March/April 1983
Volume 33
Number 2
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In this Issue:

Texas Architect

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On the Cover: *Detail of the American Airlines Southern Reservations Offices near the Dallas/Fort Worth Airport, designed by the Dallas firm Corgan Associates. Photography by Michael Haynes of Dallas (see page 44).*

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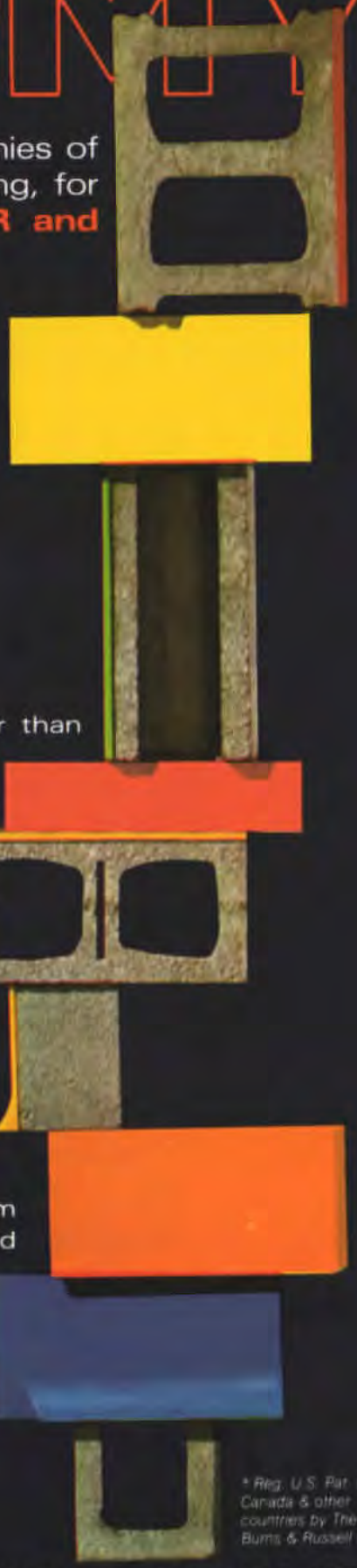

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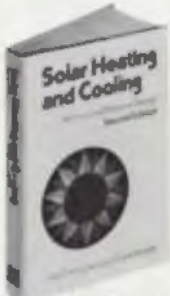

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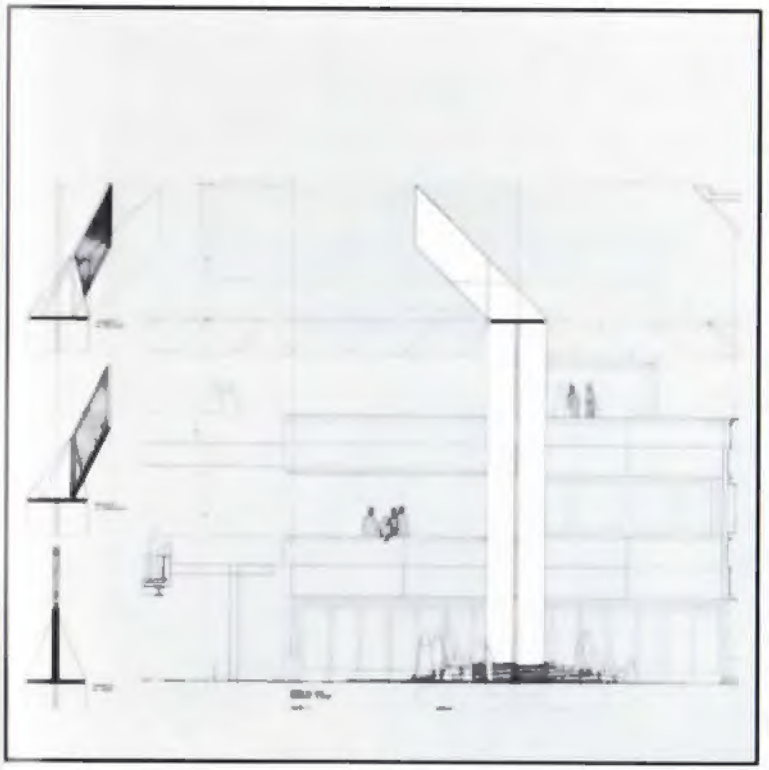

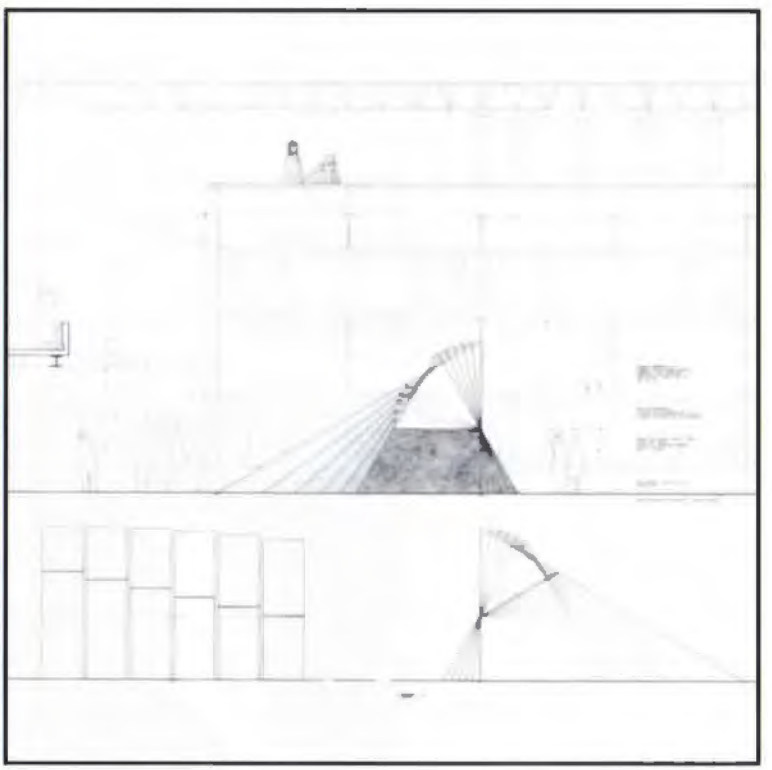

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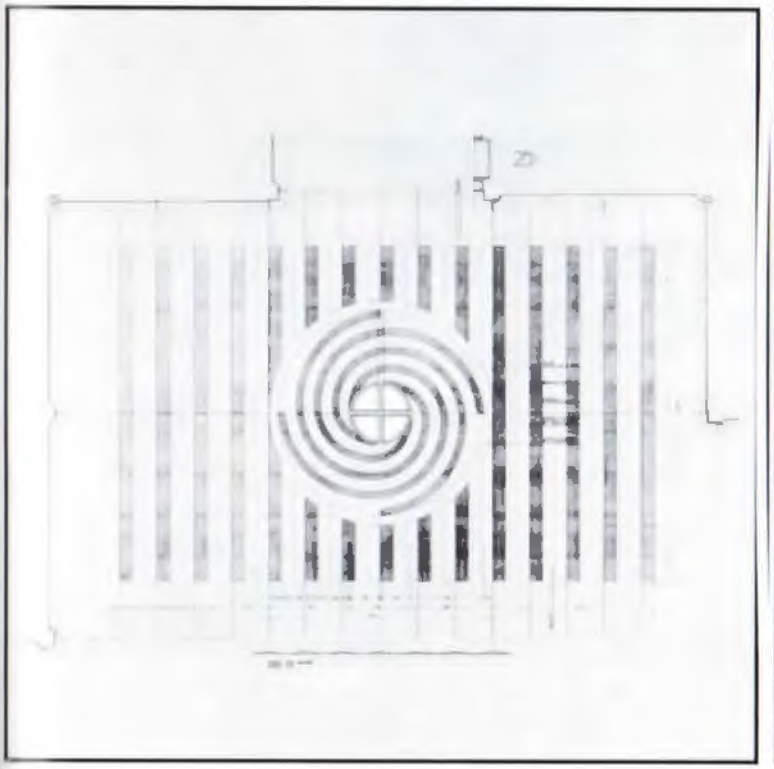

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In the News

People, Projects, Proposals, Events, Firms, Products

Edited by Michael McCullar

Judy Bankhead

View of San Antonio skyline from El Mercado.

Cisneros Urges San Antonio Developers to Preserve City's Essence

Inspired by a recent *Newsweek* article on the new American skyscraper, San Antonio Mayor Henry Cisneros has admonished certain San Antonio bankers, developers and architects to preserve the city's architectural essence in their plans to build anew.

"I have increasingly become impressed with the tremendous opportunities before our city at a time in its history when its skyline is about to change forever," wrote Cisneros January 21 in a letter to Tom Sokol, president of the San Antonio chapter of the American Institute of Architects. "The announcements of planned structures by Frost Bank, RepublicBank, and Raddison Hotels, as well as other projects now under discussion, will result in a dramatically altered skyline."

At a time when neighboring Austin's skyline is being dramatically and controversially altered, detracting from the Capitol's historic prominence, Cisneros is not asking for a strict maintenance of the quaint 19th-century scale that seems so characteristic of downtown San Antonio. In fact, he cites the Tower of the Americas, the Tower Life Building, InterFirst Plaza and the Landmark Building as features of the central business district to which developers ought to refer in providing a signature skyline for the city.

"I think it's their use of stone," he writes, "of cuts and angles, of warm colors and of artistic additions that make their net effect on the skyline so attractive."

Nevertheless, Cisneros does express concern over the prospect of downtown redevelopment overshadowing older buildings and places that lend San Antonio its unique Old-World flavor. There is no need, he says, for the San Antonio skyline to be as monumental as that of Houston or Dallas. He says there *is* a need, however, for San Antonio to have a readily identifiable skyline, like Houston's and Dallas', made up of buildings that reflect the city's culture and constitution.

"We have a tremendous opportunity to continue to define our city's presence by planning structures that will be attentive to the textures that are our heritage (and) that are unique and striking in design, and that can become distinctive, notable and interesting landmarks. . . ."

Sokol wrote Cisneros January 27 that he could not agree more with the notion that buildings can create a strong identity for a city and that San Antonio is indeed a different sort of place. But Sokol emphasizes that the city's unique charms are closer to the sidewalk and river than the penthouse or revolving restaurant.

"San Antonio draws its distinctiveness more from the amenities at street level rather than the height of its towers," Sokol writes. "It would be prudent for us to keep this in mind as economic forces increase the height and density of our high-rise structures."

As in Austin, such forces are exerting a great deal of pressure on the shape of downtown San Antonio. More than a million square feet of office, hotel and

Proposed HemisFair Plaza redevelopment.

retail space is now going up in the San Antonio CBD. Two of the biggest projects currently under way are the 28-story InterFirst Plaza, scheduled to open this spring, and the three-phase RepublicBank, which incorporates the facade of the old Texas Theater (see *Texas Architect*, May/June 1982). Major buildings recently completed downtown include the 19-story RiverWalk Place and 20-story Commerce Plaza.

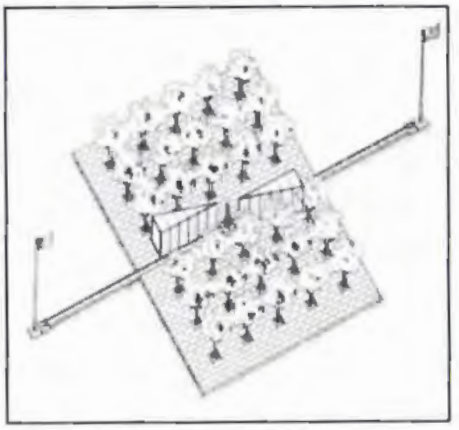
Cisneros has enthusiastically endorsed a $100 million proposed redevelopment of HemisFair Plaza, approved by the city council in December, which would include a 650-room hotel and 145,000 square feet of retail and entertainment space designed by Ford, Powell & Carson. Historic structures in the area would be preserved and incorporated into the design of the complex, which would feature plazas, a public park and expansion of the convention center into a part of HemisFair Plaza that has been unused since the World's Fair in 1968.

Such a heightened interest in downtown's physical environment, Sokol says, is due in part to the efforts of such active civic and professional groups as the Conservation Society, the Fine Arts Commission, the AIA chapter and Centro 21. It's becoming obvious to all that, unlike that of Austin or Houston or Dallas, San Antonio's major industry depends in large measure on the attractiveness of its downtown. "Everyone is catching onto the idea," Sokol says, "that the physical environment has an impact on tourism."

UH Architecture Student Wins Harris County Veterans Memorial Competition

As controversy continues to simmer over the Vietnam war memorial in Washington, D.C., designed by a Yale architecture student, a student of architecture at the University of Houston has won a refreshingly *un*controversial competition to design a shrine to Harris County participants in four 20th-century wars.

The program, cosponsored by a local Veterans of Foreign Wars post and Harris County Commissioner Bob Eckles, sought designs from Houston art and architecture students for a "meditation area" in a county park. The plan at first was to build a memorial to the forgotten veterans of Vietnam, as so many other communities seem to be doing these days. Eventually, however, the concept grew to include



Harris County war memorial.

World Wars I and II and Korea as sponsors realized there were no existing memorials to county casualties and survivors of those wars either. Sponsors also figured that private funding for the project might be more easily obtained if the memorial were less exclusive.

The winning design by fifth-year UH architecture student Victor Perez, chosen from 25 entries in the program, calls for some 1,150 names of Harris County dead and missing in four wars to be put on two wedge-shaped pieces of polished red granite quarried in Marble Falls. The center of the two-acre site in Bear Creek Park in West Houston will be paved with 4,200 square feet of textured white limestone from Abilene and shaded by 30 thornless honeylocust trees planted in six rows. A small fountain will extend axially by trough to an American flag at one edge of the memorial and a Texas flag at the other. To create the effect of a shaft of light "splitting" the memorial in two, the water will be highlighted at night by a series of high-intensity underwater lights.

Not completely without aesthetic compromise, the memorial's original design may be somewhat altered to add a familiar touch of patriotic imagery and to facilitate maintenance. County commissioners are considering a proposal to replace the central fountain and trough with a small bronze statue of an American bald eagle sitting on a globe atop a granite pedestal. By either design, construction is scheduled to begin on the $250,00 memorial this spring and to be completed in time for formal dedication on Veterans' Day.

Getting war memorials built in recent years has become a tricky business. The Vietnam memorial in Washington, dedicated in the fall of 1982, aggravated some veterans from the very outset when its design competition was won by a 21-year old senior at Yale named Maya Ying Lin, a Chinese American woman who was 12 years old when the last American combat troops came out of Vietnam. Of course, Ms. Lin's age, sex and ethnicity have nothing to do with her ability to design, and her winning proposal—calling for two 246-foot-long concrete walls clad in polished black granite and sloping downward beneath ground level to form a wide "V"—was chosen unani-

Vietnam war memorial in Washington, D.C.

mously from a field of 1,421 entries. The American Institute of Architects, among others, has lauded the design—and has come out strongly against efforts to incorporate an American flag and a life-size statue of three infantrymen within the "V" of the memorial walls. Opponents of the original design, including H. Ross Perot of Dallas, feel that it is just too abstract and not monumental enough to symbolize the sacrifices of Vietnam vets and therefore needs a little something more. A compromise plan, approved by the Commission of Fine Arts in February, calls for the flag and sculpture (designed by Washington sculptor Frederick Hart) to be placed in an entryway plaza about 120 feet from the walls later this year.

Controversial or not, the memorial drew hundreds of veterans and relatives of those lost in Vietnam to Washington in November to be on hand at its unveiling on the Mall. Gently touching and searching the reflective black walls, which bear the names of the 57,939 dead and missing Americans of the war, they looked for friends and loved ones in a spirit of communion and remembrance that somehow made the design seem right as a memorial to good men who went to a bad war.

Convinced that the competition was a success in spite of the clamor—after all, the winning design *was* built and dedicated on the proposed site—project director Bob Doubek of the Vietnam Veterans Memorial Fund says the VVMF was determined to do it right from the beginning. The problem, he says, was "bridging the gap" between two communities: veterans on one hand, artists on the other. To help with the design and mechanics of that bridge, Washington-based VVMF, sole sponsors of the competition, enlisted the aid of Washington architect and design-competition consultant Paul Spreiregen, who Doubek says is familiar with the "substantive niceties" of putting such a competition together. The idea was to stick to a set of specific program criteria, steer the competition as clear of politics as possible and, in the end, defer to the professional judgment of the jury. This they did, Doubek says. Opposition to the winning entry has come only from a small vociferous group, he says, and not from major veterans organizations. (Such a negative reaction could be due to confusion over the purpose of the project, which was never meant to be your typical war memorial. The VVMF has never used the word "monumental," Doubek says. Inspired by a park-like shrine at West Point, sponsors envisioned the memorial as a "place" rather than an "object.") The American Legion and VFW, as well as the VVMF, have supported the jury's original selection, and the finished product has been well received by most everyone who has seen it. Due in part, perhaps, to all the publicity it has received, the memorial is reportedly one of the most popular in Washington. "The public comes to appreciate something that is good," Doubek says.

Jimmy Jalapeeno

Ill-fated Vietnam memorial for Austin.

In a similar turn of events in Austin a few years ago, a competition to design a memorial to Vietnam veterans from Travis County also seemed at times to be as divisive as the war itself. The Austin chapter of the Military Order of World Wars came up with the idea to honor local Vietnam vets in 1977. Having already sketched out the simple obelisk that it had in mind, the group was persuaded by area artists to hold a bonafide design competition for the memorial, which it agreed to do in the fall of 1979. The winner was Thana Lauhakaiku, a professor of art at the University of Texas and a native of Thailand, and his design consisted of a 36-foot-square black steel grid with a white egg-like form positioned in each square representing each of the county men lost in the war. Contemplative and moving, said the competition judge. Totally inappropriate, said the veterans group, which went on and built its own obelisk with a star on top and the names of the 102 dead and missing Travis County servicemen inscribed in its base. The memorial was dedicated in Waterloo Park on Memorial Day 1980.

It remains to be seen whether young Perez's design for the Harris County war memorial will really appeal, once it is built, to the people it is intended to honor, although everyone seems to like it so far. It could be that opponents of the more abstract approach tend to underestimate the ability of the average grunt to appreciate "art." Or perhaps it really doesn't matter if he does, since the noble reach for a higher aesthetic purpose is bound to go over the heads of some of the people who fight our ignoble wars. But a war memorial should say something strong and direct to the veteran who stands before it as well as the people whose attention it is intended to attract. And fortunately for all, Ms. Lin's stark enumeration of 57,939 names finely etched into polished black granite—*sans* statue and flag so far—appears to do just that.

Potentials Scrutinized For Corpus Christi's Arts and Science Park

Sketches have been arriving over the past few months from New York landscape architects Zion and Breen dealing with the open space in front of Philip Johnson's Art Museum of South Texas in Corpus Christi. Having recently celebrated its tenth anniversary, the museum has joined the City of Corpus Christi in planning for the future development of the bayfront which the next decade will undoubtedly provide.

The particular area of the bayfront in front of the museum, known as the Arts and Science Park, is currently under the scrutiny of interested citizens and city planners who are debating what type of activities the space should support. Currently used for automobile circulation and parking, the area offers the potential for a significant urban space that could unify the waterfront, museums, convention center, historic district, theater and future hotel development.

Before the completion of the convention center in 1981, the area around the museum was underdeveloped, and there was little pressure to question how its development might be directed. The art museum stood out as a work of art in its own right—an urban landmark somewhat removed from the rest of the city. Early sketches from Johnson and Burgee imagined the building with a European-style pedestrian plaza, complete with water gardens, aviary, outdoor theater and restaurants in a Baroque arrangement of paving and landscaping. Heightened drama was to be provided by enormous freighters passing by 500 yards away. The commercial growth needed to realize this vision, however, was occuring in another

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Site plan of existing bayfront park.

part of town. As a result, the museum has remained an isolated cultural landmark. And with the construction of the convention center, the museum was visually overwhelmed by the center's large auditorium and its equally large parking garage.

The Zion and Breen schemes attempt primarily to restore a distinctive sense of scale to the museum in its relationship to the Bayfront Plaza and the city. Recognizing the problem of the convention center's orientation, Zion nevertheless points out how delightful it is that a conventioneer can have walking access to two museums, a playhouse and a dramatic view. He notes the lack of an "organic whole" largely caused by the parking scheme and suggests the creation of an "outdoor room" similar to, though of a more modest nature than, Johnson's original concept. Furthermore, Zion suggests using urban-scale sculpture and fountains to identify and organize a grand termination of Ocean Drive in front of the convention center and to rechannel circulation to the art museum to Chaparral Street, thus providing a frontal approach to the museum. Multistory parking garages are suggested to minimize the presence of automobiles.

The larger context in which these plans are being considered is the recently adopted Corpus Christi Bayfront Plan. Proposed by the City Planning Department in response to development pressures on the downtown bayfront area, the plan is an attempt to exert public control over this particularly sensitive environment. Basically, strategies suggested are to encourage the movement of people along the waterfront, thus taking advantage of this valuable urban asset. The plan specifically proposes high density residential, commercial and hotel development for the area. Promoting its image as a cultural center as well, the plan also suggests the establishment of an historic district adjacent to Bayfront Plaza, as called for in the Zion and Breen plan. Tax-increment financing and zoning

schemes are suggested methods by which the city could achieve these goals.

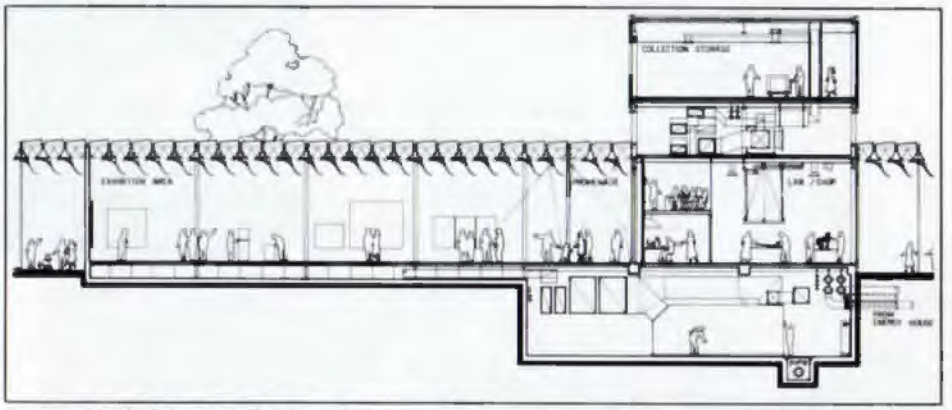
Public support of both plans has been positive, although an accurate image of Bayfront Plaza probably will not appear until future private-sector development takes place. Meanwhile, Philip Johnson's art museum will continue to be a source of pride for the community, asserting its presence within the context of urban change.

—John R. Dykema, Jr.

