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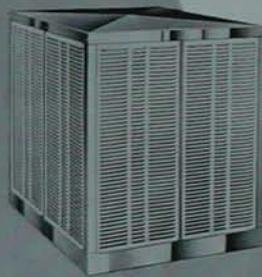
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Art. 26. Subcontractors.—The Contractor shall, as soon as practicable after the execution of the contract, notify the Architect in writing of the names of subcontractors proposed for the principal parts of the work and for such other as the Architect may direct and shall not employ any subcontractor without a reasonable time object to the subcontractor or work.

If the Contractor has submitted before execution of this contract a list of subcontractors and the change of any name, or with list, is required in writing by the Owner, the Architect, or the General Contractor, prior to the execution of the contract, or if the list is increased or diminished by the difference in work necessary for such change, the Architect shall, on request, furnish to any subcontractor, whenever practicable, evidence of the amounts certified on his account.

The Contractor shall, on request, furnish to any subcontractor, whenever practicable, evidence of his subcontractor and of persons either directly or indirectly employed by him, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the Owner.

Art. 27. Relations of Contractor and Subcontractor.—The Contractor agrees to bind every Subcontractor and every Subcontractor agrees to be bound by the terms of the Agreement, the General Conditions, the Drawings and Specifications as far as applicable to his work, including the following provisions of this article, unless specifically void in the manner in a subcontract agreed in writing as aforesaid by the Owner or Architect.

This does not apply to minor subcontractors.

The Subcontractor agrees—

(a) To be bound to the Contractor by the terms of the Agreement, General Conditions, Drawings and Specifications, and to assume toward him all the obligations and responsibilities by reason of his work, and to render to him all the services required by him.

(b) To render to the Contractor applications for payment in such reasonable time as to enable the Contractor to apply for payment under Article 24 of the General Conditions.

(c) To make all claims for extra, or extension of time, or for damages for delay or other cause upon the Owner, except that the time for making claims for extra cost is one week.

The Contractor agrees—

(d) To be bound to the Subcontractor by all the obligations that the Owner assumes to the Contractor under the Agreement, General Conditions, Drawings and Specifications, and by all the provisions thereof affecting remedies and redress to the Contractor from the Owner.

(e) To pay the Subcontractor, upon the payment of certificates, if issued under the schedule of values described in Article 24 of the General Conditions, the amount allowed to the Contractor in account of the Subcontractor's work to the extent of the Subcontractor's interest therein.

(f) To pay the Subcontractor, upon the payment of certificates, if issued otherwise than as in (e), so that at all times the total payment shall be as large in proportion to the value of the work done by the Subcontractor as the total amount of work done by the Contractor is to the total work done by him.

(g) To pay the Subcontractor to such extent as may be provided by the Contract Documents or the subcontract, if either of them provides for extra or larger payments than the work.

(h) To pay the Subcontractor on demand, for his work or materials as far as current and fixed in place, less the retained percentage, at the time the certificate should issue, even though the Architect fails to issue it for any cause not the fault of the Subcontractor.

(i) To pay the Subcontractor a just share of any fire insurance money received by him, the Contractor, under Article 29 of the General Conditions.

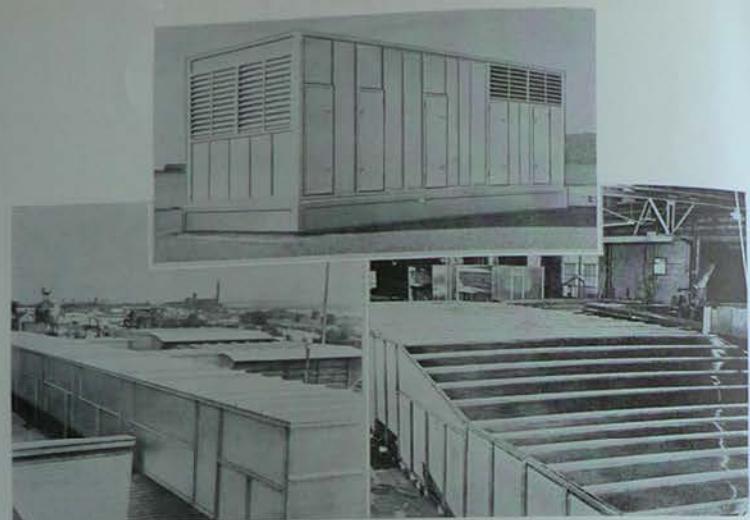
(k) To make no demand for liquidated damage or penalty for delay in any sum in excess of such amount as may be specifically named in the subcontract.

(l) That no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first ten days of the calendar month following that in which the claim originates.

General Conditions, Sixth Edition—Ten Pages—Page 6.

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AUGUST 1958 Vol. 1, No.



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Phil Stitt Managing Editor

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Signed articles reflect the views of the authors and do not necessarily represent the official position of the Arizona Society of Architects or the Central or Southern Arizona Chapters, AIA.

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August, 1958



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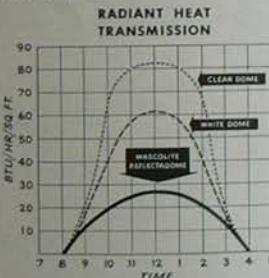
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ARIZONA ARCHITECT

Four

## THE PRESIDENTS' PAGE



SOUTHERN  
ARIZONA  
CHAPTER



Santry Fuller



CENTRAL  
ARIZONA  
CHAPTER

David Sholder

GUEST COLUMN By JOHN H. BECK  
Public Relations Chairman, Southern Arizona Chapter

TINKER AT ALL TRADES and master of none! Could this be a worm's eye view of the architect from the sub-contractor's point of view?

