



MECKLENBURG COUNTY COURTHOUSE

MECKLENBURG COUNTY COURTHOUSE, BY WOLF ASSOCIATES

THE HARLEM SCHOOL OF THE ARTS, BY ULRICH FRANZEN

SAN FRANCISCO VICTORIAN HOUSE RESCUED, RESTORED AND RAISED TO A LANDMARK

TWO OFFICE BUILDINGS: A MINI-STUDY OF SPECIAL INTERIOR FOCAL POINTS

BUILDING TYPES STUDY: INDUSTRIAL BUILDINGS

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

MAY 1979

5

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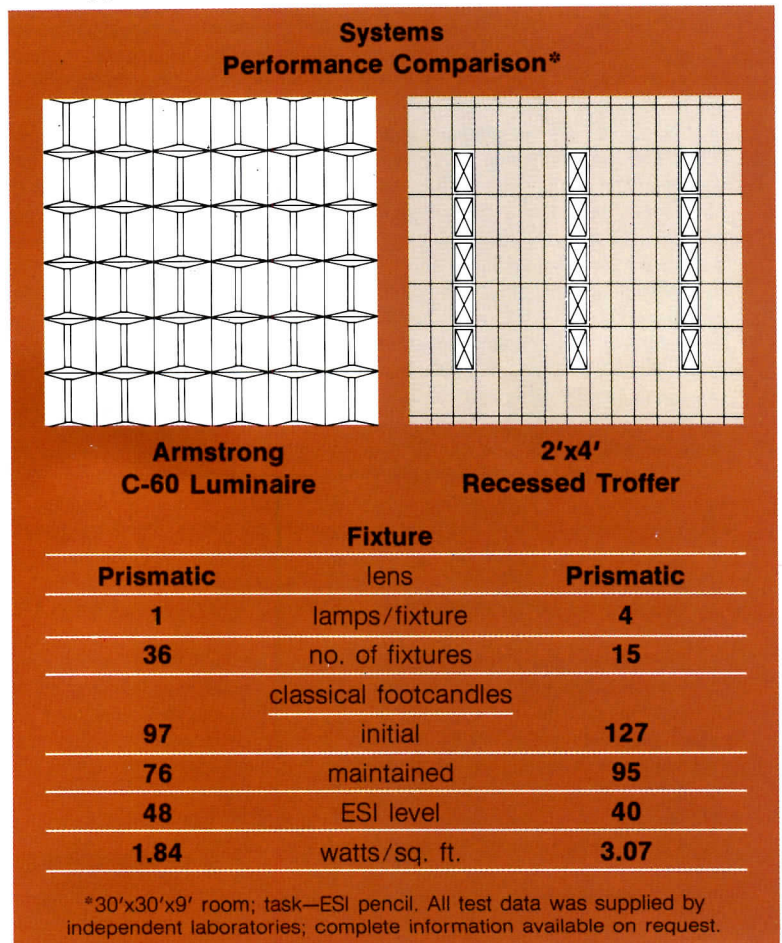
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The comparison data quoted here is part of our informative show entitled "Light Wars." It's a highly entertaining film that includes an explanation of ESI and a documentation of energy savings.



If you wish to see "Light Wars," or receive a free booklet on ESI and the C-60 Ceiling System, just write to Armstrong, Dept. 95NAR, Lancaster, Pa. 17604.



Circle 2 on inquiry card

Letters to the editor

Weld Coxe's article on future markets in your September 1978 issue (pages 69, 71) is very enlightening and encouraging. Of particular interest is his projection that behavioral-based design is likely to be a "bigger revolution than the energy market."

I don't believe, however, that we are only on the threshold of understanding how the physical environment influences human behavior. That threshold has been passed; it is now a problem of technology transfer. Currently this information is being employed in architectural programming, post-occupancy evaluation, and user participation in design, in both the private and public sectors.

Mr. Coxe's implication that the concept has not captured the public's imagination may be too conservative. In fact, some behavioral scientists are hired by design firms and listed on proposals to help attract business.

Our company's experience in construction management for young, small businesses shows that clients are very receptive to behavior-based design concepts and encourage their application, when this is shown to be cost-effective. For example, clients recognize that the degree of managerial informality and the involvement of supervisors in the daily operation of the organization are significantly influenced by the location of the supervisors' offices and the traffic patterns throughout the organization. Furthermore, they recognize that the more involved each of their employees is in the design of facilities, the more thorough the design, the more the design facilitates productivity, the smoother the transition into new quarters, and the greater the employees' cooperation and success in adjusting as building needs change.

Some critics who favor "architecture as a fine art" fear the scientific approach of behavior-based design, while other critics charge that the behaviorists are only displaying a systematic command of the obvious. Perhaps the moderate view of architecture as a social art is more acceptable and will present a framework for more systematic efforts to create physical environments that enhance and facilitate day-to-day activities.

Thanks for a fine article and a forum for response.

*C. Burgess Ledbetter, Associate
Soils & Structures
Lebanon, New Hampshire*

This letter is prompted by the news report carried in the March 1979 ARCHITECTURAL RECORD (page 37) analyzing the Carter Administration's 1980 budget as it might affect the building industry itself and the wider community of organizations and groups whose programs might be affected by Federal building programs.

Your article enumerated many Federal programs whose capital plant

needs would stimulate demand for buildings, building products and design services. The last paragraph, discussing the National Endowments for the Arts and for the Humanities, represents an altogether different kind of contribution by the Federal government to the building industry: the development of ideas and new concepts rather than demand for physical structures.

This last is a worthwhile inclusion, for ideas have consequences. But it also raises a question. If ideas from the arts and humane letters affect the future of building, do not also concepts from science and technology? That suggests, to me at least, that your analysis could include the Administration's proposals for building-related research expenditures.

I think you would do the building community a service if you were to include budget proposals for building research—from the basic studies related to building supported by the National Science Foundation, through the building research studies undertaken by the 40-plus mission agencies that either sponsor, regulate or insure building construction, to the Center for Building Technology's budget, one quarter of which comes directly from Congress (for developing long-term research competence) and three quarters of which is sent here by the mission agencies (for problem solving and near-term research).

One might argue that the dollar amounts are small—vanishingly small in some cases. But that might be newsworthy in itself: the building community should know the relative ranking of building research in the total R&D budget of the Federal government. And there is a precedent: the American Association for the Advancement of Science annually publishes such a digest for the general area of science.

*Francis T. Ventre, Chief
Environmental Design
Research Division
Center for Building Technology, NEL
National Bureau of Standards
Washington, D.C.*

Your February 1979 issue included a story on the Deere West Building in Moline, Illinois, designed by Kevin Roche, John Dinkeloo & Associates.

We would like to point out that Syska & Hennessy was the mechanical and electrical engineer for the project. AZCO Downey and L. K. Comstock, who are listed as the engineers, were in fact the mechanical and electrical contractors.

*Ann Hardeman
Syska & Hennessy, Inc., Engineers
New York City*

Correction

The address of the National Institute of Building Sciences, given in error in RECORD's February 1979 editorial, is 1730 Pennsylvania Avenue, N.W., Washington, D.C. 20006.

Calendar

MAY

7-10 International Conference on the Application of Computers in Architecture, Building Design and Urban Planning, "PARC 79," sponsored by AMK Berlin; held at the International Congress Center, Berlin. Contact: Ausstellungen-Messe-Kongress-GmbH, Abt. 11/3, Postfach 19 17 40, D-1000, Berlin 19.

16-18 "Effective Planning of Storage/Warehouse Facilities," sponsored by The University of Kansas; held at the Ramada Inn Central, Kansas City, Mo. Contact: Larry Vujnovich, K. U. Regents Center, 9900 Mission Rd., Shawnee Mission, Kans. 66206.

18-20 New York International Sculpture Fair, sponsored by Showcraft International, Inc.; at the New York Sheraton Hotel. Contact: Showcraft International, Inc., Box 468, Dedham, Mass. 02026.

19-20 Tour of Mesa Verde Indian ruins, "Origins of Architecture in the American West." Contact: Drake Jacobs, Colorado West Chapter, AIA, P. O. Box 4962, Aspen, Colo. 81611.

21-24 "Noise and Vibration Control of Mechanical and Electrical HVAC Equipment in Buildings," sponsored by Bolt Beranek and Newman Inc. Contact: Gloria Cianci, Bolt Beranek and Newman Inc., 50 Moulton St., Cambridge, Mass. 02138.

22 Seminar, "Design/Build & the Law (for Architects, Engineers & Owners)," The Halloran House, New York City. Contact: Charles E. Hamlin, ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020 (212/997-3088).

22-24 A series of one-day seminars: "Loss Control," "Premium Audits," "Preparation of Insurance Specifications" and "Umbrella Liability/Experience Rating," sponsored by RCI Communications, Inc., and International Risk Management Institute; Chicago. Contact: RCI Communications, Inc., 10300 N. Central Expressway, Suite 350, Dallas, Texas 75231.

23-24 Seminar, "Developing Design Opportunities in the Commercial Building Market," The Halloran House, New York City. Contact: Charles E. Hamlin, ARCHITECTURAL RECORD SEMINARS, (see May 22).

25-June 1 The New York School of Interior Design Annual Exhibition of Student Design Work. Contact: Nancy di Benedetto, Administrative Dean, New York School of Interior Design, 155 E. 56th St., New York, N.Y. 10022.

28-June 1 Silver Jubilee of the International Solar Energy Society, held in the Georgia World Congress Center, Atlanta. Contact: 1979 International Congress of ISES, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Ga. 30332.

JUNE

3-7 The American Institute of Architects 1979 National Convention, at Kansas City, Mo.

ARCHITECTURAL RECORD (Combined with AMERICAN ARCHITECT, ARCHITECTURE and WESTERN ARCHITECT AND ENGINEER) (USPS 132-650)

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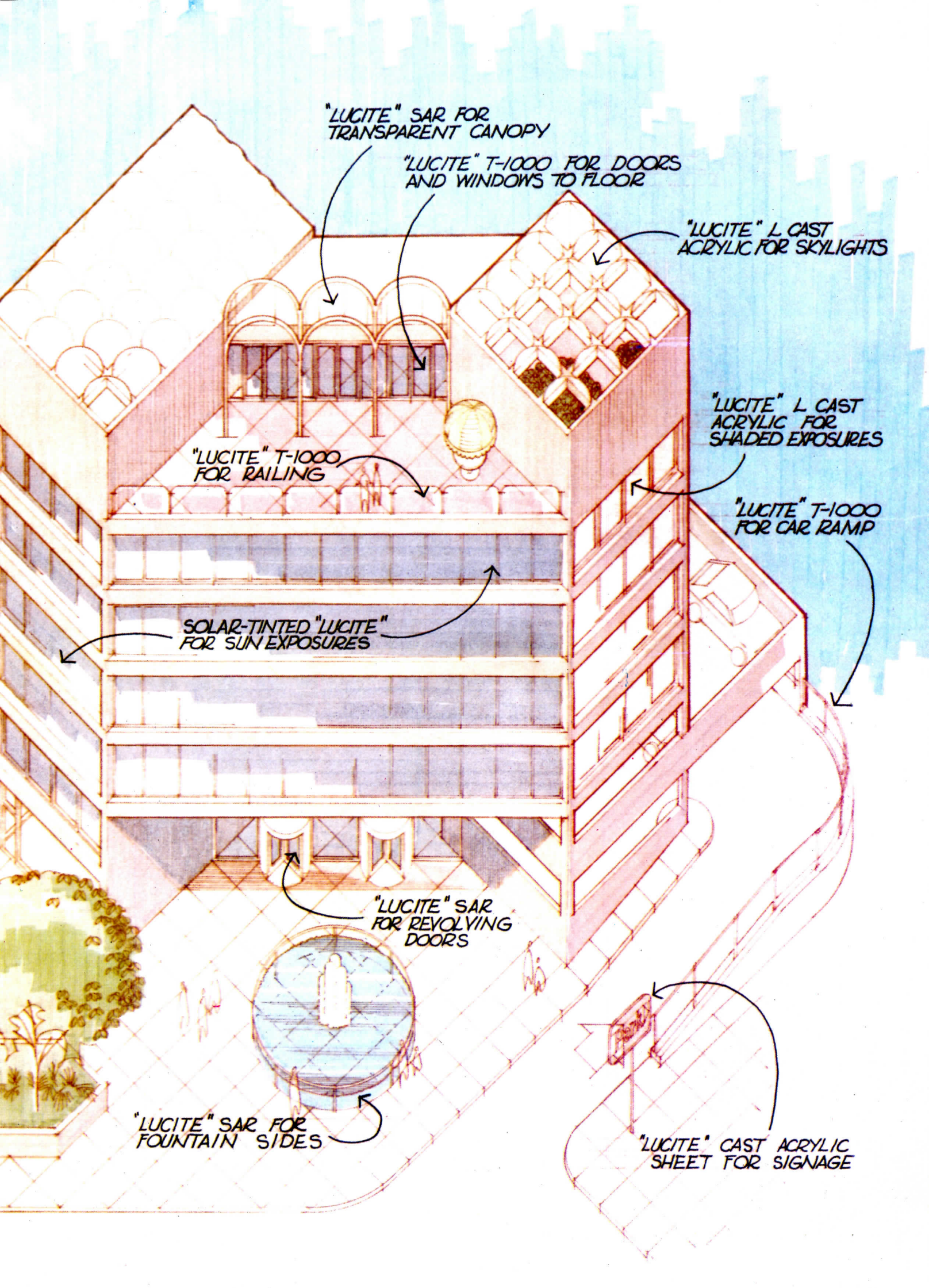
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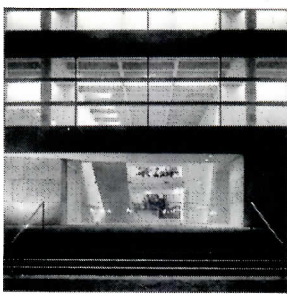
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SHEET FOR SIGNAGE



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THE RECORD REPORTS

13 Editorial

Random thoughts:
on U. S. building abroad,
on international reciprocity,
and on NEOCON

4 Letters/calendar

33 News in brief

Short items of
major national interest.

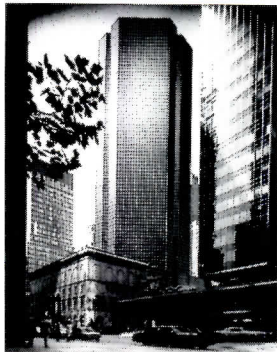
34 News reports

A proposal for a 49-story office
tower proves the last straw for
high-rise opponents in San Francisco.
President Carter appoints a Navy
expert on government procurement to
head GSA. Congress considers an
accelerated public works program to
be activated by high unemployment.
GSA renovates a landmark railroad
station in Nashville, Tennessee.

37 Human settlements: world news

40 Buildings in the news

Public Library, Billerica,
Massachusetts. Central Library,
Atlanta. Coliseum, Hartford,
Connecticut. 725 Fifth Avenue, New
York City. Park Avenue Plaza,
New York City. 180 Maiden
Lane, New York City. Israeli
Chancery, Washington, D. C.



ARCHITECTURAL BUSINESS

65 Construction management A partial guide to painless construction management projects

Part I of this two-part article by
San Francisco architects Herbert
McLaughlin and Cynthia Ripley focuses
on when to use a CM, and analyzing
the CM's qualifications.

69 Office management Designing the site to meet barrier-free goals

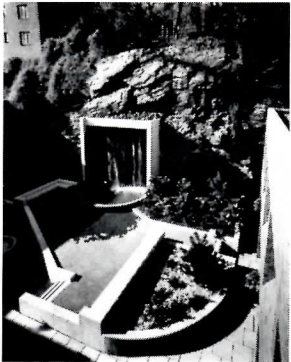
This second article in a series on
barrier-free design by Edward Steinfeld
provides some guidelines on site
accessibility, including parking,
walkways and site furniture.

73 Building costs U. S. construction costs up 8.5 per cent in six months

This quarterly report by McGraw-Hill's
Cost Information Systems
Division updates materials and wage
increases for 183 cities.

FEATURES

97 The Harlem School of the Arts, a cultural oasis by Ulrich Franzen
A concept of world-famous soprano Dorothy Maynor that has been long in the making, this school for Harlem children is now housed in a splendid new building, which Maynor regards as an oasis in an otherwise bleak environment.



Norman McGrath

05 A Victorian rescued—and raised to landmark quality
In San Francisco, a city long known for its preservation successes, a noteworthy 1876 Victorian house designed by architects Samuel and Joseph Newsom, has been saved from demolition and brought back to life. Architects Susan Bragstad of the San Francisco Redevelopment Agency and Peters, Clayberg & Caulfield collaborated on the restoration and remodeling.

09 Mecklenburg County Courthouse
Wolf Associates, architects
The new Mecklenburg County Courthouse in Charlotte, North Carolina, is remarkable for its pristine elegance and also for the debate it has stirred up over not just how a courthouse should work but what it should look like as well.

17 Two offices built around special interior spaces
In this mini-study two offices are examined in regard to their mutual design thrust—the focusing of views inward on carefully designed interior spaces. The first building was designed by Raymond, Rado, Caddy & Bonington, the second by Loebel, Schlossman & Hackl, Inc.

BUILDING TYPES STUDY 530

125 Heavy duty delights
Industrial buildings—those in which products, or their various components, are researched, manufactured, warehoused, or repaired—are proving to be a “good bet” in the 1979 construction market. The tightening utilization of space that came on line last year, exceeding 85 per cent of capacity, is predicted to call up about 220 million square feet of new space this year—not a staggering leap over the 200-million level of 1978 but, with business wringing its hands over the economy, an impressive development nevertheless. Six swell industrial types are sized up in this section.

126 Cerritos College Auto Technology Center
Norwalk, California
William L. Pereira Associates, architects.

128 IBM France Research Center
La Gaude, France
Marcel Breuer Associates, architects.

130 Deere & Company Atlanta Branch and Parts Distribution Center
Conyers, Georgia
Heery & Heery, architects.

132 Monsanto Environmental Health Laboratory
St. Louis, Missouri
Holabird & Root, architects.



134 Hollister Inc.
Stuarts Draft, Virginia
Holabird & Root, architects.

136 Edward Weck and Company
Durham, North Carolina
Eugene F. O'Connor, architect.

138 Standard Brands Research Center
Wilton, Connecticut
Warren Platner Associates, architects.

ARCHITECTURAL ENGINEERING

141 Tilted walls for a Mideast hotel pose tough design problems for structural engineers
Special care had to be exercised in the design of the base of the structure to ensure that deflection of guest-room wings would be minimized, and in the design of the atrium glass wall to account for wide swings in daily temperature.

147 Product reports

190 Required reading

215 Office notes

215 Classified advertising

216 Advertising index

219 Reader service inquiry card

NEXT MONTH IN RECORD

Building Types Study: Schools

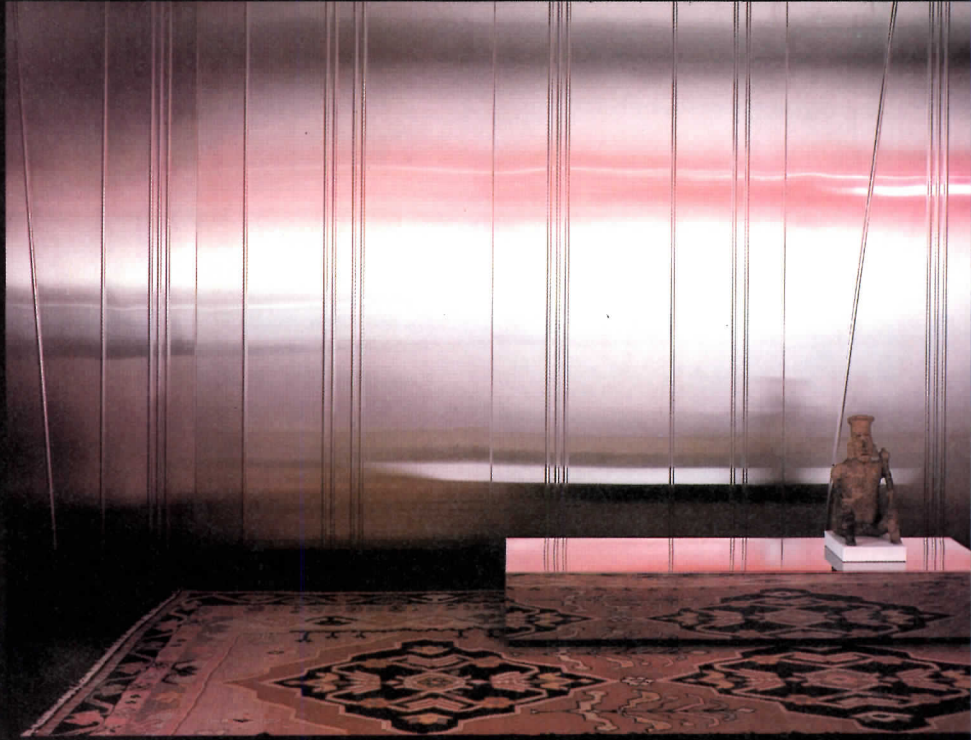
In spite of continuing reports that the student population in the United States is on the decline, schools continue to represent a lively segment of the construction industry. This is no doubt a product of changing demographics, with more and more schools being needed as various segments of the population move from one place to another. Important, too, are new developments in educational theory which demand new kinds of schools. The June Building Types Study will feature a collection of schools that show these developments, and also how recent trends—like the open classroom, or the multi-use, eighteen-hour-a-day school building—are beginning to be consolidated and assimilated.

New Forms in Metal

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FORMS + SURFACES

Random thoughts on U.S. buildings abroad on international reciprocity, and on NEOCON

■ We all spend so much time criticizing our government that it is really enjoyable to be able to praise something that is happening; viz. the very productive effort to bring better and more appropriate design to our embassies and other government buildings built overseas. Very much involved in this productive effort is Bill Slayton, until about two years ago the executive vice president of the AIA and now deputy assistant secretary for foreign buildings of the State Department. One of his major functions within the Foreign Buildings Office is the choice of architects, which seems a particularly appropriate responsibility for a man who must know more architects than almost anyone and have listened to more discussions about good architecture and the problems of creating it than anyone. Slayton is now the final step in an architect selection process that seems to have functioned well and to the satisfaction of the profession for some years: From the list of architects who have applied for or been recommended for these commissions, three consultant architects (currently Donald Lethbridge of Washington, D.C., Don Emmons of California, and O'Neil Ford of Texas) provide the director with a selection of firms they feel best suited to the job at hand. Slayton selects firms from the list for interview, and in consultation with FBO staff architects and the concurrence of the Department's assistant secretary for administration, makes a final choice.

In addition to appropriate concerns for earthquake protection, energy conservation, and security (in the face of increasing violence around the world), Slayton is directing all architects currently at work to strive for design that will be well received by the host countries—clearly a direct response to criticism in the past that some of our government buildings (particularly embassies) are either too fortress-like, or seem to flaunt our relative opulence in poor countries.

The architects now at work around the world for the State Department set—in one editor's opinion—a very high standard of design skill; and range from big firms through (mostly) middle- to small-size, to at least one one-man office with a major assignment.

To the extent that architecture can represent us in countries around the world, I think our in-progress overseas Federal buildings will be a good representation. And for that, three cheers to the Foreign Buildings Office and to Bill Slayton.

■ On another matter international: At the fifth annual meeting of the Joint (that is to say international) Committee on Architectural Registration, its chairman and past-president of the NCARB Paul Graven proposed a "performance standard" method of reciprocal registration be set up in place of the "prescriptive standards" of education, training and experience, letters of recommendation, published articles, photos and drawings of work and so on that are in place today and that vary from country to country.

The philosophy on which this proposal was put forward is very simply that a good architect is a good architect, anywhere in the world. As Mr. Graven put it: "Why wouldn't it be a good idea to remain faithful to our main objective—namely, to work toward international reciprocity for all qualified architects—but meanwhile to recognize the needs of those individuals . . . who are clearly qualified to execute an architectural commission wherever it is offered; and who in fact receive such opportunities. . . ."

"This is an idea," Mr. Graven concluded, that should appeal to our architectural rather than to our bureaucratic instincts." It is also an idea that seems to make a lot of sense—for most invitations for Americans to practice abroad or for foreign architects to do a building here do tend to go to experienced—and generally distinguished—architects.

■ NEOCON XI—the National Exhibition of Contract Interior Furnishings—takes place this year on June 13th through 15th. We have an expanded Products Report section in this month's issue—but cannot hope to give more than a hint of the literally thousands of products for architectural interiors that will be on display in the sprawling Merchandise Mart. And in addition to the show, this year NEOCON will again offer a fine series of seminars—on interior adaptive re-use, on retrofitting hospitals, on office procedures, on revitalizing downtown hotels, on the impact of behaviorism on interior architecture, on selection and extending the life of contract carpeting, on the architect as interior designer, on power delivery in the open office landscape, on restaurant design, on the impact of the word-processing revolution. This is all architect talk—and there's no better place to get ideas on your interior design work and to see the products that are available than at NEOCON. Details are available from the Merchandise Mart by calling 312/527-4141. —Walter F. Wagner, Jr.



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*T.M. Reg. O.-C.F. Corp. **T.M. ©O.-C.F. Corp. 1979

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“Steel gave us the design flexibility needed to sensitively match the new with the old, and do it at a cost that this subsidized housing development could afford.”

Samuel E. Mintz, President
Mintz Associates Architects/
Planners, Inc., Boston
Project: Christopher Columbus Plaza

The owners of this 151-unit housing project wanted a building that would be economical and functional, yet be sensitively designed for its elderly inhabitants. The 155,000-psf structure also had to satisfy HUD requirements. The prominent Boston historic site demanded that the new building be compatible with the neighboring buildings and Waterfront Park.

Steel offers lowest overall cost

“Structural steel was chosen for this project based on economics,” explains Eugene W. Hamilton, P.E., Engineers Design Group, Inc. “Several structural alternates were compared, including a cast-in-place concrete frame and pre-cast concrete floor units on masonry bearing walls. When factors such as foundation costs, parking requirements, and speed of construction were considered, structural steel was found to be the most economical choice.”

Two-way steel frame

The structure consists of steel open-web joist supported floors and a structural steel frame. Lateral forces in the longitudinal direction are taken totally by the exterior wall frames. Full moment connections are required in this portion of the design. Lateral forces are taken into partial moment connections at the exterior columns and full mo-



“Steel permitted construction to take place in severe winter weather,” says Mr. Mintz. “If cast-in-place concrete had been used, we would have had to delay this much needed and long-awaited project an additional three to four months.” Bethlehem furnished more than 400 tons of structural shapes for the \$4.4 million project.

ment connections at the interior columns of the transverse frames. Partial moment connections are adequate because of the multiplicity of transverse bents.

The fire-resistive floor system consists of 28-gage steel centering supported on H series steel open-web joists, spaced at 2 ft on center, topped with 3 in. (total thickness) of reinforced concrete. A gypsum wallboard ceiling is attached directly to the joists to complete the fire-resistive assembly.

Sales engineering services

Bethlehem's District Office Sales Engineers are available to provide practical professional, and prompt assistance. And they're backed up by a Buildings Group that can provide budget cost information for the total “system package” of a structure under study. Get in touch with the Bethlehem Sales Engineer nearest you. Bethlehem Steel Corporation, Bethlehem, PA 18016.

Inflation accelerated in construction costs, reaching a rate of 12.3 per cent in the year ending March 1979. This figure compares with an 8.5 per cent rate a year earlier, according to the Dodge Cost Services Department of McGraw-Hill Information Systems Company. Increases averaged 15.4 per cent in the cost of materials and 7.7 per cent in the cost of labor, with the Pacific Coast and the Rocky Mountain States showing the greatest inflation—15.4 per cent—and the New England States the least—7 per cent.

Despite inflation and other economic constraints, construction contracts set another record in February, reports the F. W. Dodge Division of McGraw-Hill Information Systems Company. "High interest rates and severe winter weather, which are blamed for the recent drop in one-family housing starts, have not had any apparent effect on the boom in general building activity," noted George A. Christie, Dodge's chief economist. "For the past six months, the average rate of commercial and industrial contracting—in physical volume—has equalled the very peak rate reached during the 1973-74 capital-spending boom," he added. Nonresidential building rose 38 per cent above last February, and though housing rose 20 per cent over the same period, Mr. Christie credits inflation for that increase.

Congress has called a halt to new Federal construction, building alterations and leasing while it drafts legislation to tighten up GSA procedures. The moratorium, which is scheduled to last for the rest of the calendar year, will not affect projects already under way. Details on page xx.

Despite reductions in spending for government construction, the field remains lucrative for innovative architects, Federal procurement officials said at a recent COFPAES meeting. They also said that the government will stress energy efficiency, environmental protection, historic preservation and barrier-free design. Details on page xx.

Lewis Mumford will expound his architectural and urban philosophy on the Public Broadcasting System May 22. During the 90-minute special "Lewis Mumford: Toward Human Architecture," says PBS, the critic discusses such topics as "the quality of city life, the mentality of the suburbs, the way we deal with the rich and the poor, the way we deal with the past, and how we are giving over many of life's choices to the domination of blind technology."

The President has nominated Rowland G. Freeman III to head the General Services Administration. Adm. Freeman, who is at present commandant of the Defense Systems Management College at Fort Belvoir, Virginia, brings with him a reputation as an expert on the Federal acquisitions process. Details on page xx.

The Administration wants to combine the built and the natural environments in its preservation efforts, allowing building preservationists to take advantage of the natural environmentalists' superior political power. A proposed bill would also add ethnic neighborhoods to the National Register of Historic Places. Details on page xx.

The American Institute of Architects has moved its 1981 national convention from New Orleans to Minneapolis. The decision of the board of directors honored a resolution offered by feminists and passed by the membership at the 1978 convention to schedule future conventions only in states that had ratified the Equal Rights Amendment, although the board did not refer to ERA in its announcement, and in fact re-scheduled the 1983 convention in New Orleans. (Other convention sites named include Cincinnati in 1980, New York City in 1982 and Phoenix in 1984.)

A House committee presses for a program of accelerated public works to fight sustained high unemployment, calling for \$2 billion in stand-by authorization and automatic activation. Details on page xx.

The National Fire Academy sponsors a five-day course on Fire Safe Building Design for architects and designers. The course, presented earlier in San Francisco and New Haven, Connecticut, will be offered June 25-29 at Georgia State University, Atlanta, and August 13-17 at the University of Minnesota, Minneapolis/St. Paul. For information: Student Enrollment Section, National Fire Academy, P. O. Box 19158, Washington, D.C. 20036 (203/634-7541).

The General Services Administration and GOSSTROY have compiled a Russian-English glossary of construction terms. (GOSSTROY is the Soviet counterpart of GSA.) The 95-page booklet, developed by the joint U.S.-U.S.S.R. Committee on Cooperation in the Field of Housing & Other Construction, is available for \$2.50 from the U. S. Government Printing Office (stock number 022-000-00175-2).

The School of Architecture at Mississippi State University seeks papers for "A Chautauqua in Mississippi." The assembly, subtitled "Order and Image in the American Small Town," will meet on the university campus October 3-5. Subjects may focus on the humanities, design, the social sciences, governmental organizations or other related topics. Abstracts or manuscripts are due by June 1. For information: School of Architecture, P. O. Drawer AQ, Mississippi State University, Mississippi State, Mississippi 39762.

Congressional bill proposes accelerated public works program to be triggered by prolonged unemployment

An accelerated public works program that would be automatically activated by a sustained period of high unemployment is under consideration by a Congressional committee.

The House Committee on Public Works and Transportation—the panel that drafted the original local public works program—sees a need for the stand-by program, even though the construction industry is presently suffering few economic woes.

Arguing for the authority, committee members cite the delays caused when Congress has to go through both authorization and ap-

propriations processes. The impact of these delays would be worsened, they reason, by the need for a quick activation.

As presently envisioned, the program would provide \$2 billion in stand-by authorization and would emphasize what the committee calls “soft” public works—mainly the rehabilitation of public buildings.

The beneficiaries of the money would be state and local governments. Under the new program, they would apply for 100-per-cent grants from the Commerce Department’s Economic Development Administra-

tion. Only those projects that could start quickly—usually those “soft” jobs with designs prepared and sites selected—would get high priority.

The committee has not resolved a couple of uncertainties: first, whether the program should trigger activity when unemployment reaches 7.5 or 8.5 per cent, and, second, whether activity should begin at the end of one or two quarters of such high unemployment. It would also like to figure out a way to activate the program regionally instead of nationally, since economic slowdowns often begin in one section of the coun-

try before spreading elsewhere.

The committee acknowledges that it is having trouble drumming up enthusiasm for the proposal—largely, members suspect, because the nation’s lawmakers are more interested in battling inflation than in warding off an economic downturn.

So far, the Public Works Committee has failed to convince the House Budget Committee to include the stand-by authorization in its budget resolution. If it fails at that, the entire proposal could sputter out. — *William Hickman, World News, Washington.*

Congress puts moratorium on GSA building activity

A Congressional committee, miffed over what it sees as lax management at the General Services Administration, has slapped a moratorium on new construction, major alteration and leasing of Federal buildings.

A spokesman for the Senate Committee on Environment and Public Works says the moratorium will remain in place “until the end of this calendar year,” while members draft amendments to the Public Buildings Act to tighten GSA procedures.

The action does not stop projects under way—it withholds Congressional authority to begin new ones. But GSA says it has \$857.8-million worth of contracts and leases in the pipeline that it was planning to seek approval for this year.

According to agency figures, 128 projects are included in the freeze, and new construction accounts for \$474 million of the total amount.

The Committee has not clearly defined its concerns over GSA procedures. It does, however, worry about an increasing tendency to lease space rather than build it. It does not think the agency is thorough enough in its reports to Congress on project plans. And Committee sources say there is a general lack of confidence in the agency’s space acquisition processes. — *William Hickman, World News, Washington.*

Officials see Federal work for innovative designers

Despite limitations on Federal spending for new building projects, the Federal marketplace for private architects and engineers remains lucrative. To tap this market in the future, however, the private firms will have to be more innovative and more responsive to design trends.

This is the message hammered home by the design-services buying staffs of 30 Federal agencies at a recent meeting of the Committee on Federal Procurement of A-E Services (COFPAES) in Denver.

The Federal officials say that

future projects will place greater stress on energy efficiency and protection of the environment. There will be more emphasis on historic preservation, post-construction maintainability, urban and transportation planning, and designs that impose no barriers on the handicapped.

Agency officials also say there will be a concerted drive to find new firms for the Federal work, in the interests of design diversity and of spreading the Federal design dollar.

Architect David R. Dibner, assistant commissioner of General Services Administration’s Public Buildings Service, offered one example of higher anticipated spending for A-E services. He says a 1978 law creating an additional 152 Federal judges means GSA must find courtrooms and chambers for them. Most will be housed in existing Federal buildings, but GSA will have to spend some \$50 million from its repairs and alterations budget to adapt space to the judges’ needs. — *William Hickman, World News, Washington.*

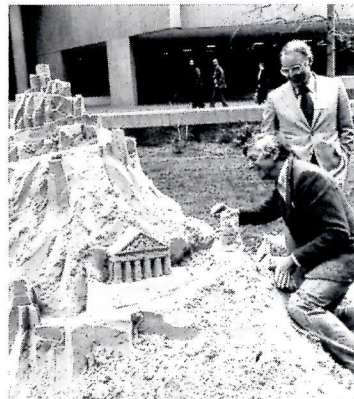
President nominates admiral to take over as GSA head

A Navy admiral billed as an expert on Federal acquisition has been nominated by President Carter to head the General Services Administration.

He is Rowland G. Freeman, III, who has been commandant of the Defense Systems Management College at Fort Belvoir, Virginia. If he is confirmed, as expected, by the Senate, he will succeed Jay Solomon, who resigned the position effective March 31.

Adm. Freeman, 57, a former Naval flier, has pledged to continue investigations into charges of corruption at the agency.

Though Mr. Solomon spent much of his time toward the end of his term investigating the scandals that have rocked GSA in recent months, he was also active in increasing GSA’s awareness of historic preservation and in promoting better design by architects and engineers employed by the agency. — *William Hickman, World News, Washington.*



Design-build sandcastle opens toy exhibit at AIA

To open its exhibit on building toys, the American Institute of Architects Foundation enticed a number of grown-ups to come over and play.

Perhaps the biggest media event of the day was architect Hugh Newell Jacobsen’s eclectic sandcastle, which he sculptured in the Octagon garden. The castle, which incorporated Classical, Gothic, and Jacobsenesque elements, required masonry fixative to stabilize it during construction in a drizzling rain on April 3.

A band of Mr. Jacobsen’s playmates worked with commercially distributed building toys. Washington architect Nicholas Pappas built Philip Johnson’s glass house with Lincoln Logs, and Peter Ksietepolski, a partner of I. M. Pei, built a funhouse with Fischertechnics, a German toy. Architect Avery Faulkner and his son used Froebel Blocks to construct an English fishing village, The Architects Collaborative used Erector Sets to construct a space station, and Donald R. Myer, of the Washington Fine Arts Commission, used Tinkertoys to recreate the Octagon itself.

A Wrightian spirit hung over the show, as well. The Froebel Blocks had, of course, a seminal influence on Frank Lloyd Wright’s architectural thought, illustrating that building toys have importance beyond mere play. Moreover, it was FLIW’s son John who invented Lincoln Logs.

“Just for Fun” continues through June 17 at the Octagon’s galleries in Washington, D.C.

Competition offers \$10,000 for Les Halles design

Ten years ago, farmers and food merchants decided, or were persuaded, to leave the historic market at Les Halles in the center of Paris and to take up new quarters in the outlying parts of the city. Much of the old building was destroyed, and the abandoned site has ever since been the subject of projects, disputes and design competitions. But the 40-acre site still remains undealt with.

Recently, however, Mayor Jacques Shirac resolved that a large park should occupy the site. The Syndicat de l’Architecture, a union of youngish practicing architects, angered that “secret” decisions ignored the interests of neighborhood inhabitants, that “the heart of Paris has been ripped open to receive an insipid nonentity,” and that “architecture has been banished” from the Halles district, plans to offer a counterproposal, which it will select through an international competition.

The stated goals of the competition are to re-establish the place of architecture in defining the quality of public space, to reinforce the symbolic importance of the site, and, not least, to provoke public debate.

The competition, open to architects and to architectural students, will award a first prize of \$10,000, as well as an indefinite number of honorable mentions for \$2,000 each. Approved by the International Union of Architects, the competition will be administered by ACIH (*association pour la consultation internationale pour l’aménagement du quartier des Halles*) and the magazine *l’Architecture d’Aujourd’hui*.

Purchase of the program (available in both French and English), for which architects will pay \$60 and students \$30, is equivalent to registration. Closing for registration is July 31, and deadline for entries is October 17. The Syndicat will announce winners November 15 and open an exhibit of all entries the next day.

Inquiries should be addressed to ACIH, 50 Rue de l’Arbre Sec, 75 001 Paris, or *l’Architecture d’Aujourd’hui*, 75 Rue de Wagram, 75 107 Paris.

New law would combine Federal preservation efforts

The Federal government's historic preservation functions, which now deal with the built environment, may soon be combined with a new effort to protect natural areas such as swamps, forests, deserts and mesas.

Such a combination should mean more clout for preservationists because they would gain an ally in the politically astute environmentalists.

Legislation to accomplish the merger was due to be sent to Capitol Hill in April. It would expand the National Register of Historic Places to include ethnic neighborhoods and create a new National Register of Natural Areas—both registers would be administered by the Interior Department's Heritage Conservation and Recreation Service.

Also included in the proposal are provisions for additional protection of historic buildings and natural areas from damaging encroachment by Federal projects or local projects that receive Federal aid.

The origin of the legislative proposal can be traced to May 1977, when President Carter called for a "thorough re-examination of existing Federal programs dealing with our natural and historic heritage." Interior Secretary Cecil D. Andrus then set up a special task force of Federal, state and private historic preservation and conservation officials. The recommendations of the task force have gone through two legislative drafts,

the first of which was proposed to Congress last year only to die when Congress adjourned. The new version of the legislation is given a better chance of success, though Congressional consideration will probably consume many months.

Meanwhile, the National Trust for Historic Preservation, the Federally chartered and partially Federally funded organization of preservationists, has launched a new fund-raising campaign tied to the theme that "preservation is good for business."

Trust President James Biddle is addressing civic and business groups across the country, citing examples of companies that have restored and adapted old buildings for new and economically viable purposes.

While contributions to the Trust (60 per cent of the annual budget comes from private sources) have not fallen off in recent years, there is some concern because contributors are increasingly earmarking their offerings for specific functions or projects. Fund-raising specialists say the earmarking phenomenon is being experienced by many organizations.

And earmarking does result in a squeeze on unobligated funds needed to maintain the headquarters staff. The staff is exploring ways to mitigate the damage, perhaps by establishing special funds for such functions as publishing. —*William Hickman, World News, Washington.*

GSA saves another railway station—this time in Nashville

Even though the General Accounting Office has raised some questions about the legality of the General Services Administration's program of adaptive use for railroad stations (see RECORD, March 1979, page 37), GSA has saved some notable buildings.

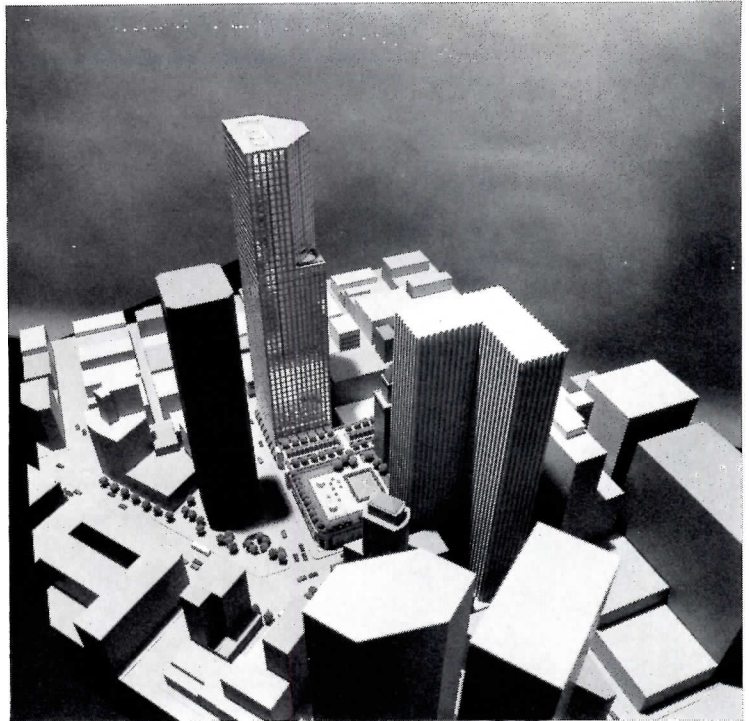
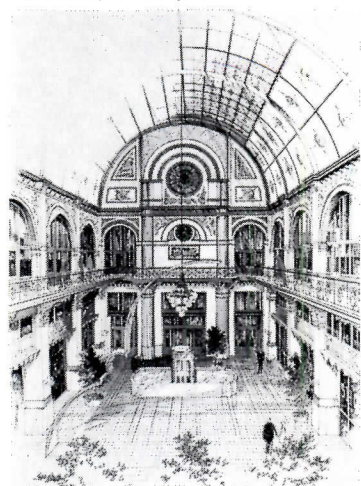
One of the Administration's current projects is Union Station in Nashville, Tennessee. Memphis architects Walk Jones & Francis Mah, Inc., who won the government's competition for the project, have designed a renovation that incorporates retail space on the ground floor and mezzanine, a public restaurant in the basement, and government office space on the upper floors.

The primary area of restoration, the architects report, will be the three-story lobby that occupies the center of the building. Its elaborate ornament—frescos, cornices, sculptured capitals, metal railings and stained glass—will be restored or reproduced. The space was designed some 70 years ago by an engineer with the L&N railroad. Says Charles Daily, partner in charge of the project, "First he knocked off the design of a Philadelphia station and reduced its scale—then he stayed with it for years till it came out the way he wanted."

To increase the office area, the

architects will adapt the attic under the mansard roof. Originally intended only to house the roof's wood trusses, the space offers uncommon opportunity for novel lighting effects, taking natural light not only from above through the main skylight and from the sides through dormers, but also from below through the protected skylight over the lobby.

In the basement, the architects hope to adapt "huge" boilers and coal bins as a bar and booths. "If you go in with an open mind," says Mr. Daily, "you can find an enormous availability of unique uses."



In San Francisco, citizens campaign against high-rises

The future of San Francisco's skyline, a controversy dormant since the early 1970s when environmentalists unsuccessfully challenged high-rise development, has again become a hot issue as the coast city undergoes the biggest downtown building boom in its history. Most of the ten skyscrapers already under way probably will be completed on schedule, but the fate of some eleven proposed office towers is shrouded in a cloud of debate thicker than San Francisco's famous fog.

Noisy public reaction to one building, a quiet courtroom battle about another, and an initiative campaign to place an anti-high-rise measure on the November ballot have added up to a tricky urban planning climate that may affect development for years to come.

The most visible case is Crocker National Bank Corporation's proposed Northern California headquarters, a 49-story steel-frame tower designed by Skidmore, Owings & Merrill's San Francisco office (in center of photo above). Plans for the 700-ft structure were in trouble from the day they were unveiled last January because Crocker, which wants to centralize its banking activities in a single tower on part of a block-square downtown plot, chose a section of the site zoned with a 500-ft height limit. Crocker chairman Thomas Wilcox, claiming the bank was "sensitive to the needs of the city," said the building reflected "better urban planning" because it would not be placed on an allowable corner of the site, where it would face other towers across the intersection and create a wall of monoliths.

But fearing that the variance Crocker sought for the extra 200 ft of its building would open the door for more high-rises in the low-zoned

areas, skyscraper opponents voiced noisy protests against the bank and launched an initiative campaign to put a height limit measure on the November ballot.

Faced with growing opposition to its proposed tower, virtually assured of a long fight to win a variance from the city's planning commission, and admittedly concerned about its public image, Crocker announced March 19 that the building plans were going back to SOM for redesign.

Said Crocker vice president David Sampson, "Our tower seemed to crystallize the concern people had about where the city was going with high-rise development. We represented the last straw." Noting that Crocker has spent "109 years building good relations with the people of San Francisco," Mr. Sampson said that pushing for a tall building where it wasn't wanted "just isn't worth the risk of ruining our reputation."

Even if Crocker hadn't scaled down the building, it was sure to be affected by the passage of the proposed anti-high-rise measure. Gerald Cauthen, president of San Francisco Tomorrow, the environmental group sponsoring the initiative, explained that the issue "involves more than just saving views. People are reacting to congestion, to the loss of historic buildings, and to a downtown that is getting drearier, darker and windier."

Moreover, Mr. Cauthen, a traffic engineer, estimates that within 12 years, 100,000 more people will be working downtown, a 50 per cent increase. There is insufficient space, he says, to accommodate them on existing bridges, highways, streets, parking lots and public transit.

The proposal would place sev-
continued on page 37

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eral restrictions on downtown development, among them:

- Height limits: the city planning code currently permits buildings of varying heights, up to 700 ft. The draft initiative would lower current limits to 260 ft—or 20 stories—in the downtown area, with even lower ceilings in other areas.

- Bulk limits: expressed as Floor/Area Ratio, the current downtown limit is 14 to 1. The initiative would reduce FAR downtown to 8 to 1. Abolished under the measure would be the "bonus system," which currently allows developers to exceed the FAR limits if they provide public amenities such as pedestrian malls or transit-access corridors. However, the new plan would allow bonuses under special circumstances, or if developers add housing to their plans or preserve a historic building.

Opposing anything it regards as an "excessive regulatory measure" is the city's Chamber of Commerce, which claims that office towers expand the tax base, reduce unemployment, increase transportation efficiency, conserve energy and reduce residential taxes.

But according to city assessor Sam Duca, some "75 per cent of the property-tax burden is borne by residential properties." High-rise opponents also claim that since California's Proposition 13 rolled back property taxes, commercial-industrial properties no longer pay as much as they once did.

Another case typical of the current mood in San Francisco involves the construction of the fourth and final tower of David Rockefeller's and John C. Portman's 8.5-acre Embarcadero Center project near the city's waterfront. Even though site preparation has been under way since early January on the 45-story tower, San Francisco planning commissioner Charles Starbuck seeks to stop the project.

At issue is the project's lack of an environmental impact report (EIR) and its disparity with the urban design plan for San Francisco; when the development agreements for the \$300-million Embarcadero Center were signed a decade ago, EIRs weren't required. And the city's master plan—which limits building size near the waterfront—was not adopted until 1977.

Despite the specter of height limits and lengthy court battles for new high-rise construction, San Francisco is likely to remain a popular West Coast corporate address. Some observers warn, however, that if the city is too tough, there are two extremely attractive alternative cities—Oakland and San Jose—nearby, both aggressively searching for new resident corporations. But as one corporate official confided to an interviewer, "It just doesn't have the same zing to say your headquarters are in Oakland." — Tom Baake, *World News*, San Francisco.



Nigeria chooses an uninhabited site in the interior for her new capital city

For reasons both political and demographic, Nigeria will build a new national capital city in the center of the country.

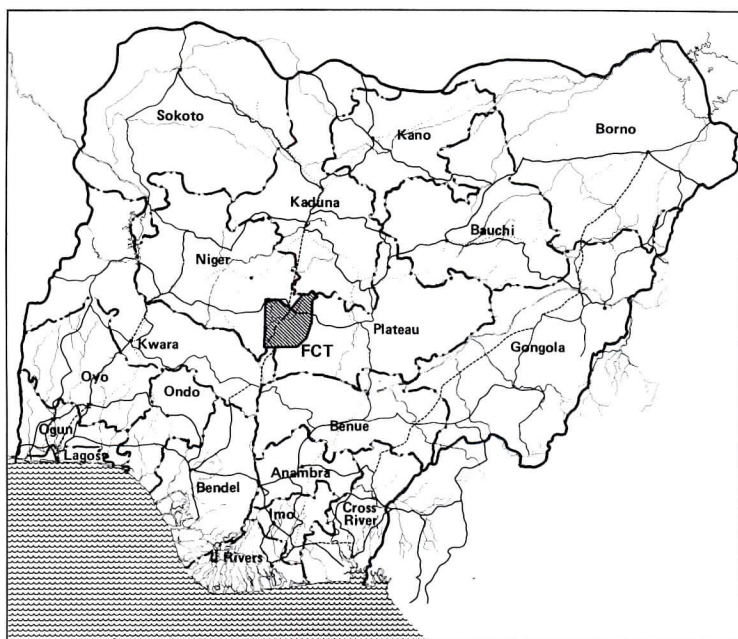
The political motives were given a strong push by Nigeria's Draft Constitution, which calls for a new federal capital to achieve a number of goals: recognition of "the diversity of the people," the promotion of "national integration," "the formation of associations that cut across ethnic, linguistic or other sectional barriers," and the fostering of "a feeling of belonging, and of Nigerian peoplehood."

