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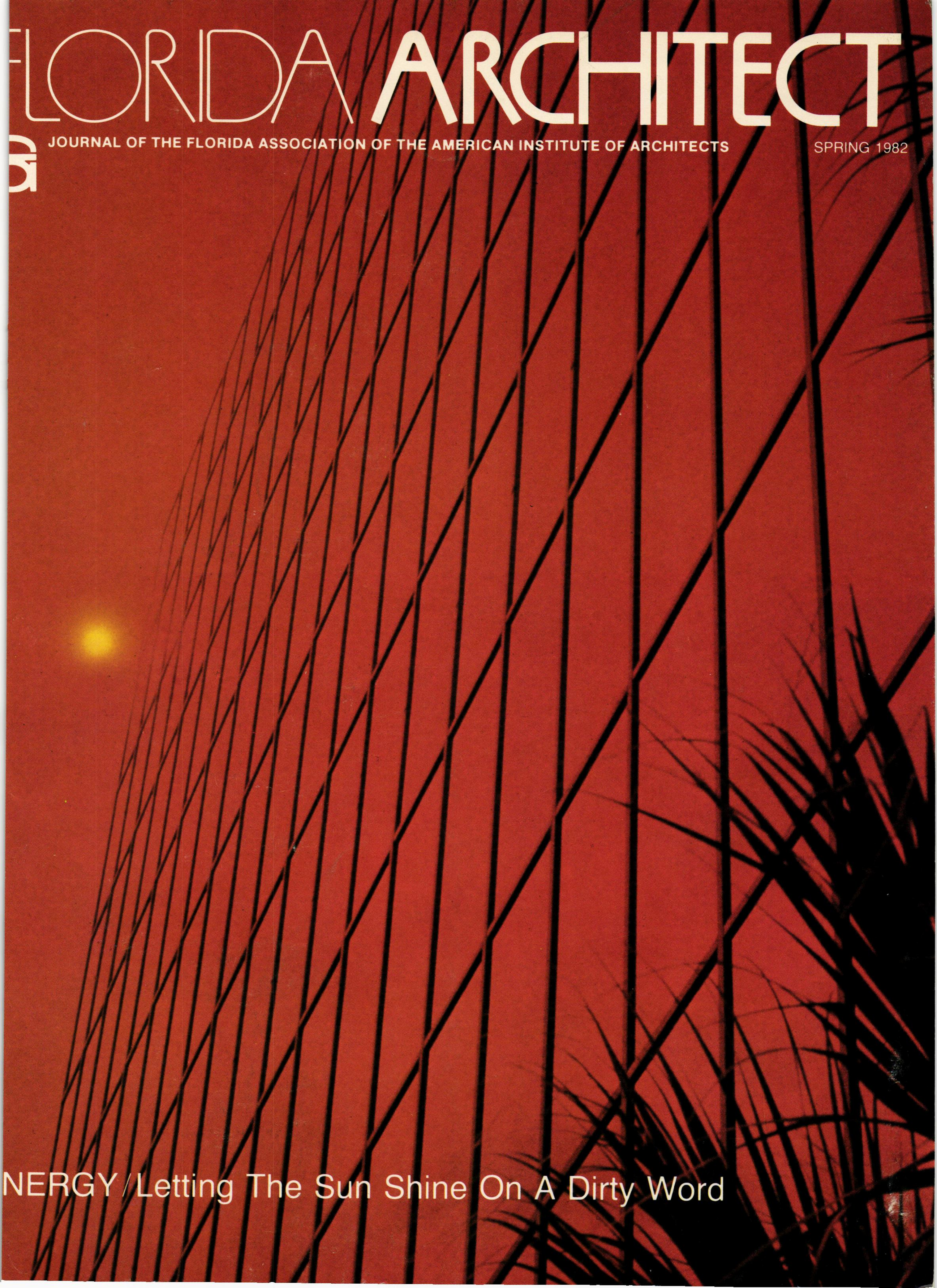
JOURNAL OF THE FLORIDA ASSOCIATION OF THE AMERICAN INSTITUTE OF ARCHITECTS

SPRING 1982



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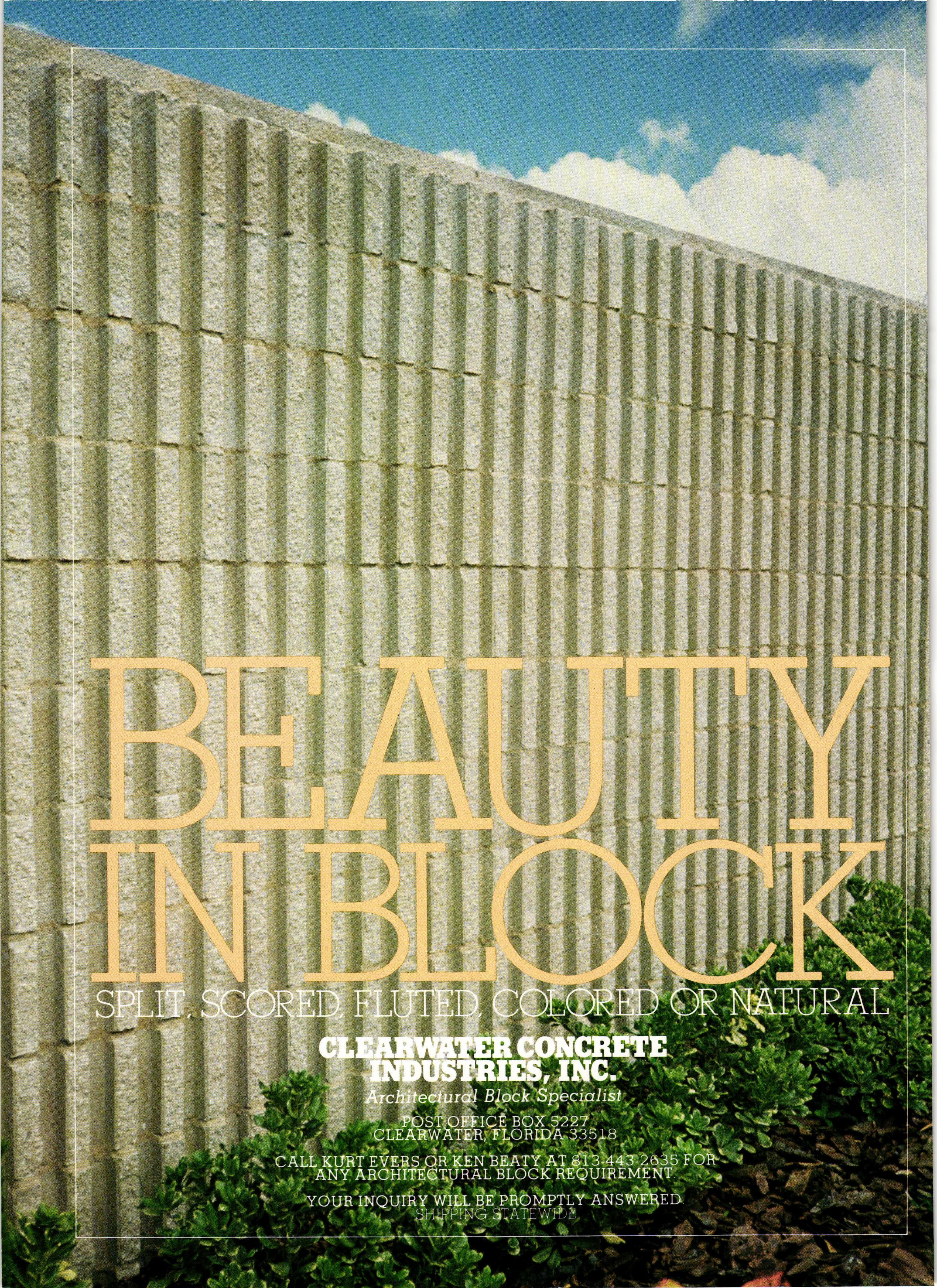

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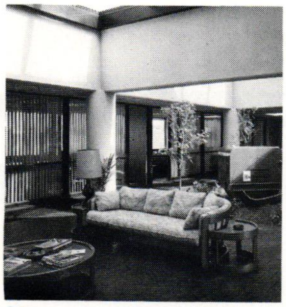

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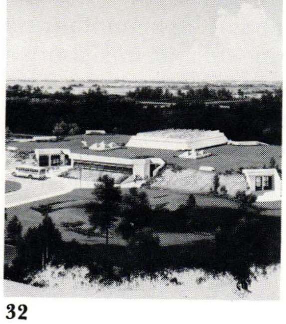

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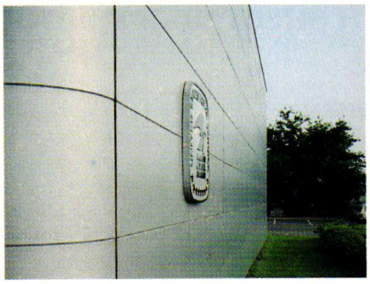
DEPARTMENTS

Cover Photo by
Bob Braun.

THINK HORIZONTALLY

General Mail Handling Facility, U.S. Postal Service, Huntsville, Alabama Architect: Northington, Smith, Kranert, Tomblin Assoc. General Contractor: Bryson Construction Co., Inc.

Design in a new direction with the horizontal look from Robertson



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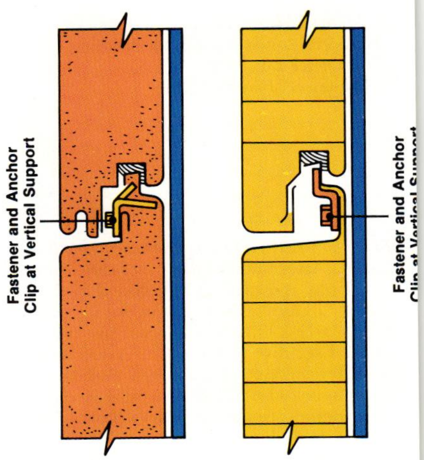

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Foam Core Panel

Formawall 2000
2″ Thick
Honeycomb Core Panel

Robertson

We, as a nation, have watched the rapid depletion of our major fuel sources with little care or concern about what lay ahead. But, no longer. With the discovery that we, the people, had "sliced, diced, chopped and grated" ourselves right into a national predicament came the question, "If we are to keep our food processors processing, where will the "juice" come from?"

It occurs to me that in our evolution into the fully automated and highly technical lifestyle of the 80's, we have come full circle in terms of the means by which we automate our very existence.

While conventional (i.e. "dirty", as our catchword on the cover states) fuel sources dwindle and continue to rise in cost, the search for a place in the sun becomes ever more frantic. In Florida, we're lucky. We're already in the sun. The resource is here . . . we have only to take advantage of it. Nationwide, however, the energy situation is dire. Energy-conscious design in architecture is no longer a goal . . . it's a style.

In the year 2000, we may reflect on the fact that during the 80's energy conservation emerged as the predominant determinant of architectural style. At the national level, the impetus is already there. The American Institute of Architects devoted its full attention to the problem last year, a year which JOURNAL Editor Donald Canty described as "the most focused in the organization's recent history."

In this issue of FA, we'll examine four projects which can proudly flaunt the fact that energy is their "style." Geographically, they cover the state from north to south. They vary greatly in size and design. But, collectively they are the products of great care for the future of both architecture and our energy sources. These are buildings which were designed at a time when conventional fuel sources were nearly gone to last well into a time when they would be completely gone.

—Diane D. Greer

LETTERS AND NEWS

Dear Editor:

What a pleasant surprise to receive the winter issue of the "Florida Architect" and see my neon design "Neon Rainbows & Florida Clouds" at the Orlando International Airport on the front cover.

It was exciting and rewarding to be a part of the design team for this project. I feel that credit should be given to the two creative architects who gave birth to this tremendous project. Duane Stark of Schweizer Associates and Walter Taylor of Kemp, Bunch & Jackson led the design group from initial concept through completion of this project.

Without their individual talents and dedication to this project, the Orlando International Airport would not be the functional, practical and flexible project that it is.

The new "Florida Architect" magazine is a welcome quality publication that the Florida Association can certainly be proud of. The quality of print and publication certainly puts it in a category of its own in trade magazines. Good luck with future issues.

Very truly yours,
Robert J. Laughlin, Jr., I.A.L.D.
Lighting Specialist
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Dear Editor:

Thanks so much for the generous contribution to Florida House from the Association. As per our conversation last week, I'll look forward to receiving from you the list of chapters who contributed toward the donation. As I mentioned, those who gave $25 or more will have their chapter's name inscribed on our '82 contributors' plaque. If you'd like, I will be happy to drop a note to each, acknowledging their contribution and informing them about the plaque.

I meant to chat with you when you were here about the possibility of your doing a story about the House in "The Florida Architect". The magazine did a story about Florida House back in 1975 and I wonder whether you might consider doing an update. If so, I'll be glad to write something or to work with your editor in putting something together. I'm sure the association has many new members now and we would welcome the opportunity to inform them about "their House."

Again, best thanks for your support.

Sincerely,
Nancy Elliott
Director, Florida House

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1857 * 1982 The First 125 Years

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THE AMERICAN INSTITUTE OF ARCHITECTS

COST-BASED COMPENSATION

By H. Samuel Krusé, FAIA, AICP

A story has circulated that the General Services Administration of the Federal Government designed all its buildings and estimated probable construction cost plus the Fed's administrative costs, including *6% of the probable construction cost for hiring an A/E team to prepare the bidding/construction documents.* In this way a budget could be set for a project sent to Congress for approval and ample appropriation.

For many years the architect's fee was 6% of probable construction cost, following precedent established by the Feds. Unfortunately, many architects did not know that the Fed's 6% did not include design and contract administration by the architect. Whether clients also did not know is not substantiated, but it is known that many architects performed AIA described basic service for 6% of construction cost, believing it to be adequate compensation.

In the interest of teaching membership what percentage to charge clients for architectural services, the AIA, at local, regional and national levels, conducted surveys to establish some justifiable percentages of construction costs for various types of buildings of differing complexities. Many charts were developed and distributed based on the membership's high-medium-low fees charged for various projects.

The survey's important revelation was that little relationship existed between the architect's costs to render architectural services and the clients costs for the construction of a project. It was found that an architect's effort was greater for an economical project than an expensive one, and the same was true in contract documents, whether economically or generously financed.

The complexity of the design/build process demanded further study. The AIA employed Case and Co. to conduct a national survey to determine not only what fees architects charged, but also the costs to the architect to render professional service. Case and Co. was also employed to evaluate the data collected.

Two shocking conditions were uncovered by the Case and Co. survey: (1) architects do not keep accurate records, and (2) architects did not earn profits on 25% of their projects.

This revelation was followed by another shock. The Federal Government charged the AIA (presumably its members, spouses and children) with violating the Sherman Anti-Trust Act by disseminating ranges of fees within which an architect should expect to make a reasonable profit.

It became apparent that architects and their fees were now part of the business world (some call it the market place, others the snake pit), and not august members of a profession dedicated to a social art.

The American Institute of Architects' staff, with the assistance of a blue ribbon task force, groups of clients and allied professionals, developed a new approach for determining compensation for professional services. This involved calculating fees based on the architect's unique service to the client's specific project.

The new concept made its debut in the February, 1975 Edition, "Compensation Management Guidelines for Architectural Services, A Manual on Cost-Based Compensation", (AIA Catalog No. M-188). In its preface, AIA Past-President William Marshall, Jr., FAIA, writes: "The determination of the appropriate level of compensation for specific services can be as simple or sophisticated as a firm's record-keeping procedures permit. Adoption and widespread use of these guidelines holds forth the promise that unprofitable commissions will be a thing of the past".

Unfortunately, the new guidelines depend upon two climates of behavior rarely found in architectural education and practice:

(1) Office record-keeping; and
(2) Forecasting the time and type of effort needed to satisfy the requirements of a specific project.

Both are ingredients in planning and managing an architectural practice; both are *experience factors* which are learned as the practicing architect is forced to maintain proper records and becomes aware of the benefits derived therefrom.

Since office record-keeping is required by a number of tax and insurance related laws, it is to the practitioner's benefit to have a single record-keeping system, which will not only satisfy legal obligations, but also help the architect to plan fiscal goals, determine the gross income needed to achieve the fiscal goals, and the basis for calculating the fees required to support the fiscal aspirations of the practice.

There is a simple eight-step planning process for establishing what a firm's annual gross income must be to meet desired fiscal goals. The steps involve data easily found in a required office record, provided the records are kept in the proper journals.

(1) Select the minimum acceptable personal salary for principals.

Unless the firm is organized as a coop, the principals' salaries are the only negotiable ones. A principal's time is usually divided between direct and indirect time. Therefore, the principal's time is recorded on sheets showing time productively spent on each project. From these time records not only are legal data recorded, but the direct costs of personnel effort for each project. This data is a significant part of what is called *experience factors.*

(2) Agree on the division of principals' time between direct client services and business administration.

This step is integral with step (1). Time for direct services for the client is considered as income-producing or *direct personnel cost.* Business administration, for which nearly every principal spends some of his time, is considered overhead or non-productive or *indirect personnel cost.*

(3) Estimate the number of personnel needed to produce work directly related to the year's projected projects and their total cost to the

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AIA Site Selection Committee in Orlando

Bruce Patty, FAIA, gets out of the helicopter he toured Orange County in with other members of the site selection committee.

R. Bruce Patty, FAIA, Regional Director of the Central States, Robert Gramann, AIA, Regional Director, Ohio and Francis X. Brown, National Administrator for Conventions and Special Events for the AIA were in Orlando in January as the guests of the Mid-Florida Chapter of the AIA. These men compose the Site Selection Committee for the 1987 AIA National Convention which will hopefully be held in Central Florida. Orlando is competing with Baltimore and Denver for the honor of hosting the 1987 meeting. Last year, Orlando was runner-up in the selection of a place for the 1986 meeting.

While in Orlando, hosts Gene Bebermeyer, AIA, Chuck Braun, AIA, Guy Butler, AIA, and Lou Evans of the Orange County Convention Bureau gave the committee members a tour of Epcot and the Orange County Convention-Civic Center which is now under construction. They also had a helicopter tour of the entire Central Florida area.

During the committee's visit, the Mayor of Orlando and the Chairman of the Orange County Commission proclaimed it "Architecture Week" in both Orlando and Orange County.

Florida South Chapter Installs Officers, Confers Awards

The 1982 Officers and Board of Directors of the Florida South Chapter of the American Institute of Architects were installed recently at a formal gathering at Reflections On The Bay.

State Senator Richard R. Renick installed the office holders which now include: Walter B. Martinez, President; Raul L. Rodriquez, Vice President; R. Jerome Filer, Secretary; J. David Perez, Treasurer.

The Chapter Directors are: Ira D. Giller, Robert Koger, Hedvika Meszaros, Ronald W. Robinson, Don Sackman, Raul Ocampo, Jr., David Harper, Javier F. Cruz, Jesus Cruz and H. Richard Schuster.

Norman Giller, a Miami Beach-based architect was awarded the prestigious FSCAIA Silver Medal award, "for his distinguished professional work and valuable contributions to the chapter over an extended period of time."

In another presentation, Cuban-born architect Santiago Jorge Ventura was recognized for his many contributions to the organization of Cuban Architects in Exile. Ventura is the Past President of that organization.

AIA Energy Workshops Planned

More than one hundred architects have attended the three comprehensive "Energy in Architecture" programs in Florida so far and the seminars will remain a top priority this year to help meet the energy conscious design needs of the construction industry statewide.

Nationally, the AIA will conduct 75 workshops in 1982, with an additional 75 scheduled for 1983. Forty workshops were conducted in 1981.

This widely acclaimed three-year Energy Professional Development Program recently produced its second graduating class—12 design professionals who completed the entire three-tiered workshop series in Wichita, Kan. (The first class completed the series in Peoria, Ill.)

"I believe the AIA has placed in my possession an exceptionally valuable tool with which I can better serve my clients," said Topeka architect Robert D. Onek, AIA, one of the most recent graduates.

"The Institute should be congratulated on an outstanding program, and this program should be encouraged to the best possible and widest participation," continued Onek. "The Institute has assembled an outstanding faculty of well-read and well-respected individuals in their fields. Let's not stop now, but continue this direction in the future."

Toward this end, the AIA has named program development administrator and professional management consultant Donald R. (Chip) Levy, Sea Girt, N.J., as director of the energy workshops. He will coordinate all facets of programming, budgeting, policy development and other aspects of the program nationwide. Levy can be reached at the AIA national office, (202) 626-7458.

Launched last year as the Institute's most ambitious educational effort, the "Energy in Architecture" program will be offered to thousands of design professionals in all parts of the country this year. Workshops scheduled for early 1982.:

—"Techniques" (level 2), May 7-8, Miami, Fl.

—"Process" (level 3A) September 10-11 (tentative) Orlando, Fl. Contact John Newlin, (305) 647-5767.

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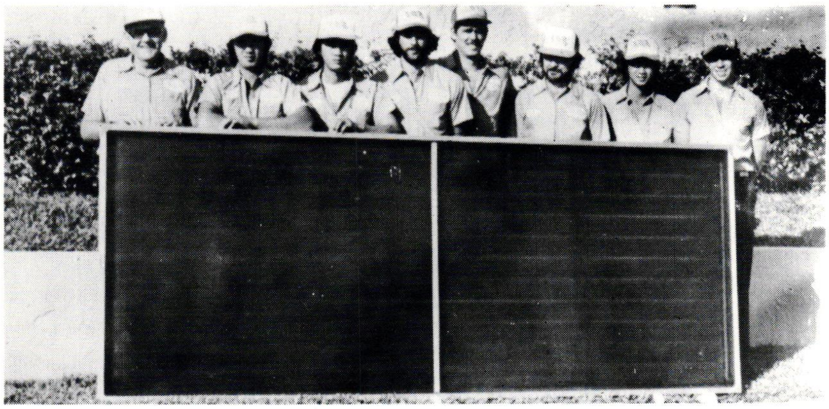

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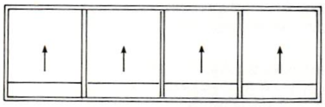

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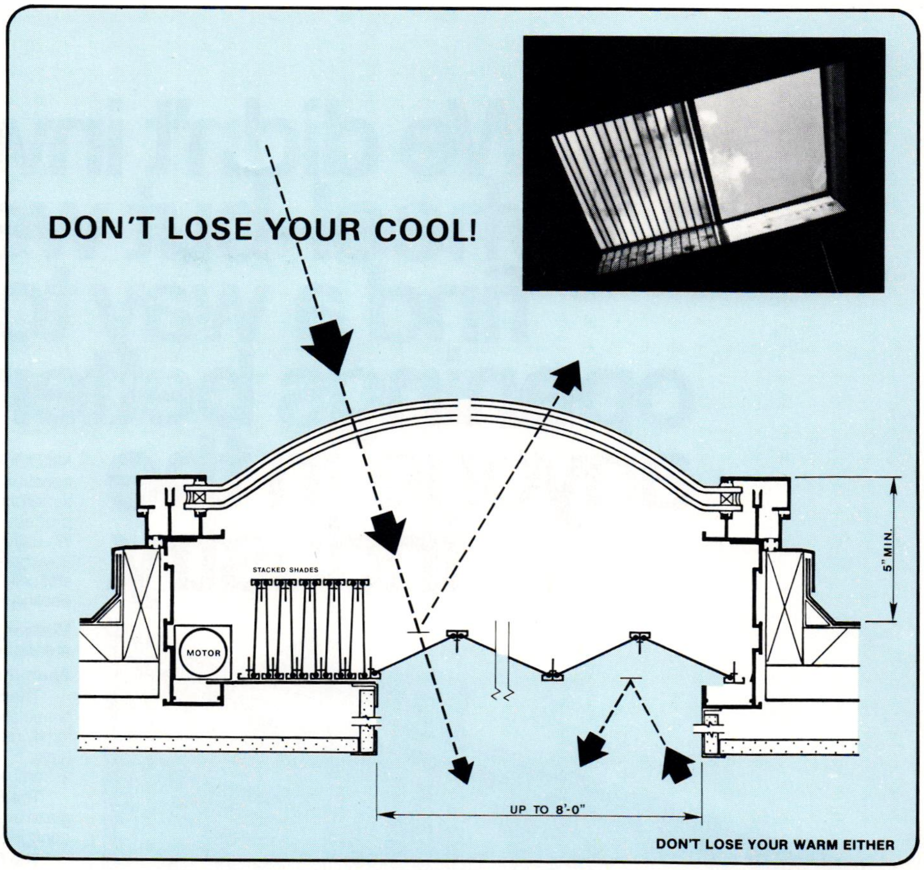

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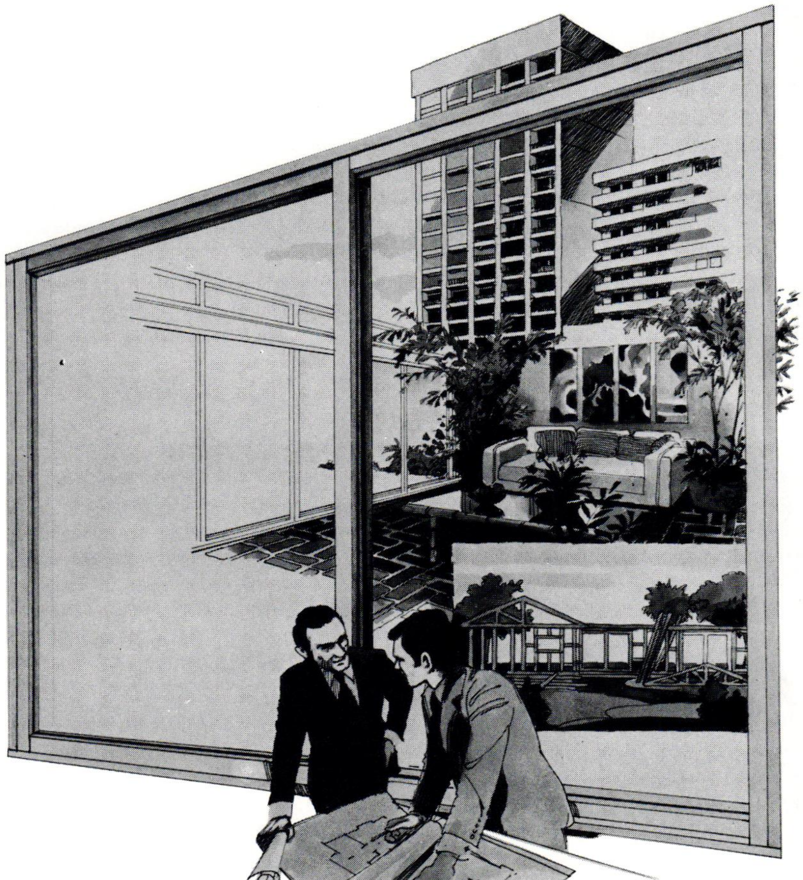

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ENERGY LETTING THE SUN SHINE ON A DIRTY WORD

by Diane D. Greer

We've titled this issue of FA, "Energy: Letting the Sun Shine On A Dirty Word." More than a cute catch-phrase, this seems a highly accurate description of today's energy situation.

Energy conservation is a Pandora's box of problems for architects. Clients are skeptical. Contractors don't want to get involved in passive or active systems. More often, they view energy conservation as more and heavier insulation. Engineers seem to support the active systems, but steer clear of the passive ones. All of this, I regret to say, is perfectly understandable.

We are a society raised in the mechanical-technological mode. The new energy systems, particularly the new solar systems, remain vague and mysterious to owners and contractors alike.

Interesting, however, is that the antithesis of this mechanical-technological response to high-tech energy is an historical precedent based on a set of principles which evolved from logical use of the elements: heat from the sun, insulation from the earth, cooling breezes and shade. The earliest and most primitive houses provided only shade. Ventilation followed as houses were raised on stilts. Sod houses, adobe and air locks on igloos have all been in use for a long time, and successfully so.

Another offshoot of the energy crisis, as specifically affects architects, is the old "chicken and egg" dilemma applied to energy conservation and design. Sometimes the best solution to a problem from the design standpoint isn't the best from the energy standpoint. Does the architect compromise on design to make things work? And, which comes first? Do we design buildings and then try to make them energy efficient or do we let energy conservation methods dictate design?

