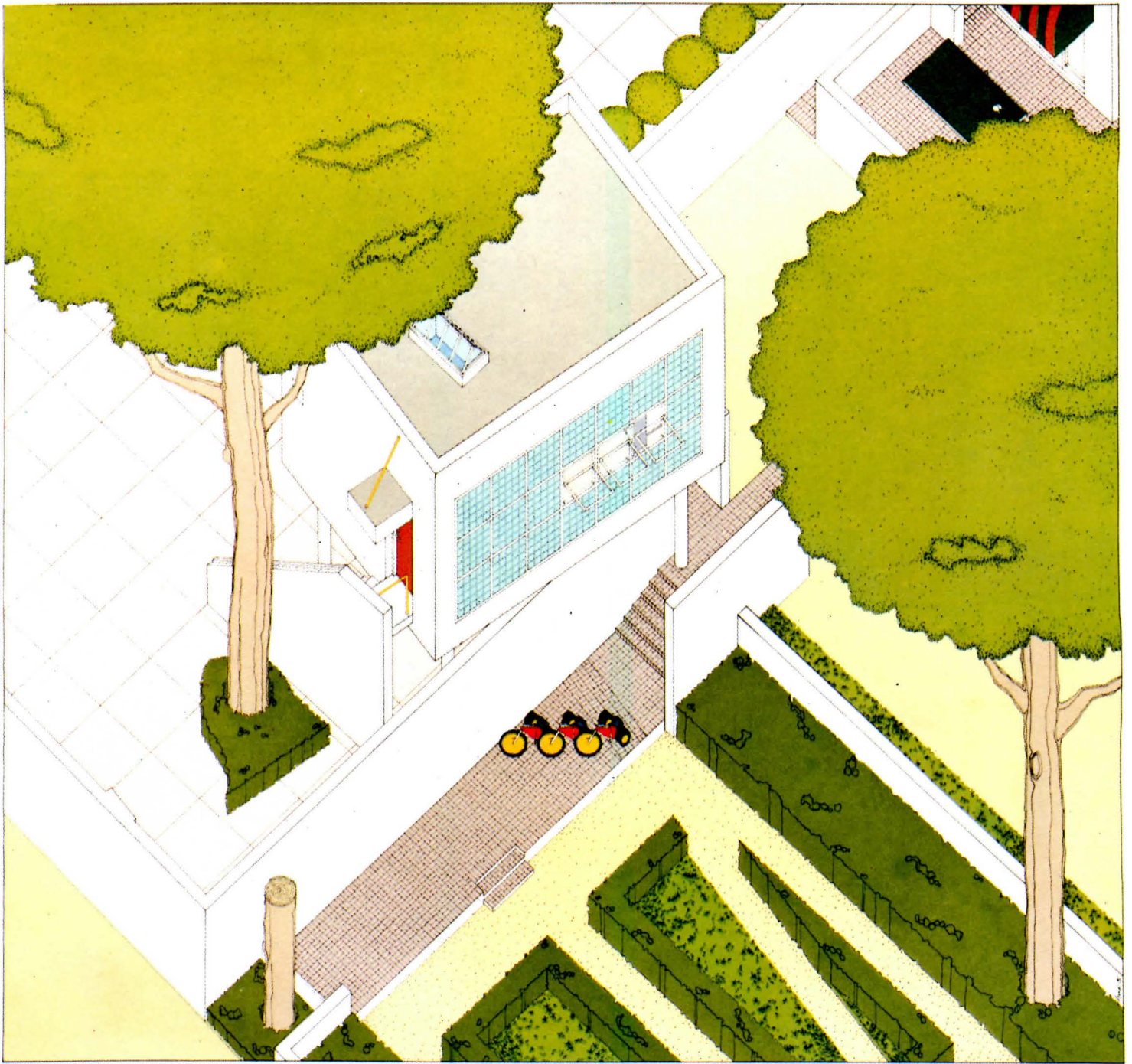


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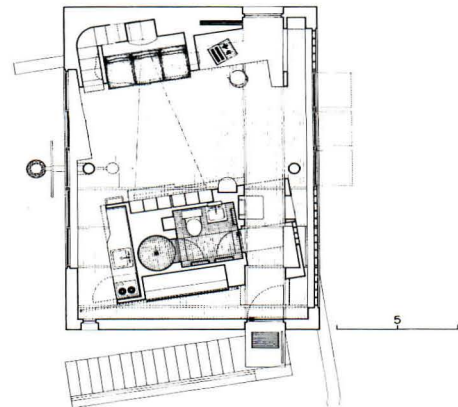
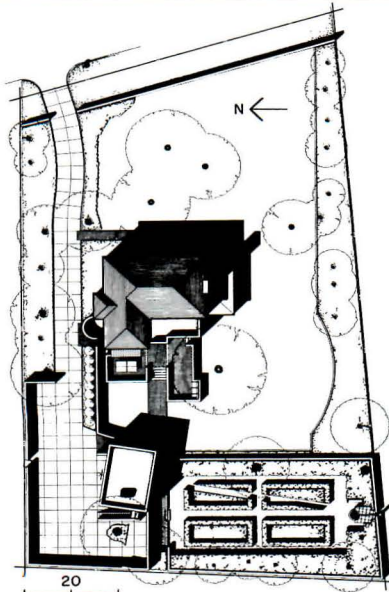
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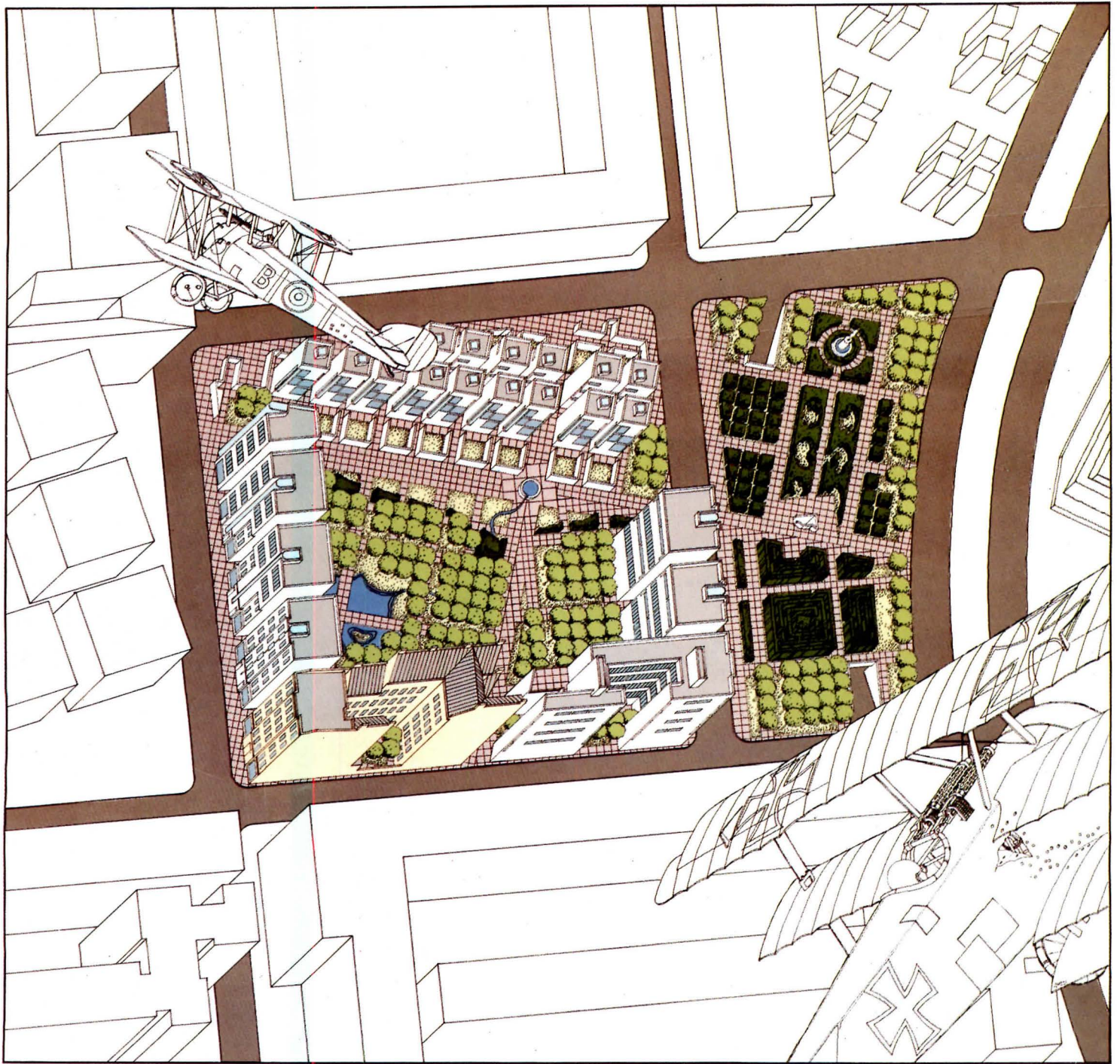
By placing the Villa Augusta in Augusta, Georgia, at one corner of the site, Ames preserved much of the relatively limited land as low-maintenance wilderness. The only exception to simple quarters asked for by the clients was a large library. To give this space especial importance, Ames rotated its axis outside the rest of the building, easing the rotation through a curved stairway. This left little poché area, but Ames put it to use for a sinuous corridor from the open plan of the house to the contained space of the library. A complexly curved wall for the music room behind the library also occupies the poché area. The tapered corridor, a forced perspective in reverse to shorten the hall as seen from the entrance, was based on lessons taught by architects Asplund and Lallerstadt.



Garden Pavilion, Atlanta

The Garden Pavilion built behind Ames's own house serves not only as a study and guest house but as a test case, allowing the architect to observe the three-dimensional consequences of what might otherwise become merely a fixation with plan. The rotated plumbing cube can be read at least two ways. First, it stands as a separate object in free-flowing space. Second, its tiled contents—a square bathroom and a round shower—are carved out to leave a poché area between contents and the cube's outside walls. The sitting room contrasts visual calm with complex spatial textures where the two interior axes cross at the end of the core. The cantilevered canopy at the entrance, like that at the Villa Augusta (opposite), borrows from Corbu. The three Big Wheels belong to young Ames.

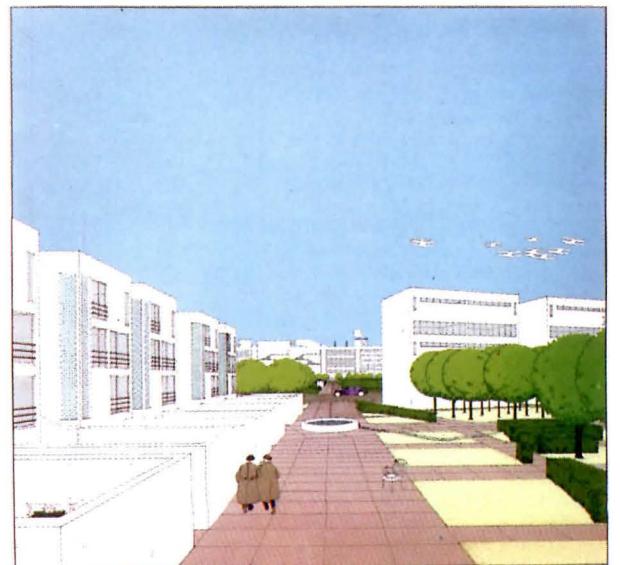


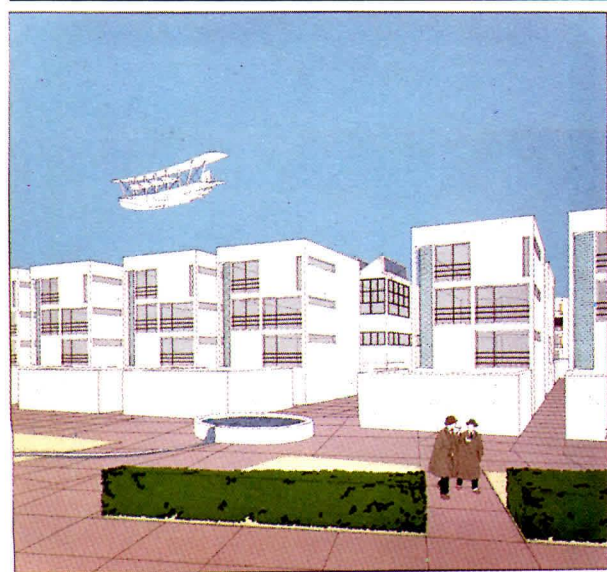
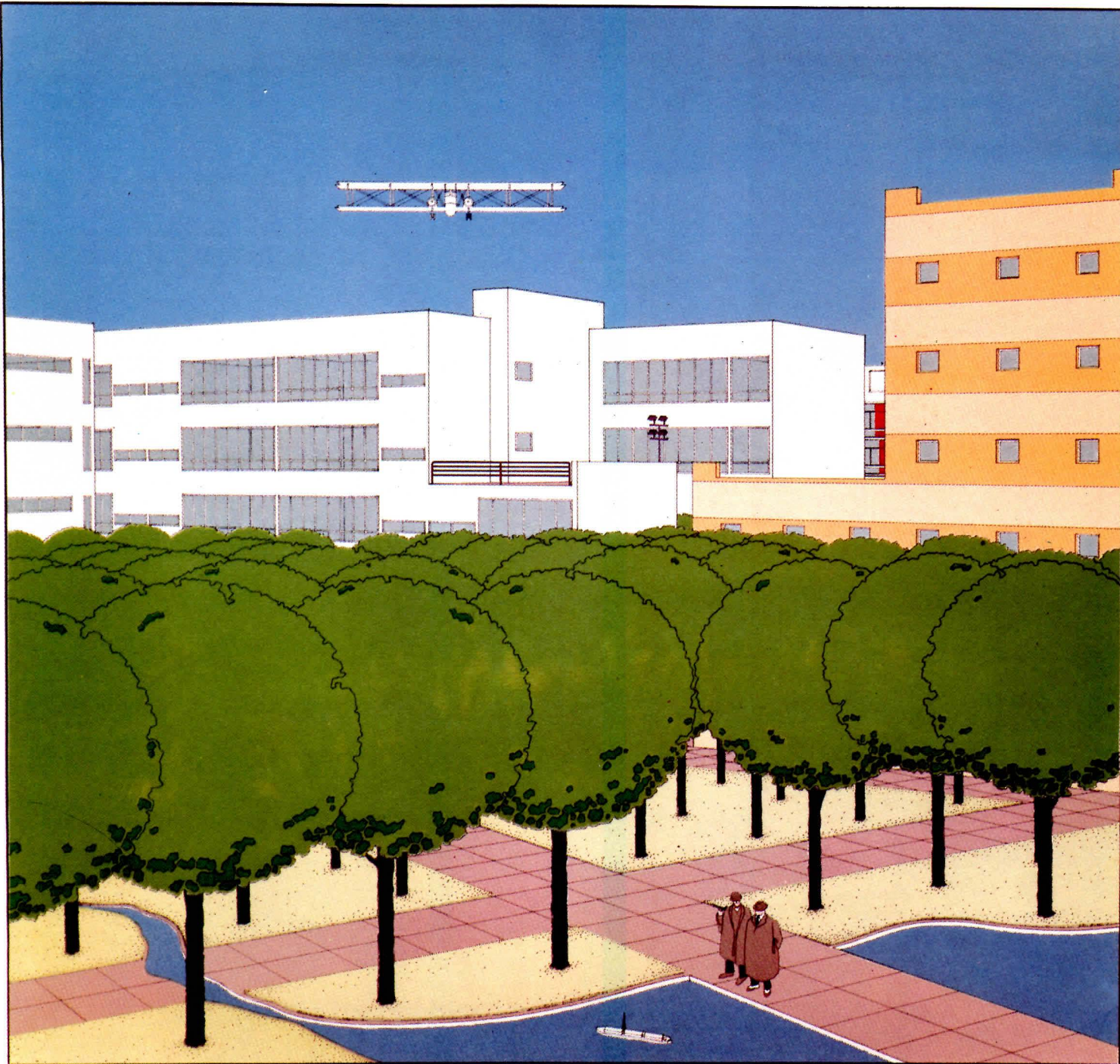


Friedrich Stadt, East Berlin

Designed essentially as visionary architecture for a putative housing exhibition much like those held in Stuttgart and Berlin before World War II, Friedrich Stadt would occupy a block in bombed-out East Berlin. The project illustrates the application in urban planning of Ames's ideas about rotated elements. Regarding the entire block as a walled garden, Ames preserved an existing building at

the southwest corner and along the south edge. New buildings on the south, east and west edges preserve the existing city grid. But on the north edge, rows of small townhouses rotate to recall the angles of an earlier grid. The intersections of the rotated axes have spatial consequences that carry great design promise.





