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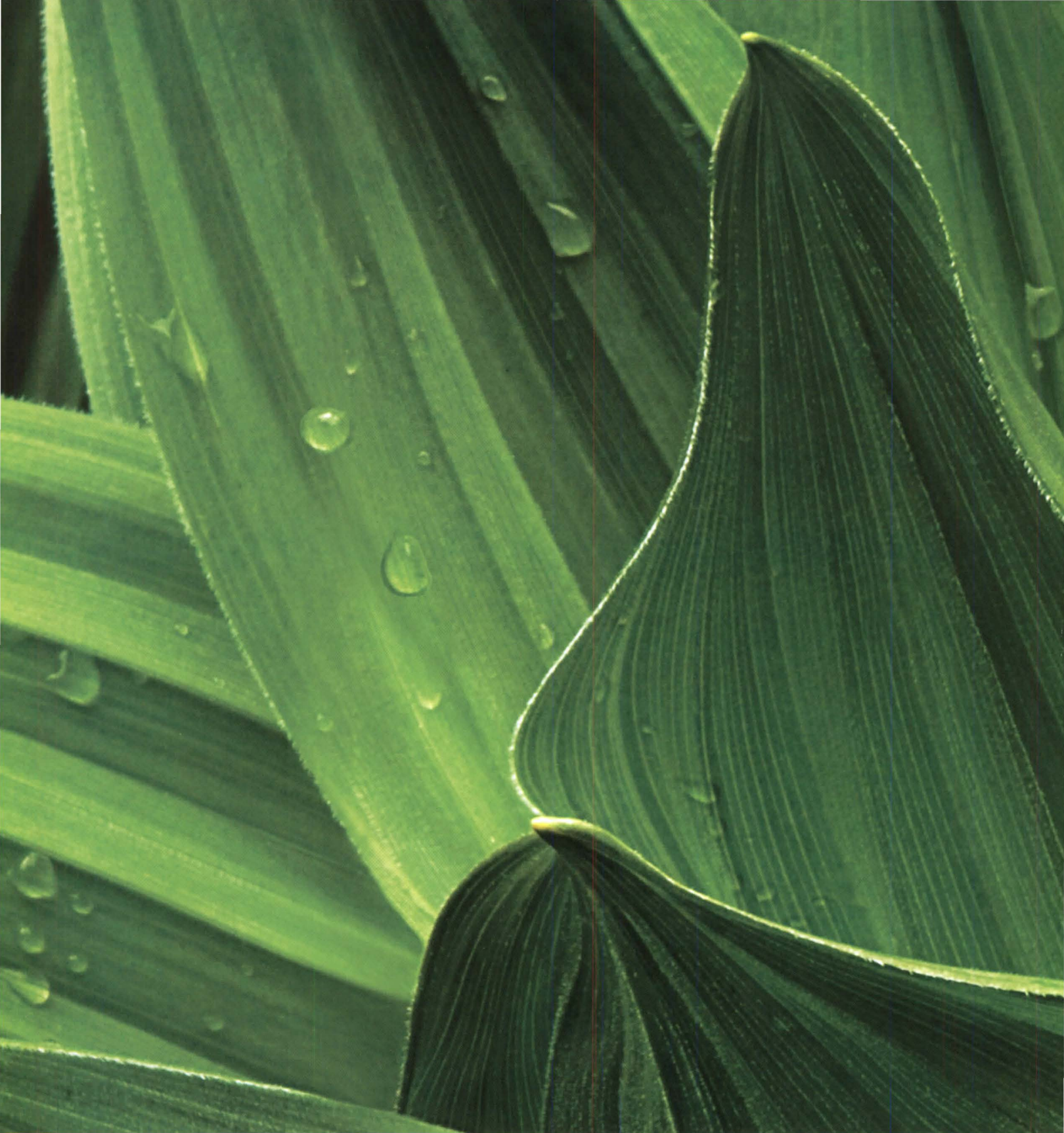
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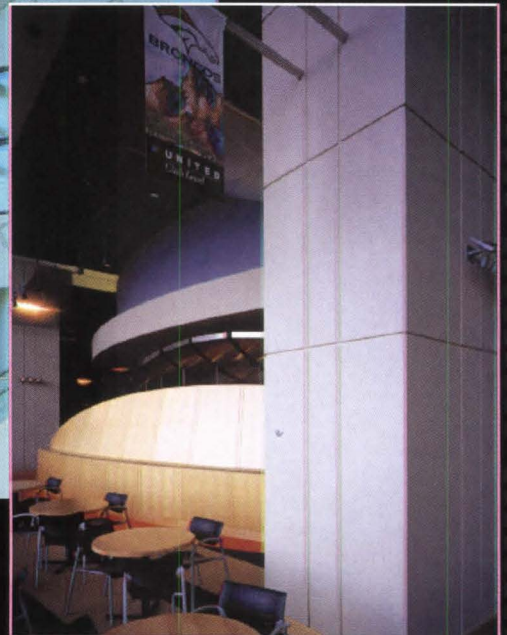
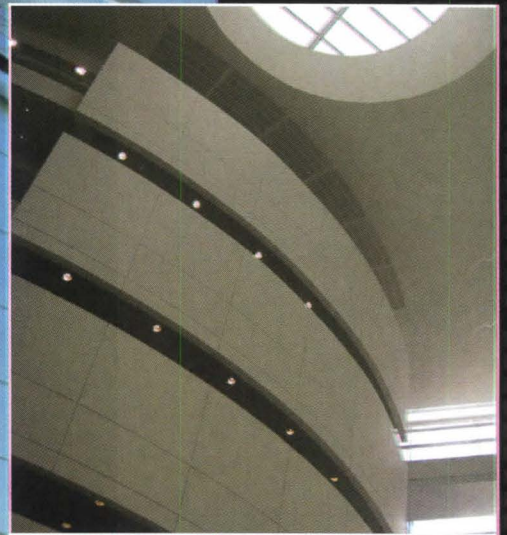
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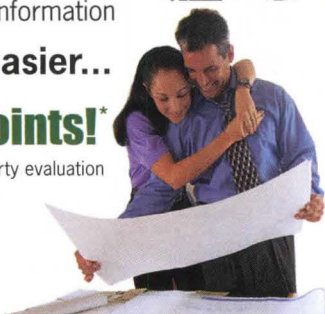


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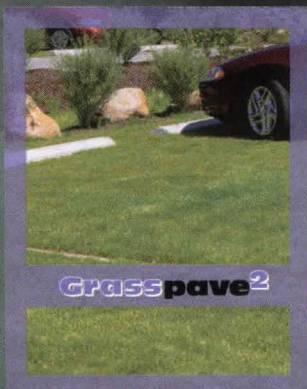
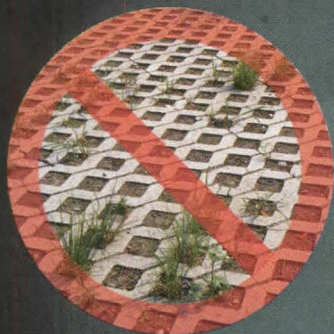
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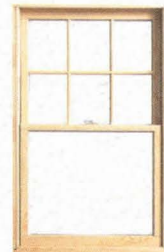
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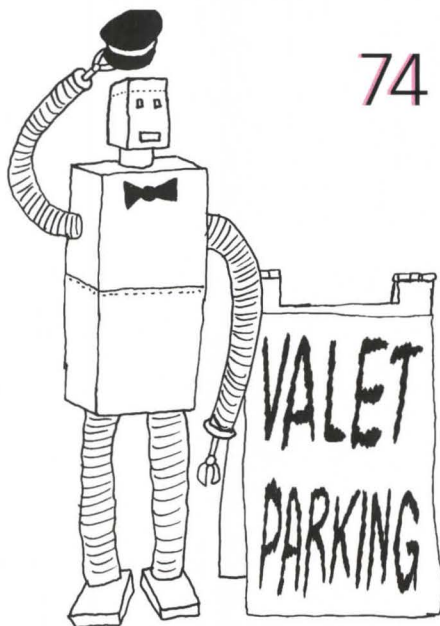
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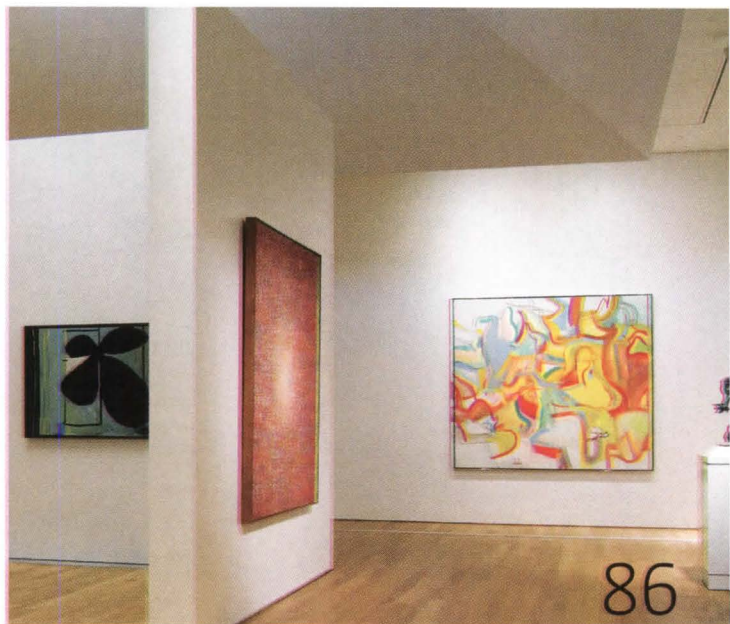
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Los Angeles-based wHY Architecture builds what promises to be the nation’s first ground-up LEED-certified art museum, in Grand Rapids, Mich.

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From “Park This Way,” page 74.



ON THE COVER

Kulapat Yantrasast of wHY Architecture poses in the lobby of his firm’s breakout project, the Grand Rapids Art Museum (page 86). Photo by Jonathan Bookallil.



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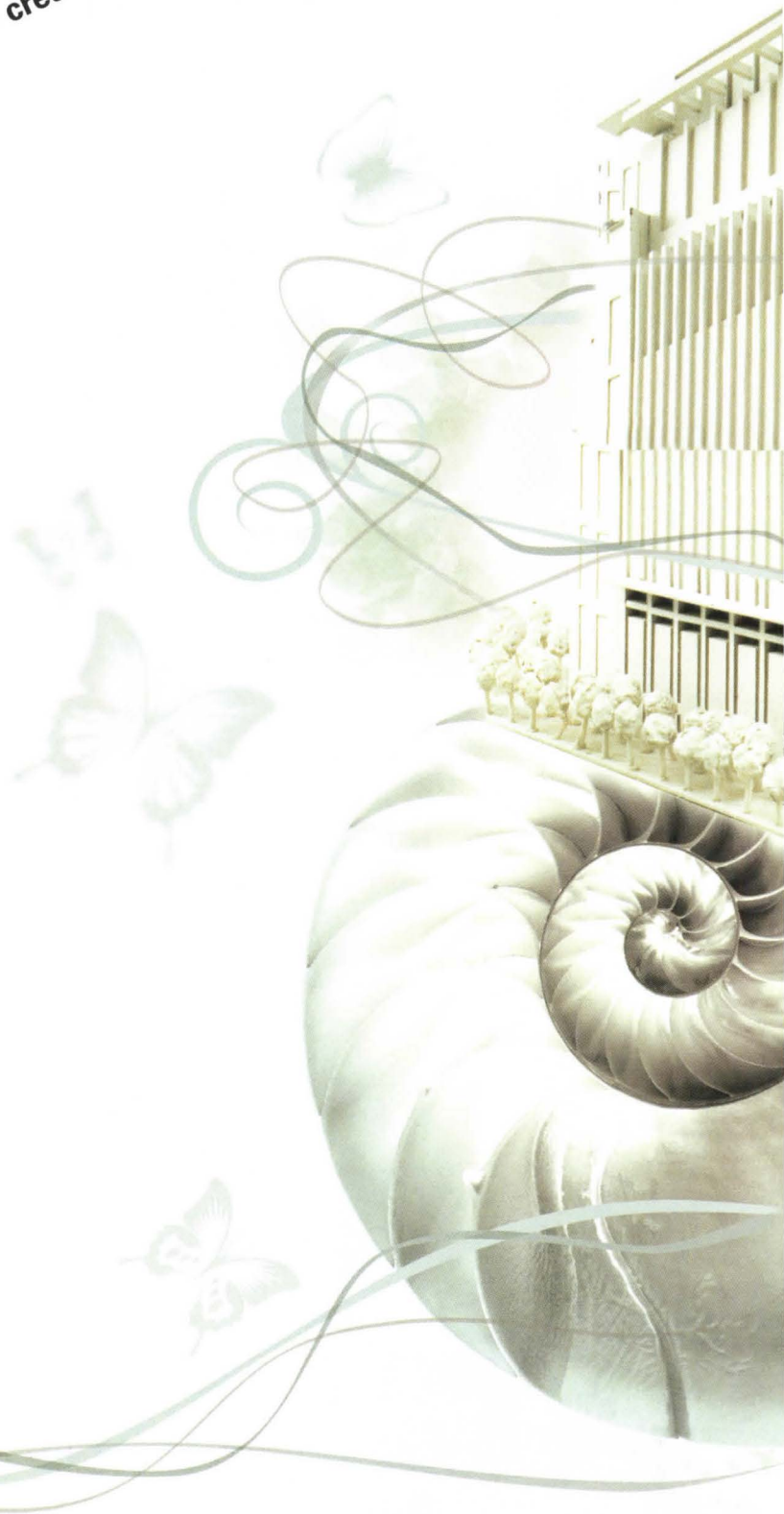
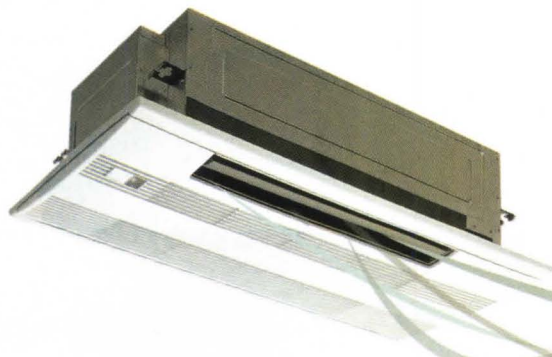
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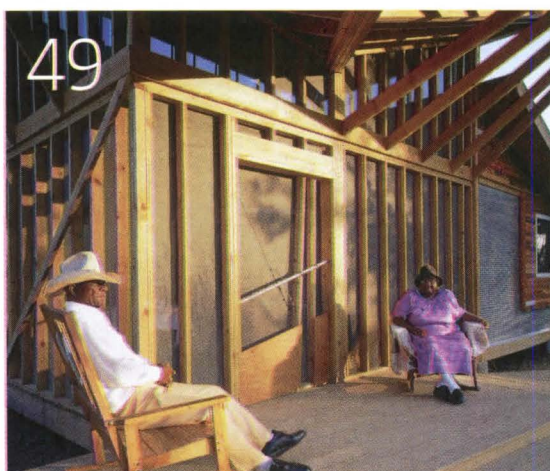


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TIMOTHY HURSLEY

RIGHT An iconic Timothy Hursley photograph of the Rural Studio's Harris "Butterfly" House.

FAR RIGHT Inside James Turrell's "End Around," now on exhibit at the Pomona College Museum of Art.



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TIMOTHY GREENFIELD-SANDERS

Ned Cramer
Editor in Chief

IF MY MOUTH WERE A STOP on the D.C. subway system, service would be suspended indefinitely. A chipped tooth recently sent me to the dentist for the first time in years, and now I'm paying the price for my deadbeat policy of deferred maintenance with six fillings and a root canal, dispensed over multiple appointments. What really rankles—more than the cost of treatment, the disruption of my schedule, and the ache in my gums—is the fact that I could have avoided the mess altogether by simply setting aside a couple of hours every six months for a checkup.

Something similar could be said of our nation's infrastructure.

The overall forecasts and surveys are grim, despite the careful maintenance of icons like the Golden Gate Bridge (this issue, page 66). In 2005, the American Society of Civil Engineers (ASCE) graded the condition of U.S. infrastructure, giving it a D. Would Minneapolis' I-35W bridge have collapsed or New Orleans' levees broken had Congress, the U.S. Department of Transportation (DOT), the Army Corps of Engineers, and countless other responsible authorities at every level of government had the resources and foresight to execute the right maintenance at the right time?

Resources are indeed a major issue. The ASCE estimates it would cost \$1.6 trillion—no small drop in the bucket—to bring the nation's infrastructure up to speed over the next five years. The DOT offers ostensibly less biased and more conservative estimates for select infrastructural upgrades over a 20-year period, but the figures are still staggering: \$78.8 billion for roads and \$24 billion for transit. Everybody, it seems, thinks the nation should increase our investment in infrastructure—well, almost everybody.

The chair of the House Transportation and Infrastructure Committee, James Oberstar, recently called for a five-cent increase in the federal gas tax, which pays for the national highway system. The tax hasn't been increased since 1993, but President George W. Bush has rejected the proposal, instead calling for greater cost-effectiveness and increased accountability—presumably for pork like the \$8 billion in 2008 transportation earmarks that *USA Today* reports “for pet projects that include a North Dakota peace garden, a Montana baseball stadium and a Las Vegas history museum.”

Both Bush and Oberstar are acting within reason, except that their actions amount to a stalemate. Maybe both of them should get their way. Why not make a significantly larger investment in the nation's infrastructure, as Oberstar proposes, and reform the process of administration at the same time, as Bush seems to advocate? The trickle-down of dollars from the federal government to states and municipalities is uneven at best, with Alaska getting \$6.60 for every dollar paid in federal gas taxes, while California, home of the freeway, gets 91 cents on the dollar.

While we're busy reinventing the wheel, so to speak, here's another goal: shifting the emphasis of U.S. infrastructure spending. Keep the roads, bridges, and airports in safe, working order, to be sure. But hasn't the time come to restore the viability of light and heavy rail? Amtrak's been on a starvation diet for decades. Brushing up the nation's rail infrastructure would help decrease our reliance on foreign oil, lessen our outrageously high output of greenhouse gases, and, just possibly, even prevent gingivitis.

Ned Cramer
Editor in Chief

Architect Emeritus

Thank you for your Dialogue in support of Walter Netsch [August 2007, page 12] while he is experiencing a lack of support by the Illinois State Board in his senior years. Our appreciation also to your reader Alan R. Clark and his letter of support for Netsch [August 2007, page 12].

We should recognize the support that the American Institute of Architects provides its senior members by allowing them to continue participation in the institute with the designation of “AIA Emeritus.” Perhaps a lobby of our state boards is in order, to recognize senior architects with the designation “Architect Emeritus,” per your suggestion.

In the interest of full disclosure, I am a senior architect. I am pleased to have received the designation of “AIA Emeritus.” It beats being kicked out the back door when your days of an active practice are behind you.

In case Netsch should read this note of mine, I would like to tell him that I have vivid recollections of reports and activities of his practice with SOM. He has provided a lasting legacy of architectural practice.

Les Appleby

AIA Emeritus

applebyarch@kaus.com

Word Choice

Thank you for your excellent July editorial [“Beltway Bull,” July 2007, page 16] in defense of our profession. I have met people who expressed surprise when told that Thomas Jefferson was an architect, and on one occasion when I said that I am an architect, I was stunned by the follow-up: “Yes, but what do you do?” Suddenly the sense in which architecture may be a “new” profession dawned on me. The press calls George W. Bush the architect of the war in Iraq—a war marked by not only a lack of planning but, really, a contempt for planning. This is the new twist: The design mentality turned inside out for the sake of elegant variation by poor writers! They could not bring themselves to use the correct word: “instigator.” Or “perpetrator.”

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Interview

'No Bombast or Boredom' for Bush Library, Says Stern

Shrugging off controversy, architect discusses his latest high-profile commission



ROBERT A.M. STERN ARCHITECTS

Robert A.M. Stern

IN LATE AUGUST, after much speculation, the George W. Bush Presidential Library Foundation chose Robert A.M. Stern, the prominent New York architect and dean of the Yale School of Architecture, to design the 43rd president's official library and policy institute. Stern was selected by a five-member committee comprising first lady Laura Bush, New York financier Roland Betts, Texas philanthropist Deedie Rose, architecture critic Witold Rybczynski, and Marvin Bush, the president's youngest brother. Choosing both an architect and a site has been beset by controversy, owing to the increasing unpopularity of the Bush administration. The site has yet to be finalized, but the foundation has been in exclusive negotiations with Southern Methodist University in Dallas, Laura Bush's alma mater. Once the location is secured, fundraising for the project—expected to cost at least \$200 million—will begin. ARCHITECT spoke with Stern about his new client, his plans for the project, and the controversy surrounding it. JOHN GENDALL

Congratulations. You've had quite a distinguished career. How does it feel to be designing for the president?

This is really special. I've had many wonderful clients and many famous clients, but the president of the United States is at the top of the list.

"I'm an architect, not a political commentator. Last time I checked, [Bush] was the twice-elected president of the United States."

What are your first impressions about this president as an architectural client?

Well, we're not too far along yet, so it's hard to say, but he is definitely open to exploring new ideas and to making something special. And it's not just Bush who is open. I am also open to exploring what is the exact, correct building with the right dignity and character for this project.

Do you have any preliminary concepts in mind?

No, it's really too early for that. We need to wait until the site is finalized. But we're thinking of at least two buildings, one for the library and museum and the other for the policy institute. The National Archives and Records Administration, which oversees the library and museum, has very rigorous standards to maintain the purity of the archives. So we will separate it from the institute. We have

also thought about a small campus of buildings.

This commission has stirred up criticism from people who believe that you are essentially celebrating an unpopular president. Do you see this project in any way as an endorsement—even a tacit one—of his policies?

Look, I'm an architect, not a political commentator. Last time I checked, he was the twice-elected president of the United States. Even if it is controversial, we still need to preserve the papers of a twice-elected president. Scholars will be able to interpret and reinterpret what went on, and his intellectual colleagues can continue to explore their way of thinking. He has high aspirations that leading political figures from around the world will be able to come there to study. And remember that most presidents are controversial and unpopular at times, but each of these people is the president, and each deserves a library.

Have you been looking at presidential library precedents?

Yes, I have. Of all of them, none is more moving than [Franklin Delano] Roosevelt's. It's small and intimate in scale, but powerful. He was also controversial during his presidency.

What about the others?

Many of them are big and bombastic. Quite a few have been dull. With Bush, there will be no bombast or boredom. And this is the only one truly in the city. They are mostly out in rural or suburban settings. Even [John F. Kennedy's] is out by Columbia Point, outside of Boston, so it's inaccessible. Bush's will be at Southern Methodist University, right in the middle of Dallas. It will be at the edge of the campus, next to a light-rail stop, so it's highly accessible. This is a totally different situation.

What's the next step?

The foundation is finalizing the site. When that is done, I can get started. Based on the timeline of [Bill] Clinton's library [designed by Polshek Partnership Architects], we are expecting to be finished with construction by 2013. Make sure everyone knows I haven't designed the building just yet.

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The people of CEMEX are experts in concrete, peace and quiet. That's why we were selected to help build the new Georgia International Convention Center, which happens to be just across the freeway from Atlanta's Hartsfield-Jackson International Airport. Where planes take off every 90 seconds. The answer to meeting their stringent sound specifications? Encase the structure in more than 25,000 cubic yards of concrete, including 7-inch slabs over meeting rooms and the exhibit hall. So conventioners can actually hear their welcoming speeches, instead of the latest departures.

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REPORT NEWS

Clips

The AIA's **Architecture Billings Index** for July was 60.0 (any score over 50 indicates an increase in billings), the second highest mark since the survey began in 1995. Of the four regions, the Northeast was strongest, with a score of 68.5. The July Inquiries Index was 66.2.

Because of worsening national economic conditions, the Portland Cement Association has adjusted its forecast for **2007 and 2008 cement consumption**. The group projects that this year, cement consumption will drop 6.8 percent, followed by a 1.8 percent decline in 2008.

Even though they're not done building it, Skidmore, Owings & Merrill's Burj Dubai is now officially the **world's tallest freestanding structure**. On Sept. 14, the firm announced that the building had reached the 150th floor level at 1,821 feet, passing Toronto's CN Tower, which is 1,815 feet tall and had held the distinction since it was built in 1976. The final height of the Burj Dubai, which is expected to be completed in 2008, remains a closely held secret.

The University of Arkansas School Press has just

debuted **Appx**, a journal focusing on **architectural criticism and scholarship**. A follow up to *Appendx: culture, theory, praxis*, the new journal will continue to explore the African-American aesthetic in architecture. For more information or to submit material, contact Darell Wayne Fields at dfields@appendx.org or 479-575-6710.

The team of **Flatiron Constructors Inc. and Manson Construction Co.** won a **\$233.8 million contract** to replace the collapsed I-35W bridge in Minneapolis by the end of 2008. The team, which beat out three other bidders, came in with the highest ticket price, but that was balanced by the fact that its proposal also had the highest technical score. The Minnesota Department of Transportation hopes to start construction on the new bridge by Oct. 15, and it must be completed by no later than Dec. 24, 2008. Flatiron and Manson are also partnering with Figg Bridge Engineers.

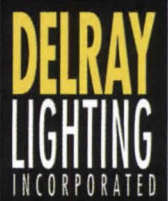
Robert Somol is the new director of the architecture school at the University of Illinois at Chicago. He began his tenure at the end of August, replacing interim director and local architect Dan Wheeler. Somol is a principal at PXS Architecture in Los

Angeles, a widely published author, and a former professor of architecture at Ohio State University.

Plans to build a nearly 1,000-foot tower in downtown St. Petersburg have put the city's **World Heritage Site status in jeopardy**. The skyscraper, designed by architect Peter Nikandrov for gas company Gazprom, would be by far the tallest structure in town, and Unesco has announced that the city has until February 2008 to compile a report of the planned tower's impact on the surrounding areas. The city has been a heritage site since 1990, and losing that title would earn it a place on the organization's list of endangered places.

Toronto has announced a three-color **system to rate the bird-friendliness of buildings** in the city. Yellow is "minimum," green is for "preferred," and blue is for "excellent." The voluntary program will be used by developers to market their buildings as bird friendly in the wake of new city guidelines intended to prevent the deaths of migratory birds.

→ continued on page 24



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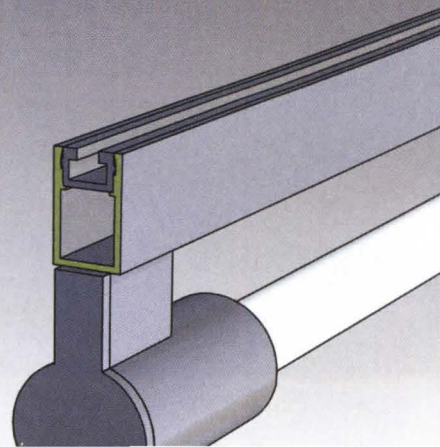
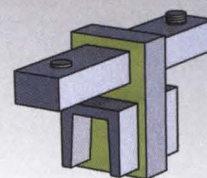
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Public Opinion

AIA Poll Finds Americans Blame Autos, Not Buildings, for Greenhouse Gases

40 percent say cars and trucks are primary cause; only 7 percent correctly identify built environment

WHEN IT COMES to the production of greenhouse gases, most people believe the worst culprits are the cars and trucks clogging the nation's highways. They're wrong. Between construction and maintenance, buildings produce the greatest portion of the dangerous emissions contributing to global climate change—up to 48 percent, according to studies by the U.S. Environmental Protection Agency.

In a survey released in September by the American Institute of Architects (AIA), only 7 percent of respondents accurately identified residential and commercial buildings as the primary cause of emissions. According to the survey, which polled a nationally representative sample of 1,000 registered voters, 40 percent of the respondents believed that cars and trucks were the greatest producers of greenhouse gases, which include carbon dioxide, methane, nitrous oxide, and ozone. Nearly 20 percent felt that power plants were the worst offenders, while 15 percent named natural causes. Another 18 percent either didn't know what caused most emissions or thought they came from a source not listed in the survey.

"The media has focused on transportation as a cause of noxious emissions," says Paul Mendelsohn, the AIA's vice president of government and community relations. "With a car, however, after five or 10 years you can

trade it in for something more efficient. We're trying to instill the concept that you can either design an energy-efficient building in the beginning or there are some simple things you can do once a building is constructed to make it more energy-efficient."

Despite their misconceptions about the link between buildings and global warming, American consumers ironically want more energy efficiency in their homes. The same AIA poll indicated that 91 percent of the respondents would be willing to pay an additional \$5,000 for a more energy-efficient house. Along the same lines, the AIA's Home Design Trend Survey for the second quarter of 2007 reflected a growing desire among homeowners for green products, including geothermal heating and cooling systems, tankless water heaters, and flooring made from easily renewable materials, such as bamboo and cork.

The AIA, for its part, will continue to impress upon its members, Congress, and the general public that energy efficiency is achievable whether in new construction or in existing buildings. "One of the things I've learned about architects is that many of them chose this profession because they wanted to make the world a better place," Mendelsohn says. "We've seen a lot of success when architects go beyond the typical built environment and think holistically."