Piano's Menil Collection Under Way in 'Do-ville'

At this writing, the outline of Houston's latest art facility should have begun to occupy a site adjacent to the Rothko Chapel in Houston's Montrose area. Known locally as "Do-ville," the site is characterized by a collection of wood-frame bungalows in a variety of styles but all painted grey with white trim. One of Houston's older residential enclaves, Montrose has been gradually changed in recent years due to its proximity to downtown until it now contains an amalgam of mixed-use intrusions, contrasting scales and new development. In contrast, "Do-ville" represents a conscious effort at acquisition of property to maintain the existing character of the area and eventually to provide a buffer for the proposed art facility, which will be the permanent home of an extensive art collection assembled by patrons Dominique de Menil and her late husband, John.

The new facility, The Menil Collection, the first solo work in the United States by Italian architect Renzo Piano, is designed to create a linkage of pedestrian routes in the neighborhood and to relate closely to its context. Juxtaposition of the bungalows to the projected museum is at once the point and design issue of the facility, resulting in somewhat of a hybrid expression. The building will be *big*; some 70,000 square feet of exhibition space and processing and archival support areas are essentially in one story. Primary galleries are ordered by a linear promenade linking an interplay of rooms and courts. Collection storage, curatorial offices and archival research facilities are contained in an articulated penthouse. Planning results from a basic grid, curious in the context of Piano's work, which consistently separates structure from spatial infill and here conservatively links structural



Section of The Menil Collection, Houston.

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Despite the concerned and diligent efforts of the Western Pennsylvania Conservancy, decades of intense weathering and constant exposure to water had taken a heavy toll on Frank Lloyd Wright's famous "Fallingwater". A five-year-old coat of paint was blistered and peeling, and much of the concrete was pitted and spalled.

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bays and room definition in a direct fit. Exterior expression is of a Mies-like articulated frame, contrastingly infilled with panels recollecting the horizontal wood siding of neighborhood cottages. The main design element, however, is a composite roof structure of ductile iron trusses and ferrocement beams in a curved-blade configuration comprising the main span of the interior.

Piano, with offices in Genoa and Paris, will execute The Menil Collection in joint venture with the Houston firm Richard Fitzgerald and Partners. Long identified as a high-tech designer, Piano has developed buildings whose architectural character arises from unique uses of structure, construction process, enclosure and so forth, which have made him seem to straddle the line between architecture and industrial design.

Plain walls and a wood floor in The Menil will contrast with the unique ceiling element as it integrates structure, services and both artificial and controlled natural daylight. It is the use of the latter that reflects the interests of Piano, for extensive research went into development of a configuration that would retain a consistent level of natural light regardless of orientation, volume and fluctuation of external conditions.

In the early summer of 1982, a full-size mock-up room was fabricated to refine the design under actual conditions, including experimentation using actual pieces of art from the collection. Construction documents will be completed in early 1983, and work has proceeded on development of a process for fabrication of the roof elements.

—Peter Papademetriou

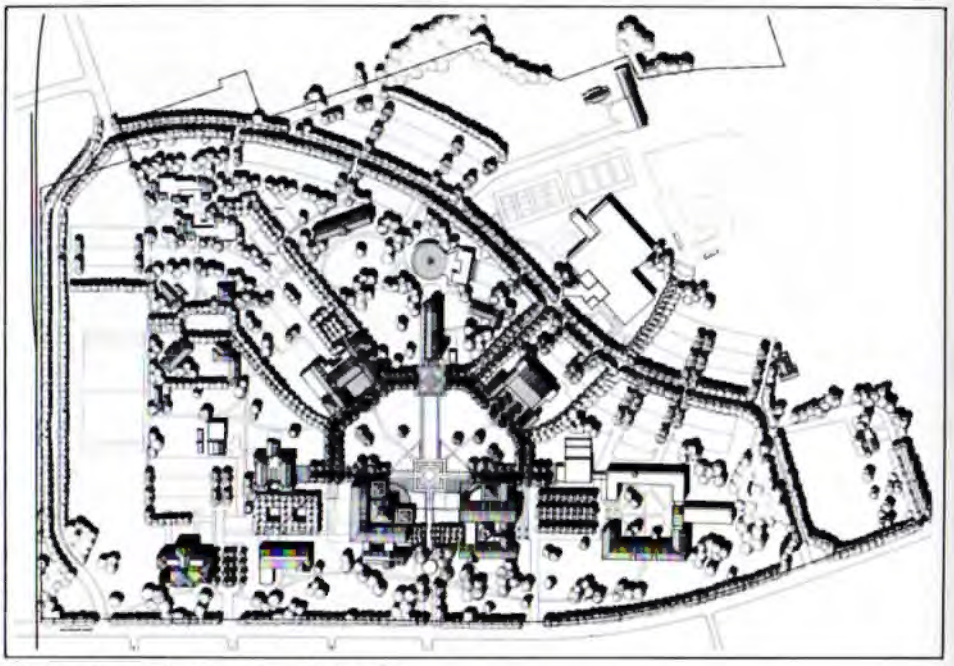
Two Houston Firms Win P/A Citations

Two Houston architecture firms—the Houston office of Skidmore, Owings & Merrill, and Morris/Aubry Architects—have won citations in *Progressive Architecture's* 30th annual awards program.

Two of 26 chosen to receive awards from a field of 1,040 entries were SOM's master plan for Southwestern University in Georgetown, which won in the urban design and planning category, and Morris/Aubry's proposed addition to the Nina Vance Alley Theater in Houston, which won a citation for architectural design.

Awards were presented January 21 during an awards luncheon at the Plaza Hotel in New York.

Section of proposed garage-top theater.



Master plan for Southwestern University.

The Southwestern University master plan calls for an academic court to be developed at the heart of the campus by repositioning space in peripheral buildings and by strengthening the axis of an existing court. A crescent drive and central parking area would be replaced by a pedestrian promenade with a landscaped edge defining the court. Existing buildings of architectural or symbolic importance would be given more prominence, and new buildings that do not reflect the school's traditional character would be modified to bring them in line with the master plan.

Morris/Aubry's addition to the Nina Vance Alley Theater complex calls for a 45-seat proscenium theater to be built atop a downtown parking garage. Planning for the theater addition began after the parking garage was under construction, so the design had to be adapted to predetermined dimensions, structural columns and elevator locations. Patrons enter at the 13th-floor theater lobby, then proceed up to seating on the 14th floor and a lounge on the 15th. Ornament is used extensively in the theater to make the spaces more "ceremonial."

Jurors for the program were George Baird, Toronto; Alan Chimacoff, Princeton; Mark Mack, San Francisco; James Stirling, London, England; Sandra Howell, Cambridge, Mass.; Marietta Millet, Seattle; Stanton Eckstut, New York; and John M. Woodbridge, Berkeley, Calif.

Des Taylor Named Honorary AIA Member

Des M. Taylor, executive vice president of the Texas Society of Architects, has been elected an honorary member of The American Institute of Architects in recognition of "his years of dedicated service to the profession of architecture."

Taylor and 13 other individuals will receive their honorary memberships during the 1983 AIA National Convention May 22-25 in New Orleans.

As TSA's executive vice president since December 1972, Taylor has been instrumental in "developing a model governmental affairs program for representing architects' interests in the state legislature," according to his nominators. He

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1/2"	Sheathing – span index	32/16	24/16
	Max. roof span/no clips	28	24
5/8"[2]	Sheathing – span index	40/20	NA
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also helped create "a commitment to communication, which has resulted in a highly effective and widely respected publications program, including *Texas Architect* magazine." In addition, Taylor was instrumental in leading the Society "into a position of financial strength that enables it to be a dynamic organization of high visibility and a leader among AIA components nationwide."

Taylor served as chairman of the Council of Architectural Component Executives in 1978-79 and concurrently as CACE representative to the AIA Board of Directors. Currently, he is a trustee of the TSA Insurance Trust and an honorary member of both the Austin Chapter AIA and the Texas Society of Architects. His nomination states: "His dedication, loyalty and effectiveness in all matters relating to the architectural profession would be difficult to equal."

A native of Kilgore, Taylor received his bachelor's degree and law degree from Baylor University in Waco. Before coming to TSA he was executive director and legal counsel for the Waco Chapter of the Associated General Contractors.

Of the 14 individuals receiving honorary AIA memberships this year, 10 are from the general public and four are from the AIA and components' staffs.

Texas Attorney General Holds For and Against Architects' Positions

The Texas Society of Architects has received some good news and some bad news regarding recent opinions issued by the Texas Attorney General.

First the good news: then-Attorney General (now Governor) Mark White held December 23 that a contract for the services of a construction manager on public building projects is excepted from the competitive bidding requirements of state law.

The opinion was issued in response to a request from the Tarrant County district attorney, who argued that a construction manager is not a "professional" and therefore should be excluded from provisions of the state Professional Services Procurement Act.

The act, enacted in 1971, stipulates that no state, county or municipal entity may engage "personal or professional services" on the basis of competitive bids, since so doing would most likely result in the selection of the least able or qualified. Instead, the act requires such contracts

to be awarded on the basis of demonstrated competence and qualifications.

White concluded that the service of a construction manager is a "personal service," if not a "professional" one, and therefore is within the "personal services" exception of the law.

Now the bad news: White also has held that the use of the title "Architectural Engineer" by a person registered under the Texas Engineering Practice Act and not the Architects Registration Law does not violate the latter.

The opinion was issued December 31 in response to a request by the Texas Board of Architectural Examiners, which has ruled that firms or persons other than those registered by the TBAE may not "employ the title 'Architect' or constructions of the word 'architect' to describe persons or services."

White pointed out, however, that a rule promulgated by the TBAE cannot validly contradict the Architects Registration Law, which specifically allows firms composed of persons not licensed to practice architecture to "hold themselves out" as offering architectural services provided that the actual practice of architecure on behalf of such firms is performed only by registered architects.

White said there is a difference between *furnishing* architectural services and *performing* them, and that to violate the Architects Registration Law a person must use the title "Architect" *and* actually practice architecture.

Texas Construction Activity In 1982 Reflects 1.7 Percent Decrease Over 1981 Activity

Total construction contracts in Texas in 1982 reflect a 1.7 percent decrease over construction activity in the state in 1981, according to McGraw-Hill's F. W. Dodge Division.

Dodge vice president and chief economist George Christie reports that 1982 contracts for residential and non-residential building statewide totalled $14,955,405,000, down from a year-end total of $15,216,763,000 in 1981.

In the Houston metropolitan area, total residential and non-residential building contracts in 1982 show a 12 percent decrease from 1981 to 1982. In Brazoria, Fort Bend, Harris, Liberty, Montgomery and Waller Counties, 1982 building contracts totalled $4,766,982,000, down

Continued on page 68.

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About this Issue

In this issue, we consider a subject that during the past decade has appeared more or less automatically on the editorial calendars of architectural publications—"Energy-Conscious Design." It has been one of those topics that demanded attention, that simply could not be ignored. But there is a certain irony in the dedication of special editorial attention to what should be one of the "givens" of architecture. At least for now, however, there is still ample justification to consider energy-conscious buildings as a class unto themselves.

During our Texas round-up of architectural responses to the issue of energy conservation, we encountered assorted manifestations of energy consciousness—from wind power in Lubbock to aluminum *brise-soleil* in Dallas. A number of small firms are specializing almost exclusively in passive solar homes, utilizing age-old concepts of design for climate such as site-specific orientation, sun control devices, storage and transfer of solar heat, and, where appropriate, earth sheltering. For larger-scale projects, there seems to be an increasing sensitivity to such basics as insulation values, placement of fenestration to prevent heat gain, and efficient HVAC and lighting systems that are in tune with the building's cycle of energy use. It is apparent that a decade of high-priority experimentation and data-building has produced a sound body of knowledge about energy conservation from which architects may draw.

At the same time, however, energy is not as hot a topic as it once was; there are widespread signs of a growing complacency regarding the importance of conservation. Once-popular energy seminars are being discontinued for lack of interest. The Federal government has begun a virtual withdrawal from the energy research scene, jeopardizing the data-building momentum that has been developed during the last 10 years, and making it less likely that existing information will be disseminated to those who can give it practical application. One of the more amazing signs of complacency is that the American auto industry, apparently not having learned its lesson, may be gearing up to meet renewed consumer demand for larger, less efficient, cars.

"What else could we expect," one might ask, "in the midst of a global oil glut?" We might expect some ongoing recognition of the nagging reality that—despite fluctuations in supply and demand—petroleum is a finite resource. That means the process of "running out" should be *prolonged* through conservation, and the transition to sustainable sources of energy should be *minimized* through a renewal of commitment. However discomforting the thought, the good old days are gone forever. *—Larry Paul Fuller*

Special thanks to Raymond Reed, of the Texas A&M Department of Architecture, for his advice and counsel during the preparation of this issue.

Ten Years Into the Energy Crisis

An Overview

By Raymond D. Reed

In 1973, long lines waited for gas. In 1983, long lines wait for jobs.

In ten years, the high cost of fueling our factories and farms, heating our homes and running our businesses has squeezed us into recession. Production is down. Construction is down. Prices are up. Still there is plenty of everything, if you have the money. But, fewer do. Fewer work; fewer buy.

Looking Back—The Problem

The dominant force shaping our nation from World War II until 1973 was cheap oil and gas. Cheap, abundant oil and gas shaped and sized our homes, our cars, our offices, our cities, our highways, our farms, our factories—our total way of life.

During these years, "to satisfy the market," we built slurbs of fast-not-to-last-ticky-tacky-houses, and destroyed our cities' country edges while becoming auto-dependent for survival. We built super-gas-tax-highways, bypassed small towns into oblivion, and ripped once-proud and powerful railroads into shreds. We did this, and more, with pride. America was "on the move." "On-the-make" conspicuous consumption was the game, and we played it well, with little regret or remorse.

But that was *then*. Now we—along with the other major industrial powers of the world—are dependent upon imported petroleum to sustain our economy. However, the factories of Western Europe and Japan, constructed after World War II, are more efficient than our factories. And the cities of Japan and Western Europe, constructed before the age of cheap energy, are more efficient than our cities. Their cars are more efficient than our cars. And our now-not-so-super highways are less efficient than their railroads.

The combined overheads of inefficient industrial production, expensive distribution, and a high, but comparatively wasteful, standard of living inhibit our successful competition in world markets. Our productivity, our buying power, and our quality of life continue to decline. Prosperity shines only on those sharing in energy-related profits, those preparing for war, and those inventing new ways to do things better, using less: the Hondas, the Sonys, the Silicon Valley breakthroughs.

Failure and Success

What have we done, in the last ten years, to remedy our energy problem? Not much. We have failed to adopt a national energy policy. The current administration is methodically dismantling the Department of Energy, the Solar Energy Research Institutes, and all conservation programs. Get-it-out-of-the-ground-fast auctions of national resources to the highest bidder threaten even our national parks and seashores. It would appear that everything we have has a price.

We have steadfastly discouraged the development of solar, wind, and other decentralized renewable resources, but we have generously subsidized the enormously expensive and potentially unsafe nuclear industries. If we could make war with windmills and sunshine, would the government subsidize renewable energy technologies?

We tried, but failed, to adopt a national energy building code. We tried, but failed, to adopt energy performance standards. With few token exceptions (such as the IRS deduction for energy-conserving devices), our national legislative response has been a failure—an intentional failure—and our nation suffers from it. Fewer work. Fewer buy.

State legislative responses generally have been more successful. Most states have statewide energy building codes of varying degrees of effectiveness, but the lack of a uniform energy code makes large-scale practice difficult. It is understandable that Texas, in profiting from oil and gas exploitation, has refused to establish a statewide energy building code. It is also regrettable.

Throughout the land, a few cities have developed energy policies and development plans. Portland, Davis, and Boulder are notable examples. In Texas, Port Arthur has adopted development ordinances to optimize solar access. However, when all federal, state, and city efforts are averaged, our legislative response to the energy crisis must be rated a failure.

What have we done as architects? We have learned a lot. In 1973, the profession had no idea how much energy buildings consumed. In 1975, the D.O.E. sponsored—and the AIA Research Corporation managed—a massive research project to determine energy uses in different buildings and climates. This research provided the basis for increasingly accurate estimates of average and state-of-the-art energy standards for buildings.

In 1973, few architects knew how to design energy-efficient buildings. In response to the energy crisis, the American Institute of Architects revised its entire budget to prepare the requisite technical workbooks and successfully present the largest self-financed professional development program in the nation. The AIA Energy in Architecture Seminar series has to date trained about 3,000 architects to design more energy-efficient buildings. Twenty-five seminars will be taught in 1983; then the program will be withdrawn. Here is an opportunity to acquire immediately usable and marketable tools and techniques from two days of intensive work. Increasing energy prices increase the need for energy-efficient design.

AIA Energy Committee

Since 1980, the AIA Energy Committee has recommended a series of coordinated five-year plans to guide Institute policies and programs. Energy policies

adopted in December 1982 include:

- support for a national energy policy,
- research in energy-conscious design,
- immediate emphasis on the energy-efficient redesign of existing buildings,
- implementing performance-based building targets,
- energy education at all levels,
- energy conservation tax incentives,
- the development of community-wide energy conservation strategies and techniques,
- forming a national energy emergency preparedness task force on the built environment,
- and supports for studies on how we can make the transition to a society based on renewable energy sources.

It is an ambitious and essential program.

AIA Foundation

Current AIA Foundation (the old AIARC) energy activities include:

- preparing an industry-wide energy data storage and retrieval system,
- developing Energy Regional Urban Design Assistance Team Programs,
- assisting in the revision of ASHRAE Standard 90-A (the basis for most state energy codes),
- and preparing homebuilders' and Manufacturers' Guides for Energy Conservation.

In every architectural school, there are two or three faculty members developing energy-efficient technical and design courses. Numerous notoriously underfunded small research projects are beginning to provide rational criteria for climate-sensitive energy-efficient design. Most schools are training a few computer-competent energy-efficient designers, who are sure to compete well in the job market.

Economic pressures and increased skills in the profession have lowered average energy consumption in new buildings to about 75% of their 1973 counterparts. Seventy percent reductions in new buildings and 50% reductions in renovated buildings are easily achievable. But the fact remains that, after 10 years into the energy crisis, regionally sensitive, energy-efficient design is still the exception rather than the rule. Our stock-plan-energy-hog housing style hasn't really changed. Nor have our office buildings, our shopping centers and our cities evolved for the better. Slick, stylish magazines still feature sweet architectural pastries and candy-colored confections. Pundits of the "let them eat cake" schools of design still prevail, while energy-efficient design is considered an "add-on" service by many firms.

Looking Ahead

In view of our mixed success at coping with the problem of energy, what strategies should we employ for the future? Above all else, we must recognize that the energy crisis will not go away. The giant jump from four- to forty-dollar oil forever changed the world's economic system—despite a current temporary glut and softening of prices. Further fluctuations in energy prices, up and down, will create additional havoc. The industrial nations of the world are enmeshed in a common web of inflation and recession. Third World potential defaults on development loans threaten the world's monetary system. Witness Brazil and Mexico. The global economic system is changing. As the forces that shape society change, the architecture of its buildings and cities must change. Reduced availability of cheap oil and gas and the transition to more sustainable energy sources (coal, solar, nuclear, etc.) will force great changes in the cities, towns, farms, and factories of the world. It is inevitable.

We cannot legislate a nostalgic return to the good old days. The increasing contrast between the fewer-but-richer and the unmet needs of the poor could breed revolution. Life sentences in the slums will not stimulate capitalism. Nor can we, as architects, attempt to maintain the staus quo. If we allow outmoded codes and practices to frustrate intelligent responses to new needs, we will contribute to the decline of our nation. We must master ageless concepts and new technologies to develop a sustainable architecture of energy-efficient buildings and cities. We must learn how to live better, using less.

Less energy per person does not require a lower standard of living. The great lasting literature, music and architecture of the world was conceived and created using less than we now possess. The most exciting cities and soul-satisfying towns of the world use less energy per person than we do.

Even the most optimistic predict that it will take several decades to fully develop alternative energy sources. During this critical transition, architects must develop and perfect the concepts and techniques of sustainable architecture.

We must re-learn how to design with nature. Energy-efficient, regionally sensitive buildings are essential to sustainable architecture. And we must extend energy-efficient design to the community scale; it is not enough to design energy-efficient buildings in wasteful cities. We must tighten city perimeters and increase densities to sustain mass transit. Creative adaptive reuse and urban infill are essential.

As architects we must advocate multiple-use buildings and more finely mixed land uses to support efficient and enjoyable communities. While buildings may become bigger (whole galleria-enclosed communities), they shouldn't necessarily get taller. Horribly inefficient tall office buildings, made increasingly obsolete and unnecessary by electronic breakthroughs, have dehumanized our downtowns. Urban land reform may be necessary.

Getting Serious

The successful transition to sustainable architecture and a nation of energy-efficient buildings and cities will be, at best, a close race between the decline of conventional supplies and resources and the development of viable alternatives. Therefore, we cannot be complacent. We cannot drag our feet like the U.S. car industry without suffering a similar fate. We must advocate and practice sustainable architecture. And we must become activists in the process.

As architects—as a profession—we have a responsibility to provide the best possible service to sustain the environmental health of our clients and our society. Amusing architectural fripperies may be indulged, only if they do not harm the environmental health of the community. It is our responsibility to produce sustainable architecture that shelters the soul and substance of our people. Nothing less.

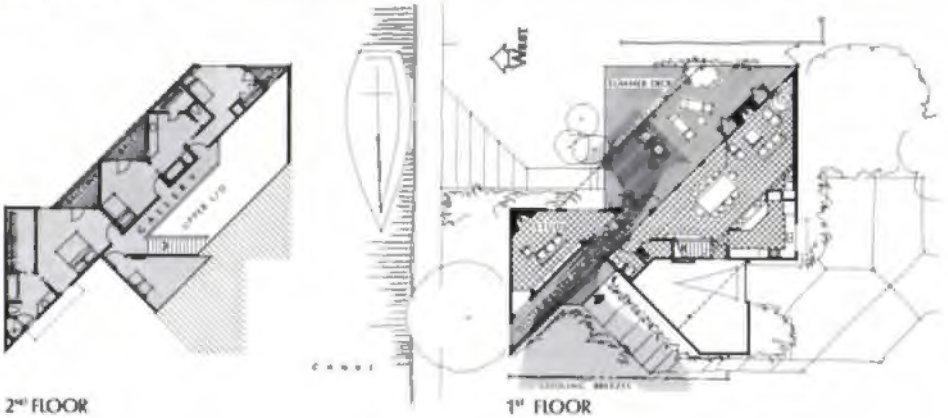
Raymond D. Reed is a professor of architecture at Texas A&M University and a recognized spokesman in support of energy-conscious design.

Energy Potpourri

Recent Responses to the Issue of Energy-Conscious Design

Traditional Dog-Run Helps Ventilate Modern-Day Coastal Retreat

Northwest side.



SAILOR'S RETREAT, NEAR GALVESTON BAY, BY ENVIRONMENT ASSOCIATES, HOUSTON

Located 30 miles east of Houston on a canal near Galveston Bay, this house is designed to take advantage of sea views and prevailing sea breezes. A dog-run vestibule funnels southeast breezes to a deck on the northwest side of the house, where the views are, or can serve as an air-lock entry to front and back yards when the house is mechanically heated or cooled. A clerestory above a second-floor gallery brings natural light into the house and helps ventilate the interior by creating a "thermal chimney" effect, pulling air through ground-level windows and doors and exhausting it out the top of the house. To reduce heat gain and transfer, foil-faced paperboard is laid over rafters in the roof, with an air space on both sides allowing air to enter and exit through soffit and ridge vents. Walls are similarly ventilated. Other features include an overhanging second floor on the northwest to protect windows below from the afternoon sun, light colors to reflect the sun's rays and wall and ceiling fans to circulate internal air. During its first year of use, according to the architect, the owner didn't turn the air-conditioner on until midsummer. And in winter, the entry deck on the south side, protected from the north wind, was often warm enough for sunbathing.

