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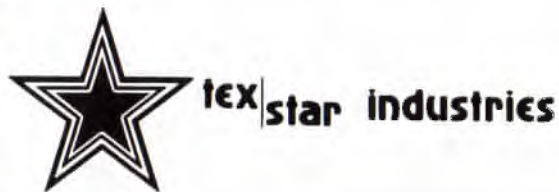


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# TEXAS ARCHITECT

## 1997 TEXAS SOCIETY OF ARCHITECTS DESIGN AWARDS

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**On the cover:** Exterior of the Latorre Residence, Cunningham Architects.  
Photograph by James F. Wilson.

**Above:** The Birthday, Frank Welch and Associates, Dallas. Photograph by Ezra  
Stoller.



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# A Moment to Reflect

IN JUNE, THE JURY for the 43rd annual TSA Design Awards competition worked for two days to select 15 winning projects from among 164 entries. The results of their labors are presented in this issue, starting on page 51.

This was the fifth time in the six years I have worked at *Texas Architect* that I sat in on the deliberations. As always, I was impressed with the care the jury took in coming to their decision. (The jurors this year were Patricia Patkau of Patkau Architects, Vancouver, British Columbia; David Rinehart of Anshen + Allen, Los Angeles, Calif.; and Alejandro Diez of R. Kliment & Frances Halsband Architects, New York, N.Y.) Some juries talk, some don't. This one did, at least on the second day, and as I listened, I was as fascinated now as I was six years ago by architects' ability to look at a plan and a few slides and understand something about how a building works or doesn't work. And listening to the jury's discussions reminded me of something that became clear to me during that first design-awards jury, three months after I started working for *TA*: Architecture is about much more than the way buildings look and architects do much more than just make buildings that look good.

The two projects the jurors selected to receive the 25-Year Award—the Kimbell Museum by Louis I. Kahn and the Birthday by Frank D. Welch, FAIA—do not, on the surface, have much in common: The Kimbell is a public monument, a shared pleasure. Birthday is inaccessible, an architect's pleasure. But as the jury recognized, almost without discussion, these are places that go straight to the heart of what architects can do: They can make buildings that transfix us with their absolute rightness, that force us to pause, just for a moment before we walk on in, to absorb the union of elements that have been assembled to create the whole.

Whether any of the other projects the jury selected to receive awards this year are remembered in 25 years is a question only time can answer. But for now we are pleased to honor them, their architects, the clients who made them possible, and the entire design and construction team.

We thank the TSA Design Awards Committee and its chair, Nestor Infanzón of Dallas, for their hard work. Canan Yetmen, *TA's* publisher, deserves special thanks for the time and energy she put into organizing the jury and making that part of the process run so smoothly. *Susan Williamson*



Patricia Patkau



David Rinehart



Alejandro Diez

#### UPCOMING ISSUES

We invite submission of projects to *Texas Architect* for the upcoming issue:

Jan/Feb '98 (deadline 29 September) "Texas Quarters: Houses and Housing"

If you have questions, or ideas for "News" or "Survey," please call us at 512.478.7386, fax at 512.478.0528, or e-mail at [williamson@txarch.com](mailto:williamson@txarch.com).



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**OKLAHOMA CITY** The winning proposal in the Oklahoma City Memorial Foundation design competition is a sensitive tribute to victims and survivors

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**DALLAS** The Dallas light-rail system continues to plan for further extensions in the wake of the past year's successes.

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**AUSTIN** The Texas Society of Architects will honor fifteen individuals and programs this year during its Annual Meeting.

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## UT alums to design memorial

**OKLAHOMA CITY** When the winner of the Oklahoma City Memorial Foundation design competition was unveiled on July 1, the city took one more step on its long path to healing. The winning team—project leaders Hans-Ekkehard Butzer and Torrey Butzer, based in Austin and Berlin and graduates of the University of Texas at Austin School of Architecture, with Sven Berg; Sasaki Associates, landscape and planning consultants, San Francisco; and The Benham Group, civil, structural, and electrical services, Oklahoma City—designed a place of quiet contemplation in the midst of downtown that honors both the victims and those left behind.

The fate of Oklahoma City took an unforeseen turn on April 19, 1995, when a bomb exploded in front of the nine-story Alfred P. Murrah Building, killing 168 adults and children. In July 1995, the mayor of Oklahoma City appointed a 350-member volunteer task force to develop a memorial to honor victims and survivors, and insure that everyone who wanted to could participate in the planning process, says Kari Ferguson, communications director for the foundation.

The task force gathered input from families, survivors, and the public about what experience a memorial should provide; from that, a mission statement was developed: *We come here to remember those who were killed, those who survived and those changed forever. May all who leave here know the impact of violence. May this memorial offer comfort, strength,*

*peace, hope and serenity.* The task force, which has since transformed into the private, non-profit foundation, developed a three-pronged approach to fulfill those goals, says Ferguson. The first component was a symbolic memorial on a three-acre space, which includes the footprint of the Murrah Building, dedicated to victims and survivors. The other two components include a Memorial Center with a museum and visitors center, and the Oklahoma City Memorial Institute for the Prevention of Terrorism and Violence, a public/private research and assistance center.

The memorial competition received 624 submissions from all 50 states and 23 countries. A jury of design professionals narrowed the field to five: the Butzer submission and proposals by Hanno Weber, Kathleen Hess, and Michael Maher of Hanno Weber & Associates—Architecture/Urban Design, Chicago; James Rossant and Richard Scherr, New York City; Brian Branstetter and J. Kyle Casper, Dallas; and Susan Herrington and Mark Stankard, Ames, Iowa. Each finalist submitted three 32-by-48-inch design boards and one model. A selection committee of 15, including eight family members and survivors, three local civic leaders, and four design professionals, unanimously chose the Butzer proposal.

For Hans, an Austin native, and Torrey, from Oklahoma, the competition was inviting for many reasons. "First was the call to design an outdoor room; it's a challenge to design a space. And the theme of the memorial—to

## Light rail steams ahead

**DALLAS** Will future generations of North Texas residents remember the summer of 1996? Last year, the Texas Rangers were chasing the pennant, construction on North Central Expressway continued, and modern electric light-rail trains started rolling in Dallas (see *TA*, July/August 1996, pp. 12-14). A year later, some things change, some things stay the same, and some things extend another three miles. Extending the Blue Line southward is how Dallas Area Rapid Transit (DART) celebrated the first birthday of the successful Light Rail Starter System. This event in May was preceded by two other transit system events in DART Rail's inaugural year: the Red Line extension northward along

(and under) North Central Expressway to Park Lane and the opening of ten miles of the Trinity Railway Commuter Rail to South Irving Station.

Throughout the year, the public reception has been enthusiastic. DART reports that more than 33,000 patrons ride the train each weekday including many who are first-time mass-transit users. Parking lots at the North Central Station sites are filled as commuters opt to board the train and zip past the congested traffic on North Central Expressway. With ridership exceeding expectations, DART is making plans to expand station parking, maintenance facilities, and fleet size.

The response to the facilities has been as favorable as the response to the service. The station art program has created a linear museum with a \$1-million art collection that has





Stephan Klank

help the community get over a tragedy—held tremendous appeal for us,” says Hans Butzer.

The memorial site is bounded on the south by the GSA Plaza and the space where a wall of the Murrah Building once stood, on the north by the Journal Record Building, on the west by Harvey Avenue, and on the east by Robinson Avenue. The winning proposal creates an urban edge with two



Oklahoma City Memorial Foundation

“gates of time,” one to the east and one to the west, that interrupt the city grid at Fifth

*“UT alums to design . . .” continued on page 14*

1 a 3-D perspective of the memorial looking from the Survivor Tree at night

2 the final model; Journal building is to the right, with the tree to its side, east gate at bottom

received praise and recognition. The fact that the station art reflects the character and identity of the neighborhood where it is located has also helped to keep vandalism at bay.

Preliminary design on two future extensions were completed earlier this year by the design team of Carter & Burgess, Inc., and John S. Chase, FAIA, Architects, Inc. These include the extension of



1

1 Photo courtesy of DART: aerial view of DART Downtown Light Rail Transit Mall and

West Transfer Bus Station looking east from West End

*“Light rail steams ahead” continued on page 19*

## OF NOTE

**Austin district added to National Register**  
In May, the Zilker Park Historic District, the centerpiece of Austin’s park system, was listed in the National Register of Historic Places. The district contains 28 historic resources, including buildings, bridges, and landscape features, making it the only public recreation facility in Austin with National Register status. It was nominated by the Texas Historical Commission for its role in the development of Austin’s public parks during the early part of this century.

The Zilker Park Historic District was developed on 350 acres between 1917 and 1947 as an urban park and recreation facility. When it was created, it represented the latest trends in park design and conservation. Notable features are the 1928-29 Barton Springs Pool/Dam, the 1947 Bathhouse, and the 1934 Zilker Park Clubhouse and Zilker Cabin.

The National Register of Historic Places includes over 2,200 listings in Texas. Listing affords properties a measure of protection from the possible impact of federally funded projects, and access to technical expertise and grant funds to preserve the property.

## Houston’s Sixth Ward teams with UH

Thanks to a \$3,500 grant from the Greater Houston Preservation Alliance and efforts by University of Houston architecture students, residents of Houston’s Old Sixth Ward will now have guidelines to restore and rehabilitate buildings in the historic neighborhood. The project will include historical research of the area, with the publication of a detailed book of written and graphic descriptions of architectural styles and features from all historic homes in the district west of downtown. In addition, schematic drawings will help owners identify features found in their own buildings and suggest appropriate designs for renovation, new construction, and business signage.

## Spinning the Web

Need to find a particular project published on TA2, the digital version of Texas Architect magazine? Now you can, through the searchable project database under the “TA2 Project Index” at <http://www.txarch.com/>. Search by architect, building type, region, or project name, or just check out the archived content on an issue-by-issue basis. Articles and photos are available from the May/June 1995 issue to the present.



"UT alums to design . . ." continued from page 13

Street. Butzer describes the gates as a "preparatory space, which provides a transition from the bustle of the outdoor world." On the east gate is inscribed "9:01," representing the minute before the bomb exploded; on the west gate, facing the setting sun, is inscribed "9:03," or the aftermath. In between is 9:02, the minute of the explosion. Although the existing site slopes from east to west, the space in between the gates would be leveled out for a reflecting pool.

The focus of the memorial's design is 168 chairs, set in a grassy field on the ground where the Murrah Building once stood, one for each of the victims of the bomb blast. "The chairs are a personal approach to memorializing victims; their placement is an abstraction of the building," says Butzer. The chairs, of varying sizes to represent either a child or an adult, would be built with a glass box base, each inscribed with the name of a victim, and a stone back and seat. During the day, says Butzer, the seat and back appear to float, "recalling the fleeting memories of the

victims." At night, the glass bases are lit, "standing as symbols of the victory of good," says Butzer.

While the chairs are a direct reminder of the victims, several elements in the memorial are tributes to the survivors and "those changed forever." To the north is the Survivor Tree, which was the only tree growing in the parking lot across from the Murrah Building before the blast; it managed to survive and is an enduring symbol of endurance and perseverance, says Butzer. The tree would be encircled with a stone wall inscribed with survivors' names, and terraces cascading down to the reflecting pool. The proposal also calls for the survivors' names to be inscribed in granite in a small freestanding wall near the east gate, the only real remnant of the Murrah Building and one that many of the survivors climbed over to safety, but Butzer said it is yet to be decided if the wall will be developed further.

The design also incorporates the future Memorial Center, which will be established

in the first three floors of the Journal building. The submission guidelines required a proposal for the museum entrance, which establishes a visual connection with the rest of the memorial. Butzer says he "hopes the development of the museum will run parallel to the memorial," and Kari Ferguson expects "the designers of the park will work with the designers of the museum closely."

In addition, the Butzer proposal creates a space specifically for children, as a way to remember those who died and those who sent letters and cards from all over the world. Chalkboards in the

ground in front of the museum entrance will allow children to continue to leave messages and feel involved in the memorial efforts, says Butzer. An orchard to the south of the children's area will provide space for teachers to bring classes or groups to meet.

The foundation is currently working to raise the necessary funds to complete all three components, with construction of the memorial as a first step, says Ferguson. The capital campaign has raised \$2.3 million of its \$24 million goal, and at press time, the Senate voted to name the area a national memorial, placing it under the auspices of the National Park Service and giving it \$5 million to be put in trust for perpetual care and maintenance. The Butzers, who in July relocated to Boston, expected to sign contracts with the foundation in mid-August and then present schematics to its board. Butzer hopes that the groundbreaking will take place in the spring or summer of 1998, with the dedication a year later.

Butzer feels that the community's healing process relates directly to the competition process. "They coordinated the competition and goals as a way to confront what happened, visualize what the future should hold, and create a place where they could go to heal," he says. The memorial recognizes that people may be at different stages in the grief process, and has different places—from a walkway with benches, to the chairs, to the orchard—for them to go. "This is a place for people to meet with lost ones," says Butzer.

Ferguson feels that the overwhelmingly positive reaction to the memorial is due to the foundation's involvement of the whole community, but in particular the survivors and the relatives of those killed. "The process has been unprecedented in the city. It was a community process that decided the competition, and from day one, they [the foundation] wanted community involvement. We involved people from all sectors so they have ownership of the memorial. This is a critical part of healing process . . . but it takes time, patience, and energy to get involved," says Ferguson.

To "walk through" the memorial, view the site at [www.Oklahoman.net/connections/memorial](http://www.Oklahoman.net/connections/memorial). Contributions may be sent to the Oklahoma City Memorial Foundation, 420 N. Robinson Avenue, Oklahoma City, Okla. 73102.

**Kelly Roberson**

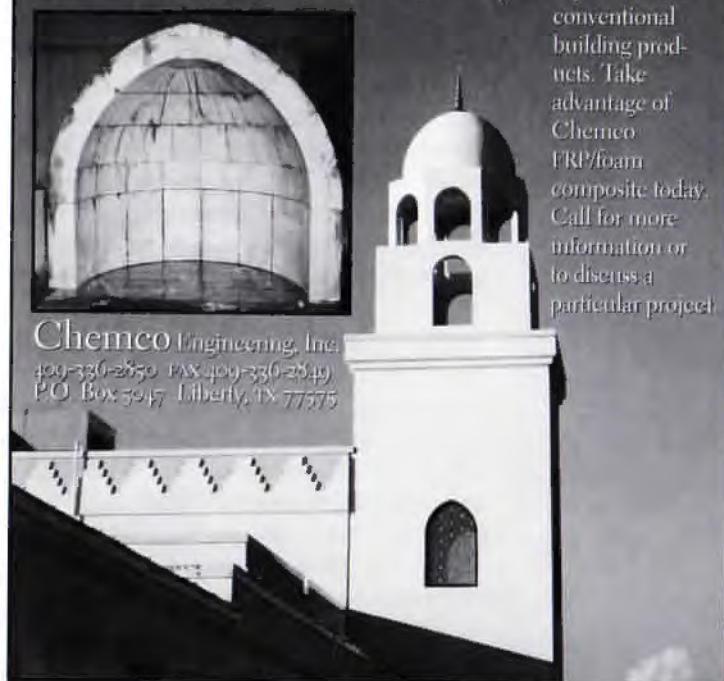
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## Fifteen honored by TSA

**AUSTIN** Ten individuals, one firm, and four programs will be recognized by the Texas Society of Architects (TSA) this fall with the Society's annual honor awards. Presentation of the awards will take place during TSA's annual meeting in Fort Worth, October 23-25. The recipient of the Llewelyn W. Pitts award for lifetime achievement, the highest honor TSA can bestow on a member, will also be announced during the meeting.

The recipients of this year's John G. Flowers Award, recognizing excellence in the promotion of architecture through the media, are Lee and Virginia McAlester of Dallas. The McAlesters have published numerous guides to historic and modern architecture, including *A Field Guide to American Houses* and *Discover Dallas/Fort Worth*.

Richard B. Ferrier, FAIA, of Dallas is the 1997 Edward J. Romieniec Award winner, recognizing an individual architectural educator for outstanding contributions. Ferrier is a professor of architecture at the University of Texas at Arlington (UT-A), and was instrumental in the development of the UT-A School of Architecture. In addition, he served as associate dean at the school for 15 years, and was named to the Academy of Distinguished Teachers at the university.

Thomas Hayne Upchurch is the 1997 winner of the William W. Caudill Award, recognizing professional achievement in leadership development during the early years of AIA membership. In addition to numerous other activities, Upchurch was president of AIA Austin in 1996 and participated on the national AIA Committee on Design for nine years.

Receiving the Architecture Firm of the Year Award in 1997 is Hahnfeld Associates Architects/Planners. The firm, based in Fort Worth, was formed in 1963; during its history, it has developed an extensive background in educational, religious, and institutional facilities, and received numerous design awards for its work.

Six individuals will be recognized with TSA honorary membership. Sally Still Abbe will be honored for her efforts as a planner in the City of Lubbock Planning Department, including her work as staff liaison to the Urban Design and Historic Preservation Commission and in writing National Register of Historic Places nominations. Marty Craddock, former executive director of the Historic Preservation Council for Tarrant County, will receive honorary membership



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1 Lee and Virginia McAlester

2 Richard B. Ferrier, FAIA

3 Thomas Hayne Upchurch

4 Sally Still Abbe

5 Marty Craddock

6 Alfred A. King

7 Raymond D. Nasher

8 Thomas W. Taylor

9 William P. Wright

10 Barbara Hesse Odum

for her efforts to protect and restore structures of architectural and historic significance.

Alfred A. King, a private entrepreneur, investor, and philanthropist who will receive honorary membership, is founding chair of the Austin Lyric Opera, chair emeritus of Laguna Gloria Art Museum, and established the Alfred and Ellen King Lectureships in the UT College of Fine Arts and Natural Sciences. Newly elected honorary member Raymond Nasher, a longtime supporter of design and the arts, is founder and chair of The Nasher Company. He recently announced plans to build a public sculpture garden in a full city block adjacent to the Dallas Museum of Art.

Thomas Taylor, also receiving honorary membership, is president of Datum Engineers, Inc., a fellow of the American Society of Civil Engineers, and an honorary member of the Dallas Chapter of the AIA. William Wright will receive honorary membership for his commitment to the humanities, arts, and photography, including his work on the National Committee on the Humanities and as president of the Texas Committee on the Humanities.

Barbara Hesse Odum will receive a citation of honor for her leadership in efforts to save, restore, and maintain historic properties in San Angelo, including Fort Concho. Texas Parks and Wildlife will also be recognized with a citation of honor for its efforts to preserve Texas' history and pre-history resources. The Dallas Arboretum and Botanical Society will receive a citation of honor for its innovation and ongoing activities, especially the Ultimate Treehouses event, which provides the public insight into thinking about commonplace objects.

Edinburg 2020 Vision—Design of the City will receive a citation of honor for its planning efforts which resulted in the first Architectural Design Review Ordinance in Texas, created to preserve and promote the city's heritage, character, and traditions. A citation of honor will also go to the Lubbock Heritage Society for its efforts to promote, maintain, and preserve the history, cultural heritage, and architecture of Lubbock and the surrounding area, including renovation of the city's oldest existing public building. **KR**



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"Light rail steams ahead" continued from page 13

the North Central Line from Park Lane to LBJ Freeway, through Richardson's Telecom Corridor (in 2002), and on into Plano by 2003. The northeast extension serving Garland opens in 2002. DART has initiated final design for these extensions with the general engineering consultant team, consisting of program managers LAN/STV and section designers Greiner, Inc., for the northeast extension and Chian, Patel & Yerby, Inc., for the North Central extensions. While prototypical station designs from the starter system will continue to be used, the architects will also develop new aerial stations for use near locations where the light-rail guideway will travel overhead to avoid grade-level crossings at major streets.

DART's successful year has coincided with a year of good economic news for downtown Dallas. The relocation of Blockbuster Entertainment Group's headquarters to downtown was accompanied by several other major deals: Union Pacific, Continental Insurance, and Amresco's relocation to downtown; and Transamerica Insurance Company's lease and NationsBank's ten-year lease renewal. The *Dallas Business Journal* has identified DART's growing light-rail system as one of the factors driving downtown's "renaissance." A recent newspaper article announcing plans for the Adam's Mark Hotel renovation notes the proximity to DART's light-rail line as "a major factor in the decision to buy and renovate." There are also indications of development activity along the north and south light-rail corridors beyond downtown.

Bolstered by favorable decisions from voters in five member cities who reconsidered participation in the transit system, DART's plan for light-rail system expansion has started to gain momentum. Future anniversaries of the 1996 opening of the Light Rail Starter System will continue to coincide with ribbon cuttings and rail extensions. If development follows infrastructure, then DART rail expansion will create expectations of economic activity. And why not? As with the Rangers, opening days are always accompanied by great expectations. **David Ehrlicher**

*David Ehrlicher is deputy program manager for architecture with LAN/STV and is currently assigned to the DART light-rail extension project.*

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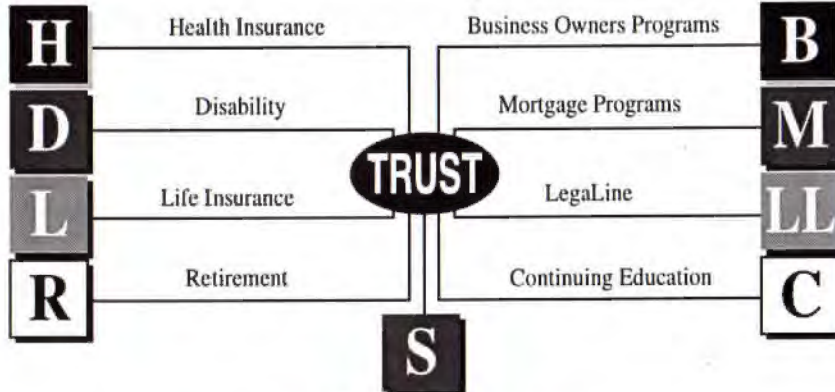


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## CALENDAR

### "Joseph Cornell"

Drawn from one of the largest and most distinguished collections of surrealist art in the world, The Menil Collection has assembled a group of works by American artist Joseph Cornell (1903-1972). The exhibition is composed of 50 collages and boxes created by Cornell that contain small toys, momentos, and unusual objects preserving his personal reflections. The Menil Collection, Houston (713/525-9404), SEPTEMBER 19 THROUGH JANUARY 4, 1998

### Life and Design

In celebration of its centennial, the Cooper-Hewitt will explore the central role design plays in our lives in *Design For Life: A Centennial Celebration*. The exhibition features 200 works from the permanent collection challenging the notion that design is a modern phenomenon by exploring its presence throughout history. Cooper-Hewitt, National Design Museum, Smithsonian Institution, New York City, N.Y. (212/860-6894), SEPTEMBER 30 THROUGH JANUARY 11, 1998

### Quilts for the Ages

*Peaceworks: Textiles about a Community* is an exhibition fashioned from the result of the Museum of Fine Arts' ongoing community art education effort "A Place for All People." Nine quilts were constructed by students ages 9 to 18 in Houston's Near Northwest neighborhood following a free quilt-making workshop offered by the museum in the summer of 1996. Modeled after the Baltimore Album Quilt in the museum's permanent collection, the quilts reflect the spirit of community life, family histories, and nurturing environments. The quilts will also be on exhibit in community centers, schools, and public venues in the Near Northwest neighborhood. Museum of Fine Arts, Houston (713/639-7300), NOVEMBER 2 THROUGH 24

### "Hidden Treasures from Tervuren"

In their first trip outside their home in Brussels, 125 treasures from the Royal Museum for Central Africa will be exhibited at the Kimbell Art Museum. A majority of the objects in the exhibition, taken from the richest collection of central African art in the world at the Tervuren Museum, come from what is now Zaire. They include masks, weapons, headrests, statues, and ritualistic figurines, and give a balanced overview of central Africa's most culturally important ethnic groups. Kimbell Art Museum, Fort Worth (817/332-8451), NOVEMBER 9 THROUGH JANUARY 25, 1998

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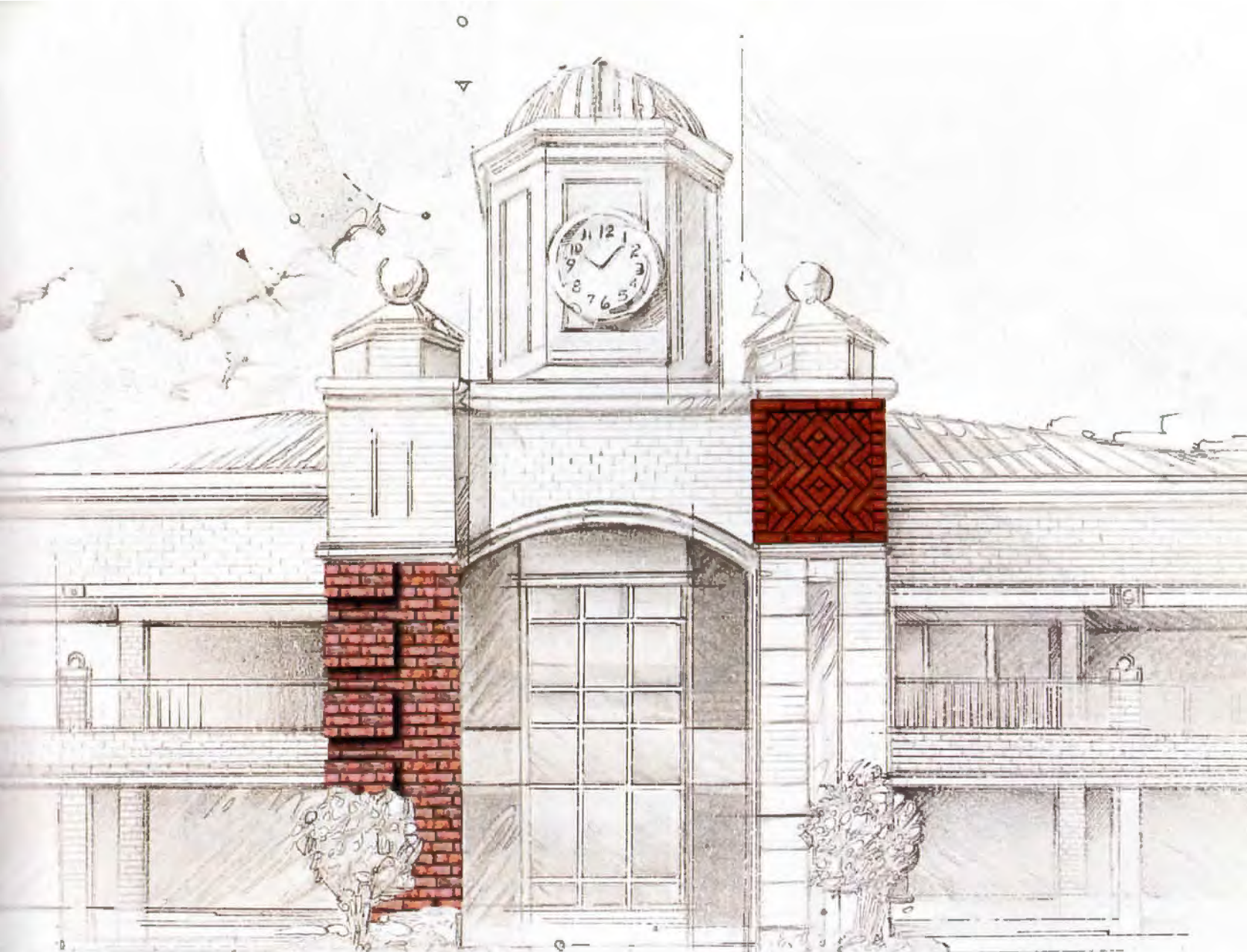


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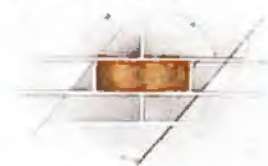
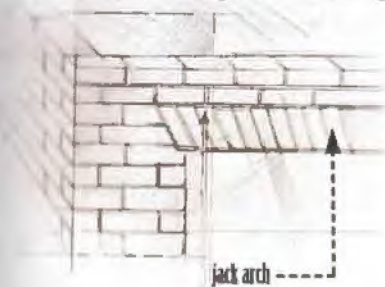




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Other areas of interest on the TSALink home page include a website for every chapter that comprises TSA, JobLink—a source for entering and reviewing employment opportunities, a current news section, and various links to other interesting and informative websites.

