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In 1969 the Association, through its publication "The Florida Architect," published its first Directory of Architectural Building Products and Services. This Directory contained names and addresses of manufacturers, distributors and representatives of building products and services within the 16 Product Classifications of the Construction Specifications Institute, Inc. (CSI).

The initial distribution of this sixteen page Directory was 5,000 copies, and since then additional requests for 1,450 copies have been received.

The Directory was established in 1969 as a service to the architectural profession, the construction industry in Florida and to manufacturers, distributors and representatives. The Directory enables the architect, contractor, builder, etc. to have at his fingertip a manufacturer's address and phone number, and of equal importance, the same data for distributors and representatives. Communications are thereby improved. The architect needs product information now, not next week, and a phone call brings him this information (knowing the phone number is most important.)

The 1970 Directory will also include a cross reference index such as:

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Introducing The Blue Book To All Florida Architects

Frank D. Shumer, AIA

Chairman, FAAIA

Committee on the Construction Industry

Early in 1966, the Jacksonville Chapter of the American Institute of Architects and the Northeastern Florida Chapter of the Associated General Contractors of America joined forces in an effort to solve some of the problems in our industry. Each organization selected nine of its members to form the AIA-AGC COUNCIL. The decision was made to create a manual which could be used by all in the construction industry as a guide for practices and procedures in bidding and performing our work. The result of these efforts is the "BLUE BOOK," whose purpose is to summarize the discussions and conclusions in a manner that will permit ready reference as the same problems arise again and again in our daily business relationships.

In reaching its recommendations, the Council is not attempting to dictate a mandatory procedure to each Architect or Contractor. However, a wide variation in the way of doing the same thing has gradually arisen, and the Council is convinced that there is much time to be saved on the part of both the Architect and the Contractor if the routine part of our relationship could be more or less standardized. The recommendations are specific as to their area of applicability.

Although the Blue Book developed out of the needs of the Jacksonville Chapter of the AIA and the Northeastern Florida Chapter of the AGC, its application relates generally to the problems of the construction industry throughout the State.

A copy of the Blue Book has been sent to each Chapter President. We hope the Blue Book will help you as it has us to solve some of the problems in our industry. ■

NEWS

Winter Park Architect Elected President of Guild for Religious Architecture

Nils M. Schweizer, partner in the Architectural-Engineering-Planning firm of Schweizer Associates, Winter Park, has been elected president for 1970-71 of the Guild for Religious Architecture at the annual meeting of the organization in Washington, D. C.

In becoming head of the most wide-ranging and influential segment of the religious architectural field, Schweizer said mankind is losing contact with the natural world, and therefore the visual and spatial factors of man's constructed world are the most important elements for survival.

He discussed the dichotomy of goals and objectives in present religious institutions. "This dichotomy does much to confuse both the religious community and its architects by promulgating a past which is becoming increasingly irrelevant — both in forms of worship and structures," he added.

The Guild for Religious Architecture, an affiliate of the American Institute of Architects, represents the combined efforts of architects, clergy, craftsmen and artists to improve the design and function of religious buildings.

Founded in 1940, the Guild is the professional arm of the AIA in the field of religious design. A non-profit organization, it has four basic aims: to promote excellence of design in religious architecture and its allied arts; to develop greater appreciation of the essentials of good design for religious buildings; to assist architects without experience in the design of buildings for worship; and to encourage the study of religious architecture and art.

Schweizer, a member of the Guild for many years and once an understudy of Frank Lloyd Wright, is a corporate member of the American Institute of Architects; vice president of the Mid-Florida Chapter of the AIA; and a member of the Architectural Commission of the Episcopal Diocese of South Florida.

Active in civic affairs, he is vice president of the Florida Symphony, a member of the board and a past president of the Loch Haven Art Center, and a member of the Mayor's Action Committee of Winter Park.

New AIA Components in Florida

The Board of Directors of the AIA recently approved the Charter for the Florida Southwest Chapter of the AIA. This brings to twelve the number of AIA Chapters in Florida. The following counties are included in the Chapter area: Charlotte, Glades, Lee, Hendry and Collier.

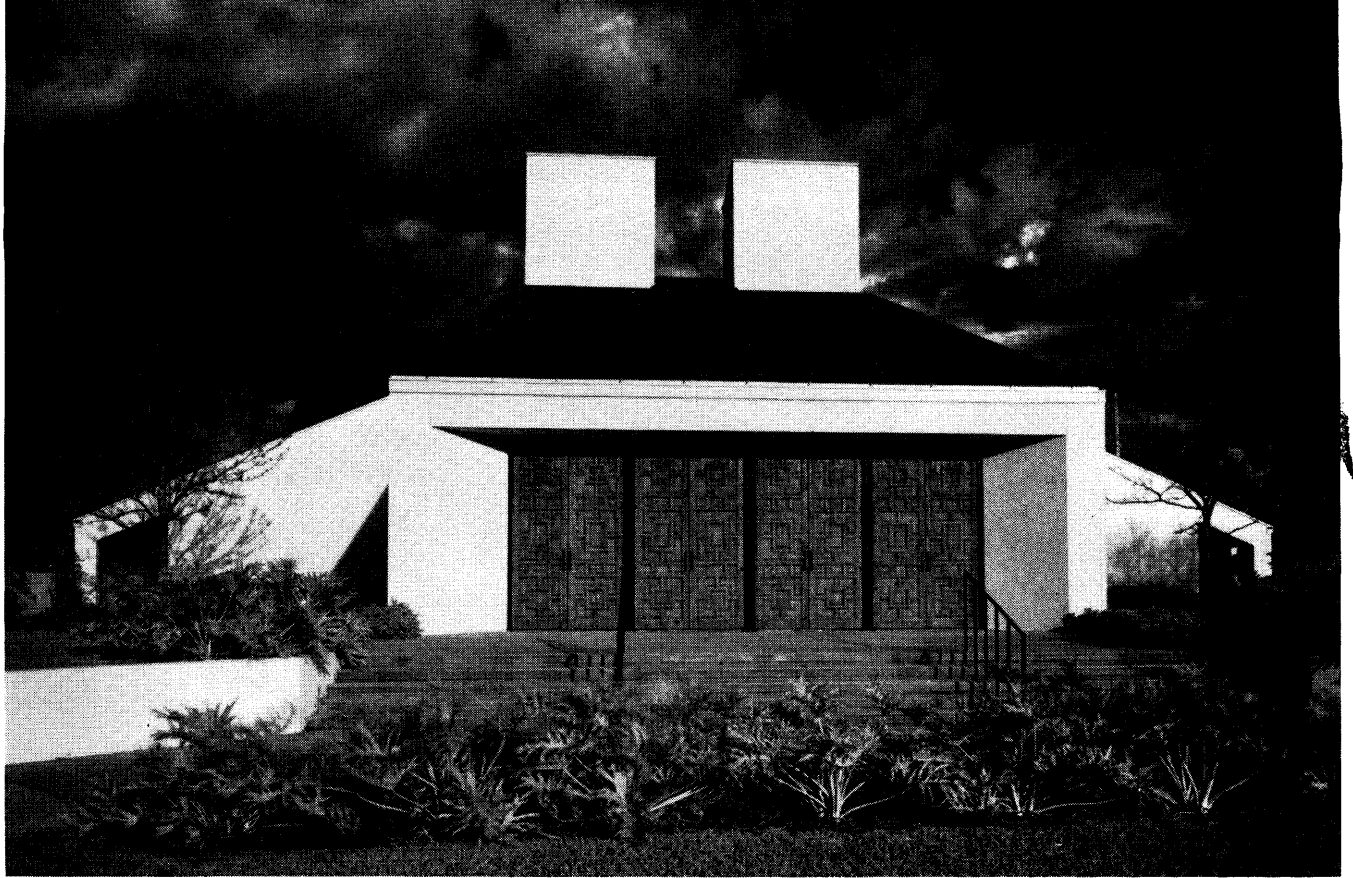
The current officers are:

