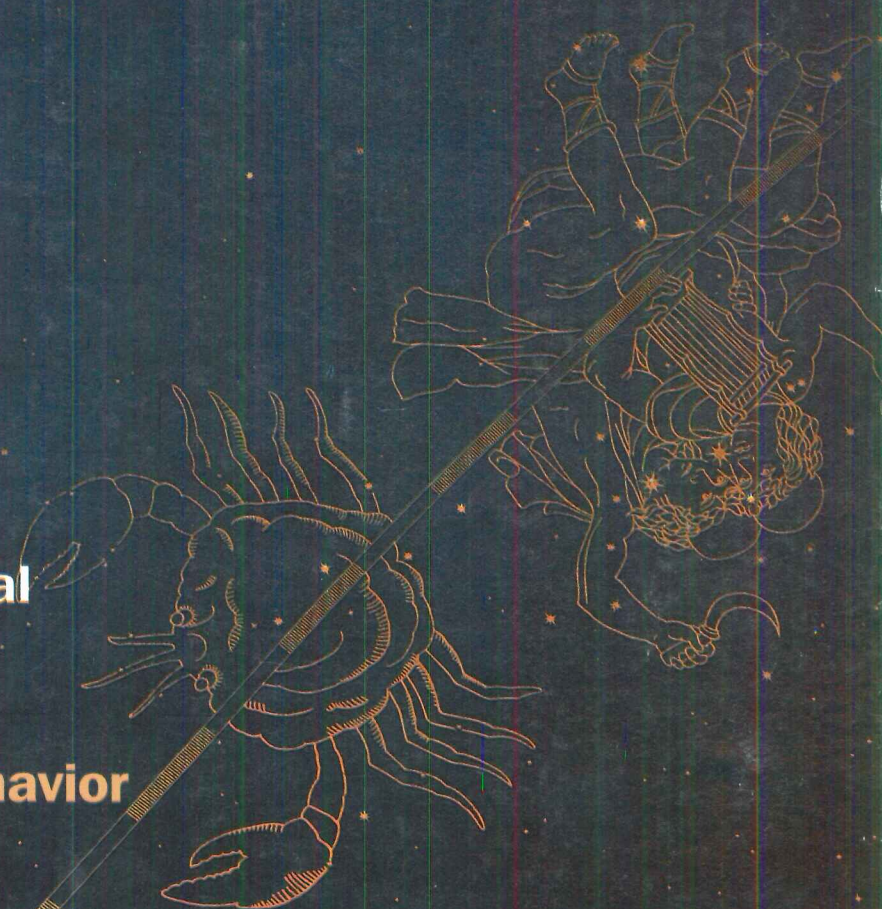


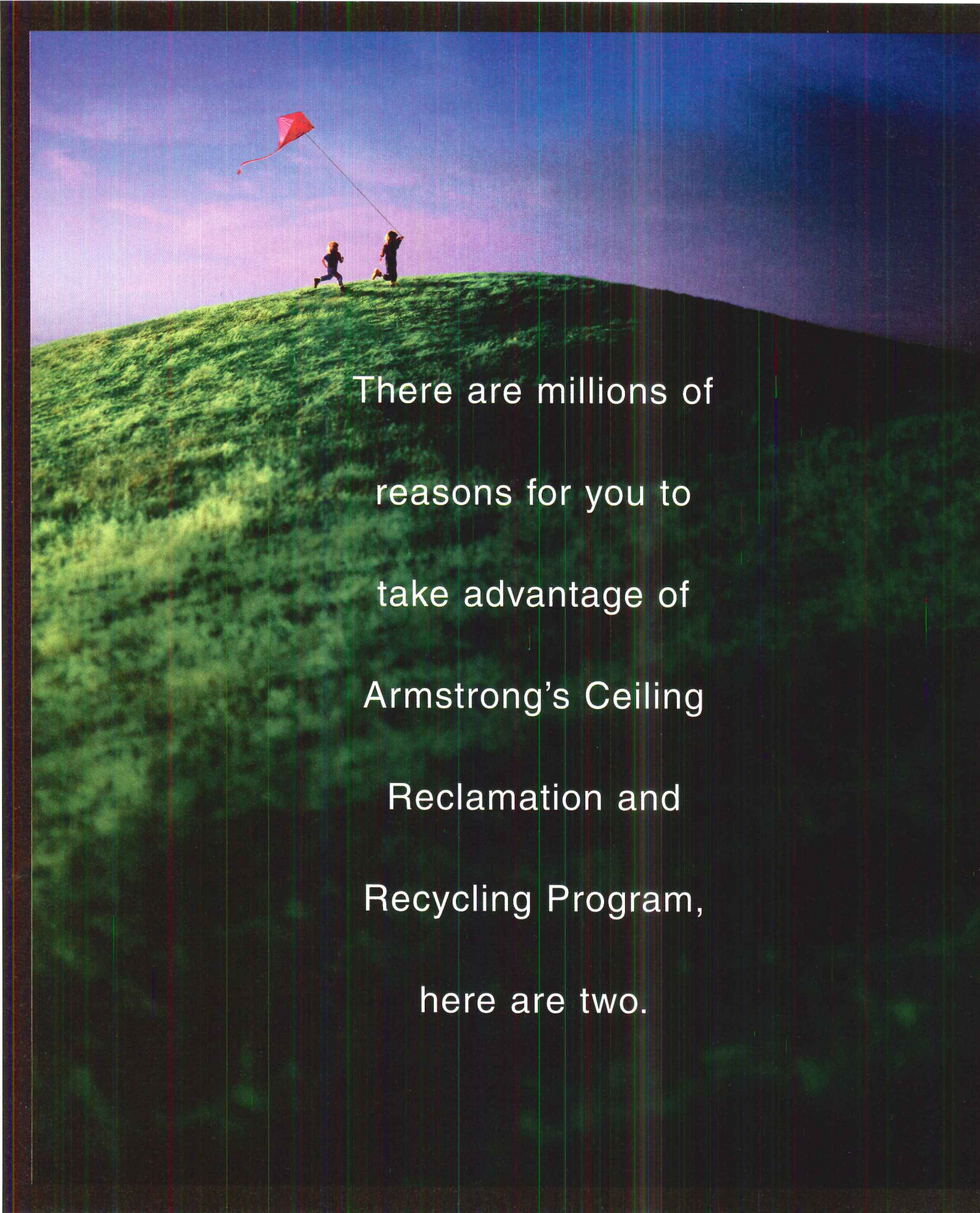
ARCHITECTURAL RECORD

**Restoring the Grand in
Grand Central Terminal**

How Buildings Affect Behavior

A Serene Retreat by Tadao Ando



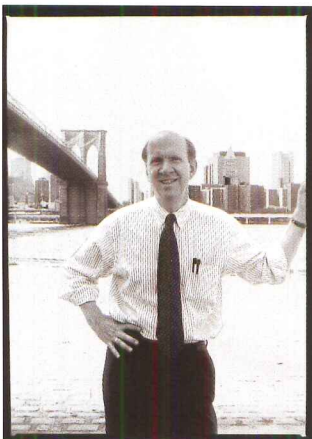
A photograph of two children running on a grassy hill under a blue sky, flying a red kite. The children are silhouetted against the bright sky. The kite is a simple diamond shape with a long tail. The hill is covered in green grass, and the sky is a clear, bright blue. The overall scene is peaceful and evokes a sense of childhood and nature.

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EDITORIAL

Learning from Las Vegas

BY ROBERT IVY, FAIA



Listen to the hum. Across the continent and out to the islands, you can hear the ring from the casino floor, a seductive, whirring call to come, let go, and spend. Buildings are following the gambling dollars, fueling an unprecedented boom in design and construction that dwarfs the \$1 billion budget of the “commission of the century”—the Getty Center.

Consider the astronomical figures. Las Vegas’s latest offering, the Bellagio, cost \$1.6 billion and encompasses a 3,025-room hotel. According to the Associated Press, in its first 20 days of operation the complex generated an average of \$6.7 million in daily revenues. Other mega-resorts will quickly follow its success, including Circus Circus’s Mandalay Bay, Hilton Hotels’ Paris, and Sheldon Adelson’s Venetian, ultimately bloating the desert city with 128,000 rooms. When will it end?

With each new high-rise, the city is transforming itself into an upscale destination. Its buildings have evolved from low-scale, motel-studded Sinatra country to today’s jumbo-size fantasyland. Along the way, the strip has become a kind of midway, an American mall to the 10th power, a sidewalk leading from air-conditioned agora to forum, overflowing with shuffling humanity dropping dollars in their wake.

Is it architecture? The latest hotels in Las Vegas—slab-sided, immense structures—recall both Miami Beach and veterans’ hospitals, and the crowds love them. However, jungle conservatories, gaming floors, and lobbies are combined into sprawling amalgams that can be disorienting and overwhelming. Although the goal is to capture your time and money, the question they raise is, “How do you get out of this place and on to the next attraction?”

While Las Vegas, the repository of freewheeling American myth, is a special case, other locales, including sober cities like Detroit, want to join in the party, often by employing designs that mimic the Nevada originals. Even solitary Native American casinos down country roads try to capture a bit of Vegas gold, surrounding themselves with strip malls and fast-food eateries.

This winter, the Mississippi Gulf Coast, a manmade beachfront strewn with historic houses and small towns, welcomes Bellagio’s sibling, the 1,780-room Beau Rivage, a massive building that would be right at home beside Caesar’s Palace. In Tunica, Mississippi, just outside Memphis, high-rise Vegas-style buildings loom from cotton fields like surreal omens; they look like flashing mid-continental signs pointing west, where the real action lies.

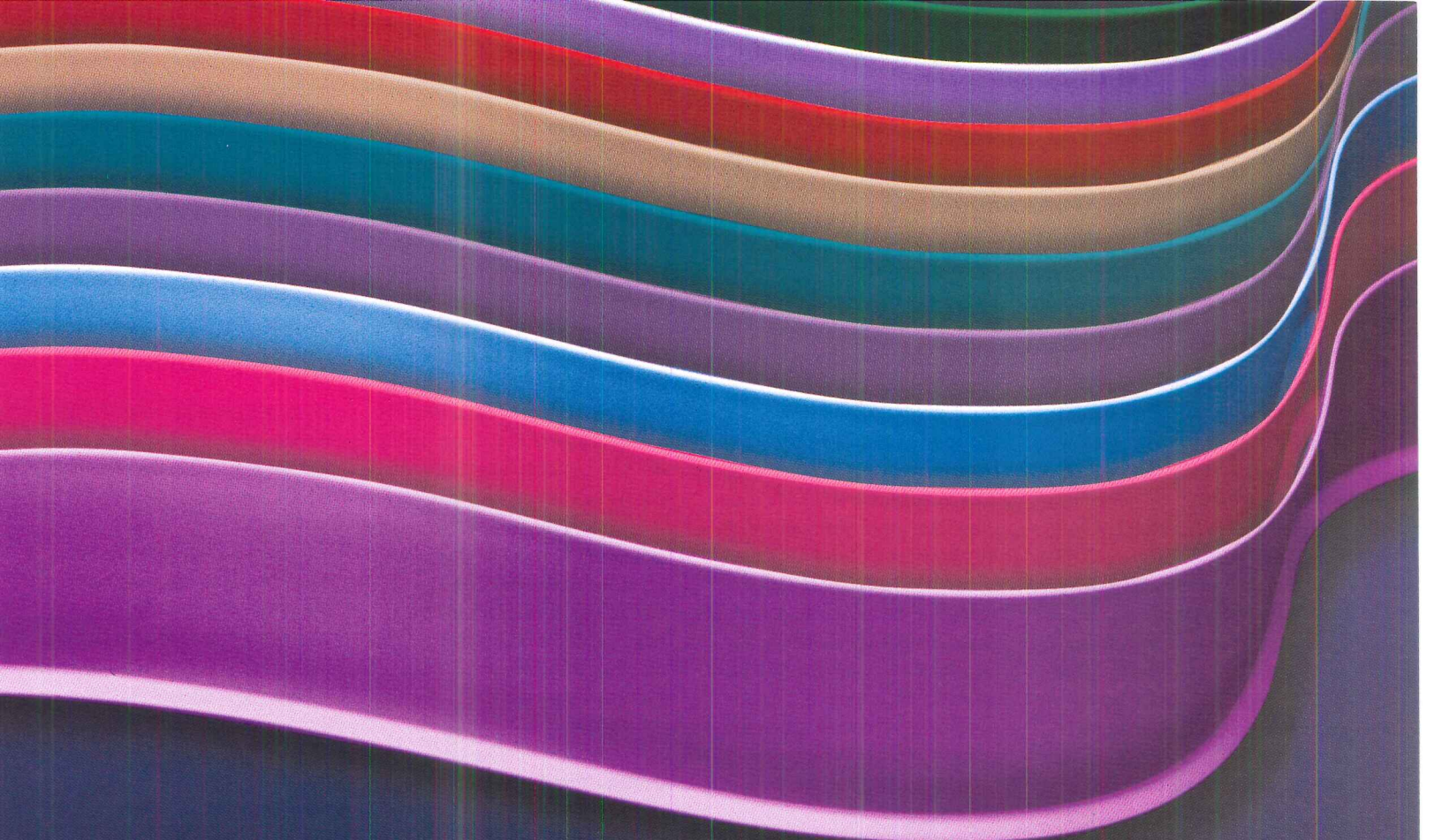
There are pitfalls. An enormous empty shell stands out prominently at the foot of Canal Street in New Orleans, a painful reminder of what was to be the world’s largest casino. Gambling, plagued by high state taxes and corruption, has not proved to be a panacea even for gambling-loving Louisiana. Not all dreams come true, but the structures that embodied those dreams remain. What do you do, after all, when the party’s over?

Without recognition and debate, fragile environments like the American Virgin Islands may be compromised by gaming mania. The New York Times reported that St. Croix, an island devastated by hurricanes, is banking on casinos to help revitalize its broken economy. If it worked in Mississippi, why not further south? In its rush toward waterfront gambling, the casinos and hotels along the Mississippi coast inhabit land devastated by Camille, this century’s most powerful hurricane. Where such large enterprises are planned, only informed local debate can clear the air.

Nothing, however, is slowing the economic fury. We are challenged to harness and channel the casino phenomenon’s inexorable energy—learning from Las Vegas, advising decision makers what makes sense for each city, for the land, and for the people who will come. While we may not control the game, we can focus the debate and we may affect the outcome, including the project design, in a positive way. Deal them up.

when building a home on the coast,
keep one thing in mind. there's a sea there.





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CIRCLE 10 ON INQUIRY CARD

LETTERS

Space A/E's lack friction

"Listening to Engineers" [October, page 108] made me shake my head in amazement at the apparent conflicts between architects and engineers.

I am one of only three registered architects working with or at NASA. The experience of working with my colleagues in structures, avionics, materials, thermal/vacuum environments, and other engineering disciplines has been a rewarding one. It would have been worthless, however, had I not taken on the challenge of learning how to work with these professionals from the beginning. I have spent long hours listening to their presentations on arcane issues while volunteering formal solutions that optimize the systems they are trying to develop.

The result is that I now understand how to design an even better airlock or crew cabin, while the engi-

neers have been happy to learn what an architect can offer them. Architects and engineers think differently, but when thinking together, they can make a truly formidable team.

—Constance Adams

*Space Architect/Human Factors Engineer
Lockheed Martin
Houston*

Trapped in the suburbs

I couldn't help noticing the ultimate irony in December's Building Types Study, "Detention Facilities" [page 69]. While gangsters reform themselves in thoughtfully designed spaces by the architectural elite, Joe Public is tragically surrounded by parasitical McBuildings and seas of asphalt. Who is really being punished here? Of course, the apathetic suburban frontier is perhaps in part to blame for the criminal mindset in the first place.

—Scott McElrath

*Dangerous Architects
Chelsea, Mich.*

Blood rights

I can't help but wonder why in the course of all the considerations of Steven Ehrlich's addition to the Lewin House [August, page 74], people were so concerned with what Neutra would have liked but no one thought to ask the Neutra who is still around! I haven't seen the work, but from the photographs I can assure Ehrlich that my dad would not have introduced a curve in a vertical plane to compete with the original curve in the horizontal plane.

For owners who are gutting the interiors of Neutra houses or making other drastic changes, I invite inquiries as to what would be consistent with the original concept of the icons they have acquired.

—Dion Neutra, architect
Los Angeles

Credits/Corrections

Due to an editing error, the volume number of the January 1999 issue was printed incorrectly as 188. It should be 187.

Additional architect/artist teams working on the Villa Montalvo project (December, page 37) are Adèle Naudé Santos with Doug Hollis; Mark Mack with David Ireland; Dan Solomon with Patrick Gleeson and Nellie King Solomon; and Craig Hodgetts and Ming Fung with Lee Breuer.

Wilson & Associates were the interior designers for Las Ventanas al Paraiso, featured in the November issue (page 118).

In December's Product Reports (page 93), juror Dan Himmelberg, AIA, of Gould Evans Affiliates, was incorrectly described as overseeing the design of the Times Square AMC Theater; he is overseeing the graphics program for the theater.

Letters may be E-mailed by visiting our Web site at www.archrecord.com and clicking on News/Features/Dialogue. RECORD may edit letters for grammar, style, and length.

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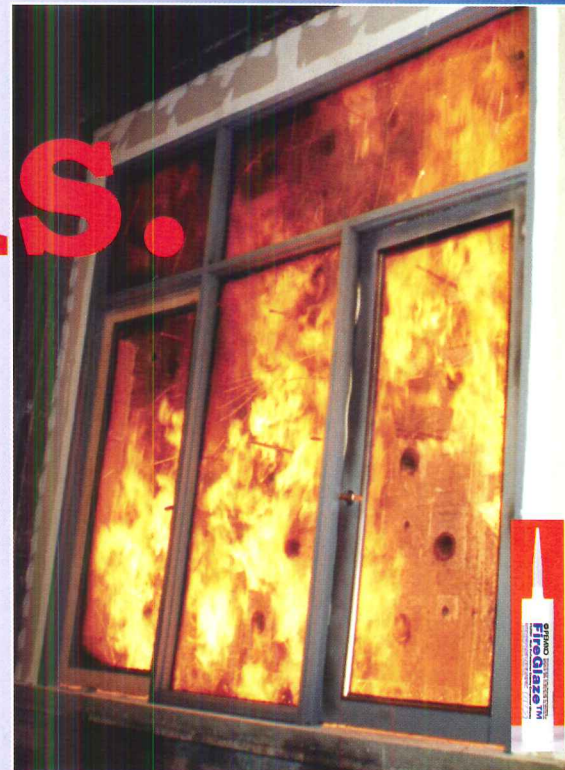


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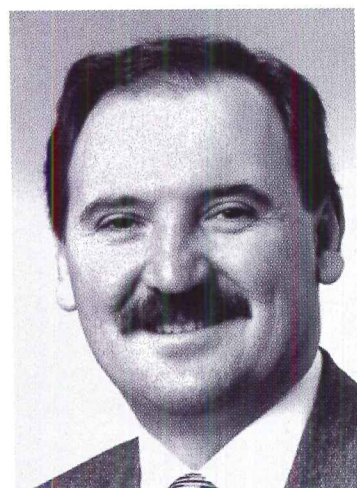
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CIRCLE 12 ON INQUIRY CARD

SPEAK OUT Forged from ironies: architects' attitudes toward design-build are ill-conceived and self-defeating.

CLIFFORD W. BEDAR, AIA, AND MICHAEL W. BEHM, AIA

Clifford W. Bedar, AIA (top), and Michael W. Behm, AIA, are directors of design-build services with HDR Architecture in Chicago.



As we begin 1999, the architectural community is embroiled in a circadian period of prosperity; times are good and commissions abound. However, a few visionaries have finally acknowledged our ever-dwindling influence on the design and construction industry. Competition grows fiercer as construction, preconstruction, program, project, process, and design-assist managers invade our territory. As a group, we have waged a sometimes bizarre campaign against the general public's indifference to understanding exactly what we do. While this may have saved a few trees, the forest remains an enigma.

There is hope. Right now, design-led design-build is whispering in our ears the secret to regaining influence over the built environment. Will we hear the message or continue to turn our backs on the opportunities this presents? As we share our design-build experiences with architects across the nation, we hear many reasons why architects cannot lead design-build:

Ethics. Architects proudly assert that they cannot act in the client's and/or public's best interest if they serve as both designer and builder. It would simply compromise the checks and balances essential to the traditional tripartite process. Ironically, this tells our clients that architects cannot be trusted with their money. The ethical dilemma is a self-fulfilling prophecy that architects helped to create and continue to nurture: the traditional design-bid-build process creates adversarial relationships, which fabricate ethics issues. In response, clients

are opting for design-build, where the designer and builder are one entity. If design-led design-build lacks ethics, we have only ourselves to blame.

Quality. Architects associate design-build with cheap, badly designed buildings. The most arrogant among us believe that only the architect working independently of the builder, and sometimes the client, can protect a project's design integrity. Ironically, project quality is actually diminishing as a result of the conflicts inherent in this system. Projects over budget and schedule often mandate cheaper materials and reduced scope after it's too late. Moreover, we are more distracted with defensive posturing than focused on good design. This lack of quality in product and process is inciting our clients to demand design-build.

Liability. Architects have spent an inordinate amount of time and money trying to distance ourselves from project liability. The irony in the liability debate is that no matter how much we try to contractually isolate ourselves from the builder, our clients always perceive architect and contractor as a team. When there is a problem, it's everyone's problem. When we finally understand our client's perspective, we will understand the concept of a single point of responsibility.

And what are insurance companies saying about design-build? Ironically, they are actually encouraging architects to lead design-build, because statistics reveal fewer claims. Carriers prefer that architects actively manage their risks

instead of just going along for the ride.

We wonder if our message will continue to fall on deaf ears. Like the cobbler's children, the architectural profession has no shoes. Our clients hire us to be visionaries, to create opportunities where they perceive only obstacles. Yet when it comes to the health of our own profession, we react too late, when the opportunities have disappeared.

Design-build offers a chance to recapture professional and financial success. As architects leading design-build, we have found it very close to our original ideals. While we may have assumed more responsibility by controlling both design and construction, we have also expanded our ability to manage risk.

To sustain the profession and the public interest, architects must take the lead in design-build. It places us in the central role of designing and building the highest-quality project for our clients within their budget and schedule. Isn't this what architects are supposed to do anyway? Let's put some irons—not ironies—in the fire. ■

Contributions: If you would like to express your opinion in this column, please send submissions by mail (with a disk) to *Speak Out, Architectural Record*, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.

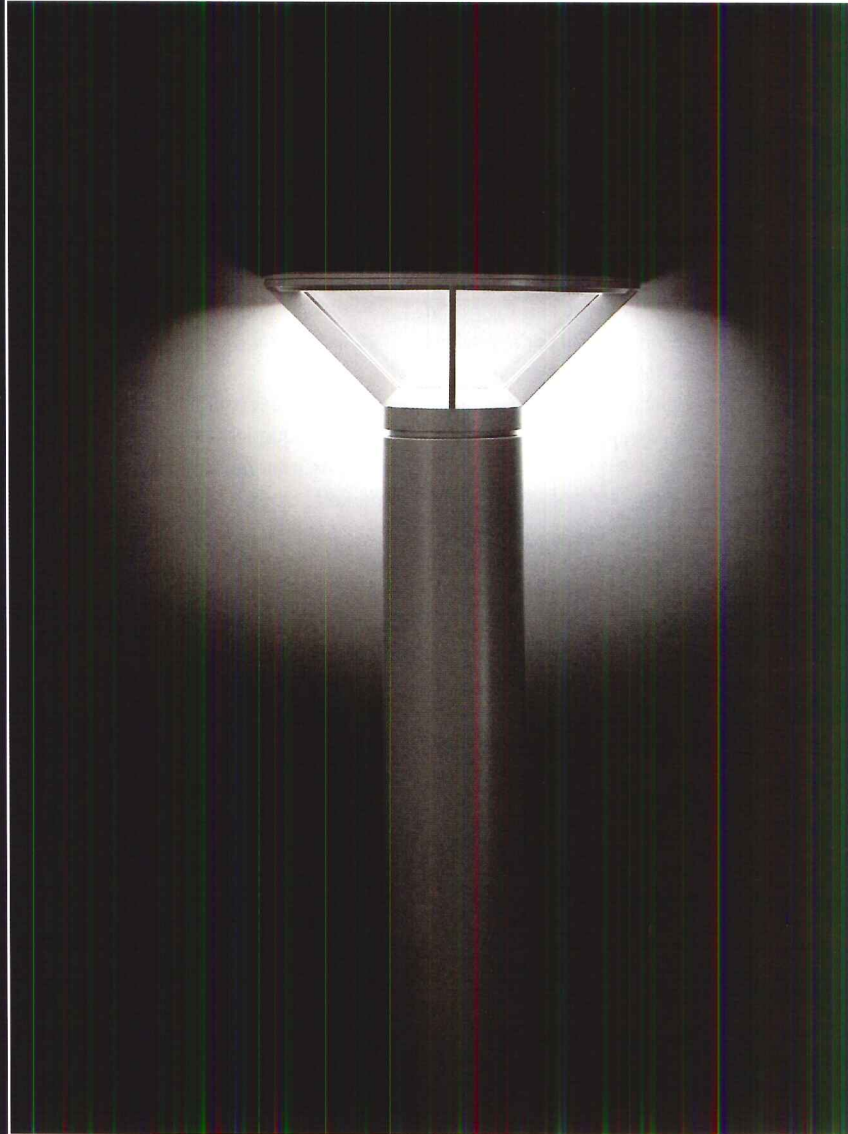
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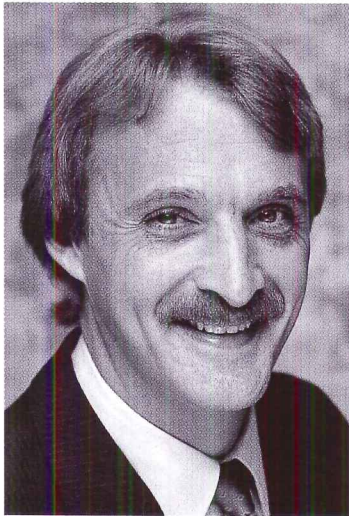


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Circle No. 13

MENTORS Design firms should care as much about managing their learning abilities as they do about managing projects.

Donald R. Levy is CEO of the Rochelle Organization Inc., an education consulting firm in Washington, D.C., and the former head of the AIA's professional development program. He has worked on education issues for many construction-related organizations, and his research has resulted in the development of the "learning maintenance organization," a strategy to maximize a firm's learning capacities.



The ability to learn is critical to an architecture firm because the field is constantly changing—particularly now, in the computer age. RECORD asked consultant Donald R. Levy to give pointers on how practitioners can ensure they and their employees are learning well and correctly.

Top-quality design and service demand superior knowledge and skills. As materials, technologies, markets, design trends, and regulations change, a firm's success will depend on its ability to learn and adapt. To stay the same is to fall behind. Can you afford to know less than your competition?

The firms that do best will be those that think strategically about learning. Firms should approach learning planning and management with as much rigor and discipline as they do project management. The cost of falling behind can be fatal. Training programs are investments the firm makes in its core asset—intellectual and technical capacity. Yet too often computer selection, office design, and marketing programs get more attention.

In many firms, training is assigned to the human resources staff (or the managing partner). Often, HR is primarily a salary-and-benefits operation. Because they aren't trained in learning assessment and planning, don't have the time for it, and are fearful of making mistakes, HR personnel give the task back to supervisors who are similarly unprepared. They in turn consult their staff members, who (research confirms) are not good self-diagnosing learners; they tend to choose what

they're interested in rather than what will remedy deficient practice.

The firm winds up with a lot of money spent on training without any sense of planning or intent, without links to the firm's strategic plans, and without a system to ensure quality product selection or to spread the benefits to other staff.

Inept training not only fails to meet its goals, it will alienate the higher-level talent, confuse the mid-level staff, annoy line workers, and cast a bad light on the management's decisions. Money spent on something that doesn't work is money wasted.

On the other hand, the benefits of better-organized learning are many: better staff acceptance of the firm's goals, a "learning attitude" that helps you stay ahead of competition, increased productivity, more responsive staff management and performance planning, and improved morale. A successful program centers on these issues:

Strategic vision and planning. Where are you going as a firm, and what will it take to get there? What kind of company do you want to be? You need a consistent, logical, well-informed, and widely understood planning system.

Competency analysis. What competencies are required for future success? What knowledge, skills, and attitudes (KSAs) are implicit in the competencies you'll need? Critical thinking skills and impartial observations are imperative.

Learning assessment and planning. What kinds of competencies/KSAs do you have at the moment? What kinds do you need

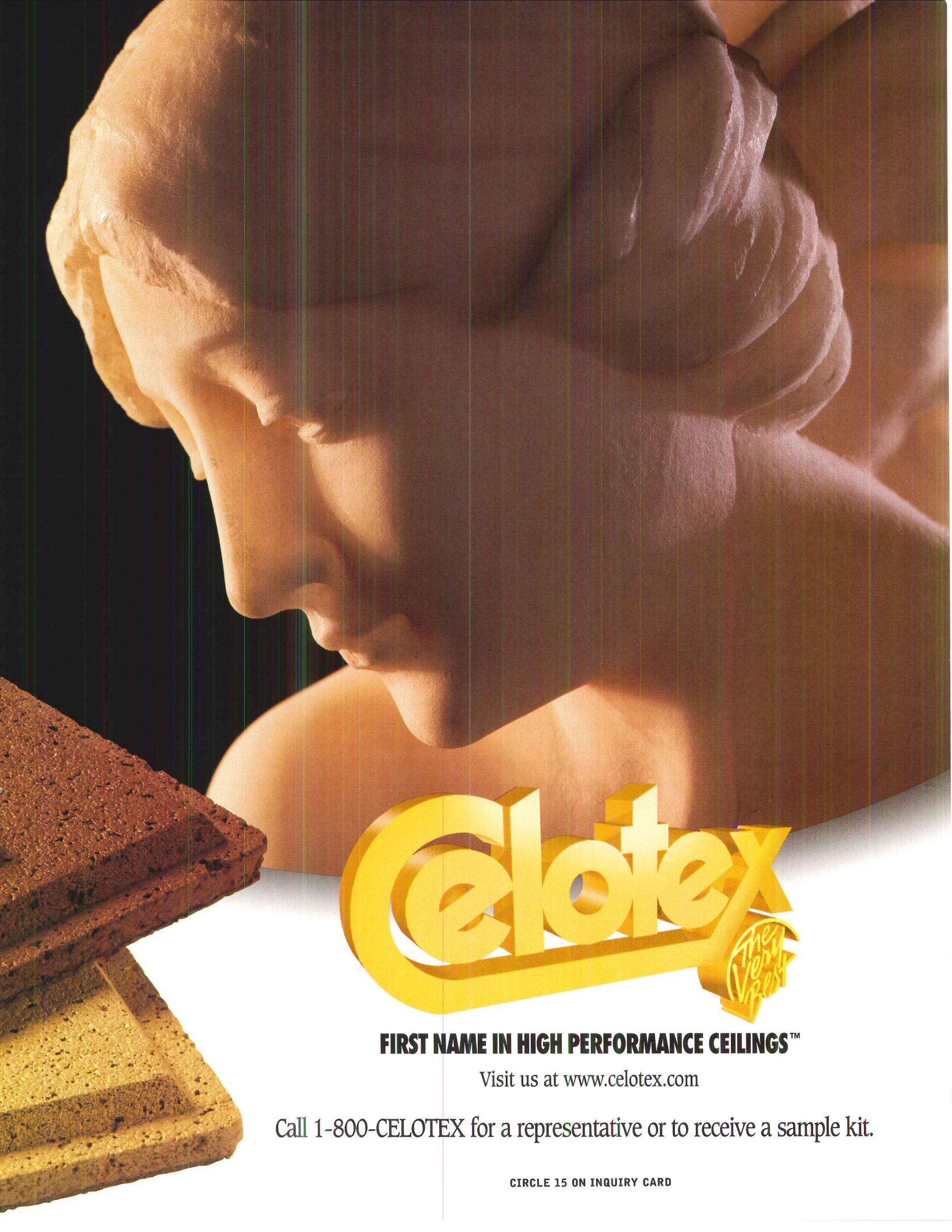
to grow? Where in the firm should these KSAs reside? How can you link learning planning and performance planning? How do you train staff for learning planning tasks? You need tools to measure and summarize KSAs, logical planning systems, and targeted training.

Learning program implementation. How do you ensure that learning occurs in a logical, efficient, and effective way? How can you get the best return on investment and positively affect the most staff? You need program planning and evaluation systems and good ways to maximize the benefits for the firm while addressing individual needs.

Planning your vision. After taking the first steps, see how your vision of the future held up. What progress was made in developing the requisite competencies/KSAs? What's next? You need good, impartial analytical and planning skills.

Think strategically about investment in learning. Professional development is fundamental to good management policy; it is also the foundation of the intellectual capacity of a firm's employees. If you think the cost of training is high, consider the cost of ignorance. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Submissions may be edited for space and clarity.*



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CIRCLE 15 ON INQUIRY CARD

PULSE RECORD readers were asked: Can a new building that ignores principles of sustainable design be considered a success?

No: A building's success is a subjective idea that may be judged against the goals of the inhabitants, the clients, the contractors, or the architects. But if we look at the planet as a closed system, it soon becomes clear that any building not taking responsibility for its existence is failing all of us.
—Eric Corey Freed, Architect
San Francisco

Yes: The success of a building is measured by what it intends to accomplish as defined by the client, the users, and the architect. Just because sustainability is the latest trend in architectural theory does not mean it belongs among the goals for every new building.
—Aida Isabel Latorre
Dallas

Yes: I have a hard time believing

that many of the extraordinarily beautiful innovations of our (mostly) European superstars didn't require equally extraordinary consumption of raw materials and fuel in milling, fabrication, transportation, and erection to come to fruition.
—Tim J. Carter
HNTB
North Bend, Wash.

Yes: Unfortunately, a building that ignores sustainability *can* be considered a success. This prevailing attitude comes at great expense to our environment.
—Brian Roth
Student, University of Idaho
Moscow, Idaho

No: The concept of sustainability is not limited to natural matters. Sustainability includes economic, social, and cultural factors. If the

design of a new building ignores sustainability, it ignores the world around it. Clients and architects alike must be educated that sustainability is not limited to how "green" a building is but is also affected by how it interacts on every level with the world around it.
—Daniel J. Eitman
KTYG Group
Irvine, Calif.

No: As Frank Lloyd Wright said, our buildings should grace, not disgrace, the environment. To disregard technology that saves the environment would be a disgrace.
—Doug Gehley
Vienna, Va.

Yes: The architect, while sometimes able to steer a client toward building ideals such as sustainable design, simply cannot force these ideals on

an owner. Most architects cannot afford to pass up a project because it doesn't coincide with his or her personal ideals. As Wright was reported to have said about an unpleasant commission, "After all, my kids needed new shoes."
—Scott A. Gilbertson
Intern architect
YHR Partners
Moorhead, Minn.

Yes: I think a building can be considered a success even if it ignores accepted principles. If the building is an innovation and implements new design ideas, it is a success. Frank Lloyd Wright is one example. I think every one of his buildings was a great success. They were innovative and did not conform to accepted ideals.
—Basar Girit
Plainsboro, N.J.

This Month's Question

Does the architectural profession need the star system?

In a recent critics roundtable (January, page 69), Cynthia Davidson said that every profession—including architecture—needs its celebrities and heroes. This may be contrary to the opinion of most architects. What do you think about the star system?

Does the architectural profession need the star system? Yes No

Copy and fax this form to 212/904-4256, or, to respond by E-mail, visit www.archrecord.com and click on News/Features/Dialogue to voice your opinion.

Note: Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.

Let us know your opinion:

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CRITIQUE Nostalgia's dead: long live the vigorous, innovative architecture for which the '90s will be remembered.

BY DOUGLAS COUPLAND

Douglas Coupland is the author of *Generation X*, *Microserfs*, *Girlfriend in a Coma*, and other books. He has also written essays about architectural subjects, including airport hubs and the work of Rem Koolhaas. He lives in Vancouver.

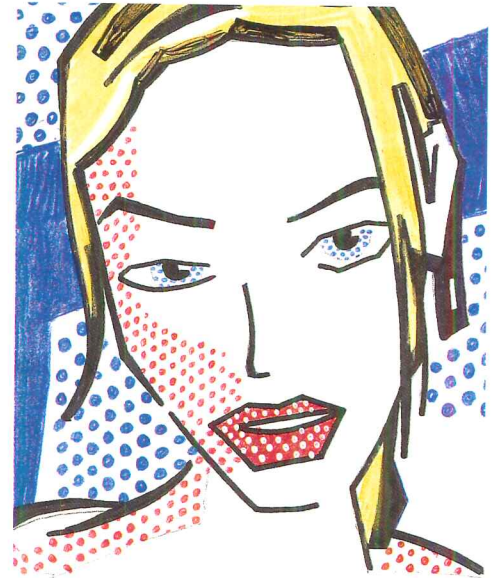
I remember the little lull back at the start of the 1990s, back when the decade was blank and looming, back when the 10 years ahead held for me the allure of a witty-looking *New Yorker* cartoon for which the caption had yet to be written. Dreadful, dreadful, dreadful 1980s buildings littered the landscape like so many concrete Stalinist wedding cakes and cheesy, oversize mimics of Alessi trinkets. It truly felt like somebody had pulled the plug out of history's clock with the hands permanently stuck at, say, 1988.

And then . . .

And then came Grunge. And Generation X. (I plead the Fifth on that one.) And the Internet. And raves. And *Wallpaper**. And the Bilbao Guggenheim and the Getty and the volumes of vigorous, innovative, and compelling architecture for which this decade will be happily remembered . . . the mothership nerve cortex of Berlin's Friedrichstrasse; Steven Holl's Seattle chapel, seemingly carved from beeswax and uranium; Koolhaas's Euralille, a Kraftwerk album converted into plywood, glass sheets, and steel.

Well, *well*. Suddenly, it seems, we have ourselves a stylish decade, and not just any old stylish decade, but a great one. And I find myself considering the decade's textures and allure, wondering, just what makes the 1990s the 1990s? What are its textures? What is unique solely unto it? There's the chewiness of portobello mushrooms and the gleam of titanium cladding. There's the fluid polygons of Lara Croft's body and the shimmer of micropoly-

The world of cyberspace is producing new, ultra-modern icons—as exemplified by Lara Croft, the first computer game superstar.



ester athletic wear. There's the mental room temperature brought on by Prozac and there's the calculated decay of *Raygun's* typography.

At the least, we can say that the 1990s have been a decade of unparalleled technical and biological innovation. Think of Norman Foster's use of trees as air-conditioners, and Santiago Calatrava's algebraic bridges. And just about anything to do with the Bilbao Guggenheim.

Looking at all of this, I'm struck by a core truth of the 1990s: no one is nostalgic anymore. Nobody's harboring moony fantasies about living in the past—not even in such sure-fire time-travel hits as the Bloomsbury Set or the Summer of Love. And it's not even a matter of nostalgia not being what it once was. Nostalgia's *dead*. The past sucks. Right now is good. Right now is darn good. The future might even be—pinch me—better. Witness three of last year's most talked-about films,

The Truman Show, *Pleasantville*, and *Saving Private Ryan*. All reject the canons of the past completely or view them with a refusal to sanitize. *The Truman Show* goes so far as to portray Florida's New Urbanist nirvana, Seaside, as dystopic.

This leads to the next observation about the 1990s: the least successful and least satisfying dimensions of design are those that consciously milk the past—the theme-parking of public life exemplified by, say, Disney's transmutation of Times Square, or Prince Charles's Poundsbury. Can't they come up with something *new*? We're equating design failure with the inability to generate new forms.

Excellent. The 1990s has meant a pleasant recapturing of a sense of optimism about the future, one that got lost somewhere between the introduction of the Ford Mustang and the lunar landing. Modernism, once about as alive as

This is the first edition of *RECORD's* new critical column. Upcoming issues will include writings by William J. Mitchell, Peter Davey, and others.

Walt Disney at two degrees Kelvin, is breathing and dancing. We love Modernism now. It's groovy and sleek. We like it because it embodies a belief that new forms and a better world can be attained through the use of new materials and informed design decisions. We like it because it can elevate us. It speaks to our social conscience as it did to the original Modernists. Gordon Bunshaft is sexy! Wallace K. Harrison is sexier! Brasília is once again . . . *the future!*

But whereas Bunshaft was about 3,000 Jack Lemmon Everymans designing spreadsheets in the veldts of Connecticut, 1990s Modernism is about, well, a half century of Modernism's failures—in particular, the cruelty and ugliness of the 1980s. By now we know what mistakes not to make. We have in our minds a tape loop of the homeless begging along Madison Avenue, and a Pruitt-Igoe demolition scene—except in the new scene, it's Michael Graves's Portland

Building becoming dust, from which rises Kuala Lumpur's twin towers, Renzo Piano's Kansai Airport, and just about every Dutch social housing project since the end of the Bush Administration.

When did the future regain its gleam? For me it was in 1997, at a Vancouver auto show—at the sight of a New Beetle, which I bought on the spot. The New Beetle (below) is a contradiction that proves an earlier point. It's architecture on wheels. It embraces the future by rejecting the past. And it elegantly embodies two of the forces that have given back to us the future: the ultra-democratization of good taste and the use of high technologies and materials for the Forces of Good.

And here's the contradiction: the New Beetle would have worked even if there had never been an old Beetle, just as Koolhaas's neo-

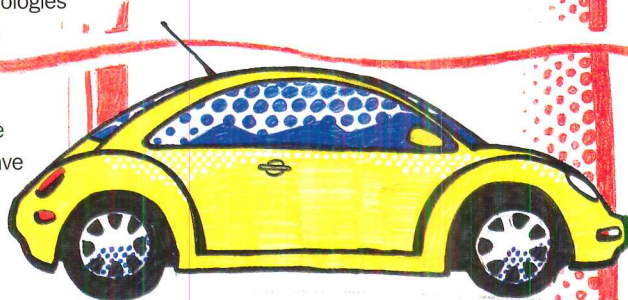
Modernist house in St. Cloud would have worked even if there had never been a Villa Savoye. They're both just darn good works.

It's easy to bitch and moan about the present and get all nostalgic for the past. Crabbiness about the present allows us to live inside a static retro universe of brittle little *New Yorker* cartoons. Get over it. Modernism was about good taste and good design for the masses. And we're getting there. Okay, the Gap and Starbucks are paving the world, but do we want to go back to JC Penney knit shirts and swamp-water java? Restoration Hardware,

Linens 'n Things, and designer homes purchased online really *do* raise the bar of taste for the average citizen. Sometimes it can seem as if the time lag between the Gagosian Gallery and Omaha, Nebraska, has been reduced to about three minutes (or three seconds if you have a T1 connection).

But it's *good* that kids know about Jeff Koons. It's good to find Kona Roast coffee and *mille feuille* danishes in Boise, and it's cool that kids are dressing up as Warhol for Halloween. It's the worst sort of self-conscious, mean-spirited snob who begrudges the rising general taste level of Western industrial culture.

Snobbery these days is, if not dead, certainly a fair whack harder to practice. At the end of the decade there may not be a brittle, wry little caption at the bottom of a year-end *New Yorker* cartoon. There may well only be a fine little illustration. ■



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DIGITAL ARCHITECT Software being developed now will completely change the way architects design, and how they charge for their work.

BY B. J. NOVITSKI

The computer has brought plenty of changes to the architectural profession, but the way architects approach design has remained consistent. Computer-aided drafting, after all, is still drafting; although sophisticated digital technology may intervene between the designer's act of drawing and the final production of blueprints, the initial process and the final result are basically the same.

But the changes in technology within the architecture profession over the last 15 years are minor compared to the tremendous innovations that are coming. Chief among these will be the impact of object-oriented approaches to CAD systems. Instead of graphic representations being the software's primary data, designers will produce electronic definitions for "intelligent" objects such as walls, windows, and roofs, which will reside in a highly complex database.

These objects are referred to as intelligent because software keeps track of their behavior and their relationships to other objects as well as their appearance. Working drawings, schedules, and specifications can be generated quickly from the database of this information, replacing long hours of drafting.

As a result, the time it takes to complete various design phases will shift, and the tedious act of drafting will be replaced by a more decision-

intensive design process. This will affect the traditional roles and relationships within firms. For example, senior designers may have less need to delegate menial work to junior designers, so there may be less low-level work for the juniors to hone their skills on.

The model is key

Future software systems also promise to have the ability to exhaustively define a building through its entire life cycle. No single system has yet reached this goal, but Autodesk and Bentley Systems have come close enough that it's possible to envision the future.

In the scenario suggested by these vendors, a single, unified data model encompasses all the information about a building, from its initial programming through all the phases of design and construction. It serves as an aid to maintenance and operations and even covers the building's eventual demolition.

As the building evolves, the model grows richer in information added by architects, their consultants, and the constructors. This data includes the graphic representation of the building's form, numeric results of engineering analysis, text-based material specifications, project schedules, cost calculations, and more.

A software system that could support all of these types of data and their collection would need to adapt to the changing demands of the users throughout the building's life cycle. The system might be a free-form 3D modeler early in design, a precision component

developer later on, and a Web-based exchange system for those involved in the final stages of construction.

During design development, specialized calculation or generation tools would aid, for example, in

and make specification writing a simpler task.

Clients could track ongoing progress by viewing renderings on a project Web site. Instead of using architectural plans only as background, engineers would add their analysis and design to the same model. The model would support construction processes by displaying length and area data, for example, linking to installation demonstrations on manufacturers' Web sites, displaying site photographs to construction administrators, and tracking project schedules and cost calculations.

Facilities managers would tap the same model for information about maintenance schedules, personnel moves, furniture ordering, and so on. This centralization of information would help improve communications between disciplines and reduce conflicts. Although most of these individual functions are theoretically available now, nowhere are they integrated into a single, streamlined package.

From concept to design

Some architectural software, such as Graphisoft's ArchiCAD, has been "model-centric" for years. As a designer draws in plan in ArchiCAD, a model is created, complete with a third dimension and a database of information about sizes and materials. Renderings and construction drawings are easily generated from this model.

The San Francisco firm of House + House, which specializes in custom residential design, relies on ArchiCAD to do the things they



This new residence in Oakland, California, by House + House, was created in ArchiCAD. The detailed perspective views were manipulated in Photoshop and composited in QuarkXPress.

forming spatial layouts or creating code-compliant stairs, restrooms, and parking lots. As design progresses and materials are defined more specifically, links may be inserted between elements in the database (symbols on a plan) and the Web pages of building product manufacturers. These links could facilitate access to technical data

B. J. Novitski, a contributing editor to RECORD, specializes in computer technology. She is the author of Rendering Real and Imagined Buildings (1998).

couldn't do manually, such as quickly studying spaces from many angles and experimenting with complex color schemes. Firm principal Cathi House says that although she still loves making working drawings by hand, ArchiCAD's capability to move from schematic to detailed design is indispensable in helping both architect and client visualize the proposed design.

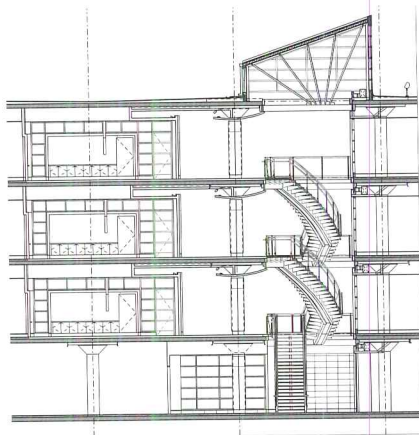
For example, House + House frequently investigates several alternatives during schematic design. "ArchiCAD's 3D modeling capability provides us with a quick method for visualizing massing studies, sun angles, roof configurations, and siting options," she says. "Then, during design development we are able to carefully refine specific building components such as lighting layouts, color schemes, and cabinetry details."

Preparing now for the future

The firm of Burt Hill Kosar Rittelmann Associates has been exploring how much of the ideal scenario of a single, unified building model it can implement with Bentley Systems' MicroStation TriForma. Using solids modeling—the electronic equivalent of modeling with clay—the architects can work with form and space during conceptual design. Then they attach attributes, such as those related to thermal or structural performance, to that same model, which enables them to explore various technical considerations of materials and construction.

From the TriForma model, they are able to generate 3D perspectives for client presentations and extract 2D plans, sections, and elevations that will eventually be used as the base for construction drawings. Any modification to the 3D model will show up in subsequent 2D extractions, though TriForma is not yet "bidirectional," able to automatically reflect edits in the 2D drawings back to the model.

Burt Hill is now customizing the software to fit the firm's standard practices and organizing their com-



Burt Hill Kosar Rittelmann is renovating an operations building in Maryland for the General Services Administration. The model in MicroStation TriForma (below) outputs precise 2D line drawings (left) and perspectives.



ponent libraries—the object equivalent of traditional symbol libraries. Once these libraries of materials are set up, generating cost estimates, schedules, and specifications will be simple and quick. "We're now going through several pilot projects to get a feel for what the work flow will be in the future," says associate Mark Dietrick, AIA. "It will take a little more time up front to define the correct components. But once the component library and the detailed 3D model are built, the time needed in the construction documents phase will go down dramatically."

The firm focuses on energy-sensitive design; ultimately, it plans to develop strong links between building models and existing analysis software for energy, daylighting, and acoustics. This will enable the architects to apply analyses without reformatting and reentering the building data.

Eventually, Dietrick says, the firm will develop a large library that

will embody, in effect, its collective knowledge about building components and construction methods. "It's not always possible to schedule the ideal team," he adds, "but we can benefit from the expertise of everyone in the firm because the components they have built for other projects will be part of our knowledge management system."

For now, making this new process work requires teamwork between the junior designers, who are more facile with modeling, and the senior designers, who know more about design and construction technology.

Changing roles

At Hellmuth, Obata + Kassabaum in San Francisco, chief information officer Ken Young, AIA, is evaluating the firm's entry into the world of object-oriented design software through Autodesk's AutoCAD Architectural Desktop. Although HOK is already a leader in promot-

ing object-oriented software, Young admits it is difficult to take the needed time to redesign future processes while under everyday work pressures. Autodesk is helping to ease the transition by integrating new object-oriented software within the existing Auto-CAD R14 and other architectural applications.

As this software becomes more common and more widely used, architects will learn to see their design work as a kind of database, instead of as independent, labor-intensive documents. As a result, senior designers will be able to make decisions earlier in the process by interacting directly with the software tools.

There's a potential downside to this new way of working. It's likely that there will be less work for inexperienced architects and interns as the intelligent software eradicates the need for the menial work normally relegated to them. This suggests that the nature of mentorship will need to be reevaluated to give junior staff alternative ways to learn.

A less labor-intensive process may also change the way architects charge for their services, since producing construction documents will take less time but give the client more long-term value. "The client will receive a valuable database that will serve for the life of the building," Young says. "If we make sure they compensate for it correctly, this could have significant economic ramifications for the profession."

Young cautions that preparing for object technology should not be left up to a few adventurous firms. "We're not going to reap all the advantages of this technology until the majority of the profession is on the same page," he says. "It's still early enough in the process that anyone who wants to get involved can help set the direction in which the profession will evolve as a result of the new technologies. Now is the time to start learning how to use these tools properly and to figure out how they will affect our processes." ■

VAN GOGH WORKS SET TO RETURN TO A REVAMPED AND EXPANDED HOME

The renovation and expansion of Amsterdam's Van Gogh Museum is entering its final phase. The world's most comprehensive collection of works by Vincent van Gogh has been housed since its opening in 1973 in a distinctive building of interlocking cubes, designed by Dutch architect Gerrit Rietveld (1888–1964) and built after his death.

But the museum, built to accommodate just 70,000 visitors per year, has been taxed beyond its capacity for many years; in 1997, it drew more than 1 million visitors.

