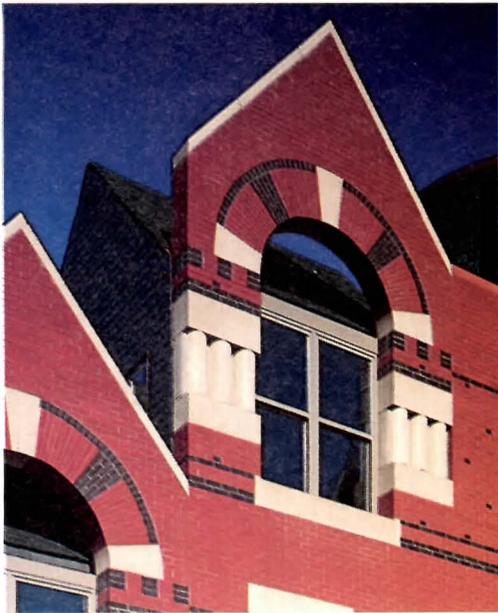


ARCHITECTURE

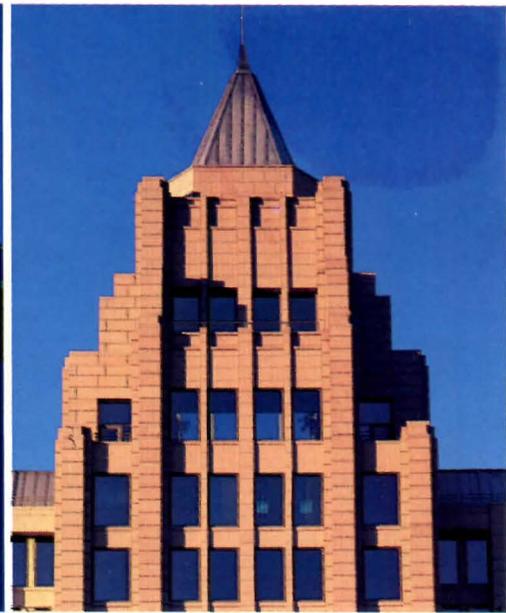
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Over the last decade, the capital has witnessed a boom in its downtown design.

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Hartman Cox's Market Square mediates between commercial and federal Washington.
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Sides of Your Brain

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Photograph by Maxwell MacKenzie

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Recycled and nontoxic materials
Disappearing coastlines
Software for energy analysis



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LETTERS & EVENTS

Fair Politics

In response to the letter labeled "Election Fallout" from Ted Prince, AIA (January 1991, page 16), there are many justifiable reasons for not only architects, but other responsible citizens to support Harvey Gantt's bid for election to the U.S. Senate. Based on observations of Congressional action related to building regulations, it is clear that the Senate, largely made up of individuals trained in law, political science, and business, could benefit the nation to a far greater extent if it included representation from the professions of architecture and engineering.

In recent years, Congress has addressed such complex issues as asbestos in buildings, lead-based paint in housing, accessibility for the disabled, and use of model building codes by federal agencies. Those experienced in these issues, and those affected by the actions of Congress, often recognize more effective solutions that weren't considered by Congress due to a lack of experience among those responsible for legislating these issues.

My interpretation of the AIA's action is to increase the representation of architects—not for the purpose of the "good ol' boy" philosophy or partisan politics, but simply to provide better government.

*David Harris, AIA
Washington, D.C.*

Hopefully, the comments of Mr. Prince regarding the 1990 senatorial campaign of Harvey Gantt are not indicative of any widespread belief among architects that we are incapable of direct participation in activities concerning affairs of the state, or that otherwise qualified individuals should refrain from seeking public office because they happen to be architects. Quite the opposite is true.

My sincere hope is that more architects will seek high public office in the future, and that the AIA will more stridently endorse and support future Congressional candidates among us. Only then will the profession and the country benefit from the unique solution-oriented perspective that architects bring to the problem-solving process.

Knowing Mayor Gantt slightly through past association, I further hope that he is as persistent as he is talented, and that other architects take the time to understand his views on several industry-related issues.

*Lee E. Martin, AIA
Columbus, Ohio*

Global Omissions

Your news report on the Architectural League's symposia on global architecture (February, pages 18 and 20) overlooked a couple of fundamental axioms and conclusions. Firstly, all legitimate buildings and townscapes throughout history have been characterized by a strong cultural identity. This identity informs not only the monuments of a given style, but includes the vernacular permutations that shape daily life.

Secondly, the heralded global or universal culture is still a long way off. We are currently in a transitional state of flux and fragmentation. As a result, no legitimate global style will evolve in the foreseeable future. A sequence of intermittently interesting and occasionally brilliant forays may occur, but will not lead to surroundings which enhance our lives. Witness the blight and occasional devastation of cities throughout Europe, Asia, and the Americas since World War II by the vernacular manifestations of international Modernism—a vernacular reflecting little save banal rationalism and economic expediency: symptoms of a cultural vacuum with no end in sight.

*James Kingsland, AIA
Abramovitz Kingsland Schiff
New York City*

Corrections

In the article "Cincinnati Museums Gain New Life" (February, page 24), E. Verner Johnson & Associates should have been listed as the design architect for the Union Terminal restoration. The original terminal was a joint effort by Paul Cret and Fellheimer and Wagner.

Sussman/Prejza & Company should have been credited as developing the graphics and color scheme of the Aquarium of the Americas (February, pages 52-59).

Ellerbe Becket is also a member of the Austin Collaborative Venture, which designed the Austin Convention Center (February, page 38).

Walter H. Sobel, FAIA, provided programming for the Bexar County Justice Center (February, pages 64-69), with Humberto Saldana, AIA, and Roy Lowey-Ball, AIA, providing programming support.

Landscape Architects Campbell & Campbell collaborated with artist Robert Irwin on the desert courtyard for the Pasadena police building and jail (February, pages 42-47).

April 19-21: "Emerging Forms of Architectural Practice," a symposium focusing on the changes in the sponsorship, design, and production of buildings. Sponsored by the Center for the Study of the Practice of Architecture in Cincinnati, Ohio. Contact: David Saile, (207) 780-5143.

April 26: Deadline for "The Essential Housing Competition," a regional design contest for neighborhood repair in Portland, Oregon's Albina district. Contact: The Architecture Foundation (Essential Housing), c/o the Portland Chapter AIA, 215 S.W. First Ave., Portland, Oregon 97204. (503) 223-8757.

May 3-June 2: "Future Directions in American Urbanism: An Academic Perspective," an exhibition at Second Street Gallery in Charlottesville, Virginia. Contact: Second Street Gallery, (804) 977-7284.

May 3: Ninth Annual Construction Law Seminar at the Illinois Institute of Technology in Chicago. The seminar will include mock negotiations between owners and architects, owners and contractors, and contractors and subcontractors. Contact: Dawn Rupcich, (312) 567-5047.

May 7-June 14: An exhibition of the architectural photography of Judith Turner at the National Institute for Architectural Education in New York City. Contact: Lauren Yessayan, (212) 924-7000.

May 18: "Wright Plus Housewalk," sponsored by the Frank Lloyd Wright Home and Studio Foundation, in Oak Park, Illinois. Contact: Melanie Birk, (708) 848-1976.

May 17-20: "199Issues," the AIA's national convention and design exposition in Washington, D.C., featuring nearly 100 professional development seminars, workshops, and consultations for architects. Contact: AIA, (202) 626-7300.

June 2-8: "Building Systems Automation," a symposium offered by the University of Wisconsin-Madison, Department of Engineering. Contact: Karen Collins, (800) 462-0876.

June 3-5: "MacBuild Conference," a symposium outlining uses of the Macintosh for design professionals, in Los Angeles. Contact: Robert W. Berkowitz, (617) 965-0055.

NEWS

ADPSR Conference ■ Isozaki at Disney ■ Denver Library ■ Chernikhov at Columbia ■ Grand Louvre Exhibit

Salk Institute Addition Unveiled

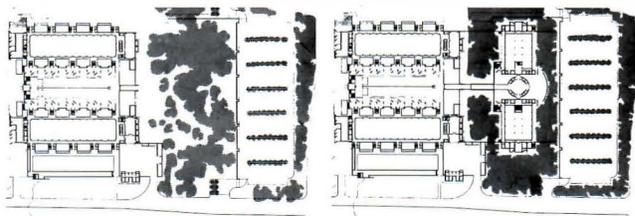
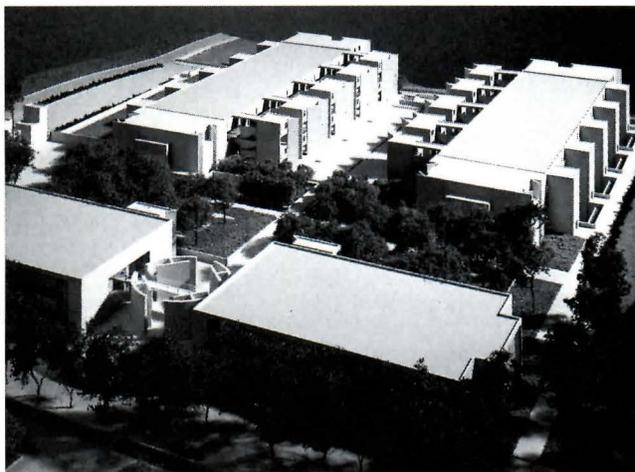
FORMER ASSOCIATES OF LOUIS KAHN HAVE UNVEILED THEIR DESIGN FOR AN ADDITION TO Kahn's Salk Institute in La Jolla, among the finest of the master's few realized designs. Mindful of the furor surrounding an addition proposed by another Kahn alumnus, Romaldo Giurgola, to Kahn's Kimbell Art Museum in Fort Worth, Texas, David Rinehart and Jack MacAllister of Anshen + Allen in Los Angeles have developed a scheme that bypasses the controversial aspects of adding onto a Modern landmark.

Unlike Giurgola's Kimbell addition, which was postponed indefinitely last year, the proposed \$19.4 million Salk expansion would not be attached to Kahn's 1965 complex (site plans, below center), nor does it attempt to replicate Kahn's design, although it would be constructed of matching concrete. Set in a grove of eucalyptus and jacarandas more than 100 feet east of Kahn's building, the three-level addition, with one level below grade (bottom), would house 10,000 square feet of administrative offices, 8,000 square feet of labs, a 22,000-square-foot scientific meeting center with a 300-seat auditorium, and 32,000 square feet of expansion space.

Like Kahn's original, the new building consists of symmetrical wings united by a courtyard (above right). A glass and steel footbridge would span the court between wings, and four "light prism" towers set in a circle would direct attention to this formal entry while bouncing natural light down to a lobby outside the subterranean auditorium.

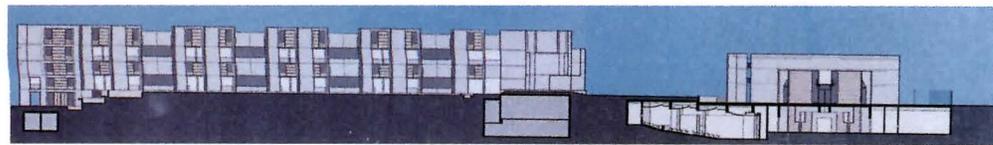
The addition could still cause some fallout. Fifteen feet lower than the original, the 105,000-square-foot building would block views of Kahn's building from the east. It would also do away with the existing sensation of "discovering" Kahn's building after a mystical stroll through a eucalyptus grove. Nonetheless, Kahn's widow and daughter, who opposed the Fort Worth expansion, have given their blessing to the addition, according to MacAllister, as have several of Kahn's former associates. Assuming expedient approval from other government organizations, including the California Coastal Commission, and no Kimbell-like protests, the project is slated for groundbreaking next fall and completion 20 months later. —DIRK SUTRO

Dirk Sutro is the architecture critic for the San Diego edition of the Los Angeles Times.



EXISTING

PROPOSED



A I A B R I E F S

This year's AIA Convention, to be held May 17-20 in Washington, D.C., promises to address "199Issues"—including the environment, community planning, and design. The annual event will feature 38 seminars and workshops, as well as 48 small-group consultations with specialists on such aspects of professional practice as fighting the recession and successful marketing techniques. On the day before the convention begins, five workshops will be held on subjects ranging from interpersonal skills for architects to how to diversify in an uncertain economy.

Invited speakers at the convention will include Senator Daniel Patrick Moynihan, Hon. AIA (D-N.Y.), who will discuss urban issues, and keynote speaker Robert Venturi, FAIA, of the Philadelphia-based Venturi, Scott Brown & Associates, who will discuss architecture as elemental shelter and critique Modern architecture. Urban planner and 1990 Union of International Architects' Gold Medalist Charles Correa, Hon. AIA, will argue his belief that housing authorities should provide proper land-use planning and basic services for affordable housing. Other talks will be given by 1991 Gold Medal winner Charles W. Moore, FAIA; architect and planner Andres Duany, AIA; Rod Hackney, president of the Royal Institute of British Architects; and physicist Amory Lovins, founder of the Rocky Mountain Institute, an environmental think tank in Colorado.

Tours in the city will take advantage of local landmarks such as the Capitol, the Old Executive Office Building, and the White House. Visits to the National Cathedral, Dumbarton Oaks, and a foray through Georgetown are also planned. For registration information, call the AIA Convention hotline at (202) 626-7395.

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DETAILS

Michael Graves and Edward Larrabee Barnes were elected to the American Academy and Institute of Arts and Letters in February.

Designer and educator **Susana Torre** of Susana Torre and Associates, New York, succeeds **James Wines** of SITE as chair of the Environmental Design Department of Parsons School of Design, effective in July.

AIA Gold Medalist **Joseph Esherick** will serve as the University of Oklahoma's Bruce Alonzo Goff Professor of Creative Architecture this spring.

Venturi, Scott Brown & Associates of Philadelphia is designing the Henry R. Luce International Center at Yale University, a 30,000-square-foot building for research and teaching.

Perkins & Will, in association with **Sasaki Associates**, is designing a 73,000-square-foot facility to be shared by the Schools of Architecture and Landscape Architecture and Urban and Regional Planning for the University of Illinois at Urbana-Champaign. Temple Hoyne Buell Hall, estimated to cost \$12.6 million, is scheduled for completion in 1993.

Princeton, New Jersey, architect **William Short**, FAIA, noted for his work in historic preservation, died February 20 at age 66. A partner with Robert Venturi from 1960 to 1963, Short founded **Short and Ford Architects** in 1974. The firm recently won a design award from the New Jersey Society of Architects for its agricultural museum in North Brunswick, New Jersey (below).

Social Responsibility Conference in New York

ON THE WEEKEND FOLLOWING THE END OF what one panelist called America's "First Petroleum War," an audience of 300 assembled to revive a long silenced discourse. Needless to say, no yellow ribbons fluttered from lapels of panelists sponsored by New York's Architects, Designers and Planners for Social Responsibility (ADPSR) to discuss "Social Responsibility and the Design Profession." After all, it was their board of ADPSR that condemned "a U.S.-led and imposed 'New World Order,'" blaming Bush as archangel of death and destruction in the Middle East.

The daylong conference enlisted architects, academics, and hybrids of both at the New York School for Social Research to talk on topics of public space and cultural diversity; changes in demography; economics and communications; urban development vs. the natural environment; and ethnics and esthetics. The definitions and debates flew fast and furious in four panels on topics that ranged from the global macrocosm to the urban microcosm of the built environment.

Sociologist Richard Sennett, author of *The Conscience of the Eye*, distinguished between architects as "responsive," with primary duties to the single client and "responsible" with a commitment to universal and humane obligations. Participants hewed to this quest "to broaden and open the architectural discourse," as coordinator Susana Torre put it, "in contrast to the denial of architecture as a social and political and engineering practice."

If the aspirations were common, the approaches were fragmented. Speakers delved into the hidden city—the empty, abandoned DMZ of the East Village, in the words of urban historian Janet Abu-Lughod; the improv-

erished city of the third world in planner Saskia Sassen's view; or the forgotten landscape of Susan Saegert's studies on women homesteading in abandoned housing.

At one end of the environmental scale, Michael Brill, head of the Buffalo Organization for Social and Technological Innovation (BOSTI) chose to focus on his work with the homeless with AIDS and the dependent elderly, "the vulnerable population far more affected, for good and ill, by architecture." At the other, Richard Ingersoll, editor of *Design Book Review*, pulled out a global yardstick to measure the environmental degradation, our "long-term loss as a biosphere."

Sparks flew between those (like architect David Handlin and Robert Yaro, director of New York's Regional Plan Association) who chose to look beyond the 1 percent of Manhattan to the swelling exurbs. While Handlin dismissed the "isolation and unfriendliness" of the suburban stereotypes of such places as Tampa and Phoenix, Marshall Berman, author of the neighborhood classic *All That is Solid Melts Into Air: The Experience of Modernity* endorsed an urban populism and aspired to open the new school's bunker housing the conference to the richness of life on adjacent 14th Street.

Comparison with the '70s shadowed the speakers. Harvard Law professor Charles M. Haar brought back memories of valiant labors for the urban poor in HUD's "Model Cities," or Floyd McKissick's "Soul City." "Of all the various actors in shaping a city—property owners, developers, politicians—as you look at it, the architect is even less influential than the lawyer," he said.

Above all, then, panelists returned with depressing regularity to architects' roles in the last decade, a time in which they were trained "not to see the connection" between corporate architecture and the underbelly of America. In the words of planner Christine Boyer, "Increasingly we have a tale of two cities—the rich and the poor."

If the solutions to that issue remained foggy at the end of the day, if the image of the architect remained more socialite than socialist, the organizers of the conference emerged feeling that the record-setting attendance and the new push of their group could serve as a "catalyst" for escaping the vanities of the '80s. —JANE HOLTZ KAY



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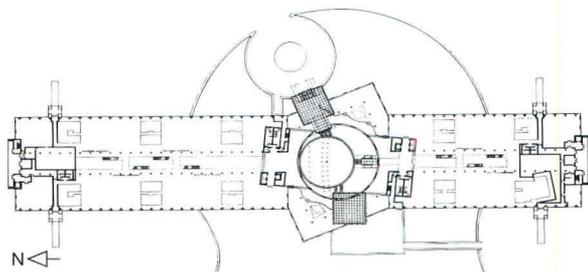
Isozaki at Disney World



THE FINISHING TOUCHES ARE NOW BEING applied to Arata Isozaki's bold, colorful "Team Disney" building in Lake Buena Vista, Florida (above), designed to house several of the Walt Disney Company's administrative departments. This is Isozaki's first building for Disney, a corporation that has, in just a few years, amassed a collection of architectural landmarks by some of the world's leading practitioners.

Built adjacent to an interstate highway interchange and overlooking a manmade lake, the Team Disney building is an arresting sight for motorists as they enter the 29,000-acre Disney compound. Rising out of a rather ordinary four-story office building (below) are brightly colored primary forms: a tilted, gridded box, from which emerges a 120-foot-high concrete drum. What appears to be a decorated cooling tower is actually one of the world's largest sundials—a gigantic void at the building's center.

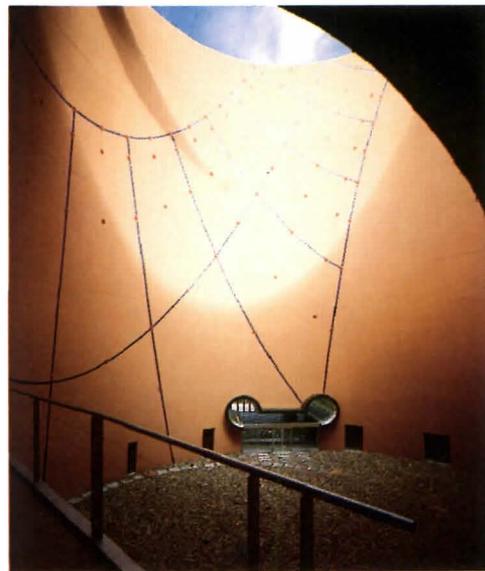
The 820-foot-long building is sited pre-



cisely on a north/south axis and entered from the east side, through a steel canopy shaped like Mickey's ears (interior view, bottom right). The entrance leads to a peripheral circulation space, and eventually to the heart of the sundial, its walls sloping in at different angles high overhead. A yellow stylus cantilevers into the void, the shadow of its spun aluminum "ballpoint" falling precisely on the red tile disks that designate solar time (top right). Numerous rows of these disks arc along the drum's inside wall, describing the sun's path throughout the year. The line of summer solstice extends off the wall and stretches along the floor of the drum, which is covered with large, smooth rocks. A bridge along one side of the drum provides access between offices and conference area (center right). A path of stone disks, inscribed with quotes about time from famous figures such as Donald Duck and Albert Einstein, follows the outline of the drum's rim. It is a moving space, time-filled and timeless, which seems to rise above the Disney philosophy of "entertainment architecture."

The wings, extending north and south from the drum (plan), contain offices for 1,200 employees, and, in contrast to the building's center, are studies in gray. They are neutral canvases for the bold forms and colors of 26 Sol Lewitt murals in atrium galleries. Exterior materials are granite, stucco, painted steel, and aluminum, whose colors vibrate beneath the Florida sun.

Architect of record for the project is Hunton Brady Pryor Maso Architects of Orlando, landscape architecture is by Foster-Conant & Associates, and design engineering by Tilden Lobnitz & Cooper. Associated Space Designers completed the interiors. —MICHAEL J. CROSBIE



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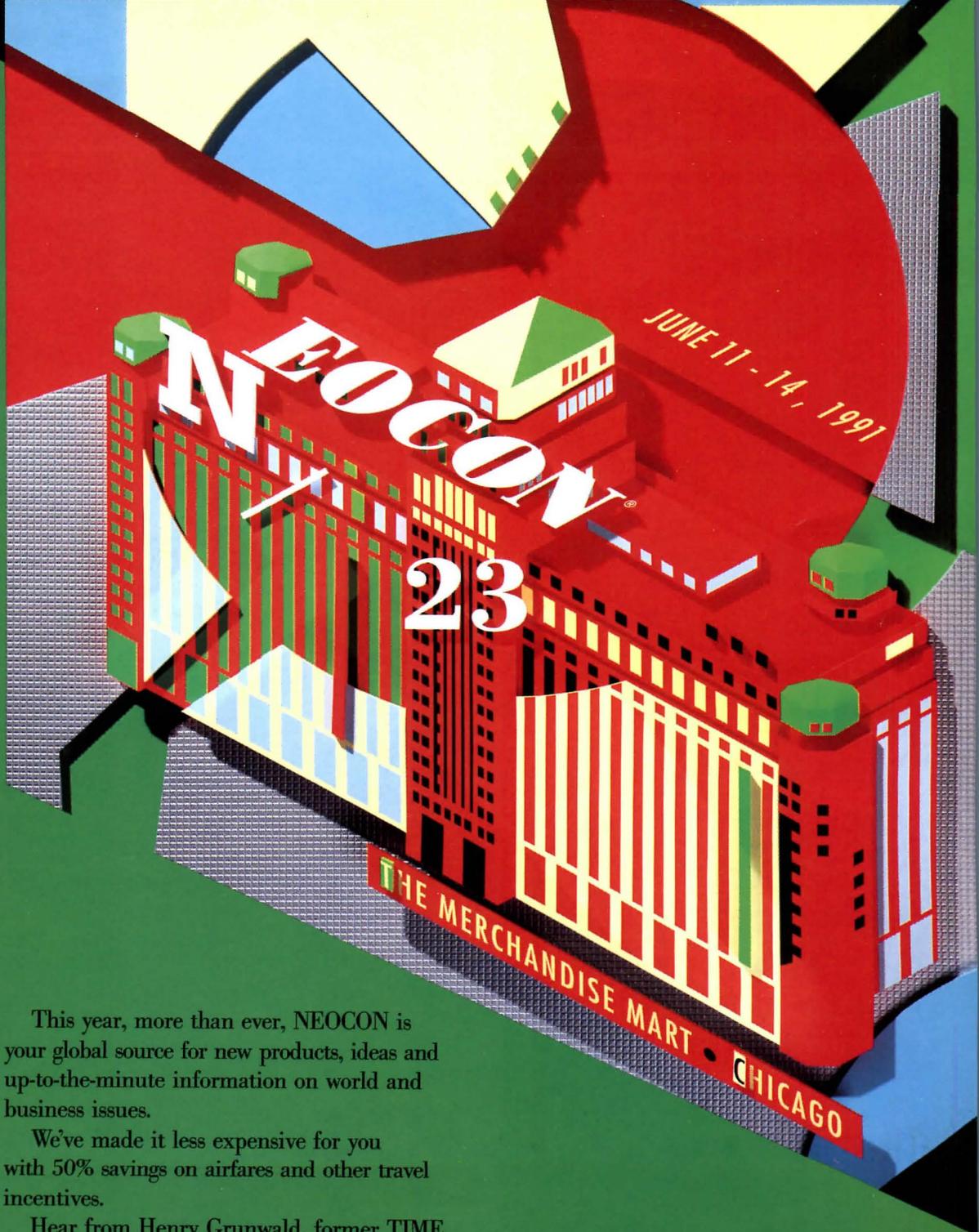
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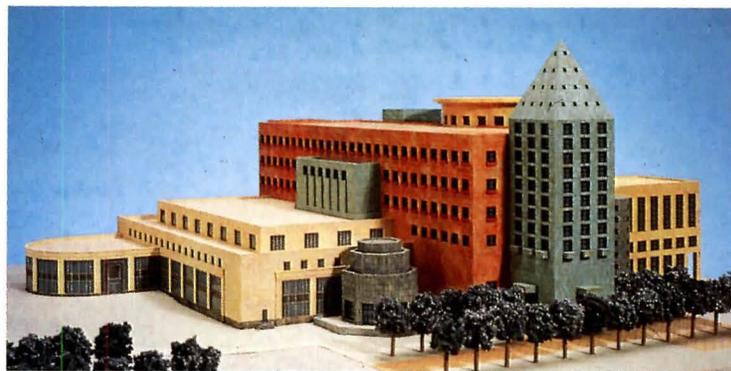
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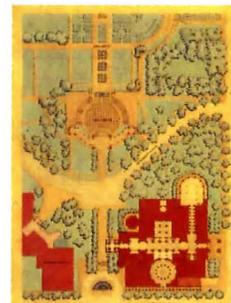
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Denver Library Competition

ON MARCH 5, FOLLOWING FOUR HOURS OF debate, the Denver Central Library Selection Committee chose the Klipp Partnership of Denver with associate architect Michael Graves to build a \$64 million central library facility in downtown Denver. The committee, comprising elected and appointed city officials, library staff, community representatives and architects, chose the Klipp/Graves submission over a preservation scheme by Robert A.M. Stern Architects of New York with Urban Design Group of Denver and a bold, Modernist solution by Hoover Berg Desmond Architects of Denver and F S Partners of Dallas.



As specified in the program, the new 450,000-square-foot structure will incorporate Burnham Hoyt's early 1950s central library, located in Denver's Civic Center. According to the architects, the Klipp/Graves scheme preserves the integrity of the historic Hoyt library by turning it into one of several distinct elements flanking a central mass.

Diane Legge of Chicago, a member of the professional advisory committee, believes that the Klipp/Graves design goes beyond the conservative treatment by the Stern/Urban Design Group team in not only sympathizing with the library's Neoclassical surroundings, but allowing future architects to bring their design ideas to 60 blocks of undeveloped land that abut the library's south facade. In her view, the committee not only chose the more courageous solution, but "a building for 50 years or more." The city hopes to break ground for the three-year project within the next year. —KAREN SALMON

Clad in red and yellow sandstone, the main block of the Klipp/Graves scheme (top) provides a backdrop for the Hoyt library, thus maintaining the original building's civic presence to the north, facing downtown Denver (site plan). The south elevation (above) reveals an assemblage of parts in a bold color palette, including a "drum" and entrance tower to the west, already dubbed the "pencil point" by the local press.

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Iakov Chernikhov at Columbia University

VICTOR HUGO, IN HIS BOOK *NOTRE-DAME DE Paris*, suggests that the discipline of architecture was being threatened by the printing press and could die in the face of a medium in which thought was more powerful and elusive. However, far from proposing that architecture should surrender to its own image, Hugo suggested that the reemergence of architecture could be predicated on a capacity

for "speech," and thus grounded in a reciprocal relationship between itself and the printed word.

Today, these thoughts certainly appear to have prognostic value, since it is increasingly difficult to extricate contemporary architecture from the dissemination of its images in drawings, photography, and film. And, in a time in which architectural culture seems to

be consuming its own history under the aegis of representation, the exhibition of the work of Soviet avant-garde architect Iakov Chernikhov would seem to provoke this kind of questioning. Indeed, the drawings of Chernikhov, exhibited at the Arthur Ross Gallery in Buell Hall at Columbia University from last December until this March, and scheduled to travel to Chicago and foreign cities over the next year, can only be understood in relation to their own representation. The exhibit, curated by New York architect Terence Riley, presents the drawings in a chronological fashion, organized according to the publication of Chernikhov's books in the 1920s and 1930s. Each book is represented through a series of drawings, which builds from simple instructive images to a more complex formal experimentation. This organization, and the presence of the actual books in the exhibit, further emphasize the importance of the relationship between the architect's drawings and their representation in book form.

In viewing the exhibit, one becomes aware of the richness and complexity of Chernikhov's graphic work, which is further underscored by the presence of his leather-bound portable drawing kit. His images are impressive for their breadth and scope, from the purely artistic speculation of the drawings of

Continued on page 42



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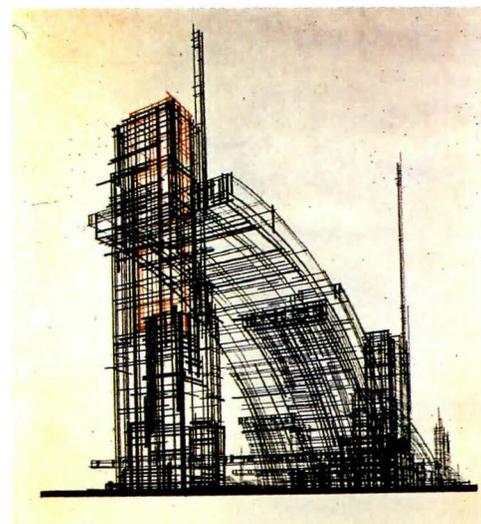
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A composition from Chernikhov's "Architectural Fantasies," 1933 (below).



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Chernikhov at Columbia *continued from page 38*

The Art of Graphic Representation to the formal exercises of *A Course of Geometrical Drawing*, to the constructive and imaginative genius of *Architectural Fantasies*. They are images that instruct through their form and content, and through the empirical methodology that went into their conception and execution.

Despite attempts to attribute political motives to Chernikhov, the message of his

drawings is much more about a method of inquiry. This insight was provided by Chernikhov's architect grandson, Andrei, at the colloquium that accompanied the exhibit. In his presentation, the younger Chernikhov affirmed that his grandfather's work was undertaken during a time of profound change in the structure of the Soviet intelligentsia, a change which fostered a new exploration of

the arts. He also suggested that Chernikhov was above all else a teacher. His drawings were thus a research into the language of form conducted in the context of academia, and as such, their intent was didactic rather than polemical or ideological.

Perhaps the most penetrating insights were provided by critic Kenneth Frampton, moderator of the colloquium, which included presentations by Bernard Tschumi, Robert Slutzky, and others. Frampton touched upon the most problematic question surrounding Chernikhov's work. "Why, now, have we become so interested in Chernikhov?" he asked. "Whatever does this tell us about the current state of architecture?" Far from offering an answer to this question, the colloquium only further reinforced the degree to which we seem to want to rewrite the history of Modern architecture by connecting our present situation with that of the Soviet avant-garde. This is unfortunate, as, taken out of context, the works of that period, including the drawings and publications of Chernikhov, lose much of their meaning. In this process, architectural culture today would appear to become a victim of its own representation.

—BRIAN McLAREN

Brian McLaren is a New York-based architect and writer who currently teaches at the New Jersey Institute of Technology.

Chernikhov's design of a factory from "Architectural Fantasies," 1933 (below).



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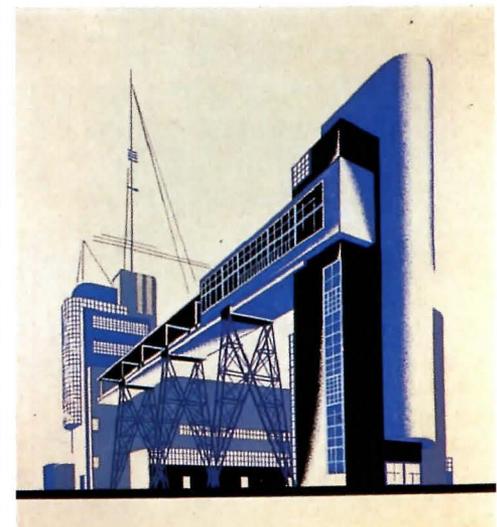
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Grand Louvre at the Octagon

IT'S IRONIC THAT THE LOUVRE WAS FIRST A fortress, built to weather attack. Even eight centuries of conflict couldn't have prepared it for the critical fire it's drawn in the past 10 years. In 1981, faced with the need to make the museum more accessible and integrated with contemporary Paris, French President Francois Mitterrand challenged visionary architect I.M. Pei to create much-needed space without compromising the Louvre's historic integrity. The architect responded by designing an underground addition with room for everything, even parking. Above it, he planted a grand plaza—and the now famous pyramid, seen by some as the multipurpose tip of the metaphorical iceberg that underlies the entire project. To Pei's critics, however, the pyramid is architectural sacrilege.

"The Grand Louvre: Entering a New Century," an exhibition at the Octagon from February 6 through May 21, 1991, documents the controversial project. Organized by the American Architectural Foundation, the exhibit succeeds on many levels, speaking to the layperson as well as to architects. It combines French history with the technical intricacies of building design, told through some 150 original drawings, models, maps, engravings, rare books, humble napkin scribbles, and computer-generated graphics.

