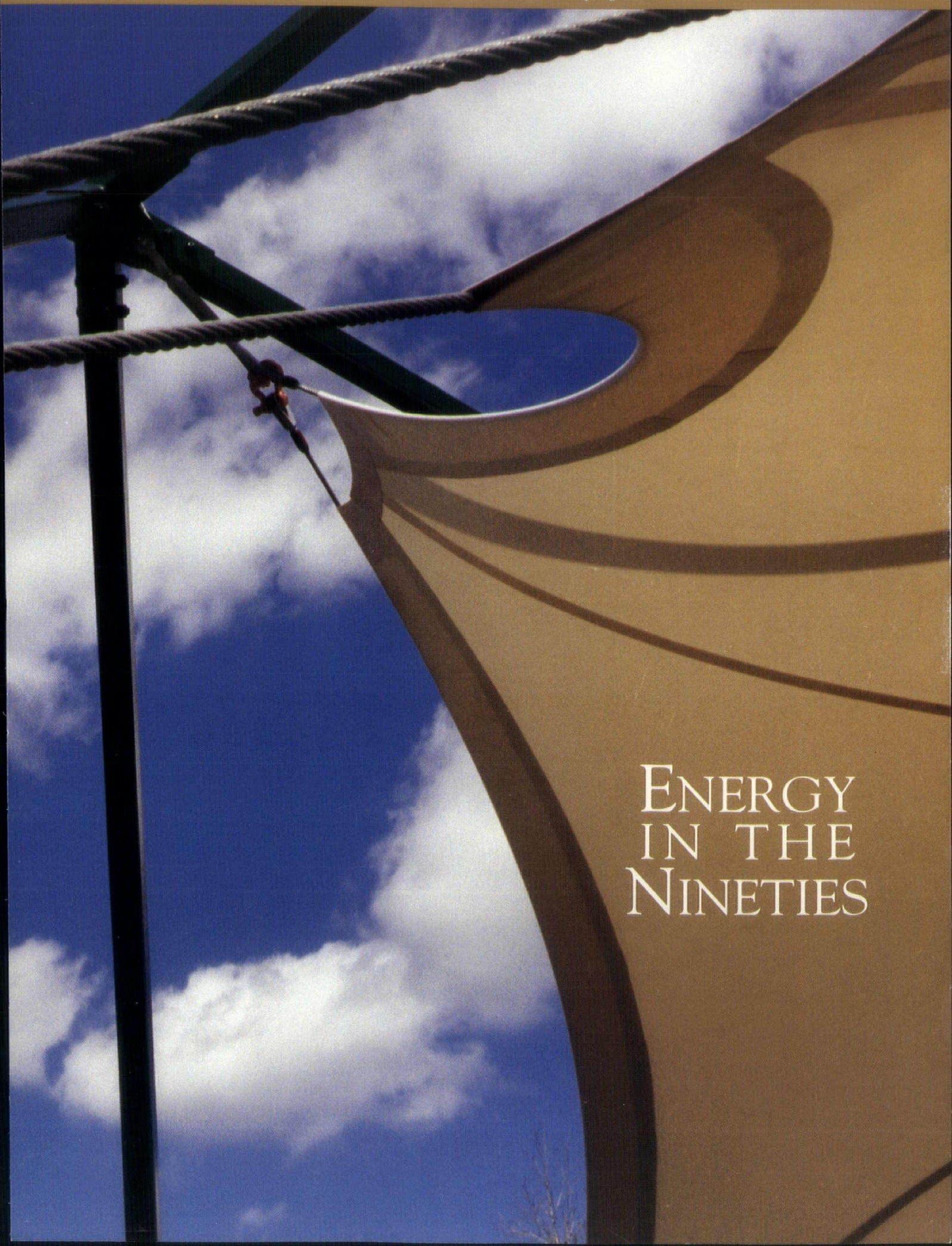
FLORIDA ARCHITECT Spring, 1993



ENERGY IN THE NINETIES

Architect/Engineer: Reynolds, Smith and Hills, Inc. • Photographer: Robert Reck

Birdair's Tensioned Membrane Lands at Jacksonville International Airport

Birdair's Teflon® coated fiberglass membrane technology makes permanent translucent structures of any size or configuration possible. In Jacksonville, architects used tensioned membrane to create a "wagon wheel" curbside canopy, which is 26 ft. wide and 824 ft. long. The crossover canopy is 26 ft. wide and extends 174 ft. from curbside to the parking garage. Birdair continues to pioneer technology it introduced in 1956, now providing imaginative and thorough detail, fabrication and erection services to design and building teams world wide. From California to New York, to Canada, Italy and Saudi Arabia, Birdair has created sports domes, skylights and magnificent canopies.

For complete illustrative and technical information on how you can bring high flying excitement to your next project, call or write:

BIRDAIR

Birdair, Inc. • 65 Lawrence Bell Drive • Amherst, New York 14221 USA

716-633-9500 • 800-622-2246 • FAX: 716-633-9850

Birdair's Florida Representative:

Savannah Trims • 1550-8 Latham Road • West Palm Beach, Florida 33409

Phone: (407) 697-2897

Circle 15 on Reader Inquiry Card

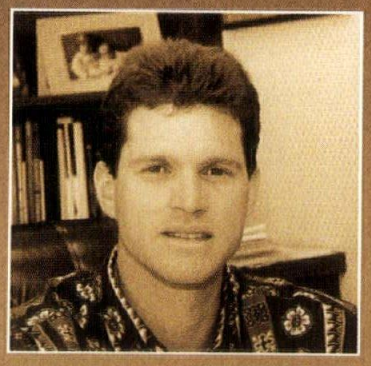
"We install Hardiplank or Hardipanel on every Century home."

"We tried everything, but all the other products had problems."

"Hardie siding goes on straight and true without rotting, shrinking or chipping."

"It looks great. It's actually better looking than wood. This enables our homes to have good curb appeal."

"The 50-year warranty is important to our customers. When you go from using wood or a wood-based product, and you switch over to Hardie siding for every home, I think that pretty much speaks for itself."

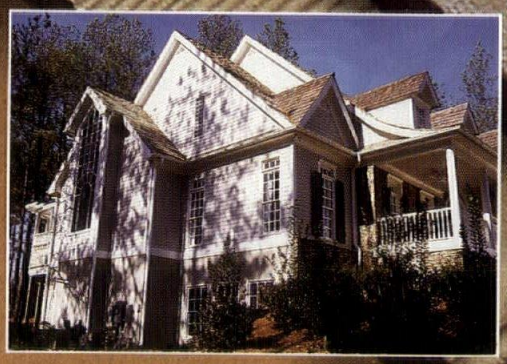


Doug Turner
President,
Century Construction Corp.
Tallahassee, Florida

Designed for residential and light commercial applications, Hardie exterior siding won't burn, rot, chip, or split and isn't damaged by humidity, sun, salt-laden air or termites.

Hardie's lightweight, fiber cement horizontal lap siding planks and vertical panels combine the durability of concrete with the beauty and workability of wood.

Hardie siding is available in an array of attractive surface textures and styles all backed by a transferable, 50-year limited warranty.



For more details on Hardiplank® and Hardipanel™ exterior siding and other James Hardie building products call:
1-800-766-7094

Hardiplank®
Hardipanel™

James Hardie Building Products
A James Hardie Company
Building Confidence for Over 100 Years

10901 Elm Avenue • Fontana, CA 92335

Circle 22 on Reader Inquiry Card

MADE IN THE U.S.A.

WEATHER SHIELD
WINDOWS & DOORS

Authorized Florida Distributors

Everglades Lumber & Building Supply, Inc.
6991 S W 8th Street
Miami, Florida 33144
(305) 261-1155

Florida Kitchen & Window Centers
8036-11 Phillips Highway
Jacksonville, Florida 32256
(904) 739-0661

Florida Kitchen & Window Centers
327 Tresca Road
Jacksonville, Florida 32211
(904) 725-8495

Garner Window & Door
2425 Silver Star Road
Orlando, Florida 32804
(407) 291-6241

Garner Window & Door
4333 W. Kennedy Blvd.
Tampa, Florida 33609
(813) 281-9334

Garner Window & Door
1100 N. Florida Mango Road, Suite H
West Palm Beach, Florida 33409
(407) 684-5754

Holmes Lumber Co., Inc.
6550 Roseville Blvd.
Jacksonville, Florida 32230
(904) 772-6100

Manning Building Supplies, Inc.
530 NW 1st Avenue
Ocala, Florida 34475
(904) 622-8175 / (800) 749-8175

Palm City Millwork & Supply Co.
3313 SW 42nd Avenue
Palm City, Florida 34990
(407) 288-7086

Smith & DeShields, Inc.
11350 Metro Parkway, #106, Box 10
Fort Myers, Florida 33912
(813) 278-5554

Solar-Tite, Inc.
395 Commercial Street
Casselberry, Florida 32707
(407) 834-2718

S & P Architectural Products, Inc.
520 S W 12th Avenue
Deerfield Beach, Florida 33442
(305) 480-8959 / (800) 992-8959

S & S Craftsmen, Inc.
1307 Second Avenue
Tampa, Florida 33675
(800) 922-9663 / (813) 247-4429

WEATHER SHIELD
WINDOWS & DOORS

Circle 3 on Reader Inquiry Card

THERE'S MORE TO SEE IN A WEATHER SHIELD WINDOW

There are those of us who march to the beat of a different drummer. And there are those within this group who insist they set the pace. These individuals are finding their way to Weather Shield wood windows and doors. Some are intrigued with the industry's widest

THERE'S MORE TO

variety of shapes, sizes and styles. Others are impressed with the true attention to detail on every sash lock, every contour, every piece of trim. But whatever the reason, the number of people who seek the personal satisfaction of Weather Shield are not disappointed. They

SEE IN A WEATHER

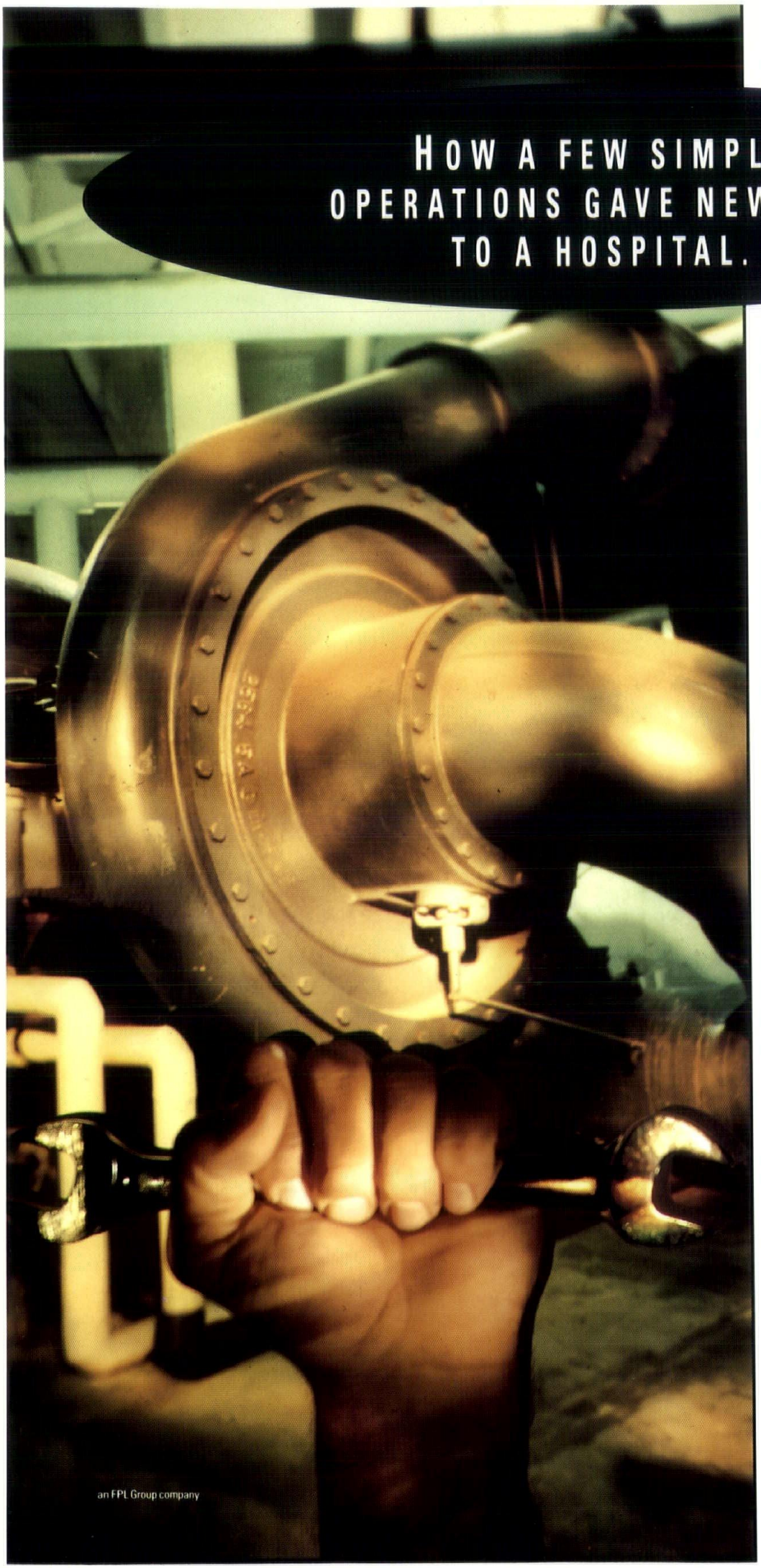
share the belief that a window is not merely a hole in a wall filled with glass. So to them, the possibilities of True Oak™ or Cherrywood™ interiors and bright brass hardware are more than just appealing. They're demanded. If you have ever felt stifled from the lack of

SHIELD WINDOW.

expression most window manufacturers press on you, we invite you to become part of this group. But we caution you. The world will never look the same again. For the name of the Weather Shield dealer near you, call 1-800-477-6808 between 8 a.m. and 5 p.m., C.S.T.

WEATHER SHIELD
WINDOWS & DOORS

All Weather Protection · Always
WEATHER SHIELD MFG., INC. MEDFORD, WIS.



HOW A FEW SIMPLE OPERATIONS GAVE NEW LIFE TO A HOSPITAL.

When Venice Hospital needed to cut overhead expenses, FPL advised them that they could find significant, unexpected savings in their energy expenditures.

FPL worked with Venice to replace their main chiller system with a new, high-efficiency water-cooled chiller. We provided technical assistance in selecting and overseeing installation of the equipment. Through our Chiller Retrofit Rebate, we even helped them purchase the new system and save 11% of the total cost. We were there every step of the way.

In the first year alone, Venice Hospital saved almost $30,000 in energy costs. The initial investment paid for itself in two years. Best of all, the savings continue for the life of the chiller—approximately 20 years.

The Chiller Retrofit Rebate is just one of FPL's Business Energy Services. To find out how FPL can help your business, call *1-800-FPL-5566.*

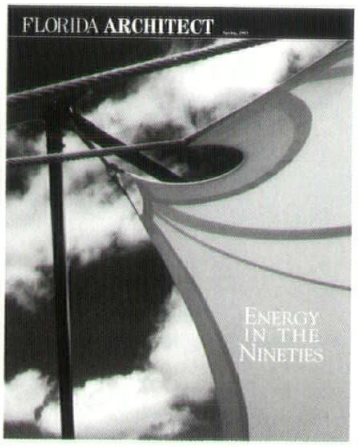
THE POWER TO IMPROVE YOUR BUSINESS℠

FPL

an FPL Group company

Circle 5 on Reader Inquiry Card

CONTENTS



Spring 1993
Vol. 40, No. 2

Features

Departments

Cover photo of the tensioned fabric structure at Florida A & M University is by Ron Shaeffer.

WHAT YOU WANT. WHEN YOU WANT IT.

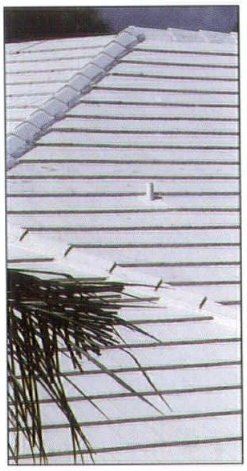
You want colors, textures and profiles?

Monier Roof Tile has more to choose from than anyone else—color-through, slurry-coated, large and small format. So no matter what type of architecture you're dealing with, Monier has the perfect complement.

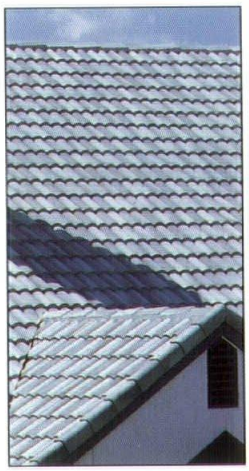
What's more, Monier now has four plants serving Florida, so you can depend on your in-stock orders being delivered quickly. You also get full technical support from Monier's on-staff installation advisors. With one call, you can get all the answers you need about specification, products and more.

Superior selection. Unbeatable service. And technical support. Monier's got it all. Call toll-free 1-800-432-2715, and you can get it too.