Additional Credits

Project Architect: Laverne Williams
Project Team: David Prince and Uli Zwar
Structural Engineer: Pieratt Stalinsky Inc., Houston
Contractor: Clayton Company Constructors, Houston

Mix of Passive-Solar Features Cools Southeast Texas Farmhouse

CARSON FARMHOUSE, McDADE, BY MICHAEL GARRISON, AUSTIN

In the coastal hot-humid climatic zone in Texas, which extends as far inland as Austin, the biggest problem as far as human comfort is concerned is how to stay cool and dry seven months out of the year (from April through October). To that end, the 2,000-square-foot Carson farmhouse in McDade, situated in the somewhat incongruous "Lost Pines" belt 25 miles west of Giddings, is designed to combine four passive-cooling measures: shading, ventilation, thermal grounding and recirculation of internal air. High-mass walls of insulated and stuccoed concrete block are shaded by evergreen trees and overhangs and thermally grounded to the cool earth by a deep foundation beam with continuous slab-edge insulation around the perimeter. A roof-top cupola, 30 feet above the 1,000-square-foot central living room, serves to ventilate hot air out the top. Equipped with attic fans and return-air ducts, the cupola also recirculates inside air to prevent temperature stratification. Additional cooling is provided by ceiling fans, which move dehumidified inside air around at speeds up to 250 feet per minute. Due to the lightened load, the air conditioner is one-third the size of the unit normally used in a 2,000-square-foot house. Heating in winter (from November through March) is provided by a wood-burning stove and a sunspace on the south side of the house.

Additional Credits

Contractor: PTLG Construction Co., Bastrop
Owner: David and Barbara Carson, McDade

Central living room with cupola above.

View looking northeast.

Broad overhangs reduce heat load.

Photography by Richard Payne

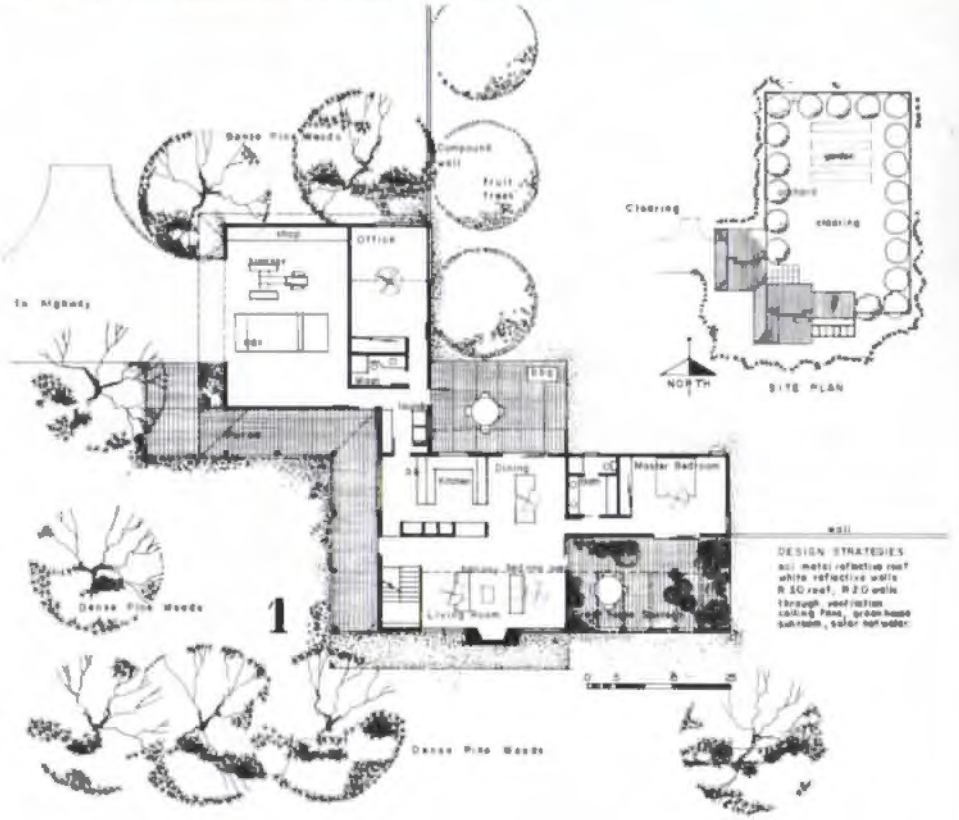
South-side greenhouse becomes screened porch in summer.

STEVENSON RESIDENCE, PLANTERSVILLE, BY RAYMOND D. REED, COLLEGE STATION

Nestled into a clearing among the tall Plantersville pines, the Stevenson House incorporates a broad range of straightforward passive solar strategies, in addition to the use of active solar collectors for heating water. In winter months, a south- and east-facing greenhouse/sunroom with a slab floor provides radiant heat for the adjoining living room and master bedroom. In summer months, the glass panels are replaced by screens to form a screened-in porch. Ceiling fans and through ventilation help moderate indoor temperatures in this relatively mild microclimate.

An ECI reflective metal roof, insulated to R-30, slopes down to form broad overhangs and porches which shade exterior walls and minimal fenestration. The walls, of stucco on foam board, are insulated to R-20.

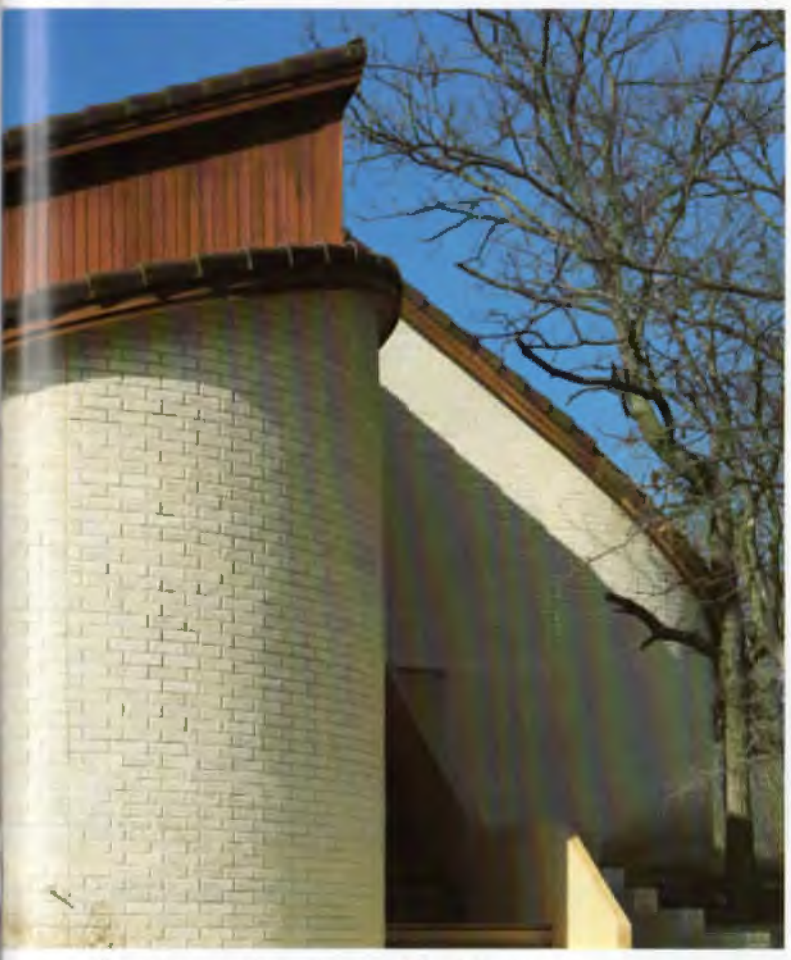
Clerestory windows assist ventilation and, with skylights, provide interior lighting during the day.



First floor and site plan.

Additional Credits

Builder: Salerno Construction Co., Bryan
Roof: Engineered Components, Inc., Houston (Stafford)



House has curvilinear forms, minimal fenestration.

Photography by Robt. Cook

South-facing solarium collects heat.

XEN-WALL interior.

North side.

SOUZA RESIDENCE, FORT WORTH, BY BOOTHE & ASSOCIATES, FORT WORTH

Now nearing completion, this house will be one of the first to utilize the XEN-WALL—touted by Texas Industries as a major innovation in passive solar techniques. Designed by Joe and Buddy Beard, of Xenarcx, Inc., in Fort Worth, the system features a collector wall made of concrete block turned on its side and glazed on both sides with ¼-inch glass. Covered by a solarium, the south-facing wall collects heat from the sun, which is absorbed by air blown through passages in the wall. The warm air then circulates through channels around the base of the structure and throughout all exterior walls, which are covered with exterior insulation and a brick veneer. Heat therefore radiates inward, moderating indoor temperatures. In summer, blinds shade the solarium and mechanically cooled air is circulated through the walls.

Additional Credits

Consultants: Xenarcx (mechanical), Leon Levitt (structural).
Builder: Terra Systems, Inc.

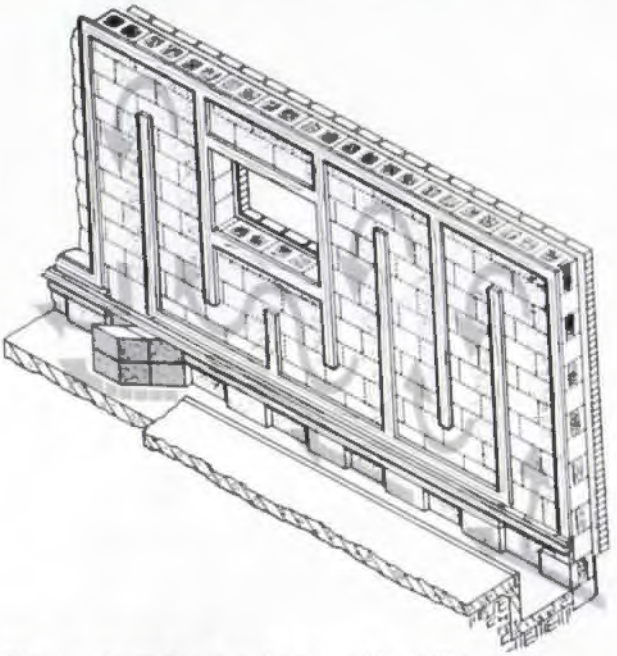


Diagram shows air pass to be covered by wallboard and flooring. Air is drawn over the wall surface through spaces created by strategic placement of furring strips. In summer, the air is mechanically cooled only at night, when low, non-peak-load utility rates are in effect. The massive walls stay cool through the day.

Photography by Richard Payne

View looking west.

LIESTMAN ELEMENTARY SCHOOL, ALIEF, BY MRW ARCHITECTS, HOUSTON

This elementary school was the winning project in Houston Lighting & Power Company's 1982 Energy Awards Program and was designed by a firm specializing not only in schools, but in energy-conscious design. High energy performance is achieved in buildings that *look* conventional, but which incorporate both basic and highly sophisticated conservation techniques.

This school is oriented so that all glass is either facing north or is 100 percent shaded, and glazing is limited to only 5 percent of the exterior wall. Both the tilt-up concrete panel walls and the roof are heavily insulated; the overall building envelope, excluding glass, has a "U" value of .04.

Linear skylights and clerestory windows reduce artificial lighting needs: installed lighting consumes only 1.2 watts per sq. ft. at full capacity.

Cooling is achieved by a solar-assisted water-to-air heat pump system with a 124-ton capacity for 86,000 square feet (about half the normal requirement). Normally, heating requirements can be met by merely turning on the lights; in special situations, the heating cycle of the heat pump can be used.

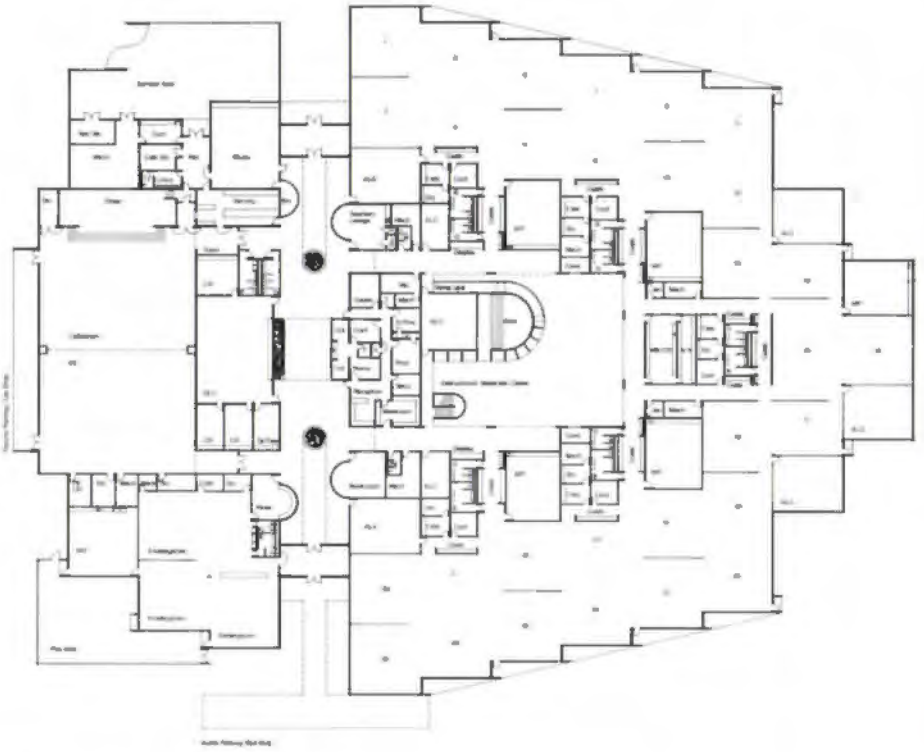
Part of the architects' basic approach to conservation is to consider both "how" and "when" energy is used in this particular building type. Thoughtful answers uncover energy-saving opportunities and lead to specific conservation strategies.

Additional Credits

Consultants: McDermott-Hudson Engineering (MEP and structural)
General Contractor: Spaw-Glass, Inc.
Note: The architects were formerly McKittrick Drennan Richardson and Wallace Architects Incorporated

Glass is recessed; blank wall faces west.

Skylights minimize use of artificial lighting. Mural depicts natural resources.



Returns Not Yet in on Inspired Attempt to Cool by Active Solar

Rooftop solar collectors.

MEMORIAL STATION POSTAL SERVICE FACILITY, HOUSTON, BY CLOVIS HEIMSATH ASSOCIATES, FAYETTEVILLE

As originally conceived in the late '70s, the Memorial Station Postal Service facility in Houston was intended to prove the feasibility of active-solar cooling as well as heating in the Houston climate. Although successful at heating, this ongoing research project has been modified over the years until engineers now think they may have all the bugs out as far as cooling is concerned. Antifreeze and heat exchangers were added to the rooftop solar collectors following a freeze several years ago during which many of the panels were damaged; an electric chiller now augments the less efficient absorptive chiller; and thermostats have been installed in the storage tanks, which have been moved above ground.

Additional Credits

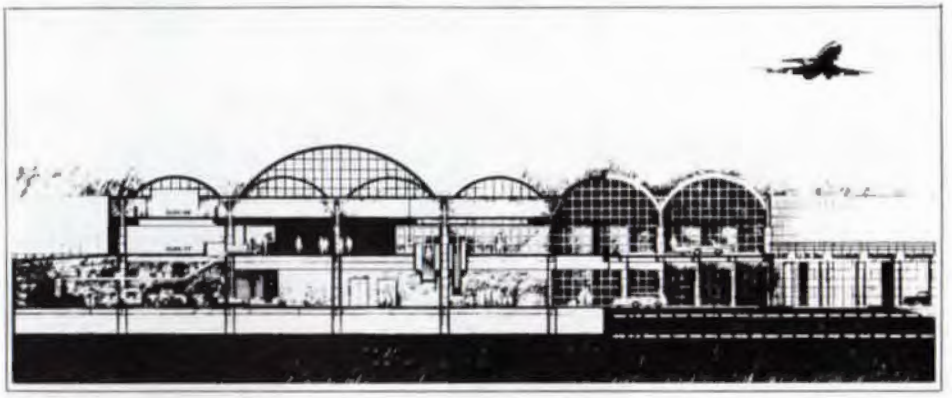
Engineers: Nat Krahl & Associates (structural); Timmerman Engineers (mechanical)

General Contractor: Westpark Construction Company

State-of-the-Art Airline Terminal Under Way in San Antonio

SAN ANTONIO INTERNATIONAL AIRPORT DEVELOPMENT PROJECT, SAN ANTONIO, BY HEERY/MARMON MOK/SIMPSON, ATLANTA AND SAN ANTONIO

Now under construction just east of the existing terminal building at the San Antonio International Airport is a new $64 million terminal whose design is based on the very latest in energy-use simulation, control and analysis of options. A computer determined the optimum mix of roof and wall U values as well as the placement of skylights and windows, which is calculated to let in just the right amount of natural light to lessen the lighting load without adding to the heat gain. Energy use in the facility will be regulated by a computerized energy management system, which will control duty cycling, chiller operation and water storage in a 500,000-gallon tank, scheduling of outside air and daylighting intake, and the use of air handling units. The terminal is scheduled to be completed in mid-1984.



Additional Credits

Project Manager: Day & Zimmerman, Inc.

Wind generator at Mack house, Pampa.

Generators at Judge Kennedy's, Pampa.

St. John Nuemann Catholic Church, Lubbock.

WIND GENERATORS, PAMPA AND LUBBOCK, BY JAY CARTER ENTERPRISES, BURKBURNETT

As the rest of the nation begins to reflect more on the sun for solar, and scratch deeper into the earth for coal, some West Texans are relying on the prevailing winds to blow their energy problems away. While not yet regarded as an ally in a region where menacing sandstorms are common, the wind is beginning to exhibit potential for producing electrical power. Recognizing this potential, and convinced there's a future in it, Mr. and Mrs. Robert Mack installed two 25-kilowatt wind generators during the construction of their new house, guest house, greenhouse, poultry house and pump house in Pampa. Presently, the generators are providing for all the Macks' electrical needs, and plans call for the installation of a 125-kilowatt wind generator that will offer five times the current capacity. Up the road a bit, Gray County Judge Carl Kennedy's home is served by one of five 60-foot towers topped by 32-foot rotors; unused power from the other four is sold back to the power company at a price equal to "avoided costs" (electric utilities are required by the Public Utility Regulatory Act of 1978 to purchase energy from qualifying small producers at a rate equal to what it cost the utilities to produce the energy). And in Lubbock 200 miles south, the St. John Neumann Catholic Church combines two alternative approaches—wind energy and earth shelter—to cut down on the inordinate amount of energy that a church building typically consumes compared to hours actually used. Five wind generators provide electricity for light and heat, while the building is partially underground to help stabilize temperatures inside.

—Tom Davis

Additional Credits

Manufacturer and Installer: Jay Carter Enterprises, Burkburnett

High Ceilings Open Up and Air Out Earth-Sheltered Interiors

BOOTHE HOUSE, PARKER COUNTY, BY BOOTHE & ASSOCIATES, FORT WORTH

Unlike most earth-sheltered houses, the Boothe house near Fort Worth has a pitched roof, which the architect designed to maximize the ceiling height inside, thereby opening up the potentially dank, basement-like interior. The higher ceiling (12 feet, eight inches at its peak) also allows hot air to rise and be exhausted through a skylighted thermal chimney, pulling the prevailing southwest breezes through operable windows on the south-facing facade to ventilate the house. Ceiling fans assist by recirculating inside air. Shading is provided by a five-foot overhang over the exposed facade and a horizontal trellis for vines. Concrete walls and floors are thermally grounded at the proper depth to tap a near-constant earth temperature of 65 degrees. A heat pump serves as conventional backup.

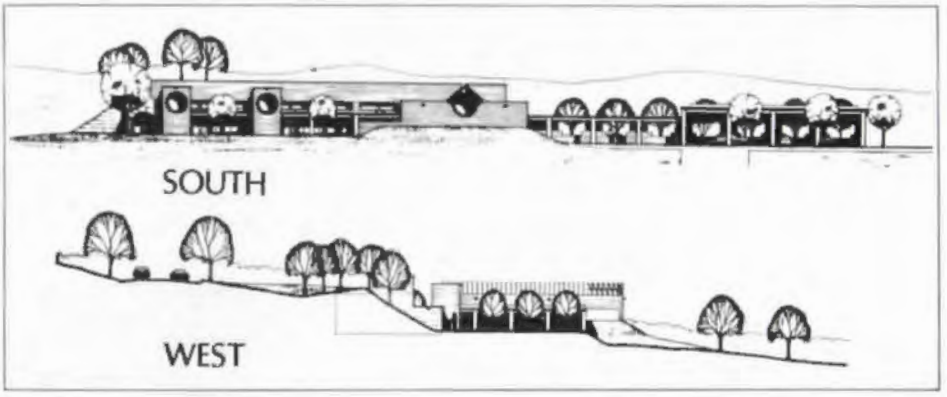
Additional Credits

Project Architect: Ray W. Boothe
Structural Engineer: William D. Walker
Mechanical Engineer: James McCure
Contractor: Terra Systems

Child Care Center Situated High on, and into, its Sloping Site

CHILD CARE CENTER, BROOKS AIR FORCE BASE, SAN ANTONIO, BY O'NEILL & PEREZ, SAN ANTONIO

This 8,100-square-foot building was tucked into the highest and steepest part of its south-sloping site to catch prevailing breezes from the southeast, which are taken advantage of by operable windows and exhaust monitors, and to leave the more level parts of the site open for play areas. A two-foot overhang protects the facade from the high summer sun while letting in warmth and light from the lower sun in winter. Although not possessing a high U-value, the 18-inch-thick earthen roof creates an effective thermal lag; by the time heat penetrates the roof, the sun has set. The earth shelter also serves as a thermal mass to maintain interior temperatures at a relatively stable 70 degrees (the same constant temperature as that of the enveloping earth at six feet).



Additional Credits

Principal-in-Charge: Larry O'Neill
Project Architect: Mark Oppelt
Structural Engineers: Feigenspan & Pinnel

HYPOTHETICAL OFFICE BUILDING, HOUSTON, BY CAUDILL ROWLETT SCOTT, HOUSTON

It is a shame that this building may not be built. It is good sculpture. It is good energy engineering. It is good architecture. And, it is more. It has much to teach us—perhaps more than its designers intended.

