FLORIDA ARCHITECT March/April, 1991

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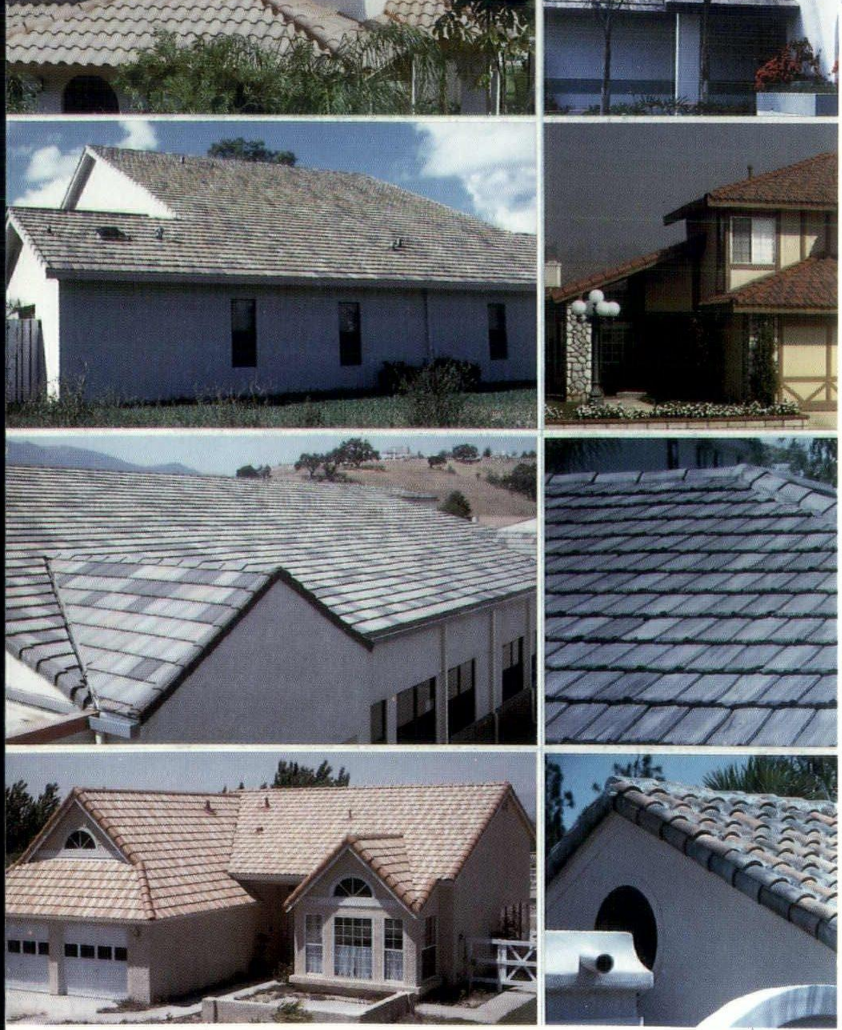

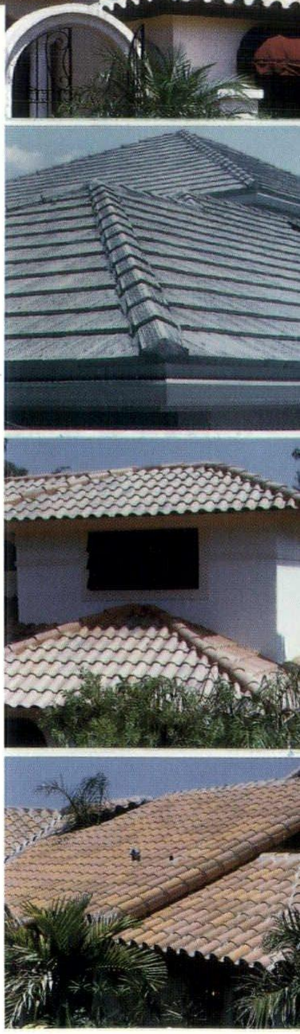

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St. Petersburg Times Offices St. Petersburg, Florida

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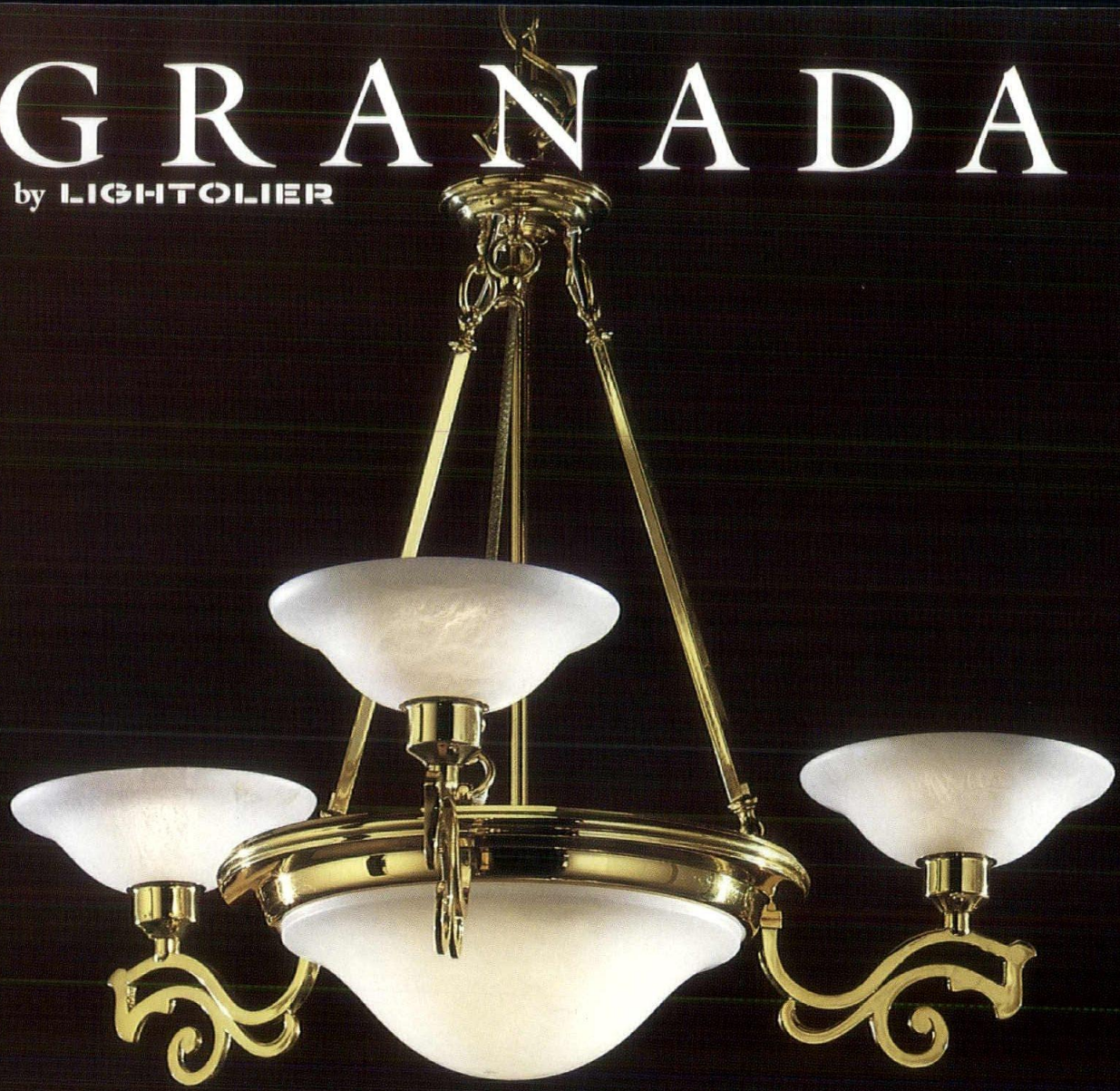
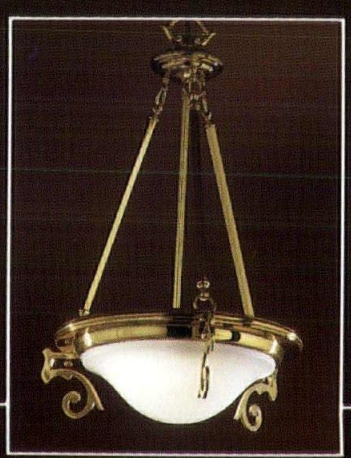
Cover photo of Trio Restaurant in Tallahassee is by Randy Lovoy. Architects: Craig Huffman, AIA, in association with Larry Peterson.

GRANADA

by LIGHTOLIER





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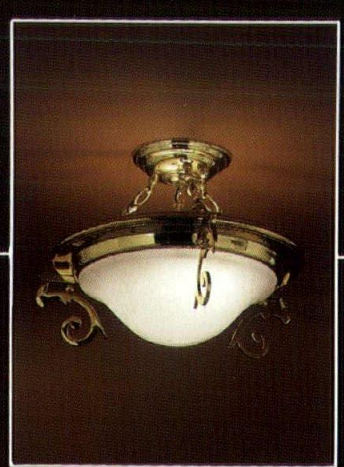

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Publisher/Executive Vice President
George A. Allen, CAE, Hon. AIA

Editor
Diane D. Greer

Assistant Publisher
Director of Advertising
Carolyn Maryland

Design and Production
Peter Mitchell Associates, Inc.