Martin G. Gunderson, AIA, President
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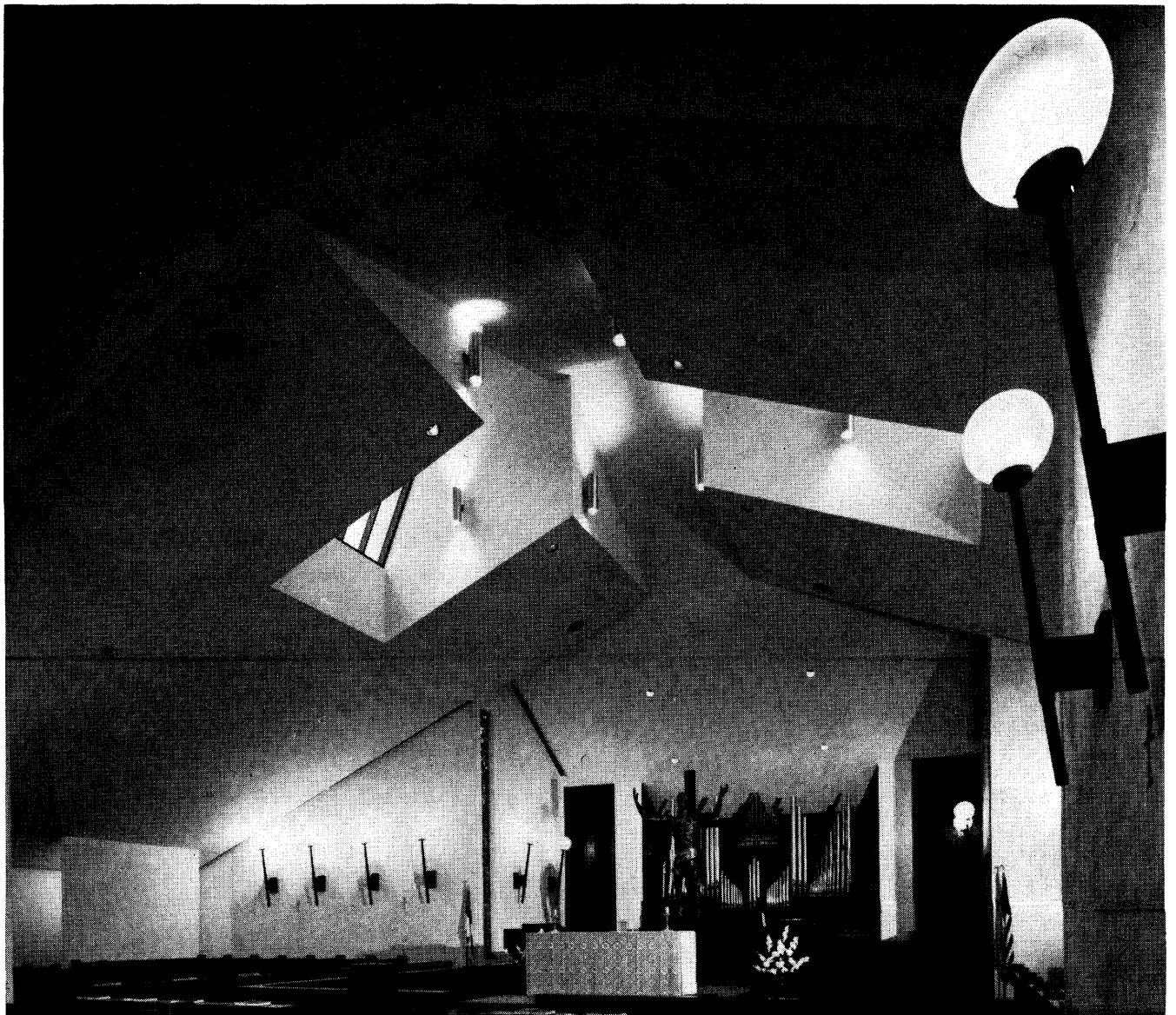
The AIA Board also approved the Charter for the Indian River Section of Palm Beach Chapter covering Ft. Pierce, Vero Beach and Stuart area. Previously the Palm Beach Chapter was granted a South Section Charter for the Boca Raton, Delray Beach area.

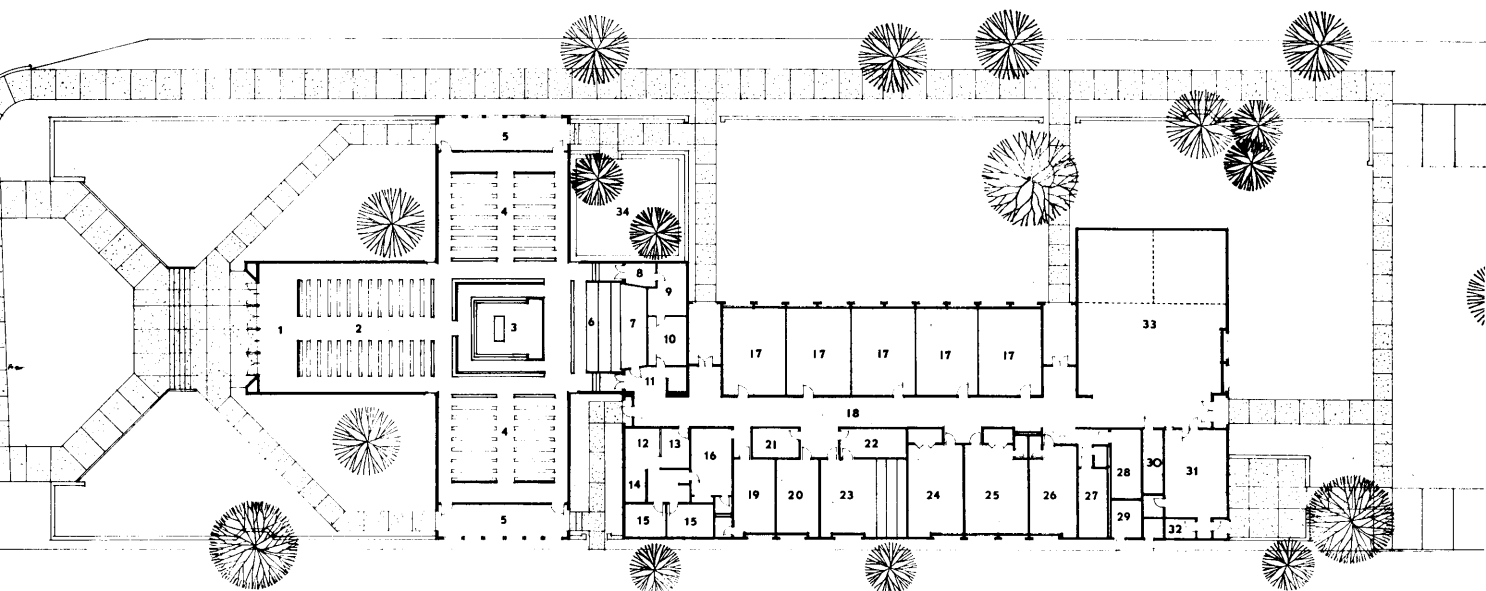
Youngest Corporate Member

Jay Farcus at age 25 is the youngest Corporate member of the AIA. He is employed by the architectural firm Morris Lapidus & Associates. Farcus is a member of the Florida South Chapter, AIA.



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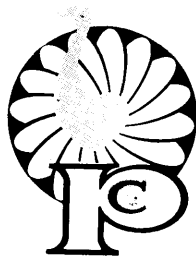
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Regulations and Other Factors Affecting Use of Floor Systems in Single-Family Houses in Florida

By Milton Applefield*

ABSTRACT

Building code regulations of 10 major Florida city and county jurisdictions were evaluated relative to specific wood uses for floor systems of single-family houses. The author discusses requirements among communities for the use of wood members in crawl-space and concrete slab-on-ground construction. He shows the extent of acceptance of pole-frame and ductless underfloor-plenum construction systems by building inspection departments.

Wood is a familiar construction material which has many advantages for architects, builders, and consumers. Like other materials, it has limitations and requires certain safeguards and maintenance. Some building code regulations, however, unjustifiably restrict or prohibit its use.

Building codes, and their interpretation and enforcement, provide the regulations which control the use of building materials and methods of construction. Such controls differ greatly among communities. Wood-related construction requirements were studied from information obtained from building officials of 10 major Florida cities and their counties (Figure 1). This study was intended to provide the following:

- Determination of regulations affecting selected wood uses and the variation existing among communities.
- Evaluation of protection requirements for structural wood members used close to the ground.
- Identification and analysis of misconceptions that influence regulations which impede or preclude the use of wood.
- Determination of building officials' acceptance of two new, wood floor-foundation systems.

Building Code Use

This study of 10 Florida city and county jurisdictions, where there is heavy demand for house construction, determined which building codes are enforced and their

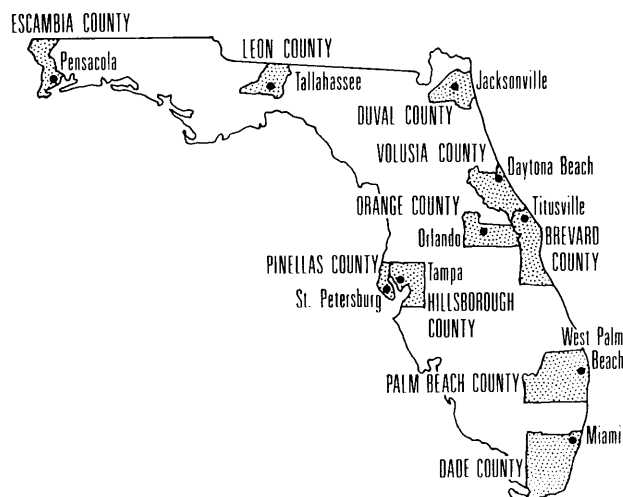


Figure 1. The ten city-county study areas in Florida.

regulations applicable to wood use. Leon and Escambia counties in western Florida have no building codes. The City of Miami and Dade County use a regional code, the South Florida Building Code. The consolidated City of Jacksonville-Duval County uses the National Building Code. The 14 remaining cities and counties use the Southern Standard Building Code.

All subsequent data will pertain to the 17 city and county jurisdictions which enforce a building code. Although most of these use the same code, building regulations were found to differ considerably. Fourteen jurisdictions had revised certain technical portions of their model codes to handle supposedly unique local circumstances. Varied regulations also resulted from different interpretations of identical code provisions.

