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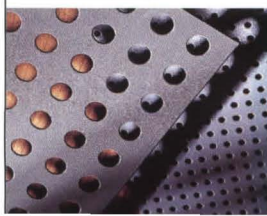
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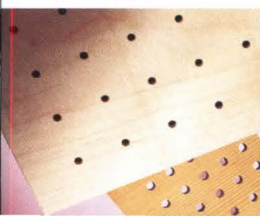
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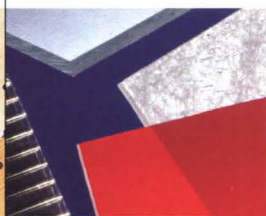
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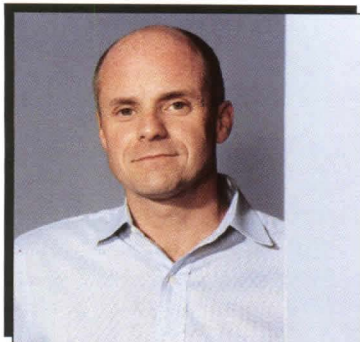


WOODWORKS



INFUSIONS





SMELLS LIKE COMPETITIVE SPIRIT

BY C.C. SULLIVAN

My old friend Rudy (not his real name), an athletic and affable 48-year-old hard at work in the family business, recently decided it was time to give back to the West Coast community that helped his folks do so well. So with his family's blessing and a few like-minded friends, he pulled together enough money to fund a new community center in a perennially blight-stricken area of his home city. He called to tell me about his idea—the basketball court, the computer room, and the optimistic-sounding \$160 per square foot—but also to ask for a referral on a good architect in his area, a favor that for ethical reasons I couldn't fulfill.

But *carpe diem*, I thought. Instead of blurting out names, I could offer a little guidance, so I described the typical modes of selecting a design firm—referrals, RFPs, interviews—and then urged Rudy to forget those and instead sponsor a competition. The publicity you'd get could add more charitable contributions to the pot, I reasoned, and some great ideas would emerge in the process. He seemed convinced and asked me how architects compete. I explained.

As I described the variations on the theme and their benefits, though, I heard myself revealing two edges of the competitive sword. What Rudy might gain to benefit his project would be at the expense of each submitting architect. Driven to win and convinced they can do a better job than anyone else, most architects invest lots of time and money in speculative contests, whether they can afford to or not. And they risk giving away their best ideas in the process.

I felt pangs of conscience. While architects had been telling me for years they'd like to see more competitions, I'd also been hearing more about their burdens lately: scenarios in which the firm that comes in a close second, for example, is forced to lay off staff. And then there's the potential for real abuse. (Senior editor Bay Brown offers a potent report on the subject on page 37.) I righted myself, and stressed that architects should be paid for their work, which, by the way, they own upon creation. Rudy caught my drift.

Together we crafted what we thought was a morally

plausible option: Rudy would invite five local firms to compete in a paid two-day charrette, Friday to Saturday, in the cafeteria of a high school near the project site, with hard media only—pencils, trace, foam board—and with no advance knowledge of the project except its function and approximate budget. Specifics of program, site, and zoning would be revealed on Friday morning, and the work would culminate in a charity auction on Saturday night with bidding on the exhibited working boards of the proposals. (The income would amply cover the firm stipends.) The jury, which would include community leaders and artists, would review the output and cast votes that night, announcing the winner during the auction.

Rudy took my advice almost literally, which pleased me. I can't wait to find out which architects he invited.

LET'S TALK (MORE)

While architects may harbor concerns about competitions, we rarely discuss them openly. No surprise: For whatever reasons, firm principals are loathe to convene and hash out the pressing issues facing their practices. (Billing rates leap to mind.) With some exceptions (in West Coast markets, for example), we leave experience-sharing and benchmarking, if we condone any at all, to our spec writers, accountants, IT directors, and office managers. Not surprisingly, some breakthrough thinking occurs during this presumably "lower-level" extramural brainstorming.

We're just a competitive bunch, I guess, but some practitioners are breaking the wall of silence. Only a few years ago, for example, a group of architects began meeting twice a year to tackle challenges both big-picture and firm-specific. Their self-described roundtable (the subject of our Practice feature starting on page 26) has led them to greater rewards, both in project quality and business profitability.

More important, the architects' open discussions have bolstered their sense of vocational community. By generously sharing successes and missteps, they've learned that their deepest hopes and fears stem from not only personal circumstances but also from unique challenges inherent in their chosen profession.

HOW DO YOU SHARE BEST PRACTICES? Send letters to csullivan@architecturemag.com, or to *Architecture*, 770 Broadway, New York, New York, 10003. The most compelling response will earn its author complimentary admission to a 2004 *Architecture* Conferences event. (Visit www.architecturemag.com to view this year's conference schedule.)

Homeowners' improvement

Homeowners' associations are merely a symptom of a basic problem [March 2004, page 88]. Several years ago, a local architect of some note proposed a large residence on private land along a scenic highway in the Santa Monica Mountains, making every effort to minimize its mass by sinking it into its site. While the design conformed to all city standards, nearby residents of a mind-numbingly banal collection of zero-lot-line pink stucco boxes (with identical mission tile roofs) voiced opposition to the construction—not for any code or zoning violations but because it would have altered their view of the hillside.

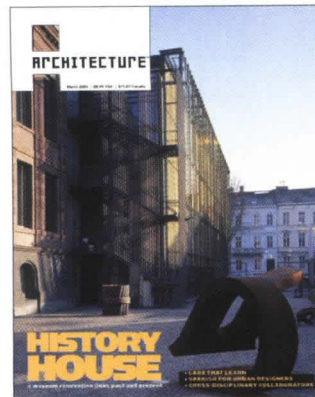
Yet no one from the architecture community or the AIA stepped forward to express solidarity or to cry out that this was the denial of a basic right, that of freedom of speech.

We should all feel kinship to this architect's plight, as we all face a bewildering maelstrom of opposition to our free expression. Homeowners' associations, design-review committees, and codes covenants limit, restrict, and oppose any deviation from their narrow views of community standards. By accepting these restrictions and attitudes, we are aiding in our own demise.

Craig R. Townsend
 Tarzana, California

Clients and designers struggle with developers and community-review boards to make a modern house for living in this modern world. The "gated community" phenomenon has unilaterally discriminated against modern design, reducing the role of the architect in these communities to stylists of pastiche, and their clients into consumers of mediocrity.

Tim Woods
 Savannah, Georgia



03 | 2004

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ATHENS IN OLYMPIC FRENZY



The 2004 Olympic Games have host city Athens in a frenzy. First, a nationwide workers strike halted construction on the Olympic village for 24 hours on March 31. International Olympic Committee top inspector Denis Oswald told BBC News that if other strikes occur, the complex might not be ready for the August 13 games. Then, last month, the British newspaper the *Independent* reported that 13 workers died as a result of rushed construction on the Olympic site. The construction workers' union president, Giorgos Philiouisis, says the deaths were due, in part, to excessive overtime and careless contractor supervision.

Meanwhile, the green light is back on for architect Bernard Tschumi's Acropolis Museum, designed to house the

Parthenon's Elgin Marbles in the hopes that the British Museum will return them to Greece. Last month, the Council State of Greece decreed that the museum would not disturb the archeological ruins found on the site, and that construction could therefore continue. The decision came after national Greek elections in March made the fate of the museum a political issue. The country's new prime minister, Costas Karamanlis, bolstered the high court's motion by announcing that he supports the project. While construction has been underway for a year on the part of the site not affected by archeological excavation, says Tschumi, "Now we have a lopsided building," with progress on one-third and none on the other two thirds. **Anna Holtzman**

⇒ Prices for commodity building materials—oriented-strand board, plywood, lumber, and metals—have in some cases more than doubled over the past year. Despite the threat to profit margins implied in the higher prices, the housing market is still strong. Starts were up 6.4 percent in March, the largest jump in 10 months, according to the Department of Commerce.

⇒ Davis Brody Bond has been named associate architect for the World Trade Center memorial. The New York City firm will work with designers Michael Arad and Peter Walker on *Reflecting Absence*. The firm will be responsible for preserving the intent of the original design, maintaining design quality, and coordination. Also in New York City, Fox & Fowle has been named associate architect with Fumihiko Maki on the new U.N. office tower.

⇒ The American Academy of Arts and Letters has announced its 2004 award winners. Among them are architects Hans Hollein of Vienna; Preston Scott Cohen of Cambridge, Massachusetts; partners Marion Weiss and Michael Manfredi of New York City; and landscape architect James Corner of Philadelphia.

⇒ Outgoing chairman of London's Architectural Association, architect and educator Mohsen Mostafavi, has been named dean of Cornell University's school of architecture. Mostafavi assumes the post on July 1.

For late-breaking news, see
www.architecturmag.com

PIERRE KOENIG, 1925–2004



Architect Pierre Koenig—renowned for his glass-and-steel structures that epitomized midcentury modernism—died of leukemia at his home in Los Angeles last month. He was 78.

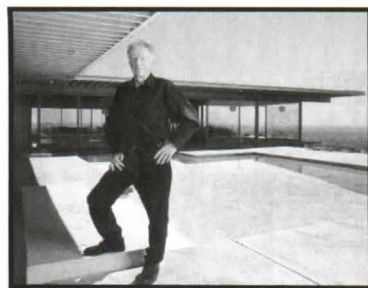
Koenig gained widespread attention through the Case Study House program, which sought to bring modernism to suburbia. Selected by *Arts & Architecture* editor John Entenza, Koenig designed the 1959 Case Study House No. 21, which blended natural and manufactured elements.

When his Case Study House No. 22, with its glass-enclosed living room cantilevered over the Hollywood Hills, was captured by Julius Shulman's camera lens in 1960, it became an instant icon of that era. In fact, it is said to be the most published modernist home ever, according to *Los Angeles* magazine.

"Modernism is a way of life, not a style," the architect often

insisted. True to this motto, said Robert Timme, dean of the University of Southern California (USC) School of Architecture, where Koenig taught for 40 years, "Pierre never taught a style. It was much more about the forces that acted on the built environment."

"Although he's known worldwide for some of the most beautiful and elegant structures that define modernism, his true legacy," believes Timme, "may be the countless students he initiated into a world of space, light, and architectural forms." **Bay Brown**



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news

URBAN DESIGN GOES SMALL SCREEN

Move over *Trading Spaces*, the future of reality TV is urban redevelopment. At least, that's what producers at Britain's Channel 4 think. Hoping to tap into the popularity of house-and-garden shows on British television, the network will broadcast a new five-part series on the revitalization of the ancient Yorkshire town of Castleford later this year. Channel 4 is funding the project, entitled *Regeneration: The Castleford Project*, in tandem with public agencies keen to revive the town, which has suffered from the collapse of local manufacturing.

Five teams of architects were selected earlier this year following an international competition to draw up designs for the "town makeover." A leading British architect, Sarah

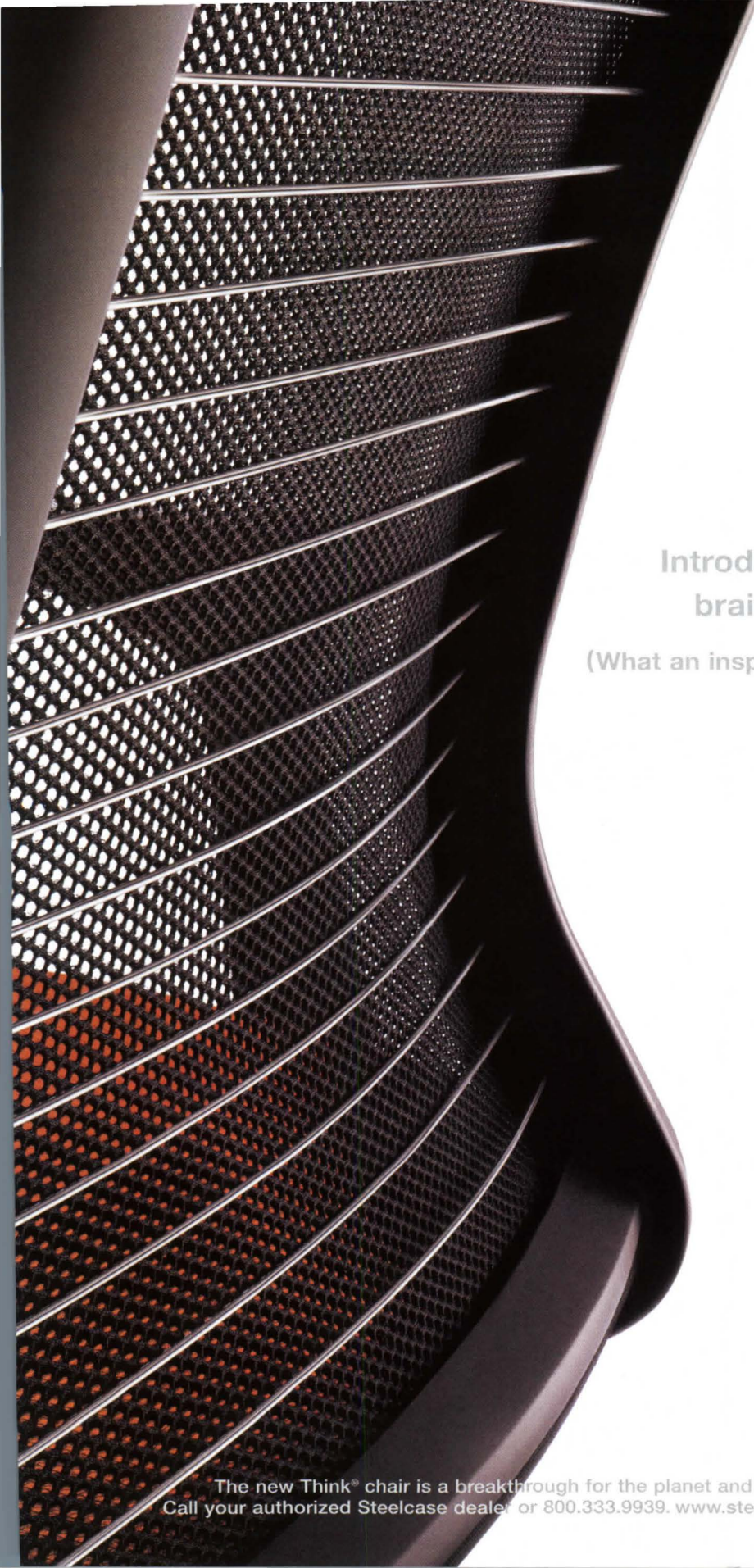
Wigglesworth, is developing a master plan for the town center. Another scheme by firm McDowell & Benedetti calls for a new bridge across the River Aire near the spot where Castleford was founded 2,000 years ago.

"The local community has been empowered by the program," says architect Roger Zogolovitch, who is advising on the project. The architects presented their designs in working men's clubs as a way of reaching the town's mainly blue-collar communities. The show's producers dropped the program's original title, *The Regeneration Game*, to assuage residents' fears that the producers were interested only in a quick-fix solution. Construction is expected to begin next month. **David Blackman**

ANOTHER OVERHAUL FOR LES HALLES



The mayor of Paris, Bertrand Delanoë, has launched an invited competition to revitalize Les Halles, the city's central marketplace since the 12th century. Following the midnineteenth-century market halls' design by architect Victor Baltard and the 1980s transformation of the square into a public park atop a four-story subterranean shopping mall, schemes by architects Rem Koolhaas (above), Winy Maas, David Mangin, and Jean Nouvel seek to reintegrate the 17-acre site with the surrounding urban fabric. Models of the proposals, which focus on landscape design for the open plaza, are currently on display inside the Forum des Halles underground shopping center through June, and visitors may register their evaluations of the projects, which will be taken into account in the final selection. **Liane Lefavre**



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MAKING ROOM FOR ARTISTS



The city of Ventura, California, wants to keep its artists and won't let skyrocketing real estate prices force them to flee. Instead, the city has enlisted the help of Artspace, a Minneapolis-based developer that specializes in affordable live-work spaces for artists.

With grant money from the U.S. Environmental Protection Agency for studies on brownfield rehabilitation, the city hired Artspace last October to examine several industrial sites for the artists' residence. Now in the planning stage is a \$10 million, 25- to 50-unit complex, on a yet-to-be-determined plot. Chris Velasco, Artspace's vice president, believes that the building will spawn other arts-related developments in the city. Criteria for residency is still being formulated.

This is the first undertaking in Southern California for the nonprofit,



which has developed projects around the United States since 1979, and its first ground-up construction. Making design a priority, Artspace has selected one of its former board members as a consulting architect on the project, Garth Rockcastle of Meyer, Schere & Rockcastle, Minneapolis. Elena Brokaw Myles, manager for the city of Ventura's cultural affairs department, states that green initiatives will be a guiding force in the design. While "timelines are squiggly," she says, "our hope is to break ground in June 2006 and open the doors in 2007." **Anna Holtzman**

FOR FEDERAL WORK, A SPIN-OFF

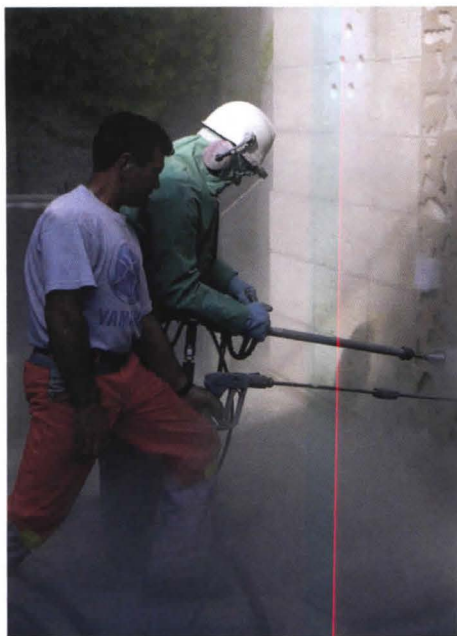


Perhaps a harbinger of future strategies for large firms wanting to improve profits and target "inflation-proof" construction niches, HNTB, the huge Kansas City, Missouri-based A/E firm, has opened a subsidiary in Washington, D.C., devoted exclusively to federal government projects. The new company, HNTB Federal Services, will include some relocated HNTB employees as well as the current segment director, architect Mark Erdly.

While HNTB's move may offer the firm some marketing leverage, experts contend that those benefits are secondary to more tangible advantages in financial accounting and project reporting that can come from a legally separate entity. For example, most service providers like to show higher overhead in their federal government audits, so firms often change billing structure or principal involvement for public work—an effective approach in a spin-off. Also, federal projects must follow the voluminous Federal Acquisition Regulation (FAR), which mandates, for example, complex set-asides for women-owned and "small disadvantaged" businesses.

The president of the newly formed subsidiary, 27-year HNTB veteran Kevin R. McDonald, is quick to acknowledge the business benefits. "There are no tax advantages, but it's a structure that's in synch with the federal government so we can be successful in this sector," he says. "It also allows the federal effort to [operate] without financially affecting other HNTB companies." Executives at the parent organization, HNTB, are already familiar with this strategy: In January of this year, the privately held company spun off HNTB Architecture, which now provides architectural services—as a separate company—to all its subsidiaries, including HNTB Federal Services.

Which leaves one wondering how the new company will make money at all. The answer: by offering "nontraditional A/E services like outsourcing and training for the government," says McDonald, which he predicts will boost annual revenues from \$8 million last year to as much as \$40 million by 2006 for the federal group. **C.C. Sullivan**



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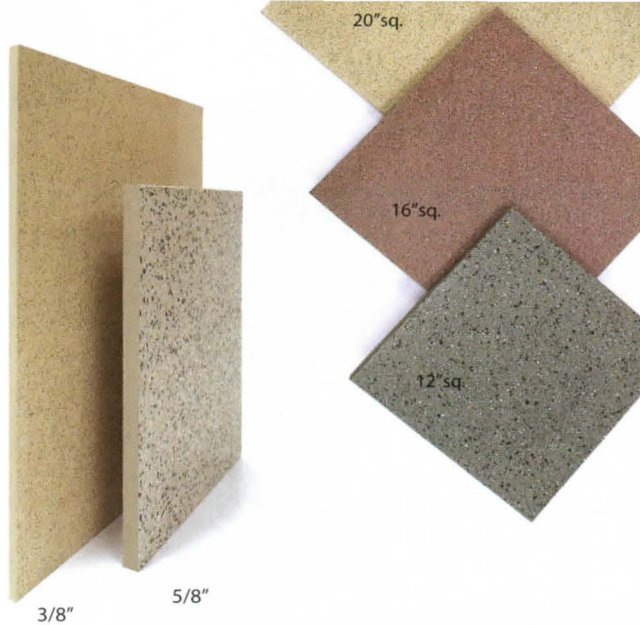
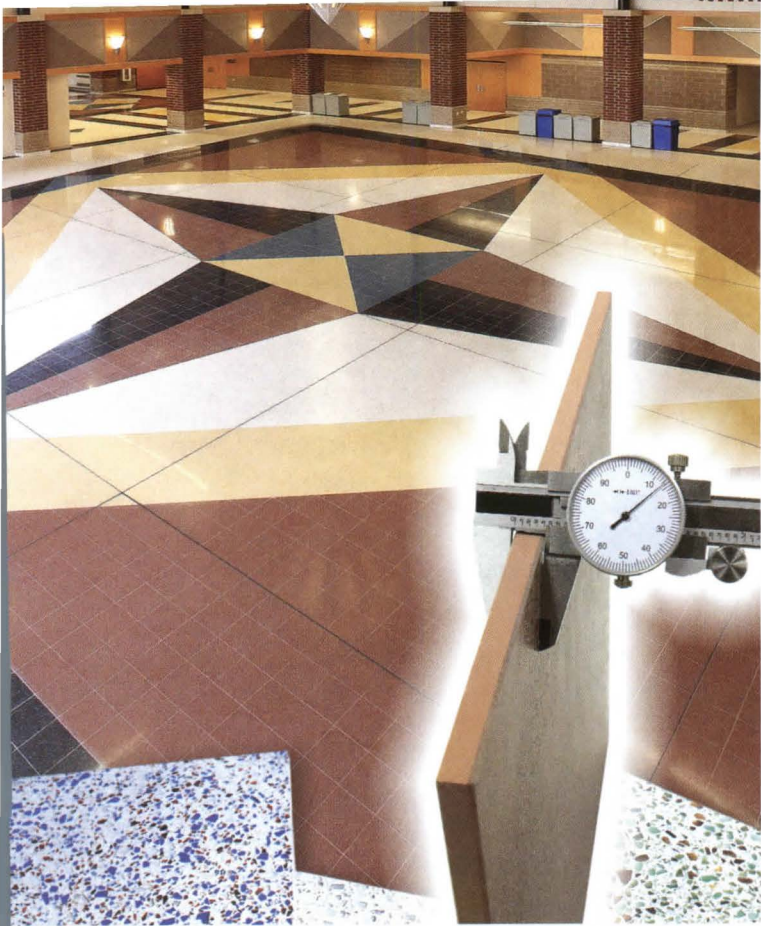
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OF PRACTICE AND PROFIT

Do good business and great design go hand in hand? Participants in our second annual management summit, held recently in Snowbird, Utah, insist on it. by C.C. Sullivan | Illustrations by Danielle Huthart

What kinds of architects share their best practices, their hopes and dreams, and plan strategically with each other? In fact, very few, and fewer still share data on their firms' secrets: financial performance, transition plans, or internal partner dynamics. Yet, one group of practitioners, a seven-year-old, self-described roundtable, meets twice each year at an invigorating resort location, and these leaders of 17 architecture firms openly share challenges, successes, strategies, and benchmarks—and fears and failures, too. Organized by Hugh Hochberg, partner of the Seattle-based consulting firm The Coxe Group (which also consults individually to all the firms), the meetings are exclusive and confidential. But ARCHITECTURE magazine was invited to the latest gathering, held last March in Snowbird, Utah, to listen in.