KIM A. O'CONNELL

Deadlines

Competitions and more

OCT. 24

Portland Courtyard Housing Design Competition

The City of Portland invites you to share your ideas on the design possibilities of housing oriented to shared courtyards. The competition is part of a multipronged effort by the city to retain families with children in the face of increasingly unaffordable conventional detached housing. This competition will be a key opportunity to explore how courtyard housing may help fill the need for new housing for families with children, as well as provide desirable options for other types of households. courtyardhousing.org

OCT. 26

Bienal Miami+Beach 2007

The directors of the Bienal Miami+Beach 2007 extend an invitation to architects and designers worldwide to participate in the event's different categories with built works from the last five years. Among other categories is one devoted to projects and/or unbuilt architecture, in addition to an international student competition (deadline: Nov. 1) for the design of a pavilion representing the city of Miami in the 2009 AIA National Convention, which will be held in San Francisco. bienalmiami.com

→ continued on page 26

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Memorials

Rest in Peace—and in Grandeur

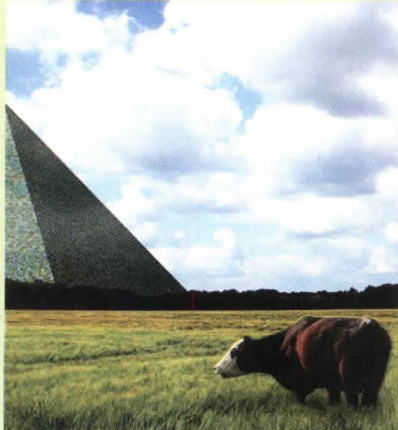
Unconventional and outsize, architectural burial site concepts could indicate a new trend

THEY ARE EXTRA-VAGANT and eccentric, but two human burial and memorial sites, one in Germany and one near Miami, are in the works. Each is massive in scale and offers a final resting place that is far from ordinary.

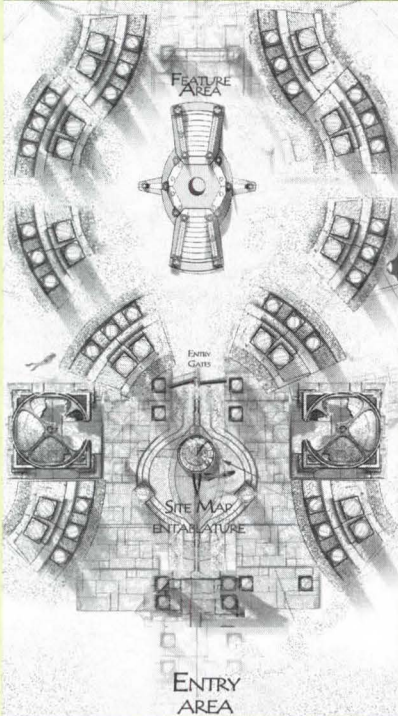
Proposed by writer Ingo Niermann and economist Jens Thiel, The Great Pyramid would be built in the eastern German town of Dessau, home of the Bauhaus. Each concrete block in the structure—"A Monument for All of Us," as the project's website, thegreatpyramid.org, describes it—would contain an urn for the ashes of one person or remembrances of that person. Alternatively, stones could be dedicated as memorials and have carvings and decorations.

The pyramid would be a continually growing structure, increasing in size to accommodate as many people as purchase a place in it. If enough people purchase stones, Germany's Great Pyramid could eventually dwarf Egypt's ancient Great Pyramid, which is 456 feet high and covers more than 571,000 square feet at the base. To achieve such an enormous size, however, the project would need millions of people to sign up; so far, only a few hundred have done so.

An open-call competition is being held to design the area around the pyramid site and will be juried by Rem Koolhaas; Bauhaus Dessau Foundation executive director Omar Akbar; architect Stefan Boeri, editor of



THEGREATPYRAMID.ORG



ATLANTISREEFPROJECT.COM

Rethinking what a sepulcher can be: the Great Pyramid in Germany (rendering, top) and the Neptune Memorial Reef near Miami (Phase 1 illustration, above).

Abitare; fashion icon Miuccia Prada; and Niermann.

Closer to home, 3.25 miles east of Key Biscayne off the coast of Florida, development has started on the Neptune Memorial Reef, an underwater structure that will serve simultaneously as interment location, memorial, and living reef. Phase 1 of the project was completed last spring. The Neptune Society, a cremation-service company and the project's management organization, predicts that the reef will become an active marine research site as well as a destination for recreational divers.

Designed by businessman Gary Levine, the project's originator, and sculptor Kim Brandell, the reef—originally called Atlantis Memorial Reef before being taken over by the Neptune Society—will be constructed in a style and layout reminiscent of the legendary lost city of Atlantis. Concentric rings containing bronze and concrete structures are designed to attract living coral and other marine species. The

completed project will use more than 10,000 cubic yards of cement, cover more than 16 acres of ocean floor, and provide room for the remains of 125,000 people.

The Neptune Memorial Reef will also incorporate several special interment sections, including one for U.S. military personnel killed in combat, who will be interred free of charge, and one to house the remains of treasured pets. STEPHANI L. MILLER

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REPORT NEWS

Clips

The housing market may be slowing, but **office construction** jumped 31 percent during the 15-month period ending in June, according to Reed Construction Data. A further 18 percent gain is expected by the end of 2008. State and local governments are also picking up the pace. A *USA Today* analysis of new Census Bureau data reports that construction of athletic facilities, prisons, schools, and other **government projects** rose 11.1 percent this year from January through April.

Need cash? You may be in luck, assuming you're an NAAB-accredited architecture school **looking to integrate practice and education** in your curriculum. The National Council of Architectural Registration Boards annually awards grants of up to \$10,000 through the NCARB Grant Program for the Integration of Practice and Education in the Academy. Submissions are due on Oct. 16. Visit ncarb.org for more information.

In a new report from the **World Business Council for Sustainable Development**, titled "Energy Efficiency in Buildings: Business Realities and Opportunities," a poll shows that professionals from eight countries think that buildings give rise to an average of 19 percent of CO₂ emissions, when the real figures place that number closer to 40 percent. A companion poll shows that professionals from those same countries think that it costs an average of 17 percent more to build a certified sustainable building, when in reality, the cost premiums are really only 5 percent over standard construction. To see the full report, visit wbcscd.org.

San Francisco-based **Chong Partners Architecture** (CPA) announced last month that it has been acquired by **Stantec**, a professional design and consulting firm with more than 100 locations in the United States. CPA has 175 employees and additional offices in Sacramento and San Diego.

Francis Cauffman Architects has opened a New York office. This is the fourth office for the 160-person firm, which is headquartered in Philadelphia. The firm has focused on academic, corporate, government, healthcare, and scientific projects since its founding in 1954.

The Spanish Ceramic Floor and Wall Tile Manufacturer's Association (ASCER) is sponsoring a **training course on ceramic tile** applications and traditions at Harvard's Graduate School of Design. Scheduled for the 2007–2008 academic school year, the course will be led by Spanish architect Patxi Mangado, who is responsible for the design of the Spanish Pavilion at the 2008 Zaragoza Expo.

The **International Masonry Institute** has opened its new \$30 million facility in Bowie, Md., site of the

institute's popular "Masonry Camp." The complex, designed by Stanley Tigerman of Chicago-based Tigerman McCurry Architects, comprises a 61,000 square-foot training center and a 46,000 square-foot main building with offices, meeting rooms, and dormitories for more than 100 students.

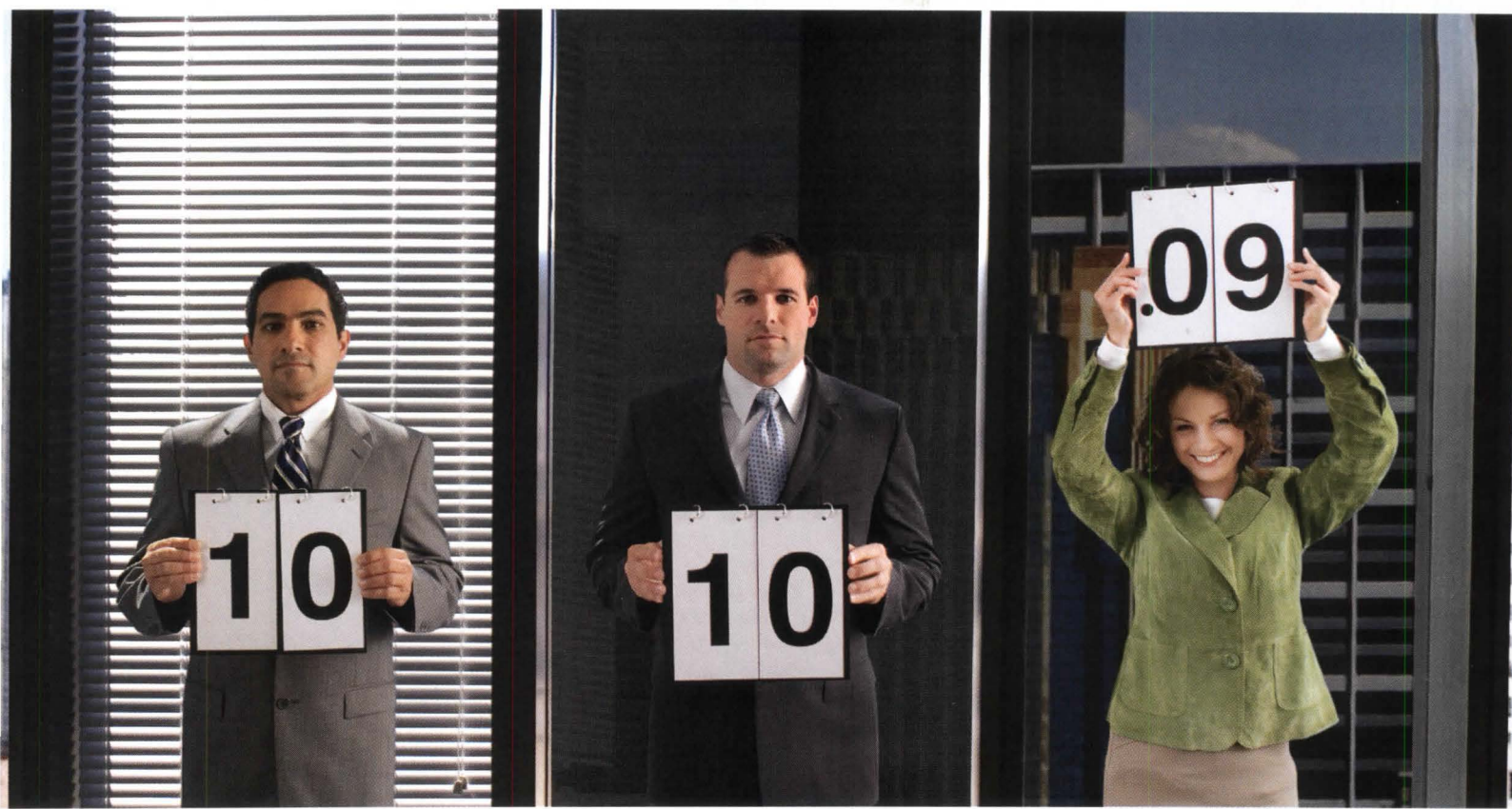
The Environmental Protection Agency (EPA) announced nine winners and 13 honorable mentions in the **Lifecycle Building Challenge**, an awards program conceived by a partnership of the EPA, the AIA, the Building Materials Reuse Association, and West Coast Green. The challenge, as posed to professional and student entrants, was to propose both cost-effective disassembly of existing buildings and future reuse of those materials. The winners were spread across three categories: building, component, and service. For a full list of winners, visit epa.gov/region09/lifecyclebuilding.

San Francisco-based **SB Architects** received the commission to design a new Hard Rock Hotel in Palm Springs, Calif., scheduled to open in 2010. The building's 490 units will be sold as condominiums, which give access to a nightclub, a bar and lounge, three restaurants, banquet and meeting rooms, a spa and pool, and—this being California—a private recording studio.

Perkins+Will announced that the CDC Division of Laboratory Sciences, Building 110 in Atlanta is the first high-performance **federal government laboratory to achieve LEED Gold certification**. The design of the building offered upfront savings of nearly \$850,000 over standard construction, and the annual savings in energy efficiency, productivity, and laboratory flexibility are estimated to be in the neighborhood of \$1 million.

The **Association for Computer Aided Design in Architecture** has announced the winners of its 2007 design competition for a "new media" school in Halifax, Nova Scotia. First prize: **MisoSoupDesign**; second prize: **Studio Sphere**; third prize: **Vokil Design**; honorable mention: **Vural Architects**. Go to acadia07.architecture.dal.ca for images and more information.

Paris' **City of Architecture and Heritage** reopened last month after a \$114 million, 10-year renovation process. The newly reopened, three-gallery, 86,000-square-foot space in the Palais de Chaillot is the largest architectural museum in the world and features exhibitions from 12 centuries of French architecture. The collection includes 350 plaster casts of ecclesiastical architecture and maquettes from mid-19th to 21st century projects. A library will eventually hold 45,000 volumes of architecture books. The long-anticipated institution hopes to attract half a million visitors each year.



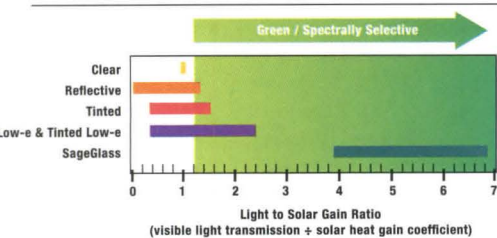
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REPORT NEWS

Deadlines

Competitions and more

OCT. 26

Benjamin Moore Hue Awards

The Benjamin Moore Hue Awards honor architects and interior designers who have masterfully used color consistently throughout their work. In at least one of the three to five projects required for entry, Benjamin Moore paint must be represented.

benjaminmoore.ca/professionals/hue_awards.aspx

OCT. 30

Buckminster Fuller Challenge

The Buckminster Fuller Institute seeks submissions of design solutions that exemplify the principle of doing more with less. Solutions should be comprehensive, anticipatory, ecologically responsible, verifiable, replicable, and achievable. Each year a distinguished jury will award a single \$100,000 prize to support the development and implementation of a solution that has significant potential to solve humanity's most pressing problems in the shortest possible time while enhancing the Earth's ecological integrity.

challenge.bfi.org

OCT. 31

Ken Roberts Memorial Delineation Competition

For 33 years, the Ken Roberts Memorial Delineation Competition (KRob) has celebrated the best in delineation in architecture (architectural drawing). Open to students, professionals, and architectural illustrators who are working in the United States, Canada, or Mexico, KRob accepts both hand and digital delineation.

krobarch.com

NOV. 1

Milka Bliznakov Prize

The International Archive of Women in Architecture (IAWA) invites architects, scholars, and researchers to honor IAWA founder Milka Bliznakov through their research on women in architecture and related design fields. In stage one, applicants register their proposal. Stage two occurs the following year, when applicants submit their completed projects. The winner of the prize is selected from among these projects.

spec.lib.vt.edu/IAWA

NOV. 1

Pritzker Prize

The purpose of the Pritzker Architecture Prize

is to honor a living architect whose built work demonstrates a combination of the qualities of talent, vision, and commitment, and who has produced consistent and significant contributions to humanity and the built environment through the art of architecture. Nominations are accepted from architects, writers, critics, academicians, government officials, associations, or others around the world who might have an interest in advancing great architecture.

pritzkerprize.com

NOV. 1

Rome Prize

The American Academy in Rome invites applications for the Rome Prize competition. The academy offers up to 30 fellowships for periods ranging from six months to two years. Rome Prize winners reside at the academy's 11-acre center in Rome and receive room and board, a study or studio, and a stipend. Fellowships are awarded in the fields of architecture, landscape architecture, design, historic preservation and conservation, literature, musical composition, and visual arts.

aarome.org

NOV. 5

Metal Construction Association Student Design Competition

This metal-in-construction competition challenges entrants to address architectural, structural, functional, cultural, and environmental issues in designing various facilities at the Nature Center of Northerly Island, a 91-acre peninsula just south of downtown Chicago. The facilities should utilize sheet metal and other metal materials, as well as metal structural members. The design should be sensitive to the purpose of the center and the context and activities surrounding this location.

metalconstruction.org

NOV. 13

Rieger Graham Prize

The Institute of Classical Architecture & Classical America is pleased to announce the second biannual Rieger Graham Prize, to occur in 2008 and to be awarded to a recent graduate or practitioner of architecture. The centerpiece of the prize is a three-month fellowship at the American Academy in Rome. The applicant must submit a proposal for a project involving research, documentation, and design, showing how the applicant sees fit to explore Rome in the best way possible for career development.

classicist.org

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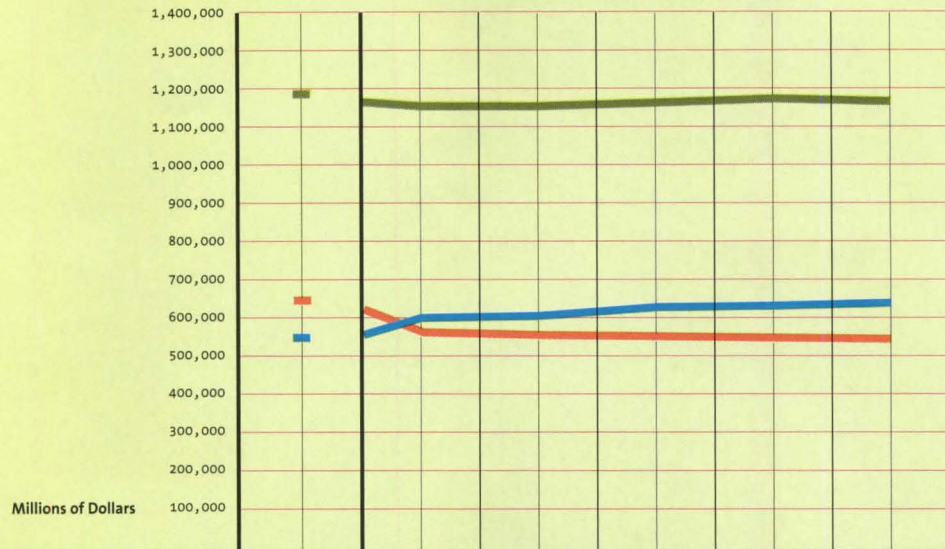


July 2007

Construction Spending

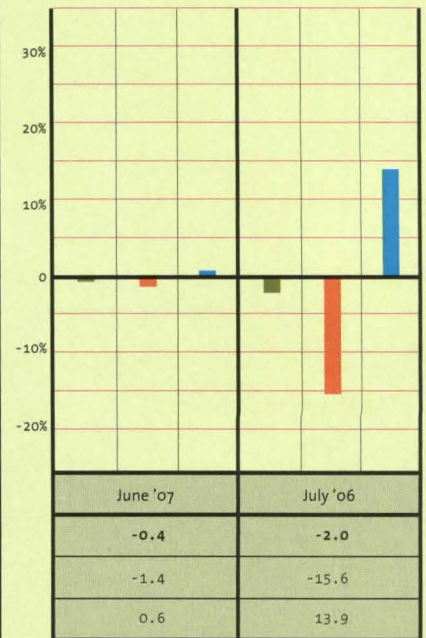
From the U.S. Census Bureau's monthly report on the value of construction put in place

TOTAL CONSTRUCTION (SEASONALLY ADJUSTED)

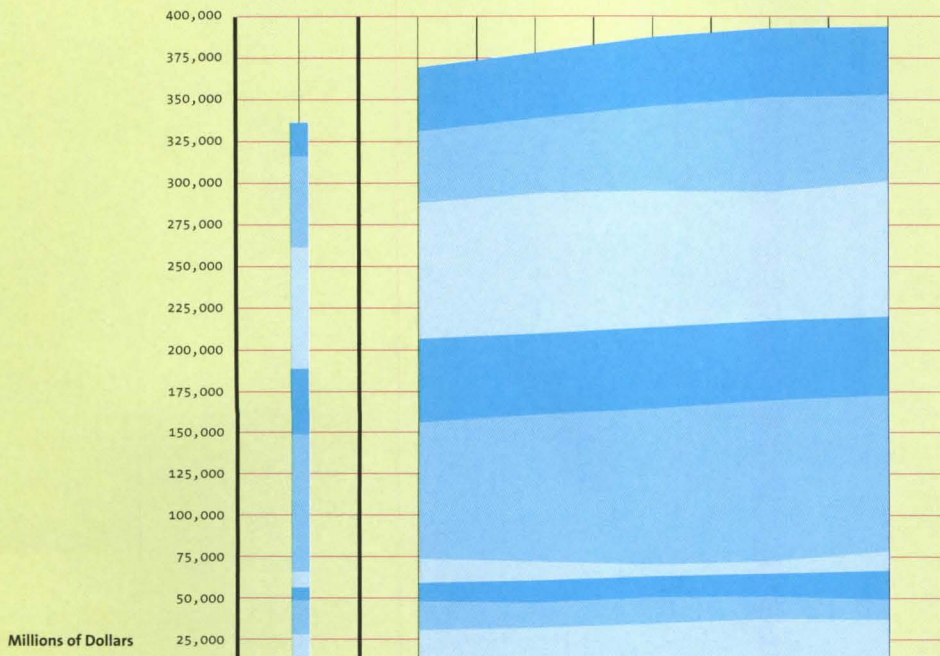


Months	July '06	March '07	April '07	May '07	June '07	July '07
Total Construction	1,192,932	1,163,647	1,166,171	1,172,135	1,173,246	1,169,074
Residential	642,219	562,214	558,467	552,043	549,706	541,866
Nonresidential	550,713	601,433	607,704	620,092	623,540	627,207

Percent Change From:



SELECT NONRESIDENTIAL CONSTRUCTION (SEASONALLY ADJUSTED)



Category (July '07 Total)

- Lodging (30,296)
- Office (64,335)
- Commercial (85,869)
- Healthcare (45,669)
- Educational (99,882)
- Religious (7,738)
- Public safety (10,509)
- Amusement and recreation (19,504)
- Transportation (30,560)

Months	July '06	March '07	April '07	May '07	June '07	July '07
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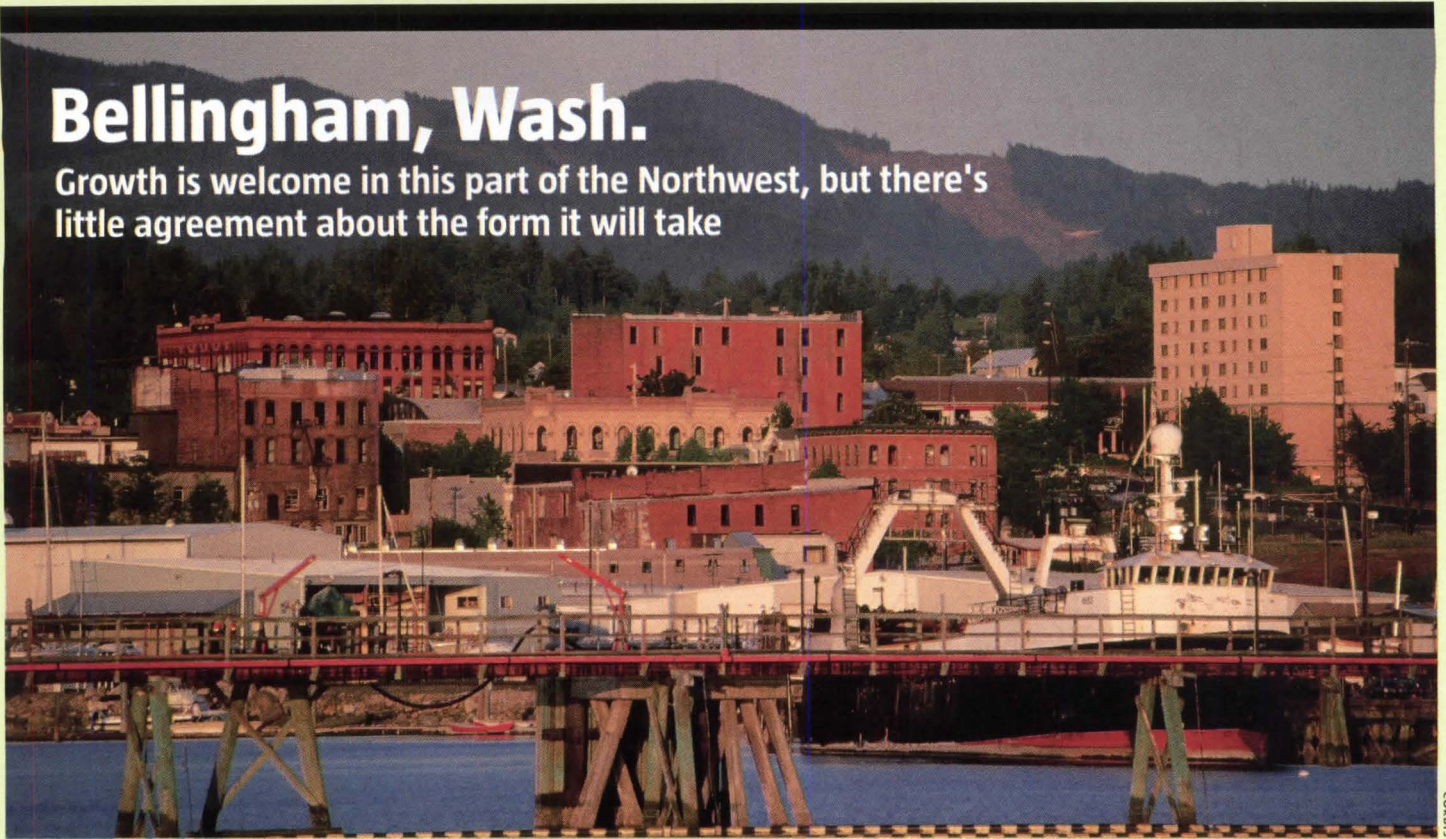


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Bellingham, Wash.

Growth is welcome in this part of the Northwest, but there's little agreement about the form it will take



As Bellingham prepares to redevelop 220 acres of waterfront property, a debate rages over whether to grow denser (and taller) or to spread the city outward.

A CENTURY AND A HALF AGO, Bellingham, Wash., was a small mill town on the Pacific Coast. Then came the Fraser Canyon Gold Rush, luring thousands of fortune-seekers to the area from California. After the rush, shipping became the economic mainstay. These days, retail, trade, healthcare, manufacturing, and education keep the city humming.

"We have clean air and water, good schools, proximity to large cities without having to live there, [and] great recreational opportunities," explains Lylene Johnson of the Muljat Group South, a local real estate broker. The nearly 90-mile commute to Seattle keeps Bellingham from serving as a bedroom community, a plus for those looking for less expensive housing on or near the water.

Several residential, commercial, and mixed-use projects have been completed since 2000, and many more are on the boards. The biggest project now is the redevelopment of 220 acres of prime waterfront property on Bellingham Bay, adjacent to the central business district. Now in the planning phase, the first part of the development, a marina, could be online as early as 2008.

But not everyone is excited about Bellingham's growth, and managing public opinion is a challenge. "There is a lot of resistance to increasing density within existing neighborhoods," says Michael Smith, principal of Zervas Group Architects. "That leads to increased pressure to expand the urban growth area, which is also met with a lot of resistance." **MARGOT CARMICHAEL LESTER**

POPULATION GROWTH

Bellingham's population grew by 2.4 percent to an estimated 75,220 in 2007, the highest rate in the past six years. Employment outside the farm sector grew by 1,600 jobs for the 12 months ending in July 2007. Most of that was in the service sector, which includes retail, transportation, and professional employment.

OFFICE MARKET

Occupancy in the city's office buildings is high, at about 97 percent. Average asking rates range from around \$11 per square foot to the mid-\$20s in newer space.

RESIDENTIAL MARKET

Median home sale prices have risen \$40,000 since 2003, to \$377,894 for the first half of 2007. The median condominium price at midyear 2007 was \$199,995.

MARKET STRENGTHS

- Educated workforce (Western Washington University)
- Proximity to large domestic markets—including Seattle and Redmond, Wash.—and Vancouver, Canada
- Gateway to natural areas

MARKET CONCERNS

- Sprawl
- Resistance to increased housing density
- Rising home costs

FORECAST

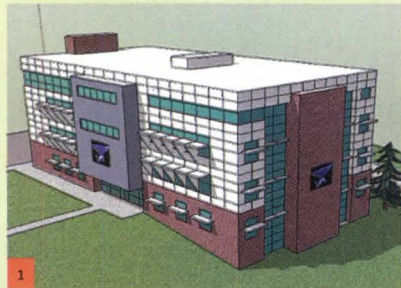
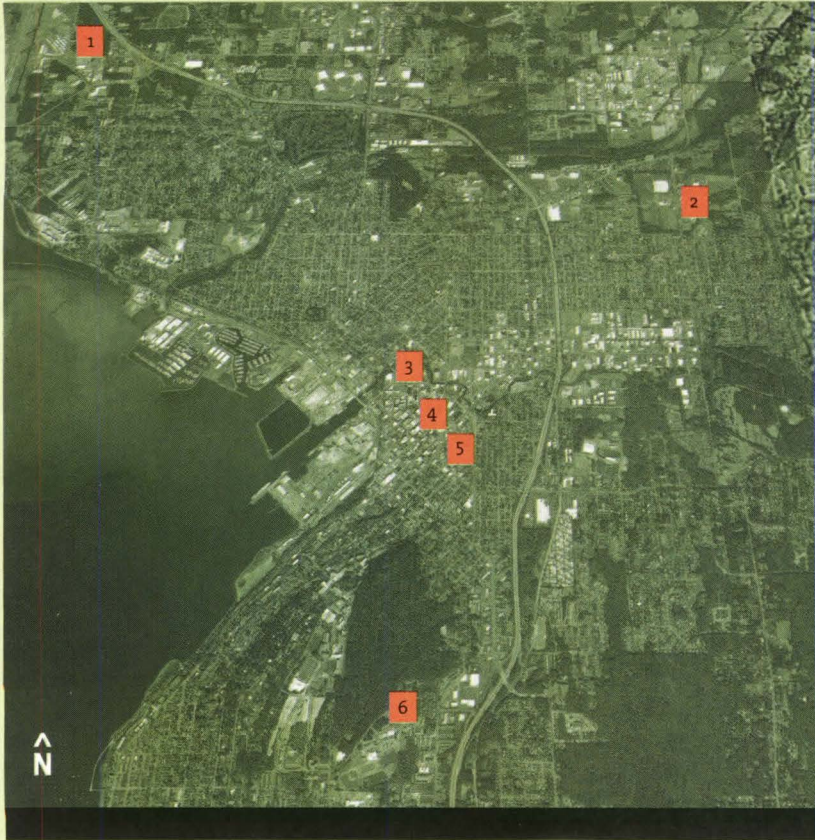
"The largest challenge is how to grow the economy beyond the service sector to better provide family-wage jobs in a rapidly increasing housing market," notes Brad Cornwell, principal for RMC Architects. "Also critical will be how to manage the incoming growth in a manner acceptable to established residents and in a location with restricted geographic constraints."