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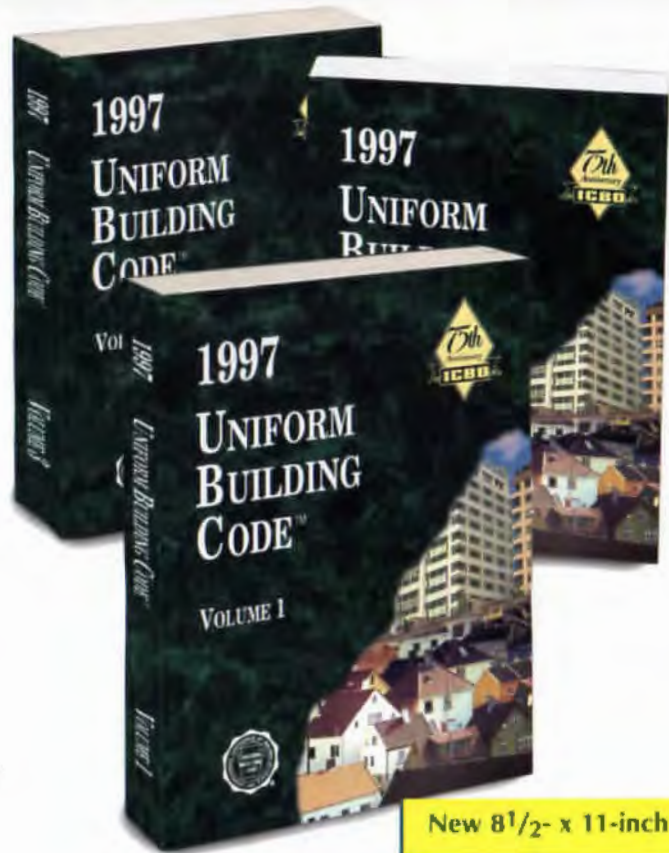
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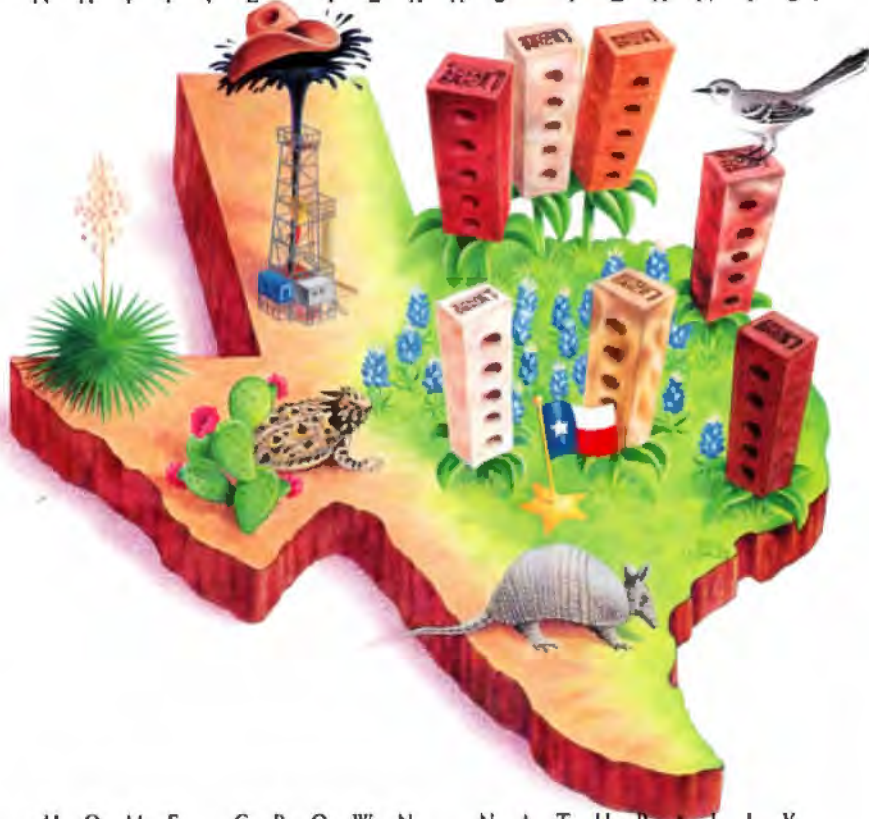
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# A Roofing Alternative

A ROOF SUBSTRATE THAT IS commonly utilized, both in existing and new construction, in the southern and southwestern regions of the United States, is lightweight-insulating concrete. This article provides ideas and general information regarding material options, application methods, testing procedures, system-construction sequencing, and constructibility options that can be used during installation of new lightweight-insulating concrete or roof-replacement activities over existing lightweight-insulating concrete fill substrates.

## General Information

LIGHTWEIGHT-INSULATING CONCRETE has been used in the construction of roof decks since the late 1930s. It consists of Portland cement (ASTM C 150, Types I, II, and III), water, and either a lightweight aggregate or an air entraining agent. There are two basic types: 1) aggregate lightweight-insulating concrete, or 2) cellular lightweight-insulating concrete.

The aggregate type of lightweight concrete has been used since the late 1930's. Two predominant aggregates have been utilized: vermiculite or perlite. Both are naturally occurring minerals that are mined. The aggregate that is used in the concrete is formed by taking the mined ore and heating it at elevated temperatures (1600 degrees Fahrenheit), causing the mineral to expand many times (4 to 20 times) its original size and volume. Consequently, the resulting "expanded" particle occupies a larger volume at a lower weight.

These "lightweight" aggregates are incorporated into the concrete mixture (Portland cement and water) in lieu of sand and gravel (typically used in traditional structural concrete), in order to create the lightweight-insulating concrete while providing some level of insulating value. These aggregates, when used in lightweight-insulating concrete, should conform to ASTM C 332, "Lightweight Aggregates for Insulating Concrete" Group 1 designation (aggregates prepared by expanding products such as perlite or vermiculite).

W.R. Grace was the predominant supplier of vermiculite-based lightweight-insulating concrete for many years. In 1995, Siplast purchased the rights from Grace to the lightweight-insulating concrete business and is the current predominant supplier of the vermiculite-fill material. Siplast markets their products under the previous names used by

Grace, which are Zonolight Insulating Concrete (ZIC) and NVS (Non-venting substrate) Insulating Concrete. The perlite-based material is generally provided by regionally located deck applicators rather than one particular manufacturer. The Perlite Institute has published guidelines and standards for perlite-aggregate-based lightweight-insulating concrete.

The cellular or "foam" lightweight concrete has been used since the 1960s. Cellular concrete utilizes a pre-generated foam ("detergent") that is introduced into the cement and water mixture.

The foam creates tiny air bubbles within the concrete mixture during the batching process. The control of the density of the fill is achieved by substituting macroscopic air cells for all or a portion of the fine aggregate.

After placement and during the curing process, the foam dissolves, creating a network of open air cells throughout the concrete mixture, thus creating the lightweight characteristic and, in addition, providing some level of insulating value.

The use of the foam creates a "slickness" characteristic that allows for ease of use during the placement of the concrete. Consequently, less water is necessary with cellular concrete because the addition of the foam concentrate makes the concrete more workable. The foam concentrate should comply

with the standard specifications as established by ASTM C 869, "Specification for Foaming Agents Used in Making Pre-formed Foam for Cellular Concrete," when tested in accordance with ASTM C 796, "Test Method for Foaming Agents for Use in Producing Cellular Concrete Using Pre-formed Foam." At this time, several manufacturers provide the cellular type of lightweight-insulating concrete, including Elastizell Corporation of America (Elastizell Cellular Concrete), Celcore, Inc. (Celcore Cellular Concrete), Cellufoam Concrete Systems (Ultra-Lite),

### Common properties of the two variations of lightweight insulating concretes

Property	Aggregate	Cellular
Cement: Aggregate Ratio	1:3.5-1:6 1:3	(cement:foam)
Cement Content	4-5 sacks/cubic yd	6 sacks/cubic yd
Water:Cement Ratio	1.25-1.6	0.5-0.6
"Wet" Density	35-60 pcf	30-45 pcf
"Dry" Density	20-40 pcf	20-40 pcf
Compressive Strength	130-300 psi	120-200 psi

Mearl Corporation (Mearlcrete), Lite-Crete, Inc. (Lite-Crete Cellular Concrete), and Siplast (Insucel).

Other elements can and have been substituted for the aggregate to achieve alternative lightweight mixtures. One is expanded polystyrene (EPS) beads. Combinations of the lightweight aggregates, EPS beads, and/or foam have also been used to achieve a desired formulation by various manufacturers. One manufacturer, Siplast, currently provides a hybrid mixture of both aggregate (vermiculite) and foam which is called Zonocel.

If you are a registered architect and an AIA member, reading this regular feature in *Texas Architect* can help you accumulated valuable learning units. After reading "TA Specifier," complete the questions on page 48 and check your answers on page 87 for two learning units.



### Learning Objectives

After reading this article and completing the exercises, you will be able to:

1. understand the material qualities of lightweight concrete;
2. understand the advantages and disadvantages of lightweight concrete;
3. realize the implications for its applications and installation.





The typical R-value of lightweight concrete ranges from approximately 1.1–1.5 per inch, depending upon the added element (aggregate versus foam). The R-value of the lightweight-concrete system can be increased significantly with the inclusion of EPS board. EPS board has a typical R-value of approximately 4.15 per inch based on a minimum density of 1 pcf. The R-value is determined by independent testing of materials in accordance with ASTM C 177 "Standard Test Method for Steady State Heat Flux Measurement and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus."

### Advantages of Lightweight-insulating Concrete

THE ADVANTAGES of lightweight-insulating concrete are as follows:

- Provides one-hour to two-hour fire-rated deck assemblies without the addition of thermal barriers or the application of fire-proofing on the underside of the metal deck.
- The insulating concrete is attached to the structural deck without the use of mechanical fasteners.
- The insulating concrete provides a smooth monolithic substrate without joints or surface irregularities for application of the new roof.
- Provides excellent resistance to wind uplift since the lightweight concrete provides a monolithic substrate that prevents air infiltration occurring below the roof assembly.
- Provides a relatively dense substrate for attachment of the roof assembly that reduces thermal fluctuations and/or thermal stresses incurred by the roof membrane.
- The lightweight concrete can be considered a permanent part of the structure or a "re-cyclable" insulation.
- The insulating concrete typically remains in place during roof replacement activities, unlike rigid board insulations, which are commonly discarded.
- Lightweight-insulating concrete can provide a substrate with a relatively high compressive strength (minimum 125 pounds per square inch) compared to 10–30 psi for common rigid board insulations.
- Lightweight-insulating concrete is inert and will not rot or decay and remains dimensionally stable under variable climatic conditions.
- Provides a positive slope that can be created for any building configuration.

### Batching

THE LIGHTWEIGHT-INSULATING concrete is batched on-site to the desired proportions, pumped to the desired location, deposited, and screeded to the desired thickness. The elements of the lightweight mixture are batched in a mobile mixer and pumping machine. The Portland cement (Type I, II, or III, ASTM C 150), water (potable), and either the aggregate or the foam are all stored adjacent to the machine. The aggregate is commonly retained in a typical storage trailer adjacent to the batching machine and supplied in 100 pound paper or cloth bags. The foaming agent is supplied by the manufacturer in either 55-gallon drums or five-gallon pails. The foam is then mixed by the deck applicator (typically 40 parts water to 1 part foam) and stored in plastic storage/dispensing tanks mounted on a trailer. The trailer is then positioned in adjacent to the batching equipment.

The Portland cement is typically stored adjacent to the batching machine in what is commonly referred to as a "bulker" or a container trailer with bulk storage and self-discharging capacity. The water can be obtained from either a source at the subject building, public facilities (i.e. fire hydrant), or a mobile-storage tanker. The entire set-up can be considered to be an on-site mini-batch plant. Strong Manufacturing Company is the predominant manufacturer of the type of equipment currently utilized for the batching/ placement of the lightweight-insulating concrete. Approximately 90 percent of the lightweight-insulating concrete fill for roofing is mixed and placed using the "DeckMate" mobile insulating-concrete mixer and pump manufactured by Strong.

The cement and water are supplied to the batching machine via measured mechanical methods utilizing spring-tension or platform scales. The aggregate is typically removed from the bags manually and placed in a holding device until the desired proportion (determined by weight) is reached, whereupon it is introduced into the batching machine by mechanical methods. The foaming agent is introduced into the mix via a hose that is attached to the source. The operator adds the foam to the mix by activating a manually triggered apparatus on the hose until the desired quantity is achieved. The technician can determine the foam output of the apparatus by

# ROOFING INDUSTRY

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filling a container of known volume with the foam and timing this process. The ASTM suggested ratio of water to foaming agent is 40 parts water to 1 part agent, by volume.

Several factors can arise during the batching process that could impact the physical characteristics of the final product.

- 1) The type of Portland cement selected can have an effect on the proportioning of the components. Most mix designs are based on Type I cement. However, using Types II or III, which have a finer cement particle size, will require a higher water/cement ratio to achieve the same product workability.
- 2) It has been estimated that the compressive strength of the lightweight-insulating concrete can be reduced 5 to 10 pounds per square inch (psi) for every one percent increase in the water/cement ratio.
- 3) An increase in the water/cement ratio can result in an increase in occurrence and/or concentration of dry shrinkage cracks in the lightweight concrete during the curing process.
- 4) The compressive strength may decrease 5 to 10 psi for every one percent increase in the foam volume.
- 5) Proper dispersion of the cement particles throughout the mix is important in maintaining the physical characteristics of the specified product. The compressive strength can be reduced if proper cement dispersion is not achieved. Some common characteristics of improperly dispersed cement are lumps, clots, and pellet-size balls of cement.

### Placement

AFTER OBTAINING the desired mixture, the material is transported (pumped from the hopper) utilizing conventional concrete-pumping equipment. A two-inch diameter flexible hose is typically used with common pumping capabilities of 15 to 35 cubic yards/hour at maximum distances of 1,000 feet horizontally or 200 to 300 feet vertically. The material is placed on the substrate with a typical minimum thickness of one to two inches, depending on the type of lightweight-insulating concrete utilized. Wood nailers or blocking are commonly used at low points and perimeters to provide a stop and thickness guide for the lightweight concrete.

After placement, the lightweight concrete

is screeded and finished utilizing the conventional techniques and tools used with traditional concrete placement. Fill boards, matching the desired thickness of the lightweight-insulating concrete, and/or string lines are often used during the placement to maintain proper slopes and/or thicknesses during the screeding process.

When the thickness of the lightweight concrete is anticipated to exceed the minimum-required thickness (typically two inches), an expanded polystyrene (EPS) board is commonly used as a "filler" board. The EPS board provides several functions when incorporated into the lightweight-insulating concrete: It reduces the overall weight of the lightweight concrete, reduces total material costs, and increases the insulating value of lightweight-insulating concrete. The thickness of the EPS board can range from 1 to 16 inches, depending on the capacity of the manufacturer's equipment. When the desired insulation-board thickness exceeds the maximum thickness of the available insulation board, two or more boards typically have to be laminated together to achieve the desired thickness.

Roof assemblies incorporating lightweight-insulating concrete that are published in the Underwriters Laboratory (UL) Directory have a maximum thickness of eight inches for the EPS board. UL limits the thickness based on structural and heat transfer issues. The thickness is also limited due to manufacturing equipment that cannot produce boards of a greater thickness. The size of the board is typically two-foot-by-four-foot. Boards four-foot-by-eight-foot can also be made.

As outlined by Underwriters Laboratory, the polystyrene-foamed plastic insulation board should have a density of 1.0 +/- 0.1 pcf. Other criteria for the EPS board as outlined by UL include the following: 1) The EPS board should have a hole or a hole/slot configuration constructed into the board; 2) The holes should be a nominal three inches in diameter spaced approximately twelve inches



All photos courtesy of Karl Schaeck. Typical batching equipment and cement silo.

on-center per row or three holes in a row (across the width of the board); 3) The rows should be spaced approximately 16 inches on-center longitudinally or lengthwise along the board; and 4) The holes should equal approximately three percent of the gross surface area of the board. One manufacturer, Siplast, provides a polystyrene board that has the designated holes together with slots or a hole/slot combination that are also incorporated into the board.

The holes and/or slots in the EPS board provide two functions: 1) they allow the board to become "keyed" into the lightweight concrete "tying" together the lightweight concrete located below and above the board, and 2) they provide an avenue for outward moisture migration during the curing process for the newly placed lightweight concrete ("slurry coat") below the EPS board.

Underwriters Laboratories classifies the polystyrene board for surface-burning characteristics (Classification BRYX) and for wind-uplift characteristics (UL Construction No. 110 and No. 155—Class 90: Roof Deck Construction TGKY). If the foamed-plastic board is designated to be used in a roof deck construction with a UL "P" design number, it means that the polystyrene board bearing the UL mark under category BRYX or CCVW (category of Foamed Plastic in the UL Fire Resistance Directory) may be used in the construction of UL Fire Resistance Designs (BXUV). The EPS board should meet the requirements established by ASTM C 578 "Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation," Type I.

The lightweight concrete is initially placed either in the flutes of the steel deck (filling





## Roofing warranties: A liability trap?

MOST ARCHITECTS know of the risks of implied warranties with strict liability as the measure of professional performance. For an unfortunate few, the lesson has been a painful trip through a legal system clouded by the *White Budd* case (*TA*, March/April 1993). For others, it has been through confrontation with an onerous architect/owner agreement like that promulgated by the National Construction Law Center (*Architecture*, February 1997). For almost all architects involved in public work, it has been evident in the attitude that an architect's job is to somehow protect the bureaucracy from any responsibility for building ownership. Some roofing cases provide an example of how that works.

### Case in Point

IN THE EARLY DAYS of built-up roofing, manufacturers controlled the entire process. After World War II, the nationwide building boom and new competitive forces made that system increasingly impractical, so the manufacturers began establishing networks of approved roofers. To control quality and protect their ability to warrant their product, they established standards for field practices and inspections. To provide financial substance to their warranties, they offered performance bonds for roofs meeting those standards.

These bonds were backed by a surety and typically cost around 10 percent of the financial exposure, which was limited in several ways and usually capped by a dollar amount. The bond offered no coverage to repair structures or finishes that might have been damaged by leaks. It excluded coverage of accessory items like insulation and metal flashing. It was voided by "unusual" use of the roof such as heavy traffic or by alterations or repairs not approved by the manufacturer. It was also limited to the normal life expectancy of the system—usually 15 years for three-ply roofs and 20 for four- or five-ply systems. Hence the term "bondable roof" entered the lexicon of the trade and architects began referring to a "15- (or 20-) year roof" as a shorthand way to describe the underlying technical requirements, whether or not a bond was actually specified.

Then, in the late '80s, several Texas school districts with large, built-up roofs ranging from 5 to 15 years old that leaked were advised by attorneys that the term "20-year bondable roof" in the 1970s specifications or project correspondence constituted an implied warranty by the architect that the roof would not leak for 20 years. Although the school district had not purchased the

manufacturer's bond, this was actually far better. It covered damages to finishes, prior repairs, and all accessories. School districts are not bound by the three-year statute of limitations on claims of negligence or breach of contract, so they could claim entitlement to a whole new roof up to 10 years into the life of the old one. Best of all, it was free. All they had to do was hire the attorney on a contingency fee and sue. Faced with a trial in which the jury would be taxpayers from the district and with defending an architect who had not inspected and tested the roof to the extent required by the manufacturer if they had warranted it, the architect's liability carrier capitulated. They, along with the contractor, (if still solvent), bought the district a new roof.

### Avoiding the Trap

ALTHOUGH ROOFING BONDS are a thing of the past, major manufacturers still advertise extended warranties with similar costs and limitations. One company, for instance, offers, for \$15 per square (about 10 percent of the initial roof cost), their 20-year "classic" warranty, which covers repairs to both roof and insulation. They also offer a "standard" warranty at \$8 per square for the roof alone. Both exclude collateral damage and both are voidable by misuse or unauthorized repair.

Whether or not either is economical depends on project-specific factors. Warranties make more sense for buildings planned for stable, long-term owner occupancy than for buildings where frequent additions or alterations or a quick turnover are expected. Most roofing problems appear in the first two or three years of a building's life, when still covered by the contractor's warranty, so the money might be better invested in a higher-quality roof or a specialized consultant to oversee the installation.

The architect should help the owner make an informed decision. If a manufacturer's warranty is purchased, advise the owner of requirements for maintenance and inspection. Make sure the warranty is delivered prior to closeout and that the small print conforms to the terms specified. If an explicit warranty is not purchased, architects can avoid creating an implied one by accurately documenting their advice throughout and by knowledgeable use of both the technology and the language of roofing. *John McGinty, FAIA*

*John McGinty, FAIA, of Houston, is managing principal of American Construction Investigations, a forensic consulting firm.*

the flutes completely) or on top of a solid substrate (i.e. structural concrete, secondary roof, etc.) to provide a slurry coat approximately 1/8-inch-thick (measured from top flange of deck rib or top of substrate). The EPS board should be placed within approximately 30 to 60 minutes after the slurry coat is applied. The EPS board should be placed or embedded into the slurry coat so that the bottom of the board comes in full contact with the slurry coat and the slurry coat enters the keying holes. The board should be installed with the long dimension of the board parallel to the flute direction of the steel form deck, where applicable. The transverse joints (joints at the ends of the boards) should be staggered and all joints should be butted snugly. The board should also be held back from the roof edge approximately three inches. The EPS boards are placed in a stair step configuration to achieve the desired slope. A maximum differential of one inch should be maintained for adjacent stair-stepped boards.

Once the EPS board is installed, the overlying lightweight concrete should be placed within one to four hours into the holes and over the board to reach the desired thickness. It is possible that the EPS board, particularly the boards with thickness greater than two inches, can "float" in the lightweight concrete if a proper slurry coat is not initially applied and the EPS board is not properly embedded into the slurry coat. If this occurs, it is advised that the EPS board and affected lightweight concrete be removed and replaced.