Now a new, 55,000-square-foot wing, designed by Japanese architect Kisho Kurokawa, is being readied to house temporary exhibitions, while the extensively renovated Rietveld building will continue to house the permanent collection. (Many of the paintings have been traveling during the revamping, in an exhibition held at the National Gallery of Art in Washington, D.C., among other venues.)

East meets West

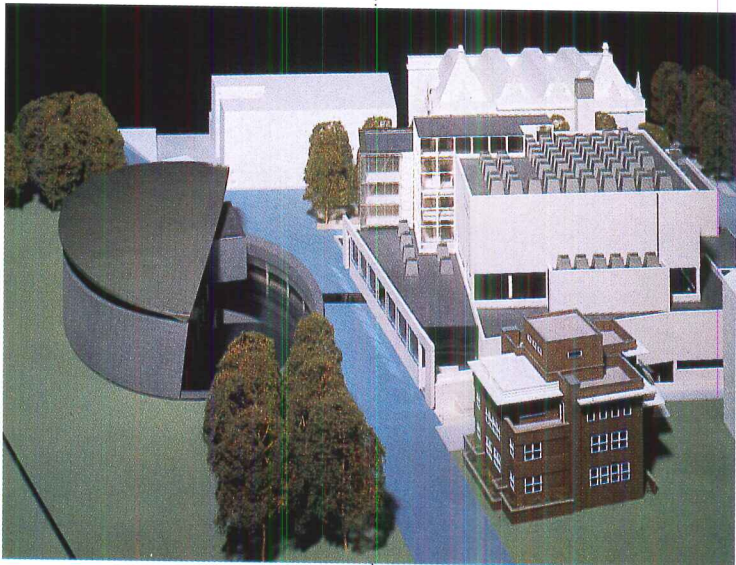
Kurokawa says his design is an attempt to forge a symbiotic relationship between Japanese and European design principles. He has placed his new wing on an elliptical

plot, with half the ellipse occupied by the stone and titanium-clad, 45-foot-high building and the other half occupied by a garden and pond.

The building, funded by a \$20 million gift from Japan's Yasuda Fire & Marine Insurance Company, stands apart from the Rietveld building, with the garden forming a visual link between the two and an underground passageway providing the physical connection. An aluminum cube, partly protruding from the flat wall facing the Rietveld building, houses the print collection.

The Amsterdam-based firm of Greiner Van Goor has taken on the Rietveld renovation, which includes the redesign of the public foyer and ground-floor area, construction of the connection between the old wing and the new, and new office space.

The museum is scheduled to reopen on June 24 with a show focusing on Vincent Van Gogh's younger brother, Theo. Later in the year, Amsterdam will celebrate its completely refurbished, auto-free Museumplein, around which the Van Gogh Museum, the Rijksmuseum, the soon-to-be-renovated Municipal Museum, and the Concert Hall are clustered. *Jim Wake*



A TALE OF TWO STATIONS Michigan Central Station in Detroit and New York's Grand Central Terminal were both constructed in 1913 from designs by Warren and Wetmore. But the current scenarios of the two buildings could scarcely be more dissimilar. While Grand Central is lauded for an extensive renovation project concluded last year (see story, page 84), Michigan Central is now run-down and isolated. The cavernous space contains three vaults, held up by columns, that articulate the main hall, which is lit by three large, iron-framed windows. On sunny days, lunettes on both ends bring in a flood of light. But over the years, windowpanes have been broken, the iron roof has gotten rusty, and glass and plaster have piled up.



The building's current owner, the Michigan Central Depot Limited Partnership, is reportedly considering several options. But for now, the station serves as an art gallery of sorts; poetry, paintings, and graffiti have appeared, and in December, a sculptor placed a small figure in the station: a standing woman, frozen in place. *Camilo Jose Vergara*

AT AIA, GORE PLEDGES SUPPORT FOR MORE "LIVABLE" COMMUNITIES

Sounding a probable presidential campaign theme, Vice President Al Gore allied himself with "the livability movement" in a January speech at AIA headquarters in Washington. He proposed "by far the single largest investment in 'smart growth' and sound community planning in all of our nation's history."

By embracing historic neighborhoods as well as new suburbs, where proximity to employment and day care would allow residents to replace commuting time with family time, Gore appealed to city dwellers and suburbanites, preservationists and developers, champions of family values and families on welfare. The vice president also equated smart growth with smart business.

"Livability doesn't just generate common sense, it generates dollars and cents," he said, noting that companies often locate where "quality of life is high; that is where qualified people want to live."

Attempting to clarify the federal government's role as neither a "beauty commissar" nor a land-use planner, Gore said, "It is our job to learn from communities' successes" and provide the resources needed

to preserve green spaces, ease traffic congestion, and promote regional cooperation.

He proposed a package of broad initiatives, as part of the Clinton Administration's fiscal 2000 budget proposal. Most ambitious is a five-year, \$700 million Better America Bonds program enabling lenders to claim tax credits if they give interest-free loans. Gore claimed that the initiative, aimed at preserving parks and open spaces, protecting water supplies, and recycling abandoned industrial sites, would generate as much as \$10 billion in new investments in these areas.

In a separate initiative, up to \$6.1 billion would go to communities to develop alternatives to clogged highways. Gore called this "the single highest investment in public transit in the history of our country." An additional \$1.6 billion will go to state and local efforts to reduce pollution and congestion.

In a final recommendation, Gore said schools and civic buildings should return to their pre-World War II role as "anchor stones for the architecture of community." *Andrea Oppenheimer Dean*

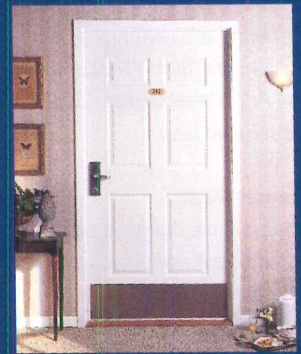
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AN ALL-STAR CAST DESIGNS GUADALAJARA'S MEGAPROJECT

After years of architectural silence in the city that gave birth to Luis Barragán, the greatest Mexican architect of this century, a proposed cultural and business center is spurring activity in Guadalajara. Twelve major architects are involved with the project, the vision of businessman Jorge Vergara, owner of vitamin-drink maker Grupo Omnilife, and work is ready to begin soon.

Plans for Vergara's center, which covers more than 750 acres, range from fairgrounds and a convention center to a new university and a *palenque*, a traditional cock-fighting ring, which here will be used for other types of entertainment.

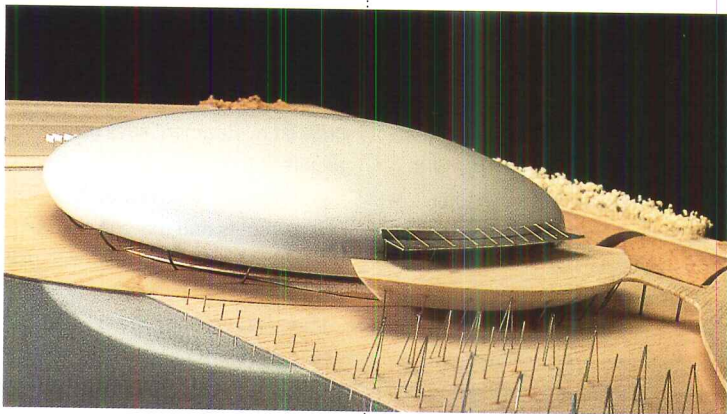
Overall, the project is intended to function as a veritable museum of contemporary architecture. It is being led by TEN Arquitectos

life's new corporate headquarters; and Philip Johnson, a children's museum.

Libeskind's university is structured in four eight-level prisms, which intersect and form patios. Each prism is of a different material and represents a different culture. Holl's proposal consists of two-story apartments interlaced in an L shape, developed around five patios that respond to the forms of the adjacent hotel.

Thom Mayne's 6,000-capacity covered palenque is a truncated, inverted cone anchored to the ground; it recalls the inclined planes of pre-Hispanic architecture. Williams and Tsien's amphitheater likewise uses inclined planes; their theater will seat 8,000.

Toyo Ito's museum is a deli-



(Enrique Norton and Bernardo Gomez-Pimienta), who did the master plan and designed the convention and exhibition center (above).

Among the other architects involved are Carme Pinós of Barcelona, who will likely do the fairgrounds; Morphosis (Thom Mayne) of Los Angeles, the palenque; Coop Himmelblau (Wolf Prix) of Vienna, a mall and movie theaters; Daniel Libeskind of Berlin, the university; Tod Williams and Billie Tsien of New York, an amphitheater; Frank Gehry of Los Angeles, who is considering designing some of the theaters; Toyo Ito of Tokyo, a museum; Steven Holl of New York, housing and a hotel; Jean Nouvel of Paris, Omni-

cate, 240-meter-long prism enclosed by glass, with intermediate screens for projecting images. The simplicity of his proposal lends itself to Asian subtlety, and a meditation room is included as part of the plans.

TEN's convention center is a 780-foot-long oval featuring a fluid play of elliptical perimeter ramps, which enclose the central part of the exposition hall. A skeletal covering supports the translucent Teflon-coated skin.

Work on selected parts of the project starts this month, with a major push slated to begin in December. Completion is expected in 2003. *Miquel Adrià*



BOSTON'S CITY HALL PLAZA EDGES NEARER TO OVERHAUL

Boston's vast City Hall Plaza is getting closer to a major renovation. The plaza is the legacy of an urban renewal project that leveled a huge section of old Boston in the early 1960s, with the goal of revitalizing a weak economy. Now that Boston has revived financially, the city is acting to make its 1960s public spaces more livable.

The redesign is under the aegis of the private, nonprofit Trust for City Hall Plaza, chaired by developer Norman B. Leventhal. Leventhal organized the highly successful creation of Boston's Post Office Square, completed in 1991 to designs by Ellenzweig Associates of Cambridge and the Halvorson Company of Boston. The public control and private financing of that project are the models for the much bigger City Hall Plaza, where \$25 million of capital improvements, as well as ongoing maintenance, are expected to be funded mainly by private sources, though the General Services Administration will likely become involved.

The new process depends on consensus building; multiple public entities, civic and private groups, and businesses have had to agree in order for the project to go forward. A major piece could be falling into place now that the GSA is considering demolishing the long, low wing of its 1966 structure on the north side of the plaza, designed by The Architects Collaborative (left in photo above). The GSA had opposed

plans for a new hotel on this site, but the agency now appears to be amenable to construction of the hotel along with a new office tower of its own.

The City Hall remains

The centerpiece of the plaza will continue to be Kallmann, McKinnell & Knowles' Brutalist City Hall—a building admired among Boston architects but disliked by many others, including Mayor Menino, who last year proposed to sell the building and move out (he did not follow through). Proposals for renovating City Hall include replacing grade-level parking with commercial space, glazing its light well to create an atrium, and making a new ceremonial entry accessible to vehicles.

In addition to the new hotel, other elements of the trust's proposed design include a tree-shaded green, a glass-enclosed winter garden, and an interactive fountain covering nearly half an acre. Hanover Street, one of 18 local streets eliminated in the 1960s, is to be rebuilt, rejoining the plaza to the historic North End.

Cambridge architects Chan Krieger & Associates and landscape architects Hargreaves Associates designed the trust's various improvement proposals, while Boston architects Koetter Kim and Associates Inc. designed the proposals for redevelopment of the GSA properties. *Jonathan Hale*

FAR FROM THE LOOP: CHICAGO FIRM GOES TO MAURITIUS

Loebl Schlossman & Hack/Hague Richards, a 100-person Chicago firm, continues to land work far from home. In the past five years, it has won five of seven international competitions it entered for projects in China, Chile, and, most recently, Mauritius, an island nation located in the Indian Ocean, 500 miles east of Madagascar. The firm's scheme for the Port Louis headquarters of the Bank of Mauritius, the country's national bank, features a 200,000-square-foot, 23-story cylindrical tower whose base abuts two existing low-rise bank buildings. The firm linked these together and incorpo-



rated them into the new design at the client's request. Rather than downplay the difference between new construction and old with a uniform exterior, the firm gave the smaller structures a layered facade treatment that contrasts with the smoother surface of the glass-and-granite-clad tower.

Sensitive to potential criticism that they have created "a parachute building, something from the West dropped into the culture," firm principal Donald J. Hackl, FAIA, notes that the "only vernacular in Mauritius—a French colonial style in residential buildings—wasn't appropriate for a tall building. We created a cylindrical element, a traditional form which is stable, efficient, and timeless." The top two floors, he added, designated for boardrooms and offices of the Governor of Mauritius, form a wedge, a shape implying "an aggressive posture, movement to the future."

Designing for a tropical climate, the firm ringed the tower with sunshades that also function as catwalks for maintenance crews. The program also required spaces for daily food operations and special events, which Hackl and his associates combined in a single, two-story space leading to a rooftop garden. The project, budgeted at \$40 million, is scheduled for completion in September 2000. *Thomas Connors*

SEATTLE'S MEANY HOTEL RETURNS TO PAST DESIGN GLORIES

When designed by architect Robert C. Reamer in 1931, the Edmond Meany Hotel in Seattle was a model of American Art Deco form. Showcased in a portfolio of apartment and residential hotel buildings in the March 1932 issue of *Architectural Record*, six years later it was among 100 buildings deemed representative of distinguished American architecture in a traveling AIA exhibition.

Over the next 60 years the structure suffered from unfortunate redesigns inside and out, but a new \$5 million renovation by architects NBBJ, for client Starwood Lodging Corp., has allowed the Meany to reclaim its original integrity.

The 18-story hotel, named in honor of a popular professor at the University of Washington, was the first continuously poured slip-formed concrete structure in the Northwest. It also represented the last major project completed by Reamer, an Eastern architect who moved west to build such projects as the Fifth Avenue Theater in Seattle and Old Faithful Lodge in Yellowstone National Park.

During the recent renovation, the project team "was responsive to the various surprises found during the demolition and construction phases," says NBBJ principal Rysia Suchecka, Assoc. AIA. The architects uncovered and then restored the



main lobby's original terrazzo floors, original staircase, colonnade, and mezzanine level, which had all been obscured by the many previous interventions.

"Our main goal was to restore the clarity of the interior spaces and reinstate the original perspectives created by Reamer," says project architect James Skog.

Wherever feasible, existing design motifs and materials were reused and complemented with new details such as custom metal screens and railings. A new café was added at the lobby level to encourage more interaction with the neighboring streets, and the entire infrastructure, including guest room telecommunications, was upgraded. Throughout, contemporary furnishings and finishes share an affinity with Art Deco without creating a period piece.

The Meany's concrete facade was pressure-washed and treated to prevent further seepage, while a new base color of deep green is augmented by the original chevron-patterned ornamentation, which was painted silver.

As a final nod to Reamer, the typography of new exterior signage is based on his original lettering, while supergraphics along one elevation also reinterpret his designs. *William Weathersby Jr.*

NEW YORKERS IN THE WILDERNESS New York City architects Dennis Wedlick and Robert A.M. Stern are going back to traditional Western American styles for a project in Colorado. A new development called Aspen Highland Village, a ski resort being built by Hines Resort Development with an eye to opening in 2001, will include a conglomeration of retail shops, restaurants, condominiums, and various skiing and tourist facilities designed by Stern, flanked on the south and north by Wedlick's Marron and Thunderbowl townhome neighborhoods.

Stern's design for the village was inspired by National Park buildings dating from early in the century—such as Old Faithful Lodge (see story at right) in Yellowstone—along with traditional European ski villages. The resort will rely on a small scale to create a pedestrian-friendly, neighborhood feel, and will include many stone walls and exposed rafters and beams, as dictated by the requirements set by Hines.

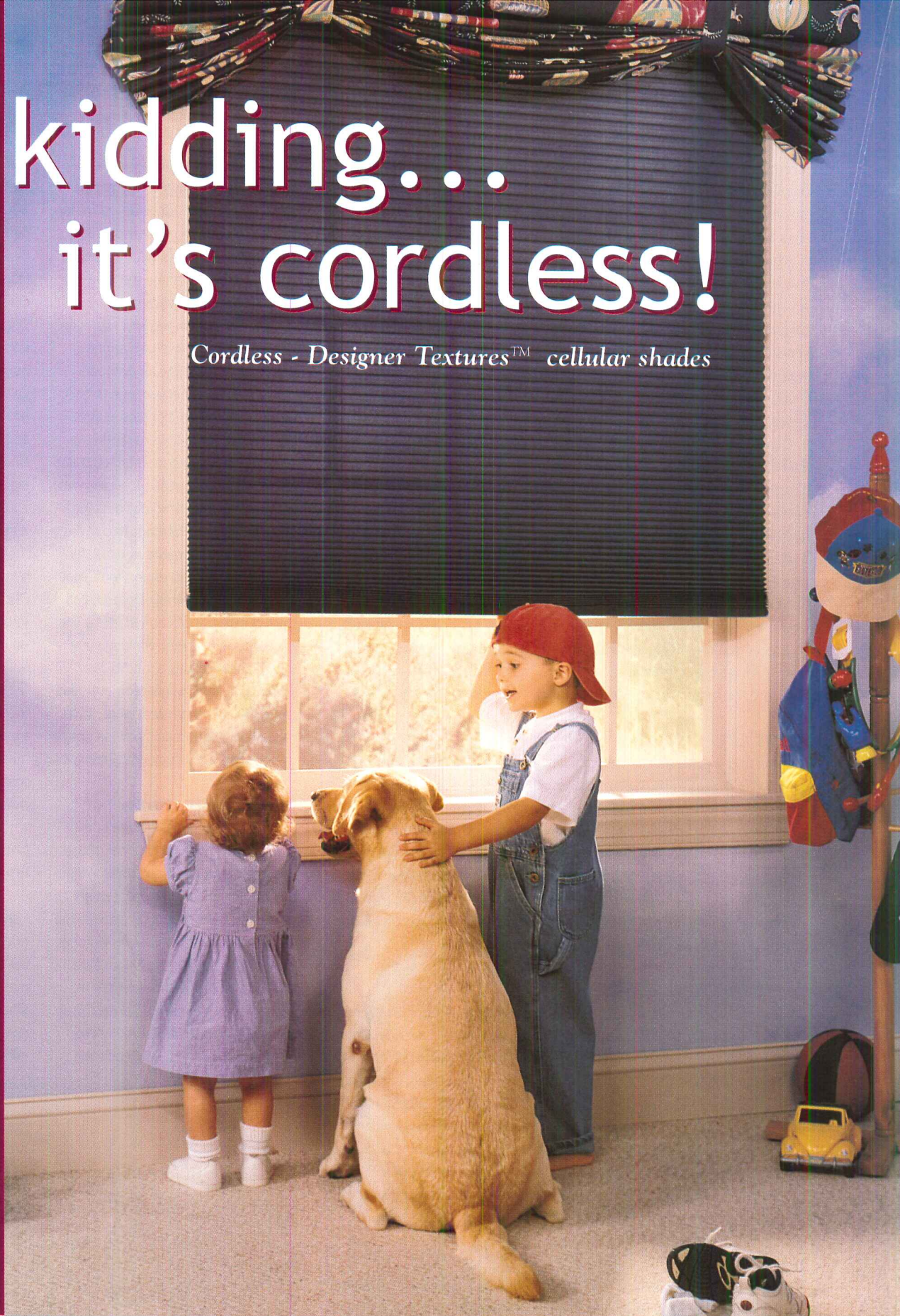
Wedlick, a protégé of Philip Johnson, worked within the style guidelines developed by Stern and set out to capitalize on the site's views and abundant sunlight. His 32 ski-in/ski-out townhomes will include dry-laid stone walls and rusticated siding, and wood roofs with large overhangs. The residences will be clustered in groups of two or three and arranged in a cloverleaf pattern with each unit facing a different direction, enabling each home to take optimum advantage of the surrounding views. "The developer wanted each unit to have an individual feel," says Wedlick. "We were able to do this while staying within the rustic parameters." *Soren Larson*

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ROGERS COURTS CONTROVERSY

According to *The Architects' Journal* (London), Richard Rogers is bloody mad that newspapers have reported his new courthouse in Bordeaux, France, to be “non-functional” and that the architect may be sued over cracked glass. “It is called slander by innuendo . . . the client has said it is totally functional and I’m told it is working very well,” Rogers told the magazine. Nearly 20 of the 74 glass fins on the building’s facade have cracked, however, and the French justice ministry commissioned Ove Arup to investigate why. Arup’s reports were to be confidential, but Rogers says that the problem was traced to deformations in the attaching plates. A solution is being worked out, he says. Meanwhile, filters covering the glass fins ensure that no one will get hurt if they break.

QUIET WORKER

The work of French architect Jacques Hondelatte, celebrated in the November issue of *L’Architecture d’Aujourd’hui* (Paris), suffers a lack of recognition, perhaps because it’s so hard to visualize, the magazine says. The architect relies almost exclusively on plans to represent projects; sections and elevations are rarely utilized. He leaves out direction and scale, and is spare with technical details because they are “implicit.” “Perhaps he makes his projects difficult to access [to] encourage people to actually look at how they work,” writes Marc Emery. “At a time when hype and overblown values have moved in all around us, this is little more than basic wisdom.”

STATIC ART

Every other art form has experienced its radical transformations, writes Ole Bouman in the November *Archis* (Rotterdam), so why is it that architectural photography remains so stubbornly classical? “It is exclusively make-believe imagery; as if architecture is clean, unaffected, unused, clear-sighted,” he writes. “With exceptions, architectural photography has persistently denied the cultural history of this entire century.” Unfortunately, architectural photography is subject to the authority of architects, who are often its patrons, inhibiting the field’s journalistic potential.

GATT GOOD FOR BWB’S

If Malaysia goes ahead and implements the General Agreement on Tariffs and Trade (GATT), Malaysian architects will lose out, says architect Tuan Hj Mohd Fazillah Ali. Hj Fazillah told *Architecture Malaysia* (Kuala Lumpur) that local architects just can’t compete yet with experienced foreign architects. “There also seems to be prejudice on the part of local clients and even the government that ‘whites’ are better,” he said. He suggests that one way to compete with the “Big White Boys,” or BWB’s, is to specialize. Arkitek FAA, Hj Fazillah’s own firm, for instance, is one of the country’s most successful designers of sports and education facilities.

DESERT BLOOM

“Vegas has gone green,” writes Paul Davies of the city’s newest resort hotel, the \$1.6 billion Bellagio, featured in the December issue of *Blueprint* (London). Inside the 3,000-room hotel, which is themed after the village of Bellagio on Lake Como, an atrium displays 20,000 real chrysanthemums. The flowers are always fresh; they’re replaced daily. —compiled by David Simon Morton

HONG KONG’S LANDFILL IDEAS RUNNING INTO OPPOSITION

Landfill, which in Hong Kong is euphemistically called “reclaimed land,” has traditionally been a major focus of the city’s infamously fast-paced development. With future building now stalled by the Asia-wide recession, government-sponsored landfill projects represent one of the few areas of planned growth. But recently, an unprecedented chorus of objections to two such projects has signaled a shift in public attitude toward landfill.

The reclaimed land projects are driven by an aggressive government program for infrastructure development and a commitment to building both public and private housing for an expanding population. Reclaimed land provides centrally located, flat sites, which are auctioned off by the government. Current plans include 3,205 acres of future landfill over 14 sites, which the government sees as key to urban renewal since it will relieve congestion and provide space to house those displaced by renewal.

Concern for the harbor

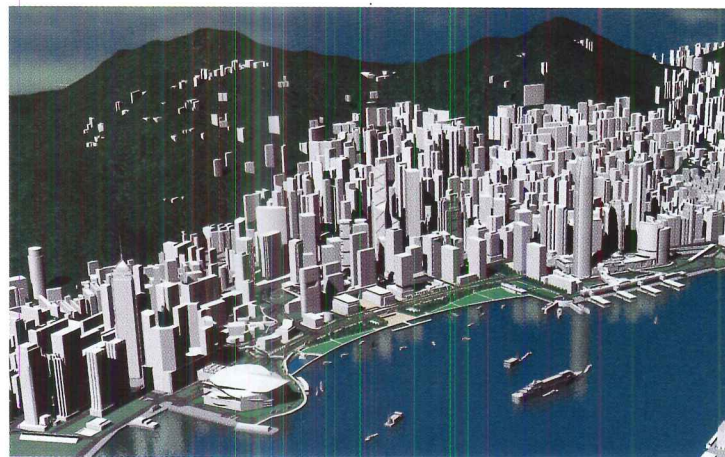
But concern over the design quality of some of the developments, along with their economic and environmental consequences, has created an alliance of diverse groups opposed to filling in more of picturesque Victoria Harbor. The 1,431-acre South East Kowloon development would fill in 739 acres of the harbor surrounding the now defunct Kai Tak Airport to build housing for 320,000 people;

the two-month period for public comment on the plan resulted in over 300 formal objections, an unprecedented amount.

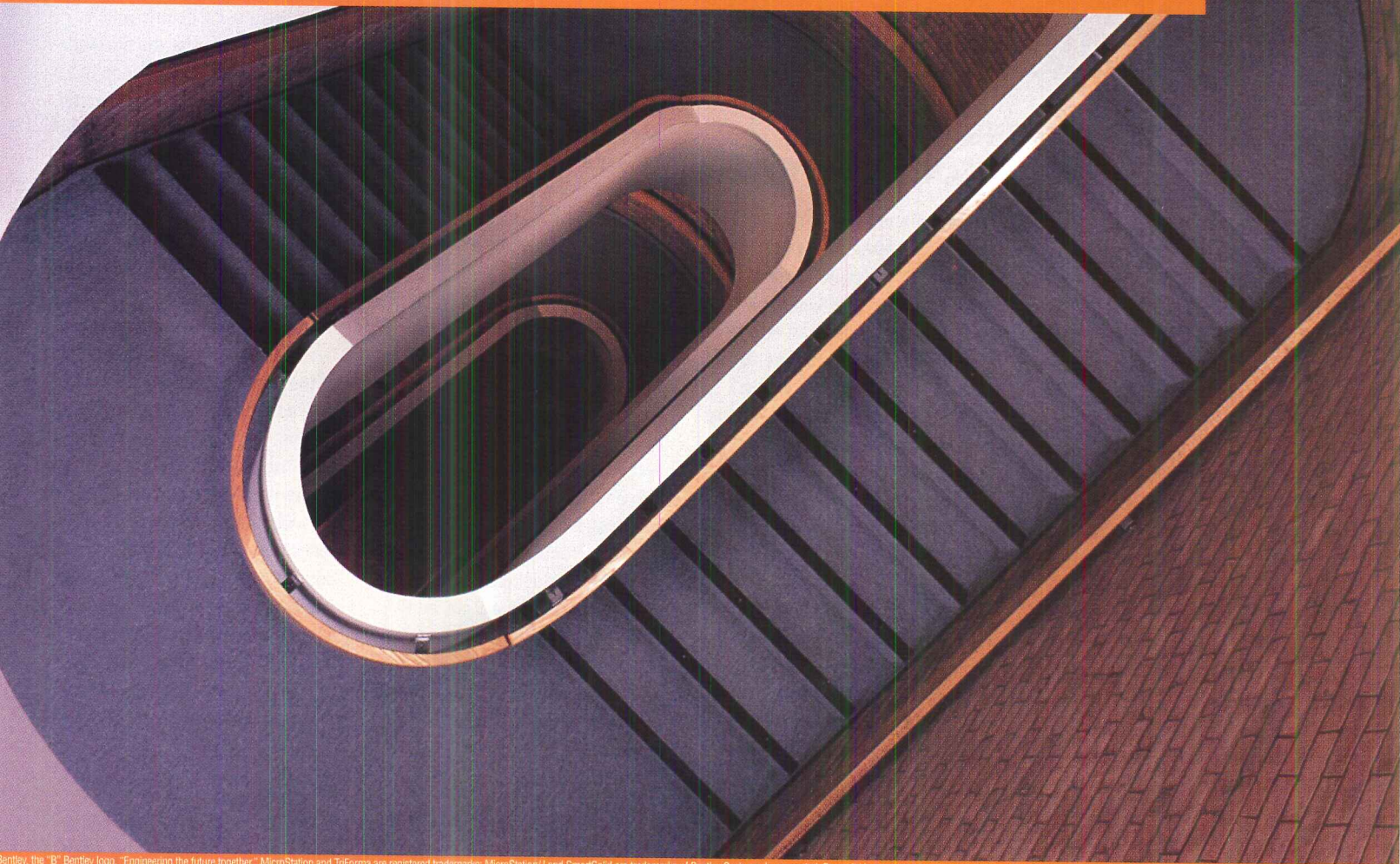
Across the harbor, adjacent to Hong Kong’s Central Business District, the 220-acre Central-Wan Chai reclamation also received objections, coming from the general public as well as environmental groups, the Hong Kong Institute of Architects (HKIA), the Hong Kong Institute of Engineers, and some of Hong Kong’s major developers, including Swire Properties, Hong-kong Land, and Great Eagle Holdings. Several had alternative plans; the HKIA plan reduced the landfill by half, reflecting what spokesman Cheung Kwong-wing calls “the strong belief that Victoria Harbor is an invaluable asset.”

Swire Properties wanted to “act as a catalyst for a change in the thought process,” according to managing director Keith Kerr, when it hired Skidmore, Owings & Merrill to create a plan (below) with only 40 acres of landfill. “Without the harbor, what is Hong Kong?” asks Winston Chu, chairman of the Society for the Protection of the Harbour.

Responding to the outcry, the Legislative Council has unanimously rejected the government plan, denying funding for the next stage of planning, and the government has since backed down, agreeing to rework its strategy in order to minimize landfill. *Jack Robbins*



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CIRCLE 28 ON INQUIRY CARD



SHOPPING AND HOUSING MIX IN NEW KANSAS CITY MALL

Shopping malls are known to siphon crowds away from Main Street, but a retail-based development planned for Kansas City is set to compete with nearby suburbs when it offers locals both shopping and housing.

The new Towers at Zona Rosa—sited just 10 minutes from downtown—will include one- and two-bedroom loft-style apartments situated atop boutiques and cafés. Anchor stores in the 24,000- to 30,000-square-foot range are also planned, and project architect Bill Fowler of Gould Evans Goodman Associates says interest among potential retailers is strong.

Not the typical developer

Inspiration for this unconventional development on a former agricultural site comes from an award-winning documentary filmmaker and professor raised on the land. Not interested in a straightforward neighborhood strip mall, she has instead planned what her architect describes as a veritable community, featuring sidewalks paved with colored concrete, decorative street lamps, and sidewalk café tables with market umbrellas. Although apartment residents will use underground lots secreted below the buildings' retail level, pedestrian-oriented streets will permit parallel parking.

Similarly, Kansas City's historic and successful Country Club Plaza, which sparked copycat shopping villages across the United States, and utilizes on-street parking and was developed without the setbacks now required at suburban retail strips. Fowler said the plaza has proven an indispensable example in discussions with the city—especially since the proposed mall is among

the first in the area to follow progressive planning principles. Fowler says city agencies have granted approvals and variances to give Zona Rosa its pedestrian-oriented and ecologically progressive assets.

The development will host indigenous plants, rainwater will be collected on-site, and an area on the northern edge will remain undeveloped. The architects also hope to link with nearby residential streets—despite the fact that for many suburbanites the horror of living adjacent to a mall is second only to the idea of living in one. “We are convinced the neighbors will want to connect. It’s a matter of being able to let the kids walk to the store,” Fowler says. *Craig Kellogg*

SOLAR-PANELED COMPLEX IS UNIQUE IN CENTRAL EUROPE

The conversion of a 30-year-old apartment tower in Budapest's Buda-keszi area into an energy-efficient solar-paneled complex could shine new light on architectural design in Hungary and possibly the rest of Central Europe. If the project goes through, the building will become the region's first solar-powered high-rise structure.

A proposal put forth by Energy Efficiency Development Ltd., the general agent in Hungary for BP Solar Ltd., calls for the application of tinted photovoltaic (PV) panels to the facade of the 10-story tower and the placing of a domed PV system on the roof, giving the structure a futuristic look.

The proposal offers two options. The first utilizes a rainscreen system incorporating a glazed PV thermal wall on the southeast and southwest faces of the tower and a glazed PV canopy over the entrance area. Collected heat would be transferred to the roof level to support

solar thermal collectors, which would heat water for the building. “This is the most sophisticated version; the system that provides the most electricity,” says Charles Cook, Energy Efficiency's managing director.

The second option, says Cook, “is a slightly less adventurous design that minimizes installation costs but still provides sufficient PV electricity to make a significant contribution toward the electrical load of the building. It also does not provide as exciting an appearance as the first option.”

The building, located among sylvan hills on the Buda side of the Danube, belongs to the state-owned real estate firm CD Hungary and is currently home to members of the foreign diplomatic corps. Because CD is undergoing management changes following the election of a new government last May, no decision is expected to be made for four to six weeks. *Carl Kovac*

SENIORS WITH STYLE Conforming to a flatiron footprint, Berkeley-based Kava Massih Architects has designed the Avalon, 67 units of low-income senior housing in Emeryville, California, on a site that was originally the city's main transit terminal. When Massih was called in, the site held two buildings—a hotel and a bank—and the architects produced a scheme in which the existing structures were refurbished and vertically extended. But the cost of bracing the brick walls and upgrading the openings was prohibitive—adding an extra \$1 million to the \$5 million budget—and the developers, Catellus & EDALDC, opted for construction of a new four-story, 55,000-square-foot building instead. It is slated for completion next spring.

“The triangle dynamic required special considerations for residential [design],” says Kava Massih, who placed the larger units with balconies at the apex to maximize the end space and overhanging the property line with bays to gain width.

In addition, the building's location between two converging streets of diverse character dictated different side elevations. On the west, San Pablo Avenue is a major East Bay artery, and “breaking up that elevation into traditional residential bays would have

been inappropriate for a civic-scaled street,” explains Massih. The design reduces the scale and “keeps it from looking too institutional and old-folksy.” A single 90-foot bay of wood siding, painted yellow, encases three four-window blocks set into corrugated steel.

On the opposite side, five identical steel-framed windows protrude from the taupe-stuccoed surface. Notes Massih, “I wanted to maintain a connection with the area, and [Bay Area] Victorians all have windows that nicely contrast with the building's plane.” In line with the boatlike configuration of the site and its marine setting near the base of the San Francisco–Oakland Bay Bridge, the apex is a column of curved balconies made of bent perforated steel. The balconies—as well as the roofscape, with its colored light scoops servicing a lower central courtyard—were designed to add a sculptural quality. *Terry Bissell*



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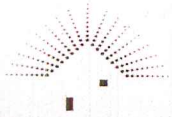
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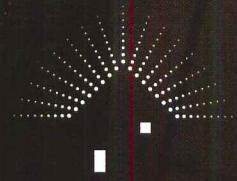
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CIRCLE 29 ON INQUIRY CARD

JOSEPH ESHERICK, 1914–1998: A MODEST MAVERICK IN CALIFORNIA

One of California architecture's most influential figures, Joseph Esherick, FAIA, died of heart failure late last year at the age of 83. Esherick designed some of the first Sea Ranch houses, debuted an early prototype for festival marketplaces at San Francisco's Cannery, and led the design team of the University of California at Berkeley's architecture building, where he taught for decades. To top it off, he won the Gold Medal from the AIA in 1989.

Esherick was also modest and didn't need to make waves—he lectured in New York only once. Esherick had recommended a student, Frederic Schwartz, to Denise Scott Brown, getting Schwartz his first job out of college; when Schwartz wanted to return the favor and phoned in 1994, asking Esherick to join Philip Johnson and Paul Rudolph in a lecture series at the Architectural League in Man-

hattan, Esherick resisted, saying: "I've never been invited by any of the New York schools," with a note of pride. "He had the smallest ego," Schwartz remembers. "When I first met him at Berkeley, I thought he was a janitor."

Influential houses

Esherick specialized in custom residential designs—though he kept his profile so low that clients thought they had designed their houses themselves. His wooden buildings built in the shingled Bay-region style were not always cheap, but even the biggest were modest, in the tradition of Gardner Dailey and William Wurster. Interior elevations would come first, and then Esherick would struggle to wrap them in facades and design foundations. One noted house, for a psychiatrist in Oakland, California, lurches straight off a hillside toward a sublime view of the

Golden Gate Bridge, its hanging rooms propped on a pair of supports for a cast-concrete chimney.

Esherick's use of concrete can be traced directly to Louis Kahn, to



whom a teen-aged Esherick was introduced by his uncle Wharton Esherick, a Philadelphia-area furniture-maker and artist. After his Philadelphia upbringing and a stint

in World War II, Joseph Esherick founded a firm in 1946 in San Francisco that quickly grew to 35 people. By 1952, he had disbanded and moved to a storefront where his sole employee was George Homsey; again, the firm grew, and Esherick Homsey Dodge & Davis, perhaps best known for its Monterey Bay Aquarium, now employs 80.

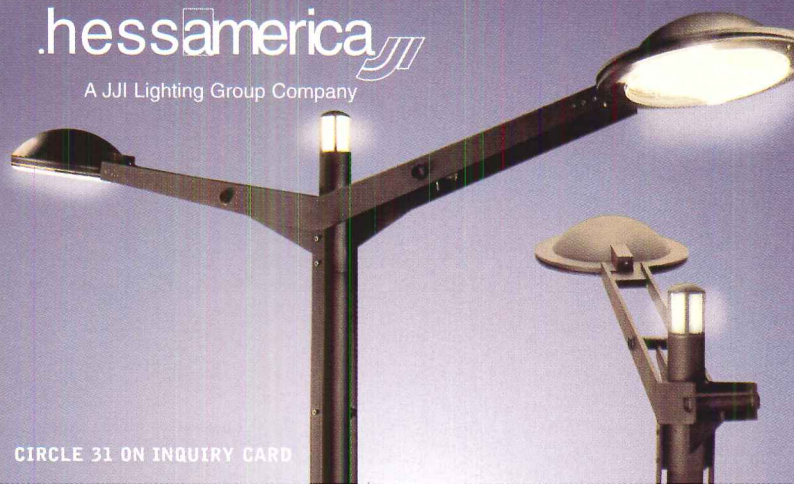
Esherick's last project, an elementary school and community center in San Francisco's Tenderloin district, was a gift: he donated his services. Esherick is survived by his wife, Norma, their five children, three stepchildren, and many grandchildren. Contributions can be made to the Joseph Esherick fund at the University of California at Berkeley. *Craig Kellogg*

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AMBITIOUS MALL REDEVELOPMENT ON THE RISE IN A GROWING DUBAI

A \$375 million renovation and expansion of an aging shopping center is under way in downtown Dubai, commercial capital and principal seaport of the United Arab Emirates. While the Persian Gulf locale might conjure up images of exotic souks and other bazaars among narrow, winding streets, the new project's retail environment and designs wouldn't be out of place in Dallas or Detroit.

Abdulaziz Al Ghurair, whose prominent local mercantile and developer family initiated the project, predicts it "will be the most significant retail development in the Middle East," with 800,000 square feet of enclosed-street shopping and several anchor stores. It will also more than triple the size of the existing, 19-year-old shopping center—the first shopping mall in the Middle East—which the family also owns.

Other elements of the project include 500 long-term and 200 short-term serviced apartments



geared to visiting foreign executives and professionals working in Dubai; 300,000 square feet of office space; a 600-seat food court; a multiplex cinema; and parking for 3,500 cars. The renovation and con-

struction of new retail and parking facilities are under way, with the rest to follow in a second phase.

The architects

NORR Limited Architects and Engineers of Toronto and RTKL International Ltd. of Baltimore were retained to jointly provide architectural, engineering, and interior design services. RTKL is new to Dubai, while NORR has a staff of 107 at its Dubai office, which it opened recently by a smaller office in neighboring Qatar. NORR designed the National Bank of Dubai's corporate

headquarters and the two-tower Emirates Project, among scores of other local commercial and institutional projects. At 54 stories, one of the two Emirates Project towers will be the tallest in the Middle East and

Europe when it is completed in 2000.

Construction of the Al Ghurair redevelopment will be managed by Turner Steiner International of New York, until its scheduled completion in 2001. NORR, RTKL, and Turner principals and staff are now traveling frequently between Toronto, Baltimore, and Dubai, and they exchange files over a high-speed ISDN line.

NORR vice president Victor Smith notes the project is a "major component of Dubai's strategic plan to sustain the city's enviable track record as the leading tourist and shopping destination in the region."

The city's improvement plan also includes upgrading older parts of the city to meet world standards, with commercial and residential infill, sports facilities, other retail space, and a supermarket connected by new streetscapes, pedestrian walkways, and public plazas.
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NEWS BRIEFS

Hurwitz departs AIA After a year on the job as the American Institute of Architects' executive vice president and chief executive officer, Mark W. Hurwitz left in January. According to a statement by AIA president Michael Stanton, "There were key conditions in our contract with Mark that were not fulfilled." Norman L. Koonce, FAIA, president of the American Architectural Foundation, will be interim CEO while a search takes place for a permanent successor. Meanwhile, L. William Chapin II, FAIA, will take over as interim president at the AAF. Hurwitz had come to the AIA from the Building Owners and Managers' Association International, where he was executive vice president.

Cooking with Graves Michael Graves has developed a line of kitchen accessories, which will be sold exclusively at the discount chain Target. The Graves Design

Collection—including everything from spatulas to toasters to a \$499 patio set—went on sale in late January at Target's 851 stores. Graves told the *New York Times*



RTKL's vision for Chicureo Ciudad, a new community that will go up near Santiago, Chile.

that the venture is "not licensing, but designing."

Berlin's choice After an arduous,

decade-long process, an agreement has finally been reached on a design for a Holocaust Memorial in Berlin. The plans—a field of stone pillars, a 65-foot-high wall of books,

and a research center—are a blend of proposals by New York architect Peter Eisenman with touches requested by the government. The project seemed shaky last year when sculptor Richard Serra, who had worked with Eisenman, withdrew from the competition.

Recipe for Chile After winning an international competition, Dallas-based firm RTKL is preparing the master planning for Chicureo Ciudad, a new 3,000-acre city in Chile that will operate as a satellite of Santiago, the country's capital. The developer is a group of investors and landowners who have consolidated their real estate holdings to create the new community. RTKL, teamed with Santiago firm Schmidt & Valdés Arquitectos, will design mid-rise office and civic buildings, retail centers, and housing; construction is expected to begin late this year. RTKL has also designed Riverside Office Center, a three-tower complex in Recife, Brazil. Work began this month.

Asia Society angst New York's Asia Society is planning to expand its headquarters, an Upper East Side building designed in 1981 by Edward Larrabee Barnes, FAIA. But the society's neighbors aren't gung-

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ho about the project. Neighbors for the Neighborhood, a group of area citizens, is arguing that the renovation shouldn't be allowed, as its extensive use of glass for an atrium, among other touches, is out of context with the East 70th Street block. Voorsanger & Associates, designer of the addition, was sent back to the drawing board by the Landmarks Commission after a first proposal; at press time, the commission was set to debate the approval of a second, toned-down concept.

Norway says no more To reduce pollution and revive ailing downtowns, Norway has banned the construction of large shopping centers outside city center areas for five years. The ban covers any construction or expansion of shopping centers with more than 33,000 square feet of retail space. Norway has seen a sharp increase in shopping center construction in the past decade; the country now has about 500.

This week's tallest Add Melbourne, Australia, to the ever-changing list of cities laying claim to the world's tallest building. Plans have been announced for a \$900 million, 120-story office tower to be designed by Denton Corker Marshall. Malaysia's Petronas Towers are the current titleholder.

Hollywood hopes The American Cinematheque, a nonprofit film forum, has opened new headquarters at the historic Egyptian Theater on a downtrodden stretch of Hollywood Boulevard in Los Angeles. The theater, which opened in 1922, had endured earthquake damage and was closed in 1992. It reopened after a remodeling effort overseen by Hodgetts & Fung.

A city hall comeback A thorough renovation of the San Francisco City Hall, designed in 1912 by Bakewell & Brown and modeled after Les Invalides in Paris, has been completed. Under the direction of



The San Francisco City Hall's dome, with scaffolding during renovation.

principal architects Heller Manus, preservation architects Carey & Co., and others, the project included base isolation (the building was damaged in the 1989 earthquake), updated communications and infra-

structure, new hearing rooms, and a new gilding of the dome.

The new Cook After a long battle and a referendum, Chicago is replacing its aging Cook County Hospital. Loebel Schlossman & Hackl/Hague Richards leads the team designing the \$301.8 million replacement facility; the new 1.1 million-square-foot hospital is scheduled for completion in February 2002.

Hot design Frank Gehry's Guggenheim Bilbao continues to get attention beyond typical architectural forums. The video for Mariah Carey and Jermaine Dupri's hit "Sweetheart" was shot at the museum; Carey wears a silver metal-mesh outfit to match the decor. ■

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NEW Coming this month: Take a tour of Petronas Towers, the world's tallest buildings

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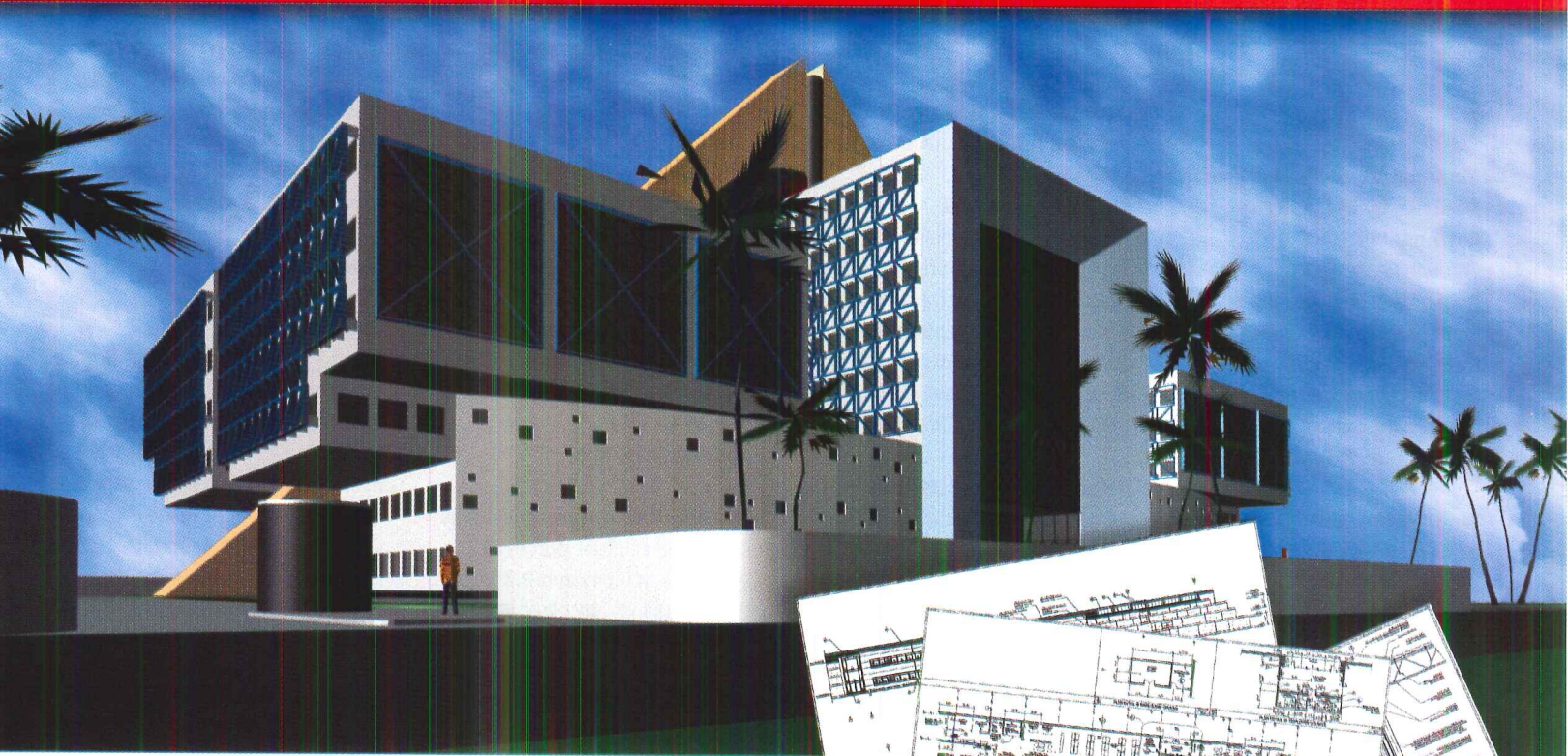
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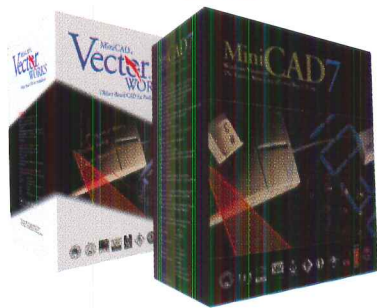


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DATESEVENTS

Calendar

Monuments of the Future: Designs by El Lissitzky
Los Angeles*Through February 21*

Rare books, photography, and architectural and exhibition designs by the early-20th-century Russian artist demonstrate the continuity of his work throughout his career. Getty Center. 310/440-7300.

Transformations: Mixed-Media Assemblages by Keith Krueger
Washington, D.C.*Through February 26*

Works by a local architect who uses discarded elements from buildings and construction sites in his compositions. AIA Headquarters Gallery. 202/638-3221.

The Cartoons of Roger K. Lewis
Washington, D.C.*Through February 28*

More than 100 cartoons satirizing the state of architecture and urban design, originally published in the *Washington Post*. National Building Museum. 202/272-2448.

Design Ideas for New York's East River
New York City*Through February 28*

On display are entries to the Van Alen Institute's ideas competition to transform the East River into public space, and the New East River Park Project by Reiser + Uemoto Architects. Van Alen Institute. 212/924-7000.

Unlimited by Design
New York City*Through March 21*

An exhibition of products, services, and environments designed to meet the needs of people throughout their life spans, from toddlers to the elderly, demonstrates the effect design can have on the quality of life. Cooper-Hewitt National Design Museum. 212/849-8300.

Forgotten Gateway: The Abandoned Buildings of Ellis Island
Washington, D.C.*Through March 28*

A photographic exhibition documenting the deterioration of the historic hospital complex on Ellis Island, which was untouched by the renovation that transformed the north side of the island. National Building Museum. 202/272-2448.

The Little Apple: Souvenir Buildings
New York City*Through March 28*

On display is a collection of 125 miniature New York buildings, with the oldest souvenir dating from 1800. Museum of the City of New York. 212/534-1672.

Zigzags and Speed Stripes:**The Art Deco Style**
Pittsburgh*Through March 28*

An exhibition surveying the impact of the Art Deco style on architecture and design, tracing the interwar phenomenon from zigzag moderne to streamlined moderne. The exhibition complements the permanent installation of *The Chariot of Aurora*, a gilded and lacquered relief from the SS *Normandie*. Carnegie Museum of Art. 412/622-3131.

Building the Empire State
New York City*Through March 31*

A documentary look at the design and construction of Shreve, Lamb & Harmon's 1931 Empire State Building. Skyscraper Museum. 212/968-1961.

Architecture on the Rise: Renderings by Hughson Hawley
New York City*Through April 4*

Watercolor drawings from 1880 to 1931 by a master renderer who offered a vision of the developing city. Museum of the City of New York. 212/534-1672.

Photography and Transformations: Venezia-Marghera
Montreal*Through April 25*

The work of 15 Italian photographers who explore the relationship between historic Venice and the modern, industrialized, and polluted mainland port of Marghera nearby. Canadian Centre for Architecture. 514/939-7000.

Marion Mahony and Walter Burley Griffin
Sydney, Australia*Through May 2*

This exhibition explores the professional and spiritual journey of architects Mahony and Griffin, from their years in Frank Lloyd Wright's office at the turn of the century through their work in Australia and India in the 1920s and 1930s. Powerhouse Museum. 011/61/2/217-0111.