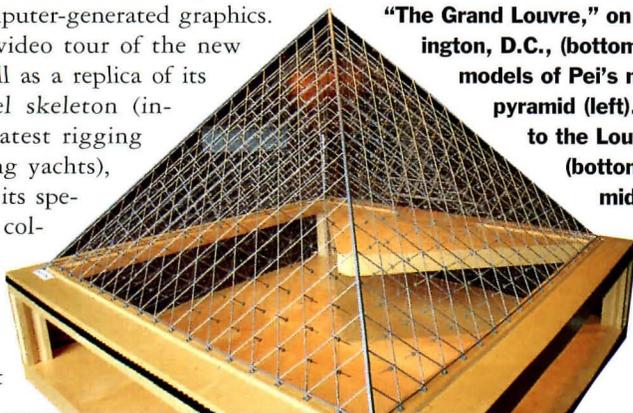
There's also a video tour of the new pyramid, as well as a replica of its impressive steel skeleton (inspired by the latest rigging design for racing yachts), and samples of its specially designed colorless glass.

The exhibit also contains a few surprises. The Louvre, it

turns out, is crooked—and misaligned with the old Tuileries palace and the great axis of Paris—because it was built along a bend in the Seine River. Trying to camouflage its embarrassing asymmetry became an obsession over the centuries (the exhibit includes several creative solutions), until Napoleon I threw up his hands in 1812 saying, "It makes little difference whether a great edifice possesses complete regularity...What is real is always beautiful."

Pei's addition is conscientiously presented, but in a way that is curiously neutral and almost anticlimactic. All the documentation is there: how it was conceived, the marvel of its execution, what worked and didn't work. But there is no acknowledgment of the controversial nature of the project—the thrill and danger of changing a cultural icon is juicy stuff. Some see Pei's structure as a perfect, beautiful complement to the Louvre; others feel more uneasy. It's everything people love and hate about architecture, symbolic of the challenge of speaking to the future while respecting the past. People can't help but react strongly to it, but, unfortunately, this drama is not evident at the Octagon. ■

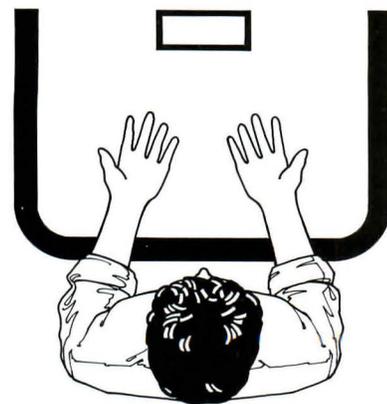
—TRISH SCARLETT



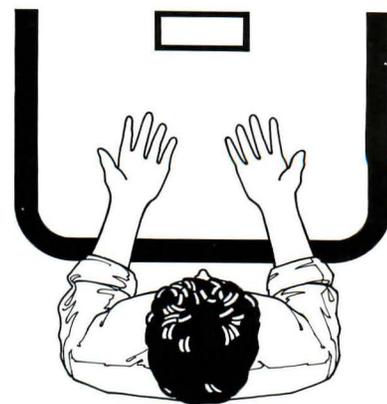
"The Grand Louvre," on view in Washington, D.C., (bottom right), includes models of Pei's now famous pyramid (left). A centerpiece to the Louvre's front yard (bottom left), the pyramid is seen as the multipurpose tip of the metaphorical iceberg that underlies the entire project.



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“Joe is very available”

T. Graham Bradley is a principal of Bradley Likins Dillow Drayton, AIA, a 60-year-old firm located in Decatur, Illinois. He is a Fellow of the AIA and a past director of the national AIA. He is also past president of both the Central Illinois Chapter of the AIA and the Illinois Council of the AIA.



Joe Murphy is president of Insurance Designers, an independent insurance agency based in Petersburg, Illinois. He is a member of the Professional Liability Agents Network (PLAN), a nationwide group that specializes in serving the risk management needs of design professionals.



There's no typical day for Joe Murphy, but at least a couple of days a week you'll find him driving 250 or so miles in several different directions to: spend two hours discussing loss prevention with an architect and helping him fill out a DPIC application, two hours talking about a structural engineer's changing practice and completing a renewal application, another hour talking about project insurance with another architect, and more time with another renewal application. He met Graham on a trip like that about eight years ago. Graham had a problem on his professional liability policy and Joe helped straighten it out.

Joe says, "I don't think you have to come on strong—I think it's just being there when they need you. You finally get to the place where, when they think they have a problem, they call you—they just plain can't think of anyone else to call."

Joe's spent over 20 years in the insurance business, and nearly ten representing DPIC. Today he can hardly remember the days before he knew about professional liability for design professionals: almost 100% of his time is spent with architects and engineers. Because of his expertise and his proximity to the state capitol, he works with Graham and other design professionals to provide input to policymakers, working with government bodies like the state Capital Development Board, which handles all renovations and new buildings for the state. He's a "reference point" for them—their sounding board on what the insurance industry thinks about contractual clauses under discussion with the AIA, ACEC and others. If you're a design professional in central Illinois, you'll see Joe Murphy.

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Capital Investments

The Pennsylvania Avenue Building
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Michael Graves, Architect

THE TRIANGULAR SITE FOR THIS 10-STORY building in the city's West End allows for a 600-foot facade along Pennsylvania Avenue (top right) and another along K Street, N.W. Following the cornice height typical of buildings in the neighborhood, the facades are joined by a cylindrical tower facing Washington Circle (top left). Two entrances will lead to a central atrium lobby, which overlooks a 20,000-square-foot community theater on the basement level. The first two floors will contain 50,000 square feet of retail space, and the floors above will house 710,000 square feet of leasable office space. The 1.1 million-square-foot project, including a below grade garage, is scheduled for completion in 1993.



JOE AKER PHOTOS



JOE AKER

The Warner
1209 Pennsylvania Avenue, N.W.
Pei Cobb Freed & Partners and
Shalom Baranes Associates

THE TERRA-COTTA FACADE OF THE ORIGINAL 1924 Warner Building, housing the historic Warner Theatre, will be restored as the facade of a two-section addition (left) that extends down E Street to 12th Street, N.W. The new building, designed by James Freed, features a central facade of jeweled window boxes and two skylighted atria: one, four stories high in the original building's west tower; the other, 13 stories in the center. The mixed-use complex, with the renovated theater, 500,000 square feet of office space, and 20,000 square feet of retail space (including two restaurants), is scheduled for completion in early 1992.

The Portals
14th Street and Maryland Avenue, S.W.
Arthur Cotton Moore Associates and
The Weihe Partnership

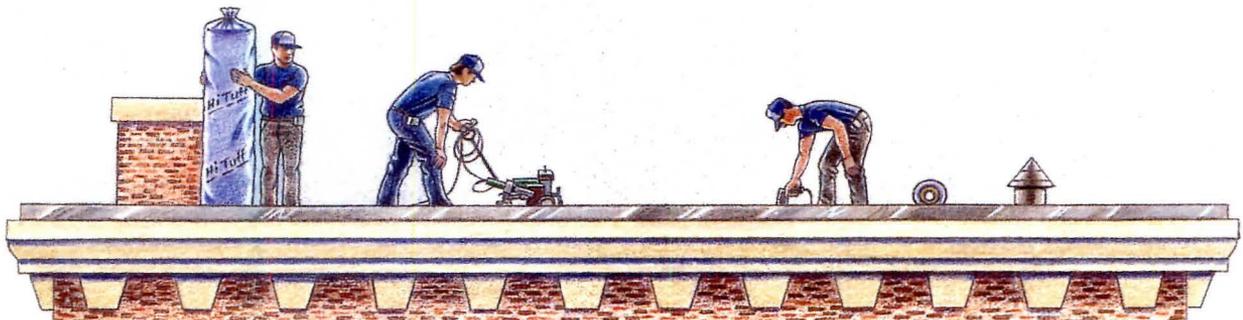
PIERRE L'ENFANT'S PLAN OF WASHINGTON specified two grand boulevards radiating from the Capitol: Pennsylvania Avenue and Maryland Avenue. The Portals (left), a mixed-use development at the north end of the 14th Street Bridge, will accentuate the now-broken Maryland Avenue spoke with a central promenade and plaza. Neoclassical details recall the Federal Triangle buildings along Pennsylvania Avenue, and domed turrets guarding the city's "portal" reference the Jefferson Memorial across the Tidal Basin and the Capitol. The first of four phases is scheduled for completion in December 1991. ■

HARLAN HAMBRIGHT





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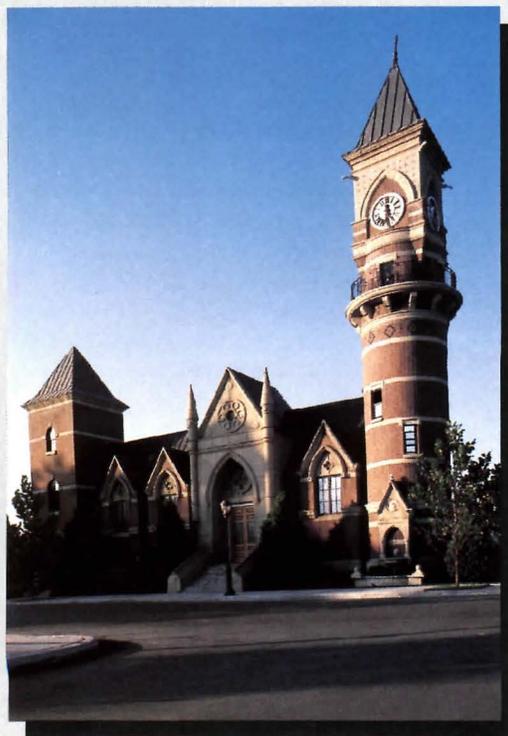
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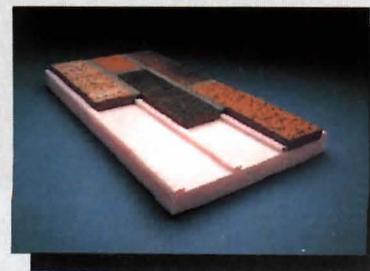
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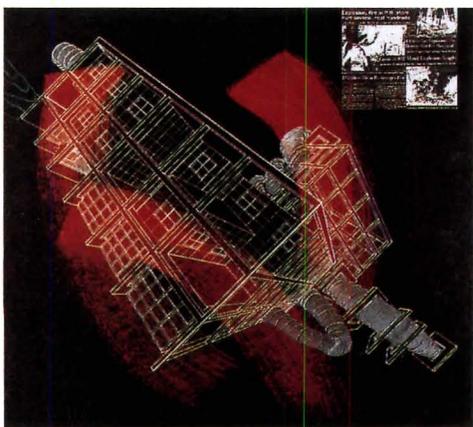
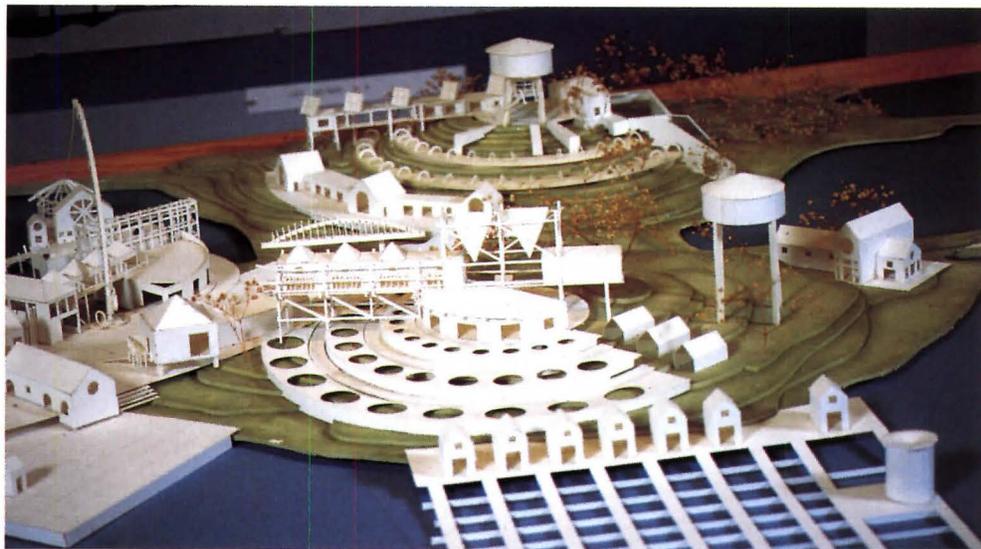


Howard University School of Architecture

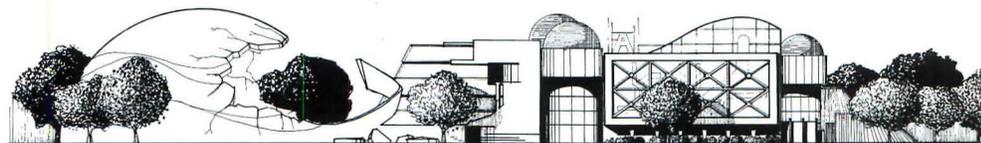
THE ARCHITECTURE PROGRAM AT HOWARD University in Washington, D.C., has a dual mission. Not only must it educate students to enter the architectural profession, but as part of the nation's most prestigious black institution of higher learning, it must also define the role of African-American architects within society. The history of that role is yet unsung, and the number of blacks in the profession remains small—out of AIA's regular membership of 44,470, only 380 are black (see pages 106-113 for overview of minority-owned firms).

Howard offers a five-year bachelor's degree program, which has a current enrollment of approximately 275 students. The school also offers a master's degree program, attended by about 10 students, and a post-professional Master of Science program. The majority of students come from Washington, and tend to stay in D.C. to practice, taking advantage of the social and professional connections forged during their education. A quarter of student enrollment is foreign—Howard has long attracted those from abroad to study architecture, who then return to their homes in the Caribbean or South Africa to practice. "They know about Howard before Harvard," says Professor Ahmed Elnaggar. The school offers a complement of foreign study programs (although a program linked to an architecture school in Iraq has temporarily been put on hold), lecture series, visiting critics, and internships at several federal agencies. There are also ties to the doctoral program at the University of California, Berkeley, to encourage Howard grads to prepare for careers in architectural education. Twenty percent of Howard grads go on to graduate school.

Howard emphasizes "educating students for leadership in the profession," according to Dean Harry G. Robinson, who has headed the school since 1979. Robinson practices what he preaches and appears the preeminent role model: he grew up not far from the school, studied architecture and city planning at Howard, and then earned a master's degree in city planning and urban design from Harvard. For eight years he ran the architecture program at Morgan State University in Baltimore, and then returned to Howard. Many of the school's 21 full-time faculty are also Howard grads, and it's part of the



Howard University design studio projects run from utilitarian to conceptual. A project mixing environmental ecology and community self-determination, Kyril Burrows's "Archipelago Gardens" (top), sited in the student's native Bermuda, proposes a futuristic island town; Jennifer Adams built a prototype homeless shelter for less than \$10 with plastic, broomsticks, and coat hangers (above left). Forms in Julia Sue Gay's fire station (left) are derived from firefighting equipment. Hadyn Heman-Ackah's Thelonious Monk Institute of Jazz (above) houses a cultural education center to enrich the public's appreciation of jazz, while a multiuse entertainment center (below) by Ashley Maglorie is modeled on the rhythms and lyrics of rap music.



Howard tradition to give something back to the institution. John Maudlin-Jeronimo, executive director of the National Architectural Accrediting Board, points out that a number of Howard's faculty have become leaders in the profession. Robinson, a recipient of the Whitney Young Citation, is vice president of NCARB and a trustee of the National Building Museum in Washington, D.C.; Professor Raj Barr-Kumar is past president of the Washington Chapter/AIA; and a number of faculty members have served as graders for the NCARB examination. "The faculty works beyond the program and the institution," says Maudlin-Jeronimo. "That's what the profession requires, and it's great to see Howard taking a leadership role."

The faculty and students appear to agree that design projects should focus on problems relevant to black practitioners. "Our studio problems are those of the real world," says Robinson, "which gives the program its

practical slant, as opposed to being purely theoretical." Adds Professor Ken Jadin, "Our tendency is to be concerned about what goes on in the community, to educate our architects to deal with those issues. Part of the nature of these students is that they are looking for leadership positions in the communities they will go back to."

Design problems such as housing for the homeless were a Howard staple long before they became fashionable in studios across the country. Most studio problems are assigned to sites in Washington, and recent projects have included the reuse of abandoned buildings in inner cities, the design of a soup kitchen, and a thesis on prisons. Barr-Kumar sent his fourth-year students out to interview homeless people as "design consultants" for shelters that could be built for \$10 or less. Following their interviews, the students developed designs and implemented them on steam grates and other sites often occupied

by their clientele, using materials such as broomsticks, umbrellas, coat hangers, and grocery carts. Other projects focus on environmental concerns, such as a marine research station in Bermuda that would draw from the natural resources of the ocean to sustain a local community.

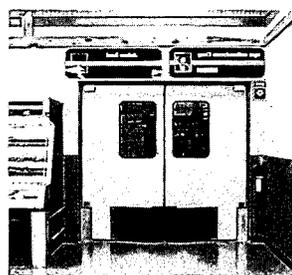
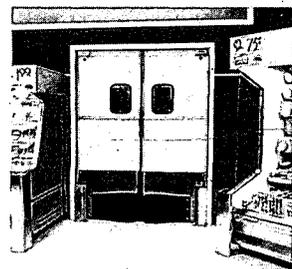
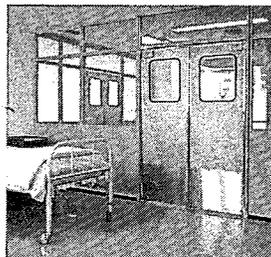
"I'm impressed with the way Howard ties its architectural education not only into the university but the surrounding community, and by the way it is supported by the professional community," says AIA First Vice President W. Cecil Steward, FAIA, dean of architecture at the University of Nebraska, who was on Howard's last visiting accreditation team. "The school also benefits from the mix of international students. Other schools have to struggle for that kind of diversity." ■

—MICHAEL J. CROSSBIE

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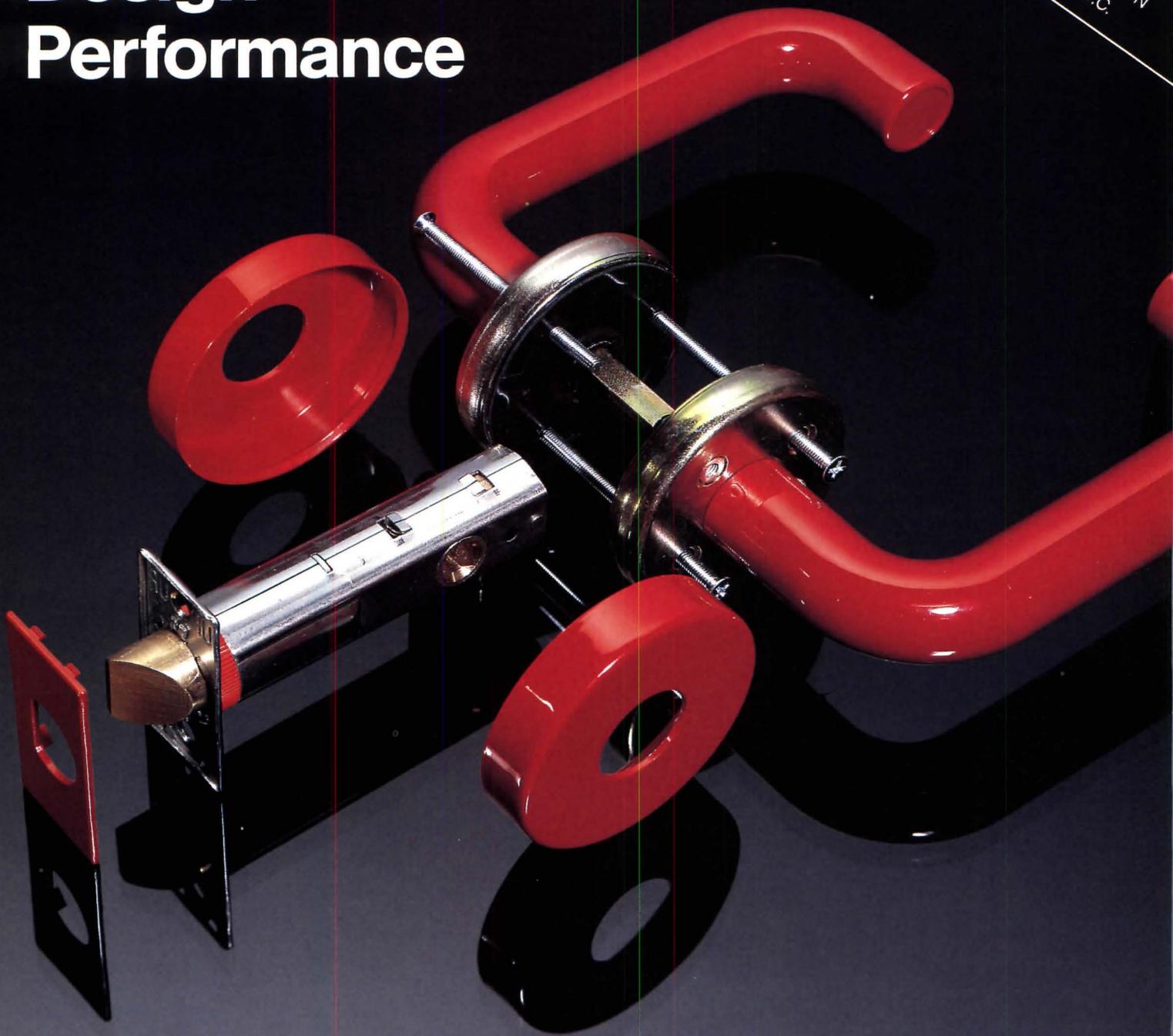
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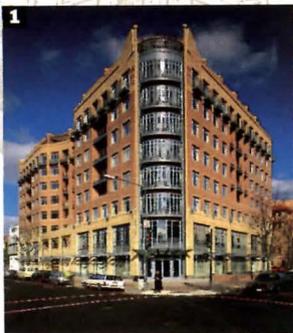
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One Franklin Square
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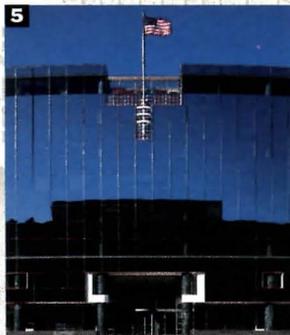
3 4



Market Square
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Liberty Place
Page 74



Washington Office Center
Page 76

7



518 C Street, N.E.
Page 85

6



666 Pennsylvania Avenue
Page 87

Commercial Washington

WASHINGTON, D.C., HAS UNDERGONE A VIRTUAL ARCHITECTURAL renaissance since the AIA last held its convention in the capital city. That was in 1974, the year Gordon Bunshaft of Skidmore, Owings & Merrill completed the controversial Hirshhorn Museum. On that occasion, *New York Times* architecture critic Ada Louise Huxtable lamented: "It is hard to know whether Washington does something to architects or architects do something to Washington. Perfectly respectable practitioners fall on their faces with alarming regularity, unstrung by the capital's overblown scale and frequently overwrought grandeur."

Since the mid-1980s, however, downtown Washington has witnessed a new generation of increasingly urbanistically sensitive buildings, especially in the commercial core. The city's traditional downtown, comprising a 50-block

area from Pennsylvania Avenue to K Street, N.W., and from 7th to 16th Street, N.W., has been transformed through new construction and renovation from an increasingly derelict area to a lively district housing law and accounting firms, trade associations, government-related businesses, and street-level retail. Downtown Washington gained 37,240,471 square feet of office space in 262 new and renovated buildings during the 1980s, twice the amount built in the 1970s.

As the office market boomed, out-of-town architects came to Washington, including internationally-renowned firms such as Kohn Pedersen Fox, RTKL, Graham Gund, and Don Hisaka. Local practitioners Shalom Baranes, Kress Cox Architects, and Arthur Cotton Moore also were increasingly commissioned to design speculative office pro-



ALAN KARCHER

1
Office Building
1150 18th Street, N.W.
Hisaka & Associates



2
Rizik Brothers Pavilion
1100 Connecticut Avenue, N.W.
Arthur Cotton Moore/Associates



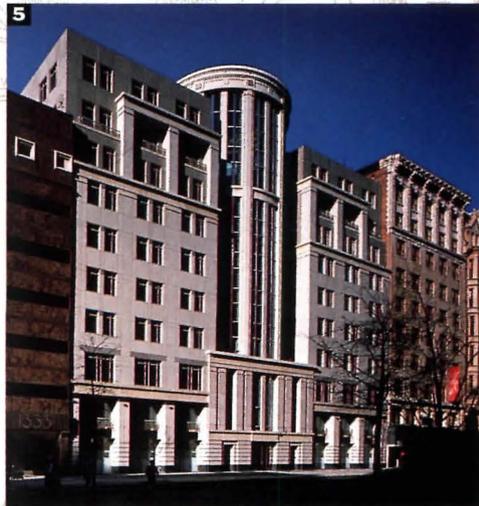
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3
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John Burgee Architects



ALAN KARCHER

4
Westory Building
607 14th Street, N.W.
Shalom Baranes Associates

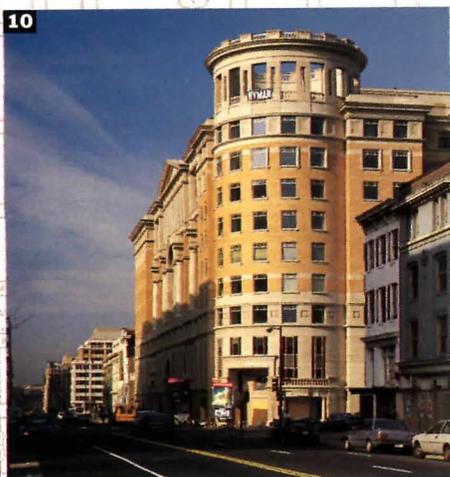


MAX WELLMACKENZIE

5
Office Building
1331 F Street, N.W.
Kress Cox Associates

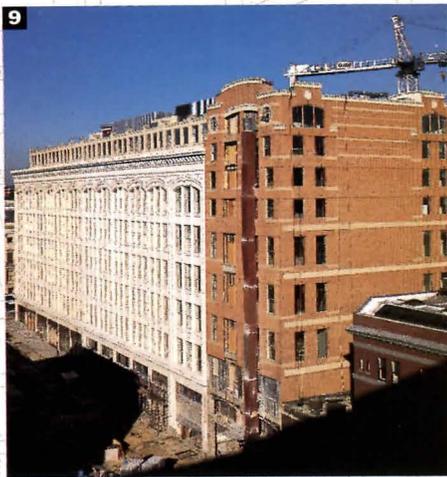


10



American Association of Retired Persons (AARP) Headquarters
6th and E Streets, N.W.
Kohn Pedersen Fox Associates

9



The Lansburgh
423 8th Street, N.W.
Graham Gund Architects

8



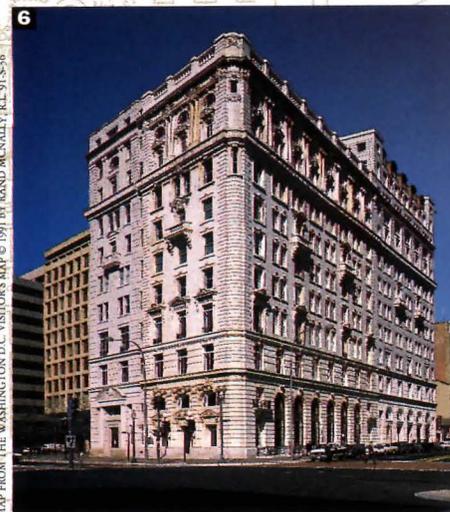
Pennsylvania Plaza
601 Pennsylvania Avenue, N.W.
Hartman Cox Architects

7



Homer Building
601 13th Street, N.W.
Shalom Baranes Associates

6



Evening Star Building
1001 Pennsylvania Avenue, N.W.
Skidmore, Owings & Merrill

jects (see map, these pages). Compared with their older siblings, these buildings demonstrate an increased attention to detail and refined accents within Washington's confines.

The spruced up downtown still adheres to a multitude of traditions stemming from Pierre L'Enfant's 1791 radial plan and the city's height restriction, which has been in effect since 1910. Recently, however, the height limitation has been challenged by architects involved with large-scale commercial development. Martin & Jones Architects, for example, proposed a 130-foot-tall building, which exceeds the limit by 20 feet. Although approved by the D.C. Council, the U.S. House of Representatives passed legislation in March to block construction of the planned complex.

"An architect working in this city needs to put his ego on the back seat," maintains Warren Cox, principal of the award-winning Washington firm Hartman Cox Architects. "You work on an analytical basis, doing what the context and program require. Forget self-expression." Colden Florance of another leading local firm, Keyes Condon Florance, adds that no matter what style designers may employ, they tend to resort to design devices aimed at breaking down the bulk of low buildings covering entire city blocks as large as 450 by 700 feet. "One has to search for ways to divide the building into giant orders both vertically and horizontally," Florance says. "You rely on cornice lines, string courses, setbacks, changes of materials."

In this issue, we feature two of Hartman Cox Architects' newest designs outside the federal city—Neoclassical Market Square and Franco-American One Franklin Square. We also focus on Keyes Condon Florance, now undergoing an organizational transition, whose eclectic approach to designing Washington's commercial core has grown more sophisticated and urbane over the past decade.

Setting the stage for Washington's future, we conclude the issue with a portfolio of work by a younger generation of local architects. Turning away from the polite historicism of 1980s Washington, they offer a tougher, less sentimental, and more abstract contextualism. These firms design buildings that relate to their surroundings without looking like period architecture. In Washington, "Modern architecture has gotten a bad reputation from bad architects," says Olivia Demetriou of Adamstein & Demetriou. "We're trying to find a balance, wherein our buildings harmonize with the contexts, not just imitate them." ■

Market Square
701 and 801 Pennsylvania Avenue, N.W.
Hartman Cox Architects and Morris Architects

On the Avenue







WASHINGTON'S PENNSYLVANIA AVENUE, nicknamed "America's Main Street," is a thoroughfare along which newly inaugurated presidents, departing and returning armies, suffragettes, and astronauts parade. In fact, it was John F. Kennedy's ride down the decaying avenue after his inauguration in 1961 that set into motion plans to revitalize it. "It's a disgrace—fix it," he was said to have barked at an aide. Kennedy's Council on Pennsylvania Avenue soon spawned the Pennsylvania Avenue Commission, which beget the Pennsylvania Avenue Development Corporation, charged with implementing an evolving plan.

Market Square was the result of PADC's 1984 competition, won by Hartman Cox Architects, with a scheme by SOM/Washington as first runner-up. The winner not only had to provide a satisfactory mix of commercial, office, and residential space, but was required to walk a tightrope between foreground and background architecture. It was necessary for Market Square to establish a strong presence on Pennsylvania Avenue, while also providing the backdrop to the U.S. Navy Memorial, designed by Conklin Rossant of New York City. In the vogue of contemporary monuments, the Navy Memorial is unmonumental—a flat disk of space depicting a map of the world, with a lone sailor of bronze. Its quiet, contemplative nature makes the Navy Memorial the perfect mate for Market Square, which cradles it in two cupped hands, holding it out to the city.

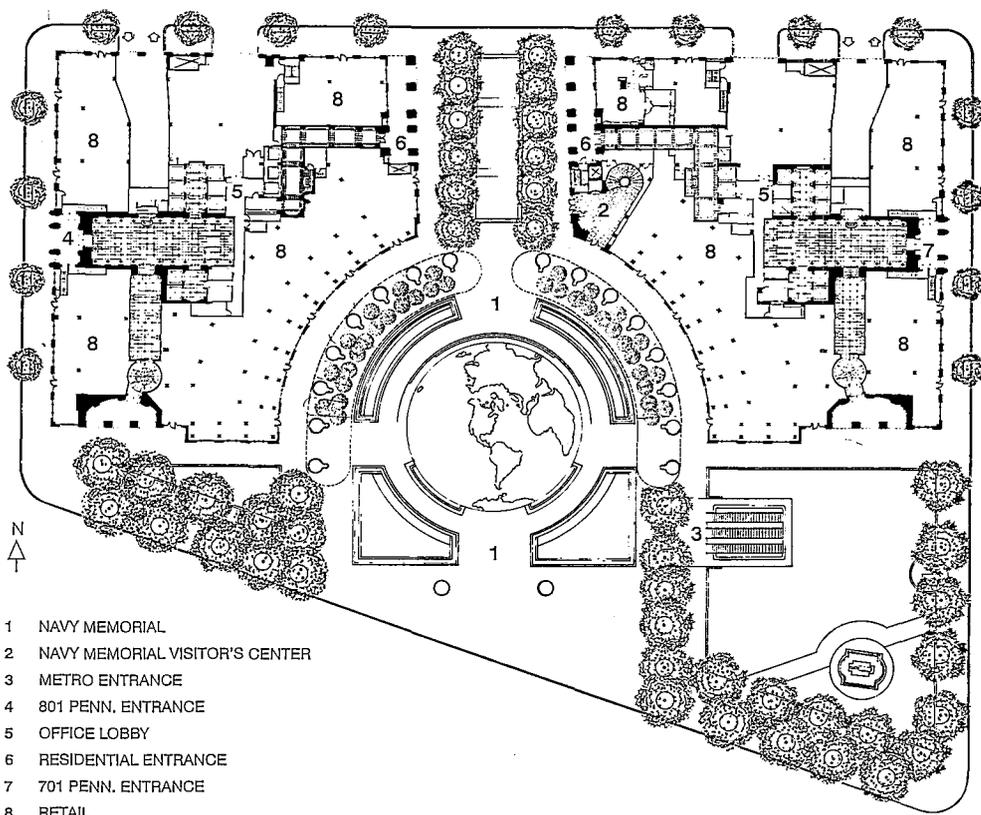
Market Square occupies one of the most prominent sites on the avenue. Along the mile-and-a-quarter stretch that links the White House and the Capitol, there is only one cross axis, and it bisects the site of Market Square. The cross axis links the National Portrait Gallery two blocks north of Market Square with the National Archives building, which faces the new complex across the avenue. The axis continues through the Archives, across the National Mall, and terminates at the Hirshhorn Museum. Market Square partitions the city at the four cardinal compass points: it marks the midsection between the legislative and executive realms of the city, and it straddles the line between "official" Washington to the south and the city's commercial core to the north.