Ames's references to—indeed, reliance on—the International Style derived not from social ideology but from esteem for the architectural vernacular. The differing style of the older yellow brick building at the corner, on the other hand, was also acknowledged, and it persists on the new west-facing facades, gradually changing to a later style as the buildings extend northward. The drawings themselves are full of

waggish references, from the obsolete airplanes seen in old theoretical drawings to famous early modern buildings peeking around the new rendering. The inseparable gentlemen are, of course, Le Corbusier and Ludwig Mies van der Rohe, caught at one point admiring a floating model of Corbu's design for a Salvation Army ship.

Made in Friuli



Five projects in Friuli, Italy
by Mitchell/Giurgola Architects and
Renato Severino, Architects & Planners



As Fiats whiz past, a farmwife pedals home on an ancient bicycle, its swaying panniers laden with groceries. Beyond the poppy-scattered roadside, a patchwork of corn fields and vineyards stretches to a gentle rise, where the sun picks out white walls, orange roofs, and a honey-colored campanile against the blue Alps. The landscape of Friuli-Venezia Giulia, the region at Italy's northeastern tip, embodies the patiently tended harmony of civilization and rural peace that Americans idealize in reveries of the Old World. Of course, this graceful equilibrium, seemingly changeless to the traveler's eye, has been shaken time and again by wars, social upheavals, and acts of God—the last most recently in 1976, when two successive earthquakes, in May and September, devastated 600 square miles of Friuli's heartland. United States aid has played a large part in the ongoing recovery, especially in the construction of public buildings. In these pages we illustrate five U.S. government-funded projects in Friuli designed by two American firms: two schools and a student hostel by Mitchell/Giurgola Architects, of Philadelphia and New York; and another school and a center for the aged by Renato Severino, Architects & Planners, of Greenwich, Connecticut. Though all of these buildings display an affectionate understanding of Friuli's regional character, they also attest to the fine balance of sentiment and pragmatism that is required to keep traditions alive.

Recovery from the earthquakes has been so energetic and painstaking that the present-day visitor to Friuli can hardly visualize the full impact of the cataclysm. The heaviest destruction occurred in the pre-Alpine foothills above the cities of Udine and Pordenone, taking a toll of nearly 1,000 lives, and leaving 2,400 persons injured and 70,000 homeless. Property damage totaled \$5 billion, with many towns bereft of their centuries-old artistic patrimony. Within weeks after the first tremors, the U.S. Congress had appropriated \$25 million for relief in Friuli, assigning responsibility for the planning and administration of a specific assistance program to the U.S. Agency for International Development (AID). Following the September quake, Congress authorized expenditure of another \$25 million, and later added \$3 million to cover anticipated cost increases. Seeking investments in long-term community renewal that would also give an immediate boost to morale in the stricken areas, an AID exploratory team singled out two groups as primary targets for new construction: youth and the elderly. AID subsequently funded the building of 14 educational facilities and seven centers for the aged in 16 towns. The need for new schools was obvious; more poignant, though, was the plight of old people overwhelmed by a sense of economic and physical helplessness. In some districts the death rate for residents over 65 rose 30 per cent after the quakes.

AID's Friuli program director, Arturo G. Costantino, and his assistants, Tullio Biagini and William Espinosa, met with local authorities to determine appropriate sites, organize the allotment of public land, provision of utilities, and maintenance agreements. To maximize local involvement and avoid confusion over codes and protocol, AID hired Italian architects (seven firms in all) for the bulk of the projects, with a complement of three firms who had worked both in Italy and in the United States. Roberto Einaudi, who has practiced in Rome and Boston, received one school commission; Mitchell/Giurgola, whose Roman-born principal Romaldo Giurgola keeps close ties with Italy, produced the three projects shown here; and Renato Severino, who until recently maintained an office in his native Florence, designed four centers for the elderly in joint venture with Florentine architect Sergio Alessiani, in addition to the buildings discussed

in this article. For advice on his selection of Italo-American designers, Costantino turned to leaders of the Associazione Nazionale Alpini (ANA), a benevolent organization of veterans of the Italian Army's Alpine Corps, with 27,000 Friulian members. Besides carrying out their own extensive housing renewal and civil engineering program, the Alpini voluntarily supervised construction of 13 projects for AID chief engineers Merten M. Vogel and John B. Saccheri. (Italian engineers for the other buildings were the firm of Austin Italia.) With the official completion of its work in Friuli, AID closed its Northern Italian headquarters this spring, in order to concentrate personnel in a Naples earthquake relief center. However, the special ANA/AID office in Udine, under Alpini project director Ernesto Siardi, remains an active force in Friuli's rehabilitation.

In towns such as Buia, where AID built a school designed by Milanese architect Giancarlo De Carlo and housing for the elderly by Severino (foreground, photo preceding pages), scaffolding and cranes are still familiar sights, alongside dry cleaners' shops, beauty parlors, and banks housed in temporary metal huts. It has, of course, been impossible to recreate the ravaged past stone by stone, but within the limitations imposed by seismic standards and reinforced concrete structure, AID project guidelines called for designs in keeping with the Friulian vernacular of pale stucco walls, arcades, and low-pitched terracotta tile roofs. This deliberate architectural regionalism accords with a general resurgence of interest in the area's customs and language (local amateur linguists regularly spray-paint Italian national road signs to obliterate vowels that are silent in their own patois). Except for the abstract geometry of several schools by De Carlo, and a vocational institute by his fellow Milanese, Marco Zanuso, all of the AID projects respond to the regionalist spirit—though with considerable latitude for individual style. As in much post-earthquake building in Friuli, the least successful AID projects clumsily inflate old domestic forms to an institutional scale for which they were never intended.

Romaldo Giurgola, whose work in America and abroad has often been praised for its sensitive contextualism, describes his firm's approach to the projects in Friuli as "frankly romantic, even with extremely limited budgets, since it is the picturesque character of these places that is so attractive. I'm very skeptical about the notion of always relating esthetics to historical factors, but it's often a good beginning. I wanted to use the technology and techniques most used in Friuli—their spontaneous way of building—so there would be no waste of energy and time. They have a good understanding of plaster and a fine tradition of handling stone. I thought I could do the most in not going against the grain of how *they* do things." Stylistic borrowing from the past is more overt in Renato Severino's two buildings, though his aim is neither antiquarian nor strictly formalist. "People ask me," he says, "'Why devote so much effort to a building in an out-of-the-way place like Spilimbergo?' I tell them it is like a love affair nobody else needs to know about. Where else *can* you do such a thing? The building expresses some of the ambivalence between past and present one feels today in Friuli—something that became even more obvious after the earthquake. The spirit of the past in Italy was to keep things for oneself, one's family, and a few friends; but modern people want to advertise, to put their feelings on show. We, too, are in a period of transition, and I don't want to give prefabricated truth to anyone." The refusal to export ready-made truths distinguishes all of the projects in Friuli by Severino and Mitchell/Giurgola. It is also the signal virtue of the entire AID relief program: an intelligent generosity that honors donor and recipient alike. *Douglas Brenner*

Commissioned by the U.S. Agency for International Development, as part of its earthquake relief program for Italy's northeastern Friuli region, five buildings designed by Mitchell/Giurgola Architects and Renato Severino, Architects & Planners (illustrated in the following pages) are object lessons in architectural regionalism. In the entry detail shown below, Mitchell/Giurgola's

student housing at San Pietro al Natisone (figure 1) echoes the vernacular of nearby Alpine hamlets. A bowed portico at the same firm's primary school in Aviano (figure 2) reflects the rounded bay of a church next door. The third Mitchell/Giurgola project, a technical high school at Maniago (figure 3), uses classical motifs to heighten the urban dignity of public areas. Renato Severino

faithfully recreates a Friulian village street in old people's housing at Buia (figure 4), while drawing upon more aristocratic traditions of villa design in the inner courtyard of an agricultural college at Spilimbergo (figure 5).



Riccardo Toffoletti photo on preceding page



1 Elio Ciol



3 Elio Ciol



2 Elio Ciol



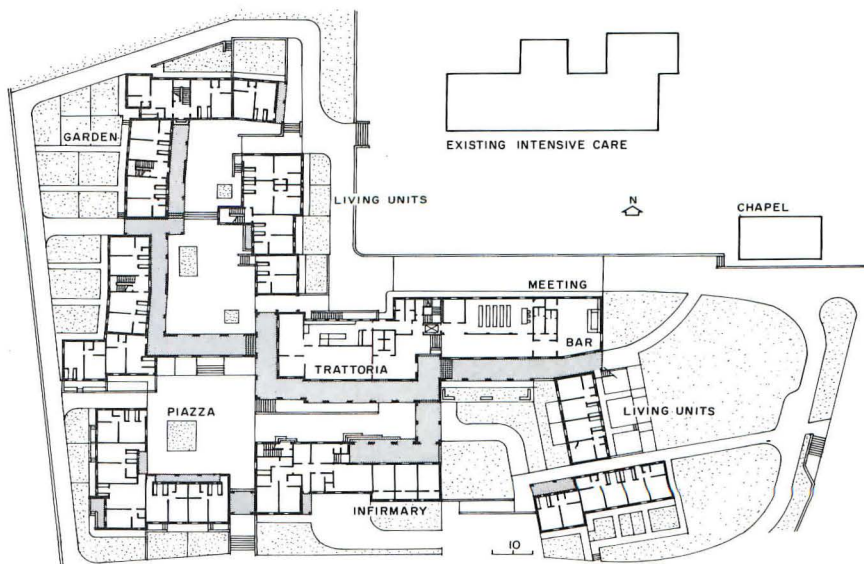
4 Riccardo Toffoletti



5 Riccardo Toffoletti

Scenes from village life

Situated near the epicenter of the May earthquake, in the rolling hills northwest of Udine, Buia saw most of its housing severely damaged or ruined by the tremors. With some 1,800 residents over the age of 60, out of a total population of 6,850, the town faced a crisis in caring for the elderly—partly the outcome of demographic changes already under way before the earthquake. In generations past, the old people of Friuli commonly lived with their children and other relatives, but as Northern Italy's economy has shifted from an agricultural to an industrial base, the young have increasingly left rural homes for Milan and other cities, while their parents stay behind. In planning accommodation for 80 pensioners in Buia, Renato Severino strove to recreate the traditional architecture of a Friulian village, reassuringly familiar surroundings that would also blend into the small-town fabric of Buia itself. Severino was determined to avoid the sterile monotony of many geriatric institutions, not only in the outward appearance of his 47,344-square-foot complex, but in the layout of program spaces, as well. Without compromising the principles of barrier-free design, he has organized circulation routes that offer a choice of alternative paths. Ground-level, one-bedroom apartments for couples and second-floor single lodgings are linked by arcades around a series of small piazzas. Instead of the usual refectory, there is a bar and a cluster of dining rooms laid out like a *trattoria*, where residents are encouraged to invite family and friends. A diminutive triumphal arch in the central piazza (lower photo), bearing a dedicatory plaque from the people of the United States, supplies the "historic monument" that any self-respecting Italian town requires. Shuttered casements, moldings, and lanterns all follow regional precedents; window sills are local sandstone, doors are native pine. A knock on one door is answered by a white-haired woman, clad in black wool despite the summer heat. She solemnly shows her American visitor the furniture donated by the Alpini, which she has embellished with doilies salvaged from her former home. But clearly her special pride is the garden plot beside her front door, the perquisite of every householder. "When you have worked the fields all your life," she says, "you need to touch growing things."