National Roofing Contractors Association Convention
Phoenix*February 7-10*

The NRCA hosts the largest roofing convention in the United States, attracting more than 8,000 attendees and 390 exhibitors. Phoenix Civic Plaza. For registration materials, call 800/323-9545 or visit www.roofonline.org. For fax-on-demand, call 888/455-6722 and request document 1203.

Designing in the Wright Style
Lexington, Mass.*February 13-September 6*

This exhibition surveys the collaborative work of Frank Lloyd Wright and George Mann Niedecken, who designed furniture and interiors together during Wright's Prairie Style years. Museum of Our National Heritage. 781/861-6559.

Greenprints '99: Sustainable Communities by Design
Decatur, Ga.*February 22-23*

A conference and trade show on environmentally appropriate building technology and sustainable commu-

nity design, hosted by Southface Energy Institute and the Georgia Environmental Facilities Authority. Atlanta-Decatur Hotel and Conference Plaza. For more information, call 404/653-0606 or visit www.southface.org.

Inter Con '99
Orlando*February 24-28*

A convention and trade show for the commercial interiors construction industry, sponsored by the Ceilings and Interior Systems Construction Association and *Interior Construction* magazine. Walt Disney World Coronado Springs Resort. Call 630/584-1919 or visit www.CISCA.org.

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Two exhibitions showcasing products and services related to interior design and facilities management. Miami Beach Convention Center and Los Angeles Convention Center. For more information, visit www.designfestneoconsouth.com and www.neoconwest.com, or call 800/677-6278.

Archigram: Experimental Architecture, 1961-1974
San Francisco*March 19-June 15*

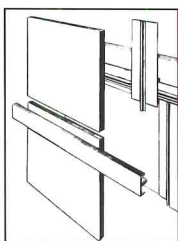
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continued on page 69

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American Institute of Architects National Convention

Dallas

May 6-9

The theme of this year's AIA convention, expected to draw as many as 14,000 people, is "Think Big, Make It Happen: Leadership in the New Millennium." Architects can earn all 36 Learning Units needed for AIA accreditation by attending seminars and exhibitor education sessions. Dallas Convention Center. For information on exhibiting, contact Hill, Holliday Exhibition Services at 617/572-3553.

Competitions

Encouraging Neighborhoods of Choice and Diversity

Registration deadline: February 15

Submission deadline: April 15

This competition seeks innovative and sustainable redevelopment strategies for a Baltimore neighborhood that has witnessed a dramatic decline in population. First prize for the winner is \$10,000. For more information, call Rob Inerfeld at the Neighborhood Design Center, 410/233-9686, E-mail him at inerfeld@hotmail.com, or visit www.ndc-md.org.

NYSCA Project Grants

Application deadline: March 1

The Architecture, Planning and Design Program of the New York State Council on the Arts announces grants provided through its Independent Projects category. Grants of up to \$10,000 for architects, designers, and scholars are available for projects that advance the field and contribute to the public's understanding of the designed environment. Open to New York State residents only. Contact Anne Van Ingen at 212/387-7013 or E-mail avaningen@nysca.org.

DuPont Benedictus Awards

Submission deadline: March 8 (professional architects); March 19 (students)

These awards, open to professional architects and students, recognize the use of laminated glass in commercial and residential projects. Winning architects receive a sculpture by glass

artist Hans Godo Fräbel; winning students receive \$15,000 for their programs. Contact Stephanie Vierra at the AIA, 202/626-7446, or vierras@aiaemail.aia.org. Information is also available at www.dupont.com/safetyglass/benedictus/index.html.

Presidential Design Awards 2000

Entry and nomination deadline: April 8

The Presidential Awards for Design Excellence recognize works that have been sponsored, authorized, or commissioned by the U.S. Government and have been completed or in use between January 1, 1989 and January 1, 1999. There is no entry fee, and nominations are requested. Nominations are also requested for the Presidential Millennium Design Awards, which honor federal design projects completed in the 20th century that have made a significant contribution to the environment and quality of life in the U.S. For information, contact Thomas Grooms at the U.S. General Services Administration at 202/501-1888 or thomas.grooms@gsa.gov.

The Van Alen Institute Dinkeloo Fellowship

Submission deadline: May 7

A two-month stay at the American Academy in Rome will be awarded for the submission that best demonstrates how architecture and technology can be environmentally conscious. Open only to those who have graduated, or will graduate, from U.S. architecture degree programs between May 1990 and September 1999. For a competition packet, contact the Van Alen Institute at 212/924-7000, E-mail vanalen@vanalen.org, or write 30 West 22nd Street, New York, N.Y. 10010.

Envisioning California's Great Central Valley: Housing the Next 10 Million

Submission deadline: May 1

This ideas competition, to design less-land-intensive housing models and support urban planning implementation tools, will help local decision-makers deal more effectively with the projected growth of California's Central Valley. Open to students and professionals. Contact William Liskamm, AIA California Council, 916/448-9082, or visit www.aiacc.org.

Resort Concept Competition

Submission deadline: May 15

The San Francisco-based Valor Group is sponsoring a competition for the design of an environmentally sensitive, portable tent village. For more information, call 415/276-5958. ■

Please submit information for events and competitions at least six weeks prior to the magazine's publication date (March 15 for the May issue).

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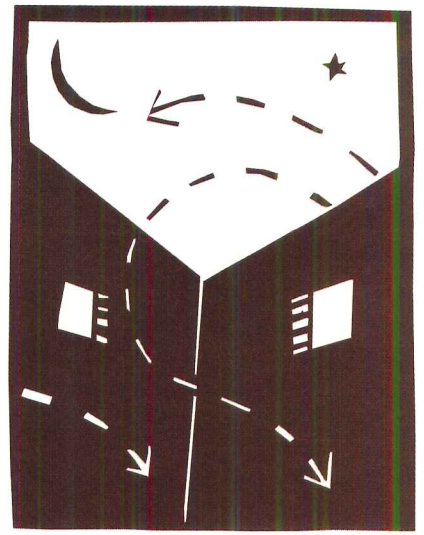
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Architects:
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How Places Affect People



BUILDINGS HAVE A HUGE INFLUENCE ON OUR MOOD AND PERFORMANCE. WHY HAVEN'T ARCHITECTS HEEDED THE FINDINGS OF ENVIRONMENTAL-BEHAVIORAL SCIENCE?

by Winifred Gallagher

To celebrate his new prosperity, an urban entrepreneur bought a historic brownstone. Soon after moving into his dream house, however, he became trapped in the nightmare of a serious clinical depression. Armchair analysts might surmise that the man was unable to deal with sudden success. His doctor, however, traced the problem to a less obvious origin.

When he descended from a sunny high-rise apartment to what amounted to a luxurious cave at the bottom of a dim canyon, the man had unwittingly triggered a bout of seasonal affective disorder (SAD). Often called winter depression, this neurochemical condition develops when a vulnerable person is deprived of adequate exposure to light, which most commonly occurs during the short days of the cold months.

The particulars of this mogul's illness are unusual, but in America's northern regions, SAD is a health problem of serious proportions. In the New York metropolitan area, 6 percent of residents are said to be afflicted by severe winter depression. When the victims of the milder "February Blues"—low energy and mood and disturbed patterns of eating and sleeping—are added in, however, half the region's population, or more than four million people, suffer from a recurring behavioral problem that has an environmental cause and cure: light.

*Winifred Gallagher is the author of *The Power of Place: How Our Surroundings Shape Our Thoughts, Emotions, and Actions* (Harper Perennial Library, 1994) among other works. She attended the University of Pennsylvania Graduate School of Architecture and now lives with her family in Manhattan and Long Eddy, New York.*

Architects have always considered light from the perspectives of aesthetics and visibility. But based on one simple observation—that office and apartment buildings in, say, New York City have the same fenestration pattern as those in Miami, where only 2 percent of the population suffers from SAD—it seems very few exploit light's influence on the way people feel and function. And what about the special light needs of night-shift employees, workaholics, and frequent flyers? Their schedules can simulate winter conditions in Alaska, inviting sleep and energy problems, if not actual depression.

For that matter, what about the lighting design challenges posed by extreme environments? Each winter in Alaska, as is the case in other far northern latitudes, nearly 10 percent of the population becomes seriously depressed and another 70 percent feels grumpy and lethargic. Yet in summer, when abundant light increases the incidence of mania worldwide, the nearly endless days can create insomnia and agitation, driving some Alaskans to wear sunglasses and line their windows with aluminum foil. (For bibliographical references and information concerning research alluded to in this article, see *The Handbook of Environmental Psychology*, edited by Daniel Stokols and Irwin Altman [Wiley, 1987].)

The proper placement

As the plight of the depressed townhouse owner demonstrates, extreme mini-environments can be found in any region. Even in temperate Virginia, a handsome scheme for a low, rambling house tucked deep into a heavily wooded site might be a blueprint for the blues. An understanding

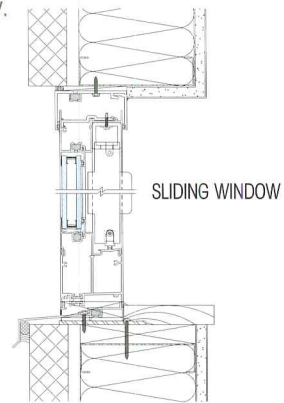


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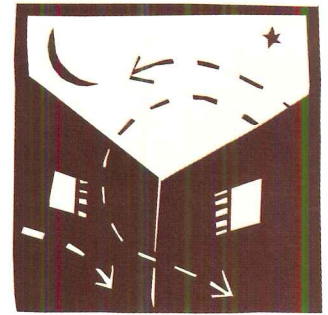


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of light's influence on human behavior is just one dimension of the emerging science of the ways in which places affect our thoughts, emotions, and actions. Diverse studies of how people work and learn, mingle with strangers, and recover from illness prodigiously document the importance of being in the right place.

For architects, the investigation of environments as agents in our lives, rather than mere backdrops, holds special promise. It's another tool for designing better buildings, of course, but this research also offers new ways to understand and communicate with clients. Since the social revolution that we call the '60s, demographic analyses have shown that Americans increasingly look to psychology for answers about how to live. Settings that help them feel and function better—by reducing stress, say, or promoting creativity, to say nothing of combatting depression—will have a strong appeal.

But architects, focused on their traditional aesthetic and practical concerns, have paid little attention to environmental-behavioral science. Just as they have thought of themselves as artists and builders, however, they now have the option of seeing themselves as healers of a kind, who prescribe design rather than drugs.

The science of setting

Compared to the more familiar warm-and-fuzzy psychotherapist, environmental psychologists are hardhats. They expose their subjects to physical stimuli—windows or blank walls, noise or silence—and measure the effects, using metabolic monitors, tests, or questionnaires.

Several broad principles of environmental-behavioral science raise many pertinent questions for architects. The most radical discovery about environment's effect on behavior is its sheer potency. A vivid illustration: simply passing a place associated with drugs causes addicts to undergo physiological changes that create craving. As the French term *habitué* suggests, we all react to certain environments like addicts, albeit less dramatically. A phenomenon known as "behavior setting" ensures that whatever our individual personalities or recent experience—a fight with a spouse at home, perhaps, or a happy occasion, like a promotion—we're apt to act businesslike in an office, reflective in a church or museum, and sociable in a restaurant.

In organizing our private lives, we exploit behavior setting to help summon up the self we want or need at a given time. To unwind after a hard day, we head for the workshop or custom kitchen. If we must complete the income tax returns, we don't lounge in bed surrounded by forms and receipts, but find a desk in a quiet room—or even make a special Saturday trip to the office. If architects truly understood the power of settings to help occupants to be the

right self at the right time, many design formulas would undergo serious questioning.

People feel best in settings that, like parks and cars, foster a sense of control, impose few constraints, and offer multiple options. With these simple criteria in mind, consider the employees in a typical office, which increasingly means the large, open-plan sort that's cheapest to construct and operate. Seated in double-faced rows of built-in, partially partitioned "workstations" in which even the positions of phones and computers have been standardized, each shares intimate air space with at least five immediate neighbors.

The most serious problem posed by this setting is noise, or unwanted sound—where behavior is concerned, the most toxic environmental pollutant. The particular horror of noise is that unlike other such stressors, it both distracts and restricts its victims. We can read or talk if

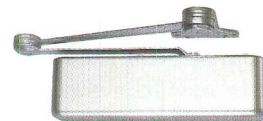




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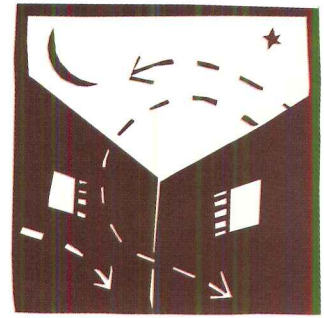
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HALF OF ALL AMERICANS COMPLAIN THEY'RE DISTRACTED ON THE JOB BY COLLEAGUES' CONVERSATION.



our environment is too warm or bright or crowded for our liking, but not if we can't "hear ourselves think."

Among the measurable physiological and psychological consequences of this form of frustration are decreased sociability, concentration, and performance—a triple threat in the workplace. When we try, even unconsciously or with seeming success, to block out sound so that we can focus, the effort drains energy from our more worthwhile pursuits.

Because our evolution has made it impossible to ignore, others' speech is a particularly insidious form of noise pollution; half of all Americans complain that they're distracted on the job by colleagues' conversations. (Noise takes a toll on workers' productivity, but it exacts a steeper one from babies and small children who are trying to learn language; these youngsters must expend energy on dampening racket when they should be devoted to the nuances of speech.)

If employers and their architects could supply one environmental element that would improve their employees' efficiency, it would be peace and quiet. Considering the hidden price tag on large, open, "cost-effective" offices, the challenge for architects is to come up with alternative designs for economical workspaces that maximize rather than compromise workers' performance and well-being.

Points of difference

Ramps for the disabled are concrete symbols of society's relatively recent recognition that few settings work for all of the people all of the time. From a psychological perspective, however, certain groups have special needs that often go unacknowledged; they must adapt to what psychologists call a poor "person-environment fit."

For example, research on the rapidly increasing aged population yields a simple, striking finding of great importance: the elderly's activity and well-being strongly correlate with environments that don't treat them like invalids, but promote their control and autonomy. A chilling contrast: institutional residents whose privacy and independence are compromised by sharing a room and spending half their time in bed, whether asleep or awake.

At the other end, popular wisdom has it that youngsters, even infants, thrive on lots of stimulation. In fact, research shows that neurological immaturity means young children are easily excited and overwhelmed; confronted with excessive sensory input, they shut down and turn off rather than take in and turn on.

Many architects will remember all the fuss in educational as well as design circles over so-called open schools, which did away with traditional segmented classroom layouts. These vibrant buildings looked attractive to adults, yet by acad-

emic measures, they failed to live up to their promise. Numerous studies showed that compared to those who attended traditional institutions, students from these new schools performed the same or less well because they were subject to so many distractions, especially noise. A great deal of research on the best environments for kids can be summed up thus: small is beautiful.

To each his own

Although it sometimes concerns the needs of a whole group of people, the right environmental fit can be a highly individual matter as well. Where the design of private spaces is concerned, a client's satisfaction must largely depend on it. Yet variations in temperament—the human personality's more biological, heritable component—mean that two individuals in the same room may be sitting in different worlds.



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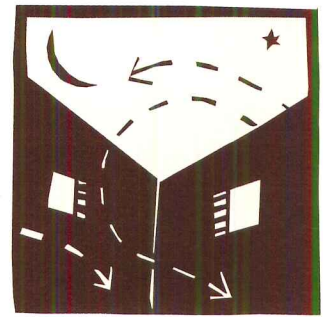
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CIRCLE 46 ON INQUIRY CARD

RESEARCH SHOWS THAT EVEN SMALL DOSES OF NATURE HAVE SALUBRIOUS EFFECTS ON BEHAVIOR.



For neurological reasons, some people, including many artists, academics, and others drawn to the life of the mind, have so much going on inside their heads that they need little in the way of external stimuli; they do best in restrained environments, such as hushed libraries and minimalist lofts, that protect from sensory overload. If they are to avoid boredom, others whose nervous systems idle very low require lots of external feedback, whether from a wall of video screens or a rock-climbing wall. One type of person is best served by a soothing sanctuary, another by a more stimuli-laden environment. In consultations with a client, architects can include questions about the level of external stimulation that's most comfortable for that individual. And when different temperaments share the same roof, as families do, the problem for designers is whether they can provide micro-environments that complement each type.

Temperament helps explain why some people are drawn to bucolic settings and others to cities. In urban environments, one of the greatest factors in how we feel and function is crime and the fear of it. Just as architects can use behavior-setting theory to design smart buildings, planners can use it to promote safe streets. In combatting urban crime, the most stunning recent breakthrough has been the vigorous policing of seemingly minor "quality of life" crimes.

Similarly, environmental research shows that it doesn't take much—peeling paint, some boarded-up windows, graffiti, a junked car—to set off the tragic chain reaction that leads to abandoned housing, arguably the single most powerful factor in urban decay, and the death of a once-vibrant street. Considering that seemingly subtle signals, even holiday lights and personalized mailboxes, can be more effective than locks and alarms in reducing crime, designers have many options when it comes to encouraging urban residents' territorial feelings and expressions.

The power of nature

On the rural side of the equation, it is a common concept that nature somehow restores us. The house plants and landscape pictures so ubiquitous in homes and offices attest to our reliance on its mood-altering and -stabilizing effects, as does our willingness to pay dearly for Arcadian views. In their analysis of nature's magic, researchers have made a discovery that's particularly important for our rapidly urbanizing, indoor world: a remedy for what psychologists call mental fatigue.

Staring at a computer all day is not exhausting in the same way as manual labor, yet people didn't evolve to sit still for hours, narrowly focused on accumulating electronic information. Simultaneously constrained and over-stimulated, we grow bleary and weary. As concentration dwindles, some feel irritable and begin to make so-called human errors. One quick cure for these symptoms, as prescient companies who choose to build their headquarters around garden courts know, is a nature break. Exposed to the gentle, beautiful patterns of plants, water, or clouds, we loosen up, slow down, and—at least figuratively—take time to smell the roses. In some important, mysterious sense, we go home, have a

little rest, and return to the job able to focus again.

Extrapolating from some research on playgrounds, we may be more creative, too: kids are more active in hard-surfaced recreation facilities, but play more imaginatively in naturalistic parks. Happily, research shows that even small doses of nature have salubrious effects on behavior. Green things are among the luxuries in the shortest supply in poor urban neighborhoods, yet when public housing tenants have little garden plots, their increased feelings of mastery, pride, and sociability are matched by a decreased incidence of vandalism.

Nature can work its wonders through glass: windows that frame trees, clouds, or water rather than bricks and asphalt help surgery patients recuperate faster and with less pain medication, and workers to experience less stress and illness and more satisfaction on the job. Designers can use large and small doses of nature to balance the behavioral effects of urbanization and technology's increasing dominance of our daily environments. In the new global village, sophisticated people who have an international perspective on politics and economics, music and cuisine, are acquiring some new ideas about architecture as well.

According to the principles of *feng shui* (pronounced *fung shway*), China's ancient system of harmonizing form and function, a building must be placed and designed to attract the optimum flow of *chi*: the energy that animates the earth and all living things. A hybrid discipline, *feng shui* uses principles from art, geophysics, psychology, and religion to make settings feel comfortable, attractive, and well-suited to the business at hand, whether it be crunching numbers or eating dinner.

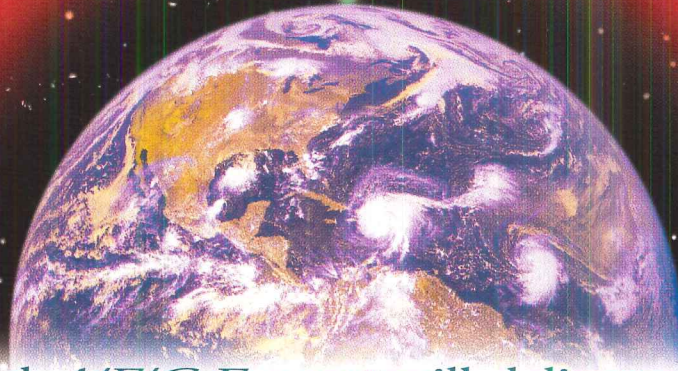
Because good *feng shui* is said to promote good fortune, its practitioners have long been valued consultants on the design of important Asian commercial buildings. A few years ago, when the Bank of Hong Kong failed shortly after erecting a new headquarters, the Chinese shook their heads; the architects hadn't called in a geomancer, who could have told them their building's *chi* was disastrous. Now, an increasing number of Western corporate clients, such as Hollywood's Creative Artists Agency, are using *feng shui* to ensure that offices have propitious entrances and harmonious meeting rooms. In newspapers and shelter magazines, chic decorators and architects advise homeowners that too much *chi* in a bedroom invites insomnia, while too little in a living room promotes dullness.

Seeking the unseen

Geomancy isn't taught in architecture school, but some very practical people insist that *feng shui* works. In an increasingly multicultural world, how can a knowledge of different ways of looking at sites and buildings expand the scope of American architecture? Discussions of *feng shui* lead to a fascinating—if speculative—dimension of environmental-behavioral science that concerns the subtle geophysical properties of special, even sacred, places. Moving water, for example, is often featured in legendary resorts and shrines; many of the great medieval cathedrals were built over springs worshipped by pagans. By the sea or in (*continued on page 214*)

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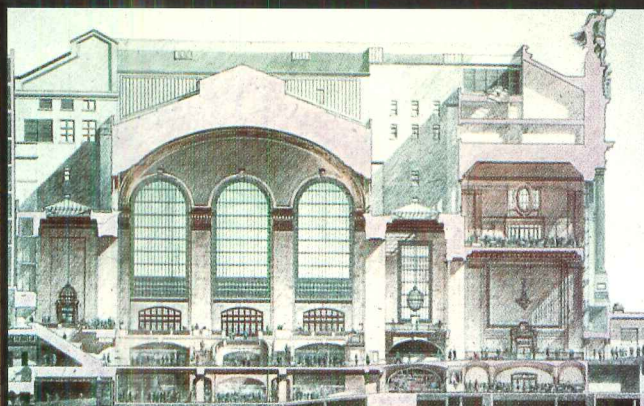
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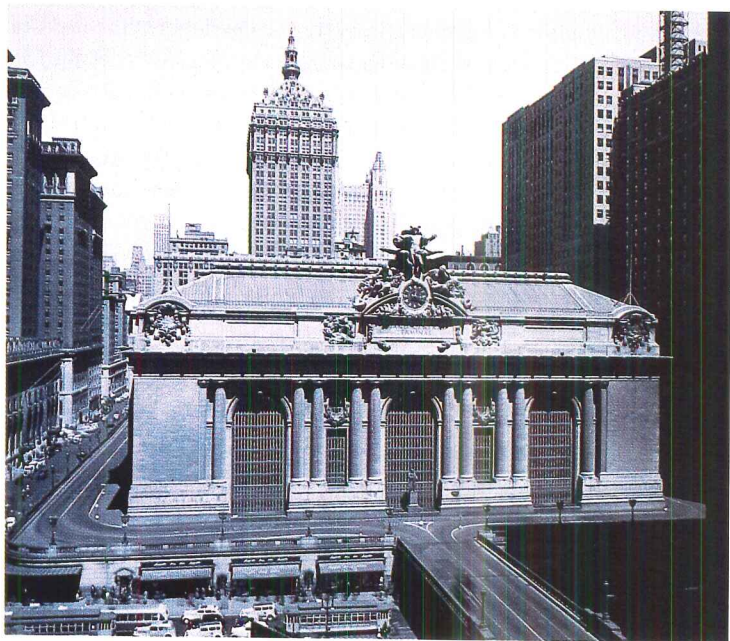
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The Main Concourse (above) in all its glory; the Oyster Bar with its famous Guastavino vaulting (below left); and the station's south facade (opposite).



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by Clifford A. Pearson

Electrifying its rails and building a new double-level station on the site of its existing one will cost the New York Central \$80 million (about \$2 billion in today's money). To pay for the huge project, the railroad's chief engineer, William J. Wilgus, devises a scheme involving the sale of "air rights." Since an open rail yard won't be needed when steam engines are replaced by electric trains, Wilgus proposes that the area north of the station—today's Park Avenue from 45th to 49th Streets—be covered and that the railroad sell to developers the rights to build above the concealed tracks. The idea would transform an open wound in the city's fabric into a grand boulevard lined with apartment buildings, offices, and hotels.

The railroad puts together a short list of architects for the new facility, which will be called Grand Central Terminal. Among these are McKim, Mead and White and Daniel Burnham. The winning firm, though, is Reed and Stem from St. Paul, Minnesota, which had worked on other projects for the New York Central. Not coincidentally, Charles Reed's sister is married to Wilgus. After some post-competition lobbying, however, the New York firm of Warren and Wetmore submits a design and is asked to work on the project with Reed and Stem. Whitney Warren happens to be a cousin of William Vanderbilt, the chairman of the New York Central.

The planning, design, and construction of Grand Central Terminal take 10 years. Rail service continues uninterrupted throughout the entire process, with the old station being used until it is razed in 1910 and a temporary facility operating through 1912.

1913-47 The new terminal opens on February 2, 1913. More than 150,000 people come to gape at the Main Concourse, which measures 200 by 120 feet, and to admire the

Its original architect, Whitney Warren, called Grand Central Terminal "a triumphant portal to New York." John Belle, FAIA, who has spent the last 10 years renovating the Beaux-Arts train station, refers to it as "the Holy Grail of the landmarks preservation movement." These two immodest—but accurate—statements shed light on the very different roles that the building plays on what has always been a very big stage. More than just a fine old building or a place to catch a train, Grand Central is a highly charged symbol: of a cocky city, an expansive metropolitan region, and a grass-roots movement that has altered the real-estate calculus of developers around the nation.

Preserving a landmark of the landmarks movement is a delicate undertaking. Changing anything here raises more than just eyebrows. But the people involved with Grand Central realized that to bring back its old pizzazz would require rethinking the way it functions, adapting old spaces to new needs, and making a few critical changes. The brilliance of Grand Central's original architects, says Belle, can be seen in the way they wove what were essentially three different stations (for incoming long-distance trains, outbound long-distance trains, and commuter rail) into a unified whole. With only suburban trains pulling into Grand Central these days, the challenge facing the renovation architects was to make the building work as a single station while retaining the character and complexity of the original.

1903 The age of the steam engine is ending and planning begins on a new electrified train station for the New York Central and Hudson River Railroad, the company that had opened the large, Second Empire-style Grand Central Depot in 1871 and then expanded it into Grand Central Station in 1898. Change, though, won't come cheaply.

WWW On The Web: Take a virtual tour of this project at www.archrecord.com.

Project: Renovation of Grand Central Terminal, New York City

Client: Metropolitan Transportation Authority; Metro-North Railroad

Architect: Beyer Blinder Belle Architects & Planners—John Belle, FAIA, partner in charge; John H. Beyer, FAIA, partner, retail design; Douglas McR. McKean, AIA, partner, project manager; James W. Rhodes, FAIA, partner, direc-

tor of preservation; James Marston Fitch, former chairperson, historic preservation; Timothy Allanbrook, AIA, Norma Barbacci, AIA, William Bickford, Jean Campbell, Denise Duffy, Don Fiorino, Donald Flagg, AIA, David Johnson, Tammy Kahm, Margaret Kittinger, AIA, Charles Kramer, AIA, Maxinne Leighton, Laurence Marner, AIA, Jennifer McManus, (credits continue on page 95)

Beaux-Arts exteriors. As built, the station is more the work of Warren and Wetmore; the only major feature lifted from Reed and Stem's original scheme is the elevated roadway wrapping around the building. Not surprisingly, the forced pairing of the two firms was never amicable, and the architects fight over credit for the project for many years.

The new station serves as a powerful engine driving development in the area. The Biltmore and Commodore Hotels, the Yale Club, the Graybar Building, office towers, and apartment buildings rise up around the station from 1913 to 1927. Grand Central itself is a thriving hub; in 1947, more than 65 million people board or depart trains here.

1950-67 Just as the shift from steam to electric trains created the need for Grand Central Terminal, the postwar transformation of America into a nation of highways and automobiles spells trouble for the station. With revenues from train travel slipping and real estate values in Manhattan rising, there is pressure on the New York Central to find new sources of income from its terminal. One solution is to rent parts of the station for nontransit uses; Kodak erects a giant sign, and Westclox a large clock in the Main Concourse. In 1960 the railroad even imagines putting bowling alleys in the Main Waiting Room. Another proposed approach is to tear down part or all of the station to put up a high-rise—a plan that evokes some original plans for the station, which called for a skyscraper behind the main building. In 1954 two different tower proposals are considered. A group of prominent architects, including Philip Johnson and Serge

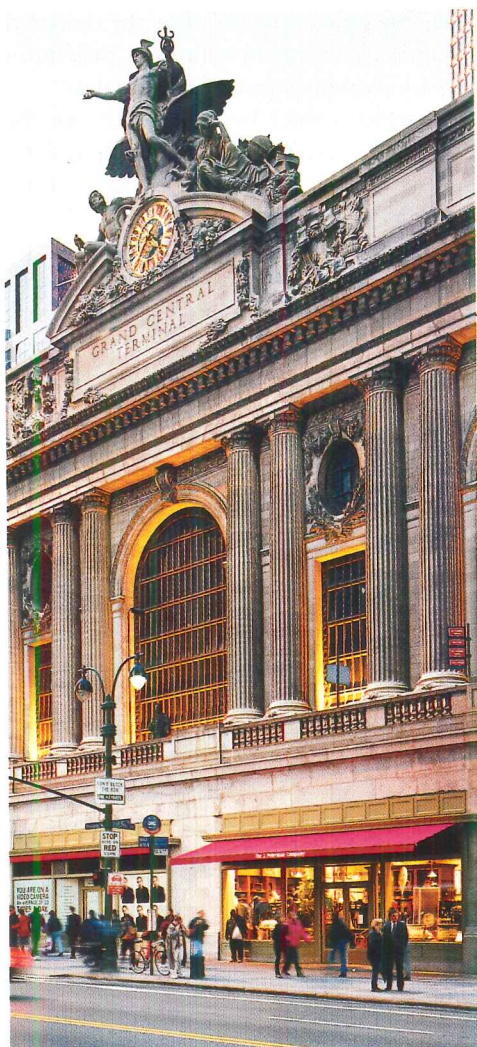
Chermayeff, speaks out against the plans, which are eventually dropped.

In 1958 the railroad approves plans to demolish a small office structure north of the station and build a 59-story tower by Emery Roth, Pietro Belluschi, and Walter Gropius. The Pan Am Building opens in 1963, obscuring Grand Central's remarkable north facade.

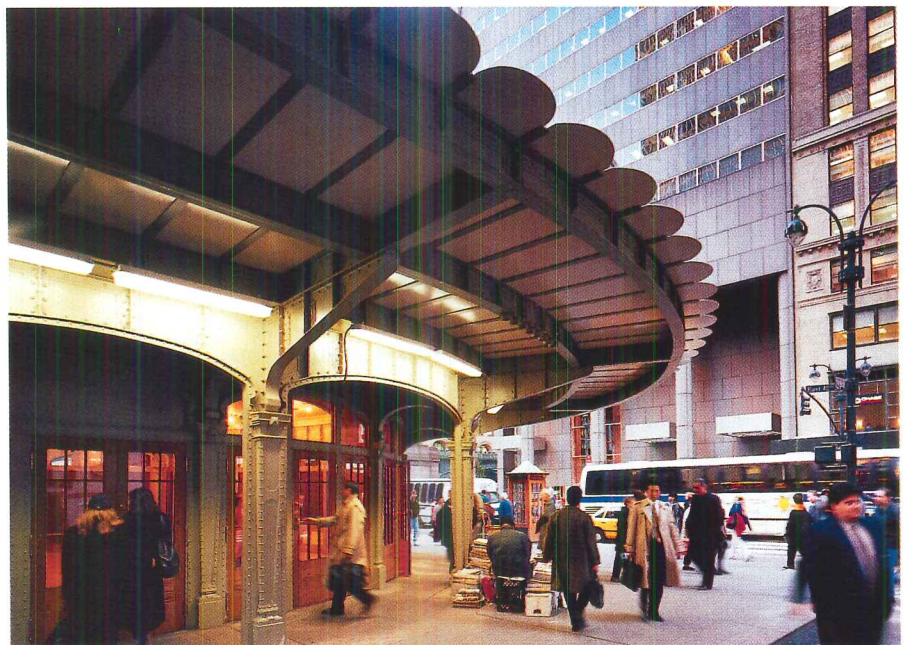
1967-78 New York City's newly established Landmarks Preservation Commission designates Grand Central Terminal a landmark in 1967. But the next year, Penn Central, the company formed by the merger of the New York Central and Pennsylvania Railroads, leases the property to a developer who proposes a new tower directly above the station. Designed by Marcel Breuer, the 55-story tower would require the demolition of the Main Waiting Room and part of the Main Concourse and would hide most of the terminal's south facade. After the landmarks commission rejects the proposal, Breuer redesigns the tower so it would preserve the Main Concourse but demolish the south facade. In 1969 the commission rejects this design.

Penn Central files an \$8 million lawsuit against the City of New York, challenging the constitutionality of the landmarks law. Three years later the New York State Supreme Court rules in favor of the railroad company, overturning Grand Central's landmark protection. As litigation drags on, opinion makers, including Jacqueline Onassis, rally to protect the old station. Finally, in June 1978 the U.S. Supreme Court upholds New York's landmark law. Grand Central is saved from the wrecking ball.

1978-90 Demolition has been averted, but the terminal now suffers from the consequences of deferred maintenance: leaks in the roof, chipped stonework, rusting steel, stained surfaces, and increasingly run-down and tacky retail tenants. In 1983 Metro-North takes over from Penn Central and begins a program of repairs that includes replacing the leaking roof and skylights. Five years later Metro-North hires Beyer Blinder Belle (BBB), which is also renovating Ellis Island, to prepare a master plan for revitalizing the terminal. Another key consultant is Williams Jackson Ewing, a retail specialist involved in renovating Union Station in Washington, D.C.



Planners hope a revitalized Grand Central (red square on site plan opposite) with new retail on 42nd Street (left) and a restored entry on Vanderbilt Avenue (below) will help upgrade the area.





Although retail plays a smaller role at Grand Central than at Union Station, Michael J. Ewing, president of Williams Jackson Ewing, realizes it can be the element that makes the deal work. By upgrading the quality of the retail and doubling the amount of retail space, Ewing figures that rental revenues can be tripled. This expanded income potential can then be used to convince investors to buy bonds that will finance the project. Ewing and John Belle devise a plan predicated on a buffed-and-polished station attracting upscale retailers. Their plan also tries to balance the needs of shopping and history. "Throughout the project, we knew that the retail and the historic structure had to work together," says Ewing today. "We kept reminding ourselves this is a train station."

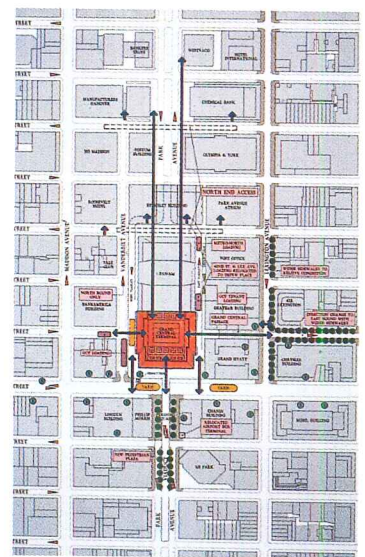
In April 1990 the master plan is approved by the Metropolitan Transportation Authority (MTA), the parent agency of Metro-North. But without all the funding in place, the program must go forward one piece at a time. Another complicating factor is the fact that the station must remain open during all of the renovation work. "At Ellis we had the island to ourselves," he explains. "But at Grand Central we had half a million people every day walking through our construction site." So for financial and logistical reasons, "we segmented the project," says Belle.

1990-94 The first piece to be tackled is the restoration of the Main Waiting Room, just off 42nd Street. The architects use this phase as "a wonderful laboratory," states Belle. Almost all of the materials found in the building are in this room: Botticino marble, Tennessee marble, Caen stone, ornamental plasterwork

and metalwork, wire glass, and the chandeliers that everyone thought were bronze but turn out to be nickel- and gold-plated. Tasks include cleaning Caen stone (a plasterlike material scored to look like ashlar) by applying a poultice and flexible membrane, then peeling the application off along with embedded dirt; reopening a quarry in Tennessee to get the same marble stones used in the original floor; and dismantling the chandeliers and sending them to Salt Lake City to be cleaned, rewired, and reassembled.

When the Main Waiting Room reopens in 1992, it is used as Exhibit A when the project team makes the argument for renovating the entire station. No longer needed as a waiting room, since long-distance trains don't pull into Grand Central anymore, the room is now a grand space for exhibits and special events. It offers the public an enticing taste of things to come.

The next element to be restored is the Vanderbilt Avenue taxi stand, on the west side of the station. Not only is this renovated drop-off





NEW HAVEN LINE DEPARTURES

TIME	TRK	DESTINATION	REMARKS
3:10	107	STAMFORD	NOBLET VERMONT-1ST STOP
3:35	105	NEW HAVEN	GREENWICH-1ST STOP
3:40	114	STAMFORD	NOBLET VERMONT-1ST STOP
4:17	103	NEW HAVEN	GREENWICH-1ST STOP CONNECTION TO NEW CANON

INFORMATION

WELCOME!
DISSEMINATE THE WORD
TRAIN CONTROL

DEPARTURES

TO	FROM	TIME	TRK
STAMFORD	NEW HAVEN	3:10	107
STAMFORD	NEW HAVEN	3:35	105
STAMFORD	NEW HAVEN	3:40	114
STAMFORD	NEW HAVEN	4:17	103

ARRIVALS

FROM	TO	TIME	TRK
NEW HAVEN	STAMFORD	3:15	108
NEW HAVEN	STAMFORD	3:45	115
NEW HAVEN	STAMFORD	4:20	104

NEW HAVEN SHUTTLE
NEW HAVEN DISTRICT
WEST BOUND ONLY



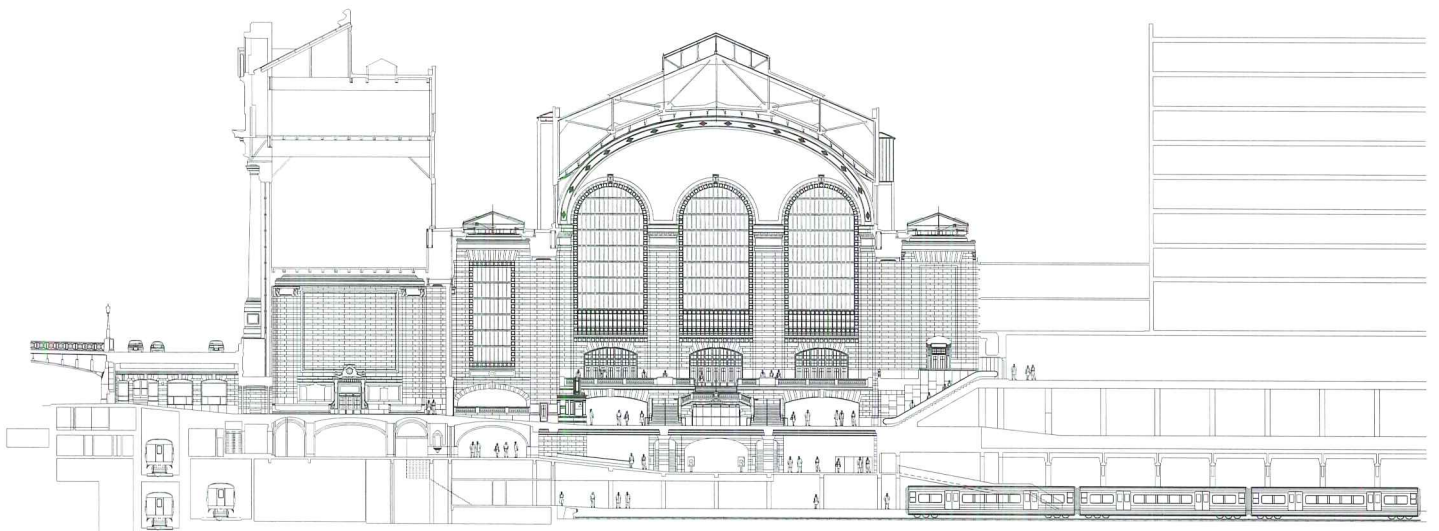
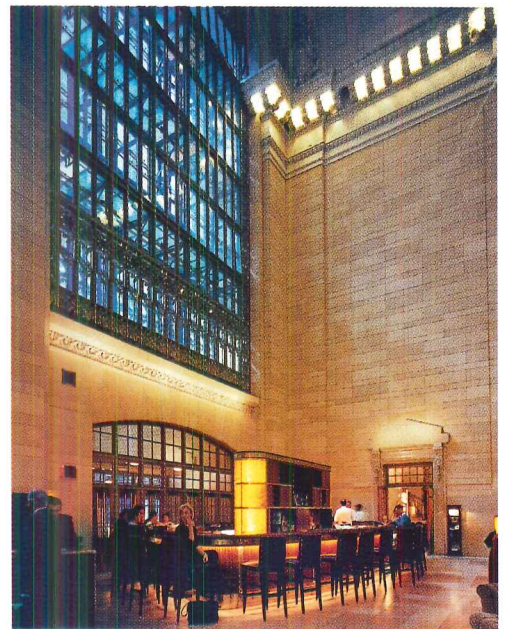
Virtually every surface in the Main Concourse has been cleaned or restored, including the Tennessee marble on the floor, the Bottocino marble covering the lower portions of the

walls, the Caen stone above that, and the ornamental metal of the ticket windows. The sky ceiling rises 120 feet above the Main Concourse, which is 200 by 120 feet.

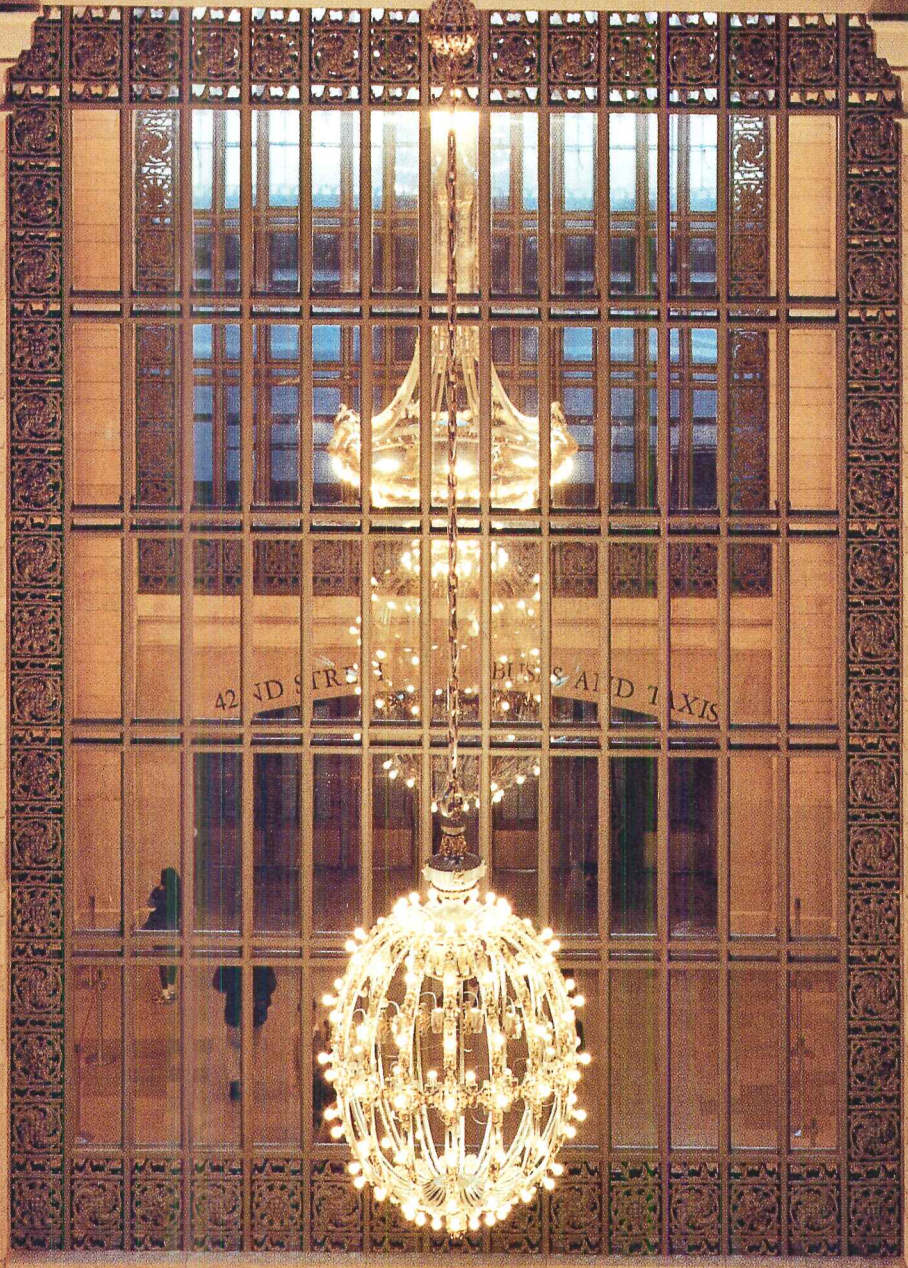


The terminal's arched windows (left and below) each measure 33 by 60 feet and form a double skin of glass. Glass walkways run between the two transparent skins, connecting offices on either side. A new east stair (left) stands where the Kodak sign used to be and provides access up

to restaurants on the balcony level and down to the food court on the lower level. Ornamental metalwork on the ticket booths was recreated from old photographs, and electronic train information displays replaced old flip-letter signs. Nickel- and gold-plated chandeliers (opposite) were cleaned and rewired.

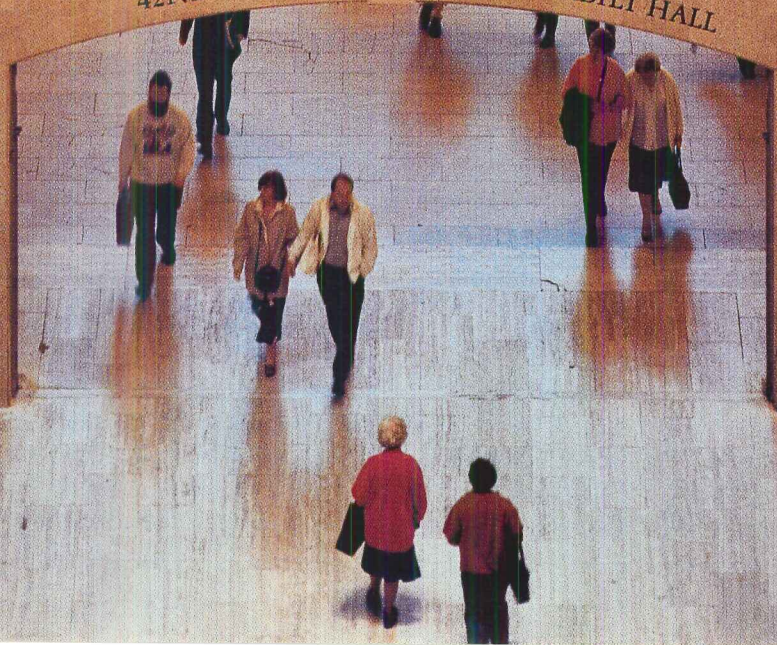


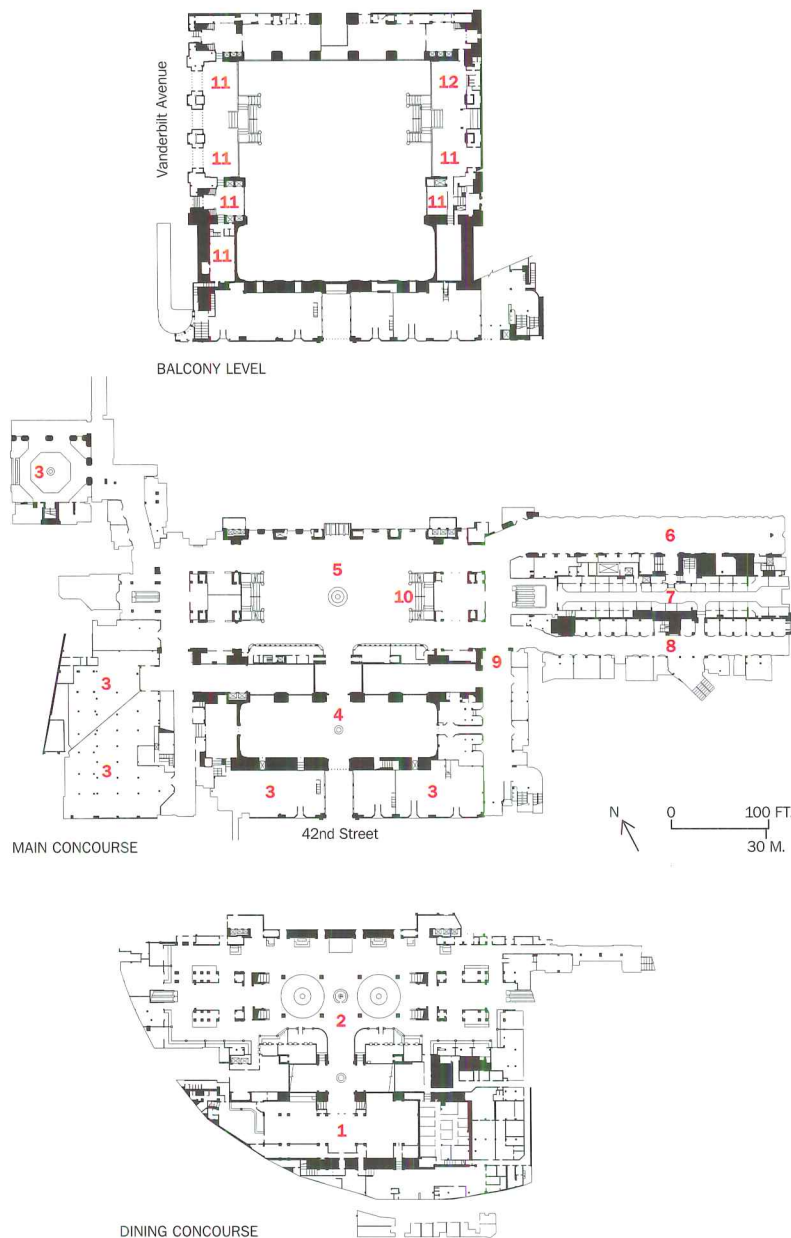
NORTH-SOUTH SECTION



42ND STREET

VANDERBILT HALL





1. Oyster Bar
2. Food court
3. Retail
4. Main Waiting Room
5. Main Concourse
6. Graybar Passage
7. Market
8. Lexington Passage
9. 42nd Street Passage
10. East stair (new)
11. Restaurant/bar
12. Public space

To bring life to all three levels, the architects converted the lower train concourse into a food court, turned the balconies into restaurant space, and added a new marketplace east of the Main Concourse.

a welcome convenience, linking the station to the city, it also brings new life to the west balcony onto which it feeds. Soon an upscale café opens on the balcony, proving that this upper level can support food-service establishments.

In 1994 the MTA signs a 110-year lease on Grand Central from the successor company to the bankrupt Penn Central. With long-term control of the building secured, the MTA asks the private sector to invest in a comprehensive revitalization of the station. Bonds worth \$84 million are sold, supplemented by \$109 million from the MTA's capital budget and \$4 million from the federal government. The MTA then hires GCT Venture Inc., a partnership of Williams Jackson Ewing and developers LaSalle Partners, to implement the overhaul of Grand Central Terminal.