C.C. SULLIVAN: As a group, your twin goals are to improve design quality and make your practices more profitable. How are you changing your architectural process and project delivery to those ends?

the building department was very open to looking at computer modeling to actually change building systems. They said we had to install smoke control, so we hired a life-safety consultant to model the building. They consented to review this for the first time ever, and decided we could keep the occupants safe without smoke control.

THE BENEFITS OF BIM

TOM WAGGONER: The most helpful thing I've seen is the use of building-information-modeling [BIM] software. We started using it about eight months ago on a \$220 million IRS project, and it's really incredible what the capabilities are.

BILL BROWNE: We're doing a \$50 million laboratory facility right now using the same software you are, and once a staff member is trained to do a stair section, they'll be able to do the next one in about a third of the time. Also, when you draw it in 2-D, it's automatically in 3-D. It has the potential to change our production.

MIYASATO: We're just launching into that system. What kind of



Joining the roundtable discussion this year are (left to right): Allan Kehrt, KSS Architects, Princeton, New Jersey; Patricia Whitaker, Arcturis, St. Louis; Troy Miyasato, Ferraro Choi, Honolulu; Bob Oglesby, Everton Oglesby Architects, Nashville; Carol Shen, ELS, Berkeley, California; and Rob Widmeyer, LMN Architects, Seattle. Also participating but not pictured are: Tom DeAngelo and Peter Vesterholt, Architectural Alliance, Minneapolis; James Flajnik and George Tremblay, Arrowstreet, Boston; Rob Comet and Chuck Wray, BCWH,

TROY MIYASATO: We've launched more fully in the direction of sustainable design, linking up with several key engineering firms for both marketing and promotion as well as to work together better very early in the design phase. Many M/E/P firms aren't used to heavy marketing, but our partner is.

BOB OGLESBY: Through affiliations, you can provide integrated design services—one-stop shopping for the client. So we get the best consultants and each time out offer this turnkey service.

ROB WIDMEYER: What's also changing is having building parts manufactured, brought to the site, and assembled. 3-D drafting and design systems are helping us because we have this information, and the materials manufacturers can put these components together. Then the stuff shows up at the site ready for assembly.

DAVID FAWCETT: We did a retail renovation in San Jose, where

learning curve are we up against?

BROWNE: If you've got people who are really computer literate and can mentor the team, the learning curve really isn't that bad. And a huge project can really help absorb that learning process.

ALLAN KEHRT: How do you think it's going to help you?

WAGGONER: From a speed standpoint: Multiple things can be drawn at once and adjusted across the board as you make changes. It helps you avoid mistakes and having to go back and forth.

FAWCETT: BIM can streamline production, but it's especially helpful in structural and envelope design, for example, where the information from various disciplines feeds into a 3-D model and then to the fabricator and the field.

WIDMEYER: We're using another BIM software, and because it allows us to create things three-dimensionally, we're looking at deci-

sions about building materials and systems at the very earliest stages to take advantage of this tool.

DAN DANIELSON: I remain cynical about it, especially for smaller or medium-sized firms. We've gone through many software packages, and they're only as good as your staffs. If you have consistent staff turnover, you're throwing money at retraining.

MARVIN MANLOVE: I think that's true, but in an agile market we have to assume that those kinds of software applications are going to come along faster and faster, and our goal is to adapt them and learn the training methodologies that allow that to happen. Five years from now, these will be common languages for people applying for jobs.

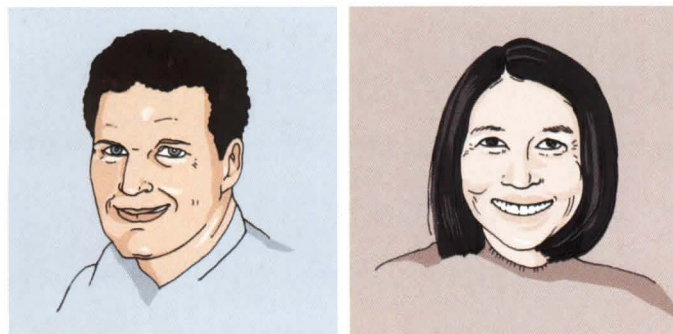
In 1999, says Hochberg, average revenue-per-person levels in U.S. firms jumped from the \$70,000 range to the \$90,000 range. Even if half of the increase was due to the market paying more to get work done more quickly, about 15 percent of the growth would be due to efficiency gains. Annual revenue-per-person has continued to go up since; the average for the roundtable firms is currently \$107,000.

EMBRACING DESIGN-BUILD

SULLIVAN: Can your delivery process get much more efficient?

MANLOVE: I have a simple philosophy: no one will pay us more than they do now, so the only way we can make more money is to streamline the delivery process.

WIDMEYER: In many of our design-build projects, we've been



Richmond, Virginia; Tom Waggoner and Marvin Manlove, CDFM2, Kansas City, Missouri; Rich Carr, CGY, Basalt, Colorado; Steve Davis and Carl Krebs, Davis Brody Bond, New York City; Steven Ehrlich, Steven Ehrlich Architects, Culver City, California; David Fawcett, ELS; Joe Ferraro, Ferraro Choi; Phil Harrison and Willard Lariscy, Perkins & Will, Atlanta; Bill Browne, Ratio Architects, Indianapolis; Dan Danielson, Soderstrom Architects, Portland, Oregon; Randy Cook and Brian Fitzgerald, Thomas Cook Reed Reinvald Architects, Tacoma, Washington.

able to finish projects on a much shorter schedule. The key is for the owner to get their ducks in a row early on and commit all their criteria to writing. In one case, we did design and construction for a \$200 million, million-square-foot convention center in 36 months.

MIYASATO: In our last three projects, the clients—as part of the RFP—asked us to list the projects we've done with the design-assist delivery method. But I have mixed feelings on how it interrupts the design process, because you're getting fed information so quickly, and being asked to make decisions in an accelerated schedule that doesn't foster an in-depth design thought process. But it's the reality.

KEHRT: Our client for a \$12 million science building invited us down to talk about the project, and they had the contractor in the room. At the end of the meeting they said, "Oh, by the way, your contract will be with him." And it was a surprise, but it has actually turned

out to be an incredibly efficient way to do a building—we tore through the CDs and the construction. But we also made an enormous amount of money on it, because there was little time for examining and reexamining things. And it will be a good building to boot.

DANIELSON: Where we see the highest profitability is in teaming with the contractor from the award. They bring a valid perspective to it, and they keep us on task. As a result, we both make money.

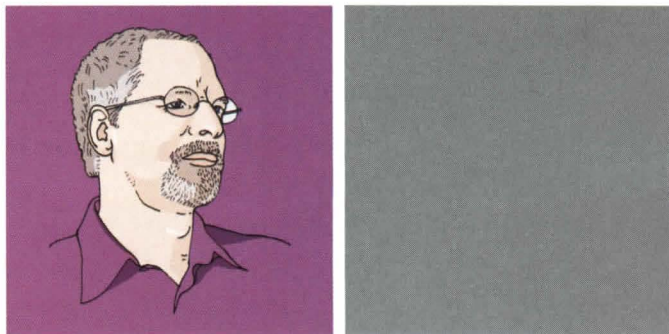
MANLOVE: With BIM, we can suddenly provide quantities and square footages, which are historically in the contractor's domain.

CHUCK WRAY: Yes, but there are so many legal and liability issues involved with taking our structural and ductwork drawings and turning those into steel-detail and fabrication drawings. It's logical that it would happen, but in our realm of mostly publicly bid design-bid-build work, it's hard to see that crossover happening.

Many firms today voice alarm over the increasing amount of time required in the construction-administration phase, notes Hochberg, mainly due to poor-quality contractor work. Several of the roundtable firms encourage their clients, especially those working with difficult contractors, to have someone from the architect's office on site full time, billed separately. Other firms now include in their contracts that they must be able to review shop drawings twice.

SULLIVAN: Is greater efficiency the goal of your roundtable meetings?

ROB COMET: We need to benchmark ourselves against people



that we respect, and that seem to have common values, and that in many cases have done something more successfully, or for longer, or at a bigger scope than we have.

FLAJNIK: At our firm's partner and management meetings, it's so easy to fall into the trap of doing what's urgent, rather than doing what's important.

CAROL SHEN: We're a self-selected group. It isn't just a random collision of 17 firms.

PATRICIA WHITAKER: In fact, we were handpicked.

HOCHBERG: And there's the AIA Large Firm Roundtable, which is only for firms of 150 or more, but they have national markets that tend to collide with each other, so they're much less open to talking about strategic and proprietary issues. They'll share certain data, even financial data, but they don't get near the level of intimacy that we do.

RICH CARR: One thing that makes a big difference here is the non-competitive nature of our firms, which allows us to really dig deep into financial comparisons.

For most firms, says Hochberg, the biggest step toward reducing overhead is often to increase chargeability or utilization. One roundtable firm, for example, gives each employee a specific target, in hours, for his or her billable work. Hochberg advises that while managing overhead is a good idea, a bigger impact on elevating profit comes from increasing revenue relative to the effort to deliver the work. An indicator of this relation is the "direct-labor multiplier," and a high multiplier can be good—and a sign of perceived value in the marketplace—as long as the firm's salaries are competitive.

BROWNE: As a group, we've developed a nice spreadsheet to drill down to the different factors of the business to understand how to improve a part of it. Since we've started, we've seen our direct multiplier consistently increase over the years, as we've found ways to lower our overhead and change billing rates, for example.

WHITAKER: I think one of the biggest values of meetings like these is that you get instant answers to problems that you have, because somebody here has faced that same issue or problem before, and it comes up right away. So it's about learning.

SHEN: And we have this broad view from different size firms, from

different states, and from different building types and focuses of practice—it's completely different than your own firm's retreat, talking amongst yourselves.

WAGGONER: And it's a testing ground for me. I'm able to talk to people at principal level before I actually bring things up with my fellow principals.

COMET: We can deal with partner-level personnel problems, issues you can't talk to your spouse or your partners about, perhaps—and that you certainly don't want to talk to your competition about.

OGLESBY: You think you're going through this by yourself, for the first time, but you get in here and think to yourself, "Wow, it's not so uncommon after all."

SHEN: Yet, it's all about thinking strategically. We can find ways to cut overhead here and there, but it isn't just about the infrastructure and the product. The entrepreneurial side, the enterprise side, is what architectural practice is about now. It isn't just getting the commission and doing a good design. It's more than that.

ARCHITECT AS ENTREPRENEUR

PETER VESTERHOLT: We're very good at reacting, but we do need to be more entrepreneurial, think in nontraditional ways, and go out and invent the project ourselves—or get engaged and lead a client to a new project.

OGLESBY: In Nashville, they were going to tear down a historic

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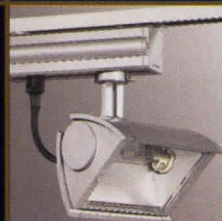
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bridge, and so my partner and I put in a proposal to buy the bridge from the city. Lo and behold, they pulled it off the table. And really, we didn't have any interest in owning the bridge.

HOCHBERG: The common thread I hear is that to move to the next level, however you define it, you need to play a stronger leadership role with clients, rather than taking a responsive role. And with regard to the go/no-go decisions, those clients that want to direct you, and have you fulfill tasks rather than lead, are the wrong clients to work with. As you learn to deal with that potential collision of concerns about cash flow, and ego, you'll get to the next level.

Marketing cost as a percentage of gross revenues can vary from less than 2 percent to as much as 12 percent or more, observes Hochberg. (The average among the roundtable firms was about 5 percent.) Another useful measure is marketing labor costs versus the total marketing budget. "If you have to decide between spending money on graphic materials versus being in front of clients, I'd do the latter," he advises.

OGLESBY: As you identify growth marketplaces, you have got to develop expertise in multiple markets to be able to just sustain your practice in a changing economy.

GEORGE TREMBLAY: Almost every commission has a design opportunity, and the more difficult the problems—sustainability, tricky

permitting, or incredibly constrained budget or schedule—that's the stuff that turns us on.

MISSION: ELEVATING DESIGN

SULLIVAN: What kinds of leadership roles do you look for in your work? And how do you get there?

BROWNE: We're trying to elevate design to a level that may already be accepted by clients in other parts of the country.

SHEN: That rings true in our practice. We do a building type—retail—that often isn't even recognized as needing good design, and instead is seen as sort of throw-away architecture. What we'd rather do is contribute to the town or city, and create a place people want to come to, rather than just produce another mall that's going to be recycled in 15 years.

WHITAKER: We've decided that it's our job to elevate the quality of architectural design in the Midwest. Most clients are open to it, and although they may not have been exposed to it before, if you educate them in the right way, you can do it. So one of our strategies is to find and retain the best talent, what we like to call "A-players." And it's working.

OGLESBY: In addition to design, we're all service organizations trying to better the services we offer to clients, whether it's office culture or training our younger staff to be leaders. Our role is evolving toward being more than just a design architect or a producer of work to some-

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one who's really helping facilitate a process for our clients' betterment and their growth.

KEHRT: It seems that everybody in our roundtable has been more interested in quality than in quantity.

RECHARGING THE BATTERIES

TOM DEANGELO: Another aspect of getting to the next level is renewal, finding what recharges your batteries.

A lot of us have been in the profession for a number of years, and it's often just a matter of aligning our own firms, many of which are very collaborative, with this opportunity to renew everybody as individuals. Because if you're personally excited about something, that'll really carry your firms a long way.

WIDMEYER: One way to keep your energy high is doing research projects. We're putting a lot of energy into making sure that the value of what we do on a project can be shared with the next ones, whether it's sustainability, a little materials research, or inventing something new in curtain-wall technology. You want to make sure you can transfer that benefit to your other work, and mitigate the risk.

SULLIVAN: Do you and your partners take time off to recharge and get inspired?

DEANGELO: This is it.

FLAJNIK: It's called the weekend.

DANIELSON: Our mission statement includes sabbaticals for the principals, one or two months. The problem is how to get the partners to actually leave.

FLAJNIK: An associate principal who has a passion for photography asked for three months off to travel and shoot wonderful photographs of the Grand Canyon. But he came back afterward and said, "I'd like to entertain the possibility of doing this every year."

CARR: Our partners have done sabbaticals for probably 20 years, but it is getting to be more of a challenge as our work world has become more rigorous in many ways.

BROWNE: Cell phones, e-mail ...

FLAJNIK: Until you can get some distance and perspective to really think about what's important, you won't solve problems and grow. I enjoy coming to these roundtables because I almost always leave with something I didn't expect. There's that surprise, when the light comes on and you've figured something out. And that's always a hoot.

CARR: It's unusual that firms like ours get to share so much with each other.

KEHRT: In my firm's market, there are probably more architects per square foot than anywhere else in the country. Yet, they don't talk to each other, and I don't know why that is. It's

nice to come here and see that everybody's got pretty much the same problems.

And opportunities: The roundtable participants are sanguine about their prospects for growth, Hochberg concludes, although not all of them grew their businesses in the last six months. The most excitement in terms of new business development is in the public sector and in offering planning services, as well as such specific markets as education, infrastructure, healthcare, and military housing. ■

For the full text of this roundtable, visit www.architecturemag.com.

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THE 3-D CITY

Proposals for multilevel cities are back in fashion. Can skyway systems in places like Minneapolis and Calgary offer lessons for architects?

by Vincent James and Jennifer Yoos

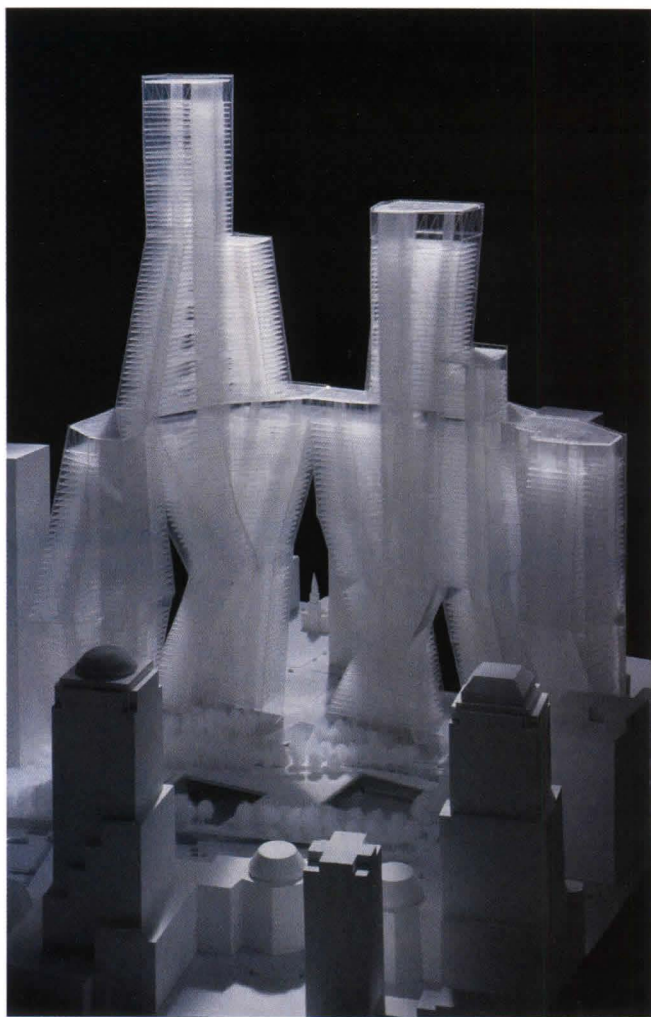
A careful look at the World Trade Center (WTC) master-plan competition proposals reveals a significant difference from the original twin towers. Eight of the nine schemes proposed elevated bridges or tangential intersections high above the streets of Manhattan. Like most of the buildings in New York, the original towers were simple vertical extrusions. Circulation was also principally vertical: People left their trains, got into their elevators, and got off on their floors. The WTC competition, and many other contemporary projects by well-known architects, make it clear that ideas about three-dimensionally layered and interconnected cities are back in fashion.

Describing their projects as multilevel cities in the sky, as buildings that kiss or link, or as interconnected structures with continuous floor plates, the WTC competitors represent only the most public of a group of like-minded architects who employ a language of fluidity and flows, connectivity, continuous surfaces, and hybridization. It is a nomenclature for a new kind of architectural thinking and, some designers believe, a new way of building cities. Yet, as proposals for three-dimensionally layered urban space proliferate in elite discourses of architecture, far grander—if more banal—city-scale versions of similar concepts have been under construction in North America and Asia for nearly 50 years.

These systems go by different names—skyways, skywalks, pedways, footbridges, the “Plus 15”—but they share one thing: They are radically altering the form of many North American cities, from Minneapolis, Saint Paul, Cincinnati, Spokane, and Charlotte to Indianapolis, Des Moines, Dallas, and Calgary. Like their counterparts in Hong Kong and other Asian cities, all have extensive and growing pedestrian networks crisscrossing the city above the street. What began in the 1960s as a few blocks connected by bridges or tunnels are now pedestrian networks extending up to 10 miles in some cases.

WHY GO SKY HIGH?

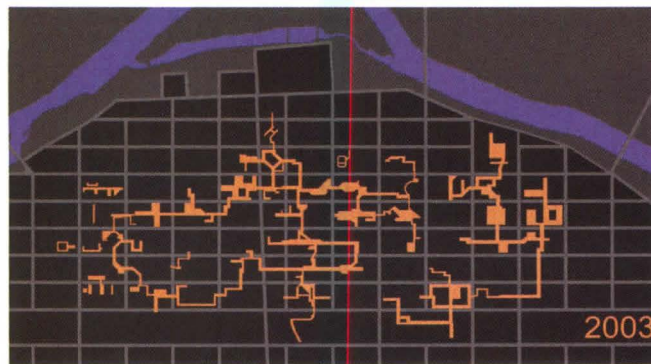
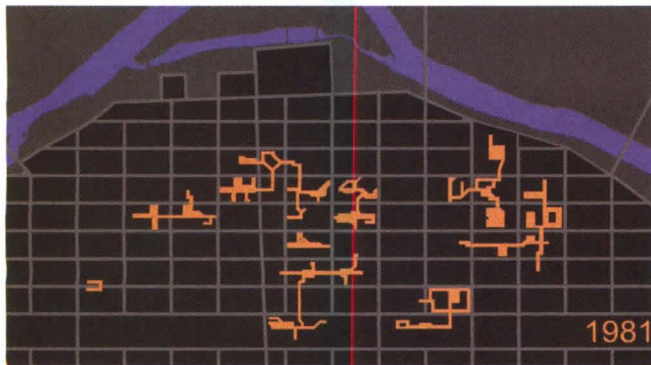
Functional imperatives drive the development of these pedestrian systems. In an attempt to compete with proliferating suburban malls, city planning departments and business coalitions often cooperate to build and expand above-street circulation. They commonly develop in cities with extreme climates or high densities of pedestrian and vehicular traffic. Critics of the systems have challenged them on social, moral, and aesthetic grounds but have rarely been able to curtail their growth. Skyway systems reach a point of momentum that creates a network parallel to the street. Every major commercial development must be connected to succeed economically. With each new nodal connection, the overall growth of the system accelerates and a new and extreme urban form emerges.



Most of the World Trade Center master-plan competitors proposed sky-high public spaces in 2003, including “sky gardens” (above) by the team led by Skidmore, Owings & Merrill, and a multipurpose public realm spread horizontally across the 60th floors of five connected towers by United Architects (top).



A series of diagrams (below) developed by the authors shows the laissez-faire growth of Calgary's Plus 15 skyway system from 1972 to 2003. The Minneapolis skyway as it appeared in 2000 (above) also offers an extensive above-ground circulatory network.



Proposing multilevel cities with streets above streets has become something of a tradition for the avant-garde. The concept has frequently been used as a way to reinvent the modern metropolis by transforming pedestrian mobility. In the 1950s, Team 10, the renegade offshoot of the International Congress for Modern Architecture (CIAM), adopted an overlaid system of "streets in the sky" that aimed to reintegrate the parts of the urban landscape severed by modern zoning practices. But speculative proposals for these 3-D cities were rarely conceived in bureaucratic, legal, or economic terms. Rather, they have been envisioned as grand projects built by enlightened governments or magnanimous property owners—unlikely investors in an enormous, inflexible system. As is often the case with progressive propositions, bureaucrats and developers in North America did indeed realize many of these ideas, but it took another twenty years.

In comparison to traditionally planned developments, the implementation of contemporary skyway networks is radical. The systems are usually built incrementally under the auspices of municipal bureaucracies. Driven by commercial interests, their dynamics are largely "unplanned" and self-organizing. The complex incentives offered to developers redefine property rights and blur the distinction between public and private. Significant social, legal, and political questions have arisen as these quasipublic urban domains have developed in a number of multilevel cities. Here, a new kind of public-private space is emerging, analogous to those in shopping malls but interconnected with urban amenities and dependant on public functions.