If during the placement process and the following 24 hours, the ambient air temperature is expected to be 40 degrees Fahrenheit or lower, then installation of the lightweight concrete should be delayed until warmer temperatures will prevail. However, if installation must proceed during cold weather, certain precautions, such as using warm water during the batching process, should be followed. If proper precautions are not implemented, freezing of the concrete can occur and jeopardize the quality.

Prior to the installation of the new roof assembly, the adequacy of the slope created by the newly placed lightweight-insulating concrete substrate can be verified via water testing. By conducting water testing, potential areas of inadequate drainage (i.e. bird baths)





can be identified. If these areas are identified, the low-profile lightweight can be leveled to match the surrounding substrate. A "rich" mixture (1:3-1:4 cement to water ratio) can be hand-troweled onto the substrate to fill in the low area. Prior to applying the trowelable mixture, the existing lightweight concrete should be removed to a depth of approximately 1/2-inch within the subject area.

Then the subject area should be well wetted (visible surface moisture) just prior to the application of the rich mixture. Wetting of the existing surface prevents the underlying dry substrate from drawing moisture out of the repair mixture, which would cause rapid curing. The rapid curing would

result in embrittlement of the repair mixture and subsequent cracking. Feathering the edges of lightweight concrete in a repair area should be avoided, as the thin lightweight-insulating concrete will have a tendency to crack and become disbonded.

For lightweight concrete with perlite aggregate, control joints are required at roof perimeters and penetrations. These control

joints should be typically one inch wide and should extend down through the full depth of the concrete. A compressible-fill insulation, typically fiberglass insulation, is installed at the control joint location and the lightweight concrete is placed up against the insulation. These joints are required because the perlite-based concretes can experience expansion after placement due to the expansive nature of perlite.

After placement, lightweight concrete (like traditional concrete) requires time for curing and hydration of the Portland cement. As with traditional concrete, the 28-day curing time frame also applies to lightweight-insulating concrete in order to achieve the maximum physical characteristics and properties. However, roof application can and should occur prior to the 28-day cure time. A cure time of five to seven days is normally required for aggregate lightweight-insulating concrete prior to roof insulation. For cellular lightweight concrete, 48 to 72 hours is a typical cure time allowance prior to installing the new roof. Actual cure time will depend on the

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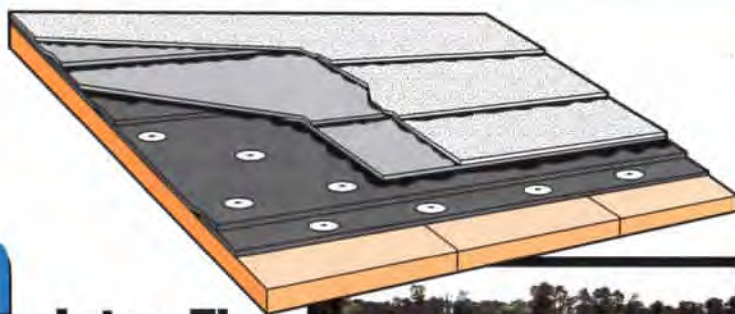
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climate and weather during the placement and curing process. A common rule of thumb used in the industry states: If foot traffic upon the lightweight concrete does not result in depressions in the surface of the lightweight concrete, then the concrete is suitable to receive the new roof.

Current typical industry practice involves placement of the lightweight concrete over a corrugated-metal form deck. Other possible substrates that have been utilized in the past, and to some extent continue to be used today, include structural and/or precast concrete, cementitious wood-fiber panels, fibrous form boards over bulb Tee's, gypsum form boards over bar joists, reinforced kraft paper/wire mesh over bulb Tee's, wood, and existing roof membranes.

The steel deck should be coated with either G60 or G90 hot dipped galvanized zinc coating. A G60 galvanized coating results in a zinc coating applied at a rate of approximately 0.6 ounces per square foot to both sides of the sheet. The G90 coating results in a zinc coating applied at a rate of approximately 0.9 ounces per square foot. Both of these coating weights conform to ASTM A 525. Neither bare metal nor painted metal decking is acceptable to be used as a form deck for lightweight-insulating concrete. Steel decking with the G60 coating is acceptable for use with lightweight concrete. However, in higher moisture/humidity exposure conditions, the G90 coating may be more appropriate.

The steel decking should have uniformly distributed slots located on either the bottom or the sides of the flutes. Common available slotted steel decks are manufactured with 0.75- to 1.5-percent net free area venting. The amount of bottom venting required will depend upon the local exterior climatic conditions, the quantity of water used in the mix, and the interior temperature and humidity conditions. The steel used in manufacturing decking conforms to either ASTM A 611 or A 446 having a minimum yield strength of 33 ksi. Some typical manufacturers that provide steel decks for lightweight-insulating concrete substrates include, but are not limited to, Wheeling and Vulcraft.

If cellular concrete is used, the metal form deck should not have bottom side venting. Cellular concrete or other non-venting types of lightweight concrete should be installed

over a "non-venting" substrate. If cellular concrete is placed over a venting substrate, accelerated curing can occur possibly resulting in shrinkage cracks and decreased physical properties.

The installation of the steel deck, if used, should conform to those requirements outlined by Factory Mutual 1-28. The typical installation criteria includes lapping ends of deck panels a minimum of two inches. The end lap should occur over the structural members. The sides of adjacent deck panels should be lapped a minimum of one-half of a rib. Once laid in place, the deck panels should be secured to the support members with either 1/2-inch (13 mm) diameter (Exposure 1) or 5/8-inch diameter (Exposure 2) puddle welds installed with weld washers or approved mechanical fasteners. Weld washers are typically required with metal decks that are 24-gauge or less. When weld washers are utilized, they should be minimum 16-gauge metal with a 3/8-inch diameter hole. Whichever attachment method is used, the maximum spacing should be 12 inches on-center in the field and six inches on-center in the corners and perimeters. There are four options for attaching side laps: stitch screws, button punched, top-seam welded, or side-seam welded. For metal decks of 22 gauge or less, stitch screws are recommended for side-lap attachment. Side laps should be secured three feet on-center (Exposure 1 and 2) and 30 inches on-center (Exposure 3). The spacing should be reduced 50 percent in the corners and perimeters. The dimensions of the area to increase the rate of attachment is determined by the smaller number of 0.1 times the lesser plan dimension, 0.4 times the eave height or a minimum of four feet.

The bonding capacity of lightweight concrete to galvanized steel deck produces excellent uplift resistance to meet UL Class 90 Wind Uplift Resistance Classification (Published in *UL Director*, Construction No. 110).

Lightweight concrete also forms an interfacial bond with polystyrene board when utilized in construction to achieve the necessary uplift resistance.

Steel reinforcement can also be incorporated into the lightweight-insulating concrete matrix. Steel reinforcement is typically required for a two-hour fire-rated assembly. The steel reinforcement is typically a woven mesh consisting of 19-gauge galvanized wire twisted in a two-inch hexagonal configuration with an additional 16-gauge longitudinal reinforcement wire spaced approximately three inches on-center across the width. The steel



Testing wet density

reinforcement should have a minimum cross-sectional area of 0.026 square inches per linear foot and meet the tensile, bending, and coating requirements outlined in ASTM A 82. A common product that is used and complies with these requirements is Keydeck 2160-2-1619 as manufactured by Keystone Steel & Wire. The wire mesh should be placed in the middle of the desired top pour thickness (measured from top of steel deck, substrate, or EPS board) of the lightweight concrete. The wire mesh should be lapped a minimum of six inches at ends and butted or spaced no more than four inches apart at sides. The wire mesh should be placed with the longitudinal wires at right angles or perpendicular to the structural supports and cut at openings/penetrations in the deck.

One common problem experienced with lightweight-insulating concrete, particularly the cellular version, is the occurrence of shrinkage cracks during the initial curing process. Since the mix is composed of only cement, water, and fine aggregate and/or





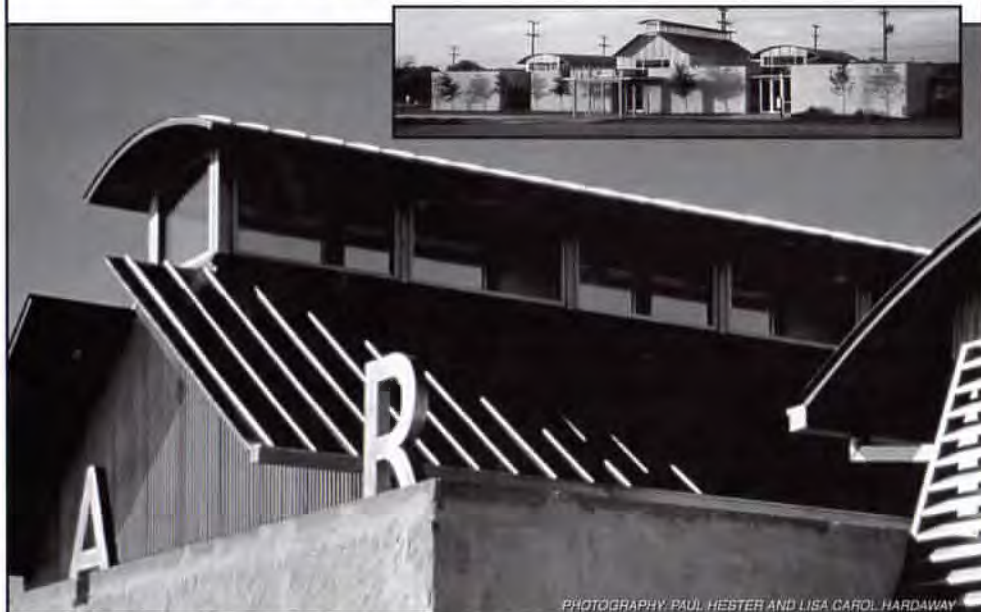
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foam, movement in the substrate or just the natural curing process can result in cracks within the concrete. One option to reduce this cracking condition involves the inclusion of either steel wire mesh and/or inorganic fibers dispersed within the mix. The reinforcing mesh or fibers as well as aggregate allows the forces and stresses created by the curing process to be transferred to the matrix. The transfer of these forces allows the concrete matrix to resist these forces and consequently reduce the chance of cracking. The fibers can be either polyester, fiberglass, or polypropylene in nature and are added to the mix prior to the inclusion of the foam at a rate of approximately one to two pounds per cubic yard. One manufacturer of cellular concrete, Elastizell, provides a polyester fiber called Zellercrete Fibers. Fiber Mesh is a common manufacturer of polypropylene fibers, commonly used as an additive fiber to structural concrete.

Another practice that can be implemented during the placement process, particularly in hot and arid climates, to minimize or reduce the occurrence of cracks, is to apply water, via spray misting, to the newly placed concrete. If cracks do occur within the cured concrete, repairs can be performed to the affected areas. The lightweight concrete can be routed out along the crack, typically in a "V" shape to a depth of approximately 1/2- to 3/4-inch. Loose debris should be removed from within the crack, the surface of the concrete wetted, and a rich mixture should be troweled into the routed "V", striking flush with the adjacent surfaces.

### Testing

SEVERAL TESTING procedures can be implemented during and/or after the placement of lightweight concrete for evaluation. Some of the common testing determines wet density, fastener pull-out resistance, compressive strength, and dry density. The first test, determination of wet density, is performed during the initial placement of the lightweight-insulating concrete. The wet density should be determined at various times during the day as the lightweight-insulating concrete is being batched and placed. The wet density should be obtained at both the hopper and the point of placement. It can be determined simply by placing the batched mixture in a container of known volume and weighing the





placement of stair-stepped EPS board with staggered joints



typical finished placement of lightweight insulating concrete

filled container. If the measured wet density is found to be within +5 percent of the specified wet density, then the batching and placement process would be considered to be functioning properly. If the wet density is found to be out of tolerance of the specified range, then the following events may be present: water/cement ratio is out of tolerance, batching equipment is not functioning properly, pumping system is deficient, placement hose is kinked or has loose connections, or the diameter of the hose is too large. The sample of the lightweight-insulating concrete that is to be used for testing purposes should be considered representative and not be collected at the beginning or ending of the placement operation.

The remaining tests are performed after the placement of the lightweight-insulating concrete. As stated earlier, a common rule of thumb used by field personnel is: If foot traffic does not leave an impression (i.e., footprints) in the lightweight-insulating concrete, then the concrete is suitable to receive the new roof. However, there are other more

scientific testing methods to evaluate the suitability of the concrete. The fastener pull-out resistance is a relatively quick test to determine if the concrete has reached an adequate "age" to allow installation of the new roof. The fastener proposed for use in the new roof assembly should be used and tested in several random locations throughout the subject area (approximately one test per 100 squares). The minimum pull-out resistance that is commonly required by manufacturers for the split shank fastener is 40 pounds per fastener. Care should be taken if evaluation of the lightweight concrete is determined only by performing pull-out resistance tests on fasteners. The concerns are twofold: 1) the concrete may not have reached the 28-day strength, and 2) galvanized steel fasteners reportedly can gain additional pull-out resistance as a bond develops between the lightweight concrete and the steel fastener as the concrete cures.

The pull-out resistance test can be performed using a sheet metal holding clamp that could be attached to a spring scale. The scale should have a range of 0 to 100 pounds with one-pound increments. Another pull-out tester than can be utilized is a hydraulic device with a twisting crank and dial gauge, commonly utilized for testing screw-type fasteners.

Another easily performed test to verify the density of the cured concrete implements a hand-held penetrometer, designed for performing field and laboratory evaluations of initial set of concrete mortars. This testing apparatus is comprised of a hand-held cylindrical tool (7 inches long by 3/4-inch diameter) with a circular probe/shaft with a 1/20th

square inch of surface area. It is manufactured by ELE International and classified as a Concrete Mortar Penetrometer. The test involves pushing the shaft of the penetrometer into the lightweight-insulating concrete. The tool has a direct read scale on a range of 0 to 700 psi. The reading that is obtained from forcing the shaft into the concrete at a constant rate to a known depth provides an individual a relative indication of the compressive strength/density of the concrete. However, this test does not provide sufficient repeatable data nor the precision to use as a single source of evaluation.

Testing of the compressive strength of newly installed lightweight concrete is performed in accordance with ASTM C 495, "Standard Test Method for Compressive Strength of Lightweight-Insulating Concrete." This method covers the preparation and testing of molded cylinders (three inches diameter by six inches long) for lightweight concretes with oven-dry weights not exceeding 50 pcf. The test specimens are molded from a sample of the lightweight-concrete mixture obtained from the batching equipment prior to placement. The mixture is placed in molds, stored, and specifically cured. The molding process consists of placing the wet mixture in two approximate equal layers. After each layer is placed in the mold, the sides of the mold should be tapped until the top surface of the respective layer has subsided to a plane.

The ASTM procedure has specific procedures for curing, which generally involves initial moist curing followed by oven dry curing. It is critical that the samples are dried prior to testing. The most practical procedure is to moist cure (70 degrees Fahrenheit, +/-10 degrees) in the mold for the first seven days, strip the mold and cure in the appropriate environment (70 degrees Fahrenheit, +/-10 degrees) for the following 18 days, and then oven dried (140 degrees Fahrenheit, +/-five degrees) for three days. The sample should then be allowed to air cool until dry prior to testing.

Several factors can affect the results of the testing of molded cylinders: 1) The accuracy of the testing machine is a critical issue. The maximum load required to break the sample of lightweight-insulating concrete should not be less than 10 percent of the maximum load range of the testing equipment being used.



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The testing equipment that is commonly used for testing compressive strength of structural concrete has a typical load range of 10,000 pounds. Ten percent of this load range equals 1,000 pounds, which exceeds the typical maximum compressive strength of lightweight-insulating concrete range of 200 to 400 psi; 2) The actual cross-sectional area of the cylinder can also have an impact on the test results. Even though the cylinder mold is commonly three inches in diameter, the actual diameter of the hardened concrete cylinder should be measured to the nearest 0.01 inch (0.3 mm). The recorded diameter should be determined by an average of two diameters measured at right angles to each other at mid-height of the sample. The difference of 1/10th of an inch less than the nominal three-inch diameter will result in a smaller bearing surface which can reflect a lower compressive strength reading of approximately 6-1/2 percent. The actual recorded height of the sample should also be measured to the nearest 0.01-inch (0.3 mm); 3) Preparation of the

specimens can also have an affect on the sample. The concrete should be placed in the mold in two to three lifts. After each lift is placed in the mold, the mold should be tapped, or raised, and dropped approximately one inch to allow the lift/layer to settle. The concrete should not be rodded as is typically performed during the molding of cylinders for structural concrete. After the cylinder is molded, it should be left undisturbed for 16 hours and kept in the mold a minimum of seven days.

Testing the physical properties of existing lightweight concrete can be performed in accordance with ASTM C 513, "Obtaining and Testing Specimens of Hardened Lightweight-insulating concrete for Compressive Strength." This method covers obtaining and preparation of in-place lightweight concrete (minimum 14 days old). In general, the procedure consists of obtaining a bulk sample of the existing (cured) lightweight-insulating concrete and shaving/shaping the sample down to the desired size and number of cubes. The bulk

sample obtained shall not include any cracks, spalls, or otherwise be damaged. The size of the shaped cubes shall be two inches by two inches (minimum), or four inches by four inches (maximum). The size of the cube is typically determined by the maximum thickness of the lightweight-insulating concrete. Four cubes (three for compressive strength, one for density) should be obtained for the appropriate testing. Since the samples are manually produced, the actual measurements of the cube shall be achieved to determine the true size and bearing surface. The specimens shall be oven-dried (140 degrees Fahrenheit, +/-five degrees) for three days prior to performing the tests.

To obtain the dry density of the lightweight-insulating concrete, the oven dry weight should be determined initially using cylinders, similar to those prepared for the compressive strength testing, molded and cured the same as the compressive strength specimens. However, after 28 days, the specimens should be placed in an oven at 230 + 18

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### Self-Test Questions

1. What process makes the aggregate lightweight? \_\_\_\_\_
2. What two materials are used in lightweight aggregate? \_\_\_\_\_
3. Why is less water needed in cellular concrete? \_\_\_\_\_
4. True or False: Cellular concrete is slightly more difficult to cast than typical structural concrete. \_\_\_\_\_
5. What provides the insulating value in cellular concrete? \_\_\_\_\_
6. What has higher potential compressive strength: aggregate or cellular concrete? \_\_\_\_\_
7. True or False: Because of the air pockets in concrete, a fire resistant material needs to be added to the concrete for a one-hour fire rating. \_\_\_\_\_
8. If Type II cement is used, how will the water/cement ratio have to be altered to provide the same workability as Type I? \_\_\_\_\_
9. True or False: Conventional finishing tools and techniques cannot be used for lightweight concrete. \_\_\_\_\_
10. To pour an eight-inch-thick slab, what material is added to the lightweight concrete? Name two advantages of using this material instead of solid concrete. \_\_\_\_\_
11. True or False: Lightweight concrete typically cures faster than structural concrete. \_\_\_\_\_
12. What material can be used to help avoid shrinkage cracks in lightweight concrete? \_\_\_\_\_
13. Name two ways lightweight concrete is tested. \_\_\_\_\_

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degrees Fahrenheit (110 + 10 degrees Celsius) and weighed at 24-hour intervals until the loss of weight does not exceed 1 percent. Upon determining the oven dry weight and measuring the specimen, the dry density can then be calculated.

### Summary

IN SUMMARY, lightweight-insulating concrete fills can provide challenging circumstances to those individuals involved in roof installation activities. However, with proper pre-planning, design, material selection, and installation, lightweight-insulating concrete will serve as a sound suitable substrate in which to install the new roof system and provide the desired features expected from the project personnel.

**Karl Schaack**

*Karl Schaack, P.E., is the branch manager of Price Consulting, Inc., of Houston.*

*See page 87 for answers to the self test.*

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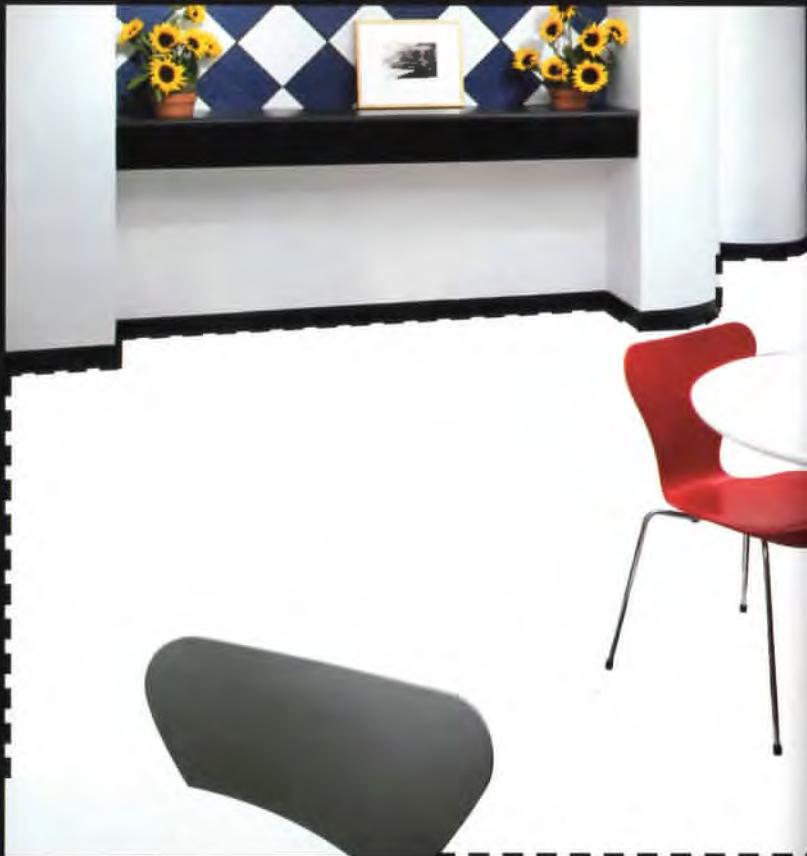


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## 1997 TSA Design Awards

Presented on these pages are the winners of the 43rd annual TSA Design Awards competition. The 15 projects include 13 Design Award winners and two winners of the TSA 25-Year Award. They were selected in June from among 164 entries by jurors Patricia Patkau of Vancouver; David Rinehart of Los Angeles; and Alejandro Diez of New York (see page 5 for more on the jury).

The winning projects show the range and diversity of architectural practice in the state: from an enormous office complex in Canada to a house on the prairie in South Texas, from townhouses in Houston to the Texas State Cemetery. Enjoy.





1



2



3

1 living room looking toward stairs coming down from glazed bridge

2 dining room, looking toward entry

3 An outside bridge leads to the main entry; beyond it a glazed bridge connects the house's two sections.

4 From the rear of the house, the master bedroom, at left, cantilevers out over the living room below.

5 The architects fabricated a light fixture of dacron, fir, and birch plywood for the dining room, seen here through window at entry.



4



# House in Two Parts

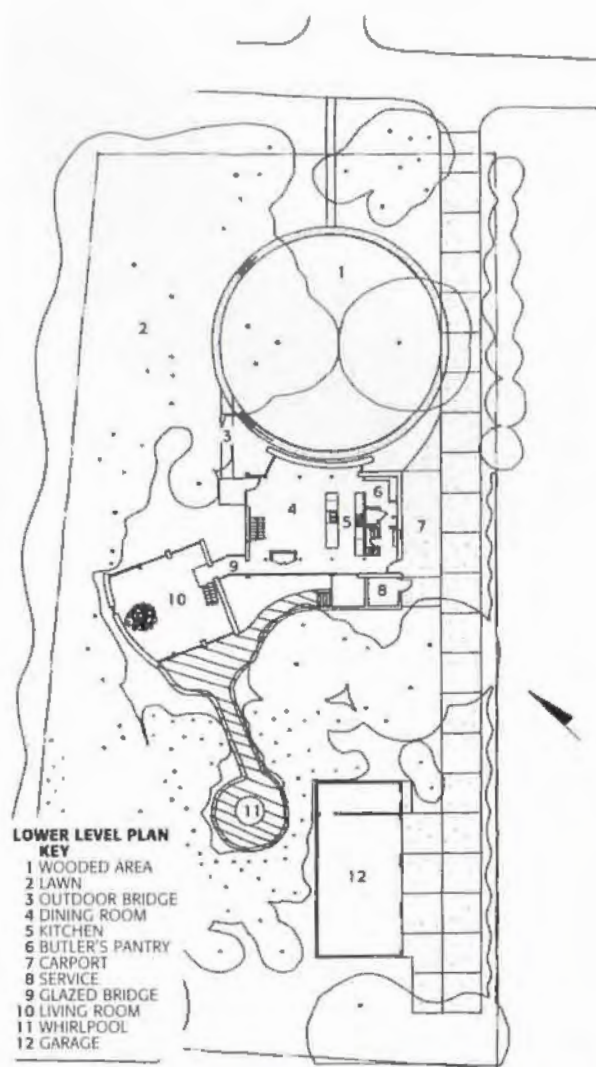
by Susan Williamson

THE LATORRE HOUSE by Cunningham Architects of Dallas, a 1997 TSA Design Award winner, is a house of several faces: at once public and private, outward-looking and inward-focused. The 3,500-square-foot house was designed for a single man with a variety of interests and requirements, the architects say. The hunter and fisherman wanted a lodge, the gourmet cook and entertainer wanted a kitchen, and the conservative businessman wanted a house that would fit into the neighborhood. The result is a house of various parts and of varied moods. The parts are contained in two separate volumes connected with a glazed bridge.

