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Seaside Acetic

Steven Holl’s multiseuse Dreamland Heights building at Seaside, Florida, winner of a 1987 P/A citation, is a coolly abstract response to the town’s tradition-based code. John Morris Dixon

A Masterwork for Masterpieces

The recently opened Canadian Centre for Architecture, designed by Peter Rose, further the understanding of architecture through its extensive collections and by the intelligent example of the new building itself. Susan Doublet

Desert High

In the Capital High School, Ralph Johnson of Perkins & Will emphasizes the rationalism inherent in the vernacular architecture of Santa Fe. Thomas Fisher

P/A Inquiry: Correctional Facilities

Our ambivalence toward the treatment of criminals affects the siting and design of our prisons and jails. Thomas Fisher

Look Both Ways

The first phase of a development in Atlanta, a striking new retail center by Arquitectonica and Milon Payne & Associates sets an upbeat pace. Jim Murphy

A Machine in the Forest

The new Center for Innovative Technology in Virginia by Arquitectonica and Ward/Hall Associates makes a bold image for a new type of facility. Vernon Mays

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The Next Asbestos?

The next health hazard in buildings, comparable in scale and seriousness to asbestos, may be upon us. The New Yorker in June (June 12th, 19th, and 26th) ran a three-part article by Paul Brodeur on the potential health threats of magnetic fields created by unbalanced electrical currents in and around buildings. (The unbalance is often caused by current moving through grounded plumbing systems rather than back out the wire.) Brodeur describes research by epidemiologist Nancy Wertheimer and physicist Ed Leeper in the U.S. and medical officer Lennart Tomenius in Sweden showing that people living near transformer stations, pole-mounted transformers, or high-current overhead electrical lines (found along many city and suburban streets) have a higher incidence of certain types of cancer. He also mentions research by Wertheimer and Leeper connecting electrical cable heating systems in ceilings (as well as electric blankets and computer video-display terminals) to higher rates of miscarriages.

There are several lessons here for the architectural community. First, the article undermines the common but erroneous assumption that just because we have used something for a long time, it must be safe. As Brodeur points out, we began using overhead electrical lines (as we did asbestos insulation, lead pipes, and lead-based paint) long before the advent of environmental impact statements or health-related product testing. Which raises the question: How many other common building materials or systems that we now use pose a health hazard? The architectural community, as prime consumers of building products, has the leverage to demand that manufacturers provide evidence as to the long-term biological effect of building components and systems.

Second, Brodeur's article focuses on the attempts by the government, the utilities, and product manufacturers to discredit this research with few attempts at replicating it. The reason for such stonewalling is not hard to find. There are over 30 million video-display terminals in use in the U.S., there are growing numbers of electrically radiant-heated buildings, and there is an immense investment in the overhead power distribution system. But if Brodeur's account is true, the duplicity, especially among government agencies and government-controlled utilities, is inexcusable. If nothing else, this episode, like that of asbestos before it, underscores the need for skepticism about manufacturers' claims, the need for more building research independent of any industry or interest group, and the need for better means of transferring technical information, since, as in the case here, most of the research findings were buried in obscure technical journals rarely seen by practicing professionals or the public.

Third, the article raises questions about liability in such matters. The courts may hold companies liable for the safety of particular products, but how can responsibility be assessed when damages are caused by the way we distribute electrical power or communicate electronic information in this country? If such systems turn out to pose a public health threat, then the courts could conceivably go after those who specify and locate the harmful components in and around buildings as well as those who make and distribute them.

What, then, should the architectural community do if further research verifies these preliminary findings? Brodeur has several suggestions. An effective solution to VDT radiation, he writes, has “all VDT operators sit at least twenty-eight inches from their own terminals, and about forty inches from other terminals.” He also mentions that some U.S. computer companies make magnetically shielded terminals for sale only in Scandinavia (where laws require it), and that a Norwegian firm is marketing such a terminal in the U.S. Brodeur admits that overhead power lines pose a more difficult problem. “In some cases,” he writes, “restringing or burying them may be sufficient to reduce magnetic-field exposure. In other cases, it might be necessary to develop ways of changing the present grounding system, which, because it often allows unbalanced currents to flow through plumbing systems, can create relatively strong magnetic fields in many homes. The trick will be to accomplish this without losing protection against electric shock. Possible solutions include using nonconductive plumbing or installing dielectric unions in existing plumbing to interrupt the flow of electric current in conducting pipe.”

It is not enough to conclude that others will take care of such problems. Architects have a professional obligation and a moral duty to press for more information and more action. Thomas Fisher
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Post-Modernism and Energy
The John Morris Dixon editorials are one of the main reasons I subscribe to P/A. And I like the one for April (page 9) in which you discussed diversity.

But somewhere, the subject of energy should have been brought in. The underlying assumption of Modernism was a steady decline in relative energy cost, and the underlying assumption of Post-Modernism was a reversal of that seemingly reliable decline. That's why the big changes came with the Arab Oil Embargo, OPEC, and related events. (The optimism of the International Style rejected regionalism based on energetics. Energy cost, as a declining percentage of the cost of living, made a glass box in Phoenix seem chic and a concern for ventilation in Tallahassee seem quaint but irrelevant.)

If we are in a period of confusion now, it's because our culture is waiting to see if fusion will become more important than fashion. Will it give us another steady energy cost decline? Or will plain old heat pollution (greenhouse effect) prove worse than physical pollution (acid rain, etc.)? Awaiting more data, stylists have no clear verdict—and can try anything.

Harry Compton, Architect
Bartlesville, Oklahoma

Post Offices and Suburbs
I would like to compliment you on the breadth of your recent article on "Reordering the Suburbs" (May 1989 P/A, pages 78–91). While the subject appears in much of the professional and popular literature these days, yours was one of the first articles to provide a valuable comparative commentary on the variety of concepts.

I was, however, struck by a dichotomy in the same May issue between the article referred to above and the Technics Topics article on Post Office Design (pages 111–113). The prototype development team apparently did not include a spokesman for a differing "kit" that might relate to the setting within which the post office was to be located. Similarly the site plans included with the article reflect two suburban parking-in-front-of-the-building solutions.

A case illustrating the inherent problem of this approach occurred recently in a small, suburban fringe community where I have been working on a plan for orderly growth. The existing downtown is a disjointed mix of somewhat urban and suburban character and the new planning concept seeks to alleviate some of this by encouraging development to the sidewalk line. A new post office is planned for this community. The plans for this post office, prepared by an out-of-state architect, are virtually identical to the suburban examples shown in your article. While this plan no doubt resulted from discussions concerning the convenience of access (in a retail sense) it works against the urbanizing planning concept (in a civic sense).

Communities at our urban fringe will not often be designed by teams with the sociological and design range of those identified in your "Reordering the Suburbs" article. Neither will one developer be likely to control the destiny of most large tracts of land. We must work to insure that institutions such as the Post Office (including their postmasters and design architects) recognize the importance of their developments as potential focal points of the urban/suburban fabric. I am certain that the site plans examples shown in the post office article do not fit any of the emerging community prototypes of your suburbs article.

William L. Clarke, ASLA, ASCE
Ross, California

Seductive Presentations
I was browsing through a June 1989 P/A in another office and, in spite of my effort to cut back on subscriptions, the projects and presentations were inspiring so you got me again. I respect and take pride in good presentation drawings. "Presentation Methods" (page 84–93) is most interesting with variety in styles, techniques, and medium, and I hope it's a regular feature.

Rolf S. Lokensgard, AIA
Minneapolis, Minnesota

Pratt Finalist Corrected
The finalists for the Pratt Institute School of Architecture commission (July P/A, Pencil Points, page 20) were Gwathney Siegel & Associates, Rafael Vinoly Architects, and Eisenman Architects. The other firms mentioned were among the ten firms who competed for the job.

Rendering Credit
The illustration of the Center for Innovative Technology, Herndon, Virginia (June 1989, page 85), was done by Terry Guilbeau for the architects, Architectonica International.

Tile Installation Photo
The photograph of the Daily Catch restaurant by JCA Architects (July 1989, page 93, right) was taken by Richard Mandelkorn.

Tile Information Source
P/A's list of reliable sources of information on ceramic tile (June 1989, page 92) should have included the Ceramic Tile Marketing Federation, which provides information and organizes educational programs on tile. Contact CTMF, 1200 17th Street NW, Suite 400, Washington, D.C. 20036, 202-296-9200.
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Progressive Architecture announces its 37th annual P/A Awards program. The purpose of this competition is to recognize and encourage outstanding work in Architecture and related environmental design fields before it is executed. Submissions are invited in the three general categories of architectural design, urban design, and applied architectural research. Designations of first award, award, and citation may be made by the invited jury, based on overall excellence and advances in the art.

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Judging will take place during October 1989. Winners will be notified, confidentially, before October 31. Public announcement of winners will be made at a ceremony in New York in January 1990, and winning entries will be featured in the January issue of P/A. Clients, as well as professionals responsible, will be recognized. P/A will arrange for coverage of winning entries in national and local media.

**DEADLINE FOR SUBMISSIONS: SEPTEMBER 5, 1989**

*Turn page for rules and entry forms.*
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Please fill out all parts and submit, intact, with each entry (see paragraph 14 of instructions). Copies of this form may be used.

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10 Entries must consist of legibly reproduced graphic material and text adequate to explain proposal, and be bound in binders no larger than 12" in either dimension (9 x 11" preferred). No fold-out sheets; avoid fragile spiral or ring bindings.
11 No models, slides, films, or videotapes will be accepted. Original drawings are not required, and P/A will accept no liability for them.
12 Each submission must include a one-page synopsis, in English, on the first page inside the binder, identifying the project and location, clarifying eligibility (see Item 4, 5 or 6), and summarizing principal features that merit recognition in this program.
13 To maintain anonymity, no names of entrants of collaborating parties may appear on any part of submission, except on entry forms. Credits may be concealed by any simple means. Do not conceal identity and location of projects.
14 Each submission must be accompanied by a signed entry form, so to be found on this page. Reproductions of this form are acceptable.
15 For purposes of jury procedure only, please identify each entry as one of the following: Education, Houses (Single-family), Housing (Multiple-unit), Commercial, Industrial, Governmental, Cultural, Recreational, Religious, Health, Urban Design, Applied Research. Mixed-use entries should be classified by the larger function. If unable to classify, enter Miscellaneous.
16 Entry fee of $90 must accompany each submission. An early submission fee of $75 per entry will be accepted for entries postmarked August 22 or earlier. Fee must be inserted into sealed envelope containing entry form (Item 14 above). Make check or money order (no cash, please) payable to Progressive Architecture.
17 P/A intends to return entries intact, but can assume no liability for loss or damage.
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Barton Myers Wins Seville Pavilion

Barton Myers Associates, Los Angeles, has won the competition to design the United States pavilion at the 1992 Seville World's Fair. The firm was awarded the project by the U.S. Information Agency from a shortlist of nine finalists (P/A, May 1989, p. 28). With the "Age of Discovery" as its theme, World Expo '92 will celebrate both the 500th anniversary of Columbus's voyage to the New World and the dismantling of European economic trade borders.