The "tinker" is in reality an expert in design and co-ordination and possesses the ability to grasp every facet of the whole problem. The sub-contractor is an expert in his trade.

What can these two do to help each other?

Mr. Architect can help by clearly drawing specifications and perhaps in other ways. He certainly should possess enough know-how to use trade practices and he must give adequate supervision.

Mr. Sub-contractor can be helped by making it possible for him to see the project in its entirety — and not expecting him to work like a mole in a hole. Some studies have been made and it was found that the more explanations given to workers by management, the more co-operative they became, even to the point of working overtime or producing more pieces, for instance. It gave them a feeling of status and security to share the confidence of management. Thus for better morale and workmanship the sub-contractor should be helped to see his relationship to the whole. Better availability of complete working drawings would help to this end.

The General Contractor completes this triangle. He is vital to a good sub. If he is playing fair he doesn't shop for bids, he doesn't force one trade's mistake on another trade, and he doesn't expect a sub to finance the job.

The architect, general and sub are interdependent. The conception and execution rest on the architect. He in turn depends on the general and subs for faithful execution of his ideas. This should end up in a smooth running, co-ordinated team. In which case we will have no tinkers or worms, but a team working for better buildings — better Architecture.

August, 1958

THE VALUE OF ANY enterprise is judged by results, and on this basis the Ninetieth Annual Convention of The American Institute of Architects must be considered as one of most importance to the profession. It was important for at this convention definite steps were taken toward increasing the influence and usefulness of the profession. Probably the most far-reaching in its ultimate effect is the movement to develop a plan for the closer co-operation of the various architectural organizations, the state chapters and the A.I.A.

As usual, when something so logical is presented the question is asked, "Why hasn't this been done before?" The unification of the professional architects, in order that they may work together more effectively toward common ends, is one of the first steps in furthering the integration of the building industry. The development of a practical plan for the accomplishment of this is in competent hands, and the next year will undoubtedly see a larger and more influential body of architects working throughout the country.

The convention delegates acted on 17 resolutions. A resolution for re-establishment of the former committee on fees and contractual relations was passed, as was a resolution for establishment of a building code committee.

One of the resolutions defeated proposed that no chapter should influence or promote the proposition that public work in a given area be limited or restricted to members of the chapter having jurisdiction in that area.

Space does not permit a review of all the resolutions acted upon. However, the views and desires of the architects of the country, expressed in the resolutions, carry the conviction that this action is necessary for the public good. The ways and means of carrying out the expressed views are largely in the hands of the Board of Directors of the Institute, and whatever program is formulated should have the support and co-operation of every member of the profession.

Five

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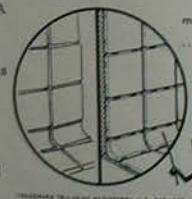
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#### *The Editor's PERSPECTIVE*

FOLLOWERS OF THIS PAGE must be well aware that we favor two-way communications for architects; that we think it's often more productive and instructive to listen than to talk.

In this issue we have invited representatives of several groups of subcontractors to tell us some of their problems that might not have filtered through the general contractor to the architect.

The subcontractors have problems.

Depending on their own personalities and those of the architects with whom they have dealt, it is possible to get from subcontractors widely varying opinions of architects as a class. We won't quote the extremes. We suspect that in some cases much more than personality is involved.

For example, take an architect who is a stickler on inspections, as he should be. If the general contractor is encouraging his subs to bid too low and then requiring them to finance his operations, the sub is unhappy to begin with. Perhaps he is tempted to substitute inferior materials or workmanship. It will probably be the architect who will catch him and force him to meet the more costly specifications. It is understandable that "architects" will be an unpopular breed with that subcontractor.

The architect, it seems to me, would save himself not only some ill-will, but delays and explanations to his client if he would take the time to analyze and help solve some of the serious problems that beset the industry.

Some of those problems are mentioned in the articles in this issue of *Arizona Architect*. None of them are reported with the emphasis and the colorful language with which they are discussed among the subcontractors. After all, there are postal regulations!

One of the very real problems of the industry is bid-peddling by some general contractors — a subject we will develop more fully in another issue.

Another apparent problem involves vast sums of money that some general contractors owe to their subcontractors for unduly long periods of time. In turn, the subcontractors are hard put to pay their bills to suppliers.

Much of this involves the merchant builders and not architects. But the matter of retainage called for in a great many contracts supervised by architects has come up for criticism. (See *Are Retainage Fees Excessive?*, page 16). This problem ought to be seri-

ously considered by the architectural profession. A good place to start would be within the two Arizona chapters' Committees on Relations with the Construction Industry.

If the agitation for change is warranted, some chapter resolutions would be in order. If not, let the architects give a carefully considered explanation to their associates in the contracting fraternity.

In the highly competitive construction industry it is to be expected that there will be some chiselers and opportunists. Certainly there is good reason for the responsible members of the business to associate themselves together to adopt codes of ethics by which they will operate and to provide some policing of their ranks.

It isn't easy to so organize, because even among the most responsible businesses of a given nature, there is rivalry as well as common interest. Often the rivalry dominates judgment rather than the common interest, and the staff members hired to operate the association have a tough time keeping peace and order.

It is much better that order in an industry be maintained voluntarily by its members than by the force of government regulation. Often, as in the case of the Registrar of Contractors, government and associations are able to work together effectively.

Just as architects recognize the high public interest that is served by their Institute and its member chapters, they will do well to encourage the subcontractor associations by favoring their members wherever possible. It seems to me that by doing so the architect will not only be dealing with the better skilled of the particular craft, but will be getting added help on inspections and adjustments if needed.