Calgary began its 9-mile skyway system, the Plus 15, in 1972 with a master plan by city architect Harold Hanen, a proponent of the work of Team 10. The skyway is publicly owned and administered by the city of Calgary. Private space is appropriated on multiple levels to expand the public system. Developers negotiate with proportional contributions of space to increase their floor-to-area ratio. A particularly interesting hybrid condition fueled by the Plus 15 is the "Devonian Gardens," an interior tropical garden that co-opts the entire fourth level of a city block as a public park.

In contrast, the Minneapolis system appropriates public airspace for private use. The city's skyway system began in 1962 with a few tubelike bridges connecting department stores. It has grown by accretion to 8 miles, interconnecting the entire downtown core on the second level. The city leases airspace over the streets to building owners to make private bridge connections. The increased lease value of the second level motivates private investment. Currently, 77 bridges have been constructed to connect retail spaces with office buildings and parking.

ARCHITECTURE AS INFRASTRUCTURE

Because pedestrian network systems function less like architecture and more like infrastructure, they undermine traditional ideas about buildings and cities. New Babylon, Constant Nieuwenhuis's mid-century vision of a meandering, elevated techno-city, predates North American skyways by 20 years. Still, the architectural and spatial characteristics are surprisingly similar. With entries on multiple levels, the boundaries of individual buildings become nebulous. The continuous interior renders the façade obsolete. Navigation is a

challenge. Within New Babylon, Nieuwenhuis addressed the problem of undifferentiated continuous space by designating "color zones of atmospheres." There is nothing so aesthetic in the spatial definition of the typical skyway city. Territories are defined through discrete atmospheres: interior spatial figures, decorative themes, fields of veneer finishes, and the odors of perfume, cinnamon, and coffee. Rem Koolhaas calls this "junk space."

Yet, the biggest danger to cities such as Calgary and Minneapolis is the unintentional interiorization that creates isolated and privatized zones. If the complex issues of public and private space can be resolved, however, skyways can increase urban density, reduce the use of cars in extreme climates, and create more interesting and varied urban conditions.

The astonishing thing is that these grand urban experiments with the 3-D city are being carried out with little critical attention. As most architects avert their eyes, others execute the component projects, giving little thought to the system as a whole. Those who have engaged the topic theoretically have been ill equipped. Colin Rowe, at a 1984 symposium on skyways at the Walker Art Center, argued that the difficulty with the Minneapolis skyway system is that it had no beginning and no end. By proposing that individual bridges be seen as places in themselves, he initiated years of gratuitous "place-making," as each new bridge was decorated with an arbitrary architectural motif. Jacques Herzog was asked at a recent Minneapolis lecture what he thought of the 8-mile skyway network. He responded that, if he had the choice, he would simply close it.

CHANGING ATTITUDES

The conservative attitude that most architects maintain toward this new kind of city is understandable but inadequate. These systems are not going to go away. Ignoring them is more a sign of professional impotence than a solution. In the absence of serious consid-

eration by the design professions, we are leaving the form of these cities to lawyers, developers, politicians, and bureaucrats. The systems will continue to grow—in a perfunctory, project-by-project way—into a ubiquitous and banal urban condition.

This takes us back to the WTC competition and other recent projects. If architects are going to propose multilevel urban solutions for projects like the World Trade Center, then why not take a serious look at skyway cities. There are significant social, political, and economic implications as well as design opportunities in this reemergent urban form. Foreign Office Architects and UN Studio have proposed formal and spatial inventions, which, if applied with rigor to these systems, might transform them. Steven Holl has devised many provocative urban spaces with flying bridges and intertwining circulation paths. And MVRDV has experimented with proposals to leverage the forces of urban development into socially innovative ideas about buildings and cities.

This contemporary body of work only begins to illustrate the architectural potential of multilevel cities and our ability to reconceive this new urban form. On the level of design, new spatial conditions can challenge the limitations of individual projects and the boundaries of interior and exterior spaces. Advantageously, a more interconnected city pushes buildings away from their autonomous, objectlike character to become more integrated with the landscape, transportation, and each other. In unanticipated ways, these systems can radically impact how people use cities and move through them, how urban space is developed and controlled, and how buildings are adapted to social and economic change. Ultimately, architects will need to engage the full spectrum of urban issues to have an impact on the form of the emerging 3-D city.

Architects Vincent James and Jennifer Yoo, principals at VJAA in Minneapolis, are completing a book on multiple-level cities.

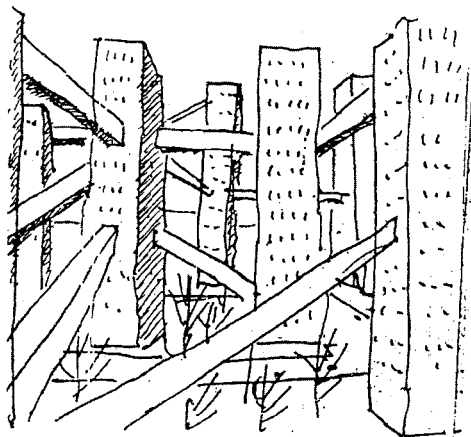
A BRIEF HISTORY OF THE MULTILEVEL CITY

The multilevel city is not a new idea. Ancient examples can be found in cities like Ghadames, Libya (700 A.D.), where a continuous bilevel pedestrian network supports segregation by gender. In Europe, speculative proposals date back to Leonardo DaVinci's plan for a multi-

level city separating nobility from the commoners. Robert Adams used similar circulation strategies to vertically segregate social classes and commercial traffic in his eighteenth-century Adelphi project for London.

The modern project of multilevel cities began in Paris, in 1910, with Eugene Henard's proposals for separating vehicular traffic from pedestrians. Henard's ideas were adapted by Le Corbusier in his 1931 Obus Plan for Algiers, where he morphed them into a traffic-controlling megastructure. Antonio Sant' Elia developed a techno-adaptable form in his La Citta Nuova project in 1914. In the United States, speculative projects in the 1920s by architects like Hood, Ferris, and Corbett proposed multilevel systems to integrate modern transportation into dense pedestrian cities like New York.

The most influential proposals for multilevel circulation systems would emerge from the European avant-garde in the 1950s and 1960s. Architects of the period, including Alison and Peter Smithson, Yona Friedman (sketch, left), Giancarlo De Carlo, and Candilis-Josic-Woods redefined the multilevel urban project into a form that would eventually cross over into mainstream planning. **Vincent James and Jennifer Yoo**





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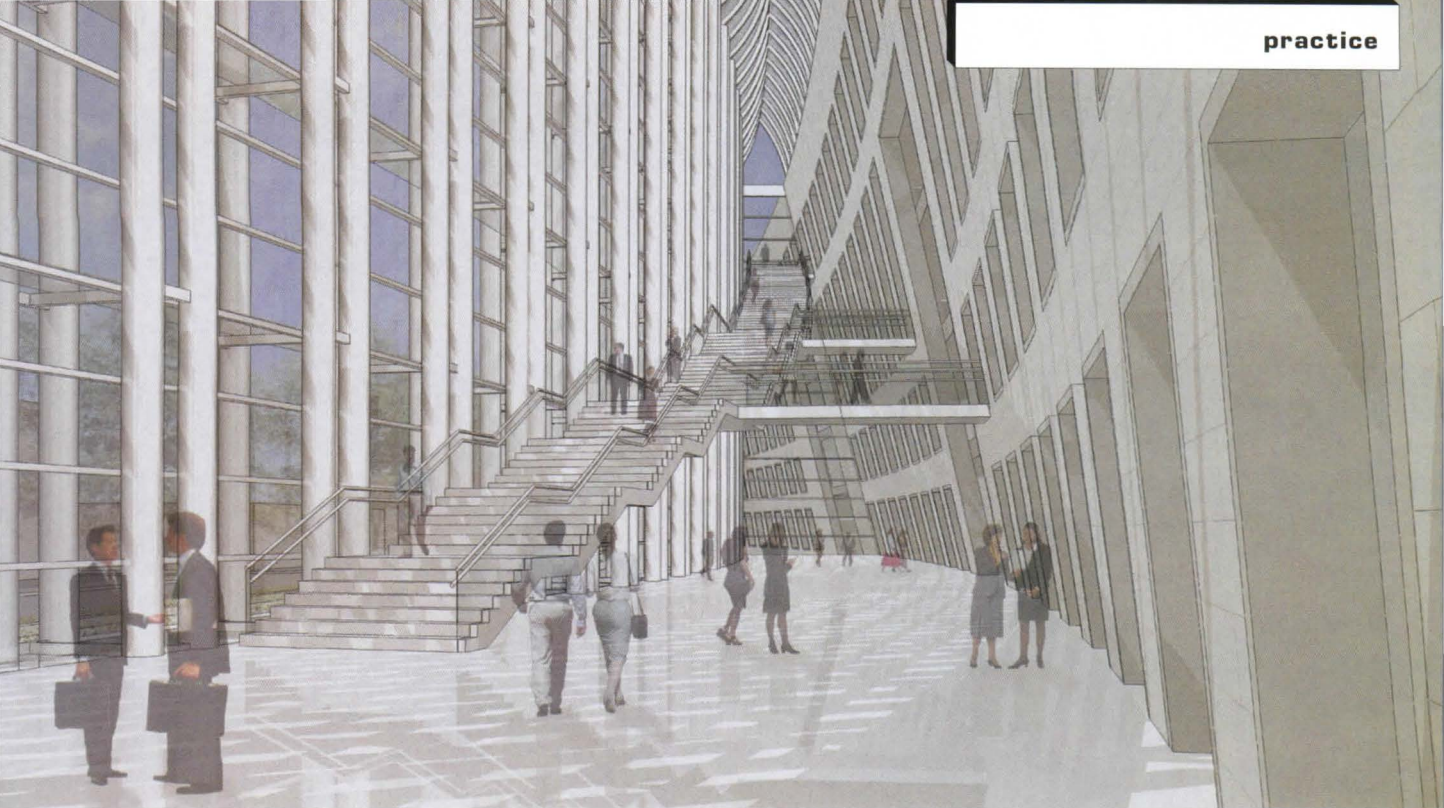


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TYRANNY OF THE CONTEST

There may be more competitions in the United States than ever before, but is the playing field level? by Bay Brown

As good design has become an increasingly sought-after commodity in the past few years, architectural competitions have accordingly gained popularity in the United States. On one level this is heartening—American practitioners benefit from a more equitable selection system, which is already a staple of European practice—but in reality, many architects are being taken advantage of as their clients have no professionally sanctioned competition standards to follow.

Take the contest of the decade: the race for the World Trade Center site. As the teams were rallying at the starting gate, Frank O. Gehry begged off, quoted in the press as saying he couldn't afford to subsidize his entry. In the end, at least one submission was reported to have cost seven digits. While many competitions are run completely above board, the problem is pandemic: Fault can be found with both

The lobby of the U.S. Federal Courthouse in Mobile, Alabama, which will be completed next year. Moshe Safdie and Associates won the competition for the project through the GSA's Design Excellence Program, a model of how competitions should be run.

invited and open contests, and in both the public and private sectors. And architects are fed up.

PRESENTATION INFLATION

The amount of time and money spent on submissions—and on in-person presentations—has escalated lately as clients have become more demanding and architects have voluntarily invested more time and money. Yet competition stipends rarely cover the costs, often falling short of expenses by as much as 84 percent, according to one disgruntled architect. In more than one case, architects discovered that if they had won the competition, their project fees still would not have covered the labor and materials for their entry.

Bob Hillier, president and chairman of the Hillier Group, based in Princeton, New Jersey, describes a telling moment during a Johnson & Johnson-sponsored invited competition: "They gave each of the five entrants a \$25,000 stipend, and each of us designed our entries as far as schematics.

J & J told me: 'We got five schematics for \$125,000. We couldn't even get one from you for that.'" But if he objects to the process, Hillier explains, he would be taken off the list of a potentially important client and maybe even be dropped from other lists, too.

The problem exists in the public sector as well. Glenn Jardine, head of the Atlanta office of Heery International, sees all types of clients—private and public—who have higher expectations now. Last year, Heery experienced a particularly galling incident when the firm responded to an RFP from the General Services Administration (GSA) for a \$25 million FBI building located in Birmingham, Alabama, a project not commissioned through the GSA's well-respected Design Excellence Program. Because they were partnered with a developer, the team was required to provide a pro forma, and the architects had to go into schematics, spending an estimated \$70,000 with no stipend. "To make matters worse," Jardine lamented, "there were upward of 30 sub-

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practice

missions, making our odds slim."

While large firms shell out the money grudgingly, smaller, less established firms simply can't keep up. An emerging Los Angeles-based architect, who prefers to remain anonymous, catapulted his career by winning a museum competition, which landed him on short lists with bigger, more established firms. "The problem for us is that our fellow competitors are older and more heavily capitalized," he explains. "It hurts us at a deeper level. We have fewer people and more burnout."

NEED FOR REGULATION?

Stanley Collyer, founding editor of *Competitions*, believes that presentation inflation has reached a crescendo: "Because competitions are not in any way regulated in this country, all kinds of abuses can occur."

The AIA would seem the obvious body to institute competition regula-

▣ "We let the cat out of the bag because clients expect it. The profession needs to re-establish standards before it self-destructs."

tions and, in fact, it did have standards for everything from submission requirements to stipend amounts. "In the old days, the only way a member could enter a competition was if it met AIA standards," says Carl Sapers, who served as general counsel for both the AIA and NCARB and now teaches professional practices at the Harvard Design School. But in 1971, the Justice Department challenged the AIA for impinging upon free trade, and later, in 1979, challenged their code of ethics in a trial that ended with the AIA paying a \$1 million settlement. As a result, the institute decided to terminate its code of ethics and, with it, their competition standards. In 1981, they issued very general competition guidelines, but they do not include recommended standards. In the 1980s, most state registration boards adopted professional rules of conduct, but again without such standards.

Bartholomew Voorsanger, principal of New York City-based Voorsanger Architects, recalls the sea change that

occurred at the time. "When the AIA acquiesced on that, any sort of genteel quality about the profession went down the drain." Bruce Fowle, senior principal of Fox & Fowle, also based in New York City, is likewise frustrated. "We let the cat out of the bag because clients expect it," he says. "The profession needs to re-establish standards before it self-destructs."

According to Sapers, the AIA can no longer mandate standards, but it could recommend them. With regard to stipends, Sapers suggests, that legally it would make sense for a standard to stipulate that the awarding authority give each of the finalists a percentage of the commission fee for the project based on each entry's contribution to the entire work product. Other recommendations might include a balanced jury (design professionals, client representatives, etc.), time restrictions, and limits on the number

of entrants for invited competitions.

"If there were such standards in place, clients would embrace them," says Hillier. "They generally don't want to steal; they're just naïve, so they do dumb things."

AN INTERNATIONAL PROBLEM

As the workplace is now global, the issue becomes an international one. In Europe, competitions are commonplace and generally required for all public projects and some private ones, depending on the country. But all is not rosy there, as entrants have countless stories of juries selecting ringers. In Asia, where an increasing number of American architects are entering contests, few standards exist.

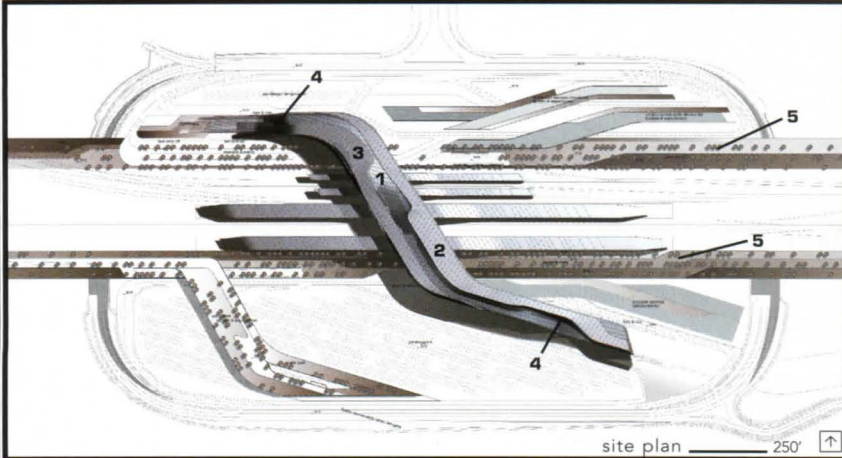
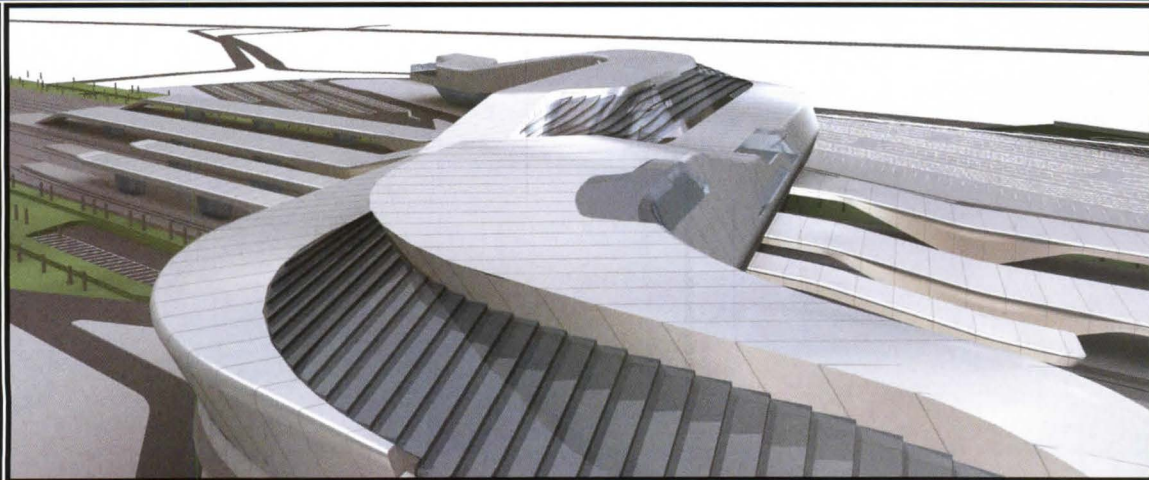
As submissions become more elaborate and architects lavish more money on their designs, it is time that the profession—a relatively low paying one—stop cannibalizing itself and adopt recommended standards. If architects want more respect, they should start with self-respect. ■

➔ ZAHA HADID ARCHITECTS | HIGH-SPEED TRAIN STATION NAPOLI-AFRAGOLA | NAPLES, ITALY

With the Pritzker Prize now topping Zaha Hadid's list of achievements—which also includes much-published projects such as the Rosenthal Center for Contemporary Art in Cincinnati, Ohio (August 2003, page 40), and the Bergisel Ski Jump near Innsbruck, Austria—the architect's career seems to be accelerating at a lightning pace. One of her latest projects is a high-speed train station in Naples, Italy, with aerodynamic-looking twists and turns that echo earlier, digitally-driven projects, such as her 1999 international garden show pavilion in Weil am Rhein, Germany (September 1993, page 68).

For this 215,000-square-foot train station, the designer lifts the entire program above the tracks. A drop-off area is placed along the east side of the Z-shaped plan, while parking runs

along the west edge. The central atrium contains ticket offices, waiting rooms, and a VIP lounge, and is accessed via two symmetrical entrances that lead first through split-level commercial galleries. The mission of the project is to provide both a symbolic and functional gateway to the city, and to act as the nexus for a proposed business park that would link several surrounding towns. Strips of parkland run parallel to the train tracks, with trees planted in decreasing density as they recede from the station. The arboreal configuration is meant to evoke the speed of trains departing, and the station's sinuous form is also intended to suggest motion. This strategy is reinforced inside, where the complex curves that delineate space follow anticipated commuter footpaths. Completion is slated for 2008. **Anna Holtzman**



- 1 waiting rooms
- 2 drop-off area
- 3 parking
- 4 commercial gallery
- 5 parkland

➔ STEVEN HOLL ARCHITECTS AND RÜSGLI ARCHITEKTEN | SWISS AMBASSADOR'S RESIDENCE | WASHINGTON, D.C.

The team of Steven Holl and Justin Rüssli, whose firm is based in Lucerne, Switzerland, has been selected from among 10 Swiss-American teams competing for the design of a residence for the Swiss ambassador. Sited within the country's embassy compound, the project replaces an outdated house in the Woodley Park area of Washington, D.C. The new 14,000-square-foot building is conceived as a series of incised cubes organized into a cruciform plan with priority given to interior and exterior sightlines. Ground-floor rooms assigned to official functions (dinners, salons, receptions) are oriented toward the Washington

Monument, establishing a visual connection to the city and its symbols. On the second floor, the ambassador's apartment, guest quarters, and staff accommodations are self-contained precincts with individual entrances. The vertical separation of public and private spaces is echoed in the exterior materials palette: charcoal-colored concrete with slate trim marks the entrance façade, while structural glass planks define the remaining walls. A sedum-covered roof connects the fifth façade to the parklike landscaping of the embassy grounds. Completion of the residence is slated for fall 2005. **Abby Bussel**



- | | |
|-------------------|---------------------|
| 1 entrance hall | 4 terrace |
| 2 reception rooms | 5 reflecting pool |
| 3 herb garden | 6 caretaker's house |

➔ JOHN RONAN ARCHITECT | PERTH AMBOY HIGH SCHOOL | PERTH AMBOY, NEW JERSEY

In an upset competition win over Eisenman Architects, Fox & Fowle Architects, and Morphosis, Chicagoan John Ronan has been selected to design a progressive high school for Perth Amboy, a once-thriving, working waterfront metropolis, 30 miles south of New York City, looking to square its educational offerings with its ongoing efforts in economic renewal. Slated for 15.5 acres now occupied by a public housing project at the city's edge, the 3,000-student school is organized as a tripartite scheme: a mat of programmatic zones at ground level, where a composite porous paving system filled with various materials (grass, clay, rubber, and gravel) marks athletic fields, outdoor learning areas, and parking; a "barscape" of five career-oriented learning academies; and five activity towers, glass-clad extrusions housing spaces such as media and fitness centers that are open to Perth Amboy residents as well as students. The towers serve as both a functional extension of the city's public realm and a symbol of an enlightened future on its skyline. Part of the school district's \$112 million state-funded building program, Perth Amboy High is scheduled to open in 2006. **Abby Bussel**



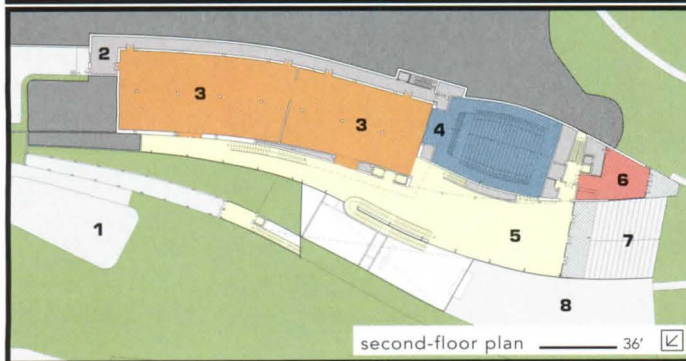
→ ROBERT A.M. STERN ARCHITECTS | AMERICAN REVOLUTION CENTER | VALLEY FORGE, PENNSYLVANIA

While the contemporary master of columns and quoins may seem a most appropriate designer for a 100,000-square-foot museum honoring the American Revolution at historic Valley Forge, he has not designed this structure in a historicist style. For the project, created by the National Parks Service in partnership with the locally-based nonprofit National Center for the American Revolution, Robert A.M. Stern seems instead influenced by Frank Lloyd Wright's exuberant organic modernism, arguably a more American idiom than the Colonial style we borrowed from Great Britain.