The more public part of the house includes an open kitchen and dining room on the first level with guest bedrooms above. These rooms sit behind one of two rubble walls built from limestone salvaged when a previous house on the lot was demolished. The inward-curving wall anchors one edge of the dining room and provides a sense of enclosure that is further enhanced by a pavilion-like structure of exposed columns, beams, and cross members. A bank of windows opens onto the back of the site and the warm-toned materials—glue-laminated beams and columns, cork floors, and a tongue-and-groove wood ceiling—glow in the natural light. The galley kitchen is screened from the dining room by a divider of steel and frosted glass fabricated by the architects.

Across the bridge and downstairs—stairs whose railing is an intricate assemblage of wrought iron created by artist David Sines—is the much more private living room. North and south window walls connect the room to the heavily wooded site. The second limestone wall, curving outward this time, provides a backdrop for a wood-burning stove. Upstairs from the dining room and across the bridge is the master-bedroom suite: sitting room, a wonderful set of built-in wardrobes, bathroom, and bedroom, connected again to the woods through banks of windows.

The house, with its hints of a 1950s sensibility, its richly textured and varied materials, and its openness to and relationship with the site, provides almost an overload of images and moods. It is a collage in the best possible sense: an assembly of diverse pieces where the whole is more than the sum of the parts. **TA**



**PROJECT** Latorre House, Dallas  
**CLIENT** Robert Latorre, Dallas  
**ARCHITECT** Cunningham Architects, Dallas  
**CONTRACTOR** Charles Hoback Construction  
**CONSULTANTS** MEP Inc. (mechanical, electrical, plumbing); James Smith (structural); Phil McEwin (grotto pool); Cunningham Architects (landscape)  
**PHOTOGRAPHER** James F. Wilson

## RESOURCES

**Structure:** Featherlite; **wall surfacing:** Featherlite, USC; **doors:** Simpson Mastermark, John Fitzgerald Millwork (custom pivot maple plywood); **floor surfacing:** Dodge (cork), Bentley (carpet); **roofing:** GAF; **insulation:** Owens Corning; **kitchen appliances:** Viking range, Subzero refrigerator, Bosch dishwasher; **custom steel handrails and steel pot rack:** David Sines; **lighting:** Flos, Lightolier; **plumbing and sanitary:** Kohler, American Standard, Speakman, Elkay; **heating and air conditioning systems:** Trane; **environmental control system:** Trane; **carpets/rugs:** Bentley; Daphne Perry, Architect; **lamps/portable lighting:** Artemide, Cassina; **furniture:** ICF, Max Aalto, John Fitzgerald Millwork, Knoll, ICF, Herman Miller; **blinds:** B & B Italia



# Wide Open Place

By Canan Yetmen

**PROJECT** Louisiana Place, Houston  
**CLIENT** Jones Lang Wootton, USA  
**ARCHITECT** Ziegler Cooper Architects, Houston  
**CONTRACTOR** LTB Consultants  
**CONSULTANTS** CBM Engineers, Inc. (structural); I.A. Naman + Associates (mechanical, electrical, plumbing); Coventry Lighting (lighting); Scott Architectural Graphics (graphics)  
**PHOTOGRAPHER** Aker/Zvonkovic Photography

- 1 One of two new escalators in the Louisiana Place project leads from the street level to the first-floor lobby.
- 2 The new two-story clear glass curtainwall reveals the life of the lobby inside.
- 3 Two corners of the existing building were carved out to create prominent entrances that enhance the streetscape.
- 4 Stainless steel plates connect the two-foot-six-inch interior structural "fins" that control wind-loading conditions.
- 5 The exterior of the 35-story building in downtown Houston is detailed with entrance canopies and sunscreen elements.
- 6 Interior canopies over elevator lobbies recall the exterior.

BRINGING AN OFFICE TOWER originally designed in the late 1970s into the late 1990s was the task of the renovation undertaken by Ziegler Cooper Architects of Houston. The result, the transformed 35-story, 875,000-square-foot Louisiana Place (see *TA*, May/June 1997, p. 14), is winner of a 1997 TSA Design Award. The building, sited prominently on the Louisiana Street corridor in Houston's central business district, needed updating in all public areas—lobbies, corridors, and restrooms—as well as the creation of retail space at the tunnel level and replacement of the exterior at the base of the building.

The renovation focused on redesigning the first two floors by connecting the two lobbies to create a large open volume and prominent entrances. The interiors, including the tunnel level, were completely gutted, with large portions of floor removed to open the space and accommodate new escalators. A structural clear glass curtainwall system two stories high gives a view into the lobby from the outside, and accentuates the feeling of openness. The predominantly cool blue and silver palate of the public spaces is warmed by the figured anigre wood veneer of the elevator lobbies and security consoles. An exterior vocabulary of silver-painted aluminum cladding, thermal-finish luna pearl stone with black accents, and stainless steel was chosen to complement the existing tower of glass and aluminum. "The success of this project, in our view, is the connection we were able to create between the tunnel and street," says Kurt Hull, principal of Ziegler Cooper. "We are pleased with the fact that we were able to redevelop an existing office building by responding to the context of the structure, and create an open and inviting feel to the building." **TA**



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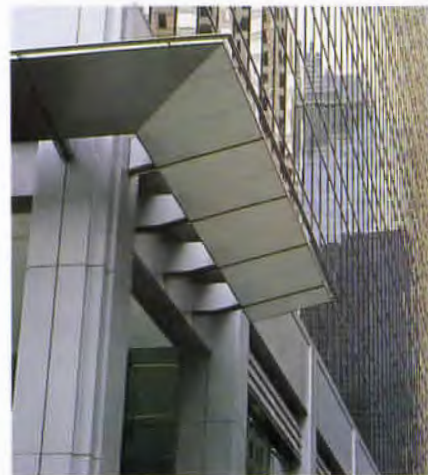




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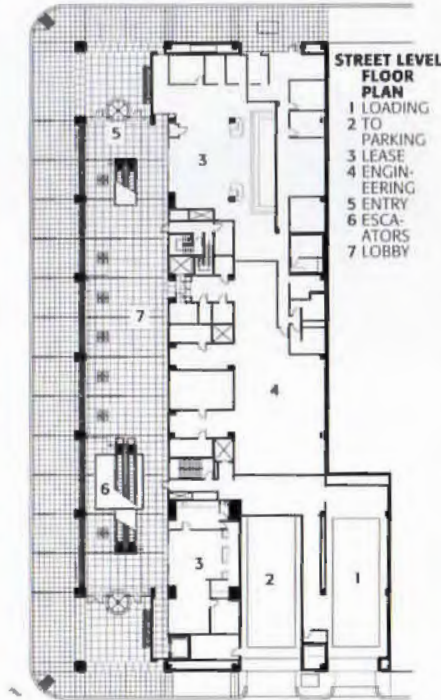
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**RESOURCES**

**Walls:** Myrex Industries; **wall surfacing:** Pilkington, Baker Metal Products, Metal Concepts, Met-Tec Inc.; **windows:** Amera Glass; **doors:** Crane, Royal Door Co., American Door Products, Metal Concepts; **floor surfacing:** Wausau Tile, Lucia, Armstrong; **ceiling surface/system:** Met-Tec Inc., Myrec Brothers, Tobin & Rooney; **roofing:** Nervastral, Inc.; **waterproofing/sealants:** Tremco; **partitions:** Lucia, Patella, Studs; **paint, stain:** Kynar, Polomyx, ICI Paint (Devco); **hardware:** Hager, Schlage, Norton; **smoke detector, fire alarm:** Notifier; **elevators, escalator:** Schindler; **handrails:** Arch. Metal Crafts; **lighting:** Metalux, Lightlier, Norbert Belfer, Staff, Edison Price; **electric distribution:** Elliptipar; **plumbing, sanitary:** American Standard Co., Sloan Valve Co., Bobrick Co., Halsey Taylor, Reliable Automatic Sprinkler Co.; **carpets/rugs:** Mannington Commercial, Fortitude Karastan Contract; **base boards, heaters:** Emerson; **structural glass:** Pilkington





**PROJECT** Great Northwest Branch Library, San Antonio  
**CLIENT** San Antonio Public Library, San Antonio  
**ARCHITECT** Lake/Flato Architects, Inc., San Antonio  
**CONTRACTOR** Kunz Construction Co.  
**CONSULTANTS** Structural Engineering Associates, Inc. (structural engineering); HMG & Associates, Inc. (HVAC); M.W. Cude & Associates (civil engineering)  
**PHOTOGRAPHER** Paul Hester and Lisa Carol Hardaway

# Book Warehouse

By Jonathan Hagood

COMPLETED IN THE FALL OF 1995, the Great Northwest Branch Library is a 12,000-square-foot addition to San Antonio's public library system. Needs included simple, functional work areas, ample lighting, and ease of visual surveillance. The building (see *TA*, July/August 1996, pp. 52-55) is another in a growing list of design-award winning projects from San Antonio-based Lake/Flato Architects, ranging from residential and commercial structures to community projects.

The architects predicated the design of Great Northwest upon simplicity and order. The geometry of the building creates a datum, wherein stacks and rooms occur in the low spaces while reading areas occupy the taller spaces between—identified by their metal, shed-like roofs that provide clerestory light. From the outside, the limestone walls delineate the perimeter of the library and define the rectangular interiors. Lake/Flato's use of clear and logical forms, a simplified mechanical system, and a limited materials palette were in part due to budgetary constraints, but these elements also create an elegantly simple and useful "warehouse"—in the words of the architects—for books. **TA**

## RESOURCES

**Wood trusses:** TrusJoist  
**MacMillan;** gypsum  
**sheathing:** Gold Bond;  
**corrugated siding:** MBCI;  
**windows:** Architectural  
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 Roddis Lumber, Curies; **VCT:**  
 Azrock; **rubber base:** Roppe;  
**ceilings:** Vulcraft; **roofing:**  
 Berridge; **waterproofing:**  
 Sonneborn; **insulation:**  
 Guardian Fiberglass, Atlas  
 Energy Products; **paint and  
 stain:** Monarch; **hardware:**  
 Hager, Schlage, Rixson, Adams  
 Rite; **kitchen equipment:**  
 Kenmore; **security and fire  
 systems:** Simplex; **lockers:**  
 Interior Steel Equipment;  
**louvers:** American Warming;  
**lighting:** Hubbell; **water  
 closets:** Kohler; **plumbing  
 fittings:** Chicago Faucets;  
**flush valves:** Sloan; **toilet  
 stalls:** Bobrick; **HVAC  
 systems:** Trane; **carpets:**  
 Mohawk; **lamps:** General  
 Electric; **furniture:** Baring  
 Enterprises, Inc.



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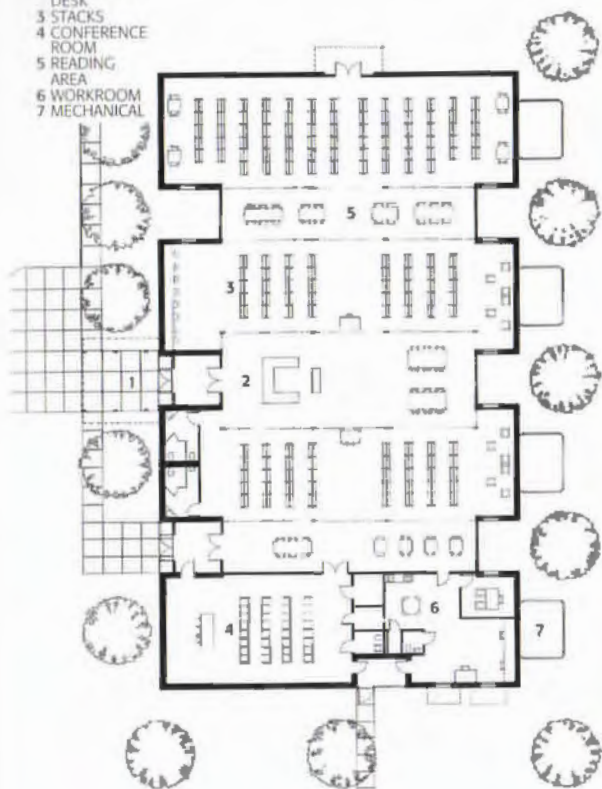


3



## FLOOR PLAN

- 1 ENTRY
- 2 CIRCULATION DESK
- 3 STACKS
- 4 CONFERENCE ROOM
- 5 READING AREA
- 6 WORKROOM
- 7 MECHANICAL



1 Industrial forms rise above the limestone walls to demarcate the reading spaces between the stacks.

2 As a nod to the library's community, the entrance faces the neighborhood and not the adjacent arterial street.

3 Reading spaces between the stacks benefit from a taller space and more natural light.

4 Clerestories bring softened, indirect light into building interiors.

5 The library combines rectangular stone walls and shed-like steel forms.

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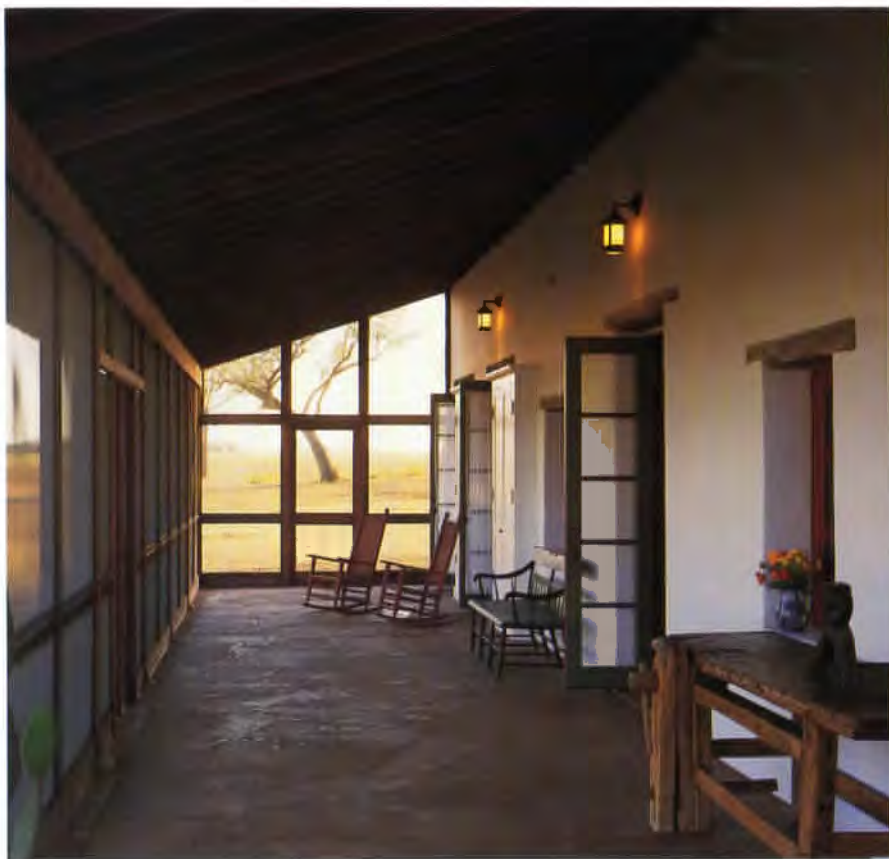


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**PROJECT** Butcher Ranch Residence, Gonzalez County  
**CLIENT** Milton C. Butcher, San Antonio  
**ARCHITECT** Michael G. Imber, Architect, San Antonio  
**CONTRACTOR** DFR Construction  
**PHOTOGRAPHER** Paul Bardagjy



## Little House on the Prairie

By Kelly Roberson

DESIGNED AS A WEEKEND RETREAT for 70-year-old Milton Butcher, a photographer, wood boat builder, and art collector, the Butcher Ranch Residence was only the second project Michael Imber of San Antonio completed after starting his own firm, and marks the firm's first TSA Design Award. Located on 700 acres of prairie in Gonzalez County, the 1,960-square-foot house forms a courtyard with an existing barn, several full-grown oak trees, and a 100-year-old grapevine. The house, oriented to the southeast to capture breezes and maximize views, was designed as a sculptural object in the landscape, says Imber, and acts as a screen through which you must pass for a full view of the prairie. For Imber, the house "almost reads like a ship": The chimney anchors one end and the interior stair anchors the other, acting as a bulkhead to separate public from private.

The aesthetics came from Butcher's acute eye and minimalist approach, says Imber, as well as a sensitivity to landscape and client needs. Materials, such as the exterior painted plaster, recall the German immigrant vernacular of Butcher's heritage and reflect the history of the region. A redwood sleeping porch, with two beds tucked away into closets, and a kitchen "shed" are utilitarian and add a personal touch and scale. For economy of space, wardrobes in the bedroom and entry, which screen the high wood ceilings of the living room and wrap into the kitchen, provide the only storage space, and the bathrooms are tucked under the stair. The windows are small, and most placed high, to allow room for the art collection and to let light drift across the walls from above. The hand-carved fireplace evokes the property's grapevine in a continuous effort to relate the details back to the site, says Imber.

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#### RESOURCES

**Cabinets:** Hallmark Cabinetry; **concrete slab:** Oscar Villarreal; **lumber, millwork:** Allen & Allen Co.; **stucco finish:** Genuine Lath & Plaster Co. Inc.; **finish drywall:** Skip Trowel Finish; **drywall:** Dennis Richter; **custom mahogany windows:** Bennet Garwood; **doors:** Bennet Garwood, Allen & Allen Co.; **Colorado red flagstone:** Garza Masonry, Stone Materials; **long leaf pine:** Lee Tousignant; **roofing:** Mangold Roofing; **insulation:** Owens Corning; **paint:** Benjamin Moore Paints; **hardware:** Schlage; **heating, air conditioning systems:** Trane; **plumbing:** Kohler, Delta, Peerless



6

- 1 Details in the living room include a hand-carved limestone fireplace lintel, Colorado sandstone floors, custom iron chandeliers, and a long-leaf pine ceiling.
- 2 The screened porch at the rear of the house looks out onto the prairie beyond.
- 3 from the front, looking at the redwood kitchen shed
- 4 The stair acts as a separation between public (kitchen, living room) and private (bedroom).
- 5 The sculptured plaster forms of the house took their cue from vernacular elements used by German immigrants.
- 6 The screened porch fills the length of the house; a stair to the side leads directly to the guest bedroom upstairs for added privacy.



# Not Your Standard Fare

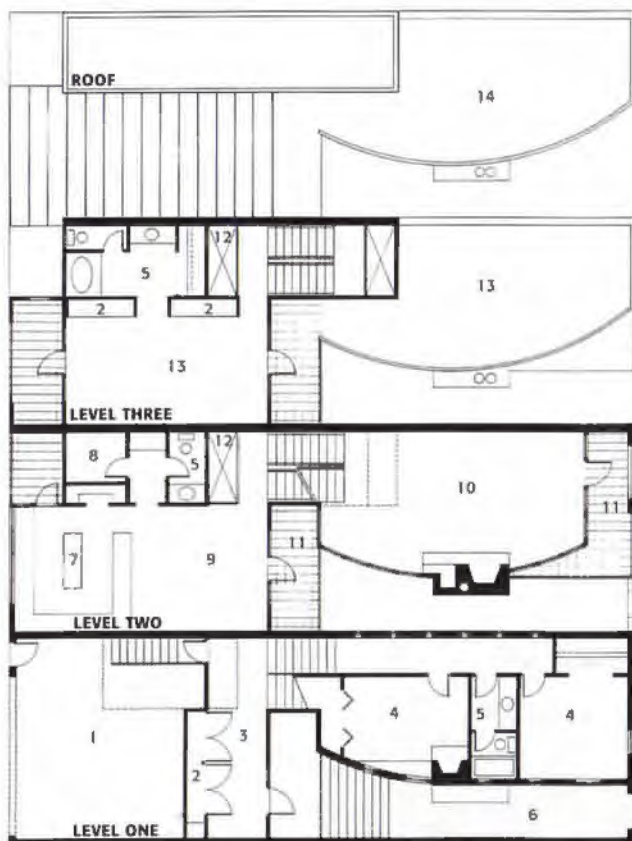
By Kelly Roberson

IN A SLICE OF A RESIDENTIAL NEIGHBORHOOD facing Memorial Park, on the western edge of central Houston, are the Haskell Street Townhouses, designed by Natalye Appel Architects of Houston and recipient of a 1997 TSA Design Award. For Appel, the project was a chance to design for a client—a landscape architect—who gave her freedom and encouragement, who “knew they [the townhouses] would sell if it was good design,” she says.

The floor plan of the side-by-side, 3,000-square-foot, split-level townhouses maximizes park views across the depth of the space, while preserving the character of the site, says Appel. Designed mainly for professionals with a need for a flexible arrangement, the townhouses lift up the living room over a ground floor bedroom/office. The dining room and kitchen are one-half level up from the living room, over the garage and mechanical at the rear, affording views through the entry and 15-foot-high front space. The curve of the courtyard window wall pulls the eye towards a view of the park. The interiors are simple and clean, with white walls, clear finish cabinets, lightly finished wood floors, and slate as accent around the fireplace and in the bathrooms and bar. Spaces that didn't need as much light—stairwells, bathrooms, pantry, and laundry—were tucked in around the party wall.

For Appel, the outside spaces, and the residents' connection to them, were just as important as the interiors: Each floor has a terrace overlooking the park, and a 600-square-foot roof terrace is located over the living room, a place Appel calls a “a space up in the trees.” The relationship with the park is further emphasized with a front garden, landscaped by the client, that enables residents to be a part of a public area while maintaining a semi-private space and feeling.

TA



- |                   |               |
|-------------------|---------------|
| <b>FLOOR PLAN</b> | 8 UTILITY     |
| 1 GARAGE          | 9 DINING      |
| 2 CLOSET          | 10 LIVING     |
| 3 ENTRY           | 11 BALCONY    |
| 4 BEDROOM         | 12 LIGHT WELL |
| 5 BATHROOM        | 13 MASTER     |
| 6 ENTRY           | 13 BEDROOM    |
| 7 KITCHEN         | 14 ROOF       |
|                   | TERRACE       |

**PROJECT** Haskell Street Townhouses, Houston  
**CLIENT** The Memorial Design Group, Inc., Houston  
**ARCHITECT** Natalye Appel Architects, Houston  
**CONTRACTOR** Carl Construction Co.  
**CONSULTANTS** Matrix Structural Engineers (structural); Karen Rose Engineering & Surveying (civil); The Office of James Burnett (landscape); Diana Martin (interiors/finishes)  
**PHOTOGRAPHER** Richard Payne unless noted







2

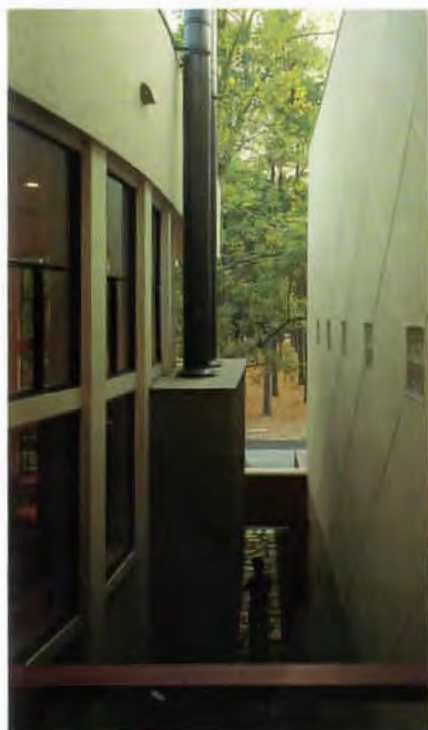
Natalie Appel



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Natalie Appel

- 1 the front of the Haskell Street Townhouses
- 2 The kitchen and service areas are in the back of the townhouses, overlooking the alley access.
- 3 The roof terrace, above the living room, looks over Memorial Park.
- 4 Front windows open up the townhouses to the park.
- 5 The curved wall looks out over the entry and garden toward the park.
- 6 Bounded by the party wall, the entry court looks up onto two terraces.

#### RESOURCES

**Wall surfacing:** Atlantic Partners, Eagle Concrete Products; **windows:** Champion Windows; **skylights:** Gulf & Babco; **doors:** Lonestar Plywood & Door; **floor surfacing:** Keystone Concrete, Houston Hardwood Floors; **ceiling surfacing/system:** Kurio Drywall; **cabinets:** Mecanus, Francois W. Desruisseaux





1 St. Pius X Fellowship Hall, looking through the lobby and into the hall from the courtyard

2 The tall lobby wall, which faces the courtyard, is detailed with sunshades and louvers.

# Symbolic Orchard

by Jenna Colley

THE CONGREGATION AT ST. PIUS X Catholic Church in San Antonio had no idea that their new fellowship hall, designed by Kell Muñoz Wigodsky Architects/Jerry Theis & Associates Joint Venture of San Antonio, could be completed under budget and at the same time exceed their expectations. But this 1997 TSA Design Award winner proved to do just that: It is an example of beautifully executed design reflecting both forethought and spirituality.