General Wood Use Requirements

Moisture Content.—The moisture content (M.C.) of wood exerts an important influence over all its physical properties. Most strength properties of wood vary inversely with the M.C. when it is below approximately 25 percent, the fiber saturation point. Consequently, satisfactory service requires the use of a suitable lumber M.C. for a specific use condition. Nineteen percent is generally accepted as an adequate maximum lumber M.C. for housing construction requirements. This is the maximum M.C. permitted by all of the sampled cities and counties except Pensacola, which enforces no maximum limitation. It should be noted that, for certain uses, conditions, and areas, lumber M.C. less than 19 percent is necessary for satisfactory service.

Grade Marked Wood Materials.—Product grade marking provides a stamp of quality approval backed by recognized and reliable trade associations. It applies to shingles and shakes, lumber, plywood, preservative treatments, and fire-retardant-impregnated materials, as well as to nonwood products. With few exceptions, all the cities and counties required grade marked lumber for floor joists, sills, and sub-flooring. Jacksonville-Duval County had no lumber grade mark requirement. Palm Beach County did not require grade marked lumber for sills or sub-floor, and St. Petersburg had no grade requirement for sub-floor lumber.

Floor Systems¹

The predominant construction system for new single-family houses in these Florida jurisdictions is the concrete slab-on-ground. Based on building officials' estimates, more than 90 percent of new houses are built on concrete slabs in 12 of the cities and counties studied. Slab construction in Orlando and in Brevard County amounted to 85 percent and West Palm Beach had 80 percent, but Jacksonville-Duval County claimed 40 percent and Tallahassee had only 35 percent of its houses built on a slab. The remaining houses are either crawl-space or split-level construction. With the exception of Brevard County and Jacksonville-Duval County where crawl-space construction increased, the use of slab construction increased or remained constant over the past 5 years. The high incidence of slab construction in Florida largely explains the heavy use of terrazzo, carpeting, and resilient tile instead of wood for finish flooring.

New Construction Systems

Two new alternatives to concrete slab-on-ground construction for single-family houses are the underfloor-plenum and pole-frame construction systems, both highly favorable for wood use.

¹The term "floor systems" used throughout this paper refers to the floor framing, finish flooring, and, where applicable, the foundation of slab-on-ground, crawl-space, plenum, or pole-frame types of construction.

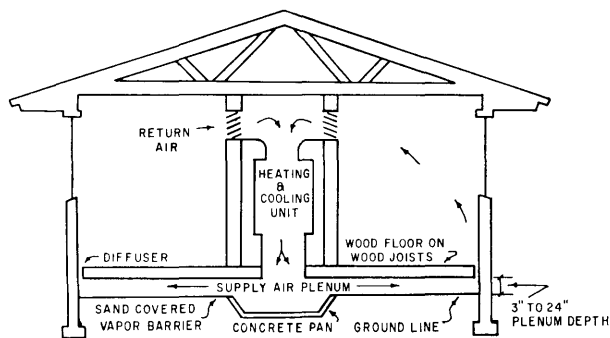


Figure 2. Sketch of a wood floor system with ductless, underfloor-plenum air distribution for heating and cooling single-family houses.

Plenum Construction.—A ductless, underfloor-plenum system for distributing warm and cool air (Figure 2) is permitted in all the jurisdictions except Dade County and Miami. Dade County regulations will not permit the use of wood or other combustible materials in the supply air circulation system. Miami building officials objected to the plenum because of the lack of insulation and because of anticipated problems with insects. They also contended that “dead air” in the plenum might promote rot of wood members when the mechanical system is not in use. Actually, with proper drainage, the plenum space under the house tends to be drier than the living area in the house, thus creating an unfavorable environment for insects, vermin, and decay (1). By means of chemical soil poisoning and adequate preservative treatment of the wood members in the floor system, protection against insects and decay can be obtained. The amount and kind of insulation, as in any building, is generally a function of initial cost versus operating costs and can be installed as needed.

More than 2,000 homes throughout the United States have been built with ductless, underfloor-plenum air distribution systems in recent years. Various studies prove the system is structurally and mechanically efficient (2) (4) (5). It has been shown to provide various advantages from aesthetic, comfort, and economic standpoints:

1. The plenum permits “low-profile” construction which is desirable with current indoor-outdoor home activities.
2. Greater freedom of overhead design is permitted because ducts are not needed for heating or cooling.
3. It is conducive to the use of wood floors utilizing the resilience of wood for underfoot comfort.
4. The system provides uniform comfortable heating and cooling temperatures from floor to ceiling throughout the house (1).
5. In Florida, the plenum system is less costly than either slab-on-ground or crawl-space construction when carpet or wood finish flooring is used. However, slab construction costs less when terrazzo flooring is used (Figure 3). In 11 other states across the southern half of the nation, cost estimates revealed that plenum construction is least costly regardless of whether wood, carpet, or terrazzo is used.²

²Dickerhoof, H. E., and J. D. Lawrence. 1970. Floor foundation costs. USDA Forest Serv., Southeast. Forest Exp. Sta. Unpublished data.

The cost estimates from which Figure 3 was derived are based on construction labor and materials from site preparation and grading to the finish flooring of a one-story, single-family house with central heating and cooling, and with 1,680 square feet of floor space. (Plumbing is excluded.)

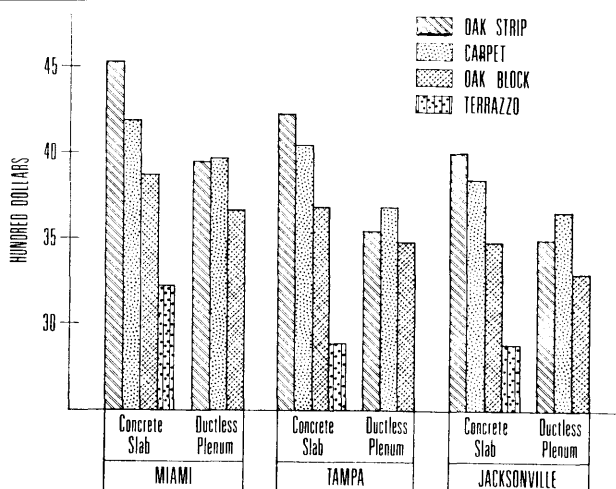


Figure 3. Cost comparisons of several kinds of finish flooring, over concrete slab and ductless underfloor-plenum construction, for single-family houses in three Florida cities.

Concrete slab-on-ground construction costs include a trowel finish of the slab and soil treatment under the slab with an insecticide, and also include ducts for distributing warm or cool air. Carpeting, laminated oak block flooring, and terrazzo are installed directly on the slab. Oak strip flooring is laid on treated wood sleepers over the slab.

Plenum costs include pressure treatment of wood beams and floor joists, but no ductwork. Carpeting is on $\frac{5}{8}$ -inch plywood sub-flooring.

Cost estimates for plenum and slab construction floored with carpeting, wood block, and wood strip flooring each are based on 1,300 square feet of coverage. In addition, 220 square feet of sheet vinyl are used in the kitchen, and the bath is floored with 160 square feet of ceramic tile. Terrazzo flooring occupies the entire 1,680 square feet.

Pole-Frame Construction.—Pole-frame construction (Figure 4) has displayed its structural superiority under hurricane forces through the years. It provides great latitude of design, minimum of site disturbance, and cost savings, but is little used for housing except for beach-front properties. Objections to the use of pole-frame construction for single-family houses were voiced by building officials of four jurisdictions.

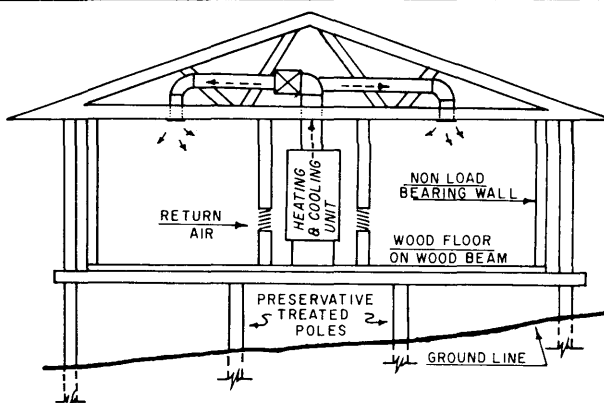


Figure 4. Sketch of pole-frame construction for single-family houses.

continued on page 12

Regulations and Other Factors, cont'd

It was claimed that pole framing was not practical in the cities of Tallahassee and West Palm Beach, and therefore would not be permitted. Brevard County does not permit pole framing because of the frequency of hurricanes which they feel would result in roof damage by wind uplift. Pole-frame construction is no more susceptible to wind damage than other construction if properly designed and built. Volusia County reported no experience with pole framing for housing, but will not allow such construction without specific approval of each set of complete plans.

Crawl-Space Versus Concrete Slab-on-Ground Construction

Crawl-space construction utilizes about one-fourth more lumber than slab construction for houses of comparable size and design. A major proportion of this difference is in the floor system. There are also considerable differences in the installation of finish flooring over crawl-space compared with concrete slab construction.