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EDITORIAL

As the world waits, and watches the developments in the Middle East, I sit composing this editorial and wondering what will have happened in the world by the time it's in print.

My chief concerns until now have related to the recession this country finds itself in, the shortage of funds for construction, low housing starts and architects whose practices are taking the brunt of the economic downturn. Additionally, the state of Florida, in its struggle to improve it huge economic deficit, is causing jobs to be lost and the picture seems very grim close to home. Now, all of that pales in light of the war and all that the very word implies.

I know the economy will recover, hopefully sooner than later. I hope the recession will be brief. I can only pray for those whose lives will be dramatically affected by this tragic turn of events.

On a far more positive note, this issue of *Florida Architect* contains five interesting projects, most of them small scale. During 1991, FA will be publishing articles which will hopefully draw the landscape and interior design communities into its reading audience. This issue focuses on several small projects, two restaurants at opposite ends of the state and a South Florida hair design salon, all of which showcase the talents of architect and interior designer in concert.

The Samuel P. Harn Museum of Art at the University of Florida is by Orlando architect Kha Le-Huu. It's an exciting addition to the University of Florida campus and to Florida's art world in general, providing as it does a beautiful showcase for exquisite painting and sculpture.

Then to Hollywood, but this time in California, to view the work of architect Lawrence Scarpa as he transforms a deteriorated building into a high tech film production studio. The film industry has hit Florida hard and fast and readers should find this project interesting, particularly with the potential for designing such buildings here. **DG**

NEWS

Architects Selected For Tampa Museum Expansion

The collaborating firms of Antoine Predock Architect of Albuquerque, New Mexico, and Robbins, Bell & Kuehlem Architects of Tampa have been selected to design a $35 million expansion of the Hillsborough County Museum of Science and Industry.

The expansion will be built in three phases over a 15-year period, with Phase I consisting of approximately 110,000 square feet of free-standing science exhibit halls, an Omnimax theater and supporting educational facilities. The projected opening date of the first phase is 1994.

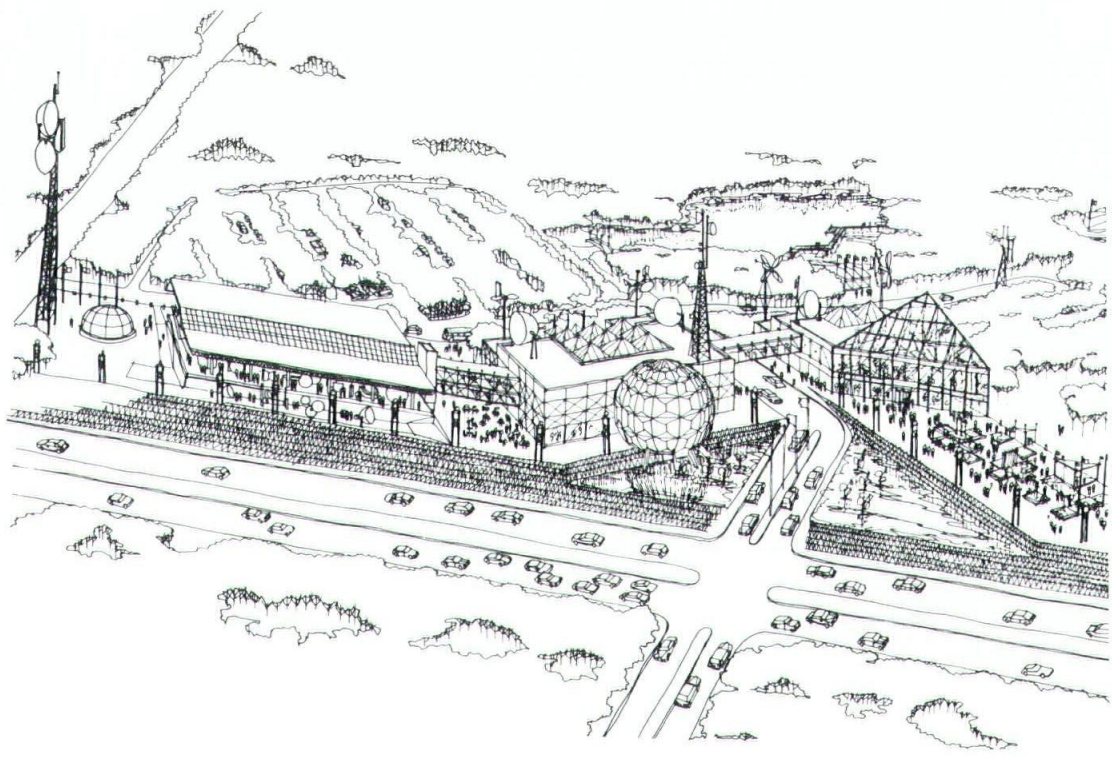
The project also includes the site design of 47 acres that will contain special water conservation elements and outdoor environmental exhibits.

Predock, the "cosmic modernist," was selected from more than 100 applicants. The short list, a veritable "Who's Who" among national firms, included:

- Pritzker Prize winner Frank O. Gehry of Santa Monica, CA in association with the Tampa firm, Rowe Holmes Hammer Russell Architects;
- Pritzker Prize winner Richard Meier & Partners of New York in association with the Tampa firm, Ranon & Partners;
- Cambridge Seven Associates of Boston in association with the Tampa firm, Fleischman/Garcia Architects;
- E. Verner Johnson & Associates of Boston.

"Those architectural firms who weren't selected are as significant as those who were," says MOSI board member and architect Gerald Curts. "We would not have received this kind of response if the project were not such a special one. We have the opportunity to become the premier museum facility in the southeastern United States."

Predock has won national design competitions for many of his buildings, including the American Heritage Center and Art Museum at the University of Wyoming, the classroom/laboratory/administration building at California Polytechnic University and the Arizona State University Fine Arts Center. His Las Vegas Library/Discovery Museum graced the October cover of *Progressive Architecture* magazine. *Renee Garrison*



This 1989 artist's rendering shows the size and scope of the Museum of Science and Industry's current expansion plan.

LETTERS

Editor:

I read the STYLE article by J. West in your November / December issue with great interest. While generally informative in the context of what can only be viewed as an 'evasive concept,' West poses a variety of interesting ideas.

He suggests that a 'complete lack of bias in architectural criticism is unattainable.' Of whom does he speak: 4-year-old children, the Kung of Africa, Eskimos, Amazonian Indians, Ada Louise Huxtable, Beth Dunlop, Vincent Scully, Corbu? Of course, humans have proclivities: it is the nature of the human spirit to be inclined toward a variety of things among which may be color, form, texture, line and the like. But, I submit that such a broad statement tends to the unproven. The studies of Rachel and Stephen Kaplan – psychologists at the University of Michigan who have for years researched the human response to various images in the landscape – seem to suggest that there are somewhat-uniform responses to the same image, despite the varied backgrounds (proclivities) of the viewers. Voltaire – in his *Allegory of the Cave* – explores the idea of one's ability to know and to comprehend the meaning of the terms 'dark' and 'light,' if one has always lived in the darkness of a cave. The mere absence of one element – in this case, the light – does not deny to the cave's resident the ability to perceive nor to imagine what 'light' must be. It seems thus to follow that unbiased architectural criticism is achievable, and it depends entirely upon the context in which such architectural judgments are rendered. The pres-

ence or absence of certain knowledge does not inherently preclude or insure rational judgments on architecture, rather precluding only those which some may view as being 'informed.' But, many would agree – I suspect as West might – that 'informed' judgments on architecture are often as dangerous as no judgments at all.

On the subject of 'beauty,' that evasive concept: it seems a term used rather loosely within the text, as if it were precisely-definable, which of course it is not. Beauty is an issue of 'fitness' and 'appropriateness,' a pride of lions roaming freely on the Serenghetti at dusk might well be considered 'beautiful,' but that same pride roaming 'freely' within the confines of a man-made zoo exhibit is quite something else. That the pride of lions is deprived of its true freedom by the confines of the zoo, has everything to do with beauty, defined by fitness and appropriateness. Lacking these two characteristics insures an absence of 'beauty,' as the inherent nature of the element is converted from one 'natural' function to a second 'managed' function. While the components of both settings may be exactly the same, it is the context, fitness and appropriateness which play the dominant role – it seems to me – in defining beauty. How that translates to architecture seems rather simple. A wonderful piece of Downing's cottage architecture, set within Times Square is not beautiful, while the same structure set in a pastoral English countryside would surely be beautiful.