Faced with the challenge of linking an existing church built in 1977 and a school built in 1959, the architects focused their attention on a courtyard shared by both of the buildings. The courtyard proved to be the main design inspiration, serving as a natural tie between the divinity of nature and the divinity of religion. Architect Dan Wigodsky wanted the lobby and hall interior to echo this connection, creating what he calls a "symbolic orchard."

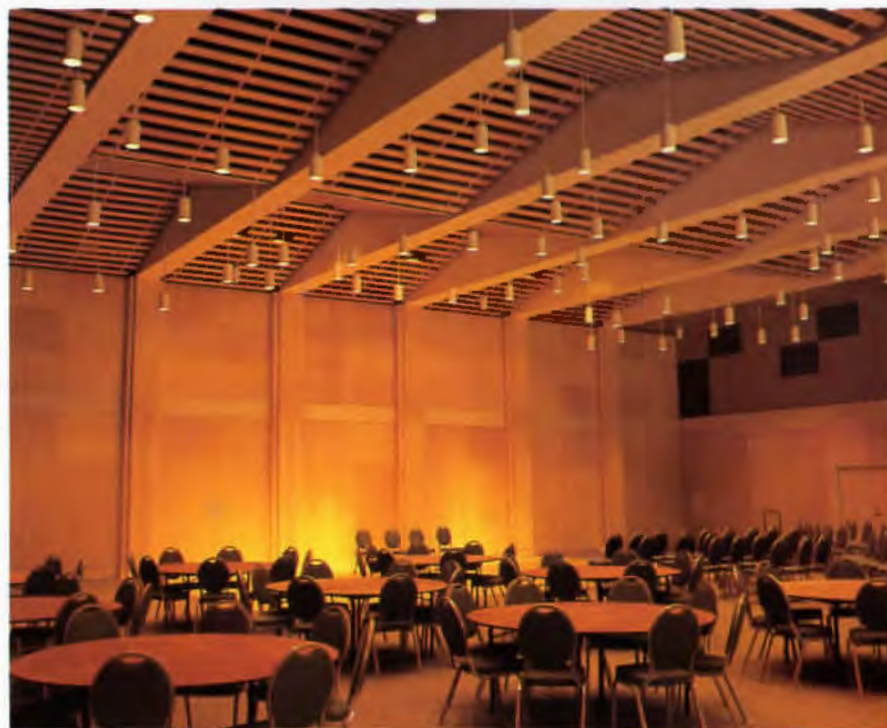
The architects achieved this by creating a long lobby, with tall windows that not only offer a view of the courtyard but also allow an easy transition from the garden without to the garden within. Daylight spilling in through the windows creates shadows on a rich purple wall in the lobby; the constantly changing shadows provide both a visual accent and a connection to the natural world.

Stained glass in the lobby doors is etched with plant motifs, each representing a different religious symbol. The lobby ceiling is constructed of overlapping panels of wood of different colors. In the main hall, wood paneling is used again on the ceiling, as well as on the walls; however, the geometry of the ceiling installation there suggests a transition from the emphasis on symbol in the lobby to an emphasis on form in the hall. Also in the hall, circular lights hung at different heights simulate stars in the night sky.





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Photograph here and below left by Dan Wigodsky

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3 Three sets of double doors open the fellowship hall lobby to the courtyard, allowing an easy flow between outdoors and indoors.

4 The warm materials used on the interior of the hall provide an inviting atmosphere for its users.

5 The architects wanted to create a connection between the well-used outdoor plaza at St. Pius X and the new fellowship hall.

The hall is connected to the school on the east and the church on the west, allowing for functional movement and activity between the two. Several meeting and activity rooms border the main hall.

If a religious structure is to serve those who worship there, it must be part of the experience, the architects say. The St. Pius X Fellowship Hall does that by combining the spiritual with the natural. **TA**

**PROJECT** St. Pius X Fellowship Hall, San Antonio  
**CLIENT** The Catholic Archdiocese of San Antonio  
**ARCHITECT** Kell Muñoz Wigodsky Architects/Jerry Theis & Associates Joint Venture, San Antonio  
**CONTRACTOR** The Keller-Martin Organization  
**CONSULTANTS** Project Control of Texas (project manager); Danysh Lundy & Associates, Inc. (structural); HMG & Associates, Inc. (mechanical, electrical, plumbing); Boner & Associates, Inc. (acoustical)  
**PHOTOGRAPHER** R. Greg Hursley

**RESOURCES**

**Structure:** Vulcraft; **wall surfacing:** Acme; **windows:** Kawneer; **doors:** Kawneer, Weyerhaeuser, Won Door Corp.; **floor surfacing:** Alamo Concrete Products, Prince Street, Venic Art Terrazzo Co.; **ceiling surfacing/system:** Armstrong; **roofing:** Allied Signal; **insulation:** Owens Corning; **paint and stain:** ICI Paints (Devoe); **hardware:** Schlage; **elevators:** Dover; **lighting:** Lithonia; **plumbing and lavatory:** Kohler, Bradley; **air-conditioning system:** York, Magic Air





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1 The massive presence of the visitors center anchors the western edge of the site.

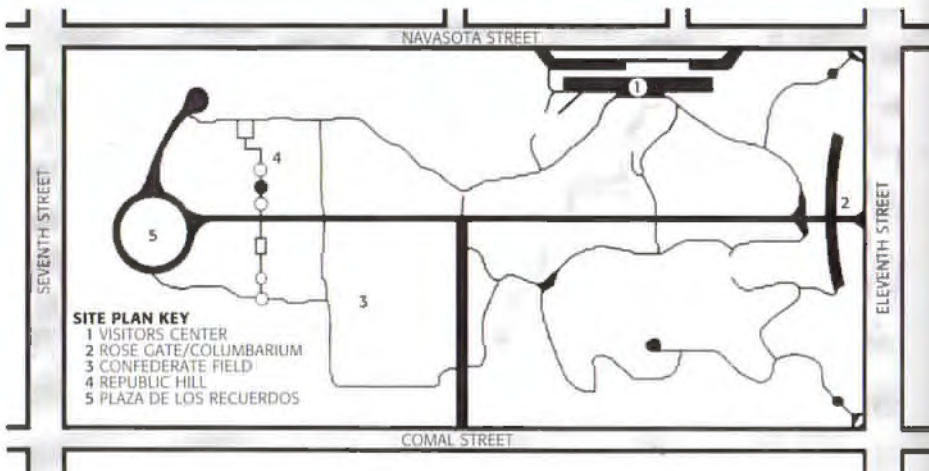
2 Natural light enters the visitors center gallery through small floor-level openings.

3 The Plaza de los Recuerdos is composed of

a circle of large stones centered on a Texas flag.

4 The formal entry to the cemetery is modeled on a gate at the Texas State Capitol.

5 The long visitors center is organized as two sections connected by a central dogtrot-like opening.



4





# A Place of Pride

by Jonathan Hagood

AFTER THREE YEARS OF HARD WORK, the Texas State Cemetery in Austin opened the doors in March 1997 to a new visitors center, a fresh landscape, and restored monuments and landmarks. Lake/Flato Architects of San Antonio spearheaded the award-winning project, including design of the visitors center (see *TA*, May/June 1997, pp. 12-13). The work was begun at the behest of Lt. Gov. Bob Bullock who wanted people to feel "reverence, respect, dignity, and honor for those buried here and the people of Texas."

The cemetery, which was established by the Texas Legislature in 1851, had by the 1980s fallen into a state of general disrepair. A master plan developed by Lake/Flato called for a reorganization of the grounds, including construction of the new visitors center. The building, stretching along the western edge of the site, now provides a focal point for the restored cemetery. The center houses administrative offices and a gallery containing exhibits designed by Douglas/Gallagher of Houston (see *TA*, July/August 1997, pp. 48-49). The building is a massive, low-slung limestone presence, punctuated on the street side only by a central opening through which the cemetery grounds can be seen and on the cemetery side by small floor-level windows.

The formal entry to the grounds is through the Rose Gate, a replica of the gates on the Texas State Capitol grounds, flanked by a 265-foot-long columbarium. Also newly constructed was the Plaza de los Recuerdos—a circle of roughly cut standing stones dedicated to important Texans who are not buried in the cemetery. A series of ponds and replanted native grasses, wildflowers, and trees cover much of the grounds, and winding paths provide an opportunity for visitors to walk through history.

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**PROJECT** Texas State Cemetery, Austin  
**CLIENT** State of Texas  
**ARCHITECT** Lake/Flato Architects, Inc., San Antonio  
**CONTRACTOR** Silventon Construction Company Inc.  
**CONSULTANTS** JEK, Inc. (landscape); Jose I. Guerra (engineer); Laura David (Texas Parks & Wildlife project manager); Emily Little Architects (project manager); Gerron Hite (Texas Historic Commission Monument Renovation); Douglas/Gallagher (interpretive design and way finding); Sue Moss (historian)  
**PHOTOGRAPHER** Lake/Flato Architects, Inc.

## RESOURCES

**Structure:** Dryden Stone; **windows:** Marvin Windows; **floor surfacing:** Dryden Stone; **paint and stain:** ICI Paints (Devoe); **hardware:** Dorma, Hager, Adams Rite; **special equipment:** G.E. Electric; **furniture:** Taylor, Kimball





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1 Skylights were inserted above circulation paths to add light and provide visual identification of the circulation zones.

2 Interior hallways feature bright colors and street signs.

3 interior of the new entry area

4 An undulating glass wall, placed over the original facade, marks the entry to the new headquarters building.



# Neighborhood Office

by Jonathan Hagood

NORTHERN TELECOM's new global corporate headquarters in Brampton, Ontario, is a small city complete with piazzas, street signs, and neighborhood coffee shops. The award-winning design by Hellmuth, Obata + Kassabaum of Houston is a conversion of 470,000 square feet of high-bay manufacturing space—the equivalent of a 25-story office tower spread over a single floor—and a renovation of 346,000 square feet of existing office space into the telecommunications company's new combined headquarters. The facility houses operations such as the senior executive staff, corporate communications, finance, human resources, information systems, and legal and marketing, and replaced previously separate Nortel facilities in the Toronto area.

The development of a pedestrian streetscape and circulation system reduced the scale of the project and gave a sense of order to the office complex. The 3,000 employees at Brampton Centre are organized into what the architects call neighborhoods made up of work groups that need to communicate and interact with each other. Implementation of the concept meant including street signs, different floor and overhead treatments for the circulation paths, and frequent streetside benches. Also, piazzas with trees, open eating areas, and "public" buildings—facilities such as cafés, retail stores, and banking kiosks—occur at street intersections and building entrances.

This cityscape lies within the former manufacturing building. HOK altered the envelope to provide views to and from the outdoors and to bring in more of the weak, northern-latitude light. For similar reasons, the renovation inserted skylights over the streets, which also helped visually identify the circulation paths. The architects redesigned the public entry—the signature piece of the building—as an undulating glass wall fronting portions of the original industrial facade. Internal streets, trees, and offices are visible through the new transparent facade.

While bright, upbeat colors and the repeated small-scale structures break up the immense space, these design elements also create a sense of unity throughout, like parts of a city that have a similar character yet a different feel depending upon the neighborhood or street on which you find yourself. **TA**

**PROJECT** NORTEL Brampton Centre, Brampton, Ontario, Canada  
**CLIENT** Northern Telecom Canada, Ltd., Real Estate  
**ARCHITECT** Hellmuth, Obata + Kassabaum, Inc., Houston  
**ASSOCIATE ARCHITECT** Bregman + Hamann Architects, Toronto, Canada  
**CONTRACTOR** The Jackson-Lewis Company  
**CONSULTANTS** Caruother & Wallace Limited (structural); Smith & Anderson Consulting Engineering (mechanical & plumbing); Mulvey & Banani International, Inc. (electrical); Marshall Mackin Monaghan (civil); Herman Miller Canada, Inc. & Steelcase Canada Limited (furniture)  
**PHOTOGRAPHER** Gary Quesad, Hedrich Blessing Photographer

## RESOURCES

**Wall surfacing:** Sota Glazing; **skylights:** Sota Glazing; **doors:** Sota Glazing, Toronto Door & Hardware; **floor surfacing:** Gordon T. Sands, Toronto Marble & Terrazzo; **partitions:** Herman Miller; **hardware:** Best Lock; **signage:** WSI; **carpets/rugs:** Gordon T. Sands; **furniture:** Herman Miller; **elevators:** Dover; **plumbing and sanitary:** American Standard



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5 existing conditions in the high-bay space

6 Public spaces, such as this dining area, are placed

at street intersections and help break down the scale of the immense building.

7 first-floor plan



- 1 A pool, drainable but not recirculated, cools breezes as they sweep across and into the courtyard.
- 2 The loggia-lined courtyard is focused on a central pool; smaller cisterns anchor each corner.
- 3 The elliptical main room is set at an angle to the more rectilinear courtyard section of the house.
- 4 Horizontal steel framing in the spaces between the buttresses in the main room allows for unobstructed river views.
- 5 connection between main room and courtyard loggia



# On the River

by Susan Williamson

A COTULLA RANCH HOUSE by Lake/Flato Architects of San Antonio includes many of the elements that have come to be expected from the firm's award-winning houses. However, with this project, winner of a 1997 TSA Design Award, the firm pushes the boundaries of its past work, refining some elements and recombining others to create a whole that stands on its own.

The 4,424-square-foot house, located between San Antonio and Laredo on the banks of the Nueces River, looks to both the river and to the surrounding arid flatlands for its inspiration. Two screened rooms open the house to the outdoors. At the river end, an elliptical structure composed of heavy stone buttresses and panels of screen ties the house to the river bank. The depth of the buttresses was necessary, says architect Ted Flato, to allow space for the swing of glass shutters used to seal the room during cold weather. Screened rooms are always the most-used areas of the houses the firm designs, Flato says, so in this case they made one that could be used year round. A dramatic light monitor tops the metal-roofed main room. At the opposite end of the house, a more conventional screened room bows outward toward adjacent pastures.

The rest of the house is composed of four L-shaped stucco sheds organized around a large courtyard anchored at each corner with a small cistern-like pool where rainwater runoff is deposited. An even larger pool—the architects call it a stock pond—is located directly across the courtyard from the main entrance, providing a break in the courtyard's enclosure, necessary to keep out deer and other wildlife. At the entry, a large-scale arbor—Flato describes it, in what he calls ranch vernacular, as a “truck” arbor—will provide shade for parked vehicles when recently planted vines grow to cover it.

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#### RESOURCES

**Structure:** Vestal Steel Specialties; **wall surfacing:** Lone Star Stucco, Alamo Cement, Amico Mtl. Lath; **windows:** Pella; **clerestory:** Kawneer; **doors:** The Koehler Co.; **insulation:** Manville; **paint and stain:** Sherwin Williams; **hardware:** Hager, Accurate, Valli & Colombo, Omnia; **special equipment:** Kitchen Aid, Subzero, Maytag, Dacor, National Guardian; **lighting:** Graham Martin, Lithonia, Capri; **electric distribution:** Square D. Co.; **plumbing and sanitary:** Universal Rundle, Kohler, Speakman, Delta, State; **air-conditioning system:** Carrier

**PROJECT** *A Cotulla Ranch House, La Salle County*

**CLIENT** *Anonymous*

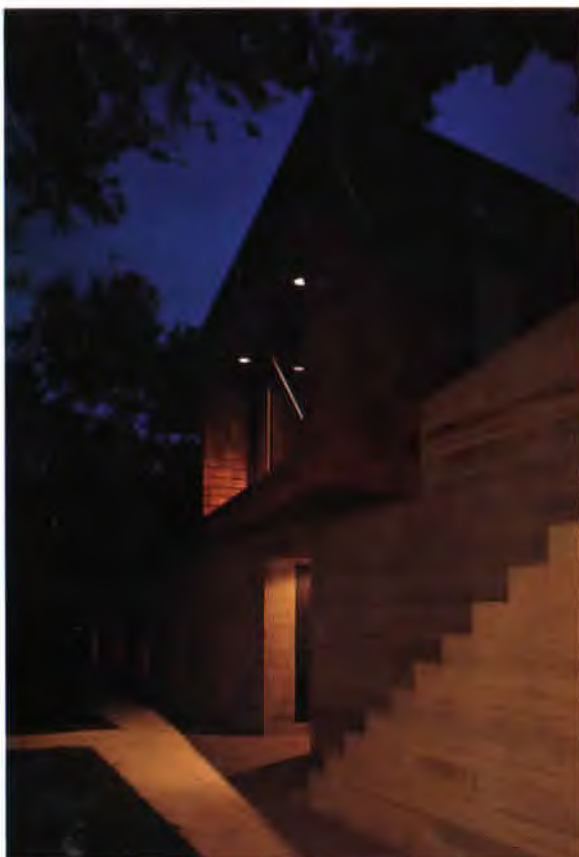
**ARCHITECT** *Lake/Flato Architects, Inc., San Antonio*

**CONTRACTOR** *The Kobler Company*

**CONSULTANTS** *Reynolds-Seblattner-Cbetter-Roll, Inc. (structural engineering); Lozano-Wilson & Associates; Comfort Air (mechanical engineering)*

**PHOTOGRAPHER** *Michael Lyons*





1

**PROJECT** Gatehouse Studio and Other Renovations, Corpus Christi

**CLIENT** Mark and Janet Hulings, Corpus Christi

**ARCHITECT** Richter Associates Architects, Inc., Corpus Christi

**CONTRACTOR** Black Brothers Construction, Inc.

**CONSULTANTS** Wally R. Wilkerson (structural); PSI (geotechnical)

**PHOTOGRAPHER** David R. Richter, FAIA



2

## Modernist Makeover

By Canan Yetmen

1 The new studio at night

2 The studio's largest window is oriented inward, overlooking the house, courtyard, and greenhouse.

3 The greenhouse, at left, is a relic from a farmhouse located on the site prior to the creation of the subdivision and the building of the house.

4 The new carport echoes the shingles of the original house and incorporates copper detailing in the trellis supports.

5 The addition of concrete pilasters and copper-clad hurricane shutters breaks the visual monotony of the original shingles.

RICHTER ASSOCIATES ARCHITECTS' renovation of a 1970s modernist shingle-style house in Corpus Christi is the winner of a 1997 TSA Design Award. The project included construction of a new carport and studio, designed to define an entry space for the existing courtyard. Extensive modifications were performed on the interior of the house, including renovation of bedrooms, kitchen, and dining areas, as well as new landscaping and paving of the courtyard.

The exterior of the L-shaped house was originally clad entirely with wood shingles, making the building appear flat and too homogenous. To visually support the composition of the house, Richter Associates added new texture and color by highlighting design elements with pre-weathered copper cladding. Board-formed concrete pilasters anchor the structure and contrast the lightness of the other two materials. The copper cladding, its blue-green patina echoing the nearby ocean, was chosen for its ability to stand up to the constant humidity and pounding winds of the coastal bend.

The original design of house, courtyard, and greenhouse lacked a fourth element to enclose the space and provide a well-defined entry. The gatehouse creates covered parking spaces, a parking court for guests, a new guest room or study, and provides a spatial anchor for the courtyard. The study is oriented inward, its largest window looking back over the house and courtyard. Shingles on the gatehouse exterior echo the original material of the house, and copper inlays supporting the trellis inject the patina of the renovation, visually tying old and new together.

TA

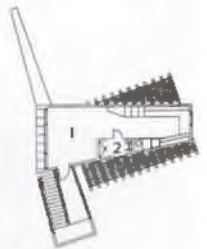




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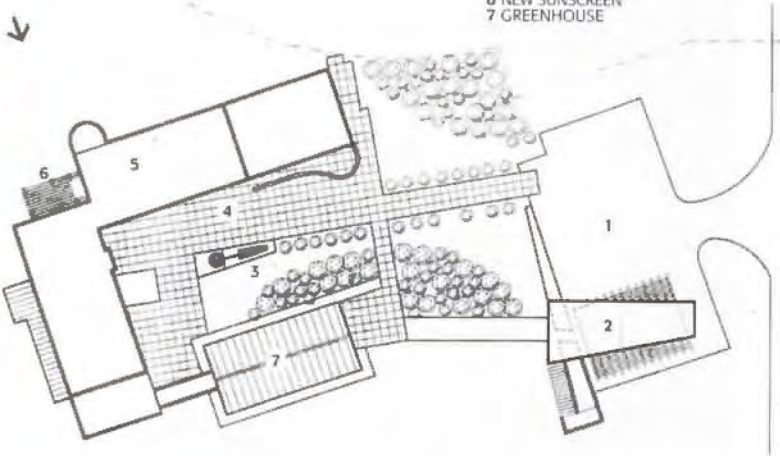
**FIRST FLOOR PLAN**  
 1 STUDIO  
 2 BATHROOM  
 3 GREENHOUSE  
 4 FAMILY ROOM/KITCHEN  
 5 DINING ROOM  
 6 GREAT ROOM  
 7 MASTER BEDROOM



**SITE PLAN**  
 1 DRIVEWAY  
 2 STUDIO/CARPORT  
 3 NEW FOUNTAIN  
 4 NEW PATIO/COURTYARD  
 5 HOUSE  
 6 NEW SUNSCREEN  
 7 GREENHOUSE



4



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**RESOURCES**  
**Structure:** Ingram Ready Mix, Western Steel Co., MG Building Material, Inc., C.C. Gasket & Packing Co.; **wall surfacing:** MG Building Materials, Inc., Revere Copper Products, Inc.; **windows:** Pella; **floor surfacing:** MG Building Materials, Inc.; **roofing:** Haeber Roofing Co.; **paint and stain:** ICI Paints (Devroe)





**PROJECT** *House with a Sky View, Parker*  
**CLIENT** *Name withheld*  
**ARCHITECT** *Max Levy, Architect, Dallas*  
**CONTRACTOR** *Travis and Travis*  
**CONSULTANTS** *Bill Walker (structural engineer); David Rolston (landscape architect); Bonick Landscaping (landscaping contractor)*  
**PHOTOGRAPHER** *Craig Blackmon*

#### RESOURCES

**Structure:** East Texas Truss; **wall surfacing:** STO, AK Steel, USG; **windows:** Pella; **skylights:** Skyline; **doors:** Dallas Door & Supply, Overhead Door Co.; **floor surfacing:** Dal Tile; **roofing:** J.P. Stevens; **waterproofing/sealants:** TREMCO; **paint and stain:** ICI Paint Stores (Glidden); **hardware:** Stanley, Baldwin; **lighting:** Artemide, Modular, Lumiere, Akari; **plumbing:** Kohler, Qll London, Porcher, Speakman; **air conditioning system:** Carrier, Titus; **furniture:** Ligne Roset, Richard Schultz

# Above and Beyond

By Jenna Colley

ARCHITECT MAX LEVY UNDERSTANDS that architecture, even in its most elegant and calculated form, must still pay homage to the uncontrollable elements of nature. It is this understanding that made his project, *House with a Sky View*, a winner of a 1997 TSA Design Award.

Nestled among the shallow pastures of Parker, north of Dallas, the house is anchored by low walls that form a small parking court. This forecourt is opened to the north and contains gridded clusters of crepe myrtle trees, paving blocks, grasses, and low growing ground cover. Great care was taken to secure the view of the drive from the kitchen window and dining room. Levy's use of the Texas sky resonates throughout the entire project. "One of architecture's most elementary acts is the framing of a view . . . and that's about all this house is about," says Levy.

Gray-green slate paves the breezeway of the house, while a screened porch projects above the roof line. Bright light forms curving shadows on the interior of the oculus, enhancing the intensity of the blue sky by contrasting with the lighter stucco finish. A wide glass entry door located off the breezeway pivots open to a small vestibule included within the single volume of the interior of the house. Continuous ceiling and floor planes extend from the entrance to the bedroom, opening to three enormous skylights suggested by the rooftop solids. The skylights modulate the light, creating a space that is both dynamic and vibrant. Contrast plays a fundamental role in the interior of the house. Finished in gray basecoat plaster, the texture of the fireplace contrasts with the smooth surface of the painted walls.

