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THE SUBURBAN ALTERNATIVE FOR THE MIDDLE CITY

STUDENT CENTER TRENTON STATE COLLEGE, BY CAUDILL ROWLETT SCOTT

RESTORATION AND RE-USE FOR THE DUKE MANSION BY RICHARD FOSTER

BUILDING TYPES STUDY: SCHOOLS—IS A NEW TYPE OF FACILITY EMERGING?

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ARCHITECTURAL RECORD

AUGUST 1978

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Letters to the editor

Those of us who watched the Citicorp Center go up have been waiting for a full marshalling of the project's design history. You've filled this gap admirably, save for one missing bit of ecclesiastical aggregate.

You may recall that angry mutterings were heard among literal-minded church folk when the Center's model was publicly displayed. "See," went the grumbings, "they're worshipping Mammon again, letting that huge commercial building completely overshadow the Church."

Not long ago at a gathering of architects, I found myself chatting with Hugh Stubbins. I asked him how he responds to this incipient form of yahooism. "Oh," he replied, "I just tell them the tall building is the church steeple."

William Houseman
Spring Valley, Wisconsin

I have read your recent article, "Boston's Historic Faneuil Hall Marketplace: Restored and Transformed by Architect Benjamin Thompson and Developer James Rouse into a Triumphant Successful Downtown Center," in the December 1977 issue of ARCHITECTURAL RECORD, with a great deal of interest.

While it is not my desire to detract in any way from the vision or success of James W. Rouse in the development of the Faneuil Hall Marketplace, I would like to point out that, in addition to his expertise and the debt financing, one other critical element was required: equity capital. Without this ingredient, the Marketplace could not have become a reality. I respectfully suggest that there might have been some acknowledgement in your rather extensive article of the individual investors who put up their own capital when this project was just in its formative stages. I am somewhat partisan in this belief, in that this capital was raised by a partnership, Carlyle Real Estate Limited Partnership, sponsored by JMB Realty Corporation.

C. Paul Denkla, Jr., Vice President,
JMB
Chicago

In his informative and generally excellent review of Richard Gaines's *Interior Landscaping* in the April issue of RECORD, Dan Kiley argues that the energy costs of providing a suitable environment for plants may rule out

or limit their use in interiors in the future.

An important factor to be considered here is that by oxygenating, humidifying, and purifying the air, plants can perform valuable services which would otherwise have to be provided mechanically at a substantial cost in energy. They may make it possible to maintain acceptable air quality indoors with reduced ventilation rates. Many people who are especially sensitive to air pollution or who have respiratory problems find even current ventilation standards inadequate, yet we can no longer afford the energy waste involved in heating, cooling, humidifying or dehumidifying huge masses of air every hour. With proper design, taking full advantage of natural lighting, I would imagine that plants could provide net energy savings. This is a topic which warrants further research.

Recent research on the effects of air ionization on health (for a popularized summary (see *The Ion Effect* by Fred Soyka) suggests that the negative air ionization produced by plants may be highly beneficial to human health, especially for people who must live or work in sealed buildings.

A recent colloquium hosted by our Architecture Department on "Plants in Personal Well-Being" and several recent books, including the one by Gaines, attest to the growing interest in the relationship between plants and people. It would appear that the benefits of close association with plants are more than psychological; there is a natural symbiosis between plants and humans which can be important and valuable even on the micro-scale of interior environments.

Charles Early
Architecture Library
Department of Architecture
University of Notre Dame
Notre Dame, Indiana

Calendar

AUGUST

13-26 Third session of the Women's School of Planning and Architecture, "Workplaces and Dwellings: Implications for Women"; Bristol, R.I. Contact: The Women's School of Planning and Architecture, Inc., P.O. Box 311, Shaftsbury, Vt. 05262.

18-20 "Participatory Design Conference," the University of California,

Santa Cruz. Contact: Julie Reak, University of California Extension, Santa Cruz, Calif. 95064.

21-25 Program, "Fundamentals of Noise and Vibration Control," sponsored by the Massachusetts Institute of Technology, Department of Mechanical Engineering, Cambridge. Contact: Director of Summer Session, E19-356, Massachusetts Institute of Technology, Cambridge, Mass. 02139.

27-31 The 1978 Annual IES Technical Conference; Denver Hilton Hotel, Denver. Contact: The Illuminating Engineering Society, United Engineering Center, 345 E. 47th St., New York, N.Y. 10017.

SEPTEMBER

11-12 Seminar, "Effective Management of Costs, Codes and Design in Building Re-Use," sponsored by ARCHITECTURAL RECORD; Marriott's Essex House, New York City. Program will be repeated Oct. 23-24 at Water Tower Hyatt House, Chicago. Contact: Charles Hamlin, ARCHITECTURAL RECORD SEMINARS, 1221 Avenue of the Americas, New York, N.Y. 10020. Phone: 212/997-3088.

13-15 2nd National Conference on Standards for Solar Energy Use, sponsored by the American Society for Testing and Materials; Roosevelt Hotel, New York City. Contact: ASTM—Second National Conference on Standards for Solar Energy Use, 1916 Race St., Philadelphia, Pa. 19103.

13-17 23rd annual convention of the National Association of Women in Construction (NAWIC); Boston-Sheraton Hotel, Boston. Contact: Betty Kornegay, National Executive Director, 2800 W. Lancaster, Fort Worth, Texas 76107.

16-24 Exhibition, "Modernization of Old Buildings—Materials and Methods," German Industries Fair Berlin 1978; Berlin Exhibition Grounds, Germany.

25-29 4th annual Historic Preservation Maintenance Workshop, sponsored by the National Trust for Historic Preservation; Little Rock, Ark. Contact: Training Programs, Education Services Division, National Trust for Historic Preservation, 740-748 Jackson Place, N.W., Washington, D.C. 20006.

28-Oct. 1 Energy Fair '78, sponsored by Energy Fair, Inc.; Los Angeles Convention Center. Contact: Shirley Solomon, Energy Fair, Inc., 15915 Asilomar Blvd., Pacific Palisades, Calif. 90272.

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Some houses were never meant to be painted.



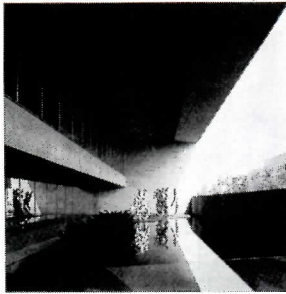
Architect: Architectural Workshop—Moscow, Idaho. John Anton Berg—Designer

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East Building, National Gallery of Art
Washington, D.C.
Architects: I.M. Pei & Partners
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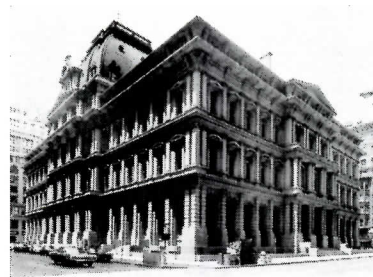
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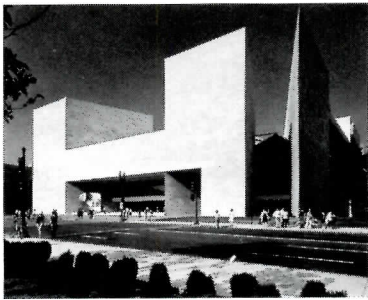
An architectural firm helps find new markets for outdated schools

The Chicago firm of Perkins & Will is merchandising its school building experience in a new marketing service aimed at reuse.

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The new East Building of the National Gallery of Art is the most impeccably planned, crafted building in years.



© Ezra Stoller

**93 Student Center
Trenton State College
by Caudill Rowlett Scott**

A carefully shaped structure that is designed to serve both resident and community students as well as its surrounding community.

**99 The New York University
Institute of Fine Arts:
How do you re-use a
jewel box?**

Architect Richard Foster has restored the restrained grandeur of New York's landmark James Biddle Duke mansion and skillfully re-adapted its use as a fine arts library.

**105 The suburban alternative for the
"middle city"**

by Robert A. M. Stern
Architects have for too long neglected the "middle city"—whole areas of our metropolitan regions that lie between the inner cores and the outer suburban developments. This essay suggests that, instead of continuing the path of high-rise, high-density development in these areas (in effect moving the inner city out), it is time to consider using the suburban development model (in effect moving the suburbs in).

BUILDING TYPES STUDY 520

**113 Schools: is a new type
of facility emerging?**

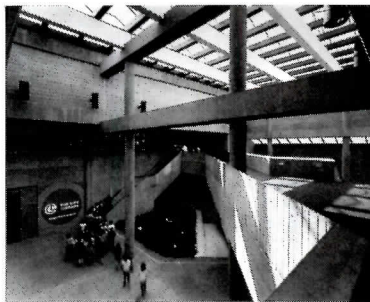
Although the statistical curve of school construction is not as awesome as it was during the famous "baby boom," new schools continue to be built apace everywhere in the U.S. for a variety of reasons, ranging from plain obsolescence to new laws and social and educational requirements that must be complied with—often with all possible speed.

**114 Marcus A. Boster Middle School
Oakland, California**

Joint Venture: Mackinlay Winnacker McNeil AIA & Associates; Kennard and Silvers AIA, architects.

**116 North End Community School
Springfield, Massachusetts**

The Perkins & Will Partnership, architects.



Nathaniel Lieberman

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COMING IN MID-AUGUST

Engineering for Architecture

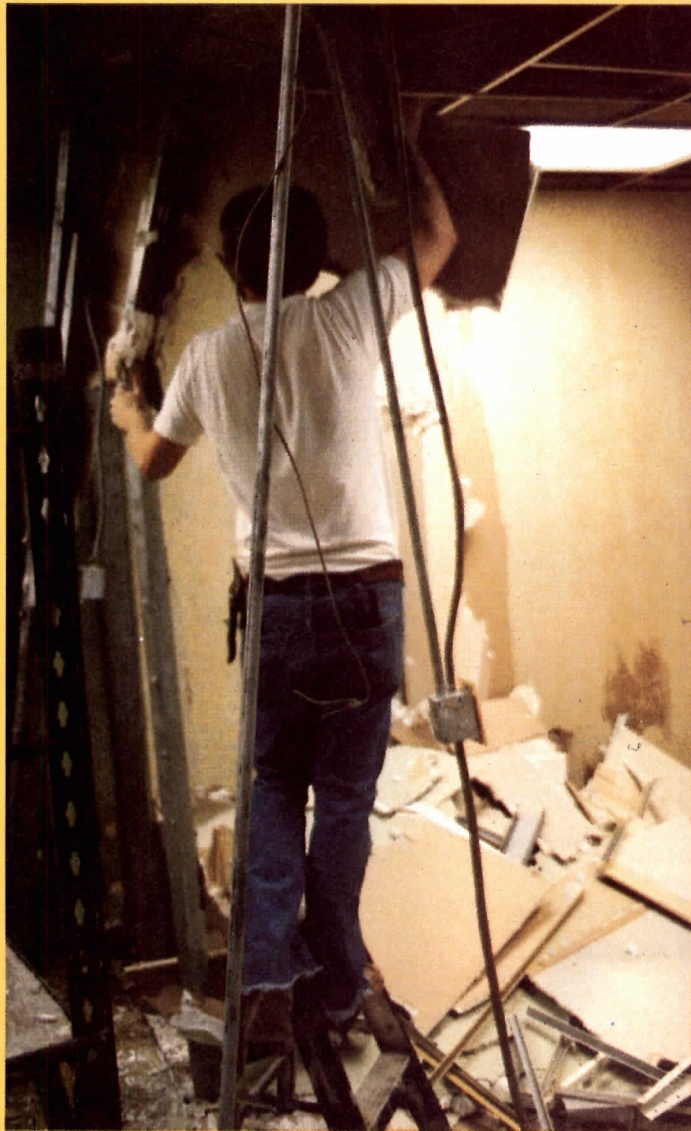
The fifth annual issue of "Engineering for Architecture" featuring energy-conscious design, appropriate use of building materials—new and old—and innovative lighting techniques.

The 40 pages of case histories cover solar heating/cooling, lighting for function and appearance, integration of mechanical systems and structure, novel applications in steel framing for wind and earthquake resistance.

RECORD's Round Table explores the wide-ranging concerns of architects and engineers on the subject, "How Effective are Performance Criteria in Satisfying Building Users' Needs?"

A highlight of the issue is a picture story and commentary by Yale professor and structural engineer Herman Spiegel on famed architect Antoni Gaudi's manipulation of structure and masonry for architectural form.

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New Ideas on the move

Some thoughts about all those young people in architecture school

Please stop telling young people not to go to architecture school.

I mean that both figuratively and literally. Figuratively, I'm asking you to try to feel better about the importance of your role as architects—about what you are trying to do. If architects cannot solve the problems of the world, we can at least keep trying to help. The profession is far from perfect, but I think there is no other profession with higher aspirations or a higher social conscience. Please keep it—and please leave aspiring architects with their ideals intact.

On a more literal level: I've talked over the years with a lot of young people who are studying architecture. Few of them have as a goal running a highly profitable business. They have higher goals. I know there are some architects who see profitability as the big goal—and I feel sorry for them. They should have become dentists. Further . . .

I hope you will find it possible to do still more in helping young graduates find their role in the profession—whether their skills are in management, in technology, or—most important of all—in design.

By the time they have graduated from

school they have run, I would remind you, a terrible gauntlet. Admission to architecture school has become a fearsome selection process—with the best schools accepting something like one in ten applicants. Survival in school is as difficult as it ever was—and many drop away from architecture because they do not want to work that hard, or do not have the talent to work well enough.

The graduate who arrives at your door looking for a job is a talented survivor—who has gotten that far mostly on his or her own. Help them the rest of the way. If you cannot offer them a job, make some phone calls and help them find one. Train those you do hire as you wish you had been trained by your first employer. Pay them decently—it is shocking that the best way for an architecture student to increase his future salary is to flunk design and switch to engineering. If your firm is short on design talent—and there are too many of you and you know who you are—consider that the 1998 Gold Medal winner may be standing there at your office door in blue jeans. And think what that could do for you! Philip Johnson sometimes turns down work. . . .

. . . and some thoughts about "interior architecture"

NEOCON X, the huge contract show held each June at the Merchandise Mart, turned out to be the biggest yet. Attending that show is a forceful reminder of the incredibly vast array of products and materials available to architects doing interiors for their own buildings or involved in interior design commissions—new or remodelings. NEOCON was crowded with architects (I'd guess well over 1000) listening hard and asking tough questions about interior design practice. That's no surprise: RECORD's newest research indicates that architects and engineers are up to their ears in interior design work—84 per cent of our subscriber sample reported they were personally involved in the design of interiors and 80 per cent report that they are personally involved in the selection and specification of interior furnishings and finishes ranging from Acoustical ceiling systems through Carpet and Furniture and Office accessories to Window treatments and Wood flooring.

Rubbing elbows with the specialists in "interior architecture" (as, alas, it has become known in deference to the interior designers) and the more professional interior designers is clearly smart business for that growing number of architects deeply involved in interiors work. Because—as a day spent with the AIA's new Committee on Interior Architecture made clear to me—interiors work is not just potentially very rewarding but also very complex. For example: the shopping list of interior design services within the standard contracts (and the terrors involved in not having a clear understanding of what is included) is enormous and complex. So are buying practices in the furniture industry (do you really know your discounts?). And has anyone really thought out the implications of the new design—build freedom when it comes to interiors—resale of furniture for example? We'll be trying to keep you posted.

—Walter F. Wagner, Jr.



The look you pick



The Supreme Court has upheld the right of communities to designate privately owned buildings as landmarks, in a case fought over the preservation of Grand Central Terminal. Preservationists are hopeful that the Court's validation of landmark legislation will encourage more communities to join the movement. Details on page 34.

At \$17.8 billion, May construction contracts hit an all-time high, up 11 per cent from last May, according to the F.W. Dodge Division of McGraw-Hill's Information Systems Company. "Until the recent tightening of credit brings on the inevitable decline of homebuilding, the construction industry should be enjoying a few months of record activity," predicts George A. Christie, Dodge chief economist. Housing contracts, up a "strong" 32 per cent from last May, nonetheless represented a "modest retreat" from April's peak. Nonresidential building was up 57 per cent for the month, with offices, factories and shopping centers "nearly double" the May 1977 level and with the recently sluggish institutional market showing some improvement.

Blame the rise in housing costs on economic cycles, land shortages and government regulation, a HUD Task Force concludes. The Task Force recommends the inclusion of the HUD Secretary in the formulation of national economic policy and the creation of a New Technology and Codes Policy. Details on page 34.

The National Earthquake Hazards Reduction Program will work to update design codes for new buildings, but the Carter Administration has abandoned efforts to establish a policy for existing buildings. Details on page 34.

The Federal Government seeks the public's help in its endeavor to form a national historic preservation policy. Secretary of the Interior Cecil D. Andrus asks that "people involved in and concerned about the conservation of our historic and cultural resources" submit statements on preservation issues and their backgrounds, sources of additional information on the issues, and the names of key people or groups who should be consulted. Material should be sent to Chris Therral Delaporte, Director of the Heritage Conservation and Recreation Service, Department of the Interior, Washington, D.C. 20240, Attn: NHP, no later than September 15.

The French Academie d'Architecture has awarded its Gold Medal to Marcel Breuer. Representing the Academy as the French Ambassador to the United States presented the medal to Mr. Breuer in Washington, French architect André Remondet said, "His architecture's logic and its powerful effect, the structural sincerity that it expresses, the exact relation to each other of the materials he uses, and the nobility of each of his masterpieces place Breuer among our greatest sources of inspiration."

Moshe Safdie has joined the Harvard Graduate School of Design as director of its Urban Design Program and as studio professor of architecture. Mr. Safdie, whose architecture and urban design firm has offices in Montreal, Jerusalem and Baltimore, will relocate his principal professional office in the Boston area.

Lawrence Berkeley Lab has compiled a "sunshine inventory" of California to assist architects, engineers and other designers of solar-energy systems. The California Solar Data Manual provides monthly tabulations of climatic data in various parts of the state, and is intended to assist designers with such questions as estimating the optimum size of a solar collector or estimating its energy production at different times of the year.

The AIA College of Fellows has named Charles A. Pugh its Chancellor. As Chairman of the executive committee, he will administer a special College of Fellows fund for a schedule of lectures, publications and foreign exchange programs. Mr. Pugh is partner-in-charge of the Seattle office of Skidmore, Owings & Merrill.

The American Institute of Steel Construction invites entries for its 1978 Architectural Awards of Excellence. The competition, which recognizes the creative use of structural steel, is open to structures built in the United States in 1977; structures must be framed with domestically produced steel. The AISC will also conduct a competition for Prize Bridges. Deadline for submissions is October 15. For information: American Institute of Steel Construction, 1221 Avenue of the Americas, New York, New York 10020.

ARCHITECTURAL RECORD invites submissions of architect-designed interiors, houses and low-rise apartments for its special issues RECORD INTERIORS 1979 and RECORD HOUSES 1979. All architects registered in the United States and Canada are eligible for these awards programs, and the editors especially encourage submissions from young and/or unpublished architects. Submissions of previously unpublished buildings should include plans, photographs and a general description of the project. The deadline for RECORD INTERIORS is October 1, that for RECORD HOUSES November 1. Queries and submissions should be addressed to Charles K. Hoyt (212/997-6319) for RECORD INTERIORS and to Barclay F. Gordon (212/997-2334) for RECORD HOUSES, both at ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, New York 10020.

Supreme Court validates landmarks laws as community tools for building conservation

The Supreme Court has ruled, in a 6-3 decision, that state and local governments can impose historic preservation laws even if doing so results in certain property owners having to accept less than full financial exploitation for their property.

The Court came to this conclusion in a case involving Grand Central Terminal. Under New York City's landmarks preservation law, the Landmarks Preservation Commission designated the terminal as a historic building to be preserved. The city's Board of Estimate must approve the designation, and the owner can seek judicial review. (Grand Central's owner, the Penn Central Transportation Co., did not do so.)

The owner of a designated landmark must keep the building's exterior "in good repair," and before exterior alterations are made must secure Commission approval.

Penn Central entered into a lease with United General Properties, Ltd., under which UGP was to construct a multistory office building over the Terminal. The Commission objected, saying that the tower would destroy the Terminal's historic and esthetic features. UGP appealed in state court, claiming that, in effect, the Commission was "taking" its property without compensation in violation of the Fifth and Fourteenth Amend-

ments to the Constitution.

A lower court agreed with UGP, but this decision was reversed on appeal by the New York Court of Appeals, which ultimately concluded that there was no "taking" since the preservation law did not transfer control of the property to the city, but only restricted exploitation of it.

The Court of Appeals, which the Supreme Court upheld, also said that there was no denial of due process for several reasons: 1) the same use of the terminal was permitted as before; 2) UGP had failed to show that it could not earn a reasonable return on its investment in the terminal itself; 3) even if the terminal property could never operate at a reasonable profit, some of the income from Penn Central's extensive real estate holdings in the area must realistically be imputed to the terminal; and 4) the development rights above the terminal, which were made transferable to numerous sites in the vicinity, provided significant compensation for the loss of rights above the terminal itself. Thus, the Court of Appeals said, the landmarks law does not constitute a "taking" of the property within the meaning of the Constitutional amendments.

The Supreme Court also noted that the government may execute laws or programs that adversely

affect recognized economic values without its action constituting a "taking." The example used by the Court was zoning legislation in which a state body had "reasonably concluded that the health, safety, morals or general welfare" would be promoted by prohibiting particular contemplated uses of the land.

The Court added, "The landmarks law no more effects an appropriation of the air space above the terminal for governmental uses than would a zoning law appropriate property; it simply prohibits appellants or others from occupying certain features of that space while allowing appellants gainfully to use the remainder of the parcel."

Preservations forces see the Court's opinion as a leg up for the cause of landmark preservation. Communities which have so far resisted the designation of local landmarks for fear of litigation may, in their opinion, now change their minds.

Looking to the future, Frank B. Gilbert, general counsel to the National Trust for Historic Preservation for landmarks and preservation law, says, "Historic preservation today is a much stronger movement because our highest court has examined and approved the way Americans try to save their landmarks." — *William Hickman, World News, Washington.*

HUD Task Force examines the high cost of housing

Concerned that the rapidly increasing cost of housing might be pricing many prospective homeowners out of the market, the Federal Department of Housing and Urban Development last year appointed a task force to examine the extent to which housing costs have risen for reasons other than general inflation, and to recommend specific actions to reduce or stabilize housing costs.

The Final Report of the Task Force on Housing Costs, published a couple of months ago, offers a detailed and lucid account of the causes behind housing inflation, but falls considerably short of a ringing call to action. As HUD Secretary Patricia Harris points out, however, "the Federal government cannot deal with all of the issues raised," since so many are the responsibility of state and local government or of the private sector.

Among the causes of rising costs of housing cited by the Task Force: the cyclical pattern of housing construction, "exacerbated by counter-cyclical national monetary policy"; national tax policy as it creates, or fails to create, a stable investment environment for housing; the proliferation of government regulations, "many of which are unduly burdensome"; a shortage of developable land, aggravated by "land-use, envi-

ronmental, no-growth and exclusionary zoning regulations"; and inadequate basic research on materials, land development and building.

Among the Task Force's recommendations, the most innovative called for the inclusion of the Secretary of HUD in the formulation of national monetary, economic and tax policy, and for the establishment of an Office of New Technology and Codes Policy to create, test and demonstrate new methods in building technology and land development.

Following her receipt of the Task Force report, Mrs. Harris announced a number of initiatives taken by HUD, among them:

- a Grant Award of \$300,000 to the National Institute of Building Sciences for a comprehensive study of building codes in the country;
- the setting aside of \$500,000 for research to begin immediately on the costs and benefits of land-use and environmental regulations and on the impact of monetary and tax policies on the costs of housing;
- a national conference, to convene later this year, at which local and state officials will be "alerted to how some land development regulations unnecessarily increase housing costs."

The Secretary said also that the Department will support the revision of nationally recognized one- and two-family dwelling codes, and will encourage the use of Community Block Grant funds to subsidize the early purchase of subsidized housing sites as a hedge against higher land costs in the future and to pay for development in low-income housing.

The 53-member Task Force included representatives from the housing industry and the financial community, as well as from HUD and from state and local governments. Its chairman was William J. White, general manager of HUD's New Community Development Corporation.

Government pushes program for earthquake-proofing

The Carter Administration has begun to push a program designed to ensure that all new buildings are earthquake-proof, but it has reluctantly concluded that the cost of making earthquake-resistant improvements in all existing structures would be prohibitive.

Announcing the National Earthquake Hazards Reduction Program (NEHRP), President Carter's science advisors said that the emphasis will be on updating building codes and researching ways to improve designs. They also said that the Federal government will lead the way by incorporating the latest in earthquake-resistant design in the facilities it builds and leases in the future.

The incremental cost of earthquake improvements in future construction is considered acceptable to

NCARB tests a new method for continuing education

The National Council of Architectural Registration Boards, at its 57th annual meeting at Los Angeles late in June, concentrated on two areas of professional development: the Architectural Development Verification Program (ADVP), a pilot project for continuing professional development, and the Intern-Architect Development Program (IDP).

In the ADVP pilot project, 17,000 architects holding NCARB certificates will receive copies of a monograph on energy efficiency in existing buildings, and will be asked to return their answers to a quiz on the monograph and to a questionnaire covering their views on the monograph as a mechanism for aiding their professional development.

Although NCARB does not favor mandatory continuing education as a condition of license maintenance, it sees the ADVP monograph project as a "standby" measure for any of its constituent boards who might be pressed by legislative action requiring evidence of continuing professional competency. (Iowa has already enacted such a law.)

The pilot ADVP project follows a test mailing of the monograph to 750 NCARB certificate holders, who responded favorably to the process.

The convention passed two resolutions to strengthen its internship program. The first lays down some

specific training regulations. The other offers architectural registration boards a set of model IDP regulations, and aims to assure IDP participants that licensing standards will be uniform in those jurisdictions adopting the model.

To date, four states have committed themselves to the IDP program: Iowa, where the program is already in operation, California, New Jersey and Texas.

Delegates to the convention also discussed the upcoming International Architectural Registration Conference, for which NCARB will be the host at Washington in mid-October. NCARB expects delegates from as many as 35 nations, as well as from Canadian provinces, who will consider reciprocal registration based on a universally applicable means of equating architectural education, internship, examination, licensing and quality of architecture.

Lorenzo D. Williams, of the Minneapolis firm Williams/O'Brien, took office as NCARB president and John R. Ross, of San Luis Obispo, California, was elected first vice president and president-designate. Other new officers include Dwight M. Bonham, of Wichita, second vice president; Thomas H. Flesher, of Oklahoma City, secretary; and Julian W. Goodrich, of Burlington, Vermont, treasurer.

the Carter aides. But they say the expense of renovating for the protection would be "astronomical."

The centerpiece of a 30-page report on earthquake-hazards reduction deals with improving building codes and construction standards and practices. It notes that many codes do not reflect the current state of the art and should be updated.

"The codes and standards and the professional practices underlying them would not only represent our best knowledge, but would be adaptable to different areas of the United States, according to different seismic risks and the cost and benefits they entail," the report says.

The first step specified is a newly created Interagency Committee on Seismic Safety in Construction (ICSSC) to develop seismic design standards for Federal buildings. These standards are intended to reflect regional differences in earthquake hazards, placing emphasis on life safety, and they will be built on existing model codes whenever possible.

The drafters of the report recognize, however, that the vast majority of construction in this country is undertaken by the private sector and regulated by local governments. So President Carter is ordering the National Bureau of Standards to assist in the development, evaluation and improvement of model seismic design provisions suitable for incorporation into local codes and practices.

The White House hopes local jurisdictions will perform an inventory of buildings to determine those that are liable to earthquake damage. Priority, it says, should be given to structures that provide vital community services or pose unacceptable risks because of high occupancy.

Some poorly designed or constructed buildings may not warrant reinforcement or replacement because their collapse would not cause loss of life, injury or significant damage to contents. But in structures that present unacceptable risks, the buildings ought to be remodeled and strengthened or "decommissioned."

The report invites local governments to apply for Federal grants to pay for inventories and for development plans for hazard reduction efforts. It suggests the use of the Community Development Block Grant Program as a source of Federal aid. There is no mention of additional Federal money, however.

The President's program was mandated by the Earthquake Hazards Reduction Act of 1977. The report clearly shows the degree of Federal concern over earthquake hazards.

"Earthquakes pose perhaps the greatest single-event natural hazard faced by the nation. An earthquake can effect hundreds of thousands of square miles, can cause damage to property measured in the tens of billions of dollars, can cause loss of life and injury to tens of thousands of persons, and can disrupt the social

and economic functioning of the affected areas," the report says.

While most earthquakes in U.S. history have affected the states west of the Rocky Mountains, 39 states are known to have the potential to experience moderate and severe earthquakes.

The President's report does not specifically establish a bureaucracy for handling earthquake responsibilities. It does, however, make frequent mention of the "lead agency"—apparently a new one that will be proposed to coordinate the program.

And the report was issued just three days after President Carter proposed a comprehensive reorganization of the Federal government's emergency preparedness and disaster response programs. The plan provides for the consolidation of five existing agencies and six additional disaster-related responsibilities into a single agency. Included in the combined group is the Earthquake Hazard Reduction program, which is now part of the Office of Science and Technology. — *William Hickman, World News, Washington.*

Chicago starts construction on the State Street Mall

Proudly repeating that State Street is "that Great Street," Chicago celebrated the start of construction on the State Street Transit Mall.

The mall, which the city expects will expedite vehicular traffic in the downtown area and add amenity to the pedestrian environment, will extend along a nine-block stretch of the thoroughfare, running from Wacker Drive at the north to Congress Parkway at the south. The city also expects the mall to provide "increased economic stimulus" to the street, along which such major stores as Marshall Field and Carson Pirie Scott are located.

The city hopes in addition to encourage redevelopment on the side streets serving State. Projects now in planning for the area include a hotel, office buildings, the city central library, high-rise housing, stores, a college and a pedestrian skyway system.

Since mid-June, the street has been closed to all wheeled traffic apart from buses and emergency vehicles. The roadway will be narrowed from six lanes to two, with boarding bays added at bus stops. Sidewalks will be correspondingly widened, in some places by as much as 24 feet. Truck deliveries will be handled by an existing system of alleys; in only a few instances will it be necessary to allow trucks brief passage on State Street.

Construction on the \$17-million project will be suspended for about six weeks around the Christmas holidays, and is scheduled for completion in the fall of 1979.

RECORD offers a briefing on design/build ventures

In response to architects' growing interest in design/build construction services—an interest reinforced by the recent decision of the American Institute of Architects to lift its ethical ban on members' offering this service—ARCHITECTURAL RECORD will sponsor a series of one-day briefings on the drafting of proper legal frameworks for design/build projects.

Even before the AIA's action, a RECORD study shows, 16 per cent of the architectural firms in the United States claimed to offer design/build services. With the easing of ethical restrictions and with mounting market pressure for design/build, some industry leaders foresee an increase in architectural firms offering the service, or joint venturing with contractors.

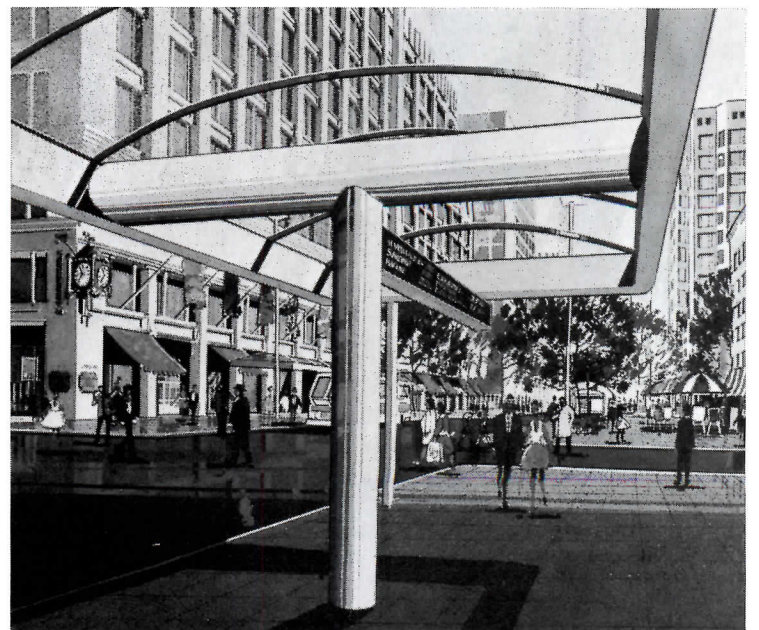
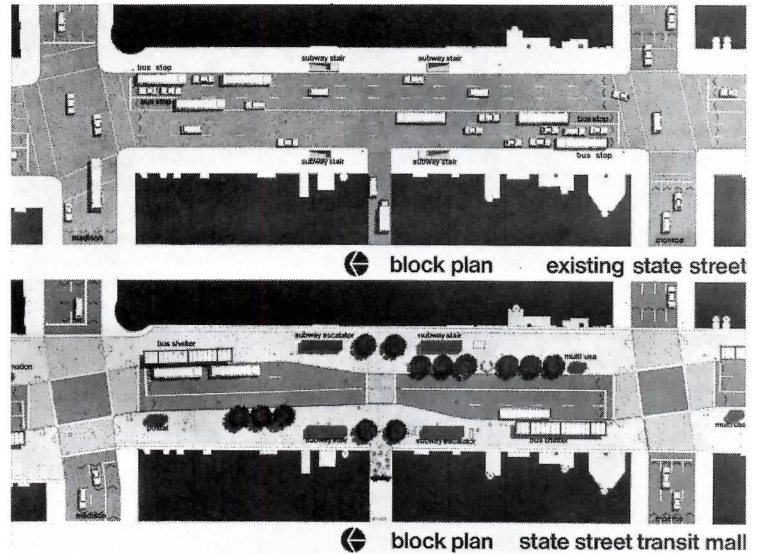
Conducted by attorney Arthur T. Kornblut, the sessions, titled "Laying the Groundwork for Design/Build Ventures," will emphasize the development of the proper legal matrix for obtaining the maximum benefits of the design/build project delivery method. Specific areas of concentra-

tion will include contract preparation, insurance coverage, implied warranty and strict liability, licensing and taxation, government regulation, advertising practices, and the identification of services, obligations and liabilities. The briefing is intended for top management personnel in architectural and engineering firms.

Mr. Kornblut is a principal in the Washington, D.C., law firm of Ford, Farquhar, Kornblut & O'Neill, and is in addition a registered architect. He has contributed many articles to RECORD's Legal Perspectives column.

The briefings will meet on September 8 at the Hyatt Regency, Washington, D.C.; October 25 at the Water Tower Hyatt House, Chicago; November 13 at the Peachtree Plaza, Atlanta; December 15 at the Century Plaza, Los Angeles; and January 15 at the Hyatt Regency, Houston. Attendance will be limited to 30 persons at each location.

For information: Charles Hamlin, ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, New York 10020 (212/997-3088).



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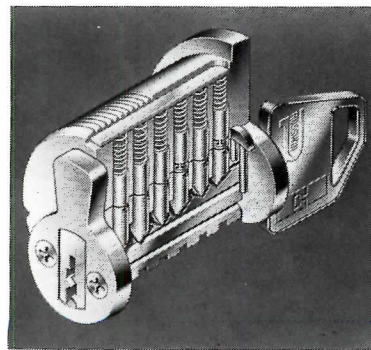
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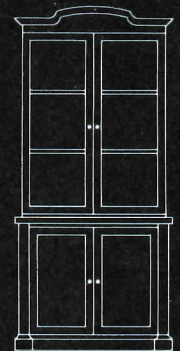
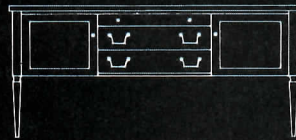
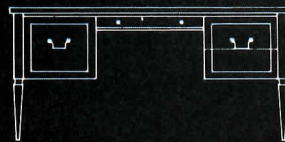


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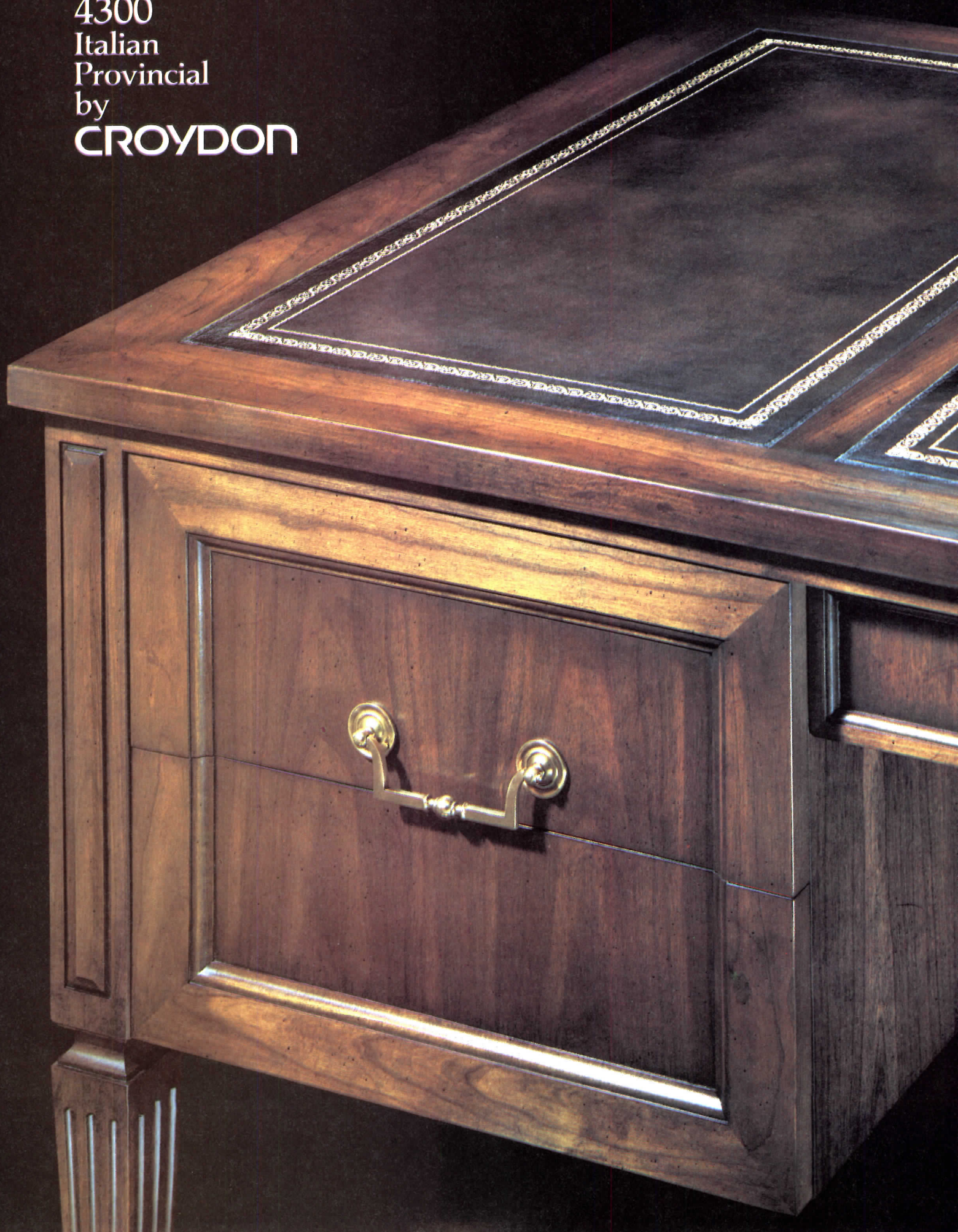
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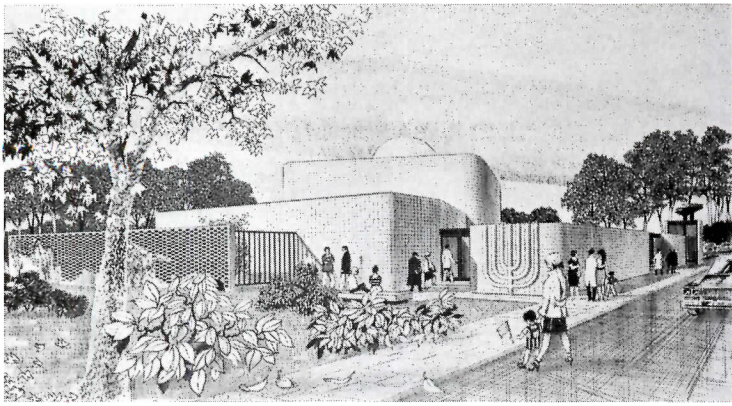
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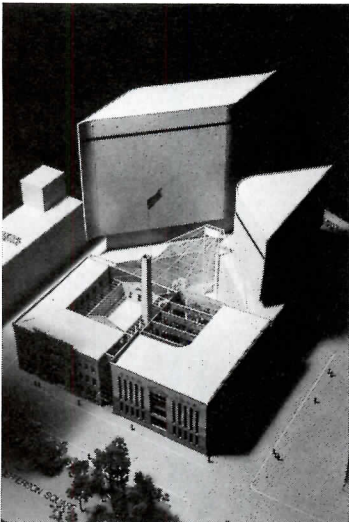
Chattanooga synagogue, destroyed by bombing, rebuilds

The Beth Shalom Congregation of Chattanooga, whose synagogue was destroyed by bombing a year ago, is rebuilding on the same site. Though no one was injured in the explosion, which remains unsolved, the 20-year-old building was leveled.

When the Orthodox congregation decided to rebuild, Haim M. Zukerman, an Israeli architect who practices in Knoxville as president of CIDECO Architecture and Planning,

Inc., and whose uncle was a member of the congregation, donated his services, as did Betts-Lutin Consulting Engineers of Chattanooga.

Facilities in the new brick synagogue will include the sanctuary and an adjacent social hall, offices, lounges and two kitchens. The social hall will offer access to a large enclosed courtyard. The building, scheduled for completion in October, will cost an estimated \$200,000.



Louisville county jail adapted as a commercial complex

In Louisville, the 70-year-old Jefferson County Jail, vacated by administrators and prisoners for a new facility across the street, has been planned as a complex of restaurants, shops and offices.

Architect Arthur Cotton Moore's design augments the existing buildings with two new triangular office towers, and the old cell block becomes a skylit garden surrounded by tiers of shops and offices. A new glass-roofed atrium links the old and new structures.

The new buildings, with their sharp angles and smooth materials, are designed as a foil for what Mr. Moore calls the "shaggy" quality of the old building, with its heavily rusticated stone lower walls, brick upper walls and crenelated cornice. The site faces City Hall and the County Courthouse in the downtown Government Center.

Federal government urged to simplify business overseas

If American designers and constructors were given proper encouragement by the U. S. Government, they could become far more competitive in the world's marketplace and make a major contribution to the nation's adverse balance of payments, as organizations representing the international design and construction industries see it.

They claim that the government is actually discouraging U. S. firms, and the result is that industries in other countries are gaining a competitive edge.

Comments incorporating this viewpoint have been forwarded to the Commerce Department's Industry and Trade Administration—an agency that is coordinating the activities of the Cabinet-level Export Policy Task Force created by President Carter in April. Through the International Engineering & Construction Industries Council, a combine of three industry trade groups, the industries suggest that the government should:

- tax U.S. citizens working abroad no more heavily than those of other countries;
- provide grants for feasibility studies for foreign projects;
- provide a comprehensive construction guarantee program that includes loan guarantees, letter of credit guarantees and political risk insurance;
- maintain existing export promotion programs such as tax deferral and the Domestic International Sales Corp.;
- resolve inconsistencies in existing anti-boycott regulations and their various interpretations. —William Hickman, *World News, Washington*.

IUA's XIII Congress will convene in Mexico City

The International Union of Architects, perceiving a philosophical shift in the concept of architecture as one of the plastic arts to the realm of national development and human settlements, has titled its XIII World Congress "Architecture and National Development." (This perception in fact parallels UNESCO's 1976 decision to transfer the subject of architecture from its Department of Culture to the Department of Social Services as part of the new Division of Human Settlements and Socio-cultural Environment.)

Among the aims of the Congress outlined by its president, Mexican architect Antonio Fuentes Flores, are examinations of the response of architecture to the process of national development and its contribution to the improvement of the quality of life, the architect's role in the interdisciplinary nature of national development solutions, and his influence on political decisions.

The Congress will convene October 23-27 in Mexico City, where the *Federacion de Colegios de Arquitectos de la Republica Mexicana* will act as host chapter. Sessions will be held at the National Auditorium in Chapultepec Park.

To reflect the broadened scope of architecture in the context of national development, each of the main component sessions will be presided over and addressed by both an architect and a non-architect from a discipline related to the topic:

- Topic I: Architecture and Economic Development will be led by architect Hassan Mohamed Hassan, president of the Egyptian Society of Architects and formerly the Minister of Housing, and by economist Enrique Peñalosa Camargo of Colombia, who was Secretary General of the 1976 UN Conference on Human Settlements (HABITAT) in Vancouver.

- Topic II: Architecture and Socio-cultural Development will be addressed by Japanese architect Kenzo Tange and by Belgian archeologist

Raymond Lemaire, president of the International Council of Historic Monuments and Sites (ICOMOS).

- Topic III: Architecture and Technological Development will be led by Spanish architect Rafael de la Hoz, who was the general rapporteur of the previous IUA World Congress, held in Madrid in 1975, and by industrial designer Kenji Ekuon of Japan, formerly president of the International Council of Societies of Industrial Design.

- Topic IV: Architecture and Human Settlements Development will be addressed by construction engineer Gennadi Fomin, president of the State Construction and Architectural Committee of the Soviet Union.

- Topic V: The Role of Architects in National Development will be conducted by Gueorgui Stoilov, president of the Bulgarian Architects Union, and by Moroccan economist Mahdi Elmandjra, president of the World Federation for Future World Studies.

Before these sessions, delegates will hear a report on the over-all subject by Pedro Ramirez Vazquez, who is Mexico's Minister of Human Settlements and Public Works, and who will serve as general rapporteur of the Congress.

These sessions will be followed by two days of smaller meetings at which participants will discuss the topics in a series of simultaneous sessions.

In addition to publishing conclusions drawn by participants in the discussion groups, the Congress also plans to publish papers on topical subjects submitted to IUA before the opening of the Congress.

Events scheduled around the IUA Congress include Expo-Arq 78, an international architectural exposition, a meeting of women architects, an international meeting of architecture critics, and an inter-American symposium on the conservation of artistic property, as well as an international competition for students.