Through some contractor associations there will be an opportunity for groups of architects and groups of contractors to get together on occasion to discuss mutual problems. Through such discussions both sides will become better able to perform their necessary role of serving the public.

Meanwhile, we suggest that they may learn much from the series of articles on Arizona's lien law, starting in this issue and especially prepared for us by Attorney Donald Shortridge. A somewhat related subject of performance bonds will also be covered in forthcoming articles on these pages.

*Phil Litt*

Seven

August, 1958

# 2 SOUND ACHIEVEMENTS

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ARIZONA ARCHITECT

Eight

## State Architecture Education Progresses

### University of Arizona Starts New Department

The planned curriculum for the new department of architecture at the University of Arizona has been announced by Sidney W. Little, AIA, Dean of the College of Fine Arts. The new five-year program will emphasize "design as the major contribution of the architect to the modern world."

The first two years of the program, intended to lead to a bachelor of architecture degree, will go into effect this fall. The third and fourth years will be available to students in September, 1959, and the final year in 1960.

This fall a few advanced students may transfer into the program from other schools by special arrangement, the Dean said, and plans are being made to offer advanced degrees in the field at a later date.

According to Little, the faculty has attempted to develop a course for the student of architecture which "looks forward to the needs of the second half of the twentieth century. In this and other ways the new school is expected to differ rather vitally from many schools already in existence."

The past century, Little pointed out, "has greatly increased the complexity of tools and technics in architecture and during the same period man's needs have also increased quantitatively, and qualitatively. The architect's task lies in his unique ability to unite these elements through design, and by so doing, to create a total architectural environment."

"There is a great need now for an architecture school in which the training program returns to the fundamentals of professional responsibility," Little continued. At the University of Arizona the new course in architecture will include all the accepted courses normally found in architectural curricula but the emphasis will be on design rather than on technical skills alone. "Architecture is a design profession," Little said. "Technology will be considered as a source for design rather than as an end unto itself."

Included in the program will be courses in the natural sciences and climatology, Little stated, "to give a knowledge of the natural determinants of Architectural Form." Cultural anthropology and special electives in sociology are also in the program to cover the social aspects of architecture, and courses in theory and history of the field are planned.

"The history of architecture is the record of the aspirations of mankind," Little said, "and only through

this type of cross-cultural approach can the new architect appreciate both his great heritage and his responsibilities to the future of the profession."

The new dean is a graduate of Cornell University and has a master's degree in architecture from Tulane University. He is past president of both the Pacific Arts Association and the Western College Art Association. He was a member of the Oregon capital planning commission.

Little was, from 1929 to 1936, an assistant professor of architecture at Clemson and, from 1936 to 1946, associate professor of architecture at Alabama Polytechnical Institute.

— AIA —

### Arizona State's Division Given ACSA Recognition

The Association of Collegiate Schools of Architecture has elected Arizona State to associate membership; it was announced last month. This was in recognition of the school's careful planning and development of its division of architecture, headed by James W. Elmore, AIA. Arizona State's five year curriculum in architecture became effective last year, an enlargement from the four-year program offered since 1949.

About 200 students are expected to enroll next month in the division, an increase over last year's total of 165.

In preparation for the enrollment this fall, the faculty will be increased to the equivalent of seven full-time instructors who will conduct more than 20 courses in architecture and construction.

Instruction will be given by four full-time faculty members, two of them new, and several local architects and engineers on a part-time basis.

Included on the faculty will be Elmore and Logan E. Campbell, who earned his master of architecture degree from the University of Oklahoma in 1956 and became assistant professor at AS last year, and two new instructors, Raymond G. Studer, Jr., and Chester L. Sprague. Studer earned his bachelor of architecture degree from the University of Texas and has been a designer and draftsman for several Texas and California architects. Sprague will be awarded his master of architecture degree at Massachusetts Institute of Technology next month. His bachelor of architecture degree is from the University of Minnesota.

Part-time instructors will be announced later.

Nine

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ARIZONA ARCHITECT

## CONVENTION at CLEVELAND

Complete accounts of the A.I.A. convention at Cleveland are available in the AIA Journal and personal reports are being given by Arizona delegates at chapter meetings. Here are some between-session photos.



August, 1958

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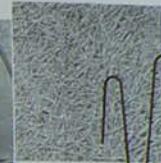
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Twelve

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## IS MASONRY MISUSED?

By CLINTON CAMPBELL, Secretary  
Arizona Masonry Guild, Inc.

*(Editor's note: Following disclosures in our February issue that some masonry contractors were failing to meet specifications on mortar strength, a group of contractors and suppliers formed Arizona Masonry Guild, Inc., to police and improve the quality of masonry work. We have asked them what the architect can do in his own and his client's behalf.)*

Are you, as architects, utilizing the full potentialities of unit masonry construction in order to save money for your clients?

With the increase in building in this area and the demand for lower cost per square foot of building area, it is more necessary than ever to squeeze the last bit of efficiency from the material and design of these buildings. In the case of steel frame buildings no one would use 16-inch steel columns where 8-inch columns will do the job, nor would they place the columns 10-feet apart if 15 or 20-foot spacing would do the job; and yet when masonry is used there is a great deal of useless duplication or use of two materials to do the job where either one will do by itself, and do it better.