Riccardo Taffoletti photos



*Center for the Elderly
Buia, Italy*

Owner:
Township of Buia

Architect:
*Renato Severino, Architects &
Planners—Renato Severino, AIA,
partner-in-charge and designer;
Sergio Alessiani, project manager;
Giuseppe Pancino, job captain*

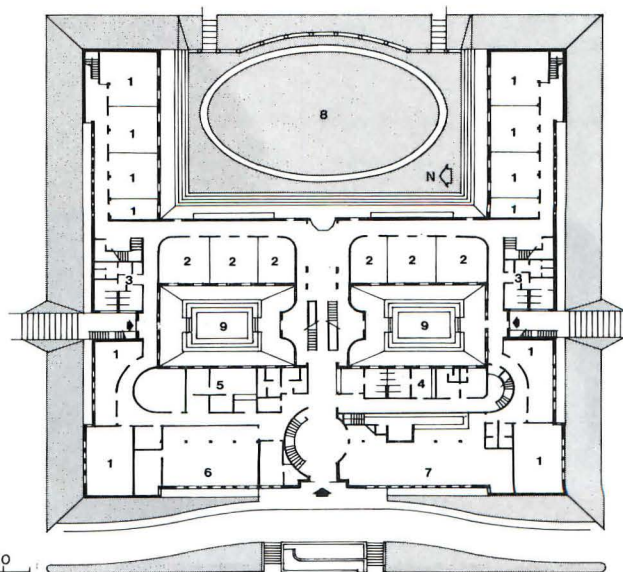
Engineers:
Peruzzi, Consigli & Pesciullesi

*(structural, mechanical, electrical);
G. Della Marina (site); John
Saccheri, chief engineer, AID;
Ernesto Siardi, project director,
ANA.*

General contractor:
Impresa Stabile

Back to the villa

When he received the commission for a school of agriculture, Renato Severino's first instinct was to build a dazzling modern image of solar technology, a glorified greenhouse. However, the unenthusiastic response of AID team members and local authorities led him to rework his scheme as an up-to-date physical plant encased within an architectural celebration of the past. "At Spilimbergo, I'm going back to Italy before the war, before architecture changed from sculpture to science and machines," Severino explains. "It seemed logical in Friuli, where much of the old kind of life still survives." His exterior trim of Verde Alpi and Rosso di Sicilia marble (applied to stucco over insulated blocks of expanded clay) continues a Friulian tradition of polychrome decoration that can be traced to the Lombards. The U-shaped plan, symmetrical massing, and vaulted interiors of the 70,000-square-foot structure hark back to classic Italian villas—most directly, to the Villa Manin at nearby Passariano, the 18th-century summer home of the last Venetian doges. Severino argues that such antecedents are altogether appropriate to his program, since the aristocratic villa was typically the center of a working farm and a symbol of culture in the countryside. A sloped podium elevates the school above the flood plain of the Tagliamento River, increasing the building's magisterial eminence. As in a Palladian villa, the main axis of the school bisects a double-height, vaulted hall—though in this case, stainless steel trim casts a spark of modern glamour onto floors and walls of polished marble (photo below right). The ceremonial aura extends through axial corridors, and upstairs to the skylighted gymnasium and auditorium that flank the center hall on the second story like a pair of grand *saloni*. Everywhere one senses the unifying order of geometry. The culmination of this leitmotif is the stone sphere set in an oval ring on the eastern terrace (photo opposite), beneath the blind gaze of solar bronze window panes—a tableau that evokes the enigmatic world of Metaphysical painter Giorgio de Chirico. In contrast to the laboratories within, and the neat rows of crops beyond, this courtyard composes an ironic emblem for human mastery of natural law: in post-earthquake Friuli, one dreads that the ball might start to roll.



1. Teaching area
2. Laboratories
3. Services
4. Locker room
5. Faculty
6. Library
7. Dining hall
8. Courtyard
9. Interior court

Riccardo Toffoletti photos



*School of Agriculture
Spilimbergo, Italy*
Owner:
Province of Pordenone, Friuli
Architects:
*Renato Severino, Architects &
Planners—Renato Severino, AIA,
partner-in-charge and designer;
Sergio Alessiani, project manager;
Furio Biagioli, job captain;
Giovanni Desomaro, coordinator*

Engineers:
*Peruzzi, Consigli & Pesciullesi
(structural, mechanical, electrical);
A. Da Farra (site); John Saccheri,
chief engineer, AID; Ernesto
Siardi, project director, ANA*
General contractor:
Impresa Collodetto

Elio Ciol photos

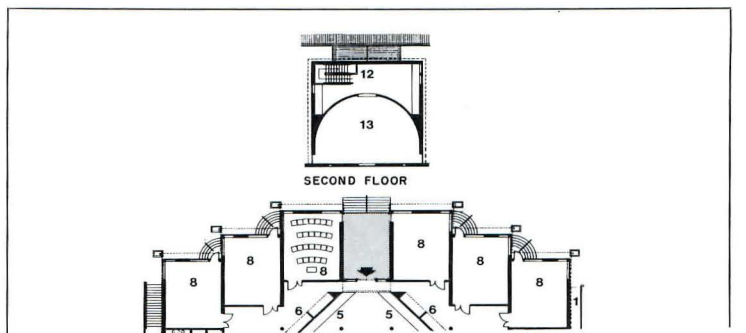


A gentle lesson from the master

Smallest of all the AID projects in Friuli, though perhaps the gem of the lot, the 9,598-square-foot Aviano school stands at the edge of town, between a parish church and a group of suburban houses. The entry front faces a quiet road, while the rest of the building opens onto meadows with Alpine views. Although the official standards of Italy's public education system necessarily determined basic program requirements, Mitchell/Giurgola's plan marks a radical departure from that country's conventional school layout of boxlike classrooms entirely glazed on one side, and linked in rigid series along straight corridors. "I thought they should have classrooms that look like rooms at home, and windows that frame views, not just a missing wall behind the desks," says Giurgola. These attitudes accord with a new informality in Italian pedagogy: for example, teachers no longer lecture from a *cathedra* but sit among their students. Even so, Italian schools are still very much regulated by the bell, and the children are models of decorum in class. As soon as the hour passes, however, the little citizens in dark smocks and sweaters burst into noise and action like a flock of starlings. To give the children space to run and play indoors, Giurgola grouped the classrooms about a triangular meeting hall (upper photo opposite), which alternately serves as a gym and (with the installation of a temporary stage) a theater. Angled partitions help to baffle noise and channel traffic to the classrooms from curved entry porches at either end of the school (the diagonal screens also house coat racks in their outer recesses and toy storage built into benches). The long southern gallery connecting the entries also acts as a greenhouse, with window boxes and hanging plants to filter the sun. The 75-seat dining/conference room (lower photo opposite) is a nearly independent pavilion, the curved surface of its inner niche oriented away from the rest of the school to separate the shared ritual of meals and meetings from more casual encounters in the triangular common area.



1. Ramp
2. Portico
3. Gallery
4. Meeting room
5. Seating/storage
6. Coat rack
7. Storage
8. Classroom
9. Office
10. Warm-up kitchen
11. Dining hall
12. Staff room
13. Open to below



Interpreting the classics

Except for the manufacture of cutlery, a local industry that dates back to the days when Maniago furnished the Venetian Republic with lances and daggers, agriculture is still the economic mainstay for this town of 10,000. Wheat and corn fields nearly surround the high school where the children of farmers learn new technology. As at Aviano, though on a larger scale (the total area of the Maniago school is 45,000 square feet), Mitchell/Giurgola have abandoned serial rows of classrooms to assemble a varied sequence of public spaces. An entry forecourt at the southeast corner of the site adjoins the most public aspects of the school: offices, and the auditorium and dining hall, which are also available for general civic use. The classical elements of portico, pediment, and Diocletian window at the main entrance combine with mural panels and a columnar pedestal (still awaiting a statue) to lend this paved yard the dignity of an urban forum





*Aviano Elementary School
Aviano, Italy*
Owner:
Township of Aviano
Architects:
*Mitchell/Giurgola Architects—
Mark Markiewicz, project
architect; Romaldo Giurgola, Jay
Litman, design team*
Associated architects:
Studio Einaudi S.R.L.

Engineers:
*ING. Achille Montalbano
(structural); ING. Attilio Colombo
(mechanical); John Saccheri, chief
engineer, AID; Ernesto Siardi,
project director, ANA*
General contractor:
F. Presotto



Interpreting the classics

Except for the manufacture of cutlery, a local industry that dates back to the days when Maniago furnished the Venetian Republic with lances and daggers, agriculture is still the economic mainstay for this town of 10,000. Wheat and corn fields nearly surround the high school where the children of farmers learn new technology. As at Aviano, though on a larger scale (the total area of the Maniago school is 45,000 square feet), Mitchell/Giurgola have abandoned serial rows of classrooms to assemble a varied sequence of public spaces. An entry forecourt at the southeast corner of the site adjoins the most public aspects of the school: offices, and the auditorium and dining hall, which are also available for general civic use. The classical elements of portico, pediment, and Diocletian window at the main entrance combine with mural panels and a columnar pedestal (still awaiting a statue) to lend this paved yard the dignity of an urban forum (top photo opposite). By analogy, the larger inner court (middle photo opposite) becomes the school's own *Circus Maximus*. Rimmed with amphitheater seating, this is a space where students can meet between classes or eat lunch outdoors. Romaldo Giurgola delights in the ambiguous enclosure of this, or any, courtyard: "You are still in the building and yet you have this wonderful room open to the sky." He particularly values the potential in such spaces for a "node" that can anchor an entire architectural complex. Here, the node is a stairway window above the fountainhead for a central water course. The painted window surround and recessed



1 Classroom

The cloister and the hearth

One breathes Alpine air in San Pietro al Natisone, a center for the Natisone river valley near Italy's border with Yugoslavia. The 35,000-square-foot student housing complex just off San Pietro's main street offers a weekday home to the children of farmers and herdsmen in distant mountain settlements who come here to attend the town's schools and professional institutes. There is a distinct Tyrolean flavor to the building, with mingled reminiscences of ski lodge, minor baronial *schloss*, and rural convent. This element of fantasy is quite deliberate: "I wanted to make a sort of castle-farmhouse," says Giurgola, "something the children could have fun with, and a place where they would feel at home." Although the courtyard plan recalls a variety of urban and institutional prototypes, it is intended here to suggest the walled farmyards the students know in their own villages. As in these mountain homesteads, the heart of the entire complex is an enormous fireplace, commanding one end of the dining room (photo opposite). Not simply a refectory, the timber-roofed hall is a favorite gathering place, much like a farmhouse kitchen. (It is here that the headmaster and headmistress invite the visitor to sit down for a morning espresso laced with local *grappa*. As they talk, a tearful girl in braids runs in to sob her disappointment at exam results, borrow a handkerchief, and ask



Elio Ciol photos



Maniago Technical High School
 Maniago, Italy
Owner:
 Township of Maniago
Architects:
 Mitchell/Giurgola Architects—
 Mark Markiewicz, project
 architect; Romaldo Giurgola, Lynn
 Schneider, Laine Young, design
 team
Associated architects:
 Studio Einaudi S.R.L.

Engineers:
 ING. Achille Montalbano
 (structural); ING. Attilio Colombo
 (mechanical); John Saccheri, chief
 engineer, AID; Ernesto Sardi,
 project director, ANA
General contractor:
 Impresa Rizzani

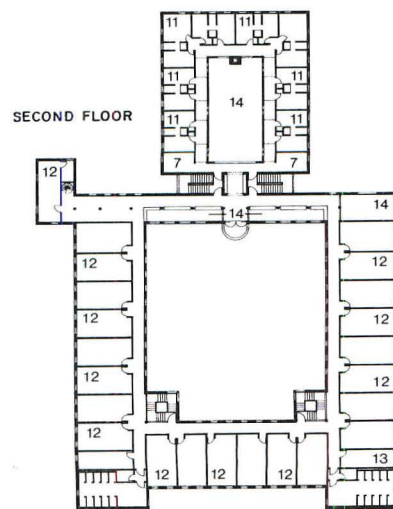
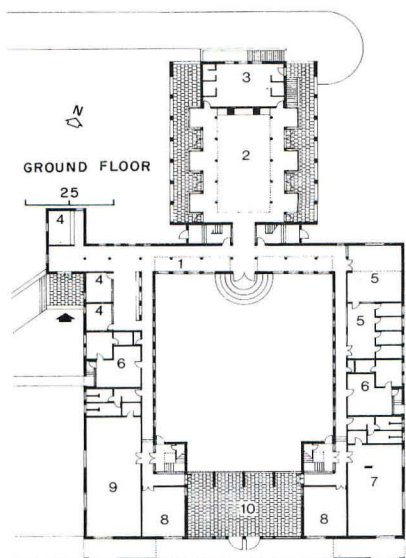


The cloister and the hearth

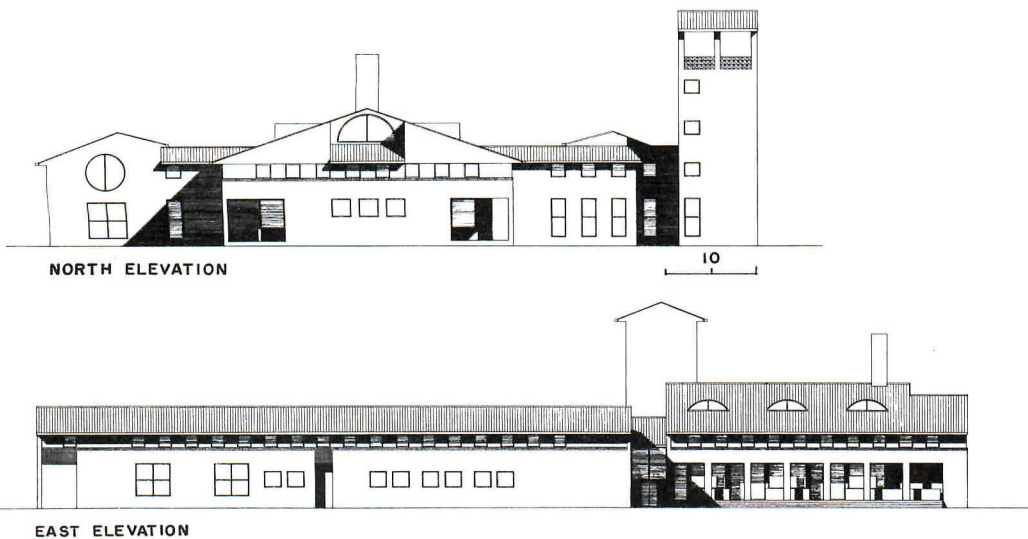
One breathes Alpine air in San Pietro al Natisone, a center for the Natisone river valley near Italy's border with Yugoslavia. The 35,000-square-foot student housing complex just off San Pietro's main street offers a weekday home to the children of farmers and herdsmen in distant mountain settlements who come here to attend the town's schools and professional institutes. There is a distinct Tyrolean flavor to the building, with mingled reminiscences of ski lodge, minor baronial *schloss*, and rural convent. This element of fantasy is quite deliberate: "I wanted to make a sort of castle-farmhouse," says Giurgola, "something the children could have fun with, and a place where they would feel at home." Although the courtyard plan recalls a variety of urban and institutional prototypes, it is intended here to suggest the walled farmyards the students know in their own villages. As in these mountain homesteads, the heart of the entire complex is an enormous fireplace, commanding one end of the dining room (photo opposite). Not simply a refectory, the timber-roofed hall is a favorite gathering place, much like a farmhouse kitchen. (It is here that the headmaster and headmistress invite the visitor to sit down for a morning espresso laced with local *grappa*. As they talk, a tearful girl in braids runs in to sob her disappointment at exam results, borrow a handkerchief, and ask whether she can phone her mother.) In planning the layout, Giurgola strove for "a tight fit of parts, so that children would always feel part of the whole organism." He achieved this connection with galleries, balconies, and unexpected overlooks, such as the high windows in the dining hall that give occupants of the single rooms upstairs a glimpse of activity below—and also admit light to the refectory from eyebrow dormers. Yet there are also quiet study alcoves, seating nooks, and, most private of all, a belvedere atop the tower, accessible by spiral stairway and trap door. Giurgola conceived the tower as a pristine white mass, signaling the main entrance, but the effect seemed too stark to the town fathers. Taking matters into their own hands, they commissioned a painted sundial of the sort one finds on Alpine churches. Even if the finished decoration verges on Hansel-and-Gretel quaintness, it looks just right: this is regionalism from the grass roots up.



