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From left to right: Vincent James, AIA; Malcolm Holzman, FAIA; Carol Ross Barney, FAIA; photo by Kenny Braun.

Unbuilt and Underwhelmed

The first annual TSA Studio Awards left the jury wishing for more than the standard fare

HALFWAY through the first round of slide shows in the unbuilt category, an air of bored dissatisfaction had settled over the jury. The three judges obviously weren't interested in the bulk of the 70 entries, and when the last presentation was over, the jury had selected only 16 they thought were worthy of a second look.

Underwhelmed? Definitely. Puzzled? Enough to wonder out loud what criteria had been set for the TSA Studio Awards. Anything meritorious? asked Malcolm Holzman. No, came the reply, just that they're unbuilt. "They should wait until they're built," Holzman suggested, "then submit them." Vincent James was more specific: "They should be challenging the client. The fact that these projects are unbuilt...I feel that they should be pushing."

After a quick review of those 16, the jury singled out a temporary shelter for an earthbound NASA rocket by RTKL. They seemed pleased that at least one presentation for an unbuilt project had conveyed to them a sense of the finished product. "Pure function," James said after he and his counterparts had unanimously chosen the Saturn V project. (See article on p. 16.) But their disappointment in the general quality of the Studio Awards submittals prompted them to go on record with their comments. James posed the obvious question, then offered his opinion: "I wonder what the value of this award is as opposed to the built building award? It seems to me that it

has to do with supporting and promoting projects which push the quality of the ones that are winning the awards...You almost have to set a higher standard for this group because they haven't yet been built." Holzman then gave his advice for future submittals: "I would think that if you're going to submit an unbuilt project it needs to be exemplary in some way or it goes beyond what is, what I would call, standard fare. I think the people who are submitting these need to think about what it is [about the project] that goes beyond the standard fare and makes it exceptional."

Later, at the end of the two-day event, the jurors expanded on their thoughts about the Studio Awards. Holzman, as became evident early in the jury's discussions, was the most vocal of the group and didn't hesitate to summarize what he considered to be the consensus: "So many of the projects appeared to be developed to a point where you thought you'd rather see what the finished result looked like. They were nice projects, but the true measure of them would probably be [realized] in the completed work. I think that one of the things we were looking for was something out of the ordinary in the incomplete work because there was no reason for them to be ordinary. They need to go beyond what is understandable as architecture as we now know it. So I think we were hoping for things that were sort of extraordinary or took the leap to some other place. So the [shelter]

for the rocket was great because who had ever seen one of those before? And it was an idea that looked like it was developed sufficiently that you could imagine that it should be done...because it's not scaffolded and it's not concealed and it's not hidden away some place where people are working on it—there was a lot of exciting stuff in there. We didn't have that sense in looking at the housing projects that were submitted or some of the public rooms that were submitted."

Speaking about their reasons for awarding the Saturn V project with a Studio Award, the jurors added these comments:

James: "It shows how a very simple solution to a problem can sometimes be the most interesting and meaningful. I think it's very direct."

Holzman: "I think that we were all interested in the transparency of it and the notion that you might be able to see work as it went on...[T]he fact you could involve the public in this operation which otherwise might not have been public is something to be commended."

Ross Barney: "I like it because [it resembled a city] being renewed through scaffolding and temporary buildings all over the place. Even though they're temporary they really affect your experience in that environment. I like this project because it took that into account. If NASA decides to scaffold it with something more ordinary it will really be a loss."

STEPHEN SHARPE

mar zi pan (mar'zi pan') n. | Ger < It marzapane | a confection of ground almonds, sugar, and egg white masc. or mas. masculine

mas car a (mas kar'e) n. | < It maschera, mask | a cosmetic for coloring the eyelashes -vt. -car'ac'd, -car'ain'g to put mascara on

mas cot (mas'kat') n. | < Prov masco, sorcerer | any person, animal, or thing supposed to bring good luck

mas cu line (mas kyou lin, -kye-) adj. | L. mas, male | 1 male; of men or boys 2 suitable to or having qualities regarded as characteristic of men, strong, vigorous, manly, etc. 3 mannish; said of women 4 Geom. Designating one of the gender of words referring to male -mas'cu lin ity

mash (mash) v. | 1 crushed malt for making wort bran, meal etc. 2 soft mass -vt. by beating, crushing -injure -mash'er n

mask (mask) n. | covering to conceal anything that conceals 4 a) a mold a grotesque representation to amuse or frighten with or as a mask

ma son (ma sen) n. | whose work is building etc. 2 [M-] FREEMASONRY

Ma son-Dix on line | C. Mason & J. Dixon, who surveyed it, [1763-67] boundary line between Pa. & Md. regarded as separating the North

marzipan - massive

ma son ry (ma'sen re) n. | 1 a mason's trade 2 pl. -ries something built, as by a mason, of stone, brick, etc. 3 [usually M-] FREEMASONRY

mas que (mask) n. | see MASK | 1 MASQUERADE (n. 1) 2 a former kind of dramatic entertainment, with a mythical or allegorical theme -masqu'er n.

mas que ade (mas'ker ad') n. | see MASK | 1 a ball or party at which masks and fancy costumes are worn 2 a) a disguise b) an acting under false pretenses -vi. -ad'ed, -ad'ing | to take part in a masquerade 2 to act under false pretenses

mass (mas) n. | < GR massa, to knead | 1 a shape and number | a the main matter in a matter -vt. -vi. -masses

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LETTERS

Wishing in New Mexico

Keep up the great work! We only wish New Mexico architects had such a high quality publication.

Don May, AIA

Rohde May Keller McNamara Architecture
Albuquerque

Correction

In "O'Neil Ford in the Details" (*TA* July/August 2004, p. 18) the first name was incorrect for one of the new owners of a recently restored residence designed by Ford and Arch Swank. Dan and Gail Patterson, not Anne, purchased the house that was originally the home of Alfred and Juanita Bromberg and their son Alan Bromberg.

We want to hear from you!

Texas Architect encourages feedback from its readers. Send your letters to Stephen Sharpe at editor@texasarchitect.org or 816 Congress Avenue, Suite 970, Austin, Texas 78701. Letters may be edited for clarity and length. Include your name, address, and a daytime telephone number.



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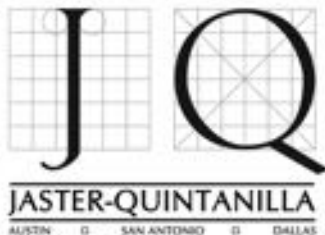
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Two Construction Sites in Fort Worth in Top 10 of State's Priciest Projects

F O R T W O R T H According to a recent survey by *Texas Construction*, the contract value of projects around the state that broke ground in 2003 reached approximately \$2.88 billion. In the magazine's list of the 10 highest valued projects are two that are currently under construction in Fort Worth: ranked third is the RadioShack Riverfront Corporate Campus, valued at \$200 million, by HKS Inc. in Dallas, and ranked tenth is the Pier 1 Imports Headquarters, valued at \$90 million, by design architect Duda/Paine Architects of Durham, N.C., and architect of record Kendall/Heaton Associates of Houston. The two projects, located on the west side of



downtown, already have significantly altered the city's skyline.

That total amount for 2003 reportedly represents an increase of almost \$200 million over 2002 and an increase of approximately \$500 million over 2001. *Texas Construction* publishes its Top Projects list annually and bases its survey on information gathered from contractors, architects, and owners. The latest findings were published in the magazine's June 2004 edition. Highway construction accounts for four of the list's top 10 projects, with the \$263 million I-10/Loop 610 interchange in Houston ranked second. The remaining six projects in the top 10 are either single buildings or a corporate campus.

Topping the 2003 list was the Toyota Motor Manufacturing Plant, valued at \$800 million, by design architect SSOE of Toledo, Ohio, and local architect Marmon Mok of San Antonio. Work on the facility began in last October and is expected to be completed in 2006. Located on a 2,000-acre site on the southern outskirts of the city, the plant will turn out 150,000 full-size pickup trucks annually.

The two Fort Worth projects, located four blocks from each other, are leading the redevelopment of the downtown along the Trinity River, especially in the case of the low-rise RadioShack campus which is being built on a 37-acre site along its south bank. The new campus, where 2,500 employees will work, includes seven buildings and a 2,700-car parking garage. When completed in 2005, the project will contain approximately 900,000 square feet. The general contractor is The Beck Group of Dallas.

The Pier 1 Imports Headquarters is a 21-story tower that sits on a prominent 15-acre site along West Trinity River. The construction schedule calls for completion in just 18 months, and the project is expected to open in October. The 450,000-square-foot facility is the first high-rise to be built downtown in almost 25

Scheduled for completion in October, the Pier 1 Imports Headquarters in Fort Worth is ranked as the tenth highest valued project in Texas. The project's design architect is Duda/Paine Architects of Durham, N.C., and the architect of record is Kendall/Heaton Associates of Houston; photo courtesy Duda/Paine Architects.



A major component of Fort Worth's redevelopment of its downtown Trinity River waterfront, the RadioShack Riverfront Corporate Campus by HKS Inc. of Dallas is expected to be completed next year. Valued at \$200 million, the project is ranked as the third highest valued project in Texas; rendering courtesy HKS.

years. Designed for a workforce of about 1,000 employees, the facility will include a conference center, training center, fitness center, employee cafeteria, photo studio, data center, sample room, as well as an 850-car parking deck. General contractors for the project are Manhattan Construction Co. of Dallas and Thos. S. Byrne of Fort Worth.

STEPHEN SHARPE

Top 10 Projects by Value

from Texas Construction, June 2004. Dollar amounts are in millions.

- \$800 Toyota Motor Manufacturing Plant, San Antonio
- \$263 TxDOT IH-10/IH-610 Interchange Reconstruction, Houston
- \$200 RadioShack Riverfront Corporate Campus, Fort Worth
- \$136 IH-45 Bridge Replacement, Galveston
- \$120 Proton Therapy Center, Houston
- \$107 Travis County Loop 1, Austin
- \$103 State Highway 45, Austin
- \$100 Presbyterian Hospital of Denton, Denton
- \$92 Galveston County Criminal Justice Center, Galveston
- \$90 Pier 1 Imports Headquarters, Fort Worth

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Fair Explores Energy Alternatives

The Renewable Energy Roundup and Green Living Fair is set in Fredericksburg's downtown Market Square. Featured topics range from green building and organic gardening to energy conservation and alternative-fuel transportation. Tickets are \$8 on Friday or Sunday, \$10 on Saturday, and \$16 for a three-day pass. Visit www.renewableenergyroundup.com for more information. SEPTEMBER 24-26

Fort Worth Celebrates Architecture

AIA Fort Worth is planning several activities to coincide with the city's observation of Architecture Month, including the sixth annual "Canstruction" team competition. See www.aiafortworth.org for locations, times, and additional events. SEPTEMBER 28 – OCTOBER 31

Preservation Dallas Tours Homes

"Architects Selecting Architects: Homes of Lasting Significance" is the theme for the 2004 Preservation Dallas Fall Architectural Tour. Eight significant residences were chosen by a panel of leading architects who will speak about their choices. Tickets are \$50. Call (214) 821-3290 or visit preservationdallas.org for further information. OCTOBER 16

Houston Hosts TSA Convention & Expo

Among the highlights of the Texas Society of Architects' 65th Annual Convention include continuing education programs, awards ceremonies, and tours of some of Houston's best architecture. In addition, the convention's Design Products & Ideas Exposition will feature 200 exhibitors of products and services. Early registration ends Sept. 16. Visit texasarchitect.org to download a brochure and to register online. OCTOBER 21-23.

National APT Meeting in Galveston

The Association for Preservation Technology International's annual conference will be held in early November at Galveston's historic Hotel Galvez. The theme for this year's gathering is "Raising the Grade for Preservation." In addition, a special one-day symposium will be sponsored by the General Services Administration and the U.S. National Park Service. NOVEMBER 3-6

Preservation Efforts Underway for Original Home of Alamo Survivor

A U S T I N Historic architecture frequently lies buried beneath layers of alterations, additions, and neglect before it is rediscovered. Frequently the discovery is made as the result of demolition, as was the case of the final home of one of the survivors of the Battle of the Alamo. Demolition of a barbecue restaurant on Fifth Street in downtown Austin to clear the site for the construction of a new hotel revealed a simple stone structure—a “hall and parlor”-style house (circa 1870) with a detached kitchen. Research brought to light the name of the original occupants of the residence: Joseph William Hannig and his wife, the former Susanna Dickinson.

Historians steeped in the legacy of the Alamo immediately recognized Susanna Dickinson's name. Born in 1814, Susanna Wilkinson was 15 years old when she married Almeron Dickinson in Tennessee and migrated to Texas shortly thereafter. Dickinson received a league of land from empresario Green DeWitt on May 5, 1831, and later acquired additional lots near the town of Gonzales in Caldwell County. Their daughter, Angelina Elizabeth, was born on December 14, 1834. After the first battle of the Texas Revolution was fought at Gonzales in October 1835, Almeron Dickinson joined other volunteers under the command of Stephen F. Austin and marched to San Antonio. Susanna and her daughter remained behind for another month, but left Gonzales for San Antonio after their home was looted by Mexican troops. Mother and daughter lived in a private home before joining Almeron at the Alamo (Mission San Antonio de Valero) on February 23, 1836. On that same day 1,800 Mexican soldiers, led by General Antonio Lopez de Santa Anna, began the attack on the San Antonio fortress, overwhelming the small Texian army of less than 200 men. A 13-day battle ensued, until March 6, when the final assault began. By the end, every Texian defender, including Captain Almeron Dickinson, and 600 Mexican soldiers lay dead.

A few people, mostly women, children, and several slaves, survived the battle—among them Susanna and Angelina Dickinson. General Santa Anna warned Susanna, the lone Anglo adult survivor, that the Texian rebellion would fail and commanded her to take news of the Alamo defeat to General Sam Houston in Gonzales. Houston ordered the citizens of

Gonzales to move eastward and to burn the town behind them, a move which drew General Santa Anna away from his main forces and into San Jacinto, where he was defeated in a surprise attack on April 21, 1836. It has been said that Susanna Dickinson's account of the Battle of the Alamo, and the memory of the brave defenders there, inspired the Texian troops to “Remember the Alamo!”

In the years that followed, Susanna and her daughter Angelina moved often and experienced repeated economic hardship. She also endured several failed marriages before she married her fifth husband, William Hannig, a German immigrant living in Lockhart, in 1857. One year later the couple moved to Austin and later occupied the stone house at Pine (now Fifth Street) and Neches streets. The house retains its symmetrical plan that was common during the era, with a central hall plan that evolved from the classic Greek Revival temple form. Additions to the structure eventually surrounded the original dwelling and completely concealed it from view.

In October 2003 the house with its detached kitchen was relocated in a public park across



Relocated to a downtown Austin public park, the circa-1870 home of Susanna Dickinson awaits further funds for preservation. Volunteers have painted a faux facade on the house to approximate the structure's original detailing; photo by Wayne Bell, FAIA

the street from its original location. Volunteers have painted a faux facade on the house to approximate the structure's original detailing. Efforts have begun to raise \$650,000 to restore the house as a museum and a center to interpret life during the Republic of Texas period (1836-46). For additional information, visit www.alamosurvivor.org.

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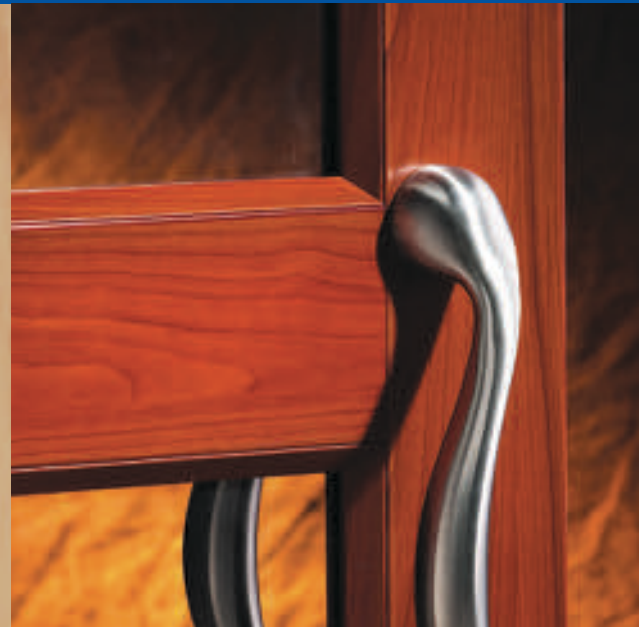
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Some things actually are rocket science. Out of the 70 entries in the 2004 TSA Design Awards'

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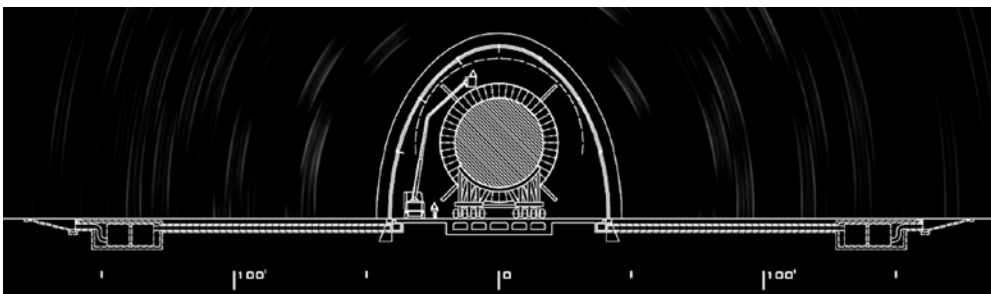
inaugural Studio Awards category, the jurors chose only one project that they felt conveyed a sense of discovery through design vision and investigation—plans by RTKL's Dallas office for a structure to temporarily house the Saturn V rocket launch vehicle at NASA's Johnson Space Center in Houston.

Saturn V rockets launched the Apollo missions that took humans around and to the moon between 1969 and 1972. The Saturn V at the Johnson Space Center never left the ground, yet, of the three surviving vehicles of this type, only this one is made up of rocket stages intended for flight. Exposed to the elements since 1977, the rocket is desperately in need of repair, and a thorough preservation plan is underway. An essential part of the restoration effort is the structure that will harbor the 363-foot-tall rocket during the five-year renovation period.

To function, the shelter has to maintain a stable humidity factor of 55 percent, while keeping the volume of air surrounding the rocket to a minimum. Calculations revealed that a clearance of 15 feet on all sides would provide just enough accessibility for repair equipment. RTKL's scheme incorporates active and passive environmental systems, with the mechanical equipment hidden underground. The design for the 400-foot-long structure comprises arched aluminum extrusions tensioned with bracing straps, lightweight, semi-translucent polyurethane sheathing, and strategically placed lighting that will reflect off the membrane's surface. "Thousands of people come to see this historic relic every day," says Fernando Teruya, Assoc. AIA, lead project designer for the scheme, "so we had to create an envelope that would mystify as well as function for the renovation work. Like a veil or a curtain, you can see the silhouette of the rocket, and like a glove, the structure is both practical and beautiful."

At this time, the Smithsonian Institution is attempting to secure funds for the preservation effort, and no date has been set to begin construction on the shelter.

Managing editor of *Architectural Record* from 1999 until earlier this year, Ingrid Spencer now resides in Austin.



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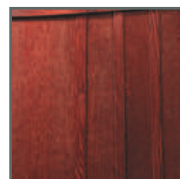


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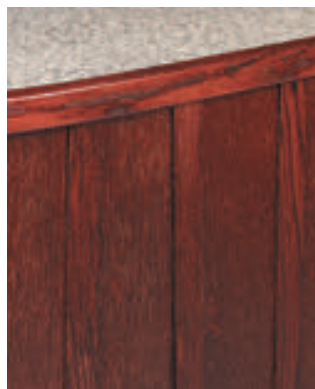
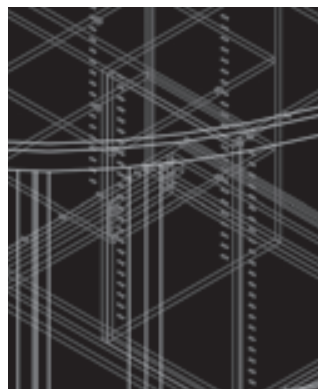
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In Defense of the Model

Increasingly rare, handmade miniatures demonstrate art and soul of designer's hand

by CANAN YETMEN

Before computer-aided drawing and 3-D screen modeling changed the way architects work and communicate with clients, the architectural model was an integral part of the design process. Design tool, marketing piece, and work of art all at once, the model is one of the most charming and evocative artifacts associated with architects. Small-scale versions of the imagined project, architectural models are the set dressing of choice in films and television programs depicting architects at work. Yet, in reality, in many architectural offices, models are playing an increasingly diminished role.

As with other technology that increases workflow efficiency, computer modeling speeds the creation of the final product, often at the expense of traditional craftsmanship. While computer models have the ability to render images that place the viewer inside the yet-to-be-created building, even allowing for extraordinary accuracy in natural lighting and detail finishes, the art and soul of the designer's hand is lost. Artfully crafted models are unique architectural objects — they enchant the viewer not simply through their diminutive detail but through their ability to transform ideas into a nascent reality. “Real models have a primitive power,” says Max Levy, FAIA, of Dallas, who always uses models in his design process. “By creating real space with real materials formed in miniature, they capture a piece of the metaphysical, which is the realm architects work in. Our creative work occurs at the dividing line between dreaming

and being. Models are the manifestation of that process. They are the architectural equivalent of newborn children.”

Model building remains an important part of architectural education, despite the ever-presence of computers and students' facility with sophisticated technology. Donna Kacmar, AIA, who teaches architecture at the University of Houston in addition to having her own practice, says model building teaches students a number of important lessons. “Models are really mini-construction projects,” she says. “Students learn first how to put a building together in the most basic terms by building models. Models help them understand the implications of their design decisions and help them work out structural issues.” While computer renderings and other technological advances seem like second nature to students, she says, models are important in helping them understand scale and context. “The fixed scale of models, their physicality, best demonstrate to a young architect the relationship between proportion and space,” says Kacmar.

However, for many practicing architects, building models themselves demands a prohibitively large investment. The time, money, and office space needed to fabricate a presentation model has spawned a support industry for architects — the model makers — that sustains the art of carefully creating the scale, proportion, detail, and context that can help bring a design concept into physical reality. Professional

Amanda Winford of Flying Fish Designs built the model of the Austin Convention Center Expansion for Page Southerland Page. The finished project received a TSA Design Award last year; photo by Geno Esponda.

model builders, often trained in architecture themselves, provide an expertise that is in danger of extinction. In a sense, model makers comprise the last line of defense against the pervasive eroding by computers of the human touch during an architect's design investigation. Besides, says Michael Heffernan, AIA, of Studio Maquette in Austin, “Computer modeling may sometimes be more expensive and time consuming than traditional model building.” Heffernan, who builds models with his wife Tina, adds, “Computer models produce a three-dimensional screen image. A lot of important information gets lost in that translation.”

The Heffernans build models for architects, landscapers, developers, furniture designers, and even lawyers and film producers. Their shop, which specializes in presentation models, is able to work within a range of budgets depending on the client's need. The model building process is collaborative and each product is tailored to the preferences of the architect, the aesthetics of the building, and the intended purpose for the model. The Heffernans say the benefit of farming out the task is to allow architects to return to using handmade models within the framework

“Models” continued on page 20



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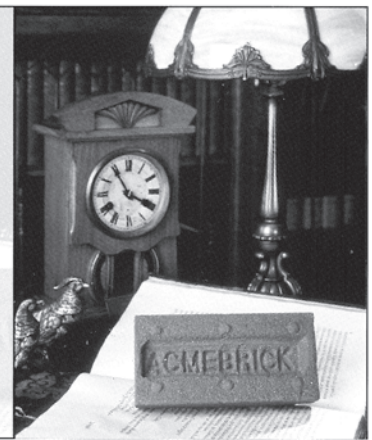
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“Models” continued from page 18

of busy modern practices. “We hope to provide architects a way to reincorporate models into their work process,” says Tina Heffernan.

Amanda Winford of Austin-based Flying Fish Designs has produced models since 1998 for clients to use along with computer renderings as part of comprehensive marketing strategies and as fundraising efforts for public projects. “Projects that face long-term marketing situations, such as the many new downtown condominiums, may use a large presentation model and a computer model in their marketing office,” she says. “When a project’s budget relies on fundraising, most firms still turn to a model to attract donors. I have worked on fundraising models for various projects, including public and private schools, churches, and state parks.”

Trammell Crow Residential hired Studio Maquette to build models of its Hilltop Townhomes project in Austin. Michael Heffernan, AIA, began the project this summer; photo by Adam Fortner.

While model building is a disappearing art, people’s fascination with them prevails. When Levy mounted an exhibition of architectural models at the McKinney Avenue Contemporary Museum in Dallas last year, the opening night event was the best attended in the museum’s history. “Models invite you to come close,” he says, “which is in contrast to the alienation of a fast, impersonal world.” Levy believes their rarity, though lamentable, has actually made scale models more powerful than ever, and he suggests that their growing scarcity may indicate that the architectural profession’s drive to be more efficient is endangering the essence of the design process. “Design evolves on its own biological clock,” says Levy. “When you move through the process too quickly, you may trample down possibilities trying to rise to the surface. Models force you to slow down and let those eventualities arise.”

Formerly publisher of *TA*, Canan Yetmen owns a marketing firm in Austin.

