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For one, there was concern about putting a 228-unit project in a suburban neighborhood. "We wanted to do it in a sympathetic fashion," said project architect Duane Johnson of HGA.

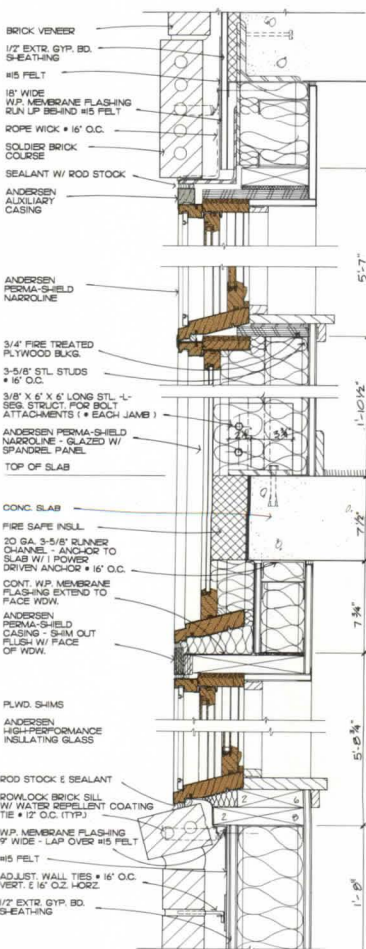
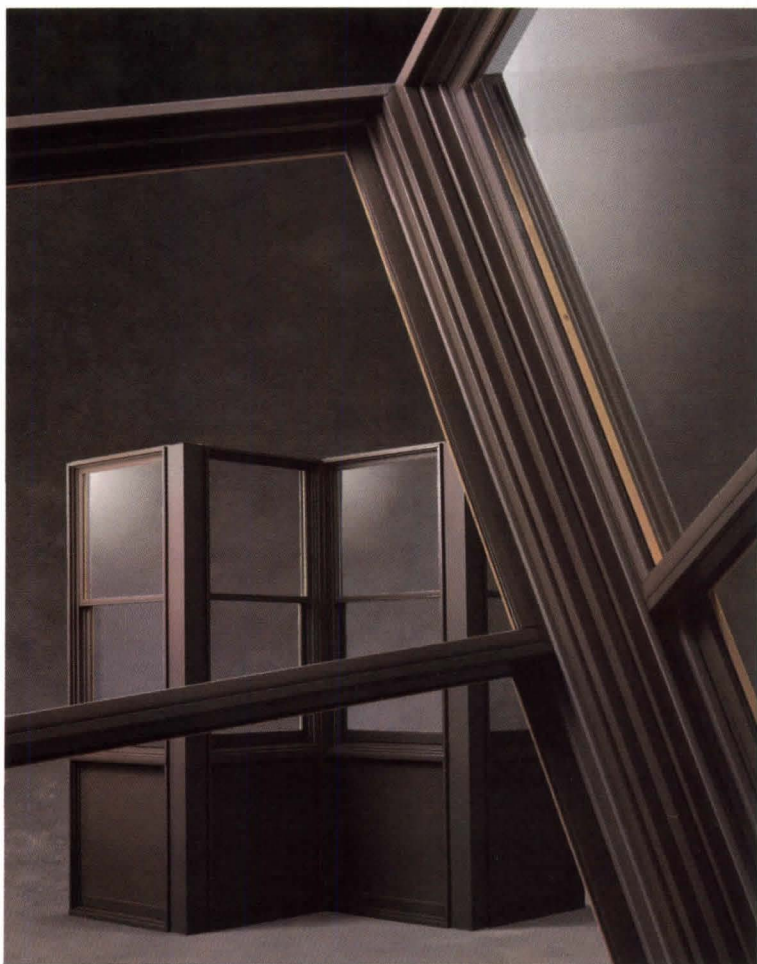
Other considerations were a tight budget and what Larry Everson of OPUS described as an "incredibly demanding" 15-month schedule.

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St. Therese Care Center
Hopkins, Minnesota
Architect: Duane Johnson
Hammel Green and Abrahamson
Minneapolis, Minnesota
Design-Build Contractor:
OPUS Corporation
Larry Everson, AIA
Minnetonka, Minnesota



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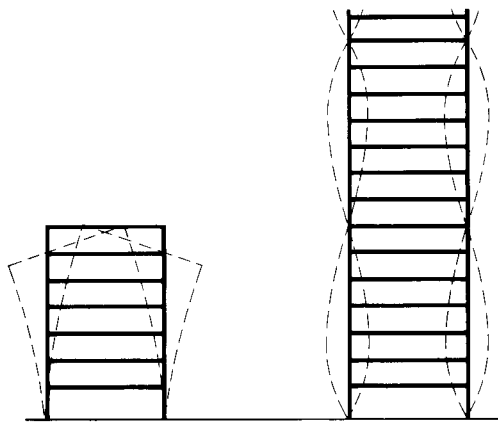
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In downtown St. Louis, the classical Civil Courts building by Klipstein & Rathmann, Eero Saarinen's Gateway Arch, and the tower of Union Station by Theodore Link. Photograph by Allen Freeman.

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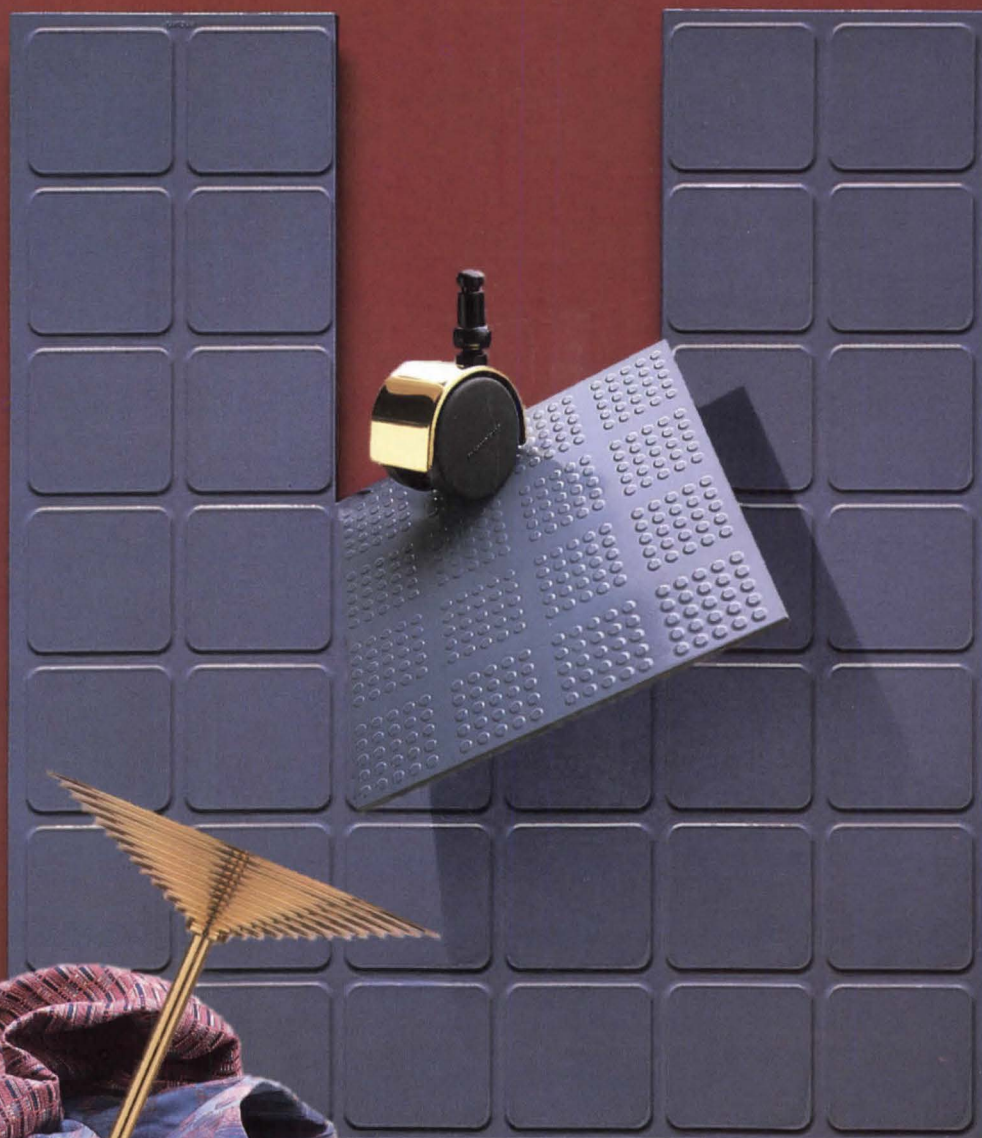
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EVENTS

April 1-29: Exhibit entitled "Greene & Greene: Photographs by Marvin Rand," Los Angeles. Contact: Donna Grossman, Kirsten Kiser Gallery for Architecture, 964 N. LaBrea Ave., Los Angeles, Calif. 90038.

April 21-22: Symposium on "Building the Modern City: The Poetics of Landscape and the City, Precedent to Present," Washington, D.C. Contact: Registration Office, Resident Associate Program, Dept. 0603, Smithsonian Institution, Washington, D.C. 20073.

May 1-5: Course on the Use of Infrared Thermography for Predictive Maintenance, St. Louis. Contact: Paul Grover, Infra-spection Institute, 33 Juniper Ridge, Shelburne, Vt. 05482.

May 4-7: Innovation New Products Exposition, Pittsburgh. Contact: Leo Castagnari, INPEX, 701 Smithfield St., Pittsburgh, Pa. 15222.

May 5-8: AIA Annual Convention, St. Louis. Contact: Ketchie Brassel at Institute headquarters, (202) 626-7396.

May 9-11: Training Program on Economic Revitalization, Des Moines, Iowa. Contact: Vicki Onderdonk, National Trust for Historic Preservation, 1785 Massachusetts Ave. N.W., Washington, D.C. 20036.

May 10-12: Lighting World International, New York City. Contact: National Expositions Co., 15 W. 39th St., New York, N.Y. 10018.

May 12-14: Seminar covering the 1989 NCARB Architect Registration Exam, Atlanta. (Repeat seminars: May 19-21, Miami; May 26-28, Washington, D.C.) Contact: Registration Institute, 2600 Bantary Bay Dr., Tallahassee, Fla. 32308.

May 18-19: Seminar on Lighting Efficiency Solutions, Chicago. Contact: Wendy Wheeler, Association of Energy Engineers, 4025 Pleasantdale Rd., Suite 420, Atlanta, Ga. 30340.

May 18-19: Strategic Planning and Self Insurance for the A/E Firm, Seattle. Contact: Michael Sturdivan, Financial Managers' Group, 425 W. Wilshire, Oklahoma City, Okla. 73118.

May 28-June 1: International Congress on Managing and Financing Education and Buildings, Rotterdam, The Netherlands. Contact: Secretariat International Congress, Coolsingel 67, 3012 AC Rotterdam, The Netherlands.

LETTERS

Haystack School: I read with great interest Robert Campbell's article on the Haystack Mountain School of Crafts in Deer Isle, Me. [Feb., page 60]. Once again, we were not to be disappointed by Campbell's rare ability to create beautiful prose describing our natural as well as our constructed environment. While the piece was admittedly for an architectural magazine, and understandably focused on the work of a well-known architect, it was still some-

what surprising to find so little said about the school itself, or, more importantly, the crafts themselves. Although the anomaly of the name Haystack Mountain is explained, one gets the distinct impression from what is written that the spirit of the school was essentially created by the architectural product. My guess is that it was probably the other way around.

Architects have always had their imaginations fired by the crafts, just as poetry fires good prose. Frank Lloyd Wright was a good example of this, as was Corbu, at least when he was doing the chapel at Ronchamp. And even if not transformed, everyone in Chicago connected with architecture knew that Mies chose to live in a house made by the hands of old masons and the like.

Interestingly, Haystack made a heroic attempt in 1971, when I had the wonderful experience of attending the school, to try to rebuild the bridge between craftsmanship and architecture when it invited Wright protégé Paolo Soleri to conduct one of its summer sessions: a so-called Urban Design Consortium. Although Soleri himself arrived somewhat late, when he did there was already underway a large-scale, interactive, creative endeavor of the most impressive proportions—integrating ceramics, textiles, glass, metal, wood, and graphics in the most imaginative kinds of constructions. He was simply swept along with the spirit!

Somehow, at the turn of the century, we missed the turn in the road—art nouveau was getting too florid, and mass production becoming too cold. The Bauhaus almost made it at the beginning, but didn't somehow. Are we now doomed to endless postmodernity, or God knows what? How about architects taking a good look at the ceramics, textiles, glass, metal, wood, and graphics work produced within the admittedly outstanding buildings that Ed Barnes was inspired to build for their creators? When the (now retired) director, Francis Merritt, first chose the present site for Haystack, it was really just an island. His arrival with the spirit of the then homeless school became the principal cause of the causeway being built to connect the island to the mainland.

*Michael M. Bernard
Newton, Mass.*

A/E Selection: I read with great interest Jon T. Adsit's article "How A-E Firms Lose Federal Jobs," in the December 1988 issue [page 125]. I perform a similar function for the U.S. government as does Mr. Adsit. I have been involved in such activities for the past 17 years for the Department of Defense and, like Mr. Adsit, am concerned about the large number of A/E submissions that become trash can liners, especially when they represent a great financial outlay on the part of the firms attempting to do business with the government under the A/E contract umbrella. It is because of this concern that I have a

strong interest in what the A/E community is being told about the government's A/E selection process, especially when it affects their ability to be responsive to the government requirements.

It is clear from reading Mr. Adsit's article that his agency does not use the preselection and selection concepts required under Department of Defense A/E contract procurements. Therefore, his development of a "10-minute window" is not relevant outside of his own agency. Under similar circumstances with a DOD effort, the 75 submissions would initially be reviewed by a preselection board. A determination of the responsiveness of a firm's statement of qualifications relative to the published selection criteria would be made. Only those firms that properly addressed their qualifications and past experience relative to the published requirements would go to the selection board for further review and ranking. Under the DOD procedures, each firm's statement of qualifications would receive a much more thorough and lengthy review than Mr. Adsit's 10-minute window indicates. Under the DOD procedures, assuming 75 submissions, three days to conduct the review, and a five-member panel, each member would only be required to review five submissions per day. This review would determine qualified firms for subsequent selection board ranking.

I am appalled at Mr. Adsit's statement that screening panels are generally eager to find reasons for throwing out or marking down a submission. The screening panels that I have been associated with over the past 17 years have been eager to determine the most qualified firms for a particular project and take whatever time is necessary to properly and fairly evaluate the firms that have responded to the CBD announcement. Mr. Adsit's statement implies that the list of firms is to be reduced to a magical number (three to six) regardless of the qualifications of the firms being reviewed, and that's just not the case.

There is both good and bad information in Mr. Adsit's article. I think the worst deals with the 10-minute window. Taking 10 minutes to select an A/E to perform a multimillion-dollar design, in my mind, does not come close to meeting our obligations to the public.

*J.B. Goodowens, P.E.
Madison, Ala.*

We regret that the 10-minute window concept created such a vehement exception, but perhaps the objections are based on an overly literal translation of Adsit's point (for one thing, Adsit's time breakdown has all panel members reviewing all projects rather than each project getting the attention of only one set of eyes). The point of the article is that small details, many of them clerical, can become major detriments in the federal procurement process and easily can be avoided.—Ed.

Government

Kemp Meets Congress as Housing Bills Proliferate

Members of the House banking, finance, and urban affairs committee could scarcely conceal their glee as HUD Secretary Jack Kemp testified before them for the first time. Their warm welcome was not occasioned by word of a thaw in President Bush's "flexible freeze" that would bring new funds for housing and community development programs. To the contrary, except for a pledge to fully fund programs for the homeless and to press for tax incentives for enterprise zones, the Bush budget left Reagan spending goals for the department virtually unchanged.

What had changed, radically, in both style and substance, committee members sensed, was the management of the agency. Almost to a person, they preceded their questions by contrasting Kemp's enthusiasm for his job with the detachment his predecessor, Samuel Pierce, displayed.

In these sessions and in testimony on Capitol Hill, Kemp reached for bipartisan consensus on urban issues. The former National Football League quarterback detected a window of opportunity. "This is one of those rare moments when people are ready to lay aside differences of party and race and seek American solutions to problems," he told directors of the National League of Cities. His appeals to local officials and members of Congress were sprinkled with quotations from John and Robert Kennedy and the Rev. Martin Luther King Jr. An early and ardent advocate of tax cuts and supply-side economics, he labeled himself to separate groups of mayors as "a small 'c' conservative" and a "big 'L' Liberal" on urban issues.

In providing in his \$1.16 trillion budget for full funding of the McKinney Homelessness Assistance Act, President Bush fulfills a campaign pledge. His revised spending plan increases Reagan's request for HUD-administered assistance to the homeless by more than 60 percent, to \$675 million. This would fund a range of programs, including emergency food and shelter grants, transitional and permanent housing, and other needed services. The President proposes an additional \$50 million to finance efforts by local public-

private partnerships to help families move from welfare hotels and other temporary shelters into permanent housing and to provide community-based services for the mentally ill homeless.

Efforts to help the homeless, coordinated by Kemp in his role as head of a federal interagency task force on homelessness, tops the list of current HUD priorities. But close behind are priorities Kemp has advocated for at least half of the 18 years he represented a suburban Buffalo district in the House of Representatives. They include fostering establishment of enterprise zones and helping tenants manage public housing complexes and, wherever feasible, buy the units they live in. He also vows to make public housing drug-free and to fully enforce the fair housing law Congress passed last year.

Kemp was one of the earliest advocates of enterprise zones, low-income areas in which tax breaks and relaxed regulatory procedures were expected to attract new business and jobs. Reagan repeatedly called for passage of bills offering such incentives, but the legislation failed to clear the congressional tax-writing committees.

Now, however, bipartisan advocates of an enterprise zone bill (HR 6) claim to have nearly 300 sponsors. With Kemp leading administration support, they hope for authorization this session of 70 zones. The secretary believes the estimated federal revenue loss of just over a billion dollars over a four-year period would be a modest price for "reincentivizing" (a staple in the Kemp lexicon) areas bypassed by nearly a decade of economic expansion. It would be a first step, Kemp says, in "green-lining" these formerly red-lined areas.

His enthusiasm for tax incentives doesn't stop at enterprise zones. "I will exert every effort" to get the Office of Management and Budget and the Treasury to permit use of the tax code, including extension of the soon-to-expire low-income tax credits, to increase the availability of affordable housing, Kemp told Rep. Chalmers Wylie, of the banking committee.

Kemp pledged to the House committees

on banking and budget to retain the \$2.88 billion requested for the community development block grant program. But he argued that funds for the 15-year-old program must be more carefully targeted to benefit needy neighborhoods. He has asked mayors to serve on a task force to recommend the best way to use CDBG funds.

Rep. Mary Rose Okar (D-Ohio) tested the waters on prospects for revival of urban development action grants. Cleveland, in Okar's district, was a major beneficiary of UDAGs before these grants for spurring private development fell victim to last year's deficit struggles.

Would the secretary favor federal matches for locally financed pools that would be used to stimulate major investments in cities?

"The trouble with UDAG," Kemp said, "is the money went to the bigger guys—hotels, auto agencies, and ski resorts, people who already have access to capital. Besides, the marketplace has a better record of picking winners and losers than public officials."

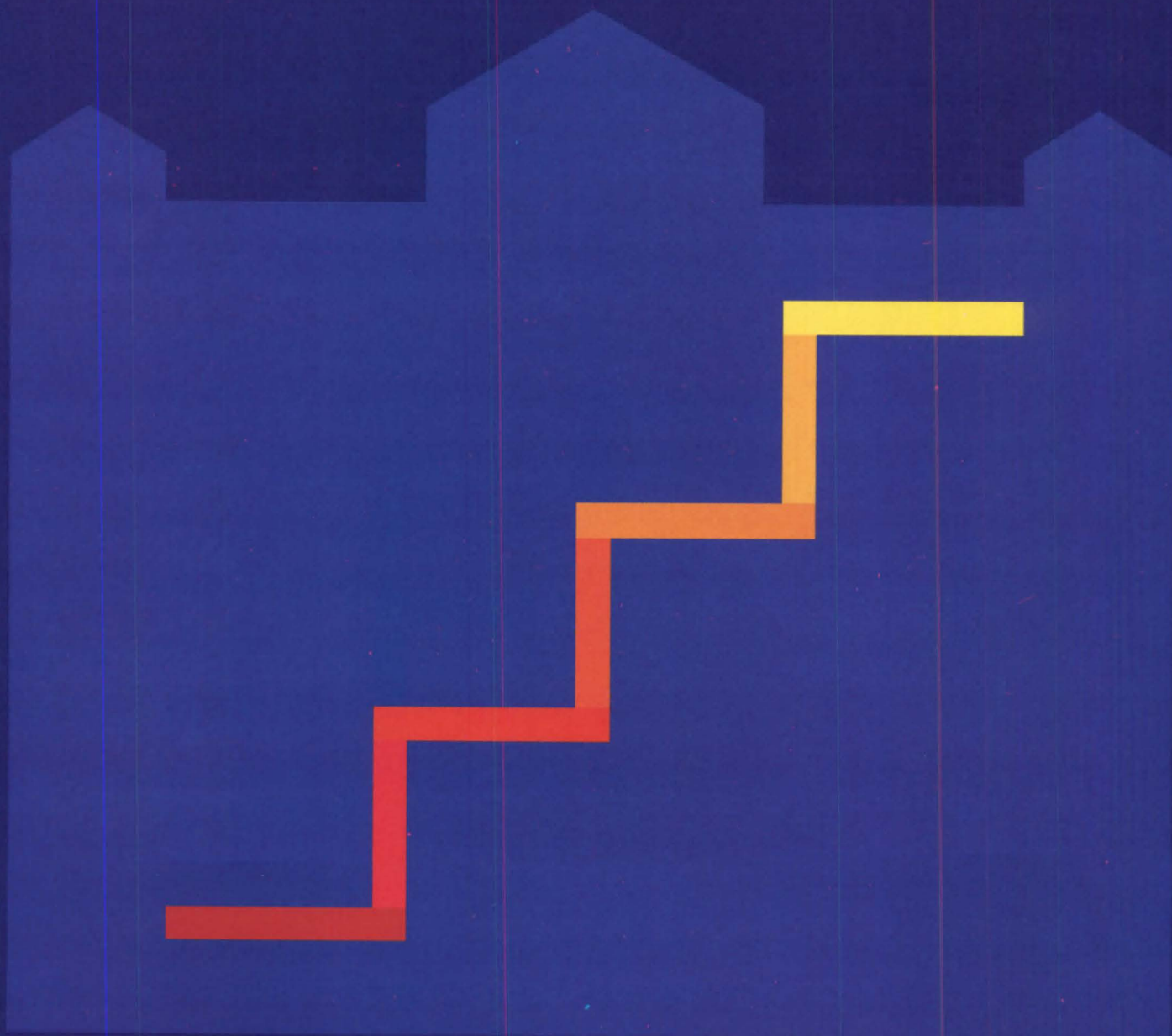
The housing subsidy of choice remains vouchers. Bush left untouched Reagan's request for \$6.6 billion for 109,000 additional units of assisted housing, all but 9,000 of them to be funded with vouchers.

Banking committee members from districts with high rents and low vacancy rates told Kemp many vouchers assigned to their areas go unused. In Cleveland, said Rep. Okar, they often subsidize owners of substandard housing. "My mind is open on the use of vouchers in tight housing markets," Kemp replied. "I want to be secretary of housing, not secretary of vouchers."

The day after he was sworn in, Kemp took his "conservative war on poverty" on the road. In Atlanta he toured inner city areas with Mayor Andrew Young, a Democrat, and had breakfast with Coretta Scott King. In Baltimore, he ate spinach lasagna at a soup kitchen. With Pennsylvania's two Republican senators, Arlen Specter and John Heinz, and Philadelphia Mayor Wilson Goode, he visited the public housing apartment of the president

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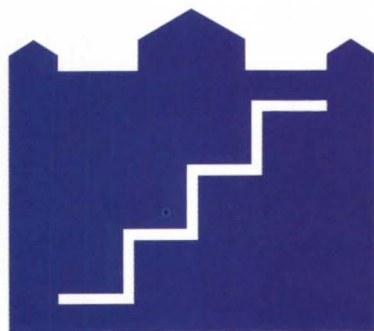
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Government from page 29

of that city's tenants council. Later, after witnessing a drug deal just outside a Headstart center, he spent the night in a Philadelphia high-rise for low-income elderly residents.

The trips, described by Kemp as partly symbolic and partly to provide on-site experience, have brought a ground swell of invitations from other cities. Expect, at a minimum, to find the secretary walking the ghettos and barrios of New York and key West Coast cities soon.

Kemp's assumption of the reins at HUD comes as housing subcommittees of the Senate and House offer comprehensive bills to overhaul the nation's housing and community development programs. Senate Housing Subcommittee Chairman Alan Cranston (D-Calif.) and the panel's ranking Republican, Alphonse D'Amato (N.Y.), introduced a bill aimed at increasing the availability of affordable housing.

The legislation climaxes a two-year effort by the subcommittee to shape housing policy for the 1990s. It would establish a new structure in HUD to help local Housing Opportunity Partnerships plan five-year housing affordability strategies and provide matching formula grants to help carry them out.

The Senate bill draws heavily on reports of blue-ribbon groups of practitioners, officials, and academicians, including housing patriarch James Rouse, former HUD secretary Carla Hills, retired legislator Henry Reuss, and scholars whose work was coordinated by MIT Prof. Langley Keyes.

In the House, Banking Committee Chairman Henry Gonzalez (D-Tex.) introduced HR 1180, which would authorize up to \$55 billion in spending over the next two years. It incorporates a National Housing Trust that could distribute up to \$2 billion each year to subsidize mortgage interest rates for first-time home buyers. The bill also incorporates a Community Housing Partnership Act, drafted by Rep. Joseph Kennedy, which would make available \$500 million to states and localities for loans and grants to nonprofit sponsors of low- and moderate-income housing.

Both bills, of course, are working drafts, sure to face highly skeptical analysis and a flurry of cost-trimming amendments in today's deficit-conscious environment. In his honeymoon round of hearings, Kemp was not asked for his views on either bill, nor did he offer any.

Perhaps the most searching question Kemp's former House colleagues raised was a rhetorical one—at least one that must remain rhetorical until the new secretary establishes a track record. The overriding question all HUD constituents and observers will ask, said Rep. Floyd Flake (D-N.Y.), paraphrasing presidential campaign jargon, is, "Where's the roof?" — SIMPSON LAWSON

Mr. Lawson is a freelance writer.

News continued on page 32

Awards and Exhibitions

Kennedy Museum Opens in Former Texas Schoolbook Depository

After 20 years of controversy, the opening of the Sixth Floor exhibit in the former Texas Schoolbook Depository seemed almost anticlimactic. First proposed in the late 1960s to chronicle the Kennedy Presidency and the aftermath of his assassination, the project was plagued by money problems, political opposition, and widespread public fears that it would be a ghoulish reminder of an event that Dallas wanted to forget.

The Sixth Floor opened officially on Feb. 20, Presidents' Day, and those worst fears have not been realized. It is an even-handed, underplayed exhibit that puts the Kennedy assassination in political and cultural perspective without attempting to answer the questions behind it. The Warren Commission report provides interpretative baseline for the exhibit, with the various conspiracy theories being discussed as well. Visitors looking for a clear, unpolemical account of the assassination will likely be satisfied; those hoping for bullets, guns, and bloody clothing will be disappointed. This is not an exhibit of artifacts and memorabilia.

"We tried to play straight about the story and straight about the space," says exhibit designer Barbara Charles, of the Washington firm of Staples & Charles. "There is no sense of its being another Madame Tussaud's." The core of the exhibit is a collection of approximately 400 photographs, many familiar as family snapshots, arranged on display panels and accompanied by explanatory texts. We see Kennedy on the campaign trail, in the oval office, relaxing with his family in Hyannisport. There are frames from the Zapruder film,

the funeral, the Warren Commission hearings, and many straightforward, almost artless images that capture the depth of the nation's grief.

Kennedy was America's first television president, so appropriately the texts and photographs are complemented by six short video documentaries by Dallas filmmakers Allen and Cynthia Mondell that recall the nation's romance with the Kennedy family as well as our own private agonies at the news of his death.

Overall, the Sixth Floor is a somber exhibit—understandable given the subject matter, doubly so considering the public uneasiness. There are few virtuosic design flourishes from either Charles or restoration architect Eugene George. The display panels are gray and attached to black pipes. The carpet is dark gray; the walls, ceilings, and columns have been left exposed to convey the spartan industrial feel of the original building. In no sense is this a conventional museum space.

The bold strokes have been reserved for "the sniper's perch," from which Lee Harvey Oswald allegedly fired the fatal shots, and the corner stairway where his rifle was found. Both areas have been enclosed in glass, like icons, and they fit uneasily with the rest of the exhibit. The designers should either have drawn an X on the floor to mark the spot and let it go at that, or else treated the spaces more theatrically. They tried to do a bit of both and the result is confusing and non-committal.

But elsewhere they struck just the right

Below, sixth floor exhibition space.

note. Visitors have unobstructed views of Dealey Plaza and the "grassy knoll," with nothing to distract them from contemplating this shuddering landscape. It is not a view that the public has had before, and it makes your hair stand on end.

Farther on, near the exit, are several memory books in which visitors can write down their impressions of the exhibit and the site. Some have been conventional expressions of praise or relief, others more personal and emotionally charged. "In this building I have relived one of the most frustrating days of my life," wrote a former deputy sheriff who participated in the assassination investigation.

Visitors enter the Sixth Floor through a visitor center and elevator appended to the rear of the building. They were constructed to keep the anticipated 500,000 annual visitors from coursing through the Schoolbook Depository, which is now the Dallas County Administration Building. Like the exhibit, the additions were fiercely debated, mostly by preservationists who felt that they disfigured a historic building and violated the design guidelines for the historic district in which it sits.

The debate was as much psychological as architectural, about attitudes toward commemoration as well as bricks and mortar. And as with the exhibit itself, worst fears have not been confirmed. The design, by Hendricks/Callaway Architects, is unremarkable but also unintrusive. The additions don't overwhelm the building. The only jolt is the metal detectors in the lobby. As easy as it is to rationalize their presence, they make a disturbing introduction to an exhibit on an assassination.

The organizers of the exhibit, the Dallas County Historical Foundation, have said repeatedly that their only objective is to provide basic information and perspective on the Kennedy assassination, and perhaps for some people an occasion for finally letting go of it. By and large, they have succeeded.—DAVID DILLON

American Wood Council Honors Twelve for Design Excellence

Twelve buildings were recognized in the American Wood Council's 1988 awards program that honors outstanding wood design in residential and nonresidential buildings. Selected from 419 national entries, four nonresidential buildings and eight residential projects were cited.

Six honor awards were presented. Sea Ranch employee housing, designed by William Turnbull Associates of San Francisco, was praised for its "simple wood forms carefully detailed" that lend "dignity to this low-income housing project, sensitively sited on a coastal meadow." The development of 45 residential buildings incorporates Douglas fir walls and ceilings and exposed roof trusses and exteriors of unfinished redwood siding and shingles.

continued on page 34



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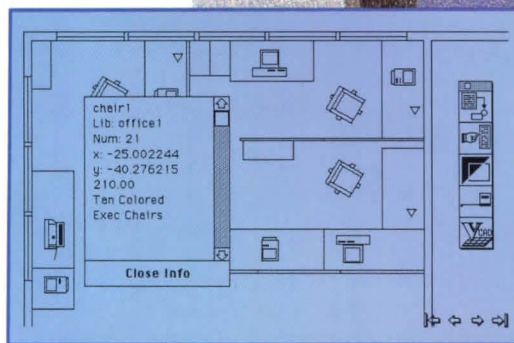
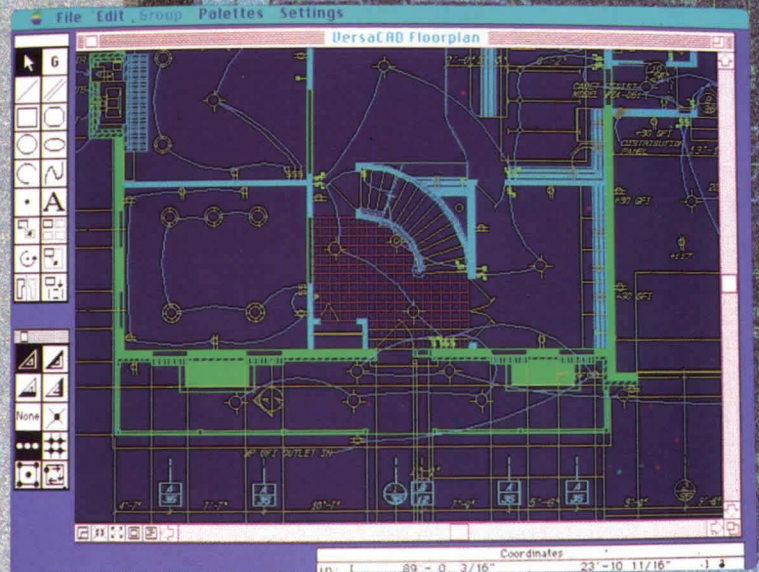
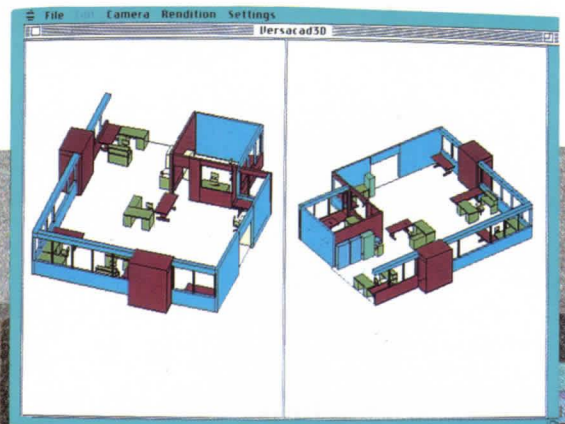
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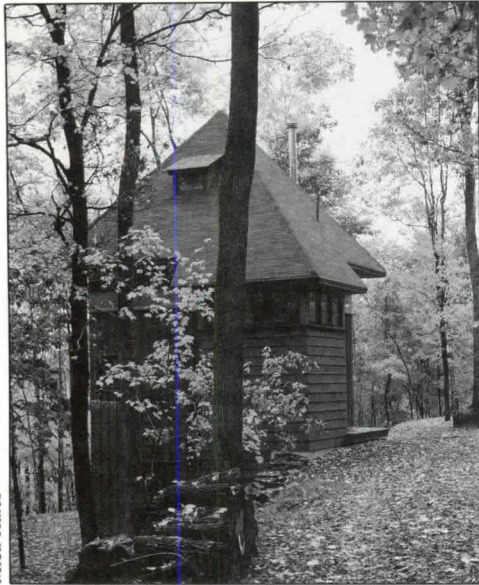
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Mick Hales

Caradco View, a 1,000-square-foot weekend house (above) in Bucks County, Pa., by Bentley LaRosa Salasky Design of New York City, uses three types of cedar cladding on the exterior walls with colored and natural stain finishes and contrasting painted window frames and doors. The building's simple plan contains a single 17-foot-square room stacked on the three levels. One corner of each floor is pulled out by a winding stairway; projecting from the opposite corner is a two-story bay window. "Skillful juxtaposition of wood elements lend a playful quality to this 'big' small house," said the jury.

The William Pitt Tavern restoration for the Strawberry Banke Museum in Portsmouth, N.H., by Allen Charles Hill, AIA, of Winchester, Mass., was recognized as a respectful restoration that made "every attempt for historical accuracy in wood detailing." The original hew timber frame, beams, rafters, and joists were retained whenever possible; exterior pine clapboards were cut at a Vermont mill using historical methods.

The assembly building for Camp Grizzly Cub World at the Beaumont Scout Reservation in High Ridge, Mo., by Team Four Inc. of St. Louis was cited for the creative use of wood to tie the building to its forest setting. Trellises provide visual interest and divide outdoor space for arriving groups; a tower resting on a projecting wood pediment signals the entrance. Grooved plywood siding was used on both exterior and interior walls.

An open-air shelter for polo horses in Dutchess County, N.Y., by Stephen Sullivan Architects of Seattle was praised by the jurors for its "elegant simplicity" and "harmonious proportions." The building is a straightforward rectangle in plan with wide roof overhangs and a central cupola. The exterior has painted cedar beveled siding with a band of vertical siding.

An honor award also was presented to Seneca Lake Pier and Pavilion at Watkins Glen, N.Y., by Chad Floyd, AIA, of Centerbrook Architects, Essex, Conn. The pavilion with a central turret and spire and

the 330-foot-long pier serve as the symbol for the town's revived waterfront.

In addition to the honor awards, merit awards were presented for six residential projects. Seaside at Wild Dunes on the Isle of Palms, S.C., by Chris Schmitt & Associates of Charleston, is a development of 24 single-family houses recognized for their traditional flavor incorporating pastel cedar clapboard siding.

Two contemporary versions of shingle style houses also were cited: a private residence on the North Shore of Chicago by Stuart Cohen & Anders Nereim Architects of Chicago; and the Fisher house in East Hampton, N.Y., by Robert A.M. Stern Architects of New York City.

One residential renovation project was honored—the Davis residence, a vacation house overlooking Lake Michigan in Union Pier, Mich., by Peter Landon Architects of Chicago. Other winners were the Schulte Ranch in Round Top, Tex., by Cannady, Jackson & Ryan Architects of Houston and a guest house in Seattle by James Cutler Architects of Winslow, Wash.

The awards jury included Kurt Andersen; Peter Q. Bohlin, FAIA; Laurence G. Booth, FAIA; Heidi Richardson, AIA; and Cynthia Weese, AIA.

Seven Schools Recognized In Design Awards Program

Seven schools have been cited in an annual awards program, cosponsored by AIA and the American Association of School Administrators, that recognizes excellence in the design of educational facilities.

Two facilities were singled out for highest honors:

The Strawberry Knoll Elementary School in Gaithersburg, Md., by TCA Architects, also of Gaithersburg, received the Walter Taylor award for excellence in an educational environment. The jury commended the architect for innovative integration of portable classrooms within a permanent facility.

LKA Partners of Colorado Springs, Colo., was presented the Shirley Cooper award for the Columbine Elementary School in Woodland Park, Colo., hailed for "its attractive simplicity and the way in which it blends with its surrounding environment."

Five other schools were honored:

- Fernbrook Elementary School in Maple Grove, Minn., by Armstrong, Torseth, Skold & Rydeen of Minneapolis.
- Oxbow Creek Elementary School in Champlin, Minn., also by Armstrong, Torseth, Skold & Rydeen.
- Villa De Pas Elementary School in Phoenix, by Orcutt-Winslow Partnership of Phoenix.
- Old School in Telluride, Colo., by Chamberlin Architects of Grand Junction, Colo.
- Margaret Chase Smith Elementary School in Brunswick, Me., by Moore-Weinrich Architects of Brunswick.

Citations for Urban Design Awarded to Three Projects

AIA has honored three projects in its annual awards for urban design, city planning, and community development. The awards program is administered through the Institute's regional and urban design committee.

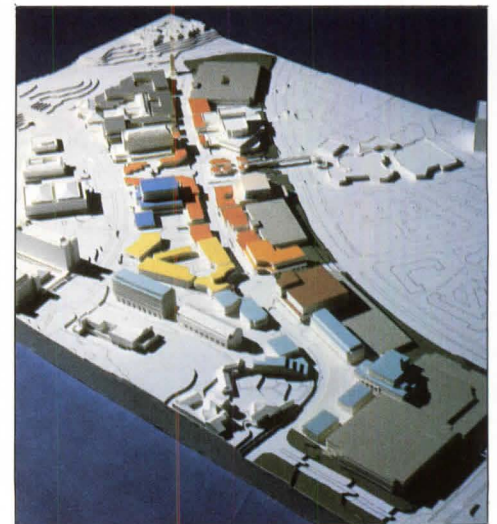
The master plan for Philadelphia's Fairmount Park was chosen for establishing the first inventory of the 8,700-acre park system's natural and built resources and for developing standards of appropriate uses.

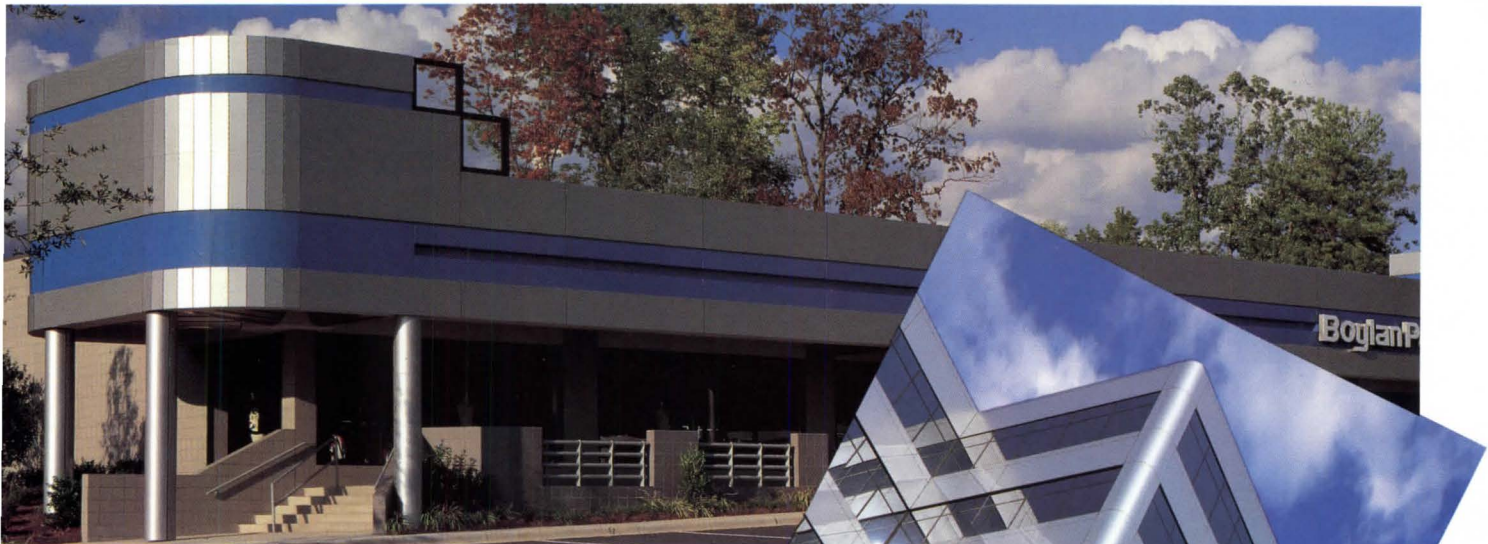
Boston Urban Design Focus Team Project was cited for creating guidelines for growth and development in the metropolitan area. The program provided for a new civic design review commission, an analysis of air rights development over the turnpike, and initial guidelines for Rowes Wharf and the Boston Society of Architects' "Boston Visions," a national competition for development ideas. The project team also worked in association with the Chamber of Commerce in preparing the "Guidelines for Growth and Change in Central Boston."

An award was presented for the Main Street urban design plan (below) for the University of California, Irvine. The program was honored for providing an innovative design that introduces a "sense of place" to the academic community while integrating campus facilities with retail and commercial space.

The annual urban awards previously were administered through the local AIA chapter and the Institute's regional and urban design committee. The submission process for the 1990 citation for excellence in urban design has been revamped to generate wider interest and greater participation. Individuals and architecture firms can now submit projects directly without having to go through local AIA chapters. Entries for the next awards program are due May 31. For more information and submission requirements contact Bruce Kriviskey, AIA, at Institute headquarters.

News continued on page 38





▲ **Ashton Square, Raleigh, North Carolina,**
Architect: Envirotek, Inc., Raleigh, North Carolina

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The Institute

New President for Growing American Architectural Foundation

Norman L. Koonce, FAIA, has been named president of the American Architectural Foundation at the Octagon. He assumed the position March 15.