Billed as a commemoration of Columbus's voyage "through (continued on page 28)

Show of History Opens the CCA

"Architecture and its Image," the main inaugural exhibit at Montreal's Canadian Centre for Architecture (see p. 68), bodes well for future installations at the CCA. Says Eve Blau, Curator Exhibitions and Publications, "Our mandate was to show the range of the collections while dealing with issues that are central to the study of architecture and the purpose to which the CCA is dedicated." Accordingly, the first part of the exhibit deals with architectural representation, highlighted by Durer's woodcut of a fortification, dating (continued on page 20)

"Convertible" Stadium in Toronto

Despite the controversy that has surrounded it, Toronto's Skydome, the first domed stadium with a fully retractable roof, qualified as a local landmark even before its June 3rd opening. Considering its size and prominence, it could hardly have been otherwise. Occupying 11 acres immediately adjacent to the CN Tower, Skydome is a multi-purpose arena seating over 50,000 for baseball and football and up to 67,000 for concerts. In addition to 161 (continued on page 26)
Copley (continued from page 21) some 300 peers in an extensive competition judged by...
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Symbolic Seattle School Saved

While the question "What to do with our public schools?" has received wide attention in recent years, another equally perplexing concern has faced school districts: what to do with our public school buildings? As schools across the country have outlived their original purpose, they have most often been replaced, destroyed, or sold off for adaptive reuse. Rarely, though, will a school district spend the extra money required to renovate an existing facility and keep it operating as a school.

One exception to the rule is Seattle's 1912 Franklin High School. Once considered "the most beautiful school in the Northwest," Franklin's stature has diminished considerably over the years. An engineering survey identified the school as one of the district's worst facilities in terms of condition and safety. Furthermore, the beauty of Franklin's once-striking west façade was marred by a box-like 1950s-style addition that obscured its colonnade, ornamental terra cotta trim and arched cathedral windows.

Given those factors, it was no surprise when school authorities announced plans to replace the sagging structure with a new building. What wasn't expected was the enraged response from students, alumni, and preservationists, who embarked on a city-wide campaign to save Franklin from the wrecking ball.

In a resultant compromise, the district plans to spend $18 million (as opposed to the $15-million cost of a new building) to restore the school, removing the 1958 addition and modernizing interior facilities to accommodate changing program needs.

During the course of the debate over Franklin, the question was raised: At a time when other schools are having to be closed, is the expense of preservation a justifiable option? At one point, a school board member admitted, "We're at a loss as to how to measure the educational value of a building." School board member Elizabeth Wales offers an answer: "There's an image of public schools across the country that's one of neglect . . . of mediocrity and of settling for just getting by. Franklin will stand there in total contrast to that image." -Clayton Park

The author is a freelance writer living in Seattle.

ADPSR on Bay Area Housing

A diverse and international group—Jean Nouvel, Cushing N. Dolbeare, Joseph Paul Kleihues, and Kenneth Jackson—spoke in San Francisco this spring on the issue of affordable housing. In presenting the series, "Housing the City," the local chapter of Architects/Designers/Planners for Social Responsibility departed from its usual agenda of publicizing the consequences of nuclear war and disproportionate weapons expenditures to discuss the negative effects of the withdrawal of funding from low-income housing programs. The intent of the series was to review past and present attitudes toward subsidized housing in the U.S. and (continued on page 26)
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P/A NEWS REPORT

ADPSR (continued from page 25)
to expand conventional perceptions of housing solutions for San Francisco, a city facing its own housing crisis.

The first speaker, Jean Nouvel, presented his recent social housing projects in St. Ouen and Nîmes. Although Nouvel emphasized the difficulties of building innovative social housing in France, his success in using unconventional materials — metal siding and garage doors for balconies — and open floor plans with mezzanine bedrooms aroused a great deal of envy in the audience.

Cushing N. Dolbear, the founder and former president of the National Low-Income Housing Coalition, drew on her long career as a social housing advocate to distill the bewildering mass of housing statistics into a coherent and objective history of housing policy and its effects since 1980. Kenneth Jackson reiterated the theme of his best-selling book, Crabgrass Frontier: The Suburbanization of the United States — that we imperiled the democratic foundations of our society by failing to provide shelter for the lowest tier of its members.

On May 1, Josef Kleiheus spoke about the Berlin International Building Exhibition (IBA), which he directed from 1979 to 1989. Perhaps Kleiheus’s presentation, along with the run of the IBA exhibition at the San Francisco Fort from July 17 to August 18, could mobilize public opinion to develop a similar program in San Francisco. The idea of inviting noted architects to design subsidized infill housing seems particularly applicable to a city with a strong emphasis on comprehensive planning and neighborhood conservation.

The final event was a symposium in which architect Tom Jones, Chair of the Mayor’s Housing Advisory Committee, presented the committee’s draft report on housing. According to Jones, Mayor Agnos will seek $40-60 million for affordable housing through a new tax on real estate transfers, tax increment funding, and a bond issue.

San Francisco has been described as a livable New York — its density is second only to New York — but with the medium price of single homes now among the highest in the nation, residents are wondering what “livable” means these days. Although the city has shown no net gain in employment over the past two decades, about 60,000 new residents, many of them homeless, have come to the city.

While the city added 2000 rental units — about 20 percent of them low-income — to its housing stock last year, the affordable housing crisis worsens. Having concluded a very successful public forum on the subject, the local ADPSR chapter is now plotting the move from talk to action.

Sally Woodbridge

Stadium (continued from page 19) boxes, a 600-seat restaurant, and Canada’s largest McDonald’s, the stadium can claim another first: an 11-story hotel wrapping around the north end, with 71 (of 360) rooms overlooking the field.

Skydome’s price tag doubled to $500 million in the four years after the job was awarded to a consortium of Toronto architect Rob Robbie, in joint venture with Neil Owen Rowland Roy, structural engineer Michael Allen of Adjeleian Allen Rubeli, and construction company Ellis-Don. Roughly $60 million came from government sources, the rest from private investors, many of whom received exclusive advertising and sales rights. Critics argued that the project was devised by the powerful for the rich, adding it was a misguided substitute for an open-air ballpark and a sure guarantee of traffic congestion in the core.

It was also Robbie’s first crack at the civic and monumental. An Englishman with Brutalist tendencies, Robbie believes in systems over style. While architecturally, Skydome is a crude eruption of concrete and curtain wall on the Toronto skyline, it also happens to be organized inside — and, against all odds, a successful and atmospheric baseball stadium. Allen’s roof adds a futuristic dimension. There are only three moving parts. In open mode, two barrel sections slide to the north to stack over a fixed spherical segment and a second spherical piece retracts to the north, rotating around a circular track. (The operation takes 20 minutes.)

Skydome has spawned an entire district of bars and restaurants around it, and has sent Robbie and Adjeleian to second base. They’ve been asked to study the feasibility of converting the fixed roof of the Hubert H. Humphrey Metrodome into a retractable lid.

Adde Freedman

The author, a regular contributor to PIA and Canadian publications, is design critic for The Globe and Mail of Toronto.

(News Report continued on page 28)
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Seville (continued from page 19) allusion and metaphor," the Myers design, in its conceptual stage, appears to incorporate an appropriate mix of Americana, reveling in a combination of technological ingenuity, science fiction, and popular culture. Its NASA/Constructivist architecture responds, with some sensitivity, to world’s fairs of the past and suggests an optimistic America of the future. It has been conceived as a prefabricated structure with components manufactured in the United States and shipped to Spain.

Because of zoning mandates, the low-rise steel paneled building must demonstrate its wares without the usual bigger-is-better American mentality. The refreshing small proportions, however, do not dictate small ideas. A 40-foot-high, 300-foot-long wall of water that symbolizes the vast expanse of water faced by Columbus doubles as the pavilion’s façade.

Inside the pavilion, a big-screen communications board will inform visitors of the pavilion’s offerings. Beyond, three tracking sails (representing Columbus’s three ships) will follow the movement of the sun, shading visitors from the summer heat. The expected 4000 visitors an hour will then enter a “Walk-Through Theater.” Fifty “Cool Towers” representing the fifty states will act as an outdoor air-conditioner; the towers will capture and store Seville air, moisten it, and release a cool breeze into the main courtyard.

Gardens and landscaping by the Los Angeles firm of Emmet Wemple & Associates are planned to soften the space and to provide a green oasis amidst the pavilion’s metal-clad fixtures. Sussman/Prejza & Co., Los Angeles, will provide graphic design for the pavilion.

As is customary, states, cities, and anyone else—generally large corporations—will produce and organize exhibitions and pavilions within the larger parameters of the main pavilion. With funds as yet unallocated (a combination of private donations and matching government funding is expected to cover expenses) and many of the players in this celebration still undetermined, the final shape of the U.S. Pavilion is still without definition. Abby Bussel

Twelve Win Tucker Awards
The Building Stone Institute has announced the winners of this year’s Tucker Architectural Awards, an annual awards program recognizing “excellence in concept, design, construction, and use of natural stone.” Choosing the 12 winners were architects Peter S. Forbes, Boston and Steven L. Einhorn, Albany, N.Y.

The winners are: Software Engineering Institute, Carnegie Mellon University, Pittsburgh, by Bohlin Powell Larkin Cywinski and Burt Hill Kosar Rittelman; 3401 Walnut Street, Philadelphia, by Geddes Brecher Qualls Cunningham (P/A, Feb. 1989, p. 86); Heron Tower, New York, by Kohn Pedersen Fox (P/A, July 1988, p. 92); Metropolitan Police Headquarters, Toronto, by Shore Tilbe Henschel Irwin Peters and Mathers & Haldenby; Macy’s, Dallas, Texas, by Thompson, Ventulett, Stainback & Associates; Mayo Clinic, Scottsdale, Ariz., by Ellerbe Becket; Tennis Cottage, La Anna, Pa., by R.K.R. Hess Associates; Indiana State Capitol restoration, Indianapolis, by The Cooler Group; South Station restoration, Boston, by Skidmore, Owings & Merrill; Swimming Pool and Outdoor Shower, Eastern Maryland, by Rubenstein-Markiewicz Architects. Two projects by Kohn Pedersen Fox Conway won awards for interiors: MONY Financial Services lobby renovation, New York, and an office at 65 East 55th Street, New York.

Ellerbe Becket’s Mayo Clinic in Scottsdale, Arizona, Tucker Award winner.
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New Challenges for Nouvel

In the wake of his highly acclaimed Institut du Monde Arabe (P/A, July 1987, p. 72, May 1988, p. 94) in Paris, Jean Nouvel has become one of the most sought-after of those new image-makers that have put French architecture back on an international stage. Now a series of new commissions spread over the map of France is presenting a challenge to the syntax of elegant and urban High-Tech which has become Nouvel’s personal trademark. In addition to a much-publicized and controversial design for a hotel and health spa complex at Vichy and a vast mixed-use project to renew a whole quarter of Perpignan, both of which made architecture a major issue in this spring’s round of municipal elections, Nouvel recently captured the commission to realize Europe’s tallest skyscraper on a prominent site at La Defense, Paris’s office quarter.

The Vichy commission (for which Ricardo Bofill and Christian de Portzamparc were also competitors) is a clear gamble to tap into the excitement generated by Nouvel’s architecture and to give new glitter to the somewhat depressed “queen of the spas,” where the fashionable gathered into the 1930s to take the waters and haunt the casino. Financed by the Vichy Compagnie Fermiere, a state-franchised spa-management division of Perrier, the new center is to combine a 200-bed, four-star hotel with a state-of-the-art health and beauty spa. On a prominent site between the existing domed Neo-Byzantine spa building (designed in 1903 by Charles LeLecoeur) and a leafy park along the Allier river, Nouvel is designing the latest addition to a century of audacious spa architecture, creating, as he says, “an event on the scale of the casino...an architectural event based on modernity.”