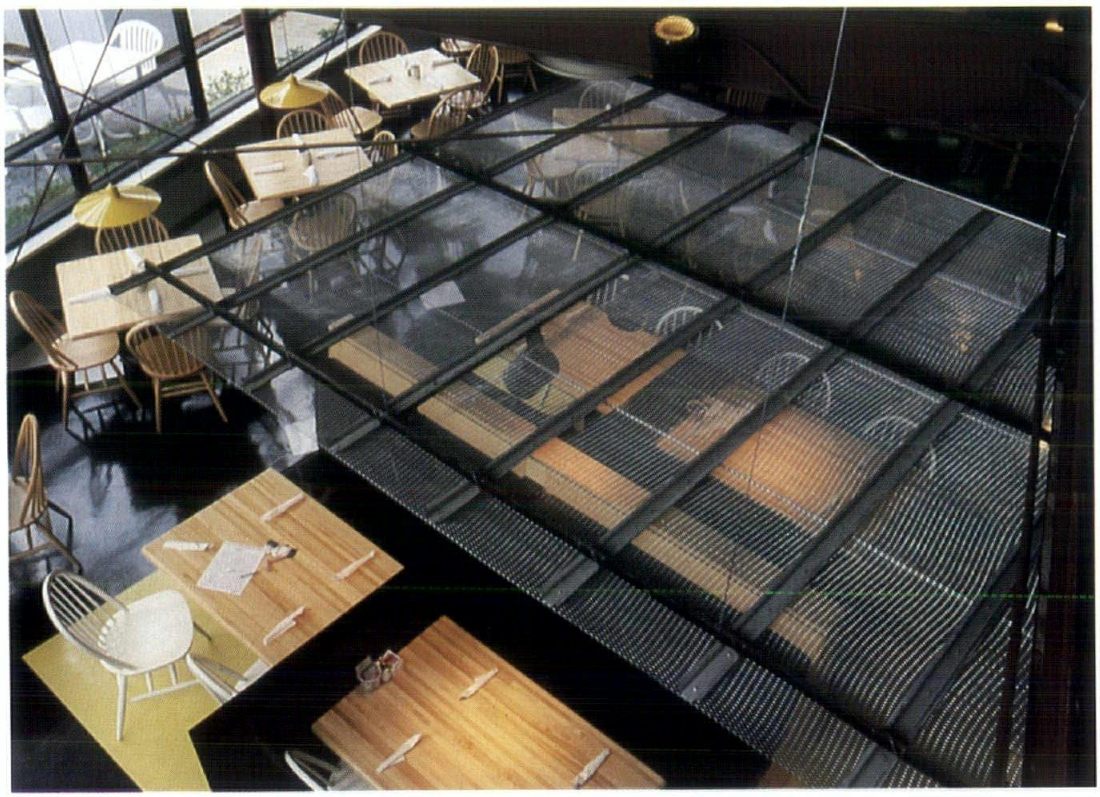
Any comments? I would be interested to hear other opinions on the concept of 'beauty.'

Ted Baker, ASLA
Landscape Architect

A Tallahassee Eatery With Family Appeal

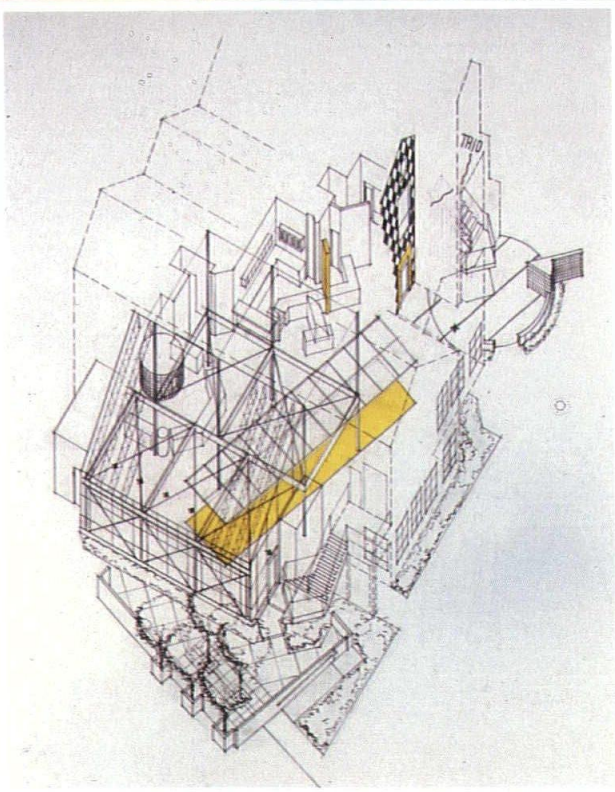
TRIO Restaurant
Tallahassee, Florida

Architect: Craig Huffman/ Architect, Tallahassee, in association with Larry Peterson, Associate Dean, Florida A & M School of Architecture
Project Team: Craig Huffman, AIA, Larry Peterson, Leslie Harris
Structural Engineer: A. Emmett Anderson III, PE
Mechanical/Electrical Engineer: Liebtag, Robinson & Wingfield, Inc.
Landscape Architecture: Hodges & Associates
Graphics, Logo, Signage: Vicki Monroe, in association with Craig Huffman/Architect
Owner: Pattymax, Inc.
Contractor: L.L.T. Development, Inc.



The owner of TRIO in Tallahassee is not new to the restaurant business. He already has four successful restaurants operating in downtown Tallahassee and he was in a perfect position to know exactly what the city needed as its next new eatery. He was concerned about the fact that there were few, if any, family restaurants in the vicinity except fast-food chains. The few upscale restaurants that did take kids expected them to behave. What this restaurateur wanted was an exciting and distinctive place for families to eat in casual clothing...a place that was light and bright and noisy with TVs going. Just like home, but not like home.

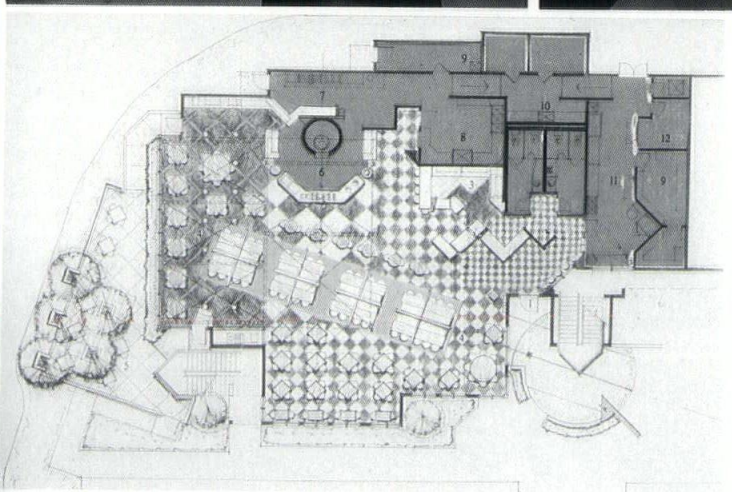
With that set of imperatives, architects Craig Huffman, who teaches at FAMU, along with colleague Larry Peterson, went to work designing the 200-seat restaurant in an already existing two-level shopping village. The site consisted of four 20-foot wide bays in the first level and two bays in the second level, plus adjacent areas to the north and east.



The design solution evolved from a conversation between the designers. At times, the architects would variously assume the role of owner, chef, manager, waiter, and especially patron, to question and challenge their initial ideas.

Since the client insisted that there be no "cheap seats," no bad seats, in the restaurant, seating placement, type and number became a primary determinant in the final composition. It led, in fact, to the eighteen-degree "cant", which together with the orthogonal order of the exposed structure and the 45-degree pattern of the floor and cabinetry, creates an environment that is both dynamic and playful. With pa-

Photo on opposite page shows metal lath cloud which carries lighting and lowers the scale of the space. Axonometric courtesy of Craig Huffman. Photo this page, top left, shows the salad island and food preparation area. Photo, top right, is of indoor booth seating with outdoor dining area beyond. Site plan courtesy of Craig Huffman, AIA. All photos by Randy Lovoy.



trons walking at right angles to the main axis of the open two-story space, the architects gently shifted the focus toward the huge pizza oven. The booth island was rotated slightly and placed on an area of yellow vinyl tile with an expanded metal lath cloud hanging over it to carry the lighting and lower the scale. The final design was exactly what the client was hoping for, an exciting space where good food could be enjoyed.

The structural steel frame is exposed on the interior of the restaurant. There are also exposed pine trusses, maple millwork, metal lath and miscellaneous steel plates and diagonal bracing, all in clear view. Outside, there is a stucco and black anodized storefront.

The fact that the existing building is a two-way post-tensioned slab resting on marbled pipe clay made the addition and renovation difficult. By pulling the existing window wall out to include the walkway to the street, the architects were able to push the entry back beside the exterior stairway and create an alley-like entry which is both private and intriguing. With the customers already pulled deeply into this space and entering on the far side of the dining area, they are also pulled naturally out to the newly created courtyard.

The pasta-pizza-grille-bakery cuisine includes the sale of freshly baked goods right over the counter and pizza which is baked in a wood-fired, seven-foot diameter, 4,000-pound pizza oven which is visible from much of the restaurant. There is also a discreet, full-service bar, an open kitchen and outdoor dining is available when the weather permits. There is no question that in this restaurant, food preparation is the entertainment.