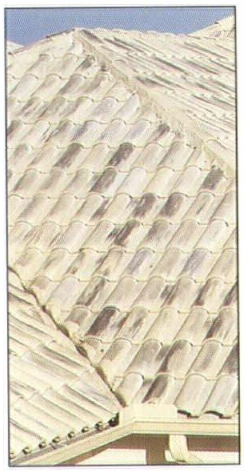
NOW WE'VE GOT IT.



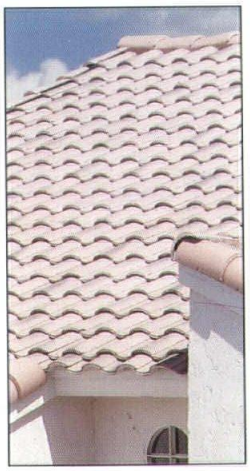
BERMUDA FLAT



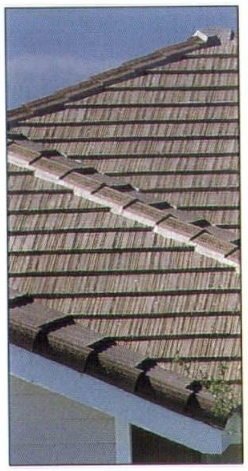
VILLA



SPANISH "S"



MISSION "S"



FLAT

For MONIER and GORY tile call:

BOCA RATON 135 NW 20th Street (407) 338-8200
FT. LAUDERDALE 1900 NW 21st Avenue (305) 497-1000
LAKELAND 4425 US Highway 92 East (813) 665-3316
POMPANO BEACH 1369 Hammondville Road (305) 786-5380

MONIER ROOF TILE

Circle 11 on Reader Inquiry Card

EDITORIAL

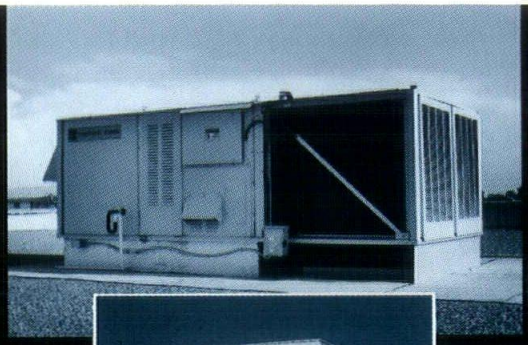
This important issue of *Florida Architect* is all about energy. Please take time to read the articles and study the charts and graphs. This issue is full of up-to-date information for any architect who plans to design buildings in Florida in the coming decades. These articles represent the ideas and opinions of architects, students, professors, clients, public officials and representatives of the Florida Solar Energy Center and the Governor's Energy Office.

Projects featured in this issue range from a Florida A & M University student project using tensioned fabric to the "most energy efficient building in the world"- the new Florida Energy Center in Orlando.

According to Larry Peterson, the author of this issue's lead story and a policy advisor to the Florida Energy Office (FEO), "The Chiles Administration and the FEO are committed to achieving energy efficiency in state buildings and to developing an energy efficiency business sector in Florida. Every dollar that is saved in energy expenses is a dollar that goes directly into Florida's economy. Redirecting $1 billion from current energy expenditures could create $2 billion of new growth in the Florida economy." Peterson and others believe we can redirect some of the dollars we already have in Florida and spend them on building our own businesses rather than export the dollars, and the business, out of state.

The architect's role in all of this is tremendous. If building designers are to emerge as heroes in the 21st century, they must begin right now "taking the high road" as Peterson calls it - insisting upon designs that maximize energy efficiency as a primary requirement. "The question," he says, "is not whether a design should be energy efficient, but how can we make it more energy efficient?" That is the challenge to Florida's architects.

Also, special thanks to architect Steven Langston of Architects Design Group for sharing his sketches of the Florida Solar Energy Center which were used as illustrations throughout this issue. **DG**



Chill-out. Cash-in.

NATURAL GAS CHILLER KEEPS COST IN LINE.

When Southern Telephone Systems needed to replace the air conditioning system for their 10,000 square foot building, they naturally took the innovative approach — with a 15-ton natural gas unit. "Saving money is just smart business. We've had no problems and have definitely seen a reduction in our utility bills," said Carol Fox, vice president.

For information call: (813) 291-4040

Natural Gas.
Good for Florida, good for you.

Circle 31 on Reader Inquiry Card

Florida Natural Gas Association

NEWS

Francis Walton Passes

After designing more than 800 buildings, Florida architect Francis R. Walton, FAIA, died at the age of 82. Mr. Walton was a longtime resident of Volusia County where he left a legacy of designs including Peabody Auditorium, two Volulsia Jai Alai frontons, the Ormond Beach Library, the Children's Home Society offices, the Tomoka State Park Museum and the Florida Power and Light Building.

Francis Walton graduated from the University of Florida School of Architecture in 1934 and was a longtime member of the American Institute of Architects. In 1971 he was made a Fellow of the Institute and in 1970, he was awarded the Gold Medal by the Florida Association/AIA, the highest honor that the state association can bestow on one of its members. Mr. Walton was always very actively involved with the practice of architecture at both the state and local levels. In 1947, he organized the Daytona Beach Chapter of the AIA. He was a member of the State Board of Architecture and past chairman of the Daytona Beach Downtown Development Authority.

FAMU/SOA Holds 2nd Annual Kinship

The second annual celebration of "Kinship: An African-American Aesthetic" was sponsored by the Florida A&M University School of Architecture, February 21-28. The week long celebration was directed by Dr. Richard K. Dozier, Associate Dean, and it focused on African-American communities. An exhibit of the work of African-American architects and projects was on display in the School of Architecture Gallery.

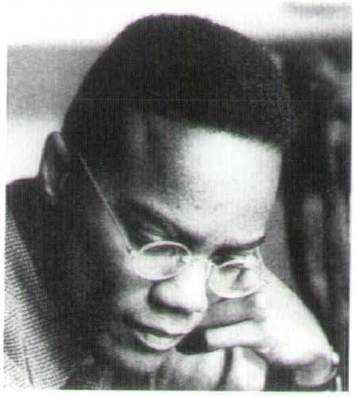
"Revisioning Frenchtown" was the title of a Design Charette which was held in conjunction with the program. The intent of the charette was to examine the possibilities for Frenchtown, a African-American community in Tallahassee, and to target visions which would provide continuity to the area as an ethnic urban landscape. Invited architects led teams of students in an all-night charette which produced plans and drawings that were presented to the entire conference the following morning.

Featured speakers for the Kinship Seminar were Jack Travis and J. Max Bond, Jr. Travis is the Editor of *African-American Architects in Current Practice*. He is an award-winning architect and interior designer who served as the architectural consultant for the film "Jungle Fever". His recent works include commissions for filmmaker Spike Lee and actor Wesley Snipes.

J. Max Bond, Jr. was formerly the Dean of City College of New York and he has served on the New York City Planning Commission. He is currently a partner in the New York firm of Davis, Brody Architects and commissions include the Martin Luther King, Jr. Center for Nonviolent Social Change in Atlanta and the Schomburg Library, Harlem Studio Museum and Lionel Hampton houses in Harlem.

Kinship activities were coordinated by SOA faculty members Andrew Chin and David Brown with funds partially provided by the Title III program.

J. Max Bond, Jr.



Jack Travis

1993 HMA Buyer's Guide Available

The Hardwood Manufacturer's Association has its *1993 Buyer's Guide & Directory* available. The book is a valuable tool for purchasers of hardwood lumber since it provides accurate information on member mill's species, products and capabilities.

The *Buyer's Guide* primary list consists of 46 pages of companies organized alphabetically, followed by a useful index listing companies geographically, by city and state. The directory includes a comprehensive cataloging of sawmill and concentration yard locations, speciality products, hardwood species, hardwood-producing states and mill capabilities.

To order the HMA *Buyer's Guide*, contact the Hardwood Manufacturer's Association, 400 Penn Center Blvd., Suite 530, Pittsburgh, PA 15235, (412) 829-0770, or fax (412) 829-0844.

Affordable Housing Winners Announced

The Community Redevelopment Agency (CRA) and the City of Delray Beach honored the winners of the Affordable Housing Competition, a program which is part of the CRA's Affordable Housing Program. The goal of the program is to revitalize deteriorating neighborhoods by introducing new homes priced from $55,000 to $75,000 for home buyers with annual incomes between $17,500 and $25,000. The winning entries were considered for use in a Model Block Program in Delray Beach.

Approximately 100 teams of architects, landscape architects, general contractors and manufactured housing specialists from South Florida and other areas entered the competition. A jury comprised of community leaders, City and CRA officials, design and construction professionals, and financial specialists awarded four $1,000 first prizes, two $500 second prizes and three commendations. Winning entries were selected on the basis of their appropriateness in the neighborhood, relationship to the street, development of the outside spaces, organization of the floor plan and overall appearance.

First prize winners included Wayne Berenbaum of Boca Raton, Ted Hoffman of Miami, John Meachem of Miami and Marilys Nepomechie and Molly Feldman-Adams of Miami.

Second prize recipients were Dan Carter and George Brewer of Delray Beach and Rosendo Marcet of Miami.

Commendations went to Alberto Abad and Glenn Pate of Ft. Lauderdale, Shubankar Sanyal and Elizabeth Caisson of Sunrise and Dan Stuver and Harriett Boyce of Charlottesville, Virginia.

Drawing by: Marilys Nepomechie, AIA

Chapter Design Awards

Florida Northwest Chapter AIA

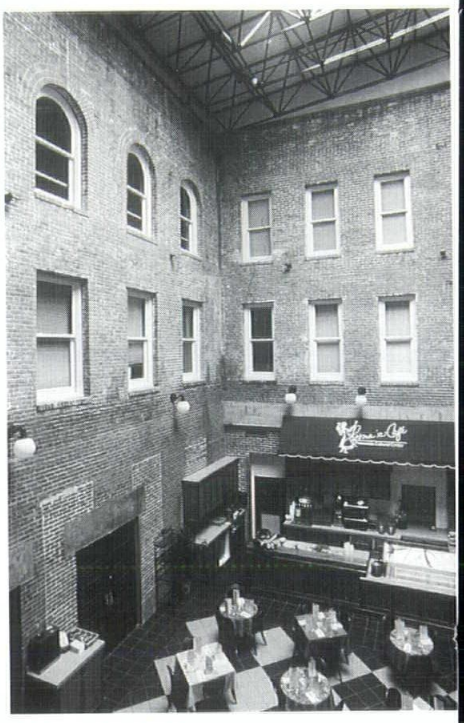
The 1992 Awards for Excellence in Architecture for the Florida Northwest Chapter were presented to seven projects in the Pensacola area. The jury consisted of Nicholas D. Davis, AIA, Professor of Architecture, Auburn University, Jim Jipson, Chairman, Department of Art, The University of West Florida and Rick Gardner, Architectural Photographer, Houston, Texas.

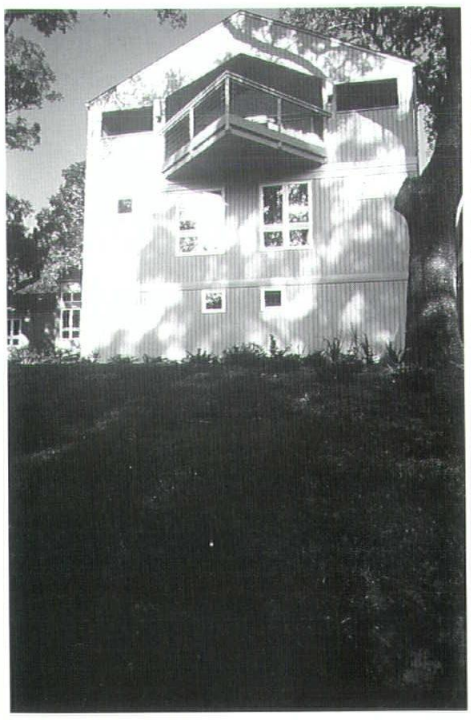
Honor Award
National Air and Radiation Environmental Laboratory
Montgomery, Alabama
Architect: Bullock-Tice Associates Architects, Inc.
Contractor: W.M. Marble, Inc.

Jury: *"Excellent and clear organization of plan elements unified on the exterior by sophisticated curvilinear massing. The interiors are functional both in terms of operations and aesthetic considerations."*

Merit Award
Pensacola Cultural Center (adaptive reuse)
Pensacola, Florida
Architect: Quina Associates Architects/Planners
Contractor: Phase I, Greenhut Construction
Phase II, Comprehensive Construction Services, Inc.

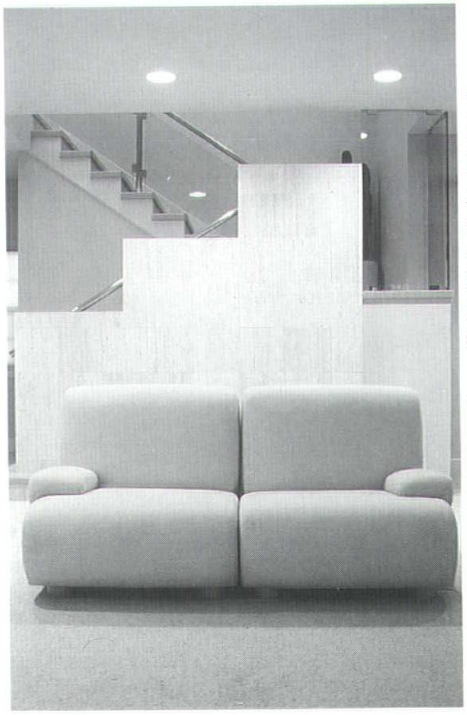
Jury: *"We were pleased by the effort to retain the best historical qualities of the original building while still allowing a contemporary program of use to work."*





Merit Award
Hedgecock Residence
Pensacola, Florida
Architect: Architectural Affairs

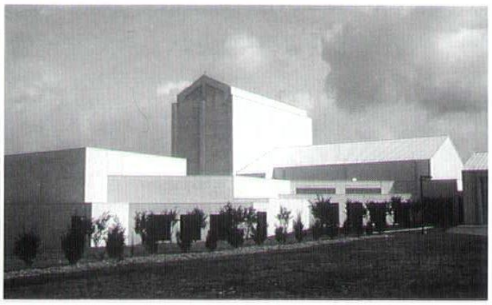
Jury: *"Excellent blending of a tremendous variety of diverse elements. Scale, scope and volume variations could have created chaos, but instead produced a well-integrated structure full of harmony and visual integrity."*



Merit Award
Hightower Residence
Gulf Breeze, Florida
Architect: Spencer and Maxwell Architects, P.A.
Contractor: Gregory Simms Construction Co.

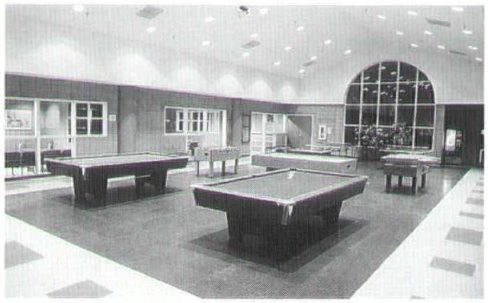
Jury: *"Jury was impressed with modifications that did not require major structural surgery, but did greatly improve the look, organization and spatial feel of the residence."*

Honorable Mention
University of West Florida
Center for Fine and Performing Arts
Pensacola, Florida
Architect: Carlan Consulting Group
Associate Architect: Mitchell/Giurgola Architects
Contractor: Indus Construction Co.



Jury: *"This is an exceptionally rich and varied program which is eloquently expressed in the building's massing, restrained materials and clear functional expression."*

Honorable Mention
Navy Youth Activity Center
Pensacola Navel Air Station
Architect: Bullock-Tice Associates Architects, Inc.
Contractor: Moore and Burkett, Inc.



Jury: *"This award is in recognition of the building interiors which exhibit an atmosphere of fun within a well-coordinated framework of color, light and space."*

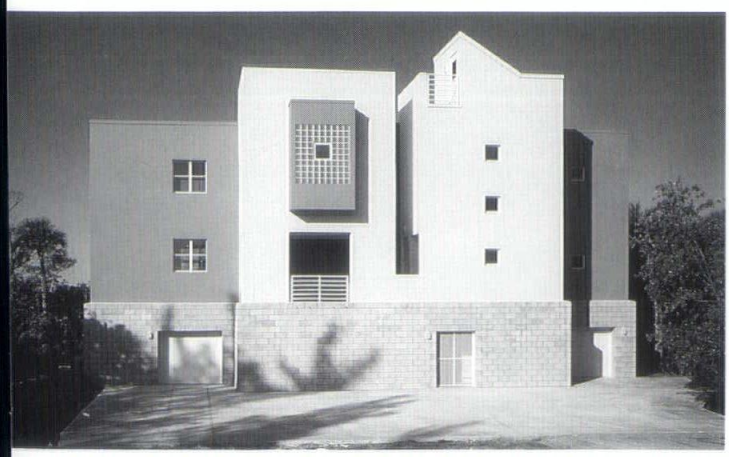
Honorable Mention
Johnson Residence
Pensacola, Florida
Architect: Spencer and Maxwell Architects, PA
Contractor: Packy Maxwell

Jury: *"Dramatic change in appearance, scale and apparent comfort level since this remodeling. The courtyard dropped into the center of the house seems an effective and unique design solution."*

Palm Beach Chapter

The Palm Beach Chapter Design Awards for 1992 resulted in the selection of two projects to receive awards. The jury included Carl Abbott, FAIA, Mark Smith, AIA, Cooper Abbott, Kevin Kuenzel and Javier Suarez, AIA.