This is not a site for faint-hearted architecture, and Market Square is anything but. With unflinching Neoclassicism (complete with a Roman Doric peristyle that towers five stories) and not the slightest trace of irony or wit, Market Square seems every inch



Dominating a full block along Pennsylvania Avenue (preceding pages), Market Square offers axial view to the north (top). Details of curving facades (facing page, bottom) are dominated by 26 Indiana limestone columns that were cut on a computer-controlled lathe and form a backdrop to U.S. Navy Memorial (right). West building (facing page, top) shows transition from Neoclassicism to commercialism.





- 1 NAVY MEMORIAL
- 2 NAVY MEMORIAL VISITOR'S CENTER
- 3 METRO ENTRANCE
- 4 801 PENN. ENTRANCE
- 5 OFFICE LOBBY
- 6 RESIDENTIAL ENTRANCE
- 7 701 PENN. ENTRANCE
- 8 RETAIL

Ground plan for Market Square reveals multifaceted demands on the program for a building at the city's heart. Dignified lobbies with Italian marble columns, mahogany paneling, and brass fixtures (facing page, bottom) are reached via long galleries (facing page, top) from Pennsylvania Avenue entrance, or directly from 7th and 9th Streets (section below). Separate lobbies for building's top four residential floors face one another across 8th Street. Plan curves to cup Navy Memorial and offers access to memorial visitor's center (plan, top), due to open in May. At ground level, curved facades house retail, which opens onto site circulation around the memorial. Plans appear to be mirror images but are not, and corners are skewed (only two are 90 degrees) to account for George Washington's inaccuracies in his survey of the city.

MARKET SQUARE
701 AND 801 PENNSYLVANIA AVENUE, N.W.

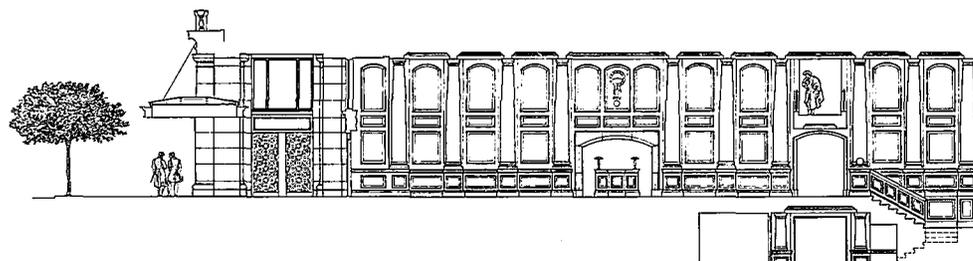
DESIGN ARCHITECT: Hartman Cox Architects, Washington, D.C.—George Hartman (partner-in-charge); Graham Davidson, Lee Becker (project architects); Robert Shutler, William Neudorfer (project team)

ARCHITECT OF RECORD: Morris Architects, Washington, D.C.—A. Tedford Barclay III, AIA (principal-in-charge); John R. Smart, AIA (design principal); James H. Pope, AIA, Max F. Stringer (project team)

ENGINEERS: Haynes Whaley Associates (structural); Brady & Anglin Consulting Engineers (mechanical/electrical/plumbing)

GENERAL CONTRACTOR: HCB Contractors
COST: \$90 million

PHOTOGRAPHER: David Patterson/Carol Highsmith



the monumental building its site demands. Across the avenue from Market Square in front of the Archives is a statue of a woman holding a book of history. "What is Past is Prologue," inscribes the statue's base, and it's a fitting description of Market Square's architectural character. The Federal Triangle buildings, constructed in the 1930s, fill a seven-block wedge southwest of Market Square with immense limestone columns, rusticated bases, and triglyphed pediments. Some of these government office buildings in Neoclassical dress boast great curving facades describing hemicycles, and Hartman Cox borrowed freely from them. "George Hartman and I also walked around the neighborhood and looked at the U.S. Treasury Building and the Riggs Bank for details," says James Wallace of Morris Architects, associate firm on the project.

Like Federal Triangle, Market Square's super-scale Neoclassicism is bombastic, verging on fascistic, and makes you wonder why anyone would want to emulate an architectural style that was always so inappropriate for the capital of a democracy, even for the sake of context. SOM's runner-up scheme took its contextual cues from the Old Post Office (which sits a few blocks away) and, although just as big as the Triangle buildings, is much more humanly scaled. But Market Square is not all columns, and the building displays a friendlier face away from the avenue. On 7th, 9th, and D Streets, N.W., the facades are constructed of buff-colored brick, and windows emulate the size, proportion, and spacing of the turn-of-the-century commercial buildings north of Pennsylvania Avenue. The ground floor is devoted to retail space which, once the landscaping is finished around the Navy Memorial, should thrive with tourist traffic. Above, eight floors contain tenant offices reached through marble-column-lined, mahogany-bedecked lobbies (designed by Morris Architects) that are elegant and impressive without the bombast. On the top four floors, apartments terrace back to create balconies with breathtaking views of the Capitol, the mall, and the Washington Monument.

Architects designing for Washington always feel the tug of history as their pencils glide over tracing paper. Knowing what is best to borrow from, and what is best ignored, will mark good designers in a town where contextualism seems the order of the day. Market Square's split personality demonstrates that good and bad choices can be made by the same architects.

—MICHAEL J. CROSBIE



One Franklin Square
1301 K Street, N.W.
Hartman Cox Architects



Tall Order

The towers of a downtown office building exceed Washington's height restrictions.

ONE FRANKLIN SQUARE IS HARTMAN COX Architects' first downtown building that "needed to transform its area rather than draw from a strong historic context," in the words of George Hartman, partner-in-charge. It is located on K Street, N.W., Washington's main commercial thoroughfare, which is composed of mostly blocky, banal buildings. Topped by twin towers, the 1.1 million-square-foot structure suits its site; like virtually all of Hartman Cox's designs, the building mends, extends, and brings out the best in the existing urban fabric.

The building's capacious "front yard," across K Street to the south, is Franklin Square, a former Civil War encampment ground and Washington's second oldest park. Like the square, the building is symmetrically arranged; a north-south axis from the park leads directly to the structure's west entrance, which serves IBM, the tenant occupying the entire western half of the building

(the eastern half houses rental office space).

The architects derived the building's main design cues from two structures to the west of the site. The Beaux-Arts Hamilton Hotel (now an office building) suggested the scale of One Franklin Square's bays, and Hartman Cox adapted the towers' spires from the top of the 1920s Art Deco Tower Building to the west of the Hamilton. Moreover, the architects articulated the entrances to echo that of the only existing building on the site, the four-story Moorish-style Almas Temple, built by the Shriners in 1926. Hartman Cox had the temple dismantled and moved, and preservation architects Oehrlein Associates reconstructed it as a small infill building on the site's western edge.

The towers of One Franklin Square exceed the city's height limit by 90 feet, taking their place with the District's few tall landmarks, including the Washington Monument. The architects were allowed to boost their build-

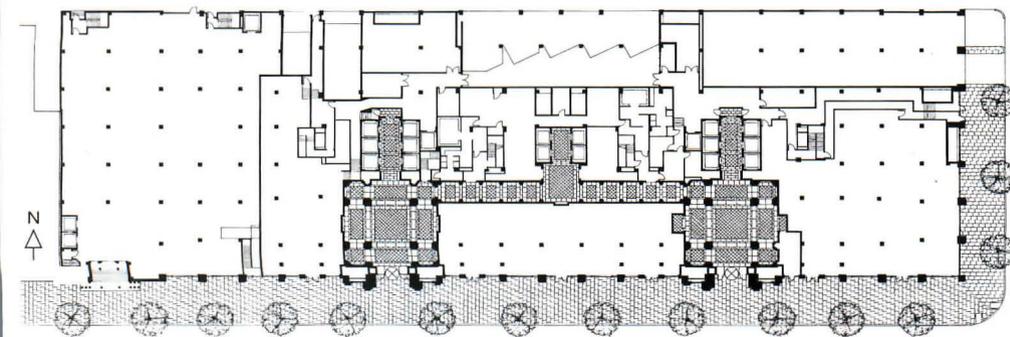
ing's height, according to Hartman, "because the towers are empty and, therefore, mere embellishments, according to the code." The architects differentiated the towers from the building's main facade by pulling them forward and cladding them, along with the base, in polished granite, while the remaining granite sheathing is left unpolished. A more eclectic top can scarcely be imagined. Its quasi-crenellated, Art Deco-inspired towers and mansard roof bespeak Franco-American elegance, not ordinary spaghetti.

"Everything is set back and banded to break down the scale," according to project architect Graham Davidson. Even the windows are set into the curtain wall of the south-facing building to create shadow lines that further enliven the facade, making it look solidly built rather than veneered. "We detailed the elevations so that the whole building looks cubic," says Davidson. ■

—ANDREA OPPENHEIMER DEAN



Viewed straight-on, One Franklin Square maintains the line of the street (facing page) but seen from an angle, its walls poke forward and recede following setbacks (above right). The towers, which exceed D.C.'s height restriction, create a prominent landmark (left), while setbacks on the 10th and 11th floors decrease the perceived bulk of the structure and three bays echo the size of an adjacent building. Inside, a pair of identical lobbies (above left and plan below) are intended to appear "like the base of a very substantial tower," in Hartman's words. Each three-story lobby has four corner aedicule that extend from a square column, which is striated in marble to echo the exterior. "The idea," says Hartman, "was to make you feel, coming off the hot sidewalk, like you're entering a cool, Italian church."



ARCHITECTS: Hartman Cox Architects, Washington, D.C.—George Hartman (partner-in-charge); Graham Davidson (project architect); Lee Becker, David Duncan, Bryan Lavie, William Neudorfer (project team)
ASSOCIATE ARCHITECTS: Dewberry and Davis, Fairfax, Virginia—David Habib (partner-in-charge); Neil Bhatt, Rick VanDeusen, Thomas Stastney (project team)
PRESERVATION ARCHITECTS: Oehrlein Associates
ENGINEERS: James Madison Cutts (structural); The Office of Lee Kendrick (mechanical/electrical)
CONTRACTOR: HCB Contractors
PHOTOGRAPHY: David Patterson/Carol Highsmith

Urban Individualists

A leading Washington firm undergoes a transition of partners and practice.

IF THERE IS A CONTEMPORARY WASHINGTON SCHOOL OF ARCHITECTURE, KEYES CONDON FLORANCE IS ONE OF ITS leading proponents. Combining site-sensitive design and hardheaded pragmatism, the 85-person firm has synthesized an appropriate approach for the capital's unusual architectural history and urban planning traditions. A stylistic switch-hitter depending on which partner is at bat, KCF has completed 10 major commercial office buildings in downtown Washington within the last decade. And although this portfolio defies a single label, each building exhibits an equally skillful manipulation of plan, proportions, detailing, and an overriding respect for context.

Founded in 1956 as Keyes Lethbridge Condon, the firm evolved with the architectural mainstream and its hometown, in concert with the postwar rise of Modernism. During the 1960s, it became the strongest design practice in the city, winning national AIA honor awards in 1966 for the Tiber Island housing project in Southwest Washington and the River Road Unitarian Church. But by the mid-'70s, the firm had decreased in size to 15. In 1975, the partnership of the firm changed to recognize Colden Florance, who added commercial development, historic preservation, and master planning projects to KCF's institutional and governmental base. The practice grew dramatically during the 1980s, and witnessed the emergence of three talented designers—Thomas Eichbaum, Philip Esocoff, and David King, each in his early 40s and Ivy League educated—who were named partners in 1985.

This month, contributions of these young partners will be recognized when the firm changes its name to Keyes Condon/Florance Eichbaum Esocoff King, which even Florance acknowledges to be "a real symphony in noneuphonious naming."

In 1992, KC/FEEK will move from a modest, poured-in-place concrete office building the architects designed in 1969 to 1100 New York Avenue (facing page, bottom right), a 530,000-square-foot project that incorporates the landmark Art Deco Greyhound Terminal. The firm's metamorphosis will be completed next year with the simplification of its name to the slightly more manageable Florance Eichbaum Esocoff King. The partnership also includes Mark Maves, who heads the firm's master planning section; Tam Nguyen and Russell Perry, who direct project management; and Bruce Dicker, who is responsible for general management.

Throughout its history and regardless of stylistic predilections, KCF has always been regarded a firm of choice for young architects in Washington. "We have served as a five-year incubator for many of the leading young and not-so-young firms around town," notes

Arthur Keyes. George Hartman and Warren Cox met in KLC's offices, and Winthrop Faulkner and Hugh Jacobsen spent time in its drafting rooms. Younger offshoots have included local firms such as McCartney Lewis, Bowie-Gridley, and Heather Cass & Associates.

In spite of the current recession, KC/FEEK anticipates its future with optimism. "I've thrived in this environment," explains David King. Currently working on a major complex for the U.S. Fish and Wildlife Service, King looks forward to new challenges. "Although there was a comfort factor in the 1980s with our diversity of building types and stylistic approaches," he points out, "the 1990s promise more institutional and government work."

The firm maintains a broad client base, with projects ranging from the renovation of the Torpedo Factory in Alexandria, Virginia, and the Pension Building to work at George Washington University and the University of Maryland. But it was commercial work of the 1980s that afforded the firm its trademark pluralism. "We savored our early buildings," recalls David Condon, "but during the rush of the '80s, many projects became more reflective of the individual designer." And as King points out, "There was almost a perverse pride in selling this diversity." Local developers, resisting out-of-town competition, were drawn to the individualism of KCF's designs. As Oliver Carr, Washington's leading developer, explains, "KCF understands the city's cultural and architectural traditions. They come up with fresh design without creating egocentric statements inappropriate for their context."

But perhaps the key to the firm's continuing success is KC/FEEK's willingness to play by the capital's rules. "Washington is a transient city and not the primary place of residence for its principal occupants," explains Florance. "Therefore, the city developed according to architectural styles and periods after they had matured." But Florance, who is the only native Washington partner, believes this phenomenon has made for a calmer, quieter, and fundamentally more coherent urban fabric. "That's the background we have always worked in," he proudly states, "and that's not going to change." ■

—LYNN NESMITH

GARY FLEMING



Four design partners head the firm (left to right): Colden Florance, Thomas Eichbaum, David King, and Philip Esocoff.

Republic Place
1776 I Street, N.W.



750 17th Street, N.W.



1717 H Street, N.W.



1100 New York Avenue, N.W.



2401 Pennsylvania Avenue, N.W.
Keyes Condon Florance, Architects

Bipartisan Design

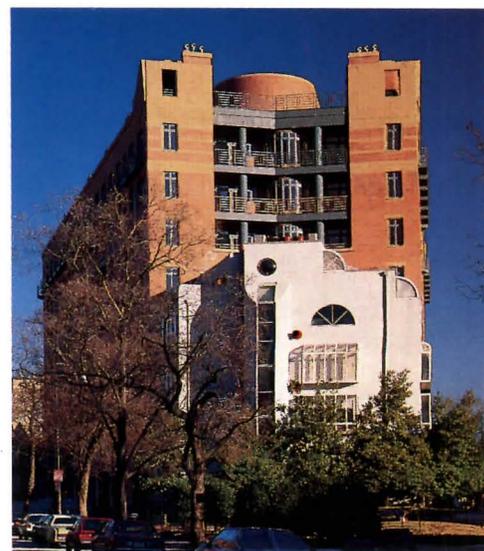


WITH THE DEMOCRATS A MAJORITY IN Congress and a Republican in the White House, successful politicians in Washington must play both sides of an issue. Keyes Condon Florance does just that with 2401 Pennsylvania Avenue, a mixed-use project that straddles stylistic and functional camps with crafted finesse.

Sited on the western end of Pennsylvania Avenue near Georgetown, 2401 Pennsylvania Avenue is a site-specific building that could only be designed by a hometown firm, notwithstanding its formal debt to Philadelphia architects Frank Furness and Robert Venturi. KCF inserted the wedge-shaped, through-block building to respect Pierre L'Enfant's vision and the neighborhood's informal character, while accommodating the 143,000-square-foot building's loading dock and underground parking entrance along the elevation fronting L Street.

Of course, the structure has a clear base, middle, and top—anything else would be heresy in Washington. But the building is designed as a virtual patchwork of Americana with topical ornamentation, historical forms, local references, and political iconography. "Where else could you possibly replace palmetto antefixa with U.S. and D.C. flags, and use the heads of donkeys and elephants as extension plates?" asks KCF principal-in-charge Philip Esocoff.

Located in Washington's eclectic West End, 2401 Pennsylvania Avenue turns the corner with a prominent glass and metal tower to mark the building's commercial entrance (facing page). Fronting the avenue, the sweeping masonry facade breaks down the building's apparent mass (bottom) and accentuates its residential entrance. At the site's western boundary (below), the complexity of the plan is revealed as the building attempts to acknowledge its eccentric little neighbor, an historic townhouse completely engulfed by remodeling in the early 1980s.





With equal allegiance to the building's commercial and residential functions, Esocoff created two formal entries, each symmetrical unto itself. Anchoring the corner of the building at 24th Street, the commercial entrance is marked by a fan-shaped canopy and a curved metal and glass tower that appears to be an exposed structural steel skeleton extending from behind the brick veneer.

The residential entrance squarely faces Pennsylvania Avenue. The architects pulled the curving masonry mass of the building away from a two-story *mankato-kasota* limestone screen wall punctuated with retail storefronts flanking a symmetrical front door. Rusticated horizontal bands visually strengthen the stone base, and deep inset windows increase the apparent thickness of the brick cladding. Breaking down the building's apparent mass, the sweeping elevation divides the building into three bays, and a cast stone band of stars and stripes along the cornice line animates the facade as a great big waving flag. To highlight the residential entrance, the architects created a trio of blind niches, each outlined with green slate gilded with a ginkgo leaf pattern.

Visible from the street, a metal and wood

trellis crowns the roof to define a series of outdoor rooms, and serves as a festive reminder that this space is habitable—the perfect place to watch an inaugural parade or fireworks on the Fourth of July.

Occupying the top four floors, the apartment units are large and feature the same floor-to-ceiling heights as the offices, allowing an even 10-foot spacing all the way up the facade to avoid demarking the elevation where internal functions change. Esocoff believes a building's primary obligation, especially within Washington, is to define the street; differentiating internal uses is a secondary concern. "Is writing a business letter on the third floor that different from writing a love letter on the fifth floor?" he asks. "And even if it is, why does it need to be reflected in the window treatment?"

Unabashedly eclectic, 2401 Pennsylvania Avenue makes no apologies for its collage of historical references, abstracted forms, and sentimental ornamentation. But unlike many buildings of recent Postmodern vintage, this complex composition brings a new material richness to Washington and KCF's growing portfolio of commercial structures. ■

—LYNN NESMITH

The Pennsylvania Avenue facade (facing page) is a highly articulated composition of patterned surfaces. The three central bays are lined with slate detailed with a gold leaf ginkgo pattern announcing the residential entrance. A single threaded standpipe rises up the front facade through the seventh floor residential balcony (top left), which features a view of the Washington Monument. Donkeys and elephants double as extension plates for cables supporting the canopies (above, right).

**MIXED-USE BUILDING
2401 PENNSYLVANIA AVENUE, N.W.**

ARCHITECTS: Keyes Condon Florence, Architects, Washington, D.C.—Philip A. Esocoff (principal-in-charge); Cynthia Johnston, Judith Halsey (project architects); William Drewer, Andrew Hazelton, Donna Kessler, Suzanne Rathlev, James Saloka, North Sturtevant, Thomas Zegler (project team)

ENGINEERS: Tadjer-Cohen-Edelson Associates (structural); GHT Chartered (mechanical and electrical); A. Morton Thomas & Associates (civil)

CONSULTANTS: Polysonics (acoustics); George Sexton Associates (lighting); Lerch, Bates & Associates (elevators); Heller & Metzger (specifications)

GENERAL CONTRACTOR: Omni Construction

COST: \$19 million—\$77/square foot

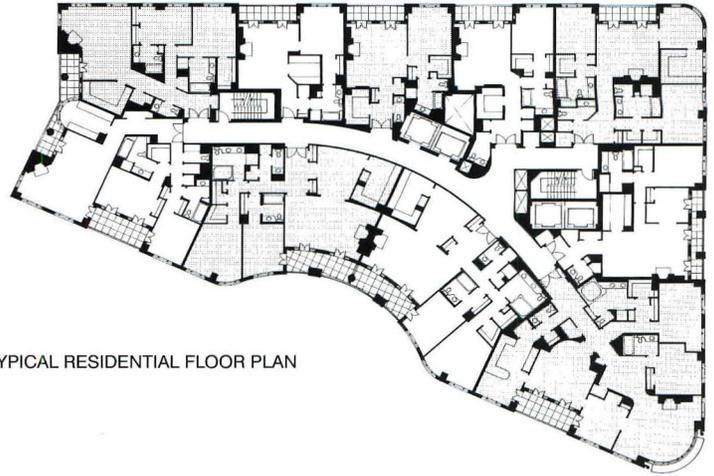
PHOTOGRAPHER: Maxwell MacKenzie



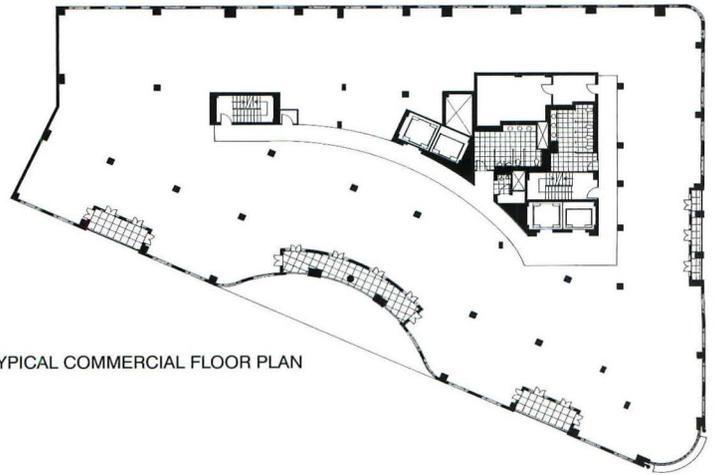
2401



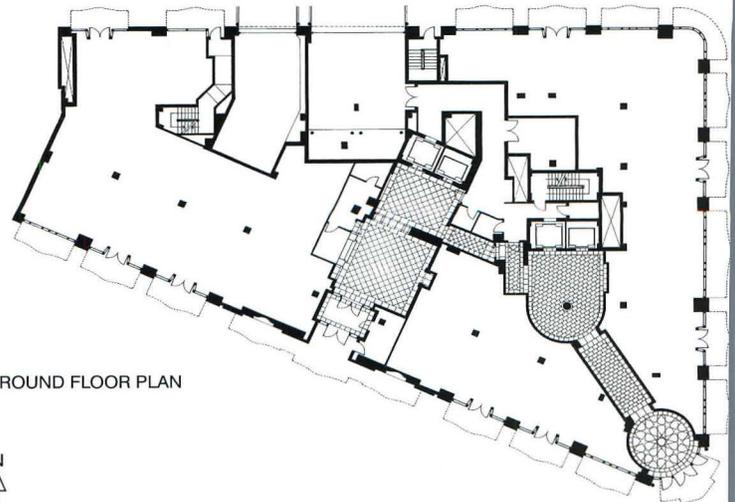
Once inside, geometric patterns and ornament are deftly crafted in marble and wood. The ginkgo leaf pattern is repeated on a frieze encircling the commercial lobby, and the marble floor is patriotically detailed with a pattern of stars in the circular lobby and stripes down the hallway (facing page). Walls of polished inlaid wood (bottom left) line a corridor leading to the commercial elevator lobby (top left). The architects created two cores (bottom plan) to accommodate commercial tenants (center plan) and residential users (top plan).



TYPICAL RESIDENTIAL FLOOR PLAN



TYPICAL COMMERCIAL FLOOR PLAN



GROUND FLOOR PLAN





Liberty Place
325 7th Street, N.W.
Keyes Condon Florance, Architects

Corner Office

A new tower anchors Washington's oldest commercial district.



KEYES CONDON FLORANCE LOOKED TO Washington's 19th-century commercial center rather than its Neoclassical monumental core in designing Liberty Place, a 173,000-square-foot office complex that encompasses a pair of historic office structures and a new tower. Since 1889, the six-story Fireman's Insurance Building has anchored the tapering corner site. The architects incorporated the historic building with the new structure, linking the floors and retaining an original stairway and interior walls. A new gilded dome crowns the octagonal corner bay.

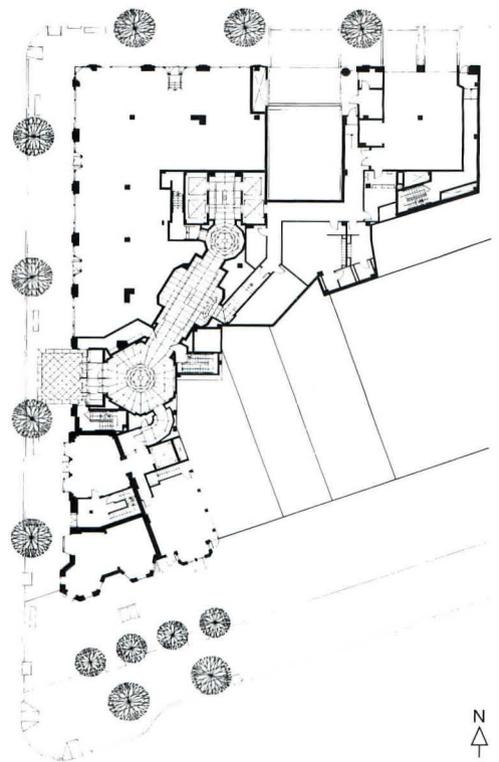
KCF pushed its 12-story tower up against the restored brick structure to position the complex's main entrance toward prestigious Pennsylvania Avenue. As a result, the new construction is stepped back from the southwest corner to create a heightened sense of verticality. While deliberately designed to contrast with the Fireman's Insurance Building, the tower projects the image of a background rather than a foreground building.

Along 7th Street, one of Washington's leading commercial strips before development migrated westward in the 1950s, the architects designed a more articulated facade. Without the luxury of fancy materials, they relied on massing, fenestration patterns, and ornament to recall nearby historical commercial structures. Evoking the cast iron and glass facades of late-19th-century mercantile structures, the building is constructed of a precast concrete frame infilled with projecting bays that are detailed with decorative metal mullions. Sculpted rosettes accent spandrels and cornice lines.

Liberty Place attests to the architectural variety that has long flourished along Pennsylvania Avenue. Although less ambitious than its next-door neighbor, Market Square (pages 58-63), Keyes Condon Florance's eclectic commercial ensemble is nevertheless appropriate for America's Main Street. ■

—LYNN NESMITH

Facing Pennsylvania Avenue, Liberty Place engages a landmark structure (facing page) while its 7th Street elevation is more highly articulated (top left). Lobby of main entrance (bottom left) connects the 1889 building to elevator core at center of new tower (plan).



ARCHITECT: Keyes Condon Florance, Washington, D.C.—Colden Florance (principal-in-charge); James Blount (project manager); Erik Johnson (project architect); Toni Ayres, North Sturtevant, Alan White, David Askins (project team)
ASSOCIATE ARCHITECT: Devroux & Purnell, Washington, D.C.—Marshall Purnell (principal-in-charge); Marc Doswell (project architect); Barbara Laurie (job captain)
ENGINEERS: James Madison Cutts (structural); Shapiro-O'Brien Associates (electrical/mechanical)
CONSULTANTS: Grenald Associates (lighting)
GENERAL CONTRACTOR: George Hyman Construction
COST: \$19.8 million—\$79/square foot
PHOTOGRAPHER: Robert Lautman



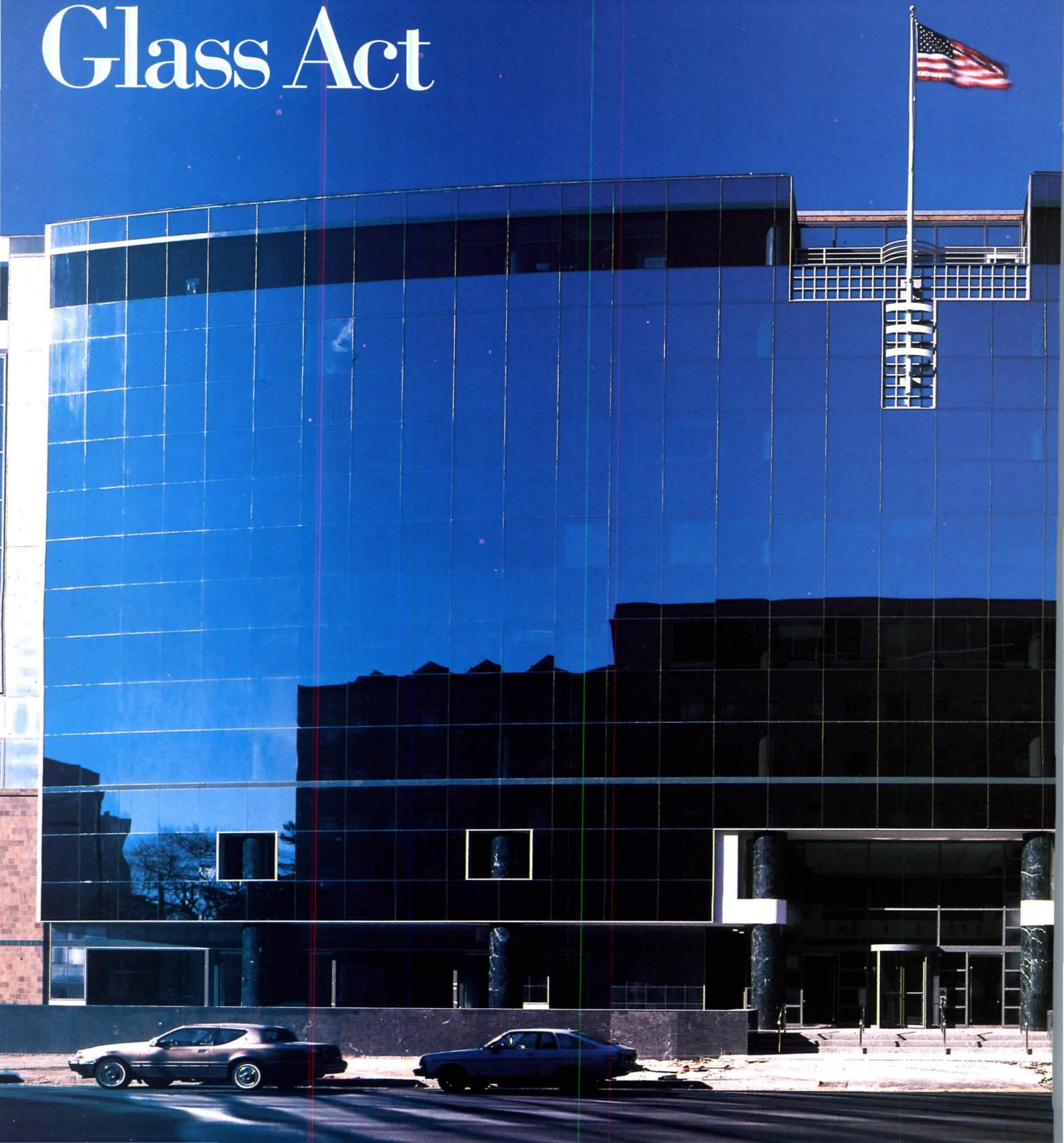
COMPANY

RESTAURANT

THE DELICATESSEN RESTAURANT & CATERING

Washington Office Center
409 3rd Street, S.W.
Keyes Condon Florance, Architects

Glass Act





IN 1982, KEYES CONDON FLORANCE ADAPTED and expanded a 1920s refrigeration warehouse to house Washington's new Design Center. The architects' original renovation comprised a 176,000-square-foot, sleek glass curtain wall addition that deliberately contrasted with its context and the red brick warehouse. Located amid banal government buildings of limestone and precast concrete, the Design Center stands as an outsider in both function and form.

Nine years later, KCF has delivered an encore significantly more sophisticated and refined than its first effort. Originally slated to house more showrooms, the new building was revised according to changes in the marketplace. The second phase is a 375,000-square-foot speculative office structure connected to the original Design Center that functions as a separate building. Along the north facade, where old and new meet, vertical strips of matte-finished glass panes are set in a gridded pattern of reflective panels, recalling the brick pilasters of the warehouse. As in their earlier renovation, the architects set this composition atop a brick base.