Beyond the symbolic value of a new capital city, however, lie practical, even pressing, demographic concerns. A 1975 Nigerian study committee found Lagos incapable of functioning simultaneously as the national capital and as a state capital, a situation aggravated by inadequate land for development.

Moreover, Nigeria, like much of the rest of the world, feels the dual pressures of population growth and urbanization. Nigerians, inhabiting Africa's most populous nation, now number an estimated 75 million, and expect to number 120-140 million by the year 2000. And though population is now only about 20 per cent urban, the current urbanization rate will increase this figure to 45 or 50 per cent in the next 20 years.

In any case, Nigeria, unlike much of tropical Africa, has an indigenous urban tradition, beginning with the precolonial establishment of mercantile cities to accommodate the trans-Saharan trade, and continuing with colonial cities oriented to the export market.

In 1976, the Nigerian government, on the recommendation of a Special Committee on the Location of a New Capital, decreed the boundaries of a 3,600-sq-mi Federal Capital Territory. The FCT is almost exactly in the center of the country, equidistant from all areas except the far northeast corner. It occupies one of the least populated districts in the coun-



try, and lies between the dry area to the north and the hot, humid lowlands to the south.

The physical geography of the FCT consists of a tilted plain, rising from an elevation of 300 ft in the southwest to 2,000 ft in the northeast. Rocky knobs and inselbergs and several low mountain ranges emerge from the plain.

Seeking a site within the FCT for the new city, the Federal Capital Development Authority and its consultants had to consider a variety of natural, manmade and policy constraints. Within a greenbelt established around the periphery of the territory to discourage uncontrolled development, they found three sites, defined by surrounding mountains, that were suitable for building and large enough to accommodate 1.6 million residents, the capital's goal for the year 2000.

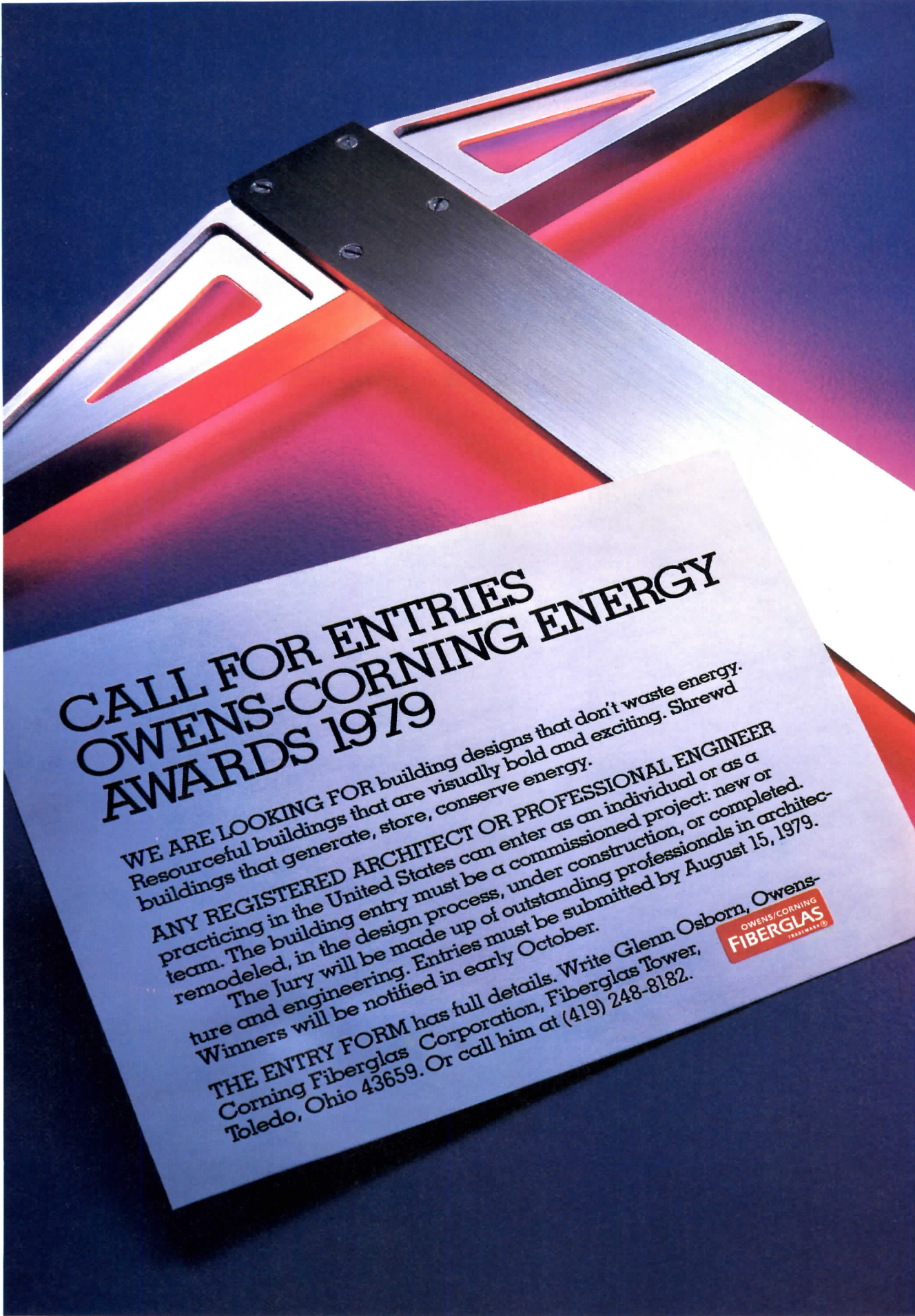
A major constraint involved location of the airport, for which only two appropriate sites could be found; one of the prospective capital sites was thus eliminated, since a range of mountains would interpose a barrier

between it and the airport. A "sieve analysis"—an overlay of cross-hatching representing natural and manmade constraints—revealed a single suitable site, in the district's northeast quadrant.

Besides satisfying all of the critical requirements—size, buildable geology, good soils, climate, vegetation—and eliminating unacceptable features—flood terraces, geological faults and shear zones, steep slopes—this corner also confers a haunting natural beauty on the proposed city.

Planning consultant to the Federal Capital Development Authority is the joint-venture firm International Planning Associates, comprising Archisystems International of Van Nuys, California, Planning Research Corporation of McLean, Virginia, and Wallace, McHarg, Roberts and Todd of Philadelphia. The FCDA is led by Commissioner/Chairman Mobolaji Ajose-Adeogun and Executive Secretary Abubakar Koko.

The planning of the city and its central government district will be described next month.



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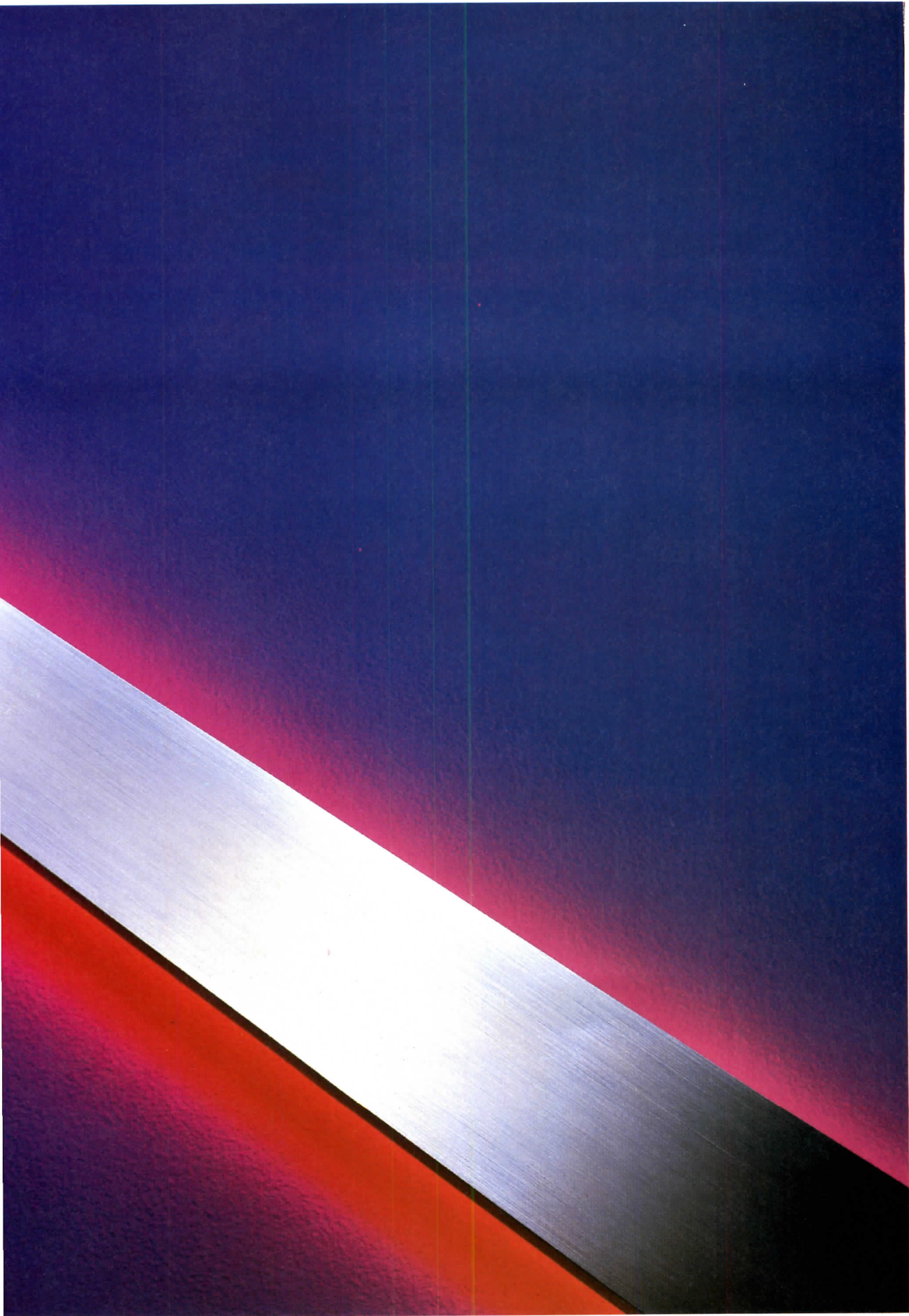
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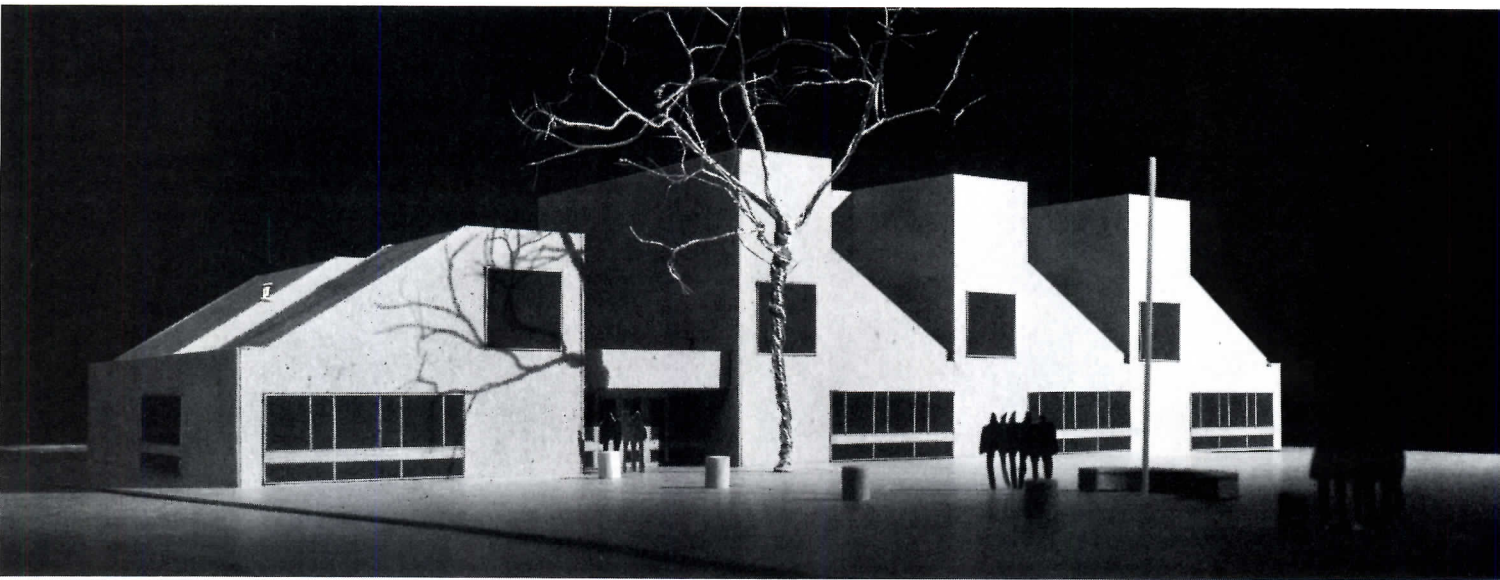
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THE ENTRY FORM has full details. Write Glenn Osborn, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659. Or call him at (419) 248-8182.

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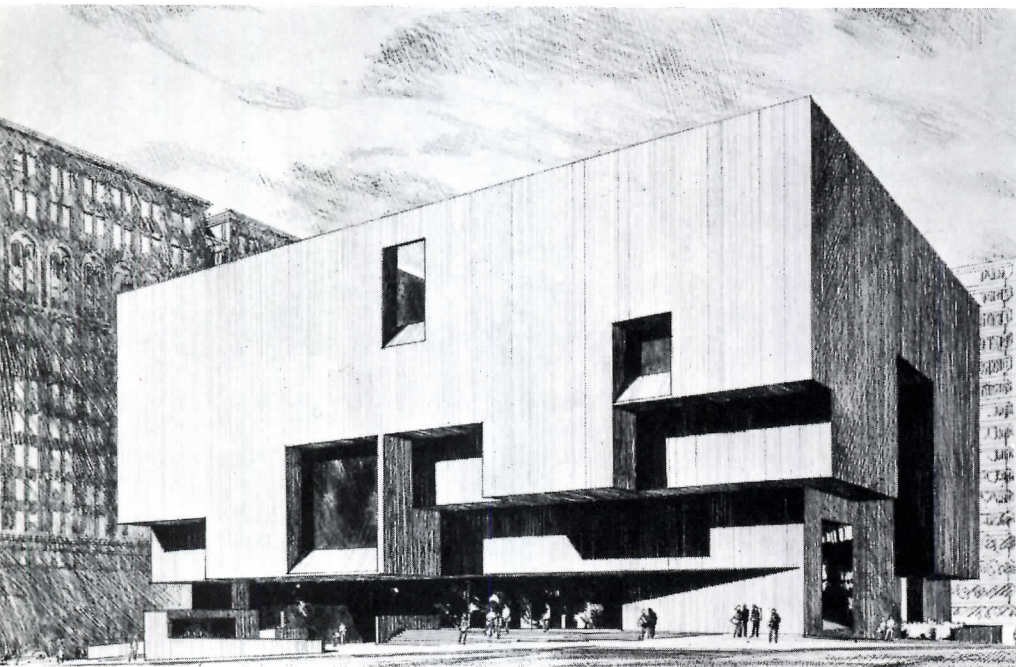
Billerica, Massachusetts, establishes a library for children and adults

Despite its relatively small size—15,000 sq ft—architects Crissman & Solomon managed to invest the library at Billerica, Massachusetts, with clear definition of functions and consid-

erable complexity of interior form. The children's wing (at left in model) itself has two wings: a reading room at the back of the building and a story-telling room in front,

separated by the charge desk. In the adult wing, the reading room extends the length and height of the building, up to a pitched copper roof pierced by tall, squared-off dormers.

The second floor of the adult wing, at the back of the building, accommodates open stacks and carrels. The \$900,000 project received Federal funding.



Atlanta plans a central library downtown

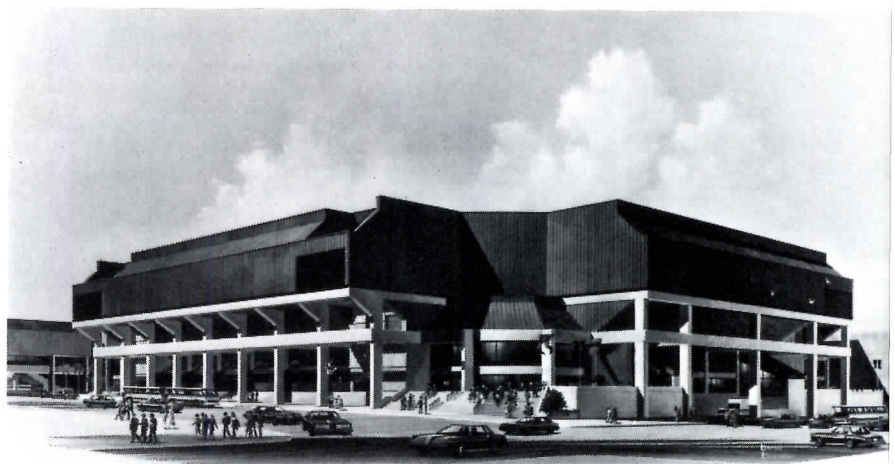
Taking advantage of a sloping site in downtown Atlanta, architects Marcel Breuer and Hamilton Smith provided dual access to the facility, separating library and extracurricular functions. The main entrance to the eight-floor adult library lies across a sculptured series of steps and past sheltered seating. Below the ground floor, partly below grade, are the children's library, with its own entrance on the side of

the building, and a 340-seat auditorium and exhibit area which are reached by a monumental stairway from the ground floor. The lower floor also houses a public cafeteria with an adjacent open-air dining room sheltered by the cantilevered upper floors (far right in rendering). The building's lowest basement provides parking for 76 cars. Textured precast concrete panels enclose the building.

Hartford repairs, reconstructs, remodels, redecorates, enlarges—and builds a new roof for—its Coliseum

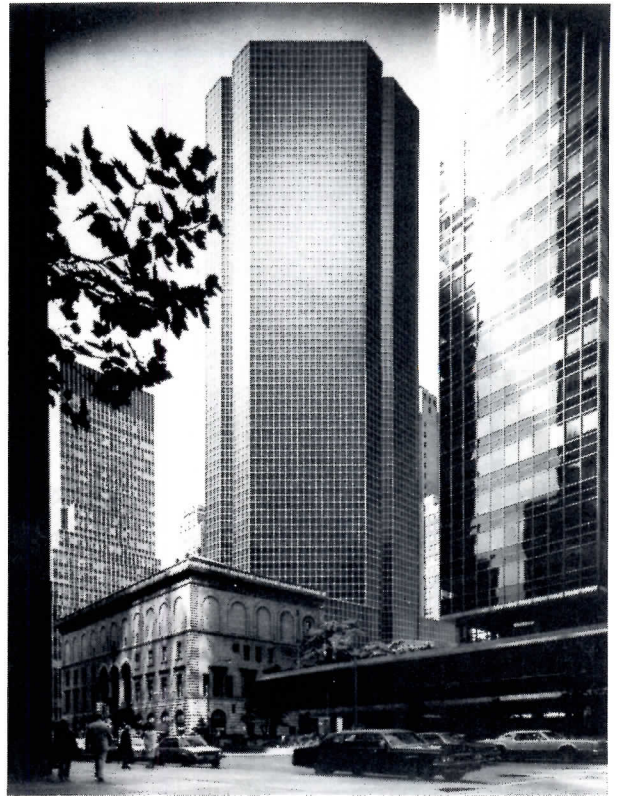
The collapse of the two-year-old roof of the Hartford Coliseum after a snowstorm in January 1978 was a blow to the city's redevelopment plans: the sports facility (home of the New England Whaler hockey team and home-away-from-home for the Boston Celtics basketball team) was a major component of the Hartford Civic Center, itself central to downtown revival. With funds from the Department of Housing and Urban Development, the Economic Development Administration, and the Connecticut government, and

a check from its insurer, Hartford will cover the repaired Coliseum with a new roof designed by Ellerbe Associates. The height of the four corner columns was raised 12 ft to support the new roof, a two-way truss (the old roof was a long-span space frame). And while they were at it, the city decided to extend the Coliseum on two sides, triple the number of restrooms, quadruple the number of concession stands, and redecorate. Construction, which will cost an estimated \$27.2 million, will be completed in January 1980.



**Manhattan tower:
Park Avenue Plaza**

Ground has finally been broken on a site that has for some years exercised New Yorkers with concern and contention—to wit, a mid-block lot behind Stanford White's Italianate Racquet & Tennis Club, a building valued by urban connoisseurs for its contrast in scale and texture to the neighboring Seagram and Lever buildings. Park Avenue Plaza, designed by Skidmore, Owings & Merrill and developed by Fisher Brothers (who bought the club's air rights for \$5 million), will be a 44-story, 15-sided tower, its narrow, notched Park Avenue facade centered on the Racquet Club's arched entrance. At ground level, a 30-ft-high retail arcade will connect 52nd and 53rd Streets.



**Manhattan tower:
180 Maiden Lane**

Though the Manhattan office building boom has focused chiefly on midtown, the Continental Corporation, a diversified insurance company, elected to build its new headquarters downtown in the financial and insurance district. For the East River site, Poor, Swanke, Hayden & Connell designed an octagonal tower, placed diagonally to command views of the river and nearby South Street Seaport. Continental's lower floor offices will overlook a three-story pedestrian plaza, covered by a sloping glass roof on three sides.



Manhattan tower: 725 Fifth Avenue

When Bonwit Teller closes its Fifth Avenue store, as expected, late in July, developer Donald Trump plans to replace it with a 60-story tower for mixed-use occupancy—five floors of retail space, 13 floors of offices, and 49 floors of luxury condominiums. Among the prime considerations of the architects Poor, Swanke, Hayden & Connell were the building's distinguished neighbors: the next door on Fifth Avenue and Edward Barnes's IBM building next door on South Street, as well as Harrison Abramovitz's Corning Glass Tower directly and Philip Johnson's pedimented AT&T

diagonally across 56th Street. The proposed tower, faced with bronze-colored reflective glass and polished bronze trim, will have "cascading" terraces to define the office floors and a serrated upper facade to multiply views from the apartments. The arcade will connect Fifth Avenue with IBM's Galleria. Although commentators fear increased midtown density from this and other new buildings, the architects have minimized visual bulk with the receding corner, and the developer points out that residential use will increase population density far less than would new offices.

The Israeli government builds a chancery in Washington, D. C.

When the National Bureau of Standards moved to the suburbs, the General Services Administration subdivided the land into lots intended for sale to foreign governments as an International Chancery Center.

The first building will be the Israeli Chancery, scheduled for groundbreaking this month. Designed by Cohen and Haft, Holtz Kerxton & Associates, it will unite offices now scattered in several buildings; it

will contain no residential quarters. The masonry chancery will enclose a three-story-high courtyard with interconnecting galleries, lighted by arched windows that recall traditional Israeli architecture.



Ronald N. Anderson



A partial guide to painless construction management projects

As a concept and practice, construction management has been an important part of the institutional and commercial client's world—and thus the architect's world—since approximately 1970. Prior to that time, construction management did occur, particularly as part of the "package" of design-build companies who controlled both the design and construction of a project. However, the concept did not emerge in common practice until clients, faced with the rapid escalation and unpredictability of costs during the period of 1970-73, became convinced that there had to be "a better way" of producing buildings faster, and on budget. The construction manager—sharing cost- and time-budget responsibility with the architect—seemed to offer an answer. As we enter another period of rapid construction cost escalation, we can anticipate that the CM concept will become even more attractive to owners—especially on jobs where fast-track is required. This article attempts to provide some guidelines on: 1) When a construction manager is most likely to be needed and useful, and what services are most appropriate; 2) The qualifications that should be expected of a construction manager; and 3) How the construction manager, architect and client can work most effectively together. [This article has been divided in two parts. Part I, which appears here, covers "when to use a CM" and "analyzing the CM's qualifications." Part II, to be published next month, will cover "working with a CM." —Ed.]

by Herbert McLaughlin and Cynthia Ripley

The best venture is one in which all parties benefit. What are the advantages of the construction management process? Why are so many architects, contractors and others eager to get into the CM business?

First, it is an emerging business opportunity. Second, it can be a low-risk business, especially if no guaranteed maximum price (GMP) is involved. Since the GMP is considered substantially invalid in practical terms by the courts, it involves minimal risk even if required by the contract. Third, since a CM is paid on a fee basis, it can be high-profit activity, particularly if a formula for sharing savings is utilized. Fourth, in the case of public work, the CM concept can serve to effectively establish a select bid list. While a general contractors' bid list cannot be limited, often the interview list for a CM is. Since many CMs are sometimes, in effect, general contractors on the job, the limited interview list provides them with an inexpensive shot at a job (preparing an interview presentation rather than a construction bid).

This process also appeals to the in-state or county contractor/CM because the select list can be manipulated to exclude the out-of-county or state contractor who might get the job in an open bidding situation. Frequently, in this case a local contractor will

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Ms. Ripley is a project architect in the firm, and is a lecturer at the University of California, Berkeley.

ally himself with an experienced CM. This joint venture arrangement can work well. The experienced CM is responsible for cost estimating and value engineering; the local contractor is responsible for bid and construction management.

The owner theoretically benefits by the active participation and, often leadership, of the project by the CM, whether or not the CM has responsibility for a guaranteed maximum price. In the case of public projects, the use of a select CM interview list can eliminate unqualified or difficult-to-work-with contractors from the project. The CM, once selected, can encourage good sub-bidders and eliminate undesirable ones. CMs can also in many instances be more effective than the average contractor in setting up minority participation programs.

The architect theoretically benefits from the participation of the CM because he is given consistent and early advice with regard to budgets and building systems so that he is not subjected to expensive redesign. He can also be relieved of the hazards of cost estimating on some CM contracts.

Theoretical advantages of CM cannot always be sustained in practice

It has been our experience that the value of the CM is dependent on the following circumstances: 1) The appropriate match between available CM services and the project in question; and 2) The experience of the CM with the specific building type in question.

There are a number of arrangements for

CM services as well as features offered within the CM package. The CM may be involved only during the initial phase of a project to provide cost control information. He may function strictly as a manager, providing cost input and managing construction through a series of sub-bid packages. He may contract to a series of sub-bid packages. He may contract to some or all of the work himself if permitted to do so as a general contractor.

Within any one of these arrangements the CM may offer the owner several basic features. At minimum, he controls costs on the project by means of periodic estimates and value engineering. He may attempt to improve the cost picture further by "fast-tracking" a building. He may offer a GMP under which he agrees to deliver a building for a fixed price. Within the GMP structure most CM's reserve the right to do all the contracting if bids do not come within the GMP. Many CM contracts also contain a provision for shared savings if the job is finally completed for less than the GMP.

The fast-track approach can save—sometimes

The ability to "fast-track" a project is an important part of many CM's proposal. Fast-tracking promises more rapid delivery of the project and, therefore in times of inflation, saves on the cost of the project. The advantages of this technique vary enormously with the size and type of project. The concept is most effective and efficient in the case of highly standardized and repetitive building types such as office buildings and warehouses; the structural grid and skin can be determined very early since the shape of an efficient floor plan and interior construction systems are well understood. Fast-tracking is inappropriate for complex building types which require an idiosyncratic design approach, such as a hospital or jail.

Total costs can actually be increased when fast-tracking is applied to the wrong situation, for the following reasons: functional compromises occur when construction begins early; the ability to modify the plan is inhibited, affecting the functional appropriateness of final product. For example, for a complex project to be efficiently fast-tracked, a building will often have a certain amount of extra area and volume, frequently as much as five per cent, built in to accommodate changes that occur in the design of systems after the basic building envelope is under



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construction. For a building type which requires information refinement all the way through construction documents, only an insignificant portion of the total project can be bid early to beat inflation. On California schools and hospitals, for example, agency reviews delay bidding until the completion of working drawings.

At best, the first bid package usually goes out at 60 per cent of design development in a complex project. Grossly simplified, this means that only a few bids are advanced more than three-to-six months. Mechanical, electrical and interior finish bids are seldom advanced significantly, if at all.

Structural framing—about 10-15 per cent of the project value in a complex building—can often be bid early even for a non-repetitive building. However, if inflation is moving at 1.5 per cent per month, only 6 per cent may be saved on the structural framing package—a total of plus or minus .7 per cent of total project costs. Unfortunately, the added costs associated with fast-tracking more than cancel this savings.

Within the fast-track concept, the "soft costs" of a project increase. Architectural fees are greater. There is inevitably some waste of materials and manpower because of unforeseen coordination problems. On a fast-track job, changes in scope to the project, additions or reductions can be expensive, both to design or to execute.

The general suspicion is that one gets fewer sub-bids in fast-track and that those bids, understandably, have more fat built into them than do bids taken when the project drawings are complete. This inefficiency in bidding, it is argued, is further compounded by the fact that in a CM contract, in effect, there is only one contractor urging sub-bidders into performance rather than a more conventional bidding process in which a number of general contractors are actively seeking low bids from a variety of subs.

Fast-tracking does usually advance delivery dates, and in many instances this has unquestioned value. However, the savings against inflation should be carefully compared with the increased costs described above. If the building type is repetitive, fast-tracking is warranted. If fast-tracking is not appropriate, neither may be a CM, or at least full CM services.

Recent court decisions have rendered GMP largely academic

Often a CM contract includes a guaranteed maximum price at an early stage in the project. This price may be necessary for the owner to obtain financing. Most CMs resist the concept, and in any event recent court decisions have held that even minor changes to drawings render a GMP substantially invalid. Our experience has been that an owner's reliance on a GMP that does not include a substantial contingency is unwise.

Arrangements to share cost savings are normally associated with the GMP, which is ideally provided in the middle of the design development phase. Cost savings are introduced through value engineering, or because

bids come in lower than estimated when the GMP was prepared. While the concept of rewarding the CM (and the architect) for reducing costs is certainly valid, how is it best done? The first step is to set a fixed rather than percentage fee for the work. Ideally, nothing more need be done. Professional standards should ensure that the maximum effort is expended to achieve savings. However, if an incentive system is set up we believe that the owner should receive at least 80 per cent of the savings on value engineered items and all of the savings on low bid items. This gives the CM less incentive than the 40 per cent he often receives, but the opportunity to share cost savings is a provision that may put CMs in a position of over-emphasizing cost savings. In the case of one corporate headquarters building, a skylit employee cafeteria/recreation complex highly desired by the architect and owner was deleted from the project to reduce costs to within the projected budget. At the end of the project, the CM returned a million dollars to the owners, probably pocketing a percentage of the savings. In this case, the owner would have preferred a complete project rather than the cash.

An experienced CM must show in-house cost estimators in all trades

Being a skillful CM is very different from being a good architect or contractor. It is extremely dangerous to embark on a project, particularly a complex building type, with a CM who has not had experience with that building type as a CM.

This point cannot be sufficiently stressed. Many contractors are eager to present themselves as CMs. However, contractors are not called upon routinely to do value engineering or system trade-off studies; CMs are. Contractors are not expected to deliver accurate cost estimates from schematic drawings; CMs are. Even an experienced CM team must include in-house cost estimators in all trades. If a CM cannot show this capability, his participation should be seriously questioned.

In some localities a CM becomes significantly less efficient because he is unable to get real competitive bids on any number of sub-trades. There are locales in which there are effectively no subs in many trades. General contractors are responsible for steel, concrete, form work, rough and finished carpentry and masonry. This situation makes it more difficult for a CM to operate effectively. Experienced CMs should be aware of local industry conditions and the relevance of their services should be evaluated in this light.

Perhaps the most troublesome and erratic area of CM performance, cost estimating is also the key to the CM's ability to control costs on a project. A competent CM should be able to estimate complete building systems on the basis of incomplete design or design development drawings, carrying contingencies that reflect the accuracy of the estimate. Too often, contractors who enter the CM business approach estimating as though preparing a bid: that is, pricing only

what is shown on the drawings. This information is totally unreliable in the early phases of the project, where vital correlations between cost and project scope need to be made. The problem is aggravated if the CM is a contractor who relies on friendly sub-contractors to help him with estimating their subspecialty. Many subs do not take the drawings or the effort seriously at this stage. Prior to selection, a CM should be required to document his estimating experience at the various stages of projects and compare it to the final costs.

Effective CMs possess value engineering skills greater than a contractor's

Effective value engineering, which is simply a fancy name for cost reduction, requires the CM to have an accurate idea of what various systems cost to put in place; what materials are in short supply or will be in short supply at the time of final bidding, and what the anticipated movement in prices of such items that vary considerably is likely to be. Most contractors are accustomed to pricing such items at the time of bid without extensive analysis of future fluctuation in prices. The effective CM, who is projecting the cost of materials in place during schematic design phases often as much as a year or two years in advance of construction, needs a level of sophistication which is totally absent from most construction organizations. The qualified CM should be able to demonstrate past performance in this area.

A few CMs make the claim that they are competent to do studies which analyze the long-term operational cost of materials and systems in place versus their original cost. It is the experience of most architects that few, if any, CMs have a real capability in this area and that one must rely on engineering consultants who are more accustomed to doing such studies.

Construction management in general, and fast-tracking in particular, require aggressive and sophisticated management of the bidding process. Subs are asked to bid on drawings which do not show complete coordination between trades. They are further asked, at least in the original packages, to bid on faith that the job will indeed go forward. If the CM passively follows the normal bid process—particularly in today's heated up construction economy in which the most qualified sub-bidders are quite busy and only desire to bid on the most simple bid packages—there will be problems. The CM must seek out bidders, and coax them to participate, especially if affirmative action participation is a requirement on the project. Most contractor/CMs can be relied upon to do an adequate job in this phase since it is that part of a CM's activities which most parallels previous general contracting experience. As always, the quality of the job in this area will be very much dependent on the quality of the superintendent provided. With CM firms that come from an engineering or architectural background, their performance needs to be carefully evaluated in this area.

Next month: working with the CM.

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Designing the site to meet barrier-free goals

One of the most important aspects of barrier-free design is providing the means by which disabled people can get to a building and use facilities on a site. By considering accessibility at all stages of site design, architects can often avoid serious difficulties in meeting barrier-free design codes. At the same time, they will discover that the resulting outdoor spaces will be more convenient for all users.

by Edward Steinfeld

Basic building design and site planning decisions often set a de facto limit on access. For example, raising the main floor of a building half a level above grade virtually decrees the provision of an exterior ramp for disabled people. On the other hand, such basic decisions can just as easily reduce the need for special provisions and increase the potential for making a building more accessible than minimum codes require.

Most accessibility codes require only one entrance of a building to be accessible. Logically, this accessible entrance should be the one closest to major site access points—bus stops, parking facilities, public sidewalk or entrances of adjacent buildings with related use. If this entrance is also the principal entrance of a building it will benefit users in general because it will be direct and convenient. But, what if there is more than one major site access point, and they are far apart? Given such conditions, multiple-entrance or entry court schemes could be used as basic design concepts.

Pathways and pedestrian areas

The design of walks, plazas and other parts of the pedestrian circulation systems will ultimately determine if a disabled person can actually get to a building and site amenities. Eliminating stairs is a necessity to allow use of pathways by wheelchair users. There should be at least one route to an accessible building entrance from all site access points that does not have stairs along it. On steep slopes, however, it may be wise to plan more direct paths with stairs as well because they are easier for people with other disabilities to use than long ramps or roundabout walkways.

The minimum circulation width necessary for passage is 36 inches; this width is based

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This is the second article in a series of six by Mr. Steinfeld on barrier-free design. The first appeared in March 1979, pages 69 and 71.

upon the spread of crutch tips and the space necessary to wheel a wheelchair, allowing for some deviations from a perfectly straight push. The actual width of any walk segment, however, must be based upon the directions of traffic flow, the volume of traffic, the length of the segment and surrounding site conditions. In general, where traffic is in two directions, providing places large enough for two wheelchairs to pass each other (a 60- by 60-inch space) at reasonable intervals is a satisfactory way to ensure that passage will not be restricted. This space can include the walk width itself; for example, a 48-inch-wide path would only have to be widened 12 inches at intervals to provide such a place. Also, "T" intersections of pathways can be used for passing places.

Many individuals—both those who walk and those who use wheelchairs—have difficulty negotiating inclines above a slope of 1:20. The difficulty of any given incline is related to both its slope and length. One recent research project found that many wheelchair users cannot negotiate the widely used slope of 1:12 for a distance of more than 5 feet, but most of those people could manage a 1:16 slope for 30 feet. In another study, wheelchair users rated a slope of 1:8 to be relatively easy for a distance of two feet. Ramps steeper than 1:8 are hazardous due to the danger of overturning. Ramps should have runoff space at both top and bottom and railings at both sides.

On building sites and public walks, the most frequent need for ramps is at street curbs. People using curb ramps must be protected from automobile traffic. Where there are marked street crossings, curb ramps should always be placed within the marked boundary. Curb ramps should only be placed at the apex of a corner where the radius of curvature of the curb is large enough so that the run-off space at the bottom of the ramp is not within the traffic lanes. Short ramps for mounting curbs need no railings.

Wheelchairs cannot be used on surfaces that are soft and internally unstable. Wheelchairs and walking aids are extremely difficult

and sometimes dangerous to use on irregular surfaces (e.g., cobblestones) or those having small components with unfilled joints. Gratings and ridges on walkway surfaces should be eliminated to ensure that those people with poor sight or shuffling gaits will not trip or slip. Drainage grates can be placed to the side of pedestrian areas. Another important issue in surface design is cross slope. Excessive cross slope or crowning can make it impossible to propel a wheelchair in a straight line and can also upset the balance of walking aid users and others with impaired gaits. Where pathways end at doors and gates, there must be enough maneuvering space to approach, open and pass through them. This space has to be relatively level or wheelchair users might roll away as they try to pull the door or gate open.

People who have severe visual impairments are trained to use curbs to identify the boundary between paths and streets. Although complete removal of curbs helps to provide access for wheelchair users and others who have difficulty walking, it eliminates a major safety feature for visually impaired people. Tactile warning signals have been found to be an effective substitute for curbs—a strip of the walking surface area at the boundary of the street edge is given a special texture to provide a recognizable change detectable by both cane and foot. The signals can also be used to mark unexpected and extreme hazards such as the top of stairs located in the middle of a walk or plaza, the edge of public transit loading platforms, and the edge of reflecting pools not otherwise protected. Grooves in walking surfaces are not effective outdoors, because they are hard to distinguish from normal cracks and joints in sidewalks.

Parking and vehicular loading zones

People who use wheelchairs need enough space next to parking areas to maneuver into position for transfer. The need for space to approach hydraulic lifts on vans—a popular form of transportation for wheelchair users—determines the minimum space required for access aisles next to accessible parking spaces. The access aisle becomes the connection between the automobile and the accessible pathway system. Thus, it must be designed to the same criteria as an accessible walkway.

At least one parking place among all

continued on page 70

those serving a building should be accessible. However, the need for such spaces varies considerably with the number of spaces in the lot and the type of buildings served by lots. Experience has demonstrated that the proportion of spaces allocated to disabled drivers can be reduced as the number of available spaces increases. In lots serving health care facilities, the proportion of accessible spaces should be much higher than for other facilities.

In lots where spaces are not assigned for use to individuals, accessible parking spaces must be reserved for disabled drivers and appropriately marked. These spaces should be along the shortest accessible route to the building entrance they serve. Where there are several lots serving an entrance, it is better to locate all accessible spaces in the closest lot rather than assigning an equal number to all lots.

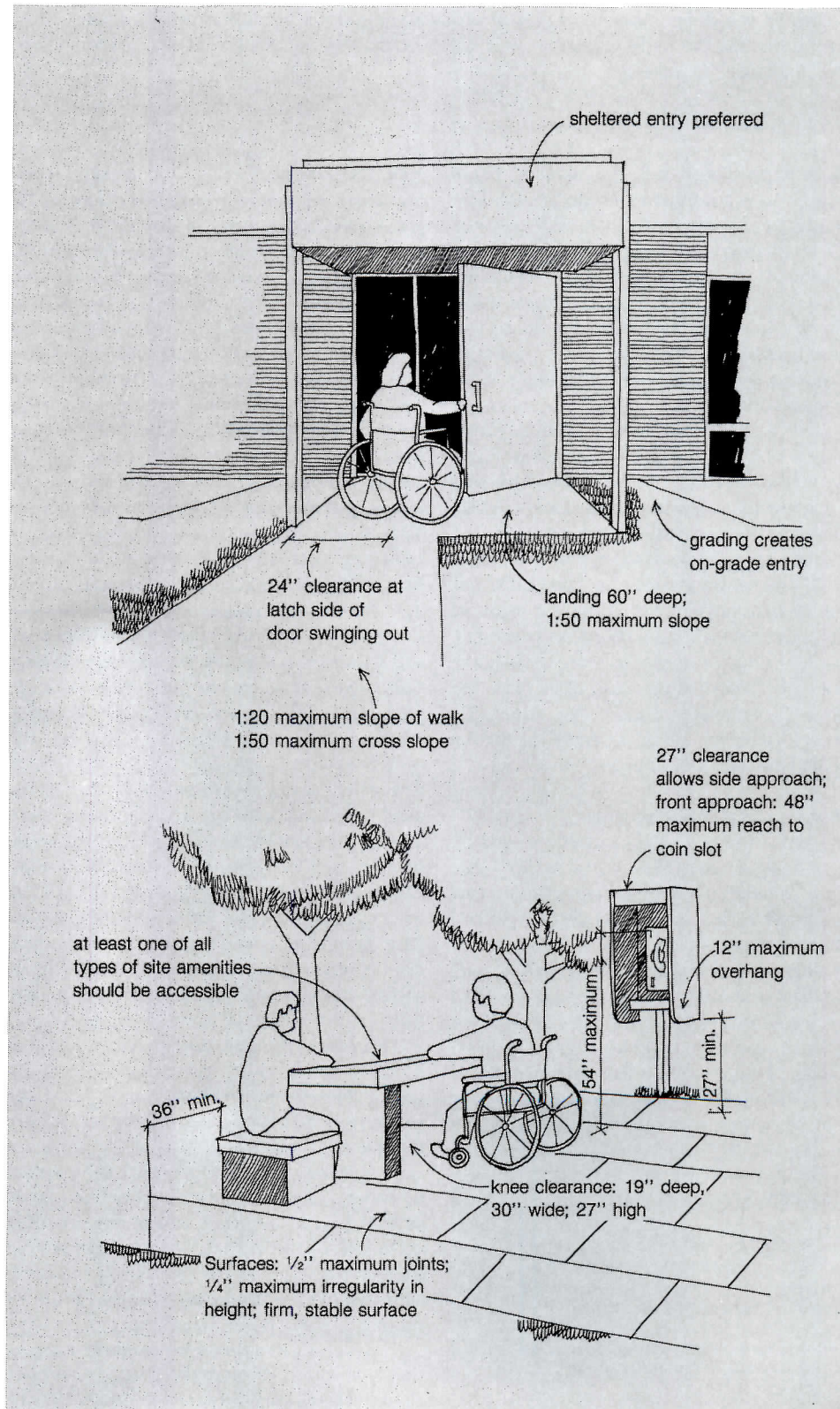
Automobile loading zones serving buildings should have a clear space parallel to where the vehicle parks, wide enough for a person to transfer to and from a wheelchair. The entire space does not have to be ramped or level with the street because most people can transfer to and from a vehicle when their wheelchair is on a raised walk. A curb ramp is necessary somewhere in the zone, however, for people who cannot manage such a transfer, or for reaching buses that may not be able to approach the curb.

Site furniture and amenities

Full usability of sites includes access and use of site furniture, and removal of hazards to visually impaired people caused by such objects. Dispensers, receptacles and devices such as public telephones are often outside the reaching limits of people who use wheelchairs. If a wheelchair can be pulled alongside an object in a "parallel approach," the highest part necessary for use can be located at 54 inches. However, if a wheelchair must be pulled up in a "forward approach," 48 inches is the greatest possible mounting height to such parts.

Often, objects mounted on pylons, posts and walls overhang circulation paths. Blind and partially sighted people can easily injure themselves by bumping into those objects which are not detectable by canes. Overhangs with their leading edges no greater than 27 inches high can be detected. If the edges are higher than that, the object should be protected by guide walls or moved out of the circulation paths. Objects mounted on posts or pylons can be detected with a cane before collision even if their leading edges are higher than 27 inches, as long as the overhang is no greater than 12 inches from the post or pylon.

Where tables, seating and other site amenities are provided, enough should be located on accessible routes and designed for use by disabled people so that they can participate fully in all site activities. This does not mean that all amenities must be located along accessible routes—only those that are necessary to make the full range of site experiences available.



DESIGN CRITERIA

Walks:

1. At least one route without stairs to an accessible entry from bus stops, parking, passenger loading area, etc.
2. Maximum width of 3'-0".
3. Passing place at least 60" wide every 200 ft.
4. Firm stable surface; joints 1/2" wide (maximum); 1/4" maximum irregularities in height; gratings located off walk surface.
5. 1:20 maximum running slope, 1:50 maximum cross slope.
6. Curb ramps wherever walk crosses curbs.

Ramps:

1. Slope related to length:

Slope	Length
1:8	2 ft.
1:10	8 ft.
1:12	5 ft.
1:16-1:20	preferred

2. 60" long level runoff area, top and bottom.
3. Handrails both sides, continuous at one side of landings, 12" extension where handrail is not continuous.
4. Handrails not necessary at curb ramps.
5. Protection at edge of ramp surface.
6. Flare slope on curb ramp 1:10 maximum, wherever people can walk across it.

Stairs:

1. On steep slopes, provide stairs as well as ramps.
2. 11" minimum tread depth, exclusive of nosings; 7" maximum riser height; 1-1/2" maximum nosing.
3. Handrails - same as ramps.

Parking:

1. Reserved-for-disabled sign.
2. Access aisle 60" minimum wide.
3. Number of spaces reserved for disabled:

Total Spaces	Number Reserved*
0-100	1 per 25
101-200	4, + 1 per 50
201-500	6, + 1 per 100
500 +	9, + 1 per 200

* double the number for health care facilities

Tactile Warning Signals:

1. At tops of stairs, unprotected edges of reflecting pools, transit loading platforms, etc.
2. Materials: applied strips, cast ridges, broom finished concrete, exposed aggregate, pea gravel aggregate, paving elements in strip pattern.
3. Run strip pattern perpendicular to direction of travel.
4. Standardized signal on each site.

Overhanging Objects:

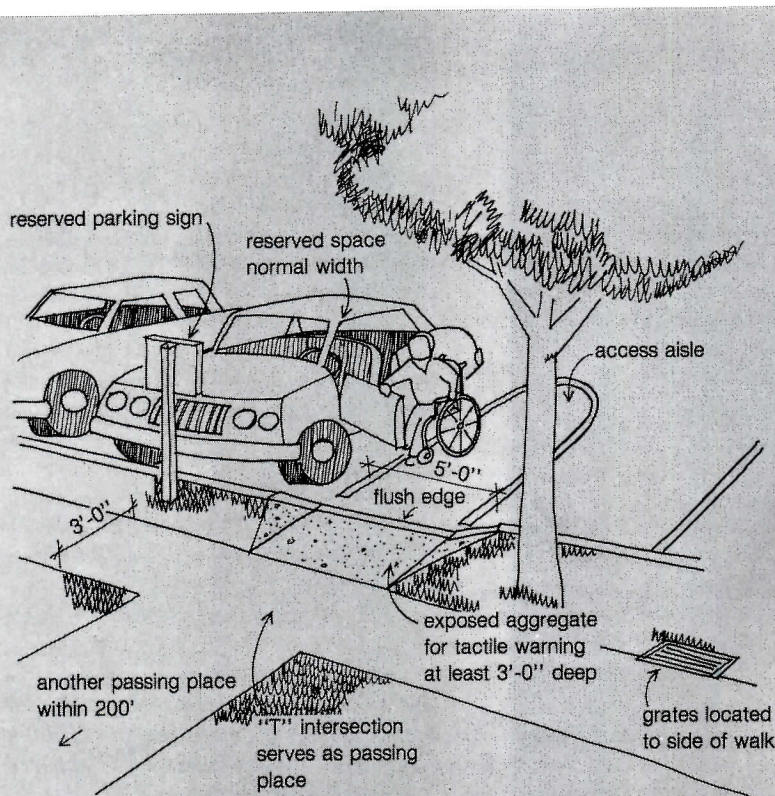
1. If overhanging edges are 27" or higher, place objects hanging from walls off pedestrian path.
2. If overhanging edges are higher than 27" but objects are mounted on posts or pylons, they can project into pedestrian areas 12" maximum.

Entries:

1. Landing 60" deep minimum.
2. 24" clearance at latch side of outswinging door.
3. 1:50 maximum slope of landing in any direction.
4. Sheltered entry preferred.

Site Furniture:

1. At least one of all types of site amenities should be accessible.
2. 48" maximum reach to objects requiring front approaches in wheelchairs; 54" maximum to objects allowing site approaches.
3. Clearances at tables for wheelchair users: 19" deep by 30" wide by 27" high.



At right is a sitework checklist for barrier-free design. Drawings above provide guidelines for avoiding common design pitfalls involving facilities for the handicapped.

In designing pathways and pedestrian areas, special attention should be given to the dimensions in which both wheelchairs and crutches can be used comfortably. Also, inclines above a slope of 1:20 are difficult for most handicapped individuals—both those who walk, and those in wheelchairs. Wheelchairs cannot be used on soft or unstable surfaces, such as cobblestone.

In designing parking, experience shows that the number of spaces allocated to the handicapped can be reduced as the number of total spaces increases.

Full usability of sites includes access to site furniture, and removal of hazards to visually impaired people caused by such furniture. Not all amenities need to be accessible—just enough so that the handicapped can participate fully in site activities.

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U.S. construction costs up 8.5 per cent in six months

Prices of five common building materials, and wage rates for ten widely used building trades have increased 8.5 per cent from September 1978 to March 1979, according to a recent survey by McGraw-Hill's Cost Information Systems Division. The new figure is 12.3 per cent above a year ago.