1994-98 Cleaning up the old fabric, modernizing mechanical systems, and improving transit functions of the terminal are only part of the grand plan. The overarching

goal is to transform Grand Central into a destination for everyone in New York, not just commuters. "The idea was to restore Grand Central to its former glory," says E. Virgil Conway, chairman of the MTA. "For many years it hadn't been central to the functioning of New York, nor had it been grand."

The most obvious changes are in the Main Concourse, one of the great rooms in the country and the people-pumping heart of Grand Central. The giant Kodak sign is removed, opening up the east side of the concourse and making way for a critical new element: a grand stair that will echo the design and placement of the existing west stair. In fact, early drawings by Warren and Wetmore show twin staircases facing each other at either end of the Main Concourse. The east stair was never built, says Belle, because its main function was to bring people up one level to the elevator lobby of a high-rise that was to stand behind the terminal. When a collapse in the real estate market killed the tower, the east stair died, too, leaving an asymmetrical axis in this otherwise perfectly Beaux-Arts space.



Removing offices added in 1927 over the ramps leading from the Main Concourse to the Lower Concourse has turned a tunnel-like corridor (left) back into a dramatic space (right). The architects changed the bridge over the ramps (above), designing a new balustrade that offers views down. The bridge originally had an eight-foot-high wall that shielded long-distance travelers from seeing commuters below.



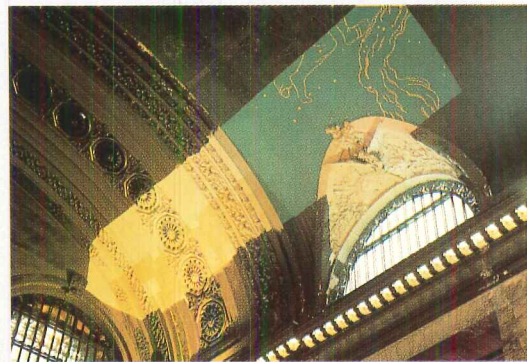
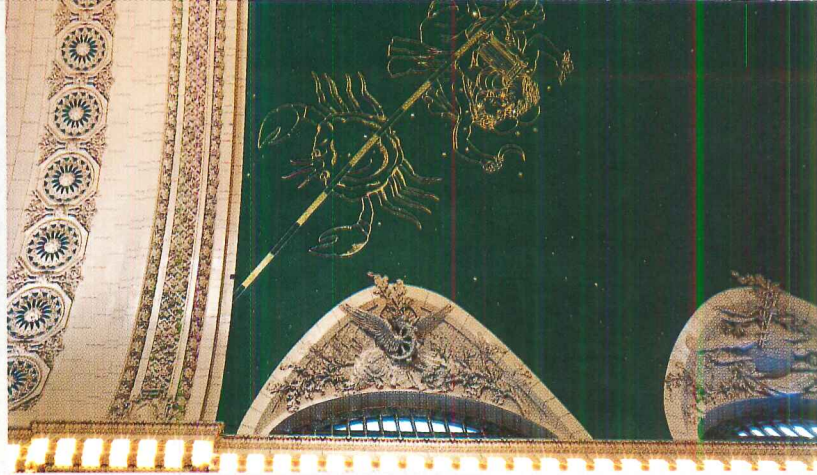
A wide-angle photograph of the interior of Grand Central Terminal. The image captures the grandeur of the space, featuring massive, light-colored stone columns that support a high, vaulted ceiling. The ceiling is adorned with large, arched windows and intricate relief sculptures. A prominent feature is a balcony level with a decorative railing, which is now used as a restaurant. People are seated at tables in the foreground, and a waiter in a white uniform is seen attending to a table. The lighting is warm and ambient, highlighting the architectural details and the bustling atmosphere of the terminal.

The balcony level now has 35,000 square feet of space for restaurants, as well as a public area in which visitors can relax without having to buy anything.

The project team's decision to clean and restore the sky mural done in 1945 rather than the one painted by Paul Helleu in 1913 provoked some controversy among preservationists. But Beyer Blinder Belle determined that the original tempera mural had been damaged beyond repair by decades of water leakage and by the installation of the new painting, which was glued in panels directly onto the water-damaged old. The presence of asbestos in the 1945 work also helped convince the architects that it would be safer to keep the panels in place than to remove them.

The most difficult part of the job was getting work crews up to the ceiling. Scaffolding the entire ceiling would have been very expensive and would have interfered with travelers using the Main Concourse

below, says Steven Sommer, senior vice president of Lehrer McGovern Bovis, the general contractor for the Grand Central renovation. So Universal Building Supply, the scaffolding contractor, devised a free-standing aluminum-truss scaffolding that moved along the floor on rollers and covered just a small section at a time. Cleaning the oil-based painting was relatively easy, done with a diammonium citrate gel that is very stable and requires little rubbing. Small portions of the mural required repainting and new gold leaf. Old 40-watt incandescent "stars" were replaced with a fiber-optic light system. Above the ceiling, contractors installed new ventilation equipment. Even before funding for the job was in place, a patch of the ceiling was cleaned (right) to get the public excited. *C.A.P.*



Wanting "to complete Whitney Warren's plans for the room," BBB designs a new east stair made of the same Bottocino marble as its sister to the west. Though Beaux-Arts in spirit, the new stair has simpler lines than its older sibling to show it is not original to the building.

The most eye-catching change in the Main Concourse is the restoration of the famous Sky Ceiling. The aquamarine barrel vault, with its procession of goldleaf constellations punctuated by 60 blinking "stars," has accumulated decades of dirt, grime, and diesel exhaust and become a dull, almost illegible ghost of its former self. What the public has seen for the last five decades, though, is not the original mural, but a second version executed in 1945 on panels glued to the 1913 work, to hide water damage from a leaking roof. BBB has to decide whether to clean and touch up the less sophisticated painting from the 1940s or try to restore the seriously damaged original mural. According to Douglas McKean, the project director for BBB, the older painting is beyond repair. The 1945 version, however, is relatively easy to clean, though some goldleafing and repainting is needed. As a final touch, a new fiber-optic system replaces the old incandescent stars in the constellations.

A critical part of BBB's plan is to open up the station by removing previous alterations that impeded the original flow—most notably the expanded ticket offices built in 1927 over the ramps leading to the lower concourse. Restoring the space above the ramps, the architects turn dark tunnels into architectural theater and focus attention on the original building's spectacular way of weaving together different levels of activity.

Another important element in reinventing Grand Central is revitalizing underused spaces such as the balconies and the Lower Concourse. With prime views of the Main Concourse, the balconies are leased to high-end restaurants—Michael Jordan's—The Steakhouse, Cipriani Dolce, and Metrazur among them—bringing new panache to a station that has catered mostly to the hot-dog and pretzel needs of its users. The Lower Concourse, which has been used only during peak hours since the

end of long-distance rail service, is redesigned by David Rockwell & Associates as a food court that aims to attract customers all day long.

Retail areas in the Graybar and Lexington Passages, which run parallel to each other from the Main Concourse to Lexington Avenue, are also renovated. In space that had once been occupied by a newsreel cinema and a loading dock, BBB designs a new marketplace that will feature fresh produce, seafood, and local goods. The east end of this structure is a new granite and limestone facade on Lexington Avenue topped by one of the cast-iron eagles that had sat atop the 1871 Grand Central Depot.

Some of the new restaurants and retail elements won't be finished until this spring, so it is still unclear whether the \$200 million makeover has indeed created a place that can stay active between rush hours and into the evening. And only time will tell if the repolished Beaux-Arts jewel can be a civic engine driving improvements in its neighborhood. But like the new fiber-optic lights in the cleaned-up Sky Ceiling, Grand Central's stars seem to be aligned for a bright future. ■

Credits (continued)

Robert McMillan, AIA, Richard Miller, Christine Muller, Elizabeth Newman, Mark Nusbaum, AIA, Elena Palau, Jennie Pocock, Frank Prial, AIA, Deborah Rau, Donald Recchia, Magali Regis, Roni Ruso, Ranabir Sengupta, Ken Shook, Rocio Vasconez, Michael Weststone, AIA, Kip Wicke, AIA, Nolan Zail
Associated Architects: Harry Weese Associates (master plan, restoration); Sen Architects, Rockwell Group, Federman Design + Construction Consultants (retail development)

Contractors: George Campbell Associates (Waiting Room renovation); Lehrer McGovern Bovis (retail, Main Concourse, utilities)

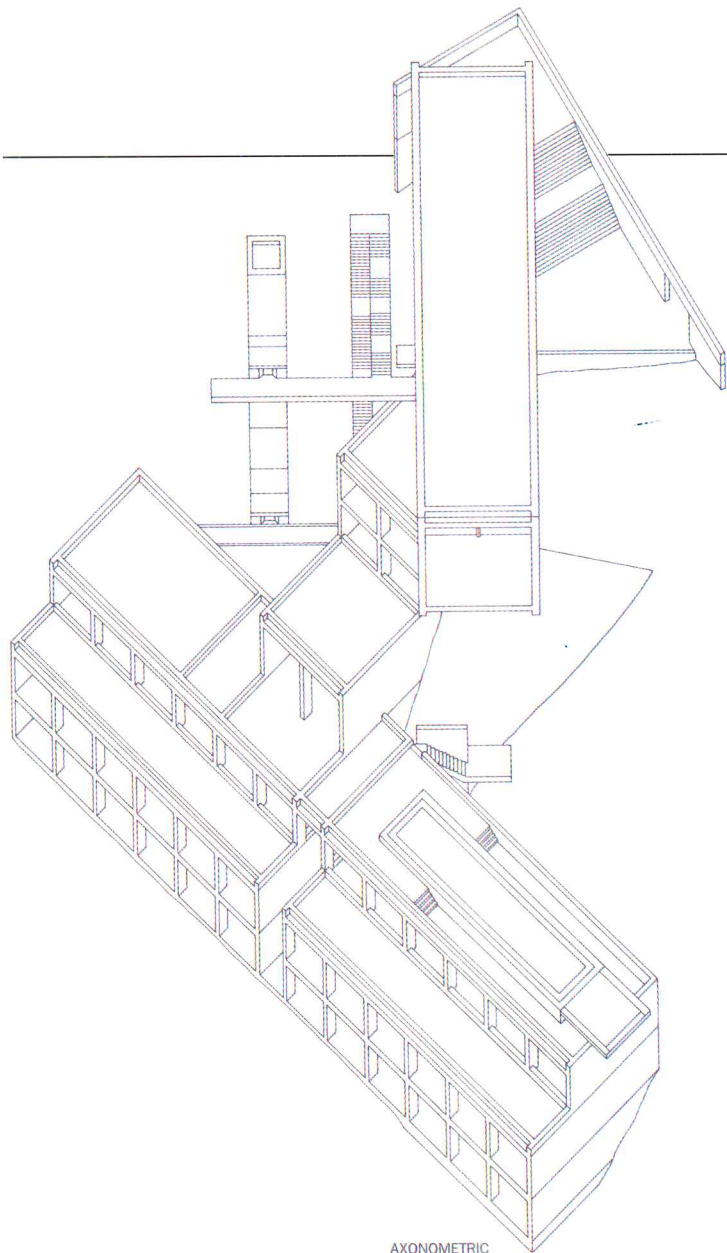
Sources

Steel windows: Airflex, Coordinated Metals Inc., W & W Glass
Entrance glazing: Genetech, Tajima Corp., W & W Glass
Acoustical ceiling: Armstrong
Floor and wall tiles: Daltile
Lighting: LK Comstock & Co.
Resilient flooring: Azrock Marmoleum

At the edge of a steep hillside, Ando has stacked boxlike forms, rotated to fit into the hillside (axonometric, opposite). From the top-floor entrance, a single window punched into the side wall gives a clipped view of the coastline and the free-standing elevator shaft (right).



Tadao Ando's **TOTO SEMINAR HOUSE** is a corporate retreat that is a world apart, a building that beckons to earth and sky.



AXONOMETRIC

by James S. Russell, AIA

A solitary tower, minimally penetrated monumental walls, and gridlike openings reveal little about what goes on inside the ash gray concrete structure on a steep hillside in southern Japan. To the informed eye, however, one thing is clear: this is a work of Tadao Ando. Still, it could be a private house, a museum, or a shopping galleria—Ando's palette has not varied greatly by type during his 30 years of practice. The building is in fact a 34,000-square-foot retreat house for TOTO, a plumbing-fixture manufacturer. Though the company holds conferences and training seminars here, the retreat house primarily offers hard-working employees a place to take their families for a weekend's rest and recreation.

Neither a woodsy getaway nor a pampering resort, Ando's purposefully austere design doesn't promise conventional R&R. The architect has long asserted that the compromises of a convenience-oriented and commodified daily life deprive us of spiritual richness. The company hired him to make a place that defied expectations, that was serene, contemplative—a place apart. The client trusted its architect so much it even let him select a site. Ando found one that was freighted with meaning on the eastern shore of Awaji Island, near Kobe. Perched close to the brow of a lushly planted hillside, the site offers a panoramic view of the island's edge and the ocean, some 300 feet below. Ando found in the upthrust land an expression of Japan's founding, which ancient mythology attributes to this place. It was also the epicenter of the 1995 earthquake that did immense damage to Kobe. The architect thought of the building as a kind of landmark commemorating this tragic event.

Ando's design shifts the orientation of the building across its seven levels to orchestrate an itinerary that opens distinct vistas and carefully framed views. ("I have tried to create works that betray . . . expectations," Ando told an interviewer in *Japan Architect*.) Guests enter the building on the topmost level of a two-story-high concrete tube. A reception area spills down a wide stair to a lounge and outdoor terrace that opens to a huge vista—split by a pier of concrete—of ocean and distant

Project: TOTO Seminar House, Tsuna-gun, Hyogo, Japan
Owner: TOTO Ltd.
Architect: Tadao Ando Architect & Associates—Tadao Ando, principal; Takashi Muto, project architect

Engineers: Ascoral Engineering Associates (structural); Setsubi-Giken (electrical)
General Contractor: JV of Takenaka Corporation and Saeki Kensetsu Kogyo



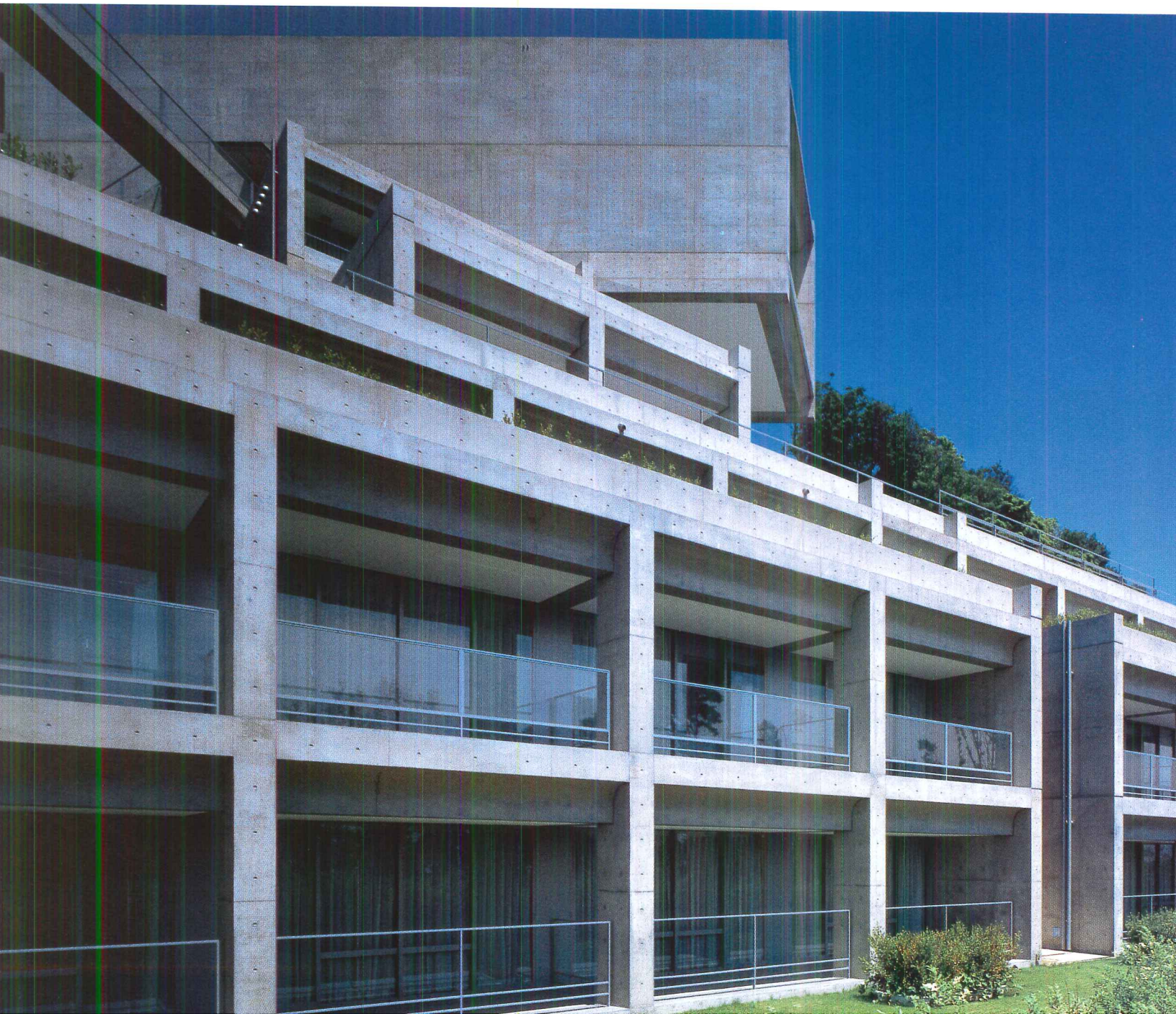
A narrow road leads to the top-floor entrance of the TOTO Seminar house (aerial view, left). From the top level, the visitor moves through the building by crossing an outdoor bridge (above) and taking an elevator down. In this way, the building exposes the visitor to wind, sun, and the vastness of the ocean's sun-dappled surface. The axis of the pool (opposite) carries the eye to Osaka in the distance.

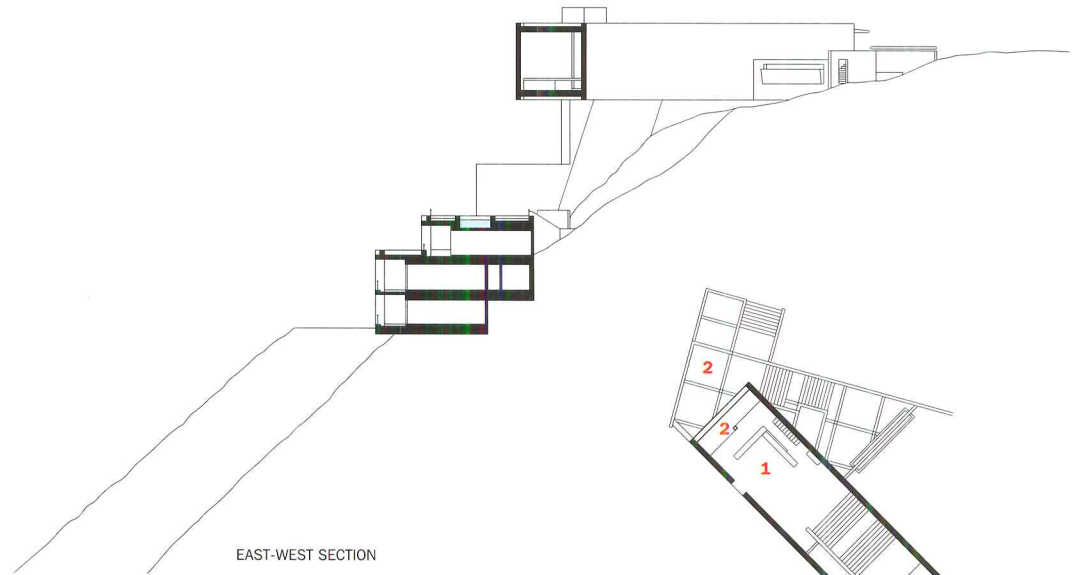




Though Ando oriented some elements of the building to shape views (plans opposite), the orientation also fits the buildings into the tumbled slope of the hillside (section opposite). Light seeps into the single-loaded corridor behind the guest rooms (right). On the lowest levels, the rooms open onto

ocean-facing terraces (below), though a scrim of trees makes a protective foreground. The architecture of the guest-room levels—linear segments set perpendicular to the hillside’s fall line—is akin to that of Ando’s most famous housing, the Rokko complex above Kobe.





EAST-WEST SECTION

rolling hills. By screening the foreground coastline, Ando paints a view of almost pure abstraction. The ocean seems no longer a uniform lens of blue or steel gray, but comes alive with wind rippling the surface, the limpid path of the sun, or the restless shadows of clouds.

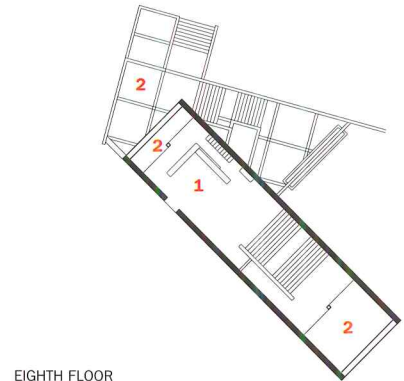
Under the cantilevered entry pavilion, Ando has rotated long, terracelike structures a little more than 45 degrees to the south, stretching meeting rooms, a dining room, and guest rooms southwest to northeast on a flat part of the site. An elevator shaft unites the crisscrossing geometries, rising from within the three single-loaded lower floors of guest rooms as a freestanding tower. Ando saves the vertigo-inducing vistas for public areas, swaddling domestic spaces with the comforting enclosure of greenery. At the guest room levels, the plunging hillside and the ocean vistas are obscured by trees edging a small shrub-studded lawn.

The guest rooms reprise the vertical itinerary of the public areas: all are duplexes entered from the top. Stairs lead down to a double-height living area. Some rooms are arranged in traditional tatami style, with pillows and low tables, rather than Western-style chairs. Bathrooms are elegantly appointed, and soaking in a TOTO tub affords an outdoor view.

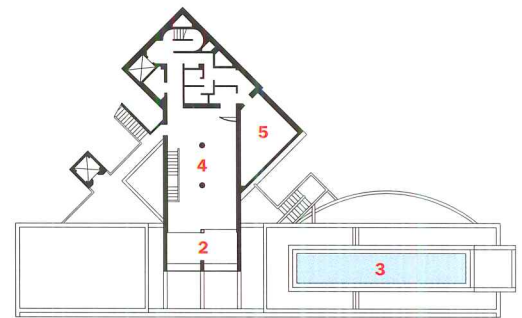
Just as the site was chosen for its historical associations as well as its spectacle, the orientation of views celebrates more than an attractive setting. The axis of the pool, which cantilevers northeastward from a roof terrace, points the eye to Osaka, the vast metropolis from which many guests will have come. The vista in the reception lounge includes Kansai Airport across many miles of ocean, symbolizing, says Ando, "arrival and departure, a sense of the center of information transfer, a sense of the most important thing that connects the region to the rest of the world."

Revisiting earlier themes

Ando has deployed his customary materials and details, and the way TOTO engages its site is as unique and complicated as much of his earlier work is. The Water Temple, only a few miles north of TOTO, engages in a dialogue with the landscape. It's a lily pad-studded basin presented as if in offering to the hillside above. Descending the stair into the temple is like dropping through the surface of the water. In other projects Ando offers something akin to an argument, an argument that is civilized but that the architect seems determined to win. The exterior of the Chikatsu-Asuka Historical Museum (RECORD, November 1995, page 72), for example, is experienced by visitors as a monumental stair cascade, an architectural extension of the topography. On its west and south faces, however, it's a massive wedge pushing its way out of the earth.



EIGHTH FLOOR

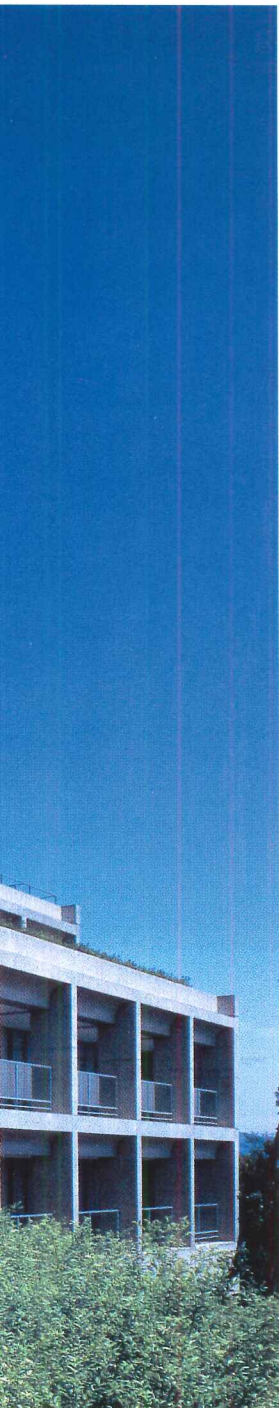


FOURTH FLOOR



SECOND FLOOR

1. Lobby
2. Terrace
3. Pool
4. Dining
5. Kitchen
6. Guest rooms



If the TOTO project is similarly assertive, even citadel-like, it is because Ando is not only recognizing the topography and views, he's helping the guest experience the place as the edge where earth meets sky.

The power of Ando's forms and the sensuousness of the fabric he uses to make buildings can distract the visitor from the architect's real intention: to make sensation palpable. Rather than simply framing views, Ando is "inviting nature in," as he puts it, placing visitors where they will feel the breeze, catch the sun, and sense the sky not as a visual backdrop but as an atmosphere that surrounds and touches.

Ando's guiding proportional system is the tatami, which, he explains, "comes from the scale of the human body of the Japanese people." Measurements derived from the tatami form the datum for column spacing, window divisions, and railing heights. You don't have to know how these proportions add up to feel them, which is why Ando can keep making something new out of apparently similar concrete, metal, and glass details.

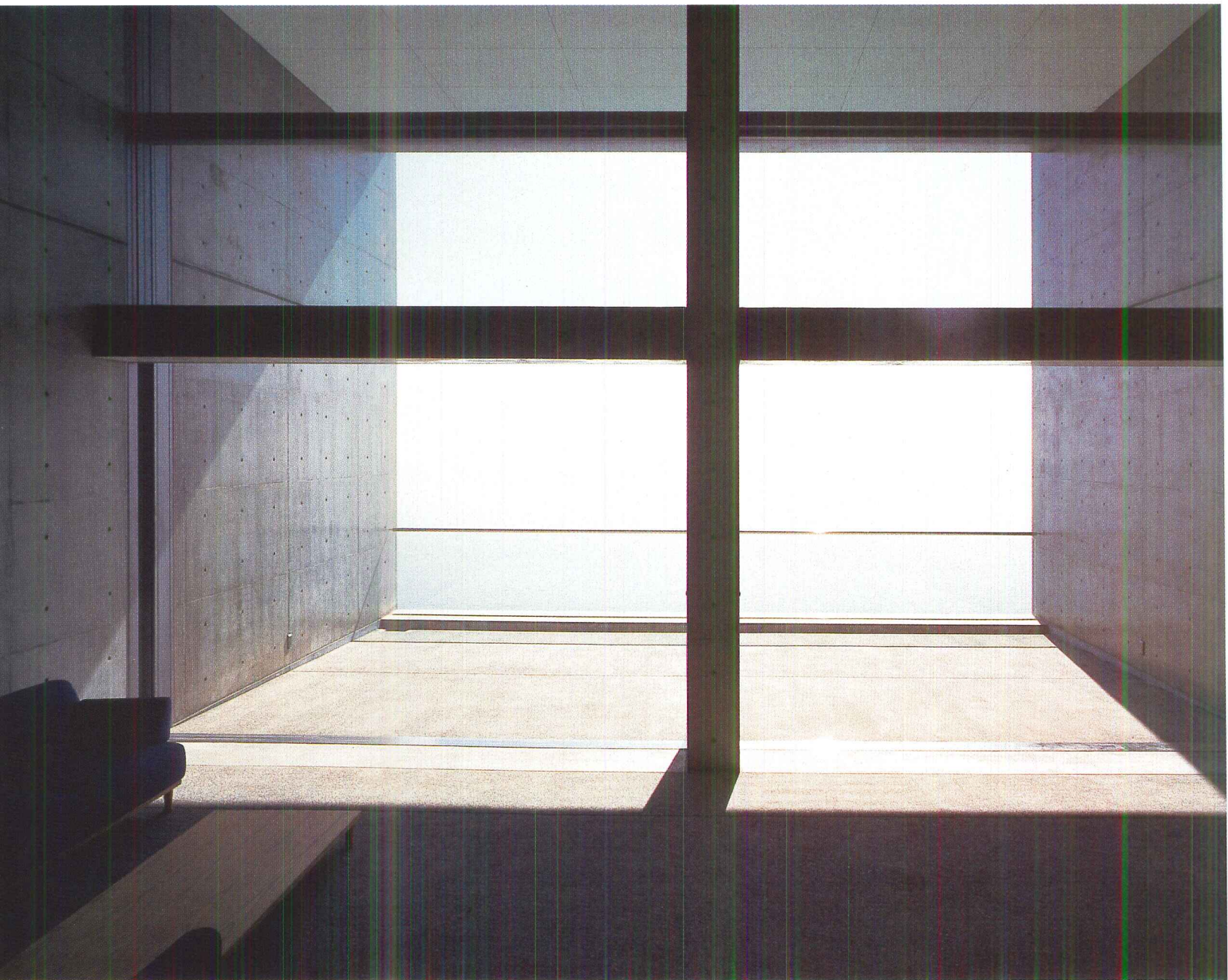
Contradictory architect, and architecture

Ando is often portrayed in reverential monographs as something akin to a helmet-haired monk. But he operates in the adrenaline jangle of modern, urban Japan. Speaking from his office, not far from the grimy shadows of a railroad viaduct at the bustling center of Osaka, he belies any Zen-like preconceptions. Gravelly voiced, quick to smile, but impatient and pugnacious, he reminds the visitor of the amateur fighter he once was.

If it is hard to reconcile the man with the work, the work does not neatly resolve itself either. It is monumental, but not bombastic. It is calm, but too willful, too striven-for to be truly tranquil or deferential in the Zen tradition. It is indisputably urban, but it walls off Japan's often cacophonous manmade surroundings.

Ando describes an "oscillation" in his design process, a perpetual consideration of opposites. "Can the delicacy of Japanese architecture be carried in its original character into an architecture infused with high intensity?" he has asked. "Conversely, can powerfully constructed space be brought to delicacy without its weakening?" The work of Tadao Ando arguably succeeds more in the intensity than in the delicacy. On the other hand, the architecture of the TOTO Seminar House opens one's eyes in a unique way to the wealth of natural experience—it helps you see the hawk idly picking its way along the hilly site's thermal updrafts. This is perhaps Ando's genius. ■



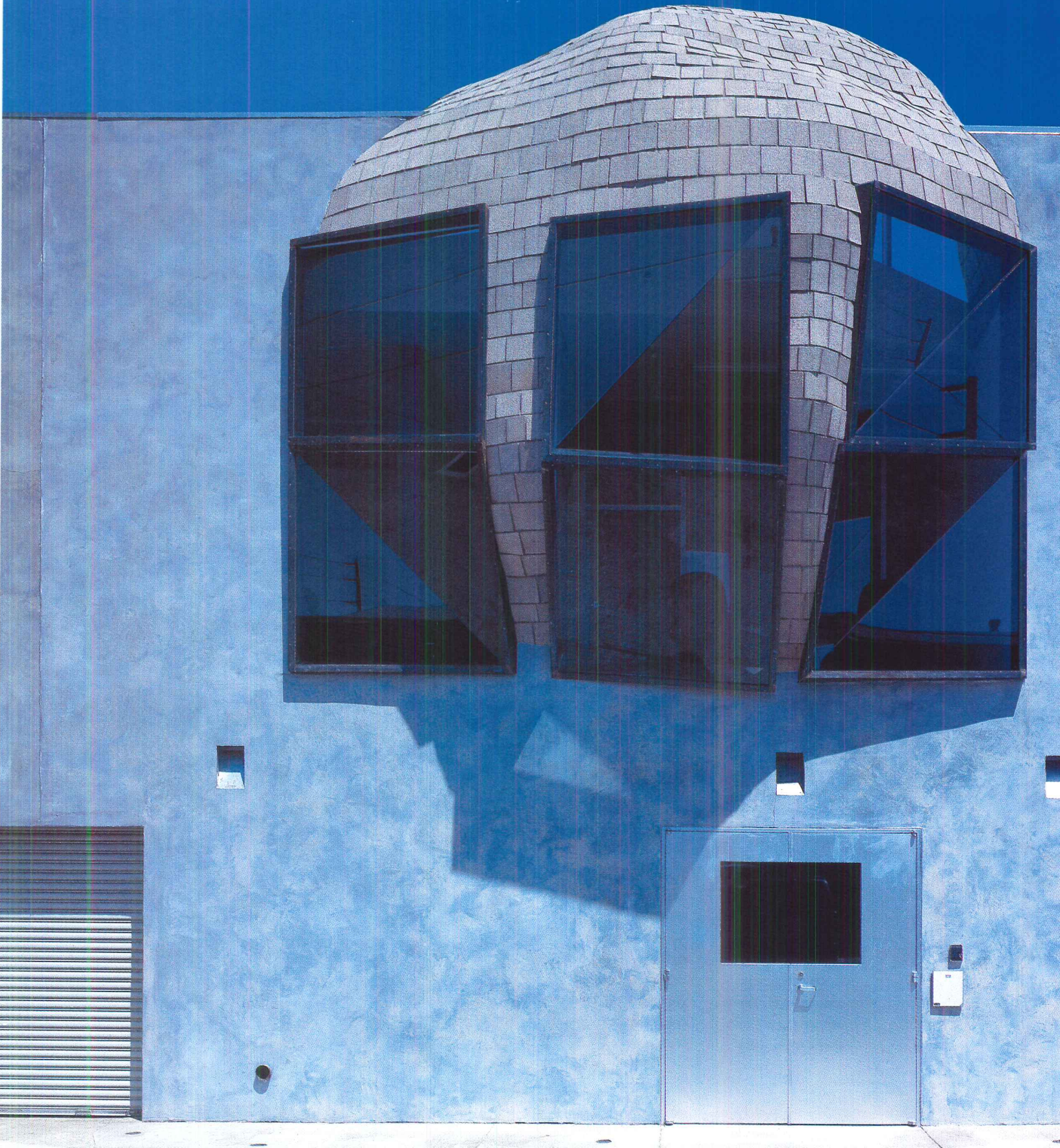


On entering the TOTO Seminar House, the visitor descends a wide stair to a lounge opening out to a view of seemingly endless ocean (above). Duplex guest rooms are also entered from above

(opposite). The bathroom on the upper level is placed on the window wall. Some of the lower-level living areas are fitted out in Western style; others are set up as tatami rooms.

A shaggy protrusion of glass and concrete block energetically pops out of the smoothly plastered wall. Computer model-

ing (drawings opposite, top to bottom) shows the plywood mold, the wire pipe frame, and the projected surface form.



CRITICISM Eric Owen Moss comes up with a wild thing for TRIVIDA in Culver City.

by Suzanne Stephens

It's not a pretty sight. The rippling bulge of concrete block and steel-framed windows bursting out of a Culver City, California, warehouse make it seem that Eric Owen Moss has seen *Alien* too many times. A question pops into the onlooker's mind: "Why do this?" Moss's rationale is compelling, although the experiment raises questions that are larger than the thing itself.

Moss's aim in designing the bulge was to "break out of the box" and, using conventional materials, arrive at a spatial form that was "fluid" and "hypothetically kinetic." The intervention provides an idiosyncratic signature for both Moss and the building's developers, particularly since it is near other projects they have worked on. Moss's combination of architectural panache and functional spec office space has contributed to a significant overhaul of this grotty industrial area of Culver City.

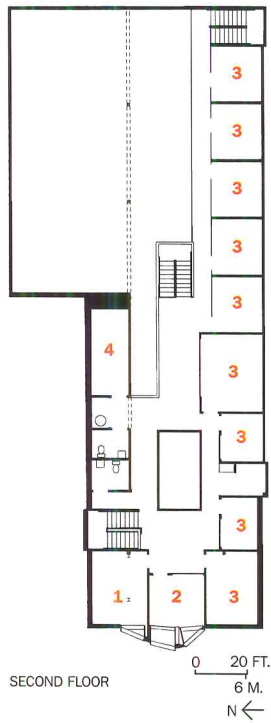
Located at 3524 Hayden Avenue, the warehouse belongs to Frederick and Laurie Smith, Moss's clients for a number of daring projects in recent years, including the Samitaur Building (RECORD, February 1997, page 52). In renovating the building, Moss deliberately kept the 7,000-square-foot, blue-gray-plastered wood-frame structure a neutral background. Out of the second-floor street wall erupts the ogle-eyed bulge of concrete block and glass, containing within its bowed contours a conference room and an office for Alex Jacobson, the president and CEO of Trivida, a computer software company that leased the space from the Smiths.

Inside the protrusion, occupants find themselves within a vaulted, dramatically shaped and angled space, partly glazed and partly concrete block, with additional light admitted through

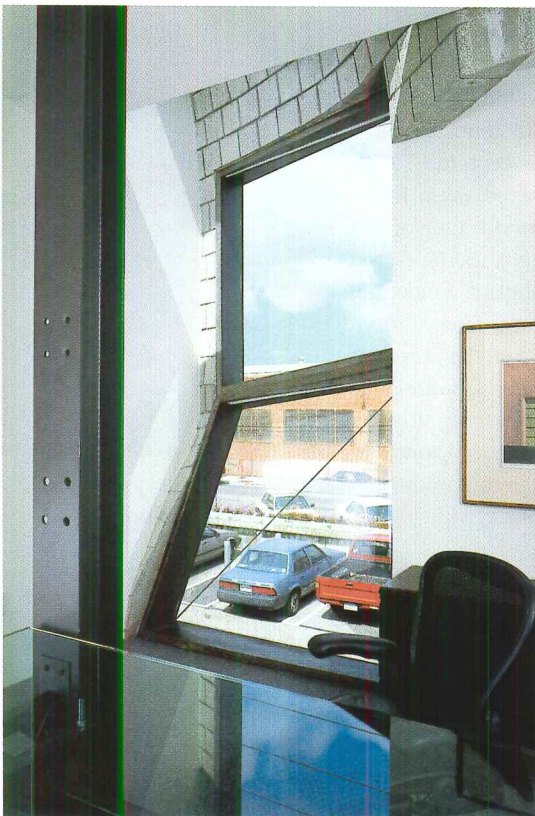


Project: Trivida, Culver City, California
Architect: Eric Owen Moss Architects—Eric Owen Moss, principal; Jay Vanos, project architect; Scott Nakao, design team leader; Paul Groh, Dolan Dagget, Francisco Delgado, Don Dimster, John Bencher, Stewart MacGruder, Justin Liu, Sandra Gallego, Nicole Hatje, designers

General Contractor: Samitaur Constructs—Peter Brown and Tim Brown
Engineers: Kurily, Szymanski, and Tchirkow (structural); Fruchtman and Associates (mechanical); Silver, Roth and Associates (electrical)
Consultants: Dennis Kuga and Laurie Smith (landscape)



1. CEO office
2. Conference room
3. Offices
4. Records

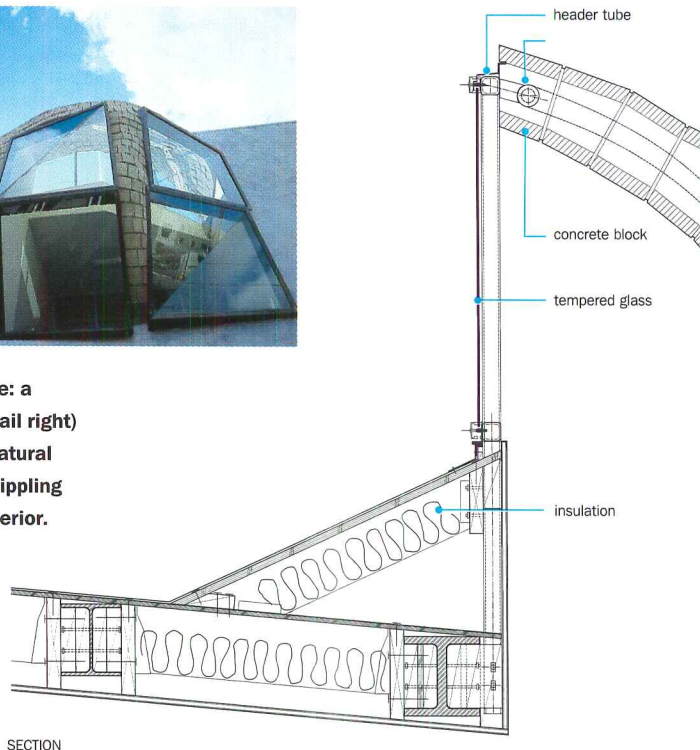


A "battle of the bulge" as Moss calls it, resulted in a dramatic interior space for the president and CEO's office and for the conference room on the second floor. The height of the space,

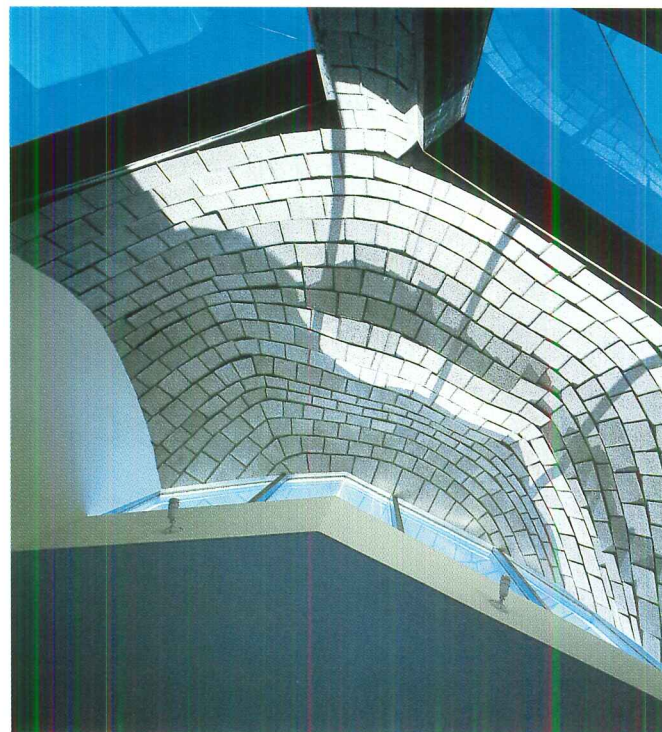
amply lit through both the protruding windows and a rear clerestory, and the undulating curves of the concrete block dramatically punch up the clean and crisp offices of the two-story building.



Top of the bulge: a clerestory (detail right) admits more natural light onto the rippling walls of the interior.



SECTION



clerestories installed between the top of the curve and the flat roof.

In creating this muscular eruption, in which the concrete block wall's identity as a planar, crisply regulated form is severely assaulted, Moss was inspired by a 1929 essay by Le Corbusier. The essay, "In Defense of Architecture," was written to rebut criticism that Le Corbusier was being seduced by formal qualities rather than inspired by the functionalism of the *Neue Sachlichkeit* (New Objectivity). Le Corbusier maintained that "aesthetics are a fundamental human function" and concluded, "The *sachlich* (object) I do not even discuss, conceding it to be evident, primary, inevitable, like the bricks with which one builds a wall. But what wall?"

Le Corbusier's question became all-important to Moss, who named his bulge "What Wall?" He took about 1,000 concrete blocks ("very *sachlich*"), each eight by eight by eight inches, and custom-trimmed them to fit into a curve. Since the hollow blocks could not be cut too much, they limited the overall contour of the bulge. And one thing about concrete block construction always remains constant, adds Jay Vanos, the project architect: "the horizontal course is mandatory."

Moss's architectural team made a wood model, then used computer-generated construction drawings to create a steel armature. Next, an egg crate-like plywood scaffold was placed inside the steel frame to provide shoring and formwork for the blocks. (The plywood was later cut out with a chainsaw.) Finally, the mason, using the model, shaped and attached the concrete blocks, knitting them together with rebars and mortar. The windows were adjusted to this radical deformation: though they are basically square with steel frames, the clear glass has been creased and folded where necessary.

Making a curvilinear wall using flat-sided modular blocks came at a price, however. "Having the freedom to make wild things is an issue," Moss acknowledges. "The search for freedom and openness turns out to have its own constraints." Money was not the main problem, for if the small, 25-by-25-foot area was expensive (Moss won't divulge the cost), the rest of the building was low-budget. But the entire process, including the

construction and bidding, was extremely complicated. Some 52 working drawings were required for the windows, plus 32 for the steel pipe structure. Nevertheless, Moss feels his large-scale projects in Düsseldorf, on Ibiza, and in central Los Angeles will benefit from such research. (Though one is tempted to point out the obvious lesson from all those drawings: too much method might be required for this madness.)

The issue of aesthetics is murkier. Le Corbusier had defended the use of the Golden Section and geometric forms against obsessive functionalism. Moss's aesthetic goal was different from both of these modernist positions: with this battered, squashed, and fragmented artifact he sought to "find a way to construct tension, not just to find a way out of tension." His architectural expressiveness ends up challenging not only what a concrete block wants to be, but what we want to see.

For some, such as Trivida's Alex Jacobson, the result is a success: "I love it," he exclaims. "The interior has such a spatial impact with the light, the height, and the sculptural concrete block wall. It's like a cathedral." For others, such as this observer, the theoretical impetus behind the bulge is more seductive than the physical result. But there are mitigating factors. The smooth, planar, renovated warehouse offers a mute foil to this eccentric event: we notice more of one because of the other. The experiment takes place off the beaten path in this peculiarly urban, laboratory-like part of Culver City, where such efforts are more and more at home. And the thing may be weird, but it has vitality.

This is not to say that the question "Why do this?" has been answered. But Moss's own investigation into torturing concrete block should not be shrugged off: there is virtue in the quest for an architecture that does not accept convention. If Moss's exploration of anti-logic does not lead anywhere specific, or turns out to be simply gratuitous, at least he is keeping the questioning open. ■

Sources

Masonry: *Angeles Block/L & J Flores Construction*

Steel windows: *Rami Designs*

Glazing: *Regal Glass*

Locksets: *Schlage*

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The Past Revisited

FOUR INDUSTRIAL BUILDINGS ARE INVENTIVELY TRANSFORMED,
WHILE THE FATE OF MANY '50S AND '60S STRUCTURES HANGS IN THE BALANCE.

by Tracie Rozhon



1

Landau, Germany

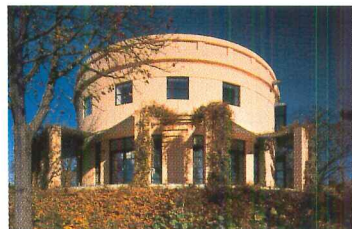
A 19th-century slaughterhouse in southwest Germany is reborn as a library that eloquently integrates traditional with Modernist architecture.



2

Los Angeles

Rising on the foundations of a 1930s warehouse, a new restaurant combines industrial timber trusses with soaring, dynamic forms.



3

Hamden, Connecticut

A monumental concrete water tank gains a new life as a stuccoed hilltop villa, home to the architect who transformed it.



4

Eindhoven, The Netherlands

A desolate lightbulb factory becomes a vital cultural complex with a design school, an auditorium, a café, exhibition galleries, and a library.

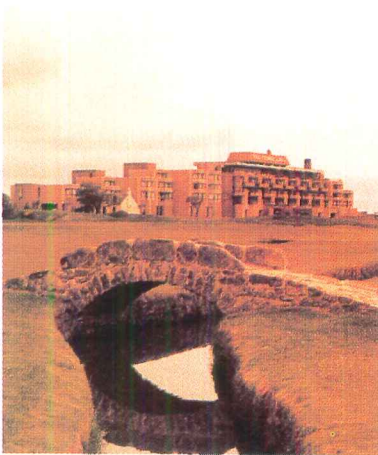
Even the most determined development devotee can see what's worth saving in an old limestone custom house with 48-foot-high Doric columns. Or a brownstone church with an elaborate steeple, casting its dignified shadow over a graveyard dotted with mossy headstones of 18th-century notables. Or those cast-iron-fronted warehouses with elaborate copper cornices and tin awnings, forever stamped on our consciousness by shelter-magazine profiles of the celebrities who live in them.

It's the problem buildings whose fates are increasingly up for grabs. They're not only too big or too small, but too weird: a monumental automobile factory in Italy with a racetrack on its roof has been saved, but hundreds of 1920s tourist cabins along near-defunct byways in the United States are still threatened. A 1953 gem of an A & W Root Beer stand in Boise, Idaho, was reincarnated as a coffee bar, but mid-19th-century mental institutions scattered across the nation—sometimes the grandest buildings in town—are slated for demolition, often despite their national landmark status. Industrial buildings without industry. Tourist cabins without tourists. Asylums without patients.

With grand houses in well-to-do villages and cities, the solution has often been clear, though not always ideal: make a museum. In Utica, New York, civic-minded planners proposed turning a 19th-century mental hospital—a palatial, 350,000-square-foot, neoclassical national historic landmark—into a museum of mental health. Perhaps not surprisingly, the idea came to nothing. Now preservationists are trying to find ways to turn these hospitals into apartments, hotels, or even golf resorts. Can you imagine billboards advertising these garden condos? “If You Lived in the Binghamton Asylum for the Insane, You’d Be Home Now.” Maybe not.

A more realistic approach comes from John G. Waite, an upstate New York architect who is working on a multipurpose plan for an Athens, Ohio, mental hospital. While a museum figures into his current scheme for this 1868 brick behemoth with towers and slate roofs, at least it's a museum of American art, not a gallery of mental health. And his master plan for the 10-building complex also includes a much-needed expansion of nearby Ohio University.

Tracie Rozhon is a reporter for the New York Times, where she covers real estate, preservation, and architecture.



In St. Andrews, Scotland, a 1960s hotel (above) was altered (right) to harmonize with the golf course's older, grander hotel.



Preserving the 1950s and 1960s

For both preservationists and architects, an even stickier problem is the fate of thousands of exemplary '50s and '60s buildings (see "Bringing Back 1960s Buildings," in this issue)—which, because of their sheer numbers, may prove even more pressing than the rescue of stand-alone monuments like becolumned banks and one-of-a-kind Beaux-Arts power plants. With their perceived shoddy construction and the widespread belief that they aren't beautiful or interesting enough to save, these buildings may face an even shakier future than the grand-scale and soundly built asylum.

"There's a clash coming," predicts Peter Brink, a vice president at the National Trust for Historic Preservation, "between two streams of preservation thinking," between people who want to save newer buildings as layers of time and those who would just preserve beautiful old neighborhoods, rich with history and architectural detail. The first camp, he says with the suggestion of a sniff, "wants to save the first major strip mall," while the second group thinks, "Oh, but that stuff's crap." He admits he's of the latter faction. "We'd go to the wall for a great Victorian neighborhood," Brink says. "But I'd be much more selective with the '50s and '60s."

And right now, at least, his faction is dominant. Generally speaking, buildings must be at least 50 years old to be considered for the National Register, though exceptions are permitted. Nevertheless, a search found no individual buildings completed after 1950 listed as national historic landmarks—only Philip Johnson's 1949 Glass House, in New Canaan, Connecticut, comes close. And only buildings with historic attributes (i.e., either listed on the National Register, or deemed eligible for it) are entitled to the 20 percent tax credit that makes so many adaptive-reuse projects economically feasible.