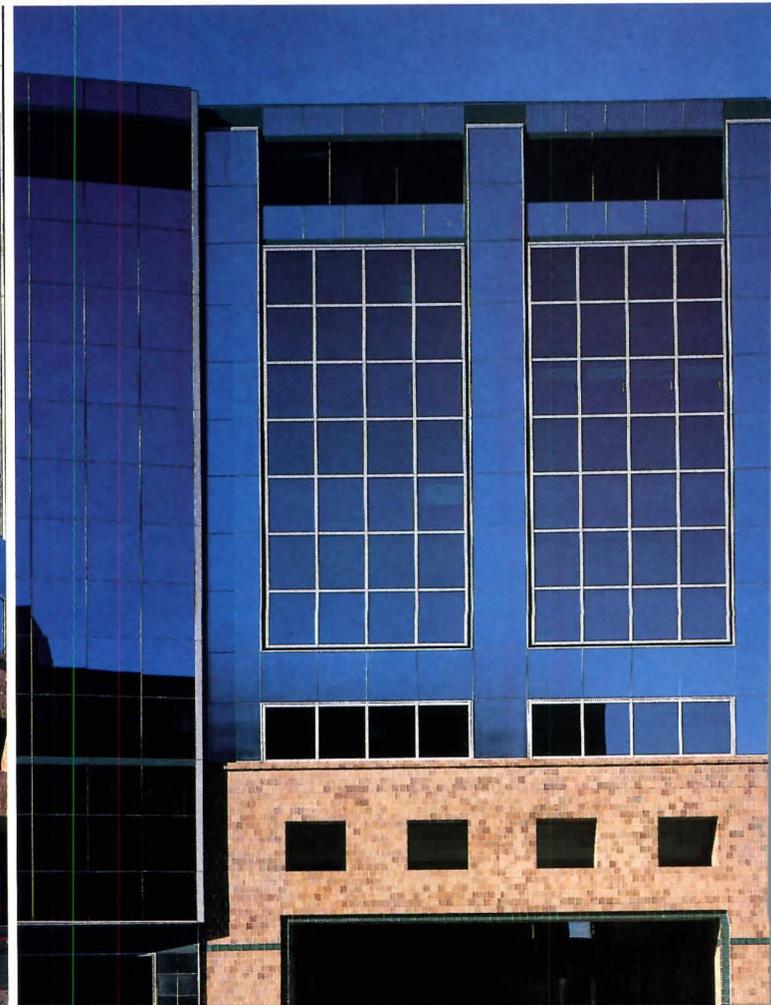
But the front of the office building is located to the east, facing 3rd Street, S.W., where new construction turns the corner away from the original. Anchoring this main facade like a pair of bookends, corner bays seem to support the curving central facade with a brick base and a curtain wall system enlivened with a strong vertical expression.

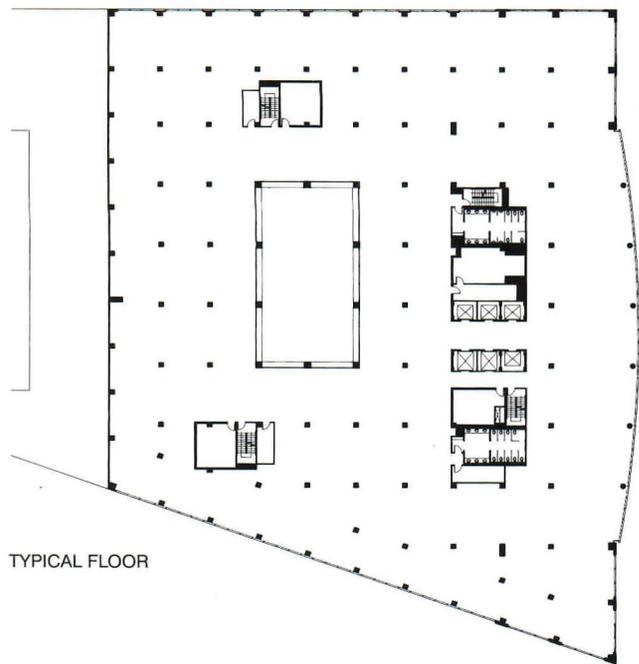
The architects made the transition away from historical references with a tautly clad bowed bay that measures 150 feet in length. Set atop a granite terrace that defines its territory, the eight-story building reads as a series of layers. The curtain wall is punctuated by square windows and a soffit that comes out to grab the marble columns, appearing to float in front of a white monolithic liner exposed only at key points. Encouraging an interchange between exterior and interior, KCF repeated the Modernist vocabulary in public spaces and extended the marble columns and glass cladding system into the lobby.

Keyes Condon Florance's new Washington Office Center debunks the myth that Neoclassicism is the only game in town, and proves that Modernism is alive and well in the nation's capital. ■

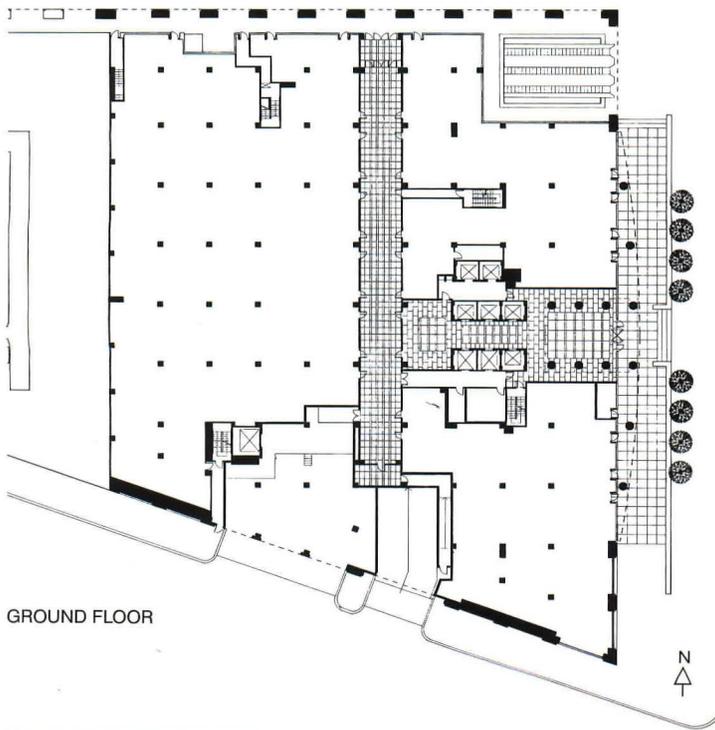
—LYNN NESMITH

KCF's composition is enlivened by a bold glass facade (previous pages and bottom left) and corner anchors (below and bottom right). To break up a 50,000-square-foot floor plate, the architects carved out an atrium (plans, facing page). The columns are repeated inside (facing page, top) and a balcony recalls the front facade (facing page, bottom).





TYPICAL FLOOR



GROUND FLOOR

WASHINGTON OFFICE CENTER
409 3RD STREET, S.W.

ARCHITECTS: Keyes Condon Florance, Architects, Washington, D.C.—
Tom Eichbaum, David Condon (principals-in-charge); Martin Denholm,
Andrew Singletary, Steve Buck, Terum Patel (project team)

ASSOCIATE ARCHITECTS: Bryant and Bryant, Washington, D.C.

ENGINEERS: Tadjer-Cohen-Edelson (structural); Shefferman & Bigelson
(mechanical/electrical); Greenhorne & O'Mara (civil)

CONSULTANTS: Grenald Associates (lighting)

GENERAL CONTRACTOR: George Hyman Construction

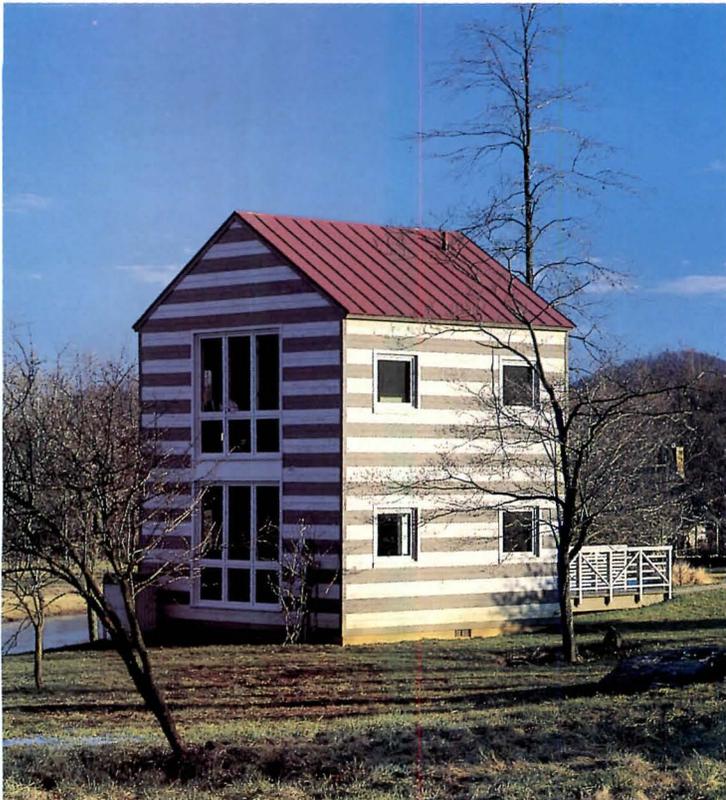
COST: \$31 million—\$77.50/square foot

PHOTOGRAPHER: Maxwell MacKenzie



Contemporary Cabin

Inspired by an 18th-century log house, an office reflects the design fundamentals of a young firm.



Originally hired to renovate a log cabin (below right) into an office, Adamstein & Demetriou instead created a new cedar-clad building (above and facing page). The two-story structure includes a conference area on the first floor and a two-person office on the second (plans). Red tin roof matches the clients' nearby house, as well as traditional buildings in rural Virginia.

OLVIA DEMETRIOU AND HER HUSBAND, THEO ADAMSTEIN, SHARE similar obsessions about creating what she calls a "procession through architecture. There's an importance of how one enters a building, how one moves through it, and what you finally come to." Demetriou compares this approach to the way a director manipulates a viewer through a film, a metaphor that stems from the couple's other occupation—running a highly successful laboratory for custom photographic processing. The 25-person lab and the four-person architectural office share quarters in Georgetown, and they also share Adamstein, who runs the lab while keeping a hand in the firm's architecture, especially in the conceptual stages.

Adamstein & Demetriou's ethic is to reduce architecture to its essence, as the pure, almost childlike form of the rural Virginia office for a philanthropic organizations consultant makes clear. To emphasize a sense of isolation from the client's nearby home, Adamstein & Demetriou designed the office with a "drawbridge," as if a moat surrounded the tiny tower. The bridge, axially aligned with the back door of the house, gives the 18-by-18-foot, two-story office a formality and importance that sets it apart from other buildings on the 200-acre farm. These include the client's house, designed in the early 1980s by the New York firm Bumpzoid, and an 18th-century log cabin that the tower references in a contemporary manner.

The couple's photo lab/architecture practice permits them to take only those projects that afford a freedom to pursue their own interests. In Washington's polite, traditional design community, that includes, says Demetriou, "pushing the limits of architecture." ■

—HEIDI LANDECKER

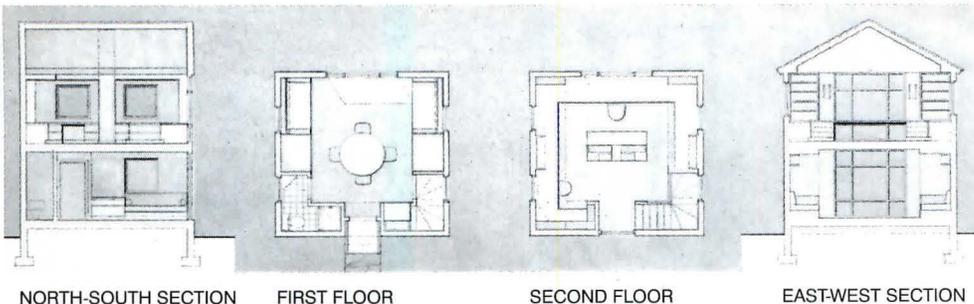
ARCHITECTS: Adamstein & Demetriou, Washington, D.C.—Olvia Demetriou, Theodore Adamstein, (principals-in-charge); Brian O'Connell, Margaret Gaughan (project team)

CONTRACTOR: Norris Wilson

LANDSCAPE ARCHITECT: Meade Palmer

STRUCTURAL ENGINEER: Tadjer-Cohen-Edelson

PHOTOGRAPHER: Maxwell MacKenzie



NORTH-SOUTH SECTION

FIRST FLOOR

SECOND FLOOR

EAST-WEST SECTION





WEINSTEIN ASSOCIATES ARCHITECTS

Capital Improvements

A young architect brings a contemporary vocabulary to a Victorian neighborhood.

WEINSTEIN ASSOCIATES' RECENT PROJECTS ARE LOCATED ON CAPITOL Hill, one of Washington's many historic districts, which requires facing what principal Amy Weinstein calls "the pragmatic reality" of practicing architecture in the capital city. While a Modern approach is always appealing, Weinstein's experience is that by the time all the changes are made to gain approval from the District's rigorous preservation review board, the projects lose their contemporary edge. "There's no point trying to be a brave new Modernist in a historic district in Washington," Weinstein laments.

Similarly, adventurous residential clients in the capital are few, partly because resale is always a concern in a city known for transience. "My sense," says the University of Pennsylvania-educated architect who studied with Norman Foster and Louis Kahn, "is that there are any number of Manhattan clients who want the latest drop-dead Modern statement. But in Washington, clients want a house to look like a house, not a ma-

chine for living." Weinstein Associates' solution is to design buildings that appear at first glance to fit their contexts, but, at second glance, clearly belong to the 1990s.

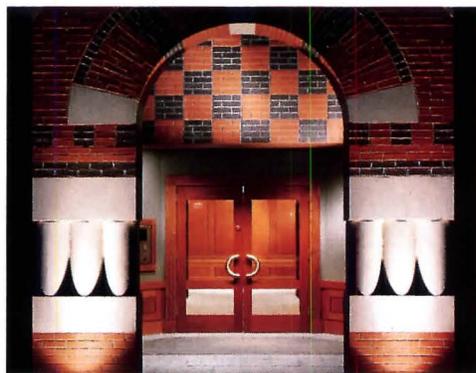
Located on two leased floors near Dupont Circle, another historic district, Weinstein's 11-person firm is a varied practice that has learned to work well with the District of Columbia Historic Preservation Review Board, one of the nation's oldest. "Her work is contextual in a way that still bespeaks a current project," says Nancy Witherell, an architectural historian for the board. And, since historical periods vary, even within the small vicinity of Capitol Hill, buildings by Weinstein Associates can be refreshingly dissimilar.

To begin a project, Weinstein purchases books on the architectural style of the buildings surrounding her site. As a result of the architect's Capitol Hill projects, her firm owns every book on Victorian architecture that's been published in the last 10 years. "You can't just rely on your memory of what these styles look like," she maintains, "a lot of mediocre Postmodern architecture occurred when architects did that."

After a thorough exploration of the site, Weinstein builds a model—often with adjacent historic buildings in tow. "And we really design in model," she explains. "It allows you to see the building at eye level." She presents the schemes in model form, rarely drawing elevations, and "forces the clients to get down on their knees and really see how the building will look. They always protest, but then they say, 'oh, you're right.'"

This contextual approach is basic to Weinstein's design esthetic; she feels a building doesn't exist outside its context, whether historic district or wooded site. Although her work always departs from literal interpretations of past styles, she is uncomfortable with purely abstract notions of architecture. "My work can't be described as 'my building is a spine' or 'my building is the void within the void,'" she contends. "I think architecture is much more subtle and rich an art than that."

—HEIDI LANDECKER

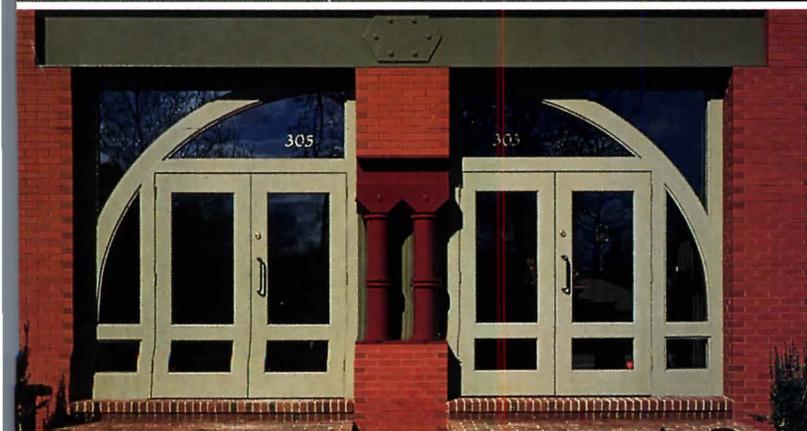
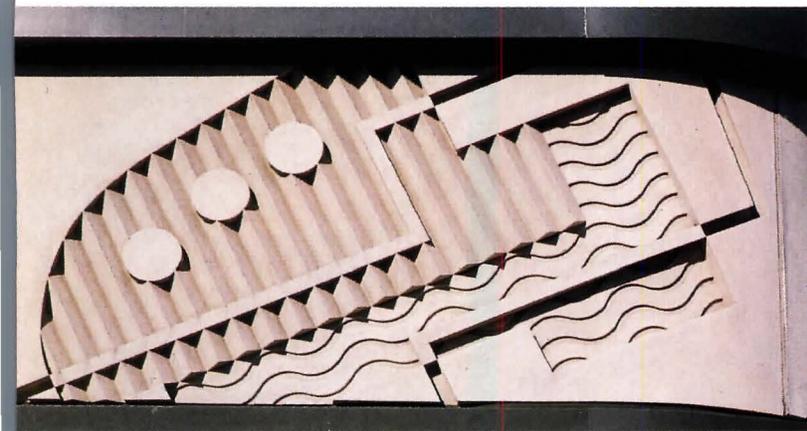


MAXWELL MACKENZIE (AND FACING PAGE)

Reinforced concrete frieze on Weinstein's Pennsylvania Avenue office building (left) is based on 1930s-era designs, but cropped for a Modernist effect. A contemporary steel and glass storefront (bottom left) recalls the eclecticism of Philadelphia architect Frank Furness. A three-story office building on Capitol Hill (above and facing page) reveals contemporary building methods with brick cladding separated from slate-covered Modern volumes.

LARRY OLSEN

KENNETH M. WYNER







518 C Street

AMY WEINSTEIN CLEARLY REVEALS HER buildings as 1990s structures through a contemporary expression of details. For a three-story office building at 518 C Street, N.E., located on a prominent corner across from Stanton Park on Capitol Hill, the architect carried this idiom beyond the details to the structure. "We clearly show that the front wall is just a skin and not a bearing wall; that we build differently now than we did 100 years ago," says the architect.

Although not immediately evident at first glance, from an angle it is easy to see that the building's skin rides clear of the slate-shingle-covered cylindrical and gabled volumes behind it. To the west of the C Street entrance, the building's mass steps down in deference to the oldest (and lowest) structure on Stanton Park, an early 1800s wood frame house that is now a landmark.

To the west of the entrance, the facade steps up to a corner tower, its projection implied by a brick pattern which stops to delineate the tower's eastern margin on the C Street facade. "We didn't want to build a three-dimensional tower like the other two on that corner," Weinstein explains, referring to the Victorian towers directly and diagonally across the street. "We wanted a more Modern expression of what a tower might be." The single slot at the facade's highest point implies a large-scale crenellation and reveals that there is nothing behind the skin. In height, the corner matches the true Victorian tower across 6th Street, and the residential appearance of the building blends with the neighborhood, which was built to house upper-middle-class Washingtonians at the turn of the century but is now largely commercial. Inside, the building has a small lobby and a typical office-tenant layout; on the third floor, a conference room terminates in an apse formed by the cylindrical volume.

Along 6th Street, a rhythmic projection of bays responds to existing 1890s residences on the block, helping to break up the building's mass. Where the Victorians spanned large

ARCHITECTS: Weinstein Associates Architects, Washington, D.C.—Amy Weinstein (principal-in-charge); Margaret Mook (project architect); Linda Gureckas, Joanna Macias (project team)

ENGINEERS: Ehlert Bryan, Inc. (structural); Setty Associates (mechanical/electrical, plumbing)

CONSULTANTS: Ruthann Smith (lighting)

GENERAL CONTRACTOR: American Property Construction

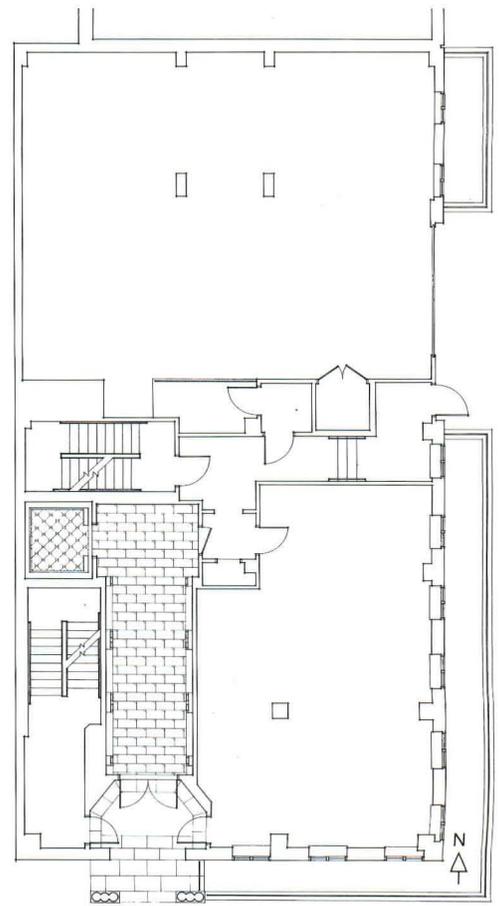
PHOTOGRAPHER: Maxwell MacKenzie

openings such as carriage doors with cast iron beams decorated with rosettes, Weinstein extends a steel beam with silhouettes of cut-out stars, a humorous reference to many renovated Capitol Hill structures sporting metal stars on their facades, which hide connections to tie rods supporting weary floor joists.

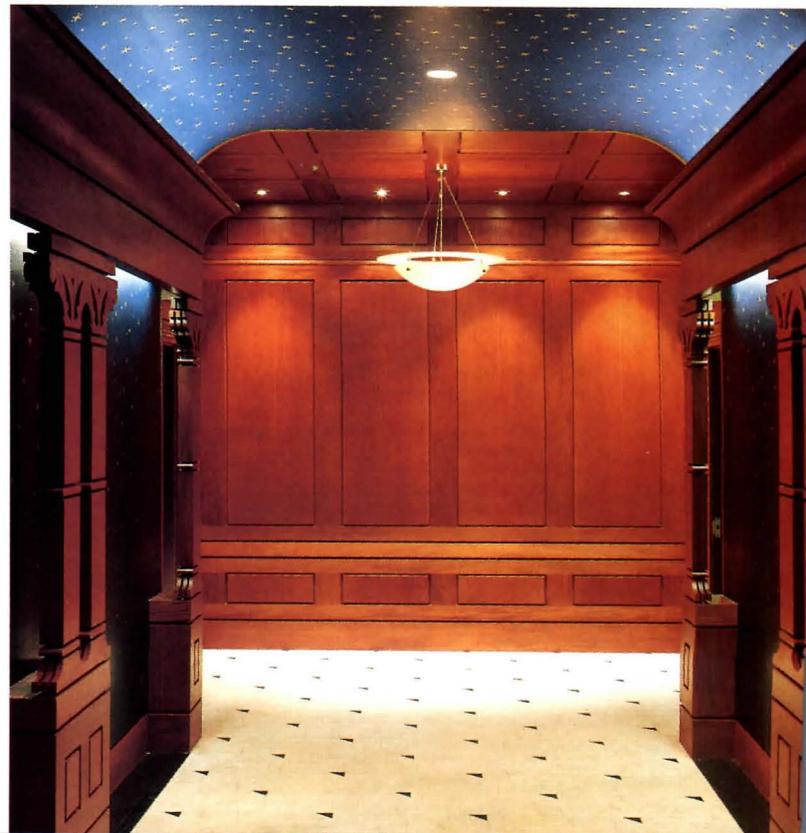
To derive the variety of different brick patterns on the building's facade, Weinstein studied photographs and drawings of high Gothic Victorian architecture, including William Butterfield's Keble College at Oxford. The use of black brick on red to create a pattern was a common turn-of-the-century practice, Weinstein says, but the Victorians used red bricks soaked in a crankcase oil solution to blacken them. The bricks used at 518 C Street are through-body black bricks obtained from a Nebraskan manufacturer.



Mahogany woodwork in lobby bears traditional Victorian designs in cut-out columns and capitals (above). Stars painted on ceiling and walls are intended to give the small lobby a sense of endless space. At its entrance (facing page, top), the three-story building steps down to meet a landmarked structure (left in photo). Archways are based on turn-of-the-century designs, as is exuberantly polychromed cladding (facing page, top and bottom).



GROUND FLOOR



666 Pennsylvania Avenue

ALTHOUGH AN ABANDONED 1936 KRESGE'S five-and-dime at the corner of Pennsylvania and 7th Street, S.E., wasn't old enough to be a landmark, its developer decided to retain the Art Moderne structure after consultations with the preservation review board. Weinstein Associates, which had completed three other Capitol Hill projects for Stanton Development Corporation, was hired to create a three-story office addition, retaining the storefront as a base. To accommodate offices in this desirable commercial area near a Metro stop, local zoning officials granted one of the largest variances ever allowed in the District.

In keeping with its Pennsylvania Avenue context, the architect retained the original Kresge's windows for the retail storefronts that stretch along the boulevard, and placed the office lobby around the corner on 7th Street. Adapting a pattern by 1930s designer Donald Deskey (his work included the Rainbow Room in Manhattan, the Prell tube, and the Clorox bottle), Weinstein created a reverse bas-relief of fiberglass reinforced cement for the frieze that wraps the building. Instead of giving the pattern a border, as a 1930s designer would have done, she cropped the frieze's top and bottom edges, offering a more contemporary expression.

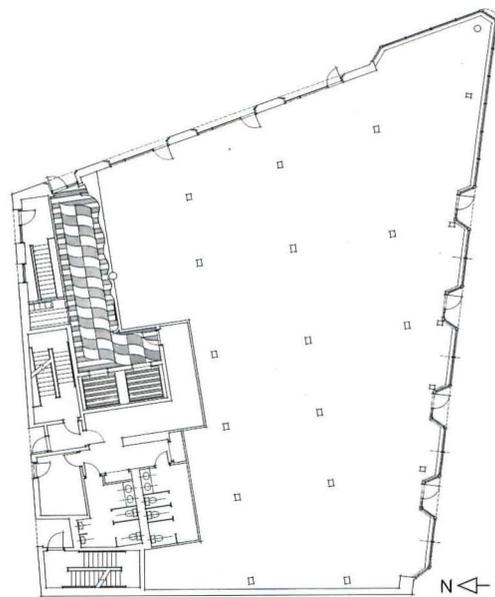
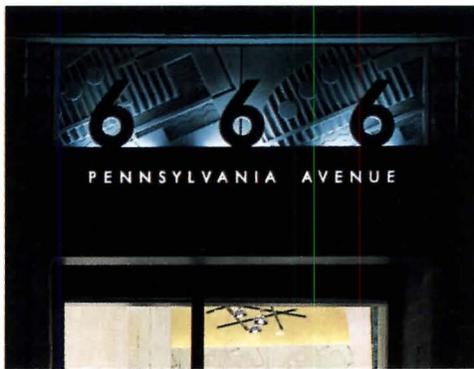
The addition is clad in beige brick that matches the original (visible above the frieze) as closely as possible. In the upper stories,

the material is combined with aquamarine glazed brick that resembles a 1930s color but is slightly more subdued. Weinstein refers to the mottled upper stories as the building's "tweed suit" and the frieze as its "necktie."

The brick pattern for this project was derived by a painstaking process developed by the architect after working for Venturi and Rauch, where she spent three years after graduate school. Weinstein creates two-dimensional patterns with color-matched paper "bricks," and then takes Polaroids of the patterns to establish how they appear from a distance. She builds actual-size mock-ups of the preferred patterns, and then carries the cardboard "walls" of pasted paper bricks to the site to determine whether the pattern is appropriate for the context. Weinstein says the polychromy for 666 Pennsylvania Avenue

was developed in part to make the building "comfortable" in a predominantly Victorian neighborhood.

Within the lobby at the 7th Street entrance, undulated walls create an Art Moderne sense of movement through the interior, drawing a visitor back through the narrow corridor to the elevators at the rear. A small budget dictated faux finishes on the lobby's plaster walls, which are painted to look like wood. Weinstein carried the 63-degree curve of the original Kresge's corner up through her additional three stories. The top floor is set 10 feet back from the two lower stories, in keeping with the mass of the adjacent building and of a junior high school across the street. The setback creates a terrace, affording top-floor tenants a view down Pennsylvania Avenue to the Capitol. ■



GROUND FLOOR

In keeping with Pennsylvania Avenue's commercial context, the south side of the building houses shops at street level (facing page, top) with the entrance to the offices around the corner (above and facing page, bottom right). The frieze is repeated in the lobby (left) where a marble tiled floor creates a sense of movement. The architect extended the angle of the original storefront's chamfered corner all the way up the building (facing page, bottom left).

ARCHITECTS: Weinstein Associates Architects, Washington, D.C.—Amy Weinstein (principal-in-charge); Linda Gureckas (project architect); Chris Kirwan (job captain)

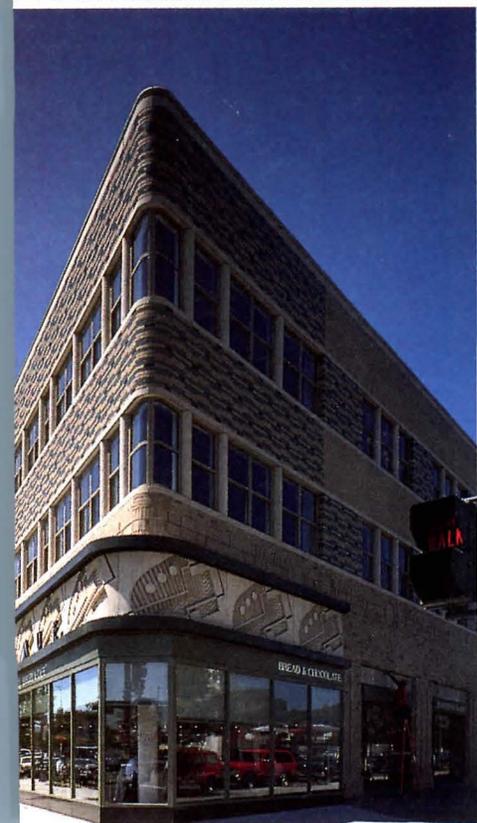
ENGINEERS: Ehlert Bryan, Inc. (structural); Ralph Petrossian Associates (mechanical)

CONSULTANTS: Candace King (lighting)

GENERAL CONTRACTOR: Stanton Development Corporation

PHOTOGRAPHER: Maxwell MacKenzie, except as noted





Industrial Evolution

A spare and simple richness suffuses residential work by a native Washingtonian.



BILL LYONS



JULIA HEINE



ANDREW LAUTMAN

Steel-framed canopy over a Northwest Washington back porch (top), completed in 1989, has a polyester screen with vinyl coating. A canopy of copper-leaved plywood and a copper roof shields the front porch of a 1990 house renovation (above left), where the vaulted form is carried through the home's central hallway (above right). "We wanted something very minimal that sets up a place with the least possible means," says the architect of the canopy. The Knight weekend house (facing page) echoes regional agricultural buildings in a tough materials palette.

"I LIKE TO FIDGET WITH BUILDINGS WHILE THEY'RE BEING BUILT," says Mark McInturff, whose suburban Washington, D.C.-based firm specializes in residential architecture. McInturff prefers to let buildings evolve during construction, not a risk that all clients are willing to take, but a method he applied to the fullest when building his own house and office. "Every project I'll show you," he says, "is probably 25 percent different than the working drawings, due to wholesale changes that came about during construction."

Though not a design/build firm, McInturff Architects' strong interest in the making of buildings stems from the 43-year-old architect's two years working as a carpenter after he completed his architectural training. He has also built his own house—twice. It is not unusual for McInturff and another member of his five-person firm to visit the construction site of one of his projects more than 100 times, establishing a rapport with the builder, often bringing to the job a cabinet-maker or a metalworker who has worked with him before. "We have a little group of artisans who we keep busy all the time."

A Washington native who studied at the University of Maryland, McInturff says he was strongly influenced by a summer semester touring European villas and palaces with Charles Moore, a visiting professor. Indeed, a rich articulation and layering is evident in some of his buildings, although McInturff's recent work exhibits a finely finished simplicity of industrial forms and materials. The newest work is more pared down, he says, because the firm is experimenting with copper, marble, corrugated steel, and granite, materials that the architects feels "don't want to be complicated by additional colors and forms." He believes in establishing a hierarchy: "There are certain parts of a building that really deserve a lot of care, attention, and cost, while other parts need to be laid back." In the Knight weekend house (facing page), for example, the tower-loft element that separates the kitchen and living room is the most highly articulated section of the interior; the rest of the house is relatively spare.