There are prominent architects such as Ed Dean, AIA, of Shelley Dean and Fuller in California, who feels that energy is not a style, nor does its technology impose design limits. Dean recently stated that, "In an area of architecture where so many guidelines, regulations and publications have so recently been written—at such great expense—there is simply no substitute for design." Dean feels that energy provides no more an *a priori* basis for architecture than structure or materials.

Others disagree.

In his address to the opening business meeting at the AIA National Convention in Minneapolis last May, President Randall Vosbeck said, "More and more I hear this profession saying that energy is not an afterthought in the design process. Energy is a design concern that cannot be pushed off on the engineers as exclusively their problem."

New York City architect and researcher Richard G. Stein, FAIA, puts it even more vehemently. "The impact of energy on the design process will have a more profound and lasting effect on the shape and appearance of our buildings, our cities and our suburban and rural areas than any other single factor."

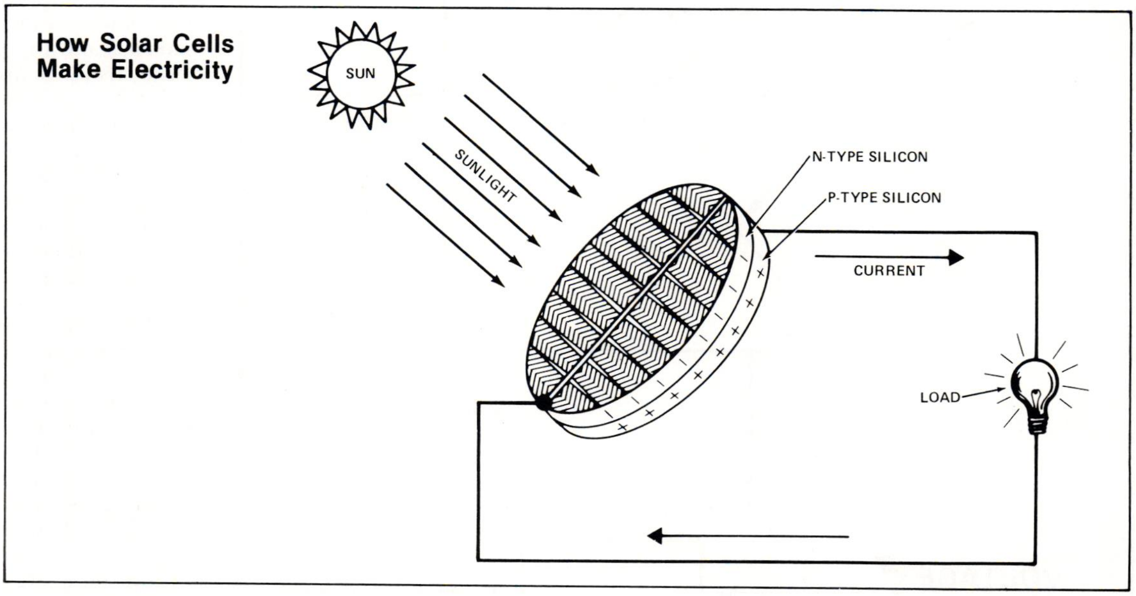
Stein goes on to say that energy "will make the whole discussion of Post-Modernism, the building as a metaphor and the reintroduction of Renaissance ornamentation seem to be a diverting, but unimportant, perturbation in the larger current of architectural development."

So there is disagreement within the design community, but on the whole architects seem to believe that energy-conscious design is something owed more than lip service.

Unfortunately, the problems associated with energy are not clearly defined and there are no clear strategies for their resolution. Moreover, the architect is caught in the middle in this painful dilemma. He has a responsibility to his client and to himself — he must be form-builder, problem-solver and guardian of the built environment all at once. He is only irresponsible if he fails to be energy-responsive. ■

PHOTOVOLTAICS: THE HIGH TECH ALTERNATIVE

by Ivan Johnson, AIA and Al Simpler



Editors Note: Photovoltaics has been touted recently as a "rising star" on the energy scene—the alternative of the enlightened segment of the population. Photovoltaic energy is safe and clean, but not cheap. Except for its initial cost (and it does promise great dollar savings over the long haul), it seems a very nearly perfect system.

As to the cost, most solar cells are currently made from crystals of high-purity silicon, grown over a long period of time. Much of this material is then wasted in the cutting process, which is accomplished by diamond-edged saws cutting the crystals into wafers. The high cost of photovoltaics will probably not be resolved until the painstaking and time-consuming process of growth and cutting is reduced.

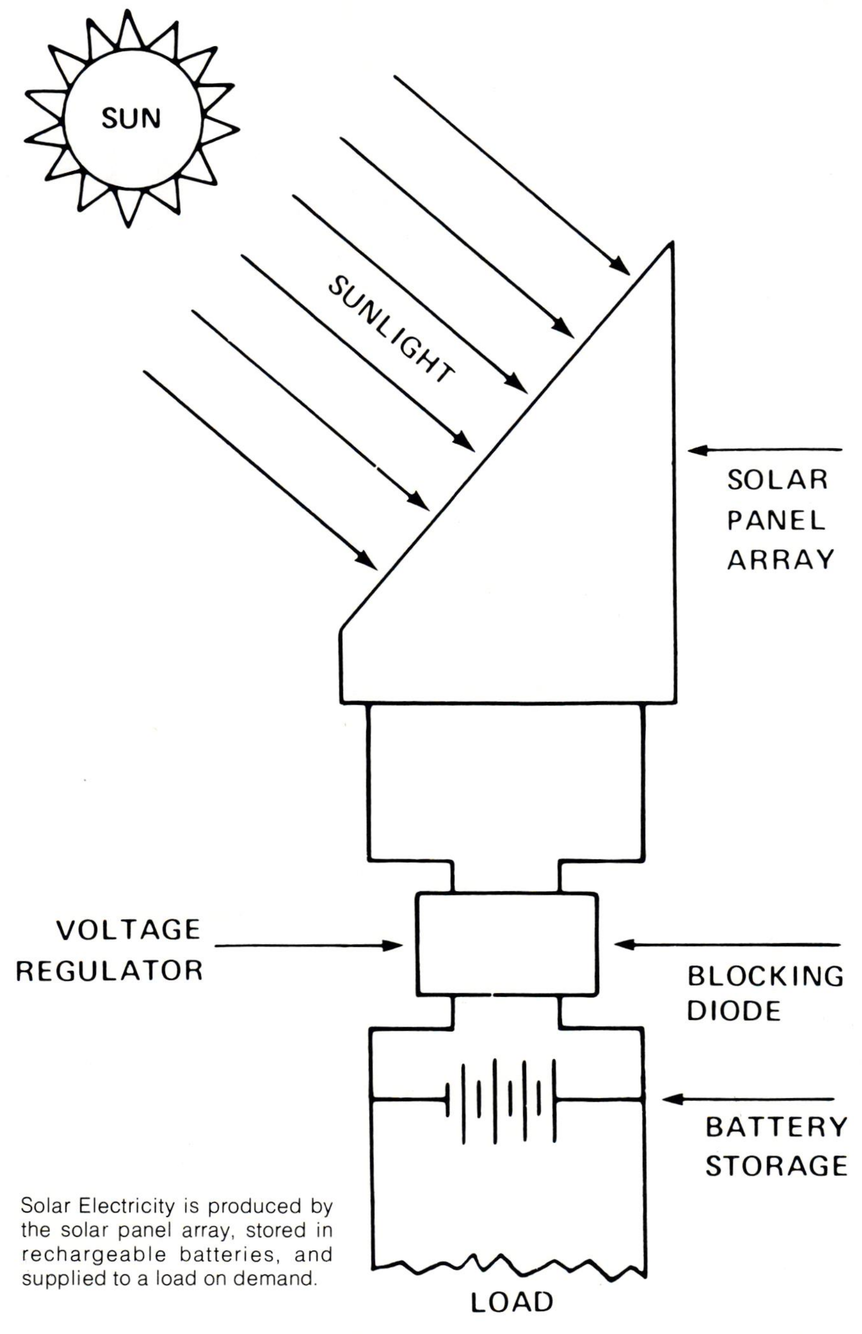
In the meantime, systems such as the one designed by Tallahassean Al Simpler, and described in the following article, are being pioneered for use in far-sighted, ambitious design projects such as architect Ivan Johnson plans for the medical complex discussed here.

Have you ever wanted to incorporate a solar electric generating system into a building design, but been unable to keep a straight face when telling your client how little the system will cost when compared with this year's Rolls Royce? It's a tough presentation for an architect to make. Sure, we've been designing with passive energy principles for some time. Some of us have even been able to justify the use of sophisticated active energy systems. But, it's a rare occasion when a client emphatically requests the inclusion of such a system in a new building . . . no matter what the cost!

Yet, this is the experience we had recently with two Tallahassee physicians whose burgeoning practice necessitated the design of new offices. Neither doctor is a millionaire, nor are Tallahassee's utilities unreasonably expensive, unreliable or unattainable. Dr. Stephen J. Gross, however, is an enlightened futurist, and with this commission the opportunity presented itself to try a solar electric generating system using a photovoltaic power source. Dr. Gross, and his associate, Dr. Stuart Shapiro, agreed.

Although the building will still be tied to the municipal power system as a back-up, the solar electric generating system will be designed to furnish electrical power for all HVAC, lighting, appliances and medical equipment. The site the doctors selected is heavily wooded with a mixture of deciduous and coniferous trees. The only open area is to the north.

There is no plan at present to remove any more trees than necessary, and even if all the trees were removed, the adjacent property to the south would still shade most of the medical center site. Given the location of the site and the large number of trees lo-



Solar Electricity is produced by the solar panel array, stored in rechargeable batteries, and supplied to a load on demand.

cated on it, the planning and design of this office complex will be a real team effort between the architect and the designer of the energy system.

The system planned for the medical office consists of 4 foot by 1 foot photovoltaic panels which are wired in "parallel" to produce a 12 VDC output. As panels are added, the amps increase to the desired system size. If high-efficiency DC appliances are to be used, such as DC fluorescent lighting, DC refrigerator-freezer, DC ceiling fans and circulating motors or DC water pumps, then not more than one-third of one side of the roof space should be required to accommodate an adequate array of solar panels. The solar array is then connected to a battery-conditioning device which allows the battery to charge fully and then maintain "peak charge"." As many DC appliances and pieces of equipment will be used throughout the building as possible, but a common 115 volt AC line must also be available for specialized equipment. We have decided to use Honeywells PowerLine DC to AC Automatic Demand Generator which produces clean sinewave 115 VAC on an as-needed basis. This is accomplished by means of a sensing circuit. When an x-ray machine is turned on, for example, the automatic generator immediately produces the AC current needed to operate the x-ray machine for the length of time the machine is running. The generator automatically shuts down when the x-ray is no longer in use. Care must be taken, however, to place these generators on separate circuits. If an overload takes place, the generator automatically shuts down for about two minutes, then resets to protect the equipment from "low voltage." This is a condition which should never exist, however, if care is taken to design the system with as many sub-systems as is physically possible through the design and layout of the office itself.

In designing a "stand-alone" energy system, which simply means a system with no outside utility grid hookup, several important factors must be taken into consideration. Site, building materials and the passive solar design of the structure are all important. Such things as utilizing the sun's energy for heat retaining walls, thermal windows, heavy insulation, solid core doors and locating the water heater in a heated space like the attic are all laid out in the Standard Building Code and all architects should be familiar with the Energy Performance Index (EPI) for new construction under the SBC. The EPI rating on a building ranges from zero to 100 points. A building with a rating of 50 will supposedly use one-half the amount of energy required of a building with a rating of 100. There are many designs now in use with EPI ratings of 25 and less and these are the types of buildings which allow independence from the power grid because they are maximizing the energy of the sun in passive solar design and perhaps some active solar water heating or other high-efficiency equipment.

Since equipment and appliances to be used in the office will have been predetermined and the amount of energy needed to operate them already computed, it is possible to select the most efficient equipment possible. It is this ability to select the appliances which are compatible with our system that allows us to use photovoltaics as an electric generating power source both economically and efficiently.

Helpful to an understanding of the PV system and how it operates is an explanation of some of the more commonly used appliances and how they operate in this system. First of all, the hot water heater. Electric water heating is one of the largest wastes of electricity in modern buildings. This PV system replaces the hot water heater and tank with a couple of Gulf Thermal or high-efficiency solar water collectors with 120-gallons of stored hot water tank space. This unit is placed in the attic, where it's already warm, and then the attic is insulated with three inches of polyurathane foam. This much insulation on that large a tank will have a Delta drop in temperature of only about eight degrees over the entire night that the tank is storing hot water before the solar collectors are able to heat it up again in this "closed loop" system.

At this point, we might also mention the use of solar water collectors as the primary means of heating the air space in the building. This is done by utilizing a small flow pump and what are now called baseboard heating coils which are placed along the baseboards to permit the circulation of water from the solar collector through the baseboard exchange plates. This draws the cold air off the floor and the hot air off the plates rises up into the room. Thus, we have a completely solar heated building. In addition, we could utilize the sun's low angle coming into the southerly facing windows and hitting a heat-retaining wall, thus maximizing the sun's energy for space heating and solar water heating.

Lighting is another tremendous consideration in the energy needs of any building. We know now that incandescent lights last from five to 900 hours. A 90-watt bulb gives off approximately 1500 lumens. But, that same bulb is giving off a lot of heat with the 1500 lumens and it consumes 90 watts of electricity per hour that it's used.

Let's contrast that with a fluorescent light of 1500 lumens. A fluorescent light of 1500 lumens will burn approximately 15 watts of electricity and will last 12,000 hours. Fluorescent lighting is a source of illumination that gives off more light and less heat and will last 12 times or more longer and not generate an additional heat source that will eventually need to be cooled down by the air conditioning system. We've also replaced a 90-watt bulb with a 15-watt that provides the same amount of light.

Fans and motors are the next big consideration. AC motors consume a tremendous amount of electricity for the job load requirement. An AC motor will only run efficiently at a certain speed or a certain load. DC motors, however, will operate effectively at virtually all loads. A ceiling fan, for example, will operate with an 18-watt DC motor compared with an AC motor of 100 watts. Both move the same amount of air.

Up to this point we've discussed replacing traditional equipment with new high-tech, high-efficiency equipment that operates on 12 VDC rather than 120 VAC. DC has an apparent gain over AC when used in the type of equipment we've described here. It does have a voltage drop over a long line, so we will not use any long power lines to supply DC. We will use DC directly from the unit on short runs from the photovoltaic panels to the equipment. Another advantage of the system is that as photovoltaic creates DC electricity and stores it in the DC battery storage system, there is no conversion loss from PV to the DC equipment.

When all equipment is in place, the building is a total energy package with a power source and battery storage to carry it for six days of overcast weather. The operating system in combination with the six days of reserve energy should provide the building with complete independence.

It can't be stressed too strongly that there are many factors which must be taken into consideration if this system is to function efficiently. Site, building materials, appliances and equipment to be used, number of occupants, hours of equipment use, etc. Planning is essential between architect and engineer. Neither the design of the building nor the energy system need dominate given good, thoughtful planning from the time the building is conceived. ■

Ivan E. Johnson, III, AIA, is in partnership with Guy Wesley Peterson. Johnson/Peterson Architects of Tallahassee has designed a wide range of projects, most of which incorporate passive energy systems.

Al Simpler is president of Simpler Solar Systems and is recognized as one of the founders of independently powered photovaltaic housing. Simpler conducts seminars and workshops on designing photovoltaic systems.

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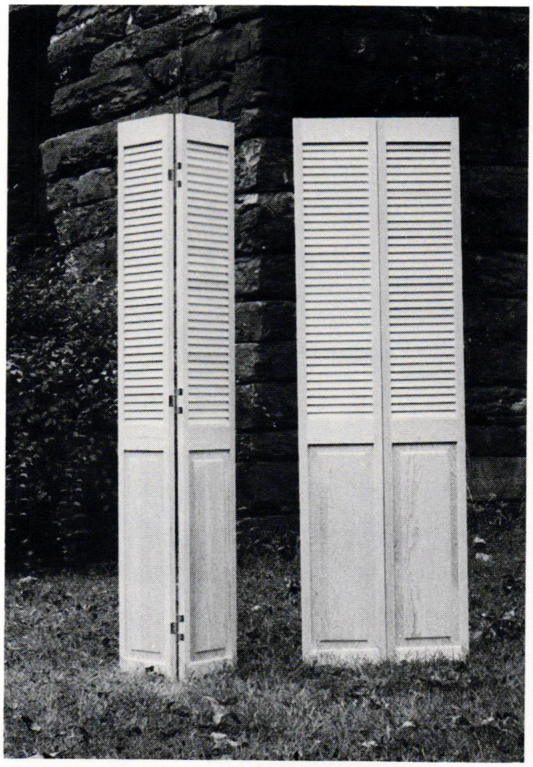
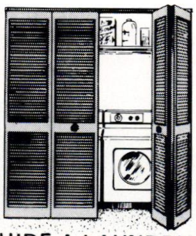


Above, 4-0 x 6-8 Louver-over-panel



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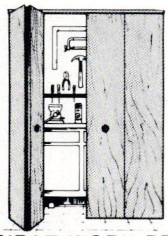

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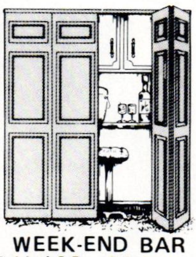

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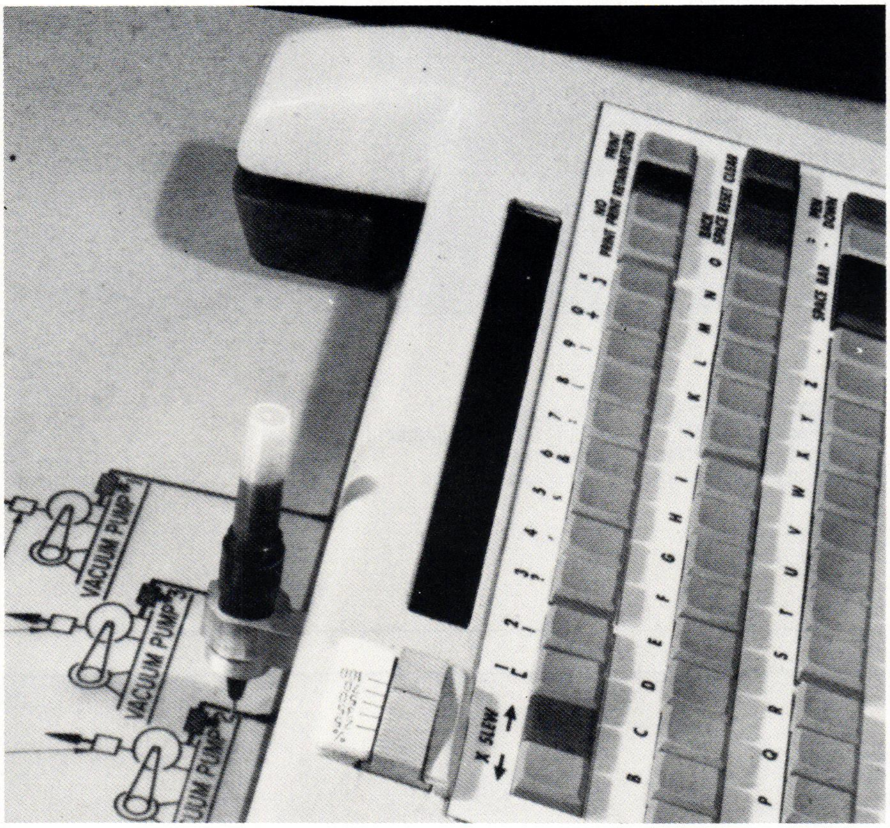

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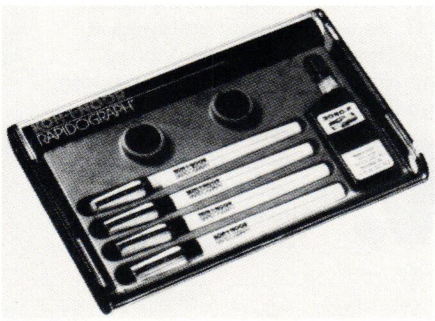

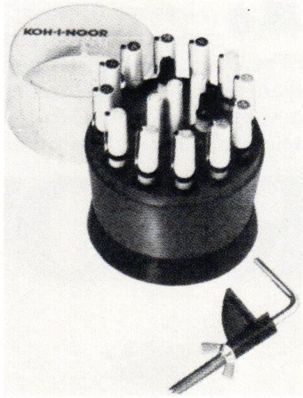

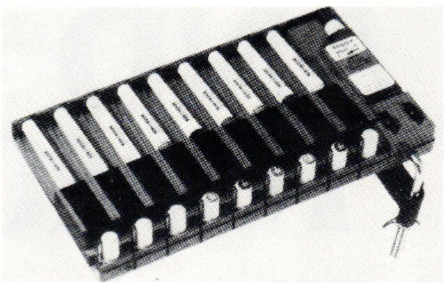

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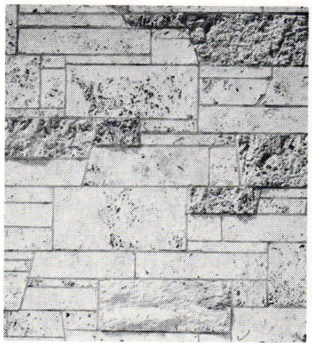
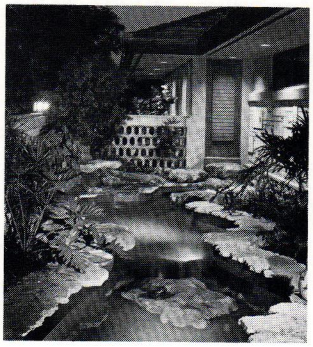
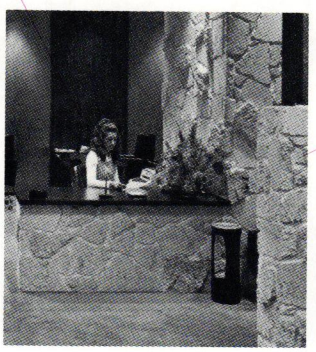
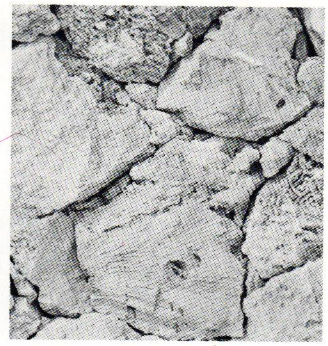

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ARCHITECTURE AND THE SUN IN JOINT VENTURE

by Diane D. Greer with John E. Stefany, FAIA

Atrium of Teco Plaza, looking up toward "SOLARIS," a photovoltaic-powered sculpture by SCOPIA. Photo by: George Cott, Chroma Inc., Tampa.

Associated Architects: McElvy, Jennewein, Stefany & Howard, Architects/Planners, Inc. and Thompson, Ventulett, Stainback & Associates, Inc., Architects
Interiors: Associated Space Design
Structural: Harald Nielsen & Tamer Uzun, Inc.
Mechanical: Britt Alderman Associates
Energy Evaluation: Newcomb & Boyd
Electrical: Carastro, Aguirre & Associates
Landscaping: Roy Ashley/Holmes
Development Agent: The Landmarks Group of Tampa
Contractor: Federal Construction Company

TECO Plaza is the new headquarters building for TECO Energy, Inc. and Tampa Electric Company. It was designed with energy conservation as the primary consideration. Through the use of a large interior atrium, the architects reduced the areas of building "skin" exposed to the exterior, thereby reducing overall heat loss or heat gain. The low-rise concept and large floor areas also contribute to maximizing the building's volume in relation to exterior exposure.

Various wall configurations were studied and shading for the glass was incorporated into the wall design. Tinted, double pane insulated glass was used almost exclusively to minimize solar gain and heat loss.

Air-conditioning in TECO Plaza is provided by a chilled water circulation system employing two high-efficiency water chillers which can be operated either one or two at a time. One of these chillers is equipped with a "turbo-modulator" which allows it to maintain its high efficiency while running at part load by varying the speed of the compressor drive motor.

Each floor in the building is served by two variable air volume air handling units which, besides having the ability to use less energy at part load, can be used to maintain desired space temperature condition in separate areas of each floor during non-standard operating hours.

Fifty flat plate solar collector panels with a total aperture area of 990 square feet are mounted on a supporting framework atop the roof penthouse. This solar hot water system supplies domestic hot water to all restrooms and also preheats domestic hot water used in the kitchen.

Lighting is provided in four classifications: task-oriented lighting, general lighting, daylighting (natural and artificial reinforcement) and decorative lighting. The majority of the lighting is the direct fluorescent type with an average power requirement of 1.5 watts per square foot. The installed system also includes manually controlled dimming. The building lighting system has been designed to accept the future addition of photocell controlled automatic dimming of the fluorescent lights around the exterior perimeter of the building as well as the interior perimeter of the atrium. The addition of this dimming equipment is contemplated as soon as state of the art equipment is available and will make a valuable addition to energy efficiency by automatically utilizing the natural light available through windows. The mechanical and electrical systems were also designed to accept installation of an energy monitoring and control system which will provide closer control of the individual systems and will also keep a close watch on energy conservation at TECO Plaza.

Since Tampa Electric Company is a utility company in the business of selling energy, it was imperative that the design of its new headquarters building reflect energy efficiency and low operating costs. The design of the building responds to this concern in numerous ways. Energy saving measures that were cost effective were utilized and the design conforms with the new and stringent Florida Energy Code.

The architects, in approaching the design of the new building of approximately 300,000 square feet, felt the creation of a large outdoor plaza or "people space" would be very desirable. Given the urban site, several building forms were considered. An approximately square 9-story building with a large open interior space or atrium was decided on.

This concept provided the greatest amount of floor area with the least exterior surface area. The smallest amount of surface area required per square foot of floor area provides the least amount of heat loss or heat gain.

By utilizing the entire site and keeping the building "low rise", significant savings were realized in elevator requirements and building structures with reduced windload requirements. Cost studies of all the building forms indicated that this scheme was the most economical in terms of initial construction costs and long term operating costs.

Above: View of Atrium floor through sculpture "Solaris." Photo by George Cott, Chroma, Inc. Tampa. Right: Main entrance, TECO Plaza. Photo by George Cott, Chroma, Inc. Tampa.

Although enclosed atriums have been built in the past, the more traditional pre-air conditioning method was to open the top of the atrium for ventilation. Today, however, with modern heating and AC systems, major savings in operating and equipment costs can be achieved by glazing the roof opening. In TECO Plaza, the atrium's 3,600 square feet of roof-mounted skylight replaces 28,000 square feet of otherwise exposed atrium wall. The building's air conditioning load is less with the enclosed (roofed) atrium than it would be without it.

Left: TECO Plaza. Photo by George Cott, Chroma, Inc. Tampa.

The enclosed atrium increases the number of feet of perimeter office space (office space at an outside wall) without exposure to the weather. This permits maximum utilization of natural light to the interior of the large floor areas. This was important since reducing the building height resulted in larger floors. Ninety-three percent of the office space is within 32 feet of natural light. This natural light permits the switching off or dimming of artificial light and the reduction of air conditioning required to overcome heat from artificial light. Artificial lighting and subsequent cooling consume the majority of energy supplied to a building.

The large floor areas, approximately 33,000 square feet each, allow a reduction of building height providing a lower surface area to building volume ratio minimizing exterior wall exposure. Large floor areas also provide for growth changes in the future.

Tampa's southern climate, warm most of the year, typically does not require insulating glass. However, to provide a more energy efficient building and to comply with the Florida Energy Code, insulated glass has been used on all the typical floors. The insulated glass is made up of two ¼″ panes of glass separated by ½″ of air space with sealed edges. The air within the space has a low moisture content to prevent condensation. In the TECO building, the outer panel of insulated glass is tinted to reduce solar radiation into the building and thereby reduce the air conditioning load. Tinted glass also provides visual comfort to the building occupants by reducing glare.