Housing the largest collection of artifacts and manuscripts


related to the birth of our nation, the center intends to celebrate the diversity of the men and women of all nationalities who fought for their country. Given this goal, it is fitting that the design evokes one of the country's most original designers.

The steel and concrete structure clad in glass and local stone burrows into the landscape, and provides views to the historic Grand Parade, the park's central feature. Inside the museum, the great hall—a light-filled two-story atrium with Pennsylvania blue-stone flooring and a walnut ceiling—breaks down the boundaries between inside and out, completing the homage to Wright. The project is expected to be completed in 2006. **Bay Brown**



- 1 tram stop
- 2 loading dock
- 3 exhibit space
- 4 theater
- 5 great hall
- 6 restaurant
- 7 outdoor seating
- 8 plaza (below)






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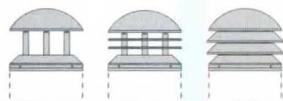


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RESOURCEFUL THINKING

Skeptics among us may believe that the Ford Motor Company's 20-year, \$2 billion transformation of its historic Rouge Center in Dearborn, Michigan, is nothing more than an elaborate public relations affair. They may think that the 10-acre sedum roof on the company's new final-assembly plant merely deflects attention from the manufacturing of fossil-fuel-burning trucks beneath it. They may perceive the energy-reducing rooftop light monitors that naturally illuminate the factory floor, the swales and porous pavements, the retention ponds, and the native plantings as little more than Band-Aid solutions. This is, after all, the place where Henry Ford first integrated the processing of raw materials with the manufacturing of parts and the assembling of vehicles. It is the place where toxins have been released into the air and deposited in the soil for nearly a century. But there's a "What if?" What if this works? What if William Clay Ford, Jr., the founder's grandson and the company's current CEO, really does produce a viable model for sustainable manufacturing? What if the agile minds he's brought to bear on his company's past and future—an interdisciplinary team including William McDonough and D.I.R.T. Studios, among many others, from hydrologists to chemists—really do create a "regenerative plant" that remembers its own history (the good, the bad, and the ugly), and establishes new ways to work more cleanly and efficiently? Then we can set an even more ambitious agenda: mass-produced vehicles that don't burn fossil fuels at all. ■





some sustainability required

A TRUCK PLANT WITH A 10-ACRE SEDUM ROOF KICKS OFF THE TRANSFORMATION OF FORD'S HISTORIC ROUGE COMPLEX INTO A MODEL FOR ECOLOGICALLY MINDED MANUFACTURING. BY STEVEN LITT | PHOTOGRAPHS BY ADAM FRIEDBERG

First, the disclaimers. The new truck plant at Ford Motor Company's Rouge Center in Dearborn, Michigan, just southwest of Detroit, isn't the most exciting thing to look at. It's a 1.16-million-square-foot box with plain, grayish-white aluminum façades punctuated around the base by loading docks and rows of small, squarish windows.

Built for \$100 a square foot, it's as plain as a gigantic refrigerator, which it resembles from some angles. The façades haven't been covered yet with vines that are being trained to grow up the nylon mesh draped over the exterior. And from the ground, you can't see the building's most notable feature, a 10-acre green roof that is the world's largest, according to the Guinness Book of World Records.

But looks aren't on the agenda. As one of the biggest experiments in eco-friendly design on the planet, building performance is: "We weren't going for visual drama, we were going for fundamental values," says architect and educator William McDonough, the green-design evangelist based in Charlottesville, Virginia.

McDonough was hired by Ford CEO William Clay Ford, Jr.,

five years ago to spearhead a \$2 billion, 20-year-long transformation of the 600-acre Rouge Center from an icon of vertically integrated manufacturing in the twentieth century to a model of sustainability in the twenty-first. For the truck plant, the most visible expression of Ford's green philosophy to date, McDonough headed a team that included Detroit-based Arcadis as architect of record.

TOEING THE GREEN LINE

The big roof, which resembles a slice of prairie raised into the sky, is covered with thousands of 10-foot-square panels planted with sedum—a small, invasive succulent that blooms in spring with tiny white, yellow, red, and purple flowers. The vegetation, which is expected to double the life of the roof from 15 to 30 years, provides insulation and protection from ultraviolet light.

Most important, the roof is designed to soak up 4 million gallons of storm water a year, releasing it slowly into a constructed wetland immediately to the east, where it collects in terraced ponds. McDonough says the roof has already saved Ford as much as \$5 million that the company would have had to invest



in a water-treatment plant.

Inside the building, where pickup trucks are assembled in 16 work cells, light monitors flood the shop floor with daylight, keeping workers attuned to the cycle of the sun and reducing electricity needs. Ten supersized HVAC units on the roof provide an even flow of fresh and dehumidified air, while keeping internal air pressure slightly higher than that on the exterior. The system obviates the need for ductwork, reduces visual clutter, creates greater flexibility in the placement of conveyor belts, and is expected to be 50 percent cheaper to operate than a traditional air-conditioning system, according to McDonough.

Ford officials expect the building to save them millions of dollars by increasing worker productivity and reducing outlays for energy, maintenance, and storm-water treatment. But the building is so new that the company hasn't gathered data to gauge how well it is producing the expected benefits, financially or environmentally. (The plant will not be fully functional until this month, when 800 employees report for each of three daily shifts.)

Ford has asked federal and state environmental officials, along with students and faculty from the University of Michigan, to measure the building's performance. For now, though, McDonough and Ford spokesmen point enthusiastically to anecdotal evidence about how the Rouge Center, once nearly dead ecologically, is coming back to life. "It is amazing to see how quickly nature responds," notes Tim O'Brien, Ford's vice president for corporate relations.

Last summer, for example, killdeer began nesting on the

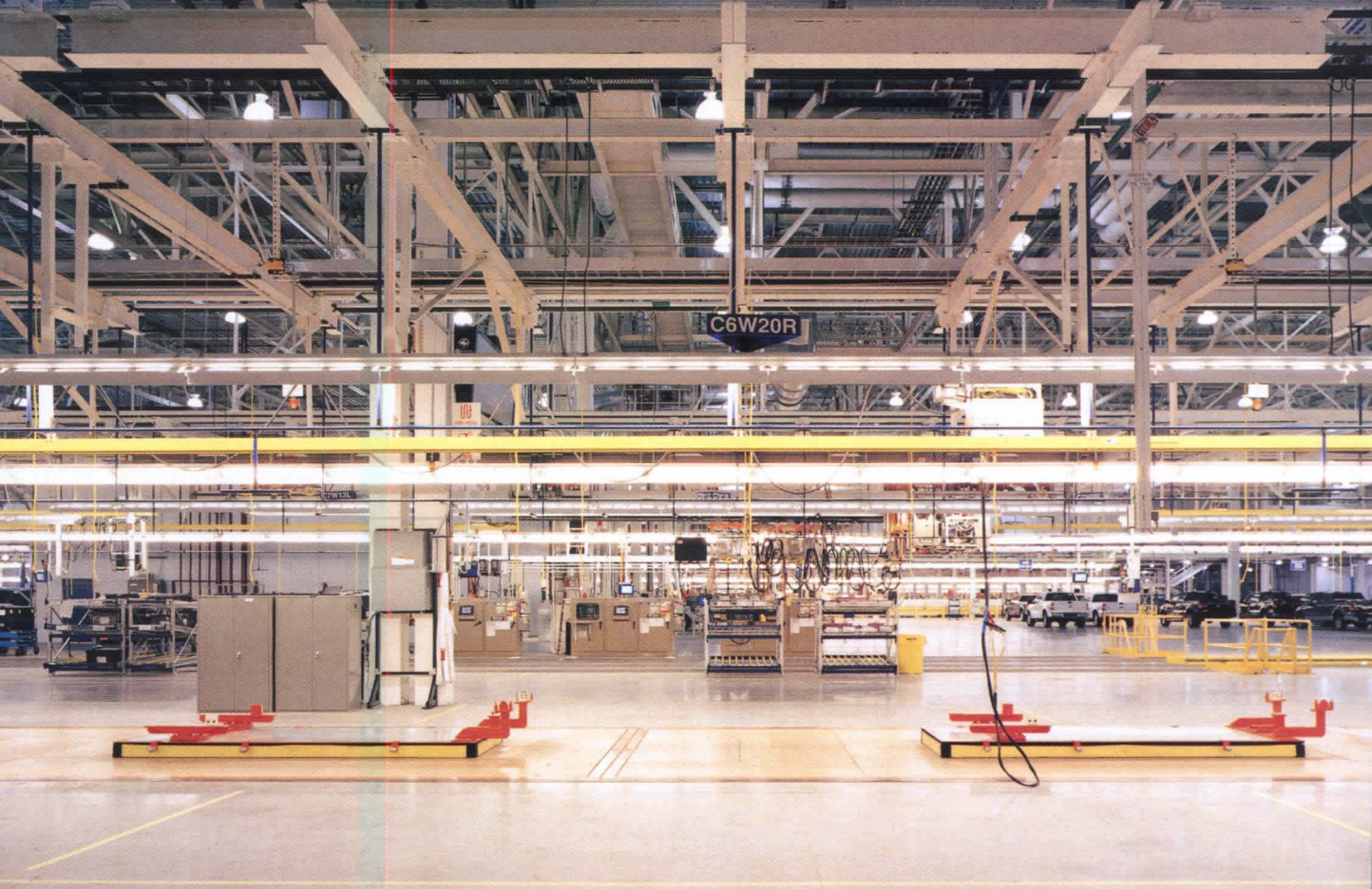
sedum roof days after the system was installed, and mallards gathered in the constructed wetland. And in an orchard of crabapple and hawthorne trees between the wetland and the assembly plant, Ford workers installed beehives to pollinate the grove and the green roof, producing many pounds of honey in the process.

IS SUSTAINABLE MANUFACTURING AN OXYMORON?

It is easy to criticize the final-assembly building as a clever public-relations move on the part of a company whose bottom line depends on selling millions of fossil-fuel-burning vehicles. After all, the eight-cylinder F-150 truck, which is produced inside, gets 15 to 17 miles per gallon in the city and 19 to 20 on the highway.

Ford officials, however, claim that they deserve credit for investing in sustainable design, both at the Dearborn plant and in vehicle prototypes such as the Model U, a McDonough-influenced concept car unveiled last year that sports parts made from soybeans and cornstalks. But the Rouge Center overhaul doesn't go far enough. The company rejected as too expensive McDonough's idea of generating electricity from windmills, for example. On the other hand, while the Rouge master plan has been compromised by such decisions, if research shows that the plant benefits both the environment and the company's bottom line, it could be as widely imitated as Henry Ford's assembly line was a century ago.

The aesthetics of the new building at the Rouge Center may be wanting, but its social and environmental aspirations—and potential influence—are nothing short of thrilling. ■



Beneath its 10-acre sedum roof (preceding pages) Ford's 1.16 million-square-foot truck plant is a lesson in structural and organizational choreography, with catwalks and ductwork hovering above 16 identified work cells dedicated to various assembly and testing functions.





A web of truss work accommodates all matter of assembly needs, while massive light monitors reduce the need for artificial illumination. Ford employs "synchronous material flow" and waste-reduction techniques to help limit the environmental impact of their processes.

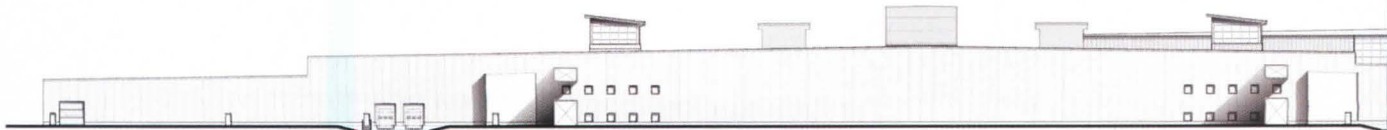








Ford intends to show off the truck plant's environmental features by staging public tours from a new 30,000-square-foot visitors center (top left in photo), which offers unobstructed views of the green roof on the final-assembly building from a glass-enclosed, 80-foot-high observation room. Part of the 20-year Rouge Center master plan called for the remediation of the land, including a storm-water retention pond, new landscaping, and beehives to pollinate the young trees.

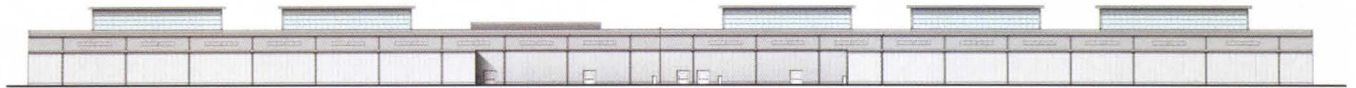


Ford Rouge Center Revitalization and Dearborn Truck Plant, Dearborn, Michigan

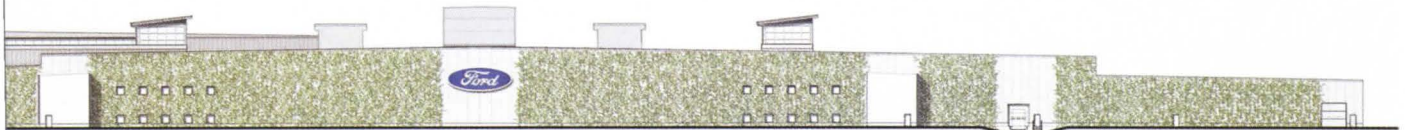
client | Ford Motor Company—Tim O'Brien, James Richardson, Gordon Cooley, Roger Gaudette, Richard Bardelli; the Henry Ford—Steve Hamp
architect | William McDonough + Partners, Charlottesville, Virginia (master plan; concept design)—William A. McDonough (design principal); Russell K. Perry, (partner-in-charge); Diane M. Dale, Roger Schickedantz, Richard Price (project managers); Jim Duxbury, Andres Backer, Schaeffer Somers, Rick Jackson, Bryna Dunn, Flavio Espinoza, Jen Cline, Maria Chao (project team) **architect of record** | Arcadis, Southfield, Michigan (truck plant)—Loren Klevering, (principal-in-charge); Richard Shriner (project manager); Bill Kroczołowski (design); Fred Payne (storm water); Dennis O'Bierne, Keith Holt, Dan Ventimiglia, Sewa Barmi (project architects) **engineers** | Arcadis (structural, M/E/P, civil); Professional Supply (M/E/P); Arcadis (storm water); **consultants** | Nelson Byrd Woltz Landscape Architects, D.I.R.T. Studio (master plan landscape design); HarleyEllis (landscape architecture); Cahill Associates (storm water concepts); MBDC (materials research and product development); Arcadis, HarleyEllis (interiors); BRC Imagination Arts (exhibits); Michigan State University (soil and agricultural research); Mannik & Smith (roads); Battelle (business case analysis); Golder Associates (environmental analysis); Northern Power Systems (renewable energy research); Ove Arup & Partners (structural and mechanical engineering concepts); Quinn Evans/Architects (historic preservation analysis); Rochon Associates (illustration); Steven Winter Associates, U.S. Department of Energy (energy analysis); Tilton & Associates, Wildtype Native Plants (native vegetation); University of Michigan (daylighting); URS (phytoremediation installation) **subcontractors/suppliers** | WH Canon (landscape); JM Olson (general trades); Professional Supply (HVAC); Xero Flor (green roof); ChristenDetroit (roofing); Walters Gardens (vegetation); Crittall (historic replacement glazing); Traco Skytech (skylight); Supersky (canopy); BP Solar (PV canopy) **general contractor/construction manager** | Walbridge Aldinger **area** | master plan: 600 acres; truck plant: 1.16 million square feet

Specifications

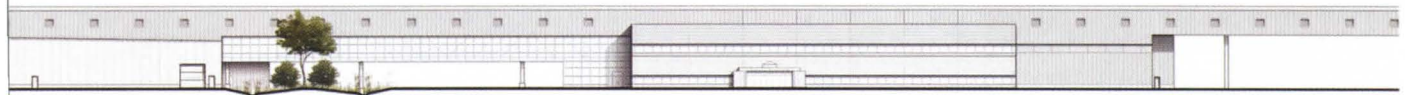
concrete structure | Devin Industrial Group, DeMaria, Aristeo, Stenco **steel decking** | Midwest Steel, Havens Steel, Bristol Steel, Contractors Steel, Alpha Steel, Federal Steel and Pipe, United Structural Deck, MBM/Ojibway Industrial **steel pilings** | E.C. Korneffel **curtain wall** | Kawneer **metals** | Crown Corr, Centria, Metalco **mesh trellis** | Carron Net **vegetation/native plants** | Walters Gardens, Hortech **modified bitumen roof membrane** | Siplast **glass** | Viracon **skylights** | Traco-Skytech Systems **metal doors** | Overhead Door, LCN **ornamental handrail** | Ideal **locksets** | LCN, Schlage, Rockwood **ceiling systems** | Armstrong, Integrated **toilet partitions** | Yemm & Hart **cabinetwork/custom woodwork** | Shelby Williams **paints and stains** | ICI Paints **flooring** | Johnsonite, Lonseal, Virginia Tile **carpet** | Shaw, Mohawk, Interface, Reese **gypsum** | Lafarge, USG, Dietrich **laminates** | Nevamar, Dupont, Corian **lockers** | Shelving, Penco **furnishings** | American Seating **interior ambient lighting** | Lithonia Lighting **elevators** | Thyssenkrupp **plumbing fixtures** | American Standard, Sloan Royal, Olsonite, Waterless **irrigation** | Century Rain Aid **energy management** | TAC life **safety/security systems** | Ademco **fire alarm/fire suppression** | Simplex, Wolverine, Shambaugh **HVAC** | Carrier, Recan, DesChamps, Ventcon **electrical systems** | Square D **photovoltaics** | BP Solar **solar thermal system** | Solel Solar Systems, Professional Supply



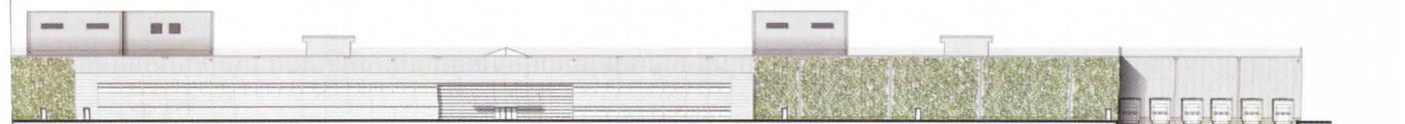
elevation showing light monitors



elevation showing main entrance



elevation showing bridge connection to visitors center



elevation showing mesh armature with mature vines



עירי בלעטעניפול

IN BRITISH COLUMBIA, A SMALL CITY THINKS BIG AND GREEN.

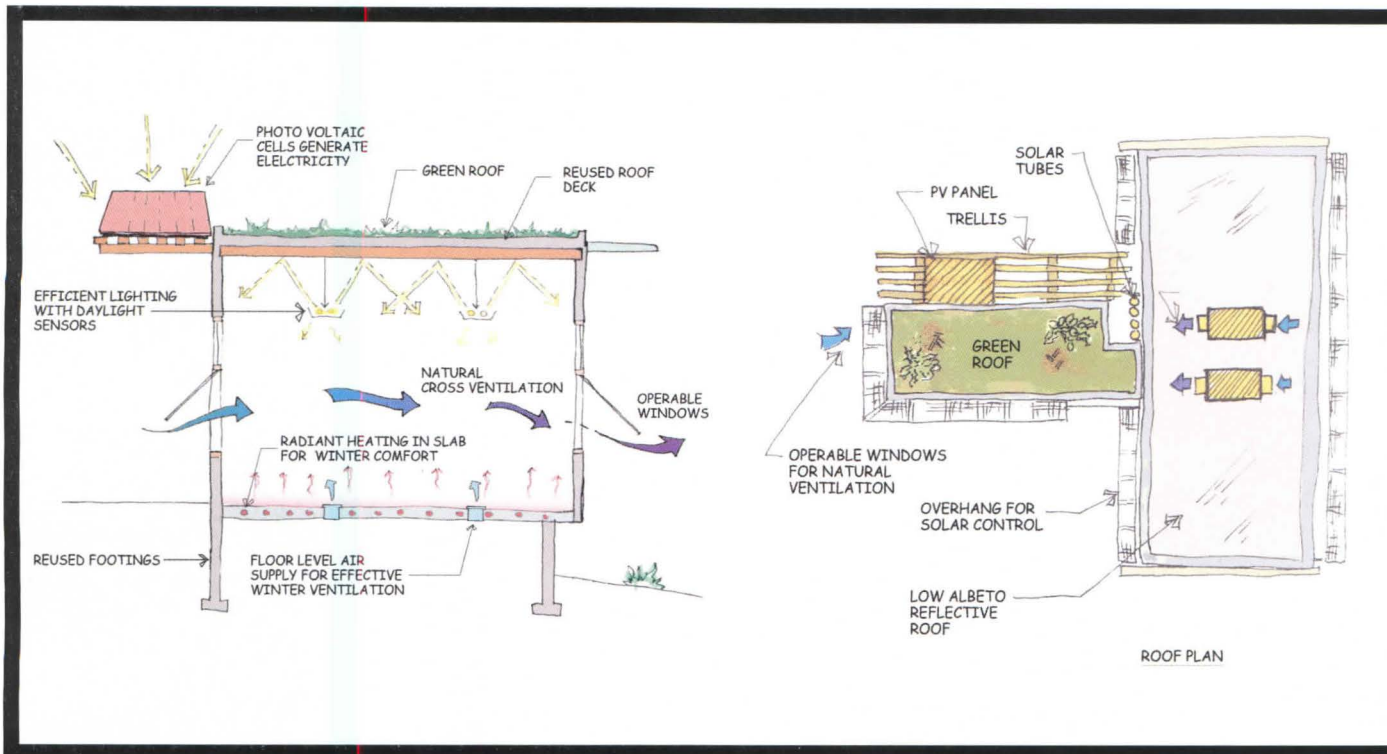
BY ABBY BUSSEL





Corrugated metal and red cedar siding imbue the White Rock Operations Building with a sense of lightness. Operable windows throughout the facility and manifold-based evacuated-tube heat collectors that provide pumped, closed-loop water heating to the building are among the architects' many low-tech strategies for minimizing use of natural resources and keeping operating costs down.





When Daniel Burnham and his compatriots designed their White City for the World's Columbian Exposition of 1893, they were betting that a neoclassical exemplar of metropolitan life would initiate a socially unifying architectural movement in a country struggling with unprecedented urban growth. Little more than a century later, municipalities across North America are promoting a different kind of city-beautiful movement, one that is more than skin deep, but equally invested in galvanizing citizen support: the sustainable use of natural resources. From a green roof on Chicago's city hall and Morphosis's energy-efficient San Francisco Federal Building to the use of alternative fuels in official vehicles, government demonstration projects are changing the nature of public works. It is a post-stylistic movement that aims to both save taxpayer dollars and inspire similar strategies in private-sector development.