Honor Award
D'Alessandro Residence
Architect: Mitchell O'Neil, AIA



ury: *"The elevations are very elegant and the building looks like a iece of artwork in the woods. It is particularly nice the way the creen cage flows into the block wall."*

Award of Merit
Seaboard Train Station Restoration
West Palm Beach, Florida
Architect: Oliver-Glidden & Partners Architects & Planners, Inc.

Jury: *This restoration is very well done. It appears to have adhered closely to the spirit of the original architect and with time, it will look even better."*

Residential Rainfall Collection Systems: Technology As Form Determinant

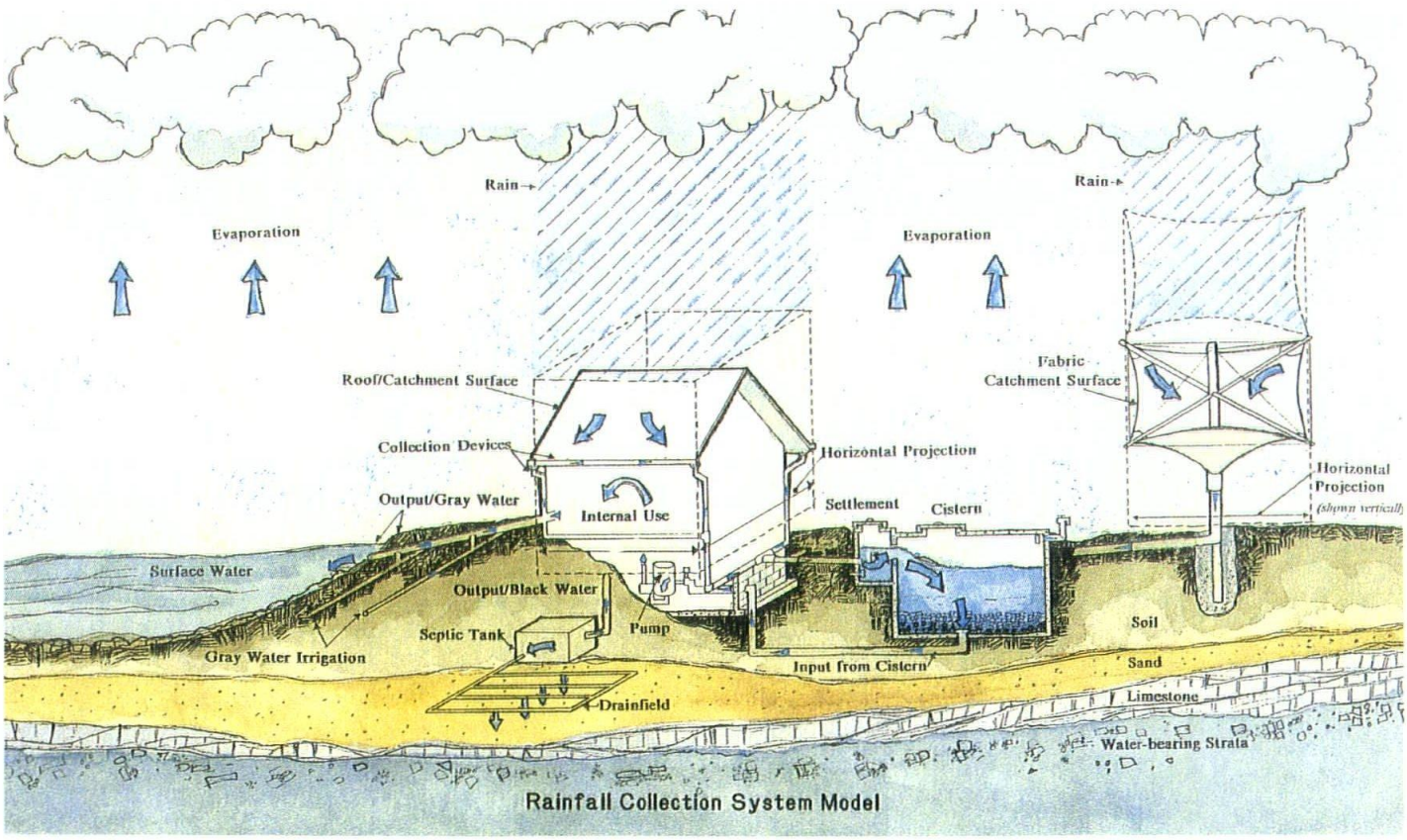
by Molly E. Smith

Would you drink the water that drains from the surface of your roof? Many people think of this as a frightening proposition. Yet people will readily drink water that is extracted from rivers or lakes and into which the wastewater of dozens of other communities is channeled. It is the thought of drinking water from a structure – rather than the actual water quality - that is objectionable. Peter Pfieffer, an architect based in Austin, Texas, relates that the public water supply was recently tested in order to compare its quality to that of his client's water-harvesting home. In this test, the water collected from the home's metal roof surface was 25 times cleaner than the municipal water supply. Owners of water-harvesting homes are able to tailor their water supply to meet personal preferences such as: selecting their own filtration system (ultra-violet light, chemical, or other); providing irrigation for landscaping and gardening needs; directing overflow to home water gardens; and many other options. It is this independence which sets these homeowners apart from the norm.

Unlike Austin, which receives about 25-30 inches of annual rainfall, the Central and South Florida region is "water rich," receiving about 50-60 inches of rain per year. Much of this abundant resource is quickly lost, however, due to irreversibly altered hydrological patterns. During its early settlement, 60 percent of Florida's wetlands (natural water storage and filtration areas) were drained and filled. Today, the combined seasonal demands on surface and groundwater sources in Florida regularly exceed municipal water availability, and the demand for freshwater withdrawals is expected to increase with the projected growth of population and economic activities.

This alteration of the state's hydrology, along with increased pollutant loadings, has degraded the state's water quality. Without the natural, gradual sheet flow of water through wetlands, there is less time for nutrients to be assimilated by our environment. Nutrients and pollutants from point and nonpoint sources are swept downstream by way of canals and river channels to be discharged into lakes and other water bodies. Aquifers (water-bearing geologic formations surrounded by extremely permeable materials) are particularly sensitive to groundwater pollution, especially as increased demands lead to overwithdrawals. In rural areas, eroded soil, fertilizers, pesticides, and animal wastes from agriculture, sediment and nutrients from silviculture, and sediment from mining have been found in runoff. In urban areas, the pollution of surface and groundwater supplies by surface washoff from roadways, parking lots, construction sites, buildings, and even undeveloped land degrades water quality and impacts vital aquatic ecosystems. Materials used in the construction and maintenance of buildings and infrastructure are major sources of pollution. Metal plating, paints, wood preservatives and copper and galvanized piping corrode, flake, dissolve, decay, or otherwise deliver potentially harmful chemicals and heavy metals to the central water supply.

Public water treatment works, which were constructed



Rainfall Collection System Model

and continue to be built at enormous public expense, were designed to preserve the quality of our water supply. The funds spent on these works, however, are just the tip of the iceberg and constitute only one portion of the true cost of our potable water. The incredibly low cost of a gallon of water on our monthly utility bill does not include the hidden costs paid by the community. For instance, each water processing plant costs millions, sometimes billions, of dollars and is usually funded through local bonds at an additional expense to the taxpayer. Each of these plants must be installed with extensive infrastructure – pipes, pumps, and lift stations – which must be constantly maintained and upgraded. These plants have a limited life span and must be completely replaced or renovated every 20 or so years. This system works, though, only if there is water to extract and process; if not, much more expensive solutions must be engineered to alter or impose upon the landscape a means by which water may be delivered. Dams, canals, dikes, and man-made lakes are just a few of the many solutions that have been employed, and they are so expensive that they must be funded by the federal government. One community could not possibly afford to finance such an undertaking. Such megaprojects produce costly side effects. Whole ecosystems die when water is diverted from one region to another, areas become flooded when dams or dikes fail, and earthquakes are induced by large, man-made lakes. The list is endless, with each alteration generating another effect, and all are paid for by the taxpayer.

Since about 1900, our water delivery process has been based on a "linear" approach. Water is extracted from the source, delivered to the consumer, used by the consumer, filtered, and, then, channeled away from the community. But because this approach doesn't replenish the source, such a system exists only if there is a clean and unlimited source. Neither of these conditions can be met, given our current supply and pollution problems. Opponents advocate a "circular" system of delivery which involves obeying nature's inviolable law of return. It entails sending our used water back to the cleansing system of soil, plants, air, and sunshine for reclamation and reuse, over and over again. In a circular system, a site's resources are captured and utilized by its occupants, then disposed of in ways that are appropriate to the ecological filters that already exist on site.

Today, the demands placed on the earth are beyond nature's regenerative capacities; the ecosystems of this world are naturally balanced, and resources are finite. Every structure built should contribute to its environment, and it is a building professional's duty to become familiar with the problems that are associated with or related to the profession. Technology provides us with a palette of choices, any one of which may be the key to solving or alleviating a societal problem. What the building professional must do is recognize the alternatives and apply them creatively to design solutions.

An individual rainfall collection system must contain the following basic elements: a catchment surface (roof surfaces, paved areas, walkways, decks), collection and concentration components, separation and treatment units, a storage facility, and distribution capabilities.

The catchment surfaces affect the amount of water collected. Most importantly, they may affect the quality of runoff received. Careful attention should be paid to collection surface composition, size, and slope so that harmful leachates do not contaminate the potable water supply and excessive velocities do not waste rainfall.

Concentration components (gutters, downspouts, flashings, and piping) should also be carefully designed. They should be sized to handle the intensity of the local rainfall without overflow, and their chemical composition should be carefully selected so as to provide clean and harmless runoff. Overall, the collection surface shape should be designed to simplify the whole collection system.

The separation and treatment units should provide the level of filtration needed for the intended use of the resource. For instance, elaborate filtration units will not be necessary if the runoff will not be used for potable water. The designer should pay careful attention to provide the correct filtration devices for the end use. Over-design could add unneeded expense, and under-design could render the water non-potable.

The storage distribution components should also be designed according to the intended use of the resource. The designer should first determine, based on occupancy, how much water will be needed. Then, the storage facility (cistern) should be sized accordingly. This may be a steel, fiberglass, pre-fabricated or poured-in-place concrete container. In addition, the distribution components (piping and pumps) should be designed to deliver the desired amount and pressure of water to building occupants.

Examine the diagrammatic model shown in this article. Rain is received from rain-bearing clouds. The surface area is based on the horizontal projection of the collection surfaces. Two are shown here: a rooftop and a fabric gazebo roof. This rain is collected and distributed by gutters, downspouts, and pipes to be delivered to a separation and treatment tank. The first wash of rain is wasted, as it contains the highest concentration of pollutants. The water is then stored in a cistern; when needed, the water is drawn by pump into the household for use. The gray water (from showers and dishwashers, containing no biological waste) is utilized for irrigation purposes by means of perforated underground pipes, and black water (water containing biological waste such as from toilets) is disposed of properly by way of septic tank and drainfield where it is filtered by the earth to ultimately recharge the underlying aquifer. Overflow from the collection surfaces is redirected to be detained by a surface water body, where it will once again evaporate and renew the cycle as rain.

So, "Would you drink the water that drains from your roof or other structures?" The answer should be, overwhelmingly, YES! It is certainly reasonable to assume that such a proposition is realistic and not really frightening at all. Designers should take the opportunity to utilize this age-old technology by applying creative solutions to a growing problem. The design of rainfall collection surfaces can be an exciting opportunity to explore aesthetically beautiful forms that collect water. Butterfly wings, inverted pyramidal shapes, inverted barrel vaults, and cup-like surfaces are just a few of the endless shapes which honestly express the collection of rainfall. This opportunity to unite the application of science and art is one which design professionals should not ignore.

Molly E. Smith is a recipient of the Master of Architecture degree from Florida A & M University. She plans to pursue a career in architectural research.

LEGAL NOTES

Misplaced Faith in Forms

By Steven A. Anderson

This is a true story. Only the names have been changed to protect the guilty (actually, a court stipulation prevents disclosure of the parties.)

Ledo Architects, Inc.(a fictional name) just paid a cool $1.3 million to a former and very unhappy client. The claim was based on the theory of improper supervision of the Contractor and inadequate administration of the contract. LAI was working under a STANDARD FORM OF AGREEMENT BETWEEN OWNER AND ARCHITECT (1977), AND LAI had NO separate or special supervision duties under the contract.

How can this happen in light of the protective language of 1.5.4 of the contract that "...the Architect shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the work."? Or, the language of 1.5.5 that "The Architect shall not have control or charge of and shall not be responsible for construction means, methods, techniques, sequences or procedures..."?

Easy. LAI, like many other architects, relied too much on the standard terms of Form B141. On a complex, integrated project, including a 12-story building and a $400,000 fee, neither they nor the owner spent any appreciable time arriving at a clear understanding of LAI's post-design duties. Of course, the owner felt he had a very clear understanding: the architect was there to be his "representative" during construction per 1.5.3, to "determine in general if the Work is proceeding in accordance with the Contract Documents" and to "guard the Owner against defects and deficiencies" per 1.5.4.

First, LAI did a lousy job of contract administration. Staff members were actually on site almost daily. But many defects went unseen. Others were seen, but no corrective action was required by LAI. And others were notified to the contractor, with no follow up or enforcement. The contractor just kept on building sloppily, and generally ignoring the weak protestations of the architect.

Oh, yes, LAI did write some letters requesting corrective action. And then, later, demand letters: "last notice", "you will be held responsible" and " we really, really mean it" letters. But they were too little, too late, generally sent after the bad work had been in place for awhile and sometimes even covered with next-phase work.

Second, LAI kept right on certifying payments under 1.5.7 and 1.5.8. Even after they had been forced to write some pretty strong letters to the contractor, they continued to allow payment. Then, when the contractor totally refused to correct its work, LAI retroactively decertified payment after the cows were out of the barn.

The owner, at LAI's suggestion, finally fired the contractor and took him to arbitration over fifty seven (57) defects. There, the arbitrators found the construction to be very substandard, but agreed that the architect had allowed it and therefore, as the representative of the owner, had effectively authorized it!

The owner then sued the architect for breach of its duties to represent, observe, inform and protect.

Nonsense, said LAI. We were not supervisory. We had only a duty to "observe", to become "generally familiar." We have no contractual responsibility for the contractor's errors.

This case was tried before a jury and the jury agreed with the owner. Not even a close call.

The fact that LAI seemed to hide behind the word "observe", when its own letters referred to "inspections" hurt. The fact it rarely kept field notes or put its findings in writing really hurt. And the fact that it kept on certifying payment month after month was a killer.

Forget the limiting language in the standard form B141. Forget the fact that there was no special inspection or supervision language inserted. Forget all the experts who tried to draw fine lines between "observe" and "inspect", between "generally familiar" and "familiar."

The jury believed the language in B141 on behalf of the owner meant something, even if it was contradicted and made confusing by other language. And they were right.

LAI did a great job of designing. But, its performance fell dramatically after that. Many architects aren't excellent managers to begin with, and so they avoid that unpleasant chore whenever possible. But they also avoid the difficult but critical job of clearly communicating and defining issues with their clients.

The AIA STANDARD FORM OF AGREEMENT BETWEEN OWNER AND ARCHITECT lulls professionals and owners alike into a false sense of security. Its broad and inconsistent terms give something to everyone, but leave everyone at risk. It is a model of ambiguity, inconsistency and confusion.

LAI has learned:

- Have a long, hard talk with the owner about contract administration before signing;
- Include an addendum to the contract delineating more clearly such things as frequency of visits, owner's site rep duties, how architect will keep owner informed, and the owner's responsibilities;
- Insist on extra compensation up front if the owner wants more;
- During contract administration, continue to delineate responsibilities in writing;
- Prepare regular field notes and copy owner with each report.
- Yes, LAI has learned. Have YOU?

Steven Anderson is a Senior Partner in the law firm of Anderson & Orcuff, P.A.

Ed. Note:
The views expressed in this article are solely those of the author.

Energy Efficient Design – An Architectural Challenge

by Larry Peterson

A Little History

In 1974, as an energy policy advisor to Oregon Governor Tom McCall, I was impressed with the Governor's courage and ability to deal with energy issues head on and motivate people to act in the highest public interest. During the 1970's energy crisis, Governor McCall impressed the nation by taking executive action and implementing energy policies in Oregon that preceded most other states. He exhibited leadership by being ahead of both the legislature and the state bureaucracy in responding to public need.

Some of his policies were unpopular because they required a new way of thinking about energy. Before speaking to the National Association of Business Economists, he asked his staff for advice on what he should tell them. We said, "Governor, you have to tell them to stop just drilling for more oil, since that is not the only answer to America's energy problems."

His response was a wide grin as he said, "I like that. Now what else do I tell them to do?"

I am reminded of Governor McCall as I write this article for the *Florida Architect*. Florida is staring in the face of a new energy crisis and I want to tell all architects in Florida, "You have to stop designing buildings and support facilities that are not energy efficient."

I am obliged, however, to tell you what I think you should do.