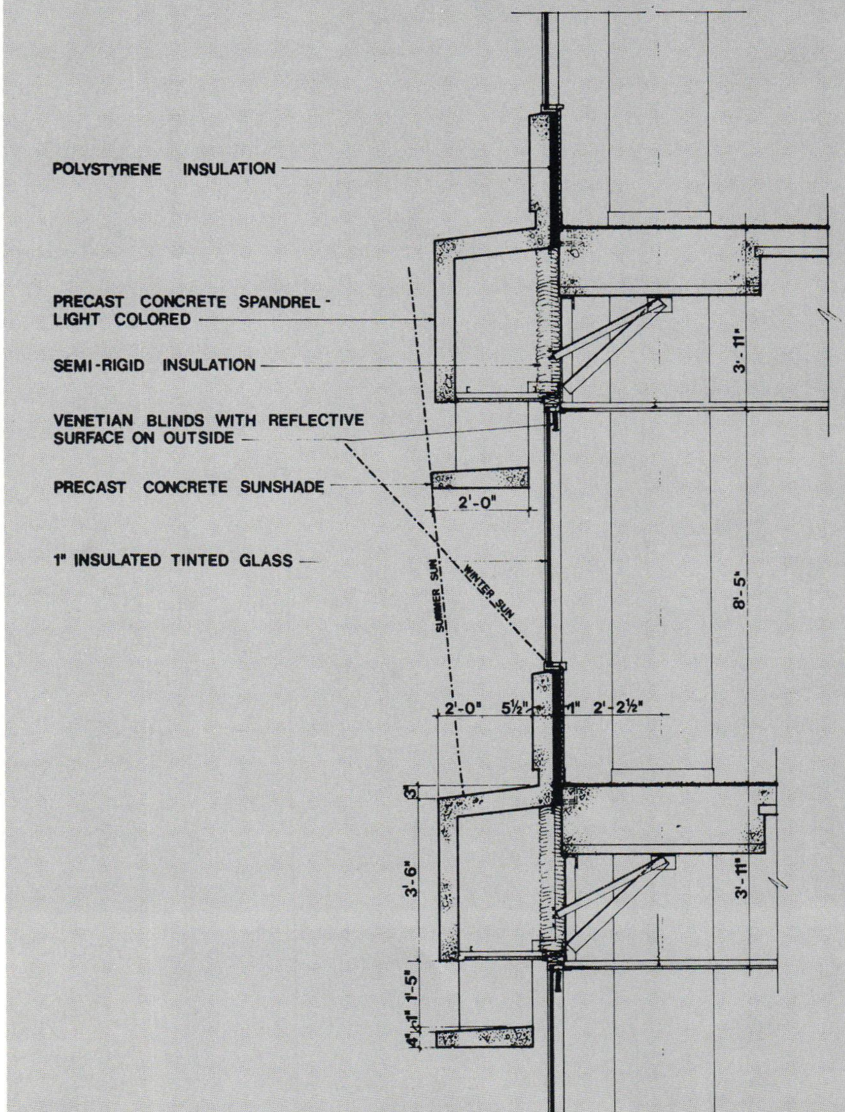
A different glass, a 'total vision system', was used on the lower two floors. The glass panels in this system are supported by glass mullions giving the wall a completely transparent look allowing pedestrian views into and through the ground floor level. In this case, the glass is required to be single thickness due to the structural nature of the glazing system.

Since the interior glass surrounding the atrium is not an exterior wall and consequently does not suffer any heat loss or gain, it is single thickness and full height, providing a feeling a openness from the interior spaces to the atrium. The skylights forming the atrium roof are not totally glass. One-half the skylight area is insulated metal panels to reduce the solar load and keep unwanted sunlight from entering office areas bordering the atrium. At the northwest entrance there is a revolving door to reduce the heating and cooling load to the atrium space.

The building designers studied several wall profiles by projecting sun angles onto the wall profiles at various times of the year before arriving at a wall design. The typical wall on the east, south, and west sides of the building consists of a spandrel between the glass bands which projects two feet beyond the glass line. In addition, a horizontal strip of precast concrete or 'eyebrow' is suspended below the spandrel. This wall design provides double shading to the glass and prevents sun from entering the building during most of the operating hours. By reducing the solar exposure of glass, the mechanical equipment and operating costs are substantially reduced.

Although the north side of the building does receive sun in the late part of the day during the summer, this solar load is low and the spandrel projection here was reduced and the 'eyebrow' omitted for cost effectiveness. The spandrels between the glazing and other solid partitions of the walls are light colored concrete panels and are somewhat heat reflective. Light colored gravel is used on the roof to reflect heat. The solid portions of the walls as well as the roof are heavily insulated. The walls have a "U" value of 0.039 and the roof a "U" value of 0.091.

Typically narrow slat venetian blinds, whose outside surface is silver, are used inside the glass to minimize heat gain by reflecting sunlight which could enter. ■



Typical Wall Section, TECO Plaza. Photo courtesy of architect.

HARDRIVES— A BUILDING CARVED FROM THE EARTH

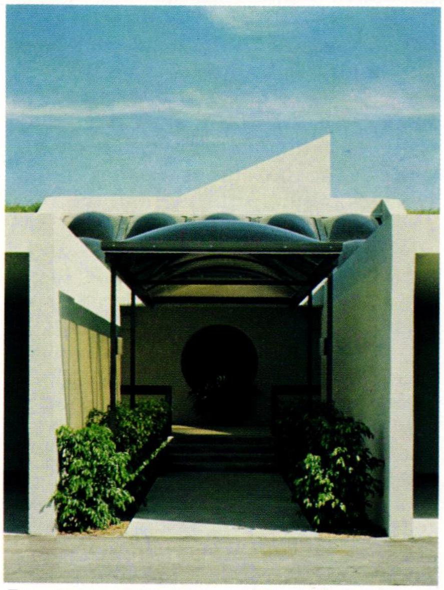
by Patty Doyle

Architects: Schwab & Twitty Architects, Inc.
Engineers: (electrical and mechanical) Arnold Chane Engineers; (structural) Mike Fried
Contractor: Shannon R. Ginn Construction
Land Planner/Landscape Architects: Schwab & Twitty Architects, Inc.
Building Owner: Mr. George Elmore, Hardrives of Delray, Inc.

When architects design buildings, they generally plan the design so the building is aesthetically pleasing from the outside in. They are seldom given the challenge to design a building which is aesthetically pleasing from the inside out. The Hardrives of Delray Inc. office building meets this challenge. An unusual structure which effects significant energy conservation, the building provides an inviting office environment in an industrial setting.

Hardrives, established in 1953, is a major South Florida paving contractor. Their new office building is located directly across the street from the company's concrete batch plant and equipment storage center. The 10 acre site is flat, was devoid of vegetation and has two communication towers with guy wires and a satellite tracking dish. From a conventional office building, the views would be unattractive.

Hardrives' basic request was for a one story, fireproof building of approximately 10,000 square feet, one that would provide a stimulating work environment internally and project a corporate image externally. The intent was to create a subtle exterior



Top: Atrium of Hardrives Building. Photo by Jim Duncan, Ft. Lauderdale.
Middle: Hardrives Office Building, photo taken from berm. Photo by Jim Duncan. Ft. Lauderdale.
Bottom: Employee entrance to Hardrives Building. Photo by Jim Duncan, Ft. Lauderdale.

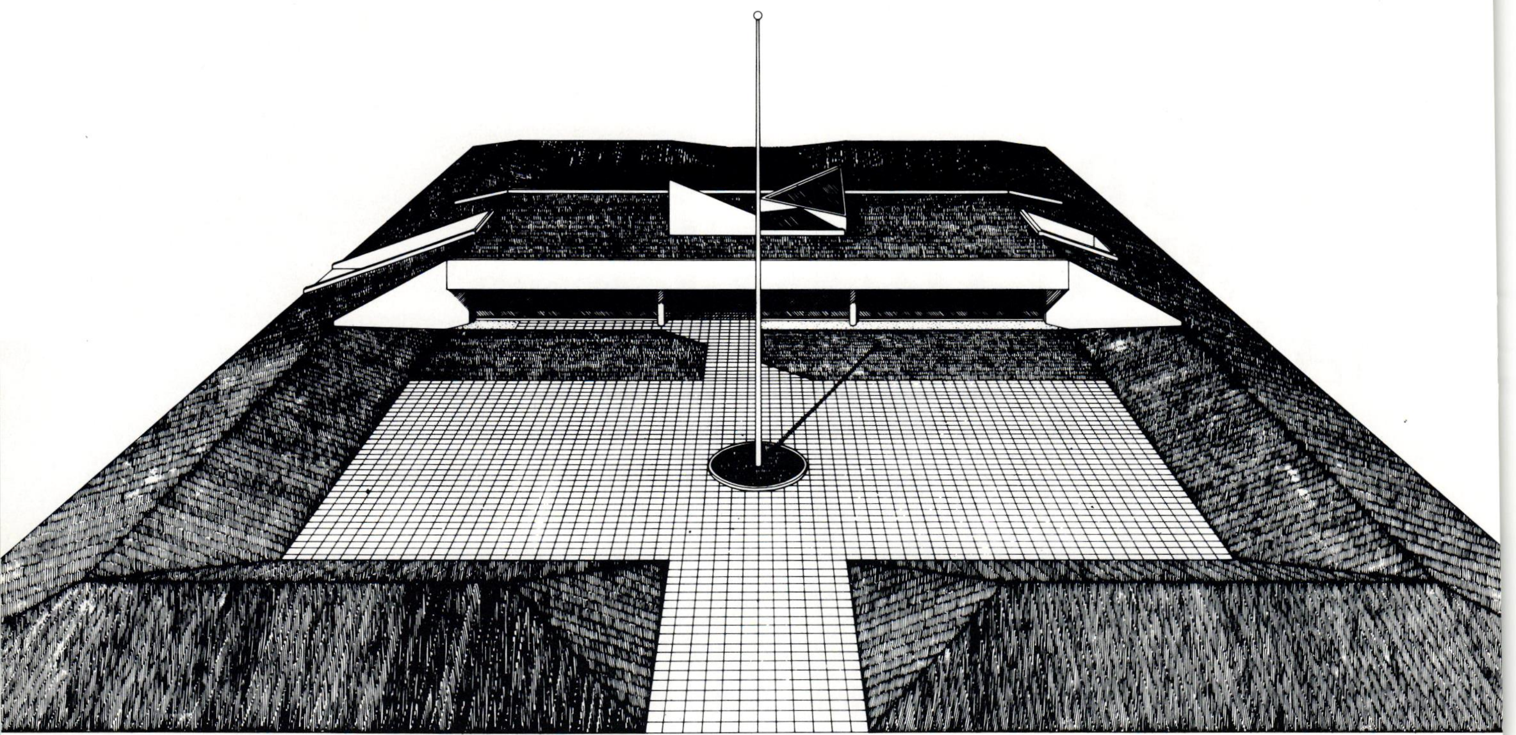
form that would not compete with the existing towers and guy wires and would screen the surrounding elements from the interior.

The result is 9,400 square feet of usable office space in a rectangular structure in the center of a larger rectangle of grass-covered 7′ high earth berms which encompass landscaped courtyards. The roof is also grassed and appears as an extension of the berms which are hand-graded and sodded with Argentine Bahia grass, a low maintenance grass used on most of Florida's highway systems.

Bahia grass is virtually impervious to insects which attack most sod. It also handles a drought well; it responds immediately to irrigation and recovers quickly. The grass on the slopes is cut only four or five times a year while the grass on the flat areas is cut about once a month.

In concept, the building is open from the interior while confined by the exterior.

Energy conservation was a primary consideration in the design and construction of this building. The solar bronze glass storefront systems are



Schematic of Hardrives Building showing berm.

bronze aluminum framed. They face north and south onto the courtyards and are always in the shade due to the broad seven foot overhangs which prevent the sun from touching the glass.

The storefront system incorporates a ventilating horizontal mullion over an insulated aluminum panel which is set up to provide natural ventilation in the event of a power outage.

The east and west walls and the roof, covered with sodded earth, effect sun control. The sodded roof, with its benefit of earth mass, insulation factor and natural evaporation, results in low roof temperature.

The use of the sod and bermed walls provides additional mass creating the flywheel effect . . . an energy retention factor whereby the mass of earth, with high thermal capacity and low conductivity, permits retention of both cooling and heating energy, minimizing high transient loads on the cooling/heating system.

There is a lushly landscaped atrium and a lobby in the center of the building; the focal point is an original piece of Hardrives paving equipment utilized as a sculpture. Skylights in the center of the building provide needed sun and light. They allow natural light to be used for illumination, reducing the normal lighting loads. The skylights are angled to the sun, oriented to the northeast and southwest, providing efficient daylight illumination levels while minimizing the direct sunlight therefore mimimizing the requirements on the air conditioning system. The skylight glass plane is also elevated above the finished ceiling line and the solar heat gain is trapped above the air conditioned space. The geometric shape duplicates the angle of the guy wires and the slope of the berms. Because of the concrete beams and angles, light flowing through these skylights takes on interesting shapes, creating unusual shadows and shafts of light, changing with each hour of the day and as the sun changes positions throughout the year.

The circular windows used in some areas are a design element and carry the circle of the Hardrives logo as well as reinforcing the overall geometric theme of the project.

The building uses a water cooled heat pump system, providing high efficiency air conditioning capability. The geo-thermal system uses the consistent year 'round temperature of well water for cooling and heating.

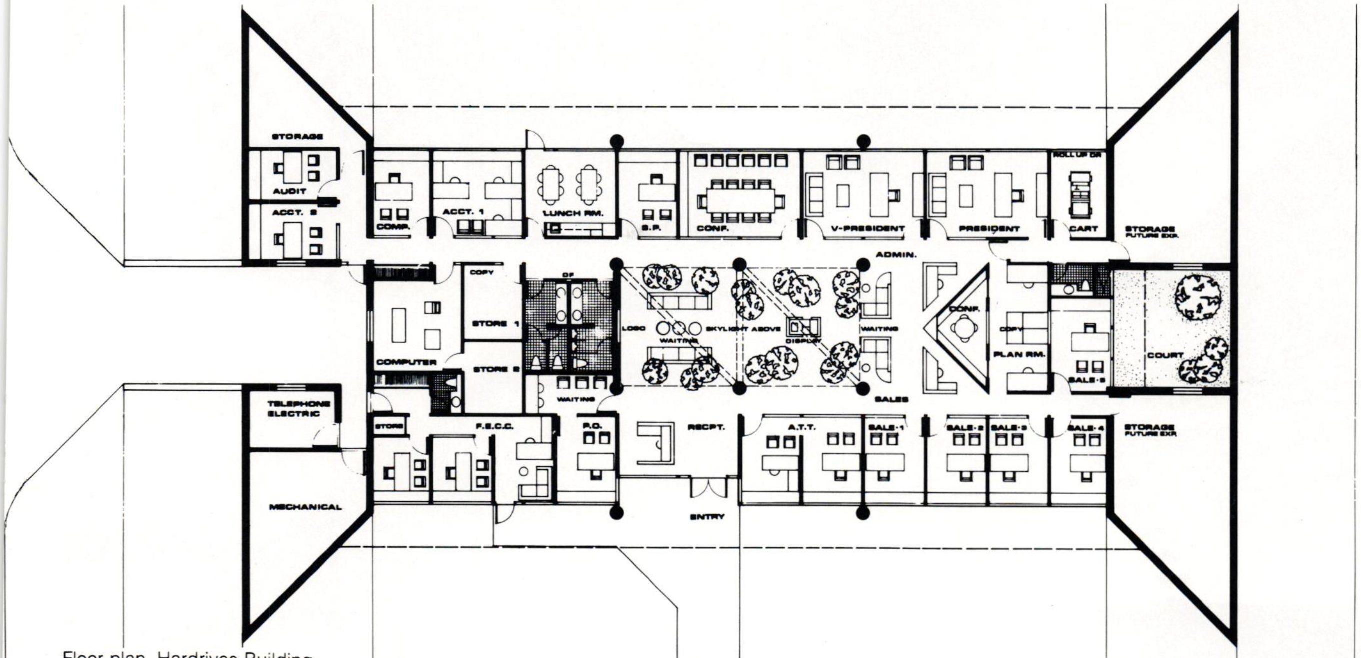
There are three pumps in the system; one is primarily a standby. To conserve both water and energy, the pumps are set up on a demand system. When the system is in operation, as the load lightens the units cycle off, pressure builds in the cooling system and turns off the pumps as needed. As the A/C load increases, the pumps automatically start, maintaining an efficient operating level. Thus, they conserve water and electricity, using only what is needed.

The structure is of exposed concrete walls, some reinforced masonry walls, sono-tube columns, concrete fascia beams with 16″ deep pre-cast concrete joists 3′ 6⅝″ on center and a 4″ concrete roof slab spanning 40′. The interior walls are insulated primarily for noise control. Hardives supplied all the concrete from the adjacent plant and did all the earth work.

The required fill for the berms was obtained by scraping the site down one foot from the excavation of the water retaining swale. Where the berms come to a peak at the top and at the 45 degree ridge points, they are reinforced with 2″ × 12″ pressure treated beams to create a clean straight line and so they will retain their form.

Landscaping consists of sodding, full size mahogany shade trees in a geometric configuration and springeri ground cover under the overhangs. Another original Hardrives grader accents the north courtyard. Brick pavers were used in the entry court, for walks and for portions of the interior.

In order to test the effectiveness of the energy conserving design, materials, equipment and construction methods, building owner George Elmore kept careful track of his electric bills throughout the first seven months of operation, specifically breaking down the elements which



Floor plan, Hardrives Building.

Interior, lobby, Hardrives Building. Photo by Jim Duncan, Ft. Lauderdale.

pertained to air conditioning. He discovered his bills were 50% of what they had been in his previous building. He determined he had been paying $1 per square foot per year and is now paying 50¢ per square foot per year. And, the other building had a lot of "dead" inside office space while this new building has every office on a view.

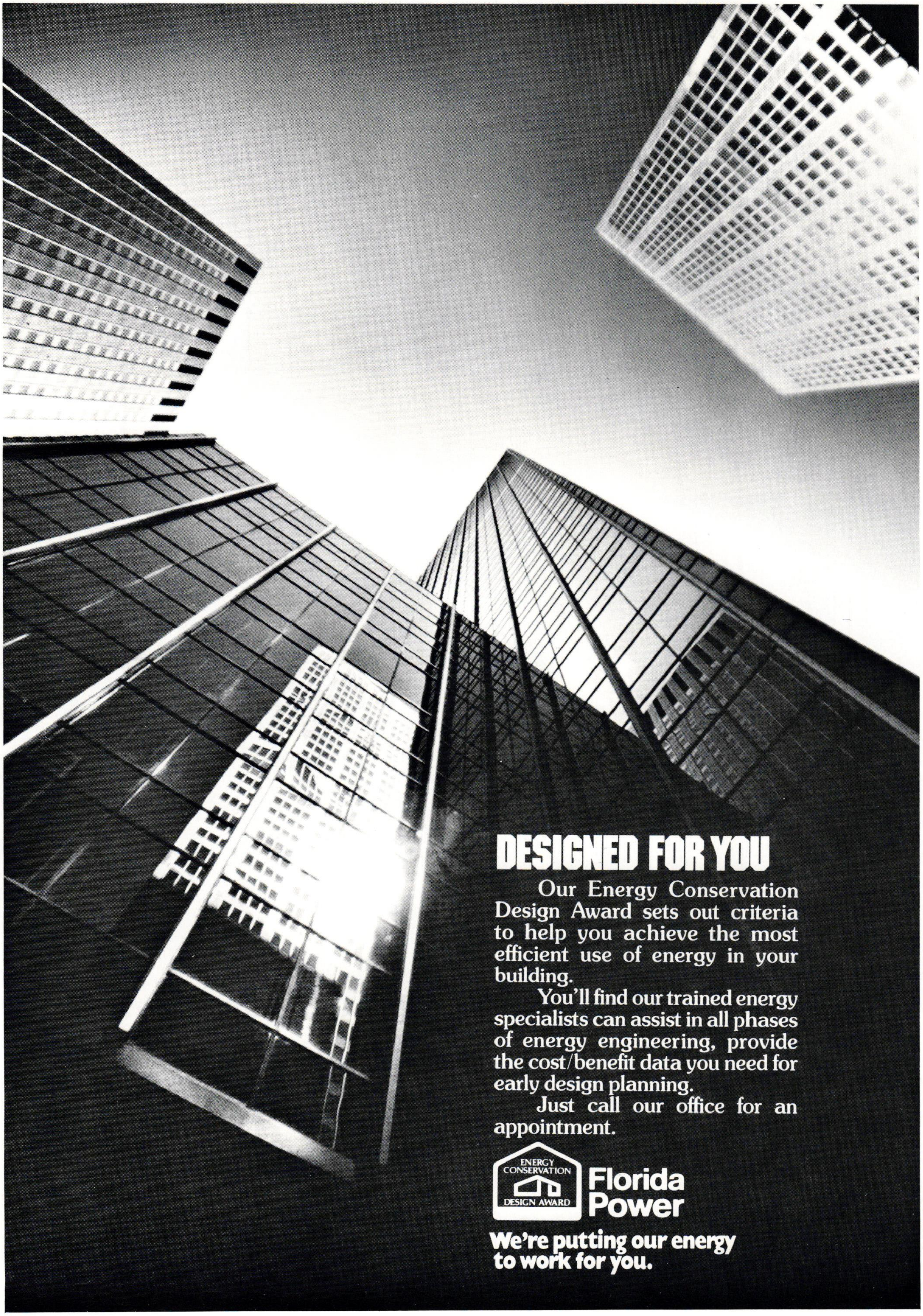
Specifically, his electric bills average about $500 per month (the maximum was $700 during a peak A/C use period) and this includes night lights, computer, the radio tower and the pump for the irrigation system.

Elmore employes 20 people who work a typical 8 hour day, five days a week. Some employees come in on Saturday. There is a time clock on the air conditioning system which activates the system at 7:00 a.m. for 7:30 operation and shuts it down at 6:00 p.m. It comes on for a half day on weekends.

In addition to being energy conserving, the building is attractive and has captured the interest of people across the country. It has been recognized by the Palm Beach Chapter of the AIA and by the NAHB, Builder Magazine and Better Homes & Gardens Magazine with a Builder's Choice Grand Award for 1981.

This earth architecture presents an obvious break between what is natural and what is man-made. The building is a simple architectural solution for an unattractive site—one which is representative of the use and one which provides visual relief from the complications of its surroundings. ■

Patty Doyle is a consultant with Schwab and Twitty Architects.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firm. (This cost is called direct personnel expense. It is defined as the salaries of professional, technical and others employed by the firm to perform the services needed to resolve the client's project, plus the cost of their mandatory and customary benefits.)

(4) Forecast the probable expense for outside consultants.

(5) Estimate probable *non-reimburseable direct costs*, such as reproduction, models, renderings not requested or authorized by the client, specifications or research the firm must perform so it can resolve a problem for which it has no recent experience.

(6) Establish budget for indirect costs and administrative personnel salaries.

These costs are called *overhead*, but are recorded in many classifications because they are more manipulable and can be used to satisfy a variety of statutory and administrative requirements. Indirect costs apart from administrative personnel salaries, include rent or mortgage payments, telephone, utilities, transportation, licenses, insurance, supplies, books, magazines, and most recently, firm promotion or public relations.

(7) Choose the firm's annual profit target.

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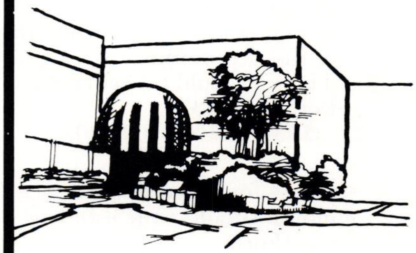

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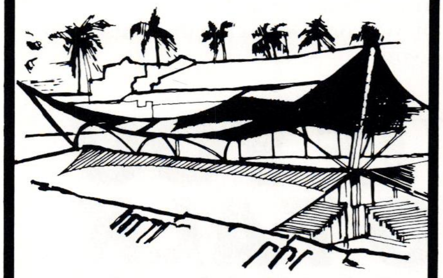

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This includes marketing expenses, bonuses, profit sharing, pension plans, taxes, dividends, retained earnings for funds for specific expansion, predicted impact of inflation, etc. If possible, it also includes a little money to augment the salaries of principals who agreed to the lowest incomes.

(8) Calculate the annual gross income required to earn the firm's annual project target.

This is a simple calculation. Just add the total costs in salaries and other expenses to the firm's annual profit target. The sum is the *gross income* needed to produce the desired profit.

By dividing the *annual gross income* by the direct personnel expenses, the *multiple* for the firm is simply calculated. This *multiple* is the factor that relates the actual salary for each person included in the *annual direct personnel expense* to the firm's *gross income* needed to satisfy the client and to achieve the firm's *annual profit target.*

Now, how is the *multiple* used?

The most accurate way to estimate an appropriate fee is to determine the cost of the number of hours expended by the staff members needed to satisfy the requirements of the client's project, then multiply that cost by the *multiple*. This provides a figure that reflects not only the total cost to do a project, but also the "mark-up" needed to carry the fair share of the overhead cost and desired annual profit.

The *multiple* works also for architects who must decide whether to accept a commission where the architect's fee is established by others, such as other architects or engineers who represent school boards, institutions and governments. By dividing the *multiple* into the fee proposed by others, the architect can determine the maximum amount of direct personnel time that can be expended without losing profit. If this is not possible, it might be wise to reject the commission. On the other hand, the calculations might make it possible to convince the "others" that their established fee is inadequate, and win an adequate fee for the project.

But how can an architect be sure that the estimate of time and personnel is accurate enough to establish a fee, especially for a lump sum agreement?

Some years ago, Case and Co. prepared two reports for the AIA: (1) *The Economics of Architectural Practice* (AIA Catalog No. M114) and (2) *Profit Planning in Architectural Practice* (AIA Catalog No. M113). These reports suggest another method for determining appropriate compensation, using the same data from the architect's records as used in determining the firm's *multiple.*

By subtracting the total annual direct and indirect expenses from the annual gross income needed, and dividing the remainder by the same annual gross income, a *contribution rate* to profit is found. This can be written as:

$$\text{contribution rate} = \frac{\text{(annual gross income) minus (total expenses)}}{\text{(annual gross income)}}$$

Since the *contribution rate* is the relationship between annual expenses and annual income to provide an annual planned profit, each project during the year should at least equal the projected *contribution rate.*

The formula for determining fees should be:

$$\text{gross income for project (the fee)} = \frac{\text{direct and indirect expenses for project}}{\text{(one) minus (contribution rate)}}$$

Example:

The architect estimates the direct and indirect expenses for the year are $300,000 and quickly guesses that a proposed project will use his total staff 4 months to complete. The direct and indirect expenses for the project are 4/12 of $300,000. Thus, $100,000 is the cost to perform the service.

If the contribution rate for the year is 0.25, then the fee for the project should be:

$$\frac{\$100,000}{(1 - 0.25)} = \$133,333$$

For the proposed project the architect knows:

(1) The fee must not be less than $100,000 (the guessed cost to render the service.)

(2) The fee should be $133,333 to provide the desired profit as well as the cost of 4 months of the firm's time.

(3) The fee would be better if it were $158,333 $(\$133,333 \times \frac{\$100,000}{4})$ to pay for an additional month should your estimate was short.

This procedure can be refined by estimating probable cost more deliberately and precisely by following a client/architect identification-in-detail of the scope of the architectural services to be provided. The check sheets and forms in *Compensation Management Guidelines for Architectural Services* are excellent and help to educate the client as to what an architect does. It also encourages compensation on a *direct cost times multiple* basis, a sure winner for adequate compensation, rarely applied to the full architectural service. ■

H. Samuel Kruse, FAIA, is a partner in the Miami-based architectural firm of Watson, Deutschman, Kruse and Lyon.

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Photo by Bob Braun, Orlando

airport of the 21st century...

By Betty Meyer

The overriding goal set by the Greater Orlando Aviation Authority was explicit: Orlando International Airport must be "The Airport of the 21st Century."

The Authority handed The Greiner Team a strict 41-point statement of design criteria geared toward just that. Primary considerations centered around environmental compatibility, maximum passenger conveniences, expansion capability, dramatic reflection of Central Florida's character, and minimal maintenance and operations (M&O) costs.