A wide range of metal and glass materials are employed in the arch.

A huge extruded triumphal arch (not altogether unlike Norman Foster’s Sainsbury Center) that serves as one of the principal gates to the downtown spa complex provides a visual and pedestrian link between Vichy’s principal natural amenities: leafy greenery and mineral springs. Bridging the great concourse, whose transparent glazed floor is undercut by streams and fountains, the hotel and health facilities are housed in a great frame clad entirely in glass and aluminum. The two-level roof is given over to sunbathing and pool facilities shared by hotel and spa. Throughout, the essential ingredients of any spa cure, water and abundant sunlight, are amplified and symbolized through reflective materials and transparent effects.

Despite the confidence of the Compagnie Fermiere, doubts have been aired locally over the scale of this great arch—27 meters high—and the loss of two beloved local landmarks, the Queen’s Hotel and a Neo-Alpine chalet, demolished last spring to prepare the site. Only completion in 1991 will reveal whether this triumphal arch of health, beauty, and leisure can give Vichy the facelift its corporate fathers are seeking.

Transparency, water, and sun are also principal ingredients in Nouvel’s urban renewal project for Perpignan, the “Place Sang et Or” (Blood and Gold Square), the largest project ever undertaken by Nouvel’s firm. Construction is scheduled to begin later this year on the three-hectare site along the Tet river on the periphery of Perpignan’s historic center, a prime site left vacant by the transfer of the wholesale produce market to the suburbs. Nouvel conceived a vast oval space—with practically the same dimensions and form as the Piazza Navona in Rome—as the focus for an immense program of apartments, offices, shops, flower market, auditorium, and open-air cafés. While its piazza creates a focus and a protection from the fierce Tramontane winds, the office quarter on the south side of the square is pierced by streets which (continued on page 34)
Nouvel (continued from page 33) continue the axes of the adjacent 19th-Century neighborhood and extend the existing urban perspectives into this new public forum.

Just as Bofill at Montpellier adapted his Classical language to the sunny south, Nouvel has inflected his architecture of transparency and screening to accommodate the local climate. The apartments are protected from the sun by sophisticated, electrically operated Venetian wood shutters, a sort of Catalan vernacular response to the famous photosensitive screen wall of the Institut du Monde Arabe in Paris. Likewise, retractable canopies and awnings in modern materials appear on the roofs and terraces of the various buildings. A screen of sound deflectors protects the apartments from the express lanes that separate the long northern facade from the banks of the river.

While the project revels in the materials and effects of Nouvel's current work, it is meant to speak in Catalan dialect with its palm trees and fountains, its terracotta coloring, and its echoes of the open ironwork of local church belfries.

Nouvel has taken on the romance of the great period of skyscraper building in his most audacious project to date, a 400-meter tower designed in collaboration with Jean-Marc Ibos for a difficult triangular site between the Tête Défense (P/A, February 1989, p. 24) inaugurated in July by President Mitterrand, and the great concrete shell of Zehrfuss's CNTI Convention Hall (1959), recently renovated.

As part of the complex financing package worked out to save Tête Défense once its original program as a state run center of international communications was canceled, a team of Robert Maxwell, the newspaper magnate, and the French Caisse des Depots was promised development rights on this site, known as the "Triangle de la Folie." They were also given a zoning variance to build the highest tower in Europe. Last winter a two-stage competition quickly reduced entries for this site from 334 to 4.

The "Tower of Infinity" as Nouvel has nicknamed it, seeks to play with the purity of the form, a cylinder with no setbacks in which neither the beginning nor the end is easily defined. Emerging from a black granite grotto—for the entire Défense is built on a multistory platform containing transportation and services—the cylinder progressively changes material and color as it rises, from black and then gray granite to aluminum panels of ever whiter tonality to transparent glass in the final uninhabited stages, which should merge imperceptibly with the often overcast and dense Paris sky. A double skin creates plays of transparency for the whole height of the tower, which Nouvel says is "concerned with the density of matter, or de-materialization." But even Nouvel announced in February when the winning model was presented that it was but a first representation: "The building will be much better, much more subtle, just as the Institut du Monde Arabe, I think, was much more subtle in reality than in all the models that we made."

Barry Bergdoll
The author, who teaches architectural history at Columbia University, is on sabbatical in Paris.
This invitation exhibition looks at housing designs that challenge the "dreamily predictable aesthetic" characteristic of single-family homes today. Work by Mark Mack, Lars Lerup, Stanley Saitowitz, and others is included. Contemporary Realist Gallery, San Francisco. Through August 26.

Frank Lloyd Wright "Preserving an Architectural Heritage, Decorative Designs from The Domino's Pizza Collection," is a traveling exhibition of Wright's furniture, lamps, windows, etc. Albright-Knox Art Gallery, Buffalo, New York. Through September 2.


Jože Plečnik Architect The Yugoslavian architect's use of Classical elements and desire for accessible design is demonstrated in this traveling retrospective of his works. The Octagon, Washington, D.C. Through September 8.

French Avant-Garde Works by some of the country's most celebrated architects—François Jourda and Gilles Perleaud, Jean Nouvel, Bernard Tschumi, and others—are included. Chicago Art Institute. Through September 17.

Processes as Interpretation Printing and presentation of architectural photography will be explored through an exhibition of pairs of photographs developed from one negative. Canadian Centre for Architecture, Montreal. August 28 to October 8.


CONFERENCES

Shinkenchiku Competition Bernard Tschumi will judge this hypothetical competition for which entrants are to "insert" a 21st-Century industrial/sports complex on an irregular one-square-mile residential site. Winners will be announced in the March 1990 edition of Japan Architect magazine. Contact Shinkenchiku-sha Co., Ltd., 32-31-2 Yushima, Bunkyo-Ku, Tokyo 113, Japan. Submission deadline September 5.

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Disrupting Domesticity This invitational exhibition looks at housing designs that challenge the "dreamily predictable aesthetic" characteristic of single-family homes today. Work by Mark Mack, Lars Lerup, Stanley Saitowitz, and others is included. Contemporary Realist Gallery, San Francisco. Through August 26.

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A Moment in Building This competition is a call for photographic images of construction workers on site. Winning submissions will be published in the museum's quarterly publication and displayed in a future exhibition. Contact National Building Museum, Pension Building, Judiciary Square, N.W., Washington, D.C. 20001 (202) 372-2448. Entry deadline August 31.

P/A Awards The 37th annual P/A awards (see p. 15) recognize unbuilt projects in the categories of architectural design, urban design, and applied architectural research. Projects must be scheduled for completion after January 1, 1990. Winning entries will be featured in the January issue of P/A. Contact Awards Editor, Progressive Architecture, 600 Summer Street, P.O. Box 1361, Stamford, Conn. 06904. Submission deadline September 5.

Conferences

CONPAC 89 This contract furnishings show will be held at the Concourse Exhibition Center and the Contract Design Center, San Francisco. Contact Lydia Crichton, 2 Henry Adams Street, San Francisco, 94103 (415) 864-1500. September 7-9.

Rocky Mountain Design The Denver Design Center's "Unleash the Power" symposium is billed as a forum for discussion on development of talent and creativity, current tools of the trade, "sick" buildings and how to fix them, and future trends. Contact Jan Wise, 595 South Broadway, Denver, Colo. 80209. September 13-15.

Biennial of Architecture An impressive international mix of architects and designers is scheduled to gather in Buenos Aires to discuss their work and their profession through lectures, round tables, exhibitions, and competitions. Contact Center of Art and Communication (CAYC), Viamonte 452, 1053 Buenos Aires, Argentina. September 18-23.
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Computers: Apple and AutoCad

Computers have become an integral part of the practice of architecture. They currently permeate all aspects of design, production, documentation, and administration. Close to 70 percent of design offices have purchased CADD systems; an even greater number are using computers for applications such as word processing and spreadsheet analysis.

Today, the technical challenge facing architects is integration: of software written by various manufacturers; of hardware running different operating systems; of graphic and attribute databases generated by different software programs; and even of architects with other design and engineering disciplines and clients who increasingly want to obtain as-built databases for facility planning and management purposes.

The use of computer technology originally grew in architectural offices because of the low cost and high performance of the IBM Personal Computer. Yet, despite the increasingly cost-effective performance of these machines, they discourage casual users, including most architects, because of the awkwardness of IBM's DOS operating system. The increasingly popular alternative is Apple's Macintosh II series of computers, which do not demand learning the cryptic language of DOS.

Apple

Part of the reason for its increased acceptance lies in the perception of the Mac II series as a more serious professional tool than its predecessors. Users also find that the software available for the Mac offers an ease of use and sophistication of program structure seldom found in its IBM-compatible counterparts. All Macintosh software use a "bit-mapped" display technique, which means that a document or drawing can be displayed on the monitor closely (continued on page 44)

Law: Waiving Liens

The right to place a lien on the property of the owner in the event of non-payment of fees is a significant tool for both contractors and design professionals. In most jurisdictions contractors and subcontractors may, unless they have waived their rights, assert such a lien, and in majority of jurisdictions architects or engineers may place a lien on the owner's property if they are unpaid for the construction documents that they prepared.

Since the right to assert a future lien may be of prime importance, many owners seek to obtain a waiver of that right as a condition of the contract with a contractor and/or design professional. In some jurisdictions such a waiver is treated as against (continued on page 46)

Products: Warranties

When establishing a warranty program, a building product manufacturer typically considers the warranty's impact on product liability and the marketing appeal of the product. These factors also affect the value of a warranty to an owner and should be considered by an architect before specifying a product or accepting a substitution.

Product warranties are frequently perceived as providing increased legal and financial protection to building owners against product defects. This is an inaccurate perception. Most building product warranties provide a "limited warranty," which actually reduces the rights an owner may have by statute under a "full warranty."

A warranty is not a contract to reimburse a buyer for damages. Instead, it is a statement of fact, stipulating that the information provided by the seller about a material is accurate. The information warranted by the seller becomes part of the terms of sale for the product. If the material (continued on page 49)

Practice Points

An excess of 20 million square feet of office space is being added annually to the real estate market, according to a survey of 49 office markets by the New York research firm REIS Reports. Vacancies are up, the survey states, despite a decline in commercial construction. The study predicted a continued drop in rents for some markets, which could restrict even more commercial projects to the drawing boards.

What comes after rent control? According to the Berkeley, California, self-employed financial consultant who brought rent control to that city, the next step is to limit the resale price of homes. A story in the Wall Street Journal about Marty Schifferbauer's proposed law might relate the amount owners could raise their selling price "either to a national housing index or a specific dollar amount." Critics charge that the law would crush new housing construction and discourage owners from maintaining their property.

Water resource facilities and related construction will increase substantially through 1993, predicts A/E Business Review in a recent analysis. As a result of the Water Resources Act of 1986, 181 new construction projects have been authorized. With the heightening awareness of water conservation, designs for such projects may continue to be in demand.

Foreign influences may present a hidden opportunity for the U.S. economy rather than the threatening consequences so often anticipated. The National Institute of Building Sciences conducted a comprehensive study of the impact of such influences. They suggested that "foreign influences should be seen as an opportunity to develop both economic and technological policy in order to favorably meet the challenge." For example, research into robotics in the construction process may increase that industry's competitiveness.
Computers (continued from page 43) approximating the look of the hardcopy output. For this reason, graphics applications such as desktop publishing and presentation software are particularly facile, offering professional-looking results with a minimum of trial and error.