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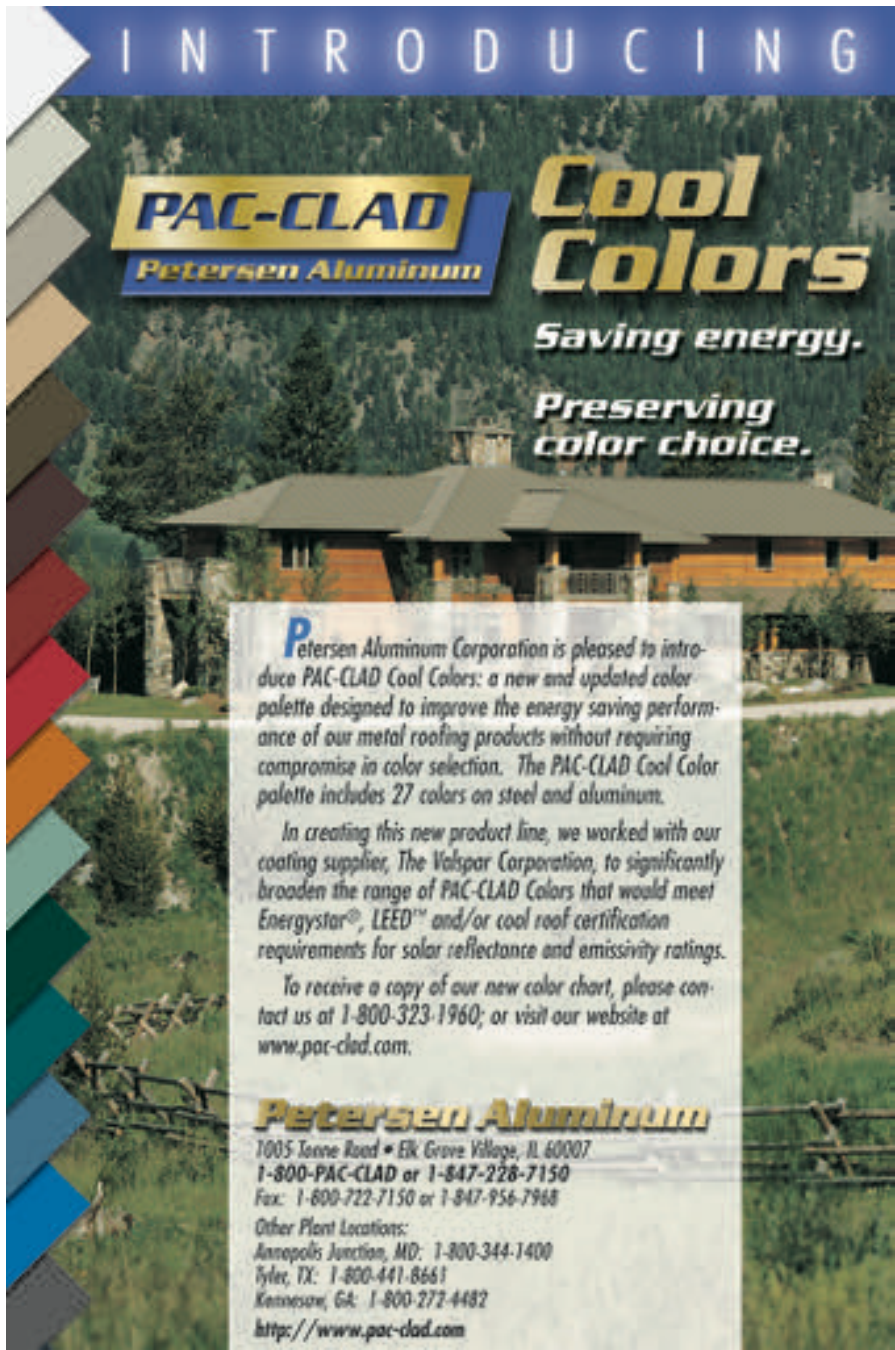
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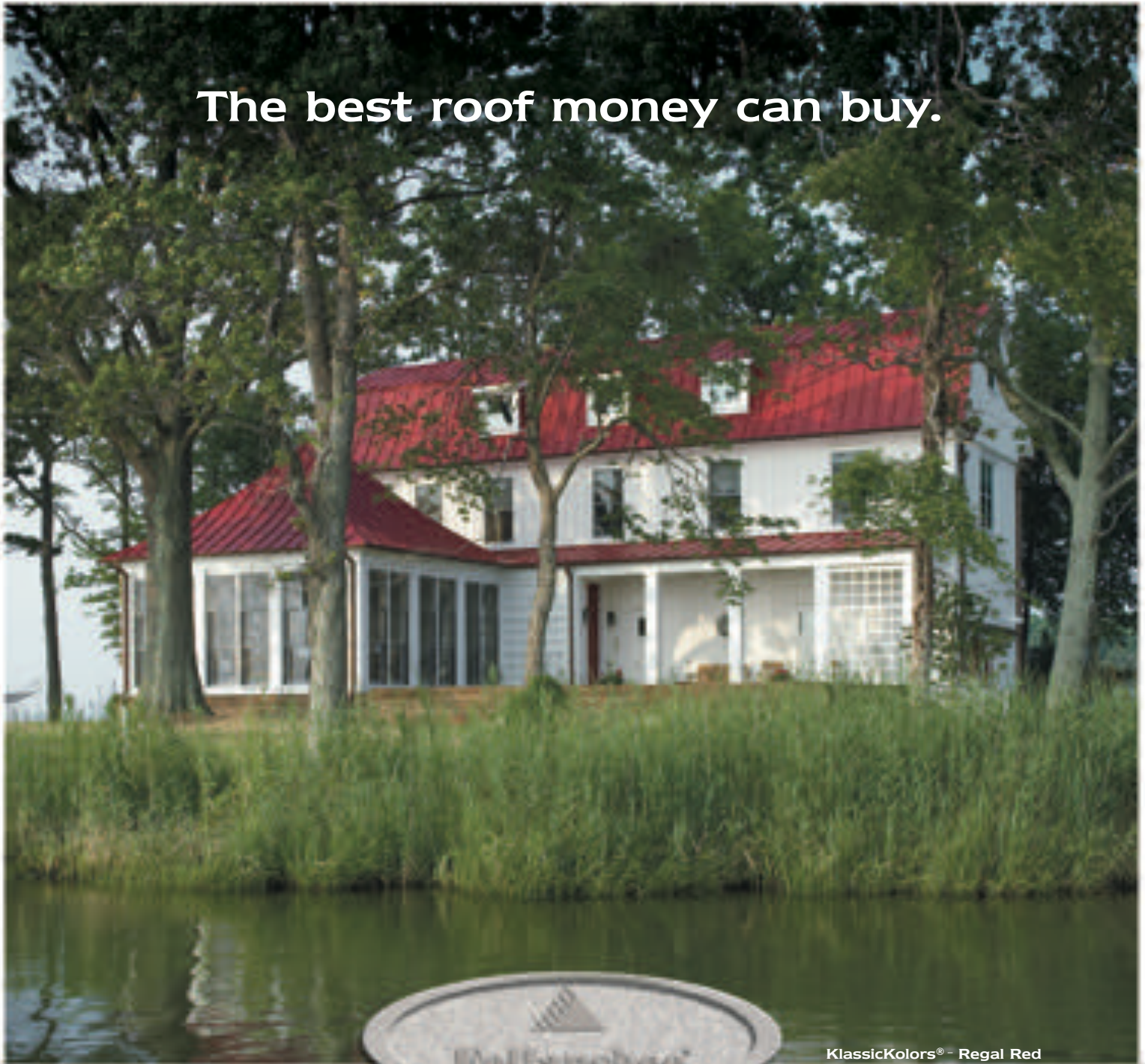
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TOWARD OBJECTIVITY

Fifty (or so) years of the TSA Design Awards

by DAN HART, AIA

ARCHITECTS do not claim to be good with numbers. Although we celebrate the golden anniversary of the TSA Design Awards this year, the first such awards are mentioned in the inaugural issues of *Texas Architect* in 1950. It is unclear when the erroneous 50th anniversary countdown began.

But the ambiguity surrounding TSADA's origins does not detract from the fact that the program remains strong to this day. The vitality of this long running program is a testament to the importance Texas architects place on promoting design excellence. For more than 50 years, the TSA Design Awards have communicated the status of architectural design to the public and have affirmed practitioners who seek to advance architectural expression.

Architectural design awards are conferred all over the world by various organizations, some by architects and others by groups focused on specific building types or products. Recognizing architectural design excellence is a compelling way to communicate the importance of the issues surrounding the built environment. Programs have accordingly proliferated. However, such public acclamation is somewhat peculiar to the design professions. (Do attorneys receive

awards for the best closing arguments? Are accountants honored for especially inspiring audits?)

Perhaps because excellent design is in so many ways immeasurable, architects feel compelled to seek other avenues for affirmation. "Immeasurable," however, should not be confused with "subjective." While it is difficult to measure how design results in a great building, an objective look at 50 (or so) years of TSA



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Neuhaus + Taylor Architects.....	14
The Oglesby Group.....	12
William T. Cannady & Associates.....	12
Wilson Morris Crain & Anderson, Architects.....	12
Cunningham Architects.....	11
Kenneth Bentsen Associates.....	9
Omniplan Architects.....	9
Bolton and Barnstone.....	8
Charles Tapley Associates.....	8
Golemon & Rolfe Architects.....	8
Hellmuth, Obata + Kassabaum, Inc.....	8
Howard Barnstone Architects.....	8
Max Levy Architect.....	8
McKittrick, Drennan, Richardson and Wallace.....	8
S.I. Morris Associates.....	8
Skidmore, Owings & Merrill.....	8
Harwood K. Smith & Partners.....	7
Richter Architects.....	7
3D/International.....	6
Craycroft-Lacy Partners.....	6
George F. Pierce Abel B. Pierce.....	6
P. M. Bolton Associates.....	6
Page Southerland Page.....	6
Pratt, Box, Henderson & Partners.....	6

Firms winning six or more TSA Design Awards

Note: This list represents a simplified compilation of award winners. Because some firms have changed names and several individuals have led more than one firm, a more detailed table would require extensive footnotes and an accompanying timeline.

Design Awards suggests that TSADA juries through the years have made awards that were not subjective. By logical extension, this cursory and admittedly informal survey of the history of the TSADA suggests that recognition of design excellence is objective.

Consider the table above that lists firms that have won six or more TSA Design Awards. Obviously, these are not the only firms who have made significant contributions to architecture in our state. But any serious historical survey of Texas firms that have consistently produced great architecture would have to include those listed. A deeper look at the objective data avail-

able through the record of the TSADA further solidifies the place of these firms in Texas architectural history.

All totaled, 70 percent of the TSA Design Awards have gone to firms that have received two or more awards. There's a decided minority of firms that have won a single award, a fact that suggests that firms capable of producing design excellence tend to demonstrate that capability repeatedly over time.

Given that this consistency with the top-performing firms occurs in a "blind" process where awards are conferred without indication of the firms who produced them adds weight to the objectivity argument. Couple that with the TSADA tradition of selecting highly respected jurors who have demonstrated that they know design excellence when they see it. In addition to the members of the 2004 jury (see next page), the list of jurors has included such luminaries as Gunnar Birkerts, Robert Campbell, Francois DeMenil, Joseph Esherick (twice), Fay Jones, Reed Kroloff, Richard Meier, Enrique Norten, Gyo Obata, Patricia Patkau, Peter Pran, Antoine Predock, Stanley Saitowitz, William Turnbull, Robert Venturi, and Tod Williams.

Over the years, various titles of honors within the TSA Design Awards have come and gone or changed (Award of Excellence, Award of Merit, Commendation, Award of Merit with Special Commendation, Finalist, First Honor, Highest Honor, Honor, Honorable Mention, Merit, Meritorious Design, and Top Award Winner), and skeptics could consider this inconsistency as proof of the competition's subjectivity. In many cases, full freedom has been given to the jurors to name the award as they felt appropriate. But whatever label was applied to the award, recognition of design excellence was in view.

A pair of photographs in one edition of *Texas Architect* shows a TSADA winner, the West Columbia Elementary School, designed by Donald Barthelme, along with the jury's comments:

This project is first of all a brilliant design. A fresh and well studied plan conception has been coupled with painstaking care in detailing and execution. Taking advantage of all the contributions of technological progress, the architects have used them in a light, colorful, apparently effortless way, to capture some of the essence of delight in architecture.

Those comments, from the 1952 competition, could have been made in any one of TSA Design Award's 50-plus years. The values expressed then, by one of the very first juries, have served

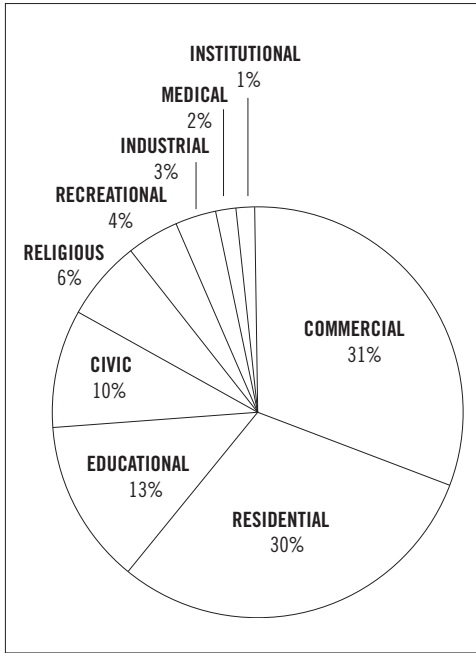
jurors ever since as they seek to recognize and affirm design excellence.

In the end, design excellence is intangible, elusive, immeasurable, and difficult to label. But the history of the TSA Design Awards helps show that recognizing design excellence can be done objectively.

A member of the TSA Design Awards Committee, Daniel S. Hart, AIA, is a principal with Parkhill, Smith & Cooper. A database of TSA Design Awards is available at texasarchitect.org. Contact Hart at dhart@team-psc.com with comments or corrections.

Location	Design Award Projects
Houston.....	145
Dallas.....	102
Austin.....	53
San Antonio.....	38
Fort Worth.....	14
Galveston.....	9
Tyler.....	5
El Paso.....	4
Laredo.....	4
Longview.....	4
Midland.....	4
Other.....	216
Outside of Texas.....	45
Outside of U.S.....	7

Location of TSA Design Awards projects



TSA Design Awards by building type



VINCENT JAMES, AIA

MALCOLM HOLZMAN, FAIA

CAROL ROSS BARNEY, FAIA

PHOTO BY KENNY BRAUN

2004 TSA Design Awards Jury

by TOM TRENOLONE, ASSOC. AIA

THE composition of each year's TSA Design Awards brings together three unique and talented individuals who temporarily join one idiosyncratic group. While the dynamic that results is often interesting and sometimes fascinating, each jury almost always selects a final list of projects that inevitably reflects the state's best work.

In June, this year's jury spent two days viewing 323 presentations (253 built and 70 unbuilt) in digital format before awarding 11 projects. The 10 built projects are featured on the following pages, with the single unbuilt project featured on page 16.

Members of this year's jury were:

Malcolm Holzman, FAIA, of New York, has been a partner with the nationally renowned firm of Hardy Holzman Pfeiffer Architects. Holzman has strong ties to Texas both as a practitioner and educator. This summer he began a new chapter in his career as he leads the new

partnership of Holzman Moss Architecture. Two familiar projects featured in his portfolio are the Lucille "Lupe" Murchison Performing Arts Center at the University of North Texas (a TSA Design Award-winner in 2000) and the renovation and renewal of Radio City Music Hall in New York City.

Vincent James, AIA, began his practice in 1990 and today is president of Vincent James Associates Architects in Minneapolis. Recipient of two national AIA Honor Awards and four Progressive Architecture Awards, James is currently an adjunct professor at Harvard University's Graduate School of Design. Two of his most notable projects are the Type/Variant House and the Minneapolis Rowing Club Boathouse.

Carol Ross Barney, FAIA, is a native of Chicago and spent a year in the U.S. Peace Corps prior to beginning her practice. Today, she is the design principal of Ross Barney+Jankowski,

Inc. Her firm has received four national AIA Honor Awards. Her most notable buildings include the award-winning Cesar Chavez Multicultural Academic Center for the Chicago Public Schools and the U.S. Federal Campus in Oklahoma City.

Each of these professionals has demonstrated design leadership in a variety of contexts—by preserving the historic integrity of a national landmark sited within a dense urban environment with one of the nation's strictest building codes; in designing a boathouse, one of the simplest of structures, that transcends the building type with economy and artistic aplomb; and by assisting a stricken community to heal while at the same time creating a secure federal facility that does not resemble a bunker.

Tom Trenolone, Assoc. AIA, works for RTKL in Dallas.



LOUISIANA STATE UNIVERSITY HILLTOP ARBORETUM, BATON ROUGE

Vernacular Expression

by JIM SULLIVAN



HILLTOP Arboretum is a long-standing and respected horticultural institution that holds a cherished position in the landscaping and gardening community of Baton Rouge—no small group in a place where the growing season spans 10 consecutive months. Even those without much of a green thumb can find a place in this community.

The Arboretum owes its special position to its founders, Emory and Annette Smith, and their dedication to nature and their willingness to share its wonders. In the late 1940s the Smiths purchased a rural hilltop property south of Baton Rouge as a working farm and country retreat. As they tended and cleared their land, Annette could not bear to discard some redbud tree seedlings. Instead, she began a nursery with them. Soon the redbuds were joined by other native plants. Her husband then decided to design a cathedral-like garden where “those whose load has become too heavy might work and feel the healing touch of Nature, a world full of enchantment, full of beauty and poetry.” Over the years, this openness and love of nature engendered in Hilltop’s visitors a devotion to the Smiths’ property and the couple’s vision for it. Many of those visitors organized “The Friends of Hilltop,” a group committed to developing the land in accordance with the Smith’s vision. It was this organization that began the initiative to fund and develop the design and construction of the visitor center.

According to Janet Forbes, Hilltop’s then-director, the group faced the challenge of ensuring that any building erected on the site would be sympathetic to the principles of the Arboretum. This challenge was addressed in their choice of Lake/Flato Architects, a firm that has built a body of work around a consistent investigation into site-specific architecture. For Lake/Flato such architecture seems to find expression in three ways: first in the reinterpretation of local vernacular form; second in

CLIENT Friends of Hilltop Arboretum

ARCHITECT Lake/Flato Architects

PROJECT TEAM Ted Flato, FAIA; Andrew Herdeg, AIA; Brandi Rickers

CONTRACTOR MBD Construction

CONSULTANTS Bodman, Webb, Noland & Guidrez Architects (construction administration); Stephens Engineering (structural); Assaf, Simoneaux, Tausin & Associates (MEP); Reich Associates (landscape)

PHOTOGRAPHER Neil Alexander





- SITE PLAN**
- 1 PARKING
 - 2 ADMINISTRATION
 - 3 SHOP/RECEPTION
 - 4 RESTROOMS
 - 5 OPEN ASSEMBLY PAVILION
 - 6 ENCLOSED ASSEMBLY PAVILION
 - 7 POND
 - 8 RAVINE
 - 9 ACTIVITES LAWN
 - 10 UTILITY LAWN

the organization of the program; and third in a judicious use of resources. Despite being Lake/Flato's first excursion into Louisiana, the visitor center successfully continues this fruitful investigation.

In the case of the visitor center, Lake/Flato reinterprets two vernacular building forms, the "shotgun" and the "dogtrot." At first glance, their design follows the shotgun type in its long, thin rectangular shape resting above ground on piers with a single gabled roof running along its length. But a closer look reveals characteristics of the dogtrot, with the long rectangular form split by a covered outdoor open space, making two primary rectangular forms under one roof, and that the building's main entrance is on its broad side within the outdoor space. Their reinterpretation is distinctly modern. For instance, enclosure and structure are separate elements. The columns and beams that support the roof stand free of the two rectangular forms under it. This not only expresses the structure but also creates the illusion that the rectangular forms are floating free in space, particularly because they are raised above the ground.

The use of local vernacular forms not only associates the design with the local culture but also, Ted Flato, FAIA, says, "helps solves issues specific to the relationship of the program to the particulars of its site." The property is rectangular and runs generally north-south with a ravine that extends northward from its southern border. This ravine separates the southeast corner from the rest of the site. Lake/Flato located the visitor center on this corner and aligned the building on a north-south axis running roughly parallel with the ravine. Here, the shotgun's long, thin form effectively serves as a thick wall separating parking on its east side and the main area of the arboretum, just across the ravine, on its west side. The outdoor covered space that is drawn from the dogtrot's form splits the thick wall and becomes a large threshold through which visitors formally enter the arboretum. The visitor center's program resides in the thick wall, flanking the open space of the entry threshold. To one side is the Hilltop Arboretum's office and a gift shop while to the other is a large resource/library room and public restrooms.

The visitor center has been a remarkable success. Tracey Benowetz, Hilltop's current director, says she feels that the building "honors the arboretum by giving it a clear boundary and entry." This is appropriate given the Smiths' vision of nature as hallowed, and as such, must be separated from the more mundane activities of everyday life. Lake/Flato's design clearly delineates between the sacred and the profane while offering a suitably respectful bridge across that divide. ■

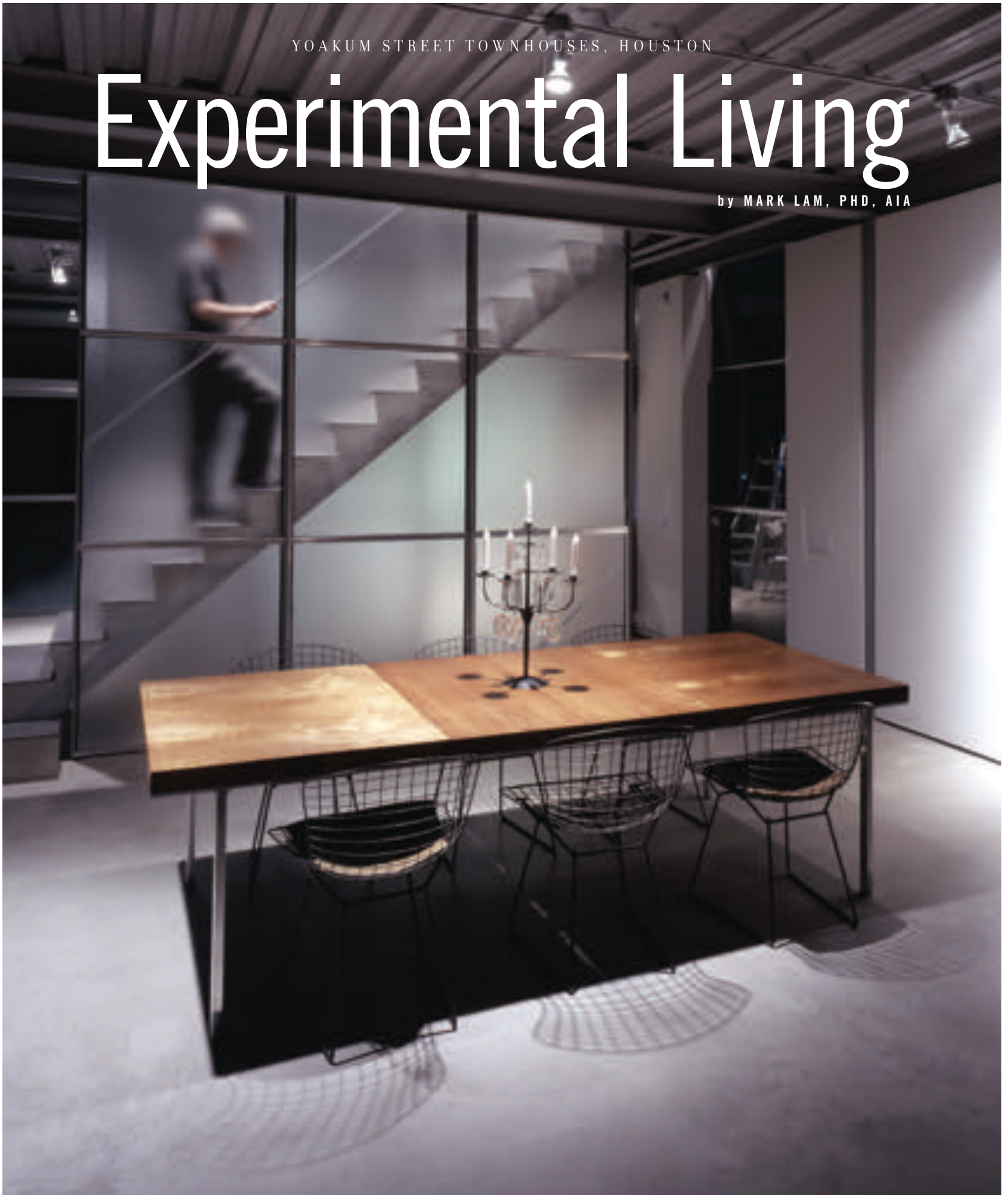
RESOURCES PRE-FABRICATED WOOD JOINTS AND TRUSSES: Southern Components; METAL ROOFING: MBCI; ENTRANCES AND STOREFRONTS: Kawneer; PLASTIC GLAZING: Polygal

Jim Sullivan is an assistant professor of architecture at Louisiana State University.

YOAKUM STREET TOWNHOUSES, HOUSTON

Experimental Living

by MARK LAM, PHD, AIA





IN the spirit of Charles and Ray Eames and the case study houses of the 1940s, Gordon Wittenberg, AIA, along with his wife Susan, have taken the roles of clients in an experiment to explore the nature of “home” in an urban setting. Wittenberg’s main goal was to express a common, economical structural system and allow it to give shape and order to two halves of a duplex. Through the early stages of the experiment they sought to minimize the amount of materials and the number of processes necessary to realize these two dwellings. The simplicity and openness of the houses sharply contrast with the congestion of Houston’s densely populated Museum District.

This prototype for inner-city living is formed by a simple spanning structural system with a typical bay of 9 feet 4 inches by 18 feet 7 inches and a floor-to-floor height of 10 feet 4 inches. Wittenberg used this kit of parts to create two interconnected three-story town houses joined in an L-shape *parti* constructed entirely of steel, concrete, and glass. The buildings are clad with two colors of metal siding and a three-story glass curtain wall on its south side.

Sited on a 57-foot by 125-foot lot, the warehouse-like plan features sealed concrete floors and a painted metal structure. Incandescent lighting is straightforward, with exposed conduits, j-boxes, and bulbs. Stairways and a very limited number of walls or cabinetry define individual spaces without restricting natural light. Stairways are expressed as a simple geometry of cast concrete topped with granite pavers. The stairs are sandwiched between translucent screens of fluted glass framed in steel grids that provide both privacy and a sense of layering on each side. The use of wood and marble is sparse, limited to freestanding closets and cabinetry. The thickened northern wall serves as storage and an HVAC chase. The inside face of this wall is finished with full-height hinged wall panels

CLIENT Gordon & Susan Wittenberg
 ARCHITECT Wittenberg Oberholzer Architects with Susan Wittenberg
 PROJECT TEAM Laura Dougherty; Michael Morrow; Mark Oberholzer, AIA; Gordon Wittenberg; Susan Wittenberg
 CONTRACTOR Tribus, Inc.
 PHOTOGRAPHERS Michael Morrow and Evans Wittenberg





made from steel frames with gypsum drywall infill that conceal a number of shallow storage areas throughout the home.

The first floor is primarily used for covered parking and storage, with the second and third floors dedicated to living spaces. The kitchen of the rear unit is located on the second floor and opens to a garden room. Operable garage doors allow for natural ventilation of this treehouse-like space, which serves as a shaded outdoor eating area and greenhouse.

Parking for six vehicles is accomplished by placing two covered spaces beneath the front duplex and by creating a pass-through motor court leading to an additional four spaces beneath the larger rear duplex. By paving the entire yard with crushed granite, Wittenberg efficiently makes the most of this small lot by combining functions and blurring the traditional distinction between driveway and yard. The crushed granite motor court, an oasis in this densely populated neighborhood, is tucked behind the street-side unit and doubles as a courtyard and main focal point for the rear unit. The court is minimally landscaped with bamboo and loquats along the southern edge with a simple granite topped rectangular lap pool. An existing sycamore tree provides shade and a focal point at the west end.

A similar architectural language is evident between the two town houses although they shelter very different living environments. While the street-side duplex looks and feels more like a traditional loft-style dwelling, the three-story curtain wall transforms the rear unit into a much larger and more open space and creates visual continuity between inside and outside spaces. Wittenberg's experiment has yielded two economic and restful residential settings. As for the human side of the experiment, Wittenberg says that living there is wonderful and is "a lot like camping." **T**

RESOURCES STONE: Sweeney Marble; METAL DECKING: MBCI; ARCHITECTURAL METAL WORK: MBCI; BUILDING INSULATION: Owens Corning; ROOF AND DECK INSULATION: MBCI; METAL SIDING: MBCI; METAL ROOFING: MBCI; METAL WINDOWS: Champion; TILE: BPI, American Olean; PAINTS: ICI Dulux; METAL BUILDING SYSTEMS: MBCI

Mark Lam, PhD, AIA, is a partner with SHW Group.



VIA KEL-LAC TRANSIT CENTER, SAN ANTONIO

Static Movement

by CARLOS MORENO, AIA



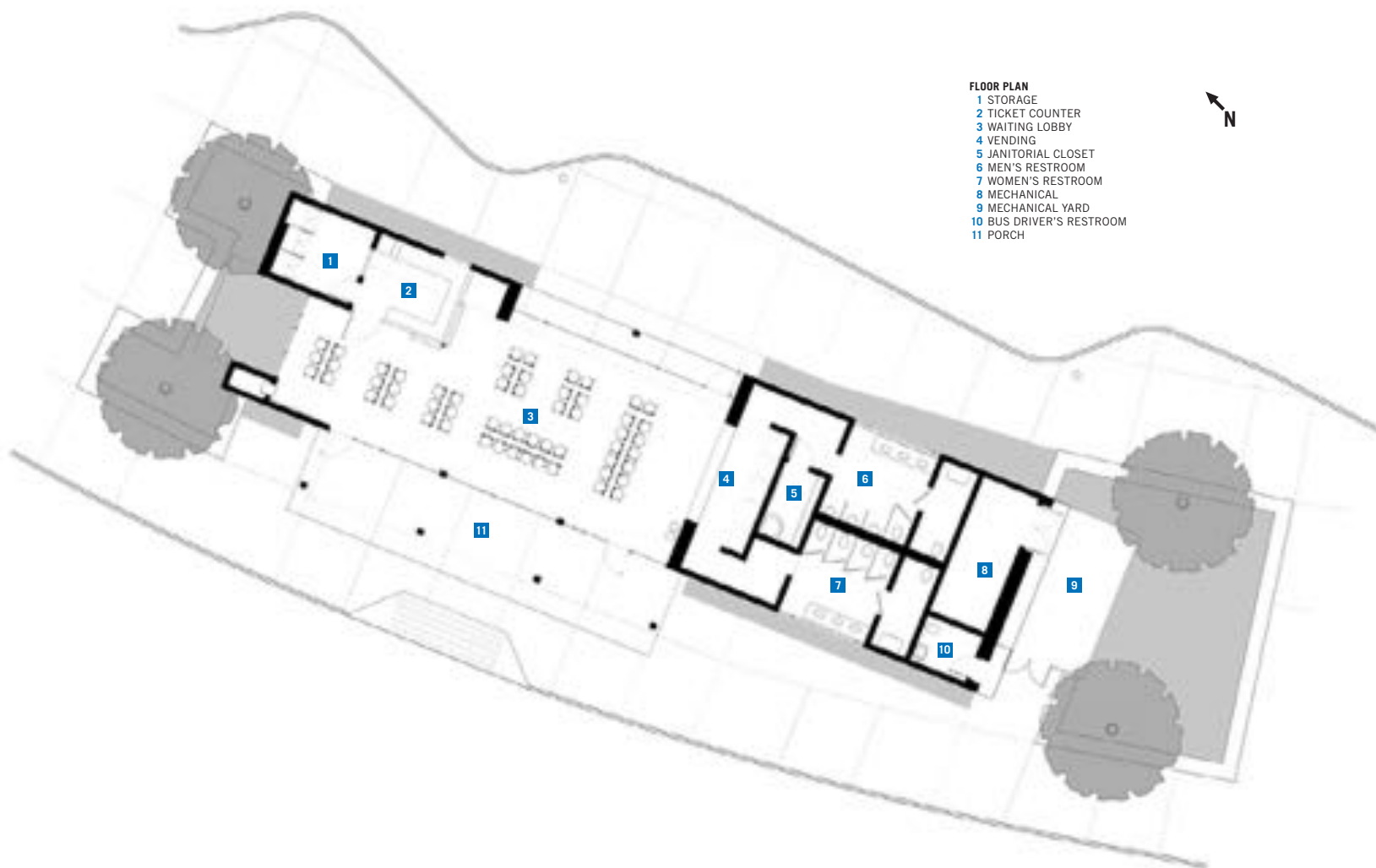
AT first glance, the building appears out of place, corresponding to its program. The new VIA Metropolitan Transit park-and-ride facility, known as the Kel-Lac Transit Center, captures a brief moment in time. Here, time seems to freeze in that moment between rest and forward momentum, and as one would expect, the building does not simply rest upon the asphalt sea of a well-worn strip shopping center. Instead, the architects took advantage of the blank parking-lot-canvas and conjured an image of movement while also evoking a sense of serenity for the busy, burden-laden, and weary traveler trying to get from point “A” to point “B.”