It was important that design solutions be guided by the objectives of achieving a low energy budget and remaining adaptable to future methods of utilizing energy. This translated into requirements for carefully insulating the buildings' exterior surfaces to balance with climate and use conditions, developing natural lighting, optimizing use of vertical circulation equipment, and efficiently proportioning interior spaces.

The two goals of minimizing M&O costs and emphasizing a Central Florida theme seemed to clash head-on when it came to one of the terminal's most striking features—skylights.

Florida's architects and engineers, of course, are no strangers to the negative impacts skylights place on constantly rising energy costs. In this case, however, the problems were magnified by the sheer size and layout of the buildings.

Both the landside building (470,000 sq. ft. enclosed) and the two airside buildings (total of 375,000 sq. ft. enclosed) needed large open spaces so passengers could find everything they need quickly and easily. (This was high on the list of 'absolute musts' since less than one-third of Orlando's air traffic is generated locally. The unusual passenger profile has a heavy percentage of vacationers, most of whom have minimal experience with air travel and cannot affort to be confused by airport layout.)

The most appealing design emphasized a light, airy feeling and skylit atria with the effect of interior courtyards. However, built as proposed, this would incorporate some three acres of skylights and other large glass panels.

The benefits were undeniable. Natural sunlight would create an ideal growing environment for a focal point of the interior decor—17,000 indigenous plants, including large trees. Also, skylights would bring the outdoors inside and re-emphasize the airport's Florida-flavored greeting to visitors. Further, because sunlight could penetrate deep into massive interior areas that couldn't be served efficiently by conventional windows, total reliance on artificial lighting could be cut substantially and thus help offset the cost of some increase in air conditioning operation.

On the other hand, the potential negative impacts on energy efficiency were too great to be ignored. After extensive deliberation, however, the Authority opted to go with the skylights

With this decision made, the team began studying ways to insure that skylights would not compromise the buildings' thermal insulation requirements. At the same time, concepts were developed for the terminal's highly sophisticated electrical and mechanical systems.

The end result was a design in which extensive use of glass has little, if any, net effect on energy consumption.

Obviously important was design of the skylights themselves. Double-layered, highly reflective, thermal insulating glass was selected. Computer model studies were used to analyze its year-round 24-hour-a-day performance, and it was determined that some 75% or more of the sun's heat could be reflected, thus reducing heat gain through the glass by approximately the same percentage. The two sheets of reflective glass in this double-insulating glass panel system are separated by a thin air space, which further reduces the heat gain/heat loss problem.

This particular design admits the 200 footcandles of light necessary to support plant growth and illuminate much of the interior naturally.

In addition to the skylights, extensive vision glass was desirable to facilitate passenger movement through the terminal and to offer panoramas of the natural Florida environment outside.

For example, each airside building has a central people-mover transfer lobby connected to three airline holding areas by corridors, which have predominantly glass walls so passengers can enjoy their walks between the two. This is in addition to the large glass panels in the transfer lobbies and holdrooms which offer views of airfield operations and of the landside building.

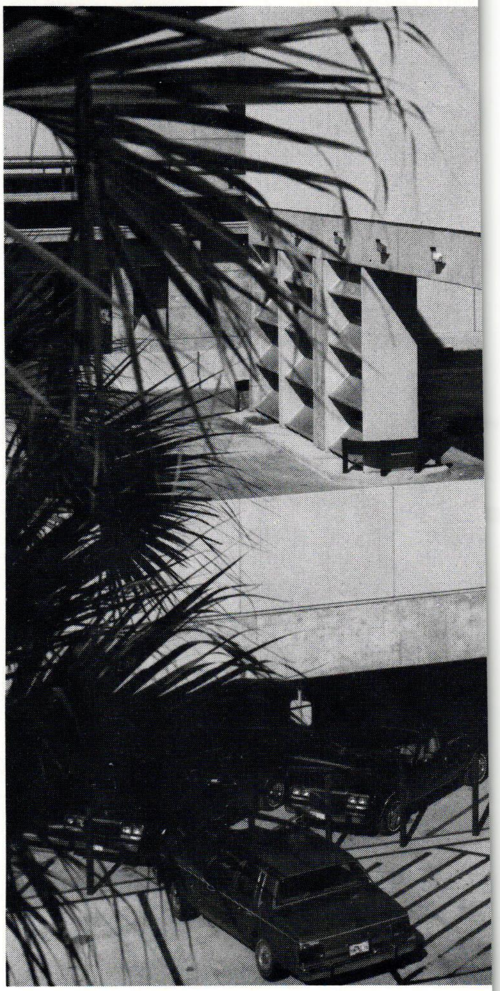
Double-layered thermal insulation glass was used in most of these areas. Also, glass areas are shaded by overhangs or, in many cases, totally protected from direct solar radiation by louvers ranging up to 2 feet in depth. Horizontal configuration of the louvers accommodates changing sun angles and adds subtropical flair without obstructing the view.

These design solutions provided a building envelope in which the electrical and mechanical systems could function at optimum efficiency.

Electrical Systems

Designed by Tilden, Denson & Lobnitz, Inc. (now Tilden, Lobnitz & Cooper, Inc.)

Energy savings in the lighting design of airside and landside terminal



buildings was achieved by use of highly efficient lamps, extensive automatic controls that respond to space needs and environmental conditions, and controlled 'task' lighting distribution.

This design approach resulted in the building lighting load averaging less than 2.0 watts per square foot. During daylight hours, the average is as low as 0.7 watts per square foot. This is substantially below the Florida Energy Code requirement of 2.7 watts per square foot for the most comparable type of building.

Choice of light fixtures and lamps was a judicious blend of flourescent, mercury vapor, metal halide, and high-pressure sodium. Fixtures and lamps were selected on the basis of their abilities to respond to the functional use of each space and its architectural configuration.

Flourescent fixtures were used in low ceiling areas to provide uniform illumination. Mercury vapor fixtures were chosen for the passenger service, transitional and waiting areas. A combination of metal halide and high-pressure sodium lamps were used in the main lobby and concession space.

Lighting in the public areas is controlled by a low-voltage control system consisting of a computer controller (which operates in conjunction with the HVAC computer controller), with


Exterior wall of Orlando Airport. Photo by Bob Braun, Orlando.

photocell inputs to computer or local low-voltage transceiver boards. Local manual override switches in each area allow fixture lighting control for abnormal conditions. The low-voltage control system saves energy by performing the following functions:

- Lighting levels in public-use areas can be reduced automatically by 50% during hours when traffic at the airport is low.
- Interior lighting in public-use areas which are near skylights or exterior windows will be turned off automatically when available daylight reaches a pre-set level.
- Interior lighting in the parking area of Level One can be reduced to 50% during times when normal sunshine exists.
- Perimeter lighting at Level One parking and the sidewalk lighting at all three levels of Enplane Drive and Deplane Drive turnoff automatically when available daylight reaches a pre-set level.
- In areas occupied by the airlines, the computer automatically reduces lighting approximately 75% at the end of any given airline's daily activity. For example, if Eastern Airlines' last flight is at 10:00 p.m., lighting in the EAL area would be shut down at 10:30 p.m. Only a minimum of emergency and security lighting, which is separately controlled, would be left on for normal nighttime security purposes.

These lighting patterns were carefully designed to respond to the specific activities of each space. The result is a great variety of lighting levels which provide the necessary lighting for each activity or 'task'. Low, but adequate, lighting levels were developed for the vestibule, passenger, standing, waiting and assembly spaces. However, higher levels were needed —and fixtured concentrations designed for —the ticketing and security areas, as well as within concessions spaces.

Mechanical Systems

Designed by Van Wagenen & Searcy, Inc.

To achieve energy savings, the terminal buildings' mechanical systems were designed to respond automatically to varying load conditions.

The units which provide heated or cooled air to the buildings' various spaces are designed to either reduce or increase air flow, as needs demand. This 'variable volume' system provides significant savings in the energy consumed by fan motors.

Heated (or chilled) water is pumped to the air heating and cooling units through a piping system which utilizes variable-speed pumps. By providing only as much heated or chilled water as is required, excessive pumping of unneeded water is eliminated, thus saving considerable energy for pump operation.

The central mechanical plant, located at landside, serves the landside and airside buildings. Its present 2,400-ton cooling capacity can be expanded to 4,000 tons when the two additional airside buildings are constructed in the future.

Two particularly important features of this central plant are the heat recovery system and the physical design of the building itself.

In the winter, when the buildings require heating, the necessary heated water is obtained by using the same energy which is used to provide the chilled water. Thus, for all practical purposes, the buildings are heated at no cost. Under normal conditions, this heat is adequate. However, gas boilers are on stand-by for exceptionally cold days.

The building design allows for lateral expansion, thus insuring that when technological advances produce more or larger equipment which will further cut energy consumption, the space necessary to house them can be readily obtained.

The computerized system which provides automatic temperature monitoring for the buildings also provides fire and security alarm. Besides its primary function of monitoring the main heating and air handling equipment so their operating conditions are automatically re-set to consume less energy, it controls the air flow to and from any given area in a manner that keeps smoke away from occupancy egress areas, thus assuring maximum safety.

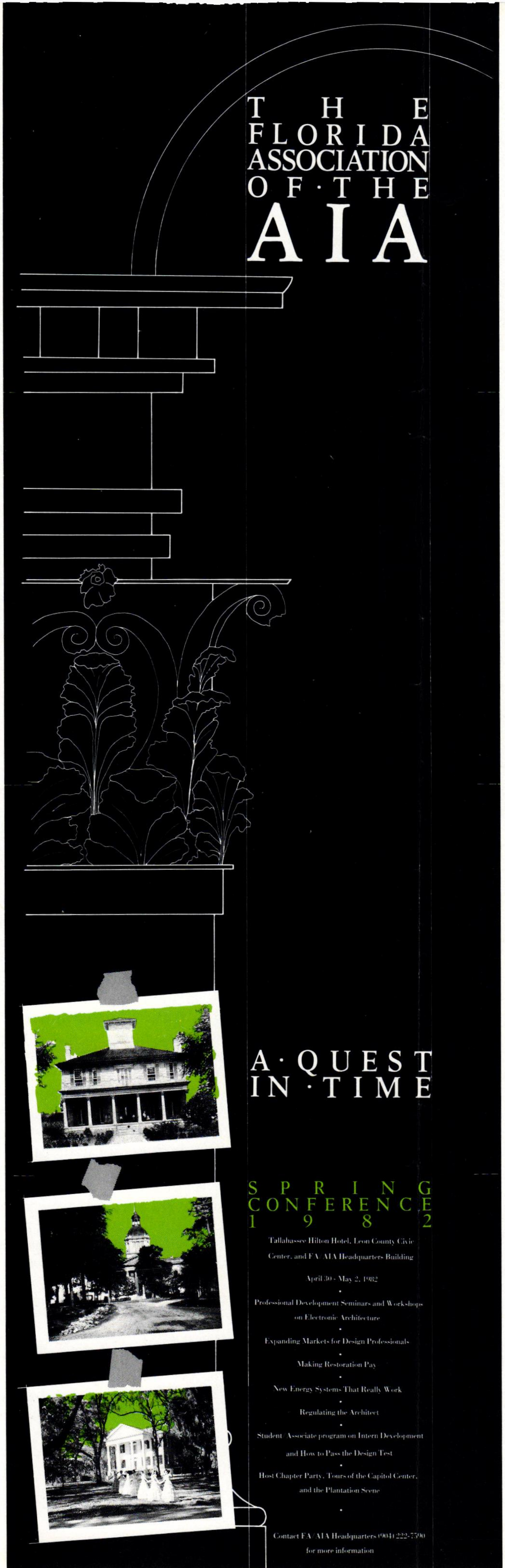
There were, of course, numerous other considerations regarding energy efficiency.

The designers considered all factors, large and small. For example, because of the large number of door openings required, it was important to control air exchange between the interior and exterior. This was accomplished by utilizing deeply recessed vestibules at door openings. While outside air infiltrates the vestibules themselves, it does not affect the interior of the building.

Another factor was reducing the reliance on vertical conveyances. Concentration of virtually all passenger activities on one level and provision of direct curbside access to all three levels of the landside building allow departing passengers to make the transition between air and ground transportation without changing levels. Arriving passengers, in many cases, make only one. This has minimized the necessary number of elevators and escalators, thereby cutting both energy and maintenance costs. ■

Betty Meyer is Communications Coordinator for Greiner Engineering Services, Inc.

Page 27: Interior view of Orlando Airport skylights.



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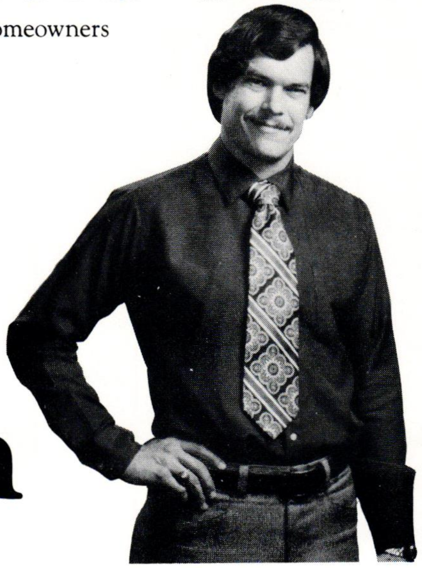

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FLORIDA'S FIRST EARTH-SHELTERED SCHOOL

by Meg Rehse

Architects: Frizzell Architects, Inc.
Mechanical & Electrical Engineer: Davis, Smith, Carter & Rider, Inc.
Structural Engineer: Frizzell Architects, Inc.
Civil Engineer: Briskey Engineering
General Contractor: Eugene W. Kelsey & Son, Inc.

When students attended their first day of class this Fall at Reedy Creek Elementary School, they attended an earth-sheltered school. The first of its kind in the southeastern United States, Reedy Creek Elementary is an energy efficient, prototype school. A solar collector system for domestic hot water, passive solar energy conservation in the form of earth-sheltering and a closed loop, water activated, heat pump system are the three basic systems that enable the school to function efficiently. When used in combination, these features are expected to save the School Board of Osceola County 50% in energy costs.

Reedy Creek Elementary was designed to meet the current needs of the Osceola County School system and to provide for future expansion. The present plan calls for 28 classrooms for a student capacity of 750 - 889. Located in the rapidly growing community development of Poinciana, northeast of Walt Disney World, the school has expansion capabilities for the addition of two pods. A multi-purpose room, stage/music room and multi-media area round out building space. Designed as a basic core layout, only 9% of space is used for circulation.

Reedy Creek Elementary School contains 4,400 cubic yards of poured in place concrete serving as a structural system and as an architectural design feature.

Concrete's properties of reducing sound transmission, its resistance to ever present corrosive elements in Florida and the minimum amount of fireproofing required, are a few of the initial reasons for specifying its usage. As analysis progressed, structural engineers with Frizzell Architects concluded that the school's energy conservation needs, waterproofing requirements and design criteria yielded to a concrete structural system. The end result was a precast, prestressed joist system with composite poured-in-place slabs and beams.

A major factor in the choice of a concrete system was the required roof load. Twenty-two inches of earth on the roof alone created a dead load of 220 PSF. Construction time was kept at a minimum by allowing the General Contractor to spread the earth with a small dozer rather than by hand. This is possible because of code mandated 100 P.S.F. live load for terrace type structures as well as the inherent strength of concrete. The roof serves as the lateral support for the top of the walls. Guardian-type parapets project skyward an additional 5'5" in height, decreasing the chance of children accidentially over-stepping the roof edge.

Architectural plans made the choice of concrete both more economical and aesthetically appealing. Interior column spacing extends 26 feet in one direction and 20 - 30 feet in the intersecting direction. By placing columns at these intervals, engineers were able to conceal most of the 12" square columns within the walls. The

Reedy Creek Elementary School. Rendering courtesy of the architect.

remaining columns were specified as 16" diameter and positioned in the hub of the classroom core as architectural focal points.

Thoughts of leaking roofs instill uncalled for feelings of horror when talking about earth-sheltered buildings. If proper materials are specified and installed correctly, there is no reason the roof cannot last the life of the building.

Shrinkage, expansion and creep always result when using concrete but its degree of severity is controllable. For Reedy Creek, no expansion joints were needed because the 22" of earth fill will serve as a temperature moderator. Shrinkage is controlled by adding a super plasticizer to the concrete mix for the poured in place roof slabs and beams. Walls and precast elements are standard mix.

Consideration was specifically focused on avoiding student and teacher feelings of attending school in a cave. Each classroom is not without some natural lighting. Large skylights allow sun light to stream through the roof in the hallways and the multi-purpose areas.

The classrooms are designed in a triangular shape with the long chalkboard wall as the focal point. Students are closer to the board than in a rectangular room set-up. Each classroom shares a skylit bathroom suite with an adjoining classroom and each classroom core contains a central teacher workroom.

As energy costs soar and tempers flare in response to continuous rises in energy prices, individuals and administrators alike are turning to alternate sources of energy. The Reedy Creek Elementary School is one response to the school administrator's cry for help. Its system combinations work in conjunction to help save energy costs. ■

Meg Rehse is Marketing Coordinator for Frizzell Architects, Inc.

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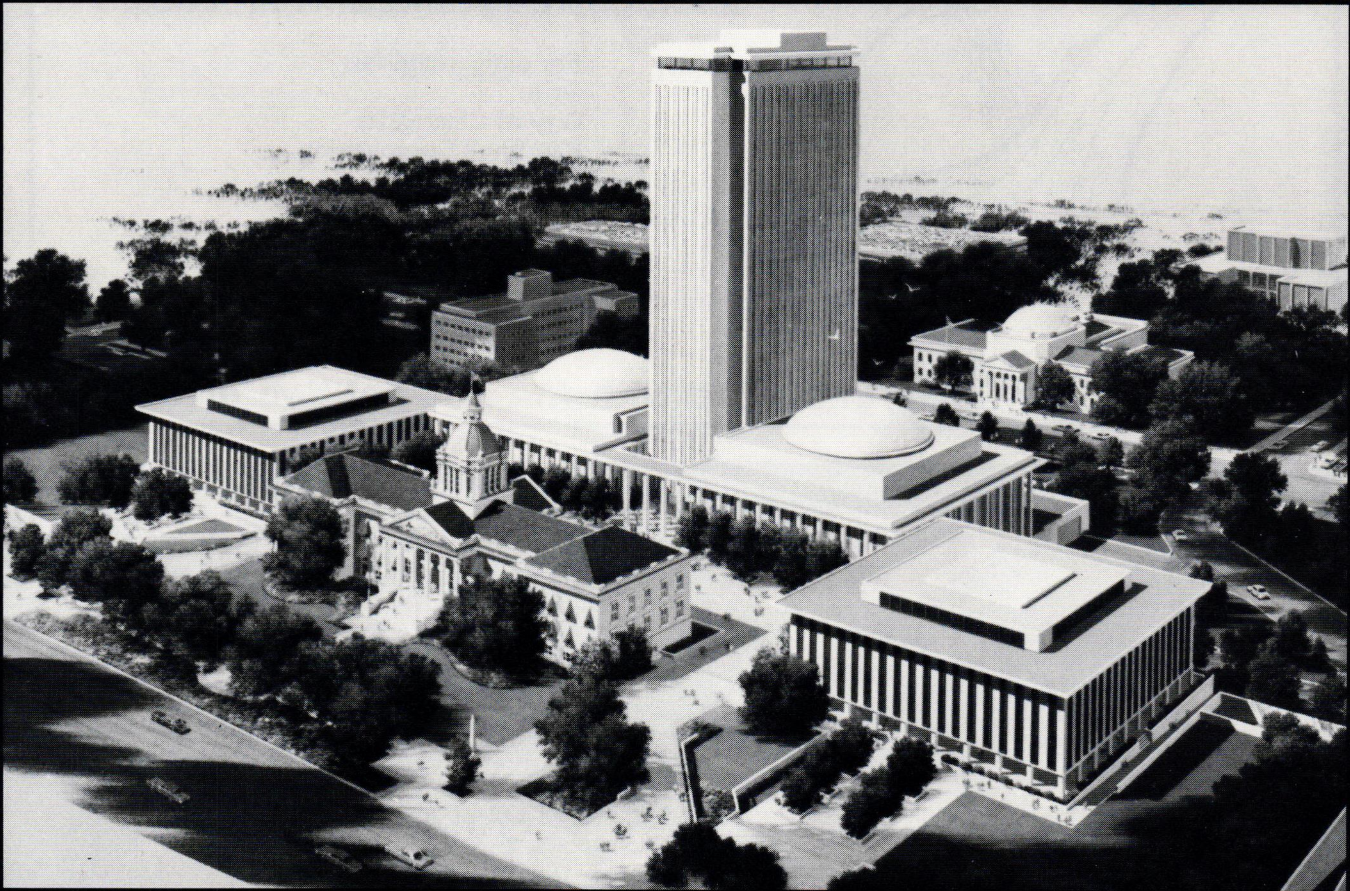

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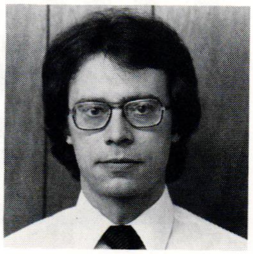

FLORIDA'S A/E SELECTION LAW DOES WORK

by Fred Vyverberg, AIA, President, Florida North Chapter, AIA

Editors Note: This article was written during the height of the battle to convince the Florida Legislature that modifications to the CCNA were not needed or necessary. By now the Legislature will have made its decision, but we still feel that Mr. Vyverberg's viewpoint is relevant.

The passage of the Florida Consultant's Competitive Negotiation Act (CCNA) in 1972 was a progressive step forward that de-politicized the selection of design professionals, bringing the whole process into the sunshine. The U.S. Congress also passed a law that year (The Brooks Bill) to require that architects and engineers (a/e) be selected on the basis of the highest qualification for each project and at a fair and reasonable price. Both of these procedures have adequately withstood the test of time.

Several statements about the CCNA were made in editorials based on the recent House Transportation Committee Report on "Consultant Policies". Rep. Jones is the Chairman of this committee and also the sponsor of HB 642 to modify the CCNA. This report found no irregularities in the selection of architects or engineers (in fact contains no findings regarding selection of architects by DOT or any other agency). The Florida Senate did an extensive review of the law in 1979 and made the following report:

> "It is recommended that Florida not institute competitive bidding for professional design services. Being a very large user of such services, the State of Florida would best be served by an efficient system of design consultant procurement directed at obtaining high quality design services at fair and reasonable rates. The present system functions well, produces timely selections, does not generate unreasonable fees, and helps insure high quality work for the state. The CCNA minimizes the prospects of favoritism or abuse. The selection procedures currently in use, place a premium on expertise and proven competency."

It is clear why Government is drawn to competitive bidding. It generally is a workable, legitimate and fair way to purchase defined services and products when using the public's tax money. Yet the public can understand the distinction between the purchase of a building contractor's construction of a project and the purchase of the a/e's services. The contractor's price is based on a complete set of plans and specifications that clearly define the project. However, the a/e's work begins with an idea — most often an idea that is not fully developed until the a/e services are actually underway.

Architects and engineers welcome competition in obtaining both private and public work (competition which pits the qualifications, experience and innovation of one applicant against another) — it is in the best interest of clients, the public and the profession. Any proposal to include basing competition on price (which is in practical effect a contradiction to qualifications) is likely to result in a deterioration of professional design services and in the quality of facilities.

The budget for professional services is generally established by the using agency before even advertising the project to solicit professionals' proposals. The agency is not taken by surprise as was intimated in a recent editorial. Only minor adjustments in the fee are generally negotiated. The first firm selected for negotiations is hardly dealing from a position of strength when 'two other firms are waiting outside the door'. Try to find a firm that was ranked second and was awarded the contract—they are very rare.

Several editorials made the unsupportable statement that competitive bidding would reduce the cost of design services "by something like 25 percent". The inherent liability that exists in providing professional design services requires careful, diligent analysis by the designer; and naturally, the acceptance of liability requires some compensation to the designer. Architects average less than 10% profit on their projects. The only possible way to reduce their fees by 25% is to have the state agencies greatly increase their staffs to handle major portions of each project and accept some measure of the liability that each project creates.

The Department of General Services and the Board of Regents have stated that the CCNA is the fairest and most professional method of selecting a/e firms. Since adoption of this law in 1972, it has been used nationally as a model and now the federal government and 21 other states follow precisely the CCNA process. The American Bar Association, after an in-depth study into this issue, has recommended that a/e services be selected in accordance with the Florida law or with the federal law. Federal officials report the Brooks Act, as implemented, is working quite successfully.

The Federal Commission on Government Procurement's Study Group 13-B pointed out that a/e services account for only a small portion of construction costs, but have a major impact on life cycle economies. The group concluded that when total cost to the government is considered for the entire project, from initial design through the life of the facility, an a/e contract awarded on the basis of competitive bids would result in a higher cost to the government, and ultimately the taxpayers.