FACT 79 will examine the impacts of solar energy

FACT 79 will be the first of a projected series of "International Encounters on Architecture and Planning" to take place in alternating years in Switzerland (at Lausanne) and in France (at Antibes). Its organizers envision "an open confrontation of ideas, neither exclusive nor predetermined, calling to all who today create the future through working out the practical problems of the present." (FACT is an acronym for Forum Architecture Communication Territory.)

FACT 79 is scheduled to meet January 26-29, 1979, at the Palais de Beaulieu in Lausanne. Proceedings will include conferences, seminars and practical workshops to consider the architectural, technological and politi-

cal impact of solar energy.

The conference also plans an industrial exposition for the display of products and processes for both active and passive applications of solar energy.

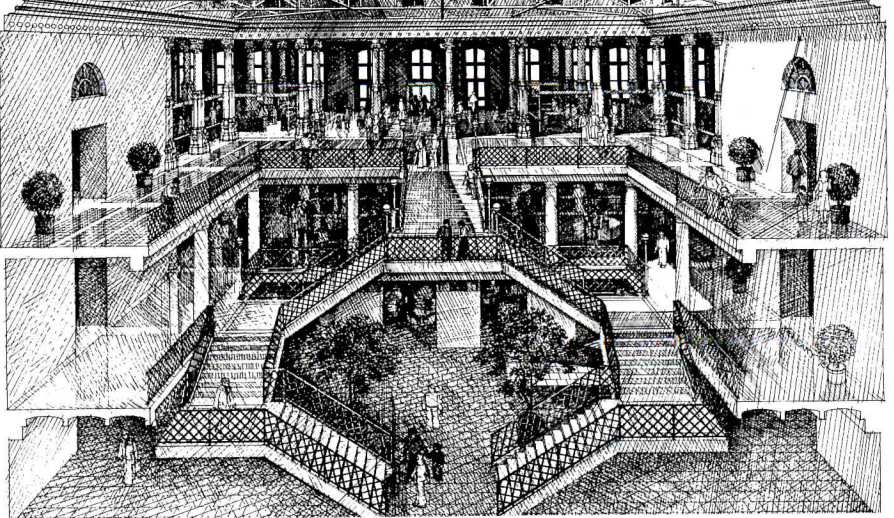
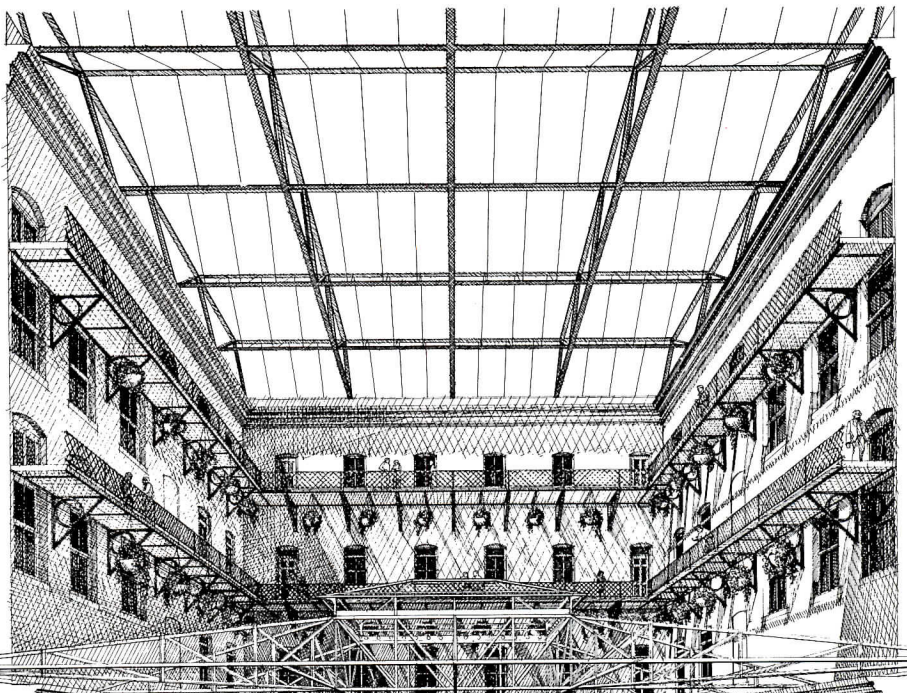
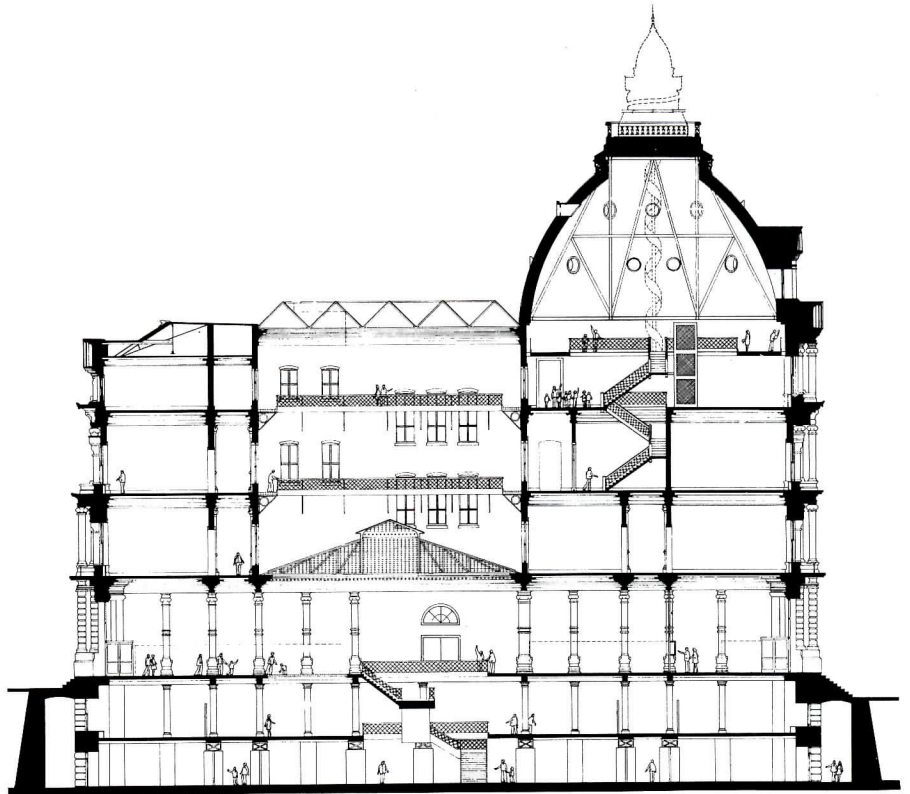
Seeing itself as a communication tool, FACT 79 will also present a festival of films on the built environment, and will convene an international meeting of architectural and planning editors, with the cooperation of the French magazine *L'Architecture d'Aujourd'hui*.

Francois Confino, an architect and urban planner, is director of FACT, which has offices at CP 248, 60, Avenue d'Ouchy, 1006 Lausanne, Switzerland.

GSA will adapt the St. Louis Post Office

In its competition for the restoration and renovation of the landmark St. Louis Post Office building, the General Services Administration has selected the design offered by Patty, Berkebile, Nelson Associates of Kansas City, working in joint venture with Harry Weese & Associates of Chicago. The second undertaking in GSA's Living Buildings program, the project carries forward a couple of GSA policies—to apply the practice of adaptive use in preference to new construction for government offices, and to encourage a mixture of uses in government building to enliven the urban scene. The Post Office building (officially the U. S. Custom House) was completed in 1884 to a design by architect Alfred Mullett, whose other buildings include the Old Executive Office Building in Washington. The PBNA/Weese team made a list of architectural and technical features worth restoring or replacing in the Second Empire-style building: an existing skylight above the first floor, the West Courtroom (the restoration of this room was specified by GSA), the belvedere above the dome, glass-block floors, cast-iron columns, and assorted tile floors, plaster columns, iron grilles and wood railings. Among the "original technological innovations," they listed the steel and concrete vault, the structural floor system, air distribution elements (cast-iron column

bases, shafts and exterior masonry walls), and hydraulic elevator. The new design would add a reflective skylight above the large central light well, but would restore the old skylight above the first floor to reduce sound transmission from the main floor multiuse area to the government offices above. One of the proposed additions is the construction of an open stairwell connecting the main floor and the basements to admit light to those floors and to invite retail expansion. (The two basement floors are assigned to office space for the immediate future, but the design team hopes that this "unique space," with its stone piers and masonry vaults, will eventually "phase into" multi-use.) On the upper two floors, which are intended for open-office planning, glass-block catwalks will be added around the light well to provide alternative circulation. The designers feel that mechanical systems can be provided with minimum intrusion on the fabric of the building by using existing shafts, by placing fan-coil units in existing radiator enclosures, by using the high ceiling spaces to distribute air without ductwork, and by relying on task lighting in the office areas. New open-cage elevators will run in cut-stone shafts created by existing vault walls—and will incidentally provide a close-up view of the steel and masonry structure.





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The architect as restaurateur: a new café on Capitol Hill

A new restaurant, highly favored by the Washington movers and shakers who operate on the Senate side of Capitol Hill, is the product of a young District of Columbia architect and 19 of his best friends.

Richard S. Newlon, the architect, and his friends, who come from the communications, real estate and government fields, formed a consortium to undertake the restoration of an 85-year-old building previously used as a dry-cleaning establishment and a two-seat barbershop. They turned the old Victorian structure into a bright and airy saloon and eatery that has attracted the likes of Senator George McGovern of South Dakota and Daniel P. Moynihan of New York.

The establishment is called The Man in the Green Hat for a brazen Prohibition Era bootlegger who operated out of the Senate office buildings. It fills a void in Washington, where politics mix well with food and drink, because the Senate side of Capitol Hill has suffered a shortage in places for dining and imbibing. High property costs and historic preservation covenants severely limit the availability of restaurant sites on Capitol Hill.

The location settled upon by Newlon and his consortimates had been considered and rejected by other would-

be restaurateurs. The building is small and was in a sad state of repair when the partners located it. Shaped somewhat like a plump string bean, the building cost \$140,000 and another \$200,000 was spent on restoration construction. Still, it will seat no more than 100 patrons in its three dining areas and bar.

Newlon's toughest design problem was to devise circulation patterns that permitted access to any of the separate areas without travel through other areas. He did this by cutting a new ground-level door in the building's midsection and located a stairway to the second-level dining area just beyond the entrance.

A barrel-vaulted skylight, 3 feet by 12 feet, illuminates both the stairway and the second-level dining area with natural light. Behind the stairway and visible to patrons in ascent is a massive wine rack that towers 20 feet and can accommodate 200 cases of wine. A sliding ladder gives access to the wine rack.

Another design dilemma arose from the need to put the kitchen on the second level and the bar on the first level. How could the food and drink servers scurry between the levels without bumping into patrons reaching their tables? Newlon decided against a dumbwaiter, but instead built another stairway accessible

only to food servers. He decided, however, to have drink servers use the patron's traffic patterns—with their drinks easily visible for Pavlovian suggestion.

Newlon's interior design makes extensive use of oak, with highlights in brass and green. The brass must be polished daily, but Newlon thinks it is worth the effort because the patron "gets the idea that we care about him and his surroundings."

After a Washington newspaper restaurant critic gave *The Man in the Green Hat* a rave review, but criticized it for being excessively noisy, Oriental rugs were added in the second-floor dining area. Sound-dampening panels are being considered, too.

Food at *The Man in the Green Hat* is good, but does not pretend to be great. Prices, by Washington standards, are very modest. A soup-and-salad lunch costs just \$2.15. A mutant variety of San Antonio chili, which is popular with regular patrons, costs \$1.95.

Newlon is working on a design for a sidewalk café that will be added this summer. He says the awning over the café will be kite-like and will move, or flap, in the wind. With that done, the restaurant will have reached its maximum size. — *William Hickman, World News, Washington.*



Convention hotel rises in downtown San Antonio

Along a bend in the river that runs through downtown San Antonio and which is one of the city's chief charms, Stouffer's is building a 700-room convention hotel. Architects Koetter Tharp Cowell & Bartlett have designed a stepped-back tower of curving terraces that will offer guest rooms a view of the river and will at the same time minimize the apparent bulk of the building from the relatively small-scaled river walk. The major public spaces—lobby, restaurants, shops and an ice-skating rink—will be housed in a three-story wing. The three restaurants will occupy a series of terraces sloping down to the river and will be enclosed in a glass envelope. The new hotel will

also preserve a designated historic Texas landmark: the facade of Old Adobe, a one-story structure built in 1846 that served as the first Presbyterian church in San Antonio, will be "wrapped" into the hotel's facade and become the entrance to the shopping facilities. A roof-top lounge and an outside elevator will take advantage of the views of the river and the Alamo. In response to the city's requirement that buildings along the river walk use materials appropriate to the indigenous architecture of the area, the hotel will be finished in rough plaster with bright-colored ceramic tile ornament. Stouffer's San Antonio Plaza Hotel is scheduled to open in January 1980.

Marriott Corp. specifies steel framing for new headquarters building in Washington, D.C. area.

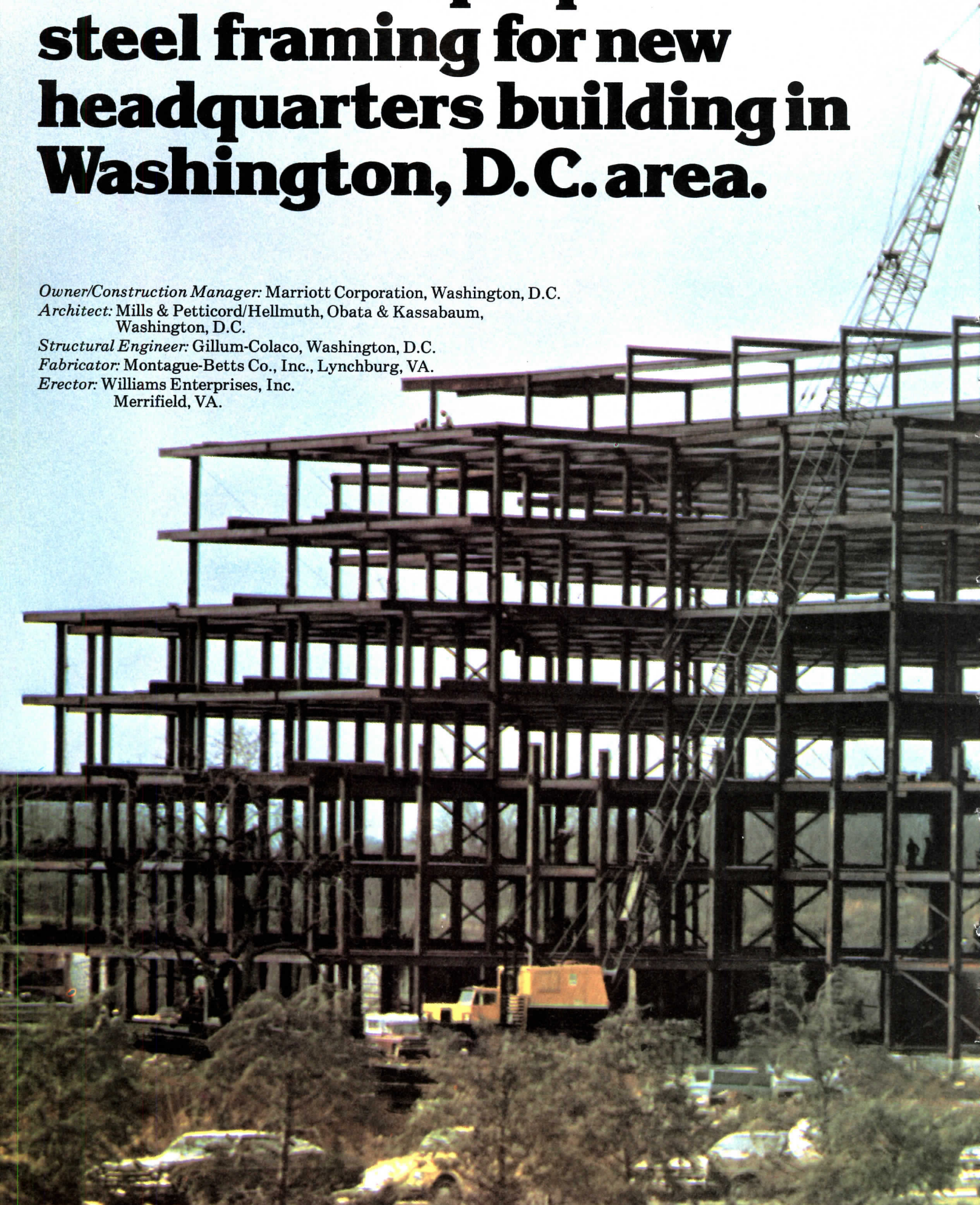
Owner/Construction Manager: Marriott Corporation, Washington, D.C.

Architect: Mills & Peticord/Hellmuth, Obata & Kassabaum, Washington, D.C.

Structural Engineer: Gillum-Colaco, Washington, D.C.

Fabricator: Montague-Betts Co., Inc., Lynchburg, VA.

Erector: Williams Enterprises, Inc. Merrifield, VA.



Dodge/Sweet's construction outlook, 1978: second update

The construction cycle has entered a critical stage. After last year's unusually strong across-the-board advance, the market has settled on a bumpy plateau. It could be just a pause before the next advance—or the first stage of the next cyclical decline. For the time being, though, the situation is stable—the result of opposing movements in the major sub-markets. Of course, inflation will continue to push up dollar values, but physical volume has reached a plateau. This condition has been the rationale, since last fall, for our 1978 construction forecast of just under \$150 billion in contract value, and—with a few mid-course adjustments—it remains the basis for this Second Update.

The transition from expansion to stability such as we are now experiencing never quite comes off with textbook precision, and the current situation is no exception. So far in 1978, we've had the complications of an unusually severe winter which distorted the pattern of housing starts, and the "backlash" of last year's local Public Works program which affected many types of nonresidential work. Overshadowing these more or less random events is the resurgence of severe inflation throughout the economy in general and in construction in particular.

Last winter's bad weather may be long forgotten, but its distorting effect on the housing market persisted all the way into early summer. Just how much of 1978's strong second quarter rate of housing starts represented catch-up of work delayed during January and February is anybody's guess. By now, however, it's safe to say that all the catching up has been done.

Round II of the Local Public Works Act had the opposite effect on public nonresidential construction that the weather had on housing. It produced a \$4 billion concentrated surge of building which was then followed by a void.

The current action is in commercial and industrial building . . . so far

In sharp contrast to the on-and-off, up-and-down behavior of housing and public works, contracting for commercial, industrial and other *private* nonresidential buildings has been showing strong and steady expansion.

A comparison of construction activity in the first half of 1978 with that of the second half of 1977—in *seasonally adjusted terms*—gives the best picture of how the market place is changing.

- Total contract value averaged only 5 per cent higher in the first half of 1978 than in the previous six months. Inflation accounts for the entire gain.
- Residential building value was unchanged from its second half of 1977 rate, but the rate of new housing starts averaged some 5 per cent *less* in 1978's first half. This decline suggests that something more than a brief spell of bad winter weather is affecting homebuilding.
- Institutional building value was 20 per cent lower in 1978. That's mainly the temporary LPWA backlash.
- Contracting for commercial and industrial buildings averaged 20 per cent *higher* in

1978 National Estimates of Dodge Construction Potentials

Construction Contract Value

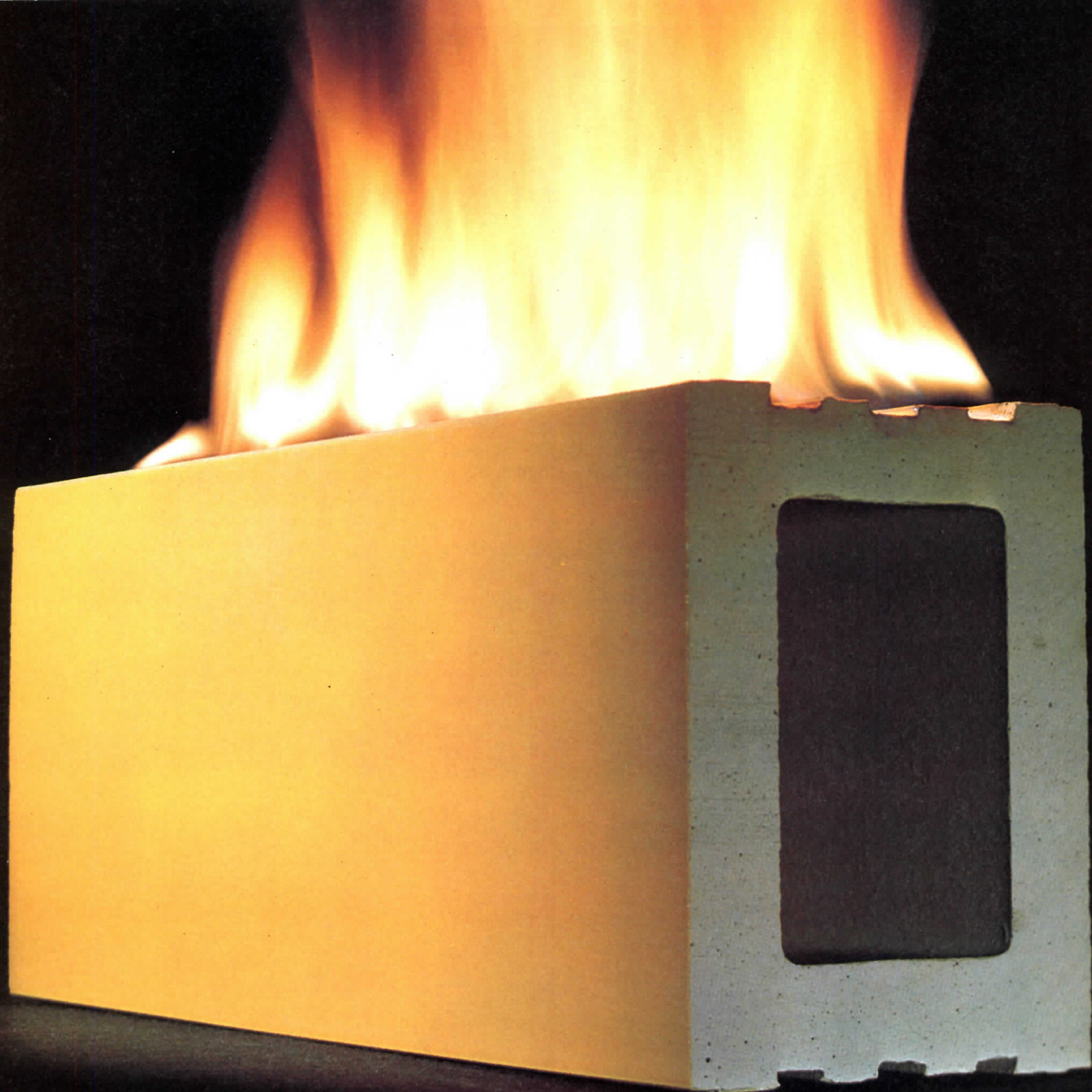
(millions of dollars)

		1977 Actual	1978 Forecast	Per Cent Change
Nonresidential Buildings	Office Buildings	\$ 5,247	\$ 7,550	+44
	Stores & Other Commercial	8,343	10,350	+24
	Manufacturing Buildings	5,150	6,100	+18
	Total Commercial & Manufacturing	\$ 18,740	\$ 24,000	+28
	Educational	\$ 5,217	\$ 5,150	- 1
	Hospital & Health	4,485	4,700	+ 5
	Other Nonresidential Buildings	6,857	6,925	+ 1
Total Institutional & Other	\$ 16,559	\$ 16,775	+ 1	
Total Nonresidential	\$ 35,299	\$ 40,775	+16	
Residential Buildings	One-Family Houses	\$ 49,508	\$ 50,150	+ 1
	Multi-Family Housing	10,652	11,350	+ 7
	Total Housekeeping	\$ 60,160	\$ 61,500	+ 2
	Total Nonhousekeeping	1,273	1,700	+34
Total Residential	\$ 61,433	\$ 63,200	+ 3	
Nonbuilding Construction	Highways & Bridges	\$ 10,210	\$ 9,500	- 7
	Utilities	20,275	20,000	- 1
	Sewer & Water	7,123	9,000	+26
	Other Nonbuilding Construction	4,873	5,200	+ 7
	Total Nonbuilding	\$ 42,481	\$ 43,700	+ 3
Total Construction	\$139,213	\$147,675	+ 6	
Dodge Index (1967 = 100)	252	268		

Floor Area of New Buildings

(millions of square feet)

		1977 Actual	1978 Forecast	Per Cent Change
Nonresidential Buildings	Office Buildings	137	185	+35
	Stores & Other Commercial	430	505	+17
	Manufacturing Buildings	171	205	+20
	Total Commercial & Manufacturing	738	895	+21
	Educational	112	106	- 5
	Hospital & Health	67	65	- 3
	Other Nonresidential Buildings	184	178	- 3
Total Institutional & Other	363	349	- 4	
Total Nonresidential	1,101	1,244	+13	
Residential Buildings	One-Family Houses	1,910	1,820	- 5
	Multi-Family Housing	472	475	+ 1
	Total Housekeeping	2,382	2,295	- 4
	Total Nonhousekeeping	36	47	+31
Total Residential	2,418	2,342	- 3	
Total Buildings	3,519	3,586	+ 2	



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1978's first half. This is where the important action is taking place.

Tight money will hit every segment, but homebuilding will suffer most

Residential building will soon be showing the inevitable consequences of tight money. So far, the Federal Reserve's effort at containing inflation by monetary restraint has made itself felt more in the cost of credit than in its availability. Despite sharply rising short-term interest rates, a large backlog of mortgage commitments at the thrift institutions, along with heavy secondary mortgage market operations, have managed to sustain a good but diminishing volume of lending through 1978's first half. However, the sharply curtailed flow of new savings—currently less than half the rate of six months ago—sooner or later must deplete lender liquidity.

However, there are a few reasons to expect that the decline in the rate of housing starts will be more gentle this time around than it has been under similar circumstances

in the past.

Among today's stabilizing factors are:

1. The housing market is not overbuilt. With adequate financing the current rate of housing starts could be sustained for several years, as recent sales bear out.
2. The secondary mortgage market is more highly developed and is capable of providing thrift institutions with greater liquidity than ever before.
3. HUD subsidy programs have been operated at near-minimal levels for the past couple of years, and could be expanded as private starts decline. HUD's influence would be felt mostly on multi-family building.
4. Finally, there is the likelihood that the Fed will become more accommodating toward the end of 1978 as the economy's aging expansion loses momentum.

Our forecast of housing starts in 1978's second half is an average rate of 1,750,000 units, putting the year's total at 1,825,000—down about 8 per cent from the 1977 number of housing starts. At current prices,

however, contract value of 1978 residential building will be higher than in 1977 by about 3 per cent.

Current commercial and industrial surge may be short-lived

Nonresidential building will be even more sensitive than usual in the second half of 1978 to the general economic outlook for the 18 months ahead.

Current concern about recession in 1979 is being overstressed. Even after three years of recovery from the 1975 collapse, the economy is hardly straining at the limits of capacity as it was in 1974. Nor are inventories, which are often the catalyst for recession, excessive in relation to sales. By these tests, the economy is not particularly vulnerable to the classic "boom-and-bust" type of recession at present. But we do face some other risks. One is that the more-than-three-year-old cyclical expansion might simply run down from a lack of self-generation—the case for external stimulus by a hefty tax cut early next year. Another is that either excessive inflation and/or overzealous anti-inflationary restraint will bring expansion to an end in 1979.

The most favorable forecast that can be made from this choice of scenarios, even with the help of a tax cut, is for a reduced rate of growth. Since any change in the rate of economic expansion—acceleration or deceleration—usually has an exaggerated effect on business capital spending, the economy's impending slow-down implies that the recent surge of contracting for commercial and industrial buildings may be short-lived, or at best, proceed more slowly by year end.

With institutional building now back to a normal level of contracting after its temporary setback early in the year, total nonresidential building contract value for 1978 is currently estimated at \$40.8 billion, a gain of 16 per cent over 1977.

After a strong first half, total 1978 construction may be up only 6 per cent

At midyear, 1978 contracting for utilities and public works stood as close to even with 1977 as any two years ever get, so our earlier estimate for the full year of \$43.7 billion (up a nominal 3 per cent over the 1977 total) looks as good now as it did back in March (see RECORD, March 1978, page 65).

Will the public "revolt" against taxation as expressed in California's Proposition 13 and similar referenda in many other states lead State and local governments to show greater restraint in spending for public works construction? Not likely, but the situation bears watching.

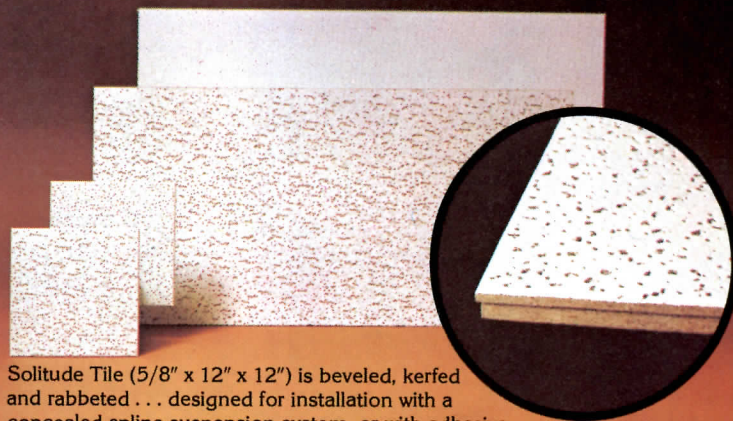
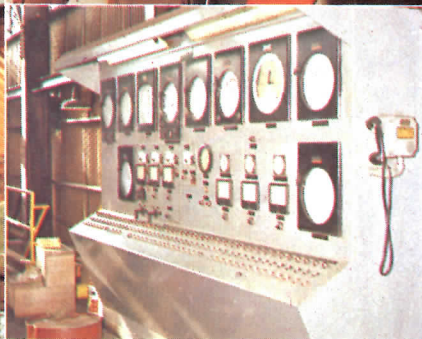
Total construction contract value in 1978 is now estimated at \$147.7 billion for the year, 6 per cent more (at current prices) than the 1977 total. After a very strong first half, this full year estimate implies a lower average rate of contracting during the second half by as much as \$10 billion (annualized). Most of that decline will be confined to housing.

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

1978 Regional Estimates of Dodge Construction Potentials

Construction Contract Value (millions of dollars)	Northeast Conn., D.C., Del., Mass., Md., Maine, N.H., N.J., N.Y., Eastern Pa., R.I., Va., Vt.			Midwest Northern Ill., Ind., Iowa, Ky., Mich., Minn., N.D., Ohio, Western Pa., S.D., Wis., W. Va.		
	1977 Actual	1978 Forecast	Per Cent Change	1977 Actual	1978 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	\$ 2,833	\$ 4,000	+41	\$ 4,759	\$ 6,050	+27
Institutional & Other	3,468	3,575	+ 3	4,420	4,475	+ 1
Total	\$ 6,301	\$ 7,575	+20	\$ 9,179	\$10,525	+15
Residential Buildings						
One-Family Houses	\$ 6,543	\$ 6,875	+ 5	\$11,667	\$11,600	- 1
Multi-Family Housing	1,643	2,000	+22	2,608	2,650	+ 2
Nonhousekeeping Residential	216	350	+62	276	350	+27
Total	\$ 8,402	\$ 9,225	+10	\$14,551	\$14,600	—
Nonbuilding Construction						
Highways & Bridges	\$ 2,075	\$ 1,900	- 8	\$ 2,578	\$ 2,425	- 6
Utilities	3,362	3,600	+ 7	3,799	5,000	+32
Other Nonbuilding Construction	3,211	3,800	+18	2,720	3,325	+22
Total	\$ 8,648	\$ 9,300	+ 8	\$ 9,097	\$10,750	+18
Total Construction	\$23,351	\$26,100	+12	\$32,827	\$35,875	+ 9

Construction Contract Value (millions of dollars)	South Ala., Ark., Fla., Ga., Southern Ill., Kan., La., Miss., Mo., N.C., Neb., Okla., S.C., Tenn., Tex.			West Alaska, Ariz., Cal., Colo., Hawaii, Idaho, Mont., Nev., N.M., Ore., Utah, Wash., Wy.		
	1977 Actual	1978 Forecast	Per Cent Change	1977 Actual	1978 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	\$ 6,758	\$ 8,125	+20	\$ 4,390	\$ 5,825	+33
Institutional & Other	5,356	5,350	—	3,315	3,375	+ 2
Total	\$12,114	\$13,475	+11	\$ 7,705	\$ 9,200	+19
Residential Buildings						
One-Family Houses	\$18,055	\$19,050	+ 6	\$13,243	\$12,625	- 5
Multi-Family Housing	2,965	3,200	+ 8	3,436	3,500	+ 2
Nonhousekeeping Residential	312	450	+44	469	550	+17
Total	\$21,332	\$22,700	+ 6	\$17,148	\$16,675	- 3
Nonbuilding Construction						
Highways & Bridges	\$ 3,788	\$ 3,550	- 6	\$ 1,769	\$ 1,625	- 8
Utilities	10,944	8,000	-27	2,170	3,400	+57
Other Nonbuilding Construction	3,748	4,050	+ 8	2,317	3,025	+31
Total	\$18,480	\$15,600	-16	\$ 6,256	\$ 8,050	+29
Total Construction	\$51,926	\$51,775	—	\$31,109	\$33,925	+ 9



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Design/build changes all the ground rules for affected architects

by Arthur T. Kornblut, Esq.

Last month's *Legal Perspectives* column reviewed the recent Supreme Court decision finding an antitrust violation in NSPE's ethical prohibition against competitive bidding by engineers. Shortly after that decision, delegates to the AIA convention in Dallas approved a major change in the architectural profession's ethics—the AIA's longstanding ban against architects acting as contractors was suspended for a three-year trial period. In light of the Supreme Court's general comments in the NSPE case about commercial restraints arising from ethics provisions, AIA's action may have both forestalled legal problems for the Institute and facilitated the enhanced business opportunities suggested by the advocates for change. The absence of institutional restraints and the increase in opportunities, however, mandate careful inquiry into, and legal analysis of, the form, scope and financial arrangements of projects for which architects are performing more than a professional service role.

Architects contemplating the world of design/build or construction contracting should recognize that the ground rules—professional, legal, financial, insurance and so forth—will be quite different from those of the traditional client/professional relationship with which they are familiar. Standard form contracts and insurance will not be readily available. The flexible relationships made possible by the relaxation of ethical restraints do not lend themselves to the preparation of "standard" form contracts or insurance policies. Other features of construction projects rarely affecting architects, but daily fare for contractors, will demand new management ability. Architects will have to learn firsthand how to acquire bonding capacity, and the intricacies of labor relations in dealing with construction unions. Subcontracts will involve not only consulting engineers but also construction contractors, all requiring among other things coordination, control and compensation.

AIA ethics change imposes four controls over a "conflict of interest"

There is some merit to the claim that architects retaining control over both design and construction will be able to achieve improved delivery of their projects. There is also an economic attractiveness for both parties in successful design/build projects, and the reduction in institutional restraints on how projects are undertaken will enable increased competitiveness among architects and non-architects. This will mandate increased skills,

benefiting both the professional and the general public.

In retrospect, the former ethical prohibition against architects construction contracting from their own designs was a well-considered attempt to prevent a conflict of interest between the professional and his client. A conflict now clearly arises because the architect, when contracting, stands to either profit or lose money on the labor and materials required for construction. The architect's professional interest in determining whether construction is proceeding in accordance with the design, drawings and specifications might be overridden by his financial interest in not wanting to lose money or, conversely, in wanting to maximize his profit. Thus, changes could be made without the owner's knowledge to achieve these latter goals.

The AIA's ethics change accepts the inevitability of such a conflict of interest and imposes four major controls to achieve some protection for the owner. The architect engaged as a principal in design/build or contracting activities must:

1. Give the owner full written disclosure of the conflict of interest, including the elements of the AIA's Code of Ethics, and notify the owner that he may wish to obtain independent professional advice.
2. Exercise independent professional judgment "without partiality to the interests of any affected parties" (presumably including his own).
3. Make construction subcontracts and cost data available for the owner's review.
4. Fully inform the owner of "cost and other consequences of any proposed change or substitution" and procure the owner's approval of any change or substitution. (Note: The above is a synopsis of the approved ethics change; the verbatim version should be studied carefully before

proceeding with a design/build project).

In addition to compliance with the ethics, the architect must anticipate uncertainty about legal standards which may be applied to his design/build projects. Applications of implied warranties and strict liability, relatively unknown in the law related to professional services, could become commonplace. Government regulations previously affecting the architect only on a third party basis as a designer will now apply directly to him as an employer, owner or principal. Licensing and taxation will impose significantly increased administrative and financial burdens.

Site safety responsibility will undoubtedly fall to the design/builder

It is impossible to anticipate, let alone analyze, all of the many legal considerations entering the design/build picture. Even a relatively straightforward subject as "safety" illustrates the complexity of the problem. Architects traditionally have avoided responsibility for site safety for fear of liability for construction workers' injuries. Much effort has been expended to develop contract clauses to isolate the safety responsibility with contractors and to enable the architect to be indemnified when aberrant court decisions found him liable. By contract, code or statute, the principal in a design/build project can not avoid responsibility for safety.

OSHA decisions have clearly imposed liability for safety violations on contractors, subcontractors and even construction managers because of their perceived control over construction operations. On the positive side, a design/build contractor may be able to protect himself with a workmen's compensation insurance umbrella for the project, thus immunizing himself from common law liability for construction related injuries. However, owners who contract with design/build contractors may insist on strict indemnification clauses to protect themselves from suits by injured workers seeking additional sources of recovery beyond the available insurance. Indeed, the highest court in New York recently construed a state statute to impose an absolute, non-delegable liability for safety at construction sites on owners as well as on contractors.

Whatever the future of design/build holds, it should be interesting for architects and lawyers alike.

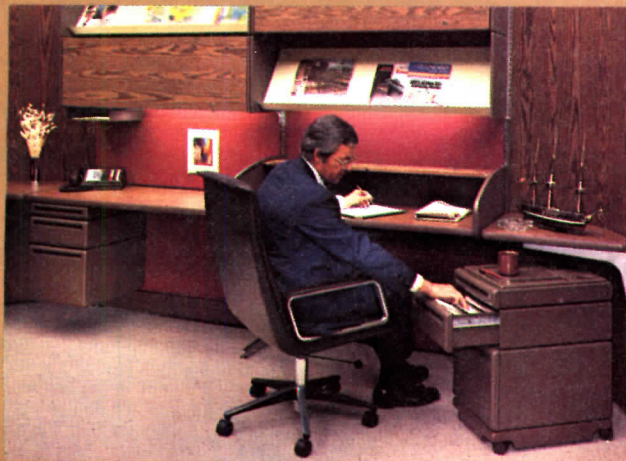
Mr. Kornblut is a registered architect and practicing attorney in Washington, D.C.

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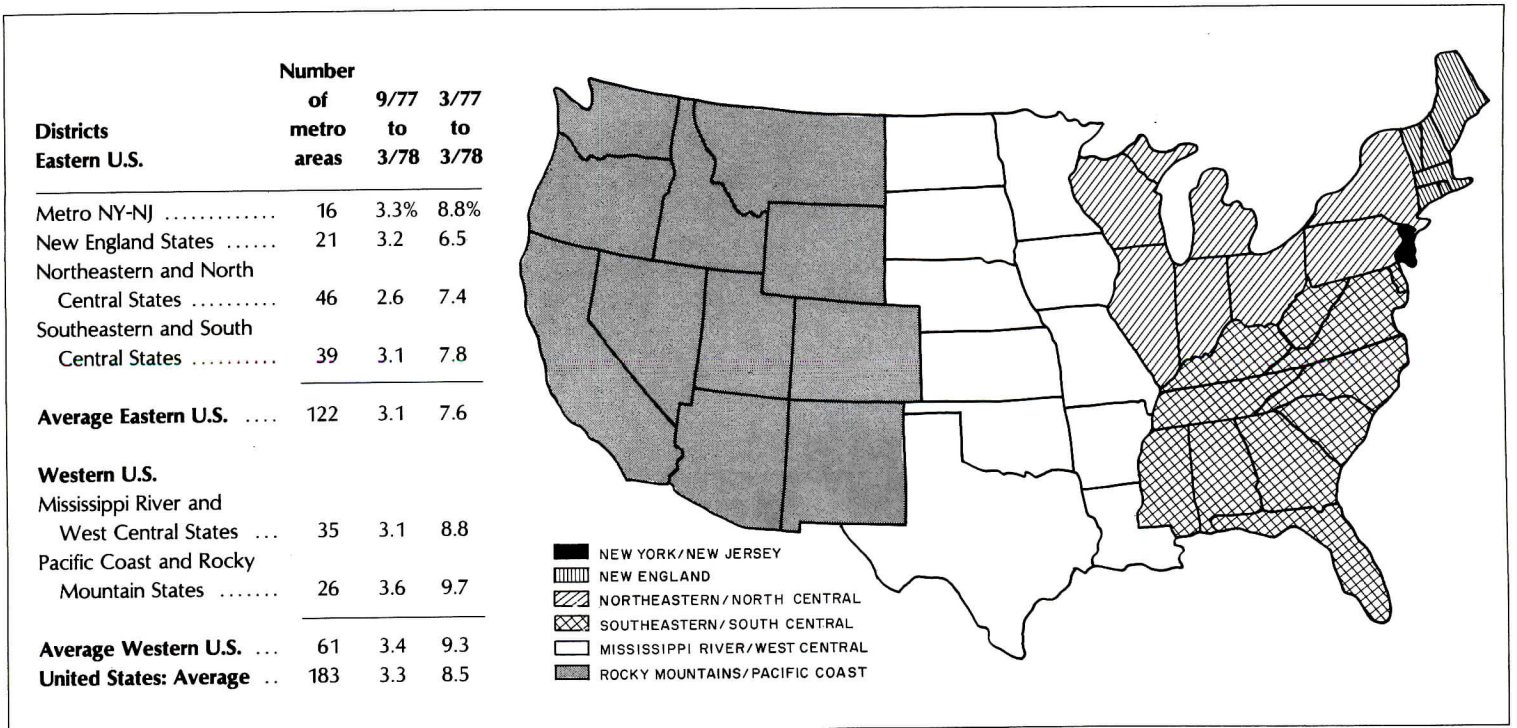
Construction costs nationally now at 9.5 per cent over last year

The impact of the coal strike is beginning to be felt throughout the construction industry: steel, gypsum products and Portland cement have all shown hefty increases, and lumber and wood products—reacting to a boom year in home building—have soared approximately 17 per cent so far this year.

Construction labor settlements are also beginning to reflect the frantic pace of construction, and various labor organizations report increased militancy on the part of union members.

We have revised our estimate of construction costs increase for the year to 9.5

per cent nationally. The increase in labor rates, material prices, fuel and utility costs and mortgage money will undoubtedly begin to impact the construction industry over-all, and we can expect construction costs to rise, but the level of construction should begin to drop off around September.