A total of 183 metropolitan localities across the nation reported a 15.4 per cent rise in building material prices in the 12-month

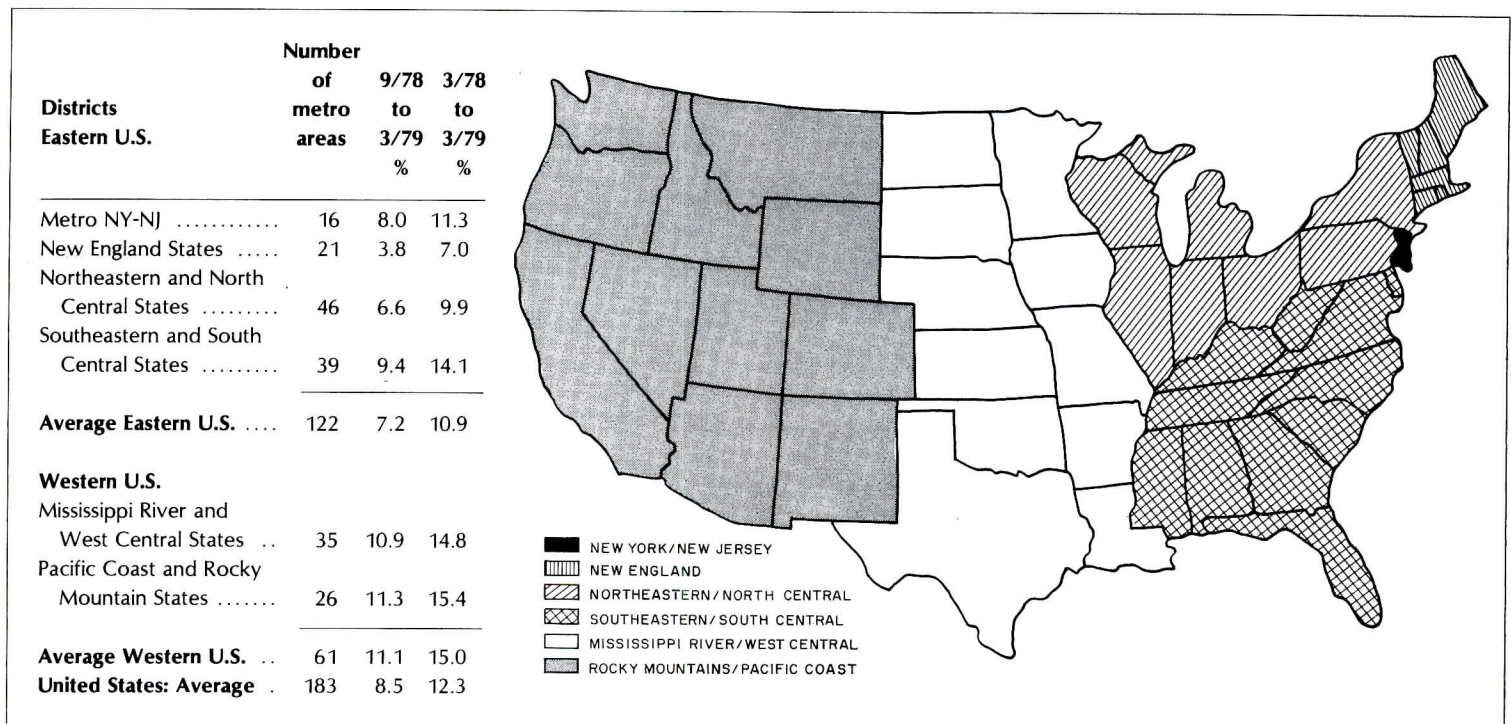
period ending March 1979. Hourly wage rates of building trade craftsmen increased 7.7 per cent for the 12-month period.

Building construction costs in Canada are now 6.3 per cent above a year ago. Prices for building materials increased 5.7 per cent and wages paid building trade craftsmen have risen 7.1 per cent in the past year.

McGraw-Hill's Cost Information Systems' studies are conducted semi-annually by mail

and telephone, and involve contacts with building products distributors, chambers of commerce, construction labor consultants, and both general and specialty contractors in each city.

Note: The substantial changes from February figures shown in some of the indices are accurate, and reflect an upgrading of the data bases used.



Metropolitan area	1969	1970	1971	1972	1973	1974	1975	1976	1977	1st	2nd	1978 3rd	4th	1st	2nd	1979 3rd	4th
Atlanta	384.0	422.4	459.2	497.7	544.8	575.0	598.7	657.1	714.2	724.0	746.8	769.6	783.1	819.6			
Baltimore	322.8	348.8	381.7	420.4	475.5	534.3	581.1	585.0	635.6	643.2	656.0	668.9	680.6	729.6			
Birmingham	303.4	309.3	331.6	358.3	402.1	421.2	448.9	551.9	585.4	594.8	603.4	613.9	624.6	704.1			
Boston	295.0	328.6	362.0	394.4	437.8	462.5	513.2	555.9	587.7	594.1	605.4	616.7	627.5	691.9			
Chicago	356.1	386.1	418.8	444.3	508.6	529.6	560.1	635.2	689.9	696.4	711.0	725.6	738.3	805.4			
Cincinnati	325.8	348.5	386.1	410.7	462.4	500.1	550.6	609.8	656.6	662.4	673.6	684.9	696.9	750.7			
Cleveland	358.3	380.1	415.6	429.3	462.2	509.5	531.0	632.9	625.2	635.4	655.6	655.7	667.2	794.7			
Dallas	308.6	327.1	357.9	386.6	436.4	477.9	499.6	538.5	615.2	618.9	631.6	644.3	655.6	739.0			
Denver	339.0	368.1	392.9	415.4	461.0	510.0	553.6	616.0	703.8	715.9	723.0	730.2	753.0	803.2			
Detroit	352.9	377.4	409.7	433.1	501.0	538.7	597.5	617.2	664.2	679.0	738.3	797.6	811.6	840.6			
Kansas City	295.5	315.3	344.7	367.0	405.8	444.9	509.1	547.3	603.0	614.0	626.0	637.9	649.1	657.7			
Los Angeles	344.1	361.9	400.9	424.5	504.2	531.8	594.1	673.1	756.8	765.4	777.6	789.9	803.7	886.3			
Miami	392.3	353.2	384.7	406.4	447.2	485.5	558.9	592.5	628.4	640.1	644.9	649.7	661.1	686.1			
Minneapolis	331.2	361.1	417.1	412.9	456.1	488.6	538.0	564.1	629.4	640.8	646.9	653.0	664.4	793.4			
New Orleans	297.5	318.9	341.8	369.7	420.5	442.1	494.7	534.8	614.7	620.2	631.0	641.9	653.1	697.7			
New York	344.5	366.0	395.6	423.1	485.3	515.3	533.5	580.8	619.8	632.0	641.2	650.3	661.7	666.6			
Philadelphia	321.0	346.5	374.9	419.5	485.1	518.5	567.5	579.2	658.8	661.7	673.6	685.5	697.5	778.0			
Pittsburgh	311.0	327.2	362.1	380.3	424.4	465.6	509.5	526.3	589.6	599.4	608.7	618.0	628.8	692.2			
St. Louis	324.7	344.4	375.5	402.5	444.2	476.7	528.9	537.1	617.1	622.3	632.2	642.0	653.2	752.0			
San Francisco	441.1	465.1	512.3	561.0	632.3	672.5	753.3	820.8	963.2	972.3	983.0	993.7	1,011.1	1,239.0			
Seattle	317.8	341.8	358.4	371.5	424.4	450.2	515.1	570.5	629.6	638.6	656.5	674.4	706.6	700.7			

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

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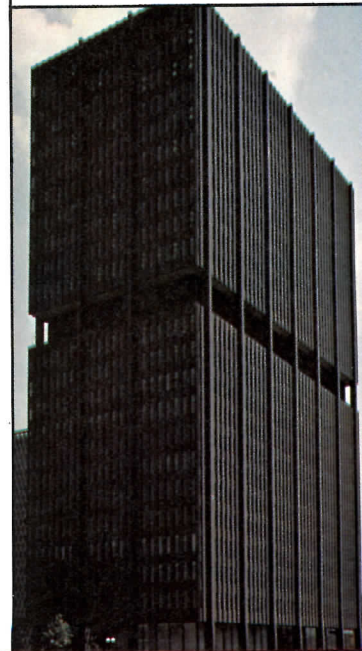
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Norman McCrath photos

THE HARLEM SCHOOL OF THE ARTS

When New York's City Club announced the 1978 winners of the coveted Bard Awards for local architectural and urban-design excellence, the jury noted the predominance of projects that serve programs of social significance. And none of the winners conformed better to that description than architect Ulrich Franzen's building shown here.

The institution that is so nobly housed is practically the single-handed creation of its director, world-famous soprano Dorothy Maynor, whose determination in the face of seemingly overwhelming odds has produced what she describes as "an oasis of hope in a sea of despair." Dedicated to the concept that their own accomplishment in one or more of the arts and a daily relief from the surrounding chaos could bring new senses of self-worth to Harlem's youth, Maynor raised the \$2,600,000 building cost plus the monies needed for fees, expenses and furnishings.

Today, the school strives to produce cultural accomplishment for between 700 and 800 local children with a faculty of 44—while offering some facilities for adults as well. And as a tribute to Maynor's concept, the building that houses her programs is as fresh and well respected as it was when it opened nearly a year ago, after a long seven-year collaboration between architect and client.

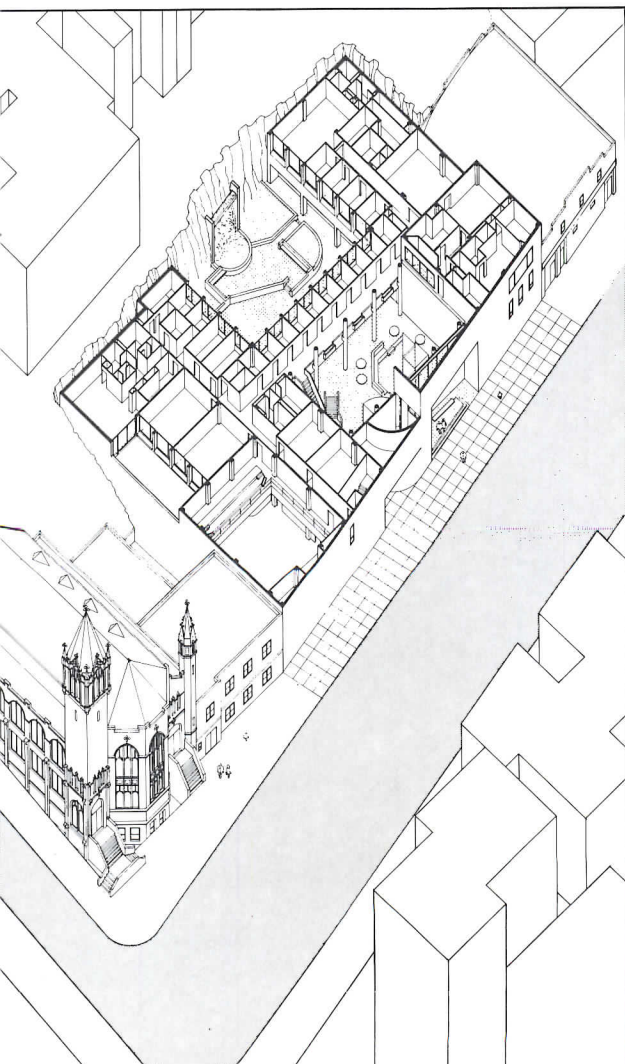
**A gleam of hope from a
cultural oasis**

From the street, the Harlem School of the Arts is perceived as a gray brick wall punctured only by a curved section at the service entrance, by a large recess for the main entrance and by several windows set well above the sidewalk. Still, by a sensitive handling of these few elements in the wall, the over-all message is anything but forbidding. And it scarcely speaks of the high degree of security that was an obvious concern. Especially at the main entrance where story-high reflective metal initials are surmounted by a clerestory view of the main space within, the atmosphere is welcoming—even festive.

It was architect Franzen's successful intention to hold the line of buildings on the block—a line terminated on the south by the neighboring neo-Gothic St. James Church. Accordingly, the new building hugs the sidewalk. And to accentuate the purposeful two-dimensional quality of the facade, the architect has run a section of freestanding wall over the main entrance, where a "missing" section of the roof allows bright eastern sun to enter the clerestory (small photo opposite).

In an effort to make a compatible element in the neighborhood and not to overwhelm the Church visually, Franzen spread the bulk of the 37,288-square-foot school out over 90 per cent of the site, so that the majority of the building is only two stories above the street. And to give literal meaning to Director Maynor's concept of an oasis, the architect has wrapped the building around three sides of a small leafy courtyard (photos overleaf). The fourth side is the sheer face of the almost vertical rock outcropping that is Morningside Heights, shown rising high above the school in the photographs here. The sounds of outdoor concerts rise from this courtyard on warm summer nights. According to Director Maynor: "Even in a hostile setting, the tendency to seek order and beauty can come to the surface."





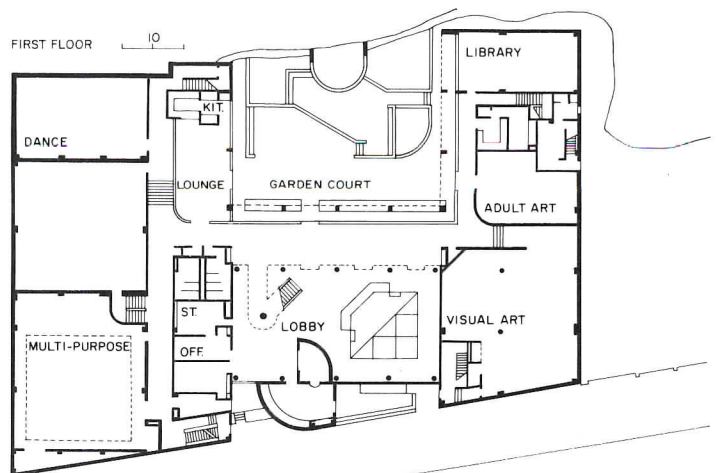
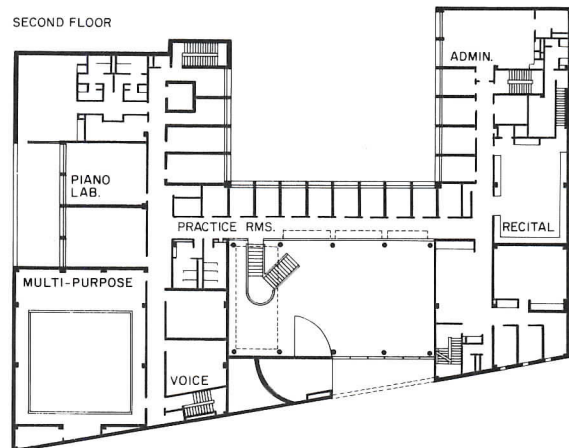
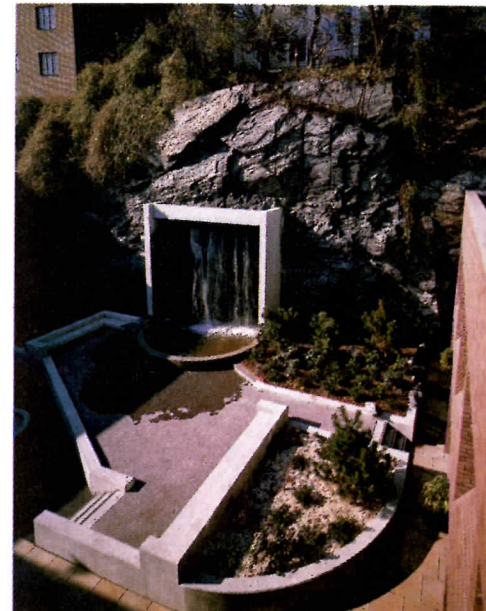
Designed to be and appear to be part of the group of buildings for the community service, architect Franzen's new Harlem School (far right in photo above) is unassertive when viewed from the street. While turning a protective and rather solid wall to the outside world, the facade still manages a welcoming grace, thanks to a skillful management of openings and proportions in the largely two-dimensional surface. At the entrance, Franzen has chosen to both emphasize the two-dimensional quality (photo below) and to relieve it by means of a curved brick surface (photo opposite). But the result hardly prepares viewers for the spatial experiences within.



It is only after visitors have passed through a vestibule arranged for maximum security and emerge in the large central lobby (large photo overleaf), that the real spaciousness of the building becomes apparent. The lobby, and many of the building's other spaces, look out onto, and are indeed centered on, a tranquil garden court. This court provides the symbolic visual message of the oasis that the whole school has become—with its plantings and a fountain set against the natural rock formations of the sheer wall behind.

Just as the court provides a visual focus, the lobby, which director Maynor refers to as the "gathering place," provides a functional focus. It is a two-story space designed for waiting parents and friends, for student body assemblies and as an auditorium for concerts. Its generous proportions and central position also provide a strong visual tie for the rest of the spaces.

These other spaces on the first floor include a two-story multi-purpose room surrounded by a balcony, and two large dance studios to the south of the lobby. (The multi-purpose room is also primarily a dance studio, although it can be used for chorus, orchestra and dramatics with seating for up to 140 spectators.) These spaces have maple floors on resilient pads, practice barres, mirrors and audio facilities. Sound absorbing panels are used on 50 per cent of the walls, and doors are gasketed to provide sound isolation. (Similar acoustic considerations exist in spaces for music practice.) The floors of the two one-story studios are depressed below the main level to achieve raised ceiling heights, and children's dressing rooms are located on a lower level reached by stairs between the studios. Other facilities in this area include a snack bar for thirty-six persons. Direct access is provided from this area to the courtyard during mild weather. On the north side of the first floor is a library, isolated from the noisier pursuits, and two rooms for painting and sculpture classes.



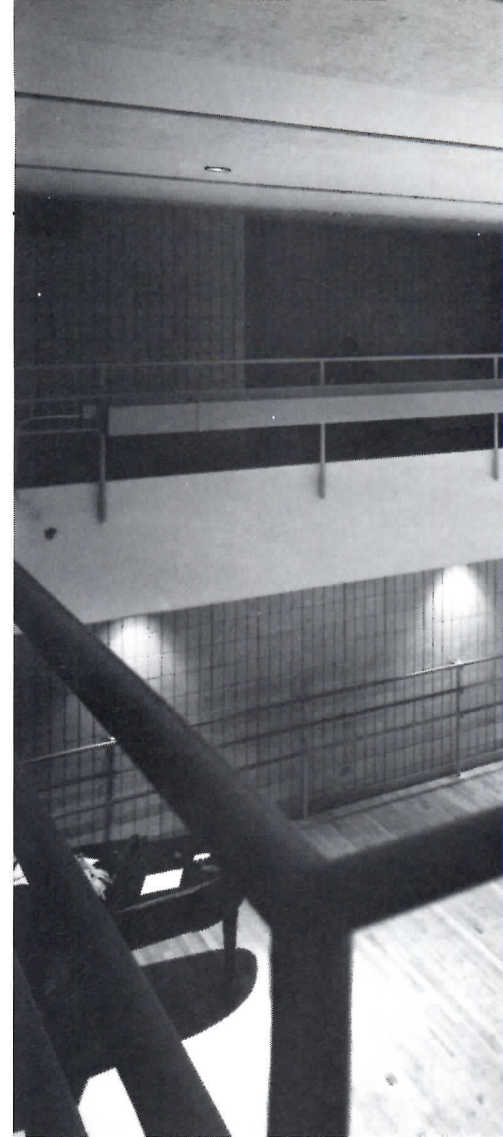
The cultural oasis that Director Dorothy Maynor wished to create by the school is given symbolic meaning by a tranquil courtyard that incorporates the sheer natural rock outcropping at the back of the property as a fourth wall. Here, through generous outlooks, diners in the lounge (photo above)—as well as the users of many of the school's major spaces—may enjoy an atmosphere far removed from the immediate outside environment. The sound of running water in the fountain—as well as the sounds of concerts during warm weather—offer a mask for outside noises.

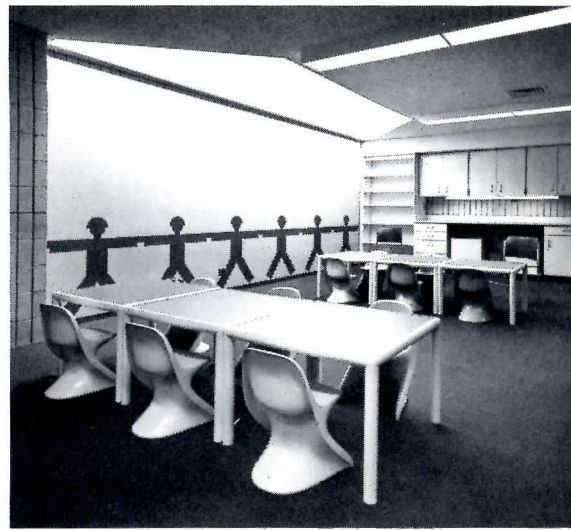
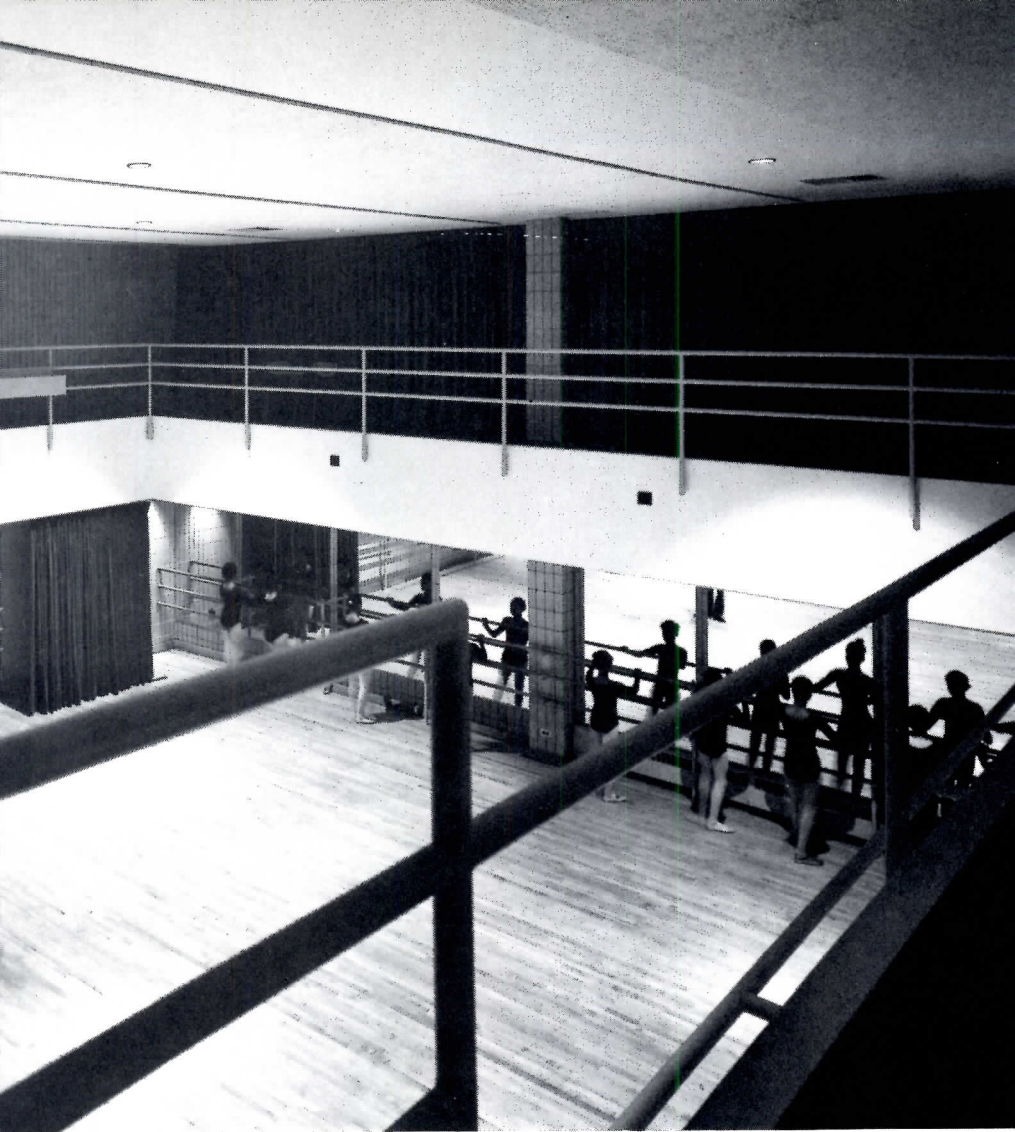


The second floor is mainly devoted to music. Opening from a balcony along one side of the lobby and practically surrounding the court are individual practice rooms. Other facilities on the south side of the second floor include two piano labs, two rooms for voice training and a faculty lounge opening onto a terrace. The Suzuki string program is located in a section of its own on the front of the north side of the second floor. And the remainder of the north side is devoted to the director's office and a large recital room. A small third floor houses a permanent caretaker's apartment, where there are security and mechanical-system controls. Where sound isolation is not a consideration, the interior walls are generally a sand-aggregate block. And floors that are not in spaces used for dance or art are carpeted. Much of the lighting comes from surface-mounted fluorescent fixtures that both reduce noise penetration through ceilings and conserve electricity. Fluorescent "wall washers" are used in corridors to illuminate the art work, for which the corridors provide admirable display spaces.

In fact, Franzen cites very low energy consumption for the whole building, due to low conduction values for walls, roofs and decks, minimized glass areas with double glazing, reflective blinds, local switching for lighting, and highly efficient heating and cooling mechanisms. Other mechanical considerations include a dry fire stand pipe system to reduce the possibility of vandalism. The building has a steel frame with poured-in-place concrete floor and roof decks. (The second floor deck is eight inches thick to minimize sound conduction.) And fireproofing is concrete or mineral fiber.

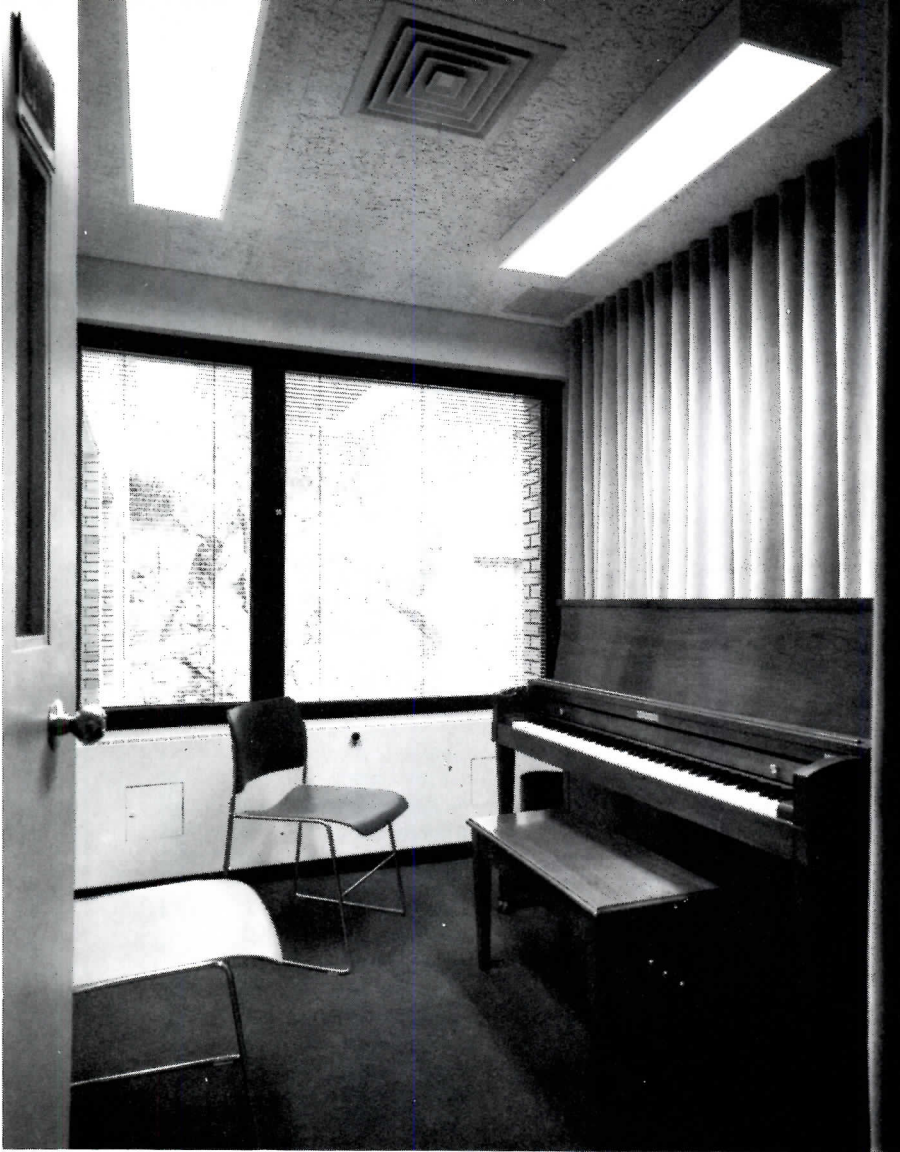
HARLEM SCHOOL OF THE ARTS, New York, New York. Director: *Dorothy Maynor*. Architect: *Ulrich Franzen—associate-in-charge; William Jacquette*. Engineers: *E.W. Finley* (structural); *Hannaham & Johnston* (mechanical/electrical). General contractor: *Or-Di Construction Corporation*.





Also a focus of the school, the lobby or "gathering place" (photo opposite) opens onto the courtyard, seen on the previous pages. It is conceived as a space for both social and performing functions. Similarly, the double-height multi-purpose space (photo left) accommodates both the functions of a dance practice studio and a theater for performances. Here, seats can be moved in around the main floor and onto the balcony above the spectators. Unusually well equipped, the various teaching and practice spaces include two other dance studios (one is seen in the photo below) and various studios for the graphic arts (photos above).





Like many of the School's interior spaces, the individual practice rooms (photo above) have outlooks onto the "oasis" that is the courtyard (photo left). In such sound-producing spaces as the practice rooms and the other music and dance studios, special care has been taken to avoid the transfer of noise—such as the surface-mounted light fixtures, gasketed doors and the curtained wall, seen in the photo. Double glazing helps not only the reduction of sound transfer, but heat loss as well.

A VICTORIAN RESCUED— AND RAISED TO LANDMARK QUALITY



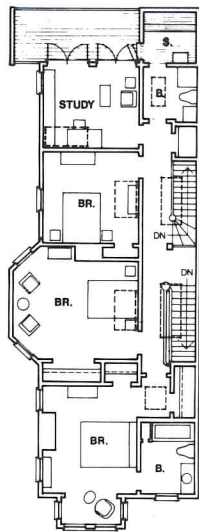
In a city famous for its successful preservation ventures, this fine San Francisco Victorian house—designed in the late 19th century—was restored and remodeled by architects Susan Bragstad and Peters, Clayberg & Caulfield. Noteworthy in design, the house nevertheless had to be rescued from demolition and withstand being moved to a new site. It was worth it. —*Janet Nairn*



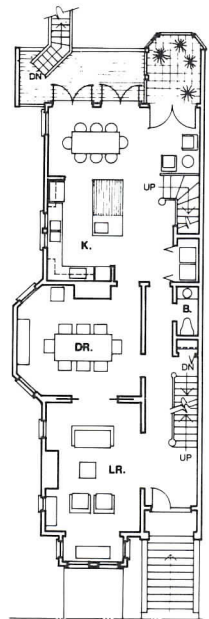
The renaissance of what has been dubbed "Victoriana" throughout the West Coast means more than just fresh paint and new windows. It is, rather, a preservation attempt exemplified by this Victorian house.

The house was designed in the Stick Eastlake style in 1876 by Samuel and Joseph Newsom, well-known California-based architects who were prolific designers of housing. It had fallen into disrepair, as had its entire neighborhood. An energetic San Francisco Redevelopment Agency years ago designated this area as Western Addition and with the aid of Federal monies had begun rejuvenation. In one spot where demolition was slated, several structurally sound houses,

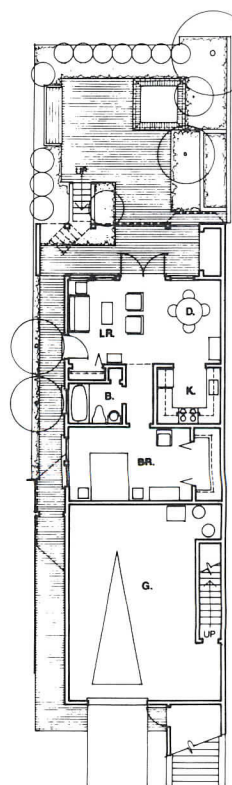
including this Victorian, were sold to the highest bidders under the condition that each be moved to a new site. George Stewart bought this Newsom-designed house, and it was moved 15 blocks to a new site with all the nervousness and tenseness to be expected. It was blocked up, raised onto a flat-bed truck and maneuvered through the streets like a turtle, with crews of men removing and then replacing overhead telephone and power lines. While the two sites were similar, the second was slightly narrower and so the house had to be "squeezed" into place on a 25-foot-wide lot, cutting off a quarter inch of a side bay window. Only the first and second floors were moved; at the



SECOND



FIRST



GROUND



Rob Super photos

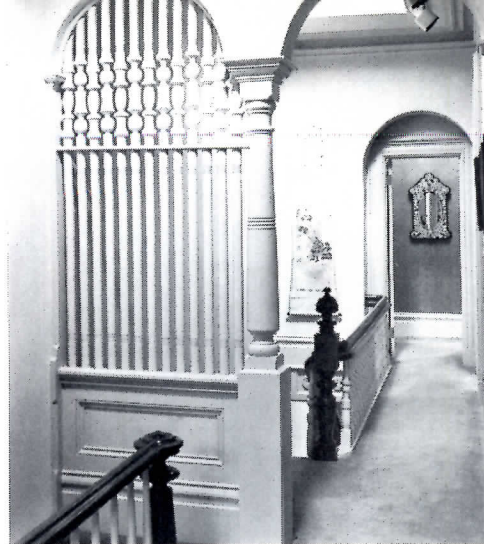
second site a new foundation had been prepared and the two floors were positioned atop a garage and a newly designed rear apartment. An unusual high tower at roof height was removed and rebuilt later.

Architects Susan Bragstad of the Redevelopment Agency and Peters, Clayberg & Caulfield collaborated on the restoration and remodeling. Meticulous attention was given to the restoration of the classic ornate facade with its profusion of ornamentation. Characteristic of the Newsom brothers' designs, the exterior form is dominated by square bay windows crowned with a tower.

After the house had been rehabilitated, it was then recognized and placed on the

National Register of Historic Places and chosen by the San Francisco Landmarks Preservation Advisory Board as one of the most important Victorian structures in the City. It has also been designated the theme logo building for The Foundation for San Francisco's Architectural Heritage.

STEWART RESIDENCE, San Francisco, California. Owner: *George E. L. Stewart*. Architects: *Peters, Clayberg & Caulfield* and *Susan Bragstad* of the *San Francisco Redevelopment Agency*. Structural engineer: *Nishkian, Hammill & Associates*. Landscape architect: *Max A. Schardt*. Interiors consultant: *Cliff J. Hines*. General contractor: *Rosenmayr Development Co.*

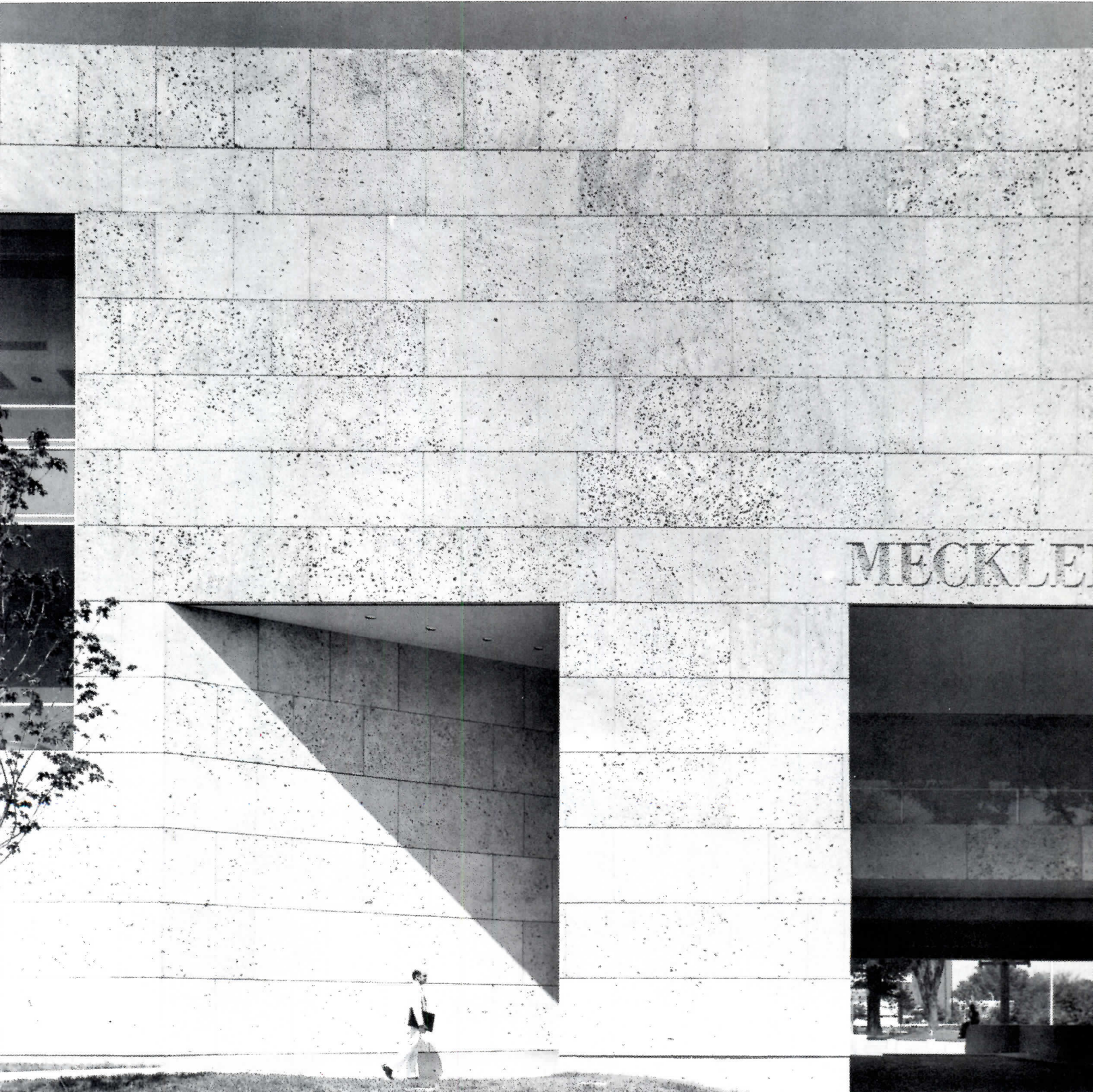




The Stewart residence is a combination of restoration and remodeling, totaling 4000 square feet. Because there had been many owners and nearly as many remodelings of the interiors, care was taken to restore special elements, including tracking down the original bannister which had been stolen when the house sat idle. A unique double back-to-back stairway, separated by its original screen, leads to the second floor. On the ground level, a separate rental apartment was added behind the garage, with its own private entrance and access to a rear deck and garden. On the first floor, the formal living and dining rooms (see previous pages) were retained and restored, but an open kitchen (top right), informal dining area and porch (left), and greenhouse (top left) were added. In order to replace deteriorated or missing sections of moldings and trim, the plasterer made molds on site, and later in his workshop extruded new pieces from plaster or plastic.

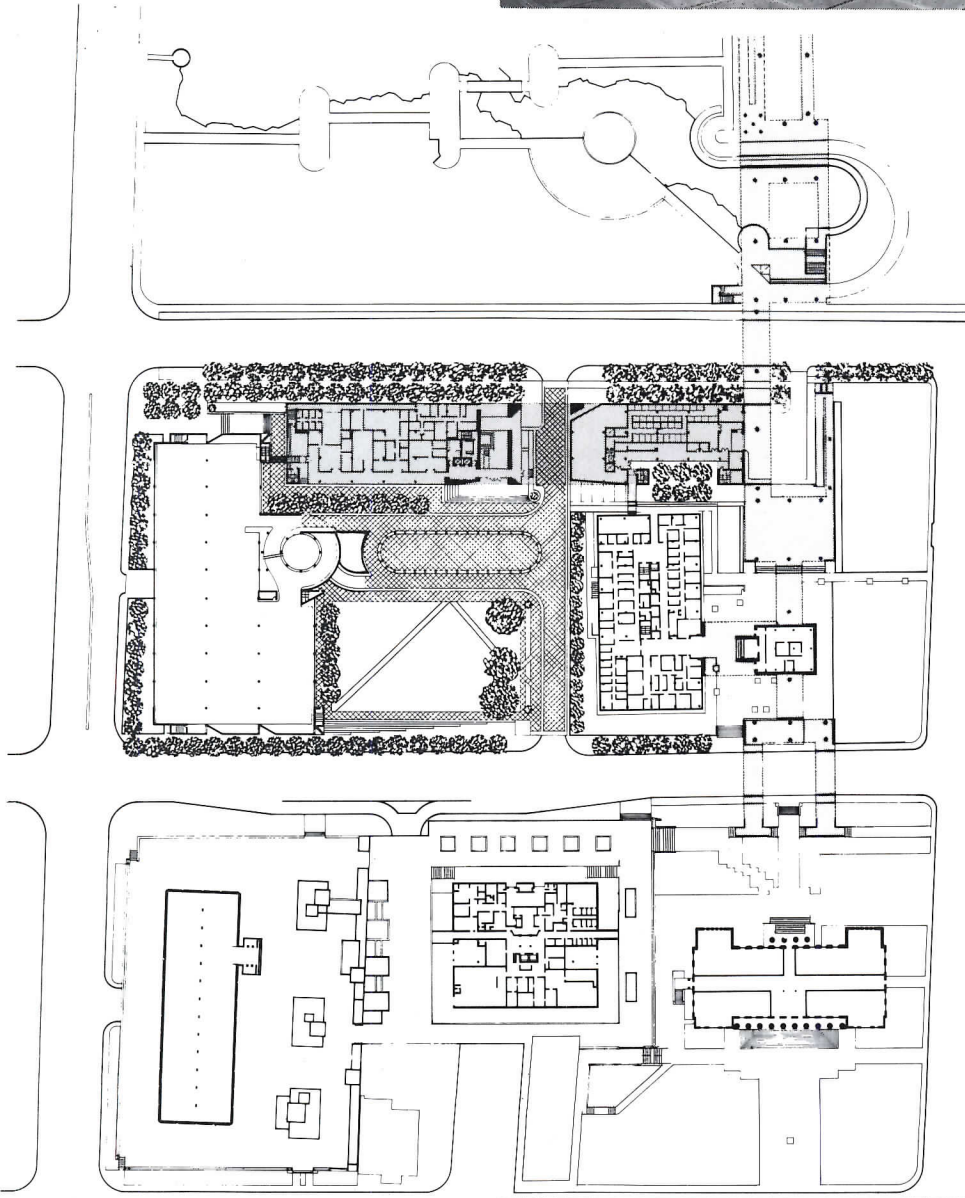
Mecklenburg County Courthouse

Gordon H. Schenck, Jr.





The architectural firm of Wolf Associates in Charlotte has gained an enviable reputation for being one of the South's—and, for that matter, one of the country's—most meticulous purveyors of architectural design. Their buildings are finely honed, elegant to a fare-thee-well, and powerful—so powerful, indeed, that they ineluctably cause even casual observers to sit up and take notice, and to offer strong criticisms as well as heartfelt congratulations. A case in point is one of Wolf Associates' most recently completed buildings, the new Mecklenburg County Courthouse in Charlotte, shown here



and on the previous and the following two pages. The building is located in the heart of a city and county government center and also in the midst of a wide open urban mesa that was the result of the inevitably cataclysmic first act of what used a decade ago to be called urban renewal. Wolf Associates' task was not just to design a building, but also to make some over-all sense of the existing architectural elements on the site—a county office building (most to the right of the three shaded buildings in the plan on the opposite page), a major public park (at the top of the plan), and an elevated pedestrian

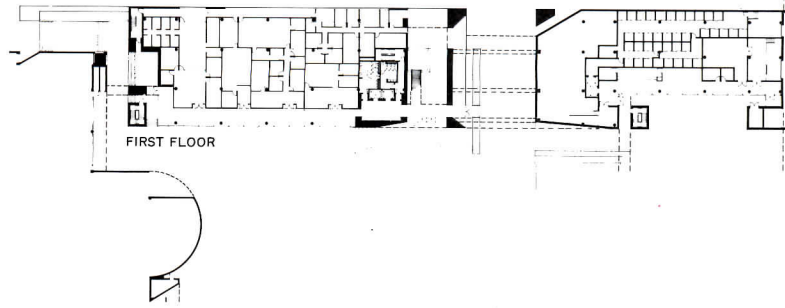
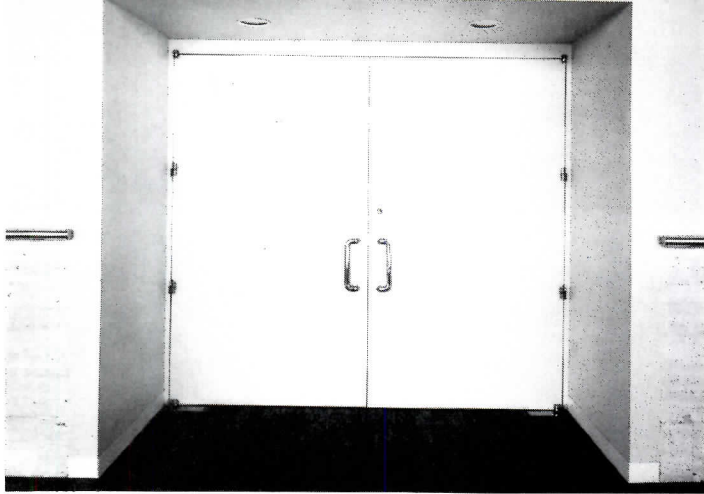
walkway crossing a public street. A new 450-car garage, designed by another firm, had also to be provided for (most to the left of the three shaded buildings), and the hope was also to create some focal point for the whole complex in the form of a new public plaza—evocative, the architects suggest, of old courthouse squares of the past. The courthouse itself, lying between the new parking garage and the county office building and pedestrian walkway, is a long, sleek building clad in Cordova shell limestone and, on the plaza side, a glass and aluminum curtain wall. It functions not just as a courthouse,

but also as a circulation spine that links the garage to the walkway and to the county office building. On its street side (shown in the small photograph at the bottom of the opposite page and in the photograph on the page before that) the building sports a facade that is large in scale, the limestone being punctured with openings that provide viewers from inside with selective prospects of the park across the way. The largest of all these openings is the streetside entrance—not just to the building, but through it, to the new public plaza that has been created beyond (below). . . .

photos © 1978 David Franzen/ESTO



303 COURTROOM

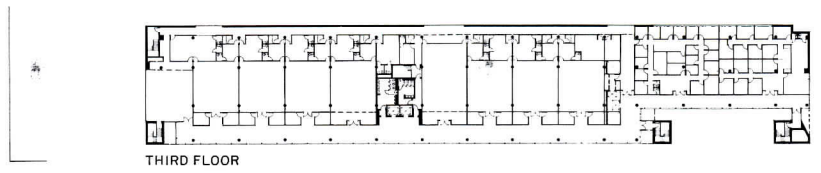
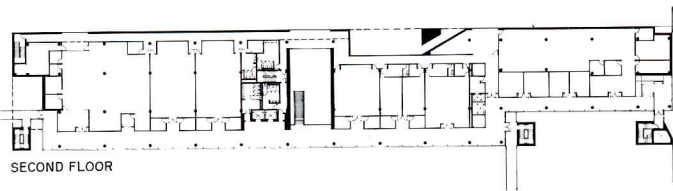


Inside, the courthouse uses a dual-corridor system to separate public and private circulation; the public corridors overlook the plaza through the glass curtain wall (right). On the opposite side of the building, private corridors provide access to the rear of each courtroom.

As a piece of architecture, the building is obviously Modernist in persuasion, in that it uses the handsome and apparently machine-made materials in which Modern architecture traditionally clads itself. Less obviously, perhaps, it is Modernist in that it takes a literal view of function, and an abstract view of symbol. Thus the function of circulation—not some arguably higher judicial “function”—mainly determines the shape of the building, and the recollection of courthouse squares from the past is attempted by abstractly evoking their form—as opposed to something perhaps more palpable, their look. These issues provide subjects for an essay which follows.—Gerald Allen

MECKLENBURG COUNTY COURTHOUSE, Charlotte, North Carolina. Architects: Wolf Associates. Engineers: King-Hudson Associates (structural); James A. Story & Associates (mechanical); Bullard Associates (electrical). General contractor: Parke Construction Co.





photos © 1978 David Franzen/ESTO



Commentary: Symbolism in Architecture

by Allan Greenberg

"All architecture proposes an effect on the human mind, not merely a service to the human frame."
—John Ruskin

Since the growth of the International Style in the 1920s, the expression of symbols appears to have lost its relevance to architecture.¹ Because symbolism is a major element in the articulation of meaning in architecture, especially in the design of public buildings, its loss must count as a significant factor in any explanation of the serious functional and esthetic shortcomings of so many modern buildings in our towns and cities.

Symbolism plays an especially important role in planning the settings for the judicial system, and the design of courtrooms and courthouses offers a provocative case study for the assessments of its crucial function in architecture. Court procedures are highly formalized and should, in their operation, both uphold and emblemize the tradition and development of our democratic system of government.

Consider courtroom design. The courtroom is the setting for the administration of justice under the law and, as such, is the heart of the courthouse. The layout of a typical criminal courtroom in the United States differs markedly from courtrooms in other countries and reflects our unique system of justice. The American judge is an impartial arbiter and is therefore positioned on a raised podium in the center of the front of the room. Defense and prosecution are equal adversaries and, as such, are each provided with seats at assigned tables in the well of the courtroom facing the judge. The public are silent observers, sitting at the rear of the courtroom, facing the judge. Their role is just as crucial as that of the other parties for, as silent arbiters, they influence the law through the political processes of election and legislation. The jury box is placed at the side of the room, deliberately divorced from the axial relationship of judge, counsel and public. This placement reflects the impartiality of the jurors, who must decide guilt or innocence. The witness box is located adjacent to the judge's bench facing the two parties. This provides the latter with their constitutional right to confront the opposing counsel's witnesses.