The Consultant's Competitive Negotiations Act continues to function well—assuring the public of quality professional design services and true value for the tax dollar. The proposed modifications to this selection process would inevitably lose sight of both of those basic objectives. ■

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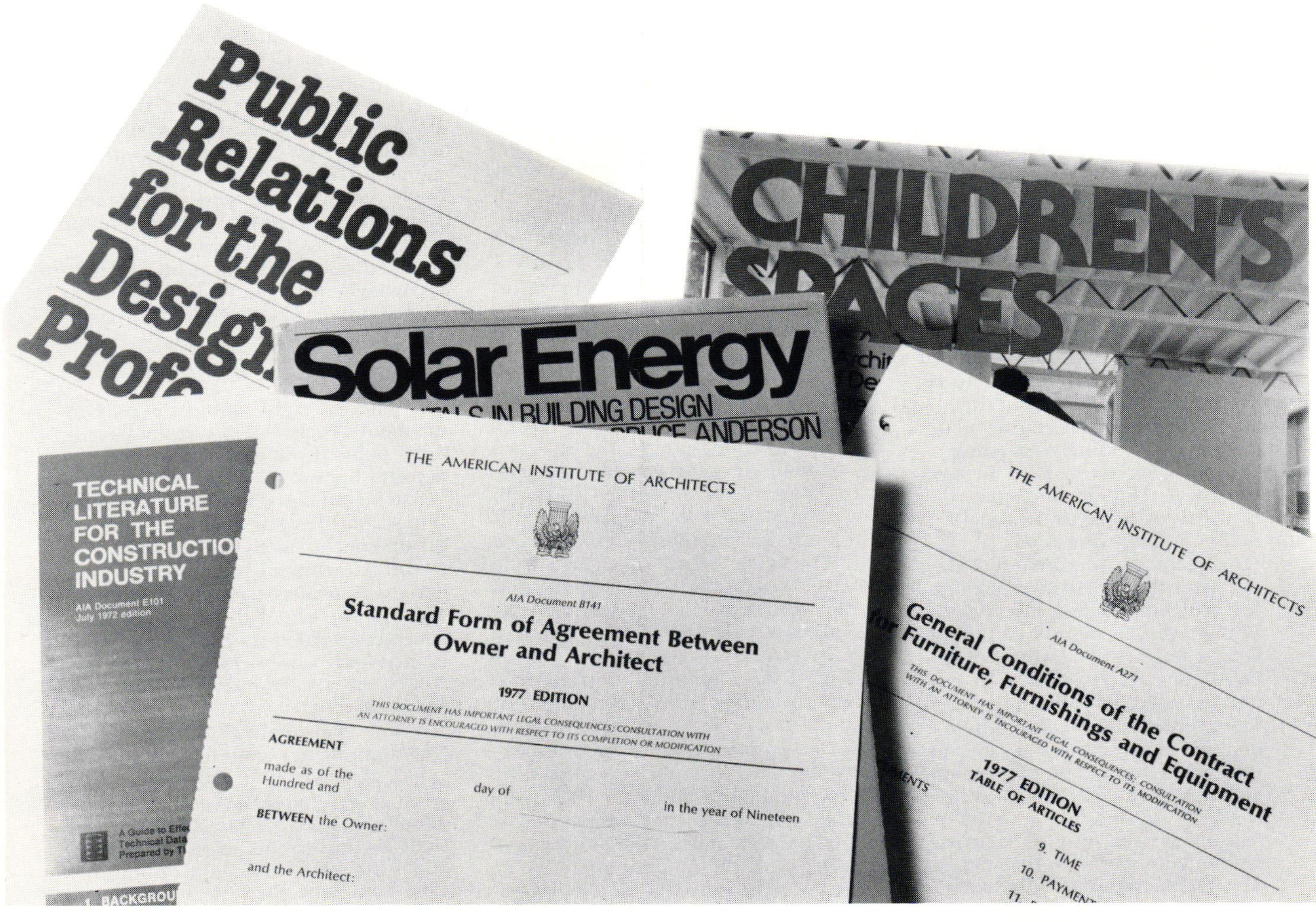

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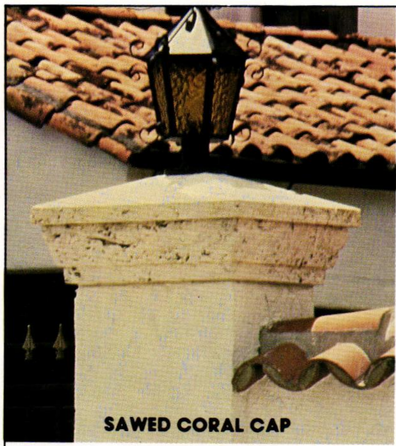

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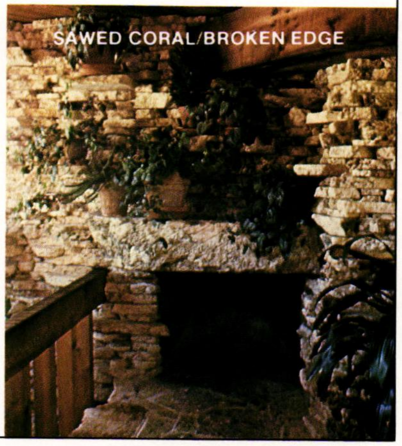

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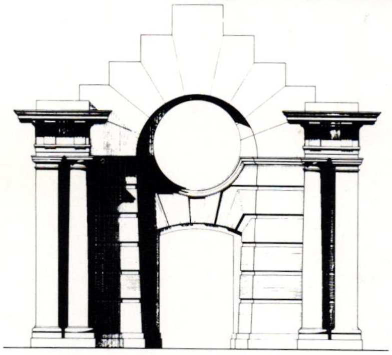

Allan Greenberg, from Architecture 1980, Rizzoli

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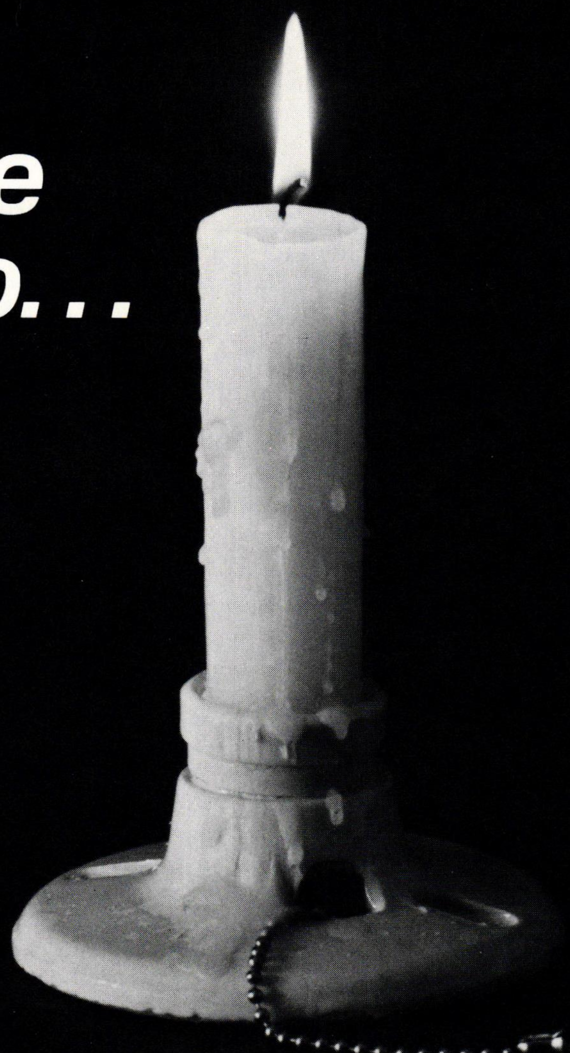

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Summer, 1982
Volume 29, Number 4

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DEPARTMENTS

Cover: Rotunda stair in Florida's Historic Capitol. Photo by Randy Atlas

WHEN THE CHIPS ARE DOWN...

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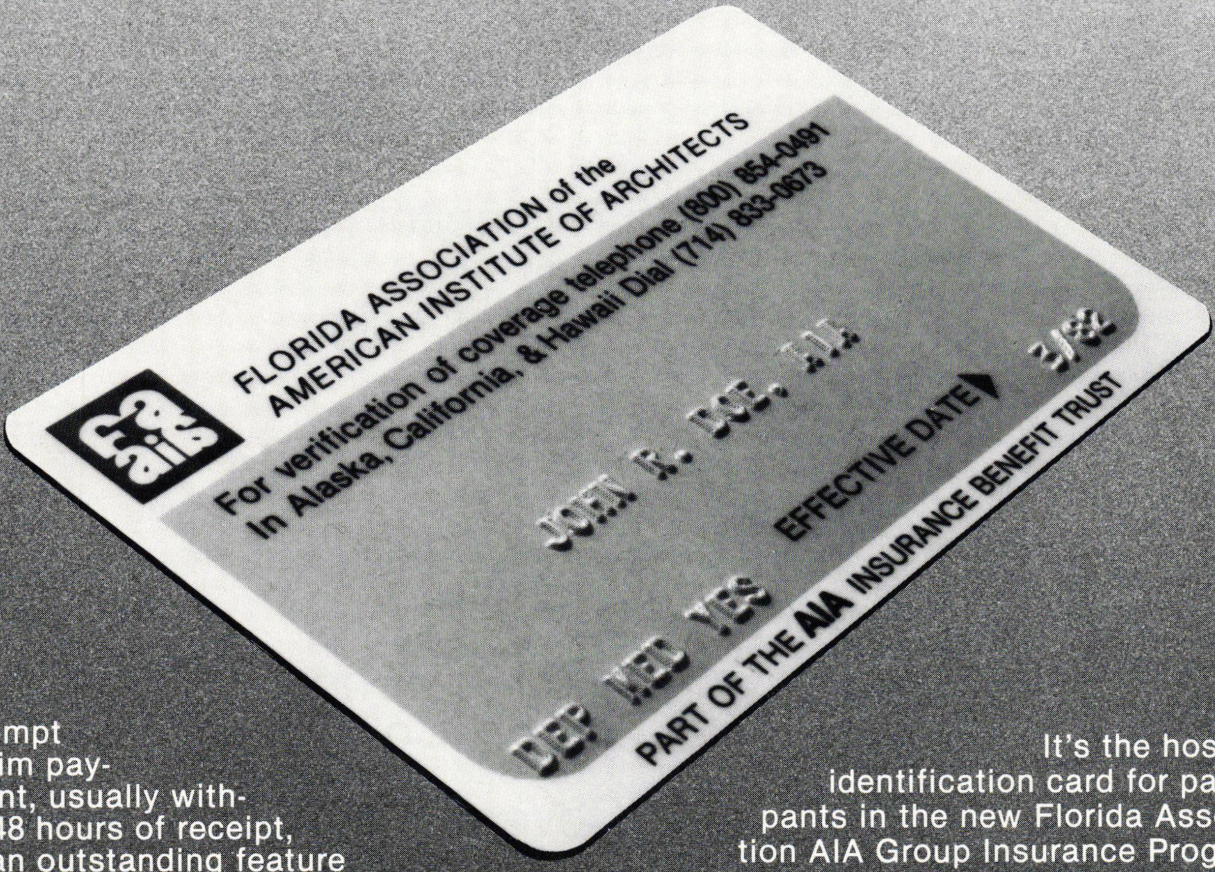

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EDITORIAL

"The revolution of the twenties was total and moral and its creators looked at beauty, not as something subconsciously added on, but as something that is believed to be inherent in the vitality, appropriateness and psychological significance of the designed object, whether it was a building, a piece of furniture or a stage design. We knew and taught that space relation and proportions and colors controlled psychological functions which are as vital and real as any performance by the structural and mechanical parts and for the use value of the plan. If our early attempts look stark and sparse, it's because we had just found a new vocabulary in which to speak out and this we wanted to set in the greatest possible contrast to the overstuffed bombast that had gone before."

Walter Gropius
"50 Years of Bauhaus" Exhibit
London, 1968

"The Silver Prince, as we knew Walter Gropius, far from being a conspirator imposing a European style on innocent Americans as some would have us believe, was very much the opposite. Gropius was open to everything real and critical of only what was false for the age he lived in. The Modern Movement was a coming to terms with the industrial age for the sake of humanity. Such an attitude was like fresh air in a stale room. The effect was similar to Freudianism on Victorian manners."

Sarah Pillsbury Harkness, FAIA,
in an interview with Diane Greer.
Jacksonville, Florida May 20, 1982

In light of the recent wave of criticism of Walter Gropius, the Bauhaus and, to some extent, the whole Modern Movement, the above excerpted quotes are particularly meaningful and insightful. In the interview with Sarah Harkness contained in this issue, she spoke candidly about Gropius and his effect on the architecture of this century. Walter Gropius probably didn't expect the "new vocabulary" of the Modern Movement would stay the same forever, nor did he think that any vocabulary was the ultimate one. Nor do I believe, from talking with his friend Sarah Harkness, would he have wanted it that way.

Diane D. Greer

LETTERS

Dear Editor:

I commend you and your very professional staff for the outstanding job that was done with the 1982 FA/AIA Reference Book for the Construction Industry.

As I reviewed this publication I was flabbergasted to learn of the multitude of codes and standards that you must contend with. The list is unreal! I noticed that the State Fire Marshal's Rules and Regulations were omitted from list of "Fire Codes". This is unfortunate because these fire safety standands surely NEED much attention from a professional organization such as yours.

Again, I sincerely thank you for the considerations that I have received from you and your staff.

Tommy Knight
Consultant

Dear Editor:

Congratulations on your excellent Florida Architect, May 1982 Reference Book Issue. It is simply outstanding and all Architects in Florida can be proud of such a quality publication.

Ellis W. Bullock, Jr., FAIA
Vice President

Dear Editor:

The Spring issue of Florida Architect highlighted two buildings designed to compliment the environmental use of sunlight and earth berming. Both buildings are designed by outstanding Florida architects.

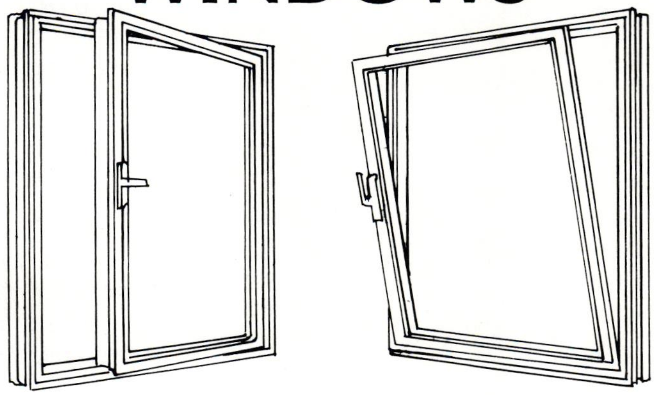
In the name of energy conservation, I question why natural ventilation was not emphasized. All glazing appeared to be fixed non-operable. How did humans exist prior to air conditioning? We will never truly conquer the energy crisis until we recognize and design responsively to our naturally wonderful Florida climate.

The flat terrain and high water table of South Florida is a questionable backdrop to earth bermed construction. It would be interesting to reevaluate the Hardrives Building in five years, especially in response to water penetration and roof lawn maintenance. Whatever happened with the University of Florida Museum?

Florida is fortunate—it is a home for many great architectural talents. Hopefully, they will expeditiously remove the shackles created by past mechanical engineering marvels.

Very truly yours,
F. Louis Wolff, AIA

DUAL FUNCTION WINDOWS



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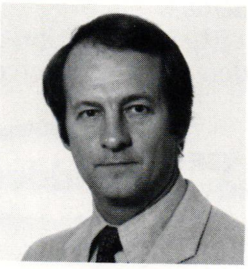
Architects As Design- Builders



by DON W. DAVID, JR., AIA

Architects will be playing an ever diminishing role in providing the architecture for Florida in the future. Who will be providing more and more of the architecture for Florida? It's going to be the Design-Builder!

The design-builder is the person or company that is best meeting the needs of the majority of the architectural clients. Of course, there will always be a need for the traditional design-bid-build process, but this need appears to be decreasing. Even governmental agencies are talking about going to the design-builder.

Clients are demanding a less time consuming, less fragmented, more responsive, more streamlined, more cost-effective approach to project delivery. Many people are now turning to the design-builder as they become more sophisticated clients. They do not want to go through design bid, wait, redesign rebid, wait, etc., etc. What will you be doing as this growth takes place and swallows up an ever-increasing portion of your market and your clients?

Your job as an architect is to solve the needs of your client. If the client needs and wants a finished building, and the best we can do is give him a set of plans and specifications, he is eventually going to go to someone who will give him the building he wants. How many times have you had to explain exactly what an architect does and, after all the explanations, still feel the client does not really understand? He wanted a building, not an education about what architects do. He did not want to be compressed to the narrow mold of our methodology.

Our roots supposedly stem from the master-builder of old. The 20th and 21st century master-builder is going to be the **Design-Builder.** The question now before architects is who will take the lead in the future as Design-Builders: Architects, Contractors, or someone else? Now is the time to move toward assuming the leadership role or we will be relegated to a lesser position as others take the lead.

A little over five years ago our architectural firm felt our "offerings" of services were too limited. We decided to start a Design-Build/Development/Construction company. Our practice was limited geographically. There was only so much work to which we were exposed. The desire was for a "bigger-slice-of-the-pie", to create our own development and construction projects and thus to create our own architectural work. We wanted to be involved in equity positions on projects and to meet what we perceived as the growing need for the total handling of a project by one organization.

We were a little pregnant before we knew it. We stayed that way over twenty-four months before our Design-Build company was born. The labor and birth pains for our new venture were sometimes excruciating and sometimes pleasant. We made many mistakes and learned very fast from them. Now our company is the best looking, healthiest little newborn anyone could expect. With each day and every project, it is getting stronger, learning, maturing and eliminating mistakes. It has the enthusiasm of youth and the wisdom of the years of experience brought to it by the organizers.

There are several ways to get involved in design-build if you are so inclined. One is to form a separate company, joint-venturing with a contractor. However, it would be rare to have an architect/contractor joint venture or partnership that wasn't affected by the basic differences in viewpoint between the two.

In my opinion, the best way to form a design-build company is to have all functions in-house. You must have the capability to provide architectural services and you need the capability to do general construction. The design-build company should have a licensed architect as a full-time employee as well as a licensed contractor. Preferably, these two are principals in the company. By being owners or employees of the firm, and not consultants or subcontractors, they are there full time to advise, consult and provide the necessary vital input at the time it is appropriate when the projects are being developed from initial design concept to final design costing. This interrelation and cooperation provides the atmosphere that a design-build firm must have to be effective.

"How do you avoid the conflict of interest?" This is a question several fellow architects have asked. What is the conflict of interest? We don't think a conflict of interest really exists. It's interesting that architects seem much more concerned about this point than do the clients we serve and it's their money at stake. Conflict of interest implies that one would take advantage of the situation and use his position to gain extra profits by substituting inferior materials or some other similar dishonest act. On the contrary, the design-build approach removes one real conflict of interest the architect has in the traditional design-bid-build approach. This conflict is in having to be paid by the owner and to be fair and impartial toward the contractor. It is hard to go back to your client and tell him he is wrong and the contractor is right.

The main objective of the client is a well-designed building delivered on time and within budget. Many projects are approached on a fixed fee for design and construction, thus allowing all savings to accrue to the owner. If there is a guaranteed maximum, savings are split between the owner and the design-builder on some predetermined percentage. By dividing the savings, everyone involved has an incentive to save as much as practicable within the quality standards required. This approach is the fairest and everyone benefits from any savings.

Another frequently asked question is: "How does the client know he is getting the best price?"

Typically, only a small portion of the work is done by the forces of the design-builder. The remainder of the work is competitively bid using all the same sub-bidders that would normally be bidding if the project were on the open market. One big advantage to owners is that they can become more involved by reviewing the subbids and participating in the selection of the exact subcontractor to do the work. In any event, they know

Turn to page 32

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Florida's Capitol Restoration

How Do You Keep The Understudy From Stealing The Show?

by Diane D. Greer

Firm of Record: Shepard Associates. Architects & Planners Inc.
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Kenneth R. Smith — Project Manager
Catherine D. Lee —Project Documentation
Henry J. Link —Project Representative
Contractor: Jack Culpepper Construction, Tallahassee
Structural Engineers: Gomer E. Kraus & Associates, Jacksonville
Mechanical and Electrical Engineers: Evans and Hammond, Inc., Jacksonville
Landscape Architects and Planners: Herbert/Halbach, Orlando
Civil Engineers: Richard P. Clarson & Associates, Jacksonville
Structural Consultant: T.Z. Chastain, PE, Atlanta
Interior Restoration Consultant: Dr. William Seale, Alexandria, VA.
Preservation Consultant: F. Blair Reeves, FAIA, Gainesville
Historic Paint Color Consultant: Frank S. Welsh, Bryn Mawr, Pa.
Preservation Consultant: Phillip P. Wisley

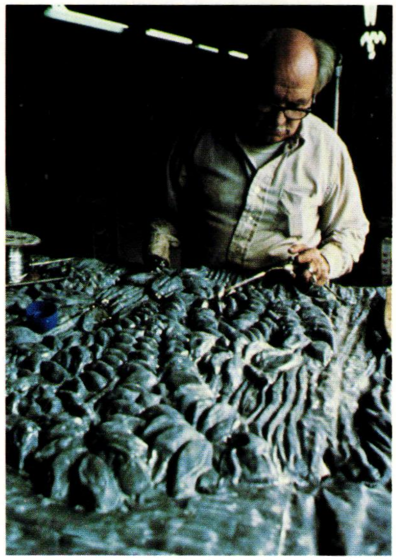
Florida's historic Capitol, now fully restored to its 1902 appearance, is a real show stopper—"a formidable old lady" according to architect Herschel Shepard, the man responsible for her current rise to stardom. Imperative to the restoration of the historic Capitol, however, was the dictum that visitors to "the Capitol" (in Florida we must distinguish between the historic Capitol and Edward D. Stone's Executive Tower which is "the Capitol") must be led not to the front steps of the 1902 building, as they might prefer because of the lure of its classical beauty, but around the restored building and into the main entrance to the Stone tower.

By stripping the historic capitol of the wings that had been added to it over the years, the building was restored to something which could, and would, compliment the new Capitol—not barricade it from view. The restored building reposes, lavishly, in the lap of the monumental tower behind it and owing to the clever design of the landscaping and diagonal pedestrian walkways which were jointly conceived by architect Shepard and landscape architects Glenn Herbert and Fred Halback of Orlando, the problem of traffic flow was solved, Along brick paved walks which lead not up to the 1902 steps, but around the building and into the great forecourt of the new Capitol, visitors stroll around a grassy lawn and small neat gardens planted with species commensurate with the time period. The restored capitol and gardens provide the most pleasant possible entry to the building which now serves as Florida's seat of government.

Florida's historic capitol, begun in 1845 and completed in 1982, is a tribute to many people, builders, craftsmen, preservationists, lawmakers and politicians . . . and to three architects in particular. The designer of the 1845 Capitol was Cary Butt. In 1902, Frank Milburn enlarged and aggrandized the building and in 1982 Herschel Shepard saw the completion of his skillful restoration of the building to its 1902 appearance.

Each of these men was a visionary. Butt, not even a fully trained architect, designed the first building to house Florida's territorial government. Frank Milburn expanded the Capitol dramatically to meet the demands of a rapidly growing state while at the same time giving the building monumentality and style. Herschel Shepard, facing formidable political and financial odds, skillfully selected the best architectural solution to the restoration dilemma and masterfully saw it through to conclusion. In its restored form, Shepard has not only successfully preserved the building for future generations, but he has deftly created an understudy that does not steal the show from "The Capitol" in whose forecourt it sits. The very fact that these two buildings, which were clearly never intended to coexist on the same spot, do so successfully is a tribute to everyone involved in both the initial design of the 1902 building and its restoration.

Detail showing deteriorated section of interior moulding prior to restoration. Photo by Catherine D. Lee, AIA.



Craftsman Tommy White works on the restoration of the Great Seal of the State of Florida for replacement in the east pediment. Photo by Catherine D. Lee, AIA.

Detail of plaster moulding, fully restored, in Chamber of House of Representatives. Photo by Randy Atlas.

Restored House of Representatives Chamber. Note the partially laid battleship linoleum and the light fixtures which are exact reproductions of the original. Photo by Randy Atlas.

Craftsmen put the finishing touches on the artglass dome over the Capitol rotunda. The twelve panel dome contains sixteen different types of glass and 3,250 different pieces. Photo by Kenneth R. Smith, AIA.

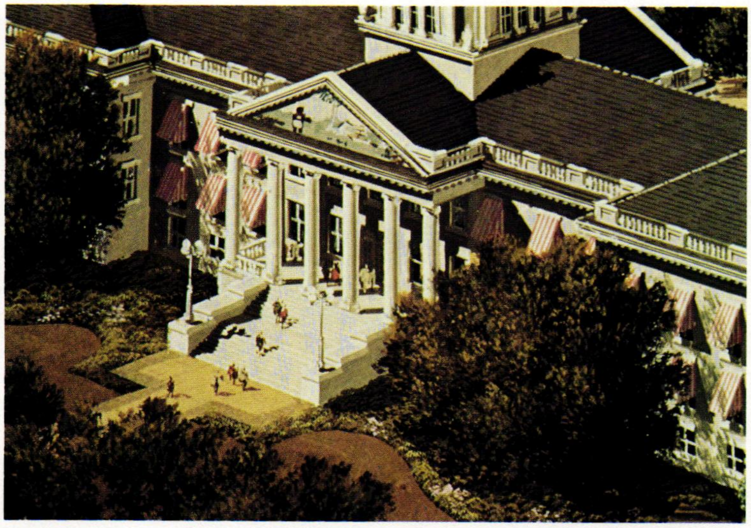
How Florida Got Two Capitols

Florida's territorial Capitol grew with the needs of the State until it mushroomed into a sprawling building that by the early 1970's was not at all adequate for the requirements of State government. Edward D. Stone was commissioned to design a 20-story tower immediately west of the historic capitol and from the beginning the two buildings were in conflict with one another.

Architect Stone's tower was clearly "the Capitol." The historic building had clearly become an eyesore, serving only to block the view of those who approached the new building from the east. The old capitol was thought by many, including a number of lawmakers, to be merely filling up what Stone had planned as a monumental forecourt for his building. In point of fact, according to the Stone plan, the historic building was never intended to continue standing. His recommendations for the site were these:

—construct a major fountain which would be part of a contemporary landscaped plaza on the east side of the tower;
—demolish the old capitol, keeping the foundation of the 1845 building and incorporating it into a sculpture/garden in the forecourt of the tower;
—keep the 1845 capitol, demolishing all other wings and creating an entrance around it to the new tower.

The ultimate decision was none of these. It was to keep the 1902 building,



Architect's rendering of the Capitol as it will appear with awnings on the East front. Photo courtesy of Shepard Associates.

but it was a decision fraught with political controversy. Those who argued for leaving the building completely intact were quickly outvoted. The Capitol, with its 1923 additions to the east and west by H. J. Klutho and the 1936 and 1947 additions by M. Leo Elliott and Hadley and Atkinson of St. Petersburg, was too large to co-exist with the new building. But, tearing down the entire building was not viable either and was totally unacceptable to preservationists. The Capitol is, after all, the most historic building in the State.

The best architectural solution, and the one Shepard promoted honestly and vigorously, was to preserve Frank Milburn's 1902 design. The 1902 configuration was the best solution because with its dome it was large enough not to be overwhelmed by the Stone tower, but small enough to leave space for a monumental plaza between the two structures.

The Restoration

The 1902 Capitol was restored at a total cost of just over seven million dollars. Included within that figure are actual restoration costs plus site development, drainage, park development and a staggering number of salaries and consulting fees for research, documentation, testing surveys and expertise in highly specialized areas such as paint analysis, dome construction, plaster work, etc.

In the final analysis, the restored Capitol provides visitors a rather romantic approach to the new Capitol by using diagonal site lines which depart from the traditional symmetrical Neoclassical axial system. This less formal approach makes the trip around the old building a more interesting, less rigid experience.

Moreover, in addition to providing diagonal pathways to the monumental plaza, the great breadth of the walkways helps to draw pedestrians into them, almost forcing the flow of traffic into the plaza. This system of walks will also serve as a parade route and is large enough to accomodate vehicular traffic for such events as the inauguration.

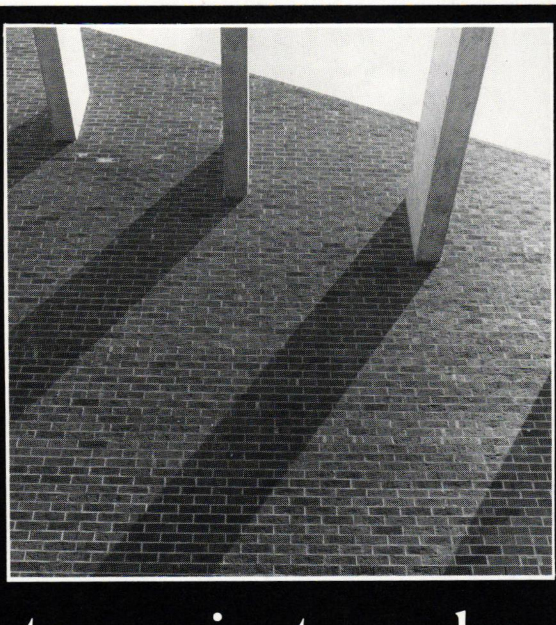
In 1976, before restoration began, no particular respect had been given to the old Capitol. No care had been taken to preserve the character of the building, and it was in great need of repair. Steam lines had been anchored to trusses. Doors had been cut in half. As ceilings were lowered, cornices and entablatures were covered up and door jambs were run right into Ionic capitals. Pressed ceilings were pushed up right on top of plaster and it was not until successive layers of plaster were removed that the original pink and blue paint used in 1902 could be seen.

Demolition of all that was to be removed from the old Capitol was tricky business and it was accomplished in three stages. The first stage was to salvage everything that was either to be reused or sold at auction. The second stage was the demolition of the north, west and south wings. During this stage, a six inch space was cut between the wings to be demolished and the main building. This cut was made from the roof to the top of the foundation to keep the tremendous vibration of the wrecking ball from disturbing unstable portions of the main building. The third stage was the removal of finishes for determination of historical accuracy and construction sequence.

At various stages during the demolition interesting details were uncovered such as stencilled work of Pompeiin design on the walls and plaster rosettes in the ceiling of the House chamber. Photographs taken in the 1902 building show the placement and style of gas and electric light fixtures, furniture, door location and wainscoting.

There is only one extant photo of the

Turn to page 24



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Security By Design

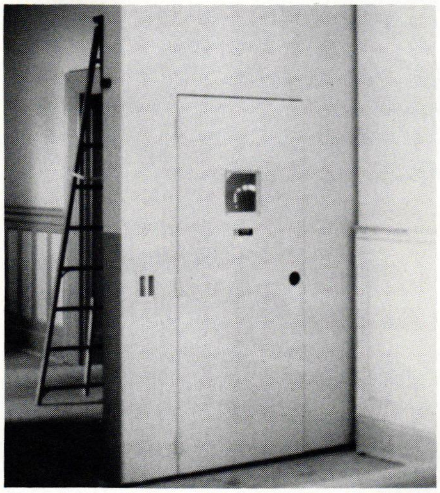
by
Randy Atlas, Ph. D., AIA Associate

The application of physical security techniques to all phases of design and construction significantly improves the level of protection and safety in a new or renovated facility. If security considerations are not incorporated into a building's design, problems that could be designed out have to be dealt with after the fact, usually at a much greater expense. Public buildings and museums, which have large numbers of visitors and require a relatively open environment throughout, present numerous hazards not experienced in private facilities.