The building’s form resembles an aircraft just prior to takeoff – a visual reference to nearby U.S. Air Force bases (Kelley USA and Lackland AFB) from which the transit center’s name derives. Likewise, its east-west orientation parallels approaching buses as they dock at the facility, recalling the arrival and departure of commercial jets along an airport tarmac. For park-and-ride patrons, circulation through the terminal’s parking lot allows easy approach to the facility.

The materials are simple and readily apparent: standing-seam corrugated metal panels, structural steel, exposed concrete, stucco, aluminum framed glazing, and painted gypsum board. Their use, however, is not contrived; their placement does not conform to typical installations. As described by architect Davis Sprinkle, AIA, one objective in the building’s design was the “peeling back through the

CLIENT VIA Metropolitan Transit
ARCHITECT Sprinkle Robey Architects
PROJECT TEAM Davis Sprinkle, AIA; Thom Robey, AIA; Rene Balderas; and Jose Torres
CONTRACTOR Kunz Construction
CONSULTANTS Fernandez Frazer White & Associates (civil); C.F. Zavala Group (landscape); Lundy and Franke Engineering (structural); M.E.P. Design (MEP); Edens, Inc. (code/life safety); Ethel Shipton (art)
PHOTOGRAPHER Hester+Hardaway





- FLOOR PLAN**
- 1 STORAGE
 - 2 TICKET COUNTER
 - 3 WAITING LOBBY
 - 4 VENDING
 - 5 JANITORIAL CLOSET
 - 6 MEN'S RESTROOM
 - 7 WOMEN'S RESTROOM
 - 8 MECHANICAL
 - 9 MECHANICAL YARD
 - 10 BUS DRIVER'S RESTROOM
 - 11 PORCH

layers of an onion.” This is readily identified at the west facade by an ordered breakdown of materials from metal to stucco to glass. The hard, slick sheen of the standing-seam metal appears to peel away from the stucco’s softer, more textured finish, which itself peels away from the transparent layers of a Mondrian-esque multi-colored composition of glass panes.

The interiors are minimal and well-suited for their intended use, providing a large open room that allows for personal introspection while waiting for their next ride. The panes of colored glass diffuse interior light in a way that makes the space almost ecclesiastical—perfect for quiet meditation as in any religious setting.

The project’s artful transparency also creates a context where the use of space embraces street life, reanimating a dying commercial zone and reinvigorating the surrounding neighborhood. This hub of human activity provides a sense of community amid a barren landscape of concrete and asphalt. The patrons have access to what has been coined as the “kiss-n-ride” bus stop where spouses drop-off their significant others as if a departure port-of-call. To its credit, the new terminal creates the backdrop for the re-creation of a sense of community, where even its use of space could encourage the start of its own *mercado*, or street-market. Planters and walkways create an outdoor environment that is more than just a place of rest and circulation; it is also a place where one expects local vendors to set up shop.

Fortunately for riders and bus drivers alike, the client and designers realized that the new VIA facility could provide more than a place to catch the bus. They saw the opportunity to enhance that mundane experience by focusing on the anticipation of arrival and the awareness of departure. Even the casual observer seems to become a character in a play scripted with unending action, ever-shifting points of view, and subplots that continue offstage long after the bus has left the station. **T**

RESOURCES CAST STONE: Pyramid Stone; LAMINATES: Wilsonart; WATER-PROOFING AND DAMPPROOFING: Blueskin TWF, Henry Air Bloc 31; ROOF AND DECK INSULATION: AC Foam; ROOF AND WALL PANELS: MBCI; METAL ROOFING: Architectural Building Components; ENTRANCES AND STOREFRONTS: YKK AP; DECORATIVE GLAZING: Vanceva; GYPSUM BOARD FRAMING AND ACCESSORIES: Dietrich; GYPSUM FABRICATIONS: National Gypsum Company, Gold Bond Building Products; PAINTS: ICI Dulux; RESINOUS FLOORING: Polyspec

Carlos Moreno, AIA, practices with Marmon Mok in San Antonio.



MARTIN BOATHOUSE AND BRIDGE, AUSTIN

Natural Connection

by STEPHEN ROSS



OVER two decades, Arthur Andersson, AIA, and Chris Wise, AIA, of Andersson-Wise Architects, have developed a strategy for designing projects by drawing inspiration from the cultural and physical imagery of their context. Through client and design team collaboration, the firm's work seeks to uncover and understand the complexities of each site. The investigation inevitably reinforces both the physical and emotional connections already established in a locale, and ultimately yields a new destination of symbolic importance to this intersection of client and context. The Martin Boathouse and Bridge project embodies the success of the firm's strategic approach to design solutions.

As the family's new residence was under construction in the hills of West Austin, the Martins asked Andersson-Wise to design a half-mile pathway from the site of their house across a deep ravine to an opposing ridge and eventually leading down to a boathouse sited on Lake Austin below. The client's program required convenient means of access to the lake with minimal intervention on the surrounding landscape. These criteria, coupled with the existing texture and terrain, compelled the architects to consider a pedestrian link rather than a mechanical connection. This sensitive orientation towards the immediate context allowed the architects to create a series of subtle, mediated responses that are at once delicate yet dramatic and experientially rich.

A 200-foot-long wood-and-steel cable-stayed suspension bridge was designed to span the ravine and thus afford an easy path to the opposite ridge. At this point, the ridge drops 100 feet and is negotiated via a stone staircase to the shores of Lake Austin and the boathouse below.

The boathouse is a two-story prefabricated steel grid infilled with ipe wood window frames, floors, walls, and ceiling. The barge-delivered steel structure is welded onto pylon supports which rest atop submerged rocks. The steel is painted with a protective zinc coating in a sympathetic hue that allows for a gentle visual transition between lake and sky. The 800-square-foot structure's first level provides covered space for two slips (for a boat and a personal watercraft) and a minimal amount of dry

CLIENT Tom and Mary Martin

ARCHITECT Andersson-Wise Architects

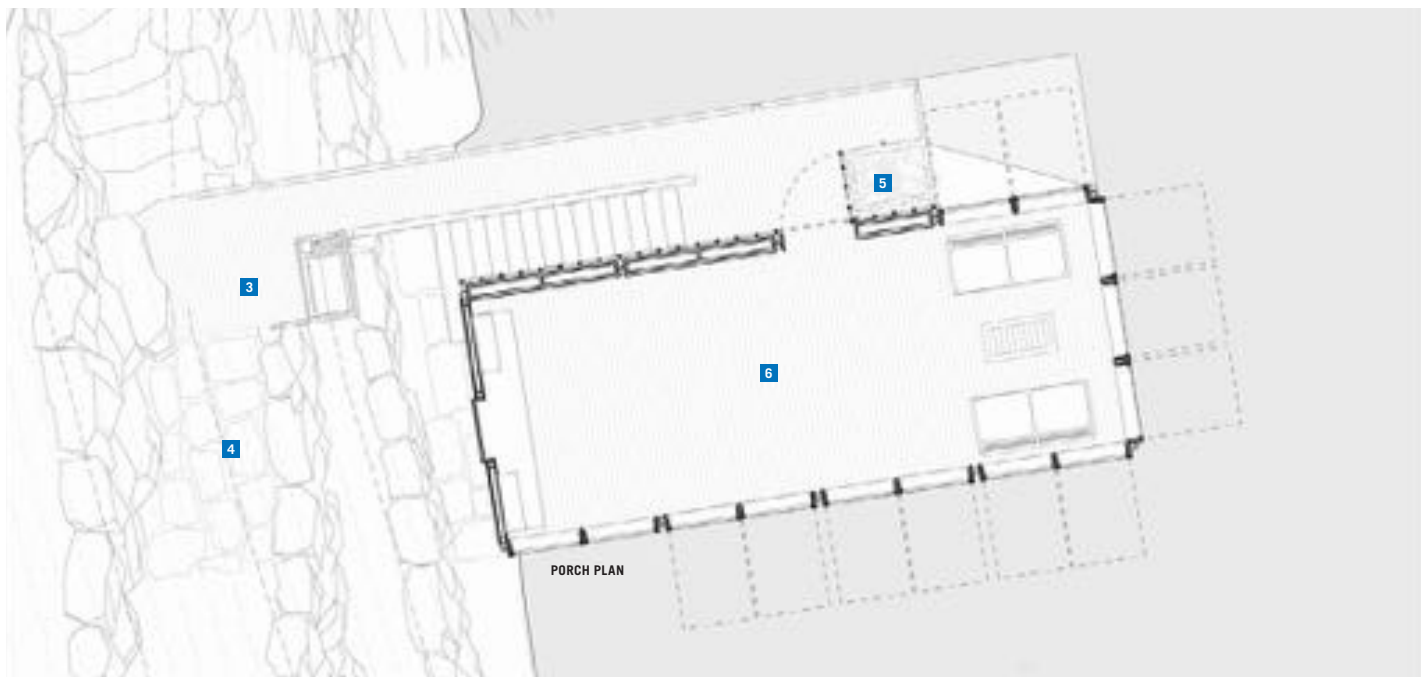
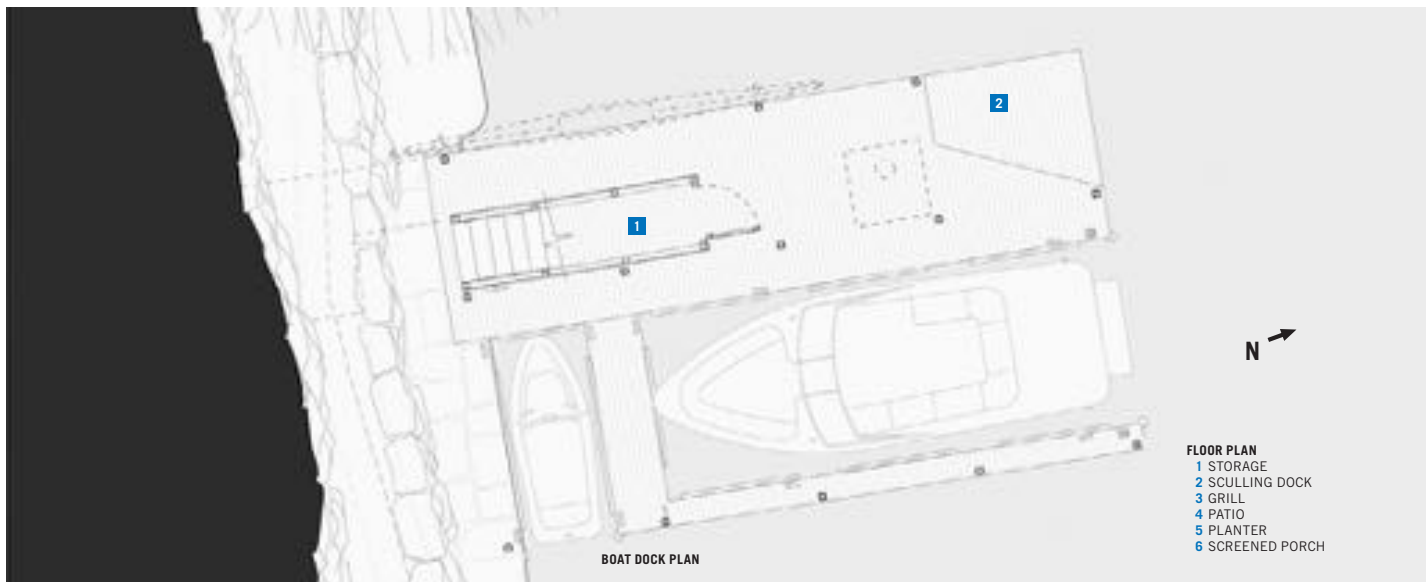
PROJECT TEAM Arthur W. Andersson, AIA; F. Christian Wise, AIA; Jim Moore, AIA; Gregory Brooks

CONTRACTOR Four Corners Construction

CONSULTANTS Architectural Engineers Collaborative (structural); Fabric Structures (bridge engineer)

PHOTOGRAPHER Paul Bardagjy





storage under the stairway, as well as an uncovered sculling dock. The second level is divided between an exterior shower and a freestanding screened porch that serves as an elevated outdoor room. The outdoor room converts to a screen-awning-clad space that opens to the three sides directly exposed to views of the water, a configuration that allows convection currents and breezes off the lake. The room is equipped with a small storage and appliance cabinet on the south wall. A wooden trellis, which serves as an armature for growing vines, protects the west side from direct sunlight.

It has been said that the most successful projects are the ones which, once built, seem inevitable, as if they grew sympathetically from the contextual conditions of site and client. This may or may not be so, depending on the skills and sensitivities of those involved. It is, however, especially true in this instance: The architects embraced a very dramatic and complex set of intersecting landscape conditions in a manner which has yielded both a wonderfully simple, poetic, and formally elegant boathouse and accompanying bridge while also offering a durable and delight-filled place of human experience. ■

RESOURCES LUEDERS LIMESTONE: Mezger Enterprises

A senior lecturer in UT Austin's School of Architecture, Stephen Ross also works with Black and Vernoooy Architects and Urban Design.



1936 aerial photo of TAMU campus looking west (courtesy Cushing Memorial Library & Archives, Texas A&M University)

TEXAS A&M UNIVERSITY MASTER PLAN, COLLEGE STATION

Campus Reorientation

by LAWRENCE CONNOLLY, AIA



The Long Range Plan (courtesy Barnes Gromatzky Kosarek Architects)

UNRESTRAINED sprawl during the past 60 years has dramatically changed the quality and character of Texas A&M University's original campus at College Station. When it first opened in 1876, a tightly knit composition of buildings and green spaces flourished as a self-contained academic community on the Texas prairie. Methodical development of the campus continued through the early decades of the twentieth century, especially under the direction of F.W. Giesecke after his appointment in 1908 as A&M's first official college architect. However, after World War II and on through to the century's close the campus sprawled across its original 1,830 acres, thanks to a seemingly endless availability of surrounding land. Over time that widespread growth obscured the seamless historic core that Giesecke and others had nurtured.

Several years ago TAMU leaders realized the dire need for a master plan to reorient and reorganize campus development. They hired the team of Barnes Gromatzky Kosarek Architects in Austin and Michael Dennis & Associates in Boston to outline the steps necessary to improve the quality of the physical environment and to devise guidelines for growth management. The document, approved in July by TAMU regents, will influence growth over the next 50 years at College Station, the flagship school of the nine universities within the Texas A&M University System.

The architects' first task was to determine their client's main goals, which they achieved by conducting stakeholder meetings with the university's administrators, staff, faculty, and students, as well as officials from the City of College Station and other adjacent constituencies. Mary Miller, TAMU's associate vice president for administration and chair of the Master Plan Committee, said

CLIENT Texas A&M University

ARCHITECT Barnes Gromatzky Kosarek Architects with Michael Dennis & Associates

PROJECT TEAM Carl Gromatzky, AIA; N. Thomas Kosarek, AIA; Jay Barnes III, AIA; Anthony Marco; Michael Dennis; Erik Thorkildsen; Christie Monroe

CONSULTANTS Sasaki Associates (landscape); Paulien & Associates (academic space planning); H. Bryce Jordan, PhD (academics)



View of proposed West Quad looking west (courtesy Michael Dennis & Associates)

she appreciated this inclusive process because the collective approval of the master plan is expected to provide residual benefits for decades to come.

The most important objective that emerged after a year of stakeholder meetings and research was the communal desire to enhance student life on campus. According to BCK's Carl Gromatzky, AIA, that goal could be achieved in part by restoring the campus' pre-war pedestrian-friendly environment. In addition to improving life on the campus, Gromatzky said, the changes would reestablish the integrity of the historic core that now comprises the eastern section of the campus. (While the master plan does not explicitly identify architectural details for future development, the architects suggest that TAMU officials look to buildings in the historic core as models to reinforce campus identity.) Once the master plan's goals were clearly defined, the architects detailed how those objectives could be realized in part over the short term and ultimately over the long term.

The short-term plan calls for constructing two vehicular/pedestrian underpasses at the tracks of the Southern Pacific Railroad that bisect the campus. Existing vehicular crossings are at grade and one bicycle/pedestrian underpass was built in 2003. The architects also identified the need for a westward extension of the "civic structure" (the primary sequence of public space and buildings that forms the main body of the campus) and the formation of a "green reserve." The strongest link is the campus' longitudinal spine that connects the semicircular East Lawn with the White Creek Greenway; a distance of approximately two miles. While the civic structure forms the interstitial spaces between campus buildings, the green reserve represents open areas that should be preserved indefinitely. The enormous area of the campus almost guarantees that the green reserve will never require expansion.

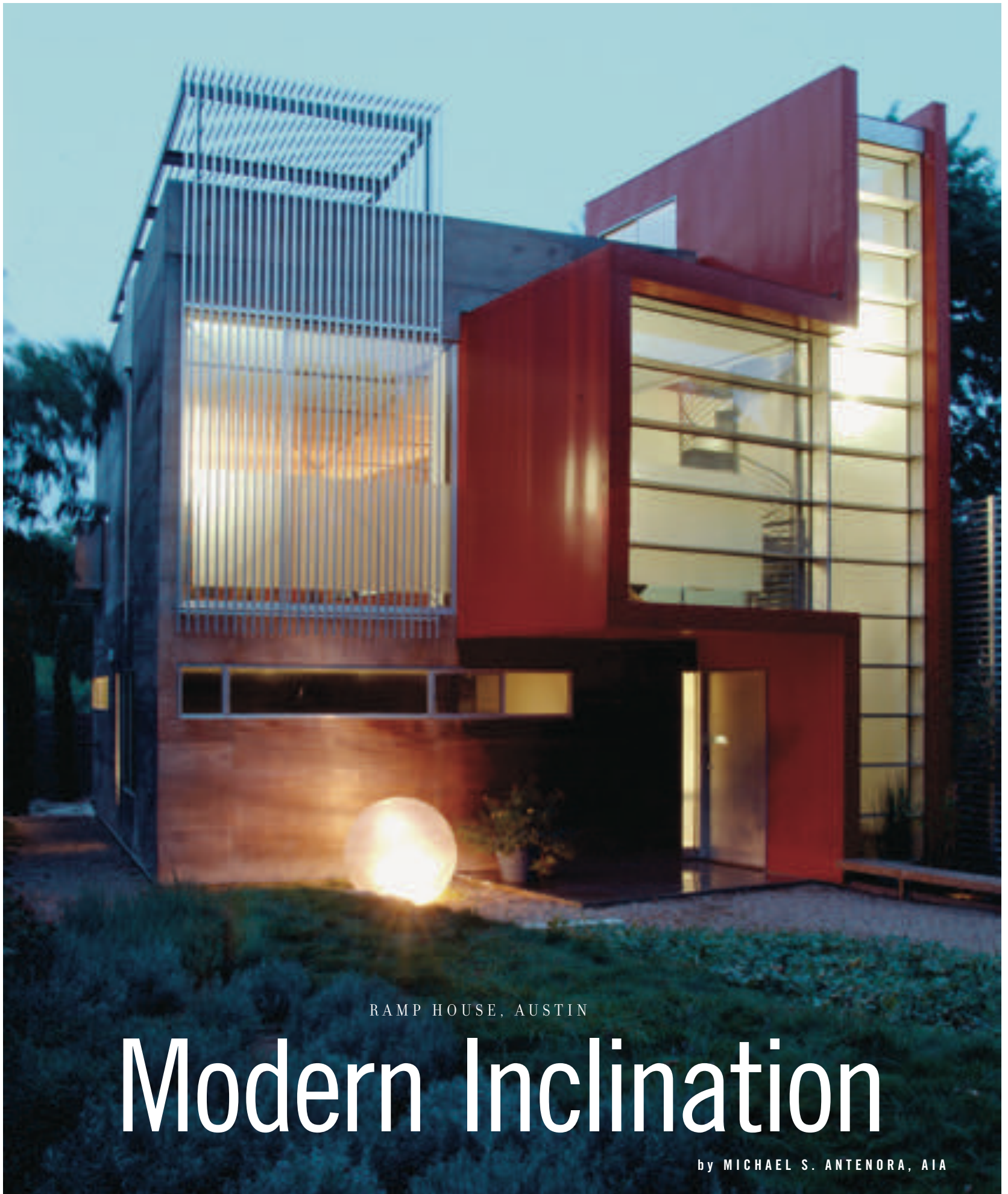
The long-range plan outlines 16 policies that will realize the goals of the master plan, including a carefully studied pattern to increase the campus' square footage of built space from the current 15 million to the estimated 25 million TAMU officials expect to be needed over the next half-century. In recognition of the long-overdue master plan's immediate value, the school's administrators already have begun to implement its guidelines as they decide the locations of future campus buildings. **T**

A *TA* contributing editor, Lawrence Connolly, AIA, is principal of Connolly Architects in Austin.



(below) Aerial view looking west across the Simpson Drill Field and Wellborn Road (courtesy Barnes Gromatzky Kosarek Architects)





RAMP HOUSE, AUSTIN

Modern Inclination

by MICHAEL S. ANTENORA, AIA



THE Ramp House, so named because of its gracefully sloped interior walkway, is one of three spec houses designed and built by M.J. Neal, AIA, in the same transitioning South Austin neighborhood. One might presume that a house with a ramp as its primary circulation is a folly, however, like one's shoes, visitors are asked to leave presumptions and prejudices at the front door.

"The Ramp House is a study in time and movement," says Neal, who lives in the house with his family. "I wanted to play with the fourth dimension, time; to deliberately slow down the pace of travel through the house. I wanted people to experience the sequence of space differently than just racing upstairs."

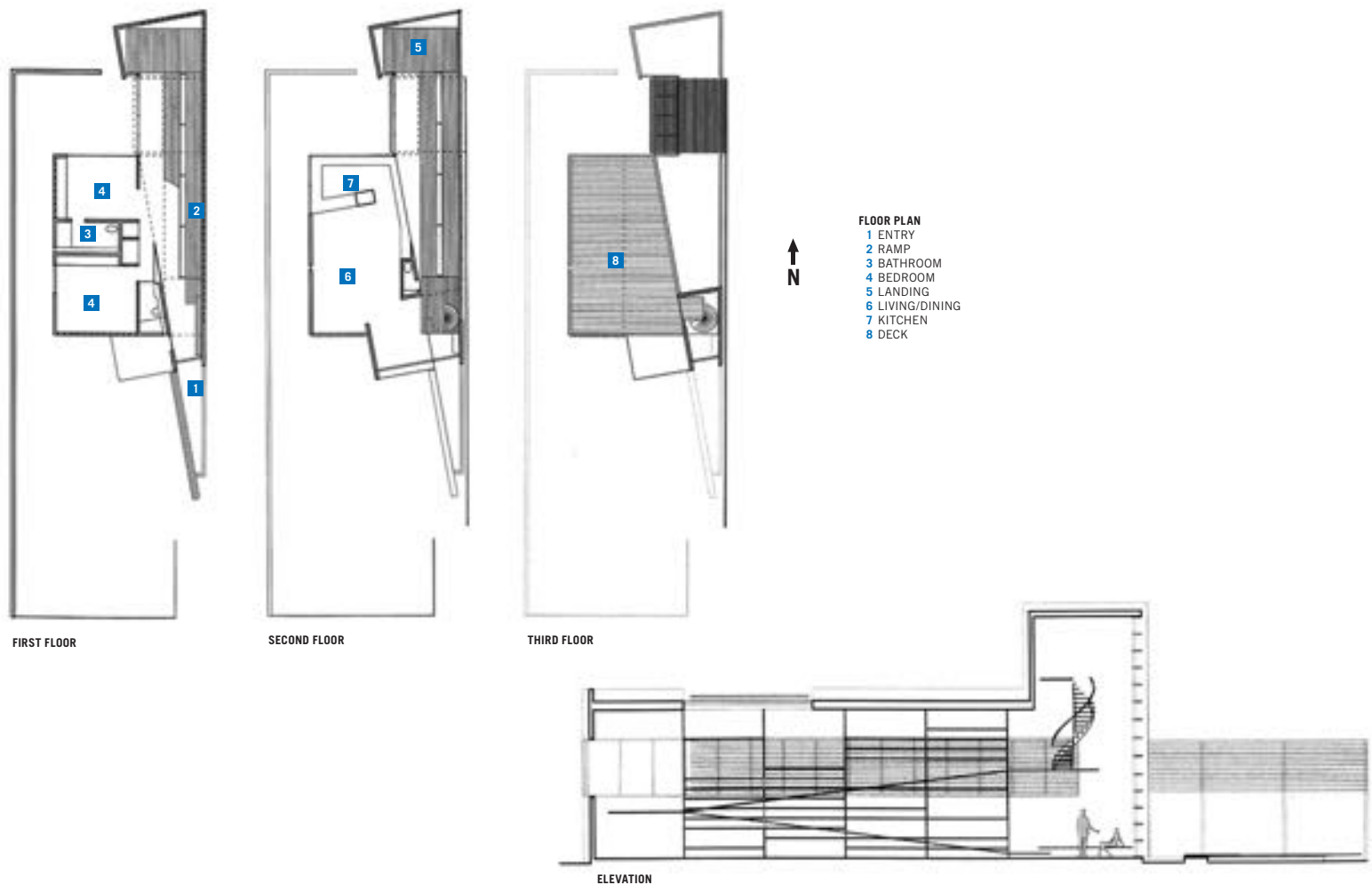
And, indeed, the unique spatial experience starts just inside the front door where the ramp immediately begins its gentle ascent at the foyer. Constructed of a steel pipe framework with its surface and substructure of 3 1/2-inch solid ipe wood, the ramp is essentially a sculptural element that functions all at once as a means of vertical circulation, a spatial delineator, a massive bookshelf—a solid wood grid structure inserted in between the ascending and descending legs—and a modern *objet d'arte*.

The climb to the top yields an unexpected surprise: the second floor's living room, kitchen, and dining area. The upper level, like the lower, is another large volume organized by furniture placement, casework, and a floor pattern reminiscent of Japanese tatami. The pattern is, in fact, a tectonic expression of structure that is seen again on the ceiling.

Where the ramp extends space vertically, the layout of the first floor extends space horizontally and outwardly into exterior courtyards. The first floor—which includes the master bedroom, master bath, second bedroom and a small reading area—is partitioned with pivoting, sliding, and swinging doors and wall panels, which allow many spatial configurations. Such flexibility is useful in a 2,400-sf house, of which the ramp consumes 230 sf. When asked if the ramp takes up too much space

PROJECT Ramp House, Austin
 CLIENT T.E. Kolenda
 ARCHITECT M.J. Neal Architect
 CONTRACTOR M.J. Neal Development
 CONSULTANTS Structures by Jerry Garcia (structural)
 PHOTOGRAPHER Joe Pettyjohn





relative to the total floor area, Neal responds, “Of course, it is how you look at it. However, it is not inefficient at all because it offers spaces in, on, and under it to read, study, and play. Kids especially love the ramp. It really is a very versatile use of space.”

On the question of the insertion of Neal’s three distinctly modern houses in a neighborhood of vintage homes from the 1930s, Neal says, “We don’t live like they did when these houses were originally built. What was at one time a very typical suburban neighborhood is now, by virtue of proximity to downtown, a very urban environment.” That switch from suburban to urban, Neal notes, is evident by the many drawn blinds on his neighbors’ street-facing windows. He says that demonstrates the neighborhood’s inward focus that is characteristic of the urban residential experience, as opposed to suburbia where residents look out on their front yard and to the street. “I wanted to bring a more urban mentality to this neighborhood,” Neal says, “to show people how to utilize this very small piece of land and get a lot out of it, a lot more spatial experiences; to show them they don’t have to have their house closed off.”

But, he adds, an urban or modern site response does not free the designer from being sensitive to the adjacent historic structures. “I went to great lengths to look at the scale and proportions of the adjacent houses and to be cognizant of those things,” he says. “This was so that this home didn’t become this massive ‘thing’ sitting here...unlike a lot of the pseudo-traditional homes being built.”