1. Gallery
2. Dining hall
3. Kitchen
4. Office
5. Library
6. Director's apartment
7. Lounge
8. Living room
9. Auditorium
10. Portico
11. Single bedroom
12. Triple bedroom
13. Storage
14. Open to below



Elio Ciol photos



San Pietro al Natisone Student Housing
 San Pietro al Natisone, Italy
Owner:
 Township of San Pietro al Natisone
Architects:
 Mitchell/Giurgola Architects—
 Mark Markiewicz, project
 architect; Romaldo Giurgola, Lynn
 Schneider, design team
Associated architects:
 Studio Einaudi S.R.L.
Engineers:
 ING. Gaspare di Gasparo
 (structural); ING. Attilio Colombo
 (mechanical); John Saccheri, chief
 engineer, AID; Ernesto Siardi,
 project director, ANA
General contractor:
 Impresa Rizzani

Brooklyn Bridge at 100





By Horst Berger

It is a want of my intellectual nature to bring into harmony all that surrounds me. Every harmony is to me another messenger of peace, another pledge of redemption. John A. Roebling

Bridges are the simplest of all man-made structures. Their function is evident, their structure clear and their image strong. At least in the best of them. And John Roebling's bridges are among the best.

Roebling was a big man with the ambition and ingenuity to tackle the big spans. In his youth, in Germany, he had seen one of the early chain bridges and comprehended instinctively the tremendous power of the catenary suspension system. He knew then that he wanted to devote himself to the design of suspension bridges, and Brooklyn Bridge, now one hundred years old, became his supreme and final masterpiece.

From the beginning, Roebling understood that the powerful principle of transferring the gravity load of a bridge by means of simple catenary cables to a pair of support towers was not sufficient to make a useful and lasting bridge structure. "I have always insisted that a suspension bridge built without stays is planned without regard to stiffness and consequently is defective in a most important way," he said early on. It is the use of diagonal stay cables that became the trademark of Roebling's suspension bridges. The collapse of Ellet's suspension bridge in Wheeling, West Virginia, in 1854 because of dynamic action strengthened his conviction. And long before science could quantify his intuition, the dramatic destruction of the Tacoma bridge in the 1940s and the subsequent reinforcement of the Whitestone bridge with stay cables and trusses bore witness to the depth of his understanding. He would be most gratified to know that today the pure stay-cable bridge has become one of the new frontiers of long-span bridge construction.

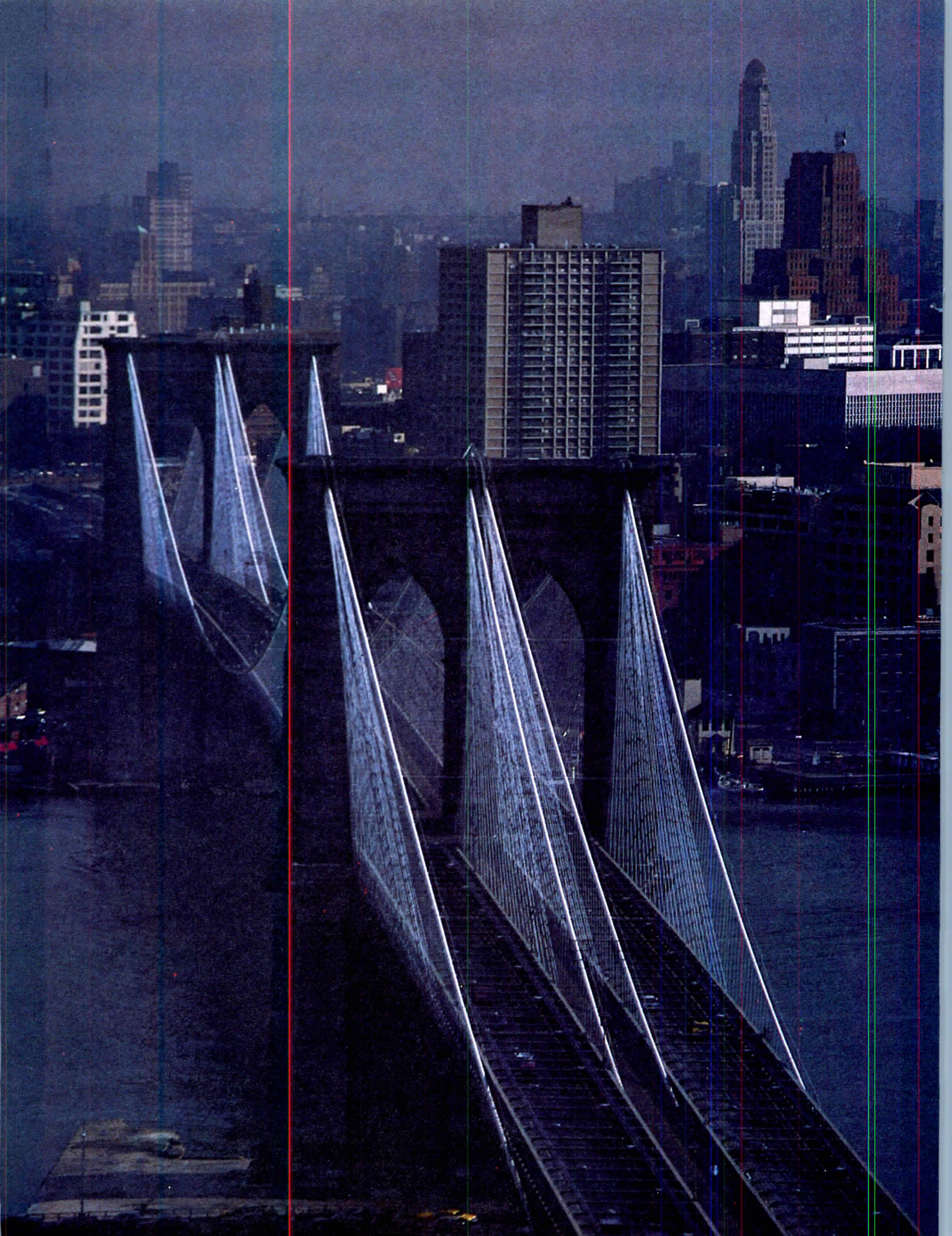
Of course, Roebling could not calculate the dynamic effects of wind on a suspension bridge. In order to have a numerical base for the rational design of the stays, he proportioned each one to carry the weight of the bridge section connected to it. This gave him a comfortable redundancy, since the main catenaries themselves carry the load of the bridge.

In the same way, Roebling developed every component of the bridge as a rational part of the logical engineering solution best suited to the functional problem of carrying a traffic band across the East River. And yet, as he drew, each particular component became part of a dense, harmonious composition held together by a compelling structural and visual logic. Roebling could not draw a line without an awareness of all the other lines and their intrinsic relatedness. His mind dealt in integrated totalities, and it was important to him to have a comprehensive image of the world as a whole and an understanding of his place and the place of his work within it.

The powerful stone towers with their Gothic arches give witness to this sense of belonging not only in space but in time. As a purist, Roebling made the stone carry the load without reinforcement, using its superior capacity to withstand compression. His superbly detailed design reveals not only his engineering understanding of the force flow but also his intrinsic knowledge of stone and his eloquent sense of scale.

Beyond expressing the flow of forces from the cable saddles into the exquisitely proportioned columns, the image of the Gothic arch pays respect to those magnificent masters of the Middle Ages, builders of the incomparable cathedrals who, like Roebling, had a deep understanding of materials, an uncanny sense of space visualization, a dominating preoccupation with construction methods, and a deep belief in the purpose and meaning of the enormous undertaking they devoted their lives to. In the totality of their tireless endeavor, their minds, like his, could not have comprehended any separation of purpose from economy of execution or from beauty. And as you walk over the Brooklyn Bridge, you become enchanted by the grace and power of this masterpiece, a messenger of the greater harmony that John Roebling tried to make visible in this world.

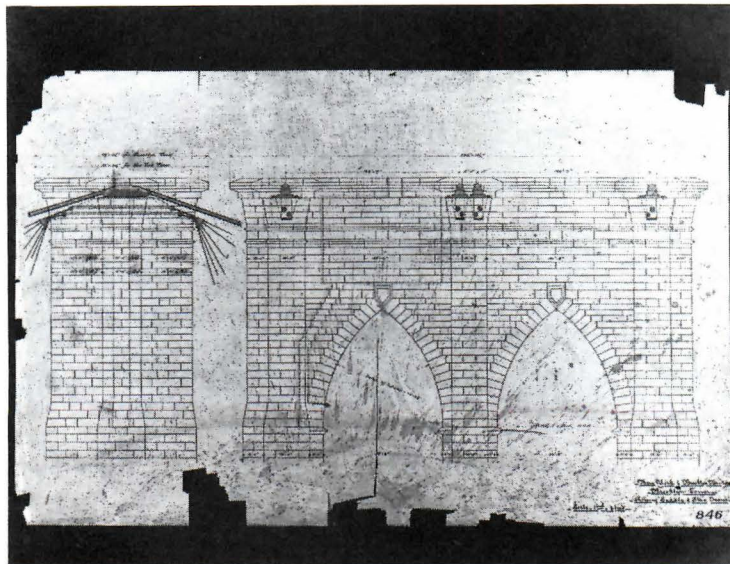
Horst Berger, best known for his design of fabric tension structures, began his engineering career as a bridge designer, and bridges are still his first love.



Michael George

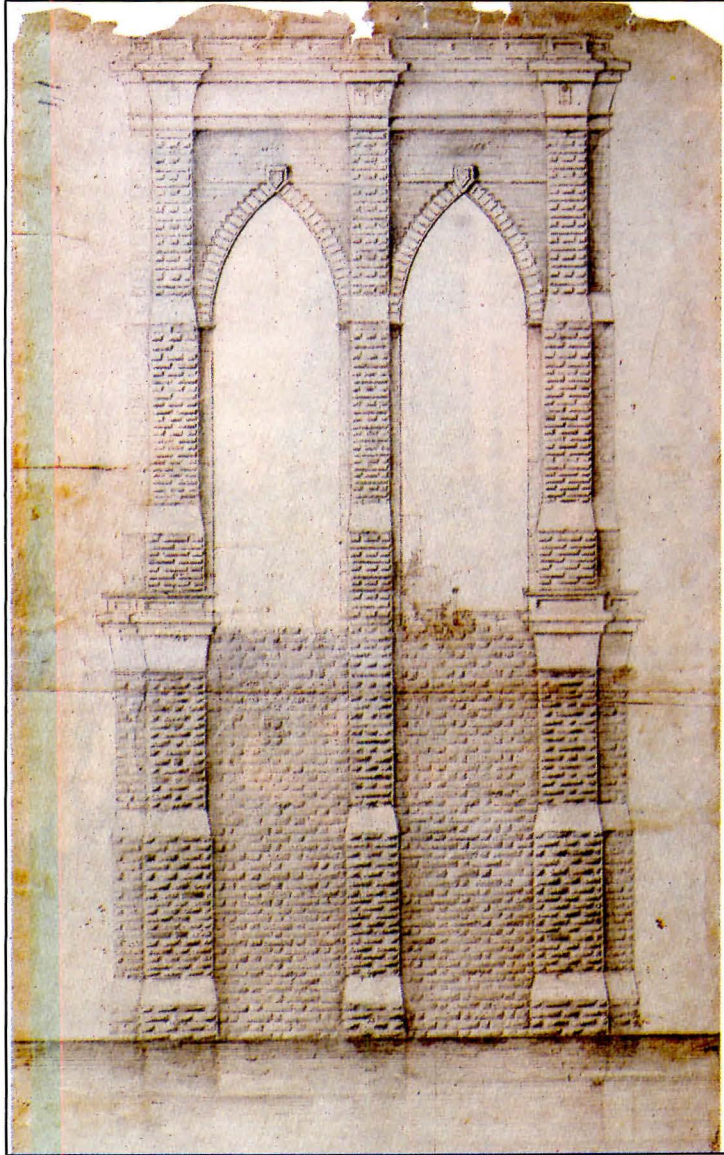


There are few main components in a suspension bridge, and they are clearly visible in the illustration far left. The roadway—a trussed steel band of gentle curvature—carries the traffic across the river and provides clearance for river vessels. A delicate network of cables supports this roadway, gathering loads and transmitting them to the top of the supporting towers. Thin vertical hangers connect the roadway and the main catenaries, which drape in parabolic curves of breathtaking geometric accuracy. Diagonal stay cables, the trademark of Roebling's great suspension bridges, provide rigidity and safety against dynamic oscillations. The weblike cable net contrasts impressively with the solid granite towers. The over-all impression must have been imposing at the time of the bridge's completion, when buildings in both Manhattan and Brooklyn were low in height and the 285-foot towers dominated the city. Even today a walk across Brooklyn Bridge is one of the most enchanting experiences in the city, as one moves through the ever-changing geometry of the cable net and views the cityscape up and down the river. Since the cables penetrate the walkway and can be touched, the pedestrian senses the power of this great bridge in a most intimate way. H. B.



Drawing by Washington A. Roebling and Wilhelm Hildenbrand, courtesy of the Municipal Archives of the City of New York

Drawing by Wilhelm Hildenbrand and Washington A. Roebling, courtesy of the Municipal Archives of the City of New York

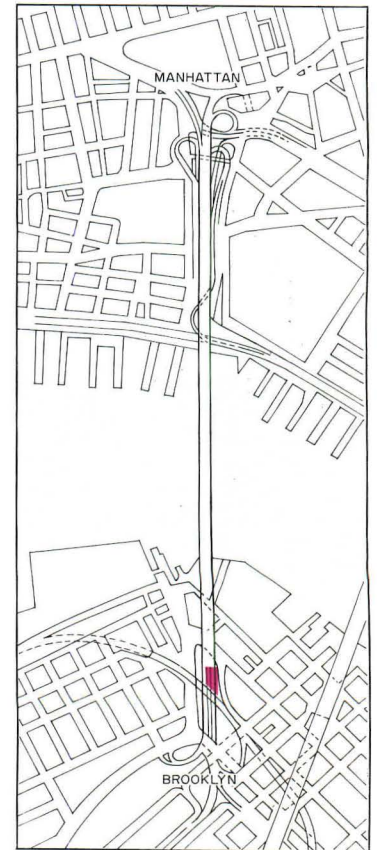


The superbly drafted elevation of the tower, depicting each stone in a sculptural manner, shows Roebing's concern about every detail as part of a total edifice that was to be as nearly perfect as he could possibly make it. In the photograph opposite, all the main components are again visible as

they come together at the top of the tower. Note the light curvature of the stay cables, the delicate stiffening truss of the roadway, and the sensible proportioning of the stone piers. H. B.