→ continued on page 32



Use anything but postformed laminate, and it won't be the patients who need their heads examined. No one wants to think about the germs and bacteria that linger in medical facilities. And thanks to VT commercial grade countertops, you won't have to. We use high pressure decorative laminates that resist stray microbes, and thanks to our postformed process, they don't have any seams to collect dirt and grime. Which is good news for you and your patients. For more information about VT commercial grade countertops or to locate a VT PRO Team fabricator, simply log on to www.vtindustries.com. Circle no. 53 or <http://architect.hotims.com>

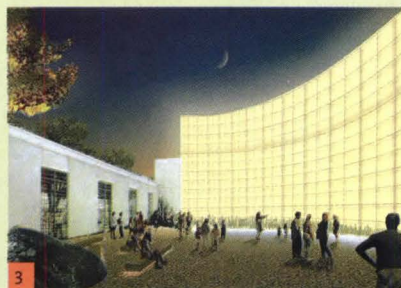
VI Fine Laminate
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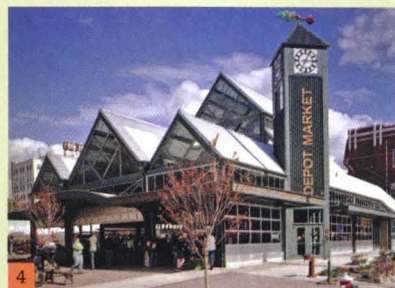
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DOUG SCOTT PHOTOGRAPHY



DAVID SCHERER/WWU ARCHIVES

NOTABLE PROJECTS

- 1 ANVIL CORP. BUILDING**
Architect: Zervas Group Architects, Bellingham
Developer: Anvil Corp., Bellingham
Planned Completion: 2008
Cost: \$13 million
 Because the engineering firm's new headquarters by the airport will be home to more than 200 new high-paying jobs, the city allowed sewer and water extensions for the 50,000-square-foot project, despite a long-running moratorium.
- 2 CORNERSTONE**
Architect: RMC Architects, Bellingham
Developer: The Barkley Co., Bellingham
Planned Completion: 2008
Cost: \$16 million
 This 149,000-square-foot commercial-residential building will have a roof garden and mark the transition between a retail/mixed-use district and Barkley Village, a master-planned, new urbanist residential area.
- 3 BELLINGHAM ART AND CHILDREN'S MUSEUM**
Architect: Olson Sundberg Kundig Allen Architects, Seattle
Developer: City of Bellingham
Planned Completion: 2008
Cost: \$11 million
 Containing two new museums and situated in the heart of downtown Bellingham, the 41,720-square-foot building is expected to receive a LEED Silver rating.
- 4 DEPOT MARKET SQUARE**
Architect: Stewart+King Architects, Bellingham
Developer: City of Bellingham (plus private funding)
Completed: 2006
Cost: \$2.5 million
 This 5,200-square-foot downtown market uses reclaimed steel from a historic Skagit River bridge in nearby Mount Vernon, Wash. The open-air market won a 2006 Citation Award from the AIA's Northwest Washington chapter.
- 5 WHATCOM EDUCATIONAL CREDIT UNION LOAN CENTER**
Architect: Zervas Group Architects, Bellingham
Developer: Whatcom Educational Credit Union, Bellingham
Completed: 2007
Cost: \$3.2 million
 LEED Gold certification for the 9,000-square-foot building is pending and would make the center Whatcom County's first building to achieve the standard.
- 6 WADE KING STUDENT RECREATION CENTER**
Architects: Opsis Architecture, Portland, Ore. (design architect); BJSS Duarte Bryant, Seattle (architect of record)
Developer: Western Washington University, Bellingham
Completed: 2003
Cost: \$18.3 million
 The 98,000-square-foot building is the first university rec center with a pool to receive LEED certification. In 2004, it earned a national merit award from *Athletic Business* magazine and won the Outstanding Sports Facilities Award from the National Intramural Recreation Sports Association.

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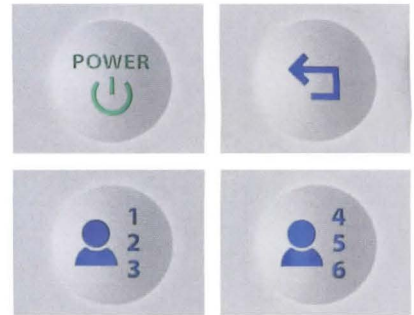
DTV™ Custom Showering Experience

Featuring leading-edge technology, the DTV Custom Showering Experience allows individuals to create a spa-like environment in the home. Inspired by body and wellness experts at the Kohler Waters Spa, the DTV Custom Showering Experience complements a wide variety of aesthetics and delivers a personalized shower every time.

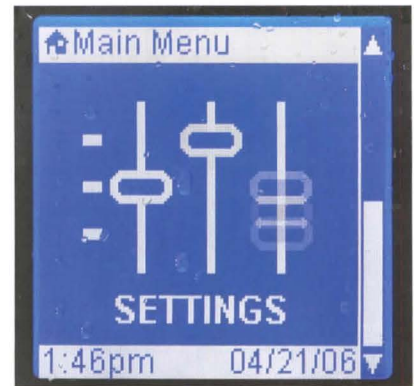


Feature	Benefit
Six unique user presets	Allow users to create a wide variety of personalized showering experiences
Streamlined digital interface	Eliminates the need for multiple valve handles
Intuitive, user-friendly technology	User menus are easy to navigate and control
High flow rate of up to 21 gallons per minute	Allows users to simultaneously run up to eight showering components
Digital thermostatic performance	Delivers precise and consistent water temperature
Six-port valve	Enables users to create elaborate custom shower configurations

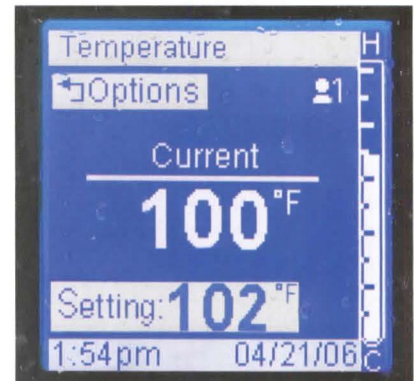
Shown on front K-684-1CP DTV Digital Interface in Polished Chrome.



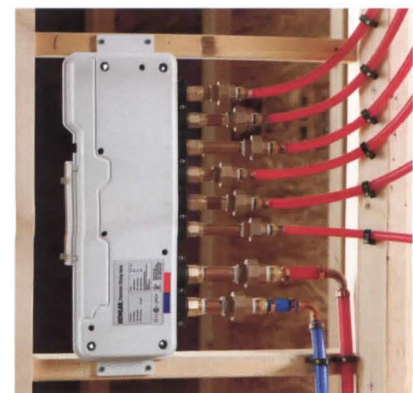
Digital soft-touch interface allows user to effortlessly navigate menus.



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insidearch.org

That firm you're thinking of joining? Find out what it's really like there

A DREAM POSITION with even the most admired architect could turn out to be a complete nightmare—especially in a profession given to long hours, low pay, and, at times, difficult personalities. But job announcements and classified ads generally don't traffic in such information.

As a young intern architect casting about for work in the late '90s, Stephen Simon found it was relatively easy to learn the basics about a firm, such as number of employees, past commissions, and principal biographies. When it came to the nitty-gritty, however, his searches were fruitless. "I wanted information on the firm's culture and what it offered a young person," says Simon. Unwilling to commit blindly to a job, in 2002 he created insidearch.org as a message board where people could discuss what it was like to work at particular firms. Realizing there was growing interest in the information being generated but that there needed to be a common measure for comparing firms, later that same year he introduced the 70-question survey that all firms in the site's database are rated on.

The site now lists about 1,300 firms across the country based on 3,200 individual survey responses. (According to the 2002 Census, there are 12,869 U.S. firms with more than two employees.) Each profiled firm is graded on nine criteria, including work environment, attitude toward interns, and management's interest in seeing employees grow as architects. Also included are respondent quotes about the firm and answers to questions about things like the firm's financial stability or interest in social issues. Forums allow users to carry on public conversations.

There are drawbacks, of course. A firm's rating can be based on the opinion of a single, potentially disgruntled, employee. But even if the data aren't statistically watertight, Simon is convinced of their value. "Ultimately," he says, "I think this information can positively affect the market for architectural talent." If principals are upset with a low rating, Simon invites them to encourage employee participation in the ongoing survey, thus creating a more accurate assessment of their firm. "The site is helpful on both sides," he says. "If you're looking for a job, it can be very helpful in finding firms, but principals can also see what is important to employees."

Now happily employed at a San Francisco firm that he declines to name (to avoid the appearance of a connection with his website), Simon points out that "in other professions with mandatory internships, the professional organizations maintain these sorts of statistics themselves." Although this is not the case in architecture, until something else comes along, insidearch.org effectively fills the gap. **JOHN GENDALL**

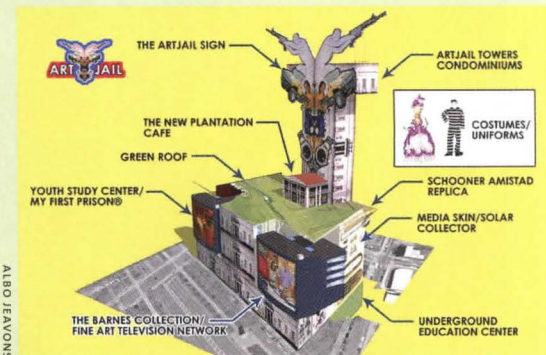
Links

CENTENNIAL

basilspence.org.uk

In 2003, the family of Scottish architect Basil Spence (1907–1976) gave The Royal Commission on the Ancient and Historical Monuments of Scotland 40,000 items from the noted modernist's archives. Now, a century after his birth, the commission and the National Galleries of Scotland have collaborated to celebrate Spence through this website, an exhibition currently making its way around the U.K., and a major retrospective that will open later this month.

SATIRE



artjail.org

So Albo Jeavons didn't beat out Billie Tsien and Tod Williams for the chance to design the Barnes Foundation's new Philadelphia digs. That's no surprise, as the local artist wasn't even on the shortlist. Nevertheless, the self-described anarchist has offered up the ArtJail, which combines the Barnes' cultural focus with the services of the juvenile detention center that previously occupied the site. It's not the first time Jeavons has skewered Philadelphia development through his artwork; check out his DisneyHole Project at albojeavons.com.

VIDEOS

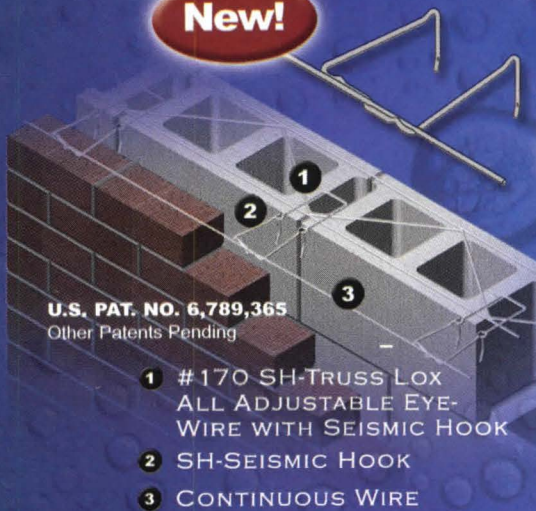


greenenergytv.com

As with any website that depends on user-generated content, the videos on Green Energy TV are of uneven quality. But there is a lot of good information to be found on this eco-focused "channel" that launched in January, such as a documentary of the Morning House (shown), Pennsylvania State University's entry in the 2007 Solar Decathlon.

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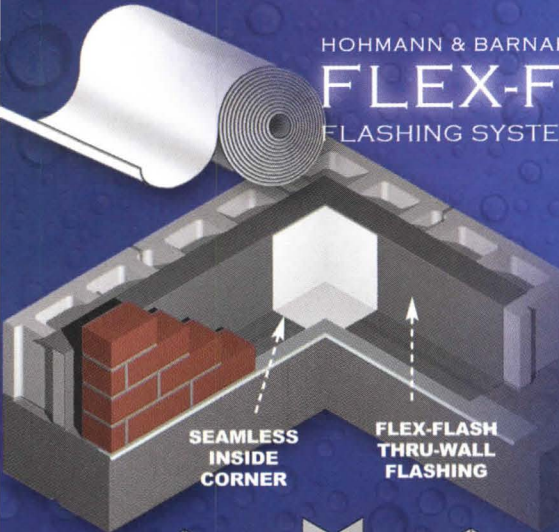
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PAPERLESS DRYWALL MAKES THE GRADE

A school's colors are carefully chosen, as they help establish its identity and boost school spirit.

Regardless of the official hue of choice, though, more and more schools are getting "green" - not as an official color, but as a means of ensuring that school buildings are built so they are conducive to a positive learning environment.

And, schools that aren't green are suffering significant consequences.

Nearly half of the more than 120,000 U.S. public and private schools have problems related to indoor air quality (IAQ), according to the U.S. Environmental Protection Agency. Numerous studies testify to the negative impact of poor IAQ on school children, especially in elevating health risks, raising absenteeism rates and inhibiting learning. Children are more susceptible to the health impacts of poor indoor air quality because they are more impacted by environmental toxins than adults.

In fact, one in 12 children suffers from asthma, a rate that has more than doubled since 1980.* Many triggers for asthma are commonly found in school buildings, including volatile organic compounds (VOCs), dust, pests and mold resulting from excess moisture due to leaks or high humidity levels.

School officials, architects, specifiers and builders are well aware of the ill effects of poor IAQ, and the direct correlation between IAQ, health and academic achievement. This has led to a renewed emphasis on improving the indoor environment in schools.

New structural materials that positively impact IAQ are in high demand, including mold-resistant drywall. Mold growth on building materials can degrade indoor air. But traditional drywall has paper on both sides, and mold "eats" paper. If you remove the paper from drywall facing, you've greatly reduced the risk of mold growth.

DensArmor Plus® drywall from Georgia-Pacific Gypsum is the industry's first paperless interior drywall featuring a glass-mat facing on the front and back surfaces for the best interior protection from moisture currently available in drywall products. Not only does it provide long-term benefits of being moisture- and mold-resistant, DensArmor Plus also helps projects stay on schedule by allowing drywall to be hung earlier in the construction process. It has superior fire and abuse-

resistance, as compared to paper-faced drywall, and carries a three-month in-place exposure warranty.

Additionally, Georgia-Pacific Gypsum recently has expanded its line of paperless gypsum panels by adding an abuse-resistant board, which is perfect for a school's high traffic areas like classrooms, hallways and dorms.

Both DensArmor Plus and DensArmor Plus® Abuse Guard® are the first and only gypsum drywall products to receive GREENGUARD and GREENGUARD Children & Schools(SM) Indoor Air Quality Certifications. These prestigious certifications recognize indoor building products that have low emissions of VOCs.

"Schools constructed with high quality building products can positively impact a child's education," said Leo Bissonnette, general manager for Georgia-Pacific Gypsum. "By designing and building with construction materials -- such as the moisture- and mold-resistant DensArmor Plus interior drywall -- that also meet indoor air quality standards set by GREENGUARD, builders can deliver high performance schools for our children."

To be GREENGUARD Certified means that DensArmor Plus meets the GREENGUARD Environmental Institute's rigorous emission standards for indoor building materials. This certification subjects materials to emissions testing to identify low emitting products that can be used in school buildings to lower indoor air pollutant exposure.

Equally important, products that meet the GREENGUARD Children and Schools certification criteria automatically qualify for credits by the Collaborative for High Performance Schools (CHPS) program, a national, non-profit organization that strives to facilitate the design of high performance schools by providing guidelines for school districts and design teams to construct learning environments that are healthy, efficient and comfortable.

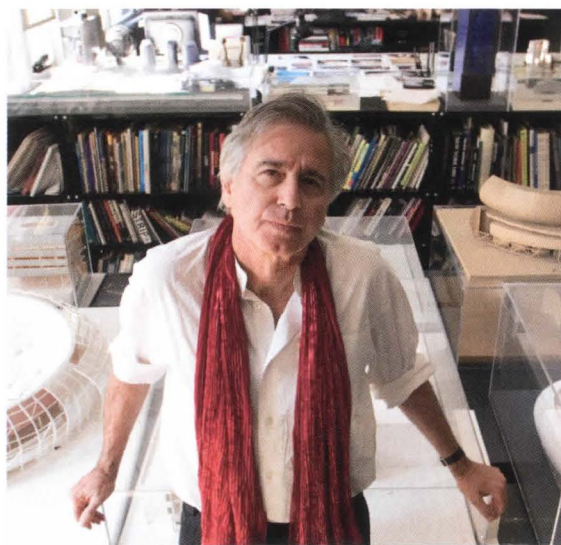
For more information about DensArmor Plus, DensArmor Plus Abuse Guard, or any paperless product from Georgia-Pacific Gypsum - or for further information about how to build paperless - please visit www.buildpaperless.com. For more information on GREENGUARD, visit www.greenguard.org.

*Source: <http://www.greenguard.org>

Numerous studies testify to the negative impact of poor IAQ on school children, especially in elevating health risks, raising absenteeism rates and inhibiting learning.

ARCHITECT BERNARD TSCHUMI SHARES HIS STRATEGIES FOR SUCCESS IN THE WORLD OF COMPETITIONS. **Text** Fred A. Bernstein **Photo** Matt Greenslade

PLAYING TO WIN



Entering competitions requires a combination of strategy and realistic expectations. Even highly successful competitor Bernard Tschumi wins only one out of every four he enters.

TWENTY-FIVE YEARS AGO, Bernard Tschumi—a young architect known mainly for theoretical writings—entered a competition to design a new 60-acre park in Paris. It was an anonymous competition that drew more than 400 entrants. Having his entry selected, Tschumi said, “was like winning the lottery.” As construction of the park—called Parc de la Villette—was getting under way, Tschumi, who was already living in New York, became the dean of Columbia University’s architecture school. After 15 years in that post, he returned to full-time practice, which again includes entering competitions. Recently Tschumi calculated that he has won about one-fourth of the competitions he has entered, an almost unheard-of rate. (In 2002 alone, he won five important competitions.) The results are taking shape in half a dozen European cities, including Athens, where his new Acropolis Museum, designed to house the famous Elgin Marbles, is expected to open next year.

Punch above your weight.

“What I learned from La Villette is that, for someone who is young and who has no experience, the only way to get big projects is through competitions,” Tschumi says. “Even now, with 35 people in my office, competitions are a way for me to get projects that would normally go to 200-person firms.”

Use competitions to explore ideas.

“If I were starting out today, I would develop a body of work that reflected my own interests and use competitions as a way of testing those ideas. When someone like Gregg Lynn or Asymptote starts winning competitions, it’s because they’ve been doing the research for years. The competition is a way to apply what you’ve learned—never the other way around.”

Be wary of U.S. competitions ...

In this country, Tschumi says, organizations use competitions to “see what a building might look like. Often, the program hasn’t been figured out. They may not even have the money. In many cases, nothing gets built. In Europe, by contrast, they not only build the buildings, but they build them as designed. That’s because in many countries, once you’re selected, they cannot change the scheme. Winning creates a binding contract.”

... especially if they ask too much.

“There are competitions where they want to see every parking space and every duct,” says Tschumi. “Sometimes they ask for the equivalent of full schematics. If so, the organizers don’t know what they’re doing. Stay away.”

Foreign is fine.

Americans are free to enter most overseas competitions, though sometimes it’s necessary to partner with a local firm. That shouldn’t be a problem for young architects today; as Tschumi says, “Everyone travels and knows people in other countries.” And language needn’t be a barrier. “I’ve done competitions in China, where the documents had to be in Chinese, and I don’t speak Chinese. Find someone who can work with you who speaks the language.”

Enter competitions—with low expectations.

In an open competition, “The odds of winning are slim, and you shouldn’t forget that. But entering will help you build a portfolio and allow you to see your work alongside that of others of your generation. By entering the same competitions, you and your peers will start to have a conversation.”

Edit yourself.

“You have to be a very good editor. Don’t try to put every idea you’ve ever had in one single project. Judges have 30 seconds to see your project; if it’s not something that grabs their attention, it’s not going to work.”

Volunteer to judge competitions.

That will help you get to know how judges think.

Pat yourself on the back.

“If I lose a competition with a weak project, after weeks or months of working around the clock, it’s depressing,” Tschumi says. “But if I lose a competition with a great project, it’s fine. Because I still feel good about the work.”

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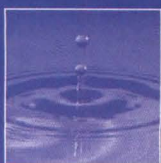
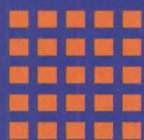
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Text Katie Gerfen

Through the Woods

New landscape products can help revolutionize an outdoor environment.

A **LANDSCAPE PRODUCT** usually helps maintain, contain, or beautify an outdoor environment, but in the case of the Chair to Garden collection, the product itself becomes part of the landscape. The collection, produced by Paris-based 5.5 Designers, features an armless chair, a table, and a bench with one, two, or no arms.

Each piece is made from cast concrete with a reservoir for a growing medium. In the case of the chair, the back is a planter; the bench also has a planter in the back as well as space for two more optional planters serving in the place of arms; and the table edge has a shallow lip that can hold dirt or gravel. There is enough room in the planters for the root system of small topiary or flowers. The table's lip is deep enough for grass. Drainage holes in all three of the furniture pieces ensure that plants will not drown.



1



2



3



4



5

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Haddonstone
www.haddonstone.com
 Solid stone construction edging • Subtle scroll design on the front, flat on the back • Four components available, including a straight-run piece, left and right end pieces, and an edging post

2. Metal mesh fencing

GKD
www.gkdmalfabrics.com
 Continuous-run metal fabrics that can be finished into custom applications • Several standard flexible and rigid fabric profiles available • Seen here in the 185 Corwin project in San Francisco designed by local firm Steel Cherry

3. Adobe collection

Eldorado Stone
www.eldoradostone.com
 Three profiles—Bautista, Carmelo, and Solano—mimic the texture, shape, and color of adobe bricks • Can be installed over concrete masonry units to create raised beds

4. Lakeside bench collection

Landscape Forms
www.landscapeforms.com
 Available in backed and backless versions • Marsh Grasses and Leaves patterns are cut out of sheet steel, with aluminum seat surfacing • Designed by Chicago architect Margaret McCurry

5. SurfaceFlow irrigation system

Jardinier
www.jardiniercorp.com
 A pressure-compensating emitter, controlling water flow on its way to irrigate plants • More-controlled water usage than sprayhead or rotor systems • Emitter tubes are trimmed just below mow height to not interfere with landscaping

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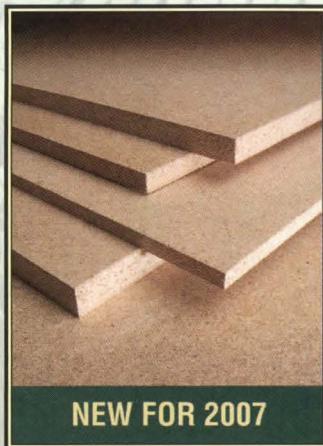
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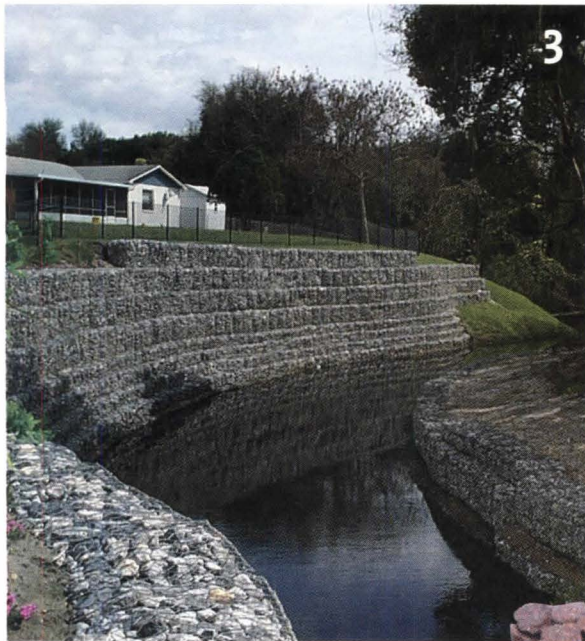
Products



1



2



3

IECA: MATT SHOWAN, LARRY LARSON



4



5

1. Square planters

Wausau Tile
www.wausautile.com
 Units measure 96 inches square and 36 inches high • Sturdy planters weigh 5,500 pounds • 25 standard finishes available • Aggregate surface can change depending on finish, from coarse to fine grain

2. PaverScape planning software

Pine Hall Brick
www.pinehallbrick.com
 Calculates how many pavers will be needed for a particular installation • The designer can determine a pattern, move particular pavers around on screen, and create a digital model of the paving application to discuss with contractors and clients

3. Gabion wall systems

Maccaferri
www.maccaferri-usa.com
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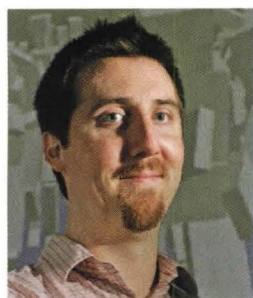
BY ENDOWING DIGITAL CROWDS WITH REAL HUMAN TRAITS, PAUL TORRENS LEARNS HOW PEOPLE NAVIGATE URBAN SPACES.

Text John Gendall

MODEL BEHAVIOR



PHOTO AND ILLUSTRATION: PAUL M. TORRENS



In a virtual scenario created by researcher Paul Torrens (above) to learn how actual crowds work, a suited throng runs from an explosion in the street (above right). Each member has been created to react individually to his neighbor's actions and the ever-shifting dynamic. The environment, too, has been made as realistic as possible, from the way the fire burns to the types of materials the buildings are made of.

MATERIALS CAN BE TESTED, methods of fabrication can be tried, and even destructive natural forces can be simulated, but human crowds have remained largely unpredictable. Until recently.

A growing body of research is attempting to demystify the nature of crowds to predict what they may do in extreme or calamitous situations. Complicating this effort has been the fact that large groups cannot be tested empirically. No right-minded scientist would force an unsuspecting crowd to evacuate a sports arena or incite a riot simply to study people's behavior. And rehearsing such scenarios with willing participants would never yield truly accurate responses.

So researchers are turning to the computer to model such events. One of the emerging leaders is Paul M. Torrens, 33, an assistant professor at Arizona State University's School of Geographical Sciences. Although he has a Ph.D. in geography, Torrens' particular field blends that discipline with urban studies and computer science.

Crowds have been modeled before. But usually they have been conceived of as basic, generalized aggregations or with participants acting as identical entities—not unlike molecules of gas bouncing around an enclosure.

Torrens' model is different: Individuals are individuals. Torrens calls the approach an "agent-based methodology,"

in which the agents are capable of processing what's going on around them. Thus the virtual crowds—like the real ones on which he's basing his model—are made up of individuals endowed with human behavioral traits.

"We already know a lot from past research in behavioral geography and spatial cognition," Torrens says. So he picks up where previous scientists left off by equipping subjects (including himself) with sensors that detect body movements and reactions during different scenarios—a crowd running down the street, say, or an angry mob. Then, starting with a basic behavioral template, this motion-capture data and other behavioral algorithms are used to add on higher-level behaviors to create individualized agents—as many as might be needed for a particular scenario—each with its own "flavor."

"The agents will employ these behaviors very heterogeneously," Torrens says, "as the surroundings for each agent are always going to be unique." The modeled individuals, aggregated into a group, will then make the sorts of decisions that make crowds unpredictable. Rendered three-dimensionally, the model is immediately easy to understand.

While previous models provided only cross-sectional snapshots of particular moments, Torrens builds his with time in mind. Working on the scale of 1/60th of a



PAUL W. TORRENS

The green cloud hanging over this digital version of Salt Lake City (above) isn't severe weather—it's the shape of the Wi-Fi environment. The cloud's coloring and height represent signal strength in decibels relative to 1 milliwatt (dBmW), ranging from -51 dBmW at the low end (dark green) to -14 dBmW at the high end (pale green).

WI-FI GEOGRAPHY

As if modeling crowds wasn't enough, Torrens is also setting out to map the signals generated by wireless networks, which over the past decade have flooded urban areas with a new kind of invisible activity. Torrens hopes the effort will help urbanists and geographers understand the effect of wireless use on cities. "This is particularly interesting for geographers," he says, "because [Wi-Fi is] changing the nature of interaction, but it's completely invisible." As such networks increasingly become the mode of communication, and of community, Torrens aims to reveal the geography behind them. While this realm typically has been understood as difficult to characterize or categorize, he notes that it has become the site of real interaction. Torrens cites the architectural model of space vs. place, where "space" is understood broadly and generally and where "place" is space made personal. Following this logic, he believes "cyberspace" should more accurately be understood as "cyberplace" and should thus be studied geographically. To do this, Torrens has developed his own technology (patent pending) to survey Wi-Fi access points and detect such things as transmission density, network security, and public vs. pay-per-use coverage.

second—the reaction time for human movement, Torrens notes—his models can run dynamic situations that reflect close-to-real-time scenarios.

The uses are manifold. Architects and engineers can watch buildings evacuate, city planners can observe congestion, and law enforcement officers can study how crowds turn into riots—all previously untestable events.

Convinced that architects, town planners, and city officials will benefit from his work, Torrens is hoping to model an entire city over the next five years. Citing Phoenix's explosive exurban growth, urban redevelopments, and unlikely environmental conditions, Torrens calls the city "a perfect lab to study urban

dynamics." A \$400,000 grant from the National Science Foundation will help to get him going in that direction.

And Torrens' work also brings an intangible, yet significant, contribution to better understanding urban settings. "I once saw a 3-D model of London, with all of the city's buildings precisely represented," he says. "But it was a ghost town. It wasn't really London." If Torrens has anything to do with it, cities will one day be modeled the way they actually are: as incredibly dynamic sites of human interaction, not simply as a collection of buildings.