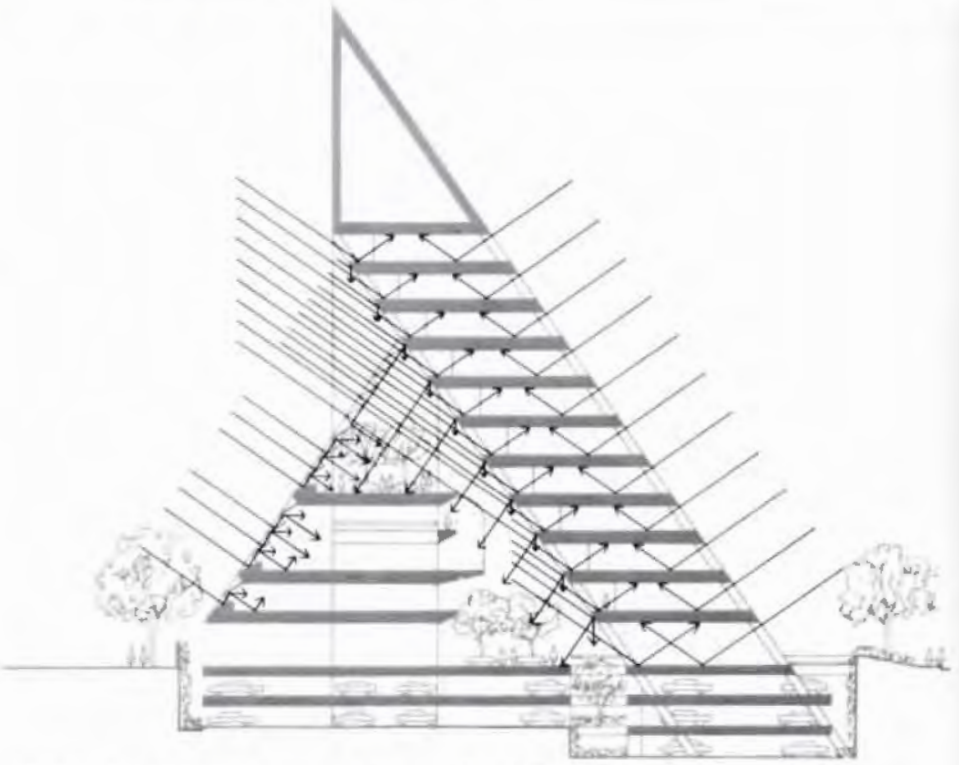
In combining ageless concepts of wind-tower air scoops and seasonally appropriate sun- and shade-producing forms with solar collectors and computer monitored lighting, daylighting, HVAC, fire safety and personal security systems, it clearly illustrates that "cutting-edge" technologies can complement climate-sensitive concepts to spell architecture with a big "A."

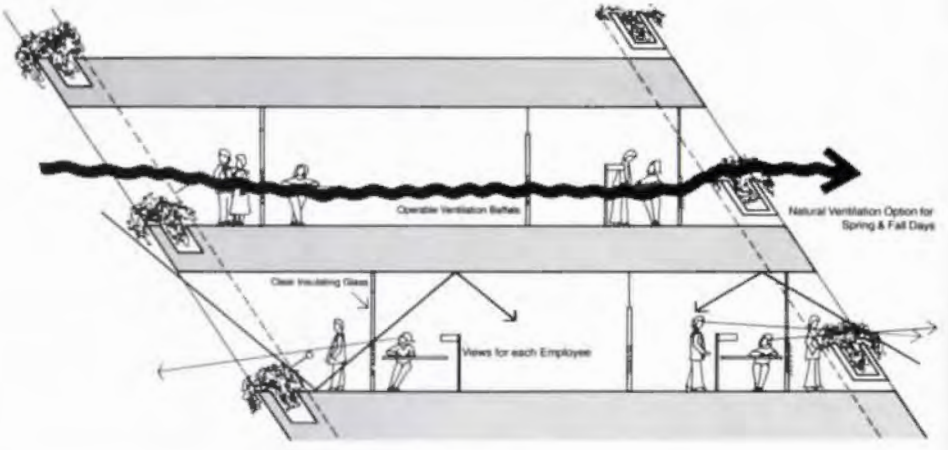
Current office buildings trap so much internally-generated heat within hermetically sealed walls that on the coldest day of the year, in Texas, the average office building is cooling, not heating, its inhabitants. This one wouldn't. Its natural breezes, balconies, and day-lit rooms would refresh office tasks. Corridors and atrium spaces would have no mechanical heating or cooling at all, while office spaces would utilize mechanical systems only as required.

But this is not a building. It is, or could be, a community. It has, or could have with some "minor" program adjustments, all of the elements for quality community design. Its cars are parked below grade. Secure and out of the way, they return the land to the people for outside enjoyment in parks, playgrounds, and more urbane activities. Houston, more than most cities, needs this.

Entering the 550-foot-long atrium (actually there are two and there could be more), one could experience the sense of community fondly recalled from European town squares and plazas. A notable contribution of 20th century architects will be the enclosed town square.

Within the perimeter of this atrium, one could squeeze the shops and services necessary to live the good life, and the offices and companies to sustain it. Taking one last liberty with the program, I would lease the upper floors for residential use. Safe, private, condominiums with balconies and distant views within secure walking distance of shops, schools, work and recreation could provide attractive, energy-efficient, enriched and enjoyable alternatives to today's air-conditioned car and office commuter.





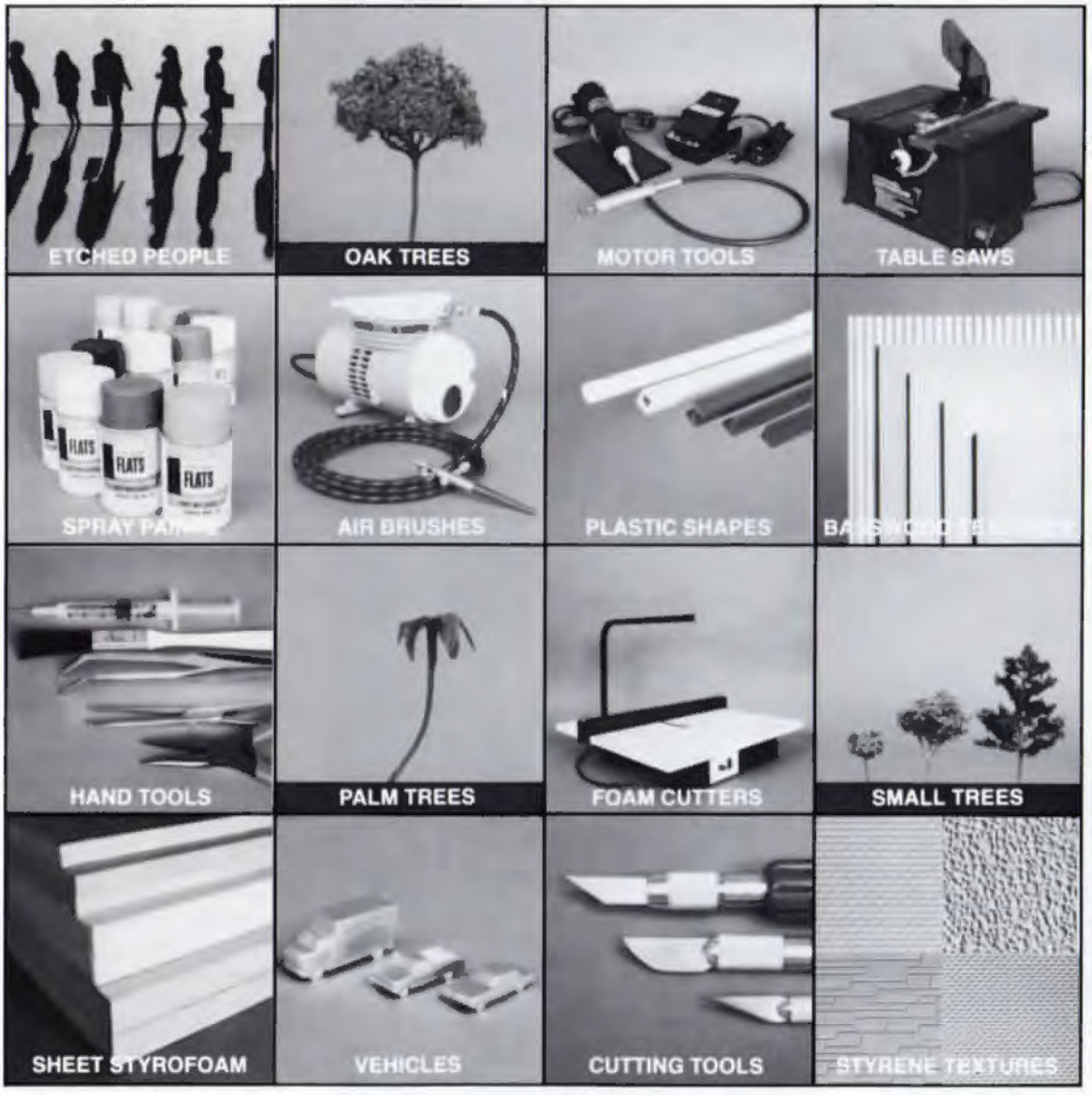
ABOVE: Building form scoops up breezes (the Malkaf Concept) and natural light. A computer would regulate air conditioning and lighting according to outside conditions. BELOW: Office space section illustrates views and ventilation.

The mix of residential, office, sales, and shop functions would diversify and enrich life within the building. It would also represent a sensible alternative to the energy-intensive practice of providing equivalent services in separate but widely scattered zones throughout the city.

This building, slanting away from the street, would expose and reflect the sky, making one feel more at one with nature. Today's vertical-walled office buildings shrink men on the street. This one wouldn't.

If mixed uses were permitted here, the building would contain all the energy-efficient, technical and economically viable systems to sustain a balanced community life. Like Le Corbusier's unbuilt designs for Algiers, it offers a superior prototype to today's way of life. Unfortunately, like Le Corbusier's design, it may live only in print to excite the imagination of designers on what might have been or could be. *—Raymond Reed*

Professional Model Materials



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W. F. Burwell, Partner
Helen Burwell, Partner

American Airlines Southern Reservations Office

An Energy-Conscious Blending of Function and Form

ABOVE: Long and low, the building is nestled into a grove of honey mesquite trees near DFW Airport. RIGHT: Aluminum "eyebrows" provide sun control for second-story windows.

Michael Haynes

The American Airlines Southern Reservations Office is a consolidation of several facilities in the south and central parts of the country. It is located in a grove of honey mesquite trees on the 600-acre American Airlines campus, directly south of the DFW Airport, and consists of two stories and 150,000 square feet.

The architects, Corgan Associates, Inc., of Dallas, gave primary consideration to energy efficiency in developing the architectural form. The building is a double cruciform shape, which corresponds with agent groupings, and is oriented north-south for minimal solar gain. Connecting the two cross forms is a central sky-lit atrium, which serves as the major circulation space and dining area. The atrium provides visual and sensory relief for employees and, as an energy measure, reduces the overall exterior envelope. Night operations can be clustered around the atrium space, allowing those areas within the farthest extensions of the plan to be totally shut off until morning.

The building exterior is of white precast concrete panel, which not only reflects the Texas sun but also provides thermal lag time for heat transfer through the wall. Exterior fenestration is limited to only 20 percent of the wall and is shaded to reduce solar gain. The second-floor windows are shaded by six-foot aluminum "eyebrows" and windows on the first floor are deeply recessed under the second-floor overhang. Shading the fenestration also reduces glare and thereby addresses the crucial requirement of a proper visual comfort level for viewing the reservationists' CRT screens.

Developed by computer, the lighting scheme utilizes high-intensity, upward-directed lighting columns as a supplement to natural light, particularly within the agent work areas. These columns

develop a one-watt-per-square-foot energy consumption rate, which is well below federal guidelines.

A computer program was also used to help determine the most energy-efficient and first-cost-efficient HVAC system. A variable air volume unit with exterior zone heating coils was selected as the optimum strategy. The building's 800 CRT units and a high concentration of employees preclude supplemental heating loads in winter under most conditions. Heat recovery boxes in the ceiling plenum space recapture this "found" heat for redistribution to the exterior perimeter zone on marginal heating demand days. This system also reduces water heating requirements for further energy savings. The mechanical system, coupled with an energy-efficient envelope, develops a net hourly heating requirement of 15 Btu/square foot. — *Larry Paul Fuller*

Credits
Architects: Corgan Associates, Inc., Dallas
Client: American Airlines
Consultants: William K. Hall (MEP); Edward L. Wilson (structural); Carter & Burgess, Fort Worth (civil); H.G. Rice (food facilities).
Landscape Architect: Howard Garrett
General Contractor: Great Southwest Construction Co.
Acoustics: Acoustic Design Associates, Inc.
Construction Management, Interiors, Graphics: Corgan Associates, Inc.

Richard Payne

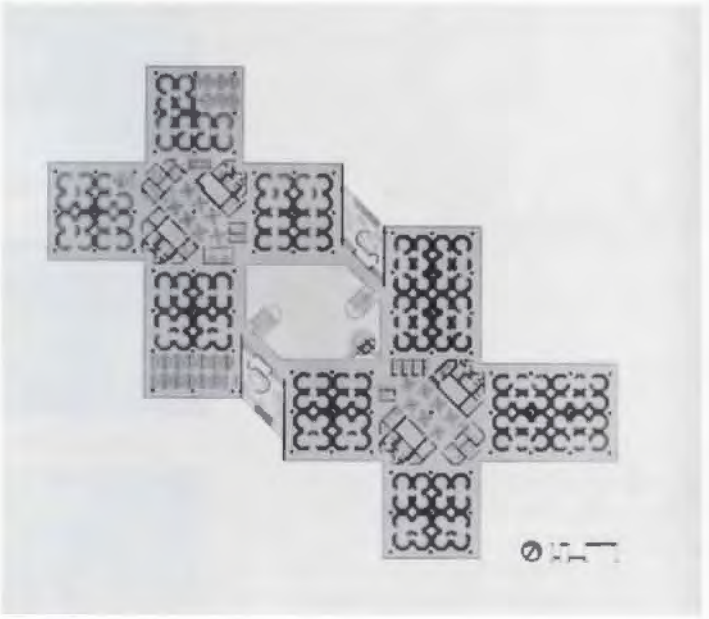
View looking northwest. Atrium area at right connects two cross-shaped forms.

Richard Payne

Central atrium space provides visual and sensory relief for employees and reduces external envelope as an energy conservation measure.

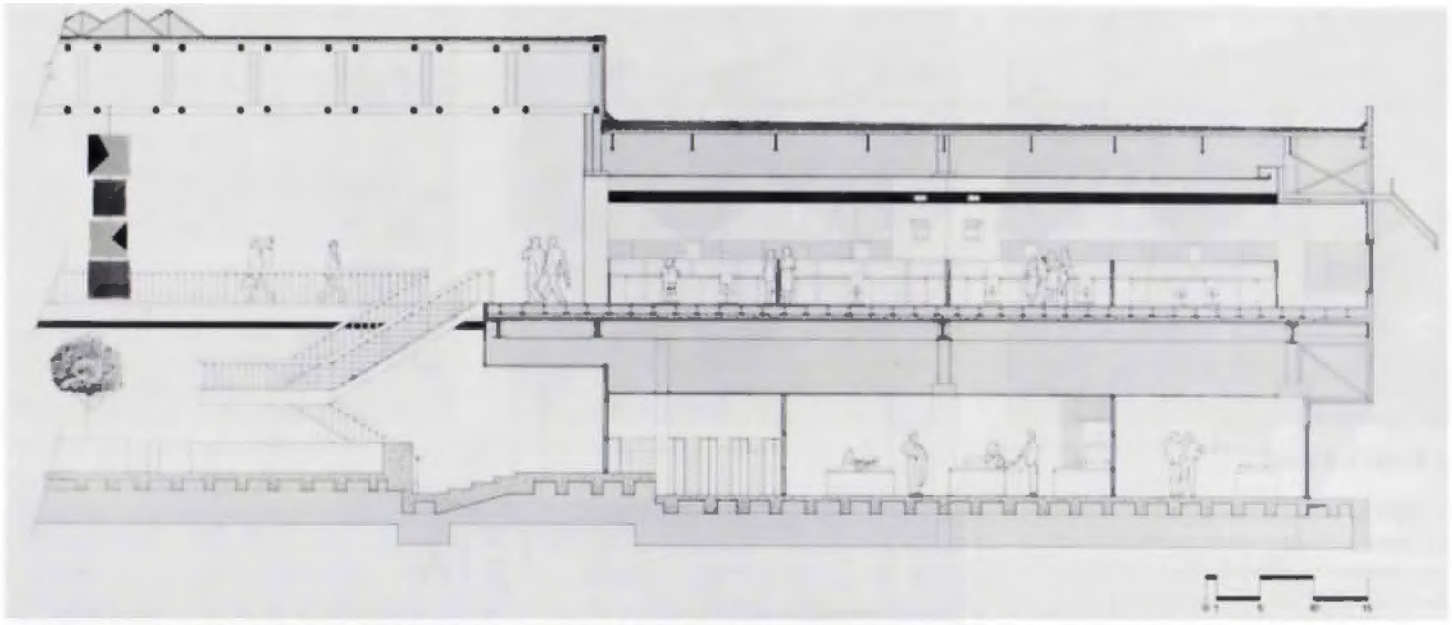
Richard Payne

First-floor windows are deeply recessed; second-floor windows are shaded with "eyebrows."



Second floor plan.

First floor plan and, below, site plan.



ABOVE: Section. BELOW: "Eyebrows" extend outward six feet, reducing heat gain and minimizing glare on CRT screens.

Richard Payne

Passive Solar in the Land of Adobe

A Sampling of Work by Four New Mexico Firms

By Kevin J. Lorenz

As "energy consciousness" and "regionalism" become increasingly predominate programmatic considerations, we here take a "peek across the border" at a sampling of work by four New Mexico firms. What is unique about these firms and projects is their response to the inherent characteristics of a southwest building tradition. To better understand the depth of these influences, we must first ask, "What is it that makes this part of the country distinctive?" A native to this region may give the same answer as a convert—that being first and foremost the climate. Still others will swear by the kaleidoscope of scenery beneath the daytime and twilight skies. Responses such as these are by no means new, and indeed echo through the four periods of early New Mexico architectural history—Indian, Spanish Colonial, Territorial and American. The physical impressions left by the centuries of occupation these periods represent may be found built up into the steep sides of cliffs, perched commandingly atop scattered mesas, or left abandoned along the banks of a once-swift flowing river. New Mexico is a land where, heretofore, the most lasting of built forms has been that of Indian ancestry; where the seeds of Christianity were sown by the Spaniards who, more often than not, fought to see that their crop flourished; and where the most recent inhabitants, the Americans of today, have in both heritages a rich palette from which to draw inspiration.

That Albuquerque's growth into a major urban center has resulted in diverse and often conflicting architectural predispositions comes as little surprise. There remains, however, a tangible spirit of place in parts of the city where the geography and local building traditions continue to be strong influences.

Photography by Tim Street-Porter

Stockebrand Residence:
Mazria/Schiff & Associates

Located in the Sandia Mountain foothills is the Stockebrand residence. The owner, Thomas Stockebrand, director of engineering for Digital Computers in Albuquerque, came to architects Edward Mazria and Marc Schiff with the desire for a house that would demonstrate the feasibility of minimal reliance on a public power supply limited to electricity. The client required a one-level house for a family of five, with visually connected living spaces, privacy between the adult and children's areas, and an integrated swimming pool enclosure to act as the focal point of the design. The resultant passive solar house form was one of clustered building parts projecting and opening onto outdoor spaces, not unlike the historic precedents of pueblo imagery found in this region.

Circulation through the house occurs along the edge between the living spaces (grouped along the south face of the building) and the pool enclosure, which acts as a thermal buffer from the winter winds. The 45-degree orientation of these living spaces affords an opportunity for direct solar gain in winter through clerestory windows, while taking advantage through lower windows of spectacular views toward the city 1,000 feet below to the southwest. The pool enclosure, which is heated through a large sawtooth clerestory (and to some extent

Outdoor terraces expand living area.

Pool is heat storage medium.

Kitchen accepts the sun.

LEFT: Living room with direct solar gain.

by active solar panels achieving water temperatures of 83 degrees), acts as a reradiating thermal mass and provides an interior heat source to the surrounding uninsulated walls of the living spaces.

The selection of materials used throughout the house was largely based on Mazria's research for his book *The Passive Solar House*. Knowing that dark-colored masonry surfaces often overheat in direct sunlight, he utilized light-colored surfaces to reflect light to the masonry floor and other masonry interior surfaces. In this manner, the rate of absorption can be regulated and fine-tuned to the specific needs and characteristics of the building material.

Summer cooling is facilitated by the use of overhangs shading all glazed areas, and by allowing the cool night breezes to flow through the house, thereby reducing the temperature of the thermal mass and providing comfortable interior surfaces throughout the day.

As Mazria states, "The architecture of the building does most of the work." Even so, it works because of the commitment on the part of the architect and client to produce a textbook example of energy-conscious design which stands as a fine counterpoint to the jagged peaks of the Sandia Mountains beyond.

Kress Residence:
Ervin E. Addy, Robert W. Peters

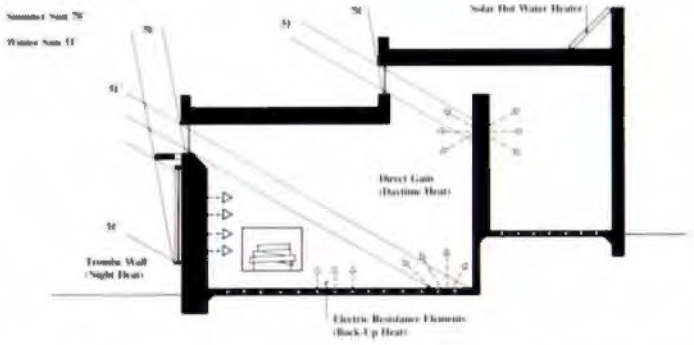
Also located at the base of the Sandia Mountains is the Mr. & Mrs. Donald L. Kress residence. At an elevation of 6,400 feet, several hundred feet above the river valley, it is situated in a high desert landscape of arroyos, granite boulders and exotic vegetation. The opportunity to build in the higher elevations of the foothills where there is no clearly defined historic precedent for dwellings allowed the architects, Ervin E. Addy and Robert W. Peters of Albuquerque, to use the more established lowland building forms in a "non-literal translation" which seeks to incorporate new attitudes toward energy conservation in the face of a limited public power supply.

The house sits close to the road on the north, terracing down seven levels to the

Axonometric (noon-winter).

Plan.

Sunken living area.



BELOW: View from east. RIGHT: Bedroom sitting area.

Photography by Brooks Photo

south, allowing the incorporation of clerestory lighting into most of the rooms. The entry foyer gives access to all parts of the house, with living-dining-kitchen-utility areas to the west, master bedroom-sitting room-dressing and bath to the east, and guest bath, storage and library-guest room to the south. The stair-step arrangement of spaces also protects the south and east terraces from the prevailing northwest winter winds, while utilizing the southwest summer breezes to provide optimum ventilation throughout the house.

Included in the design are 16-inch concrete, unvented Trombe walls on principal south-facing elevations. The walls have plaster interior surfaces and stucco exterior, with a four-inch air space created by setting one-inch insulating glass into bronze anodized frames applied to the exterior. The stucco surface visible behind the glass is a lighter color so as to minimize the visual effect of large voids which violate the adobe tradition of deep-set small glazed openings to the south. The Trombe walls comprise about 30% of the exterior surface on these elevations and, in conjunction with a roof-mounted solar hot water heater, result in a solar contribution of 64% of the total heating requirement.