At the Harn, the Focus is on Art

The Samuel P. Harn Museum of Art University of Florida Gainesville, Florida

Architects: Kha Le-Huu and Partners, P.A., Orlando (design); Jackson-Reeger, Inc., Gainesville (technical).
Design Team: Kha Le-Huu, AIA (principal in charge of design); David Jackson, AIA (project manager); Bud Reeger, AIA (technical coordinator); Thomas Chapoton, AIA (project architect)
Project Team: Christopher Brown; Andrew Davis; Juan Haberkorn; Patricia McBraver; Joe Wynn; Steve Ziemba; Terri Welch; Deborah Morgan; Bao Le-Huu; Linda Waller; Kenneth Felix
Structural Engineers: Allan Conrad & Mitzo, Inc.
Mechanical/Electrical/Fire Protection Engineers: Ingley, Campbell & Moses, Inc.
Lighting Consultants: Robert Laughlin Associates, Inc.
Security Consultant: Steven Keller Associates, Inc.
Landscape Architect: Blitch, Davis & Feiber, Inc.
Civil Engineer: Ing, Chance & Denman, Inc.
Owner: Florida Board of Regents
Contractor: Gilbane Building Co.

When Kha Le-Huu learned that his firm had been selected to design the University of Florida's new art museum in 1987, he knew he would be working with certain givens.

His budget was set at just under $8 million for the 32,000-square-foot facility — $3 million donated by the family of the man for whom it was named, Samuel P. Harn, $4 million in state funds and the rest privately donated. His site, on the edge of the campus in an agricultural area, sloped rather steeply and would need to be dotted with several retention ponds.

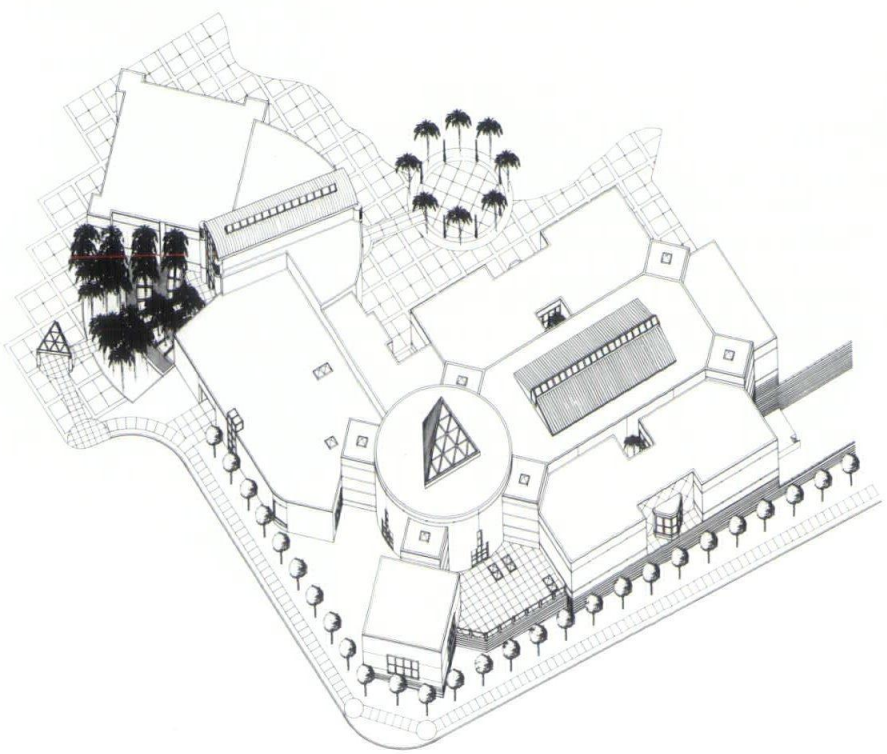
Another program requirement would be the creation of a master plan for a cultural precinct that in addition to the Samuel P. Harn Museum eventually would include a performing-arts center and natural history museum. From the start, the Orlando architect knew he would be linking the buildings visually and functionally.

On the day he learned he would be in charge of the ambitious project, his first thought was of his ultimate goal — creating an art museum that would be an equal to the art it would shelter. By the next day, Le-Huu was on his way to Paris, to see what made the

world's great museums successful — or unsuccessful. He found that many of the older museums had not been designed as museums and some of the newer ones suffered from a basic flaw: their architecture made it difficult to appreciate the art. By design, their shapes and spaces dominated the works displayed inside.

Le-Huu set out to create a museum that would work with its art, designing a subdued, but dramatic, building whose organization is logical and understated. From its emphatic, barrel-vaulted entrance, along a paved walkway set with diamonds of transluscent black granite and flanked with tall, broad columns topped with beacon-like lights, to its premier open space, the tetrahedron-capped rotunda that leads into the galleries, the new Harn is a museum that seeks to welcome and orient its visitors, offering them a pleasant, well-lighted tour of its permanent collections and changing exhibits.

The building's muted exterior, with its quiet palette and crisp massing of simple geometric shapes, sets the tone for its interior. On the upper, or gallery, level, outside walls are gray concrete enlivened with slender bands of creamy travertine and an occasional small square of black granite. The walls of the lower level, a service area closed to the general public and nestled beneath the galleries on the site's slope so that the loading dock is accessible but hidden from museumgoers, are clad with a bold pattern of alternating buff and red rectangles of split-face masonry block that seem satisfyingly sturdy and decorative. The low lines of the gallery level — all



that is visible to those entering the museum from the main parking area — are broken by the dramatic, jagged lines of the crystalline tetrahedron rising over the curving drum of the rotunda.

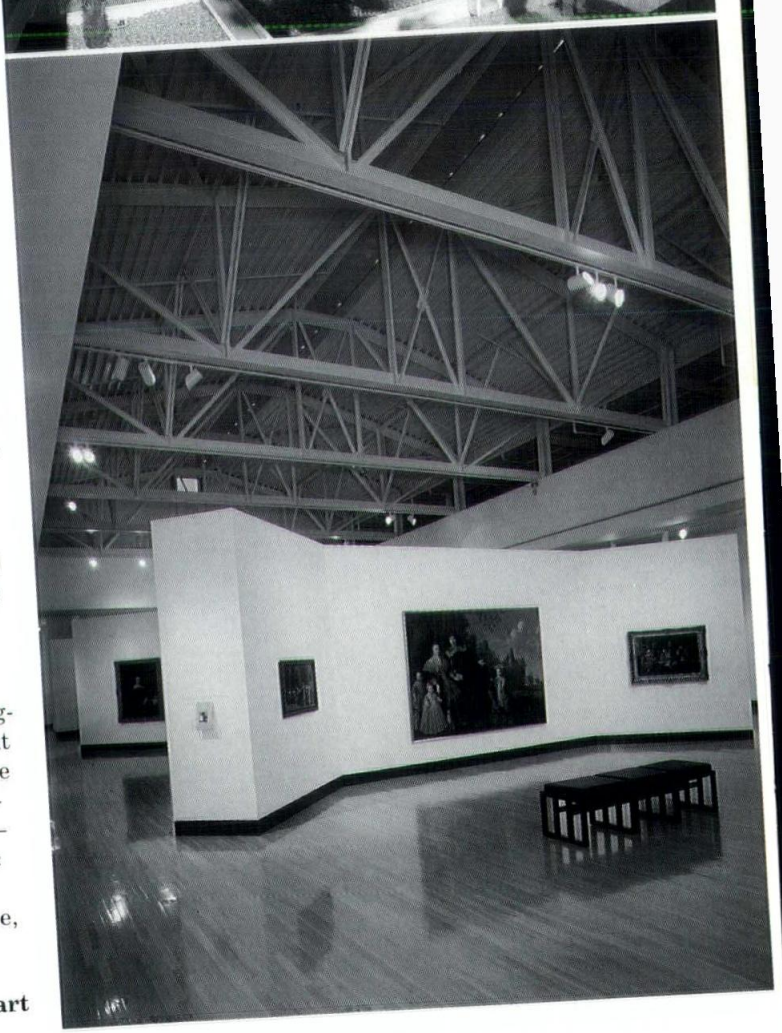
Once inside, the museum's visitor is immediately aware of the vast, friendly spaces opening before — and, with vaulting soaring to more than 30 feet, above — him. To the left of the entrance is a 200-seat auditorium; to the immediate right is an attractive, but definitely utilitarian, kitchen. Just beyond the auditorium is the bright, window-walled museum shop and seating that overlooks the still-incomplete cultural precinct that will rise outside the museum. To the right of the lobby, beyond a passageway whose ceilings are a cozier 18 feet above, lie the offices of the administration staff — easily reached by visitors but separate from the galleries and storage, conservation, loading and preparation areas below, on the ground level.

Le-Huu, however, saved his most impressive vista for the rotunda, a circular space that rises to 60 feet at the peak of the tetrahedron skylight and leads directly into the main gallery ahead or, alternatively, into smaller, more intimate galleries that are clustered around the skylighted, oak-floored main hall on three sides. The basic concept was that the main gallery would be used for changing exhibits, divided by partitions as needed and lit partly by cool northern light admitted from above when the skylight was open.

Visitors could view works in the main gallery, making forays into the smaller, carpeted spaces to the side to view African masks, American paintings and other pieces from the Harn's permanent collection. As all spaces are linked by a logical network of passageways, the entire 18,000 square-foot gallery space feels open and friendly. Yet the surrounding, smaller and quieter carpeted galleries are clearly distinguished from the main hall and so allow the visitor to approach the works in understandable units.