Are you using masonry construction just to "keep

Some suggestions for improved designs  
better workmanship, and greater economy.

the wind out"? Or, are you using it as it was intended to be used — as load-bearing wall construction? A specific example of this is in buildings where a complete frame of structural steel is designed and erected to take all of the wind load, floor load, etc., and then masonry is used to "look pretty and keep the wind out". Masonry walls can and should be used for load-bearing walls. Have you ever thought of designing a load-bearing masonry job in place of the steel frame? The results may surprise you! On your next job, take a look at the masonry figure and the steel erection figure — see where you could add another 4" of wall for less than 20% of the masonry cost and take away the structural steel needed in the wall area.

Grouted masonry has not been used to any extent until recently, following a change in the City of Phoenix Code. It is "new" and the fullest potential has not yet been realized. In the early days there have been mistakes made — putting small bars close together instead of big bars farther apart, which has the same structural value. This method keeps the mason "happier" because he doesn't have the bars "up around his ears". Another mistake that has been made is an es-

*(Continued to Page 15)*

### announcing the formation of the ARIZONA MASONRY GUILD

to promote and improve masonry construction in  
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construction information.

Any suggestions, ideas or questions that  
you as an Arizona Architect might have, would  
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August, 1958

7

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### BRENNER NCARB OFFICER

It has just been learned that John Brenner, AIA, Phoenix, has been elected Treasurer of NCARB whose offices are being moved to Oklahoma City from Charaton. Joe Smay will become executive director. Walter F. Martens, president, Brenner is secretary of Arizona's Board of Technical Registration.

— AIA —

### "LIVING WITH THE SUN" TO BE CONFERENCE THEME

Colorado Chapter, hosts to this year's Regional Conference in Denver September 25-27, has chosen "Living With The Sun" as its theme.

Headquarters for the conference will be the Continental Denver Motel, and plans are being completed to present outstanding nationally known speakers and guests.

Registration will be Thursday morning, September 25, and will be followed by a program of stimulating seminars and discussions of special pertinence to architects of the Southwest and Mountain region. Although trips to the new Air Force Academy are not normally open to the public at that season, arrangements are being made for architects to see this point of national architectural interest.

A regional awards competition will be held during the conference, and plenty of opportunity will be presented for swimming, sight-seeing, shopping, and the relaxation of parties and architectural tours.

There will be many special ladies' events.

The conference will present an opportunity for architects to meet the newly elected AIA regional director, Frederic H. Porter, Sr. Public relations chairmen from the various chapters will be able to confer with Robert R. Denny, representing the Institute's firm of public relations consultants.

The Denver Chapter invites all AIA members to make this their Autumn Holiday.

ARIZONA ARCHITECT

### IS MASONRY MISUSED?

(Continued from Page 13)

cessive amount of cuts of brick — for instance, putting 1/2-inch steel bars in a 7 1/2-inch brick wall. The placement of steel, type of wall sections and the mortar mix all have a bearing on cost of your job.

Mortar is one of the most difficult materials for the architect to control on his job. The architect knows a definite strength that he must have in order to meet structural requirements — but he thinks he is going to be cheated, so he specifies one of twice the strength, and no one is happy. The mortar must have workability and not set too rapidly in order for the mason to lay it properly. With the addition of cement and the reduction of lime putty, the mortar sets too fast and must be struck immediately. This slows down the masonry. Another check point to look for in workability of mortar is the proper grading of the aggregate. We refer you specifically to ASTM C 144-52T on Aggregate for Masonry Mortar. If the proper relationship between workability and proper strength can be maintained everyone will be "happier". But you say, "How can I be sure I get what I ask for?" The methods for testing mortar are all set out in ASTM Specs. Proper inspection by your inspectors or independent testing laboratory, and knowledge of what to look for, can do the rest.

The masonry industry in Phoenix has formed an organization — the Arizona Masonry Guild, Inc. This is made up of the manufacturers of clay products and concrete products, the mason contractors, mortar manufacturers, and anyone else who is interested in masonry. The principal interest of the Guild is to work with the architects and engineers in order to find what we all can do to improve the industry, from manufacturing, to mortar, to in-the-wall betterment and costs.

We intend to do research in wall design, grout mixes, moisture content, placing of steel, etc., for this area of the Southwest in which we are all interested. We know that there are places for improvement and we intend to find them. We are ready for your suggestions — and hope you will take some of ours if we can prove their validity to you.

— AIA —

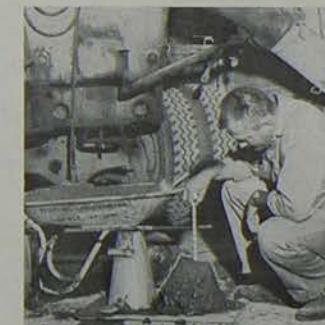
Construction contracts in the United States in June totalled more than \$3.8 billion, by far the highest figure ever reported for any single month, according to F. W. Dodge Corporation.

The June contracts were 12 per cent above the previous high record which had been established only a month earlier in May, and they were 18 per cent higher than in June of last year.

The June figure was pushed upward by large increases in public utility, public works and residential contracts.

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Fifteen

## Are Retainage Fees Excessive?

By WILLIAM N. WILSON  
Executive Secretary, National Association of  
Architectural Metal Manufacturers.

The National Association of Architectural Metal Manufacturers believes that the present retainage fee percentage is excessive. We believe that this percentage should be cut and that a definite time limit of not more than 90 days should be set for settlement to sub-contractors. The excessive retainage fee and the delay in prompt settlement works a financial hardship upon the Architectural Metal Fabricator. Millions of dollars are needlessly tied up in retained percentages.