Generally, architects approve of the Macintosh's intuitive operational structure, find the graphic user interface to be clear, and appreciate the very short learning curves associated with many of the Mac software applications. Also, many report that they use the Macintosh not only for word processing and desktop publishing, but to manage all the tasks and activities connected with their work, including the management of prospect databases. In particular, many marketers feel that Macs are much more comprehensive and useful for their purpose than larger systems.

AutoCads AutoDesk, which has succeeded in capturing over 60 percent of the architectural CADD market with their AutoCad package, has recently released a new version for the Macintosh. It handles much like the MS-DOS version, only slower. It compares unfavorably to other Mac-based packages, such as Prime's Ver-saCAD Macintosh or Inter-graph's new Micro-Station Macintosh. The lack of speed seems to result from AutoCad's not yet using the Macintosh operating system to its fullest possible advantage.

Despite AutoCad's present unimpressive speed performance, Mac users have an incentive to look at AutoCad Macintosh since, apart from AutoCad being the de facto industry standard, it offers a number of features currently unavailable with other Mac software packages. For example, AutoCad has some excellent drafting features and provides excellent support for symbol libraries. It also readily interfaces with all major database software and includes an integrated interpreter language that is without peer in the industry.

A number of opportunities for using AutoCad innovatively will present themselves to industrious users who are already familiar with standard Macintosh software applications. For example, users of the HyperCard software may use AutoLisp to develop linkages between it and AutoCad. Access to AutoCad from word processors such as MicroSoft Word, and desktop publishing packages such as PageMaker will also be useful.

One clear advantage of the Macintosh version (over the MS-DOS version of AutoCad) is the ability to resize the text and graphics window by using the mouse. AutoCad's pop-up menus can actually be de-marcated from their location at the top of the screen and re-positioned as separate windows for frequent use. The operation of the screen menu is basically identical to MS-DOS AutoCad. Full customization of menus and LISP code is possible using the text mode of word processors like MS Word. The package comes with a conversion utility that allows you to translate AutoCad drawings produced on the Mac to DOS and UNIX.

Apple's introduction of the Macintosh in 1984 has resulted in an approach to personal computing that is beginning to have far reaching effects. The IBM DOS operating system has been a significant impediment to using PCs by architectural professionals. Macintosh camouflages its operating system with a graphic interface that resembles a physical filing system, which presents architects with access to the computer's resources in a familiar and friendly work environment. All of the tools needed to use this environment are represented as (continued on page 46)
"We could have carved our reputation in stone. Instead we chose Avonite."

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Computers (continued from page 44) icons or graphic symbols which are manipulated by moving a screen pointer with a mouse.

The Macintosh's original shortcomings of power and speed and its initial difficulty in communicating with non-Mac software and hardware have all been overcome with the new Mac II. This machine is enabling a new generation of architects to cost-effectively use computers.

Eric Teicholz, Ben Olasove

Mr. Teicholz is President of Graphic Systems, Inc. in Cambridge, Mass. Mr. Olasove is Project Manager in the firm's New York offices.

Law (continued from page 43) public policy and thereby unenforceable. However, where a waiver is enforceable, disputes still arise as to its validity.

For example, in a case in Connecticut (Bialownais v. Minor), a building owner contended that the contractor's waiver of lien barred him from filing not only a mechanic's lien but also a prejudgment attachment to obtain jurisdiction over the owner. The contractor claimed that there was no consideration for his waiver, and it was therefore void.

The court, however, concluded that, by signing the waiver agreement, the contractor had enabled the owner to finance the construction of the project and thereby assure the availability of funds to pay the contractor. This, stated the court, was sufficient consideration.

The court, however, limited the application of the waiver to the filing of a mechanic's lien, holding it inapplicable to the filing of a prejudgment attachment. The court stated that the interpretation of a contract involves a search for the intent of the parties and that the waiver agreement, when read as a whole, clearly and unambiguously provided for a waiver of mechanics' liens only. Although the waiver agreement utilized broad language to the effect that it was "releasing all liens and claims of liens," the court could not interpret such language to include a prejudgment attachment lien since that wording appeared below a bold-faced heading entitled "waiver of mechanic's lien."

In another recent case involving the waiver of a mechanic's lien (Fabe v. WVP Corporation), a Missouri court was called upon to consider the obligations of an architect, as part of his function in certifying payment to the owner, to verify the legitimacy of a waiver of lien furnished by a contractor. The facts revealed that the architect and the owner had entered into a standard AIA agreement, where the architect was to issue a certificate of payment based on the architect's observations at the site that the work had progressed to the point indicated by the contractor but also had been performed in conformity with contract specifications. Once the architect authorized payment to the contractor, the contract expressly relieved the architect of any responsibility to ascertain how the contractor used the monies.

The court also rejected the argument that once the architect assumed the role of examining the lien waivers, there arose a duty to determine the authenticity of those documents. The court concluded that such a duty would have to have been expressed explicitly in the contract, which could not be amended except in writing. In the absence of such written amendment the architect assumed no such duty and the claim was without merit. Norman Coplan

The author is with Bernstein, Weiss, Coplan, Weinstein & Lake in New York.

(Practice continued on page 49)
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entanglements by establishing in advance the terms and remedies available under the warranty.

Common provisions in a building product warranty can exclude labor and consequential and incidental damages. Other conditions may establish criteria that must be met by the buyer before the warranty will be honored. For example, a manufacturer may require an extra fee to register the warranty, restrict the conditions of use for the product, or require installation by specially qualified contractors. Other provisions may limit rights under the warranty to the original purchaser. This can be interpreted to mean a contractor or even a subcontractor, leaving an owner without recourse directly to the manufacturer. And if the product warranty clock begins running when the contractor purchases or installs the material, the owner may receive less protection than if the clock started at substantial completion. Before determining what protection is given under a warranty, an architect should study the disclaimers and limitations to see which of an owner's rights and remedies are taken away.

Manufacturers must balance product liability concerns against their product's marketing appeal. For example, a wool door warranty that includes refinishing and reinstallation is of obvious advantage to the manufacturer but costs the owner without recourse directly to the manufacturer. And if the product warranty clock begins running when the contractor purchases or installs the material, the owner may receive less protection than if the clock started at substantial completion. Before determining what protection is given under a warranty, an architect should study the disclaimers and limitations to see which of an owner's rights and remedies are taken away.

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Products (continued from page 49)

ous appeal to potential specifiers and other customers but carries greater financial risk to the manufacturer than a "material only" warranty.

Like any other product feature, warranties are usually designed to meet the competition. If the leading manufacturer of a particular type of roof offers a ten-year warranty, for example, manufacturers of similar roofs are likely to follow suit. But in other cases, warranties are intended to differentiate one brand from another. When industry concern over the long-term color retention of anodized aluminum became apparent, at least one anodizer created an extended warranty program to increase customer confidence in what they claimed was an improved manufacturing process.

And in the lighting fixture industry, where one-year limited warranties are the rule, a manufacturer of high-performance fixtures has recently introduced a "lifetime" warranty.

Despite their limitations, warranties do instill buyer confidence in a product. Because of this, warranties are especially important in new product introductions. When fluorocarbon coatings were first being promoted, a 20-year warranty was offered to help overcome skepticism about long-term product performance. Now that the coating has an established track record and strong acceptance among architects, a shorter warranty is typically offered.

In their enthusiasm to beat the competition, some manufacturers offer hollow warranties of impressively long duration but are excused by limitations, disclaimers, and unrealistic administrative requirements. A 20-year warranty for a sealant, for example, requires an owner to return the product's original packaging tubes and submit them with a warranty claim. And a ten-year warranty on a pre-finished exterior wall panel requires an owner to return the panels to the factory at his own expense in case of paint failure. Few architects are qualified to compare the nuances of various suppliers' warranties, and owners are unwilling to hire an attorney to review the thousands of product warranties on a project. Manufacturers also are reluctant to change their standard warranty terms, doing so only in certain competitive situations and after review by senior management and their legal and insurance advisors. In spite of this, architects must insist upon

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In the final analysis, the quality of a product and the reputation of the manufacturer are usually more important than a warranty. Reputable manufacturers will go beyond their limited warranty obligations to protect their product's reputation and assure customer satisfaction.

Michael T. Chusid

The author, a marketing and architectural consultant building product manufacturers, has designed warranty programs for a variety of products.
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The long vaulted galleries (above left), the square central galleries (above right), and the octagonal gallery (facing page), are capped by translucent, UV-filtered skylights (see section A-A, p. 70).

The limestone exterior is a veneer but laid up to resemble a loadbearing condition. In contrast to the bushhammered texture of the gray stone is the lustrous finish of the aluminum, used for the windows and door frames, the entrance pavilion that reinforces the pedestrian path into the site, and, most interestingly, the building's "cornice." While the small-paned windows seem ingratiating in their attempt to soften the cool reserve of the limestone façade, the cornice does nothing of the sort. Sophisticated and wholly original, the cornice, made up of off-the-shelf angles and perforated sheets, brings electricity to the façade: attenuated where the limestone is broad and planar, glinting where the limestone is matte, and thoroughly modern where the limestone is both traditional and modern.

Lighting

"Buildings should be able to sustain a relationship," says Rose. "If they incorporate daylight, they change, and are interesting places to spend time in. Think of Kahn's buildings." In the CCA, Rose brings in light in many ways. The staircase axis, for example, is lighted at either end and from above, and the shifting diagonal shadows cast by the slim skylight structure enliven the orthogonal space. The galleries' skylights introduce carefully filtered light that changes minute by minute.

The opening exhibition in the main galleries (see p. 19) was curated by Eve Blau and Edward Kaufman. Display panels of silkscreened glass and black lacquered wood and display cabinets of plexiglass and steel were designed by John Vinci.

The Right Time

The 1980s were ideal years for the conception and completion of the CCA building. Patron, architect, and architectural history were passing through fertile periods.

Phyllis Lambert had evolved from insightful client, over 30 years ago, to an experienced patron. Her first major act in the world of architecture was to convince her father, Samuel Bronfman, to commission Mies van der Rohe to design the Seagram Building in New York—an act which affected the course of architecture. She then completed her master's degree in architecture at the Illinois Institute of Technology, practiced (a notable work was the Los Angeles Biltmore Hotel restoration, with
Gene Summers, P/A, Nov. 1978, pp. 66–71) and became a guiding member of Montreal’s preservation movement (the Shaughnessy House was an important “save,” one of the last mansions of a residential street). When she realized the need to house the CCA collection properly, she decided that her experience as an architect would best be applied as a client, and she commissioned Rose. Peter Rose, meanwhile, had also evolved. Fifteen years ago, he was known for his youthful and exuberant experimentation in the Post-Modern style (his St. Sauveur ski pavilion won a P/A citation, P/A, Jan. 1978, p. 70; P/A, March 1979, pp. 70–75). Now, having gained perspective, and wary of exaggerated “style,” he was ready to examine each concept and detail to reach an appropriate solution, in close collaboration with Lambert. Like Rose, history had evolved to a point where the superficial aspects of Post-Modern style were dismissed, while the important lessons of spatial enclosure, progression, and contextual harmonies and contrasts were retained. It was a favorable moment in architecture, a moment ripe for the emergence of a strong, refined, and intelligent building like the CCA.