Floor Framing and Finish Flooring.—Most city and county building officials require a wood sub-floor, alone or in combination with an underlayment, for most types of finish flooring over crawl-space construction. Several communities have no underfloor installation requirements, thereby permitting a latitude of assembly methods. By contrast, with slab-on-ground construction, there are few communities which require the use of sub-floor, underlayment, or other wood materials regardless of the kind of finish flooring used. However, when wood-strip finish flooring is used, about one-third of the officials do require the use of wood sleepers over concrete slabs as protection against condensation and to provide underfoot resiliency.

Protection of Wood Members.—When wood materials are used close to the ground, they should be protected against damage by termites and decay. This may be accomplished by various methods applied separately or in combination: use of naturally resistant wood, application of poisons to the soil, proper structural design and fabrication, and treatment of wood with chemical preservatives.

The treatment methods accepted by the building officials for protecting wood floor systems against termites and

Table 1. Wood preserving methods accepted by the 17 Florida jurisdictions studied which enforce building codes.

Structural Members	Brush	Spray	Dip	Pressure	None Required
	Number of Communities ¹				
Wood Beams	4	4	4	17	0
Wood Sills	4	4	4	17	0
Wood Joists	5	4	5	15	1
Wood Sub-floor	4	2	3	9	7
Wood Underlayment	2	1	2	7	10

¹ Some communities accept various methods of treatment, so the sums of all responses exceed 17.

Table 2. Nonwood treatments required to protect wood floor system members from damage by termites and decay in single-family houses built with crawl-space and concrete slab construction.

Protective Measures	Protection					
	Required Crawl	Required Slab	[Not Required] Crawl	[Not Required] Slab	No Reply Crawl	No Reply Slab
	Number of Communities					
Soil Vapor Barrier	4	10	10	6	3	1
Chem. Soil Treat.	3	3	13	13	1	1
Termite Shields ¹	14	0	2	0	1	0

¹ With crawl-space construction, Orange County permits the substitution of insecticides in the soil for termite shields; Tallahassee requires both termite shields and soil treatment; Jacksonville-Duval County permits the use of termite shields in lieu of treated wood.

decay are shown in Table 1. As height above ground of wood members increased, wood treatment requirements decreased. Pressure treatment with preservatives approved by the American Wood Preservers' Institute is the most widely required safeguard, and is generally acknowledged as the most reliable method of protection. The pressure treatment of wood is relatively low in cost for the security it affords. Local retail cost of pressure treatment averages about \$44 per thousand board feet of lumber. Based on the use of 2,250 board feet of lumber for the structural floor system, the treatment cost per house would be about \$100. At a sale price of \$21,000 for a new single-family house, such protection would cost less than one-half of one percent of the total cost of the house.

Requirements for protecting wood floor system members by means other than wood treatment are shown in Table 2. The use of termite shields as protection is widely enforced. Although their effectiveness is highly questionable, termite shields for crawl-space construction are required by most communities. On the other hand, treatment of soil with insecticides, which provides more positive protection against termite infestations (3), is required in only three communities for both crawl-space and concrete slab construction. Soil treatment is simple to apply during construction and is relatively inexpensive (about 3 cents per square foot). It should be noted, however, that such treatment will not provide protection against decay.

Ground Vapor Barrier.—The use of ground vapor barriers to prevent the absorption of moisture by floor systems has expanded greatly in recent years. In recognition of this need with slab foundations, ten jurisdictions required vapor barriers in concrete slab-on-ground construction whereas four required them for crawl-space construction.

There are few requirements for ground vapor barrier materials or their use for housing. Polyethylene film was the principal material used in the majority of communities. Though 6-mil thickness was required by some officials, 4 mils is acceptable in Daytona Beach and by Pinellas County. Building paper or felt is also acceptable by 11 communities, in which 15-pound stock was most widely used. Miami specifies the use of 30-pound material, and Tallahassee requires hot-mopped felt.

Though the need for protecting wood against damage by termites and decay is generally dictated by height of the wood members above ground, height specifications are quite varied in the communities studied. The minimum height for wood beams, sills, and joists ranged from 6 to 24 inches above the ground; the most widely specified was 18 inches.

Wood Sills.—Wood sills are required on the perimeter walls of both concrete slab and crawl-space, single-family houses in about 85 percent of the jurisdictions. The minimum sill width requirements, however, varied among the communities and between the two construction systems. Sill width requirements are 4, 6, or 8 inches for crawl-space construction. For slab construction, 2 x 4 inches is the minimum sill size accepted by all jurisdictions except Dade County, which requires 4 x 8-inch sills for both the slab and crawl-space. From the standpoints of safety and cost, it seems unnecessary to require sills larger than 2 x 4 inches for either crawl-space or concrete slab.

Conclusions

The "model" building codes do not favor one floor system over another. It is the inclusion of community revisions to the "model" codes that tends to restrict or encourage certain types of construction. Consequently, requirements for wood floor system members vary considerably regardless of the building code used.

Wood, used in, on, or close to the ground and susceptible to termite and decay damage, should be protected by pressure treatment with approved preservatives. Lesser treatments such as brush, spray, or dip are inadequate for groundline applications. Another inexpensive safeguard

against termites is the treatment of the soil under the house with effective insecticides. Soil treatment would be a logical substitute for termite shields, which are still required throughout Florida in spite of the questionable protection provided.

Because of local requirements, acceptance of new construction concepts, such as the underfloor-plenum and pole-frame systems, must be determined on an individual community basis. Local code interpretations and lack of familiarity with new systems often result in either prohibition of use or insistence on more stringent requirements than are enforced for conventional types of construction.

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**The author is an Associate Economist, Southeastern Forest Experiment Station, USDA Forest Service, Forestry Sciences Laboratory, Athens, Georgia.* ■