In large part, that unusual sense of spatial clarity is due to the organization of volumes, particularly in terms of the various ceiling heights and floor treatments. But certain grace notes also add to the satisfying spaces in the Harn's galleries: Le-Huu defined the peripheral spaces with angular window seats, spartan in their use of the same cool, whitened oak that serves as flooring in the main hall and vast, metallic grids on the windows that refer to the functional, even industrial, appearance of the ceilings in most of the galleries. There the decoratively exposed ductwork, lighting and other usually concealed elements were simply painted white and left in plain view, far above the more refined art works. In addition, Le-Huu included small, enclosed garden spaces throughout the galleries, bringing the environment itself next to the art and emphasizing the museum's underlying, harmonious interplay of opposites — interior and exterior, metallic and wooden, smooth and rough, curving and crystalline, open and enclosed.

Laura Stewart



High Style Hair Style Setting

Frederick Savage Salon
Boca Raton, Florida

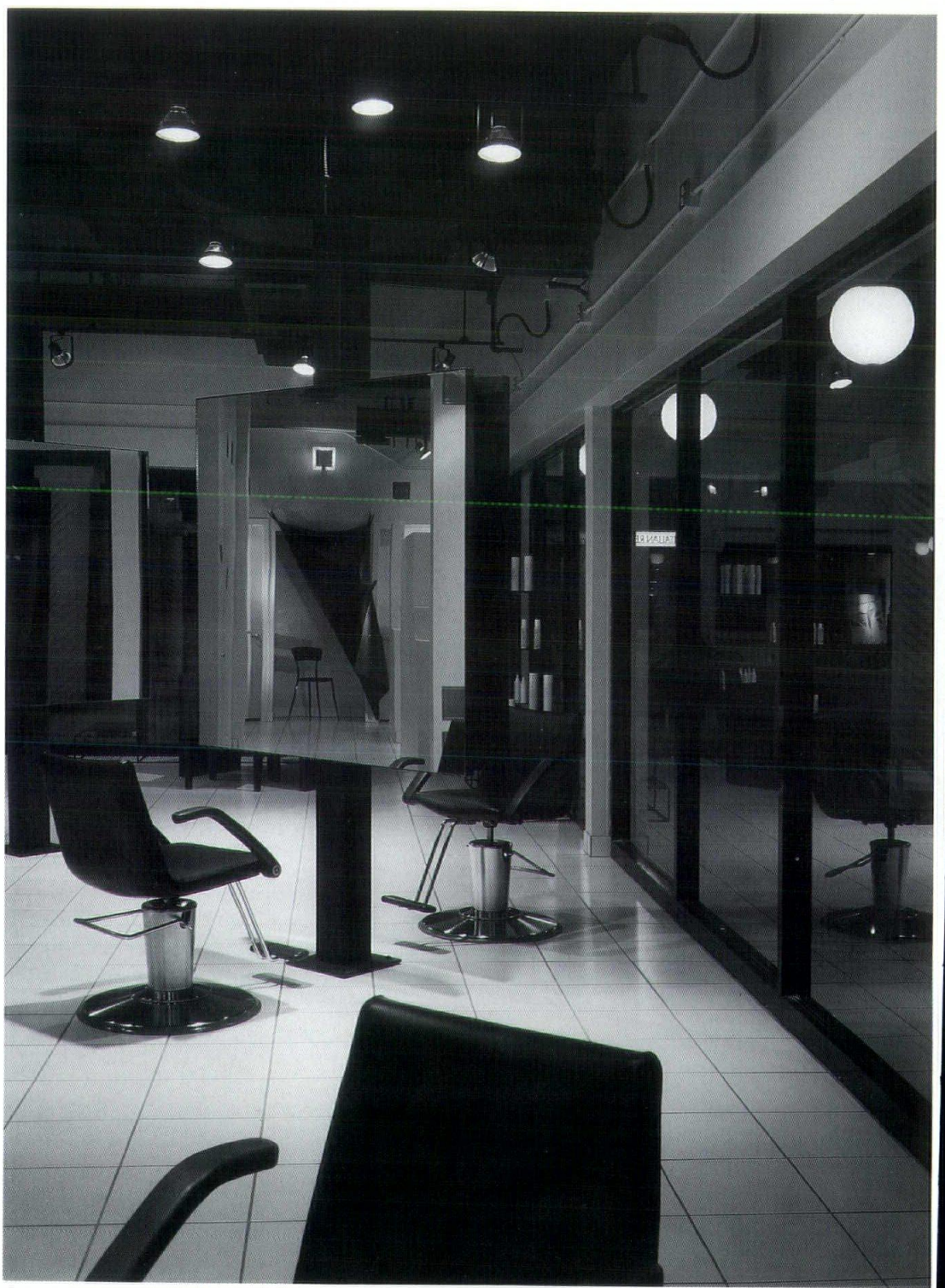
Architect: The Berenbaum/ Simon Group
Boca Raton, Florida
Principals: Wayne Berenbaum, AIA; Shelley Simon, IBD,/ASID
Project Manager: Steve Torp, AIA
Contractor: The Legend Co.
Owner: Frederick Savage

The Frederick Savage Salon was designed and created as an architectural environment in which an open-plan theme is combined with commercial and industrial elements housed in a highly visible retail area.

Since the goal of the facility was to present itself as an open, uncluttered environment yet provide private areas within a client-oriented business, the design evolved around a closed core with client services radiating to the periphery of the predominantly glass curtain walled area. Partitioning of spaces was minimized and controlled spaces utilize mesh screening to further define space.

Within the facility, space is maximized by incorporating the standard steel bar joist and cellular roof deck into the salon space. By monopolizing on exposed mechanical equipment, as well as the structural steel framework of the infrastructure, the facility takes on a typical industrial appearance.

In keeping with the exposed ceiling, the electrical conduits are bussed throughout the plan adding additional definition to an otherwise open area. The system was further carried into



Oversized mirrors attached to 8 x 8 steel columns with exposed baseplates dramatize the industrial feeling used as the concept. Long cantilevered soffits add scale to the open and exposed ceiling system. Visual expanse is maximized both inside and throughout to the outside courtyard.

Employee reaction has been most favorable since each styling station is designed to allow personal flexibility, low maintenance and departs from the standard salon seating arrangement.

Client reaction has also been very positive. Nearly all of the stylists are reporting the most profitable three month period of their careers during a typically slow period in a seasonal region.

Close collaboration between architect and designer provided for a harmonious solution to a challenging design program in which every aspect of the project received close attention to detail.

Sculpted partitions formalize specialty task areas. Screening panels define space while allowing visual contact throughout the salon. Photos by Robert Thien.

the styling areas by stainless steel utility carts and cabled onto structural steel columns onto which mirrors are framed in steel angle stock. This allows stylists to move equipment around freely at the stations, thus changing the standard station configuration.

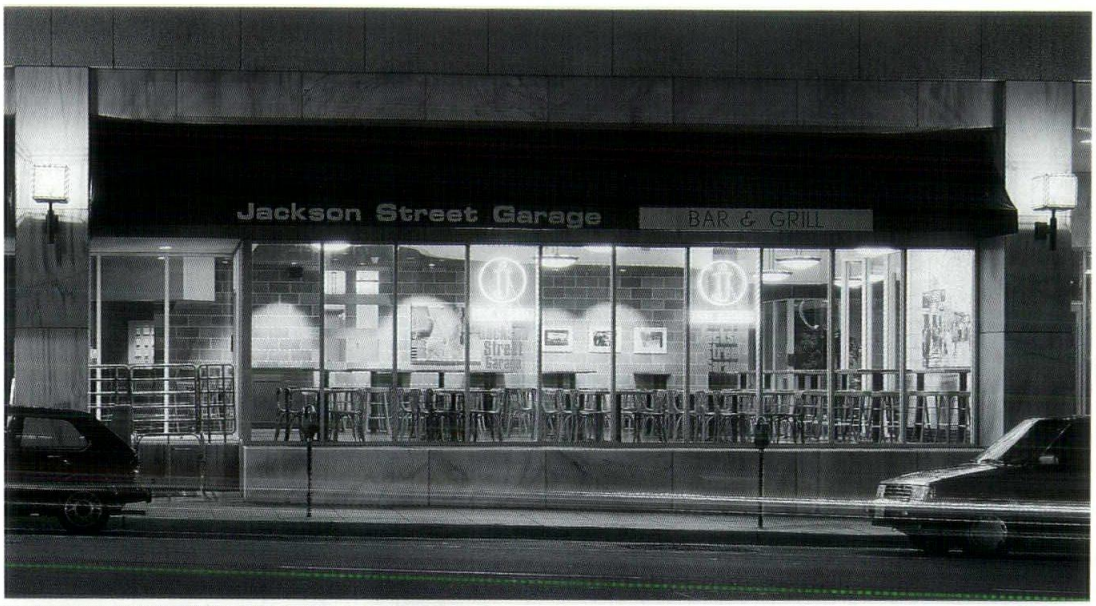
Designers incorporated a subtle color scheme, combined with textural elements, such as those found in the marble reception desk, leather seating and rich patterned area rug in the entry foyer, into the salon. This extended the inviting environment and also manipulates colors and textures found in the surrounding commercial complex.