A principal in the Bogalusa, La., architecture firm Knight, Koonce, Howe & Associates, Koonce has been active in national AIA leadership and recently served as a national vice president. In 1982 he served as president of the Louisiana Architects Association. He was a member of AIA's architects in education and minority resources committees and served on the architectural education initiative task group.

Koonce earned his Bachelor of Science in architecture at Louisiana State University. He chaired the Bogalusa planning commission for six years and was co-author of the city's home rule charter. Koonce has also founded the city's economic redevelopment organization.

His firm has designed religious, educational, commercial, and correctional facilities. A former member of the board of Interfaith Forum on Religious Art and

Architecture, Koonce authored *Religious Architecture—The Creative Challenge* and has lead seminars for clients and architects on religious architecture.

On making the announcement, Thomas J. Eyerman, FAIA, chairman of the Foundation board of regents, said, "During his many years of service to the Institute, Norman Koonce has demonstrated a deep commitment to public education and the intimate relationship between design excellence and quality of life."

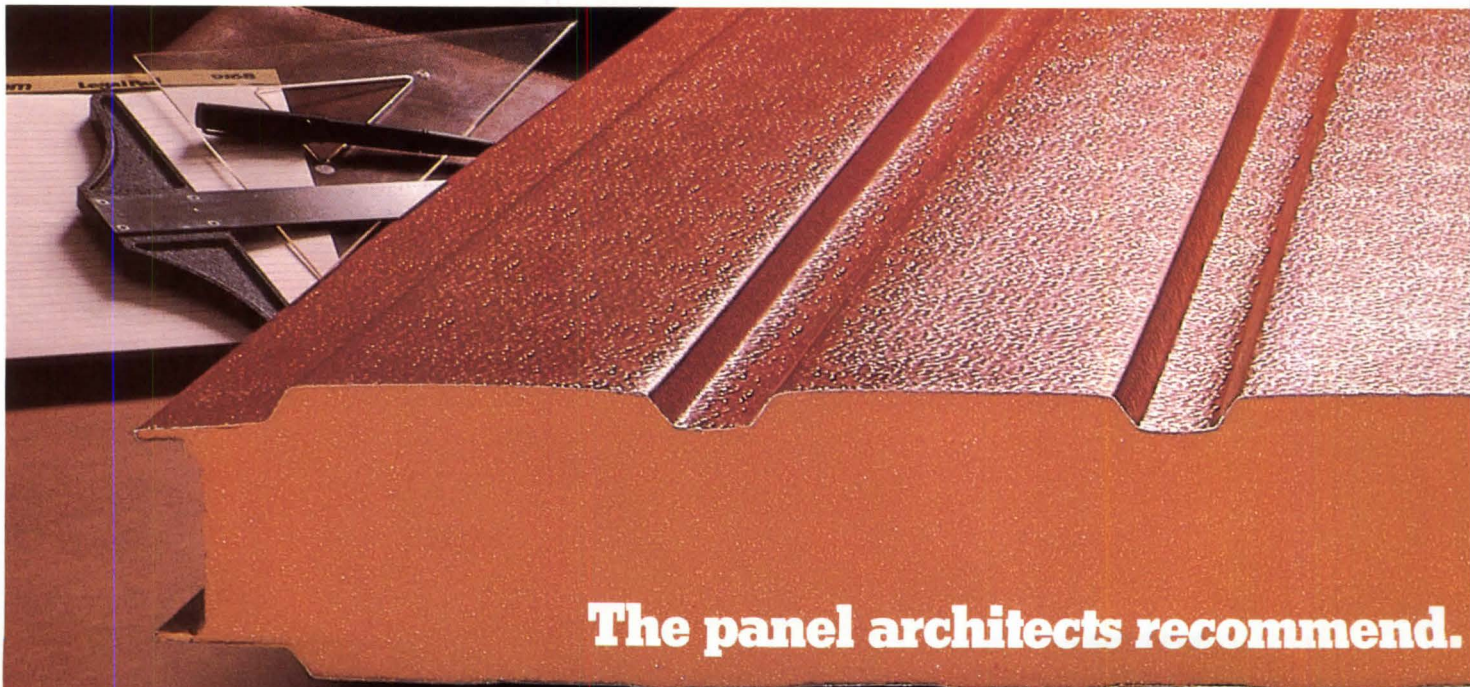
Koonce's plans for the Foundation include more exhibitions and publications and public education programs for all age groups. "Our profession must invest in its future by enabling an awareness and understanding of architecture in young, formulative minds, assuring an ever-increasing appreciation of the role and effect of the environment which we create," said Koonce. He also restated the Foundation's mission of advocating a creative and responsible public stewardship of America's architectural heritage.

As president of the Foundation, Koonce

will also direct the exhibition and educational programs of The Octagon. Purchased by AIA in 1902 to serve as its headquarters building, the Octagon is the oldest museum in the U.S. dedicated to architecture. The recent exhibition on Robert Mills was the first major showing of his work. Exhibitions scheduled for later this year include "Ogden Codman and the Decoration of Houses" and "Yeman: A Culture of Builders." The Foundation sponsors an ongoing series of traveling exhibitions ranging from "The Exceptional One: Women in American Architecture 1888-1988" to "Townscapes of Europe" to "Robert Adam and Kedleston: The Making of a Neoclassical Masterpiece." In addition, the Foundation provides financial support for architecture programming for PBS.

On accepting the position, Koonce said, "These objectives will be achieved only as they effectively involve all our resources—from elementary classrooms to the Octagon; from young interns to superstars in the design world; from the office worker to the corporate executive; from children's cardboard cities to drawings by the masters; from small AIA chapters to the largest of state societies—to communicate the message that good design enhances the way we work, play, live, and worship, and that good design is good business."

—LYNN NESMITH



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AIA Names 44 Architects To the College of Fellows

Forty-four architects will be invested in the Institute's college of fellows during AIA convention in St. Louis in May. Fellowship is conferred on members of 10 years' good standing who have made notable contributions to the advancement of the profession in such areas as architectural practice, construction, design, education, government, industry, historic preservation, literature, public service, research, service to the profession, and urban design.

The AIA jury of fellows was chaired by Robert Lawton Jones, FAIA. Other jurors were Samuel A. Anderson, FAIA; Melvin Brecher, FAIA, Ellis W. Bullock Jr., FAIA; Robert Hillier, FAIA; William H. Kessler, FAIA; and Paul R. Neel, FAIA.

The new fellows are:
Pedro Aguirre, Dallas
Anthony Ames, Atlanta
Joseph D. Bavaro, Princeton, N.J.
Robert J. Berkebile, Kansas City, Mo.
Joseph F. Boehning, Albuquerque, N.M.
J. Donald Bowman, Bellevue, Wash.
Walter T. Carry, Atlanta
Richard Chylinski, Pomona, Calif.
Richard C. Donkervoet, Baltimore
Andrew Euston, Washington, D.C.
John W. Focke, Houston

Albert Burr Fuller Jr., St. Louis
Carolyn D. Geise, Seattle
James Goettsch, Chicago
Robert Lawrence Good, Dallas
Paul J. Gumbinger, San Mateo, Calif.
Alan C. Helman, Maitland, Fla.
John Howey, Tampa
Charles A. Hubbard, Houston
Edgar LeRoy Huxley, San Diego
Jack Benjamin Jones, Tamuning, Guam
Howard H. Juster, Scarsdale, N.Y.
Forrest M. Kelley Jr., Tallahassee, Fla.
Thomas L. Kerns, Washington, D.C.
John H. Lind, Orlando, Fla.
Herman Carle Litwack, Newark, N.J.
Peter Eric Madsen, Boston
Walter B. Martinez, Miami
Herbert McKim, Wrightsville Beach, N.C.
Samuel Mockbee, Jackson, Miss.
David John Neuman, Coronado de Mar, Calif.
Paul Stevenson Oles, Boston
Gregory S. Palermo, St. Louis
James D. Pfluger, Austin, Tex.
Roger Vernon Reed, Kansas City, Mo.
Gil Sánchez, Santa Cruz, Calif.
Angel C. Saqui, Miami
Joseph J. Scalabrin, Dallas
Arthur F. Sidells, Warren, Ohio
Lawrence Simons, Santa Rosa, Calif.
James L. Thomas, Spartanburg, S.C.
Raymond S. Thompson, Indianapolis
(posthumously)
Michael F. Trostel, Baltimore
John H. Winkler, New York City

AIA and Billboard Publications Sign Partnership Agreement

The Institute and Billboard Publications Inc. (BPI) have signed an agreement that BPI will assume publication of ARCHITECTURE. It will remain the magazine of AIA, and subscriptions will continue to be part of members' dues.

No editorial or staff changes are planned as a result of the partnership agreement. A joint magazine partnership board with four members from each organization will be formed to assure continuance of the magazine's editorial direction and quality, using 1988-89 issues as a baseline.

BPI, a subsidiary of Affiliated Publications, publishes magazines and books in the fields of design, the arts, and entertainment. Among its other 14 magazines are *Billboard*, the *Hollywood Reporter*, *American Film*, *Photo Design*, *Music & Media*, *Musician*, *American Artist*, and *Interiors*.

Affiliated Publications is also the parent company of the Globe Newspaper Co., publisher of the Boston *Globe*.

"We view this as a partnership that will allow us to present an even more dynamic, fast-growing publication to the architects of America," said AIA President Benjamin E. Brewer Jr., FAIA.

News continued on page 41



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Rev. Robert Schuller Named Convention Keynote Speaker

Robert H. Schuller, television evangelist and pastor of the Crystal Cathedral, will deliver the keynote address at the AIA national convention in St. Louis May 5-8. A variety of seminars during the convention will address practice, design, management, and technological issues, as well as affordable housing, designing for the aging, and a report on the findings of the Vision 2000 program.

Keynote speaker Schuller will address the inspirational value of good architecture and its impact on society. Schuller has expanded his religious complex in Garden Grove, Calif., from his first "walk-in/drive-in" church designed by the late Richard Neutra to his "cathedral" designed by Philip Johnson. His speech will focus on his experiences as a client of two eminent architects and how in his opinion their designs have inspired worshippers.

A forum of young architects will explore design and practice realities and potential, as well as their practical implications for the future. A selected group of 40 young architects will form the nucleus of a Vision 2000 review program examining the future of the profession of architecture and the changing roles of architects.

A series of two-part case-study seminars will address local preservation and redevelopment issues, including the landmark St. Louis Union Station, inner city housing, and the riverfront development. The programs will include a background lecture and panel discussion followed by site visits.

An awards program and exhibition will recognize AIA's national honor award winners, the firm award, and the 25-year award. Joseph Esherick, FAIA, will be honored at the gold medal reception on May 8.

Deaths

Matthew Rockwell: Architect And City Planner

Matthew L. Rockwell, FAIA, Chicago architect and executive director of the Northeastern Illinois Planning Commission, died last December at the age of 73.

A graduate of the Massachusetts Institute of Technology, Rockwell served as the director of planning during World War II for the U.S. Army Corps of Engineers in the Chicago area and was responsible for the site selection and design of the airfield that is now O'Hara International Airport.

From 1946 to 1961, Rockwell was a partner at the Chicago firm Stanton & Rockwell Architects and Planners. In 1963 he was named the executive director of the Northeastern Planning Commission. During his tenure, the organization grew from a staff of 19 to 130 and its budget from \$200,000 to \$6.3 million. He also served

as AIA's director of public affairs and urban programs in Washington, D.C.

A committee is being formed to establish a memorial fellowship to honor Rockwell. For more information, contact Lawrence Christmas at the Northeast Illinois Planning Commission, 400 W. Madison St., Chicago, Ill. 60606.

BRIEFS

Waterfront Design Competition

The Waterfront Center is sponsoring its third "excellence on the waterfront" project competition, open to all substantially completed projects on any body of water. The entry deadline is June 1. For more information contact Susan Kirk, Waterfront Center, 1536 44th St. N.W., Washington, D.C. 20007.

Preservation Honor Awards

The National Trust for Historic Preservation is seeking nominations of individuals and organizations for its 1989 National Preservation Honor Award program recognizing accomplishments in preservation, rehabilitation, restoration, and architectural and cultural heritage. The deadline for submissions is May 1. For more information contact Bridget D. Hartman, Office of Public Affairs, National Trust for Historic Preservation, 1785 Massachusetts Ave. N.W., Washington, D.C. 10036.

Engineering Achievers

Ten projects were recent winners in the National Society of Professional Engineers' competition for outstanding engineering achievement awards. The winners are:

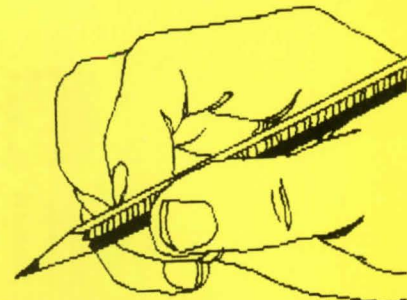
- Diamond-Star Motors Assembly Plant, Bloomington/Normal, Ill.
- Emergency Response: St. Anthony Falls Hydropower Plant, Minneapolis.
- Copeland Compliant Scroll Compressor Project, Salisbury, N.C.
- Dorran Mechanical Splice, St. Paul.
- Automated Lighting Panelboard Project, Salisbury, N.C.
- Ladle Metallurgical Facility at Bethlehem Steel Corp., Burns Harbor, Ind.
- High Cell Density Fermentor, Bartlesville, Okla.

Freschi Named Dean

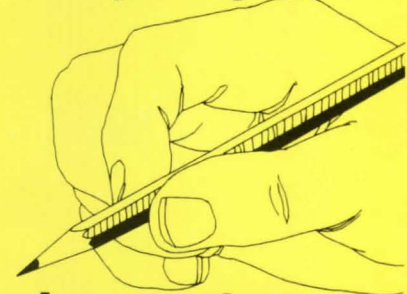
The State University of New York at Buffalo has chosen Bruno Freschi, chief architect and planner of Expo '86 at Vancouver British Columbia, as the fourth dean of the school of architecture. Freschi has been an associate professor at the University of British Columbia's school of architecture, acting head of its graduate program, and vice president of the Royal Canadian Academy of Art.

Noland Traveling Fellowship Recipient

Adam M. Shalleck, a fifth year architecture student at Virginia Tech in Blacksburg, has been awarded the 1989 Noland Traveling Fellowship by the Virginia Foundation for Architecture. □



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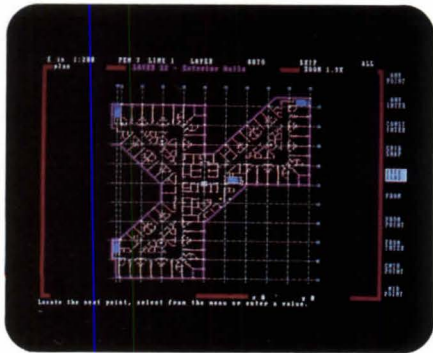
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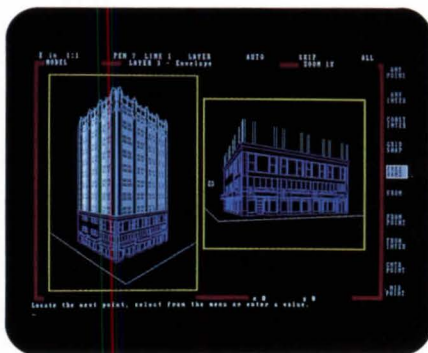
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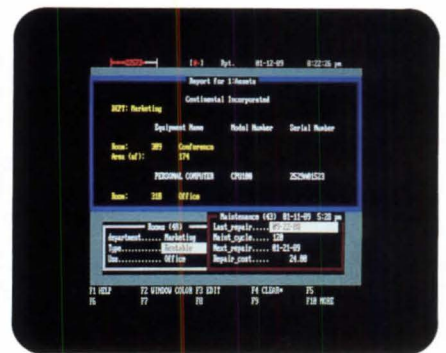
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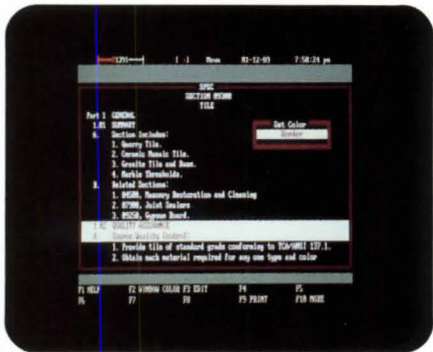
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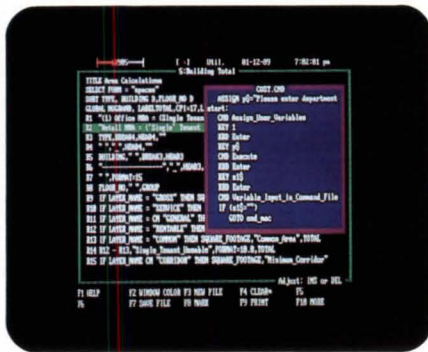
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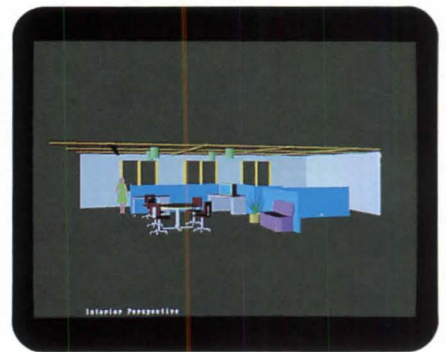
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The Early Masters of Modern Architecture in Japan

The Making of a Modern Japanese Architecture: 1868 to the Present. David B. Stewart. (Kodansha, \$60.)

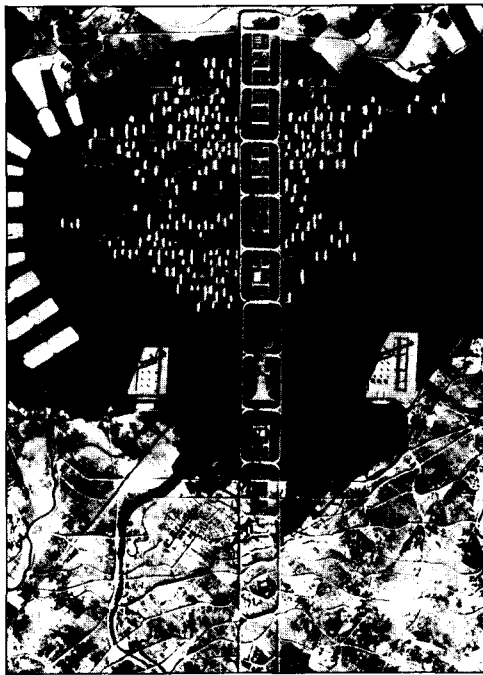
In 1960 Kenzo Tange presented his heroic proposal for Tokyo Bay at the World Design Conference in Japan. Among his audience were Alison and Peter Smithson, Jacob Bakema, Paul Rudolph, Louis Kahn, Jean Prouve, and B.V. Doshi. For the first time, Western architects became aware of the vital forces at work in modern Japan. Subsequently built projects as diverse as Arata Isozaki's Prefectural Museum (1974) and Kazuo Shinohara's Uehara House (1976) soon became icons of a radically modern architecture whose ambition, mystery, and virtuosity have captured the imagination of the Western world.

How did Japan move so quickly and dramatically from a 1,000-year-old tradition of post-and-beam wood architecture to the present condition? What elements and sensibilities have been sustained through the transformation, and what has been left behind? These are some of the questions addressed in *The Making of a Modern Japanese Architecture*.

As visiting foreign professor at the Tokyo Institute of Technology since 1975 and as an architectural historian trained by the late Sir Nikolaus Pevsner, Stewart is amply qualified to observe and document the unfolding of Japanese modern architecture. His is the rare perspective of a long-term foreign resident who can observe the Japanese situation in all its subtlety and depth through the lens of the Western intellectual tradition.

Stewart tells the story of the development of Japan's modern architecture from its Victorian foundations, through the influences of Frank Lloyd Wright and Le Corbusier and experiments with the International Style, to the search for a unique identity and concept of space as seen in the work of Shinohara and Isozaki.

The book consists of 10 chapters that deal with the period of transition following Japan's opening to the West in 1868, the arrival and early influence of modernism, the spread of modernism in prewar Japan, the postwar period, and the emerging identity of contemporary Japanese architecture. In its more than 300 pages and 400 black and white photographs and



Tange's 1960 proposal for Tokyo Bay.

drawings, the book includes many rarely seen competition entries. Notes, references, an excellent annotated source list, and an index follow the text.

Stewart's story begins in 1868 with the forced opening of Japan to trade with the West and the resultant influences of foreign building styles. Meiji architecture (named for the emperor who presided over the dramatic transition from a feudal to a modern industrial nation) is present in all its manifestations—first, the absorption of colonial Victorian British influences and later European tendencies.

A succession of historicist styles—Palladian, Gothic revival, Queen Anne revival, second empire—swept Japan at the turn of the century. Much of this imported work was authored by foreigners who came to live and work in Japan, such as Englishman Josiah Conder. Others, including the Germans Ende and Bockmann, sent designs from their European ateliers. Innovative Japanese craftsmen-builders such as Kisuke Shimizu II and talented designers such as Kingo Tatsuno quickly absorbed the foreign influences and transformed them into the hybrid monuments of the era.

A worldwide esthetic renewal followed

this era of historical revivalism. The birth of modernism and the Western discovery of Japanese estheticism were closely intertwined, and Frank Lloyd Wright played a key role in both. Stewart's detailed account of the building of Wright's Imperial Hotel and his analysis of its architectural character illustrate the transitional nature of the Japanese architectural environment in the decade before the great earthquake of 1923 as much as they do Wright's personal agenda and aspirations for the building.

Stewart's treatment of the early modern movement in prewar Japan represents the first complete coverage of the period available in any Western language. Even before the Imperial Hotel was complete, the first expression of native Japanese proto-modernism was to be found in the establishment of the Bunri Ha Kenchiku Kai (Secessionist Architectural Society) of 1920. The real inspiration for this group was post-World War I German expressionism; projects such as Manoru Yamada's Central Telegraph Office (1925) and Yasuhiro Ishimoto's Asahi newspaper offices (1927) prepared the ground for the International Style to come.

The Japanese house underwent a dramatic transformation during this period, led by the Czech-American architect Antonin Raymond, who came to Japan to work with Wright on the Imperial Hotel and stayed to build for three decades. Beginning with experiments in his own house in Tokyo, Raymond worked tirelessly to forge a new idea of the Japanese house that combined traditional sensibilities and life style with the technological advances of modern, reinforced-concrete, earthquake- and fire-resistant construction. Joined by the former "Secessionists" Sute-mi Horiguchi, Mamoru Yamada, and others, Raymond developed a residential style in the 1930s that was influenced by the early houses of Le Corbusier.

By the end of that decade, however, high modernism and the emerging modern Japanese estheticism were interrupted by militaristic concerns and the propagation of what came to be known as the Imperial Crown style.

In considering Japan's postwar period, Stewart covers material that is more familiar to Westerners—the work of Kunio Maekawa, Junzo Sakakura, and Kenzo Tange, all of whom were profoundly influenced by Le Corbusier's architecture and concepts of urbanism. Both Maekawa and Sakakura worked in Le Corbusier's office before the war. Stewart details Tange's

continued on page 44

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career in great depth, conveying his heroic ambitions from the beginning—his apprenticeship with Maekawa; his study and emulation, at a distance, of Le Corbusier and Michelangelo; his development of his concepts of urbanism during an enforced wartime period of extended study; and his involvement with urban planning for Japan's destroyed cities during the war.

During the years of rebuilding in the 1950s, Sakakura's museum of modern art at Kamakura (1951), Tange's Atomic Memorial Museum at Hiroshima (1955), and Maekawa's housing at Harumi in Tokyo (1958) displayed a growing mastery of Corbusian forms, the technology of reinforced concrete, and a uniquely Japanese esthetic. In the same period, efforts to define a new, minimal, single-family house by Kyoshi Seike and others indicated interest in Mies van der Rohe, Gropius, and the California "case study" houses.

Japan's "economic miracle" of the 1960s was ushered in by the Metabolist manifesto, which took physical form in two significant buildings of the era—Tange's Shizuoka Press and Broadcasting Center (1967) and Kisho Kurokawa's Nakagin Capsule Building (1972).

Finally, Stewart explores the emerging identity of modern Japanese architecture and its unique perception of space as exemplified by the work of Shinohara and Isozaki. With reconstruction and restored prosperity, the architects of the late '60s and early '70s found a new freedom to move beyond the influence of their Western counterparts.

The residential work of Shinohara and the public-scale work of Isozaki seek answers to the "identity of Japanese architecture as it had evolved through a filter of Western modernism." Shinohara's interest in abstraction has led him to rediscover a particularly Japanese concept of space, while Isozaki's interest in metaphor has led to an architecture that generates new meanings. For both architects, a modern radical estheticism is closely linked to the sensibility of the tea house.

This book has many outstanding successes. With considerable skill, Stewart threads two themes worthy of special note. One is the persistent debate between those who argue that structure and function are the basis for architectural design and those who believe that architecture is fundamentally an esthetic endeavor. The second theme has to do with urban design, where Stewart asserts and demonstrates that, despite a series of prewar and postwar proposals for the development of Tokyo, none was ever undertaken with conviction. As a result, the concept of urban design never really took root except as a series of public works projects.

In a study that promises to be an all-encompassing history, the few major omissions are puzzling. There is relatively little national history in which to place the changing events of architecture, and even

less discussion of the impact of technological developments on evolving formal considerations. There is only passing mention of another important foreigner—Bruno Taut—whose presence and influence in Japan were exceeded only by Wright and Raymond.

Almost nothing is said about the period between the late 1930s and early 1950s, save for a few competition entries and the houses of Seike. We are left wondering whether there simply was no building production just before, during, and after the war, whether its quality was so poor as to deserve no notice, or whether information about this difficult period has been suppressed.

Despite these few limitations, *The Making of a Modern Japanese Architecture* remains an essential and valuable resource, presenting for the first time to the Western reader the richness and complexity of the architecture of a critical era in Japan's history. It is a work of impressive scholarship recounting a story that before now could only be pieced together from a limited number of translated journal articles, the occasional exhibition catalogue, or firsthand observation in Japan. Stewart has done us all an extraordinary service by bringing a compelling but fragmented era into focus.

—ANDREA P. LEERS

Ms. Leers is a practicing architect in Boston and teaches architecture at Yale.

Jefferson and Monticello: The Biography of a Building. Jack McLaughlin. (Henry Holt, \$29.95.)

What is Monticello and why is it important? A house pictured in most histories of this country as well as of its architecture, a house created by its owner—possibly the most intelligent man, and also the most complex, to occupy the American presidency—Monticello supposedly reveals him. But what we see there today sitting serenely on a mountaintop outside Charlottesville, with the trim immaculately painted, the gardens carefully tended, and the interiors both elegant and empty

(except for tourists), is a house Jefferson never saw and probably never imagined. And in touring the house one at times can glimpse the man, but only partially, for it is a house never finished and perhaps never intended to be finished.

Thomas Jefferson, our only president who was an architect and also one of the few American politicians with a taste for and interest in architecture, created in Monticello his most intimate personal statement. Although Jefferson designed other seminal buildings, such as the Virginia State Capitol in Richmond, the University of Virginia, and houses for friends, Monticello is his ultimate statement. Even when he was in France or England, or in Washington or Philadelphia, Monticello remained an obsession. Jefferson collected ideas, tools, furniture, and paintings from everywhere; he would wait years for the correct fittings and would import five stoves from France and four waffle irons from Holland, all for his home. He laboriously copied recipes from hostesses for use at Monticello.

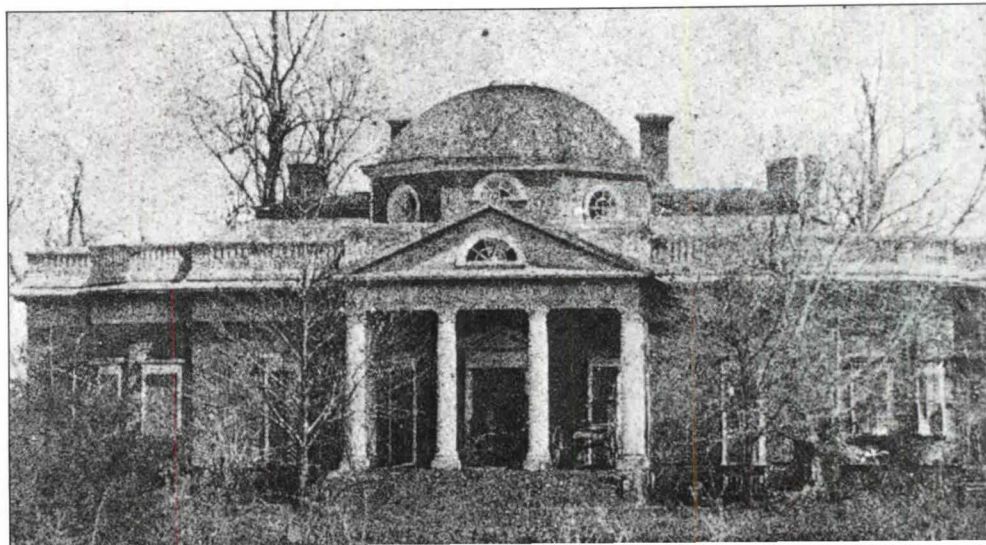
Jefferson in a sense did it all at Monticello, from designs on paper to hiring the brick makers, manufacturing nails, detailing window cords, and laying out the gardens. From 1767 when he was 24 until his death nearly 60 years later on July 4, 1826, Jefferson built up, tore down, and rebuilt several houses on his hilltop. He was never satisfied and never really completed it. The house in its many dimensions is a self-portrait of the man.

Jack McLaughlin teaches humanities and literature at Clemson University. He conceived this book after designing and building his own home and thereby realizing that "those who construct their own shelter replicate themselves, at their deepest and most significant level, in their houses. They *are* what they build."

A house is designed, built, and modified to fit a way of life. At Monticello,

continued on page 49

Monticello's low point in the decade following the Civil War, shown below in 1870 photograph by William Roads.



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when the life inside would not fit, it sometimes was changed to fit the house. McLaughlin has used the thousands of letters, notebooks, records, and assorted other documents Jefferson kept throughout his life, coupled with accounts of the many visitors to Monticello who partook of Jefferson's legendary hospitality. What emerges is a view of Jefferson and his building, from the latrines and the daily maintenance to provocative interpretations of the meaning of the house as symbol.

Jefferson craved order and created it about himself—measuring, documenting, and recording every possible item of existence. He tried to order the weather by recording it, and he tried to organize knowledge in his library. He documented every penny he ever spent throughout his life, but, as McLaughlin observes, Jefferson never added it all up. He blithely failed to balance his checkbooks and so came to the end of his life deeply in debt and forced to sell his library and to forgo needed repairs at Monticello. A visitor in 1824—two years before Jefferson's death—reported the mansion as “old and going to decay” and the gardens and lawns as “slovenly.”

But McLaughlin's book is far more than just a story of how Jefferson lived, or how people saw the house. It is an interpretation of Jefferson as an architect and a creator of symbols. The narrow stairs at Monticello that practically everybody notes with a critical eye were not just a Palladian reference or a functional saving of space but an attack upon the hierarchical idea of grand staircases that the noble descend or the lower classes ascend. At Monticello all meetings are on the same level.

But of course Monticello can be seen as sophisticated eclecticism, as a mixture of architectural references. But equally the forms, octagons, and dome are replete, as Gaston Bachelard has noted, with feminine references that may recall Jefferson's own mother, with whom he had an uneasy relationship. The house also reflects other aspects of Jefferson's life, such as his position as slave owner as well as politician.

Jefferson and Monticello is excellent and should be read by anyone interested in architecture. Of course it is about Jefferson and his building, but, more important, it reveals what a house can say. It is a big book—481 pages—but it also is highly readable. Its only flaw is a paucity of illustrations. The book is the best study we have on Monticello and on Jefferson as an architect and builder. The distinction and the connection between the two are important. In the trials of building, one can see Jefferson within his own context and begin to grasp the meanings of his greatest works—himself and his house.—RICHARD GUY WILSON

Mr. Wilson teaches architectural history at the University of Virginia.

Books continued on page 51



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Density By Design. Edited by James W. Wentling, AIA, and Lloyd Bookout. (Urban Land Institute, AIA Housing Committee, \$48.)

Density By Design is written to open the eyes of the merchant-builder and others in the home-building industry to the expanding variety of market-rate options for cluster housing on increasingly expensive raw land. The name of the game in this market continues to be the design of prototypes (dubbed "models" or "product lines" by builders) that can be duplicated on different sites or within a single large-scale project.

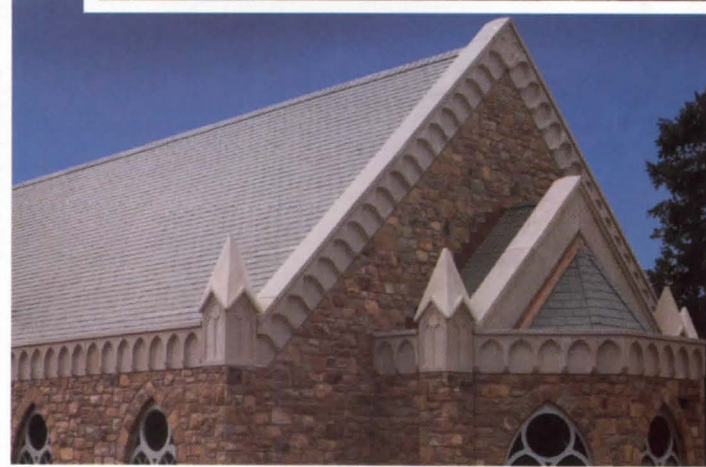
Few builders know (or care) about the residential work of Charles W. Moore, FAIA, Robert A.M. Stern, FAIA, or Robert Venturi, FAIA. Builders focus on building what sells, and their creative juices ooze at a slightly slower rate than their cash flow. In aggregate, the ranks of merchant-builders outnumber the entire architectural profession, and their collective leverage upon the built environment is enormous. They follow the market, which is still predominantly single-family detached housing.

To counter this tendency, this book presents 25 case studies of completed projects submitted by members of AIA's committee on housing. These are presented in a tight, factual framework, based on the "project reference file" system that has been utilized for several years by the Urban Land Institute. Each project description includes the development strategy, site planning, architecture, marketing, and a project data sheet that lists financial and land use statistics such as density, unit size, and cost. The presentation of the case studies is as it should be: clear, succinct, and factual in both text and graphics.

The editors have relied upon a simple yet clever thematic device of grouping these projects under headings that have a ring of historical familiarity. For instance, today's "patio homes" are associated with yesterday's bungalows because both rely upon an outside deck to extend limited interior space. The themes are questionable from a historical viewpoint, but they do serve a useful communication purpose.

The book has several minor faults. A chapter on high-rise, mixed-use projects is of interest and benefit to a much more sophisticated developer audience, and this book certainly would not suffer without it. One wishes that all floor plans had been reproduced at the same scale with room sizes indicated. A few of the projects appear as dismal as any ticky-tacky 1950s subdivision—particularly one dubbed "California Meadows." Also disappointing is the final chapter, "The Continuing Evolution," which attempts to generalize from current trends. Many of its points are vulnerable.—MARTIN ZIMMERMAN, AIA

Mr. Zimmerman is a principal of Zimmerman Design Associates in Silver Spring, Md.



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ARCHITECTURE

St. Louis, as recorded on the following pages, has gone from a symbol of civic decline to something of a model of a city pulling itself back together. We begin this issue by chronicling its comeback, then introduce you to some of the people who have helped this phenomenon along, then look at some of the buildings and other landmarks that give the city a very special flavor. (The most striking landmark, the Saarinen arch, is not singled out but is a backdrop to everything, as it is a constant presence from almost any vantage point in the city.)

While a great deal of credit for the rebirth of St. Louis belongs to its citizens, one point should be made pointedly at the beginning of a new national Administration. A good part of the city's progress in recent decades has come from the stimulus of federal programs and the skillful use of the leverage of federal funds. The point is perhaps made most tellingly in the area of preservation. The movement to save and re-use the city's wonderful stock of old buildings was steadily growing in momentum and produced some proud accomplishments. Then preservation tax credits were cut back and the momentum all but ceased. The St. Louis story is an account of public-private partnership, but also a reminder that it takes both sides to make a partnership successful.

Changing subjects, we would like to remind our architect readers that October will be a "discovery" issue, as announced last month. That is, it will feature the work of individuals and firms that have not previously been published. To repeat some of the ground rules:

Note that it is the architects and firms, not just the buildings, that must not have been previously published. However, an architect working for a firm that has been published can submit work done on his or her own time if he or she has not previously been published individually.

We define "publication" as multi-illustration presentation of completed buildings in major magazines. Single pictures don't disqualify, nor do presentations of unbuilt projects. By "major magazines" we mean our own, *Progressive Architecture*, *Architectural Record*, and the late *Architecture Plus* and *Architectural Forum*.

It has occurred to us since the March announcement that it would be interesting to include acts of design other than buildings. One purpose of the "discovery" issue is to uncover new talent, and it often takes a while for even the most promising new talent to acquire a building client. So don't hesitate to send other designed objects, from furnishings to tea sets.

Submissions are due June 15 and for buildings should include a brief description, plans and any other drawings that help communicate the design, and photographs. At this stage the photos don't have to be of publishable quality and can be slides, transparencies or prints, color or black and white.—D.C.



St. Louis: Comeback City

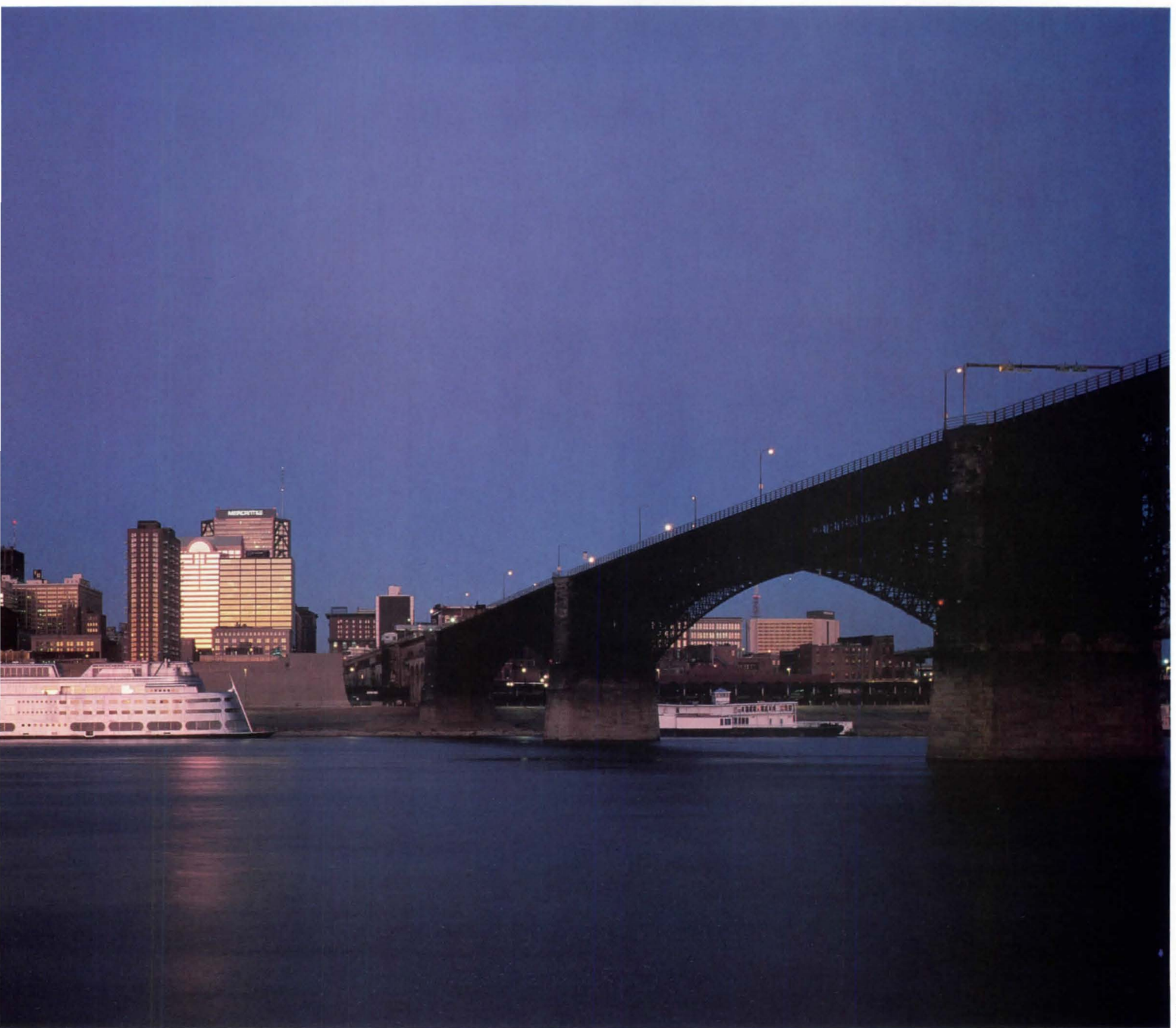
By Nora Richter Greer

St. Louis is a model city—not for a dazzling skyline nor as a place that has all its urban problems under control, but as a spirited community that through a slow, sometimes painful, public-private effort resurrected the city after decades of decay. Now, the immediate focus is on perpetuating that renaissance; the long-term goal is to add grace to that re-emerging city.

In December 1985 *Fortune* magazine heralded: "For a city that not long ago seemed to be sliding irreversibly, with a population down to half its 1950s peak, St. Louis suddenly looks like a place with a future. Thanks to successful business initiatives both big and small—and copious government aid—new commercial megaprojects are rising and the piecemeal rebuilding of deserted neighborhoods is well under way. In a town whose mood long bordered on desperation, unaccustomed excitement prevails. A stream of good tidings seems to prove that a city can be kept going despite a huge loss of residents." The *New York Times* called St. Louis a "phoenix rising from the dead."

What almost caused the death of St. Louis? How can the scope of its rebirth be measured?

First a quick look backward. Located just downstream from where the Missouri River flows into the Mississippi, the town was founded as a trading post in 1764 by the French explorer Pierre Laclède. The young town's prosperity was intricately tied to the rivers, but early on the city turned its back on the Mississippi—a development pattern that began to be altered only



Robert Pettus

in the 1960s with the construction of Eero Saarinen's Gateway Arch. As the population gradually expanded, residential—and eventually commercial—development moved westward up the hill. The river's edge was given over to factories, warehouses, and railroad tracks and facilities.

By the mid-1800s St. Louis had become the westernmost transfer point for goods manufactured in the east and for agricultural and game products coming from the South and Midwest. The city's population boomed: from 6,700 inhabitants in 1830 to 17,000 in 1840 to 170,000 in 1860 to 310,000 in 1870, making St. Louis the fourth most populous city in the country by the turn of the century. A central business district was hastily formed on the hill, while new factories were positioned along the railroad lines and workers were housed in small communities near the factories. In 1874 the Eads Bridge, a masterful work of engineering by James Buchanan Eads, linked the city with the east bank of the Mississippi.

The act that had perhaps the greatest effect on the city's future was the fixing in 1876 of its boundaries at 61.4 miles, an area

St. Louis skyline at early morning, framed by Eero Saarinen's Gateway Arch, dedicated in 1965, and the 1874 Eads Bridge. Tallest on the skyline is the recently completed Metropolitan Square, designed by HOK. Visible through the bridge is Laclede's Landing historic district.

then encompassing not just the entire city but miles of farms and woodlands and country homes of the landed gentry as well. That year the city also seceded from St. Louis County, in a move thought at the time to be a progressive one toward home rule (the first in the nation) but that later caused it to suffer, particularly with the exodus of jobs, people, and important parts of the city's tax base to the suburbs in the 1950s and 1960s.