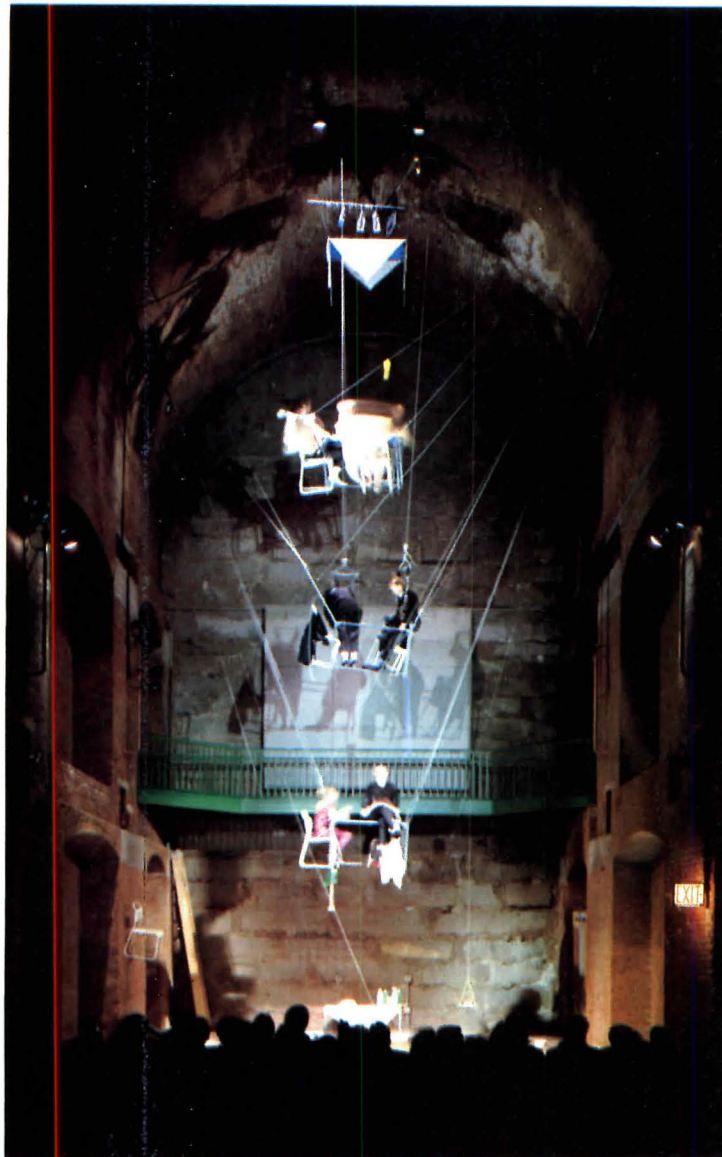
The anchorages: a second spectacular

Quite as elegant from an engineering point of view, and perhaps as moving from a visual point of view, are the anchorages where that spiderweb of spun cable is tied to the earth with massive iron links bedded in countless tons of stone. In September of 1982—not yet a year ago—architects Smotrich & Platt were invited to “take a look at the spaces” within the Brooklyn anchorage of the bridge—which Borough President Howard Golden hoped to use as an exhibit space, opening of course for the Centennial on May 24th this year. “There was just one small metal door on the river end of the anchorage,” says David Smotrich. It opened to one of two great stone vaults in the anchorage (see plan overleaf and photo page 127)—spaces 82 ft long, 20 ft wide, and over 50 ft high. “We walked through and emerged in the first of five huge transverse vaults—these of brick supporting the approach roadway. That first look was stunning, and eerie—and frightening,” for the dirt floors were littered with fallen brick and pieces of broken mortar. Within a week, Smotrich & Platt had shown the client that the first essential was to make the spaces safe. The budget was set at \$1.1 million—\$600,000 for restoration of the masonry and \$500,000 for lighting, mechanical work, and general construction. Under the supervision of the architects and structural engineer Robert Silman, the masonry was restored “literally square inch by square inch,” concrete floors were poured and, in the main exhibition areas, paved with brick. All of the masonry was blast-cleaned using walnut shells—a technique that preserved not just the texture of the masonry surfaces but the century-old patina as well. “Having made the space safe,” says Smotrich, “our next job was to make it legal, and then to create lighting that would enhance the great spaces and illuminate the exhibits.” The extraordinary result is shown herewith. *W.W.*



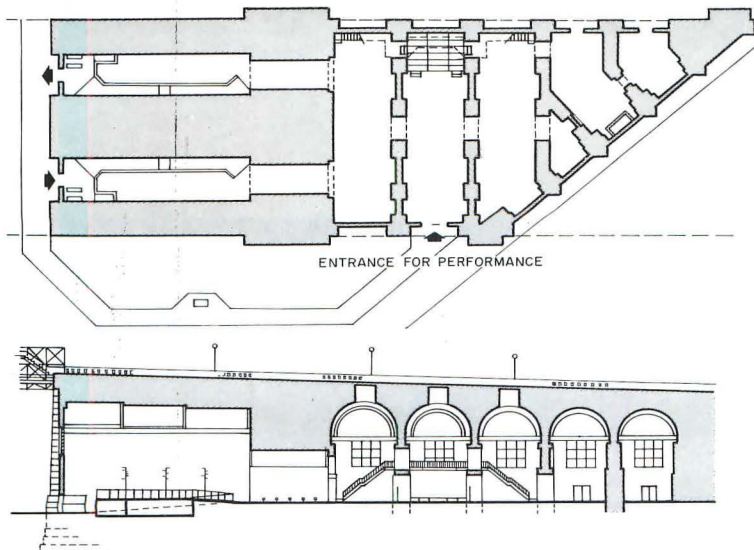
Timothy Horsley photos

The plan and section below show the seven vaults making up the 13,000-sq-ft exhibition and performance space. At left in both drawings are the stone vaults that are the actual anchorage—the load of the four cables is taken at the left in the drawings and transferred to the ground through great iron links—one each in the outer walls, two in the central mass between the two vaults. At right in both drawings are the masonry vaults that support the roadway and now form the main exhibit areas. The photo opposite shows the stone entry vault—lighted by freestanding fixtures and set off with sculptures by Keith Godard of Works (who also did the education exhibit on the previous page). The red neon symbolizes the great anchorage chain within the walls, the foreground piece is fashioned of bolts like those used in the construction. Spaces for toilets, vending stands, and storage were dug out under the entrance and exit ramps in both stone vaults. The photo on the previous page shows one of the great masonry vaults—this one filled with the Anatomy of a Bridge exhibit. These and the other two main vaults (see plan) are 96 ft long, 25 ft wide, 46 ft high. The vaults are dramatically lit and articulated by strip fluorescents at the top of the wall and by neon tubes picking out the curve of the arch. Set into the wall are brackets holding flexible exhibit/stage lighting, adjustable to any use to which the space may be put. “Site-specific” artwork was coordinated by Creative Time, Inc., a not-for-profit arts organization founded to support visual and performing arts in vacant spaces of architectural interest throughout New York City. Music, dance and theatrical performances are held in the



central vault (see photo left and section). To meet code requirements for a space that can hold up to 1,300 people, Smotrich & Platt punched new doors into the ends of four vaults (which had originally been open and therefore were not protected by the various landmark designations of the bridge). For ventilation, air enters through seven existing louvers at the end of the vaults, is exhausted by two new fans—both six ft in diameter and rated at 25,000 cfm each—installed in the entry and exit vault. All of which seems a splendid celebration of “The Great East River Bridge.” An exhibit by that title is on view through September 5 at the Brooklyn Museum, chronicling in drawings (like those shown), prints, paintings and photos made over these 100 years, the engineering achievements of its designers, the construction of the project, its impact on the city’s urban development . . . and finally the role of this most admired of bridges as a cultural icon. W.W.

Restoration/remodeling of the Brooklyn anchorage of the Brooklyn Bridge, New York City
Sponsoring agency:
 Office of the Borough President of Brooklyn
Contracting agency:
 New York City Department of General Services
Architects:
 Smotrich & Platt—David Smotrich and Charles Platt, principals; William Eisenberg, H. Russell Drinker, design team
Lighting consultant:
 Theodore Kondos of Bonvini-Kondos
Engineers:
 Robert Silman Associates, P. C. (structural); Abraham Joselow (mechanical)



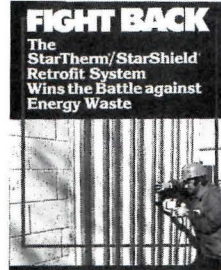




Roofing

A 24-page color booklet describes the uses and characteristics of all of the roofing systems and accessory products made by this manufacturer. Illustrations show details of each roofing system and flashings; specifications are included. SIPLAST, Arkadelphia, Ark.

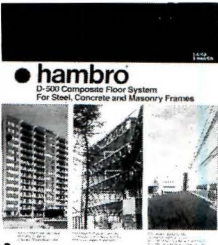
Circle 400 on reader service card



Wall and roof retrofit

The *StarTherm* wall and *StarShield* roof systems, designed to increase energy efficiency, are covered in an 8-page color brochure. Photos show installations and details show design features. Charts show energy savings. Star Manufacturing Co., Oklahoma City, Okla.

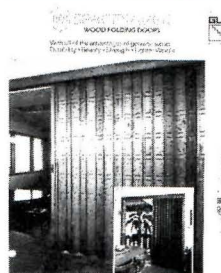
Circle 406 on reader service card



Floor system

A composite floor system for steel, concrete and masonry frames is covered in a 12-page color brochure. A section detail shows floor composition while photos illustrate installation procedures. Load tables and other technical data are included. Canam Hambro Systems, Inc., Needham Heights, Mass.

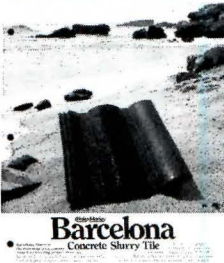
Circle 401 on reader service card



Folding doors

An 8-page color catalog features *Spacesaver* wood folding doors. Photos show applications, including counter closures and room dividers. Available woods and finishes and options in latches and locks are also shown. Specifications are included. Wood Specialty Products, Mountlake Terrace, Wash.

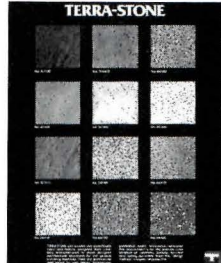
Circle 407 on reader service card



Concrete roof tiles

A page of literature features *Barcelona Slurry* extruded concrete roof tiles. Six available colors are illustrated; sizes, weights and physical properties are described. Short form specifications are included. Celotex Marley, San Bernardino, Calif.

Circle 402 on reader service card



Pavers

A product data sheet shows 12 available texture and color options in *Terra-Stone* concrete pavers, designed to protect substrates and to provide local access to them for repairs. Photos show installation procedures. Wausau Tile, Wausau, Wis.

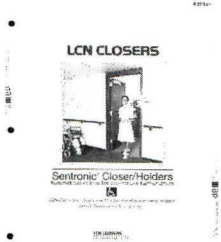
Circle 408 on reader service card



Partition systems

A 6-page color brochure covers three *Colorline II* open office partition systems. Components of the systems are shown in diagrams and described. Photos illustrate a variety of installations. Unistrut Interior Building Systems—GTE, North Kansas City, Mo.

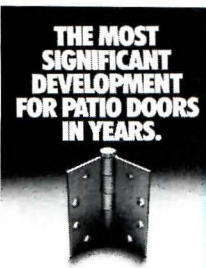
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Door closers

Sentronic door closer/holders, which automatically close fire-barrier doors, are featured in an 8-page brochure. Seven models, with and without fire detectors, for doors used by the handicapped, are shown and described. Technical data and details are included. LCN Closers, Princeton, Ill.

Circle 409 on reader service card



Patio doors

A 4-page color brochure describes and illustrates patio doors made by this manufacturer. Features such as solid wood frames, extra wide stiles and foam-filled weather stripping are highlighted. A chart shows dimensions of a variety of models. Marvin Windows, Warroad, Minn.

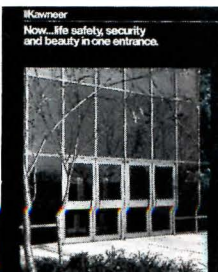
Circle 404 on reader service card



Ironing-board cabinets

Several models of recessed ironing-board cabinets, which fit into the space between 2 studs in a conventionally framed wall, are shown and described in a 4-page brochure. Cabinets include built-in ironing boards, iron storage shelves, electric outlets and lights. Iron-A-Way, Inc., Morton, Ill.

Circle 410 on reader service card



Panic exit devices

PanicGuard with *Paneline*, a panic exit device designed to meet security needs, is covered in a 4-page color brochure. Section details show how the locking mechanism operates. Line drawings show models of entrances on which this device is available. The Kawneer Co., Inc., Niles, Mich.

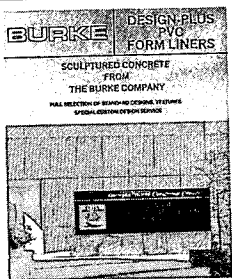
Circle 405 on reader service card



Floor outlet

The *Big 2" Poke-thru*, a floor outlet said to offer double the communication-carrying capacity of existing fittings, is covered in a 6-page color foldout brochure. Section details illustrate outlet components. Specifications are included. Raceway Components, Inc., Nutley, N.J.

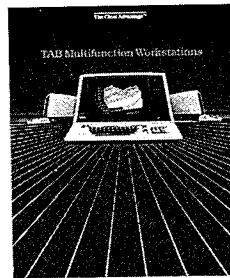
Circle 411 on reader service card
More literature on page 131



Concrete form liners

A 6-page color foldout brochure shows 24 textures and patterns that can be achieved as finishes for precast and poured-in-place concrete by using PVC form liners. Photos show several installations of sculptured concrete designs produced by these liners. The Burke Co., San Mateo, Calif.

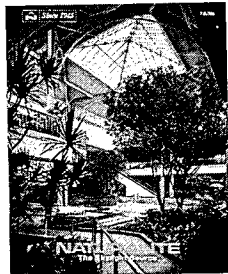
Circle 412 on reader service card



Multifunction workstations

Five models of multifunction workstations are illustrated and described in a 6-page color foldout brochure. Special features and applications are covered. A table lists the components of all models to assist appropriate model selection. TAB Products Co., Palo Alto, Calif.

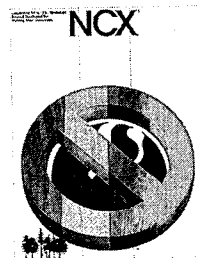
Circle 418 on reader service card



Skylights

Size selection schedules and details are included for several different models of skylights in a 24-page color booklet. Photos show typical installations. An *Illuminometer*, a light sensor that adjusts artificial lighting to complement daylighting, is also shown and described. Naturalite, Inc., Garland, Texas.

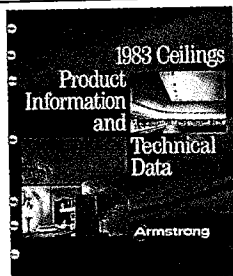
Circle 418 on reader service card



Fire-retardant hardwoods

A 4-page color brochure features Loughman *NCX* fire-retardant treated hardwood for milling after treatment. Photos show a number of installations. Fire-resistant properties are discussed and applications, code recognitions and specifications are listed. Loughman, St. Louis, Mo.

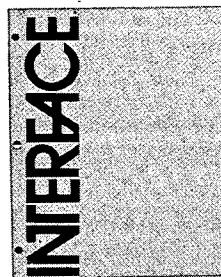
Circle 419 on reader service card



Ceilings

A 32-page color catalog contains data on a complete line of panel and tile ceiling products. Photographs show products close-up and in installations. Fire ratings, available colors, installation and maintenance, and specifications are covered. Armstrong World Industries, Lancaster, Pa.