John Gendall is a freelance writer based in New York City.

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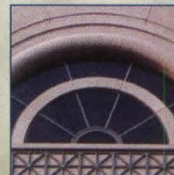


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WHAT'S THE BEST WAY TO PHOTOGRAPH A GREEN BUILDING?

Text Lance Hosey

SHOOTING GREEN



PAUL HESTER

Including people in a photograph helps explain a space—especially one where comfort is key to the design. When Paul Hester photographed Lake/Flato's World Birding Center Headquarters in Mission, Texas, "I just waited for people to do something," he says. Digital cameras let architectural photographers think and act like journalists.

"**PHOTOGRAPHY IS TRUTH,**" said film director Jean-Luc Godard. Architectural photography, however, often stretches the truth. Margaret Bourke-White depicted the Chrysler Building soaring weightlessly over Manhattan, and Edward Steichen's misty portrait of the Flatiron Building made the whole city seem carved from stone. Mies van der Rohe and Le Corbusier both doctored images of their work in order to make it appear simpler, and Ezra Stoller, arguably the most influential architectural photographer ever, transformed midcentury modernism

into abstract sculpture. These images do not simply illustrate buildings—they influence attitudes about architecture. Because many buildings are experienced mostly second-hand, through published photos, a picture can be worth a thousand visits.

What is the most persuasive way to photograph a green building? "The problem of sustainable design is a great one," says Washington, D.C.-based photographer Prakash Patel. "What is it we're trying to represent? Is it just what you can see?" Fresh air and thermal comfort

are experienced by the entire body, not just the eye. Though balanced daylight is critical, photographers routinely rely on heavy artificial lighting, and the results often appear flat and unnatural. Another trick of the trade is to place the camera below eye level so a space seems larger. This is particularly popular with photographers of commercial interiors, including many projects celebrated as green.





These habits can send the wrong signal, says Texas photographer

Paul Hester. "Sustainable design isn't about monumentality. It's about livability." Shooting green requires a shift from what he calls the *iconic* to the *experiential*. "What's important is to capture what it's like to be there." With Lake/Flato's World Birding Center Headquarters (shown on page 49), he knew that the building's connection with its setting, the Lower Rio Grande Valley, was key. "You're there to be outside, but you need some shelter from the sun. Instead of one big building, it's a



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By dramatizing the effects of light at different times of day and year, Prakash Patel's photos of Carrie Meinberg Burke's Timepiece House render time visible. Patel used a fog machine to help define the lightstream. For three years, he reshot the space at every equinox and solstice, capturing the light's path through the room.

Prakash Patel

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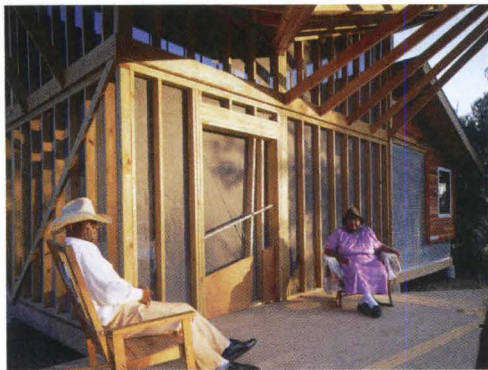


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TIMOTHY HURSFLEY

Timothy Hursley's shots of the Rural Studio projects, including this image of the Harris "Butterfly" House, often blend architectural and portrait photography.

series of small pavilions. There's a sense of openness with protection." A view from under one of the long vaults contrasts its deep shade with the bright, open plain beyond, and the coolness is almost tangible.

"It was a simple shot," says Hester. "I didn't pose those people. I was taking a break and having a cup of coffee." (That's his cup in the foreground.) Digital cameras have allowed photographers to be quicker, like journalists, according to Hester. "You don't need strobe lights or double exposures or any other effects. You can focus on the experience and not the technology." At the Birding Center, "I just waited for people to do something." This is the opposite of the conventional approach, which requires complicated staging and long exposures and avoids people altogether. "I want people in the photos," says Hester. "They help viewers understand a place."

How people in photos help us to understand a place is perfectly illustrated by Timothy Hursley's work with the Rural Studio. One photo of the Harris "Butterfly" House in Mason's Bend, Ala., puts us

right at eye level with the owners, as if we are visitors on their front porch. When the photo (left) was taken, construction had just finished, and the Harrises clearly were proud. "They dressed up for the photo," Hursley recalls. "They're in their Sunday clothes." Imagine this picture without Mrs. Harris' welcoming gaze and Mr. Harris' rugged profile. It would be an empty portrait. As interesting as the house is, it's not a home without these two.

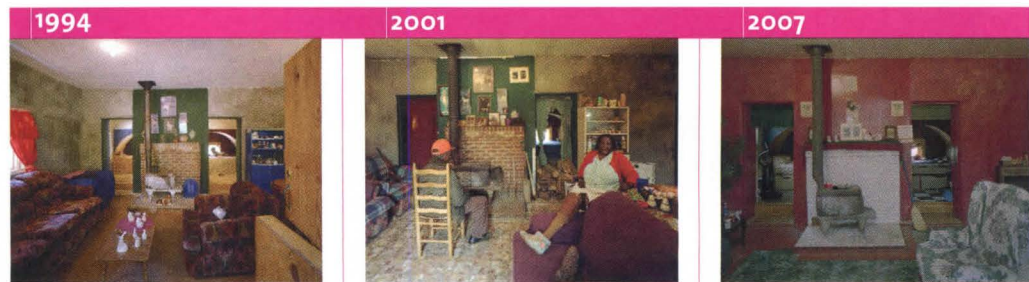
Since the early 1990s, Hursley has been documenting the Rural Studio work as it evolves, and the outcome is a unique chronicle of architecture over multiple generations (see sidebar below). "I'm building something over time," he says. "I'm fascinated by the changes."

Patel agrees that getting to know the life of a building requires more than a typical one-day shoot. "I have to understand the space before I can illustrate it." Illustrating Carrie Meinberg Burke's Timepiece House in Charlottesville, Va., took more than a single visit. Designed around a central oculus that casts a beam of light along the floors and walls, the house turns daily and seasonal cycles into cinema. How do you convey that in still images? "Because time was central to the design concept, I was forced to come up with a novel way to photograph it," says Patel. Inspired by sunlight reflecting off dust in the Pantheon, Patel used a fog machine to dramatize the light. "You can see the effect without understanding where it's coming from." The space varies through the day, season to season. "I went back to shoot it every equinox and every solstice for three years."

Photography may be truth, but telling the truth takes time.

Lance Hosey is a director at William McDonough + Partners.

BRYANT "HAY BALE" HOUSE, MASON'S BEND, ALA.



TIMOTHY HURSFLEY

Timothy Hursley took this photo within a month after the Bryants moved in. A grandchild reads in the window at the back. Hursley showcases the family's belongings—especially the personal effects around the fireplace in the center of the room—to show their influence on the space.

This was the first time Hursley had revisited any of the Rural Studio's work. Where the earlier photo conveyed the Studio's "spirit of goodness," says Hursley, the later images focus on the family itself. "They influence the shots." Here, Mrs. Bryant had lost her legs, and a prosthesis is the center of the view.

In this most recent photograph—never before published—Mr. Bryant has died, Mrs. Bryant is bed-ridden, and, says Hursley, "the life has gone out of the room."



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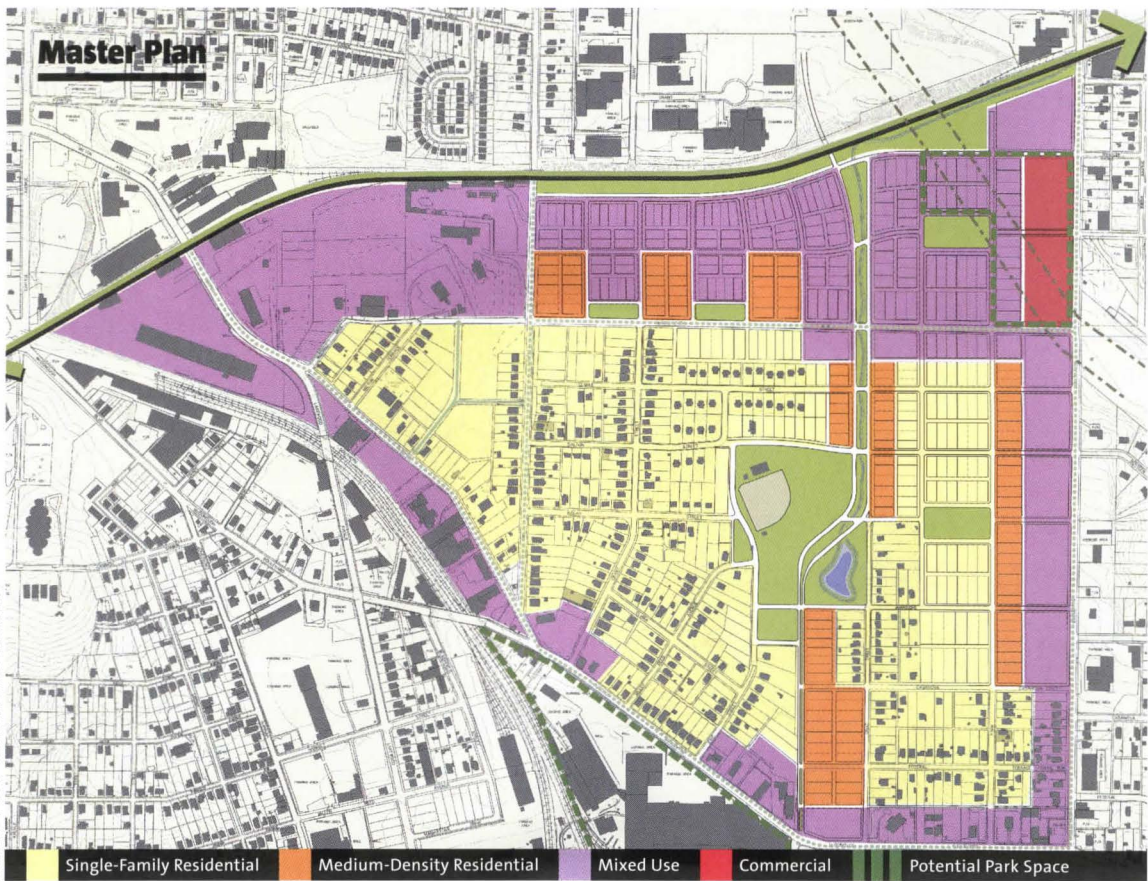


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LORD, AECK & SARGENT MAPS A NEW STREETScape OVER ATLANTA'S OLD RAIL LINES.

Text Mimi Zeiger

DRAWING THE BELT LINE



DRAWINGS COURTESY LORD, AECK & SARGENT

The master plan for the Belt Line includes residential, mixed-use, and commercial neighborhoods and pays careful attention to the location and flow of streets to create density and, with it, an urban feel.

HISTORICALLY, ATLANTA'S development is linked to the railroad. The city was established in the 1830s, with the fortunately short-lived name of Terminus, as the final stop on the Western and Atlantic Railroad's route out of Chattanooga, Tenn. A loop of track, the Belt Line, took shape around the city to feed its rapid industrial development. While trains bolstered the commercial economy, hundreds of miles of light rail crisscrossed the city, networking downtown to streetcar suburbs. A sepia-tinged, early 20th century snapshot would reveal an infrastructural idyll.

These days, traffic-heavy freeways knot sprawling, postindustrial Atlanta. Although the city's urban core is seeing regeneration after half a century of suburban flight, still only one-sixth of the population lives within the area delineated by the now-abandoned tracks of the Belt Line. The city and its planners see potential rebirth in that 22-mile loop of historic railroad. A master plan for the Belt Line is under way: It sketches out, over 25 years, an ambitious vision that provides new parkland

and light rail systems (it connects into Metropolitan Atlanta Rapid Transit Authority, or MARTA, lines) while supporting older neighborhoods and fostering development on underutilized land.

Architect David Green, a principal at Atlanta-based Lord, Aeck & Sargent, worked on the Belt Line's street framework plan. "The plan backs into a rail system that was already in place 50 years ago," he explains. "The primary issue is that of transit, but the overarching question is how to tie the existing neighborhoods back together. How do we bridge that gap between the tracks?"

Pieces of the project are already under construction. A one-mile section is expected to open this year, and Lord, Aeck & Sargent are designing the street plan and 3,000 housing units in the Chosewood Park neighborhood. The new structures increase density but are scaled to respect typical Atlanta block sizes. The design pays close attention to parking lot sizes, sidewalks, and street alignments—details that encourage an urban feel.



Street Formula

COMPONENTS	STREET TYPE	PARKWAY				THOROUGHFARES				PRIMARY			
		Single-Family	Townhouse	Multifamily	Commercial / Mixed	Single-Family	Townhouse	Multifamily	Commercial / Mixed	Single-Family	Townhouse	Multifamily	Commercial / Mixed
RIGHT-OF-WAY WIDTH		120				100				80			
Pavement Width—Traffic Lanes		22	22	44	44					22	22	22	22
Traffic Lane Width		11	11	11	11					11	11	11	11
Number of Traffic Lanes		2	2	4	4					2	2	2	2
Pavement Width—Bike Lanes		10	10	10	10					10	10	10	10
Bike Lane Width		5	5	5	5					5	5	5	5
Number of Bike Lanes		2	2	2	2					2	2	2	2
Sidewalk Zone Width		24	24	30	30					30	30	30	30
Sidewalk Width		7	7	15	15					9	9	15	15
Planting Strip Width		5	5	n/a	n/a					6	6	n/a	n/a
Number of Sides		2	2	2	2					2	2	2	2

To determine the location and right of way of arterials and local streets, as seen above, planners connected new roads to existing infrastructure and public transit.

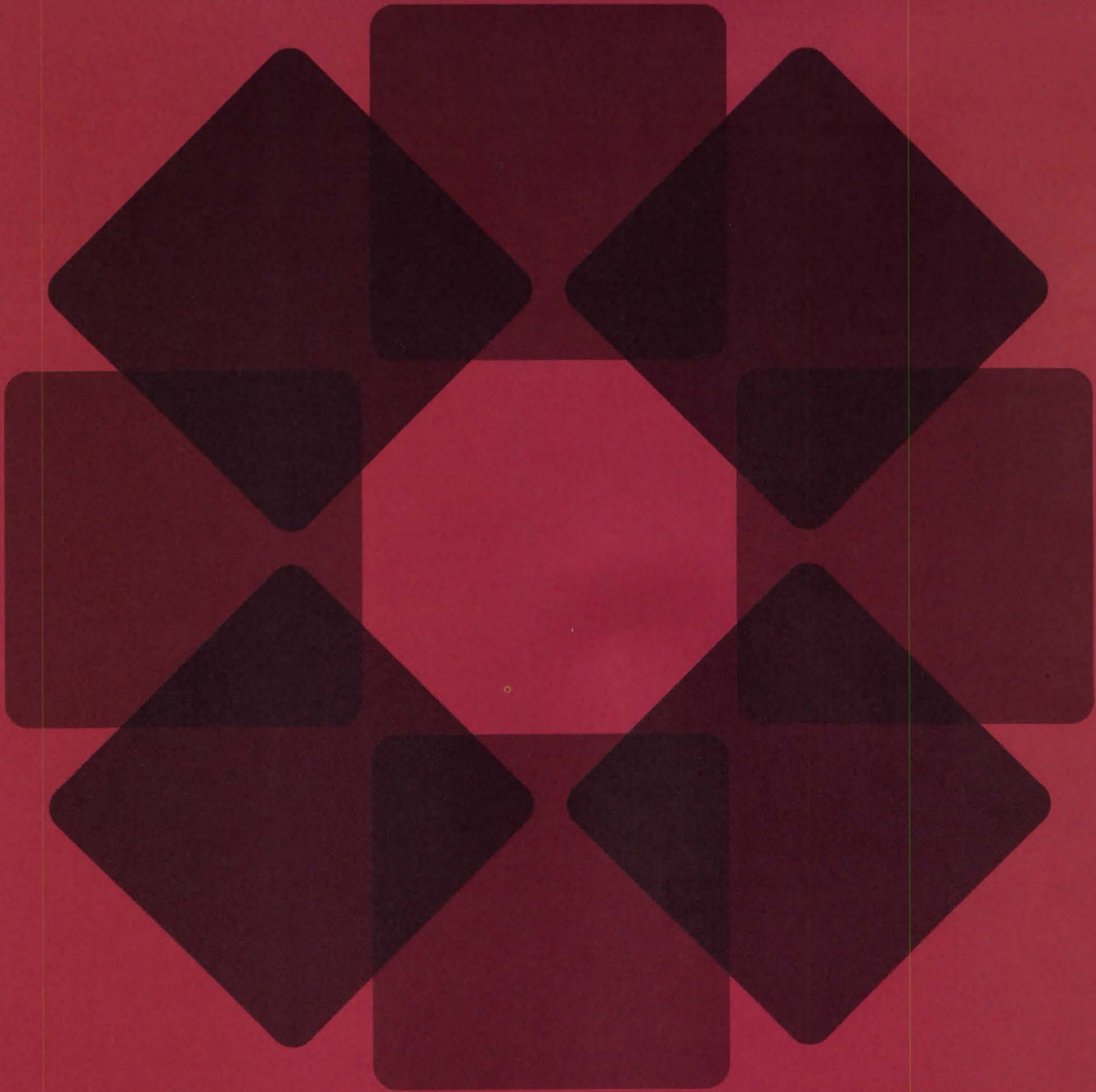
Careful consideration was given to street and sidewalk widths (shown in the chart at left) in an effort to promote walking as well as congestionless driving in the area.

Green compares the Belt Line with the famous Commissioners' Plan of 1811—which set the guidelines for Manhattan's telltale grid. The Belt Line plan doesn't mimic the orthogonal pattern of New York; in fact, it extends bits of the urban fabric locally around the necklace. But the Atlanta master plan does parallel the scale of the Commissioners' Plan, attempting to master 5,500 acres and 45 different neighborhoods.

"It is an enormous public space, practically and culturally. If it wasn't big and bold, people wouldn't have gotten behind it," says Atlanta planner Ryan Gravel, who conceived of the Belt Line project in the

late 1990s as his graduate thesis at Georgia Tech. The concept took off after it reached city council representative Cathy Woolard, gaining further momentum via grassroots efforts. "It is about how public investment in infrastructure creates private goals," Gravel explains. "People moving here expect more from an urban environment. Atlanta is a young city, and we relied on automobiles for 40 years. We are just now learning how to grow better and be more sustainable."

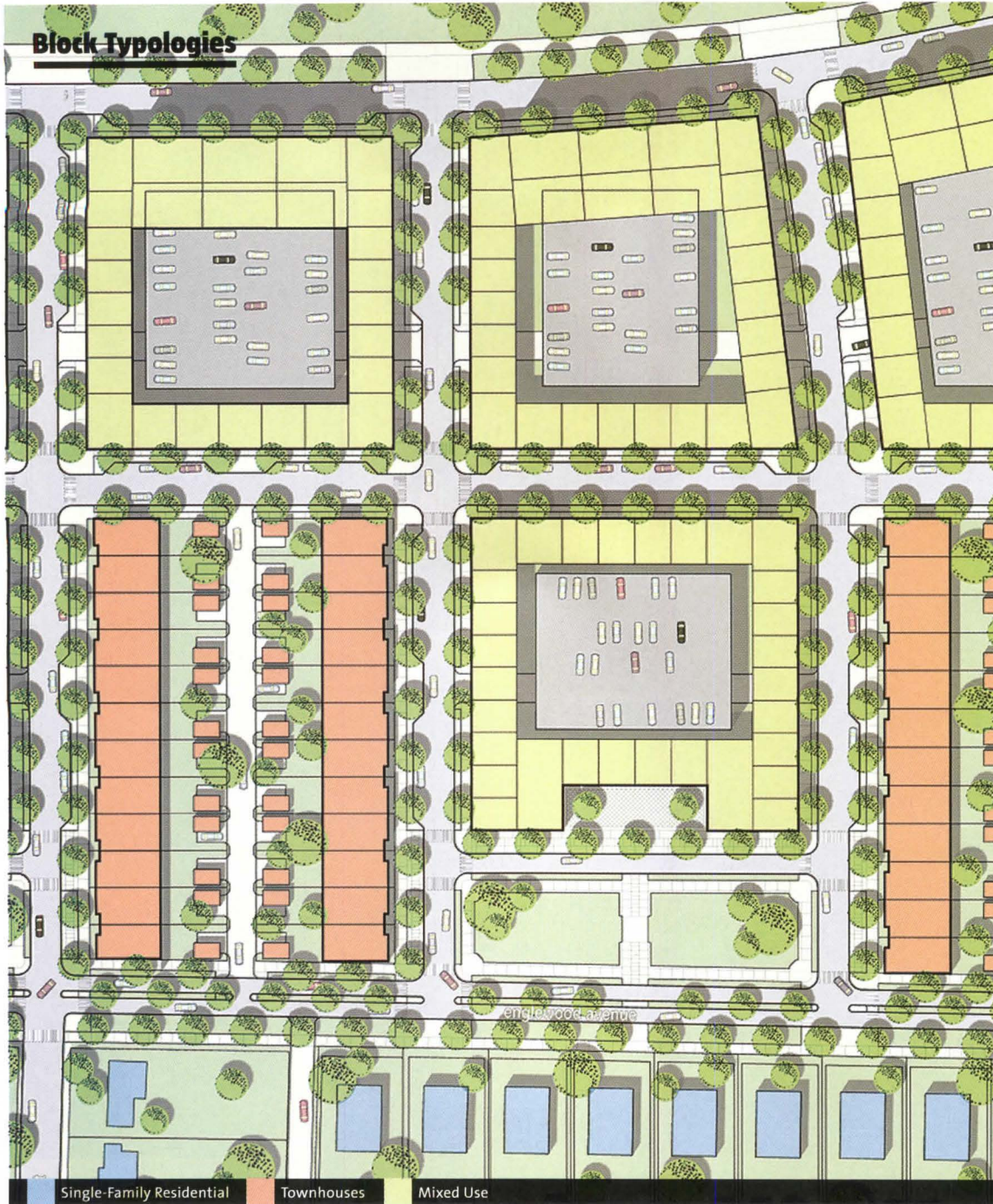
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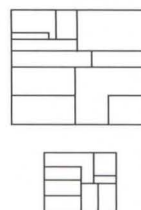
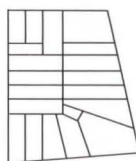


A close-up of an area on the northern edge of the Belt Line (left; see locator map at bottom left) shows that housing typologies have been intermixed to add density to the neighborhood.

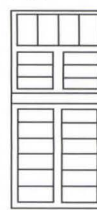
Block plans (bottom right) show average densities of residential city blocks in New York, Atlanta, and Chosewood Park, one of the Belt Line communities.



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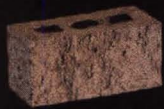
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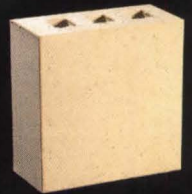
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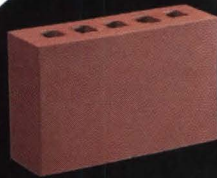
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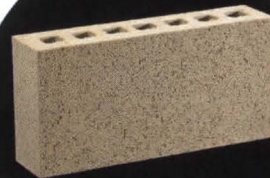
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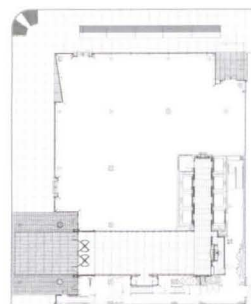


DOUBLE MONARCH
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A COLLABORATION BETWEEN KPF AND ARTIST JAMES TURRELL ENLIVENS
A LOBBY SPACE IN A NEW YORK OFFICE BUILDING. Text Edward Keegan

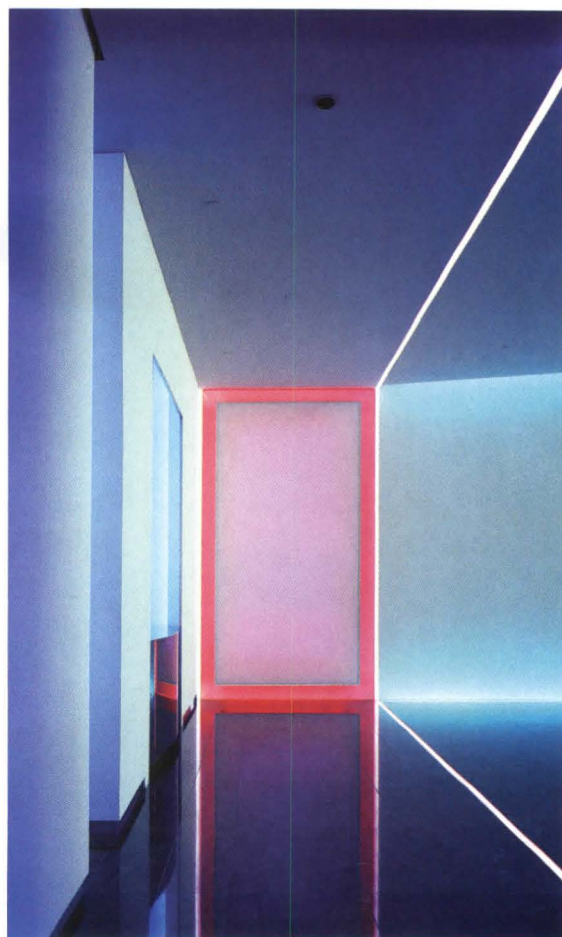
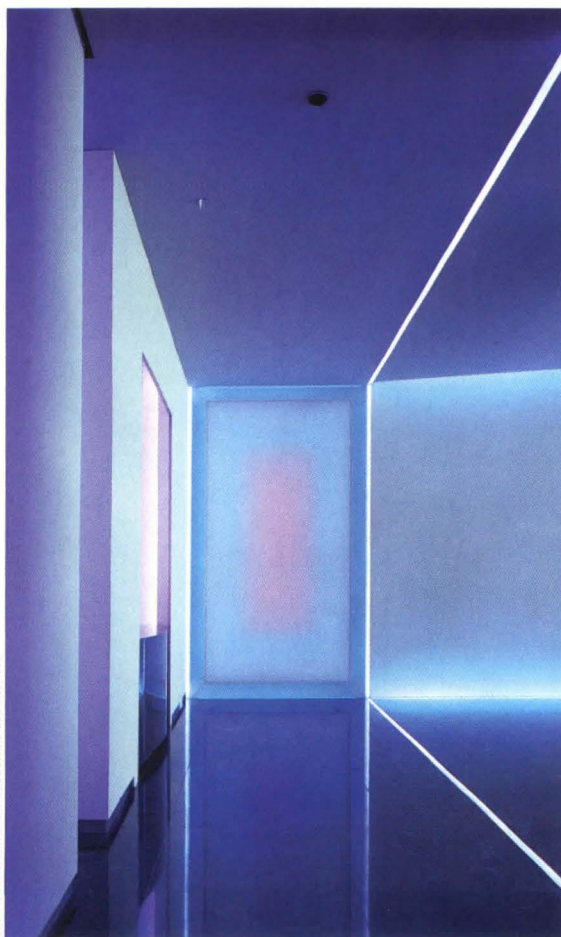
LIGHT BOX

GROUND FLOOR PLAN



Placing the elevator shafts at the north end of the site (above) resulted in a long lobby that traverses the entire width of the site. The final configuration is L-shaped, lit by color-changing LED light cabinets and cove lighting and cold-cathode tubes. The view from the elevator lobby back toward the entrance lobby (right) shows the dramatic effect of the lighting strategy and the shift in mood that accompanies a change in the colors of the light cabinets.

ALL IMAGES COURTESY KOHN PEDERSEN FOX



NEW YORK'S 42ND STREET is no stranger to interesting lighting. The pulsating honky-tonk of Times Square has been fascinating visitors and natives seemingly since the creation of the incandescent bulb. But a new lobby space in a Kohn Pedersen Fox (KPF) building just two blocks east at 505 Fifth Avenue is a decidedly more high-brow use of light's ethereal effects. Artist James Turrell collaborated with the design team at KPF to transform two narrow lobby spaces into environments more typically found in a museum.

The speculative office building was planned with its elevator core at the ground floor's north end—necessitating a lobby configuration that traversed the full width of the site. The client wanted the space to be a collaborative effort between the New York-based architects and an artist. During a meeting, KPF design principal Douglas Hocking made an offhanded comment that the lighting in a particular rendering reminded him of a James Turrell art piece. The client immediately picked up on the thought, and with the help of a KPF colleague who knew Turrell's London-

based representative, the team was set to design the lobby as one of the artist's light spaces.

Turrell has two veins of work: his "commodity" art and his "art" art. (For an exhibit of his work, see page 103.) "This is his commodity art," says Hocking, "the stuff that he does that people tend to like." The layout of the lobby was unchanged by Turrell. Each of his interventions was inserted within KPF's initial design—an L-shaped space with the visitor lobby and reception desk segueing into a narrow elevator lobby. In the entrance space that leads to the elevator lobby, a light trough and ceiling cove separate the floor, walls, and ceilings. Two light hoops—2¼-inch-wide linear fixtures set flush with the walls, ceiling, and floor—create a threshold at the north and south ends of the entrance space. The east-west elevator lobby is anchored at either end by Turrell's light cabinets.