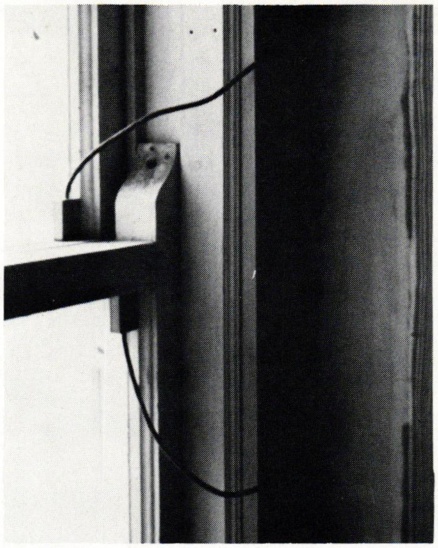
Any building's security involves protection for the building itself, the building's belongings and its inhabitants. In a building such as Florida's Historic Capitol, which will house art exhibits and cultural artifacts as well as providing office space, security is of prime importance.

One component of any security plan is fire and arson protection. The old Capitol is primarily a heavy timber construction with exterior stucco walls. The building has a sprinkler system throughout and heat and smoke sensors on each floor which are monitored electronically by a computer in the Capitol Executive Tower control center. In the event of fire, a panel light is activated and a computer printout immediately shows which sensor and/or sprinkler has been activated. In addition, a schematic drawing of the floor plan is put on a video screen and an automatic tape recorder system with a prerecorded message comes on announcing evacuation routes from each floor. Emergency stairs are located on either wing in addition to the main central stairway.

In order to reduce the spread of fire in the rotunda, which would act like a giant chimney, fire doors on either side of the rotunda on each floor automatically close when the fire alarm is sounded. These fire doors essentially divide the building into three parts. Evacuation routes are posted on each floor as reference points.



Fire doors at the entrance to the north and south wings close automatically when the fire alarm sounds. Photo by Randy Atlas.



Window sensors electronically detect unauthorized entry. Photo by Randy Atlas.

Prevention of breaking and entering and vandalism is controlled by the building perimeter, intercom-controlled zones and security personnel. The building perimeter is secured by heavy exterior doors that have deadbolt locks and nonremovable hinge pins, and all ground floor windows have sensors for breakage detection. Interior security controls include heavy wood and metal doors with deadbolt locks for all interior offices. Sensitive or valuable information with be additionally secured in safes.

Personnel protection is insured by a security staff in key locations directing visitors and guests. Security personnel help channel access and circulation by directing visitors to the public areas of the building, thereby keeping them out of private offices. Closed-circuit television will be used to observe entrances and exits thereby prohibiting afterhours entry to the building.

Accessibility for the handicapped is also a part of the overall security plan of the building. Access to the Capitol on the ground level is achieved by either side entrance, i.e. north and south doors. Concealed elevators permit handicapped persons access to upper floors while maintaining the historic integrity of the existing structure.

The potential for bomb threats is present in any public building and the security plan and options for emergency evacuation were prepared by the security director as part of the emergency plan package. In the event of a bomb threat, evacuation is conducted upon a determination of the genuineness of the call. Based on that evaluation, a systematic search of the building is conducted.

In summary, a building's security plan is dependent upon a rational and organized systematic approach which insures the health, safety and welfare of the building and its inhabitants. The use of perimeter and internal zone security has provided a safe workplace and exhibit environment for Florida's Historic Capitol and the many visitors which are anticipated. Preventing the opportunity for fire, burglary and other health and safety hazards will enable the people of Florida to enjoy the building well into the future. ■

RANDY ATLAS *is an interning architect with an M.S. in Architecture from the University of Illinois and a Ph.D. in Criminology from Florida State University. Dr. Atlas conducted research on prison violence for his dissertation and has been involved in many projects involving security and corrections. He is president of Atlas Security Consultants, 1801 Lenore Dr., Tallahassee 32306.*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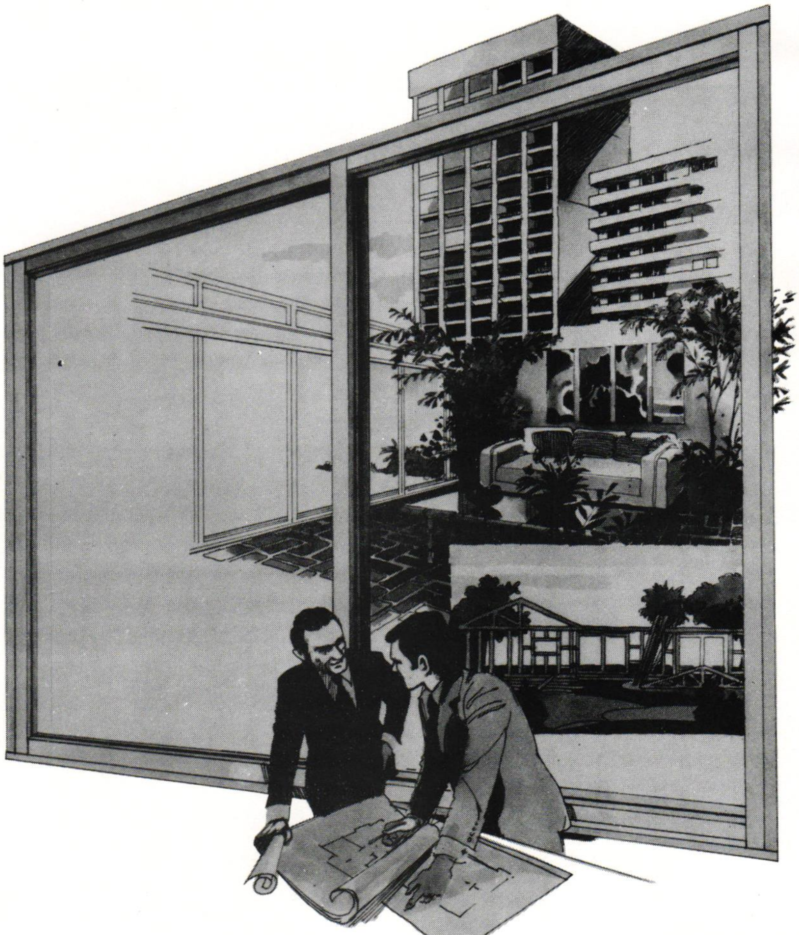

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NEWS

Clearwater Band Shell Competition

The City of Clearwater is sponsoring a design competition for a band shell in Coachman Park, a waterfront park located in downtown Clearwater. The competition is open to all architects who are registered and maintain Florida offices. The first award is $3,000 and two merit awards of $750 will also be given. The city will also negotiate for full construction drawings with the winner of the first award.

Competition entries must be submitted by September 17, 1982. Competition materials include the program and a color aerial photograph of park surface and may be obtained for a $30.00 entry fee.

All correspondence should be addressed to the Band Shell Design Competition, P.O. Drawer 4748, Clearwater, Florida 33518.

As a finale to the 1982 Governor's Design Awards Program, Ellis Bullock, FAIA, Vice President of the American Institute of Architects presented a citation to Governor Bob Graham. The citation was by AIA President Bob Lawrence, FAIA, praising Graham for his contribution to the architectural profession and "his sensitivity to and appreciation of the importance of design excellence in public architecture."

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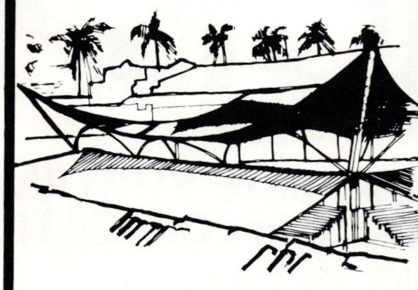

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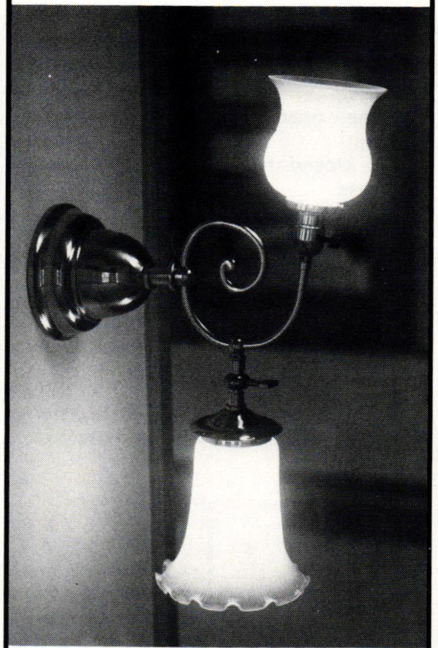

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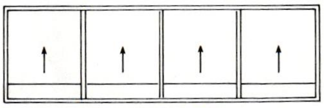

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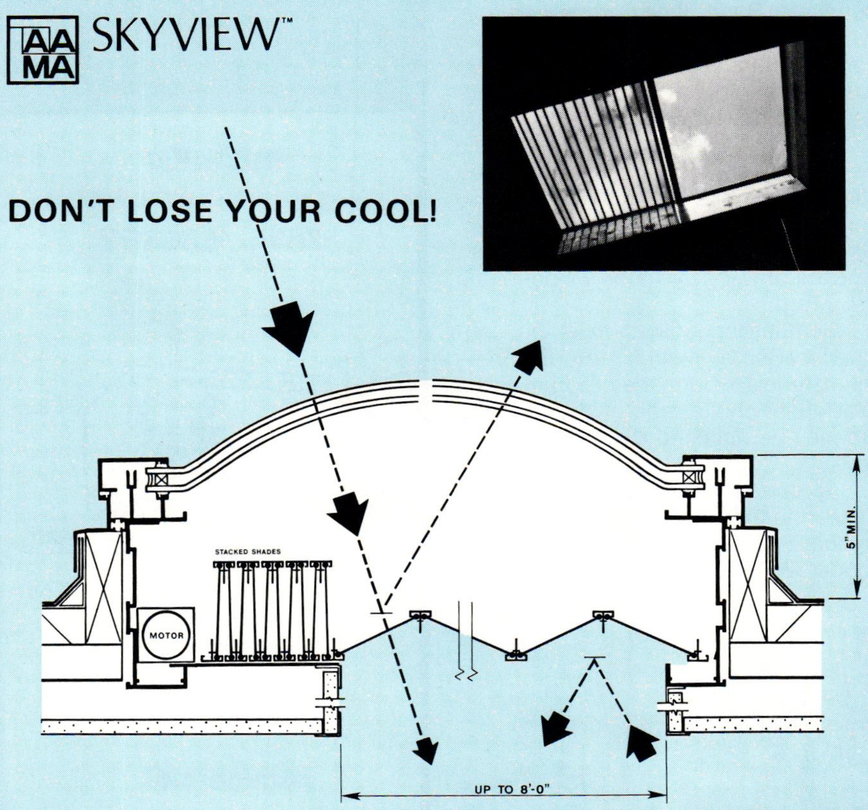

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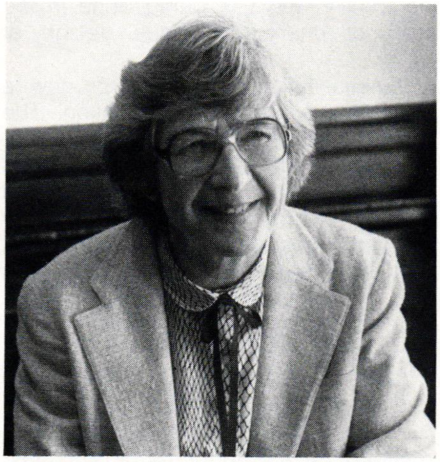
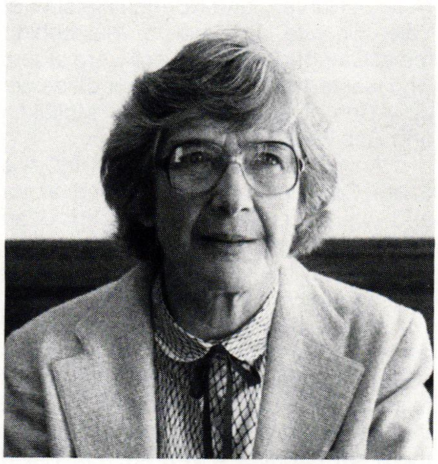
SARAH PILLSBURY HARKNESS, FAIA

Sarah Harkness is Vice President and Principal of The Architects Collaborative, Inc. (TAC). She has a Master of Architecture degree from Smith College Graduate School of Architecture and Landscape Architecture and an Honorary Doctor of Fine Arts from Bates College in Lewiston, Maine.

Ms. Harkness has been a visiting critic at Harvard Graduate School of Design and Miami University of Oxford, Ohio. She is a former Vice President of the American Institute of Architects, New England Regional Director and a member of the Boston Society of Architects. Ms. Harkness has been a member of numerous juries, panels and committees.

Ms. Harkness is the architect of the Tennessee Valley Authority Headquarters in Chattanooga, Tennessee; numerous buildings at Bates College in Maine, including the library for which she won an Honor Award from the AIA; 4M Petroleum Company in Massachusetts; Worcester Art Museum, Art School Addition in Worcester, Massachusetts as well as many others.

Sarah Harkness was in Jacksonville to sit on the jury of the 1982 Jacksonville Design Awards Program. Her keynote address to the Chapter and the impetus for this FA interview was, "Who's Afraid of Tom Wolfe?" Ms. Harkness was interviewed by FA Editor Diane Greer and KBJ Architect Joanna Rodriguez, AIA.

FA: You were assigned the topic of "Who's Afraid of Tom Wolfe?" as the subject for your keynote address to the Jacksonville Chapter of the AIA. Who is afraid of Tom Wolfe?

Harkness: Well, I'm certainly not afraid of Tom Wolfe, but I am afraid of "Tom Wolfism," which is the reaction to such a shallow thesis which is only destructive and leads nowhere. This particular thesis, of course, is general and it's not only Tom Wolfe. It's a lot of other people who have been enjoying a tremendously destructive wave of criticism. Architects rise up in anger while the public laps it up. I wonder why the architects are so upset by this nonsense and the public revels in negativism? I wonder if such defensiveness on the architects' part and such joy in laying blame on the other hand is not an expression of the general malaise and confusion that go far beyond architecture.

FA: Why do you think that Wolfe picked on Gropius in particular, as opposed to Wright for example?

Harkness: I think that Tom Wolfe was looking for someone to pin his criticism on, someone of another generation, and maybe even another nationality. In criticism of the sort that Wolfe undertakes, you try to appeal to people who are uncomfortable or unhappy with something—in this case people who don't like their environment. It's all the easier to pin that criticism for present circumstances on someone outside your own generation. And I really feel that what Wolfe has done with Gropius is a little like Red-baiting. He might as well have called Gropius a Communist. Sadly, Wolfe is not the first. Others like Bob Stern have made really nasty remarks about Gropius in public and in writing and they've managed to build up a myth about him so that many students now believe that Gropius was a cold, hard, mechanical person and that machines were everything to him and life was nothing.

All of that is completely contrary to the truth. Part of that image of Gropius evolved from a deliberate putting down of what's gone before for the sake of one's own advancement. Being negative, you know, always makes one look smart. Critics, unfortunately, are lumping Gropius with everything that has happened in architecture since the Bauhaus when probably they're not even aware of how the whole thing began.

Anyway, they're really thinking more of the so-called Modern Movement, that is, the way our cities look now rather than the original thinking of Gropius which I suppose did look stripped and cold by comparison. But, it was a total house cleaning in architecture and it was necessary. Unfortunately, critics like Wolfe blame him for what architects have done since . . . the architects who, for example, design windowless schools. Gropius would never have done that.

FA: Will you tell us about your beginnings as an architect . . . about your education?

Harkness: Well, I went to a very small school, the Cambridge School of Architecture and Landscape Architecture. I'd always liked drawing and painting and the school was there and it accepted women, so I went. I wasn't married at the time, so I still had my freedom. The first year at the school, architecture and landscape architecture were combined and thereafter you pursued your individual interest.

FA: How was The Architect's Collaborative (TAC) founded?

Harkness: When World War II ended, several of us who had been friends and been to school together began talking about setting up an office with very "idealistic goals"—a collaborative type of office. The War was over and we were all wondering what we were going to do with our lives. My husband, Chip, had been at Harvard and Norman Fletcher at Yale. His wife, Jean was a year behind me at Cambridge. And there were others who wanted to help us get our office set up—Ben Thompson, Louis McMillen and Bob MacMillan.

Anyway, the competition for the Smith College dormitories came along and we entered. Norman and Jean Fletcher won first prize and Chip and I, working in the attic of my Mother's house, came in second.

It was then that we had the idea of asking Walter Gropius to join us in setting up a collaborative practice. He had talked about it for some time and since the departure of Breuer from his office, there sat Gropius with a secretary and two empty rooms. And, we and the Fletchers had our prize money. So, everyone contributed something and Tac began in 1945.

By the way, the Smith College Dormitories were never built.

FA: What were the original ideals and goals of TAC?

Harkness: Primarily we had a strong sense of community and we put that into practice by building "Six Moon Hill" on 20 acres in Lexington. It was a community of 28 families living on a deadend street, each on his own land, in his own house, with his own view. It was not a commune like today. Each person's land was his stock in the company and all of the TAC architects had homes there as well. Chip and I still live there. Anyway, the idea was that the community was planned, each house in relation to the next. Some things were shared such as a community pool and there was some common land, but mostly what we share is a sense of community living.

FA: What was Gropius' influence on TAC?

Harkness: His philosophy influenced us at TAC a great deal. But, Gropius was the kind of person who didn't expect everyone to do things as he did them. He wouldn't have liked it if we had. He made a strong point in all his writings that teachers should not have "sheep-like" followers. His idea was to have common aims in architecture, but that each person should put those aims into practice in his own way.

FA: Was that his design philosophy or his organizational philosophy?

Harkness: Both, I suppose. The idea of collaboration was merely a way of working. It was a way of achieving results . . . of getting there. Each TAC building grew out of a collaborative environment, but the aims of the architecture would always be very much related to the environment, culture and climate.

FA: Let's talk about energy conservation, which I know is of critical concern to you personally. What is being done in the area of energy-conscious design at TAC?

Harkness: My role at TAC right now is design and energy conservation. The design and energy angle is so fascinating to me that I think it's the only way we're going to get our heads back on straight. We certainly don't have all the answers yet, but we're trying, and I think that there are some areas and issues that haven't been traditionally considered architectural, but which architects ought to think about. Building access, location, the amount of energy needed to get people to and from the building, all of these are important. And also, it's a matter of not asking for trouble and staying away from the things that we know are bad such as big windows facing west.

Engineering is important and engineers should not be called in after the building has been designed. They should be called in during the design process. The bigger the building, the more complex the problems and the more people are involved in its creation. I'm not sure this is so bad, either. It used to be that building design was left to "the experts", but now everyone has something to say and I believe that all this input might be for the best. In the case of the Tennessee Valley Authority Headquarters, for example, it's design was like one big charette.

FA: What about energy conservation in restored buildings where integrity must be retained?

Harkness: I think you'll find, as often as not, that those buildings are the most energy efficient of all. The high ceilings, tall windows and awnings are far more efficient for cooling than we know.

FA: After Gropius died, did things continue to move along smoothly at TAC or was a terrific void created?

Harkness: Well, he was missed, of course. But, by the time Gropius died his philosophy was so well built in at TAC that things went well. Any project in the office considers site, the approach, the relationship to its context, to the building next to it, to the city, whatever. The entire program is carefully gone over with the client.

I do think that climate relations have slipped at TAC just as they have everywhere else and it's partly because mechanical engineering has been so successful with AC. When we began years ago, there wasn't any and eventually clients began asking for designs which could have AC added later. But AC was always added later and as sites became more cramped because land use values got so high you ended up with much more compact building shapes. So, it's then that you begin to lose track of using windows for natural ventilation and light. All of the things which used to be so important to us began to fall by the wayside as AC became so important.

There was something else that was very important to Gropius and I felt very stupid, but it didn't really hit me until after he was dead. Our first big project after his death was for the Harvard Graduate Center. Gropius had always talked about the spaces between buildings and he always alluded to the Harvard Yard and how wonderful the spaces between the buildings were. Well, when we did the Graduate Center I realized how important the spaces between the buildings were and it was a real dawning of awareness for me. As time goes on, I realize that spaces can be as or more important than the buildings themselves. Buildings don't have to be such individual monuments as we've always thought. If each building is an individual monument with no concern about the spaces around and between them, that's where our cities begin to break down.

FA: What were Gropius' feelings about architectural education?

Harkness: He once said that, "Only from a plan in which science and art are balanced can a cultural group consciousness develop as a precondition for a flowering of the arts and as a powerful equal to science in the economics of affluence."

Interestingly, the greatest expression of our affluence has been in the prolific use of energy. Our movement turned into what could be called the "fossil fuel style." Buildings could suddenly be any size or shape, face in any direction, have all glass or no glass. We lost our connection with nature and reality, the very things Gropius taught to his students—the human things. Now we are being brought back to reality by the energy crisis just as the early modern movement was coming to terms with the industrial age. Now energy-conscious design is coming to terms with our present age. Both are similar to primitive or indigenous architecture in that they use materials and methods that are most available in their time and place to make a humane environment.

I hope that the Silver Prince is looking down at us from a silver cloud and can see that at least we're trying. ■

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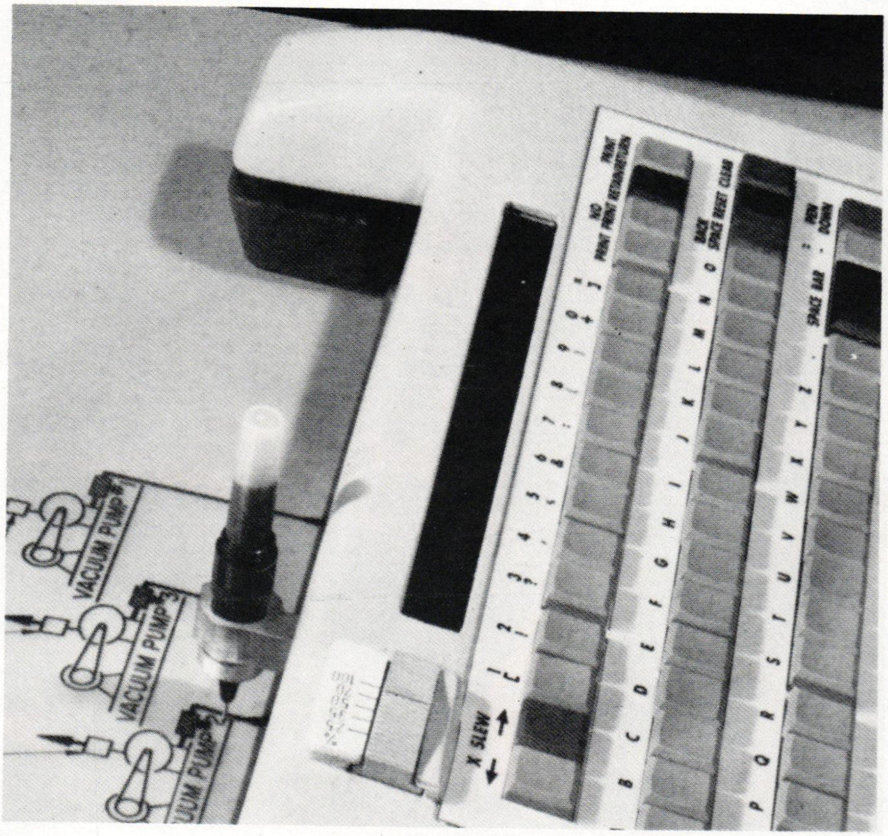

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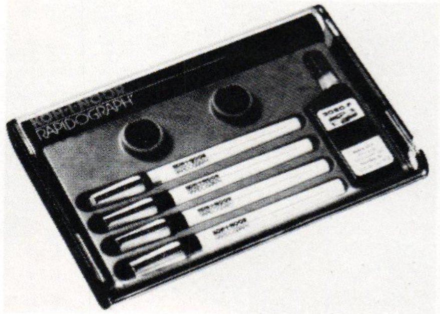

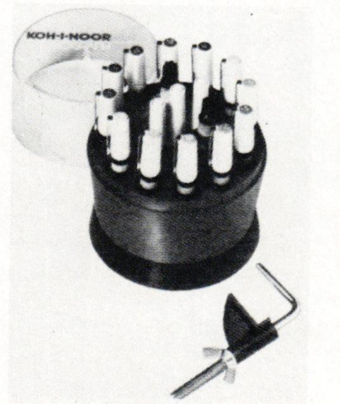

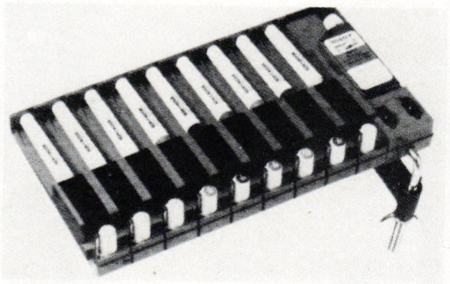

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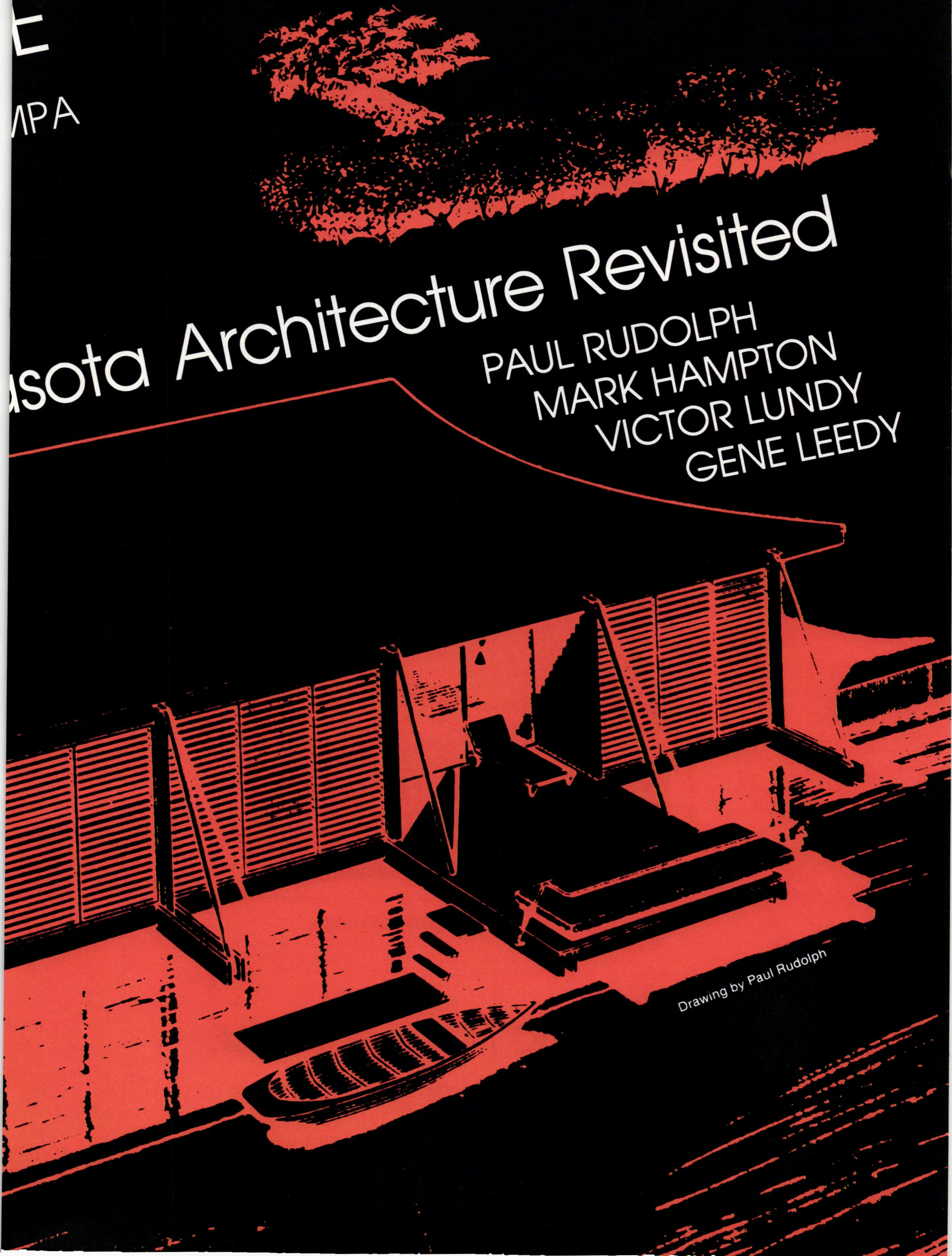

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NEWS

University Building Wins Concrete Award

Mr. Willy Bermello, AIA, representing Severud-Boerma-Buff-Bermello, was presented the 1982 Annual Award for the Outstanding Structure in Florida utilizing Architectural Precast Concrete. This award was for the design of the School of Business Administration, University of Miami.