Circle 414 on reader service card



Carpet tile system

Photos show a number of installations of *Interface* carpet tiles in a 10-page color booklet. Advantages of the tiles, which are backed with 5 layers of PVC and fiberglass, are discussed. A diagram shows carpet tile composition. Interface Flooring Systems, Inc., LaGrange, Ga.

Circle 420 on reader service card

You're not just automating your architectural office, you're taking charge of your future with *ARCADE*. By...

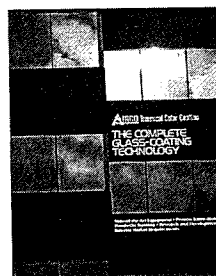
BRUNING



CAD

The *Arcade*, the latest in a line of CAD systems intended to be affordable, can handle up to 12 workstations in a local area network. The system is covered in an 8-page brochure, which illustrates and describes components and applications. Bruning, Itasca, Ill.

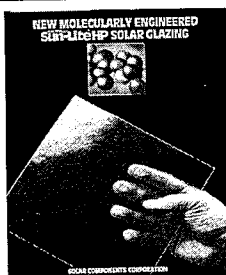
Circle 415 on reader service card



Reflective glass

An 18-page color brochure covers the manufacture and uses of reflective glass and mirrors. How this manufacturer's reflective glass functions to control solar heat is explained and shown in diagrams. Photos show several installations. Aircco Temescal Solar Coating, Concord, Calif.

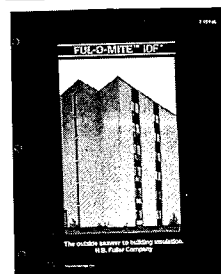
Circle 421 on reader service card



Solar glazing

Sun-Lite HP solar glazing for low- and medium-temperature solar heat collectors is featured in a 4-page color brochure. The results of weathering tests are illustrated, and a chart lists physical properties. Section details illustrate installation suggestions. Solar Components Corp., Manchester, N.H.

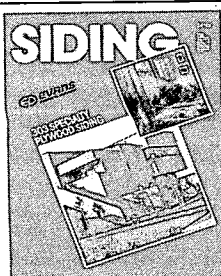
Circle 416 on reader service card



Exterior wall insulation

Photos illustrate installation procedures as well as a number of installations of *Ful-O-Mite IDF*, an exterior wall insulation and finish system, in a 4-page color brochure. Applications, specifications and a chart of physical properties are included. H.B. Fuller Co., Palatine, Ill.

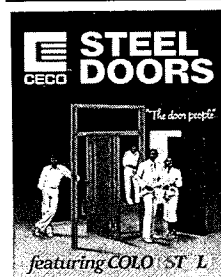
Circle 422 on reader service card



Specialty plywood siding

An 8-page color brochure covers specialty plywood siding with photos showing typical installations and charts showing grade characteristics and groove details. Application instructions are illustrated by section details. Finishes are also shown and described. Evans Products Co., Portland, Ore.

Circle 417 on reader service card



Colored steel doors

Steel doors finished in oven-dried urethane enamel available in 13 colors are featured in a 32-page booklet. Several models of doors and frames are illustrated and described. Door and hardware selection guides and specifications are included. The CECO Corp., Oak Brook, Ill.

Circle 423 on reader service card
More literature on page 136

A new way to match color...



by computer.

Benjamin Moore & Co. is pleased to announce the development of **MOORE'S COMPUTER COLOR MATCHING SYSTEM**.

Nuances of color in paint that are exact matches to a fabric, carpet, wallcovering or other colorful materials have long been the desire of architects, designers, decorators and others involved in color selection.

Until now many of these colors could not be obtained unless hand-shaded; a process involving considerable time and effort that does not always yield the desired results or consistent duplication.

MOORE'S COMPUTER COLOR MATCHING SYSTEM now makes it practical to match quickly and simply virtually any color sample in a variety of Benjamin Moore Paint's interior and exterior finishes.

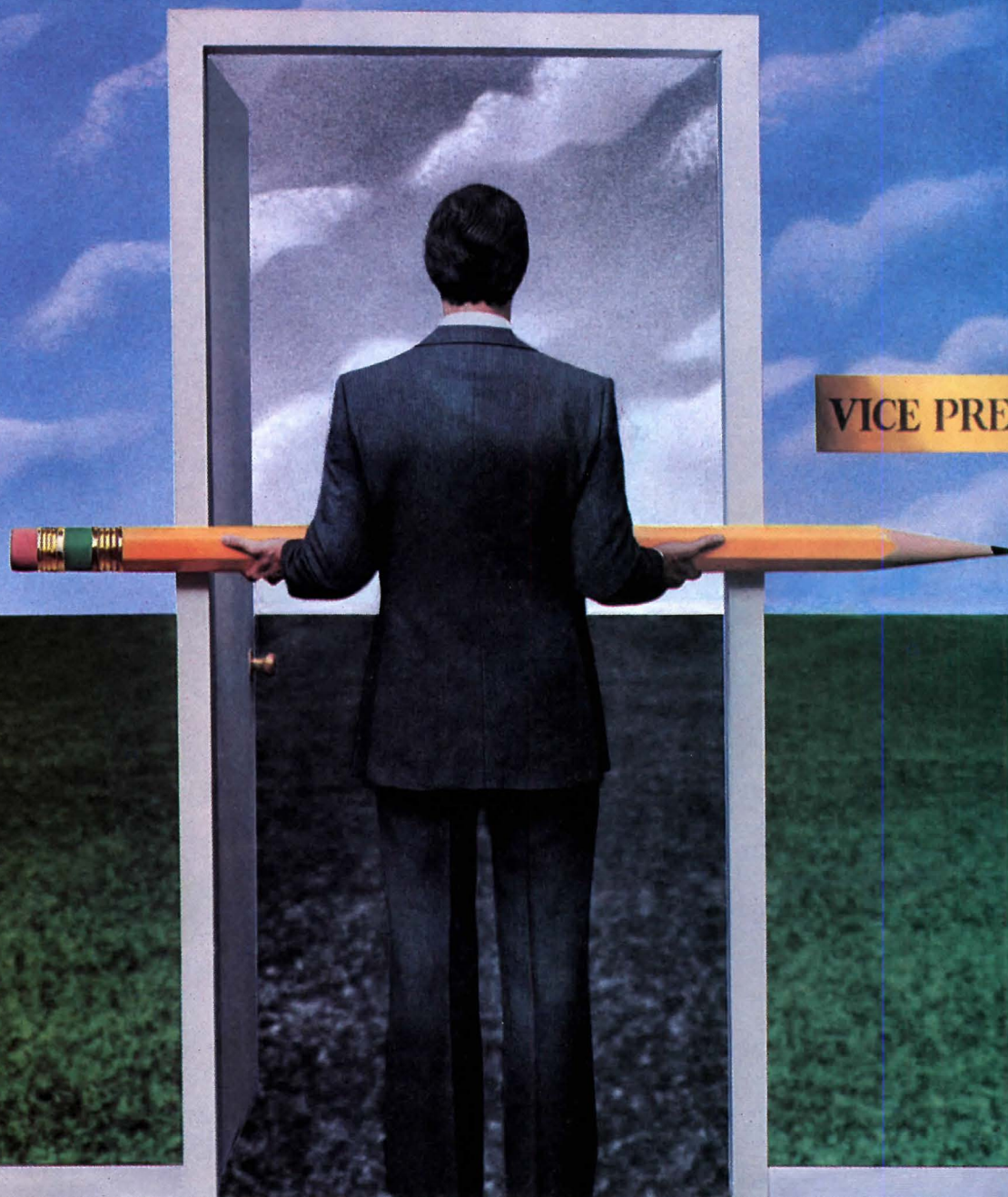
Through the equipment shown here, the latest color, paint and computer technology have been linked with the color values of the bases and colorants of Benjamin Moore's Moor-O-Matic Color System. In a matter of minutes a sample of the color to be matched is "read" and a prescription developed to produce an exact match in the selected paint finish.

This equipment is just now being made available to leading paint stores across the country where Benjamin Moore products are sold.

For further information contact H. E. Lester, Benjamin Moore & Co., Chestnut Ridge Road, Montvale, N.J. 07645 or phone (201) 573-9600.



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Aug. '83 Architectural Record 1 89 G H3

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New products

For more information, circle item numbers on Reader Service Card, pages 189-190

The end of the line

For over 20 years Formica Corporation had been working on a surfacing material that would have all of the characteristics of a laminate plus the added dimension of being the same color throughout—eliminating the “dark line” at the edge. The result, introduced last year, is *ColorCore*, a surfacing material available in all 72 colors of Formica’s *Color Grid* system.

To demonstrate what can be done with *ColorCore*, Formica’s creative director, Susan Grant Lewin, and director of marketing, Vincent Langone, commissioned 10 distinguished designers to create works (shown opposite) that would display the new medium’s versatility. The objects designed by this all-star cast and displayed at NEOCON 15 show that *ColorCore* has far more to recommend it than simply the absence of a thin dark line. One advantage is the variety of ways in which it can be worked. In Venturi, Rauch and Scott Brown’s mirror, for example, the ornamentation is achieved by layering the material and routing it to expose the different colors. Milton Glaser used the layering technique to create the ornamental detail on the corners and pedestals of his table and Ward Bennett used it in the two half-circle handles of his cart.

Chipping is evident in Frank Gehry’s *Ryba* (“fish” in Polish) and in SITE’s *Door*, and Helmut Jahn reveled in the material’s versatility by routing, beveling, layering and inlaying it on the surfaces of his *Elevator Cab*.

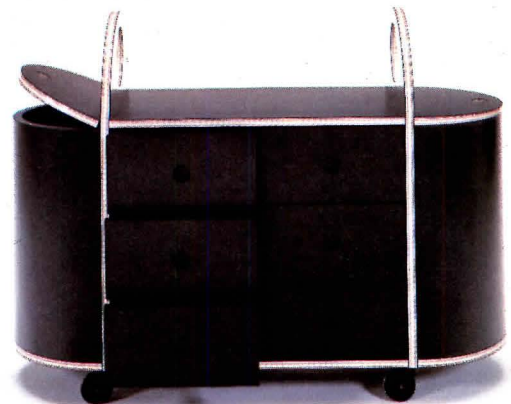
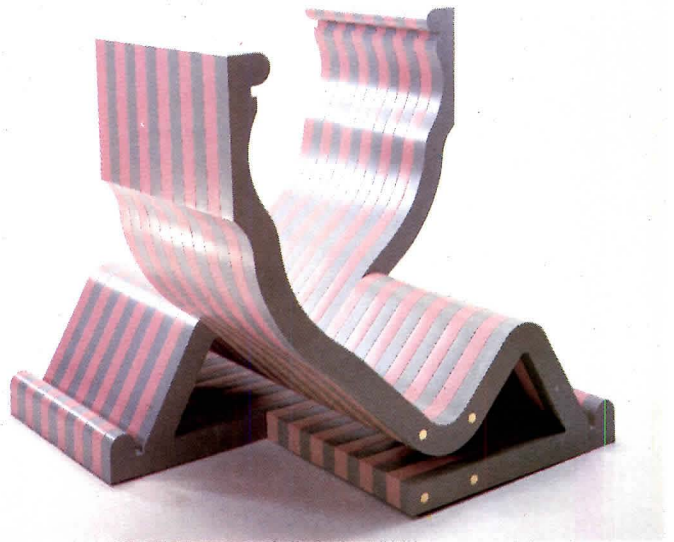
Each of the designs of the Vignellis, Stanley Tigerman, Emilio Ambasz and Giancarlo Piretti, and Charles Moore gives the illusion of a solid mass—an effect that Susan Grant Lewin claims cannot be achieved with any other man-made material.

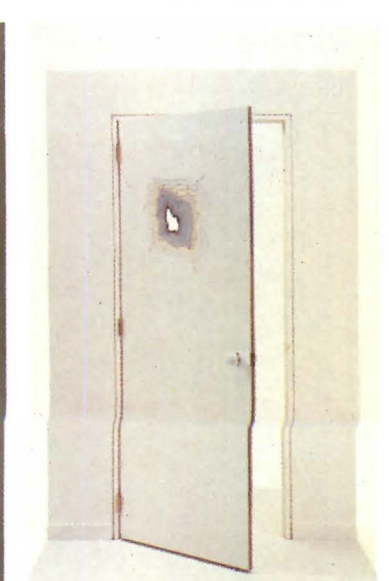
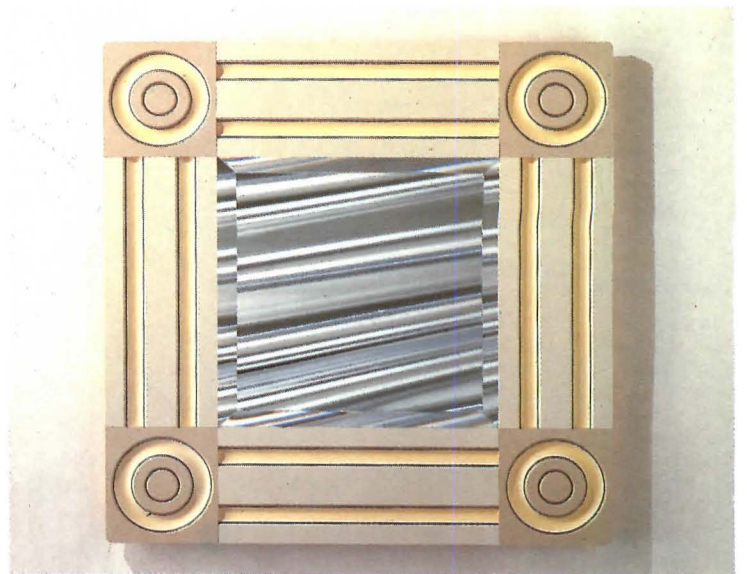
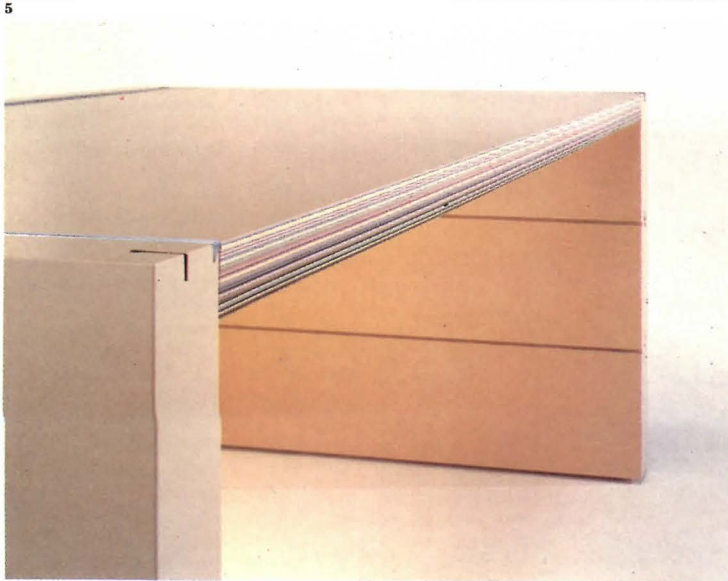
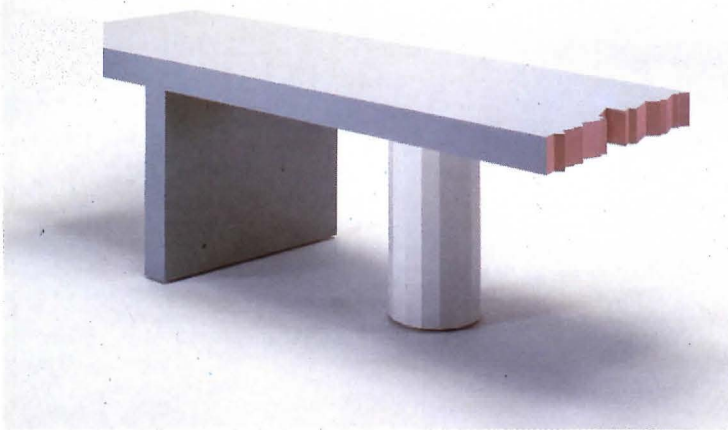
In addition to commissioning the works of the noted designers, Formica organized two design competitions called “Surface and Ornament”: the first one, whose winners were also displayed at NEOCON 15, was conceptual; the second, whose winners will be displayed at next year’s NEOCON, is for installations or products with *ColorCore* inherent in their design. The first prize of this year’s competition went to Lewis and Clark’s *Temple Chair*, a chair sculpture based on the design of a South American Indian temple. Second prize went to Lee Payne for *Neapolitan*, a coffee table designed to look like a block of ice cream with a slice curling off the end to demonstrate the medium’s ability

to be cold formed into an arc.