In Canada, this paradigm shift in public-works construction has been more pronounced, especially on the West coast, where a deep connection to the land has long characterized much of the population. Like other progressive movements, advancements of any kind tend to be made by the most agile proponents through small interventions that slowly seep into the mainstream.

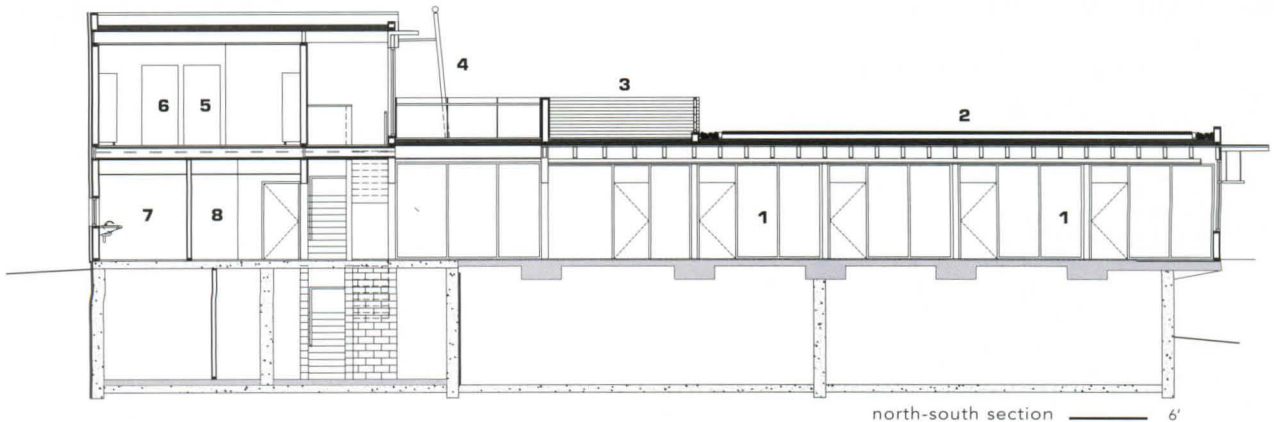
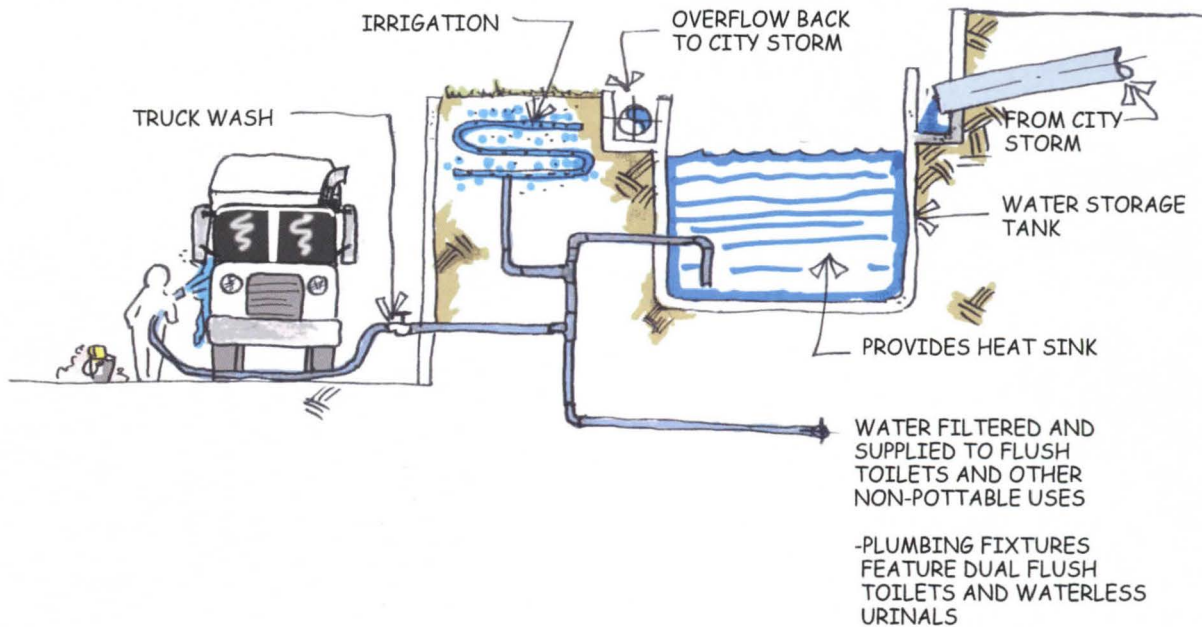
One such advocate is the city of White Rock, British Columbia, a waterfront resort community about 30 miles south of Vancouver, that promotes sustainable strategies in its own building projects, as it did when conceiving of its new engineering-and-operations building as a model of resourceful design. And with the assistance of Busby + Associates, the city produced the first new building in Canada to earn LEED "gold." (Two years ago, British Columbia adapted the U.S. Green Building Council's rating system to its own standards; last summer, the Canada Green Building Council was established, which will soon administer a national LEED system).

To replace the operations department's makeshift workplace of trailers and a small wood-framed building, the architects' process was primarily focused on strategies to reduce energy and water use in the new 6,545-square-foot structure. They also took the idea of recycling to heart. Because of the project's modest budget, "our approach to sustainability was decidedly low-tech," explains Busby associate David Dove: "We let the building do as much as possible."

The complex—two pavilions on a hillside; one for administrative offices, the other for crew facilities—takes advantage of existing site conditions by reusing components of a long-decommissioned waste-treatment plant. The two-story crew pavilion, for example, sits on the foundation of the old plant's control building. And a storm-water retention pond reuses one of the waste treatment tanks; the collected rainwater and street runoff are redirected for toilets, site irrigation, and weekly vehicle washings. Other natural-resource-harnessing devices include deep sunshades, roof overhangs, and deciduous trees to provide seasonal protection. A row of water-filled glass vacuum tubes on a south-facing façade provides base heating.

According to Dove, his team ensured that just under 98 percent of the existing building was recycled, diverting 267,000 tons of construction material from landfill. Numbers released by the city of White Rock are equally impressive: The operations building cost a mere 8 percent more than a conventional structure, while reducing energy costs by an estimated 40 percent.

The town's operations center is a modest entry in the larger sustainability movement, but it is precisely this kind of small-scale demonstration project that can have a wide influence. This new city-beautiful movement may not have the pomp and circumstance of the original, but its long-term benefits offer a unifying agenda that reaches beyond the style of the day. ■



- | | | |
|--------------|--------------------|------------------|
| 1 offices | 4 solar collectors | 7 washrooms |
| 2 sedum roof | 5 locker room | 8 first-aid room |
| 3 roof deck | 6 shower room | |

White Rock Operations Building, White Rock, British Columbia, Canada

client | City of White Rock **architect** | Busby + Associates, Vancouver, Canada—Vaughn Berg, Peter Busby, David Dove, S. Edwards, Rod Maas, Agatha Malczyk, Kathy Wardle (project team) **engineers** | Fast + Epp (structural); Flagel Lewandowski (electrical); Keen (mechanical) **consultants** | Wendy Grandin (landscape); Pacific Environmental (indoor-air quality) **general contractor** | KDS Construction **area** | 6,545 square feet **cost** | \$1.2 million

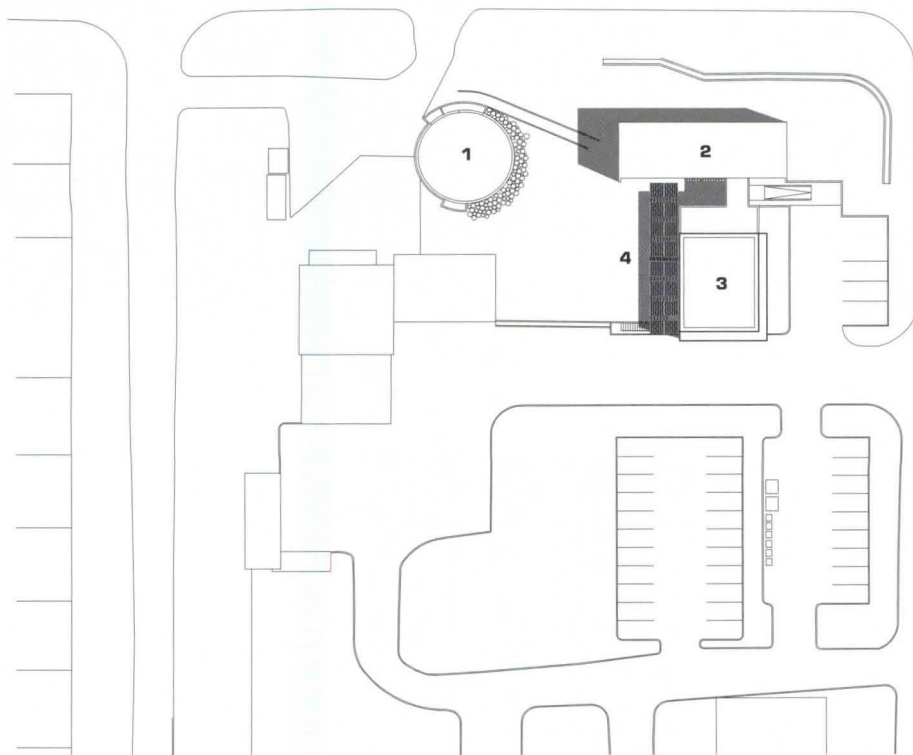
Photographs by Colin Jewall

Specifications

concrete | Rempel Bros. Concrete metal/glass curtain wall | U.S. Aluminum of Canada corrugated metal | Vic West wood siding | Cedarland built-up roofing | Soprema paints and stains | Sherwin-Williams, ML Campbell recycled-rubber flooring | Dinoflex carpet | Collins & Aikman roller shades | Solarfective lighting | Zumtobel, Staff, Lithonia, Insight photovoltaic panels | Shell plumbing fixtures | American Standard, Caroma evacuated-tube heat collectors | Thermalstar



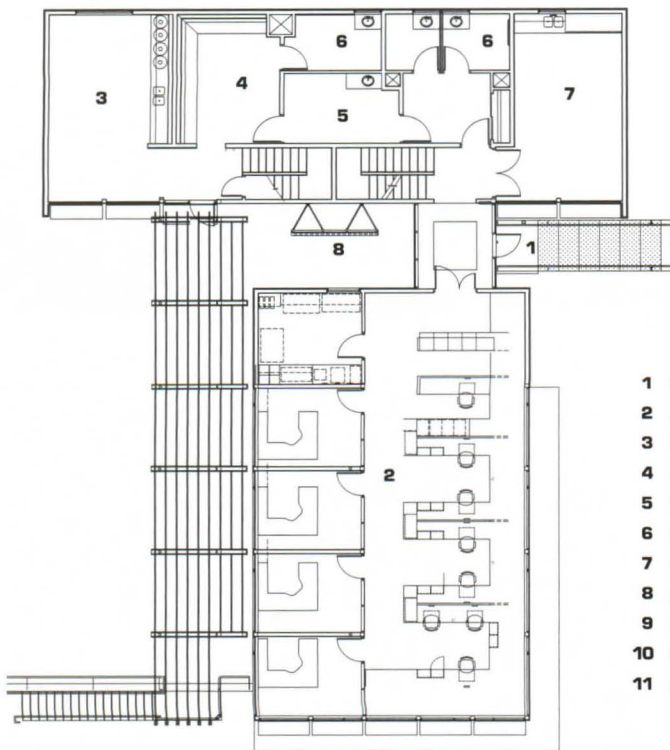
An east-facing trellis leads to the front door of the crew facilities. Since these photographs were taken, vines have been planted at the base of the wood walls of the trellis, and panels of photovoltaic cells have been added to its roof.



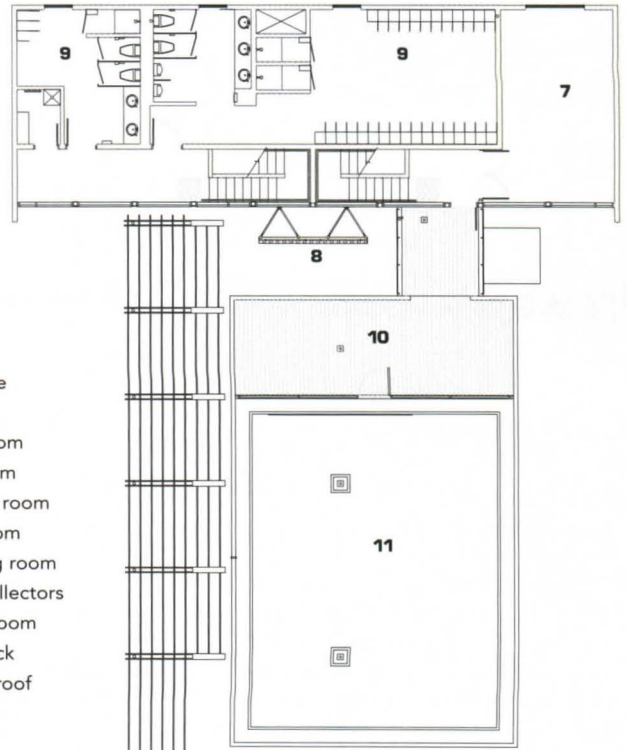
- 1 storm-water retention pond
- 2 crew facilities
- 3 administrative offices
- 4 trellis



Glass interior walls bring natural light deep inside the building, while occupancy sensors minimize electricity consumption in rooms that are used periodically. Joists were salvaged from a nearby demolition site. Water-based, nontoxic adhesives were used throughout.

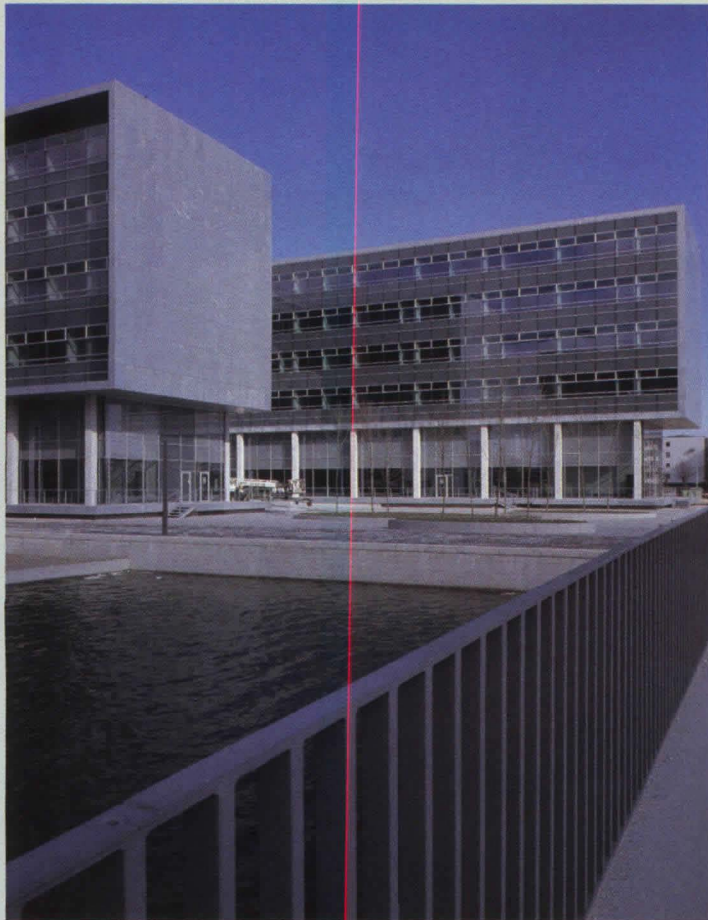


first-floor plan



second-floor plan 8'

- 1 entrance
- 2 offices
- 3 lunchroom
- 4 mudroom
- 5 first-aid room
- 6 washroom
- 7 meeting room
- 8 solar collectors
- 9 locker room
- 10 roof deck
- 11 sedum roof



Situated on a new canal (above right), IT University finds its place at the edge of Ørestad's residential neighborhood. In plan, a central atrium (facing page) separates two bar-shaped wings that slip past one another (above left) to create an entrance plaza. Cubic meeting rooms also slip beyond the footprint of the bar buildings.

OPEN UNIVERSITY

In Copenhagen, a spatially dynamic building helps computer science students reconcile the physical and virtual worlds.

BY LARS BANG LARSEN | PHOTOGRAPHS BY JENS LINDHE

Built on undeveloped land and marketed as a "city-within-the-city," Ørestad is a new district being added to Copenhagen. Its conception and construction is very SimCity: Appearing to rise straight out of the urban planner's drawing board, it is a still-nascent district for business, education, shopping, and living linked to Malmö in southern Sweden by a bridge that opened in 2000 to create an international region. In the northern part of the new district,

Henning Larsens Tegnestue (HLT) has designed a building for the Information Technology University of Copenhagen, a five-year-old institution that had resided in provisory premises until now.

To Henning Larsens—who established his practice in 1959 and is considered heir apparent to Arne Jacobsen—stylish functionalism is second nature. With an emphasis on material honesty and on light and space, HLT's projects have a distinctly

Scandinavian look. However, this reputation for architectural discretion may be jeopardized by the firm's new opera house, a shipping tycoon's controversial present to Copenhagen that, when finished next year, will dominate a historical part of the harbor. Unlike that instant cultural icon, IT University doesn't stand out on its own, but is built to adapt to the urban fabric surrounding it. In this case, it is an urban fabric yet to come—but that is just one of the





Glass elevators and an open-air staircase with broad landings (facing page) provide views of both the atrium and the cityscape to the east. The glazed ceiling and end walls of the atrium together serve as a transparent foil to the solidity of untreated concrete columns, polished concrete floors in common areas, and solid ash on the meeting rooms floors.

project's conjectures: The building is also meant to harbor a new kind of education. When it receives its first batch of students this summer, the university will offer a new degree that combines business, research, and design. It is a syllabus conceived for the team-workers and generalists of the future, and one that demands flexible workspaces that open beyond the classroom to become hybrid accommodations of leisure and group studies.

OPEN-SOURCE SPATIAL DYNAMICS

HLT's building incorporates those needs into a curtain-walled six-story structure centrally organized around a four-story atrium, roughly 70 feet wide by 200 feet long. The atrium is placed between two parallel wings that stretch farther out on each end, with café and social spaces at

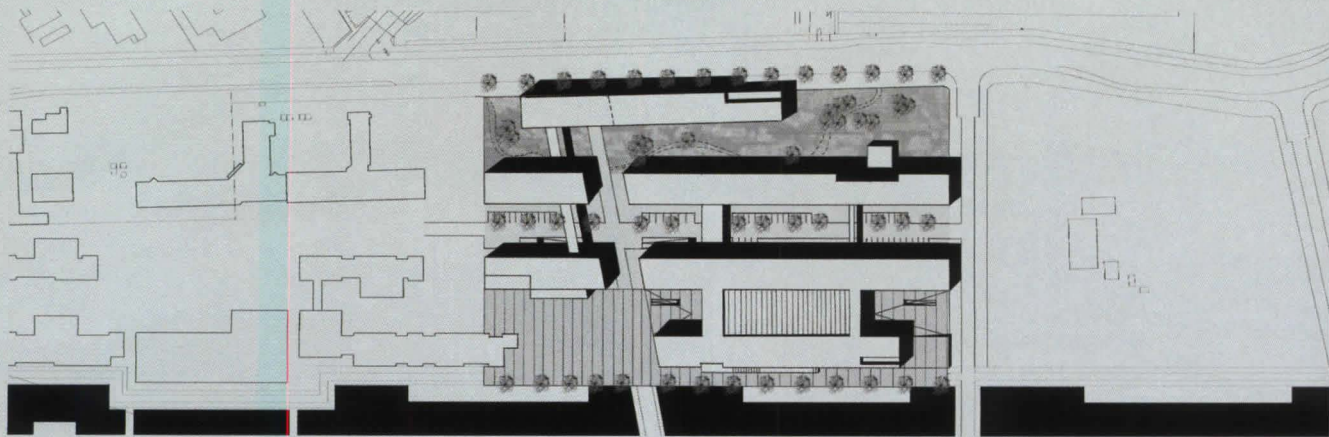
their tips, placed this way to better engage the neighborhood growing around the university. Educational spaces are concentrated in and around the atrium, most spectacularly in space-age boxes shooting out at different lengths and levels like open drawers, as the architects refer to them, enclosing meeting rooms that hover above the polished-concrete atrium floor. The partially glazed appendages look like pistons in a knowledge factory, offering occupants wide-ranging visual connections to their surroundings. Their Canadian ash floors provide moments of luxury in the building's otherwise economic palette of industrial-strength materials. At ground level, the organically shaped walls of the main auditorium modulate the atrium's hardened horizontals and verticals.

From the outside, the glass façade is set deep in a metal frame that seems to fold over the entire building, its surface galvanized and raw against sandblasted, tinted, green, and clear glazing. The façade didn't turn out to be quite as transparent as planned, but it still allows for a play of color and texture.

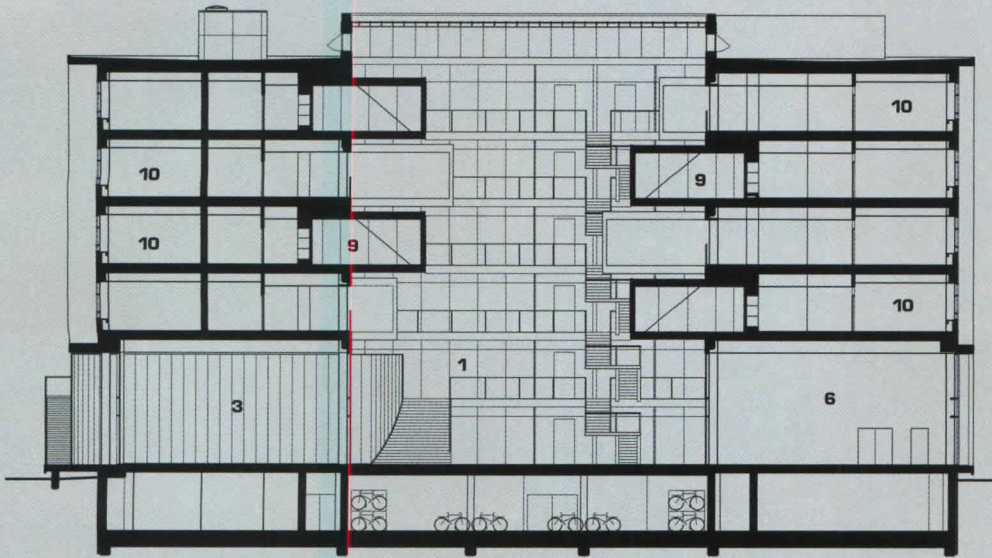
The new building for IT University—intelligently pared down and spatially dynamic—is a design for the knowledge economy and the staging of an unexplored curriculum. It makes for a cool, vibrant ambience suitable to the study of a new soft science.

Lars Bang Larsen is a writer based in Bilbao and Copenhagen. He writes for magazines and journals, including *Art Forum*, *After All*, and *Springerlin*.