But through the late 1800s and early 1900s St. Louis blossomed into a world-class city. Magnificent parks—Tower Grove, Carondelet, O'Fallon, and Forest—were carved out of the landscape and today remain high on the list of the city's amenities. The major boulevard system was established, with most of the major streets oriented east-west: Lindell, Washington, Delmar, Forest Park, Page, Market.

When electric trolleys connected the west end with downtown, development boomed along this route, particularly in the vicinity of Grand and Lindell avenues, a major trolley transfer point that became known as Midtown. There a business and theater district grew adjacent to the new campus of St. Louis University, generating some notable architecture. In 1899 the prestigious St. Louis Club moved into its elaborate building designed by New York architect Friedlander & Dillion (with Lawrence Ewald of St. Louis). In 1925 the St. Louis Theater occupied its new, eclectic, French baroque building (designed by Rapp & Rapp of Chicago), later renovated into the Powell Symphony Hall. The



Allen Freeman

fabulous Fox Theatre, a conglomeration of Moorish, Far Eastern, and Indian motifs, opened in 1929. Its architect was C. Howard Crane of Detroit; Eve Leo Fox designed the interiors.

As the city grew, middle- and upper-class residents moved to the western edge. Because development of their private residential streets spanned generations, no architectural style prevails among the houses. Yet even the middle-class houses bespeak elegance and wealth, and particularly opulent are the mansions on Westmoreland and Portland places. "Few who have seen them would deny that they, along with Forest Park, the Missouri Botanical Garden, and Union Station, give credibility to St. Louis's claim to be a beautiful city," wrote James Neal Primm (in his foreword to *Westmoreland and Portland Places*, by Julius K. Hunter). In the same book Esley Hamilton wrote, "Westmoreland and Portland places were served by the best talent in design and craftsmanship that St. Louis had to offer, and it is ultimately this standard of excellence that gives the places their unity." Some of the private street entry gates are as elaborate as the houses, such as pictured here.

As the demand for office and municipal buildings rose, St. Louis's core could compete in quality and grace with any other U.S. city. There was Adler & Sullivan's Wainwright Building, Alfred B. Mullett's monumental French second empire Old Post Office, and the Richardsonian revival Union Station by Theodore C. Link and Edward A. Cameron (see page 83).



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At the turn of the century St. Louis was at its grandest; the 1904 Louisiana Purchase Exposition, the world's fair set in Forest Park, exemplified that exuberance. By all accounts it was a marvelous fair for the 20 million visitors who flocked to St. Louis. For it Forest Park was transformed into a stately succession of classical palaces set alongside lagoons (see page 94), of which only one remains today—the St. Louis Art Center. Cass Gilbert designed the original building; subsequent remodeling and additions have significantly altered its appearance. (Locals note drolly that something else remains in Forest Park from the fair—the giant Ferris wheel buried beneath.)

By 1910 most of the city's streets were plotted and development patterns set, and St. Louis enjoyed a steady and substantial growth until the Great Depression. It was home to producers of diversified products—beer, shoes, stoves, wagons. By the 1920s and 1930s, however, patterns of decay were becoming evident, particularly in the older sections downtown and in the older neighborhoods in close proximity to downtown.

In the 1930s city leaders were seriously considering how to spur redevelopment of the oldest and most deteriorated areas, but the Depression and World War II delayed action until the 1950s. By then more than 50 percent of the city's housing was in various stages of deterioration. Downtown construction had virtually stopped. An influx of poor, unskilled workers, however, helped swell the population to 850,000.

Far left, the fabulous Fox Theatre, a 5,000-seat movie and vaudeville house designed by C. Howard Crane and opened in 1920. Left, the 1892 Wainwright Building (Adler & Sullivan and Charles K. Ramsey), later renovated along with neighboring buildings into a Missouri state office complex (Hastings & Chivetta with Mitchell/Giurgola). Right, view through ornamental gate into private residential street.

Allen Freeman



Large sections of the city, mostly slum neighborhoods, were bulldozed in the '50s and '60s, in the name of urban renewal. Some land was designated for industrial or commercial use, but the bulk went to housing developments for some 30,000 people, many close to downtown. While the smaller-scale housing projects proved successful, larger ones did not. In fact, the ill-conceived—and ultimately destroyed—Pruitt-Igoe high-rise public housing complex would tarnish St. Louis's image for years.

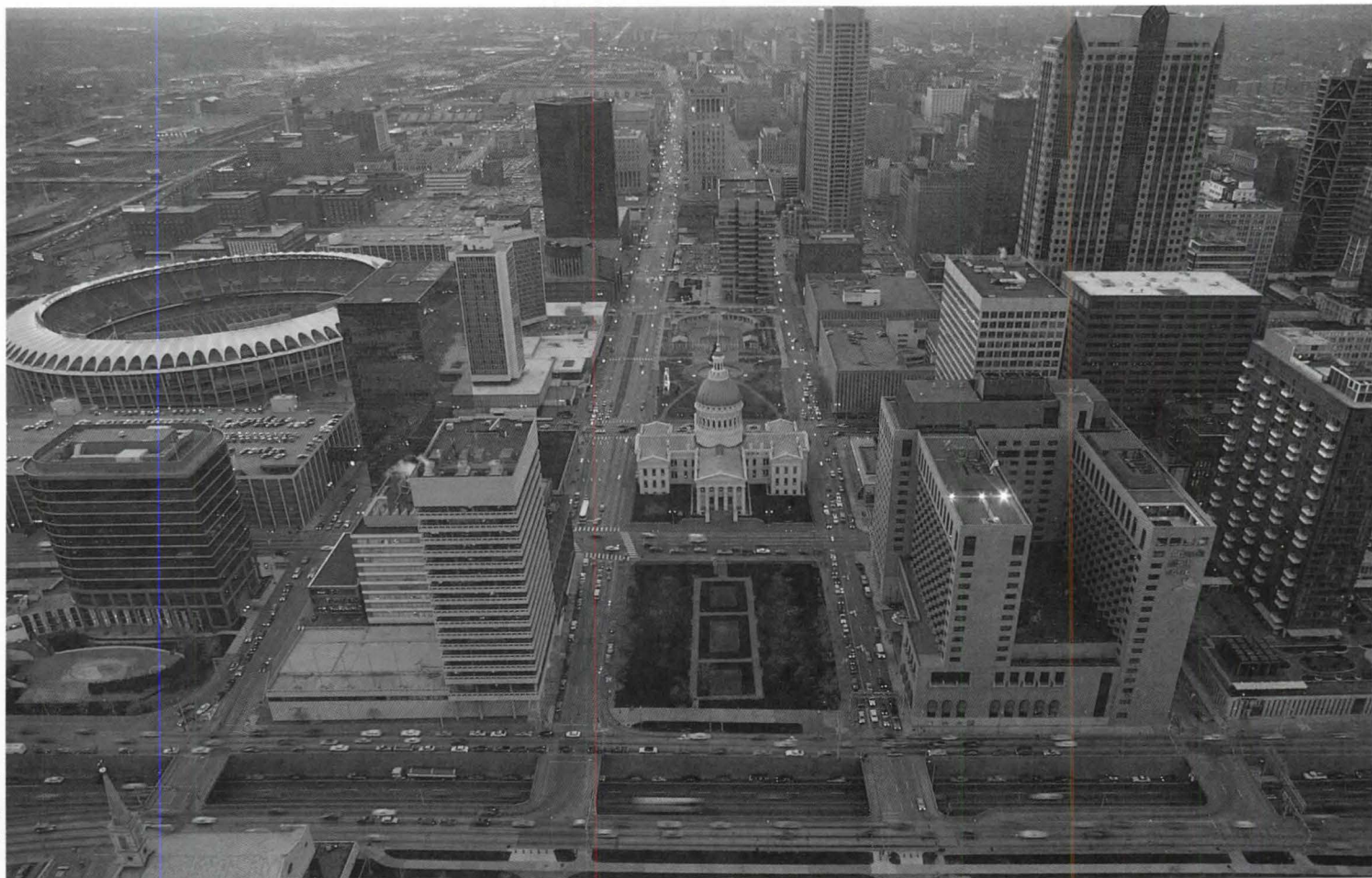
Despite those ambitious urban renewal projects—and in some measure because of them—by the late 1960s it was clear that the city of St. Louis was deeply troubled. The exodus from city to suburbs first of business and then of people seeking better jobs and housing was staggering. The population plummeted from 750,000 in 1960 to 420,000 in 1980. The city's tax base eroded. Crime increased, and the quality of the public schools declined. City neighborhoods—some with the oldest housing in the Midwest—continued to deteriorate until many were virtually abandoned, the bricks from the dilapidated buildings being toted away by scavengers. Rubble-strewn vacant lots and boarded-up stores existed in close proximity to the elegant turn-of-the-century mansions.

Sections of downtown became like ghost towns, while office towers sprouted in Clayton and other suburbs. Even sparks of the coming revival downtown couldn't tip the scales. From 1970 to 1980 employment within the city limits dropped 12 percent,

while in the metropolitan area it increased by 20 percent. Then came a Rand Corp. prediction that St. Louis would continue to decline and eventually become merely a large office park ringed by suburbs. The city was declared dying, if not already dead.

During those years, more obituaries were written for St. Louis than for any other "rust belt" city, with the possible exceptions of Cleveland and Newark. The Brookings Institute in the early 1980s officially pronounced St. Louis the nation's most distressed city, based on demographics, mobility data, and economic indicators. *Time* magazine mockingly requested the last one out to turn off the lights. For natives of St. Louis "it was a horrible and difficult time," says the city's current mayor, Vincent C. Schoemehl Jr. "There was this feeling that for some reason St. Louis just couldn't get it right."

The lights flickered, but they didn't go out. In the mid-1980s the national press began heralding a miraculous rebirth. But St. Louisians recall a long, hard struggle to turn the city around that began two decades earlier with the opening in 1963 of Busch Stadium (designed by Sverdrup & Parcel, Edward D. Stone, and Schwarz & Van Hoefen) and the dedication in 1965 of Eero Saarinen's Gateway Arch in the Jefferson National Expansion Memorial Park along the river. The arch would become the symbol of a new St. Louis, even though its design actually had been chosen in a 1945 competition. Its site, selected in 1935, was 40 riverside blocks that contained a collection of cast-iron build-



ings, described by architecture historian Sigfried Giedion as equal in quality and quantity to New York City's. Those buildings were razed, leaving only the 1834 limestone and sandstone Old Cathedral, designed by Morton & Laveille (renovated in 1963 by Murphy & Mackey). For years the area was used as a vast parking lot—a tremendous eyesore separating the river from downtown.

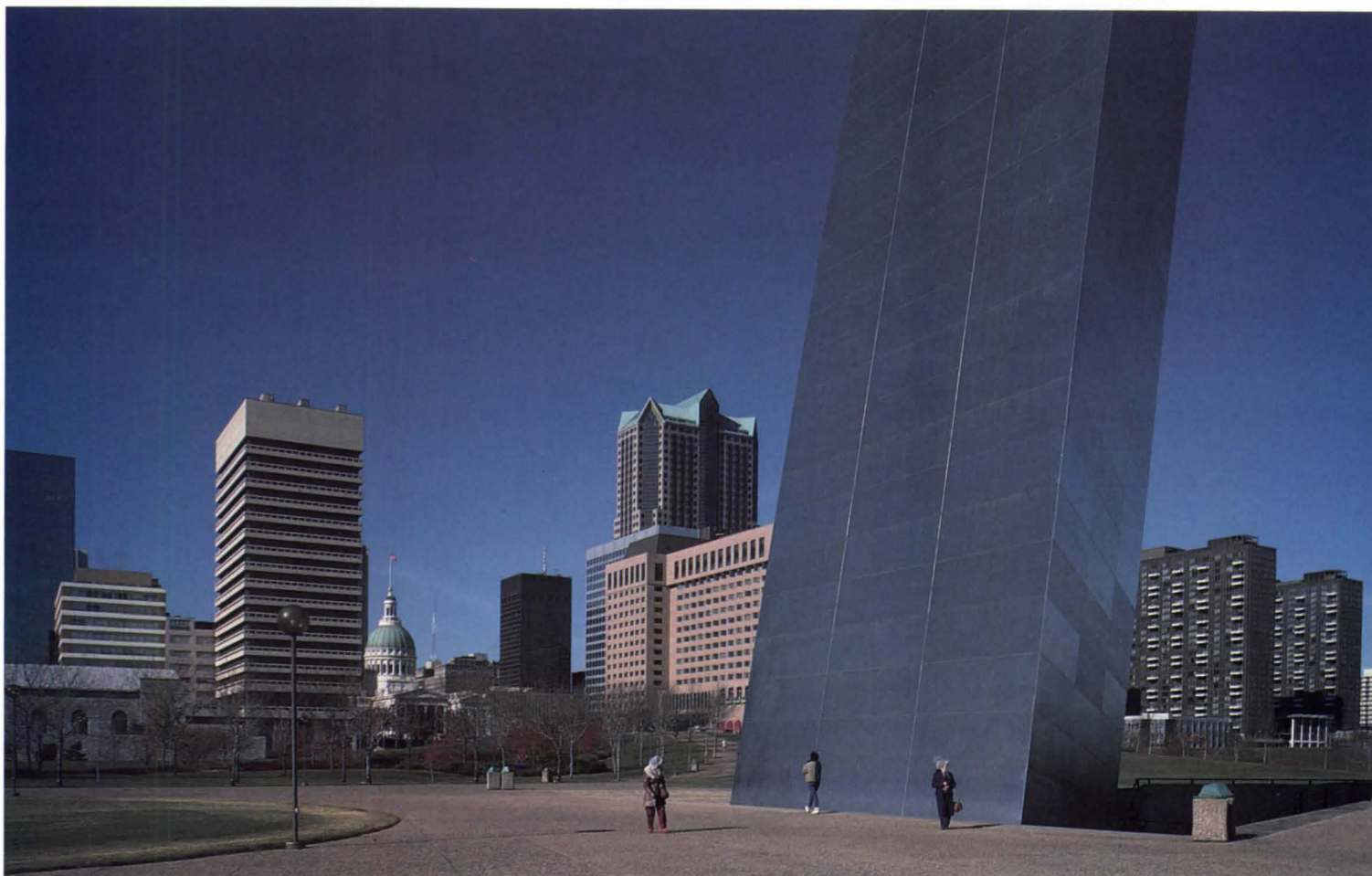
It was the civic-minded leaders of St. Louis—two to three dozen business executives and academicians, doctors and developers, bankers and politicians—who first put their reputations on line in an attempt to re-energize downtown. In the mid-'60s their group, called Civic Progress, formed the nonprofit Civic Center Redevelopment Corp. to build Busch Stadium on urban renewal land. Of utmost importance to the project's success was the state's Chapter 353 redevelopment tool, under which a city could pass to a developer its power of eminent domain and confer upon that developer real estate tax relief—that is, property taxes would be retained at the redevelopment level for 10 years and at half the newly assessed value for the next 15 years. "Success in the stadium brought with it the realization that the city government's role in redevelopment should be to establish and maintain an economic climate in which the private developer is willing to take risks," said lawyer S. Jerome Pratter and urban planners Richard C. Ward and Robert M. Lewis in the Urban Land Institute's publication *Cities Reborn*.

The addition of arch and stadium sparked new interest down-

Above, view of downtown St. Louis from top of Gateway Arch. The green parkway of Gateway Mall (center) is interrupted by the Old Courthouse. At left is Busch Stadium and at right is downtown business core.

town, but the mood was still cautious. It wasn't until the late '60s that new office towers appeared, the most notable hugging the western edge of the Jefferson National Expansion Memorial Park. At least as important was the Mercantile Bank's decision in 1969 to build a new office tower in the heart of downtown, a decision bank chairman Donald Lasater conceded was "30 percent emotional. . . . You can't have a major urban area without a downtown." An even bigger surprise was Mercantile's announcement that it was studying a six-block area downtown for a shopping mall, to be built in conjunction with the May Co. stores. Friends and foes alike doubted the project's feasibility. Why take the risk of bringing a major retail center into downtown when almost daily older establishments were closing their doors? The shopping mall was only a pipe dream, however, until 1980 when out-of-towner Melvin Simon & Associates was brought in as a partner. An \$18 million urban development action grant and local property tax abatements assured the project.

Shortly after the Mercantile Bank's development plans were announced in 1969, St. Louis voters passed a general bond referendum to finance the construction of a convention center just



north of the downtown on still vacant urban renewal land. A UDAG played a significant role in making this \$25 million project economically attractive and feasible. Designed by HOK/Jenkins-Fleming, the center was completed in 1976.

Another corporate chief who envisioned the city's possibilities is William E. Maritz, chairman of the board of Maritz Inc., a marketing firm in the suburb of Fenton. In 1975 Maritz formed a consortium of private investors to acquire and restore nine square blocks of 19th-century warehouses just north of the Gateway Arch on the site where Pierre Laclède founded the city. "I love it down there," Maritz says. "You can walk on those cobblestones and smell that muddy, moist Mississippi River." Under the auspices of the nonprofit Laclède's Landing Corp., a monumental renovation began. The buildings, many with cast-iron facades, were classified as suitable or not suitable for renovation. Meanwhile infrastructure improvements were made, the street circulation was improved, railroad tracks were moved from a main street, and a promenade along the levee was built. Strict design guidelines were developed. Over a decade of slow, methodical planning, more than \$100 million of private money has produced a lively, coherent district with offices, shops, restaurants, theaters, and salons. Future plans call for a hotel in the heart of Laclède's Landing. One already exists directly north, in an area that may eventually contain housing, among other uses.

By the early 1980s, as new profiles joined the skyline, the rebirth

Above, the Gateway Arch's tremendous scale as revealed by contrast with human figures. The stainless steel arch is 630 feet high and 630 feet wide at the base and sits along the Mississippi River in the Jefferson National Expansion Memorial Park.

of downtown began to seem inevitable. More and more the new buildings penetrated the central core of downtown. Much of the new architecture there belonged to the local giant, HOK; however, as in earlier times, prominent architects were being brought in, among them Johnson/Burgee and Edward Larrabee Barnes.

As important downtown development decisions were being made, attention also was being directed to dilapidated neighborhoods. *Fortune* reported in 1985, "Even in the years when the outlook seemed darkest, a handful of businessmen worked toward a revival with many dimensions. Without their interest, St. Louis might have garnered little more than a bit of construction in the central business district. The result would have been a bore: a city surviving solely as a waterfront office park ringed by grass and freeway."

In the city's West End the six medical institutions making up the Washington University Medical Center in the early 1970s began to prepare a redevelopment blueprint. The aim was to stop blight in the neighborhood before the medical center—one of the city's major employers—would be forced to move. Decline had set in after World War II as many of the large, single-family



houses for upper-middle-class families were replaced or converted into apartment buildings, rooming houses, or nursing homes.

Under the direction of the Washington University Medical Center Redevelopment Corp., two 10-year plans were developed—the first in 1974 and the second in 1984. In 38 blocks surrounding the medical center, the corporation acquired dilapidated or underused properties, sold these properties to developers, provided developers with property tax abatements, managed property on an interim basis, planned the use of city funds for public improvements, and relocated displaced residents. The neighborhood began to stabilize.

The early success of the medical center suggested that the city's new methods to encourage redevelopment were effective. "The city began to shift from direct involvement in redevelopment, principally through urban renewal, to indirect involvement in partnerships with the private sector," Ward notes. The new financial tools were community development block grants and urban development action grants, federal programs begun in 1974 and 1976, respectively. Such monies were used to provide low-interest and "gap" financing and public capital improvements. "Federal money was used creatively and aggressively," Ward adds, and perhaps with greater overall success in St. Louis than in any other city in the country.

The first stirrings of neighborhood redevelopment were undertaken by so-called urban pioneers who found that the satisfac-

tion of living in historic houses outweighed the risks involved in renovating them and living in their sometimes marginal neighborhoods. Lafayette Square on the near south side contains brick, terra-cotta, and stone houses built between 1860 and 1935 around a 30-acre public square. (Many of the early buildings were destroyed in a tornado in 1896). The renovations often were products of sweat equity, since in the early years financing was hard to obtain. Renovation of the Gothic revival, second empire, Romanesque revival, and Queen Anne houses had begun even before Lafayette Square became the city's first historic district in 1969. Infill housing became economically feasible only after the neighborhood was re-established and the city offered development subsidies.

Other neighborhood rehabilitations would follow, each building on the strengths of previous ones while establishing its own goals and financing strategies. Since the majority of city neighborhoods had pockets of abandonment, displacement of residents during rehabilitation was not a major concern. As Leon Strauss, developer and former director of the nonprofit Pantheon Corp., once said of the DeBaliviere-Pershing district, "We are trying to create whole new neighborhoods in the midst of virtual wastelands. If we are unable to go in on a large scale, there is no point in going in at all." And, too, Strauss points to that neighborhood's proximity to the stately turn-of-the-century mansions, zoo, art museum, and Forest Park. "If we couldn't turn things around



Allen Freeman



Allen Freeman



Allen Freeman

Left, renovated alley houses in Soulard (Mackey Associates). Right top, typical street in LaSalle Park, a historic district supported by neighboring Ralston Purina. Right middle, a well-tended Southside street. Right bottom, Columbus Square's new townhouses and late-19th-century St. Joseph's Shrine.

there," he says, "then it was bye-bye St. Louis." DeBaliviere-Pershing had seen its population drop 75 percent, from 2,025 in 1950 to fewer than 500 in 1976 when Pantheon began work there. Mercantile Bank's Lasater committed \$3 million to help finance the restoration of 1,500 apartments.

The city realized by the early 1970s that it had to create additional incentives to lure private developers; federal monies for housing projects were supplemented by low-interest or no-interest loans as a one-time subsidy of the developer's costs. Eventually all loans were to be repaid to the city. The city's For Sale Incentive Program was created to provide financial incentives to buyers. Together the two programs have helped finance the construction and rehabilitation of more than 10,700 housing units since 1978. By 1985, the city's Community Development Agency had received 28 UDAGs worth \$78.7 million.

Other notable areas of rebirth:

- **DeSales:** Founded in 1975, the DeSales Community Housing Corp., originally sponsored by St. Francis DeSales Catholic Church, promotes private reinvestment in housing for middle-income residents. In the neighborhoods of Tower Grove East and Fox Park, it was discovered that the most effective way to stimulate homeowner interest was to purchase vacant houses, renovate them, and resell them, usually at cost.
- **Soulard:** An early-19th-century subdivision, Soulard was home to European immigrants. Once considered one of the most dense

communities in the world, it consists predominately of vernacular federal or Italianate red brick row houses, behind which were built smaller alley houses. Its mix of single- and multi-family housing with corner commercial buildings is charming, yet the long-term results of renovation efforts remain unclear.

- **LaSalle Park:** This 140-acre neighborhood next to the corporate headquarters of Ralston Purina Co. was regarded a slum by the 1960s. Of the 875 residential units left, 800 were considered substandard. In the late 1960s Ralston Purina announced plans to remain and develop an urban renewal plan for the area.
- **Hyde Park:** Designated the city's first north side historic district in 1978, Hyde Park is a remnant of Bremen, a town laid out in 1844 by a group of German landowners.

The passage by the U.S. Congress in 1981 of historic preservation incentives would have tremendous repercussions in St. Louis. Several neighborhood groups, many already working in designated historic districts, were quick to reap the benefits. For St. Louis the timing was perfect, and interest in renovation exploded.

"In the use of historic preservation tax incentives, no other city even comes close to St. Louis," J. Jackson Walter, president of the National Trust for Historic Preservation, said in the mid-1980s. Basically, the 1981 Economic Recovery Tax Act provided a 25 percent investment tax credit for rehabilitation expenditures on certified historic properties, a 20 percent credit for

Below and right, Washington Avenue's Lammert building, designed in 1897 by Eames & Young and renovated in 1985 by Mackey Associates. Inside offices are arranged around a two-story atrium in a rich mixture of old and new.



nonresidential structures at least 40 years old, and a 15 percent credit for nonresidential structures at least 30 years old. The 1986 Tax Reform Act, however, significantly tightened those incentives by allowing a 20 percent credit for historic properties and a 10 percent credit for structures built before 1936.

Between 1981 and 1986, 600 projects were undertaken in rehabilitations that increased by nearly \$1.1 billion the gross output from sales and business, generated \$326 million in new earnings, and created at least 14,480 new jobs, according to the National Trust. The city's substantial historic properties no longer could be considered eyesores blocking the progress of the city. Instead, their value was greatly enhanced.

The 1986 cutbacks in the preservation tax credits took the wind out of the preservationists' sails. "Excitement about renovation and dollars for renovation has slowed so much," says Carolyn Hewes Toft, executive director of the Landmarks Association of St. Louis Inc. "Now we see a corresponding rise in demolition." Nationally, there was a 35 percent reduction in renovation in fiscal year 1987. Legislation calling for a return to tax incentives for historic preservation similar to those in the 1981 law is expected to be debated in the U.S. Congress this year.

When the tax incentives were diminished, developer Leon Strauss predicted, "New ways to finance the revitalization will be found. After all, restoring fringe neighborhoods is our *métier*—

we'll find a way to keep it going." Today Civic Progress members are putting together an equity fund for the development of low-income housing in the city and the suburbs.

The accomplishments made between 1981 and 1986, however, are visible testaments of what preservation can do for a city. Take Washington Avenue in downtown, for example. Once the prominent street in town, by the 1950s it had become seedy. Because of the general lull in construction downtown, the old building stock was virtually abandoned, but most survived. Now, warehouses have been turned into offices, such as the American renaissance revival Lammert building (Mackey Associates, renovation). The 1929 Lennox apartment building re-opened as luxury housing (after a renovation by Mackey Associates), a bold step toward bringing downtown living into a city that otherwise has none.

These renovations are but pieces of a 10-year plan developed for a 14-block area encompassing Washington Avenue from Seventh Street to Tucker Boulevard. That ambitious plan would "preserve the overall harmony that existed in the area," according to Eugene Mackey, AIA, through renovation and new infill construction. Whether the entirety of that plan actually comes to fruition may depend on financing strategies unknown at this time and on the extent to which local preservation laws will protect the area's buildings from future demolition. Renewed development pressure is expected, given the city's plans to double the

Below and right, 1.45 million-square-foot St. Louis Centre (designed by RTKL), a downtown retail complex. Skywalks connecting shopping mall to established department stores bridge several streets, including Washington Avenue (right).



size of the Cervantes Convention Center (according to plans by HOK) and to have it front on Washington Avenue. When it opens in 1992, the convention center will connect through enclosed walkways to St. Louis Centre.

Without a doubt, the single project benefiting most from the 1981 tax credits is Union Station, the 17-acre train terminal and sheds on the fringe of downtown, renovated for a mixture of uses and re-opened in 1985. Its financial packaging revolved around a \$10 million UDAG and qualification of the entire project for the 25 percent historic preservation tax credit.

Opening two weeks prior to Union Station was St. Louis Centre, the downtown shopping mall conceived by Mercantile Bank a decade earlier. Its lengthy gestation period is endemic to development in St. Louis. "Persistence is absolutely necessary for success," says Ed Ruesing, president of Downtown St. Louis Inc. Designed by RTKL, the two-block, partially glass-enclosed shopping mall connects two downtown department stores and contains 1.45 million square feet of retail space. Of St. Louis Centre, *New York Times* architecture critic Paul Goldberger wrote: "It is not remarkable as a piece of architecture, as Union Station is. What is striking is that such a huge mall is there at all, in the midst of a retail district that seemed a few years ago to be grinding to a halt."

That season the city celebrated. It had every reason to. It had struggled against urban death and come out victorious. Natives

began to take pride in their city, citing as its attributes the revitalized downtown, the historic neighborhoods, the inexpensive but high-quality housing, the zoo, art museum, symphony orchestra, opera, and baseball team—"a high quality of life, with strong urban amenities at an affordable price tag," Ruesing says.

Moments to revel in success were fleeting, though. Now, once again, the climate has shifted. Without a doubt the cutbacks in the preservation tax credits and in federal programs, such as the CDBGs and UDAGs, have slowed—and will continue to slow—renewal in St. Louis. Few question the need to continue preserving neighborhoods with whatever funding is available, with the emphasis on redeveloping neighborhoods, not just renovating housing. Most in need are neighborhoods in distressed pockets south and north of the healthy east-west corridor, parts of which seem bombed out and empty. These neighborhoods would likely prove the hardest to regenerate in any financial climate. To monitor and improve its 54 neighborhoods the city recently established housing corporations in each to acquire, rehabilitate, and market once-abandoned housing. Some 1,000 units are planned for redevelopment in 1990 and 1991 each.

It is widely acknowledged that throughout the city there also must be a vast improvement in the education system. Otherwise, suburban flight can only be slowed, not stemmed. "We're at a crossroads," says developer John Roach. "We've stopped a lot of the bleeding by bringing the downtown back and renovating



the neighborhoods. Now we need to be persistent and to get ready for the next wave of activity. Meanwhile the city needs to ask, what are we? What do we want to become? It may ultimately require more planning than people might understand."

When the HOK-designed Metropolitan Life building opens this year, a 20 percent excess of Class A office space is expected downtown. Some predict no major office development there for three to five years, a minuscule lull compared with the drought of the mid-1940s to the late 1960s, but a lull nonetheless. That earlier hiatus most likely saved many turn-of-the-century buildings from demolition and resulted in a downtown historic district with fabulous texture. When vigorous redevelopment returns once more to downtown, the delicate transitions between the historic and the new will be crucial to avoid more unsettling juxtapositions like some from the last boom.

The current slowdown could result in much-needed urban refinements. Mayor Schoemehl, whose administration has been criticized as too prodevelopment, foresees an opportunity to turn that reputation around. "In American cities we are forced to regard almost any development as progress," the mayor says. "Design by necessity is a secondary consideration, and we spend all of our time playing defense." Now he is investigating what benefits thoughtful urban design could bring to St. Louis.

For, in the final analysis, says the mayor, "cities are consumer products. People make decisions to buy or not to buy them. The

design—the eye appeal—of a city is the packaging. People don't want to buy plain cities. They want cities that are attractive, well designed, comfortable places to be. . . . The measure of success for St. Louis will be if by the year 2,000 we have created an environment attractive enough that people are willing to pay to be there. Then you won't need UDAGs and tax abatements and a whole series of other incentives to bring development in." His models are San Francisco and Boston.

What really gets to the mayor is the emptiness that still haunts downtown. A large part of the problem is that office towers are not required to include street-level retail space, and few have it. And the inward orientation of St. Louis Centre has not helped. New city ordinances encouraging street-level retail are in the works. In the meantime, the mayor is locked in "mortal battle with surface parking lot owners downtown," in his words. "Our downtown is not finished. We have allowed the development of surface parking lots in an uncontrolled way in the downtown core. They have been temporary lots for 22 years. As a result the downtown doesn't have a finished appearance. That diminishes the attractiveness and marketability of downtown space."

Not to be overlooked is the animosity between St. Louis city and St. Louis County. Many leaders in the St. Louis region are far from accepting the theory that suburb and old city are "interdependent rather than competitive, and each must be strong to benefit the other." Instead, they see a "St. Louis County



Allen Freeman

View from Market Street east toward downtown and Gateway Arch. Union Station's head house is at right.

berger. Developer Roach argues that city and county "need to work together now" before major traffic congestion and growth and then disinvestment problems come to the county as they have to suburbs in other regions.

What may eventually smooth tensions between city and county is the 18-mile light rail system, called Metro Link and scheduled for completion in mid-1993. Running from the municipal airport through Clayton, continuing through the city of St. Louis, and across the river to East St. Louis, Ill., the system will have 20 station stops; and, if successful, Metro Link may be significantly lengthened in the future. The use of existing railroad rights-of-way, including the railroad tunnel of Eads Bridge, will greatly reduce the system's overall costs. Stations will be designed by a consortium of architects, engineers, and artists.

Areas around Metro Link stations undoubtedly will prosper, as will the cultural center on Grand Avenue, an important link in the city's overall rebirth. Already there are the Powell Symphony Hall (home of the St. Louis Symphony since 1979), the Fox Theatre (which was renovated and re-opened in 1982), the Sheldon Memorial Concert Hall, and the Lyn, a 1,200-seat vaudeville theater. Surrounding these anchors are several significant historic buildings in the process of being turned into other cul-

tural, commercial, and residential facilities. The New Performing Arts Center Inc., established in 1987, is investigating the use of other buildings for performance, rehearsal, office, and storage facilities. The aim is to "propel St. Louis toward the 21st century with the kind of excitement and purpose that the World's Fair brought to the community at the beginning of the 20th century," says Robert Gaddes, the center's director.

Without a doubt, major scrimmages have been won in St. Louis, but the battle is not yet over. Missing, many say, is a comprehensive plan for the city. Such a plan might have produced a cohesive and graceful Gateway Mall as was originally proposed. And Saarinen's magnificent arch is physically cut off from downtown by the I-70 highway. Covering the expressway with parkland would immediately make the needed connection. And the east side of the river now stands neglected. When will the National Park Service announce the competition to improve the site? A well-conceived vision might help guarantee that in the next century the city will not suffer massive abandonment as it has in this century—and still does in some of its poorest neighborhoods.

St. Louis has proved itself tenacious. Appropriately, the architect whose vision helped spur its rebirth will finally be honored at a time when that renewal is truly in hand: on Sunday, May 7, a commemorative plaque to Eero Saarinen will be set permanently near the Gateway Arch. □

Some of the People Behind The Comeback

*Gyo Obata, FAIA: A designer
with 'the seductive
talent to listen.'*



The conventional wisdom about Hellmuth, Obata & Kassabaum, the St. Louis-based multinational architecture firm, is that, during the years when the three nominal partners were active, George Hellmuth brought in the business, George Kassabaum oversaw production, and Gyo Obata was in charge of design.

What this tidy table of organization probably overlooks is Obata's role in client relations. Now, with Hellmuth in semi-retirement and Kassabaum dead—and notwithstanding the activities of two vice-chairmen assigned to the Hellmuth-Kassabaum roles—Obata's salesmanship is more visible.

It is not the conventional kind. Obata, now 66, projects a shy, low-key diffidence, a lack of vanity, and what appears to be a thinly concealed sense of the absurd, which results in great personal charm. If he is a prima donna—and it is hard to imagine he is not one slightly—he doesn't let it show. He is a past master at that most precious of diplomatic arts, the ability to listen. It's a very seductive talent, and one can imagine that it must be catnip to the clients: Obata leaning back, fingering his tie or twisting a pencil, and blinking slightly, while giving his rapt attention as a client drones on about his ambitions and prejudices.

In his book *Architecture in the Real World*, a sort of festschrift on HOK and its people, Walter McQuade tells of one corporate client in which the second-echelon executives provided the program, but when the design, a complex one, was completed the top man looked at it and said, "Gyo, you'd better start over." Without a syllable of protest, according to the anecdote, without so much as a flinch or a shrug, Obata unhesitatingly replied, "Okay, we'll begin over." It's an entirely credible story.

Obata is now chairman and CEO of a firm that originated in 1949 when Hellmuth, Minoru Yamasaki, and Joseph Leinweber left Smith, Hinchman & Grylls to strike out in partnership on their own. The firm opened an office in St. Louis, Hellmuth's

HYL was dissolved in 1955 and from the pieces arose HOK. The firm had a start-up strength of 24, plus the partners. Today it has about 800 in seven offices worldwide. It is the third-largest architecture firm in the nation.

Among the firm's very first jobs were an elementary school followed by a Nervi-esque, thin-shelled concrete chapel for a Benedictine monastery-cum-prep school in a suburb of St. Louis that is known colloquially as the Priory. The structure, which remains one of the most admired of Obata's oeuvre, is a circular array of arches and vaults suggesting an inverted coffee filter or perhaps an aspic mold, painted white. An equally bold product of those early days was the McDonnell Planetarium (now the St. Louis Science Center) a vaselike hyperboloid prominently sited next to a highway in St. Louis's Forest Park.

But designing show-stoppers was not to be the firm's principal metier. It was Hellmuth's business philosophy—one that history has vindicated—that the best way to make an architecture firm recession-resistant was to diversify, to expand the firm's markets and capabilities in every direction, including geographically. Thus, another of HOK's early jobs was the huge, maximum-security federal penitentiary at Marion, Ill., the successor to Alcatraz. In tribute to its versatility, HOK's vast list of credits now includes, besides prisons and houses of worship (a mosque, a synagogue, and a Mormon temple as well as other Christian chapels), air terminals (Dallas-Fort Worth and Riyadh), museums (in Washington, D.C., and St. Louis), exhibition halls (San Francisco and St. Louis), libraries, and historic restorations. Though the firm has left its footprints across the globe, its mark is deepest in its home town. The latest edition of the AIA guide to landmark structures in St. Louis lists 19 designed by HOK, more than twice as many as by any other firm, past or present.

Obata's accommodating manner may conceivably be related to the adversities of his childhood and youth. His father was a painter who immigrated to California in 1903, two decades before Gyo was born, and made his living painting stage sets and window displays until he obtained a position on the arts faculty at the University of California at Berkeley.

As an Isei (Japanese for first generation), the elder Obata was, in the interwar years, not permitted to own property, join a military service, or apply for citizenship. He and his family were excluded, by law, from many neighborhoods. It was a phenomenon that bemuses social psychologists: despite the ostracism, the Isei, their children (the Nisei), and grandchildren (Sansei) have eagerly contributed to the culture and prosperity of their adoptive land far out of proportion to their numbers.

Though he attended school with Caucasians, Gyo Obata was made conscious of his apartheid. He rarely socialized with whites, he now recalls, and never dated a Caucasian when he was in

the Japanese attacked Pearl Harbor. Hostility toward Japanese-Americans, fanned, as Obata recalls it, by Hearst's San Francisco *Examiner*: reached fever levels. Life as an undergraduate at Berkeley became untenable. Then came Franklin Roosevelt's Executive Order 9066 requiring the internment of every West Coast resident of Japanese ancestry. Obata applied to inland colleges and learned that the Big 10 universities would not accept Japanese. Washington University in St. Louis was one of the few places that would take him.

The Army, which was in charge of the relocation of the Japanese, would not give Obata permission to leave Berkeley, not even to cross the bridge to San Francisco. It was only through the personal intercession of Berkeley chancellor Robert G. Sproul, a friend of his father, that he was at last, in April, allowed to take the train to St. Louis. The next day, his parents and siblings were ordered to assemble at a racetrack in San Mateo, bringing only what personal belongings they could carry.

Obata recalls the contrast between the Bay Area and St. Louis. While San Francisco was blacked out and Californians were caught up in dangerous chauvinistic fervor, St. Louis seemed hardly aware there was a war on. While Gyo was at Washington University, his parents were being shunted from camp to camp, living most of the time in 15x15-foot tar paper huts. One night, late in the war, the elder Obata was attacked by a group of Kibei, Japanese immigrants who had returned to Japan for their education and had retained their loyalty to their homeland. The elder Obata was struck on the head and for a time lost his sight. Gyo's brother protested to camp authorities, but nothing was done. The family was allowed to leave the camp and move to St. Louis so the father could obtain specialized medical treatment. They returned to the Bay Area after the war. Gyo's mother, who taught flower arranging, is now well into her 90s.

It is hard to spend any time in the company of Gyo Obata today without wondering if one detects a touch of the sadness of those years. There is a quality to his countenance that bespeaks a sort of vulnerability and harmlessness.

After graduation from Washington University, Obata earned a master's degree from Eliel Saarinen's Cranbrook. Then, after a brief stint in the Army and four years with Skidmore, Owings & Merrill in Chicago, he joined Hellmuth, Yamasaki & Leinweber, the institutional ancestor of the firm he was one day to inherit.

Obata is reluctant to name his favorite commission and when asked to do so will as often as not say, simply, "the next job." It is clear, however, that he's had favorite clients and they have resulted in the commissions he seems most to enjoy discussing. "It takes a good client to get a good building," he says.

Obata's flexibility, versatility, and deference to the client means that, unlike many of his more flamboyant colleagues, he has no signature. Indeed, HOK promotional literature avers that "there is no HOK style, as such. Mr. Obata believes that each project should be approached individually, without preconceptions."

Below, Obata in HOK offices with origami that he folded.



Allen Freeman

Thus, as his detractors are wont to note, Obata is not a great innovator—not a Wright, or a Stirling, or a Graves, not an ironist or a modern classicist or a postmodernist, though there are derivative elements of these movements (with the possible exception of irony) in the sum of HOK's work.

Obata's stylistic relationship to the contemporary original spirits of architecture has been likened, perhaps not altogether justly, to the fashions offered by a department store as opposed to those of a chic Manhattan boutique: not out front, but not too far in the rear, and above all keenly sensitive to the tastes and requirements of the customers, providing them with what is up to date but never preposterous and, above all, serviceable.

History may be kinder to Obata than is today's taste machine of the Atlantic rim. His work has earned a reputation for courtesy that not all contemporary architecture observes. Although the design quality of HOK's work is uneven, the best of it exhibits a gentle, thoughtful, and respectful relationship to its environment. The work seems in a subtle way to reflect, in fact, the manner and personality of the firm's chieftain.—E.F. PORTER JR.

Mr. Porter writes about architecture for the St. Louis Post-Dispatch.

Carolyn Hewes Toft: Tact and strategy in preserving the city's built heritage.

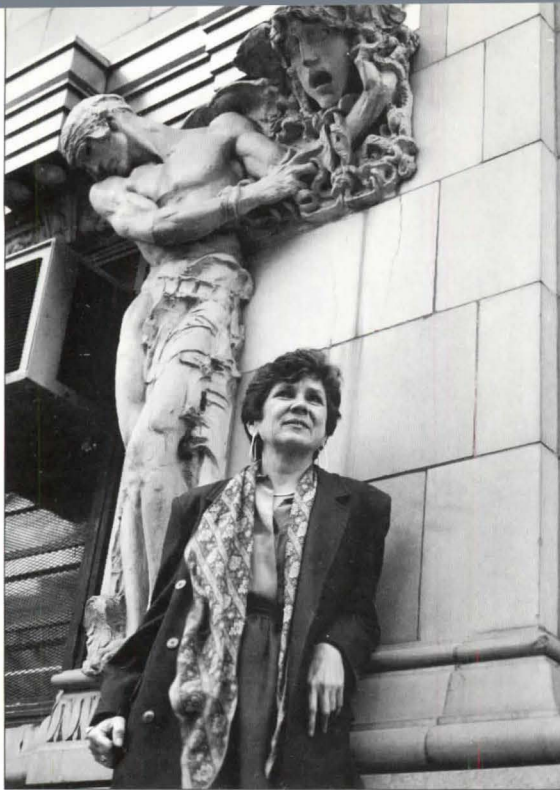
When Carolyn Hewes Toft showed up at a masquerade party in 1981 in a flowing, bright green gown, her hair styled to look like a bird's nest, with a big, fake bird on top of it, people noticed. And that's just what she wanted. Toft, executive director of the Landmarks Association of St. Louis Inc., and others in the preservation community were battling civic leaders who wanted to tear down some fine, historic buildings in the path of their Gateway Mall—a proposed swath of green space downtown. Asked about her party costume, Toft quipped, "I'm the Gateway Moll—expensive, passive, green, and boring."

Toft and the other preservationists eventually lost that battle, which raged on for years. But it wasn't because they didn't fight hard. "We attempted to work with the city on the mall," Toft said later, "but the mind-set was impossible to turn around."

During the more than 12 years she's been at the helm of Landmarks, Toft has used every tactic and strategy in the book to preserve St. Louis's exceptional architectural heritage for future generations. At times she's been outrageous and publicly vocal with her often witty criticisms of city officials, high-powered developers, or anyone else posing a threat to a landmark. At other times, she's worked quietly alongside the officials and developers, coaxing them gently and almost demurely into seeing things her way.

In the early 1980s, for example, when the preservation community was up in arms about the lack of adequate city legislation to protect historic buildings and districts, Toft helped convince city officials to change the laws. She also was appointed by then-Mayor Jim Conway to a committee that wrote laws more favorable to historic preservation.