The Design Challenge

All design professionals - engineers, architects, landscape architects and interior designers - have a responsibility for the quality of the built environment. All design professionals should agree that the existing quality of our built environment does not represent the best we can do. It represents the best we have been able to do. As designers, we may be willing to do better, but circumstances have prevented us from providing our best services.

In my discussions with leaders of Florida's design professions, familiar responses are offered as explanations for the condition of the built environment. Codes, zoning, financing, client wishes, low first-costs, growth management regulations, declining design fees...are all offered as the parameters which guide, if not limit, the potential of any and all building projects.

All professionals engaged in providing design services to clients have a responsibility to protect the public interest and provide, through their standards of practice, for the public welfare. A growing issue of concern for design professionals practicing in Florida is including energy efficiency as a primary element in their "standards of practice". Energy efficiency in buildings does not directly affect public safety, but it can affect health and welfare, both of the building occupants and the public as a whole.

Design professionals are not fulfilling their responsibilities if they continue to design and build energy inefficient buildings and facilities, when up to 70 to 80 percent of the energy normally used to provide human comfort can be saved through good design and engineering. With these savings becoming more commonplace, clients will be requiring better performance in their building projects. A major goal of the Florida Energy Office's project, the FLORIDA DESIGN INITIATIVE, is to help the state become a more knowledgeable client and require better energy performance in the buildings and facilities it procures.

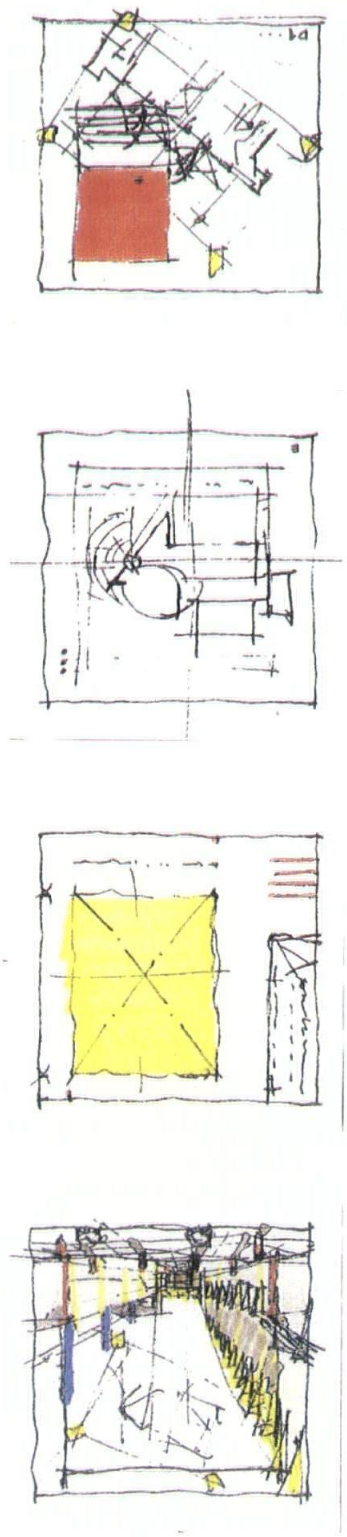
Good energy-efficient design begins with the initial architectural design decisions: proper building siting and orientation;

building massing and openings; and fenestration pattern. These decisions that affect the building envelope either make it easy or difficult to achieve energy efficiency. When architects design with the idea of maximizing energy efficiency, they make it relatively easy for the engineers to reduce energy consumption in the building's HVAC and lighting systems. Building orientation, massing and fenestration patterns that minimize heat gain, maximize daylighting and utilize natural fresh air circulation require smaller HVAC systems and less artificial lighting. When architects do a poor job of preliminary design, the engineers have to size larger, more costly and more energy-intensive HVAC and lighting systems to maintain human comfort and workstation requirements.

"Best Practices" Become Standard Practices

Amory Lovins of the Rocky Mountain Institute in Snowmass, Colorado, reports that in 1991 Pacific Gas and Electric asked for designs to retrofit 20,430 square feet of research offices. Five designs were presented by different firms and all were cost-effective, with 67, 74, 76, 76 and 87 percent energy savings indicated by DOE-2 simulations. All but one design reduced the energy required from approximately 76,000 BTU/SQFT (initial conditions) to less than 20,000 BTU/SQFT (after retrofit). This magnitude of energy savings is being reported in many projects around the nation.

Lovins also reports that a few re-engineered projects have actually had reduced initial construction costs due to energy efficient design of the building envelope. In one case, a one percent increase in soft costs for additional design and engineering services yielded a four percent reduction in first cost of construction.



All sketches of the Florida Solar Energy Center by Steven Langston, AIA, of Architects Design Group, Inc.

Another potential bonus to the client in a retrofit project is increased net usable floor space, due to downsized mechanical equipment requirements. The proposed design for a state building retrofit project indicates that a 15 to 20 percent increase in net usable floor space can be realized from the removal of unnecessary mechanical equipment rooms and chases. In the public sector, this potential increase in usable space in existing buildings decreases the need for new construction and offers an immediate bonus to the occupant.

A typical office building built to today's Florida Energy Code can consume 60,000 to 70,000 BTU/SQFT. The Florida Educational Center in Tallahassee is a typical example. Built in 1989, it has 17 stories, 405,836 GCSF and consumes 63,000 BTU/SQFT at an annual utility cost of $533,000. Designed ten years before it was occupied, the interior electrical loads doubled during that period, causing brownouts when the building was fully occupied. The increased interior loads were due to increased use of personal computers, copiers, FAX machines and other workstation equipment. Only recently has this contribution to a building's energy budget received detailed attention.

Fortunately, new portable personal computers use far less energy than the standard desktop PC and new energy-efficient copiers are coming on the market. Manufacturers of office equipment are realizing that low energy consumption and lower operating cost, are a new marketing edge. As older office equipment is phased out and replaced with new models, the interior wall plug loads will decrease. Diminished loads will reduce the heat generated by office equipment and thereby reduce cooling loads on the HVAC system as well, providing additional energy savings.

The Florida Educational Center is poorly sited for energy efficiency, with the long facade facing southwest which introduces solar heat gain. The facade is smooth with no protrusions to offer shading to windows and walls. The building is whites and does have solar reflective windows. Any design studies to increase the energy efficiency of this building will have to overcome three very important initial design decisions which contribute to the buildings' current energy consumption - building orientation, exterior envelope and fenestration design.

The Florida Educational Center may not be designed to be energy efficient, but it is not as flagrantly wasteful as some other state buildings. A recent FEO study of the state capitol complex indicates a range of energy consumption from 47,000 to 240,000 BTU/SQFT. The Florida Educational Center uses 63,000 BTU/SQFT, which is fairly typical of new construction and meets the current Florida Energy Code.

The Chiles' Administration and the Florida Energy Office (FEO) are committed to achieving energy efficiency in state buildings and to developing an energy efficiency business sector in Florida. Through the FLORIDA DESIGN INITIATIVE, the FEO is working with design-profession associations to develop recommendations for new ways of financing energy efficiency design services. Members of the FLORIDA DESIGN INITIATIVE are discussing the adoption of a general protocol for procuring energy efficient design and delivery of new state buildings. This protocol would include new enhanced levels of energy efficiency design services which state clients would be willing to pay for to insure that the completed building project will pass a commissioning evaluation

prior to occupancy and meet specified operations and maintenance levels during the first year of operation.

The lifetime energy expenses of many state buildings will exceed the initial cost of construction and it is irresponsible to obligate the taxpayers of Florida to pay these expenses for the life of a building. The FEO is investigating new design fee structures that include incentives for the (state) client and the design team. New contracting procedures need to be established so architects can share in the potential dollars to be saved through "best practices" design and engineering.

The Cost of Inefficient Design

The energy budget for providing human comfort in all state buildings in Florida is $5 to 6 billion each year. State and local government buildings account for hundreds of millions of dollars. The electric bills for county school districts and community colleges alone totaled $201.2 million in 1990-91. If the Governor's Executive Order (91-253) mandating a 30 percent reduction in energy use by all state agencies had been achieved, the 30 percent saved would amount to over $60 million. If the private sector matched the state and the whole state could save 30 percent of five billion, it would equal $1.5 billion or more than the requested tax increase of $1.4 billion for 1992. Those are big "ifs", but the payoff to all Floridians should be more than worth the effort.

There are architecture and engineering firms in Florida that can offer energy-efficient design services. The question is, "Why is this not the standard of practice?" The answer from the design professions is usually, "The client did not require it." Followed quickly by, "It takes more time to do good energy-efficient design and engineering and I cannot get paid for it." Both are valid answers and will continue to be for several years. Design and engineering practice is changing and energy efficient design is changing very rapidly. Not only are there many new technological advances, designers and clients are exploring new ways of negotiating and contracting for energy efficiency design services.

The Architect's Role

One of the keys to successfully achieving the Governor's goal is the willingness of design professionals to adopt energy efficiency design and engineering measures as "best practices."

Energy-efficiency should be a prime factor in the standards of practice, but architects believe that their clients are not willing to pay for energy efficient design.

For most clients, first-cost has become the predominant factor in a new building project, cost-effectiveness is second in importance and life-cycle costs are usually ignored. The FEO is working with all state agencies to change this attitude in the government sector, where life-cycle costing is a statutory requirement. With the strain on the state budget getting worse, public agencies are willing to look at new ways to save the money they do have. Reallocating existing dollars into energy efficient designs today will save energy expenses for the lifetime of the building. Getting state agencies to adopt the wisdom of life-cycle cost accounting is becoming easier, although the legislative appropriations and budgeting processes make it difficult to implement. Ironically, the projected revenue shortfalls in state agency budgets can make life-cycle costing more attractive and more affordable. If the state agencies do not take the leadership and implement life cycle cost accounting, the taxpayers may soon demand it.

The Client's Role

As clients become more knowledgeable and more sophisticated, they will request and demand energy efficient design services from architects. In state government, the FEO is committed to making the state agencies more informed clients. During these difficult economic times, managing energy and utility expenses is a good way to save wasted money on operations which are desperately needed for other purposes.

Some large private sector clients are already doing this in-house. They have watched energy expenses increase over the years and realized that good energy management can increase profits. They are also realizing that the initial designs they approve and build can limit any new cost-effective energy management measures they may want to consider later.

As the relative costs of primary energies and utilities continue to increase in operations budgets, energy efficient designs will provide an economic advantage to those building and facility owners who require them.

The potential savings of energy-efficient designs far outweigh any marginal increase in initial design fees; and easily outweigh any marginal increase in initial construction costs.

Current studies underway indicate that increases in worker productivity and lower absenteeism can offset any increases in initial design and construction costs.

State agencies are being shown that energy efficient design services are a smart investment in lower energy expenses and operating costs. They are also realizing that they have to pay for those design services. The FEO is actively engaged in identifying any changes in negotiating fees that will provide funds for good energy-efficient design; and is asking for assistance from all design professions to realize those needed changes.

I am appealing to all architects who contribute to the design of buildings and facilities to "take the high road" and insist upon designs that maximize energy efficiency as a primary requirement. The question should not be whether a design is energy efficient; the question should be how can we make it more energy efficient. In the public sector, I believe there is no question whether energy efficiency is in the public interest. In the private sector, it would be difficult to imagine a client-owner who would not like to save money on energy and utility expenses. The arguments need to be made to all our clients which show the large, long-term returns on small investments in additional design costs.

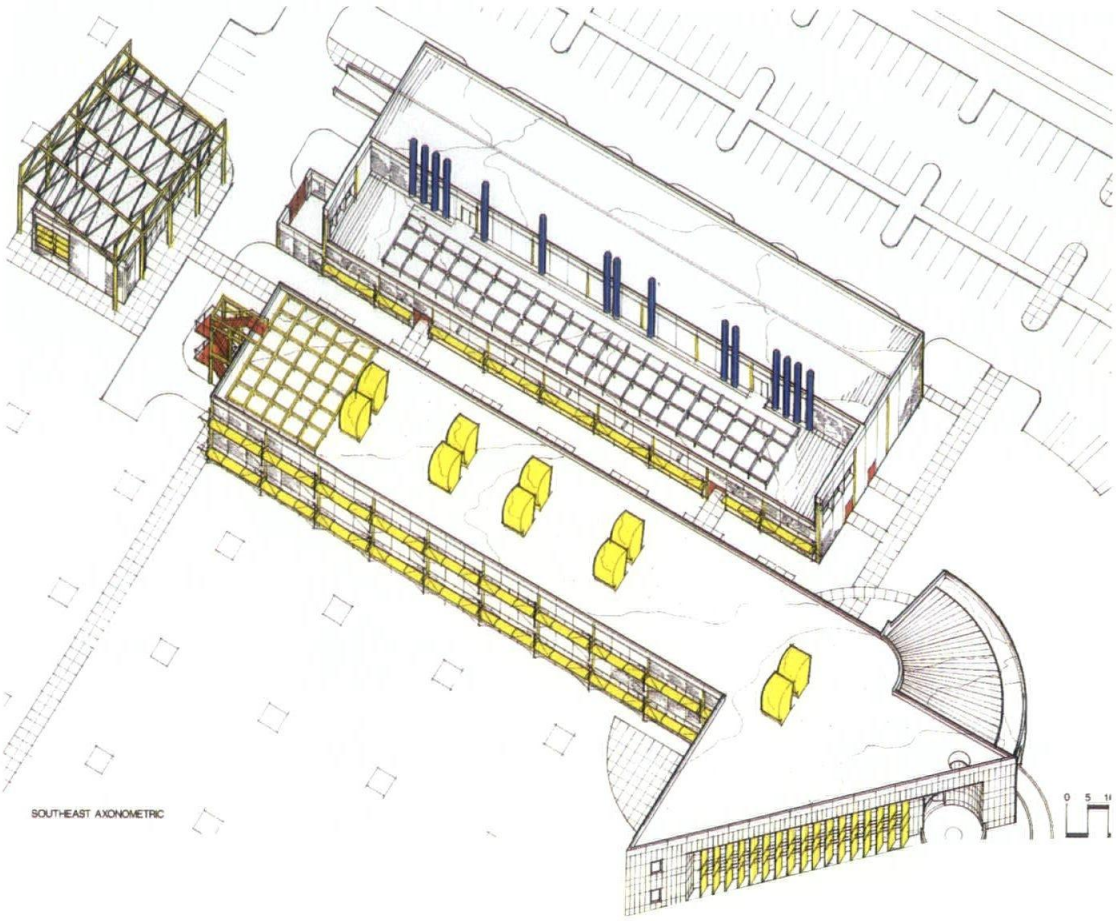
Energy-efficient buildings are the result of many individual efforts, moving in concert, toward the same goals. The leadership position on a design project can, and often does, move around from person to person or profession to profession. For Florida to get moving toward achieving energy efficiency in **all** buildings and facilities, someone has to step forward and take a leadership role. Architects have done it in the past, the opportunity is here to do it again.

Larry Peterson is an Associate Professor of Architecture at Florida A & M University in Tallahassee. He is also a Policy Advisor to the Florida Energy Office.

The World's Most Energy Efficient Building

Florida Solar Energy Center
Cocoa, Florida

Architect: Architects Design Group, Inc.
Principal In Charge: I.S.K. Reeves V, AIA
Project Architct: Kevin Ratigan, AIA
Design Team: Eugina V. Ellis, John Pages, AIA, Steven Langston, AIA, Rick Grey, Bill Hegert, Sergio Baca
Consulting Engineers: Ralph Hahn & Associates, Inc., Paul J. Ford & Company, Commonwealth Engineering Associates

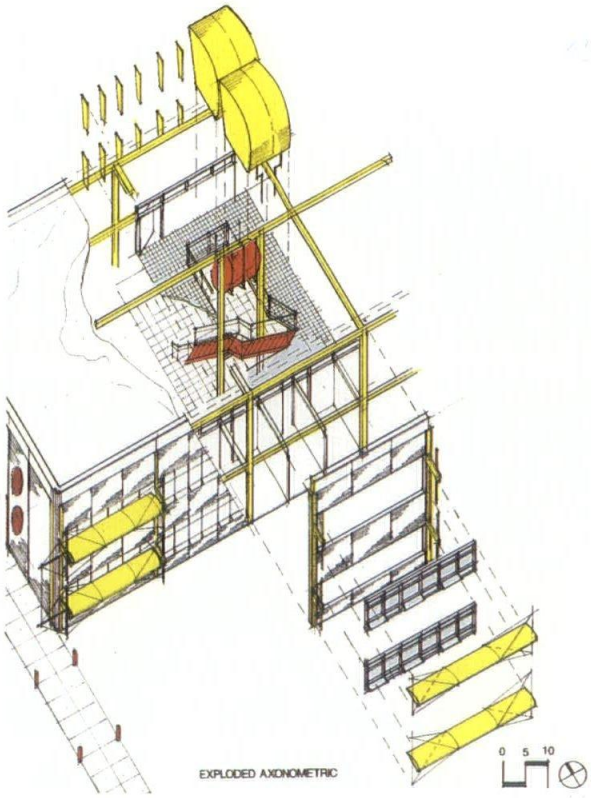


When state officials claim that Florida's New Energy Center will be the world's most energy-efficient building, the first response may well be "prove it." The Florida Solar Energy Center's new research complex is still just a concept — drawings, a model and a lease on 20 acres at the University of Central Florida/Brevard Community College Campus in Cocoa. Construction won't begin until August, 1993.