The award was presented as the grand finale of a program hosted by Architectural Precast Producers, Inc. at Walt Disney World's Contemporary Hotel. The guest speaker for the event was Robert M. Lawrence, FAIA, 1982 President of the National AIA.

Only in the past decade has architectural precast come into its own as a multi-use material giving maximum design flexibility through shape, texture and color. While functioning as structural, load bearing, sandwiched insulated panels, the precast provides interior and exterior finish and lends time saving economy to the construction schedule.

The School of Business Administration had a total square footage of 70,000 square feet and employed approximately 500 precast concrete units, the average size of which was 9′ by 12′.

Chapter Commemorates Architectural Week

The Florida North Chapter of the AIA commemorated the AIA's 125th anniversary and Florida Architectural Week, as proclaimed by Governor Graham for the week of April 25-30, by sponsoring a number of activities. Notable among these was the staffing of a booth for three days by chapter members during Gainesville's Energy Expo 82.

In special celebration of Florida Architectural Week, the chapter sponsored a public presentation of "City Visions" at the Hippodrome Theatre in Gainesville. "City Visions" was a nostalgic look at Gainesville's past, a critical look at the present and a visionary look at Gainesville's future. The program included a showing of the film "City Visions" with an introduction by Jan Abell, AIA, a slide and sound presentation and a panel discussion open to the audience. The panel included Dr. Ernest Bartley, AICP, Sam Mutch, AICP, Barry Rutenberg, Francine Robinson, Jan Abell, AIA, and Peter Prugh, AIA. The focus of the panel discussion was creative design and decision making in urban planning.

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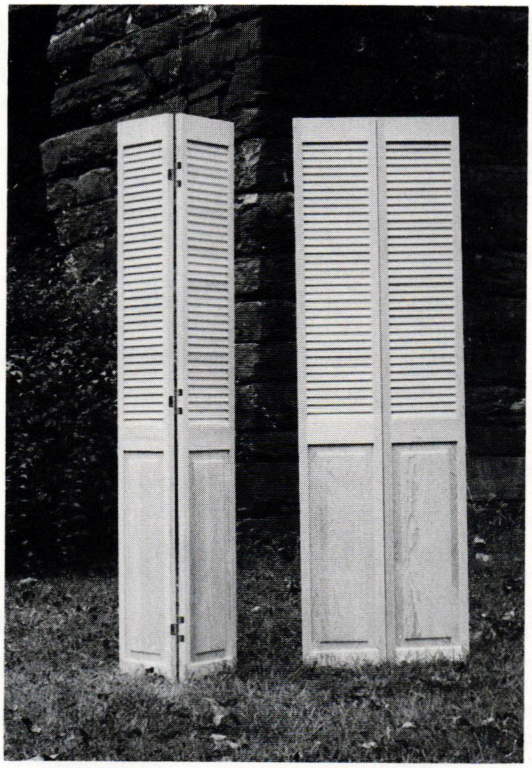
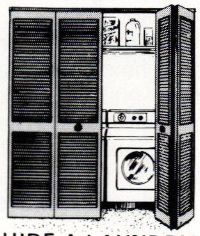


Above, 4-0 x 6-8 Louver-over-panel



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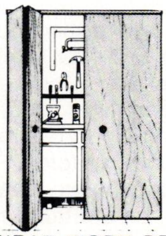

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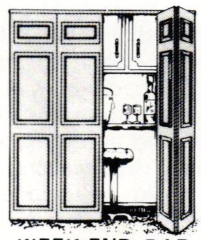

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governor's office in 1902. It is of Governor Bloxham's funeral and it shows the existence of pocket sliding doors and a light fixture that were not previously known about. Both have been put back in the building.

There is also only one photo known to be in existence of the rotunda stair and that, too, is of a funeral. Reconstruction of the rotunda stair is based on this photo plus tracking out the location of the stringers against the walls and the beam pocket locations at the landing. These crucial overall dimensions along with the photograph helped to reproduce the 1902 stairs according to the Milburn dictate: "Staircases should be wide, well-lighted, and have wide step with easy rise; 6½ inches is good height. Avoid winding stairways, especially in public buildings".

On the east front of the building, using a Beaux Arts approach, the columns are of reinforced concrete with big flat discs at the third points. The discs were then furred out with galvanized lath and stuccoed. In order to save costs, this approach was used. The capitals of the Tuscan Doric columns are precast architectural reinforced concrete. The reinforced concrete beams bearing on the plinth rod are truly structural.

The 1902 cupola was removed, cleaned out and it was found that the copper was in excellent condition, as was the interior framing. The copper was unsoldered, taken off, restored and replaced. The dome was also found to have copper in excellent condition and it was cleaned and replaced. Throughout the entire restoration, any materials which could be cleaned and reused were.

The Restoration Craftsmen

One of the most awesome aspects of attempting a restoration the magnitude of the old Capitol is reproducing the interior finishes, trimwork, light fixtures and a myriad of other specialized details.

While finding the craftsmen who still do this work is difficult, it is not impossible. A group of just such men came together to work on the Capitol project and the results were spectacular.

The art glass in the top of the inner dome was found broken in many pieces lying on the floor of the attic. It was painstakingly reassembled by David Ferro, AIA, and other members of the Historic Preservation staff of the Division of Archives and History in order to determine the original pattern. The finished art glass dome was reproduced by experts at Louisville Art Glass, the same company, who possibly made the original.

A local craftsman, William Kroenkie of Tallahassee, was called upon to do the very tedious and precise plaster work inside the dome. In order to make the dome conform to Milburn's original specifications, Knoenkie rigged up a trammel with a vertical center pivot. As the trammel rotates, it measures the thickness of the plaster inside the dome. The trammel was also designed to strike the continuous plaster mouldings around the base of the dome which look like wood to the viewer. A metal template was cut and mounted on one end of the trammel, the plaster put up and as the trammel rotated, the template cut the plaster in the desired configuration.

Tommy White of White's Historical Restorations in Jacksonville was called upon to reproduce Milburn's pressed metal reliefs of the State seal in the two portico tympanums. White removed the reliefs and repaired and replaced the one in the east pediment. The one in the west pediment was painstakingly reproduced in White's shop. Today, they both sparkle solid white as originally intended.

A multitude of other skilled craftsmen, sometime working only with photographs, succeeded in reproducing light fixtures, pedestals, urns, balustrades and railings . . . and, of course, the red and white awnings.

At the turn of the century, Governor Jennings described Frank Milburn's accomplishment in this way. The architect has preserved in the remodeled capitol all of the beauties of the old . . ." The same is still true. ■

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The FA/AIA Headquarters

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Coral Gables—Tallahassee, Florida

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Paul A. Buzinec, AIA, Principle-in-Charge for production
John Charles Hayes, AIA, Project Architect
Robert Ricci, Construction Coordinator

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Introduction by Diane D. Greer

The large Flemish arch which boldly departs from the block of contiguous rooflines along East Jefferson Street in downtown Tallahassee is the first thing

Lobby of FA/AIA Headquarters building. Photo by Diane D. Greer.

Gallie Hall garden and rear entrance to FA/AIA Headquarters Bldg. Photo by Diane D. Greer.

View of lobby from third floor conference room level showing mezzanine level in between. Photo by Danny Pietrodangelo.

you notice about the newly restored FA/AIA Headquarters. The arch, or thumb in the vernacular, was painstakingly restored and as it soars upward, it makes a bold statement about the building's interior space. The arch is actually an exercise in trompe l'oeil. Exterior fenestration on the south front, which has been accurately restored, denotes a two-story interior. In actuality, the building is a tri-level (37 feet from ground floor to skylight) with a spacious mezzanine between lower level offices and upper level conference room. The interior space repeats the tri-level pattern established on the south front with the illusion of a third level created by the arched parapet.

At the time the Headquarters building was purchased in 1980, the idea of a competition criteria called for a contemporary interior restoration and an authentic exterior restoration. Since the building, which was known originally as Munro's Store, was constructed in 1890 as a dry goods store and a part of the Gallie Hall Opera Complex, it in included within the Gallie Hall listing to the National Register of Historic Places. Historical accuracy on the exterior of the building was critical to retaining that prestigious listing. The interior, however, at the time of the FA/AIA purchase was a dark two-story space with dropped ceilings and a filled basement. In order to make maximum use of this space, it was obvious that the building either had to go up into a third story or down into an excavated basement.

The Coral Gables architectural firm of Harper and Buzinec was the winner of the design competition. Though the winning design is not representative of the finished building, the following discussion by the architects will trace the design evolution of the building as well as a design critique and some comments about the particular challenges which this type of retro-fit produces.

AIA Headquarters Design Statement by David Michael Harper, AIA and John C. Hayes, AIA

The completed Headquarters project represents the last of three completely different designs based on three programs and budgets. They were in order of their evolution:

DESIGN NO. 1 The Design Competition Winner

The emphasis was on the creation of an "Historic Frontal Piece" behind which a new modern entry would have been located. The design included a basement and barrier-free access throughout the building. The entire second floor was rental space. This straightforward functional approach to the original program paid particular attention to tight budget constraints and placed its emphasis on the facade. It perhaps suffered somewhat on the interior due to cost constraints. Finally, in fashion reminiscent of the original Mitchell/Giurgola Design for the National AIA Headquarters, the design was rejected as being "out of character" with the area by the Capital Center Planning Commission and "unacceptable" to the State Department of Historic Archives and Records Management.

DESIGN NO. 2

The owners program changed to request the inclusion of as much floor area as possible. This resulted in the addition of an entire additional floor above grade and substantial additional estimated construction costs which were to be offset by the increased revenues from rental space. It was during this period in the development of the project that the facade was modified to its final configuration.

DESIGN NO. 3

This design recognized the need to focus attention on the creation of open interior space. This was achieved by opening up the building vertically by removing the center portion of the second floor and lowering the north portion of the Gallie Hall floor level. The linear "landscaped open office partition type" configuration of the work galley was instrumental in not visually restricting the area of continuous open office space which was particularly critical in view of the narrow width of the building. During this stage of the evolution of the design, it was determined that the client would occupy the entire building in lieu of providing an enclosed glass office space adjacent to the atrium for lease purposes. The design of the facade evolved from what started out as rectilinear window configurations at the second floor to a group of three, each with a single arched head condition and finally evolved to the implemented solution which consisted of three windows each with a dual arched window head configuration.

The client is to be credited for most of the good to be said about the building. Ironically, though, in view of the way the project came about through the design competition, the greatest contribution of the firm was probably in the area of thorough and accurate cost control which extended to estimating the construction costs to within 1 percent of the bid price and then working with the client in efforts to reduce the cost by 27 percent through inclusion of donated items and various reductions in sophistication.

The building is a two-story rectangular building 24′ wide by 78′ long. Once the design of the building captured the program, the challenge was to adapt the existing facility to enhance the design concept. The first step was to move into the demolition phase to clear out all the existing materials to determine the composition of the building. Once the building was gutted of interior finishes, it was revealed that the roof was composed of rafters with a tie collar beam between the exterior bearing walls and the second floor was composed of steel beams spanning across the building approximately 16′ on centers, and joists 2-½″ wide by 10-½″ deep. The north and south facades are walls built in between the two buildings on the east and west—Gallie Hall wall on the west and the Check-Mark Office Supply wall on the east. The second floor structural members, the rafters, and the collar beams rest on the masonry walls of these two buildings. Because of this kind of construction, the walls were not keyed together and the south wall had a tendency to fall away from the building and cause severe damage to the southeast corner.

There was a significant problem in trying to capture the 1902 design by replacing the pediment on top of the building. The structural engineers were concerned about extending this pediment 8′ to 10′ up above the roof without the wall being keyed into the east and west walls. Hurricane force winds could easily topple that pediment and cause severe damage to the building. This was solved by constructing the pediment out of solid brick with a 1′ deep by 2′ wide reinforced concrete beam cap. On the back side of the pediment, steel channels were extended up from the second floor windows through the roof up to a steel plate on the bottom of the concrete cap. The steel members were tied into four bays of the roof rafters and collar beams, then tied together with horizontal crossbracing of the collar beams, crossbracing on each slope of the roof rafters, plus vertical diagonal bracing at the ridge of the building. This series of crossed-bracing was secured to the steel channels for bracing the pediment against hurricane winds. The structure members on the north side of the pediment were finished with metal-lath and stucco-veneer.

In providing proper insulation in the existing building through the roof, it was decided to cover the 1 × 4 wood decking with 2-1/2″ of thermasote insulation board. The combination of wood decking, insulation, shingles, and air-film, gives the required R-value. Both the north and south walls are insulated with 1-½′ gypsum board.

One concept in the design of the building was to lower the back half of the second floor to be flush with the second floor of Gallie Hall. This was done because the toilet facilities for both Gallie Hall and the FA/AIA Headquarters

Building were located in a central core. The Gallie Hall second floor is 3′ lower than the Headquarters Building second floor. From the lowered floor at the exterior door, there was access to the toilet facilities and the elevator or the stairs to the conference room level. This emphasizes the importance of the conference room in its use for AIA functions. The design then was further enhanced by opening up the middle of the building at the second floor and at the roof. The size of the skylight was increased more than twice that of the existing skylight. The floor was opened up to allow light to enter the second level and down to the first floor to open up the interior of the building. This prevents the building from looking like a long narrow shaft and opens it up by providing additional natural lighting.

The second floor atrium effect and the lowering of the back half of the second floor was accomplished by cutting off the steel beams at the wall. The same beams plus some new structural members were installed into the existing walls at the lower level. New structural members and a new column had to be installed where the stairs run up through the second floor. The same floor joists were reused with new ¾″ plywood subfloor installed on the existing joists. The skylight was enlarged by removing existing ceiling collar beams and rafters. The opening is framed with four 2 × 12s on each side of the skylight to the same configuration as the rafters and then dressed out with wood trim. The east/west edges of the skylight are framed with four 2 × 12 beams spanning between the roof beams and trimmed out the same as all of the rafter beams.

The whole second floor was opened up to give the feeling of an open airy space and to express the existing structure as much as possible. All the rafters and collar beams were left in place and the glass walls around the conference area were designed to enhance this feature. By looking through the glass walls, the continuation of the structure is evident. The air conditioning ducts were exposed and the lights were hung in such a fashion that it would not take away from the expression of the existing structure.

The windows on the north and south walls were installed to the basic configuration of the 1902 style. The three windows on the north elevation of the building had been blocked up. The windows there were one half the size they are now. The masonry down to the existing sill was removed and then custom windows, designed to fit within that existing space were installed. It was very important to keep the eyebrows and the arch over the head to maintain the architectural style and compliment the Gallie Hall courtyard windows. The windows on the south side were nominal windows in a blocked-up opening. The masonry and the windows were removed to reveal the new design. The 1902 design had openings for the theatre patrons to purchase their tickets and walk upstairs to the second floor and into Gallie Hall. Sometime after 1902, the openings were sealed off and small conventional windows were installed in their place. The architects and the AIA Executive Committee worked closely with the Florida Preservation Board Architects to capture as accurately as possible the 1902 style of the building. The elevation as expressed in the new building emphasizes a tall elegant look.

The wood slat ceilings on the first floor are composed of 1 × 3 oak slats that are secured to a 2 × 4 wood suspension system from the existing wood joists. The slats were nailed to the suspension system and finished with 2 coats of clear sealer. The 7 foot high wall on the west side of the galley was designed to provide a work area for the staff, yet not make the wall so tall that it reduced the building in width, thus creating a building that is extremely long and narrow. The wall was only taken to 7 feet to provide the required height for shelving to carry all of the AIA forms. The east wall of the work galley has base and wall cabinets for the use of the secretaries and staff.

The FA/AIA staff assumed occupancy of the building on February 1, 1982, nearly two years after the building was purchased. With the dedication of the building on April 31, the FA/AIA is insuring that the structure will once again serve the important commercial function for which it was intended when first constructed nearly 100 years ago. ■

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Methodist Hospital Facilities Center, Indianapolis, Indiana Architect: Schmidt, Garden & Erikson Contractor: Tousley-Bixler Construction Co.

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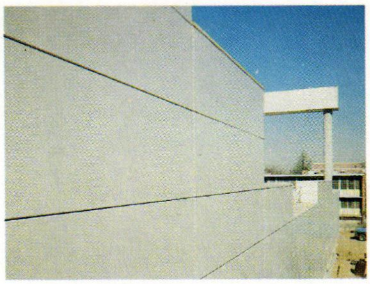

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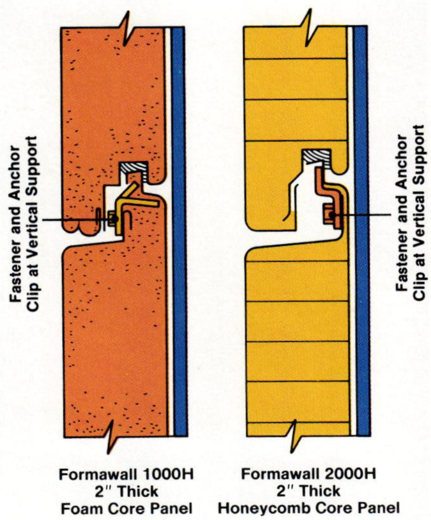

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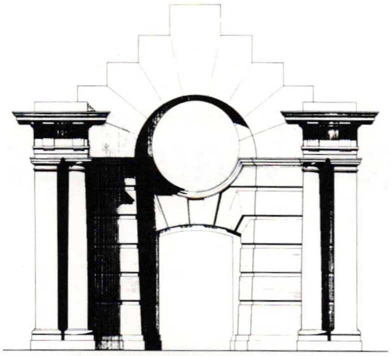

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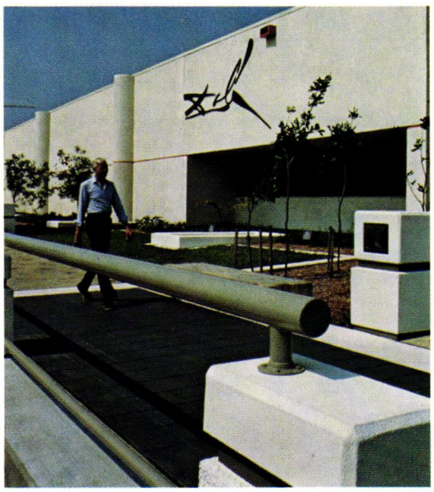
Converted Warehouse Houses Dali Collection



Top: Interior of Dali Museum showing pit where master-works are displayed. Photo by Timothy Lefstead.

Middle: Salvador Dali Museum, view from harbor side. Photo by Timothy Lefstead.

Bottom: Interior of Dali Museum. Photo courtesy of Dali Museum.

by Jim Wallace and Michael Clary

Architect: Harvard, Jolly, Marcet & Associates Architects, P. A.

Principal Architect: Blanchard E. Jolly, AIA

Project Architect: Jonathan R. Toppe, AIA

Engineers: (electrical & mechanical) Best, Hickman & Thomas Engineers, Inc.; (structural) Olsen, White & Associates, Inc.

Contractor: (Phase I Construction Manager) Federal Construction Company; (Phase I Structural Contractor) Dara Hennessy Construction Company; (Phase II General Contractor) Cox Development Corporation

In March of this year the Salvador Dali Museum opened on the St. Petersburg waterfront amidst a great deal of fanfare. Housed within the structure was the collection of Eleanor and A. Reynolds Morse of Cleveland—a collection containing 96 oil paintings, 200 drawings and watercolors and over 1000 graphics and sculptural works by the renowned Spanish surrealist. The opening of the museum capped two years of planning, construction and organization of the exhibit.

When it was learned that the Morses were looking for a new public home for their collection, they were approached by James Martin, a St. Pete City Councilman, with the idea of bringing the collection to Florida. Through the efforts of Martin and other city and state officials and an allocation of funds by the state legislature for the construction and maintenance of the building, the Morses' announced their intent to relocate to St. Petersburg. The site for the museum was donated by the City and it is on the harbor just south of the downtown. An existing marine warehouse was adapted for use as a single open gallery with the required service facilities wrapped around it. A particular requirement of Morses' was that the gallery be one large open room and the warehouse suited his requirement perfectly.

The Tampa-St. Petersburg architectural firm of Harvard, Jolly, Marcet and Associates was selected to undertake the project. With a tight budget and a tight schedule, the firm set out to design the building in two phases.

In Phase I, the warehouse was to be converted and finished as a gallery so that the collection could be safely stored. Phase II involved the addition of a lobby, sales area, office wing and storage space. In developing the final design, Jonathan Toppe, Project Architect, followed guidelines suggested by both Morse and city officials.

The completely open space left by the architect, per Morse's requirement, permits a view across the entire gallery. Ample wallspace permits the display of paintings which range in size from a 3½″ by 2½″ portrait of the artist's wife to the surrealistic "Hallucenogenic Torreador" which measures a whopping 13′ by 10′.

Harvard, Jolly, Marcet believed that the building should be a clean, simply stated backdrop for the art to be displayed. To this end, the interior of the warehouse was simply treated and honestly expresses the original structure. Large wallboard panels were hung on the masonry walls—not covering the walls, but floating out from them, leaving the painted block behind. The wallboard is trimmed in light oak and acts as a frame for the works of art. The gallery space was left open to the roof deck exposing the joists. This step provided the desired volume and opened up the space rather than closing it in with some form of ceiling. New HVAC ductwork spans the joist space.

While exposing the joists and creating increased space, HJM had to raise the floor three feet above the existing level in order to conform to flood requirements and protect the art. This allowed for the design of the return air plenum under the new floor. Then, at the end of the gallery, opposite the entry, a pit was created with greater floor-to-ceiling heights for the display of five large scale "masterworks." The museum patron is led to the pit along a gently sloping ramp flanked by oak capped glass rails. These five tremendous works may be viewed from two different and distinct perspectives, from across the gallery or closeup, thereby exposing many of the secrets and surprises of Dali's small hidden images in his large scale forms.

The museum space excludes natural light, providing a great degree of control, as well as protection, from the sun's damaging rays. A two-circuit track lighting system was selected and laid out by the architect. One set of lights illuminates the art while the other defines a circulation route.

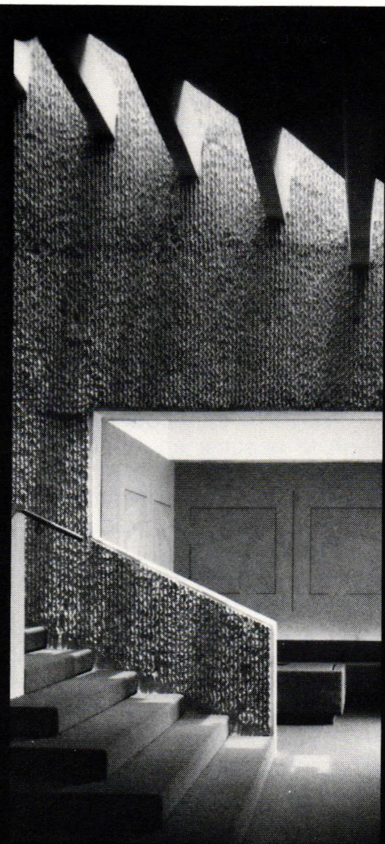
The architect was also responsible for developing the multi-faceted security system which secures the building and its valuable contents. The gallery and its storage areas are served by a halon fire protection system and humidity and temperature controls.

In order to complete all the Phase I work in the short period of time allowed, the architect recommended that the city retain Federal Construction Company as a Construction Manager. The Construction Manager then used a phased bidding process in order to begin the project more quickly and expedite construction. Construction of the gallery was completed by the target date and by the time the museum staff began cataloging the collection, the architects had begun designing the Phase II addition, which included a large lobby-multi-purpose room suitable for lectures and a sales and display room. A wing of offices and storage space forms an "L" with the lobby, wrapping a corner of the gallery.

HJM is now planning further phases of expansion to satisfy the demands of the large number of visitors and the expanding collection. The exhibit now rotates periodically as only one third of the collection can be displayed at a time. An addition to house a research library and a community room for meetings is presently being designed.

A facility designed to house such a renowned collection of art as that of Salvador Dali stands to make St. Petersburg a center for the study of the artist and surrealism. ■

JIM WALLACE *is a graduate student at Princeton University in architecture*
MICHAEL CLARY *is a graduate student at The University of Florida in architecture*



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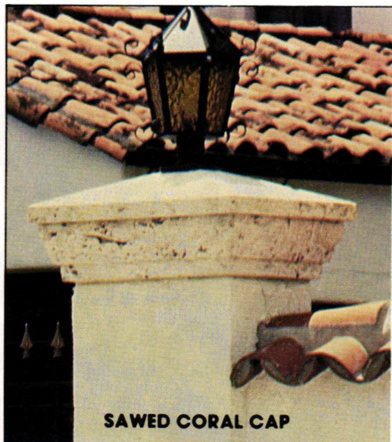

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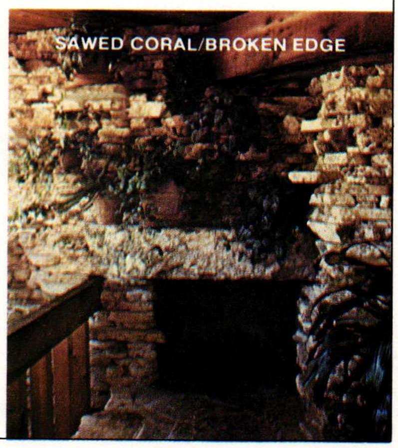

what the costs actually are and that they are getting the best possible price. The owner usually saves on change orders because of his involvement. The best approach is for the design-builder to work on a fee basis which removes any sort of adversary relationship between the owner and the design-builder.

There is nothing mystical or hard to understand about becoming involved in providing design-build services. It is very much like the process you went through to become an architect. Allow several years for training and developing business procedures. Then allow several years to slowly gain practical experience. You should plan to have plenty of funds to finance this education and cover the new risk to which you will be exposed. Your big advantage is that your training and experience as an architect will provide a good base. Rest assured, you will not be disappointed and you will find that you will be better able to serve a greater number of people. ■

Don W. David, Jr., AIA is the president and CEO of Quatre Inc., a design-build company. He is also a principal in the architectural firm of Ricks/Kendrick/Stokes/David Architects Inc.

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1982 Governor's Design Awards

On May 3, 1982, Governor Bob Graham presented six Florida architects with design awards. The recipients of the 1982 Governor's Design Awards Program received their prize in the newly restored Supreme Court Chamber of the 1902 Capitol.

This year's winning projects were in eight design categories located in five Florida cities from Miami to Pensacola.

The Awards Program, started by Graham in 1981, is unique in the United States. It is open to nominations only from state and local governmental agencies. Florida makes a significant investment in its public capital outlay program each year and it is appropriate for the results to be evaluated in a review of the overall success of the facility after a period of use for their intended purpose. Three Architects were among the jurors for this year's program. They were FA/AIA President Glenn Buff, AIA, John Steffian, AIA, Chairman, Department of Architecture and Planning, University of Miami, and Bob Burke, Chairman, Florida State Board of Architecture.