Three shades of grey-green were chosen for the exterior stucco, to complement the natural vegetation on the site. The south and east facades are the darkest color, to provide maximum absorption of heat. The west and north walls are a medium shade, while the courtyard walls remain pale, matching the color of the sage plants on the site. Interior walls are a still softer green, and floor tiles are the tan color of the earth surrounding the house.

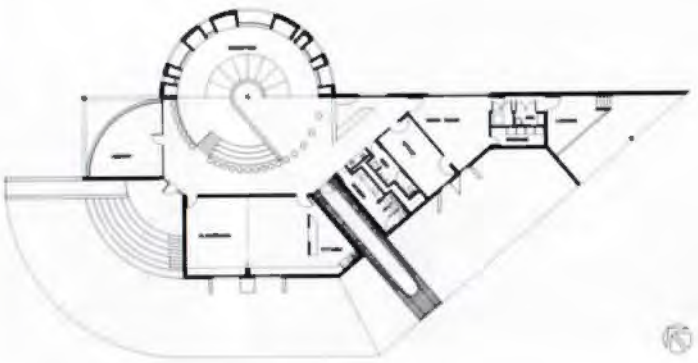
Rio Grande Nature Center: Antoine Predock

Descending the foothills of the Sandias to the rolling terrain of the Rio Grande Valley, one is confronted with what New Mexico architect Antoine Predock refers to as "a rapidly diminishing Albuquerque ecosystem." The prime resource of the valley—water—has traditionally shaped the lives of valley inhabitants with me-

Photography by Brooks Photo

Water-filled plastic tubes retain heat from lights.

ABOVE: Fortress-like structure has controlled views.
BELOW: Tunnel through berm to entry.



Plan.

ABOVE: Section. BELOW: Site plan.

andering canals creating complex and interesting paths for people and irrigation. The natural wetlands ecosystems harbor an incredibly diverse set of processes that contrast dramatically with the upland semi-arid mesas. Predock's Rio Grande Nature Center and Preserve, with its 170-acre site on the Rio Grande Flyway for migratory wildfowl, stands as a symbol of the importance these wetland areas have in Albuquerque's past, present, and future development.

The Nature Center building acts as a "blind" from which the activity of the surrounding preserve may be viewed without intrusion. Predock chose a "river-bottom vernacular" as a source of design elements. An eight-foot diameter corrugated culvert is used as a tunnel-like entry on the bermed southern side of the building. The use of rough, board-formed concrete for a building shell alludes to drainage headwalls.

Since children's groups will be major users, the facility has a playful, yet educational, emphasis. Once inside, a ramp descends through "view layers"—a series of exhibits that alternate between controlled vistas and interpretive displays to augment the actual views. A reverse periscope is used to view the underwater aquatic life in its natural state in the wetland pond adjacent to the building. The exhibit terminates at the bottom of the ramp with a close-up view to animal burrows. On exiting, the flow is past an A/V area, through a small orientation amphitheater and then on to interpretive trails.

On the entry side, earth berms covered with native grasses stabilize the environmental load; water against the opposite side serves the same function. Inside, a row of eight-foot-high water-filled plastic tubes circles the sunken, ramped exhibit/view area. Focused light shimmers through these tubes to create an underwater effect while warming the water for thermal storage as a passive solar contribution.

(Continued)

ABOVE AND BELOW: Second-phase residences.

Office complex.

Photography by Dan Shaffer

Community room.

La Luz del Sol:
Barker-Bol & Associates

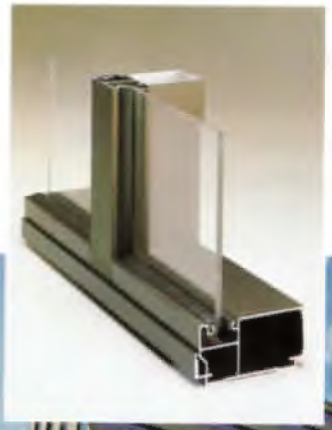
Antoine Predock has also been involved in the first phase development for a city-within-a-city planned community on Albuquerque's West Mesa called La Luz Condominiums. A second phase of this 400-acre development, designed by Hildreth Barker and Andrew Bol of Albuquerque, is being called La Luz del Sol. The concept calls for a mixed use of residential, office, recreational and open space. The first of the office units is now completed and eventually will be part of a series of office complexes acting as a buffer along Coors Boulevard, a major thoroughfare.

The residential portion of the second-phase development has also been completed and exhibits some of the same concern for energy conservation rooted in the southwest building traditions examined earlier. The homes are all solar-oriented, employing brick floors throughout and adobe on all southern exposures to aid in thermal storage. Skylights and operable windows are also included in each unit. The placement of the living units rising up and along the site to the northeast supplies each resident an equally spectacular view across the river bosque and city to the Sandias and Manzanos, and north to the Sangre de Cristos and Jemez mountains.

What this development lacks in terms of individual identity for each homeowner, and the custom-fit sophistication afforded other than the speculative buyer, it makes up for in its ambitious and indeed prophetic organizational concept—that of a planned, self-contained community.

All four of these projects—though only a representative sampling of equally meritorious projects throughout New Mexico—have as a commonality their commitment to and interaction with the inherent characteristics of the land, climate and people that are the southwest.

Kevin J. Lorenz, formerly of Pratt, Box & Henderson in Dallas, is in a graduate architecture program at UT-Austin.



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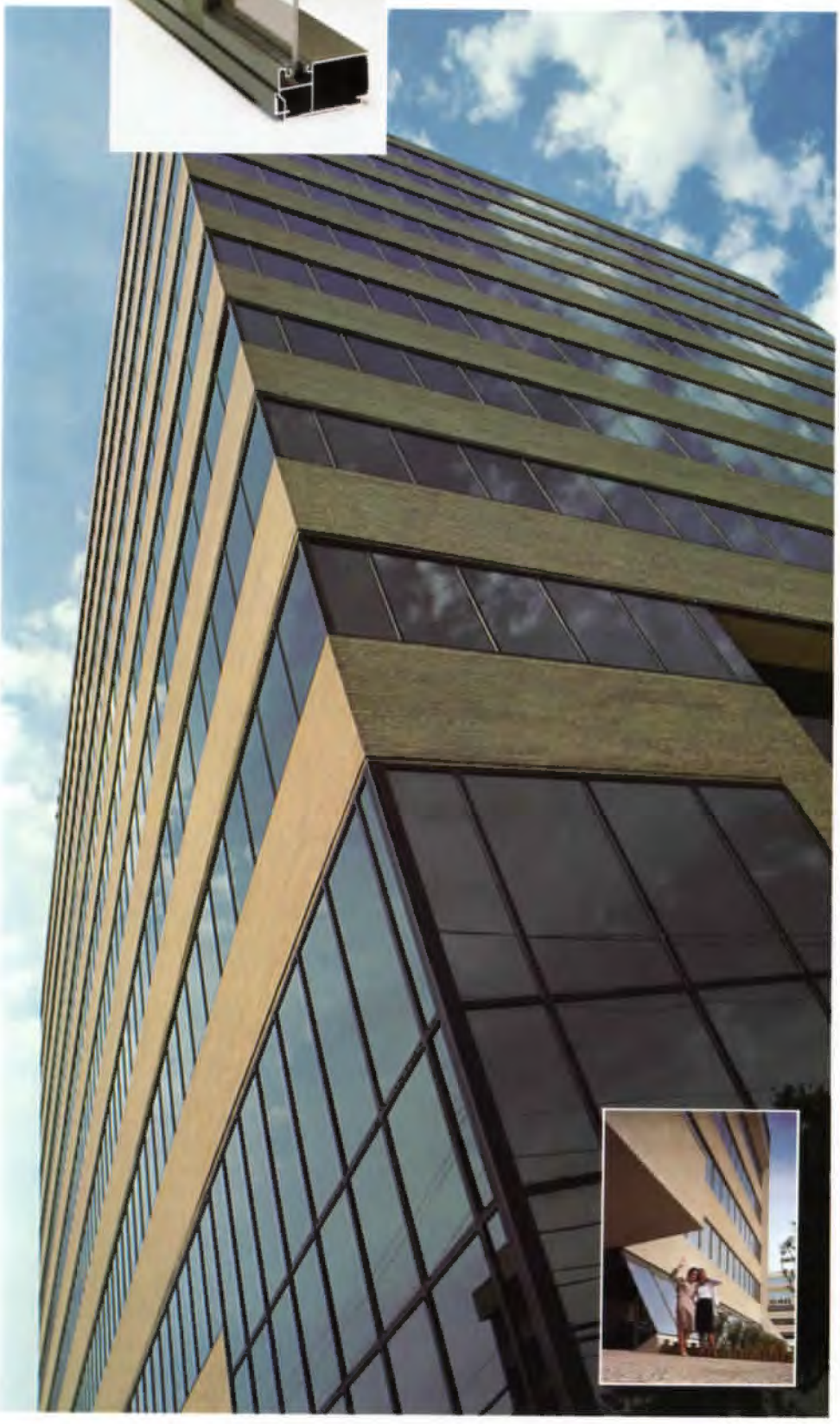

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Energy-Conscious Design

The Maturing Process

By Larry Bickle, Ph.D., P.E.

The energy crisis has taught us how to build more cost-effective buildings. A recent DOE study* of Owens Corning energy conservation award winners concludes that the 1981 participants reduced energy consumption by 50% as compared to 1973 conventional practice. And in some cases, this was accomplished with *no increase in relative cost.*

These results are significant, and our experience is similar. As specialized mechanical engineers on some 75 major projects, we have found that the best buildings frequently combine a 30 to 50% reduction in energy consumption with a 5 to 15% reduction in initial construction cost. The worst projects *cost* more than their conventional counterparts, and don't work.

We have watched many architectural firms, including some of the "Big Names," go through three distinct phases of maturing as they learn to design *successful* energy-efficient buildings.

Business as Usual: "Energy-efficient buildings are nothing but good design. We have always designed energy-efficient buildings. That's the mechanical engineer's problem, and 'old George' has been designing efficient buildings for years."

Zeal: "Energy should be the *foundation* of Architecture! This project is a great energy challenge! This is going to be the *MOST* energy-efficient building ever! This is a great project for a double envelope with a Trombe wall and daylighting! But it may *cost* a little more."

Maturity: "Energy can be an important design determinant along with form, function, cost and time. With just a little information about energy end uses, we can focus on the important energy problems. The goal is to develop a cost-effective building."

The "business as usual" phase may lose clients but is not dangerous. They quickly spot this approach as resistance to change or lack of motivation. Smart clients begin to ask embarrassing questions like:

- What was the energy use for your most recent building?
- Who designed those energy-efficient buildings your firm did in the 1920s?
- What energy conservation concepts will you consider, and how will you integrate energy considerations into the design process?

In time, the motivation builds to actually *do* something different, and that leads to the dangerous zealot phase. Motivation and enthusiasm without information and a realistic viewpoint is a sure prescription for disaster. If the building functions at all, it is likely to be an expensive "Rube Goldberg" concoction that is ugly and inefficient—all to make a "meaningful" energy statement. The buildings produced in the zealot phase give individual architects and energy conservation a bad name.

Those firms that go beyond the zealot phase mature by adding information and perspective to their motivation and enthusiasm. The results are low-key buildings that save 30 to 50% as compared to "business as usual" buildings and cost no more to build. At first glance, many of these mature buildings would be overlooked by an energy zealot. From an architectural viewpoint, the differences from conventional buildings tend to be minor variations in aspect ratio, orientation and fenestration. Emphasis is on maximizing cost effectiveness, not on maximizing energy savings at any cost.

In our experience, the zealot phase is universal. Design teams differ only in how long this phase lasts and whether or not they eventually mature or fall back to "business as usual."

For the last few years, our firm has specialized in helping design teams get through the zealot phase as quickly and as painlessly as possible. The potential conflict is obvious. The challenge is to provide realistic engineering information and perspective without directing the design or inhibiting the enthusiasm and creativity that can lead to great design breakthroughs.

We first tried to develop design methods and procedures to *ensure* good design. We failed every time. Good design is talent-dependent. There is no magic, step-by-step formula that always works. If there were, engineers or computers could design buildings and there would be no need for the spontaneous, individual creativity of the designer. In the end, we concluded that the best engineering support is to "play defense" against common mistakes. One way to do this is to ask hypothetical questions and provide typical data *before* the design effort starts:

1) What is the major energy end use?
A few typical building end-use breakouts for a San Antonio-type climate are shown for the sake of example in Figure 1. Clearly, the priorities for energy solutions are different for different buildings with different uses. In this climate, heating and cooling are about equal BTU uses for houses, but heating is unimportant for office buildings. Sunspaces, Trombe walls and other passive heating solutions are not appropriate for offices. The next step would be to convert the information in Figure 1 into cost rather than BTU's.

**See "Design and Performance Trends for Energy-Efficient Commercial Buildings," by John Kurtz, et al, of Booz, Allen & Hamilton Inc., for DOE, March 31, 1982.*

"Motivation and enthusiasm without information and a realistic viewpoint is a sure prescription for disaster. If the building functions at all, it is likely to be a Rube Goldberg concoction that is ugly and inefficient—all to make a 'meaningful' energy statement."

2) What is the preferred shape/ orientation?

Figure 2 introduces the concept of "Building Blocks" that are just "pieces" of a building. The blocks use typical glass areas and internal loads and are studied in different orientations. *No particular building shape is assumed.* By comparing total energy use, designers can intuitively compare compact vs. extended aspect ratio, and identify preferred orientations. With more study and comparison of end-use breakouts, designers can develop insight into obvious conservation modifications (e.g., a shaded south block behaves as a north block).

3) What design variables have the strongest influence on energy end use?

Consider the concept of a 100% elimination of lighting, glass area, thermal transmission, or ventilation air as shown in Figure 3. For the clinic facility shown as a hypothetical case, removing *all* electric lights increases heating and reduces cooling, but the *sum* of heating and cooling is *unchanged.* A 100% reduction in lighting produces a 45% change in total energy use. In this case, lighting is important in itself, but it doesn't change the sum of other energy loads.

In contrast to lighting, *infinite* insulation (no transfer) only reduces energy use 4%. Therefore, additional insulation is not cost-effective and has no significance in this specific case.

4) Are the subsystems balanced?

The most common mistake in the zealot phase is making every subsystem energy-efficient. If the architect spends money on architectural features for daylighting, the electrical engineer probably should not spend money on a high-efficiency lighting system. If the lights are only used a few hours per year, their efficiency is not important. The lowest

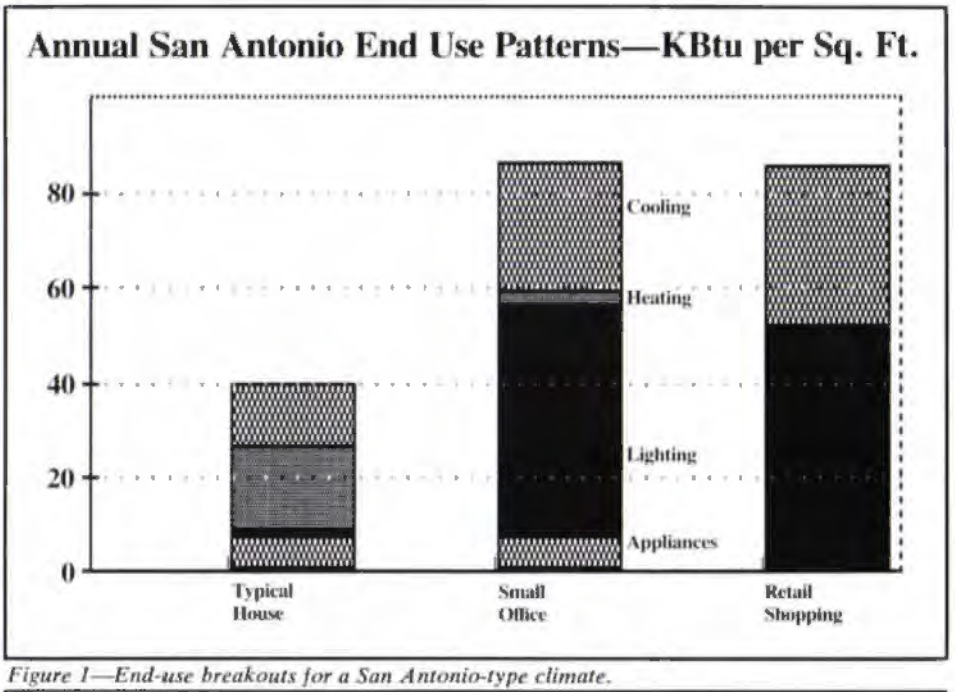

Figure 1—End-use breakouts for a San Antonio-type climate.

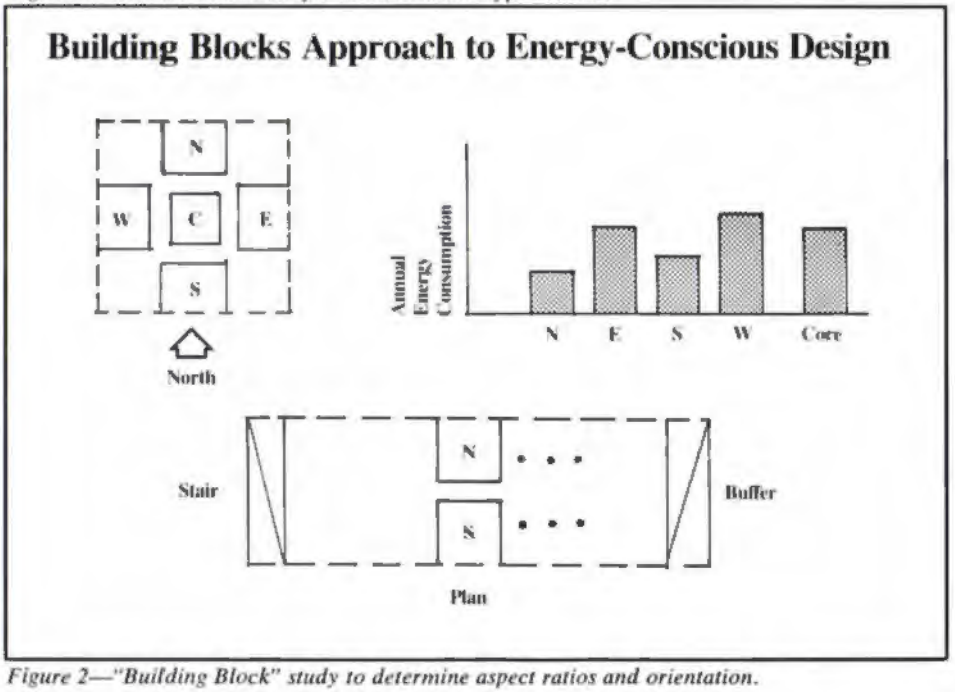

Figure 2—"Building Block" study to determine aspect ratios and orientation.

"Each end use should be addressed by only one conservation concept or subsystem. This avoids the typical zealot problem of a building with several systems competing to save the same BTUs."

first-cost lighting gives the "best" building.

In general, each end use (e.g., heating or cooling) should be addressed by only one conservation concept or subsystem. This avoids the typical zealot problem of a "Rube Goldberg" building with several systems competing to save the same BTUs. However, the converse is *not* true. One design concept can and should address more than one energy use (e.g. design fenestration to combine passive heating and daylighting).

5) Is thermal storage necessary?

Thermal storage can be expensive and is necessary only if the energy must be saved for later use. A Trombe wall can be good in a house that needs heat at night. But that same Trombe wall—as it *absorbs* heat produced by the conventional heating system—can be detrimental in a school that needs quick warm-up in the morning and is unoccupied at night. Think about *when* energy is needed relative to *when* it is available. Direct use will always be more effective than going through an unnecessary storage retrieval step.

6) Are the transient heat transfer concepts valid?

There are two *fatal* technical errors that are commonly made at the zealot phase. Both involve transient heat transfer, a subject not covered in most architectural schools.

Error 1: Transferring heat from an air stream to a solid surface is a difficult technical problem. Car radiators are a common example of a device that is designed for this task. No manufacturer would go to the trouble of making a radiator unless the basic physics of the problem required such intricate detail. We have seen situations where a .050 inch tolerance made the difference between success and failure in a heat transfer device. Casually drawn arrows flowing past Trombe walls, roof plenums, and atriums may not reflect reality—and probably won't without extensive design.

Error 2: Thermal storage is usually *rate limited*; not capacity limited. A good analogy is a large tank of water with a tiny spigot. If 100 gallons per minute are needed to extinguish a fire, it doesn't matter how much water is in the tank if the spigot restricts the *flow rate* to 1 gallon per minute. Reasonably intelligent people can spend years analyzing and experimenting with transient heat transfer conditions to meet rate requirements.

In summary, once a design team becomes enthusiastic about designing energy-efficient buildings, it is important for them to begin asking questions like those above. It is also important to develop the ability to generate information similar to that shown in Figures 1-3 and to analyze transient heat transfer situations. This will not guarantee good energy-efficient buildings, but it will prevent the more common mistakes and speed up the maturing process.

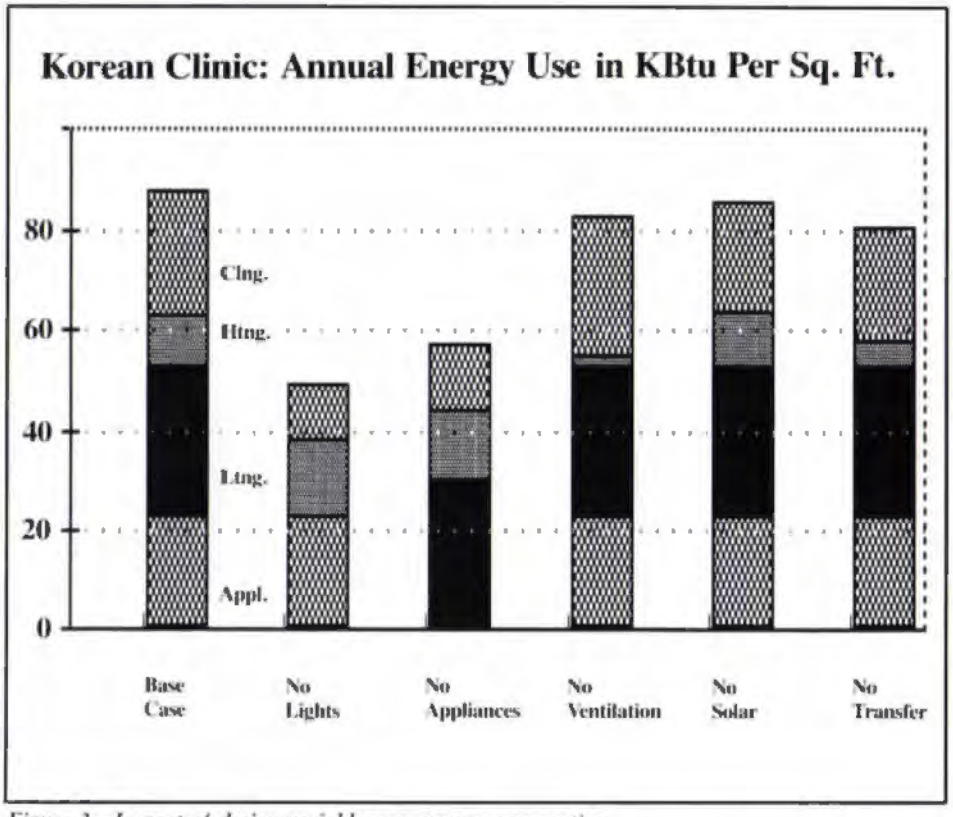

Figure 3—Impact of design variables on energy consumption.