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

Metropolitan area	1968-1976										1977 (Quarterly)				1978 (Quarterly)			
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1st	2nd	3rd	4th	1st	2nd	3rd	4th	
Atlanta	353.1	384.0	422.4	459.2	497.7	544.8	575.0	598.7	657.1	701.5	712.0	704.3	732.5	742.8	772.5			
Baltimore	308.7	322.8	348.8	381.7	420.4	475.5	534.3	581.1	585.0	605.7	614.8	628.1	653.2	661.0	687.4			
Birmingham	284.3	303.4	309.3	331.6	358.3	402.1	421.2	448.9	551.9	543.8	551.9	575.9	598.9	608.5	632.8			
Boston	277.1	295.0	328.6	362.0	394.4	437.8	462.5	513.2	555.9	567.7	576.2	581.3	604.5	611.1	635.5			
Chicago	339.5	356.1	386.1	418.8	444.3	508.6	529.6	560.1	635.2	662.2	672.1	683.4	710.7	717.8	746.5			
Cincinnati	302.6	325.8	348.5	386.1	410.7	462.4	500.1	550.6	609.8	615.6	624.8	650.7	676.7	683.5	710.8			
Cleveland	331.5	358.3	380.1	415.6	429.3	462.2	509.5	531.0	632.9	619.4	628.7	615.1	639.7	650.6	676.6			
Dallas	281.7	308.6	327.1	357.9	386.6	436.4	477.9	499.6	538.5	560.1	568.5	611.6	636.1	640.6	666.2			
Denver	312.5	339.0	368.1	392.9	415.4	461.0	510.0	553.6	616.0	656.3	666.1	691.7	719.3	731.5	760.8			
Detroit	316.4	352.9	377.4	409.7	433.1	501.0	538.7	597.5	617.2	634.2	643.7	649.4	675.3	733.7	763.0			
Kansas City	278.0	295.5	315.3	344.7	367.0	405.8	444.9	509.1	547.3	568.2	576.7	592.1	615.7	625.6	650.6			
Los Angeles	320.1	344.1	361.9	400.9	424.5	504.2	531.8	594.1	673.1	709.2	719.8	748.2	778.1	787.4	818.9			
Miami	305.3	392.3	353.2	384.7	406.4	447.2	485.5	558.9	592.5	604.6	613.7	616.7	641.3	653.5	679.6			
Minneapolis	309.4	331.2	361.1	417.1	412.9	456.1	488.6	538.0	564.1	593.0	601.9	617.9	642.6	654.8	680.9			
New Orleans	274.2	297.5	318.9	341.8	369.7	420.5	442.1	494.7	534.8	580.2	588.9	609.2	633.5	639.8	665.4			
New York	321.4	344.5	366.0	395.6	423.1	485.3	515.3	533.5	580.8	607.7	616.8	607.7	632.0	644.6	670.4			
Philadelphia	301.7	321.0	346.5	374.9	419.5	485.1	518.5	567.5	579.2	615.8	625.0	655.8	682.0	688.8	716.4			
Pittsburgh	293.8	311.0	327.2	362.1	380.3	424.4	465.6	509.5	526.3	549.5	557.7	579.7	602.9	615.2	639.8			
St. Louis	304.4	324.7	344.4	375.5	402.5	444.2	476.7	528.9	537.1	605.8	614.9	611.9	636.3	642.7	668.4			
San Francisco	402.9	441.1	465.1	512.3	561.0	632.3	672.5	753.3	820.8	904.5	918.1	954.2	992.3	1002.2	1042.3			
Seattle	292.2	317.8	341.8	358.4	371.5	424.4	450.2	515.1	570.5	603.7	612.8	620.6	645.4	656.1	682.3			

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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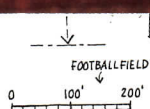
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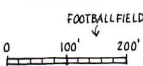


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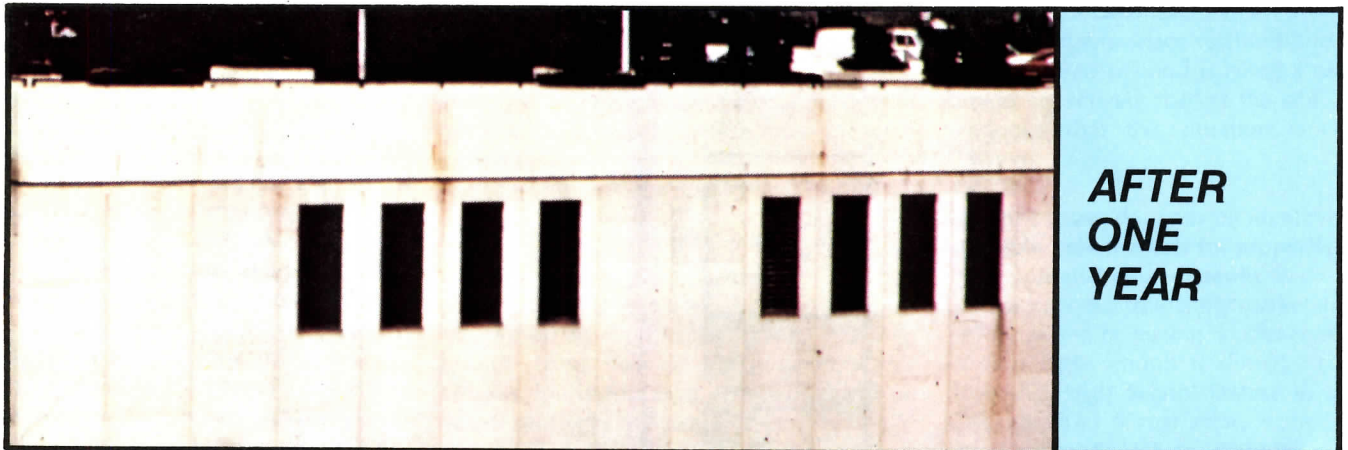
**EXISTING
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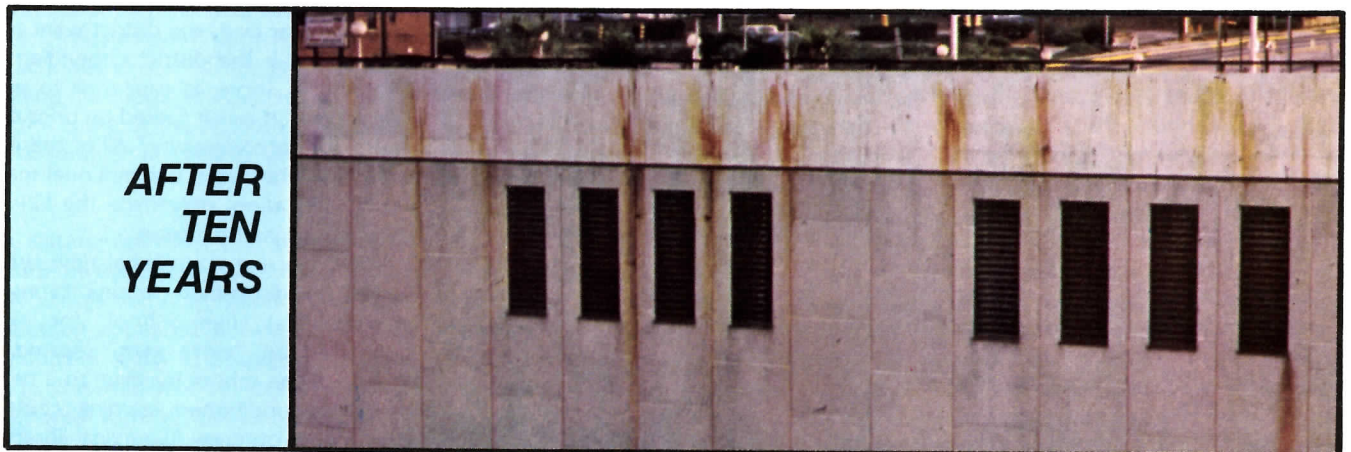
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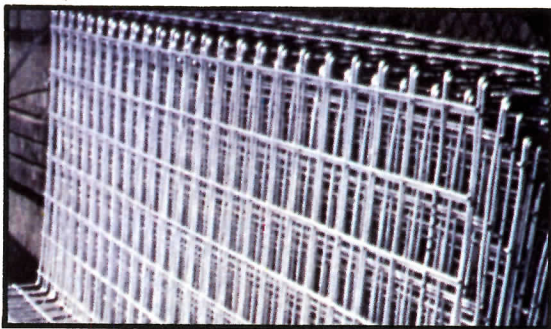


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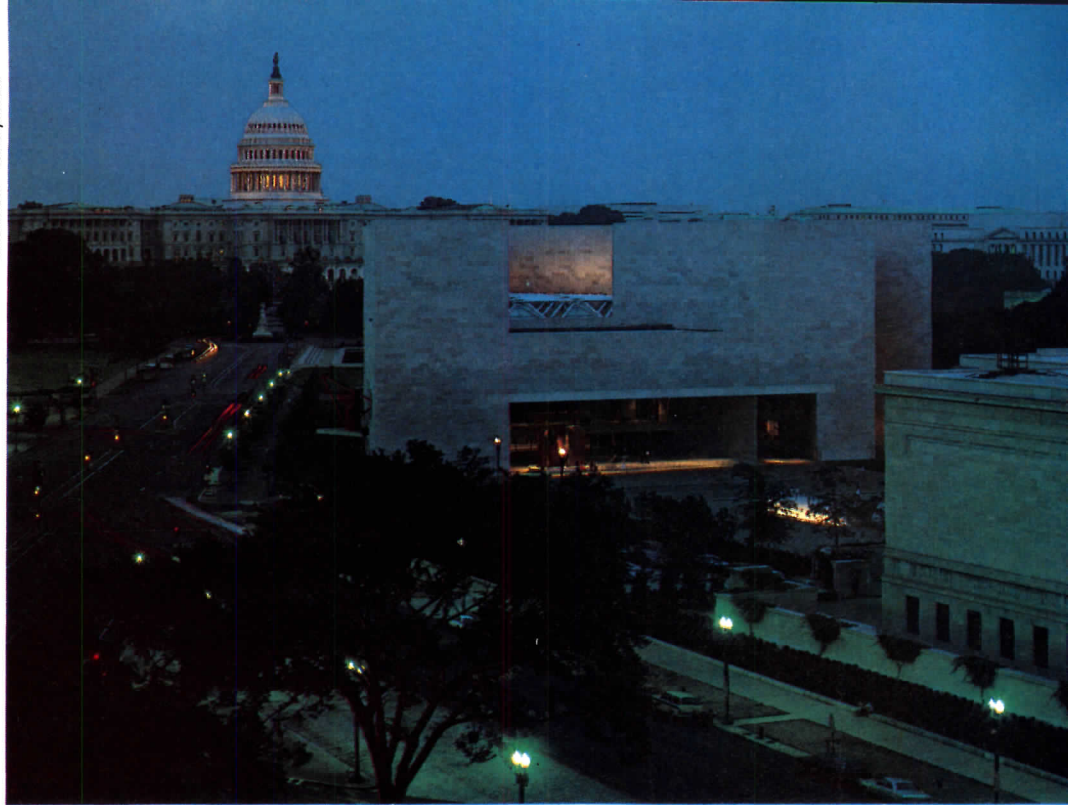
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MR. PEI GOES TO WASHINGTON

In May of 1969, Ieoh Ming Pei, kept company by a couple of his designers, sat patiently on one of the stone benches outside of the board room of the National Gallery of Art in Washington.

After something of a wait, Paul Mellon, the president of the Gallery, came out into the hall, followed by J. Carter Brown and John Walker. Mr. Brown, who was in the process of taking over as director of the Gallery from Mr. Walker, his boss, mentor, and friend of eight years, had a big boyish grin on his face.

Mr. Mellon, who is understated, said they had decided. After two years of thinking about how the National Gallery of Art should grow, and after six solid months of Mr. Pei's having absorbed himself and his sharpest "pencils" in coming up with a concept for its projected East Building, the scheme was in, most satisfactory, and so let's go.

Mr. Pei did. Right over to the house of his friend Joseph Alsop, the columnist, who broke out some bottles of champagne, *Dom Perignon* champagne, while Mr. Pei, using some yellow blue-lined legal paper, explained (still exploring, no doubt) the nature of his concept. What they sipped, and what he sketched, were vintage.

Nine years later, on the first of last June, the East Building—containing galleries around a glowing courtyard, a Center for Advanced Study in the Visual Arts, and an underground concourse connecting it with the Gallery's neoclassical original by John Russell Pope—was opened by President Jimmy Carter.

Though it is not popularly understood that he likes architecture almost as much as music and poetry, the President's interest was not lost on those who were crowded onto

the new plaza, which is covered with four-inch cubic cobblestones of Oklahoma granite, and which is 375 feet wide.

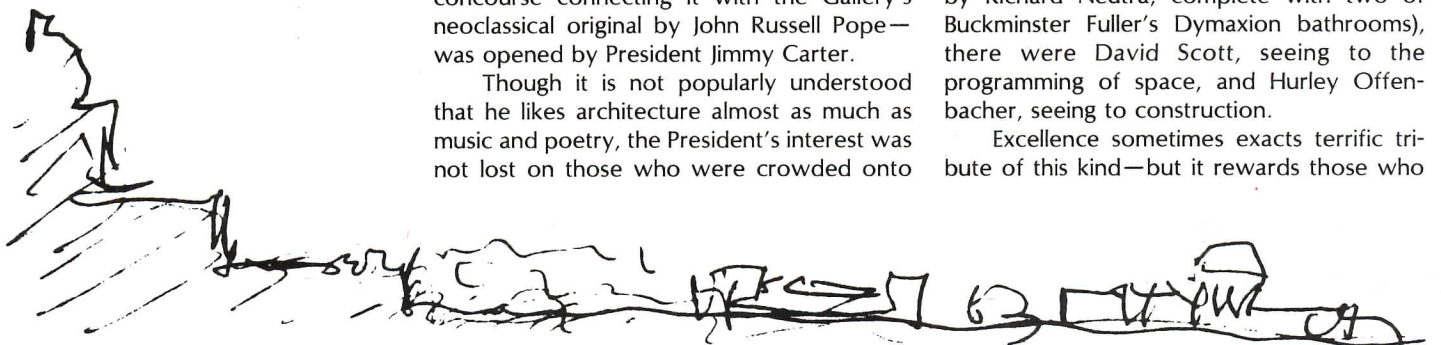
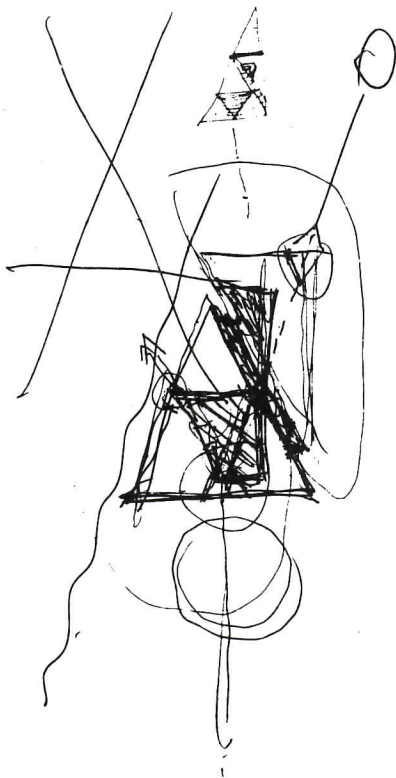
In one of the most illuminating references to architecture made recently by an American leader, Mr. Carter not only "critiqued" the East Building as a study in urban compatibility and considerate proportion, but he also went further, explaining how it symbolizes the increasingly supportive connection between public life and art.

It might be said that the most expressive, useful art is doing everything well. The seat of American government, as laid out by Major Pierre L'Enfant in the late 18th Century, was started up in that spirit. The East Building—paid for by Paul Mellon, Alisa Mellon Bruce (his late sister), and the Andrew W. Mellon Foundation (Andrew W. Mellon, their father, paid for the original, which opened in 1941)—now consolidates that spirit.

This intent as interpreted by Mr. Pei runs deeper than munificence, the costs having come to over \$94 million—for creative conviction is summoned by other factors, and more valuable ones; such manifest, mesmeric beauty is not merely purchased.

The lessons of the East Building are in the intensity, competence, and passion that were spent in the designing of it, and, as seen to by the Chas. H. Tomkins Co., the builder, in the doing of it. Besides Mr. Brown looking after the Gallery's concerns (he grew up in a house by Richard Neutra, complete with two of Buckminster Fuller's Dymaxion bathrooms), there were David Scott, seeing to the programming of space, and Hurley Offenbacher, seeing to construction.

Excellence sometimes exacts terrific tribute of this kind—but it rewards those who



dig down deep to pay it with an assuredness and serenity that finally belie the pains, perplexities, and bruises along the road. That kind of tribute was paid here, and a lot of money—as the program and the budget, though both were strictly monitored, blossomed beyond an earlier concept for a study center with a modest museum.

This was the last major undeveloped site between Pennsylvania Avenue and the Mall, though—a trapezoidal site, of nearly nine acres, that had been set aside by Congress in the late 1930s when it accepted Andrew W. Mellon's gift. Was just a study center, a more or less private enclave, really right at such a strategic, symbolic point—especially so when the National Gallery of Art had been envisioned as quite a public affair?

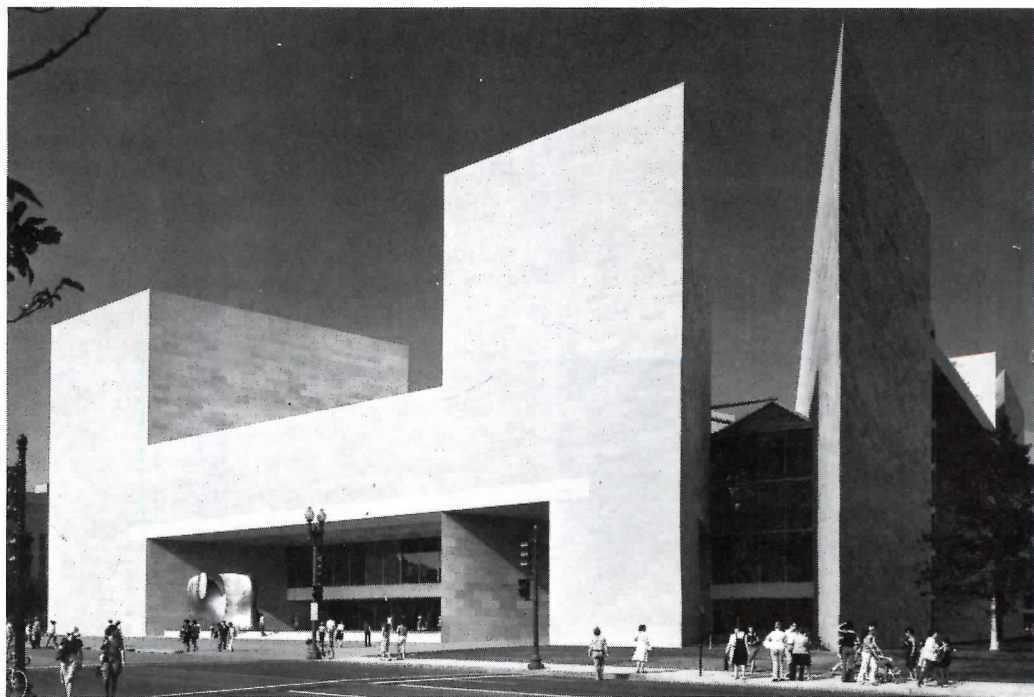
A sense of accountability came into play, something that the Mellons have never ignored, even though it meant that an early estimate of \$20 million was not going to be enough to make the East Building the public affair that their civic and cultural consciousness was impelling. Paul Mellon had the vision not to panic, and fortunately the means. He ended up giving the kind of gift that he would have liked to receive.

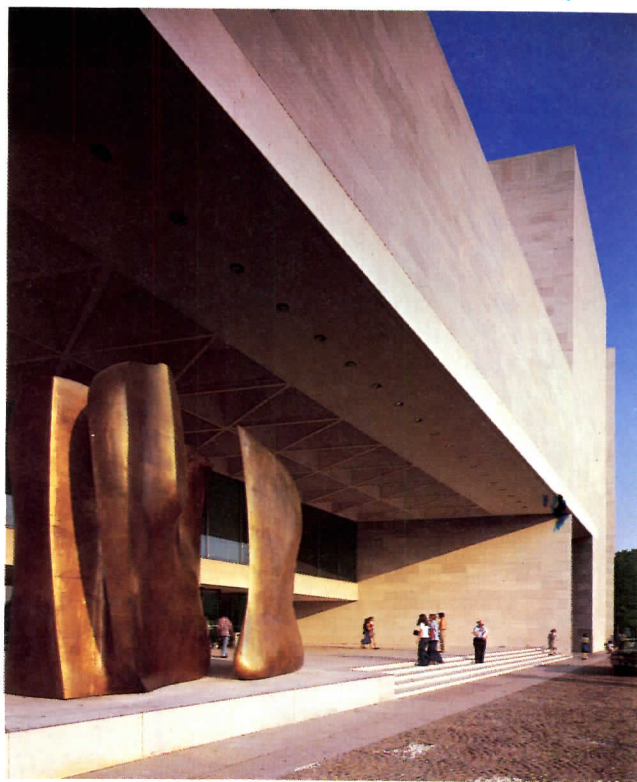
The lessons of the East Building are also in how this complicated cycle of programmatic and budgetary decisions, of planning options and horrific staging problems, were brought into alignment and given a cohesion that is indeed assured and serene. Its complexity is all the more awesome because it is agreeably concealed.

Then there are lessons in how the design was developed, not as an object, but as a latticework of objectives. Its material configuration of marble, concrete, and glass derives from, deferring to, the physical, spatial, and symbolic elements of the city. The ceremonious diagonal of Pennsylvania Avenue edges the site on the north. The Mall edges it on the south. Fourth Street edges the site on the west, with Mr. Pope's immaculate monumentality beyond, and Third Street edges it on the east. It is a flying wedge of axial forces aimed at the Capitol, where money is appropriated for the Gallery's operations.

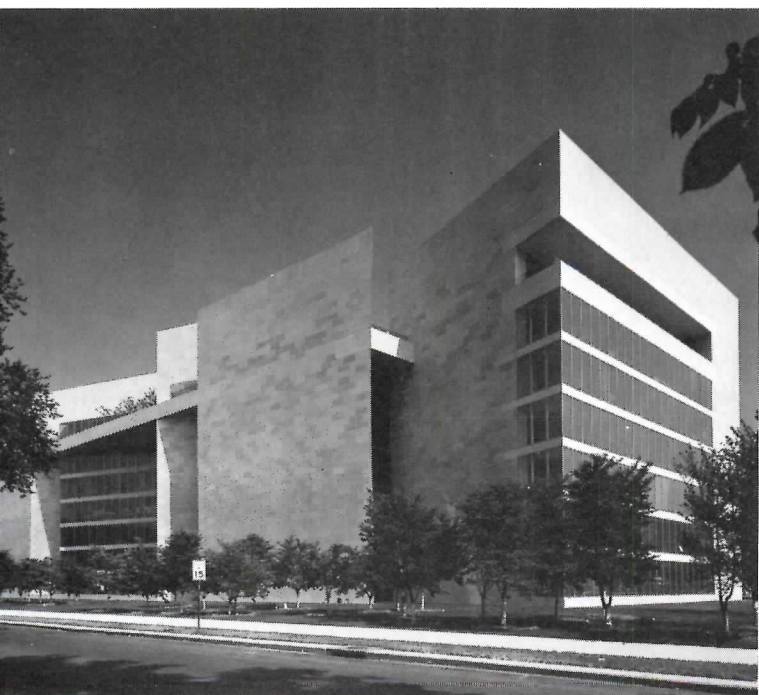
Mr. Pei's aim was to take these forces into account. There were setback lines to respect, too, as established by the National Capitol Planning Commission; and height restrictions relative to Pennsylvania Avenue and the Mall (at substantially different cornice levels), as established by the Commission of Fine Arts. Then there was Mr. Pope's proposition—its deft gradations of Tennessee marble, its central rotunda and flanking sculpture halls, the height of its moat-like walls extending out to and edging Constitution Avenue just before it converges with Pennsylvania, its strong east-west axis and the symmetry of its east-facing facade. All posed crucial questions for contemporary judgment. Mr. Pei's team was listening hard, looking for contextual clues, and gratefully picked up on those of Major L'Enfant and Mr. Pope.

Those listening and looking have included Leonard Jacobson, the project architect, Thomas Schmitt, the project designer,





The East Building of the National Gallery of Art infers the geometry of its trapezoidal site, adjusting itself to the scale of Pennsylvania Avenue (below right) and of the Mall (below left). This geometry is articulated by the interlocking and interplay of two basic triangles—an isosceles section containing the exhibition areas, and a right triangle containing the Center for Advanced Study in the Visual Arts. The isosceles section is entered from Fourth Street, passing a burnished bronze by Henry Moore, symmetrically aligned across a new plaza from the original Gallery building (left). Also in from Fourth is the entrance to the Center, through a deep indentation which not only introduces the section composed of the right triangle but also a subtle but definite shift to asymmetry in the direction of the Mall (opposite below). The grammar of marble and concrete (above) is clearly, cleanly enunciated.



and William Jakabek, the job captain. Also, and with lasting value, designers Yann Weymouth and William Pederson, beginning in 1968, had worked closely with Mr. Pei on the initially submitted scheme, and Mr. Weymouth had been asked for some procedural advice by John Walker, early in 1967, when the Gallery was first trying to figure out how to solve some grievous spatial limitations of the old building and get the grounds ready for some new growing room. (Mr. Weymouth and Mr. Pederson struck out on their own early in 1971.)

In September of 1969, beginning a severe four-month-long charette to refine the scheme in the context of also defining a set of programmatic and budgetary options about how much to build and how much to defer, Leonard Jacobson assumed day-to-day control. On into 1970, Thomas Schmitt began shouldering the design challenges. *There were some.* Getting into 1971, a major (and fortunate) shift occurred. This was in the courtyard, which had been largely layered over with a heavy coffered slab, and its skylight design, which had an incongruous array of egg-shell-style lights up there. The surfaces, space, light and, most crucially, the art did not appear that they would be right enough together as embodied in that first scheme. The architects began an even more intensive attack on the design. Though the basic plan did not change, the present lyricism and luminosity of circulation from level to level was achieved. For the first time, too, an entry directly into the Study Center from the courtyard was arranged for.

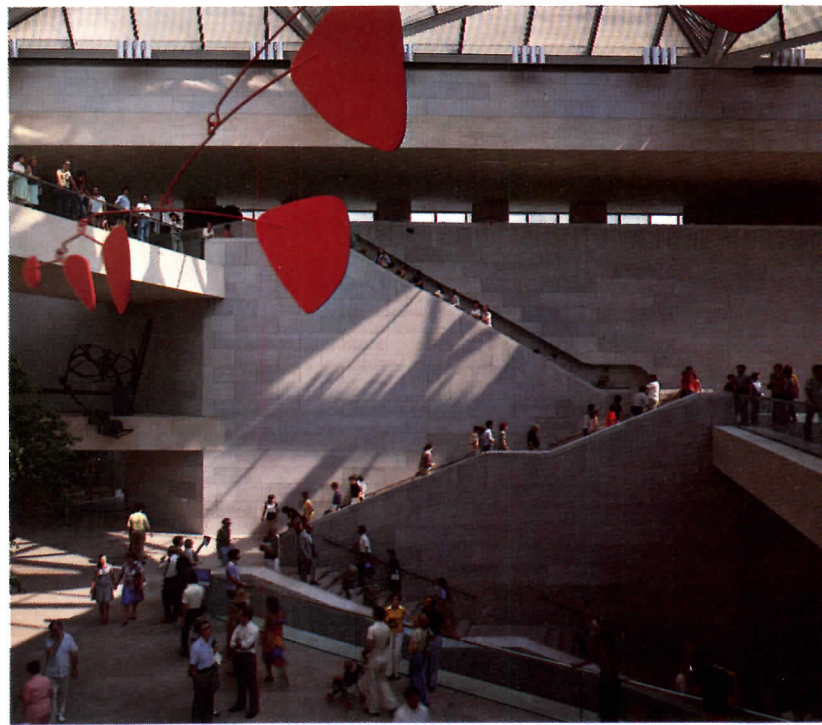
Earlier on, the plot thickening, that trapezoid had been transformed into two interlocking triangles, a kind of Romeo-and-Juliet geometry. One triangle (for exhibitions) isosceles, measuring 405 by 405 by 270; the second (for the Center for Advanced Study in the Visual Arts), a right triangle, measuring 405 by 135 by 381.

Come out here on the Fourth Street side. Mr. Pei explains, "I am quite pleased with the way one gets into the building. You see, we had to have a way to get into the gallery area, and a second way to get into the study center area—and we were permitted entry only from Fourth. The Mall side was closed to us for this purpose, and Pennsylvania Avenue too. This was the most difficult problem we faced, making two entrances on this same side—one very public, the other comparatively private. Now there is no doubt, coming up here, about which is which, and Henry Moore's bronze, which is titled *Knife Edge Mirror Two Piece*, certainly enhances the public experience of getting inside. This problem relates to another—recognizing and reconciling the symmetry of the older building. So the isosceles section of the new building is symmetrically aligned with the old one; *it has to be.* By making this deep indentation for the entrance to the study center, there is a necessary (and quite natural) shift toward asymmetry—and to the scale of the Mall in contrast to that of the Avenue. The spandrel up there continues the cornice line of the buildings along the Mall, in fact. Facing





Space, light, and movement—now spontaneous, now processional—are the reality of the courtyard rising 80 feet above the concourse-level entrance to the exhibition areas (above). Looking up into, or across, the courtyard, the four-foot-thick floor levels and post-tensioned bridges overlap and interconnect at various points as people thread in and out of the four gallery levels. Grand stairs from the concourse, and a second sweep up to the mezzanine (below) give way to a run of escalators leading to the third, major level with a terrace cafe, the second bridge sweeping across the northeastern area of the upper courtyard (opposite, below left), and the larger ranges of gallery space. Light dapples down.



these problems as *one problem* called for balancing symmetry and asymmetry."

The angle of Pennsylvania Avenue to the east-west axis of the Gallery literally engendered the basic geometry and, within it, the basic module. That angle, a touch under 20 degrees, was found to account for a minuscule four-inch discrepancy when calculated along the Pennsylvania Avenue elevation, a touch over 450 feet long. The triangular module was thus set—pervading this place, *being* this place. By taking the two long legs out 20 degrees each way, for a total of 40 degrees, the other two angles of this module being generated become 70 degrees each. These long legs of the module measure 15 feet, because 15 goes into 450 feet evenly; and the short leg of the module is 10.

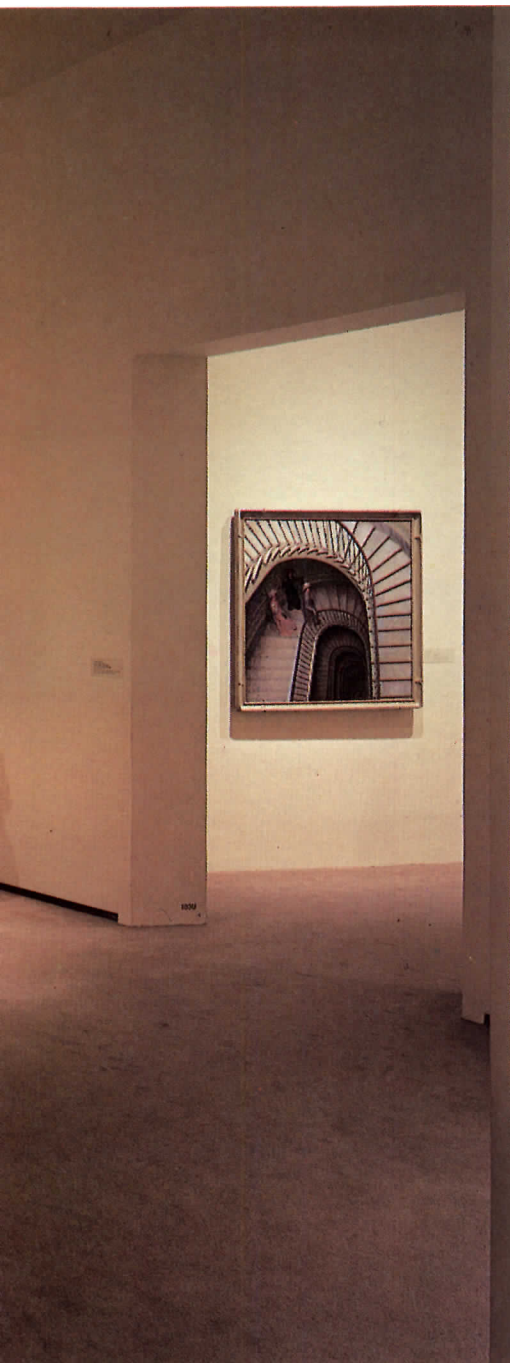
In many respects this building is for all seasons and architects—a countenance of precedent which, in principle, has been working for quite some time. It is also a calm commentary about the commotion, inquiry, and cant that have been heard, these same nine years, about the supposedly limited language of modern architecture. It could not be less modern, actually, or more modern. It could not be less postmodern, as it were, or more. What is "modern," anyway? As Frank Lloyd Wright used to say, "Come on, fellows, let's not concern ourselves with these matters of *taste*."

The East Building has an identity, integrity, and drama of its own. People (by the thousands, every day now) walk or wing on vectors of experience, perception, encounter—up into, across, around the homing device of the 70-foot-high courtyard with its 20-foot-high ficus trees, circular benches, and works of art. It is covered by a triangular cluster of 25 tetrahedral skylights, which takes up 16,000 square feet, measuring 225 feet on the long sides and 150 on the shorter one. It is a clearing in the forest of the city, the precedent of Mr. Pope's rotunda, come again, at once encased and enlivened by the compressive presence of newly quarried Tennessee marble, and by the tensional runs of concrete beams, soffits, four-foot-thick floor slabs, bridges spanning the space as physical and symbolic sources of connection, and the triangularly coffered ceilings.

This marble has been laid up in the same two-by-five-foot pieces that were used by Mr. Pope, and with the same one-eighth-of-an-inch joints. The pieces were selected from the same quarries in Knoxville by Malcolm Rice, who worked on the original.

Yet this new one is not a marble building in the sense of its being marble through and through. Three-inch-thick cladding was the means, the metaphor, of relating to Mr. Pope's material, which Mr. Mellon felt was important. The older building really *was* marble, over a foot thick, and in such an ecstasy of compression that the joints are practically indiscernible, waterproof, and maintenance-free. So are Mr. Pei's joints, though. Each piece is ingeniously floated, independently, and the joints are filled with a lining of neoprene—no cracks, no caulking. These marble surfaces, some of them





Entering the exhibition area either from the plaza on Fourth Street or by a low tunnel leading to it from the cafeteria below the plaza (opposite below), the upper galleries are unfolded within three "houses" or "pods," one rising up from each of the three corners of the isosceles triangle encasing this section. Each "house" is a parallelogram, with elevators or spiral stairs set into the corners (below left), and the healthy room-like scale of the galleries is thus arranged, with great flexibility of expression and installation, within basic hexagonal hollows within these "houses." Walls are freshly built to suit the scale or spirit of the art being shown, both enclosure and culture looking permanently at home (opposite above); the uppermost ceilings in each "house" are freshly adjusted, up or down, assuring apt vertical scale, as in this installation of David Smith's *Voltri* series (below right).



hundreds of feet long, and without expansion joints, do serve precedent. But technically, Mr. Pei, for whom marble was not a familiar (or particularly favorite) material, set precedent in patentable terms. Mr. Rice also saw to it that the pieces were selected in such a way—the marble has gradations of brown shading into pink—that the subtleties of the original building have been simulated.

It is very useful to look at what Mr. Pope and Mr. Rice did together, way back when. The darker gradations, starting at the base, work around and up into the lighter gradations, the lightest marble of all being in the dome over the rotunda. And look at the eight columns on the north or south portico. The outermost columns are of darker gradation, becoming gradually lighter, from either direction, toward the center.

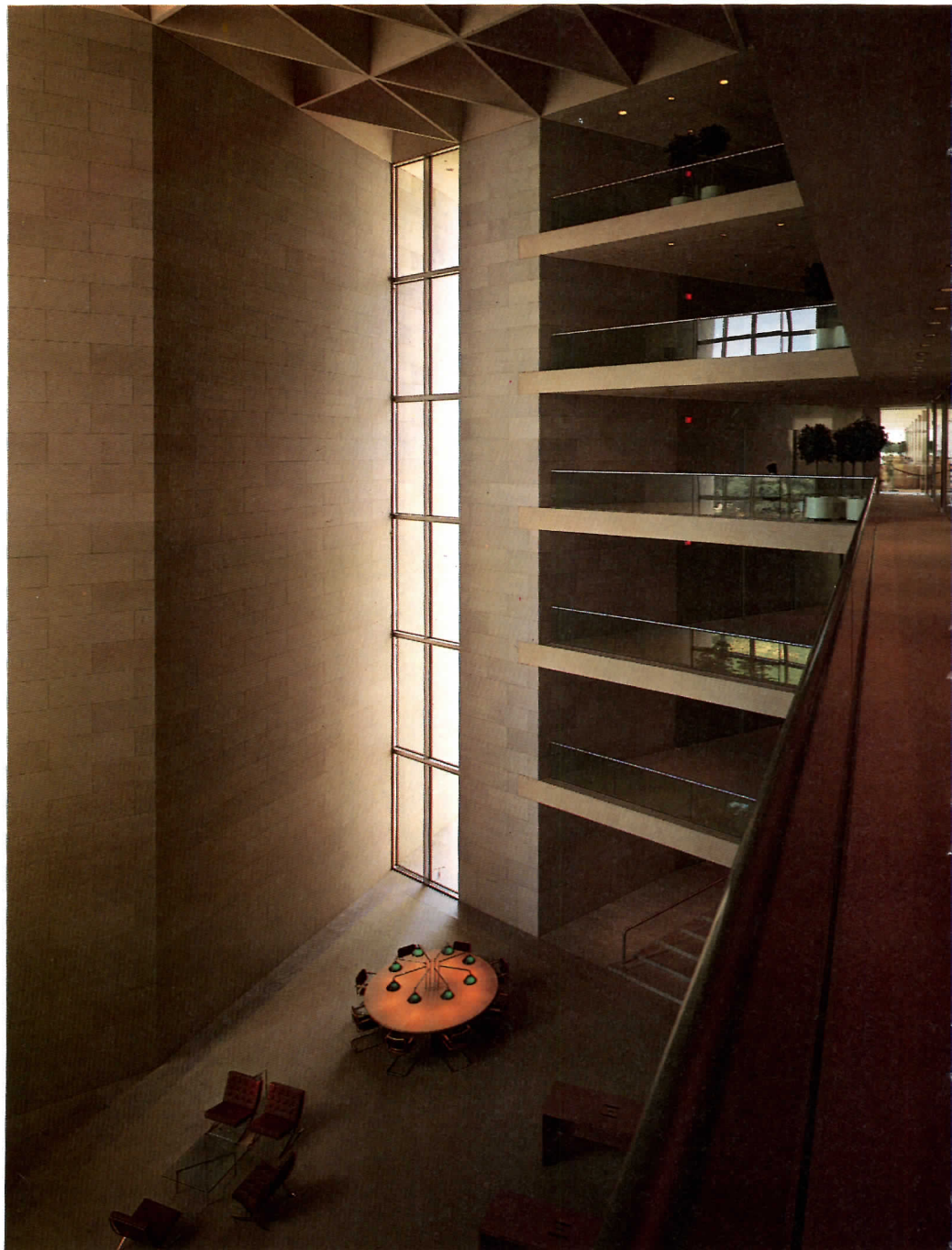
This is the kind of care that Mr. Pei has successfully interpreted on his own turf and terms, though due to unexpected shortages of certain gradations and unpredictable delivery schedules, the light-to-dark gradations on the outside of the East Building are more abrupt in some places than they were intended to be. Weathering will eventually fulfill that intention.

The architectural concrete is beyond doubt fulfilled. It is the equivalent of precious stone. During design, the relationship of its color and texture to the marble was seriously pondered. Should they be closely compatible or contrasting? Concrete signified more than structural capacity and, with a lot of steel embedded in it, great spans; it was the means, and the metaphor, of relating to our own century. So maintaining contrast, relative to the marble, seemed consistent.

The concrete was poured into formwork of fir which was nothing less than *brilliant* cabinetry, and the faintest tint of the pinkish powdered marble was mixed into it. The resulting color of the concrete, resembling the light of dawn, resonates throughout the building, discreetly but definitely maintaining contact with the lighter, rarer gradations of the marble. Mr. Pope over there had used the lightest, rarest marble for his dome—a kind of marble no longer available. Mr. Pei, over here, with this concrete, has achieved that kind of subtlety—a hue that becomes the harmonics of his composition.

Inside the clearing—that courtyard—the third basic material of the East Building, natural light, comes down through the facets of the tetrahedrons, which are fitted with sunscreens. Their delicate rounded members filter the light, deflecting and diffusing it, dappling the bounding walls, especially the vast northern wall above the court, with effects worthy of the Expressionist masters—or of Louis Kahn.

The amazing feat in all of this is that what is commonly thought of as “material” (the marble, the concrete) has been dematerialized; what is commonly thought of as intangible, weightless, and even metaphysical (this light in here) has been *materialized*. More than a confluence of surfaces, triangularly configured, this wonderful room is a confluence of forces, wafting in and out with an



The second major section of the East Building is the Center for Advanced Study in the Visual Art, its six stories rising around a reading-and-reference hall that recalls, without literally rendering, a medieval library (opposite above). Its entrance, like those of the adjacent exhibition area, is low, compressive, and anticipatory (opposite below), releasing movement and vistas that are illuminated by light coming in from the southeast and southwest, but still defined by the enfolding presence of the concrete edges of floor dramatically dovetailed with the bounding walls of marble. This space, 70 feet high, is also edged with book stacks and scholars' offices, which, rather than stuck off somewhere, fully share in (fulfilling really) the light and loftiness of the hall. The uppermost level of the Center is taken up by administrative offices, a board room and a refectory that are interconnected by a passage running past an outdoor terrace and a skylit stairwell (right). Variations of the triangle permeate the place from the configuration of the skylights to the deeply recessed coffers of the ceiling down in the concourse-level auditorium.



order that Kepler would have found comfortable, and which is also being found to be companionable by people not inclined to dwell on "cosmic harmonies." It is not too much to say that inside this big isosceles triangle is one of the most resplendent rooms of all time. Perhaps Mr. Pei, in the manner of Mr. Kahn, asked precedent what it wanted to be and it said, "This."

The design in all of its dimensions is also a successful *working* museum. J. Carter Brown, as it turned out, was every bit as much the architect in this regard. There is something about museums, a good many of them anyway, that Mr. Brown was determined to avoid. Too many are intimidating; too many are fatiguing. There is often a feeling of wanting to get out somehow, or of being lost, or of missing something.

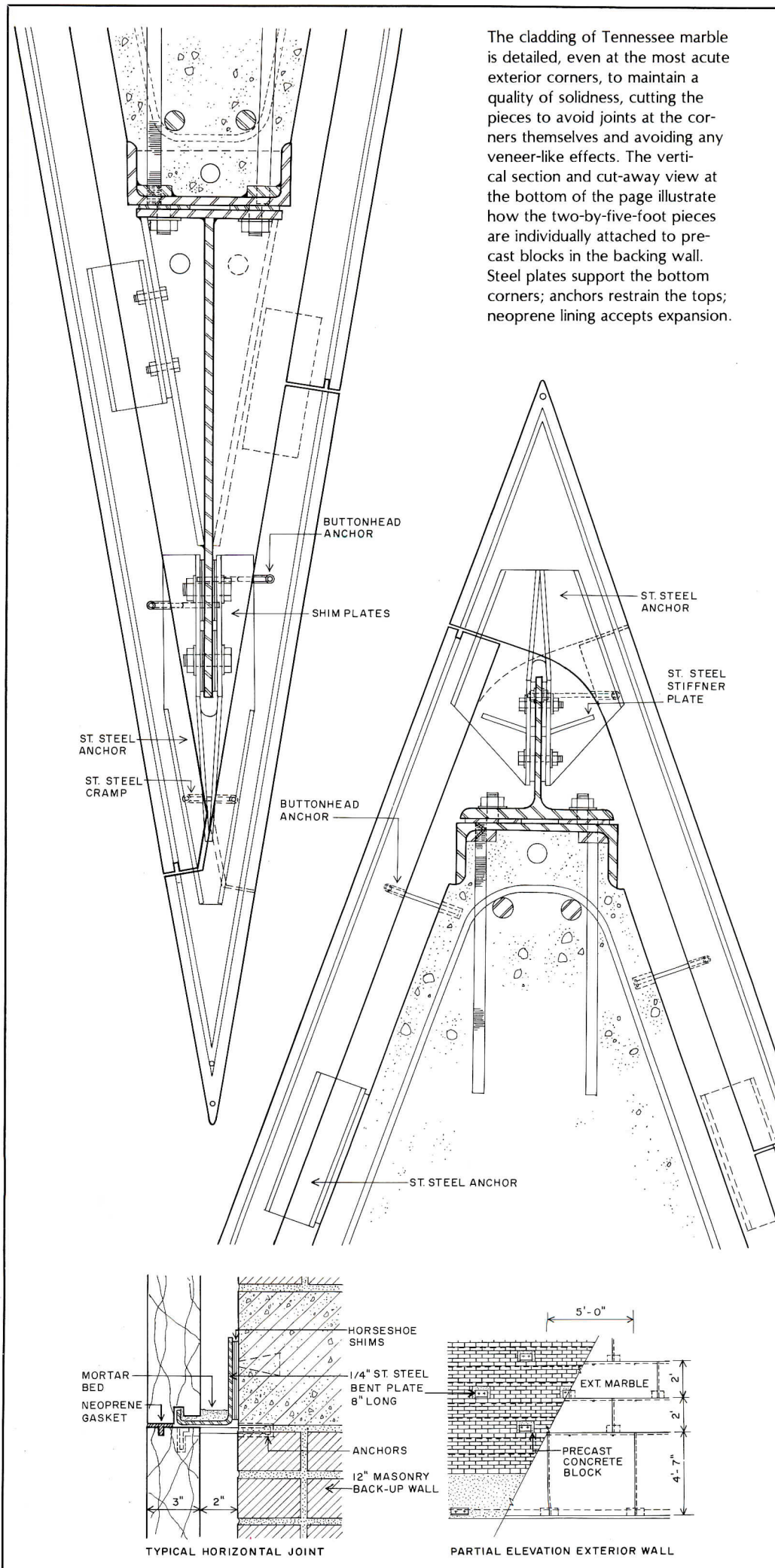
Those museums done in fealty to infinite flexibility often leave people wondering whether they have come to look at exhibitions or to look at staff and workmen changing exhibitions. And then there is the museum-as-shrine, pristinely poised on classicized plinths. A few great paintings and sculptures, placed sensitively about heady vastnesses to resemble one of Mies van der Rohe's collages, do not necessarily inspire mere mortals to incarcerate themselves, as they must in Mies' magic box in Berlin, downstairs in the plinth where most of the art is kept. This is a case of art shooting itself through a temple, and Mr. Brown, who undertook a serious study of museums all over America and Europe with the architects, was not about to be caught holding a smoking gun of a building. Neither, of course, was Mr. Pei, who, though admiring Mies as much as any thoughtful student of culture must, readily warmed to Mr. Brown's concept of the museum-as-house.

This means, among other things, a feeling of family, a recurring, confiding familiarity, and of rooms—a healthy domestic scale, more simply. Mr. Brown wanted houses—which is what the three towers rising from the corners of the isosceles triangle have come to be called, although some working on the job came to call them "pods."

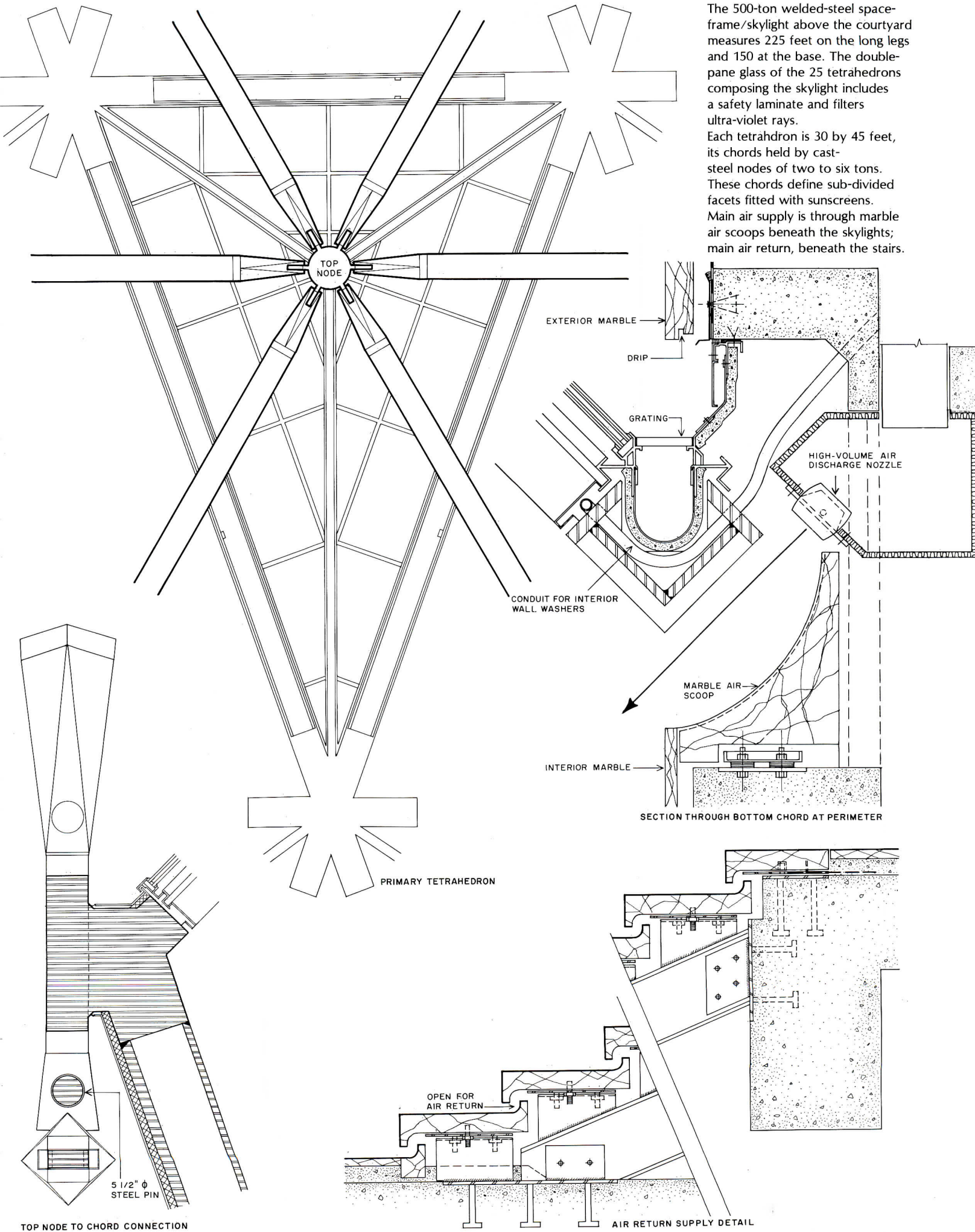
He also wanted a sense of centrality and orientation—a *place* where one can be "born" into the building and, from any level, from any range of rooms, where one can readily be "born" again. This place is the courtyard, and entering it from Fourth Street, moving beneath the coffers of the 10-foot-high ceiling there, one is released into the space and light—and more.