In this courtroom layout, symbolism is of paramount importance. Serious consideration of the cultural and social values embodied in the court system is, therefore, a prerequisite to the design or evaluation of any courtroom.² The architectural forms should be seen as a "sign system through which society tries to communicate its ideal model of a relationship between judges, prosecutors, jurors and others involved in judicial pro-

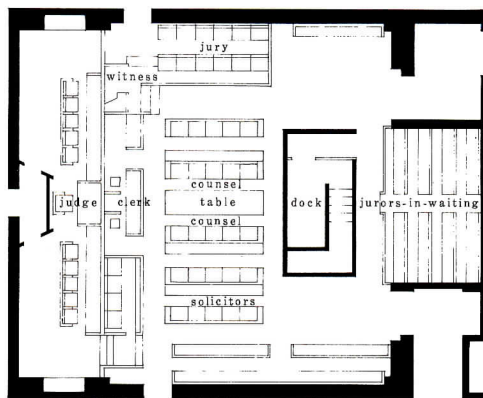
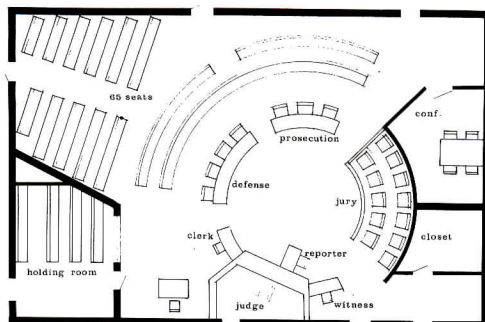


Figure 1. Plan and section of a typical courtroom used for criminal cases at the Crown Court, Dorchester, England (1957). The accused person is seated in a dock, raised above the level of the courtroom and facing the judge. The public seating is in a gallery, and the judge's bench extends almost all the way across the courtroom. The bar area is occupied by the barristers. (Architect: James Hearst).

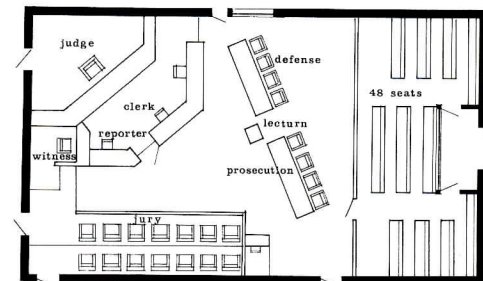
Figure 2. Plan of a courtroom-in-the-round. Trial participants, with the exception of the court reporter, are seated in a circular arrangement. The judge's bench is slightly differentiated by its geometry and raised platform.



ceedings."³ In other countries, where social organization and judicial procedures are very different from ours, these differences are often directly reflected in their courtroom designs.⁴ For example, in eastern European countries the prosecutor sits on the podium next to the judge, thus leaving the defendant and his attorney alone in the center of the courtroom; in some Swiss courts, the jury sits behind the judge, who may also be a member of the jury panel; and an accused person in England does not sit at a table with counsel for the defense, but is isolated in a dock with a security officer (figure 1). Seen in this light, the traditional American courtroom layout is notable for its marked orientation toward the rights of the accused.

During the past decade, three new courtroom layouts have been proposed. These are the courtroom-in-the-round, courtroom with the judge's bench in the corner, and courtroom with witness located opposite the jury (figures 2-4). In each case, proponents have claimed significant improvements for court procedure and trial participants' ability to see or hear. However, any new courtroom design should be rigorously justifi-

Figure 3. Courtroom with the judge's bench in corner. This remarkable type of plan was developed by Judge George Boldt. Ignoring symbolic criteria, it arranges trial participants so as to give maximum weight to the judge's view of the witness, adjacency of reporters to witness, and to provide space for conferences at the judge's bench.



able on grounds of symbolic meaning as well. For example, the appropriateness of a courtroom-in-the-round, especially in serious criminal litigation, is open to question. The equality implied by the circular form fails to differentiate between the trial participants or to express their adversary roles.

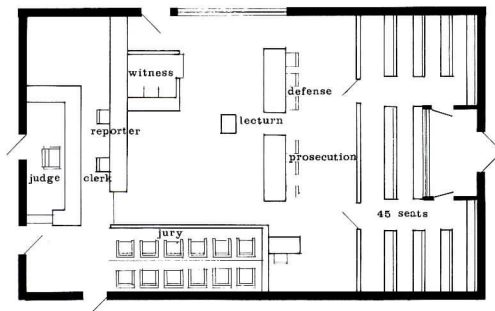
The courtroom with the judge's bench in the corner seems to lack a clearly expressed symbolic order, and the courtroom with the witness stand facing the jury is a variation of the traditional courtroom. The witness stand is relocated so as to improve the judge's and the juror's view of the witness. Unfortunately, this move establishes a cross axis of judge-counsel and witness-jury, which has no connection with adversary proceedings and severely undercuts the sense of counsel and client confronting witnesses.

The most important functional criterion is that all the participants in the trial—judge, juror, witness, clerk, court reporter, defense and prosecuting attorney, defendant or litigant, press and public—be able adequately to see and hear everything that occurs and to feel a sense of involvement in the proceedings. This is difficult to achieve in a room of 1,200 to 2,000 square feet in which the focus of attention moves unpredictably from witness to counsel, judge or reporter. Counsel occupies different positions in the courtroom during cross-examination, summation, sentencing and bench conferences, and the jury is often out of the room. The problem is further complicated by the uncontrollable factors of poor enunciation and diction and the use of the same courtroom for trials, arraignments, calling the calendar and sentencing. We are faced with a functional problem whose complex and overlapping requirements preclude the isolation of any dominant set of organizing principles. It is necessary, therefore, systematically to test a series of compromises, none of which can fully accommodate the various needs of all the participants, until layout is developed.

In order to do this, I developed a comprehensive method to evaluate the performance of any courtroom and to compare performance of any number of courtrooms.⁶ By establishing principles for good sight lines and acoustics, functional problems can be readily assessed for correc-

Allan Greenberg is an architect in New Haven, Connecticut, and author of *Courthouse Design: A Handbook for Judges and Court Administrators*, commissioned by the American Bar Association.

Figure 4. Courtroom with witness located so as to face the jury. This plan follows the traditional model with the exception of the witness location.

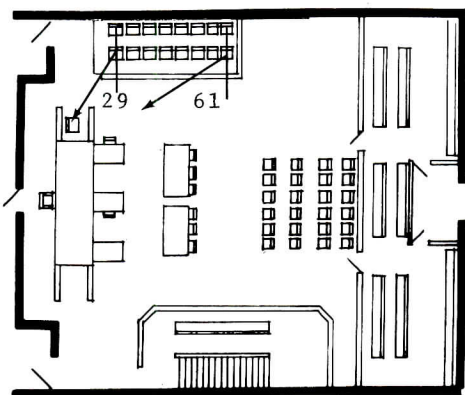
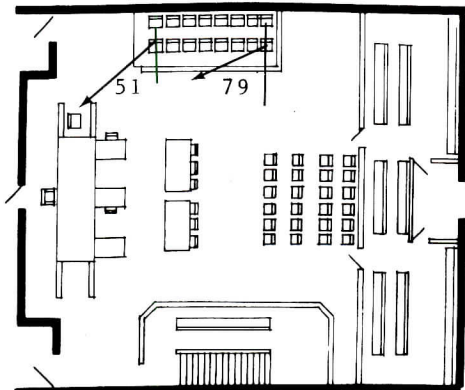


tive action. A point-score system is used to compare and evaluate the performance of two or more courtrooms. However, experience in designing and evaluating courtrooms has made one point abundantly clear: *there is no one optimal functional solution*. Each courtroom's configuration and dimensions have their own set of built-in advantages and problems. For example, the main deficiency of both the traditional courtroom and the courtroom-in-the-round is that the location of the witness denies judge and some jurors a good frontal view of the witness' face (figures 5-6). The courtroom-in-the-round actually worsens the problem for the jurors nearest the witness by increasing the angle they have to turn in order to face the witness. The traditional layout may also create problems for jurors farthest from the witness, who must lean forward to obtain good sightlines to the witness. Both problems can be corrected. In the latter case, the jury box must be moved nearer the witness, and in the former jury box can be modified.

The courtroom-in-the-round reduces distances between some participants, thereby creating a sense of intimacy, but it also increases the sight angles and physical strain.⁷ The latter can be alleviated to some extent by using swivel chairs. The courtroom with the judge's bench in the corner keeps the witness between judge and jury but moves the bench into a corner and turns it almost ninety degrees so as to optimize the judge's view of witness and jury (figure 3). These adjustments dramatically increase the distance between counsel tables and witnesses. The courtroom with the witness located opposite the jury optimizes the judge's, jury's and reporter's view of the witness, but limits counsel's to a profile. Counsel must also cross-examine the witness from a lectern to avoid turning his back to the jury (figure 4). The latter two plans optimize sightlines without unduly increasing distances. The traditional plan provides the best relationship between public, counsel and judge.

It is clear that functional analysis yields no ultimate plan, as each type has both advantages and drawbacks. In order to find a way through this maze of ergonomic data and conflicting claims by proponents of different courtroom layouts, I suggest that the most

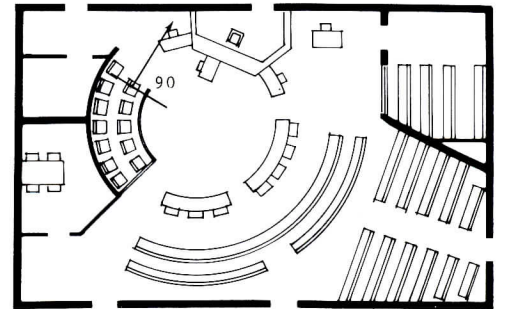
Figure 5. The traditional courtroom layout imposes some strain on jurors seated farthest from the witness. The angle they have to turn to see the witness can be reduced by careful consideration of jury box location.



reasonable design procedure is, *first*, to select a courtroom layout which provides a desired set of symbolic relationships; and, *second*, to optimize ergonomic relationships by detailed consideration of room dimensions and subtle placement of furniture and fixtures. Once a selection of layout has been made, it must be subjected to a rigorous program of testing, adjustment and evaluation by the architect and building committee. Drawings and scale models should be used to optimize all sightlines and distance relationships. The availability of voice amplification and acoustical engineering should ensure that no one in a courtroom misses a spoken word. Having chosen a courtroom for its symbolic attributes, serious study of the functional aspects can then maximize its advantages, and careful placement of the furniture and control of sight angles can minimize the disadvantages of any layout to the extent of virtually equalizing performance factors. It should be clearly stated that advocating a primary role for symbolism in the process of selecting courtroom layout can never be used as an excuse for failing to resolve acoustic or sightline problems in any courtroom, irrespective of size or layout.

It is also important to study the fabric of the courthouse building which houses the courtrooms, as this structure is also imbued with symbolic importance. The exterior articulation of a courthouse and the relationship of the building to its surroundings expresses our concept of the role of the law in society. Similarly, the building's internal arrangement reflects the relative importance assigned to

Figure 6. The circular courtroom layout imposes severe strain on jurors seated nearest the witness, who have to turn almost 90 degrees to see him or her. Modification of the witness box shape can improve the situation, but the symbolism of the circle is severely compromised.



the transactions and the roles of the various groups using the building. In order to demonstrate the range of meanings and values that can be communicated by a courthouse, let us look at the Virginia State Capitol, which originally included the State Supreme Court, designed by Thomas Jefferson in 1785 (figure 7). Jefferson based the design on that of a Roman Temple. His idea was to express the continuity of the classical ideals of democracy and rule of law now being realized anew in the American Republic, to strengthen the Republic's young roots by demonstrating the intellectual tradition to which it was heir, and to signal to the world the greatness to which it aspired. The organization of the Capitol's plan also has symbolic significance, as the legislative chamber and supreme courtroom were expressed as co-equal branches of the government. The building was sited in a landscaped square in Richmond and elevated on a podium to signify its unique importance as the center of the state's legal, judicial and executive activities. At the time, it was the most elaborately designed and important building in Virginia.

Jefferson's intention was understood by citizen and architect alike, and for the next 150 years so many state capitols and courthouses followed the classical tradition that the United States boasted more large domes and porticos than ancient Rome. Even High Victorian Gothic structures, such as the Connecticut State Capitol at Hartford, are planned to express the independence of the three branches of government.

Buildings like the United States Supreme Court in Washington, D.C., designed by Cass Gilbert in the nineteen-thirties, clearly refer to Jefferson's design and use ambitious sculptural programs, mottos and inscriptions to amplify further the themes of law, justice and democracy, (figure 9). Similar principles underly the design of our greatest public building, the United States Capitol.

Symbolic factors were of primary importance in the design and planning of the interior of older courthouse buildings. The beautiful lobbies indicate—by virtue of their size, rich material and primary importance in the organization of the plan—that public convenience has been an overriding factor in design. Paul Cret, at the Hartford County Courthouse

Figure 7. Virginia State Capitol, designed by Thomas Jefferson. The use of Roman forms suggests that the new American republic is the successor to the ancient Roman republic.



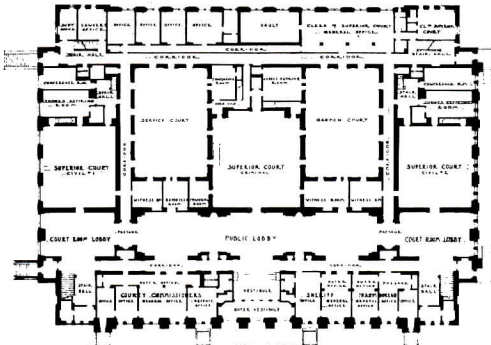
(1926-28), uses light, entering one side of the lobby, to separate courtrooms and mark the location of the entrance to office spaces on the opposite side, (figure 8). The articulation of the lobby in plan and section, which contrasts the large-scale fenestration, murals and doorways associated with courtrooms with the small colonnade and related offices on the opposite side, subtly informs the user that there are one major and two minor courtrooms on one side and office functions on the other.

The grand public spaces and elaborate design found in older courthouses still convey an aura of dignity and, despite current overcrowding and obsolescence, continue to provide a sense of order, orientation and hierarchical importance of destinations. The fact that they provide more than the bare minimum of space is a celebration of human values, a demonstration of concern for user well-being, and a recognition of the fact that people come to a courthouse for the resolution of serious problems and require a setting that confers the appropriate aura of dignity on their deliberations.

Perhaps the most damning characteristic of many new courthouses is the lack of a coherent and symbolically significant relationship with the surrounding buildings and environment. The messages which these buildings communicate to the taxpaying public and attorneys, witnesses, jurors and litigants in the courthouse are that their needs, both functional and psychological, do not warrant attention or expression.

Study of older courthouses often yields valuable data which can profitably be applied to our own work. These buildings' exteriors were monumental, yet did not overwhelm the surrounding environment. They communicated the importance of the venue where society administers laws, metes out sanctions and resolves citizens' conflicts. Entrances were clearly articulated, and architectural forms provided visual pleasure. An analysis of interior spaces in offices in old courthouses also provides a wide range of useful planning information. In this regard, we have much to learn from the Beaux-Art-trained architects who strove to design circulation systems in public buildings so that destinations were obvious and self-evident to the user.

Figure 8. Plan of the first floor at the Hartford County Courthouse (Architect: Paul P. Cret). The lobby, which is three stories high, receives light from high windows between the courtrooms. These windows also mark the entrances to offices on the opposite sides of the lobby.



Anything less than this constituted a serious design failure. The shapes of lobbies and foyers, windows, location of stairs and elevators, strategic placement of spacious corridors and decorative elements, were all used to suggest direction of movement, hierarchical importance of destinations, and to provide a sense of orientation at all times.

It is obvious that our idea of what constitutes the most appropriate setting for a courthouse and its various departments has changed over the last two or three decades. Some people argue that the legal process itself is the monument and that the courthouse building is a very secondary concern. This attitude confuses non-design with the need to make visitors, jurors, witnesses and litigants feel comfortable and oriented in the building. This latter, desirable goal can only be achieved, I believe, by recognizing the important role of symbolism and the expression of meaning in architectural design, and by using symbols that are comprehensible to contemporary society in order to communicate with its surroundings and the user.

The design problem is more than simply providing sufficient area and minimal standards for satisfactory operations. A more fundamental question is this: "What kind of environment is appropriate for the particular transaction?" The answer is inextricably involved with cultural and social issues, tradition and process. A design method that ignores these factors, and does not go beyond satisfying minimum needs, results in both the architect and the client neglecting such important considerations as orientation, expression of civic role, and the provision of amenities for the individual. The lack of recognition of the role of symbolism in the courthouse also has the secondary effect of excluding *serious* consideration for provisions both for physical comfort and for psychological comfort as well.

Today, tradition-repudiating doctrines inherent in much Modern architecture compel architects to attempt the development of new design typologies with each new building they undertake. This results in a repeated reinvention of the wheel. The denial of tradition has also led to a lack of serious guidelines for courthouse design which has resulted in poorly informed clients and architects and in

Figure 9. United States Supreme Court, designed by Cass Gilbert. The temple front clearly refers to Jefferson's Virginia State Capitol, and the sculptural program deals with themes related to justice.



situations where the display of stylistic innovation and formal novelty are confused with the development of functionally appropriate solutions and genuine innovations.

How can this deficiency be remedied? Some obvious answers spring to mind. In the past, architects used a system of building types as the basis of design. Model solutions were based on the accumulated experience of the past (traditions) and constantly revised as new experience became available. There is a crying need now for a rigorous program to evaluate, systematically, the performance of new courthouses as a means of accumulating a body of data dealing with symbolic, functional, psychological and physiological aspects of design. The case-study method, which was so pivotal in developing our modern system of legal education, should now be applied to the design of courthouse facilities, as well as other building types. The development of design standards for courthouses and evaluation procedures for architects, clients and users should be a task of our architectural schools and the profession. Without such standards and procedures, experience and knowledge related to courthouse design cannot be accumulated, assessed and transmitted. It is only in this way that the challenging task of incorporating symbolic, as well as functional, concerns can be solved and that as architects, we can rise to meet Ruskin's challenge to service both man's mind and his frame.

FOOTNOTES

1. An early version of this paper was published in *Judicature*, April 1976, pages 422-428 and May 1976, pages 484-490.
2. John W. Hazard, "Furniture Arrangements as a Symbol of Judicial Roles," *19 ETC: A Review of General Semantics*, pages 181-188 (July 1962).
3. Robert Gutman, *People and Buildings*, (Basic Books), 1972 page 229.
4. Sybille Bedford, *The Faces of Justice: A Traveller's Report* (Collins), 1961.
5. C. Theodore Larson, "Future Shock Hits the American Courthouse: Opportunities for Parameters of Design," *American Institute of Architect's Journal*, July 1975, page 38.
6. Allan Greenberg, *Courthouse Design: A Handbook for Judges and Court Administrators*. American Bar Association Commission on Standards of Judicial Administration, 1975, pages 43-52.
7. *Ibid.*, pages 64-65.
8. *Ibid.*

TWO OFFICES BUILT AROUND SPECIAL INTERIOR SPACES



Office building design has been the source of a great amount of work during the past few years, often a mainstay for many firms during a time of economic flux, and the outlook for more work looks even better today. But designing an office building is not a simple task. Client criteria is at its toughest, especially in corporate headquarters, because of budgetary concerns on one hand and the desire for a quality image and employee satisfaction on the other. In this mini-study two smaller office buildings are featured—both explore these common goals, but each achieves them through different design avenues and for different reasons. The mutual thrust and major design feature is to focus views inward on carefully designed interior spaces. The Panasonic office (above) by Raymond, Rado, Caddy & Bonington turns inward because of its location in a highly industrial area; in the Household Finance Corporation International headquarters (below) by Loebel, Schlossman & Hackl, all interiors open off a stunning atrium, a surprise since the building is in a pleasant suburban setting.



**PANASONIC OFFICES
SECAUCUS, NEW JERSEY
RAYMOND, RADO, CADDY &
BONINGTON ARCHITECTS**

In considering the proper design approach to this particular set of requirements and problems, the architects focused their design on the creation of a special interior environment that minimizes views to its surrounding flat, unattractive industrial park. The result was a 200,000-square-foot rectangular office building with two large, open courtyards in the center, separated by a glass walkway.

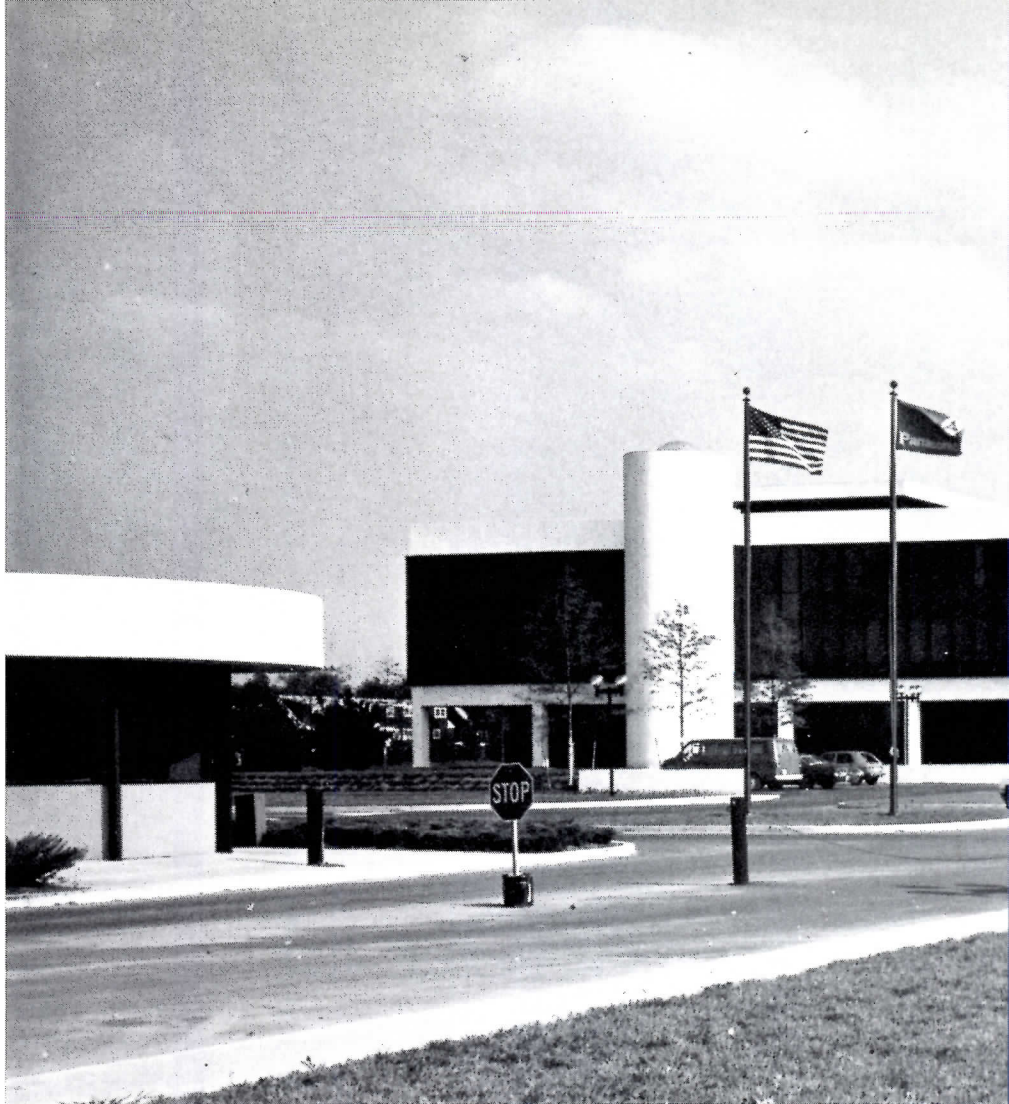
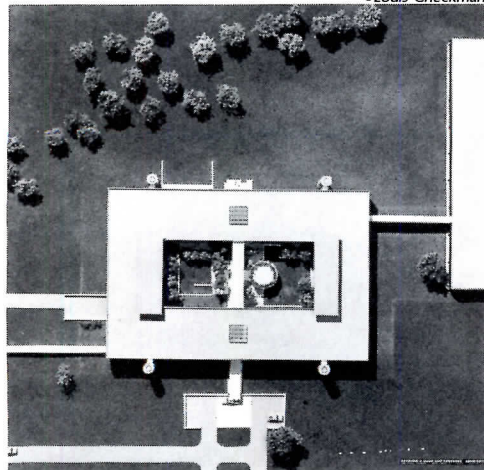
The architects were initially asked by the industrial park owner to demonstrate to a prospective client that the site could be suitable to the company's needs; once that was accomplished, they were dually retained by the park owner to design the structure and by the client, Panasonic, to design the interior spaces.

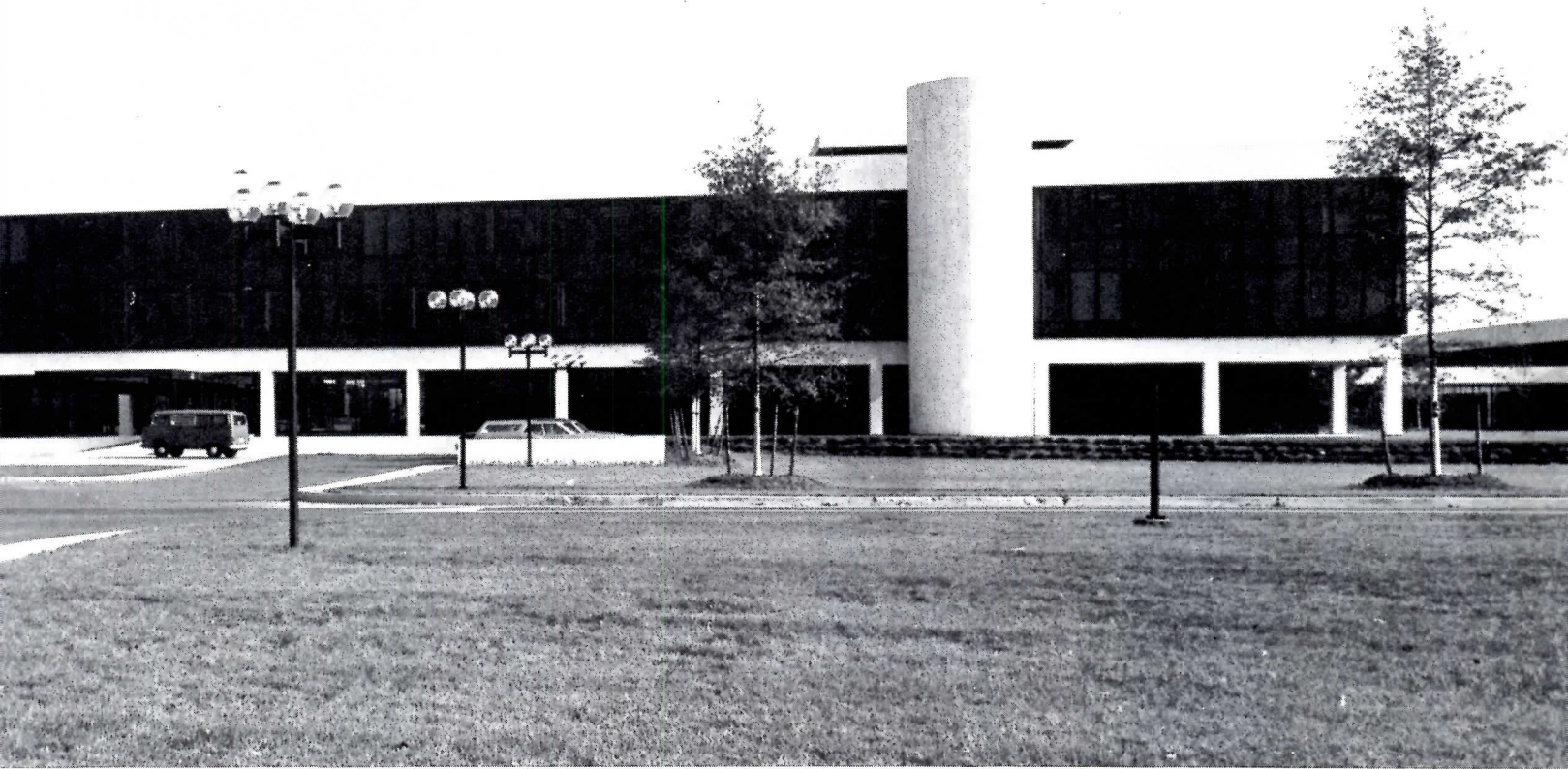
The structure was designed as a simple rectangle to meet strict budgetary controls while maximizing the amount of diversified space the client requested. Yet the building has a stronger visual identity than the other buildings in the area, set off by its contrasting solar glass panels, articulated exterior concrete grids, and circular stair towers pulled out from the structure.

Inside (overleaf) two handsome courtyards create a private world. Because of the linearity of the structure, the architects broke up what could have been long, blind corridors by positioning open seating and light "wells" at each terminus of the courtyard walkthrough. A double corridor system was also employed to allow offices around the perimeter, some offices and general employee areas along the glass wall facing the courtyards, and storage and conference rooms between the corridors.

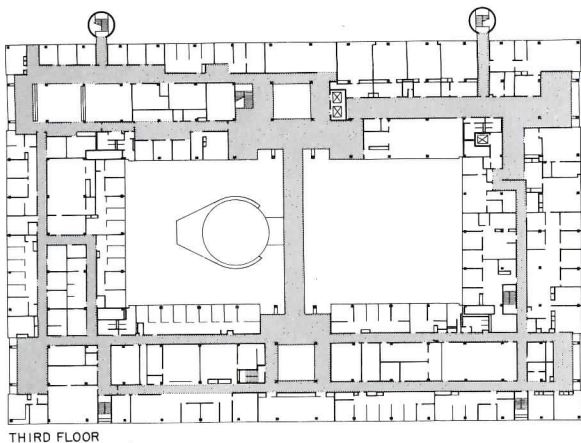
CORPORATE HEADQUARTERS AND DISTRIBUTION CENTER FOR PANASONIC, Secaucus, New Jersey. Owner/developer/general contractor: *Hartz Mountain Industries*. Architect/interior designer: *Raymond, Rado, Caddy & Bonington*. Engineers: *Nacamuli Associates* (structural), *Atmos Engineering* (mechanical). Landscape architect: *Lawrence J. Tencza*.

©Louis Checkman

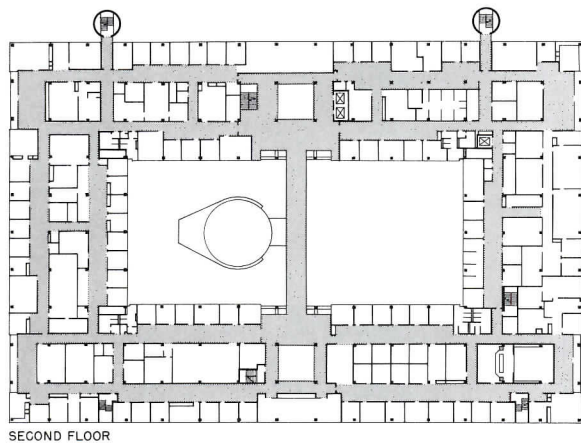




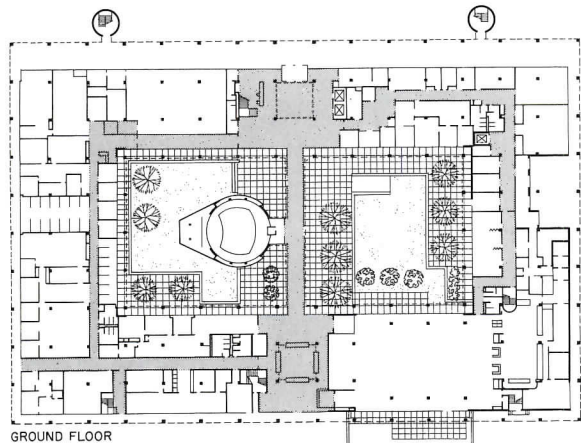




THIRD FLOOR

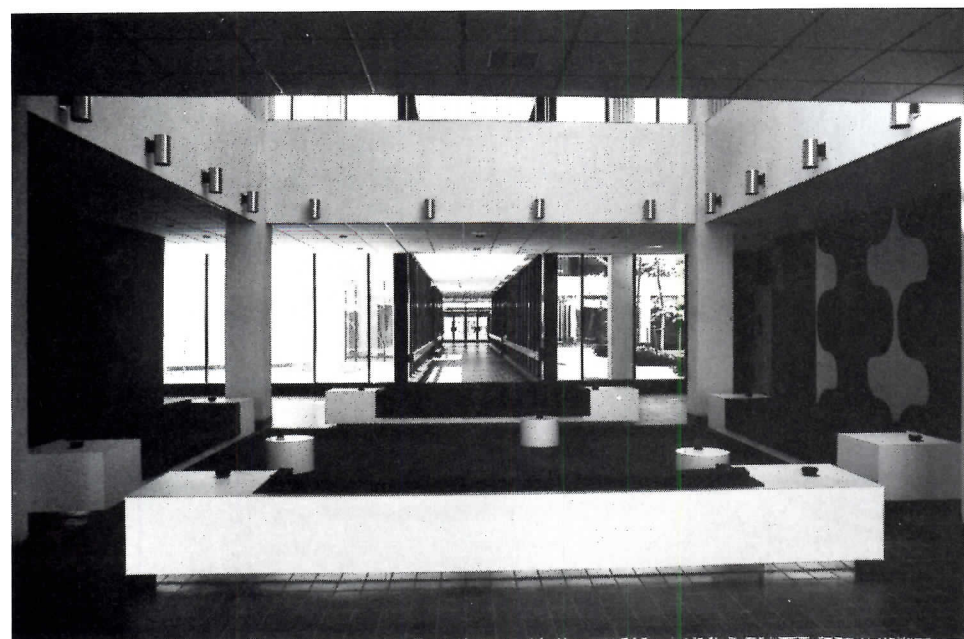
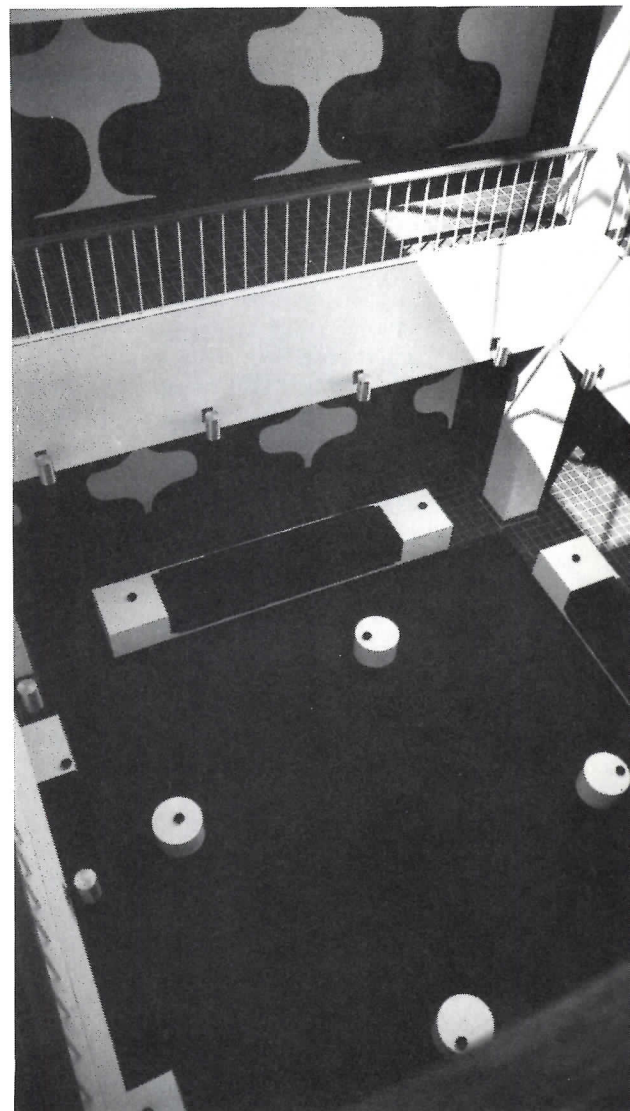


SECOND FLOOR



GROUND FLOOR

In an attempt to have a controlled environment where views are directed inward, away from the surroundings, several special open areas were designed, augmenting work spaces with natural light and "replacement" views. In the center of this rectangular building there are two courtyards separated by a glass-enclosed walkway (left). Major employee spaces, such as the cafeteria (bottom right), are positioned along the glass wall facing the courtyards. A large auditorium is also located in one of the courtyards. At the ends of the walkway are two open "wells" (below and top right), each open the full three-story height of the building and topped with a skylight. These are pleasant areas utilized by the employees as well as used to visually and physically alter the pattern of interior long corridors.



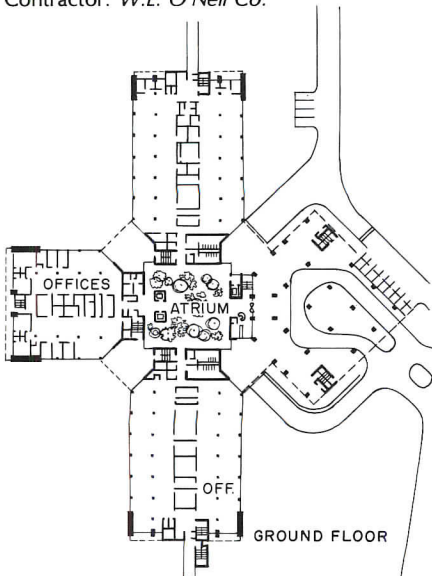
**HOUSEHOLD FINANCE CORPORATION
INTERNATIONAL HEADQUARTERS
PROSPECT HEIGHTS, ILLINOIS
LOEBL, SCHLOSSMAN & HACKL**

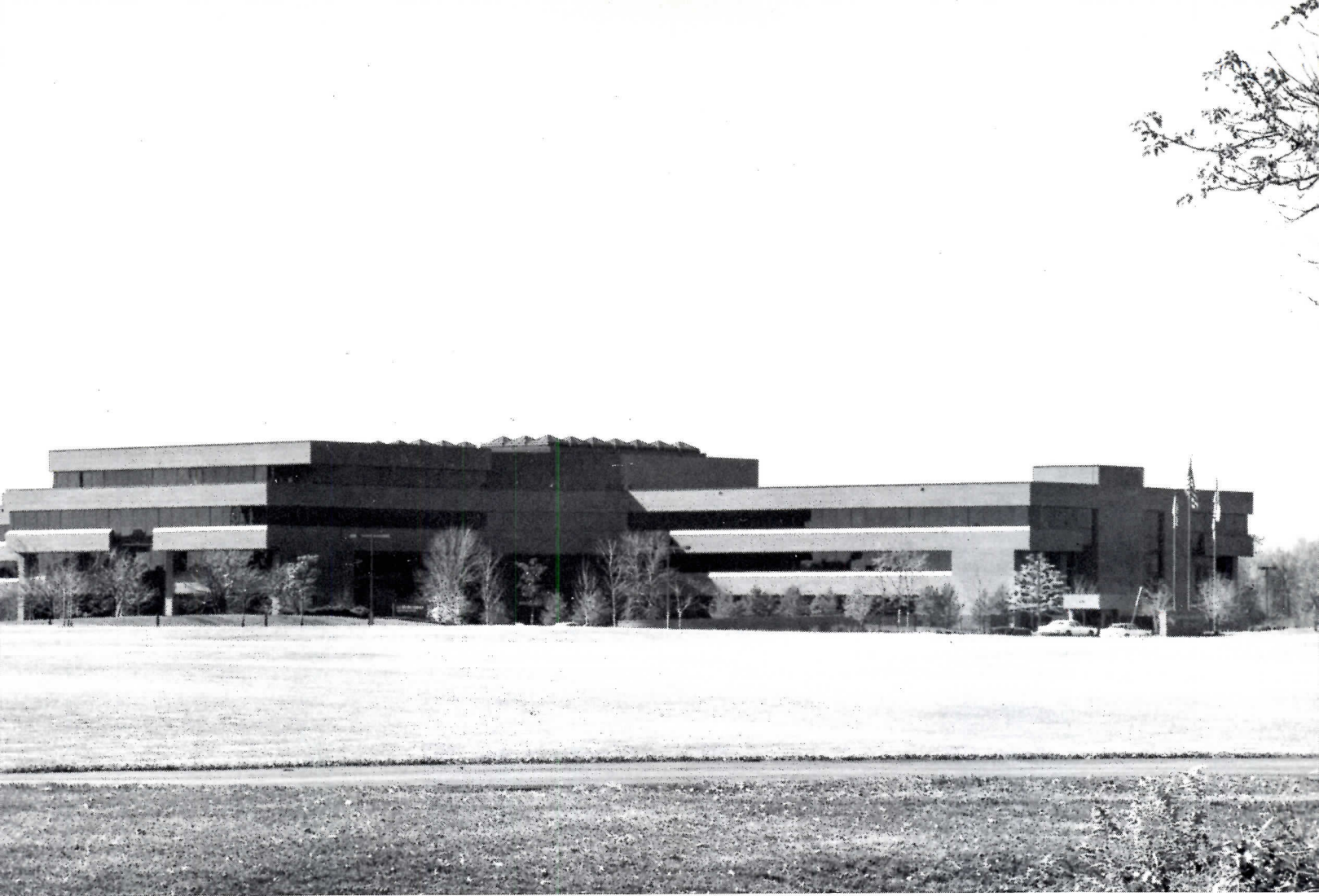
The corporate headquarters for this company is centered around a four-story-high atrium filled with lush, beautiful vegetation and a running stream. While four arms filled with office space radiate from this hub, the atrium is the crucial and central environment of this 380,000-square-foot building. This central space serves as the main reception area and is a most impressive entrance for the visitor; it is also the focal point for the employees as passageways and balconies all converge at this view point.

The client desired to move from its offices in the Chicago Loop to the northwest suburbs, a mecca for large corporate headquarters. But the client also wanted a non-high-rise structure that rejected any "institutional" look, and a building that was different in form and color from its neighbors. A cruciform-shaped building evolved with varying massing that reflects the company's organization of department and functional divisions. It was set back from the roadway for visual impact, enhanced by crisp detailed fenestration and reddish-brown colored brick.

An energy conservation design, the building features dark-tinted insulating glass, a charcoal air-filtration system that needs almost no outside ventilation, and an interior heat retrieval system that controls temperature of water and air year-round.

HOUSEHOLD FINANCE CORPORATION INTERNATIONAL HEADQUARTERS, Prospect Heights, Illinois. Owner: Household Finance Corp. Owner's consultant: Allstate Management Corp. Architects: Loebel, Schlossman & Hackl, Inc.—Donald J. Hackl, principal-in-charge of design; Dan Koide, project manager; Po Hu Shao, Steven Wright, Ming Nang Chen, design team. Consultant to the architect: Ambrose Richardson. Engineers: Rittweger & Tokay (structural), Herman Blum Co. (mechanical/electrical). Landscape architects: Lipp, Wehler & Associates. Interiors: Business Interiors, Inc. (1st, 2nd, 3rd floors); Colby's Interiors (executive floor). Contractor: W.E. O'Neil Co.



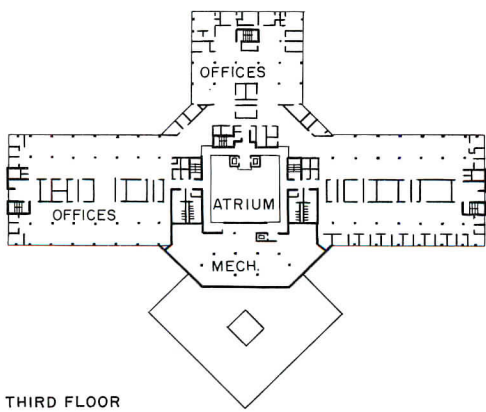
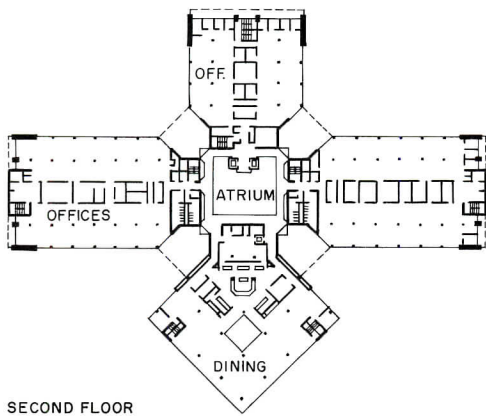


Balthazar Korab photos





Office space throughout the headquarters for Household Finance Corporation is open-planned in each of its four wings, with each wing radiating from a central core—the plant-filled atrium (below and previous pages). This atrium is only partially topped with a skylight; a large solid centerpiece holds mechanical systems for the structure and downlights to augment natural light. One floor is below ground (not shown in plan) and is mostly space for computer facilities. The main dining facilities and employee cafeteria (left), located on the second floor, were positioned in the west wing to have views to a forest preserve adjoining the site. Executive facilities are located on the fourth floor.

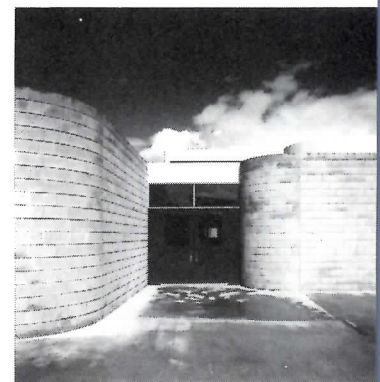
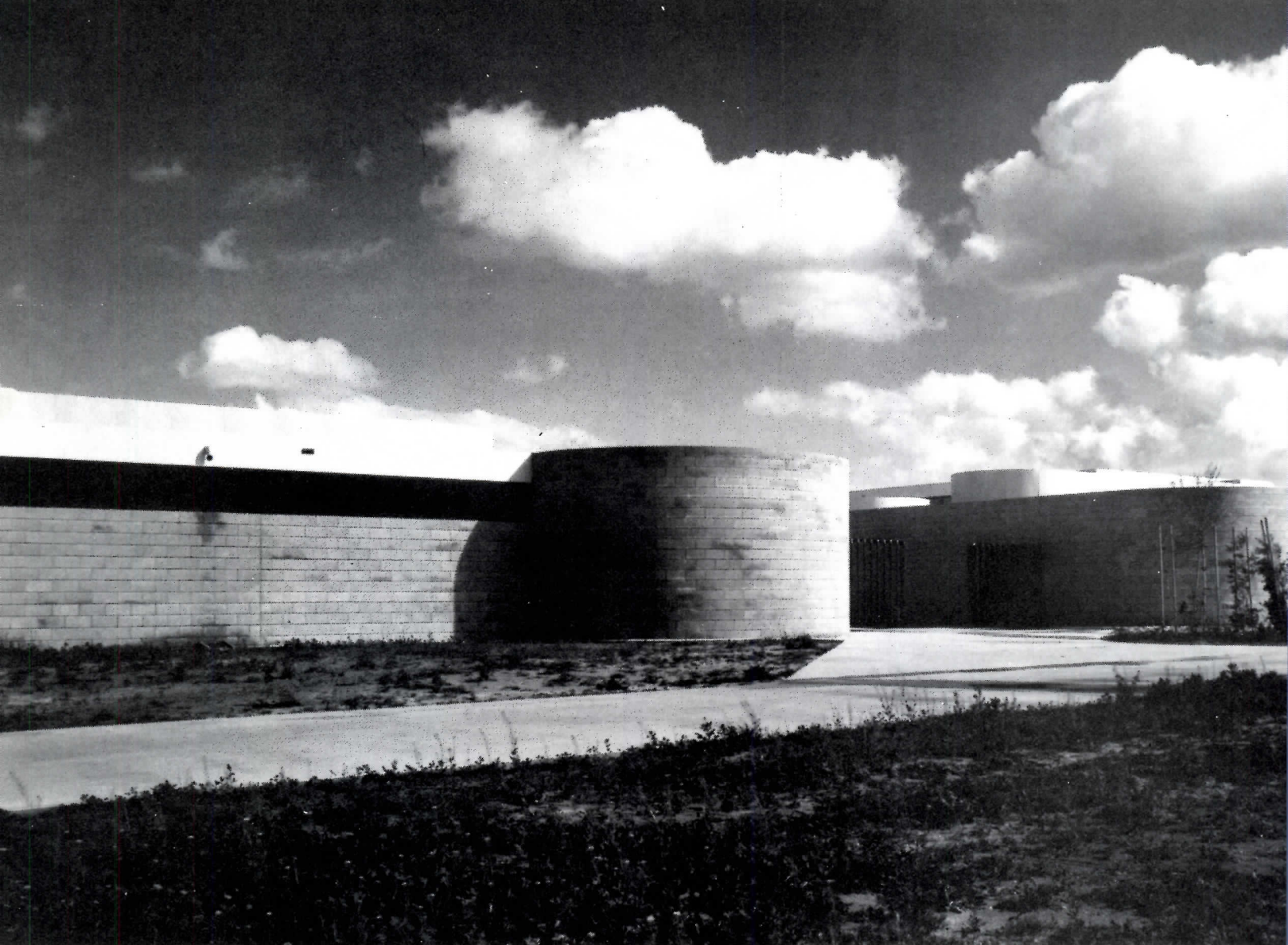


HEAVY DUTY DELIGHTS

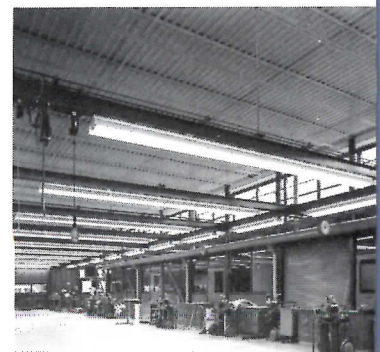
Any one, certainly any architect, who is going to build industrial kinds of buildings, should read two books. One is *Working*, by Studs Terkel (Pantheon). The other is *Clockwork*, by Richard Balzer (Doubleday). This year, businesses are contracting for some 220 million square feet of new space, 20 million more than last year—space in which products, or their various components, are researched, manufactured, warehoused, distributed, or repaired. But what will people, blue- or white-collar, be getting from all these offshoots of the country's "physical plant"? More mere existence? More mere efficiency? *Working* and *Clockwork* explain why neither the blues nor the whites typically show up for their shifts saying whoopee-doo, and implicitly they explain how to delve into the many human dimensions of the environments in which people have to work. The architects of the industrial kinds of buildings shown on the following pages did that delving. The result? No wincing hulks, but handsome design, indeed. —William Marlin

Wayne Thom





The Auto Tech Center of Cerritos College houses two departments, Auto Body and Automotive, that flank courtyard. This is reached through a landscaped approachway, past gates (above). Clad with concrete block, and shimmering with ribbons of reflective glass, it is a civil, attractive element of the campus with bright colors inside and out (previous page).