Larry Bickle is president of The Bickle Group, Inc., a Houston mechanical engineering firm specializing in conservation and alternative energy projects. This article is based largely on the experience of teaching energy-conscious design methodology to some 42 design firms as part of a DOE pilot program—and later being commissioned, with two other firms, to evaluate the program results.

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The Future Begins in the Past

An Essay

By Gerald Moorhead

In the mid-19th century, as industrialization developed, bourgeois values of utility and efficiency changed the meaning and style of life. Concurrently, the role of art changed from an integrally useful elaboration of practical life, to an independent, internalized expression of its own values. Art became an alternative to—and a forum for criticism of—the practical, useful and progressive values of industrial society. This shift in understanding of art's place in life began with the romantic movement in literature and by late century had spread to the visual arts, but not to architecture. (Exceptions are the arts and crafts movement in England and the later Art Nouveau in France and Belgium, which practiced a hand-crafted aesthetic in direct opposition to machine mass production.) In fact, by the late 19th century, and into the early 20th century, mainstream architecture was finally reaching its fullest expression of the industrial revolution with emphasis on the machine aesthetic, progress, production, efficiency and utility.

In the course of the century, Neoclassical, Gothic, Beaux-Arts, and Neo-Baroque skins were simplified, reduced and eventually omitted to reveal the steel structures developing within. At this stage in the early 20th century, the formal and theoretical principles of the Modern Movement were solidified, embodying a contradiction that would persevere for half a century. On the one hand, architecture emphasized the machine production and functional utilitarianism of the bourgeois industrial society. On the other hand, it gave itself the moral role of social reformer in response to problems associated with the increasingly organized and powerful working classes.

Catching Up

While the rest of the artistic community was exploring and developing art for its own sake, disengaged from a practical, useful relationship to life and society, architecture was bringing to mature expression the values of the industrial machine. By mid-century, the industrial revolution had long since ended and had been replaced by more modern technologies, but social stratifications between middle and working classes had changed very little. The inability of architecture alone to bring about social changes was proven, and the contradiction finally broke apart the Modern Movement, leaving the many pieces to dissolve in their own time. In the course of the dissolution of the Modern Movement (by no means yet complete), architecture has been catching up with other arts. Some of the present work is completely internalized, whether a direct copy or derivation of past styles. Its prevailing purpose is to comment on itself, or the architectural past. Other work serves the role of critic, commenting on current life and values, and on the recent demise of the Modern Movement.

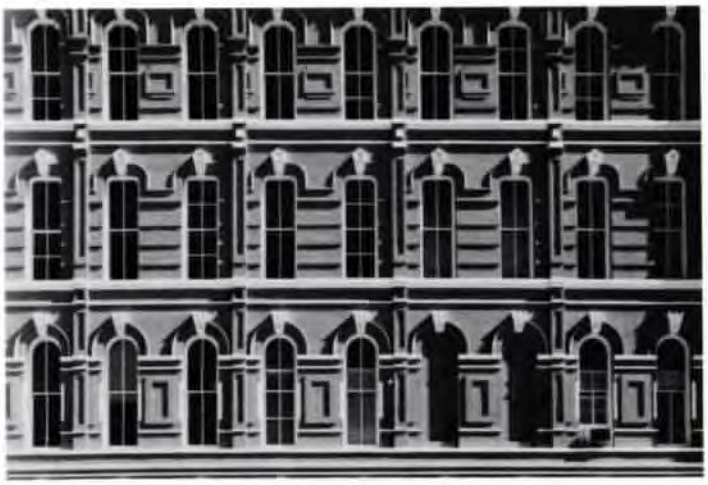
Meanwhile, since the 1960s, art has returned to an involvement with life—not perhaps in its earlier subsidiary decorative role. But, with pop art and later trends, much of the bohemian rejection of popular culture has changed to a critical participation which has actually enhanced the life once scorned. So where will architecture go from here? Will life, art, and architecture meet again in the spiral of time? Or should this unification even be considered a goal?

The developments in architectural design and theory in the past 15 years (dating from the publication of Venturi's *Complexity and Contradiction in Architecture*), have generated a lively response and debate, and have created more questions and doubts than anwers and resolutions. The one characteristic, it seems, that could draw the many diverse functions into something like a "movement" or "ism" is the pluralistic attitude of including the whole history of architectural experience as a source of learning. Perhaps the confusion and difficulty in grasping the proliferation of trends (in style and theory) lies in the absence of unified ideals or goals—which were a precondition in the Modern Movement for 75 years.

Reevaluation

This is a period of growth, reevaluation, and restatement of a multitude of architectural issues not addressed during years of simplistic Modernist one-liners—issues like historicism, style, regionalism, meaning and symbolism, avant-garde elitism vs. vernacular tradition, social purpose. But, most noisily, this is a period of confrontation with the perceived failures of the Modern Movement. While some aspects of the current production are reactionary and negative, there is much that offers positive directions for growth and maturity. This period should not be expressed as a searching for a contemporary zeitgeist, when there is such diversity and fluctuation of values. Such an attitude would fall back into the Modernist syndrome of classifying historical precedents relative to Modernist principles rather than within their relative contexts.

One of the greatest contradictions within Modernism was its effort to express a universal spirit while generating many factions, unresolved episodes, and even stylistic trends that would seem to demand particularized rather than idealized solutions. In its search for the universal, Modernism abandoned, repressed, ignored and rejected history and its lessons. Much of today's work now seems bent on reinstating through historical allusion the continuity of architectural



development, especially the western humanist tradition begun with the Renaissance. The most reactionary arguments call for a total rejection of Modernism; but this position assumes the same dogmatic stance used by Modernism in its manifestos against its predecessors. Rather than being exorcised from history, the Modern Movement should be given its respective place and examined for its lessons, both good and bad.

Toward Pluralism

This attitude perhaps would seem more viable if the lessons of Modernism could be seen as processes or methods, rather than style (International Style). In this way the repressed complexities may be brought out into the open where they can be approached and dealt with. The very diversity of trends within the current movement reflects the complexity of society and the frequently contradictory demands to which architecture must respond. The Modernist belief that architecture can and should influence life (socially and politically) is being replaced by the attitude that architecture must certainly be a *part* of life (a vital, enriching part)—but without the moral imperative for social improvement or elitist snobbery against popular culture. Disillusionment with architecture as the purveyor of an idealistic social message has generated experiments in improved communication with the many levels of popular taste. A revived awareness of the public role and responsibility of architecture should lead to a greater responsiveness and interaction with a broader cross-section of contemporary life. The final failure of Modernism was its abstraction from reality into an internalized, self-referential vocabulary which alienated rather than communicated. However, there is also a danger in the present polemics of becoming as moralistic, dogmatic, and self-referential as the Modernist ideologies being criticized. Hence, there is a need for continued refreshing of the attitude of pluralism: the architect's ability to respond to a wide (usually conflicting) variety of economic, programmatic, and cultural conditions with an unprecedented attitude toward style, form and symbol. The design freedom of pluralism would give the architect more latitude and inspiration to deal with the particulars of program, budget, context, and theory, yielding built solutions more vitally responsive to time and place, and not limited by preconceptions.

Much of the current work and theory must still be seen against the background of Modernism, as a rejection of it, a mutation of it, a proposed replacement for it. The weakness of these attitudes, which usually leads to indecisive results, is in believing there actually is (or was) such a thing as Modernism—a unity, a period, even a golden age. As is the case with most "periods" of art history, the appliçation of a label restricts, narrows and seeks to simplify understanding. However, the perception of life at any time is a continuum, a conscious present with a memory of the past and a hope for the future.

Architecture as Continuum

Beginnings and endings of periods in the academic sense are strictly arbitrary means of organizing the past. Our view of the recent past, even at this near perspective, reveals a multitude of directions and responses which deny the notion of such a unified structure as Modernism. With the enemy thus dispersed, where will the attackers turn?

A broadened understanding of the interweaving continuum that is the past would imply that the present is the ongoing part of the sequence. At any given time, architects will build as they must, considering the conditions of the time. Buildings are not built to compose architectural history. The categorizing and labeling comes later, or has until recently. Perhaps the unique quality of architecture today is its extreme self-consciousness—its awareness of the presence of the past and its effort to make history of the present. But with the past remembered so clearly and so literally, what will the future learn from us?

Perhaps with a closer attention to the needs of the present, with a discriminating application of lessons from the past, and less of a precious self-consciousness about our own historical importance, we can create an architecture of our time and place which may be looked back upon as another source of learning.

Gerald Moorhead is a partner in the Houston firm Charles Tapley Associates.

The Renewal of Sutton Hall

Architecture Complex Taking Shape at UT-Austin

By Jeffrey Karl Ochsner

Richard Payne

East face, Sutton Hall. Designed by Cass Gilbert in a derivative of the Spanish Renaissance style, the building dates from 1918.

Across the state of Texas, architectural education takes place in many settings. The role of these settings in the educational process often remains unnoticed and completely unstudied. But, the concept that an architectural school building can itself be a teaching tool has been recognized in the renovation of Sutton Hall for the University of Texas at Austin School of Architecture—the first phase of a long-range program for the creation of a distinguished facility for achitectural education.

Context

Sutton Hall is one of three buildings serving the School of Architecture, located in the southwest corner of the older section of the University campus. The original Architecture Building (now Goldsmith Hall) was designed in 1931 by Paul Cret of Philadelphia in association with Herbert M. Greene of Greene, La Roche and Dahl of Dallas. Facing onto West Mall, a major campus axis, and sited across the Mall from the Student Union, Goldsmith was integral to Cret's Beaux-Arts master plan for the university. As the architecture program grew beyond the 250 students for which Goldsmith was designed, the school began to expand into adjacent structures including Battle and Sutton Halls, both originally intended for other uses. Battle Hall, the oldest of this group of buildings (1910), faces two major campus axes, West Mall and Main Plaza, and sits diagonally across from the Main Building, which is the center of the campus and the location of the University administration. Like Sutton Hall, Battle Hall was designed by the well-known New York architect Cass Gilbert (1859-1934), designer of the Woolworth Building in Manhattan and the Supreme Court Building in Washington. Battle Hall is marked by a richness of materials and a profusion of ornament, particularly in its

Wayne Thom Associates

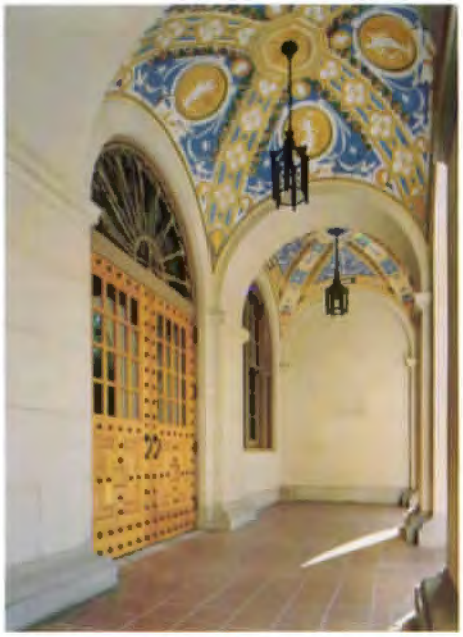
Faculty office.

Richard Payne

Top-floor studio is reclaimed attic space.

Richard Payne

Richard Payne



Tile treatment on soffit above new north entry (left) echoes original south-side loggia vaults.

Richard Payne

Work spaces in top-floor studio, beneath new clerestory windows.

Richard Payne

Larry Murphy

ABOVE LEFT: Dean's office. ABOVE RIGHT: Stair with iron and brass rail.

magnificent reading room. In 1952, the West Mall Office Building, an uninspired background building housing a variety of administrative services, was added to the back of Battle Hall.

Sutton Hall (1918) was designed by Cass Gilbert to house the education department, but it passed through a variety of uses and by 1977 was occupied by architecture, several foreign languages, and education.

The School of Architecture had long recognized the value of its central campus location and its distinctive structures, but by 1977 it was evident that the architecture group could no longer function effectively without renovation and some major modification. The 1977 master plan by Thomas, Booziotis & Associates of Dallas and Chartier Newton of Austin detailed the facilities requirements of the School and the renovation needs of the buildings and also pointed out a clear requirement for a complete reworking of circulation within the group. Because the buildings were all originally designed for separate uses, they all orient outward. In spite of the proximity of these buildings, entrance placement and floor levels made interbuilding circulation very difficult and the center of the complex was a vacuum. The 1977 plan proposed a new circulation pattern with new and reoriented entrances, as well as a central courtyard to serve as a focus for the entire facility.

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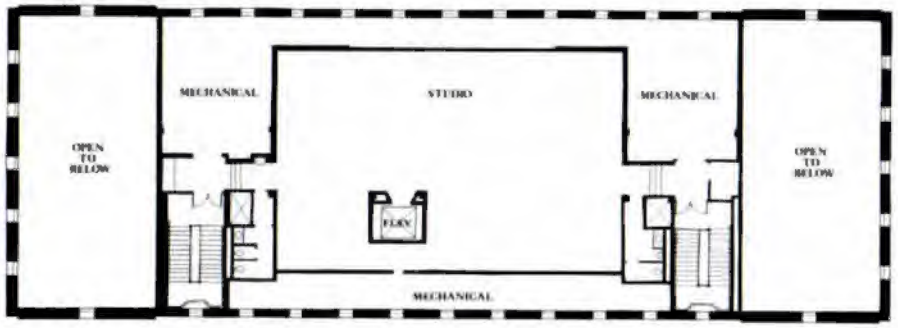
Wayne Thom Associates

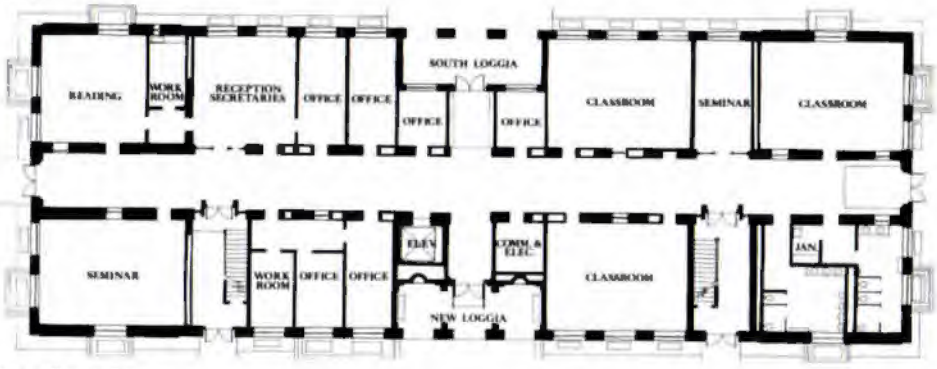
New stair enclosures echo orders on exterior.

Sutton Hall

Although Sutton Hall had served several departments since its construction, it remained essentially intact. A rectangle in plan, measuring roughly 190 by 70 feet, the structure contained about 40,000 square feet on three floors divided conventionally into classrooms and offices in a typical center corridor plan on each floor. (The attic and basement had not been intended by Gilbert for daily use.) Designed in a derivative of the Spanish Renaissance style, the exterior of limestone, buff brick and multi-colored terra cotta with a red-tiled roof remained in excellent condition, requiring little work other than restoration of the decoration of the soffits at the roof. Inside, Gilbert's plaster walls, clay tile corridor floors and red gum trim required repairs but otherwise could be left intact. As a result of the respect for the Gilbert design, the work of the architect often appears as a modest restorative effort and sometimes is indiscernable from the original. Although vinyl-covered acoustical panels and new lighting were added at the ceilings, their impact is relatively minor. In large vaulted studios at the ends of the third floor, a hung ceiling which had been

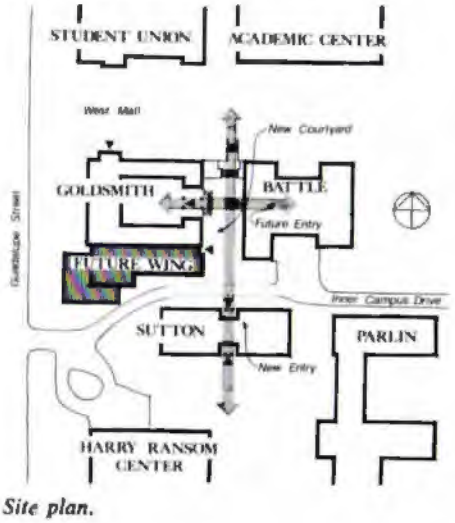


Top floor plan.



Main floor plan.

Composite section.



Site plan.

added was removed and the resulting space rises to 22 feet in height as Gilbert intended.

The conversion of the fourth floor attic to usable studio space was a major alteration by the renovation architects. This space was described in the 1977 plan as substandard and unusable due to its configuration, single exit and lack of natural light and ventilation. The conversion involved the addition of new dormer/clerestory windows to the north and the vertical extension of the west end stair to the fourth level to create the required second exit. This extension virtually duplicates the original east stair, so that the new is indistinguishable from the Gilbert-designed original.

Other alterations were less dramatic. The Life Safety and Uniform Building Codes required the enclosure of the two stairs. And a new mechanical system was deftly incorporated, such that minor interference with the existing structure is never apparent. One strategy, for example, was to use existing ventilation chaises for the return-air system.

In keeping with the 1977 master plan, a formal axial entrance was cut into the building's north side to face the planned courtyard between the other two buildings of the architecture complex. This was matched to the Sutton Hall south entrance and required only extending existing window openings to grade.

The ceiling of the loggia thus created remained flat due to constraints of the existing structure, but the tile treatment of the soffit was developed as an echo of the original south-side loggia vaults.

The Long Term

Overall, the renovation of the three main floors, the conversion of the attic, and an earlier renovation of the basement have given the School a total of 60,000 square feet of usable space in Sutton Hall. With the continuing temporary use of off-campus space, the school is now able to commence with the next phase of the master plan, the simultaneous renovation of Goldsmith and Battle Halls and the creation of a central architecture court, a two-year project.

The final realization of the architecture master plan involves the conversion of the West Mall Office Building to architecture library stacks, administrative, and other uses. However, this process cannot begin until other campus locations are available for the non-architecture uses currently occupying the space, which may be a decade in the future.

When completed, the complex of three buildings will offer superior facilities for architectural education. Combined with the resources the school is developing in its library, computer and word processing equipment, drawing archives and planned exhibit spaces, it will provide some of the strongest support for architectural education among all programs in the nation.

The context of this development is important in considering its full implications. Attention has recently been focused on the stated intention of the University of Texas to become a great state university on the level of Michigan, Berkeley and Wisconsin by the end of this century. To achieve this, the schools and colleges comprising the university are each striving for prominence in their fields, which will require the highest quality combination of facilities, resources, personnel and courses. In architecture, it is evident that the school will have the necessary facilities on which to build.

Jeffrey Karl Ochsner is a lecturer at Rice University, a practicing Houston architect, and a frequent TA *contributor.*

Sutton Hall Credits: Architects—Thomas, Booziotis & Associates, Dallas, and Chartier Newton & Associates, Austin; MEP—Alan H. Smith Consulting Engineers, Dallas; Structural—Brockette/Davis/Drake, Inc., Dallas; General Contractor—Rio Construction Co., Austin; Client Liaison—Richard Dodge, Bldg. Committee Chairman; Hal Box, FAIA, Dean.

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from a total of $5,405,389,000 in 1981.

Building activity in the Dallas/Fort Worth area, however, shows a seven percent *increase* for 1982. Residential and non-residential contracts in Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant and Wise Counties totalled $4,220,199,000, up from a total of $3,944,039,000 at the end of 1981.

Dallas Architect Gershon Canaan Receives Grand Cross Of Merit from West Germany

Dallas architect Gershon Canaan, senior vice president of the Dallas firm J. L. Williams & Co. and Honorary German Consul, has received the Federal Republic of Germany's Commander's Cross of Merit.

Canaan, who has served as Honorary Consul since 1962, was honored for his "accomplishments in fostering the cause of German-American friendship during 20 years of consular service."

A native of Berlin, Canaan came to the United States in 1947 on a Frank Lloyd Wright Fellowship. He received a bachelor's degree in regional and city planning in 1952 and a master's degree in architecture in 1954, both from the University of Texas at Austin.

Buffalo Bayou Park Under Way in Houston

Twelve years after the city of Houston commissioned Charles Tapley Associates to prepare a study for the "Beautification and improvement of Buffalo Bayou from Sabine Street to Allen's Landing," work is finally under way on a part of it.

In January 1982 the City Council authorized the Public Works Department to seek bids on renovation of the downtown Houston waterway from Sabine Street west about 2,000 feet. Ground was broken in June on the so-called Sabine Reach unit, the first-phase demonstration project that will include a wharf, boat launch, hike-and-bike trail, pedestrian bridge, erosion controls, lighting, grading and landscaping.

Upon scheduled completion this July, the Sabine Reach project is intended to prove the recreational, aesthetic and flood-control feasibility of the entire Buffalo Bayou Park Plan, which now calls for improving some 360 acres along the bayou from Shepherd Drive on the west to Hirsch Road on the east. The downtown portion would include a wharf area along the lines of San Antonio's famed River Walk.

First proposed in 1971, the Buffalo Bayou Park Plan was approved by the city council in 1974 as a Bicentennial project, but never got off the ground due to lack of funds. The $1.5 million Sabine Reach segment, jointly funded by the city and the philanthropic Wortham Foundation of Houston, will serve as an effective impetus for the $100 million plan if further funding can be lined up. At this point, the Chamber of Commerce's Buffalo Bayou Transportation Corporation is confident that the tax-increment finance district recently approved by the city council will help see the project through to fruition, along with funding from the private sector and Harris County.

Grayson Gill Dies in Dallas Nursing Home at Age 89

Grayson W. Gill, FAIA, retired Dallas architect and engineer and former president of the Texas Society of Architects, died Dec. 18 in a Dallas nursing home. He was 89.

Notable Dallas buildings which Gill had a hand in designing include University Park City Hall, St. Bernard Catholic Church and St. Patrick Catholic Church and School, Republic National Bank Building and Republic National Bank Tower.

Grayson Woodward Gill was born Nov. 7, 1893, in Port Clinton, Ohio. Following three years at Ohio State University, he worked as a draftsman in Toledo, then joined the U.S. Army, serving as an infantry lieutenant and aerial observer in France and Germany during World War I. Following his discharge, he enrolled at the University of Michigan, receiving a bachelor's degree in architectural engineering in 1921.

Gill moved to Texas in 1922 to take a job as an associate professor of architecture at A&M College of Texas (now Texas A&M University). Later moving to Dallas, Gill worked as an engineer with Herbert Green Co., then in 1934 established his own Dallas firm, Grayson Gill, Architect-Engineer (later Grayson Gill, Inc.), where he worked until his retirement.