On the outside, from all around, the towers could be seen rising up, anchoring the corners of the building. The filigree of the skylight—a space frame of steel members pitching up and joined together with nodes of cast steel—could be seen triangulating itself between the towers like a composite of crystals embedded high on the ledge of a canyon. Yet inside, which seems outside, these anchoring houses assume another, if recollective, position. Looking up through the skylight, they can be seen rising up again. They do not loom though; the members of

The cladding of Tennessee marble is detailed, even at the most acute exterior corners, to maintain a quality of solidness, cutting the pieces to avoid joints at the corners themselves and avoiding any veneer-like effects. The vertical section and cut-away view at the bottom of the page illustrate how the two-by-five-foot pieces are individually attached to pre-cast blocks in the backing wall. Steel plates support the bottom corners; anchors restrain the tops; neoprene lining accepts expansion.



The 500-ton welded-steel space-frame/skylight above the courtyard measures 225 feet on the long legs and 150 at the base. The double-pane glass of the 25 tetrahedrons composing the skylight includes a safety laminate and filters ultra-violet rays. Each tetrahedron is 30 by 45 feet, its chords held by cast-steel nodes of two to six tons. These chords define sub-divided facets fitted with sunscreens. Main air supply is through marble air scoops beneath the skylights; main air return, beneath the stairs.



the sunscreens, giving the light its almost material diversity of shapes and sensations, also renders them like *memories*, memories of something experienced more tangibly earlier, rather than as solid sentinels.

As much as the geometrical theme delivers unity here, (the triangle-as-diety stops just short of having influenced the shape of the doorknobs), there is repeated surprise: images and vistas overlapping, variations played and picked up on again from level to level, like a fugue. Math and music are sublimated in each other and wisely unfrozen. (Mr. Pei's and Mr Schmitt's decision, back there in 1971, to lighten up the sense of overhead load and soften the hard surfaces with a more effervescent circulation system was extremely smart, courageous, and really makes the building.) The houses, up there now, with many different kinds of exhibitions in (as one gradually learns) many shapes and sensations of format, raise anticipation, like refreshing breezes coming up.

This is as dramatically evident coming into from the lower concourse of the East Building, which stretches over here beneath the plaza, connecting to the old building, where a new lobby has been laboriously but neatly chipped out, by way of a cafeteria.

This concourse is effectively a separate building, passing under Fourth Street. Doing it solved a maze of costly problems related to having to build under Fourth, and keep the assorted services and utilities running there while keeping the street open to traffic.

The concourse splices into the East Building by way of a low, long tunnel with a long, slow-moving sidewalk. This instrument focuses anticipation as it *v-e-e-r-y* gradually takes one eastward from the cafeteria area toward the concourse level of the courtyard space where a blue-and-yellow tapestry by Jean Arp beckons. This movement is along a skewed axis, deflected from the main east-west axis of the old building, and parallel to that of Pennsylvania Avenue in alignment with the geometry of the new building. The effect of walking off the moving sidewalk, out into the light coming way down into this concourse level, is dramatically swept up marble stairs to the main floor, with the wide bridge of the mezzanine level (reached by a second sweep) hovering above. These stairs quite grandly recall a processional event, a quality of occasion, like fanfares.

Another allusion to history hangs above, from the skylight. A black-and-red mobile by Alexander Calder, with arms stretching out as much as 70 feet, sprinkles the space with lightweight aluminum petals as the whole thing, Mr. Calder's last work, weighing only 700 pounds, glides around the room. In its slow, even, circular excursion it defines a zone recalling the dome of Mr. Pope's rotunda. This mobile, engineered by Paul Matisse, a relative of Henri Matisse, is kept moving, humorously enough, by redirecting the building's air supply system, which works through curved reveals running along the upper edge of the bounding marble walls. When the mobile was first hung up, it would not get moving. Engineers fretted, along with every-

BASEMENT

1. Bookstacks
2. Mechanical
3. Staff parking
4. Service
5. Green room
6. Toilets
7. Auditorium

CONCOURSE LEVEL

1. Photo archives
2. Books receiving
3. Slides
4. Photo lab
5. Data processing
6. Special exhibitions
7. Auditorium
8. Lounge
9. Moving walkway
10. Mechanical
11. Workshops
12. Service corridor
13. Offices
14. Art storage
15. Chadar
16. Cafe
17. Dining
18. Restaurant
19. Kitchen
20. Sales
21. Truck dock
22. Lobby

GROUND LEVEL 1

1. Reading
2. Call desk
3. Reading room
4. Periodicals-catalogs
5. Gallery
6. Sculpture pool
7. Information
8. Orientation
9. Exhibit
10. Study center entrance
11. Coats
12. Gallery entrance
13. Sculpture
14. Fountain
15. Chadar
16. Skylights

MEZZANINE LEVEL 2

1. Library offices
2. Stacks
3. NGA Press
4. Gallery
5. Sculpture
6. Sales Desk
7. Office
8. Toilets

LEVEL 3

1. Study offices
2. Stacks
3. Print storage
4. Print reading

MAIN GALLERY LEVEL 4

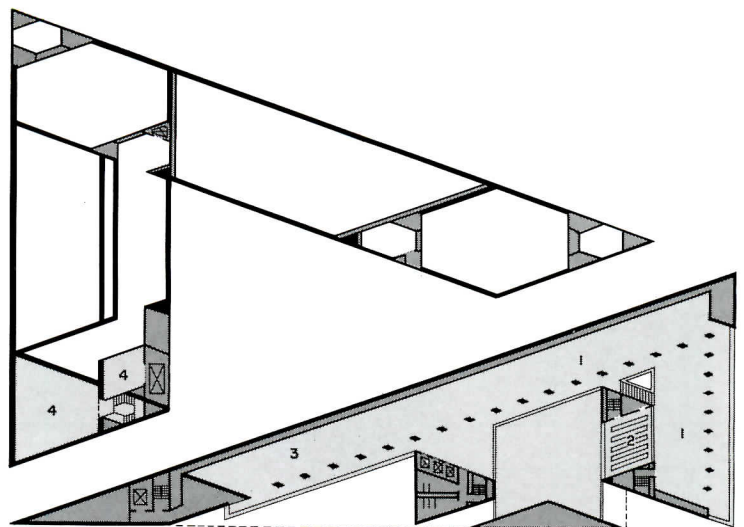
1. Offices
2. Stacks
3. Lounge
4. Gallery
5. Terrace cafe
6. Kitchen

LEVEL 5

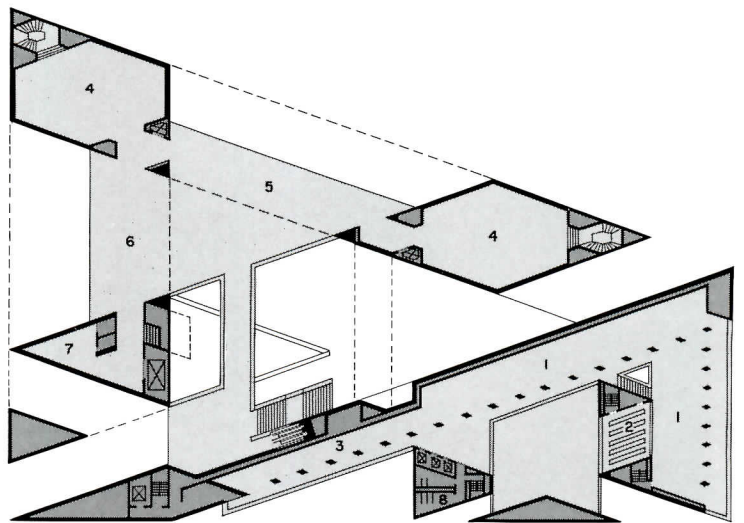
1. Curatorial offices
2. Stacks
3. Education staff
4. Gallery

LEVEL 6

1. Curatorial offices
2. Administration offices



LEVEL 5



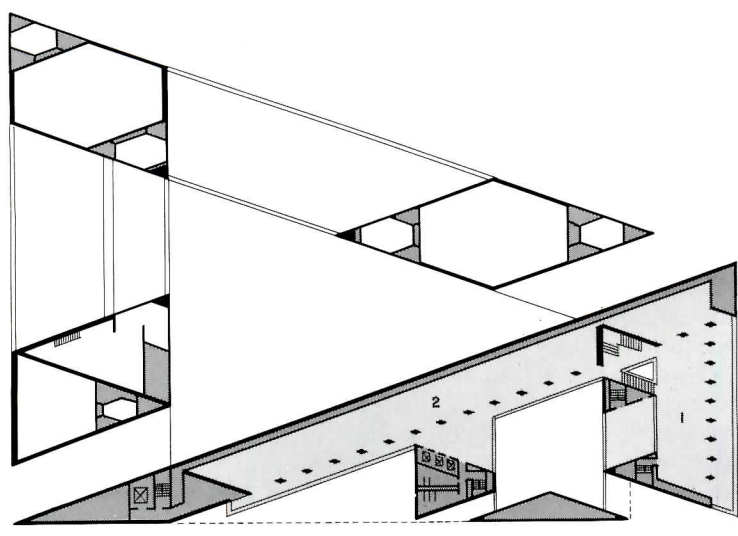
LEVEL 2 MEZZANINE

Entrance to the East Building is through the concourse level, coming over from a new lobby that has been laboriously but skillfully carved out of the original Gallery's east entrance, and through a large cafeteria. Or entrance is through the ground-level area in from Fourth Street and a new plaza with tetrahedral skylights into the cafeteria and a range of fountains. This low ground-level entrance introduces the skylit courtyard, and the three towers (one at

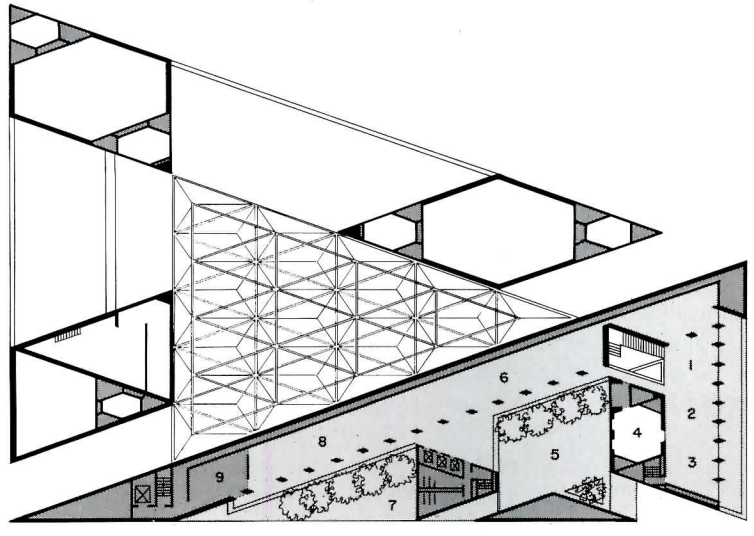
each of the three corners of the courtyard) housing galleries. Grand stairs rise from the concourse and courtyard; the mezzanine with its bridge loading to exhibitions or, up an escalator and across a second bridge, to the main gallery level of 20,000 square feet. The topmost gallery is tidily housed on the fifth level. Recurrent visual and physical reference is made to the unifying courtyard throughout; museum fatigue has been routed.

LEVEL 7

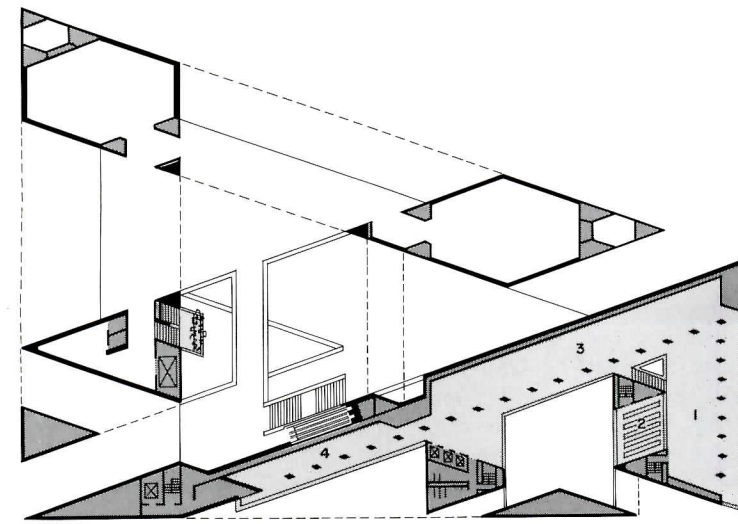
1. Assistant director
2. Director
3. President
4. Board room
5. Terrace
6. Offices
7. Roof garden
8. Refectory
9. Kitchen



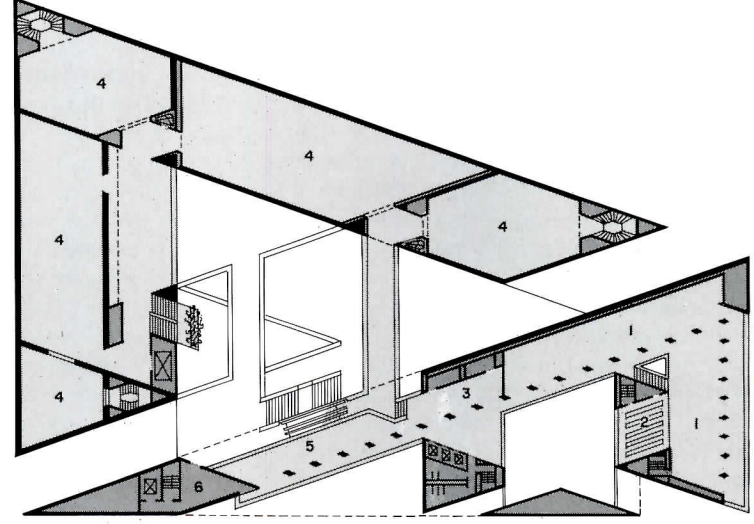
LEVEL 6



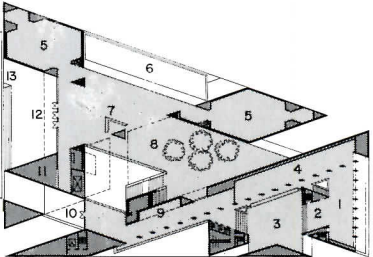
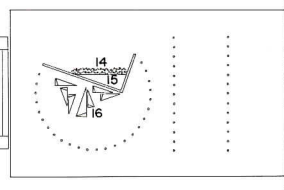
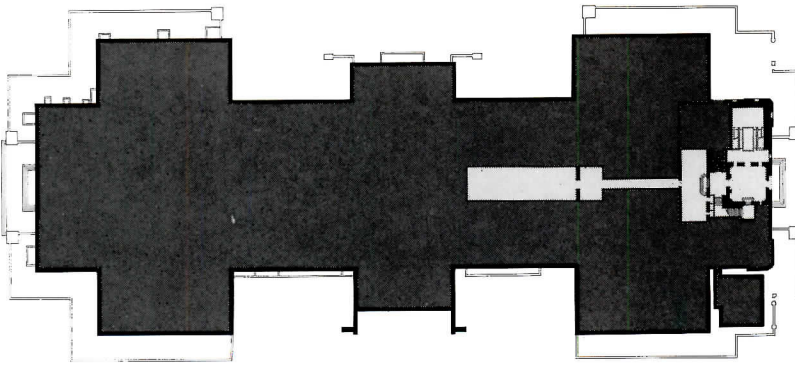
LEVEL 7



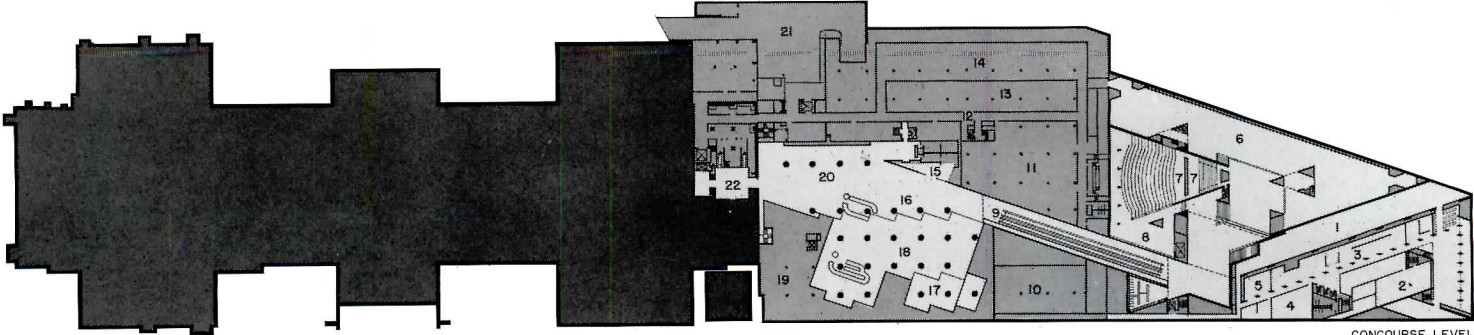
LEVEL 3



LEVEL 4 MAIN GALLERY



GROUND LEVEL I



CONCOURSE LEVEL

body else, and gave the creature life.

They gave a lot more to the East Building, attentive to the architect's concept. In a period when air supply and air return have been seen to dash about on metabolic binges, this building's air supply and air return are neatly folded into the construction. The respiration is silent. "You *can* express too much," says Mr. Pei. Air comes in not only through those reveals in the marble, but also through the sides of some flush-mounted lights in the ceilings. Air is also brought in through discrete slits along the edges of the bridges and floor levels overlooking the court. Air is returned, as inconspicuously, through reveals tucked under the treads of the stairs, and through openings in the courtyard benches.

This main level, up from the concourse, or in from the Fourth Street entrance, has two gallery areas nestled into Mr. Brown's "houses"—one in the northeast house, one in the northwest house. These towers (all three are parallelograms with spiral stairs or elevators set into their corners) define spaces for exhibition that are hexagonal and, in a few cases, triangular. On the mezzanine level are two more galleries, one presently housing a profusion of Piranesis. There is also a lounge here, and a sales area. The next level can be reached by a balcony-like stair (very Romeo and Juliet) jutting out over the court, above the mezzanine bridge, and this balcony is planted with little lemon trees, which, along with everything planted in and about here, were seen to by landscape architect Dan Kiley. This third-level exhibition area has 20,000 square feet of space. It also has a sculpture terrace overlooking the court. Looking out across it to the east, the second of the two bridges in here swoops across the opposite, eastern area of the space, connecting the galleries on the north edge of the isosceles triangle with the cafe (the Terrace Cafe it is called) on the southern edge.

This is one of the moments in the East Building that is most bracing, indicative of the interlocking nature of the triangles making up the original trapezoid. The cafe, overlooking both the court and the Mall to the south, is positionally part of the right triangle, but spatially it connects with the isosceles courtyard. The ceiling extends out from this pleasant recess, where staff, scholars, and the public meet, creating a sense of continuity that not only joins these distinct, if commonly derived, sections but carries one's view from the galleries out, past the cafe, to the green-sward of the Mall. The southwest house of the Gallery picks up on the other two on this level, and on the very top floor, up one more spiral stair, the well (like all of them in these houses) being skylit and embellished with a hanging planter, this southwest house has 1,500 square feet of tightly defined, yet luminous gallery space in a tidy triangular room. Matisse cut-outs hang here.

All of this gallery space—from the lower concourse, where there is also a 442-seat auditorium and a smaller 90-seat lecture hall, to the grand range of the main exhibition level, to that aerie up in the southwest house—can be tuned and retuned by the

Gallery's staff—into any geometrical configuration that will most sympathetically set off different kinds of art. This tuneability is on the broadest band of curatorial frequencies—from the intimate squared-off spaces that have been set into the hexagonal room of the northeast house's main level (there are small Impressionist painting in here, from the collection of Alisa Mellon Bruce), to the literal hexagonality of the northwest house's upper level (there are metal sculptures by David Smith in here, giving sonorously silent orations amidst a white Spoleto-style forum with generous, gradual steps rising all around). There is not only horizontal flexibility in these galleries, such as those running between the houses on the upper level, but there is also *vertical* flexibility. The concourse gallery has a variable height of 16 feet in most places, going up to 30 feet beneath the northeastern "house." The main-level galleries have a ten-foot height; the next ones, 14 feet; but the larger third-level areas can be, and are, lowered or raised with great latitude, according to the mood and configuration that suits the art best—as much as 30 feet above the floor. So what Mr. Pei and Mr. Brown have achieved here is a flexibility so genuine that, on any visit, one has the feeling that the galleries, as one is experiencing them right then, have been just like that always. This variable sense of fixity, from room to room, is a notable achievement as seen to by those of staff responsible for designing and installing the exhibits—most especially Hugh Ravenel, the Gallery's wizard in this field.

Perhaps there is something unique to the human consciousness in that whenever we try to think into the future, our thoughts jump into the past. The programming, conceptual nature, and planning of the East Building illustrate this. It has been described as a conservative work (certainly a good deal of the art in here is safely established). It may be—but the conservative impulse in its finest sense is to studiously maximize resources, to save, to innovate sparingly and quietly and with knowledge of previous experience. This is a repository, if (in Mr. Brown's hands) a rambunctious one. Its structural repose is suitable—and maybe therefore "conservative." Within this, though, there can be—there is here—great room for exuberance.

The Center for Advanced Study in the Visual Arts, encased in the right triangle of the East Building, is also an example of this. The library with its six balcony-like levels overlooking a 70-foot-high hall (there are olive trees in here) offers a contemplative reading-and-reference space with more than a tracing of monastic and medieval precedent. This arrangement was Mr. Brown's idea.

One refers to this volume of space in a number of ways. Entry is in from Fourth Street, just south from the main entrance to the court and galleries, whereas the isosceles triangle, as Mr. Pei was explaining, is symmetrically on axis with Mr. Pope's building. The splitting apart of this larger isosceles triangle and the smaller right triangle housing the Center adjusts the over-all composition into a compatible relationship with the Mall. It also

allows one, upon entering, to look across the concourse to the courtyard level, just opposite. So while the physical separation is maintained, consciousness of the public is deliberately introduced.

On the Fourth Street side, this split-as-synthesis is pointed up by the most-talked-about architectural corner in memory—a 19-degree razor-edge of marble rising the full height of the building and carrying back along the upper northern wall of the Center to the east. Walking around, just south to the Mall, one notices another knowing gesture. The south wall of glass, instead of being parallel to the mall, is deflecting inward, parallel to the 19-degree angle of the Center's sheer cliff, even as the marble below this deflection as well as those expanses of it above the glass are kept strictly parallel to the Mall. Thus the directionality of this right triangle section is inferred and the angle of its hypotenuse repeated, while at the same time the east-west directionality of the Mall itself is reinforced without excessive reference.

On the uppermost level of this seven-story section is the refectory of the Center, with a terraced view of the Mall, and there are several private dining rooms—all of which has been called jokingly (but justifiably) the best new supper club in the capital. Between the refectory and the new board room is another terrace (there are crab apple trees here). New offices for Mr. Mellon and Mr. Brown are nearby. There are closely cropped views of the area from the terrace—James Renwick's original reddish stone "castle" of The Smithsonian Institution, to the southwest, and a powerful one of the Mall converging on the Hill. The warp and the woof of national experience have been pulled apart and rewoven up here, outside this enclave of administration and scholarship. People from, say, Iowa will always know they are in Washington—not just a museum.

leoh Ming Pei paid attention to things which, of late, some architects seem scarcely to mention. He paid attention to proportion. He paid attention to scale. He paid attention to existing buildings and streets and spaces. He paid attention to putting materials and parts together considerately and gracefully and lastingly. He paid attention to all of these things, creating (*because* of them) a building full of allusion to the properties and qualities of humanness and history.

Culture may sometimes appear to be, as Buckminster Fuller has said, the flotsam and the jetsam saying to each other that there should be a law against having any waves. The East Building of the National Gallery of Art is a wave that architecture, and its relationship to the values of culture generally, has very much needed. —William Marlin

THE EAST BUILDING OF THE NATIONAL GALLERY OF ART, Washington, D.C. Architects: *I. M. Pei & Partners*. Engineers: *Weiskopf & Pickworth (structural); Syska & Hennessy (mechanical/electrical)*. Consultants: *Malcolm Rice (marble); Kiley, Tyndall, Walker (landscape architects)*. Construction manager: *Carl Morse, Morse/Diesel, Inc.* Builder: *Chas. H. Tomkins Co.*

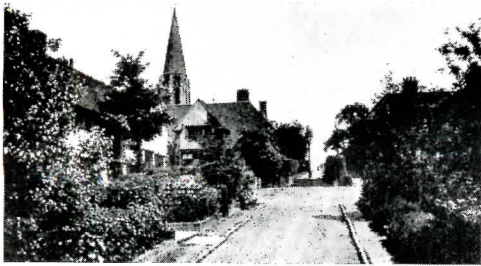
THE SUBURBAN ALTERNATIVE: COPING WITH THE MIDDLE CITY

For the past thirty years, urban planners and architects have been almost exclusively concerned with the commercial revitalization of the inner city. At the same time, the sprawling new suburbs of the post-World War II era have created an "outer" city. Between the two lies the "middle" city—whole areas of many major and medium-sized cities that, if not already devastated and nearly vacant, are on a path of apparently irreversible decline. This essay suggests an alternative, not yet explored approach to revitalizing these areas. Instead of continuing on the path of high-rise, high-density development—in effect moving the inner city outwards—why not use the suburban development model—moving the suburbs inward? Thus new suburbs would be built where they are really needed, not in the remote reaches of the outer city, but in the middle city where the existing network of roads, rapid transit, and utilities, and where the sudden availability of empty land make it possible to introduce suburbanism to a new consumer market and to offer the less advantaged people in our cities the chance to bask in one of the glories of the American dream.

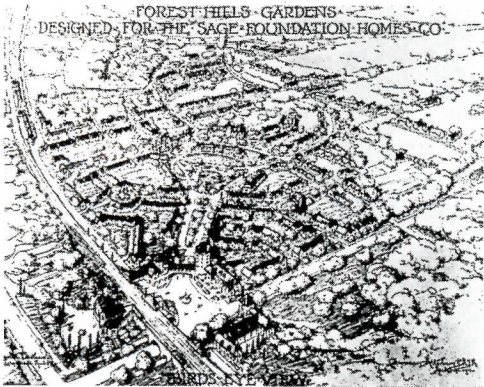


The Suburban Alternative for the "Middle City"

by Robert A.M. Stern



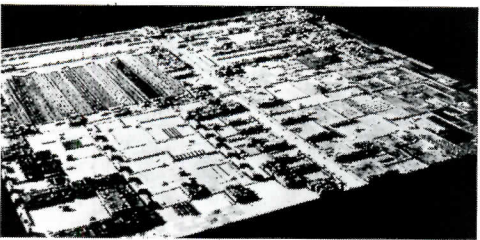
A Street in Hampstead Garden Suburb, London, by Barry Parker and Raymond Unwin, about 1910.



Forest Hills Gardens, Queens, New York, by Frederick Law Olmsted and Grosvenor Atterbury, about 1910.



A Street in Riverside, Illinois, by Frederick Law Olmsted and Calvert Vaux, 1869.



Broadacre City (project), by Frank Lloyd Wright, 1934.



Park Village East, Regents Development, London, by John Nash, 1825.

In spite of a substantial body of opinion to the contrary, the Anglo-American suburb is a remarkable urbanistic achievement, not just a degraded species of town planning. A new and long-overdue look at the suburb can revitalize the design of the seemingly inevitable suburban developments that ring our metropolitan regions. But, even more importantly, it can also supply much-needed models for the redevelopment of the vast, virtually empty urban wastelands that lie between the inner cores of our cities and the suburbs beyond in what, for the sake of argument, we can call the "middle city." President Carter's recent trip to the South Bronx focused the nation's attention on our most devastated middle city. But other large sections of New York and whole neighborhoods in Cleveland, Detroit, and St. Louis also lie fallow, virtually empty of people and buildings, and with no discernible assets except those which are called the "urban infrastructure"—the network of streets and the utility systems buried in their rights-of-way. The development of these urban fringe areas was a debased or incompletely realized version of the high-density inner-city model, and they were never more than speculatively conceived way stations for an upwardly mobile immigrant population moving towards cultural assimilation. The tenements were knock-offs of the inner-city apartment house, just as the row houses were knock-offs of inner-city brownstones, in which two or three families inhabited the space occupied by one family in the original.

For the past thirty years or so, architects and planners, in their efforts to stem the flight of businesses to the rapidly suburbanizing countryside, have been almost exclusively concerned with the commercial revitalization of the inner city. And until very recently the generally accepted residential redevelopment model of our cities was the high-rise tower or slab built in a park-like setting. It is now clear that this model does not provide an adequate response to the diverse aspirations of large numbers of our citizens, no matter what their economic status. It is also clear that we can no longer ignore the problems of the "middle city," the vast land areas between the inner city and the suburbs. In most cases, the high-rise apartment has been a developer's dream and little else. On the other hand, the one-, two-, or three-family house on its own lot can, under the proper circumstances, be as economically and technologically viable as the high-rise apartment—and it has proven an overwhelming popular success as well.

I would suggest this to architects, planners, sociologists, economists, and political strategists beginning to consider the burnt-out wastelands of our middle cities: look to the suburb, especially to the pre-automobile suburb, for a workable redevelopment strat-

egy. This model, with its tradition of free-standing houses within walking distance of village centers (and usually of rapid transit stations), has proven a viable format for development that can support a variety of people of different age groups, life-styles, and even economic and social levels.

New suburbs should be built where they are really needed—not in the remote reaches of the outer city, but near the inner cities where the existing network of roads, rapid transit, and utilities, and where the sudden availability of land with no evident higher use combine to make it possible to introduce this remarkable urban format to a new consumer market.

In proposing the suburban model for the South Bronx of our cities, I realize that I am taking on two sacred cows. The first is the notion that the history of cities is and has always been one of increasing population and therefore population density. The second is that the suburb is the particular fief of the middle classes, leaving the other forms of housing to those less well off economically and to the rich, who not only can choose what they want but who also are able to spend enough money to make their choices work. In challenging the former view, one merely contradicts dearly held theories of some physical and economic planners. But in challenging the latter, one strikes at the jugular of our national value system. Still it is important to point out that, though home ownership is a *sine qua non* among the badges honoring individual success, in reality such ownership for the past thirty or more years has in effect been subsidized by the government as a result of the FHA, the GI Bill, and many other similar programs.

Suburbs are an important and unique part of Anglo-American culture. They are as much a product of our traditions and aspirations as they are of rapid industrialization and excessive land speculation. And, just as a history of the suburb needs to be written, so too must a new generation of architects begin to examine without prejudice the varieties of suburban types that have existed. For the truth is that the suburbs we are building now, based as they are on the automobile, are not the ones we idealize. It is the earlier suburb that represents the desirable paradigm, not only from the point of view of the design of the individual buildings, but also from the standpoints of convenience and of economic value. That is why Garden City and not Levittown, Shaker Heights and not Columbia continue to ring the bell of status.

Many suburbs—like Hampstead Garden Suburb in London, and Forest Hills Gardens in New York—are within the political boundaries of large cities, and this fact raises an important question about what a suburb really is. It is clearly a planning type. But is it also a

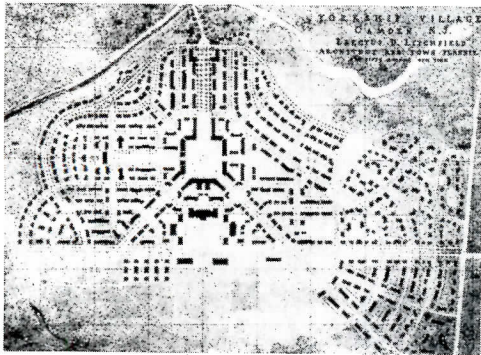


Gerald Allen

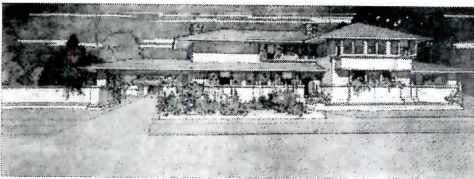
A street in the South Bronx, New York.



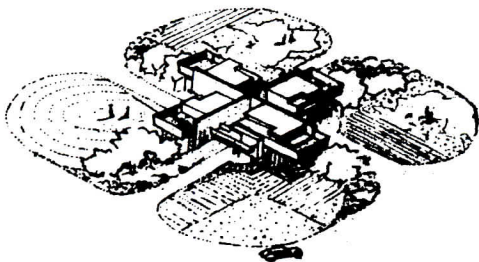
Bath Road, Bedford Park, London, by Richard Norman Shaw and others, 1875.



Plan of Yorkship Village, Camden, New Jersey, by Electus D. Litchfield, about 1915.



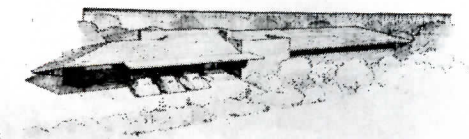
"A Home in a Prairie Town" (*Ladies Home Journal* project), by Frank Lloyd Wright, 1900.



Cloverleaf Subdivision (*project*), Pittsfield, Massachusetts, by Frank Lloyd Wright, 1942.



Cheney House, Oak Park, Illinois, by Frank Lloyd Wright, 1904.



Muehlberger House (*project*), near Lansing, Michigan, by Frank Lloyd Wright, 1938.

political entity? A place? A state of mind? It can be any of these, and, perhaps most important, the suburb is a dream, a dream of arcadia which can take two basic forms: that of the pre-industrial village set in an open landscape, and that of houses scattered across the landscape itself, whether prairie or forest. It is the relationship between the image of the village and the image of the open country that gives each suburb its particular character. At Riverside, Illinois, for example, the two are neatly balanced. At Forest Hills Gardens the village dominates, while at Wright's Broadacre City and at Levittown, Long Island, it almost completely gives way to a continuous rural landscape. At its most basic level, this balance is expressed in the plan: the choice of curved or straight streets is an obvious clue to the designer's attitude towards nature on the one hand and the village on the other.

The beginnings of the suburb

The American suburb has its origins in English housing developments of the early nineteenth century—in particular two villages included as part of John Nash's Regent's development in London. But it was with the establishment of Llewellyn Park in New Jersey (1850), Riverside, Illinois (1869), and Bedford Park, London (1875), that effective models of the suburb as we know it began to emerge. By the time of our Centennial, the suburban model was firmly established on both sides of the Atlantic.

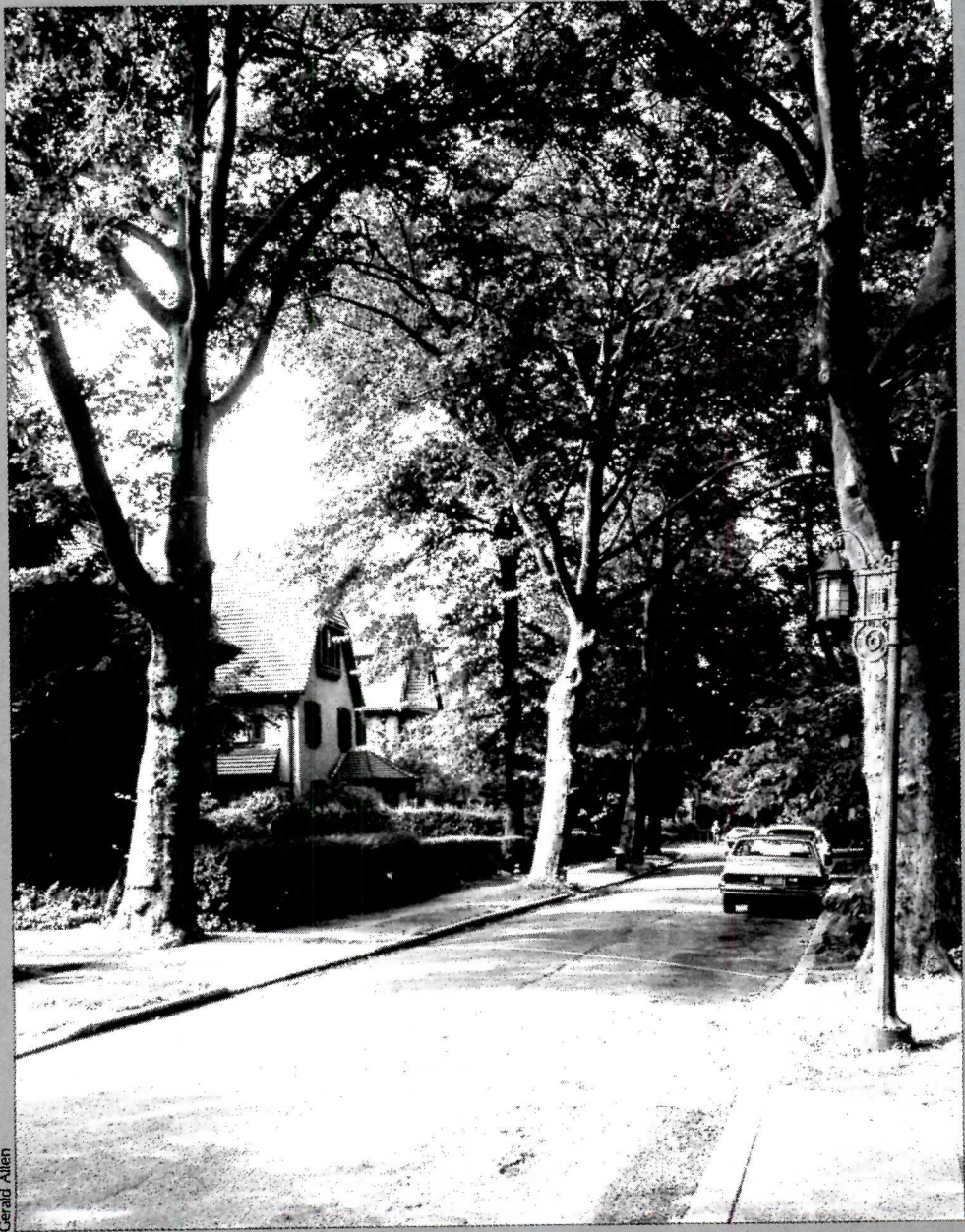
The Anglo-American suburb succeeded because, among the affluent, it was an effective response to a growing dissatisfaction with life in the inner cities (environmental pollution, crime, and immigrant populations were all serious urban problems a hundred years ago). Still the suburban model was applied with equal success to the needs of the working classes. In England, Bourneville, Saltaire, and Port Sunlight were all serious attempts to establish model working-class suburbs. American examples include Echota, near Niagra Falls and designed by McKim, Mead, and White, Pullman, Illinois, designed by S. S. Beman, Torrance, California, by the Olmsted brothers with Irving Gill, and a host of so-called "Industrial Villages" begun during World War I under Federal sponsorship—including Kohler, Wisconsin and Yorkship Village at Camden, New Jersey.

The modest single-family house, free-standing on its own plot, is the glory of the suburban tradition and the focus of the lifestyle which grew up with it and which we can call "suburbanism." From the time of A. J. Downing and A. J. Davis through the late work of Frank Lloyd Wright, America's best architects have been to some extent concerned with the over-all design of the suburb. But it has been the attention paid to the design of the suburban house itself by our best architects that has made this building type so richly and uniquely our own. Lewis Mumford has written in *The City in History* that "from H. H. Richardson to Frank Lloyd Wright the most graciously original expressions of modern form were achieved in the

suburban house." The standard urban and architectural histories, though, have usually relied on the most elaborate examples of suburban design, because, no doubt, these provide the fullest expression on an architect's ideas. It should nonetheless be pointed out that many remarkable designs for very modest suburban houses abound in the work of our leading architects—in the work of Davis and Downing, for example, or of Frank Lloyd Wright.

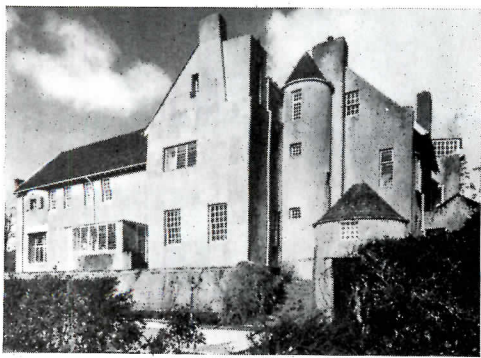
No architect, in fact, has had more influence on the suburb—or took it more seriously as a design problem—than Wright, but his impact on the suburb was not nearly so great in the area of the individual house as it was in the area of landscape and townscape. The image of Wright's Prairie House as a house in a small town, and on a small lot, has no precedent in the farm or ranch buildings of the American West, nor, of course, does it relate to any continental European precedent; it can be understood in terms of the small towns of the East Coast. With the introduction of the fully developed cross-axial plan in the Ward Willetts house in 1902, and in subsequent work like his Cheney and Heurtley houses, Wright began the gradual transformation of the traditional suburban streetscape. The narrow but relatively deep lot characteristic of nineteenth-century suburbs was not suitable for Wright's new house type. This de-emphasized the traditional, static relationship of front, back, and sides in favor of something new, based on the simultaneous inward and outward focus of the interior spaces and the composition of volumes according to the principles of centrality and rotation. To accommodate Wright's Prairie Houses, their lots became square in plan, and the centralized massing of his most resolved works led also to the abandonment of the traditional gable-fronted building in favor of a very low hip roof, or to the kind of gable roof characteristic of pre-Georgian houses in New England, with their roof ridges running parallel to the street. In his Usonian houses of the 1940s and 1950s, Wright abandoned the cross-axial plan and at the same time adopted single-story plan types. The Usonian houses established the model of the ranch house which often characterizes suburban development today.

His impact was felt at the scale of suburban development but not of suburban house design. His site plans for government housing at Pittsfield, Massachusetts, for instance, have had a great impact on suburban land planning in the last thirty years, and, though his proposal for Broadacre City can be dismissed as an extreme vision of the Arcadian ideal such as only Detroit might dream of but never have the genius to propose, it did articulate principles for a new kind of land planning based on the automobile which have come to govern suburban development since 1945. Wright, almost uniquely among architects, understood both the magic of the automobile and its potentially destructive impact. Thus if the suburb is to be thought of as a legitimate urban form—and I think it must be—then Wright must be

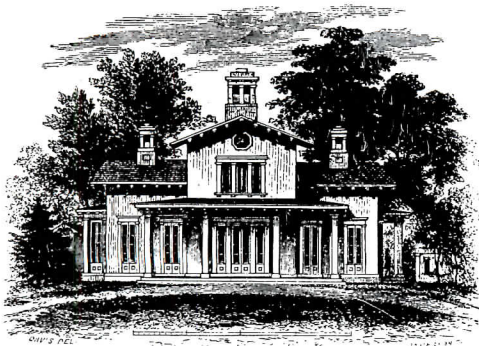


Gerald Allen

A street in Forest Hills Gardens, Queens, New York.



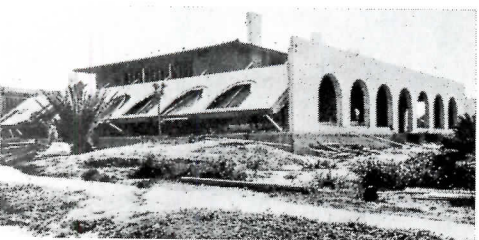
Hill House, Helensburgh, Scotland, by Charles Rennie Mackintosh, 1902.



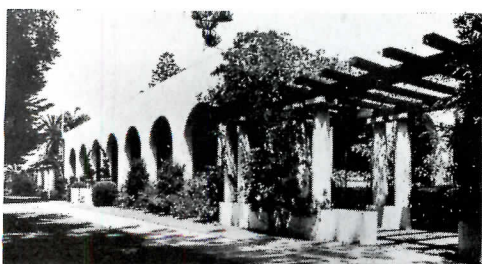
"A small classical villa," by A.J. Downing, 1848.



Ballard House, Chestnut Hill, Pennsylvania, by Thomas, Martin and Kirkpatrick Architects, about 1929.



Women's Club, La Jolla, California, by Irving Gill, 1913.



Women's Club, La Jolla, California, by Irving Gill, 1913.

acknowledged as a twentieth-century urbanist equal to if not greater than Le Corbusier, a greatness to be measured not only in terms of theoretical insight, but also in terms of real impact on built form.

The suburban house is a specific type in its own right: not a manor house or a farm house, both of which involve lives economically connected to the land. It is a direct response to the requirements for efficient, servantless domesticity and to the need for reconciling the scale of the house with that of the personal transportation vehicle, be it the horse-drawn or, later, the horseless carriage. Most important, it offers its inhabitants a comprehensible image of independence and privacy while also accepting the responsibilities of community. The most successful suburban houses have addressed these issues within recognizable cultural contexts. In developing the suburban house, American and English architects have drawn on examples from the past in order to establish a continuity and a sense of place in the open countryside where new suburbs have traditionally been built. Mid-nineteenth-century suburban architects tended to design in an "associational" manner; virtually each of A. J. Downing's or Samuel Sloan's villas was intended to evoke a specific earlier architectural style. And there was always the implication that the style carried with it a mood or characteristic that the prospective occupant could seize on as emblematic of his own nature.