A PLACE FOR LEARNING ABOUT AUTOMOTIVES AND LIFE

While Detroit is deciding how to reinvent the car, the architectural firm of William L. Pereira Associates has reinvented the garage—and maybe helped raise the expectations (as well as the technical skills) of the mechanic. The Auto Technology Center of Cerritos College in Norwalk, California, sets a high standard as a work place.

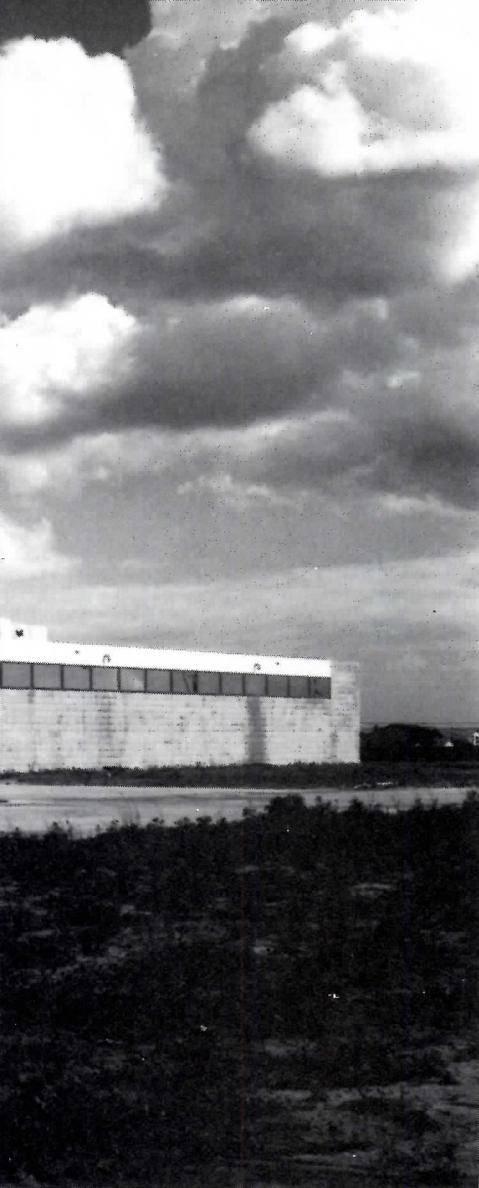
Auto Tech is high-tech with a certain classical bent, especially so in the way its two departments—Automotive and Auto Body—flank its outdoor courtyard, where the finished work of the students is frequently exhibited. The flanks each provide classrooms, labs, service areas, offices, vehicle storage, and assorted other support functions. The service bays are right next to the various specialized labs. The scheduling of classes is made more efficient.

Safety was, of course, a primary consideration. So was economy of construction (\$50 per square foot was the budget) and low-cost maintenance. From the safety standpoint, lots of glass has been used so that the faculty can keep on top of all the activities; it also admits lots of natural light into the service bays and labs. From the standpoint of economy, a simple steel-frame structure was used, with sheer walls of concrete block enfolding much of this superbly organized plan. Running beneath the lightweight trusses and metal decking, another structural grid is installed in the service areas to support lighting, air, water, electrical service reels, and all other utilities. Low-cost maintenance is ensured by the choice of interior finishes. The floors are hardened sealed concrete. The interior partitions, of metal studs and drywall, have wainscoting of industrial rubber tile, and are very durable and cleanable.

All the glass, in both the interior partitions and the exterior walls, is set into rubber window gaskets, an automotive product that has hitchhiked its way into architecture—here with especial skill and style. The exterior glass is mostly reflective, picking up moving clouds and the changing color of the sky. More bright colors embellish the surfaces, utility runs, and fittings inside, making the atmosphere as visually stimulating as it is physically open. The use of color outside, as along the doors to the service bays of the two departments, is also stimulating, and just plain fun. Yet visual emissions to the campus are low.

So is noise. Inside, the metal roof deck is perforated to swallow up sound. Outside, the two air compressors are located away from the main flanking structures, out at the end of the courtyard, at either end of a semi-circular earth berm. It is dynamic and disciplined, the Auto Tech Center—all elbow grease, and good design.

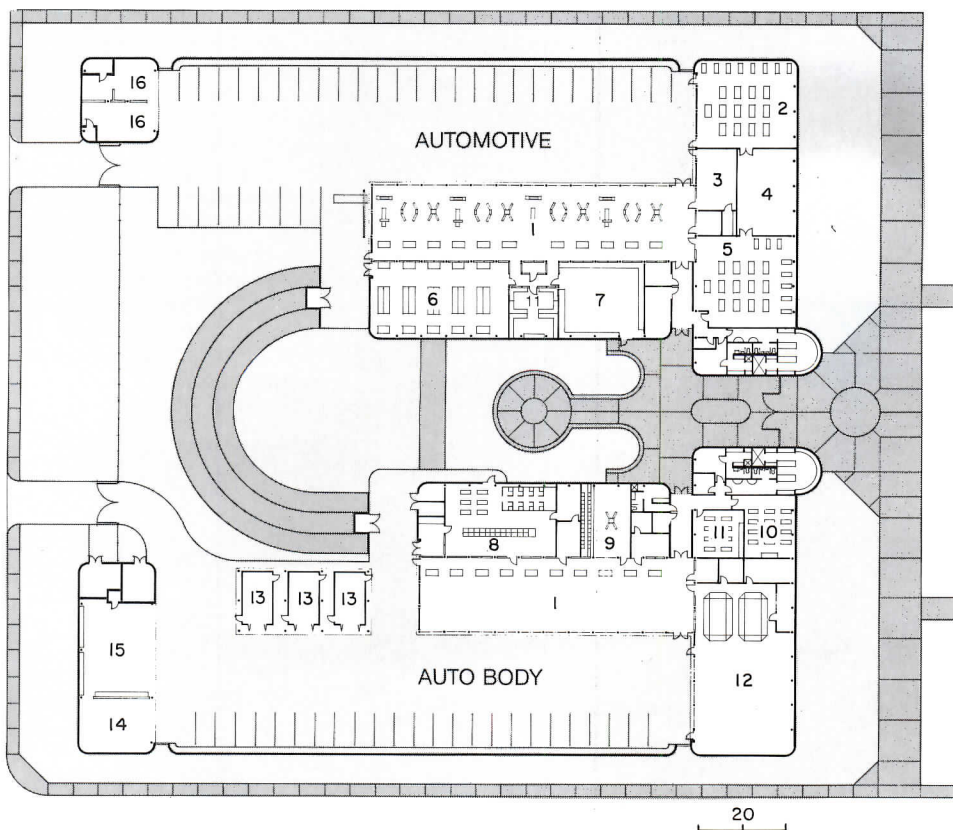
CERRITOS COLLEGE AUTO TECHNOLOGY CENTER, Norwalk, California. Architects: *William L. Pereira Associates*—project manager, *Robert Stockton*; project designer, *Robert Caddes*; production team, *Ron Temple and David Pillman*. Engineers: *Brandow & Johnston* (structural); *RJM Associates* (mechanical/electrical); *Simpson-Steppat* (civil). Landscaping: *Richardson Chase & Associates*. Contractor: *C.V. Holder Inc.*

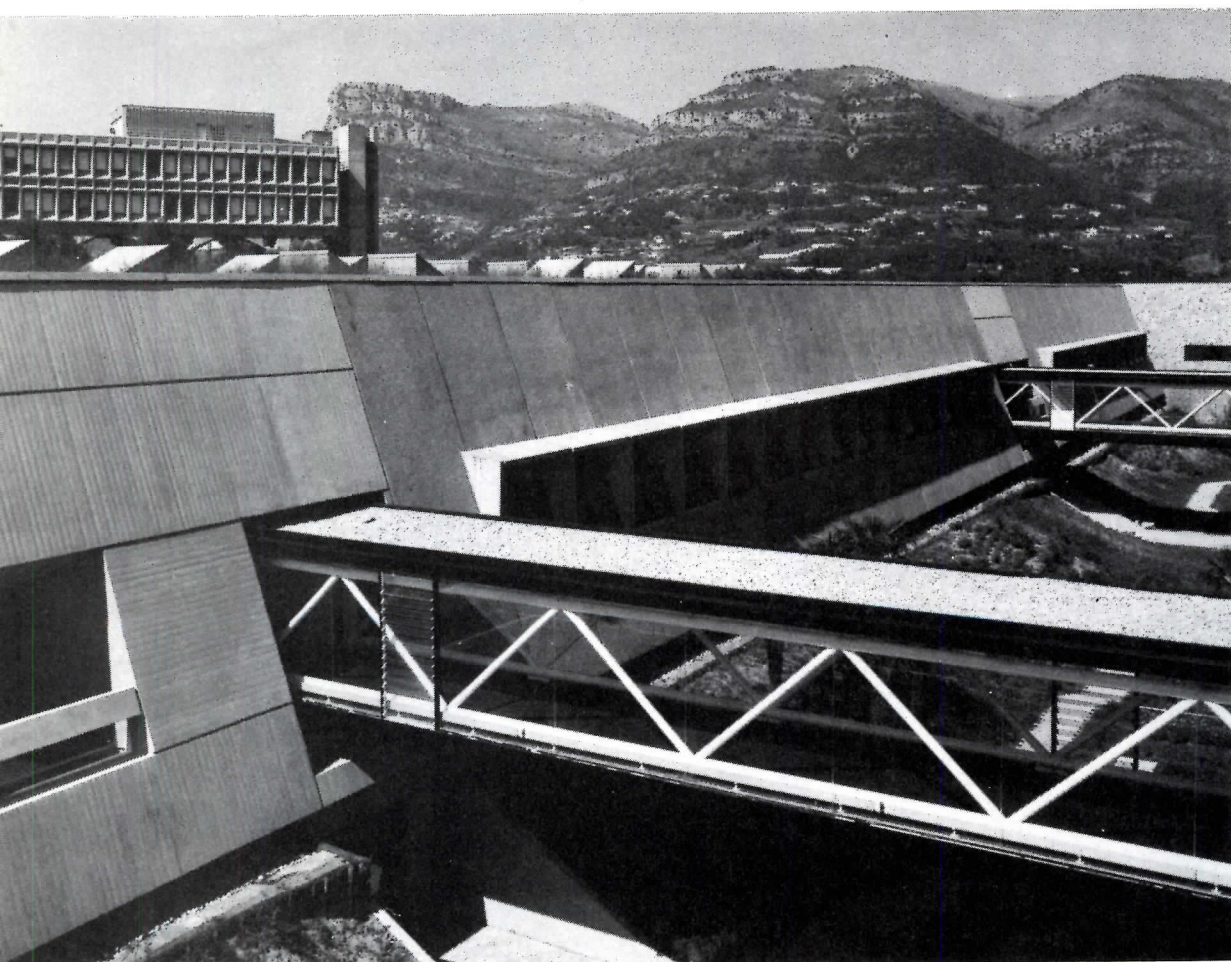


Wayne Thom photos



- | | |
|------------------|--------------------|
| 1 Service bays | 9 Demo lab |
| 2 Carburetor lab | 10 Damage estimate |
| 3 Audio-visual | 11 Management lab |
| 4 Lab service | 12 Advanced auto |
| 5 Engine lab | 13 Paint booths |
| 6 Machine lab | 14 Carwash |
| 7 Assembly lab | 15 Detail lab |
| 8 Welding lab | 16 Steam cleaning |

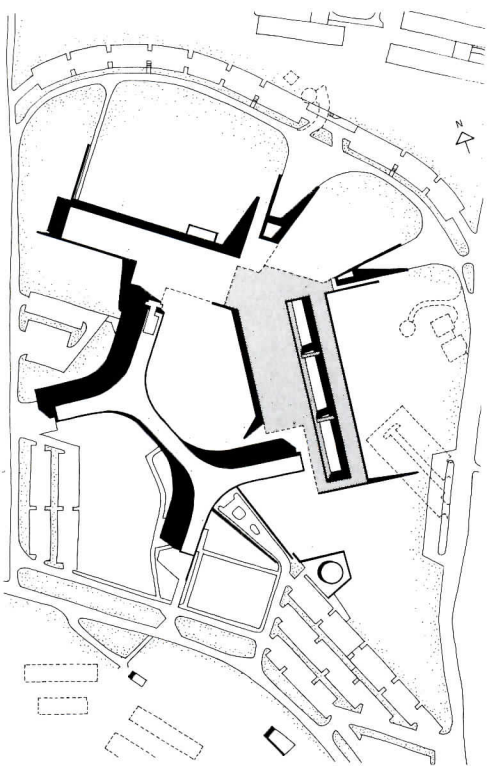




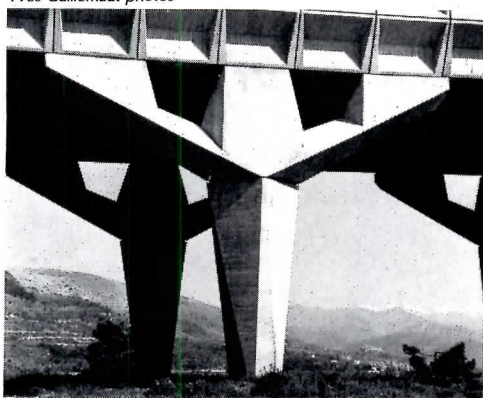
The Research Center for IBM at La Gaude, France, represents almost 20 years of work by Marcel Breuer Associates. The third phase shown here, recently completed, is located downhill from the original building which was hoisted above the rugged and colorful landscape on columns (opposite, upper photo). This new building, like the first addition completed a few years ago, partially burrows into the steep slope, the roofs being covered with sod and planted with grass. Here the laboratory and office functions are housed in separate and parallel sections, with a courtyard running between them. Bridges cross over the courtyard, connecting the sections. Precast concrete panels of exquisite finish are used throughout, in counterpoint to rubble stone.



A RESEARCH BUILDING IN FRANCE BY MARCEL BREUER



Yves Guillemaut photos



For 20 years, Marcel Breuer Associates has been working on a research-and-development center for IBM France near La Gaude, a medieval village within a short drive of Nice and the Côte d'Azur. La Gaude has ruins and greenhouses where flowers for perfume are grown, and Mr. Breuer bicycled by 30 years ago, making note of the turbulent landscape rising to a plateau—all rocks, crags, scrub brush, and color. It was this plateau that IBM would show him later. What delight he took. The three buildings that he and his partners have done—Robert Gatje handled work on the first two; Mario Jossa, the third—show it. This third one is now complete, deferring to the land by disappearing into it.

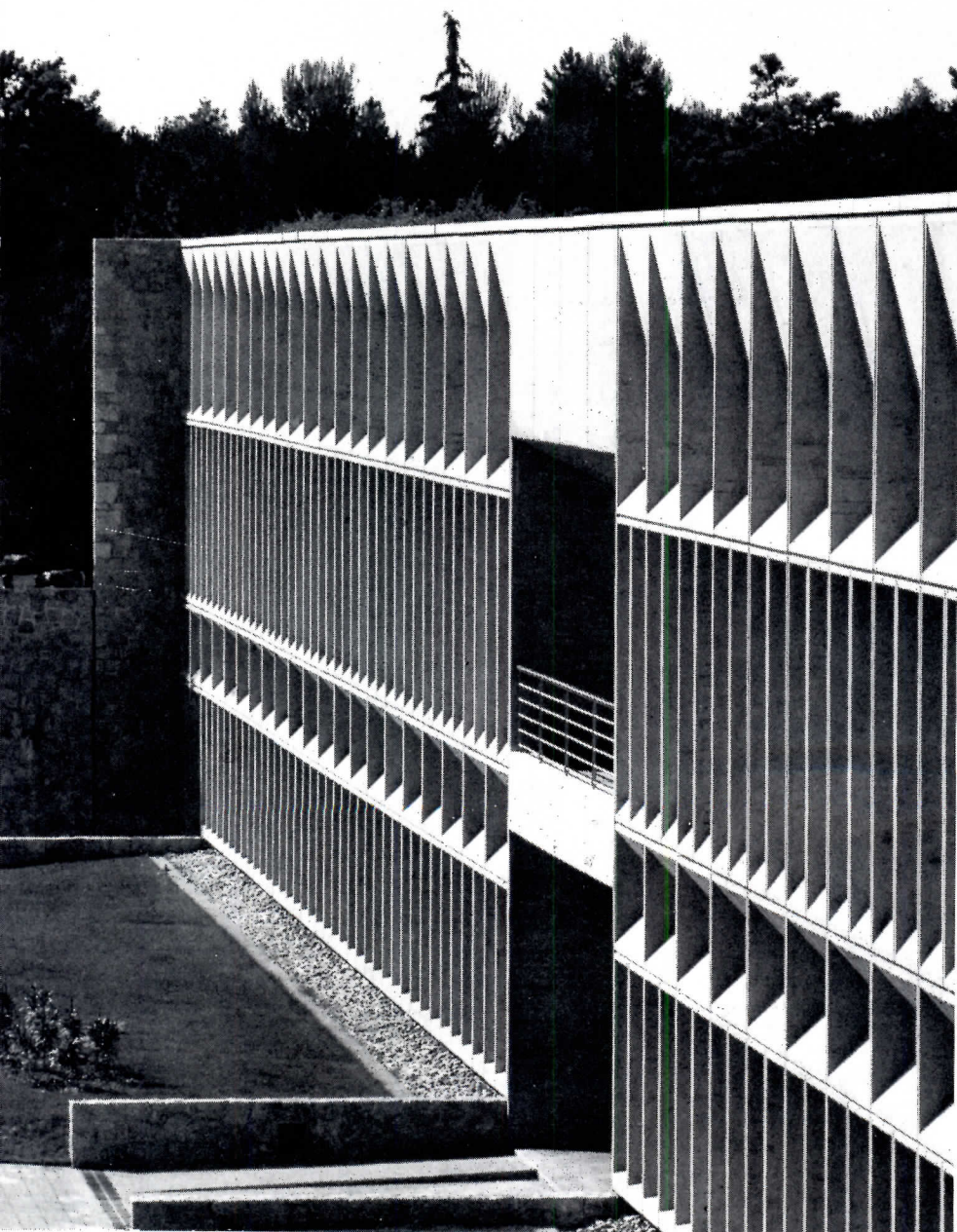
The original, as many will recall, was hoisted on candelabra-shaped concrete columns (see photo), varying in height from 13 to 24 feet, so that the strongly horizontal structure could straddle the site gracefully. This strong form nevertheless manages a low profile as seen from below—more like a distant outcropping, and it is pointed out to tourists as a landmark.

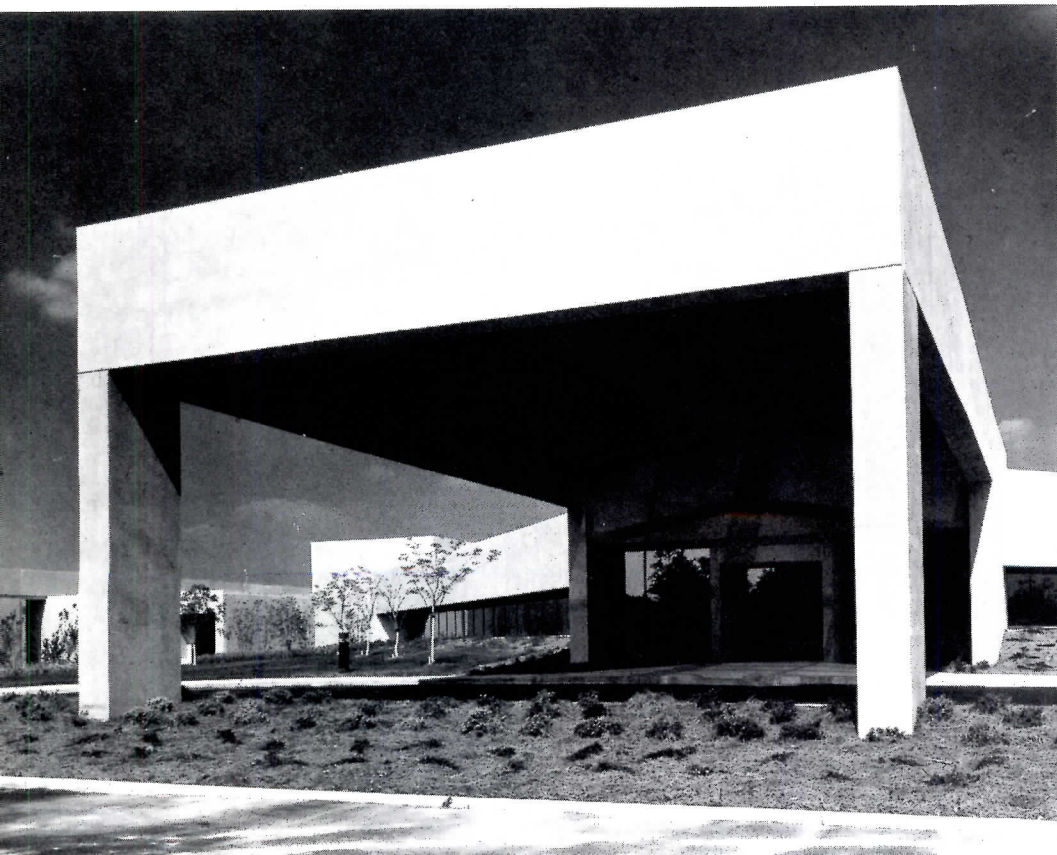
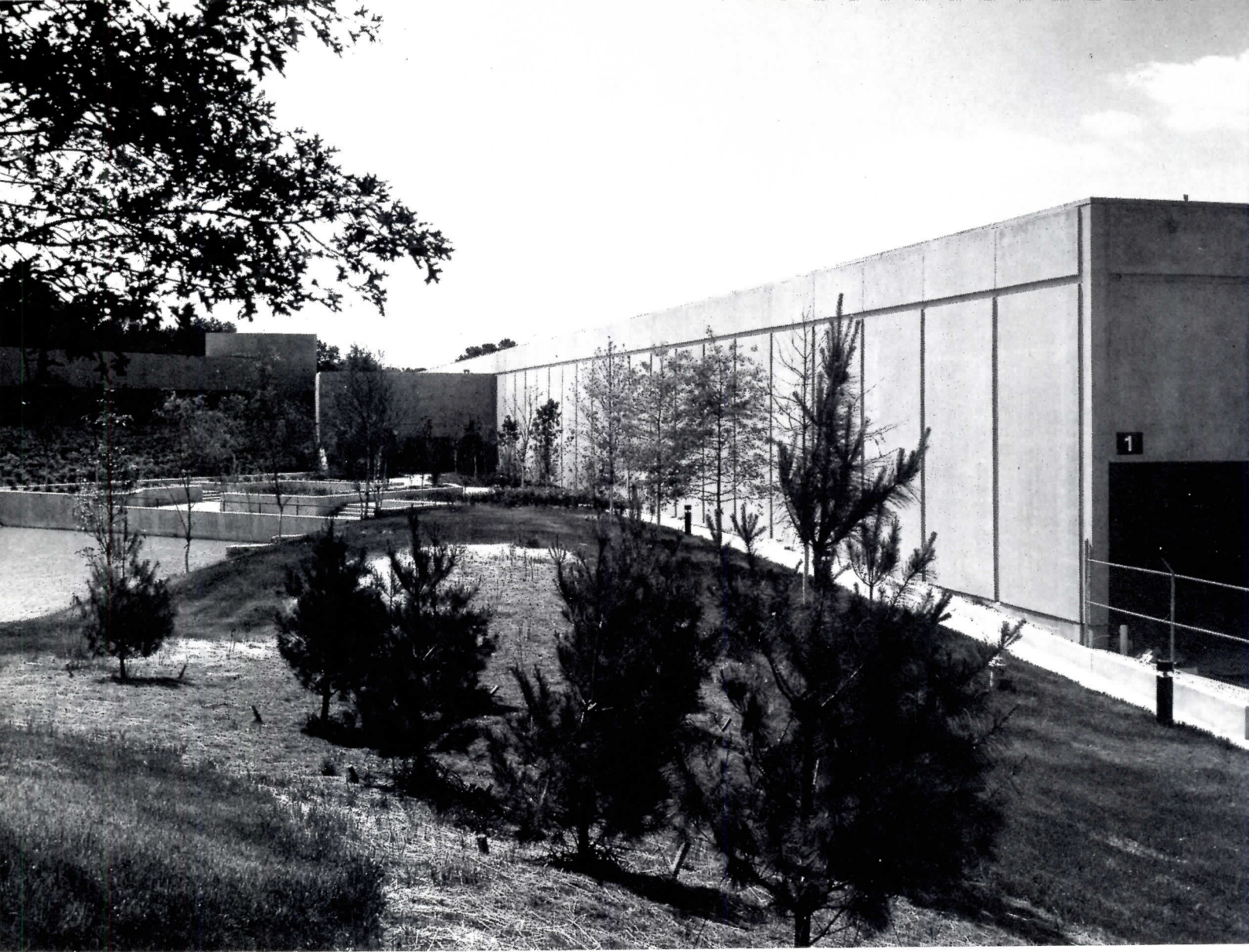
This second, latest extension, picking up on the nature of the earlier one, is situated downhill so as not to compete with the original building or the landscape. By burrowing partially into the slope, then emerging quietly from it with flat tops and sloping flanks to the side of their downhill facades, both extensions are buttes as much as buildings. Going up in the air again, in either of these extensions, would have clobbered those cherished views to and from the broad Var River valley. To look out from the original, one doesn't see architectural extensions; one sees, looking over their "roofs," expanses of grass.

Two other factors determined the planning. One is that the French *have* to have windows in their offices. There isn't a working space that one can't see out of—and the windows can be opened, saving energy. The second factor is this section's dual role as both an office and a laboratory building. These functions run parallel to each other, separated by a courtyard. Bridges connect them.

The labs, burrowing into the slope on one level have windows facing the courtyard at a slant to catch the sun. The slant is of precast panels with exposed aggregate. The offices, on two levels, are laid out off central corridors. The partitions—custom-designed, movable, with gasketed windows—make for a comfortable, luminous setting. Both the courtyard and downhill facades of the office section are of load-bearing precast panels, and downhill their rhythmic theme is framed and fed into the terrain with sloping walls of stone. La Gaude is pure romance; IBM, pure rigor; they are in memorable balance.

IBM FRANCE RESEARCH CENTER, THIRD PHASE, La Gaude, France. Architects: *Marcel Breuer Associates*—partner-in-charge, *Mario Jossa*; project architect, *George Berg*. Engineers: *Cabinet Bancon* (structural); *Cabinet Trouvin* (mechanical/electrical). Landscaping: *Jean Delogne*. Quantity surveyor: *Cabinet Merlin*. Contractor: *Entreprise Moinon*.





E. Alan McGee photos

DEERE & COMPANY INSISTS ON GOOD TASTE EVEN IN A WAREHOUSE

Deere & Company, the farming equipment firm, always does things decently, especially when it farms out architectural work, which it has since the day it invited Eero Saarinen to take a look at a certain piece of land outside of Moline, Illinois. This time, for its Atlanta Branch and Parts Distribution Center, it invited Heery & Heery to take a look at a 40-acre site in suburban Conyers.

The idea was to build a great big warehouse, with 35 truck-loading docks, a computer room, and a classroom for training sessions—over-all, about 430,000 square feet. Furthermore, this warehouse had to be expandable—a hundred per cent expandable (someday). Finally, next to and connected with it, there had to be an office building containing only 30,000 square feet, and the idea here was to plan and position the office building so that the warehouse wouldn't look like the box that the office building came in. This took some doing; and finally it also took only \$10.75 per square foot, which is a darn good buy.

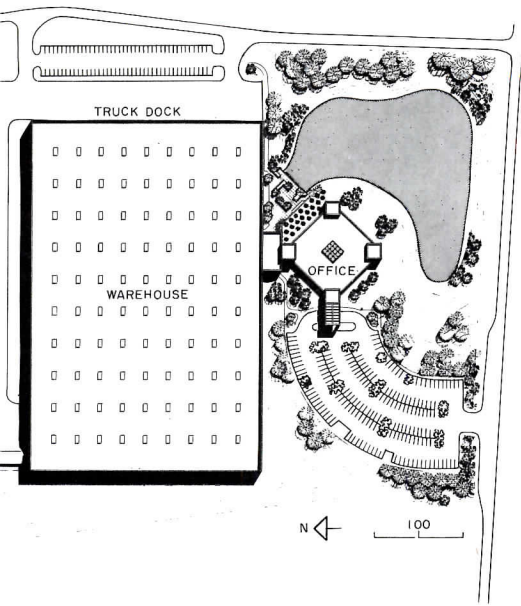
A busy interstate highway runs past the site, and the architects have made the best of awkward site lines by turning the office "pod" (it's called) at a 45-degree angle to the warehouse. Not only is the office floor raised higher than that of the warehouse behind, but this orientation allows passers-by to view the sides of the pod in direct elevation from the angle of approaching traffic. So the little office building looks bigger than it really is.

Inside, the work stations feel quite delightful, what with carpeted floor tiles, warm grays, tans, and beiges used around the units, dark trim and upholstery, recurrent views outside to the landscaped grounds, and right in the middle of the pod itself, a skylighted garden that has a quartz-chip terrazzo floor. There are no doors or floor-to-ceiling partitions. A mix of direct-task and indirect-ambient lighting will save 40 per cent on lighting costs.

From the standpoint of resolving both the relationship of scale between the two buildings and dealing with construction economies, a precast prestressed concrete panel system was chosen. These panels, while varying in size, have similar texture, color, and detailing. The pod has precast fascias and reflective bronze-tinted windows. Its lobby is in from a crisply framed canopy.

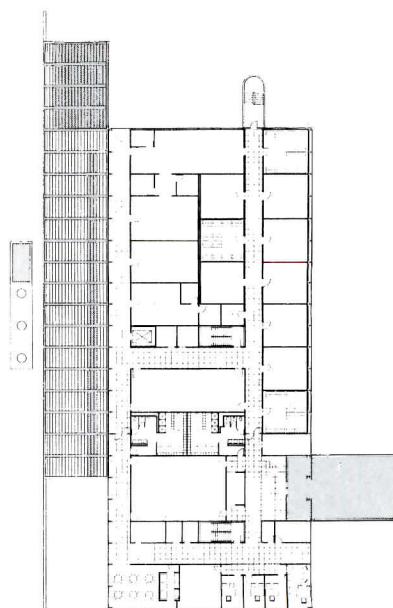
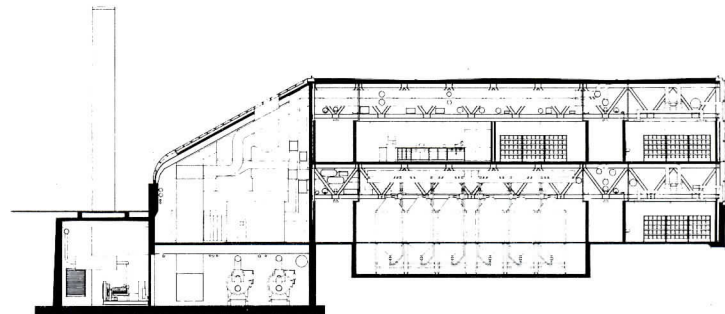
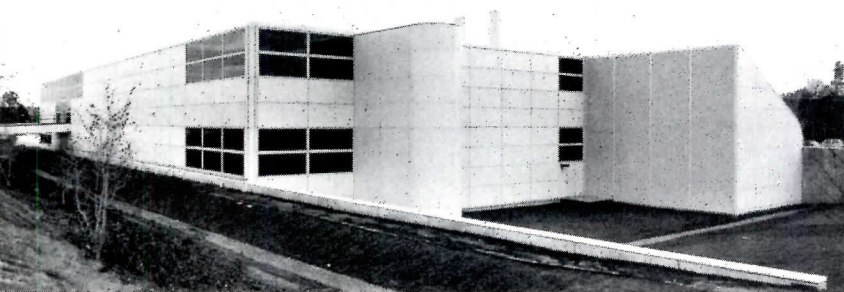
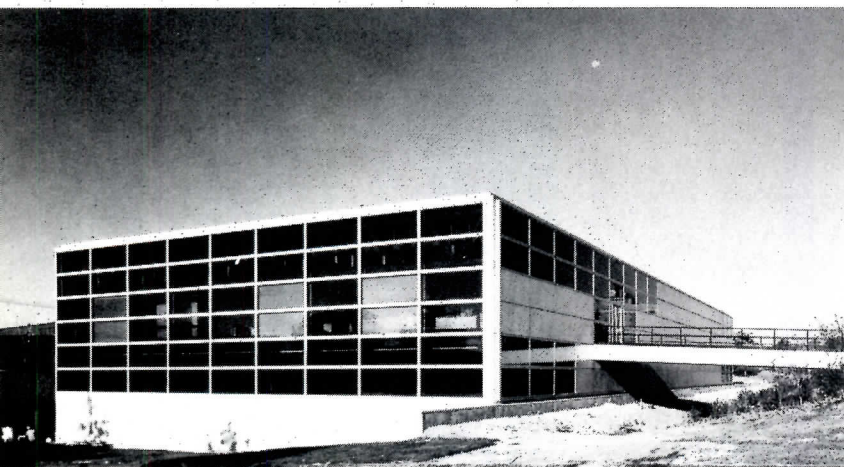
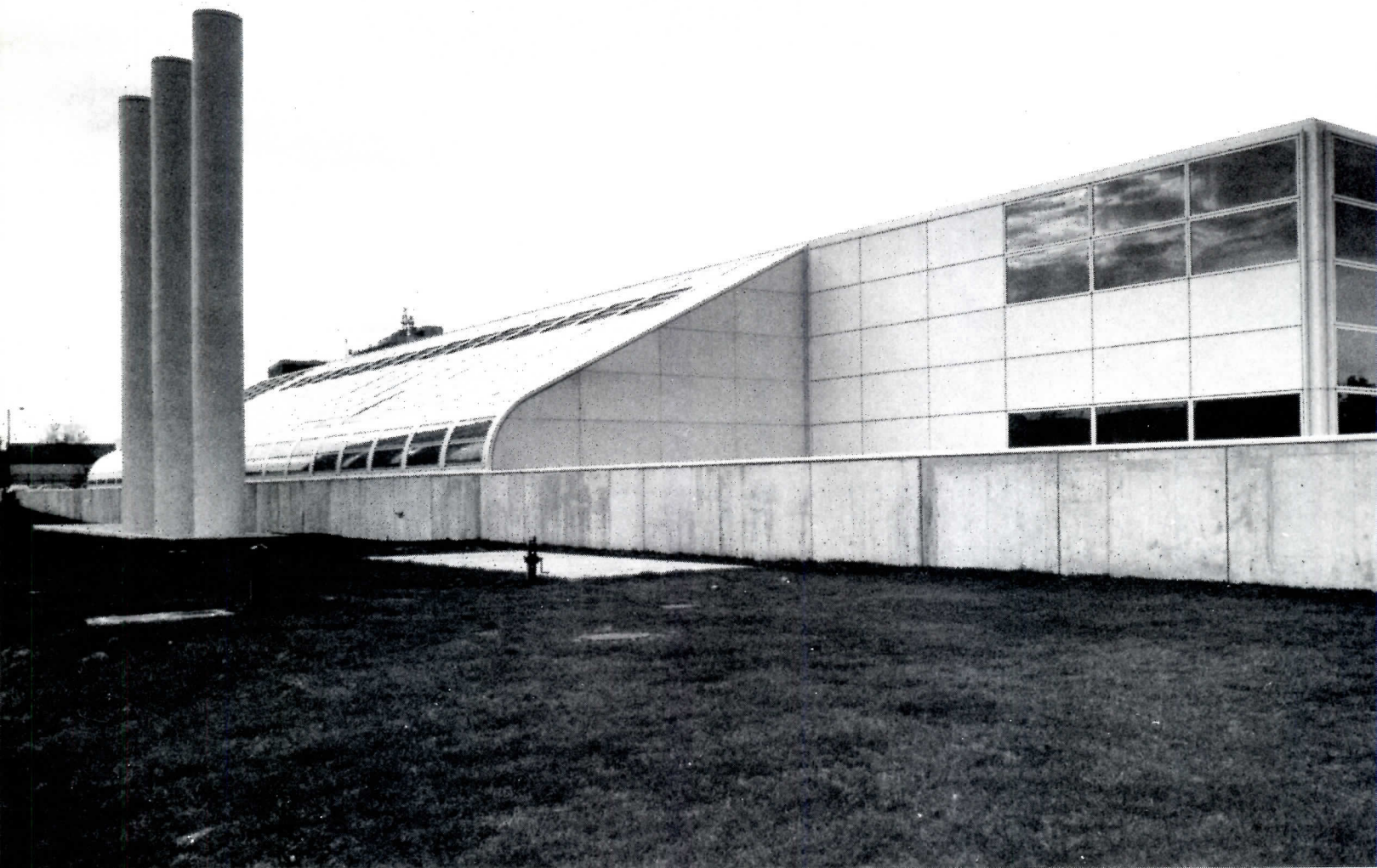
As one might expect from such a publicly conscious client, the trouble was taken to "build" a lake as well, of four acres. Not only is it good to look at from the highway, but a landscaped terrace, just outside the cafeteria on the lower-level link between the pod and the warehouse, steps down to the water's edge, further softening the change in scale. It is a double-duty solution too, since the fire-sprinkler system inside the building is connected to it. As usual, when it comes to reconciling esthetic conviction and practical need, Deere has shipped out a winner.

DEERE & COMPANY ATLANTA BRANCH AND PARTS DISTRIBUTION CENTER, Conyers, Georgia. Architects: Heery & Heery. Engineers: Heery & Heery. Contractor: Holder Construction Co.



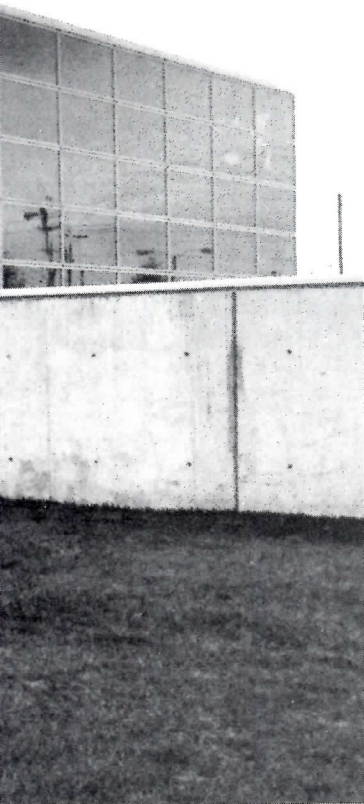
The Atlanta Branch and Parts Distribution Center of Deere & Company includes a warehouse of 430,000 square feet and a little office building of only 30,000 square feet. The office building, located slightly higher than the warehouse and in a non-perpendicular relationship with it, succeeds in looking much larger than it is, and thus the bulk of the warehouse is not allowed to overwhelm the composition as seen from the highway and entrance area. Consistent materials, careful scale, and a well-designed, lushly planted patio help make for a handsome environment.



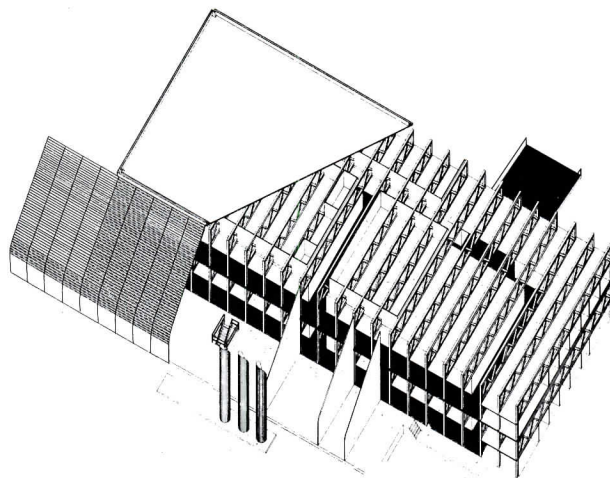


Environmental Health Laboratory for Monsanto combines research functions, located on two levels, with a lean-to housing mechanicals. The elegant clarity of Mies, so well handled by Holabird & Root, finds a bit looser expression here while relinquishing none of the Miesian discipline. Two kinds of ten-foot-wide panels are used on the outside, either of insulated steel or of glass, and the composition and positioning of these panels open up the interior to views from the outside, also exposing the eight-foot-deep trusswork that marks the two interstitial spaces—one between the two floors, and one between the second floor and the roof. Nothing, least of all Mies, is boxed in here.

EDGING OUT THE MIESIAN TRADITION IN A LABORATORY FOR MONSANTO



Jim Norris photos



For those who are missing Mies, and it is getting harder and harder *not* to, great pleasure will be taken in knowing (if they don't already), that many of the Chicago-area crowd are edging his conceptual boundaries outward while keeping his standards of careful detailing and considered proportions.

Not the least of this crowd is the firm of Holabird & Root, which descends from the founding fathers of the Chicago School, and which, given the design direction of Gerald Horn in recent years, is edging those boundaries outward with utmost skill.

An example of this skill, and sensitivity, is the Environmental Health Laboratory for the Monsanto Company in St. Louis.

It is a biological research place essentially, housing toxicology labs that house, in turn, the acute, sub-acute, and chronic testing of small critters. Typical of industrial kinds of buildings, this one is planned to accommodate a hundred per cent expansion.

The site is located in a redevelopment area of St. Louis, next to the Washington University Medical Center. Restrictions on the site, taken together with the rigid realities of the diverse and highly technical program, generated a structure with two levels. It measures 90 feet by 230 feet, and it has two eight-foot-deep interstitial spaces—one between the two floors, the other between the upper floor and the roof.

The lean-to-style slant one sees rising up, clamping onto the spiffy box, is structurally separate, and it houses mechanicals, electricals, plus a truck dock area. Three stacks rise up just outside the lean-to, making sculptures out of humble function. Running between the lean-to and the stacks is a low concrete wall, which runs on out into the site from the building. The roof, slanting down into a curve, fits into the wall gracefully, strengthening the relationship with the site.

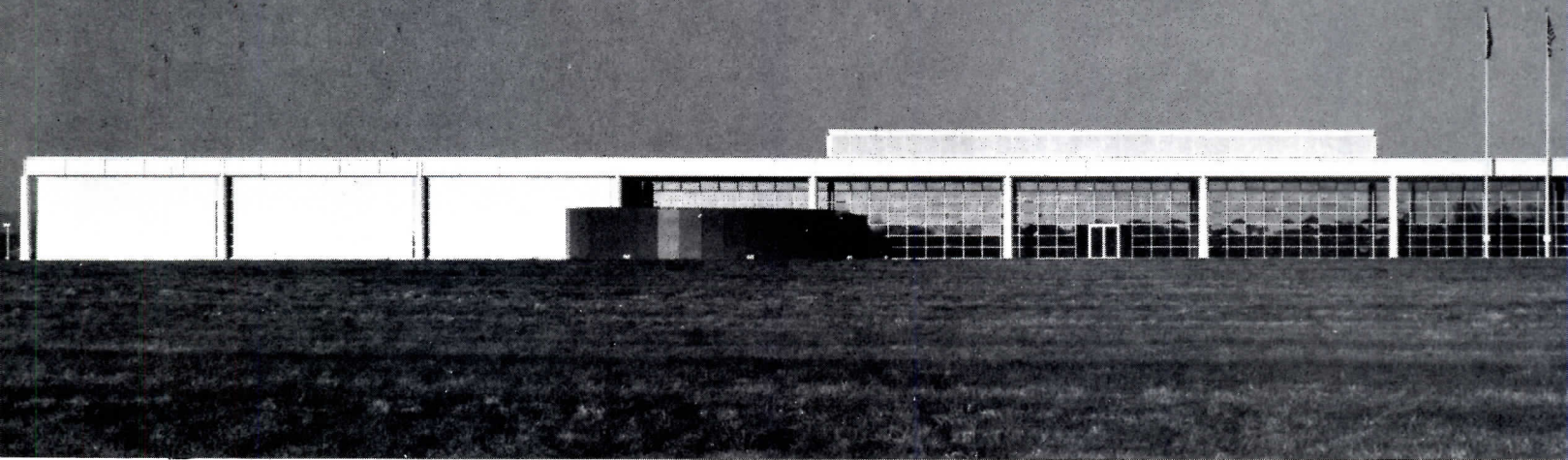
Truss construction in the main section, providing the interstitial arrangement, is eight feet deep, on ten-foot centers.

Thus both the box and the lean-to are highly flexible in and of themselves. Each can be changed around inside, or expanded, independently of the other.

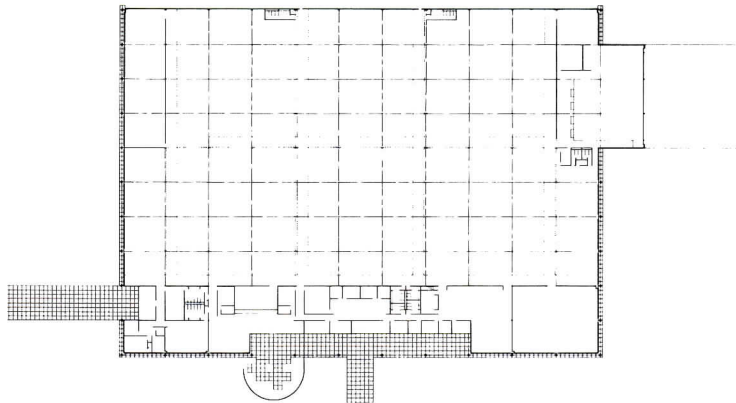
This kind of flexibility also pertains to the exterior skin, which is composed of ten-foot-wide panels of insulated steel or, as in the case of the lean-to's roof and various sections of the box, of insulating glass. Not only does this system make for easy, economical installation, in the first place, but it also makes for easy, economical expansion later on.

The main approach and entrance to the building, on the opposite side from the lean-to, is by way of a wide, slightly slanting bridge, passing over a gradual fall in the land. The trusswork, immediately visible through the glass as one approaches, as it is from other points around the building, confides the constructional nature of the place. That's good chemistry, and class architecture.

ENVIRONMENTAL HEALTH LABORATORY, MONSANTO COMPANY, St. Louis. Architects: *Holabird & Root*. Engineers: *Holabird & Root*. Contractor: *Hercules Construction*.



The Hollister building, by Holabird & Root, is a classical exercise, enclosing a lot of heavy, no-nonsense manufacturing and warehouse activities in a big white box. Whereas strict humidity control was necessary in those sections, cutting down the use of glass, a good deal of glass is used out in front, where the public and office areas are located. Round columns, deep plate girders, and infill of brick (all white) are beautifully related. The image is serene.



Jim Norris photos



A SHIFT BACK TO CLASSIC CLARITY IN A VIRGINIA MEADOW

Holabird & Root's building for Hollister Inc., in Stuarts Draft, Virginia, brings Miesian clarity to Jeffersonian country.

Hollister is a medical equipment company, making intravenous containers, identification bands, and other sterile things.

While this building is simple, strong, even stately—situated 500 feet back from the road—it is in no sense sterile, tempted as the architects might have been to interpret the metaphorical nuances at work in the functional context presented them.

Holabird & Root isn't all that heavy into "metaphor," though given Hollister's product line, this place has been dubbed the Halls of I.V.

The building houses three separate but related functions—the light manufacturing part, the warehousing part, and the office part. The first two had to be very flexible and open. A structural steel system, laid out on a four-foot module, generates bays measuring 32 by 40 feet.

The manufacturing and warehousing areas are designed for controlled humidity, and because this function doesn't technically require much glass or natural light coming in, there are minimal openings to the outside.

On the other hand, a lot of glass is used around the entrance, in the offices and dining area, this last looking out on a private courtyard which is surrounded by a ten-foot-high curving wall.

Obviously the building as a whole, as seen from round about the site, was meant to be an harmonious feature of the landscape, and everything about the exterior fulfills this objective admirably.

The round steel columns and deep plate girders are exposed; their connections, crisp and elegant. Walls of white glazed brick are set just behind the structure, independent of the steel. Vertical ribbons of glass, visible to the side of each column, mark the seam between the brick surfaces, also bringing the columns into relief.

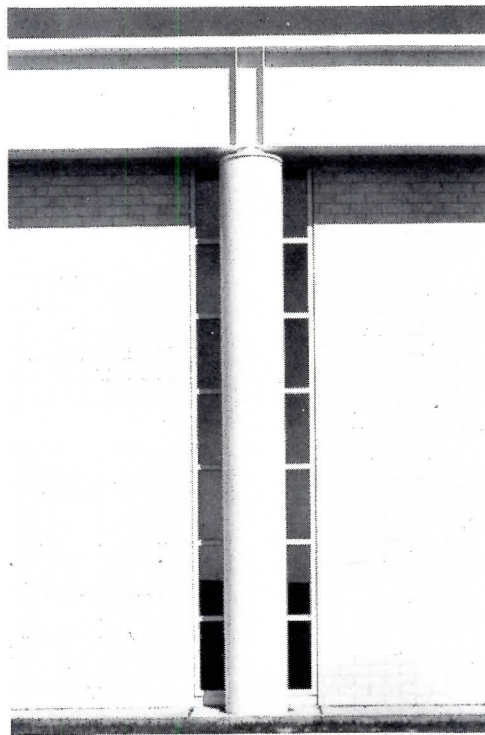
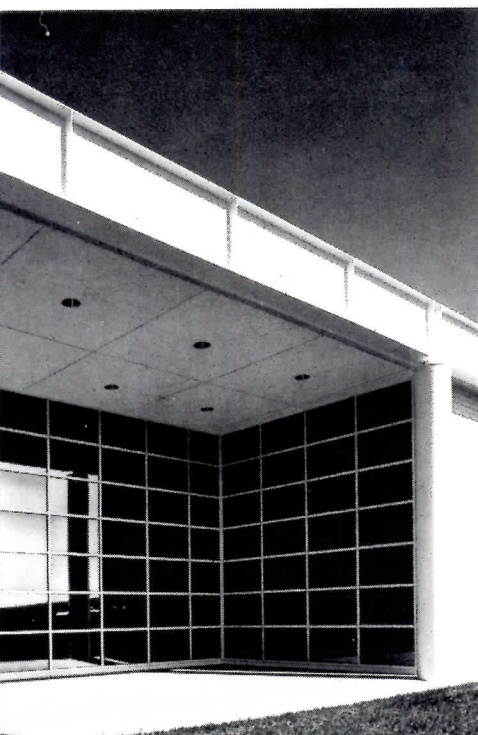
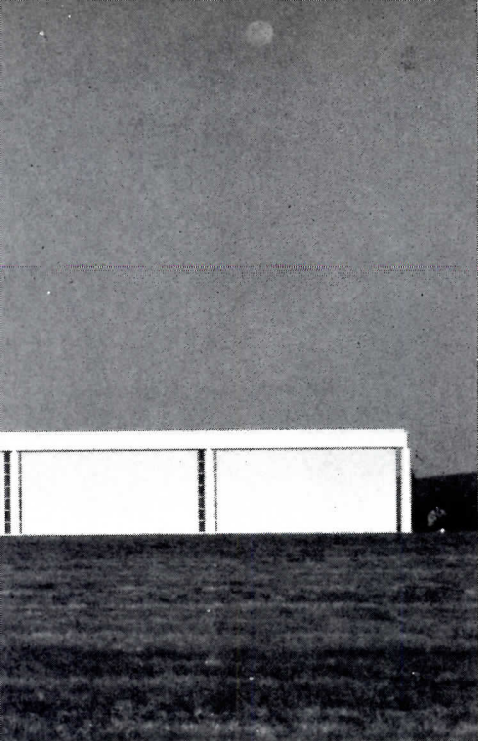
The broad entrance porch is recessed beneath the roof plane, set symmetrically into the composition of the facade. It gives into a light, airy lobby which, through wide, handsome double doors of wood, opens in turn to the office precincts.