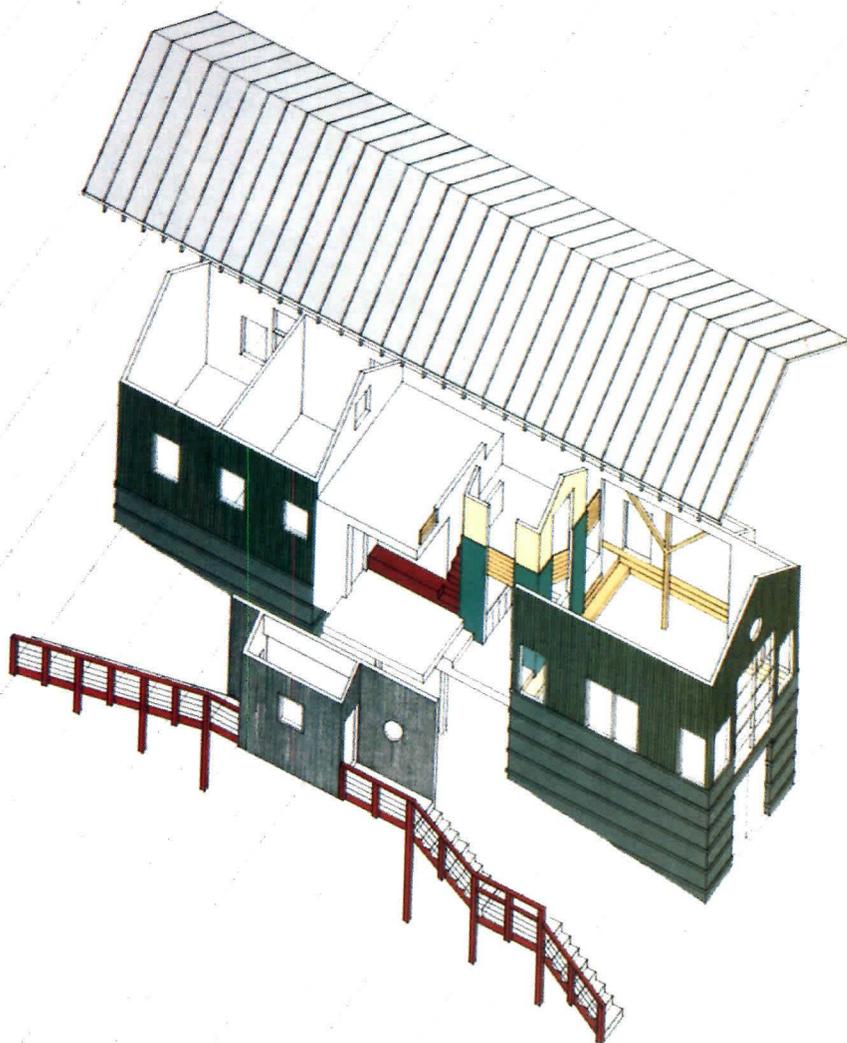
McInturff once identified with the illusion, contextualism, and historicism that defined Postmodernism, but now says he doesn't like being pigeonholed by the term. Washington, he believes, embraced historicism over the past decade because of its focus on tradition, but clients in the conservative capital city "bought the history without the irony—they breathed a sigh of relief when tradition became fashionable." He believes that local interpretations of the past have grown more and more literal, until the goal of Washington architects seems to be making "buildings that looked as if they'd always been there." McInturff strives for buildings that play upon their context without literally repeating it. Fitting a context too closely, he laments, has been "the argument for an awful lot of tame work." ■

—HEIDI LANDECKER



The scheme that was chosen for the Knight house and developed all the way through working drawings was a small three-story tower in the Shenandoah foothills for two busy Washington professionals. When the clients realized that a covenant on their property required construction of a building with a certain size footprint, they took the design to the community for approval. The community threatened to sue if the tower was built, so architects and clients went back to the drawing board and selected their second-favorite scheme.

The long, thin, post-and-beam house is constructed of three different types and colors of plywood. Corrugated metal encloses "what Charles Moore calls the machines," according to McInturff—the kitchen, entry, and utilitarian parts of the house (below left). In plan, the house is a linear arrangement of two bedrooms, bath-laundry-kitchen area, and dining-living room area, with peaked ceiling and south-facing windows (right). A fir-clad loft above the kitchen (below right) provides additional sleeping space. A porch (facing page), added after the clients' first year in the house, was conceived by the architect as a "metal drawer that pulls out of the house, with a metal end but no metal sides." In the Knight weekend house, McInturff says, the agricultural form of the building is familiar, but "we turned up the volume."



KNIGHT WEEKEND HOUSE
FRONT ROYAL, VIRGINIA

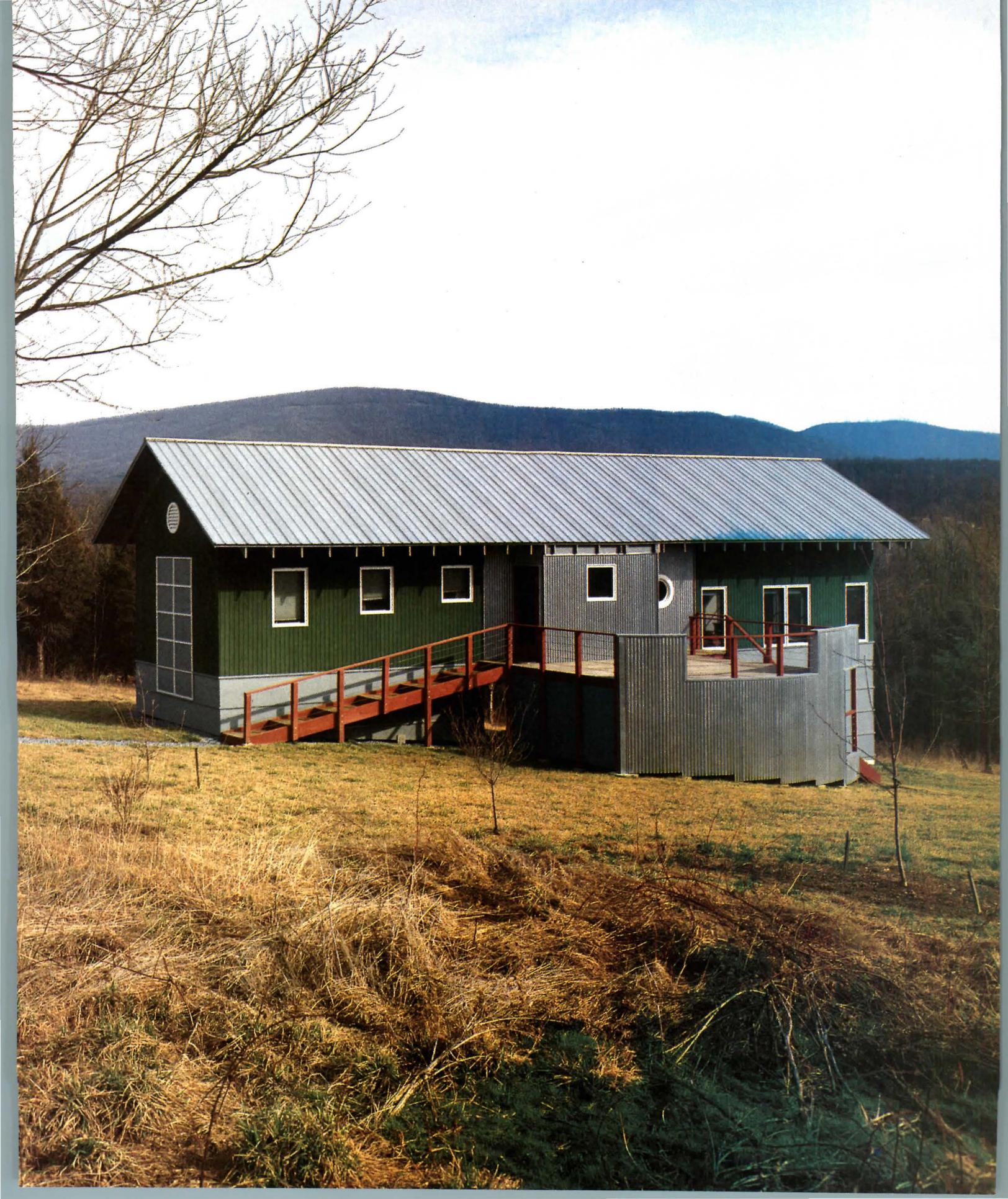
ARCHITECTS: McInturff Architects, Bethesda, Maryland—Mark McInturff (principal and project designer); Tom Bucci, Julia Heine, Norman Smith (project team)

GENERAL CONTRACTOR: Douglas Thomas Construction

PHOTOGRAPHER: Walter Smalling, except as noted



JULIA HEINE





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Bending the Rules of Wood Engineering

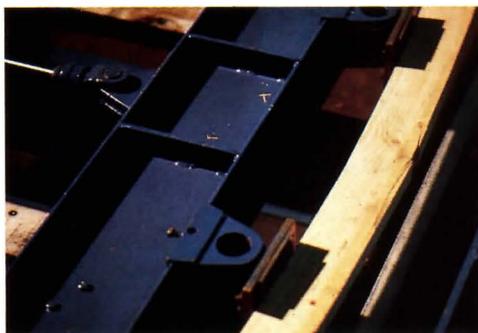
LOAD AND RESISTANCE FACTOR DESIGN (LRFD), an engineering method that has already influenced the construction of steel and concrete structures and is currently being incorporated into the evaluation of masonry buildings (see pages 115-118), is now on the verge of altering the design and application of structural wood members.

In a recently completed 12-year testing study of 42,000 pieces of softwood lumber, conducted throughout the United States and Canada, wood members

chosen from randomly selected mill lots were pushed to their strength limits to validate existing wood design values against LRFD, which relates material properties to load requirements. After three years of working with the American Society for Testing and Materials (ASTM) to develop a test-based standard, the Western Wood Products Association (WWPA) in January released preliminary tables outlining modifications to current dimensional lumber values for shear, tension, compression, modulus of elasticity, and resistance to bending stress. These new values are expected to alter established wood-member span and load capacities, and are currently subject to acceptance by building code officials.

The test results revealed significant variations from existing, accepted design values, including a reduction in bending and stiffness values in some wide widths (2 by 10s and larger dimensions), especially in the lower grades. Bending and tension strengths of narrow widths (2 by 4s and smaller dimensions) in the highest grades were found to be generally higher than the existing values. Most of the modulus of elasticity values are slightly lower than existing design values, while compression strengths will be significantly higher than existing design values for most sizes and grades of lumber.

Although the allowable spans for some wood members will be reduced, researchers



Based on 12 years of testing and observation (above) and more than 42,000 pieces of lumber pushed to their breaking point (left), the Western Wood Products Association has adjusted engineering design values for wood members to reflect more accurately their structural capabilities.



indicate that existing wood structures have performed satisfactorily, due to the built-in safety factors of extremely conservative existing values and because constructed spans are commonly less than the current allowable maximums permitted. Research also reveals that common nailing, gluing, and sheathing practices, along with the use of repetitive members (such as floor joists, roof rafters, trusses, and stud walls), can produce up to a 50 percent increase in actual performance strengths over preliminary design-value calculations. According to the WWPA, such light-frame wood systems account for approximately 85 percent of dimensioned lumber.

The test results, therefore, will most significantly influence engineering calculations for dimensioned lumber used as a single structural element. One system still expected to be affected, however, is an industrial panel roof in which better grades and deeper members may be required. The selection of wood species for truss systems may also be influenced by the test results. Other design revision proposals include new column formulas and connection criteria. For further information, contact the WWPA: (503) 224-3930. ■

New Guidelines

The Building Thermal Envelope Coordinating Council of the National Institute of Building Sciences has completed the first stage of documentation to develop construction design guidelines for federal building envelopes. From building research, design, and construction sources, data on exterior wall and roof systems that address heat transfer, air infiltration, ventilation, and moisture transfer have been forwarded to the Center of Building Technology of the National Institute of Standards and Technology (NIST), which will develop the final draft guidelines. The guidelines are scheduled for submission to the General Services Administration's Public Building Service on September 30, 1991. For more information, contact NIBS: (202) 289-7800.

With the National Roofing Contractors Association (NRCA), NIST is also cosponsoring an international symposium on roofing technology to be held April 17-19 in Montreal. Results of the more than 70 papers to be presented will also be available at that time. The proceedings from the last international symposium, held in 1985, are also available. For further information, contact the NRCA: (708) 299-9070.

For architects seeking information on detailing and specifying architectural and structural standing-seam metal roofing systems, the roofing task force of the American Iron & Steel Institute (AISI), in conjunction with the Metal Building Manufacturer's Association and the Metal Construction Agency, are in the process of developing the first nonproprietary metal-roof construction guidelines. The guide is expected to be completed this fall and will include 75 details in addition to a listing of industry sources. For further information, contact AISI: (202) 452-7100.

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Government as Client

Architects debate the merits of privately developed public buildings.

WHY WORK FOR A CLIENT WHO SCRUPULOUSLY audits budget proposals, offers small fees, has a low regard for design excellence, and is slow to make decisions? When the client is a government agency required to reimburse payments within 30 days and, during the current recession, is spending more on construction than private developers and corporations (see chart below), the reasons are obvious. As a result, more and more architects are seeking to dip into the stable well of federal, state, and local government commissions for design services.

Beyond surviving lean times, designing for government clients offers architects visibility and the satisfaction of community service. As principal Robert Yohe of Hansen Lind Meyer, a firm involved in several county courthouse and judicial facilities in Florida, notes: "There is a challenge in government projects because they are important to the fabric of a community" and often serve as high-profile symbols of civic pride on prominent sites. "I feel a greater sense of accomplishment in developing a solution for a public building than for a speculative project," adds Daniel Dworsky, principal of Dworsky Associates in Los Angeles, California, architects for the Los Angeles Federal Reserve Bank and Van Nuys Courthouse. Since the future tenants of government buildings are already established, architects face a closer working relationship with public sector clients than with many of their private, speculative counterparts.

More importantly, architects' previous reservations about government contracts are vanishing as a result of a trend toward more design-build and privately developed projects at the federal, state, and local levels. Such public projects move through a process similar to fast-track, speculative, private-sector development. In 1990, Congress authorized 21 new federal construction projects, eight to be completed by design-build firms, and 13 under a lease-purchase agreement administered by the General Services Administration (GSA), the federal government's construction management agency. In the lease-purchase



agreement, funding is partially or completely provided by a private developer, and the government then leases the building until it decides to purchase it. The Department of Housing and Urban Development (HUD) and the Defense Department have experimented with the design-build process since the 1960s, according to James Stewart, director of design and construction for the GSA. But the 1990s projects are the first to be implemented by the GSA under a planned, systematic approach to public buildings that will put the design-build process on equal footing with the traditionally tax-financed, low bid, lump sum selection procedure.

Responding to the increase in design-build contracts, the AIA's Government Affairs Committee initiated a task force in August 1989 to review its policy regarding such turnkey projects. Based on the committee's findings, the current version of the AIA's proposed public policy still discourages design-build, supporting the traditional architect-owner relationship as the preferred delivery method. Depending on the particular makeup of the design-build team, such architect-developer collaborations may not even be legal in some local jurisdictions, due to

The growth of institutional construction and decline of commercial buildings (chart) is expected to continue. However, where federal funding has been cut back, more local governments are looking to private developers to finance new public buildings, especially jails and judicial facilities. Miami recently signed a contract with the design-build team of Rodriguez and Quiroga Architects and Turner Construction for a new GSA Federal Law Enforcement Building (above). Construction is expected to begin in July.

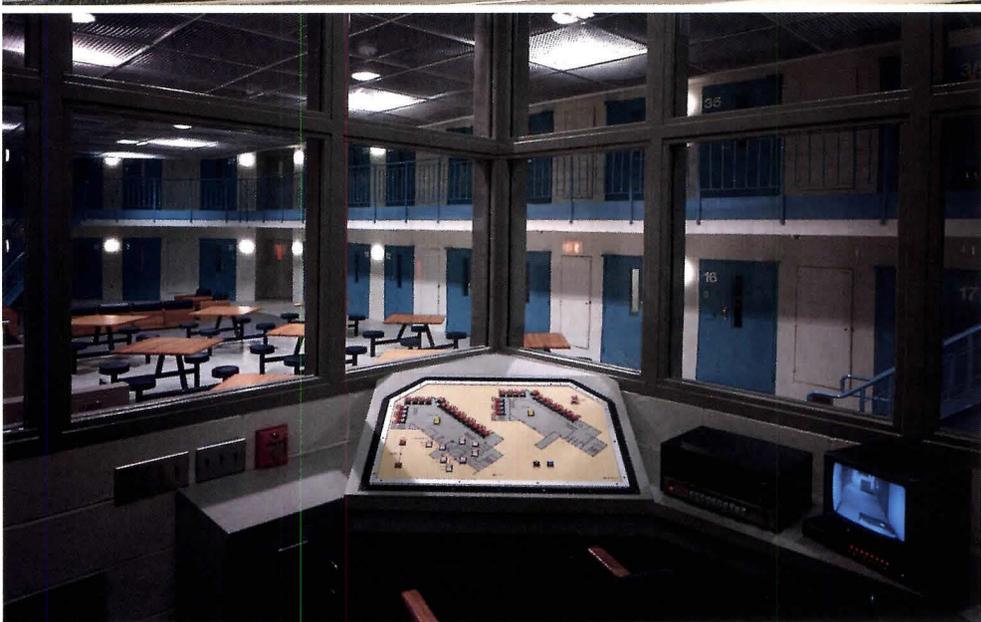
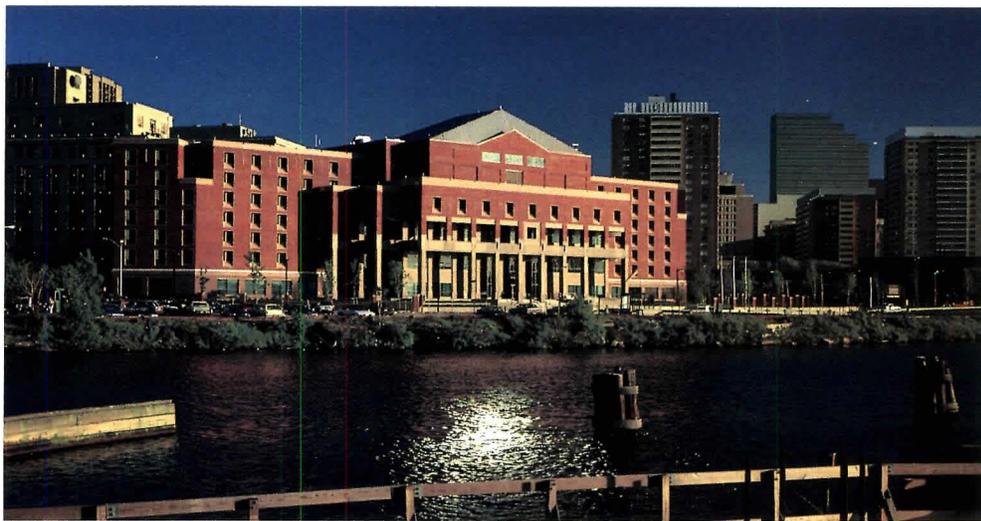


**Suffolk County Jail
Boston, Massachusetts
The Stubbins Associates**

The need for more prisons nationwide has ushered in a new era of local construction under the design-build process. However, communities prefer that these types of institutional facilities exhibit a low profile, rather than *high design visibility*. Such was the case in Boston over a prison the *Boston Globe* dubbed the “glamour slammer.” Local citizens accused the newly completed Suffolk County Jail along the Charles River (top right) of being over-designed and exceeding the requirements of its future occupants. Designed by The Stubbins Associates (in association with Voinovich-Monacelli Architects and built in conjunction with George Hyman Construction) for the Commonwealth of Massachusetts’ Division of Capital Planning and Operations, the accommodations on the interior hardly look inviting (bottom right), yet the building eschews the traditional image of a jail and is reportedly often mistaken for a condominium (center right) by passersby who enter the lobby and inquire about available apartments. As a result, the Suffolk County Sheriff’s Office is considered by some local residents to be guilty of pampering inmates and inappropriately spending taxpayers’ dollars.

Certainly, those incarcerated have no option to lease. But inmates do have the constitutional right to humane and habitable quarters, and design-build government projects can move very quickly when court orders must be met to improve the substandard living conditions of existing correctional facilities. Ensuring timely completion of the facility was the primary reason behind Boston’s decision to approve its first public project under a design-build agreement. This fast-tracked process allowed cell bars, glazing, and exterior and interior wall finishes to be preassembled and constructed as one piece, aided by the early coordination of the designers with the subcontractors. Time was also saved since, as project architect Roy Pedersen explains, “specifications and drawings also did not have to be lock-tight, since we knew who we were dealing with. We didn’t have to spell everything out for the lowest, supposedly qualified, bidder.”

Despite public controversy, the success of the Suffolk County Jail led to a second design-build project nearby, the Suffolk County House of Correction. Currently under construction, the project was also awarded to Stubbins Associates following a competition.





Judiciary Office Building
 Washington, D.C.
 Edward Larrabee Barnes/John M.Y. Lee,
 Architects, and Boston Properties

Based on the results of an invited competition selection procedure sponsored by the Architect of the Capitol and authorized by Congress in 1985, the winning design for the Judiciary Office Building (left), was chosen nearly four years later in 1989. Currently under construction and expected to be completed later this year, the 633,000-square-foot building will eventually be purchased and owned by the government after a 30-year lease agreement with the developer. The Barnes/Lee-designed building is planned and constructed to meet the needs and services of the federal government's judiciary branch and the Supreme Court for the next 100 years.

laws requiring at least 51 percent of the team to be architects. So, while fast-track construction of justice centers and jails is desperately needed (see sidebar, facing page), the jury to determine the fate of privately developed government facilities is still out. This uncertainty has led firms seeking the government as client, and even those who have a history of working for the government, to raise new questions over the role of the architect, the quality of government-sponsored projects, and the success of the design-build process in meeting the public's interests.

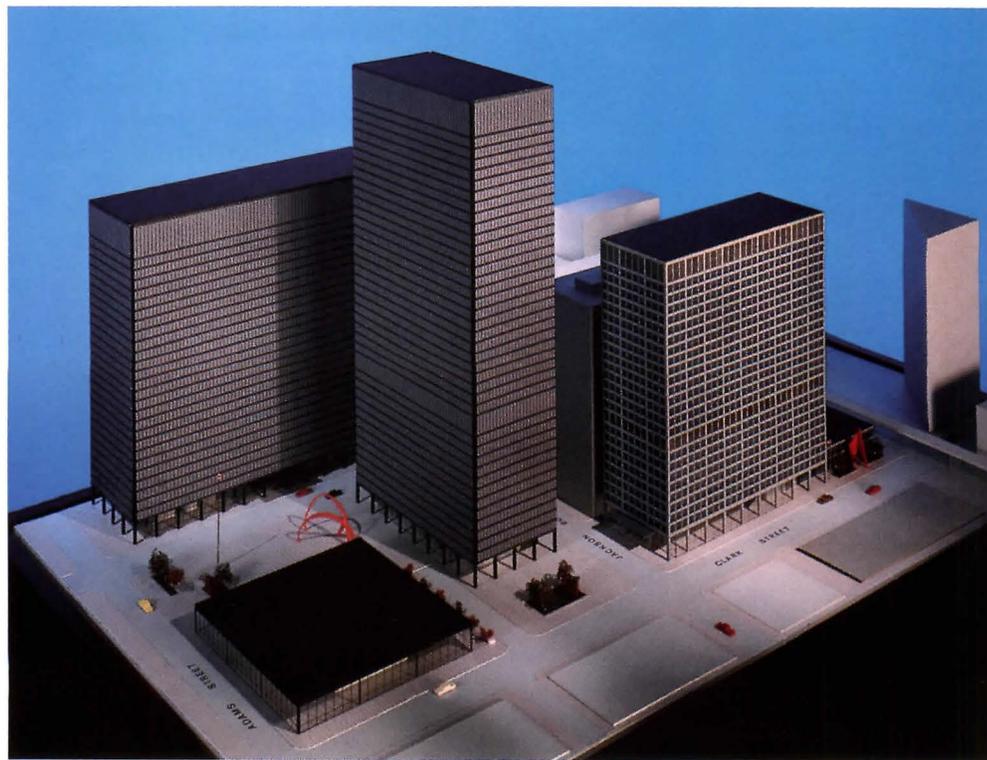
New process, new role

"FAST-TRACKING IS A WAY OF LIFE IN CHICAGO," claims Greg Gobel, project architect for the Chicago Federal Building, a 27-story, 813,881-square-foot office tower currently under construction for the GSA by the team of Fujikawa Johnson and Associates and developer Stein and Company. While common in private work, the fast-track method is still new for public construction. Architects agree that once a firm is selected, a public project moves more quickly than the traditional low bid, lump sum method, but many have reservations concerning the competition process for choosing a design-development team—the time required to select competition winners often seems needlessly long. For Foley Square in lower Manhattan, a 740,000-square-foot federal courthouse and an 800,000-square-foot office building budgeted at \$797 million, a decision on the winning proposal, originally scheduled to be made in 1989, still hangs in limbo.

Chicago Federal Building
 Chicago, Illinois
 Fujikawa Johnson and Associates/Stein and Company

Expected to be ready for occupancy in July of 1991, the \$100.5 million Chicago Federal Building (below) is the closest to completion of GSA's Congressionally approved lease-purchase construction projects. The 27-story office tower will eventually serve the diverse needs of six federal agencies, including the

Environmental Protection Agency, Department of Housing and Urban Development, United States Department of Agriculture, Social Security Administration, Public Health Service, and the Federal Domestic Volunteer Agency. A cafeteria, day care facility, retail space, and fitness center will also be provided.



SCOTT McDONALD, HEDRICH-BLESSING

Although many government officials champion the opinion that competitions encourage a higher level of design, many architects have more ambivalent feelings, especially in tight financial times, since the costs of developing a scheme may not be reimbursed. Eugene Kohn, principal of Kohn Pedersen Fox Associates, one of the finalists awaiting response to the Foley Square project, laments, "Even if awarded the contract, compensation for a competition fails to meet expenses."

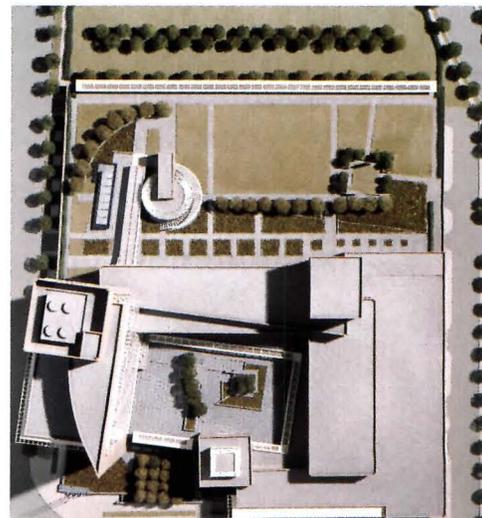
At the state level, Florida has the most established and consistent procedures for awarding design-build contracts. But even after consulting with the GSA and creating carefully detailed selection criteria, the City of Miami is still entangled in a lawsuit over suspected favoritism in a city-sponsored competition for a 12-story, \$35 million federal law enforcement building. A technical committee composed of architects, engineers, and city officials first evaluated proposals for urban design and building criteria, ranking the submissions on a point system. Bid envelopes were then opened and ranked on points related to costs. The proposal with the highest combined design-cost score was awarded the project. Arleen Weintraub, assistant director of the city's Department of Development explains: "Our objective was to get the best design at the best price, and we think we got that through this process." However, from the date of the first published request for qualifications to this February, when the winning design-build team, Florida-based Turner Construction and Rodriguez and Quiroga Architects signed the contract, the process took nearly three years. Typically, an initial survey is conducted to determine the necessity for constructing the proposed project, and a program, budget, and occasionally even a prototype design are outlined to establish competition criteria. Since the architecture firm selected for this preliminary design phase is excluded from entering the competition, the design must then be examined by the competing firms. Once the competition has begun, entrants' contact with the government agency is often limited, ensuring all architects receive the same level of information in developing their design schemes. The entrants' design proposals, therefore, are frequently the only basis for selecting a team. Once awarded the contract, the team can revise assumptions that had to be made for the proposal, ultimately resulting in design changes.

Michael Barragt, project architect with



Edward Larrabee Barnes/John M.Y. Lee & Partners, which won a competition with Boston Properties to design and build the Judiciary Office Building in Washington, D.C., attributes much of the project's success to constant review by the staff of the Architect of the Capitol. Experienced in consulting and maintaining many federal buildings on Capitol Hill, the clients expressed clear ideas about what they wanted, and they were committed to achieving the highest level of design quality for the future headquarters of the federal government's judicial branch.

Managing Principal Benjamin E. Brewer, Jr. (former president of the AIA who initiated the AIA's review of the design-build process), of Sikes Jennings Kelly & Brewer, which in association with Kohn Pedersen Fox is currently engaged in the fast-track construction of the Dallas Federal Reserve Bank, credits the design-build process for saving money and, more importantly to his client, saving time. The 750,000-square-foot, \$150 million bank is expected to be designed and constructed within a three-year time frame. Fast-track is not without its drawbacks, however. According to Brewer, "We did press the time frame during the design stage. It would have been money well spent to further develop partially completed drawings and specifications so that the client could have more clearly and accurately interpreted the contract documents, eliminating redrafting and redesigning." Brewer adds that having knowledgeable clients, the 11th District Federal Reserve Bank Board of Trustees (many of



Federal Reserve Bank Building Dallas, Texas

**Sikes Jennings Kelly & Brewer in association
with Kohn Pedersen Fox Associates**

The architects provided design and construction management services through a fast-tracked construction process initiated by the 11th District Federal Reserve Board of Trustees. The 750,000-square-foot, \$150 million Federal Reserve Bank in Dallas (top), expected to be completed in 1992, represents a possible halfway step to the private development of future Federal Reserve Banks. As an amenity to the executives and staff who will occupy the building, the grounds feature courtyards (above) designed to be secure from outside intruders.

whom are engaged in private sector development), secure an experienced project manager to represent them on site aided in ensuring their needs were met.

Quality, cost, and time

AS A CLIENT SERVING THE PUBLIC INTEREST, the government is a cautious decision-maker. The checks and balances built into the traditional process of many government projects can mean lengthy review procedures. Staff turnover and the transfer to other departments for approval can make progress difficult. Additionally, since many different agencies are frequently involved in the decision process, Robert Yohe expresses the frustration of "getting any conclusive decision at all, as opposed to getting the most appropriate decision." But shortcutting or accelerating the approval process presents its own dilemmas.

Many of the checks and balances that occur under a traditional owner-developer-architect contract are removed during the new government-sponsored design-build method. The closer relationship between architect and developer working for the government has both advantages and potential limitations. A frequently stated concern of architects is that the developer will treat them as another subcontractor. However, in government-sponsored design-build projects, the potential also exists for architects to seek a developer they have worked well with in the past, leading to greater involvement on the architects' behalf in selecting subcontractors and ensuring design decisions are carried through to final construction. On the one hand, it affords an architect greater responsibility for ensuring a quality project that meets the needs of a demanding public. But an architect also faces the possibility that the long-term interests of a government facility can be sacrificed for shorter-term profit motives.

It is difficult enough with a full set of specifications and plans to ensure design criteria are met, but without the owners' contribution, more latitude is potentially available to the contractor. As indicated by Robert Ostberg of Stubbins Associates, the architect of two Boston projects completed under the design-build process (see sidebar, page 98): "Owners cannot write a performance specification, walk away for two years, and expect to come back getting what they originally wanted." Frequent meetings with the eventual government-owners are required to ensure that future occupants will get what they need and expect.

The debate continues

NEITHER THE GOVERNMENT NOR ARCHITECTS can ignore a process that is becoming common practice in private industry. "There is going to be a lot of pressure in the building industry to integrate design and construction, and those firms who begin to master it will be looked upon to shape the rules for those that follow," forewarns Ostberg. For developers, government lease-purchase contracts offer a guaranteed tenant. For state and local governments feeling the squeeze of reduced federal aid, private development may be the only viable option to finance an increased demand for public facilities. Although the benefits of reduced construction time, fewer staff devoted to reviewing documents and construction, and dealing with fewer change orders are enticing, GSA's Stewart stresses that design-build will only be chosen for projects that must be quickly constructed. In comparison to the traditional delivery process, more of the government's senior staff time is required to keep such projects moving smoothly. "There is a feeling within the agency that there might be a control problem," Stewart states. As food for thought, he adds, "We are digesting the results of current projects to see how they measure against more traditionally financed projects." Preliminary studies by the GSA have shown design-build projects to cost an additional 5 to 10 percent over the low bid, lump sum method, due to less well-defined specifications and drawings as a basis for construction budgets. These findings counter the perceived notion of reduced construction costs. As a result, this premium must be justified by reduced construction time. Of the 138 new construction and renovation projects the GSA is currently authorized by Congress to manage, 35 are slated to be completed under the design-build process.

Architects involved in such projects generally express the opinion that the outcome hinges on the expectations of architect, developer, administrators, and contractors that comprise the design and construction team. "It comes down to individuals and what they consider to be their responsibilities," maintains W. Easley Hamner, a principal of Stubbins Associates. "No system can prevent abuses." Although the success of privately developed government contracts remains to be proven, architects involved in public work agree that by exploring alternate methods, the government is becoming more dedicated to achieving greater design excellence. ■

—MARC S. HARRIMAN

Alphabet Soup

EVERY ARCHITECT HAS DEALT WITH government regulations in meeting code requirements and securing building permits. Zoning variances, landmark preservation review committees, and community boards present their own required forms and procedures to ensure the safety and best interests of the public. Some architects, however, still argue that obtaining government contracts is more like constructing a house of cards from a bureaucratic paper trail than designing a building. For example, a typical government project requires looking for RFQ (request for qualifications), RFP (request for proposals), and SFO (solicitations for offers) announcements, in order to respond by filling out an SF-254 (standard form to provide a firm's general qualifications) and SF-255 (standard form to provide qualifications for a certain project). These forms are subject to review and approval by the GSA (Government Services Administration) to ensure the proposal meets the GMP (guaranteed maximum price) established by the OMB (Office of Management and Budget), based on the PDS (a preliminary development survey, which is conducted by a firm to determine the need for a future project and outline its design and budget criteria for a competition).