Later in the century, the suburban house was seen as a principal mechanism for the establishment or re-establishment of appropriate national styles. In England, Voysey's beautifully crafted suburban houses, typified by his own house "The Orchards," abstracted typical village architectural imagery. Mackintosh's "Hill House" was a commentary on vernacular Scottish form, and Lutyens's "Salutation" was a true revival of the style of Queen Anne. In America, the Shingle Style was in large part an interpretation of the salt-box architecture of pre-Georgian New England, and the Colonial Revival was a reinterpretation of the Adamesque Georgian of the late Colonial and early Republican periods. In each of these cases, it goes without saying, the styles invoked were those of the pre-industrial age. And in virtually all cases, it should be emphasized, the process was one of eclectic evocation and not one of archeological reproduction.

In the twentieth century in England, only two vernacular styles took root—the Tudoresque free-cottage style and the "true" Queen Anne or Georgian. In America the Shingle and Colonial styles were quickly rejected in many parts of the country as styles too closely related to the East to meet the imagistic needs of the Midwest, South, and West. To discover a regional style where none had before existed was an exciting prospect. Before World War I, Southern California, under the influence of Bertram Goodhue, adopted a loosely Hispanic language of form, borrowed in part from mission architecture but more evidently from the buildings

of Mexico and Spain. And under the influence of Wright an attempt was made to forge a Prairie Style which would at once connect back to New England and also evoke the rude houses of the pioneers and the endless landscape on which they had found themselves.

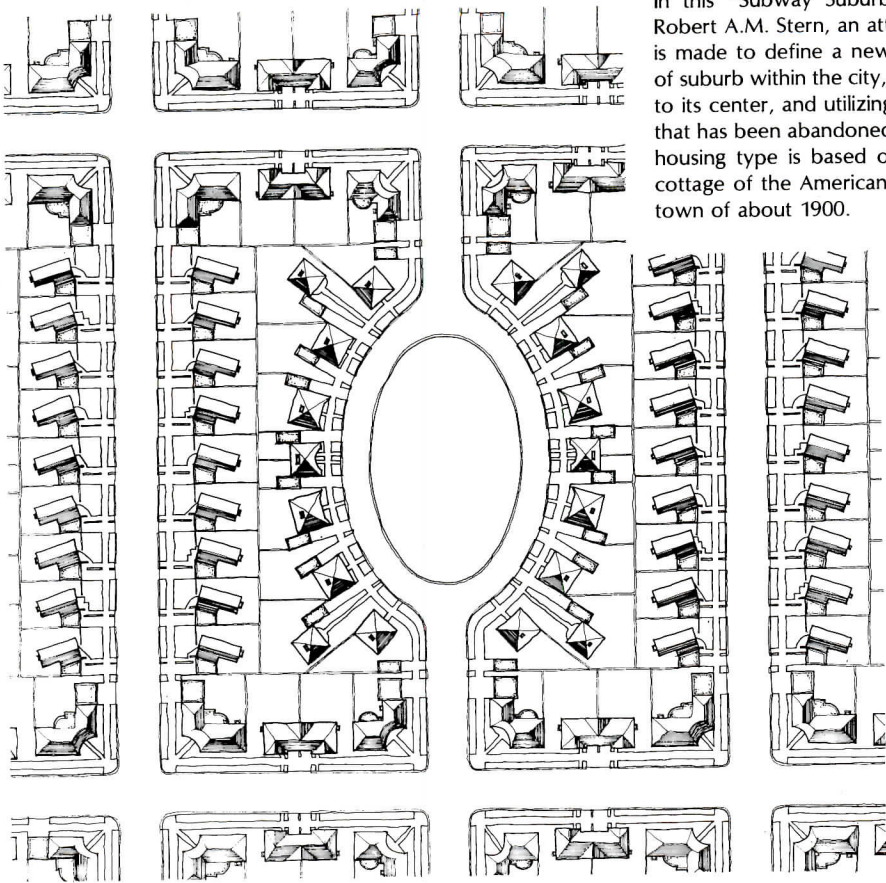
This kind of regionalism took root not only in the design of single-family houses, but also in suburban developments. Often, references to a local vernacular style were combined with references to a European prototype, as, for example, in the suburb of Chestnut Hill, which is located within the city limits of Philadelphia. Chestnut Hill was largely developed by one man, George Woodward Jr., in the late 1910s and in the 1920s. A number of very good architects built houses there, including Robert Rodes McGoodwin and the firm of Mellor, Meigs, and Howe. Architects working there acknowledged a common style based loosely on the French farmhouses of Normandy and on the local vernacular stone architecture that could be seen in abundance in the adjacent village of Germantown. Thus Chestnut Hill today seems not only romantically evocative but contextually responsive, a grouping of new buildings that continues regional tradition. Later architects building in Chestnut Hill, like Kenneth Day, Oscar Stonorov, Louis Kahn, Romaldo Giurgola, and Robert Venturi have chosen not to acknowledge the Chestnut Hill style that was once so firmly established.

It is important to note that regional associationalism has not in the past thwarted technological invention, nor has it confounded the move toward abstraction that characterized much of the best work of the 1910s and 1920s in America and Europe. For example, the work of Irving Gill in La Jolla exhibits many characteristics that we consider modernist, though it also participates in the Spanish Colonial tradition. It is also technologically innovative: Gill's famous concrete tilt-up wall was executed for a building designed in a distinctly Spanish-Colonial mode.

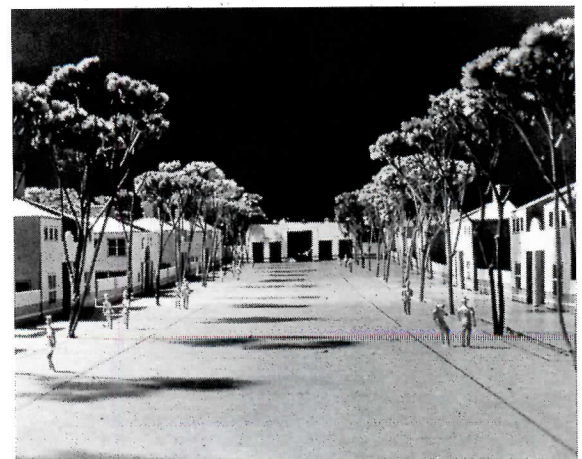
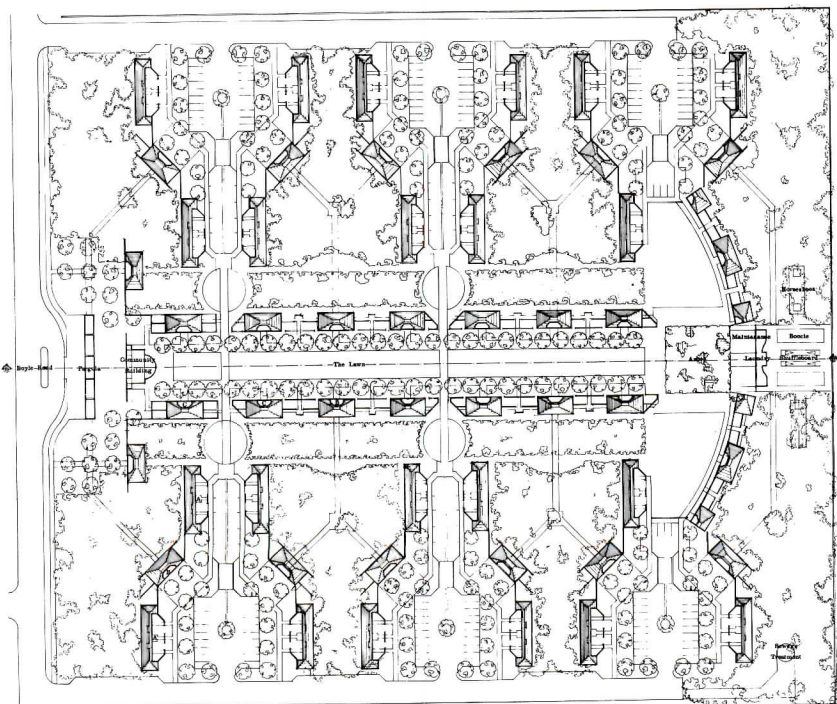
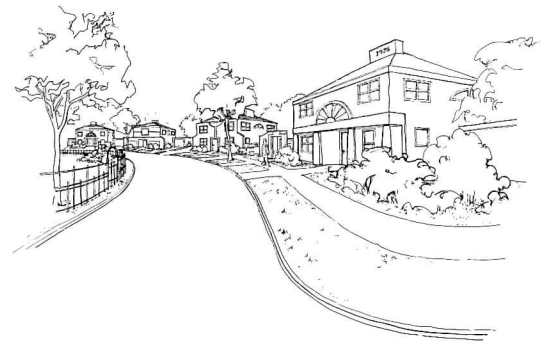
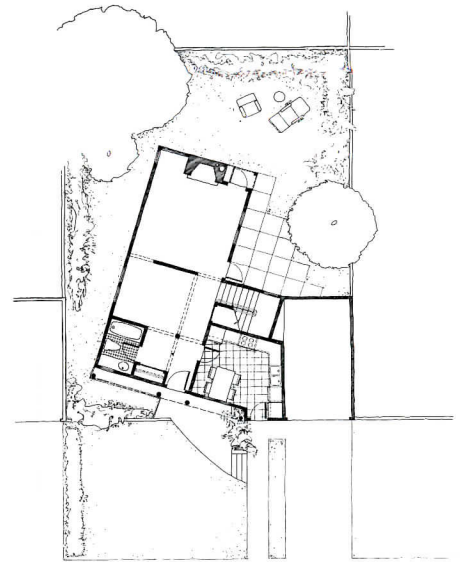
The contemporary suburb

It was only with the coming of the continental European modernist styles—conceptual and self-referential (process oriented) as opposed to perceptual (pictorial) and representational (content oriented)—that an abrupt shift in the relationship between American architects and the suburb developed. Under the impact of European modernism, with its continuing polemic on behalf of collectivization and machine technology, the tradition of serious suburban design was abandoned in the late 1930s and the 1940s by our best architectural talents just as our suburbs burgeoned to unprecedented size. At a time when our very best talents should have been thinking about the suburb and the suburban house, they were pursuing issues like architectural mass production or the joys of building "one-off" houses as monuments that would establish reputations leading to careers designing museums or office buildings.

Our best architects have abandoned the suburb to the ordinary practitioner and to the speculative builder. And the discipline of



In this "Subway Suburb" by Robert A.M. Stern, an attempt is made to define a new kind of suburb within the city, close to its center, and utilizing land that has been abandoned. The housing type is based on the cottage of the American small town of about 1900.



This proposal by Robert A.M. Stern includes an explicit critique of prevailing paradigms for low-density housing and also comments on the validity of such pre-modernist American models as Radburn, New Jersey, and the University of

Virginia. Relationships between public and private space, car, house, and street are considered in order to provide a variety of places within a context that is recognizably "American suburban" and not an evocation of a Mediterranean village.

town planning at the suburban scale has been allowed to die. For the past thirty years, there have been very few efforts made towards understanding the suburb and suburban architecture. No wonder the level of prevailing speculative residential development is so low. Even the comparatively enlightened "cluster" and "townhouse village" developments, where the quality of the site planning is reasonably acceptable, usually lack the architectural elements that would help establish that sense of place so necessary for the images of community and of continuity.

The English and Americans are uncomfortable in large, densely built cities. Our urbanism is shaped by the prejudices and preferences of this shared cultural heritage. Even London is a city of vast land area and low population density—a collection of loosely connected villages that set the stage for the kinds of urbanism that the automobile has made possible in Los Angeles and Houston. For fifty years or more, communications systems have enabled businesses to move away from the centers, and even our densest cities, like New York and Chicago, have experienced a diffusion towards the expanding suburbs. In fact, the actual density of a city like New York—once one goes beyond the two dense cores on Manhattan—is far lower than the city's image in literature and films would begin to suggest. Outside Manhattan, much of New York is a city of attached and semi-attached one-, two-, and three-family houses, interspersed with apartment houses usually no more than six stories high. For this reason, it can be argued that New York and most other American cities are, like London, collections of small towns united—not by a uniform street grid or by a superhighway system, but by a system of roads which generally preceded urbanization and by underground and elevated rail systems that even now can make the suburbanization of our cities feasible.

This pattern of low-density residential centers focused on transportation and shopping hubs persisted until the end of World War II. Only with the development of the vast parkway and interstate highway system of the post-World War II era did it become possible for a new sprawling kind of suburb to develop. Dependent only on good roads, the new automobile suburb can be established virtually anywhere, and, with the recent emigration of industry and commerce from the inner city, even the road connection back to the city has become less important.

One needs only to look at the growth of cities like Phoenix to realize that suburban pressure is a factor that cannot be ignored. Yet it is too easy, too glib, to say that Americans are so anti-urban that Phoenix—a city virtually without a center—is the future. Phoenix does nonetheless suggest, though, that the suburbs of the thirty years just past are of a very different kind from the ones we have seen earlier—perhaps they are a subspecies, but they are nonetheless suited to the nature of our cultural heritage, to our vast geography, and to our life-styles, which we must recognize as shockingly profligate.

Our suburbanism, then, has been of two kinds. The first is based on the image and to a considerable extent the reality of the small town and its life, connected back to the city by rail and by local roads. The second is based on the new mobility provided by the automobile. It is without the sense of town; it is a diffuse landscape interspersed with low-density development and occasionally interrupted by linear shopping "centers".

What is missing in the second, newer category of suburb is an architecture rich enough to record the struggle between the image of arcadia and the reality of life in the twentieth century. Also missing is any sense of collective space, the focusing qualities of a village and its green, a market square, or a civic plaza. But unquestionably the most important problem with the new suburbs is their love affair with the automobile. The car not only killed Main Street, it has killed the traditional suburban town as well.

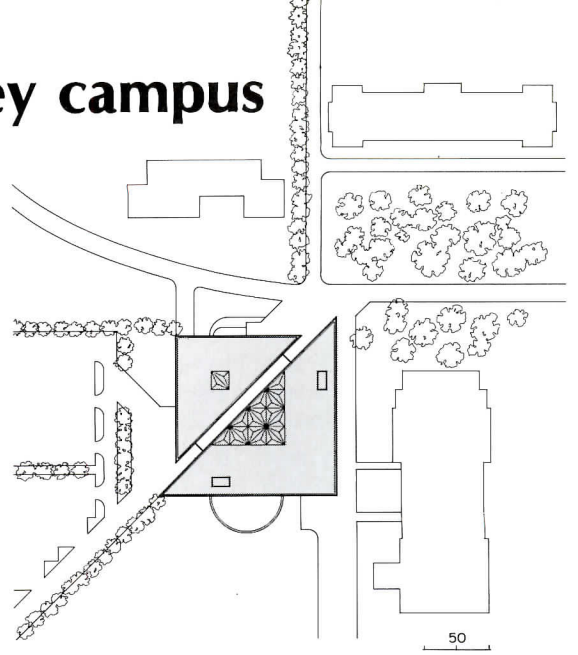
The future of the suburb

There are still some optimistic notes that can be struck. The old suburbs continue to function, and they continue to be desirable places to live in. Though the wonderful heterogeneity and the strong sense of place established, for instance, at Forest Hills Gardens does not seem to be recognized or even remembered by most historians, the development itself continues to function admirably. And, prodded by the example set by sociologists like Herbert Gans, some of our architects are trying to get the profession to face up to the reality of the post-World War II suburb—if not to love Levittown, as the Venturis have put it, at least to recognize that it exists, that it will not go away, and that people live in it. But at the same time we should not lose sight of the fact that Levittown is at best a dim reflection of the really inventive prototypes it emulates. In re-discovering the suburb, architects should not lose their critical judgement. But they should cast aside their prejudices and do a little serious research, and they must also recover from the failure of nerve which has crippled them over the past thirty years—a failure that has prevented them from rolling up their shirt or blouse sleeves and getting to work in an area where symbolic image and economics are valued as much and probably even more than the play of light on volumes set in space.

There will be no new ideas about suburbs until our thinking frees itself from the biases and orthodoxies of our recent architectural and urban theories, especially those peculiar cultural biases and cultural prejudices which have encouraged us to see old cities and old buildings—not to mention traditions and recognizable forms—as worthless and wrong. Nor will we be able to deal confidently with the suburb until we free ourselves from the belief that new suburban ideas (or, in fact, new suburbs) can only grow on virgin land beyond the edges of existing development. Suburbs will not go away, nor should they. In fact, they may well hold the key to the solution of urban problems that were hitherto deemed insoluble.

Student center for small New Jersey campus

How to design a building that would serve as a magnet for both resident and commuter students—groups that do not always mix. That was the problem. The architects solved it well and provided a community aspect to their design in the process.



Otto Baitz photos



STUDENT CENTER

Following directly on the completion of a new master plan, the architects—Caudill Rowlett Scott together with Collins Uhl Hoisington Anderson—designed this new student center with the goal of bringing together resident and commuter students and, at the same time, offering special facilities to the surrounding community on an intermittent basis. A rather ordinary program you say? Yes, but notice how skillfully the building has been sited and how carefully the plan has been arranged with these goals in mind.

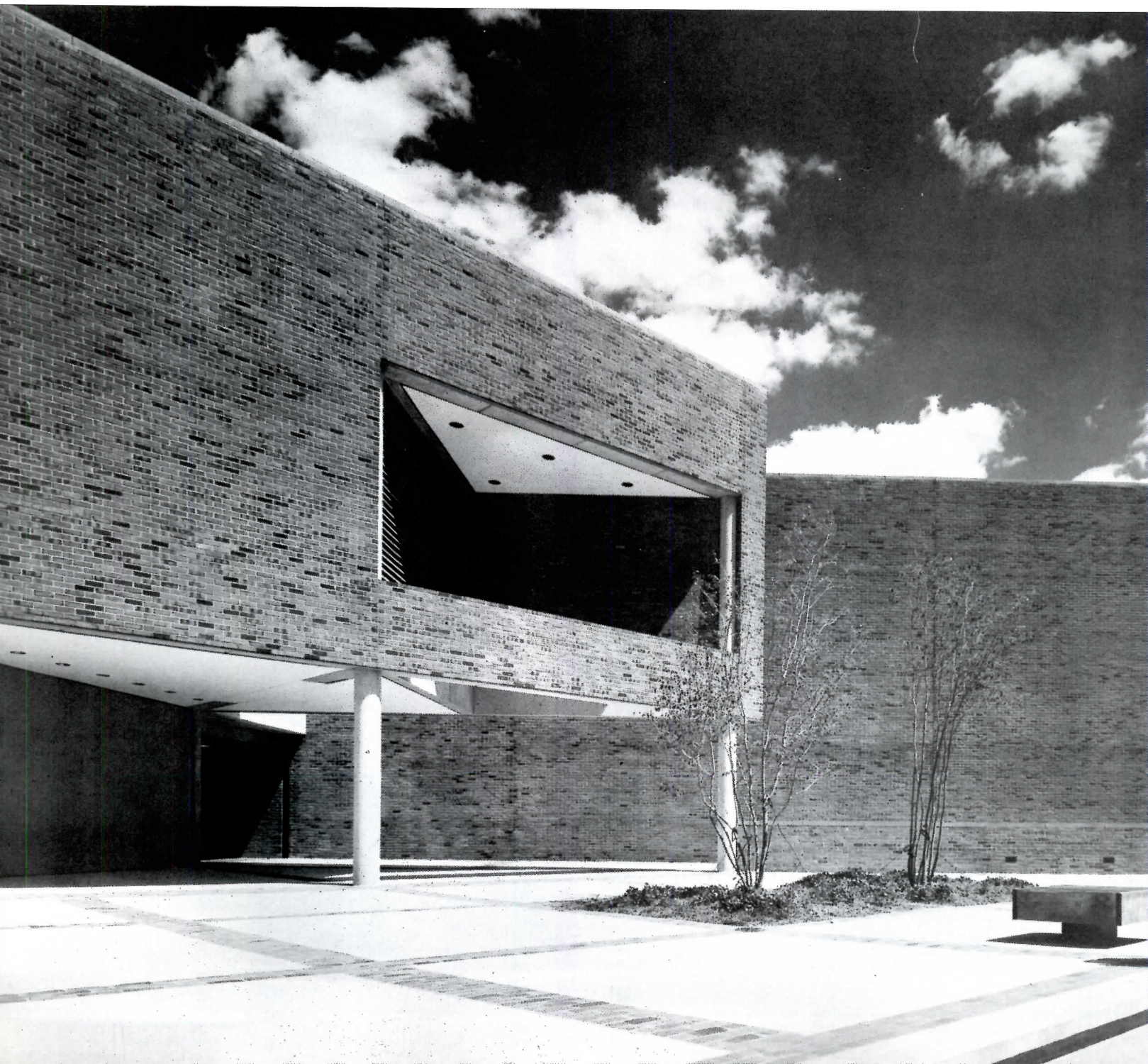
The building rises in two triangular sections that straddle the main pedestrian circulation route between student parking and the center of the campus. In this manner, the main lounge—a distribution point as well as a destination—becomes an incident along the commuter student's normal daily route, both when he arrives and when he leaves the campus. Air curtains were installed at both entrances to offer as little resistance as possible to this important sense of circulation and flow.

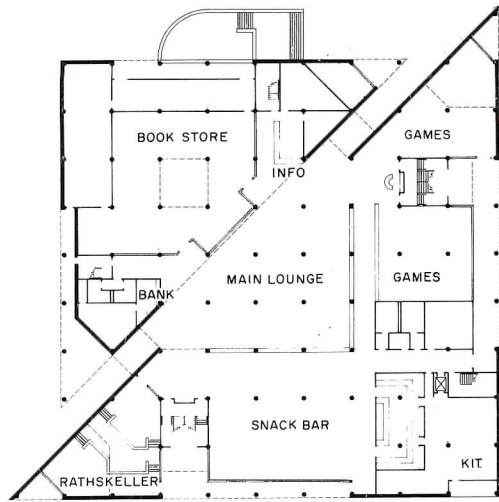
The main lounge is a double-height, skylighted volume; in scale

and character it is a courtyard filled with natural light, with plant materials, and with student activities. The faceted sections of mirror glass overhead are supported by concrete "trees" that are freestanding at the center of the space but engage the balcony lounges at the perimeter. At night, the glass planes cast back in fractured images the lively reflections of people and movement below.

Bordering the main lounge on the first floor are game rooms, snack bar, kitchen and a small rathskeller. Carried from reasons of functional separation to the opposite side of the main circulation route are "commercial" spaces: these are varied in design and character but include a branch bank, college bookstore, and a ticket booth for campus activities.

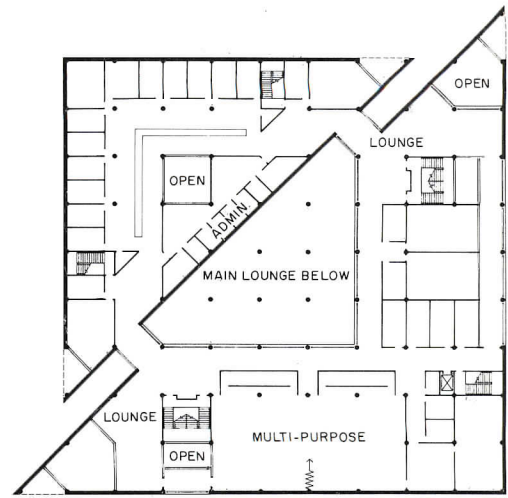
On the balcony level above, overlooking the main lounge, are a series of smaller lounges, a community-oriented multi-purpose hall (accommodating up to 500 persons) and a variety of small meeting rooms. Over the bookstore is a range of student organization offices. Completing the plan is a partial basement (not shown) that houses the



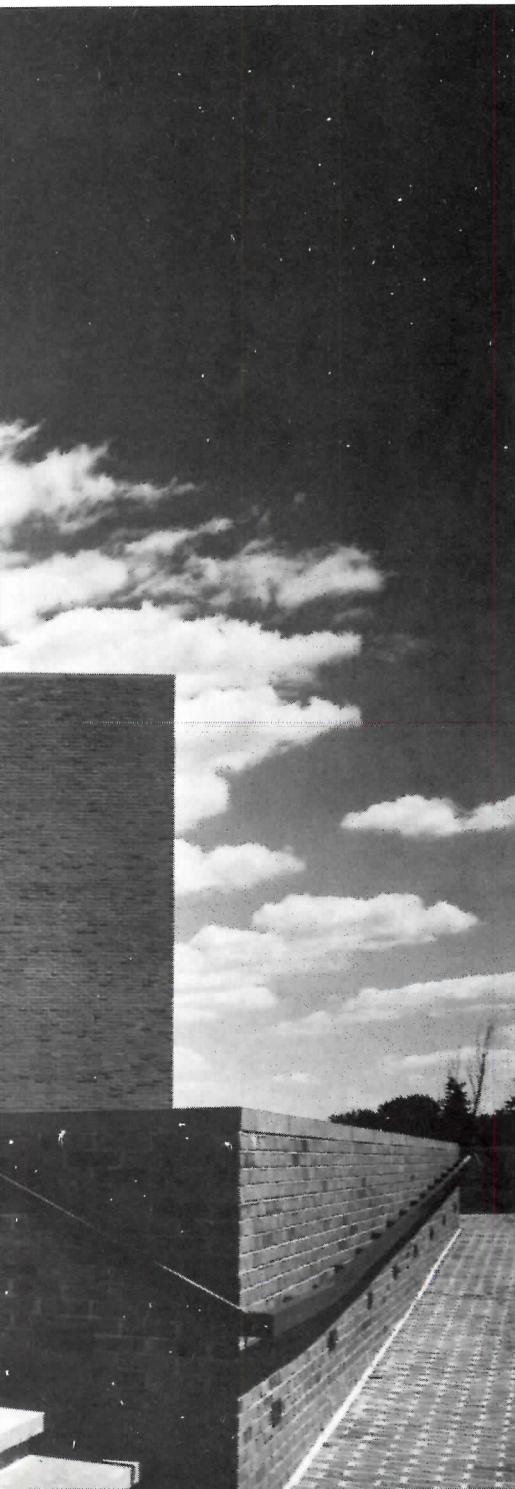


FIRST FLOOR

PATIO



SECOND FLOOR



STUDENT CENTER

campus radio station, newspaper and other similar media-related student activities.

It is a clear, carefully ordered plan organized so that the most heavily used spaces are located nearest to the circulation spine. Totally free of barriers as now required by state law, the design included elevators, special public facilities and parking for handicapped students.

The building's massing—two triangular volumes of different sizes linked by a covered passage—reads very legibly. The architects clad the structure in a dark red "campus" brick but allowed cast-in-place columns and spandrels to add a welcome counterpoint. The contrast is nice and produces a visual enrichment. The glazing is clear and set in neoprene gaskets. The building is serviced mechanically from a central plant using steam and chilled water air handlers.

The major spaces of the student center are elaborately detailed as numbers of materials are brought together in an orderly articulate hierarchy. Concrete, brick, tile, wood, aluminum and glass make a full

palette of finishes for the main lounge but they work together to provide a lively, if active, composition; a composition that is active day and night.

Following its usual practice, CRS sent a pre-design team into the field to establish some basic design and conceptual criteria for this the third building they have done on this same campus. After sampling student opinion, it was clear to the team that students wanted for their new activity center a facility that looked as little like an ordinary academic building as possible. While still maintaining the basic design vocabulary of the campus, the architects developed a design that was fresh, expressive and thoroughly individual.

TRENTON STATE COLLEGE STUDENT CENTER, Trenton, New Jersey. Owner: Division of Building Construction, State of New Jersey. Architects and engineers: Caudill Rowlett Scott—G. Norman Hoover, principal-in-charge of design; Peter Gumpel, project designer. Associate architects: Collins Uhl Hoisington Anderson. Contractor: Max Drill.

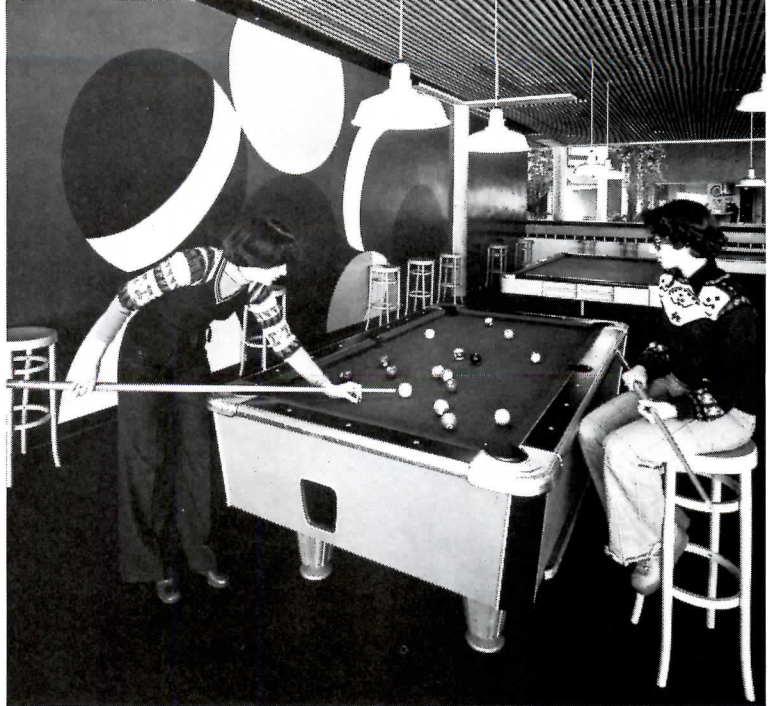




The use of mirror glass in the skylight sections reduces the sun load during the day. In the evening, the skylight becomes "a huge chandelier," instead of a vast black hole, thanks to its mirrored surface and to the careful placement and design of lighting.



Air screens at the entrances can be turned off during periods of high winds or abnormally inclement weather. And the whole building can be secured by rolling steel gates at both entrances. The cost of the structure, less fees and sitework, was just under \$4 million.



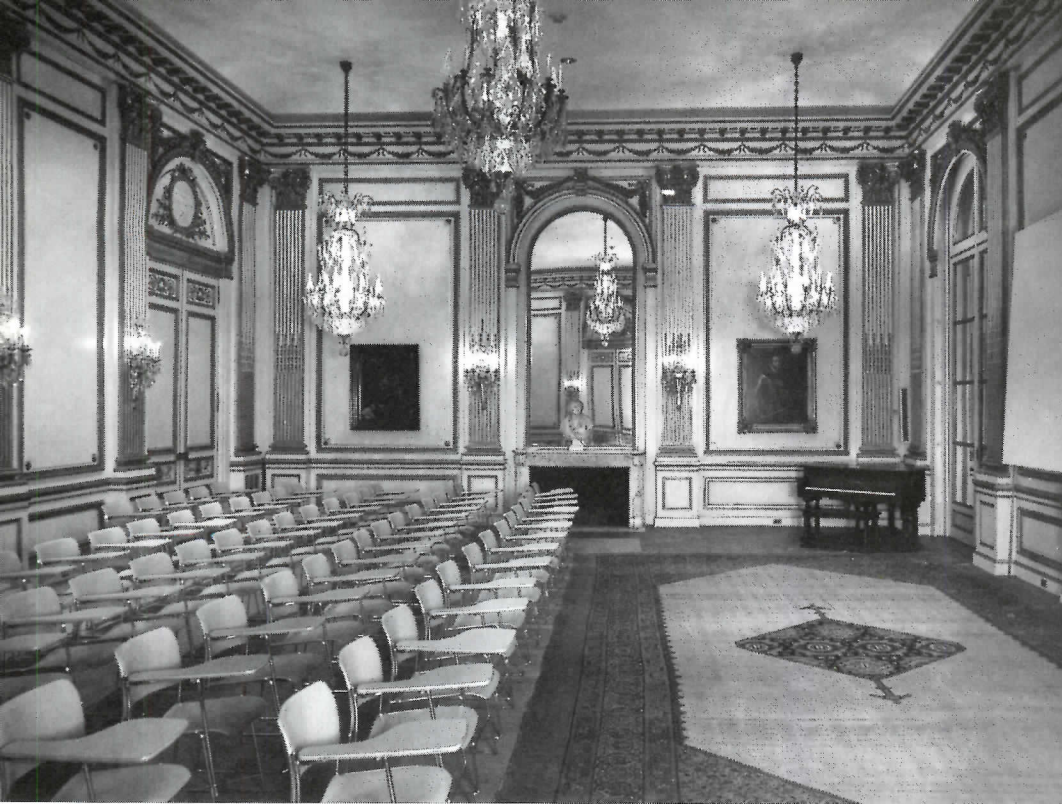
THE NEW YORK UNIVERSITY INSTITUTE OF FINE ARTS: HOW DO YOU RE-USE A JEWEL BOX?

Norman McGrath photos



Now that the concept of recycling older buildings is really catching on, it is interesting to examine both the reasons and the many manifestations that are growing out of always different parameters. Of course, the reasons spring from the obvious economies and from the newly-recognized importance of visual variety and the preservation of local character and history. One of the most interesting projects to come along in a long time has come from the office of architect Richard Foster—the second remodeling of the building currently occupied by the New York University of Fine Art's library. The project is interesting because it dealt with such severe restraints—a wonderful confection of a building adapted to a new functional use without compromising what was there before. . . .

The New York University of Fine Arts preserves the restrained grandeur of the landmark James Biddle Duke house shown in the photo above in a seemingly unchanged condition; the house is a cornerstone of the newly designated Metropolitan Museum Historic District (see *RECORD* April, 1977, page 35). The building was designed by Horace Trumbauer, one of *the* architects of high-style fashion in 1912, the year the house was built. What Trumbauer produced was a colossally scaled French-classic jewel box—hard to alter inside or out without destruction of its irreplaceable qualities. But Foster has managed not only to insert a large amount of new space within the walls; he has painstakingly restored much of the interior's original character, after twenty years of steadily expanding library use had nearly obliterated that character—along with previous conversion work by architect Robert Venturi. Once again, at least the ghosts of grandeur can walk the marble halls.

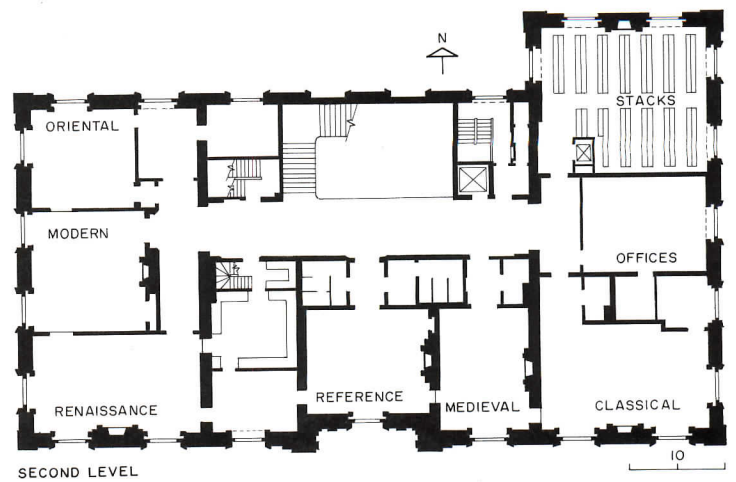
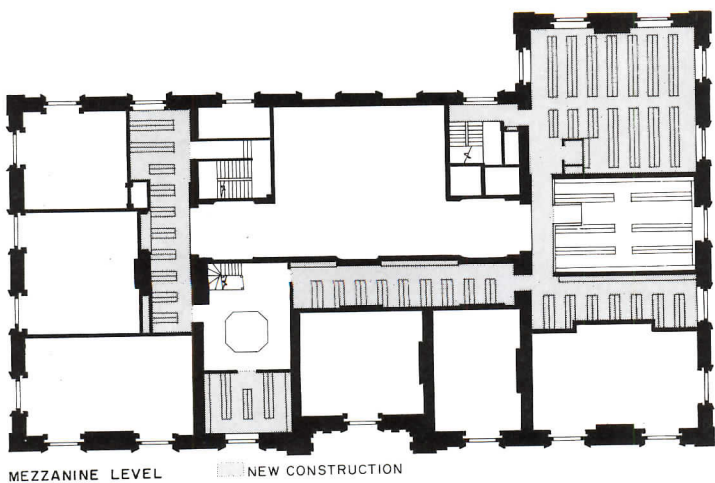


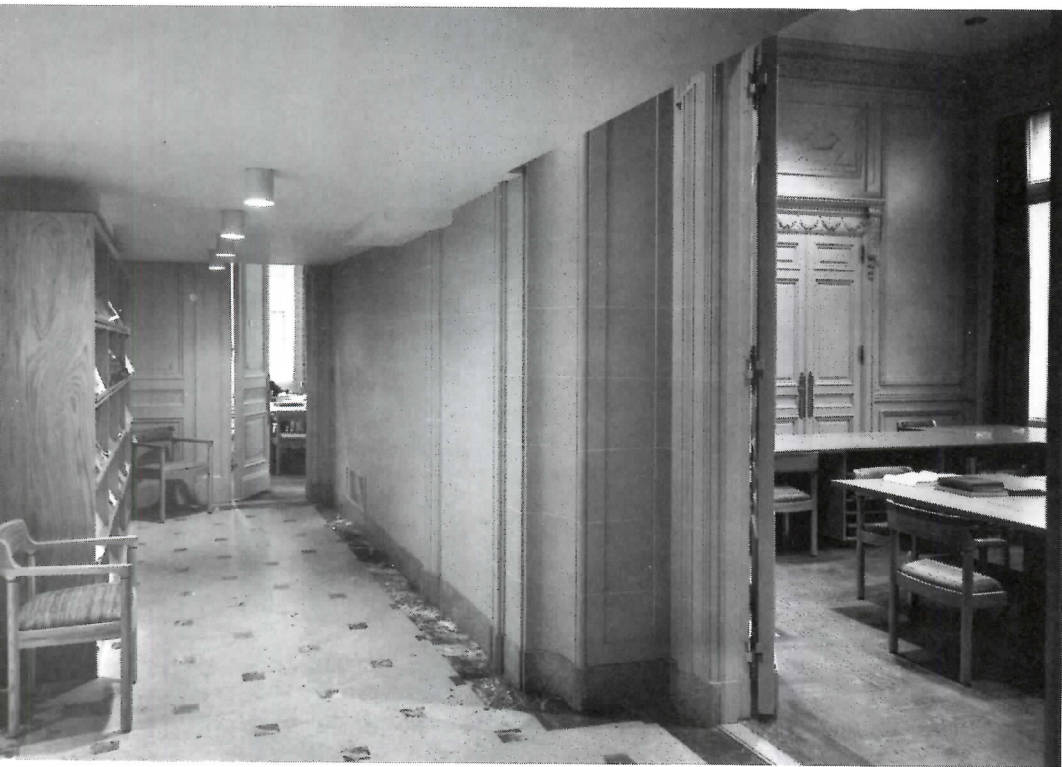
Foster's basic approach was to use the elegant main rooms of the house as reading rooms, while banishing an encrustation of accumulated books (some 80,000 strong) from shelves covering the walls into more efficient stack areas. (The crowded conditions, which included a maze of partitions before the remodeling, can be seen in the photo, right.) The stacks had to be created in new floor space, which was built into former service areas and onto new mezzanines that make use of high ceilings in corridors above the second floor (see overleaf.) In the reading rooms, the architect worked closely with the library staff to provide furniture that would both suit the rooms visually and satisfy

specialized needs, such as the storage of oversized volumes that can lie flat in specially designed cases (see large photo of the original dining room, opposite.)

One of the most intriguing decisions involved the degree of restoration that would be appropriate to the newly organized main rooms. For instance, many of the original surfaces had been painted in the former conversion to a library, and the white marble walls in the original dining room had been painted, at the time of the building's construction to resemble a more florid marble. Foster describes much of the restoration as an intuitive process that involved day-to-day decisions unfamiliar in new con-





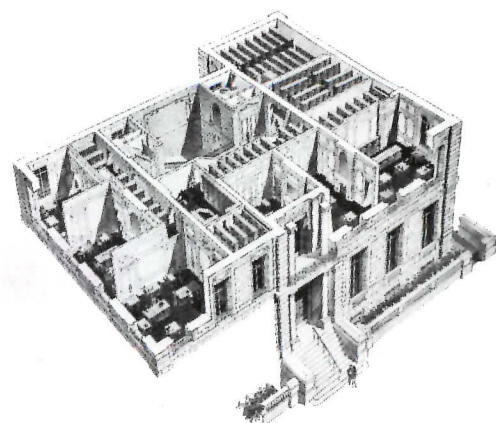


struction. Among these decisions were the retention of the painted marble on marble, the restoration of some entirely faked marble (such as that in the central hall, photo opposite) and the paint colors—the architect studied another Trumbauer house, The Elms in Newport, for color inspiration.

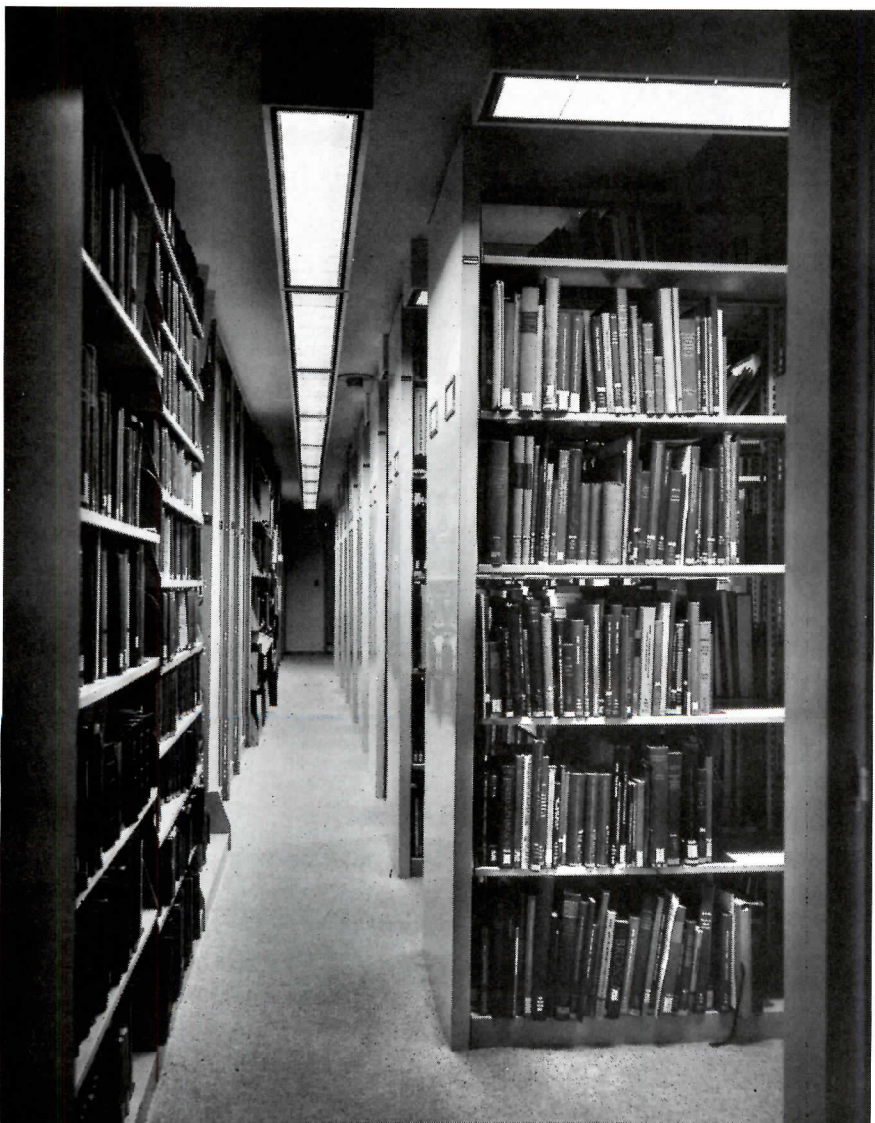
The plans on the previous page and the isometric at right reveal the locations and extent of the new mezzanines inserted above the second floor for the stacks. The mezzanines were inspired by Mrs. Duke's dressing room (lower left in plan and photo directly above). This space (as well as another in the Venturi plan) utilized the high ceilings for a second level of storage, and Foster simply

continued the system with steel deck that extends over one bedroom (upper right in plan) and over hallways and service areas. The mezzanines intrude on the major spaces only in the one bedroom and in vestibules at the ends of the central hall.

THE INSTITUTE OF FINE ARTS RENOVATION, New York, New York. Owner: New York University. Architects: Richard Foster and Michael Forstel—project coordinator: M. John Hamer. Engineers: The Office of Ruderman (structural); John L. Altieri (mechanical/electrical). Lighting consultant: Claude K. Engle. General contractor: John D. Quinn Construction Corp. Painting contractor: Hudson Schatz.







The new mezzanine stack areas above the second floor were woven through the building to avoid major rooms, but one place that the intrusion was necessary was over vestibules at the ends of the central hall in order to join the various mezzanines. Here Foster held the steel structure of the mezzanines away from the original walls and detailing, and inserted a simple metal grille in the arches facing the major space.

SCHOOLS: Is a new type of facility emerging?

More and more, it is becoming obvious that the schoolhouse as we have known it is going through a metamorphosis. Not only have declining enrollments caused concern with what to do with surplus space (and few schools have any serious expansion plans any more), but thoughtful people everywhere are becoming concerned with what a school should really be and do.

Although the statistical curve of school construction is not as awesome as it was during the famous "baby boom," new



Marcus A. Foster Middle School, Oakland, California

schools continue to be built apace everywhere in the U.S. for a variety of reasons, ranging from plain obsolescence to new laws and social and educational requirements that must be complied with—often with all possible speed. And the design and planning of these schools is being deeply affected by bundles of new factors and cares, such as earthquake codes, integration laws, population shifts, energy conservation, help for the handicapped—to mention only a few.

During the next five years, migration alone will be a chief factor in keeping the volume of educational construction in a range from 110 million square feet in 1979 to 115 million square feet per year by 1983, according to George F. Christie, chief economist, F.W. Dodge Division, McGraw-Hill Information Systems Company.

Today's schools are not just for kids

Probably the biggest change in the concept of what a school is, and how it should be used, is the emerging trend toward more general community use of the facilities—uses which could expand or contract as student enrollment figures vary in a given area. Alan C. Green, president of Educational Facilities Laboratories, and long deeply involved with schools, sees this as an idea that "is really catching on." Says Green:

"Schools are under great pressure these days—ranging from the effects of enrollment decline and fiscal constraints on the coping with energy costs, architectural accessibility, deferred maintenance, vandalism and demands for upgrading outmoded facilities. At the same time there is a significant trend that is changing some basic assumptions about schools.