The Ramp House does nestle into and use the site very well. However, even with sensitivity to adjacent scale and proportion, the combination of materials, form, and detail makes this house obviously different than its neighbors. Nevertheless, the house successfully achieves the design intent. Neal has created a house that does challenge conventional notions of movement and time by forcing one to slow down and observe the surrounding space. In our age of haste, that is something we are less and less inclined to do. ■

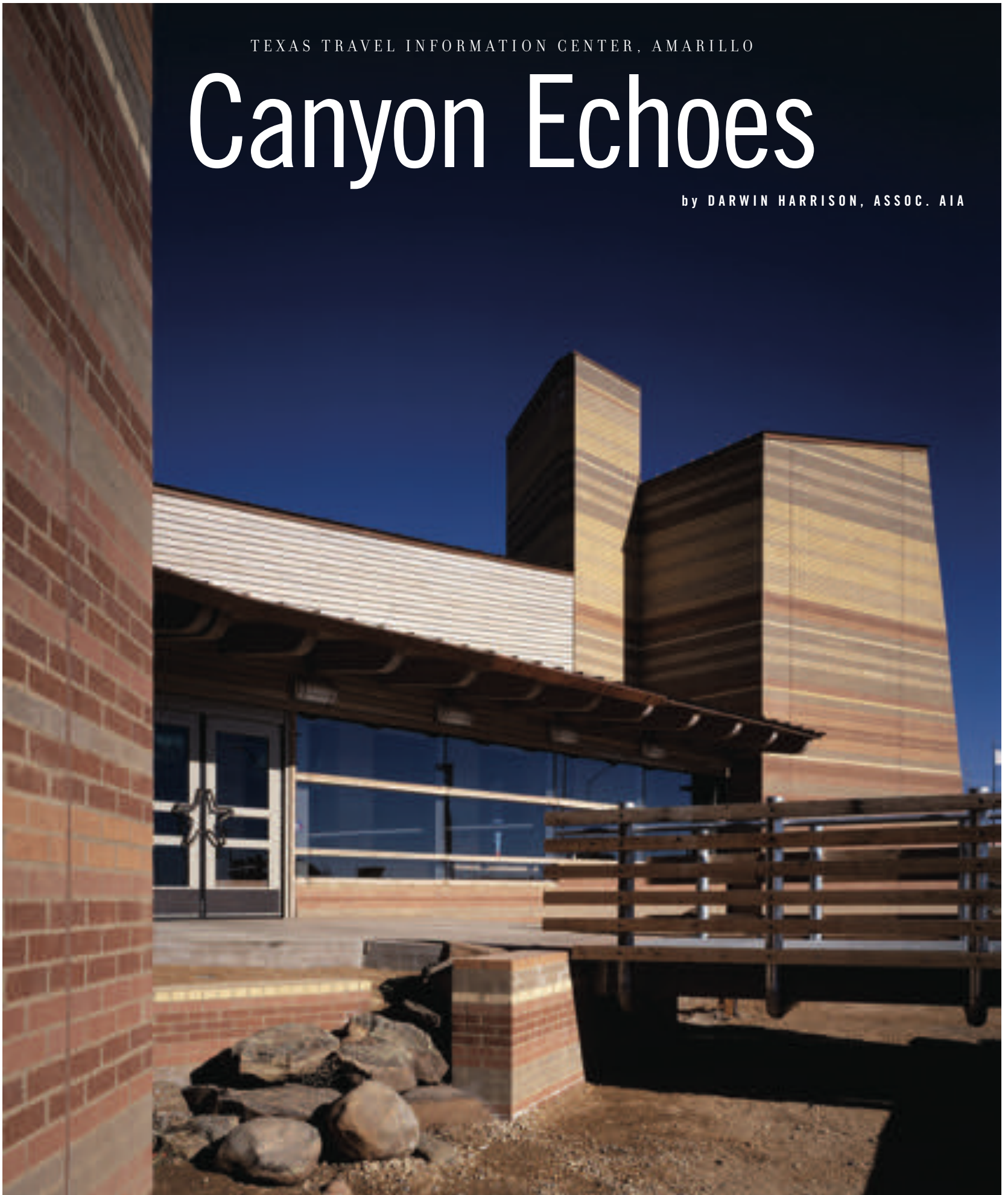
RESOURCES MASONRY UNITS: Featherlite; METAL MATERIALS: Schupan Aluminum; METAL WALL PANELS: Petersen Aluminum; WATERPROOFING AND DAMPPROOFING: Johns Manville; MEMBRANE ROOFING: Johns Manville; GLASS, METAL DOORS AND FRAMES: Petersen Windows, Binswanger; METAL SIDING: Petersen Aluminum

Michael Antenora, AIA, is principal of Antenora Architects LLP in Austin.

TEXAS TRAVEL INFORMATION CENTER, AMARILLO

Canyon Echoes

by DARWIN HARRISON, ASSOC. AIA





THE vast and relatively monotonous landscape of the Texas Panhandle poses a considerable challenge for architects, especially in designing architecture intended to grab the attention of motorists zooming across the flatness of the High Plains. Richter Architects derived a solution to that challenge by looking closely at the terrain and its geological makeup. Their Travel Information Center on Interstate 40 in Amarillo appears on the horizon as though it were part of the high desert topography. The structure, suggestive of the stratified rock formations in nearby canyons, presents a striking silhouette against the wide open West Texas skies.

"I've never seen bricks used this way in Texas before," said Malcolm Holzman, FAIA, a juror for the 2004 TSA Design Awards, in his summation of the competition's finalists. "To take a common, mundane material that we all have access to, to take and make it into something that is unique and sits comfortably in West Texas, not far from the Palo Duro Canyon, is terrific." Holzman's two counterparts on the jury praised the project as a dynamic visual composition that responds to its place on the flatlands, as well as its appropriate "eccentricity" along a highway lined with gas stations and fast food joints.

The Amarillo project is one of several Travel Information Centers built and operated by the Texas Department of Transportation, Travel Division along interstate highways near state lines. TIC facilities provide tourist information to motorists visiting Texas or traveling across the state. (This is the third TxDOT project by David Richter, FAIA, and Elizabeth Chu Richter, AIA, to receive a TSA Design Award. The first, in 1998, was the Brooks County Safety Rest Area. The second, in 2002, was the Kenedy County Safety Rest Area.) Set on 14.9 acres and surrounded by large parking areas with outdoor picnic structures, the TIC facility contains 9,265 square feet comprising spaces for admin-

CLIENT Texas Department of Transportation, Travel Division

ARCHITECT Richter Architects

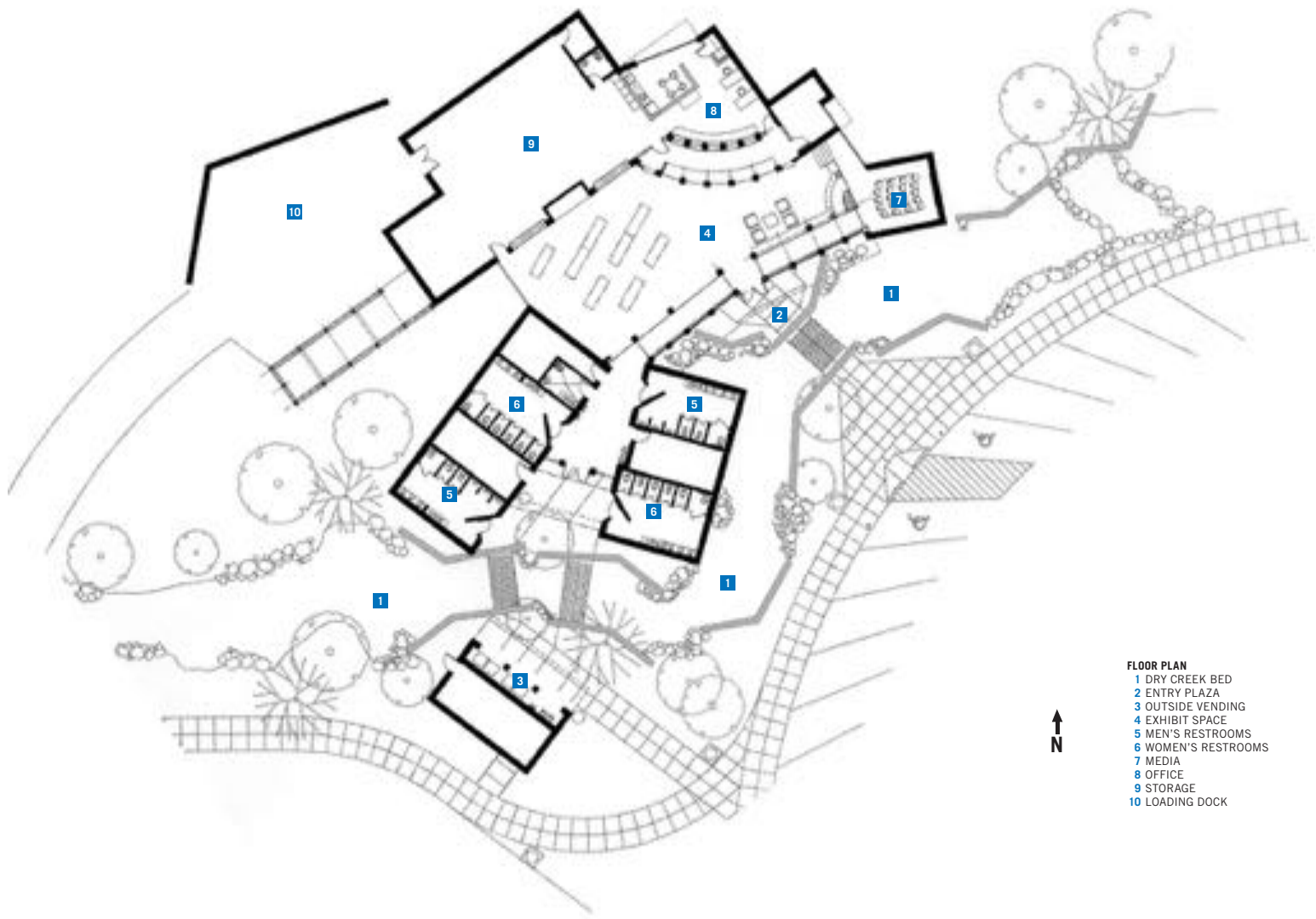
DESIGN TEAM David Richter, FAIA; Elizabeth Chu Richter, AIA; Sam D. Morris, AIA; Stephen Cox, AIA; Lonnie Gatlin; Sheldon Schroeder, Assoc. AIA; Manuel H. Ramirez

CONTRACTOR Plains Builders, Inc.

CONSULTANTS Jaster-Quintanilla (civil and structural); Callins, Haggard & Associates (MEP); Doug Wade, ASLA (landscape)

PHOTOGRAPHERS Craig D. Blackmon, FAIA; David Richter, FAIA (p. 57; p. 58, top left)





- FLOOR PLAN**
- 1 DRY CREEK BED
 - 2 ENTRY PLAZA
 - 3 OUTSIDE VENDING
 - 4 EXHIBIT SPACE
 - 5 MEN'S RESTROOMS
 - 6 WOMEN'S RESTROOMS
 - 7 MEDIA
 - 8 OFFICE
 - 9 STORAGE
 - 10 LOADING DOCK

istration offices, public restrooms, a central lobby, and an information desk staffed by professional travel counselors.

As Holzman's remarks indicate, the Richters were inspired by the multicolored rock walls in Palo Duro Canyon State Park just a few miles south of the project site. The husband-and-wife design team said they walked through the canyons after receiving the TIC commission and were immediately struck by the colorful layering of the walls surrounding them. The couple collected soil samples, which they carried in bags to the initial meeting with their client. These were to be colors for the TIC project, Elizabeth Chu Richter announced to Milton Meharg, then the director of TxDOT's travel services division. Meharg said later that he knew at that moment that the Richters would design a project that would "reflect the regional flavor of the area."

Following considerable experimentation with pattern studies, the Richters decided on a combination of seven colors (maroon, brown, red, orange, yellow, and gray) for bricks that would comprise the facility's walls.

The Amarillo TIC not only demonstrates the Richters' design creativity and sophisticated use of materials, but it also evidences their development as astute designers. While the building might clearly be successful as an eye-catching visual attraction, the facility also is truly a place of rest. This important quality might not be as obvious as the structure's brick banding, but once inside it is readily apparent that the Richters have designed the facility with a sensitivity for the weary traveler. The TIC staff and motorists (judging from their comments in the visitors' log) consistently express their delight with the architecture and their satisfaction with how it functions.

RESOURCES SITE, STREET, AND MALL FURNISHINGS: Dumor; UNIT MASONRY ASSEMBLIES: Acme Brick; METAL DECKING: Nucor, Vulcraft Group; PIPE AND TUBE RAILING: Glenco; GLUED-LAMINATED TIMBER: C&C Designs; ARCHITECTURAL WOODWORK: American Millwork; WATERPROOFING AND DAMPPROOFING: Quik-Tape; ROOF AND WALL PANELS: Una-Clad (Copper Sales); METAL DOORS AND FRAMES: Ceco; WOOD AND PLASTIC DOORS AND FRAMES: AMPCO; ENTRANCES AND STOREFRONTS: Horton Automatics; VINYL WINDOWS: Gerkin; GLASS: Insulite Glass; TILE: Daltile; ACOUSTICAL CEILINGS: Armstrong; ACOUSTICAL WALL TREATMENTS: Tectum; PAINTS: Benjamin Moore

Darwin Harrison, Assoc. AIA, works with Holzman Moss Architecture and teaches at Texas Tech University's College of Architecture.



PROTOTYPE INFILL HOUSING: THROCKMORTON SITE, DALLAS

Innovative by Tradition

by NESTOR INFANZÓN, FAIA



NESTLED in one of Dallas' most socially blended neighborhoods, a new quad-plex of infill housing follows the tradition of maverick architects whose modernist work during the mid-1950s through the late 1970s challenged this city's expectations about residential architecture. The project is located at the core of the Oak Lawn community, an area once known for its innovative housing designs as well as its eclectic mix of musicians, artists, and other uninhibited inhabitants. Oak Lawn experienced tremendous deterioration of its urban fabric during the late 1970s and early 1980s, although just two decades earlier it was a thriving laboratory for edgy architects exploring modern design and its symbiotic relationship with urban living. Numerous examples of housing experiments by the likes of Bud Oglesby, Arch Swank, and Howard Meyer filled this area of Dallas with a unique stock of modernist houses. Fortunately, following years of slow decline, Oak Lawn is now experiencing the beginnings of what may be another architectural renaissance.

This complex of new infill housing benefits both from local historical precedents and the strong roots in modernist architecture of its designer, Edward Baum, FAIA. The former dean of the University of Texas at Arlington's School of Architecture, Baum was educated at Harvard and afterward worked for Josep Lluís Sert. As a young architect, Baum embraced the core values of modern archi-

CLIENT Urban Edge Developers, Ltd and Edward Baum

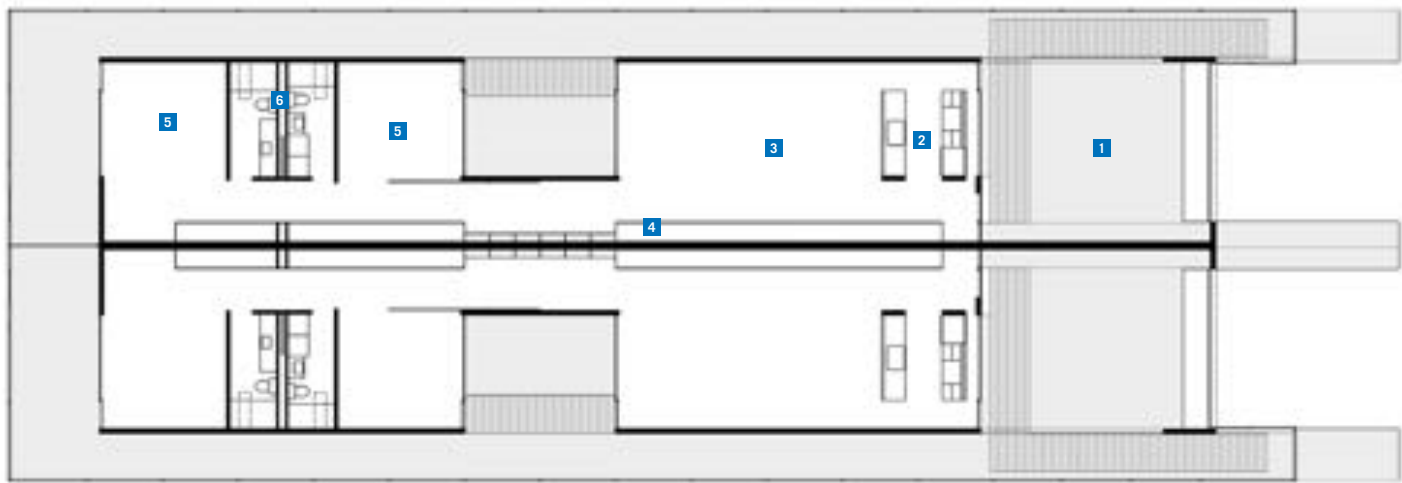
ARCHITECT Edward M. Baum FAIA

CONTRACTOR Urban Edge Developers, Ltd and CCM General Contractors

CONSULTANTS Structural Studio (structural); MEP Systems (HVAC)

PHOTOGRAPHER Hester+Hardaway





- FLOOR PLAN**
 1 CARPORT
 2 KITCHEN
 3 LIVING/DINING
 4 STORAGE
 5 BEDROOM
 6 BATHROOMS

texture and investigated related concepts of construction technology and the use of mass-produced materials. When asked about his infill prototype, Baum recalls his student days, saying, “My fascination with the courtyard prototype as a vehicle for blending community and privacy led to the ideas for the development of the planning and aesthetics of the project.”

The approach from the street provides few clues about the true nature of residences. Four large garage doors comprise the front facade, their dark gray metal surfaces framed by the rich reddish tone of cypress siding, with four thin, wing-like roofs appearing to hover over the carports. The curbside composition is well thought out and includes manicured jasmine-covered medians and chain-link fencing that will form a green enclosure to the spaces as the vines mature, providing privacy for the occupants. The floor plans follow through with this design attitude. A long spine – a 80-foot-long storage wall – threaded through a series of spaces creates the basic *parti* for the four units. This allowed the designer to capture the outside while providing for two main family areas linked by three courtyards. Each unit is then wrapped with a vine-covered chain-link fence connecting the outdoor spaces with the interior areas. The result is a sequence of private spaces: the front courtyard serves as the carport, the second courtyard as a flex space between the living/dining area and the bedroom/study, and the third courtyard becomes a private zone off the master bedroom. The main interior spaces that face outdoor areas have large windows, as well as clerestories, that allows for constant visual connection to the outdoors and the opportunity for cross ventilation. White walls, delicate detailing, and plentiful natural light imbue the interiors with monastic qualities. In keeping with the spine *parti*, the bathrooms are arranged in a simple linear fashion that acts as a central plenum for AC distribution to the bedroom.

The designer’s desire to build this project with off-the-shelf materials runs directly counter to the current method of building today. That maverick approach to construction further complements the nonconformist traditions of the Oak Lawn community. **T**

RESOURCES SIDING: Jimmys-Cypress; WOOD AND PLASTIC DOORS AND FRAMES: Wilson Plywood & Door; METAL WINDOWS: J&M Glass Company; UNIT SKYLIGHTS: Dryco Skylights

A TA contributing editor, Nestor Infanzón, FAIA, practices with Jonathan Bailey Associates in Dallas.



LESTER E. PALMER EVENTS CENTER, AUSTIN

Pavilion in the Park

by STEPHEN SHARPE



LIKE a big tent set up along the southern shoreline of Austin's Town Lake, the Palmer Events Center offers a sweeping gesture of invitation to the entire city. Its massive roof appears as if made of tensile fabric, but the material is actually standing-seam metal set over huge wood glue-laminated trusses. The design carries the tent analogy through to the lower edges of the roof, which arc on all four sides of the building as though the fabric were stretched at the corners by stakes embedded in the ground.

"I think the nicest compliment I've personally heard is that it's too nice to be a city building," says Robert Holland, AIA, who oversaw the design and construction as the project manager for the City of Austin. While conventional wisdom, according to Holland, holds that municipal buildings should be "functional but not so enjoyable," the Palmer project's roof translates as a visual gesture that invites everyone to enter. Or at least to walk under the deep eaves that shade perimeter porches—protected areas that range in depth from 45 feet to 90 feet due to the contour of the roof's lower edges. There is a sleight-of-hand aspect to the roof's design, which gives the illusion that the canopy covers the entire building. Instead, the roof's upper panels terminate above the outer edges of the exhibit hall—a "black box" that is the facility's core element—but high enough to obscure mechanical equipment.

Completion of the Palmer Events Center in early 2002 realized the first phase of the city's grand scheme of improvements to Town Lake Park, an area comprising about 72 acres just across the lake from downtown. When the second phase wraps up as expected in October 2006, Palmer's sheltered porches will achieve their maximum potential: landscaped grounds on the west side of Palmer that will directly address the building, allowing for full integration of structure and parkland.

According to BGKA principal Thomas Kosarek, AIA, the big tent imagery derives from rustic nineteenth-century park pavilions. Early meetings with stakeholders led the design team to use the idea

PROJECT Lester E. Palmer Events Center, Austin

CLIENT City of Austin

ARCHITECT Barnes Gromatzky Kosarek Architects, Alan Y. Taniguchi Architects & Associates, Centerbrook Architects and Planners

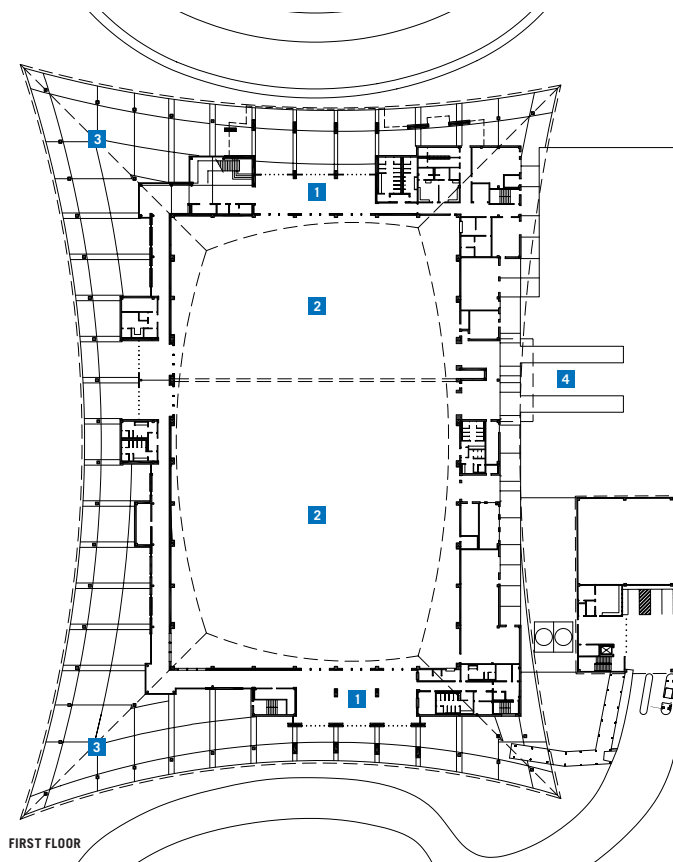
PROJECT TEAM Jay Barnes III, AIA; N. Thomas Kosarek, AIA; Lauren Goldberg, AIA; Rick Moore, AIA; John Armstrong, AIA; Evan Taniguchi, AIA; Melody Leung; Chad Floyd, FAIA; James Coan, AIA

CONTRACTOR MW Builders

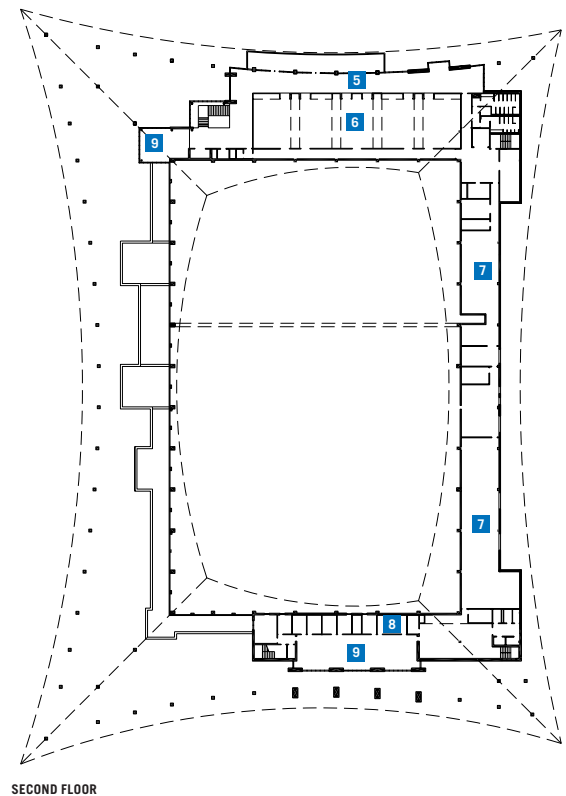
CONSULTANTS Jaster-Quintanilla (structural); Harutunian Engineering (mechanical and electrical); JEAcoustics (acoustics); OTM Engineering (telecommunications); Urban Design Group (civil); Archillum Lighting Design (lighting); Kent J. Chatagnier Firm (roofing); Stanley Architects (sustainable design); Project Cost Resources (cost consultant); Austin Permit Services (code compliance); Carl Walker (parking consultant); Winterowd Associates (landscape); ARCHAIC-Joseph and Holly Kincannon (limestone carvings); Twyla Arthur (natural stone mosaics); Pentagram (graphics)

PHOTOGRAPHER Jeff Goldberg/Esto





- FLOOR PLAN**
- 1 LOBBY
 - 2 EXHIBIT HALL
 - 3 PORCH
 - 4 SERVICE YARD
 - 5 PRE-FUNCTION
 - 6 MEETING ROOMS
 - 7 MECHANICAL
 - 8 ADMINISTRATION
 - 9 OPEN TO BELOW



of a pavilion to wrap around the facility's exhibit hall. A column-free space that encompasses 70,000 square feet within Palmer's total 130,000 square feet, the exhibit hall is a versatile venue for events that range from springtime boat shows to a monthly Austin tradition, the City-Wide Garage Sale.

Second-floor meeting rooms on Palmer's north side open to a balcony oriented toward the downtown cityscape that looms across the lake. Elsewhere along the building's perimeter, double-height glazed wall sections maintain a visual connection to the outdoors while the deep overhangs minimize solar gain. The roof trusses are visible high above the pre-function spaces—their mammoth proportions offset by interior elements designed on a more human scale. Although describing the interior corridors and lobbies as intimate might be a stretch, the indoor spaces contrast decidedly with the outsized—and appropriate—civic scale of the exterior porches.