Fast Paced Space

Jackson Street Garage Bar & Grille Tampa, Florida

Architect: Urban Studio Associates, Inc.
Owner: Stephen & Anna Marie Zanis
Contractor: Paragon Contractors, Inc.

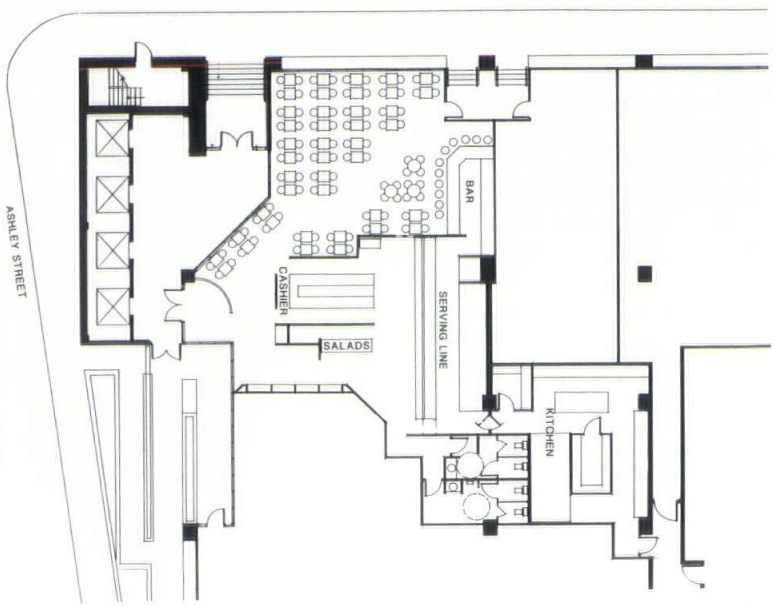
Located on the ground -floor retail level beneath the parking garage of an office highrise, the client needed an economical solution to provide restaurant space for both breakfast and a furious lunch business.



The design treated large portions of the existing structure (exposed ceiling structure, concrete block walls, and concrete floor) as major components and supplemented these surfaces with exaggerated shapes and bright color.

The restaurant is easily maintained because of these basic finishes. Food is served on a line, however, patrons are directed to queue on specific entree stations, instead of proceeding through in cafeteria-line fashion. Cashing out occurs at the end of a two-sided beverage island. The restaurant has begun exhibiting regional Florida artists and the owners plan to continue this collection.

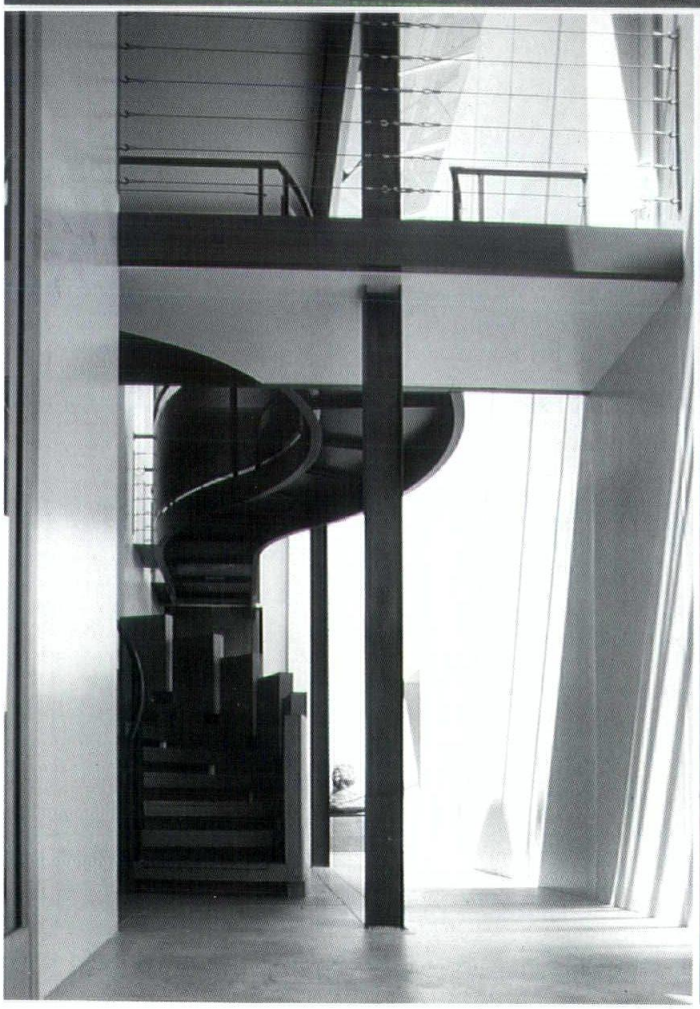
Photos by George Cott

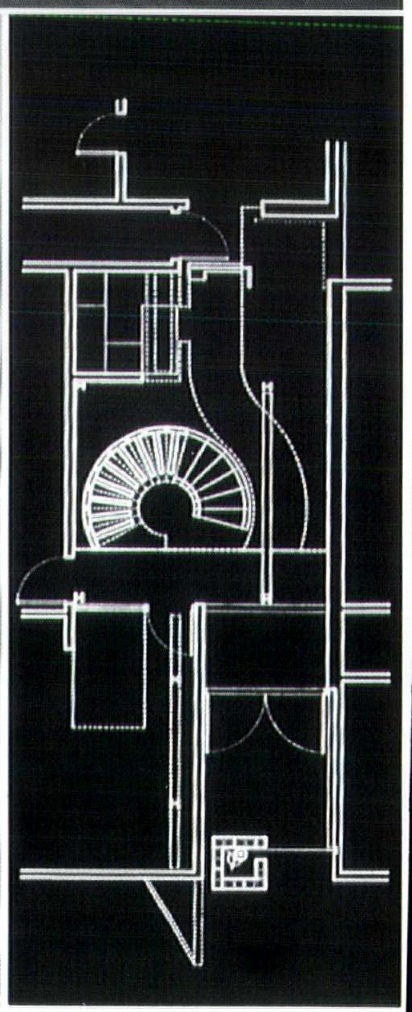


A Balance in Tension

Dektor Higgins Film Studio
Hollywood, California

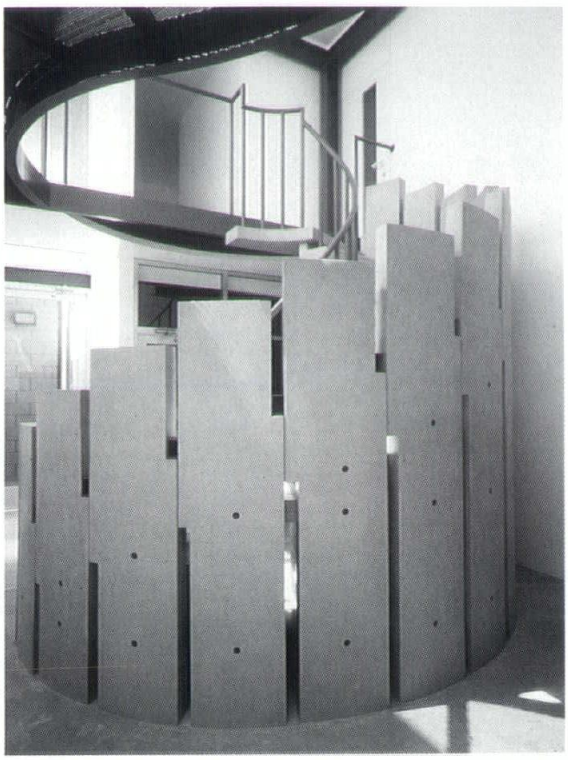
Architect: Lawrence Scarpa and Gwynne Pugh
Santa Monica, CA and
Lakeland, FL
Principal-in-Charge:
Lawrence Scarpa
Project Team: James Dove, David Johnson, Gwynne Pugh, Lawrence Scarpa, Kenny Sizemore, Carla Watkins, Ann Zollinger
Presentation Drawings:
David Johnson, Lawrence Scarpa, Andy Copeland
Engineering Consultant:
Gwynne Pugh
Stair Consultant: Syndesis
General Contractor: Ernst and Dubey, Inc.
Owner: Dektor Higgins and Associates, Leslie and Faith Dektor





This project involved the remodeling of an existing 1930's masonry and wood frame film production studio into a contemporary studio for a renown producer of television commercials. The existing building was sited on an interior lot on a busy, but dilapidated commercial thoroughfare.

The program called for remodeling 4,000 square feet of space within an 8,000-square-foot existing building. The client required a strong statement as well as design consistency with the existing studio. The entry was to be relocated and combined with a new lobby. In the process, there were to be new facilities for an additional director and production staff. Circulation needed to be improved and facilities upgraded for casting, wardrobe and editing.