For John Waite, who is rescuing the Ohio mental hospital, '50s and '60s buildings present a much tougher challenge, not only economically, but also aesthetically and technologically. "I went to architecture school in the mid-1960s," Waite says, "and one of the reasons I went into preservation was a real concern about the craftsmanship of buildings just being built: they weren't being built to last." Indeed, the word craftsmanship seemed foreign when applied to post-World War II technology. "Eighteenth- and 19th-century buildings were constructed by hand or by early machines," he explains. "It's easy to replicate a hand-hewn brick or

one manufactured by a primitive machine. The challenge is working with architecture from the recent past. It's much harder to replicate a curtain wall; the technology is obsolete. There's no way to run off a new curtain-wall panel. And how can you make Carrera glass? It's like trying to go back to a first- or second-generation computer: the hardware does not exist anymore."

Buildings of this era were often constructed with flimsy materials, including corrosive metals, that have deteriorated. Does an architect dealing with these structures use the elaborate and expensive methods perfected for restoring 19th- and early-20th-century monuments? "Should we pull out all the stops," asks Waite, "and use silk-purse techniques on sow's-ear buildings?" In many cases, the answer has been no.

Stripping down and changing styles

So far, most architects renovating 1950s and 1960s buildings have chosen to strip them down

to the steel, gut the inside, and re clad the outside, trying (sometimes desperately) to make the building either look brand new or fit in with historic surroundings. In her new book, *Architecture Transformed* (Rockport, 1998), Nora Richter Greer highlights two such projects: a group of 1960s dormitories at Middlebury College in Middlebury, Vermont, and a 1960s hotel overlooking St. Andrews Golf Course in St. Andrews, Scotland.

At Middlebury, architects Einhorn Yaffee Prescott of Albany, New York, took a group of faded 1968 dorms by Shepley Bulfinch Richardson and Abbott, tore off the gray, ribbed-plywood panels, stripped them down to their concrete structure, and refaced them in Corinthian granite (which ranges in color from browns to blacks) with pink Stony Creek granite lintels.

At St. Andrews, RTKL Associates of Baltimore began with a 1960 four-and-a-half-story, brick-and-stone-faced hotel—dubbed "a file cabinet with its drawers hanging out" by locals—and gave it a mansard roof, stone cornices, and French doors to harmonize with the golf course's grander, older hotel. All the first-floor corridors were interior, says Tom Witt, the partner-in-charge, and one of Scotland's most idyllic views—the town, golf course, and North Sea—had been totally ignored. "We turned it inside out," he explains, "and softened the edges of the file cabinet."

In Marina del Rey, California, Jim McElwain of Caldwell Architects reports that his office has been swamped by recent requests to turn '50s and '60s schools—previously mothballed or used as office space—into state-of-the-art schools that meet current codes for fire safety, accessibility, and lead-free paint. Caldwell is working on six such projects, including the conversion of a 1959 concrete vocational school building into liberal arts classrooms for Santa Monica College. "Life has changed," he observes. "Community colleges are not interested in teaching people how to weld anymore. There aren't any factories!"

To effect the transformation, Caldwell's firm added a floor to the two-story structure, since land in Southern California is no longer cheap. The architects sprayed concrete on the floor slabs to stiffen them for earthquake resistance, and replaced tiny slit windows (that rendered the welding labs as dark as mushroom caves) with big, operable ones fit for sculpture classes. The building was then retrofitted with air-conditioning ducts and

computer wiring. With all that work, McElwain says, it was still cheaper to alter the 39-year-old building than tear it down and build anew.

Retaining the original character

Other solutions have maintained the historic integrity of buildings while refitting them for modern use. To James Stewart Polshek, preserving the recent past is “a very important issue.” His firm has revived three 1960s Harrison & Abramovitz buildings and is currently working on Louis Kahn’s Yale University Art Gallery.

With the Harrison & Abramovitz buildings, Polshek took a different tack. At Columbia Law School, Harrison & Abramovitz’s Jerome M. Greene Hall had been nicknamed “The Toaster” because a strange,

“SHOULD WE PULL OUT ALL THE STOPS,” ASKS ARCHITECT JOHN WAITE, “AND USE SILK-PURSE TECHNIQUES ON SOW’S-EAR BUILDINGS?” PERHAPS NOT.

enclosed balcony stuck out the side, like a pop-up lever. While saving most of the upper stories, including the balcony, Polshek and Partners completely changed the base of the 1962 building, echoing the vertical concrete “pleats” of the upper section with an elegantly ribbed glass entrance. The architect replaced the escalator—which he says made the place look like a department store—with an elaborate, broad staircase. “We wrapped the base in a new package,” Polshek explains. “Programmatically, it had been almost anti-student. The entrance had been forbidding, blocking out the neighborhood in an unfriendly way.” Greene Hall, he adds wryly, is not one of Harrison & Abramovitz’s best buildings.

The Yale Art Gallery, by contrast, presents a good argument for—as well as an example of the difficulties with—preserving exceptional architecture from the 1950s and 1960s. “We always knew we wanted to preserve it,” says Polshek of the ongoing project. “Kahn’s building has a kind of iconic importance to members of my profession: it’s almost religious. It’s a fantastic building.” Nonetheless, the art gallery has many shortcomings typical of its period.

“It has very severe technical problems,” the architect continues. The skin is detailed without a vapor barrier, and water has seeped in. The air-conditioning ducts, installed beneath reinforced concrete, are accessible only when the floor is ripped up. Spatially the building was designed, says Polshek, as a “universal space—and that’s ceased to work.” Built with nonoperable windows, the museum depended on mechanically recircu-

lated air. And the ubiquitous accessibility issues haven’t been worked out to Polshek’s satisfaction—at least, not yet.

Questions for the new millennium

Exactly which buildings to preserve and how to save them will undoubtedly be debated into the coming millennium. Should architects replace the dated skins of buildings with pseudo-historical pastiches? When should they devise new facades influenced by existing surroundings, and when should they attempt faithful, full-scale restorations of Modernist landmarks? It’s hard to know what will become important with time. If a building is already so changed that it’s unrecognizable, the chances of its restoration are drastically diminished.

Although a multitude of ’50s and ’60s buildings were built, preservationists grumble that few distinctive examples remain. J. Winthrop Aldrich, New York State’s deputy parks commissioner in charge of historic preservation, describes his office’s futile search for the quintessential Levittown Cape Cod house. “We can’t find one that hasn’t been monkeyed with,” he says. “How many thousands of these houses were built to the great model of William Levitt for returning servicemen? But before half a generation went by, the little houses were being remodeled for three children.” Aldrich says he’s conferring with state historic preservation officers around the country, trying to formulate “our positions on the big subdivisions, the shopping centers, and the freeways: the postwar era when automobile was king.”

One Midwestern firm, Trout Architects of Boise, Idaho, has found a solution, at least for delightfully tacky roadside architecture: strip away the haphazard accretions and restore it to an eye-popping version of fin-de-millennium kitsch. In Boise, Trout took a much-altered former A & W Root Beer stand—a cinderblock structure with a flat roof and a drive-through canopy—ripped off traces of its past, and transformed it into a drive-through Moxie Java hut. The architect turned the backyard into a patio and commissioned a giant neon coffee cup for the roof.

“It’s wicked cool—it rocks,” says Burt Bedeau, the architectural historian at the Idaho State Historic Preservation Office. “I’m just waiting until it turns 50 so I can put it on the National Register!” ■



In Boise, Idaho, an A & W Root Beer stand—turned—seafood store

(above) reclaimed kitsch appeal as a Moxie Java hut (right).



1 Landau City Library Landau, Germany

A 19TH-CENTURY SLAUGHTERHOUSE IS REBORN AS A LIBRARY, FORGING AN ELOQUENT DIALOGUE BETWEEN TRADITIONAL AND MODERNIST FORMS.

by Lisa Koenig

Project: Landau City Library, Landau, Germany

Client: City of Landau

Architect: Lamott Architekten BDA—Ansgar Lamott, design principal; Sonja Schmuker, Bernd Treide, Fabian Determann, Jutta Wiedermann, design team

Engineers: Schreiber Ingenieure (plumbing and mechanical); Müller and Bleher (electrical)

Consultants: Brüssau Bauphysik (acoustical)

At the turn of the century, the small southwest German city of Landau ranked its municipal slaughterhouse among its most celebrated cultural attractions. Regional guidebooks directed tourists to medieval churches, neoclassical fortifications, and the “expansive, extremely well-equipped” abattoir. The slaughter halls—recently transformed into a 19,500-square-foot city library—are once again bringing praise to Landau. Designed by Stuttgart-based architect Ansgar Lamott, the \$4.8 million library opened last spring, nine years after the building’s demise as a slaughterhouse.

The project’s success owes much to Lamott’s inventive use of industrial materials in integrating a Modernist addition with a 19th-century sandstone-and-brick edifice. “We played rough and fine materials off one another to differentiate spaces,” notes Lamott, “expressing transitions from one space to another, from one era to another, and from the old building to the new.”

The slaughterhouse complex—a 4.7-acre site with the slaughter halls and a water tower, both from 1884, and a circa-1893 cool-storage building—became overrun by a maze of shoddy but functional '50s and '60s additions. By the 1980s, most of the buildings had

Lisa Koenig is freelance journalist specializing in architecture.



lapsed into structural disrepair. Finally, when the European Union’s 1989 meat-processing regulations mandated costly renovations, the city closed down the complex.

Meanwhile, the post-Cold War abandonment of four of Landau’s military bases further eroded the urban fabric. The need for citywide renewal was severe. In 1989, the town sponsored an idea competition for mixed-use redevelopment of the slaughterhouse site. Lamott won with a proposal that carved a town square in place of the decrepit 1950s-modified cool-storage building, which connected the water tower and slaughter halls. No plans were implemented until 1995, when the Karl and Edith Fix Foundation donated \$4.5 million to transform the preservation-protected slaughter halls, a spacious twin-nave basilica, into the new city library.

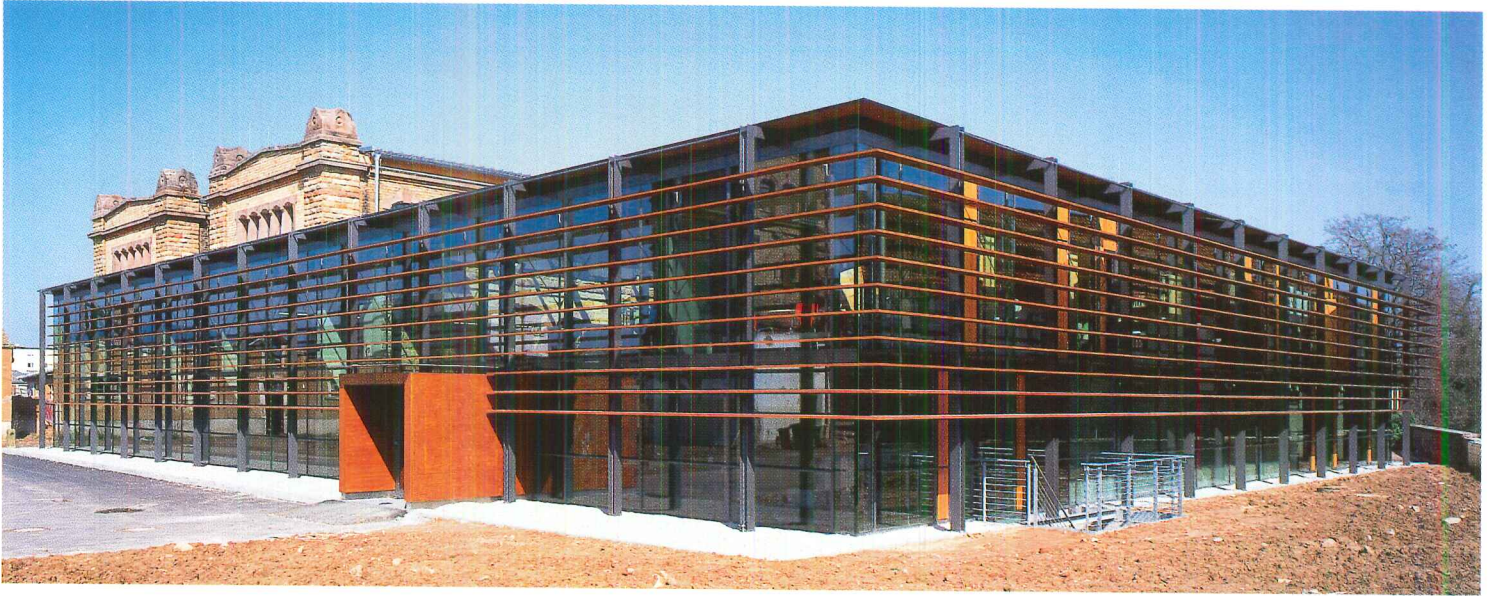
Turning the derelict abattoir into a modern library resisted simple design solutions. The historic building was too small to accommodate a program with 75,000 books, CDs, and periodicals. If a mezzanine

Lamott replaced the slaughter halls’ ragged party wall (left) with new concrete columns behind glazing and a louvered brise-soleil (opposite).

were simply inserted, the floor-to-ceiling heights would be inadequate. Moreover, the existing sandstone foundations, weakened by water from the swampy ground, could not support the new loads. And the slaughter halls’ front (or west) facade would stand as a truncated ruin—its lower half a ragged party wall—after demolition of the adjoining cool-storage building.

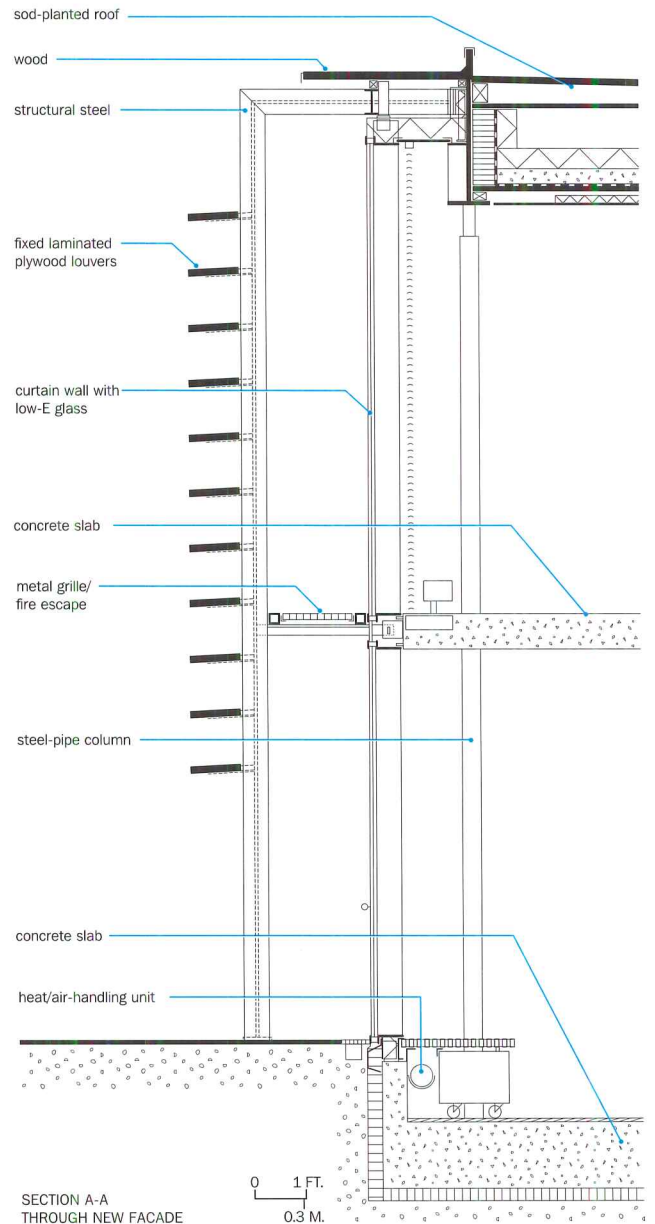
The architect’s solution consistently forged a dialogue between old and new—juxtaposing lightness with heaviness, transparency with opacity, and traditional elements with simple machinelike interventions—to achieve an integral whole.

On the exterior, Lamott wrapped a wood-slatted brise-soleil around the existing masonry structure and his glass-and-steel addition. Mounted on a steel frame (which also supports the new curtain wall), horizontally fixed louvers float visually in front of the composite building, embracing and unifying it. Distinctions between existing and recent architecture remain clearly articulated, with the original twin gables—the clerestories above the two naves—rising behind the modern facade. Behind the louvered curtain wall, Lamott opened the

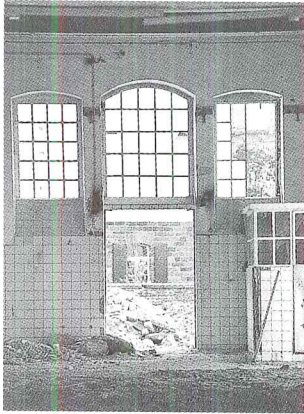


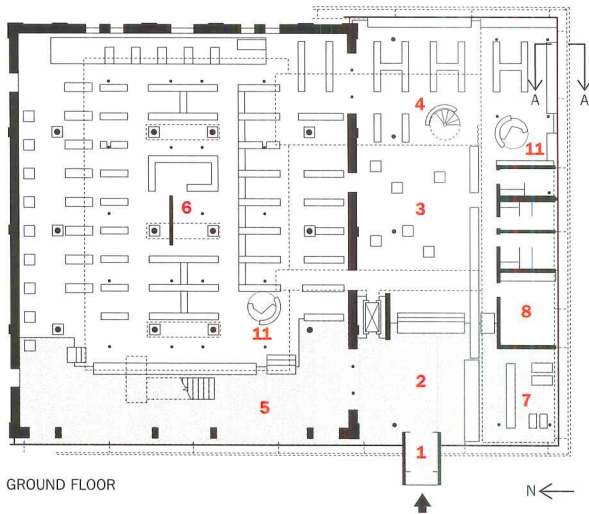


A steel structure supports the curtain wall, as well as Nordic-pine plywood louvers, which allow for transparency while shading the interior (right, below, and opposite). Louvers are set two feet from the face of the glass to provide minimum width for a second-story fire escape. Lamott gave the louvers opened-ends fins (below and right), instead of wrapping the entire building. Befitting a library, the interior is legible from outside.

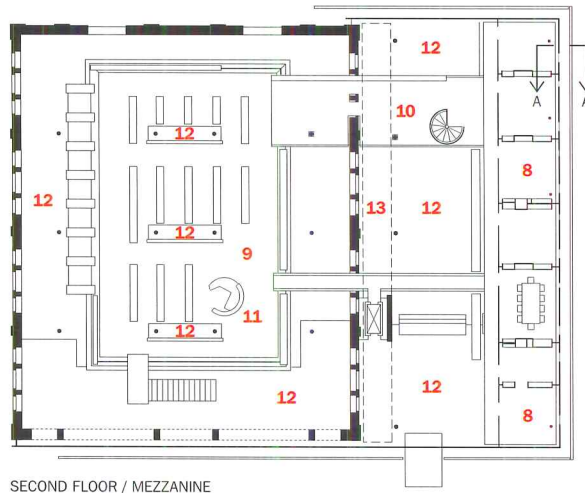


New steel jambs (right) echo the tripartite composition of the original windows (below) above them. A wide steel bridge (bottom), acting as a lounge, links Lamott's mezzanine in the old building with offices in the new.





GROUND FLOOR



SECOND FLOOR / MEZZANINE

1. Entry
2. Foyer
3. Exhibition/café
4. Children's library
5. Exhibition
6. Main reading
7. Circulation desk
8. Administrative
9. Mezzanine stacks
10. Audiovisual/bridge
11. Librarian station
12. Open
13. Skylight

problematic ground floor of the historic west facade and supported its upper half on new concrete columns. From outside, the new transparent facade reveals a deep and inviting spatial layering.

Entering the building, the visitor steps inside Lamott's addition, a canyonlike rectangular space that parallels the twin naves. The original south exterior wall, massively built in rusticated red sandstone, is now an interior screen. A seven-foot-wide skylight, along the entire length of this wall, articulates the juncture between Lamott's flat-roofed building and the 19th-century structure. The modern extension, outside the masonry screen, houses the noisier activities: the entry foyer and circulation desk; a flexible zone with café tables and periodicals racks; the children's library; and, against the new south facade, two floors of administrative suites.

Within the old slaughter halls lie the library's quieter regions: two levels of stacks for adults, and an exhibition area. Lamott addressed the structural limitations of the original foundations by pouring a new load-bearing concrete slab that is independent of the existing shell, not even touching it. This separation between old and new is accentuated by gaps or reveals where Lamott's floors meet the stone walls and original cast-iron columns.

To provide a second level of



stacks, the architect inserted a freestanding tablelike mezzanine, supported on steel pilotis. He depressed portions of the ground floor nearly two feet to increase floor-to-ceiling clearances. Eloquently expressing spatial metaphors through

contrasting materials, Lamott marked transitions with changes in flooring: an asphalt screed in the grade-level foyer and exhibition area, echoing the street paving just outside, leads further inside to more typical interior fin-

Original clerestory windows light mezzanine stacks (top). Modern and historic materials mark transitions between the two buildings (bottom).

ishes, with a warm industrial parquet in the café and stacks.

Two steel bridges—modern interventions, railed with glass and planked with oak—penetrate the old south facade, crossing the canyonlike zone to connect the mezzanine to fire-escape routes and second-floor administrative offices. These bridges literally and figuratively link the historic and modern structures. Where Lamott pared away window surrounds to accommodate bridges, he placed simple bladelike jambs, austere steel plates, that acknowledge the opposition between old and new.

Rather than mimic a period style, Lamott drew on the authenticity and inherent qualities of modern materials. On the eve of the new millennium, his slaughterhouse-turned-library is a work of forward-looking architecture: an optimistic beginning to Landau's urban reawakening. ■

Sources

Curtain wall: *Hartmann*

Plywood louvers: *Kaufmann*

Lighting: *Licht + Raum, Sill, Rodust + Sohn, Bega*

Aluminum doors: *Metallbau Möckmühl*

2

Pagani Restaurant Los Angeles

RIISING ON THE FOUNDATIONS OF A 1930s WAREHOUSE, A STYLISH RESTAURANT COMBINES INDUSTRIAL TIMBER WITH SOARING FORMS.

by Terry Bissell

Project: Pagani Restaurant, Bar & Lounge, Los Angeles

Clients: George and Robin Pagani

Architect: Hagy Belzberg Architects—Hagy Belzberg, AIA, project architect; Javier Suarez Jr., project manager; Sean Gallavin, Chris Tallon, Serene P. Lee, Camilla Foulk, design team

Engineer: Dan Echeto Consulting Engineer

Contractor: Pacific Southwest Development

If the three quintessential Hollywood arts are the triumph over less-than-glamorous beginnings, the creative rearrangement of skin, and the dramatic entrance, Hagy Belzberg Architects has made Pagani Restaurant in West Hollywood a standard of filmland virtue.

At the southwest corner of Melrose Avenue and Robertson Boulevard, Pagani stands in the center of Los Angeles's decorator and restaurant district. In the 1930s, when the wood-frame stuccoed structure housed a furniture warehouse with an attached caretaker's cottage, the neighborhood was primarily light-industrial. More desirable real estate, Beverly Hills, lay literally just across the railroad tracks. Eventually, in a growth pattern typical of southern California, commercial enterprises serving the industrial sector flourished. The warehouse was converted to a furniture showroom and, later, to a high-end antiques shop.

In upscaling the property, the owners made a series of piecemeal changes to the 4,000-square-foot building that "reconsidered the occupancy instead of the architecture," according to architect Hagy Belzberg, AIA. A patio was added to display metal furniture, and the

Terry Bissell is the former architecture editor of Architectural Digest and associate editor of Arts + Architecture.



caretaker's cottage became the owner's residence. Minor renovations followed in the late 1970s, when restaurateur Peter Morton transformed the antiques shop into his namesake bistro and the cottage into its kitchen.

Again, the owners made no significant architectural interventions. As Belzberg points out, Morton's and its successor, Eclipse, were essentially "restaurants in an antiques store and house."

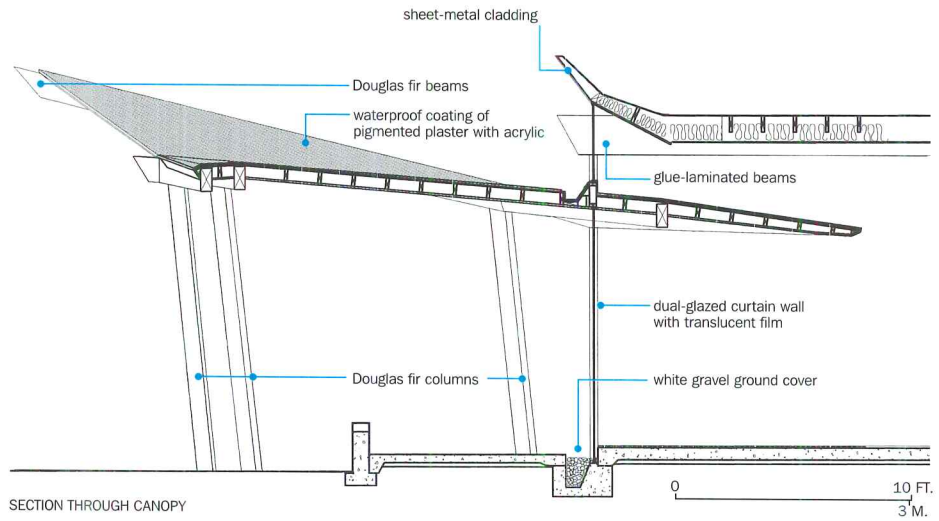
"The place was by now a nice



artifact, but in horrible condition," says Belzberg. Neither he nor his client, George Pagani, wanted to preserve its 1980s pink-and-black aesthetic or its constricted circulation pattern. The footprint, however, had to be retained to comply with strict zoning laws, and both owner and designer sought to bring out the building's strongest feature: its connection to the neighborhood's historic fabric.

Belzberg deemed the warehouse's bowstring truss, which had been concealed by a low ceiling, the one element worth preserving. Using the exposed-timber roof structure as a departure point for new construction, the architect made Douglas fir the primary detailing material. Along with new olive-pigmented, poured-in-place concrete floors, the heavy timber recalls the building's earlier industrial incarnation.

With its sculptural canopy and translucent curtain wall, the new east facade (opposite top) contrasts dramatically with the building's earlier incarnation as an antiques store (opposite bottom).



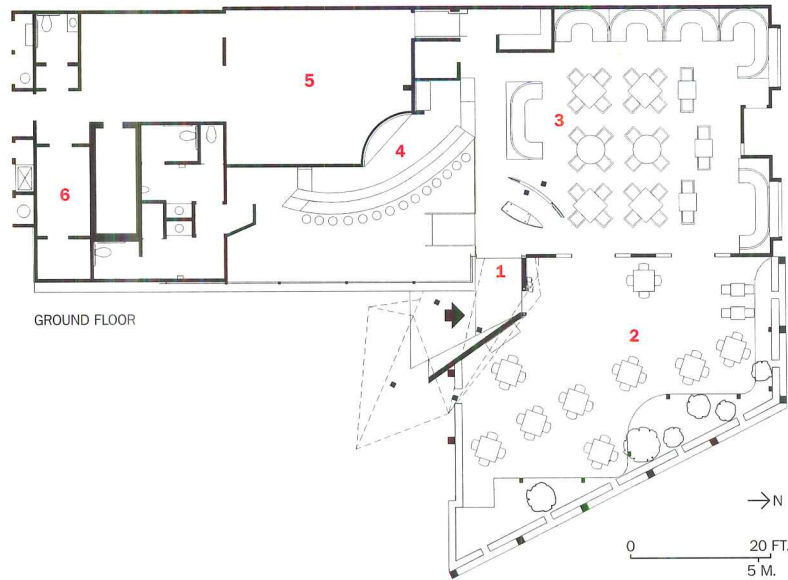
Heavy timber columns supporting the canopy (above) recall the original

warehouse's industrial aesthetic. At the eaves, the roof peels

upward to expose raw connections and steel underpinnings.



Glazing below the horizontal mullion is frosted (opposite), except for a clear strip that reveals the heads of patrons at the bar. From inside (below), the frosted glass obscures parking lot views. The bowstring truss in the dining room (bottom) is original to the 1930s warehouse.



1. Entry
2. Patio
3. Dining
4. Bar
5. Kitchen
6. Office



Belzberg cut away two abutting warehouse walls (necessitating seismic retrofitting) and established a continuous, unimpeded space spanning the two original buildings. He

reconfigured the central area, adjoining the former cottage, into a bar and restrooms.

To blur the distinction between indoors and outdoors, Belzberg re-

placed the stuccoed east face with three steel moment frames and a glass curtain wall. The glazed wall appears to hover slightly above the ground, but it actually rests on a low concrete stem wall that's hidden in a white-gravel-filled planter. Lying to either side of the glass, the gravel both edges the exterior wall and borders the bar area, seeming to continue uninterrupted. Reinforcing what he terms the "outside-in condition," Belzberg turned the patio into an outdoor room with a retractable roof.

"We reused the form, taking the building from a very introverted, fortified box to 'veiled' architecture," says Belzberg. Glazing is frosted to shoulder height, where a clear strip reveals the heads of patrons standing at the bar. From the exterior, the obscure glass offers glimpses of the action inside; from the interior, it blocks out the parking lot in favor of treetop views. "We wanted a thoroughly seductive street element," the architect explains, "and at night, the translucent plane is the first thing passersby see."

A soaring entry canopy pierces the building as a sculpture of folded planes—an L.A. motif reminiscent of 1950s Googie-style diners and the subsequent work of architect Frank Israel. Belzberg's office constructed a three-dimensional computer model of the canopy's complex geometric form, through which they led

the client on a virtual tour to convince him of the structure's impact and power.

Visually related to the warehouse truss, the canopy exposes its simple underpinnings: spliced steel members and industrial hardware. Timber columns, supporting it, tilt streetward. A waterproof coating of black integrally pigmented plaster with acrylic gives the canopy a striking presence.

"This project challenges the formal entry sequence with a three-part system of display, veil, and reveal," Belzberg suggests. Indeed, the canopy, with its funnel effect, highlights the patron's arrival in a fashion associated with red carpets and klieg lights. Further accentuating the see-and-be-seen experience, the translucent screen creates interest from the street—"like a flirt," the architect says. Finally, at the threshold, the full spectacle reveals itself as the eaves peel upward like a parapet, laying bare the building's raw detailed connections and intersecting materials. ■

Sources

- Curtain wall:** U.S. Aluminum
- Window frames:** U.S. Aluminum
- Doors:** T. M. Cobb
- Roofing:** Molloy Sheet Metal
- Paint:** Dunn Edwards
- Doors:** T. M. Cobb
- Lighting:** Halo
- Cabinetry:** CVS Custom Woodworks

3

The Cistern Hamden, Connecticut

A 92-YEAR-OLD CONCRETE WATER TANK OVERLOOKING YALE UNIVERSITY BECOMES A TRELLED VILLA INFUSED WITH LIGHT.

by David Simon Morton

Project: *The Cistern, Hamden, Connecticut*
Owners: *Peter de Bretteville and Sheila Levrant de Bretteville*
Architect: *Peter de Bretteville, Architect; Neal Deputy, associate*
Engineers: *Vladimir Tusman (structural); Kenneth Scorbatti (mechanical)*
Landscape designer: *Deborah Nevins*
General Contractor: *Dickson Construction*

When two newly appointed Yale professors visited a friend's Hamden, Connecticut, home several years ago, they spotted a curious object at the end of the street. There, at the top of a steep hill overlooking New Haven and Yale University, and Long Island Sound beyond, stood a 365,000-gallon concrete water tank. This cistern, built in 1907 and decommissioned in 1977, seemed uninhabitable yet permanent, an oddity occupying a choice site in a highly desirable residential neighborhood. Attracted to the structure's simple cylindrical geometry, architect Peter de Bretteville and his wife, Sheila, a graphic artist, purchased the cistern and determined to convert it into their home.

Among the houses that line the street—Modernist boxes and brick neocolonials—the derelict cistern's nearly pure Platonic form gave it gravity and a presence far more imposing and interesting than its neighbors. "In the past, buildings for public works were built as temples," says de Bretteville. Indeed, even the cistern's dimensions revealed a mathematical rationalism: measuring 50 feet in diameter and 25 feet in height, the cylinder sits on a square grassy plinth exactly 100 feet long on each side.

Although much of the exterior concrete had spalled, the double-banded cornice that crowns the cistern remained mostly intact, as

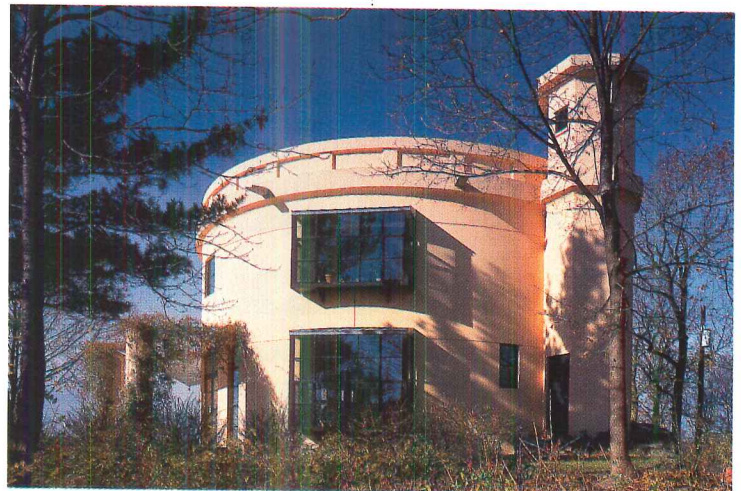


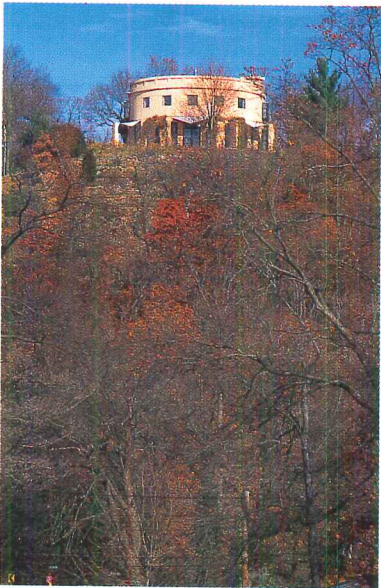
A construction view of the cistern's north elevation (left) shows the existing stair tower and new double-height window openings. Bay windows with aluminum mullions painted black were added on the east face (below). On the south side, a trellis is visible from below (opposite, top left and bottom).

did the 66-inch-wide octagonal stair tower leading to the future roof deck. Repairing the crumbling 18-inch-thick concrete wall (with exposed rebar) would have been costly. Instead, the architect insulated the cistern from the outside and encased it in stucco. The cornice depth remained unaffected since the original wall canted slightly outward and the new surface tapered toward the top. The concrete shell now provides an effi-

cient thermal mass that helps keep the inside cool in summer and warm in winter.

The architect sandblasted the circular interior, saving the resulting debris as material for a patio. He then washed the walls in two coats of lime to produce a translucent, greenish-white finish, and left the concrete ceiling bare to highlight imprints of the original formwork. Plaster-secured caulk, which had plugged old water leaks, left bulges

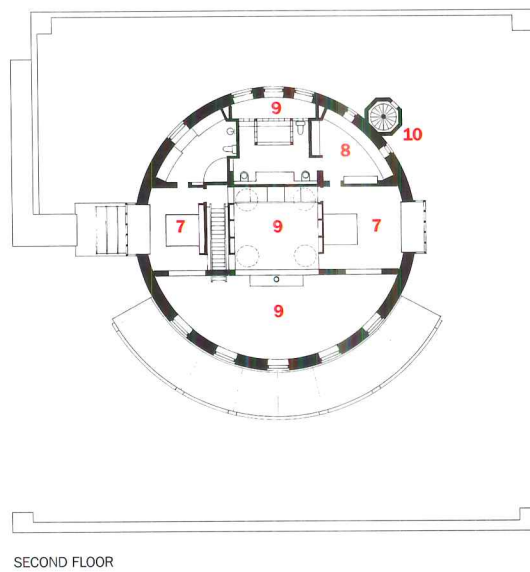
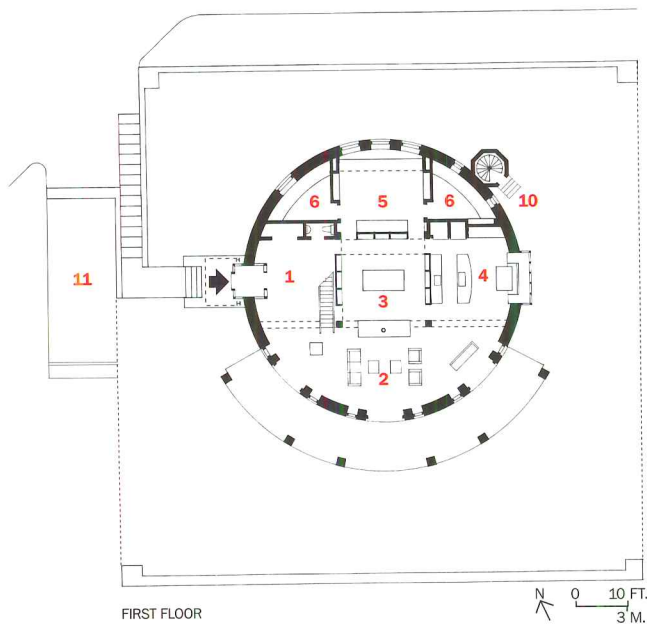




1. Studio
2. Library
3. Living
4. Master bath
5. Stair tower
6. Patio

NORTH-SOUTH SECTION





1. Entry
2. Living
3. Library
4. Kitchen/dining
5. Studio
6. Offices
7. Bedroom
8. Dressing
9. Open
10. Stair to roof deck
11. Garage

A glass walkway leads from the stairs to the master bedroom, through a double-height library (right). Ceiling oculi and extensive glazing fill the interior with daylight (below and opposite).



in the interior surface that the architect chose to preserve. The irregular surface texture, along with aggregate and sections of rebar revealed at the cut for the front door, remain as reminders of the home's less-polished predomestic history.

Within the cylindrical shell, de Bretteville's plan follows the existing structural system: a tic-tac-toe pattern of two steel-reinforced concrete beams oriented north-south and two running east-west, with columns at the four intersections. Halfway up the columns, the architect attached paired glue-laminated Douglas-fir beams that repeat the ceiling pattern and define two floors of living space.

A two-story library occupies the plan's central square, opening onto the double-height living room to the south. Glazed patio doors with clerestory windows above draw sunlight deep into the house. Four oculi in the library's ceiling bring even more light into the central core. On the second level, two bedrooms flank the library on the east and west. To the north, the master bathroom's floor ends several feet short of the exterior wall, allowing daylight to stream through three double-height windows into a studio space below. Sunlight still reaches the bathroom through a glass-block partition.

Carving a home from a con-

crete cistern requires more than a rational division of space and copious windows. Here, de Bretteville achieves a sense of domestic grace through details. Most of the second-story flooring is tongue-and-groove yellow-pine decking, stained black on top and, like a traditional New England porch ceiling, painted light blue on the exposed underside. Outside the kitchen and bedrooms, bay windows pop from the facade; though they disrupt the purity of the cylindrical form, they open the rooms to more light. "The walls are very thick, and we needed a way to get these rooms closer to the natural setting," explains the architect.

The house's yellow-orange stucco, its light-filled interiors, and the canopied and trellised patio that partially rings it evoke a spirit far removed from its gray origins as a water tank. For the owners, the building embodies the memories the couple shares of a two-year stay in Lombardy, where even rationally composed villas answer to visceral needs for sun, warmth, and color. ■

Sources

Stucco: *Sto Corp.*

Tinted concrete for floor: *L. M. Scofield Co.*

Aluminum window and door frames: *Custom Window Co.*

Interior downlights: *Reggiani, Lightolier*



4

The White Lady Eindhoven, The Netherlands

A SPRAWLING FACTORY IS SAVED BY FITTING A MULTIPLICITY OF USES, INCLUDING A DESIGN ACADEMY, INTO ITS OLD CONCRETE SHELL.

by Tracy Metz

Project: *De Witte Dame (The White Lady), Eindhoven, The Netherlands*

Owner: *Foundation de Witte Dame*

Architect: *Dirrix van Wylick Architekten—Bert Dirrix, Pascal Grosfeld, Bart van der Velde, Timo Keulen, Tom Frantzen, Karel van Eijken, design team*

Engineer: *DHV-AIB—Robert Collignon*

Consultants: *Philips (lighting); Van de Laar Physicon (acoustical)*

General Contractor: *Building Company IBC/Van Straten V.O.F.*

By 1992, the huge gray-white light-bulb factory in Eindhoven, the Netherlands, had stood empty for nearly 10 years, and the threat of demolition was growing. Executives at Philips, the global lighting and electronics company that owned it, thought it would be a nice civic gesture to replace the factory's concrete carcass with a city square, and applied for permission to raze it.

The company's dreams of demolition faded when Bert Hermens, a local artist spearheading an effort to save the building, won the support of former Philips CEO Wisse Dekker. A consensus soon developed to find a new purpose for the building.

The White Lady, as the six-story complex has been nicknamed, was built from 1927 to 1930. First used for the production of lightbulbs and later radio tubes, it eventually faded in importance, becoming secondary offices and then a warehouse before being left vacant. Though it is neither an architectural jewel nor an official landmark, the factory has long been the heart of Eindhoven, Philips's hometown.

Still, it took years to figure out how to reuse the White Lady, a moniker acquired only in the 1990s

Tracy Metz is RECORD's correspondent in Amsterdam and is the editor of the features supplement for NRC Handelsblad, a Dutch newspaper.

as the old factory gained popular appeal. In 1993 Philips agreed to hold a competition for ideas for the building's future, and a year later a developer, IBC Vastgoed, conducted a feasibility study. As negotiations between city, developer, and owner dragged on, however, there must have been moments when the parties were tempted to substitute the word "elephant" for "lady."

The time for doubting is now over; the White Lady has been reincarnated as a center for design, art,

and architecture. Developed by IBC Vastgoed along with Van Straten Bouw, the \$40 million project benefited from about \$10 million in subsidies from the city, regional, and national governments. Within its 344,000 square feet are Eindhoven's flourishing Design Academy, the concomitant European Design Centre, Philips's own industrial design department, the Eindhoven Public Library, local architecture, design, and art collectives, three shared exhibition spaces, a 120-



As a lightbulb factory, the complex was a key part of the local economy (left). Today it is a sign of Eindhoven's transformation from a city based on industry to one driven by knowledge (above).

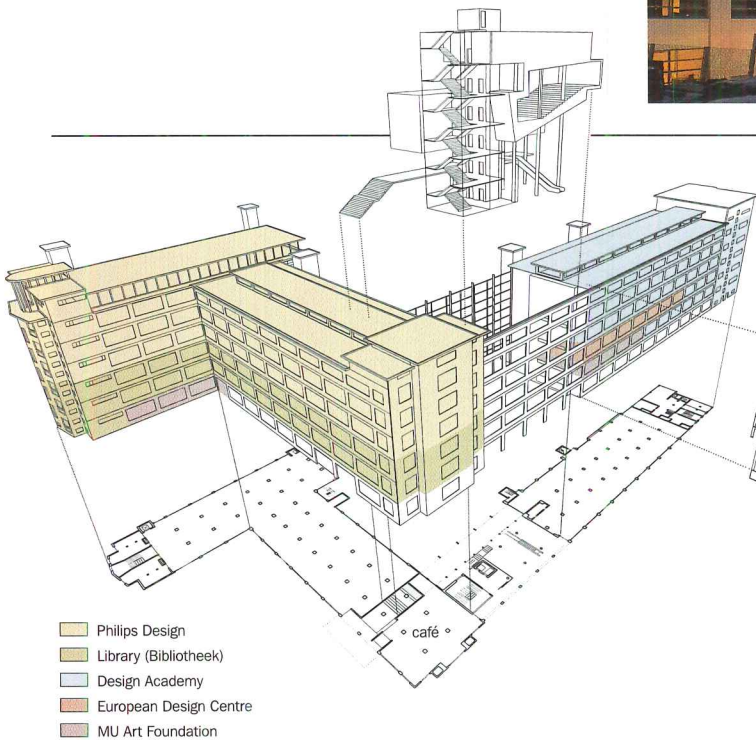


The building's fenestration was changed from small-paned windows to large double-paned expanses of glass (left). The Light Plaza (below) offers Philips a place to show off some of its outdoor lighting applications.



The major components of the new complex occupy areas that feed into a central circulation core with elevators and stairs (drawing below). Tenants include the

Eindhoven Public Library (bottom), the Design Academy, the European Design Centre, the MU Art Foundation, and the offices of Philips Design (opposite).



seat auditorium, a bookstore, a grand café, a rooftop courtyard, and underground parking. For all of its uses, though, it does not feel cramped or full.

Eindhoven architect Bert Dirrix of Dirrix van Wylick Architekten directed the renovation or, as he prefers to call it, the reconstruction, which brought urban vitality to this monolithic L-shaped factory. Dirrix provided not only architectural solutions, but also urbanistic ones.

For example, the city wanted a new pedestrian route that would pass through the White Lady and lead past a planned neighborhood of 400 new homes to the existing soccer stadium. To create such a pathway, Dirrix cut a rectangular opening in the building measuring 83 feet high, 115 feet wide, and 69 feet deep. Only the old facade was left standing, delicate as a trellis, to maintain the continuity of the building's street face.

This newly opened space is the main circulation hub for the complex: elevators, stairs, and the start of a broad internal street with rough wooden floors. From this interior street visitors can see the underside of the auditorium, hanging between the third and fourth floors and pulsing with red light at night: the White Lady's beating heart.

Dirrix tore down two later additions to the rear facade and healed the wound with large glass panels, which add some variation to the building's uncompromising horizontal lines. On the top floor he cut out parts of the roof and the walls to create roof terraces, protected from the elements by large metal grids hung at an angle to the facade—a modern-day variation on Le Corbusier's brises-soleil.

From the rear of the building visitors can look down into the courtyard (formerly the delivery area), which is now paved with large Portuguese granite flagstones (laid by Portuguese workmen brought in specially for this task) and some impressively large boulders. On one side of the courtyard rise low, broad stairs that form a gathering place and a performance podium.

Philips's presence is still visible here: company lighting designers Harry Hollands and Dorien van der Weele installed small sunken lights in the flagstone plaza to highlight the boulders, as well as a red lighting strip along the walkway. A different type of lighting effect can be created with a series of nozzles that produce a layer of low-hanging mist through which various kinds and colors of light can be projected.

The only building in the courtyard is a small, steel-and-glass pavilion, painted bright red on the inside, where visitors pay their

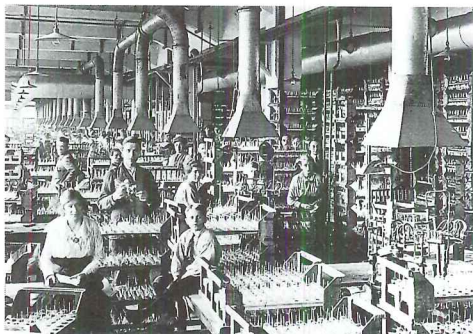




The industrial heritage of the new arts complex is reflected in materials such as concrete, metal, and wood planks used along the covered walkways that run through the project (right).



The manufacture of lightbulbs has been replaced by the pursuit of art. The Design Academy (above) offers degrees in industrial and interior design.



parking fee. It also contains an elevator and (equally red) stairs down to the 250-car garage. The side-street entrance to the garage is marked by a tall black canopy dotted with white neon tubes. Along one side of the entrance is a bright yellow pedestrian walkway. This sparing use of outspoken colors distinguishes the project's new additions from the existing building. Simple as it sounds, it works.

As in the renovation of other Modernist buildings, windows were a sensitive issue. The White Lady's original windows—long horizontal strips filled with countless small square panes—were already old-fashioned when the building was completed in 1927 and have never been very efficient. Dirrix replaced the charming but anachronistic glazing with long rectangular windows of double-paned glass that work much better at providing both sound and heat insulation.

Detailing throughout the building, though, remains true to the industrial character of the facility. Concrete walls are unpainted but covered with a clear latex layer. Metal fittings in the public areas are all galvanized steel, and wooden walkways retain a rough-hewn look.

Strategic surfaces in the central core of the building and the circulation zones along its sides are covered with western red cedar panels, the warm glow of which off-

sets the other rough-and-tumble materials. This almost anti-aesthetic approach works well, not least because it emphasizes the generic, nearly anonymous nature of the building, which functions as a shell within which users and visitors are free to develop their own identity. Indeed, individual components of the complex, such as the Design Academy and Philips Design, have been able to take different approaches to the design of their spaces without harming the integrity of the whole.

To the architect's credit, in dividing up the White Lady for a variety of different uses he has retained the original clarity of the building's organization. At the main entrance, signs direct visitors to the various destinations within the building, but because of the clear plan there is no need for separate nameplates or doorbells.

First a factory, then an eyesore, the White Lady is now home to artists and open to all. Retaining this collective character will be the building's next challenge. ■

Sources

Steel windows: *Moeskops and Goma*

Aluminum windows: *de Groot & Visser*

Glazing: *de Groot & Visser*

Carpet: *Forbo Krommenie*

Office furniture: *Ahrend*

Interior ambient lighting: *Philips Lighting*

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Petersen Aluminum Corporation's SNAP-CLAD Panels top the new \$4.75 million press box and stadium club, completing an eight year long renovation of the 48-yr-old Rosenblatt Stadium in Omaha, Nebraska. The stadium plays host to the NCAA College World Series and serves as home field for the Omaha Royals. The new press box features a peaked metal roof, which dramatically altered the exterior appearance of the stadium. Boone Brothers Roofing Inc. in coordination with the general contractor, Weitz Company, Inc. installed over 11,000 square feet of SNAP-CLAD Panels manufactured by Petersen Aluminum Corporation. The panels are a custom blue PAC-CLAD finish and were corrective leveled to provide superior panel flatness. Color and panel appearance was critical considering the prominence of the roofing panels in the stadium design.