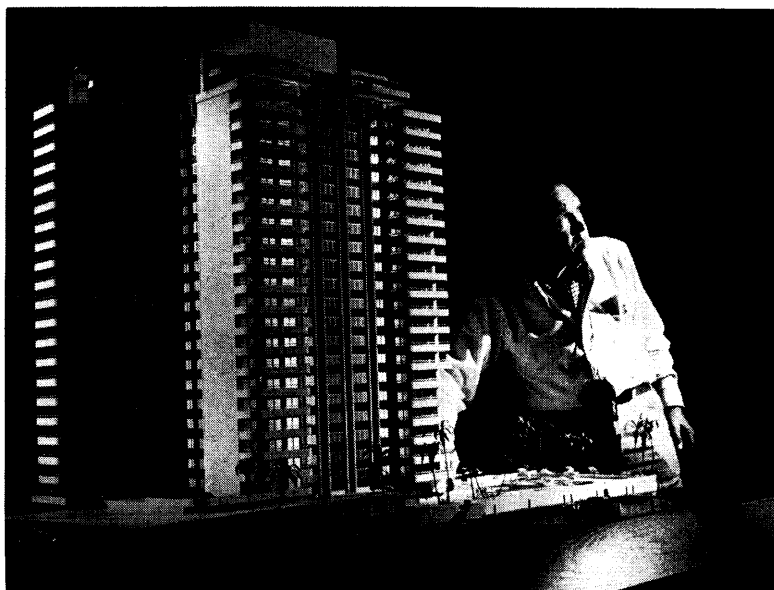
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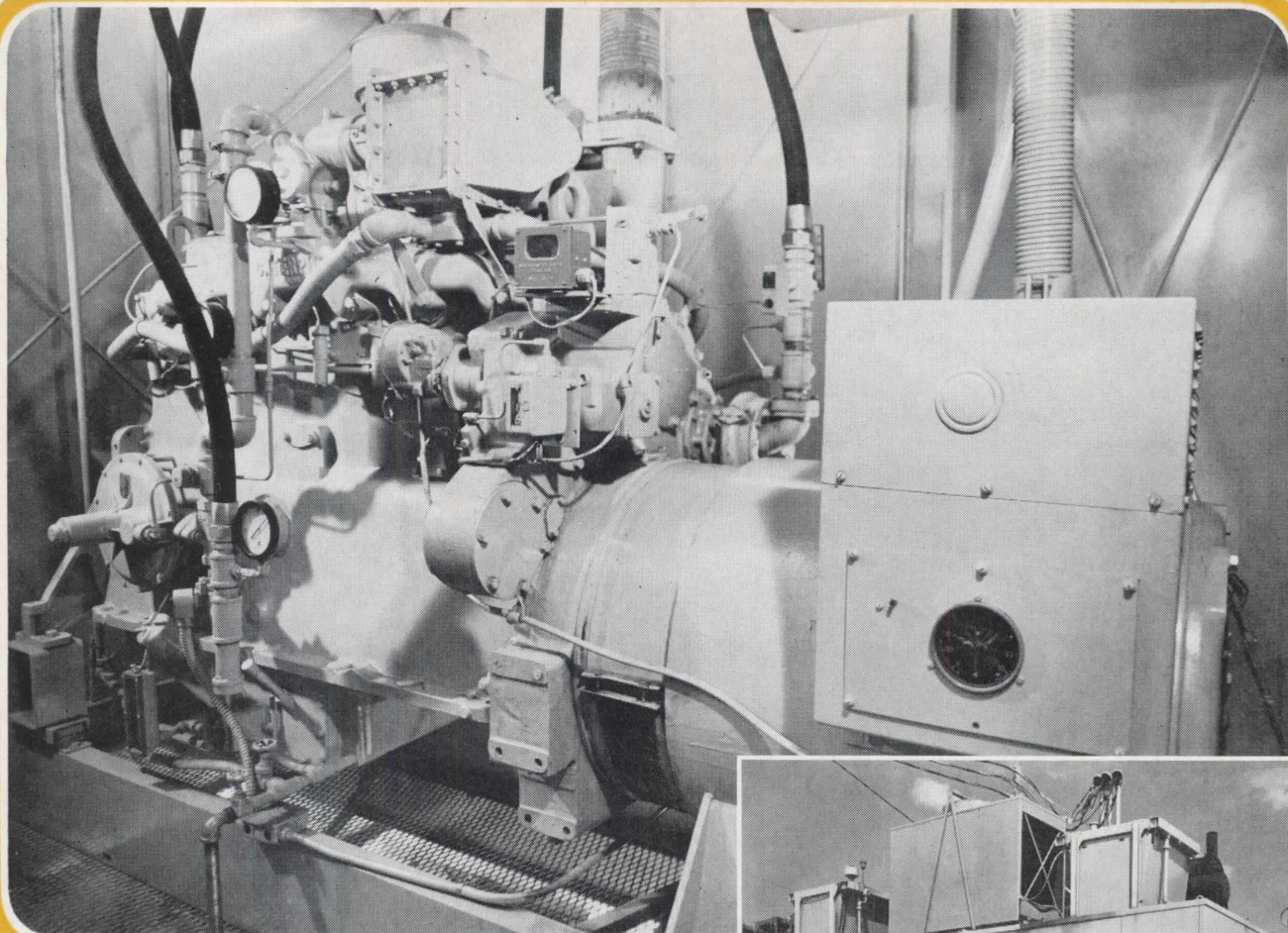
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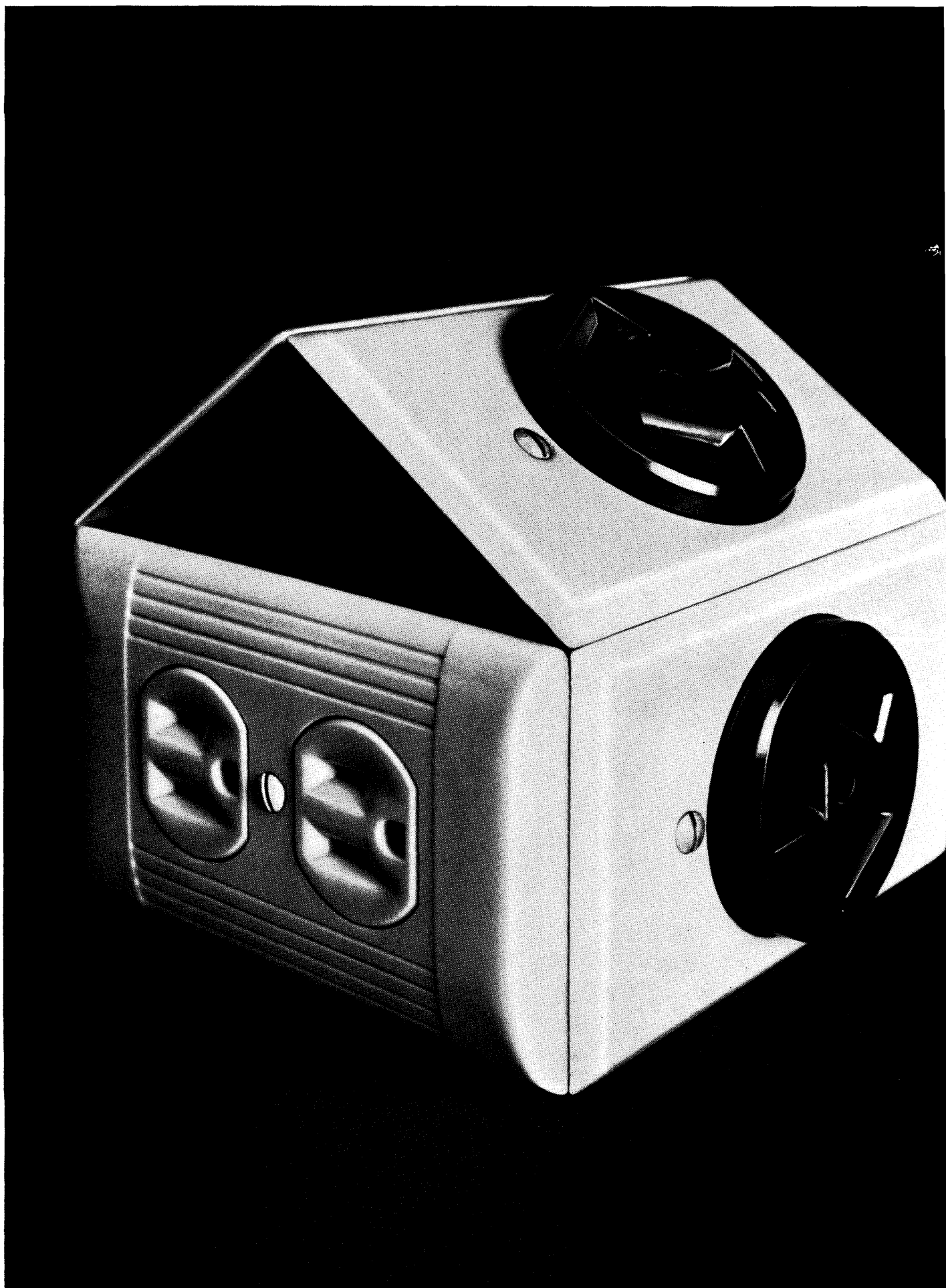
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Industrialization of Building?

By Francis R. Walton, AIA

Chairman, FAAIA Committee,
Building Industry Coordination

The most obvious characteristic of the existing construction business (industry?) is its decentralized flexibility. Plans are produced by architects and engineers. Contracts are taken by general contractors with simple subcontract relations with a multitude of available subcontractors and suppliers utilizing available skills and manpower, all distributed throughout the population. Financing is by practiced pattern with numerous sources and agencies using habitual methods. None of these elements has any czar or bureaucratic character and all are quite large in the aggregate but distributed as to activity throughout the country. The varied flow of need or distribution of contracts geographically produces a flow of services and personnel in response to the need or opportunity. Dislocation caused by this flow is absorbed into the fibers and elements of the team. Laws and code regulations affecting this apparatus are highly localized and are encountered and adjusted to by the organism as needed. There is a smooth working amoebalike or jellyfish character to the whole. It seems to have no central nervous system but responds in particular at each stimulus. This is really not an organization; it is a set of ingrained habits.

This organization has not been without development and progress. The product industries have developed new methods of manufacture and in some cases new products. Glass and brick manufacture has been revolutionized over the last 25 years. Glue-laminated wood, pre-stressed concrete and plastics have made their appearance. The air conditioning industry has developed and found a product uniformity through rating systems which expanded the market and held price lines. Conglomerate companies have brought efficient distribution and management systems to widely scattered lines. The lighting industry has continued to exploit the development of luminous vapor contained in glass with great variations.

During this time, with the demand for higher grade items, quantity has been increased. The demand for ray and heat shielding, higher standards of finish, more sophisticated designs and methods have all been absorbed and with them an ever higher unit cost of construction. The concepts of acoustics have expanded and with the closing in of buildings has come the idea of controlled sound levels in devices of all sorts. We are not building the same buildings we did 30 years ago.

The criticism of obsolescence in the industry methods seem hardly apt. Clinging to old habits, a reluctance to form vertical management groups is evident. Big operations have in some cases backfired. Millions have been dumped into the prefab schemes with little return. The basically horizontal organization of the construction team persists. Industrial methods have come in spots and more are promised. Jim Walter, Levitt, (ITT), and now the rash of modular builders spawned by operation Breakthrough are very evident. (A bibliography of recent story material on the subject appears at the end).

In summary these writers discuss Modular and Site by site organizations. The Module — Expo, Systems — Ehrenkranz, and Element Prefab — Mouton, are still the major developments to date. The new cities and the model cities are really "site" industrialization. The only writer who really visualized an industrial system is R. Bender in the P.A. story, "General Contractor as General Motors." However, I get a different message from the tempting General Motors example.

In researching writings on the subject of the impending industrialization of building construction frequent refer-

ences to the auto industry are encountered. There has been a preoccupation with this comparison. At one time this frightened me. I had visions of a monster factory somewhere with trainloads of buildings flowing steadily out, ready to be plopped into place by cranes at the destination. At the urging of a friend in the design level of the auto industry I reviewed and reconsidered these attitudes. A whole new vista is opening as I search. Although the auto industry has reached a fantastic stage of development it is to be hoped that building can proceed with less faltering to a development similar to auto industry practice. If so the dislocation of work force and material supply will be much less affected than previously believed.

Information received from GM Assistant Secretary, William M. Collins, indicates that their products are produced by triple process of components, assembly and sales, operating through diversified elements. Components are produced in company-owned and supplier-owned plants with 37,000 separate non-company subcontractors distributed over the country. Assembly is carried on in company-owned plants also well distributed, about 20 from coast to coast. The component plants also have diversified suppliers. The sales and service dealerships with their company-operated supply and parts centers are also distributed and diversified into brand name divisions.

The auto industry has had a growth period to arrive at this stage consisting roughly of the past 60 years.