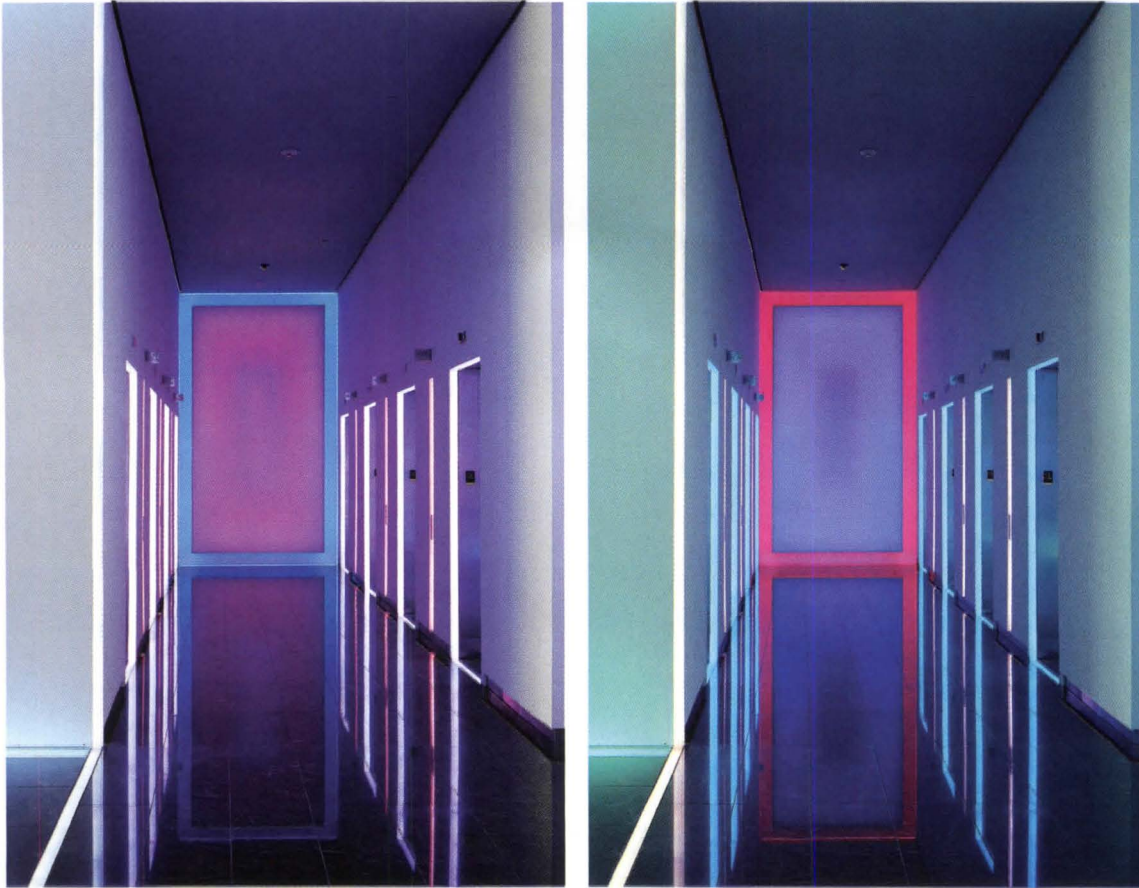
"They look like Rothko paintings," says Hocking. These large, vertically oriented rectangles are set off from the surrounding surfaces by ordinary recessed coves. Each "canvas" is a single sheet of a translucent

Lighting

resin product. "Inside the cabinet is just a bank of LEDs that are staggered to get a uniform light," says Hocking. The lights within each cabinet are programmed to constantly change over a 24-hour cycle, with various color patterns and combinations. Sometimes the light starts as a rectangle. Sometimes it grows out or recedes. "It's really beautiful and it's subtle," says Hocking of the final animated piece.

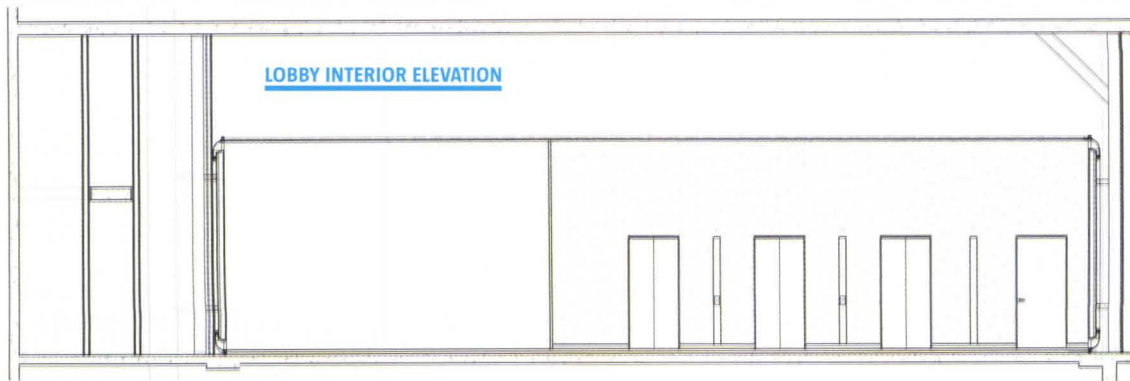
manufactured by 3form and met both the artist's aesthetic and the architect's technical needs.

Where most New York lobbies tend to be wood and stone (in a word, expensive), the lobby finishes at 505 Fifth Avenue are simple in both color and material: white-painted plaster and gypsum board for the walls and ceilings, a dark granite for the floors. "Turrell just wanted the stucco and plaster to be the canvas

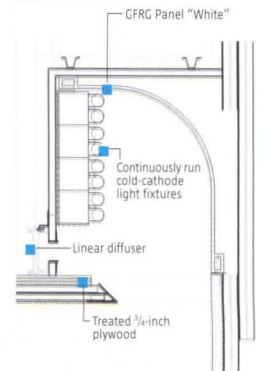


The narrow elevator arm of the lobby (left and far left) features a color-changing light cabinet at the end that serves as the focal point of the space. Additional fixtures around the elevator coves can also change, altering the atmosphere of the space.

The elevation of the elevator lobby (below left) shows how cramped the space is, but high ceilings and ceiling cove lighting (see diagram below) help to make the space seem bigger.



CEILING COVE



While Turrell has done similar pieces before, these are almost twice as large as previous works, a leap in scale that created some challenges for the architects. They considered glass for the exterior surface but found that the weight of a single sheet would have been prohibitive. Hinging such a piece was also too high a hurdle. The much lighter resin material was

the light hits," says Hocking. But the artist was quite specific in his requirements for white paint—the walls are decorator white, while the ceiling is two f-stops darker. "That grounds the whole composition in terms of optics," explains Hocking, who notes that it wasn't the most difficult of requests to fulfill. "You go to Benjamin Moore and pick an off-white," he says. "It's

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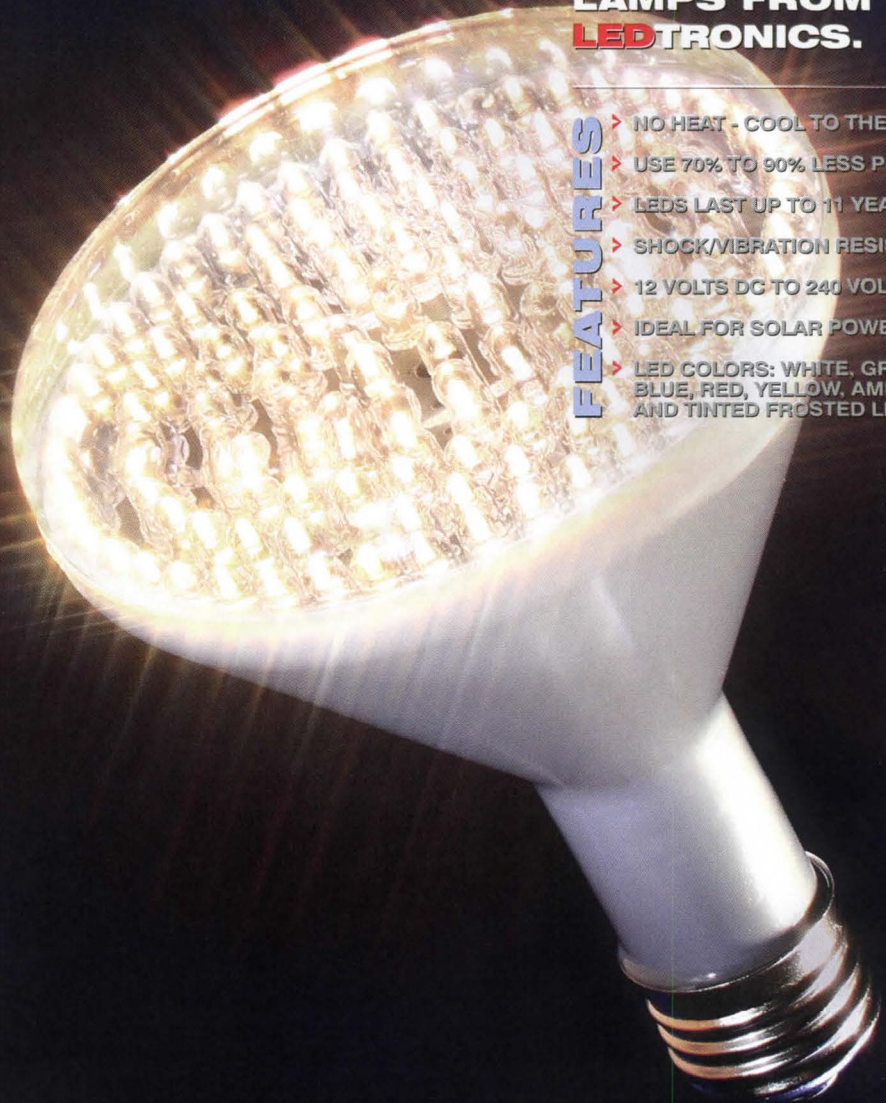


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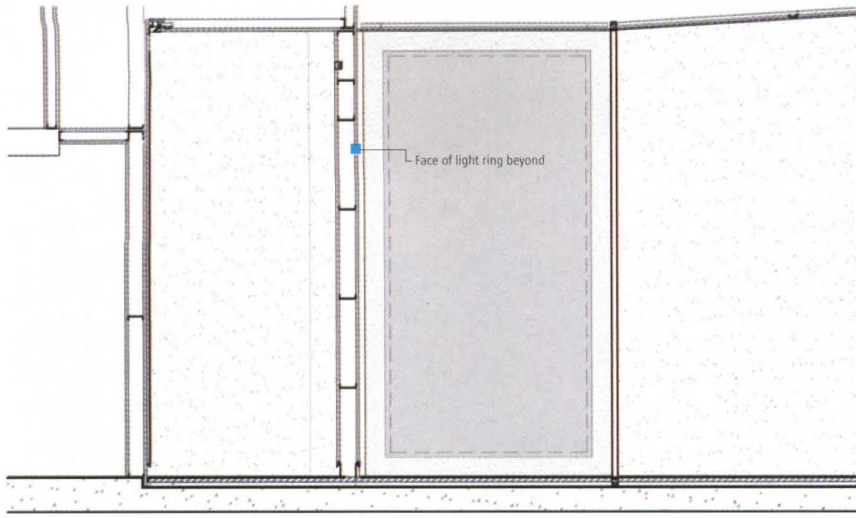
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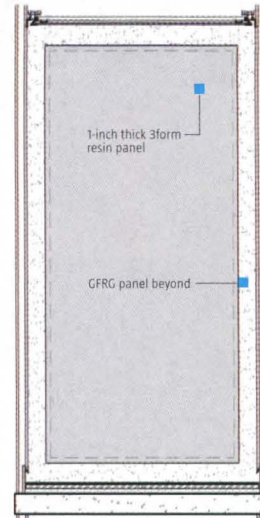
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ELEVATION AT EAST LIGHT CABINET

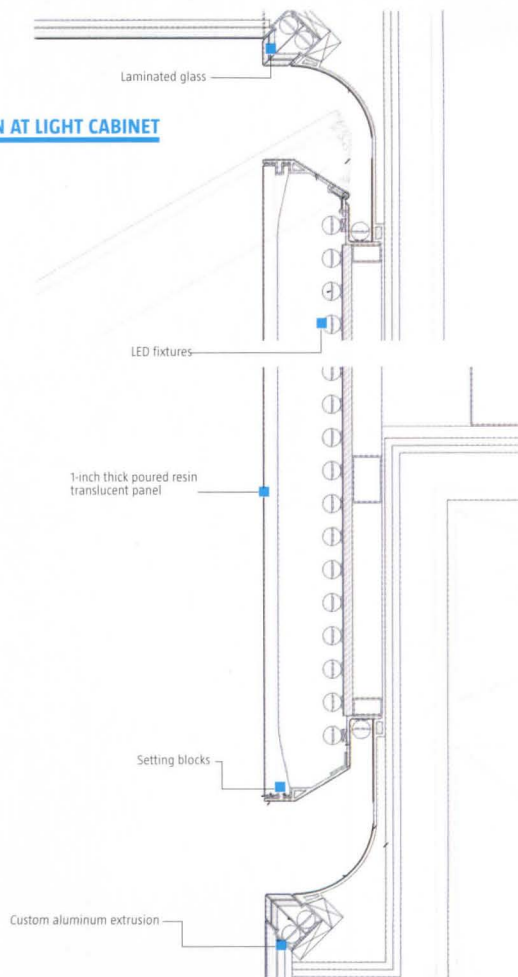


ELEVATION AT WEST LIGHT CABINET

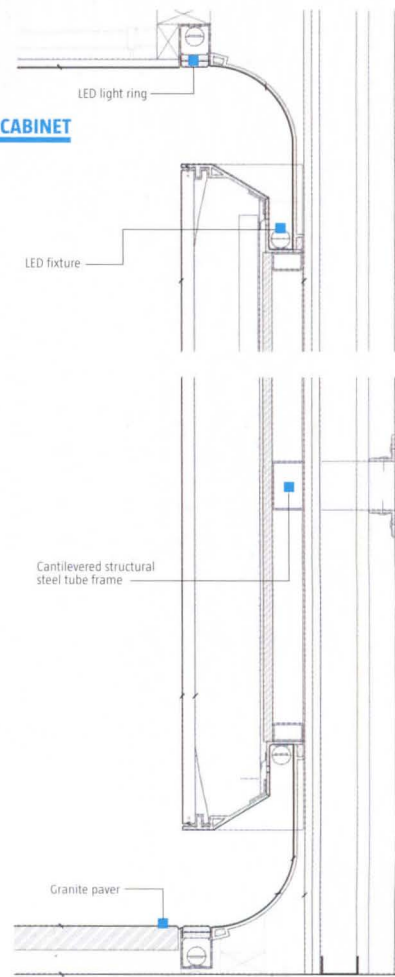


The lighting cabinets (left) have LED fixtures mounted to a structural steel tube frame and enclosed by resin panels that help diffuse the light. The LEDs are programmed to change colors on a continuous 24-hour cycle. Sections of the cabinets (below left) show the simple construction of the light cabinets, but the impact on the space is strong.

PLAN AT LIGHT CABINET



SECTION AT LIGHT CABINET



not like picking some exotic stone.”

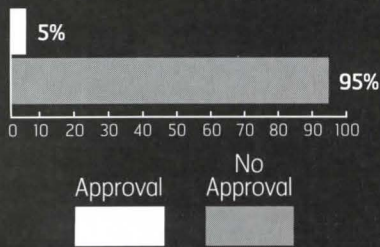
Hocking describes the process as a collaboration between four distinct players. James Turrell was the head honcho, but KPF did the details and material specification; London-based Isometrix, a lighting design firm, picked the fixtures; and programmer Benjamin Pearcy digitized the complex ballet of

lighting changes within the light cabinets. After construction was complete, Turrell and Pearcy spent two days on site tuning the combinations. Only after that process was completed did the artist give the result his blessing as a James Turrell artwork. Satisfied with his interventions in the 505 Fifth Avenue lobby, Turrell dubbed it “Plain Dress 2006.”

ARCHITECT Kohn Pedersen Fox, New York—(Douglas Hocking, design principal; Paul Katz, managing partner; Christopher Stoddard, project manager; Theodore Carpinelli, Li Min Ching, Miranti Gumayana, Wendy Hanes, John Lucas, Lloyd Sigal, project team)
ARTIST James Turrell
LIGHTING DESIGNER Isometrix, London
PROGRAMMER Benjamin Pearcy

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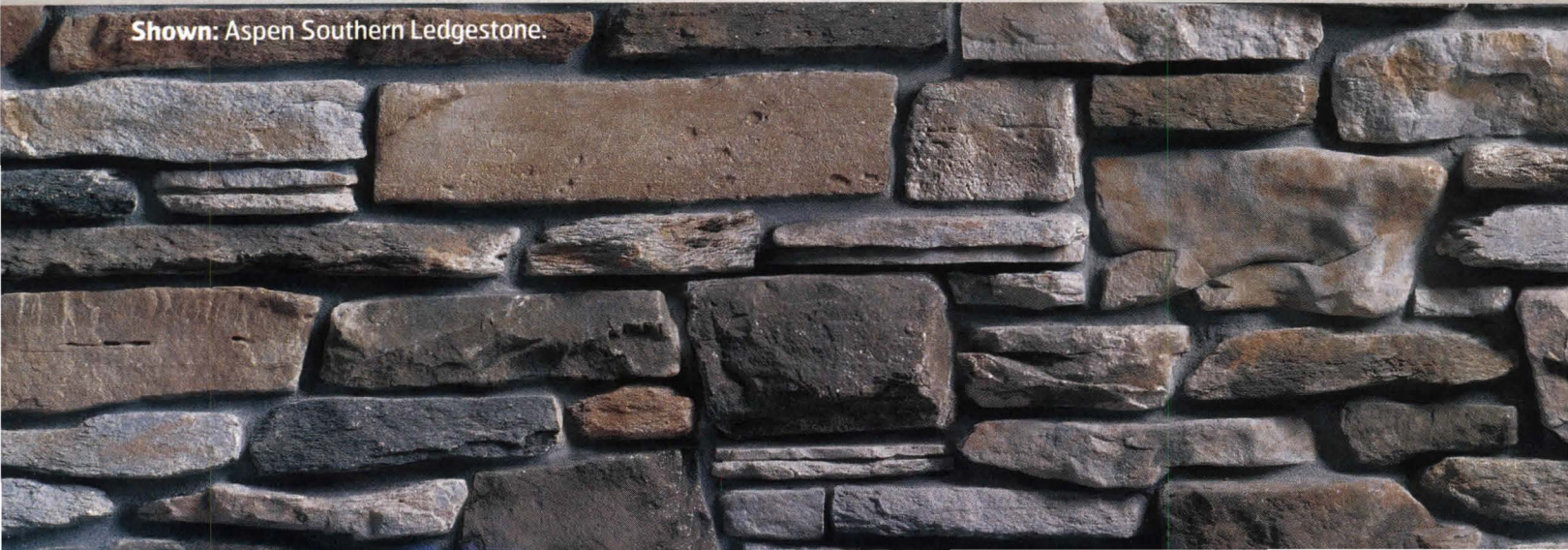
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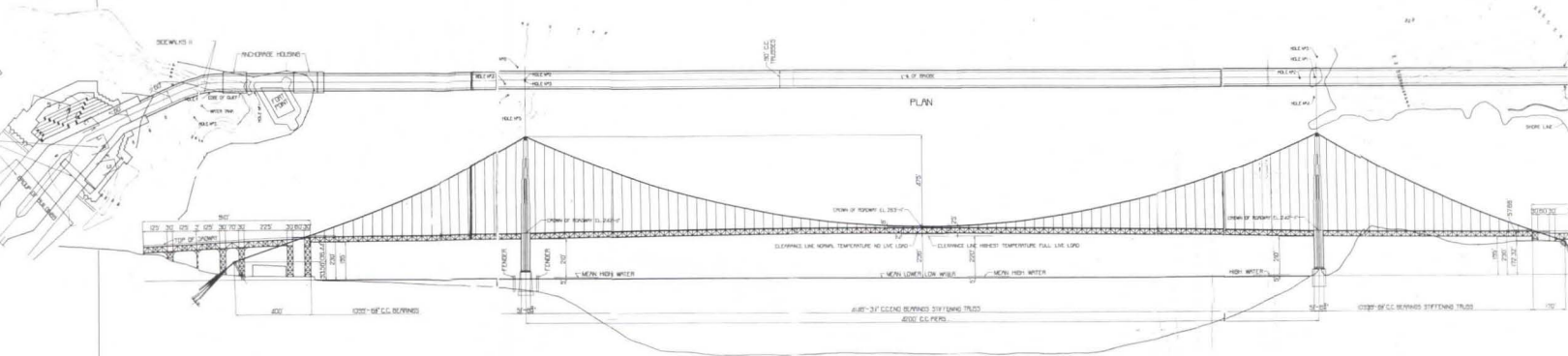
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A SERVICEABLE ICON

THE GOLDEN GATE BRIDGE, NOW 70, GETS A DEFERENTIAL OVERHAUL.

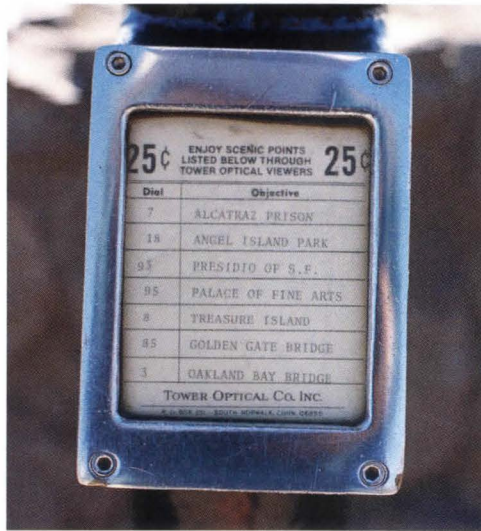
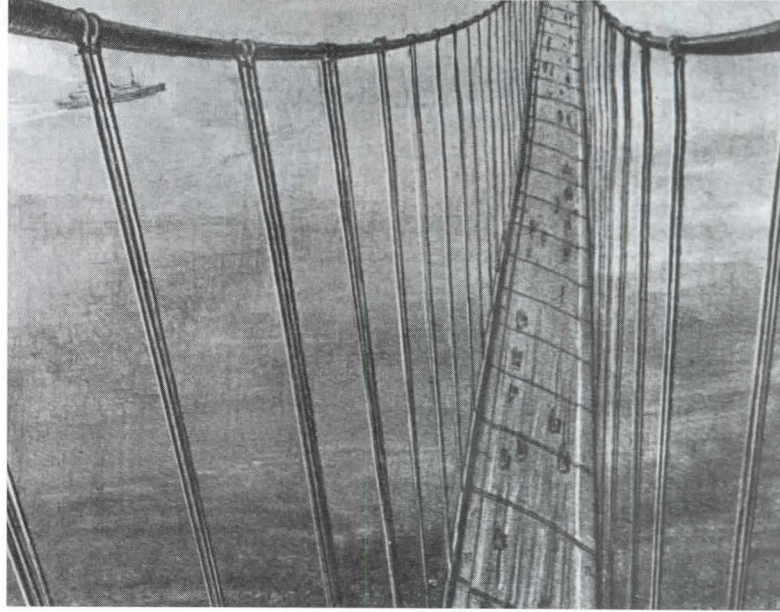


I'D COME TO SAN FRANCISCO to work out whether the Golden Gate Bridge, named for the strait that connects the San Francisco Bay to the Pacific Ocean, might not be the end of America—its final border, the end of the West. This notion follows if you consider the beginning of the country, naturally, to be the Statue of Liberty. If the country has a beginning and an end, these are surely the two spots.

Yet for an immigrant from the Pacific Rim, surely the Golden Gate is where the country begins, not finishes. Joan Didion knew this, writing in 1982, "The Golden Gate Bridge, referring as it does to both the infinite and technology, suggests, to the Californian, a quite complex representation of land's end, and also of its beginning." So the idea is not without problems. All the same, there is clearly some historical sense to the simple metaphor of the West as end, keeping in mind that the American movement westward through the initial stages of the nation's development is a historical fact, not a point of view. There is a tradition of the West as the nation's vanguard, the place of youth and revolution, and inasmuch as the bridge represents the place—who, please, goes to San Francisco and buys a postcard of Coit Tower?—the bridge thus also represents the frontier, the furthest reach, the edge.

The next problem in fixing a beginning at the Statue of Liberty and an end at the bridge is that it makes an uneven pair of anchors. The statue is only a monument, and the bridge, 1.7 miles long, is an essential and utilitarian piece of infrastructure as much as it is an icon. It can't just stand there untouched, but is used every day: Indeed, about 40 million vehicles cross the bridge annually, coming down from Marin County into the city and vice versa. That is to say, the bridge is difficult to make stand still as a simple icon.

The bridge is now in the middle of a \$471 million seismic retrofit aimed at making it as safe and strong as possible—that is, better able to move with and dissipate seismic forces—without changing its appearance at all. Phase 1, shoring up the North (Marin) Viaduct, began in 1997 and finished in 2002; the second phase, strengthening the South (San Francisco) Viaduct, finished earlier this year; and the third phase, retrofitting the main span, is expected to continue through 2012. Engineers have replaced all the steel towers, which are up to 150 feet tall, below the south



A SERVICEABLE **ICON**

WHO GOES TO SAN FRANCISCO AND BUYS A POSTCARD OF COIT TOWER? THE BRIDGE REPRESENTS THE WEST—THE NATION'S VANGUARD, FRONTIER, FURTHEST REACH, THE EDGE.

and north approaches to the central span. Pylons and anchorage housing have been strengthened, dampers and stiffeners and bracing installed. "It's 10 times stronger, but the public doesn't see any difference," I was told by Denis Mulligan, chief engineer for the Golden Gate Bridge, Highway and Transportation District.

THE BRIDGING OF THE GOLDEN GATE was spurred by the need for an easier commute. By the 1920s, 50,000 commuters a week were coming into the city on ferries, and the number was only increasing. But San Francisco itself, surrounded on three sides by water, had stopped developing after decades of tremendously rapid growth, with no land to expand into, and its future was dependent on access.

As Kevin Starr, the longtime California state librarian and now librarian emeritus, has put it: "San Franciscans were beginning to realize that there was a vast northern and interior empire that had to be integrated into the San Francisco economy and transportation and travel network for San Francisco truly to survive."

Thus, as early as 1916, the San Francisco city engineer, Michael O'Shaughnessy, began to consult engineers about the possibility of bridging the strait. The typical estimate he received came in at around \$100 million, or about \$2 billion today, but Joseph Strauss, a Chicago engineer with experience in much smaller projects—his patented design for a bascule bridge, or drawbridge, was used worldwide—proposed to create a bulky cantilever-suspension hybrid for \$25 million to \$30 million; indeed, his initial cost estimate turned out to be \$17 million. (The eventual cost was somewhere between \$27 million and \$36 million.)

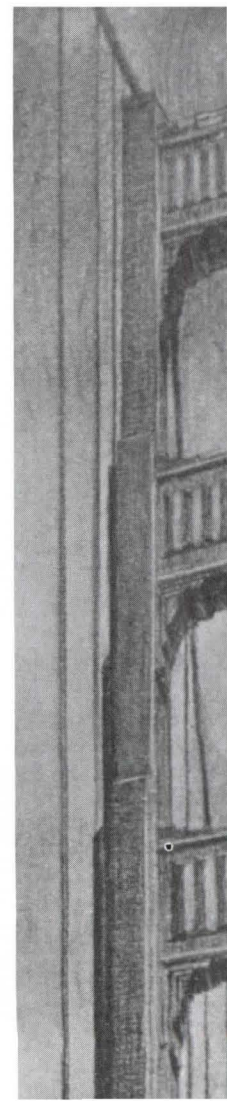
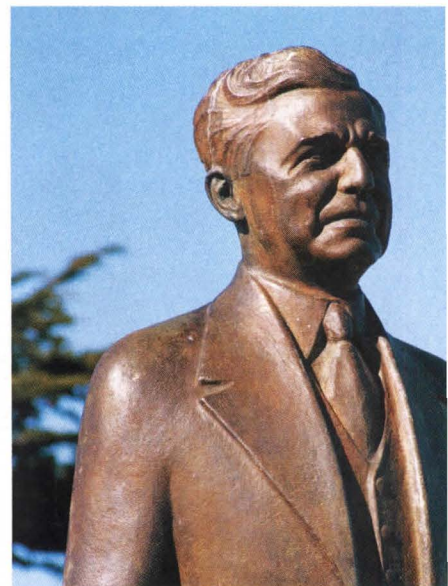
Strauss spent the following years working to raise the money and the support necessary for the bridge, promoting the idea to every community in Northern California that would listen to him. In 1921, he hired Charles Ellis, an academic and engineer, to run the staff of his company and oversee the project, and in 1923 representatives of 21 Northern California counties met to come to an agreement to form the Association of Bridging the Gate, which would become a special district of the state in that same year, created in order to raise money to fund the bridge, largely financed by bridge bonds. The district was officially formed in 1928, with six counties ultimately joining, and in 1930 they voted in a \$35 million bond issue, pledging the value of their property and assets against the bridge. The bridge, thus, would not belong solely to San Francisco but to a set of Californian communities, existing as its own entity.