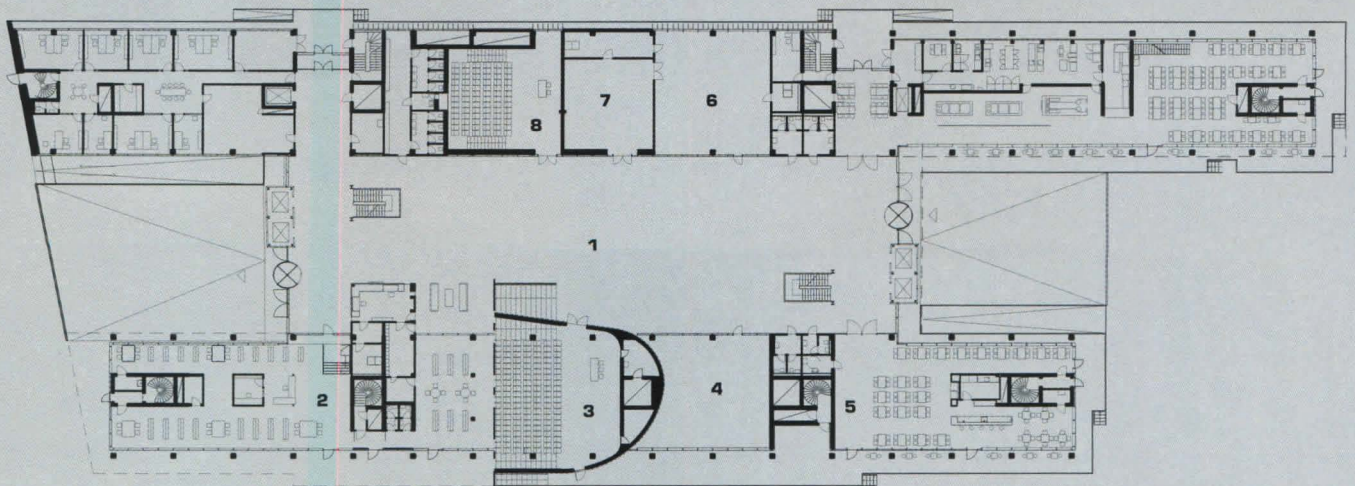


site plan — 100'



north-south section — 17'

- 1 atrium
- 2 library
- 3 auditorium
- 4 multimedia lab
- 5 café
- 6 hardware lab
- 7 virtual-reality lab
- 8 lecture hall
- 9 meeting room
- 10 classroom



ground-floor plan — 30' ↑



IT University of Copenhagen, Ørestad Nord, Copenhagen

client | Danish National Research and Educational Buildings **architect and interior architect** | Henning Larsens Tegnestue (HLT), Copenhagen—Michael Christensen, Søren Øllgaard, Dominic Balmforth, Gitte Edelgren, Nana Ejlers, Osbjørn Jacobsen, Jan Besiakov, Signe Kongebro, Jens Larsen, Mikael Skadborg (project team) **structural and M/E/P engineer** | Carl Bro **landscape architect** | Svend Kierkegaard **consultant** | HLT, Carl Bro (lighting) **contractors** | NCC Construction (structural frame); Marius Hansen (façades and roof); MT Højgaard (fittings); Kemp Og Lauritzen (electrical); Glenco (HVAC); Skelskør Planteskole (garden); Invensys (building automation); Siemens (security) **construction managers** | Hifab, Wissenberg **area** | 215,000 square feet **cost** | \$50 million

Specifications

structural metal | CSK Stålindustri **metal/glass curtain wall** | Schüco, Saint Gobain **insulation** | Rockwool **built-up roofing** | Icopal **glazing** | Saint Gobain **skylights** | Schüco **windows** | Window Master **metal doors** | Schüco **wood doors** | Swedoor **sliding doors** | Record BTM, Dorma **security doors** | Siemens **locksets** | Ruko, Dorma **ceiling systems** | Knauf **panels** | Deko, Feco, Trox **demountable partitions** | Rockfon **paints and stains** | Dyrup **wallcoverings** | Danogips **linoleum flooring** | Armstrong **carpet** | EGE Tæpper **wood flooring** | Norparquet **tile** | Winkelmann **downlights** | Luminex, Bega **elevators and escalators** | Kone



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NATURAL HYBRID

A composite cocoon of steel and wood shelters Vancouver commuters.

by C.C. Sullivan

Glue-laminated timber, or glulam, offers a rustic, rugged appeal when exposed, and it is often associated with the rectilinear profiles of traditional lodges and Craftsman houses. Yet its use in curving structures can be even more impressive. Its properties, which derive from stacking individual pieces of dimension lumber, are ideal for **curved beam-columns and trusses**. The combined bending and compression of arched glulam members are expressed in limitless ways, offering architects design freedom and the opportunity for structural audacity.

To further improve glulam's range of use—and to ease construction—designers may add steel components to the pre-engineered assemblies, notes Paul Fast, a partner in the Vancouver, Canada-based structural engineering firm Fast + Epp: “**Composite timber-and-steel** trusses are very common and efficient.”

COMPOSITE CANOE

For the Brentwood Station of the Vancouver SkyTrain's 18-month-old Millennium Line, architect Martin Nielsen, senior associate with the local firm Busby + Associates, took formal inspiration from the canoe, whose wooden cross ribs give the vessel outsized strength, but inverted the shape to create a sheltering “cocoon.” Adding complexity to the form, the architects chose to open the canoe's spine with an unusual “zipper” of steel cross-bracing, which provides **seismic force transfer** and also vents the wood members to help prevent rot.

The warmth of the wood ribs is matched by the exposed underside of **2-by-4 roof decking**, nailed side on, that spans from beam to beam to create a diaphragm reminiscent of how old warehouses in the area were built. The 15-foot spans of wood deck lend a fine grain to the interior of the canopy—and the method was found to be less expensive than a curve-formed metal deck. (The exposed side is laid with plywood sheathing and a thermoplastic-polyolefin, or TPO, membrane.) A rare detail, a **structural gutter** (see page 74), transitions the arched roof to walls of modular **shingled glazing**, which resolve at a precast-concrete platform edge beam.

For economy, Nielsen focused on repeated canopy elements and the needs of fabricator equipment, consulting with steel, glazing, and glulam suppliers early in schematic design. Modeled in 3-D with Microstation, the tapered enclosure yielded nine rib shapes.

STEEL FOR STRENGTH AND SHAPE

Although the architects preferred a primarily wood structure, they found composite ribs a more feasible and enduring solution for several reasons:

- ☐ The available **radius of curvature** of glulam timber has practical limitations, mainly based on lamination thickness (see “Glulam:



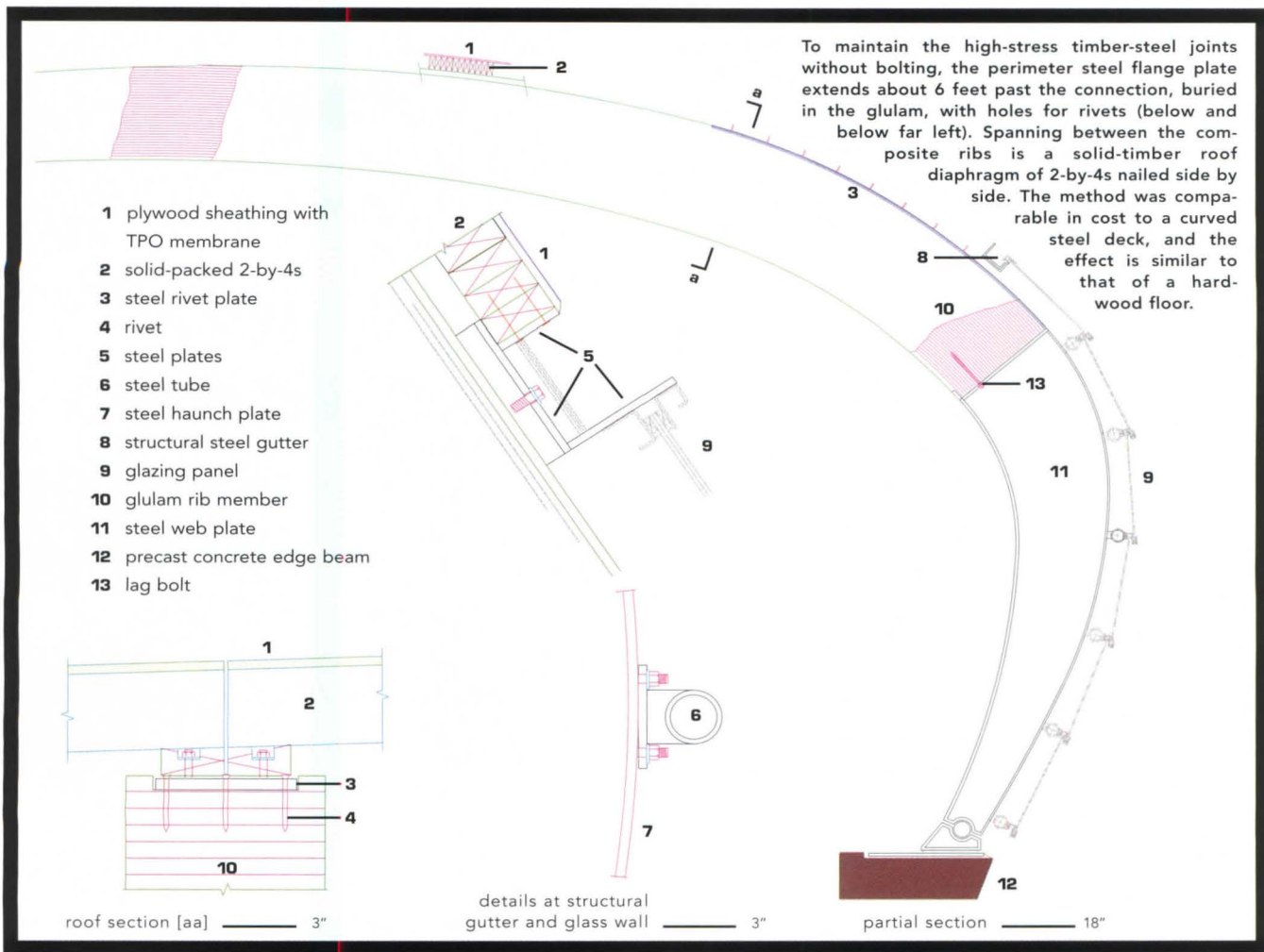
The train station was conceived as a “kit of parts,” says the architect, to allow for shop fabrication of repeated elements. The architect created a 3-D Microstation model that the glass, steel, and glulam suppliers used to optimize component shapes and dimensions. Spanning between the composite ribs is a solid-timber roof.

GLULAM: EFFICIENT AND GREEN

For the Brentwood Station, project designers developed their glue-laminated timber design in part based on the fabrication equipment. Curved glulam members are shaped on their inside radius with a jig, which lends itself to the arching beam-column “ribs.” While the members' laminations (*lamstock*) are standard at 3/4-inch or 1-1/2-inch depths for cost reasons, smaller laminations can yield tighter curves. In this case, 1/2-inch lamstock best accommodated the desired radius and created a finer, arguably more attractive grain. The laminations are end-jointed to deliver long spans of 120 feet or more. (Longer straight members typically have a slight camber to prevent deflection and ensure drainage.)

While architects at Busby + Associates favor glulam (as well as Parallam and TimberStrand) for its natural aesthetics and visual warmth, engineered wood also supports their environmental agenda. “It's an efficient use of wood from fairly fast-growing species,” says senior associate Martin Nielsen. “When I see designs with solid 24-inch columns, it makes me sick to my stomach. Why not use technology to get more out of our resources?”

For more on glulam, visit www.architecturemag.com.



Efficient and Green," page 73). For Brentwood Station, the tight radius at each beam-column base would require members comprising very thin laminations of wood—so many laminations, in fact, that it would not prove economical.

- ▣ Steel could more elegantly handle the **concentration of forces** at the columns' bases, adds Fast, noting that the comparable wood section might have been as much as 25 to 50 percent deeper.
- ▣ Abuse resistance was another project consideration, notes Nielsen. The steel bases raise the glulam arches about 10 feet above the finished floor, protecting them from general wear and **vandalism**.

The combination of steel and wood offered a special challenge to deal with large bending forces at the joints. To meet the high stresses, a perimeter steel flange plate recessed in the wood plate extends about 6 feet past the connection, with holes for its unusual attachments: **rivets**. The European technology required special code approvals, and the steel fabricator attached the glulam members to their steel mates in the shop.

While Nielsen points out that the combination of steel and wood offered the client both a sustainable, efficient, and aesthetic solution,

Fast notes that it is an exceedingly rare structure. "It's very seldom you have a longitudinal wood piece that becomes steel," he says.

Brentwood SkyTrain Station, Burnaby, British Columbia, Canada
 client | Rapid Transit Project Office architects | Busby + Associates Architects, Vancouver, Canada—Brian Billingsley, Marco Bonaventura, Peter Busby, Scott Edwards, Teryl Mullock, Martin Nielsen, Robert Peck, Soren Schou, Adam Slawinski (project team) landscape architects | Durante Kreuk engineers | Fast & Epp (structural); Klohn Crippen Consultants (mechanical); Agra Simons (electrical) public artist | Jill Anholt area | 22,500 square feet cost | \$8.1 million

Photographs by Nic Lehoux

Specifications and Suppliers

glue-laminated wood trusses and beams | Structurelam (www.structurelam.com) concrete | Con-Force Structures steel | George Third & Sons metal/glass curtain wall | Columbia Skylights metals | Mercury Metals TPO membrane roof | Carlisle glass | Lami Glass metal doors | Ideal Door locksets, hinges, closers, and exit devices | Accurate Door & Hardware flooring | Euro Ceramic Tile uplights | Elliptipar elevators/escalators | ThyssenKrupp



BUILDING BACK IN TIME

A commercial center stays current with a fanciful approach to historical styles and materials.

by Julia Mandell

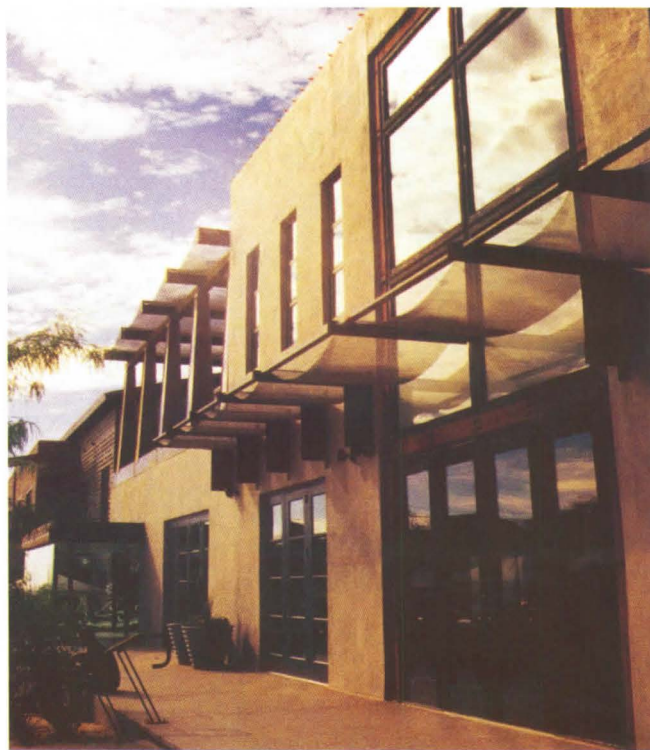
When his Phoenix-area firm Circle West Architects was asked to design Market Street—a 15-building, mixed-use commercial center for DC Ranch, the 88,000-acre planned community of Spanish Colonials in Scottsdale, Arizona—principal Peter M. Koliopoulos and his team envisioned a New Urbanist village where the residents would feel a part of an old-fashioned community. “We saw Market Street as a small town,” says Koliopoulos. “We wanted it to have a distinct physical identity that would be highly memorable and inspiring and focused on the pedestrian experience.” The designers were interested in situating their project in local history by drawing on **regional precedents**. In order to truly make the area a living community, however, Koliopoulos considered it important to provide a setting that could change and grow. “We wanted Market Street to be responsive to **modern-day retail**, which changes pretty rapidly,” he adds.

To set the town’s evolutionary growth in motion, the architects added a unique step to their design process: They made up a **fictional history** for their site. They began with ranching life in the nineteenth century and then worked through subsequent eras to create an organic, if ersatz, set of styles, design decisions, and materials. “The story gave us an outline to base ideas on, and from there we could be inspired by history without copying it. It was kind of like making a movie,” Koliopoulos explains.

MATERIAL CONNECTION

An important aspect of this approach was material selection and the execution of construction detailing. To find the perfect complementary finishes, the designers set up a sample yard on site and built **large-scale mock-ups** of assemblies, experimenting with everything from steel to concrete to tile, to ensure that the colors, applied weathering, and textures were just right.

One material that was specified extensively was Cor-Ten steel,



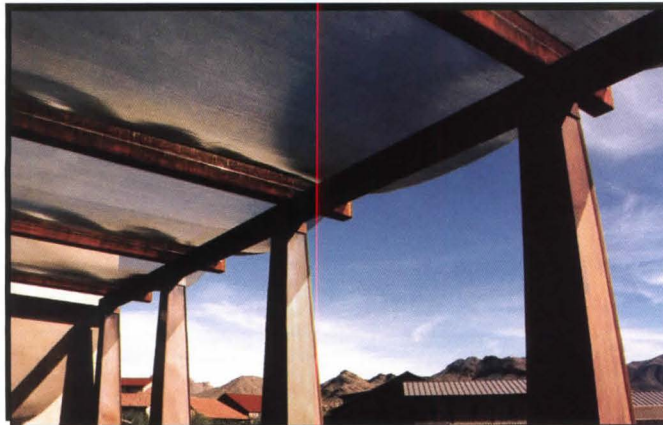
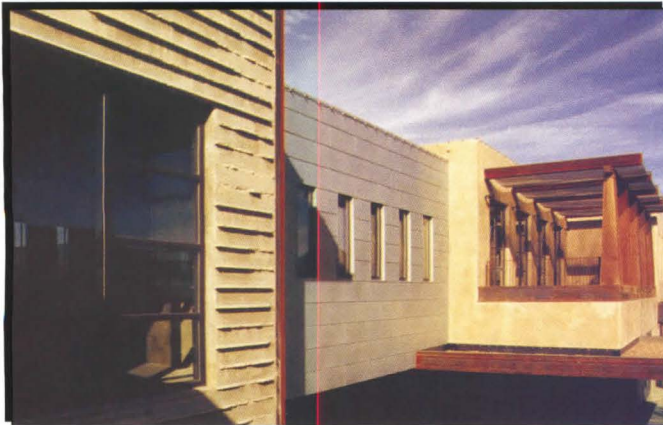
Building D (top), which houses shops and a restaurant, is finished with an array of modern materials like standing-seam metal roofing and board-formed concrete, but the result manages to convey a sense of traditional regionalism through its massing and detailing. **Building J/K (above)**, a mixed-use office and retail facility that faces onto the public plaza at the heart of the development, references the pueblos of the American Southwest with its stucco finish and stepped orthogonal massing.

specially treated to rust at an accelerated pace. The architects experimented with different types of weathered steel but found that the warm patina particular to Cor-Ten was best for the desert-inspired color palette they had in mind. Metal was applied quite differently as corrugated steel siding, neatly painted a variety of rich colors. The same material was used for roofing, combined with **steel-bolted wooden barn trusses** to maintain the project’s ver-

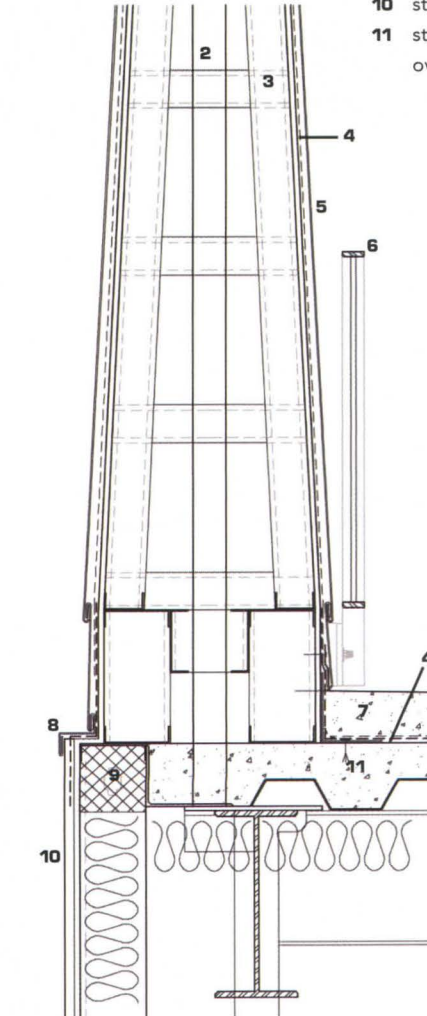
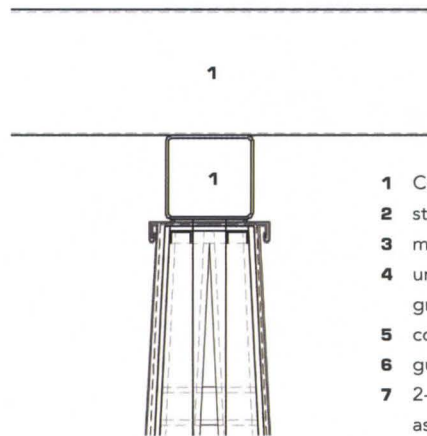
nacular aesthetic. Similarly, **standing-seam aluminum roofing** was applied to a stone-clad portion of one structure, named Building D, blending into the early-American aura of the complex.

According to Koliopoulos, the sampling experience allowed everyone involved—including the contractors and the client, DMB, a private developer specializing in planned communities—to contribute to the materials decision-making. “The contractors were creative,” he says. “We would have an idea and describe it to them and they would do mock-ups and add their own ideas, which increased the richness of the environment. When you are designing a custom project you need to work closely with the people who are doing the building.”

Koliopoulos also embraced the imperfections and handmade qualities that are a part of the building process. He describes checking over a **poured concrete wall** for quality control: “The construction team asked me to come look at it because they were concerned that it was uneven, that there was some variance in the texture, but I thought it was great. To capture that sense of history I really wanted things to be imperfect.”

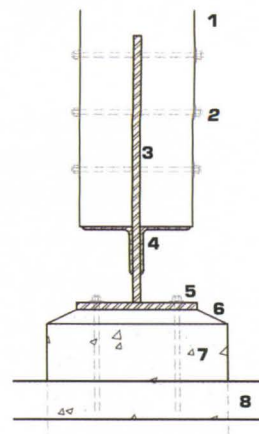
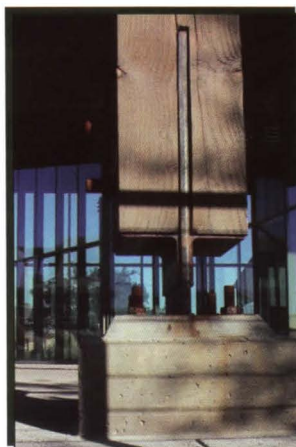
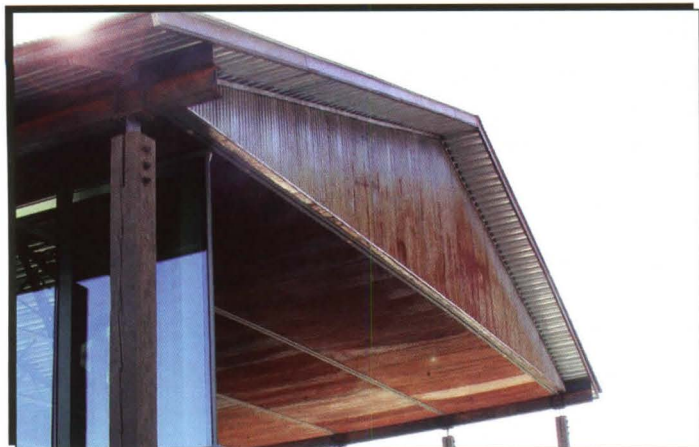


The façade on Building J/K is an update on traditional stucco, completed with an ultrasmooth burned finish (top). Other portions of the building sport zinc paneling and board-formed concrete. The balcony’s shapes are loosely inspired by Aztec imagery. The tapered columns (above) are wrapped in rusted copper that was treated, along with the Cor-Ten steel beams, with a mixture of water and chemicals in order to speed the oxidation process; a waterproof underlayer protects the framing and structural column inside.