So if the first spade of earth has yet to be turned, how can the claims being made for the building's operating efficiency be substantiated?

The answer, of course, is by computers. Using a sophisticated energy modeling program, FSEC engineers have been able to closely calculate the energy performance of the new building even before it's built. They can already state with a high degree of certainty that the office building in the new, 80,000-square-foot complex will, indeed, be a paragon of energy conservation.

Initial analyses show that the building will use less than one-third the energy of a comparable, "standard" new Florida office building and almost three-quarters less than most existing office buildings in the U.S. Equally important, the FSEC will be just as comfortable and potentially even more productive.



Program Models Performance

FSEC Deputy Director Philip Fairey and Research Analyst Danny Parker conducted the energy analyses during the transition from the conceptual to the detailed design phases of planning for the complex. Along with the rest of the FSEC in-house architectural committee, they have worked closely with Architects Design Group, the building's designer, to adopt and integrate the latest energy-efficiency technologies and design concepts.

Parker and Fairey relied on DOE 2.1D to perform their analyses. Developed by Lawrence Berkeley Labs for the U.S. Department of Energy, this building energy modeling program contains a variety of algorithms that can model almost all

of the energy-related measures incorporated in the New Energy Center.

The initial analysis compared the energy-saving performance of 25 separate energy efficiency measures with the performance of a standard, "base case" building. The results pinpointed 11 conservation measures with the potential to provide the greatest efficiency in terms of both dollar and energy savings.

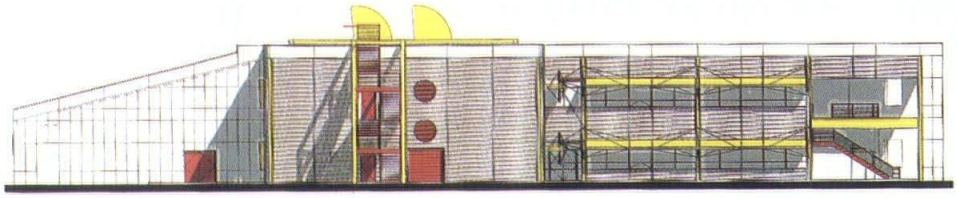
Analysis Sheds Light on Energy Savings

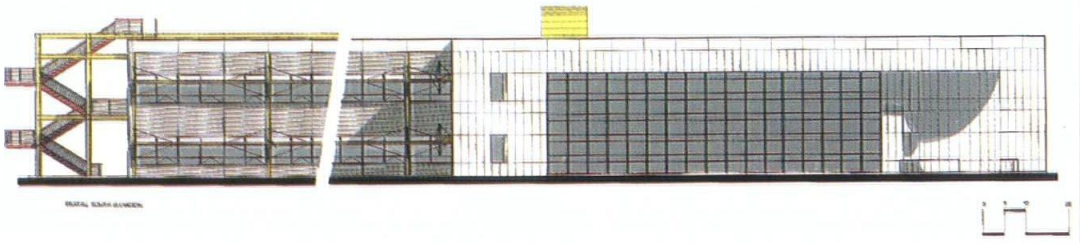
Since lighting is typically the largest energy load in office buildings, it's not surprising that lighting-related measures – daylighting, improved window technology, high-efficiency interior electrical lighting and lighting control measures – will provide the greatest energy savings. Combined, lighting-related options will reduce the building's annual energy use from 65,000 to 29,000 Btu per square foot – a reduction of more than 50 percent.

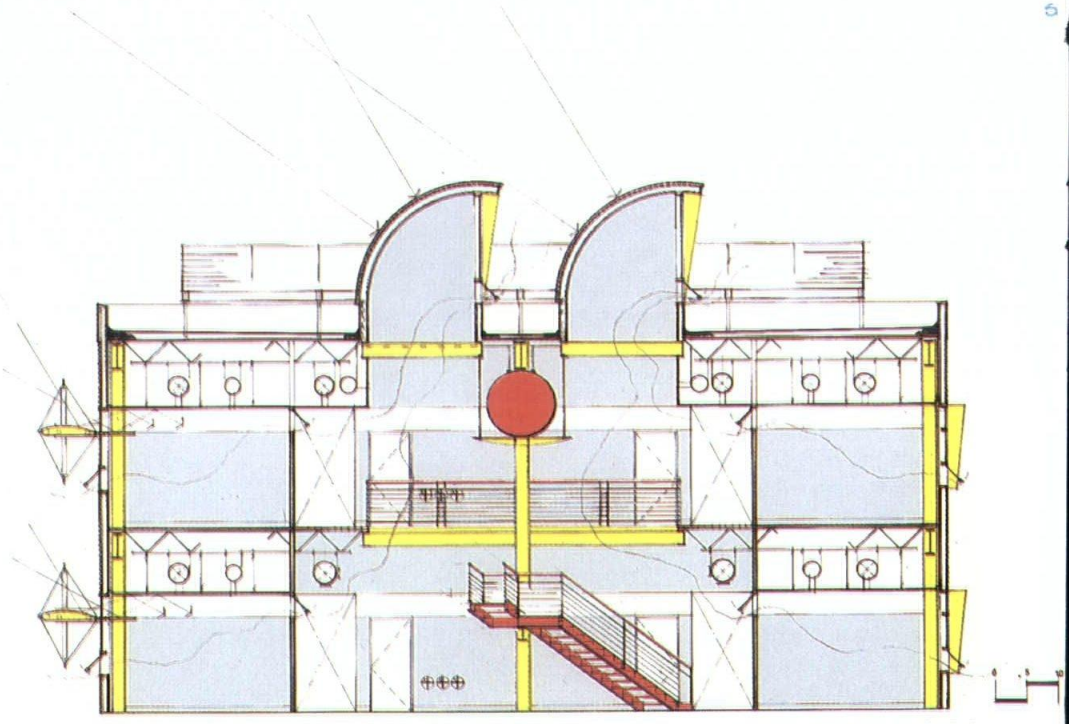
The office building is designed as a two-floor structure with a long, narrow footprint measuring 270 by 60 feet. This configuration enhances daylighting in all the offices, since they can be sited along the perimeter walls. The top floor of the building's interior core will also be daylit through the use of light scoops at roof-level.

The window scheme for the building is unique. A continuous "wall" of 4.5-foot-high windows spans the extensive south and north facades. Shade shelves mounted on the exterior of the south-facing window-walls shade the windows from hot, glaring morning and afternoon sun. Interior light shelves on both the south and north sides of the building serve to bounce soft daylight deep into office interiors.

The windows selected for the building are so advanced they're actually called "Superwindows."

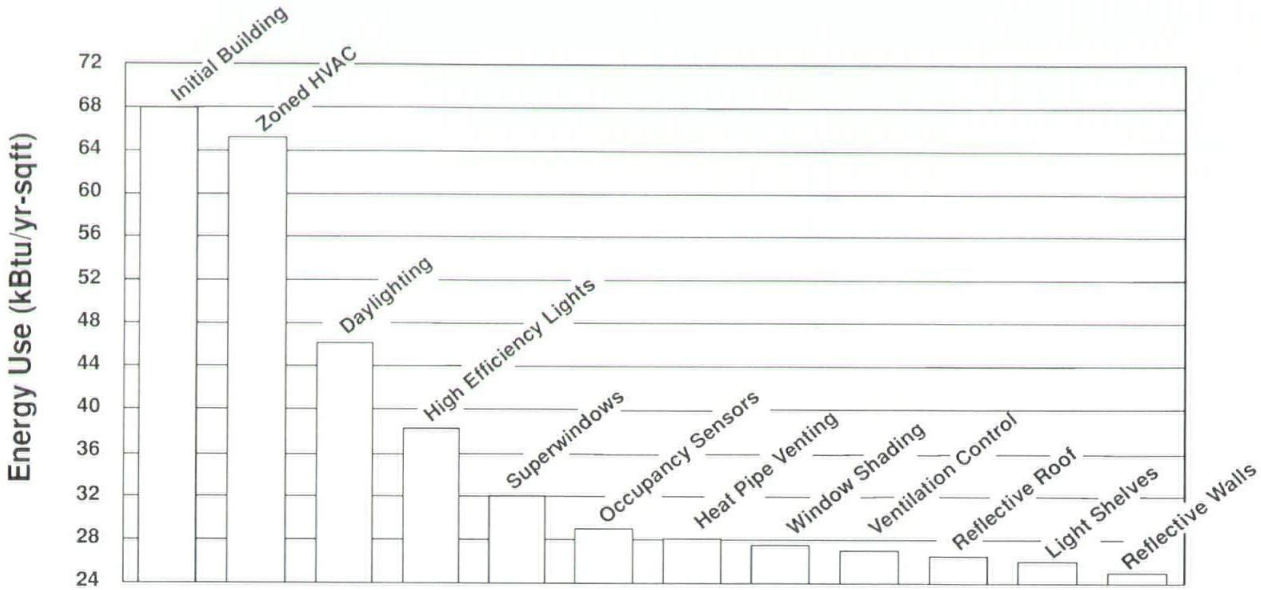






Graphics provided by Architects Design Group, Inc. Previous page, top: axonometric and below, exploded axonometric. This page, top: elevations and above, building section showing passive and active solar systems. At focal point of atrium is the thermal storage for the solar hot water system.

Ranking of Efficiency Measures



Like highly tinted glass, these glazings allow little of the sun's heat-producing near-infrared spectrum into the building. But unlike traditionally tinted glass, the let in a large portion of the sun's visible light. More light plus less heat means less energy consumption for both electrical lighting and air conditioning.

Lights Get Smart

What electrical lighting may be needed during daytime occupancy of the building will be provided by the latest T-8 fluorescent luminaires, which will be equipped with variably responsive electronic ballasts and photometric sensors. The sensors continuously read spatial light levels, and the ballasts react by throttling back or beefing up electrical lighting levels, as needed.

With the combination of daylighting and "smart" electric lighting, the illumination level inside each office will remain stable despite changing exterior conditions. When daylight is available, interior lights will automatically dim. If a passing cloud temporarily obscures the sun, the ballasts will boost electrical light output until sufficient daylight is once again available.

"Human factors" aspects of lighting are not being sacrificed for energy or economic expediency. For example, consideration is being given to the questions of glare and color rendition on human performance levels.

Consideration is also being given to the fact that humans are very forgetful animals. Occupancy sensors in all the offices will automatically cut power to lighting systems when an office is vacant for more than a few minutes and then switch the lights back on when someone re-enters the space. No more need for reminders to "turn off the lights when you leave the room."

Additional Options Offer Additional Savings

While the combined lighting-related package offers the greatest energy savings for the building, additional technologies will be incorporated to reduce power consumption even further.

One important measure is the elimination of electric reheating of air that must be supercooled to remove excess humidity. The FSEC office building will use a fan-powered variable-air-volume induction system to exchange air between the building core and the perimeter zones, which will significantly reduce the need for re-heat. In addition, heat-pipes will be installed on a separate "dual path" fresh-air unit to reduce the humidity of air drawn into the building for ventilation purposes.

The exterior finish of the building will also affect its energy use. Highly reflective roof and wall surfaces will keep the building from absorbing the sun's energy – an important cooling consideration in the Sunshine State. Using Superwindows and light shelves will apply this heat-avoidance strategy at window areas.

Energy Efficiency=Economic Benefits

The economics of the energy measures are almost as startling as their energy savings. Most of the lighting-related measures offer a simple payback (energy cost savings over time) of only 2.5 years. Energy savings will pay for the total package in less than eight years.

The Florida Energy Office has provided a $560,000 grant to FSEC to design, engineer, install and monitor the energy efficiency package in the $5.6 million complex. The goal is to demonstrate to all Florida commercial enterprises (and government building operators) that today's technologies can save huge amounts of energy (and consumer and taxpayer dollars) for the future.

Ingrid Melody is Director of Public Affairs for the Florida Solar Energy Center.

Recycled Buildings Restore Life To A Community

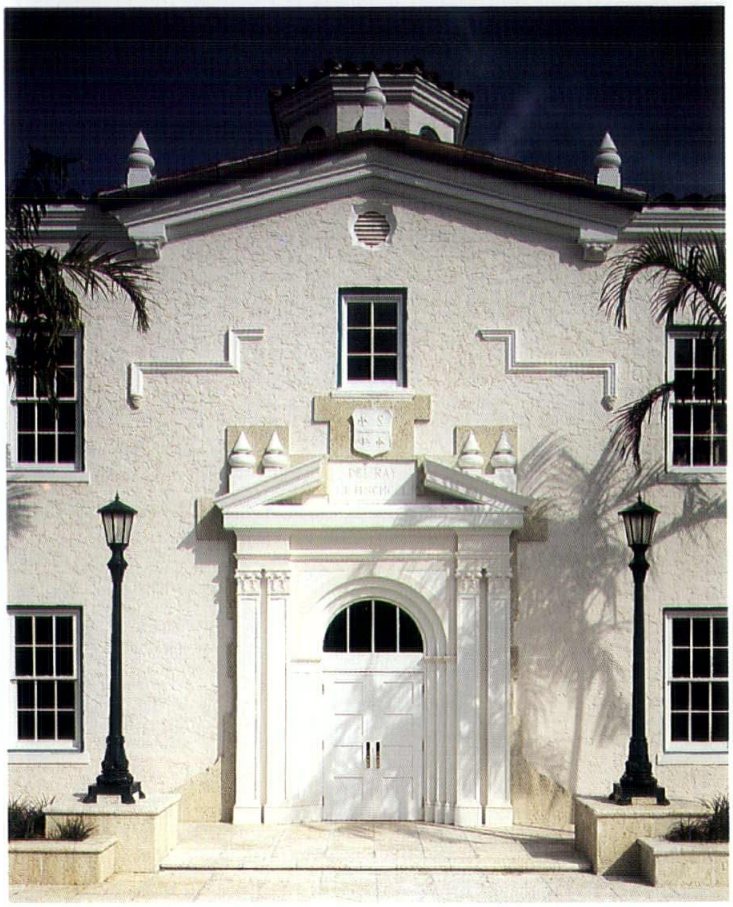
Old School Square
Delray Beach, Florida

Architect: Currie Schneider Associates AIA, PA
Designer: Robert G. Currie, AIA
Project Manager: Jose Aguila, AIA
Consulting Engineers: Thompson Engineering Consultants, mechanical/electrical; O'Donnell, Naccarato & Mignogna, structural; Walter Cornell, civil.
Landscape Architect: A. Grant Thornbrough & Associates
Theatre Consultant: Arts Environments, Inc.
General Contractor: Stinson-Head, Inc.
Owner: Old School Square, Inc.

The physical and spiritual rejuvenation of Old School Square is a modern miracle. Abandoned, in disrepair and shrouded in chain link fence, these three discarded school buildings symbolized the decline of Delray Beach's downtown. Today, restored and enhanced, the new complex of cultural buildings is at the heart of a vital redevelopment effort and home to a cultural renaissance.

Begun in 1913, the complex of school buildings were originally located on the outskirts of Delray Beach. Engulfed by subsequent growth, the school complex is now at the very center of Delray Beach at the prominent intersection of two heavily-traveled streets.

Today, the site is wrapped by a broad palm-lined coquina and brick walkway. Coquina columns stand like sentries, marking the entrances and site boundaries. Upon completion, the cultural complex will house three primary functions: a theatre, a museum and a multi-purpose building which was the school's former gymnasium.



Each building in the complex is achieved via entry from a different street with parking lining the eastern edge of the block within a reclaimed street.

Housed in the oldest structure in the complex is the new Cornell Museum. The building has a simple straightforward design. On each of its two floors, four large classrooms with 12' ceilings are connected by a large main corridor and two stairways. A central skylight and atrium introduce light to both levels. The exterior elevation reflects the simplicity of the interior layout while serving as the unifying element for the entire project.

Photos, this page, top: Theatre Building and left, detail of main entrance. Opposite page, top: Site Plan. Below, left: Cornell Museum and right: interior of gymnasium. All photos by Dan Forer.

The 1926 gymnasium has been simply restored, maintaining many of the original features. Alumni names remain on the exposed wood trusses; immortalized and carefully preserved in chalk. The Florida pine floors were restored and they provide a nostalgic backdrop for indoor dances, weddings, meetings and intimate theatre productions.

The theatre, built in 1925, was the final phase of the restoration and it is the crowning element in the composition. The two-story structure seats 305 people. A prominent feature of the exterior, the cupola, draws light down through the building into the entry foyer. In addition to the theatre itself, the structure will house classrooms for art, dance and music, a dining facility and administrative offices.

There is an elevated loggia in the central area between buildings. This rectilinear loggia will create a unifying theme between the buildings and the public space. Arranged around a covered stage at one end and a palm court at the other, this outdoor space accommodates 2,000 people and organizes the circulation for the block and its relationship to the adjacent community.

Old School Square is a modern day rags to riches story. Through the efforts of a committed organization of citizens, architects, engineers and contractors, this complex now acts as a catalyst for redevelopment in the area. As an historic restoration, it serves as an example of how new life breathed into an old structure can reinvigorate the entire community.

Crystal Kauffman is a freelance writer living in South Florida.