TA



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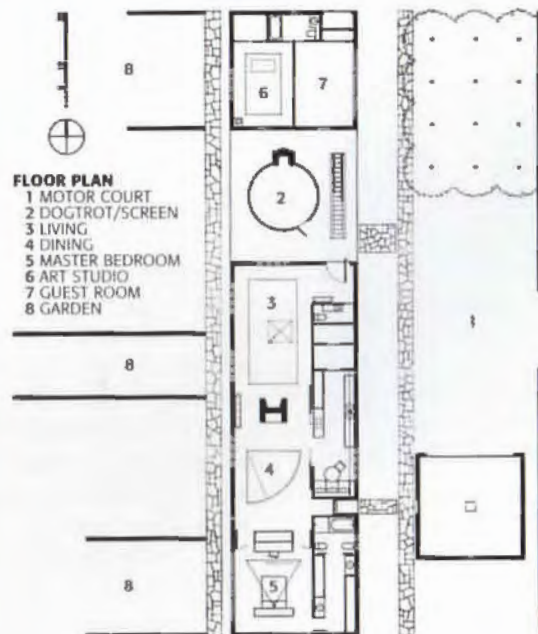




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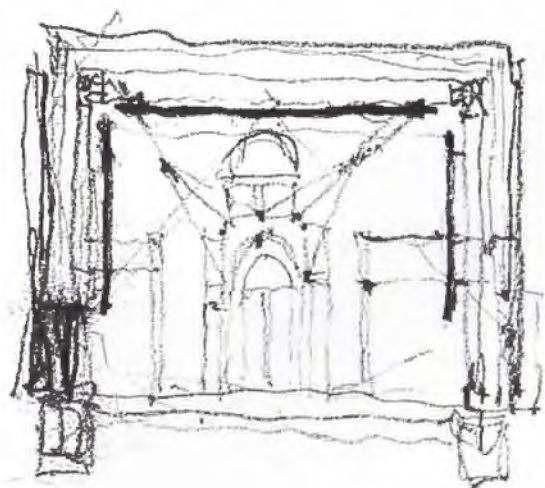
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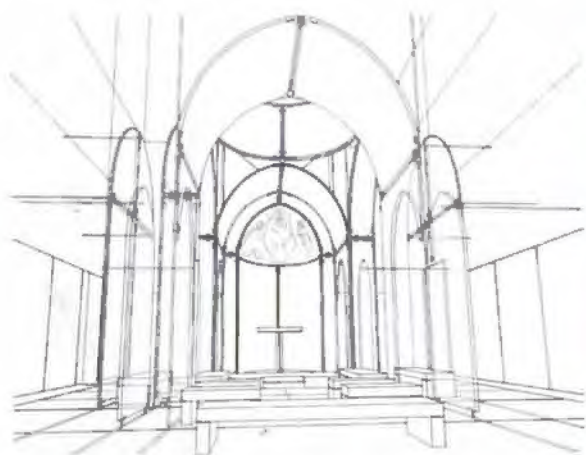
**FLOOR PLAN**  
 1 MOTOR COURT  
 2 DOGTROT/SCREEN  
 3 LIVING  
 4 DINING  
 5 MASTER BEDROOM  
 6 ART STUDIO  
 7 GUEST ROOM  
 8 GARDEN

- 1 A triangular skylight floods the bedroom with natural light.
- 2 The gardens at the back of the house are divided by long, low walls of varying lengths.
- 3 An exterior stair leads to the roof deck.
- 4 Light through the skylights is controlled with sliding panels of wood-framed sail cloth.





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Jack Poitelle/ESTO, Photographer

4

**PROJECT** Byzantine Fresco Chapel Museum, Houston  
**CLIENT** Byzantine Fresco Foundation, Houston  
**ARCHITECT** Francois deMenil, Architect, PC, New York, N.Y.  
**CONTRACTOR** W.S. Bellows Construction Corporation  
**CONSULTANTS** Ove Arup & Partners (building engineers); Arup Façade (curtain wall consultant); Fisher Marantz Renfro Stone (lighting); James Carpenter Design (glass); Robert Pringle (metal & glass finishing); Reginald Hough (concrete); Daniel Stewart (landscape)  
**PHOTOGRAPHER** Paul Warchol Photography, unless noted

## A Spiritual Display

By Jonathan Hagood

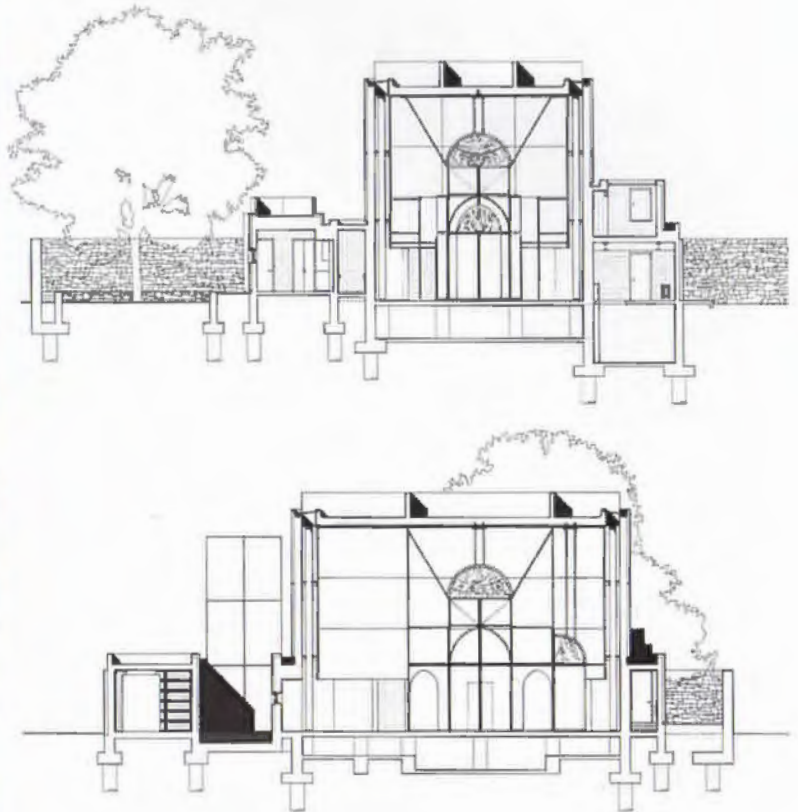
THE CONSTRUCTION OF A BUILDING for the display of the Menil Foundation's restored 13th-century frescoes required a space that was both reliquary and chapel, and resulted in a structure with a similar duality of volume. Architect Francois de Menil's award-winning design (see *TA*, July/August 1997, pp. 44-47) is a double envelope of space: a curving chapel formed by light within a dark cube of steel and concrete. Instead of a traditional—and secular—museum or a literal reconstruction of a church, Menil reinterpreted the space, volume, and emotion of a small Byzantine chapel.

The exterior of the building, an arrangement of concrete-clad platonic forms, has a neutral presence that belies its light-filled interior and religious content. Inside are illuminated, 1-1/2-inch-thick glass panels and a black space frame braced to the structure of the building, forming the complex chapel volume. The effect is striking: The matte-black background and luminous glass panels place the focus dramatically upon the frescoes and create a space for both display and spiritual contemplation. **TA**





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7

#### RESOURCES

**Foundation:** Texas Cold Finished Steel, Houston Shell & Concrete; **structure:** Houston Shell & Concrete, Offenhauser Co., Redondo Manufacturing Co.; **wall surfacing:** Hobart Stone Dealers, Plasticrete; **windows:** Duratherm Window Corp.; **skylights:** Linel; **doors:** Techniques Inc., Bilco; **floor surfacing:** W.W. Bartlett, Inc.; **ceiling surfacing/system:** Hunter Douglas; **roofing:** Seline Sheet Metal Works; **insulation:** Dow Chemical Co.; **roof and deck drainage:** J.R. Smith; **paint and stain:** Benjamin Moore; **hardware:** Stanley, Schlage, Rixson, Grant Div.-Hettich America; **security/fire:** Western States Fire Protection Co.; **public seating:** J.A. Bud Aubry; **handrails:** Offenhauser Co., Techniques Inc.; **lighting:** Bega, Hydrel, Greenlee, Kim, C.W. Cole, Nulux, Edison Price; **plumbing and sanitary:** American Standard, Elkay, Bradley, Coolair; **air-conditioning system:** Trane; **environmental control system:** Dri-Steem, Pace; **furniture:** J.A. Bud Aubry; **glass chapel:** Tri Pyramid Structures, Inc., PPG, Dlubak Corp., Offenhauser Co.

- 1 early concept sketch
- 2 axonometric of final design interior
- 3 north transept wall
- 4 model of final design
- 5 outdoor garden that separates the chapel from the entry
- 6 section facing east (above) and section facing north (below)
- 7 typical space frame and glass panel connection





1

# Off the Beaten Path

By Kelly Roberson

THE HIGHWAYS AND BYWAYS OF OUR LANDSCAPE are not often honored with awards for design. But recognition this year went to the North Central Expressway Urban Design project (see *TA*, March/April 1993, p. 9), recipient of a TSA Design Award, and its key players: Hellmuth, Obata + Kassabaum (HOK) of Dallas and the Texas Department of Transportation (TXDOT).

Central Expressway was built in the late 1940s; almost as soon as it was finished, says Donal Simpson, principal-in-charge at HOK, there were rumblings of an upgrade. An elevated expressway proposal in the 1970s met with community opposition, sending TXDOT back to the drawing board. The result was a compromise to rebuild Central, depressing six miles of the ten-mile project 26 feet below grade. Included was an amenities package to ensure, says Simpson, that it was "depressed, not depressing." The design, says Simpson, had two primary goals: to maintain architectural continuity in the main lanes and to reflect the character of neighborhoods in the frontage roads. HOK designed all the visible elements, including retaining walls, bridges, lighting, landscape, noise walls, signage, and special features on some bridges.

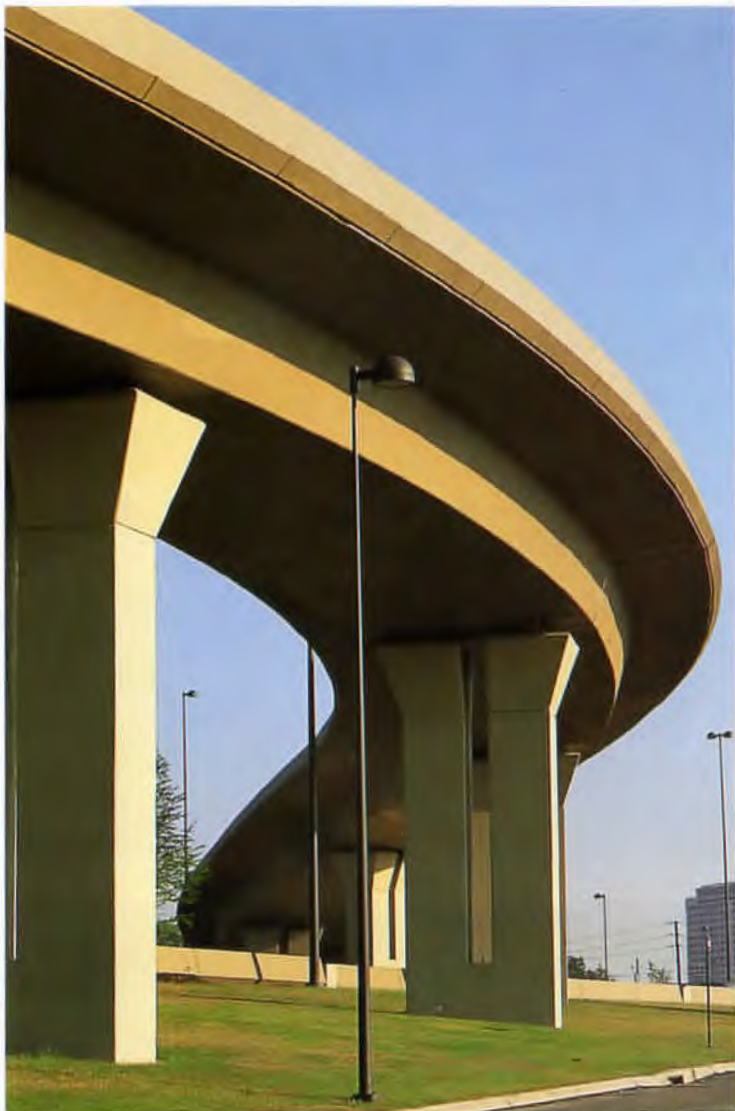
Central represents one of the rare times TXDOT has hired an architecture firm, and HOK worked to convince TXDOT to adopt new standards for some items used in construction, including the retaining walls and light fixtures. In addition, the city of Dallas agreed to pay half of the total \$10.7 million cost of the amenities package, which was only a small portion of the total project cost of \$500 million.

Over the course of ten years spent working on the project, Simpson has seen a change in TXDOT's attitude. "We hoped it would have an impact on TXDOT. High-



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ways have such a big impact on cities, and aesthetics are so important. TxDOT has started to recognize that you need to make the freeways an asset to the city, which is a paradigm shift for them, outside the old parameters of engineering practice. TxDOT deserves kudos; it will be several years before they realize all that they've done," says Simpson. **TA**

**PROJECT** North Central Expressway Urban Design, Dallas  
**CLIENT** Texas Department of Transportation  
**ARCHITECT** Hellmuth, Obata + Kassabaum, Inc., Dallas  
**CONTRACTOR** Granite Construction Co., HB Zachry, Taylor Brothers  
**CONSULTANTS** Lockwood, Andrews, and Newnam (engineering); Carr, Lynde, Hask, and Sandell (urban design); The Slaney Santana Group (landscape); Terry J. Little, ASLA (irrigation)  
**PHOTOGRAPHER** Craig Blackmon, BlackInk

#### RESOURCES

**Structure:** Texas Industries, North Texas Cement Co., Structural Metals Inc., Sheffield Steel Corp., Auburn Steel Co., Inc., Gifford-Hill Inc., Red River Sand + Gravel, Lattimore Industries, Inc., Bexar Concrete Works, Inc.; **wall surfacing:** H.B. Zachry Co., Tricou Precast, Inc.; **floor surfacing:** Pavestone, Koch Materials; **paint and stain:** Industrial Coating Specialists; **traffic signage:** Interstate Highway Sign Co.; **lighting:** General Electric



5

- 1 a watercolor of the plan for the 10-mile stretch of Central Expressway
- 2 HOK persuaded TxDOT to accept the new retaining walls they designed as a standard.
- 3 Three parts of the five-part project are finished; the official schedule forecasts a completion date in 1999.
- 4 Working out the geometry of the landscape, says Simpson, was a real challenge.
- 5 a sketch of a frontage road/landscaped section





Mark Gunderson



Bob Wharton

2



# Condensed Poetry

by Frank D. Welch, FAIA

FORT WORTH'S KIMBELL MUSEUM would have been a cultural fixture in that city regardless of who its architect was. Yet the building designed by Louis Kahn in 1966 and completed in 1972, and winner of a 1997 TSA 25-Year Award, became an international landmark and destination for visitors from around the world.

Kay Kimbell, a Fort Worth businessman with a collection of 18th-century paintings, provided in his will for a museum to hold his art, much as Amon Carter had done in the late 1950s when he stipulated that his western art collection be housed in a museum as his memorial. Philip Johnson designed that project and its success provided a momentum for art and architecture in the city known as Cowtown that has never let up. The Kimbell was the penultimate manifestation of Fort Worth's remarkable civic impetus and one of the 20th century's architectural triumphs. Yet to come is Tadao Ando's Modern Art Museum.

The Kimbell's first director, Richard Fargo Brown, led a committee that selected Kahn to design the building. Kahn was a sort of holy man among architects, given to sometimes obtuse statements of his philosophy. The clarity of his message was in the buildings: strongly graphic and expressive of their use and construction in a condensed poetry unknown to his peers. The Kimbell is one of his strongest statements.

Kahn's design for the Kimbell did not spring from his head and heart all at once but evolved through several stages. His first schematics show a large, low symmetrical "industrial" building of top-lighted parallel roof forms, punctuated with random openings in the roof. The first sketched sections were of triangular roof volumes, like a large-scale folded plate. The vault concept came soon after, and initially proposed lighting and mechanical services suspended below a center slit in the vault. Rick Brown shepherded Kahn through the shoals of full development of the museum as we know it today.

The finished building was received with warmth and praise by public and professionals. The low palazzo scale and the repeating, cycloid-vaulted profile struck an emotional chord with laymen (whose favorite architectural form is undoubtedly the arch), and the articulated materiality of concrete, marble, glass, and sheet metal in a sublime concert of proportion and the luminous, spatial magic of the interior enthralled architects. A huge cry from the architectural community went up in the late 1980s when plans to enlarge the building by extending its vaulted extrusions were revealed (and later abandoned).

From Kahn, apropos of the building: "My mind is full of Roman greatness and the vault so etched itself in my mind that . . . it's there always ready. And the vault seems to be the best. And I realize that the light must come from the high point where the light is best in its zenith. The vault, rising not high, not in an august manner, but somehow appropriate to the size of the individual."

May the integrity of Fort Worth's treasure be preserved.

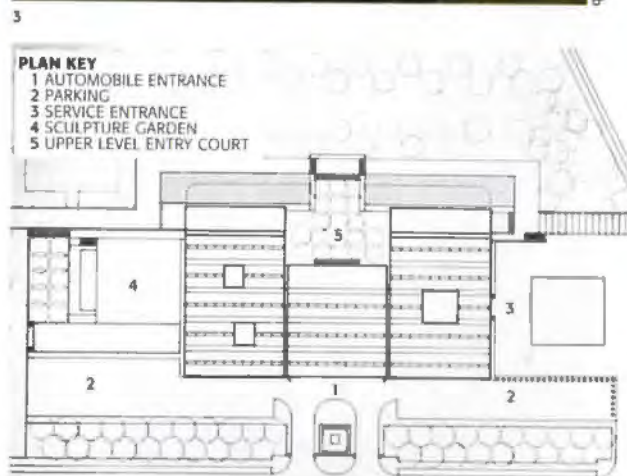
TA

*Frank Welch, FAIA, is an architect practicing in Dallas.*

**PROJECT** Kimbell Museum, Fort Worth  
**CLIENT** Kimbell Foundation, Fort Worth  
**ARCHITECT** Louis I. Kahn, Philadelphia, Penn.  
**ASSOCIATE ARCHITECT** Preston M. Geren & Associates, Fort Worth  
**CONTRACTOR** Thomas S. Byrne, Inc., Fort Worth  
**CONSULTANTS** August E. Komendant (structural); Cowan Love and Jackson (mechanical, electrical, and plumbing); Richard Kelley (lighting); George Patton (landscape)



Michael Bodyscomb



1 The Kimbell Museum's celebrated vaulted forms sit on a grassy lawn like sculptural objects in their own right.

2 The light-filled interior spaces enthral architects and non-architects alike.

3 The original three-year plan for design and construction of the Kimbell turned into six years with Kahn revising and refining up to the last minute to the frustration and consternation of his associate architect, Preston Geren of Fort Worth.





1

# Time and Place

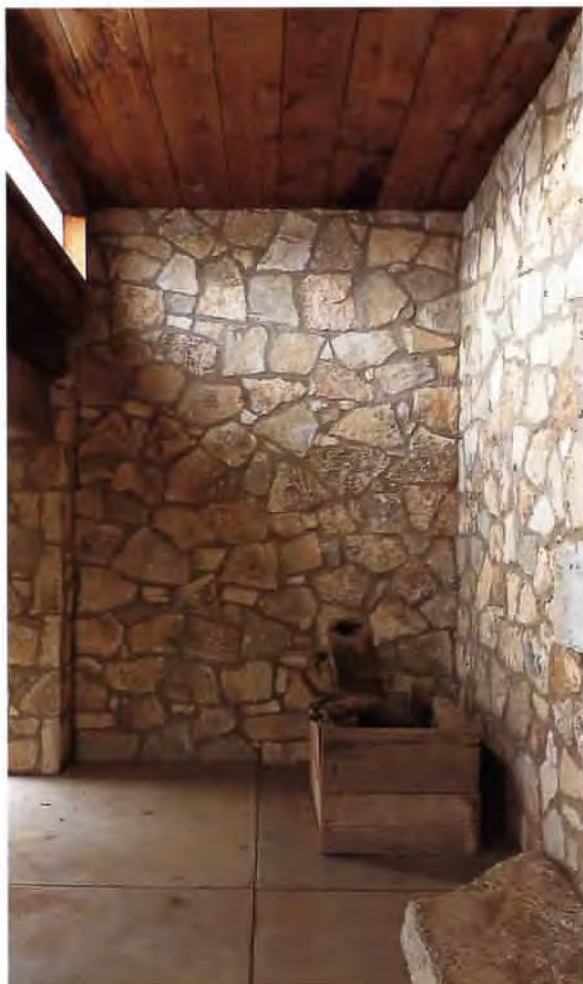
By W. Mark Gunderson

*That which lasts longest in time lies closest to the truth.—American Indian saying*

THE ACT OF CROSSING HAS ANCIENT ORIGINS in establishing place. An intersection of stone and wood in plan, this small shelter/retreat, designed by Frank Welch, FAIA, and completed in 1965, sits on a rock bluff in the obdurate landscape described so succinctly in Cormac McCarthy's *All the Pretty Horses*. Standing as simply and assuredly as the mnemonic Mexican masonry shrines after which it was named, in its 32 years Birthday has endured a lightning hit, hail, and a tornado. In West Texas "new" was always synonymous with "green," not mature. In this sense perhaps Birthday is just now "broken in" and useful.

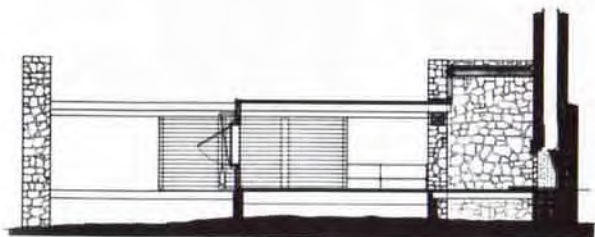
The terse pragmatism suggested by such a landscape is real enough in this part of Sterling County, and it is easy to imagine this world, sans telephone lines and highway, as unchanged since the conquistadors and the ancient inhabitants before them. The surrounding ranches date only to the 1880s and 1890s and life is, in many respects, as demanding now as then.

The structure proper consists of a single enclosed room with fireplace that lies along the slope of the bluff, "crossed" by opposing wood decks (see *TA*, January/February 1996, p. 76). An entry deck with a prefacing stone step acts as threshold to the room, and an overlook deck terminated by a wood bench serves as destination and edge. Both become outdoor rooms by implication. Two sliding exterior wall panels between them allow flexibility in use and configuration with the interior space. The material vocabulary—stacked limestone, oil rig timber from an abandoned lumber yard in Midland, untreated cedar sid-



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Frank Welch, F.A.A.

4

ing, concrete core samples as counterweights, and steel—establishes an immediate rapport with the landscape and contributes to its undeniably strong sense of “appropriateness” to its lithic site. It is Kenneth Frampton’s “critical regionalism” manifest.

Frank Welch was 38 years old and a sole practitioner in Midland when this project for John and BLee Dorn, clients since 1959, was constructed. He believes in hindsight that possible subconscious influences may have included Peter Blake’s 1954 Pinwheel House (a summer beach house) in Water Mill, Long Island, which is elevated in Miesian manner and utilizes sliding walls in a similar way. Birthday, however, belongs without question to Welch and West Texas.

It has incorrectly been called a house, which it is not. The Dorns requested a place to “stay overnight” and it is a place to *repair* in the archaic sense, to take refuge in shade, to contemplate. An adjacent windmill/water well provides water.

It is an interesting consequence of severe utility that it produces a kind of poetry born of restriction, and becomes more open and flexible, functions become abstract and universal. Birthday is imbued with dualities that coexist conceptually—open and closed, local and universal, stone and wood, *au courant* and timeless—and if the strength of architecture lies in the end in its encompassing breadth of concerns, then this small construction, winner of a 1997 TSA 25-Year Award, is of great consequence. **TA**

W. Mark Gunderson is an architect in Fort Worth.



Ezra Stoller

5



6



7

**PROJECT** *The Birthday, Sterling County*  
**CLIENT** *John and B. Lee Dorn*  
**ARCHITECT** *Frank D. Welch Architect, Midland*  
**CONTRACTOR** *W.R. Appleby*  
**CONSULTANTS** *C.W. Ellis (structural engineer); H. Dan Heyn (landscape architect)*  
**PHOTOGRAPHER** *Paul Hester and Lisa Carol Hardaway unless noted*

1 view from northeast; spiral stair was added later

2 view of limestone alcove with upper clerestory daylighting

3 longitudinal section showing sliding walls and clerestory

4 redwood entry deck with landscape visible beyond, through both open doors

5 view from southwest

6 fireplace alcove with timber girder above and minimal furnishings; ceiling is 2x4s on edge, floor is concrete with wood inserts

7 stone columns support 20-foot wall/door tracks



# Survey

## Long Time Coming 82

**ARCHITECTURE** Forty years later, Philip Johnson's Chapel of St. Basil in Houston is finally complete.

## A New Home 84

**ARCHITECTURE** The Texas Society of Architects has a new home with a view of the Capitol.

## Modernism in Mexico 85

**BOOKS** A new book explores the roots of modernism in Mexico as well as a discussion of important Mexican modernist architects.

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## A Road Less Traveled 98

**TRAVEL** Two lesser-known treasures in Fort Worth are explored by architect Paul Koeppel.

## Long Time Coming

**ARCHITECTURE** The Chapel of St. Basil at the University of St. Thomas in Houston was dedicated in June. It was 40 years a-borning and worth the wait.

Shortly after their international-style house on San Felipe Road was completed in 1950, Dominique and Jean de Menil agreed to pay Philip Johnson, their New York architect, for a master plan for the University of St. Thomas's new campus in the Montrose area. Dominique de Menil had made friends with some of the Basilian fathers at the small Catholic university and she and her husband had taken a philanthropic interest in it. Their

arranged on a long open space, connected by an arcade and focused axially on a primary building: the Rotunda library in the case of UVA, the school's chapel at St. Thomas. Johnson's building language was an explicit form of the genre found in Mies van der Rohe's Illinois Institute of Technology in Chicago. His first design for the chapel was a monumental cube of steel-framed brick masonry in a strict Miesian manner. He revised the chapel schematically over and over for the fathers and the Menils and finally bowed out in the '60s, leaving it to Howard Barnstone and Eugene Aubry to complete a Menil chapel near the campus. That became the Rothko Chapel.



initiative as architectural patrons of the small school set in motion a series of events that affected the architectural culture of Houston, indeed the state of Texas, in historic ways.