The exhibition, designed by Donovan and Green and mounted in a specially designated area of the Knoll showroom, won a special honor award for an innovative product display with “provocative content and informative quality.” It has since been invited to the Castello Sforzesco art museum in Milan to be displayed during the international furniture fair, Salone di Mobile, from September 13 through 23. Formica Corp., Wayne, N.J. Circle 300 on reader service card More products on page 143

1. Stanley Tigerman’s *Tete-a-Tete*
2. Milton Glaser’s *Modern Post-Neo Table*
3. Ward Bennett’s *Cart-Mobile*
4. Lella and Massimo Vignelli’s *Broken Length*
5. Helmut Jahn’s *Elevator Cab*
6. Emilio Ambasz and Giancarlo Piretti’s *L System*
7. Venturi, Rauch and Scott Brown’s *Mirror in the Greek Revival Manner*
8. Charles Moore’s *Corner Cupboard*
9. Frank Gehry’s *Ryba*
10. SITE’s *Door*





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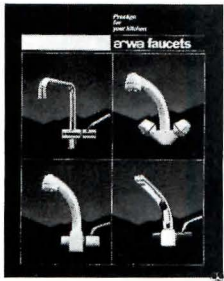
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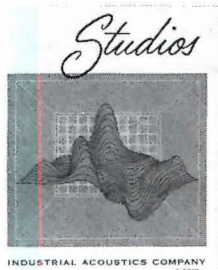
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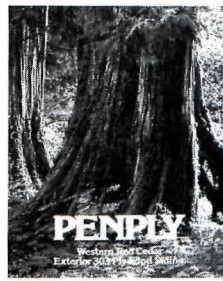
Faucets

A 4-page color brochure covers 3 Arwa faucets. Photographs show each faucet and illustrate the hand-held telescopic spray, a feature of two of the faucets. Diagrams give dimensions. A color chart is included. Luwa Corp., Charlotte, N.C.
 Circle 424 on reader service card



Acoustics

Details and diagrams in a 6-page brochure show features of acoustically designed doors, floors, ceilings and walls. Photos show a number of system installations in recording and broadcasting studios. Industrial Acoustics Co., Inc., Bronx, N.Y.
 Circle 425 on reader service card



Cedar siding

A 12-page color brochure describes and illustrates clear- and sound-grade cedar plywood siding. Several panel designs are shown complete with diagrams and dimensions. Details show typical applications. ITT Rayonier Forest Products, Port Angeles, Wash.
 Circle 426 on reader service card



Automated daylighting

Installations of louvers with electronic controls activated by sensors are shown and described in an 8-page color brochure. As described, systems can also be wired to interact with a building's energy management computer or hvac controls. The Moore Co., Marceline, Mo.
 Circle 427 on reader service card

CIRCULAR FLOOR PLAN

Your blueprint for beauty in high traffic areas, Roppe Raised Circular Design tile is solid rubber throughout for years of wear. Reduces noise; resists scuffing, gouging, burns and most chemicals; and cleans up with soap and water. In six beautiful colors. Matching stair treads, cove base and accessories available. For your nearest distributor, write Roppe Rubber Corporation, 1602 N. Union Street, Box X, Fostoria, Ohio 44830. Or call toll-free.

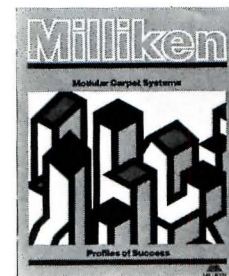
ROPPE

1-800-537-9527
 In Ohio 419 435-8546



Roofing shingles

A 4-page color brochure features Designer 125 fiberglass shingles, which have a random-tab design that gives them a custom appearance. The shingles' self-sealing adhesive is described and the 5 colors in which they are available are illustrated. Johns-Manville, Denver, Colo.
 Circle 428 on reader service card

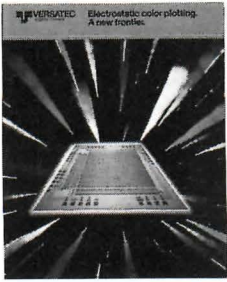


Carpet

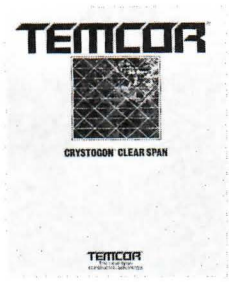
A 20-page color brochure features pictures of installations of carpets developed by this manufacturer with its design computer. As described in the brochure, the manufacturer's computer allows a designer/client to design his own carpet by selecting from thousands of pattern and color combinations stored in the computer's memory. A number of computer renderings of interiors showing carpet options, which are produced on a high-resolution monitor, are illustrated. Milliken Contract Carpets, LaGrange, Ga.
 Circle 429 on reader service card
 Continued on page 141

Circle 51 on inquiry card

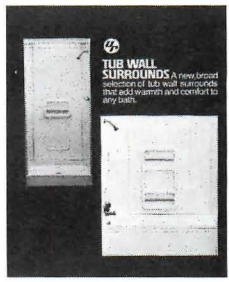
For more information, circle item numbers on Reader Service Card, pages 189-190



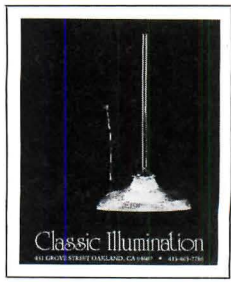
Electrostatic color plotter
A 4-page color brochure describes the operation of Versatec's electrostatic color plotter. Photos show drawings produced by the plotter, which can manage an E-sized full-color plot in 8 min. Versatec, Santa Clara, Calif.
Circle 430 on reader service card



Clear span domes
An 8-page color brochure describes *Crystogon* geodesic domes with aluminum structural frameworks and flat or formed acrylic-glazed panels. Panels are positioned with stainless steel retaining springs claimed to assure centering during thermal expansion. Temcor, Torrance, Calif.
Circle 434 on reader service card



Wall panels
A 6-page color brochure describes thermoplastic tub wall surrounds for new construction and remodeling, claimed not to chip, scratch or stain. Panels are mounted with adhesives. A variety of styles and colors are shown. Universal-Rundle Corp., New Castle, Pa.
Circle 435 on reader service card



Light fixtures
A catalog describes brass wall sconces, desk lamps and chandeliers patterned after designs dating to the early 19th century. Fixtures may be lacquered, unlacquered, chromed or copper plated. Custom designs are available. Classic Illumination, Oakland, Calif.
Circle 436 on reader service card



Passive solar control
An 8-page color brochure features several types of brise-soleil. Photos and renderings illustrate typical installations. Section details show how each device operates. Construction Specialties, Inc., Cranford, N.J.
Circle 431 on reader service card



Fabric structures
A 28-page color booklet describes the properties of permanent fabric structures and outlines designs for tension- and air-supported structures. Photos, charts, drawings and computer graphics are included. Owens-Corning Fiberglas Corp., Toledo, Ohio.
Circle 432 on reader service card



Chairs
Four models of chairs that have no backs and distribute body weight to thighs and shins rather than to the lower back are shown and described in a 4-page color brochure. HAG USA, Inc., Chicago.
Circle 433 on reader service card

Erie County Community College Cannon Design, Architect

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HIGHWAY ENGINEERS IN ATLANTA FOUND RELIEF FROM PRESSURE WITH ENKADRAIN.



PHOTOGRAPH COURTESY OF GEORGIA DEPARTMENT OF TRANSPORTATION

In Atlanta, several years ago, A.G. Spanos Development Inc. erected a retaining wall for the Corporate Forum Project after cutting into a hill to create more parking. Enkadrain® was installed behind the wall to provide protection for the neighboring property. Within hours of completing the wall construction and backfilling, a major watermain burst on the property above the wall, giving the drainage a severe test. It held, thanks to Enkadrain.

Now Enkadrain has been selected by the Georgia DOT for a number of retaining walls at or near the intersection of Interstates 75 and 85 in Atlanta. This massive project includes retaining walls which protect portions of highway below ground level, so proper drainage is a must. Jasper Construction Company, the general contractor, has completed installation of Enkadrain on some walls, with others to be done in the near future.

Today, Enkadrain is successfully retaining Atlanta's retaining walls, making the highway system run efficiently.

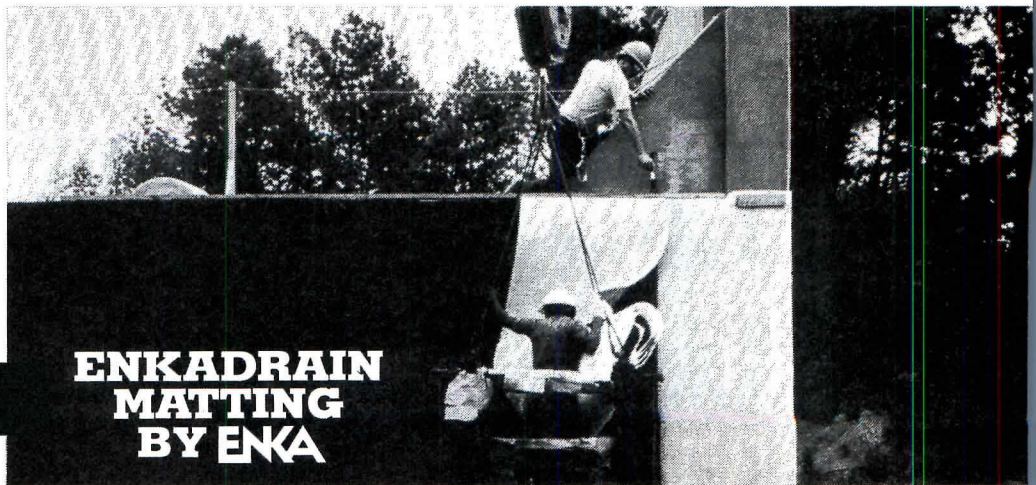
Enkadrain is the first product of its kind. It's more successful than gravel or sand blankets because it resists clogging and is effective longer. Years longer. Also, with Enkadrain, you won't need protective boards or polyethylene film to protect waterproofing membranes.

Enkadrain is an ideal and economical solution for a whole range of drainage problems including commercial and industrial buildings, pri-

vate home basements, earth-sheltered homes and our newest application—outdoor planters.

So for peace of mind about proper drainage, contact our nationwide distributor, American Excelsior, 850 Avenue H East, Arlington, TX 76011 (817) 640-1555. Or consult Sweet's Catalog's General Building and Light Residential Construction sections (7.17), or call toll-free Buyline (800) 447-1983.

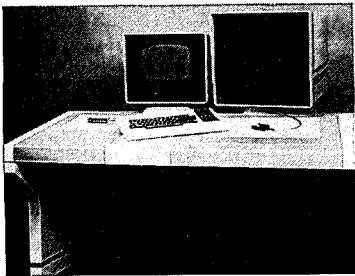
ENKADRAIN IS A REG. TM OF AMERICAN ENKA CO., ENKA, NC, A PART OF 



**ENKADRAIN
MATTING
BY ENKA**

For years it's been proven to be effective in giving fast relief from hydrostatic pressure.

Circle 54 on inquiry card



CAD

The *S Series* of freestanding systems for CAD features Data General's *MicroEclipse Engine*, which supports up to 512K bytes of main memory. Hardware functions include pan and zoom, rubberbanding and dynamic drag on the color CRT. System software generates drawings and text, displays drawings as they are being drawn and allows calculations to be made while drawings are being generated. No knowledge of programming is necessary. Summagraphics Corp., Fairfield, Conn.

Circle 301 on reader service card



Showcase/counter framing

The *Click Kit* is a multi-purpose framing system made of aluminum, which may be used to form showcases, counters, kiosks and exhibit structures. The system comes in a variety of anodized and epoxy finishes. Click Systems, New York City.

Circle 304 on reader service card



Plotter supplies

MARS PLOT supplies include ballwriter, fiber-tip and pressurized ballpoint cartridges and liquid ink drafting points. Inks are rapid-drying, opaque and come in seven colors in a range to suit a variety of media and plotter types. J.S. Staedtler, Inc., Canoga Park, Calif.

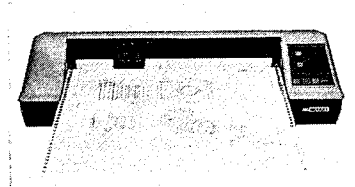
Circle 305 on reader service card



Tankless water heater

A UL listed, electric water heater provides instant hot water without a hot water tank. It weighs less than 2 lb, may be installed in the cold water line at the tap and may be used as a booster for solar systems or for hot water storage tanks. Pecbras Co., Dania, Fla.

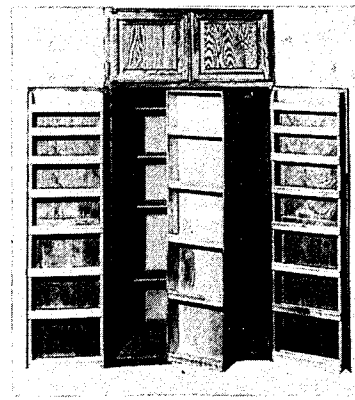
Circle 306 on reader service card
Continued on page 145



D size plotter

The ZETA 822 is an 8-pen, 22-in.-wide digital drum plotter, which is designed to provide high resolution graphics for both continuous feed and cut sheet media. Types of media available are translucent paper, vellum, glossy bond, mylar and clear inking film for view graph presentations. The plotter measures 36 by 12 by 10 in. and weighs 40 lb. As a result of the structure of ZETA 822's command language, it can support a wide range of computers. Nicolet Zeta Corp., Concord, Calif.