OLD SCHOOL SQUARE

A Corporate Model of Energy Efficiency

American Automobile Association World Headquarters Lake Mary, Florida

Architect: Spillis Candela & Partners, Inc.
Principal-in-Charge: Hilario Candela, FAIA
Project Director: Ferron Stowe
Project Manager: Charles Crain, AIA
Design Team: Hilario Candela, FAIA; Michael Kerwin, AIA; Rafael Sixto, AIA
Contractor: The George Hyman Construction Co.
Owner: The American Automobile Association

The hot, humid Florida climate has the power to diminish the work of any man. Summer temperatures can rise to over 100 degrees in the shade, if you're lucky enough to find any. These extreme levels of heat and humidity make it hard to stand and even harder to understand why man and nature must be on seemingly opposite sides. While man can do little to change what nature has given him, he can do much about how he is affected by it.

In response to rising energy costs, Governor Chiles issued a mandate in October, 1992, to reduce energy consumption in Florida's infrastructure. The Florida Design Initiative was created to mobilize design professionals to develop the new energy efficiency business sector by marketing energy efficiency design services. A steering committee comprised of these same professionals, as well as financial leaders, put forth the challenge to the media, banking and financial sectors to lead the private sector by example.

One of the leaders in this move is a corporation that has been aware of the benefits of energy conservation for a long time and they built appropriate

strategies into the design phase of their new Central Florida building. The AAA World Headquarters in Lake Mary, is an example of what can be accomplished by a company whose goal to reduce overhead costs won't be at the expense of services to their customers. In fact, the energy saving features designed into this building will help to free up dollars needed to provide services for years to come.

The most unique feature in the mammoth 603,000 sf building is the HVAC system. It is made up of two 450-ton Trane CVHE centrifugal chillers and 28 Cal Mac thermal storage tanks. On the roof, there are two Trane reciprocating chillers. They are used for cooling the building while the main chillers are recharging the ice tanks for the following day. The Trane Climatic Ice Storage system can significantly reduce air conditioning cost by shifting or leveling on-peak electrical demand. This is accomplished by making ice at night when utility rates are lower and then using the ice to satisfy daytime cooling demands when utility rates are higher. A water energizer further contributes by electrostatically removing corrosive contaminants from the water that is used to make the ice, saving maintenance and operating costs. Variable Frequency Drives installed on the water pumps kick in when needed to supplement the daytime demands.

A newcomer to the HVAC system is a type of enthalpy exchanger called a Heat Pipe System. This passive device, which requires no energy, was recommended by Florida Power & Light during a recent energy audit. It extracts moisture from the air, thereby reducing the high humidity levels caused by window leaks. By reducing humidity levels, comfort levels increase and operating costs in the print shop and shipping department are decreased.

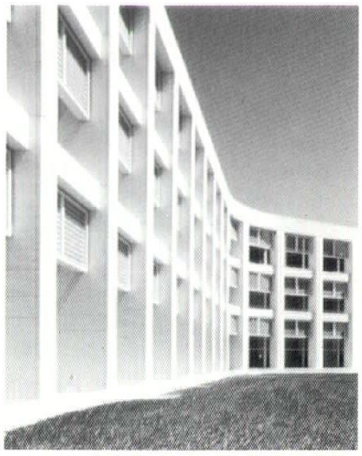
Low-E glass set in deep reveals, with eyelid-styled fixed louvers, reduce solar heat gain and therefore reduce cooling requirements. For an added human comfort value, mini-blinds allow control for those in close proximity to the windows.

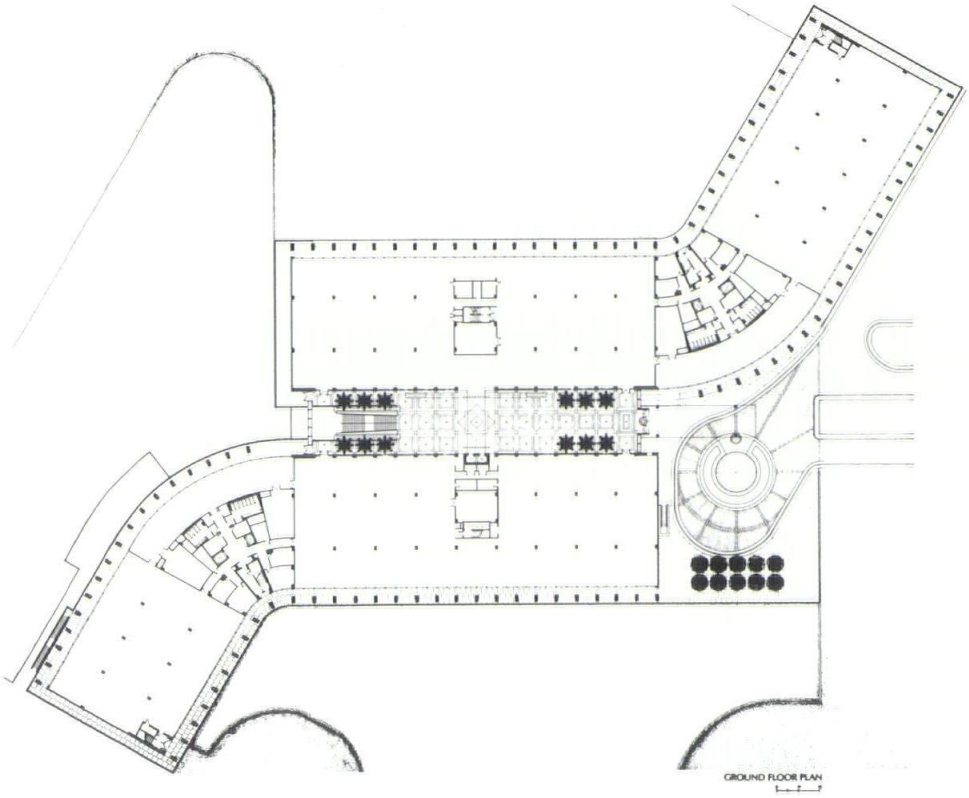
Just when they thought having fluorescent fixtures was efficient enough, a Florida Power auditor suggested another improvement. Weeks were spent relamping 11,000 fluorescent fixtures from F40W to F34W. The initial cost to change the lamps was $12,000, but AAA received a rebate of $5,478 from Florida Power and an annual projected savings of $12,067.

Various types of sensors on switches are used throughout the facility to insure that lights are not left on unnecessarily. In the mechanical and storage rooms, infra-red sensors are used. Motion detectors are used in other areas. In the conference rooms, dimmers are standard features, although there are rooms where no artificial lighting at all is necessary due to the abundance of available daylight.

AAA is a company that is making "best practices" a goal. As technology changes, so should design and that responsibility rests on the designers of buildings working in unison with clients. With such a formidable climate to deal with, staying one step ahead in Florida is a tall order, but it can be done.

Patty Hattaway is an Adjunct Instructor at Daytona Beach Community College where she teaches in the Interior Design Department. She holds degrees from FSU in both Interior Design and Housing.





Photos: opposite, Atrium and above, exterior detail showing windows set in deep reveals by Norman McGrath. Site plan courtesy of the architect.

The Nuts and Bolts of Energy Efficient Design From The Architect's POV

by Lawrence P. Maxwell, AIA

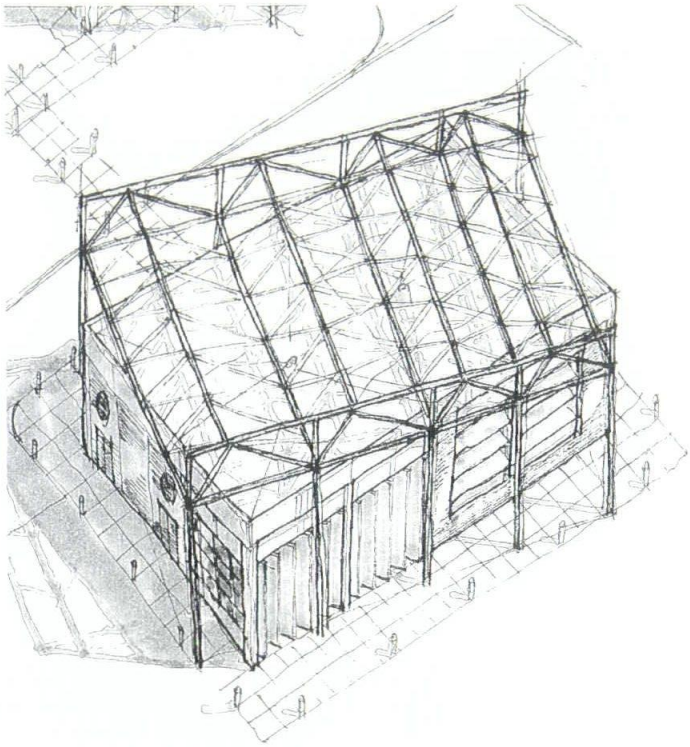
The design of any building is a complex and challenging process. Trying to make the building energy-efficient and environmentally compatible adds to the complexity and the challenge. There is plenty of information available to design energy-efficient commercial buildings. However, most of that information pertains to buildings in heating-load dominated climates. It is of little use to an architect concerned with creating a building that performs efficiently in a hot, humid climate such as Florida. Designing energy-efficient and environmentally-compatible buildings - buildings that save your client money and maintain or enhance the natural beauty and quality of life that is Florida — can only enhance your reputation as an architect.

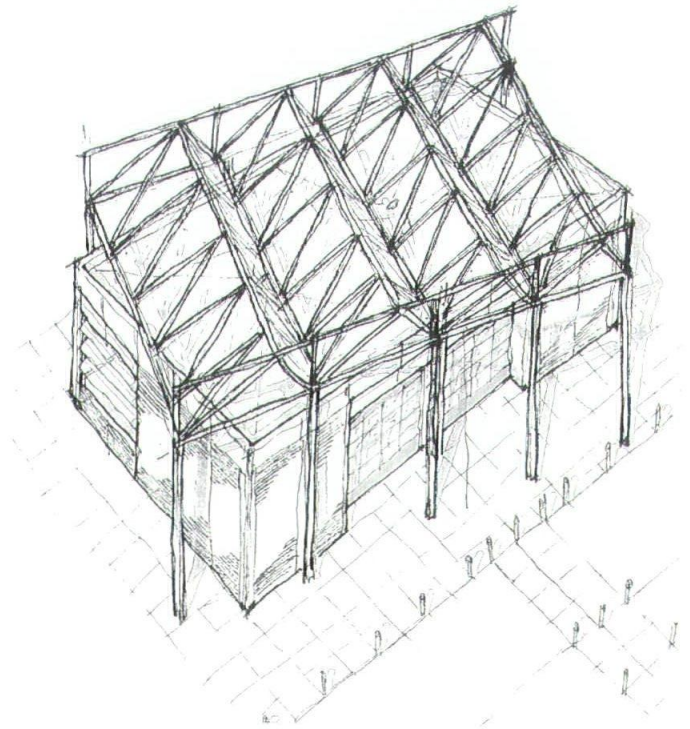
To achieve an energy-efficient building is not simply a matter of having your mechanical engineer specify energy-efficient equipment. The entire design concept must focus on strategies that stimulate positive interaction with the environment so that the building will utilize the beneficial aspects of the environment while avoiding those that would cause it to consume excessive amounts of energy. The best way to accomplish this is to understand the physical environment and to understand the energy-use patterns of the building type being designed.

The first key to designing an energy-efficient building in Florida is to understand our physical environment and climate. For example, the sun provides substantial amounts of potentially high quality natural light, but it can also provide excessive amounts of heat gains and glare problems. The prevailing ambient air temperatures fluctuate within about a 20-degree range throughout most of the year. The heating requirement is limited and brief. Humidity is the prevailing problem and because of the typically high relative humidity, the diurnal swing is quite small.

The second key is to understand the energy-use pattern of a proposed building. In Florida, cooling and lighting usually make up over 85% of the total energy usage of a typically commercial office building. The energy for lighting, as well as the cooling load generated by the lighting, can account for 50 to 60% of the total energy consumed by the building. The building envelope can account for an additional 20 to 30% of the cooling load. The balance of the cooling load is generated by the occupants and office equipment used in the building. Typically less than 5% of the total energy usage of the building is by office equipment. Since electricity is the standard power source for these loads – over 80% of the energy used in Florida buildings is from electricity - it is essential that peak time energy demands and peak time rates of energy use be understood.

By understanding Florida's climate, and the energy use patterns of a typical building, certain design criteria can be ascertained. For example, the daylight portion of the sun's energy permits energy savings by reducing electrical lighting and eliminating the cooling load associated with those lights. However, the daylighting must be designed so that the benefits of daylighting are not offset by excessive heat gains or glare from improper design of glazing and fenestration systems. Design of the envelope requires that attention be paid more to control of thermal losses and gains attributed to ambient air temperatures. The use of mass or thermal storage materials to shift cooling loads from day to night with the intent of utilizing





Sketches of Florida Solar Energy Center's superstructure supporting the photovoltaic panels by Steven Langston, AIA

cool night air to remove the heat, is not very effective. This is because of the usually low diurnal swing and the potential increase of latent loads. However, during the winter and the swing seasons of spring and fall, this strategy can prove useful.

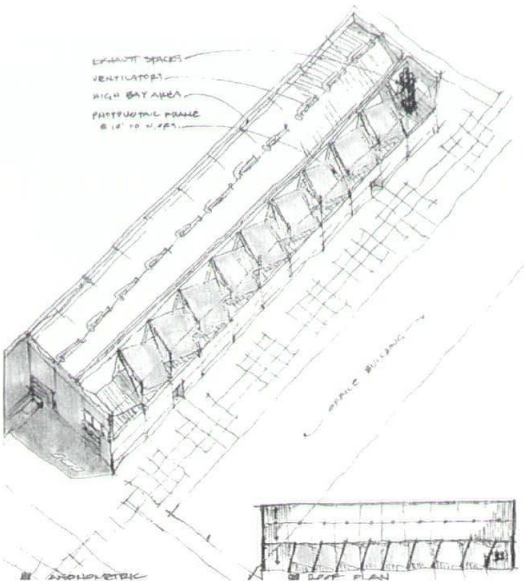
Computer software is available to analyze the energy use patterns of building designs. Among the software programs available are ASEAM (A Simplified Energy Analysis Method), BLAST (Building Loads and System Thermodynamics), DOE 2 (anaylsis of energy consumption in buildings) and others. Most of these programs are public domain programs available to any designer or engineering professional. Through these programs, the energy use patterns of a building design can be simulated. Design alternatives can also be simulated to determine the positive or negative effects of those alternatives on the potential energy consumption of the building. With the results of the simulations, competent decisions can be made and design concepts refined. Additional programs can include new simulations using the above-mentioned programs, as well as such software as ENVSTD (ENvelope STanDards) LTGSTD (LighTinG STanDards) and ACPSTD (Alternate Compliance Package Standards). Such analyses can provide the necessary input for both schematic design and design development phases of a project.

The first and most important element of the design is the building's orientation to the site. The north orientation offers the best quality of potential daylighting with the least amount of direct solar gain. The south also offers good daylighting potential, if the necessary shading is provided and adequate attention is given to glare control. The possibility of some free winter solar heat gains is also available. However, the need for this is small enough and the potential for glare is great enough that not much attention need be spent on this option. The east and west elevations require the greatest attention to minimize potential negative impacts. The problem with these elevations is that the angle of the sun is lower in the sky than on the south elevation. This places a more direct load onto and into any glazing located on those elevations. Also, because of the low sun angle, shading of these elevations is much more difficult. The worst of these two, of course, is the west elevation. The time that the sun impacts this side is during the hottest part of the day and it is also the time when the utility companies are experiencing their peak demand.

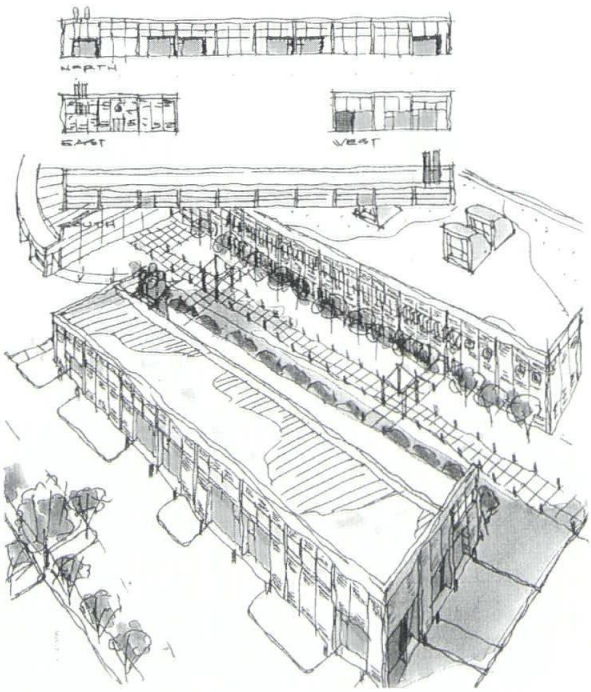
The roof of the building can contribute to substantial amounts of envelope heat gains, or it can reduce the overall effects of the sun. If the roof construction consists of a ventilated attic space, a radiant barrier at the roof can substantially reduce the effects of radiant heat gains. If the roof is a typical flat roof configuration with insulation located above the deck, a white roof will reflect up to 80% of the incoming solar radiation thereby significantly reducing heat loads into the building.

Electrical and mechanical systems must be clearly coordinated with the building design to ensure a complete building system that provides the energy efficiency desired in the original design concept. Bringing in the electrical and mechanical engineering consultants at the beginning of the project and developing a dialogue is the best way to achieve success.