"At EFL we've talked for years about schools as places for people, not just pupils. And now that concept is really catching on. Sometimes it simply means that parts of the school are planned for use after hours, evenings and weekends for community recreation, meetings and the like. But, it can also mean that the school becomes an inter-agency, inter-generational place with programs including health, recreation, day care, senior citizen, arts, job re-training and a range of community services. Sometimes the school becomes a mini-city hall, as well. Two or more agencies can contribute funds to build and operate the place—or the school district can build and then lease to other agencies.

"Sometimes these places are called community schools, or human service centers, or community education centers. Whatever the name and the form it takes (and the form is defined by the special needs of the community; no stock plan solution will work) these places tend to serve a far broader mix of people and in many different ways than the single-purpose schoolhouse of the past.

"Several forces are propelling this idea. One is enrollment decline and resultant surplus space that can be re-used for these broader purposes. So, old schools are becoming new community centers, and even the new are being planned to accommodate cyclical enrollments.

"Another is the desire to provide services more efficiently. It's logical that several agencies, sharing space and services, site and parking, and even staff, can own and operate facilities more efficiently than if each is on its own island.

"And then there is the notion that services should be provided at the neighborhood or community level—by decentralizing and placing services nearer those to be served. Joining with the school (the most common of public buildings) is a logical way to do this.

"Certainly the school building as container for education is under pressure. But the purpose of the school is being re-examined in many communities—who it serves, the program it offers and how it is financed and governed. All of which is to the good for an institution that many view as tired and full."

Interestingly enough, adaptation for new mixes of residential, office and community use is also coming to the fore as a viable means of completely disposing of surplus school property in areas where population shifts and declining enrollment have had the most impact. Some thoughts on "Promoting School Reuse" are explored by Patricia P. Rosenzweig of Perkins & Will, in this month's "Architectural Business" section, page 62.

This study focuses on five schools, located across the nation from California to Massachusetts which, to some degree at least, seek to involve and share facilities with the general community—and each tries to cope with some of the other current cares mentioned earlier. In the midst of these evolving changes, we may be spawning a new Building Type! —Herbert L. Smith, Jr.

Oakland middle school stresses after-hours community use and earthquake resistance

Built as part of a district-wide replacement program of 30 seismically inadequate buildings in Oakland, California, this middle (5-8) school was planned with extensive participation by the local community.

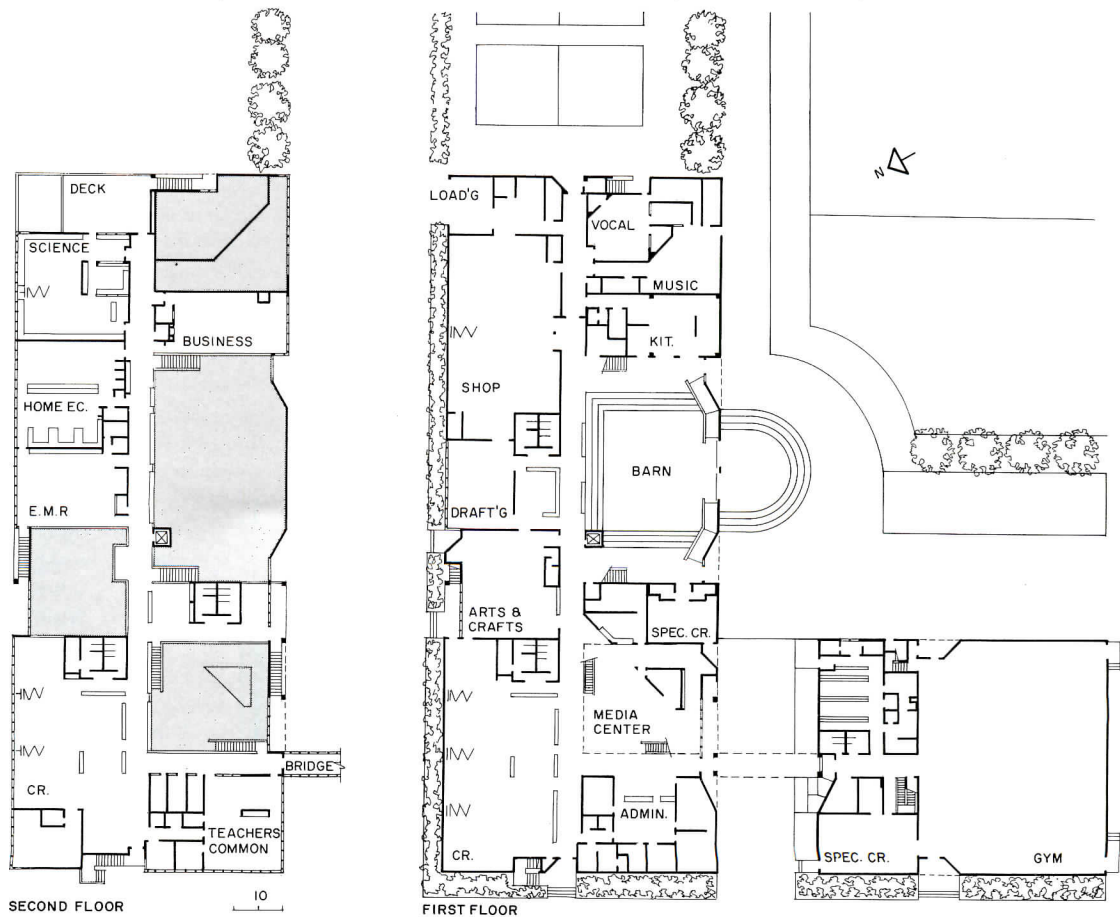
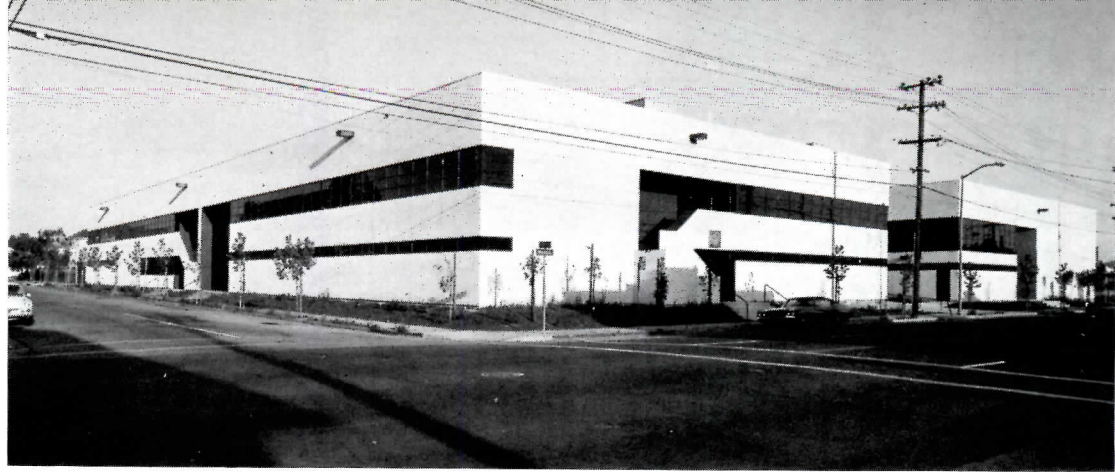
In this particular neighborhood, one junior high school and two elementary schools did not meet the new earthquake requirements and were demolished. In planning for new facilities, the grade structuring was changed: this 750-student middle school replaces one of the elementary schools, and was assigned its small 4 1/3-acre site surrounded by residential and commercial buildings. For maximum outdoor recreation area, a compact two-story scheme, hugging the street on two sides, was adopted.

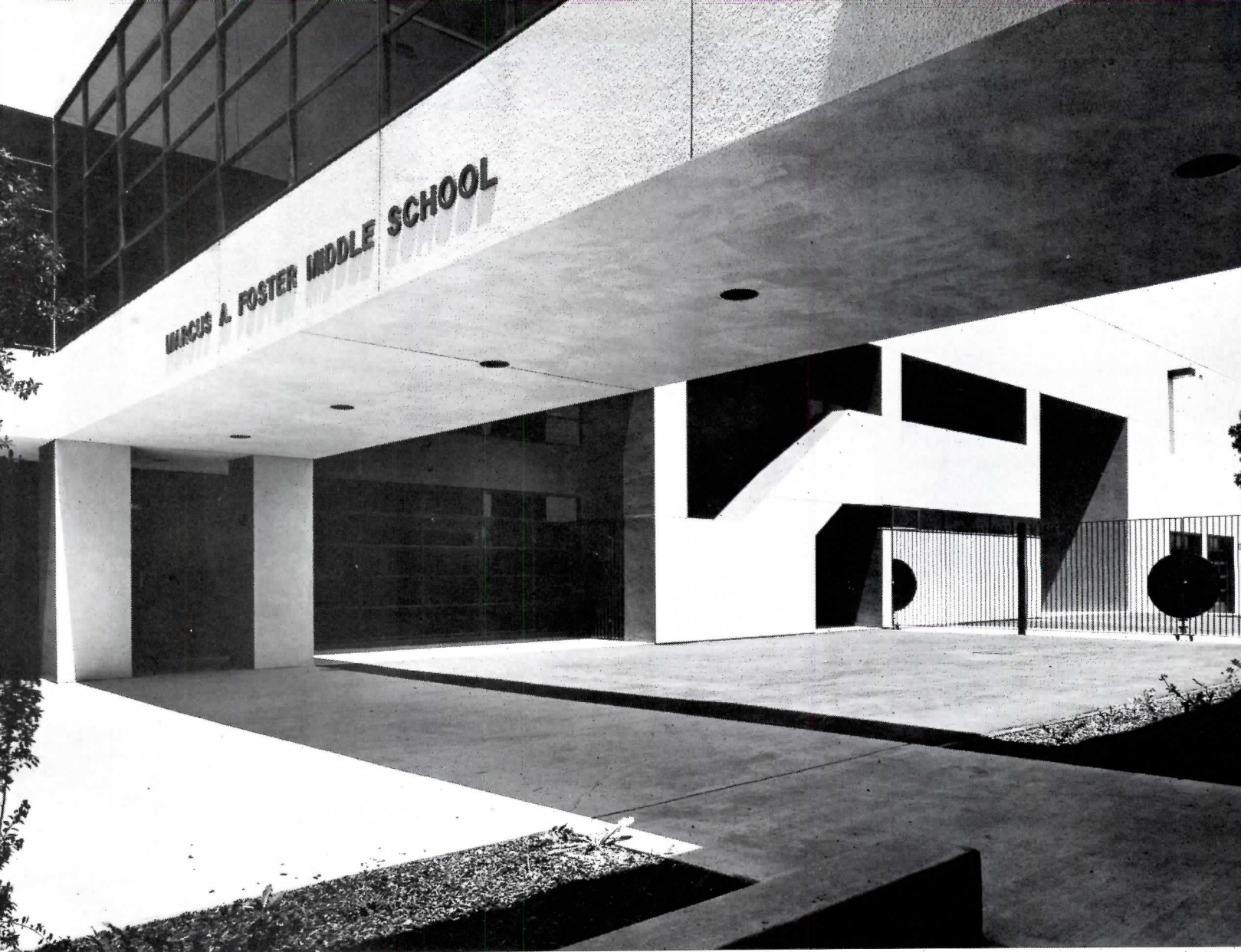
The public group which met with educators and architects set a general educational program to stress "open, visible, related qualities" and team teaching.

The handsome resulting building opens four educational "houses" along circulation "streets"; the sense of openness is increased by three large two-story spaces (music, arts and crafts and a multi-use "barn" for dining, auditorium, outdoor amphitheater stage and exhibits).

Five teaching stations with folding partitions are in each of two of the "houses," which share media, teacher prep and service facilities. A "lab house" has home economics, science and business; the fourth "house" includes art, drafting and shop. A bridge connects to a separate gymnasium. The gym, "barn" and a community room have access for individual night use.

MARCUS A. FOSTER MIDDLE SCHOOL, Oakland, California. Owner: Oakland Unified School District. Joint venture architects: Mackinlay Winnacker McNeil & Associates (project architect: Norm Tilley; project designer: Kathy Simon) and Kennard, Delahousie & Gault (project architect: Ernie Cannon). Engineers: David L. Messinger & Associates (structural); Ralston & Dweyer (mechanical/electrical); Wilson & Ehrig (acoustical). Landscape architects: Janelli & Janelli. General contractor: F.P. Lathrop Construction Co.





The crisp, white cement exterior is accented by dark bands of impact-proof glazing, and by inset entrances painted in prime colors: blue on the street facades, red on the court, and yellow towards the play fields. The interior uses color in equally simple, effective

ways. The steel structure, air ducts and lighting systems are exposed to help children understand the building functions, but are painted white, as are most walls and ceilings, to avoid an overly busy look. The entire school was designed for the handicapped.

Robert Hollingsworth photos



Elementary school and community center link separated parts of city on an improbable site

The North End Community School, perhaps more than others in this study, exemplifies the trend of using educational facilities to help solve urban planning problems and community needs.

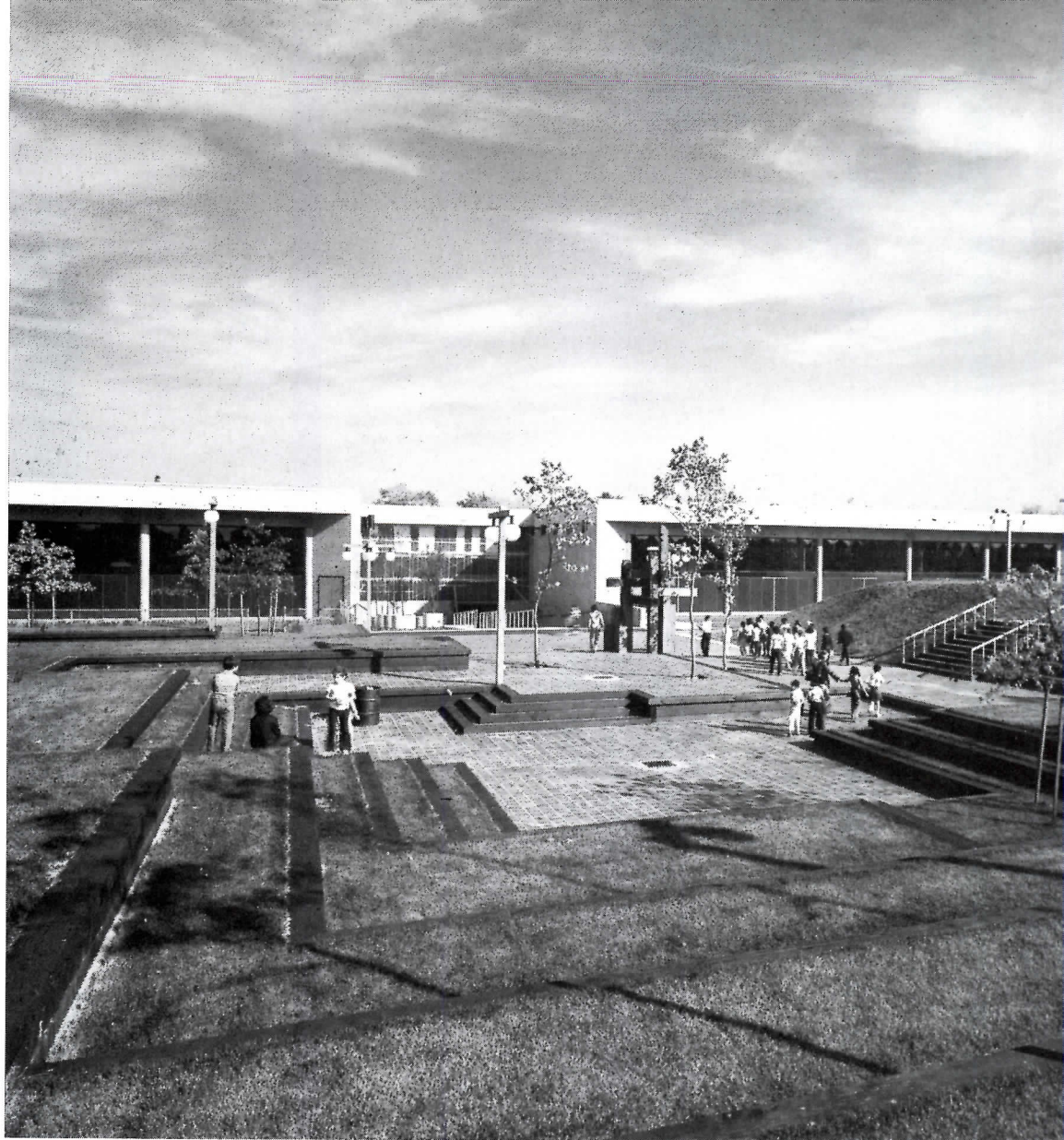
In a not atypical fashion, two residential areas of Springfield, Massachusetts, were separated by a series of "barriers"—adding racial and ethnic segregation to the urban conditions that the city's renewal program had to combat. But in this case it was not a simple "across the tracks" situation: the separation consisted of a four-lane super-highway built on a 22-foot embankment, an 11-track railroad and marshalling yard, and a commercial street cut through an inner city community. Three parcels of buildable land existed in the midst of all this.

Through the participation of Federal grants and redevelopment funds, it was decided to construct a building predominantly underground, connecting the three sites—and the two parts of town—by a school and neighborhood facilities.

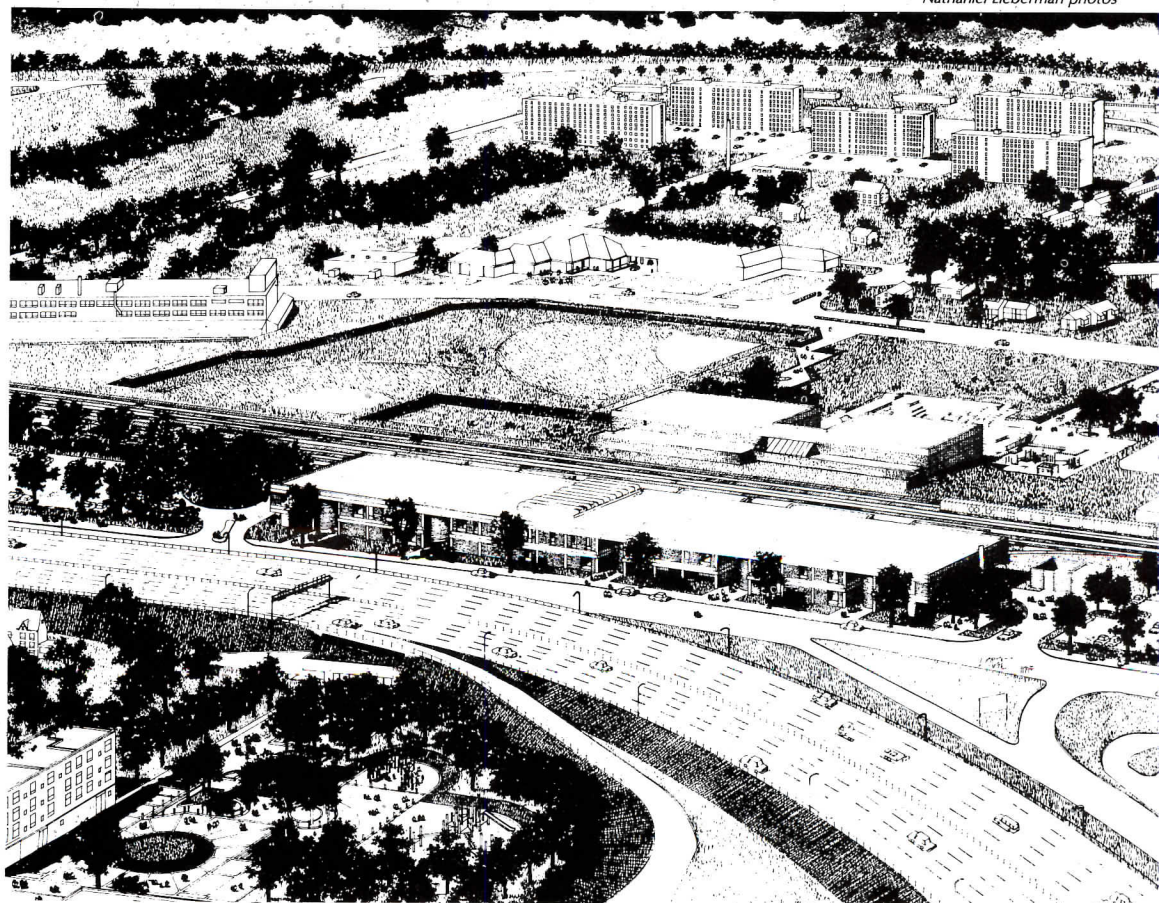
The final scheme (see sketch and sections at right) uses the surface areas for a small park on the east for tots, day care and the elderly; a school for 1,100 pupils in the center; and gyms and playfields on the west. The connecting underground link is treated as a pedestrian mall, treated as a "street" with planting and street furniture. The mall provides for a wide variety of community services, such as public library, elderly center, day care, social service agencies and health center. The focal center of the mall is a big, skylighted, three-story open space with exhibits, auditorium, cafeteria.

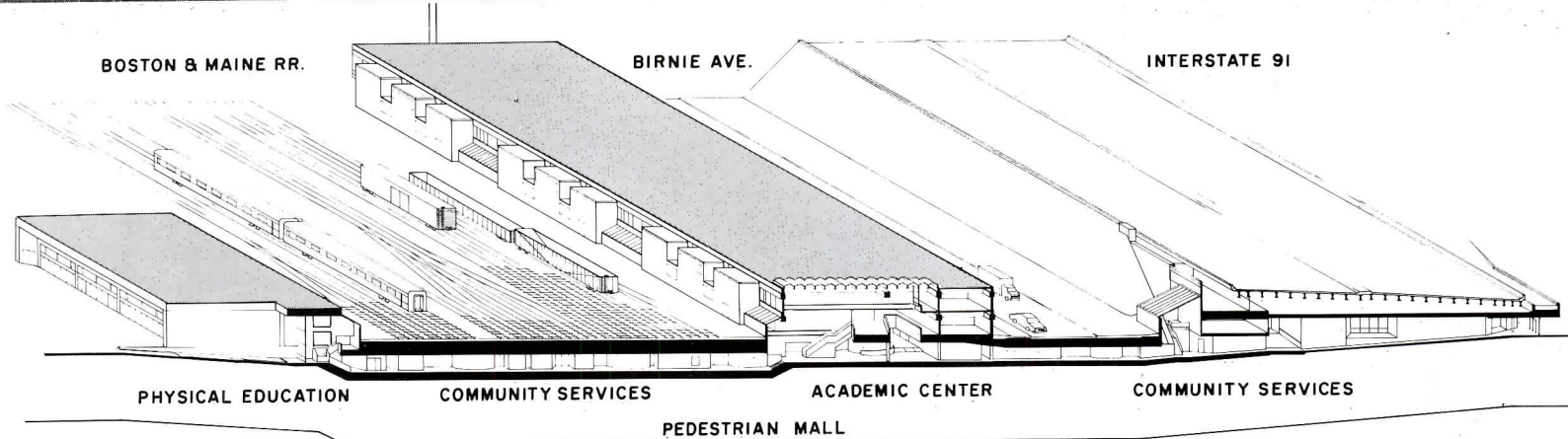
The school has large, easily divisible classrooms for about 100 pupils each, and special class spaces for the handicapped. All classroom spaces are available for community use.

NORTH END COMMUNITY SCHOOL, Springfield, Massachusetts. Owner: *Springfield School Building Commission*. Architects and engineers: *The Perkins & Will Partnership*. Landscape architects: *M. Paul Friedberg & Associates*. General contractor: *Daniel O'Connell's Sons, Inc.*



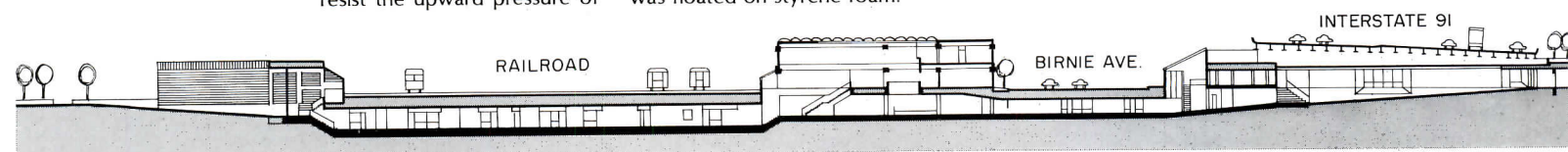
Nathaniel Lieberman photos

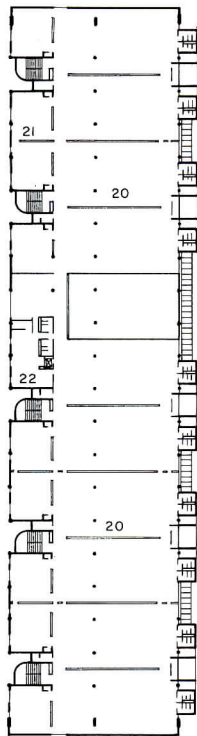




Structurally, the building was faced with some considerable problems: noise and vibration of trains and traffic, and a major portion of the building being below grade and below the water table. For the below-grade portions, poured-in-place concrete was selected. The floor slabs are designed as concrete mats to resist the upward pressure of

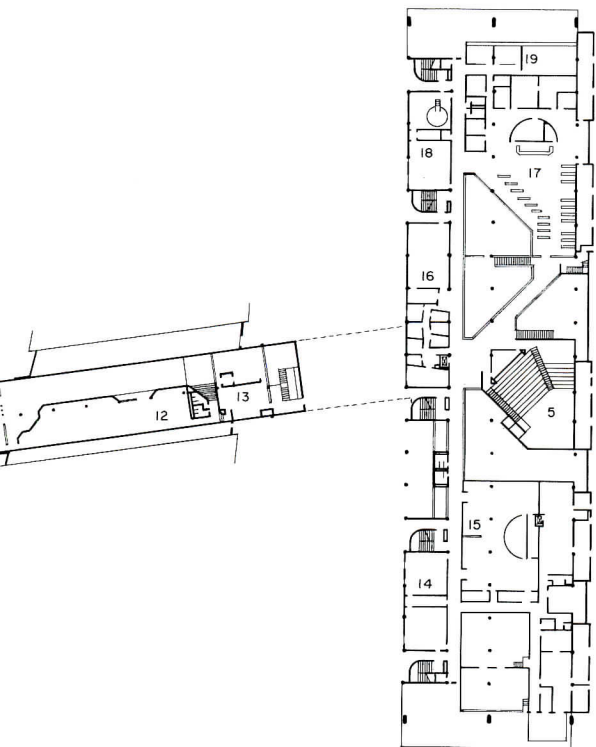
the water table and provide foundations for the structure above. The entire superstructure is a series of cast-in-place columns and girders supporting pre-cast concrete tees. The concrete girders, columns and walls are expressed on the interior and exterior. To eliminate vibration, the slab over the underground structure was floated on styrene foam.





SCHOOL LEVEL TWO

- 1 Elderly center
- 2 Health
- 3 Public library
- 4 Mall
- 5 Auditorium
- 6 Cafeteria
- 7 Administration
- 8 Counseling
- 9 Community services
- 10 Tutorial
- 11 Crafts
- 12 Day care
- 13 Adult education
- 14 Language
- 15 Art
- 16 Music
- 17 Media center
- 18 Science
- 19 Reading
- 20 Classrooms
- 21 Special classrooms
- 22 Teachers
- 23 Administration

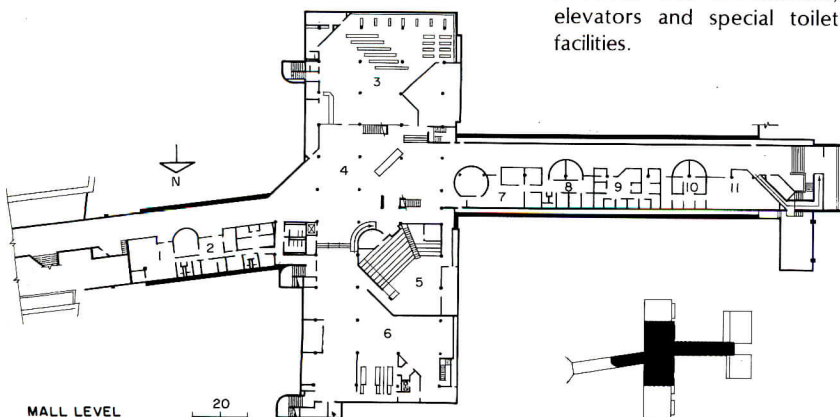


SCHOOL LEVEL ONE

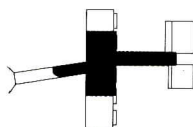
Top lighting and skylights have been used throughout the project to minimize distracting views and to introduce light to below grade areas—and give attractive and bright interiors. Above ground noise was also reduced by keeping window areas to a minimum and glazing with acoustical glass. The use of concrete also helped isolate sound from trains and traffic.

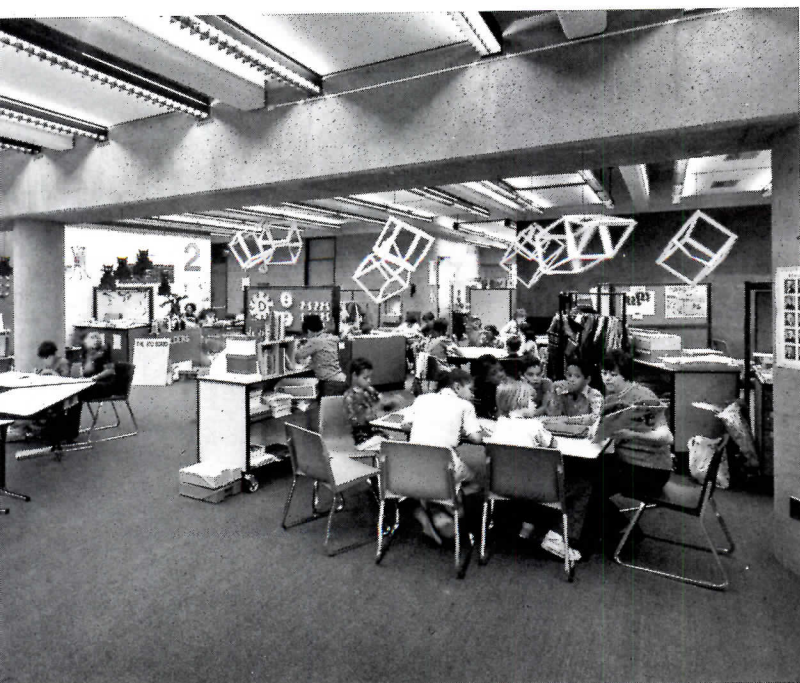
Finishes are simple and durable: exposed concrete and groundfaced block are used inside and out. Splashes of color are added by supergraphics and banners.

In addition to the special classrooms, the handicapped and elderly are provided with a barrier free environment, elevators and special toilet facilities.



MALL LEVEL





**Flexible middle school
adapts quickly to
various teaching and
community uses**

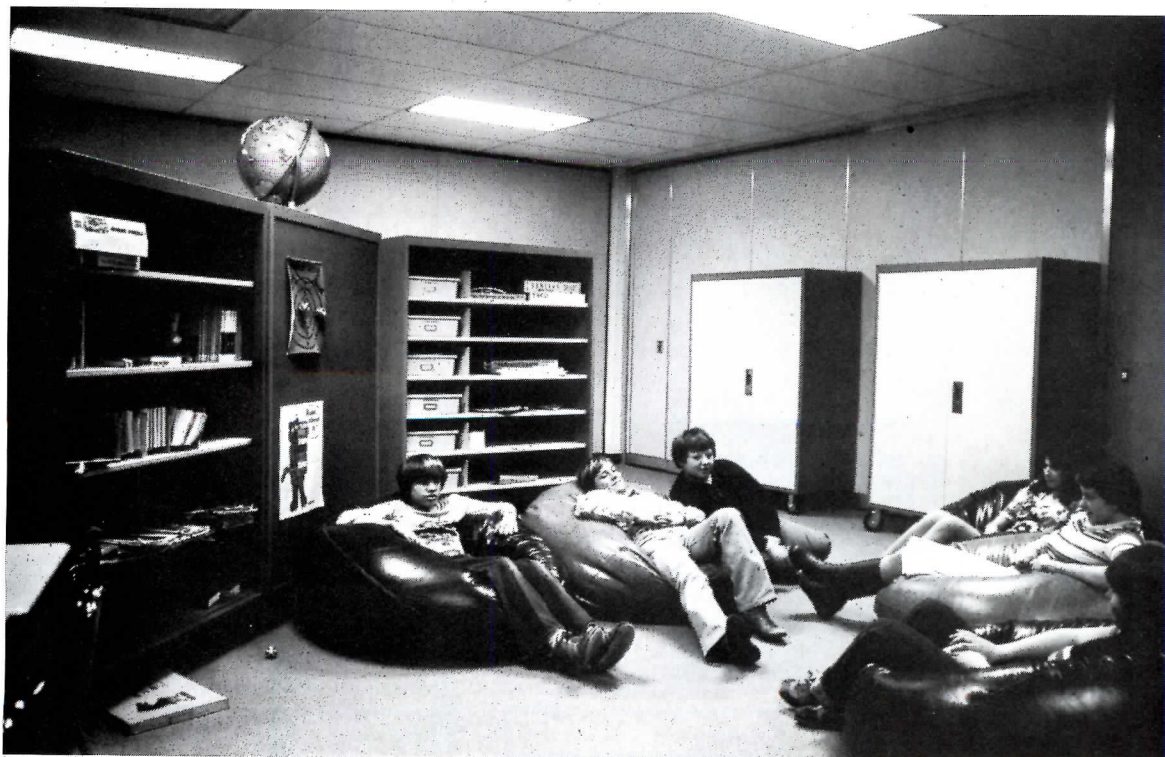
The program for the 700-pupil Westfield Middle School called for a big variety of uses and options in a relatively compact space: "emphasis on group planning and team teaching to provide individualized instruction while maintaining a continuity of classroom structure"; and adaptability to "a wide variety of community, civic, social, recreational and adult educational activities that require different types and sizes of space."

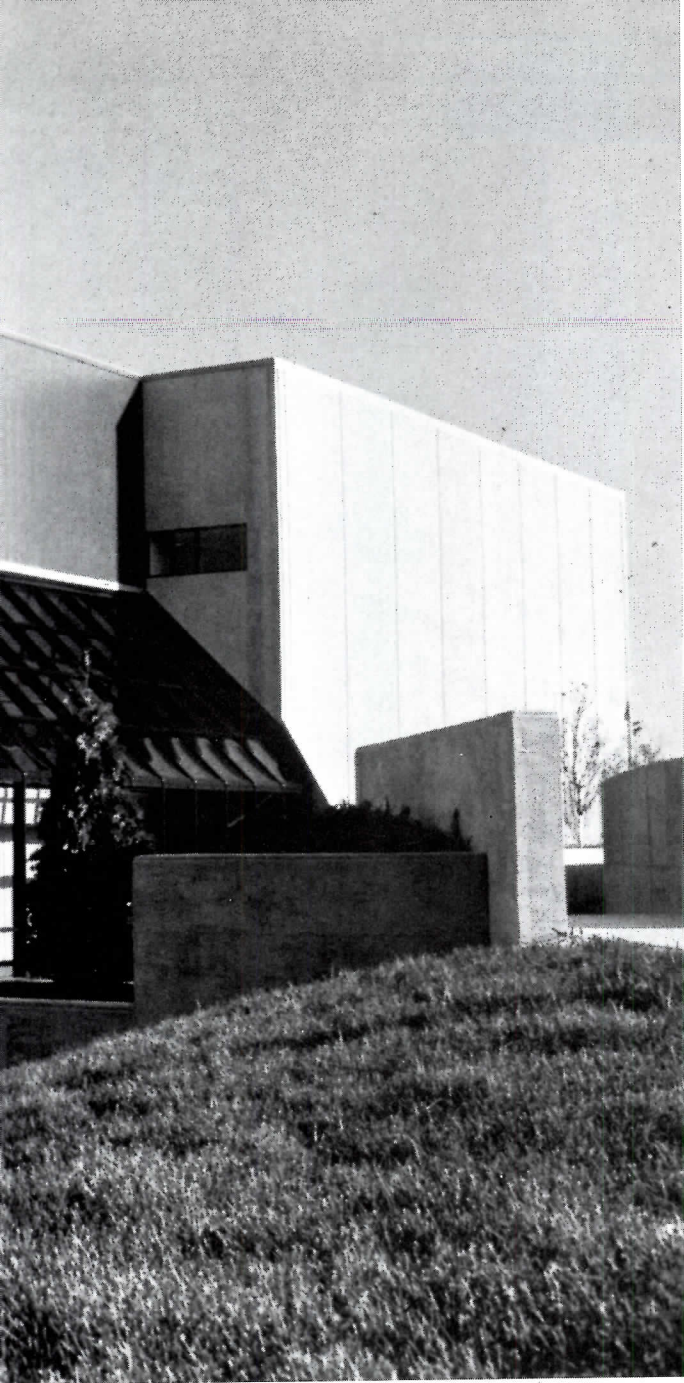
In other words, an extremely flexible, adaptable building with clearly defined, easily comprehended organization and circulation was required.

This was solved by placing all noisy or "messy" activities, such as physical education, dining, and art, on one side of a "Main Street" circulation corridor. A separate entrance to these areas (photo near right) allows them to be used for community activities without always opening the entire school. Another entrance (shown top, far right) opens directly on the "Main Street" (along which are administration, student lockers, teachers' preparation areas, and special education rooms).

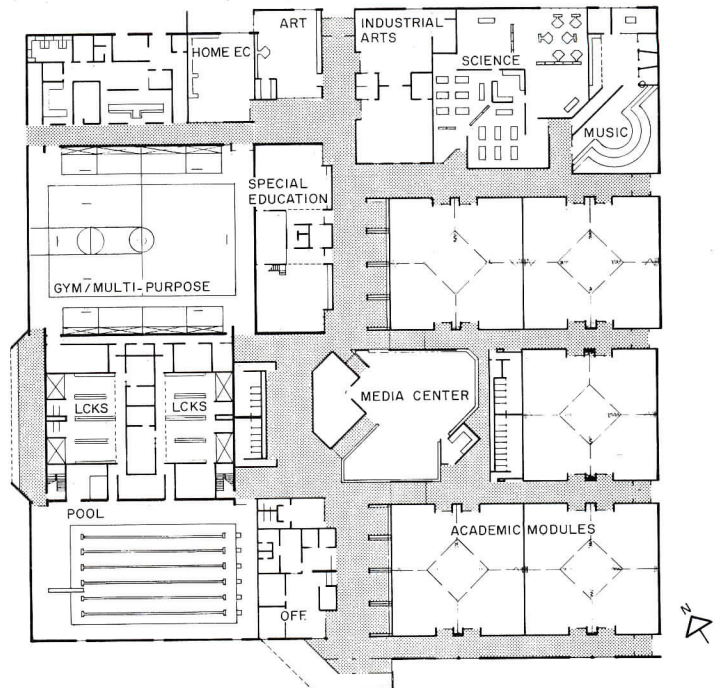
On the opposite side of the "Main Street" are five academic modules grouped around an open media center. Each module has a permanent seminar space in the middle, and moveable walls and open plan furniture to allow a change in classroom configuration within five minutes. Specialized classrooms for music, science, home economics and industrial arts are at the far end of the building.

WESTFIELD MIDDLE SCHOOL, Westfield, Indiana. Owner: *Westfield-Washington Schools*. Architects: *The McGuire & Shook Corporation Burns-Clark-Jacobs-West*—principal-in-charge: *Gilbert K. Jacobs*; project architect/designer: *David H. Partenheimer*. Engineers: *Richard E. Colter* (structural); *ATEC Associates, Inc.* (foundation and soils); *Russell E. Peek* (mechanical); *James C. Haering* (electrical). Landscape architect: *Harold R. McGee*. Consultants: *Chip Kaleen* (interior design/graphics). General contractor: *Pearson Construction Co., Inc.*





Richard E. Colter, Dan A. Soper photos



The new school is located on a campus of existing schools and sited so as not to disturb the established play and athletic areas. Food services for dining in the multi-purpose gym (which is also used for convocations, physical educations, intramurals, intra-school, and community programs) is provided by the high school.

The academic modules are placed three feet lower on the site to permit clerestory windows, and the pool and gym are lowered four feet into grade to minimize the scale of the building. The structure is steel-framed on concrete slabs, and surfaced by precast panels. The entrances are accented by orange panels.

In addition to the regular instruction spaces, there are two special education areas for the County physical handicapped and mental retardation education programs.



**High school for the deaf
creates special living,
teaching and research
facilities for disabled**

This model school, created by federal action, was designed to explore and demonstrate teaching methods for high school students whose hearing is impaired. In a sense, it is a basic research facility with two major aims: "to improve educational opportunities for handicapped students by providing a secondary teaching-learning environment comparable to that available to hearing students, and to demonstrate the feasibility of such a program nationally."

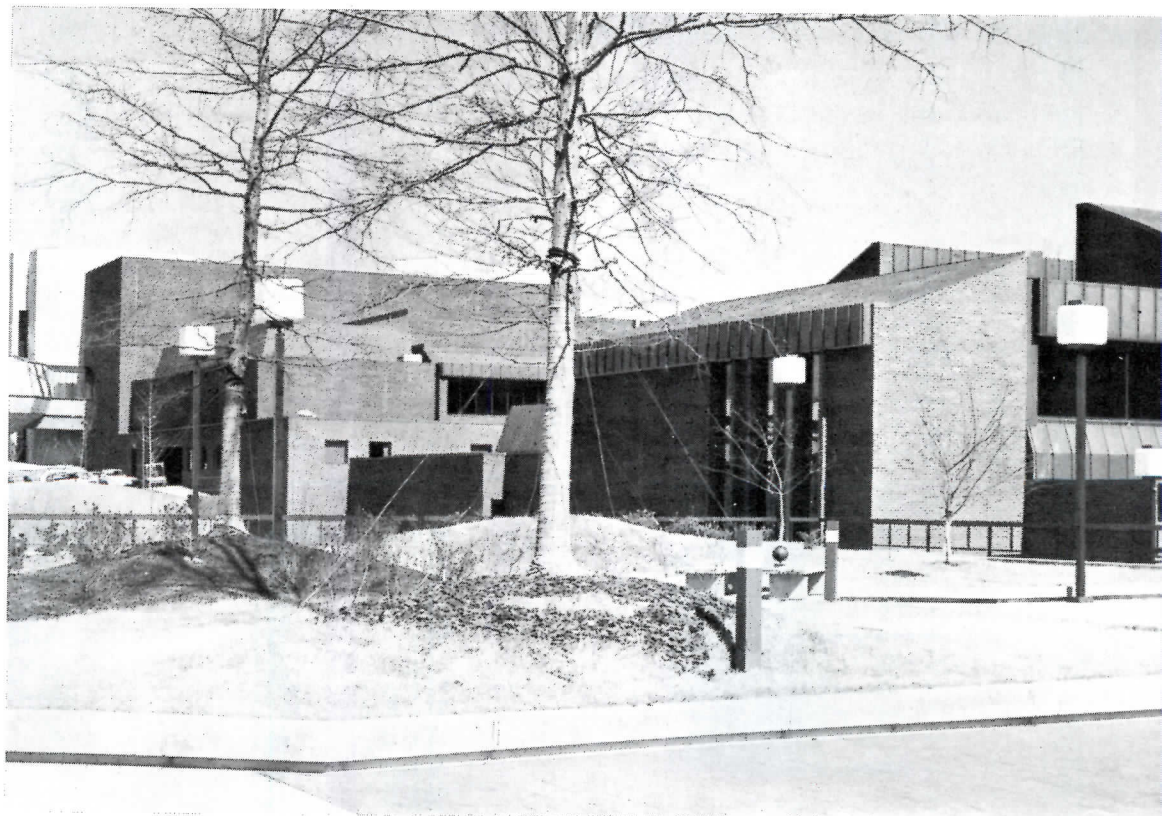
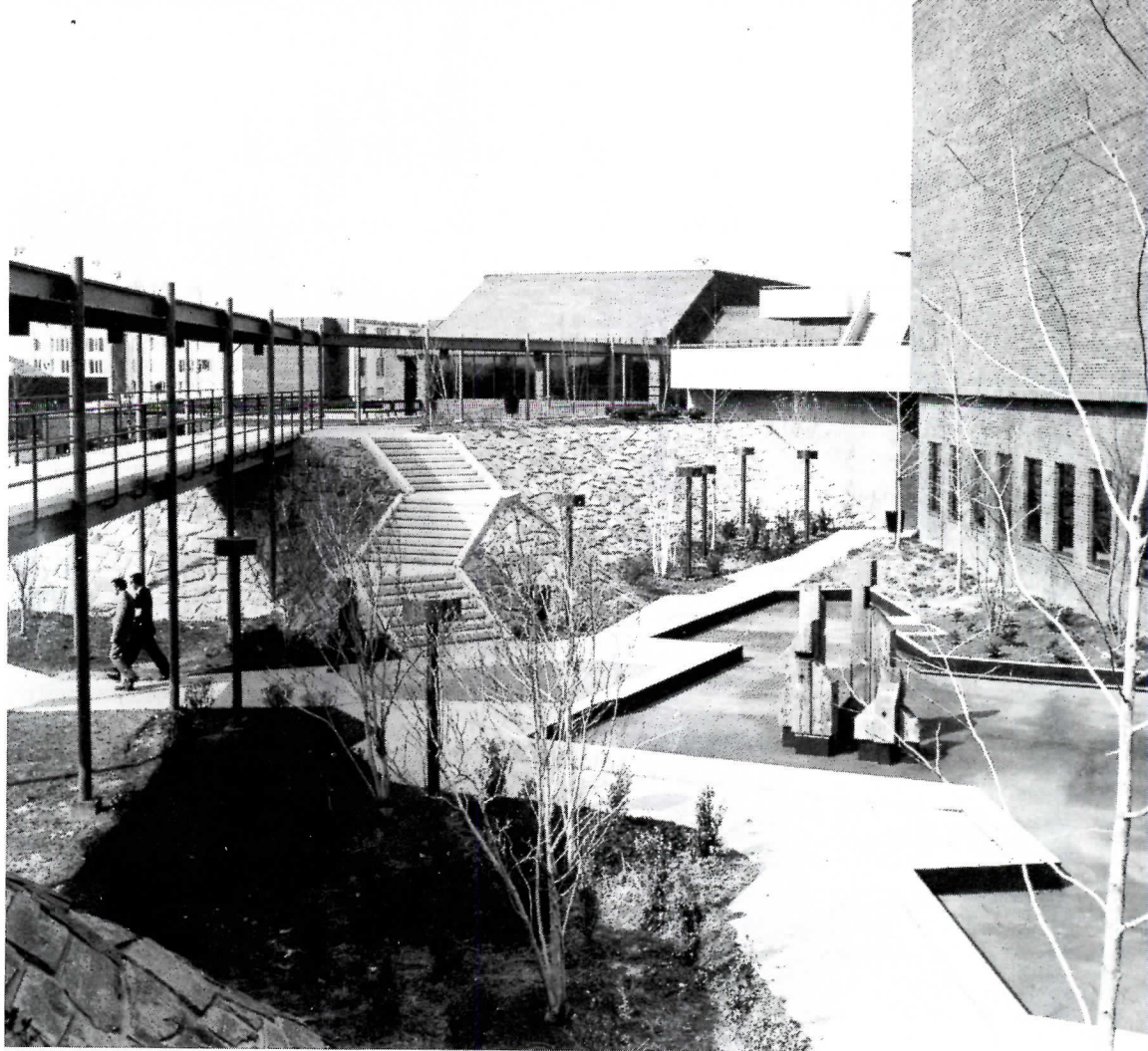
The school was built in two phases: the first was the academic building for 600 students, and the second was the on-campus residential facilities for 450.