The facility's east-side exterior area is dedicated as its service yard, which eventually will double as a staging area for the future Long Center for the Performing Arts. (Expected to be completed in 2007 as the final component of Town Lake Park, the Long Center will take the place of Palmer Auditorium, a highly visible domed structure built in 1959 that once was the city's main venue for public events.) By consolidating the two service yards into one, Kosarek says, the design team was able to "give the area back to the park, to the green space." Where initial plans called for five parking lots, Kosarek says the design team worked with neighborhood groups to site a four-level garage on the park's southern perimeter, which effectively hides Palmer's service yard from public view and also minimizes the potential impact on green space by impervious surface parking lots. A series of fabric canopies over the sidewalks outside the garage partially mask the parking structure. Adding visual interest to an otherwise strictly pedestrian amenity, the canopy structures are set at different heights and arranged slightly off-kilter. Because the canopies create a scalloped effect, the architects affectionately call it the "armadillo walkway." ■

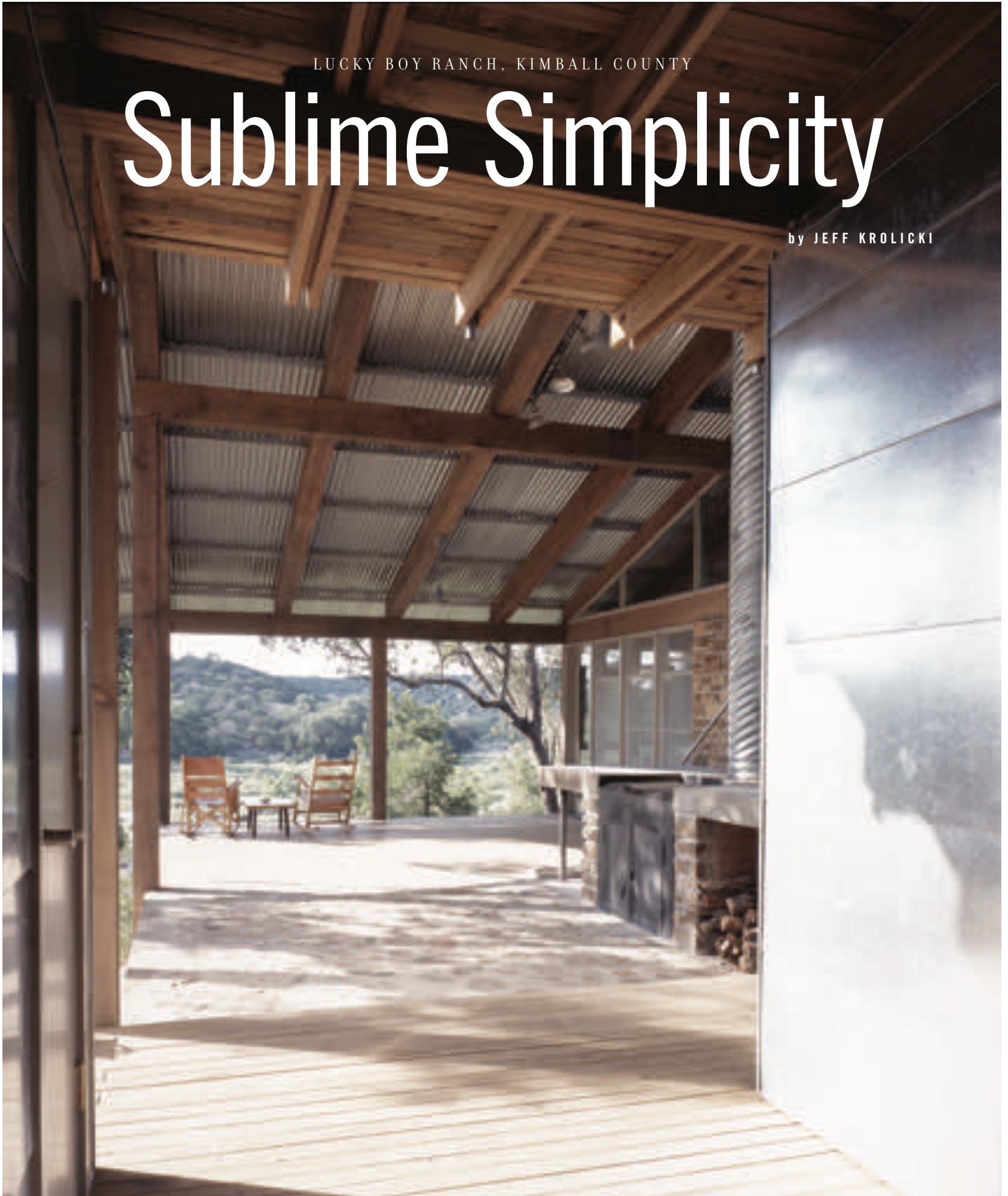
RESOURCES PRECAST AUTOCLAVED AERATED CONCRETE WALL PANELS: Texas Contec; PRECAST ARCHITECTURAL CONCRETE: Coreslab Structures; MASONRY UNITS: Featherlite; LIMESTONE: Simpson's Sons Stone; UNIT MASONRY WALL ASSEMBLIES: Featherlite, Sound Block, Tuff-R Insulation; METAL DECKING: Epic; GLUE-LAMINATED TIMBER: Western Archrib; ARCHITECTURAL WOODWORK: North American Plywood; PLASTIC FABRICATIONS: Wilsonart; WATERPROOFING AND DAMPPROOFING: Mirafi; BUILDING INSULATION: Johns Manville; ROOF AND DECK INSULATION: Johnsmanville; ROOF AND WALL PANELS: MBCI; COMPOSITE METAL PANELS: Alucobond Alusuisse Composites; MEMBRANE ROOFING: Tamko; METAL ROOFING: MBCI; SPECIALTY DOORS: Cornell Iron Works; ENTRANCES AND STOREFRONTS: Kawneer; METAL CEILINGS: Chicago Metallic; CABLE SUPPORTED FABRIC WALKWAY CANOPIES: Taiyo Birdair

Stephen Sharpe is editor of *Texas Architect*.

LUCKY BOY RANCH, KIMBALL COUNTY

Sublime Simplicity

by JEFF KROLICKI





OUTSIDE of Mason, on the western fringe of the Hill Country, the Llano River feeds occasional clusters of pecan and live oak trees amid terrain scarred by recurrent cycles of drought and flood. On a southern bank of the river rests a modest weekend retreat for a small family. The project challenged John Grable, AIA, and David Lake, FAIA, to capture the “simplicity and rawness” of this rugged landscape. They responded by designing a simple structure that evokes a profound sense of comfort. The owners call the retreat Lucky Boy Ranch, but Grable prefers the Spanish nickname, “Chico Con Suerte.”

The plan of the retreat is straightforward—a central entry porch between two rectangular volumes. The porch holds a multipurpose outdoor hearth that is both a barbeque pit and a counter for serving meals. To one side of the porch is the great room that includes an indoor kitchen, a dining area, and a place to gather around an interior fireplace. Floor-to-ceiling double-hung windows run the length of the north wall. The south wall is double-wythe sandstone. This massive stone wall holds alcoves with cypress shelves and millwork for storing books and found objects like river rocks and arrowheads.

The roof spans clear across the great room and continues out and over the porch to a two-story bunkhouse divided into four small bedrooms and two bathrooms. The bunkhouse interiors are lined with construction-grade, clear-sealed plywood and corrugated galvanized aluminum sheathes the exterior. A dog run bisects the two-story volume, with an outdoor shower set on axis. Balconies flank

CLIENT Withheld at client's request
 ARCHITECT Lake/Flato Architects
 PROJECT TEAM David Lake, FAIA; John Grable, AIA; Javier Sartorio
 CONTRACTOR Duecker Construction
 PHOTOGRAPHER Hester+Hardaway





both sides of the bunkhouse, providing elevated views of the landscape. To encourage being outdoors, all the circulation is placed outside and the interior spaces are spare.

The simplicity and directness of the project is also exemplified in the details of construction, such as the chainsaw-cut kerfs in the timber beams where the steel purlins attach. Such details demonstrate the matter-of-fact “ranch technology” construction and reliance on local materials. As Grable notes, “When you can break things down to their essentials, you can express the simplicity of the form.” These simple but engaging details also reflect the high level of craft in the project and the contractor’s obvious skill and pride in his work. The initial drawings were a simple “builder’s set,” thus the details required the early involvement of the contractor.

The project’s simplicity is sublime: it welcomes the questioning of expectations and the perception of necessities. For example, the walk-in closets of typical Hill Country homes have been replaced with a series of hooks on the wall. Rather than relying on central air conditioning, the shelter is cooled by industrial-style fans and the breeze from the dog trot and the porch. These humble gestures allow opportunities to simplify and the chance to question the essential and engage the unexpected. One of the owners says the final design both confounded and surpassed her initial expectations: “What we thought we wanted was a traditional four-bedroom/two-bath house of Fredericksburg limestone. What we ended up with was so much more. We never thought it could be so wonderful. Everyone loves it.”

“One of the goals,” Grable says, “was to reflect the owners’ appreciation of the land, geology, and the place.” Sitting on the porch enjoying a cooling breeze, a visitor’s attention is drawn to the vista of the river plain as it gently bends, flowing east to the Colorado. Lucky, indeed. **T**

Jeff Krolicki works with Dick Clark Architecture in Austin.

RESOURCES METAL MATERIALS: MBCI; METAL ROOFING: MBCI; WOOD WINDOWS: Kolbe & Kolbe; VINYL WINDOWS: Weather Shield; GYPSUM BOARD FRAMING AND ACCESSORIES: USG; DECORATIVE FINISHES: Sherwin-Williams

Amber Waves of Acme Brick



Styles have changed throughout Fort Worth's architectural history, but the texture, richness, and intricate patterns of Acme Brick remain a pleasing constant of lasting designs. Architects for the Convention Center expansion added to the city's architectural legacy with undulating, contrasting bands of Acme Brick that add a welcome human scale. Today, more than ever, selecting Acme means coming home to beauty and trusted quality.

"We worked with the City of Fort Worth to avoid a 'box with docks' and to extend the rich existing fabric of this very walkable city. We created a pedestrian scale with brick banding and intricate detailing, drawing on historical scale, colors, and rhythms."

— Kirk Millican, AIA, HOK, Dallas



Fort Worth Convention Center Expansion
Architect: Carter & Burgess, Fort Worth
Design Architect: HOK, Dallas
Walker General Contractors, Fort Worth
Masonry Contractor: ROC, Dallas
Photographer: Ray Don Tilley, Bastrop



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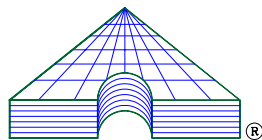
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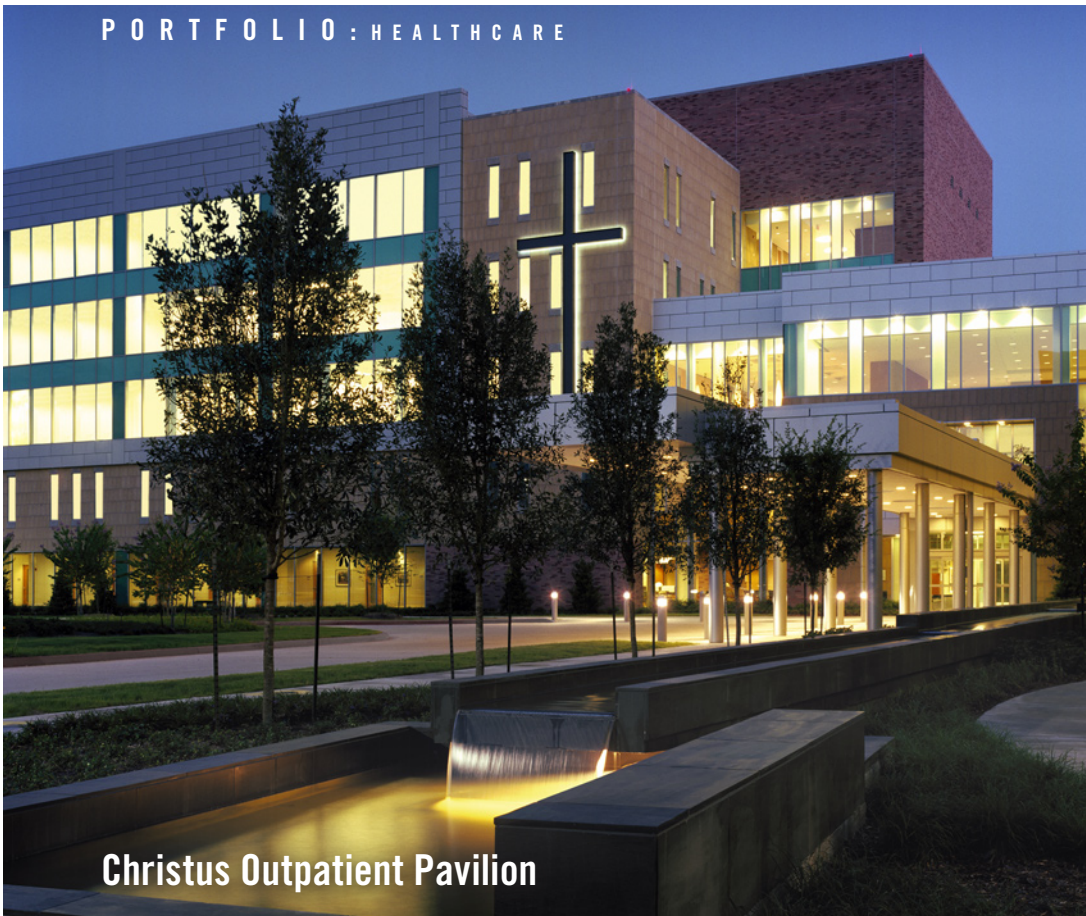
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Christus Outpatient Pavilion

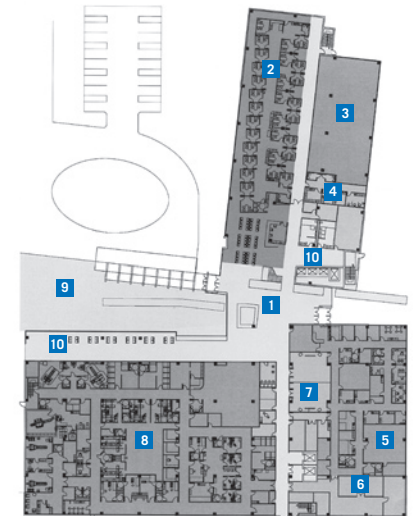
PROJECT Christus Outpatient Pavilion, Beaumont
CLIENT Christus St. Elizabeth Hospital
ARCHITECT Hellmuth, Obata + Kassabaum
ASSOCIATE ARCHITECT The LaBiche Architectural Group
CONTRACTOR Gilbane
CONSULTANTS Smith Seckman Reid (MEP); Haynes Whaley Associates (structural); Fittz & Shipman (civil); American Express/Tribrook Healthcare Consultants (medical equip. planning); Mark W. Whiteley & Associates (surveyors); Pumps Services (water features); HOK Planning (landscape); HOK Visual Communications (graphics)
PHOTOGRAPHER Aker/Zvonkovic Photography

The new addition to the Christus St. Elizabeth Hospital, the Christus Outpatient Pavilion, was built in response to the growing need for outpatient services in southeast Texas. Completed in Beaumont in May 2004, the 260,000 square-foot hospital extension includes a central plant, an outpatient center, a medical office building, and a 1200-space parking garage. Materials and colors from the older buildings are blended with those of the extension, which is highly visible to approaching traffic. The addition was designed to facilitate patient/visitor orientation and circulation for parking and entry. To break up the cumbersome mass and order often found in institutional buildings, the architect created material wrapping exchanges and syncopated rhythms. The addition introduces metal panels and variegated glazing to the hospital campus, and asymmetrical windows in the

entry volume wind around a cross. Located on the north side of the site, the facility provides access to existing physician offices to the west and the hospital to the south. Visitors can park in the garage, pass through the food court, and enter the outpatient center through a two-story gallery sprinkled with waiting areas. The Christus Outpatient Pavilion is organized into three main components—the three-story entry lobby and circulation core join the three-story outpatient center to the five-story medical office building to the east. The design allows for easy orientation and quick access for physicians traveling between buildings. The interior public space is characterized by high volumes, natural light, and quiet areas for patients and visitors.

SARAH TANNER

RESOURCES SITE, STREET, AND MALL FURNISHINGS: Landscape Forms; **MASONRY UNITS:** Arriscraft, Acme (Upchurch Kimbrough); **SLATE:** Virginia Slate (Lucia, Masonry Contractor); **CAST STONE:** Siteworks; **SIMULATED/MANUFACTURED STONE:** Arriscraft; **RAILINGS AND HANDRAILS:** Julius Blum & Co.; **ARCHITECTURAL WOODWORK:** Hallmark Casework; **LAMINATES:** Formica, Nevamar; **WATERPROOFING AND DAMPROOFING:** Cetco, Tremco; **WATER REPELLENTS:** Degussa Corp; **ROOF AND DECK INSULATION:** Firestone; **MEMBRANE ROOFING:** Firestone; **FASCIA AND SOFFIT PANELS:** Alucobond; **METAL DOORS AND FRAMES:** Premier Products; **PREASSEMBLED METAL DOOR AND FRAME UNITS:** Total Door Systems; **DOORS AND FRAMES:** Marshfield Door Systems; **ENTRANCES AND STOREFRONTS:** Vistawall; **UNIT SKYLIGHTS:** Wasco; **GLASS:** Viracon; **DECORATIVE GLAZING:** Viracon; **GLAZED CURTAINWALL:** Vistawall



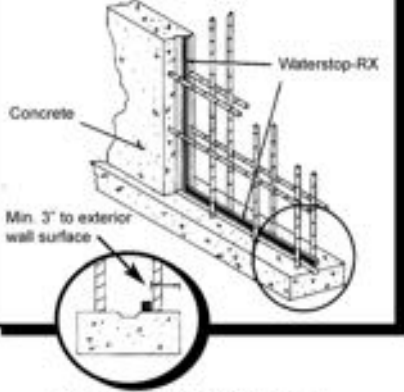
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Lantern Bend Professional Office Building

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CLIENT Lantern Bend Properties
ARCHITECT Kirksey
CONTRACTOR Spaw Maxwell
CONSULTANTS Conti Jumper Gardner (structural); Garner Engineering & Consulting (MEP); Rekha Engineering (civil); WorldMed (project management)
PHOTOGRAPHER Aker/Zvonkovic Photography

With a serene combination of light and space, the Lantern Bend Professional Office Building provides an elegant and functional atmosphere for Woodlands North Houston Heart Center and other medical tenants. The 47,000-sf building was completed in November 2003. The architect incorporated the natural beauty of the land into the design by weaving the building around several large existing trees. A central courtyard gives occupants easy access to the open air and outdoor seating, and the exam rooms on the north side of the building offer views of landscaped grounds. To diminish the visual impact of on-site parking, lots are compartmentalized with employee parking on the east side of the building and visitor parking on the west and south sides. The exterior of the building is influenced by the program elements found inside. For example, the main entrance is clad with porcelain tile and exam rooms appear as a glass box extending northward from the masonry bar building. Windows on the north side, set mostly at the junctions of the volumes, act as a primary natural light source along

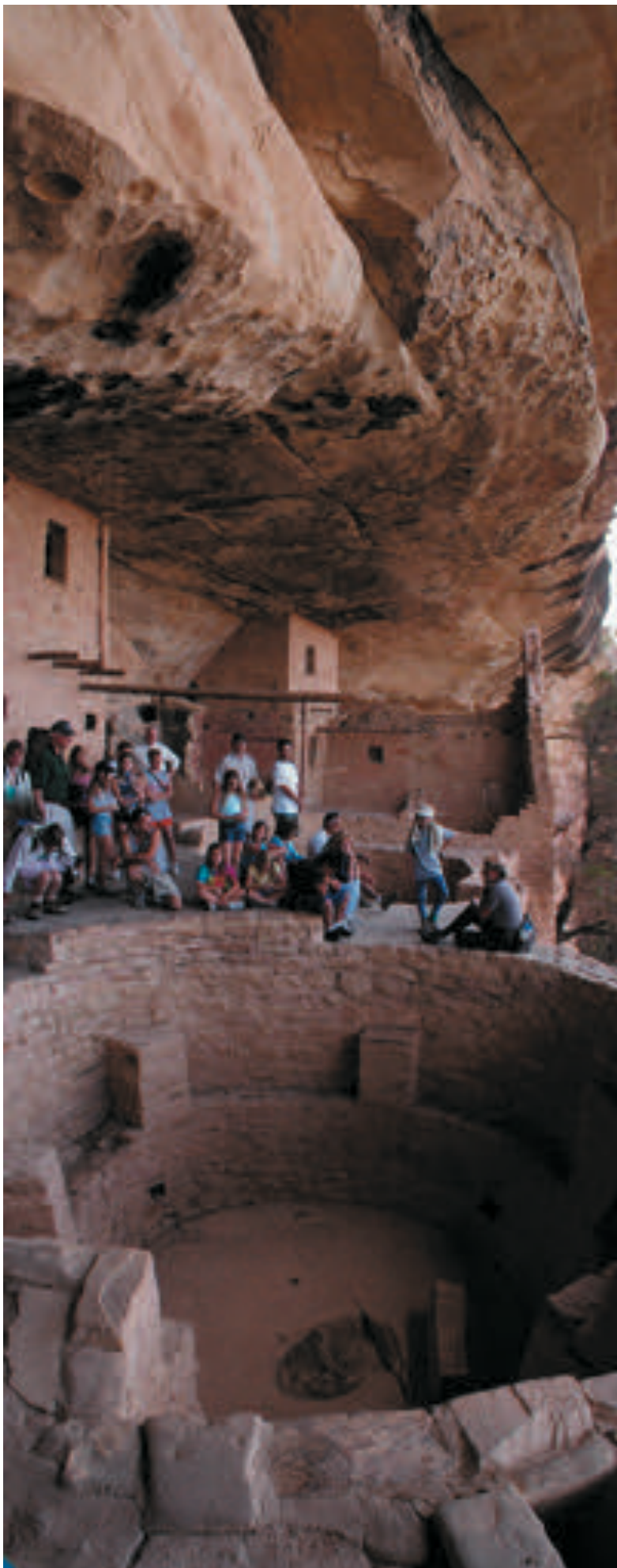
with fenestration in the courtyard. Skylights illuminate the main corridor, which operates as a unifying element between volumes. Circulation for staff and patients was a key factor in the design and layout of the building—the wide main corridor facilitates movement and large adjacent rooms offer tranquil areas for professionals to confer. Shifts in color and form signify different areas and offer visitors directional assistance. In addition, a combination of multicolored surfaces, glass, and mill-work forms complex curves that partition the main entry and denote public or staff areas.

SARAH TANNER

RESOURCES CONCRETE MATERIALS: Campbell Concrete, Stego Industries; MASONRY UNITS: Cloud Ceramics; CAST STONE: Arriscraft; MASONRY VENEER ASSEMBLIES: Wirebond; MASONRY RESTORATION AND CLEANING: ProSoCo; METAL MATERIALS: Vulcraft; ARCHITECTURAL WOODWORK: FC Designs; LAMINATES: Abet Laminati, Wilsonart, Pionite; PLASTIC FABRICATIONS: Knoll Textiles; WATERPROOFING AND DAMPPROOFING: Henry Company, Tremco; BUILDING INSULATION: Johns Manville; ROOF AND WALL PANELS: Berridge; MEMBRANE ROOFING: Firestone; FASCIA AND SOFFIT PANELS: Pro-Clad (Wade Architectural Systems); METAL DOORS AND FRAMES: Ceco Door Products; WOOD AND PLASTIC DOORS AND FRAMES: VT Industries; ENTRANCES AND STOREFRONTS: Vistawall; METAL WINDOWS: Vistawall; UNIT SKYLIGHTS: Plasteco; GLASS: Viracon; GLAZED CURTAINWALL: Vistawall; GYPSUM BOARD FRAMING AND ACCESSORIES: Delta Metal Products, Fry Reglet; TILE: Ceramic Tile International, Daltile; TERRAZZO: National Tile and Terrazzo; ACOUSTICAL CEILINGS: USG; METAL CEILINGS: USG; LAMINATE FLOORING: Centiva; PORCELAIN TILE: Stone Marketing International; PAINTS: ICI Dulux

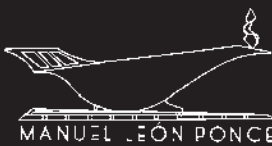


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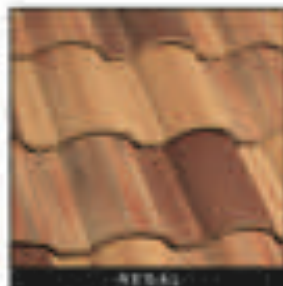
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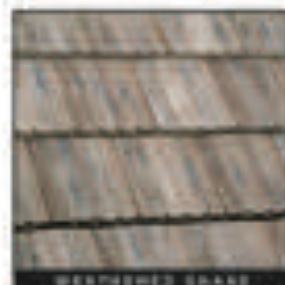
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Use of Air Barriers and Vapor Retarders in Buildings

by CHARLES W. GRAHAM, PH.D., AIA

ILLUSTRATION BY ADAM FORTNER

Introduction

Moisture, especially in its more visible liquid state, is relatively simple to understand and to manage correctly in building design. Liquid moisture is shed with the use of roofs, earth is graded to divert it away from buildings, pipes are used to carry it from one place to another, flashing is used to divert it back to the exterior when it penetrates components of the building envelope, and some materials such as heavy masonry, are used to store it for periods of time so it cannot cause problems in other materials.

In its vapor state, however, moisture is a bit more challenging to manage because its presence is not as readily observable, and the physics of its behavior are perhaps less well understood by those normally involved in the design and construction of buildings. Water vapor is an invisible gas that can find its way into the cavities of construction assemblies, such as spaces between framing, in the cores and furred spaces of masonry, and chases containing plumbing, wiring, and ventilating and air conditioning

ducts. When absorbed in materials, moisture affects both the physical characteristics and dimensional stability of almost all porous materials used in building construction.

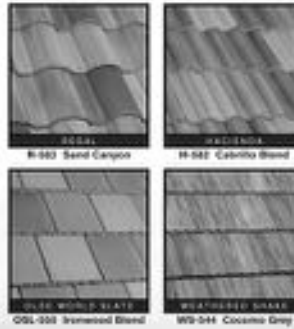
Studies of moisture problems in buildings indicate that there is a high statistical probability that all buildings will leak water or be exposed to moisture through some part of the enclosure (i.e., floors, walls, and roof) at some time; hence, it is critical that architects be diligent in their selection of components and assemblies to properly manage, by design, where moisture is allowed to go. While exposure is almost inevitable, moisture in its various states can be safely managed to avoid damage.

The prescriptive rules for moisture management in the design of building envelopes are summarized in Heinze R. Trechsel's collection of papers (2001; p. viii) on moisture analysis in buildings. They are:

- install a vapor retarder on the outside of the insulation in warm climates
 - prevent or reduce air infiltration
 - prevent or reduce rainwater leakage
 - pressurize or depressurize the building so as to prevent warm, moist air from entering the building envelope
- Experience with moisture problems in buildings might lead one to conclude that the above design criteria may oversimplify matters, such as movement of moisture in building envelopes and our understanding of how to manage it. For example, recent research demonstrates that the following issues, as noted by Trechsel (op cit., p. viii), also are relevant considerations in moisture management:
- The emphasis on either including or deleting a separate vapor retarder is misplaced, and the contribution of the hygrothermal properties of other envelope materials on the moisture flow are not considered. In
 - install a vapor retarder on the inside of the insulation in cold climates

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fact, incorrectly placed vapor retarders may increase, rather than decrease, the potential for moisture distress in building envelopes.

- Climate as the only determining factor is inadequate to establish whether a vapor retarder should or should not be installed. Indoor relative humidity and the moisture-related properties of all envelope layers must also be considered.
- The two climate categories “cold” and “warm” have never been adequately or consistently defined, and large areas of the contiguous United States do not fall under either cold or warm climate, however defined.

Still, the prescriptive rules may not be adequate to assure that building envelopes are free of moisture problems. Proper analysis of the individual components, and collectively the systems of each project, using extant methods and models of moisture management, is necessary to eliminate moisture problems in buildings. The following sections will identify some of the methods and models that should be considered when designing buildings to avoid problems.

Forensic Procedures of Building Failure Analysis

Comprehensive forensic studies of building failures normally include analyses of four critical areas: 1) building design, 2) building construction, 3) building maintenance, and 4) building materials/equipment defects. This paper will focus primarily on the design and construction considerations of moisture management, as well as the principles of water vapor movement, problems associated with liquid moisture, and methods for controlling condensation in buildings. The building materials used as air barriers or retarders and vapor barriers or retarders also will be discussed.

Water Vapor Properties

Moisture can exist in one of three states: as a liquid (water), as a solid (ice), or as a gas (water vapor). *Condensation* is the change of water from a vapor to a liquid. *Evaporation* is the change of water from a liquid to a gas. *Sublimation*, while seldom seen in building construction in the hot and humid regions of the South, is the transition from ice directly into water vapor. The change of physical state from water or ice to vapor requires considerable heat input, called *latent heat*, which

is normally measured in British thermal units (Btu). When water evaporates from a surface, that surface is cooled. The heat absorbed by a material without changing its state is known as *sensible heat* and is also measured in British thermal units.

When water changes its state to vapor, it mixes with the air and occupies all the available space that the air occupies. When air is moved by wind or a fan, or it is heated or cooled, associated water vapor is similarly affected. Moist air, then, is a mixture of dry air and water vapor. Air movement in buildings can transport much moisture; therefore, one of the reasons air barriers are used in buildings is to limit that movement. The use of air barriers will be discussed in more detail later.

Since before World War II, when regulation of building construction through codes was established as practice, the conventional wisdom was that moisture diffusion through envelope materials and systems was the governing mechanism of moisture transport leading to condensation in (i.e., in cold climates) and eventual degradation of the materials used in the building envelope. However, since World War II, and especially in the last two decades, researchers have realized that both infiltration of humid air into building cavities and leakage of rainwater past the outer components of the building envelope are significant considerations in how moisture is transported into building components.

Definitions of Terms

While some terms relevant to one's understanding of moisture management already have been defined, it is necessary to focus on the physical principles of moisture movement in buildings to then describe the correct approaches to moisture management. *Vapor pressure* is a term that describes how moisture is displaced either in materials or in the water vapor around them. Water vapor can move in one of two ways: when carried by air movements and from areas of higher vapor concentration and higher temperatures to areas of lower concentration and lower temperatures (Olin et al., 1995, pp. 460-461). Water vapor's pressure is proportional to the amount of water vapor present in the air mix. Consequently, air with higher vapor concentration has a higher vapor pressure. In air, vapor moves by diffusion from areas of high vapor pressure to areas of lower pressure, without necessarily relying on air movements to carry it.