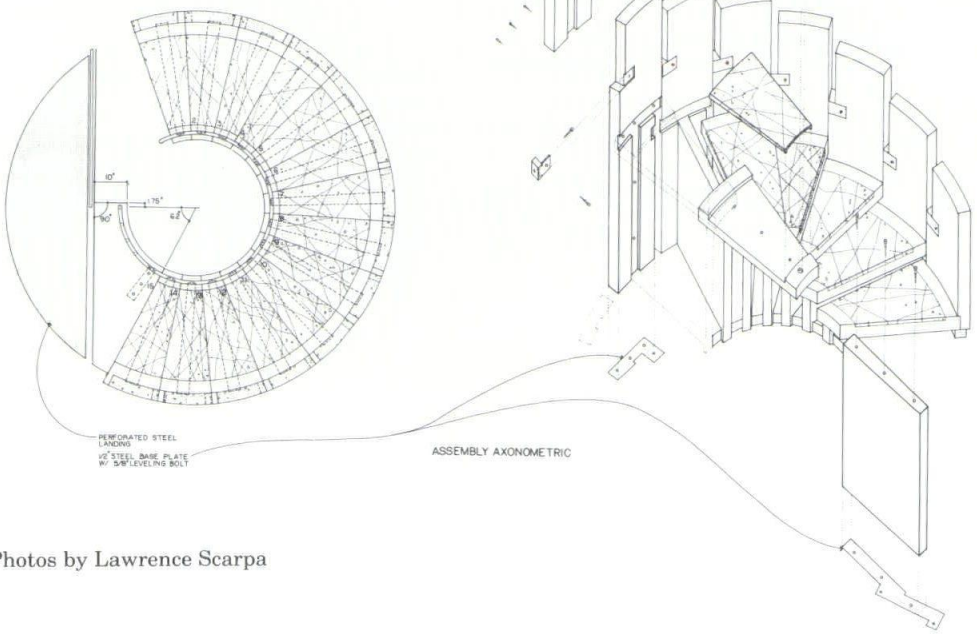
The Concrete Stair

The stair is constructed from seventy-two prefabricated components cast from four molds extruded to varying heights. Each riser/step is an assembly of three basic parts: a tread Part A, support wall Part B, and an end wall Part C, bolted together with 3/8" epoxy bolts. The base of each assembly is attached to a 1/2" steel leveling plate embedded in six inches of concrete. To absorb earthquake forces, a steel plate was devised to connect adjacent end walls and transfer the hoop stress uniformly to the foundation. Two special cast pieces resolve the second floor landing. The concrete is a special type of Portland cement called Syndecrete developed by David Hertz. The engineer was Gwynne Pugh. It was designed by Lawrence Scarpa.

Because of major time and cost constraints, it was decided early in the design process to put eighty percent of the budget into twenty percent of the program. The new lobby and entry would become the nucleus of the project, with the remaining program acting as poche space.

The lobby is intended to be bare and establish a datum for two objects, a concrete stair resting stable and vertical while the other object floats horizontally within. Conversely, the adjoining entry is compressed and tense. The two spaces are connected by a linear skylight which permits light in while allowing space to escape. The two spaces strain alone yet balance in tension together.

Building materials include syndecrete stair, concrete floors, plaster walls and exposed steel and aluminum. There is a concrete slab foundation, wood frame walls and ceiling, exposed steel columns, perforated metal decks and screens and an exposed aluminum storefront.



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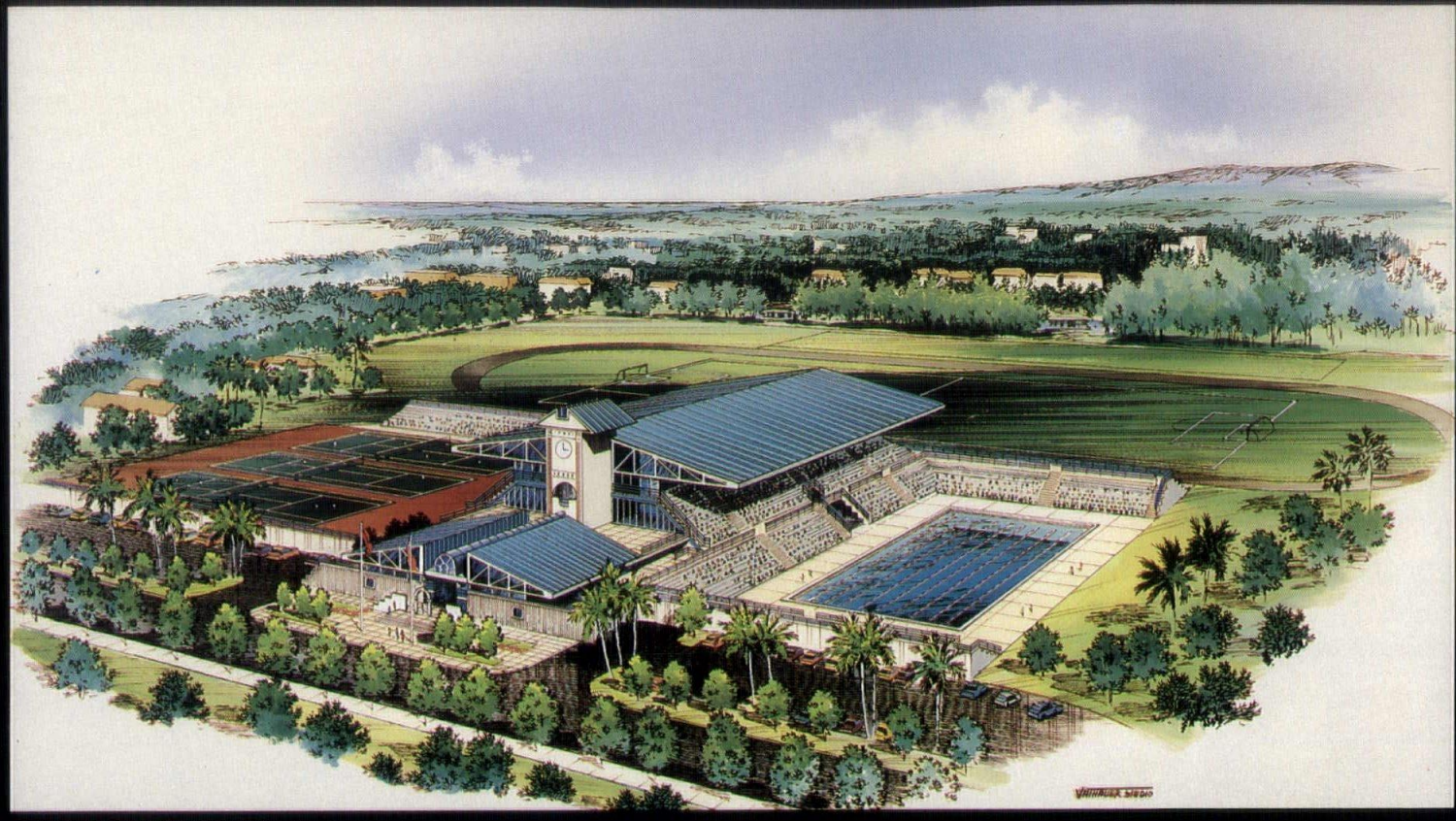

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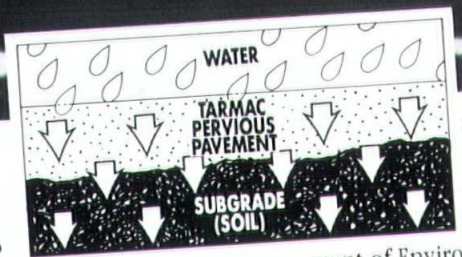

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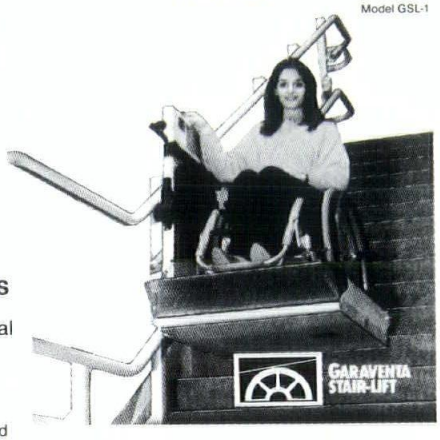

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VIEWPOINT

Technical Update: The Masonry Wall

By William C. Mignogna, P.E.

(Editor's Note: The following is the second of three *Technical Update* articles developed by the West Palm structural engineering firm of O'Donnell, Naccarato & Mignogna for *Florida Architect*. Readers may receive a **free copy** of O'Donnell, Naccarato & Mignogna's *Design Databook* report on masonry wall systems by calling 407-471-5166, or writing the firm at 1665 Palm Beach Lakes Blvd., West Palm Beach, 33401.)

The masonry bearing wall, the oldest and simplest structural system, can be one of the most economical and attractive construction approaches. But its simplicity can also be deceptive. While many consider masonry "old hat," there is still a good deal of confusion about specific applications. And, there have been cases of projects becoming subject to litigation because unrealistic properties were assumed.

The advantages of masonry are pretty straightforward. Economy is enhanced by dual usage of the primary element (wall) as both a structural and architectural feature. Masonry is intrinsically fireproof. It is compatible with most floor and roof systems (such as joists, trusses, precast plank, bar joists, cast-in-place concrete and large clear span wood trusses). When wall length/height to thickness ratios are respected, control joints and lintels properly designed and detailed, and proper mortar strengths maintained, masonry can provide cost-effective, aesthetically-appealing solutions to most building problems.

Yet despite all these advantages, there are four major concerns which should be considered at the outset.