Once your firm has been selected for the project, the process of meeting specification and code criteria has begun. Although many projects designed for the federal government such as hospitals, dormitories, housing, and office buildings are equivalent to private sector work, one of the frustrations of such commissions is that federal projects are not subject to the model codes and have their own unique sets of building criteria. The Construction Criteria Base (CCB) is one attempt to alleviate confusion (ARCHITECTURE, March 1991, page 160). The CCB has federal construction agencies specifications and standards compiled on a CD-ROM for easy access and to reduce the redundancy of overlapping standards and guidelines between independent government agencies.

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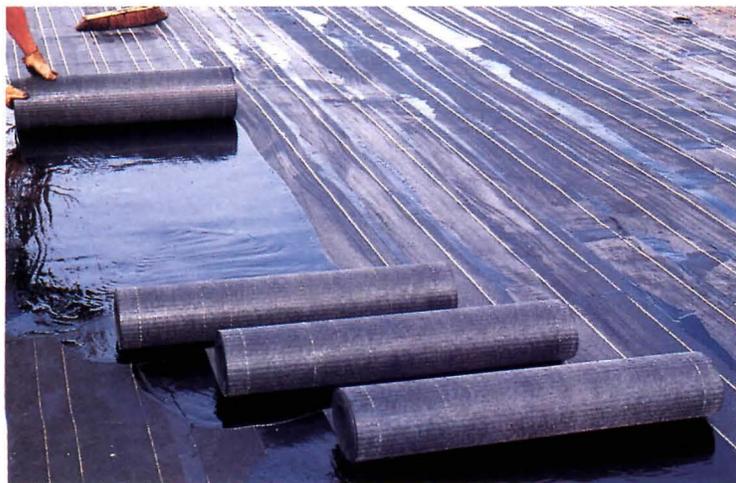
Roofing Primer

A guide to designing and specifying low-slope commercial roof membranes.

AFTER ATTENDING THE NATIONAL ROOFING Contractors Association's (NRCA) 104th Annual Convention & Exhibit in Orlando, Florida, this past February, it is easy to see how architects can feel overwhelmed by the number of systems, installation methods, and manufacturers of low-slope commercial roofing. Nevertheless, according to NRCA's most recent annual survey of new construction, architects are responsible for specifying 85.9 percent of all roof systems.

How do architects select roofing? While many clearly do their homework by researching the subject themselves or conferring with one of the ever-increasing number of roofing consultants, some practitioners tend to choose only a system with which they have become familiar, even if roofing conditions vary from project to project. Others switch too readily from one system to another—not really knowing how to make these decisions—

The installation of a built-up roofing system by Owens-Corning Fiberglas illustrates how roofing felts overlap (below left): a thin coat of bitumen is applied between each layer to waterproof the system. A modified bitumen system by Manville (below right) is installed atop a building at the United States Air Force Academy in Colorado Springs, Colorado. The fire-resistant cap sheet is mopped with hot asphalt to the base felt.



as representatives from competing manufacturers argue the merits of their products. Peter Goetz and Neal M. Eiseman, partners at the New York-based law firm Goetz, Fitzpatrick & Flynn, described a third approach to product selection in "How to Survive the Warranty Wars," one of several well-attended general sessions offered at this year's NRCA convention. They noted architects' rely increasingly on extended warranties in selecting a system, without fully analyzing its performance, a manufacturer's track record, or the actual terms of the warranty.

Roofing system types

THE MAJOR COMMERCIAL, LOW-SLOPE ROOFING membranes commonly used in the United States can be divided into three categories: built-up roofing (BUR), modified bitumen, and single ply. NRCA's survey revealed that the single-ply systems as a whole accounted for the roof membrane in 36.9 percent of all new construction in this country during 1990, BUR captured 30 percent of the same market, and modified bitumen 13.2 percent. The use of BUR has remained fairly constant since 1989, while the specification of single plies decreased by about 4 percent.

For a typical roof without unusual or extreme conditions, roofing experts agree that all three systems are adequate if installed correctly and properly maintained. But often a

roof has special requirements that may favor one system over another. These considerations can include, although they are not limited to: climate, roof size and shape, slope, insulation requirements, foot traffic, labor availability, installation versus maintenance costs, deck strength, and visibility. It is only after reviewing these issues as they pertain to a specific project that an architect can begin to eliminate certain systems and focus on the appropriate membrane for the job. A number of broader issues also affect the roofing industry and, potentially, an architect's selection process: stricter environmental regulations, increased health and safety concerns, and economic and political realities such as the availability of petroleum-based products.

Built-up roofing

DEVELOPED IN THE 19TH CENTURY, BUR IS this country's oldest and most prevalent low-slope roofing system. The membrane consists of several layers of felts alternating with layers of bitumen and topped with a surface material that protects the membrane from ultraviolet rays, weather exposure, and general impact. Ninety percent of the felts applied today consist of glass fibers; the rest are organic. Richard L. Fricklas, technical director of Roofing Industry Educational Institute (RIEI) in Englewood, Colorado, reports: "Fiberglass reinforcing has solved much of



BUR's earlier problems of wrinkling, blistering, and shrinking." The felts perform two basic functions: they provide the membrane with reinforcement to resist expansion and contraction; and they allow for the application of thinner layers of asphalt. The bitumen layers provide the actual waterproofing.

Two types of bitumen can be applied: asphalt, a petroleum derivative; and coal tar pitch, a byproduct of processing coke from coal. Both are affected by larger economic factors such as the availability of oil, which determines the price and quality of asphalt, and the state of the steel industry, which produces coke. And both have been studied for potential health hazards. Explains Fricklas, "The Occupational Safety and Health Administration (OSHA) requires special handling of coal tar pitch because it contains a known carcinogen. Though asphalt has been exempt from these OSHA regulations, the National Institute for Occupational Safety and Health—the scientific arm of OSHA—is reexamining the issue to determine if asphalt, too, should be considered a potential carcinogen."

William Spencer, technical service manager for Allied-Signal, a supplier of coal tar roofing systems, stresses that these are regulations, not bans. "Both types of bitumen can be used safely if the standard procedures are followed," he asserts.

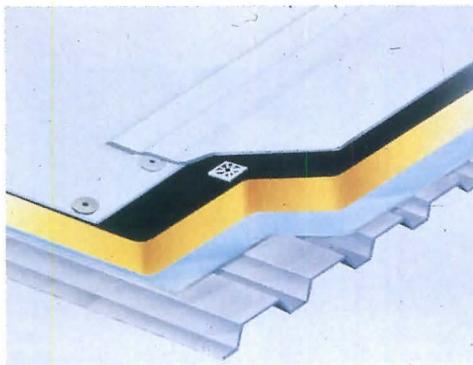
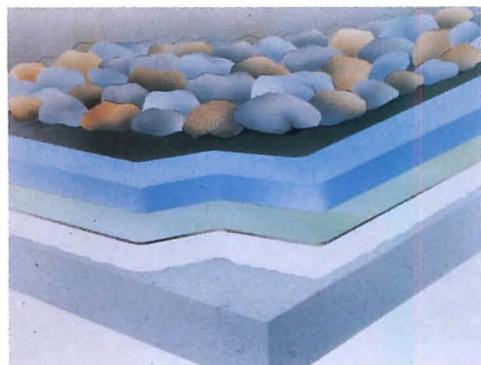
Because bitumen can deteriorate when exposed to ultraviolet radiation, the final coat is protected in one of several ways. Gravel can be embedded into the last layer of bitumen while it is still fluid. Or a mineral-surfaced cap sheet—a thicker-ply felt that has already been set with an aggregate at the factory—can be laid on top. Reflective coatings that minimize heat gain are also possible.

Suppliers of BUR argue that its inherent redundancy is key to its success. With up to four layers of felts, plus the alternating bitumen, a backup layer is always present in case one fails or was incorrectly installed. Many roofing manufacturers believe that today's



Single-ply systems can be applied with very large sheets, resulting in a simpler application process than that of BUR or modified bitumen systems. Single ply is therefore popular in areas experiencing labor shortages.

Installed as part of a protected membrane roofing system, an EPDM membrane by Firestone (above) is pulled into place before insulation is set over it. Sarnafil's thermoplastic membrane, another type of single ply, offers a choice of 21 different colors (below). This membrane can be installed with ballasts (bottom left), mechanical attachments (bottom center), or adhesives (bottom right). The Roofing Industry Educational Institute (RIEI) recommends that an architect develop a system selection criteria chart (facing page) before choosing a roofing system. The matrix shown here is very basic; RIEI is currently developing a more detailed version with 49 criteria and additional roofing systems.



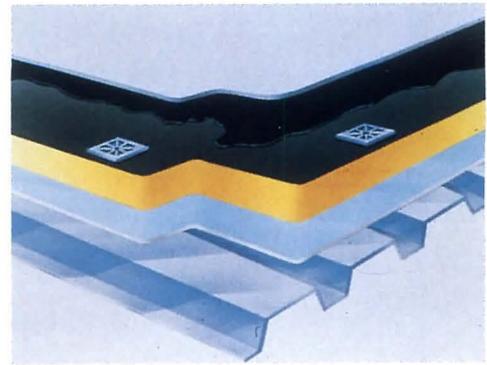
BUR has retained a steady share of the market because it is a proven system, and its application is generally familiar to contractors. BUR systems are more often applied where labor is plentiful. They are inappropriate for relatively steep slopes and do not perform as well when deck deflection is excessive.

Modified bitumen roofing

MODIFIED BITUMEN, WHICH WAS ORIGINALLY developed in Europe during the 1960s, can be considered a cross between BUR and a single-ply system. Instead of alternating bitumen with felt in the field, as is done with BUR, this system applies modified bitumen to reinforcing sheets of glass or polyester in the factory to form a thick waterproof membrane. The finished roof is constructed by rolling 3-foot-wide strips of this membrane over a base sheet. The top, or cap sheet often has a factory-applied granular or metal surface to block ultraviolet rays, reflect heat, improve fire resistance, and add visual interest.

The two major modified systems are named for the substance that alters the bitumen: Atactic Polypropylene (APP) and Sequenced Butadiene Styrene (SBS). Today, APP's share of the market is only slightly larger than SBS's. APP gives asphalt toughness, making it impact-resistant and less susceptible to changes in temperature. It also dramatically raises the melting point, so the system is usually applied with a torch that melts the underside of the membrane as it is rolled out. APP's open-flame installation technique requires special fire safety precautions. The system, which lends itself very well to flashing techniques, is well-suited to a roof with many penetrations.

SBS improves the elongation characteristics of asphalt at low temperatures. It provides an extremely tough and durable surface for roof environments that receive a lot of foot traffic. The SBS membrane is usually applied with hot asphalt, and therefore poses the same potential health concerns as does BUR.



SYSTEM SELECTION CRITERIA

System Category	Installed weight LBS/FT ²	Minimum slope IN/FT	Maximum slope IN/FT	Type of deck	Degree of difficulty locating leaks
FULLY ADHERED					
Bituminous built-up smooth aggregate	1 6	1/4" *	3 1	any any	easy difficult
Modified Bituminous	1.0	*	6	any	easy
EPDM Elastomeric	0.3	*	vertical	any	easy
Thermoplastic	0.3	*	vertical	any	easy
Spray-on Foam	0.5	1/4"	vertical	any	easy
PARTIALLY FIXED					
EPDM	0.3	*	3	nailable	easy
Thermoplastic	0.3	*	3	nailable	easy
Metal	1-1.5	1/4"	vertical	†	moderate
LOOSE LAID					
EPDM	10-20	*	2	any	difficult
Thermoplastic	10-20	*	2	any	difficult
Protected membrane roof with stone mat	10	1/4"	2	any	difficult
with interlocking insulation boards	4.5-10	1/4"	2	any	difficult
* Positive drainage	† May not be required				

Some manufacturers are offering several BUR layers of fiberglass-based felt topped with a modified bitumen cap sheet. Though more expensive than either BUR or modified bitumen alone, such a hybrid system is extremely durable. Other manufacturers are starting their systems with a traditional felt at the base, adding a modified ply, and then topping it with a modified cap sheet. As one roofing industry expert admits, "Roofing systems are not as clear-cut as they once were."

Single-ply roofing

SINGLE PLY, AS THE NAME SUGGESTS, IS A single layer of waterproof membrane that is rolled down in one application. The sheets can be weighted down with ballast, partially attached by mechanical means, fully adhered with adhesive, or—for a protected membrane—covered with insulation board and then ballast. Some single plies are installed with adhesives that use VOC solvents, environmentally-damaging substances that are gradually being restricted in some parts of the country. Manufacturers of those systems are trying to develop nontoxic alternatives.

Many types of single-ply systems are now available, most of which fall under two categories: elastomerics and thermoplastics. One of the elastomerics, EPDM (ethylene propylene diene monomer) is the most frequently used single ply. The most commonly used thermoplastic sheets are PVC (polyvinyl chloride) and PVC copolymers. The systems,

whose names generally indicate the initials of their major chemical ingredients, vary in their compositions, installation methods, costs, and performances.

In general, single-ply systems offer some decided advantages. They are easier to install, requiring fewer people and providing cleaner application techniques, than the bitumen-based systems. They can be very economical on large roofs with few penetrations, since the large-size sheets require fewer laps. Also, because a kettle of hot asphalt is not required to install the single plies, their cold roof applications can extend what is otherwise a short roofing season in cooler climates.

But a number of experts view single-ply membranes with caution. Says Ray Corbin, director of Manville's Better Understanding of Roof Systems Institute in Denver, Colorado, "Single ply by its very name is its biggest drawback—it is a single-layer membrane. In specifying them, the architects are asking for zero defects in an industry that is not typically known as a zero-defect industry. Therefore, we have had a lot of problems over the years—'fantastic' systems that didn't live up to their potential. Corbin continues, "Now as manufacturers thin out and the better single plies establish a track record, the single-ply industry will be doing better." And, as Corbin notes, "single-ply membranes are fine if you select a system of good quality and have an experienced crew apply it properly."

Faced with such myriad choices, how does

the architect specify a roofing system? Fricklas finds that many large firms designate an in-house "roofing expert," someone who will keep abreast of the literature. Smaller firms may prefer to engage a roofing consultant to make recommendations based on the architect's design criteria.

No matter what size the firm, an architect will find roofing decisions can be made more easily—and better—if a matrix is developed to compare roofing systems according to various design criteria (left). The matrix can grow as more systems and conditions are analyzed by the firm over the years. The chart should contain both general objective data—like minimum and maximum roof slopes and deck requirements—and job-specific subjective considerations, such as the client's personal bias based on past experiences with a system.

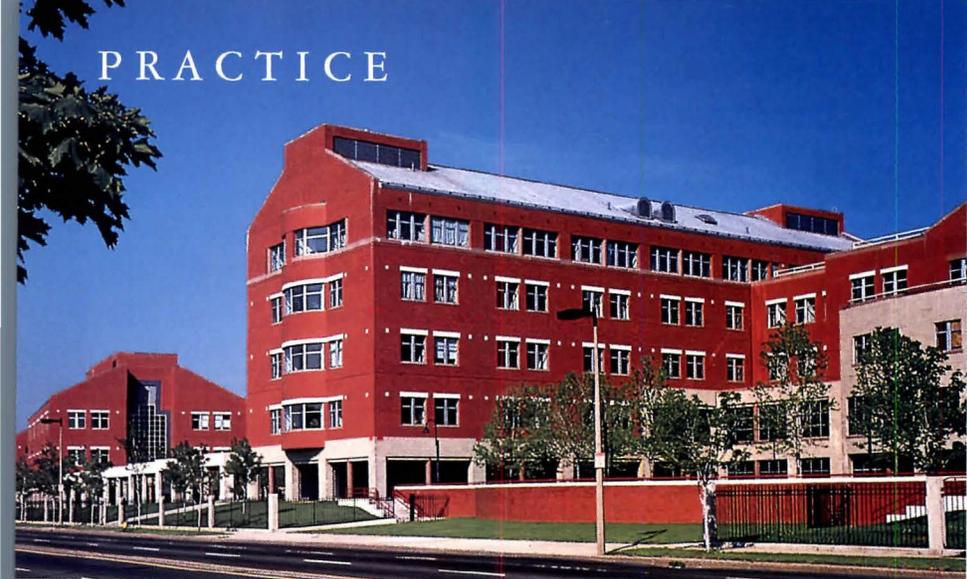
Corbin recommends that architects select a proven product, one that has a five-year track record, so that the client's roof does not become an experiment; use a manufacturer-approved contractor; and stress to clients the importance of regular maintenance.

In regard to product warranties, architects must not be enticed into specifying a system simply because a company offers one with a long-term warranty—a more and more common occurrence in recent years as the market becomes more competitive. "Longer is not necessarily better," maintains Eiseman of Goetz, Fitzpatrick & Flynn. "You have to look at what the warranty says. You may find in the fine print that a 10-year warranty gives the owner a lot more coverage than a 15-year warranty does," he cautions.

An architect must consider the actual characteristics of the roofing system and history of the company offering the warranty. Adds Corbin: "A warranty is not something that you actually want to collect on. The owner does not want someone up there every other week repairing leaks—he or she doesn't want leaks. The warranty gets all the players—owner, architect, consultant, contractor, manufacturer—together to talk about the problem areas so that you get a good roof."

The architect should have the client or the client's lawyer review the warranties for the systems being considered, so that the owner is aware of what is and what is not covered by the warranty, along with the terms that must be followed to remain covered. Information on warranties currently available for the major proprietary roofing systems are included in NRCA's *Roofing Materials Guide*. ■

—NANCY B. SOLOMON



Invisible Architects

Minority firms struggle to achieve recognition in a white-dominated profession.

A YEAR AGO IN HOUSTON, DAVID CASTRO-Blanco, FAIA, dimmed the lights, switched on the slide projector, and launched his lecture showing the work of minority architects. As slides of designs by I.M. Pei and Cesar Pelli flashed on the screen, laughter echoed from the audience. The suave and successful Chinese-born Pei a "minority" architect? The polished Argentine native Pelli an object of racism? Celebrity, it seems, had rendered the skin color, the ethnic origin—and all those fierce flags of racism in America—invisible. And hence, comic. "Once you're successful," observed the former chair of the AIA Minority Resources Committee, "you're not considered a minority anymore."

Unfortunately, that sort of racial blindness acquired through success has not come to America's black architects. In December, Robert Traynham Coles, FAIA, repeated the "old and insidious problem" of African-American architects to the board of the AIA by quoting the words of civil rights activist Whitney Young. "You are not a profession that has distinguished itself by your social and civic contributions to the cause of civil rights," Young told the AIA in 1968. "You are most distinguished by your thunderous silence and your complete irrelevance." In 1968, the rhetoric and the times galvanized Young's audience.

Since that time, Coles concedes, "the percentage of minority participants in architecture grew and remains strong." Yet Hispanic Americans, 8 percent of the population, con-

stitute a slim 2 percent of the 100,000 architects who are AIA members, and at .1 percent, the tally for Native Americans is even more dismal. Asian Americans, on the other hand, comprise 3.7 percent of the profession, higher than their place in the tally of U.S. citizens (2.8 percent). But, Coles continues, the largest component of the minority population—the African-American component—has diminished. Black architects, at 12 percent of the total population, equal only 1.1 percent of AIA members.

An even slimmer number has reached a position of high visibility. The work of black architects seldom appears in the pages of professional magazines. In academia, they hold few professorships and rarely appear on awards juries and panels of architectural events. There are no prominent black architectural writers or editors. And—perhaps the ultimate insult of invisibility—there are few exact statistics to certify these figures.

One of those few African-American architects with visibility is Max Bond. A former Fulbright scholar and a member of New York's Planning Commission from 1980 to 1986, dean of the architecture school of CCNY, and a founder of Bond Ryder Associates in 1969, his star should, by conventional wisdom, be in ascendancy in a city that now boasts a black mayor. Last winter, Bond became a partner in the New York firm Davis, Brody & Associates. An upbeat article in *The Wall Street Journal*, titled "Business and Race,"

Public and private work from the Boston-based firm Stull and Lee includes Roxbury Community College (above left and right), completed in 1987; the renovation and 62,000-foot addition to the Bay State Correctional Center in Norfolk, Massachusetts (facing page, top); Biscayne View Apartments in Miami, Florida (below), in association with Rodriguez Khuly Quirogha, Architects; and the 1989 interior renovation of Boston's historic South Station (facing page, bottom).





reported his appointment as “the first black partner to join a major New York architectural firm.” The article also noted the “visibility” of black architect Leatrice McKisack, named female entrepreneur of the year by the Commerce Department; the stature of former architect Harvey Gantt who ran for U.S. Senate against Jesse Helms in North Carolina; and—the pinnacle of visibility—a fictitious black architect slated as leading character in Spike Lee’s next film.

But Coles—and any number of black architects affronted by the article and the notion that partnership with a white architect vs. independence is a climb on the ladder of success—sees the Bond “elevation” as something other than progress. “Down the tubes,” he describes the firm of Bond Ryder. “Don Ryder has retired,” he says. “[Davis, Brody] basically rescued the firm,” says Coles. “[Bond] and I had long conversations,” Coles continues, “and I watched him as the firm went through hard times.” African-American architects live on the edge of a profession on the edge. Or, in Coles’ architectural terms, “we have a narrow window, and it’s basically urban, and it’s only in public architecture that we have a significant say. Once they look at you, your portfolio doesn’t make any difference,” he observes.

In a city where work of any sort is scarce, the courtly and articulate Max Bond sits before the wind-whipped windows of his new office at Davis, Brody and reflects on his move, his work, the plight of black practitioners. Overlooking a picturesque view of the Hudson, he paces off the decades since the height of the civil rights movement, with its promise of equity to newly forming black firms. “I think there’s been both progress and no progress,” he says, in the mellifluous tones

that describe a sad “given” rather than a polemic. In the post-Young decades, the state of African-American architects, Bond believes, reflects the social conditions during the Reagan-Bush years, with that administration’s “attack on social equity” and the parallel lack of activity in the black community.

“On the other hand,” Bond continues, “there’s been some progress, because I think society has changed.” There’s a “new perception of these issues. A new level of opportunity,” he contends. For all the concern with his firm’s economic future that brought the architect and 12 Bond Ryder employees under the white umbrella, he notes the positive with the negative: “One of the things is how absolutely racist and segregated firms are. Its been fairly rare for a good white architecture

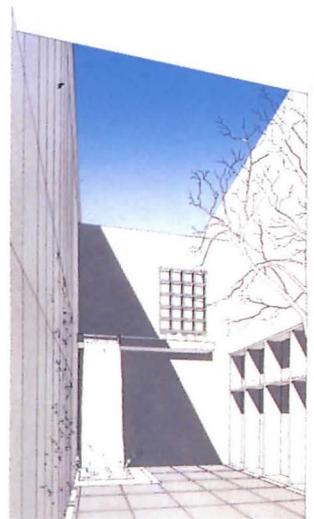
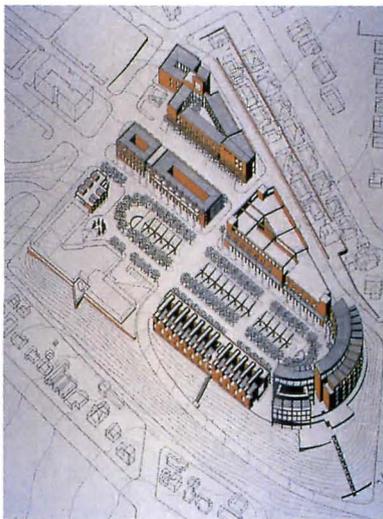
firm to have a well-known black partner.”

The fortune of black architects mirrors the misfortunes of all black Americans, and in interviews with African Americans, all parties concur: the Great Society visions fell before the Reagan privatist reality. With them went access to corporations, access to clients, and a proper share in the building of America that had seemed, if never a reality, at least a possibility in the Lyndon Johnson era.

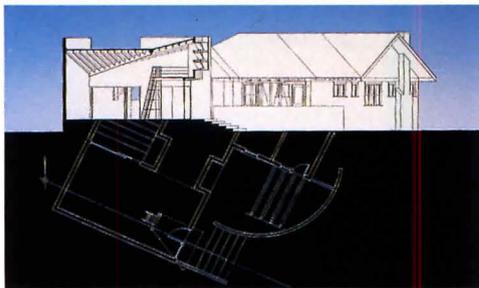
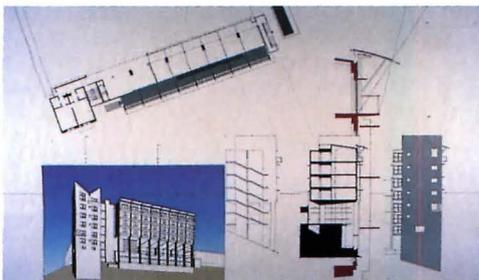
The loss is to America as well as to black architects. “I’m not looking for a ‘black style,’” says Bond, “but rather an attitude.” It is an attentiveness to human needs that minorities bring. “I think people from oppressed groups are more sensitive to social and cultural issues,” Bond maintains. “It’s still extremely difficult,” says Everett Fly, a San



STEVE ROSENTHAL



Longoria/Peters, a four-person Houston firm, recently won the Houston AIA Chapter's On the Boards Award for the master plan of the El Paso Medical Center. The plan (above) incorporates existing buildings with a clinic and medical offices (above center) and a courtyard (above right). Other projects include a tower addition to the Cliff Inn Hotel in El Paso (below); the Mounetou House (below, center) in Nuevo Laredo, Mexico, and a painting studio for a Houston artist (bottom).



Antonio architect and landscape architect who adds preservation skills to his dual registration. "I can't think of a major corporation that has used a black architect—I find it very difficult to get in the door. Still, a lot of those places that need work are central cities, and the black architect and the minority architect are just naturals."

Whether through sensitivity or circumstance, black architects are more likely to practice in the public sector. Affordable housing, public transit, and adaptive use all figure in African-American architects' portfolios, both through their own inclination and through affirmative action legislation. Though these so-called "set asides" for minority firms have weakened, their urban design impulses have produced some of the projects shown on these pages.

Duane Jackson is the younger partner in Migliassi/Jackson, a Boston firm known for the finely-honed renovation of old buildings and other public-sector projects, which his Venezuelan-born partner calls "bread-and-butter work." But both architects would like more than the secondary, subcontractor roles that many African-American architects criticize as their allotted, and inferior, position. "We have the skill and we can't crack the market," says Jackson.

In Migliassi/Jackson's office sits the extravagant model for a neo-Gothic home for Spike Lee on Martha's Vineyard, a personal and publicity feat. Jackson expresses the joy of dealing with a client who speaks his language. On the boards and in the resume of the firm are such projects as an attractively renovated lodging house at 1734 Washington Street in Boston, which adds 31 units of single room occupancy housing to the city. But Jackson and his long-term associate tick

off hardship and struggle beyond the lot of most designers. "Every architect wants to do good architecture, to express himself. And it costs money." Again and again, the cliché is reinforced in conversations with African-American architects: Money resides with the power structure; blacks do not belong.

Some observers label the failure of more African Americans to enter the design professions as the beckoning of more lucrative callings. But most black architects, still beguiled by the (underpaid) delights of design, dismiss that theory. Jackson and others blame the racism of establishment America for holding down an eager race. But they also lay some of the blame on a lack of upward pull from the older generation of their complacent black colleagues.

Donald Stull and David Lee deny the latter charge. In fact, the Boston firm Stull and Lee, now celebrating its 25th anniversary, reveals the opposite. With a solid record of civic and private work and the time-consuming job of keeping a 30-member firm afloat in the shipwrecked Boston economy, both principals still devote time to providing role models and visiting schools. This effort is repeated across the country. Call John Spenser, chairman of the department of architecture at the Hampton Institute, in Hampton, Virginia, and he has just finished a visit to a grammar school to introduce students to architecture. Spenser wears two, or maybe three, hats—as educator, partner in Livas Design Group, and member of the National Association of Minority Architects (NOMA) and the Minority Resource Committee of the AIA. He says the youngsters press to know: "Why am I an architect? Do I enjoy being an architect? Do I make money? I tell them architecture is a profession a lot of people enjoy,



PAUL WARCHOL

Max Bond, formerly with Bond Ryder James, designed the Martin Luther King Center for Social Change in Atlanta (above) in 1984. The center, which sponsors educational programs about the civil rights movement, includes Martin Luther King's crypt, a meditation chapel, and a conference and auditorium building. The architects gutted a commercial building for the 1989 Studio Museum in Harlem (above right), which is devoted to the work of African-American artists.

not because we make money but for the joy of the work." Call Texas A&M, where Walter Wendler, head of the department of architecture, is looking for black role models as faculty. "I'm recruiting a fellow who's been practicing for 17 years, a very talented guy." To improve the "dismal record" of 2 percent black students in his division demands negotiating with Texas A&M to raise the entering professor's salary, but Wendler is committed.

Such conscientiousness empowers many black and white educators and many black architects. But the problem lies beyond the single student taken on a day's trek through the world of architecture by Lee, or the visits to schools by Spenser. It is community-based. In his native Chicago, Lee recalls, "architecture wasn't a vital profession to the community," as were doctors, lawyers, undertakers, teachers. "You could regularly meet people who performed those services. There weren't any notable black architecture firms."

It is also heritage-based. No black architectural history has figured in the canon of Eurocentric architectural education. Neither the vernacular heritage of the black community nor the architecture of Africa are studied in most schools. Only a handful of architects or educators are acquainting blacks with

their past as builders. Richard Dozier, an architect who teaches African-American history at Morgan State University in Baltimore, is organizing an exhibit on the black architect in history. Harry G. Robinson, dean of the architecture school at Howard University in Washington, D.C. (see pages 52-53), has charted a time line of black architectural achievements. Everett Fly of San Antonio looks to black architectural history to document a long past of design on the land from plantation to city. He may find no high-style history, no H.H. Richardson in the cities and small towns where anonymous black architects built the plantations, churches, and schools, but "it's delightful for me to find the people who built the little vernacular houses and churches. They weren't formally trained, but they had a lot of common experience," he says. "There really is a foundation for black people to be in architecture."

Filling in numerical blanks, creating a data base, is an equally important part of establishing a foundation for African-American architects. Incredibly, this will be the first year that the National Council of Architectural Registration Board (NCARB), responding to pressure from the Department of Health and Human Services, will collect a firm figure on the number of black architects. At the University of Cincinnati, Bradford Grant, an assistant professor of architecture, is making a count of all the African-American architects in the country: 800 confirmed, 1,200 expected by tally's end. Grant is on a mission: "Let's find out who these 1,000 are; where they live. Do they work for the government? Private industry?"

Using the same hardline tally, Grant looks to the studio system. Why are there so few black students? Does the answer lie in this

age-old method of teaching architecture? Throw a design problem at a student, give the budding architect a sheet of drafting paper and a deadline. "It's tough on everyone," says Grant, "but especially on African Americans, because we're a minority in that studio class. Too much of the learning happens not with the instructor but after the student leaves, and it depends on peers. That means trying to adapt and socialize...things that have not been easy for many students coming out of a black environment."

If activists like Grant have dedicated themselves to altering the dismal outlook, "frustration" remains the constant comment, and "handful" the description of the number at work. The AIA, for all its statistics, committees, and efforts, remains a source of some criticism. The names spilling out of the AIA's Minority Resource Committee materials are the same as those who take part in NOMA events. There are goals to provide role models, goals to improve public sector participation, goals to x and goals to y. But the older generation, those involved in the glory days of the civil rights struggle and the AIA's efforts after Whitney Young's clarion call, tend to agree with young firebrands that not much is being done today.

"The AIA faces the problem of not having a strong enough voice for convincing the profession to do things," says the Hampton Institute's John Spenser. "It does take money to turn the wheels, and it's too big a problem for one staff person," he contends.