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General Contractor: Weitz Company Inc.
Roofing Contractor: Boone Bros. Roofing
Custom Color: Rosenblatt Blue
Profile: Snap-Clad

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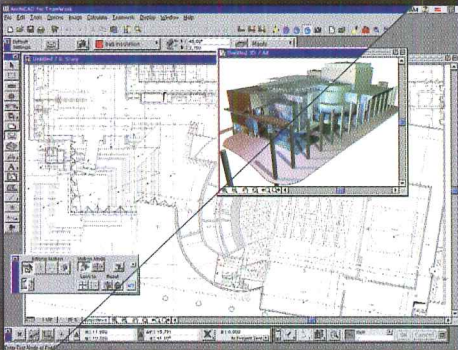
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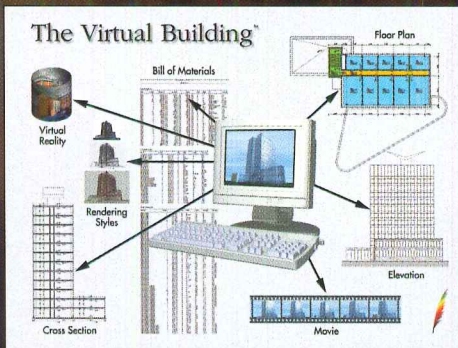
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CIRCLE 52 ON INQUIRY CARD

*Jerry Laiserin, CADENCE Magazine

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Bringing Back 1960s Buildings

ALMOST 40 YEARS LATER, MANY OF THE OFFICE BUILDINGS ERECTED DURING ONE OF THE MOST PROSPEROUS ERAS IN HISTORY LOOK OUTDATED AND NEED NEW SYSTEMS.

by Nancy Solomon, AIA

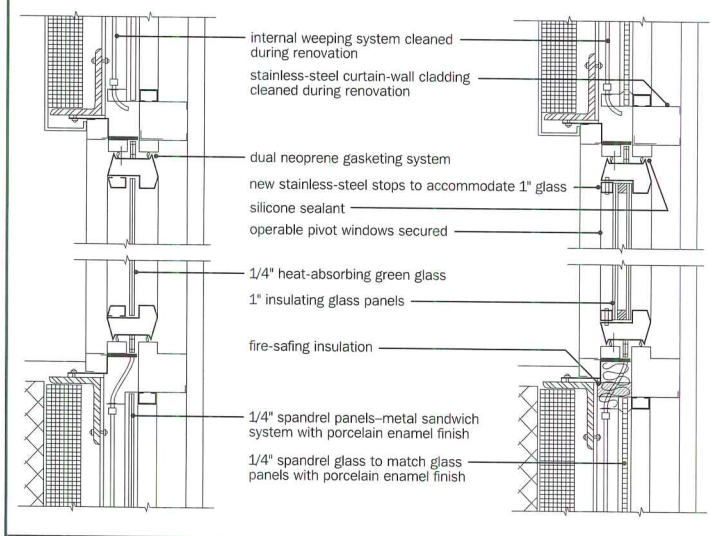
After spending a decade recovering from the belt-tightening years of the Depression and World War II, this country experienced an unprecedented building boom that lasted from the mid-1950s through the 1960s. No segment of construction went untouched in those years of prosperity. In the city, office towers grew to staggering heights while, in the outlying countryside, new suburbs took root with their now all-too-familiar production tract houses and strip malls. College campuses expanded and new ones were formed. Resorts, office parks, apartment buildings, recreation areas, galleries—all these building types burgeoned.

The International Style—what we recognize as modern architecture—dominated the period. The universal rectangular pavilion, pioneered by Mies van der Rohe, was particularly influential. Its rational grid structure, modular cladding, and other efficiencies dominated commercial construction. Unresponsive to site, orientation, or program, this type of structure could house virtually any type of function. The form also lent itself to speedy construction and cost savings, two highly valued requirements during “an era of frenzied expansion,” says Steven M. Goldberg, FAIA, at Mitchell/Giurgola Architects in New York City.

To some extent, this stylistic movement is characterized by its “ongoing experimentation with new structural techniques, materials, and ways of joining materials,” says Richard Longstreth, director of historic preservation at George Washington University in Washington, D.C. By the 1960s, these new materials and systems, many of which were spinoffs of the war effort, had become available to the building community in large quantities. The industry was eager to work with them.

Of course, in those days, architects didn’t live with the constant

UPDATING THE OLD CURTAIN WALL on the International Union of Operating Engineers headquarters in Washington, D.C., entailed replacing the existing glass and thoroughly cleaning the components.



fear of being sued. “Error and omissions weren’t an issue,” says Jack Train, FAIA, retired partner of Chicago-based Valerio Dewalt Train Associates. Designers had greater freedom to work with new techniques and materials without worrying about the legal ramifications.

The experimentation also came courtesy of a young and ambitious class of architects eager to leave their mark. “In the 20-year hiatus during the Depression and the war, experienced architects died or retired,” says Walker C. Johnson, FAIA, of Johnson Lasky Architects in Chicago. Younger architects, including Johnson, had few mentors to guide them, so they were more open to new technologies than ever before. However, a band of architects working without experienced guides meant problems, too. In those years, Johnson helped design curtain walls at Holabird & Root in Chicago. Now, 40 years later, his own firm restores and rehabilitates them.

Prosperity brings problems

But the increase in products—ranging from curtain walls and exposed concrete to sealants and, of course, plastics—coupled with the explosion in construction meant that many of these new materials and systems were never adequately tested before installation. Unfortunately, some of these products only revealed their weaknesses in situ, after months or years of exposure to the elements.

In recent years, significant expense has been incurred to repair



CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month’s ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn

to page 142 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Identify the design problems plaguing many office buildings from the 1960s.
2. Describe the limitations of glass curtain walls from that era.
3. Compare the characteristics of 1960s buildings to those that are desirable for office buildings in the 1990s.
4. Describe how the heating and cooling of office buildings are handled differently now than in the 1960s.



CASE STUDY

The International Union of Operating Engineers national headquarters in Washington, D.C., was designed by Holabird, Root & Burgee. The union represents the “stationary” engineers who operate and maintain buildings. The steel-framed structure, considered highly innovative when completed in 1959, featured materials and systems that became commonplace in buildings of that era.

The 97,000-square-foot building has held up well over the years, a testament to the quality of the original construction and the competent maintenance undertaken by its knowledgeable owners. But by the mid-1990s, the building’s systems had reached the end of

their useful life, the interior spaces needed reorganization, and the well-worn edifice needed spiffing up.

The future of the facade and lobby were debated by the building owners and the architects, Einhorn Yaffee Prescott. “The original building, with its stainless-steel details, etched glass, and ornamental staircase, was magnificent,” says Andrew W. Prescott, AIA. But the owners wanted to tear off the curtain wall and gut the entry floor because they thought it old-fashioned. In the end, the architects convinced the owners that the existing elevation and lobby were indeed elegant, comparable to contemporary designs, and represented a significant savings in renovation costs.

Yet the lobby presented its own challenges. Today’s fire code, for example, requires that the ornamental staircase be enclosed. To get an exception from the building department, the designers skillfully integrated a sprinkler system into the existing stairs.

The curtain wall was basically in good condition (see illustration, page 137). The stainless-steel system was refurbished and the water sealant repaired. The pivoting



window system was permanently closed and inch-thick insulating glass was used to replace the original ¼-inch glazing. The original metal spandrel panels were replaced with glass to match the glazing elsewhere. In so doing, at least one design compromise was made: the original horizontal banding was eliminated. “But it could be put back

Renovating a building for an association of engineers meant installing state-of-the-art internal systems.

one day,” Prescott suggests, perhaps wistfully.

Given the union’s area of expertise, there was no question that the building’s operational characteristics had to be state-of-the-

these unforeseen problems. One of the most infamous examples is the Amoco Building, an 80-story tower designed by Edward Durrell Stone and built in Chicago in 1972. By 1985, the thin Carrara marble panels that sheathed its curtain wall began to bow and crack due to exposure to Chicago’s extreme weather. All the panels were replaced with granite in 1991, at a cost of approximately \$80 million.

In New York City, the glazed-brick veneer of several high-rises dating from the 1960s has failed as the buildings’ lightweight structural concrete frames have shrunk and the steel angles, meant to support the brick, subsequently shifted. Similar problems with curtain walls have occurred in cities across America. Clearly problems with the differing coefficients of expansion of brick, concrete, and metal were not anticipated in the wide-eyed and ambitious 1960s.

Problems bring opportunities

The aging and often nondescript 1960s office structures represent a growing opportunity for architects. According to Jan Keane, FAIA, also at Mitchell/Giurgola, new programmatic requirements, failure of the exterior envelope, and outdated systems are motivating building owners to renovate their buildings so that they can be well positioned in the market for another 30 years.

The cost of renovating these buildings varies widely and de-

pends on the existing structure. Those framed in steel, for example, are more likely to require an extensive and costly asbestos abatement program than those framed in concrete. A building whose entire curtain wall is failing will demand more work and a greater investment than one that merely needs new windows. And those that were originally outfitted for air-conditioning may require less mechanical tinkering. The new program also significantly affects the cost; if the proposed use is compatible

OFFICE BUILDING TENANTS ARE LOOKING FOR MORE AMENITIES THAN THE OLDER BUILDINGS OFFER.

with the old, construction will be less disruptive and thus less expensive.

Today, office building clients are looking for more amenities than the older buildings offer. These 1960s structures were planned in a functional, efficient, and straightforward way. As a result, they lack the extra touches that attract today’s tenants. For example, building entrances from that era were usually understated, elevators often emptied directly into corridors, all types of gatherings were frequently served by one multipurpose room, and perimeter offices, limited by the repetitive glazing pattern on the exterior, were virtually identical. Owners now prefer inviting entrances, elevator alcoves that receive and orient visitors, a mix of

art. The design team replaced its 70-percent-efficient steam boilers with 85-percent-efficient water boilers. The original chiller, which consumed 1.10 kw of energy for every ton of air-conditioning, and ran with the ozone-depleting refrigerant R-11, was replaced by a .57 kw/ton centrifugal chiller that relies on the more environmentally friendly refrigerant R-123. The existing constant volume system was converted to one of variable air volume. The old pneumatic controls were replaced with a direct digital control and energy management system. A thermostat in every room allows occupants to control the temperature of their own spaces.

The system is designed to take advantage of outdoor air in the winter to cool the building interior. Known as the economizer cycle, cold air is drawn from outside into the air handlers. Hot water piped from the boiler to the air handlers preheats the air to 55° F, which is then blown to the variable air volume (VAV) boxes.

Unlike the interior, the perimeter must be heated in the winter. Perimeter VAV boxes, therefore, are equipped with hot-water coils that



can further heat the air. These coils eliminate the need for the perimeter fan coil units of the old system, thereby saving valuable floor space.

The mechanical infrastructure was not the only system that had to be updated. Fire-safety, electrical, telecommunications, and lighting also had to be revamped. Just a few of the upgrades include mounting a generator on the roof to run

the fire pump, egress lighting, fire alarm system, telephone, and security systems in case of emergencies; increasing incoming electrical service from 120/208 to 480/277 volts; hanging cable tray above a new suspended ceiling to distribute conduit; and installing more efficient lamps. The total costs for the renovation were close to \$7 million. *N.S.*



The original heating system (left), installed when the headquarters was built in 1959, was considered state-of-the-art. Though it served the building well, it was replaced in the recent renovation. The original lobby (above), however, was retained with some minor changes, including a new sprinkler system.

public spaces to serve a variety of programs, and an office layout that allows for distinctions between spaces. In addition, owners are required by the Americans with Disabilities Act to make their renovated facilities accessible. This translates into ample circulation space, larger bathrooms, and a variety of user-friendly fixtures and hardware.

Upgrading these buildings means addressing the problems that typically plague early curtain-wall systems. “Probably the hardest element to upgrade is the stick-built curtain-wall system because there was no redundancy in the system,” says Michael J. Scheffler, an engineer with Wiss, Janney, Elstner Associates in Chicago. Joints, materials, and dimensions may vary from floor to floor. Early curtain walls relied heavily on sealants to prevent water from penetrating at panel joints. Internal backup systems were rarely installed to collect and divert water once the sealants deteriorated and water seeped in. The long-term result was air and water infiltration. In addition, it is not uncommon to find curtain walls of the era constructed with incompatible metals, leading to the oxidation of key elements.

Consistent with Modernist principles, many of these buildings were sheathed with large expanses of glass—all of it single-pane. “Energy performance wasn’t much of an issue in the 1960s,” explains Thomas C. Jester, architectural historian of the Preservation Assistance Division of the National Park Service in Washington, D.C. Energy standards, obvi-

ously, are much more stringent now; low-E, double-glazed panels are the norm in renovation work.

Old, old systems

Internal systems from the period have usually reached the end of their life span, or have been rendered inefficient by newer technologies more suited to the needs and requirements of the 1990s office environment. For example, older mechanical systems “ran without modulation from 9 to 5,” explains Alan Traugott, of Flack + Kurtz Consulting Engineers in New York City. But today’s tenants work varied schedules and are concerned about energy savings and indoor air quality. They also have a greater awareness of the link between comfort level and productivity. As a result, building owners are asking for sophisticated systems that offer individualized climate control.

Offices are now filled with personal computers, printers, copiers, and fax machines, requiring electrical, climatic, and telecommunications infrastructures that can handle heavier loads. Dramatic changes have occurred over the years in fire and life-safety requirements as well. Safe havens, pressurized staircases, sprinklers, and more sophisticated alarms must now be incorporated in an office renovation.

In many cases, thanks to Mies and his followers, the original framework has enough strength and flexibility to accommodate the



CASE STUDY

The Courtyard by Marriott in Washington, D.C., formerly the headquarters of the National Rifle Association (NRA), was designed by Clas & Riggs Architects in 1959 and built in several stages in the early 1960s. The steel-framed building had a floor-to-floor height of 10 feet, eight inches. Today, floor-to-floor heights for office construction measure about 12 feet, eight inches for steel framing and 11 feet for concrete structures.

While office buildings from the 1960s are not known for their ample floor-to-floor heights, the situation is even worse in the nation's capital, where there is a longstanding building height limitation. "Because of these restrictions, many of the older office buildings in Washington cannot be upgraded to the Class A buildings that are characterized by a variety of features demanded by the current market, including large floor plates, lots of windows, sophisticated lighting systems, and a high level of finishes," says Mark Boekenheide, AIA, of Brennan Beer Gorman Monk (BBGM) in Washington, D.C., architects for the renovation.

The NRA, which relocated to Virginia, sold its former headquarters to the Bernstein Companies of Washington, D.C. With the help of BBGM, the owners researched the optimum use for the eight-story, 126,000-square-foot building. The low floor-to-floor height, small floor plate (10,000 square feet), and square rather than rectangular footprint precluded the Class A rating. "This could have become a decent Class B building, but it

didn't pencil out economically," Boekenheide adds. Although the location—between a fringe commercial district and a residential neighborhood—was fitting for an embassy or an association, these functions couldn't generate the rents that were desired by the new owner.

The solution was to create a mid-level, limited-service hotel. The need for such accommodations was great, the quasi-residential downtown location was appropriate, and the property and renovation costs were competitive. The eight-foot, four-inch maximum finished floor-to-ceiling height, too low for an office building, was just right for a hotel. And the building's narrow width (90 feet) meant there would not be excessive internal space at the suite levels; too much interior space on the upper floors is not economically viable for a hotel.

The architect's efforts were first concentrated on the original curtain wall, which consisted of vertical piers of white marble alternating with vertical aluminum frames. These contained single-pane, clear-glass, center-pivot windows and metal spandrel panels. The first and second floors, which once housed the NRA's firearms

museum, were completely clad in black marble. This created a dim and oppressive interior and an uninviting exterior. The glazing system showed its age: the aluminum was pitted and corroded, the caulking and seals had deteriorated, and the windows were drafty and not very energy-efficient. The overall image was not fitting for a modern hotel.

The architects stripped everything off the outside of the building except for the white marble piers, which were in good condition. The Modernist rhythm of alternating glass and stone gave way to a more classical, three-part composition. On both the north and east elevations, the three central bays were handled differently from the wings: the windows are now recessed, green railings create the illusion of balconies, and the entire assembly is capped with a curved cornice finished with an exterior insulation and finish system (EIFS) that matches the color of the piers. The new glazing system consists of aluminum-framed, thermally insulated windows. The original metal spandrel panels were replaced with EIFS panels.

The building was fully gutted down to the parking levels. Typical

of structures from the 1960s, the building needed a hazardous material abatement program to safely remove lead paint, vinyl asbestos floor tile, and asbestos pipe and duct insulation. "It was not a cheap process," Boekenheide says. In this case, the abatement program cost approximately \$1 million.

The architects eliminated one elevator shaft and a fire stair to free up the west elevation for suites. A new fire stair was inserted at the south wall, which abuts a neighboring building. Guest rooms line the daylight perimeter. Rooms along the east facade are about five feet deeper than those along the west, offering long-term guests an expanded sitting area.

Service and amenity rooms, such as linen closets and vending machine areas, fill out the rest of the internal spaces.

The former NRA headquarters' mechanical, electrical, and plumbing systems had to be completely replaced to meet the demands of hotel guests. The new mechanical system, which includes fan coil units in every suite, allows guests to control temperatures within their rooms. Integrating the new mechanical system into the building was not particularly difficult because the fan

coil units stack vertically, minimizing the need for horizontal ductwork and wiring runs.

Phone, data, and power outlets were installed in each guest suite to meet the electrical and telecommunications needs of business travelers. And more boilers were added to provide sufficient hot water to the guest bathrooms throughout the building. The final project cost, including all of the furnishings, was approximately \$11 million. N.S.



The former headquarters of the National Rifle Association sat empty (top) before the building's new own-

ers converted it to a hotel (above). Much of the building was stripped and gutted during the conversion.



CASE STUDY

Lighthouse International in New York City began operations in 1905 out of back-to-back brownstones situated between 59th and 60th Streets in midtown Manhattan. Over the years, the philanthropic organization alternately expanded on one side of the site and then the other to accommodate its growing research, education, and administrative programs for the visually impaired.

By the late 1960s, Lighthouse's headquarters consisted of a 15-story office tower off 59th Street

that was linked to a six-story structure along 60th Street. The office tower was built in 1964, and it showed; the steel-framed structure was set back from the traditional street wall, had a dark, recessed entry, and was clad with gridded precast concrete that gave no hint to the variety of activities within. The six-story structure dated to the 1950s.

By the late 1980s, the 126,800-square-foot headquarters could no longer satisfy the organization's activities. The only room for expansion was above the 1950s building, but the structure could not hold the additional weight. Since the building offered no significant architectural value, contained asbestos, was equipped with an obsolete mechanical system, and did not have sufficient elevator capacity, the owner and design team from Mitchell/Giurgola Architects in New York City concluded that it should be torn down to make way for a new 16-story tower.

The 1964 tower, however, presented a different story. A cost analysis indicated that \$2 million, or 8 percent of the estimated \$25 million project cost, would be saved if its structure were retained. "It was a no-brainer to keep it," says Steven M. Goldberg, AIA. Eleven-foot floor-to-floor heights meant that the design team had to struggle to accommodate new mechanical, electrical, telecommunications, and lighting systems. In addition, the tenants were required to vacate the building during renovation because asbestos had to be removed and the central mechanical system had to be dismantled.

The original modular precast concrete and glass curtain wall to the south was in good condition. But, like most facades from the 1960s, it had been fitted with inefficient single-pane glazing. In addition, the windows leaked water and the precast concrete panels required additional insulation. Replacing the window frames and glazing would have been expensive and the final result would not have satisfied the client's desire for a

new, consistent image on all sides of the facility. So, for slightly more money, the precast concrete panels were replaced with a brick veneer skin. The new windows consist of thermally broken white aluminum frames and glazing that is insulated and tinted.

The architects removed the existing brick veneer from the blank shear wall to the east, made appropriate structural changes to the diagonal bracing so that new windows could be added, and reclad the side with the same materials as the front.

The structural frame of the tower offered a great deal of flexibility. The architects shifted the core from the east wall to the west and relocated the corridor to the center of the floor plate. In doing so, they were able to increase the number of elevators, provide a proper lobby for the elevators off the main corridor, design restrooms that met current accessibility requirements, and dedicate sufficient square footage to telecommunications and electrical closets.

The renovated building required a new mechanical system. Unlike the original, which relied on a central fan for the entire building, the new system includes a fan room on every floor. This allows different

floors to operate efficiently at different times.

Inserting the mechanical system was challenging because of the low floor-to-floor heights. The original ducts ran through the beams. The 1990s team followed suit, using existing openings or punching new ones. The tight ceiling plenum precluded standard variable air volume boxes, so the engineer designed a more compact system using a proprietary diffuser to control air volume and room temperature. In some locations, parabolic ceiling lights had to be surface-mounted because there was no room to recess the fixtures. "All of this required a significant amount of coordination," Goldberg says.

Additional space was gained by digging out the basement floor for a performance space; extending the basement and street level floors to the property line; and adding a floor at the top. Except for a centrally located mechanical mezzanine, the original third floor was demolished so that the heights of the second floor's dining and multipurpose rooms could be doubled. The final headquarters, including both existing and new construction, adds 170,000 square feet.

The new massing on 59th Street, with its expanded, open base, provides a welcome gesture to what had been an awkward urban design condition: it mediates between its older neighbors to the west, which were respectful of the property line, and the 1960s buildings to the east, which are set back from the street. *N.S.*

The original 15-story tower (top) was updated by adding a new top story and windows to the blank shear wall (far left). The new entry (left) mitigates the building's setback from the street.



changes. However, finding the space to weave in modern ductwork, pipes, cables, wiring, and lighting fixtures, often while a portion of the building remains in operation, can be difficult, especially when the floor-to-floor heights are low, a common condition in older buildings.

Facing larger questions

Architects working on 1960s office structures are inevitably confronted with the question of how much of the original material and appearance of the building to retain. While some of the outstanding office buildings of the postwar era, such as the Inland Steel Building in Chicago, built in 1957 and designed by Skidmore, Owings & Merrill, have attained landmark status, most are not held in such high regard. In fact, due to the

harmonious relationship between the 1960s structure and neighboring buildings.

Others, like preservation architect Hyman Myers, AIA, of the Vitetta Group in Philadelphia, believe in retaining the major features and materials, even when they are not in keeping with current design trends or when they seem at odds with other buildings in the area. “We treat these buildings in the same way as we would a 19th-century structure,” Myers says. “We don’t want to lose 1960s buildings in the same way we lost Victorian buildings, which were so demeaned in the 1950s.”

Yet preservationists recognize the conundrum presented by aging modern architecture. Preservationists are charged with retaining original materials, but many of the innovative materials used in early

MANY OF THE INNOVATIVE MATERIALS USED IN MODERN ARCHITECTURE HAD INHERENTLY SHORT LIFE SPANS, MAKING THEM DIFFICULT TO PRESERVE.

relative ease of dismantling a curtain wall, it’s not uncommon for the original skins of the buildings to be removed and replaced with a contemporary facade. “The ‘re-skinners’ put on a facade that is in vogue, obliterating the original design,” Walker Johnson says.

Some architects see the renovation of the more banal 1960s buildings as an opportunity to correct some of the structures’ urbanistic problems; many were self-referential, stand-alone objects, unrelated to their environment. They were often set back, disrespectful of the street wall, their entrances functional but uninviting. In solving the programmatic problems of his clients, Steven Goldberg tries to create a more

modern architecture had inherently short life spans. In addition, the Modernists themselves had no hesitations when it came to destroying that which came before.

“In the 1950s and 1960s, architecture—ergo urban planning—became the demolition of urban context,” explains Theo Prudon, AIA, of Cowley & Prudon Architects in New York City, and United States president of DOCOMOMO, an international organization dedicated to the documentation and conservation of monuments and sites of the modern movement. “The irony is that the things that once caused demolition are now worth saving; they are part of history.” ■



AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- ◆ Read the article “Bringing Back 1960s Buildings” using the learning objectives provided.
- ◆ Complete the questions below, then check your answers (page 216).
- ◆ Fill out and submit the AIA/CES education reporting form (page 216) or file the form on ARCHITECTURAL RECORD’s Web site at www.archrecord.com to receive two AIA Learning Units.

QUESTIONS

1. What are the salient design problems presented by most office buildings built in the 1960s?

2. What are the problems caused by stick-built curtain walls ?

3. What are the desirable characteristics of current office buildings? How do they differ from the typical characteristics of 1960s office buildings?

4. How have the approaches to heating and cooling office buildings changed since the 1960s?

5. Why is it often difficult to retain the existing materials when renovating buildings of the 1960s?



SPECIFYING FIRE DOORS AND WINDOWS

The Industry is Ablaze

New technologies and testing techniques, coupled with a shifting regulatory environment, are creating new unknowns for architects looking to specify fire-resistant doors and windows. The arrival in the U.S. of positive-pressure testing for fire doors and the response of manufacturers to the new standards will mean new options for designers of office suites, high-rise structures, hospitals, health-care facilities, hotels and motels and other public spaces.

The 72-year-old National Wood Window & Door Association (NWWDA), which represents 45 window or door manufacturers and 60 hardware suppliers, has changed its name to the Window & Door Manufacturers Association (WDMA), a reflection of a changing marketplace and the emergence of new technologies and materials. Those who previously have visited the association at <http://www.nwwda.org> will find the association at a new web site: <http://www.wmda.com>.

"Our new name more aptly reflects both our market's directions and our members' resources," says Linda Semling, WDMA chairperson. "Wood will continue to be our members' primary material of choice. However, to offer specifiers more options, our members are delivering an increased range of products and materials."

"WDMA will always place primary emphasis on quality products designed to meet strict performance standards," says association President Alan J. Campbell. "Particularly on the residential side," says Campbell, "the newest technology developments in both vinyl and fiberglass window products moves them into the category of high-quality, high-performance window products. Many of our current members are introducing those products into their product mix, and we will also reach out to new members who have not participated in the association in the past because



AIA/ ARCHITECTURAL RECORD
Continuing Education Series

Use the following learning objectives to focus your study. After reading *Specifying Fire Doors and Windows*, complete the questions, and check your answers (page 154), AIA members may fill out the self-report form (page 216) and send it in for two AIA learning units that qualify for Health, Safety and Welfare credits:

Learning Objectives:

After reading *Specifying Fire Doors and Windows* and completing the exercises, you will be able to:

1. Discuss the debate over passive versus active fire protection systems.
2. Describe the consequences of the new UBC code adoption requiring positive-pressure fire door testing.
3. Compare the existing fire-door testing to the positive-pressure fire-door testing.

of a lack of wood-focused products."

With the name change come a new mission statement and a new set of strategic objectives:

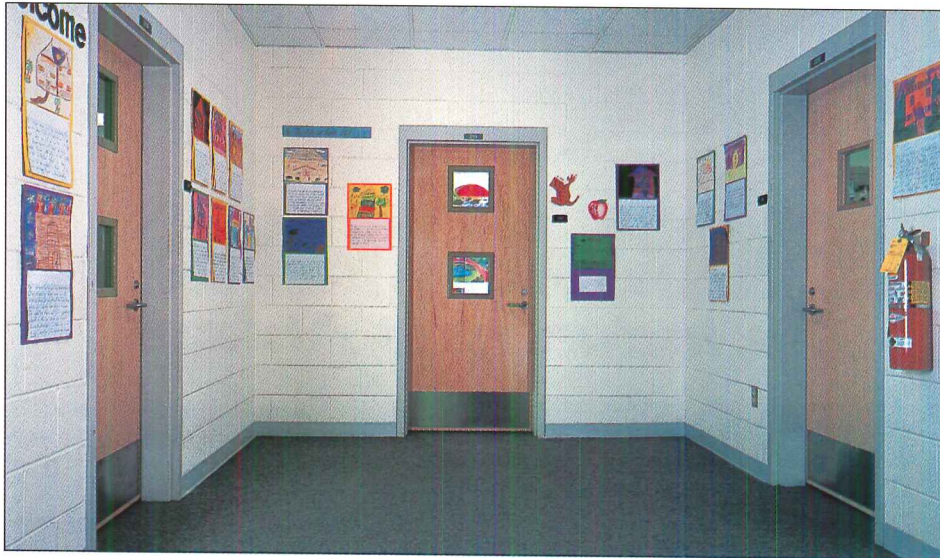
- To promote the interests of the window, skylight and door industry and to enhance the association's position of leadership.
- To formulate and promote high standards of performance for the products of the window, skylight and door industry.
- To increase the use of the products of the industry throughout the world.
- To improve the conditions under which the industry must operate.
- To collect and disseminate pertinent industry data.
- To serve as the focal point for the exchange of technical expertise.

Hallmark Certification

WDMA offers two programs that help the architect specifying performance properties of windows and doors.

The WDMA Hallmark Certification Program, gives specifiers a method of identifying windows, doors and skylights manufactured in accordance with WDMA standards. The NWWDA Hallmark is considered a mark of excellence among architects, contractors and other specifiers and is recognized industrywide. WDMA is also certified as an independent agency by the National Fenestration Rating Council (NFC). NFRC evaluates the energy conserving performance of windows, doors and skylights.

Six product areas fall within the Hallmark Certification Program. The products and the NWWDA or WDMA standard to which they must comply are: Architectural Wood Flush Doors (NWWDA I.S.1-A-97), Voluntary Specification for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors (AAMA/NWWDA 101/I.S.2-97), Water-Repellent Preservative Non-Pressure Treatment for Millwork (NWWDA I.S.4-94), Wood Skylights/Roof Windows



(NWWDA I.S.7-87), Wood Stile & Rail Doors (NWWDA I.S.6-97) and Wood Primary Entrance Doors (NWWDA I.S.9-88).

Any manufacturer who can demonstrate conformance to WDMA standards is eligible to participate in the Hallmark Certification Program.

Energy efficient product lines, to be certified, must be evaluated by two independent laboratories accredited by the National Fenestration Rating Council.

A first lab performs computer simulations to evaluate a product's thermal efficiency. A second lab performs actual tests of the product in a thermal chamber to determine the product's U-value.

If the values of the two tests are within a specified range of one another, the product is certified by an independent agency and periodic inspections of manufacturing facilities assure continued compliance.

Certified products will carry an NFRC label, and only products bearing an NFRC label may be considered certified. The certification process insures that windows, doors and skylights bearing the NFRC label will offer optimum value and desired performance characteristics.

This month, the Window and Door Manufacturers Association, in conjunction with the AIA/ Architectural Record Continuing Education Series offers a brief examination of forthcoming changes to fire door safety standards, testing procedures and possible impacts to manufacturers and designers.

WDMA membership includes the leading U.S. producers of wood sash, frames, window units, flush doors, stile and rail doors, sliding and swinging patio door units and skylights, as well as producers of the numerous other materials

required to manufacture the industry's products. As a professional trade organization, it formulates and promotes high standards of quality for the industry. More information on the WDMA, its standards, procedures and literature can be obtained from WDMA, 1400 E. Touhy Ave., Des Plaines, Ill. 60018, (847) 299-5200. Or visit the WDMA web site at <http://www.wdma.com>.

POSITIVE-PRESSURE FIRE DOOR TESTING

By the end of 1999, according to the International Conference of Building Officials (ICBO), 99 percent of jurisdictions currently enforcing the Uniform Building Code (UBC) will have updated to the 1997 UBC, the first model code in the U.S. to require positive-pressure testing of fire doors.

Positive-pressure testing, referenced in many international standards and widely used to test fire-barrier products in Europe, Asia, and other parts of the world, came to the U.S. only after more than a decade of debate among regulatory officials, consultants and fire-door manufacturers.

The ICBO revised UBC statutes in September 1996 to require positive-pressure testing on swinging fire door and window assemblies. Those requirements took effect with the 1997 edition of the UBC. Jurisdictions enforcing the Southern Building Code Congress International (SBCCI) and the Building Officials and Code Administrators (BOCA) codes will undergo similar amendment as they move to adoption of the International Building Code (IBC), which could require positive-pressure tests. This process will take place more slowly and could be extended

over the next 10 years, or more.

The code changes, spurred in the U.S. by the National Fire Protection Association, are intended to more accurately address real-world fire conditions, more specifically that during a fire, air pressure within an enclosure becomes greater than the outside, ambient air pressure. That occurs because, as air is heated by fire, it expands, causing pressure to build up. Positive-pressure buildup increases the potential impact of fire on doors and windows and may cause flames to penetrate cracks or openings in fire doors.

Historically in the U.S., fire doors have been tested under neutral-or-negative-pressure conditions. For testing purposes, the "neutral pressure plane"—the point at which pressure is equalized on both sides of the opening—has been assumed to be near the top of the opening. Under positive pressure testing, the neutral pressure plane is pushed downward to a height of 40 inches above the sill of the opening in order to increase pressure on the upper two-thirds of the opening, more realistically simulating potential "worst-case" fire conditions.

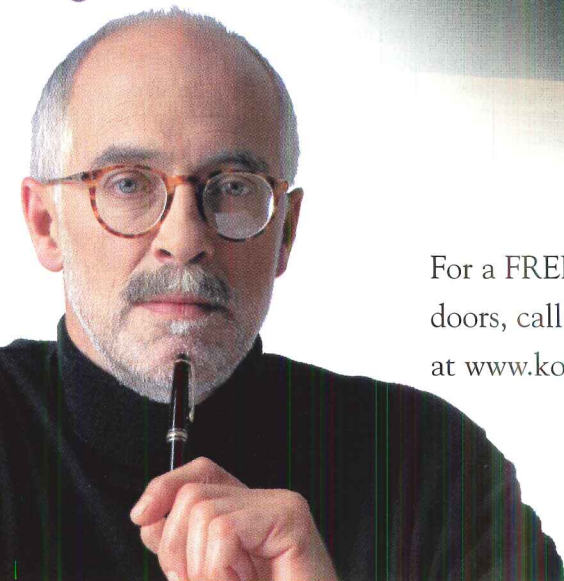
Revisions to UBC standard 7-2 (Fire Tests of Door Assemblies) and UBC 7-4 (Fire Tests of Window Assemblies) represent a fundamental change in how swinging (it is assumed the assemblies swing outward) fire doors and window assemblies are tested for fire resistance.

Underwriters Laboratories, Inc., one of two U.S. testing labs conducting positive-pressure fire testing (the other is Warnock-Hersey), has adopted a new standard, UL 10C, Positive-Pressure Tests of Door Assemblies, in response to the UBC revisions.

UL 10C specifies that the neutral plane in the test furnace be placed 40 inches above the door sill, creating a positive-pressure exposure along the upper portion of the door assembly. UL also performs a cotton-pad ignition test on insulated doors to determine whether flames and gases pass through cracks, holes, or other openings either within or around the door assembly. Doors are then subjected to the impact, erosion and cooling effects of a hose-stream test, during which doors must maintain their structural integrity. As in UL 10B, the negative pressure test protocol used by UL, the positive-pressure test evaluates doors for fire endurance and assigns them fire ratings in terms of minutes or hours.

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CIRCLE 56 ON INQUIRY CARD

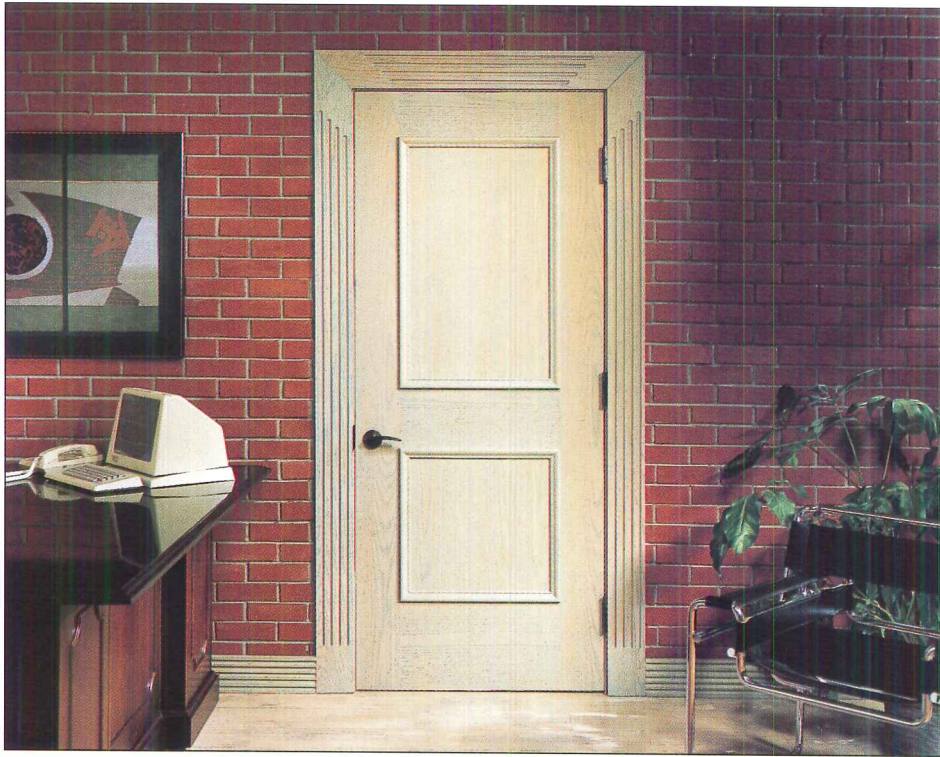
SPECIFYING FIRE DOORS AND WINDOWS

The Industry is Ablaze



AIA / ARCHITECTURAL RECORD
Continuing Education Series

Photos courtesy of Weyerhaeuser



Fire-rated doors shown as part of the design element of these projects.

fully tested to UL 10C will be authorized to bear the UL mark, specifically identifying that they have been evaluated under positive pressure. They also will bear an hourly fire rating and the manufacturer's name or identification.

Warnock-Hersey also is developing a fire-door labeling program in which information as to type, hardware and required intumescent will be attached to the door panel for use by installers and code officials in the field to insure that required parts are installed.

With the advent of positive-pressure testing followed by hose-stream tests, the U.S. will have the most stringent fire door standards in the world.

What will be the impact on wood door products?

There is considerable confusion. Some suggest that standard-sized residential doors (6-ft, 8-in) with 20-minute ratings (which constitute about 90 percent of the current U.S. market) are likely to require little, if any redesign. Others say, however, that even 20-minute doors and certainly all 45-, 60- or 90-minute doors will require some form of intumescent. Code officials, they say, are likely to demand recessed intumescent, intended to prevent hot gasses from seeping around or through the door. Intumescent will add to the cost of positive-pressure doors, perhaps by as much as \$25 per 20-minute door,

up to \$40 for a 90-minute door.

Larger doors with higher fire ratings (45, 60 or 90-minute doors) may require modification, either to stiles and rails, which may be of newly engineered composites, or to locks and closers, which frequently employ at least some interior plastic components vulnerable to fire. Or, doors may require changes to their core, using either thicker or more fire-resistant material. In specifying hardware, it is recommended that architects and contractors look for products certified to meet the more stringent standards.

Although the UBC's positive-pressure codes have already been adopted in all or portions of 14 states, few positive-pressure doors have hit the market. The vast majority of manufacturers—as many as 85 percent of U.S. suppliers—have yet to issue catalogues or pricing data on positive-pressure doors.

The dilemma for architects in those states governed by the UBC will be how to meet the demands of the new code with limited certified products. In the case of paired doors, architects may have to go back to astragals, which make one door active, the other inactive—systems long ago replaced by more sophisticated systems.

"The war stories are just beginning," says Kansas City-based door consultant Jim Berg. "Already there have

been cases where code officials have rejected doors."

That means change orders, or worse, arbitration.

Opting for steel doors is not an option. When exposed to heat, wood doors tend to be more stable dimensionally than steel counterparts. Although the exposed veneer surface of wood fire doors will char or flame, their interior cores are non-combustible. Steel doors lose strength much more dramatically than wood doors. Steel doors start losing strength at around 1,000 degrees Fahrenheit, and because steel will expand when heated, cracks and seams are much more likely to occur through which flame may escape.

"There are a bunch of issues here that have yet to be resolved," says another industry consultant. "Problems will occur for architects who put a project out to bid without carefully specifying doors."

It will be incumbent upon architects to be aware of which codes they will be using in various parts of the country and even within a single state, where codes may vary. They will have to be aware that, at least for the short term, the list of possible door and hardware suppliers may be limited. And in the absence of uniform labeling of positive-pressure doors, it would be prudent to leave certifications and installation instructions posted for the review of code officials, who also are bound to be uncertain about the new products and their ability to meet the demands of the new codes.

FIRE DOORS VERSUS SPRINKLER SYSTEMS

Few issues facing architects are as thorny as that of fire protection. The designer who raises the question of sprinklers versus passive life safety systems should be prepared for a long afternoon of debate. With the impending release of the International Building Code (IBC), which is expected to supplant the three existing U.S. model codes, the debate has become even more heated.

Increasingly over the past decade, U.S. model codes have permitted the substitution of fire sprinkler systems for fire resistive barriers, compartmentation of high-rise structures or the installation of fire-rated doors and walls. The amalgam IBC, a final hearing on which is scheduled in March (publication is scheduled for spring 2000), is likely to treat trade-offs even more permissively,

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say some industry sources.

Ask the National Fire Sprinkler Association (NSFA), and you will be told that fire doors are unreliable, that passive systems are, in the long run more expensive, and that sprinkler systems can be relied on to limit fire damage to small areas of sprinklered buildings.

Ask the Window and Door Manufacturers Association. You will be told that sprinkler trade-offs are fine if sprinkler systems work, but sometimes they don't.

The Portland Cement Association (PCA) makes a compelling argument that large losses have occurred in completely sprinklered facilities because other code-mandated fire protection features (such as fire barriers or area separation walls) have been omitted because sprinklers were installed.

Mark Kluser, manager of regional code services for the PCA in San Ramon, Calif., argues that a consequence of larger allowable floor areas (appreciably greater than any of the three model codes) in the IBC in buildings without fire-resistance-rated construction will be larger fires and higher fire losses.

Kluser argues for redundancy. "An example," he says, "is the combination of compartmentation provided by four-hour fire walls and automatic sprinklers. Requiring two or more types of fire protection provides a safety net, should one of the fire protection features be compromised or fail to operate.

"The concept of redundancy is undermined," says Kluser, "when fire resistant barriers are permitted to be reduced or eliminated where automatic sprinklers are provided."

The alliance for Smoke & Fire Control Containment (ASFCC) supports a "balanced design" approach to fire protection. A balanced design incorporates into the total fire protection package the essential complimentary fire protection features to support suppression, such as fire doors, walls and ceiling assemblies, fire-rated doors and curtains, fire-rated glass openings, protection of joints and penetrations, structural fire protection, smoke and heat vents, fire and smoke dampers and similar passive, containment features.

Passive features have been improperly referred to as redundant, which implies duplication resulting in overprotection. It is the position of the alliance that the two systems are interdependent and corresponding. The combination of both active and passive fire protection provides a more acceptable fire

safety environment than either one alone. This design provides a safer egress system, greater firefighter safety and a reduction in property damage in the event of a fire where the sprinkler system fails to activate, or is overwhelmed by fire.

The life safety code of the National Fire Protection Association (NFPA) encourages sprinkler trade-offs in some cases. It allows, for instance, a reduction in the fire resistance rating of corridor barriers in the presence of sprinklers.

"We will continue to recognize those kinds of trade-offs," says Jim Lake, an NFPA senior fire protection specialist. "Sprinklers retard fire growth. They have shown themselves to be an extremely good fire protection tool."

Having said that, however, Lake says the NFPA endorses redundancy "to the extent that the goals of the life safety code are being met without undue hardship on owners or designers."

"The NFPA endorses redundancy up to the point where that balance is threatened," says Lake.

"The architect has a difficult job," says Dick Davis, senior engineering specialist for Factory Mutual Research Corp., a fire prevention consultant to half the Fortune 500. "In this context, he is trying to deal with both structural and fire protection issues, and it is the rare individual who has a handle on both those subjects."

From a fire protection standpoint, says Davis, "rarely anything goes up that, to my mind, is flawless."

The vast majority of problems and the vast majority of construction-related losses are roof-related, says Davis. Most are wind related, but frequently are a result of fire. A common failing among designers, he says, is in materials specification: understanding what is combustible, what is not, and being aware of new materials and new technologies that can reduce the risk of fire.

"There has always been a debate," says Larry Larson, a 30-year fire marshal, now West Coast regional manager for the NFSA. "Fire door people are interested in maintaining fire door separations. The sprinkler industry is interested in maintaining its status as a first-protection source. My problem was that fire doors were often propped open or controls overridden. Astragals were such a maintenance problem, I had crews working on them constantly."

"In the case of both the One Meridian Plaza fire in Philadelphia and the First Interstate Bank Fire in L.A., the

predictions were that fire-resistant construction would contain fires. But there is always something that happens: people come in and tear out walls, protection systems are compromised to install new phone lines. If you have an hour-and-a-half-rated door assembly that theoretically will protect you from fire, you may still have smoke passing through the mullions. That's another problem with relying solely on fire-ratings and not on active fire protection."

Sprinkler systems can be compromised by overtaxed water supplies or broken piping, says Davis. Fire barriers are aids, not last defenses. "Say you've got a steel-framed warehouse with no fire-proofing. Steel won't burn, but it will weaken and collapse. If you have a firewall tied to an unprotected steel wall, it will fracture and no longer be effective as a firewall. In that case, firewalls must be designed so that framing on the fire side is separate so the wall will continue to stand. Barrier walls will help prevent the passage of hot gases or flames, but in the event of a major fire they are ineffective alone."

In the wake of New York's recent fatal fire in the 51-story South Park Towers, John Viniello, NFSA president said the city's fire codes "are written in blood." He accused New York City officials of "permitting the building of ovens in the sky."

"What I say to architects and builders is this," says Viniello: "It is not a question of whether sprinklers work. The question is how much they cost. Let's put our heads together and figure a way to reduce the cost."

Viniello is urging the use of low interest rate loans to retrofit existing buildings or tax exemptions for structures protected by sprinklers.

Mike Lavalee is chief building inspector for Daly City, Calif., and chairman of the code review committee of the Peninsula Chapter of the International Conference of Building Officials. The revisions to the IBC he and other chapter members have recommended fill hundreds of pages. "The first draft of the IBC reduced occupancy separations, increased heights and areas and allowed sprinkler trade-offs for various reasons," he says. "Any and all of these combinations will result in unsafe buildings."

He accuses the IBC framers of adhering to the lowest common denominators among the three U.S. existing codes, and says, "whether that is prudent, only time will tell."

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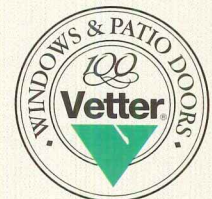
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Learning Objectives

After reading *Specifying Fire Doors and Windows* and completing the exercises, you will be able to:

1. Discuss the debate over passive versus active fire protection systems.
2. Describe the consequences of the new UBC code adoption requiring positive-pressure fire door testing.
3. Compare the existing fire-door testing to the positive pressure fire-door testing.

Instructions

The proceeding article *Specifying Fire Doors & Windows*, provided by the Window and Door Manufacturers Association, is part of the AIA/Architectural Record Continuing Education Series. You can receive two continuing education learning units that qualify for health, safety and welfare credits by reading the article, studying the learning objectives and answering the questions below. Turn the page upside down to check your answers. Then return the self report form (page 216) and submit it or use the Continuing Education self report form on Record's website, www.architecturalrecord.com.

QUESTIONS

1. What has been the result of codes requiring positive-pressure testing of fire doors?

Answer

2. What are some of the common problems of passive and active fire protection systems in buildings?

Answer

3. What is the recommended way to reduce the damage from fires?

Answer

4. What is the difference between the existing fire door testing and positive-pressure fire door testing?

Answer

structural steel isn't protected from heat, it can collapse. Also, even if a barrier wall remains intact, smoke may pass through. 3. This article recommends redundancy of fire protection, or installing two or more types of fire protection systems, both active and passive. Sprinklers that are activated at the start of a fire work best when the passive systems are already in place. Fire barrier walls and use of non-combustible materials are passive ways to prevent a fire from spreading. 4. Historically, fire doors have been tested under neutral-or-negative-pressure conditions. For testing purposes, the neutral pressure plane has been assumed to be near the top of the opening. Under positive-pressure testing, the neutral pressure plane is pushed downward to a height of 40 inches above the sill of the opening in order to increase pressure on the upper two-thirds of the opening.

1. The results have been that code officials have rejected some doors, which necessitates change orders or arbitration. Fire rated doors could require some form of intumescent, which will increase the cost of positive-pressure fire doors. Higher rated fire doors may require modifications to the stiles and rails, cores or locks and latches specifying more stringent materials. Architects will have to re-educate themselves and be careful in specifying doors to be aware of where codes may vary. 2. A common problem is in the use of combustible materials (although some combustible materials may be tested and approved for fire doors). Other problems are that fire doors may be propped open or controls overridden by occupants of the building. Sprinklers may not work due to low water pressure or broken pipes. Firewalls may be compromised through installation of wiring or modifications of existing walls. If

ANSWERS

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LIGHTING...

Lighting specifications are among the hardest to write, and it is always disappointing to see equipment not recommended by a designer actually installed on a project. The quality of a project depends on its specs: a downlight can be as simple as a metal cylinder that resembles a gallon paint can, outfitted with a plastic cone and socket sold at the local home center for \$19.95, or as sophisticated as a made-to-order unit with an insulation-contact-rated enclosure, a focusable, handcrafted reflector system of anodized alloy, an engineered lens, and an electronic ballast. The latter fixture might cost 30 times as much as the former. But are there are other significant differences? You bet there are. In this lighting section, consultant James R. Benya gives readers his advice on how to hold to firm lighting specs, and he reiterates the best reason for doing so: no matter who might mess up a project, it is ultimately the designer's reputation that is on the line.

The Soaring Eagle Hotel (1), by Gary Steffy Lighting Design, and DreamWorks Records (2), by Gotham Power and Light, are examples of what can be accomplished when top-quality equipment is specified and installed on a project. "The client considered the lighting of the project to be of extreme importance," says Gary Steffy, "and wanted us to specify the best equipment. It is a joy to see what is possible when an architect and a lighting designer are offered this freedom."

When a job is done on a low budget, however, such as Ten9Fifty (3) by Horten • Lees Lighting Design, ingenuity may substitute for expensive fixtures. Jules Horten confides that this alchemic ability is one of the great talents of Teal Brogden, who designed this project for Horten • Lees. "She can take an absolutely invisible budget and make something wonderful out of it," he says. When you look at the lighting of this speculative office complex, it becomes clear that the designer's skill is in knowing where to aim the light her client can afford so that it does as much as it possibly can. —Charles Linn, AIA

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1



2



3



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CREATIVE USES

RESPONDING TO THE HUMAN TOUCH, A GARAGE BECOMES A MUSIC BOX

Above-ground parking garages are often skeletal structures, devoid of everything except the elements that their builders consider strictly functional. Cars don't get cold, New York City parking garage magnate Abe Hirschfeld once said, so why do their storage facilities need facades? A new, 10-level, 1,600-space parking structure in uptown Charlotte, North Carolina, however, does significantly more than efficiently store cars. It also functions as an urban-scale music box, responding to the human touch with changing patterns of sound and light.

This artistic component of a utilitarian garage is the work of Massachusetts-based artist Christopher Janney, well known for interactive work that combines music, architecture, and light (see sidebar). Bank of America, the owner of the garage, hired Janney because it wants to make this area of Charlotte a better place to be after dark, and hopes the friendlier garage will enhance retail opportunities in a neighborhood already inhabited by many of the city's cultural institutions.

Mere add-ons—such as the giant renderings of fruit that decorated the 36 facade panels in the original scheme, before Janney's intervention—wouldn't do. Janney insisted on transforming the nature and the function of the whole garage. The result is a work, which he calls "Touch My Building," that is integrated into the structure of the building.

First, Janney embedded 416 aluminum panels, each five feet long and 18 inches wide, in the 47-by-10-foot facade panels. Semi-transparent car paint—in colors like Gypsy Lavender, Luscious Green, and Trudy Blue—coats the small aluminum panels, which are arranged in a more or less spectral order around the perimeter of the garage.

The progression of color is not completely ordered—a group of reds, for instance, may be interrupted by a green panel. Janney describes this jagged pattern as rhythmic, like an improvisational line of music.

Then, Janney integrated light. At night, 72 HID lamps wash the array of aluminum panels, which glint like car hoods. The real show, however, goes on at ground level at any hour of the day. Thirty-foot-tall glass fins in five shades of red fill the spaces between the large facade panels. The red fins progress from light pink to plum around the perimeter of the structure. Behind each fin are double bars of ruby-red neon tubing, powered by 9,000-volt transformers. Passersby touch a four-foot-high plate below each fin, triggering its capacitance field. This fires the neon and initiates a short concert of programmed sounds, such as a bamboo flute or a steam whistle. The sounds also chime together on the hour.

More colored glass completes the exterior work. Holes punched in the cornice are backed by yellow



glass, and both stairwells are edged in shades of blue glass.

A plaque inscribed with a riddle is hidden inside the garage. The solution requires that the outside plates be touched in a certain order. When someone solves the riddle—and only eight people have done so since the November opening of the

garage—the giant music box explodes into a concert of neon, flashing light, and music. Janney keeps track of the number of successful problem solvers. When the number reaches 50, he will change the riddle, and the nature of the garage will change once more. *David Simon Morton*



PERFORMANCE ARCHITECTURE Christopher Janney calls himself a sound artist. He is, after all, an accomplished jazz percussionist, and he also creates interactive works of public art. But if he is a self-proclaimed sound artist, Janney explains, it's because he believes color, light, and movement all fall under the category of sound. What is the sound of this light? he often asks, or, What is the color of this sound? Asked to describe the arrangement of colored panels used in "Touch My Building," he scatted rather than spoke.