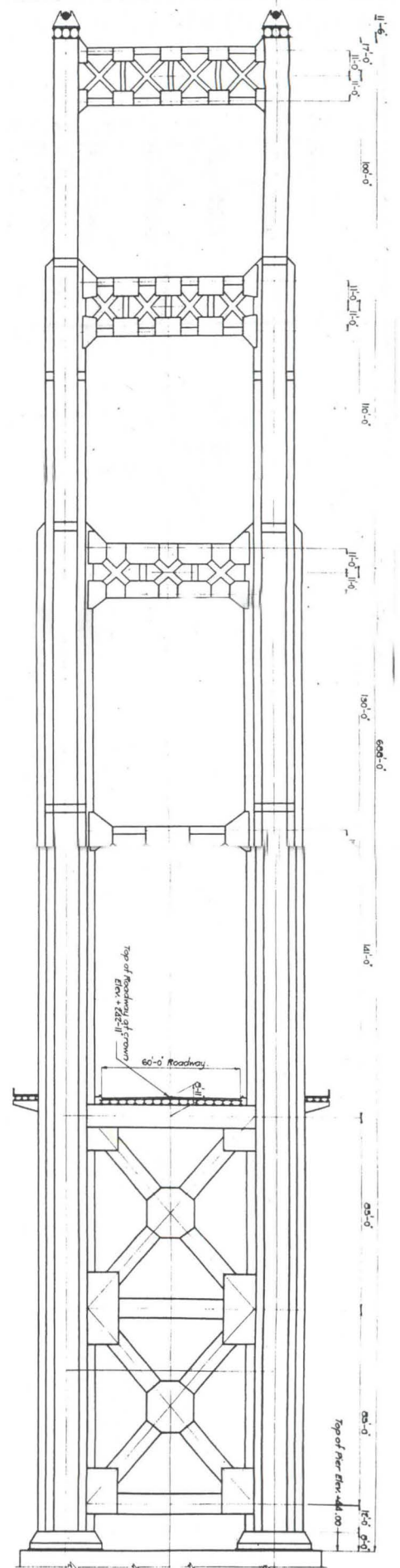
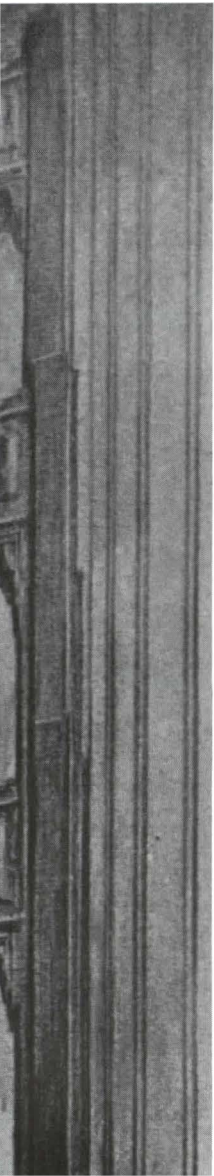
"In the midst of the Great Depression—what a tremendous leap of faith!" Mulligan said, sitting in a conference room in the district offices, which are located yards away from the toll booths at the base of the city side of the bridge. "Because voting in—voting in meant they bet the farm. Literally. They put up their homes, farms, factories as guarantees for the bonds. So the vote meant for 30 years afterward this obligation was mentioned in your deed. Nobody thought it could sustain itself. But it did."

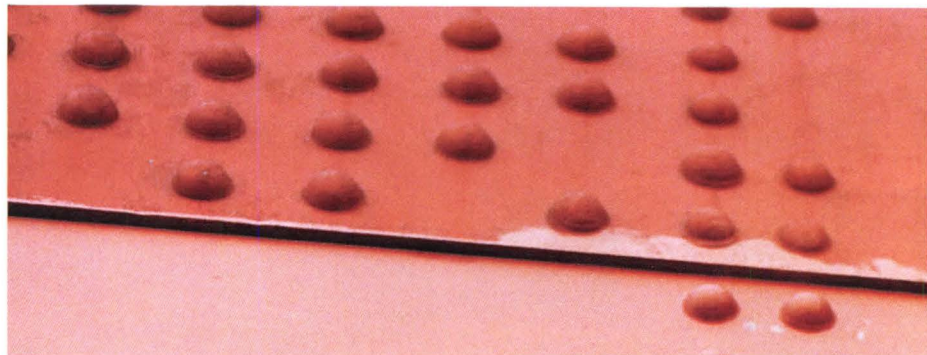
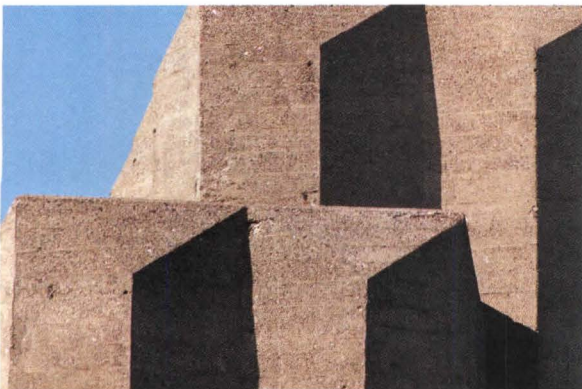
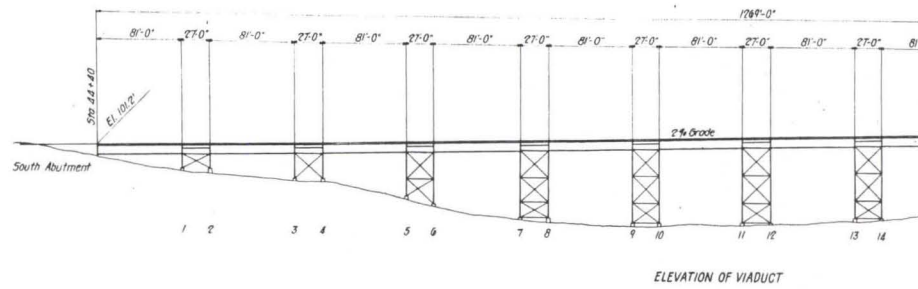
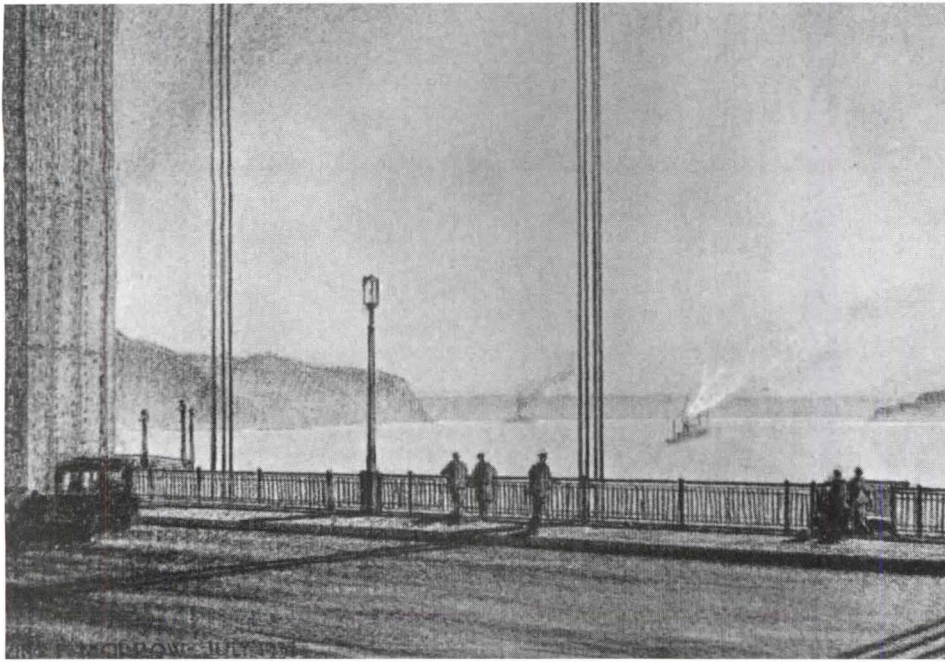
Strauss, born in Cincinnati to an artistic German Jewish family, had founded the Strauss Bascule Bridge Co. in 1902; Ellis, after earning degrees in mathematics and Greek, had started his engineering career at the American Bridge Co. and gone on to teach engineering at the University of Michigan and then the University of Illinois before teaming up with Strauss. They were joined by a host of consultants, including Irving Morrow, a San Francisco architect, and Leon Moisseiff, the Latvian-born designer of New York's Manhattan Bridge. Moisseiff, who was then in the midst of work on the George Washington Bridge, a suspension design, suggested changing the Golden Gate to an all-wire, stiffened suspension bridge, and after a period of resistance, Strauss agreed to change the design and asked Ellis to draw up plans.

Strauss has ever since been known as the father of the Golden Gate—there is a statue of him at the base of it, with a plaque naming him "The Man Who Built the Bridge." According to a host of historians today, however, while Strauss sold the idea—and most are quick to emphasize that Strauss was indeed the visionary behind the push for the span, its great champion and its human face—Ellis deserves much more credit than Strauss for the design.

"The bridge belongs to Ellis more than anyone else," I was told by John van der Zee, whose 1986 history of the bridge, *The Gate*, led to a re-evaluation of where credit should go. According to Kevin Starr, "Joseph Strauss was not much of an engineer. He was a great visionary. And his initial draft of the Golden Gate Bridge was awkward and clumsy, and if by any impossible chance it had been built, it would have been a catastrophe today." But after all of Ellis' work, Strauss fired his deputy in December 1931—no record of his reasons has been uncovered—and Ellis was all but







erased from the record until historians like van der Zee drew attention back to him.

In fact, while researching his revisionist history, van der Zee uncovered documents and letters proving the extent to which Ellis' technical and theoretical work was responsible for the bridge's ultimate design. That it should have taken so long for Ellis to be recognized is a little baffling—although Ellis was listed merely as Strauss' chief assistant in Strauss' 1937 "Report of the Chief Engineer," it was plain to see Ellis' signature as the preparer of every drawing—but perhaps the narrative of the Father of the Bridge had simply become too entrenched.

Construction began in 1933. It was an incredibly ambitious task: The bridge was to be built on the primary spot in California where saltwater and freshwater met, the huge outrush of something like half of all of the state's freshwater sources to the sea, with tremendous currents and narrow spaces to work in, along with terrible weather, wind and fog and constant moisture everywhere. Just 10 years before the bridge was first being considered, San Francisco had burned to the ground in the Great Earthquake; as they prepared to build the bridge, at enormous cost, the 1929 stock market crash occurred and the Great Depression began. The boldness of the idea in the face of such tremendous forces—the earth opening and cracking, the economy falling and flopping—is astounding. Still, with Strauss' political finesse, they managed to push it through.

It took an excavation of more than 3 million cubic feet of dirt to make room for the bridge's anchorages, massive blasting of underwater rock for setting the piles; a 1,100-foot trestle, built out from the south shore, was knocked out first by a ship in the fog and then by a storm. Strauss was assiduous about safety: He was the first engineer to require all workers on a site to wear hard hats, and he built a \$130,000 safety net around the bridge to catch any falling workers. (Nineteen were saved who would have faced certain death without the netting. They called themselves the Halfway-to-Hell Club.) There were accidents—10 men died when a platform on the underside of the roadway collapsed—but on the whole the safety record was surprisingly good for such treacherous conditions on such a huge project.

The result, which came to completion in 1937, was the largest suspension bridge in the world, with the tallest bridge towers ever built: 8,981 feet long, with a center span of 4,200 feet, 220 feet above the water at the center and reaching 746 feet into the air. The Oakland Bay Bridge, which had been completed the year before, had been the longest suspended-deck bridge and the longest cantilever bridge in the world, but its main span only stretched about 2,300 feet; the span of the George Washington Bridge, finished in 1931, was 3,500 feet. *The San Francisco Chronicle* called the new bridge a "\$35 million steel harp."

Its eminently recognizable color—known as "international orange"—came out of an accident. "When they went to construction, they hadn't decided on the color," Mulligan said. "The Navy wanted yellow and black, with diagonal stripes on the towers, but when the steel came out it was primed with a reddish-orange color."

It was a consulting architect, Irving Morrow, who recognized how well it worked. "And he saw that it happened to blend, to blend with the red rock of Marin," added Mary Currie, the bridge district spokesperson, "and how well it blends when you look back on the city with the sun on it."

On the first day the bridge opened, 200,000 people crowded onto it and looked back on the city, up to the north, and out to the ocean.

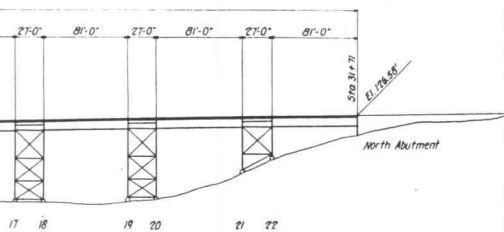
I'D ARRIVED in San Francisco the week after the I-35W bridge in Minnesota had collapsed, and the pack of journalists looking professionally alarmed on television was in high gear. (What other old bridges were moments away from falling? What craven engineers and bureaucrats would they get to

blame? And so on.)

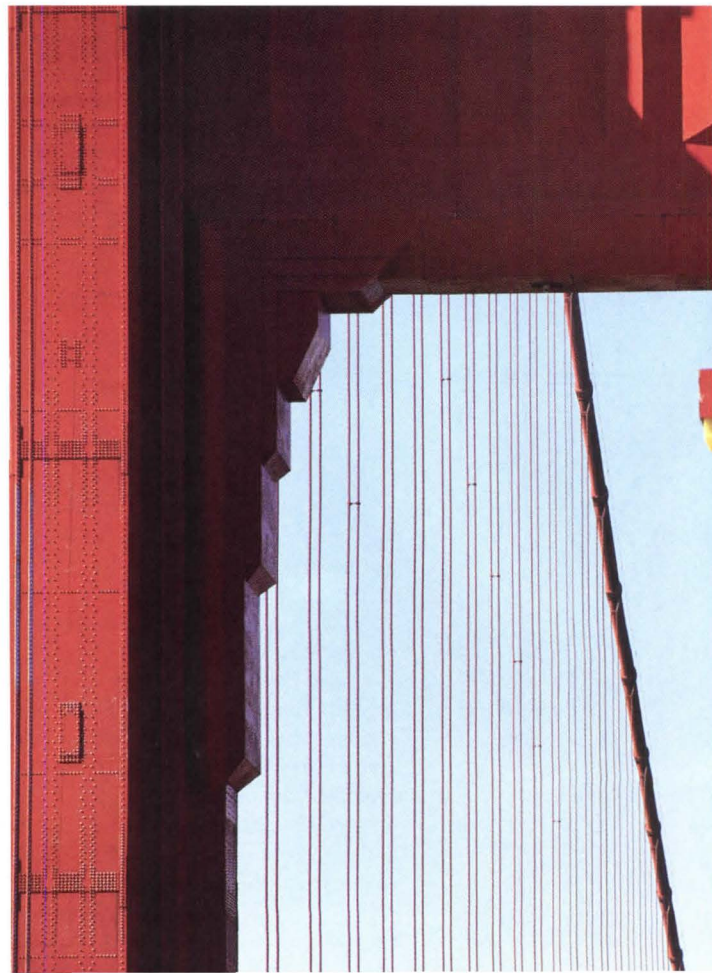
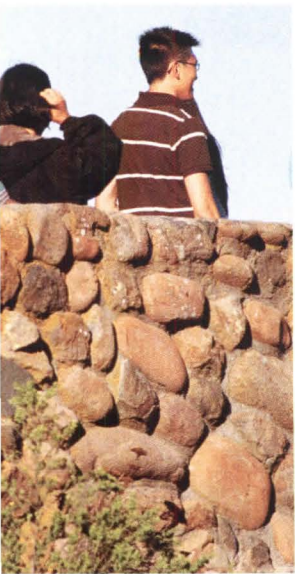
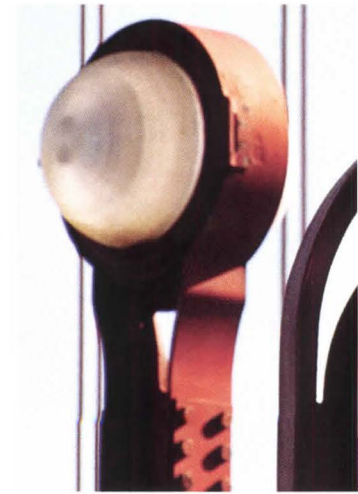
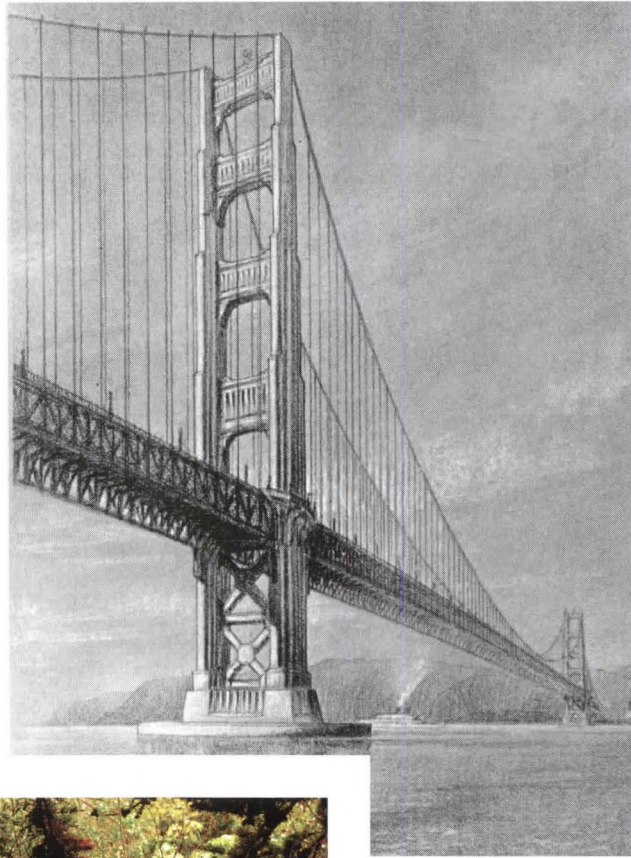
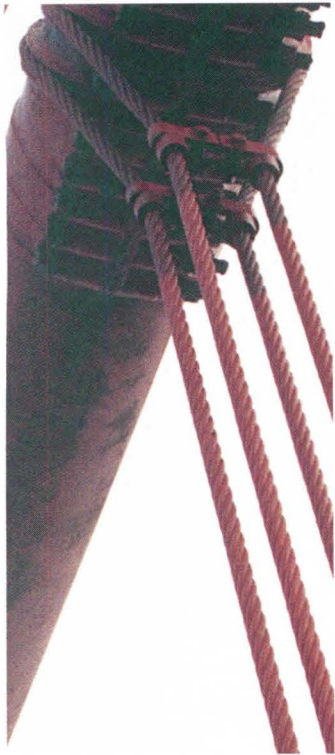
"We inspect every other year," Mulligan told me. "With a primarily steel structure, there's a host of issues—but it's not a welded structure, so we don't have fatigue cracks at welded connections. We don't have fatigue issues."

The issues they do have, he said, include localized corrosion. "It is a marine environment," he said. "The fog comes in and out a few times a day, so it can be dripping wet all through the summer. And there's a high salt content to the fog. But we have, what, three dozen painters and a dozen ironworkers who work full time on maintenance for the bridge. And that's separate from capital projects."

And the bridge, Currie points out, has a strong history of aggressive capital projects. The famous collapse of the suspension Tacoma Narrows Bridge (designed by Moisseiff) in 1940, three years after the Golden Gate was finished, led engineers to re-evaluate the Golden Gate's load capacity and ability to withstand high winds; a lower lateral bracing system was put in in the early 1950s. A major inspection about three decades into the bridge's life resulted in replacement



JUST 10 YEARS BEFORE THE BRIDGE WAS PROPOSED, SAN FRANCISCO HAD BURNED TO THE GROUND; AS THEY PREPARED TO BUILD IT, AT GREAT COST, THE CRASH OF '29 CAME. THE BOLDNESS OF THE IDEA IS ASTOUNDING.



of the suspension cables and rivets in the 1970s and an entirely new roadway deck in the 1980s.

Seismic studies have been essential, of course. "We had to replace the lower lateral bracing for earthquakes," Mulligan said, showing me photographs of the work as it progressed. Another measure was to reinforce the 250-foot concrete pylons that frame the Fort Point Arch, on the bridge's south side, with steel plating—nearly 6 million pounds of it. "Concrete is strong if you push, but weak if you pull. And an earthquake pulls. So we added steel, by chipping off 2 inches of the outer concrete, and putting steel plating on it all the way up." To match the original appearance, they added another 4 inches of concrete on the outside, mimicking the forms of the old lumber impressions in it.

All this work, obviously, costs, and the bridge's finances have suffered of late. The district's major source of revenue is tolls—\$5 coming into the city, free in the Marin direction—which, in 2006, brought in almost \$85 million (the buses and ferries it operates brought in an addition \$23 million or so). But the district still faces a budget shortfall of \$80 million over the next five years.

With that in mind, the district announced this spring that it would be looking into "corporate partnership" opportunities. While Currie says there will be no naming rights, no neon signs or banners, nothing to disturb the bridge's aesthetics or identity, the idea stirred up immediate protest. San Francisco Supervisor Jake McGoldrick, who is one of the bridge district's directors (there are 19 of them, representing the six counties that make up the district authority), told local media, "I think you might as well turn the cathedrals and synagogues into advertising opportunities."

The other controversy is the idea of a suicide barrier. It is estimated that more than 1,300 people have jumped off the bridge in the 70 years of its existence, and it has long been called a suicide magnet. (A study this spring, however, disproved the myth that people come from all over the world to kill themselves here: 85 percent of jumpers came from the Bay Area, it found, and 92 percent from Northern California.)

While critics and proponents of a suicide barrier—among the latter are many bereaved family members of jumpers—debated the issue, last year the district began a \$2 million engineering and environmental study and, this past August, began looking at three basic concepts: adding to the existing railing to increase its height; nets that extend out horizontally; or an all new vertical barrier or railing system. Wind testing, for speeds up to 100 mph, was successfully completed this spring, and preliminary engineering and environmental studies continue. But any decision will be made by the 19 directors, and it's a safe bet to say no one really knows how the vote will go.

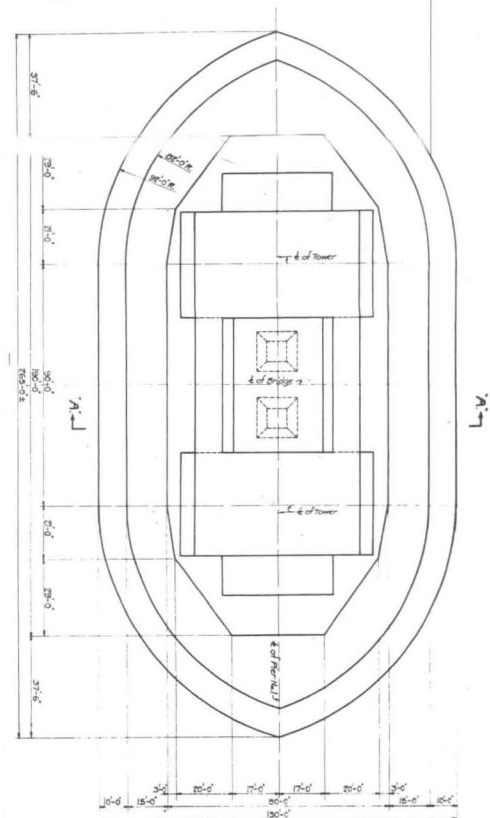
IF THE MEANING of the Golden Gate Bridge were no more than its role as a conduit between a city and its neighbors, then as those places change, surely the bridge must change the same way. The Bay Area still has progressive tendencies, from gay and lesbian rights to immigrant rights, from literate junkies in the Tenderloin to organic food stores in Berkeley. The region might still be at certain vanguards, of the environmental movement, say, or new technology, but think of this: Marin County is the wealthiest county in the United States. San Francisco is the second wealthiest city in the country, and San Jose, just 50 miles south of it, is the wealthiest. The site of revolution has become the seat of capitalism.

Yet I refuse to accept that the Golden Gate Bridge means only silver Land Rovers. Most of the people I talked to said that the bridge meant very personal things to them. George Sumner is a Bay Area artist who was commissioned to create the official painting of the Statue of Liberty for its 100th anniversary in 1986 and then, in 1987, commissioned to do the official painting of the Golden Gate Bridge on its 50th anniversary.

"My father walked over the bridge when it was built," he told me. "I was born in 1940, so I wasn't around yet. But 50 years later, on the anniversary, he came back to do it again. I started from the Marin side and he started from the city side and we met in the middle."

What surprised me about the suicides was the fact that the majority of jumpers apparently choose to jump facing the Bay side, looking at the city. They jump back toward the thing they're leaving, back toward the technological just as they prepare to enter the infinite. The reputation of the bridge as the premier destination for suicides points toward it as a representation of a last exit, the place where the country ends and empties out into the sea, with the bridge as its final gate. But yet they jump backwards, into a beginning, out off the end.

Dan Halpern has written for The New Yorker, Rolling Stone, and other publications.



Text Elizabeth A. Evitts Illustrations Peter Arkle

PARK THIS WAY

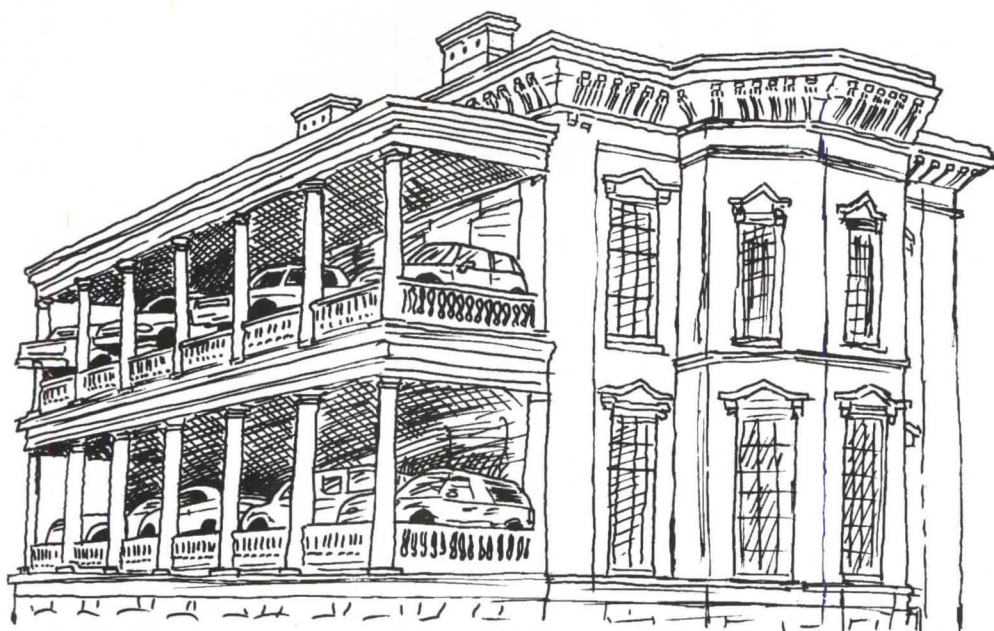
THE MOST UNLOVED—YET
MOST NECESSARY—OF URBAN
STRUCTURES IS TURNING UP
IN SOME UNUSUAL AND
AMBITIOUS NEW GUISES.

IN THE 1976 FILM *All the President's Men*, about *The Washington Post's* investigation of the Watergate scandal, a young Bob Woodward (played by Robert Redford) meets his elusive source, Deep Throat, in the dark recesses of a parking garage on the outskirts of Washington, D.C. An eerie, isolated, concrete mass, it is the ideal setting for their furtive conversations. When conspiring to unmask corruption, what better place to rendezvous than a parking garage at night?

For the most part, parking garages are still utilitarian nonplaces, structures that house cars whose drivers quickly move on to someplace else. But this may be changing. A shift in the way municipalities think about parking, coupled with the introduction of new technologies, is releasing a flood of innovative design with regional flare, mixed uses, and green features.







THE RISE OF REGIONALISM

In the 1980s, Mayor Joseph Riley of Charleston, S.C., did something surprising. He asked architects to design parking decks in the tourist-clogged downtown area that wouldn't look like places you could park. Riley believed that in the case of the parking garage, form should never, ever follow function. "In livable downtown Charleston, we insist that garages look like office buildings and have retail on the first floor," he once told a room of urban planners. "As a result, there are garages in Charleston that you would not know were garages unless you were told."



AT DESMAN'S GARAGE IN DOWNTOWN MIAMI, A FIBERGLASS SCREEN IN THE SHAPE OF A WAVE OBSCURES THE TRUE FUNCTION.

For most parking operators, this is an unnerving prospect. The primary objective behind parking garage design is commodity: How much money can you squeeze out of the spaces available? Developers often argue that changing the immediately recognizable look of a parking garage means that drivers won't know to park there.

Riley proved the naysayers wrong. With the help of his architectural team, he successfully developed busy municipal garages that integrated into the historic fabric of the antebellum city. Instead of heralding the usual street-front access, signage directed drivers down alleys and into rear entrances. This freed the street for pedestrian activity and retail. Instead of

open decks that hover above ground to reveal the pigeon-splattered grilles of cars, garages incorporated clever cladding techniques, like exterior blinds that allow for ventilation while referencing the regional vernacular of the Charleston window.

Today, other cities are following Charleston's lead. In 2004, Chicago rewrote its zoning regulations for the first time in 47 years. After decades of simply encouraging developers to integrate garages into the surrounding area, officials finally formalized design dictates requiring them to do so.

"The city would like to have parking garages not look like parking garages," says Pier Luigi Panicali. Panicali is a vice president in the Chicago office of Desman Associates, a firm specializing in transportation design with seven offices around the country and an international client base.

A licensed architect and a registered structural engineer, Panicali has paid close attention to the evolution of the parking garage since he began his career in the 1970s. "Back then, garages were primarily utilitarian, stand-alone structures created by engineers," Panicali says. "Because of the urbanizing of the U.S., quite frankly, and the growing density in cities, parking garages are no longer a structural engineering specialty. Now [they're] a mixed-use specialty."

Desman has completed several mixed-use developments in Chicago, like a project in the burgeoning North Michigan Avenue shopping district built in 1999. This 1,020-car garage sits on top of street-level restaurants and a retail store. The parking structure is adorned with an aluminum-panel system that hangs from the building at an angle, giving the complex a sculptural feel.

Chicago isn't the only city looking for inventive architecture, according to Panicali. Across the country, Desman is increasingly being asked to build garages that not only creatively disguise the function but also incorporate regionally sensitive design solutions. In a city-owned garage in downtown Miami, for example, a fibreglass screen fabricated in the shape of a wave was affixed to the structure. Inside, planters filled with varying shades of green were set on every level to fill in the trellised screen.

"The lowest levels were very dark-green foliage, the middle levels were a lighter green, and the upper levels were nearly white," Panicali says of the garage, which was completed in 1996. "It looks like a wave pattern in the foliage itself. You can't even tell it's a parking garage behind it."