Representatives of The Producers' Council, A.G.C., A.I.A., National Association of Credit Men, Council of Mechanical Specialty Contracting Industries, Inc., and Specialty Contractors Associations have met from time to time since January, 1955, to discuss the retainage percentage problem. All have agreed that too much money is tied up under the present system and that some joint program should be established to study the problem and seek a workable solution. NAAMM has gone on record supporting the efforts made by the National Association of Credit Men to bring about

a speedy and equitable solution to the problem.

At a recent informal meeting of Specialty Contractors Associations held June 10, 1958 in Chicago, Illinois, NAAMM gave full approval to the following motion adopted at that meeting: *"That retained percentages of work completed on all construction work shall be 10% of all work completed up to 50% of the total contract price on either subcontractor or general work. The retainage fees not to exceed 5% of the total contract when work completed exceeds 50% of the total contract."*

In our study of the retainage fee problem we find that many of the organizations and trade associations interested in this problem have formally recommended some action to bring about a solution to the retainage fee question. We have not been able to find any formal action that has been taken by the American Institute of Architects on a national or local level. The problem will never get out of the discussion stage until some formal recommendation is made by the architect — through his local and/or national organization. *An expression from the architect on what he thinks should be done would help guide the activities of other groups.*

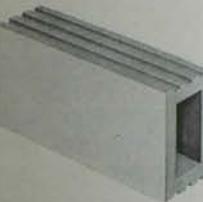
NAAMM thinks that the time has come for firm and definite action. The retainage fee problem is a serious one for the Architectural Metal Industry. It cannot be "tailed" much longer.

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ARIZONA ARCHITECT

Seventeen

## My Three Years on the A.I.A. Board

By BRADLEY KIDDEN



To me the biggest advance we have made during these three years has been in the increased prestige and leadership that the Institute has gained on Capitol Hill and as spokesman for both the Profession and the Building Industry. The AIA now means responsible and authoritative witness to each of the two major branches of our national Congress — and to the various Congressional Committees. (This position would have been seriously handicapped had we reversed our stand in opposition to the East Front expansion.)

We have improved our professional relations with most every branch of the Federal Government where in we have any opportunity to be of professional service, and have much improved contractual relationships. (Example, and one that hits close to home: we succeeded in getting the Department of Interior to abandon its policy of obtaining Architectural Services upon a competitive bid basis, especially as practiced by the Bureau of Indian Affairs.)

Our program of public relations is beginning to bear fruit and promises to develop into something from which we can begin to show tangible results. We are beginning to get together sufficient data to assist the chapters to carry on their own public relations programs in a manner that will be sure to show results at the local level, where it counts most with the individual members.

The Institute's concern with the "Package Dealer" and the work of the many Institute committees assigned to study this problem has been most enlightening. No single concrete method for combating these firms has been set forth, though many have been considered. The interesting thing has been the discovery that we have always had the package dealer with us, even in ancient times, and in many forms; so the competition is not new. There is evident a need for the sort of service that the package dealer performs, though in its present form it is far from satisfactory. The Institute is still working on the idea that the Architect should have a dominant role in the program that is represented by the package dealer and we hope eventually to be able to offer certain concrete suggestions as to how we can replace this service with an

Architectural service that will remove all of the present bad practices.

Of course, along with the public relations program must be included the tremendously successful Centennial celebrations held throughout the USA during 1957. This brought us to the attention of the public in many ways and stimulated our own members to think about better ways to serve the public.

Personal, I've tried to represent the Western Mountain Area to the best of my ability and have attempted to make certain that we were represented in the Institute's committee organization, and further to make sure that the A.I.A. represented us as the type of professional organization we wanted to have.

We now have 14 members from this Region who are serving on 1958 Committees. Two of these national committees are chaired by members from this Region. We have had a member on the (5-man) National Honor Awards Jury in each of the last two years.

We've had 15 members from this Region as members of National Committees during the last two years — with one man as Chairman of two such committees. We had one honor award winner (Mention), and had four members advanced to Fellowship in the AIA during these past three years.

For myself, I served on two committees of the Board undertaking the study of our Cost Data Surveys and Publication system — and we have now an established program ready to get under way this Fall. Also, we now have an Institution definition of the method of computing Square Foot Areas of Buildings.

I served on the Institute's Survey Team to investigate the possibility of establishing a school or schools of architecture in Arizona, and understand that real progress is being made toward this end. (This was a most rewarding experience for me and I hope for Arizona.)

My chief work on the Board was in the revision of the Institute's committee structure — motivated by many requests from Chapter presidents wanting to know what committees they had to appoint, etc. The AIA now has a fully separate document describing all committee functions, personnel, duties and terms of office — everything about committees in one small volume.

I've had the rare opportunity to visit with more than half of our three hundred some members in this Region, in Chapter meetings and at the Regional and National Conventions, and I'm more than ever proud that the members were kind enough to elect me to represent them for these past three years.

Seventeen

## AIR CONDITIONING INDUSTRY PROBLEMS

By Jim Scott, President

Air Conditioning Contractors Ass'n. of Arizona

The air conditioning industry's major problems are the result of its explosive growth. Among these problems are the shortage of qualified personnel at all levels, difficulties that result from "fly-by-nighters"; and lack of standardization in rating procedures. The architect is often directly or indirectly involved in these problems.

For example, in planning for air conditioning the architect is often confronted with the determination of whether certain unspecified equipment meets the specification that calls for "Brand X, Brand Y, or equal." Usually, the general contractors consider anything which will throw cold air as an equal. However, the architect is more concerned with certain intangible problems, such as life expectancy, cooling output per unit of electrical energy consumed, ruggedness of construction, ease of maintenance, local availability of service parts and labor, etc.