Earlier she had been publicly at odds with Conway over another preservation matter: Toft's research had revealed that at least 70 historically significant buildings in downtown had been torn down over the prior 50 years. Of those sites, 38 had become



Above, Toft and friend on an endangered downtown theater.

parking lots. Throughout the city, thousands of buildings were being demolished each year. To stem the tide, Toft nominated 66 buildings in the core of downtown to the National Register of Historic Places. Downtown St. Louis Inc., a powerful group of business and civic leaders, immediately launched a campaign to block the nomination. The fight was on. Mayor Conway stepped in and appointed a committee to study the matter. Toft cried foul, accusing Conway of using “the old head in the sand trick” and even gave Conway an “Ostrich” award for his handling of the nomination.

One of Conway’s top officials at the time—who remains in city government today—gives Toft credit for raising the city’s consciousness. “Landmarks was a prod for city government to face issues it didn’t want to face,” says Frank Hamsher, now a counselor to Mayor Vincent C. Schoemehl Jr.

Toft got to St. Louis, and into the historic preservation field, in a roundabout way. Born in Oklahoma City, she received a bachelor’s degree in music at Grinnell College in Iowa and a master’s degree in music from the University of Wisconsin in Madison. She also studied at the Conservatory of Music in Würzburg, West Germany, and at the Bachverein and Cantorei in Heidelberg, West Germany. In the meantime, she married and had four children. She arrived at Washington University in St. Louis in 1970 with plans to continue her music studies, but an interest in architecture and urban planning quickly was kindled. She joined Landmarks and worked to preserve neighborhoods such as Lafayette Square on the South Side and others in the city’s Central West End. She ended up with a master’s degree in urban affairs, with emphasis on architectural history and urban design.

After a short time at the city’s Community Development Agency, Toft landed a job at the privately supported Landmarks organization as its first full-time staff member. Her timing was right, for that year Congress enacted the Tax Reform Act that provided new, substantial tax credits for renovating historic buildings and took away other tax breaks for razing them. Toft set out in her new job determined to make sure that people in St. Louis knew about the new tax breaks—and used them.

One of the first big redevelopment projects she was involved with was LaSalle Park, a deteriorating, 144-acre neighborhood surrounding Ralston Purina’s national headquarters, just south of downtown. Ralston announced that it would rejuvenate the neighborhood, but company officials were equating rejuvenation with the urban renewal approach of the 1950s and 1960s. Their original plan was to tear down virtually all of the old brick

buildings—some dating from the 1860s and 1870s—and replace them. Toft, however, convinced Ralston and city officials that renovation was the best way to go, and today renovation and rebuilding continues in LaSalle Park.

Toft and her staff planned tours for the public, did historical research, wrote nominations for the National Register, and even published books—about Alfred Bult Mullett’s Old Post Office building in downtown, Laclede’s Landing area on the riverfront, the Carondelet and Compton Heights neighborhoods on the city’s South Side. “We were doing lots of nominations to the National Register back then,” Toft recalls, “and we often choose to do them in areas where there was no activity, but where there was a great history and a tremendous supply of historic buildings.”

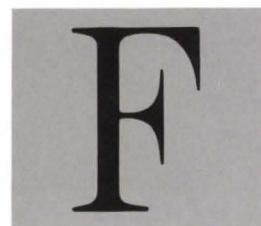
When Toft joined Landmarks, 15 buildings in the city were listed on the National Register; today the Register contains 132 listings from St. Louis. Of the 132 properties, 29 are historic districts that range in size from a small group of buildings to several districts containing thousands of buildings. Landmarks nominated nearly all the properties.

While the preservation activity slowed dramatically after the federal tax revision in 1986, Toft didn’t slow down. She wrote a 200-page guidebook with more than 200 pictures and illustrations, entitled *St. Louis: Landmarks & Historic Districts*. Toft and her staff (one part-time and two full-time assistants) recently finished a much-needed analysis of all the public school buildings built here before 1940, many of them designed by William B. Ittner. Now she’s pushing for adaptive use of the buildings as they become vacant. The next big Landmarks project will be research and analysis of the many churches in St. Louis.

As always, there are the crises. The owner of the historic Ambassador Theatre downtown, for example, has talked about converting the old movie palace into a parking garage. And a church near downtown, dating from the 1860s, is in danger of being razed so the property can be used for parking. “There’s still an awful lot to do out there,” Toft says. —CHARLENE PROST

Ms. Prost covers urban development for the St. Louis Post-Dispatch.

Jill Roach: ‘Downtown’s future depends on getting people here.’



From her office window in the center of downtown St. Louis, Jill Roach can look across the street to the handsome, sturdy building designed nearly a century ago by her husband’s grandfather. The embellishments on the facade, far above the view of pedestrians, help document its birth, an era of sometimes elegant, sometimes flamboyant architectural adornment.

Today, Roach aspires to bring a different element of urban health and beauty to the network of concrete canyons that begins near the banks of the Mississippi River and cuts westward through the massive cluster comprising the original commercial heart of the city. The Washington University history major and wife of developer and former alderman John Roach is working as a city planner, urban historian, environmentalist, and, at this hour, an ardent advocate of mass transit.

As director of transportation planning for the Community Development Agency and board member of Bi-State Transit, 2000

ator of the St. Louis metropolitan bus system, Roach spends most of her time on the planning and implementation of Metro Link. This proposed 18-mile light rail system ultimately will cross the river from East St. Louis, Ill., and lay a steel pathway north and west, terminating at Lambert International Airport.

But as a blend of preservationist, pragmatist, and visionary, she sees the \$387 million project as much more than a means of getting area residents from here to there and giving them the choice to leave their cars at home and to stop worrying about parking fees. She is convinced it will bring important side benefits to the commuters, office and plant workers, and shoppers who live in the St. Louis metropolitan area, a two-state region split by the Mississippi and spanned by auto-clogged bridges.

The light rail, she says, will pump new blood into the downtown blocks—threatened, as in every other U.S. city, with incipient anemia. It can help correct the snaggle-tooth image created by the destruction of old buildings—some still in good condition—and the allotment of valuable land to parking lots and warehouse-type garages. It will also result in the rehabilitation of historic Eads Bridge, built more than a century ago as a railroad link



across the Mississippi but now a victim of age and infirmity.

Through creative planning and maintenance of the right-of-way and stations, the light rail can bolster neighborhoods along the route. And an arts program, already in the works, will add another dimension of creativity and beauty (it is hoped).

“St. Louis is one of the largest—if not the largest—metropolitan areas without rail mass transit,” says Roach. “This is part of what is considered a well-developed metropolitan area. The light rail system is very important for historic preservation. These older buildings, such as that one across the street, weren’t built with parking in mind. The future of the downtown will depend on getting people here. If we want to keep downtown healthy, we have to have better land use. And we must have a broader base of passenger use.”

Funding, both federal and local, has been set, and the design of the \$373 million project is expected to get under way this spring despite the opposition of leaders in affluent St. Louis County. They question the wisdom of starting the line in depressed East St. Louis, crossing the river and heading west, rather than creating a north-south route that would bypass downtown and take white-collar workers and others from suburban communities straight to the airport. Roach defends the east-west route and its eastern terminus in a depressed area when it is attacked on economic grounds. “In the first place,” she says, “Metro Link will bring people across the river to jobs in the downtown area and on out west at stops along the proposed route. Also, there are many entry-level jobs connected with the airport, and workers should have an opportunity to travel to those jobs.”

Metro Link not only will be the largest public works program in the region, says Roach, but, she hopes, it will become an “incubator for a public arts program.”—MARY KIMBROUGH

Ms. Kimbrough is managing editor of the St. Louis Globe-Digest.

George McCue, Hon. AIA: The urban critic as civic conscience.



George McCue, pioneer of architectural journalism, is rich in years and honors, but he carries them lightly. Firm of voice, pink-cheeked, robust, McCue could pass for 65.

He leans back, smiling, and talks about his very first urban experience.

The McCue family had just moved from

Hannibal, Mo., to St. Louis, so George set out with his sister Lou to explore their Salisbury Street neighborhood. The children had not gone far when in front of them a man was flung outward through the door of a saloon with a crash of breaking glass. The drunk rose slowly from the sidewalk, shook off slivers of art glass, and walked away. Nearby, cowboys on horses herded cattle through the crowded city streets, making their way from a North Broadway rail siding to an Illinois slaughterhouse via the McKinley Bridge over the Mississippi River.

It was summer 1918, with the World War still going on and Prohibition a year away; George McCue was 8 years old. His emergence as a writer on architecture and urban design lay nearly four decades in the future.

McCue entered the University of Missouri journalism school and earned his bachelor's degree there in 1933. He got jobs in cities of increasing size and in 1942 found work in his original Bigtown, St. Louis. After a year at the *Star-Times*, he moved to the stronger, more prosperous *Post-Dispatch*. There, assigned after a while to the paper's weekly rotogravure section, McCue could indulge for the first time some of the extrajournalistic tastes he had acquired at Missouri U., in particular from an art history course taught by Allen S. Weller.

The *Post-Dispatch* then had no art critic. Its editors soon noticed McCue's spirited, meticulous handling of art subjects that occasionally were assigned to him in the rotogravure section. When in 1956 the newspaper set aside a Sunday page for critical writing on the arts, McCue was asked to give it his full time.

From the first, McCue sought to define his new beat broadly and to encompass within it the city as a whole. All around him in the 1950s St. Louis was being transformed by commercial development, suburban expansion, road and airport construction, new parks, and the whole business of urban renewal. Shouldn't these get at least as much critical attention as a painting hung on a museum wall? McCue's editors agreed, without much conviction. Art and architecture, artists and architects, “somehow had become separate in the modern environment,” as McCue wrote 10 years later. He found “neatness and order inside the art galleries, dinginess and chaos . . . outside.”

AIA had come to the same conclusion and wanted to do something about it. In 1962 the Institute invited 30 writers from large daily newspapers around the country to New York City's Columbia University to confer on the virtual absence from their pages of critical writing about cities. McCue learned at this meeting that he and a Louisville *Courier-Journal* writer, Grady Clay, were the only newspaper staffers in the nation who gave a large part of their time to consideration of architecture and urban design. Clay had started earlier than McCue, in 1949, with a radical revision of his paper's Sunday real estate section.

McCue remembers the skepticism of reporters at the meeting. Developers would sue papers that criticized local projects, they

warned, or at least withdraw advertising. Moreover, in sponsoring this conference and paying all expenses, the Institute, some of the newspapermen suspected, had selfish interests of its own at heart. Still, one by one, newspapers answered the call, made by McCue in summarizing the conference, for them to "ask questions and know what questions need to be asked" in covering the design of their cities. Ada Louise Huxtable took up the field for the *New York Times* in 1963.

In 1967, *Time* magazine devoted a page to the emergence of "the urban reporter-critic . . . he serves as a civic conscience—denouncing the banal, calling for preservation of the historic or unique, pointing out that planners who think big sometimes err even bigger." The article described the work of Huxtable, McCue, Wolf von Eckardt in Washington, D.C., and Allan Temko in San Francisco.

Since retiring from the *Post-Dispatch* in 1975, McCue has remained continually active before a national audience as a writer and speaker on architecture. All his work is marked by the quiet tone and scrupulous preparation he has brought to architectural journalism from the first. *The Octagon*, a 100-page monograph on AIA's historic building in Washington, was published in 1976 by the AIA Foundation. McCue's magnum opus, *Sculpture City*, a book on St. Louis public sculpture, appeared last year under the imprint of Hudson Hills Press. The fourth revised edition of his 1964 guidebook, *The St. Louis Building Art: Two Centuries*, will appear this spring to coincide with AIA's national convention in St. Louis. The 1989 revision incorporates color pictures and greatly improved black-and-white photo repro-



duction. It is published by the University of Missouri Press, with sponsorship of the St. Louis Chapter/AIA.

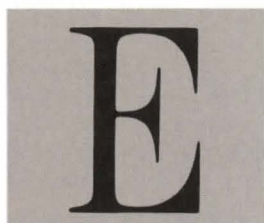
A quarter of a century after the Columbia University conference, and 14 years past McCue's retirement from the *St. Louis Post-Dispatch*, big-newspaper coverage of architecture is taken for granted. The path has not been all onward and upward, though. Good old buildings no longer are wantonly bulldozed without protest, and the press routinely chronicles their return to useful life through architectural ingenuity. To McCue, the best news of the 1980s has been the readiness of architects, engineers, crafters, and material suppliers to take on restoration projects that in earlier decades would have been dismissed as quixotic.

On the other hand, in a great many new buildings and remodelings the triumph of antimodernism or postmodernism has tended to divert creative attention away from structure and space and channel it into questions of surface decoration. McCue is dismayed by the monotonous application of bright-colored triangles, semicircles, and cylindrical pseudo-columns to building fronts in every corner of America: "It's like Front Street in Dodge City, everything put up for show."

McCue lives in Kirkwood, a mid-19th-century St. Louis rail commuter suburb, with his wife, Pearl, whom he married in 1937. They have five children and nine grandchildren—FRANK PETERS

Mr. Peters, former arts editor of the St. Louis Post-Dispatch, won the Pulitzer prize for distinguished criticism in 1972.

Eugene Mackey, AIA: Taking on powerful adversaries in the name of urban design.



Eugene J. Mackey, AIA, founder and principal in the firm Mackey Associates and president of the host chapter of this year's AIA convention in St. Louis, has spent virtually his entire professional life honoring one of the key attributes of a proper host: an eagerness to show off his surroundings to his guests,

matched by an eagerness to show off his guests to his surroundings.

For Mackey, probably more than any other architect in practice in St. Louis, has demonstrated what the Athenians called *politeia*, a term that to them meant citizenship in an ideal sense and that had not yet acquired the negative connotation we nowadays ascribe to politics. Notwithstanding the fact that local punsters (a breed not known for self-restraint) are given to calling him Designer Gene, Mackey has become locally prominent less for his freestanding designs than for a militant and often outspoken devotion to the importance of good planning and design in the built environment; promotion of the principle that architects, on account of their special expertise, have a civic obligation to give voice to their professional opinions on matters of public concern—even at the risk of alienating potential clients (an idea that has not made much headway in St. Louis); a loyalty to his profession in general and to AIA in particular that may appear jingoistic; and a work record, mainly as principal architect for the Pantheon Corp., the city's leading rehabber until it was dissolved last year, that left Mackey's stamp on scores of acres of once seriously endangered districts of the city.

The list of Mackey's rehab credits is, in fact, prodigious. Among the most conspicuous are the Majestic Hotel, the Lennox Hotel, and the former Lammert's furniture house (now an office building the tenants of which include the local chapter of AIA), the former general post office annex (also now offices), and the Cochran public housing project. Cochran has acquired a certain national renown on account of its flamboyant, matriarchal tenant-in-chief, Bertha Gilkey, head of one of the few successful tenant management organizations in the country.

Although much of Mackey's oeuvre is consequently almost invisible from the street, it could easily be argued that, since no other city in the nation took greater advantage of the investment tax credit for historic preservation in the years when it was available, and since no architect did more of the rehab designs than he, therefore Mackey has had a greater impact on the social and physical texture of St. Louis over the past decade than any other architect.

Where most architects generally measure their achievements by what they have changed, Mackey can measure his by what he has conserved. For many architects, this might seem curious tribute. Indeed, it might seem curious to Mackey, who remains as vain of his buildings as architects typically are.

Mackey says his own favorites are a fountain he designed for the Missouri Historical Society museum in Forest Park and a fountain and Japanese garden for the Missouri Botanical Garden. "Normally, an architect would look at a garden and say, 'I want to build a building,'" says Mackey. "But the essence of a garden is land."

Probably more than any other architect in the region, Mackey has involved himself in community endeavors. His activities

include membership on the boards of the local preservation organization, the downtown improvement association, the regional open space conservation group, a symphony orchestra, a sculpture park, and a local college. In 1976, Mackey organized and led a R/UDAT study of Forest Park, St. Louis's answer to Central Park. And, more than any other architect in town, Mackey has swum against the establishment tide. His manner, being more passion than malice, and his boyish looks doubtless help him get away with it. With his perpetual tweed jacket (he's rarely seen in a suit) and his ingenuous, dolichocephalic countenance wearing alternately an unguarded grin and a thoughtful, unself-conscious frown, he could pass himself off easily as a prep school history teacher/hockey coach.

St. Louis tends to be less receptive to criticism than her more cosmopolitan sisters on the coasts, and Mackey has been something of an anomaly in his frank observations of such civic matters as the ever-shifting, never-resolved plan for the Gateway Mall, a proposed grand esplanade that would stretch westward from the riverfront and the Arch. The city has been tinkering with the proposal for more than half a century, with results that are almost entirely unhappy. Mackey aligned himself in opposition to a coalition of downtown bankers, developers, and building trade union operatives by accepting a commission for rehabbing Eames & Young's nationally registered Title Guarantee Building. The building was lost. It was one of the city's sorriest hours—and one of Mackey's finest.

When the director of the St. Louis Public Library proposed improving access to the splendid Beaux-Arts main library building (designed by Cass Gilbert in 1912) by cutting an entrance through the monumental front steps, Mackey was one of only two architects in town publicly to protest. Notwithstanding that the library had been a client and might be one again someday, Mackey termed the proposal "an idea that should go right into the wastebasket" and proceeded with an eloquent dissertation on the intellectual value of heroic architecture. The result was that the librarian's proposal, which appeared to be based on the singular notion that the way to convert functional illiterates into devoted bibliophiles was to make the library as unimposing as a supermarket, was quietly dropped.

Mackey again risked making powerful enemies when he publicly opposed the installation of Richard Serra's rusty Cor-Ten slab sculpture on a prominent downtown location rather than in a sylvan setting in Forest Park. The principal sponsor and defender of the Serra piece and its siting was, and is, Emily Pulitzer, a credentialed scholar of modern art and the wife of the publisher of the *Post-Dispatch*, the city's lone daily.

Mackey's efforts to persuade his AIA colleagues to be as forthright as he have met with only small success. The only occasion on record in which the St. Louis Chapter has gone public with its views ignited a vigorous counterattack. The episode occurred in 1983. The chapter's executive board issued a brutally candid statement on the Adam's Mark, a showplace hotel for which ground was about to be broken on the block facing the city's riverfront park and the Arch. An "insipid box, . . . a travesty, . . . a banal building . . . inappropriate to its significant location . . . an affront to the aspirations of the citizens of this city," thundered AIA. It was, according to Betty Lou Custer, FAIA, the chapter's industrious and long-suffering executive vice-president, the first time the chapter had ventured forth in public with its views on a forthcoming building. And the last. In language barely more temperate, bankers and civic boosters along with the hotel's developers and in-house architects accused AIA of going off half-cocked and obstructing community progress. The St. Louis Chapter/AIA has maintained a respectful silence ever since. But Mackey insists that the Adam's Mark confrontation was not the diplomatic fiasco many perceive it to have been. It was on account of the AIA commentary that the developers made some 11th-hour improvements in the design, including the substitution of brick and granite for the stuccolike exterior cladding originally planned. "The Adam's Mark is better today—albeit only marginally—than it would have been had we not spoken out," Mackey says.



Above, Mackey in his office with some of his travel sketches.

Militating against participation, however, is the natural hesitancy of architects to stick their necks out. "We're so vulnerable, you know," he says. "Everything we do stands out there, naked." The result is that many architects, Mackey among them, can be a bit humorless, as Mackey admits. When a recent article chiefly concerning Prince Charles's attacks on modern architecture and planning in London characterized the Royal Institute of British Architects, like its American cousins, as boneless, pompous, and gassy, Mackey could not conceal his irritation. "We don't need that," he said. "What if a client reads that?"

Mackey is a first-generation Midwesterner, born in 1938 in Manhattan, Kan., where his father, also Eugene, was teaching architecture at Kansas State. The elder Mackey, the son of a firefighter in Lennox, Mass., had studied at MIT. When young Eugene was 3, his father accepted a teaching position at Washington University in St. Louis. The elder Mackey, in partnership with Joseph D. Murphy, left a monumental imprint on St. Louis with works that include Washington University's Olin Library, the Climatron greenhouse in the Missouri Botanical Garden, and the Loretto-Hilton Theatre, now home of the St. Louis Opera Theatre, in suburban Webster Groves. He was the designer of the city's World War II memorial, a stylized upright bird's wing on a terrace near city hall. Thirty-two years ago he was president of the St. Louis Chapter/AIA.

The younger Eugene (who styled himself The Third for many years, and has only begun to drop it) earned his bachelor's degree in architecture from Washington University and his master's at the Harvard School of Design, and then went to work for his father. Young Mackey was in Europe on a traveling fellowship in the summer of 1968 when his father collapsed and died while attending a zoning hearing. The son returned to St. Louis and shortly, against all advice of his peers and elders, opened his own firm. "I was just driven in another direction," he recalls.

The firm has grown steadily, from a staff of three at its small beginning to a present strength of 34, making it by at least one yardstick the 10th-largest architectural concern in the St. Louis area. Mackey's main offices are in the Power House, a near replica of a former generating station near Union Station that the firm designed, and there is a Mackey Associates branch in Kansas City. But Mackey speaks nostalgically about his former office locations. The first was on the 19th floor of a downtown building with a view of the Mississippi, "which is what St. Louis is all about." The second was in the heart of one of the historic districts where the firm had most of the rehab design.

"We could look out the window on the second floor right into the street," he recalls, adding, "That's the thing that strikes me most about being an architect: it's being a person of the city."

—E.F. PORTER JR.

Leon Strauss, Hon. AIA: 'Giving people the choice' to live in the city again.

I

f you want to talk about neighborhood rehab in St. Louis, the man you want to meet is Leon Strauss of Pantheon Corp. And if you ask Strauss how he remade 106 acres of one of the most desolate sections of the West End into the city's model for neighborhood rebuilding, he'll say: "All we did was restore an old

neighborhood and make it like the neighborhoods we used to have in this country, which are nonexistent in the suburbs."

In the early 1970s, when Strauss began his pioneering work here, "people were leaving the city to go to the suburbs because there weren't any good places left to live in St. Louis anymore. We wanted to give people a choice," he said.

"If they wanted to stay in the city, they would have a good place to live. We wanted our neighborhood to have a variety of people and a racial mix—single people, married people, young, old, people with families, ones who don't have a lot of money, others that have a lot more. We wanted a neighborhood where you could walk, or hop on your bike and take a ride, or go eat—with service stores, and a real, live neighborhood drugstore, where the owner is there. We wanted apartments, houses, condominiums, walk-up buildings, elevator buildings, subsidized housing, market rate housing."

Strauss told *Business Week* in the spring of 1980, "We are trying to create whole new neighborhoods in the midst of virtual wastelands. If we are unable to go in on a large scale, there is no point in going in at all." A smaller effort could never have turned those desolate neighborhoods around.

In neighborhood rehab, Strauss paved the way for others in St. Louis and elsewhere. Richard Baron, president of McCormack Baron & Associates, developer of housing and commercial properties, said, "Pantheon did an extraordinary job for the city and did it at a time when no one was willing to even consider reha-

bilitation. I think there isn't any question that the community owes a debt to Leon for taking that kind of risk." Strauss did so aided by what he calls "the economic goodies" provided by the city, state, and federal governments; Strauss developed innovative public/private financing packages for his projects. Developer Louis Berra, assistant to then-Mayor John H. Poelker from 1973 to 1977, said, "Those were the early boom years for redevelopment, and Pantheon was right there. This was the first time in the city for the public/private partnerships, and Pantheon played a monumental role."

Strauss, who is 60, grew up in St. Louis and received a degree in architectural engineering from Washington University. After a year helping to design towns in the newly created state of Israel, he returned to St. Louis and in 1950 joined Millstone Construction Co. as an engineer and project manager. In 1972, he left Millstone and founded Pantheon Corp. During the past 16 years he has guided the development of more than 4,500 new and renovated housing units, among other building types, throughout the city.

Strauss has said that he took the plunge into redevelopment work because he could no longer stand by and watch the fine old brick buildings and entire neighborhoods he had known as a boy crumble and fall. "I saw this incredible opportunity in the city. It didn't look like anyone else was going to do it," he said.

One of the first projects Pantheon undertook has become its biggest and best known: Pantheon has been rebuilding DeBaliviere Place, a 106-acre neighborhood in the West End, for more than a decade. Today, DeBaliviere Place has more than 1,300 new and renovated housing units—roughly a fourth of the units Pantheon had completed throughout the city by last fall. In the early 1970s, the area was mostly vacant lots and low-rent apartment buildings, many partly empty and all badly deteriorating. Crime was so bad there that some people called the place the war zone. Strauss and his staff set aside a room in their offices they sometimes called the "war room," where they met and planned their rebuilding strategies.

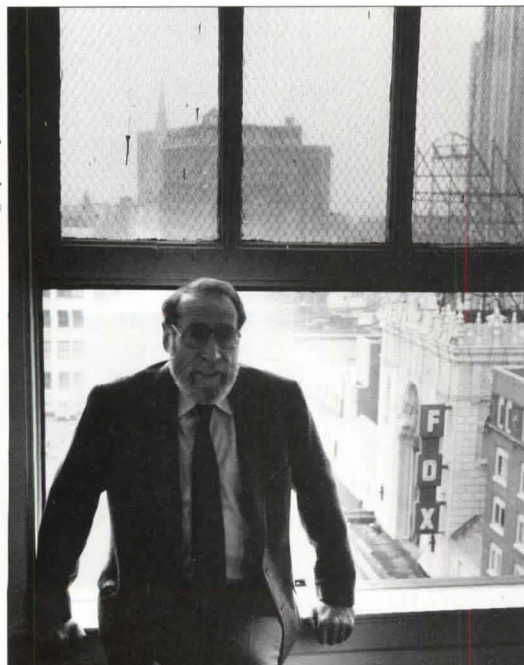
Most of the old buildings in DeBaliviere Place had been solidly constructed in the early 1900s of brick and masonry, and remnants of their architectural character remained. Strauss knew that, if he could buy a large number of those buildings, he could rebuild them into the neighborhood he envisioned there. The Pantheon staff worked quietly until most of the buildings were acquired. That helped keep prices down and real estate speculators out. For capital Strauss used his own life's savings and convinced a small group of other people, including a leader of Mercantile Bank, to invest in what he was doing.

The properties were so devastated that Strauss insisted from the beginning on "gut rehab." He was the first in St. Louis to use this technique on a large scale. "Developers here believe in quality work," Strauss said later. "We have had the same philosophy as Toyota. Build it smaller, at no sacrifice in quality, and price it competitively."

In 1978, Pantheon began building in Columbus Square, a new housing complex just north of downtown, for which the city got federal funding. And in the early '80s Pantheon took over development of an area on the city's South Side, the 222-acre Lafayette Towne. In the downtown area, Pantheon renovated two fine, historic buildings that had been vacant for years—the Lennox Hotel and the Lammert Furniture Co. building. They would become keystones of the turn-of-the-century Washington Avenue historic district. When another redevelopment group, working to rebuild the City Center area in Midtown, said it needed help, Pantheon bought it out and added that project to its growing list.

Perhaps Pantheon's most singularly spectacular project is the opulent 1929 Fox Theatre, which Strauss and some associates bought and saved from demolition in 1981. Strauss's wife, Mary, took charge of a \$2 million restoration, seeing to it that even jewels in the columns in the lobby were cleaned. When the Fox reopened with applause from the community, Strauss quipped, "Mary is the only person I know who has been given an unlimited budget, and exceeded it."

Photographs by Allen Freeman



Below, Strauss's office overlooks Fox Theatre in Midtown.

The Tax Reform Act of 1986, which sent chills throughout the country's redevelopment community, and the drying up of federal monies that Pantheon and many others had relied on for years—plus a diminishing demand for rental housing—led to Strauss's decision late last year to sell Pantheon. The buyer, O. Bruce Mills (head of the Mills Group), says he wants to carry on the Pantheon tradition that includes real estate, development, and financial investment businesses.

Strauss doesn't really say that he is retiring, but rather that he wants to take life at a slower pace. But he's already hard at work as the consultant for a group that is planning to rebuild a deteriorating Midtown area into a cultural and performing arts district, with theaters, rehearsal and performance spaces, housing, and other amenities for artists and performing arts groups now scattered throughout the St. Louis area. Strauss also is working on St. Louis Symphony-related activities, and he's helping to oversee a \$30 million expansion of the St. Louis Science Center. —CHARLENE PROST

Betty Lou Custer, FAIA: Prodding architects toward broader concerns.

W

hen she became executive secretary of AIA's St. Louis Chapter, Betty Lou Custer, FAIA, was described as "a lady-like rebel, as precise as a blueprint, as disciplined as a computer, and as old-fashioned as a backyard garden." She was, an interviewer wrote in 1972, "a space age realist with a Victorian con-

science." The years have not changed Custer. In fact—as she says with a laugh—she still wears a band around her dark hair, a coiffure that has become her trademark, and she sees no reason to try a new style. She often regrets the changes in the American life style, the passing of a simpler, lovelier era of safety and neighborliness and gracious customs.

But the rockbound traditionalist blends with the avant-garde. When she talks about her cherished profession of architecture, she may look at the past with nostalgia and affection, but she looks to the future with the gusto of a high school cheerleader.

Nothing reflects that philosophical mixture more than her house, a hospitable dwelling in the close-in suburb of University City. Here she has lived since she was 5. She continues to share the house with her widowed mother, Mrs. Paul R. Wielandy, and the mementos of the years. But for all its homeyness and comfort, this house is by no means just an old-fashioned retreat. Custer, who loves to cook, has modernized the kitchen and has set up her computer on the dining room table. Here she works early on many mornings before leaving for the chapter offices in the recently renovated Lammert building downtown.

Four decades have passed since she received her bachelor's degree in architecture from Washington University and began to practice. Although she no longer has time for that practice, she watches new trends with enthusiasm and welcomes the growing use of the computer as a tool ("I am addicted to the computer," she says) and the fresh, bold ideas that young people are bringing to the profession ("Oh, how I would love to be young again"). As a child, Custer recalls, "I was always making floor plans, and . . . laying out imaginary houses with leaves from the

yard." But her career began almost by accident. Teachers at Mary Institute in St. Louis and at Pine Manor Junior College nurtured her interest in design. At Pine Manor, her professor, Eleanor Manning O'Connor, recognized Custer's potential as an architect, encouraged her to follow that career, and recommended Washington University.

After graduating in 1944, Custer began her professional work with consulting engineer Neal J. Campbell, moved on to the office of Harris Armstrong, FAIA, and then to the St. Louis Planning Commission. In 1949 she became the first licensed woman architect in Missouri and five years later established her own practice in the basement of her house. "Of course, when you get your license, you think you know a great deal, but then it's back to square one because you are learning in a very different capacity and it's up to the profession to train you. There's a certain atmosphere in school, but when you come out into the real world, it's very different." On the first day of the first job, she designed stairs in a warehouse. "Then," she adds with a smile, "I learned how to fold drawings and tie them up."

Today she encourages young architects to become involved in the profession, just as she did. As soon as she qualified, she joined the AIA chapter and became an active and innovative member. Before becoming chapter executive she started "Architects' Sunday" tours, which regularly lure St. Louisians out of their neighborhoods and on pilgrimages across town.

It was for this that she was accorded AIA fellowship. The idea spread from St. Louis to other cities, and several years ago Custer was invited to an architects' meeting in Houston to discuss it on a panel. There her comments also covered the responsibilities of an architect, revealing, as she continues to do, her missionary spirit regarding the profession.

She believes that an architect "must be concerned not only with materials and colors and walls and foundations, but with a better environment and a quality of life. And an architect must be concerned with people and their special needs." When Custer became its executive in 1972, the St. Louis Chapter numbered 125 members; today there are 650. She says she wanted the job because "I had some ideas. . . . The profession was getting into public awareness of architecture. I just felt this would be the right place for me." Asked if she thinks pursuing a practice and managing a chapter require different talents, she says, "Not necessarily. You organize your job, whatever it is. You use your basic talents. Both are a matter of serving.

"This profession is never dull. There is always something to learn, especially from other members. It's a wonderful thing. I have never seen anyone turn down a request from young people asking advice about entering architecture. . . . Unless you want to do something for people, you don't belong in architecture."

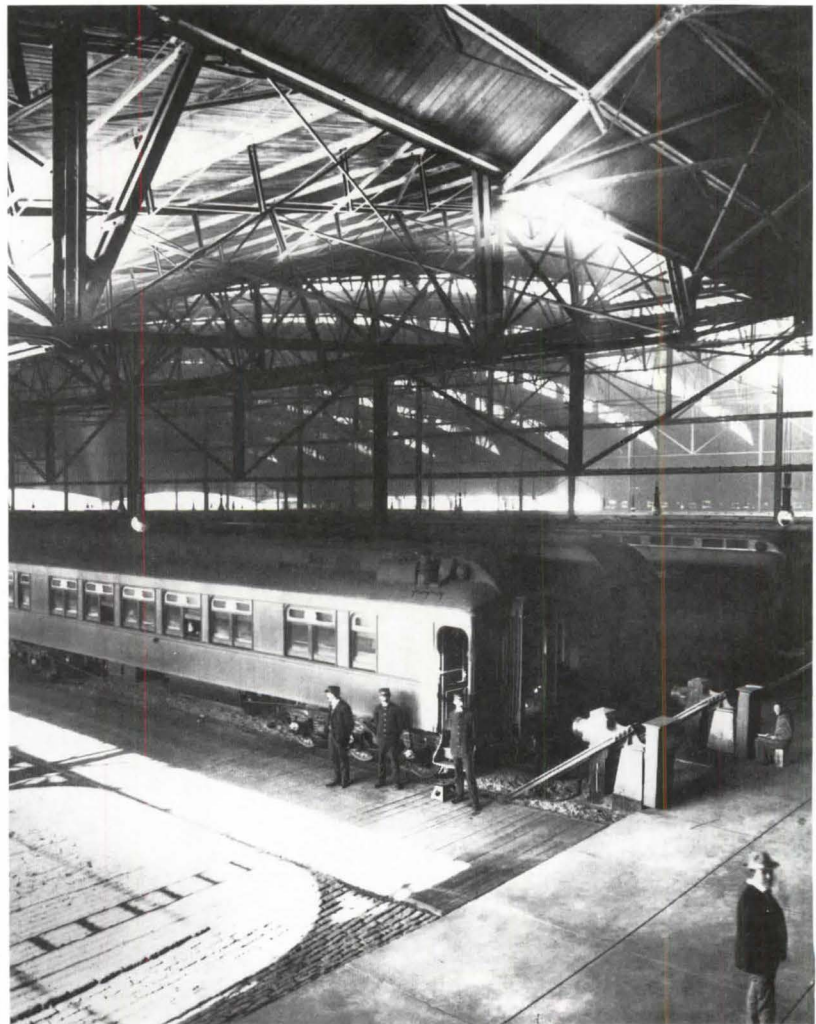
—MARY KIMBROUGH



Right, Custer in Lammert building, where chapter is located.



A. W. Sanders



E. Bochl



The Nation's Largest Single Act of Rehabilitation

The still-growing Union Station complex. By Allen Freeman

Some 90 years after it first opened and a decade after the last train pulled out, St. Louis Union Station reopened in 1985. Hellmuth, Obata & Kassabaum, working under federal rehabilitation standards that qualified the owner to receive 25 percent investment tax credits, restored and adapted the station for commercial and recreational use. At \$135 million, it is the nation's largest rehabilitation project of a historic building.

Like all the best Romanesque revival buildings, Union Station is quirky and exuberant, endearing and accessible—despite its immensity. Theodore C. Link of St. Louis led the team that designed the 1891 competition-winning entry, aided by Louis Millet, who had worked with Sullivan on the interior of the Chicago Auditorium, and by George H. Pegram, who engineered the shed. (Historians believe they also see in the facade the hand of Harvey Ellis, a designer/drafter of considerable but unstable talent who was employed by another firm in the competition.)

The limestone head house, 750 feet long, is an amazingly strung-out series of picturesque rooflines, bays, turrets, arches, and dormers that collectively favor a beautiful stage backdrop. Near one end, a four-sided clock tower rises 230 feet with a smaller, round air-intake shaft clinging to one corner.

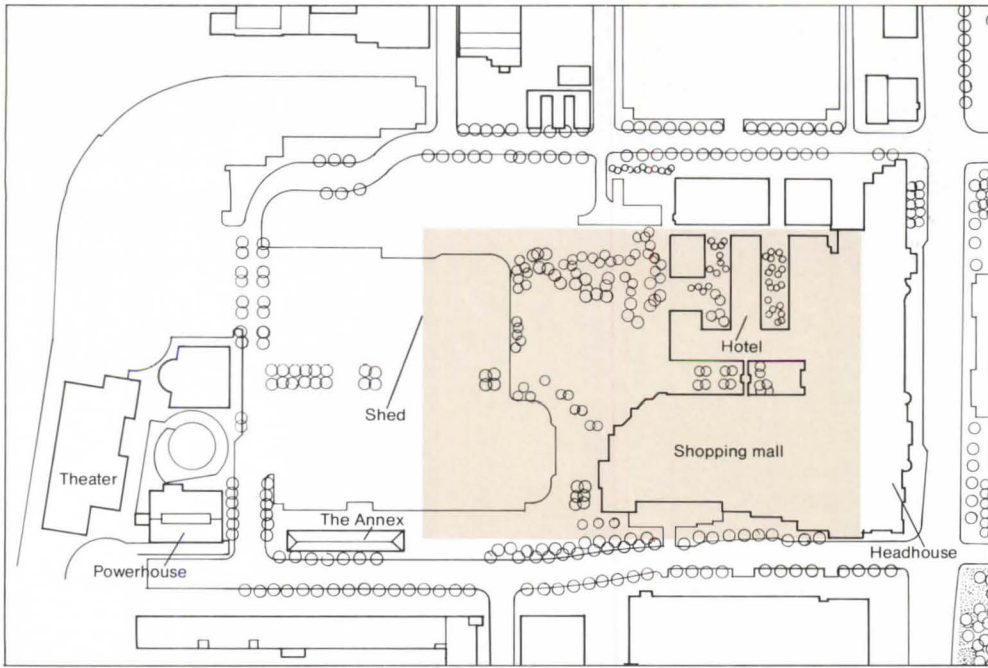
Within the head house's prominent hipped roof section is the

celebrated barrel-vaulted main waiting room, its end walls decorated in floral filigree surrounding relief female figures holding electric torches. Standing in semicircular formation, Millet's maidens resemble a Busby Berkeley tableau. The room glows in deep shades of green, gold, and red, especially when sunlight streams through stained glass windows high along the south wall. Two other spaces in the head house are especially memorable: a hall with Gothic ceiling coffers and an atrium that cinches almost closed above the third floor and then opens again for two more floors. The public spaces in the head house have been immaculately restored and appropriately adapted for new uses. The former waiting room is a hotel lobby and the atrium is a locus for 70 hotel rooms.

Pegram's contribution, the largest single-span train shed ever built, is itself a landmark. Supported on butterfly trusses, the shed originally covered 31 stub-ended tracks on 11.5 acres. During its heyday, the station served 22 rail lines—260 trains and 100,000 passengers a day. The shed was a fantastic, bustling gateway filled with backed-in trains pulled by steam locomotives.

Today, St. Louis's few remaining rail passengers use a small prefabricated station a few blocks east, while Union Station's shed covers a shopping mall, a hotel, some trees, a large pool of water, and part of a grade-level parking lot for 2,000 cars. The pieces of new construction seem arbitrarily arranged, some-

Left, the head house and great shed at the turn of the century.



Left, a new Mackey Associates building on the foundation of an old powerhouse. The original smokestack remains. Behind the new building in the photo below is an old postal annex, restored and converted by Mackey. Facing page, two views of the restored shed. Bottom photo shows the low-keyed new hotel.

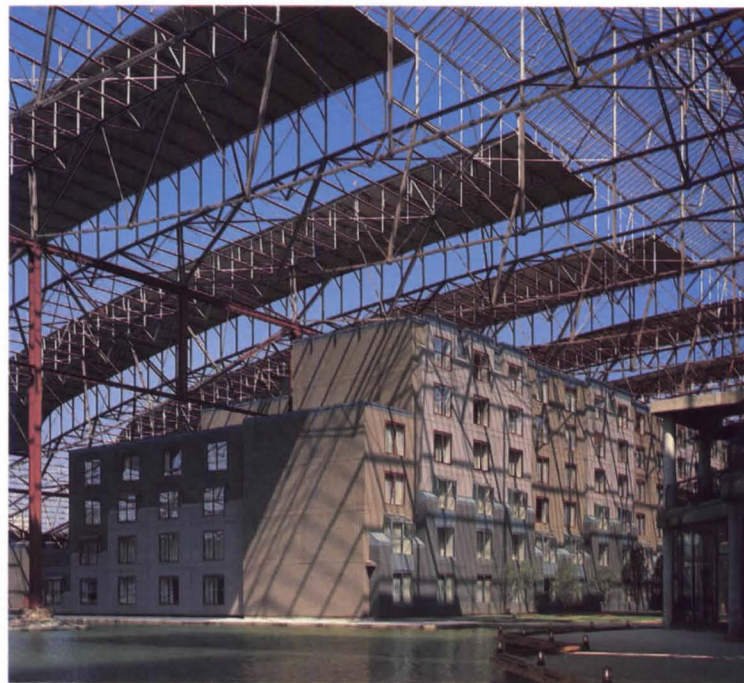




what like a fairgrounds, and circulation is confusing. The mall of about 150 shops and restaurants extends along the former midway—a linear, 600x50-foot transitional space between the head house and the great shed where passengers queued for trains—and then stretches along the east edge of the shed. The hotel, containing 480 rooms, rises in steps to six stories near the shed's high point and is clad in synthetic stucco painted in grays, taupe, and bluish-green. In deference to the historic structures, everything new is background.

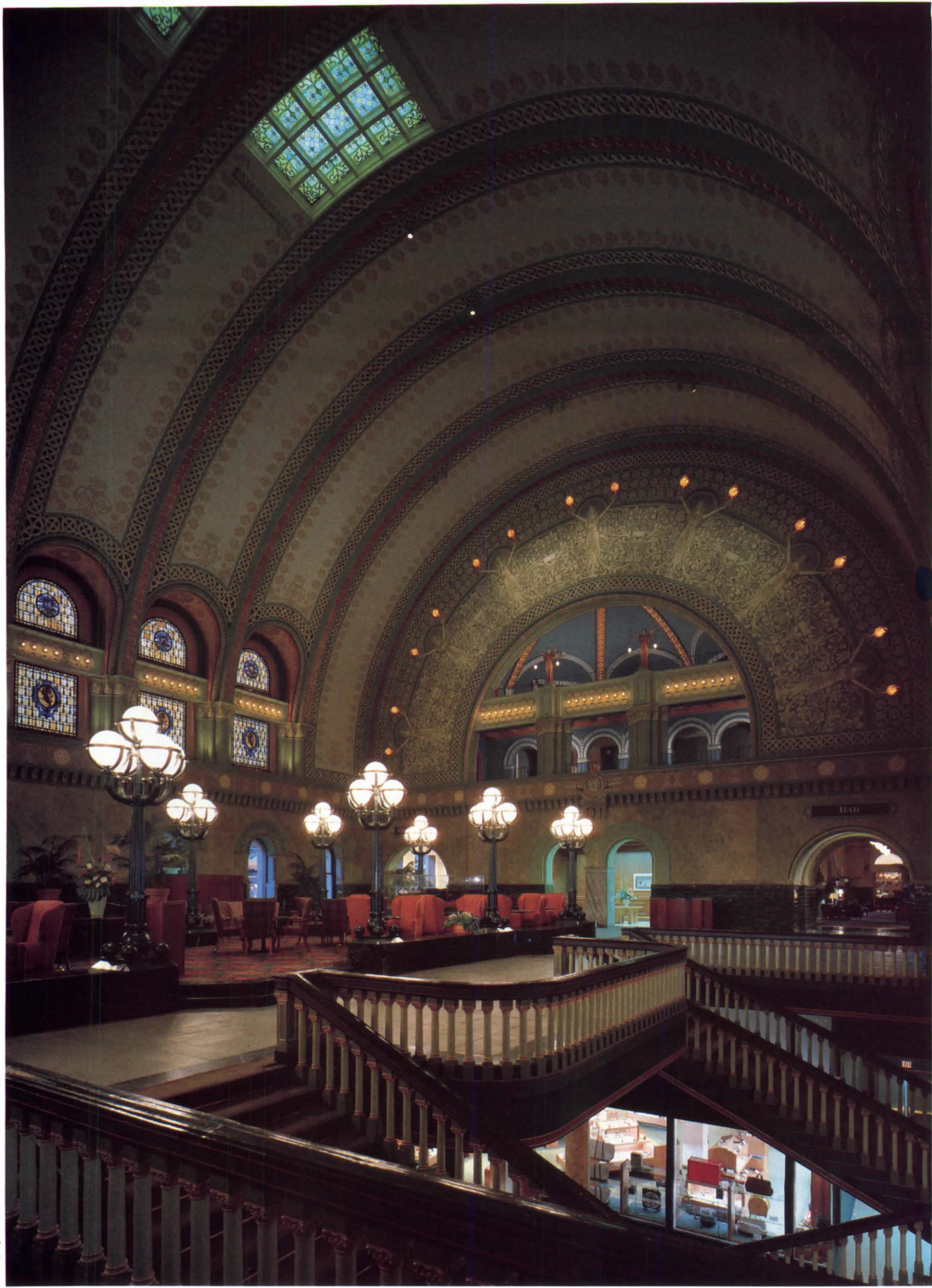
Certainly no one would deny the delights of HOK's meticulous restoration. But it is a letdown to walk through this grand, unique old building and into a bland collection of predictable boutiques and restaurants found in malls across the country.