The academic building, beyond providing spaces for an extraordinary variety of curricular needs (liberal arts, business, vocational, technical, etc.), varies from the usual school for the deaf in two major ways. One is the use of large open teaching spaces to facilitate easy change and experimentation. Since the openness posed acoustical problems, provisions were made to control sound within ranges critical to deaf persons by using amplification systems and absorbent materials which cut down reverberations.

The second big difference is the use of balconies for observers, instead of the more usual one-way mirrors or tv monitors. In addition there are unobtrusive observation points planned so circulation can occur around classroom areas without being a disruptive force.

Housing is provided in six units, of one to four stories.

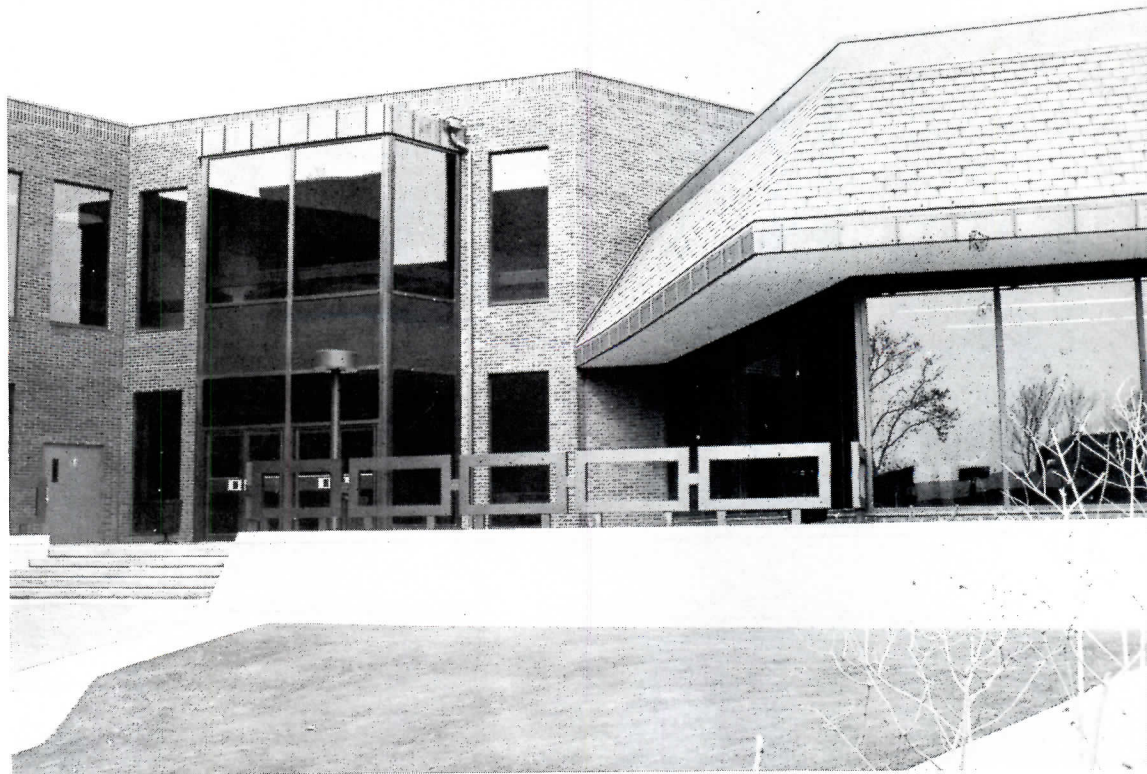
MODEL SECONDARY SCHOOL FOR THE DEAF, Washington, D.C. Owner: Gallaudet College. Architects: HTB, INC. — principal-in-charge and project architect: James N. Freehof; consulting architect: Bertram Berenson. Landscape architect: CR-3. Engineers: Smilsova, Kehnemui & Associates (structural); Schnabel Engineering Associates (foundation and soils); Herbert L. Arey (mechanical); Richard H. Freidin (electrical); Dr. Arthur F. Niemoeller (acoustical); David A. Mintz, Inc. (lighting). General contractor: Phase I—American Construction Co. Phase II—A.A. Beiro Construction Co.

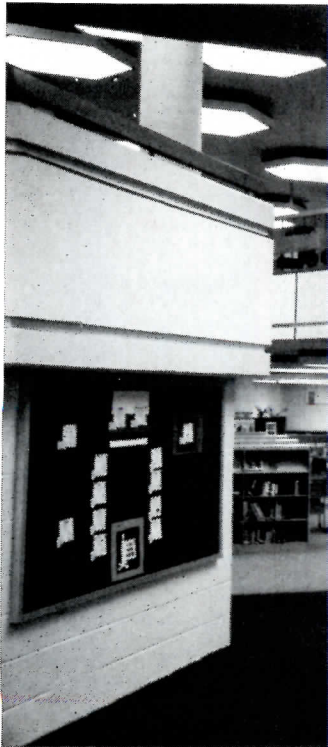
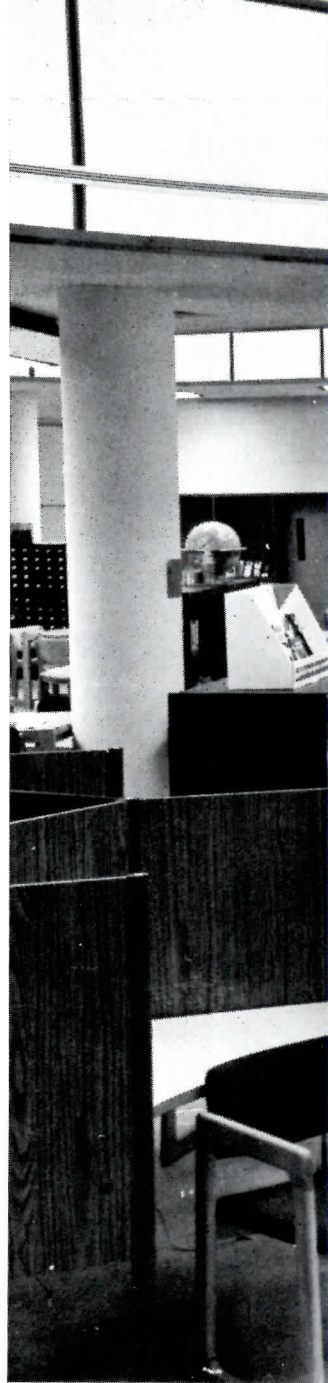
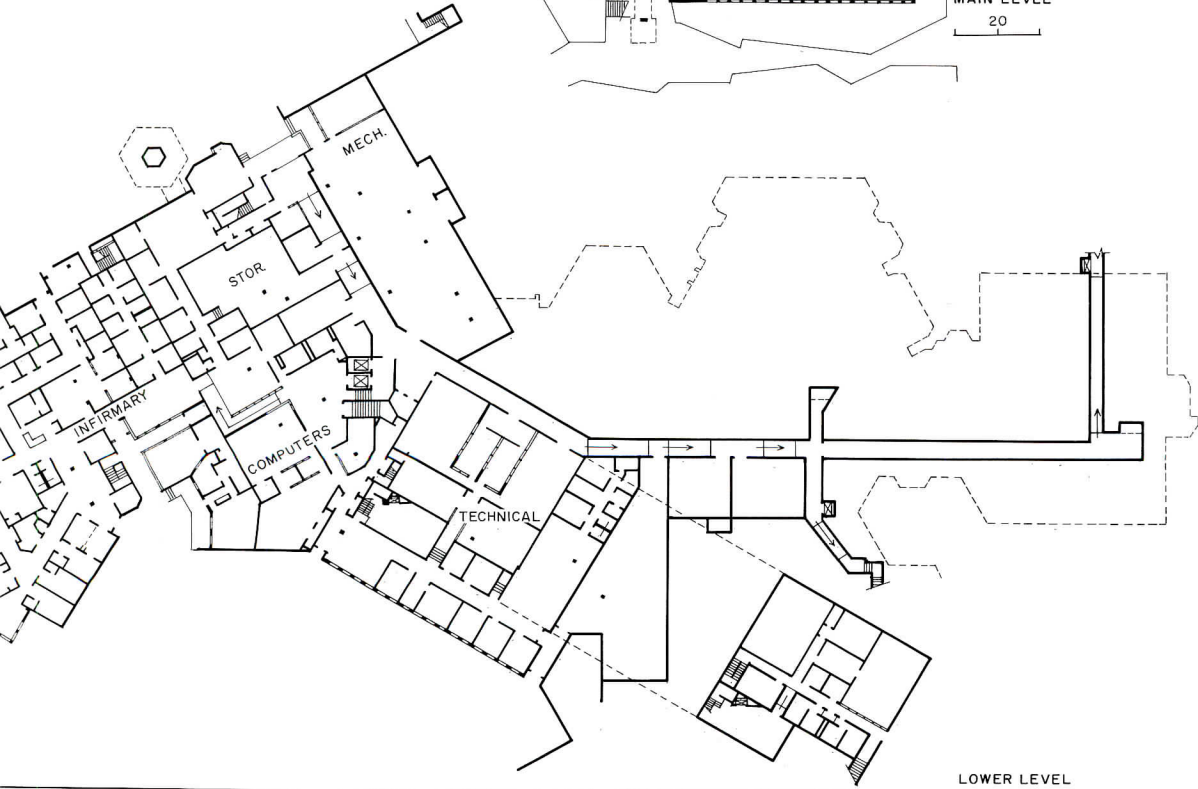
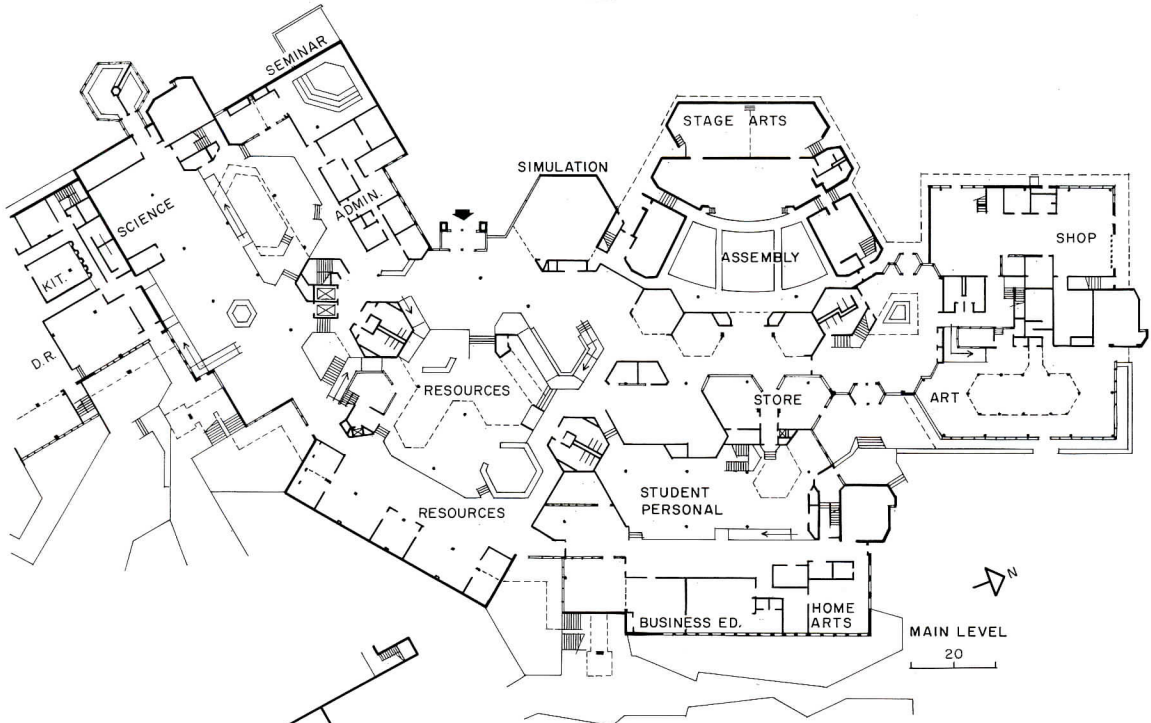
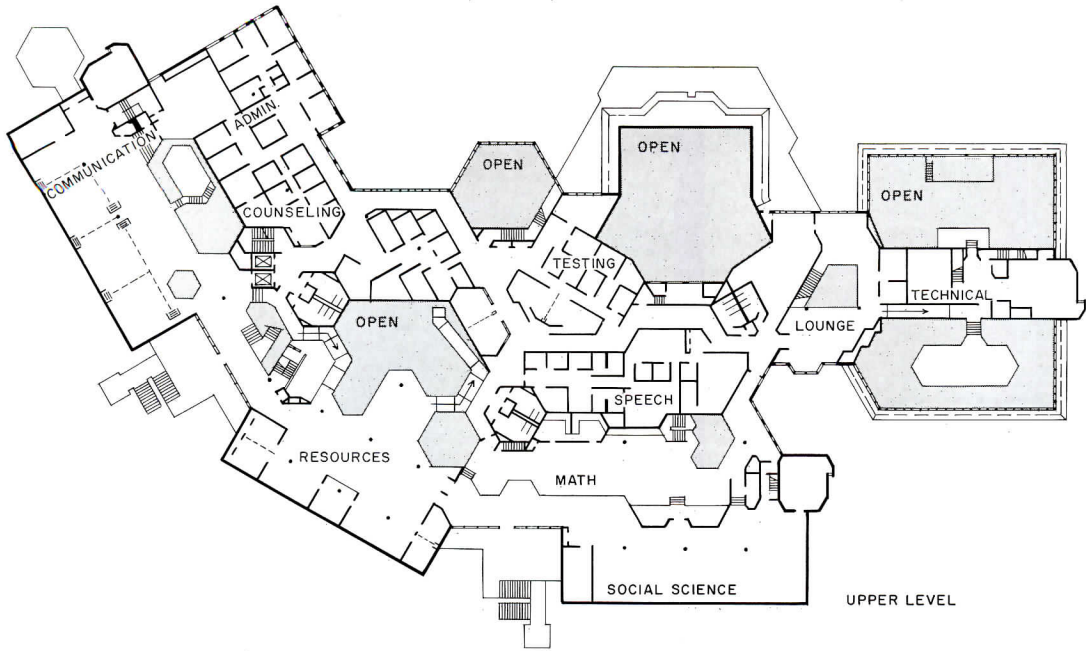


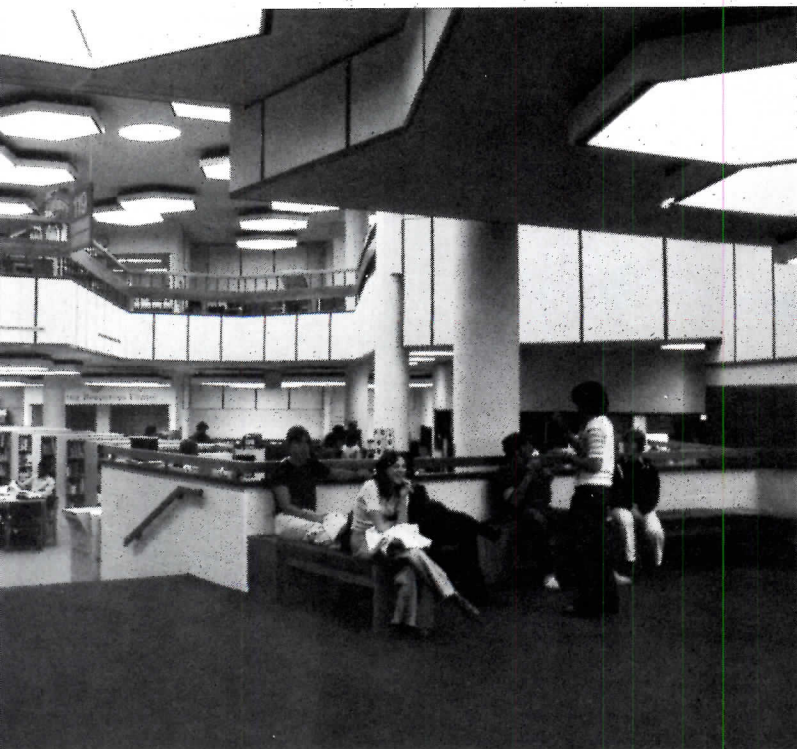


The complex, as a model school, was not designed for duplication elsewhere as a complete facility, but to research and experiment with ideas that may be adapted. As such, it is a demonstration program with provisions for extensive visitation and obser-

vation, for the education of professionals and parents, and as an information and testing center. And, of course, it is intended as an exemplary, innovative program for deaf students, with a campus-full of living, learning and recreational facilities.







The hub of the academic building, shown here, is the big, multi-level resources center, which winds its way up the core of the building. In addition to books and magazines, the center contains a large selection of filmstrips, slides and videotapes.

Most of the classroom areas are large open spaces, but provision has also been made for privacy and closed classrooms where appropriate. Each student has an individually—designed program for speech and auditory testing and training. All courses are taught using "total communication" (a combination of speech, fingerspelling and sign language). In addition to a full range of high school courses, facilities are provided for training in a number of vocational areas (metalworking, woodworking, automotive repair, drafting, electronics and photography).



**Twin elementary schools
planned for different
sites speed provision
of needed facilities**

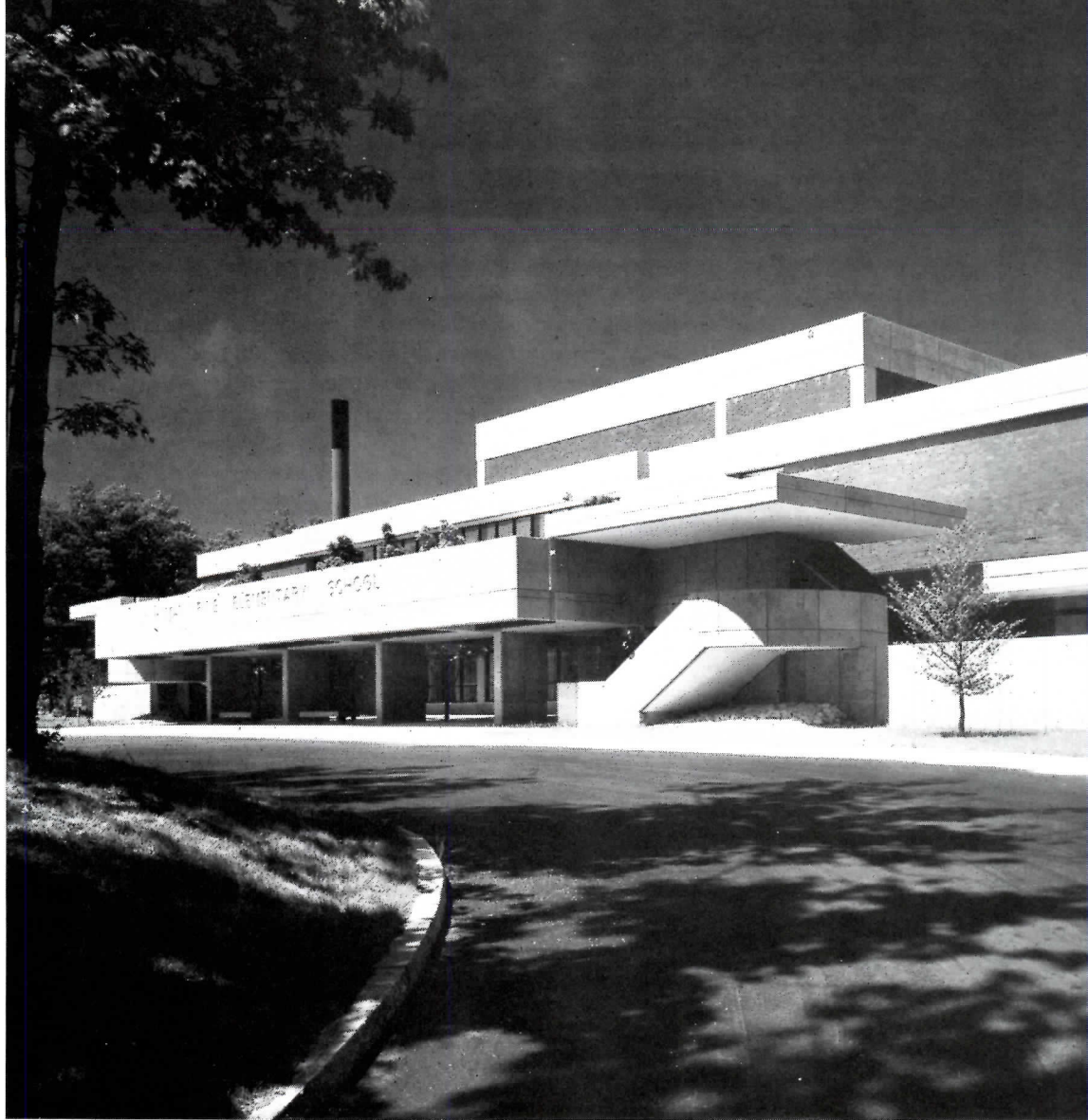
These two identical schools were built on totally different sites in Attleboro, Massachusetts (see next page). But they are a far cry from the pared-down, banal "stock plans" proposed by some a few years ago. They are built with care, of quality materials, well equipped, and have considerable design sophistication and vitality.

Although the schools were bid together, and came in for the reasonable cost of \$33 per square foot, Jacek von Henneberg says that building two schools from the same plans "didn't really save money," but obviously did save design time, and "permitted a small architectural firm to successfully compete and cope with both jobs."

The schools have identical grade structures and team teaching educational programs. However, the flexible, open plans do permit individual adaptations as time progresses. Each school has two primary and two intermediate instructional areas for 270 pupils each, clustered around a resource center/library (for 100 pupils) which is well equipped for audio-visual and TV use. There is a separate kindergarten room for 60 pupils. All these areas have mobile furniture and screen space-subdivision.

A divisible, multi-purpose cafeteria/assembly area is located on the second level, and is designed for use by pupils and the community, as is the gymnasium on the first floor. Flanking the gym, in addition to lockers, is a health care suite.

HYMAN FINE ELEMENTARY SCHOOL AND HILL-ROBERTS ELEMENTARY SCHOOL, Attleboro, Massachusetts. Owner: City of Attleboro, Massachusetts. Architects: Henneberg & Henneberg Inc. and A.A Trulli Associates, Inc., Associated Architects. Engineers: Souza & True (structural/foundation and soils); Progressive Engineers (mechanical); Lottero & Mason (electrical). Landscape architects: Carol Johnson & Associates. Consultants: R. S. Means (cost); Engelhardt & Engelhardt (educational). General contractor: J. L. Marshall & Sons Inc.

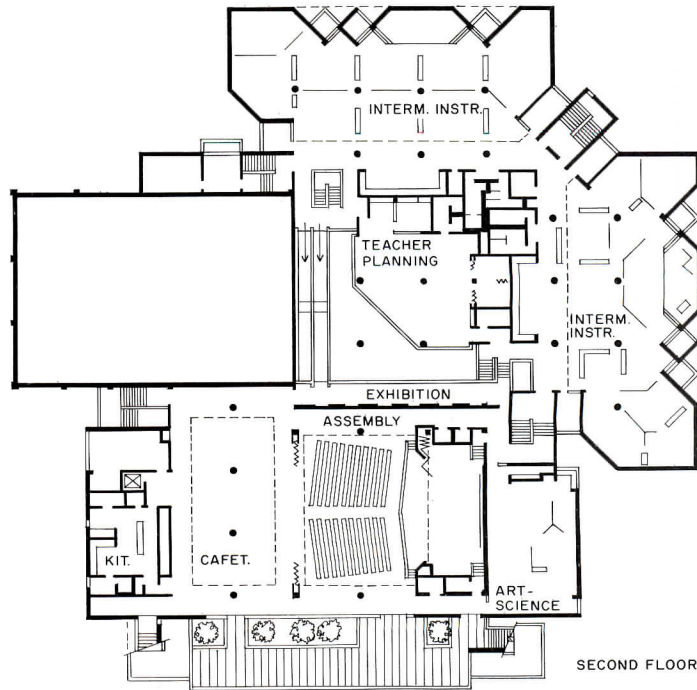
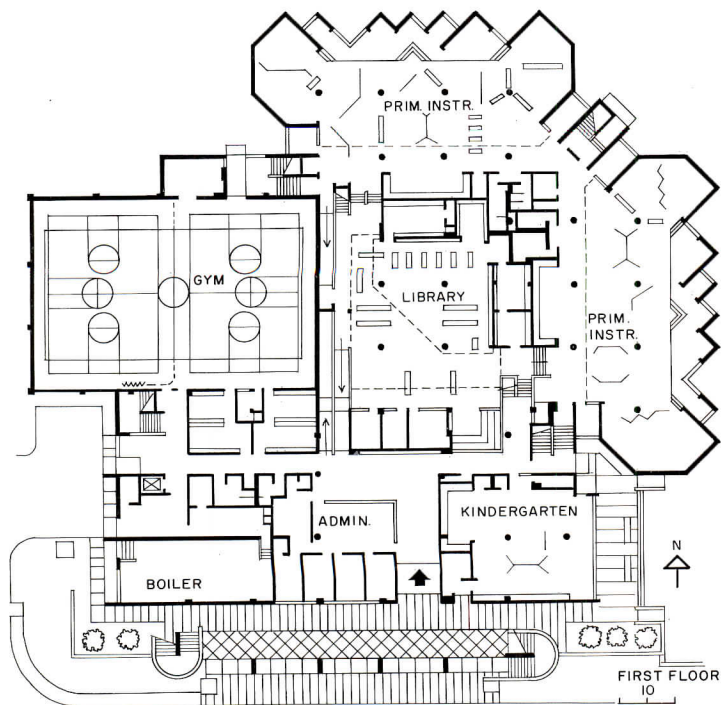


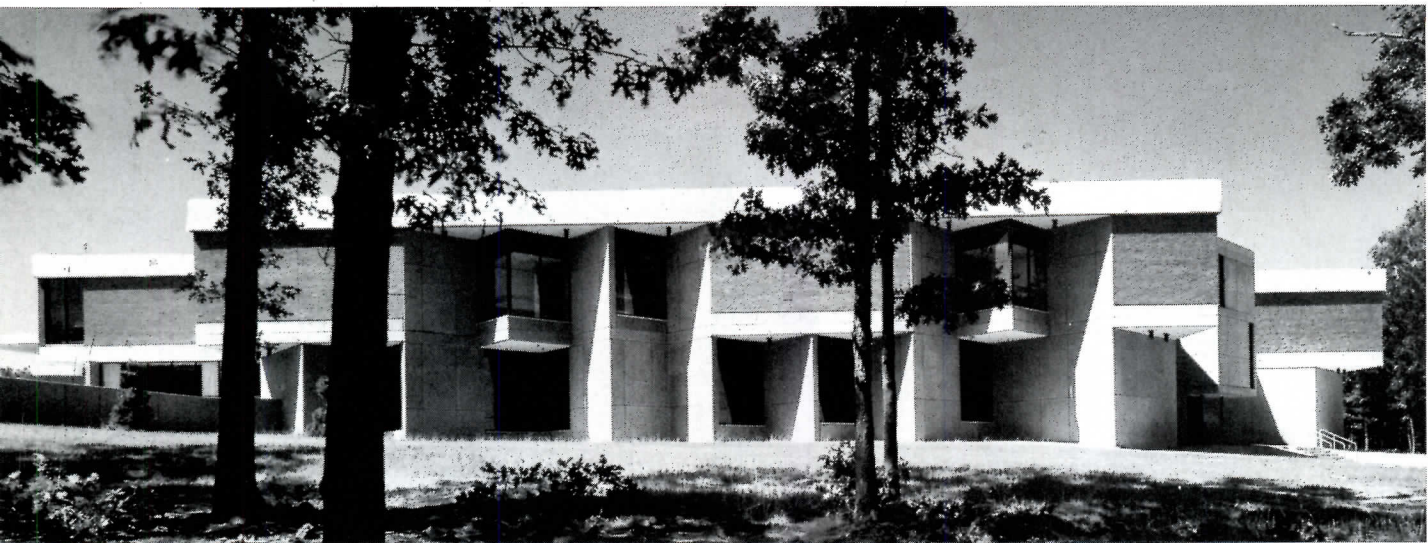
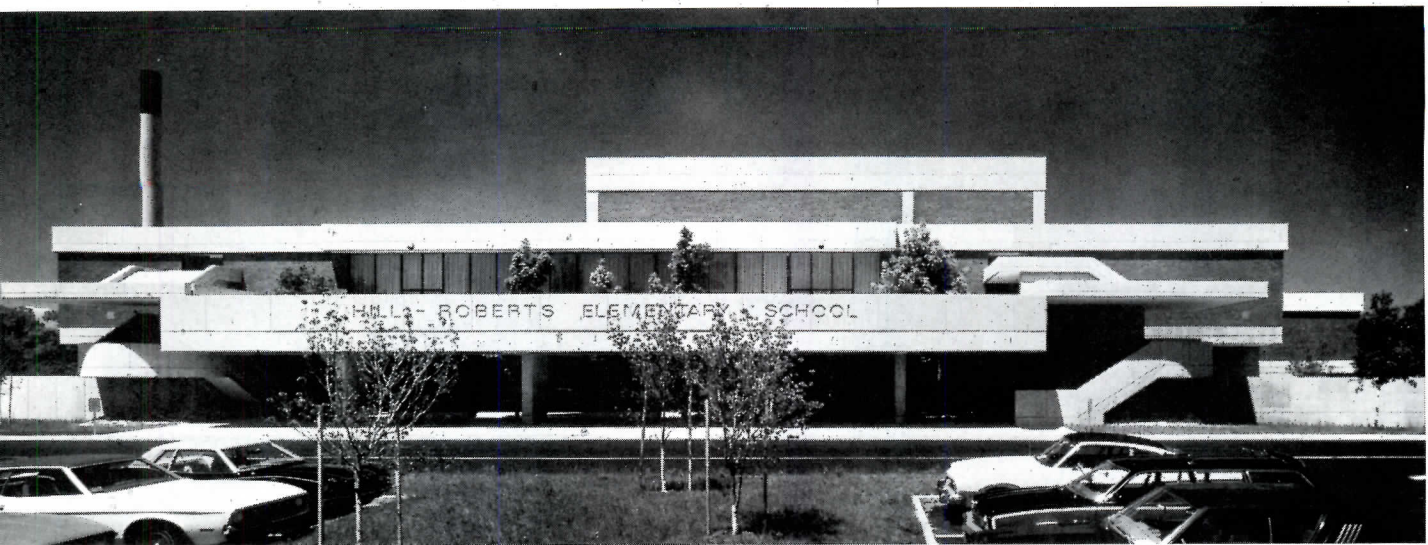


D. Randolph Foulds photos

The Hyman Fine Elementary School (shown here) is identical—except for some murals and the name on the facade—to its twin (see next page). The structures have concrete frames, concrete pan floors and roofs, and exteriors of brick and concrete. All inter-

iors were designed by the architects, and have a fresh and colorful ambience. In the teaching areas, windows are angled to prevent glare on the blackboards. In addition to the stairs, the two floors are also connected by ramps to ease access for the handicapped.

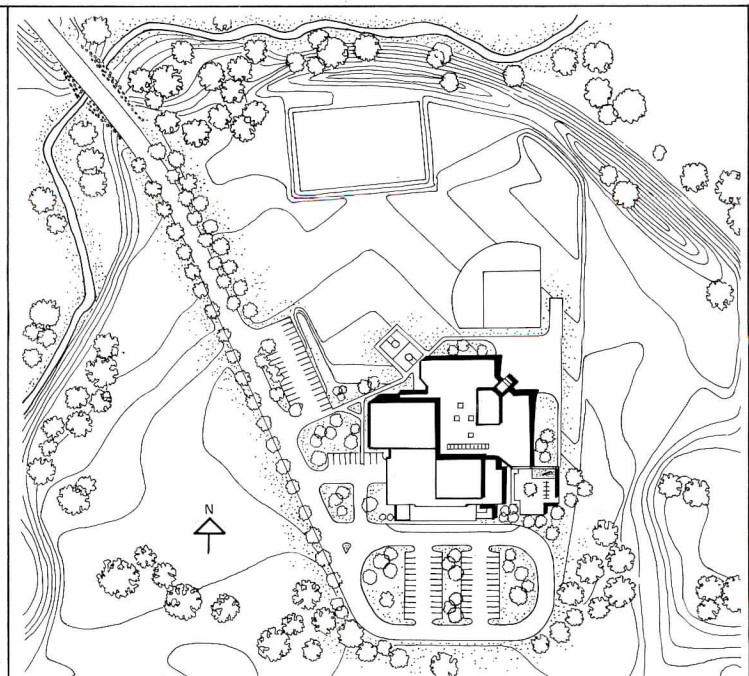
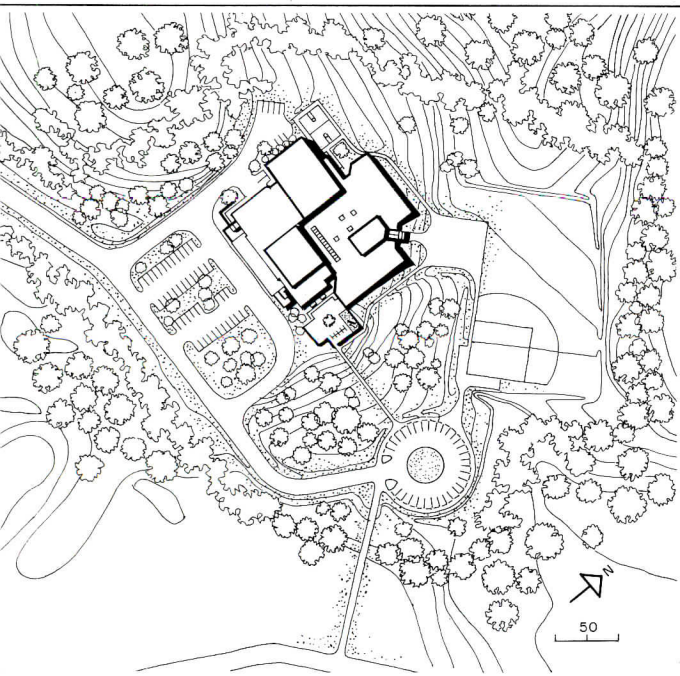




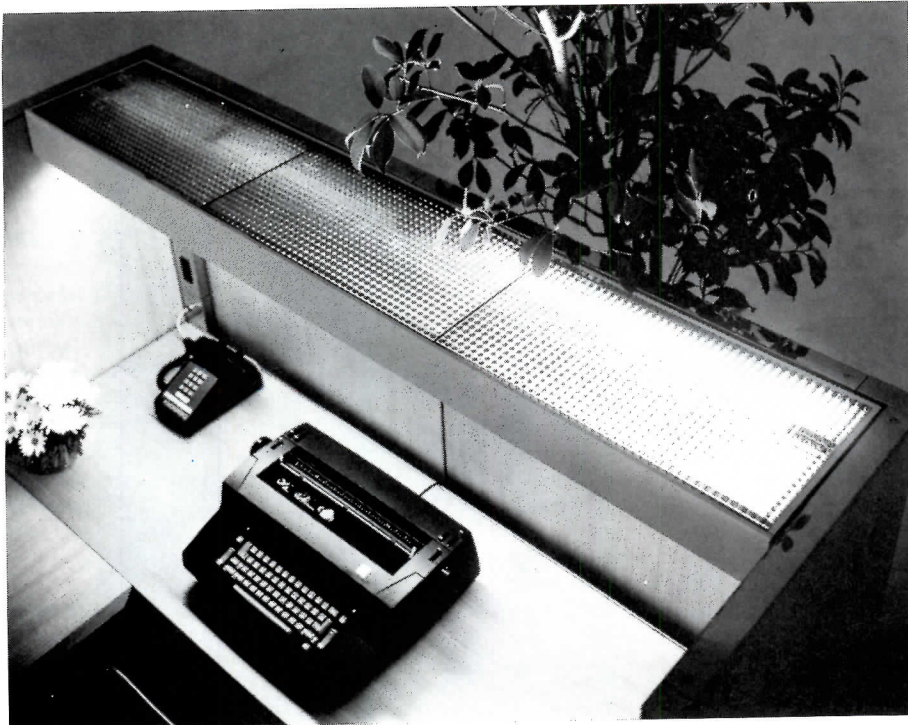
The Hill Roberts Elementary School is shown above, and in the site plan below right. The land for this school was 13.2 acres of flat gravel with high subsurface water, no topsoil or trees and located in the bend of a marshy river. Site development and landscaping

cost \$301,000.

The Hyman Fine School (plot plan below left) was built on 13.5 acres of hills, forested ledge and boulders with minimal topsoil. Here, site development and landscaping cost \$251,000. Obviously the plans had to be adapted.



For more information, circle item numbers on Reader Service Inquiry Card, pages 187-188



Subtle refinements designed for Knoll furniture/component system

The latest design developments in the Knoll furniture/component system incorporate some subtle changes. One addition is in the louver arrangement on both the top and bottom sides of the light cage hung over the work surface, intended to reduce

glare on the work top and to trap light (generated from the fluorescent lamp) for improved general up-lighting. This is claimed to provide a 45 per cent more efficient use of light than other models. Another addition is the availability of three veneers—Aniegre,

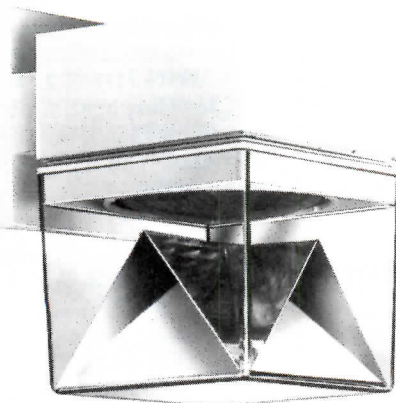
Techgrain and Mahogany. Also available are new low panel heights, improved raceway design, closet and drawer fittings and provisions for word-processing computer equipment. ■ Knoll International, New York, N.Y.

circle 300 on inquiry card

Multi-directional beam is key to new emergency light

Dual-Lite's Emergency Lighting Division has introduced a light fixture with a "beamsplitter" for multi-directional light output. Designed especially for remote-mounted applications, a faceted reflector and lens system (which can easily be field programmed) can project light in four directions. Standard colors are white and black, but optional decorator colors are available. The fixture may be mounted on a wall, ceiling or semi-recessed surface. ■ Dual-Lite, Inc., Emergency Lighting Division, Newton, Conn.

circle 302 on inquiry card

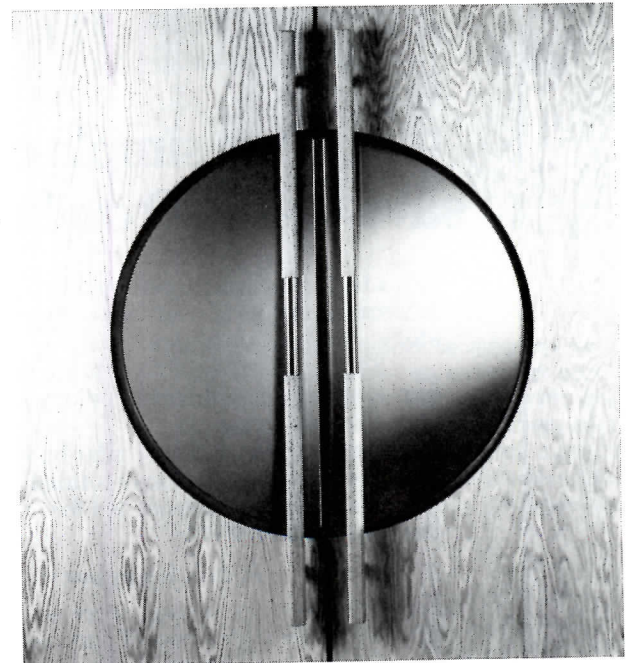
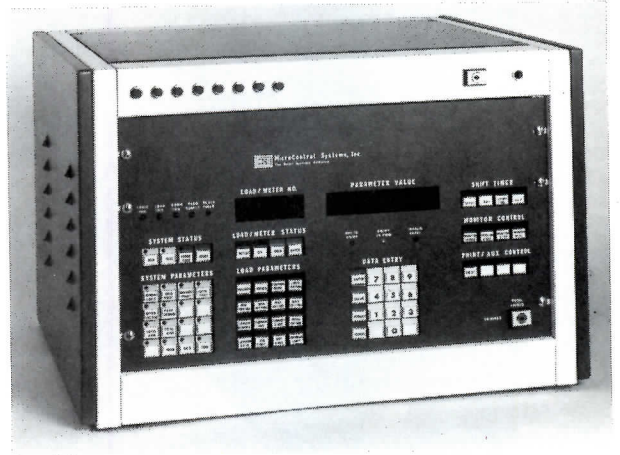


Energy management control/monitor available

MicroControl Systems Inc. has introduced a compact, self-contained energy management system that monitors and controls energy consumption in industrial and commercial buildings. The system limits

peak demands, controls temperature, and can operate equipment on a pre-set schedule in commercial buildings. ■ Micro-Control Systems Inc., Milwaukee, Wisconsin.

circle 301 on inquiry card



New doors series features elegant detailing

A highly styled hardware detail highlights the Geometric Door Series by Customwood. A weatherstripping/glass edge surrounding the door pulls reflects light. The door series includes four solid core hardwood veneered designs, stan-

dard single sizes are 36- by 84-in. and 36- by 96-in. with other sizes available by special order. Veneer options include birch, oak and walnut. ■ Customwood, Albuquerque, New Mexico.

circle 303 on inquiry card

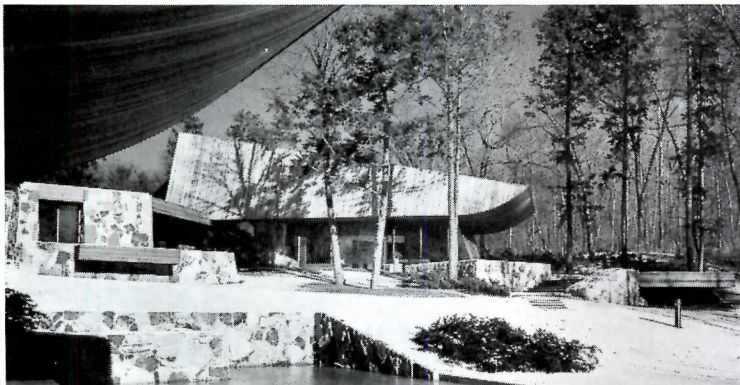
NOW IS THE TIME!

The editors of ARCHITECTURAL RECORD invite submissions for

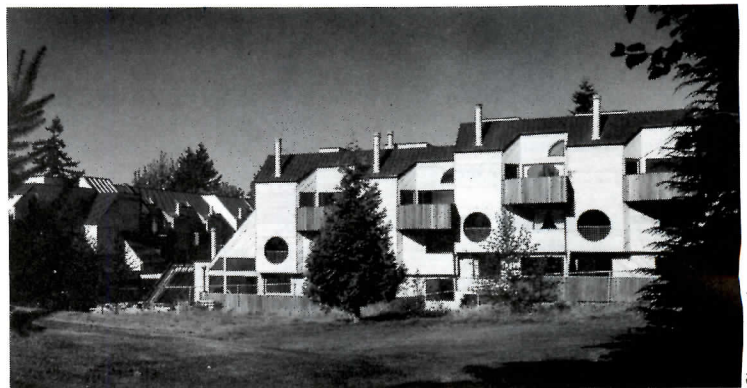


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Both award programs are open to any architect registered in the U.S. or Canada, and submissions of unpublished work will be welcome for **Record Interiors** until October 1, 1978 and for **Record Houses and Apartments** until November 1, 1978.

No formal presentation requirements are made, though materials submitted should include plan(s), photographs, and a general description of the project.

Submissions will be returned, but not before date of publication.

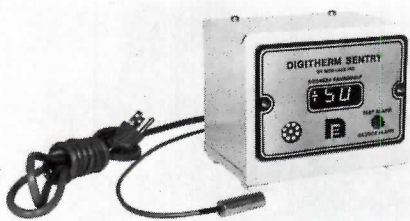
We especially solicit and welcome the work of young and/or previously unpublished architects for these two prestigious award programs.