Among other civic and professional commitments, Gill served as president of the Dallas Chapter of the American Institute of Architects in 1954, of the Texas Society of Architects in 1955 and of the Dallas Chapter of the Construction Specifications Institute in 1958-59.

Buffalo Bayou Park plan from Sabine Street to Memorial Drive.

Projects in Progress

Schreiner Center Complex, Kerrville, by Ford, Powell & Carson, San Antonio

Work has begun on phase one of the $20 million Schreiner Center complex along the Guadalupe River in downtown Kerrville, designed by the San Antonio firm Ford, Powell & Carson.

Now under construction next to the Charles Schreiner Bank is One Schreiner Center, which will be a 60,000-square-foot, three-story office building clad in "structurally expressed" Hill Country limestone. Recessed light-gray windows will be accented by exposed granite lintels and sills "dusty rose" in color and quarried in nearby Comfort. Entrance to the building will be through doors recessed under a colonnade, which will wrap around three sides of the building. Public areas inside will feature works in bronze, wood and stone by area artists.

The Schreiner Center master plan calls for another three-story, 60,000-square-foot office building, Two Schreiner Center, which will be a mirror-image of

One Schreiner Center, Kerrville.

the building now under way. The whole project also will include a parking garage, motor court with fountain and a 30,000-square-foot luxury hotel with 15,000-square feet of restaurant and retail space in a River Walk-like arrangement along 600 feet of river frontage.

One Schreiner Center is scheduled for completion late this summer.

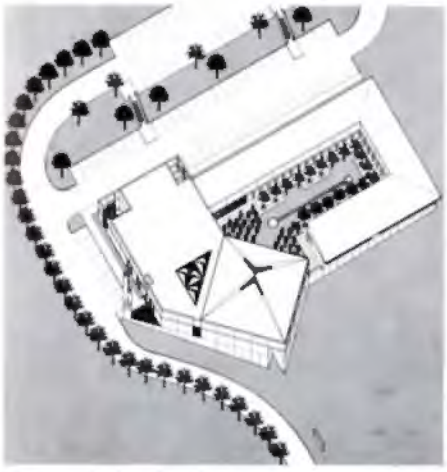
Episcopal Church of the Ascension, Dallas, by William H. Hidell, Dallas

Now under construction on Greenville Avenue in North Dallas is the Episcopal Church of the Ascension, designed by the Dallas firm William H. Hidell, Architects, as a new campus for an established parish emphasizing Christian education as well as worship.

A courtyard plan evolved as the campus nucleus, integrating the parish's worship, educational and social activities. Landscaping in the courtyard is patterned after a surrounding colonnade, with trees spaced between and on the center line of columns to add greenery to the courtyard and to enhance courtyard views from interior spaces.

The worship space is dominated by a stone altar surrounded by seating for 250 people, an arrangement intended to symbolize the gathering of the family around the table. The sanctuary is accented by refracted light from a faceted-glass skylight above. The removal of wall panels in the transitional narthex provides for the expansion of worship and social activities. The facility is cooled by a latent ice-storage system designed to utilize low off-hour energy rates at a lower rate of consumption.

The complex is scheduled for completion in August.



Episcopal church, Dallas.

San Felipe Plaza, Houston.

San Felipe Plaza, Houston, By Skidmore, Owings & Merrill, Houston

Now going up in Houston's Galleria/West Loop area is the 45-story, one million-square-foot San Felipe Plaza, designed by the Houston office of Skidmore, Owings & Merrill and scheduled for occupancy in the fall of 1984.

Rising from a 5.5-acre site on the southeast corner of San Felipe Road and Augusta Drive, the tower will be composed of cascading tiered setbacks of bronze reflective glass and polished brown granite. The approach to the building will be a circular drive leading to a fountain and a cantilevered glass canopy. Inside, a three-story, glass-enclosed lobby will be finished with white marble floors, rose granite walls and wood-panelled elevator cabs. A nine-story, 2,700-car parking garage will be connected to the building by a glass-enclosed, airconditioned walkway.

Coming Events

March 26: The University of Texas at Arlington's 5th Annual Beaux Arts Ball, sponsored by the Student Chapter of the American Institute of Architects, at the Hall of State in Fair Park in Dallas. Contact the School of Architecture and Environmental Design, the University of Texas at Arlington, c/o ASC/AIA, Box 19108, Arlington 76019. Telephone: (817) 273-2801.

April 11-13: Three one-day workshops on computerizing a design firm, sponsored by *A/E Systems Report*, in Dallas. Contact Carol Gosselin, *A/E Systems Report*, P.O. Box 11316, Newington, Conn., 06111. Telephone: (203) 666-9487.

April 25: "An Integrated Process for Energy Conservation," a workshop on a multidisciplinary approach to designing for energy conservation in nonresidential buildings, sponsored by the Division of Continuing Education at the University of Texas at Austin, at the Thompson Conference Center in Austin. Contact the University of Texas at Austin, Division of Continuing Education, Thompson Conference Center, Box 7879, Austin 78712.

April 28: "Paul Cret's Milieu: New York and Philadelphia in the 1930s," a presentation by Robert A. M. Stern as part of the Bluford W. Crain Centennial Leeture Series, in the Academic Center Auditorium at the University of Texas at Austin. Contact Larry Speck, Associate Professor of Architecture, the University of Texas at Austin School of Architecture, Austin 78712. Telephone: (512) 471-1922.

April 28-29: "What Makes a City: the Economics of Taste," a conference on the ingredients of a great city sponsored by The Dallas Institute of Humanities and Culture, at the Dallas Central Library. Contact Mickey Bright, Director of Development and Public Relations, The Dallas Institute of Humanities and Culture, 2719 Routh Street, Dallas 75201. Telephone: (214) 698-9090.

May 7: "Building Ecology," a workshop on the harmful effects of building materials during fires and normal daily use, sponsored by the Division of Continuing Education at the University of Texas at Austin, at the Thompson Conference Center in Austin. Contact the University of Texas at Austin, Division of Continuing Education, Thompson Con-

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ference Center, Box 7879, Austin 78712.

May 22-25: "American Architecture: A Living Heritage," 1983 national convention of the American Institute of Architects, at the Hilton Hotel and Rivergate Convention Center in New Orleans. Contact the American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C., 20006. Telephone (202) 626-7300.

June 8-10: "A/E Systems '83," fourth international conference for automation and reprographics in design firms, sponsored by the automation and reprographics newsletter, *A/E Systems Report,* at Market Hall in Dallas. Contact Michael Hough, Promotion Director, P.O. Box 11318, Newington, Conn., 06111. Telephone: (203) 666-1326.

June 12-17: "The Future Isn't What it Used to Be: A Conference for Tomorrow and Today," 33rd annual International Design Conference in Aspen, Colo. Contact International Design Conference in Aspen, P.O. Box 664, Aspen, Colo., 81612.

Sept. 25-Nov. 6: "Scott Burton Chairs," an exhibition of the sculptor's abstract furniture, at the Fort Worth Art Museum, 1309 Montgomery St., Fort Worth 76107. Telephone: (817) 738-9215.

Nov. 13-15: "Architectural Research 1983: Priorities, Prospects and Funding," a conference for architectural researchers, practitioners and educators, sponsored by the Architectural Research Centers Consortium and the College of Architecture and Environmental Design at Texas A&M, in College Station. Contact Norah Albright, Assistant to the Dean, College of Architecture and Environmental Design, Texas A&M University, College Station 77843. Telephone (713) 845-1260.

News of Firms

Robin McCaffrey and Janet Needham-McCaffrey have joined with David Haley to form **Needham-McCaffrey and Associates, Inc.,** for the practice of urban planning and architecture at 11020B Audelia Road, Suite B205, Dallas 75243. Telephone: (214) 348-5054.

Gordon Sibeck & Associates, Inc., Architects, has relocated its offices to Four Hillcrest Oaks, 6600 LBJ Freeway, Suite 4195, P.O. Box 402527, Dallas 75240. Telephone: (214) 239-3500.

The El Paso firm **Langford Anderson Thacker, Inc.,** has moved into new offices at 1170 Westmoreland, Suite 133, El Paso

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The Round Rock firm R. Gill and Associates has changed its name to **GSP, Gill Spencer Powell, Architects,** with the promotion of Bayard M. Spencer, III, and Bill C. Powell to the position of partner in the firm.

The San Antonio firm **Rehler Vaughn Beaty and Koone, Inc.,** is one of two San Antonio businesses on *Inc.* magazine's list of the 500 fastest growing private companies in the United States.

Richard L. Kreutz has been appointed to the board of directors of **3D/International** in Houston.

James Lee Brown, vice president and partner of the Houston firm **SHWC, Inc.,** has been appointed to the American Institute of Architects Committee on Architecture for Education.

The Austin firm Kinney and Stone, Inc., has changed its name to **Kinney Kaler Crews** with the advancement of Robert C. Kaler and Paul C. Crews to the position of firm principal.

News of Products

Venting Skylight by Naturalite.

Naturalite in Garland has introduced a new line of insulated glass skylights designed primarily for residential applications. All three models—self-flashing, venting and thermal skylights—come with a dark bronze baked-enamel finish with clear or tinted glass. The outer layer of glass is three-sixteenths of an inch thick annealed with a quarter-inch air space. The inner layer is seven thirty-fourths of an inch clear laminate. Naturalite Inc., P.O. Box 2267, Garland 75041. Telephone: (214) 278-1354.

Carl Kisabeth in Fort Worth has added two new chair and sofa series to its contract catalogue. The "Deon," available as a chair or two- or three-seat sofa, features a tight seat and back, channeled arm detail and plinth base in stain finish, solid walnut or oak or plastic laminate.

"Deon" series by Kisabeth.

The "Ele" series, also available as a chair or sofa, features tight seat and back, solid walnut or oak detail between arm and back panel and solid walnut or oak platform legs. Carl Kisabeth Co., Inc., 5320 Glenview Drive, Fort Worth 76117. Telephone: (817) 281-7560.

Engineering Graphics Technology in Houston has recently introduced "DUCTSYS," an automated drafting system for HVAC-duct layout based on the concept of point-to-point drawing. The user selects a duct fitting symbol off the supplementary menu and places it at the desired location on the drawing displayed on the CAD terminal. The system automatically draws the fitting and the connecting duct from the previous fitting. The selection of fittings includes transitions, tees, splits and curved bends for any user-specified angles. Engineering Graphics Technology, 11231 Richmond, Suite D106, Houston 77082. Telephone: (713) 531-6800.

Boyd Calculator Co. in Houston has come out with a hand-held calculator designed for architects, engineers, contractors and other building industry personnel who use the English system of lineal measurement of feet, inches and sixteenths. The primary difference between this calculator and others, according to Boyd, is its use of numeral keys 0 to 15, which allows inches and sixteenths to be entered with a single keystroke. Boyd Calculator Co., 6620 Lozier St., Houston 77021. Telephone: (713) 747-7572.

Vecta Contract in Grand Prairie has opened an office in Houston, headed up by territory manager Robert Etheridge and including facilities for display and presentation. Vecta Contract, 12 Greenway Plaza, Suite 520, Houston 77046. Telephone: (713) 871-0567.

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Books

Looking Back on an Extinct, and Inspirational, Building Type

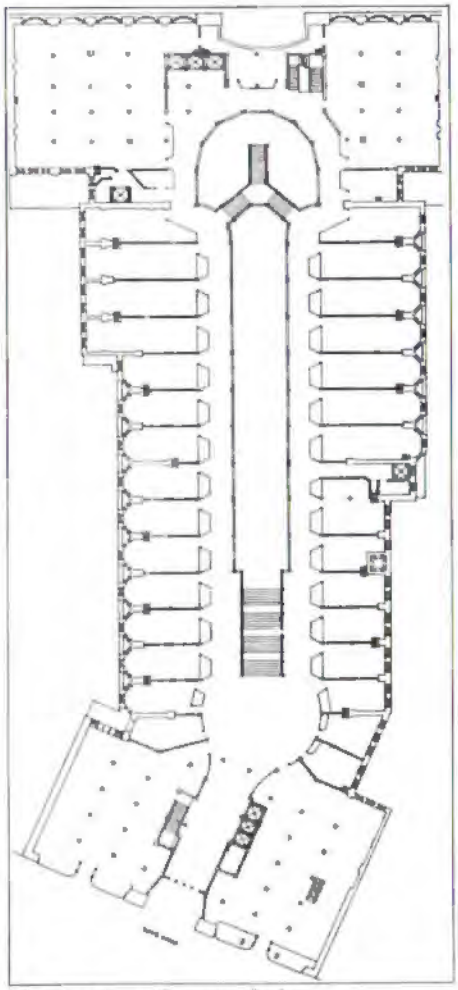
By Larry Good

Arcades: The History of a Building Type, by Johann Friedrich Geist. MIT Press, Cambridge, Mass., 596 pages, $50.

Arcade. Bazaar. Corridor. Galerie. Galleria. Halle. Passage. Architects have had rare opportunities to study this primarily European building type that may be having unprecedented influence in the late 20th century United States. Most arcades were demolished by the end of World War II, either because of financial failure or by bombing raids on London, Paris, Brussels and Berlin. With several exceptions, arcades have never been mentioned in architectural journals, yet they may provide significant inspiration for new town centers and major mixed-use developments around the world today.

What is an arcade? Is it a street or is it a building? Is it a space for movement and transition? It is historically a connecting link between early forms of the marketplace and the department stores and malls of advanced capitalism. The Eastern Bazaar was its forerunner. So too were the galleries of the Uffizi Palace, Ponte Vecchio and London Bridge. The arcade is *public* space, yet it was perhaps the first object of *private* real estate speculation among the wealthy. It was the unquestionable sign of a booming metropolis—an element of urban design, linking street to street or street to square. It is a building type that grew out of and disappeared with the 19th century.

The arcade is a collection of rentable shops (dealing primarily in luxury goods) organized in a street-like arrangement. In Europe, shops were located on the first level only, with apartments on one or more floors above. However, in the several U.S. examples, shops and offices extended to all levels with continuous balcony/walkway access on each. Regular shop bay sizes and rhythms were developed, with arcade interior facades designed to appear as exterior, heightening the street-like impression. Six qualities of the building type are common to all examples: it provides access to the interior of a block, provides public space on private property, consists of symmetrical street space, contains skylit space, provides a system of access that organizes retail trade, and creates a space of transition.



Cleveland arcade ground plan.

Construction of arcades began in Paris. Revolution had created appropriate conditions in France for the development of competition and for the exploitation of parceled private property in a free market economy. In 1786 the Palais Royal, a public gallery free of the congestion and danger of the streets, became a popular promenade and luxury marker, and therefore a model for future arcades. From 1800 to 1820, modestly scaled gable-glass-roofed arcades such as London's famous and successful Burlington Arcade were built throughout Europe. The first arcade on American soil was built in Philadelphia in 1826. The next year saw the construction of the temple-fronted Providence (R.I.) Arcade, one of only two major U.S. examples still standing.

By mid-century, the arcades became monumental symbols of national independence (The Galeries St. Hubert in Brussels) or civic dominance (Milan's Galleria Vittorio Emanuele). These buildings reached 45 feet in concourse width, 100 feet in height and were over 600 feet long. The technological advances in iron and glass allowed development of large span vaulted glass skylights to fantastic dimensions. The lightweight iron construction of the arcade roofs foresaw the exaggerated lightness of the Crystal Palace, Galerie de Machines and the Eiffel Tower.

Late 19th century arcade designers practiced gigantism. The Moscow New Trade Halls (now the national department store "GUM") in Red Square replaced an entire district with a single building. It probably was the largest building in the world in floor area at the time of its construction. Three parallel arcades, with crossing transepts, became a totally independent system of space, breaking away from the traditional arcade concept that it must connect something. The U.S. counterpart is the still extant Cleveland Arcade of 1888, a five-

story gallery connecting two Richardson high-rise office buildings. This arcade is a large steel skeleton with the central space carved out of the center like a light well. The great width and triple setbacks are unique among the building type.

The death of the arcades by the time of World War I can be attributed primarily to three causes: Urban problems in the congested center cities where the buildings had flourished; the replacement of steel with concrete as a most popular building material, and one not suited to the lightness of arcade construction; and, most importantly, the "city as a system of *spaces*" was replaced by the "*city of individual entities*." The building type then fractured into its component parts, which have dominated the planning of major developments until today—the "atrium" light well, the pedestrian "level," and the closed-off commercial street.

This book is organized well, both for initial reading and for reference purposes. *Arcades* opens with a 100 page discussion of the "Architectural and Social History"of arcades, which I have summarized in the preceding paragraphs. Next follows a well done typological listing comparing important arcades relative to key qualities that can he effectively presented graphically. These include spatial types, cross sections, types of subdivision, glass roof construction, and interior facades. The carefully drawn "same-scale" facade elevations are particularly fascinating, as is the diagrammatic chart of spatial types. Author Geist (a practicing architect who teaches architectural history and theory in Berlin) then gives an overview of the literature of the arcade before embarking on a 400 page descriptive catalog of more than 300 examples. The catalog is listed alphabetically by city and includes building and site plans, sections and photographs of a majority of the arcades listed. For each of the major projects, such as Milan, Geist spends 30 or more pages in detailed discussion of the conditions that fostered construction and the background of the architect and client. Certainly encyclopedic in proportion, *Arcades* gracefully allows selective reading.

During the days I spent selectively reading, I yearned for an analysis of how we got from the beautiful and romantic arcades to the shopping malls of today. It is well known that the Gallerias of Houston and Dallas were directly inspired by the Galleria Vittorio Emanuele. Harborplace, Eaton Centre, Citicorp Center and the AT&T Arcade may also be recognized as the late 20th century legacy of the arcades. Theaters were popular inclusions in the European arcades. Now we see multi-screen cinemas at many malls. The careful linkage and assortment of uses recommended for successful mixed-use developments will likely foster a return to arcade-like vibrancy. There is a desire to promenade, to see and be seen, to enjoy these grand interior spaces. The Valley Girl no doubt had her 19th century counterpart at the Galerie Colbert. We have come to understand the *social* program that fosters a financially successful mall. But there is much to be learned from the arcades to return the architectural program to the glories of the mid-19th century. This book will contribute much understanding to those who patiently study it.

Larry Good is a Dallas architect and a Texas Architect *contributing editor.*

In Brief

Journal of Architectural Education, Fall 1982, edited by Peter C. Papademetriou. Association of Collegiate Schools of Architecture, New York, N.Y., 55 pages (periodical), $5 for single copy back issues, $20 annual subscription for non-ACSA members, $40 for institutional members.

Volume 36, Number 1 of *JAE* marks the culmination of recent efforts by the ACSA to revamp the format and thrust of its official journal on design education, theory and practice. Editor Peter Papademetriou of Rice—a *Texas Architect* contributing editor—says the issue is an "experiment" to collect a series of topics currently being discussed by the ACSA Publications Committee and to provide a range of material that will develop into a basis of discussion for the journal's Editorial Board. Accordingly, says Papademetriou, "subsequent issues will more approximate the new editorial model being put into effect." This issue's range of material includes Marc Trieb on connections between drawing and verbal expression, a study of the rowhouse by Paul Hirshorn, an analysis of the role of architectural history and its interpretation in the design process by John E. Hancock and interviews with Stanley Tigerman and the late Albert Speer.

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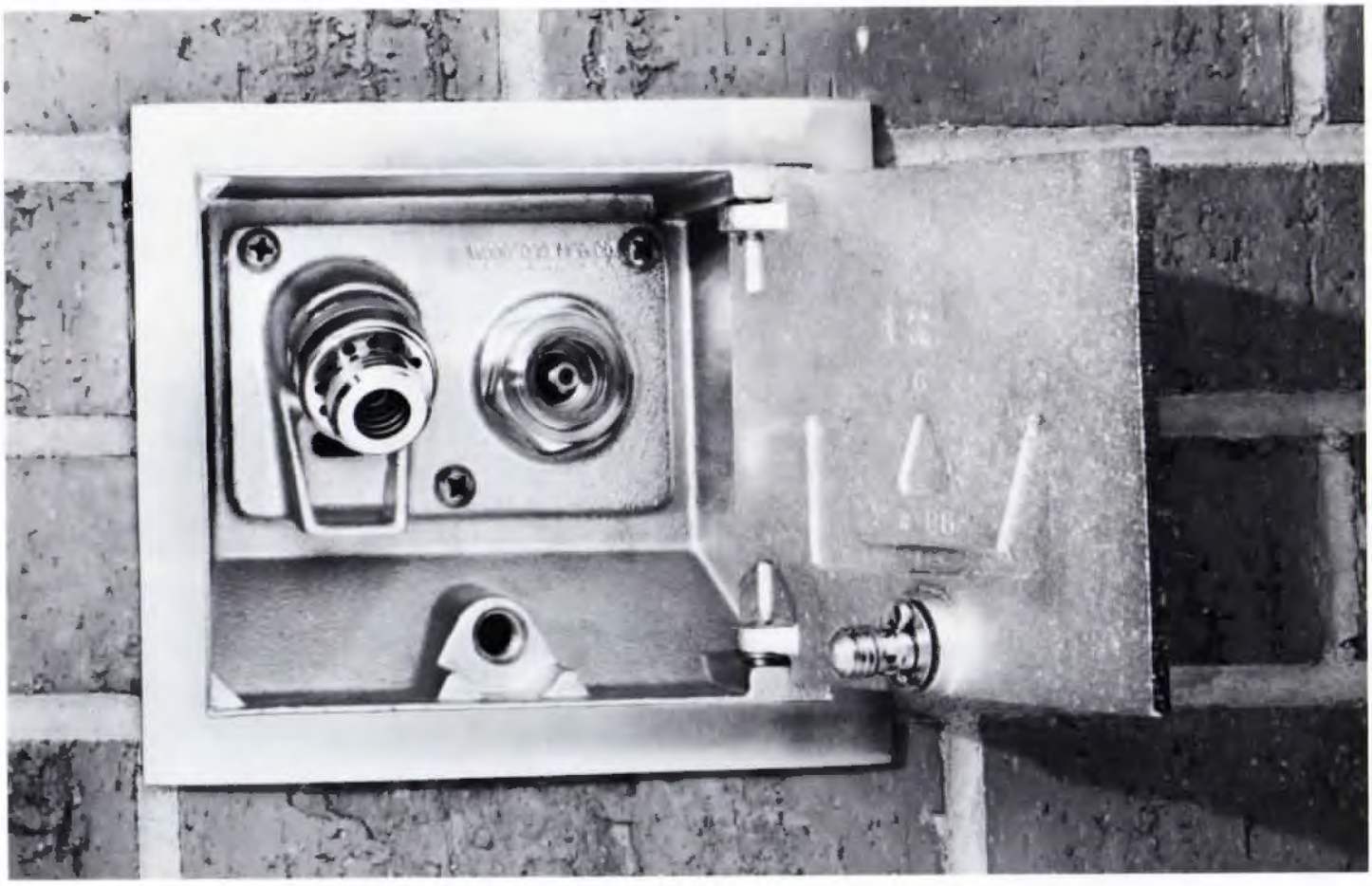

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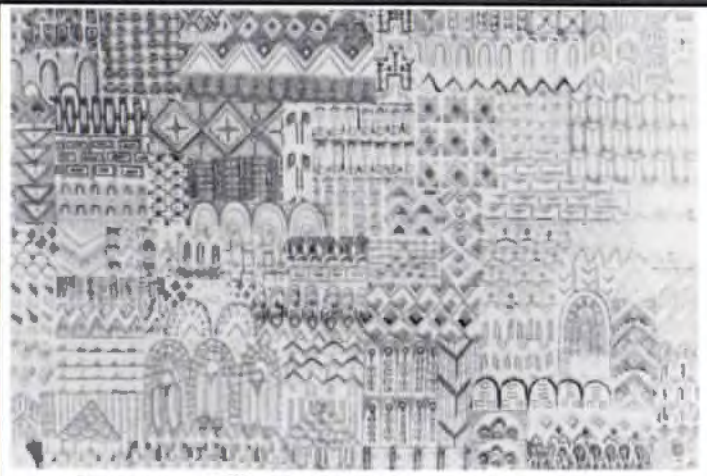

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David Braden/Musings

Can There be Life Without Air Conditioning?