Vapor pressure is normally expressed in inches of mercury. For example, at 70° F and 100 percent relative humidity, the vapor pressure is 0.739 inches of mercury (Hg). At 60° F and 100 percent relative humidity, vapor pressure is only 0.0377 inches of Hg, or about 1/20 of the saturated condition. From these pressure differentials, one can see why water vapor moves from areas of higher temperature and higher concentration of moisture to areas of lower temperature and lower concentration. Sometimes this is referred to as *vapor drive*.

During the winter season, when heating is required, the conditions outside might be 60° F and 75 percent relative humidity, resulting in a vapor pressure of 0.027 inches of Hg. Assuming the inside of the building was heated to 70° F and had 35 percent relative humidity, the vapor pressure would equal 0.259 inches of Hg. Thus, the vapor pressure inside would be nearly 10 times the vapor pressure on the outside of the space, and so the moisture would try to move from the warmer side of the enclosure to the cooler side of the enclosure. Water vapor will move from the area of higher pressure to the area of lower pressure until equilibrium with both environments is established. Such moisture can move both through building materials and through cracks or openings in the building (op cit. pp. 460-461).

As the water vapor is being driven through the building materials, there is a certain amount of resistance to such movement as different materials have varying degrees of permeance. Water vapor permeance is an indication of the flow of water vapor through the material. When the thickness and physical characteristics of the material are known, and the assembly of a number of materials is also known, it is possible to describe the amount of permeance of the individual materials, and collectively of the assembly. The unit of permeance commonly used in the U.S. is called the *perm*. The perm is the amount of vapor flow in grains per hour per square foot of surface per inch Hg vapor pressure gradient.

Water vapor permeability is the permeance of 1-inch thickness of a homogeneous material. Permeability is normally designated in per-inches and gives the amount of vapor flow through 1 inch of material in grains per hour per square foot of surface per inch Hg vapor pressure gradient. Approximately 7,000 grains of moisture produce one pound of water (grains per pound or GPP) in one pint of water.

Wood, gypsum, kraft paper, insulation, and other porous materials are permeable to some degree. Glass and metals have almost no permeability, with perm ratings approaching zero.

There has been much discussion in the engineering community in recent years about the classifications of building materials as vapor barriers and vapor retarders. Some define vapor barriers as being materials that have a perm rating of 1 or less. Materials with a perm rating above 1 are referred to as vapor retarders with this classification system (Olin et al., 1995, p. 463). However, the American Society of Heating and Refrigerating Engineers (ASHRAE) has started referring to building materials with a perm rating less than 1 as being vapor retarders because even those with perm ratings less than 1 still allow some passage of moisture. Olin and others (op. cit., p. 463) note that some have even made the critical dividing point between vapor barriers and vapor retarders as 0.5 perm. The Canadian General Standards Board (CGSB) has specified Type I vapor retarders as retarders with a permeance of 0.25 perm or less, and Type II retarders with a permeance of 0.75 perm or less before the material ages, and 1 perm or less after it ages in service use (ASHRAE 2001, p. 23.17). The exact definitions of vapor retarders and vapor barriers are thus up to the design professional to choose.

In addition to aging of the materials, the conditions of the service environment (including humidity and, to a lesser degree, temperature) may affect the performance of materials as vapor control devices. Generally speaking, the higher the relative humidity around the materials over time, the greater their permeance (see Figure 1). Holes in the material also affect the permeance of the material (op cit., p. 23.17).

Calculation of Permeance

The overall permeance of an assembly of materials is calculated by summing the permeances of the individual components. The calculation is similar to that used to determine the overall coefficient of heat transmittance (U) through materials by adding the individual material conductances (C). The expression for permeance of a wall assembly, for example, is:

$$M_t = \frac{1}{\frac{1}{M_1} + \frac{1}{M_2} + \frac{1}{M_3} + \dots + \frac{1}{M_n}}$$

Where M_t equals overall permeance, and $M_1, M_2, M_3,$ through M_n equals the individual permeances of materials in the assembly (Olin et al., 1995, p. 463). The perm ratings of a few of the more commonly used building materials are given in Figure 2. The reader should note that these perm ratings may have been obtained using different test procedures (e.g., dry-cup, wet-cup, or other) and so it is difficult to make direct comparisons between materials. For example, according to the 2001 ASHRAE Handbook (p. 25.17), 15# felt has a perm rating of 1.0 using the dry-cup method of testing, and a perm rating of 5.6 when using the wet-cup method. Others who have tested the material indicate that 15# felt may have a perm of 8. While these perm ratings were obtained using a test procedure conforming to ASTM E-96, varying results were obtained depending upon which test method was followed. Ratings may also vary among manufacturers.

Vapor Retarders

The ASTM Standard C755 defines a vapor retarder as a material or system that adequately retards the transmission of water vapor under specified conditions. The permeance of an adequate retarder for residential construction will not exceed 1 perm. Note again that as of 2001, ASHRAE now defines vapor retarders as including those that have perm ratings less than 1.0. A vapor barrier by this definition would have a perm rating of 0.0. As noted previously, the Canadian General Standards Board (CGSB) has specified Type I vapor retarders as retarders with a permeance of 0.25 perm or less, and Type II retarders with a permeance of 0.75 perm or less before the material ages and 1 perm or less after it ages in service use (ASHRAE 2001, p. 23.17).

Vapor retarders slow the rate of water vapor diffusion but do not totally prevent its movement through materials. As noted previously, warm air can carry more moisture than cool

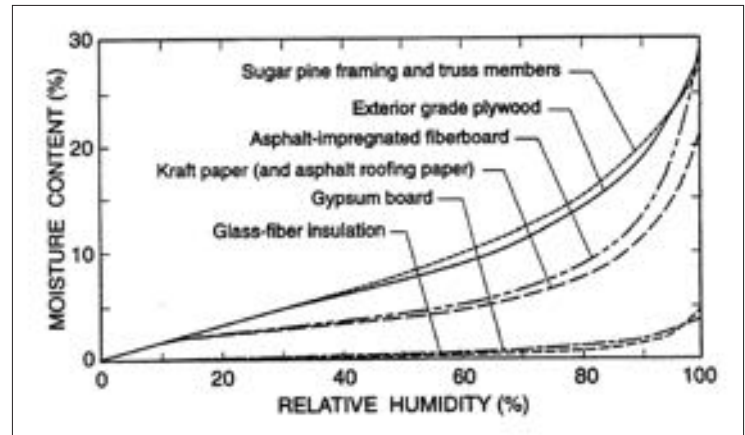


Figure 1. Sorption Isotherms of Materials
 Source: Burch, D.M. et al. 1996 (September). "Mathematical Analysis of Practices to Control Moisture in the Roof Cavities of Manufactured Houses" (NISTIR 5880). National Institutes of Standards and Technology, U.S. Dept. of Commerce.

air. As water vapor moves from a warm space through construction materials to a cooler surface, the water vapor may reach its dew point and condense as liquid water. The dew point is the point at which the air holds the maximum total water vapor that it could possibly contain at that temperature, or 100 percent relative humidity (RH). Using the psychrometric chart one can calculate the layer of material in a floor, wall, or ceiling system, or in specific components such as windows, where the dew point is reached and condensation of vapor moisture on cooler surfaces occurs. It is for this reason that vapor retarders that inhibit the flow of moisture through construction materials are installed in buildings. The designer's goal is to determine the design conditions under which this can occur and then try to retard the advance of the water vapor at the material or layer closest to the source of the warm, moist air.

The 2003 International Residential Code (IRC), Section R318, requires that moisture vapor retarders be installed on the warm-in-winter side of the insulation in all framed walls, floors, and roof/ceiling assemblies comprising elements of the building thermal envelope. There are three exceptions, however, which are:

1. In construction where moisture or freezing will not damage the materials.
2. Where the framed cavity or space is ventilated to allow moisture to escape.
3. In counties identified with footnote "a" in Table N1101.2.

Professional judgment and approval of the building code official will be required to satisfy exception No. 1. Exception No. 2 will not be used very often because of the air infiltration and consequential impact on energy performance that it poses. Regarding No. 3, all counties in the U.S. are classified in one of 17 climate zones

Material	Permeance (Perm)
Brick masonry (4 in. thick).....	0.8
Concrete block (cored, limestone aggregate)	2.4
Plaster on metal lath (3/4 in.)	15.0
Gypsum wallboard (3/8" plain)	50.0
Gypsum sheathing (1/2" asphalt impregnated) ..	10.0
Built-up roofing (3 layers min. hot mopped)	0.0
Plywood ((Douglas Fir, interior glue, 1/4 in.).....	1.9
Mineral wool (unprotected).....	116.0
Expanded polystyrene, extruded	1.2
Expanded polystyrene, bead	2.0-5.8
Aluminum foil (1 mil)	0.0
Aluminum foil (.35 mil)	0.05
Polyethylene (2 mil)	0.16
Polyethylene (4 mil)	0.08
Polyethylene (6 mil)	0.06
Kraft paper and asphalt laminated, reinforced 30-120-30 (34)	0.3
Blanket thermal insulation backup paper, asphalt coated (31)	0.4
Asphalt saturated and coated vapor-barrier paper (43).....	0.2-0.3
Asphalt saturated but not coated sheathing paper (22).....	3.3
15-lb. asphalt felt (70)	1.0
15-lb. tar felt (70)	4.0
Single-kraft, double infused (16).....	31.0
Paint, 2 coats	
Aluminum varnish on wood	0.3-0.5
Enamel on smooth plaster	0.5-1.5
Various primers plus 1 coat flat oil paint on plaster.....	1.6-3.0
Water emulsion on interior insulating board	30.0-85.0
Polyvinyl acetate latex coating (4 oz./sq. ft.)	5.5
Asphalt cut-back mastic (1/16 in. dry)	0.14
Hot melt asphalt (2 oz./sq. ft.).....	0.5

Figure 2. Typical Water Vapor Permeance for Common Building Materials
Sources: 2001 ASHRAE Handbook, Fundamentals, I-P Edition, p. 25.16; Olin et al. 1995, p. 464.
Note: Numbers in parentheses are weights in lb. per 500 sq. ft. Also, note that these perm ratings may have been obtained using different test procedures (e.g., dry-cup, wet-cup, or other) and so it is difficult to make direct comparisons between materials.

according to the number of heating degree days (HDD) for the building location. Counties in climate zones 1-5 (with annual HDDs of 2,499 or less) are in the exception category and therefore do not need to have a moisture vapor retarder on the warm-in-winter side of the wall. Paint, wallpaper, gypsum wallboard, or other finishes on the interior side of the wall may serve this purpose and so a separate retarder may not be needed. For example, one could specify a paint with a low vapor potential or perm rating to retard moisture migration into the gypsum wallboard and ultimately the wall framing.

In Texas, counties in the lower three-fifths of the state are in the exception area. Counties such as the seat for Lubbock County, with 3,000 to 3,499 HDD, for example, would need the moisture vapor retarder on the warm-in-winter side of the wall unless at least one of the other two exceptions were met. Note that ASHRAE defines any location with greater than 2,200 HDD as the transitional climate requiring the moisture vapor retarder. The Insulation Contractors Association of America (ICAA) defines heating climates as those with at least 4,000 HDD. Again, there is some disagreement on the locations where vapor retarders are required and where they are not.

Walls consisting of wood studs, kraft-faced batts insulation, and wood or oriented strand board sheathing are more forgiving in terms of moisture diffusion than a steel assembly with

foil-faced insulating sheathing and continuous 4 or 6 mil polyethylene film over unfaced insulation because the wood-framed wall system can store more moisture and then release it later as conditions permit. Obviously, the key is to let this moisture escape in fairly short order as it can eventually support fungal decay of wood products or corrosion of metals in the wall assembly.

Air Barriers

An air barrier would be a barrier that blocks all air and moisture. The American Society for Testing and Materials, however, specifies that a material “must have a perm rating of 5.0 or higher to qualify as an air retarder.” An air retarder reduces air infiltration and air exfiltration through a building assembly, yet still allows water vapor to diffuse through it. The designer should keep in mind that on the windward side of a building, air infiltration pressure is positive so air may be forced into the building. On the leeward side of the building, a vacuum may be produced and where leaks exist air may be pulled out of the building and exfiltration occurs.

Air retarders will block air movement, and repel liquid moisture at the surface but will allow moisture vapor to move through them. Because air is one of the key factors of moisture movement in buildings, limiting air infiltration reduces exposure to moisture over time. An air/vapor retarder combines moisture control

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and air movement control within one material. Examples would be polyethylene, extruded polystyrene (if thick enough and dense enough), and foil-covered foams and sheathings. These would normally be located on the warm-in-winter side of walls in heating climates (cold climates). Some experts suggest, however, that the vapor/air retarders that have perm ratings approaching 0.0 not be used, even in the cold climates, so this too is an area of disagreement.

Air barrier systems must not be confused with vapor barrier or retarder systems. Vapor barrier or retarder systems are intended to control the diffusion and infiltration of air-borne vapor in to and out of buildings. Vapor barrier or retarder systems are seldom 100 percent effective due to both logistical and practical installation problems. They often contain gaps and breaches around fixtures and windows. They are usually not continuous, and they are rarely connected at the wall to roof interface. While more attention to detailing and installation can solve many of these problems, there still remains enough breached conditions to create concentrations

of moisture laden air in to and out of building envelope systems to create moisture related problems. Using the ASTM E-96 test procedure, the typical perm ratings for air barriers are on the order of 58 perms for a common residential product. In comparison, building paper has a perm rating of about 5 and 15# felt a perm rating of about 8.

Wall Design Recommendations

The following wall design recommendations should help to satisfy most conditions in Texas. In cold climates, such as those with greater than 2,500 HDD, one should locate the vapor retarder on the warm-in-winter side of the exterior structural assembly. The retarder should be located as close to the interior finishes as expediently possible. For example, the retarder could be located on the surface of the gypsum wallboard or immediately behind it. The objective is to maintain as much of the insulation as possible behind the retarder.

In warm climates where cooling is required most of the year, such as those with 2,500 HDD

(2003 IRC), or 2,200 HDD (base 65°F), ASHRAE generally defines two approaches to be used. Donald Prowler has noted in the *Whole Building Design Guide* that ASHRAE suggests that in a "fringe zone" nearest where interior vapor retarders are prescribed, no recommendation is made on where or whether to install a vapor retarder. In the remaining zone, for example, one which is hotter and more humid, ASHRAE recommends omitting a vapor retarder in favor of more attention to air leakage control. In the "fringe zone" one has the option to locate the vapor retarder on the warm-in-winter side of the exterior structural assembly. As always, professional judgment is required when making this decision.

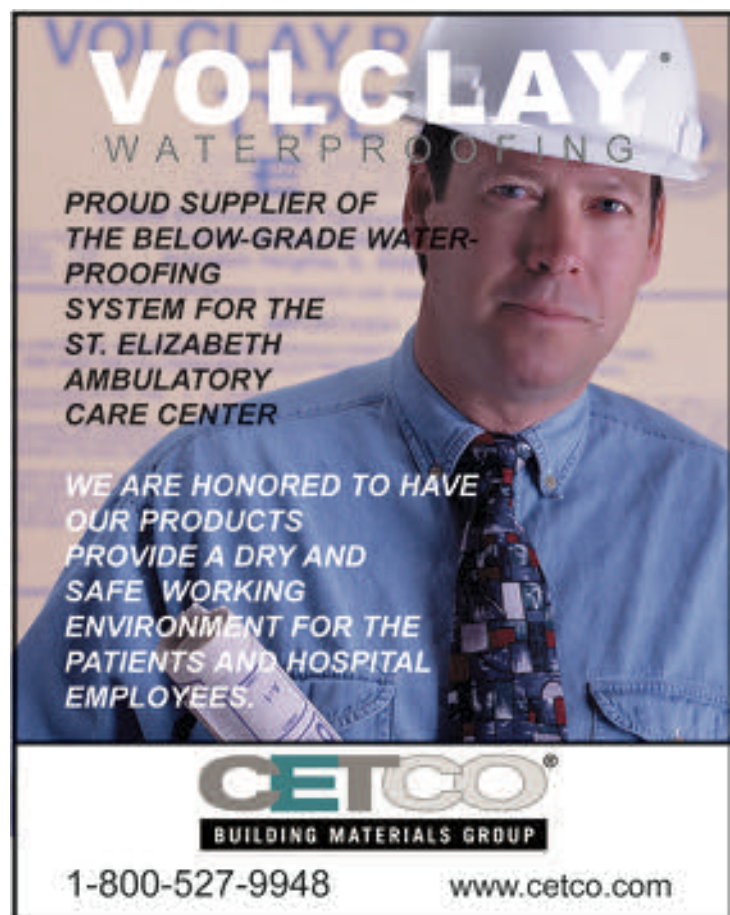
In warm climates where cooling is employed most of the year, the vapor retarder should be located on the outside of the exterior structural assembly. In these locations, the greater problem is water leakage past the outer cladding systems of the building envelope, and so retarding and redirecting liquid moisture from leakage back to the exterior is a high priority.



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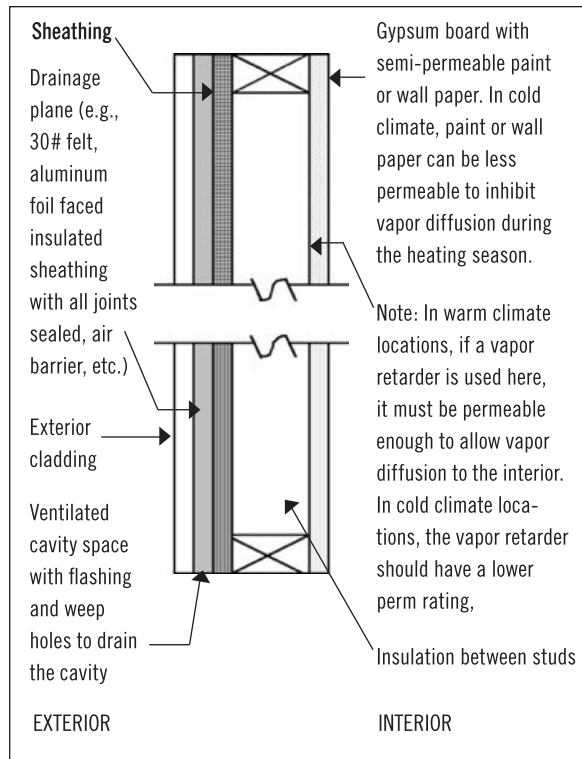


Figure 3. Wall Design Recommendations

Vapor diffusion over the longer period will be retarded with the use of vapor retarders located immediately behind the outer cladding as well. In this instance, as much of the insulation as possible should be behind the vapor retarder, towards the air conditioned (cooled) side of the wall.

Figure 3 shows how to locate the vapor retarders, depending upon the climate conditions of the building location. One should consult the IRC for more specific guidance, and professional judgment is required in the fringe or transitional areas between the extremes.

Moisture Control in Crawl Spaces

When the undersides of frame floors above crawl spaces are insulated with faced insulation, the vapor retarder, which is generally the kraft paper facing on batts insulation, should be placed on the top side and in contact with the floor sheathing above. This prevents the kraft paper facing from being exposed in a concealed configuration and perhaps posing a fire hazard. It also reduces the opportunity for air to infiltrate between the floor and the paper facing, thus bypassing the insulation. Where the flooring materials provide adequate vapor resistance to inside moisture, unfaced insulation may be used under floors. One should check with the local code official, however, to

confirm approval of this approach to moisture control. Where the crawl space floor is bare earth, it is highly recommended that the entire area be covered with a 6 mil polyethylene sheet, neatly fitted ground cover over the entire bare earth area, with joints lapped a minimum of 6 inches and sealed with adhesive, to minimize migration of underground moisture up into the framing.

The 2003 IRC, Section R408 (Under-Floor Space), also requires that under-floor ventilation be provided to dissipate moisture that gets into the crawl space. The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet of under-floor space area. One such ventilating opening shall be within 3 feet of each corner of the building as the greatest air movement around buildings is at the corners.

Moisture Control in Attics

No form of insulation should be relied upon to prevent moisture movement within an insulated cavity. Whether one uses batts insulation or blown insulation, vapor retarders in attics are required unless proper ventilation is provided. Recent experiments with unventilated attics have proven successful in cold climates, but vapor retarders must be used in the usual manner to control moisture diffusion into the attic in these assemblies.

As with fiberglass insulation, materials used for vapor retarders for blown-in insulations must have a perm rating of less than 1 perm. In a ceiling where the space above is adequately ventilated, a vapor retarder may not be required. The exception would be in cases where the cold side cannot be ventilated. In cathedral (sloped) ceilings where no vented air space between the insulation and the wood roof deck is possible, moisture problems may occur in the wood deck; and in cold climates, ice dams may occur. An air space of at least 1 inch should be provided between the insulation and the wood roof deck, and the air space must have both eave and ridge vents to allow successful migration of moisture from the ceiling cavities. To maintain a free-flowing air space from the eave to the ridge, use of a mechanical baffle, a formed attic vent chute, or other device is recommended. It is common

to provide at least a 2-inch air space at the ends of the baffles or chutes so moisture may migrate into the vented air space.

The best strategy for cathedral ceilings in cold and mild climates is the use of a vapor retarder below the insulation and, if recessed lights or other heat generating devices are used to penetrate the interior envelope, air/vapor tight fixtures are recommended. A kraft paper-faced batt insulation is sufficient for use in those areas requiring a vapor retarder. If blown-in insulation is to be used, a continuous 4 mil polyethylene sheet can be used in heating climates and a vapor retarder paint can be used in mild climates.

Attic ventilation is a critical issue for proper moisture management. The 2003 IRC, Section R806 (Roof Ventilation), requires that enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters (e.g., cathedral sloped ceilings) must have cross ventilation for each separate space by ventilating openings protected against the entrance of snow and rain (R806.1). In addition, R806.2 requires the total net free ventilating area shall not be less than 1 sq. ft. to 150 sq. ft. of the area of the space ventilated. The total area of ventilation provided may be reduced to 1 sq. ft. to 300 sq. ft., provided that between 50 and 80 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents. As an alternative, the net free cross-ventilation area may be reduced to 1 sq. ft. net ventilation area to 300 sq. ft. of attic space when a vapor barrier having a transmission rate not to exceed 1 perm is installed on the warm side of the ceiling. Paragraph R806.3 requires that eave or cornice vents shall not be blocked by insulation, and that a minimum of 1 inch space shall be provided between the insulation and the roof sheathing at the location of each vent. For this reason, some designs may require framing depths greater than those required by structural loads to accommodate the required insulation and net free air space.

Conclusions

The goal of effective moisture management in the design of buildings is to eliminate the possibility that water vapor will condense within a building assembly, and to make sure liquid moisture leakage past the outer cladding

systems of the building envelope is redirected to the exterior as quickly as possible before it can be absorbed in materials. Careful sealing of building assemblies reduces air leakage containing moisture. Air barriers help to accomplish this goal. Careful use of vapor retarders that inhibit the flow of vapor diffusion through building materials helps to make sure the moisture does not come into contact with cold materials where it can reach the dew point and condense. Drainage planes (vapor retarders with low perm ratings) located behind the outer cladding materials and cavity spaces of the envelope will stop water leakage – which is a statistical probability on all buildings – from reaching supporting structural components.

To avoid moisture problems within the building assemblies during construction, humid, moisture-laden air should not be permitted to leak through cracks into the exterior building cavities. Sealing plumbing, wiring, ductwork, electrical outlets and boxes, and other systems that penetrate the building envelope on either side of the wall requires good workmanship and careful attention to detail. Water leakage should be prohibited at the exterior, and warm, moist air leakage should be inhibited on the interior side of the walls.

Water vapor should be inhibited from diffusing through permeable building materials into exterior wall and roof cavities. Typically, more than 90 percent of the moisture entering a perimeter structural cavity is from air leakage. The other 10 percent is the result of vapor diffusion through permeable building materials. This happens because air naturally moves toward low pressure through any possible pathway, and, as noted previously, moisture moves from areas containing moist, warm air to areas with cooler, dryer air because of the atmospheric pressure differentials. Moisture diffusion through materials is a slower process than air movement, and materials of any density will retard this flow of moisture. Assemblies of gypsum wallboard, plaster, or other materials, once painted, greatly impede moisture diffusion. Cladding systems such as masonry veneers, fiber-cement or hardboard siding, aluminum siding, and other materials, when coupled with cavities and either air barriers or vapor retarders (drainage planes), will stop the advance of moisture into the cavity assemblies as long as cracks or openings do not exist in the drainage plane. Flashings and weep holes will help to direct the moisture back to the exterior

before it causes damage. It is for these reasons that entire floors, walls, and roof assemblies should be studied across the entire section to see how all of the materials and assemblies will function as a system. By effectively controlling moisture in building cavities, it is possible to increase the durability and improve the energy efficiency and long-term energy performance, improve thermal comfort of occupants, and reduce sick-building syndrome.

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Blanton is regarded as one of Houston's most exceptional business and civic leaders. Some of his greatest achievements have occurred as chairman of the Board of Regents of the University of Texas, chairman of the Greater Houston Chamber of Commerce and chairman of the Houston Endowment.

After earning his law degree at the University of Texas, Blanton joined Scurlock Oil in 1950 and quickly ascended to its presidency in 1958. He helped make Scurlock into one of the largest crude oil gathering and transportation entities in the country. In 1982, when Scurlock became a subsidiary of Ashland Oil Inc., Blanton was named chairman and CEO. Blanton currently serves as president of Eddy Refining Company. He has served on the Board of Directors of SBC Corporation, Burlington Northern Santa Fe, Texas Commerce Bank, Baker Hughes Inc., Ashland Oil Inc., and Pogo Producing Company.

While Blanton was extremely successful in the oil business, his greatest achievements have occurred in the role of civic leader. When he became chairman of the Board of Regents of the University of Texas in 1987, higher education in Texas was faced with a 26 percent reduction.

Blanton was instrumental in influencing the Texas Legislature to support the University of Texas System (and therefore, higher education in Texas) more fully.

In 1990, Blanton was named chairman of the Board of Trustees of the Houston Endowment, the largest private foundation in Texas, founded in 1937. Education is the focus of the Endowment, which has been at the core of Blanton's career as a public servant. Approximately 80 percent of the grants are dedicated to the greater Houston area, supporting abused women and children, health needs of lesser income families, civic beautification, cultural areas and virtually all areas of education. At any given time, the Houston Endowment provides scholarships to approximately 5,000 young people, including one annually to each accredited school of architecture through the Texas Architectural Foundation (TAF). In addition, Blanton has personally endowed scholarships at universities across Texas. In 1997, the Endowment made a \$12 million donation toward financing a new building on the campus of the University of Texas at Austin named the Jack S. Blanton Museum of Art. In addition, Blanton and his late wife Laura Lee Blanton have given a building at Southern Methodist University named the Laura Lee Blanton Student Services Building.

In recognition of his accomplishments and contributions, Blanton will be honored during the Texas Society of Architects' 65th Annual Convention in Houston. TSA President Jeff

Potter, AIA, will present Blanton with a specially engraved commemorative gift during the Presidents' Gala, Saturday, October 23. In addition, the Society will make a donation to a charitable organization in his honor.

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800.444.1444, fax 800.732.7130

A Texas based manufacturer offering quality windows and doors for premium residential projects through heavy commercial applications. Whether it's to satisfy the discerning homeowner or to protect our children from storms in a school near the coast, Architects are proud to specify our products for decades within Texas and beyond.

Allstate Rubber Corp., booth 604

105-12 101 Ave., Ozone Park, NY 11416

718.526.7890, fax 718.849.1662

www.muchocolors.com**Alpic, booth 214**

401 Volvo, Chesapeake, VA 23320

800.422.7270, fax 757.436.1896

www.alpic-usa.com

Alpic is a leader in innovative aluminum and metal composite materials that are used extensively in the architectural industry. Alpic materials are lightweight, durable, rigid and easily formable. Alpic offers a range of finishes from the look of stone and wood to natural metal finishes like copper and titanium.

Amazon Forms One Inc., booth 314

19068 Marbach Ln., San Antonio, TX 78266

210.651.3322, fax 210.651.3238

www.amazongridwall.com**American Skylites, booth 707**

525 113th St., Arlington, TX 76011

800.772.7401, fax 800.445.7282

www.americanskylites.com

American Skylites manufactures the highest quality standard, special and custom skylights for new or replacement openings without extended lead times or prohibitive costs. American also offers fall guard protection and security grills for all brands of skylights. In addition, ASI manufactures the largest Dade County approved skylight.

American Tile Supply, booths 710, 712

2821W 7th St., Fort Worth, TX 76107

817.332.4101, fax 817.390.2401

www.brick.com

American Tile features the Southwest's largest selection of fine quality products, knowledgeable and helpful staff and good value. Increase any of the 10 American Tile locations in Texas and your client can select the perfect tile, marble, porcelain and granite for all of your building needs. American Tile is a member of the Ame Bick family of companies.