Circle 302 on reader service card

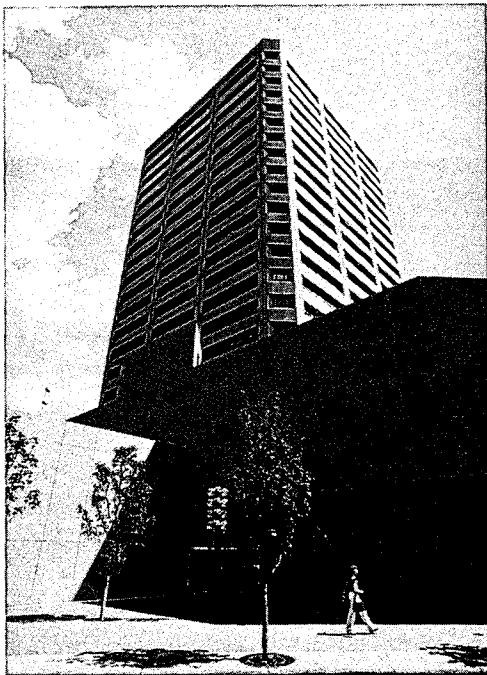


Pantry cabinet

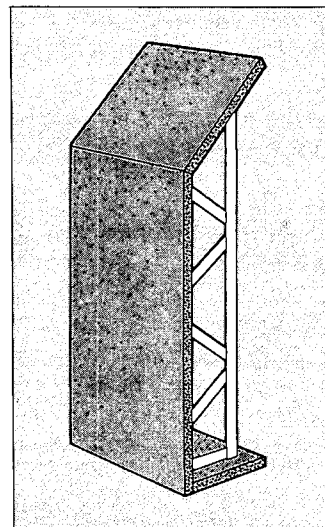
This pantry cabinet stands 84 in. high, is 36 in. wide and 24 in. deep. It has eight separate storage areas and includes an area for mops and brooms. It is available in any of this manufacturer's frame-door style and finish combinations. Connor Forest Industries, Wausau, Wis.

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Fast enclosure.



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St. Paul, MN
BWBR Architects, St. Paul, MN



Walls fill in fast with pre-assembled units of Cold Spring Granite. Here, an unusual sprandrel profile is fabricated from Cold Spring's Rockville Granite on steel truss frames.

The 9' x 5' x 2½' units went from truck to tower in minutes, saving field labor, time and money.

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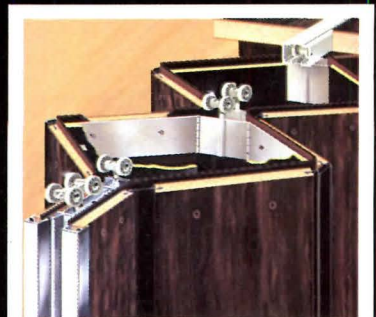
a change of space

PROJECT: HOLIDAY INN WEST, OKLAHOMA CITY, OK. ARCHITECT: HOOD - RICH, SPRINGFIELD, MISSOURI
GENERAL CONTRACTOR: GIDEON CONSTRUCTION CO., INC., TOPEKA, KANSAS

Sonicwal is the only accordion wall system combining acoustical efficiency and the natural beauty of wood. Panels may also be surfaced with textured vinyls, Softex fabrics and decorative laminates. Each is manufactured with the same high standards that make us first choice of the most discriminating specifier. See Sweet's 10.3/Pa.

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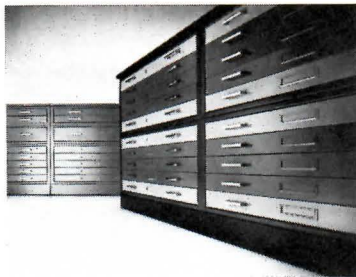




Hvac CAD software

The *E-2000* software, which is programmed for Hewlett-Packard hardware, combines 2-dimensional graphics software with an engineering-specific library of symbols, details and equipment. The system includes a desk-top micro-computer, a 5-megabyte hard disk drive for symbol and product storage, two 5½-in. floppy disk drives for drawing retrieval and entry, a full-size plotter, graphics tablets and a monitor. Carrier Corp., Syracuse, N.Y.

Circle 307 on reader service card



Steel plan files

Among the options offered with a new line of steel files are three styles of laminated reference tops and mix-and-match cases, bases, drawers and steel caps in five standard and nine special colors. Files come in three sizes: 24 by 36 in., 30 by 42 in., or 36 by 48 in. Mayline Co., Sheboygan, Wis.

Circle 310 on reader service card



Luminaires

Said to provide more light with less energy than conventional luminaires, each lamp in the *X-Parabolic* series has its own parabolic reflector. The series may be recess-, surface- or pendant-mounted with 1, 2 or 3 40W fluorescent lamps. Lighting Products, Inc., Highland Park, Ill.

Circle 311 on reader service card

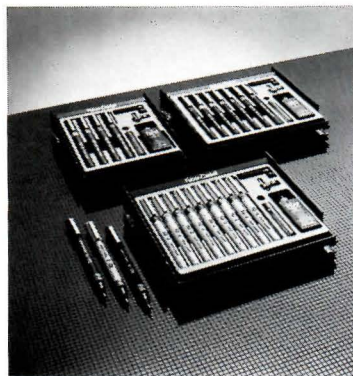


Hot water dispenser

The *Aqua-Temp* hot water dispenser provides ½ gal. of hot water per hour. A temperature adjustment allows a range from 140 to 190 deg. A safety lock position prevents unintentional operation. Elkay Manufacturing Co., Oak Brook, Ill.

Circle 312 on reader service card

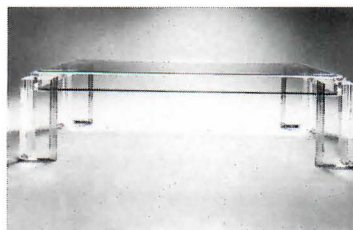
Continued on page 147



Technical pen system

The TGI system features a choice of stainless steel, tungsten carbide or sapphire jewel points. Each pen has a drawing cone to maintain the air supply needed to keep ink flowing to the point. A special cap and a humidifying element keep the point from drying out when not in use. Stainless steel points come in sets of 4, 7 and 9 pens; other points come in sets of 4 and 9 pens. All sets feature a joint adaptor and a drawing cone extractor. Faber-Castell Corp., Newark, N.J.

Circle 308 on reader service card



Coffee table

The *Trident* coffee table, designed by Mark P. Eckman, features beveled legs which fracture the light. The table's acrylic legs are formed independently from its acrylic frame. It measures 36 by 54 by 16 in. Les PrismaTiques, New York City.

Circle 309 on reader service card



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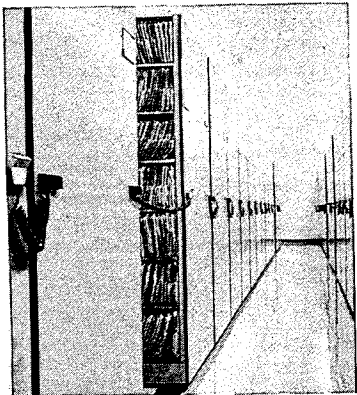
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IT'LL WEATHER THE STORM.**

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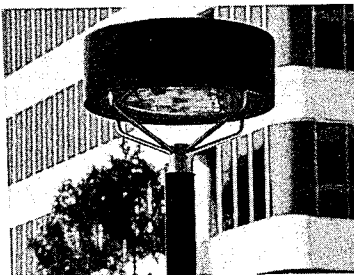




High-density storage

The ESP-1 system of electric mobile storage/filing has carriage lengths up to 21 ft and load capacities up to 1,000 lb/ft. The system offers 50 per cent savings in floor space and may increase storage capacity by 100 per cent. To move shelves and open an access aisle, a "safety leash" is inserted into its own mated socket. A "safety sweep" deactivates the system if lightly depressed by something in the aisle. Spacesaver Corp., Ft. Atkinson, Wis.

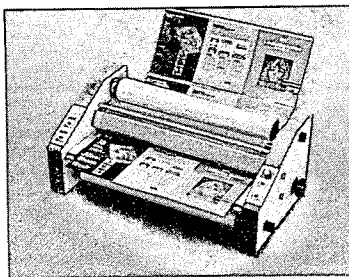
Circle 313 on reader service card



Luminaires

Curvilinear cutoff luminaires are designed for parking lots, streets and other sites. Standing 14 to 50 ft high, fixtures come in all HID lamp modes; wattages range from 150 to 1000. Ballasts are cooled by induced air circulation. Kim Lighting, City of Industry, Calif.

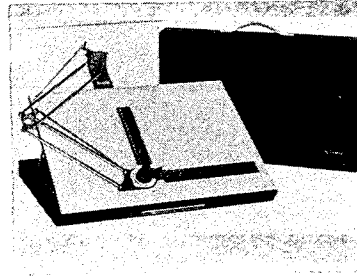
Circle 316 on reader service card



Laminating system

The GBC 270 Model 568LM laminator can accommodate items up to 27 in. wide and rolls of film up to 500 ft long. It also handles film thicknesses up to 10 mils. The system features independent heat controls, a cooling fan and a variable speed control. General Binding Corp., Northbrook, Ill.

Circle 317 on reader service card



Portable drafting kit

This portable drafting unit has a spring-balanced drafting machine mounted on a board that is part of an attache carrying case. Interchangeable scales, a protractor with a lock and an adjustable tilt support are included. Hunter Associates, Bridgewater, N. J.

Circle 318 on reader service card
Continued on page 149

Designing Quality Communications Systems!

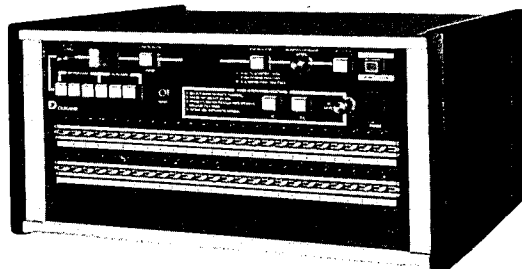
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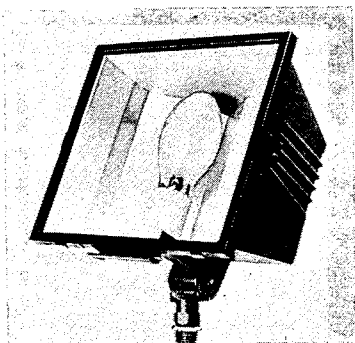
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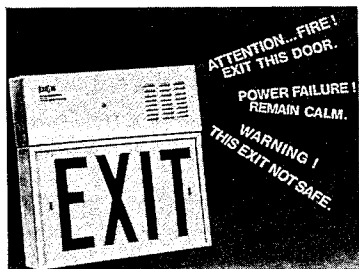
Circle 59 on inquiry card



Outdoor lighting fixtures

Ranging from 35 to 150W, SLA Mini-Flood HPS fixtures are said to require 85 per cent less energy per lumen than incandescent or quartz fixtures. Each unit weighs 7 lb, measures 8½ in. square and is housed in die-cast aluminum finished in Duraplex bronze. Keene Corp., Union, N.J.


Circle 314 on reader service card



Talking exit signs

Designed to help evacuate blind people from a building in an emergency, the "Multi-Lingual" talking exit sign enunciates the word "exit" in 2 languages. A choice of 13 languages is available. Other messages are available on the "Multi-Message" sign, which also has a public address function. Exit Us, Inc., Easton, Conn.

Circle 315 on reader service card

A black and white photograph of a woman in profile, looking out of a window. The window frame is visible on the left and bottom. The background is dark, and the lighting is dramatic, highlighting the woman's features.

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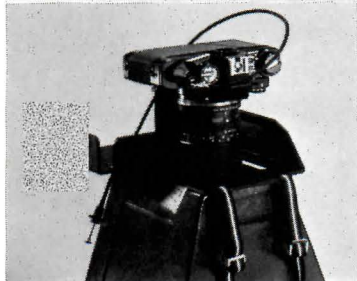
Circle 60 on inquiry card



Adjustable chair

The Graphic Arts Chair features an airlift seat height control and hand controls for seat and backrest adjustments. The seat tilts 18 deg and the backrest, with adjustable height, follows back movement to provide constant support. The five-prong base has safety casters that roll only when the chair is in use. The circular footrest is adjustable and arm supports are available. The seat and backrest are cushioned and upholstered in Dralon. Plan Hold Corp., Irvine, Calif.

Circle 319 on reader service card



Color CRT screen photos

The *Instagraphic* CRT imaging outfit can immediately produce color photos of static 12- or 13-in. CRT monitor screen displays on special color print film that has the same aspect ratio as the color monitors. Photos can be reproduced on most copiers to create black-and-white images. Adapter brackets (insert) allow a 35 mm single-lens-reflex camera to be substituted for the *Instagraphic* camera when slides or color prints are needed. Eastman Kodak Co., Rochester, N. Y.

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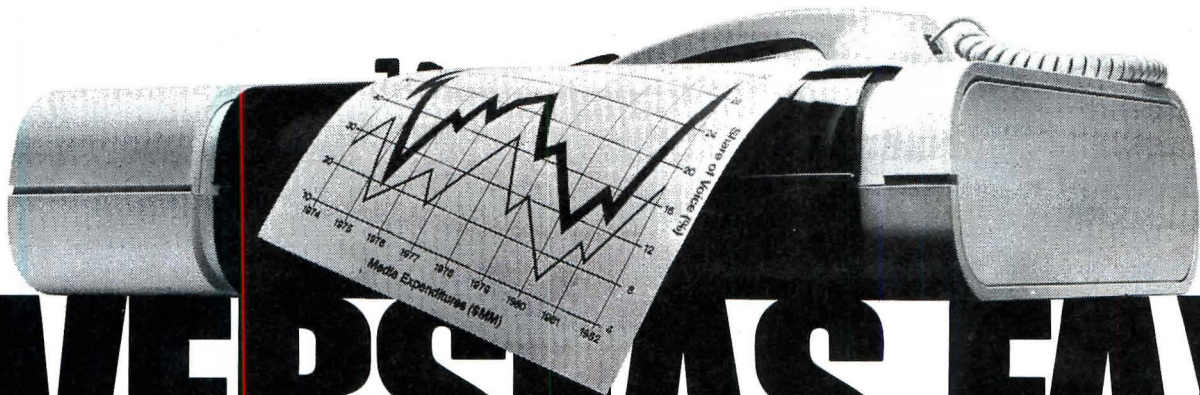
Jamison STC 51 doors tame the roar of powerful truck engines in 36-cell dynamometer testing facility. Custom-engineered, switch-controlled "guillotine" mechanism seals around overhead conveyor track that carries engines in and out of cells.

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