Meanwhile, the renovation has precipitated other development, notably a handsome collection of modest buildings by a single firm near a corner of the parking lot behind the shed. Architect Mackey Associates restored and converted to office use an 85-year-old postal facility. To the undistinguished, long, narrow, brick and limestone building, the architect has added a porch entrance and punched through part of the second floor for a new vaulted lobby. Just to the south a new four-story Mackey office building constructed on the foundations of a 1904 powerhouse is a sympathetic companion. And a movie theater with a glassy front hunkers under raised U.S. Highway 40.





Above, the head house hotel atrium. Left, Gothic hall. Below, the shopping mall. Facing page, the former main waiting room rises 65 feet. It serves as the hotel's lobby. □



Photographs © Rion Rizzo/Creative Sources





Remarkable Relic Of a Tarnished Utopia

University City and its eccentric tower. By Allen Freeman

Edward Gardner Lewis was a wheeler-dealer who made a name for himself at the turn of the century as magazine publisher, town planner/developer, politician, social reform advocate (with questionable motives), and, eventually, convicted felon.

The descendant of several generations of New England Episcopalian priests, Lewis first hit St. Louis in the mid-1890s with a pocketful of schemes, leaving a wake of suspicious activities on the East Coast. During the next 15 years or so he maintained remarkable entrepreneurial momentum. He started a candy company and a bottle-stopper plant, a bank and a publishing empire of periodicals with titles like *Woman's Magazine*, *Progressive Stenographer*, *The Mother's Magazine*, and *Everyday Housekeeping*. He promoted incorporation of suburban University City just east of St. Louis and became the town's first mayor. That is where he was building his publishing company, where he owned and had subdivided 85 acres, and where he constructed a tent city to house visitors to the 1904 World's Fair.

Lewis also started a People's University that offered a range of correspondence courses, made University City (briefly) a producer of art ceramics that received world honors, and devised something called the American Woman's League. The league, with members from around the country, tied together many of Lewis's entrepreneurial loose ends under a rubric of women's sufferage. Through the years, he had scrapes with the law over

several of these ventures, and by 1912 all of them had collapsed. That summer Lewis left for California to start over. Sixteen years later federal courts in California found him guilty of mail fraud and sentenced him to six years in prison.

Lewis left behind unrealized plans for University City that included a Versailles-inspired campus, of which only one building was constructed, and a chain of subdivisions influenced by Olmsted that were to surround his little empire. Only one of these was realized under his development company, but other developers emulated the curving streets and attention to natural terrain that Lewis achieved. Lewis's most prominent lasting monument in Missouri is University City's confectionary-looking City Hall. Designed in 1903 by Herbert C. Chivers as Lewis's publishing headquarters, the five-story building, then called the Magazine Building, was constructed on Delmar Boulevard, the community's main street, next to a plant that housed what Lewis said was the largest printing press in the world—a suspicious claim given his predilection for puffery. Lewis ran his enterprises from an elaborate wood-paneled office on the second floor.

Ever the diligent promoter, Lewis took advantage of proximity to the grounds of the World's Fair to publicize his magazine

Above, the Magazine Building during a convention of the American Woman's League. Left, today it is the town's city hall.



Allen Freeman



Allen Freeman

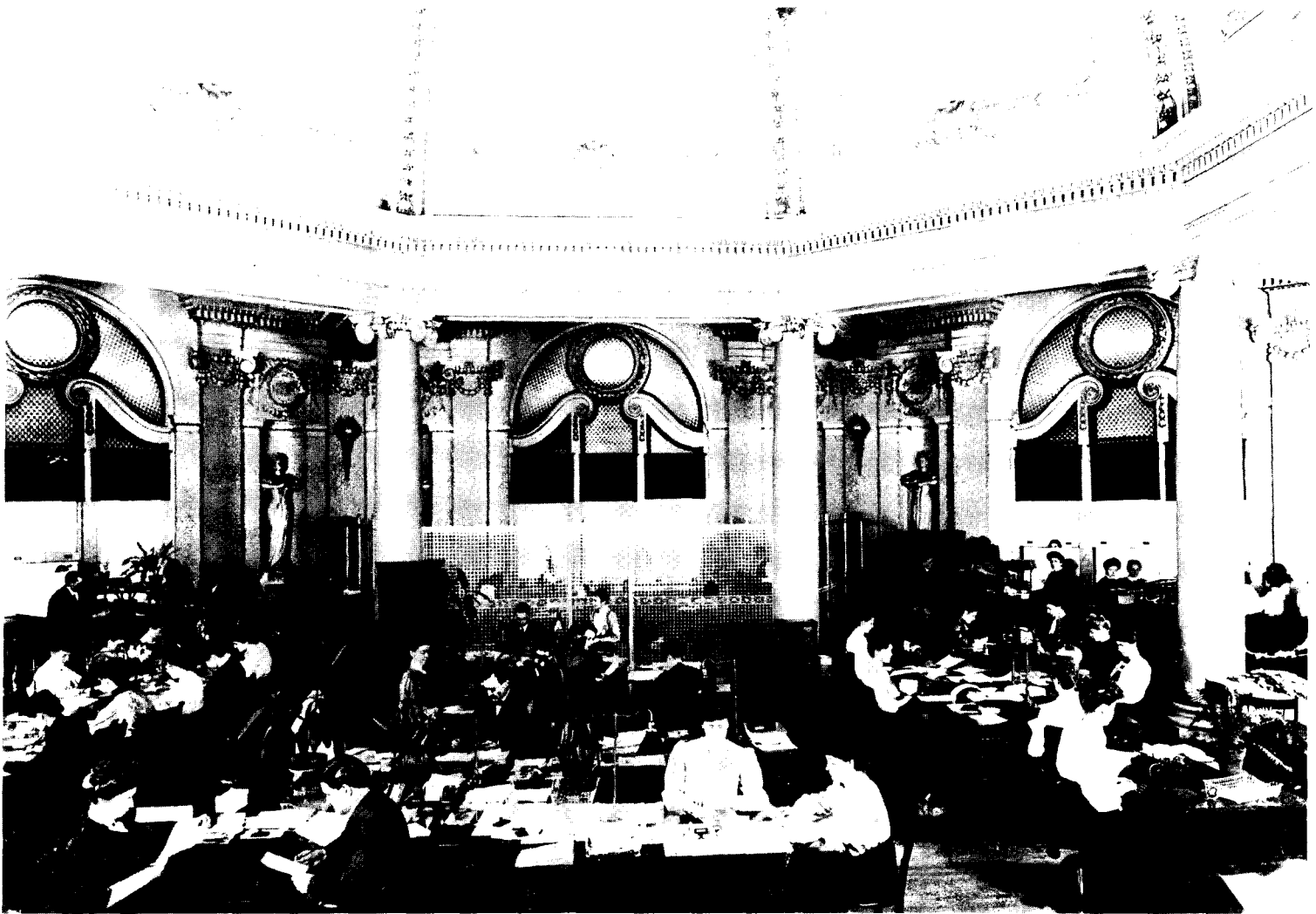
empire. According to one account, the Magazine Building's copper dome opened each night and an elevator lifted a searchlight ("largest and most powerful in the world") through the roof, thus advertising Lewis's magazines and drawing would-be lodgers to his temporary tent city accommodations.

The searchlight has disappeared, as have 16 giant, fleshy cherubs that perched in pairs on the cornice above the arched, top-floor windows. A photograph reveals the baroque angels still perching there in 1930, the year the city bought the old Magazine Building and adjacent printing plant and made them a City Hall complex.

Today the five-story City Hall, even minus chubby cherubs, is highly eccentric as an American civic edifice. Instead of alluding sternly to the Roman city-state, it stands on Delmar Boulevard like a quaint, well-fed, Beaux-Arts matron.

Concealed within are pleasant surprises. The first two floors are connected by a fluid, art nouveau-inspired marble staircase, its metal balustrade circling the bases of two pulchritudinous statues standing in identical coy salutes. On the second floor is E.G. Lewis's former office, now occupied by the city manager.

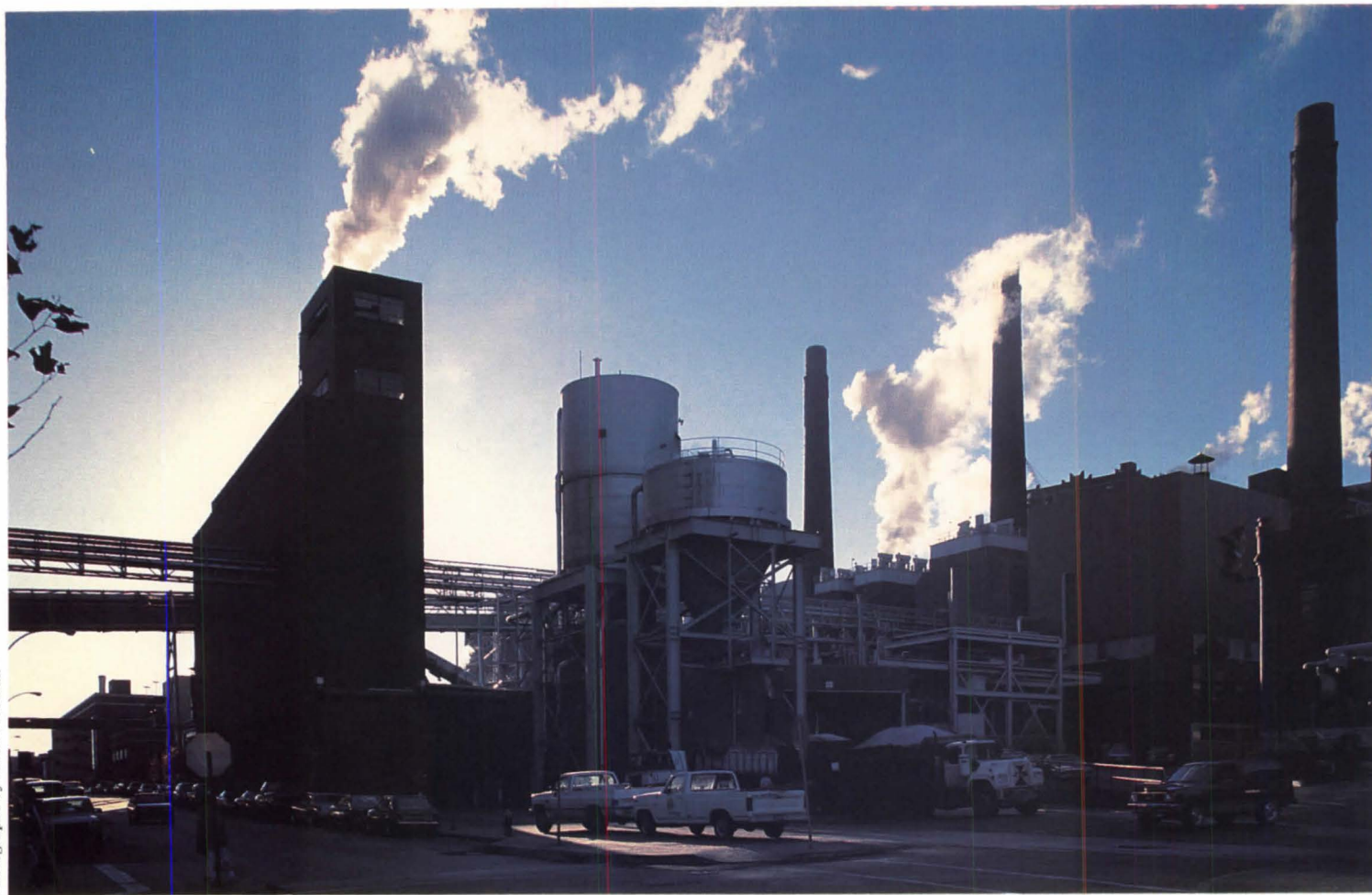
The top floor, an open office arrangement when it accommodated workers on Lewis's magazines, is now outfitted with fixed auditorium seating. The setting lends a surreal edge to everyday proceedings. Here, in a domed room painted powder-blue with cream accents and encircled by eight pairs of life-size plaster maidens standing in niches and holding electric lights, city officials conduct diligent council meetings and hear dry pleas for zoning variances. Lewis would be amused. □



Facing page, City Hall's main staircase and top-floor council chambers. Above, the same room 80 years ago as offices of the Lewis Publishing Co. Below, E.G. Lewis and staff in the Egyptian Building, planned by Lewis for his People's United States Bank. Architect Ralph Chesley Ott

designed this imitation of the temple at Karnak. The postmaster general found the bank's purposes fraudulent before its doors opened, and Lewis made the building the publishing plant for a newspaper. Demolished in 1930, the Egyptian temple was replaced by a Jewish temple.





Fortress-Like Bastions Of an Empire Built on Beer

The Anheuser-Busch headquarters complex. By Allen Freeman

St. Louis prospered before the Civil War mainly as a commercial trading center on the Mississippi. After the war, more and more factories were built along the river by manufacturers of iron, lead, chemicals, shoes, beer, and the like.

Anheuser-Busch started there in 1852 when German-born tavern owner Georg Schneider opened a tiny brewery in a German neighborhood on the near south side. Five years later Schneider borrowed money from Eberhard Anheuser to finance expansion. But competition was fierce among many local breweries, and Schneider's business faltered. In 1860 Anheuser was able to buy out the interests of minority creditors and take over the company as owner.

When Anheuser's daughter Lilly married a St. Louis brewery supplier named Adolphus Busch in 1861, Anheuser made Busch a salesman and later a partner. Busch, who lived until 1913, is credited with turning the faltering local brewery into an industry giant during his lifetime. Today his great-grandson leads the now diversified corporation from an unremarkable 1981 headquarters building located within a block of the site of Schneider's primitive brewery.

Six thousand are employed in the complex of 72 immaculately maintained buildings spread over 142 acres. The buildings are diverse, and some of the older ones are highly expressive in form and rich in ornamentation.

The earliest are in the German Romanesque style common for breweries of the late 19th century. Some have double brick walls with air spaces between for insulation. The 1885 Brew House's clock tower seems to hold forth over the complex. Within the Brew House is a five-story lightwell with iron chandeliers in the shape of hop vines. Warehouse No. 6, a seven-story building with arched windows and a huge stone eagle perched at a corner on a cornice above the first floor, is particularly robust.

A stone likeness of Renard the Fox, holding a chicken leg and a mug of Bevo, perches on each of the four corners of the massive 1917 Bevo plant. Bevo was Anheuser-Busch's Prohibition-era nonalcoholic beverage, and Renard was its plucky symbol.

Razed in 1929 was a 20-room house in which Adolphus Busch and his family had lived; and another house, that of the firm's first inheritor, August Busch, was torn down in the late 1950s. Both made way for bland breweries and warehouses typical of mid-20th-century industrial architecture. But the 1885 Busch family stable remains near the center of the complex, isolated and dwarfed by buildings of lesser interest. The stable's interior is overpolished and somewhat gussied up, but the vigor and honesty in the little building's roundhouse design are still apparent. A team of Clydesdales is fed and pampered there, and tourists, who wind through the complex on trams, are invited to step inside to see the magnificent horses. □



Facing page, steamy vapors rise from brew stacks. This page above, the clock tower on the 1885 Brew House. Left, the former South Side Bank and Hotel, built by Adolphus Bush around the turn of the century for his employees and clients. Below, the 1885 stable.



Photographs by Allen Freeman

Privately Founded Park Filled with Charming Follies

And another that was the site of a memorable fair. By Allen Freeman

Viewed from the air, the streets of St. Louis radiate from the Gateway Arch on the Mississippi like ribs of a fan. Seven miles west, the street pattern gives way to two greenswards. The smaller one, long and narrow with an oddly shaped appendage, is Tower Grove Park and the Missouri Botanical (Shaw's) Garden. The other green space, very large and rectilinear, is Forest Park. They are products of a late-1800s fascination with romantic parks and horticulture and of concurrent striving for civic improvement.

Tower Grove Park, some of whose architectural follies are shown above and opposite, is a 275-acre swatch donated to the city by Henry Shaw from his own holdings in 1868. A native of England, Shaw had made a fortune in hardware and retired at age 40 to plan and tend the botanical garden on his estate. Tower Grove's first superintendent was James Gurney, formerly of Kew Gardens in London. Shaw and Gurney made Tower Grove an English walking park punctuated by picturesque ruins, monuments, music stands, gazebos, and picnic shelters, which are all lovingly maintained today.

Shaw's 1849 Italianate house, also called Tower Grove, lies across Magnolia Avenue within what is now the Missouri Botanical Garden. He first opened his garden to the public in 1859 and lived another 30 years to see it gain considerable renown. After Shaw's death, the Olmsted brothers, John Noyes, and, most recently, Environmental Planning & Design have served as the

garden's successive planners. Scattered about its intensely programmed landscape are wide-ranging attractions, notably the Climatron geodesic dome greenhouse (see March, page 88) and Mackey Associates' Japanese garden.

In contrast, Forest Park is interesting for what has vanished—almost every trace of the 1904 St. Louis World's Fair. The park itself is an impressive 1,370 acres, half again as big as Manhattan's Central Park. On its western half (plus 615 acres of private land) was hurriedly built a city of ersatz palaces dedicated to progress. Torn down at the fair's end, they are remembered today for classical and rococo facades of egregious excess.

The icing on these cakes was staff, a then-recently developed fiber-reinforced plaster. All two dozen of the large temporary buildings were constructed on structural frames of yellow pine layered with roofing paper and then with staff. Qualms about surface durability proved unfounded when the staff didn't disintegrate during the seven-month run of the fair.

The fair had a total of 1,575 temporary structures and one permanent building of limestone and buff-colored brick. That was Cass Gilbert's Palace of Fine Arts, done in a relatively subdued Beaux-Arts style. Gilbert's interiors have been renovated by Hardy Holzman Pfeiffer and by SMP/Smith-Entzeroth with Moore Ruble Yudell. As the St. Louis Art Museum, this palace holds a commanding view of the lost fairgrounds.



Facing page, fragments of ornamental stone from the first Lindell Hotel in downtown St. Louis, which burned in 1867, assembled beside a sailboat pond in Tower Grove Park. This page, in the same park are picnic pavilions (top and bottom) and (right) a rustic Romanesque cottage, originally a gate house and now the park's administrative offices.



Allen Freeman



Missouri Historical Society



Missouri Historical Society





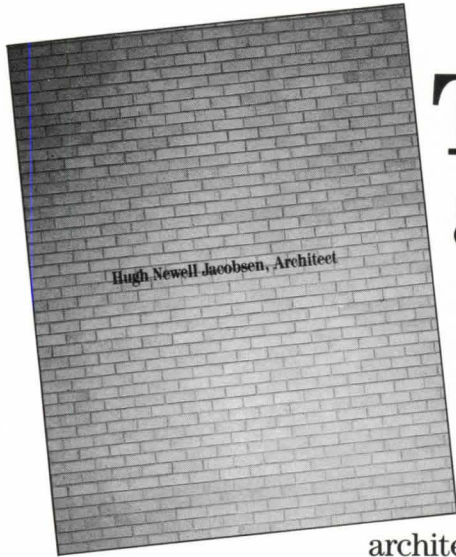
Allen Freeman

Facing page, Forest Park today and during the 1904 World's Fair. The top and middle photographs were taken from almost the same vantage points. What is today the St. Louis Art Museum (top) was obscured by Festival Hall, whose dome, 'larger than St. Peter's Basilica in Rome,' was the fair's main axial point. Bottom photo is the Palace of Varied Industries. This page, two features in the Missouri Botanical Garden: above, Seiwa-En Japanese Garden by Mackey Associates and the Climatron by Murphy & Mackey. □



Allen Freeman

The New AIA Press

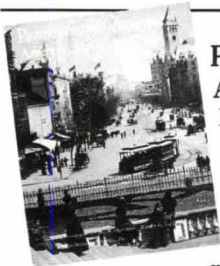


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Meeting the Seemingly Insatiable Demands for Power in Buildings

They require complex wiring and careful thought. By Forrest Wilson

Few technologies are making new demands on internal systems of buildings at top and bottom. Microwave and satellite receivers demand substantial hardware. They must be carefully located and positioned on the roof for signal interception. If roof height, line of signal generation, access, and air rights imposed by the Federal Aviation Administration cannot be met the system will be scrapped.

Receivers must be free of interference from nearby signal generators. Structural bracing is critical to withstand wind and snow loads as well as providing shelter to protect from icing. Hardware connections from receivers must coordinate with basement communications room locations.

All receivers require communications rooms for power rack, cable management, uninterrupted power supply (UPS), or battery backup systems and multiplexers to strengthen incoming signals. These rooms must be heated and airconditioned, their temperature maintained and humidity controlled; they must be effectively lighted, protected from fire and water damage, accessible, and connected to vertical shafts and computers; and the entire network must be maintained.

Selection of cabling networks and configurations is critical and costly and determines the ultimate hardware and software limits of the building. Vital choices are made in types of cables or wires introduced: copper twisted-pairs, coaxial, universal wiring, fiber-optic, and wireless. The three basic wiring configurations are bus, star, and ring. It is critical to understand size bending radius dimensions throughout the building.

For these systems to perform they must have adequate vertical shaft space and horizontal plenum spaces. There must be "clean" power, shielding from electrostatic interference from radios or other equipment or other disturbances in the data flow. Vertical and horizontal distribution must be adequate to meet long-term cabling demands with easy access and management throughout. Tying the cabling network to ground cable is critical with access to the basement and beyond an absolute necessity. Fire protection, access, and management must be provided, with significant space demanded in core or cores, and horizontal plenum spaces above the ceiling or beneath the floor must be free of structural and mechanical obstructions.

Without adequate distribution space a cable network cannot be installed, expanded, or maintained. Several other conditions also must be met: fire safety for the entire network, security from sabotage or worker error, and floor and partitioning systems important to the cost-effective integration and management of cables.

Keeping track of the wire type—power, voice, data, optical—and capacity affects architectural design. The complexity of the wiring and cable systems means the installation of computer-aided wire management (CAWM). Electronic systems are complex and interdependent. They function as integrated systems and fail totally if a single part malfunctions. A large mainframe computer

demands a system of its own. It must have guaranteed additional power, uninterrupted power, and special grounding. Because of its weight, it must have additional structural support and vibration control is needed. Extra airconditioning is demanded—five to 10 times typical occupancy—with water cooling capabilities for equipment and humidity control, condensation control, security, and fire protection by a Halon system with its own sensors, pumps, and controlled access. The cabling is massive and changing. The controlled environment that results is more like that of a submarine or space capsule than a traditional building.

Human needs in the space are superimposed on equipment needs. Computers use low ambient light levels, with task lights for equipment. People require secondary lighting. Vibration and noise are controlled for long-term equipment durability and must be critically controlled for the people inside and adjacent to the computer spaces.

Electronic enhancement is like an infusion of adrenaline. Many buildings constructed during the past two decades cannot meet the challenge. Some are no longer physically fit, others are simply out of shape, and still others never had the physique to withstand the burst of new electronic energy.

Buildings built to minimal standards with low floor-to-ceiling heights and centralized mechanical and electrical systems cannot adapt. Mechanical and electrical systems incorporated in building shells result in premature obsolescence, and centralized power systems shut down critical elevator services for servicing.

Architect Francis Duffy says it costs as much to refurbish an existing building as to build a new one, for there are few that do not need extensive structural changes. Ancillary areas required 10 percent of office building floor areas in 1970, 25 percent in 1980, and 40 to 50 percent today. Buildings wired for four watts per square foot now must accommodate computers, printers, and workstations demanding seven watts and one additional for lighting.

Spaces designed for human needs with uniform light distribution, work surfaces, and bookshelves do not withstand the encroachment of electronic equipment, and so people space disappears. Centralized HVAC systems cannot eliminate hot spots or supply air at nose level. Open-space design now is considered noisy, impersonal, intimidating, and an invasion of privacy.

The life spans of building components are mismatched. Furniture that lasts five to seven years does not keep up with annual or biannual electronic equipment advances. Building shells with 50-year life spans are technically obsolete after 20 years. Architects today are beginning to think in terms of aerobics programs for out-of-shape buildings. "Everything we know about building design has been turned upside down, every rule changed," says Piero Petri, FAIA.

In addition to physical problems there is the major issue of "dirty power," which offends users of sensitive electronic equipment as much as dirty dancing offends moral purists. We are

quickly approaching a condition in which the electronic technology in the building is far more sophisticated than the power companies' ability to supply clean power to operate, says Myron Schloss, chief electrical engineer for HLW.

Failures (blackouts), interruptions (outages), voltage sags and surges, harmonic distortion, frequency variations, voltage spikes or transient overvoltages, and radio-frequency interference when power lines act as antennae for radio signals all come under the heading of dirty power, and the result is equipment failure. Problems originate in the utility's generation, transmission, and distribution systems and from interference of customer operations. Because the power distribution medium is interconnected, the two are not easily separated.

The proliferation of increasingly sensitive electronic equipment demands a better quality of power than commonly supplied by the utility companies, says Jane Clemmenson, research engineer and principal of SRI International. At present at least three utility companies recognize this and offer "premium grade" power with specialized equipment and services.

Some disturbances result in computer crashes, terminated programs, and scrambled data. Severe damage to hardware and software may result. X-ray machines and hospital monitoring instruments are vulnerable. Scrambled data and faulty diagnosis by machine or doctor may have dire consequences.

Personal computers and small stand-alone units are more susceptible to power failures than mainframes, which usually are designed to control power quality. With widespread distribution of stand-alone units and strong competition in the minicomputer and microcomputer markets, line conditioning equipment, which would cost as much as the computer system itself, often is omitted, says Clemmenson.

Microprocessors are used increasingly in electronic cash registers, point-of-sale terminals, test instruments—everything from home entertainment centers to kitchen appliances. Dirty power is a scourge from the stock ticker to the toaster.

All installations do not suffer equally. Brokerage houses with millions of dollars of transactions passing through their networks take few chances. "A thousand dollars for a cable is nothing when 20 million a year in sales runs through it," says Frank Daddino, a Long Island and New York City electrical contractor. Trading operations pay for the best, says Alan Kaplan chief mechanical engineer of HLW. A stock operation may require 100 percent redundancy on the entire mechanical infrastructure, with stand-by generators, and stored water. Cooling towers are filled, and the two systems have backup fuel, gas, and electric. HLW also has designed double redundancies with two additional systems. Although expensive, it is reasonably priced insurance. Bank and trading floor executives may handle more money in a day than the value of the entire building, shell and all, says Kaplan.

Communications facilities can govern move-in schedules. In a move from New York City to Princeton, says Kaplan, the first consideration was getting the computers on line. The firm had international connections that had to be maintained, so the system had to be operable and ready before the client arrived. "We got early occupancy and had the entire electrical and electronic situation well in hand right away," Kaplan says.

Today the electrician sits in the "cat bird seat" on the construction site. Electricians work in a dangerous invisible medium distrusted by laymen. They are first on the job and last off. They arrive for power hookups when construction begins and remain to connect systems furniture when the building is finished. All operational machinery, elevators, exhaust fans, and coffee mak-

ers operate on electrical power, and electricians connect them all. They hook up and service advanced computers, and electronics, and, as micro chips are embedded in new products, the electrician's job becomes more demanding.

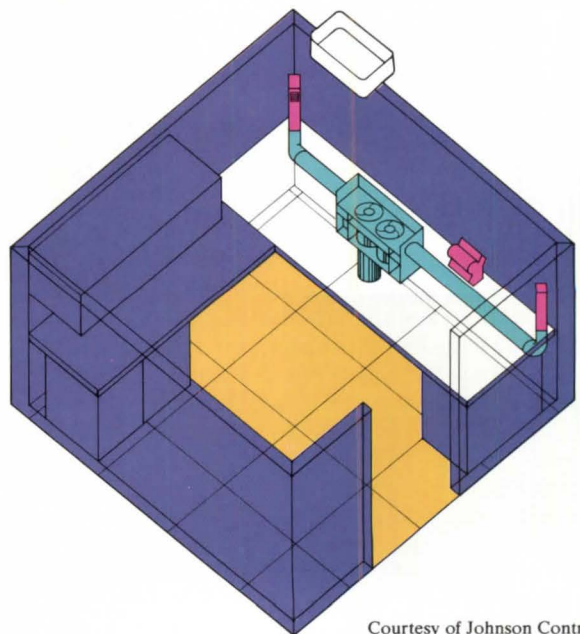
Electrical work is evenly paced. Two electricians have wired major building projects from beginning to end with temporary additional crews now and then. A detailed job history resides in the head of one or two electricians as other trades come and go. The electrician is the one to see before a pipe is hung, a sprinkler head installed, a slab drilled, or a furniture partition system laid out or when there is no bulb in the toilet.

Few understand the computer, least of all those sitting in front of it. The electrician gives the operator power and then walks away, but is called back more and more frequently. The electrician has the pivotal trade in an electronically enhanced building. According to Bob Craine, chief electrical engineer for Leo Daly Architects in Washington, D.C., the electrical contractor now has more responsibility designed into the job. "We formerly called for empty conduit. Now we design the entire communication system. The computer room is no longer a barrier."

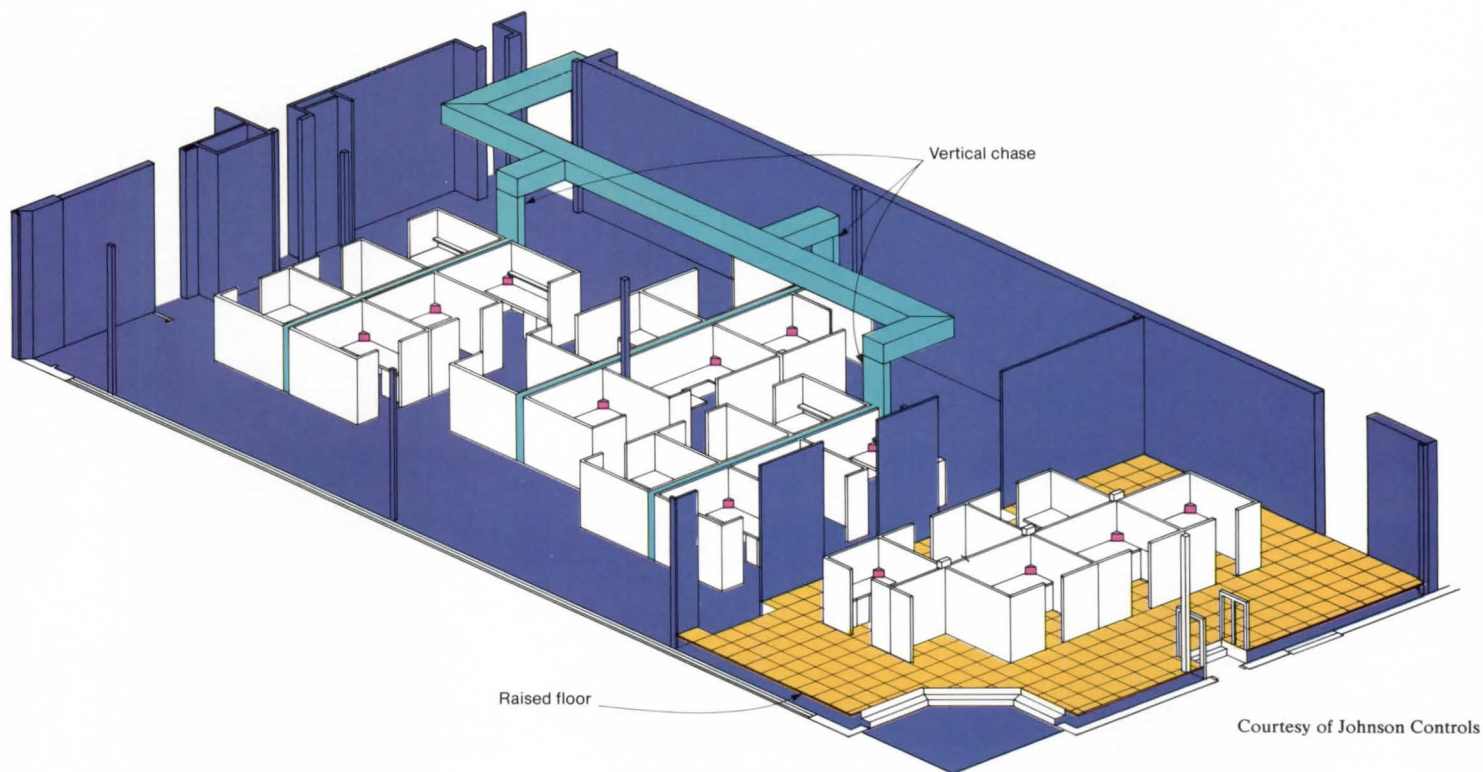
"The striking thing is the percentage of the project the electrician controls, much more than we realize," says Alvin O'Konski, a Leo Daly job captain. The electrical division is only one of 16 in the specifications, but it adds up to at least one-third of the contract cost. Electrical demand and costs have increased dramatically over the two past decades. The cost increase is more remarkable considering the steady improvement and reduction in price of lighting equipment and data systems.

A rough estimate of a \$350,000 bank rehabilitation project made by Daddino showed \$35,000 to \$40,000 in partitions and \$5,000 for relocating sprinkler heads. The data cost was the same as that of partitions, and the electrical contract was \$240,000—six

Johnson Controls' Personal Environments system gives office workers individual desk-level control of temperature, lighting, air direction and volume, and white noise. Opposite page, the system at Johnson Controls' Milwaukee demonstration project distributes air and utilities to three offices through vertical chases, and through a raised floor to the fourth office.



Courtesy of Johnson Controls



Courtesy of Johnson Controls

times the partition cost. Fifteen years ago, electrical would have been 15 percent on a renewal project; today it is closer to 75 percent, depending on building type, says Daddino. Kane's figures coincide with Daddino's. Two-fifths of the cost of a new \$5,000,000 communications operation center was electrical.

"I think the electrical contractor could step into being a general contractor quite easily," says O'Konski. "It does happen, in fact, on projects where electrical contractors specialize in computer facilities."

"The energy crisis has changed lighting drastically," says Schloss. "The Illuminating Engineering Society called for 100 footcandles before the energy crisis and now says 50. This is not because the visual acuity of the human race has improved—the IES decided humans can do with less."

Increased electrical costs have resulted in sophisticated controls. Before the energy crisis, some office buildings did not bother with light switches but rather shut them on and off from a main switch. Today, sensors detect movement in the room and turn the lights on and off as occupied. Cleaning people no longer come into the building at night, coming instead in the early afternoon to save electricity.

Although lighting increases the cost of the HVAC system and is the most obvious consumer of energy, it does not use the most,

according to Kaplan. The major consumer of electrical power in a modern office building is the ventilation system "pushing the air around," he says. It runs continuously, and in a computer building the fans are used more to cool down machinery than they are to cool people.

"The limit of the man is the limit of the system. The key to electronic technology is accept it and leave it alone," says Melvyn Kaufman of the William Kaufman Organization. Electronics is "over-processed and over-intellectualized," he continues. "Let electronics alone and it will solve itself if you remember its only real value is what you end up with in your hand and eye."

Franklin Becker, head of the department of design and environmental analysis at Cornell, says, "The key to successful buildings is understanding how decisions in any one area affect decisions in others—the ways emerging information technologies affect working patterns, maintenance requirements, and building servicing."

"A good building must work well in terms of telecommunications, wire management, HVAC, and maintenance as absolute minimum requirements," Becker continues. "This is necessary but not sufficient. It must also stimulate and give pleasure to those who use it, not as an afterthought but as an integral component of the design brief." □

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Casting the Microcomputer in the Role of Specifications Expert

By Robert Paul Dean, AIA

A new approach to specifications production involves the use of a microcomputer in the role of specifications expert. The so-called knowledge-based system emulates a human expert and produces a finished specification document tailored to the requirements of a specific project. Using such a computerized "expert," an architect does not read and edit a set of master specifications but instead engages in a dialogue with the computer, which creates a customized document based on the architect's decisions.

Imagine having a telephone conversation with a human specifications expert who has never seen your drawings. Your consultant asks you a few questions about your project, to understand its basic scope, then asks detailed questions about your specific requirements. As an expert, he or she knows what to ask. Equally important, the expert knows what *not* to ask, based on your previous responses. At the conclusion of your conversation, you hang up and your expert creates a specification section incorporating the requirements you described.

Now imagine that, instead of speaking to a human expert on the telephone, you are having the same conversation with a computer. Every question you are asked will have more than one possible answer. Each answer will in turn determine which of all possible subsequent questions will be asked, in much the same way that the conversation with the human expert would proceed. Apart from the dialogue, the computer will draw inferences and make conclusions about the contents of the final document. At the end of the session, the computer will have all the information necessary to compile an up-to-date document reflecting the specific needs of your project. The specification is assembled automatically in final form and printed out in your choice of page format, eliminating the need for conventional word processing.

The system described above is not just an imaginary scheme. It exists today in the form of SweetSpec, an automated specification writing tool developed by a team of architects, engineers, software programmers, and other technical specialists. The impetus to develop such a complex system was based on a number of premises, the most important of which are these: (1) Architects and engineers are not well equipped by training or temperament to write specifications. (2) The typical architecture or engineering firm does not have the resources necessary to keep specification content current. (3) The proliferation and rapid improvement of inexpensive microcomputers make automated specification production both feasible and cost-effective.

Too often, the typical set of architectural specifications today is poorly written and badly coordinated. There are many con-

tributing factors, but the single biggest reason for poorly written specs is that the order of the text in a specification section has nothing to do with the order in which decisions are made.

Editing a good master specification should lead to a good final document, but frequently it does not. The CSI section format is an invaluable tool for standardization and improved communications. However, it also has many pitfalls for the inexperienced or unwary specifier. The three parts of the section are a useful device to aid the contractor and are arranged in generally the order required to construct the project, not to write the specification.

Part 1 deals with global and administrative requirements, including matters such as contractor submittals and quality assurance procedures. Unfortunately for the inexperienced specifier, decisions on these matters should be among the last made. Part 2 includes all the material and fabrication requirements, which are generally among the first decisions made. The installation requirements included in Part 3 are the result of decisions made in tandem with product choices and should correspond to the contents of Part 2. All too frequently, they do not.

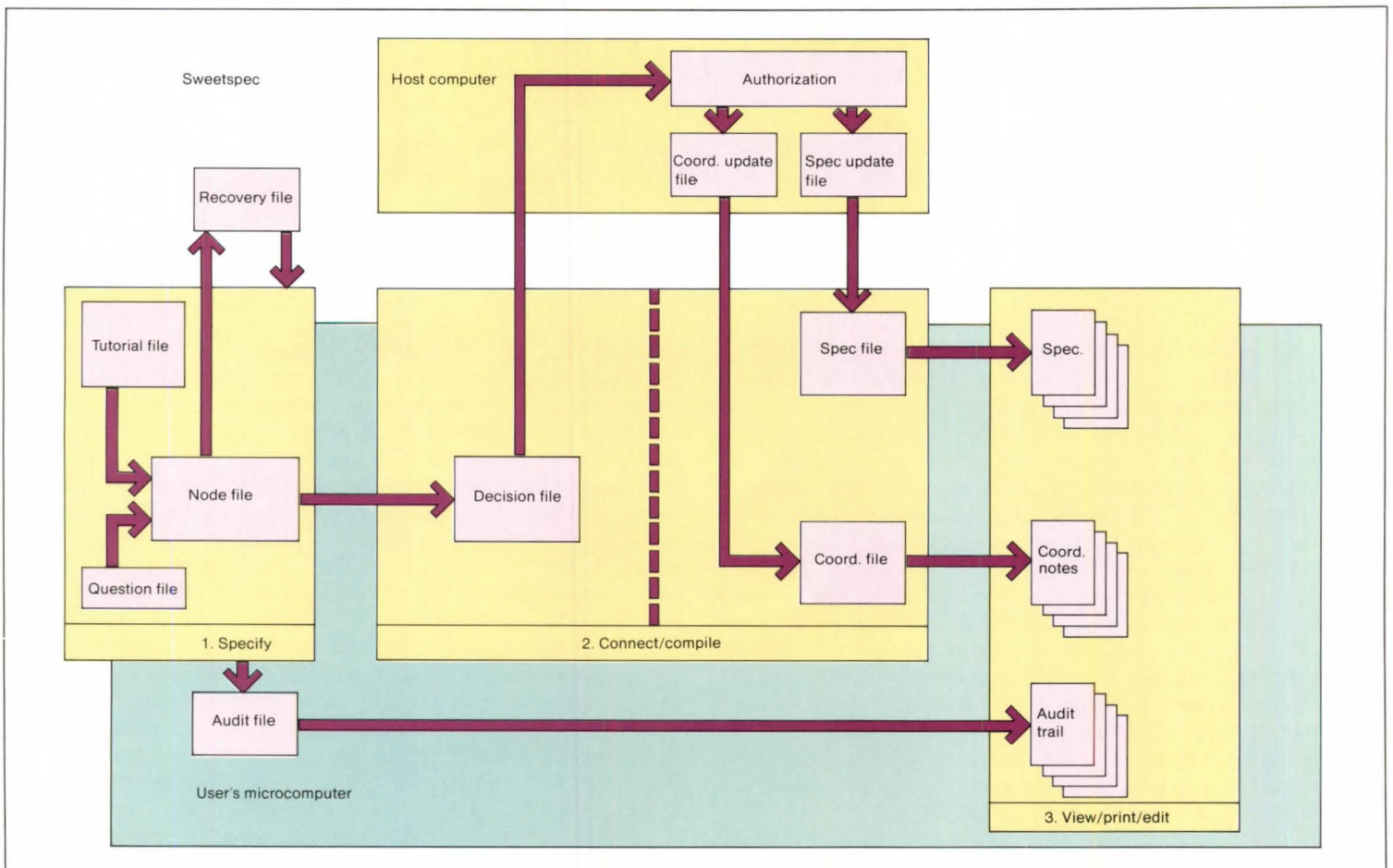
A knowledge-based computer system eliminates this conundrum by presenting questions in a logical, hierarchical order, independent of the three-part document format. Frequently, answers to early questions appear in text at the end of the final document, and vice versa. In fact, a single response often generates text in all three parts of the document.

Another big problem with specifications is proper coordination with other documents. When specifications are prepared by someone who is not intimately involved in the project development, the likelihood of poor coordination increases. This tends to be true whether the specifications are prepared by in-house specialists or outside consultants. Another basic tenet, therefore, is that specifications ideally should be prepared by the same persons responsible for the drawings.

To encourage direct use by the project designers, SweetSpec is designed to be immediately usable by computer novices. Tutorials minimize the need for specialized knowledge and time-consuming research. The system also focuses quickly on relevant subjects to eliminate wasted effort. For example, if the section deals with unit masonry and the user says at the beginning that face brick is the only type required, the system will not ask questions dealing with concrete masonry. More important, the final document will contain no text related to masonry other than face brick. An up-to-date list of references will be edited automatically to include only those actually needed for the project. And by eliminating the need for a separate word processing operation, the automated system greatly expedites production.