Susan Doublet

Project: Canadian Centre for Architecture, Montreal, Quebec.
Architect: Peter Rose Architect, Montreal, Quebec (Peter Rose, architect; Erik Marosi, Nicholas Garrison, design team; William Steinberg, project architect, new building; Karl Pinault, Andre Arel, project architects, Shaughnessy House).
Associate Architect: Erol Argun Architecte (Erol Argun, architect).
Restoration Architect: Bilodeau St. Louis Architecte (Denis St. Louis, architect).
Client: Canadian Centre for Architecture.
Site: 3 acres in a traditional graystone-built neighborhood.
Program: 62,000 sq ft storage, 31,000 sq ft curatorial space, 31,000 sq ft public space and galleries, and 6600 sq ft mezzanine in the new building; 19,400 sq ft services in Shaughnessy House.
Structural system: in-situ reinforced concrete frame and flat slab.
Major materials: bush-hammered Trenton limestone, double-glazed low-emissivity windows and skylights, aluminum, granite, maple, galvanized sheet steel (see Building Materials, p. 122).
Consultants: Gerrard and Mackers Landscape Architects, landscape; Nicolet Chartrand Knoll Ltd., structural; The ECE Group Ltd., mechanical/electrical; George Sexton Associates, lighting; Joseph M. Chapman Inc., security; Lewis S. Goodfriend & Associates, acoustics; Boyce Nemec Designs, audio-visual.
Costs: not available.
Photos: Richard Bryan, except as noted.
The library provides a lesson in fine axial planning and well-proportioned spaces. One enters through a rotunda into the library's court (facing page right), which parallels the main staircase space, and looks north through a great window towards Mount Royal. On a perpendicular axis to this space is the main, custom-furnished reading room (this page). Along the north side of the reading room is a three-bayed aisle with windowed carrels in each bay. The scholar's wing (facing page left), severe in aspect, has offices on two levels along one side of a skylighted atrium.
The main entrance is marked by a glazed lantern and a two-story portico. It is flanked by classroom wings and on axis with the library and offices.

IT is one thing for a building to fit its context. It is quite another for it to reveal that context so that we see its surroundings in new ways. Ralph Johnson, design principal of Perkins & Will in Chicago, has achieved the latter in his design for the Capital High School, which stands on an open plain at the southern edge of Santa Fe, New Mexico's suburban sprawl.

Santa Fe's historic architecture is commonly thought of in romantic terms. Its Pueblo-inspired buildings, with their adobe walls, enclosed courts, and projecting beams or "vigas," strike many viewers as picturesque. So too has the city's Territorial style, with its applique of Classical detail, been seen as a type of 19th-Century eclecticism.

But the motives behind both are the very opposite of romantic. The Pueblo-inspired work was a rational response to an arid climate and to limited natural resources: The thick walls kept interiors cool, the courts provided shade, the projecting vigas allowed the reuse of timber. In a similar way, the 19th-Century Territorial style evolved, not only to satisfy eclectic tastes, but to integrate factory-made products such as fired brick and sawn lumber into Santa Fe's vernacular.

Ralph Johnson has explored that underlying rationalism in the city's new high school. Its plan, for example, has a very rational configuration, with classrooms, laboratories, and performance spaces arranged symmetrically along a central bar containing common facilities such as the offices, library, and cafeteria. To further order the plan, Johnson identified six form types common to Santa Fe's architecture—colonnades, lofts, courtyards, halls, pavilions, and towers—and gave each a different function. The colonnades, for example, define outdoor circulation, the towers mark major entrances, and the pavilions house special facilities such as the auditorium and gymnasium.

In this, Johnson acknowledges his debt to the 19th-Century theorist, J.N.L. Durand, whose theory of formal types was an effort to accommodate modern building programs within traditional architectural vocabularies. "By reordering the building program into elements," writes Johnson, "a multi-functional, large-scale complex becomes easier to comprehend."

The Frenchman's influence is also apparent in Johnson's handling of the high school's Beaux-Arts-inspired site plan. Arranged along two axes, one aligned with an adjacent arroyo and the other running north-south, the school imposes upon the site geometrical elements, such as a circular entry drive and a semi-circular colonnade. They recall at once French landscape ideas and the circular geometries of ceremonial kivas and early pueblos.
Ralph Johnson of Perkins & Will has designed a school that explores the ideas behind Santa Fe’s historic architecture.

Yet it is not only to the rationalism of 19th-Century France that Johnson refers. At first glance, the high school looks like a straight version of Santa Fe’s Territorial style, with its dentiled brick cornice, precisely stuccoed walls, simplified Classical detail, repetitive vertical windows, and carefully proportioned façades. But the experience of walking through its tall columnar spaces or past its monumental porticoes recalls the De Chirico-like aspect of Italian rationalist architecture from the 1920s and 1930s. While those two styles had very different origins, both sought a similar goal: to achieve the timeless quality of Classicism using modern materials and methods.

If residents and staff seem pleased with the school, some local architects have been less kind. “They call its style Chicago Territorial,” says Johnson. Such reactions are telling, for they acknowledge the outsider’s perspective that is the very strength of the design. Too much of what passes for contextual architecture is too glib, making only visual connections with the buildings around it. What Johnson has done here is look beyond appearances to the intellectual traditions of the place, seeking out common ideas and pushing them beyond where others have gone. The result is bound to unsettle some, for it is an architecture that engages in the difficult yet important task of revealing a context to itself. **Thomas Fisher**

**Project:** Capital High School, Santa Fe, New Mexico.  
**Architects:** Perkins & Will, Chicago (Ralph Johnson, design principal; C. William Brubaker, managing principal; James Toya, project manager; Elisabeth Fukatselis, Mark Romak, project team).  
**Client:** Santa Fe Public Schools.  
**Site:** 45-acre plain flanked by an arroyo.  
**Program:** High school for grades 9 through 12 with a student capacity of 800, expandable to 1300.  
**Structural system:** Cast-in-place concrete frame.  
**Major materials:** Concrete masonry units, stucco, wood beams and roof deck, steel windows, quarry tile flooring, carpeting (see Building Materials, p. 122).  
**Mechanical system:** Hot water baseboard system with evaporative cooling. Natural ventilation throughout.  
**Consultants:** DeLapp Engineering Corporation, structural; Bridger & Paxton, mechanical; Tierra Engineering, electrical; Kirkegaard & Associates, acoustical.  
**General contractor:** Snider/Chapman Construction Company.  
**Costs:** Not available.  
**Photos:** Gregory Murphey.
The gymnasium wing has a towered entrance and a colonnade running its full width.

The columnar, outdoor dining area faces a courtyard and the library’s screen wall.

This axonometric shows the school’s courtyards and its axial organization.
The second-floor library has a basilican plan with a two-story reading room flanked by offices.
P/A Inquiry
Correctional Facilities

With increasing crime has come a need for more prisons and jails. But there is disagreement over their proper location and design.

OURS is a nation ambivalent about the treatment of criminals. Some argue that criminals are born, although they disagree over whether they can or cannot be held responsible for their actions. Others claim that criminals are made, although here too there is disagreement over whether that is the result of unfair treatment by our society or simply prolonged exposure to other criminals.

Whatever their relative merits, those conflicting views have greatly affected the design of our prisons and jails. Take the most basic question of whether or not to build correctional facilities. For those who see them as training grounds for criminals, constructing more buildings only makes matters worse. Instead, they say, we should be expanding various "release upon recognizance" alternatives such as home arrest, work release, or weekender programs. These options have been increasingly forced upon states burdened by the costs of building and operating prisons. (The average construction cost per bed ranges, nationally, from $30,000 to $100,000. Operation costs alone in some states demand as much as 10 percent of the annual budget.) But there are risks involved in releasing prisoners into the community, both for the public, since 10 to 15 percent of home-release inmates commit new crimes, and for politicians, as Michael Dukakis found out with the Willie Horton case in the last presidential election.

For those who see criminals as the product of social inequity, the answer lies not in new prisons and jails, but in spending more money for education, housing, and employment opportunities to eliminate the underlying causes of crime. There is some evidence that this approach works: The amount of major crime had decreased by the end of the 1970s to 50 crimes per 1000 population in the wake of increased spending for social programs. But the payback for this indirect approach is so slow that it has never had a chance to fully prove itself. With the recent cutbacks in spending for social programs and increases in drug-related crime (we are now up to 57 crimes per 1000 population), the new attitude has been to get tough with criminals and lock them up. As one wit put it, "Prisons (were) Ronald Reagan's form of public housing."

The 1980s, as a result, have brought a boom in the construction of prisons and jails. With 56 percent of the nation's prisons overcrowded and 43 states now under court-order to relieve those conditions, contract awards for new facilities have topped $2 billion for each of the last three years; $10 billion worth of new construction is planned by the states alone over the next six years. And the Federal government is following suit. President Bush's new crime package calls for $1 billion to be spent, adding 24,000 beds to Federal prisons over the next four years.

Finding the Right Site
In the midst of this construction, the old ambivalence remains. It emerges, for example, in the debate over where to locate prisons, with some wanting criminals kept close to the communities from which they came and others wanting them kept far away from the law-abiding public.

The states have generally taken the latter tack, removing serious offenders to remote locations. This may have less to do with ideology than with the pragmatic reasons that out-of-the-way land is more plentiful and less costly and that economically depressed rural areas often welcome prisons and the jobs that they bring. Those on the other side of this issue maintain that, since many inmates come from urban areas, prisons should be in cities—if not in residential neighborhoods, then at least in nearby commercial or industrial areas—to help reintegrate prisoners into society. The Federal government took the lead in this several years ago by constructing Federal prisons in the downtowns of major cities such as New York and Chicago. But when states have attempted to locate prisons in urban areas, especially anywhere near affluent neighborhoods, they have encountered stiff public resistance and local government restrictions.
Federal Correctional Institution, McKean County, Pennsylvania. Architects: Geddes Brecher Qualls Cunningham, Philadelphia. Given a triangular housing plan to work with (above), the architects paired the units and arranged them in such a way that they clearly define a central quadrangle within the prison’s 80-acre campus (left). The structural masonry walls of the housing units (above left) make patterns using various colors and textures of block to relieve the usual grimness of these facilities. Aiding in that are the trees and changes in grade around the minimum-security units.

Grand Mesa Youth Services Center, Grand Junction, Colorado. Architects: Hoover Berg Desmond, Denver. This 30,000-square-foot youth detention center is organized along a circulation spine, with services on one side and ten-bed housing pods on the other (above). The building makes a civic gesture with its brick veneer, tall entrance porch, and large-scale windows visible from the street (far left). The housing units (left) reflect the trend toward more normal interiors, using wood doors, carpeting, upholstered furniture, daylighting, and muted colors.
Correctional Facilities

Suffolk County Jail, Boston. Architects: Stubbins Associates, Cambridge, Massachusetts. Corrections Architects: Varonovich-Monacelli, Cambridge. Selected through a public-sector, design-build competition, this 453-bed, maximum-security jail has a prominent site on the Charles River. The front portico, symmetrical façade, and brick and granite cladding respond to the important location and civic nature of the building (right). On each floor, there are four, 36- to 40-bed housing pods to either side of a central service block (below). The pods, with their two-story dayrooms, are paired around stacked recreation spaces.