American Warming & Ventilating, booth 104

7301 International Dr., Holland, OH 43528

419.865.5000, fax 419.865.1375

www.aww.com

For over 100 years, American Warming & Ventilating has been providing quality products to the construction industry. Today, as one of the leading manufacturers of architectural louvers, sunshades, and grilles, AWW continues to service the industry through first class customer service, value engineering and quality products.

Ameristar Fence Products, booth 622

P.O. Box 581000, Tulsa, OK 74158

918.835.0898, fax 918.877.4454

www.ameristarfence.com

Ameristar Fence Products is setting the standard for the fencing industry. Remaining the Texas architects' 1st choice in ornamental fencing, Ameristar has a specific grade, style and color for every application.

Ampro, booth 709

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www.ampro.com

Solid Plastic Toilet Partitions manufactured here in Texas! Ampro Southwest manufactures restroom compartments in laminate,

metal, phenolic, stainless steel and solid plastic. We have manufacturing facilities in three states: Florida, Texas and Washington. We can meet your specifications and have a network of distributors and representatives to help us service you.

AMS, Inc., booth 540
3500 Ave. E East, Arlington, TX 76011
817.695.1800, fax 817.652.1177
www.ams-cs.com

Antech Roofing Consultants, Inc., booth 629
3300 S. Gessner, Ste. 118, Houston, TX 77063
713.266.4829, fax 713.255.4977
www.antechroof.com

Antech Roofing Consultants, Inc. has been in the roof consulting industry since 1982, with notices to any manufacturer or installer of roofing or related products. Professional services: roofing evaluations, plans & specifications, administration, computerized roof assessment management program on staff, registered roof consultants, registered architect, and registered roof observers.

Antico International, booth 508
6825 Wedgstone Dr., Plano, TX 75023
972.208.3532, fax 972.208.4400
www.antico.com

Antico International, manufacturing in the USA high performance, high style resilient tile "Works of Art that you can walk on". And Stratica, Antico's beautifully rugged, non-slip green product engineered for institutional and commercial users. Check us out at www.antico.com and www.stratica.com

Andersen Windows, Inc., booth 441
15001 Peterson Court, Fort Worth, TX 76177
817.430.8800, fax 817.430.8820
www.andersenwindows.com

Andersen Windows, Inc. is the leading brand of windows and doors in the country. We'll be showing multiple new products including our new architectural window and door line that can be customized to fit your specifications. We will also feature Woodwright, our new window that features the look of old wood windows with new technology.

architectfinders, inc., booth 703
3010 LBJ Fwy., Ste. 1200, Dallas, TX 75234
972.888.6007, fax 972.919.6178
www.architectfinders.com

Architectfinders is the matchmaker in the architectural field, bringing candidates and clients together for their successful career and business opportunities. The staff at architectfinders has years of experience to utilize in an effort to ensure a match in placing architects, engineers, and administrative personnel at architectural firms throughout the country.

Architectural Building Components, booths 311, 313
11625 N. Houston Rosslyn Rd., Houston, TX 77086
281.931.3986, fax 281.931.3989
AEC will display standing seam metal roof systems and specialty flashing products. We will provide a thorough overview of Retro Shield, our latest innovation in reroofing roofed buildings, built-up and single ply rubber roofs using metal.

Architectural Engineers Collaborative, booth 727
106 E. Sixth St., Ste. 450, Austin, TX 78701
512.472.2111, fax 512.472.2122
www.aecollab.com

'Architectural Engineers Collaborative' describes the mission and belief that structural design and architectural design are inseparable in the realm of building. The architectural engineer extends beyond the mathematical and economic evaluation of a structural framework to examine the impact of structure on the building resulting in buildings that are improved functionally, environmentally, economically, and aesthetically.

Architectural Sales Inc., booth 616
24800 I-45 N., Ste. 234, The Woodlands, TX 77386
281.362.0500, fax 281.419.4441
www.architecturalsalesinc.com

Architectural Sales Incorporated is a team of marketing professionals representing world class manufacturers of building products. Please visit us to learn about the latest trends in glass, metal and wood. Have you ever heard of Nara Wall Systems or Skyline Vitrocolor? If you are in search of high quality products for your next project, you may have just what you are looking for.

Arkansas Precast Corporation, booth 719
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501.982.1547, fax 501.982.3487
www.arkansasprecast.com
Arkansas Precast Corporation's goal is specializing in and declaring the manufacturing of architectural precast concrete. APC provides architectural precast concrete on projects demanding the highest and most diverse performance the product has to offer. APC's service, expertise, and quality has become the benchmark of the architectural precast industry.

Arnkol Industries, booth 229
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214.773.9338, fax 972.874.1391

Bell Group Insurance, booth 612
16980 Dallas Pkwy., Ste. 100, Dallas, TX 75248
972.581.4857, fax 972.581.4858
www.bellgroup.com

Bell Group Insurance is an independent insurance agency and financial services firm with offices in Dallas and Houston, specializing in Architects/Engineers professional liability insurance as well as other property & casualty insurance, financial services and personal insurance products for the design professional.

Best Bath Systems, booth 737
4545 Enterprise, Boise, ID 83705
800.727.9907, fax 800.627.0929
www.best-bath.com
Manufacturer of T&A ADA compliant roll-in and transfer showers for independent and assisted living. Available for new construction and renovation, many models feature "no-recess" application, 1/2" wall thickness, and 45% ceramic finish. Architectural binder and samples available upon request at 866.841.6998 or fax request to 800.627.0929. AIA Continuing Education (CEU) classes available at no charge.

Best-Fite Mfg./Trinity Furniture, booth 328
2885 Lorraine Ave., Temple, TX 76501
800.749.2258, fax 800.697.6258
www.bestrite.com
We will display visual communications products including white boards, chalk boards, tack boards, and display cases, and a full architectural line of room dividers and screens. We will also show fine wood furnishings, upholstered chairs, pulpit furniture and ledgers.

Blair Corporation, booth 409
25411 Cottage Hill Ln., Spring, TX 77373
832.928.9655, fax 281.528.0394
www.blairwire.com
The Blair Corporation represents one of the most experienced and well respected fabricators of wire rope and strand assemblies in the world. We also design, manufacture, and distribute quality wire rope, wire rope assemblies, cable, strand, chain, and hardware for fabric roof support structures, cable railing structural assemblies, guy towers, and suspension bridges and

Boulderscape, Inc., booth 316
34249 Camino Capistrano, Ste. 215, Capistrano Beach, CA 92624
949.661.5087, fax 949.661.3397
www.boulderscape.com
Boulderscape is a sculptured rock shotcrete company. Their shotcrete finishes are applied over most retaining wall systems. Once applied, the shotcrete is carved and colored to match most geological formations. They also have a full line of architectural finishes available.

EPB America, Inc., booth 142
5301 West Cypress St., Ste. 300, Tampa, FL 33607
813.286.3900, fax 813.286.3994
www.epb-na.com
EPB is the world's leading supplier of gypsum board, with mining, manufacturing and related facilities in more than 50 countries. EPB offers a complete range of drywall products, acoustical ceilings as well as drywall and acoustical ceiling grids. EPB has recently introduced GasPac, the next generation of high performance exterior sheathing.

Burke Mercer Flooring Products, booth 736
 PMB: 330-3930 Glade Rd. # 108, Colleyville, TX 75034
 800.669.7010, fax 817.267.9918
 www.burkemercer.com

C&CEngineering Inc., booth 713
 1651 Plano Rd., Dallas, TX 75287
 972.680.2164, fax 972.680.2207
 www.cnceng.com

C&CEngineering Inc. provides clients with value engineering in foundation design and consulting services. C&C offers full-service engineering including civil design/review division. From our offices in Dallas, Fort Worth, Austin, Houston, and the Valley, we can provide Third Party services, including plan review, inspections, and meet the requirements of the new Energy Conservation Code.

CADvisions, Inc., booths 603, 605
 1950 Stemmons Fwy., 2060 Infort, Dallas, TX 75207
 214.741.2323, fax 214.741.2407
 www.cadvisions.com

CADvisions, Inc. has been in business since 1991, we specialize in providing premier CAD solutions to architectural professionals. Come by our booth to see the latest software tools available for Architects from Autodesk including AutoCAD, Architectural Desktop, Autodesk VIZ, and more.

Carboline, booth 512
 350 Hanley Industrial Ct., St. Louis, MO 63144
 314.644.1000, fax 314.644.2246
 www.carboline.com

Carboline Company offers a comprehensive line of decorative, high-performance coatings for walls, structural steel, equipment, and floors for both steel and concrete structures. Ultra-durable finishes provide 25 plus years of performance for open air steel structures. Sanitary wall systems and Nullifire Pyrocrete fireproofing provide interior finishes and code-approved systems.

Celcrete, LLC, booth 530
 10650 Oulebra Rd., Ste. 104-132, San Antonio, TX 78251
 210.834.4447, fax 210.568.4782
 www.celcrete.com

Celcrete Moldings natural carterastyle look are made out of an ultralight weight concrete and are easy to install, fire, water and UV ray resistant, and environmentally friendly. Celcrete Moldings give an architectural touch to your building and remodeling projects. Our products include moldings, columns, arches, capitals, bases, brackets, and custom made pieces.

Centria, booth 410
 1005 Beaver Grade Rd., Moon Township, PA 15108
 412.299.8000, fax 412.299.8317
 www.centria.com

CENTRIA manufactures architectural metal panel systems used in new and retrofit commercial construction projects. Products include factory formed, insulated metal wall and roof panels and

field assembled metal panels. CENTRIA continues engineering expertise, fabrication capabilities, and practical construction experience to meet the aesthetic and functional challenges facing design professionals.

Chapman Building Systems, Inc., booth 342
 5275 Hwy. 27, Kerrville, TX 78028
 830.792.5050, fax 830.792.3050
 www.sips-chapman.com

Chapman Building System Inc. is a manufacturer of the R-Control® Structural Insulated Panel (SIP) specializing in containing panels with other building systems for residential and commercial projects. CBI is also a supplier of engineered wood products as a part of the structural package. Our construction-based approach insures maximum efficiencies in SIP use.

Chemical Lime Co., booth 528
 350 APGLn., New Braunfels, TX 78132
 800.292.5278, fax 830.625.0552
 www.chemicallime.com

Chemical Lime Company produces and supplies CHEMSTARType S Line which is manufactured to meet or exceed ASTM and UEC standards for masonry and finishing lime purposes. In cement-line and mortar cement mortars/plasters, CHEMSTARType S Line contributes to high workability, excellent sand carrying capacity and board life, which results in superior flexural bond strength and water resistance.

**Childcraft Education Corp/
 abc School Supply, booth 717**
 2920 Old Tree Dr., Lancaster, PA 17603
 800.631.5652, fax 888.532.4453
 www.childcraft.com

Childcraft Education Corp and abc School Supply offer quality furniture and accessories to enhance each child's learning environment. The unique brand of furniture, provides exceptional value in both beautiful wood and sophisticated laminate styles. Additionally, a full range of chairs, tables, storage units, carpets are available to enhance any room arrangement.

Cold Spring Granite Company, booth 615
 202 S. Third Ave., Cold Spring, MN 56320
 320.685.3621, fax 320.685.8490
 www.coldspringgranite.com

Cold Spring Granite Company is a full service supplier of domestically quarried granite for building facing (interior and exterior), paving landscape areas, and industrial uses. Included in our product line are slabs & thintile.

Concept Engineers Inc., booth 538
 8203 Willow Place South, Ste. 419, Houston, TX 77070
 281.890.5775, fax 281.890.4449
 www.conceptengrs.com

Conservatek, booth 431
 498 N Loop 336 E, Conroe, TX 77301
 936.539.1747, fax 936.539.5355
 www.conservatek.com

Conservatek's ALLUMADOME™, SPECTRAFORM™, and STADIA FORM™ systems offer an unmatched selection of building envelope shapes and geometric designs that conserve as stunning feature elements in a wide variety of both overhead and space wall applications. Conservatek offers a single source responsibility for the innovative structural framing and glazing materials of your choice.

Cooper Stone Corporation, booth 116
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 www.cooperstone.com

Cooper Stone Corporation has been providing the finest in natural limestone and sandstone products for over 30 years. By purchasing "direct from the source," our customers benefit from the lowest prices, the broadest selection and highest quality. Contact us today to learn how we can help your projects be successful.

Copper Craft Inc., booth 602
 4995 Keller Haslet Rd., Keller, TX 76248
 800.486.2723, fax 817.490.9661
 www.coppercraft.com

Copper Craft continues old world craftsmanship with modern day technology to provide high quality yet affordable architectural sheet metal products. Choose from standard products or custom design. Product lines include downspouts, louvers and vents, cupolas, spires and roofing detailing materials in a variety of materials including copper, aluminum and zinc.

**CPI International, Inc/
 Corner-Legrand, Inc., booth 218**
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 847.816.1060, fax 847.816.1064
 www.qpicdaylighting.com

CPI's newest innovation is Controlite®, an intelligent, self-adjusting daylighting system that provides dramatic energy savings. CPI pioneered the use of polycarbonate translucent panels for architectural use in wood decks, signs, and continues to develop specialized products such as standing seam translucent systems, hurricane endurance designs and "Class A" fire-resistant systems.

Craftsman Fabricated Glass, Ltd., booths 541, 543
 4822 Southerland Rd., Houston, TX 77092
 713.353.5800, fax 713.353.5338
 www.craftsmanfab.com

Craftsman Fabricated Glass offers tempered, insulated, and fabricated flat glass products. We manufacture heavy glass doors, custom frameless shower doors, resin laminated glass handrails, and dock doors. We stock an extensive selection of patterned glass, and create custom matched glass. We are a Certified Fabricator of LEED Compliant Spectrally Selective high performance glass.

Craig Olden, Inc. - Earth Retention Specialists,
booths 135, 137

PO Box 5000, Little Elm, TX 75068
972.294.5000, fax 972.294.2664
www.oldeninc.com

For over 25 years, Craig Olden, Inc. has specialized in engineering construction and design/build of retaining wall, temporary shoring systems, slope stability structures and other geotechnical solutions. With the experience gained from several thousand projects, Olden has the capability to provide innovative, cost-effective solutions for challenging sites.

CSI - Metal Deck Group™, booths 234, 236

650 Rosewood Dr., Columbia, SC 29063
803.540.2227, fax 803.744.6087
www.csisteel.com

The CSI - Metal Deck Group™ offers one of the most complete lines of roof, floor and form decks in the industry. Our specialty deck products include Versa-Deck® and Deep Deck™ for your unique floor and roof needs. We offer specialty options that include ball coating systems and cellular acoustic capabilities.

Daktronics, Inc., booth 734

33132nd Ave., Brookings, SD 57006
605.697.4000, fax 605.697.4700
www.daktronics.com

Daktronics, Inc. is recognized worldwide as a leading designer of electronic LED (light emitting diode) message centers, large-screen video displays, digit displays, time and temperature displays, LCDs, and custom displays for indoor and outdoor use.

Daltile, booth 225

11711 Fuqua, Houston, TX 77034
281.481.5893, fax 281.481.8705
www.daltileproducts.com

Daltile, a division of Mohawk Industries, is the largest manufacturer and distributor of ceramic tile and natural stone in America. With over 240 company owned sales centers, store yards, gallery showrooms, and slab facilities, Daltile services the architectural, commercial, and residential market with the largest sales force in the industry.

Dean Lally LP, booth 715

10700 W. 159th St., Orland Park, IL 60457
708.349.2700, fax 708.349.9381

The Fire-Tite column is a prefabricated fireproofed unit consisting of a cold bearing steel column encased in a proprietary insulating material, which is permanently protected by a non-load bearing steel shell. The durable design allows for either interior or exterior applications that require a 2 to 4 hour fire rating.

Degussa Building Systems, booth 310

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713.392.4833, fax 281.360.8993

Degussa Building Systems is an industry leader in the manufacture

of construction chemicals and building products for the construction industry. Its widely recognized products provide an expansive product offering that includes joint sealants, waterproofing membranes, grouts, concrete repair products, clear sealers, performance flooring and wall coatings.

Designer Doors Inc., booth 302

183 East Pomeroy, River Falls, WI 54022
800.241.0525, fax 715.426.4999
www.designerdoos.com

Designer Doors, Inc. is the pioneer and innovation leader in hand-crafting architecturally correct custom and standard wood garage doors and walk-through doors. Our exquisite doors complement new construction, historic preservation, or era-inspired architecture, and offer the convenience of modern-day, overhead technology.

Dixie Plywood, booth 623

6770 Mykawa, Houston, TX 77033
713.644.2001, fax 713.644.4515
www.dixieply.com

Dixie Plywood stocks a large array of specialty hard wood plywood items along with fiberglass columns, attic stairs, composite and synthetic trims, and a variety of insulation panels. Recent additions are Trex composite decking and LPs Smart Side siding and trim. We are proud to be joining our 60th anniversary this year, with 10 locations across the South and South East.

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8181 Ambassador Row, Dallas, TX 75247
214.630.0934, fax 214.630.0406
www.dycowindows.com

Dryvit Systems, Inc., booth 730

One Energy Way, W. Warwick, RI 02893
401.822.4100, fax 401.822.1980
www.dryvit.com

Dryvit will display its wide array of exterior finishes, including Custom Brick™, TerraNeo™, Lynestone™ and more, along with its moisture drainage systems. Stop by and see why the Oak Ridge National Laboratory rated Dryvit 84% more energy efficient than six other claddings, including brick.

Dur-A-Flex, Inc., booth 606

95 Goodwin St., East Hartford, CT 06108
860.528.9838, fax 860.528.2802
www.dur-a-flex.com

We have the right flooring solutions for your flooring needs. Our versatile seamless flooring applications provide improved safety, minimum downtime, easy maintenance and long lasting performance. Functional yet attractive, perfect for a variety of applications. With over 35 years of experience, innovation, and a nationwide network of quality flooring contractors, Dur-A-Flex, Inc. is the smart choice.

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Premium wood windows & doors and colors available in fifty standard priced colors in various wood species. Anodized clad-drg available in various colors, and commercial and residential applications available.

East Jordan Iron Works, Inc., booth 222

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www.ejiw.com

We "cover the infrastructure" with our construction castings that include tree gates, trench gratings, decorative logo manhole covers, storm drainage castings, meter boxes, valve boxes, fire hydrants, gate valves, Port Authority castings and Airport castings. Our castings are made in USA from three manufacturing facilities.

Eklunds, Inc., booth 307

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817.949.2030, fax 817.488.9158
www eklunds.com

Epic Metals Corporation, booth 631

11 Talbot Ave., Rankin, PA 15104
412.351.3913, fax 412.351.2018
www.epicmetals.com

EPIC Metals Corporation is the architectural choice for composite floor and roof deck ceiling systems. Our product lines address undutered long spans up to 55 feet, interior acoustical control, a versatile grid hanging system, and various appearance options. EPICs ArchDeck®, Epicore®, WickDeck®, and WickBlend® offer features to fit any project needs.

Featherlite Building Products, booths 702, 704

2821 W. 7th St., Fort Worth, TX 76107
817.332.4101, fax 817.390.2401
www.brick.com

Featherlite Building Products is the largest concrete masonry producer in the Southwest. Featherlite's family of products offers an economic solution for diverse, distinctive concrete masonry construction that combines concrete's durability, and ease of maintenance with unlimited aesthetic opportunities. Featherlite is a member of the AneBrick family of companies.

Gaco Western Inc., booth 132

PO Box 59971, Dallas, TX 75229
214.902.8940, fax 214.902.8942
www.gaco.com

Gaco Western manufactures high performance elastomeric coatings and polyurethane foam for the construction industry. Since 1955, Gaco has specialized in roofing, decking and waterproofing

Garland Company Inc., booth 203
3800 East 9th St., Cleveland, OH 44105
800.321.9336, fax 216.641.0633
www.garlandco.com

Garland Company Inc. will display high performance roofing systems, and roofing maintenance products for commercial business and schools.

Gate Precast Co./Gate Concrete Products Co., booth 507

3201 Veterans Dr., Pearland, TX 77584
281.485.3273, fax 281.485.7644
www.gateprecast.com

A "PCI Certified Producer-Erector" of precast, prestressed hollow core parking Gates "The Preferred Precast Manufacturer" for the south central / southwest United States. During 2004, Gate-Core was erected in Texas, Louisiana, Mississippi, New Mexico, and Oklahoma. From our 9 manufacturing facilities, Gate is capable of delivering any type of precast imaginable.

graphicsdfw, booth 100

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214.741.4111, fax 214.741.3003
www.hafrak.com

graphicsdfw for twenty years has served the architect and designer with a wide selection of tools and materials. This year we will offer the HAFFAK Plan File for reduced size working drawings at a special savings, while featuring the FraZang presentation binders and cases, including several 11"x17" binders.

Gypsum Floors of Texas, booth 724

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972.620.9973, fax 972.241.7653
www.gypsumfloors.com

From self-leveling toppings to high strength gypsum toppings, Gypsum Floors of Texas has 126 combined years of floor leveling experience to offer. GFT offers sound control systems on wood frame construction that is the best on the market with the sound tests to prove it. GFT services a 5 state area.

Häfele America Co., booth 122

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www.hafeleonline.com

Häfele America Co. offers choices for both architects, specifiers, and designers in quality architectural and builders hardware. From HAWA sliding door hardware for wood and glass doors, to DialoK identification and locking systems to HEW from Häfele bathroom support systems, rely on Häfele. For more details call us at 888.437.7477.

Hanscomb Faithful & Gould, booth 435
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832.295.4400, fax 281.558.8707
www.hanscombfgould.com

Hanscomb Faithful & Gould is a project management and cost solutions provider that is without peer. We provide an unparalleled array of services and solutions to meet your every requirement. We have been involved in the inception, implementation, completion and operation of construction and development projects in more than 120 countries.

Hanson Brick, booth 103

27111 Hwy. 281N, San Antonio, TX 78260
830.980.7071, fax 830.438.7141
www.hansonbrick.com

Hanson Brick is North America's largest brick manufacturer with more than 2,000 employees and operations across the continent. Hanson Brick provides its customers with superior selection and service, offering regional brick collections with more than 1,000 styles of brick. Hanson Brick is part of Hanson PLC an international building materials company.

Hanson Roof Tile, booth 105

230 W Davis, Luling, TX 78734
830.875.5182, fax 830.875.3195
www.hansonrooftile.com

Hanson Roof Tiles are beautiful, durable and add an aura of elegance and luxury to any building. Harmonizing with any architectural style, they add significant beauty and value to your project. At Hanson, we are committed to providing "best-in-class" roof tile with world-class customer service and support.

Hart, Gaugler & Associates, Inc., booth 120

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972.239.5111, fax 972.239.5055
www.hartgaugler.com

Hart, Gaugler & Associates, Inc. is committed to providing high quality structural engineering design services to a diverse architectural client base serving national markets. Our company is known for excellent customer service and high quality structural engineering design. Hart, Gaugler & Associates maintain registrations in 45 states and Puerto Rico.

Helterbran Associates, booth 405

67 Fair Oak St., Montgomery, TX 77356
972.745.0026, fax 972.745.0306

Helterbran Associates is featuring SAFI Fire Rated Glass, Graham Windows and Custom Hardware Manufacturing SAFI manufactures 20, 45, 60, 90 and 120 minute rated fire rated glass. Graham Architectural Products produces architectural grade windows for schools, churches, office buildings and historical replications. CHM manufactures custom architectural hardware and frameless bath and shower hardware.

Hendee Enterprises, Inc., booth 628
9350 South Point Dr., Houston, TX 77054
713.796.2322, fax 713.796.0494
www.hendee.com

Hendee specializes in the design, manufacture, and installation of fabric structures and associates aluminum and steel frames. Hendee also provides shade and wind screen for picnic areas, playgrounds, water parks, schools, ball parks, etc. We often assist with the design and manufacture of interior fabric applications as well as innovative tension structures.

H-Tec Flooring Distributors, booth 722

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We are an exclusive distributor of specialty flooring products including Allstate Rubber and Tile, Altro Safety Flooring, Esparko Cork, Duroflex Recycled Rubber Floors, Duration Building Products, Tdi, Terkett, including glirdeum and Tico Bamboo.

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IQ Paints is one of the world's largest manufacturers of architectural paint and high performance coatings. Our brands include Dulux, Glidden, Dorex, Fuller OBian and Dorex Coatings. Our products are available at over 400 IQ Paint stores in North America.

Icyrene Corp., booth 506

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800.758.7325, fax 905.363.0102
www.icyrene.com

The Icyrene Insulation System is a spray-in-place, light density, expanding soft foam insulation delivering multiple benefits including superior thermal performance, healthier indoor air by reducing condensation related mold and mildew, up to 50% energy savings and reduced sound transmission. It is an environmentally friendly insulation and air barrier system and contains no harmful emissions.

Innovative Lighting Inc., booth 714

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972.721.1177, fax 972.554.8477

www.innovative-lighting.com
The TruFlex System - the only pressurized LED cathode system - manufactured exclusively by Innovative Lighting. Available in any configuration, the TruFlex System is versatile, easy to install and

simple to maintain. We offer a full line of products and systems that are safety tested and UL Listed to assure you the highest quality standards in the industry.

Inter-Tel Technologies, booth 126
1140 W Loop North, Houston, TX 77055
713.844.0800, fax 713.844.0970
www.inter-tel.com

International Code Council, booth 611
900 Montclair Rd., Birmingham, AL 35213
205.591.1853, fax 205.599.9889
www.iccsafe.org

The International Code Council, a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools. Most US cities, counties and states that adopt codes choose the International Codes developed by the International Code Council.

ISG Resources, booth 411
10653 S. River Front Pkwy., Ste. 300, South Jordan, UT 84095
801.984.9400, fax 801.984.9410
www.flyash.com

ISG Resources is the nation's leading marketer of coal combustion products, principally fly ash and bottom ash, to building products industries. ISG has developed an array of innovative products that utilize high volumes of fly ash, including aerated concrete, mortars, stucco, blocks, bricks, and pavers.

James Hardie Building Products, booth 505
26300 La Alameda, Ste. 250, Mission Viejo, CA 92691
800.348.1811, fax 949.367.0185
www.jameshardie.com

Jaster-Quintanilla, booth 523
1608 W Sixth St., Austin, TX 78703
512.474.9094, fax 512.474.9179
www.jaster-quintanilla.com

Jaster-Quintanilla was established in 1984 to provide structural engineering services to the local architectural community, and has now grown to provide structural and civil engineering and land surveying services throughout Texas and the Southern US from offices in Austin, San Antonio and Dallas.

Jewell Concrete Products, booths 617, 619
400 Jewell Dr., Waco, TX 76714
800.792.3216, fax 254.772.6999
Ocastle manufacturing facilities produce architectural masonry and concrete aggregate products. These products include architectural and structural concrete block, traditional and antique pavers, retaining wall systems, stone and brick products. All Ocastle products have a long history of successful applications on commercial and residential projects throughout the United States and Canada.

Johns Manville, booth 412
PO Box 5108, Denver, CO 80502-1750
800.654.3103, fax 973.339.9435
www.jm.com
Johns Manville has revolutionized the insulation industry by producing naturally white formaldehyde-free fiberglass insulation. Additionally, JM insulation is made of 25% recycled glass, reducing the impact of landfills by 90,000 tons. When you consider the incredible sustainability of JM formaldehyde-free insulation, it doesn't make sense to specify anything else.

Johnson Screens, booth 315
1950 Old Hwy. 8, New Brighton, MN 55112
651.638.3235, fax 651.638.3266
The strength, precision, and design flexibility that characterize every Johnson industrial screen makes them ideal for a broad range of architectural applications. Our screens have been used for furniture, entrance floor grating, light fixtures, column covers, wall separators, handrails, heating grates, venting applications and safety rails in elevators.

Kee Industrial Products Inc., booth 216
100 Stradman St., Buffalo, NY 14206
713.896.4949, fax 713.896.5696
www.keeguard.com
KeeGuard® freestanding fall protection guardrail systems is counterbalanced to install easily without penetrating the roof membrane or without costly welding. Drainage systems, roof integrity, warranties, and your safety record all remain intact. Manufacturer of railing systems for roof and floor hatches—Kee Hold™ Fall protection solutions for all types of skylights.

Kelly-Moore Paint Company, Inc., booth 117
301 West Hurst Ave., Hurst, TX 76053
800.772.7408, fax 817.268.8108
www.kellymoore.com
Since 1946, Kelly-Moore Paint Company has been committed to the development and manufacturing of high quality, environmentally sound products to meet the ever evolving needs of today's coating requirements. Visit our booth to see our new COLOR EXPERIENCE color system and new environmentally friendly product line.

Kraftman Playground & Park Equipment, booth 630
19535 Hauke Rd., Spring, TX 77388
800.451.4869, fax 281.353.2265
www.kppe.com
Kraftman Playground & Park Equipment has been serving it's customers for more than 20 years building playgrounds, splash pads®, and a variety of other fun structures for the entire family. We pride ourselves on customer satisfaction and a diligent work ethic, and enjoy building relationships with our customers. After all, we build fun!