The air conditioning industry is attempting to standardize its rating procedures. Most manufacturers rate their equipment capacity at ASHRAE or ARI conditions of temperature and humidity. Since each manufacturer does his own testing and rating, some exaggerations still exist in the sales and technical literature.

At the local level, lack of standardization of procedures is quite evident in cooling load calculations. Some manufacturers suggest that loads be calculated on the basis of an indoor-to-outdoor temperature differential of 25 degrees, while other manufacturers suggest using a 30 or 32 degree differential. Some local engineers base their calculations on an outdoor temperature of 105 degrees, and still others use 110 degrees. (The American Society of Heating and Air Conditioning Engineers recommends an outdoor design temperature of 107 degrees for Phoenix. Weather data for a five-year period showed that this temperature was not exceeded for more than 24% of the total hours of June, July, August and September.)

A major problem of the industry is the shortage of qualified personnel at all levels: engineering, contracting, installation, service, estimating and selling. The training period in these classifications causes the supply of qualified personnel to lag three or four years behind the demand. This, coupled with the fact that the demand increases more than 30% per year, creates obvious problems in the personnel end of the business.

Furthermore, certain practices by unions having jurisdiction in the air conditioning field tend to limit the annual increase in the number of experienced journeymen.

Another problem inherent in "boom" industries is the influx of "fly-by-nighters" who move in to "skim

off the cream." This is true primarily of the contracting phase of the industry, rather than the manufacturing or distribution end. Arizona's Registrar of Contractors is in the process of setting up a testing program aimed at protecting the public from these unqualified operators.

In prior years, any person who could demonstrate a practical "nuts and bolts" working knowledge of refrigeration could become a licensed contractor. Hence the influx of refrigeration servicemen and sheet metal mechanics into the contracting field.

The advent of the five-year warranty on refrigeration equipment raised another question: granted that the contractor is technically qualified to install and service air conditioning equipment, is he sufficiently grounded in general business management — pricing, purchasing, estimating, credit and collections, etc. — to offer some assurance that he will survive long enough to back up the warranties on his installations?

Official records show that only 30 of the 93 licensed refrigeration contractors listed in the 1953 roster were still in business in 1958. In other words, *more than 68% of these contractors failed to last as long as the five-year warranty on the equipment they installed!*

However, the ranks were quickly re-filled. For every contractor who "cashed in his chips", two more sprang up. The 1958 roster lists 179 refrigeration contractors. If the 1953-58 mortality rate holds, 1963 will find 120 of today's roster missing! Dun & Bradstreet reports that of all building trades contractors, the failure rate is highest in the plumbing and heating trades. The licensing examinations to be put into effect at an early date by the Registrar of Contractors will cover general business of the applicant, as well as his technical know-how.

The architect seldom concerns himself with the financial responsibility of a subcontractor. However, the practical value of the five-year warranty depends on whether the air conditioning contractor stays in business long enough to implement it with his service organization. With the shortage of qualified personnel, each contractor is hard put to service his own installations, especially during the rush season. As a result, many air conditioning contractors turn down service calls on any but their own jobs. People who bought air conditioning from a now-defunct contractor are therefore in a very unfortunate position for service.

The architect, too, in such cases, may find himself embarrassed, through no real fault of his own.

Nationally, the present market saturation for air conditioning is estimated at only two per cent of residences, three per cent of churches, two per cent of factories, 15 per cent of hotel guest rooms and retail stores, and 27 per cent of Class A commercial office buildings. It is inevitable, then, that in spite of its problems the air conditioning industry will continue to grow.

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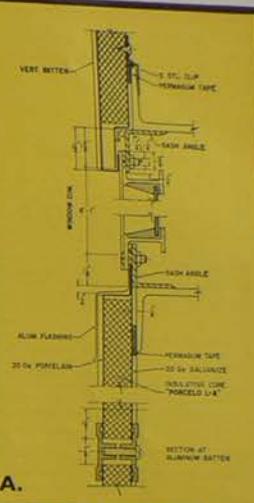
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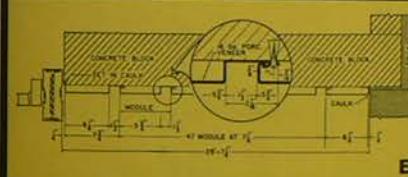


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C. Doctors' Building, Tulsa, Okla. Architect: Murray-Jones-Murray—Tulsa, Okla. Contractor: Tulsa Rig-Steel & Mfg. Co., Tulsa, Okla.



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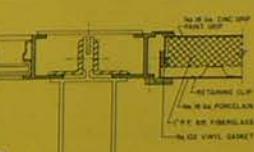
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Twenty-two

In a third companion case, the Supreme Court answered several questions of law referred to it by Superior Court Judge Donofrio. The questions were raised when Alfred N. Beadle was charged by the Technical Registration Board with practicing as an architect and an engineer without registration when he designed for the owners a motor hotel (over \$10,000) in Scottsdale. In doing so he had not claimed to be registered, nor did he "design, represent, sell, or contribute any service with respect to the soundness or safety" of the building.

The Supreme Court held that:

1. The accused did not have to be guilty of fraud or misrepresentation to be in violation of the Registration Act.

2. The Act is not unconstitutional on the basis of being "vague, indefinite and uncertain," as alleged.

3. Even though the accused did not represent himself to be an architect, he was practicing architecture and as such must be registered.

4. The Act does not too broadly and too unjustly purport to exercise the state's police power to be unconstitutional. Qualifications for registration were established under a valid exercise of the police power; and "there is no discriminatory favoritism or monopoly created by the Act."

5. The Act is not unconstitutional on the basis of being an unlawful delegation of legislative power to an administrative board.