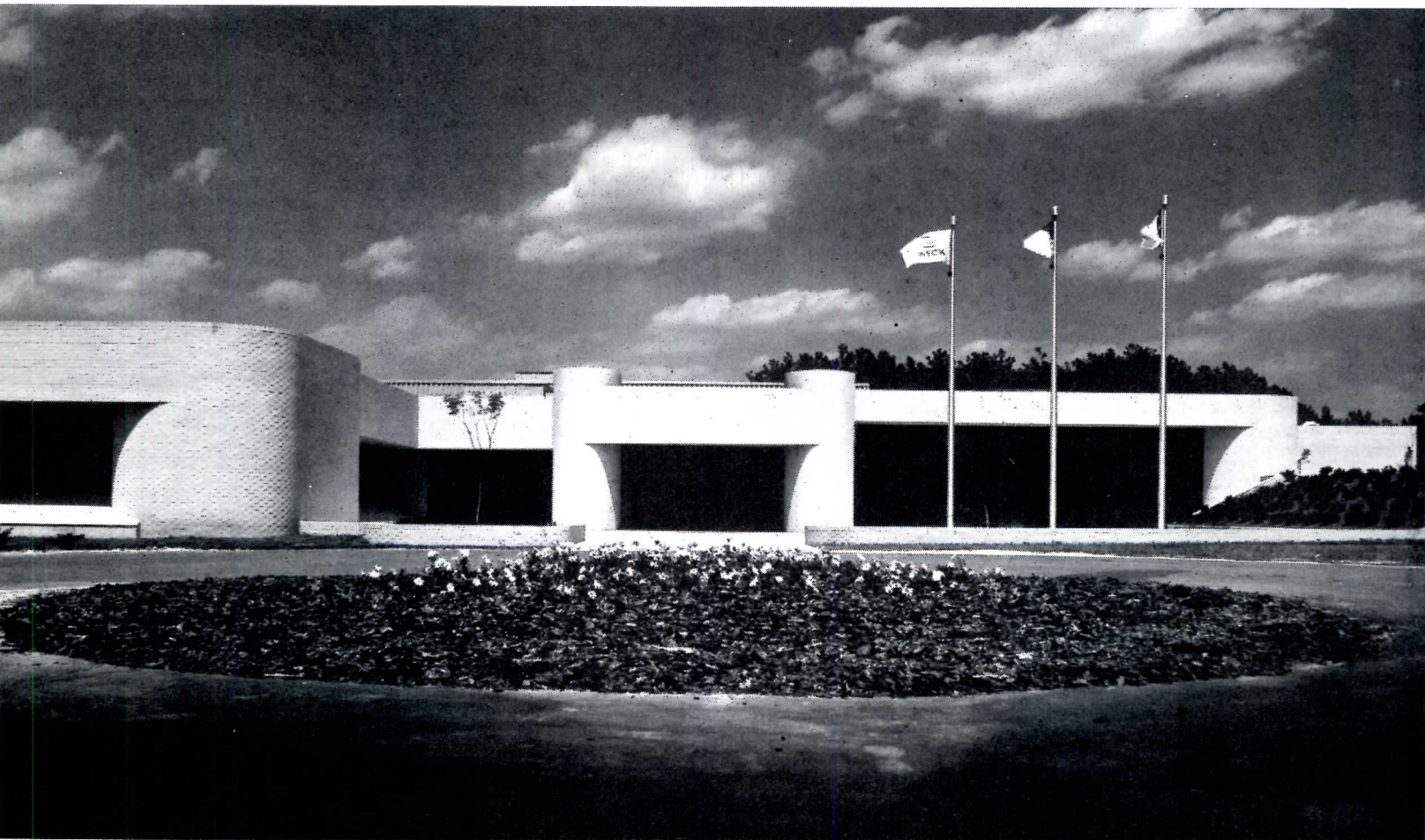
The symmetry is made all the more pleasing by the two non-structural features, outside in front, that bring it into tension—to the left, that curved blue-green wall, surrounding the courtyard; to the right, the two flag poles thrusting up.

Parking areas are concealed from both the offices and the road by lowering them below grade slightly, then providing retaining walls and earth mounds.

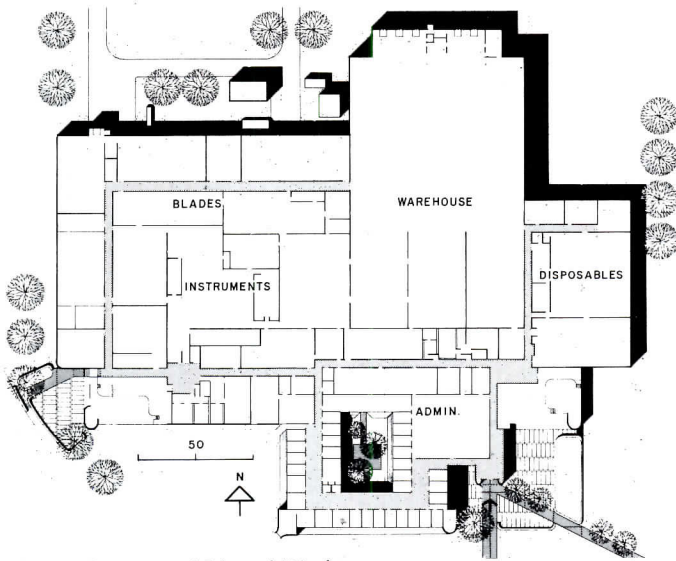
Nothing is allowed to detract attention from the poise and unity of the architecture—except the changing contours and colors of the land, which seem enhanced by the contrasting whiteness of this friendly box.

HOLLISTER, INC., Stuarts Draft, Virginia. Architects: Holabird & Root. Engineers: Holabird & Root. Contractor: Turner Construction.



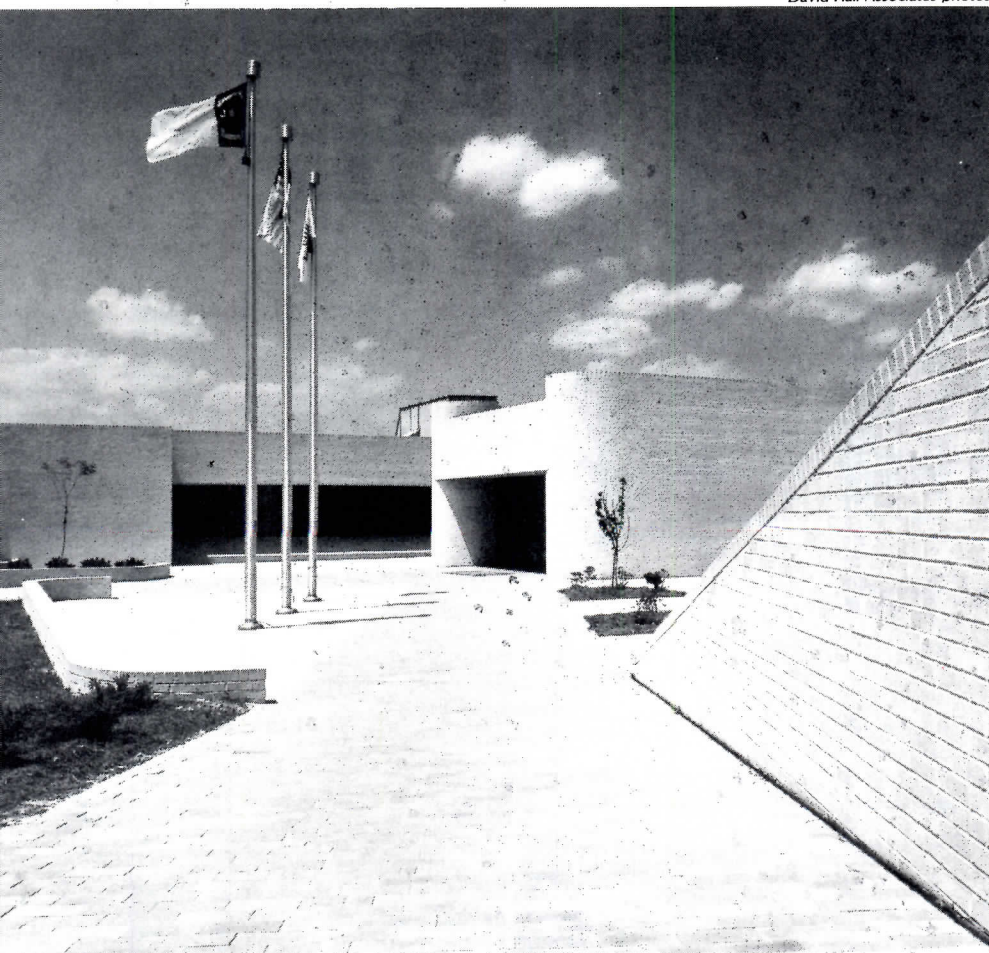


FOR DEMANDING PRODUCTION A GENTLE BUILDING IN A GENTLE LANDSCAPE



The headquarters of Edward Weck and Company consolidates complex manufacturing, administrative, and distribution functions in a calm, cohesive single-story building. Built on the higher grade of an open field, ringed with dense trees, it enhances the sylvan setting.

David Hall Associates photos



This low-slung, nice-looking building, by architect Eugene F. O'Connor, is the headquarters of Edward Weck and Company, which makes surgical instruments, a line of commercial blades, and such hospital disposables as gauze and cotton daubs.

The 35-acre site, near Durham, North Carolina, had a dense growth of trees ringing a large open field. In consolidating its operations, which had been located in three separate locations (one in New York, two in Connecticut), the company had no thought of moving 500 miles just to cut down beautiful trees and mess up a clearing. As things have turned out, it didn't do either.

The program was tough. O'Connor had to bring together the diverse product lines and manufacturing requirements in a unified, efficient way. Yet these lines, and the people manning them, required separate zones.

The surgical instrument and blade manufacturing area is the more heavily industrial portion of the building, and is located in the northerly end. It has its own locker rooms, rest rooms, and cafeteria.

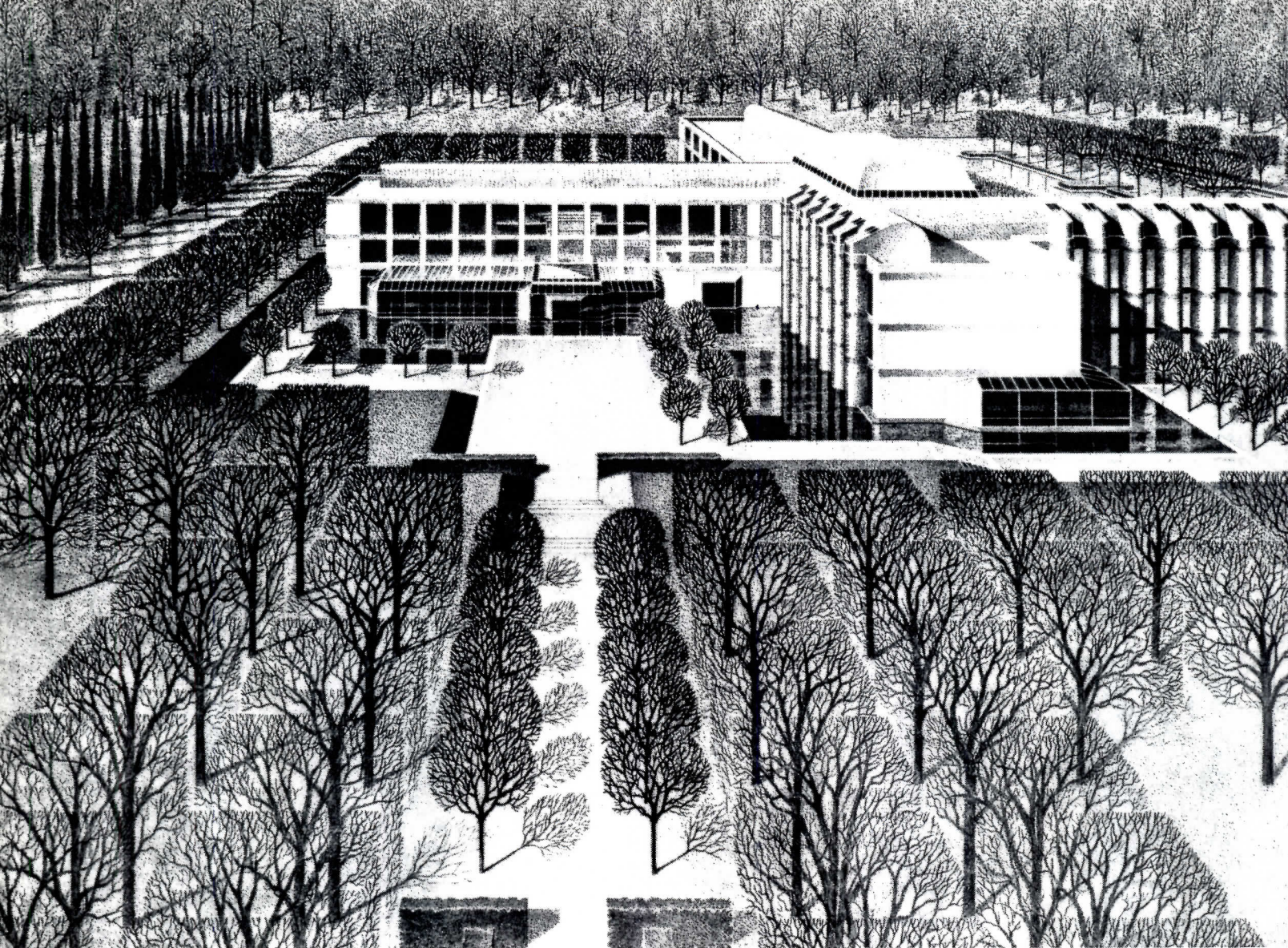
The assembly area for hospital disposables is a pharmaceutically clean environment, with sophisticated mechanicals, and the personnel in this section are closely supervised to ensure quality at every step. This area is in the southerly end of the building and, in conjunction with the administrative precinct, it also has its own locker rooms, rest rooms, and cafeteria.

The identity of these two unique, separate manufacturing areas is pointed up by the higher mass placed between them, and this is where the warehouse and distribution area fit in. This not only physically separates, and architecturally expresses, the juncture between the manufacturing functions; it also provides for the easy, efficient flow of materials through the whole facility. An intermediate roof height identifies the heavy-duty manufacturing areas; the lower roof height, the administrative and support functions.

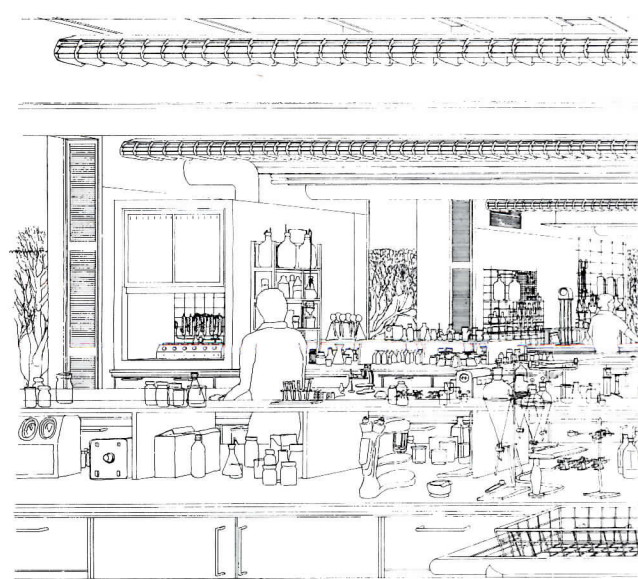
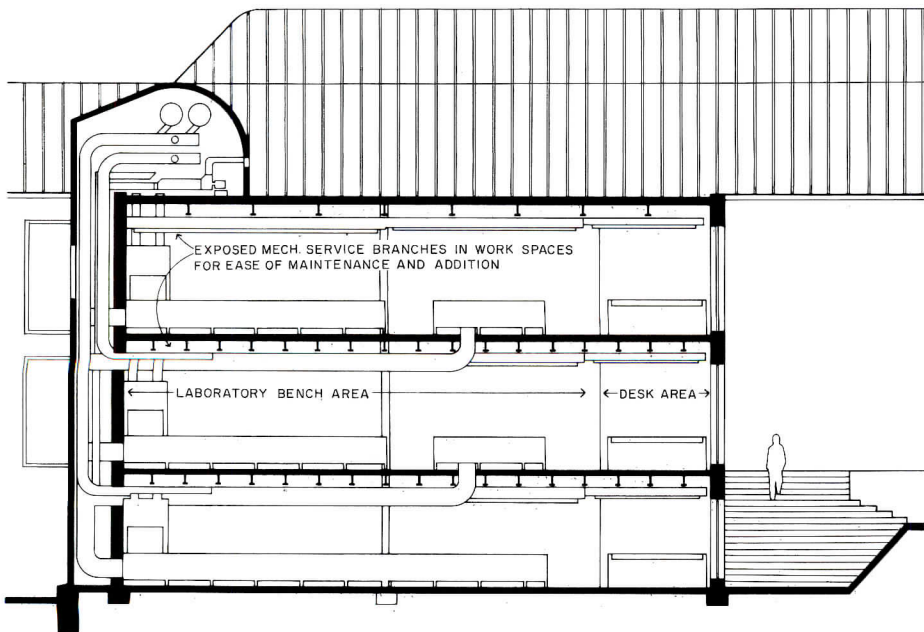
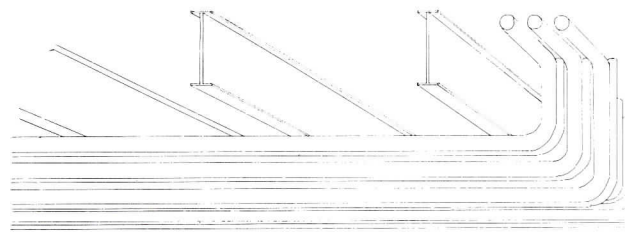
The building, on one floor, with 141,000 square feet over-all, is a structural steel frame sheathed entirely with light tan brick. Curtain walls of aluminum open up the cafeteria and administrative areas to the outside (which is quite lovely to look at). A courtyard in the administrative area allows natural light to reach each office.

As seen in the landscape, the sections are well related to each other by consistent color, materials, the thoughtful handling of scale, and the graceful gradation of the roof heights. Unpretentious, and very pleasant, this industrial building, curving gently at the corners and into public view, maintains the tranquility of its setting. Would that more heavy-duty types showed this much creative resourcefulness.

CORPORATE HEADQUARTERS FOR EDWARD WECK & COMPANY, Durham, North Carolina. Architects: *The Office of Eugene F. O'Connor*. Engineers: *Paulus & Sokolowski (structural); M. Benton & Associates (mechanical); Will O. Smith (electrical); Environmental Engineering (soils)*. Contractor: *Castle Construction*.



The working spaces and the mechanical runs feeding into them are brilliantly organized. All mains run horizontally in the roof structure, and then vertically down into the service cores. The runs then branch into the working spaces where they are left exposed for easy maintenance or change.



AN ELEGANT EXPRESSION OF ENGINEERING AND EFFICIENCY

The Research Center for Standard Brands, which is under construction on a ten-acre site in Wilton, Connecticut, to the design of Warren Platner Associates, is one of that architect's most thoughtful conceptions.

The site was already zoned for industrial use, and there is a smaller existing building that is being absorbed by the new one—so completely, in fact, that the old one will be scarcely visible, rather like being a shy, friendly ghost haunting the place. The zoning restrictions are such that the new building could only go so much above grade, but by means of jockeying the needed bulk around, Platner has gotten everything in, and in the process, produced a design that absorbs one in the architectural dialogue.

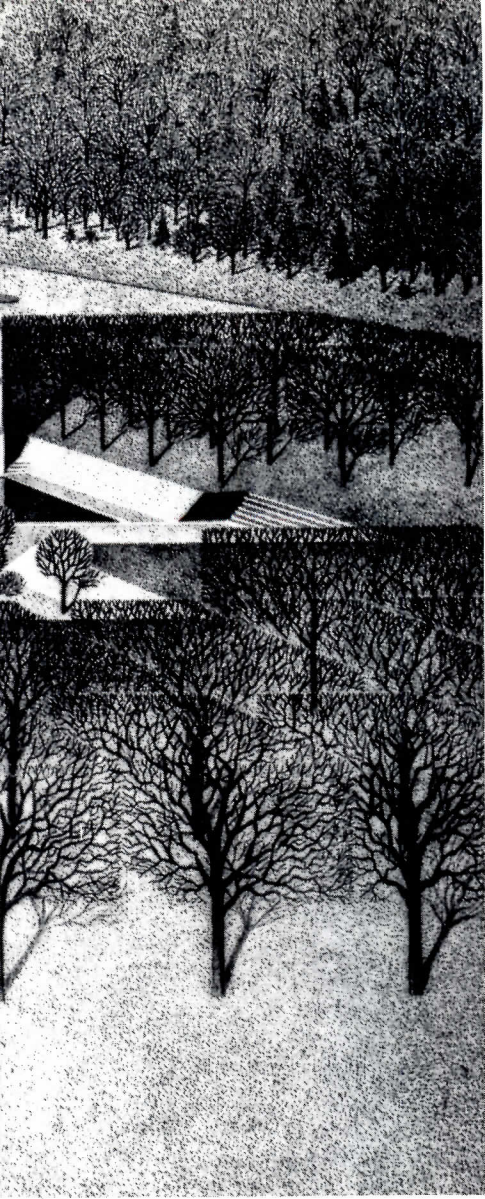
He jockeyed the bulk around in two ways, basically. First, he went below grade, got another floor, surrounding it with sunken terraces and pools. Second, since the height limitation is measured as a mean of roof pitches, the pitches here allowed for a fourth level where the major mechanical units are housed. These roofs, stepping up in gently rounded undulations, are covered with lead-coated copper.

Each of the four wings has a double function. Inside, three-fourths of the space is for research. This is where the lab benches are laid out, with all the beakers and test tubes. Just opposite, the other quarter of the space is for offices.

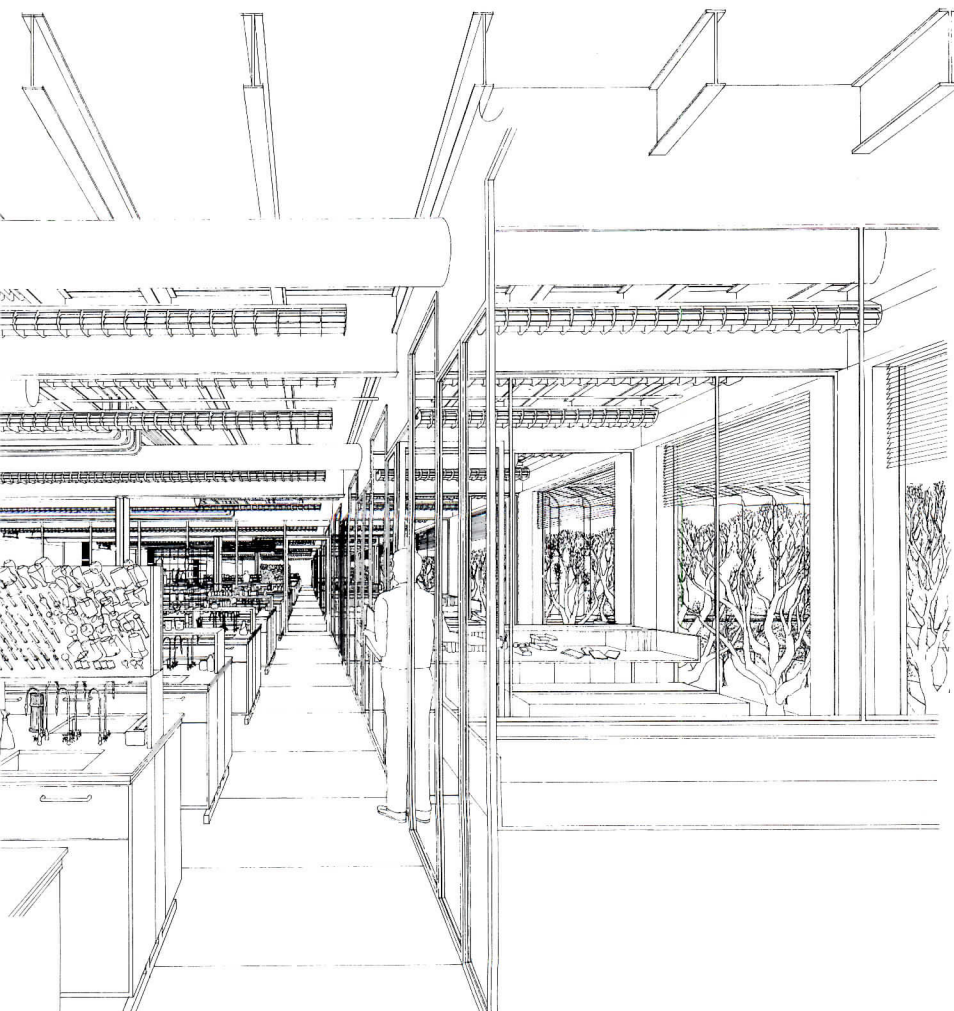
This coupling is frankly expressed on the exterior. Rounded service towers, a columnar cadence along a ten-foot module, rise up along the laboratory sides. Narrow windows run between them, but because of the "opening-out" effect of the rounded shape, the windows seem wider than they are. These towers are jammed with mechanicals, fed down vertically from the horizontal runs housed in the roof structure, and then fed inside above the lab areas where they are left exposed for easy maintenance or change. On the other hand, the windows along the office sides are large, wide ones.

The exterior is clad with a rich pink brick (sort of colonial) and this is set off with white trim (coated aluminum window frames). Edging out from the main building, at three points, are glistening enclosures of glass, framed with white metal, which house an executive suite and conference rooms, a cafeteria and dining room, and the main entrance vestibule. It is octagonal, described by Platner as a Georgian tea pot, and it is topped with a gold-leafed finial symbolizing a "bursting seed." This leads to a lobby which, like all the interiors, is painted white, including the common brick which is used recurrently.

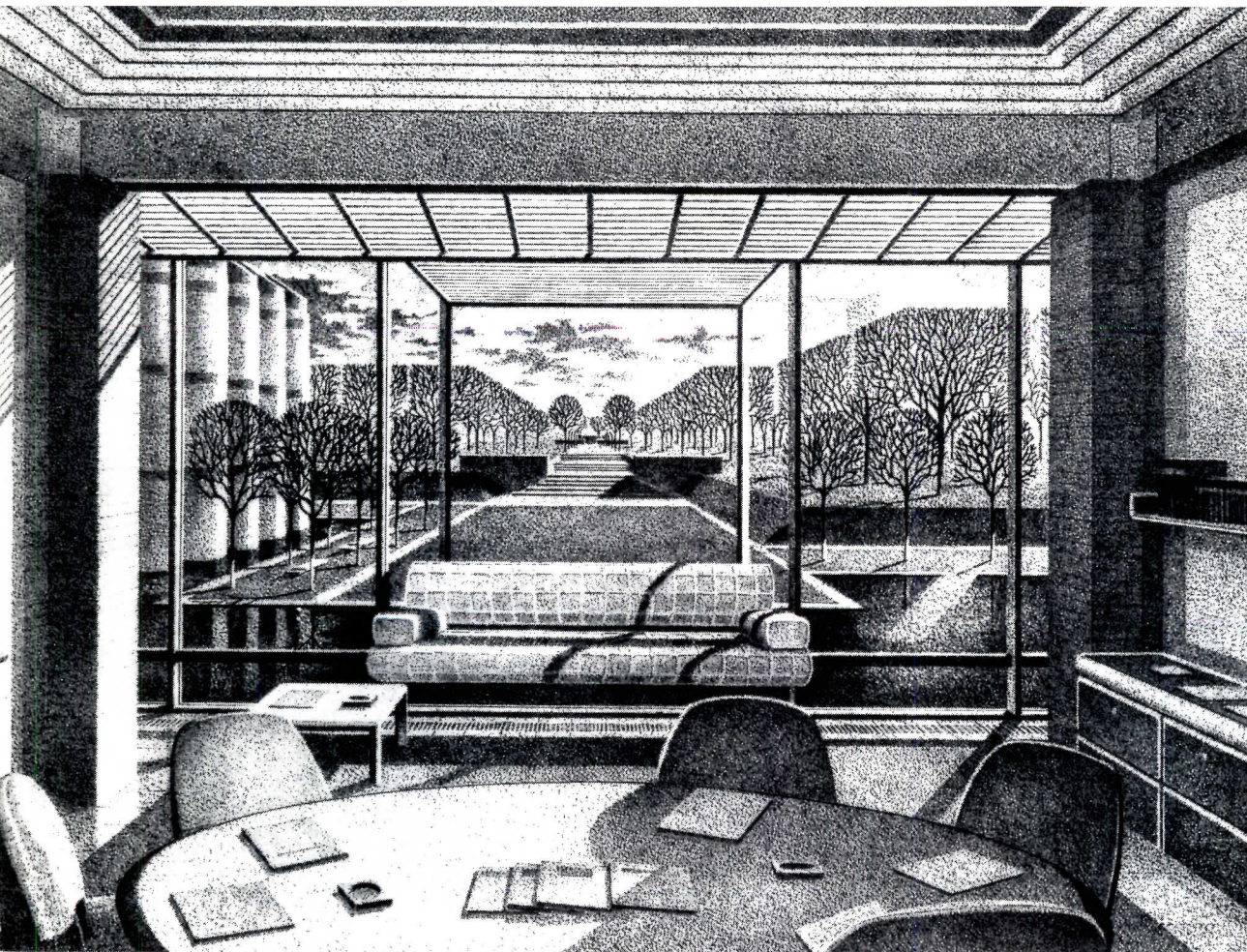
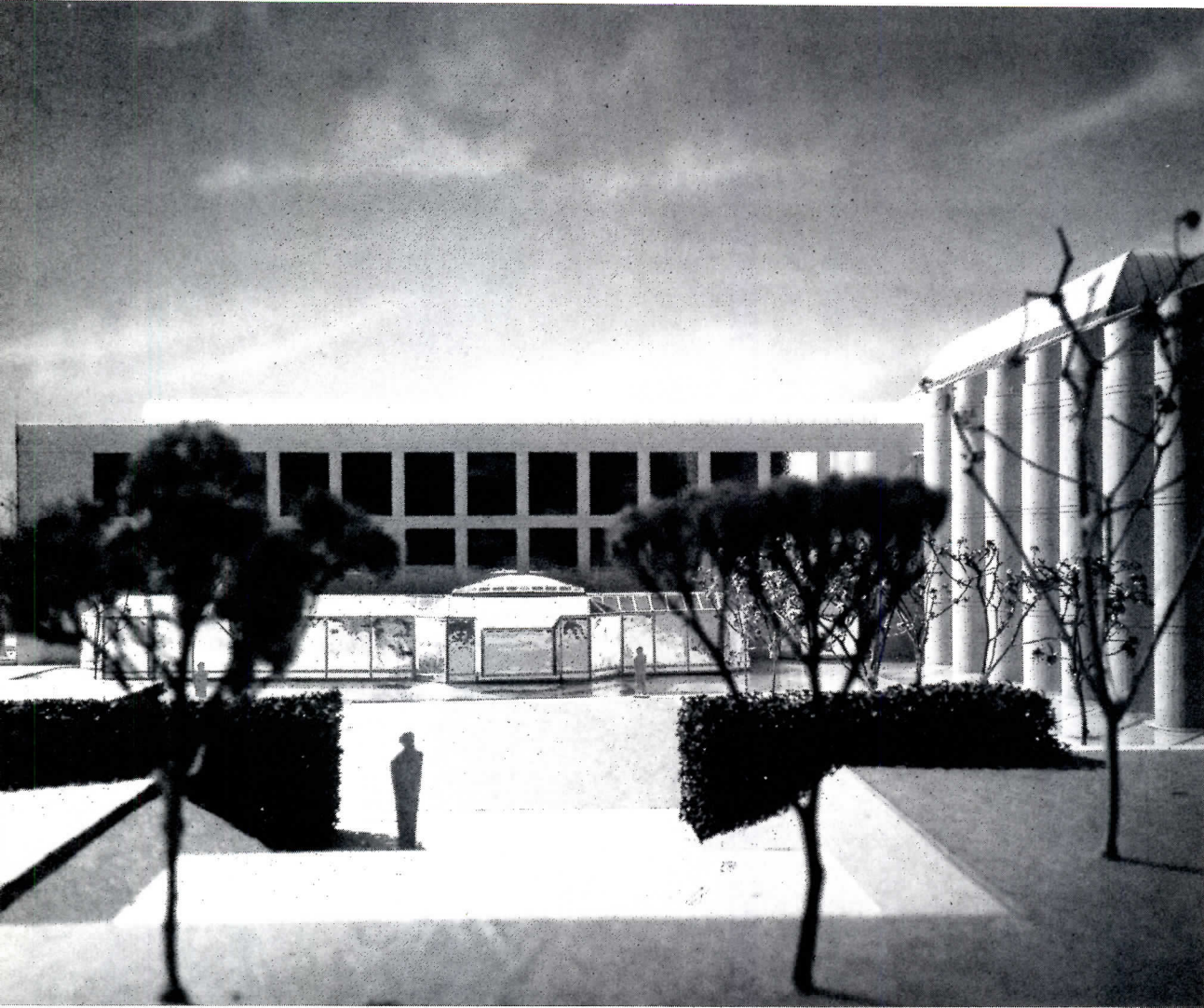
With a \$10-million dollar budget (which includes landscaping and the costly equipment), this design is nothing extravagant—just great, that's all.



The Standard Brands Research Center, which is under construction in Wilton, Connecticut, is located on a ten-acre site which, already zoned for industrial use (and an existing building), placed strict limitations on the height of the new building. The new one virtually absorbs the old one, jockeying the limitations around so that everything fits precisely. By going below grade and creating sunken terraces, an extra story was gained; the mean height of the roof pitches yielded yet another, making four stories in all.



STANDARD BRANDS RESEARCH CENTER, Wilton, Connecticut. Architects: Warren Platner Associates. Engineers: Tor, Shapiro & Associates (structural); John L. Altieri (mechanical/electrical). Contractor: J. W. Ryan Construction Company.



The exterior of the Standard Brands Research Center is of rich pink brick, recalling colonial hues. The window trim is white-painted aluminum. The service towers denote the laboratory sides of each of the four wings, with narrow windows running between them. The office sides of each wing have large wide windows. Thus the building, all around, confides its various functional aspects clearly. Major administrative areas, such as the executive conference area shown here, are housed in glistening glass prisms that edge out from the perimeter of the main structure. Views are framed by elegant ranges of trees and pathways.

Cantilever deflection challenges engineers at Mideast "oasis"

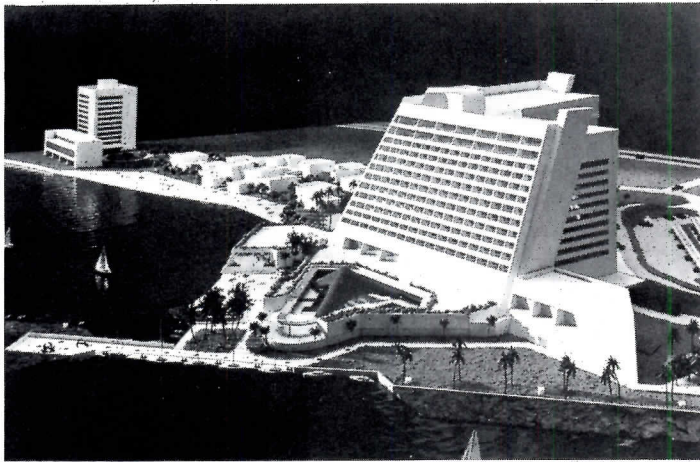
Consulting engineer Wayman C. Wing describes the approaches and precautions his firm took in the structural design of sloped walls for guest-room wings and atrium screen for a Middle East hotel.

Because the temperature can reach 44 degrees Celsius (110 F) in the shade much of the year in the United Arab Emirate state of Sharjah, Sheikh Sultan Bin Mohamed Al-

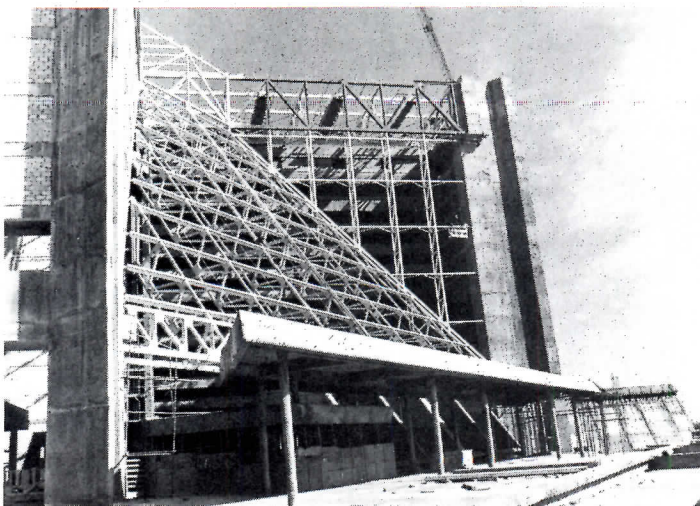
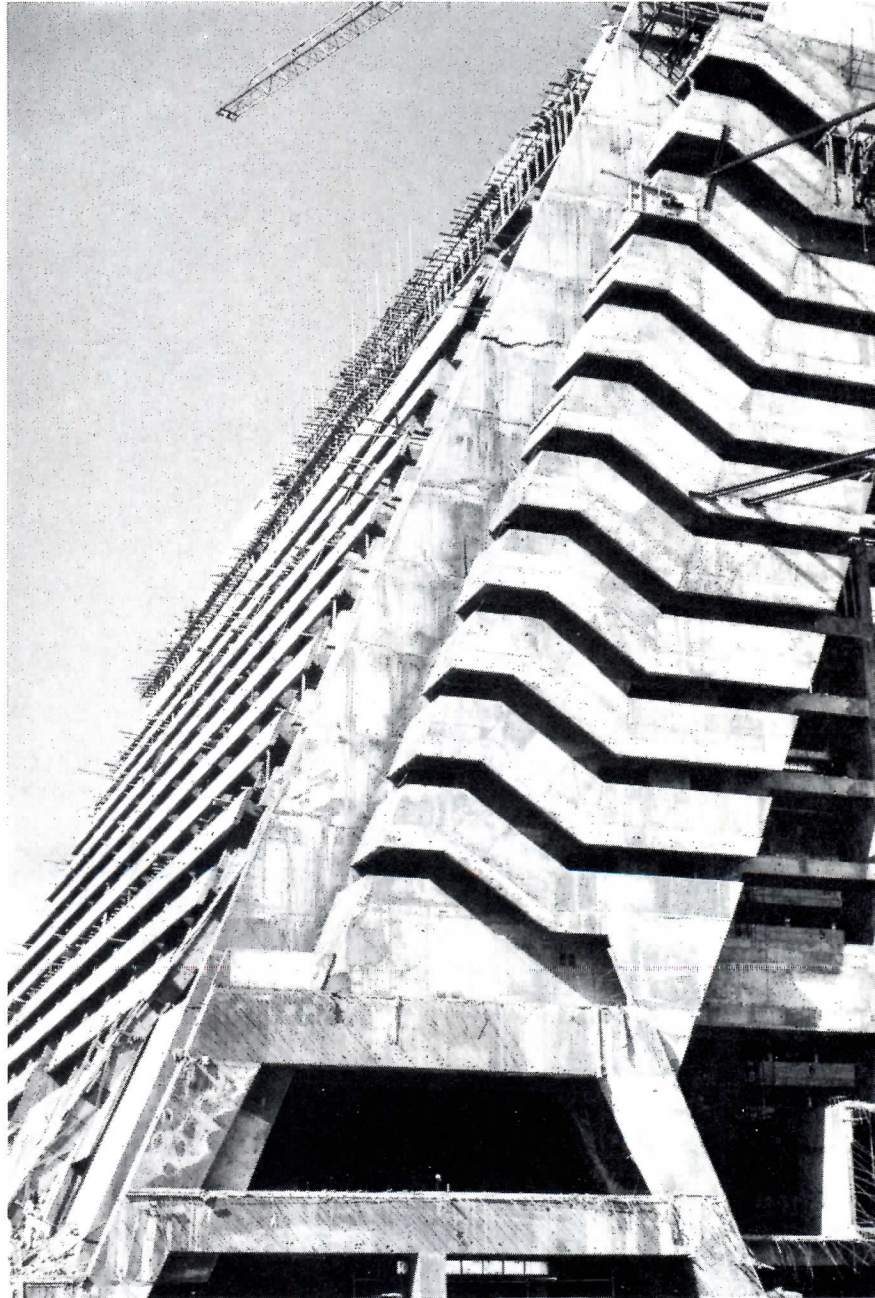
Qasmi, ruler of Sharjah, and Intercontinental Hotels liked the concept of a self-contained, environmentally-controlled "oasis" proposed by The Architects Collaborative for the hotel to be built on the Arabian Gulf.

The "oasis" is an atrium-type space formed by two sloping guest-room wings and a sloping glass wall on the third side which presented complex design problems for the structural engineer.

Critical aspects of the structural design were, first, control of the deflection of the cantilevered structural frames supporting the guest-room wings and, second, thermal movement of the atrium screens. Because limiting the rotation of the frames at the base was such a critical problem, the reinforcing of the frames was determined with the aid of a computer. Two major trusses at the top of the building supporting secondary trusses of



The Inter-Continental Hotel in Sharjah, United Arab Emirates, has a prominent site overlooking the Arabian Gulf. Triangular in shape, the building consists of two inwardly tilting guest-room wings connected by a sloping glass wall on the third side that encloses a 12-story atrium. The "A"-frame supporting structure for the guest-room wings (right), which are unbraced laterally, required computer solution to ensure minimum deflection.

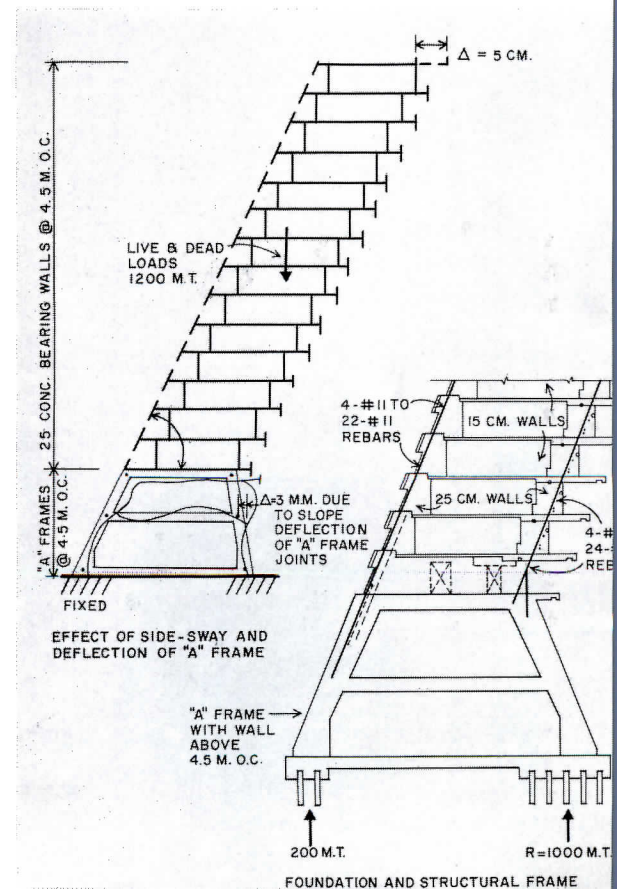
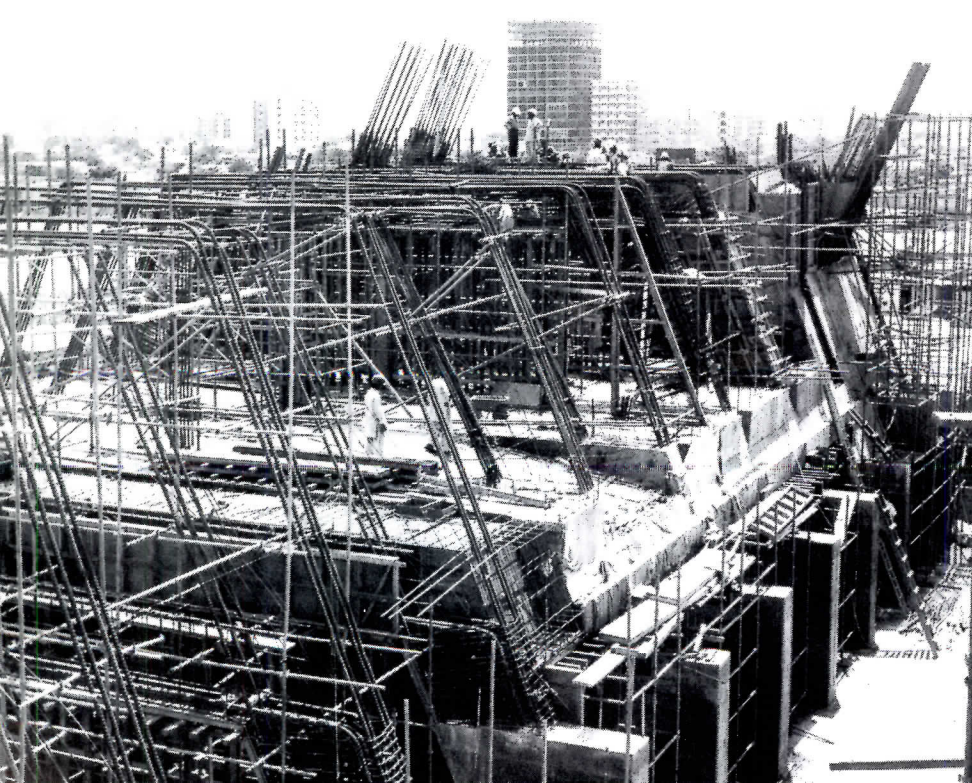
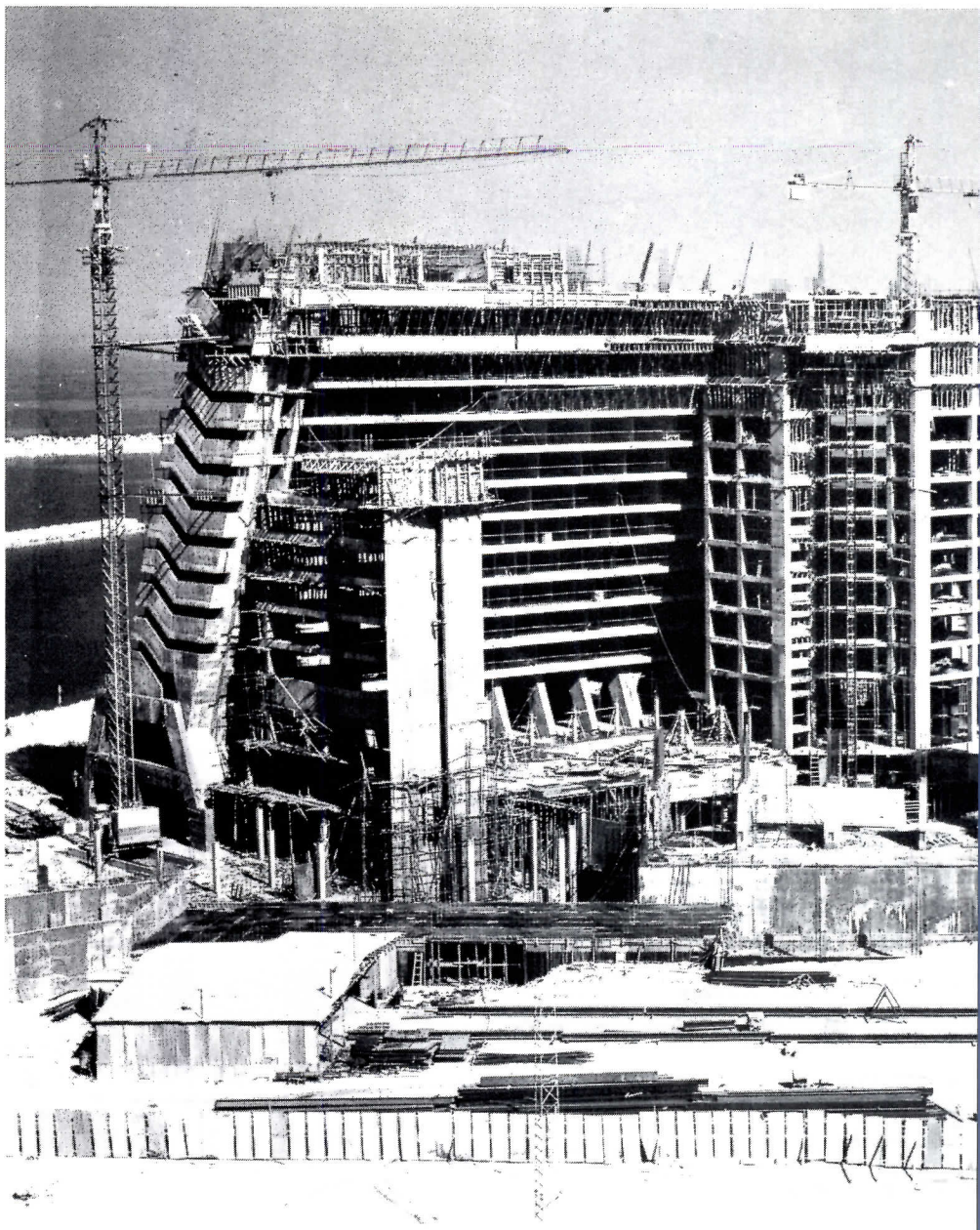


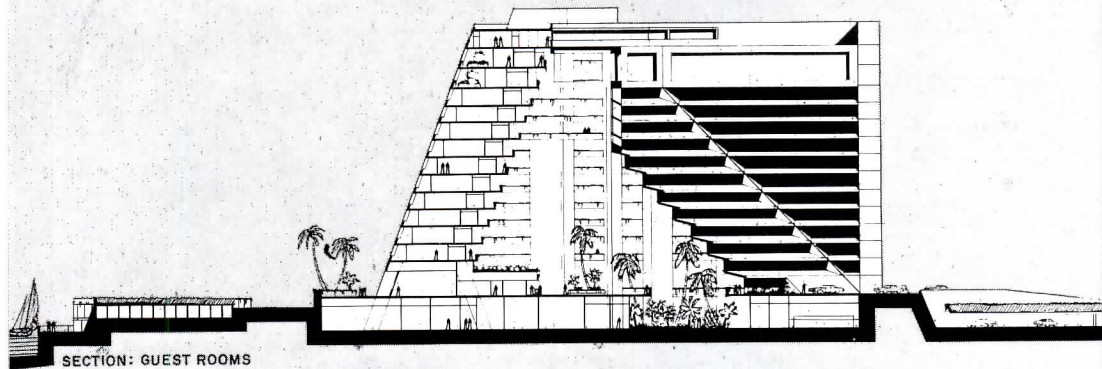
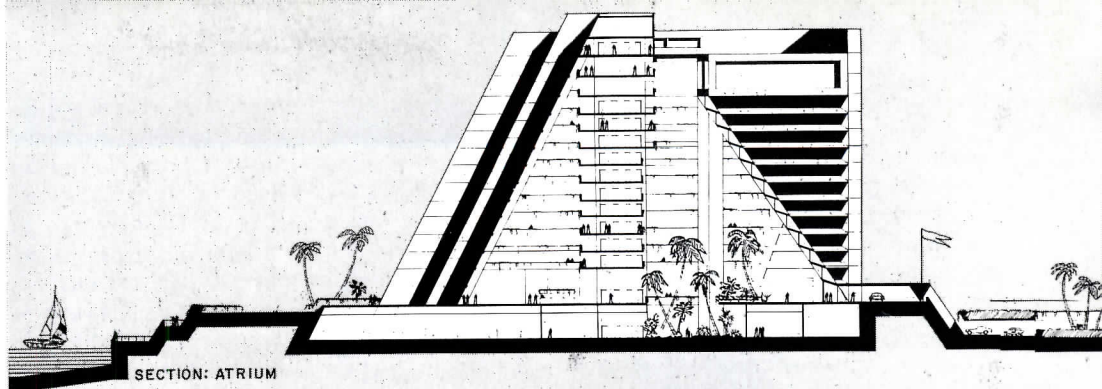
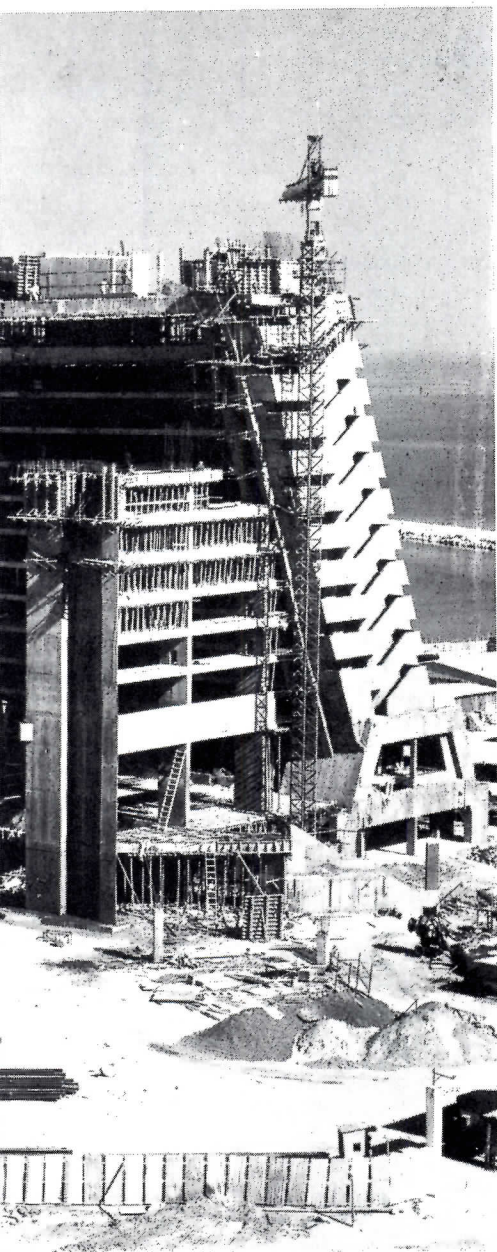
the atrium screen were supported by bridge-type bearing assemblies to accommodate thermal movement. The architects wanted sufficient glass for esthetic effect and to provide enough daylight for the indigenous trees and plants used to landscape the atrium; enclosing end walls were not glazed, however, but made opaque to cut down on the cooling load of the atrium.