With the tools available to today's architects, an energy-efficient design is easily within reach. By using the tools mentioned in this article, design decisions can be quickly tested, refined and retested to determine the optimum solution to the challenge at hand. The Building Design Assistance Center operated by the Florida Solar Energy Center, through funding from the Florida Governor's Energy Office and the U.S. Department of Energy, has been created to assist architects in designing energy-efficient commercial buildings. The services of the center are free to architects and engineers and the benefits are better quality buildings and an enhanced reputation for the building designer.



Sketches by: Steven Langston, AIA



Lawrence Maxwell is past Building Design Assistance Center Director at the Florida Solar Energy Center and is currently President of Spacecoast Architects, P.A. of Melbourne.

Learning About Tensioned Fabric Structures

During the Fall, 1992, semester, architecture students at Florida A&M University constructed a unique Tensioned Fabric Structure (TFS). Seven students were enrolled in ARC 5597 – "Qualitative and Experimental Structures" - an elective course aimed at enhancing the structural education of graduate and advanced undergraduate architecture students. The course instructor, Professor Ron Shaeffer, designed the course to vary in topical content from year to year. This year, the class studied membrane structures; that is, structures that resist loads by developing relatively uniform stresses through their thickness as opposed to bending stresses, which are non-uniform and cause structures to be inefficient.

As part of the course requirements, the class constructed a prototypical tensioned fabric structure. The structure is based on a design by Horst Berger of New York City - one of the leading designers of tensioned fabric structures - and the structural consultant for the recently completed fabric roof of the Denver Airport. Mr. Berger modified this concept when he designed the landmark Bullock's department store roof in San Mateo, California, which covered almost two acres.

The Florida A&M structure uses polytetrafluoroethylene (PTFE)-coated fiberglass fabric, a material usually reserved for long-span structures such as the Suncoast Dome in St. Petersburg and the Denver Airport.

Through contacts developed with other professionals while serving on committees of the American Society of Civil Engineers (ASCE), Professor Shaeffer was able to gain the support of several private companies including Chemfab (Chemical Fabrics Corporation) of Merrimack, New Hampshire which agreed to provide the fabric and the Birdair Company of Buffalo,

Florida A & M students assemble and erect tensioned fabric structure behind FAMU School of Architecture
All photos by Ron Shaeffer.

New York which helped with computer analyses, fabric patterning, and fabrication.

During the Thanksgiving holidays, the class visited the Birdair facility in Buffalo, New York to work with one of their engineers, Dale Cich. On the same trip, the group visited with Horst Berger in New York City, and toured some of the tensioned fabric architecture along the east coast.

With design modifications and detailing accomplished, we sought and received the support of the Owen Steel Company of Jacksonville, Florida. They provided the structural tube and fabricated the special connections. In the meantime, we worked on the foundation footings and steel piers. Immediately after final exams, the class erected the steel frame and returned early from our winter holidays to hang the fabric. With the help of Dale Cich, who flew in from Buffalo, the fabric was erected in just four hours.

Plans are now being formulated for the design of outdoor furnishings which will make the space suitable for outdoor seminar classes, outdoor luncheons, and informal group meetings.

The students who participated in the project were Sam Andras, John Barranco, Rawle Gooding, John Mathias, Mike Montgomery, Molly Smith, and Matt West.

Additional materials and services were provided by The Crosby Group, MacWhyte Wire Rope, Childers Construction, D&D Rentals, Eppes Decorating, Tallahassee Welding, and Capital City Radiator.

Molly E. Smith is a recipient of the Master of Architecture degree from Florida A & M University. She plans to pursue a career in architectural research.

Historical Note

The forms of tensioned fabric structures have a distinguished heritage dating back to the reinforced concrete thin shell constructions (mid-20th century and earlier) of Eduardo Torroja, a Spanish engineer, Heinz Isler, a Swiss engineer and Felix Candela, a Mexican architect. The work of these three men led to the pioneering of membrane structures supported by anticlastic cable net forms by the German architect, Frei Otto. With the development of high-strength fiberglass fabrics in the 1970's (used extensively for air-supported stadiums by the late David Geiger), the use of cables could now be limited to the definition of ridge, valley, and edge locations. Since the Florida A&M structure was small, only edge cables were needed.

VIEWPOINT

Rooftop Revenue: The Roofing System's Role in Energy Savings

by Paul Kidwell

Roofs in most commercial structures usually represent the largest portion of the exterior building surface, typically three times the surface area of the walls. With this large area exposed to fluctuating climatic conditions, it is clear that an energy-efficient roofing system can substantially reduce energy-related costs over the lifetime of a roof.

Color the Key

The most important factor often overlooked in determining the energy efficiency of a roof is the surface color of the roofing membrane. Many building owners and architects are not aware that different colored membranes produce surprisingly different results in air-conditioning costs.

For instance, a high quality, white, single-ply roofing membrane can actually reflect up to 78% of the sun's radiant energy so that even on the hottest days the roof's surface temperature only reaches 110°F. Contrast that with a black BUR or EPDM roofing membrane that absorbs heat, bringing its surface temperature to as high as 170°F — a 60°F difference.

Since most commercial structures typically try to maintain an inside air temperature of 78°F throughout the year, the cost differential in maintaining this temperature if a white roof surface is 110°F versus the 170°F of a black roof obviously varies greatly for each color. Even without air-conditioning, a white roofing membrane can help the building maintain a substantially lower internal temperature and create a higher comfort level for the occupants.

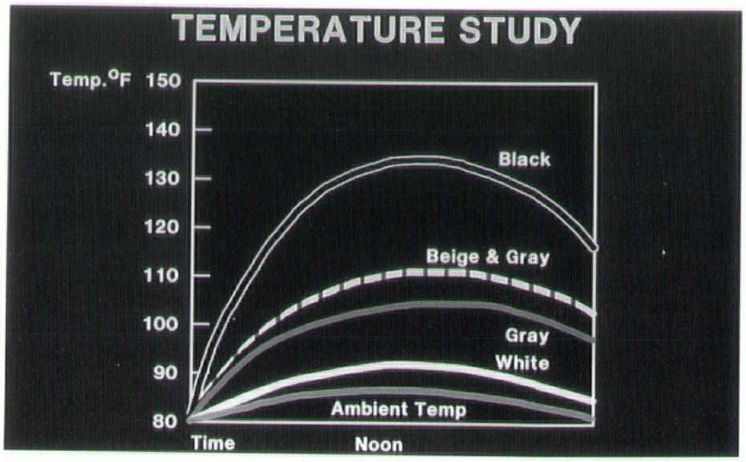
For instance, installing a new white roofing system instead of a black BUR on a 100,000 sf Atlanta warehouse heated by natural gas and cooled by electric air-conditioning can save between $32,000 and $85,000 in energy costs over ten years. The difference in energy savings is even more dramatic when the white single-ply system is compared to a mechanically attached, black roofing system. In this example, the white roof can save between $76,000 and $164,000 in energy costs over the ten-year time period. The color of the roofing membrane can result in significant energy savings depending on the climate and the cost of electricity in the region.

R-Value and Dew Point ... Other Factors in Saving Energy

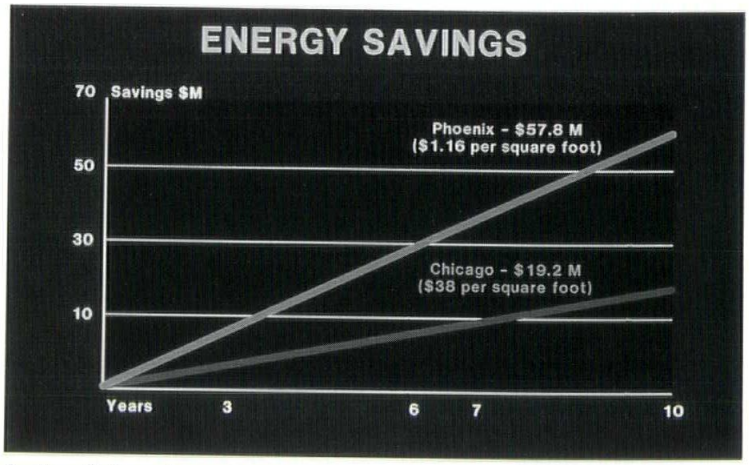
The roofing system's R-Value and dew point are also important factors in energy savings. In most cases, as R-Value is increased, cooling and heating costs are typically decreased. The higher R-Value of insulation, when combined with a white roofing system, can create 10-year energy savings in the hundreds of thousands of dollars. Most building owners agree that it is worth spending additional money on extra R-Value and white membrane to ensure these long-term savings.

Dew point is important because a roofing system's energy efficiency will be significantly hindered if moisture is allowed to seep into the roofing insulation, not only damaging the insulation, but also, the membrane itself. Proper design of the roof assembly and careful selection of roofing materials can alleviate dew point problems.

A building's roof can be a crucial factor in determining the energy efficiency of a manufacturing facility. By taking into account the roofing system's color, R-Value and dew point, building owners, architects and facility managers can select a roofing system that can save thousands of dollars in energy-related costs over the lifetime of the roof.



A white single-ply roofing membrane offers a higher degree of reflectivity of the sun's radiant energy and harmful ultraviolent rays. The result is a cooler interior temperature and less of a reliance on air conditioning to keep a building cool.



In Sun Belt regions where there are more air conditioning days than northern geographic locations, energy demands and related costs are greater. A white roof can save a building owner tens of thousands of dollars over the lifetime of the roofing system.

VIEWPOINT

Signage ... ADA Compliant or ADA Complicated

by Vince Harrigan

Flip through almost any architectural trade magazine and note the number of ads that offer ADA-compliant signs. Since the passage of the Americans With Disabilities Act, sign fabricators have run heated races to develop and market the "best" product.

But, has all this haste affected the quality of the product and more important, is much of this signage even compliant with ADA regulations?

The problems surrounding this current crop of ADA signs are legion. In fact, it has been reported that some sign fabricators are not even using the correct Braille system. This and similar errors are unnecessary because those sections of the ADA governing signage are among the most concise in the entire law. The most important specification to note in the signage law is the Braille requirement. There are two standard types of Braille - Simple Braille (Grade I) and Standard English Braille (Grade II). Grade I is a letter by letter conversion of text into Braille cells. It is not acceptable for signage. Grade II is a kind of shorthand that contains almost 200 abbreviations. It saves space and is the system specified by the ADA.

Sign shops have been advised to employ a consultant who is certified by the Library of Congress to proofread Braille, but most companies use software programs to verify their work. New software programs are almost always filled with bugs and the recent crop of Braille programs are no exception. Signage fabricators are responsible for producing correct Braille messages, just as they would be expected to spell words correctly on normal signs. Vendors should have a grasp of the Braille system and be able to give detailed information as to which system to employ to produce correct signs.

Typefaces are another feature of signage that is regulated by the ADA. Section 4.30.2 addresses character proportion. It states that letters and numbers on signs shall have a width-to-height ratio between 3:5 and 1:1 and a stroke-width-to-height ratio between 1:5 and 1:10. Furthermore, another section states that letters and numerals shall be in a "sans serif or simple serif type".

A serif is a flourish found on the base or arms of characters in certain typefaces such as the flared bottom of a Times Roman "I". The concern is that this flourish makes it difficult for the visually impaired to "read" a letter by touch. The Society for Environmental Graphic Design has determined that some acceptable typestyles are Futura Light, Helvetica Condensed and Garamond Bold. Studies have verified that the blind prefer sans serif typefaces.

The amount of glare in the finish of the sign is outlined in section 4.30.5. It states that the characters and background of signs shall be eggshell, matte or other some other non-glare finish. This would seem to exclude the use of mediums such as acrylic enamel paint. Not so. Though rarely requested of them, paint companies can introduce a flattening agent into many types of paint and produce a non-glare mixture. Also handy (you may want to tell your fabricator about this) are aerosol cans of artists matte finish spray. This permanent coating can be sprayed directly on the face of finished signs to create a non-glare finish. Tests are advised, however, since some paints will react to sprays like this, ruining the finish.

It appears that there is no material which cannot be used to fabricate Braille signs. But the current batch of ADA-related signs, for most practical purposes, can be narrowed to three categories: plastic signs, etched or molded metal signs and inlaid signs. Plastic signs are the most affordable and they are lightweight and easy to install. The main drawback to plastic is that they look....well, like plastic. Obviously installed with economy in mind.

Metal signs have the distinct benefit of having been around for a long time. They have been used in elevators for some time so the technology used to create them is less experimental and they are extremely vandal-proof and virtually maintenance-free. But, like the plastic signs, they are inappropriate for some types of interiors.

Inlaid signs are the most versatile and attractive. Braille characters can be inlaid in a variety of materials, including marble and granite. However, they are generally more expensive and highly vulnerable to vandalism. Fabrication is also very time-consuming.

Whichever product you choose, expect the fabricator to stand behind his work. The ADA doesn't have to be a headache.

Vince Harrigan is a Licensed Journeyman sign fabricator specializing in ADA signage.

VIEWPOINT

Checking Fenestration Test Results Pays Off In Florida

by Howard Moore

The overall energy efficiency of windows and doors, or lack thereof, can be a confusing issue. By most calculations, 20 to 30% of all energy loss occurs through windows and doors.

How to differentiate between a manufacturer's claim that a product is energy-efficient and the actual facts is often difficult. This is a problem which is created in part by the fact that the industry is not currently governed or required by code to meet any minimum energy standards.

Although it is projected that by 1995 all states will require a National Fenestration Rating Council (NFRC) energy label, this code only requires a minimum U-factor.

The positive side to this code enforcement, however, is that it will regulate how a manufacturer tests its product. Manufacturers will have to report test results using the same calculations required by the NFRC.

The negative side is that the code still does not address the different climate conditions across the country. The concerns of people who live in Florida is clearly not the same as those who live in Minnesota.

Since manufacturers are currently not required to provide specific energy test results, their claims are often misleading. This article is an attempt to address some of the most often misrepresented claims as they relate to Florida.

A common claim made by manufacturers is that test results are "Calculated" based on "Centerpoint Measurements." When selecting a window, you need more than just an energy-efficient centerpoint. You need an energy-efficient window. Check for manufacturers that utilize "complete" unit testing.

When deciding which product and option best meets your needs, there are several considerations which should be taken into account.

SUMMER U & R VALUES

This gives the transfer of inside cold to outside heat based on a constant inside and outside temperature, without direct sunlight. It is important to review the "complete" unit test results when gauging the window's overall performance. It is also important to review the "Summer" U & R Values since heat is our primary concern here in Florida.

SHADING COEFFICIENT - DIRECT SUNLIGHT EXPOSURE

In Florida, this is an important energy loss concern. Shading coefficiency shows the transfer of heat through the glass. Most manufacturer's energy claims show "heat loss" comparisons. Florida concerns are "heat gain" related. The best gauge of a product's performance for heat gain is in its glass shading coefficiency testing. The lower the shading coefficiency, the better the glass performance in direct sunlight.

VISIBLE LIGHT TRANSMITTANCE

With the recent advancements in high performance glass, sacrificing light for better performance is no longer necessary. When comparing glass performance, compare the shading coefficiency rating vs. the visible light transmittance. Windows no longer have to be tinted to reduce heat gain.

FADING – ULTRAVIOLET TRANSMISSION

Another area of confusion has to do with manufacturer's claims that do not clarify what spectrum of UV they are reflecting. The fact is that there are a number of spectrums

that can cause fading. The industry has not developed a consensus standard on the UV transmittance spectrum. However, Lawrence Berhley Laboratories (LBL) recently issued a report and associated computer software that attempts to quantify the cause of damage to fabrics. This appears to be the best representation to judge the actual percentage of protection offered. If it is available, ask for the LBL Comparison test report.

Until the NFRC testing is adopted nationally requiring manufacturers to use the same testing procedures, following the guidelines listed here is the best approach for checking the energy efficiency of a window or a door. It is important to get all the facts, not just the "claims." Most reputable manufacturers have access to accurate testing and it is in the architect's best interest to try to get these test results.

Howard Moore is an expert on window and door testing and the specific climate-related demands that architects in Florida experience.

NEW PRODUCTS

Introducing "Potty Parity"

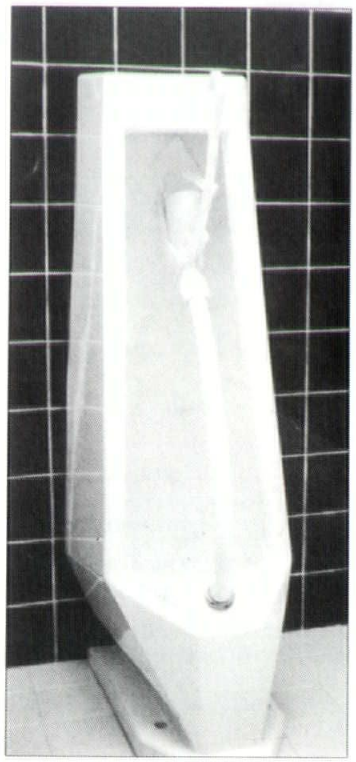
Unlike a previous female urinal design, the She-inal urinal was conceived by a female. The design takes into account the types of clothing that women wear, their fears and concerns about communicable diseases in public restrooms, physical constraints of the female anatomy and modesty. The new She-inal urinals are always used in a private stall and they are the solution to public restroom problems like long lines, water conservation and smaller stalls.