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ARIZONA ARCHITECT

## Arizona's Lien Law Explained

BY DONALD B. SHORTRIDGE, Lawyer

(Editor's note: Because of the importance of mechanic's liens to the architect, as representative of the owner, we have asked Mr. Shortridge to prepare this series for our readers. It represents a general, up-to-date restatement of Arizona law and Arizona Supreme Court decisions. For ease of reading, we have eliminated most references to statutes and decisions, and presented the cases as a series of questions and answers. For detailed information, consult your lawyer.)

Some sort of mechanic's lien code has been in force since territorial days. In the year 1901 the territorial legislature passed a comprehensive set of mechanic's lien statutes, most of which are still in force in Arizona, little amended. These statutes were patterned so closely after the then existing California mechanic's lien statutes that our Supreme Court, at a later time, had reason to remark that California's decisions on its statutes should be persuasive, if not controlling, in Arizona.

In an early case on the matter of the construction of the Arizona mechanic's lien statutes the Court said:

"The primary object of the mechanic's and ma-

terialmen's lien law is to secure to the laborer and materialman the payment of their accounts, and incidentally to protect the owner against the filing of liens by such persons against his property for services and material rendered and furnished the original contractor."

Q: Who may claim a mechanic's lien in Arizona?

A: "Every person who labors or furnishes materials, machinery, fixtures or tools in the construction, alteration or repair of any building, or other structure or improvement whatever..."

"An assignee of a contract or account for material furnished or labor performed..."

"A person who furnishes material, or labors upon a lot in an incorporated city or town, or fills in or otherwise improves the lot or the street in front of or adjoining the lot at the request of the owner of the lot..."

"...and others specifically set out by law."

Q: If an owner of property acts as his own contractor, do materialmen and subcontractors have a lien?

(Continued Page 25)

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Twenty-three

August, 1958

## THE QUESTION OF HONOR . . .

From the practical standpoint of its own ultimate survival, there are few matters of greater individual concern to a business, an institution, or an industry, than the code-of-honor governing its everyday business relationships.

In certain matters of ethical conduct, one of the principal arbiters for Arizona's Electrical Contracting Industry is the "Construction Practices Board."

Primary target of the Construction Practices Board has been the eradication of the unwholesome practice known in the Industry as "bid peddling."

In addition to being generally regarded as dishonorable, the practice of accepting a "peddled" legitimate bid (for the purpose of "undercutting" it) has probably led as many subcontractors into financial difficulty as any other single cause.

Key weapon of the Construction Practices Board in combating the problem has been its **code of honor**, pledging all signatories to a high standard of bidding practice. . . . Some 80% of Arizona's general contractors, plus a substantial number of electrical, home-building, plumbing, air-conditioning, masonry, painting, steel fabricating, roofing, and glazing contractors are voluntary signatories to this pledge.

The above are excerpts from a new brochure, "E-J-I-B — It's Your Business", available to all interested persons.

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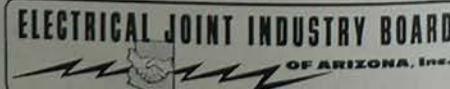
Included in the purposes of the Board:

To foster and promote safe and adequate wiring, and electrical installation practices and procedures, for the protection and safety of the Public.

To promote and encourage good craftsmanship in

The Board and its Construction Industry Relations Committee stand ready to cooperate with architects, engineers, contractors and suppliers in all activities leading to a healthy building construction industry.

Jerome M. Kelleher, Gen. Mgr.,  
1129 N. First Street  
AL 8-7886 PHOENIX



ARIZONA ARCHITECT

Twenty-four

## LIEN LAW (Continued)

A. Yes. The right to a lien on the part of suppliers, laborers and the like may originate either through a contractor representing the property owner or through the property owner himself.

A. Suppose a subcontractor delivers cash instead of materials to the general contractor. Does he have a lien?

A. No.

Q. "B," a builder, and "C," a contractor, equipped a warehouse with materials. "B" sold them to a master tile setter for use on the jobs.

A. "B" has a lien. He is not deprived of it from the mere fact that he was a builder as well as a contractor.

Q. "A" contracted to furnish certain machinery and equipment to "B". "B" had agreed to resell these items to "Y". Part of the equipment was delivered to "Y" but was not paid for by "Y". "B" then sent the balance of the equipment to "Y" C.O.D. Did this action constitute a waiver of "A's" and "B's" liens on "Y's" property?

A. No.

Q. Does a materialman have a lien on the owner's real property for equipment furnished, before the equipment has been installed?

A. No.

Q. Does a professional man, as an engineer or architect, have a lien for his professional services?

A. No.

Q. How about a superintendent who does no actual labor, but only oversees, trouble shoots, checks watchmen and so forth?

A. No.

Q. How about a surveyor who both labored and performed professional services, which were combined?

A. No.

Q. Suppose in an action to foreclose a lien, the lien fails. May the Plaintiff nevertheless get a judgment?

A. Yes, if there is alleged, and proved, a contractual relation between Plaintiff and Defendant.

Q. It is true that if the owner personally contracts with the materialman, the latter may get a personal judgment against the owner. But what if the owner contracted only with the contractor?

A. In such case the materialman is entitled only to a lien against the property of the owner, and not a personal judgment, which may be rendered in his favor only against the contractor.

(Continued next page)

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**LIEN LAW** (Continued)

Q: What is the measure of the judgment which the materialman may obtain against the contractor?

A: Only for the reasonable value of the materials furnished by the materialman, and not for the contract price.

Q: Do the above rules apply in the case of a labor lien?