Kval Paint Co., booth 705
905 Ave. T, Grand Prairie, TX 75050
972.623.5693, fax 972.522.0640
Kval Paint was founded in 1947. The name Kval was derived from the first syllable of the word "Quality." We are a leading manufacturer and distributor of architectural paints and coatings. Our principal customer is the professional paint contractor, whom we believe requires the superior product performance, service, and support we provide.

LA Fuess Partners, Inc., booth 721
3400 Carlisle St., Ste. 200, Dallas, TX 75204
214.871.7010, fax 214.969.0065
www.lafp.com
Teaming with Texas architects for 25 years, offering innovative, experienced, and personal Structural Engineering design and consulting services for commercial and institutional buildings throughout the United States.

Landscape Forms, Inc., booth 144
431 Lawnable Ave., Kalamazoo, MI 49048
800.521.2546, fax 269.381.3455
www.landscapeforms.com
Take 5 by Landscape Forms is a break from the usual. The lightweight and light-colored collection of chairs and tables performs in a variety of commercial and indoor spaces. This collection reflects Landscape Forms' emphasis on great design and strong durable commercial grade furniture.

Lehigh Cement Company/White Cement Division, booth 202
7660 Imperial Way, Allentown, PA 18195
610.366.4600, fax 610.366.4638
www.lehighwhitecement.com
Lehigh Cement has been the foremost producer of white cement for over a century. Lehigh white cement takes artistic expression to new heights, allowing freedom to choose from an unlimited range of colors, textures, shapes, sizes and patterns to accommodate a multitude of applications.

List Industries Inc., booth 118
5625 FM 1960 W, Ste. 610, Houston, TX 77069
281.290.8066, fax 281.290.8067
Steel KD and all welded lockers, Locker room benches and industrial shelving.

Lone Star Stone, booth 107
PO Box 2125, Whitney, TX 76692
254.694.6613, fax 254.694.0815
www.lonestarstone.com
Lone Star Stone is a top producer of manufactured stone veneers. Lone Star Stone continues all the benefits of natural stone like durability and elegance with the unlimited design potential of a lightweight stone veneer that can be easily installed over virtually any surface in half the time and for a fraction of the cost associated with real stone.

Lucas Cedar Inc., booth 312
12634 FM 830, Willis, TX 77378
936.856.4950, fax 936.856.8025
www.lucascedar.com

Lucas Cedar Inc. is your source for high quality, specialty lumber such as Cedar, Fir, Redwood, Cypress and more. We can also produce custom profiles in our mill. We will work with you to provide your customers with the products that will help turn your concepts into reality.

Lutron Electronics Co. Inc., booth 610
7200 Suter Rd., Coopersburg, PA 18036
610.282.7509, fax 610.282.6437
www.lutron.com

Lutron Electronics Co. Inc. headquartered in Coopersburg, Pennsylvania, is the world's leading designer and manufacturer of lighting controls, architectural lighting control systems, and window treatments for residential, commercial, industrial and institutional applications.

M2 Studio Inc., booth 424
7944 Glade Hill Ct., Dallas, TX 75218
214.752.7279, fax 214.485.2843
www.m2studio.net

M2 Studio is a multimedia service company specializing in the architecture and construction industry. M2 Studio has created hundreds of high quality animations and renderings for projects all over the state of Texas and worldwide. In addition to architectural renderings and animations, M2 Studio develops interactive CD-ROMs, DVDs, kiosks, and websites. Come experience M2 Studio for yourself.

Marvin Windows and Doors, booth 414
P.O. Box 100, Hwy. 11, Warroad, MN 56763
800.346.5044, fax 218.386.4027
www.marvin.com

Marvin Windows and Doors, a premier manufacturer of quality wood and clad wood windows and doors, offers products in more than 11,000 standard sizes, shapes and styles. For more information, please visit our website at www.marvin.com or call 800.268.7644.

Master Tile, booth 729
12614 Hempstead Rd., Houston, TX 77092
713.300.3658, fax 713.300.3634

Master Tile offers a fresh, contemporary product mix to the commercial, residential, and pool & spa segments of the market. With the right products, the well trained staff of inside and outside sales people, and locations throughout the Sun Belt, Master Tile is ready to serve the needs of the US tile industry.

MCT Sheet Metal, Inc., booth 534
29210 Quail, Katy, TX 77493
281.391.0285, fax 281.391.4787
www.mctsheetmetal.com

MCT Sheet Metal, Inc. is a major provider of quality architectural sheet metal products and services to schools, churches, residential

and industrial clients and customers. The MCT Petro-Fit roof system is a major specialty which involves replacing a leak-proof flat roof with an attractive, sloped, trouble-free standing seam metal roof.

Mid-Continental Restoration Company, Inc., booth 745
4101 Murray Ave., Fort Worth, TX 76117
817.498.7277, fax 817.656.4764
www.midcontinental.com

Mid-Continental Restoration Company, Inc. provides quality masonry restoration and water proofing services to 25 states across the Midwest and southern regions of the United States.

Modular Millwork/Southwest Solutions Group, booth 404

3204 Skylark Dr., Ste. A, Carrollton, TX 75006
888.241.7494, fax 972.250.2229
www.southwestsolutions.com
Space efficiency to help your clients "get organized" Space Saver Filing & Storage systems include stationary shelving, mobile shelving, rotary files and quick space pull out units. Applications of products are designed in the five key support areas of your floor plans: mail room, file areas, library, storage areas, and data center.

Mondo USA, booth 514
1705 West NW Hwy., Ste. 255, Grapevine, TX 76051
817.421.7861, fax 817.251.1074
www.mondousa.com

In commercial flooring, sports flooring, we focus our research on creating products that are ergonomically correct for the human body. One we'd like to mention that front we play with colors and designs to achieve aesthetically pleasing results. Mondo contract flooring helps create comfortable, safe and healthy indoor environments.

Montealban Doors, booths 740, 742
Surcos Largos s/n, San Francisco Tulla, Oaxaca, Oaxaca, Mexico cp 71228
+52 951517 7578, fax +52 951517 7578
www.pmontealban.com.mx

Montealban Doors will display interior and exterior engineered and veneered wood doors, 20-minute fire rated doors, standard models and development of custom models.

Nana Wall Systems, booth 618
707 Redwood Highway, Mill Valley, CA 94941
415.383.3148, fax 415.383.0312
www.nanawall.com

Nana Walls: elegant, precision engineered, folding and sliding glass wall systems. Custom built wood, aluminum clad wood, and all aluminum folding and sliding systems that offer unique and beautiful solutions for all large commercial residential openings. NANA Walls give you the choice of unobstructed wide open space or secure, weather tight, sound insulating coverage.

National Art Services, booth 324
5411 Feagan St., Houston, TX 77007
713.869.5861, fax 713.869.6136

National Art Service is an art consulting and framing organization operating exclusively with the architectural and design community, designing and integrating art into corporate, healthcare, and hospitality projects nationwide. In business since 1972, our lead consultants are Louise Nicholson-Carter and Charles N. White with over 50 years experience between them.

Nippon Electric Glass America, booths 716, 718
2604 W. Marshall Dr., Ste. 102, Grand Prairie, TX 75051
972.602.1740, fax 972.602.1760

Neparies and Neodac are crystallized glass ceramic wall and floor panels. They are harder and stronger than natural stone, like granite and marble. They are available in a wide variety of colors, ranging from white through to black. Also displayed will be Glass Ore, a solid glass brick, Veluna, a glow-in-the-dark glass, and Aquaglass, all of which offer exciting lighting effects. Glass blocks will also be displayed.

Nox-Crete Products Group, booth 640
10537 Egret Ln., Dallas, TX 75230
214.750.8885, fax 214.750.6449
www.nox-crete.com

Nox-Crete Products Group manufactures a complete line of compatible, high performance products for tilt-up construction, including Silosol cure and bond breakers, Duro-Nox hardener / sealer / dust proofer and Dynaflex concrete floor joint fillers. Ensure compatibility with Nox-Crete's system of partner products for tilt-up construction.

Oreco Systems, Inc., booth 113
814 Airway Ave., Sutherlin, OR 97479
541.459.4449, fax 541.459.2884
www.oreco.com

Oreco's Aduflex Treatment System makes residential wastewater so clear it looks like water. NSF-certified, but not an AIU Compact, inconspicuous, easy to maintain. No odors, no noisy power-hungry blowers. No discharge of untreated waste, even with large parties or outages. Homeowner peace of mind from service contract 24/7 monitoring.

Ovens Corning, booth 322
One Ovens Corning Way, Toledo, OH 43659
800.255.1727, fax 707.255.5572
www.culturedstone.com

Ovens Corning's Cultured Stone® manufactured stone veneers provide the beauty of natural stone for half the cost and one quarter the weight. An update to StoneCAD®, the most comprehensive veneer stone visualization program, has just been released. Version 4.3 contains new texture maps and supports the latest CAD applications.

Panel Specialists, Inc. (PSI), booths 635, 637

3115 Range Rd., Temple, TX 76504
254.774.9800, fax 254.774.7222
www.panelspec.com

PSI is a leading Texas-based manufacturer of durable, functional, and decorative interior furnishings, wall panel and partition systems, cabinetry and lockers, and store products. PSI offers design, engineering and installation services.

Pantheon Floor Solutions, booth 624

2416 Walnut Ridge, Dallas, TX 75229
214.740.1161, fax 214.740.1178
www.pantheonfs.com

Pantheon® is the leading brand in innovative surfaces. Our portfolio includes fine porcelain tiles, commercial wood flooring, quartz flooring, counter tops and façade solutions. We also offer surfaces for exterior use and extreme performance conditions. Pantheon® is a national direct distribution brand with representatives throughout the United States.

Parkland Plastics Inc., booth 327

PO Box 339, Middlebury, IN 46540
800.835.4110, fax 574.825.4438
www.parklandplastics.com

Parkland Plastics, makers of the "Waterproof Panel," offers high performance, long life, 100% recycled, waterproof, mold and mildew resistant interior wall systems and ceiling tiles. Designed to meet complete floor to ceiling needs of educational, healthcare, retail and hotel facilities.

Pavestone Company, booth 304

3215 SH 360, Grapevine, TX 76051
866.409.7971, fax 817.251.0876
www.pavestone.com

Pavestone Company is dedicated to the production of concrete paver, segmental retaining walls and erosion control blocks, our business principle is to be driven not only by technology in manufacturing but also in the development of precast concrete paving retaining wall, erosion control systems and architectural site furnishings.

Pelton Marsh Kinsella, booth 613

1420 W Mockingbird, Ste. 400, Dallas, TX 75247
214.688.7444, fax 214.951.7408
www.pmkconsultants.com

Pelton Marsh Kinsella provides acoustical and audio-video consulting including design of sound reinforcement, video, CAIV and broadcast systems. PMK has been in business for 20 years, has three US offices and one in Dubai, UAE. Projects include convention centers, resorts, sports facilities, theaters, theme parks, universities, high rise offices and condominiums.

Permatone, Inc., booths 529, 531

1620 Brittmore Park Dr., Houston, TX 77041
832.243.0787, fax 713.849.9114

Polyguard Products, booth 503

3801 S. Business 45, Ennis, TX 75159
972.875.8421, fax 972.875.9425
www.polyguardproducts.com

Polyguard Products is a waterproofing and flashing products manufacturer located in Ennis, Texas since 1952. Polyguard offers a full range of below grade, under slab, above grade flashing and roof underlayment membranes and accessories. Our new membranes are also barriers against toxic chemicals, radon gas, methane gas and termites.

Polyspec/THICKOL, booth 325

6614 Cant Rd., Houston, TX 77066
281.397.0033, fax 281.397.6512
www.polyspec.com

Polyspec/THICKOL is a leading manufacturer of high performance flooring coatings, linings and sealants. Utilizing a broad array of polymer formulations to meet diverse A&E function and performance requirements, our rugged, versatile and environmentally friendly products are specified worldwide for indoor and outdoor applications - commercial, institutional, industrial and marine.

Porter Athletic Equipment Co., booth 205

2500 S. 25th Ave., Broadview, IL 60155
713.338.2000, fax 708.338.2060
www.porter-ath.com

Porter Athletic Equipment Company is a worldwide supplier of professional and top collegiate basketball backstops in arenas, colleges, schools and parks and recreation facilities. Porter manufactures athletic equipment including basketball equipment such as backboards, rims and portables, custom gymnasium equipment; gymnasium divider curtains, the Mat Mover mat storage system and volleyball equipment.

PPGI Industries Inc., booth 539

11411 Sunshine Park, Cypress, TX 77429
281.744.1317, fax 281.955.7743

Precision Architectural Lighting, booth 206

4830 Timber Creek Dr., Houston, TX 77017
713.946.4343, fax 713.946.4441
www.pal-lighting.com

Pyrok Inc., booth 634

36 Butler Hill Rd., Somers, NY 10589
914.277.5135, fax 914.276.3990
www.pyrokin.com

Pyrok acoustener wall and ceiling finishes are specified wherever decorative plaster finishes, durability and sound absorption are desired. Available in Gypsum and Portland cement, all Pyrok acoustener formulations are spray applied in a variety of textures, in standard and custom colors, or they can be painted without degrading any of the acoustical performance, complete with a ten year warranty.

RH Tamlyn & Sons, LP, booth 535

13623 Pike Rd., Stafford, TX 77477
800.334.1676, fax 281.499.8948
www.rhtamlyn.com

We will display trim for fiber cement, siding and soffits and structural high wind connectors.

R.M. Rodgers, Inc., booth 609

6352 Alder, Houston, TX 77081
713.666.2229, fax 713.666.2516

CAFE Architectural panels are made of "stone composite," a natural mineral material that provides the best of all worlds. Strong yet relatively light, modern yet natural looking they deliver maximum durability with minimal maintenance. A nice construction material for architects, contractors and building owners alike.

RACO Interior Products, Inc., booth 334

2000 Silber Rd., Houston, TX 77055
800.727.7226, fax 713.682.2079
www.racointeriors.com

RACO Interior Products manufactures interior office fronts for commercial office space. Our product line includes aluminum sliders, "bamboo" sliders, pocket frames, bird frames, and 20-minute positive pressure rated frames and doors. We provide factory finishing in both clear and electrostatically applied baked-on paint.

Ridgway's Ltd., booths 502, 504

5711 Hillcroft, Houston, TX 77036
713.953.2305, fax 713.918.5919
www.ridgways.com

Ridgway's has been providing the AEC industry with high quality reprographic services for over 77 years. As technology leaders, we are proud to showcase live demonstrations of our web solutions at this year's convention. See web services that streamline the distribution of plans and specifications, including green e-printing, PlanWall™, BidCast™, and much more.

Rolf Jensen & Associates, Inc., booth 130

13831 Northwest Fwy., Ste. 330, Houston, TX 77040-5215
713.462.1840, fax 713.462.0812
www.rjagroup.com

Roppe, booth 614

1602 North Union St., Fostoria, OH 44830-1056
800.537.9527, fax 419.435.1056
www.roppe.com

Roppe is the proven leader in rubber flooring products that deliver quality, safety and long-lasting durability in a wide range of colors and designs. So for your next flooring application, specify the brand that delivers proven flooring experience.

San Antonio Sound & Light, booth 406

207 Braniff, San Antonio, TX 78216

210.524.3910, fax 210.524.3911

www.sanantonioundlight.com

S&L's booth will have a working demonstration of touch panel control systems that will operate home audio, video, lighting and air-conditioning systems. Also, look for structured wiring and cable networking equipment for data, phones and alarm displays.

Santa Regina, booth 626

2911 Turtle Creek Blvd., Ste. 300, Dallas, TX 75229

866.886.2894, fax 214.523.9026

www.santaregina.com

Sarnafil, Inc., booth 743

2500 Wilcrest, Ste. 350, Houston, TX 77042

713.954.4864, fax 713.780.8294

www.sarnafil.com

Sarnafil roofing and waterproofing systems are widely recognized for exemplifying the highest standards of quality, reliability, energy savings, and water-tight protection. Since 1962, Sarnafil has been committed to creating products that last and are still on display on buildings worldwide, in every imaginable climate. At Sarnafil, our reputation stems from proven performance!

Shen Milson & Wilke, booth 114

10375 Richmond Ave., Ste. 1370, Houston, TX 77042

713.278.8228, fax 713.278.8235

www.smwinc.com

Sherwin Williams Company, The, booth 440

8850 Jameel Rd., Ste. 150, Houston, TX 77040

713.957.4209, fax 713.681.8634

Please stop by the Sherwin Williams booth and visit with Brian G. Patton and John Gaston to find out about all the new GREEN products from Sherwin Williams. Also find out about new Masonry Stains and our new Barrier coating.

Southwest Concrete Products, booth 438

2233 Ackerman Rd., San Antonio, TX 78219

210.666.4989, fax 210.666.8141

Southwest Concrete Products is a producer of concrete block and brick for central and south Texas. We manufacture lightweight, architectural, ground and polished faces, sound absorbing masonry units and retaining wall systems. SCP is a distributor and licensed producer of glazed masonry units, manufactured stone veneers and mortarless brick systems.

Southwest Terrazzo Association, booth 138

PO Box 269, Fredericksburg, TX 78624

877.355.4400

www.southwestterrazzo.org

The beauty and versatility of terrazzo offers today's architects a contemporary flooring material for interior and exterior use that is both logical and practical. Terrazzo is durable enough to endure

the type of traffic found in a busy airport but is elegant enough to be displayed in a place of worship.

Spacesaver/Southwest Solutions Group, booth 402

3204 Skylane Dr., Ste. A, Carrollton, TX 75006

888.241.7494, fax 972.250.2229

www.southwestsolutions.com

Space efficiency to help your clients "get organized." Spacesaver Filing & Storage systems include stationary shelving, mobile shelving, rotary files and quick space pull-out units. Applications of products are designed in the five key support areas of your floor plans: mailroom, file areas, library, storage areas, and data center.

Stone Marketing International, booths 636, 638

2095 Afton, Houston, TX 77055

713.956.1616, fax 713.956.4808

Stone Panels, Inc., booth 415

100 S. Royal Ln., Coppell, TX 75019

469.635.5000, fax 469.635.5555

www.stonepanels.com

Ultra-light natural stone panels weigh 80% less than solid stone. They offer construction speed, reduced labor cost, and structure savings. This honeycomb reinforced natural stone is available in nearly unlimited choice of granites, marbles and limestones. It's been installed on buildings throughout the world for more than 35 years.

Sun Ports International, Inc., booth 643

8319 Chancellor Row, Dallas, TX 75247

214.905.9500, fax 214.905.9514

www.sunports.com

Sun Ports International, Inc. is the market leader in the design, manufacturing and installation of shade systems. Our products provide permanent shade solutions for swimming pool and recreation areas, seating water parks, outside playground equipment, outdoor eating areas, go-cart tracks, amusement parks, auto dealerships, car parking, etc.

Swift-Train Co., booth 639

10850 Train Ct., Houston, TX 77041

713.937.1448, fax 713.937.4337

www.swift-train.com

Earthwerks solid vinyl tile brings you that new, unique look. 18" x 18" tile with colors and patterns you won't believe. We are the industry leader in vinyl plank design. Planks that stand up to heavy traffic and look and feel exactly like wood. Care and maintenance is so easy.

TAB Products Co., booth 340

5930 LBJ Fwy., Ste. 340, Dallas, TX 75240

214.350.3556, fax 214.350.5032

www.tab.com

Taiyo Birdair Corporation, booth 436

65 Lawrence Bell Dr., Arherst, NY 14221

716.633.9500, fax 716.633.9850

www.taiyobirdair.com

Taiyo Birdair is a specialty contractor with design/build capabilities offering architectural solutions in translucent tensioned membrane and lightweight roof structures. While Taiyo Birdair is closely linked with large projects such as Reliant Stadium, we offer solutions for every type and sized building and urban renewal project.

TAMKO Roofing Products, Inc., booth 306

220 W. 4th St., Joplin, MO 64801

800.641.4691, fax 800.841.1925

www.tamko.com

TAMKO® will be featuring LAMARTE™ slate composite shingles, new METALWORKS steel shingles and a complete line of residential and commercial asphalt roofing products including HERTAGE® series of laminated shingles, ANAPLAN™ SBS-modifieds, TAMPRO® asbestos-free cements and coatings, and TAMKO® waterproofing products.

Tarkett USA Inc., booths 425, 427, 429

1705 Oliver St., Houston, TX 77007

713.344.2731, fax 713.344.2769

www.tarkett.com

Share an Excellence with Tarkett Commercial flooring options. With worldwide manufacturing facilities including Arock by Tarkett in Houston, Texas, we offer a range of high-quality, environmentally friendly product lines that are durable, easy to maintain and have a lower lifecycle cost while adding beauty and versatility to any design.

TEFS Wall Systems, booth 223

220 Bureson, San Antonio, TX 78202

210.472.2935, fax 210.472.2946

www.tefs.com

TEFS is a leading manufacturer of EFS slugs, elastomeric coatings, finishes and paint. Based in San Antonio with distributors nationwide, TEFS offers products for the commercial, residential and retrofit markets.

Tejas Textured Stone, booth 430

6000 Split Trail Rd., Plano, TX 75074

972.578.5616, fax 972.578.9468

www.tejasstone.com

Tejas Textured Stone manufactures a lightweight stone veneer that provides the warmth, beauty, and prestige of natural stone but is less expensive, easier to install, and more convenient to handle. We are committed to providing you with the finest quality, most authentic manufactured stone available for residential and commercial uses.

Terminesh USA Inc., booth 241
6046 FM 2920, Ste. 506, Spring, TX 77379
281.257.6558, fax 281.257.6595
www.terminesh.com

The Terminesh System is a chemical free physical barrier designed to stop subterranean termites from entering a building by blocking any entrance through the foundation. This environmentally friendly termite prevention system has proven 100% effective in USDA studies. The system is designed to last the life of the structure.

Tex-Lam Manufacturing Inc., booth 527
7219 Stuebner Airline Rd., Houston, TX 77091
713.695.5975, fax 713.695.3346
www.texlam.com

Tex-Lam is a quality manufacturer of toilet compartments and architectural laminate doors for public and commercial spaces. We will be displaying actual compartments (in miniature) as well as doors and have various hands-on samples to allow for a better understanding of the product.

Texas Bureau of Lathing and Plastering, booth 741
1615 W. Abram St., Ste. 101, Arlington, TX 76013
817.461.0676, fax 817.461.0686
www.tlbp.org

The Texas Bureau of Lathing and Plastering is a 50 year old organization dedicated to the promotion of the plastering industry. Educational programs and specifications for EIFS, gypsum and Portland cement plaster are available to the design professional. More information can be found on our website, www.tlbp.org

Texas Department of Licensing and Regulation, booth 112
920 Colorado, Austin, TX 78701
512.463.3519, fax 512.475.2886
www.license.state.tx.us

The Texas Department of Licensing and Regulation's Architectural Barriers Program administers the Texas Architectural Barriers Acts (TABA) and ensures compliance with state accessibility requirements. Responsibilities include educating people about the TABA, providing plan reviews and inspections for subject facilities, and investigating complaints regarding non-compliance with the TABA.

Texas Masonry Council, booth 526
314 Highland Mall Blvd., Ste. 510, Austin, TX 78752
888.374.9922, fax 512.451.9556
www.texasmasonrycouncil.org

The Crism Company Inc., booth 330
8310 Broadway, San Antonio, TX 78209
210.824.6315, fax 210.824.6379

The Crism Co. furnishes design, fabrication and installation of custom shade, rain protections and decorative applications of fabric and metal structures including awnings, canopies, tensile and tension structures, covered parking entrances, opening roofs,

shade sails, walkways, cabanas, storefronts, custom umbrellas, retractable screens, fixed and retractable patio covers and sun control devices.

The Mairan Company, booth 434
3839 E. Mustard Way, Springfield, MO 65803
417.862.0681, fax 417.862.3780
www.mairan.com

Manufacturers of classic stile & rail fire-rated & non-rated wood doors, custom made to your specifications as well as Thermal Fused flush doors, constructed with a structural 1-ply 42-pound core & durable 4-sided PVC edge banding scratch, chemical, & moisture-resistant, hundreds of faces at a competitive low price, shipped ready to hang.

The Southwell Co., booth 308
928 N. Alamo, San Antonio, TX 78215
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TRENDS OF THE TRADE

Survey Reveals Nationwide Shortages of Cement and Other Key Building Materials

The National Association of Homebuilders reported in an August 10 press release that a shortage of cement and other key building materials threatens the continued growth of the U.S. housing market, which has seen record levels of new home construction in recent years. Forty-one percent of the survey's respondents reported a shortage of cement, a significant increase from May, when 11 percent of those polled viewed this as an issue. In March, only 3 percent of builders reported that cement was in short supply.

According to the NAHB, shortages first appeared this spring in Florida, which imports about 40 percent of its cement, compared with a nationwide average of just 20 percent. Supplies subsequently tightened in other regions partly because strong demand from China has diverted the amount of cement available from other countries and limited the number of cargo ships that can bring the product to U.S. ports. Meanwhile, the HNAHB reports, prohibitive duties have severely limited supplies from Mexico, the most likely source of supplementary imports. A delivery from that country takes only four days, compared to an average of 44 days for a cement shipment from Asia.

In addition, 26 percent of those surveyed reported experiencing a shortage of gypsum wall board, up from 11 percent last October, 16 percent in March and 19 percent in May. Nearly one-third of respondents are experiencing shortages of oriented strand board and plywood, wood panel products used for wall sheathing, floors and roofs. While this is a significant figure, it is well below the peak of 52 percent reported in last October's survey. However, prices of those products remain high.

Insulation material is another limited commodity for builders, as 20 percent noted a lack of this product, compared to 10 percent just four months earlier. In a number of regions where brick is widely used, builders have reported shortages of that material as well.

While framing lumber supplies appear adequate, the larger concern among builders in the U.S. is price volatility. The price of 1,000 board feet of framing lumber hit a yearly high of \$472 in early August, up 52 percent from \$311 a year ago, according to *Random Lengths*, a trade publication based in Eugene, Ore.

As reported by the NAHB, rising costs attributed to shortages of building materials have had significant impact across the nation. During the past six months, 90 percent of respondents reported paying higher prices for framing lumber and oriented strand board, 88 percent for plywood, 86 percent for cement, 80 percent for steel, 75 percent for gypsum wall board and 68 percent for insulation.



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A Tower for Stacell

Dedicated to a teacher who saw beauty in structure

FOUR years ago Alan Stacell showed me a sketch and explained his ideas about an inverted box-truss that appeared to hang in air through the force of tension. Intrigued, I built a study model based on his sketch, which I later revised into a finer model as a gift for him when he retired in the spring of 2001 after 40 years as an instructor at Texas A&M.

Stacell's inverted box-truss remained in my thoughts through the following summer, and I began to consider expanding on his idea. I thought about how a repeating sequence of box-trusses could be developed as a tower, with the box-trusses intercepting one another rather than being inverted on each other. Stacell had said the box-truss, due to its triangulation, is one of the strongest structural units for the amount of material used.

Just two weeks after his retirement, Stacell was diagnosed with cancer. He began chemotherapy and radiation treatments to battle the tumor at the base of his esophagus, and I would visit him at his home. We discussed the box-truss tower quite a bit. I remember him saying, "Well, we all know that you can stack building blocks, but what we want to see is what you can really do." He was referring to the idea of a tower. Although I had decided on a different transition for the tower elements, I knew that Stacell would want me to make up my own mind about what should be done. I also knew that Stacell would only emphasize the purpose of building such an object, which was to maximize the structure's performance with the minimal amount of materials necessary to perform the task.

Stacell's passion for teaching stemmed from his wanting to demonstrate to his students what possibilities exist with structures and to prove to them that what is thought to be impossible can be possible. He wanted to provoke thought and

ultimately to show his students that making an object, much like a work of art, creates a thing of beauty that engages the viewer's soul.

So, why build this tower? Well, I think that Stacell would like to see any idea become reality, to show others the beauty in structures, and simply for his own self-enjoyment of observing the finished work. For me, building this tower for Stacell is an appropriate gesture that expresses his love for structure.

Last year, on December 9, one year after he died, we unveiled Stacell's tower in the atrium of the A&M's Langford Architecture Building. More than 300 people, including many of his former students and colleagues, had come to see the 43-foot-tall tower of nine and half diamond-shaped box-trusses held together only by tension cables. The tower stands in dedication to Alan Stacell as a symbol to his devotion to his students and the passion for learning that he instilled in us.

PATRICK WINN

A 2002 graduate of Texas A&M with a degree in environmental design, Patrick Winn works with Overland Partners in San Antonio.

PROJECT TEAM Patrick Winn (designer and team leader), Nicholas McWhirter, Dave Sellers, Brad Adams, Aaron Cooke, Reynold Magnuson, Drew Duffy, and Justin Dezendorf

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The author and the 43-foot-tall tower he designed and dedicated to Texas A&M University architecture professor Alan Stacell; photo by David Sellers.



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