I am desperately reading *Megatrends* to prepare myself for things yet to be, while searching out my sources of the past to figure where I went wrong when I put my money in oil and my future in architecture. I have consulted the writings and babblings of all those great philosophers I strive so hard to emulate —the likes of Brother Dave Gardner, Henny Youngman and Cactus Pryor— only to find they have no answers either. Yet here I sit assigned to write about a subject of which I am totally devoid: *ENERGY!*

It was only nine years ago that my lady, Sara Bird, and I found ourselves stranded for lack of energy in Myrtle Beach, South Carolina. We had gone there to take the word to the architects of the state. (South Carolina is not so fortunate as the Great State of Texas, in that they have no resident architectural humorist and must import.) We found Myrtle Beach to be 17 miles long and two blocks wide, with a gas station at each end. On the right (or left, depending on whether you face north or south) is the Atlantic Ocean. On the left (or right, depending on whether you face south or north) is a swamp.

We were in the middle (between the two gas stations) when, simultaneously, the governor of North Carolina announced the state had failed to lay in proper gasoline reserves and our rent car ran out of petrol. As I recall, we eventually got five gallons from somewhere and limped southward out of town toward Savannah, with a profound respect for the just-beginning energy crunch.

Since that time, our nation has experienced a remarkable series of events in our attempts to find and conserve that which has become our national lifeblood —the fossil fuel. Our government, having become a wholly owned subsidiary of OPEC, has flailed its arms in windmill fashion and set about to regain its independence. First there was the "Let's Build a Pipeline to Alaska" movement. This came into being despite those who felt construction would take too long and who wanted to bring oil down the "Washington Way"—by bus. Then there were those who were sure the oil would freeze in the pipe and America would own a 5,000-mile-long black chap-stick. Five years later we *did* get the Alaskan oil—and sold it to Japan.

Other creative solutions by government included car pooling and daylight saving time. Daylight saving time is a bright idea which requires one to burn one's lights in the morning instead of the evening. It was suggested by an Indian who once solved his problem of cold feet by cutting 12 inches off the top of his blanket and sewing it on the bottom. Nor should we forget President Carter's solution: turn America's grain into alcohol and make gasohol. It never really became available, but I longed for the opportunity to pull up to the pump and have my choice between regular, unleaded and whole wheat.

After thousands of AIA seminars, energy conservation finally arrived in the building sciences. Although architects and engineers so far have spent more money on the seminars than the developers have on conservation techniques, it is apparent that pressure by the money lenders is resulting in the demise of the energy hog. Even Detroit, faced with the spectre of 5,000,000 abandoned American automobiles (most of them in dealers' showrooms), has finally come around and announced the Cadillac/Toyota.

What finally caused these attitudinal changes in our native land? Was it an understanding of the need to conserve our natural resources? Was it a sudden surge in national pride and a joining in the cause of keeping America strong? Did we once again rally to a spirited war cry like those of the past: "Remember the Alamo!" "Remember the Maine!" "Remember Pearl Harbor!"?

In truth, most of us had trouble remembering whether we were "odd" or "even" as we rationed our gas. What brought us in line, Beloved, was the almighty dollar. If it costs too much, one uses it more sparingly—a simple axiom of life on this planet.

So where are we now as a result of our efforts to conserve? Where are we after all those thousands of seminars and lectures on energy and our smaller engines, lighter cars, insulating glass, less glass, reflecting glass, separate meters, task lighting, operating sash, vent cycles, performance codes, prescriptive codes, re-use, re-heat, re-fit, ad-infinitum? Where are we? We are in the middle of a *gas glut*, that's where—a gas glut, formerly achieved by eating an enchilada dinner in east Austin, now achieved by world energy conservation! OPEC is crumbling, oil prices are down, state revenue is down, the banks are shaky, and Mexico is falling apart. We must stop this insidious glut.

There *is* a way. We must once again seal our buildings in clear glass, avoid insulation and vent cycles, and provide instantaneous 100-foot-candle lighting for everyone everywhere. Restore the energy hog and the land cruisers. Bring back the good old days! In this way, we can use up *all* the energy and never again face either an energy crunch or a gas glut. Then, of course, there will be a new problem for architects to solve: Can there be life without air conditioning?

The answer is, "yes"—with the possible exception of Houston.

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Texas Society of Architects
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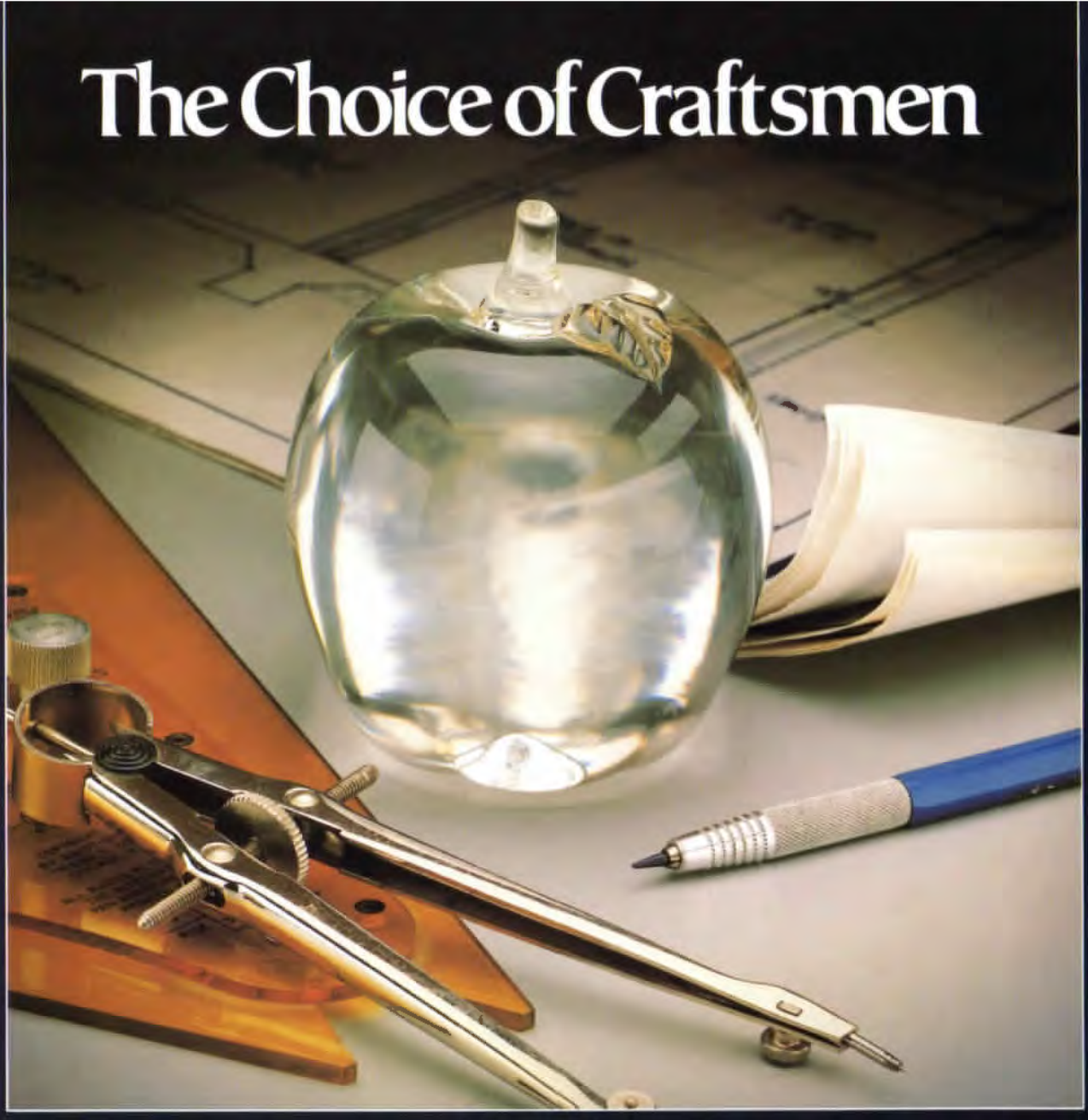
The Choice of Craftsmen



Craftsmen who require quality materials will specify the finest products available. When selecting custom tempered glass, they choose TEMPGLASS.

That's because TEMPGLASS users consistently find a remarkably flat surface and total clarity in each TEMPGLASS lite. They don't find the marks and distortions so often seen in other tempered glass. In addition, the TEMPGLASS computerized cutting method insures that the size ordered is exactly the size received. From ⅛" to ¾" in thickness, ranging from 12" x 12" up to 84" x 170", absolute accuracy of finished size is just one of the special features that makes TEMPGLASS unique.

TEMPGLASS is the preferred tempered flat glass in architectural applications where beauty and elegance are as important as strength, utility and safety. That's why architects, builders, laminators, glazing contractors and other large-scale users everywhere are specifying TEMPGLASS for use in commercial and residential installations.

Especially in the most difficult applications, TEMPGLASS has no equal. After comparing all the choices, craftsmen who require the best specify TEMPGLASS.

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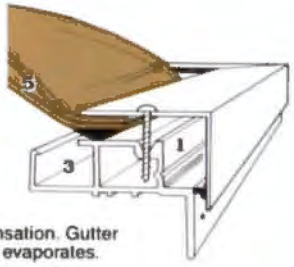
Wasco introduces an economy skylight designed for Texas architects and contractors

the SORREL SKYWINDOW®

SORREL—red roan or chestnut brown, characteristic of the bronze-like dome color of Wasco's new Skywindow. Like the horse for which it is named, the Sorrel Skywindow thrives on the brilliant western sun's free natural light and energy. It's maintenance free, economical and beautiful.

1. **Wasco's Exclusive Permatherm® Curb**—an extruded rigid vinyl with integral flexible vinyl gasket. Thermally fused at the corners to provide a rugged one-piece curb and a continuous weather seal along the entire perimeter. Permatherm curb offers superior protection against through conductivity and air infiltration.

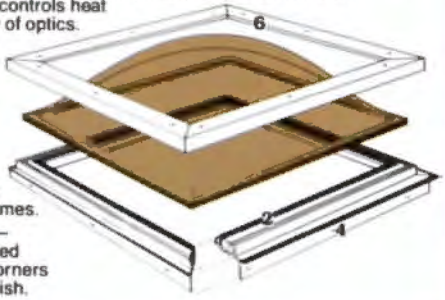
2. **Integral Weather Gasket**—100 times more effective in combating air infiltration/exfiltration; eliminates drafts and permeation of dust; ensures a "tight", energy efficient skylight, excellent for use with air conditioning.



3. **Condensation Gutter**—protects home interior when high humidity in areas such as kitchens and bathrooms, plants or foliage and other climate conditions promote the formation of condensation. Gutter collects and stores condensation until it evaporates.

4. **Prepunched Mounting Holes**—facilitates fast installation by skilled carpenter or roofing contractor.

5. **Bronze Acrylic Domes**—roan-like in appearance, as well as opaque white and clear acrylic domes. Bronze is preferred by most western homeowners because it controls heat gain yet allows for clarity of optics. Wasco uses acrylic exclusively because it resists discoloration from intense sun and other factors such as ultra-violet rays, ozone and high heat. Standard: unsealed double domes. Optional: factory sealed double domes.



6. **Protective Retainer**—maintenance free extruded aluminum with welded corners for extra strength. Mill finish.

Wasco, the national leader in skylighting since 1935, is also a local company with manufacturing facilities in Texas. Continuing its trend-setting reputation, Wasco has designed the Sorrel Skywindow economically to meet both new construction and remodeling requirements for Texas homes. Though low in price, Sorrel offers exclusive Wasco innovations ideally suited to the smaller, smarter, more affordable homes of today.

The innovative design features are highlighted by a unique Permatherm® frame which is perfect for installation with typical Texan roofing materials such as thick wood shakes and Spanish tiles. It is manufactured to mount on a wood curb for use on either a flat or a pitched roof and by a skilled contractor.

Architects and contractors like the Sorrel Skywindow because it's low in price, quick and easy to install—all but eliminating call backs. Homeowners like it because they can enjoy all the benefits of free natural daylighting with a maintenance free product that actually increases the value of their homes.

EXCELLENCE IN SKYLIGHTING

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We weren't surprised when a country club in Fort Worth told an LDBrinkman dealer their new carpet would face some unique hazards.

That's par for the course with commercial carpet. Whether it's in a clubhouse or a nightclub, a hotel or a hospital, commercial carpet has to be tough or you'll end up replacing it sooner than you planned.

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And you never have to worry about delivery. As America's leading carpet distributor, we can usually fill your dealer's order within 48 hours.

So if your next project is guaranteed to draw a crowd, let an LDBrinkman commercial carpet dealer help match your toughest specs with the perfect carpet. If your job calls for a custom design or color, he can guide you through every step from specification to final delivery, giving you access to every manufacturing process and yarn system.

Before you take a shot at choosing your next commercial carpet, get the name of your nearest LDBrinkman dealer by calling collect, 0-214-579-3504. It's the smartest way to keep your carpet decisions on course. And it's a whole lot easier than a hole in one.

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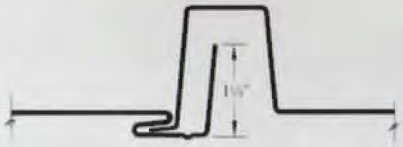
How many choices do you have when a roof panel comes in three profiles, three widths, five different metals, and 14 colors?

one. Ours. ECI's Architectural Roofing Panels give you a wonderful world of very attractive choices. All with real down to earth advantages.

And all from one source. ECI.

Start with the basics. A roof that provides trouble-free service. Our integral vertical water-proofing leg is a full 1¼-inch high, compared to the usual ⅝ to ¾-inches.



And the panels, offered in 12, 15 or 18 inch widths, are all held down with our unique concealed stainless-steel clip. A clip that permits thermal expansion and contraction with no through panel fastening.

On to aesthetics.

Our choice of profiles includes a slim rib, one that's tapered, and a little heftier looking "box" rib.

All offered in a choice of metals (plus optional embossing), and finishes. Choose aluminum, galvanized steel, Galvalume™, Terne-coated stainless steel, or pure copper.

Our 14 colors range through a choice of natural earth tones, to bold contemporary.

In short, when you're choosing an architectural roof panel, we can offer you a world of flexibility plus a complete assortment of support items including flashings, hardware and structural shapes.

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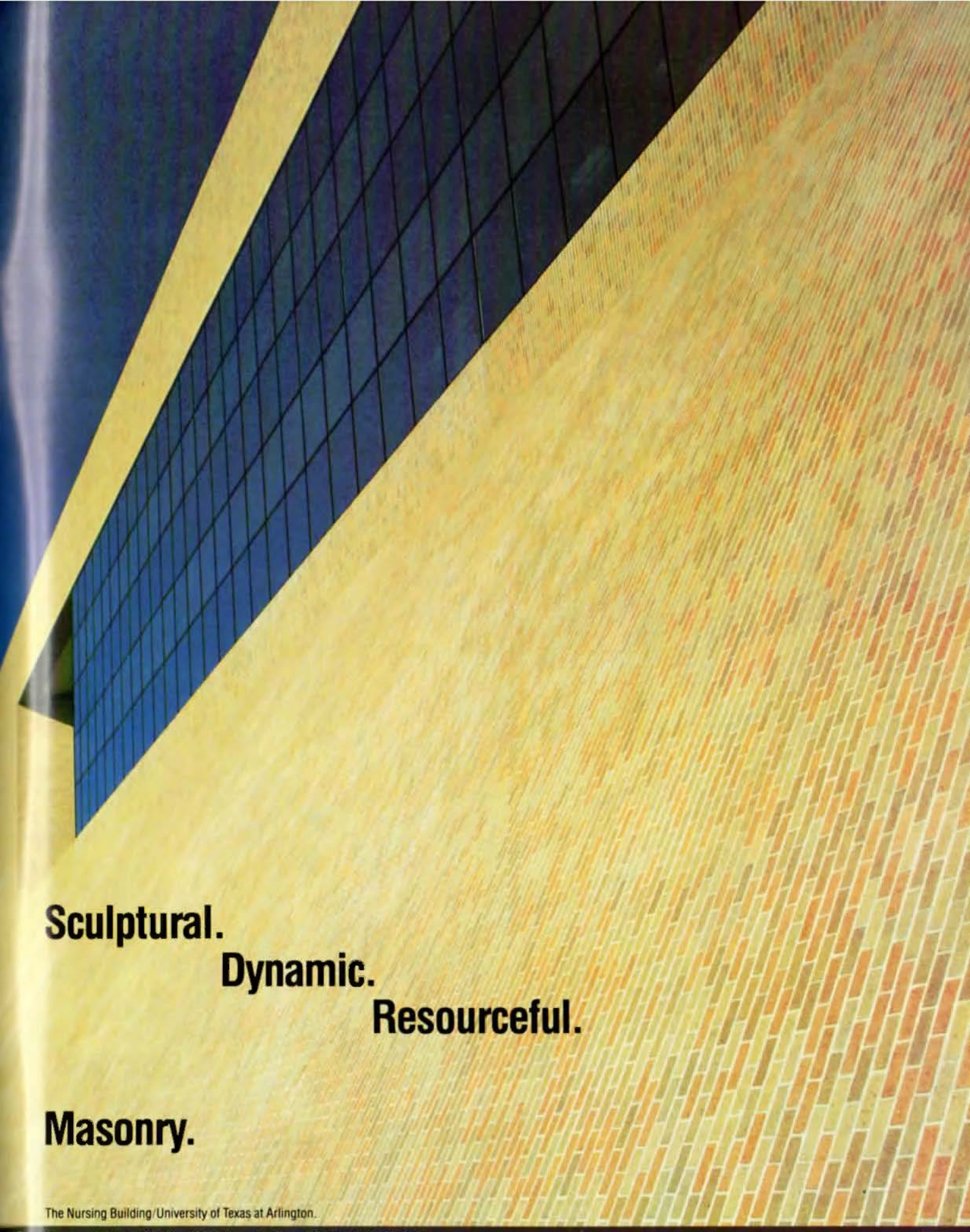

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A dramatic new glass enclosure is now available... The Solarium from Lord & Burnham. It combines architectural beauty and engineering excellence with the most technologically advanced energy saving features. The Solarium is a clean, sleek, functionally designed glass enclosure that will compliment any structure. It is designed to create elegant space that can be used year-round!

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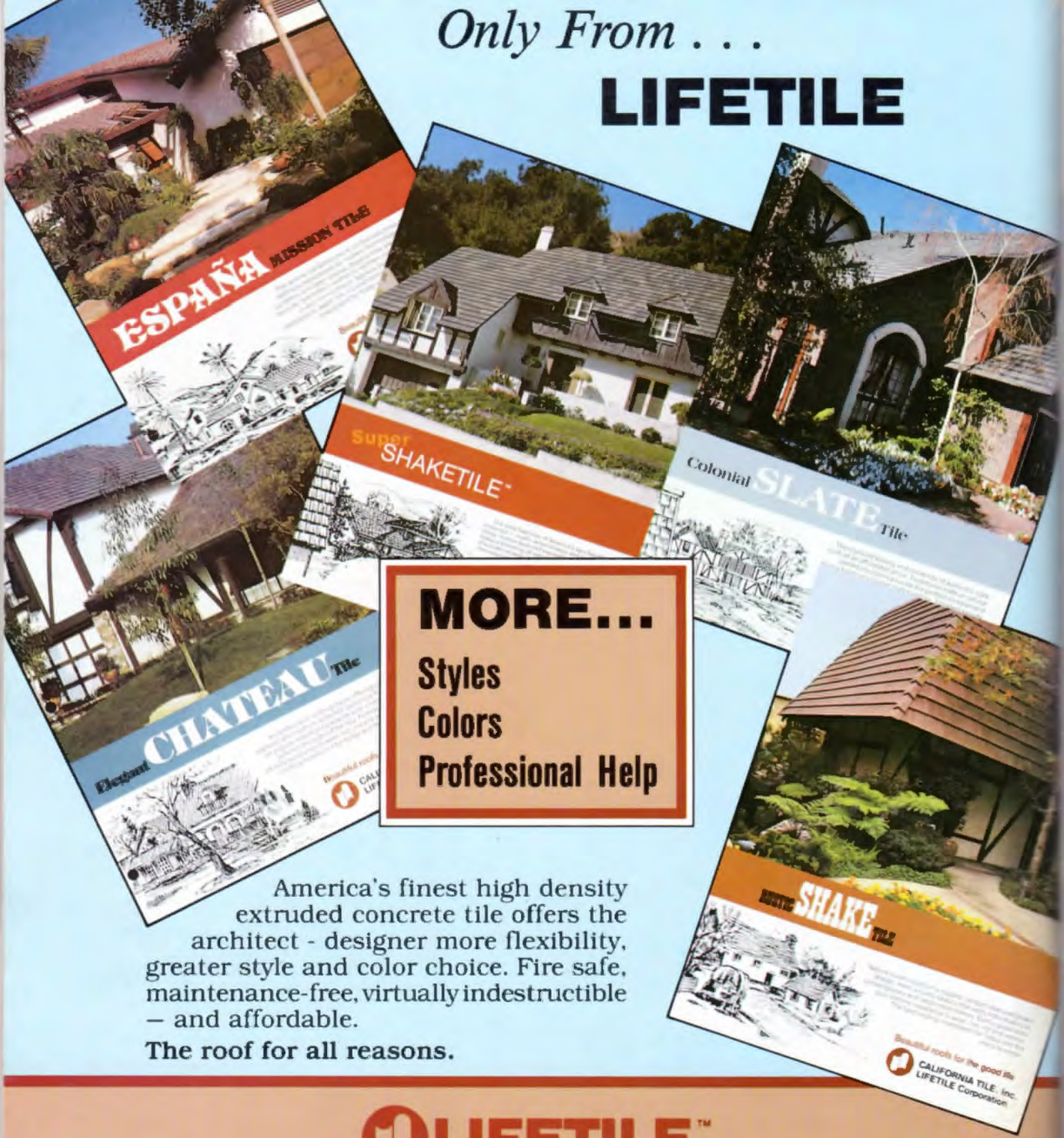

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