First, masonry bearing wall construction is particularly sensitive to wind and freezing rain during construction. While freezing rain is rarely a concern in southern or central Florida, it can be a factor in less temperate areas of the state. Protection can be provided by continuous heating or, more commonly, by adding chloride-free admixtures in the field (though walls must still be heated during the curing period). To protect against high winds before bracing is available from the floor system, it may be necessary to brace masonry walls independently.

Another concern is that masonry bearing wall systems are very heavy. This is not significant when the wall can bear directly on conventional spread footing foundations. But if the wall is interrupted by large openings, costly framing will be required to transfer the loads. With deep foundations, the weight of the wall system can increase the foundation costs.

Third, economy in masonry construction is highly dependent on thoughtful space planning. Bearing walls should be positioned for maximum utilization of the floor framing system.

Fourth, regardless of the quality of materials used, the integrity of the masonry wall system is chiefly determined by the quality of workmanship. Drawings and specifications which reflect an "easy to build" design will greatly assist field installation. Also, competent inspection will virtually guarantee that the design will be properly implemented.

In addition to these general areas of concern, there are a number of technical areas which frequently generate questions:

• **Hollow Versus Solid C.M.U.** Concrete masonry units are generally available in two basic configurations, hollow block and solid block. However, hollow block isn't really hollow and solid block isn't really solid.

Indeed, hollow block (ASTM-C90) comes in various configurations and is usually 55% solid. Design and testing is based on the net area (55% x width x length) of the block. Solid block (ASTM-C145), on the other hand, is 75% solid to facilitate handling and has open cores. It is designed and tested on the basis of gross area (width x length). The designations C90 and C145 refer to configuration and not strength.

• **Lateral Support.** Clients often express concern about masonry wall lateral support requirements. Proper lateral support both during construction and in the final product is critical. Normally, a height or length to thickness ratio of 18 to 1 is recommended for exterior wall bracing. Ratios must be maintained for all exterior masonry walls, regardless of number of stories.

Support can be provided by intersecting walls, pilasters, columns, or buttresses as vertical elements or by floors and roofs as horizontal elements. Restraint must be provided at both the top and bottom of the pilaster. Pilasters which stop short of the roof framing in single story buildings are worthless. For proper wall construction, bracing must be provided in either horizontal or vertical direction. When cavity wall construction is used, all wythes may be used in computing wall thickness if cavity widths are controlled and proper ties are used between wythes.

• **Strength.** Masonry walls have great strength in direct compression, but little or none in tension or bending. The compressive strength of individual CMU units usually is a minimum of 1800 psi and can be as high as 3000 psi. The strength of brick can vary from 5,000 to 15,000 psi.

The National Concrete Masonry Association and the Brick Institute of America have established design criteria which can help users evaluate the wide variety of masonry products and manufacturers. These criteria, along with local building codes, should be consulted for each case.

• **Mortar.** Questions are often raised about the requirement of a full bed joint at each course. This means all webs and flanges of the block must be covered with mortar. This is absolutely necessary when laying solid block, to achieve assumed design strength. For hollow block, the web may not always align vertically, so the face shell coverages takes on primary importance. But, to ensure jambs and face shells are adequately covered, we specify that a full mortar bed be provided throughout the entire masonry project. Since mortar controls the wall's strength, permeability and aesthetics, it must be designed, installed, inspected and tested with utmost care.

• **Reinforcing.** Depending on design requirements for particular geographic areas, exterior masonry wall can be built unreinforced. In South Florida, with wind speeds up to 140 mph, design must take high wind loads into consideration. The hollow cells of masonry walls can be reinforced and filled with concrete, or a poured concrete tie column and beam system can be used which allows the masonry to span between these elements.

• **Inspection.** Qualified inspection is mandatory during masonry bearing wall building construction. The first block above the foundation is the most important—it will get the highest loading. Quality testing and supervision is especially critical during the first few days of construction to ensure proper sequences, technique and materials.

• **Height and Span**. Floor spans up to 40 ft. remain economical. Buildings up to 100 ft. in height can be built using laterally braced concrete masonry units.

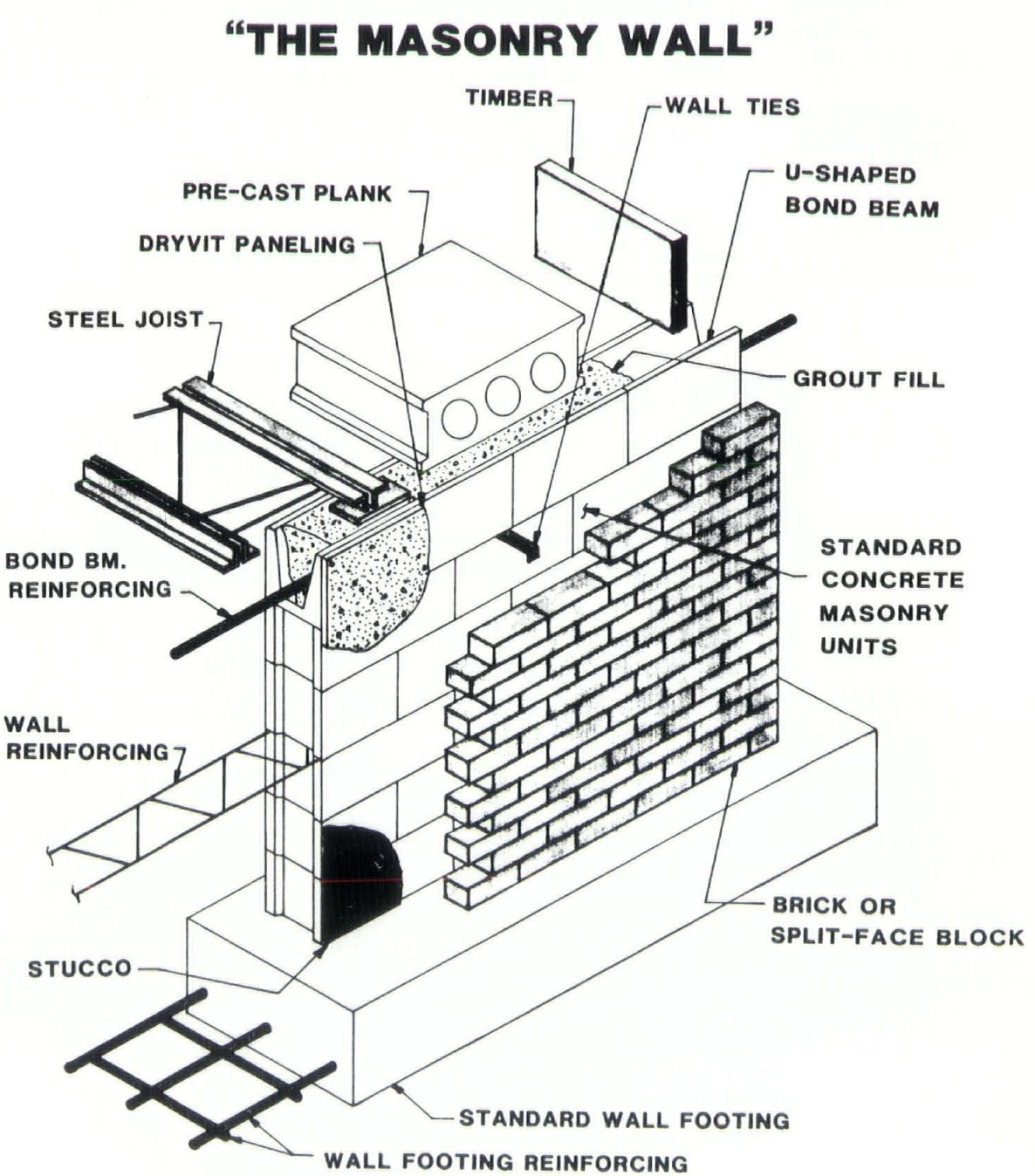
• **Ivany Block**. Though increasingly popular, Ivany block is often applied improperly. This hollow, high-strength (3,000 psi) block is used primarily in concrete filled, reinforced masonry retaining wall construction. Its webs are grooved near both faces to allow placement of horizontal reinforcing bars. This reinforcement controls placement of vertical reinforcement so vertical bars will align just inside the outside face shell. It is critical to the structural design that these bars be right at the face of the block and not "stray" to the center of the core during concrete placement.

• **Controlling Wall Movement**. Because masonry is inherently brittle and prone to random cracking, temperature and shrinkage are the main forces contributing to expansion and contraction. If the resulting stresses are relieved at properly spaced intervals, wall and building growth will not result in unsightly cosmetic cracking. Control joints and expansion joints are actually planned planes of weakness in the structure where we invite cracking to occur. The spacing of these joints depends on a particular structure's geometry and layout. Generally, control joints for building facade material should be spaced at 25-30 ft. Building expansion joints, where a true separation of all building components occurs, should be spaced at 150-200 ft.

To maximize the considerable cost and aesthetic benefits of masonry bearing and curtain wall construction, careful attention must be paid to critical connections, lateral support, mortar, anchorage and construction quality. Early coordination between structural engineer and masonry contractor is also important.

(Next Month – Designing Metal Stud/Brick Veneer Curtain Wall Systems.)

William C. Mignogna is President and Principal of O'Donnell, Naccarato & Mignogna, based in West Palm Beach.



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