Submissions should be mailed to (and any questions addressed to)

Charles K. Hoyt (212/997-6319) for Record Interiors, and
Barclay F. Gordon (212/997-2334) for Record Houses

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New York City, N.Y. 10020

PRODUCT REPORTS *continued from page 133*



TEMPERATURE ALARM / Designed to warn of mechanical or electrical problems that would cause temperatures in refrigerators, freezers or walk-in units to rise beyond a pre-determined point, the "Digitherm Sentry" electronic alarm functions as a digital thermometer as well as an alarm. A cylindrical sensing probe reads temperatures in the product area; this data is displayed constantly on the flush-mounted or freestanding "Digitherm" unit. Should the temperature rise over the preset level, the display pulsates "on" and "off" and an audible alarm sounds to attract attention. Terminals are available for optional wiring of remote audio or visual alarms. ■ Nor-Lake, Inc., Hudson, Wis.

circle 305 on inquiry card

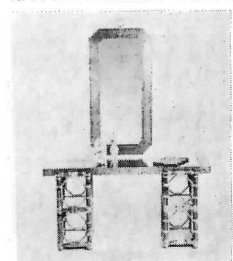
DRINKING FOUNTAINS / Pre-cast stone drinking fountains, suitable for indoor or outdoor locations, are furnished in round and square pedestal models, and regular and wheelchair-level wall-hung units. Pedestal fountains have light and



exposed aggregate finishes in two natural color tones; wall-mount units are available in polished terrazzo, light and exposed aggregate finishes in eight earth-toned colors. All have a stainless steel receptor, lever handle valve and vandal-proof bubbler. ■ Cordley, Broadview, Ill.

circle 306 on inquiry card

RATTAN/BRASS FURNITURE / Seven pieces in the "Chalfin Collection" feature antiqued brass surfaces set on natural rattan bases, and joined together by jacquard corner weaving. The line includes square and rectangular cocktail tables; a 46½-in.-high mirror; console and end tables; a chest; and a 60-in.-long desk. The brass surfaces contain hundreds of hand-hammered nailheads. ■ IPF, Inc., Paterson, N.J.



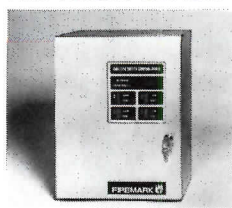
circle 307 on inquiry card

CASEWORK / The "Nordic Oak" collection is available in-stock in a full range of kitchen cabinetry and bathroom vanities, part of a complete furniture system that allows coordinated kitchen/dining or den design. Doors and drawer fronts of the wood-grained cases are surfaced in a woodgrain pattern *Formica* laminate. Construction is mortise and tenon, with self-closing hinges and brass hardware. ■ Del Mar, Triangle Pacific Corp., Dallas, Texas.



circle 308 on inquiry card

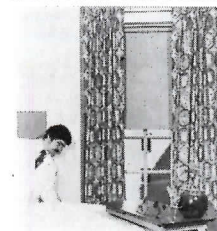
FIRE ALARM SYSTEM / This fire-alarm control panel is supplied with two zones of fire monitoring built in, but one or two more zones may be added by just plugging in circuit board modules: terminal wiring for all four zones is completed



at the factory. Terminals provide true 2-wire 24 VDC smoke detector operation; trouble indicators show the nature of malfunctions as well as the location of faults. Separate low-current LED's show blown fuse; short circuit; open circuit; positive-side ground fault; negative-side ground fault; switch left in off-normal position; and in which zone the trouble is located. The NEMA 1 housing is vandal- and impact-resistant; the panel meets all requirements of NFPA standards 72A, B, C, and D. ■ Fixson-Firemark, Inc., Franklin Park, Ill.

circle 309 on inquiry card

HOSPITAL DRAPERIES / Draperies and curtains made of glass yarns are naturally and permanently resistant to combustion, and properly finished fabrics woven from these yarns emit no significant amount of smoke when exposed to flame or intense heat. Although



the fabric cannot be dry cleaned, and should not be vigorously machine washed, simple sudsing will remove soil easily from the surface, as dirt cannot penetrate glass fibers. Larger health care institutions could use an automatic, mobile washing machine. The draperies shown here are the "Olympia" pattern, available in autumn, blue and melon colors and manufactured by Tami Products Co. ■ PPG Industries, Inc., Pittsburgh, Pa.

circle 310 on inquiry card

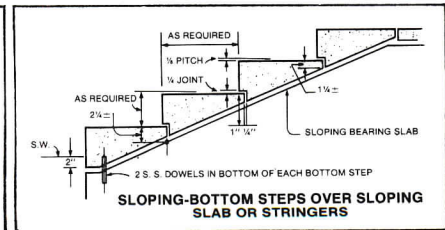
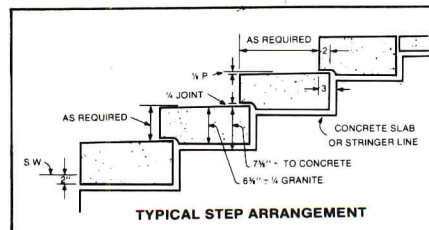
more products on page 141

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



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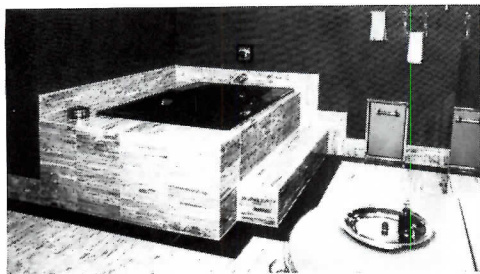
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Flor-Ever is proving its superiority in all kinds of installations throughout the country. Designed specifically for commercial use, it has the appeal of natural commercial designs and colors, combined with a durable, maintenance-saving, no-wax wear surface. In 9' and 12' widths, Flor-Ever offers the beauty of virtually seamless—and faster—installation. Abrasion and stain resistance are excellent for the toughest applications. (Flor-Ever meets federal specifications L.F.-001641 Type III, Class I.) The perfect product for changing commercial flooring needs. New Travertine, plus Marble, an over-all design, provides a total of 10 highly workable colors. For further information call a Congoleum[®] flooring contractor, Sweet's Toll-Free Buy Line (800-255-6880), or write Contract Sales Manager, Congoleum Corp., 195 Belgrove Dr., Kearny, NJ 07032.

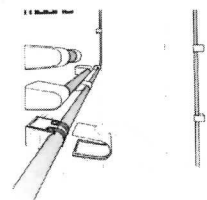




MARBLE TILE / Made from quarried blocks of marble and onyx, impregnated with resin for strength, "Zeta Marble" is installed with an adhesive in the same manner as ceramic tile. Design possibilities include solids, stripes, alternating color blends and geometrics; each piece is 6- by 12- by 1/4-in. in size. "Zeta Marble" will not stain, and may be used residentially or commercially. ■ Hastings Tile & Il Bagno Collection, Lake Success, N.Y.

circle 311 on inquiry card

RAILING BRACKET SYSTEM / Constructed of

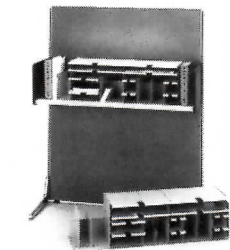


Spectra coated steel, Limbar British-made rails are 1 1/8-in. in diameter, a size said to provide the optimum ergonomic grip with great strength and large span possibilities. Bracket positions and rail

lengths can be adjusted on site without special modifications or parts; all cuts are concealed and no penetration of the rail is needed. The all-metal railing system will sustain 330-lb loading with proper bracket spacing; hospital and nursing home applications are among those suggested for the *Limbar* railing. ■ The Ironmonger, Chicago, Ill.

circle 312 on inquiry card

CABINET SPACE DIVIDERS / The "Insertables" is



a cabinet space divider system which permits custom design of office work areas without screws, bolts, or special tools. The horizontal shelf unit mounts on a telescoping L-shaped metal base, which expands from 13-in. to any desired length, assuring

custom fit in any freestanding, hang-on or lateral file cabinet. Slots in the base every inch accommodate metal shelf supports or reversible rigid dividers; shelf units come in 11 different widths to hold materials ranging from 3- by 5-in. index cards to computer printout paper. ■ Kwik File, Minneapolis, Minn.

circle 313 on inquiry card

CERAMIC MURAL / The "Il Bosco" mural is



a collection of 24 hand-painted ceramic tiles that may be arranged to form a design of woods, trees and sun for large or small areas, either horizontally or vertically. By using tiles with varying amounts of foliage, a complete custom mural is designed, with blank white tiles or the background. Tiles are heavily glazed to protect the art work. Suitable for both commercial and residential use, "Il Bosco" tiles are shown here in a two-story installation. ■ Hastings Tile & Il Bagno Collection, Lake Success, N.Y.

circle 314 on inquiry card



CONTRACT SEATING / The "Vogue" sofa combines angular frame lines with softly rounded arms and cushions; the solid base may be accentuated with burlwood, high-sheen brass, lacquer, fabric or suede. ■ Bel Vivere, Los Angeles, Calif.

circle 315 on inquiry card

RESIDENTIAL WATER FILTER / The *Super-Gard*



filter uses high-quality, long-life activated carbon to remove objectionable tastes and odors from residential drinking water supplies. It is designed to be connected to the cold water supply line underneath the kitchen sink; a separate faucet mounted

on the sink dispenses the filtered water. The filter cartridge, contained in a stainless steel housing, can be replaced by hand in minutes as required: on an estimated usage of five gallons per day, the *Super-Gard* will treat the drinking water for a family of five for an entire year. ■ Culligan USA, Northbrook, Ill.

circle 316 on inquiry card

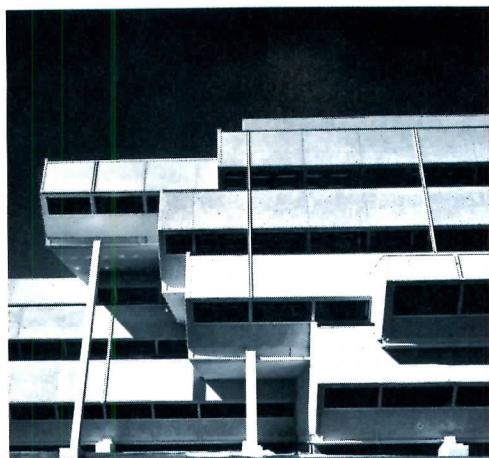
more products on page 145

All-weather Crete . . . thermal protection for an architectural achievement . . . and pharmaceutical research.

Attention to detail is but one of the ways in which architect Paul Rudolph has assured the Burroughs Wellcome Co. building of being an extremely functional corporate headquarters and research center as well as a visual architectural accomplishment. One of these details is the use of All-weather Crete as a roof deck insulation. Completely monolithic, excellent thermal protection properties, slope to drains, vapor transmission and dry application by experienced, licensed applicators - all make All-weather Crete the natural insulation choice for buildings demanding a long, trouble-free roof deck or plaza life. See why so many outstanding architectural firms specify the All-weather Crete system for their jobs . . . contact Silbrico Corporation, 6300 River Road, Hodgkins, Illinois 60525, (312) 735-3322, or see Sweets for the address of your local applicator.



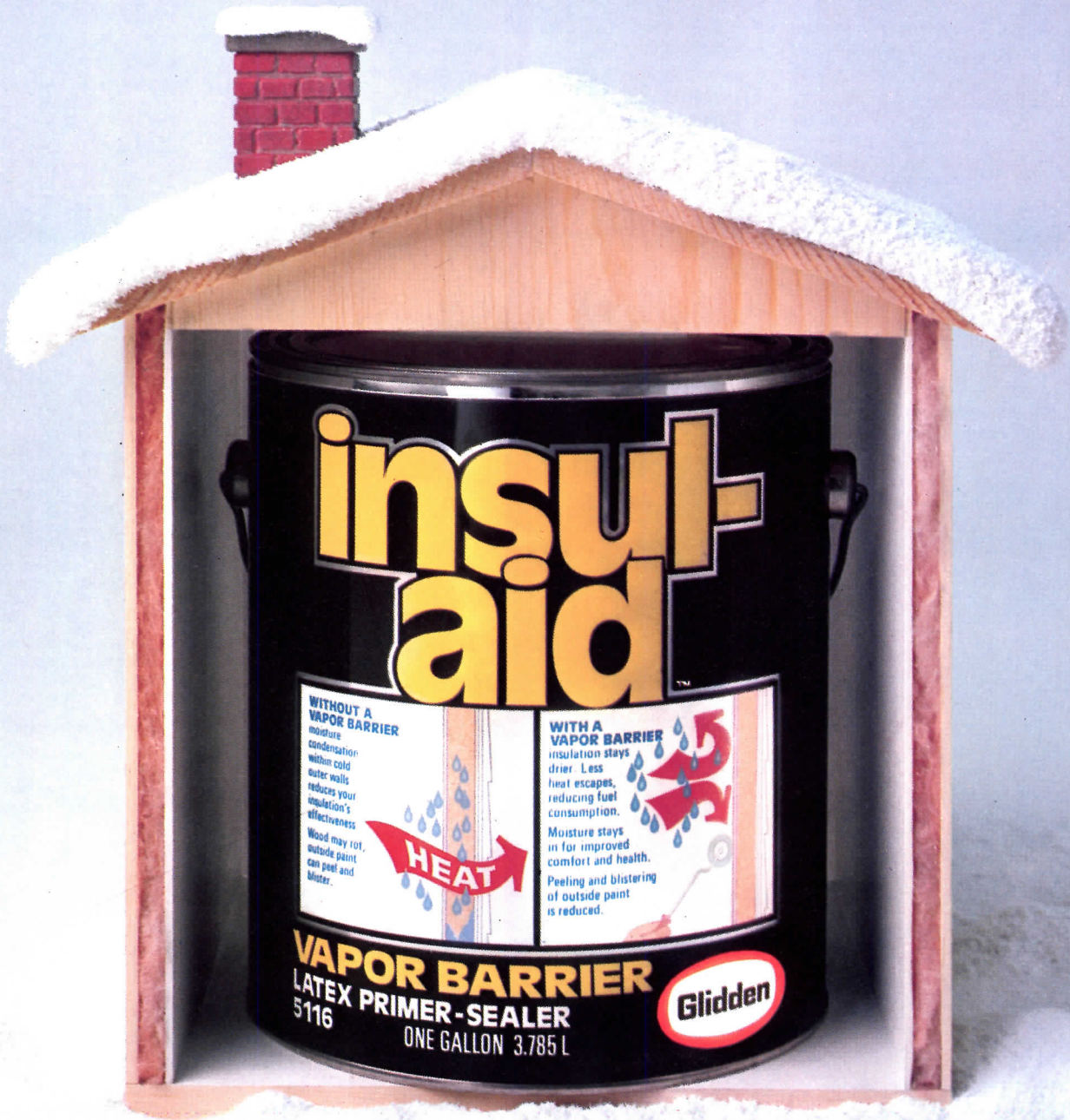
Burroughs Wellcome Co. Building, North Carolina • Paul Rudolph, Architect • Photo, Joseph W. Molitor



For more data, circle 65 on inquiry card

Only from Glidden...Insul-aid.™

A latex vapor barrier that goes on like paint,
and can actually help insulation work
more effectively.



Glidden Insul-aid works with insulation to reduce heat loss through walls and ceilings. You see, it improves the effectiveness of insulation by keeping it drier. More moisture stays in for greater winter comfort and health. Less heat is lost.

Insul-aid is the only latex vapor barrier coating that more than meets FHA standards for vapor transmission.

Insul-aid can also provide other benefits by keeping more moisture inside the structure rather than within the walls. The life of the wood, metal within walls and exterior paint may even be extended.

Insul-aid is what today's energy-conscious consumers are looking for. Let Insul-aid work for you.



Paint you can be loyal to.

SCM® GLIDDEN COATINGS & RESINS
ARCHITECTURAL & MAINTENANCE
SCM CORPORATION, CLEVELAND, OHIO 44115

For more data, circle 66 on inquiry card

SILICONE SEALANTS / An eight-page guide is designed to help assure weather-tight construction, explaining basic considerations involved with dynamic joints and sealant specifications to accommodate expansion and contraction without risking sealant failure at the joint. Brochure is illustrated with tables, photos and diagrams showing typical joint designs. Design factors covered include static and dynamic joints; load, movement and stress factors; linear expansion of common substrate materials; lap and butt joints, interior and exterior glazing; back-up materials and sealant application recommendations. ■ General Electric Co., Silicone Products Dept., Waterford, N.Y.

circle 412 on inquiry card

POLLUTION CONTROL / Twelve catalytic, cathodic and metal refining products and services which help industry meet government standards for air and water pollution control are described in a 12-page brochure. Exhaust and inert gas purifiers and odor control systems are among the products included. ■ Englehard Industries, Union, N.J.

circle 413 on inquiry card

CONCRETE TREATMENT / An illustrated booklet shows how *Thoroseal* plaster mix eliminates "rubbing" of concrete on the construction site. The textured waterproof coating for concrete and masonry is shown over block and poured-in-place concrete, and in multiple-surface applications. ■ Standard Dry Wall Products, Miami, Fla.

circle 414 on inquiry card

TREATMENT PLANT CONSTRUCTION / Forming techniques for structural parts common to water treatment facilities are detailed in a 12-page brochure. These parts include Y-walls and trough walls, curved walls and round tanks, pipe conduits and tunnels, battered walls, pile caps, columns and straight walls: all of which can be constructed using *Mod-U-Form*, *Gird-R-Form*, and heavy duty forming systems. Shoring methods for concrete construction are also discussed. ■ Patent Scaffolding Co., Fort Lee, N.J.

circle 415 on inquiry card

DECORATIVE LAMINATES / A color brochure describes "Dillerwood" and "Dillercloth" high-pressure laminates, made of genuine wood veneers and woven linens and hessians completely finished and protected with melamine. Panels are 4-by-8-ft, have a Class 1 flame spread, and are said to fabricate as easily as any regular high-pressure laminate. ■ The Diller Corp., Morton Grove, Ill.

circle 416 on inquiry card

FANS AND LOUVERS / Published by the Air Movement and Control Association, the "Directory of Licensed Products" includes all types of centrifugal, axial and propeller fans, as well as louvers, dampers and shutters. All equipment qualifies for the Association's Certified Ratings Program. ■ Air Movement and Control Assn., Arlington Heights, Ill.

circle 417 on inquiry card

SWIMMING POOL MAINTENANCE / Tips on how to reduce yearly swimming pool repair expenses are contained in a six-page color brochure. Literature explains how to properly prepare surfaces and then repair the complete pool with *Thorite*, a non-shrink patching material; *Waterplug* hydraulic cement; *Acryl 60* bonding agent; and *Quickseal* cement-base paint. ■ Standard Dry Wall Products, Miami, Fla.

circle 418 on inquiry card

ENERGY PROGRAMMER / Literature explains the multiple functions of the "Energy Master Programmable Energy Flow Controller," which reduces both the demand and the energy portions of utility bills. A specification data sheet provides full details of operating characteristics, including high- and low-priority control load points, timing capacity demand sensors, and high priority rotating shed schedule. ■ ECA, Inc., Jamesburg, N.J.

circle 419 on inquiry card

VALANCE HEATING/COOLING / A file of individual case histories describes how hotels have used this manufacturer's line of valance heating/cooling units to provide silent, draftless room comfort with a minimum of maintenance and low operating costs. Valance terminal units modify air temperature by radiation or convection, and have no fans or blowers. ■ Edwards Engineering Corp., Pompton Plains, N.J.

circle 420 on inquiry card

LOW TEMPERATURE FLOOD LAMPS / A "Lamp Information Bulletin" describes a line of low temperature flood lamps which protect merchandise from excessive heat. The fact sheet provides data on the "PAR-38" flood lamps, which have a dichroic reflector that directs the light out of the front of the bulb in the usual manner, but allows 70 per cent of the heat to pass through the rear of the lamp. ■ Westinghouse Electric Corp., Lamp Commercial Div., Bloomfield, N.J.

circle 421 on inquiry card

PNEUMATIC COLLECTION / Full-vacuum and gravity-vacuum pneumatic collection systems are discussed in a four-page product bulletin. Used for handling trash and soiled linen in hospitals, hotels and institutions, pneumatic collection systems can be installed in either new or existing construction. ■ Trans-Vac Systems, Dir. Montgomery Industries International, Jacksonville, Fla.

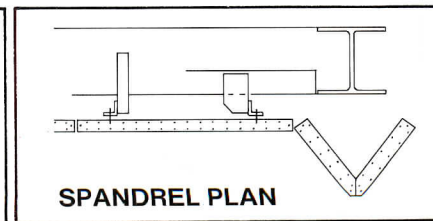
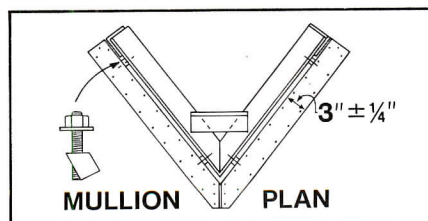
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Granite.

The best in first impressions.



Architect: Graham Anderson Probst & White, Chicago, IL



The first impression is the important one. Granite can make that impression more vivid than any other building material available. That's why Motorola, Incorporated selected Cold Spring's Texas Pearl for their corporate headquarters in Schaumburg, Illinois.

Granite affords the architect a resource from which he can create a building that reflects an image of quality... a corporate image. For lasting first impressions, specify Cold Spring Granite.

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.



Cold Spring Granite Company, Dept. AR-8 202 South 3rd Avenue, Cold Spring, MN 56320

For more data, circle 67 on inquiry card

B.R.I.G.



Viracon's exclusive Bullet Resistant Insulating Glass

Now, you can specify a custom window that offers security as well as energy-saving and anti-fog benefits. Plus, it reduces noise levels. It's the all-new Bullet Resistant Insulating Glass (B.R.I.G.), available exclusively from Viracon, Inc.

B.R.I.G. has all the environmental control qualities of an insulating unit . . . it maintains the strength and safety features of laminated glass . . . it has essentially the same weight characteristics as standard bullet-resistant glass.

Viracon B.R.I.G. is an insulating unit which incorporates multiple layers of glass laminated with polyvinyl butyral plastic interlayers*, making it bullet resistant. It's designed for bank drive-in stations, storefronts, penal institutions . . . anywhere security and energy saving is required.

The winter U-value of Viracon B.R.I.G. is .49, and the summer U-value is .51, compared to 1.00 for standard 1-3/16" bullet resistant glass. No fan or defrosting equipment is

needed. All units are available in tinted, bronze, and grey. B.R.I.G. has been thoroughly tested by Viracon and independent testing laboratories. All B.R.I.G. units are U.L. listed, and carry a five-year warranty.

For custom security and energy-saving windows, specify Viracon B.R.I.G.

Other Viracon architectural laminated products include: BULLET RESISTANT GLASS, SECURITY GLASS, SOUND CONTROL GLASS, and INSTITUTIONAL SAFETY GLASS. All laminated products are in compliance with the new Federal Specification CPSC 16CFR1201. In addition, Viracon manufactures TEMPERED and INSULATING GLASS, and combinations thereof.

See our catalog in Sweet's general building file 8.26.

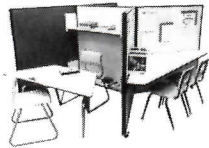
Call or write for more information.



Viracon, Inc., 800 Park Drive, P.O. Box 571
Owatonna, Minnesota 55060 • Phone (507) 451-9555
Attn: Architectural Services Department

*Viracon's laminated architectural glass is made with Saflex® plastic interlayer by Monsanto.

MOVABLE PANELS / The "Space Divider" line of



lightweight, movable panels is available with a variety of hang-on accessories for school or office use. Up to four of the 54- or 72-in.-high panels can be connected with universal hinge posts to form study carrels, work centers, teacher stations, etc. Panel surfaces are offered in a variety of working configurations, including tackable "Jute" texture vinyl, woodgrain vinyls, chalkboards, carpet, marker and projection finishes. ■ Modernfold New Castle, Ind.

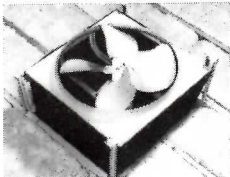
circle 317 on inquiry card



PIPE INSULATION / "850 Snap-On" fiberglass pipe insulation is recommended for use on all heating piping operating at service temperatures up to 850F. The insulation jacket is virtually unaffected by moisture, and may be installed indoors and out, as well as on concealed or exposed piping in commercial and institutional buildings. Made in cylindrical sections of molded fiberglass, "850 deg Snap-On" has an integral hinge, which opens to receive the pipe and easily snaps closed after it is in place. ■ CertainTeed Corp., Insulation Group, Valley Forge, Pa.

circle 318 on inquiry card

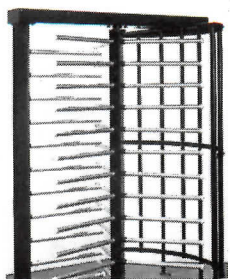
VENTILATION FAN / Large enough to vent an



entire home, model "HVB" fans come in sizes from 24- to 48-in., and are said to be easily installed in either walls or ceilings. Spring construction, prelubricated fan and motor ball bearings provide quiet, vibration-free operation. Optional accessories include a fan speed adjustment for seasonal and occupancy variations; automatic time and temperature switches; and UL-listed interior ceiling shutters. ■ Chelsea Fans & Blowers, New Britain, Conn.

circle 319 on inquiry card

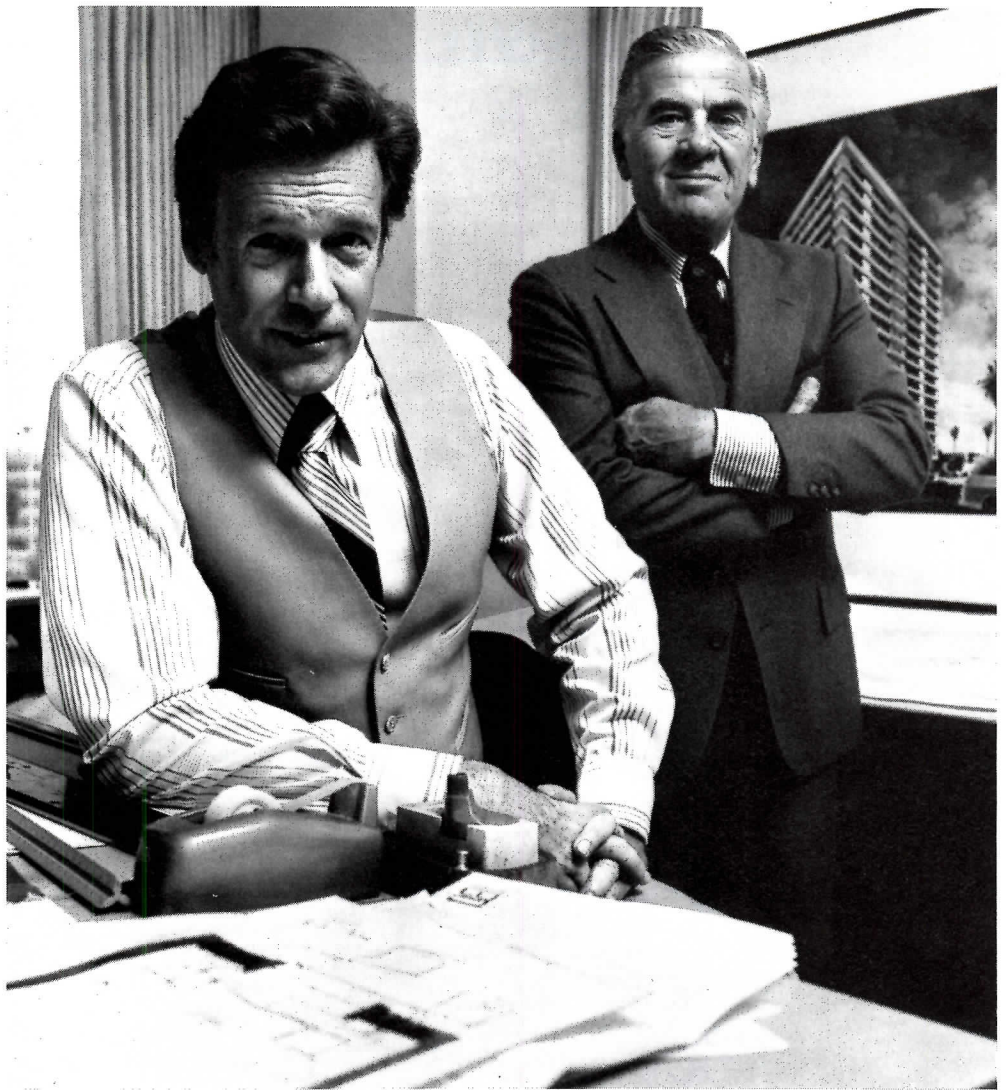
KD TURNSTILE / Transportation costs are significantly



reduced for the economical "High Gate" turnstile shown here; it is shipped unassembled ready for simple on-site erection. Constructed of angle iron and fitted with galvanized steel arms, the "5030" gate turns in one direction only. It is said to operate quietly, providing fast traffic flow with no guards or attendants. Electric controls are optional. ■ Beaver Turnstiles, Div. LCN Closers of Canada, Ltd., Mississauga, Ont.

circle 320 on inquiry card

more products on page 149



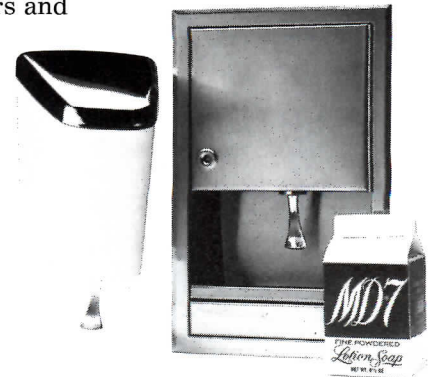
"I went for design. He went for cost. We both went for powder dispensers."

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.

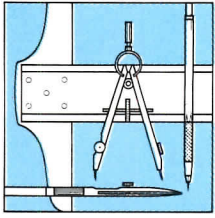


USBORAX

A MEMBER OF THE RTZ GROUP
3075 Wilshire Blvd., Los Angeles, CA 90010.

For more data, circle 69 on inquiry card

Raynor fits your plans no matter what you're planning



Raynor feels that building owners and architects should be able to design buildings related to their function, not their components so that the buildings design efficiency will be realized in years to come.

At the same time we appreciate the initial investment savings where standard components are used. So we design and build overhead type sectional doors that satisfy both of these requirements. To adapt to unusual application conditions, sizes and shapes is our normal way of doing business. What may look to be custom to most people, is often

standard with us because we've solved a lot of peculiar door closure problems in over 30 years.

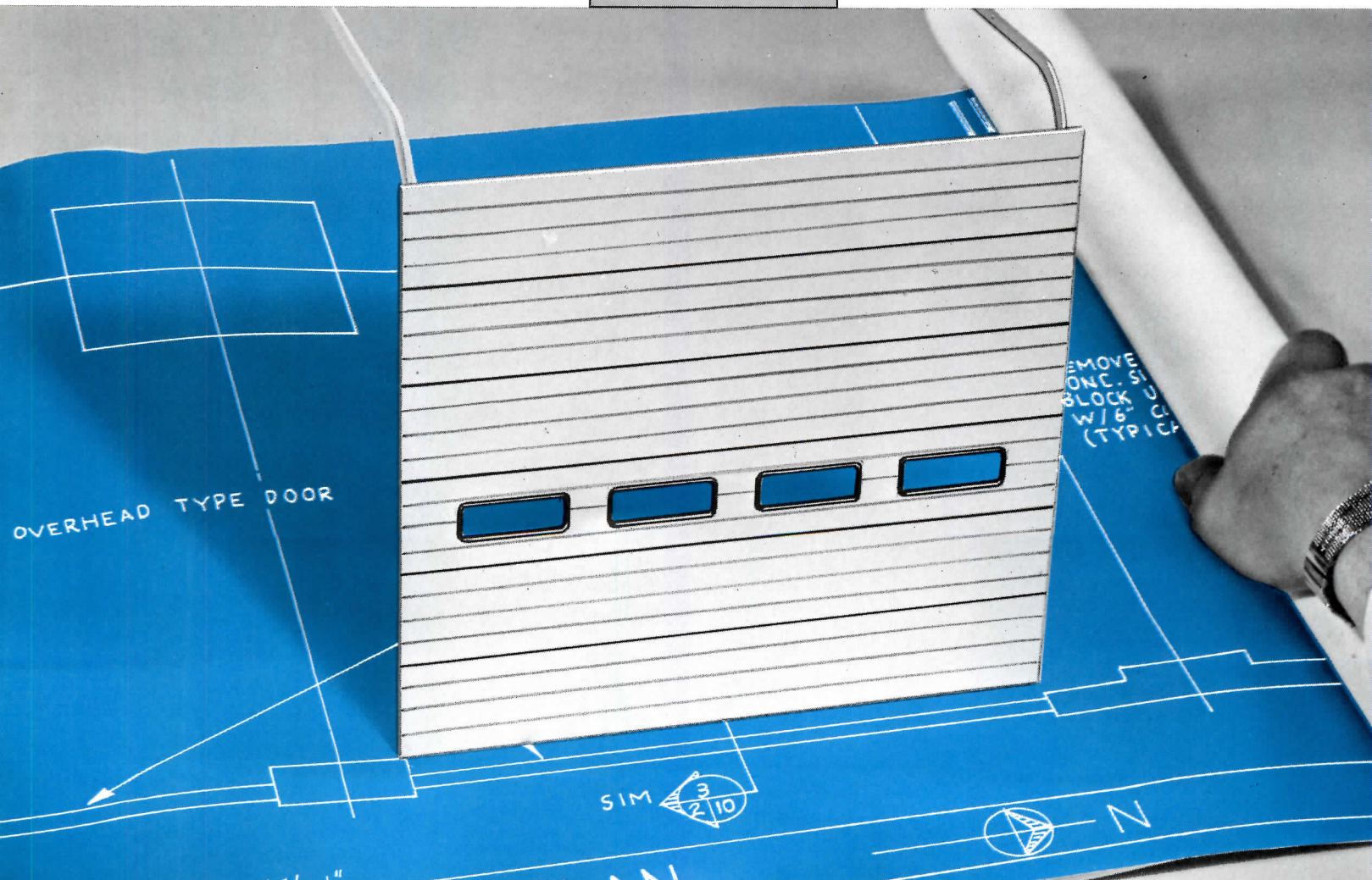
At Raynor we don't expect you to have to build around us. As a matter of fact, we hope that you'll call us in on any door problem that might come up early in your design stage so we can save you valuable time and effort. We know all the ups and downs of door design, construction and long life operation. And we're more than willing to share them with you. Send for our brochure "Raynor Commercial/Industrial Garage Doors," or call us with your door problem today at 815-288-1431. Raynor Manufacturing Company, Dept. AR, Dixon, IL 61021.



RAYNORTM
GARAGE DOORS



For more data, circle 70 on inquiry card

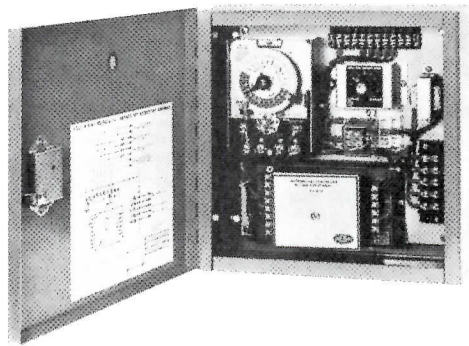




OPEN OFFICE / "Triton II", a wood group of open office modules, includes a variety of storage units, panels and work surfaces that can be selected and arranged in dozens of different ways to suit the particular needs of the user: the furniture itself makes up the office. The system includes both task and ambient lighting, pre-wired, and has convenience outlets for electrical power and telephone connections. Solid woods and wood veneers come in oak or walnut, oil finished; the panels that make up the wall sections are available in wood veneer, fabric covered, or acoustically treated surfaces.

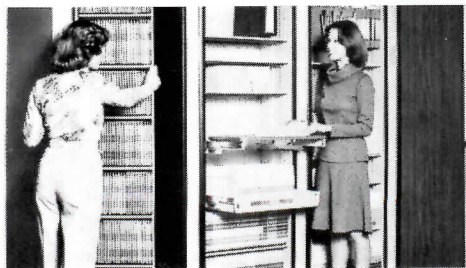
■ IKD Corp., Elkhart, Ind.

circle 321 on inquiry card



HEATING CONTROLS / The prewired "AD-8802 Econostat" package includes an exterior-mounted sensor and a solid-state heating system control unit, which regulate a building's hvac equipment based on actual weather temperatures. The amount of heat required to satisfy the sensor is directly proportional to the amount of heat required to satisfy the building's needs, eliminating the need for thermostats inside. The system is said to be ideal for schools, churches, banks, etc., where the only temperature control is the building's integral heating equipment limit controls. ■ Barber-Colman Co., Rockford, Ill.

circle 322 on inquiry card



ROTATING FILE SYSTEM / Times Two Speed Files has introduced a new office filing system that saves floor space and contains more material than conventional files, without limiting accessibility. The system features two files back-to-back on a turnstile, thus enabling the files to be rotated. Adjustable shelves and drawers are also available. A series of the units can act as a free-standing room divider or as part of a wall partition—with the unit being accessible in two separate rooms. ■ Gerard Metal Craftsman, Inc., Gardena, Calif.

circle 323 on inquiry card

GLASS FIBER REINFORCED CEMENT FOR VERSATILITY

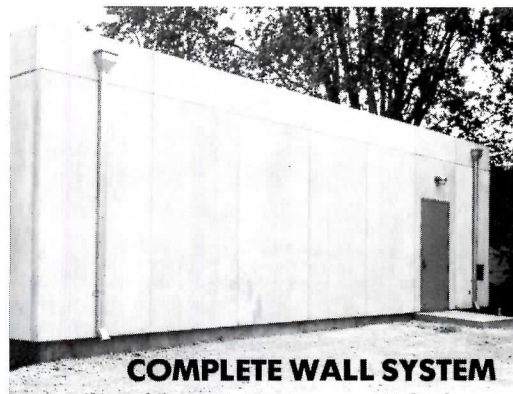
HIGH RISE



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



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



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

cem-FIL®
CORPORATION

Two International Plaza Drive
Nashville, TN 37217
(615) 361-4664, Telex 55-5120

See Sweets General Building
(Architectural File) 7.5/Cem

For more data, circle 71 on inquiry card



Introducing ScreenOne

From the inside out, ScreenOne™ has been designed for beauty and flexibility. With a thick and luxurious look and feel, it's elegant enough for the chairman of the board. Yet the removable cover material and free-standing design make it practical enough for the word processing center.

Your choice of striking graphic patterns, many sizes, colors and trim options, as well as the highest acoustical and fire ratings.

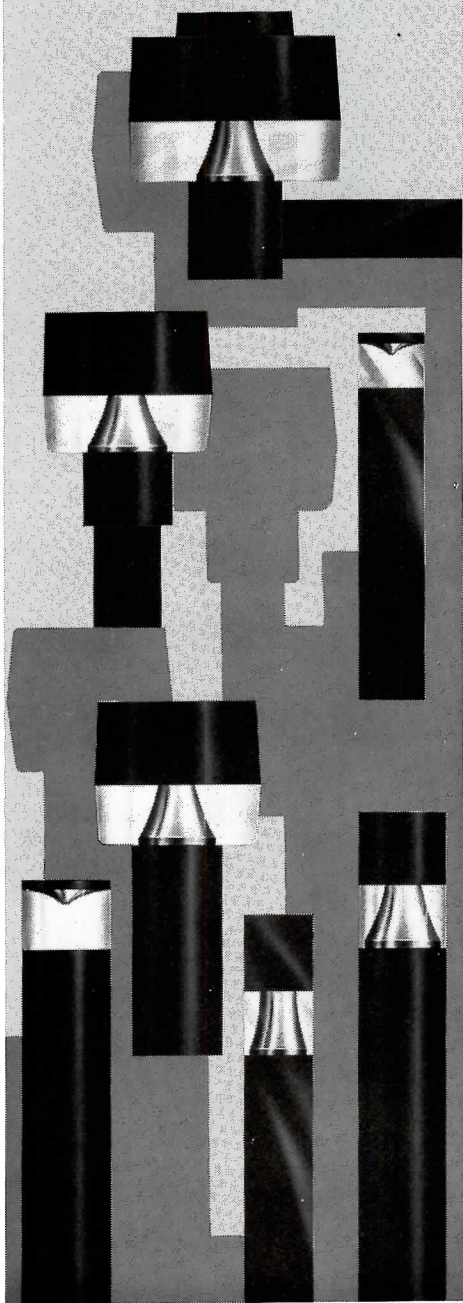
From the inside out, there's never been a screen like ScreenOne. Write Vogel-Peterson, Elmhurst, IL 60126, for more information.

VOGEL PETERSON

For more data, circle 72 on inquiry card

NEW SITELITE 5

for the added touch of beauty
in architectural landscapes...



Here's a bright, new design collection of graceful bollards and indirect mid-level post lights... Square and round luminaires and poles, various heights, and companion models for wall mounting. Fresh, harmonious designs to help blend today's newly-created sites with their structures and total environment.

SITELITE 5 from McPhilben. It's the added touch of beauty from the experts in outdoor lighting.

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mc PHILBEN LIGHTING
EMERSON ELECTRIC CO.
270 LONG ISLAND EXPRESSWAY/MELVILLE, N.Y. 11746
CANADA: P.O. BOX 150, MARKHAM, ONTARIO

For more data, circle 73 on inquiry card

Offices opened

James Nuckolls, has opened an architectural lighting design consulting practice with its main office located in New York City.

The Tanzmann Associates proudly announce the opening of their office at The Bradbury Building, 304 South Broadway, Suite 320, Los Angeles, California.

The Blackwell/Eiffert Partnership have opened offices offering comprehensive architectural services and construction consulting services to the construction industry. The firm's new offices are located at 110 North Franklin Street, Olympia, Washington.

White, Dolce & Barr Architects & Planners, Inc. are pleased to announce their association for the practice of architecture with offices at 210 Jefferson Square, Austin, Texas.

New addresses

Chaffin-Vecchi, Architects are pleased to announce the expansion and relocation of their office to 6363 Wilshire Boulevard, Suite 510, Los Angeles, California.

Alfredo De Vido Associates have moved to 699 Madison Avenue, New York, New York.

Robert B. Drews Associates, Inc. have moved to 3559 North Cumberland Avenue, Chicago, Illinois.

Jean Giltner Fenton announces the relocation of his office to 2316 Harborview Boulevard, Lorain, Ohio.

Earl R. Flansburgh and Associates, Inc. have moved their offices to 77 North Washington Street, Boston, Massachusetts.

Hellmuth, Obata & Kassabaum, P.C. is pleased to announce their new location at 1270 Avenue of the Americas, New York, New York.

Henriquez Associates, Architects is pleased to announce the relocation of their offices to 322 Water Street, Vancouver, British Columbia.

Joseph R. Loring & Associates, Inc. will relocate offices to 1 Pennsylvania Plaza, New York, New York.

John Carl Warnecke and Associates, Architects and Planning Consultants has relocated to 2029 Century Plaza East, Los Angeles, California.

Firm changes

Allen & Hoshall, Inc. announced the opening of a full service engineering, planning and design office located at North Shore Building, 109 North Shore Drive, Knoxville, Tennessee. They have also appointed Joseph T. Barnett and J. Michael Mullis as associates in the firm.

H. Richard Lloyd III has been named an associate of Arch Associates. Stephen Guerrant and Frederick Fosnot have been appointed project managers, and James Wiggleworth and Mary Russell have recently joined the firm.

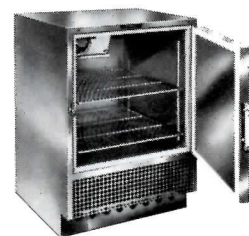
James H. Langenheim has been appointed vice president for planning; Albert P. Martin will be vice president of project development; and Nathan K. Van Osdol, Jr., was named director of professional operations in the firm of ArchiSystems.

Neil Astle & Associates announce a change in firm name to Astle Ericson & Associates Architecture & Planning. The office will remain at the same location, 533 North 86th Street, Omaha, Nebraska.

Baker Rothschild Horn Blyth, Architects and
more Office Notes on page 183

WE FIT IN

STAINLESS STEEL UNDER COUNTER LAB REFRIGERATORS AND FREEZERS



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

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

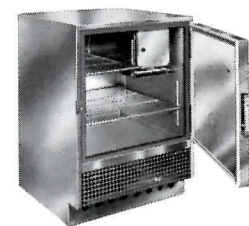


UC-5-CW* refrigerator with cold wall cooling system is equipped with push-button defrost, automatic reset and condensate evaporator. Capacity—5.4 cu. ft. (155 ltr.)

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

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

*With explosion proof interior only.



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

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



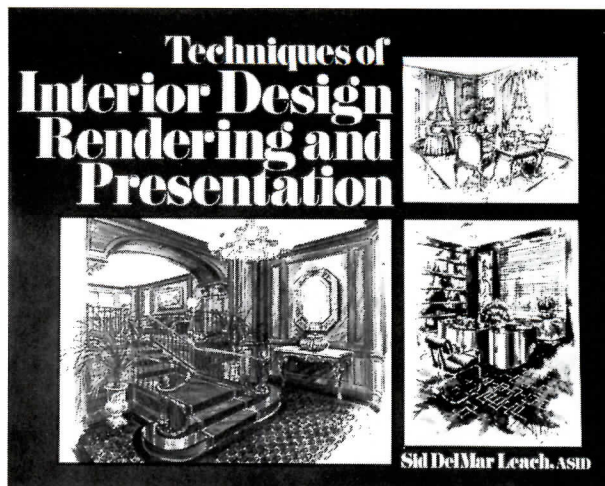
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Refer to Sweet's Catalog 11.20/Je for quick reference.

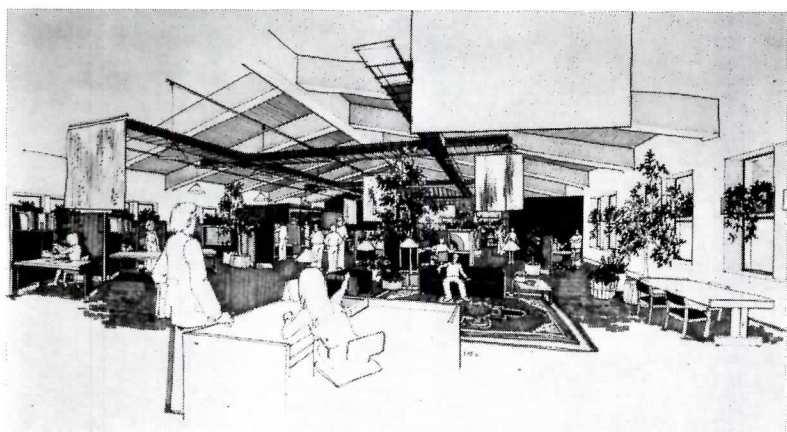
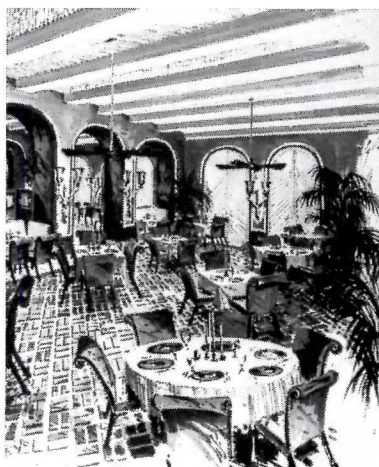
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By Sid Delmar Leach ASID
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