THE GREEN GARAGE

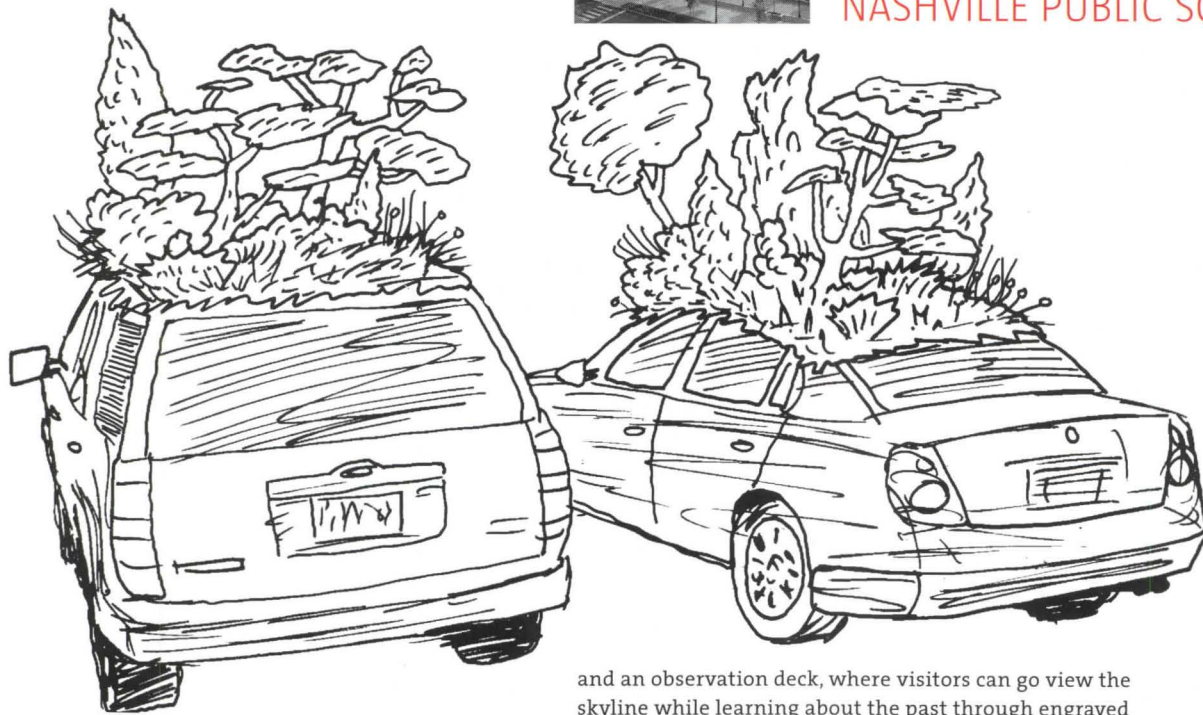
The use of greenery to clad garages is, if you'll pardon the pun, a growing trend. Companies like California-based Greenscreen, which introduced its steel-based trellising system in 1993, are seeing their products specified frequently in new garages. More compelling than a green disguise for a garage, though, is the re-imagining of the garage's very program. Nashville's Tuck Hinton Architects did this when they helped realize the city's desire to transform public parking into an actual park.

The Nashville Public Square Park sits on seven and a half acres near the city's Art Deco courthouse. Once, in the 19th century, this was the heart of downtown Nashville, with commercial buildings bordering a

with a four-acre green roof park that features mainly plants indigenous to the area. Car entrances were placed off the major street grid, giving pedestrians the right of way into the park as well as easy access to the courthouse and the nearby Cumberland River. The architects veiled the utilitarian components of the garage by turning them into focal points. Elevators and stairs, for example, look more like towering monuments. A single elevator services both the garage



TUCK HINTON TOPPED A SUBTERRANEAN GARAGE WITH A GREEN ROOF THAT BECAME THE NASHVILLE PUBLIC SQUARE PARK.



public square and a vibrant farmers market. Ironically, it was car parking that destroyed this historic fabric during the teardown zeal of 1950s urban renewal. The buildings were felled to make way for highways and a surface lot.

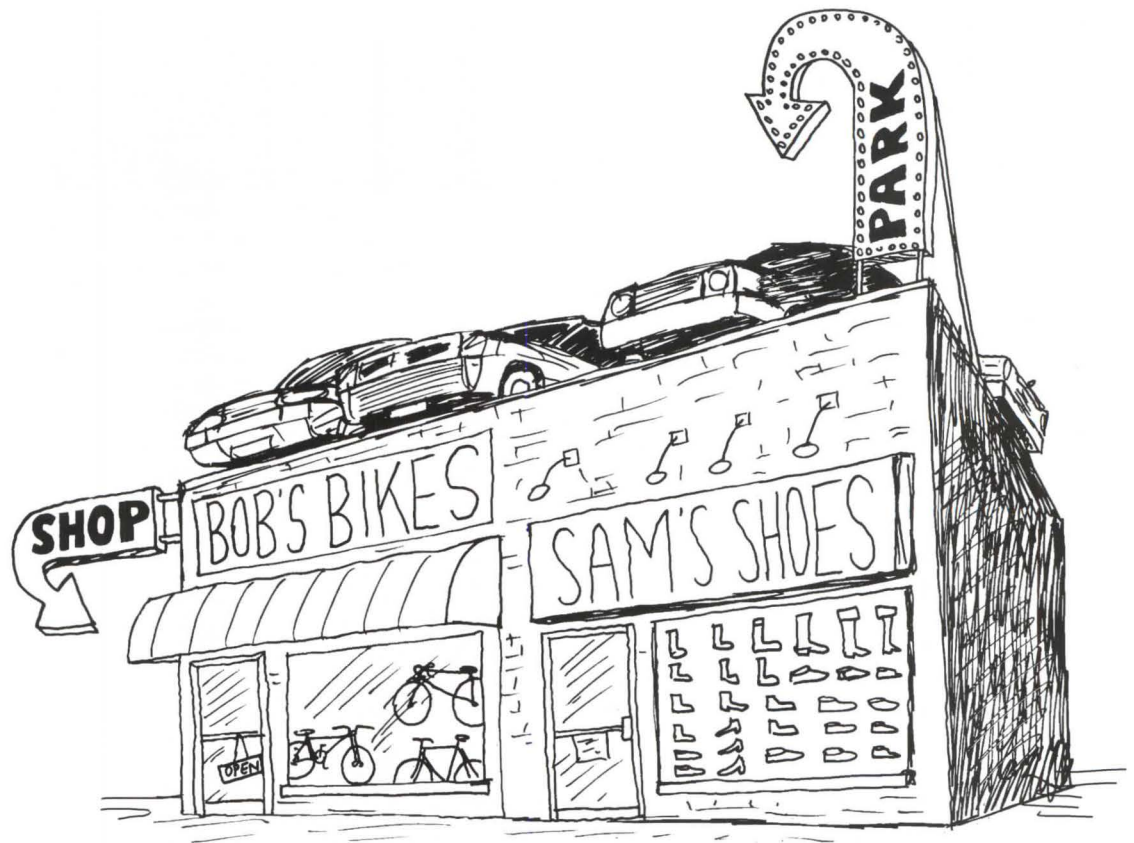
"The surface lot just looked awful," says Seab Tuck, one of Tuck Hinton's principals. After debating whether or not to try and recreate the feel of the former neighborhood, "the mayor decided he wanted to put a park there."

But he also wanted some 1,200 parking spaces.

Tuck Hinton forged a program that honored the history of the site as well as the modern needs of an urban setting, and in spite of being a car-centric project, the pedestrian experience dictated the design. In collaboration with landscape architecture and engineering firms, the architects dug 60 feet into the bedrock and topped a seven-story subterranean garage

and an observation deck, where visitors can go view the skyline while learning about the past through engraved granite markers. "History infused this area," Tuck says. "Andrew Jackson had a duel here." The roof park earned a 2007 Green Roof Award of Excellence from Green Roofs for Healthy Cities.

The roof of a green garage that opened in Santa Monica, Calif., in March is given over to photovoltaic panels, which provide all the energy needed to fuel the seven-story structure, designed by Moore Ruble Yudell for the Santa Monica Civic Center. This is the first LEED-certified parking facility in the country. Undulating façades of precast white-ribbed concrete panels and multicolored channel glass cloak 900 parking spaces. From inside, the architects provide views of the nearby Pacific Ocean.



THE NEW PARKING PROGRAM

When talking about parking garage design, how do you get your client to think outside the box?

Often, it starts by making the design conversation a program conversation, according to Christopher Giattina, principal and director of Giattina Aycock Architecture Studio (GA Studio) in Birmingham, Ala. Giattina says it's about helping clients rethink the way they can use land set aside for parking in the first place. "An owner generally thinks commodity," Giattina says. "I've never had anyone say, 'I really want a beautiful parking deck.'"

As a result, Giattina says, the average parking garage becomes a dead space, a big blank wall that can thwart contiguous streetscapes and the pedestrian

Children's Health System. At the start, the client wanted to use the parcel of land to expand parking for its hospital in Birmingham. Giattina questioned the client about other infrastructure needs and learned that the hospital also required space for the data center. He suggested incorporating both needs into the same plan, using cost-effective building materials. The client agreed—on the condition that the data center sit on top of the garage.

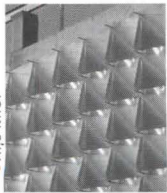
"We then asked them: 'Do you want to have a campus that obliterates a full city block at the pedestrian level?' And they said, 'Well, no,'" Giattina recounts.

The client ultimately agreed to invert the model and put the data center beneath the garage. GA Studio wrapped the data center in a two-story band of clear glass, enlivening the street and giving the pedestrian a view of activity inside the building. On the upper floors, the architects camouflaged the garage with cost-effective 5-foot-by-5-foot perforated steel panels, which they designed in-house.

During the day, the panels mask what is inside the garage but allow drivers to see out. At night, they glow from the light inside. The cost of the panels came in at about \$14 each, and GA Studio is now looking to bring them to market.

"There was a little pushback, even from this client, who we've worked with for many years, but they embraced it in the end," Giattina says. "Ultimately, you have to understand that this is a commodity-driven function, and you need to frame it as an economic opportunity."

IN ALABAMA, GA STUDIO DESIGNED A SKIN OF PERFORATED STEEL PANELS THAT LETS DRIVERS SEE OUT AND GLOWS AT NIGHT.



JOHN O'HAGAN

experience. "So how do you cleverly solve parking deck design with a client?" Giattina asks. "If you talk about it from a design perspective, the conversation is relatively short. But if you quit thinking of it as a parking deck alone and think of it as available land to solve multiple issues, then you can engage in a broader dialogue."

In 2006, Giattina and his team completed a data center and a parking deck for a longtime client, the

AUTOMATIC DELIVERY

In the end, commodity is still king when it comes to parking. But as land becomes more costly everywhere, and as developers look to bring new high-rise projects into dense urban areas, the very way we park is changing.

Robotic garages started coming to the United States about five years ago, mainly to the New York metropolitan area. Often used in land-starved European cities, automated parking garages can glean up to 50 percent more spaces than traditional parking decks by stacking cars one on top of the other in racks. In a fully automated setup, drivers pull into a parking bay, where the car is turned off and whisked away for storage by robotic machinery.

The garages cut back on emissions and on staffing costs, since no attendants are necessary. Still, at an average of \$25,000 per parking space to develop, they are by no means cheap.

AT AN AVERAGE OF \$25,000 PER PARKING SPACE TO DEVELOP, AUTOMATED GARAGES AREN'T CHEAP.

Lee Lazarus, the president of Manhattan's A.P.T. Parking Technologies, says the payoff comes in other ways. "Land values have increased so much that development costs have brought about a change in the perception of parking," Lazarus says. An automated garage can shrink the space taken up by parking, allowing more revenue-generating space to be designed into a given development.

In major metropolises, Lazarus notes, developers are trying to get more out of smaller parcels of land. A.P.T. is about to install one of its garages as part of a \$200 million project under development by AIG Global Real Estate Investment on the Boston waterfront.

"The site is completely landlocked on the Boston Harbor, and they could not fulfill their parking needs unless they used automated parking," Lazarus says.

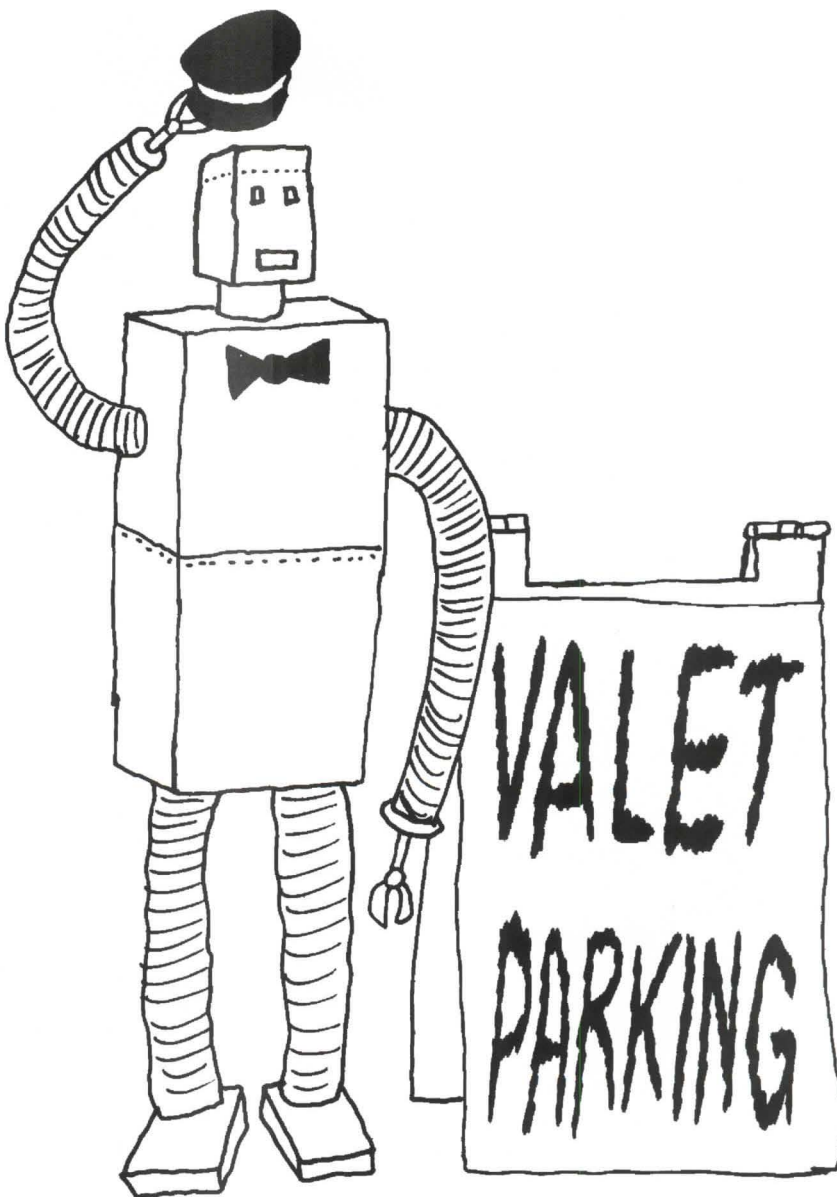
A.P.T. is also on the short list of vendors under consideration for a high-rise office project being designed by Hickok Cole Architects in Washington, D.C. "We basically have to use a mechanical parking system because of zoning requirements in D.C.," explains Mark Arnold, a senior project manager who has since left the firm. "You have to have a certain amount of parking for the height of the building."

Before Hickok Cole could include mechanical parking in its program, it had to go before the District of Columbia's zoning board for approval, which it received. Lazarus says that architects have been instrumental in getting mechanical parking onto the radar of planning officials; as a result, his firm is now

working on projects in five cities. "Because a lot of architects have raised this issue with municipalities, the municipalities are beginning to embrace the idea," Lazarus says.

In the D.C. project, Hickok Cole plans to use the mechanical parking system to reduce the 9-foot-by-19-foot standard space normally required in a D.C. self-park garage. "In this situation, you don't need to get access to a car, so it allows you to increase the number of vehicles you can put in," Arnold explains. "Where we would have had room for nine cars in a traditional garage, we now have room for 43 cars."

Bob Woodward and Deep Throat could never have met here.





Text Sudip Bose
Portrait Michael Warren

IN 1816, LORD BYRON left his home in England and, after traveling through Belgium and Switzerland, eventually made his way to Italy, where he encountered, among other things, the Roman Colosseum. “A ruin—yet what ruin!” he wrote in the fourth canto of the long poem “Childe Harold’s Pilgrimage.” It was the decay and emptiness that particularly appealed to him: the “seats crush’d,” the “walls bow’d,” and “the arena void” in which he heard the echo of his voice.

That void has now, in a sense, been filled. In June, at a public ceremony in Rome, scholars from

streets, and bridges, many of which you can see online (at www.romereborn.virginia.edu) in a series of images and video clips. An interdisciplinary team of specialists—archaeologists, architects, structural engineers, and textual scholars—contributed to the project, which was headed by Frischer and Diane Favro of UCLA’s classics department. In addition to the Plastico, the team relied on archaeological data, literary sources, and ancient plans and catalogs, such as the Severan Marble Plan of Rome (from the third century) and two fourth-century catalogs of landmarks and

rome REBORN

WITH 3-D MODELING, SCHOLARS BRING AN ANCIENT CITY BACK TO LIFE.

three institutions—the University of Virginia; the University of California, Los Angeles; and the Politecnico di Milano—presented the results of a 10-year collaboration: a 3-D computer model of ancient Rome. Called Rome Reborn 1.0, the project draws on archaeological evidence, literary texts, and artistic representations through the centuries to recreate what the city looked like at its peak in A.D. 320.

Rome has been modeled before. A plaster representation known as the Plastico di Roma Antica was created from 1933 to 1974 and can still be viewed in the city’s Museum of Roman Civilization. Bernard Frischer, a classical scholar who is head of the Institute of Advanced Technology in the Humanities at U.Va., first encountered the massive model—which stretches to a length of some 50 feet—more than 30 years ago, while studying at the American Academy in Rome. He was immediately taken with it. “I grew up in a family that had humanists in it,” says Frischer, “but we had engineers among us as well. When I saw the Plastico, I thought, ‘Wow, we’ve got to use technology to get this wonderful model out of this room.’”

Rome Reborn is the culmination of Frischer’s three-decade-old dream. The computerized model includes monumental buildings, temples, houses, aqueducts,

structures known as the *Curiosum* and *Notitia*.

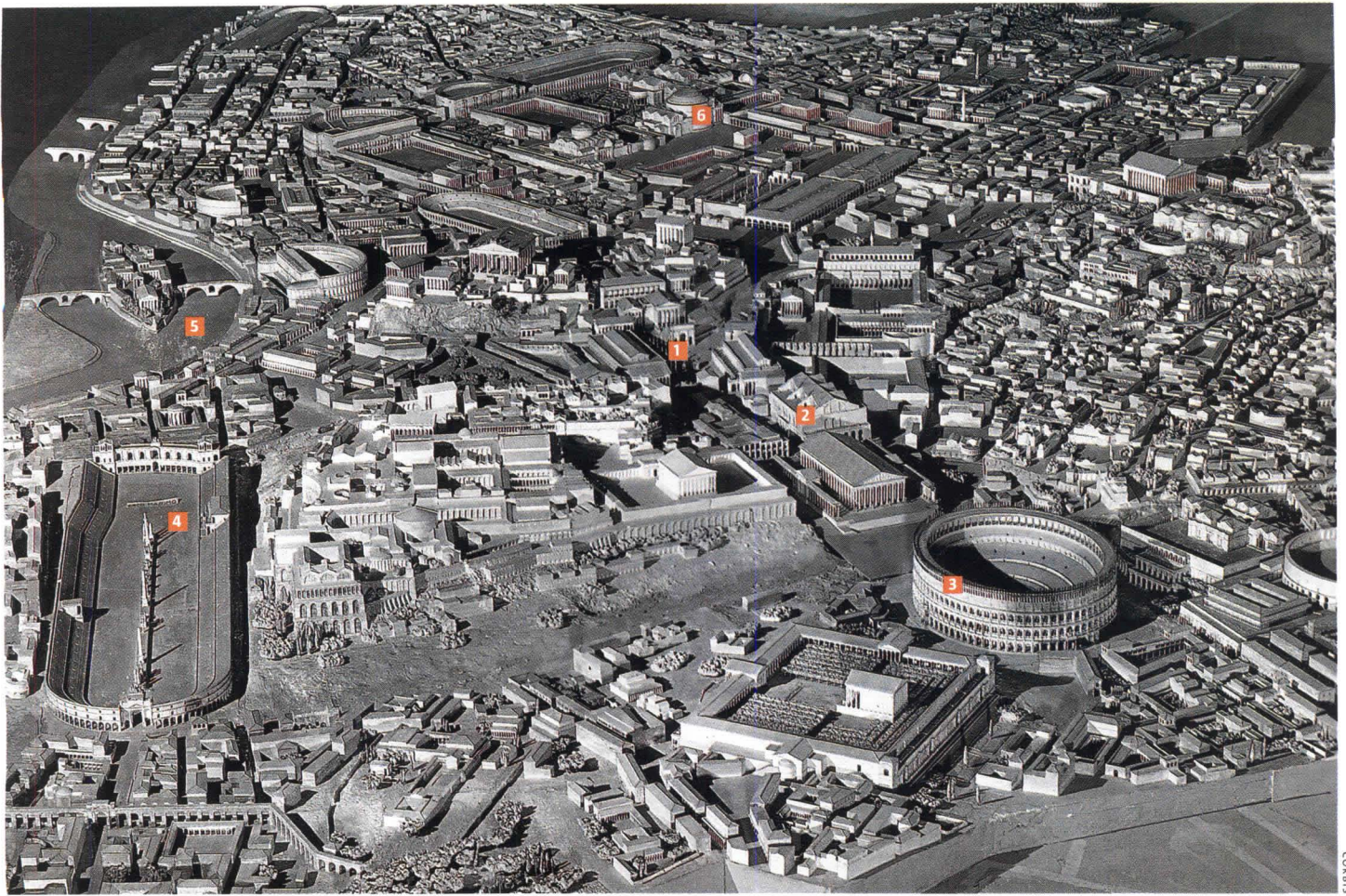
The laws and principles of ancient architecture served as logical guides. “The diameter of a certain column base,” says U.Va.’s Dean Abernathy, an architect and the project’s director of 3-D modeling, “would determine the column’s height, and that would then help determine the entablature, and so on. In a building like the Pantheon, there’s so much evidence in the brick walls, for example, in the holes that tell you where and how the beams were socketed.”

The model gives scholars a “more robust understanding,” Favro says, of such buildings as the Roman Senate House, which is located in the Roman Forum. Today, after centuries of decay, the interior of that structure is spare, the mosaics and painted stucco that once decorated the walls long gone. In the model, however, the colors pop, not only on the walls but also on the floor, with its stylized rosettes and vivid greens, yellows, and reds.

“The idea wasn’t to make a hyper-realistic recreation,” says Favro, “but rather a representation based on what scholars know about the buildings of fourth century Rome. We didn’t put in certain elements if we couldn’t confirm their existence. We might know that a certain building was painted, but we might not

Pictured on the suitably neoclassical campus of the University of Virginia, faculty members Dean Abernathy (far left) of the School of Architecture and Bernard Frischer of the Department of Classics have helped create a digital model of the city of Rome in A.D. 320. Their collaborator on the project is University of California, Los Angeles, classicist Diane Favro, who is currently abroad.

→ An exclusive video fly-through of ancient Rome, narrated by Bernard Frischer, is available online at www.architectmagazine.com.



CORBIS

1	2	3	4	5	6
ROMAN FORUM Built starting c. 700 B.C.	BASILICA MAXENTIIUS A.D. 306	COLOSSEUM A.D. 70	CIRCUS MAXIMUS Used from c. 600 B.C.	TIBER RIVER	PANTHEON A.D. 118–125

know which walls contained paint, or the colors.”

In many cases, the computer model has actually changed the accepted scholarly opinion about what a particular building looked like. While modeling the Basilica Aemilia, whose monumental gallery bordered the square of the Roman Forum, the team relied on a two-dimensional reconstruction done by a German scholar named Heinrich Bauer. But when the 3-D computer rendition was completed, it turned out that Bauer had misplaced a staircase. Abernathy says that such revelations, both small and large, are regular occurrences. “I would be surprised if there was no debate,” he says. “So much of this work is subjective.”

That inherent subjectivity points to the advantages of a digital model over any two-dimensional representation. “This isn’t an exact science,” Favro says. “We can never know exactly what a building looked like in antiquity. Someone can make a beautiful ink drawing of a site, but then somebody else will find a new column that belongs to the site that wasn’t known before, and now you have to revise that drawing. With digital models, you can incorporate changes easily. You can have multiple versions of a site. The model is always growing.”

The name Rome Reborn 1.0 suggests that versions 2.0, 3.0, and 4.0 will be released in the future. The next technical challenge, Favro says, is making the website interactive in real time, allowing visitors to navigate

their way through the city’s ancient streets, lingering upon a temple frieze or statue. And the model will eventually move beyond A.D. 320, to document how Rome changed over time, from the late Bronze Age until the fall of the Roman Empire.

“We think we have a technical solution for running the model in real time on the internet,” Frischer says, though it depends on an as-yet unofficial promise of a two-year grant from a federal agency. Putting the model online would allow hundreds of thousands of people around the world to freely explore a virtual Rome on their PCs.

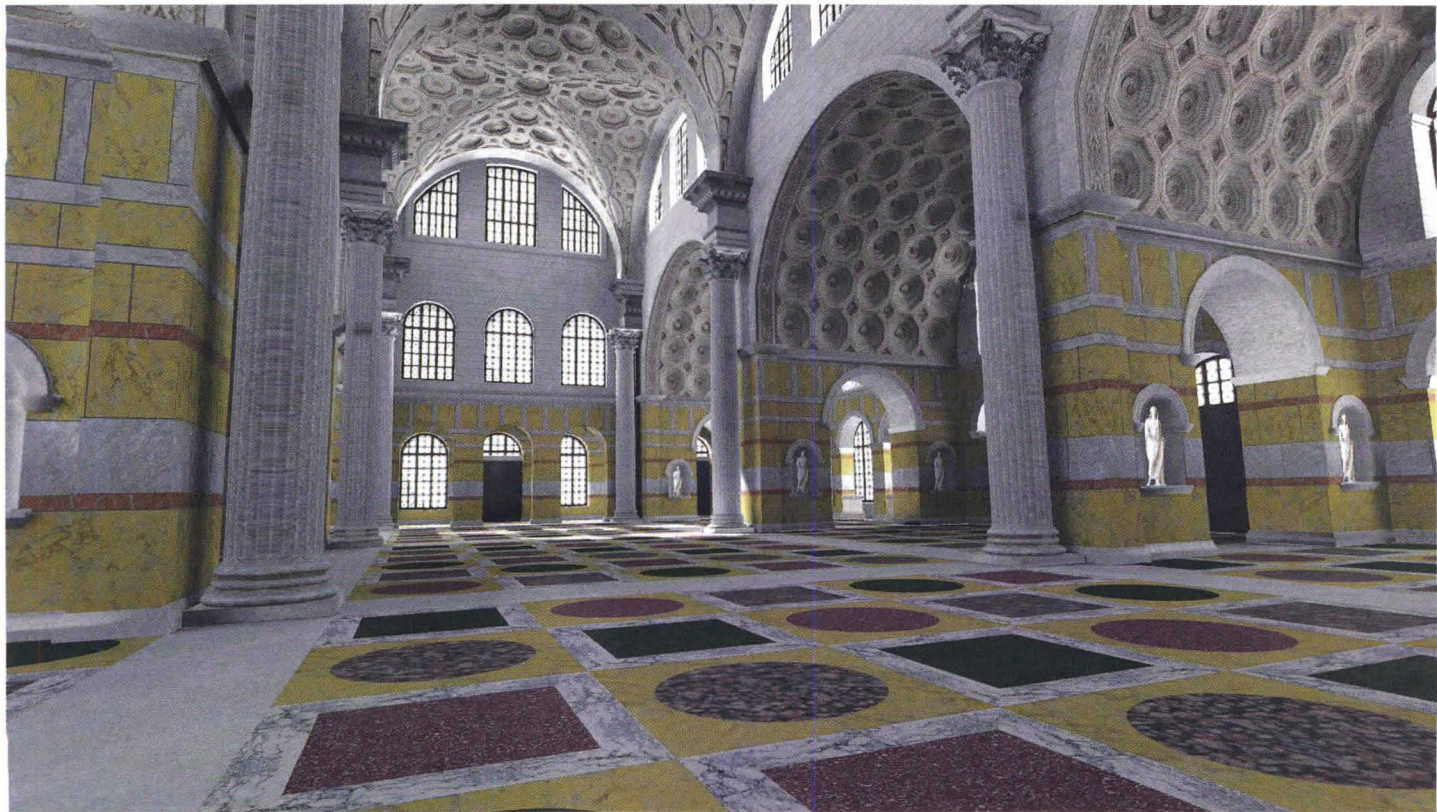
Today, if you visit the Colosseum or the Roman Forum in person, you can use a handheld device—called the “Time Machine”—on which the Rome Reborn model has been loaded. Using it to navigate through the ancient structures provides “an immersive experience,” Frischer says, allowing you to visually impose long-vanished architectural features on the ruins.

Rome Reborn is not meant to replace a visit to Italy. “There’s a certain poignancy to a ruin,” Favro says. “These models are not substitutes for going to a Roman site, where you can feel the wind and smell the smells.” The future Byrons of the world could hardly be disappointed at that.