The Hard Exterior, Soft Interior

One way of countering that has been to dress up the structures, making them look like other, more palatable facilities such as hotels or civic buildings. But that raises another hotly debated question: Just how nice should a prison or jail be? Those who see most criminals as incorrigible or deserving of the most severe punishment have become vocal in their opposition to any frills being added to prisons or jails. That point of view, if not always shared by correctional officers, has certainly affected their decisions. Prison officials, says one architect, will often “object to exterior ornamentation as being too good for the prisoners and possibly creating an image problem with the community and with inmates in other facilities.” Except for those located in sensitive areas, many prisons and jails, as a result, have relatively plain, functionalist exteriors, sending the politically popular message that these are efficient, well-run facilities which, despite their costliness, do not waste taxpayers’ money.

That message has certainly gotten through to those who, recognizing the need to get new buildings in place quickly, have pushed various methods of prefabricating cell blocks. The leading contenders in this arena are the manufacturers of precast concrete panel systems and factory-built modular units, both of which allow year-round fabrication, rapid erection, and minimal intrusion into the secure operations of existing prisons and jails. But both have been slow to catch on. “There has been a lot of talk about prefabrication,” says architect Keith Reeves, “but it overlooks the fact that prisons are used to boost local economies, which tends to favor site-built construction.” These systems, adds architect Andrew Cupples, also make it hard “to meet public bidding requirements for equal products since none of them are really equal. Lead times and delivery times, too, can be very long, and labor markets resistant to their use.”

If the exteriors of many correctional facilities appease those who would have us get tough on crime, the interiors convey a much different message, highlighting our ambivalence toward criminals. The trend on the interiors, says architect and researcher Jay Farbstein, has been to “eliminate the symbols of incarceration” such as bars on the windows and doors or rows upon anonymous rows of cells in multi-story blocks. “Making prison interiors appear more normal,” he adds, “has produced better behavior from inmates” and seems to reinforce the idea that criminals can be reformed.

New technology introduced into prisons and jails over the last 20 years has certainly helped in this process. “The replacement of bars,” notes Farbstein, “with glazing containing polycarbonate and glass has brought a real improvement” not only in the living conditions of inmates, but in the guards’ ability to survey a room. Farbstein also praises the use of electronic security devices, which have replaced that ultimate symbol of incarceration—the lock and key—and the development of smoke- and fire-resistant fibers and textiles, which have softened dayroom interiors with carpets and upholstered furniture. Another improvement in living conditions has come with the installation of more durable, tamper-resistant toilet and lighting fixtures—their stainless steel housings, rounded corners, and concealed fasteners minimizing opportunities for vandalism.

Generations of Prisons

The creation of more normal conditions inside prisons and jails did not happen easily or quickly. Correction officials talk about the changes that have occurred in prison design in terms of generations.

First-generation facilities, which date back to the early 19th Century, had multi-story banks of indirectly lighted cells radiating or branching off of a central service building. These prisons were a vast improvement over what came before—dungeons into which prisoners were thrown without any privacy or segregation of people according to the severity of their crimes. But the enormous scale of these buildings isolated prisoners and provided little chance for meaningful interaction between guards and inmates.

Second-generation facilities, which began to appear in the 1960s,
Bartholomew County Jail, Columbus, Indiana. Architects: Hisaka & Associates, Cambridge, Massachusetts. One block from the City Hall and Courthouse and adjacent to small-scale commercial and residential buildings, this 55,000-square-foot jail uses red brick, white split-face block, and smooth precast trim to enliven the façades and break down their scale (above). The jail has a front section containing offices and service functions and an oval structure to its rear that has 60 beds arranged around a pair of two-story dayrooms (right). The outdoor recreation space on the fourth floor is housed within a steel-framed, aluminum-mesh dome that reinforces the building's public role.

Bucks County Rehabilitation Center, Doylestown, Pennsylvania. Architects: Vitetta Group, Philadelphia. Housing 270 inmates in 30-bed wings, this minimum-security county jail has a radial plan and a central surveillance station located at the center of a cross-axial circulation system (above, right). Supervision of the dormitory-style housing units is on an intermittent basis. The large, central-service block contains extensive facilities for education, counseling, visitation, drug and alcohol-abuse treatment, and work-release programs.
Reduced the scale and improved living conditions. Smaller numbers of cells, located on outside walls for better light and views, began to be clustered into units around a dayroom, allowing a finer-graded segregation of inmates. This setup also responded to a new, behaviorist approach to prisoners: Depending upon how they behaved and responded to rehabilitation, they were either upgraded or downgraded to units that allowed varying degrees of freedom. Privacy for all inmates also improved as solid doors with view windows replaced the metal bars. What remained was the separation of prisoners and guards, with the latter still located in central control rooms.

Third-generation facilities have dramatically altered that prisoner-guard relationship. First promoted at the Federal level and now being widely adopted by state and local governments, these facilities call for the direct supervision of inmates, with unarmed guards stationed in each dayroom—“like a clerk at a hotel desk,” says one architect. A motive behind this change has been the move away from behaviorism toward a more humanistic approach to prisoners, which acknowledges the unique problems of each individual and allows guards to work with inmates on a one-to-one basis.

The change in inmate behavior under this new system has been remarkable, says Jay Farbstein, who has just co-authored a comparative study of prisons that use direct and indirect supervision. “There is less vandalism, less unrest, and less illness with direct supervision,” he notes. “The only danger that I see is if prisoners adopt this approach without training guards or altering management methods.”

The belief in prisoner reform has affected more than facility operations. Dayrooms now have more amenities—not just comfortable furniture and carpeted floors, but softer lighting, warmer colors, and entertainment equipment. And there is more freedom of movement not only within the dayrooms but among buildings. Many prisons, in fact, have become campus-like. The idea here, says architect Andrew Cupples, is that “within a highly secure perimeter, life in the prison becomes as normal as possible.”

**Diversity and Dilemmas**

While instructive, the idea that prison design has advanced in three generations also can be misleading, for our prisons and jails are a highly diverse lot. The number of facilities (there are about 628,000 state and Federal prisons and about 150,000 local jails in the U.S.) and the variety of independent jurisdictions (cities, counties, states, and the Federal government) all build correctional facilities almost guarantees a variety of approaches. “There are as many second-generation prisons being built,” says one architect, “as third.”

The generational idea also obscures the wide range of forms that prisons and jails can take. Radial and branching plans, for example, are still used, even though they are associated with first-generation prisons and might be mistakenly considered obsolete.

Finally, a diversity of approaches is demanded by the size of facilities. In smaller jails, for example, where prisoners of different types are segregated in very small groups of cells, it is often not cost effective to have a guard in each unit. Many of these facilities use a mix of direct, indirect, and intermittent supervision and retain central guard stations as well as stations in each unit.

If diversity is built into the system, so too is our ambivalence about the treatment of criminals, for that rubs up against some of our most cherished traditions. In a nation held together not so much by social consensus or cultural heritage as by laws, the law-breaker becomes the ultimate threat to stability. Yet, in a nation founded upon ideas of equal opportunity and social justice, our treatment of criminals also becomes the ultimate test of our belief in those ideals.

As a result, we continue to build prisons while we question whether we should be doing so. We continue to punish criminals while we ask whether they are truly responsible for their acts. We continue to attempt their reform while we wonder if it is indeed possible. And we continue to see in our prisons and jails, not a resolution of those dilemmas, but certainly a revealing expression of them.

*Thomas Fisher*
Lookout Mountain School, Golden, Colorado. Architects: Anderson Mason Dale, Denver. Master Planners: BNL Design, Denver. This building (above) is one of three new housing units for sentenced juvenile offenders. Consisting of 32 beds, the structure has a cruciform shape with three wings containing housing and recreation space and the fourth, the entrance lobby and offices (right). Clad in brick and concrete masonry, with tile roofs and gabled end walls, the housing units have a residential character that relates well to the existing turn-of-the-century campus. The interiors, too, have a non-institutional feel.

Lehigh County Prison, Allentown, Pennsylvania. Architects: L. Robert Kimball & Associates, Ebensburg, Pennsylvania. Located in an urban area, this prison shows how such facilities can be arranged within a relatively small footprint. The building has a large structural frame, with exposed corner columns, within which two-story housing units are stacked (above). Each floor has four housing units clustered around a core containing the vertical circulation and outdoor recreation areas (right).
ATLANTA is a paradox. Although much of the architectural expression represented here could be classified as Federal, or Southern Colonial, or even Classical, the city is not without its adventurous clients; such buildings as the new IBM tower (John Burgee with Philip Johnson) and Richard Meier's High Museum (and its downtown branch by Scogin Elam and Bray) are testimony that rows of white porch columns are not everything in Atlanta. As the city continues with its seemingly endless penchant for growth, scattered nuggets of architectural gold can be found; these indicate clearly that while the city may be cautious philosophically, it can be adventurous as well, and it demands a proper degree of sophistication.

A new retail center, "Rio," designed by Arquitectonica of Coral Gables, Florida with associated Atlanta architects Milton Pate & Associates, is a reflection of the most adventurous of these traits. Constructed in a redevelopment area, Rio causes some natives to ask why it occurs where it does—not far from mainstream Atlanta but not really in it—and why it takes the brash form it does.

Because Rio is just the first step in the developer's master plan to create a new urban node, it is a courageous opening line, required to stand on its own for now. Because two restaurants existed at the busy intersection of Piedmont and North, the architects wanted to "buy in" to whatever activity they could to start with, so they positioned the center as close to the corner as possible. Envisioning a court that would participate in street activity, they located it off of the heavily-traveled Piedmont. These two decisions, however, forced the parking "around back," an alternative that is less than desirable for the business plan. Because much of the center's pedestrian traffic thus would be entering from the side or back, the fragmentation of the building allowed the creation of notable entries from these sides as well as from the street.

To further enhance the center's image to potential shoppers and because the buildings were to be built on a strict budget in a renewal area, brightly colored yet inexpensive elements were chosen. The architects devised a dual-focus shopping/restauran environment, an assortment of buildings that centers around a courtyard by landscape architect Martha Schwartz (P/A, July 1989, p. 56), which creates much of the entertainment the center is intended to engender. Over 50 percent of the space is housed in an L-shaped building with one side along North Avenue and one side fronting on the parking area. The remainder of the rental space is in three buildings, one of which is rotated
Clearly the most articulated part of the center, the courtyard is full of visual activity, even when empty of people. The blue and black corrugated metal skin of the buildings here contrasts with white railings and trim and with bright red bridges. A skewed “floating” tile island touches two edges of the rectilinear pool and provides a landing for the elevator (facing page, center). Another circular planter holds a stand of bamboo. For the eastern five bays of the building, the courtyard is sheltered by a clear span roof, open at the edges. The globe at the Piedmont Avenue end of the court (top photo, right) includes a misting system for the benefit of vines that will eventually cover the structure; the gold frogs that form rows in the pool are always facing the globe, even when they progress onto the land surrounding it. The video wall with 25 television sets (bottom photo, right) was designed by artist Dara Birnbaum. Red bridges span the court on an angle at the west end of the court and join the upper elevator landing to the second level walkway. On the courtyard level, a walk crosses the pool at an opposite angle. There is a nearly seamless symbiosis here between the work of the architects and that of landscape architect Martha Schwartz.

to create dramatic skewed entry passages.

While the L-shaped building and two of the discrete segments are clad in a vivid blue vertically corrugated metal skin with white mullions and yellow awnings, the rotated element is horizontally corrugated black metal with green mullions. All are linked on the second (street) level by an open walkway, and by a bright red courtyard bridge between the L-shaped building and the detached building opposite. An elevator shares a corner of the “floating” rotated square pad in the courtyard pool with a stand of bamboo, a wet bar, a planter, and a video wall. The latter, with 25 television sets, was designed by artist Dara Birnbaum and projects multiple images of current scenes amidst a re-creation of the pre-existing conditions at the site.