The two conventional commercial master specification systems in widest use today are AIA's MasterSpec and CSI's SpecText. They embody two contrasting approaches to an inherent con-

Mr. Dean is vice president with Heery International Inc., in Atlanta. He was project director at Heery for development of the McGraw-Hill SweetSpec program.



flict in the concept of a master specification: the more comprehensive the master, the harder it is to use. MasterSpec's philosophy of comprehensive text yields sections that frequently run to 30 or 40 pages. SpecText uses a narrow-scope approach that limits most sections to four or five pages but leaves many blanks for the user to fill in. On the other hand, SweetSpec's master specification (based on MasterSpec under special license from AIA) is never seen in its entirety by the user. The master text therefore can be as voluminous as necessary, without affecting its ease of use.

Construction of a knowledge-based system such as SweetSpec is not simple, as those of us who built it can attest. First of all, every section is unique. Every product type requires individual expertise, precluding re-use of standard questions or scenarios. Somehow that complex knowledge must be built into a dynamic data base. For each section, what question should be asked first? What are the possible answers? What are the consequences of each answer? And what question should be asked next for each possible answer?

Developing a good, logical, question-and-answer structure for each specification section was an essential part of the design problem faced by the system builders. A simple scheme for diagramming these complex structures proved to be part of the answer. Each section could be organized into a series of decision trees corresponding to a single broad topic or a group of related topics. These decision trees, which we called "sequences," are composed of linked question nodes, which in turn consist of the actual question, all possible answers to the question, and a series of consequences for each answer.

The most important consequences are related to the text of the final documents. Particular answers chosen by the end user must result in the inclusion or exclusion of appropriate text segments in the specification itself and a separate set of coordination notes. In addition to the text consequences, sometimes an answer will result in the need to skip certain subsequent questions. Another set of consequences is the tutorials, which must be tailored and linked to specific questions. And, finally, the next logical question for each possible answer must be determined. Building a single section requires making connections between five separate computer files, and the resulting printout can be two or three inches thick.

In addition to being voluminous, the data contained within even one section changes at an alarming and erratic rate. An automated system therefore must minimize obsolescence with updates prepared continually, independent of any planned revision schedule. The flexible software developed for this system simplifies the updating process and makes possible the quick expansion or revision of the data base as necessitated by changes in the construction industry.

This knowledge-based specification system departs radically from any of the so-called automated systems heretofore available. Rather than speeding up the typing process, the SweetSpec system eliminates or greatly minimizes the need for typing or word processing at all. Rather than improving the efficiency of the lowest-paid employee in the architect's office, it improves the efficiency of the decision makers. Those of us who built it are convinced it also improves the overall quality of the specifications produced by its users. □

Testing a Computerized Master Specification System

By Martin M. Bloomenthal, AIA

Among architects and specifiers, only a total recluse could be unaware of the burgeoning collection of products and services that promise to automate all or part of the specification writing process. The method by which most of us have generated specifications over the past 10 to 15 years is now undergoing tremendous changes that will affect our entire industry.

Any specifying technique must be measured primarily by the end product. To compare different methodologies objectively, I like to refer to what I call the seven Cs of good specifications. They must be correct, complete, concise, clear, coordinated, customized, and cost-effective.

When I speak of "specification writing," I generally am referring to "specification generating." Traditionally that is accomplished by editing some form of master specification such as AIA's MasterSpec, CSI's SpecText, or an in-house master. Spec writing in the literal definition of the term is, in my experience, necessary for only a small percentage of the technical sections we produce. Even with a staff of 250 and billings that place the Hillier Group among the top five firms in the United States providing purely architectural services, we have found it economically impractical to maintain a genuine in-house master specification. Instead, for the past 15 years the Hillier Group has subscribed to MasterSpec, adapting this publication into a second-generation master of our own.

In the past, we received quarterly updates of MasterSpec hard copy from AIA, checked them for technical accuracy, and noted corrections. We received quarterly diskette transcriptions for our word processing system from a third-party vendor, printed the sections, checked these for consistency with AIA's hard copy, and made corrections. We made content and format changes as necessary to conform to our office standards. And, of course, we proofread at each of these stages. We stored the customized master on the hard disk of our central word processing minicomputer and made photocopies for the master hard-copy file.

To edit for a specific project, we marked hard copies for each section, wrote from scratch sections for which no master existed, had our word processing staff produce a draft, proofread the draft, had word processing make final corrections, and printed line-numbered, camera-ready copy for reproduction.

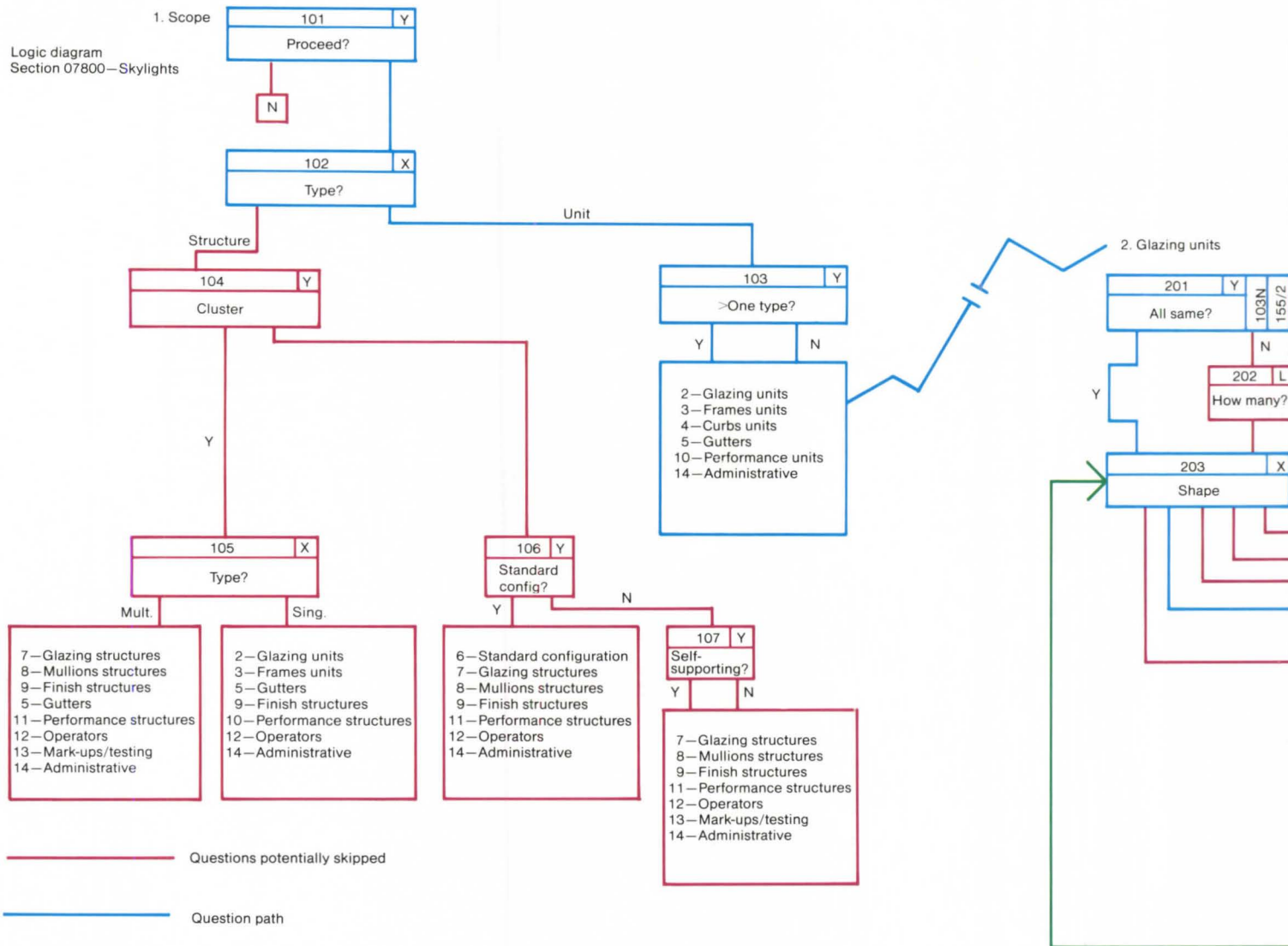
For the past year and a half, the Hillier Group has been a test site for SweetSpec. We have watched SweetSpec evolve in power and reliability over the test period and now use this service for a considerable percentage of our specifying work load. We have found many advantages with the system, along with a few bugs and compromises.

Mr. Bloomenthal is manager of specifications with the Hillier Group in Princeton, N.J., which was a SweetSpec beta tester. The opportunity to test the program came just as Hillier was establishing a centralized in-house specifications department.

On the positive side of using SweetSpec:

- The "expert" question-and-answer dialogue of the audit trail reduces to an absolute minimum involvement with subject matter that is not relevant to the project on which we are working.
- Context-sensitive tutorials encourage investigation of unfamiliar territory on the fly, as needed. Since the tutorials reside invisibly in the background, however, they don't in any way interfere with the efficiency of a specifier who has already become comfortable with the implications of the questions in a particular section.
- Printouts of selected questions or entire audit trails can be provided to appropriate members of the project team to encourage timely decision making before the affected sections are compiled. When a project manual is completed, the audit trail also remains as a record documenting the decision-making process upon which each of the specified products was based.
- Among the most common flaws in specifications produced by conventional editing techniques are inconsistencies among each section's three basic parts. For example, an accessory product's installation is described in Part 3, even though it has been deleted from the materials list in Part 2. With SweetSpec, errors of this sort have become almost nonexistent.
- Another aspect of coordination is the essential communication between the spec writer and the team producing the drawings. Obviously, it is extremely important that terminology be consistent between these two groups of documents. It is accepted practice also that instructions to the contractor conveyed by the drawings not be repeated in the specs, and vice versa. A by-product of the SweetSpec process is a listing of custom "Coordination Notes," which apply not only to the drawings but also to other technical sections, submittals, project closeout, and other contract administration topics.
- For those occasional times when no guide spec exists and we therefore must generate a spec section from scratch, SweetSpec provides a handy, well-thought-out template for this purpose. To use it, we answer a series of comprehensive, generic questions about the product or equipment that we are trying to specify. As with a normal SweetSpec section, it is a simple matter to bypass issues that are not relevant to the particular item we are specifying. The program then produces a custom spec section, organized according to the CSI Manual of Practice. Surprisingly little editing is required to finalize the section, with the end product giving little evidence of its "machine-made" origins.
- Sometimes it is necessary for us to interrupt a specifying session to use another program such as SweetSearch or even to give a coworker access to a shared computer. SweetSpec allows us to mark our place with an "electronic bookmark." Upon re-entering the program later, we can simply press one function key to return to exactly where we left off.

Logic diagram
Section 07800—Skylights

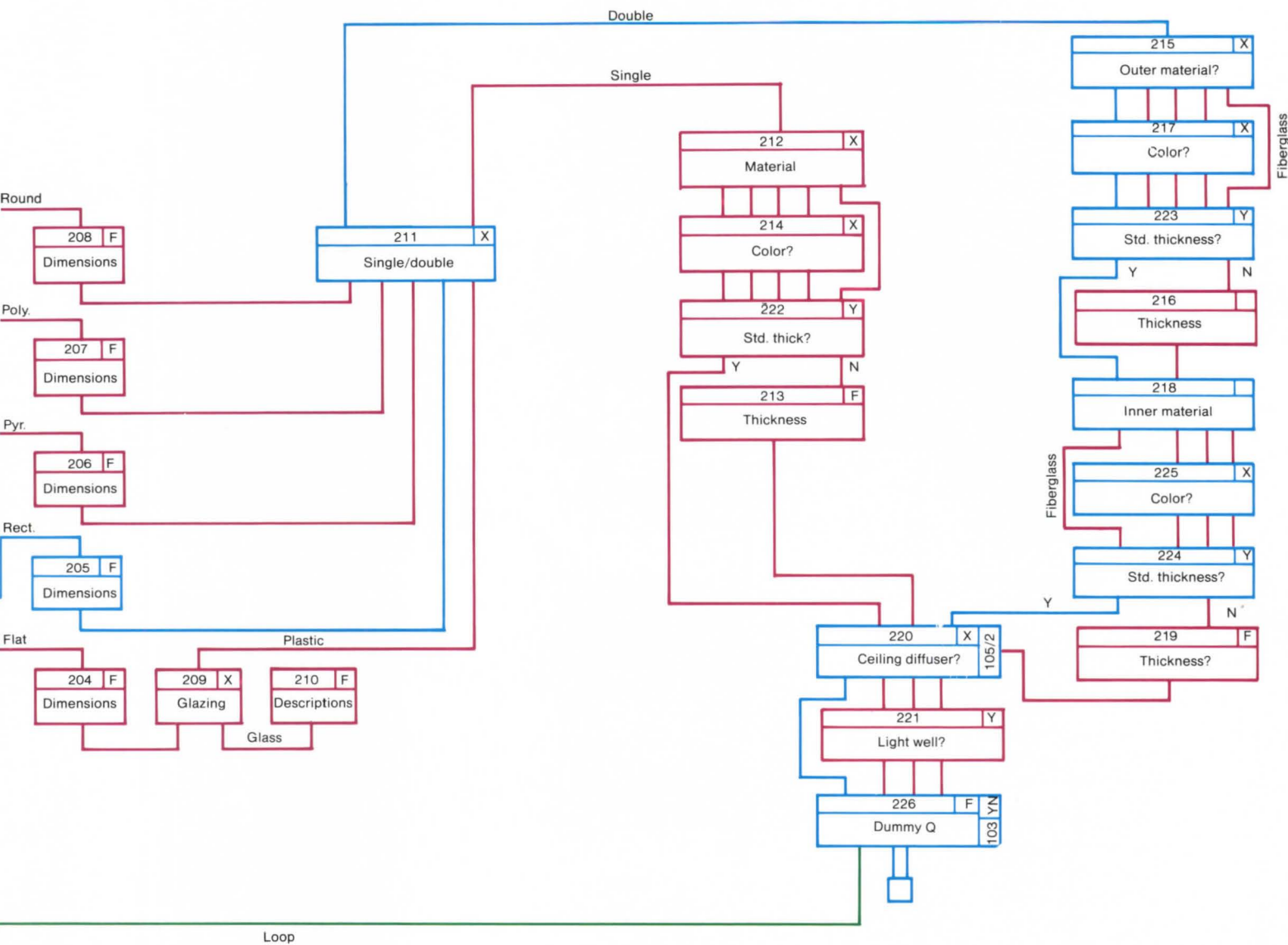


- If necessary, a camera-ready spec section can be generated about 15 minutes after audit trail. This includes processing by the mainframe computer, editing, and printing the section.
- SweetSpec can output finished text in either AIA block format or CSI paragraph numbered format. With the latter, the program will automatically renumber each paragraph when text is added or deleted by using the program's built-in editor. While we prefer CSI format because of its inherently clearer hierarchical structure, prior to SweetSpec we had been reluctantly using block format because of the renumbering problems. Soon we no longer will have to accept this compromise.
- Compact CD-ROM disks are scheduled for distribution every six months, facilitating minor modifications by McGraw-Hill as required to every section on each disk, as well as expected major revamping of selected sections.
- Between remasterings, errors or superseded reference standards can be overwritten centrally by the mainframe computer when the section is compiled. Corrections can be implemented immediately, compared with a turnaround time of three to five years for a conventional national master guide specification.
- It is my understanding that SweetSpec was conceived for the small A/E office, in which the project architect and the speci-

fier are often the same person. Used this way, SweetSpec can function much like an expert consultant, freeing an architect from much of the burden (although admittedly not the liability) of in-depth familiarity with specifying technique and product technology nuances. Notwithstanding the compromises involved, specs produced with SweetSpec by the occasional user are likely to be, in my opinion, generally superior to those created by traditional editing or cut-and-paste methods.

- More important to us, however, SweetSpec has a home in the relatively large office as well, as its reception within our firm attests. At the Hillier Group, we have four full-time specifiers who now rely on SweetSpec for about 75 percent of technical sections for each project. Repeated use of the program permits us to explore more thoroughly the many alternative "logic paths" presented within each section; this in turn continually increases the efficiency with which we can turn out specs exactly the way we want them to read. As with other aspects of specifying performed by specialists in this field, we can afford to be more thorough in our self-education, since we can amortize the time invested over a larger number of projects than can someone who writes just a few specs a year.

Of course, nothing is perfect. Having been among the earli-



est group of testers, we have weathered our share of frustrating experiences as the inevitable developmental bugs were worked out and the program became more sophisticated. Even in its present form, however, it still has a number of technical and policy-based deficiencies. The technical flaws are simply problems to which the SweetSpec programmers have not yet found appropriate solutions. For instance, the program lacks the capacity to import recurring office standard text as inserts into individual spec sections, so they must be typed in manually every time a section is produced. Furthermore, changing an answer early in an audit trail frequently results in having to re-answer numerous downstream questions that logically should not have been affected by the change. Both of these examples are weaknesses that McGraw-Hill acknowledges and plans to address in future editions of the software.

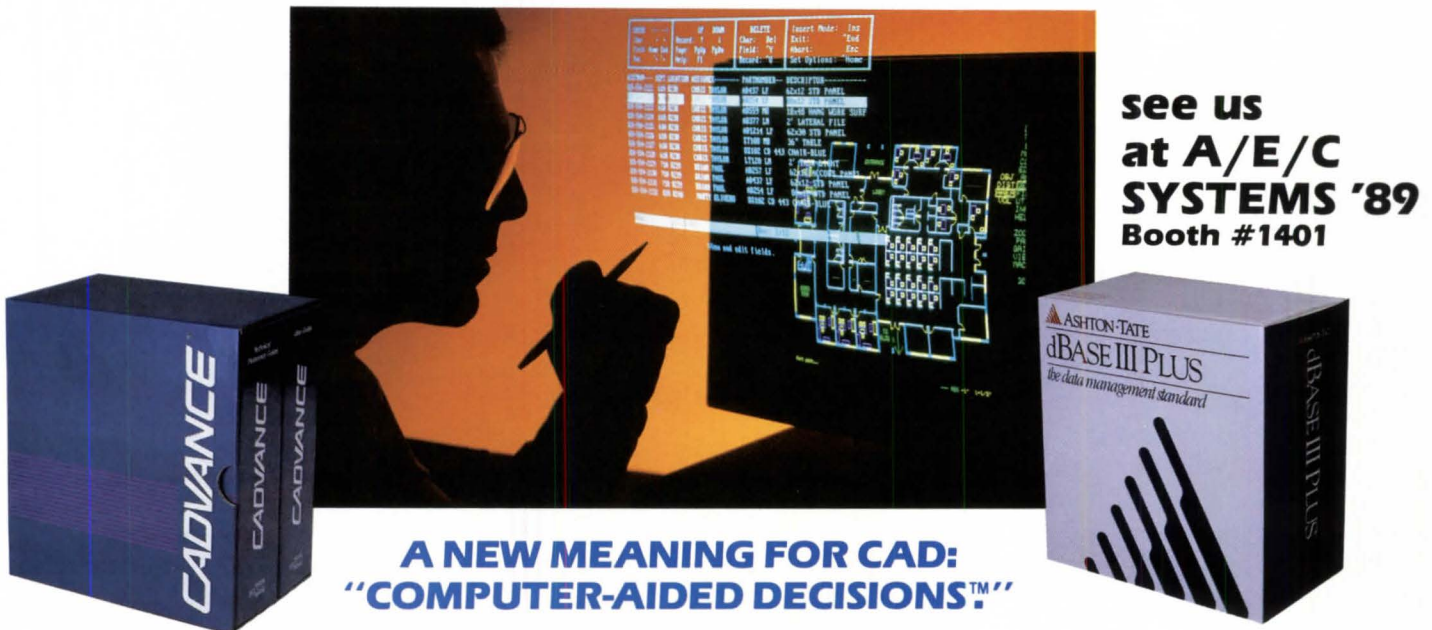
More annoying are shortcomings that are rooted in policy decisions by McGraw-Hill related to what is "marketable" or the "only right way" to specify. For example, one of the SweetSpec writers seems to believe that the "Related Documents" paragraph that begins each MasterSpec section is superfluous, so SweetSpec has eliminated even the option of including it, short of typing it manually. We hope that critical feedback from users eventu-

ally will convince McGraw-Hill that such prejudice doesn't truly maximize SweetSpec's flexibility.

Using SweetSpec is not free, of course. There is an initial processing charge for each section and a small capital investment for a CD-ROM reader, assuming that you already have a basic PC workstation in your office with a modem for telecommunication. The cost comparison we have done reveals that the per-section processing charge equates roughly to 45 minutes of the usual specifier's time. Using SweetSpec generally saves us at least 45 minutes for a typical section compared with traditional editing techniques. Overhead expenses and clerical costs also are reduced drastically. Because we no longer need to keep our masters meticulously updated, word processing expenses are gradually being eliminated. And, although we intend to continue subscribing to MasterSpec, we plan to use it primarily as a reference document rather than an editing master, so we soon will discontinue paying for annual disk transcriptions.

As I mentioned at the outset, the analysis of a new specification system must consider the whole picture. When we measure the seven Cs of the SweetSpec end product, we find that the specs we turn out using this new tool have been better than those we have produced in the past. □

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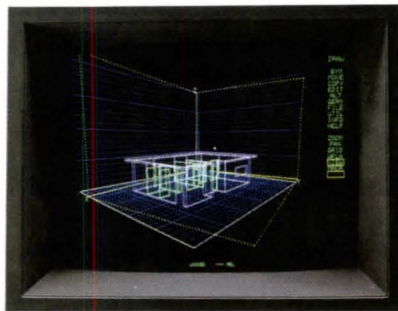
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Seismic Performance of Interiors

Guidelines for life and property protection. By Christopher Arnold, AIA

The relation of a building's performance during an earthquake to the earthquake's effect on the building's occupants is a relatively new field of study. Traditional seismic research has tended to focus on the performance of building structures per se and on the nature of ground motion. Although some sociologists have looked at the human impact of earthquakes, their emphasis has been on behavior of the family or community after the earthquake, with a concentration on social and economic recovery. Likewise, because seismic codes dictate an emphasis on the structural components of the building, preventive measures for nonstructural components often take a back seat.

Seismic performance of a building as experienced by the occupant is the result of ground motion impacting on the building structure. This ground motion may take a variety of forms, and the nature of the building changes the effect of motion as it is transmitted through the building. Although the total effect is varied and complex, some general rules can be given as to the kinds of effects that will be experienced by occupants in different kinds of buildings. Increased understanding by the occupant can reduce the trauma of the experience and improve the occupant's reaction in self-protection. The idea that all buildings do not perform the same under similar ground motions is important because it can lead to occupant education and training in emergency behavior that is specific to a given building. While some general rules of behavior always will be applicable, specific circumstances of a building's design or its contents may lead to variations in performance. It would be helpful to the occupant to anticipate and understand those variations.

As a consequence of our current building code philosophy, we have a situation in which it is possible to predict that, in heavily built areas, under a moderate earthquake (up to approximately 6.5 on the Richter scale), some poorly built pre-seismic code buildings will be damaged severely and a few will collapse, some poorly designed engineered buildings will suffer substantial structural damage, and new or well-engineered buildings will suffer no structural damage but considerable damage to contents and nonstructural interiors. Under a larger earthquake, many poorly designed and engineered buildings will suffer dangerous damage, and newer, engineered buildings will suffer considerable nonstructural damage, but there will be only rare cases of life-threatening structural failure.

These overall patterns, though satisfactory within the intent of the code to protect life, have considerable consequences for people's peace of mind—that is, the earthquake will be frightening, traumatic, and possibly injurious. In addition, since nonstructural elements account for 75 to 90 percent of building value and also make a building functional through heating, air-conditioning, weatherproofing, elevators, equipment, etc., the economic consequences may be devastating.

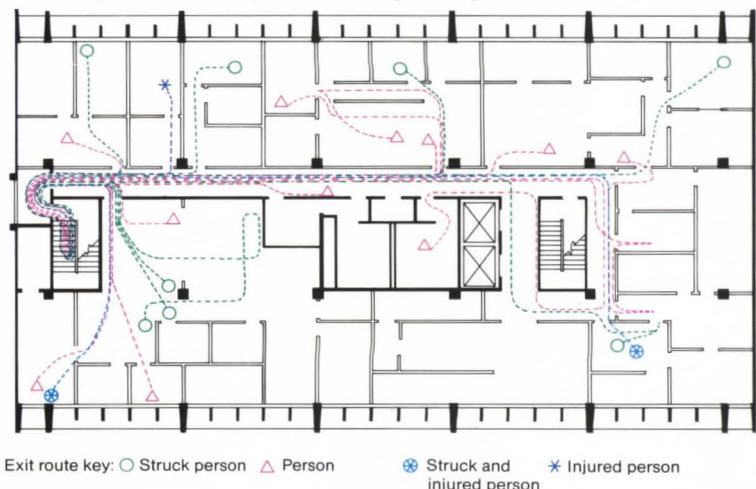
Mr. Arnold is president of Building Systems Development Inc. a San Mateo, Calif., firm specializing in architectural planning, research, and analysis.

The human dimensions of the problem are that, depending on the severity of the earthquake, thousands to hundreds of thousands of building occupants are exposed to shaking within an environment that most do not understand and are observing effects whose significance may not be clear. For example, how many office workers understand the difference between structural and nonstructural, and bearing or nonbearing, components? Different earthquakes and different ground conditions produce different ground motions: different buildings respond in a variety of ways to a given ground motion. To give useful advice to inhabitants of a specific building as to what to expect would require some specific analysis, and by no means is all the information available, but it is possible to make some general predictions that may improve people's understanding, reduce apprehension, and enable more effective self-protective measures to be taken even during the shaking period itself.

The period of ground-motion waves is of great significance, and if this coincides with the natural period of the building then severe amplification may result. Designers try to ensure that this will not happen, but, even so, ground motion typically is amplified as it moves through a building structure. Typical amplifications are of the order of two or three—that is, the acceleration on upper floors will be two to three times that at the ground, but much larger amplifications have been experienced. In the Mexico City earthquake of 1985, the maximum acceleration recorded on the ground in the downtown area was .16g. However, accelerations reached 1.0g in the upper floors of buildings whose periods coincided with that of the ground.

The Imperial County Services Building, a six-story reinforced concrete building damaged in the 1979 Imperial Valley, Calif., earthquake, provided a particularly interesting case study of occupants (see Figure 1). The building was occupied by more than

Figure 1. Mapping of occupants' initial locations and exit routes. Note heavy use of Stair 2 compared with Stair 1, due to occupants' training to avoid adjacency to elevators.



100 people at the time of the earthquake. It also was heavily instrumented with 13 strong-motion instruments, which recorded the actual motion of the building. Moreover, the building and so the effects of the shaking on people can be correlated to the physical effects of the building. One worker on the sixth floor gave this account: "This earthquake began as a calm, rolling, horizontal movement earthquake, but after about 10 seconds changed to vertical motion. Until I felt the vertical motion, I sat at my desk and continued to work, but when that vertical motion started I knew we were in trouble and got under my desk in case the building fell or items in the ceiling fell." We can relate this to engineering analysis that places the time at which the end columns of the building crushed (causing an abrupt vertical jolt) at nine to 10 seconds after the onset of severe shaking.

The building occupants were asked to estimate the duration of the shaking. Responses ranged from one second to 30 minutes, and a dozen people had no idea, said forever, or long enough. However, the three most frequent responses were 30 seconds (15 percent), one minute (14 percent), and 20 seconds (8 percent). Seismological data from instruments indicated that the period of strong shaking (0.1g) lasted about 4.5 seconds at ground level outside the building.

However, the duration of strong shaking as recorded by instruments was considerably longer inside the building. Instruments oriented in the north-south direction, located at the east end of the building, recorded strong shaking continuing for a maximum of approximately 5.8 seconds at ground level, 11.7 seconds on the second floor, and 13.7 seconds at the roof. In the east-west direction, the recorded maximum duration of strong shaking was 5.4 seconds at ground level under the eastern portion of the building. Instruments located near the center of the building recorded maximum durations of 8.7 seconds on the second floor, 8.4 seconds on the fourth floor, and 18.1 seconds at the roof.

With the exception of the fourth floor in the east-west direction, these numbers show that the duration of the shaking greater than 0.1g ("strong shaking") increased with height in the building. The responses were analyzed to see whether the occupants' vertical location in the damaged building could account for the wide range of responses. No collaborating pattern was found. For example, the largest number of second-floor occupants (32 percent) said the strong shaking lasted four minutes or longer, while on the sixth floor the majority of occupants felt the strong shaking lasted 11 to 30 seconds. Clearly, subjective human perception differs markedly from the physical "facts." This study of one building shows some of the complexity and detail involved in trying to relate the human experience of building performance to the earthquake impact. It also shows the need for more studies of this kind so that we understand more clearly the relations between building performance, ground motion, and human perception. Nonetheless, we know enough now to provide some guidelines to building performance that may be useful to the informed occupant.

General guide to building motion

1. Any earthquake effects will increase with the magnitude and intensity of the earthquake. Even a very large quake will take some time to develop. At the onset of motion, the occupants do not know whether they are experiencing a small quake or the beginning of a large one. The sequence of indications, as presented to the occupant, is as follows:

- a. initial perception of shaking;
- b. noise—creaking and grinding, hung objects moving;
- c. beginnings of damage—plaster dropping;
- d. increased nonstructural damage—ceilings displaced, cracks in plaster;
- e. beginning structural damage—cracking in concrete, etc.;
- f. increasing structural damage, indicating onset of large-magnitude quake.

2. The observed effects will tend to increase with the height of the occupants' location. At the ground floor, quakes are likely to be felt as sharp motions, like jolts, rather than shaking. On upper floors, motions are slower but endure longer.

3. Effects will increase if the building is on soft ground rather than hard. Soft ground amplifies initial motion at the fault rupture, and the period of motion may be longer.

4. In short-period buildings (low, heavy structures), motions tend to be abrupt and damped out rapidly. In long-period buildings (tall, slender, relatively light structures), motions tend to be swaying effects that may continue for a long time after the ground has stopped shaking.

5. For medium- and high-rise buildings, steel structures are more flexible than concrete or masonry. The result is longer, slower movement, continuing for longer periods. Many smaller earthquakes will cause perceptible swaying in flexible structures and will not be noticed at all in stiff ones.

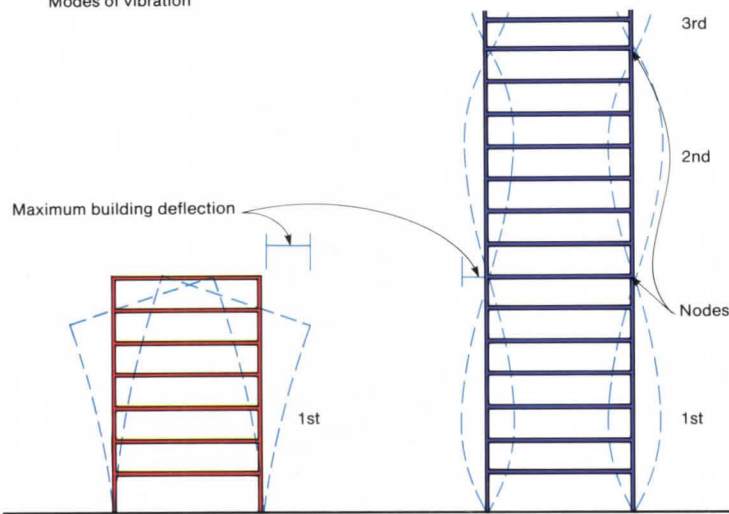
6. Buildings in which all the seismic resistance is contributed by moment-frame action are much more flexible than buildings in which seismic resistance is accomplished by walls or bracing. High-rise buildings—more than about 20 stories tall—are almost always moment frames. Very tall buildings—35 stories and more—are usually steel moment-resisting frames or tube frames. These buildings are relatively flexible and so will subject their occupants to considerable movement and will sustain a good deal of nonstructural damage under moderate ground motion, but they are unlikely to suffer structural collapse. For example, in the Morgan Hill earthquake of 1984, the Santa Clara office building, a 14-story steel moment frame, swayed considerably for over one minute, causing much damage to contents and alarming the occupants. The building was evacuated, but no structural damage occurred and the building performed according to code requirements. In the same earthquake, a new, 48-story, steel frame building in San Francisco (about 65 miles from the earthquake epicenter) swayed for four minutes without damage but occupants began to worry.

7. The entire building sways back and forth in an earthquake. However, a tall building will not necessarily sway more than a lower one because the lower one will vibrate only in its first mode. The taller building will undulate, like a snake, and vibrate in a second and third mode (see Figure 2), and the total deflection will be reduced. At the levels where the deflection changes direction, called nodes, the floor displacement relative to the ground may be negligible, although violent shaking still will be felt.

8. Shaking to the point at which permanent structural distortion takes place may result in jamming of doors in their frames. Because office doors to public escape routes must be fire-rated, they are heavy and often set in metal frames; when jammed they are difficult to force open.

9. Many newer office buildings have suspended ceilings with acoustic panels and lighting fixtures supported by metal t-bars. In moderate shaking, the t-bars may spread and acoustic panels drop out. In older and cheaper buildings, the light fixtures rest on the t-bars and may drop; these are heavy and dangerous. In newer buildings, light fixtures are independently supported by a

Figure 2
Modes of vibration



slack cord at two corners and the t-bars are braced. These fixtures may drop out but will remain dangling (see Figure 3). Inspection of any ceiling will reveal whether light fixtures have safety wires or not. Ceiling panels along a perimeter wall are the most likely to drop because the t-bars pull away from their wall support.

10. Generally, occupants in an office always should move away from windows at the onset of shaking. Although serious glass breakage is surprisingly rare, glass behavior is unpredictable. At the Coalinga Junior High School library, in 1983, many large panes of glass in a window wall were broken. Most of the glass fell inside the library within five to 10 feet of the window.

Health care facilities as a case study

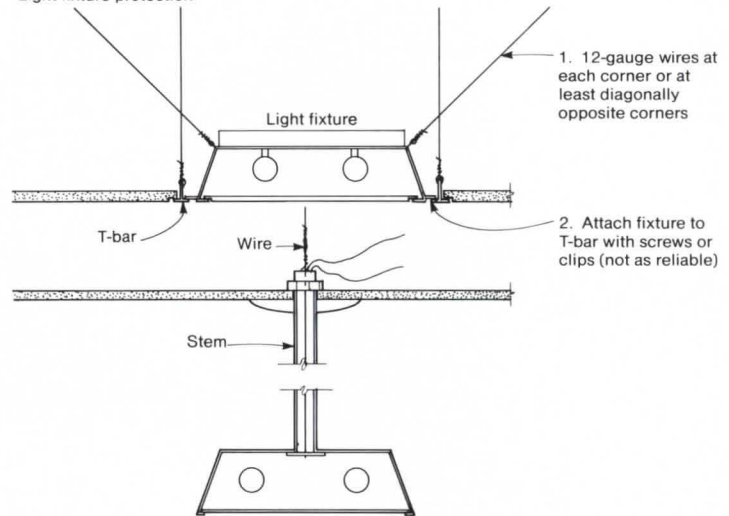
By their very nature, health care facilities deserve special seismic safety considerations because of their special occupancy characteristics (the sick and elderly, transient populations, and children) and their importance to the immediate and long-term earthquake disaster relief and recovery efforts. Many health facility supplies are essential for the survival and treatment of earthquake victims. Patient records also are vital for accurate treatment.

Health care facility functions depend on utilities such as power, water, waste disposal, and communications. Larger facilities also depend on elevators to move people and supplies; after even a moderate earthquake, elevators will cease to operate until they can be inspected for damage. Furthermore, some of the contents of health care facilities can be hazardous if overturned or damaged. Drugs can be a target for abusers if security is down.

Some problematic effects nonstructural components can have on the structural system include:

- Placing rigid elevator cores within more flexible long-span spaces (for example, in diagnostic or treatment areas) may create torsion and also attract a disproportionate share of the seismic force to the stiffer core structure.
- Inserting infill walls in the portion between columns (forming higher windows) has the effect of shortening and greatly stiffening the columns. This then attracts much higher forces into the columns than assumed in the design calculations. This type of problem often occurs as the result of later remodeling that modifies the concept of the structure.
- Adding rigid infill nonstructural walls between two or more columns interjects an area of rigidity into the whole plan with consequent torsion and stress concentration.

Figure 3
Light fixture protection



Additionally, building utility systems and equipment (except in California) traditionally have been designed or selected with little, if any, regard for performance when subjected to earthquake forces. Mechanical and electrical equipment supports have been designed for gravity loads only, and attachments of moving equipment to the structure are deliberately designed to be flexible to allow for vibration isolation. Earthquake motion occurs at different frequencies from mechanical vibrations, however, and this type of support is quite ineffective in earthquakes. Building codes (with the exception of California's), even in regions with a high risk of seismic activity, do not contain provisions governing the design of mechanical and electrical systems.

Extensive investigation has revealed the amount of equipment damage that can be expected from earthquakes, and there are many instances of health care facilities that sustained only minor structural damage but became uninhabitable and hazardous to life because of failures of mechanical and electrical systems. In the Coalinga, Calif., earthquake of 1983, the small community hospital sustained little structural damage, but damage to non-structural components and systems necessitated the transfer of all patients, and the hospital closed for two weeks. The single elevator in the two-story building stopped between floors, ruptured water pipes caused flooding, and the ambulance entrance door jammed in the closed position.

In assessing the impact of possible damage, secondary effects from equipment damage must be considered. Fires and explosions resulting from damaged mechanical and electrical equipment and broken laboratory equipment and spilled chemicals represent secondary effects of earthquakes that are also a considerable hazard to life and property. In the 1971 San Fernando earthquake, two patients at Mount Olive View Hospital died when their life support systems failed.

As another example, at the Coalinga hospital the X-ray equipment was rendered inoperable, and the cost of repairing this and other sensitive equipment exceeded \$100,000.

Large-capacity hot water boilers and other pressure vessels and broken distillation pipes can release fluids at hazardous temperatures. Several areas of a health care facility (kitchen, laundry, and sterilization facilities) are particularly vulnerable in this respect. Electrical equipment including transformers, freestanding switchboards, emergency generators, and lighting systems can fall over, causing not only damage and injury but also fire.

Health care facilities have stringent fire-safety requirements because of their occupancy. However, the fire protection system

(sprinklers, compartmentalized barriers, fire walls, fire/smoke barriers) can be rendered nonfunctional through breaks in walls, broken sprinkler lines, or inoperative alarm systems caused by primary earthquake damage. Heating equipment hung in hospital service areas (supply, receiving) seldom is designed for lateral forces. These heavy items can easily fail and cause considerable damage or injury.

Health care facilities depend on their utility systems for their ability to function much more than do other facility types. Educational, office, or retail functions can continue with a minimum of power and light, but the modern hospital becomes virtually useless under such circumstances.

Much equipment in a health care facility is essential to its diagnostic and treatment function. The overturning of an office file cabinet may be a temporary nuisance for a commercial company, but the overturning of a cabinet containing patient records can be a critical problem since these records are essential to treatment. Many other supplies, such as medicines, are necessary for emergency treatment after an earthquake.

Several functional areas deserve special attention because of the life-threatening environments that can result during an earthquake:

- Hallways and corridors that serve as the primary egress routes from the building should be designed to be safe from falling ceilings or light fixtures and broken glass and should be kept clear of obstructions such as wheelchairs and other stored items.
- Canopies at exits should be checked to ensure that they will not collapse, and exit routes should not adjoin exterior glass areas.
- Diagnostic, treatment, and laboratory areas should protect valuable or heavy equipment, and hazardous chemicals should be stored in such a way that containers do not fall off shelves and out of cases. Particular attention should be paid to the emergency, radiology, and operating room areas.
- In patient rooms, the safety of ceiling-supported equipment, such as lights and television sets, should be checked, and nurses' stations should be protected against the upset of desktop equipment and supplies.
- In pharmacies, medicines should be protected from upset and breakage, and supply racks and shelves should be braced.
- Patient records should be protected.
- Kitchen and laundry areas should be designed to protect staff from heavy equipment and possible injury or fire caused by broken service or fuel lines, and the safety of staff in mechanical rooms should be evaluated and precautions taken.

Protection for nonstructural elements

Seismic building codes such as the Uniform Building Code and documents such as the *NEHRP Recommended Provisions* establish minimum force levels for architectural, mechanical, and electrical systems and components that recognize occupancy use, occupant load, need for operational continuity, and the interrelation of these elements. The following design strategies must be evaluated to determine the correct one for protecting a particular nonstructural system or component, given its physical characteristics, location, and importance:

- Increased flexibility—improving the ability of the element to move under earthquake loading and, thus, reducing the forces on the element (for example, using a light-fixture mounting that enables it to sway safely).
- Anchorage—providing for the proper connection of the com-

	Flexibility/deformation	Anchorage	Bracing	Stability	Strengthening	Separation/isolation	Slip/control joints	Reduced mass	Containment	Incorporation	Location
Nonstructural system											
Exterior elements		●	●		●			●	●	●	●
Enclosure systems	●						●	●		●	
Finishes/veneers	●	●					●	●			
Partitions	●	●				●	●				
Ceiling systems		●	●		●	●		●		●	
Lighting systems		●	●		●	●				●	
Glazing	●				●	●					●
Transportation systems					●	●	●				●
Mechanical systems	●	●	●					●			●
Furnishings/equipment		●		●	●			●			

Figure 4
Earthquake strategies for nonstructural components

- Relocation—changing the location of a component to reduce its vulnerability or threat to occupants (for example, moving a heavy tank from the roof to the basement; see Figure 4).
- Building codes are concerned only with those components that are directly affected by earthquake motions and could affect life safety. The requirements are minimal, and the building owner should consider including in an earthquake quality-assurance plan all other potentially hazardous or functionally necessary components and contents during all phases of construction throughout the project. For many buildings, the additional cost would be minimal; the potential savings in terms of increased life safety, reduced property damage, and continuing operation both during and after an earthquake could be enormous. □

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This article was adapted from three of Mr. Arnold's previous works: "Interior Environment Seismic Performance: An Approach to a Typology" (*Proceedings of Research and Design '85*, a conference sponsored by the AIA Foundation, 1985, page 203); "Seismic Considerations for Health Care Facilities" (*Building Seismic Safety Council, for the Federal Emergency Management Agency, 1987*); and "Occupant Behavior in a Six-Story Office Building Following Severe Earthquake Damage" (*Disasters, 1982, Vol. 6, No. 3, page 207*).

'Try Before You Buy' Software

Explaining the world of 'shareware' and 'freeware.' By Oliver R. Witte

Although the purchase of computer hardware represents a highly visible initial expense, computer software tends to accumulate in smaller increments. Yet within a couple of years, a small office may have invested as much in programs as in processors. It also would not be unusual if, after a couple of years, at least some of those programs were no longer in use. There's even a name for this kind of program: shelfware. It's software that sits on the shelf—in the box rather than in the computer. New computer users are especially susceptible. And, once the plastic wrapper is broken, the store usually won't take it back.

Perhaps the ultimate vaccine for shelfware is shareware, a class of computer programs distributed on the honor system. If you don't like a shareware program well enough to continue using it, you're not expected to pay for it. This is "try before you buy"—the step beyond a money-back guarantee.

Shareware is a distribution concept, not a specific application. It includes word processors, spreadsheets, data base managers, financial management, communications, graphics, utilities, and CADD. You are permitted—yes, encouraged—to accept copies of shareware programs from friends and other sources. No one checks, and it's up to the user in most cases to determine the length of the trial period.

There's even a step beyond shareware called freeware, for which the author expects absolutely nothing in return. Some freeware programs are copyrighted, which means that the author retains some rights (usually prohibiting commercial use and modification), but other freeware programs are truly in the public domain, meaning that users are free to do anything they please with the software. These authors are the Johnny Appleseeds of computer software.

Both shareware and freeware are discussed in this article, although the number of freeware programs naturally is much smaller than the number of shareware programs, and freeware tends to be concentrated primarily in simple though frequently very useful utilities.