Johnson's New York career was first as a museum curator and scholarly *observer* of buildings who didn't start studies to become a *maker* of buildings until he entered Harvard's Graduate School of Design at age 34. Johnson went on to become an architectural celebrity and Texas' favorite "out-of-town" architect during the 1960s, '70s, and '80s, designing over 20 high-profile projects throughout the state that changed the public's expectation of our buildings (see *TA*, January/February and July/August 1993).

The master plan for St. Thomas was inspired by Thomas Jefferson's University of Virginia "academical village" of separate buildings

In 1990, Johnson was called again to design a chapel for his original 1957 location. Architecture had been through a lot since the 1950s and Johnson, ever sensitive to the *zeitgeist*, produced a building congruent with the times. He finally got his cube and St. Thomas got a prominent head for its long mall-like lawn.

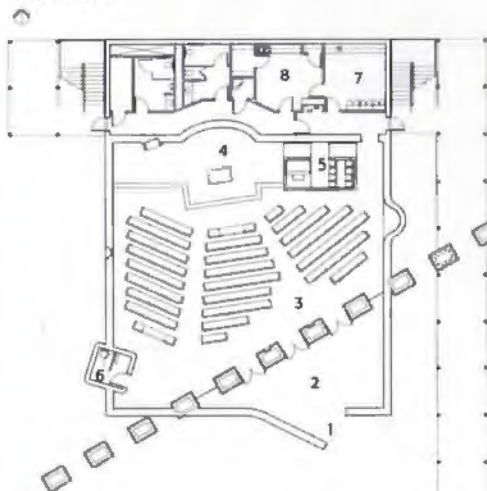
The futurism of painter Kasimir Malevich seems to have inspired the building's plan and form with a respectful nod toward SITE and Le Corbusier. The chalk-white chapel measures 64-by-64-by-50 feet and is surmounted by a 20-foot gold-leafed dome and embraced on one side with an arm of the university's double gallery. A free-standing, polished black granite wall, taller than the chapel, cleaves completely through building and dome on the diagonal, opening the dome into arched clerestories and





2

## FLOOR PLAN



## FLOOR PLAN KEY

- 1 ENTRY FLAP
- 2 NARTHEX
- 3 NAVE
- 4 SANCTUARY
- 5 CHOIR
- 6 RECONCILIATION CHAPEL
- 7 SACRISTY
- 8 WORKROOM

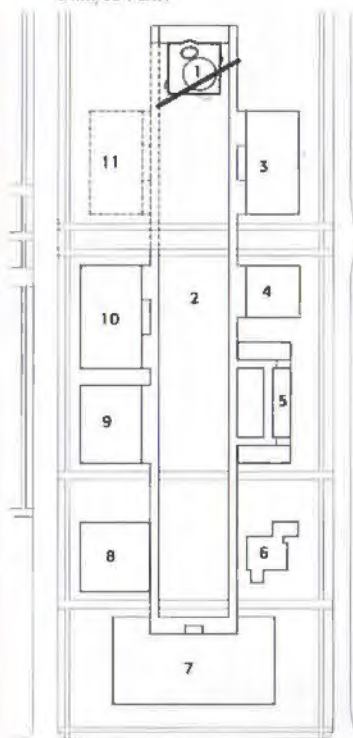
## ST. THOMAS CAMPUS PLAN KEY

- 1 CHAPEL OF ST. BASIL
- 2 LAWN
- 3 BUSINESS/EDUCATION
- 4 DRAMA/THEATRE
- 5 MATHEMATICS
- 6 THEOLOGY
- 7 LIBRARY
- 8 MUSIC
- 9 BIOLOGY
- 10 SCIENCE
- 11 FUTURE HUMANITIES BUILDING



3

## CAMPUS PLAN



1 The entry "flap" in the white facade appears to be blown open.

2 The diagonal granite wall intersects both the

chapel and one of the school's double galleries.

3 A light well fills the altar area with natural light.

directing attention to the building's entrance in the white facade, which is seemingly cut and blown open by an inner force. This is a facade in the classical sense: a principal building face fronting on a "plaza," commanding it, informing it, but, in Johnson's hands, a facade ren-

dered in a minimalist manner, yet no less potent in context than Jefferson's Rotunda.

Inside the "flap," as the chapel's portal is called, the pierced, carillon-holding granite screen-wall forms an angled narthex and transition space to the chapel proper whose stunningly pristine interior is bathed with ambient light from several sources: the dome clerestories, a light well above a niche holding a bronze madonna, an elliptical light well defining the altar wall with its exquisite medieval corpus—a gift of Dominique de Menil—and the large, leaning asymmetrical cross cut into the west wall and glazed with translucent glass.

All artificial lighting is on the *outside* of the building with concealed fixtures in the light wells and recessed ground lights for perimeter wall washing. The artworks, including the altar table, are by David Cargill and are generally successful, particularly the flesh-toned intaglio stations of the cross under the great cross in the west wall. However, the altar furnishings, especially the large floor candelabra, are overscaled and visually crowd that limited area, distracting from the serenity of the whole.

When Johnson, who is 91 and convalescing from surgery, heard recently that the building was a great success with the public, that music in the space was "splendid," and that university officials were "thrilled" with the building, he was warmed with the pleasure architects feel when hearing praise. He has waited a long time for this building. But when he was reminded that this chapel is much better than the one he might have designed 40 years ago, he quickly said, "But I'm a better architect than I was then."

**Frank D. Welch, FAIA**

*Frank D. Welch, FAIA, practices in Dallas; he is completing a book on Philip Johnson to be published by the University of Texas Press.*

**PROJECT** Chapel of St. Basil, Houston

**CLIENT** University of St. Thomas, Houston

**DESIGN ARCHITECT** Philip Johnson Ritchie & Fiore Architects, New York, N.Y. (Philip Johnson)

**ARCHITECT OF RECORD** Merriman Holt Architects, Inc., Houston

**CONTRACTOR** Linbeck Construction Corporation

**CONSULTANTS** CHP & Associates (mechanical, electrical, and plumbing); Cagley Conti & Jumper, Inc. (structural); McDonough Engineering Corp. (civil); Hoover & Keith Inc. (acoustical); Engle Associate Lighting Design (lighting); David Cargill (artist); Michael Dobbins (furniture)

**PHOTOGRAPHER** Richard Payne, FAIA



## A New Home

**ARCHITECTURE** In 1996 the Texas Society of Architects decided that it needed more than the 4,500 square feet that was available in the historic Norwood Tower in downtown Austin, its home since 1981. In November 1996 the Society moved into new offices in the recently refurbished Frost Bank Tower at the corner of Ninth Street and Congress Avenue.

The finish-out of the 6,400-square-foot shell space was completed largely with donated materials and services. Benson Hlavaty Parét Architects of Dallas, which designed the new space, donated its architectural services. According to principal-in-charge Sandra Parét,



- 1 The reception area features a curving wall.  
 2 office with view of the Capitol  
 3 pivoting glass entry to conference room

the TSA offices offered an opportunity to showcase the benefits of using an architect to create a functional and aesthetically appealing office interior. "In addition, we wanted to show that interior architecture is an important part of the profession these days," Parét says. The project was challenging because of the nature of working with donated materials, she says. "It was like working with a kit of parts where we didn't get to pick the kit."

The offices include an expansive entry area, featuring a curved wall and reception desk, that opens onto a conference room with a view of the Capitol. Staff offices are arranged along the outside wall, with support areas placed on the interior. According to Parét, Texas materials were used when possible, including the limestone and granite in the reception area.

*Susan Williamson*



Photographs this page by Craig Blackmon



2 The Texas Society of Architects would like to thank the following businesses and suppliers for their donations of materials and services to the TSA office project:

Vinyl tile: Armstrong; paint: Benjamin Moore; architectural services: Benson Hlavaty Parét Architects, Dallas; curved-wall paint, decorative pulls: Bollen Resources; construction, entry lighting: Capitol Area Contractors; ceiling tile: Celotex; conference tabletop: Cold Spring Granite; conference wallcovering: Design Tex; graphics: Douglas/Gallagher; public corridor sconces: E.C. Dickens; entry limestone floor: Featherlite; furniture delivery, installation:



3 Furniture Marketing Group; furniture discount: Haworth; entry granite floor: IGM; interior signage: Intex United, Inc.; front-house base: Johnsonite; interior core paint: Kenmark; accent wall textile: Knoll; reception dome and conference room pendants: Lightolier; back-house base: Longhorn Distributors; conference room accent cable: MCS; office accent paint: MDC Wallcovering; reception and hallway pendant: Reid Cooper; conference display rail: Schenck-Sanford; carpet: Shaw Contract; wood floor, accent metal, and laminate: Wilsonart; granite and limestone installation: York Marble & Granite



## Modernism in Mexico

*Modernity and the Architecture of Mexico*

Edited by Edward R. Burian

The University of Texas Press (Austin, 1997)

220 pages, \$40 hardcover, \$19.95 paperback

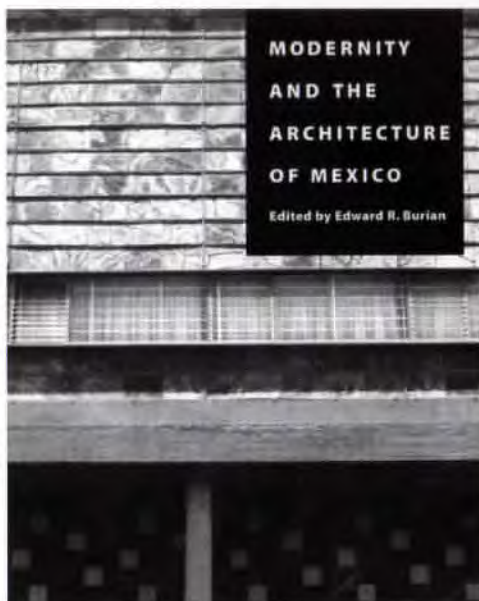
**BOOKS** To comprehend modernism is to understand progress and the need many countries felt for its implied prosperity and economic success. Mexico's nearly obsessive drive towards modernity made it almost a single-issue country throughout much of the 20th century. In architecture as well as politics, Mexico embraced modernism as the key to progress and national unity; acceptance into the First World proved irresistible if not necessary to a nation torn apart by revolution and bloodshed.

International modernism—European modernism—emerged from the ruins of the First World War with the promise of an ideal man—a concept that would transcend all borders and nations, eliminate war, and unite humanity everywhere. Mexico saw in modernism a solution to its need to create an ideal *Mexican* man, a man who could unite all of Mexico's contradictions and disparities. The irony of this co-optation—the use of international modernism to achieve a nationalist end—is critical to an understanding of both 20th-century Mexico and its architecture.

To be a “Mexican” is a relatively new concept, beginning with Porfirian technocrats in the late 19th century and becoming a major tenet of post-revolutionary Mexican government in the 1920s. The nation, torn apart by regional, cultural, and economic differences, desperately needed the common identity modernism could provide. To make a Mexican was to combine all aspects of Indian, mestizo, and Spanish history, because for everyone to invest in Mexico's future required the ability of everyone to claim Mexico's past.

After a period in which architects have critiqued, discredited, and even despised modernism, the profession is coming to terms with the ideology that shaped the 20th century. Critical to the discussion is an understanding of the reasoning behind the architecture: the goals of the governments and architects who furthered the modern ideal.

*Modernity and the Architecture of Mexico*, a collection of essays covering ideologies and specific works, was published as an introduction to both Mexican architecture and the modern



movement. The topic's pertinence lies in Mexico's geographic and cultural proximity and in the fact that Mexican modernism became so closely intertwined with government, public, and private development that in many respects it is still practiced today. *Modernity* is a survey of the roots of the movement and its ideologies, and presents a primer to some of its historically unsung heroes.

An interview with architectural historian Alberto Pérez-Gómez sets the stage and, combined with Antonio E. Méndez-Vigatá's excellent essay “Politics and Architectural Language,” provides a background for the narrower topics of the essays that follow. The immensely significant design and construction of the Ciudad Universitaria in Mexico City is discussed, and the ideas and works of architects Enrique del Moral, Juan O’Gorman, Carlos Obregón Santacilia, Juan Segura, and Mario Pani each receive an in-depth analysis.

Reading *Modernity* is only a starting point to a critical discussion of modernism. In Mexico as elsewhere, the movement's ideals are still with us today in spirit and as part of the built environment. Understanding how contemporary architecture reacts to modernism requires a thorough analysis of the movement itself and a critical understanding of why and how modernism became so important to a people preoccupied with progress and national unity. This collection is self-consciously incomplete and implores the reader to think critically about the issues and explore further the meaning and history of modernism, for to think critically of our immediate past is to understand our immediate future.

*Jonathan Hagood*

Coming next issue . . .

The November/December issue of *Texas Architect* will feature a wide range of public buildings: The Armed Forces Guard/Reserve Center in Lubbock by Rike Ogden Figueroa Dickson Wells and the E.B. Cape Center for Public Works Excellence in Houston by Willis Bricker & Cannady. In addition, architect Willis Winters of Dallas will present a survey of recent municipal projects in the Dallas/Fort Worth area, including a fire station by Phillips Swager Associates, an arts center by Milton Powell & Partners, a library by Good Fulton & Farrell, a maintenance building by CamargoCopeland, and a city hall by Ron Hobbs





# See ya'll in Fort Worth

Visit the *Texas Architect* booth at the TSA Trade Show for some good information on how to get your projects noticed and published. We'll also show you what's in store for 1998 and beyond, and how you can use *TA* as your own personal marketing kit.

Plus you'll meet the friendliest magazine staff this side of the Red River and take home some goodies. So come by and see how *TA* can help your firm. And if you have any gripes, let us hear 'em. We want to know how we can do better.

Don't be shy. Come on by and sit a spell. We'll be waiting!

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## Answers to Self-Test

1. Mined ore is heated to elevated temperatures (1600 degrees Fahrenheit) causing it to expand 4 to 20 times its original size and volume.
2. Vermiculite or perlite.
3. The addition of the foam concentrate makes the concrete more workable.
4. False; the foam creates a "slickness" characteristic which allows for ease of use.
5. Air cells.
6. Aggregate concrete.
7. False: Lightweight-insulating concrete provides a one- to two-hour fire rating without the application of fireproofing.
8. Type II will require a higher water:cement ratio to achieve the same workability.
9. False.
10. An expanded polystyrene board or EPS board. Two advantages are it reduces total material cost and increases insulating value, and reduces the overall weight.
11. False.
12. Either steel wire mesh and/or inorganic fibers dispersed within the mix.
13. Weighing the concrete to calculate wet density of the mix; the hand-held penetrometer.

### TEXAS ARCHITECT

#### Continuing Education Report Form • September/October 1997

I have read the article "A Roofing Alternative," and I have taken the self-test.

I will receive one learning unit at quality level two for a total of two learning units.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

AIA Member number \_\_\_\_\_

Signature \_\_\_\_\_

**Note: You MUST include your AIA member number and your signature to qualify for credit.**

Please return the completed form to: *TA* Continuing Education • TEXAS ARCHITECT • 816 Congress Ave., Suite 970 • Austin, TX 78701

DO NOT SUBMIT THIS FORM DIRECTLY TO AIA.

TEXAS ARCHITECT must forward your form on your behalf.

## Products and Information

The companies listed in "Products and Information" are exhibitors in the 58th Annual TSA Design Products & Ideas Exposition in Fort Worth, October 23-25.

### Acme Brick Company, booth 306

2821 W. 7th St., Fort Worth, TX 76107  
817/332-4101, fax 817/390-2404  
*Circle 1 on reader inquiry card*

### Advantage Buildings & Exteriors, booth 625

9741 E. 56th St. N., Tulsa, OK 74117  
918/272-1191, fax 918/272-2517  
Advantage Buildings & Exteriors provides commercial wall panels for architectural buildings. They are composite steel stud framed, prefabricated, including final exterior finishes of 1/2-inch clay-fired brick, glazed tile, synthetic stucco, exposed natural stone, or specialty panels of polymer-reinforced concrete. Custom wall units can incorporate combinations of these finishes.  
*Circle 2 on reader inquiry card*

### AIA Trust Business Insurance Group, booth 627

4001 Kennett Pike #318, Greenville, DE 19807  
888/242-2420, fax 302/658-2389  
*Circle 4 on reader inquiry card*

### Alenco Commercial Div., Redman Building Products, Inc., booth 411

1800 Shiloh, Bryan, TX 77803  
800/444-1444, fax 409/823-1005  
For new installations or replacements, Alenco offers nearly a half century of technological improvements and service leadership in aluminum window manufacturing; windows and window wall systems made entirely at our Bryan plant; aluminum extrusion, insulated glass manufacturing, assembly, and painting are smooth steps in a tightly controlled process.  
*Circle 5 on reader inquiry card*

### All Texas Decks, Inc., aka Sundek, booth 515

805 Avenue H #509, Arlington, TX 76011  
817/265-2406, fax 817/649-7178  
*Circle 8 on reader inquiry card*

### American Tile Supply, booth 308

2839 Merrell Rd., Dallas, TX 75229  
972/243-2377  
Distributor of all kinds of ceramic tile, marble, stone, and related products with 12 convenient locations in Texas.  
*Circle 15 on reader inquiry card*

### Ameristar Fence Products, booth 621

POB 58100, Tulsa, OK 74158-1000  
918/835-0898, fax 918/835-0899  
Ameristar Fence Products, with its unique Permacoat color coating system, produces the finest ornamental iron and color chain link framework in the world today. Permacoat consists of a double layer of powder coating protection. The zinc rich epoxy base coat is top coated with a "no mar" polyester coat. The result is a quality, long lasting, fantastic-looking fence you will be proud to specify or own.  
*Circle 17 on reader inquiry card*



**Amex Cost Consultants, Inc., booth 605**

201 Billings St. #510, Arlington, TX 76010  
817/649-3080, fax 817/649-1366  
*Circle 21 on reader inquiry card*

**Ampco Products, Inc., booth 613**

201 Railroad Ave., Sanger, TX 76266  
817/458-7401, fax 817/458-5307  
*Circle 22 on reader inquiry card*

**Anchor Fence/Monumental Iron Works, booth 319**

6500 Eastern Ave., Baltimore, MD 21224  
800/229-5615, fax 800/239-2963  
Vinyl coated chain link fence and gate systems. Ornamental picket fence and gate systems. Gate operators and access control systems. Metal (privacy) screening fence and gate systems.  
*Circle 23 on reader inquiry card*

**APCO Graphics, Inc., booth 321**

1250 Copeland Rd. #710, Arlington, TX 76011  
817/548-1048, fax 817/548-1304  
APCO's ADA Process 1 feature, available on its IM System of modular sign components, provides the braille and tactile characters required by ADA; includes a broad range of components, from personnel signs to space identification and directional modules.  
*Circle 24 on reader inquiry card*

**Architectural Building Components, Inc., booth 317**

11625 N. Houston Rosslyn Rd., Houston, TX 77086  
281/931-3986, fax 281/931-3989  
Manufacturer of nine (concealed fastener) roofing panels; material is 24-gauge Galvalume, available in 16 standard Kynar 500 colors; products include panels with structural and solid deck applications; systems are integral male-female snap-together, straight leg mechanically seamed, snap-on batten, curved roof panel, and flush soffit panels.  
*Circle 25 on reader inquiry card*

**ASI Sign Systems, booth 102**

8601 Jameel #102, Houston, TX 77040  
713/462-7222, fax 713/895-7516  
*Circle 26 on reader inquiry card*

**Associated Masonry Contractors of Texas, booth 408**

314 Highland Mall Blvd. #510, Austin, TX 78752  
512/374-9922, fax 512/451-9556  
*Circle 27 on reader inquiry card*

**Billy Cooper Stone Co., Inc., dba Cooper Stone Co., booth 309**

3788 West FM 487, Jarrell, TX 76537  
512/746-2210, fax 512/746-2270  
Limestone from the Austin area for use in both commercial and residential projects.  
*Circle 28 on reader inquiry card*

**Boral Bricks, booth 112**

1400 N. Broadway, Carrollton, TX 75006  
972/245-1542, fax 972/242-8172  
As the largest manufacturer of brick in the US, Boral Bricks is committed to providing quality brick to the architectural and residential markets. In conjunction

with Boral manufacturing plants across the nation, we offer a wide array of products and services. Our combination of colors, shapes, and textures offers the architectural community unlimited design opportunities.  
*Circle 30 on reader inquiry card*

**Cadvisions Inc., booth 510**

1950 Stemmons Frwy. #5051, Dallas, TX 75207  
214/741-2323, fax 214/741-2407  
*Circle 34 on reader inquiry card*

**CADWorks, Inc., an Avatech Solutions Company, booth 208**

4322 N. Beltline #B-110, Irving, TX 75038  
972/570-0007, fax 972/570-7505  
CADWorks has been providing CAD Solutions to CAD professionals since 1983. With industry experience and a full suite of AEC products, CADWorks is positioned to offer the highest quality service and products with software from Autodesk, Softdesk, Virtus, and others.  
*Circle 35 on reader inquiry card*

**Carlisle Syntec Inc., booth 109**

2399 Midway Rd., Carrollton, TX 75006  
972/248-0306, fax 972/248-0293  
*Circle 36 on reader inquiry card*

**Carter Holt Harvey Roofing, Inc., booth 623**

827 Avenue H East #211, Arlington, TX 76011  
817/695-1090, fax 817/695-1098  
Proven around the world for over 40 years, DECRA Roofing Systems by Carter Holt Harvey Roofing Inc., are the original stone coated steel roofing systems. Available in tile, slate, and shake profiles, these lightweight, high-performance systems carry a 50-year limited warranty that includes hail and 1230-mph wind resistance.  
*Circle 38 on reader inquiry card*

**Celotex Corporation, booth 114**

13800 Montfort Dr. #350, Dallas, TX 75240  
972/661-1406, fax 972/986-1063  
Celotex is a leader in the manufacture of residential and commercial ceilings, roofing, and rigid insulations. Working in conjunction with architects to specify foams and roofing with emphasis on EIFS and other foam systems as well as higher-end aesthetically pleasing roofing products.  
*Circle 41 on reader inquiry card*

**Ceramic Tile International, booth 415, 514**

2333 S. Jupiter Rd., Garland, TX 75041  
214/503-5400, fax 214/503-5489  
Ceramic Tile International offers one of the largest selections of floor and wall tile products in the Southwest with several innovative designer showrooms conveniently located throughout Texas and Georgia, as well as a fully staffed, professional team of architectural sales representatives to assist with all commercial tile requirements.  
*Circle 42 on reader inquiry card*

**Certaiteed Corporation, booth 631**

POB 506, Shakopee, MN 55379  
612/445-6450  
*Circle 43 on reader inquiry card*

**Chas. F. Williams Company, booth 508**

POB 1724, Fort Worth, TX 76101  
817/332-6363, fax 817/429-9320  
*Circle 44 on reader inquiry card*

**Chemprobe Technologies, Inc., booth 607**

2805 Industrial Ln., Garland, TX 75041  
972/272-5551, fax 972/271-5553  
Manufacturer of above-grade water repellents and stains for concrete, masonry, stucco, and precast industries, including conformed stain, Prime A Pell 200, and new water-based Prime A Pell H2O. Call our toll free number or contact us at www.chemprobe.com.  
*Circle 45 on reader inquiry card*

**Chicago Metallic Corporation, booth 606**

4849 S. Austin Ave., Chicago, IL 60638  
800/323-7164, fax 708/563-4552  
*Circle 47 on reader inquiry card*

**Citadel Architectural Products, booth 518**

3131-A N. Franklin Rd., Indianapolis, IN 46226  
317/894-9400, fax 317/894-6333  
Laminated composite panels for exterior use on buildings in soffits, facias, window infills, and exterior panel system.  
*Circle 48 on reader inquiry card*

**Cold Spring Granite Company, booth 516**

202 S. Third Ave., Cold Spring, MN 56320  
320/685-3621, fax 320/685-8490  
Full service supplier of domestically quarried granite for building facing (interior and exterior), paving, landscape areas, and industrial uses. Product line includes slabs and thin tile.  
*Circle 49 on reader inquiry card*

**Collins & Aikman Floorcoverings, booth 504**

1519-B Hi Line Dr., Dallas, TX 75207  
214/749-0663, fax 214/741-6632  
Collins & Aikman Floorcovering, Inc., is a manufacturer and recycler of high performance vinyl soft surface floors in both six-foot roll goods and modular tiles. Please ask about our revolutionary wet-adhesive-free system known as Powerbond RS, available on all floorcoverings.  
*Circle 50 on reader inquiry card*

**Construction Market Data Group, booth 509**

4126 Pleasantdale Rd. #A-8, Atlanta, GA 30340  
770/447-0630, fax 770/246-0452  
*Circle 51 on reader inquiry card*

**Dal-Tile, booth 507**

7834 Hawn Frwy., Dallas, TX 75017  
214/398-1411, fax 214/309-4584  
Dal-Tile is ... possibilities, color, fashion, texture, and inspiration; longtime suppliers of high-quality tile; ADA.  
*Circle 53 on reader inquiry card*



**Domco Inc. USA/Azrock Commercial Flooring, booth 407**  
4103 Parkway Dr., Florence, AL 35631  
205/765-0234, fax 205/765-8130

The Azrock Integrated Commercial Flooring System features six product lines: Vinyl Composition Tile, Luxury Vinyl Tile, Solid Vinyl Tile, Inlaid Commercial Sheet Vinyl, Mipolam Homogeneous PVC Flooring, Wall Base. Individually, they offer superior styling and performance. Together, they coordinate to save specification time and assure project continuity.