Jean Barber, that "one person," staff director for the MRC, more or less agrees. Barber, who works with a "modest budget, to say the least" pushes along with the ultimate aim of "working not to exist." The Minority Resource Committee does "outreach to students; out-

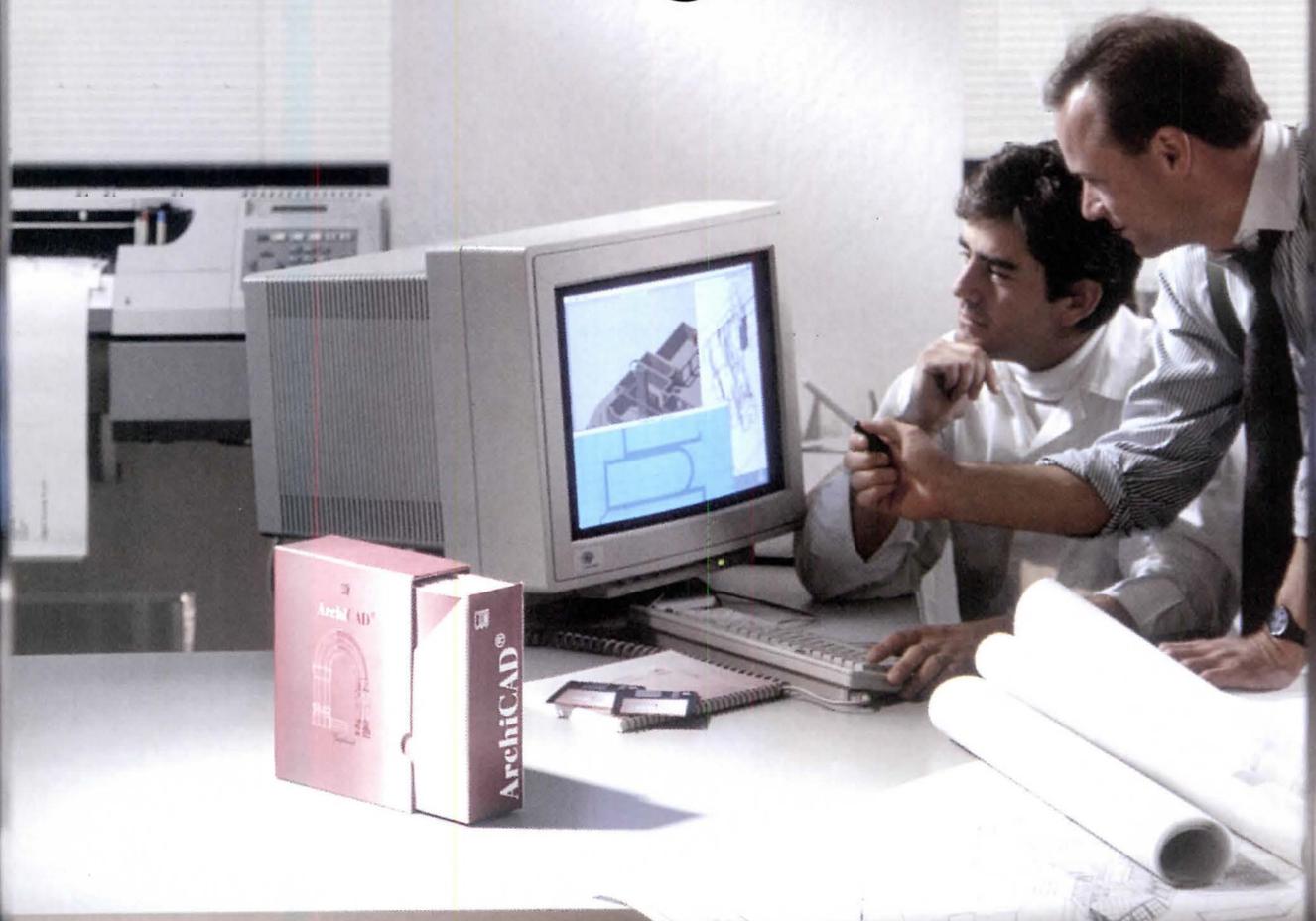


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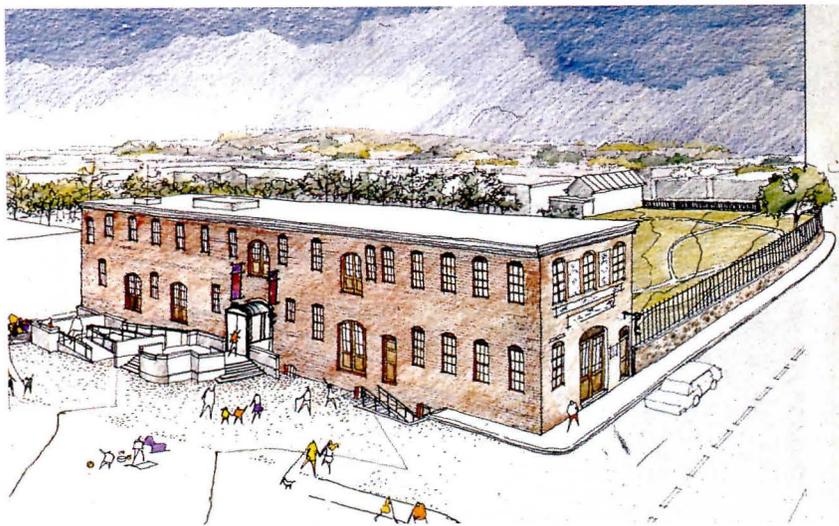
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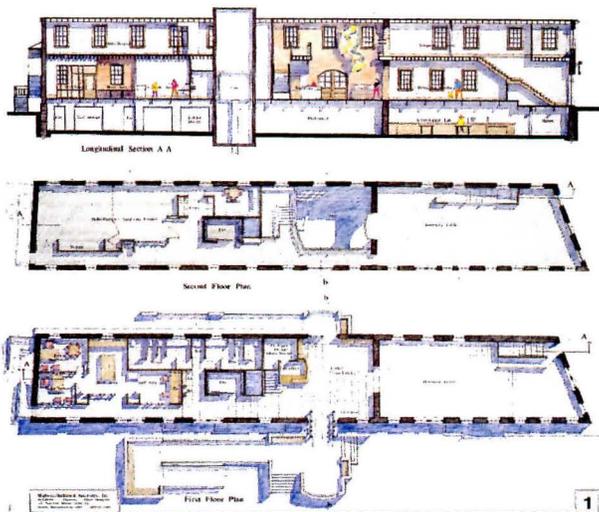
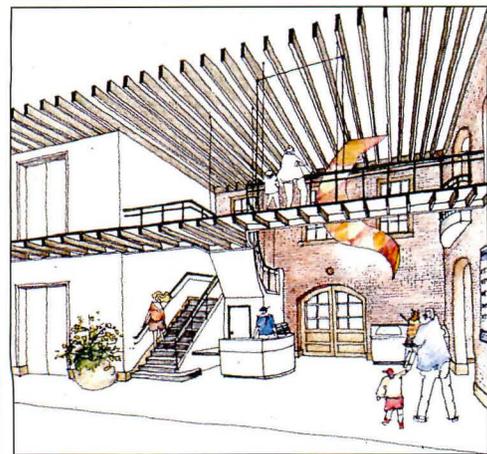
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The study (above left) for the Nawn Factory Orientation Center by Migliassi/Jackson Architects of Boston includes a visitor center housing exhibits, administrative offices, an archaeological lab, and maintenance facilities. The rear door of the lobby area (below) leads to an adjacent historic cemetery; the front door of the lobby (bottom) leads to an entry plaza that will contain outdoor exhibit areas. Construction of the project will begin in 1992.



reach to the minority profession," and serves as a national clearing house with grass-roots liaisons in 19 states. For all their labors and her enthusiasm for her circle of recruits ("small but strong"), the economy undoes their efforts. "There simply isn't money out there to supply me with funds," she observes. "As a whole, I feel encouraged, especially within the last year," she says. "The change is going to be slow," she continues. "Educators and minorities are trying, but it's a long road, and it gets frustrating."

The frustration mounts with those who see the wheels turning backwards, both socially and professionally. Vernon Williams, who ran the AIA's activist Community Design Center in Washington in the 1970s, finds progress negligible. "You look at the engineering field, at physicians, even accountants, and you find higher percentages. You look at the legal profession, and there are even mentor programs. There's nothing like that in architecture." Opportunities "have widened, but it's primarily been in the public sector," he says. The Chicago firm where he is a partner, the Amistad Group, formed a joint venture with Sims-Varner of Detroit late last year to become part of the mainstream of architectural practice, to go in on a project as the principals, he says. But large, commanding firms are as rare among African-American architects as are large, commanding corporate clients or black-led communities in America.

"Racism—that's inherent," says Williams, but the profession's sluggishness doesn't help. "I think the AIA accurately reflects its members. The staff can only do what committees and members direct the staff to do."

Other groups suffer from parallel slights, of course; blacks are not the only minorities in America. A lack of role models and token-

ism head Japanese-American architect Ron Abo's list, but the Denver architect's complaint of the stereotype of Japanese Americans as overachieving, nose-to-the-grindstone designers as a "difficult expectation to live up to" differs from the put-downs African Americans receive. Where Duane Jackson says he feels obliged to hew to the king's English to persuade clients of his competence, "Pei's slight Chinese accent and occasional minor grammatical mistakes," writes Pei's biographer Carter Wiseman, "add to the architect's aura. The combined traces of exoticism and linguistic uncertainty seem only to add to Pei's charm and credibility."

Minority discrimination, like beauty, may be in the eye of the beholder. But if discrimination seems difficult to focus and correct, minority architects have begun to look for a more precise definition. Mexican-American architect Rafael Longoria, whose El Paso Medical Center master plan and Plaza 8-F, a new square, recently won the Houston Chapter AIA's On the Boards Award, helped pinpoint the definition. "We just went through a very large argument at the University of Houston," the partner in the four-person firm of Longoria/Peters recalls. "We narrowed it to underrepresented minorities." In their list went African Americans, Mexican Americans, Puerto Rican Americans, Cuban Americans, and Native Americans. They aim to separate the foreign born who seems exotic (and hence appreciated) from the native born (deemed inferior and hence the subject of discrimination). The list of successful immigrant "minority" upper- or middle-class designers (Cesar Pelli, Gyo Obata of HOK, Bernardo Fort-Brescia of Arquitectonica, and Andres Duany come to mind) need separation from the more disadvantaged mainstream

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minority architects, they concluded.

Without disparaging the trials of nonblack minorities (or, for that matter, architects as a whole), to be Cuban in Miami or even Mexican American in Texas is not to be African American anywhere. "Over the years, [being Hispanic] has been an advantage," Mexican-American architect Elias Reyna describes the work of his San Antonio firm. "I didn't experience any problems. I guess I was fortunate in many ways." His firm Reyna and Associates, Architects, founded in 1976, has experienced the downslide of the Texas economy lately, but his work with schools, housing, and public projects benefited from the firm's Hispanic origins. "All our work has been public," Reyna says. "Being ethnic, an architect probably has higher access to public work than private work because of support from the ethnic political community."

Rafael Longoria, of the Houston firm Longoria/Peters, recalls a kind of discrimination at the Houston firm Ford, Powell and Carsons, where he claims Hispanics were slotted into production, not the "glamour" design area. "Not that they had a policy of discrimination," he muses. He contends that the greatest determinant in placing employees in design has to do with whether they attended a prestigious university. "The practice of architecture is a very social profession."

And "it's not the easiest profession at all," says Paul Devroux, principal of Devroux & Purnell, associate architects of Liberty Place (pages 74-75) and other Washington, D.C., projects. "When you get down to a list of four or five firms, any could do the work." Even a seemingly successful firm like his 18-person practice, founded in 1973, has to compete with nonminority firms. In the case of Devroux & Purnell, that means joint ventures

with larger firms and aligning themselves with a strong partner, sometimes a nonminority firm.

Find an African-American architect, and you find an architect told that the gentleman's (i.e., white gentleman's) profession was not available: you couldn't join the country club; you wouldn't have the social connections; and racism's other less subtle clues. In Texas a generation ago, the AIA had to waive the apprenticeship requirement for registration of John Chase, a black architect, because "there wasn't a single firm in Houston that would hire him," says Longoria. The response of a racist society and profession hits the self-esteem of black architects at their artistic and human core. "You never know whether you're incompetent or whether you're black," one African-American designer in the upper reaches of competence notes.

The comment is a measure, but only one, of the toll that this treatment takes on African-American architects, as on all African-Americans. "We're a barometer," says Bond. A society that slights its poorest (black) cities, impoverishes its hard-pressed (black) schools, and scorns its underprivileged is scarcely likely to swell the tide that raises all boats. On the other hand, a profession that endorses the capacity of design to empower, or at least enhance, the lives of its members could start by empowering the constituency that it most neglects or abuses. In so doing, by joining with those trying to pierce the circle of injustice, it will enhance the art of architecture and the reach of some of its most talented practitioners. ■

—JANE HOLTZ KAY

Research for this article was contributed by Claude Engle.

The San Antonio, Texas, firm Reyna Caragonne (now Reyna and Associates) designed the first phase of Gardendale Elementary School (above left) as a 10-classroom facility with a kitchen and cafeteria. The main, east-facing entrance and drop-off area has a peaked entrance and glass facade (above). A curved glass block wall (top left) along the east elevation announces the axis to classrooms. The firm's Loma Park Elementary School (below and bottom) includes 28 new classrooms that double the school's original space. Numerous other public commissions constitute the Hispanic firm's portfolio.





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Masonry Research

Brick and block construction techniques are undergoing sophisticated analyses.

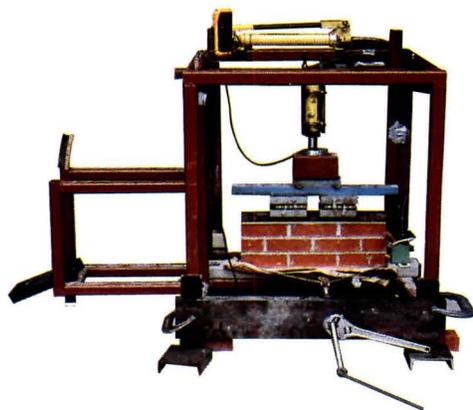
RECENT FINDINGS IN TWO INDEPENDENT studies on the reliability of brick and concrete block walls will influence the method by which certain masonry buildings are detailed or engineered. The findings will be of specific interest to architects designing buildings in either high seismic zones or areas subjected to high winds.

One study, commissioned by the Brick Institute of America and completed with technical support and materials from the Brick Association of North Carolina, evaluated the coefficients of friction currently used in designing brick masonry veneer walls, which are based largely on figures appropriate for concrete but that have never been substantiated for brick. The researchers developed new coefficients for a variety of flashing and support conditions at the base of small-scale wall specimens.

The other study, a widely coordinated effort undertaken by the Technical Coordinating Committee for Masonry Research with backing from the National Science Foundation, generated new detailed information on strengths of the component materials used in brick and concrete-block walls—from mortars and grouts up to four-story-high wall assemblies. Its purpose, according to researchers, was to develop a more reliable alternative model for the structural design of reinforced masonry walls.

Detailing brick veneer walls

THE FIRST STUDY WAS PURSUED ON THE ASSUMPTION that the friction between a veneer wall and its support would vary according to load as well as three additional factors: the type and roughness of the contact surfaces; the type and condition of the flashing; and the sequence of assembly of the wall materi-



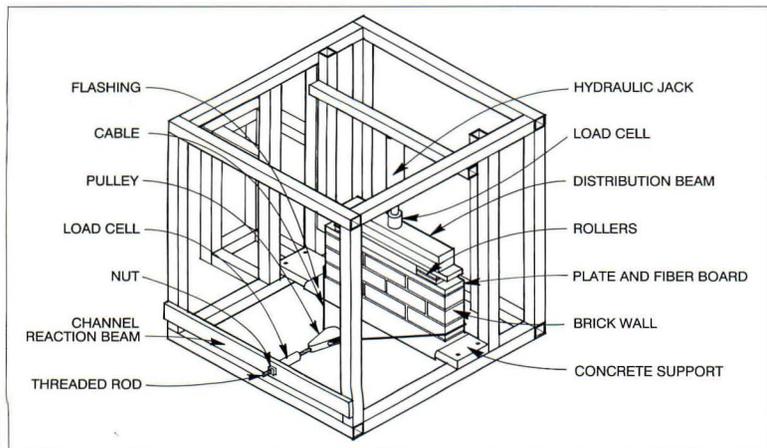
The amount of friction that can develop between a brick veneer wall and its support was studied with a loading apparatus (above) that applies pressures both perpendicular (below left) and parallel (below right) to the wall sample. A hydraulic jack presses down on the three courses of brick to simulate the weight of a full-height wall.

als. To accumulate data that would be accurate for typical non-loadbearing wall systems, downward vertical forces were applied to test specimens, each measuring three courses tall and three units long, at levels that approximated a single-story height of masonry.

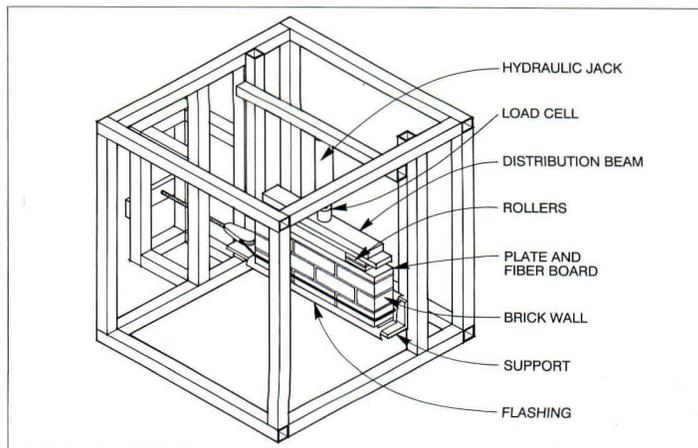
The work, directed by Mark McGinley, assistant professor in the Department of Architectural Engineering at North Carolina Agricultural and Technical State University, and J. Gregg Borchelt, director of engineering and research at the Brick Institute of America, was conducted in three phases between 1988 and 1990. More than 200 samples were tested in a series of experiments that grew progressively more sophisticated as the research continued.

The first tests were conducted on specimens that were supported either on steel shelf angles with an oxidized, mill scale surface or on concrete pads with a rough troweled surface. Two types of flashing were applied in the early tests: a 30-mil PVC flashing and a 3-ounce, paper-backed, copper flashing. Some assemblies were also built with no flashing. Specimens were tested with loads in both the in-plane and out-of-plane directions to simulate the variety of conditions experienced in the field.

New combinations of flashing, load direction, and support type were introduced in the second phase of the investigation. In

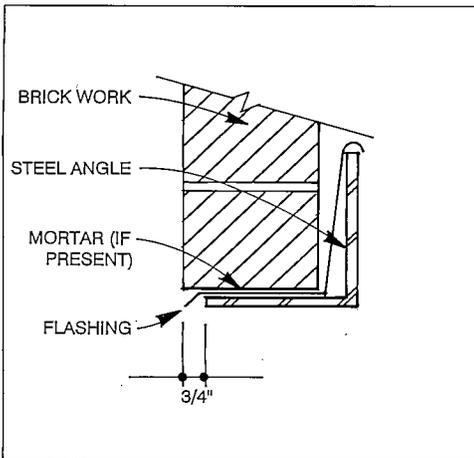


LOADING APPARATUS ONE

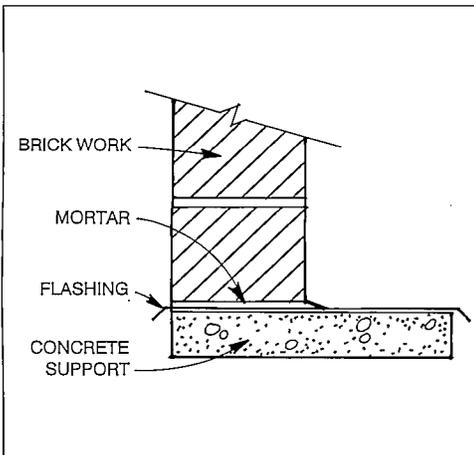


LOADING APPARATUS TWO

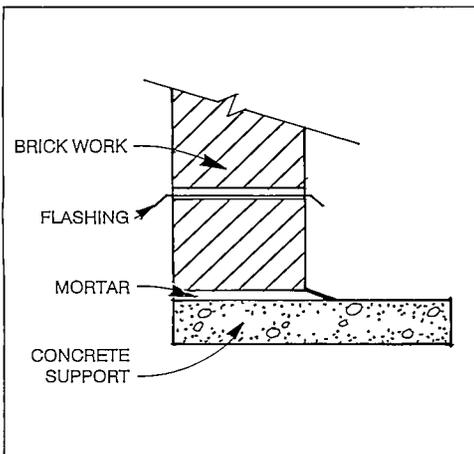
Several basic wall assemblies were studied: brick veneer on steel supports with flashing was examined with and without mortar between the flashing and brick (top); and brick with flashing and mortar on a concrete support (center). A similar assembly but with flashing placed above the first course was also analyzed (bottom).



ASSEMBLY ONE



ASSEMBLY TWO



ASSEMBLY THREE

some instances, for example, flashing was placed between the top of the first brick and the second mortar joint. In the third phase, tests were conducted on wall assemblies supported by a wider variety of steel shelf angles differentiated by their surface treatments. Angles used in these tests had a bare mill scale surface, were painted with red oxide primer, or were galvanized. Eight different flashing materials were introduced in this phase of the research.

Early results showed that the introduction of flashing between the masonry and its support structure produced significant reductions in friction—a finding that had never before been quantified in a laboratory setting. McGinley says a number of the tested combinations produced alarming results, even with materials that are commonly used. “Galvanized steel angles in combination with the copper flashing, whether there is paper on both sides or not, produces a very low coefficient of friction.” McGinley maintains that there is “not a lot of force holding the system on,” and recommends evaluating the veneer system to see whether or not the low friction force is exceeded.

While most veneer walls are constructed on steel angles, McGinley says, tests were also performed on concrete supports because that detail is frequently used on-grade at the foundation level of buildings.

The study also found that slip resistance at the base of brick wall assemblies is affected by a number of factors. Axial load level, the material properties of the flashing material, the type and coating of the support, and the presence of mortar all significantly affect the value of the slip resistance, sometimes improving such resistance, but usually not. Consequently, McGinley recommends against using the published values for masonry because they are too general. “The presently used values do not accurately represent configurations where flashing, different surface coatings, or variations in surface roughness are present,” he adds.

McGinley found, for example, that the published value of 0.3 for asphalt-coated copper flashing on galvanized steel angles is 50 percent higher than the values derived from his tests. Conversely, for PVC flashing on bare steel angles, the average value obtained in the laboratory tests is 0.65, which is more than double the 0.3 published value.

Other highlights of the study include the following findings:

- Experiments conducted on steel supports demonstrated lower coefficients of friction

than similar specimens on concrete supports (except for specimens with PVC flashing loaded in the in-plane direction). Specimens with PVC flashing produced the highest friction values of any on steel supports.

- The highest coefficients of friction occurred with brick mortared directly to the concrete with no flashing. Those specimens required that the bond between the mortar and support be broken in order to allow testing.

- Friction between masonry and concrete supports is dependent on the direction of slippage. Friction forces developed in the in-plane direction were consistently smaller than friction developed in the out-of-plane direction. A similar variation was not observed on the steel-supported specimens.

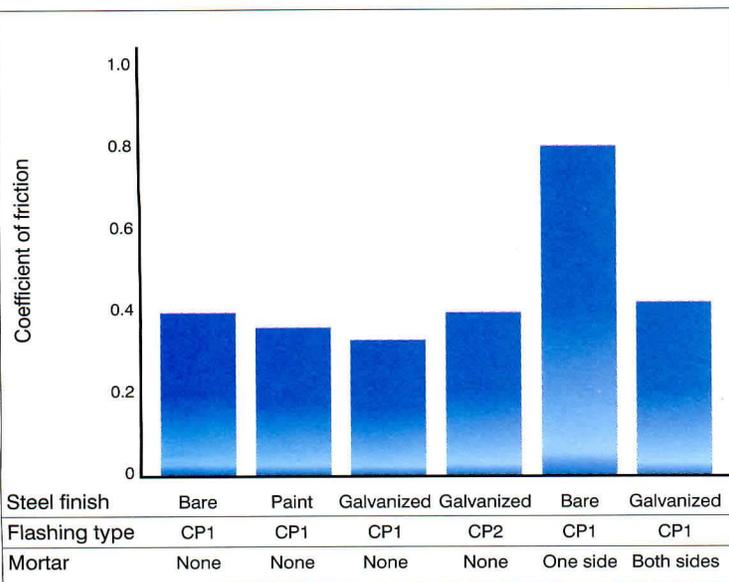
- In every case with flashing present, the wall specimens were found to slip along the plane between the support and flashing. On specimens with the flashing placed between the first and second courses, slippage occurred between the top of the first brick course and the flashing.

- Friction increased for specimens with flashing located between the first course of brick and the second mortar joint, as compared to those with flashing at the support. This occurred for both types of flashing and both loading directions, so it can be generalized that the rougher surface of the brick, as compared to concrete, increases the friction when flashing is placed in this joint.

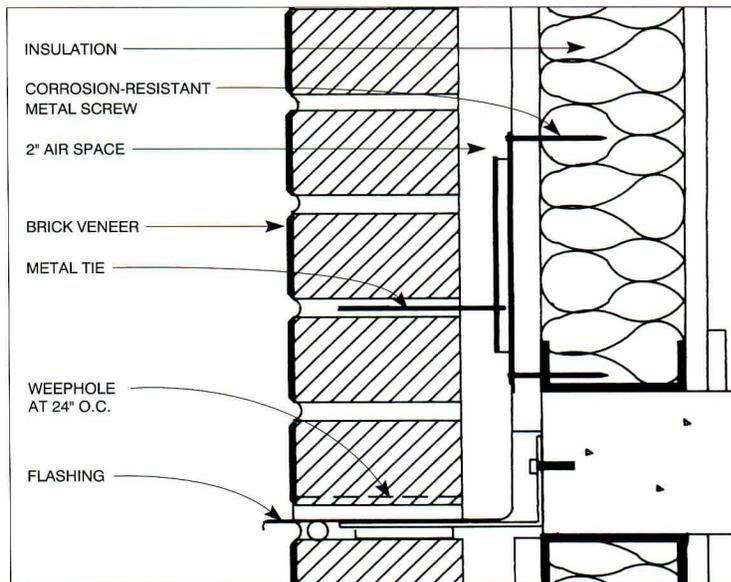
- PVC flashing increased friction resistance on steel supports. Yet when increased axial loads were applied to simulate the force of two- and three-story heights of brick veneer, the presence of PVC flashing at the base was found to reduce friction resistance on both concrete and steel supports. While that finding was contrary to his initial expectations, McGinley says he realized in hindsight that the squeezing and flattening of the flashing material under greater loads was the cause of the reduction in friction.

Architects should be aware of the reduction in friction that can occur at the base of veneer and cavity wall systems when these various combinations of flashing and support are specified, especially in earthquake or high wind regions. McGinley, for one, says he would be wary of wind loads above 20 psf.

In these regions, designers should make every effort to provide a robust mechanical tie system as close to the base of the wall as possible, and not count on friction to hold the wall in place, McGinley advises. “Most architects tend to put them down low. But in a steel stud system with a 12-inch spandrel



Friction generated in wall samples supported by steel angles varies with the surface finish of the steel (above left). Switching from one manufacturer's copper flashing product (CP1) to another (CP2) yielded different results. Friction jumped significantly when mortar



was added between the flashing and the first brick course, and when mortar was placed on both sides of the flashing. In areas of high winds or seismic activity, mechanical ties should be placed near the base of the wall (above right) and fastened to the structural system.

beam, for example, you may have the ties as much as 12 inches above the support system." McGinley recommends putting the tie in the first or second mortar bed joint, if possible, and fastening it to the slab, spandrel beam, or backing wall system.

Limit-states design for masonry

A GREATER DEGREE OF RELIABILITY IN STRUCTURAL calculations for reinforced masonry construction—and eventual changes in model building codes—are the goals of a second study, begun in 1984 by the Technical Coordinating Committee for Masonry Research with backing from the National Science Foundation. Now in its final stage, the multifaceted study by research teams across the country will provide the foundation for limit-states design, a structural-calculations method that already is being applied in concrete and steel design in the United States and is under development for application to wood structures.

"Limit-states design is an attempt to document more accurately the way masonry responds and performs under specific loading conditions," says Mark Hogan, director of engineering at the National Concrete Masonry Association. "Working-stress design, the method now in common use, is a conservative and safe way to design. However, it does not tell an architect how a structure responds, particularly to an earthquake or high wind storm in which some elements of the struc-

ture may be stressed to their limit or capacity. Limit-states design examines what happens to structural elements up to their capacity. That was our purpose: to test masonry up to its capacity and even beyond."

The research will culminate with a seismic test on a full-scale, five-story test structure, an event that is expected to take place later this year at the University of California, San Diego. Data gathered in this simulated earthquake will be used to verify the reliability of analytical tools developed throughout the research for predicting the behavior of masonry structures under seismic loads.

The research program was highly structured. Tests were first conducted on individual components, including mortar, grout, concrete masonry units, and brick units. Strength tests were then conducted on small assemblies, or prisms, and compared to predictions of their performance made on the basis of data gained from the earlier tests. In a building-block approach, each step of the process depended upon the results of the previous one. Data from the tests of the prisms was extrapolated to predict results of full-scale tests on one-story, two-story, and three-story walls. According to Hogan, the tests have been successful in developing analytical tools to predict the performance of the assemblies.

Hogan suggests that the configuration of the wall system by the architect—for example, in order to meet functional requirements—will probably continue as it is now.

But once the layout of masonry elements is established, the structural engineer's determination of the strengths of those elements and the necessary levels of reinforcement will be most affected by limit-states design.

"Limit states takes into account the strength of the materials," explains John Kariotis, president of Kariotis and Associates Structural Engineers of South Pasadena, California, and a member of the joint-industry committee developing the new standard. A shear wall designed by the working-stress method, for example, would include large amounts of vertical reinforcement and very little horizontal reinforcement. "Using the new limit-states design," he maintains, "the same wall would probably have more reinforcement horizontally, but substantially less vertically. We find that walls built in this way are more flexible, which is very good under seismic conditions. So we not only reduce the quantity of reinforcement in the wall, but we improve its seismic behavior."

Limit-states analysis also offers a method for analyzing masonry walls punctured by windows and doors. "We have realized that walls with holes in them can be designed as what we call 'wall frames,'" Kariotis says. "Until now, there was no rational way to design a perforated masonry wall. But by the appropriate placement of the reinforcement and the appropriate design for shear, we can design that wall in a way that the holes in it are not deficiencies, but assets." In essence,

Kariotis maintains, these so-called wall frames can be viewed as the structural equivalent of masonry spandrel beams between masonry columns.

The masonry committee of the Building Seismic Safety Council, a consensus group of construction industry representatives sponsored by the Federal Emergency Management Administration, has already endorsed limit-states design as an alternative to the current working-stress method. The full council will vote on the proposal later this year, and approval is anticipated. "It is the first time that a group of experts from the building

A partial elevation of a hypothetical concrete block building illustrates some of the differences between the working-stress (below left) and limit-states (below right) methods. In the limit-states design, the entire facade is of block; in the working-stress design, the first level must be poured concrete. The total amount of reinforcing required in the skin of the masonry building is less according to limit-states design. And while the vertical reinforcing bars are distributed evenly across the wall span in limit states, the working-stress method requires additional vertical re-bars at either edge.

community—including structural engineers and architects—has endorsed this concept of limit-states design," Hogan adds.

The committee's intent from the beginning has been to conduct research that would eventually lead to revisions in the sections of model building codes that pertain to masonry and seismic design, according to Kariotis. After its preliminary approval and subsequent review by industry panels, limit-states methodology could be reflected in the BOCA and Standard Building Codes as soon as 1994. Acceptance into the Uniform Building Code may take another three to four years.

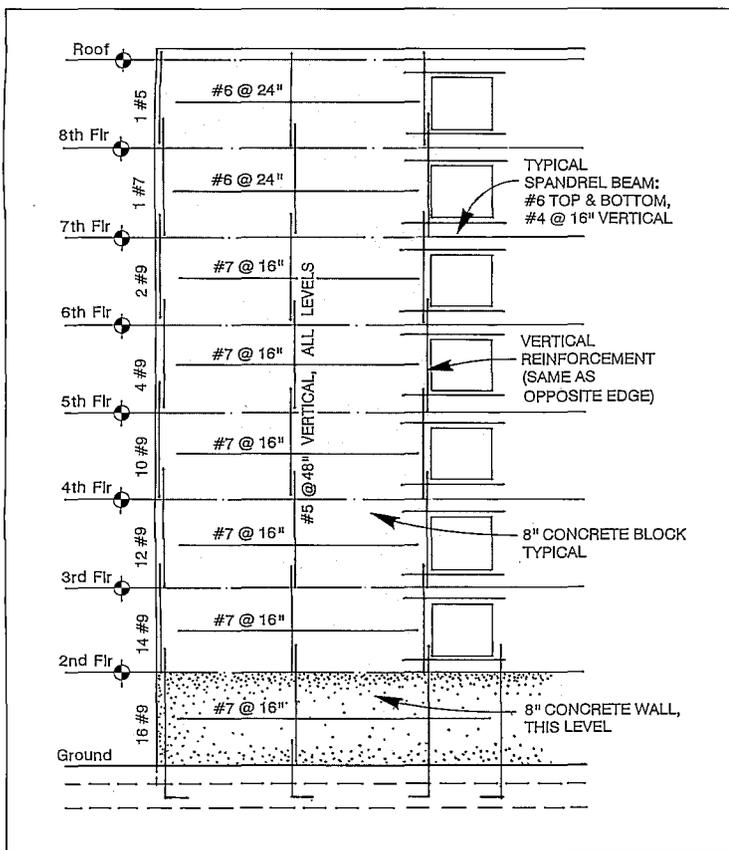
Such a change in the codes, Kariotis says, will have cost advantages. "People are complaining that having to introduce seismic design is driving up the cost of their building. We believe that while the costs may go up, they shouldn't go up very much. If you use your materials efficiently, you will not have this increase in cost." He contends that a more exacting placement of reinforcing in masonry walls will allow the use of less reinforcing material, and that's where the savings will occur. "I looked at buildings built in the past 10 to 15 years in California and found them excessively reinforced. In one sense, we wasted money," says Kariotis.

While Hogan cautions that many participants in this process don't view limit states as an immediate replacement for existing design methods, Kariotis predicts that, in time, limit states will become the predominant method for designing reinforced masonry walls. "Every time we change a technique, we have a period of transition," Kariotis says. "It is just like ultimate strength design in concrete has almost totally replaced working strength design in concrete. When people see the advantages in limit-states design, I think they will begin to use it."