"I like to give new spirit to places that already are lively," Janney says. Earlier in his career, he installed custom-made electronic instruments called Soundstairs on prominent stairways in several cities, including Rome's Spanish Steps. Movement on each step triggered a different ambient sound, like birds chirping or a light breeze. The sound for each step changed after playing. For "REACH—New York," Janney installed a similar instrument underground on a subway platform in New York City's Herald Square. Waiting passengers can reach up into the air to trip photoelectric cells and hear a corresponding ambient sound. Trains coming into the station trip the sensors in rapid succession, creating a different musical salute each time.

The use of light came much later to Janney's repertoire. It can be largely attributed to the introduction of Monsanto Opti-Color glass in recent years, as Janney can now use large sheets of glass in up to 250 colors—before, his palette was limited to eight colors. He incorporated large doses of colored glass into "Touch My Building" and in the 180-foot-long harmonic runway he installed at Miami International Airport. Janney's work comes closest to the conventional notion of architecture in this kind of work, but in all his projects, Janney is a shaper of space. It's just that sometimes the materials he uses are invisible. *D.S.M.*



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CIRCLE 63 ON INQUIRY CARD

FLAT WALLWASHING LETS GALLERY-GOERS SEE ART IN AN EVEN LIGHT

When Carla Massoni saw the burned-out brownstone on the Chestertown, Maryland, waterfront, she knew she had found the perfect spot for her new gallery. Chestertown is a historic town located at the confluence of three rivers, two hours north-east of Washington, D.C. The picturesque little town has, over the years, turned into an affluent resort.

Massoni, who had owned a gallery before, already knew that lighting is the key to good gallery design. "It can make or break a gallery," she says. So she called in lighting designers SM Lighting Design as soon as she had decided on the space.

"She wanted a simple, easy-to-maintain space within a limited budget," says Charles Starner of the New York-based SM Lighting Design. He decided to divide the 1,500-square-foot gallery into two visually separate areas. In the front, the beams and ducts are exposed, and the lighting track is pendant-mounted to create a dramatic entry. At the back, a dropped ceiling cre-

ates a more finished area. The gallery, which shows an eclectic mix of modern art and sculpture, was well suited to this demarcation, since it would allow different kinds of art to be shown at the same time in the small space.

The basic concept behind the lighting of the gallery is the use of an even wash of light on all perimeter walls. In her earlier gallery, Massoni had used MR16 lamps as spots. She found them expensive to maintain and difficult to focus. The lighting designers tried another approach. "A flat wash of light makes the lighting secondary, in a way. You see the painting without the scallops and shadows created by the spots," says George Merich of SM Lighting Design.

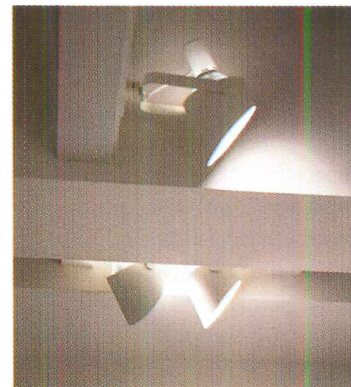
"The flat wash may not be as dramatic as using the low-voltage spots, but it works for me," says Massoni. "First, I do not want to spend my time climbing tall ladders to change lamps. More important, in my previous gallery, I found that clients would look at the art and

say, 'That looks great here, but my home is not lit like this.' It is easy for them to replicate the flat wash."

In the front, track-mounted halogen 100W PAR38 lamps with a wallwasher assembly kick the light to the wall to create a flat, even wash. The lamps are placed on dimmers for longer life. In the back, where the ceiling is lower, 100W semirecessed T4 halogens again create the same effect.

Lighting for specific pieces is achieved with the use of monopoints. Conduit was recessed into either side of the beams and outlets were placed at equal intervals, so Massoni can plug in 50W PAR30 halogen floods angled wherever they are needed. In the back, the lower ceiling called for a wiring grid with almost invisible white round ceiling-mounted plates into which the same lamps can be plugged.

The carefully thought-out plan ran into a hitch at the last minute when Massoni told the lighting designers that she had reconsidered her decision to expose all of the ductwork and lighting hardware in the front of the gallery. She was now planning to build a gypsum-



Monopoints can be plugged in along the beams wherever they are needed (top). A channel in a ductwork soffit hides track lights (above).

board soffit around the ducts and wanted the lighting to be hidden as well. Track lighting had already been ordered for the area, so to keep the project on time and on budget, the lighting designers integrated a channel into the soffit in which to hide the tracks.

"It all worked out quite well in the end," says Merich. "The entire space has only three different types of light bulbs, and with equipment and installation, it cost less than \$7,000." *Nayana Currimbhoy*

The perimeter walls of the 1,500-square-foot gallery are lit with halogen PAR38 lamps fitted with a wallwasher assembly that kicks the light to the wall. The art is displayed in an even light, without the distraction of harsh scallops and shadows. "It may be less dramatic than using MR16 spot lighting," says lighting designer George Merich, "but it is more true to the art. The lighting becomes secondary—it just disappears."

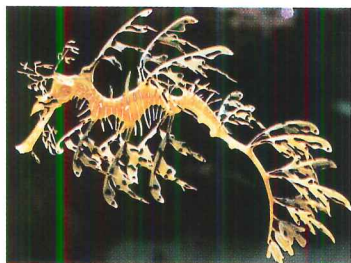


SPECIAL LIGHTING MEETS SPECIAL NEEDS OF EXOTIC SEA CREATURES

How do you help a crocodile digest its food? How do you protect a sea dragon from an exit light? How blue must a blue light be to keep an Australian jellyfish alive?

At the Coastal Rhythms exhibit at the New England Aquarium in Boston, the soft glow, the shimmering vista, defined shadows, and other such staples from a lighting designer's repertoire were definitely secondary considerations. The designer's primary task on this novel job was to help create a livable lighting environment for such exotic creatures as Japanese spider crabs, Australian sea jellies, salt water crocodiles from India, sea dragons, and other creatures that inhabit the world's fragile coastal regions.

"Coastal Rhythms: Creatures on the Edge" is a temporary exhibit that opened in conjunction with the aquarium's new west wing last year. The \$20 million 17,000-square-foot addition is the first step in the aquarium's planned \$100 million transformation. Designed by Schwartz/Silver Architects of Boston, the west wing's undulating stainless-steel



roof is designed to evoke the shimmering gills of a fish. The new wing, as well as its opening exhibit, reflects the ways in which the world-famous aquarium's curators have reexamined its programs.

Discarding the "bigger is better" model of the past, the aquarium is moving toward less grandiose displays. "The purpose of our new exhibits such as 'Coastal Rhythms' is not only to entertain but also to educate the public about the fragile marine environment," says Steven Bailey, curator of fishes for the museum.

Accordingly, the 7,000-square-foot coastal exhibit has smaller, more concentrated environments. The lighting designer was Josh Feinstein of the Lighting Design Group, a division of Standard Electric Supply Company.

Feinstein's primary considerations were lighting intensity, color temperature, and the adapting fixtures within the exhibit tanks. The entire exhibit works primarily with two lighting types: fluorescent and metal halide. Fluorescent is important because it comes closest to full-spectrum lighting, thus providing the ultraviolet rays required by creatures for metabolizing food. Metal halide is suitable because it penetrates water very well and simulates the ripple effect of sunlight passing through water. Its superior color rendition also works well for viewing the creatures.

Within this broad framework, however, each animal requires an independently structured environment that simulates its own habitat. The crocodiles, which can grow up to 24 feet long, need the intense heat and the flat light of the mangrove swamp. Three heat lamps, two 175W metal-halide downlights, and three four-foot 5,000K T8 fluorescent lamps housed in vapor-proof

The sea dragon requires a lighting level that is high but does not over-heat the water.



Fluorescent lamps are used to supply the ultraviolet light needed for photosynthesis, while metal-halide lamps are used to simulate sunlight.

beautiful six-inch sea dragons are attracted to light, says Bailey, even an exit light glowing at night at the other end of the room could lead the creatures to attach themselves to the edge of the tank. To prevent this from happening, the sea dragon tank is equipped with a 9W compact fluorescent night light; the light has its own self-recharging battery to ensure against a power failure.

Sea jellies, which also come from the southern coast of Australia, presented another challenge. They are the only animals in the world that photosynthesize their own food, and they need the same color of light found in their native environment to do so. The tank is equipped with a 20,000K metal-halide lamp, the bluest light available, to recreate the sea jellies' natural habitat as closely as possible.

This was the first time Bailey had a lighting designer on board. Changing exhibits can be stressful, Bailey says, and having a lighting expert work with him was extremely helpful. For Feinstein, the job was a tremendous learning experience. "I would say it was more a research job than a design job," the lighting designer says. N.C.



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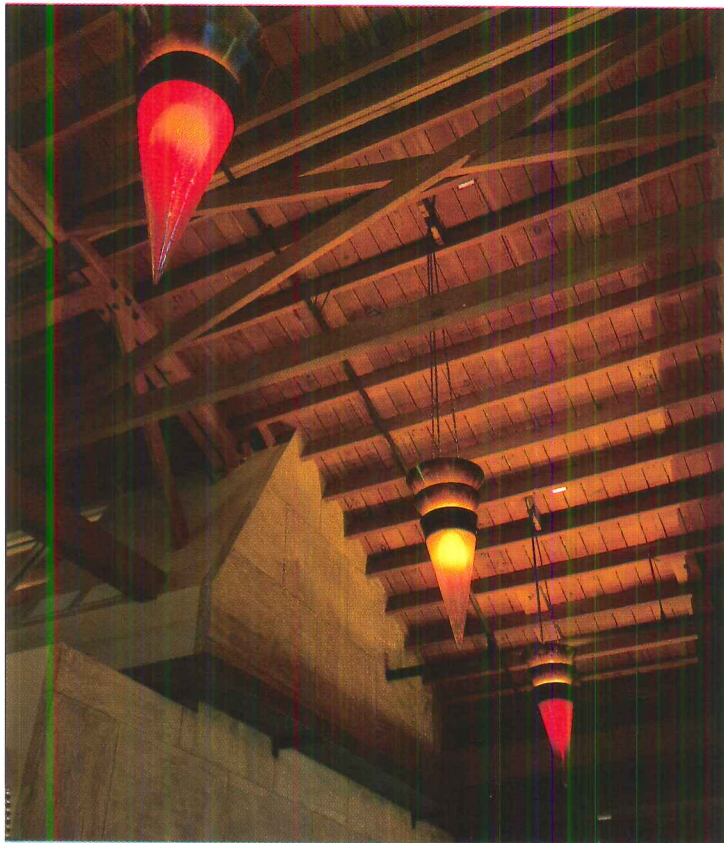
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A Renovated Warehouse Provides a Fresh Spin for a Record Company

by William Weathersby, Jr.



In Los Angeles, epicenter of the entertainment world, few new enterprises have been as closely scrutinized as DreamWorks SKG. Steven Spielberg, Jeffrey Katzenberg, and David Geffen's multimedia start-up quickly established itself as a major player in television, film, animation, and music production. DreamWorks Records, the music division, has staked out its own territory with offbeat offices carved from a turn-of-the-century warehouse that until recently housed part of the Beverly Hills Public Works Department. The new tenant was attracted to its rustic details, including exposed brick walls and vaulted oak ceilings.

Tailoring the space for the record company's needs posed several challenges for Errico/Thompson, the architecture and interior design firm. With a bow-truss ceiling that ranges in height from 16 to 21 feet, the structure "was essentially a cavernous tunnel that required both acoustical and aesthetic problem-solving," says design principal Claire Thompson. "The client wanted to retain the feeling of a big open space, but also

required sound-isolated private offices and conference rooms with a more intimate feel. We decided to modulate the scale by layering the space with a series of interior architectural elements built around a village plan."

The deftly layered lighting system for DreamWorks was a collaboration between Errico/Thompson and Los Angeles-based consultant Gotham Light & Power. "To create visual interest and to avoid a cavelike appearance, the lighting required a multilayered approach," says principal lighting designer Celeste Gainey. "The challenge was to illuminate multiple visual planes—from the upper ceiling to the task level and all the way down to the pathways—while still meeting California's stringent Title 24 energy code. The only way we were able to meet the requirement was to use very energy-efficient sources such as fluorescent and metal halide."

Lighting multiple planes

To uplight the ceiling plane within the open office areas, custom metal scoops were placed in each truss bay to hold flood fixtures using energy-efficient 100W ceramic metal-halide lamps. The lamps, with a color rendering index of 85, streak the wood ceiling with a warm glow. Theatrical fixtures fitted with PAR lamps are mounted atop rafters throughout the space to illuminate dark pockets.

At mid-level in the open-plan areas, the concept of a street lamppost was incorporated into the design of custom workstations to provide both task and ambient illumination. A fluorescent beacon sits atop each post, while two fluorescent arms are hung from cables parallel to the structural cables that tie the trusses together above. "We didn't want a lot of fixtures to obscure the beautiful ceiling, so we found a way to integrate the lighting into each desk unit," Gainey says. "Each workstation functions like an individual building in a village." Fluorescent pathway luminaires, wall-recessed close to the floor, light the corridors leading to the private offices and serve as egress lights.

In the private offices, custom light grids fitted with adjustable PAR track fixtures accommodate flexible lighting plans, showing the wide range of furnishings—from mid-century modern to antiques from India—to best advantage. The exposed oak ceilings are accented with 70W ceramic metal-halide spotlights mounted on pipes along the perimeter.

The main conference/listening room features studio-quality acoustics, sophisticated video screening and communications capabilities,

Project: DreamWorks Records, Beverly Hills, California

Interior architecture: Errico/Thompson—Claire S. Thompson, Laura L. Errico, principals; Randy Stauffer, Leila Abdul-Rahim, Andrea Devitt, Annilee Vita, Gary Tasich,

design team; Demetrio Cuzzocrea, project administration

Lighting designer: Gotham Light & Power Co.—Celeste Gainey, principal; Mark Figueredo, Fernando Bracer, design team

William Weathersby Jr. is a freelance writer based in Westport, Connecticut. He has written about lighting, interior design, and architecture for many publications.

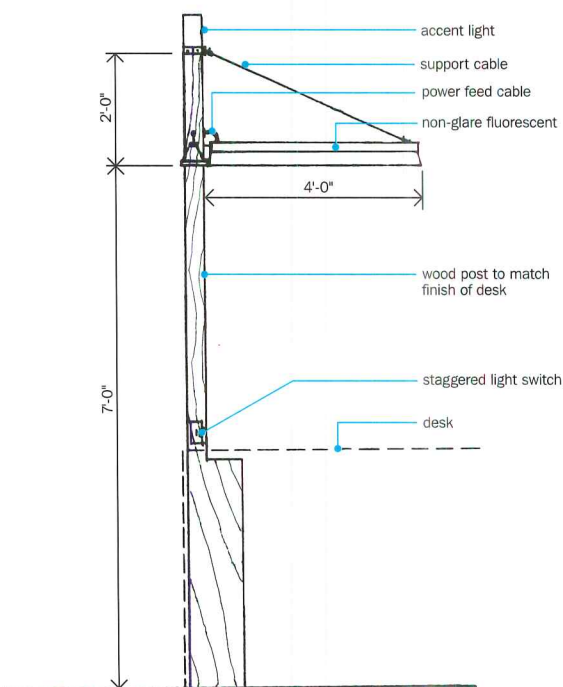


Vibrant blown-glass chandeliers punctuate the lobby (opposite), and layered lighting creates visual interest at key vertical levels (above). Wall-mounted torchères and skylights enhance seating areas (left).





Fluorescent beacons and cable-hung arms at workstations create both task and ambient illumination (opposite). Track lights augmented with ceramic metal halides light an office ceiling (far left). In the conference room, lighting dims to suit the mood (above and left).



DETAIL OF DESK LIGHTING

and residential-style furnishings that can be easily rearranged to support varied functions. Here dimmable biaxial fluorescents provide ambient illumination behind a wood trellis ceiling grid. “Because the room is used for teleconferencing, we designed a cut-off visor to eliminate any hint of shadowing or feathering that might occur along the walls,” Gainey says. Cables supporting MR16 lamps increase light levels when required, while custom torchères add ambient illumination.

Colorful blown-glass chandeliers designed by artisan Michael McEwen reduce the scale of the large lobby reception area. In other lounge seating locations, McEwen’s quirky luminaires, constructed from found objects such as lengths of ball-chain and 1950s shades, offer ambient light as well as lighthearted charm.

To keep track of so many layers of lighting, Gainey provided the electrical contractor with three reflected ceiling plans to represent different heights in the space. “It proved to be the best way to map the idiosyncratic nature of this atypical office environment,” she says. ■

Sources

- Accent lighting:** LSI
- Custom chandeliers and torchères:** Michael McEwen Lighting Studio
- Custom metal fabrication:** Art Metal
- Post-mounted luminaires at workstations:** Zumtobel Staff, Farrow Products

Track lighting: Halo

- Indirect metal halides:** Hydrel
- Indirect fluorescents:** Elliptipar
- Decorative pendants:** Luceplan
- Downlights:** CSL, Delray
- Task lamps:** Baldinger
- Dimming system:** Lutron



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CIRCLE 97 ON INQUIRY CARD

Soaring Eagle Hotel Takes Flight with Textured, Colorful Illumination

by William Weathersby Jr.

The Soaring Eagle Hotel in Mount Pleasant, Michigan, is one of a growing number of new commercial hotels and casinos operated by Native American communities. Built by the Saginaw Chippewa Indian Tribe in the middle of the state's lower peninsula, the resort made its debut with a freestanding gaming venue in 1996. Following an established master plan, the owners launched a second-phase expansion to add new wings for guest rooms and a conference center. After the phase-two structural shell was complete, Dow Howell Gilmore Associates was hired to complete the building.

"We were charged with defining the visual concepts and interior architecture," says principal-in-charge Donald Koster, AIA. "The client wanted high-quality finishes and detailing to reflect the tribe's cultural heritage and to showcase regional materials." The programming of the facility—encompassing 512 hotel rooms, an indoor pool, meeting and break-out rooms, an upscale restaurant, a cigar lounge, and a 1,200-person ballroom—was intended as a destination resort that would thrive independently of the casino. Gary Steffy Lighting Design was commissioned to design the exterior and interior illumination. "The architects developed a rich palette of natural materials such as granite, limestone, travertine, and cherry wood," says principal lighting designer Gary Steffy. "The lighting was to emphasize the textural quality of these elements."

Since Soaring Eagle is an around-the-clock operation, the design team emphasized efficiency. Softly illuminating painted ceiling

coves in the lobby and corridors, for example, are cold cathode or fluorescent lamps with dimming ballasts or transformers. Efficient HIR (halogen infrared) and ceramic metal-halide lamps also provide precise and long-lasting color rendering levels throughout the facility.

Exterior lighting concepts

The mandate for the exterior lighting was to give the complex a strong nighttime presence. On the western facade, the seven-story central section and two five-story hotel wings form a horseshoe around a pond equipped with geyser fountains. To illuminate the water feature, Steffy situated 68 500W PAR56 quartz halogen uplights within the pond. The dimmable lamps in hues of red, green, blue, amber, and white are controlled by a sequencer set on a 90-minute cycle.

"To illuminate the facade, we accentuated specific features rather than creating a uniform wash," Steffy says. "We wanted to avoid blasting light through the guest room windows." The blue-green tones of clear mercury spotlights complement the verdigris of copper chimneys. Warm-tone ceramic metal halides uplight the piers at ground level, sections of faux stonework, and architectural detailing on the upper floors. "The newer ceramic metal-halide sources offer a very high CRI [color rendering index] of about 82, and eliminate any color-shift problem," Steffy notes. Exterior sconces fitted with compact fluorescents behind faux-stone acrylic lenses delineate the balconies of the hotel's suites.



Project: Soaring Eagle Hotel and Conference Center, Mount Pleasant, Michigan

Owner: Saginaw Chippewa Indian Tribe of Michigan—Ron Jackson, project director; John Bliek, senior vice president of hospitality

Architect and landscape architect: Dow Howell Gilmore Associates—Donald Koster, AIA, principal-in-charge; Kevin Guigou, AIA, project manager; Robert Hill, AIA, design team leader

Master plan and building structure architect: Cunningham Hamilton Quiter Architects

Interior designers: Cynthia Brege, Cath McGlynn

Lighting designer: Gary Steffy Lighting Design—Gary Steffy, principal; Gary Woodall



The overall lighting approach “was to light up rather than down,” says Steffy. “We specified uplighting to illuminate covered ceilings, copper chimneys, wood and stone walls, and architectural details including metalwork and moldings.” The intent was to eliminate direct-source glare and impart an upscale ambience; subtle interior lighting

THE OVERALL IDEA WAS TO LIGHT UPWARD RATHER THAN DOWNWARD, TO ELIMINATE DIRECT-SOURCE GLARE.

augments the relaxed feeling of a lodge retreat, rather than suggesting an extension of the frenzied gaming areas.

For public spaces including the lobby, restaurant, and ballroom, custom luminaires interpret traditional tribal motifs and materials. Sconces and chandeliers incorporate panels of translucent cowhide as well as horn and onyx simulated in acrylic. The design team consulted with members of the tribal Ziiibwing Cultural Society in order to integrate aspects of Native American culture and symbology within the

lighting fixtures, complementing the original artwork on display.

The design team also employed colored lighting in strategic spots to heighten visual interest. “The goal was to give patrons a slightly different perspective and a change of environment as they spend the day in the hotel,” Koster says. Adds Steffy, “The client wanted to avoid the flashiness associated with Las Vegas casinos, so we didn’t design spectacular light shows. Color-changers are used sparingly and set on very gradual cycles.” A granite water wall adjacent to the restaurant entrance, for example, features blue and white PAR38 uplights set within the fountain. Mounted in a ceiling slot above, blue and amber PAR38s further spotlight the effect, running through eight scenes over a 24-hour period.

A signature look of the conference center was created in the reception and prefunction area leading to the main ballroom. Along the vaulted ceiling, Native American artists painted a mural of eagles soaring between the horizon lines of treetops. “Painted in soft sepia tones, the mural called for warm uplighting,” Steffy says. The ceiling is evenly washed with asymmetric uplights set within valence-screened side troughs and fitted with 50W, 3,000K compact fluorescents.



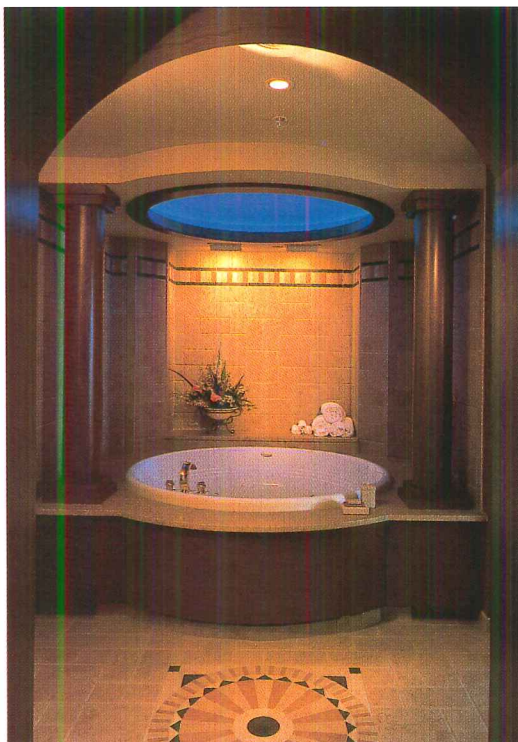
A ceiling mural is washed by uplight from 50W, 3,000K compact fluorescents mounted in side troughs (opposite). A valance



equipped with T8 fluorescents masks HVAC ductwork circling the indoor pool (left). The ballroom showcases chandeliers based on a

Chippewa star motif (above). Rings of cold cathode circle an oculus near a water wall spotlighted with PAR38 HIR lamps (below).





Multiscene fiber-optics spotlight a whirlpool bath in the presidential suite (above). Light from table lamps and torchères is augmented by downlights and wallwashers.



Steffy added cold cathode illumination at the bottom edges of the valences to create a soft line of downlight along the walls. Recessed PAR38 floods pick up the floor detailing, while a tabletop centerpiece is accented by PAR20 ceramic metal-halide spotlights. At each cherry wood archway, A-lamps set behind cowhide sconces create a warm glow. Inside the ballroom, which can be subdivided into three sections to accommodate groups of varying sizes, ceiling coves are lighted by fluorescent lamps in hues of amber, blue and white, set on dimmers and mounted above wood beams. The room's dramatic chandeliers interpret a Chippewa star

DESIGNERS CONSULTED WITH A TRIBAL CULTURAL SOCIETY TO INTEGRATE NATIVE SYMBOLOGY IN THE LIGHTING.

motif, while tall linear sconces mounted on perimeter columns also incorporate tribal decorations. Additional downlighting is supplied by PAR38 HIR lamps recessed into ceiling beams.

Lighting for the indoor pool serves a dual purpose. Not wanting to mar the wood-framed cathedral ceiling, Koster collaborated with Steffy on the design of a lighting valance structure circling the pool that provides ambient lighting while masking mechanical systems. A run of T8 fluorescent striplights are set behind acrylic panels to approximate the look of natural horn. Mounted behind the valance, 250W metal halides uplift the ceiling. Sconces on each of the piers are outfitted with 50W bi-x fluorescents. An array of PAR38 metal-halide downlights mounted to the beamwork at the highest point of the ceiling form another layer of ambient illumination. Underwater fixtures within the pool are fitted with 500W quartz halogen lamps.

In the presidential suite, recessed MR16 downlights and wallwashers are zoned and can be dimmed. General lighting is provided by table lamps and torchères housing halogen A-lamps. The lavish presidential bath employs an MR16 downlight to spotlight the floor pattern in front of a whirlpool tub. Two 100W wallwashers graze the tile wall, while a fiber-optic cove above the tub is equipped with a color wheel so guests can adjust the lighting scene. Lighting for the suite is controlled by a pre-programmed, five-button keypad.

Steffy says completing the design of the already-in-progress expansion project represented a close collaboration with the architects. CAD facilities were set up on site, with the design team spending three days a week at the property. "There was a thoughtful, ongoing review of how lighting could work to complement the architecture," Steffy says. "If we needed to refine a detail, we sat down and ironed it out." ■

Sources

Exterior sconces: *Visa with Sterling Products acrylic*

Exterior in-ground and fountain uplights, indoor pool lights: *Hydrel*

Lobby, corridor, and ballroom downlights: *Lightolier*

Lobby and corridor uplights: *Peerless*

Lobby sconces, pendants: *Baldinger with Taos Drum hide*

Ballroom sconces: *Sterner with Taos Drum hide*

Ballroom chandeliers: *Baldinger with Sterling Products acrylic*

Pool sconces, valance fixtures: *Sterner with Sterling Products acrylic, Legion striplights*

Presidential suite downlights: *Reggiani*

Presidential suite bathroom wallwashers: *Elliptipar*

Bathroom fiber-optics: *Lumenyte*
Lamps: *General Electric, Osram*
Sylvania, Philips

Lighting controls: *Lutron*

Appealing to a New Kind of Client Using Otherworldly Images

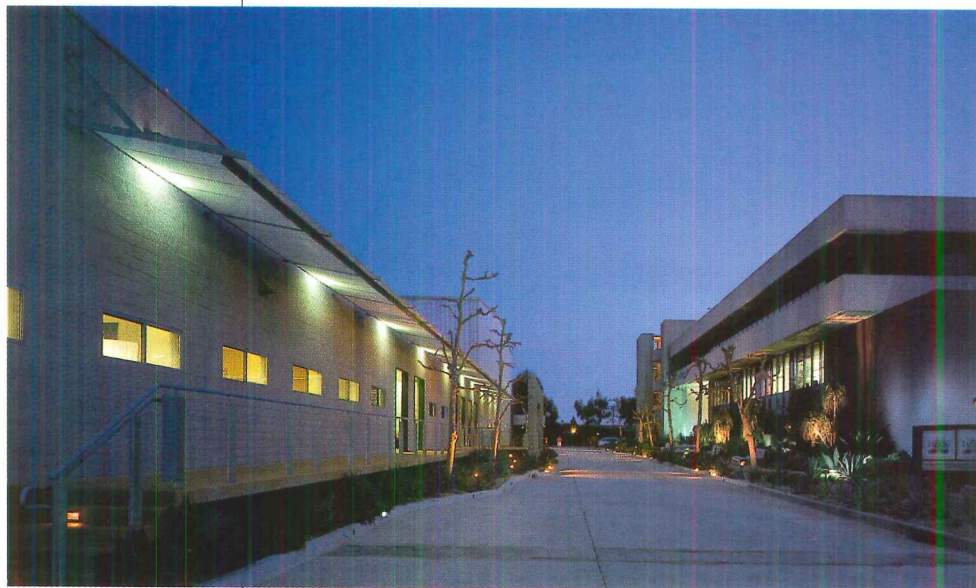
by Charles Linn, AIA

Two developers considering buying a pair of vacated buildings in Culver City, California, approached Steven Ehrlich, FAIA, and Nick Seierup, AIA, of Steven Ehrlich Architects to see if the structures would fit their needs. They wanted to create a campus that would attract young entrepreneurs in the entertainment business looking for an alternative kind of office space. Their target market was people working at the cutting edge of digital production technology, people who were successful and serious but who also might show up for work on mountain bikes or skateboards with their dogs in tow—in other words, tenants who were not likely to lease space in a typical office park. After the architects did conceptual studies and the developers ran the numbers, the buildings were purchased, gutted, and construction began on the complex, called Ten9Fifty.

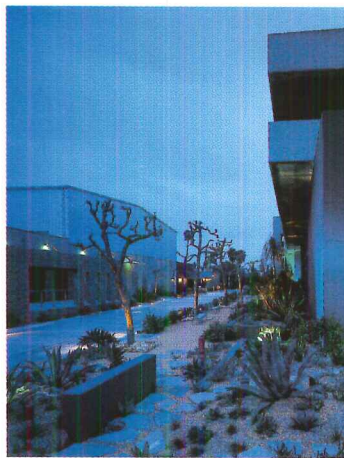
The two buildings were very different—the one-story concrete block warehouse on the east half of the property dated back to the 1950s, while a three-story concrete office building across the driveway was from the mid-1970s. “The office building’s generic image and the existing landscaping were exactly what we didn’t want to offer from an architectural or a marketing standpoint,” says partner-in-charge Seierup. “So we took a very anticorporate approach to the architecture.” This involved redefining the space between the buildings and using a varied palette of materials: deep purple stucco to coat exterior walls, galvanized metal panels at entrances, and corrugated metal for a prefabricated soundstage that was inserted inside a section of the former warehouse building.

Horten • Lees Lighting Design helped knit this anticorporate image together by developing a lighting vocabulary using inexpensive fixtures. Principal-in-charge E. Teal Brogden notes, “The job was fast-track, and the developers were very interested in rolling up their sleeves and getting involved in the job. We’d make a suggestion about how a standard fixture might be modified, and the next day the developers would show up on the job with a sample, and we’d try it out.”

To create a stronger, campuslike relationship between the buildings, the team landscaped the driveway that separated them, adding new sycamores to existing ones and then pruning them drastically to give “an



Low-voltage lights are projected across the driveway to uplight a row of otherworldly trees. Compact fluorescents backlight a fiberglass canopy, and in-ground metal halides silhouette small plants.



otherworldly appearance,” according to Seierup, “like something that you would see at the bottom of the sea or on Mars, but certainly not in an office park.”

“It was pretty easy for us to see which architectural moves needed to be lighted outside,” says Brogden. “Of course there were the gnarly trees, big cacti, and aloe plants, and we uplit and silhouetted these in incandescent and metal halide. We wanted to give the driveway some texture, so it has been raked with incandescent light from MR16s.” The designers also located different kinds of light sources to take advantage of their colors: warm incandescent light washes plants and concrete surfaces, cool metal halide was used where the galvanized panels were installed, and slightly warm compact fluorescent was

Project: Ten9Fifty, Culver City, California

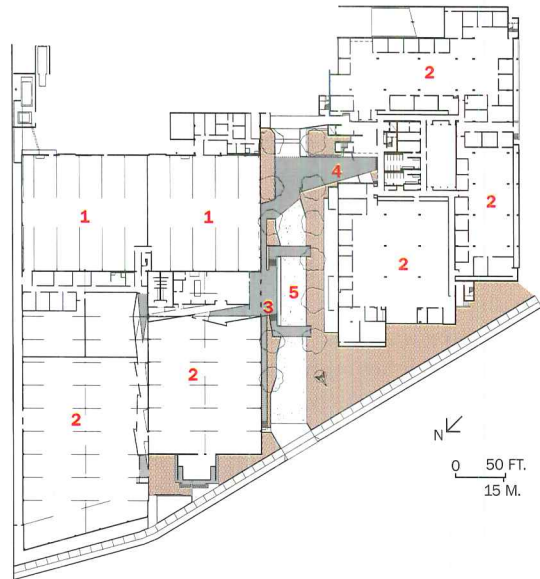
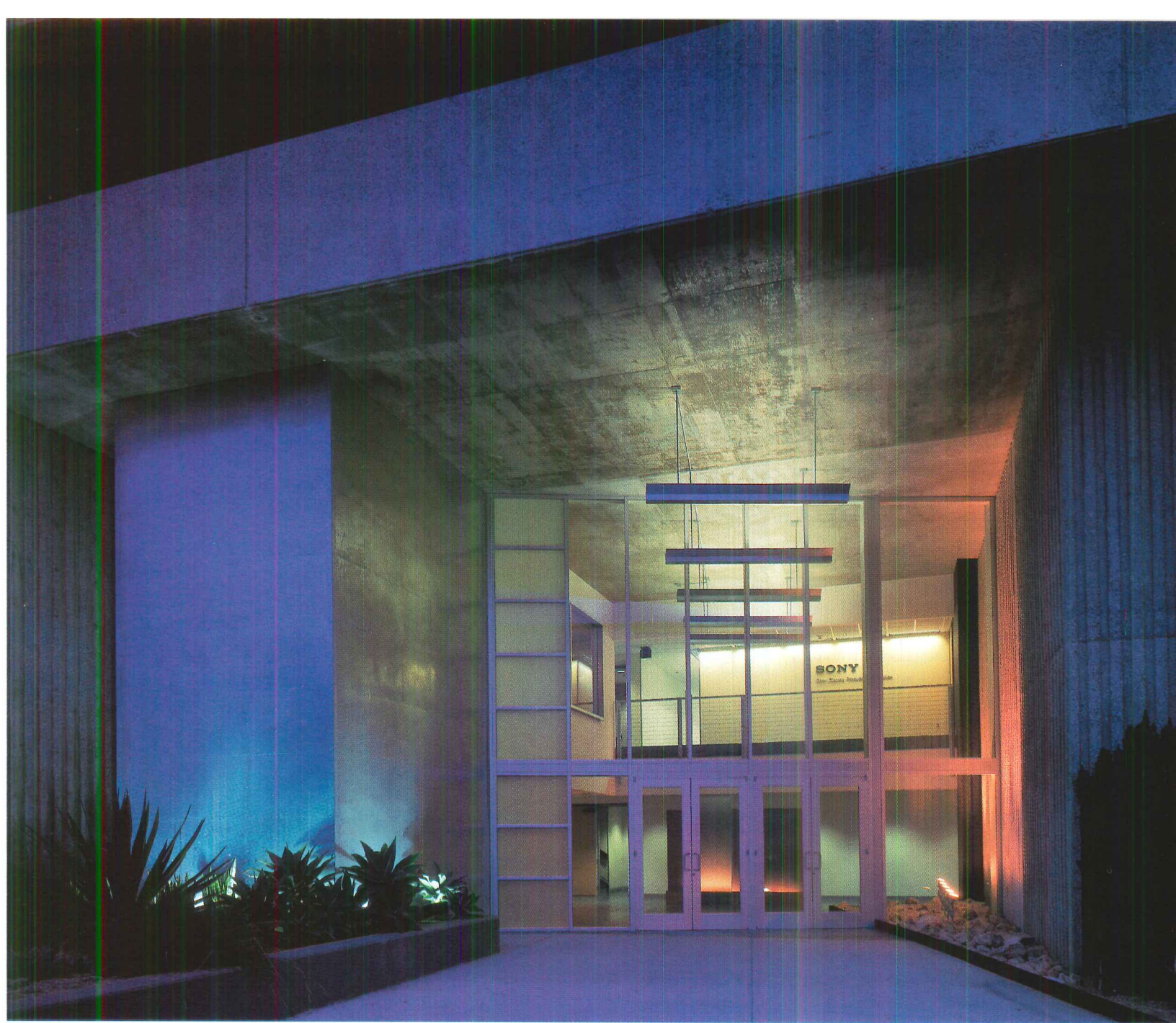
Owner: Skye Partners

Architect: Steven Ehrlich Architects—Steven Ehrlich, FAIA, principal; Nick Seierup, AIA, partner-in-charge;

Tom Zahlten, project architect

Lighting designer: Horten • Lees Lighting Design—E. Teal Brogden, principal-in-charge; Le Nguyen, Tina Aghassian, designers

Contractor: Pinnacle Contractors



FLOOR PLAN

1. Soundstage
2. Office space
3. East building entry
4. West building entry
5. Driveway

To convey the concept of the corridors as deforested canyon walls (left), Horton • Lees developed fluorescent lights that cantilever out from the walls, using generic six-foot fluorescent strips with bent metal shades.

At the entry of the west building (opposite top), metal halide washes galvanized metal panels, silhouetting plants. The suspended up-lights—simple fluorescent strips with bent metal shields—are also used in the lobby.

The corrugated concrete wall in the lobby (right) is uplit with R-lamps in inexpensive industrial lampholders. A low, black plaster enclosure conceals a low-voltage incandescent strip that uplights the building directory.

An office (below) is lit using an industrial fluorescent fixture with a custom-made prismatic lens attached under the lamps.



Seierup, “we provided Noguchi-like planters made of rusted steel and filled with rocks.” In the lobby, simple industrial lampholders are used with R-lamps to wash the corrugated concrete lobby walls, and the ceiling is lighted indirectly using simple fluorescent strips mounted inside bent metal shields. The building directory, set in a black plaster base, is uplit by a low-voltage strip.

used to backlight fiberglass canopies.

Inside the two buildings, Seierup and Brogden further developed the industrial, low-cost, low-maintenance, “moon-scape” scheme. “Where you would see potted palms in the public spaces of some office buildings,” says

“The idea for the corridors was that they should be like deformed canyon walls,” says Brogden. To communicate this idea, the corridor walls vary in width, and the floors are lined with more planters full of rocks. Brogden designed a cantilevered metal shroud, which resembles a tree trunk, to enclose a six-foot fluorescent strip. Pinned at the bottom to the wall, the shroud is supported at the top by a Y-shaped cable.

The joy of doing architecture for entertainment clients, says Seierup, is that “most of them are young, and they don’t have conservative tastes.” The 180,000-square-foot project was fully leased within a year of its completion. ■

Sources

Fluorescent strip lights: *L.A. Lighting*

Custom fluorescent shrouds:

Pinnacle Contractors

PAR lampholders, incandescent jelly jars: *Stonco*

Low-voltage tree uplights: *Greenlee*

Metal-halide floodlights: *Lithonia*

Compact-fluorescent accent lights:

Focus Industries

Incandescent and fluorescent lamps:
Osram-Sylvania, General Electric

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CIRCLE 68 ON INQUIRY CARD

Opinion: Avoiding the Pitfalls of Bid Packaging, Knockoffs, and Value Engineering

by James R. Benya

In my 26-year career as a lighting designer I have seen many changes in the way lighting is specified, priced, and delivered to the project. It is, after all, the responsibility of the designer to ensure that the client receives the full benefit of the design at a fair price. To guarantee this outcome, it has become more important than ever for the designer to understand how the system works once his or her project is completed, and to know what to do if problems arise.

When I began working as a designer in the early-1970s, I was extremely impressed by the power of specifications. Virtually whatever I specified showed up on the site, no questions asked. The only people who might have questioned the status quo were the clients: If contractors weren't taking bids for competitive products, the clients asked, were they getting the most for their money? Of course, we designers felt that they were: we were writing single-product specifications to assure that the best equipment would be used on a job and that the intent of our lighting designs would be fulfilled. Despite our best efforts, however, not every

THREE-NAME SPECS ASSURE THAT ONE MANUFACTURER'S INNOVATION SOON BECOMES EVERYBODY ELSE'S COMMODITY-GRADE KNOCKOFF.

client understood or valued the intent of the single-name spec.

In the late 1970s the rules of specifying lighting began to change. Some say it was large A/E firms that promoted the new policy of writing three-name-or-equal specs to guarantee that clients would get good prices. Others thought the practice was started by federal agencies as a way to prevent influence-buying by manufacturers. Whoever initiated it, the idea caught on quickly, and it has come to have consequences that no one could have foreseen. Soon government agencies, large corporate clients, and developers began to require that for each type of fixture on a project, the designer would specify three "equal" products and their manufacturers. Who could blame them? Under the old system, in which single-name specs were used, some designers overcharged for products; the new system seemed to be a way to cut costs while still maintaining quality.

When three-name specs were first required, it was not difficult to work with them because product development in the lighting industry had been minimal during the preceding 15 years and three equal products could almost always be easily specified. Optics weren't very sophisticated, there were far fewer types of light sources, and, it being the end of the stripped-down Modernist period, there were few wall sconces or decorative pendants. Lighting was still specified by engineers in a manner similar to plumbing.

James R. Benya is the principal of Benya Lighting Design of West Linn, Oregon, and a frequent contributor to ARCHITECTURAL RECORD's lighting section.

Still, there were some products that had no equals: Columbia's parabolic troffers, Gardco's "shoebbox" area lights with faceted HID reflectors, and the electronic dimming ballasts made by Lutron, for example, were all unique. But unfortunately, with the advent of the new specifying system, designers lost some of the freedom we had enjoyed to specify products that had no equals. We were compelled to list three products or use the expression "or equal," whether a true equal existed or not.

This practice, in turn, forced lighting manufacturers to introduce products that could be considered equals to those of competing manufacturers—or to face a loss of business. Soon enough, virtually every manufacturer of lensed troffers introduced a parabolic troffer, and every outdoor lighting manufacturer started making shoebbox area lights with faceted reflectors.

Although the three-name spec succeeded in minimizing the abuses possible with single-name specification and even inspired product innovations, it also made it difficult for designers to install products that

had no equals—products on the leading edge of lighting technology.

A far worse consequence of the three-name spec system is that it encourages manufacturers to copy the work of their competitors. It doesn't take long for one manufacturer's expensive, high-quality lighting innovation to become everyone else's commodity-grade knockoff. Since there is no point in one manufacturer knocking off another's product unless it can be made more cheaply, the lighting equipment that gets installed on a job is often an inferior, unauthorized, and royalty-free copy or approximation of the design of the inventor. It's no wonder that innovation and research are stifled in the lighting industry.

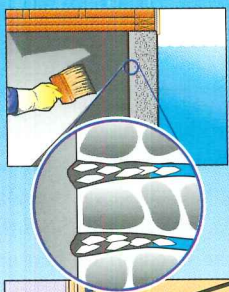
Some products are now being protected by patent. And there is some protection for luminaire makers in the realm of "trade dress" law. But trade dress recognizes only the way a product looks, not the way it works, as intellectual or creative property. And because legal protection is expensive and requires constant vigilance, in addition to the fact that the lighting industry has low profit margins and short product life cycles, the legal route is seldom pursued.

Enter packaging

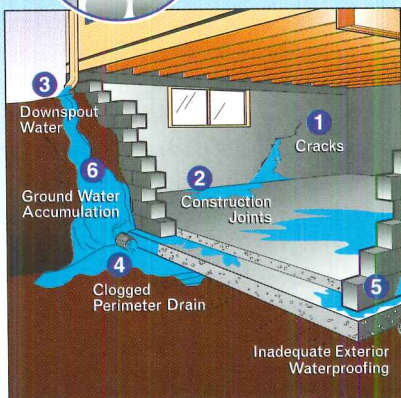
While it's still possible to specify a unique product on the job, another development has affected the lighting designer's ability to do so. By the mid-1980s, prices for lighting products had become much more competitive—and the incomes of manufacturers and their agents had been dramatically reduced. To recover some of the profitability of the good old days, manufacturers resorted to "packaging." The manufacturers went

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CIRCLE 70 ON INQUIRY CARD

through a period of consolidation in an attempt to increase the range of products they could offer for sale. Meanwhile, manufacturers' agents, or representatives, increased the number of product lines they represented so that they could offer an "equal" lighting product for just about everything that might be specified on a job. In today's market, an agency representing a major lighting manufacturer might also carry the product lines of 30 or 40 smaller lighting companies.

The competition to supply a lighting package on a building is extremely fierce, driving profit margins down to 2 or 3 percent on high-volume fixtures like troffers and downlights. Since a rep's profit is based on the sum of the commissions they are paid on all of the different pieces of equipment in the package, they must use every means possible to increase these margins while still offering the electrical distributor—who

PACKAGING AND OVERAGE MAY BE ILLEGAL, BUT THERE IS LITTLE POLICING OF THESE PRACTICES.

will sell the package to the contractor—a lower price than competing agencies that represent other manufacturers. When a designer writes a one-name specification for a product that has no equal, the rep that handles it can gain an unfair competitive advantage over competitors: the rep will simply refuse to sell this unique item at a reasonable price, or refuse to sell it at all unless he or she is allowed to furnish the rest of the package. Made up of a number of "equal" products that have been substituted for those in the original specs, the package allows reps to include products sold by the manufacturers they represent. The electrical distributor buys the product from the manufacturer, who pays the agent a commission—typically 5–10 percent for small quantities of fixtures and less for a large order.

The package is usually priced as a lump sum, without an itemized breakdown of costs for individual items. By not providing individual prices, both the rep and the manufacturer can make money through "overage," where the agent charges more than the manufacturer's list price for a given product. Overage is split between the manufacturer and the agent, often on a 50/50 basis, although it is rumored that some agents tell manufacturers they simply won't push their products unless they're given 100 percent of the overage. Using overage, an agent can often make more money selling \$100,000 worth of specialty lighting than \$1,000,000 worth of troffers.

Both packaging and overage are violations of federal law—the Robinson-Pattman and Clayton Acts—but there is little policing, and the practices are seen everywhere. To their credit, most manufacturers would rather not participate in these practices, but the agents are very powerful. Keep in mind the money involved: a superagent, like a sports superstar, can mean tens of millions of dollars worth of business for a major manufacturer.

"Value engineering"

Knowing that packaging and overage occur, bureaucrats, developers, and corporations have responded with "value engineering." Often this service is provided by the electrical contractor, distributor, and agent, whose fee is based on how much cost they can cut from the original bid (which in some cases may have been inflated by overage). Because the fee is based on cost cutting, the "value" of this "engineering" may manifest itself in compromised aesthetics, increased glare, poor color rendering, and inappropriate light levels—an overall sense of reduced quality. The latest

Hong Kong International Airport

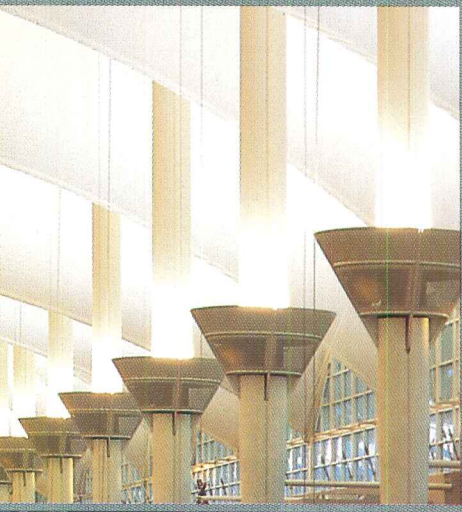
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CIRCLE 71 ON INQUIRY CARD

horror stories describe incidents where value engineering has begun during design, even before the contractor has been hired.

Architects and lighting designers can make a difference in eradicating value engineering by anticipating and preventing the system's worst problems.

Know your budget. The budgets for fast-track projects tend to be made up on the fly, and architects often begin design without a clear budget. Make sure you know your budget; if the budget isn't set, make sure you know who will set it and when. Also, don't engage in wishful thinking: be sure your budget and your design match.

Obtain confirmed unit pricing from agents. When developing

appropriate royalty arrangements have been made. If the substitution has been made without a release, contact the original manufacturer and let the company know what has occurred. Well-written performance specs will help prevent the substitutions of copies.

Be your own value engineer. Don't let others "value engineer" your job. Those who are doing the value engineering rarely understand the design criteria on which good lighting is based. Protect your client and your design, but be prepared to compromise.

Complain to the manufacturers. While packaging is rare in some markets, in others it is still rampant. When agents act improperly, do something about it. Complain to the company that is represented by the

ARCHITECTS AND LIGHTING DESIGNERS CAN MAKE A DIFFERENCE BY ANTICIPATING AND PREVENTING THE SYSTEM'S WORST PROBLEMS.

your design, obtain written quotations from the manufacturer's agent giving a guaranteed price—including the distributor's markup—for every significant product. Ensure that the price is available through a bona fide electrical distributor located close to the project site. Make sure that the specs are "package-free," or remove products with no equals from the specs and have them supplied directly by the owner.

Specify products of ethical companies. Some manufacturers do not engage in overage and other unethical practices. Let agents know that you will not tolerate overage, packaging, and other practices that decrease the value of your client's investment. If a manufacturer substitutes a direct copy of a product, reject it unless the company submits a release from the original manufacturer stating that the design is public property or that

problematic agent. Let the manufacturer know that their reputation is being damaged in the marketplace.

Stay involved with the project and your client. Stay in contact with the important parties on a project so that your client will discuss value engineering and other activities with you before making decisions.

It will always be true that specifications make or break most lighting jobs. While many designers worry that they are losing their influence, we can be proactive in protecting our designs and the interests of the client. It takes more strength than it used to, but it's still worth the effort: no matter what happens behind the scenes on a lighting job, when people look at the results, it is the lighting designer they will congratulate for the good work or blame for the bad. ■

B A L D I N G E R

The Adam D. Tihany Collection presents new ways to shape, reflect and disperse light. Bazak is one of three new ADA compatible designs, each beautiful in line and detail, inspired by the French Art Deco masters of the 1920's.

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Indirect Lighting that Mounts without Stems or Cables

by Lindsay Audin

Given a choice, most people prefer indirect lighting over direct. We are surrounded by varieties of indirect lighting—wall sconces, torchères, coves, valances—all of which depend on structural surfaces to act as reflectors and diffusers of their output. When done properly, the effect of indirect lighting is a bit like being outdoors: harsh shadows are diminished, and light seems to come from all around as well as above, unlike the sharply defined distribution typical of direct lighting. Indirect lighting reduces brightness/contrast ratios and minimizes reflections in video display terminals (VDTs), which are among the major causes of eye strain in offices and other spaces where computers are used.

Indirect light also tends to mix well with daylight from windows, making it a natural choice for rooms where light-sensing dimming controls are used to balance daylight and electric light levels. It helps avoid the greatest objection people have to this type of dimming control: that light levels change too quickly and can therefore be too distracting to the room's occupants.