*Circle 54 on reader inquiry card*

**DPR Construction, Inc., booth 115**

6805 Capital of Texas Hwy. #240, Austin, TX 78731  
512/345-7699, fax 512/345-8230

*Circle 57 on reader inquiry card*

**Dryvit Systems, Inc., booth 206**

One Energy Way, W. Warwick, RI 02893  
401/822-4100, fax 401/823-8820

*Circle 58 on reader inquiry card*

**Elk Corporation, booth 314**

14643 Dallas Pkwy. #1000, Dallas, TX 75006  
972/851-0477, fax 972/851-0447

Featuring the line of Prestique and Capstone premium roofing shingles along with roof accessory products, including hip and ridge products and roof accessory paint.

*Circle 61 on reader inquiry card*

**Facility Works, booth 425, 427, 524, 526**

4100 International Plz. 8th Fl., Fort Worth, TX 76185  
800/277-8337, fax 817/735-5724

Integrated provider of mechanical, electrical, communication, and energy services. Complete design, installation, maintenance, procurement, and financing capabilities.

*Circle 62 on reader inquiry card*

**Featherlite Building Products Corp., booth 311, 315, 410, 414**

POB 1029, Austin, TX 78767  
512/472-2424, fax 512/472-2586

*Circle 70 on reader inquiry card*

**Formica Corporation, booth 211**

1245 Viceroy Dr., Dallas, TX 75247  
214/688-0671, fax 214/630-1228

*Circle 71 on reader inquiry card*

**Fypon Limited, booth 220**

22 W. Pennsylvania Ave., POB 365,  
Stewartstown, PA 17363  
800/955-5748, fax 717/993-3782

*Circle 74 on reader inquiry card*

**Gerard Roofing Technologies, booth 107**

955 Colombia St., Brea, CA 92821  
800/841-3213, fax 714/256-1476

*Circle 75 on reader inquiry card*

**Graphisoft, booth 205, 304**

235 Kansas St. #200, San Francisco, CA 94103  
800/344-3468, fax 415/703-9770

*Circle 76 on reader inquiry card*

**Hohmann & Barnard Inc., booth 611**

2415 Cold Spring Rd., Fort Worth, TX 76106  
817/625-9781, fax 817/626-3819

Masonry wall reinforcing systems/drywall-brick veneer anchoring systems/thru-wall flashings/the mortar net cavity drainage system/stone anchor systems-design and engineering.

*Circle 82 on reader inquiry card*

**Holnam Inc., booth 310**

1800 Dove Ln., Midlothian, TX 76065  
972/299-2202, fax 972/723-9011

*Circle 84 on reader inquiry card*

**HPG Roofing Systems, booth 617**

200 Cottontail Ln., Somerset, NJ 08873  
800/457-6634, fax 908/302-4220

Manufacturer of thermoplastic single-ply roofing membrane for commercial roofing industry (Mountaintop, Penn.); HPG membrane attachments are mechanically fastened, fully adhered, or ballasted; SR-Series membrane can be mechanically fastened or fully adhered; SRB-Series membrane can be ballasted; new V-2 membrane can be mechanically fastened and fully adhered; available in a variety of colors (V-2 in black only) and thicknesses; warranties on its roofing membrane system; strong technical support and detailed specifications and literature.

*Circle 86 on reader inquiry card*

**I.C.I. Paints, booth 429**

1003 Antoine, Houston, TX 77055  
713/680-3377, fax 713/680-3486

*Circle 93 on reader inquiry card*

**IMC, Inc., booth 503**

11210 Zodiac Ln., Dallas, TX 75229  
800/929-4462, fax 972/243-4234

America's natural stone resource is the leader in your own backyard; inside our Dallas headquarters is one of the world's greatest selections of natural stone; marble, granite, slate, and other fine materials in slab and tile will satisfy your design, performance, and budget needs.

*Circle 94 on reader inquiry card*

**International Code Council, booth 418**

9300 Jollyville Rd. #1011, Austin, TX 78759-7455  
512/794-8700, fax 512/343-9116

Umbrella organization of the Building Officials & Code Administrators (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International (SBCCI), working toward the development of a single national voluntary model code for the U.S.

*Circle 95 on reader inquiry card*

**IPC-Inpro Corporation, booth 328**

S80 W18766 Apollo Dr., POB 406,  
Muskego, WI 53150

800/543-1729, fax 414/679-5407

Manufacturer of door and wall protection systems such as handrails, wall guards, corner guards, PVC, and vinyl wallcovering.

*Circle 96 on reader inquiry card*

**Jewell Concrete Products, booth 103**

POB 7115, Waco, TX 76714  
800/792-3216, fax 817/772-6999

Concrete-masonry products including distinctive and versatile Keystone Retaining-Wall System featuring secure interlocking fiberglass-pin system and efficient installation; Decro-Face exposed-aggregate units and complementary split-face units for durable and beautiful exterior/interior applications; aurora fencing for both privacy and long-term value.

*Circle 97 on reader inquiry card*

**Johnsonite, booth 227**

16910 Munn Rd., Chagrin Falls, OH 44023  
216/543-8916, fax 216/543-5774

*Circle 98 on reader inquiry card*

**Kenmark, Inc., booth 517, 519**

10865 Alder Cir., Dallas, TX 75238  
214/348-8000, fax 214/348-3252

Kenmark, Inc., is a regional wholesale distributor specializing in the promotion, specification, and sale of contract wallcoverings and interior architectural products. Major manufacturers: Abet Laminate, Forbo Flooring, Korogard Wall Protection, Koroseal/Vicrete Vinyl Wallcovering, and Polomys/Zolatone Multi-Color Coatings.

*Circle 99 on reader inquiry card*

**LCM Sales, booth 633**

3200 E. I-20, POB 1672 (79721), Big Spring, TX 79720  
915/263-3139, fax 915/263-0440

LCM Sales represent TexaStone Quarries, producers of limestone products. For building exteriors and interiors, tile, balusters, columns, etc., limestone is the architect's answer to a prestigious project. Also displayed will be the all new Flood Stopper system—a product that will prevent water damage to any new facility.

*Circle 100 on reader inquiry card*

**List Industries, Inc., booth 615**

6430 FM 1960 W. #214, Houston, TX 77069  
281/469-9522, fax 281/469-4514

*Circle 103 on reader inquiry card*

**Mapei, booth 416**

1501 Wall St., Garland, TX 75041  
972/271-9500, fax 972/271-9464

*Circle 105 on reader inquiry card*

**Marshall Company, The, booth 635**

POB 700 (620 N. Ninth St.), Payette, IN 83661  
208/642-3344, fax 208/642-9537

*Circle 106 on reader inquiry card*

**Marvin Windows & Doors, booth 525**

POB 100, Warroad, MN 56763  
800/346-5128

*Circle 107 on reader inquiry card*

**Maxxon Southwest, Inc., booth 409**

2132 Cindy Ln., Dallas, TX 75229  
800/275-0128, fax 972/406-1165

*Circle 108 on reader inquiry card*



**McGraw Hill/F.W. Dodge, booth 118**

1341 W. Mockingbird Ln., Dallas, TX 75247  
214/688-5024, fax 214/688-5023  
*Circle 109 on reader inquiry card*

**Modernfold Distributors of Texas, booth 330**

14611 Sommermeyer, Houston, TX 77041  
713/690-3484, fax 713/690-4911  
Cascadia is a flexible wall system that, with the touch of a button, vertically divides a room and offers a functional, yet aesthetically pleasing glass panel design. Cascadia offers commercial customers a flexible space division product that is attractive, functional, simple to operate, and inconspicuous when not in use.  
*Circle 110 on reader inquiry card*

**Monarch Paint Company, booth 219**

1425 Oak Ridge Dr., Duncanville, TX 75137  
972/296-6600, fax 972/299-9800  
*Circle 111 on reader inquiry card*

**Monier Inc., booth 511**

1990 Riverview Dr., San Bernardino, CA 92408  
800/571-TILE, fax 909/796-1858  
*Circle 112 on reader inquiry card*

**Moulding Associates, Inc., booth 637**

103 N. Kirby, Garland, TX 75042  
972/487-6680, fax 972/487-6584  
*Circle 113 on reader inquiry card*

**Nevamar Decorative Surfaces, booth 333**

8339 Telegraph Rd., Odenton, MD 21113-1397  
800/638-4380, fax 410/551-0341  
*Circle 114 on reader inquiry card*

**North American Tile & Stone/Stone Marketing International, booth 620**

2095 Afton, Houston, TX 77055  
713/682-1300, fax 713/956-4808  
*Circle 115 on reader inquiry card*

**Pavestone Company, booth 202, 204**

POB 1868, Grapevine, TX 76099  
817/481-5802, fax 817/329-5216  
*Circle 116 on reader inquiry card*

**PyroTherm/TXI, booth 405**

7535 Harlem Rd., Clodine, TX 77469  
713/277-3202, fax 713/277-1475  
High performance concrete masonry units conforming to the specifications of Pyrotherm are available at authorized producers in Texas and Louisiana. Masonry wall systems with HPCMU provide reduced construction costs, energy savings, and high performing fire walls. Specify a CMU with predictable weight, texture, and strength. "Half the Weight and all the Strength of a Heavy-weight." Select from "Color Sensations" group as well as Natural Gray and Silverstone. Custom colors are also available.  
*Circle 119 on reader inquiry card*

**R.H. Tamlyn & Sons, Inc., booth 609**

10406 Cash Rd., Stafford, TX 77477  
800/334-1676, fax 281/499-8948  
High wind mitigation products including hurricane clips, straps, and holdown anchors; masonry products including wall ties, triangles, and veneer anchors; vinyl accessories for fiber-cement including snap vent and ez vent continuous soffit vents, vinyl H mold Z bar, J mold, inside and outside corners, adjustable reveal/shadow line, starter.  
*Circle 119 on reader inquiry card*

**Raco Altura, booth 215**

2000 Silber Rd., Houston, TX 77055  
713/682-6100, fax 713/682-2079  
*Circle 120 on reader inquiry card*

**RAM Hurricane Protection System, booth 111**

2203 Wells Port Cove, Austin, TX 78728  
512/252-1478, fax 512/989-1387  
*Circle 121 on reader inquiry card*  
RAM Hurricane Protection System consists of 0.5-inch steel rods that are threaded at each end. Bottom end is screwed onto an anchor bolt that is cast in concrete slab, and top end uses a nut/washer to attach the top plate. System reinforces the walls and roof of building structures.

**Rheinzink Canada Ltd., booth 325**

4560 Dawson Street, Vancouver, BC V5C 4C1  
604/291-8171, fax 604/291-1343  
Architecture with zinc. Rheinzink is titanium zinc, a natural material developed for architectural roofing and wall cladding. Available in pre-weathered and bright rolled finishes, Rheinzink weathers to a natural blue-gray color. This self-healing patina makes Rheinzink extremely durable, corrosion resistant and low maintenance. If you are thinking quality, longevity, and environmentally, then you are thinking Rheinzink.  
*Circle 122 on reader inquiry card*

**Rogers-O'Brien Construction Company, booth 122**

11145 Morrison Ln., Dallas, TX 75229  
972/243-1335, fax 972/484-6231  
Founded in 1969 with combined construction experience of over 27 years; project experience includes corporate headquarters facilities, office building, banking/investment facilities, manufacturing plants, industrial warehouses, healthcare facilities, retail and commercial outlets, and recreational buildings; as general contractor offers building construction, construction management, refurbishing and remodeling, interior finish work, and design/build; proven track record on many methods of project delivery: phased, fast track, design/build, guaranteed maximum price, construction management, and conventional design/bid/construction.  
*Circle 123 on reader inquiry card*

**RTC, Inc., booth 318**

1420 Century Dr. #1000, Carrollton, TX 75006  
972/446-2211, fax 972/446-1522  
*Circle 124 on reader inquiry card*

**Schirmer Engineering Corporation, booth 326**

1701 N. Collins Blvd. #235, Richardson, TX 75080  
972/234-1617, fax 972/234-2753  
Schirmer Engineering is a full-service fire protection and life safety engineering firm. Services include: building, fire and accessibility code analysis; fire detection and suppression system design; fire and security alarm system design; computer based fire modeling studies. Offices in Dallas, Chicago, Los Angeles, San Diego, San Francisco, and Washington, DC.  
*Circle 125 on reader inquiry card*

**Semaphore Inc., booth 221**

3 E. 28th 11th Fl., New York, NY 10016  
800/545-7484, fax 212/545-7443  
Sema4 financial management software features real-time processing of accounting/financial data. The Windows-based program is available with remote Time/Expense, payroll, 254/255, and other optional modules; report and invoice formats are fully customizable. Sema4 inter-operates with other Windows applications, spreadsheets, and word processors.  
*Circle 126 on reader inquiry card*

**Simpson Strong-Tie Company, booth 324**

1720 Couch Dr., McKinney, TX 75069  
972/542-0326, fax 972/548-0924  
Founded in 1914; manufacturer of wood-to-wood and wood-to-concrete connectors since 1950; manufacturing facilities located in McKinney, Texas; San Leandro, Calif.; Brea, Calif.; and Columbus, Ohio; field representatives throughout the U.S. will be available to answer product application questions and participate in seminars dealing with structural-connector requirements in wood-to-wood and wood-to-concrete construction.  
*Circle 127 on reader inquiry card*

**Sound Reinforcements, Inc., booth 108**

410 N.E. Wilshire, Burleson, TX 76028  
817/295-9903, fax 817/295-0235  
*Circle 128 on reader inquiry card*

**Southwest Terrazzo Association, booth 431**

309 Gold St., Garland, TX 75042  
972/272-8084, fax 972/276-4736  
Association of terrazzo contractors and suppliers whose specialty is the installation of poured-in-place terrazzo.  
*Circle 130 on reader inquiry card*

**Sport Court of Texas, booth 214**

10208 Hwy. 620 N., Austin, TX 78726  
512/335-9779, fax 512/335-9770  
Suspended synthetic gymnasium and sports flooring.  
*Circle 132 on reader inquiry card*

**Sto Finish Systems, booth 210**

10076 Navajo, Quinlan, TX 75474  
903/356-0284, fax 903/356-0273  
*Circle 134 on reader inquiry card*



**Stone Panels, Inc., booth 417**

1725 Sandy Lake Rd., Carrollton, TX 75006  
972/446-1776, fax 972/245-3749  
*Circle 135 on reader inquiry card*

**Successive Graphics, booth 619**

1845 Woodall Rodgers Frwy. #1200, Dallas, TX 75201  
214/954-8029, fax 214/954-8027  
*Circle 136 on reader inquiry card*

**Sweet's Group-Division of the McGraw-Hill Cos., booth 116**

1341 W. Mockingbird Ln. #1103E, Dallas, TX 75247  
214/688-5156, fax 214/688-5157  
*Circle 137 on reader inquiry card*

**Terracon Consultants, Inc., booth 406**

2569 Gravel Dr., Fort Worth, TX 76118  
817/589-2594, fax 817/589-2090  
*Circle 138 on reader inquiry card*

**Tex-Lam Manufacturing, Inc., booth 207**

7217 Stuebner Airline, Houston, TX 77091  
713/695-5975, fax 713/695-3346  
Manufacturer of plastic laminated and solid phenolic core toilet partitions. Distributor of wash-room accessories.  
*Circle 139 on reader inquiry card*

**Texas Building Products, Inc., booth 603**

3261 Hwy. 108, Strawn, TX 76475  
817/672-5262, fax 817/672-5841  
Texas Building Products, Inc., manufactures a full line of attractive concrete masonry units featuring split face, burnished, and SpectraGlaze surfaces. All of these products are available in oversized dimensions (12x12, 12x16, 12x24, 16x16 and 16x24).  
*Circle 140 on reader inquiry card*

**Texas EIFS, L.C., booth 307**

220 Burleson, San Antonio, TX 78202  
210/472-2935, fax 210/472-2946  
Unique, lightweight exterior insulation and finish systems for residential and commercial structures; offers outstanding design flexibility; built to withstand the rugged climate of the Southwest; this Exterior Insulation and Finishing system (EIFS) is supported by an extensive training program for applicators.  
*Circle 141 on reader inquiry card*

**TSA Health & Workers' Compensation Programs, booth 316**

828 W. Taft Ave., Orange, CA 92865  
800/854-0491, fax 714/752-1568  
TSA-Endorsed Group Insurance Programs-Business Travel Accident, Dental/Orthodontia, Life, Medical (Indemnity, Medical Savings Accounts, Preferred Provider Organization), Prescription Drug Card, Short Term Disability.  
*Circle 142 on reader inquiry card*

**Tubelite Inc., booth 104**

4878 Mackinaw Trail, Reed City, MI 49677  
800/866-2227, fax 616/832-2611  
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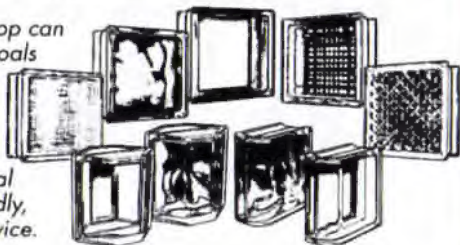
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## A Road Less Traveled

**TRAVEL** Fort Worth is known for Philip Johnson's Amon Carter Museum, an always alert scout looking east to warn us of approaching trouble, and Louis Kahn's Kimbell Museum, that temple dedicated to light. Soon we will have Tadao Ando's Modern Art Museum, which we expect to be a spiritual space dedicated to art. In addition to those famous museums, our central city contains Paul Rudolph and David Schwarz buildings seated among blocks of sensitively restored historic structures, a mix created with the philosophy of providing users with a safe but active street scene.

But before the museums were built or the downtown revitalized, Fort Worth was a place of water and natural wildness. Lake Worth is the oldest of Fort Worth's water reservoirs, built early in this century and surrounded by many Civilian Conservation Corp.-built park facilities. The shoreline is owned by the City of Fort Worth, which



2

early on leased shore lots for summer lake cottages. Needless to say, through time, these properties turned into year-round residences of all description. Among this varied lot of buildings are two unusual structures, both notable for their eccentric character. The first is the Hip Pocket Outdoor Theater at 1620 North Las Vegas Trail and the other is a house known as the Lake Worth Castle at 9121 Heron Drive.

The Hip Pocket Theater sits well back from Las Vegas Trail behind a local beer and barbecue joint. Its design—or lack of design—is reminiscent of the “Drop City” era of found materials architecture—a reference to the unincorporated towns of the hip generation in New Mexico, where everything was homemade and homemade was everything. The theater was built in 1977-78 by Hip Pockets director Johnny Simon, his wife, the production and business manager, and cast. It is open to the sky with a multi-level, free-form stage. Seating varies from church pews to home built. There is also a sprinkling of tin-can lighting. Not only is the building fun to look at, the theater company it houses presents a great series of summer musicals on the stage.

Inverness—known locally as the Lake Worth Castle—was built from 1928 to 1938 by the Samuel Whitting family. Mrs. Whitting designed and personally supervised the construction of the



1

house, which is built around a three-room stone farm house that was itself reputedly built in 1860 by D.P.

Terrell. Construction continued over a decade because the materials used were largely found and recycled. These found objects included such things as Victorian doors and trim, stained glass from the Masonic Temple at Mosque Point, and a three-dimensional wall sculpture composed of pieces of miscellaneous statues, cherubs and knights in armor.

The castle sits across Heron Drive from the lake, with a view and the remains of a pier at which a ferry once landed and transported cars to the “casino,” a lakeside swimming and dancing park. Slightly to the west of the pier remains are five guest cottages built by the Whittings. These are now being restored to their original salvaged-material origins; the restored structures will house the Lake Worth Sailing Center.

So you'll know: Someone famous slept at Inverness. Jimmy Stewart called the castle home while he was filming *Strategic Air Command* at nearby Carswell Air Force Base. It is also alleged that the Lake Worth Monster resided under the pier, and still comes out on occasion to star in the musical of the same name



3

1 Inverness

Worth Sailing Center

2 one of the cottages, which will be restored and house the Lake

3 the Hip Pocket Theater

at the Hip Pocket Theater. So watch out if you go visiting after dark.

**Paul Koeppe**

*Paul Koeppe is an architect living in Fort Worth.*

*Directions: To Hip Pocket—Go west on I-30. Take the Loop 820 (North) exit on your right. Drive north on Loop 820, exiting at the Las Vegas Trail-Heron exit (if you go over the lake bridge you missed your exit). Continue down the access road to Las Vegas Trail and turn left. Go under Loop 820, past the baptist church to the Oak Acres BBQ. The road to the Hip Pocket is between Oak Acres and the church (it's hard to see so go slow). To Inverness—Keep driving down the now-winding Las Vegas Trail about one-half mile to Heron. Take a left on Heron and drive several miles along the lake shore; you will see Inverness on your left with a large yard, a wood fence, and stone pillared iron gates.*



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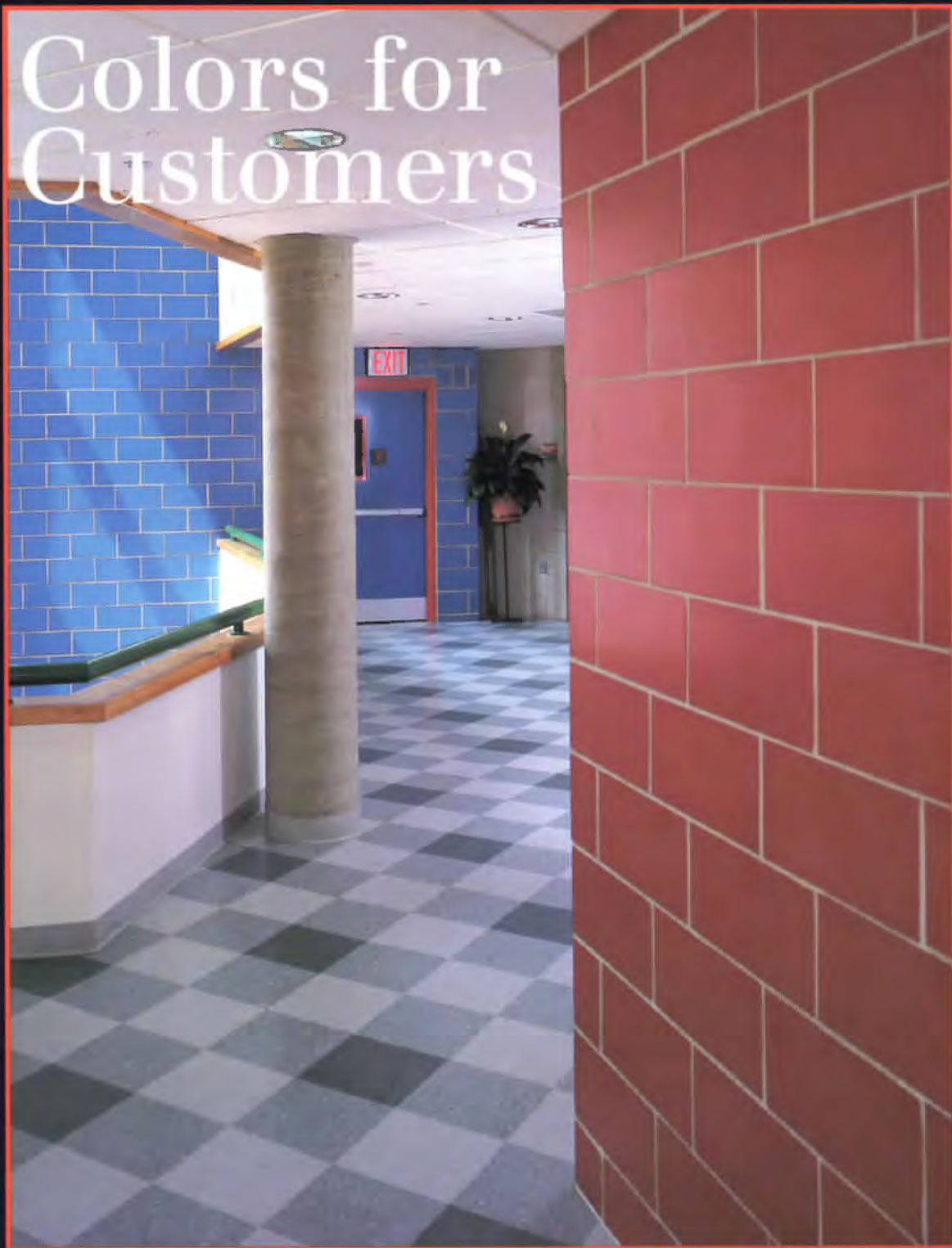
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