Given the constraints of cost, location, and program, Rio seems to be a lighthearted and successful expression of consumerism in the best sense, yet it delivers the sophistication the city expects. It is fun to be there. Jim Murphy

Project: Rio Retail Center, Atlanta. Architects: Arquitectonica International Corporation, Coral Gables, Florida—Design (Bernardo Fort-Brescia, Laurinda Spear, principals in charge; Martin J. Wander, project architect; Jennifer Luce, Richard Perlmutter, and Jennifer Briley, project staff). Milton Pate & Associates, Inc., Atlanta, Georgia—Production (Milton E. Pate, Sr., principal in charge; Lockie Brown, project architect).

Client: Charles Ackerman, Ackerman and Company.

Site: Irregular steeply sloped parcel in a redevelopment area, at the intersections of two streets.

Program: Two-level strip retail center with shops and restaurants.

Structural system: Steel frame on reinforced concrete foundation.

Major materials: Painted corrugated steel panels, aluminum glazing system, gypsum board (see Building Materials, p. 122).

Mechanical system: Gas-fired furnace and individual air-handling units for each space.

Consultants: The Office of Peter Walker and Martha Schwartz (Martha Schwartz, principal in charge), landscape architects; Bennett & Pless, structural; Brady & Anglin, mechanical, electrical, and plumbing; Bruker Design Associates, signage and graphics.

General contractor: McDevitt & Street Company.

Costs: Approximately $13 million.

Photos: © Rion Rizzo/Creative Sources, except as noted.
WHERE else, but a place so bound to tradition as Virginia, would fate have dealt the opportunity to build a Center for Innovative Technology, whose role so clearly begged for an architecture that was new, not tried and true? Presented with that opportunity, however, architect Bernardo Fort-Brescia considered the notion of rewriting architectural history in the land of Jefferson and saw in it cause for promise, not for cynicism.

He calls the crisp and dynamic outcome “the machine in the forest,” a conjunction of hard-edged, irregular shapes arranged on a raised platform like so many pieces of a puzzle that don’t mesh. Yet, rising incongruously on a hillcrest above an encircling veil of trees, the CIT’s diverging planes and truncated top lend precisely the conversational value desired by an institution in search of a forward-looking image. CIT was established by the state in 1984 to boost economic development in Virginia through technology-centered research, both at the center and in university laboratories. A high-profile site—within easy view of Eero Saarinen’s legendary terminal at Dulles Airport—became key to the development strategy of the complex.
A national ideas competition, backed by a $100,000 grant from the National Endowment for the Arts, was held in 1985 to generate concepts for what amounted to a new building type. "The brief was not a program but a general description of ‘What ifs,’" recalls Gregory Hunt, a professor of architecture at Virginia Polytechnic Institute and State University, which orchestrated the competition. Of the five submissions that shared top honors, one had a clear influence on the design of the finished project. Its proposal for a complex of buildings on and around an elongated triangular platform bears a close resemblance to the built CIT because one of the competition finalists, Jennifer Luce, who was subsequently employed by Arquatectonica, encouraged the firm to pursue the commission.

From that initial suggestion, the joint venture team of Arquatectonica, based in Coral Gables, Florida, and Ward/Hall Associates of Fairfax, Virginia, developed the building form to accommodate an evolving program. In the search for an appropriate aesthetic, brainstorming sessions focused on ways to symbolize 20th-Century gains in technology, particularly advances in the speed of locomotion across land and successes in human flight.

Formal entry to the Center for Innovative Technology involves ascending a steep ramp and arriving at an elevated forecourt (above left) on top of the podium. Architect Bernardo Fort-Brescia says the angled faces of the buildings were appealing because their reflective surfaces capture the surroundings. "The building changes constantly. It reflects and transforms the landscape," he says.

An aerial view of the complex (top) shows the relationship of the CIT’s elements—the administration tower, low-rise laboratories and offices of the Software Productivity Consortium, and prismatic commons connecting the two. The white marble block is a 125-seat auditorium. Landscape design by Martha Schwartz includes flagstone pads she likens to “carpets at the places where you step out of the building,” as shown in the vehicle drop off area (above). The second pad is for limousine parking.
If built to completion, the CIT master plan (top left) would include some 600,000 square feet of research and office space. One-fourth of that is built now. The first floor plan (above left) illustrates the simplicity of the floor plates, which accommodate many space planning options. Lines dissecting the lobby are scrims and expansion joints for the monolithic black terrazzo floor.

The elements of CIT produce a dynamic composition when viewed from one of the rear terraces (top right), still minus the yellow stone stripes and rows of decorative glass globes called for in the landscape plan. Slanting the ends of the SPC building (above right) avoided what Fort-Brescia says would otherwise have been "a dull glass box." The CIT tower (facing page) rests on a shadowy gray-black podium that holds the center's shared cafeteria and a 430-car parking garage. Aluminum grillwork shields the garage from view and forms the terrace railings.

That thinking generated the elements of CIT: a broad, low parallelogram that seems to slide horizontally off its foundation and a tower that angles toward the sky, with gold, green, and black reflective glass panels arranged randomly to emphasize the building's verticality. The tower is home to the administrative offices of CIT, located on the top two floors of the seven-story structure (other floors have yet to be assigned or leased). Occupying the horizontal wedge is a partnership of leading aerospace corporations that joined forces to develop software engineering tools.

Connecting the two main volumes is the commons, a curvilinear lobby and exhibition space walled in clear glass. "We wanted something as transparent as possible," Fort-Brescia says. "We wanted a place of arrival, but we wanted the surrounding landscape to be dominant." Penetrating this soaring space is a self-contained auditorium clad in white marble, a jewel set against the background of trees. Another focal point is the eamed elevator shaft, a free-standing sculptural element that provides access to the cafeteria and meeting rooms on the lower commons level.

Terraces outside the commons—the "fifth façade" of CIT—were
Geometric themes of the building appear in the details of the railing on the elevator landing (foreground, above): cantilevered glass railings are used elsewhere in the lobby. A clear glass prism, shaped as a segment of a circle, houses the main lobby and exhibition space (top right). The entry to the CIT tower (bottom right) is framed by reflective glass that continues into the lobby from the exterior walls. Materials in the commons are given a modern interpretation: articulated stainless steel walls, an enamel-paneled elevator core, and a cantilevered glass block landing (facing page). Entry from the parking garage is at this level.

designed by landscape architect Martha Schwartz, of The Office of Peter Walker and Martha Schwartz, who was brought onto the project after the building forms had been determined. "These buildings are all cattywumpers," says Schwartz. "They are all at funny angles. But when you get inside them, you tend to perceive the walls and floors as rectilinear again." Schwartz's scheme of textured stripes for the podium landscape "was to create a directionality against which you'd begin to perceive the angling of the building." And, because of the number of prospective tenants who arrive via the airport nearby, the perception of the building from the air was important.

In the end, construction of CIT was a triumph over politics as much as a satisfaction of program. During design and construction four presidents and two acting presidents, each with different ideas about the building and various understandings of the project's complex history, had final authority; but they were behind the design. Meanwhile, some of the local folk still scratch their heads in bewilderment at the sight of this glass box gone awry. "People wonder what it is," Fort-Brescia says, noting that's what the client bargained for. "They got a building that people talk about."  

Vernon Mays

Project: Center for Innovative Technology, Herndon, Va.
Architects: Joint venture: Arquitectonica-Ward/Hall Associates AIA, Coral Gables, Fla., and Fairfax, Va., respectively (for Arquitectonica: Bernardo Fort-Brescia and Laurinda Spear, principals in charge; Martin J. Wander, project architect; Jennifer Bailey, Tom Bittner, Toby Engelberg, Jennifer Lupe, and Derek Sanders, project staff. For Ward/Hall Associates: G.T. Ward, partner in charge; Charles Hall, partner; Leo Sagasti, project director; John Anderson and Andrew Pittman, project architects).
Site: hill overlooking Dulles International Airport.
Program: office tower, research building (labs, security areas, and offices) and commons (briefing center, auditorium, and cafeteria) totaling 150,000 square feet and a 430-car parking garage.
Structural system: reinforced concrete structure on mat foundations and spread footings.
Major materials: see Building Materials, p. 122.
Mechanical system: electric variable air volume system with reheat coils.
Consultants: The Office of Peter Walker and Martha Schwartz, landscape; Spiegel and Zameczek, structural; Silver Associates, mechanical and electrical.
General contractor: Gilbane Co.
Costs: $22.1 million.
Photos: Timothy Hursley, The Arkansas Office, except as noted.
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Japanese Style, American Life

Japanese wood construction has taken 1500 years to reach its present state, years in which even the smallest details were perfected and prescribed. The architecture was greatly influenced by Buddhist teachings and reached its most elaborate form in the temples throughout the country. The American lifestyle differs greatly from Japanese ritual, but Californian Len Brackett has created a company, East Wind, which fuses traditional Eastern building techniques and Western sensibilities. Brackett apprenticed for five years in Kyoto, in a temple carpentry workshop. In adapting the strict forms of Japanese architecture to American patterns of living, Brackett has been extremely careful not to violate its tradition and rituals. This house in Tiburon, California, constructed in the mid-1980s, is representative of his work.

The plan, which he and his clients developed using dominos, was laid out on a redwood plaque using the 3' x 6' tatami module. (The plaque was placed above the ceiling after completion to keep the plan accessible to anyone who knows the modular system.) Structurally, the house is very traditional. The wood was completely precut in Brackett's workshop, making on-site construction swift and precise. No metal fasteners were used, and the keyed, pegged, or dovetailed joints are almost invisible.

Selection of wood for the houses Brackett builds is very important, and he is very concerned with its use and replacement. He and the Timber Framers Guild are pressuring the Forest Service to institute policies that would raise the price of old growth, which is preferred for its size, strength, and fine grain, and would encourage its replacement. East Wind uses a number of woods: sugar pine, Port Orford and other cedars, American chestnut, and redwood. Brackett maintains relationships with loggers from California to British Columbia who often call him when they find an unusual tree because they know that fine specimens will not be wasted: Enough wood for more than two

(continued on page 102)
TECHNICS TOPICS

Wood and joints are used differently in each part of the house.

(continued from page 101)

houses can be cut from the largest trees.

To begin construction, the vertical members were inserted into the sills, then pegged, each piece freestanding. (Brackett says that a sensitivity to natural materials ensures that each piece is placed with its root end down and the outside or inside of the tree placed in a predetermined orientation.) Top plates and perimeter beams were joined to the posts and to each other, followed by smaller elements: short king and queen posts, ridges and purlins, tiny rafters. The interior was spanned with round logs, including the free-form beam in the living room. (The log, which Brackett found near his shop, had to be installed first because its curve would have been too large to insert once the structure was completed.) Brackett emphasizes that the engineering is very simple. The roof construction series loads directly onto horizontal beams. One drawback of this method is that the spans cannot be enormous; the one shown above is about 15 feet.

Using materials found on or near the site is another tradition which Brackett tries to maintain. Walls in the house are made of unfinished, plastered mud—soil from the site combined with additives to make it more durable and watertight. It is a very difficult material to work with (the plasterers came from Japan) but contributes to the house's uniqueness. The tone changes throughout the day, from a green in morning light to a deep brown under incandescents.