We have not included another class of programs, called demoware, which are crippled versions of commercial programs. An example of demoware is a version of Drawbase, a CADD program by Skok Systems, that is free but does not allow the user to plot, print, or save drawings. Other demoware vendors employ tricks such as limiting the number of times a program can be launched.

Another advantage of shareware is its generally modest asking price. With no marketing and distribution costs, the vendor can make an adequate profit. For simple utilities, the asking price may be only a few dollars. For complex programs, the price may approach \$100. The most expensive shareware we found was an accounting program for which the vendor was asking up to \$40 a module. As an inducement to send in the requested fee, some shareware vendors offer a printed manual, newsletter, update notices, and even free technical support.

The disadvantages of shareware are similar to its advantages.

Without traditional marketing, many users never hear about them. Few stores stock them and magazines rarely write about them. The suspicion lingers that, if they really were any good, they would be put in proper packages and advertised.

Finding a specific shareware program you might have heard about can be difficult. The traditional form of distribution—through friends—has been overwhelmed by the huge volume of freeware and shareware offerings. Computer clubs stock them, but some require you to join and pay dues to get access to their libraries. Computer bulletin boards post them, but some charge initiation and hourly fees.

Strange as it may seem, some mail-order outlets are starting to specialize in shareware and freeware. Although they cannot "sell" most of the programs, they charge as much as \$10 for the disk on which they have copied the software.

Assuming that you have found a good source, the hardest part may be sorting through the programs.

The Boston Computer Society sells for \$125 a compact disk with close to 300 megabytes of freeware and shareware programs that run on a Macintosh. Once you have purchased a compact disk player to run them, you'll find some excellent programs tucked among games, utilities, and applications that could not be started or simply did not work on a Macintosh II computer.

The Chicago Computer Society has a library of 150 disks for DOS-based machines. The disks cost \$3.50 each to members only. We were able to run most but not all of the ones we tried.

Computer users who accept copies of programs from casual acquaintances run a small but potentially serious risk of infecting their system with a so-called virus. Computer viruses are created deliberately to cause trouble as severe as erasing your disk. Apple will provide lists of bulletin boards they have found to be safe in the past, as well as Apple user groups, if you call (800) 538-9696.

In preparing this article, we tried dozens of shareware and freeware utilities and programs in each of the primary business applications. The ones that seemed to have the most merit were placed in the hands of architects who volunteered to try them out. We found no viruses but a staggering range of quality, from worthless to superior.

Documentation, which is provided in a "readme" file on the disk if it is provided at all, ran the gamut from cryptic (the user is expected to decipher it as part of the "fun") to clear and complete.

Some programs obviously had been modified, leaving even a scrupulously honest user in a legal and moral quandry. Copyright notices and identification of original sources, if they ever existed, often could not be found. In one case, a freeware utility had been combined with a shareware utility owned by an aggressive author who threatened to prosecute unauthorized users.

A nifty utility called DOSedit, which redisplayes the last half-dozen or so DOS commands issued by the user in sequence at the touch of an arrow key, contains a notice that appears only

if a user issues the DOS command "type dosedit.com." The notice, "By Jack Gersbach, IBM Internal use only," leaves the user in a dilemma. Although the notice does not constitute a copyright, the intent clearly is to prohibit external use. A call to IBM public relations did not produce a resolution by press time.

We came across another DOS utility that made us wonder how we ever got by without it. It will search an entire drive for a specified file name and, if it finds the file, display the path to reach it. At the DOS prompt, simply type "whereis filename." It's apparently in the public domain, since no notice of any kind could be found. Apple provides a similar utility, Find File, free with its Macintosh computers.

Perhaps the most interesting question was whether the shareware concept really works. Do satisfied users really send money voluntarily? The answer is a resounding yes, according to Tim Bougan, treasurer of the Association of Shareware Professionals and president of Custom Technologies, the vendor of Checkmate, an accounting program for small businesses.

Four members of the association last year grossed more than \$1 million, he said. They are Quicksort, vendor of PC-Write, a word processor; Datastorm Technologies, vendor of Pro-Com Plus, a communications program; Magee Enterprises, vendor of utilities such as Treeview and Automenu; and, the member earning the largest gross, Jim Button, one of the three originators of the shareware concept in 1983. Button, who wrote PC-File, a data base program, now sells his program commercially but encourages users to share it. His revenues last year were \$2.5 million from what has become a family of shareware programs, Bougan said.

Another successful program that has graduated from shareware to commercial distribution is Red Ryder, a communications program for the Macintosh. The current version now is sold only in stores, but previous versions still are available as shareware.

The late Andrew Fluegelman is credited with being the father of shareware. His PC-Talk, a communications program, still is being updated by successors. It has an estimated 800,000 users, including this magazine. Another pioneer is Bob Wallace, author of PC-Write. He coined the term "shareware."

Readers who would like to share architect-specific programs, utilities, and templates are invited to call or write Oliver Witte, Suite A, 1040 W. Webster Ave., Chicago 60614, telephone (312) 281-8383.

Our evaluators were asked to answer this question: Why buy a commercial program when shareware or freeware is available? Programs presented to them for review were intended to represent only a sampling of what is available, not a comprehensive list.

Their answers were typically diverse. Most evaluators were not impressed with the shareware and freeware applications they reviewed. A few evaluators found their programs as good as or better than any commercial programs. Others, mostly Macintosh users, said the programs worked best as supplements to, rather than replacements for, commercial products. The Macintosh menu of shareware and freeware is richer in desserts than in dietary staples.

Macintosh shareware often can be classified as desk accessories (DAs), function key calls (FKeys), initial resources (Inits), and control panel devices (CDevs). DAs are found under the Apple menu and function much like the "terminate but stay res-

ident" (TSR) applications in the DOS world. FKeys perform a specific function such as putting the date on the screen. Inits run when the computer is started; screen blanks and crash guarding are examples. Some CDevs give users more control over screen colors.

Another uniquely Macintosh tool is the Hypercard stack. It puts many programming capabilities in the hands of ordinary users, who then can create their own applications. This is a hot area of development on the Macintosh.

Hypercard programs fill highly specific needs. Because they can be modified easily by the user, they have found a special niche in data base applications, according to Richard E. Sipin, AIA, computer manager for the DePalma Group, Chicago architects and interior designers. Sipin evaluated Hypercheck, a basic checkbook register. He said the low fee—only \$5—and the opportunity to adjust the program to accommodate the needs of a small architecture practice make it especially attractive. The downside of Hypercard, Sipin said, is the need for five megabytes of random access memory. Complex Hypercard programs also run slowly because they use an interpretive rather than a compiled language.

But if price and ease of use are major problems, Macintosh evaluators should consider an integrated commercial program such as Microsoft Works.

One evaluator, Paul Zinni, AIA, of Chicago rather liked the option of basic software offered by some shareware programs without all the baggage and expense of a full-blown commercial program.

Criticisms of documentation and support and questions about continuity sounded similar to those for some commercial programs. Although the most important expense of any software is the time invested in learning to use it, the choice of a commercial product does not guarantee successful application in an office. Indeed, this is the primary reason for shelfware: the buyers never figured out how to make it work for them. The difference is that with shareware you don't have to pay twice.

Data base programs.

Zinni liked the two shareware data base programs he reviewed: File Express (version 4.22) and Sidefile (version 2.33), but he doubted that either would replace Symphony, which he purchased to maintain his lists of consultants, clients, and contacts. He faulted both shareware programs for not permitting files to be exported directly, without translation, to a word processor. He praised File Express for its tree structure, which made it easy to use. Sidefile has pull-down menus that also are easy to use, he said. The program is arranged with predefined data categories such as a checkbook; list of contacts, accounts, and addresses; inventories; and a to-do list. Files are limited to about 1,000 records, depending on their size, but the number can be increased to 3,000 by putting them on a floppy disk. The program can be used as is, but users must register to get printer specifications and a utility that converts files to ASCII, which is a file transfer standard.

Accounting programs.

Zinni also evaluated two accounting programs: Finance Manager II GL (version 1.2d) and Checkmate GL (version 1.7A). Finance Manager is good for a 25- to 30-member firm, he said. It includes a general ledger, accounts payable and receivable, accounts reconciliation, and financial utilities. A user must register to receive the payroll module. Checkmate was judged easy to use. Zinni especially liked the pull-down menus. The program includes a general ledger, balance sheet, profit and loss statement, and

expense checks. It permits computerized check writing. A year-end summary is available at a keystroke, and 10 custom reports may be defined.

Graphics.

PC Key Draw (version 3.51) isn't quite perfect but it has potential, said John C. Voosen, AIA, of Chicago. "It's like a half-baked pizza," he said. "It has a little bit of everything." The program is unique in combining animation, paint, and computer-aided design, Voosen said. He has been using four commercial programs—Paint II, Fanta or Grasp, and Autocad—to accomplish those functions.

But Voosen said PC Key Draw was years out of date. Because it is not fully compatible with the Enhanced Graphics Adapter (EGA), its color and resolution are inadequate. "It would have been fantastic in 1985," Voosen said. "Today, it's a little more ho-hum. The next update, with a smoother mouse and better EGA, could really bring it up to date. I couldn't use it professionally with the resolution and color it has now." The program was capable of CADD, but, he said, it was not adequate for much beyond residential bathrooms.

Since graphics is one of the strengths of the Macintosh, it was disappointing not to find good shareware programs for this computer. "Their biggest drawback was the lack of a ruler, any kind of ruler, let alone a custom ruler," said evaluator Charles Barr, AIA, of Rockford, Ill. Other drawbacks were the programs' inability to produce a document larger than 8 by 10 inches, no object capabilities such as snap grids or rotation, and no layering capabilities.

Spreadsheets.

This category received the strongest approval and least criticism. The DOS reviewers, Robert C. Robicsek, AIA, vice president of Environ, Chicago, and Catherine Lee, project architect for the firm, liked all three spreadsheet programs they tried: As Easy As (version 3.01B), QubeCalc (version 2.0), and PC-Calc (version 1.0). They said all three had more features than most architects would use, and all were easy to install and use.

Their favorite was As Easy As, a clone of Lotus 1-2-3. They noted with approval its color control and its ability to display charts in 3D. Files from 1-2-3 could be imported directly, without conversion, and printed. PC-Calc permits the contents of a cell to be erased without removing underlying formats. Flags are inserted in protected cells. Formulas in the spreadsheet can be printed separately. QubeCalc's screen also looks like 1-2-3, but users wanting to import a 1-2-3 file must take the additional step of converting it. Typing over information in a cell did not completely replace the old data if it was longer than the new data.

The leading Macintosh shareware spreadsheet was developed as both a full-fledged program and as a desk accessory. As a DA, it is available immediately from within any other program. Without faulting the main program, evaluator Don M. Beasley Jr. of Chicago called the DA a "good idea." His only quibbles were the asking price (\$40) and the memory (62K) it requires. Both are considered a bit much for a Macintosh DA.

Communications programs.

Charles R. Newman, AIA, uses shareware PC-Talk-III in preference to any commercial program. It easily and efficiently operated even a new 9600-baud modem from U.S. Robotics. But if he weren't so familiar and so satisfied with PC-Talk, he would consider either Pro-Comm Plus or Qmodem. Both worked well, but Pro-Comm Plus was much easier for novices to set up. Qmodem asked imposing questions about baud rate, parity, and

stop bits—routine subjects for experienced modem users but foreign words for novices—without giving default values.

The best Macintosh communications program, regardless of distribution method, is still Red Ryder, according to Gary R. Walo, AIA, of Chicago. The current commercial version, 10.4, sells for \$80 but shareware versions are readily available. Other Macintosh shareware for communications fared poorly.

Word processing.

Few of the primary categories of business programs are as intensely personal as word processors. Attempts to persuade anyone to switch meet formidable resistance. Thus it might not be surprising that our evaluator was not prepared to shelve her trusty WordPerfect program for shareware. The programs accepted for evaluation were PC-Write (version 3.0), New York Word (version 2.2) and Galaxy (version 2.4). The reviewer, Pat Hoesel, is the office manager for Charles Vincent George, Architects, in Naperville, Ill.

PC-Write is easy to install Hoesel said. The extras for registering PC-Write rival the benefits of the best commercial program, including telephone support and a quarterly newsletter. It has windows and accepts mouse input. An undo command and a spelling checker were helpful. Hoesel gave Galaxy high marks for its friendliness. Features include pull-down menus, indexing, column cut and paste, and the ability to generate footnotes, headers, and footers. On-line help is context-sensitive. New York Word's help files don't permit users to page back. Users must exit the help menu and access help again. But it did produce ASCII files and permitted users access to DOS from within the program.

The best of three Macintosh word processors was McSink (version 4.8), a desk accessory, according to Walo. It performs on the clipboard more than 20 file and text manipulations that can be pasted onto the editing window. McSink supports all fonts and will search and save.

Utilities.

Terrill W. Janssen, director of computer services for Loeb, Schlossman & Hackl, Chicago, reviewed Point & Shoot (version 1.0) and Treeview (version 1.0), both menu utilities; and HomeBase (version 2.14) and PC-Deskteam (version 1.04), both desktop utilities.

Janssen liked Point & Shoot better than the similar commercial program purchased from the firm's consultant. It lists all the software on the system as a menu. With a few simple keystrokes, even a novice can access programs and files. Janssen found it easy to install and clearly explained. Treeview was even easier, he said.

HomeBase and Deskteam provide a pop-up bundle of basic services that can be called from within another program. Examples are a calculator, notepad, and calendar. The best-known commercial competitor is SideKick by Borland. HomeBase is the more sophisticated of the two shareware programs, Janssen said.

Of the five Macintosh utilities that were evaluated, Disk Librarian was judged to be the most valuable. It categorizes applications and lists headings and subheadings. "For someone with a large hard disk, this would be ideal," said Marshall J. Moretta, AIA, of Evanston, Ill. He described it as "very practical."

Users worried about viruses should have Virus Rx, a freeware program supplied directly by Apple. Ferret is another good medication, Moretta said. □

Kristin Fox and Barbara Etzel contributed to this article.

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The Many Uses of Postoccupancy Evaluation

By Elena Marcheso Moreno

If architecture is considered a constant evolution of design and technology, striving always for better solutions to often unique problems, then the opportunity of learning from experience is paramount to the next improvement, to the next step toward a better building. Postoccupancy evaluation (POE), which concentrates on the needs of building occupants and their response to their environment, provides insight into past design decisions and, in effect, establishes a pool of experience by which designers and owners alike can benefit.

Corporations have learned from experience the importance of people, and that the productivity of the knowledge worker must be supported by the environment. These same corporations are realizing the importance of the environment itself, not only for the image it projects but also for its ability to facilitate process. In the previous two decades, these concepts had been promoted by newer organizations, or by high-tech and entrepreneurial industries.

Now there is also an effort under way by larger organizations to learn from smaller, successful companies. Government agencies, large corporations, hotels, and fast-food chains all are benefiting from evaluations of their own and other facilities. The results of these evaluations are seen in changes in programming, design, construction, and building use patterns, projection of a better image, and improvement in worker productivity and customer satisfaction.

Evaluations are performed routinely by some organizations to gain feedback on existing problems in building performance. Other organizations use them for feedforward to the next generation of repetitive building type. In all cases, evaluations help to increase information and data bases and ultimately can improve the state of the art in a variety of building types.

Architects generally have been slow to join the evaluation bandwagon. More often than not, the pull to conduct evaluations has come from client organizations, not from the architects themselves. Many architects in the past have regarded POE as negative feedback, concentrating on what is wrong with a building, which in turn could be interpreted as inadequate design. Then, too, most POEs were performed by social scientists, who provided results in highly theoretical and sometimes almost hopeless terms, with few recommendations for solving the problems they had uncovered. By the early 1980s, POEs had become more action oriented, geared more to the needs of the building owner and the designer than the academic advancement of theoretical models.

Who needs the information provided by POE? Numerous people who are integral to the process could benefit from the infor-

mation, and architects are high on the list, says Min Kantrowitz, an architect and professional evaluator in Albuquerque, N.M. More often than not, though, architects do not seek this type of information, she says. The most common reason for this lack of interest is the reward system—who will pay for the designers to conduct an evaluation? But psychology plays into it too. Says Kantrowitz, “There is a tendency not to look back.” That, she believes, is a gross mistake. Evaluations are not all negative feedback. Although learning from experience and the understanding of past mistakes can be a valuable tool, POE should also be looked at as a means to celebrate what was done well, she says.

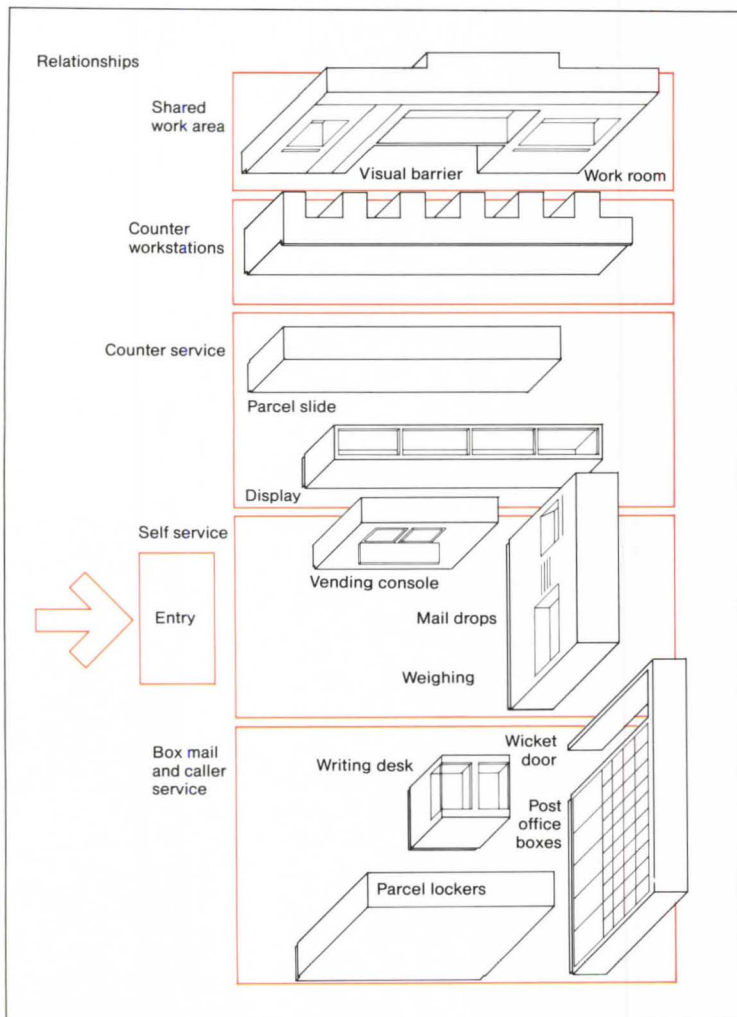
One would expect architects to be responsible for subcontracting with professional evaluators, but that is rarely the case. An individual architect hired by a client seldom has the opportunity to go back and review a building, alone or with an evaluator, although some architects are recognizing the benefit of doing so. For those designers who seek POE information, the evaluation component of the firm's past design work, which in essence could be called informal POE surveys, usually is not identified as such because it would not be paid for by the client. Instead this task is lumped into the programming phase, where in fact many evaluators argue it belongs.

In his work with POE, Wolfgang Preiser, with the Center for Research and Development at the University of New Mexico's school of architecture, says he often can train an architect or owner's representative in only a day or two to collect enough information from a building and its occupants to provide a great deal of useful feedback.

Conducting or participating in POE can be beneficial to design firms by keeping them in contact with their clients after a building is completed. The architect's continued interest in the client's satisfaction and in correcting any problems with the building can likely lead to further work. Previous evaluations of buildings can be stressed during marketing to help prospective clients feel that an architect will have continued interest in their building and in them.

Additionally, building evaluation provides architects with a lot of feedback about the success or disappointment of design decisions and increases the firm's knowledge base and expertise about a specific building type. This in turn strengthens the firm's ability to obtain similar new jobs.

James L. Gibson, AIA, a partner in the Louisville firm Bickel Gibson Architects, says that conducting a POE on one of the firm's earlier designs was responsible for the firm's bringing in a really big project. “About 10 years ago, I got interested in not



reinventing the wheel every time we started a new project," said Gibson, "and so we started to informally evaluate some of the buildings we had worked on."

By happenstance he ran into Preiser and they decided to work together to conduct a formal POE on an agricultural research facility that Gibson's firm had designed for the University of Kentucky almost 10 years earlier, strictly to satisfy his own curiosity about how well the building was meeting the owners' needs. Some time after the evaluation had been completed, the University of Kentucky sponsored a limited design competition for the Equine Research Laboratory. Gibson is convinced that Bickel Gibson Architects won the competition because of the knowledge he and Preiser had gathered earlier about what worked and what did not work in a laboratory building.

POE is an information-gathering vehicle, and evaluators now are approaching the process more from the point of view that an organization's management needs this information to make cost-effective decisions about profit, productivity, efficiency, and image. These evaluators determine what information is needed and how it can be used at each branch of the decision tree before the formal surveys are initiated. Many agree this is a big improvement over the earlier POEs, which were overly specific from the very beginning. This represents a move away from only retrospective evaluation to a frequent feedback loop that assists in establishing a proactive facilities management program.

Preiser has been working to develop models for the activation

component of POE, which is a process of preparing people as well as a newly constructed or renovated facility for move-in and operation. This is a fairly complex process, rarely of relevance in commercial office buildings, but with potentially great benefit in more sophisticated buildings such as hospitals, where the care of patients is the highest priority. All systems and building components must be operational and fault-free on move-in day for a cost-effective transition. Preiser has determined that activation is in fact an element of management that can be applied to any large or complex facility. The benefit of employing the activation process will be enhanced personnel training and morale, more timely facility readiness, and significant savings in time and overall costs.

Organizations willing to pay for POEs tend to develop buildings of the same type on a regular basis and are interested in perfecting the end result. They are also working in a constantly changing environment where new technologies will continue to be the rule rather than the exception and where flexibility in space planning and building use patterns must be accounted for or a new building can quickly become obsolete.

Follow-up evaluations of newly constructed or renovated facilities is not the only reason to review the interaction between a building and its users. When Kantrowitz was hired to help the state of New Mexico relocate three of its agencies into a new building that would soon be undergoing construction, it was for the purpose of evaluating the best organization and location for the agencies and their workers within the building. As part of that effort, she convinced the state to conduct a POE of the existing building it would be moving out of to determine the occupants' responses and to understand how the building influenced their productivity.

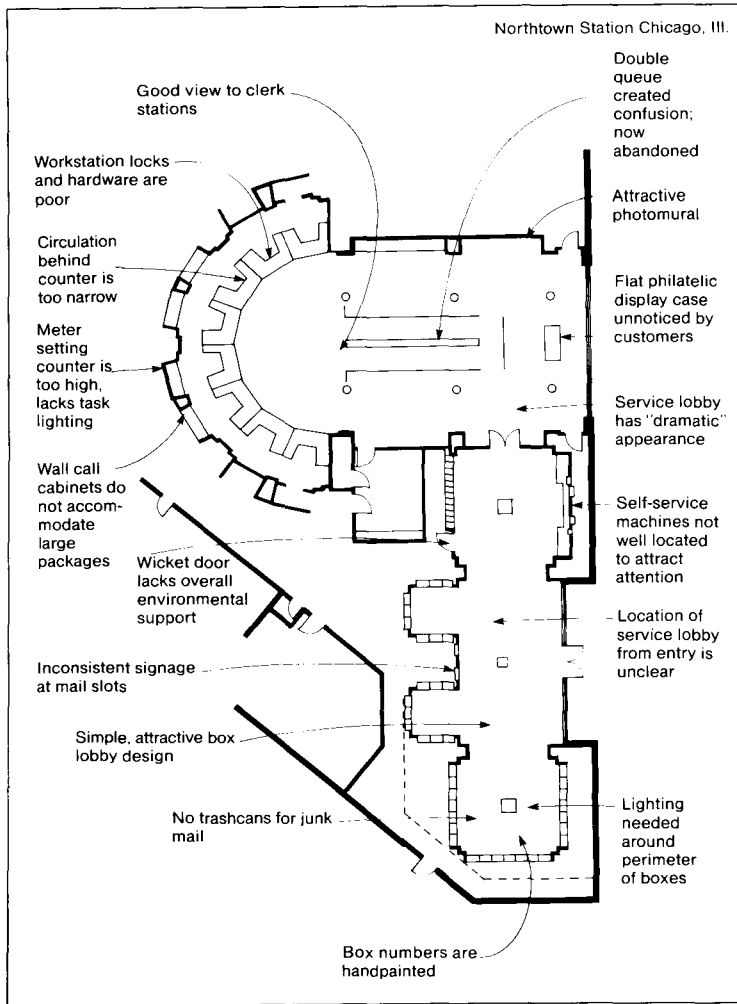
A totally unexpected outcome of this evaluation was that the new building was not large enough to accommodate the needs of all three agencies. Although the evaluation results created a bit of a furor, in the long run they saved a lot of headaches, Kantrowitz said. In the final outcome only two agencies moved into the new facility and the third remained where it was. In addition, Kantrowitz's pre-occupancy evaluation helped the state save money—and space—on support services when she found that duplicating lounges, copying machines, etc., for each agency were not necessary. Instead the agencies now share these services and allocate expenses by an internal means of accountability.

For the past four years, the U.S. Postal Service has been conducting a design research program to change the way its building standards and designs are developed, refined, and executed. Its intention is to improve its overall public image and ultimately its market share for each of its products, many of which are now faced with stiff competition from the private sector.

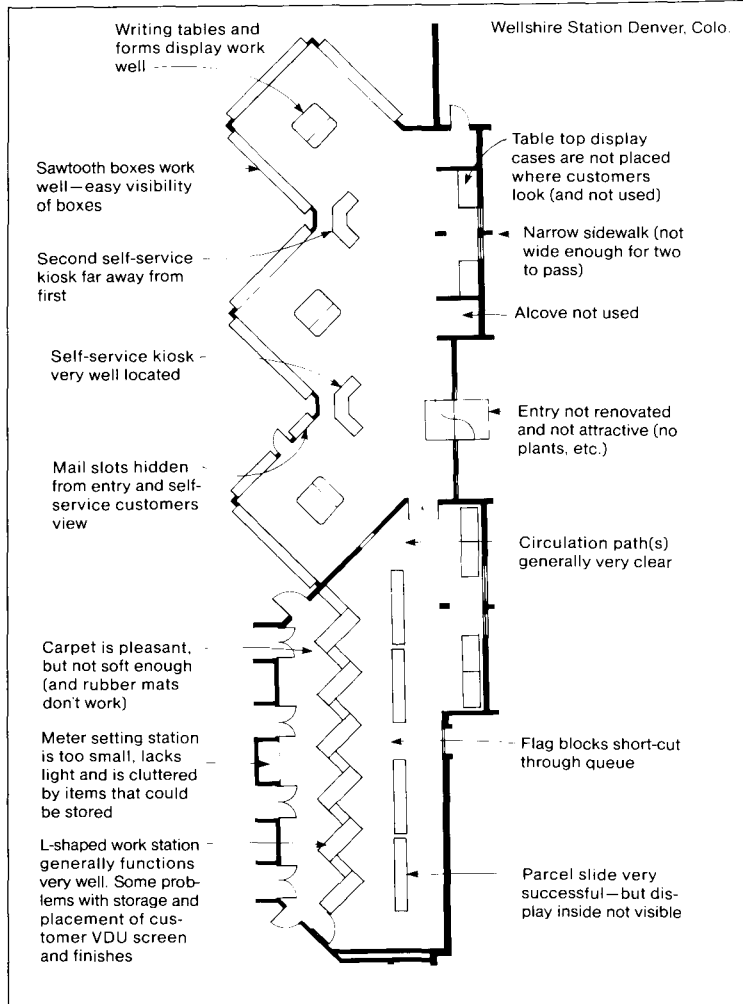
USPS spends about \$1 billion each year for close to 500 buildings of all sizes, housing a limited range of activities. Recognizing the value of POE for productivity and image improvements as well as substantial cost savings, USPS retained the team of Jay Farbstein & Associates and Min Kantrowitz & Associates as evaluators.

A nationwide study of the image of post office buildings was conducted to understand how customers and employees responded to the quasi-government agency. Following that, POEs were made of two groups of post office retail lobbies. One group of retail lobbies had been designed to demonstrate new directions in lobby designs; the other was a baseline or comparative typical design.

POE of semi-circular lobby design



POE of sawtooth lobby design



Out of the image study it was found that customers generally accepted the appearance of their post office as at least somewhat attractive, while employees did not. It was clear that landscaping was closely related to a building's image—those with little or no landscaping were considered the least attractive. It was discovered that the buildings USPS owned looked better than those it leased, that standard plan buildings projected an inappropriate image, that new buildings were not perceived as being any more pleasant than older facilities, that identifiable signage, a key aspect of image to most people, generally was lacking in retail lobbies, and that personalization of facilities with plants, artwork, and pleasant colors always enhanced their appearance. It also was found that people do not want all post offices to look the same and that each building should reflect the vernacular of the region in which it is located.

In the demonstration lobbies, USPS's new ideas in retail lobby design were evaluated as generally positive in appearance but having problems in efficiency. Layouts in larger facilities frequently were confusing and customers had trouble finding their way. Information transfer was not effective, and complex queuing systems just confused everyone.

USPS used the results of the two studies to develop a set of design guidelines for the renovation and design of its lobbies to replace its inconsistent and disorganized existing standards. The results have been quite successful, and design research has become a part of the postal service's standard business practices.

Funding for POE now is tied to construction funds rather than being an expense item that could be cut from any budget cycle, because the postal service recognizes the impact it has on future building projects.

Other organizations, both private and public, are having similar results with POE, and it is inevitable that architects will become more involved in evaluations. One stumbling block to conducting POEs has been the perception on the part of architects that special training is required. While that is true in some cases, most architects can talk with occupants and observe building uses as well as anyone.

Much of the private evaluation work done is proprietary. Organizations such as Marriott, McDonald's, IBM, Steelcase, and Red Lobster all perform POEs in some fashion, but the results rarely are published. Likewise, the marketing departments of large-scale housing developers evaluate their products, frequently in cooperation with their architects, to determine that fake Tudor timbers or postmodern columns are selling best. In effect, what these POEs uncover is that good design sells and that there is a positive public relations value for the organization that has funded that design.

Clients are more aware than ever that evaluation feedback helps them make better development decisions. As these clients request the participation of architects on the evaluation team, there will be greater incentive for the practicing architect to provide that type of feedback as a normal course of events. □

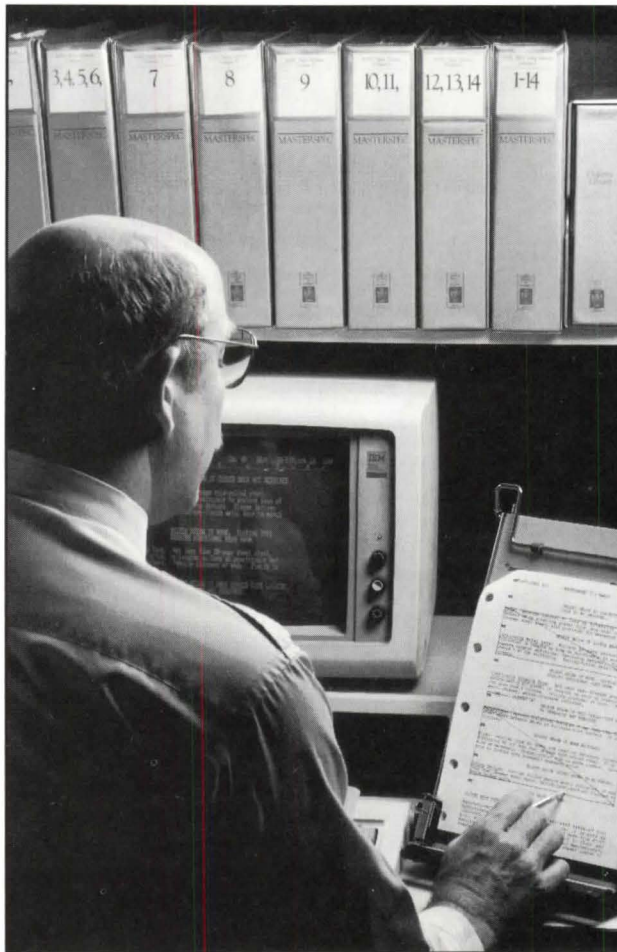
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The Many Differences Between Concrete and Masonry Technology

By Christine Beall, AIA

Since the turn of the century, portland cement has become the principal ingredient of most masonry mortar and grout mixes. It is also the principal ingredient of concrete, leading some professionals to assume that the methods and materials used to produce strong, durable concrete also apply to masonry technology. But, while similar in some respects, concrete is fundamentally different from masonry mortar and grout.

The most important physical property of concrete is compressive strength, but the requirements for mortar and grout center primarily on bond strength. Concrete is a structural material, while mortar and grout form only parts of a structural system. The primary distinction between concrete and mortar is that, where quality concrete is made using the *minimum* amount of water for workability, quality mortar is made with the *maximum* amount of water for workability and good plastic mortar properties. Concrete mix proportions state very specifically the amount of water that is to be used, and no additional water may be added at the job site. By contrast, ASTM C270 (Standard Specification for Mortar for Unit Masonry) and C476 (Standard Specification for Grout for Masonry) give proportion limits for all ingredients except water. Water content is controlled by the mason on the job site, and retempering (moistening and remixing of mortar) is permitted within the first 2½ hours of the initial mix.

Mortar and grout are similar to concrete in that they contain cement, aggregate, and water. Mortar aggregate is limited to well-graded sand (ASTM C144), but grout aggregates can be either sand or sand and pea gravel combined (ASTM C404), depending on whether "fine" or "course" grout is being mixed. Some mortar mixes use a preblended, proprietary masonry cement to which only sand and water are added. More traditional mixes use portland cement and hydrated lime (ASTM C207, Type S) as the cementitious ingredients. Admixtures seldom are used in either, and in fact are discouraged by industry authorities. As a rule, if admixtures are used to produce or enhance some spe-

cial property in the mortar, project specifications should require that laboratory tests establish the effects on strength, bond, volume change, durability, and density.

Concrete does not contain lime. Lime as an ingredient in mortar actually predates the use of modern "cements." As now used in combination with portland cement, lime adds plasticity to the mortar and grout. Its plastic flow qualities help the mortar to permeate tiny surface indentations, pores, and irregularities in the masonry units and develop a strong physical bond, as shown in Figure 1 (for further information, see Reference 1). Lime increases the water-carrying capacity of the mortar and also improves water retention so that the mortar or grout resists excessive suction from dry, porous units. The slow setting qualities of lime also contribute to the ability to retemper mortar.

Plastic concrete needs workability to assure ease of placement and thorough embedment of reinforcing steel. In order to place concrete properly, much greater fluidity is required than would be created by an amount of water just sufficient for hydration (see Reference 2). In comparison, plastic mortar

requirements are a good deal more complicated. Mortar workability is not precisely definable in quantitative terms. A workable mortar (as judged by the mason) has a smooth, plastic consistency, is easily spread with a trowel, and readily adheres to vertical surfaces. Well-graded, smooth aggregates enhance workability, as do lime, air entrainment, and a maximum amount of mixing water. Air content should be limited to 12 to 14 percent for cement-lime mortars and 18 to 22 percent for masonry cement mortars (ASTM C91). This is significantly higher than the 2 to 7 percent allowable for concrete. The bond strength of air-entrained mortar has been found to be as much as 20 percent lower than a basic non-air-entrained mix (see Reference 3).

Variations in unit materials and in environmental conditions affect optimum mortar consistency. Mortar for heavier concrete block units and stone must be more dense to prevent uneven settlement after unit placement, or excessive squeezing of mortar from the joints. Warmer summer temperatures require a softer, more moist mix to compensate for evaporation. Although ideal mortar workability is easily recognized by the mason, the diffi-

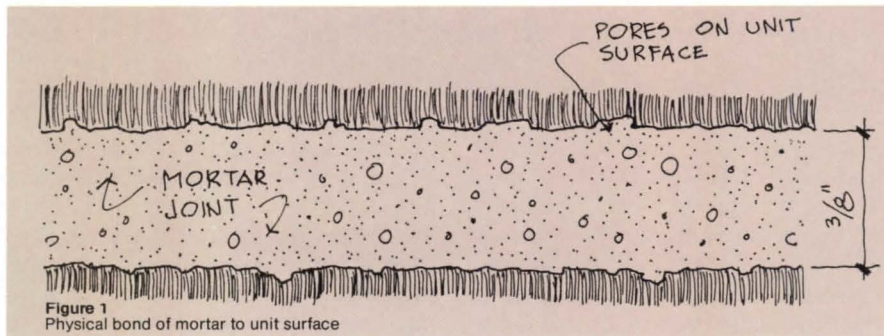


Figure 1
Physical bond of mortar to unit surface

culty in defining this property precludes a statement of mixing water requirements in mortar specifications.

A good mortar's ability to retain its plasticity in contact with absorptive masonry allows the mason to align and level the units carefully without breaking the bond. Less retentive mixes will bleed moisture, creating a thin layer of water between the mortar and the masonry unit, which substantially reduces bond strength.

The single most important property of hardened mortar is bond strength. We have seen already that plastic mortar qualities have a great influence on bond. Workmanship too is very important. Full joints must assure complete coverage of all contact surfaces. Do not permit furrowing of bed joints or slushing of head joints. Do not move or adjust a unit once it is set in place, or the bond will be irreparably damaged. Highly water-retentive mortars allow more time for placing units before evaporation or unit suction alters plasticity and flow. Lightly tapping units into place with the trowel handle can increase bond strength 50 to 100 percent over hand pressure alone.

The compressive strength of the mortar is of secondary importance to bond strength. If brick masonry is stacked 100 feet high, the axial compressive stress in the bottom course is less than

100 psi. Even a moderate-strength mortar (750 psi) is more than adequate to resist such loads with a high factor of safety.

Concrete, of course, can be formulated in an almost infinite variety of mix proportions with compressive strengths ranging from 2,000 to 8,000 psi. (With special

additives, compressive strength can top 19,000 psi. See March '88, page 92.) Mortar, on the other hand, is limited to four specific types as outlined in ASTM C270. Type M mortar is a high-strength mortar mix yielding a minimum compressive value of 2,500 psi when prepared under laboratory conditions. Field-mixed mortar, however, is based on material proportion requirements and cannot be accepted or rejected on the basis of compressive strength requirements of the laboratory property specifications because the curing conditions are drastically different. Field-mixed mortars often do exceed the laboratory criteria and may test out as high as 5,000 psi. Type M mortar is recommended for both reinforced and unreinforced masonry, which may be subject to high compressive loads, severe frost action, or high lateral loads from earth pressure, hurricane winds, or earthquakes. Because of its superior durability, Type M mortar may be used in structures below grade that are in direct contact with the soil.

Type S mortar produces tensile bond values that approach the maximum obtainable with mortar. It is recommended for structures subject to normal compressive loads but that require high flexural bond strength. Type S also should be used where mortar adhesion is the sole bonding agent between facing and backing, such as the application for adhesion-type terra-cotta veneers. Type S laboratory mortars will yield a minimum compressive strength of 1,800 psi. Type N mortar is the most commonly used and is a good general purpose mortar for above-grade masonry. It is well suited for masonry veneers and for interior walls and partitions. This medium strength (750 psi) represents

the best compromise among strength, workability, and economy. Type O mortar is a "high lime," low-strength mortar (minimum 350 psi). It can be used in non-load-bearing walls and partitions, in exterior veneers that will not be subject to freezing in the presence of moisture, and in solid load-bearing walls where compressive stresses do not exceed 100 psi. Type O mortar often is used in one- and two-story residential work and is a favorite among masons because of its excellent workability and economical cost (see Reference 4).

Masonry grout is different from both mortar and concrete, although it shares some characteristics with both. Like concrete, grout in reinforced masonry construction sometimes is required by design to have a minimum compressive strength. Like mortar, however, its primary function is bond. Grout must be capable of bonding reinforcing steel to masonry units so that tensile stresses are transferred to the steel while the masonry resists compressive loads. The bond must be complete and intimate so that both elements exert a common reaction under load. The two things that distinguish grout from mortar are (1) a smaller proportion of lime in the mix and (2) greater plasticity and fluidity. Because the areas into which masonry grout is placed often are small and full of reinforcing steel and anchors, it is essential to

have a high-slump, fluid pouring consistency and to puddle or vibrate the grout into place (see Reference 5). If the grout is too stiff, it will not flow properly, cores will contain voids, and reinforcing steel will be inadequately embedded.

The most graphic illustration of the difference in plasticity be-

tween concrete, mortar, and grout is shown in Figure 2 (see Reference 6). The very high water to cement ratio for grout ordinarily would indicate a relatively low compressive strength. However, when the grout is placed in the wall, its water to cement ratio is reduced rapidly to a low value. The water absorbed by the adjacent units is retained for a period of time, thus providing a moist condition for optimum curing. Grout that may have a predicted 28-day compressive strength of several hundred psi based on the water to cement ratio as mixed may prove to have an actual strength of 3,000 to 4,000 psi or higher when the actual core samples are tested. This high strength is attributed to the immediate reduction of water content due to the absorption and to the optimum curing conditions provided in the wall.

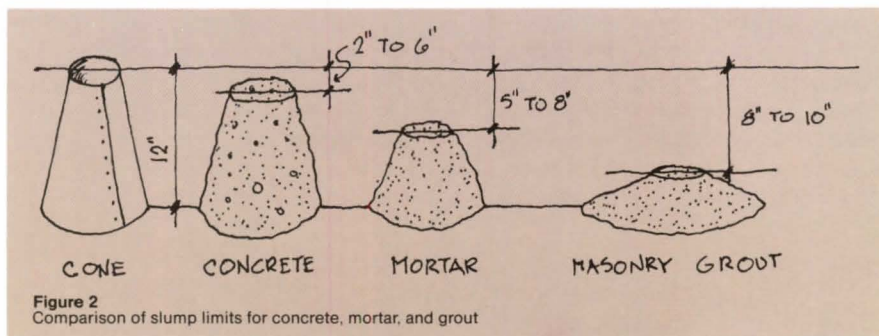


Figure 2
Comparison of slump limits for concrete, mortar, and grout

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Using Epoxies as Admixtures

Epoxies seem to have been around forever and are used extensively by amateur and professional builders alike. Not as well known or understood, however, are the epoxies used as admixtures in concrete and mortar. Designed originally for patching holes and cracks in existing concrete, these epoxies also can provide strong setting beds for anchor bolts, topping for slabs, or waterproof parging. Regardless of their use, epoxy admixtures present the architect with a unique set of concerns.

Chemically speaking, epoxy resin can be loosely defined as a molecule containing more than one epoxy group. The epoxy resin used most commonly as an admixture to concrete or cement mortar is *diglycidol ether of bisphenyl A* (DGEBA). "Bis" means two, "phenyl" means phenol groups, and the "A" stands for acetone. Unreacted acetone and phenol are stripped from the bisphenyl A, which is then reacted with a material called epichlorohydrin. This reaction puts two ("di") glycidol groups on the ends of the bisphenyl A molecule, to give you your garden variety epoxy resin.

A very viscous material that generally must be modified before use, an epoxy resin has no useful physical characteristics (at least for construction) unless it is cured. Consequently, the curing compound is as important to the epoxy as is the resin itself. Curing is accomplished either by linking epoxy groups directly, linking epoxy groups to hydroxy groups, or adding a curing agent. When carefully mixed together, the epoxy and the curing compound react with one another. Curing compounds are hardeners (not catalysts to set off a reaction passively) and as such bond with the epoxy resin to contribute to the strength of the system. The cure is considered complete once all the resin and curing compound molecules have reacted with one another. The final product is "macromolecules," bonded in three dimensions.

"There are approximately 25 basic types of products that come under the label of epoxy resin, and these are derived from 20 base chemical sources," says Douglas Fox of Fox Industries, a supplier of epoxy systems. "Considering the variations in the derivatives, there about 75 base epoxy resins available with which the epoxy chemist can work."