Both the She-inal and the Safety Urinette which was designed for the physically-challenged, are completely sanitary. The fixture is wall-mounted and designed to be contact-free. The systems are convenient for users of any age. The funnel hose is a special gooseneck design which allows the funnel to be placed at any height or in any position. The handle rotates a full 360 degrees to allow for complete freedom and comfort. Even small children find the system easy to use.

Long lines at female public restrooms have become such a pervasive problem that "potty parity" laws are being passed. Installation of female urinals will reduce the length of time required to use the fixture and increase the number of fixtures available in a limited space.

A survey conducted in 1989 by the University of West Florida had a test group of 150 women, aged 16 to 72, respond to using a urinal. Sixty-six percent of all the respondents stated they were moderately to highly likely to try the She-inal urinal. In a survey of female attitudes toward public restrooms, females were asked to respond to a concept question: If there were a female urinal available which you used in a standing position in a privacy stall, would you use it? Fifty-five percent of all respondents answered they would try it.

For complete information about the She-inal and the Safety Urinette, contact Urinette, Inc. in Pensacola, Florida, at (904) 944-9779 or fax (904) 944-9778.



Solar Powered Outdoor Lighting

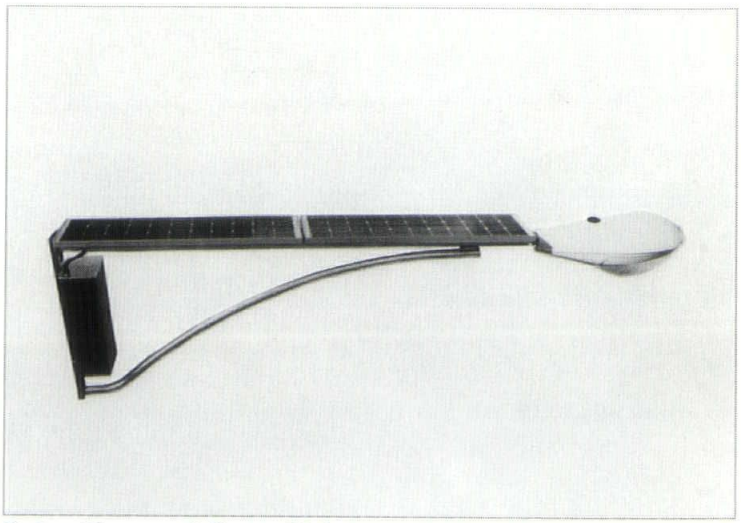
Solar Outdoor Lighting's new Solar Pal Self-Contained Sign Lighting System for entrance signs, corporate identification signs and remote signs is highly efficient, affordable and easy to install.

Pictured here is the entrance sign at the new Panache community in Boca Raton. The new Solar Pal system is being used to light a 6-by-8-foot sign located 500 feet from an electrical outlet.

The power unit, mounted on a pole hidden from view, consists of two solar panels, a battery box and a computer controller. Wires connect the batteries to a 39-watt BIAX floodlight, which provides strong illumination without generating intense heat that could possibly burn the surrounding landscape.

The solar panels, which rotate 360 degrees to face south, absorb the sun's rays, converting them to electricity which is then stored in the batteries. A patented computer directs the batteries to turn the floodlights on and off at pre-selected times.

Once charged, the power unit will operate for six days without sun. Installation takes three hours and no trenching or wiring is required. Users will be spared monthly power bills forever.



Solar Powered Streetlight Also Available

Designed for high reliability and minimal maintenance by Stuart-based Solar Outdoor Lighting (SOL), the patented Solar Pal Streetlight features a flat panel of solar cells atop its arm which absorbs the sun's rays, converting them to electricity which is then stored in gel-filled batteries to turn the lamp on and off at pre-selected times.

Currently used by Wal-Mart at their Arkansas headquarters, the Solar Pal Streetlight uses top-of-the-line components and can operate for up to five days on a full charge. SOL offers the strongest warranty in the industry.

The solar-powered streetlight is ideal for built-out office complexes, remote parking lots, temporary construction sites, parks, bridges, overpasses and marinas.

It's About Architecture

AIA Florida is holding its 1993 summer conference July 30 - August 1 at the world renowned Ritz-Carlton in Naples, Florida. The conference theme, "It's About Architecture," covers all aspects of the practice of architecture: design, professional practice, legal, community awareness, and personal satisfaction.

Conference Schedule

THURSDAY, JULY 29

Afternoon	Early Conference Arrivals/ Participants in Golf and Tennis Tournaments
7:30 pm	House Party at Home of Dick & Silvia Morris

FRIDAY, JULY 30

8:00 am-12 Noon	Golf Tournament
1:00 pm-2:30 pm	**Opening Session with Bill Chapin, FAIA, "The Future of Architecture."**
2:30 pm-3:30 pm	Chapter Community Awareness Programs a) AIA Miami Chapter, West Perrine Study b) AIA Orlando Chapter, Homeless c) AIA Tampa Bay d) Gulf Coast Chapter, Neighborhoods
3:30 pm-4:00 pm	Seminar: Sponsor
4:00 pm-5:30 pm	**Seminar: Larry M. Schneider, AIA, "American Disabilities Act for Florida and Other Code Changes."**
4:00 pm-5:00 pm	Main Lobby - Tea Hosted by Judy Tice, Jane Filer, Reagan Reep.
6:30 pm-10:00 pm	**"The finest sports car collection in America,"** says the New York Times. Party amidst some of the most significant cars in automotive history at the Collier Automotive Museum. Hosted by the Florida Southwest Chapter.

SATURDAY, JULY 31

7:30 am-8:00 am	Continental Breakfast
7:45 am-8:30 am	Seminar: How to Create Computer Animated Videos on Unbuilt Projects.
8:30 am-10:00 am	**Seminar: Jim Franklin, FAIA, "Ways to Make Your Firm Profitable."**
9:00 am-2:30 pm	Ritz Kid's Camp
10:15 am-11:15 am	Chapter Community Awareness Projects a) AIA Gainesville, Handicap Camp b) AIA Jacksonville, Habitat c) AIA Palm Beach, Vision
11:30 am-1:00 pm	**Keynote Speaker**
1:00 pm	Lunch on Own
1:00 pm-6:00 pm	Family Free time
1:00 pm-5:00 pm	Ritz Kid's Camp
1:30 pm-3:30 pm	Boat Tour of Estero Bay
1:30 pm-5:30 pm	Tour of Edison Home
1:30 pm	Tennis Tournament
5:00 pm-6:00 pm	Billiard Tournament
6:00 pm-7:00 pm	Beach Side Reception for the Family
7:00 pm-10:00 pm	Beach Cookout, Volley Ball, Bocce Ball, Limbo Contest
10:00 pm-till	Poolside/Closing Reception

SUNDAY, AUGUST 1

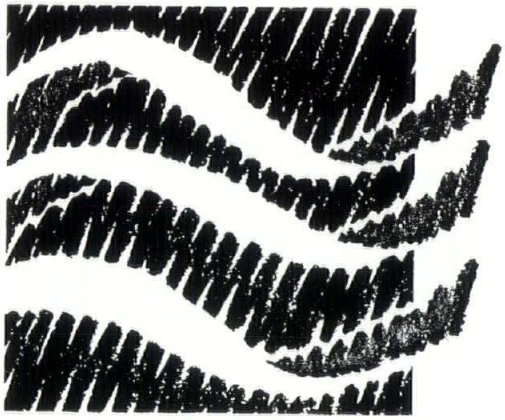
8:30 am-10:00 am	**Malcolm Holzman, FAIA, Hardy Holzman Pfeiffer Associates**
10:00 am-11:30 am	**Panel Discussion Chapin, Franklin, and Holzman**
11:30 am	Closing

Early Registration

Save up to $100 by registering before July 1, 1993. For more information contact Melody Gordon, Meeting Planner at (904) 222-7590 or write to AIA Summer Conference, 104 E. Jefferson Street, Tallahassee, Florida 32301.

AIA Florida's Summer Conference

It's About



Architecture

July 30 - August 1, 1993
The Ritz-Carlton
Naples, Florida

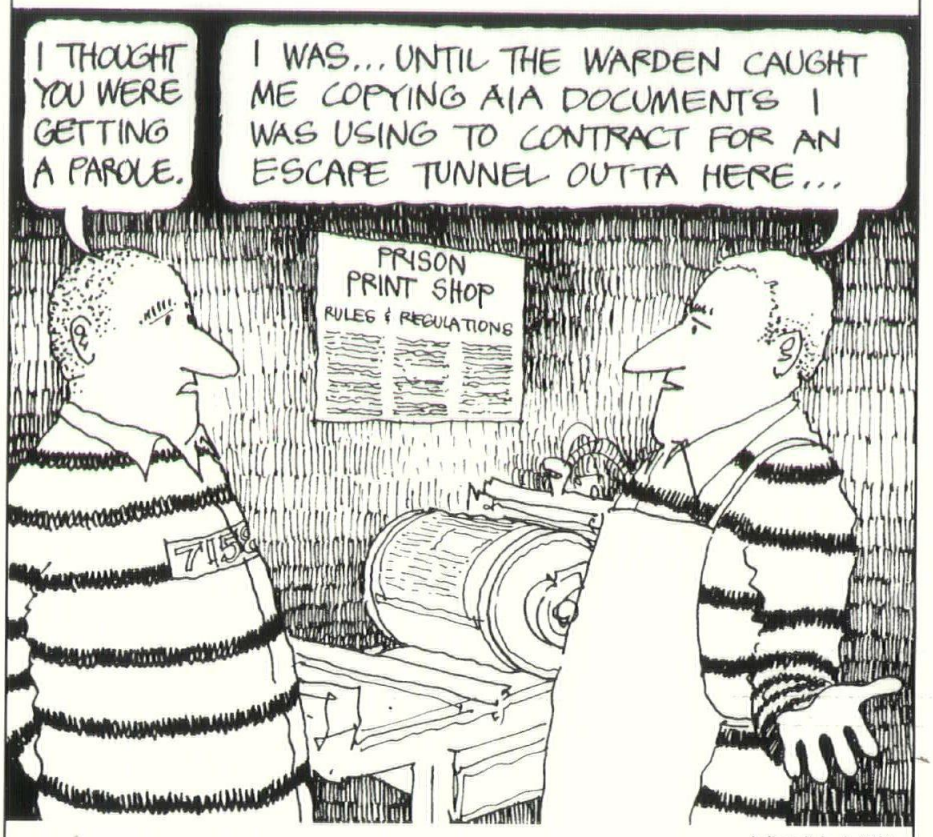
American architects and architecture are at a critical juncture. The recession has had a demoralizing affect on the profession and highly complex political and cultural forces are driving us to reevaluate our priorities. What now?

The 1993 AIA Florida Summer Conference offers an agenda that will provide opportunities for us to engage these issues in a beautiful and tranquil environment, away from the distractions of the workplace.

We've invited a number of provocative speakers for your benefit: **Bill Chapin, FAIA; Jim Franklin, FAIA; Malcolm Holzman, FAIA; and Larry M. Schneider, AIA.** It will be a conference that asks the tough questions and invites to explore the answers with your colleagues. We'll also have a lot of fun.

Please join us July 29-August 1 in Naples, Florida for AIA Florida's Summer Conference--It's About Architecture.

It's Illegal To Copy AIA Documents.



—by Roger K. Lewis, FAIA

Don't Copy AIA Documents Or Ask Others To Do It.

It's against the federal copyright law to copy AIA Documents or to ask others to do it for you. These Documents are protected by law and using original AIA Documents protects you, too. Documents that have been copied might contain obscured changes or be outdated, containing old language that does not reflect current case law and construction industry practices. Using copied Documents could increase your liability significantly. It's just not worth the risk ... and it isn't worth putting others at risk either. We're your AIA Documents Distributor. Call us today.

documents
FULL SERVICE DISTRIBUTOR

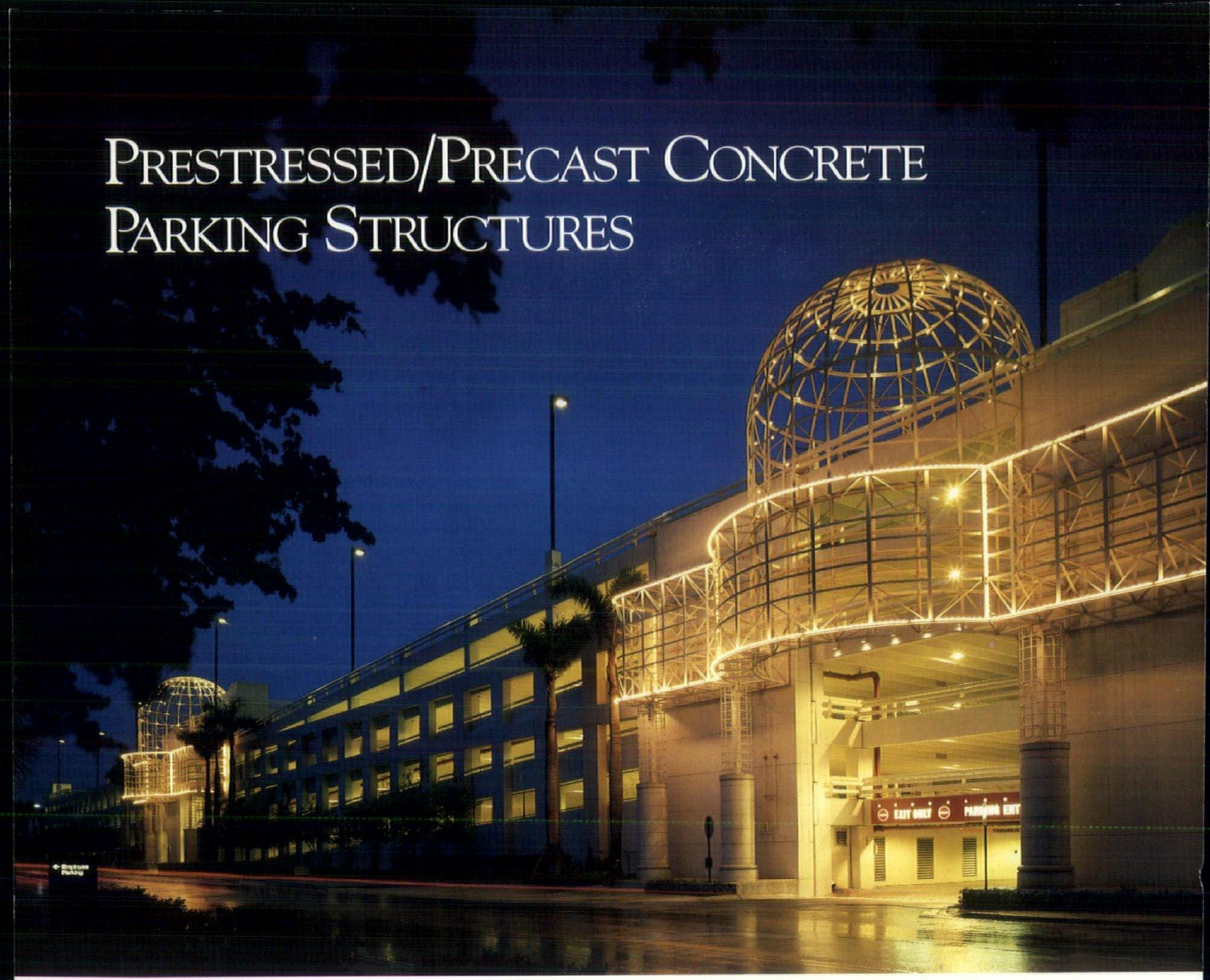
THE AMERICAN INSTITUTE OF ARCHITECTS

Florida Association/ American Institute of Architects

Marianne Jensen

(904) 222-7590

AIA Documents...the foundation for building agreements.



Top Line Quality... Bottom Line Results.

Prestressed/Precast Concrete has become Florida's building system of choice for Parking Garages. The reason? An owner receives the highest quality structure at the lowest first cost. And the savings continue for the life of the garage.

Lower maintenance costs and formidable resistance to Florida's corrosive environment are characteristic of high-strength Prestressed/Precast Concrete. The resultant service life of your garage is extended adding long-term protection to your investment dollar.

Long, clear spans, made practical through a unique manufacturing process, provide a pleasing, open interior facilitating a user friendly traffic flow. The solid good looks of Prestressed/Precast Parking Structures can be displayed functionally as finished concrete or accented with attractive surface treatments.

So, before you design or build your next parking garage, consider Prestressed/Precast Concrete and... Consider your bottom line.

For a free brochure on the benefits of Precast/Prestressed Concrete Parking Structures and upcoming seminar information call or write: Florida Prestressed Concrete Association, 1850 Lee Road, Winter Park, FL 32789 • (407) 740-5297.

FLORIDA PRESTRESSED CONCRETE ASSOCIATION INC.

Circle 1 on Reader Inquiry Card

This message made possible, in part, through the contributions of the following FPCA Sponsor Members who provide quality materials and services to the industry:

Florida Wire & Cable Company
Jacksonville 1-800-433-4204

Lafarge Corp. - Florida Cements
Tampa 1-800-282-9171

Brooksville Cement
Brooksville 1-800-727-6261