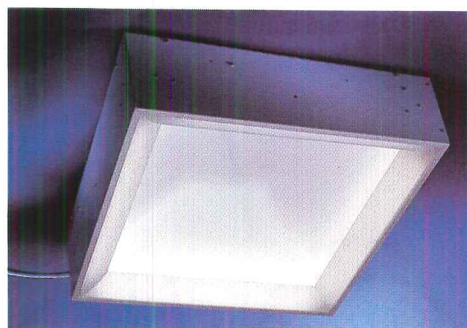
State-of-the-art indirect

Indirect uplighting generally consists of a light source mounted in a metal housing, which conceals a primary reflector that bounces light out of the fixture and diffuses it; a light-colored ceiling serves as a secondary reflector. In order to achieve uniform ceiling brightness and allow for plenty of space between rows of fixtures, most of these systems are suspended from cables or pipe stems 15 to 18 inches below the ceiling. Depending on the materials used in their construction and the sophistication of their optical systems, indirect uplight systems can be expensive to manufacture and difficult to install.

One of the biggest drawbacks to indirect systems is that they require higher ceilings than direct systems and will not be effective if they are blocked by major obstructions, such as ducts and horizontal beams. Indirect fixtures that are hung too close to the ceiling result in bright stripes of light over the fixtures. In renovation work, preparing the plenum and ceiling grid and repairing the ceiling itself for indirect lighting can add significant time and cost, often placing this option beyond many budgets. Experience also shows that light fixtures hanging less than eight feet above the floor often fall victim to the dreaded ladder carriers of the world.

A number of lighting manufacturers have come up with luminaires that produce indirect light similar to that provided by pendant-mounted units, except that they can be used at standard ceiling heights and easily retrofitted. They can be recessed or semi-recessed in a

Lindsay Audin is president of Energywiz Inc. and lighting research consultant to E-Source, a Colorado-based energy consulting firm.



The lamps and shields of Focal Point's Sky-lite II are located at the perimeter of the fixture.

standard suspended grid system, or surface-mounted onto a drywall or plaster ceiling. These fixtures are equipped with perforated screens that allow the lamps to admit some brightness, and a curved metal reflector to bounce light into the space below. While more appropriately termed "direct/indirect" because of the light that passes directly through their screens, most of these fixtures' light is reflected from their exposed surfaces. These fixtures are available in one-by-four-foot and two-by-two-foot configurations, using T8, T5, or large compact fluorescent lamps.

There are many types of ceiling-mounted indirect luminaires available today; those of Focal Point and Zumtobel Staff are typical of two styles currently in production.

Focal Point fixtures

The series of fixtures produced by Focal Point represent a new entry into the field. All of this firm's units are designed to fully recess into standard ceiling grids. A white matte-finished surface acts as the reflector/diffuser, and the lamps, located at the perimeter, are covered by curved perforated screens. The distance between the lamps reduces the apparent brightness of the reflector and allows output to be increased by adding more lamps. Up to four 55W compact fluorescent lamps can be used in the two-by-

two-foot fixture shown on the preceding page, offering a powerful light source for high ceilings or specialized locations.

A case study: the Zumtobel Staff RCII

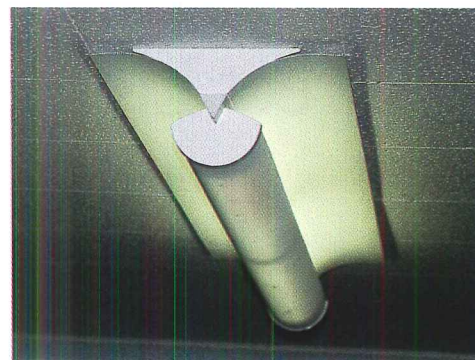
The Zumtobel Staff Lighting RCII Direct/Indirect Lighting System is available in surface-mounted, partially recessed, or suspended-ceiling versions. I installed surface-mounted units in my home office in late 1996 (right). Cutting into the wood-lath-and-plaster ceiling of the 108-year-old building was out of the question—the spacing of the joists would not have allowed proper recessing. But mounting the fixtures directly to the eight-foot ceiling was easy, and the fixture’s six-inch depth is shallow enough to avoid placing a visually distracting, low-hanging object in the space. As I write this article, I am surrounded by well-distributed light that fully illuminates both my desk and nearby bookcases.

The key to the RCII system’s indirect light is a gull wing-shaped, matte-finished, near-hyperbolic reflector that softly bounces light out of the fixture. The surface-mounted version also reflects light off the surrounding ceiling, further distributing it. Unlike the Focal Point fixtures, the lamps in the Zumtobel system run down the center of the fixture; designers can specify either one or two T8 or T5 twin-tube lamps, depending on the amount of light needed. The RCII system also includes wall sconces, as well as fixtures that can be tucked into the intersection of the ceiling and wall planes.

Calculations and maintenance

A few cautions are worth noting. While the brightness/contrast ratios produced by recessed indirect fixtures are not as high as those produced by the typical parabolic troffers found in many offices, they are not as low

In the surface-mounted Zumtobel Staff RCII system fixture, lamps are mounted in a basket that is made of perforated metal and hung beneath a matte-finished gull-wing reflector.



as those of suspended indirect fixtures. Mockups and photometric studies of fixtures from different manufacturers can help determine if the ratios are low enough.

Also, installation of indirect systems requires care. Smudges and fingerprints on the fixtures’ exposed surfaces are easy to remove, but cleaning them once they are installed is inconvenient, to say the least. Perforated screens are great bug and dirt catchers, although they are hinged and swing down for cleaning. Since most light fixtures don’t get cleaned until their lamps burn out—and often not even then—it would be wise to consider a facility’s cleaning regimen before specifying. Avoid installation in rooms where exterior doors are present, such as lobbies and exterior corridors.

Product sources

Information is available from Focal Point at 708/385-7575 and Zumtobel Staff at 914/691-6262. ■

LIGHTING

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LIGHTING BRIEFS

▼ Lighting Las Vegas

The main entrance of Las Vegas's Luxor Hotel (below) is intended to make a grand impression on visitors. Lighting the exterior required a wide array of luminaires to achieve the dramatic effect. The source for the lighting fixtures was RSA Lighting's BriteStar collection, an

extensive line of architectural linear lighting. Metal-halide, halogen, and incandescent lamps are all available in rigid or flexible strips. Lampings are available in horizontal, vertical, and festoon configurations. BriteStar also includes Promenade, a step and aisle lighting system. 800/356-3030. RSA Lighting, Chatsworth, Calif. **CIRCLE 239**



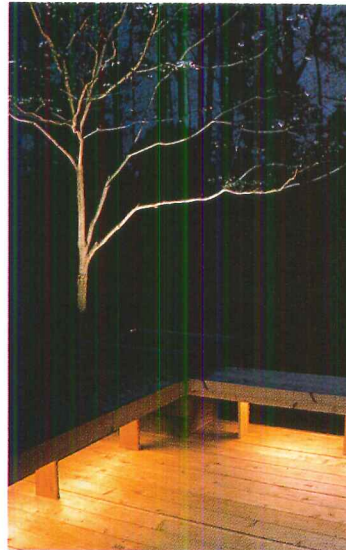
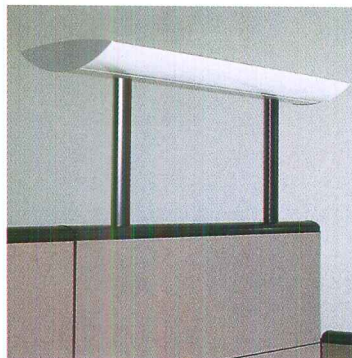
▼ Mix-and-match halogens

Bruck Lighting's modular Uni-Lights are available in more than 70 styles. Each style of interchangeable Uni-Lights can be plugged into any one of seven low-voltage halogen track systems using an adapter. Bini (shown) is available in six finishes: matte aluminum, green, red, turquoise, violet, and black. The 4¼-by-9-inch luminaire can be rotated and angled, then locked into position. 714/259-1000. Bruck Lighting, Tustin, Calif. **CIRCLE 240**



▲ Cold-weather fluorescent

Morlite Systems, a subsidiary of the JJI Lighting Group, now offers the LPL HO series, a line of high-output, cold-temperature fluorescent luminaires. Two 60W T12 high-output fluorescent lamps provide illumination. The Class P HPF magnetic ballast is rated to -20° F. 814/774-9631. Morlite, Girard, Pa. **CIRCLE 241**



▼ Wet-weather strip lights

Ardee Lighting's Klikstrip for Damp Locations is a flexible, low-voltage linear strip light for environments such as decks (left) and gazebos. Made of high-temperature polyethersulfone extrusion, the system can use four to 100 incandescent, argon, or xenon gas-filled festoons. 704/482-2811. Ardee Lighting, Shelby, N.C. **CIRCLE 244**



▼ Designer pendants

Designed by Erik Moller Architects, Poulsen Lighting's Minimal pendant is available in opal hand-blown glass, white powder-coated aluminum, or opal acrylic. The pendant, for use in restaurants, conference rooms, libraries, and offices, uses a compact fluorescent lamp with a maximum of 18 watts, or an incandescent lamp with a maximum of 75 watts. A spring system allows for easy lamp replacement. The housing is finished in powder-coated aluminum in metallic gray or white. 954/349-2525. Poulsen Lighting, Fort Lauderdale, Fla. **CIRCLE 245**

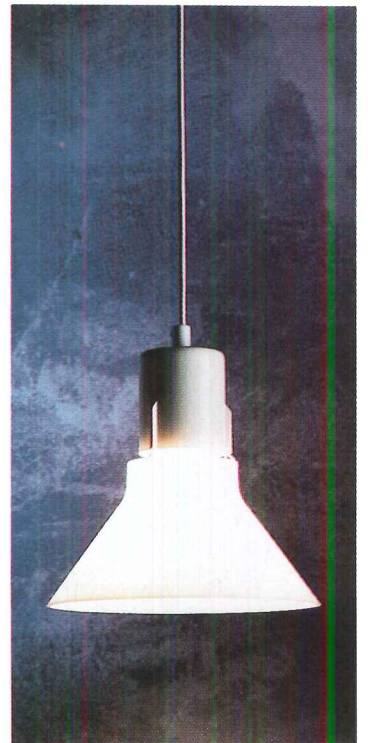


▲ Versatile wall sconce

Lightolier's Lumibox ADA-compliant sconces are constructed of an injection-molded acrylic box with a medium-density fiberboard frame. Fourteen styles are available. The fixture uses two 13W quad-tube compact fluorescent lamps, with electric, dimming electronic, or magnetic ballast. 508/679-8131. Lightolier, Fall River, Mass. **CIRCLE 242**

◀ Ambient lighting supports

Office Specialty's ambient light fixtures for the Platform office furniture system are supported by oval upright supports. The supports are available in two heights; the lights are available in five widths, using four to six fluorescent lamps depending on the size of the fixture. A downlight is incorporated into the design. 905/836-7676. Office Specialty, Holland Landing, Ont. **CIRCLE 243**



LIGHTING BRIEFS



▲ Energy-efficient wallwasher

Elliptipar's Style 211 uses asymmetrical reflectors and 32W or 42W Hex Tube compact fluorescents to light walls nine feet tall and higher with 25 percent fewer luminaires, allowing wider spacing and reduced energy use. The semi-recessed design fits new or retrofit lay-in grid or drywall ceilings. 203/931-4455. Elliptipar, West Haven, Conn. **CIRCLE 246**

▼ Powerful post top

McGraw-Edison, a Cooper Lighting brand, has introduced the Westminster Acorn lamppost top. Utilizing new refractive prisms, more usable light is redirected downward. The efficiency gains allow the fixtures, which can be wired for 120-, 208-, 240-, 277-, or 480-volt service, to be spaced up to twice as far apart as similar fixtures. 847/956-8400. Cooper Lighting, Elk Grove, Ill. **CIRCLE 247**



▼ High-load dimmers

The Decora Home Controls (DHC) dimmer module from Leviton has a 1,000W load rating. Applications include home theaters, living rooms with high hats, and entries where an existing DHC system is in use. 800/323-8920. Leviton, Little Neck, N.Y. **CIRCLE 249**

▲ High-efficiency fluorescents

Sportlite's LX800 Series High-Bay compact fluorescent lamps supply 25,600 lumens and 85 percent lumen maintenance for a 25-40 percent energy savings over 400W high-intensity-discharge high-bay fixtures. 602/468-6200. Sportlite, Phoenix. **CIRCLE 248**



◀ Low-profile style

Poulsen Lighting's Micro series recessed low-voltage fixture is suitable for ceilings up to one inch thick. A low-voltage light source (maximum 50W halogen Bi-pin lamp) is encased in protective glass for safety. 954/349-2525. Poulsen Lighting, Fort Lauderdale, Fla. **CIRCLE 250**

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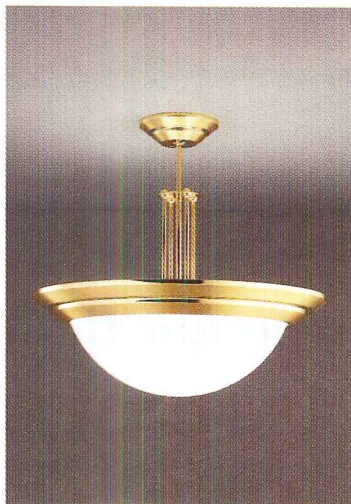
LIGHTING BRIEFS

▼ **Simple style**

Designer Ron Rezek has crafted the new Ariel series of luminaires for Artemide. Both the table lamps (shown) and the floor models feature a die-cast metal base with a matte nickel plating finish. The upper and lower shades are constructed of light-diffusing plasticized paper material. 516/694-9292. Artemide, Farmingdale, N.Y. **CIRCLE 251**



For more information, circle item numbers on Reader Service Card



▲ **Customizable pendants**

Visa's new Companion pendants have been scaled down for use in more intimate applications. The fixtures are available with eight different acrylic diffusers and five stem options. Faux alabaster diffusers are optional. Finishes include chrome-plated brass, polished solid brass, satin nickel, and painted. Incandescent and fluorescent lamps are available. 800/788-VISA. Visa, Milwaukee, Wis. **CIRCLE 252**

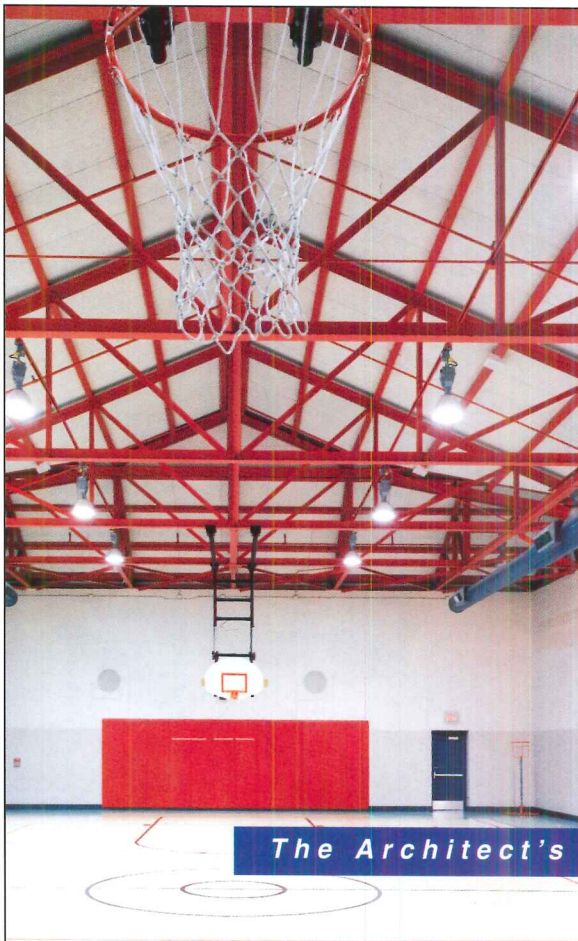
▼ **Multitask retail lighting**

Shown below installed at Sephora, a New York City cosmetics retailer, RSA Lighting's new Combo is a multipurpose, multilamp, single-installation recessed fixture. Featuring an integral ballast/transformer that supports nine lamp sources, with two to 42 lamps in a single unit (inset), Combo provides flexibility without ceiling clutter. Each lamp rotates 358 degrees with an angular adjustment

up to 50 degrees, allowing multitasking from one fixture. Other versions include Combo Decor, for residential use, and Galleria, for architectural interiors. 800/356-3030. RSA Lighting, Chatsworth, Calif. **CIRCLE 253**



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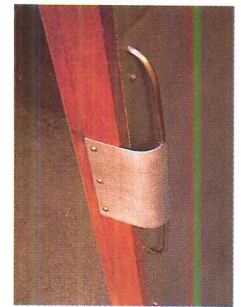
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*Source: Rose Research, 1998

NEW PRODUCTS



The one-of-a-kind doors created by Pacassa Studios for David Baker Associates (story below) were designed to provide a functional and beautiful entry for an unusual space. The unique proportions of the curved, double-height room required a custom-designed solution. Most rooms, however, don't call for such elaborate door installations, and architects and designers can choose from a wide range of easily obtainable products. The following page of New Products profiles a variety of new doors and door options readily available for both commercial and residential use.



Wooden trusses hang on an aluminum "spine" (far left). The painted-veneer finish mimics a steel door (left). The curved handle is fabricated from zinc-coated steel (above).

CUSTOM-MADE CONFERENCE ROOM DOORS COMBINE WOOD AND ALUMINUM FOR MASSIVE APPEAL

For five years, the conference room in David Baker's San Francisco architecture office had an open door policy—because there was no door. The room itself was formed by a curving masonry wall, and the height of the opening, about 15 feet, compounded the problem of adding privacy to the space. There were no off-the-shelf solutions, and Baker was willing to wait for a door that was aesthetically pleasing and functional. After "four or five years" of bouncing ideas back and forth with designer Paco Prieto, principal at Pacassa Studios in Oakland, California, 1998 was the year Baker got what he wanted. "These doors," he says, "work extremely well."

When closed, the vaultlike pair of 15-foot-tall doors does not appear to be made from a wood and aluminum frame with a wood veneer skin. "People often touch them before they realize they're not heavy

and made of metal," says Baker.

Prieto, who had been experimenting with truss-based structures for nearly a decade, designed and built the doors, which were fabricated in his studio. Each door pivots on 1½-inch-diameter anodized aluminum tubing that was fitted with a custom ball-bearing assembly and secured at floor and ceiling. Attached to the center-pivoting "spine" is ¾-inch anodized aluminum tubing. The doors' interwoven Honduras mahogany trusses hang from the aluminum assembly, and the skin is ½-inch-thick birch veneer. Both sides were etched with a diamond pattern, coated with silver paint, then finished with a clear lacquer.

Because Pacassa's creations weigh in at only around 150 pounds each, "wind circulating through the building used to blow them open," says Prieto. His solution was to add a concealed, spring-loaded mag-

netic catch to keep the doors in position, as well as holding them open at various angles. The right door can pivot a full 360 degrees; the left door was notched in the upper right hand corner to allow clearance for a sprinkler pipe.

When Prieto was delivering the doors to Baker's offices, he discovered that they were too large to fit through the building's corridors. But, as luck would have it, a "window of opportunity" arose when a residential unit in the building became vacant for a short time. Prieto moved the doors in through an opening created by removing one of the unit's 100-year-old casement windows, thus bypassing some tricky corners in the building. The type of adaptive thinking Prieto demonstrated here is what made the design a success.

510/465-4655. Pacassa Studios, Oakland, Calif. **CIRCLE 202**

MADE-TO-ORDER DOORS

When the right door for a space falls outside a manufacturer's standard offerings, a custom piece is the answer. Here, a selection of custom door fabricators from around the U.S.

Grand Entrances 3941 Legacy Drive, Box 204-304, Plano, Tex. 75023. *Old World hand-forged iron doors, iron fencing, and entry systems.*

ENJO Architectural Millwork 16 Park Avenue, Staten Island, N.Y. 10302. *Wood doors and windows, wainscoting, wood storefronts, and moldings.*

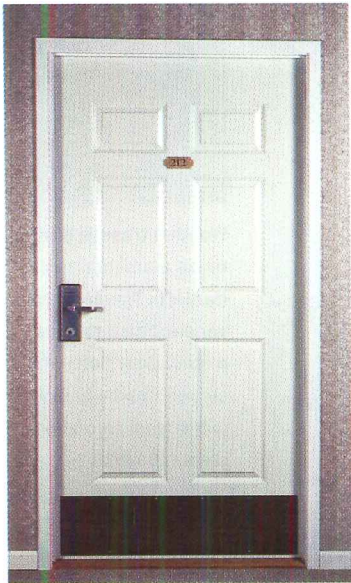
The Artisans 5729 Highway 93 S., Whitefish, Mont. 59937. *Hand-crafted doors in red oak, red elm, mahogany, knotty alder, pine, butternut, and ash.*

Cline Aluminum Doors 112 32nd Avenue W., Bradenton, Fla. 34205. *Custom aluminum doors based on standard construction designs; custom framing systems.*

Concept Frames P.O. Box 248, Newton, N.C., 28658. *Custom hollow steel frames to architects' specifications.*

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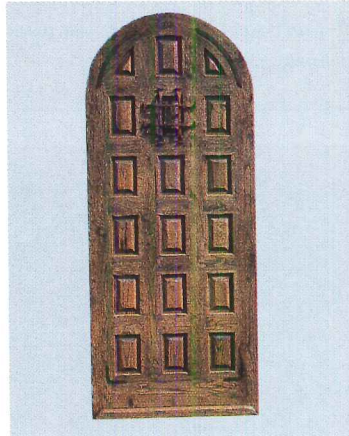
These doors and door accessories prove that off-the-shelf items can solve many of the exit and entry requirements a building presents. Whether the need is for a custom size, a period look, or a few special features that allow for accessibility, the manufacturers highlighted here provide products for a multitude of design requirements.



▲ Affordable, accessible door
Masonite's Craftmaster Commercial Smooth door is available in six-foot-eight-inch and seven-foot heights, and widths up to 42 inches to meet accessibility codes. The doors are compatible with existing hardware, such as electronic card locks and panic bar devices. 800/405-2233. Masonite, Chicago. **CIRCLE 203**

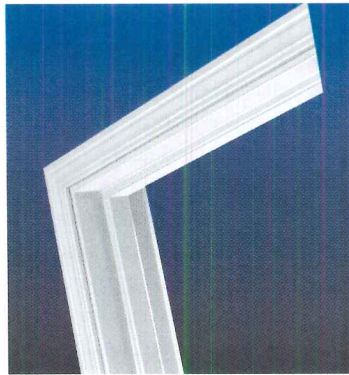
▼ Rustic entryways

Rustica Arts' use of mortise-and-tenon construction adds a 16th-century Mediterranean flair to the company's made-to-order doors. 805/692-8865. Rustica Arts, Goleta, Calif. **CIRCLE 204**



▼ Wood-grain steel door frame

Designed for use with interior drywall framing, Timely's Model TA-30 Colonial steel door frame has a woodlike appearance. The frame is sleeved over finished drywall and the casings are snapped into place; a full-perimeter anchoring system aids frame strength. 818/896-3094. Timely, Pacoima, Calif. **CIRCLE 205**



◀ Classic solid wood doors

Traditional Premier inswing and Manor outswing doors from Kolbe & Kolbe are typically constructed of western pine; oak, maple, mahogany, walnut, and hickory are optional. Door stiles are 4 7/8 inches wide and door panels measure 1 3/4 or 2 1/4 inches thick. Three standard glass patterns are available—Imperial (shown), Regal, and Dynasty—as well as custom options. Sidelights and transoms are available separately. 800/955-8177. Kolbe & Kolbe, Wausau, Wis. **CIRCLE 206**



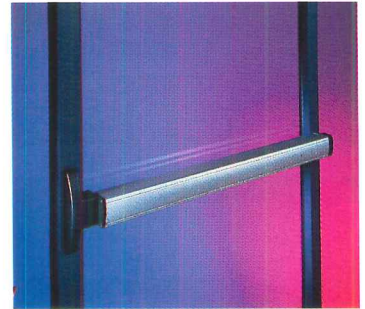
▲ Swing-in sidelights

Peachtree's P+L (panel and light) entry door system utilizes a "uniframe": the frame spans the head and sill of the door, and sidelights and transom are a single unit, easing installation and alignment. Both doors and sidelight swing

inward, widening the entryway up to 14 inches and allowing extra width for moving oversize objects through the opening. The system is compatible with most Peachtree doors and sidelights. 800/PEACH99. Peachtree Doors and Windows, Norcross, Ga. **CIRCLE 207**

► Fast, secure exits

The Dor-O-Matic 1690 Concealed Rod Panic Device is designed for single or double doors. The touch bar retracts a concealed bottom rod and releases the top latch. When the door closes, the top latch reengages and frees the bottom rod to engage the threshold. 770/449-5555. Kawneer, Norcross, Ga. **CIRCLE 208**



▼ High-rise steel doors

To accommodate higher ceilings and entryways, Stanley's Sta-Tru Premium Steel Door System is eight feet tall. The door has 24-gauge hot-dipped, galvanized steel skins on both sides and a

1 1/2-inch thermal break to prevent heat loss and interior frost build-up. Single/double door sizes, single/double sidelights, and decorative glass options are available. 800/STANLEY. The Stanley Works, New Britain, Conn. **CIRCLE 209**



PRODUCT BRIEFS

▼ **Sitting pretty**

Intended for use in public spaces, including cafeterias, libraries, universities, and food courts, the Series 2300 Caris chair from Kusch+Co. features a milled back

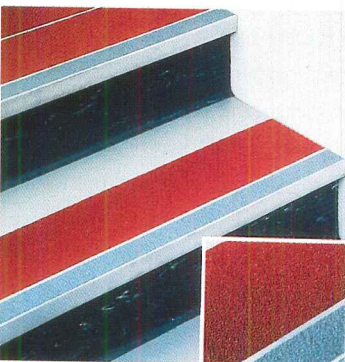


that reveals the natural grain of its beechwood frame. The chair is available in a wide range of colors and a number of wood stain treatments. 516/271-6100. Kusch+Co., Huntington Station, N.Y. **CIRCLE 210**



▲ **Solutions for signage**

Formed using a continuous soldering process, Perfect Edge channel letters have a flush face and returns. Available in sizes from two to 48 inches and in mirror or satin finish. 800/729-6807. Stainless Designs Inc., Fort Collins, Colo. **CIRCLE 211**



▲ **Nonslip stair treads**

These nonslip aluminum stair treads can be used in new construction or to renovate worn steps. Installation can be done over surfaces including concrete, wood, slate, and marble. Available in eight colors. 800/321-2381. Musson Rubber, Akron, Ohio. **CIRCLE 212**

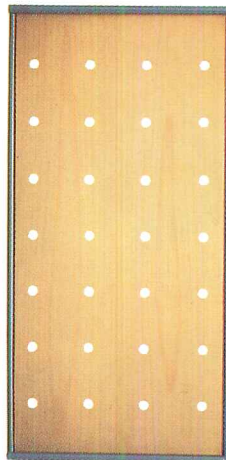
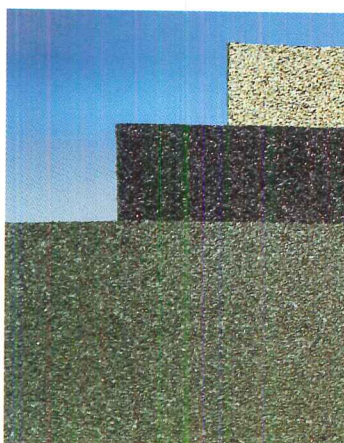
▼ **Matching bath accessories**

HEWI has added three new colors—biscuit/linen, bone, and almond—to its palette for grab bars and seats for bathtubs and showers to match colors offered by Kohler and American Standard. 877/439-4462. HEWI Inc., Lancaster, Pa. **CIRCLE 213**



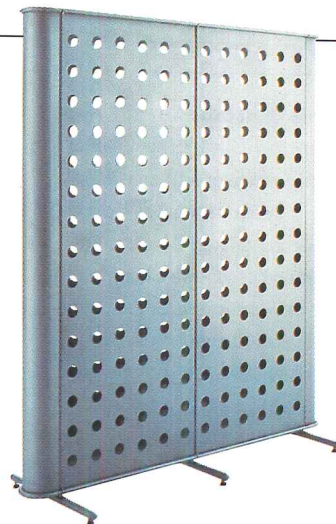
► **Water-resistant roofing**

Millennium, a water-resistant, polymer-enhanced coal tar membrane system for roofing applications, can be applied on dead-level and very low-sloped roof decks. The three-part system is composed of a Millennium-coated, nonwoven fiberglass base sheet, a Millennium-coated smooth fiberglass membrane, and a granulated membrane cap. Available colors include gray-green, light beige, and black. 800/221-6490. AlliedSignal, Cary, N.C. **CIRCLE 214**



▲ **Mobile modular walls**

Four modular work-panel designs, including Atlantic (left) and Broadway (right) from Zero help divide work spaces. Designed for temporary or permanent installation, the panels are constructed of



heavy-duty tubular frames and textured-steel panels. Individual panels can be combined in unlimited range configurations—even cylindrical groupings. 401/724-4470. Zero U.S. Corporation, Lincoln, R.I. **CIRCLE 215**



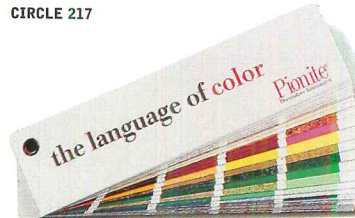
▲ **Grand entrance**

Kansas City's Kemper Arena, once a bland monolith, now greets attendees of athletic events and concerts with a 65-foot glass canopy. The curtain wall, an

EFCO Series 5800 Silicon Gasket Curtain Wall System, utilizes factory-fabricated, continuous gaskets that snap into place without sealant. 417/235-3193. EFCO, Monett, Mo. **CIRCLE 216**

▼ **Simplifying color choices**

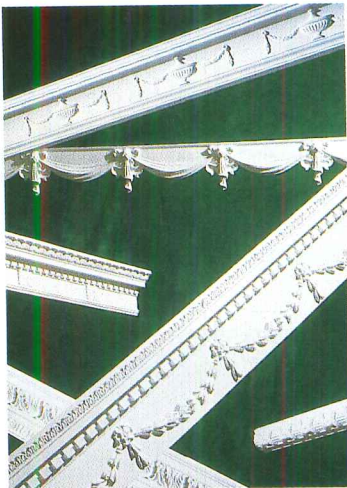
Pionite's Color & Design Guide organizes laminate choices by color family for efficient comparison of color choices. The company's entire line of colors, patterns, and finish options is included. 207/784-9111. Pioneer Plastics, Auburn, Me. **CIRCLE 217**



PRODUCT BRIEFS

▼ **Updating urethane millwork**

Style-Mark has added 25 new interior moldings to its line of high-density polyurethane millwork. New styles include dentil garlands, an acanthus leaf, and crisscross and decorative chair rail moldings. The millwork is resistant to decay and rot, making it ideal for installation in high-humidity areas like kitchens and baths. 800/446-3040. Style-Mark Inc., Archbold, Ohio. **CIRCLE 218**



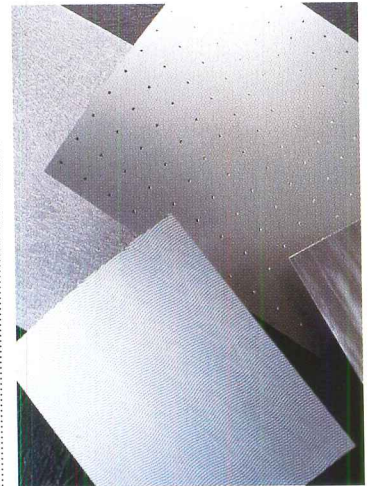
▲ **Fast-install precast facade**

The Magellan Health Services project in Columbia, Maryland, included the installation of a Slenderwall precast concrete facade from the Smith-Midland Corporation, available through Easi-Set Industries. The 20,371-square-foot application was completed in 25 days. Slenderwall

utilizes a two-inch concrete facing, secured by epoxy-coated stainless-steel anchors to steel framing. The precast panels, available in brick, tile, polished granite, and exposed aggregate finishes, accept plumbing, electrical wiring, and insulation. 540/439-8911. Easi-Set Industries, Midland, Va. **CIRCLE 219**

▼ **More metal laminates**

Formica has added five patterns to the DecoMetal laminate and solid metals collection, for a total of 35. The two new solid metals are Squiggles, a multi-textured pattern, and the braided Twister pattern. New laminates include Large and Small Rivets, and Waves, a horizontal pattern with a soft matte finish. All can be specified for light-duty horizontal and vertical use. 800/FORMICA. Formica Corporation, Cincinnati. **CIRCLE 220**



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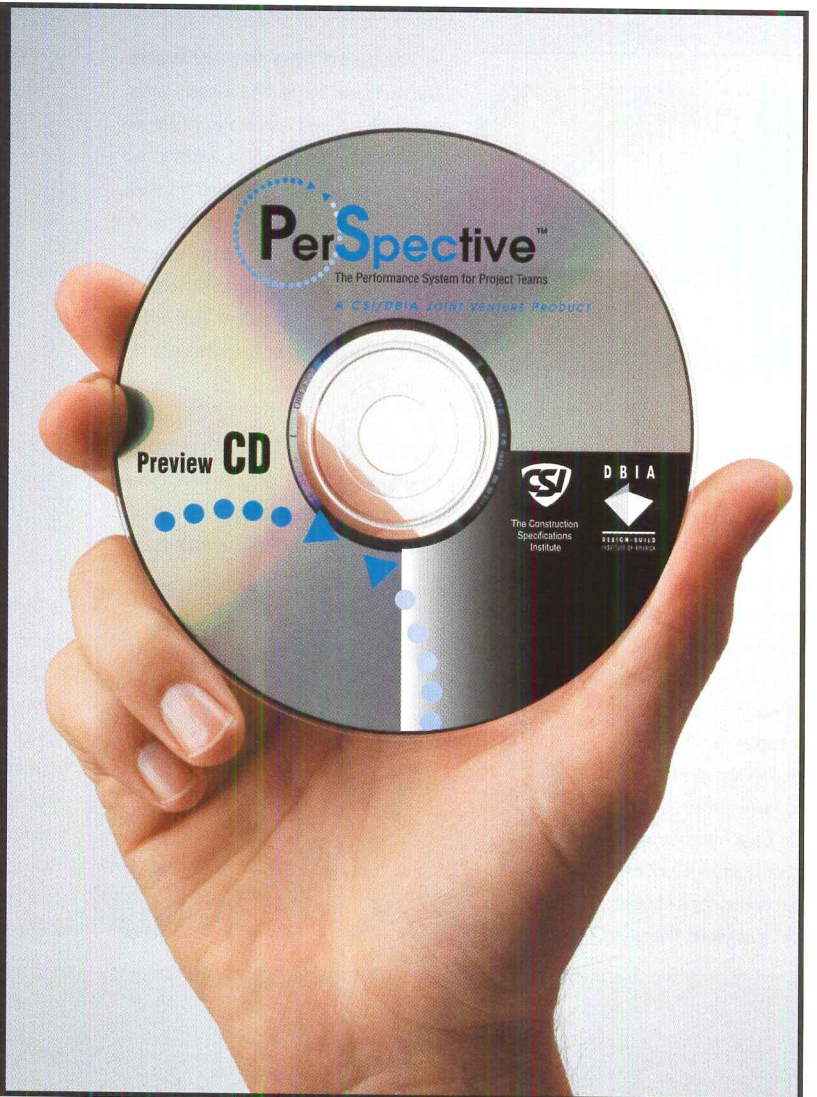


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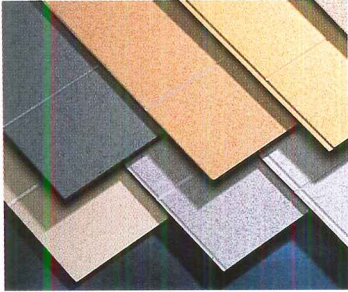
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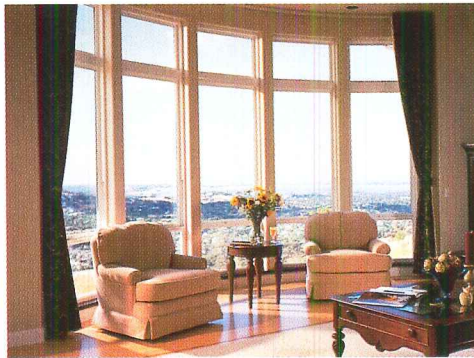
◀ Textured finishes for walls

Marlite Plank has added a new Corda series of textured finishes to its line of prefinished commercial wall surfaces. The new finishes include Madera, Piel, Platino, Polvo, Powder, Silver Moss, Vert, and Vicuna. The product is the only 16-inch-wide tongue-and-groove wood-fiber wall product on the market. 330/343-6621. Marlite, Dover, Ohio. **CIRCLE 221**

▶ Energy-efficient glazing

SunCoat, a new residential low-E glass from Milgard, is designed to reduce heating and cooling bills. The coating reduces solar heat gain due to direct sunlight, a feature that is particularly valuable in southern climates. The glazing also filters ultraviolet rays that can fade fabrics and finishes, and helps reflect radiant heat back into a room in colder months. SunCoat is an option for all Milgard vinyl, aluminum, fiberglass,

and WoodClad windows, and is guaranteed as long as the original purchaser owns the home. 800/MILGARD. Milgard Windows, Tacoma, Wash. **CIRCLE 222**



▲ Preassembled sidelights

As an alternative to traditional glass block or clear glass sidelight and transom options, ODL has introduced a six-inch acrylic block product that eliminates the need for on-site assembly in residential applications. (The unit is delivered prehung by the door supplier.) Sidelights and transoms can be purchased separately. 800/253-3900. ODL, Zeeland, Mich. **CIRCLE 223**

▼ Designer paint finishes

After making its debut on the standing seam roof atop the new Bellagio Hotel in Las Vegas, Custom Panel's Marblique painted designer pattern is now available for commercial projects that utilize exterior and interior metal components. 909/829-8618. Custom Panel Industries, Rancho Cucamonga, Calif.

CIRCLE 224



CALL FOR ENTRIES

RECORD INTERIORS

1999

The editors of ARCHITECTURAL RECORD announce the 30th annual RECORD INTERIORS awards program.

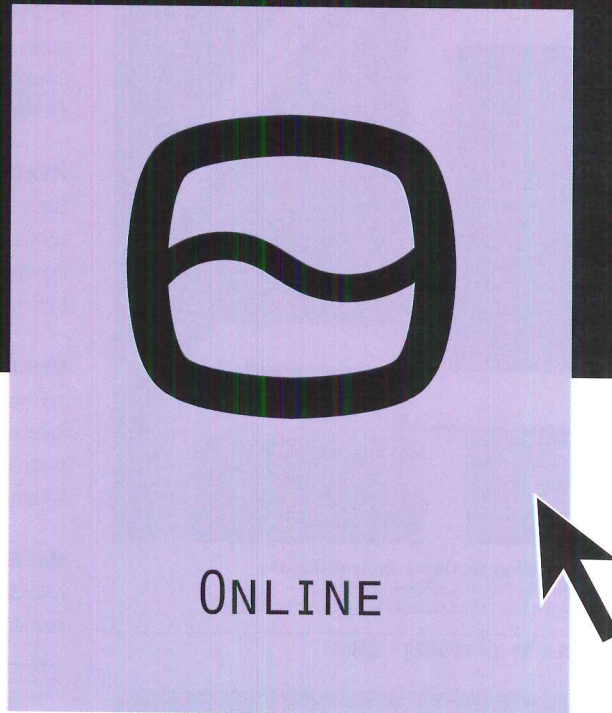
This program is open to any registered architect; work previously published in other national design magazines is disqualified. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. There is an entry fee of \$50 per submission; please make checks payable to ARCHITECTURAL RECORD. Submissions must also include plan(s), photographs (transparencies, slides,

or prints), and a brief project description bound firmly in an 8½-by-11-inch folder—and be postmarked no later than April 30, 1999. Winning entries will be featured in the 1999 RECORD INTERIORS. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

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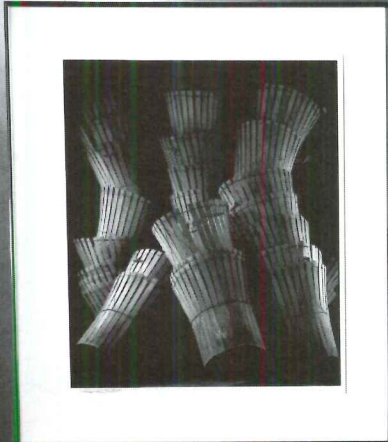
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PRODUCT LITERATURE

Urethane millwork

The Architectural Accents catalog features high-density urethane products. 800/446-3040. Style-Mark, Archbold, Ohio. **CIRCLE 225**

Duct wrap

New literature from CertainTeed introduces Quikseal Duct Wrap, an HVAC insulation product. 800/723-4866. CertainTeed, Valley Forge, Pa. **CIRCLE 226**

HVAC products

Dectron's catalog includes the company's indoor air quality and dehumidification equipment. 800/676-2566. Dectron, Roswell, Ga. **CIRCLE 227**

Building materials

Two new brochures feature Willamette's full line of building products and its industrial panel products. 503/227-5581. Willamette, Portland, Ore. **CIRCLE 228**

Roofing products

AlliedSignal's new brochure explains the ambient temperature process for com-

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- National Wood Flooring Association:
www.woodfloors.com
- Derksen (graphic projection systems):
www.derksen.com

mercial roof installations. 800/221-6490. AlliedSignal, Cary, N.C. **CIRCLE 229**

Office systems

Panel Concepts demonstrates its TL2 stackable open office system in a new brochure. 714/433-3300. Panel Concepts, Santa Ana, Calif. **CIRCLE 230**

Lighting fixtures

Columbia Lighting's Express catalog includes 80 new products as well as existing offerings. 509/924-7000. Columbia Lighting, Spokane, Wash. **CIRCLE 231**

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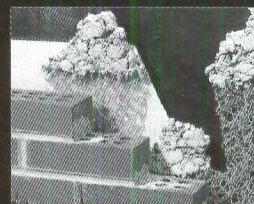
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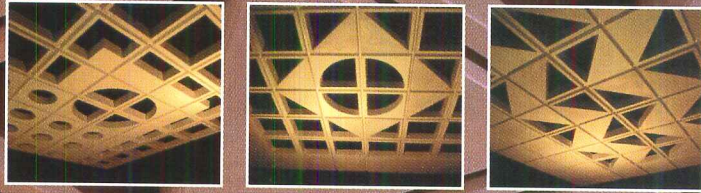
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PRODUCT LITERATURE



Reinforced concrete

A new report from the Concrete Reinforcing Steel Institute, titled "One-Way Concrete Joist Construction: Steel Lap Pan Forming System," describes one of the most efficient methods of reinforced-concrete construction. 847/517-1200. CRSI, Schaumburg, Ill. **CIRCLE 232**

Roofing solutions

Polycoat Systems is offering full-color literature highlighting the properties of Dow Corning's 3-5000 Silicone/Polyurethane Foam Roof System. 518/747-0654. Polycoat Systems, Hudson Falls, N.Y. **CIRCLE 233**

Video training for roofing

Firestone's video training program provides detailed instructions for installing the company's asphalt roofing systems. The program includes four comprehensive, step-by-step videotapes. 800/428-4442. Firestone, Carmel, Ind. **CIRCLE 234**

Forehearth coloring

Ferro's CD-ROM and full-color literature package highlight the options available to designers and glassmakers in coloring

glass in the forehearth. The CD-ROM presents the manufacturing process in detail. 330/682-8015. Ferro, Orrville, Ohio. **CIRCLE 235**

Rotorvent chimney terminal

Chimney Cowl's trade catalog of flues, terminals, and chimneys introduces the Rotorvent terminal, an addition to the company's Colt Cowl line. 011/44/1903/738500. Chimney Cows, Littlehampton, U.K. **CIRCLE 236**

Permanent wood foundations

The Southern Pine Council presents a 50-page design and construction guide to using permanent wood foundations. 504/361-1445. Southern Forest Products Association, Kenner, La. **CIRCLE 237**

Canadian construction codes

The National Research Council's new CD-ROM contains the official versions of construction codes for Canada and Alberta. Developed by the NRC's Institute of Research in Construction, the CD-ROM is available for Macintosh or Windows. 613/993-2607. NRC, Ottawa, Ont. **CIRCLE 238**

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ANSWERS

Questions appear on page 142. To receive CES credits, fill in the education reporting form below or at our Web site (www.archrecord.com).

1. In the 1960s, structures were planned in a functional, efficient, and straightforward way. They did not allow for the amenities expected and accessibility required today. Also, in the 1960s new materials were being used that were not adequately tested before installation. Their weaknesses have shown up after long exposure, particularly to extreme weather. Many of the problems with facade materials were also caused by their different coefficients of expansion which were not anticipated in the 1960s. But the design feature that is most challenging in retrofitting 1960s buildings is their low floor-to-floor heights. This limited clearance makes it difficult to modernize ductwork, pipes, cables, wiring, and lighting fixtures.
2. Early glass curtain walls relied on sealants to prevent water from penetrating at panel joints. Once the sealants deteriorated, there was seldom any continuous internal system to collect and divert water. The result was air and water infiltration. Other problems with curtain-wall construction were incompatibility of materials, leading to oxidation of key elements, and the use of single-pane glass, which led to energy problems.

3. Office building features demanded by the current market include large floor plates, large windows, a high level of finishes, a rectangular footprint, energy-efficient materials, inviting entrances, elevator alcoves, a mix of public spaces, an office layout that allows for some distinction in spaces, ample circulation space, large accessible bathrooms, user-friendly fixtures and hardware, and ample floor-to-floor height.

4. New heating/cooling systems are designed to be more efficient and environmentally friendly and to take advantage of the natural environment. Old systems used ozone-depleting refrigerant, but new air-conditioning uses different refrigerants and often features an economizer cycle to take advantage of naturally cool air—outdoor air is drawn into the air handler in the winter to cool the building’s interior. New systems allow for individual control so that systems are used only when necessary instead of continuously. Water boilers are now 85 percent efficient, as opposed to the 70-percent-efficient steam boilers formerly used. There is more emphasis on energy-efficient materials; low-E glazing, for instance, is now specified on most buildings. Attention to the site’s solar and wind implications is also a typical program requirement now.

5. Many of the innovative and often experimental materials used in early modern architecture had inherently short life spans. In addition, the original skins of the buildings are easy to remove, so they are often replaced with a contemporary facade.



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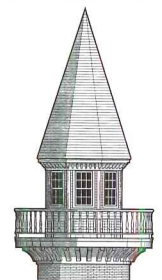
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By 2010, we may face another energy crisis that architects can help solve.

BY KIRA L. GOULD

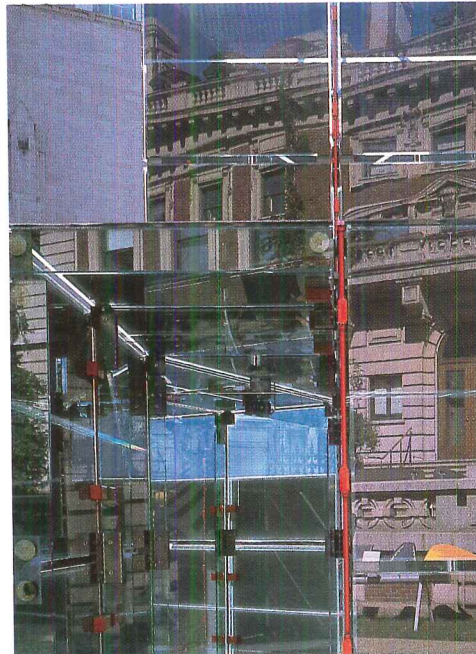


It's an odd time to be a fossil fuel doomsayer. For several years, consumers have been enjoying record-low oil prices, which have helped fuel the current economic boom as well as the millions of big new cars on American roads. And even as our oil use has risen, so have reserves. But some economists and scientists warn that this glut will come to an end, perhaps before too long. Last March, *Scientific American* devoted a special issue to "The End of Cheap Oil," warning of a permanent shortage by 2010. Observers such as Donald Aitken of the Union of Concerned Scientists say an energy crisis is likely within a decade.

During the last crisis, in the 1970s, Americans began to embrace alternative technologies; around the country, houses sprung (clunky) solar panels on their roofs. Today, though, there are few visible efforts at alternative energy production. And Americans, softened by two decades of petroleum plenty, lag far behind Europe and Japan in recognizing the relationship between architectural design and energy consumption. When the price of oil does rise again, designers who know how to use energy-efficient and energy-producing technologies will be in demand.

Photovoltaic (PV) cells, one such technology, generate electricity by harvesting sunlight. The cells are made of several layers of light-sensitive silicon; electrons, excited by light, pass from the top, electron-rich face to the electron-deficient bottom, forming a direct current of electricity. (That current can be converted to AC for larger applications.)

Cells are now built into modules that mimic traditional building materials. A PV module meant for curtain-wall use, for example, consists of cells laminated behind a sheet of clear tempered glass and an aluminum frame for easy installation. Once in



place, the PV modules are often indistinguishable from other building components.

PV cells took center stage at a recent exhibition and conference at the Cooper-Hewitt National Design Museum in New York City. The show, "Under the Sun: An Outdoor Exhibition of Light," and the symposium it spurred, "The Solar Conference: Design, Business and Power," set out to show how architects (whose product—buildings—account for 40 percent of energy use in the United States) can lead the country beyond dependence on nonrenewable energy sources.

The most compelling object in the Cooper-Hewitt show was the Solar-Powered Glass Pavilion (above and below). Designed by Gregory Kiss and Nicholas Goldsmith, its multiple PV modules and clear glass panels create the structure and

generate enough electricity to power its ventilation system and lighting. Gregory Kiss, a principal with Kiss + Cathcart Architects, has been working on the integration of PVs in architecture for 15 years.

The most recent and visible of these projects is 4 Times Square, a new office building now under construction on New York's 42nd Street. Two 60-foot-wide swaths of custom-designed PV panels are being integrated into the east- and south-facing curtain walls on the upper 19 floors. The PVs on this structure will function as a demonstration project and headline-grabber. Because there are so few panels, they will provide only a tiny fraction of the building's energy needs, about enough to support five or six homes. But even a test case—especially one on a spec building in midtown Manhattan—is a dramatic step.

Kiss says there are two things holding back PV technology in America: ignorance of what's available, and the inherent conservatism of the building industry. "The techni-

cal and economic thresholds of viability were crossed five years ago," he says. "Now we need to educate architects and developers."

PV electricity is still somewhat more expensive than grid power, though prices are expected to decline as refinements and innovations continue. Most observers believe that even without a rise in petroleum prices, solar power will soon be cheaper than grid power in most parts of the United States.

But there's more to this than just saving energy (and money) over the life of a building. PV technology is an opportunity to move beyond making energy-efficient buildings to making energy-producing structures. The average office building uses approximately five watts of electricity per square foot. Today's PV modules can yield five to 15 watts per square foot of roof area—enough to power one to three floors during peak sun. More efficient structures, using only two or three watts per square foot, could actually export energy to the grid. Using skin-integrated PV modules now available, office towers such as 4 Times Square could generate 30 to 40 percent of their required energy. In just a few years, such buildings could produce even more of their own energy, reducing dangerous peak demands on grid power. And they would do so using a solid-state, silent, maintenance-free technology that never wears out and runs on the cleanest energy source around. ■

Kira L. Gould, Assoc. AIA, is a freelance writer living in New York City.

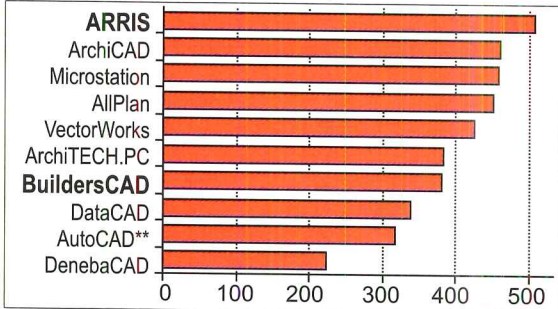


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