Let's look at General Motors' stated operating philosophy.

"Expressed in formal terms, the philosophy is 'Decentralized Operations and Responsibilities with Coordinated Control.' A simpler way of expressing it is 'give a man a clearcut job to do and let him do it'.

"Under this philosophy, overall objectives and principles are determined at the top management level, based on information flowing up from all levels of the organization. These are policies, the 'whys and wherefores'. But the task of carrying them out, that is, 'the how', is up to the men down the line.

"*Decentralization of operations and responsibilities* means dividing up the job into as many pieces as is practical. It means placing in charge of each piece an executive with complete responsibility for its success or failure. Decentralization recognizes the importance of people. It makes the most effective use of their talents and gives them maximum scope to exercise their initiative and capitalize on their opportunities.

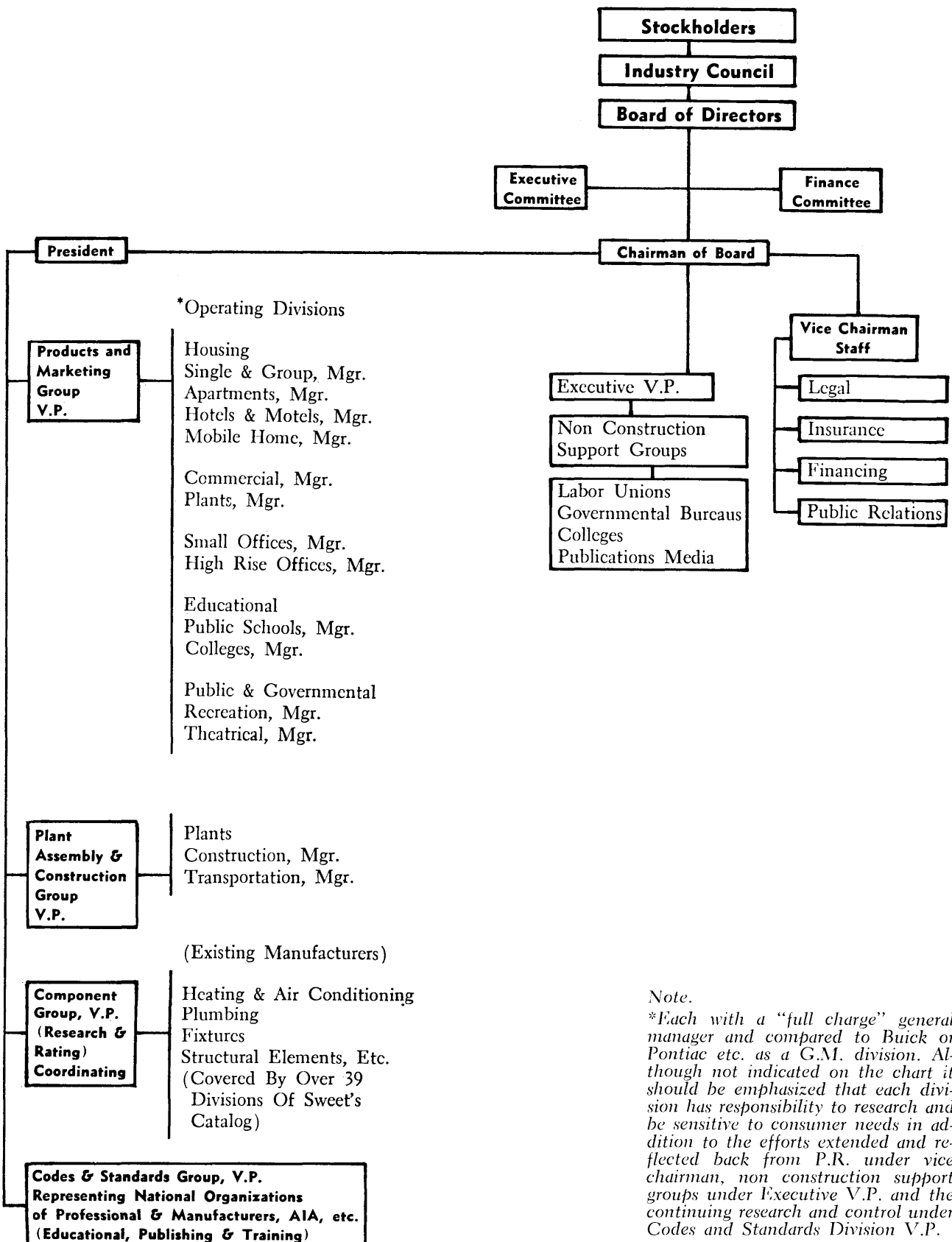
"*Decentralization* has been the means by which General Motors has retained advantages inherent in well-managed smaller businesses. It provides the flexibility which makes possible changes in operations and the constant improvement in its products in keeping with the needs and desires of its customers.

"*Coordinated control* refers to the formulation of overall policy, the framework or area within which the various pieces operate. Under this philosophy, a two-way flow exists at each level of management. On the one hand there is the downward flow of authority derived from established policy. On the other there is the upward flow of facts and opinion derived from the exercise of individual initiative down the line and which in turn enters into policy considerations. A proper balance of these two flows — the downward flow from authority and the upward flow from initiative — is constantly sought in General Motors."

It has been called to my attention that creative inventions get into this system from somewhat isolated horizontal, task

continued on page 20

Organization Chart For A Building Industry



Note.

*Each with a "full charge" general manager and compared to Buick or Pontiac etc. as a G.M. division. Although not indicated on the chart it should be emphasized that each division has responsibility to research and be sensitive to consumer needs in addition to the efforts extended and reflected back from P.R. under vice chairman, non construction support groups under Executive V.P. and the continuing research and control under Codes and Standards Division V.P.

Industrialization, cont'd

force groups working to feed new ideas into this vertically organized monster. Without this device creativity seems to be stifled by the organization.

If building learns from this and other industry lessons we could proceed almost directly to this sophisticated level of operation.

Another lesson worth noting is that new inventions have at times inspired an attempt to particularize the product so that, for instance, the purchase of a camera tied you for life to the camera maker for all the film you would need. The purchase of a safety razor predetermined the blade you must purchase. This has not worked out. The greatest growth in consumer products has been occasioned by interchangeable consumable products from cassettes to gasoline and tires. Enterprise and competition have seen to this.

Industrialized building would resemble "auto". Some segments of the industry must be devoted to producing elements, units, parts, as it were while others must take control of larger design so that parts will fit when produced. There is an important adjustment of models and elements or stabilized model design to use predesigned elements. We can't afford to have elements so unique that they have a limited use, perhaps with the exception of applied or decorative items.

Central control must seek contracts for elements geared to existing production capabilities and investment in plant. Sales vs. need adjustment in the market place is important. One reason we have a housing problem is that production capacity gravitated to the most profitable level of sales leaving behind a vast need unmet.

We will see allocation of task force or design energies well in advance of production to permit commitment and contracts all down the line. Design must be intensely specific and at times involve design of the production facility itself. Transportation becomes a larger part of the process as the elements become bulky and produced remote from the site.

Where I would differ from Mr. Bender is at the organization level. I don't see this industrial development as a "Contractor" but as a design organization first (a problem solver), and secondly as a specification writing and bid taking organization to assure some real advantages of price as small supply groups bid on elements produced by their own capital, plant and initiative also an assured distribution and regeneration of supply organizations near to the ultimate resting place of the end product. This would indicate transition of many of our existing skills and trained personnel into the process. The last, and perhaps most critical, element in this imaginary industry is the part played in "auto" by the dealer sales and service companies. Here again we have the people and in most cases the investment is made. Here the vast army of local level participants from realtor, financier, contractors, builders and subs can certainly staff this force and give it a home.

Let's return to General Motors' stated philosophy again. "Decentralization of operations and responsibilities" and "Coordinated Control." See the trial chart for the organization.

Looking at the chart I see a need for seasoned architects, contractors and engineers in the upper ranks with the business people, but largely at first as interpreters, later in more substantial roles. However, in the operating divisions I see a real need to give somewhat limited scope to some product groups and to bring into each one the task force type operations utilizing all known skills of design and

production planning. Here architects, engineers and production coordinators must be concentrated. The relationship between the parts becomes more obvious as you study it and the development of General Systems will give flexibility and multiple use of elements just as "auto" has done. A brake maker can make a good brake for the large and the small. So with the component groups attempts to create universal elements will make for economy and a better product all down the line. I am no longer frightened by industrialization but I am discouraged by the greatly limited scope of the "Module" boxes and the attention they are getting.

In 1947 when construction and subcontract organizations expanded their output and grew in size we experienced the elevation of formerly competent workers to supervisory or management jobs with an intake of less skilled personnel and attended by slower output and a jump in cost of production. Prewar, depression produced, unit costs and time required was never recovered. I would expect the same mechanism to work in the development of industrial organizations out of our present system of construction. Knowledgeable hands will be needed directing the less skilled expanded force. The trick will be to develop systems which permit a productive balance. Those who see this development as a dodge to eliminate high paid labor are really dreaming. Here again look at "auto."

By a process of natural selection most architects turn out to work best in a horizontal organization and develop into sometimes glorified "squad leaders". Industry needs some of these but without some adjustment it would need executives and hierarchal types.