The architects, working with the architectural engineering department of Intercontinental Hotels and the structural engineers, explored at least eight different schemes before finding an economical and functional solution that provided a unique form appropriate to the site. An "A"-frame scheme with guest-room wings leaning against one another was eliminated because of the extreme difficulty of coping with thermal movement under daily temperature swings as much as 60 F. With the scheme selected, the architects had desired a 45-degree slope for the guest-room wings, but a 68-degree slope was finally used to provide an optimum structural system that satisfied design and program requirements as well as economic guidelines.

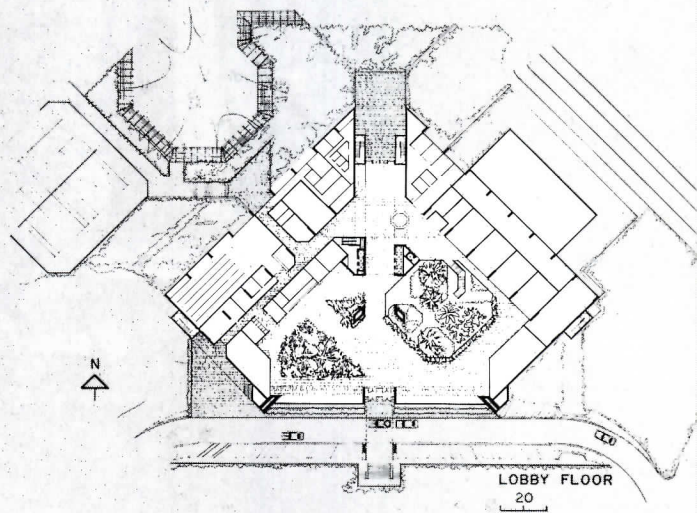
The right amount of reinforcement was critical in the base of the structure

The structure of the two 16-story-high guest-room wings comprises sloping (68 degree) concrete walls spaced every 4.5 meters (14.8 ft). These walls support the 14 cm floors (5 1/2 in.), act as shear walls, and serve as the separation between rooms. At the bottom the walls are supported by huge reinforced-concrete "A" frames. The most critical problem of the whole structure was the design of the "A"-frame joints to keep rotation within reasonable limits. Any deflection in these joints would result in 20 times as much movement at the top of the structure. A maximum tolerable deflection at the top had been

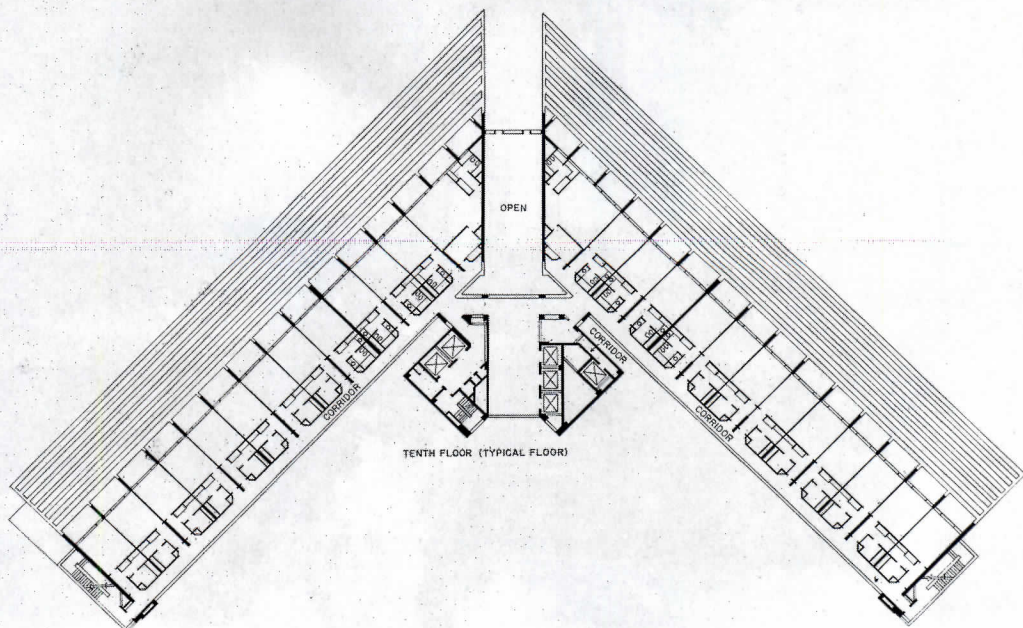
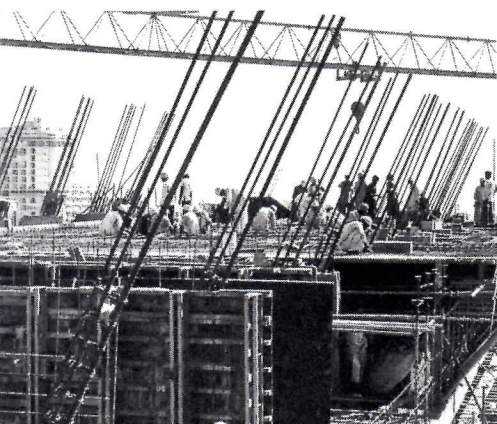




Guest rooms on 12 upper floors open onto single-loaded corridors that look down on the atrium "oasis", landscaped with tropical plants, trees, fountains and pools. Two floors at the top have private suites. The ground level has the front desk and other guest services, restaurants and night club, administrative offices, shops, bowling alleys and squash courts. The drawings right and above (of an earlier design) show the over-all concept of the hotel and how guest-room wings overlook the atrium. The plan below (final) is of the 10th level guest-room floor.



The structure of the guest-room wings consists of concrete walls 15-cm thick, except at the ends containing the major reinforcement where they are 25 cm thick. A major concern of the structural engineer was slope deflection of the "A"-frame joints. This was limited to 3 mm to keep deflection at the top under 5 cm. The continuous reinforcement of the "A" frame is shown in the photo at far left. The main reinforcement of the guest-room walls is shown in the photo below.



determined to be only 5 cm (2 in.)

The structural engineers manually made many calculations of stresses as they tried to determine the preliminary dimensions of the frame members. But ultimately it was necessary to run the problem through the computer three times before the final size and amount of reinforcing steel could be determined. For the "A"-frame sections, continuous No. 18 bars were used, and cadmium-welded butt splices were staggered to avoid congestion within the concrete section. The guest-room structural walls were typically 15-

cm thick (6 in.), except at each end where they are 25 cm (10 in.) to allow space for heavier reinforcement. During construction the actual slope deflections of the walls were carefully monitored so that they could be compared with those computed. If any adjustments were necessary they were made as each floor was constructed to bring the actual condition back to that assumed in the design. Each "A" frame contained 30 metric tons (33 short tons) of high-strength reinforcing steel. Concrete strength was 280 kg/cm² (4000psi).

A 20-ft deep scissors truss on top allows a maximum of column-free area

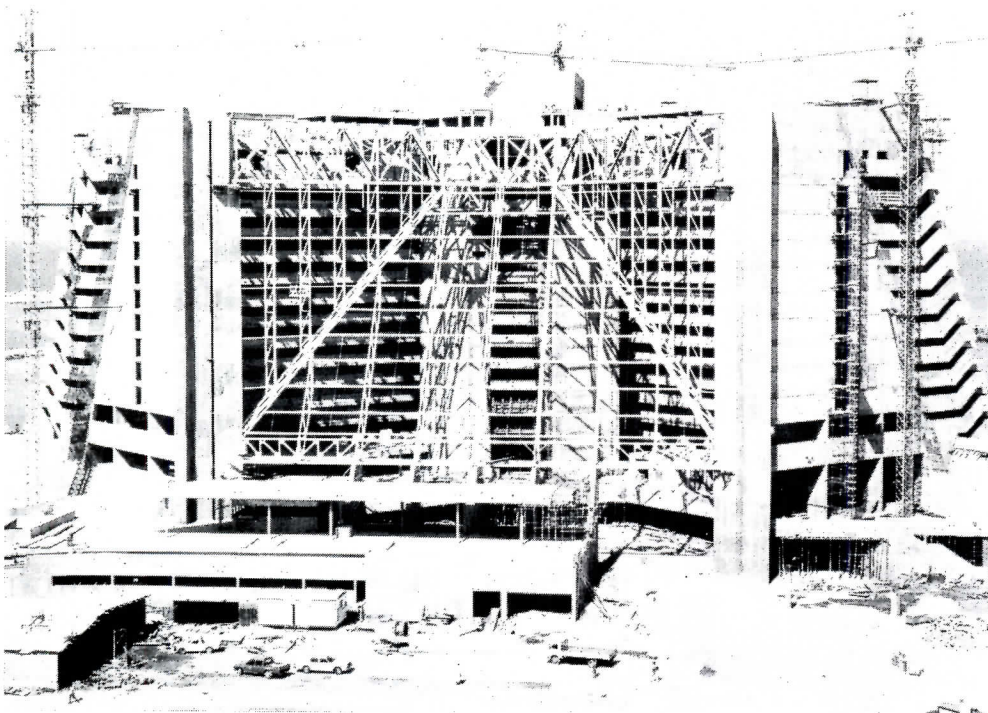
Two 45-meter (148-ft) trusses intersecting 8 meters (26 ft) from each end, similar to a pair of scissors, take the gravity and wind load of the secondary trusses at the top of the building. At the bottom the 2.5-meter (8 ft-2 in.) deep secondary trusses are supported by concrete buttresses except for the two end ones that are truss-supported. These sloping trusses are spaced 6.4 meters (20 ft) apart and vary from 13 meters (42 ft) to 30 meters (98 ft) in span. Because of fluctuating wind forces, special bridging was designed in order to stiffen the screen as a whole and to transfer evenly the anticipated 145 kg/sq m (30 lb/sq ft) wind load. And because of the high daily temperature variation, extra care had to be taken in the location of expansion and control joints. The scissors trusses were provided with bridge-type bearing assemblies that permit sliding and rotation at one end.

Field assembly of the two primary (scissor) trusses was somewhat unusual because the design required full welded continuity at their intersection. This was accomplished by erecting one full-length (45-meter) truss, supported by concrete walls at each end. Then the 37-meter section of the second truss was erected with one end bearing on a concrete wall and the other end supported by the first truss. Finally the last 8-meter section of the second truss was erected.

A special cement was required for the foundations to prevent deterioration

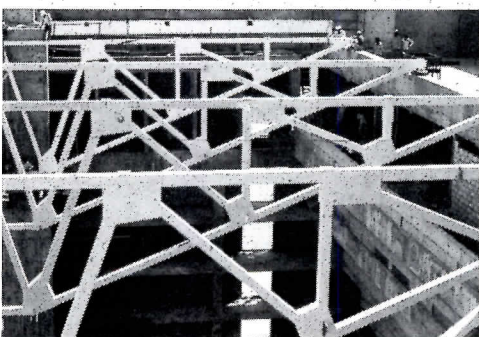
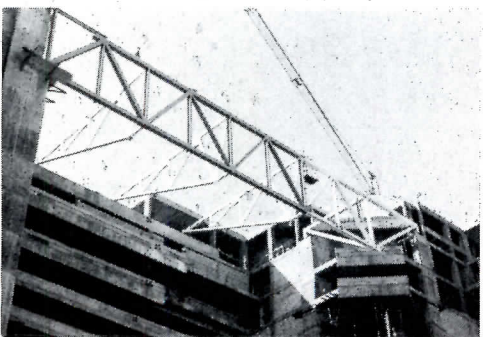
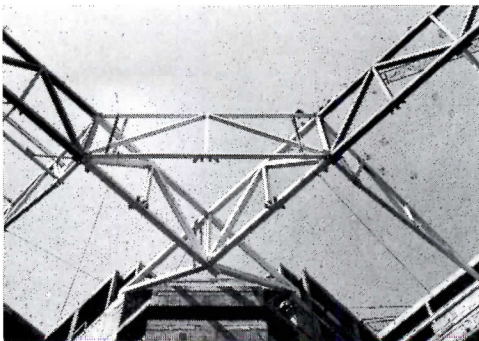
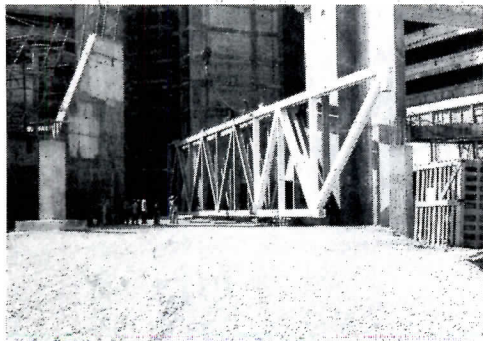
Because hydraulic fill was added to the waterfront site, further consolidation and subsidence was avoided by means of vibro-compaction and reloading of the soil. Final on-grade construction was not started until significant stabilization had taken place. Fortunately, soft to medium rock existed between 12 to 24 meters below the surface. End-bearing 150 metric-ton, slurry-shaft concrete piles were used.

The use of Type 5, sulphate-resistant cement and careful control of concrete materials were necessary because the subsoil and groundwater are high in sulphate content—a common condition in the Middle East—which can result in serious deterioration of the concrete. Research has shown that it is the tricalcium aluminate content of cement that is responsible so cement with a minimum amount of this material in it must be used.

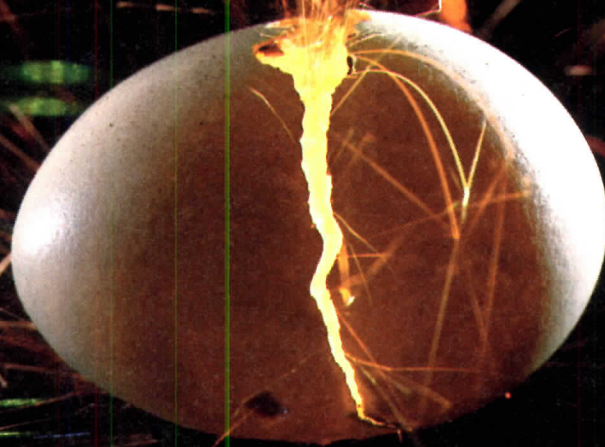


The secondary trusses of the atrium screen are supported at the top by two main trusses that intersect scissors-fashion. These two trusses also support triangular roof trusses that span back to the guest-room-

wing structure. The sloping secondary trusses are supported at the bottom by concrete buttresses. The concrete end walls (in the same plane as the outside stairs) are opaque to cut cooling load.



HOTEL INTER-CONTINENTAL, Sharjah, United Arab Emirates. Client: *Sheikh Sultan Bin Mohamed Al-Qasbi and United International Hotel Company*. Hotel operations and management: *Intercontinental Hotels Corporation*. Architects: *The Architects Collaborative—principal in charge: Alexander Cvijanovic; associate-in-charge: Michael Prodanou*. Consultants (technical services): *Intercontinental Hotels Corporation—Walter A. Rutes AIA, staff vice president (architectural engineering); Victor E. Newman, senior vice president (technical services)*. Engineers: *Wayman C. Wing (structural); Jaros, Baum & Bolles (mechanical)*. Project and construction managers: *Bechtel International Corporation*.




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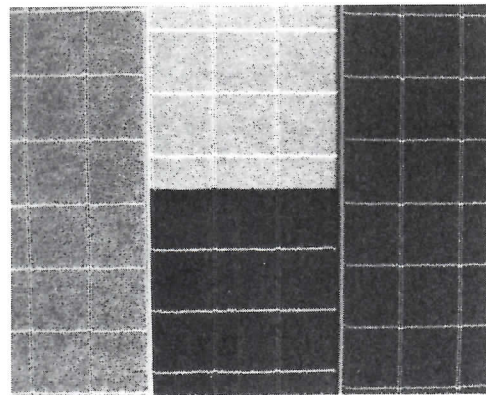
American Hospital Supply Corporation World Headquarters Evanston, Illinois

For more information, circle item numbers on Reader Service Inquiry Card, pages 219-220

NEOCON XI: new decade for exhibition

The National Exposition of Contract Interior Furnishings, this country's major show of new interiors products, is now entering its second decade. The show, to be held in Chicago June 13-15, is expected to be the best yet—with speeches and panels focusing on business, economics, human and professional issues, touching the broad fields of "interior architecture," education, behaviorism and interior design for all different kinds of building types.

As evidenced by the selection of products shown on these pages of the RECORD there will be many new and exciting products introduced. More manufacturers than ever before are exhibiting, and convention enrollment is expected to exceed last year's. In conjunction with the show, NEOCON International with over 200 exhibitors from outside the continental United States will hold an open-house adjacent to the Merchandise Mart, headquarters for NEOCON XI.



CONTRACT CARPETING / A small-scale grid pattern woven of acrylic yarns, "The Bedford Collection" is one of a number of wool and acrylic stocked contract carpeting offered for commercial and residential installations. "The Bedford Collection" is available in a 12-ft width; colorations include gray, hunter green, natural, navy and cocoa. ■ Stark Carpet Corp., New York City.

circle 300 on inquiry card



UPHOLSTERED CHAIR / The naturally curving yet solid forms of shells were used by artist Ward Bennett as a design motif for the "Shellback" chair. The deeply padded back and seat is hand-fitted to order in a choice of aniline leathers (shown) or fabric; COM may also be used. ■ Brickel Associates Inc., New York City.

circle 302 on inquiry card



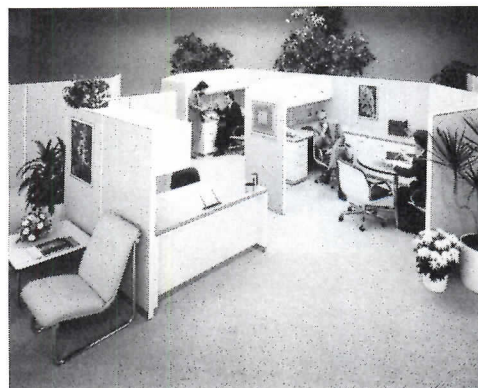
MOBILE BAR UNITS / The Italian-designed "Iglou" is a refrigerated minibar mounted on casters for mobile use in office, hotel or home. Units range in size from 21-in. cubes to 3-ft 11-in. by 2-ft 10-in. bars. The "Iglou" is offered in polyurethane, rosewood, walnut or lacquered finishes in a large choice of colors. ■ Cattaneo, distributed by Altair, St. Augustine, Fla.

circle 304 on inquiry card



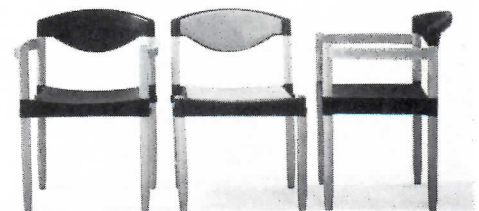
MODULAR SEATING / For contract and residential use, this handsome modular seating, called "Ceylon", offers an unlimited extension capability. Designed by Stanley Jay Friedman, deep cushions are set atop a simply-designed base. ■ Brueton Industries, New York City.

circle 301 on inquiry card



FLEXIBLE OFFICES / Two panel options are offered with the "8000 Series" freestanding and modular furniture components: finishes are available on only one side, or fabric on both sides. Class A-rated panels support wing desks, cantilevered work-surfaces, storage units and shelves. ■ All-Steel Inc., Aurora, Ill.

circle 303 on inquiry card



WOOD/PLASTIC STACK CHAIR / "Strax" seating combines lacquer-finished hardwood frames with compound curved molded plastic seats and backrests. Three configurations are offered, all with interlocking tabs to simplify ganging. ■ Krueger, Green Bay, Wisc.

circle 305 on inquiry card
more products on page 149

DesignTex takes a front seat with COM.

Major contract furniture manufacturers tell us that more DesignTex upholsteries are specified as COM than those from any other fabric source, including the manufacturers' own stock fabric lines.

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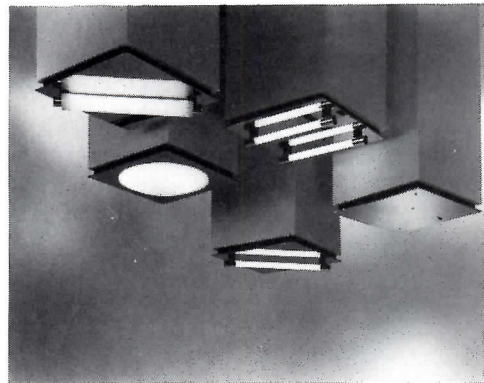
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SEATTLE

Circle 63 on inquiry card



SECTIONAL SEATING / The new handsome 441 Sectional Seating features high-friction glide inserts which grip tile or carpet, making ganging attachments unnecessary. These inserts stick to floor surfaces, holding sectionals in position. ■ Steelcase, Grand Rapids, Mich.

circle 306 on inquiry card



NEW FLUORESCENT FIXTURES / A special decorative approach to solving lighting problems is these "Lytetiles" from the "lightstream" series of the company's Designers Group 3 Collection. Patterns can be created with these by positioning them in tandem or gang mounting. ■ Lightolier, Jersey City, N.J.

circle 307 on inquiry card



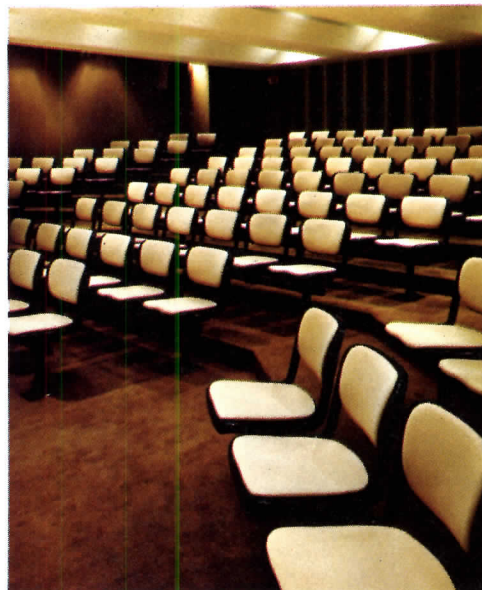
STREAMLINED CREDENZA / Designed by J. Wade Beam, the Ponte credenza is a sleekly-designed storage unit with a flush surface except for a recessed ridge. The unit can be finished in Brutone high-gloss opaque colors, or it is available in stainless steel or bronze. ■ Brueton Industries, New York City.

circle 308 on inquiry card



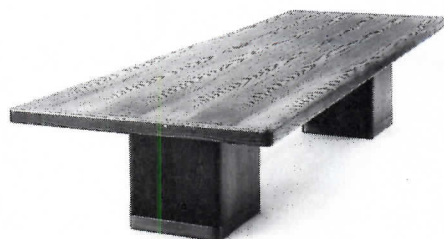
BAR CABINET / Available in teak, walnut, rosewood and mahogany, the "Executive Bar Cabinet" (shown as a freestanding unit) can be added to any *System Dado* on panels, wall rails, telescopic poles or freestanding. Bar may be ordered with a refrigerator/freezer unit. ■ Cado Royal System Inc., Woodside, N.Y.

circle 309 on inquiry card



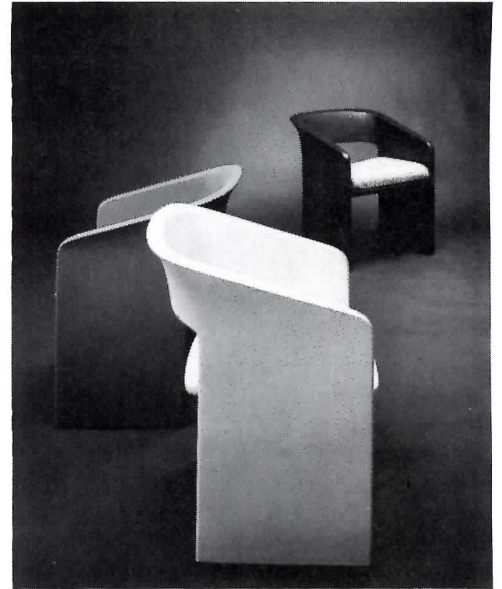
AUDITORIUM SEATING / Vertebra seating provides long-term comfort by reacting automatically to body movements: concealed mechanisms allow the backrest to tilt back while the seat slides forward together or independently. Seating is shown here in a hospital audio-visual center, mounted on a common beam with folding tablet arms. Armless and arm chair versions are also available. ■ Krueger, Green Bay, Wis.

circle 310 on inquiry card



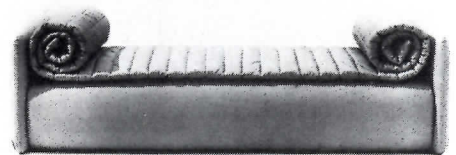
CONFERENCE TABLE / As part of the "Column Base" conference table collection, a visual strength is achieved from a column base of stainless steel or bronze, and a table top of burl, oak or walnut veneers with solid band edges. There are seven rectangular sizes (either 48 or 60 in. wide and from 6 to 16 feet long). ■ Hiebert Inc., Los Angeles.

circle 311 on inquiry card



SEAMLESS CHAIR / Designed by John Yellen, seating is constructed of high-density polyethylene and rigid urethane foam. Chairs are finished in white, orange or brown *Polane* polyurethane enamel; the unupholstered version may be used outdoors. ■ Thonet, York, Pa.

circle 312 on inquiry card



CONTEMPORARY CHAISE / A backless "Athenian Chaise" reflects the layered look with detachable channel-quilted bedroll that forms bolsters. The edges are continuously rounded emphasizing soft fluid design lines. It is designed by John Saladino. ■ Dunbar, Berne, Ind.

circle 313 on inquiry card



MODULAR SEATING ARRANGEMENTS / A system of chairs, ottomans and tables, which can be used independently or locked together to provide modular seating arrangements, have a simple, straightforward design offering comfort and function. Base design allows interlocking without devices. ■ Castelli Furniture, New York City.

*circle 314 on inquiry card
more products on page 151*



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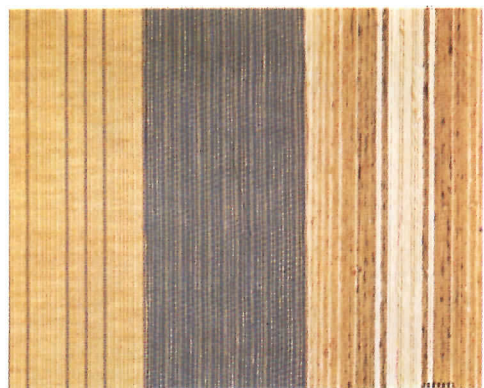


Circle 64 on inquiry card



ELEGANT CHAIR SERIES / A series of high- and low-back side chairs, office chairs and lounge chairs are designed by Karl Erik Ekselius of Sweden. They are constructed of formed aluminum, making them lightweight and able to have a highly polished surface with strong resistance to wear. ■ Davis Furniture Industries Inc., High Point, N.C.

circle 315 on inquiry card



NATURAL FIBER WALLCOVERINGS / Manufactured by Belgian craftsmen, these wallcoverings have received flame test ratings and are claimed to have acoustical properties, anti-static power, solidarity of color and resistance to tearing. ■ Belgian Linen Association, New York City.

circle 316 on inquiry card



CLASSIC CHAIR DESIGN / Reintroduced into the American market, the Arne Jacobsen-designed chairs include The Stack Chairs designed in 1958. Made with a plywood shell, they have passed rigorous strength tests. ■ ICF, New York City.

circle 317 on inquiry card



DINING TABLE / An interesting design by Afra and Tobia Scarpa, this table is a combination of transparent glass table surface and outer frame with legs that are finished in black polyester lacquer or in walnut. A flip-top extension table is another version. ■ B&B America, New York City.

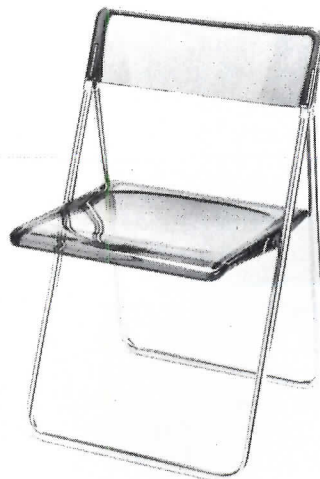
circle 318 on inquiry card



IMPORTED LAMPS / Originally designed by Prof. C.J. Jucker in 1923 during his participation at the Bauhaus, this lamp (and several other designs) are being imported and distributed throughout the U.S. This table lamp has a polished clear crystal glass base with white opal hand-blown glass diffuser, and measures 18-in. high and 8½-in. diameter.

■ Lighting Associates Inc., New York City.

circle 319 on inquiry card



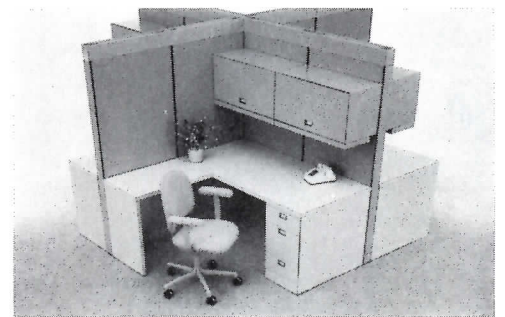
FIRST SEATING LINE / This sleek transparent folding chair is the first introduction of a new line of seating. Called "Skyline" and designed by Robert L. Wilson, this stacking chair is durable because of its use of copolyester for solid flat seat and back on a chrome-finish steel frame. The seats and backs are available in smoke or amber colors. ■ Howe Furniture Corp., New York City.

circle 320 on inquiry card



SCULPTURED CHAIR / This chair designed by Geoffrey Harcourt is highlighted by a sculptural wood base of laminated Beechwood. Appropriately named "Chicago" for its introduction at NEOCON XI, other designs in the series include an armless model, one with tubular metal arms and a cast aluminum base with a variety of finishes for metal and fabric-covered sections. ■ Turner Ltd., New York City.

circle 321 on inquiry card



OFFICE SYSTEM / As part of this company's line of office furniture, this freestanding open office system, called Tempo 3, will be introduced at NEOCON XI along with a new line of office chairs. Shown above in just one configuration, the office stations can be equipped with varying storage elements. ■ Shaw-Walker, Muskegon, Mich.

circle 322 on inquiry card



OPEN PLAN / Freestanding panels, files, shelves and storage units are part of the KOB! open office system. "Soft look" panel faces are interchangeable; hinges are continuous for an uncluttered appearance. ■ Midland Industries, Inc., Wichita, Kan.

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more products on page 159

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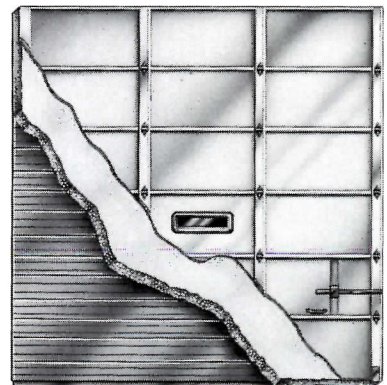
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PHOTOMURALS / Two landscape murals by photographer Ed Cooper have been added to the *Naturescapes* line of matte-finished polypropylene photomurals. Shown here is "Pinelands," available in 10 panels (3½- by 4½-ft each) for a maximum height of 9-ft and a 17½-ft width. ■ *Naturescapes*, Inc., Newport, R.I.

circle 324 on inquiry card



TABLES / The sleek lines of tables in the "Resin Group" are created by sculpturing liquid polyester resin, ½-in.-thick, over structural cores. The table shown has a square top with a 2-in. bullnose edge, mounted on four cylindrical legs. Drum and pedestal tables are also available, all in a wide range of size, height, and color options. ■ Metropolitan Furniture Corp., South San Francisco.

circle 325 on inquiry card



COORDINATED FABRICS / Over 118 fabrics, consisting of 800 colorways, all with harmonizing and correlated tones, shades and textures, are offered in designer Manuel Conovas' contract collection. Coordinated wallpapers and rugs work with these fabrics. Shown here is the "Dakota" upholstery pattern, a wool-blend basketweave available in seven colors. Other patterns include geometric, floral and Oriental prints, stripes, velvets, piques and solids, manufactured of cotton and other textiles. ■ Manuel Conovas, Inc., New York City.

circle 326 on inquiry card



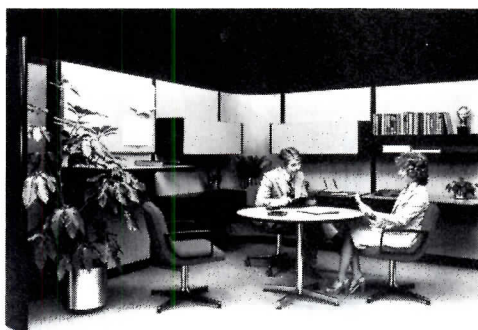
MODULAR SEATING / The "Pacesitter" series consists of a starter seating component with add-on seat or table units, up to a maximum of four. The solid oak frames are offered in a natural or dark oak finish; seats and backs are upholstered, polyfoam-padded curved plywood. ■ Madison Furniture Inc., Canton, Miss.

circle 327 on inquiry card



PRE-ENGINEERED PANELS / Power and Communications panels such as those shown here forming an EDP work station, are supplied fully-wired for office equipment loads from electric eraser to duplicating machine. A snap-in, quick disconnect system of flexible conduit travels through the panel base, bringing power to outlets placed wherever needed, including work surface heights. Power and communication cables share a common raceway; use of metal conduit eliminates signal interference. UL-listed panels have a Class A fire rating. ■ American Seating, Grand Rapids, Mich.

circle 328 on inquiry card



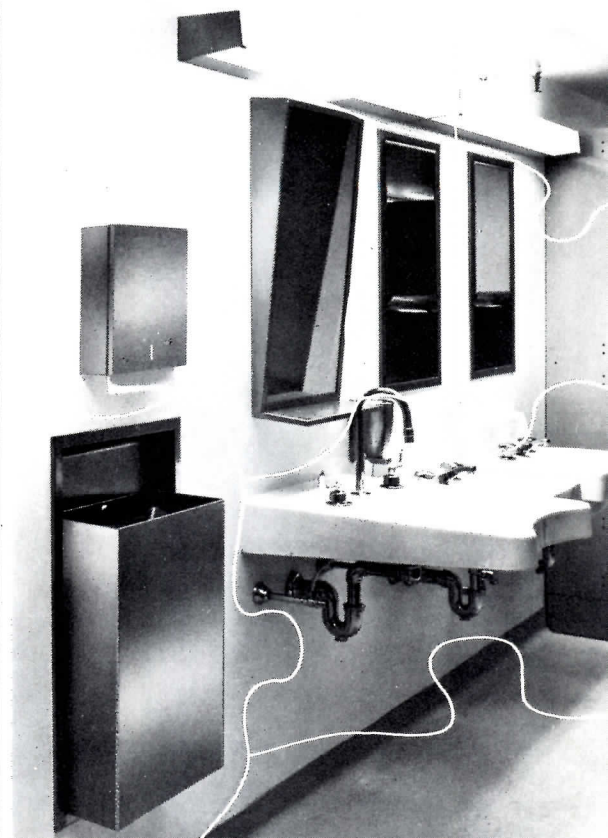
OPEN PLAN OFFICES / Extensive design refinements and new products are offered in this manufacturer's "Open-Plan System" office components. Innovations include an electrified panel option; panels and work surfaces with wood veneer, laminate, and fabric finishes; and redesigned and expanded components such as storage units, file bins, tackboards, coat hangers, etc. An office entry door, which provides total enclosure and privacy, is available for 79-in.-high work stations. ■ GF Business Equipment, Inc., Youngstown, Ohio.

circle 329 on inquiry card

more products on page 161

Circle 67 on inquiry card ▶

Designing a functional washroom can be a puzzle.



Let your PARKER representative help you put the pieces together.

Parker manufactures a complete line of stainless steel washroom equipment. With so many units to choose from, it can sometimes be difficult to choose the right ones to fit your washroom design. The Parker representative in your area has the knowledge and experience to help you make the right decisions. To find your Parker representative, see the listing of representatives on the back of our catalog.

See our catalog in:



Building Products Catalog 10-167



Sweet's General Building Catalog File 10.16/Pa



charles parker

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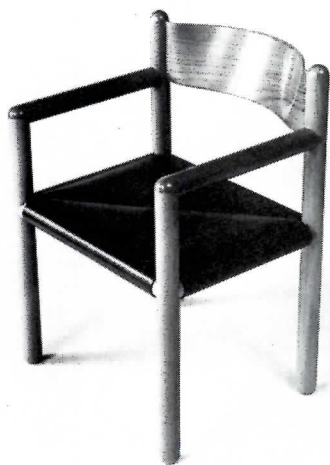
Making a world of difference for wall systems.

The variety and wide choice of Borden Film laminates offer you nearly endless possibilities for beautiful, coordinated, economical interiors. All specified from one source. Partitions, demountable walls, furniture, even air conditioning ducts can be colorful, integrated parts of the whole. And Borden Films will be happy to assist you in developing your plans.

If you produce or specify components for commercial interiors, Borden Films as your single-source supplier offers a new and outstanding collection of weaves, textures, solids, stripes, and woodgrains for pre-finished surfaces. Call your Borden Films representative now and ask him about our new LTLF line of laminate films. Because that's where the beautifully finished interior starts. Columbus Coated Fabrics, Division of Borden Chemical, Borden, Inc., Columbus, Ohio 43216.

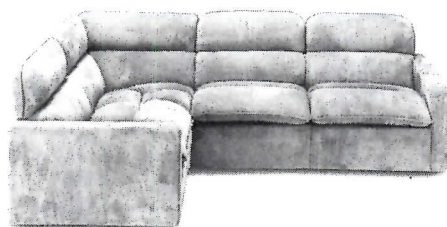


Circle 68 on inquiry card



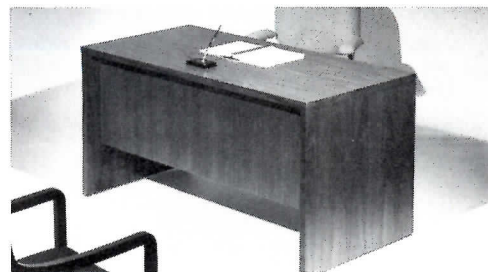
WOOD-FRAMED CHAIR / Precise joiner work is displayed in the "Acorn" chair, with legs, arms, and seat frame constructed from 2-in.-diameter hardwood. The chair back is curved, laminated wood; seat options include leather or natural linen sling; cane; or foam covered in fabric. A Vignelli design, the "Acorn" chair stands 32-in. high by 22½-in. wide; the hardwood frame is offered in a variety of finishes. ■ Sunar, Norwalk, Conn.

circle 330 on inquiry card



CONTRACT FURNITURE / This high back (31-in.) modular seating system includes two-, three-, and four-seat sofas, a lounge chair, an ottoman, and a corner unit. The components allow such configurations as long runs, right angles, islands, etc. The tufted furniture is constructed to conform to California Fire Retardancy regulations; upholstery is available in a choice of leather, suede or fabrics, as well as COM. ■ Intrex Inc., New York City.

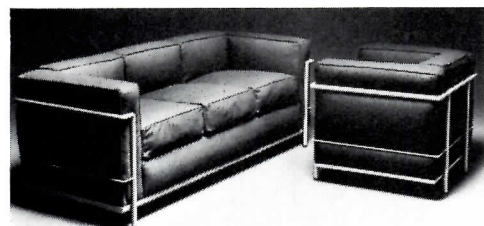
circle 333 on inquiry card



WOOD VENEER OFFICES / Using matched walnut veneer with high-pressure laminates tops, the "Lo" group provides the warmth of wood in furniture for the general office. The "Lo" line is available in a full range of units including desks, credenzas, bookcases, secretarial returns, executive and secretarial seating, and occasional seating. ■ R-Way Furniture Co., Sheboygan, Wisc.

circle 334 on inquiry card

more products on page 163



LE CORBUSIER DESIGNS / The classic "Gran Comfort" armchair, formerly manufactured only in chrome and leather versions, is now being reintroduced in fabric with an enameled frame, each in colors selected from Le Corbusier's own palette. Also available in the fabric/enamel combination are two- and three-seat sofas, stools, the LC/4 Chaise Lounge, and the LC/1 Lounge Chair, originally designed by Le Corbusier and his associates in the 1920s. ■ Atelier International, Ltd., New York City.

circle 331 on inquiry card



OTTOMAN / Introduced to complement the "Alky" series of lounge and reception furniture, the "Alky" ottoman is available in two seat heights. It may be used as a footrest with the chair, and as a bench unit ganged by itself or in combination with "Alky" tables. Cushioning is polyurethane foam bonded onto the metal and steel structure; the snug-fitting cover may be ordered in a number of natural and synthetic materials. ■ Castelli Furniture, New York City.

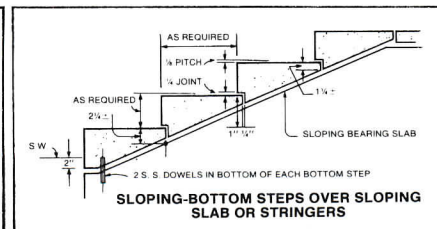
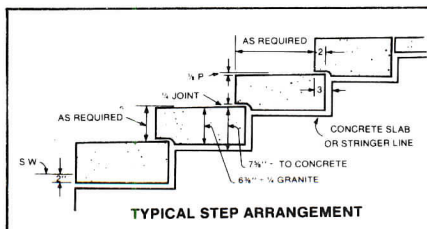
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Architect: Tinsley Higgins Lighter & Lyon, Des Moines, IA



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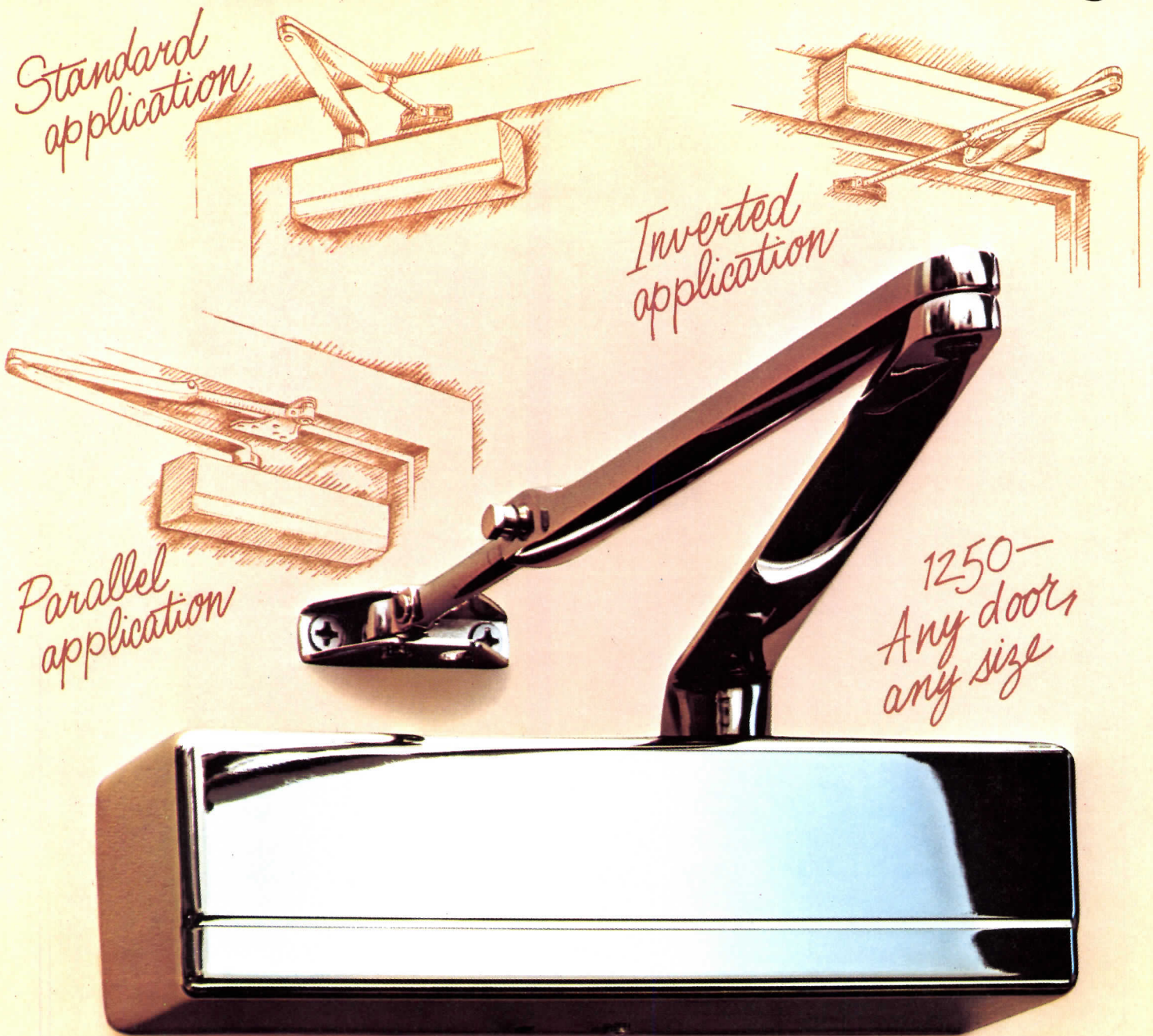
For more information, plus a free copy of our 16-page, full color catalog showing all 18 Cold Spring colors available, call toll free **800-328-7038**. In Minnesota, call (612) 685-3621. Or write to the address below.



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Closer selection made easy.



Sargent's 1250 closer is the only one you'll need. Because of its total flexibility, it's like getting 30 different closers in one. With all the quality you'd expect from Sargent. And still sensibly priced to meet most budget considerations.

The ambidextrous closer.

Designed for easy installation regardless of the hand of the door, the 1250 closer is also non-sized for added flexibility. It's convertible from a size 2 closer to any size up to 6, right on the job, with just a few turns of its spring adjustment screw.

Offers installation versatility, too. Whatever your mounting requirements, the 1250 closer can be installed in the standard, inverted or parallel arm mounting position. And is available with holder-stop arm, as well.