- 1 Cor-Ten steel beam
- 2 steel column
- 3 metal-stud framing
- 4 underlayment over exterior grade sheathing
- 5 copper wall finish
- 6 guardrail
- 7 2-inch concrete slab over asphaltic hardboard
- 8 flashing
- 9 firestopping
- 10 stucco
- 11 structural concrete slab over metal decking

balcony detail (Building J/K) — 8"



column base (Building O) ——— 7"

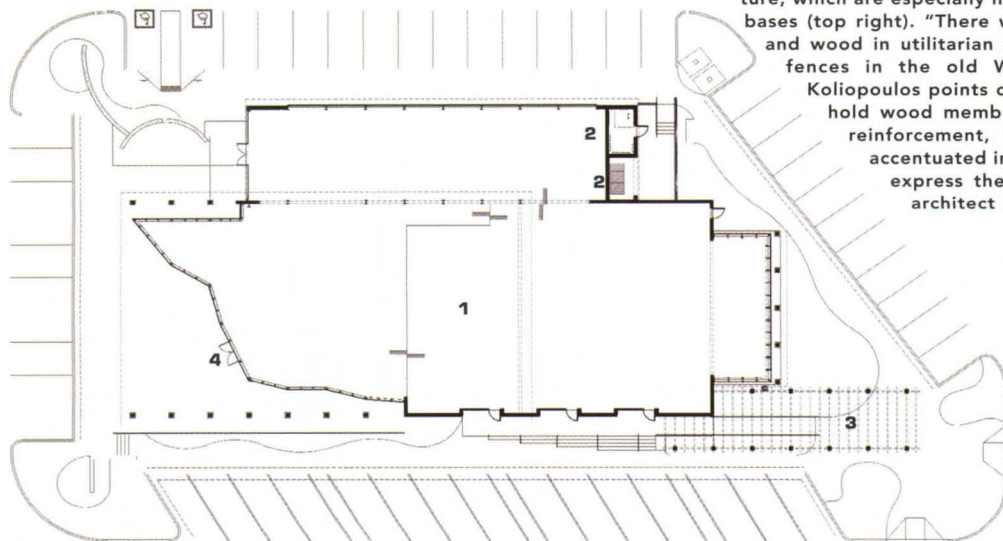
Market Street at DC Ranch, Scottsdale, Arizona

client | DMB architect | Circle West Architects, Scottsdale, Arizona—Peter M. Koliopoulos (principal), Ben McRae, Stacy Burnett, Cliff Coffaro (project team) **landscape architect** | Laskin & Associates—Hardy A. Laskin; Bowden Design Group—Mark Mahaney **lighting designer** | Robert Singer & Associates—Robert Singer **engineers** | GFG Structural Engineers (structural); Rudow & Berry (mechanical); Kraemer Engineering (electrical); McGrew Engineering (M/E/P); Wood/Patel (civil) **consultants** | Conover Design **contractor** | Kitchell Contractors **construction manager** | T.L. Steimel & Associates **area** | 300,000 square feet

- 1 12-foot-by-2-foot wood post
- 2 thru bolts
- 3 3/4-inch knife plate
- 4 steel angle
- 5 base plate with anchor bolts
- 6 dry pack
- 7 13-inch-square concrete pier
- 8 concrete slab on grade

Photographs by John Wagner and Sean Mortenson

Building O resembles an old barn retrofitted with sleek modern accoutrements, such as the curtain wall that defines the interior enclosure (top left). Working with ideas present in nineteenth-century agricultural vernacular, Circle West Architects designed industrial-strength details for the structure, which are especially noticeable in the building's column bases (top right). "There was a beautiful weaving of metal and wood in utilitarian structures like barns, sheds, and fences in the old West," firm principal Peter M. Koliopoulos points out. Steel armatures were used to hold wood members in compression for structural reinforcement, as shown in the column bases, accentuated in scale. "We wanted the details to express the construction methodology," the architect explains.



- 1 office
- 2 mechanical
- 3 trellis
- 4 main entrance

site plan (Building O) ——— 14' ↙

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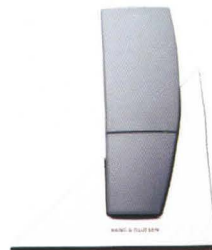
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FORCE OF HABIT

A historic convent is reborn as a light-filled setting for seniors.

by Anna Holtzman

Set in historic Bordentown, New Jersey—incorporated in 1682 by Quakers and a center of trade during the Revolutionary War—the Clare Estate has a storied past. Built in 1885 as St. Joseph's Academy for Girls, the complex was expanded in 1920 to house a group of nuns of the Order of St. Clare, known as the "Poor Clares" for their vow of poverty. In 2001, New York City-based Parsons + Fernandez-Casteleiro Architects was commissioned to convert the estate into a nondenominational senior-living facility for moderate- to low-income men and women. The program called for 101 units of both **assisted living and enhanced care** (the latter describes tenants who require a greater degree of caregiving), housed in the original convent and in an added wing. An additional 36 **independent-living** apartments were installed in nine new freestanding, two-story townhouses on the estate grounds.

While the architects restored the exterior of the existing four-story, 50,400-square-foot convent structure, preserving as much of it as possible, they had to reconfigure most of the interior layout to accommodate 50 assisted-living units. Dining facilities now reside in what used to be the convent's chapel; the preserved structure of this space, with its high ceiling and plentiful natural light, provides a cheerful atmosphere for communal activities. In the basement, below the dining area, the designers installed a 5,000-square-foot facility for primary healthcare. Adjacent to it is the kitchen facility, in what once was a crypt for deceased St. Clare nuns. Throughout the original structure, the architects tried to preserve historic details, at times transplanting **stained-glass windows**, which had been removed to fulfill exiting requirements, to locations elsewhere in the building. In order to preserve existing doors that were too deep and narrow to meet handicap requirements, they substituted **offset hinges** for original ones, allowing for a clear swing, and they added fire-retardant fiberglass panels on the backs of antique wood panels. Even the original confessional next to the chapel was preserved, converted into a phone booth.

BUILDING ON HISTORY

To house the enhanced-care units, the architects added a 27,000-square-foot wing to the original structure. While the style of the new construction does not attempt to mimic nineteenth-century detailing, materials and proportions were chosen to echo the textures, tones, and massing of the convent. The architects continued the use of sloping roofs and masonry façades. "We couldn't match the brick, and we decided that we shouldn't attempt to," says firm principal Jeff Parsons. Instead, he chose to respect history by differentiating the addition from the original structure with a slightly different **colored brick and grouting**. There are two slopes to the roof of the new wing: a steeper pitch on the courtyard side, to match the pitch of the convent roof, and a more shallow pitch on the outside, where

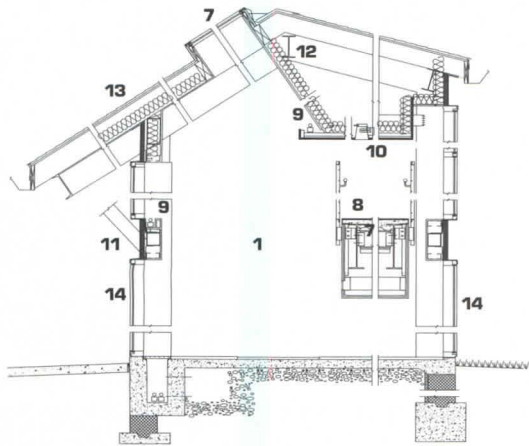


The 1885 St. Joseph's Academy for Girls once welcomed visitors through a stately streetfront entrance (top). Now transformed for senior living, the Clare Estate's main entrance (above) is situated in the complex's courtyard, leading into a new wing.

the wing cannot be seen adjacent to the nineteenth-century roof. Maintaining the original, steep pitch on both sides would have been too costly, explains Parsons—by using two angles, he was able to satisfy both aesthetic and practical concerns.

The focal point of the addition is a new lobby with a soaring interior, a skylight on the steeper roof pitch, and a **glass curtain-wall** façade that lets in generous amounts of natural light. The trapezoidal shape of the skylight was determined, in part, by a desire to maintain a view of the convent's bell tower from all corners of the site. "The bell tower was important," states Parsons, "because it organizes the whole interior courtyard, and seniors always need a point of reference, as they often become disoriented." Every panel in the **skylight** has a unique dimension, which generated some tricky roof framing, as each support beam had to be a different length. At the lower end of the lobby's skylit roof, the rafters are held in place with a series of **steel brackets**. "If you look at the brackets in section," says Parsons, "they all kick out at different angles. And because they're at different angles, as you walk along there, you get an animated feeling of these things having some movement to them." The brackets are also a reference to a Victorian porch at the rear of the convent, which features a series of similar hardware elements supporting a projecting roof.

While historical references throughout the project connect new structures to old, a series of trellises and walkways that meander through the site reinforce pathways that lead from the Clare Estate to Bordentown's walking-distance downtown amenities. Residents may be surrounded by a cloister wall, but the plentiful daylight in communal spaces, historic high ceilings, and access to the nearby community make them feel anything but hemmed in. ■



lobby section detail ——— 3.5'

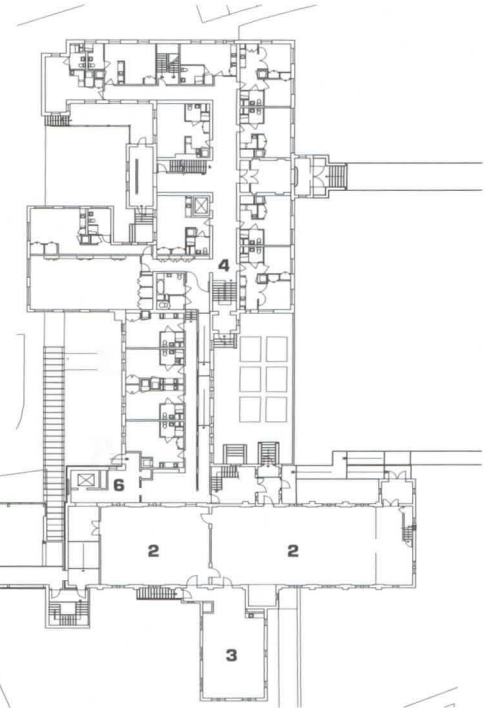


Natural light enters the Clare Estate's new lobby through a canted skylight and a glass curtain wall on its north and south lengths.



lobby section ——— 15'

- 1 lobby
- 2 dining
- 3 wellness center
- 4 assisted-living wing
- 5 enhanced-care wing
- 6 bell tower
- 7 skylight
- 8 bridge corridor
- 9 cove light
- 10 recessed downlight
- 11 steel-tube support
- 12 steel frame
- 13 asphalt-shingle roof
- 14 curtain wall



first-floor plan ——— 27' ↑

Clare Estate, Bordentown, New Jersey

client | Community Investment Projects **architect, landscape architect, and interior architect** | Parsons + Fernandez-Casteleiro, New York City—Jeffrey Parsons, Manuel Fernandez-Casteleiro (principals); Pierre Milannini, Neil Milliet, Anna Sanfeliu, Graydon Yearick (design team) **engineers** | The Szayer Engineers (structural); Barone Associates (M/E/P); Birdsall Engineering (civil) **consultants** | PMK Group (environmental); Cultural Resource Consulting Group (historical); Brommer Associates (food service) **general contractor** | A.J.D. Construction **subcontractors** | Singer Equipment (food-service equipment) **construction manager** | David A. Sobine **area** | 115,000 square feet **cost** | \$11 million

Photographs by Eduard Hueber

Specifications

metal/glass curtain wall | Atlas **built up roofing** | Owens Corning **shingles** | G.A.F. Materials **skylights** | Naturalite Skylight Systems **hinges** | Stanley, Hager **lighting** | Bartco (interior ambient); B-K Lighting (uplights); Lightolier, Halo (downlights); Belfer (task lighting); ERCO (exterior)

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Life in Style

PRODUCT, PROCESS, AND FACILITY

The automotive industry takes building-information modeling to a higher level.

by Julia Mandell

Industrial architecture is a particular challenge for designers, because so many specific variables and tolerances are involved in planning a space for a precise manufacturing process. With the advent of **building-information modeling** (BIM), which utilizes a database and a single digital 3-D model to manage and design all aspects of a project, new possibilities have opened up to streamline and customize the design and construction of industrial buildings.

One group that has brought these possibilities to fruition is the automotive industry. Many of the major carmakers have, with the help of architects, begun using BIM software to design and build factory facilities that are tailored to fabrication and assembly processes. Other industries have also begun exploring such processes, but none have done so as swiftly or thoroughly as the **Original Equipment Manufacturers** (OEMs), as the makers of major components for vehicles are called in their industry. "The difference is the driver for it," says Samir Emdanat, manager of "virtual factory" initiatives at Detroit-area giant Albert Kahn Associates. "Global adoption of this technology in the industry has been driven by competition between the OEMs. They want to be faster, better, and cheaper."

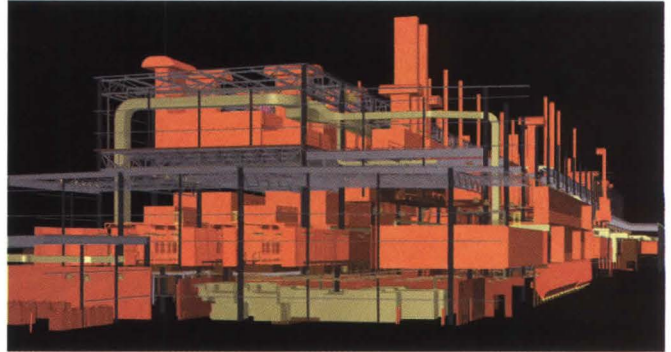
PUTTING THE FACTORY IN VIRTUAL FACTORY

According to Emdanat, OEMs have been using 3-D digital models to design new vehicles for more than 10 years. More recently, he says, unifying the digital workflows of both the product design and manufacturing-process design under one **managed environment**—meaning that all files, programs, servers, and users are interconnected and interactive—has become the industry standard. Thus, the design of the car and the design of its production process move forward at the same time. Called a **virtual factory**, this workflow process has yielded incredible efficiencies. "These companies have taken their production time from four years to one year," says Emdanat.

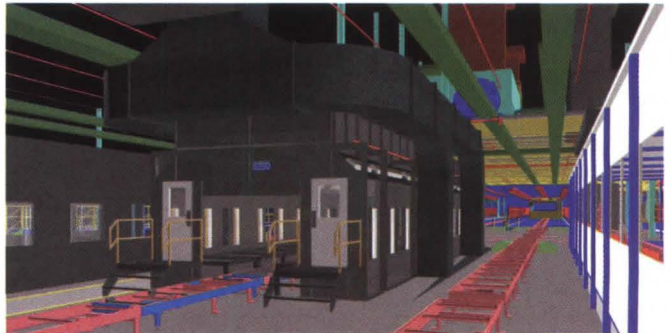
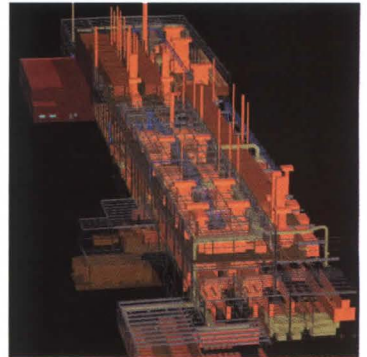
Now that the architectural community is focusing on the same process idea, automotive manufacturers are adding facility design and construction to the virtual factory. "They've compressed the process and product time," says Emdanat, "but if the facility takes a long time that doesn't matter." Once BIM is integrated with the product and the process, the design of the car, the manufacturing process, and the facility can progress together, and changes in any one can swiftly and easily update the others.

BUG-FREE BEFORE BREAKING GROUND

For industrial architects, the greatest advantage of the virtual-factory system is that it significantly reduces error in the building design. "You



To design two automotive paint shops, SSOE used the DWG support of Microstation V8 to work with 3-D object models of mechanical process equipment provided by the client. These models assisted the architects in routing M/E/P infrastructure around the facility (pictured in Microstation Triforma) and in between the components of the process. Once the facility was fully designed, the architects were able to create construction details of complex routing of the utility systems that were then passed to the fabrication and construction team.



can get a very intimate sense of what the structure will be like early on," says David Semproch, an architect in the Toledo, Ohio, office of national A/E firm SSOE, who has worked on a number of projects using the virtual-factory approach. "When you are designing the steel frame of the building, you can send the model of it over to the process team and discover far ahead of time if there will be any interferences. It cuts down on change orders and speeds things up."

Because of the competitive nature of car manufacturing and the intricate process necessary for producing such a complex product, the automotive industry is proving to be an effective testing ground for BIM. But BIM is also being used in other types of architectural projects, and perhaps the model of advanced integration offered by the virtual factory will influence these other typologies. Semproch suggests that school buildings, for example, could be well served by a similar process, due to the challenges of managing and expanding such facilities and the public nature of the client. "We've done mostly manufacturing facilities using BIM," he says, "but only because that's the majority of our work. We're looking into using it for education as well." ■

➔ Surveying the Digital Age

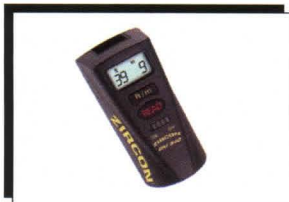
- ☒ product: **Multi-Measure LD & Multi-Measure Combo PRO**
- ☒ manufacturer: **Sonin**
- ☒ web: **sonin.com**

The Multi-Measure LD can determine distances up to 60 feet by sending out a beam of sound waves. Meant for indoor use, it can compute areas and volumes, and add and subtract multiple measurements in the metric and imperial systems. The more muscular Combo PRO has a second measurement function that can be switched on for exterior use. Employing an infrared beam, the Combo PRO can estimate distances of up to 250 feet. It also allows for field calibration, meaning it can read accurately in variable conditions, allowing it to be used for outdoor site surveying in all kinds of weather.



- ☒ product: **DM S40**
- ☒ manufacturer: **Zircon**
- ☒ web: **zircon.com**

Though it can measure up to only 40 feet, this tool is lighter and more affordable than the others on the market. Meant for interior use, it's one cost-effective option for renovations and retrofits.

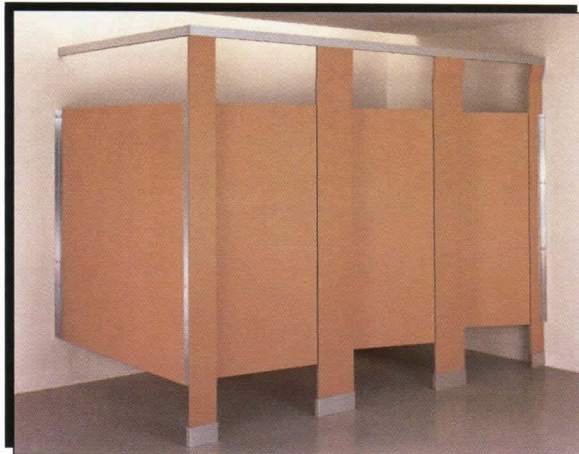


- ☒ product: **Digi-Roller II**
- ☒ manufacturer: **Calculated**
- ☒ web: **calculated.com**

The Digi-Roller II also allows one person to measure distances, and it has no measurement limit, making it ideal for tallying large distances for outdoor surveying. Includes a number of handy features, such as a built-in calculator, instant unit converter, and a "smart wheel" function that factors in wheel radius for accurate wall-to-wall measurements. The device comes with a 1-meter wheel.



divide and conquer



The history of washroom dividers is relatively short—the public toilets of ancient Rome were very much public—but the materials for boxing off our private spaces have evolved quickly. The latest chapter in this Freudian design saga is a novel material created by the Dutch company **Trespa** (www.trespanorthamerica.com) for Los Angeles-based **Bobrick** (www.bobrick.com). Called "solid-color reinforced composite," or SCRC, the handsome earth-hued panels are made of wood fibers suspended in high-density resins—so dense that they fend off scratches and gouges, and graffiti can be removed with off-the-shelf agents. Abuse resistance is the mantra for owners of high-traffic public restrooms: Architects working for them say that SCRC dividers, dubbed "Sierra" and being rolled out this month, are highly anticipated by clients, some of whom have installations already.

Other specs have served this vandal-prone niche well. The classic partition was marble, still the choice for historic and high-end lavs. For example, a new gym at the 1909 Russell Senate Office Building sports matched slabs of Imperial Danby (our tax dollars at work) by **Vermont Quarries** (www.vermontquarries.com). For the Pentagon in 1942, stone partitions spared critical wartime resources.

But baked-enamel steel and, later, plastics came to dominate abuse-resistant applications. By the 1980s, laminates such as **Formica** (www.formica.com) were competing with solid plastics, such as the HDPE partitions introduced by **Santana** (www.santanaproducts.com), and phenolic boards made of resin-impregnated craft paper.

In the 1990s, concerns about sustainability and indoor-air quality—as well as new codes classifying partitions as "interior wall finish" and, thus, subject to fire testing—permanently changed the lavatory landscape. Specifiers now ask manufacturers tough questions about NFPA classifications, formaldehyde, and recycled and renewable content for their projects. As with everything else in this modern world, the humble toilet partition will never be the same.