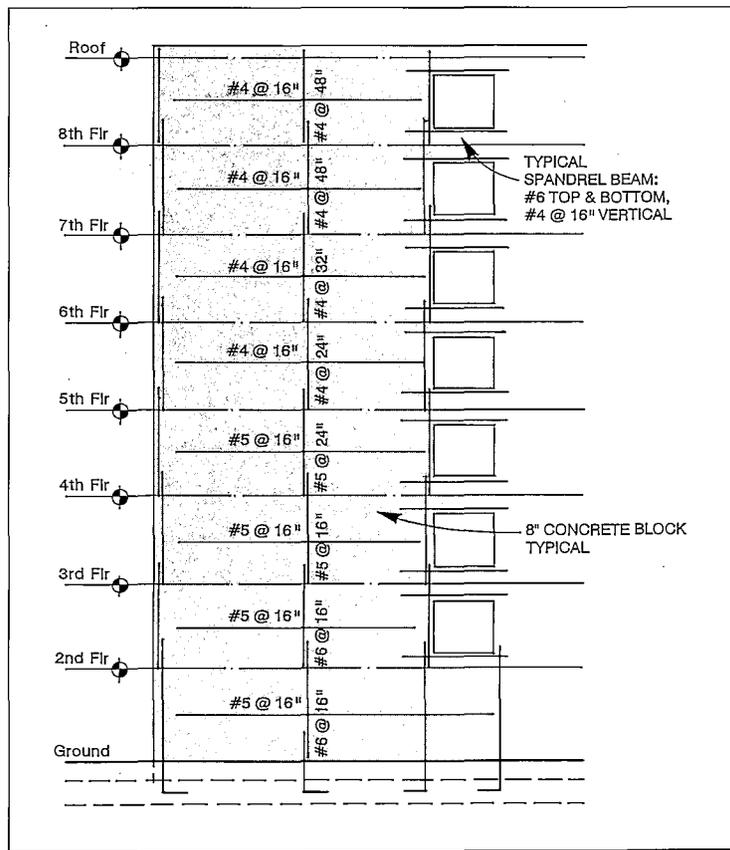
Hogan soft-pedals the cost advantages of using the limit-states method. "There are many instances where our current procedures are overconservative," he says. "From my vantage point, there will be some economic advantages, although I wouldn't hold them up as the biggest reason for the limit-states approach. To me, the biggest advantage is that it produces a more reliable structure." And that reliability depends on both quality control and more precise engineering. ■

—VERNON MAYS

Vernon Mays is editor of Inform, an architecture and design magazine published by the Virginia Society/AIA.



WORKING-STRESS METHOD



LIMIT-STATES METHOD

New CADD Developments

Next month's A/E/C Systems Show reveals how the industry is listening to its customers.

IN THE 1960s AND '70s, IT WAS DEBATABLE whether computers could serve the design professions as well as they performed in communications and finance. In the '80s, as the number of computer users mushroomed with the advent of microcomputers—so did ideas of what could be automated. Yet many architects questioned, justifiably, whether the still-awkward technology provided genuine productivity gains. Now in the '90s, although much of design is not yet computable, CADD has achieved an indisputable permanence. Few office procedures—whether design, drafting, accounting, spec-writing, or marketing—are untouched by some form of automation.

An annual barometer of this automation trend is the A/E/C Systems Show, probably the country's largest conference and trade show for architecture, engineering, and construction professionals. Organizers for this year's show, to be held in Washington, D.C., May 6-10, expect the 500 exhibitors, 100 sessions, and about a dozen concurrent conferences to attract more than 30,000 visitors.

The offering of seminars indicates that CADD has graduated from its "gee-whiz" phase and settled into the serious, everyday management of architectural offices. The 59 tutorials will consider coordinating hardware networks, managing the CADD staff, and establishing office procedures to make a design firm profitable. Other tutorials will offer spe-



cific "how-to" sessions for computer-aided drafting, specifying, estimating, and video-making. Panels will present case studies, new technologies, and solutions for computer obsolescence and system incompatibility. Prognosticators will look at 1990s trends in graphic workstations, CADD software, automated marketing, and artificial intelligence. Concurrent conferences sponsored by profes-

Using Intergraph's new Design Engineering Visualization applications, The Callison Partnership, Ltd., of Seattle and San Diego, created a video that includes this scene of a mall undergoing renovation (above). Users can define camera motion and timing sequences. Intergraph's rendering software features improved photo-realism, texture mapping, ray tracing, and other lighting effects.



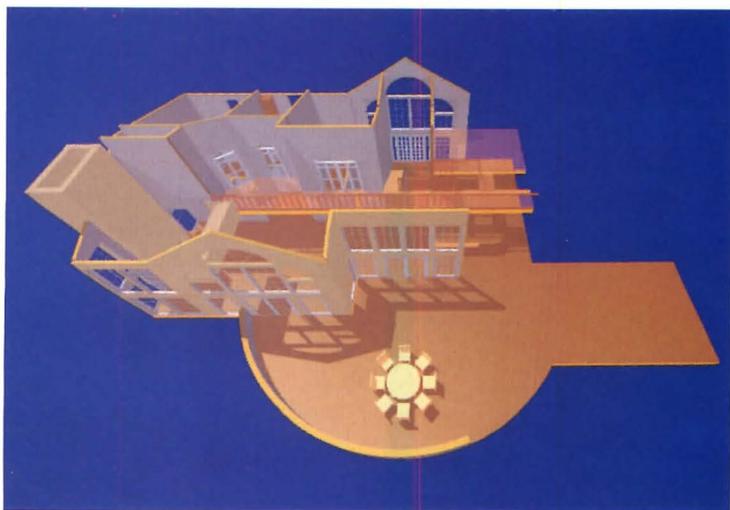
Solid forms can be manipulated and displayed in any view with Form-Z (above). Autodesk has developed the conceptual design system for the Macintosh.



AutoDesk researchers are exploring "cyberspace," where hand movements manipulate CADD objects (above). A video screen for each eye creates a stereo image.



Upfront, the new "napkin" software from Alias Research, facilitates conceptual design by combining ease of drawing in perspective with fast rendering (above).



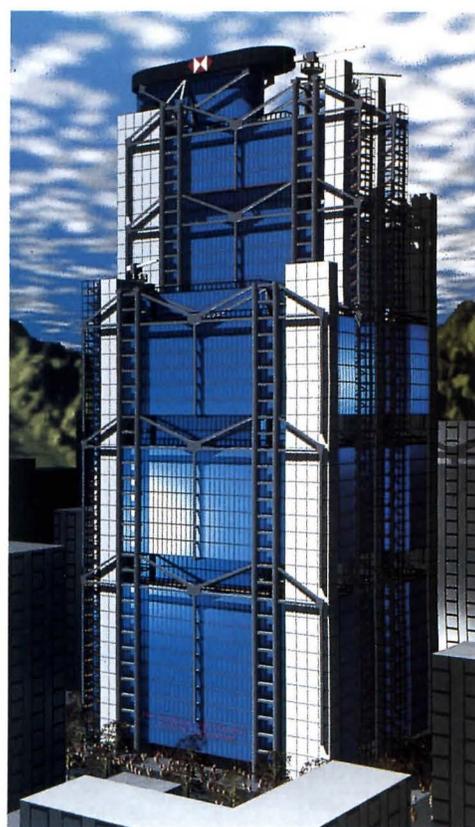
Graphisoft's newest version of ArchiCad will have an improved interface, and the visualization capabilities of its 3D modeler will include sun study capabilities, shadow casting (left), smooth shading, anti-aliasing, and material properties. It will also import Swivel 3D files and export drawings in DXF format.



DynaPerspective, a 3D modeler and animator for Mac and DOS platforms, is now available in a Unix version. Macintosh models (above) can now be exported to MacRenderman.



New translators make Wavefront (above) compatible with several modelers. Howard Associates Architectural Renderings modeled this interior.



Modern Medium, BV, Amsterdam, using RenderStar-2, created a model of the Hong Kong/Shanghai Banking Corporation (above) designed by Foster Associates, London.

sional societies and trade associations will address issues of facilities management, military engineering, construction, computer-aided specifying and marketing, intelligent buildings, and surveying and mapping.

Trends in new developments

TO SUM UP WHAT'S NEW IN CADD HARDWARE and software: it's better, easier, cheaper, faster, and bigger (except where "bigger" is a disadvantage, it's smaller). Trends point away from stand-alone personal computers and toward networking and exchanging data between unrelated systems.

One trend that's not new but simply rediscovered since Microsoft introduced Windows 3.0 is the graphical user interface (GUI). With GUI, the user communicates with the computer by pointing to screen icons and clicking with a mouse rather than typing commands. Macintosh users have thrived on a GUI for years, and this intuitive approach is particularly powerful for graphics applications. Now that it has been adopted by DOS- and Unix-based systems, GUI may well become universal. The benefit will be *easier-to-use software*

and improved transferability of information within and between systems.

As the quantity of hardware and software grows every year, so does the difficulty of trying to absorb everything at A/E/C Systems. The following is a list of some trends to look for, and a few products that illustrate them.

New software

ALTHOUGH THE SHEER QUANTITY OF EXISTING software may appear overwhelming, new packages keep arriving with capabilities that will soon seem indispensable. Alias Research has produced Upfront, a "napkin" software for the Macintosh that lets designers sketch preliminary ideas and manipulate forms intuitively. Special pointing tools help the computer differentiate between surfaces, so designers can draw in perspective as they would on paper. Users can import scanned photographs of a site, match shadows and perspective angles, then sculpt forms "on location." Upfront also features automatic shading, ease in changing views, and exporting capabilities to other Macintosh software.

Another new conceptual design system for

the Macintosh is Form-Z, a solids modeler from Autodesk. Objects can be sculpted by extruding 2D surfaces, adding and subtracting volumes, and other procedures tailored for architectural design. Preliminary designs can be created in perspective and manipulated by transformation functions such as scaling, rotation, and reflection. Views can be easily defined and displayed with shadows, shading, and transparency effects. Users can export models to and from the 2D module or any DXF-compatible software.

GenCADD, a new software series, has been developed jointly by Generic Software and DCA Software. The GenCADD Architect is a low-cost, full-featured drafting system with space-layout features, stair calculations, and automated footings, elevations, and door and window schedules.

Intergraph, a leader in Unix-based rendering software, has produced Advanced Renderer with improved photo-realism, texture mapping, ray tracing, and other lighting effects. Intergraph's Render Server distributes computation-intensive rendering tasks to computers throughout a network, freeing

workstations for continued design work.

AutoDesk will demonstrate its progress in real-time animation with "cyberspace," where computer users enter an imaginary space more realistically than with conventional input and output devices. The user wears a helmet with a video screen for each eye. By detecting head movement and hand movement through special gloves, high-powered software enables a user to walk through a CADD model. Although the technology is still primitive, it has far-reaching implications for architects because it adds the kinesthetic sense to spatial perception.

Existing software with new features

THE BEST INDICATION THAT CADD COMPANIES are listening to their customers can be found in improvements to older software. One company that particularly invites user participation in the software design process is Samsara, creator of Clerk of the Works accounting software for the Macintosh. The newest version provides networking capabilities, prints invoices in more than 100 formats, and tracks nonbillable time and expenses.

Wind-2 Software has new modules and upgrades for the Financial Management system for architects and engineers. Its Departmentalized Accounting module is for firms that manage departments as profit centers. The Wind-Tools are utilities for customizing financial-management information and summarizing financial activities. The A/E Marketing Manager for proposal development will have a multiuser version and an interface template for exporting data to WordPerfect.

Accugraph, developer of CADD and information-management systems, will release MountainTop 4.1. This will include a GUI, scanning software to convert E-size drawings

to vector-based files, database software connecting graphic and nongraphic information, and a macro programming tool for creating custom drawing applications.

Vertex Design Systems will show a new version of the Vertex Detailer, which assembles AutoCad details. It will be compatible with AutoCad Release 11 and show improvements in file compression, networking, customizing title blocks, and reporting.

Computervision will show new features of VersaCad 6.0, including attributes for attaching nongraphical information to graphic objects, associative dimensioning, drawing transfers from 2D to 3D, and file exchange between its DOS and Mac versions. This software is now available for 386 and 486 PCs as well as Macintosh, Sun, Hewlett-Packard, and Apollo.

Intergraph's Project Architect 4.0 will demonstrate improved 3D view manipulation, associative dimensioning, and compatibility with other Intergraph applications.

Sigma Design has developed a new translator that exports 3D Arris models to Wavefront Technologies' photo-realistic rendering software, Personal Visualizer. Special effects include textured surfaces and accurate light, shadow, and color rendering. The images can be used as stills or as animation frames.

Similar changes can be found in RenderStar-2 from Modern Medium. This software generates fast photo-realistic images and animations of 3D models created with AutoCad and other DXF-compatible modeling software. New features include gradient colors, spotlights, linear and colored light sources, and bitmapped material textures that users can paint or scan in and wrap around 3D objects. Animations can be created in RenderStar and edited in Autodesk's Animator.

Existing software for new platforms

SINCE IT IS NOW COMMON FOR ARCHITECTS to own several kinds of computers, the industry is under pressure to improve communications between systems and translate software for new platforms. For example, Intergraph's ModelView rendering and animation software for Unix workstations is now available for PCs. Sema4's Financial Manager, DOS-based accounting software for architectural and engineering firms, will be available for the Macintosh.

Gimeor will show its DOS version of Archi-trion, a 3D modeler for the Macintosh. Instead of relying on the Windows interface, Gimeor has designed its own similar to the Mac's. Double precision will allow an increased range of scales in a project. DXF translators will be available to export files to and from other DOS-based CADD software.

AEMAS, the Architectural/Engineering Master Accounting System from Data-Basics, will be available for high-powered Sun Microsystems and IBM RISC System/6000. These new systems offer fast file handling, a graphic interface, links between applications, and networking capabilities.

Hardware improvements

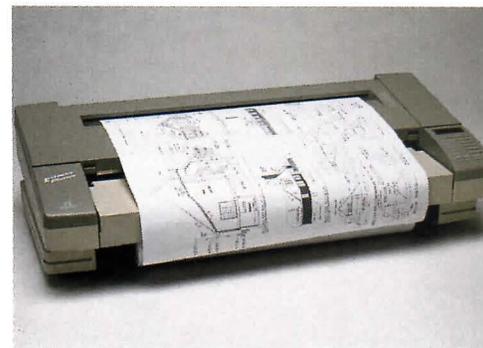
NEW DEVELOPMENTS DEMONSTRATE THAT hardware companies have been responsive to the productivity concerns of architects, improving and adding speed to computers and peripherals. CalComp's new ColorMaster Plus thermal transfer printers, for example, produce A- and B-size color drawings, and are compatible with Macintosh, DOS, mini-computer, or mainframe computers. These printers can be shared by a variety of computers on a network and are ideal for quickly printing rendered 3D models. Also new from



The LDS 4000 Plus scanner from Houston Instrument (above) accepts drawings up to E-size. It can scan gray scale, halftone, and line art, and includes features to filter out "speckles" in blue-line drawings.



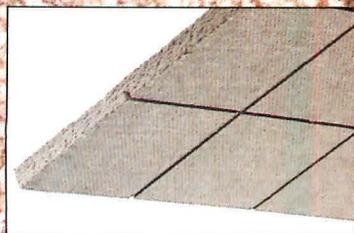
The Nth Drive display-list-processing software for AutoCad 386 shows the Nth Engine's control panel (above). The Nth Engine/150 supports 256 colors at a resolution of 1,280 by 1,024.



JDL's new D-size ExpressPlotter is a high-speed thermal plotter offering 200 by 400 dpi resolution. It accepts both vector and raster images from a wide variety of CADD software applications.

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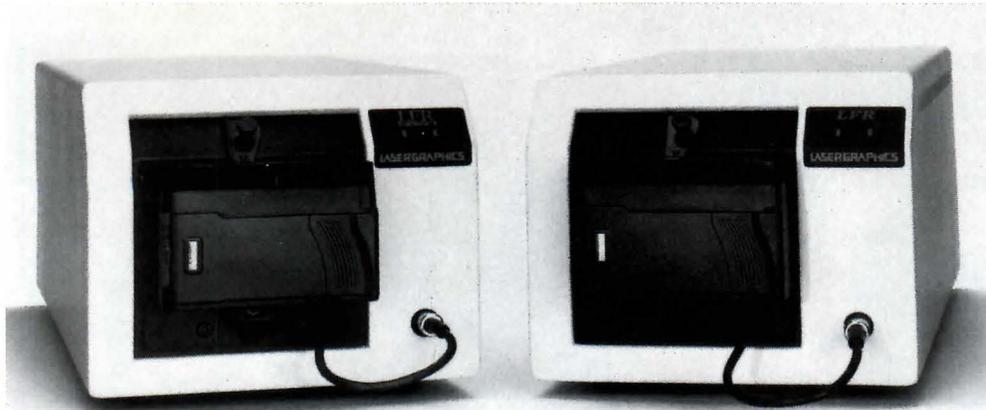
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Digital film recorders from Lasergraphics (above) photograph screen images at 2,000 or 4,000 lines of resolution. These camera systems are compatible with a variety of hardware platforms and graphics software.

CalComp is Artisan Plus 1026M, an E-size plotter with a memory buffer that allows the computer to continue work while plotting. A rotating turret houses eight pens of varying types. Built-in optical sensors determine which pen type has been selected, so pen force, velocity, and acceleration can be adjusted automatically.

Ioline's new Signature5000 plotter can handle paper or film in sizes as small as 3 by 3 inches or as large as 37 by 162 inches. Micro-calibration ensures accuracy up to 0.0002 inches and compensates for media stretch caused by variations in humidity and temperature. A pen changer supports 25 pens, and can hold pencils and blades for cutting sheet vinyl, which is particularly useful for model-making. In addition, the PlotServr Plus can operate the plotter while the designer and computer go back to work.

Another plotter that can cut vinyl is the new SketchMate from Roland Digital Group. This low-cost, A-size, eight-pen plotter supports DOS-based computers and HPGL-compatible software. Roland also has added an E-size to its family of high-end flatbed plotters. The DPX-4600 pen and pencil plotter claims 0.01% accuracy, can plot on many materials, including thin cardboard, and has a mirror function for plotting on both sides.

JDL has a new monochrome thermal plotter that accepts both raster and vector files and plots quickly at 200 by 200 dpi, or somewhat slower at 200 by 400 dpi, on sheets up to 24 by 72 inches. The thermal process is faster than pen plotting and useful for generating check plots. It's compatible with Mac-

intosh, DOS, and Sun computers.

The Zeta 2400P thermal plotter from Zeta Graphics offers 200 dpi with a top plotting speed of 4 inches per second, a sixfold increase over comparable monochrome electrostatic plotters. The dry plotting technology eliminates the need for toners, inks, or toxic supplies. It can plot on a variety of heat-sensitive papers, 23½ inches by up to 700 feet.

Improvements are also being made in color display boards. Low price and freedom from flicker characterize a new board from Nth Graphics. The Nth Engine/150 supports 256 colors at a resolution of 1,280 by 1,024. It comes with display-list-processing software for AutoCad 386 and drivers for Microsoft Windows and OS/2 Presentation Manager. The increased speed allows nearly instantaneous zooms and pans in AutoCad.

Kurta's new XLC digitizing tablets are available in D and E sizes, compatible with DOS, Mac, and Sun computers. The supporting software can be customized with macros.

Houston Instrument has improved the LDS 4000 Plus Scanner for gray scale and half-tone scanning of sheets up to E-size. A frame-advance function allows the scanning of multiple drawings from a roll of media. New options compensate for "speckles" and background variations in blue-line drawings. The software facilitates inserting scanned drawings into a graphics database.

The software and hardware systems listed here are only a few of the new developments on view at the A/E/C Systems Show. CADD firms are making computers easier to use and developing applications for every aspect of architectural practice. It's clear they want to provide not just products, but practical aids to productivity. To receive a conference pre-view publication or to register, call (800) 451-1196 or (203) 666-6097. ■

—B.J. NOVITSKI

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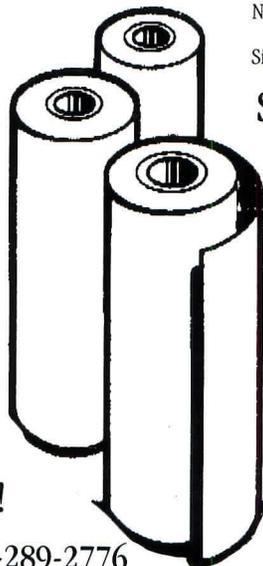
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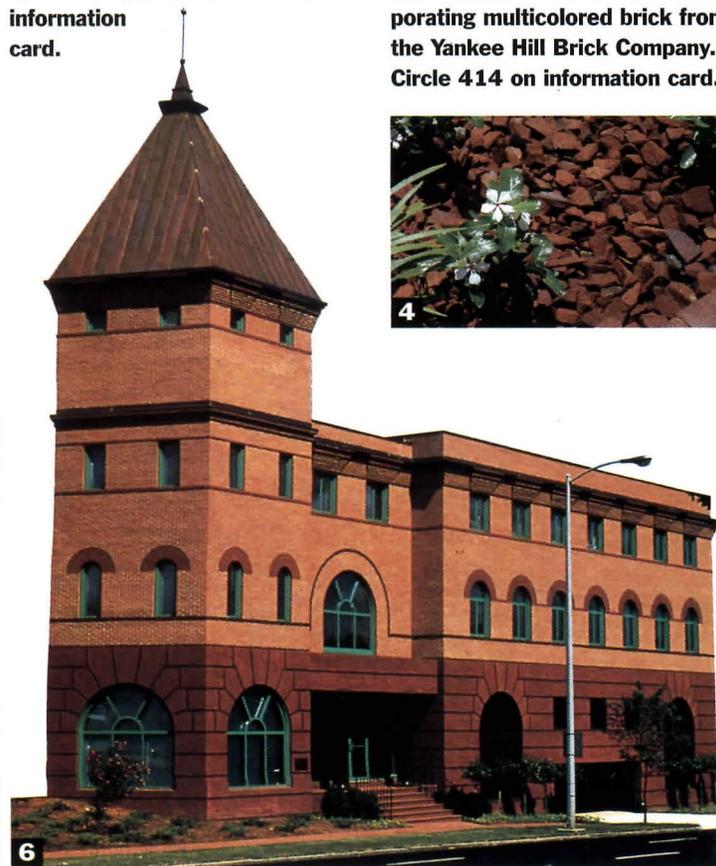
*Both Fujitsu and Jujo fax papers conform to strict NTT/OEM standards established by the leading manufacturers of fax equipment. \$4.33 price based on 10 or more carton order of 8½"x98" roll (6 rolls per carton)



1. The new Century System of clay modular pavers, developed by LPS Pavement Company, features mortarless pavers on sand with a granular base. Circle 408 on information card.

2. R-Brick Panel System by The American Brick Company consists of 1/2-inch-thick clay brick, factory-applied to Styrofoam brand insulation by Dow Chemical Company, creating a durable, well-insulated finishing system. Circle 409 on information card.

3. Glen-Gery's glazed brick is manufactured in 5 sizes or special shapes. Circle 410 on information card.



6.

4. Pine Hall brick chips offer a durable, attractive landscaping material. Circle 411 on information card.

5. Luckenbach, Ziegelman and Partners of Birmingham, Michigan, specified Beldon Brick for the Michigan National Bank headquarters. Circle 412 on information card.

6. Cushwa Brick offers two new products: Baby Roman Pavers; and a 4-by-8-inch paver. Circle 413 on information card.

7. Artist Jay Tschetter created a brick mural for the Lincoln, Nebraska, railroad station, incorporating multicolored brick from the Yankee Hill Brick Company. Circle 414 on information card.



4.

Better Brick

Creative strategies for masonry applications.

ALTHOUGH THE CONSTRUCTION TRADE FACED A NATIONAL SLOWDOWN in the latter half of 1990, the brick industry fell off by only 5 to 10 percent, according to recent figures issued by the Brick Institute of America (BIA). Although the decline was slight, BIA President Nelson J. Cooney encourages manufacturers to explore new ways to develop clay products to expand their markets. Jack Latimer, president of Cushwa Brick, owned by Steetley, PLC, of Rugby, England, says that to help weather the recession his company is investing heavily in advanced technologies and research. Latimer, a member of BIA's newly formed paving subcommittee, also sees the paver



2.



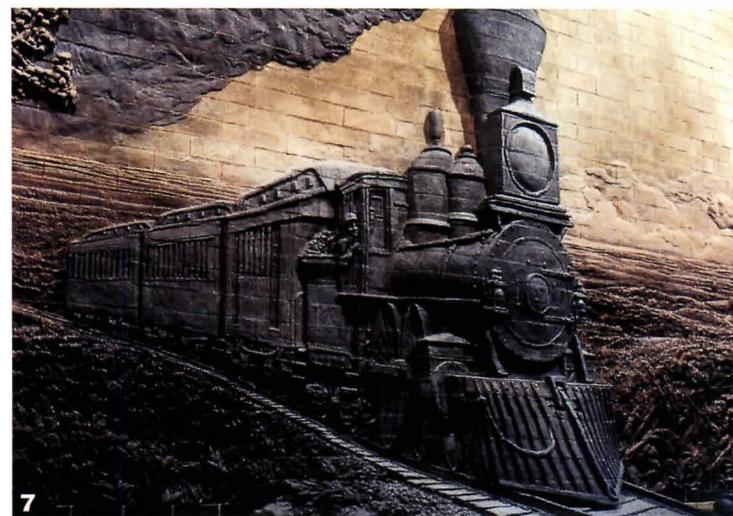
3.

market as one way to increase productivity and keep abreast of competitive market demands. According to the BIA, brick paving is experiencing a renaissance in the country, especially on inner-city streets and for residential areas. Brick sculpture is another use of brick that is becoming increasingly popular. While not a high-profit enterprise, brick murals and reliefs incorporate imagery and underscore the creative uses of the material.

—AMY GRAY LIGHT



5.



7.



1

1. Sarnafil roofs the Toronto SkyDome (top) with its new re-inforced, single-ply, thermo-plastic felt-backed membranes (detail above). Circle 415 on information card.

2. Loofburrow Architects of Yakima, Washington, chose Bond Cote Roofing membranes for the Yakima Sun Dome. Circle 416 on information card.

3. Stevens Roofing Systems applied its Hi-Tuff single-ply membrane for a facility at Springfield College in Massachusetts, formerly the Basketball Hall of Fame. Circle 417 on information card.

4. Cooley Roofing Systems' new C3 membrane was specified for a condominium complex and administrative buildings in Orlando, Florida. Circle 418 on information card.

5. For the roof of a multipurpose arena in the heart of downtown Minneapolis, KMR Architects specified Firestone's Rubbergard EPDM system (6). Circle 419 on information card.



4



5

7. Southern Slate shingles from FibreCem Corporation, which contain no asbestos, can be installed at virtually any pitch 4/12 inches or steeper. They are available in several different widths. Circle 420 on information card.



2



3

Roofing Trends

Diversity and research signify leading manufacturers.

THOMAS PETRARCA, PRESIDENT OF BOND COTE, CONCEDES THAT 1990 was a tough year, citing as evidence the downturn of overall new construction, consolidation of supplier companies in the roofing marketplace, and the failure of some of the less established roofing manufacturers. But he is optimistic that his 41-year-old, Georgia-based company can ride out the recession. "We're a strong company with many different products that cross over diverse markets, and we put a great deal of emphasis on research and development, as well as on the quality of our products. Diversification is normal for us. We have products for specialty applications for desert conditions, which are currently in use in the Middle East, as well as a high-quality fabric line. We're not letting circumstances get the best of us." Mes Fernandez, product manager of single-ply roofing for Celotex, a Florida company involved in roofing since the 1850s, agrees that while the demand for single ply is leveling off to a holding pattern, producing quality materials and investing in research is the only way a company can survive. While Petrarca notices a high rate of growth in the use of thermoplastic membranes, and Fernandez observes an increase in built-up roofing and modified bitumens, both manufacturers agree that architects are exploring more creative aspects of roofing through the use of colored membranes and unusual shapes. —A.G.L.



6



7

One way or another...



Brite Vue is the best way in!

Brite Vue Swinging Doors, Revolving Doors and Column Covers form a grand entrance

Swinging doors or revolving doors... if they are Brite Vue they are meticulously engineered, built of the finest materials and are highly adaptable to creative architectural design.

REVOLVING DOORS.

Brite Vue revolving doors create luxurious appearing entrances and deliver smooth, efficient performance year after year. Available in 3 or 4 wing models. Door wings and enclosures are provided in aluminum, stainless steel and architectural bronze or brass. Doors are of tempered glass. Enclosures are of curved annealed or laminated glass. Speed control mechanism is mounted in overhead canopy or in the floor.

SWINGING DOORS.

Having no vertical frame members, Brite Vue tempered glass entry doors, as shown here, provide nearly total vision areas. Rails are furnished in all popular architectural metals and finishes. Brite Vue swinging, balanced, bottom rolling and top-hung stacking doors using continuous and/or corner rails are ideal for interior or exterior applications. Full framed doors are also available.

METAL COLUMN

COVERS. Custom covers are fabricated to specifications in all popular architectural metals and finishes. They transform structural columns into pillars of beauty. Perfect raceways for communications and electrical lines, as well as for air conditioning ducts. Brite Vue's design, when requested, permits one half of the column cover to be removed for easy access to the enclosed services.

Write or call today for complete information on all Brite Vue products.

Circle 67 on information card

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Opportunity Knocks

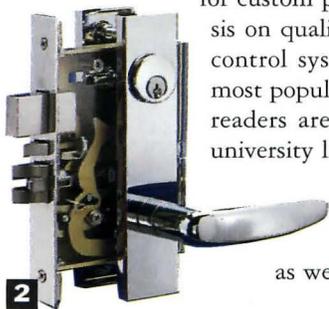
Industry growth prompts better door hardware.

ARCHITECTURAL DOOR TRIM IS DEFINED AS HARDWARE APPLIED TO the face or edge of a door to assist in access, exit, or protection. Products such as entry pulls, push/pull plates and bars, protection plates, and edging operate with existing door hardware. According to Patrick J. McCord, architectural hardware consultant and president of Yale Security, the future success of door hardware companies in the United States depends upon their ability to improve delivery. As McCord points out, "A new class of customer, the owner/developer/builder, is joining contractors and architectural firms as central players in the construction market. This client is primarily concerned with high levels of service and product availability, rather than a more traditional specifications process." Manufacturers must deliver a full range of products on time, while continuing to serve the special needs

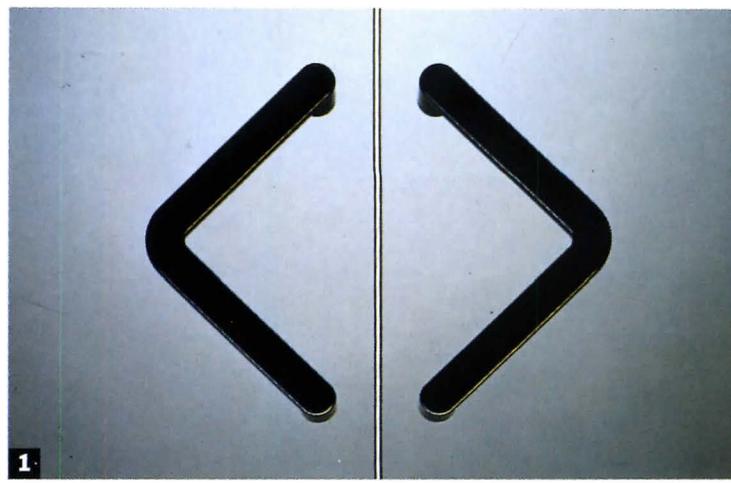
for custom products, McCord asserts. This emphasis on quality also applies to the electronic access control systems, by far the fastest growing and most popular products in the industry today. Card readers are most popular in corporate facilities, university libraries, research centers, hospital labs, and sensitive government buildings.

Users like the convenience, performance, and versatility of the devices, as well as their technology. ■

—A.G.L.

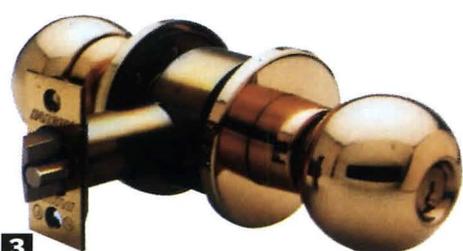


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1. Hewi introduces a nylon door pull with a corrosion-resistant steel core. Circle 401 on information card.



3

2. Schlage's mortise locks are intended for use in commercial and institutional buildings. Circle 402 on information card.

3. Falcon Lock's new N Series of locksets is available in two knob designs and several finishes. Circle 403 on information card.

4. Yale Security's 2300 Series door closer is applied to narrow-stile aluminum doors and frames. Circle 404 on information card.

5. Dorma Door Control's new floor-concealed BTS 80 EMB door closer is designed for applications where remote closing of doors is required. Circle 405 on information card.



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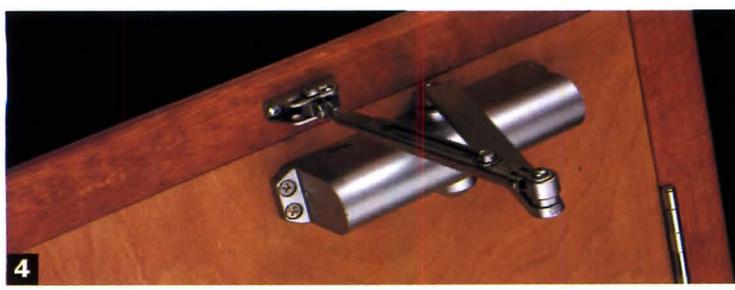
6. Adams Rite's series 3000 fire-rated exit device is now available with new entry trim, such as knob and lever entry handles. Circle 406 on information card.

7. Weather Shield's Signature Series introduces a distinctive brass three-point lockset. Circle 407 on information card.

8. Andersen's 8-foot-high Frenchwood Gliding Patio door responds to the growing trend toward higher ceilings and larger expanses of glass. Circle 1 on information card.



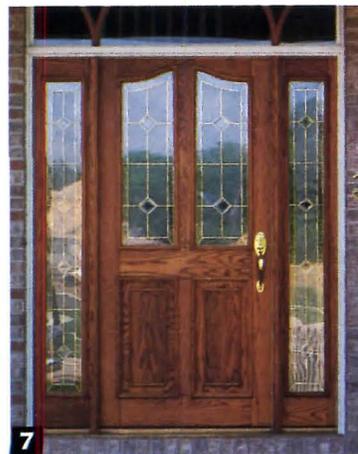
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