The Sargent quality is built-in. Engineered with the same precision and detail that distinguishes Sargent top quality lines, these new closers give a whole new meaning to long-life dependability. Particularly as it applies to on-the-job flexibility.

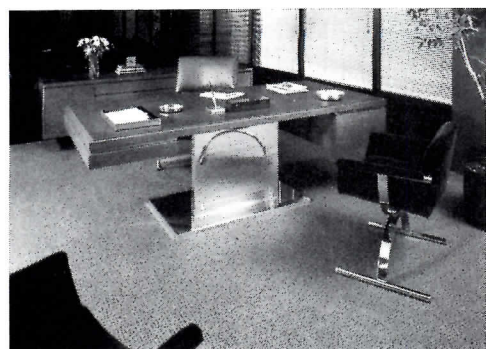
Prompt delivery is assured. Inventoried in the Sargent Mercury Shipping Service, these closers can be shipped within 48 hours of receipt of order.

Sargent 1250... the one to specify. For additional information, contact your Sargent architectural hardware distributor or write Sargent & Co., New Haven, Ct. 06509.

SARGENT

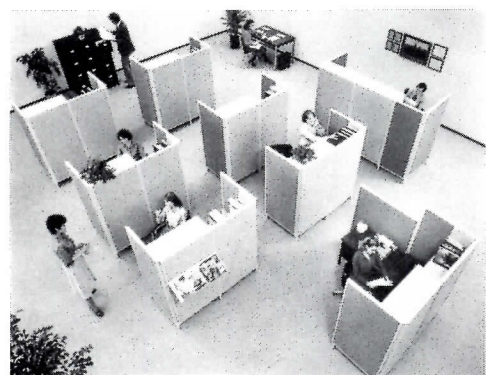
Division of Walter Kidde & Company, Inc.

KIDDE



COMMERCIAL CARPET / An *Antron III* nylon broadloom with a heavy looped boucle texture, "Boucle Status" is one of three "Weavecraft" carpets for heavy traffic office applications. Each pattern has a distinctly different looped texture, but all three are offered in the same 14 skein-dyed heather colorations to create individual yet coordinated interior areas. ■ Karastan Rug Mills, New York City.

circle 335 on inquiry card



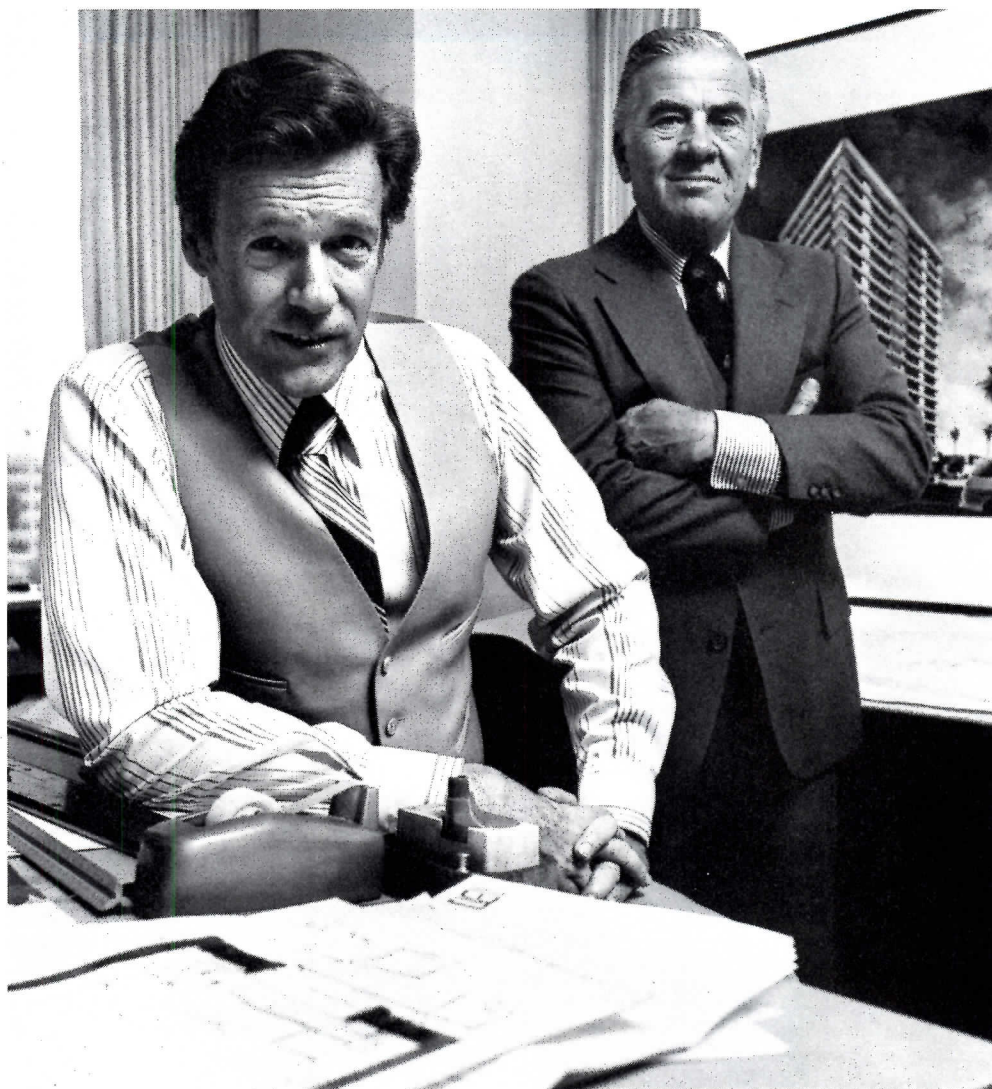
INSTANT OFFICE / A system of acoustical screens, hang-on storage components, and task lighting, the "Instant Office" is said to offer quick and economical improvement to the office "pool" environment. The office sets up around existing desks without major rearrangement, providing visual privacy and acoustical control. ■ Conwed Corp., St. Paul.

circle 336 on inquiry card



LIGHTWEIGHT CHAIR / A new line of lightweight, compact and easily movable chairs will be introduced at NEOCON XI. Designed by Canadian industrial designer Robert Whalen, the chair features molded polyurethane over hardwood core seat and back, cast aluminum arms and base, and is available with zippered fabric or vinyl slip-covers. ■ Lehigh-Leopold Division of Litton Industries, Burlington, Iowa.

circle 337 on inquiry card
more products on page 165



"I went for design. He went for cost. We both went for powder dispensers."

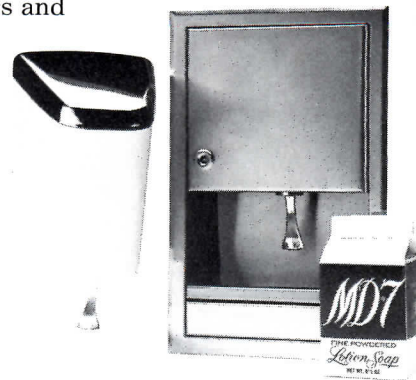
As the designer of this building, I had two things to consider when I chose the soap dispensers for the washrooms. Cost and design. The building owner asked if there wasn't an alternative to liquid soap. He said the dispensers always clogged or leaked. He also mentioned there was more waste with liquid soap—and the dispensers always seemed to need refilling.

I suggested we try a fine-powdered soap. Specifically MD*7. It's not gritty like an industrial powdered soap, so it is perfect for the washrooms in an office building. Still MD*7 gets hands really clean, is gentle, and won't irritate normal skin. We decided to go with powdered soap. And with all the different styles in soap dispensers I found one that was perfect for the design of the washrooms.

I'll be installing powder dispensers and MD*7 in all the buildings I design. And for good reasons. They please my eye, the tenant's hands, and my client's budget. Who says you can't please everyone?

For further information see Sweet's Catalog 10.16 Un.

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Centro 2 tables are backed by Krueger, your assurance of quality. For more information, contact the nearest showroom or Krueger, P.O. Box 8100, Green Bay, WI 54308; 414/468-8100.



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Alarming what Detex can do



Two compact, high decibel horns in EA-2504AC announce unexpected "visitors." And there's little they can do about it!

Authorized personnel may use a special key to disable the alarm for a few seconds as they pass through the door. The alarm automatically re-arms after the door closes. Unique 90° "one-pass" option permits automatic bypassing, but prohibits key removal with alarm in "off" condition.

For surface or semi-flush applications, the 504AC offers the same functions, makes retrofitting easy. All units operate on 24 volts AC. The EA-2505AC and 505AC have stand-by power as well. Send for our free Security Hardware literature.

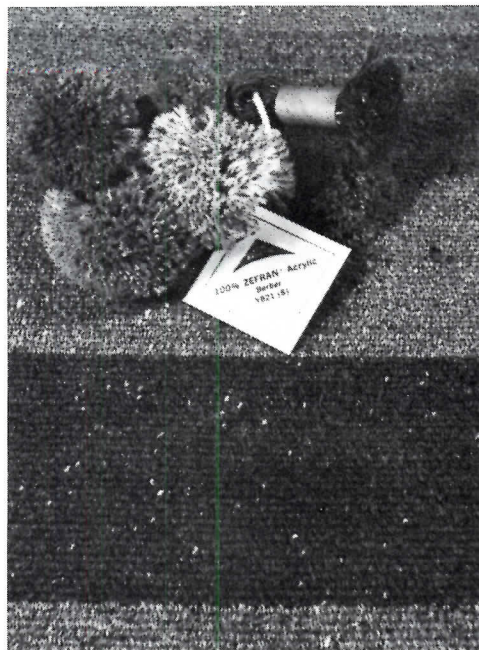


EA-504AC

DETEX

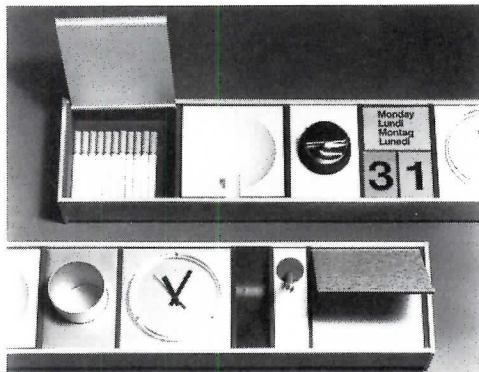
Detex Corporation - 4147 Ravenswood Ave. - Chicago, IL 60613
Telex: 206268 DETEX CGO

Circle 73 on inquiry card



BERBER CARPETS / Seven new colors have been added to the Zefran acrylic "Berber" carpet line. A departure from traditional Berber colors, the new carpets include a medium blue, light green and shades of russet. ■ Badische Corp., Williamsburg.

circle 338 on inquiry card



DESK ACCESSORIES / Brushed aluminum accessories for the executive's desk are available in six models, with various combinations of roller ball pen holder, note pad, calendar, ashtray, clock, paperclip well, lighter and pencil station. ■ Beylerian Ltd., New York City.

circle 339 on inquiry card



HEAVY-DUTY SURFACE / Powerbond, a soft surface flooring of continuous filament nylon, was said to show no signs of wear after 1.3 million visitors to the Seattle Art Museum's "King Tut" exhibit. Constructed with a vinyl cushion backing, Powerbond is specifically designed for low maintenance use in heavy traffic areas. ■ Collins & Aikman, New York City.

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more products on page 167

DELTA DASH® GETS YOUR SMALL PACKAGE THERE IN A BIG HURRY.

Delta handles more over-the-counter shipments of 50 lbs. or less than any other certified airline. And DASH (Delta Airlines Special Handling) serves 86 U.S. cities plus San Juan. Any package up to 90 inches, width + length + height, and up to 50 pounds is acceptable. DASH packages accepted at airport ticket counters up to 30 minutes before flight time, up to 60 minutes at cargo terminals.

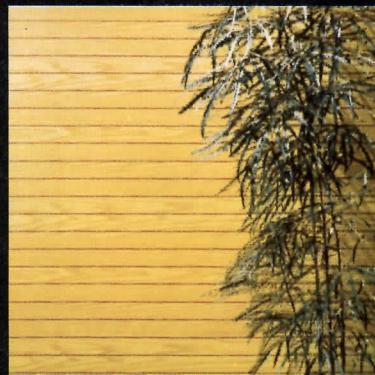
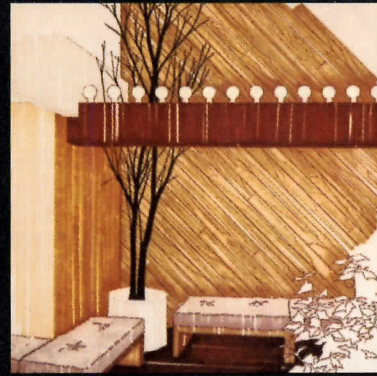
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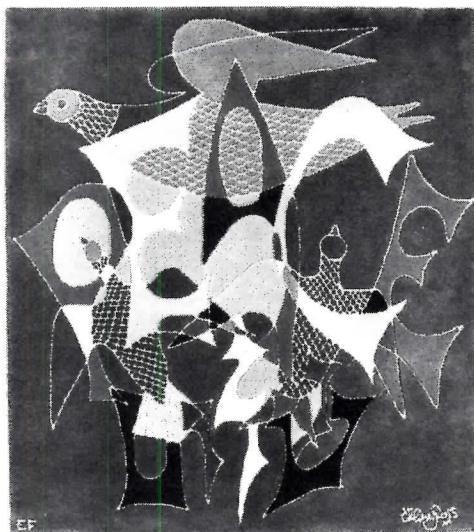
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TAPESTRY / Representative of the design potential of custom tapestries and rugs available is "Peace" by artist Chaim Gross. Sculptured in four textures, this tapestry requires 13 colors. ■ Edward Fields Inc., New York City.

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LOUNGE FURNITURE / Constructed with upholstered urethane filled seats and backs over a solid interior frame, "Lounge Landscape System" components can be joined to form serpentine, angled and other linear configurations. Each unit disassembles into parts that can be easily reupholstered as needed. A highback version also available can act as a private self-contained seating area. ■ Thonet, York, Pa.

circle 342 on inquiry card



FABRIC-SURFACED PANEL / "Weave-Tex," an all-Dacron polyester fabric in a non-directional weave pattern, is now offered on the "Private Spaces" open plan office system and Rotopanel. The panel fabric meets flame-spread criteria for Class A material when tested in accordance with ASTM E84-70, and is easily cleaned with regular detergent or carpet cleaning solution. "Weave-Tex" comes in 10 standard colors. ■ Rosemount Office Systems, Inc., Lakeville, Minn.

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more products on page 169

◆ Circle 75 on inquiry card

Circle 76 on inquiry card ◆

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Brick Pavers

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A COLLECTION OF INSPIRING BATHROOM DESIGNS

To demonstrate the design versatility of this exciting new line, Eljer commissioned the creation of a collection of dramatic bathroom designs called "Inspirations". For your copy of a 48 page booklet containing these bathroom designs, plus complete data on The Gallery Collection, contact your Eljer representative or write to "Inspirations," Eljer, Wallace Murray Corporation, Dept. AR, Three Gateway Center, Pittsburgh, Pa. 15222.

THE GALLERY COLLECTION BY ELJER



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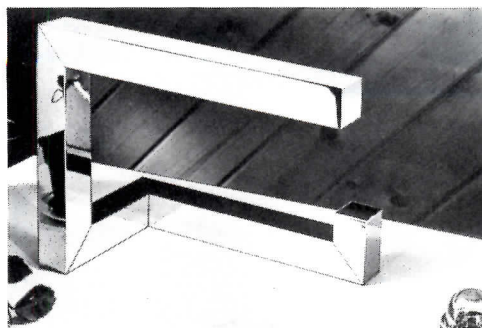
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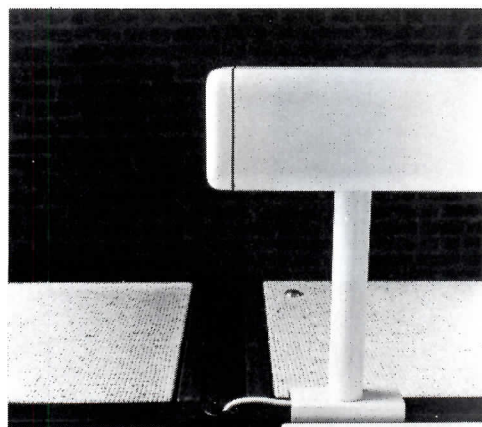
DESK LAMP / A balanced, geometric lamp/sculpture designed by Stephen Melamed, "Avval" has a recessed 60-Watt incandescent tube hidden under the top tube. The lamp stands 11 $\frac{3}{4}$ -in. high, and is available in polished chrome or polished brass. ■ Koch + Lowy, Inc., Long Island City, N.Y.

circle 344 on inquiry card



CHAIR ADJUSTMENT MECHANISM / This artist's chair, part of the Ero Dynamic series which also includes executive and secretarial chair models, permits the adjustment of seat and back in one operation by two visible levers. ■ John Stuart International, New York City.

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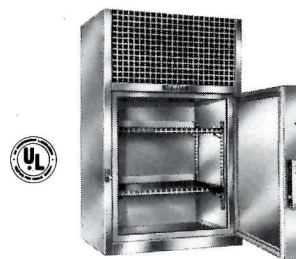


OPEN PLAN POWER PANELS / A built-in power and communications distribution system has been designed to augment the company's ASD furniture system. It features plug-in options, fewer ties to the building power system and a separate circuit for lighting. ■ Westinghouse Electric Corp., Pittsburgh.

circle 346 on inquiry card

WE FIT IN

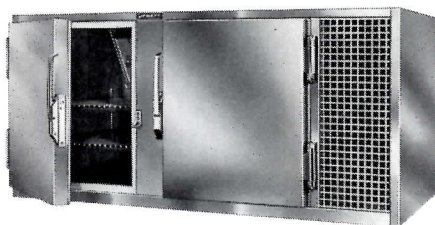
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WM-CW* series eye-level, wall mounted refrigerators are offered in 4 sizes featuring cold wall cooling systems with push-button defrost and automatic reset. Two removable, adjustable stainless steel shelves are provided. Front mounted grille removes easily for servicing.

WM-1-CW Capacity—1.5 cu. ft. (45 ltr.)
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WM-3-F-CW freezer is available only in a 3 cu. ft. (85 ltr.) capacity and has a manual hot gas defrost.
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WM-BC series space saving, double-door, wall-mounted refrigerators are available in 2 sizes. Furnished with 4 stainless steel shelves, they have a blower-coil cooling system with automatic off-cycle defrost and a condensate evaporator. Condensing unit is easily serviced by removing front mounted clip-on grille.

WM-7-BC Capacity—6.6 cu. ft. (190 ltr.)
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*With explosion proof interior.

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

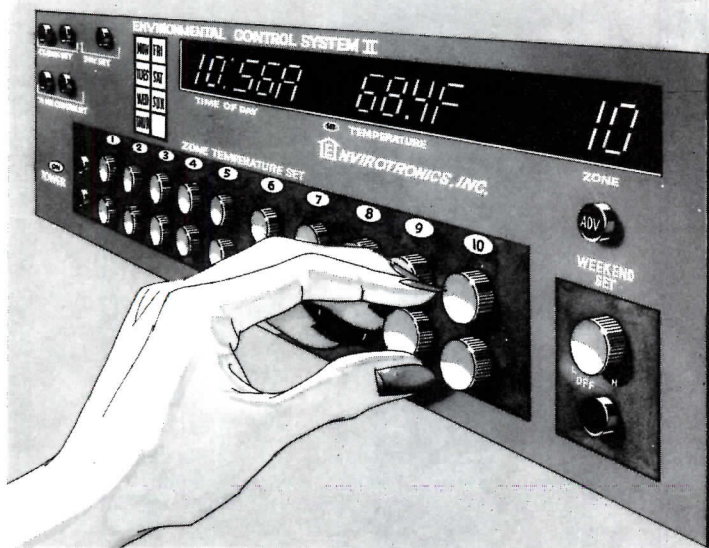


Refer to Sweet's Catalog 11.20/Je for quick reference.

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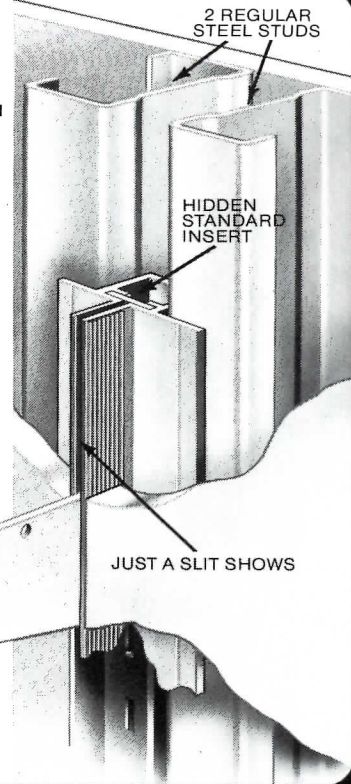
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An illuminated red "EXIT" sign is mounted on a textured, brown wall. The sign is rectangular with the word "EXIT" in bold, red, sans-serif capital letters. There are small white marks on either side of the sign, possibly indicating mounting points or light reflections.

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For all those times when a door is a wall.

Of course, a door is meant to open and close. And during the operation, energy efficiency is a total loss. But, for more than half of its life a door is really a wall. Therefore, it should weather like a wall.

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Sealair Weathering System shuts the door on air infiltration.

Sealair Weathering for Kawneer Entrances is an advanced system of weathering components which tightly seal a door's perimeter to create a positive air infiltration barrier. The result is a reduction in air infiltration of as much as 86% when compared to conventional pile weathering. This revolutionary system is now standard on all Kawneer 190 (narrow), 350 (medium) and 500 (wide) stile entrances.

These are the same aluminum entrances which are specified more often than any other entrance system.

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*Patent Pending

**Independent tests at 6.24 PSF—or equivalent to 50 mph wind.

Certified test reports available on request.

Books received

In order to give our readers a more useful sense of variety of books related to the subject of architecture that are being published today, RECORD this month begins a new practice of listing, with short descriptions, virtually all new books received for review. Next month and in the months following, the "Books received" feature will be in addition to our regular, full-length reviews.

FRANK LLOYD WRIGHT: HIS LIFE AND HIS ARCHITECTURE. by Robert C. Twombly; John Wiley & Sons.

A remaking and expansion of the author's earlier book, *Frank Lloyd Wright: An Interpretative Biography*, this is a good book.

APPRENTICE TO GENIUS: YEARS WITH FRANK LLOYD WRIGHT, by Edgar Tafel; McGraw-Hill Book Company, \$19.95.

Praise from one who was there, and who writes affectionately and with fascinating detail and insight.

LIVING BY DESIGN, by the partners of Pentagram, edited by Peter Gorb; Whitney Library of Design, \$15.

A book about the work of a major British design studio, it comprehensively illustrates their work and also contains a collection of fifteen essays on design theory and practice.

MANAGING THE LIBRARY FIRE RISK, second edition, by John Morris; University of California. A revised edition.

METROPOLIS AND BEYOND: SELECTED ESSAYS BY HANS BLUMENFELD, edited by Paul D. Spreiregen; John Wiley & Sons.

A collection of essays about twentieth-century cities, their origins and their problems, and their futures.

DRAWING AND PAINTING BUILDINGS: REGGIE STANTON'S GUIDE TO ARCHITECTURAL RENDERING, by Reggie Stanton; North Light Publishers, \$17.95.

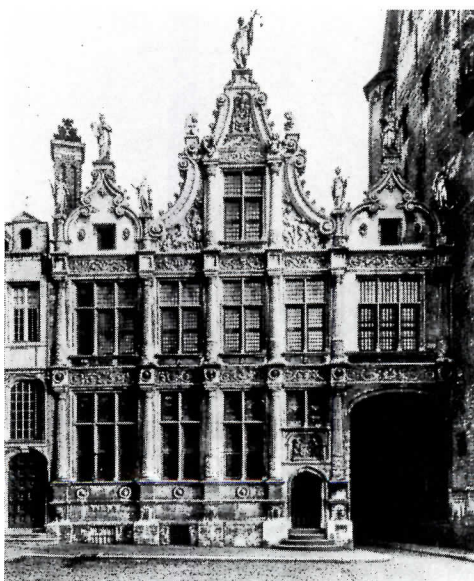
Mainly suitable for those who aspire to be "artists" who have "impressions" of architecture, usually in color.

HANDBOOK OF BUILDING SECURITY PLANNING AND DESIGN, by Peter S. Hopf; McGraw-Hill Book Company, \$34.50.

An alarmingly complete work on planning and designing for just about every aspect of building security.



THE DRAWINGS OF LOUIS HENRY SULLIVAN: A CATALOGUE OF THE FRANK LLOYD WRIGHT COLLECTION AT THE AVERY ARCHITECTURAL LIBRARY, by Paul E. Sprague; Princeton University Press.



NETHERLANDISH SCROLLED GABLES OF THE SIXTEENTH AND EARLY SEVENTEENTH CENTURIES, by Henry-Russell Hitchcock; College Art Association Monographs, \$22.50.

A book about a particular and dominant feature of Netherlandish architecture, which was carried abroad over much of northern Europe between 1520 and 1620.

STATICS AND STRENGTH OF MATERIALS, third edition, by Milton G. Bassin, Stanley M. Brodsky, and Harold Walkoff; Gregg/McGraw Hill Book Company, \$18.95.

A revised edition of a popular text.

PRACTICAL PLUMBING DESIGN GUIDE, by James C. Church; McGraw-Hill Book Company, \$19.50. A collection of definitive data and opinion.

RECYCLING HISTORIC RAILROAD STATIONS: A CITIZEN'S MANUAL: U. S. Department of Transportation (for sale from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402).

As its title implies, this is a handbook on almost every aspect of identifying, reclaiming, and restoring old train stations.

PREVENTING AND SOLVING CONSTRUCTION CONTRACT DISPUTES, by H. Murray Johns; Van Nostrand Reinhold, \$25.95.

The title explains it all, written from a layman's rather than a lawyer's viewpoint.

THE ARCHITECTURE OF BRUCE GOFF, by Jeffrey Cook; Harper & Row, \$20.00.

An important new book on the work of this important American architect.

CHILDREN'S SPACES: 50 ARCHITECTS AND DESIGNERS CREATE ENVIRONMENTS FOR THE YOUNG, by Molly and Norman McGrath; Morrow, \$29.95.

A catholic survey of this design problem, amusing too.

BRISTOL: AN ARCHITECTURAL HISTORY, by Andor Gomme, Michael Jenner, and Bryan Little; Abner Schram, \$56.00.

Bristol, for long England's second city, has a rich and colorful architectural past. This book is the first attempt at a comprehensive account of its architectural history.

WEST YORKSHIRE ARCHITECTS AND ARCHITECTURE, by Derek Linstrum; Abner Schram, \$60.00. This is the first detailed study of the architecture of one of the regions into which England's largest county is divided, a region endowed with a wealth of fine buildings, the work of local architects not previously assessed in terms of architectural history, as well as of nationally known figures.

WATER AND THE LANDSCAPE, edited by Grady Clay; McGraw-Hill Book Company, \$19.50.

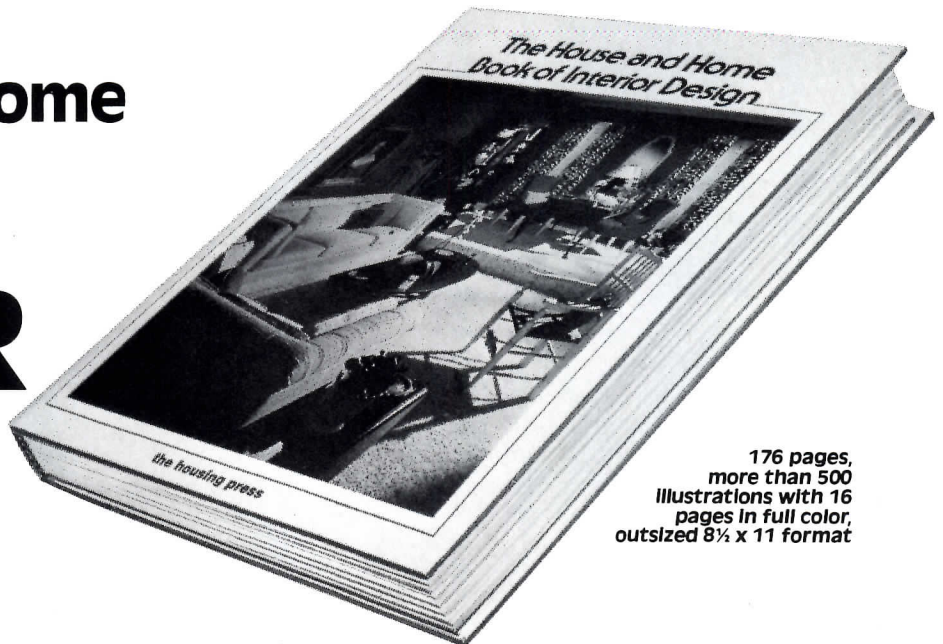
A collection of essays, many reprinted from *Landscape Architecture*, on the subject of watersides and waterside development.

Creative, workable ideas that reflect today's demands for livability and comfort...

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The book covers every aspect of interior design for you, from overcoming structural problems to the creation of an environment that will reflect your client's ideas of style and comfort. Rooms too small? Windows too large? Fireplace

off center? See how *House and Home's* professionals solve these and many other problems—and offer alternatives that satisfy every owner's interests and tastes.

Reinforces Your Own Work

Typical design-for-designer's-sake guides often result in poor decisions: clients buy furniture and accessories too hastily, are influenced by less than permanent surroundings, and reach for over-customized decorative effects. Avoid these pitfalls by offering choices (the book contains one of the most complete summaries of furniture ever published) that clients will live with happily. Help them select the right treatment for floors, walls, or ceilings, whether in living rooms or kitchens, bedrooms or baths, foyers and other areas, even in attics and basements which aren't usually treated in decorating books.

While aimed at clients, the volume was prepared by top specialists at *House and Home*, a leading publication in the building field, and every chapter contains sound, practical advice

you can use to help find creative solutions. It is completely up to date and covers every decision-making area.

Complements All Other Reference Books You Own

Since the book deals with every space in the home—plus ideas that help bring the outdoors inside—and then *puts it all together* in a final chapter, you will use the guidance it offers again and again in many different situations. It is based on the professional decorator's point of view, but "translated" into the home owner's language. Whether you want to get around the traditional rules governing the use of color (which often hamper creativity), suggest built-ins (to solve troublesome space problems), or brighten dark areas (and make complete visual changes), this exciting book will give you immediate answers to the most tricky decorating challenges and help you help your clients create an ideal environment.

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New Buildings by Teodoro Gonzalez de Leon and Abraham Zabłudovsky.
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8. November, 1977.

**BUILDING TYPES STUDY...COLLEGE BUILDINGS.
A PORTFOLIO OF RESIDENTIAL ADDITIONS.
"POSSIBILITIES IN ARCHITECTURE,"** by Robert Geddes.

9. December, 1977.

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11. Mid-May, 1978.

RECORD HOUSES OF 1978. Featuring the winners for the 1978 AWARDS OF EXCELLENCE FOR DESIGN.

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**A MAJOR BUILDING TYPES STUDY...
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**PLUS...NEW CORPORATE COMPLEX FOR
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Featuring the exciting Washington, D.C. and Toronto Metro systems. The innovative treatment of lighting for the underground offers distinctive design approaches.
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14. October, 1978.

LOW-RISE HOUSING ...illustrating some interesting solutions to problems with new and renovated apartments.
ST. LOUIS MUSEUM OF ART RESTORATION
—by HARDY HOLZMAN
PFEIFFER ASSOCIATES.

15. Mid-October, 1978.

PRODUCT REPORTS 1979.
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Offices opened

Ronald E. Cassetti, AIA and David L. Klein, RA, announce the formation of a new partnership, Cassetti/Klein Architects with offices at 205 West Gray Street, Elmira, New York.

Dames & Moore, an engineering and environmental consulting firm has announced the formation of Dames & Moore Malaysia Sdn. Bhd. in Kuala Lumpur, headquartered at Room 29 Mid-Level, Hotel Equatorial, Jalan Sultan Ismail, Kuala Lumpur 04-03, Malaysia.

Arthur W. Dearborn and William E. Whited wish to announce the opening of their new office, Dearborn/Whited Incorporated, for the practice of architecture and engineering. They are located at 395 Fore Street, Portland, Maine.

Dry Zimmermann Associates, a Philadelphia architectural, engineering and planning firm, announced the formation of a subsidiary specializing in restoration, renovation and interior design of commercial and institutional buildings. The new organization will be known as Atelier IV Design Group and headed by Hyman Meyers. Mr. Meyers will be assisted by Katherine Linehan, manager for interior planning, and Marvin Bornfriend, manager for interior design.

Amir Ali Hemani architect has started his own office for the practice of architecture, located at #200, 229 - 11 Avenue Southeast, Calgary, Alberta T2G 0Y1, Canada.

Victor C. Gilbertson, FAIA, president of Hills, Gilbertson & Fisher Inc., announces the merger of his firm with Centrum Architects Inc., headed by Leslie E. Formell, AIA and James I. Lammers, AIA. The new firm will be Hills, Gilbertson, Fisher/Centrum Architects Inc., at 6311 Wayzata Boulevard, Minneapolis, Minnesota.

Ronald D. McMahon Architect & Associates, has formed a civil engineering company, Horizon Engineering Services headed by Leo J. Terry.

PNL, architects and interior designers, have announced the establishment of a branch office operation in Reno, Nevada, to be known as PNL-Nevada. The new office will be located at 1000 Bible Way. Betti McMahan, IBD will manage the Reno office.

Parsons Brinckerhoff, the New York City-based engineering, architectural and planning firm, recently announced the opening of a branch office in Columbus, Ohio. The new office will be under the management of Melvin Rackoff.

Charles R. Sikes & Associates, a firm providing project consulting and comprehensive architectural services, has been organized by Charles R. Sikes, AIA, located at 410 Coldwell Banker Building, 2500 West Loop South, Houston, Texas.

Firm changes

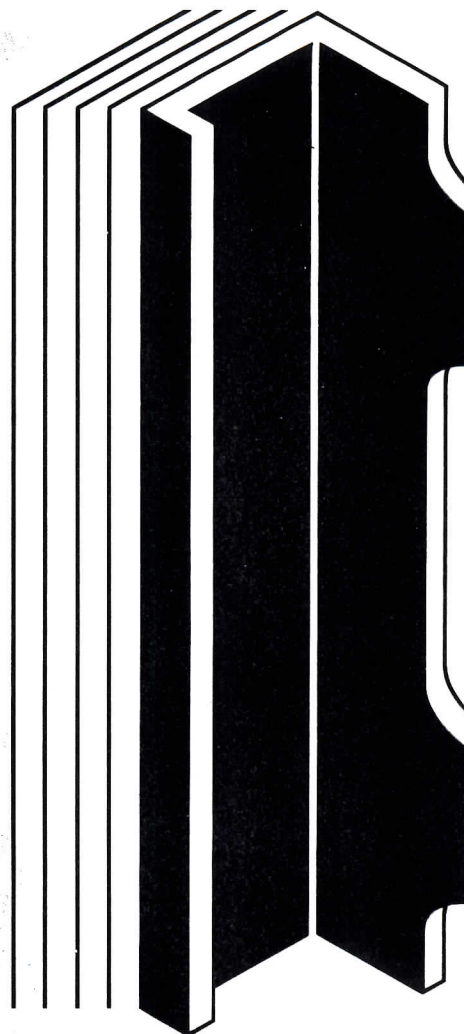
Aaberg and Associates-Architects, announce the appointment of Joseph Frambes Dicks and Gregory Lance Kamback as associates in the firm.

Allen & Hoshall, Inc., consulting engineers, announce the appointment of Frank B. Gianotti, III, to the new position of general manager.

James S. Sterling, AIA, has joined the executive staff of ArchiSystems International as director, development planning.

Architekton, Inc. recently announced the election of John W. Anderson and John M. Purdy, AIA to the positions of vice president.

The Los Angeles architectural firm of Burke Nicolais Archuleta will change its corporate name to Millard Archuleta Associates.



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- G General Building (green)
- E Engineering (brown)
- I Industrial Construction and Renovation (blue)
- L Light Residential Construction (yellow)
- D Interiors (white)

A

Acme Brick Co.	207
Advance Lifts Inc.	211
G Alliance Wall Corporation	22-23
Allied Chemical Corp., Fibers Division	88-89
All-Steel Inc., One of the C.I.T. Companies	66
G-H-L Aluminum Company of America	55
G Amarlite Products Div. of Anaconda Aluminum Co.	68
G-L American Olean Tile Company	211
G-I Amweld Building Products Div. of American Welding & Mfg. Co.	83
G-I Anchor Post Products Inc.	181
G-L Andersen Corp.	30-31
Architects Book Club	191to193
Architectural Record Books	32-2, 32-4, 32-6, 64A, 64D, 195, 199-208
Architectural Record Seminar	56-57, 78-79, 172-173, 182-183, 196-197
G-H-L-D Armstrong Cork Co.	Cov II-1, 2-3

B

D Badische Corp.	26
G-E Bally Case & Cooler, Inc.	178
Bethlehem Steel Corp.	16-17
G-D Bigelow-Sanford Inc.	51
Blu-Ray Inc.	178
G-E-I Bradley Corporation	187
G-E Burke Flooring Products	32-8

C

G-E-I Carlisle Tire & Rubber Co.	176
G-E-I Caterpillar Tractor Co. Engine Div. Building Services	92
G-I Ceco Corp.	179
G Chevron Asphalt Co.	54
Clayburn Industries	32-7
G Cold Spring Granite Co.	161
G-D Columbus Coated Fabrics Div. of Borden Chemical Co.	160
G-H-D Conwed Corp.	150
G-I Cookson Company, The	44
G Cornell Corporation	206
Crown Metal Mfg. Co.	170
Cumberland Woodcraft Co., Inc.	188
G Curries Mfg. Inc.	218

D

Delta Airlines	165
Delta Faucet Company	Cov III
Detex Corp.	165
Design Tex	148
G Donn Corporation	48-49
G Dover Corporation, Elevator Div.	93
Dukane Corporation	82
G-E-H-L-D DuPont De Nemours & Co., E.I., Lucite	8-9

E

Eljer Plumbingware Div. of Wallace-Murray Corp.	168
Engineered Components Inc.	204
Envirotronics Inc.	170
G Epic Metals Corp.	175

F

Fields, Inc., Edward	204
G Flex-i-Wall Systems Div. of Wall & Floor Treatments	206
G Follansbee Steel Corp. Forms & Surfaces	12

G

G-E-I General Electric Co. - Silicone	84-85
GF Business Equipment, Inc.	153to158
G-H-L Gold Bond Building Products Div. National Gypsum	185
G-H-L-D Goodrich General Products, B.F.	171
G-I W.R. Grace & Co.	5
G-E-I Grefco Inc.	64
E Grunau Co.	180
G-E-I Guardian Industries	60-61

H

Harmon Cabinets	32-3
G-D Hastings Pavement Co., Inc.	167
G-D Haworth Inc.	145
G-E Haws Drinking Faucet Company	18
Holmsten Ice Rinks, Inc.	167
Hoyle Products	32-2
Hume Snow Melting Systems Inc.	180

I

G-H-L Inryco, Inc.	205
International Masonry Institute	96

J

G-H-D Jennison-Wright Corp.	81
G Jewett Refrigerator	169
G-E-H-L Johns-Manville Building Systems Division	28-29
E Joy Mfg. Co.	184

K

G Kalwall Corp.	186
G Kawneer Company Inc.	189
G KDI Paragon	217
Kim Lighting	36
G-D Kimball Office Furniture	72
G-D Krueger Metal Products	164

L

G-E LCN Closers Inc.	95
G-E-H-L Libbey-Owens-Ford Co.	212
Lundia, Myers Industries, Inc.	90
G Lyon Metal Products, Inc.	211

M

G-D Marlite, Division of Masonite Corp.	166
G-I W.B. McGuire Co.	186
Medusa Cement Co.	186
Metal Lath/Steel Framing Association	215
G-I Modernfold, Div. of American Standard Inc.	92
G-E Monsanto Co. Plastics & Resins Div.	174
Muller Supply Co.	32-1
G-E-I Neenah Foundry Co.	170
G-E Nor-Lake Inc.	184
G Nucor Corp., Vulcraft Div.	211

O

G-L Olympic Stain Company	206
Omega Lighting Div. Emerson Electric Co.	178
G Otis Elevator Inc.	177
G-H-L Overhead Door Corp.	152
G-E-H-L-D Owens Corning Fiberglas Corp.	14-15, 38-39

P

G Parker Co., Charles	159
Peerless Electric Co.	20-21
G-L-D Pella Rolscreen Co.	46-47
Phillips, Eindhoven	64B-64C
G-E-I Pittsburgh Corning Corp.	86-87
G-E Plan Hold Corp.	92
Pozzi Window Co.	32-2
G-E PPG Industries Inc., Commercial Glass	91

R

G-I Raynor Mfg. Co.	209
G-I Robertson Co., H.H.	210
G-E Rohm & Haas	80
G Roppe Rubber Corporation	18
Russwin Div. Emhart Corp.	59

S

G Sargent & Co.	162
G Scott Machine Development Corp.	50
Shand Morahan & Co., Inc.	58
G-E-I Shatterproof Glass Corp.	184
G-I Silbrico Corp.	194
G-E Simplex Ceiling Corp.	204
G-L Simpson Timber	180
E Sloan Valve Company	Cov IV
Sony Video Products Co.	19
Square D Company	45
St. Joe Minerals Corporation	32
Standard Structures Inc.	32-5
G-I Stark Ceramics Inc.	188
Sweets Division of McGraw-Hill Information Systems	52-53

T

G 3M Commercial Chemicals Division - Scotchguard Trade Div.	76-77
G Tile Council of America	6-7
Turner Ltd.	146

U

Ulrich Planfiling Equipment Co.	18
G-E-I United States Steel Corp.	42-43
G U.S. Borax	163

V

E-I Viking Corp.	63
Vincent Brass & Aluminum Co.	188
G Vinyl Plastics Inc.	198
G Vogel-Peterson Co.	27

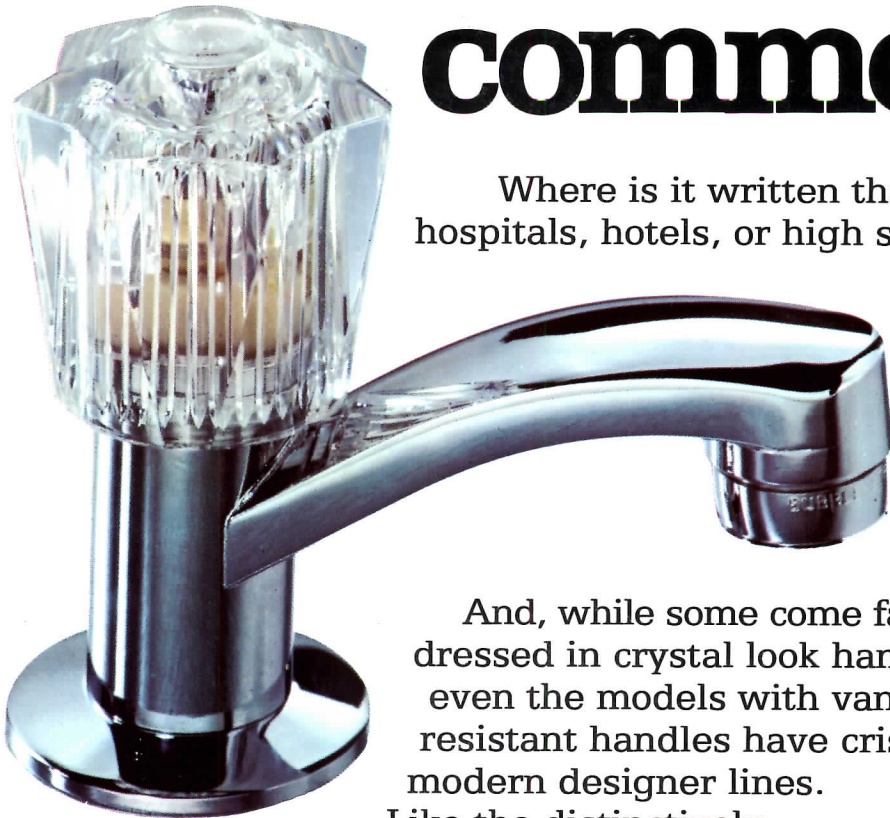
W

G Westinghouse ASD Division	74-75
G Westinghouse Electric Corp. - Elevator Div.	24-25
G Wheeling Pittsburgh Steel Co., Inc.	188

Z

G Zero Weather Stripping Co.	62
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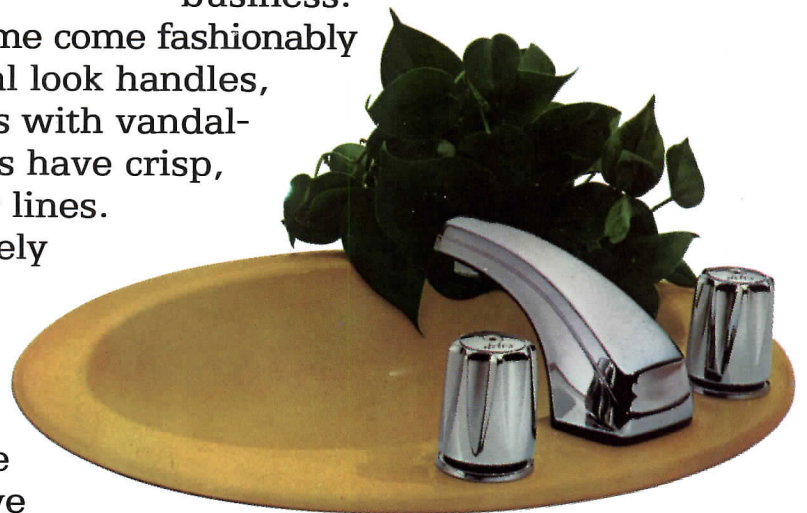
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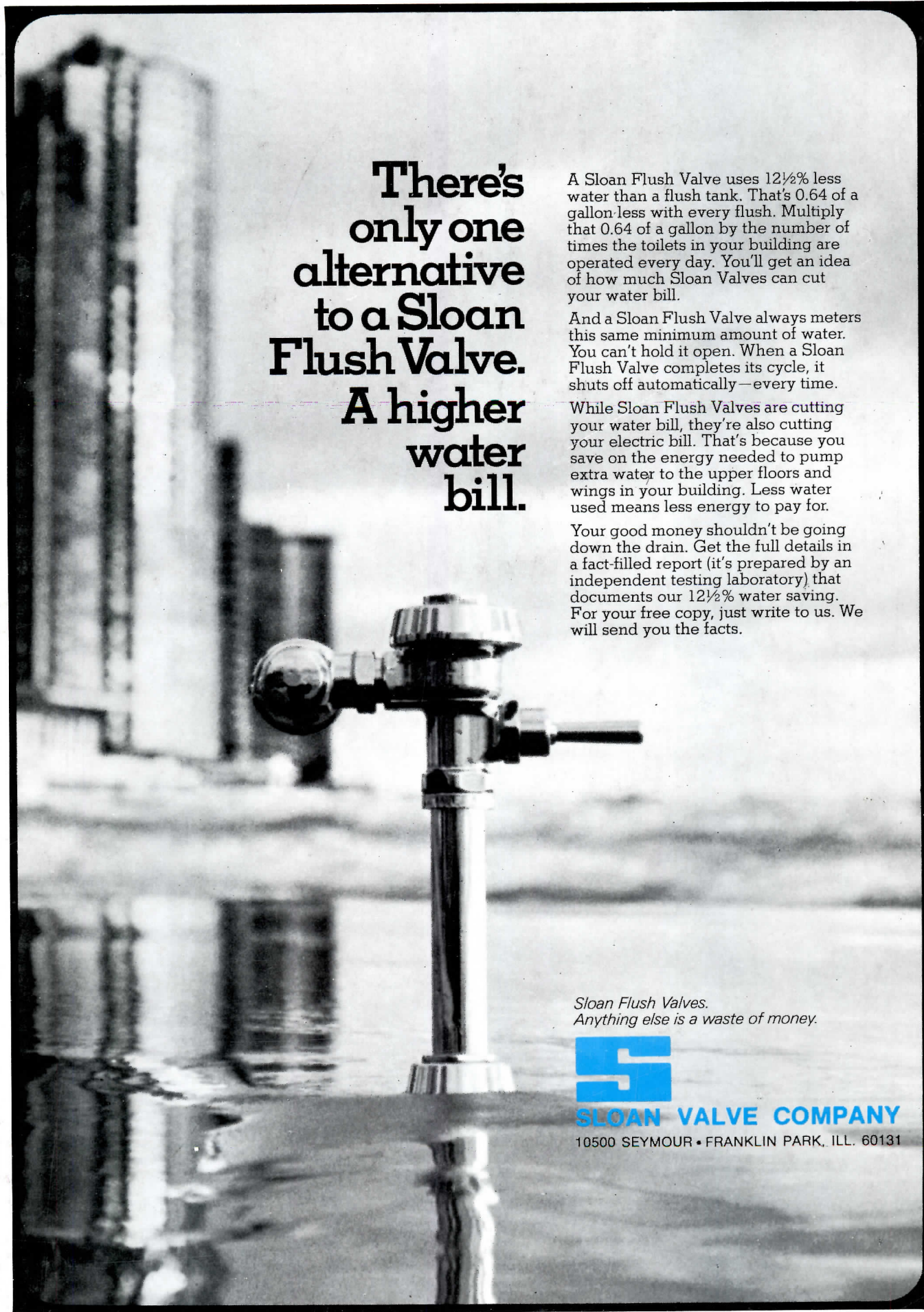
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water
bill.**

A Sloan Flush Valve uses 12½% less water than a flush tank. That's 0.64 of a gallon less with every flush. Multiply that 0.64 of a gallon by the number of times the toilets in your building are operated every day. You'll get an idea of how much Sloan Valves can cut your water bill.

And a Sloan Flush Valve always meters this same minimum amount of water. You can't hold it open. When a Sloan Flush Valve completes its cycle, it shuts off automatically—every time.

While Sloan Flush Valves are cutting your water bill, they're also cutting your electric bill. That's because you save on the energy needed to pump extra water to the upper floors and wings in your building. Less water used means less energy to pay for.

Your good money shouldn't be going down the drain. Get the full details in a fact-filled report (it's prepared by an independent testing laboratory) that documents our 12½% water saving. For your free copy, just write to us. We will send you the facts.

*Sloan Flush Valves.
Anything else is a waste of money.*



SLOAN VALVE COMPANY

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