Chemists have been able to formulate

these epoxy resins into thousands of products. Compounding techniques have made available products with a wide variety of properties for specific applications. Therefore, the architect specifying epoxy products, particularly epoxy used with concrete, reinforced concrete, or steel, should approach the manufacturer or supplier with a specific application in mind. For instance, an epoxy grout used for anchoring bolts may not make a good base material in which to set tile. The architect should request all pertinent performance data for the specific application and make sure that the contractor performs the necessary field tests prior to final application.

Properties of epoxy

The wide variety of epoxy products include adhesives, resinous mortars and concrete sealants, and coatings. Epoxy adhesives are capable of bonding almost any combination of dissimilar materials, such as steel to plastic or glass. Epoxy adhesives also have excellent gap-filling properties. Substrates don't have to be machined smooth; in fact, it often is better if the surface is roughened slightly. Nevertheless, any substrate for epoxy must be clean and free of contaminants.

Epoxy sealants have durability and flexibility that match, or in many cases exceed, those of conventional mastics, caulking, or thermoplastics. Coatings made from epoxies will withstand chemical solvents and resist abrasion. Resinous mortars and concrete can attain usable strengths within an hour and when fully cured reach very high strength. Many epoxy resinous mortars and concretes (depending on their type of curing agent and the presence of any flexibilizers or diluents) also are highly chemical-resistant. Once cured, epoxy concretes and mortars have a molecular structure that is cross-linked, presenting a compact and solvent-resistant structure.

Application

Unfortunately, all of the aforementioned qualities will not materialize if the epoxy admixture is not both carefully combined with the components and properly applied to a prepared substrate. Some manufacturers emphasize the importance of working "clean." They stress not only that the epoxy should be mixed in clean containers but

also that the substrate should be clean. Remember, you want a bond with the substrate, not with the dirt on it.

Generally, epoxy systems are made to be applied to cured, dry concrete. Curing time varies with climate, concrete thickness, and water-to-cement ratio, but 30 days usually is considered the minimum curing time before any epoxy can be applied. If there is any question as to whether the concrete is cured sufficiently, it is best to check with a moisture meter. The moisture reading should be 20 percent or less before the epoxy system is applied.

Once the new concrete is cured, its surface should be cleaned so that the epoxy will not bind to laitance material. Laitance, made up of cement and aggregate fines brought to the surface by water bleeding to the top, is about 0.05 inches thick and very weak.

Concrete curing compounds also must be removed. Used as membranes to retard water evaporation, they can contain fatty acids, oils, or resins, any of which can prevent good epoxy adhesion. Curing compounds can be removed either by chemical strippers and water or by sandblasting.

On many existing concrete surfaces, the use of strippers, water, and/or sandblasting isn't sufficient, and acid etching may be necessary. Usually, a solution of one part muriatic acid to four parts water will clean a concrete surface that is moderately contaminated with the grease, oil, and dirt from normal foot traffic. On surfaces that are heavily contaminated, a stronger acid solution may be necessary. The stronger acid should be applied only after the surface is vigorously cleaned with a detergent solution, such as sodium metasilicate (combined with a resin soap) or trisodium phosphate.

Acid must be carefully controlled so that it does not etch the concrete so deeply that the aggregate is loosened. Once the acid is applied, it reacts with the concrete chemicals, bubbling into a greenish slurry. Usually in three to five minutes the acid is neutralized by the alkaline constituents in the concrete. The residue should be flushed away using a high-pressure water jet and a stiff-bristle brush or broom. The contractor can check that all the acid is flushed away by placing a piece of litmus paper on the wet concrete to determine the pH level.

Once the concrete has been flushed, it should be allowed to dry either natu-

rally or with forced air. When a compressor is used to dry a surface, it should be equipped with an oil/water trap to prevent oil contamination of the forced air and hence the concrete surface. When the surface is dry, it should have the appearance of new concrete.

Epoxy coatings/adhesives sometimes are recommended under a concrete slab applied to a steel deck. Before the slab is poured, the steel should be degreased where necessary, sandblasted to remove all rust and scale, and vacuumed clean. Then, the epoxy coating must be applied before the steel has a chance to flash rust.

When dealing with existing wood floors as substrates, the architect often finds they have been coated with creosote or some form of oil, either of which can act as a paring agent. If the wood subfloor is coated with one of these materials, it can be cleaned by sandblasting and then vacuuming. After the floor has been cleaned, the contractor can perform an adhesion test. If the floor fails, it may have to have be covered with plywood.

Once the substrate is prepared, the epoxy resin can be mixed with the concrete or mortar and poured. (Often the curing agent is already mixed with the mortar or concrete products.) Correct temperatures are critical when curing epoxy. Elevated temperatures can reduce the pot life of the epoxy system, while low temperatures can lengthen the curing time. In cold weather, the materials may have to be preheated to as much as 70 degrees Fahrenheit before they can be mixed. The existing concrete and any embedded metal such as reinforcing, base plates, or anchors and bolts also may have to be heated prior to the pour. When patching existing concrete, remember that the epoxy patch will take on the temperature of the surrounding concrete. Existing concrete should be soaked with water before the epoxy admixture is poured. This prevents the water in the patching material from being drawn out, which would cause the patch to shrink. In some cases, when new epoxy concrete or mortar is bonded to old, the edges of the hole or the entire substrate itself will need a separate primer

prior to the pour. In other cases the primer is simply the epoxy additive itself or may require a special epoxy bonding agent. When concrete is patched, the patching material should be compatible with the original fabric. Compatibility is of particular concern in historic structures.

Some companies claim their epoxy-based products can match any color of concrete. This may be true, but keep in mind that epoxy resin materials often have a surface texture that reflects light differently from the original concrete. Also, unmodified cementitious concretes absorb a certain amount of water, whereas epoxy-based products are basically water-repellent. This may be another reason these products ultimately cannot retain an appearance identical to that of the original concrete, despite careful color matching.

The thermal characteristics of these epoxy resin systems can limit their application. For instance, portland cement concrete has a higher resistance to heat than epoxy-resin-based mortars commonly used to make repairs. Although higher temper-

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atures are quoted in some manufacturers' literature, epoxy-resin-based systems should not be exposed to temperatures exceeding 270 degrees Fahrenheit or thermal degradation will be detectable. In some cases, concrete structures that have been extensively repaired with epoxy mortars are no longer fire-resistant enough to meet codes and standards.

During the curing process, epoxy-based mortars and concretes have a lower shrinkage rate than those that are unmodified. This reduces the risk of cracking, particularly at the interface between the patch and the existing concrete. The lower rate of shrinkage means both shallow and deep patches are possible. However, because cured epoxy resin systems have a thermal expansion coefficient three to five times that of concrete, the thickness has to be limited or aggregate added in order to minimize pressure applied to the concrete when temperatures drop.

Many epoxy-based cement products display greater resilience and tensile strength than regular portland cement-based con-

cretes. In relatively small areas, this tends to overcome differences in thermal expansion between the repair and the original material. In larger patches, the higher tensile strength can shear the surface of the surrounding concrete or mortar as thermal contraction occurs.

A few other tips

- Mixing epoxy grouts is not as precise a process as one might think for a material that is perceived to be high-tech. Therefore, the architect should allow the contractor some latitude to compensate for local conditions during mixing and pouring.
- On site, the distance from the mixer to the pour may dictate that the epoxy mortar or concrete be wheelbarrowed for some distance. If this distance is greater than 10 feet, the mixed materials may separate. Therefore, the worker should remix the material with a shovel before pouring.
- Epoxy-modified concretes and mortars have ASTM standards not only for tensile

and compressive strengths but also for water absorption and volume change. If a particular manufacturer's product data sheet does not contain these standards, the architect should be wary. In only a very few cases are there no ASTM standards for systems using epoxy admixtures. In addition to the ASTM information, the manufacturer should provide slump test data for modified concretes.

- Although architects generally are not in direct physical contact with epoxy systems, they should be aware of safe working procedures. Although unreacted epoxy resins are not considered toxic, they can cause severe allergic reactions on the skin of sensitive individuals. Precaution should be taken to prevent contact with the resins and the curing agents—workers should wear protective clothing, goggles, and gloves. When gloves can't be worn, barrier creams are recommended. If epoxy should get on the skin, it should be removed with soap and water, never solvents, which spread the resin.

—TIMOTHY B. McDONALD

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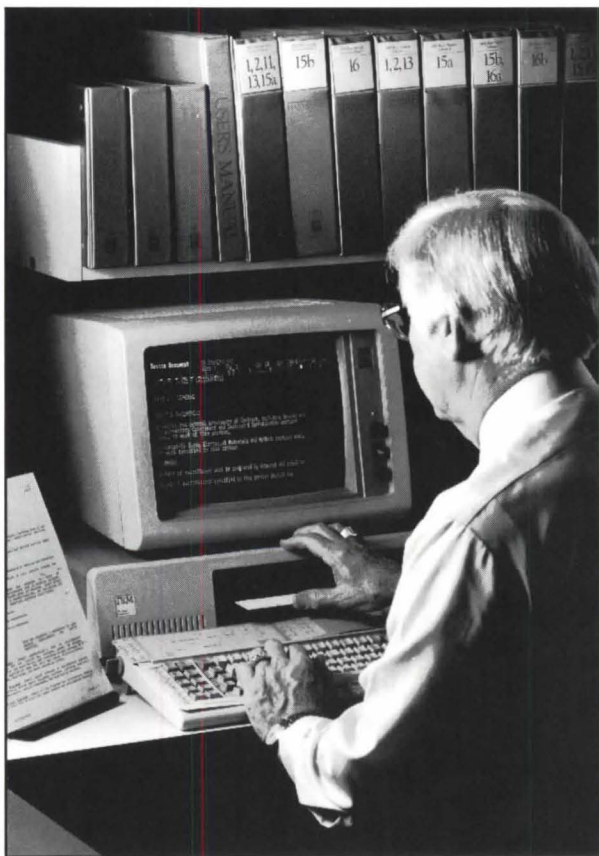
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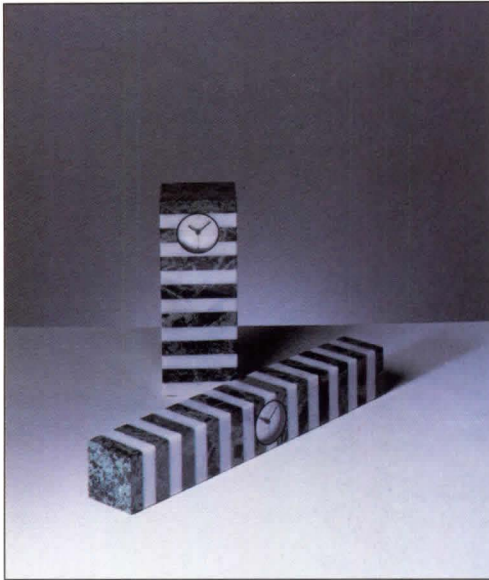


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PRODUCTS



Block Clocks

The green and white carrara marble clocks from the Firenze Clock Collection, above, of Koch + Lowy, are designed by Martine Bedin and offered in two dimensions—one is 4x4x10 $\frac{3}{4}$ -inches and the other 18x2 $\frac{3}{4}$ x 2 $\frac{3}{4}$ -inches.

Koch + Lowy

Circle 403 on information card

Popular Chairs Reissued

The "Ant" series of chairs, below, designed by Arne Jacobsen in the early 1950s, is being reissued in different shades created by Paul Gernes. The eight new colors are in the same gray value so that they match and will not clash when used together.

Fritz Hansen

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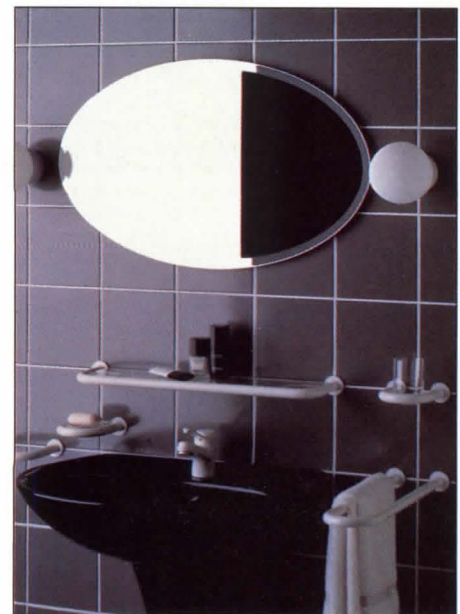


New Line of Bath Accessories

Esotec bath accessories, right, are imported from West Germany by Santile, the U.S. distributor of Adia bath fixtures and accessories. The Esotec line comes in an array of towel bars, rings, holders, hooks, and shelves, in five different finishes.

Santile International Corporation

Circle 401 on information card



Products is written by Amy Gray Light

New Symbols Library Available

American Standard has released a symbols library of its fixtures and faucets enabling three-dimensional representations or two-dimensional CADD-produced plans and elevations to be shown.

The library is to be used with Autocad Release 10 software and is provided in a three-disk format.

American Standard

Circle 415 on information card

Curved Glass Options

Bent Glass Design Inc. is a recently formed manufacturer of curved glass that uses in-house CADD to assist users desiring intricate curved glass designs. Bending options, sizes, and colors are available in a wide range for residential and commercial applications. A product bulletin describes the company's manufacturing capabilities and comes with a table of specifications for various types of bends and general tolerances.

Bent Glass Design Inc.

Circle 417 on information card

New Acoustic Panel

Peabody Noise Control Inc.'s Hard Side acoustic wall panels have a molded glass fiber core with chemically hardened sides that can be molded to any interior appli-

cation. The Class A hardening solution applied to the edges allows them to be rounded, squared, beveled, or mitered.

The sound-absorbing panels achieve a minimum NRC rating of 0.60 at 6-7 PCF density. Hard Side comes in many sizes: 1/2-, 1-, 1 1/2-, and 2-inch thicknesses; standard widths of 24, 30, 36, 42, and 48 inches; and standard lengths from 24 to 96 inches, in six-inch increments. Custom configurations also are available. The panels can be installed with concealed rear- or edge-mount mechanical clips, Velcro, or magnetic fasteners.

Peabody Noise Control

Circle 418 on information card

Vinyl-Surfaced Gypsum Wall Panels

Gold Bond's newest Durasan pattern of embossed vinyl wall panels is marketed under the Mirage name and available in three new colors—Caravan, a plum-beige; Sahara, a soft, neutral gray; and Camel, a warm tan-gray.

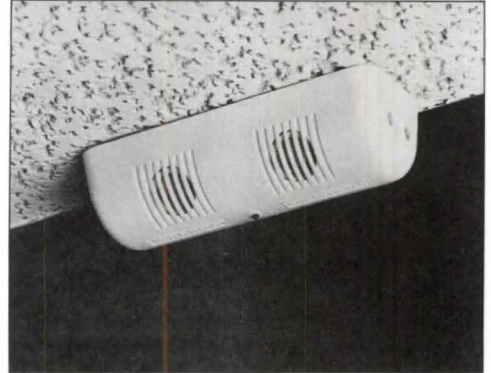
The Mirage name is evoked by the textured patterns that feature embossed diagonals and crossing filaments that seem to vanish and then reappear with shifting angles of light.

The panels combine the durability of gypsum wallboard with long-wearing vinyl and may be used for fixed walls

or with Gold Bond's GB-350 movable wall system, a demountable partition system for office interiors. The panels are 4 feet wide and up to 12 feet long, and come in 1/2-inch or 5/8-inch thicknesses. They also feature wrapped edges.

Gold Bond Building Company

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Ultrasonic Occupancy Meters

Novitas Inc.'s Light-O-Matic sensors detect normal, minor movements and switch on lights automatically when someone enters the room. If no motion is detected within a preselected period of six to 12 minutes, the lights go off.

Novitas Inc.

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Products continued on page 137

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■ ■ An Esteemed Jury of The Arts and Media

The competition will be judged by professionals in the fields of photography, architecture and print media (may change without notice):

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- Arthur Ollman, Executive Dir., Museum of Photographic Arts, San Diego
- Sam Hall Kaplan, Architecture Critic, Los Angeles Times, Los Angeles
- Michael LaBarre, AIA, Principal SGPA/Architecture & Plng, San Diego
- Sandra S. Phillips, Curator of Photography, San Fran. Museum of Modern Art

The Jury seeks the artful expression of people involved with architecture. The Jury will not be judging the architecture, but rather the successful interaction of people with building(s). Photo images are not limited to types of buildings (work, play, leisure, shopping, etc.).

GUIDELINES FOR ENTRY

1. Black & white, 8" x 10" photos only, mounted on a 14" x 16" single black mat.
2. Ten dollar submittal fee per entry. Limit of six submittals per entrant.
3. All selected entries become the property of SGPA/Architecture and Planning.
4. Entrants must be amateur photographers from the Western United States only, submitting only their unpublished work.
5. All Entries must be received by June 23, 1989.
6. Entrant's name, address and phone number must be taped to the back bottom right corner of each entry.
7. Model releases, as appropriate, must also be taped to the back of each entry.
8. Pre-addressed return catalog envelopes, with postage, must accompany each entry.

Send entries to:
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Furniture for the Electronic Library

Worden Co. offers library furniture to house current and future electronic equipment, with wire management capabilities to corral wires and extension cords and to help prevent power failure due to power overloads. All wire management systems are UL-tested for stability and safety.

Diametron tables are based on an interlocking system of cast corner hubs, steel support rails, and 2½-inch-diameter steel legs. The framework provides a firm, free-standing base to which the top is secured. The tops can be specified in veneers, laminates, or marbles. Bases are available in 11 colors of diakote, in chrome, or in black plastisol.

A streamlined library table (right) has a built-in lamp mounted through the table-top, while the electrical cord is wired through the hollow table leg and emerges near the base.

The table measures 48x72x29 inches, the lamp is 36 inches long and 18 inches high, and the lamp housing is 3½ inches in diameter.

The Worden Company

Circle 420 on information card

Exterior Colors Added to ColorAnswers

Sherwin-Williams has added a full range of exterior colors to its recently introduced interior ColorAnswers color selection system.

More than 400 exterior colors have been added to the system, which already included 840 interior colors. A color in a fan deck can be matched to a tab divider in an accompanying compact color case. Each sample has a color name, number, and light reflectance value listed repeatedly on the back.

Sherwin-Williams

Circle 421 on information card

New Tile Lines

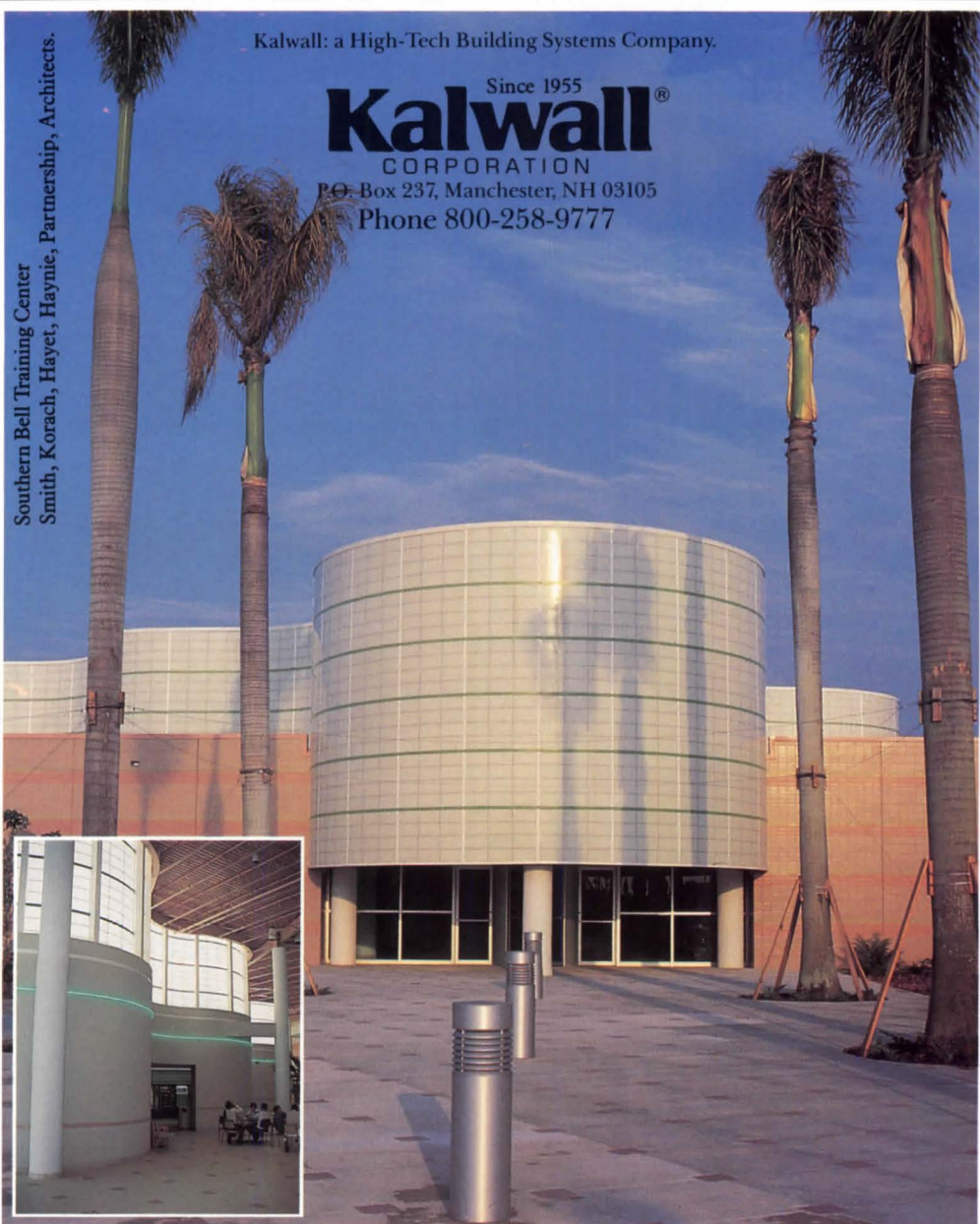
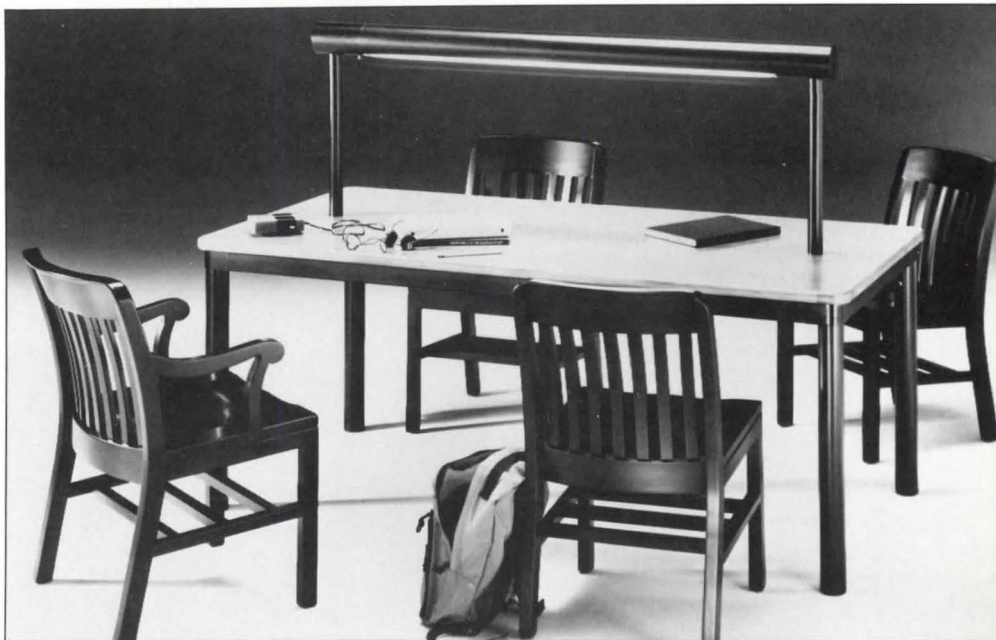
Epro Inc. offers several additions to its line of handmade ceramic tile. The Gallery collection is available in 12 colors and 15 sizes, all of which coordinate with hand-painted colors in the A'La Carte collection of accent tiles. Other colors can be created to match fabrics, wall coverings, and other design elements at no additional charge. Sample color tiles are said to be ready for shipment within two weeks.

Epro's A'La Carte collection of hand-painted, hand-pressed ceramic accent tiles features field flowers, country herbs, and delicate accent borders of English ivy and a floral trail. The A'La Carte Floral collection is composed of individual 4x4-inch tiles in a choice of six field flowers on a background of either cream or white. The underglaze colors in these lines match the Gallery collection of contemporary custom colors, allowing for designs that will blend with floor and countertop color selections.

Epro Inc.

Circle 406 on information card

Products continued on page 138



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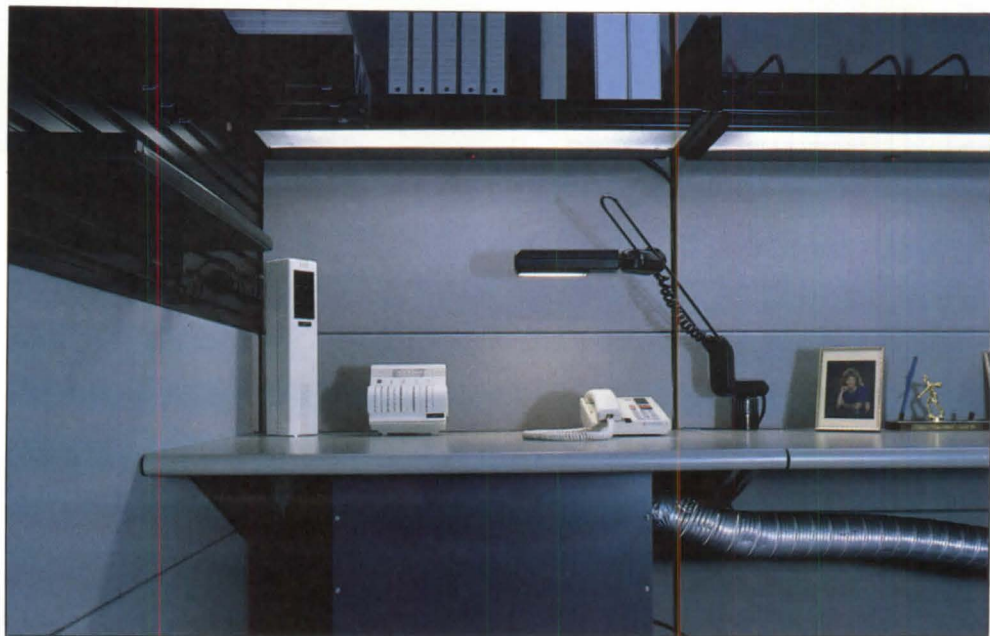
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System Customizes Office Space

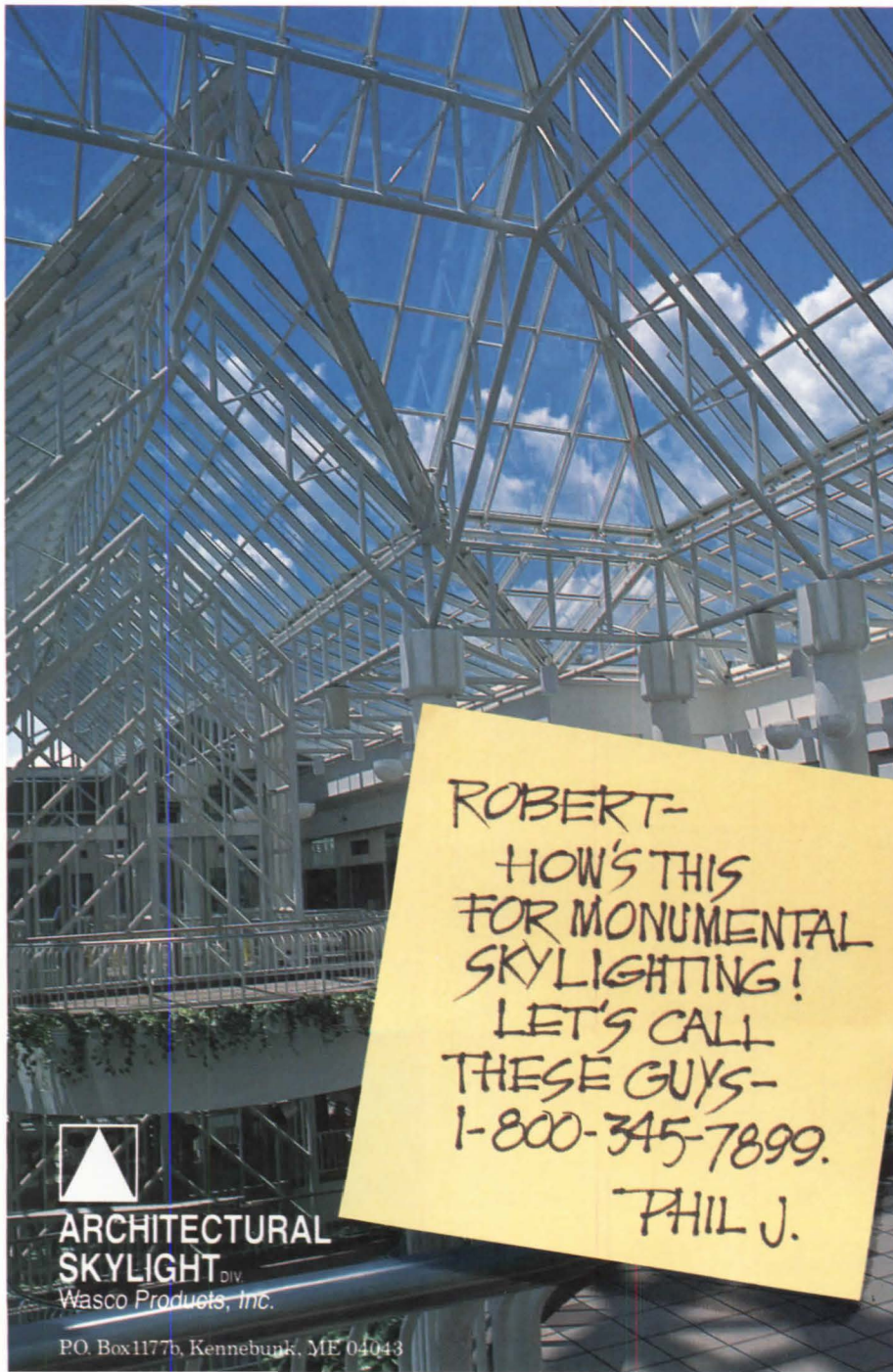
A new automation system from Johnson Controls called Personal Environments allows employees at open-office workstations to control air temperature and flow, lighting, and white noise. (Prototype Personal Environments workstation shown right.)

Air, electrical wiring, and telecommunications cabling are routed through vertical partitions between offices or through a raised floor using the Personal Environments system. Each workstation has adjustable air vents on both sides of a desk, enabling individual employees to regulate the temperature, direction, and volume of air flow.

A radiant heat panel under the desk also can be controlled individually to supply additional warmth as desired. Electrostatic filters help remove dust, particles, smoke, and gaseous contaminants such



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as cleaning compounds or fumes from carpeting. Controlled task lighting provides additional illumination where and when necessary and helps eliminate glare from computer terminals.

Employees can adjust a control generating white noise in whatever intensity is needed to drown out surrounding conversations and office noise.

A motion sensor detects a worker's movement, and when the individual leaves the workstation the sensor sets the levels automatically to an energy-efficient level until the worker returns, then readjusts the air flow and temperature to pre-selected levels. A computer monitors settings in each office, determining the need for more warm or cool air in the area.

The company claims that, if environmental problems in open offices are corrected, employee productivity can be increased by as much as 15 percent.

Additionally, the system is designed to give architects more flexibility in laying out open office floor plans. Since air distribution is through either vertical panels or a raised floor, placement of office systems and furniture is not limited by surrounding air vents and lighting fixtures.

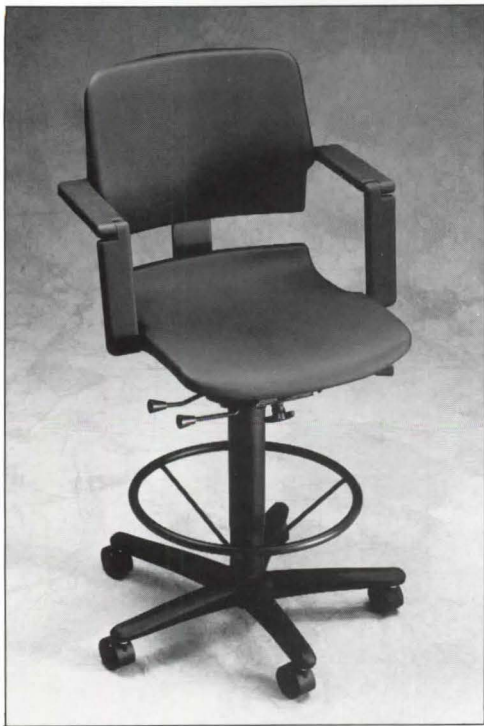
Eliminating suspended ceilings contributes to floor space, since these ceilings normally take up two or three feet of room depth. The savings can result in as much as an extra floor of space for every six floors without increasing the height of a new building.

Although Johnson Controls has no specific plans to release Personal Environments as a product until later this year, it plans to install test sites in addition to the benchmark productivity studies being done in one of its offices in Milwaukee. The potential market consists of more than 450,000 office furniture workstations throughout North American businesses, the manufacturer states.

Johnson Controls Inc.

Circle 405 on information card

Products continued on page 141



Technical Seating Line

Panel Concept's Omnific technical seating line won a silver award for new product design from the Institute of Business Designers (IBD) last October.

Omnific Tech stools (above) come in either 17- or 19-inch-wide models, with articulating arms that can be raised or lowered together or individually. The chair's molded urethane construction is contoured for flexible support accompanying each body movement, and the molded urethane may be formulated for electrostatic dissipation protection or to meet a variety of fire code requirements. The lint-free urethane construction makes the stools appropriate for clean-room environments.

The stools come in two swivel/tilt options, with an adjustable tilt tension control, pneumatic seat height adjustment, and a fixed, 17-inch-diameter foot ring. Omnific is available in upholstered models with a choice of 20 standard fabrics.

Panel Concepts, L.P.

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Silicone-Organic Copolymer

GE Silicones introduces an elastomeric copolymer called Siltem STM-1500. The amber-transparent, thermoplastic block copolymer of silicone and polyimide can be processed by all conventional thermoplastic molding and extrusion processes, has inherent flame retardance and chemical-resistance characteristics, and is designed to possess excellent electrical properties.

The material is available in its natural amber-transparent state, or it can be custom colored using concentrates in standard wire and cable colors, also from the manufacturer.

GE Silicones

Circle 426 on information card

Products continued on page 142

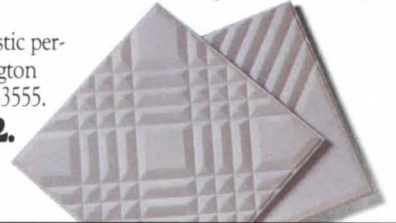


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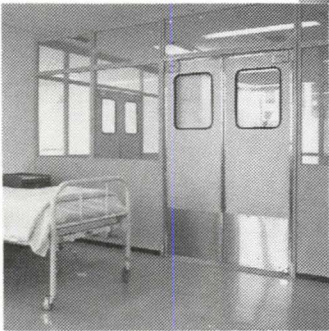
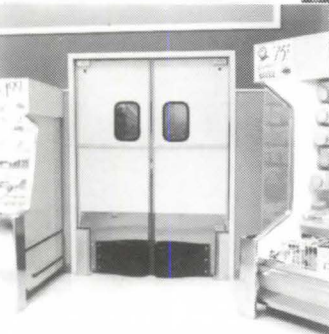
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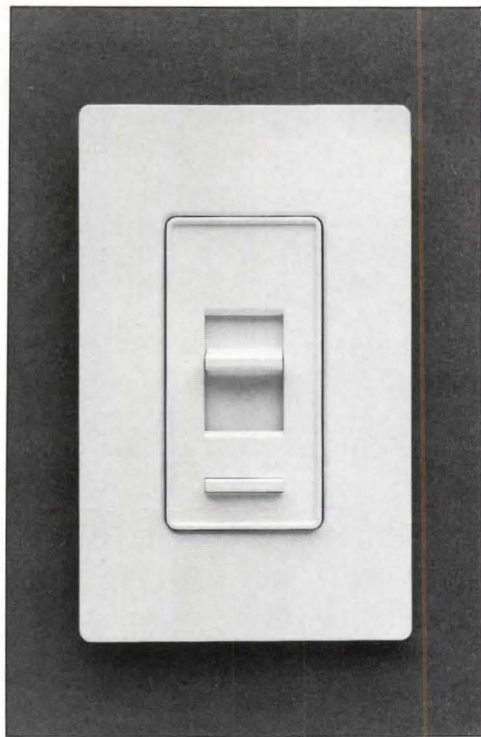
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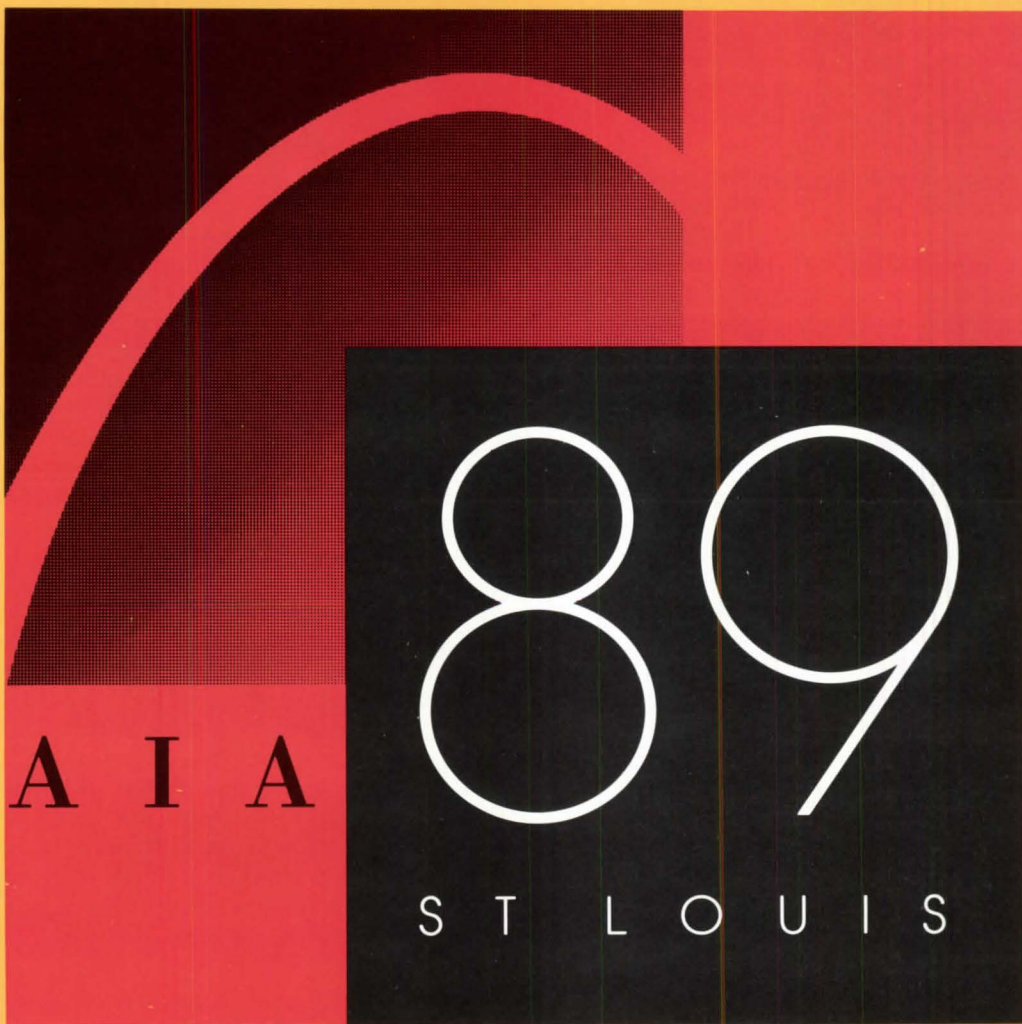
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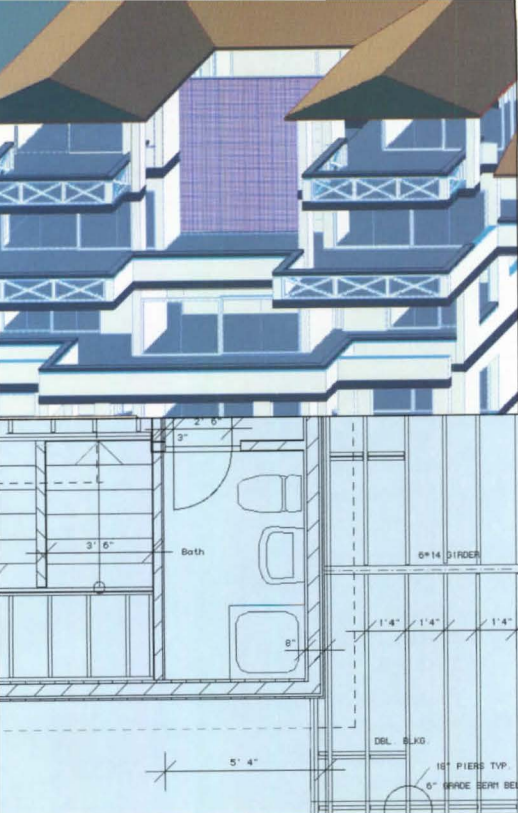
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- cavity	15.87cu ft					1"
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- siding	25.87sq ft					1"
WALL	90.61+90.61sq ft	5	2	8"	frame:dr:1	4 1/2"
- plywood	33.98cu ft				1/2"	
- frame wall	3.78cu ft				3 1/2"	
- gypsum board	3.78cu ft				1/2"	
WALL	40.35+40.35sq ft	5	2	8"	frame:dr:1	4 1/2"
- plywood	15.13cu ft				1/2"	
- frame wall	11.77cu ft				3 1/2"	
- gypsum board	1.68cu ft				1/2"	
door_2'-6"	6	1	2	2'-6" x 6'-8"		4 1/2"
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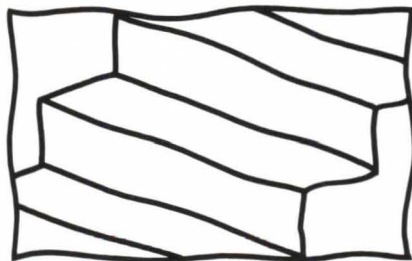
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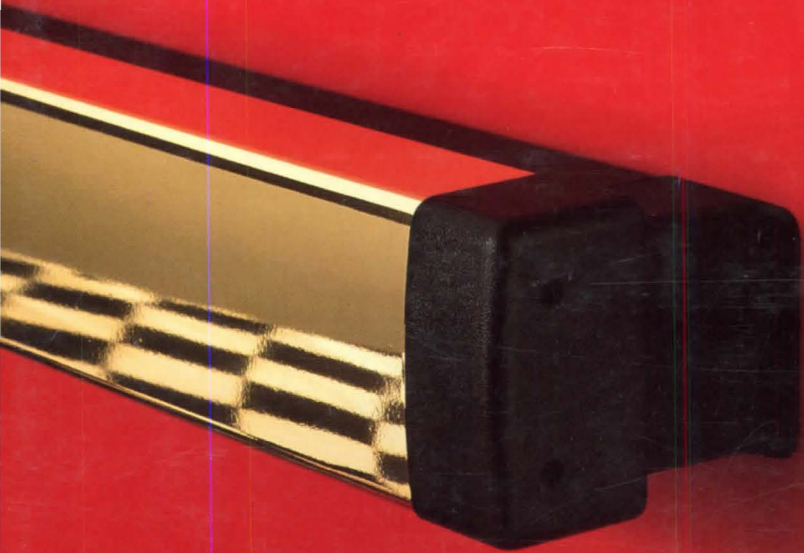
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