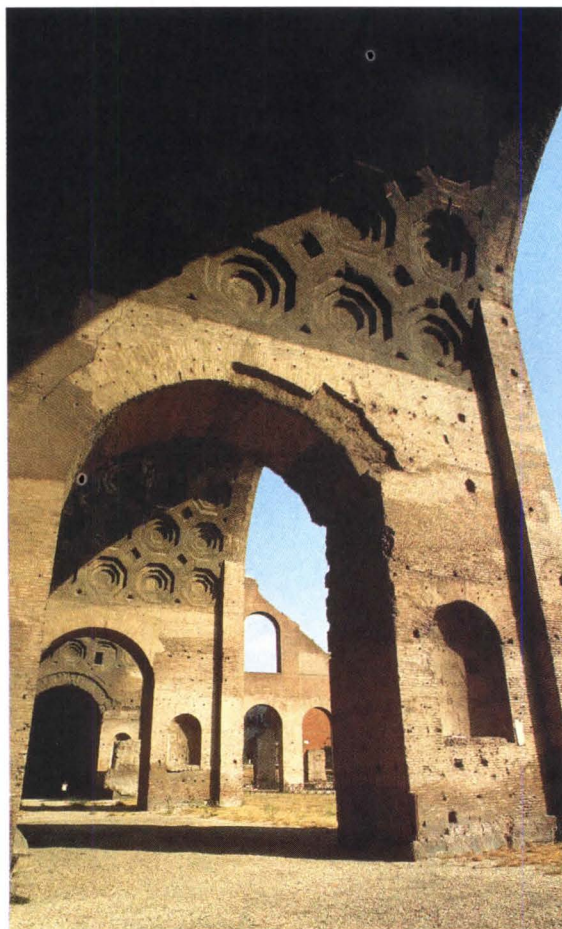
Built at a scale of 1:250 and measuring more than 250 square feet, the Plastico di Roma Antica (above) is a plaster model of the ancient city of Rome housed in the Museum of Roman Civilization. It depicts the city in the early fourth century, when its population was about 1 million.

Sudip Bose is the senior editor of Preservation magazine.

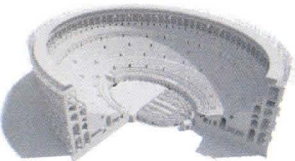
basilica MAXENTIUS



Paved in yellow, red, green, and purple marbles in a pattern of circles and squares, the floor of the Basilica Maxentius (above) recaptures its original splendor in the Rome Reborn model. The grandeur of the structure, however, is still clear from the physical remains: coffered barrel vaults (right) stand 80 feet high, and the three arches stretched alongside the nave (far right) indicate the basilica's immense size before the rest likely collapsed in an earthquake in A.D. 847.



LOCATED BETWEEN the Roman Forum and the Colosseum is the Basilica Maxentius (or Basilica Nova), which served as both a law court and a reception hall for the emperors. The structure was started by the Emperor Maxentius in A.D. 306 and completed less than a decade later by the man who defeated him, Constantine. The basilica's long central nave is flanked by an impressive series of concrete barrel vaults and is anchored by Corinthian columns. A video clip on the Rome Reborn website takes you through the majestic space, rising up to the canopylike ceiling, hovering over the geometric patterns on the floor, and moving finally to a large statue of a seated Constantine (whose marble head, hands, and feet are now in the courtyard of Rome's Palazzo dei Conservatori).



Social stratification: The Colosseum's four tiers of spectator seating (visible in an aerial photo, right, and in the cutaway graphic above) inverted the class structure of Roman society, with top-ranking senators getting the lowest, closest tier; knights occupying the second-lowest; ordinary citizens above them; and the poor and slaves at the top. Under the wooden floor of the arena (below right) is a warren of holding cells for men and animals.



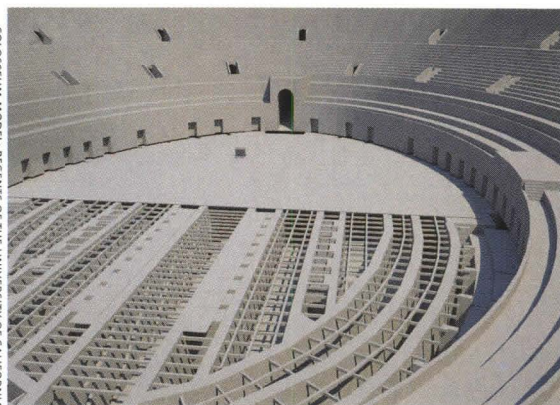
CORBIS

the COLOSSEUM

THE COLOSSEUM, that blood-soaked haunt of Roman gladiators, was begun in A.D. 70 by Emperor Vespasian and finished 10 years later. This largest of Roman amphitheaters, which seated close to 50,000, incurred damage from earthquakes and fires and was repaired many times throughout its history. The last gladiatorial contests were probably held there around A.D. 435, though animal hunts continued for another century more.

In the new model, viewers can see the exterior of the four-story Colosseum (Vespasian finished only three stories before his death in A.D. 79; his son Titus completed the rest), topped by a network of 240 wooden masts that supported awnings for shade. You can go through a series of arches, then passageways, and dramatically enter the 270-foot-long arena, whose

COLOSSEUM MODEL: REGENTS OF THE UNIVERSITY OF CALIFORNIA



substructures held animals and men beneath layers of sand and wooden planking. Then descend into the network of tunnels—which included VIP passages for the emperor and vestal virgins and a connection to the gladiators' barracks just to the east—before emerging into daylight once more.

CD-Rome: Technology that inspired the model

From the 1970s onward, Bernard Frischer experimented with different technologies in his quest to simulate the ancient city of Rome. While a fellow at the American Academy in Rome in 1975, Frischer met urban designer Donald Appleyard of the University of California, Berkeley. Appleyard had developed a system of video editing that presented models of new architectural projects within the context of the surrounding neighborhood and city. Appleyard died in 1982, but his work gave Frischer the idea to translate the plaster-of-paris model of ancient Rome into video form.

From 1978 to 1980, a research team from the Massachusetts Institute of Technology created the Aspen Movie Map, a navigable, touchscreen tour of Aspen, Colo., that was a breakthrough in interactive media. The team mounted four 16mm film cameras on top of a car and drove down the center of every street in Aspen, capturing front, back,

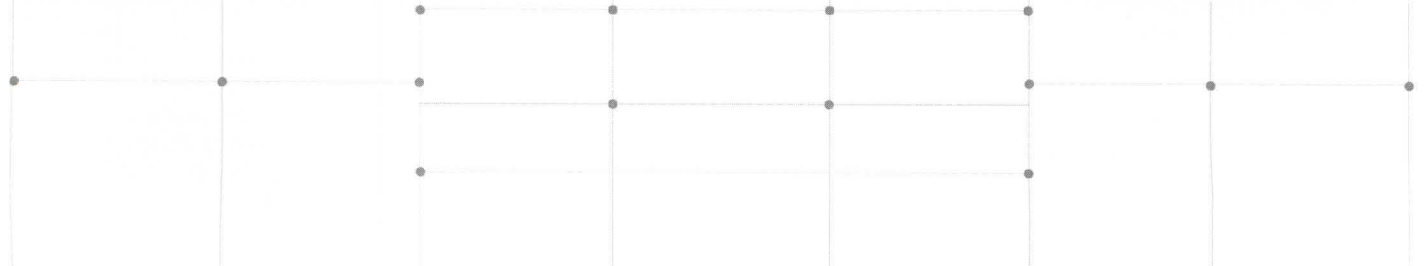
and side views. The scenes were transferred to laserdisc and linked to a street plan of Aspen. "My idea was to use the same approach, with miniature cameras going up and down the streets of the [Rome] model," says Frischer. So he did some test shots of the plaster model to see if it would support a close-up view. It didn't. "Eighty percent of the surfaces of buildings in that model have no detail at all," Frischer says. "So the idea of a videodisc didn't fly. But the vision of simulating ancient Rome stuck with me."

The advent of 3-D modeling software proved more auspicious. The buildings and terrain that constitute the urban fabric in Rome Reborn 1.0, based on a laser scan of the Plastico, were modeled with Maya software, textured with Google SketchUp, and then imported into MultiGen Creator. Finally, says Kim Dylla, a systems operator who works with Frischer, the Creator model of the whole city was converted to an OpenSceneGraph binary format for real-time viewing.

—AMANDA KOLSON HURLEY



GRAM GREEN



Text Vernon Mays

Visitors approaching the Grand Rapids Art Museum from the adjacent park ascend a broad, gentle stair to the entrance pavilion; its transparent walls offer an inviting glimpse into the 5,000-square-foot lobby. The large front portico—a concrete slab 140 feet wide and 120 feet deep—gives protection from the elements in the harsh winter and shade in the summer.

FROM THE MOMENT he penciled his first sketch for the new Grand Rapids Art Museum (GRAM) in Grand Rapids, Mich., architect Kulapat Yantrasast was inspired by more than art. A native of Thailand and a partner in the Los Angeles firm Workshop Hakomori Yantrasast (wHY), Yantrasast, 39, felt compelled to layer the building's primary role—as a place for displaying art—with activities that would naturally attract people. As he explains, “The museum experience has become an urban experience.”

Seen in this light, the 125,000-square-foot museum, which celebrates its opening on Oct. 5, is a boon to Grand Rapids, a metropolis of 1.3 million people. Located on a high-profile urban site fronting Monroe Street, a main thoroughfare in the heart of downtown, the monumental concrete-and-glass edifice stakes its claim to respectability with a broad canopy that hovers over the northern edge of Ecliptic Park, a popular urban oasis and wintertime skating rink designed by Maya Lin several years ago.

The building, distinguished by this floating concrete canopy and three articulated towers that announce the presence of galleries, strives in many ways to engage the city. Fundamental to Yantrasast's scheme was to load the front with active spaces that extend like fingers toward the park. The museum lobby, cafe, and art education center occupy separate volumes that are programmed for heavy public use. In contrast, Yantrasast likens the rear portion of the building to a sanctuary, where patrons are allowed the privilege of a quiet encounter with art. To get there, visitors pass through a pavilion of concrete, granite, and glass that is filled with natural light, the glitter from a rooftop reflecting pool, and a striking, 26-foot-tall Ellsworth Kelly diptych.

The new \$60 million GRAM triples the size of the museum's former home in a Beaux Arts federal building, with 18,000 square feet of gallery space for traveling exhibitions and the museum's permanent collection (which is dominated by modern paintings and works on paper). Having learned of Yantrasast through his work as project architect on Texas' Modern Art Museum of Fort Worth, GRAM director Celeste Adams came calling on him after running afoul of an earlier design team, whose proposal for a timber-framed building with a glass roof raised concerns in this often-frigid city about 30 miles inland from Lake Michigan.

Yantrasast, a protégé of Tadao Ando, favored concrete construction. “Sand and gravel come from local sources, so [concrete] is sustainable,” he notes. “And if you pay close attention, it is an extraordinary material.”

The project is a giant leap forward for a practice as young as wHY, which was formed in late 2003 by Yantrasast and partner Yo Hakomori, who gained experience on several large-scale projects while employed by Frank Israel and Arthur Erickson. The two principals, who met while in the Ph.D. program at the University of Tokyo, now manage a staff of 13.

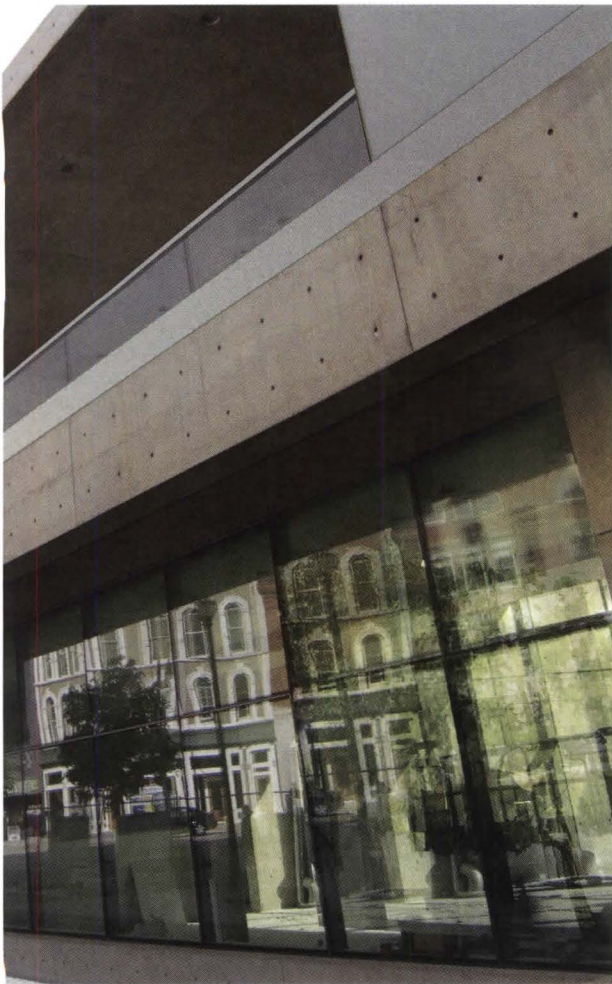
Heralded as the first LEED-certified art museum in the country (a distinction that is hoped for, but not yet confirmed), GRAM received its impetus for sustainability from Peter M. Wege, a local cultural philanthropist and environmental advocate whose Wege Foundation provided the project's \$20 million lead gift. The daylighting strategy for the galleries and public spaces was a starting point, reducing the dependence on artificial light and—by using high-quality insulated glass—also minimizing heating and cooling costs. Particularly where there are large expanses of glass, exterior louvers and interior fabric scrims are added to reduce heat gain and diffuse light.

Yantrasast reports that more than 20 percent of the construction materials came from local sources, and more than 10 percent of materials (including building insulation and carpeting) have recycled content. Rain and snow water that lands on the building is collected in a tank beneath the reflecting pool. From there, it is recycled in various building systems including toilets, plant irrigation, and the pool itself, which aerates the water as it spills down a water wall.

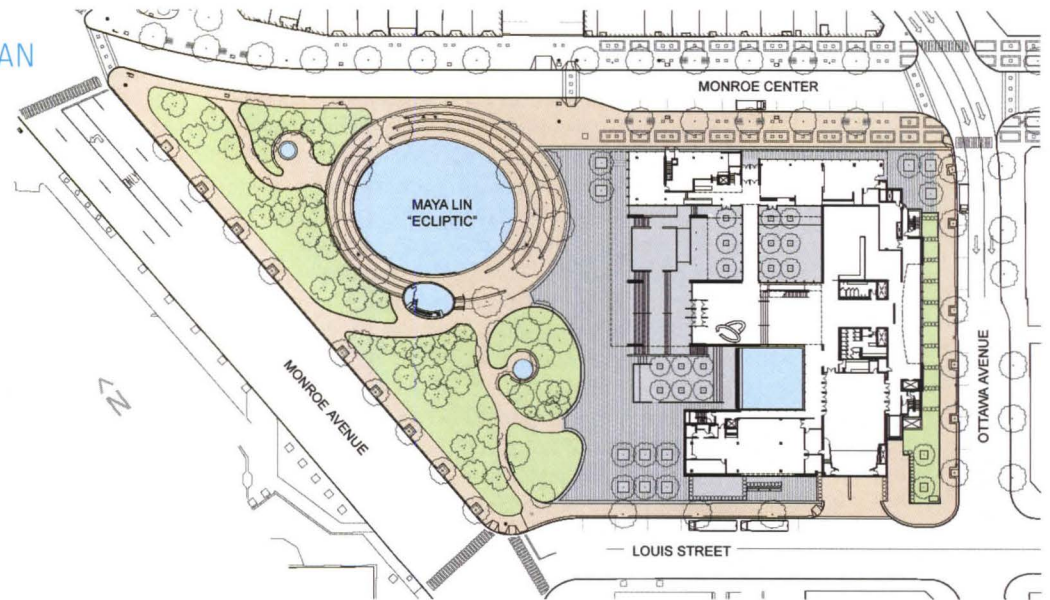
An important aspect of the building's HVAC system is an innovative system of energy wheels. The three 12-foot-diameter wheels, giant blue discs that rotate constantly inside metal housings the size of railroad boxcars, transfer desirable temperature and humidity from conditioned air as it vents out of the building to the fresh air that is continually brought in. “This was the right thing to do, because it didn't seem like we were trying to catch a grasshopper with an elephant,” quips Yantrasast. “The investment and the outcome were in balance.”

The same equation could be applied to the museum as a whole, in which a fair investment placed in the hands of a responsible architect yielded a landmark that is both respectful of its place and assertive enough to make that place better. Unlike so many recent museums, GRAM, with its restrained materials and simple forms, does not shout for attention. But the museum's appropriate scale, balanced articulation of surfaces, and welcoming programmatic gestures extend an invitation that will likely make art more accessible—and more social—in Grand Rapids.

IN MICHIGAN, KULAPAT YANTRASAST OF WHY ARCHITECTURE DESIGNS WHAT IS SET TO BE THE NATION'S FIRST LEED-CERTIFIED ART MUSEUM.



SITE PLAN



FACING THE CITY

At night, the gallery lanterns (top) make a striking presence on the skyline—lending the quiet building the quality of a civic landmark. Three layers of insulated glass and a layer of scrim material diffuse the light emitted but protect the artwork within.

Streets and sidewalks border the museum on three sides, so Yantrasast wanted each building face to nod to its surroundings. Colored spandrel glass softens the building's southern façade, which fronts the administrative offices and classrooms.

A site plan (above) illustrates how the building extends fingerlike projections toward Ecliptic Park. Negative spaces between these wings include a pocket park, outside seating for the museum cafe, and a sculpture court that reaches deep

inside the museum. The project also incorporates small green spaces around the perimeter with a water-efficient landscape design.



JIM WARK, COURTESY YALE UNIVERSITY

NEW HAVEN, CONN.

A Field Guide to Sprawl Yale University Through Oct. 19

Proponents use a neutral term—exurban development—to explain the phenomenon of suburb creep. But Dolores Hayden, Yale professor and architect, describes the outer ring as a disastrous combo of “privatopias” on “pork chop lots” in “zoomburbs.” Hayden imparted this new, acid-tinged vocabulary in her 2004 book, *A Field Guide to Sprawl*, which was accompanied by dozens of

aerial photographs by Jim Wark.

An exhibition at the Yale School of Architecture takes its name from the book and its spirit from Hayden. But it began with a gentler exploration by the Hudson River Museum of Westchester County, N.Y., as the quintessential American dream burb. The Westchester show was redesigned and installed by Dean Sakamoto in the future home of the Yale sculpture department, which the architecture school will inhabit for the next year.

Nostalgia can make the tough lessons

go down more easily, but fond memories of *The Dick Van Dyke Show*, featured in the Hudson River Museum project, won't take the sting out of unbridled growth or eliminate the need to ask what the progeny of Henry Ford and Levittown are doing with the nation's green acres.

In Hayden's lexicon, “C” is for car glut. It is a fact of life captured in a Jim Wark flyover of a Montana auto graveyard (shown above) that is just as big and as densely planted as the surrounding wheat fields. www.yale.edu

NEW YORK

Jane Jacobs and the Future of New York Municipal Arts Society Through Jan. 5, 2008

20th century heroine of human-scaled urban neighborhoods and walkable streets. Few gargantuan planned mini-cities have scored high for long-term desirability. But developers and their architects keep trying to improve on that record. Whether their efforts will succeed with a new generation of urban dwellers is a question the Municipal Art Society (MAS) now asks.

Through January, the MAS is staging an exhibition aimed at reintroducing Jacobs and her values to New Yorkers too young to have lived through the 1960s battles for the Village (shown at right) and SoHo and against the city's powerful

Given the current rapid pace of development in New York City, it makes sense for the Rockefeller Foundation to sponsor an exhibition devoted to the legacy of Jane Jacobs,

20th century heroine of human-scaled urban neighborhoods and walkable streets. Few gargantuan planned mini-cities have scored high for long-term desirability. But developers and their architects keep trying to improve on that record.

Whether their efforts will succeed with a new generation of urban dwellers is a question the Municipal Art Society (MAS) now asks.

planner, Robert Moses, who wanted to drive an expressway through Lower Manhattan.

It is often said that those who don't know history are doomed to repeat it. The MAS found in a recent poll that 58 percent of respondents worried that their neighborhoods would be adversely affected by projected redevelopment in Mayor Michael Bloomberg's PlaNYC2030. It is not known how many of the survey respondents had read Jacobs' seminal book, *The Death and Life of Great American Cities*, or whether they would, as Jacobs did, take their angst to the streets.

The MAS seems to urge dialogue with today's power brokers, though the exhibition can help those who choose to “take immediate action” to ensure the city remains livable. A website (futureofny.org) and a book of essays (*Block by Block: Jane Jacobs and the Future of New York*) promise to raise Jacobs' voice long after the exhibition closes. www.mas.org



CULTUREEVENTS



ANNE EVANS/COURTESY CHICAGO ARCHITECTURE FOUNDATION

Climate Change and the City's Infrastructure

NOV. 15

CHICAGO

With global warming making daily headlines, the Chicago Architecture Foundation looks at how a city's infrastructure is affected by climate change and initiatives to stop it. Speakers include representatives of Chicago's department of environment.

www.architecture.org

OCTOBER 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Building Design with Steel Joists, Joist Girders, and Steel Deck

OCT. 16

CHICAGO

Responsible for the design of structures subjected to gravity? The Steel Joist Institute and the Steel Deck Institute are holding a traveling, daylong seminar on steel structures and components. Next stops: Jamaica, N.Y.; Houston; and Atlanta. www.steeljoist.org

Powerful, Persuasive Proposals

OCT. 19

SAN FRANCISCO

The Society for Marketing Professional Services is traveling the country sharing best practices for drawing up proposals that clients will both understand and sign on to. The daylong course includes how to make the proposal stand out, design a readable proposal, and get your proverbial foot in the door. www.smpps.org

World Workplace

OCT. 23–26

NEW ORLEANS

The built environment takes a bit of upkeep, and this is the place to explore how it's kept. World Workplace covers the ins and outs of facilities maintenance. www.worldworkplace.org

Women in Modernism: Making Places in Architecture

OCT. 25

NEW YORK

Join the Beverly Willis Architecture Foundation for a symposium on women in modernist architecture. Moderated by MoMA curator Barry Bergdoll, the panel includes Gwendolyn Wright, Sarah Herda, Toshiko Mori, and Karen Stein. www.bwaf.org

NOVEMBER 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Design with a Conscience: Public Housing

NOV. 5

NEW YORK

The New School for Design at Parsons presents a series of panels exploring designing with the greater good in mind. The first event will discuss scale as it relates to public and low-income housing. www.newschool.edu

GreenBuild

NOV. 7–9

CHICAGO

"Accelerate Green Communities" with the USGBC's LEED seminars, tours, and even a talk by Bill Clinton. Shown in the largest expo hall yet, GreenBuild will feature sustainable products from all over the world, so bring your recycled-paper notepad to make a list. www.greenbuillexpo.org

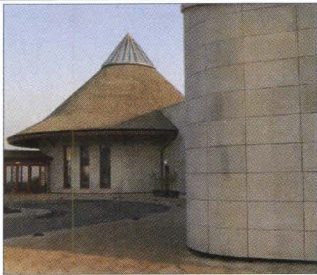
UPSTATE: Writing the City

NOV. 15

SYRACUSE, N.Y.

Syracuse's first UPSTATE symposium will address how the media bridges the gap between designers and the public. The daylong event will include presentations, moderated discussions, and the exhibition "Syracuse Builds," which showcases building and landscape projects in progress in Syracuse. syevents.cyr.edu

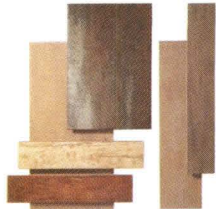
Resource



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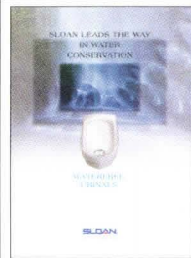
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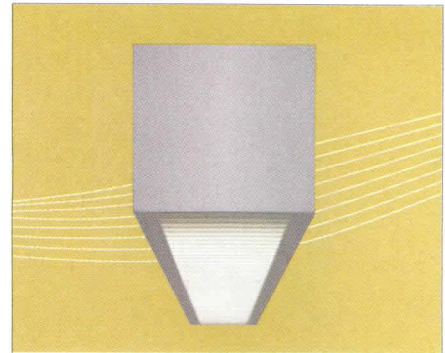
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Haddonstone

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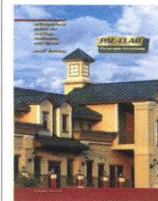


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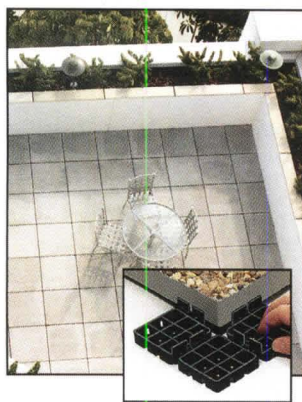
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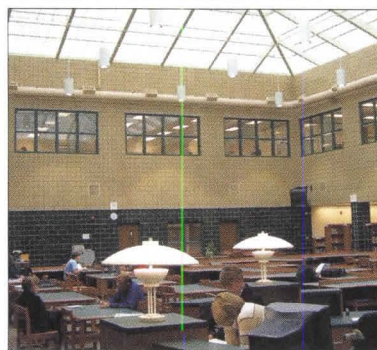
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Resource / Classifieds

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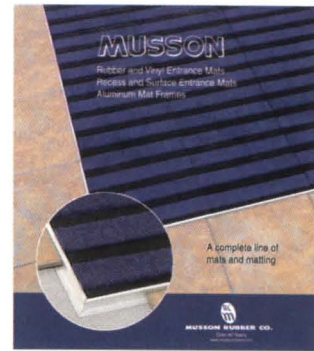
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**CHAIRPERSON
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The Department of Architecture invites nominations and applications for the position of Chairperson. The department seeks an individual who possesses keen insights into the present state of architecture, architectural education, and related fields of environmental design and historic preservation, and who can represent and clearly articulate positive future directions of a diverse faculty. The position is available July 1, 2008. Minimum qualifications: professional degree in architecture; master's degree in architecture and/or credentials that merit appointment at the rank of full professor. Preferred qualifications: Ph.D. or doctorate and/or professional registration; working knowledge of the profession; distinguished accomplishments in one or more of the following areas—practice, research, scholarship, or teaching; successful administrative experience; proven ability to build trust and integrate different educational interests that support multiple options for both the undergraduate major in architecture and the professional, post-professional, and historic preservation degrees at the graduate level. An extended version of this announcement is available at: <http://web.bsu.edu/capweb/arch/deptchair.html>.

The department currently offers two undergraduate and three graduate degree programs: Bachelor of Science in environmental design; Bachelor of Science or Arts in architecture (85 hours); professional NAAB accredited Master of Architecture; post-professional Master of Architecture; and Master of Science in historic preservation. The professional degree requires an internship as part of its emphasis on the reflective practitioner; offers concentration areas in sustainability, fabrication, landscape architecture, and social and professional practice; and has dual-degree options in planning and preservation. Students with no undergraduate education in architecture complete the degree in three and a half years. All students participate in field-study programs here and abroad. (<http://www.bsu.edu/cap>)

Send nomination or letter of application, including a one-page statement expressing one's view of architectural education; resume; and the names and contact information for three references to: Chair, Department of Architecture Search Committee, College of Architecture and Planning, Ball State University, Muncie, IN 47306. (Tel: 765.285.1902) Review of applications will begin January 15, 2008, and will continue until the position is filled.

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Send letter of application; curriculum vitae; portfolio with examples of scholarly/professional and academic work; and names, addresses, and telephone numbers of three references to: Dr. Vini Nathan, Interim Dean, School of Architecture, Philadelphia University, School House Lane & Henry Avenue, Philadelphia, PA 19144-5497. Tel: 215/951-2828; Fax: 215/951-2110; E-mail: nathanv@PhilaU.edu.

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Send nomination or letter of application, including a statement of interest; resume; complete contact information for three references; official transcript of highest degree earned; and examples of scholarly/professional work to: Search Committee, Department of Architecture, Ball State University, Muncie, IN 47306. Review of applications will begin immediately and will continue until the position is filled. (www.bsu.edu/architecture)

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THE AUTHOR OF THE BEST-SELLING BOOK *THE WORLD WITHOUT US* SAYS THAT SINCE WE'RE STILL HERE, WE SHOULD BEHAVE BETTER.

Interview Elizabeth A. Evitts Photo Todd Bennett

ALAN WEISMAN

The concept of what would happen to the Earth without humans came from a *Discover* editor, and the resulting article became the basis for your book. How did you wrap your head around the idea?

The editor said, "I want to know what would happen if we just disappeared right now." She had read my *Harper's* piece about the aftermath of Chernobyl, where abandoned villages were being overtaken by nature. The more I thought about it, the more I realized it was a mechanism that could solve my problem of getting people to follow me on a journey to the world's major environmental issues.

Your polymers chapter is one of the most startling. When you show how much plastic is in our ocean today ...

That was stunning to me. By keeping it cooler, seawater is protecting plastic from being broken up the way it would on land. But eventually it gets broken up into smaller particles, and then smaller and smaller organisms are ingesting it. Most of us already knew that otters, birds, and turtles are eating plastic, but who knew that it was going down to the level of plankton?

You outline in detail what will happen to a place like Manhattan within years of human disappearance. Were there aspects that surprised you?

I had never put all of that stuff together. The subways are below the water table. If there are no people around, there would be no electricity for the pumps. Subways would flood, and steel columns would start to erode. It takes maintenance to keep bridge expansion joints open. If they fill with debris and rust, the bridges are goners.

In fact, more people than ever are living in cities. How is urbanization affecting us?

Most of the people who live in urban areas are poor, and the architecture that is going up now is, frankly, deplorable. In Cyprus, townhouses have a 10-year guarantee of construction; 40 miles up the road, I'm seeing stuff built in biblical times. When we make stuff that is of the earth itself, it's stable, meant to last.

What would you counsel architects to do in the future?

There are many good architectural lessons that existed before we had such technological prowess that we thought we could overcome nature. Turns out we can't. Architects and ecologists have to be in a deep dialogue about engineering the future. Our cities can't keep eating up our ecosystem. It's energy inefficient, and it's coming back to bite us in a big way.



→ Audio of this Q&A is available online at www.architectmagazine.com.



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