The existing architects and contractors will continue to serve the non-industrialized building needs and will gradually be absorbed or not be replaced as they leave active production. I see no mass destruction of the architectural profession but I can see many seasoned practitioners "going back to school" for Masters in Business Administration (MBA) degrees with many majoring in Computer Programming. The construction coordinator is sure to be needed. I avoid the word contractor since like the architect, many of his long learned skills will become things to unlearn. Of all the vulnerable people in our profession it seems to me the most target prone are the large firms and the most certain to be swept into the machine are the competent small teams who would take the place of the inventors and patent attorneys in auto-related industry. This process of industrialization is not really on safe ground if it tries to become a complete package dealer. Its success depends on providing opportunity for maximum participation at all levels with good controls and management.

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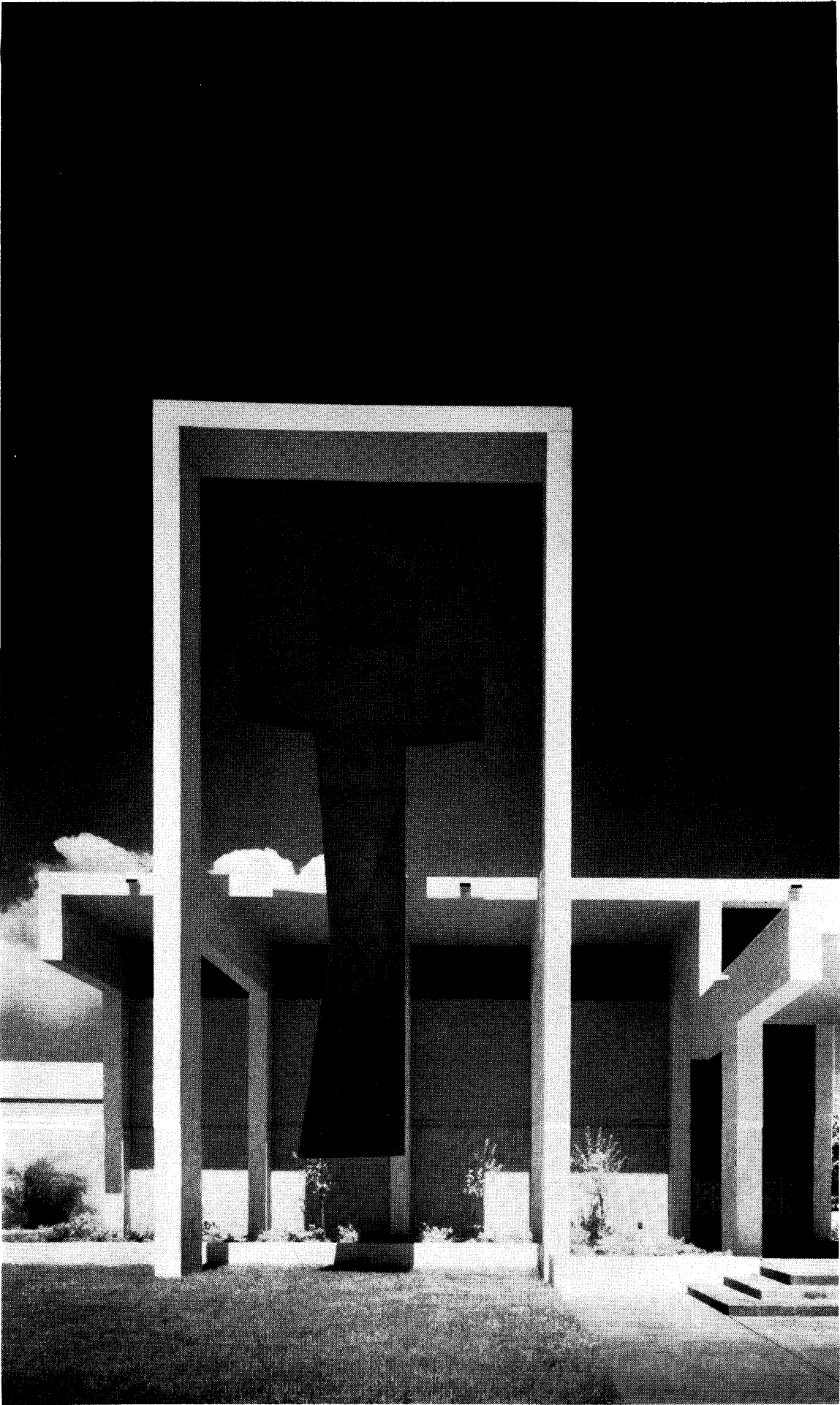
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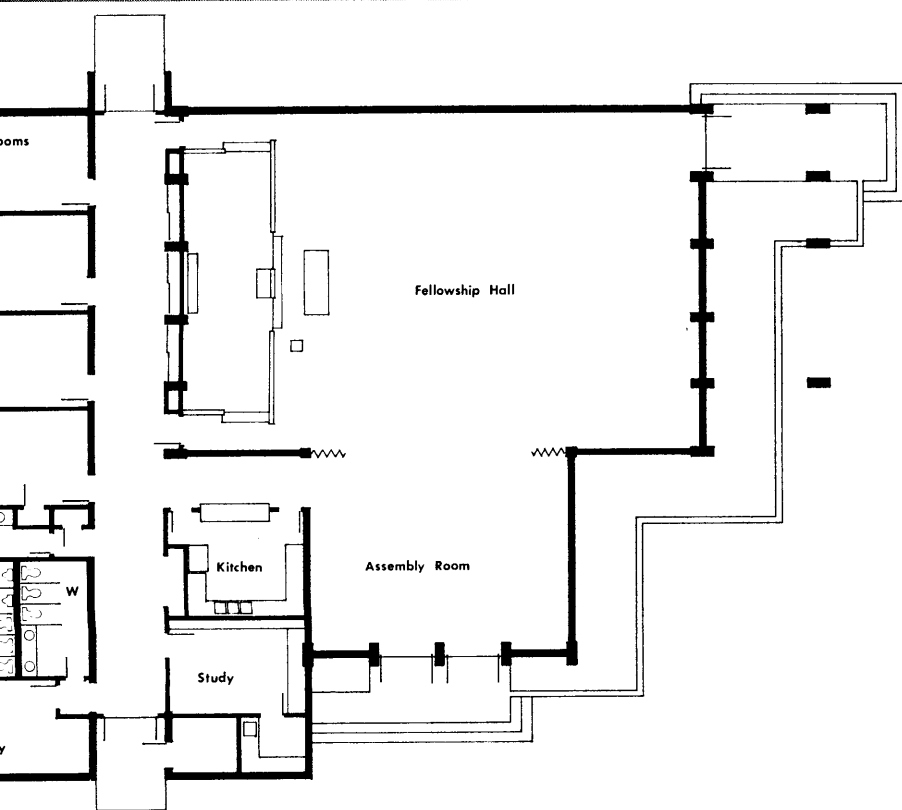
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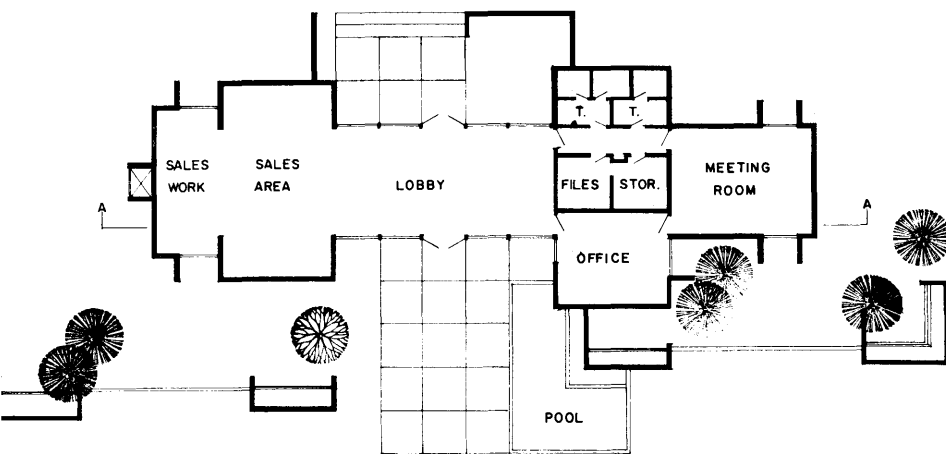
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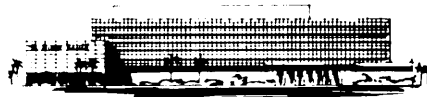
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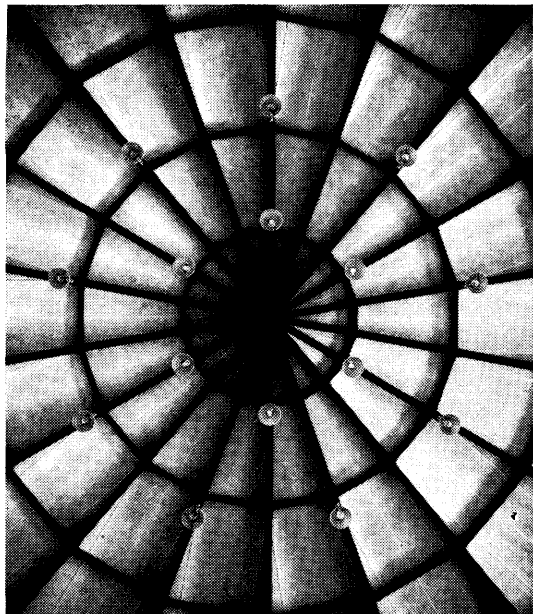
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The FAAIA has made it possible for architectural educators in Florida to be involved in professional activities in a way that was not possible before by appropriating travel money to the Committee on Education and Research, headed by Jim Garland. The heads of the schools of architecture at the University of Miami, University of Florida and Miami-Dade Junior College and the school of planning at Florida State University have attended meetings of the Board of Directors of the FAAIA, the State Board of Architecture (where they assisted in grading registration exams), and a recent meeting of the Southern Council of NCARB.