Other on-site materials include the cattails which lattice the round window and the heavy stone step in the entryway.

Japanese details were westernized within the house. People bring American habits to a traditional house, and it "doesn't work," says Brackett. Proportions that are based on eye level when one is seated on the floor become skewed when chairs and other furniture are introduced. So the window heights, for instance, were adjusted to allow the proper perspective outside. The engawa, a verandah which mediates between outside, with exterior doors, and inside, with shoji screens, is another form that was adapted: A raised futon creates a much-used space. Brackett notes that this is the most popular area in other houses he has built.

Modern technology also accounts for some of the changes East Wind has made. Stressed-skin panels and computers are not used in traditional Japanese architecture, but Brackett remains open to any technologies that do not compromise the buildings' aesthetics. In this sense, he says, while the tradition in Japan has stabilized, it is growing in the West. Still, Brackett notes that often the best techniques are the traditional ones: Washi, the paper used in his shoji screens, is a better insulator than glass.

Without the extensive building support system that exists in Japan, Brackett points out that the custom work done by East Wind can be very expensive. New collaborations are starting to make it more accessible: East Wind works with builders and clients to give certain prioritized areas the true Japanese treatment, while specifying the rest with a Japanese timber frame but without the extensive traditional woodwork. Such collaborations and adaptations allow East Wind, one of only a handful of companies that practices Japanese architecture in America, to bring traditional Eastern forms West. Andrea E. Monfried

East Wind is located in Nevada City, California, and may be reached at (916) 265-3744.
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On the other side are the anchor tenants who are key to a successful development—primarily major corporate offices, banks, insurance companies, and law and accounting firms, which typically maintain massive files. Increasingly they are turning to high-density mobile storage systems for central files, law libraries, computer tapes, and supplies.

With track-mounted moving carriages and a single transposable aisle, mobile systems will hold twice as much material as stationary shelving for the same floor space—up to six times more compared with drawer-type file cabinets. The space economies are obvious and significant, but the price includes greatly increased floor loads, well in excess of 50 psf.

To accommodate tenants who want the advantage of mobile storage, the developer has two choices: Require the tenant to absorb the cost of post-construction floor reinforcement, or provide for pre-construction reinforcement of selected areas. Although many developers opt for post-construction reinforcement, this is much more costly and not always possible—especially if it would disrupt other tenants.

Pre-construction reinforcement can be much less expensive. In fact, it can be positioned as a building amenity to benefit prospective tenants. One obstacle to pre-construction reinforcement has been a common misconception that mobile storage systems require 150 psf floor capacity. This is unnecessary for most office applications and puts too high a premium on the cost of mobile storage.

**Structural Rails Can Reduce Floor Loading**

In our experience 100 psf floor capacity is quite adequate for mobile storage in office buildings and can be provided very economically with pre-construction reinforcement. This becomes apparent when mobile storage systems are viewed not so much as floor-loading devices, but rather as load-transfer devices. Properly designed and configured mobile systems can transfer loads to the building frame so that 100 psf becomes a very practical office floor rating through the use of structural steel T-rails in a range of sizes and lengths to fit various system requirements.

Mobile storage creates line loads beneath its rails. The load transfer capacity of the system depends on the number, spacing, rigidity, and orientation of the rails with respect to building joists, beams, and girders. The aim is to either locate the rails so they run directly on top of the joists, beams, or girders members, or run perpendicular to and spanning several structural members. Either way, sufficient load is transferred away from the slab and onto the building frame so that a 100 psf live floor load rating is sufficient.

**Typical Costs**

In Atlanta, for example, the cost for a typical reinforced concrete floor slab, rated at 50 psf, is about $8.25 per sq ft ($2.75 for formwork, $2.50 for reinforcing steel, and $3.00 for concrete). Increasing this to 100 psf, which is a common rating for core areas, would add only about $1.00 per sq ft for reinforcing steel. Concrete and formwork costs would remain the same. In a typical high-rise, the overall building cost increment for 100 psf reinforcement of two bays per floor would be less than 0.2 percent. For 150 psf, however, the combined cost of all three components would increase by $3–4 per sq ft, or three to four times as much.

With steel frame buildings the incremental cost of 150 psi vs. 100 psi is even greater. The 16-inch-deep beams required for 50 psf floors become 18-inch beams for 100 psi floors, which again is conventional for core areas. But 150 psi floors are apt to require 21-inch beams, which would add 3 inches per floor to the building height and increase other material costs.

**Pre- vs. Post-Construction**

The ultimate question to a developer, however, is how he would benefit from such a pre-construction improvement. First, it may help him close the deal, especially with the growing list of companies now insisting on compact storage. Second, by facilitating compact storage, he minimizes the chances of a tenant's storage needs outgrowing the space and forcing a move. Third, he may avoid his building becoming obsolete by providing a feature now that may be required in future building codes. Why not just do post-construction reinforcement as necessary? Cost can be a major deterrent—from $10 to $20 per sq ft. Even then, it is not always practical or possible. The least expensive method—under-floor reinforcement—may not be practical because ducts and other mechanical equipment may be in the way, or there may be tenants below that cannot be disturbed. Reinforcement may be possible within the user's own space by adding grillage and building up the floor, or suspending the mobile system from building columns. However, this work requires on-site drilling, cutting, and welding that can be a fire hazard in built-out areas as well as highly disruptive to other office operations.

**Vendor Caveats**

In specifying mobile storage systems for high-rise buildings, it is essential that they be considered as an integral part of the building structure, not just furniture. They should have structural steel T-rails heavy enough to carry the load and long enough to span across building framing members. When field welding is required, the rails should permit full-penetration welds—lest the joints themselves impose floor stresses—and all field welds should be performed by a certified welder.

The manufacturer's carriage design should permit flexible location of wheel housings to permit proper rail spacing to best fit the building design and allow the installation of additional rails to share the load.

Above all, when there is any doubt at all about exceeding floor load ratings, the vendor should be required to furnish certification by a licensed structural engineer that the proposed mobile storage system will meet all building safety requirements.

Joseph R. Russ

The author is a principal in the Atlanta firm of Sedki & Russ Engineers.
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A new tapestry collection called Edition Gaudí joins the Homage Textile line. The fabrics, three of cotton and one of wool that make up Edition Gaudí, are patterned after Gaudí's mosaic, ceramic, and applique designs. Architex.

A new non-structural trim product called CTX—Clear-Type Exterior—is offered in many sizes and comes with a factory-applied prime coat. CTX is consistently free from knots, hard and soft spots, and cup and wane. Weyerhaeuser.

A low-voltage track fixture called Spacebird consists of extruded aluminum and accommodates MR16 lamps from 20 watts to 75 watts in a complete range of beamspreads. Ceiling or wall mounts are also available. Lighting Services.

A wall-mounted fixture called Quarter Moon measures 72 inches high and utilizes a 50-watt MR16 halogen lamp. Power is conducted through the cables from the low-voltage transfer switch box on the floor. The spring steel, adjustable upper portion is 15½ inches long. Azzizi.
NEW PRODUCTS AND LITERATURE

Security glass is the subject of a new specification guide that details laminated security products and glass-clad polycarbonates. Glass strength comparisons are also provided in the illustrated brochure. Viracon. Circle 200 on reader service card

High-density storage and filing systems are now offered with a new face-panel graphics program that combines more than 25 type faces in more than 40 colors as well as custom logos or symbols. A range of laminate colors and patterns may be specified for the mobile storage units. Spacesaver. Circle 112 on reader service card

An exit alarm device that is also fire rated is now part of the 572 Series. The low profile unit features a delay switch that permits up to a 20 second delay before activating the alarm. Russwin Div/Black & Decker. Circle 113 on reader service card

Surveillance and activity lighting are the subject of a new guidebook for correctional facility lighting applications. Lighting solutions and specifications for exercise yards, parking lots, entrance and guard posts are some of the activity applications discussed. Hohophane. Circle 204 on reader service card

Reinforced fiberglass that is bullet-resistant is discussed in a new brochure. The lightweight material is available in opaque flat panels that tend to absorb bullets rather than deflecting them. Point Blank Body Armor. Circle 115 on reader service card

(continued on page 120)
PAC-CLAD Metal Roofing Panels are a prominent design element on the recently completed 90 Main Street project in Westport, Connecticut.

The architect, Roger Ferris of Southport, Connecticut, has designed a mixed-use facility that is an attractive new addition to the town’s commercial center.

PAC-CLAD Snap-On Standing Seam Panels were specified for the extensive metalwork and detailing of the metal roof, dormers and clock tower. The panels are coated with a PAC-CLAD Kynar 500® finish. The color, Slate Gray, is one of eighteen standard PAC-CLAD colors and is provided with a twenty year finish warranty.

For more information regarding the complete Petersen product line, please contact Tom Creigh at Petersen Aluminum Corporation, 1-800-PAC-CLAD.

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Owner: 90 Main Street Partners
Architect: Ferris Architect, PC.
Roofing Contractor: Barrett Non-Pariel Roofing Co.
Panel: Snap-on Standing Seam
Color: Slate Gray
See our catalog in Sweet's: file numbers 07610/PET, 07715/PET and 10426/CHC.
A new office system called Context is a desk-based system with curving work surfaces designed to accommodate state-of-the-art office equipment. Acoustical panels and overhead storage units with task lighting are supported by the desk units. Free-standing storage units complement the system. Steelcase.

Brand name drafting, print, and plotter supplies are described in a 65-page catalog. Discount prices are also included in the 1989 comprehensive catalog. Dataprint.

New fiberglass enclosing sheets called Quick-Fit Klosures can be stapled, nailed, wired, taped, or glued onto wooden or scaffold frames for temporary enclosures. Kelley Klosure Systems.

A new composite panel called Alucobond 21 consists of two sheets of aluminum with a new, proprietary plastic core. The new material has a high strength-to-weight ratio, is extremely flat, and is also corrosion resistant. The plastic core is fire-safe for the intended applications, including exterior curtainwall and interior cladding, signage, and industrial uses. Alucobond.

Inlaid marble tiles for flooring, fireplaces, countertops, and wall applications are offered in a range of sizes, styles, colors, and materials. Eight classic patterns can be custom cut for any design specification. World Marble Designs.

High-performance outdoor lighting designed by Paul Steel features a 70-degree horizontal light cutoff, a cast aluminum body, and an Alzak® reflector system. The sphere is 17 1/8 inches in diameter. ELA.

B-grade redwood panels for interior or exterior applications have a nearly knotless appearance. The architectural redwood from the B-Plus series is virtually pre-shrunk. Palco.

A modular deck for mobile storage or shelving systems can be installed over existing floors and easily moved. Aisle Saver® is available with capacities of 700 or 1000 pounds per foot. Special steel dome levelers with steel plate-supports compensate for uneven floors. White Office Systems.

Asbestos abatement is the subject of an illustrated brochure that explains solutions to asbestos problems in various types of buildings. The literature helps architects and building owners understand the common pitfalls of asbestos removal. Asbestos Abatement Services.

Cast-iron tree grates in a variety of styles and shapes can be seen in a new product catalog. Expandable grates are shown. Neenah.

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Vinyl wallcoverings from the Crescendo collection are offered in 27 patterns and a range of new colors. The commercial wallcoverings and coordinating borders contain mildew inhibitors. Koroseal.

Building Materials

Major materials suppliers for buildings that are featured this month as they were furnished to P/A by the architects.


(continued from page 120)
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