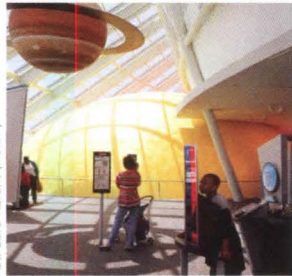
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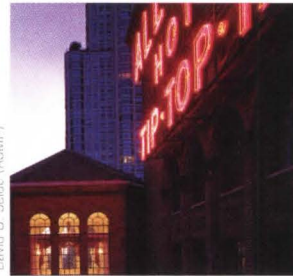
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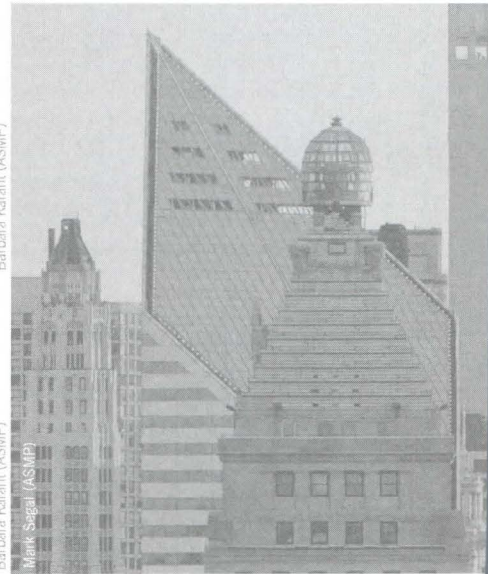


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putting a lid on it

- ☐ product: **Quick Step**
- ☐ manufacturer: **Rheinzink**
- ☐ web: **rheinzink.com**

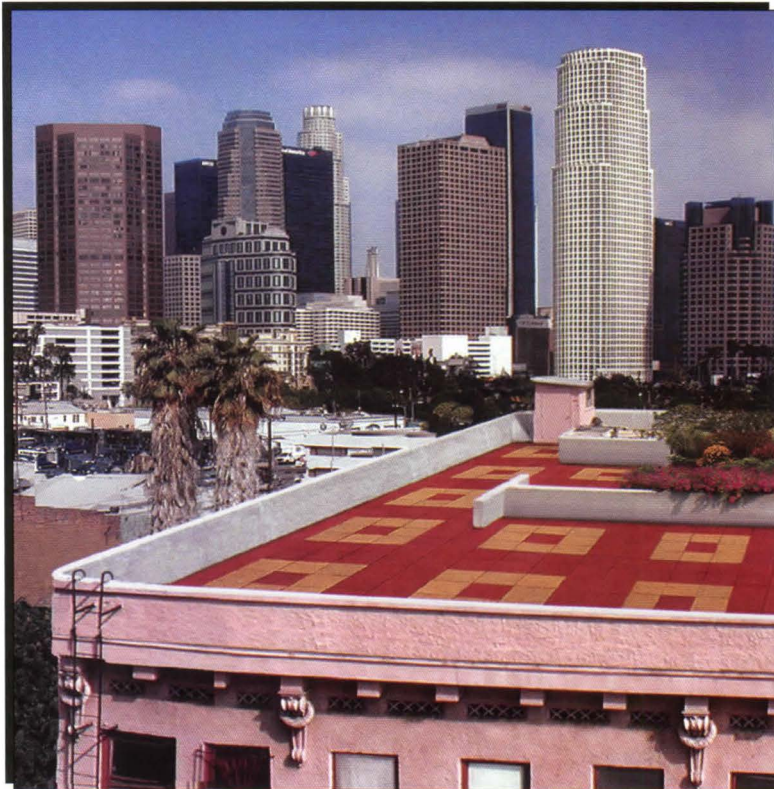
Suitable for industrial stepped roofing with slopes between 10 and 75 degrees, Quick Step is made of 22-gauge Rheinzink, a patented alloy of titanium and zinc. Largely prefabricated, the system boasts a speedy and simple installation process. Also available is a new connection frame designed specifically for roof penetrations.



- ☐ product: **ACDSH Automatic Fire Vent**
- ☐ manufacturer: **Bilco**
- ☐ web: **bilco.com**

Designed specifically for concert halls and theaters, the ACDSH vents have two sets of double covers that carry STC-45 and OITC-37 sound ratings. One set of covers opens upward and one opens downward, for maximum sound protection. Finished in an alkyd-base red oxide primer, both the frames and covers are made of 14-gauge G-90 paint-bond galvanized steel. The unit comes in sizes ranging from

48-by-48 inches to 72-by-72 inches—a 60-inch-by-96-inch model and a four-cover 66-inch-by-144-inch model are also available. The automatic fire vents are rated to the UL 790 Class A burning test.



- ☐ product: **Softile AP**
- ☐ manufacturer: **Sofsurfaces**
- ☐ web: **sofsurfaces.com**

Originally purveyors of pavers for children's playgrounds, the Canadian company Sofsurfaces has launched a line of architectural roof tiles. The 2-foot-square pavers come in 15 colors, allowing them to be arranged in vibrant patterns on otherwise underdesigned terraces and rooftops. Made of recycled rubber bonded with special agents, each paver features pedestals underneath for drainage, a locking system, and chamfered edges. Softile AP comes in 2-, 2-1/2-, and 3-inch thicknesses.

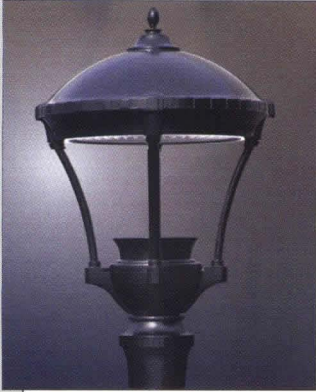
- ☐ product: **PE200 HT**
- ☐ manufacturer: **Henry**
- ☐ web: **henry.com**

A member of the maker's Blueskin self-adhesive membrane line, PE200 is a non-granular SBS compound designed to be laid under architectural metal, shingles, or tile. It features a high softening point, self-sealing properties, and full adhesion to prevent any moisture migration. Applied directly before the finished roof coverings, it comes in 36-inch rolls that are 75 feet long and 1/25 inch thick.

ARCHITECTURE PRODUCT REVIEW

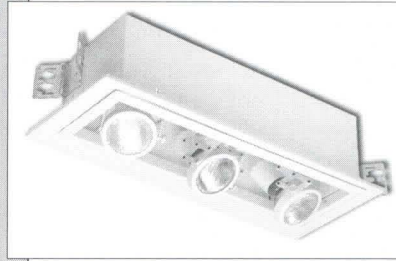
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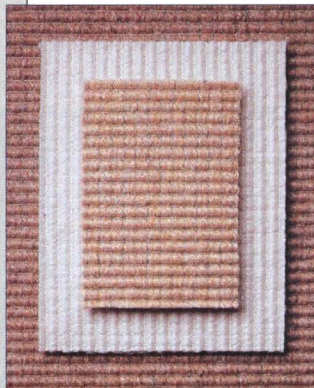
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The Department of Architecture at MIT announces a search for a tenured senior faculty member to serve as Head of the Department. The *Department of Architecture* is part of the School of Architecture and Planning which also includes the Department of Urban Studies and Planning, The Media Lab/Program in Media Arts and Sciences, the Center for Advanced Visual Studies, and the Center for Real Estate.

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MIT is an equal opportunity/affirmative action institution. Women and minority candidates are strongly encouraged to apply.

BOOK

Building with Light: An International History of Architectural Photography

Robert Elwall | Merrell Publishers Long on momentous images but short on the contemporary scene, this historical scrapbook of architectural photography offers a concise look at how image-making has inexorably changed the way we understand and record our work. (At left, Chevojon Frères portrays the Auguste Perret-designed 1919 Esders clothing factory in Paris.) Captivating essays by the Royal Institute of British Architects' photography curator Robert Elwall chronicle the mutually stimulating relationship between the camera and the built environment—find out, for example, how photography heralded the arrival, and later the demise, of midcentury modernism. This is also a nice update of Robinson and Herschman's *Architecture Transformed* (MIT Press, 1987), which focuses mainly on North American photographers. **C.C. Sullivan**

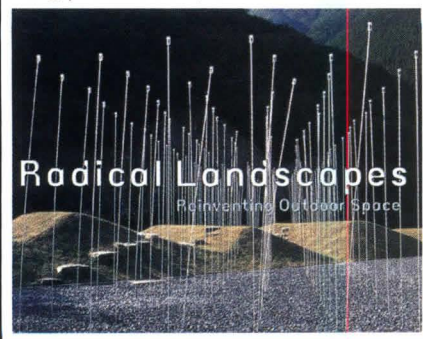


BOOK

Radical Landscapes: Re-inventing Outdoor Space

Jane Amidon | Thames & Hudson In this international survey of recent projects, Jane Amidon covers all kinds of ground, both literally and figuratively, examining the use of color, light, and texture; the relationship between order and disorder; and the dynamic and temporal aspects of landscape design. The projects range in style, setting, and scope from artist Chris Parsons's "Dew Gardens"—an installation reminiscent of Andrew Goldsworthy, in which Parsons sweeps patterns into dew-laden lawns and photographs them before they are destroyed by the midday sun—to large-scale park developments such as West 8's Interpolis Garden in Tilburg, the Netherlands, a surprisingly tranquil corporate landscape comprising jagged areas of grass, gravel, and water that in plan resemble the earth's tectonic plates.

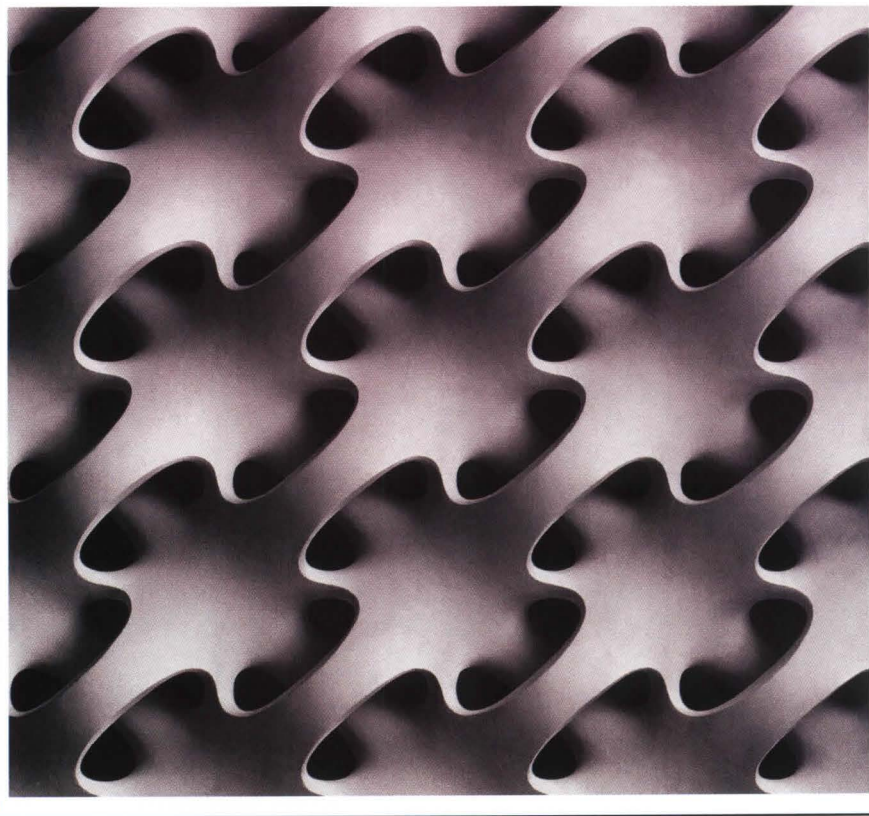
Though the book would have benefited from a narrower selection of projects with more documentation and a clearer presentation, this volume serves as a quick and thorough introduction to the diversity of landscape design being practiced today. **Julia Mandell**



BOOK

Erwin Hauer: Continua—Architectural Screens | Erwin Hauer | Princeton Architectural Press

This elegant volume documenting the work of Erwin Hauer—the sculptor and longtime Yale professor whose architectural screens adorned the work of such mid-century luminaries as Florence Knoll and Philip Johnson—demonstrates the rich results that can emerge from disciplined experimentation with geometry. The book describes Hauer's spatial machinations and provides archival images of the construction process and finished screens, and, while the artist's text is dry, he manages to convey his intense and enduring involvement with favored patterns and shapes. What becomes clear is the blind faith necessary for such abstract explorations: Following a geometric recipe of his own divining, Hauer was able to discover extraordinarily complex patterns that possess a large measure of depth and beauty. **Julia Mandell**



MUSEUM

Skyscraper Museum | New York City | www.skyscraper.org

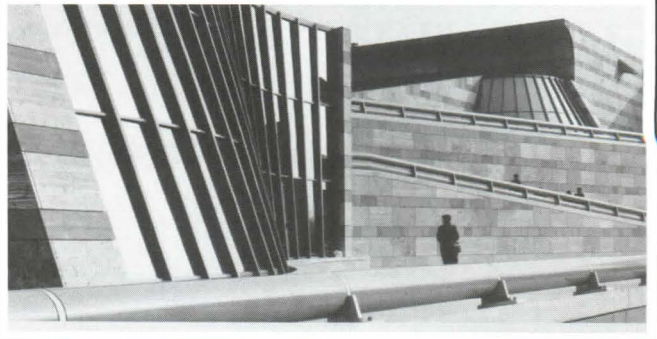
For the Skyscraper Museum's new home, Skidmore, Owings & Merrill's Roger Duffy has created the illusion of infinite height and depth in a mere 5,800 square feet, using little more than smoke and mirrors—actually, strategically placed lights and polished stainless steel that covers much of the floor and ceiling. Founded by architectural historian Carol Willis, the museum has migrated from one temporary site to another over the past six years. Its permanent residence is in the ground floor of a Lower Manhattan building completed in 2001, designed by Gary Edward Handel & Associates (with Polshek Partnership), that also houses a Ritz-Carlton Hotel. SOM provided its services pro bono, and construction for the gallery was donated by Tishman Construction. *Building a Collection*, the venue's inaugural exhibition, surveys high-rise history using materials from the museum's archives. **Anna Holtzman**



EXHIBITION

Out of the Box: Price Rossi Stirling + Matta-Clark | Canadian Centre for Architecture | Montreal |

September 6 Led by Mirko Zardini, a team of 10 in-house and independent curators at the Canadian Centre for Architecture (CCA) has conceived an experimental presentation of rare material discovered in boxes of recent CCA acquisitions, from ground-breaking architects Aldo Rossi and James Stirling (Staatsgalerie, below), "antiarchitect" Cedric Price, and artist Gordon Matta-Clark. Exhibition designer Louis-Charles Lasnier's flexible display system allows the curators to modify the installation continuously, based on ongoing research and visitor feedback. While the show has no predetermined message, Price's accent on process and development—demonstrated in his revolutionary 1961 *Fun Palace*, a theoretical, adaptable city—is at the intellectual heart of the show. The curators have all but given up their role as high priests of architectural ideas, but this open-ended approach works, engaging visitors and fusing the CCA's double mandate as museum and international research center. **David Theodore**



EXHIBITIONS

ATLANTA
Talking Furniture Design
Designs by 18 artists from throughout the southeast, ranging from traditional to cutting edge.
MUSEUM OF DESIGN
www.museumofdesign.org
Through August 28

BALTIMORE
John Russell Pope
Retrospective on the American architect who designed the 1929 building that houses the show.
BALTIMORE MUSEUM OF ART
www.artbma.org
Through August 1

BOSTON
Design—Recline
Modernist chaise longues by architects including Aalto, Mies, and Breuer.
HARVARD UNIVERSITY ART MUSEUM
www.artmuseums.harvard.edu
Through July 11

HARTFORD
Kid Size
Everyday objects designed for children, from around the world.
WADSWORTH ATHENEUM MUSEUM OF ART
www.wadsworthatheneum.org
Through August 1

NEW HAVEN
Creating St. Peter's
Exhibition featuring Michelangelo's study model for the dome of St. Peter's Basilica in Rome.
KNIGHTS OF COLUMBUS MUSEUM
www.kofc.org
Through August 31

NEW YORK CITY
Architecture by Numbers
Six architects address issues of authorship, production, abstraction, and expression.
WHITNEY MUSEUM OF ART AT ALTRIA
www.whitney.org
Through June 2

WASHINGTON, D.C.
Anacostia Waterfront
Exhibition on the ecology, urban life, and impending renewal of the Anacostia River.
NATIONAL BUILDING MUSEUM
www.nbm.org
Through May 23

EVENTS

CHICAGO
AIA Convention
Continuing-education and design expo convened by the American Institute of Architects.
MCCORMICK PLACE
www.aiaconvention.com
June 10–12

CHICAGO
NeoCon
Annual conference and exhibition for contract furnishings.
MERCHANDISE MART
www.merchandisemart.com
June 14–16

PRESCOTT, ARIZONA
Sustainable Building
Workshop on eco-friendly building materials and methods.
ECOSA INSTITUTE
www.ecosainstitute.org
June 7–July 2

COMPETITIONS

BSA
Annual honor awards for design excellence, sponsored by the Boston Society of Architects.
www.architects.org
Deadline August 2

Cradle to Cradle
Housing competition for Roanoke, Virginia, based on architect William McDonough's "cradle-to-cradle" principles.
www.c2c-home.org
Registration deadline October 15

Architecture Faculty Positions

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Large Scale Planning & Design: Requirements include a degree in architecture & a Master's degree or equivalent in urban design or urban planning; specialized knowledge & expertise in urban design large scale planning or infrastructure planning. Must show potential for research & contributions to the field of knowledge. **Send resume to: Personnel Box NJSOA-AP/LSP.** EOE/AA



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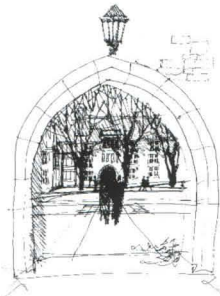
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THE NEW WORLD WAR II MEMORIAL IN WASHINGTON, D.C. IS MEANT TO CELEBRATE THE POWER OF DEMOCRACY. SO WHY DOES IT RESEMBLE A MONUMENT TO A DEFEATED FASCIST?

by Michael Z. Wise

The dedication this month of the National World War II Memorial on the Mall in Washington, D.C., comes amid global debate over the utilization of U.S. power. The dedication ceremony will justly celebrate the generation that has most clearly proven how American might can be an epic force for good. Yet the memorial fails to capture the democratic spirit that was the war's saving glory.

No, the cloying 7.4-acre ensemble has not totally spoiled the splendid axis between the Washington Monument and the Lincoln Memorial, as was long feared—the design was scaled down to prevent that. But the final result certainly mars the expansive vista along the Mall, which holds a key position in our national self-image.

The memorial consists of a granite-paved oval plaza with a reflecting pool at its center and two four-story triumphal arches at each end. One symbolizes the combat in Europe; the other stands for that in Asia. Fifty-six pillars—each of them slit at the center—encircle the plaza, one for each state and territory of the union at the time of the war. The plaza is oriented toward a large concave wall aligned with the Lincoln Memorial and studded with 4,000 gold-plated stars that symbolize the more than 400,000 U.S. soldiers who gave their lives in battle.

BATHOS AND BOMBAST

Design architect Friedrich St. Florian of Providence, Rhode Island—working with a team assembled by architect-engineer of record Leo A Daly that also includes consulting architect George E. Hartman of Hartman-Cox Architects—says he set out to create a memorial that was “highly celebratory,” intending the pools and waterworks within it to provide “an element of joy and happiness.” But it's hard to reconcile that aspiration with this heavy-handed mass of gray stonework.

The bathos and bombast of the architecture is matched by overwrought sculptural elements by artist Raymond Kaskey. Take, for example, the thickly braided rope cast in bronze that links the columns as if to stran-



gle any spontaneous emotion that might arise in a visitor's heart. Instead, that heart sinks at the sight of uninspired rows of heavy bronze wreaths hanging on the front and back of each column. Four massive bald eagles loom within the two triumphal arches, garlands in their beaks, holding aloft an even larger laurel wreath, an ancient emblem of the victorious soldier's return. (Thankfully, plans to erect another colossal sculpture in the midst of the main reflecting pool—conceived as an artistic interpretation of “the triumph of light over darkness”—were scrapped.)

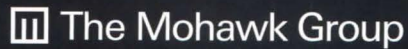
One need only look out from the memorial toward the capital's familiar touchstones—Henry Bacon's Greek temple to Lincoln, Robert Mills's obelisk to Washington, or John Russell Pope's Roman-style Jefferson Memorial—to see how far short St. Florian's effort at stripped classicism falls. At least it is likely to be the last such blemish on the Mall, since the World War II project led to a congressional moratorium on future memorials on a public space that should remain as unencumbered as possible.

MISSED OPPORTUNITIES

If the 1998 film *Saving Private Ryan* helped young Americans admiringly recall their parents' and grandparents' bravery in World War II, the St. Florian design, for which the film's

star Tom Hanks helped raise funds, is ill suited to do the same. Apart from its aesthetic failings, the memorial does little to elucidate the meaning of the war for future generations. Beyond an inscription at its entry—“Americans came to liberate, not to conquer, to restore freedom and to end tyranny”—visitors will be hard-pressed to learn much of anything from this stony pile about democracy's triumph over totalitarianism.

After St. Florian won the 1996 memorial competition, his original scheme came under severe attack. Writing in this magazine, then-editor-in-chief Deborah K. Dietsch accused the Austrian-born architect of using the language of Albert Speer, hardly the first time that a neoclassical structure in Washington had been denounced as fascist in style. But it's lamentable that any such confusion should arise in the case of this particular memorial. Such critiques spurred the federal Commission of Fine Arts under the late J. Carter Brown, then chairman, to press for alterations. The panel succeeded in reducing the project's scale, but after much fussing over details, did little to improve the design itself. Although St. Florian got a second go-round to avoid aping Speer, he and the commission members have ensured that part of Washington's core would look right at-home in Mussolini's Rome. ■

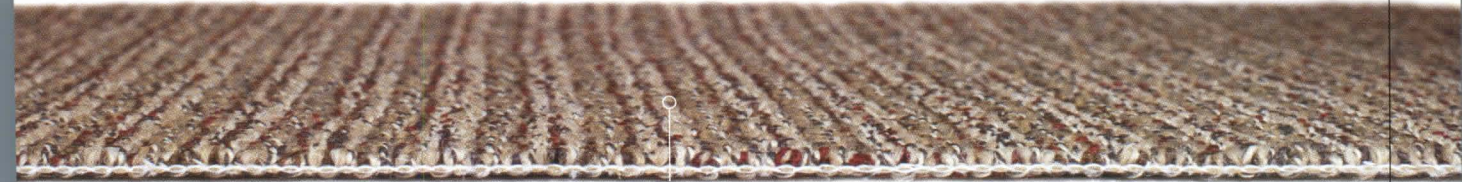


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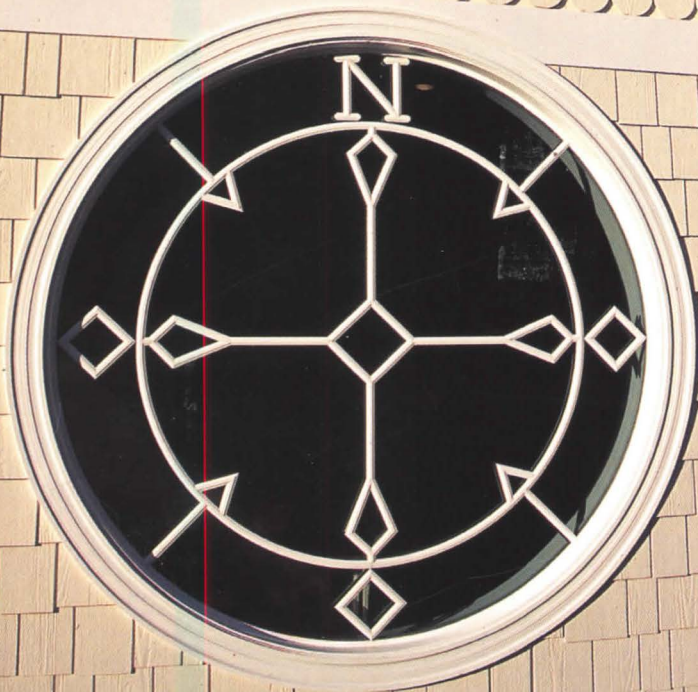
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