Speaking for the representatives of the schools, the experience has been very worthwhile, and we hope it will be continued. The following report was written after the recent NCARB meeting and may help explain why continued communication is so important.

There has been enough written and said about the changing role of the architect and the profession of architecture in the broad spectrum of urban problems and the environment, etc., etc., that I feel it needs one further explanation here. The changes are a reality—the predictions are for more of the same. The subject of this article is what is being done within the professional organizations and the schools to adjust to the changes that have occurred and to prepare — as best we can — for those changes yet to come.

During the 1960's, there was such pressure to make adjustments in the profession that it produced what seemed to be a desperate scramble. The term "package dealer" still produces a kind of paranoid reaction among many architects indicating some kind of personal threat. There are indications now, however, that architects will meet the challenge and recognize the opportunities which lie in expanded services.

It is difficult for any of us as individuals to get an overview of the problems and the adjustments that are being made. Yet the overview is necessary if we as individuals expect to influence the direction the profession will go. We charge our representatives in our professional organizations with the task of studying problems, suggesting alternative solutions and making recommendations for action and then the fallout from their activity flows across our desks in a

FROM THE UNIVERSITY OF FLOR

flood of paper and we sometimes lose sight of our objectives. Faced with voting on recommended courses of action, we are often confused.

In Boston this summer, some of our representatives will be considering a proposal to change the method of examining and licensing architects. The Board of Directors of NCARB will consider a recommendation of their Examination Committee. This proposal is so important to the total effort to update our processes, particularly in architectural education, that I would like to attempt to put it in perspective. At the recent meeting of the Southern Conference of NCARB, we had the opportunity to hear the proposal presented. E. G. Hamilton, Chairman of the Examination Committee, and Dean Gustavson, President of NCARB, discussed the proposal. In the June issue of the AIA Journal Dean Gustavson discusses the proposal in detail.

The AIA culminated its study of the needs of the profession with respect to education two years ago and published it in what is known as the Princeton Report. The guidelines for changing curricula were set down in that document, and today more than half of the architectural schools have changed or are changing to programs following those guidelines. The changes broaden considerably the courses of study for architectural students. In making these changes, it was obvious that significant changes in the amount of technical subject matter could produce graduates who would not be prepared to pass the kind of technical examination which is presently given for registration as an architect. At the schools we were promised that NCARB was at work to adjust the examinations, and we preceeded with curriculum revision. This June, the NCARB Examination Committee will present its recommendations and the hope of many of us is that the recommendations will be adopted and implemented as they suggest. Time is short. Many of our graduates of the next few years will find their places outside the profession of architecture unless we make the effort to keep them in. In some areas it was found that only 40% of the graduates of architectural schools are entering the profession.

Briefly, the report of the Examination Committee states that the present examination has gone as far as it can go. The present exam is a machine graded, objective test in

five of its seven parts. The quality of the test has been raised significantly in recent years. However, everyone who has had experience in grading the site planning and design tests agree that they need improvement.

The Committee recommends first that the prerequisites for the exam include a degree from an accredited school. The national organization feels that the time has come to close the door to non-graduates in recognition of the changing times. They feel it is no longer possible to cover the same body of information outside the schools. A total of six years of school or five years of school and one year of apprenticeship would be required to take the exam.

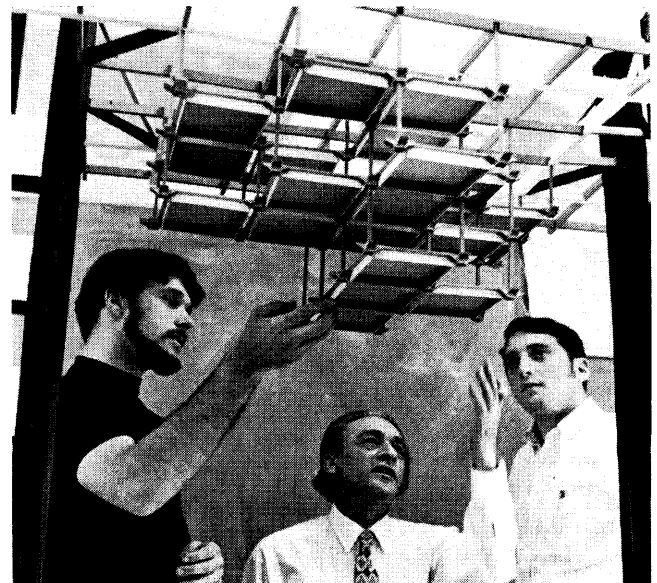
Secondly, the present examination should be phased out in favor of a problem-solving type of exam that deals with significant environmental issues, placing the examinee in the role of architect strategist. The examination would be as short as feasible, possibly not more than one day. It would be multiple choice, as objective as possible, and machine graded. It is estimated that 30% of the present examination questions could be included.

Finally, the time schedule for phasing in the new exam calls for designing the exam in 1970-71; testing the new exam in 71-72; phasing in the exam in 1972-73; and by 1974, it would be in general use. In the interim, the present exam would be modified to include only two parts: the first would combine the present design, site planning and theory exams into one; the second would be the present exam on professional administration. Examinations on structural design, mechanical equipment, building construction and history would be eliminated. For further details regarding this proposal, I refer you to Dean Gustavson's article in the Journal this month.

I believe that the proposal will find good support from the architectural schools which are trying to broaden their areas of study. It certainly will be favorably received by those young graduates who want to stay in the profession although their interests lie in planning or some other area. I hope it will be favorably received by the Board of Directors of NCARB and that the Registration Boards of the states will find it acceptable. I hope that all architects will give the recommendation serious study and participate in the decision making. ■

**Arnold F. Butt, Chairman,
Department of Architecture**

Fifth year architecture students, Philip Crannell (left) and Lawrence Alan Mackson (right) review the model constructed in Dr. Leonardo Ricci's urban design class at the University of Florida. The model is a structural system which would permit three dimensional urban growth. The upper grid of beams is supported by cables from clusters of four vertical columns spaced about 90 feet apart. Vertical cables from the upper beams support floor slabs which are flexible by creating any size room and wall height for offices, schools, apartments and shopping centers.



LETTERS

Environment

Thank you for sending me a copy of the March/April issue of The Florida Architect containing my article on environment.

I hope your members get something worthwhile out of my comments. I appreciate your willingness to give the article some wide exposure.

By-the-way, I always look forward to reading The Florida Architect and especially enjoy articles on historical and folk architecture. I am Executive Chairman of the Governor's Bicentennial Standing Committee. We have a bill in the Legislature providing for a State Bicentennial Commission. When formed, it would develop a

historical trail for visitors to the state to coincide with our celebration of America's 200th birthday. Your historical trail material in your previous issue fits into this beautifully.

Pat Dodson
Director of Administration
State of Florida
Dept. of Transportation

Heritage Trail

We have 32 schools in Alachua County and would like very much to have a copy of "HERITAGE TRAIL," a windshied survey of Florida's historic architecture, for each of them. Could you possibly provide us with enough copies to enable us to place one in each of our schools?

If you do not have a sufficient quantity to provide one for each of our schools perhaps you would send what

you have and we could place them in our secondary schools.

We would be most appreciative of your efforts in our behalf.

Sincerely,
(Mrs.) Helen Hoskins, Coordinator
Printed Media

(Editor's Note: Above request was fulfilled.)

Architecture

In building, one firm rule I've made:

First, build the roof; work in the shade.

To me this makes a lot of sense
In spite of overhead expense.

Thomas K. MacDonell

Submitted by Alfred Browning Parker, FAIA

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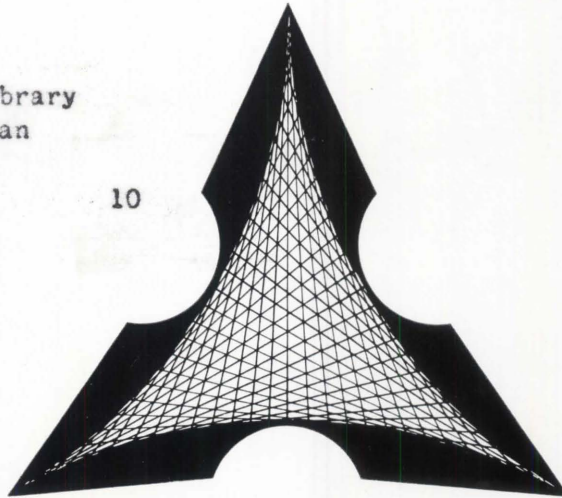
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