EDUCATION

North Campus, Leroy Collins Campus Center
Miami-Dade Community College
Miami, Florida
Agency: Miami-Dade Community College
Architect: Ferendino/Grafton/Spillis/Candela

The jury commended the fact that the indoor-outdoor relationships established by this design provide a notable setting for the various pursuits of the Center. The large covered open-air space for major activities takes maximum advantage of the climate, while allowing for protection from the elements. Compatible and exciting uses of color and material to articulate the building spaces were also noted.

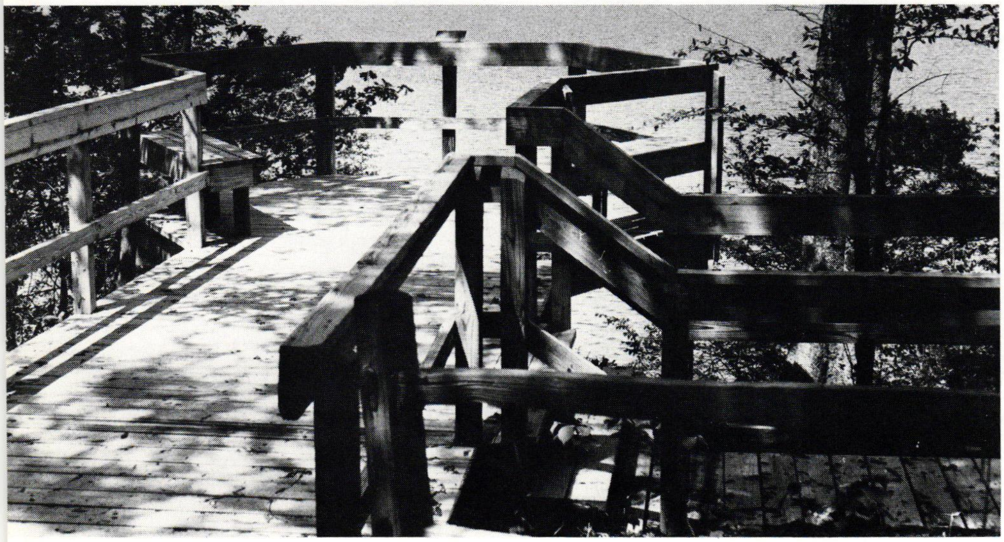
University of South Florida, College of Business Administration (Ferguson Hall)
Tampa, Florida
Agency: University of South Florida and Department of General Services
Architect: Rowe-Holmes & Assoc.

The jury was extremely impressed by this energy conservative design. The building has a distinguished bermed pyramidic form and generates excitement from the ways in which natural light and ventilation are introduced.

TRANSPORTATION

Interstate I-110
Southern Terminus
Pensacola, Florida
Agency: Department of Transportation
Architect: Reynolds, Smith & Hills

The jury commended this bridge for providing a graceful and unobtrusive transportation design solution while maximizing potentialities for public open space within its surrounds. Particularly impressive are its simple curved lines and single pedestal base, together with its apparent lightness, all of which give a clear indication of the designer's intention to avoid the hostile impact that many such bridges have upon the landscape.



RECREATION

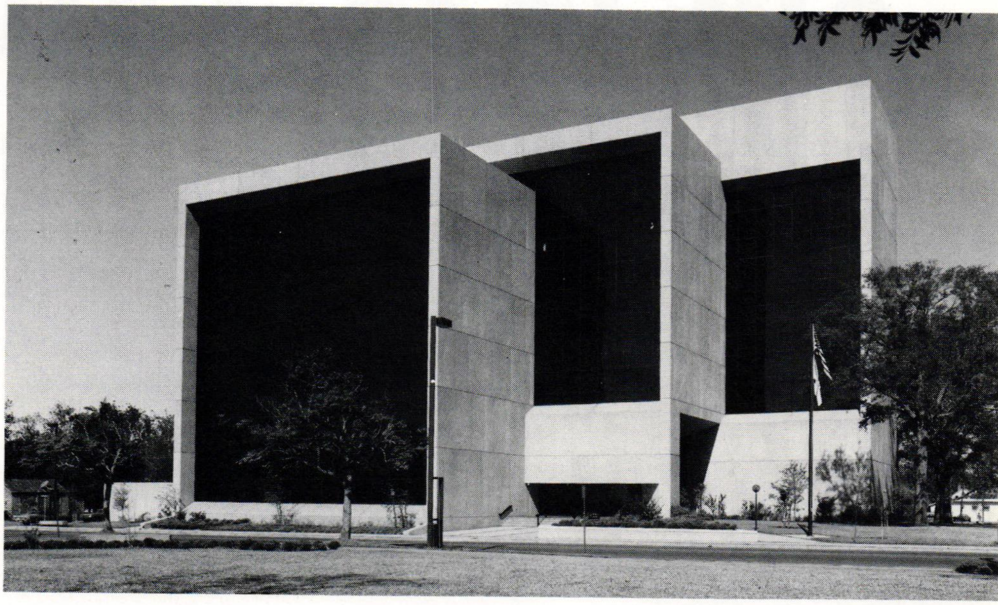
Lake Talquin State Recreation Area
Tallahassee, Florida
Agency: Department of Natural Resources
Architect: Harry Dickman

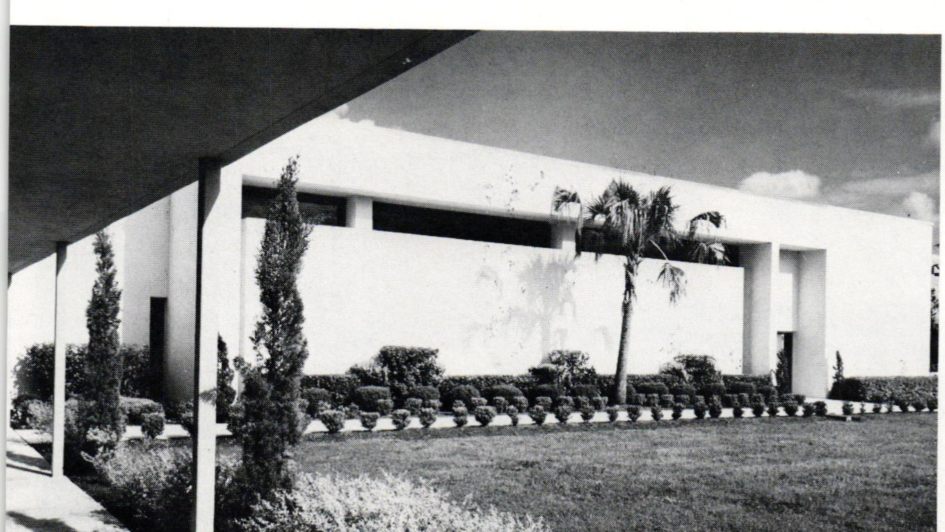
Of the recreational entries, this project exhibited the most sensitive integration of buildings, stairs and walkways which complements the terrain and exploits interesting views of the landscape. The shelters are strong design elements that are treated unpretentiously.

ADMINISTRATION

Escambia Regional Service Center
Pensacola, Florida
Agency: Department of General Services
Architect: Ellis W. Bullock, Jr.

The jury felt this building to be a handsome structure, sited and designed with environmental sensitivity. The material and exterior skin of the building are well articulated and proportioned. It is clear that the designers took great care to preserve the existing landscape and to integrate it with the building's entrance, thus forming a pleasant and human transition from the street to the building itself.





OTHER PUBLIC SERVICE FACILITIES
Special Award of Merit

Frederick H. Owen, Jr. Chapel
Lawtey Correctional Institution
Lawtey, Florida
Agency: Department of Correction
Architect: Kemp, Bunch & Jackson

The jury was extremely impressed to find that the users themselves formed its construction team. The craftsmanship and care that are evident throughout are of good quality, resulting in a chapel which is a commendable piece of work. For this reason, the jury wished to provide a special Award of Merit in recognition of and encouragement to those that participated in its construction. The jury noted that the user approach should serve as a model for similar undertakings by other institutions.

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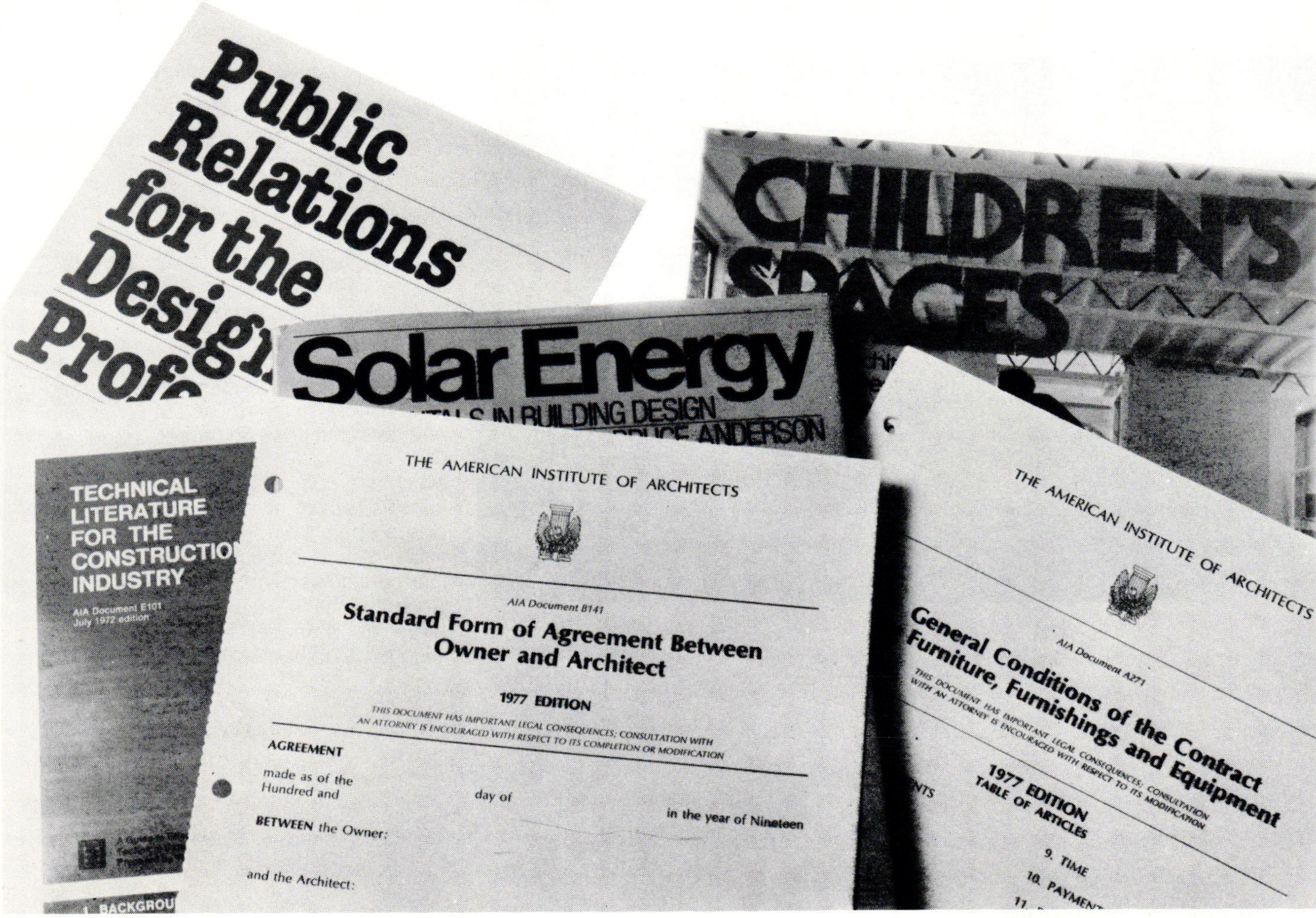

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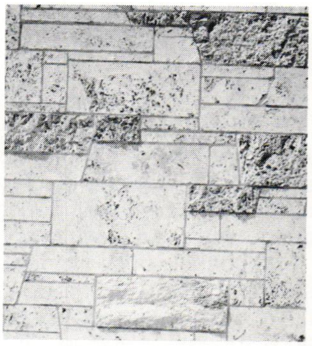
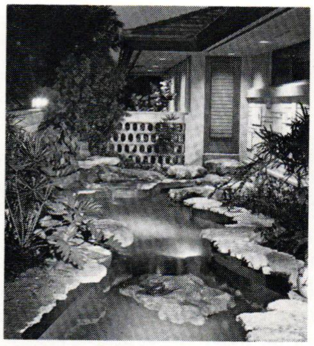
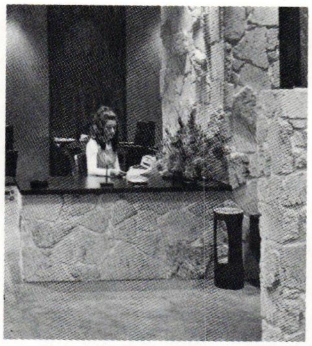
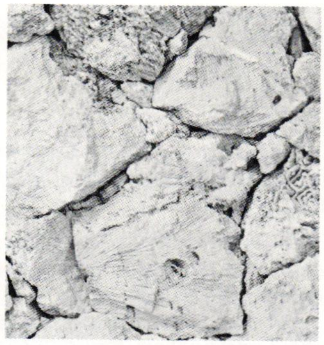

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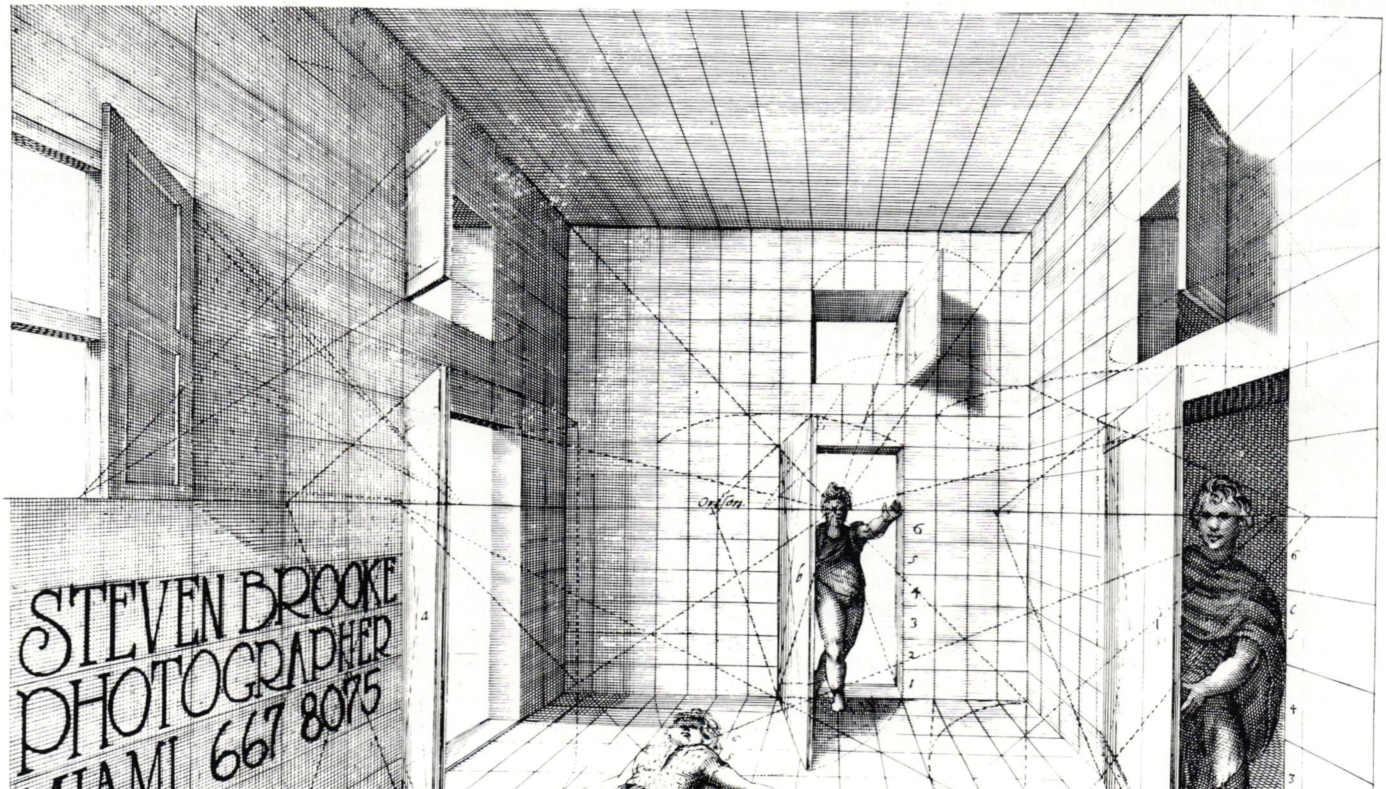

Architects Dilemma; Window Specs in Florida

by Jack Adams, Plant Engineer, and John Brown, Technical Manager, Alcan Building Products.

Window specification for Florida construction is a rather complex riddle to decipher—even with clues.

Federal glass standards, levels of window certification, five different building codes and a state energy code, in addition to Florida's five wind zones—all must be dealt with in determining what window to specify for a given project.

Attempts to simplify the Florida codes and classification ratings, established by the Architectural Aluminum Manufacturers Association (AAMA) and the American National Standards Institute (ANSI), have led in some cases to oversimplification. It has been considered a safe and simple practice to specify what is perceived to be the highest quality window throughout a high-rise building—namely, an A2, double strength glass window.

However, it would be more appropriate and economical for such project principals to ascertain what types of windows are best suited for a particular building design and locale.

From AAMA and ANSI specifications, A2 windows appear to differ substantially from B1 windows, the most common window type. In actuality, only two test specifications distinguish these window types.

First, AAMA and ANSI require that tests for air infiltration, water leakage, exterior/interior wind load and structural strength for an A2 classification utilize a window measuring a minimum of 54 x 90 inches. A B1 rating test must use a window equal to the largest size offered in that line by the manufacturer, typically much smaller than 54 x 90 inches. An A2 also must be able to pass a horizontal rail deflection test with a higher wind load.

Second, the required sill thickness, 0.078 inch for an A2 window test, 0.062 inch for B1, is unapparent to most users. Both have equally sturdy frames, and can accommodate single and double strength glass. However, greater sill thickness will not usually produce higher test numbers. In fact, most A2/A2.5 windows carry lower structural test ratings than B1 HP units.

The primary consideration in window specification thus becomes determining what window is most appropriate for the situation.

USE RIGHT WINDOW FOR RIGHT HEIGHT

Architects select and specify a window based upon overall quality, cost, aesthetics and strength.

The overall aesthetics and performance of A2 and B1 windows do not differ just because one is of an "A" of "B" rating. Hence, the quality of A2 and B1 windows (and for A2.5 windows for that matter) produced by a given manufacturer is similar. The difference in window strength lies only with sill wall thickness.

A thicker sill, or rather an A2 or A2.5 window, is used primarily for an oversize opening—one measuring a minimum of 54 x 80 inches. For buildings requiring smaller, more standard sized openings, B1 windows will ensure quality performance at both high and low elevations.

For example, in Lee County, Florida, using a 37 x 50⅝-inch size window, the architect could specify building windows as follows for high-rise construction: (1) Floors 1 through 5—B1 window with single strength glass; (2) Floors 6 through 10—B1 windows with double strength glass; and (3) Floors 11 and up—B1 windows with 3/16-inch glass.

For a more panoramic view of the top few floors, an oversized opening and an A2 or A2.5 window would be more appropriate than a B1 window—assuming the top floor did not exceed acceptable elevation limits of the A2.5 certification for that wind zone.

The difference is not to increase adequate certification levels of the window, but glass thickness to ensure proper window protection from wind load.

The Florida Model Energy Code recommends specific thermal properties or shadings for the glass at various exposures to help keep heating and cooling costs to a minimum.

The specification task is made simpler by manufacturers who produce quality B1, A2 and A2.5 windows adaptable to glass sizes of up to a half inch.

Proper window specification, with appropriate glass strengths that meet the particular building design and location, produces cost savings for the entire project. Demands for weather integrity, optimum performance and aesthetics in a window can be satisfied economically. ■

GLASS SPECIFICATION CHART FOR
WINDOWS IN 110 MPH WIND ZONE

																					2P	2P	2P	2P	3P	3P	3P	3P	3P	3P	3P	3P	DESIGN
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	1.1	1.8	2.4	3.1	3.8	1.7	2.6	3.6	4.6	5.7	2.4	3.8	5.3	6.7	8.3	3.6	5.7	7.9	9.9	12.3	5.3	8.3	11.2	14.2	4.9	7.7	10.4	13.2	7.4	11.6	15.7	19.8	Square Footage

S - INDICATES SINGLE STRENGTH GLASS
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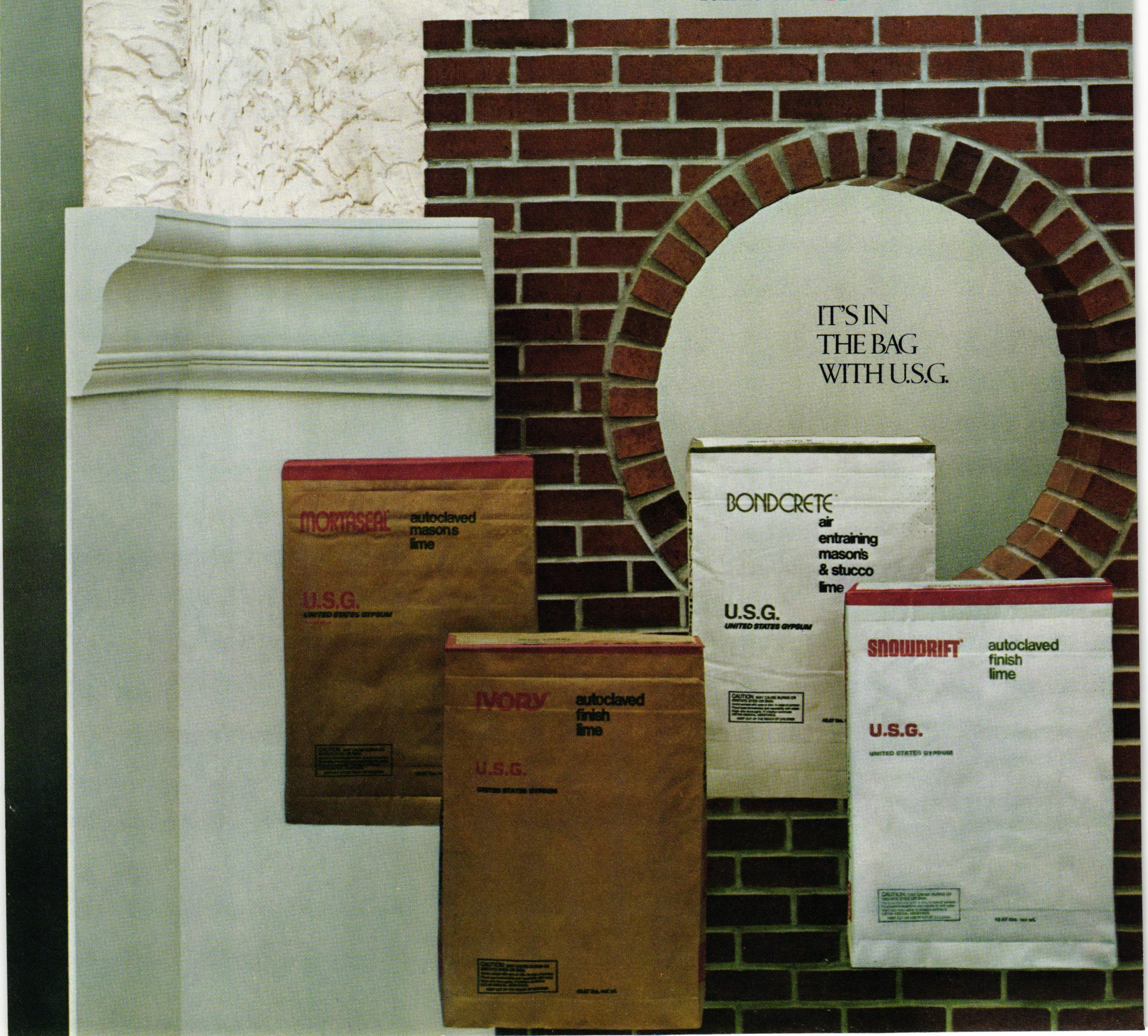

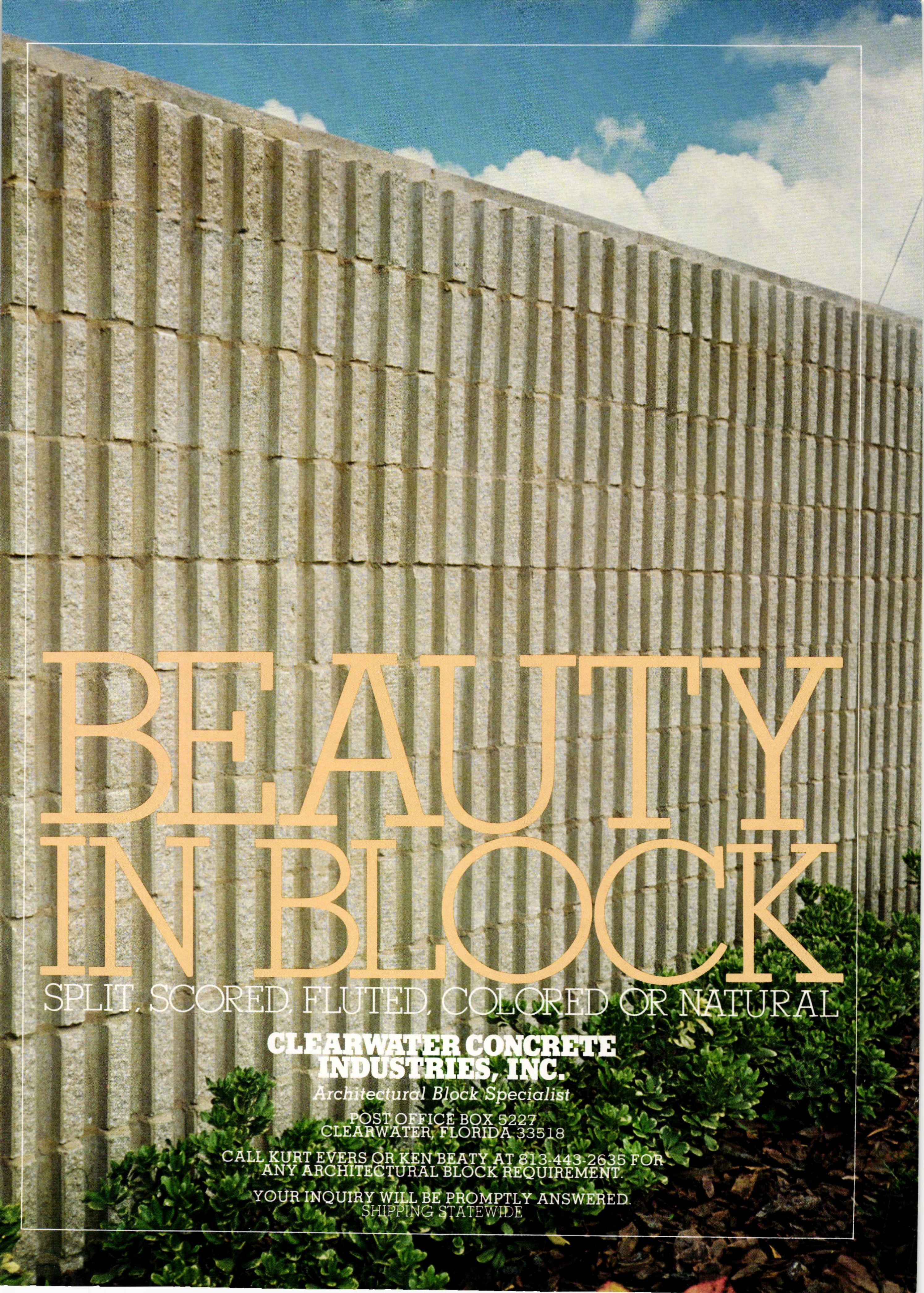

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