A: Yes.

IT IS EMPHASIZED FROM THE ABOVE THAT LABOR OR MATERIAL FURNISHED TO THE OWNER IMPOSES A PERSONAL LIABILITY UPON HIM TO PAY IT, BUT NOT WHERE THE LABOR OR MATERIAL IS FURNISHED ONLY TO THE CONTRACTOR.

Q: The owner contracted with the contractor for construction work. The contractor ordered materials from the materialman. This materialman did not know, at that time, that the contractor had no license to operate. How does this affect the materialman's lien?

A: The owner may not set up a defense that there was no valid construction contract. He is stopped from doing so.

Q: The contractor was paid in full by the owner. This contractor did not pay his subcontractors. Do they have a lien?

A: Yes.

Q: "A" contracted for improvements. What interest of his in the real property improved may be liened upon?

A: Only the interest he had. If he had none, none attaches.

Q: Can there be a mechanic's lien on a public building?

A: No.

Q: A materialman sold a machine to the owner, reserving title to the materialman until paid for. The machine was installed. Does the materialman thereby waive his mechanic's lien for nonpayment?

A: No.

Q: The owner and the contractor agreed upon a construction contract. They terminated it by mutual consent, before completion of the job. Is the contractor entitled to a lien?

A: Yes.

Q: To what amount is he entitled?

A: The reasonable value of work done and materials supplied, not merely for their actual cost. The test for reasonable value is the value to the owners and not the cost to the contractor.

(Continued next page)

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Twenty-seven

**LIEN LAW** (Continued)

Q: A materialman contracted to furnish materials to the contractor. Some materials were lienable, some were not. The parties did not intend separate charges for separate items. Can evidence be adduced by the materialman as to the reasonable value of the different items?

A: No. Inadmissible.

Q: A materialman furnished materials for a charge of \$1,000 which he could have sold to other persons for \$1,200. Can the materialman obtain a mechanic's lien against the owner for \$1,200?

A: No. A contractor cannot have a lien for any excess over the contract price.

Q: A materialman agreed to sell or furnish materials to the contractor for improvements to the owner's property, for an exaggerated price of \$1,200. The materials were reasonably worth only \$1,000. Must the owner accept a \$1,200 lien?

A: No. The owner may be compelled to pay no more than the reasonable value of labor or materials furnished. But he has the burden of proving the incorrectness of the \$1,200 value, which is *prima facie* correct.

Q: May a lien claimant assign his claim?

A: Yes.

Q: What are the assignee's rights and duties?

A: Same as the assignor's.

**CONTRACTORS AND OTHERS AS "AGENTS" OF THE OWNER**

Contractors and Others as "Agents" of the Owner Part "B" of Sec. 33-981 reads as follows:

"Every contractor, sub-contractor, architect, builder or other person having charge or control of the construction, alteration or repair, either wholly or in part, of any building, structure or improvement, is the agent of the owner for the purposes of this article, and the owner shall be liable for the reasonable value of labor or materials furnished to his agent."

Q: A materialman was requested by the contractor to furnish materials for the construction of the owner's home. The materialman went to the owner and informed him of the contractor's request. The owner then told the materialman that he, the owner, had a "building arrangement" with the contractor. Was the contractor, under the circumstances, the agent of the owner?

A: Yes, and the materialman has a lien.

Q: The contractor bought tile on credit. The owner paid the contractor for it, but the contractor did not pay the materialman. The contractor became insolvent. Was the contractor an agent for the owner?

A: Yes, and the materialman has his lien.

Q: A subcontractor did electrical work at the instance of the contractor. The subcontractor sued the owner in a lien foreclosure action, and proved that the contractor, by statute, was the owner's agent and had ordered the electrical work done. Without more, is the subcontractor entitled to a personal judgment against the owner?

A: No. The statutory clause making the contractor the agent of the owner does not establish a contractual relationship, which must be alleged and proved to entitle the subcontractor to a personal judgment against the owner.

Q: Is a lessee the agent of the owner where the lessee is in possession when he orders the improvements?

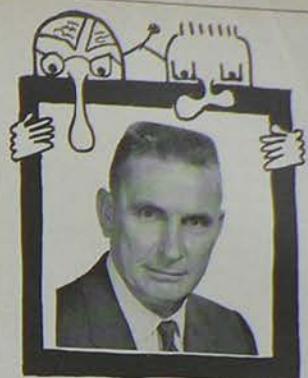
A: No, not even where the lessor expects the lessee to make the improvements and acquiesces in the use of the improvements by the lessee. And, even though the alterations were made at lessee's expense, under the terms of the lease. But there may be situations where the owner is estopped from denying the lessee's agency.

(To be Continued)

—AIA—

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Twenty-nine

## BOOKS FOR PROFESSIONALS

**THE STRUCTURES OF EDUARO TORROJA: AN AUTOBIOGRAPHY OF ENGINEERING ACCOMPLISHMENT** by Eduardo Torroja. (F. W. Dodge Corporation, \$8.50). Reviewed by Harold J. Powell.

Generally the books one selects to read are either for his enjoyment or to increase his knowledge of a selected subject. This book falls in between the two extremes mentioned above, as one can thoroughly enjoy reading the book without gaining any appreciable amount of technical knowledge concerning the analysis and construction of the structures shown, yet at the same time learn much concerning the thought process behind each structure.

Mr. Torroja has selected outstanding examples of his works in which he expresses what he was searching for in designing for the needs of man in our society. The structures selected are varied in respect to type and requirements, and include churches, bridges, recreation centers, aqueducts, viaducts, factories, dams and hangars. Each structure is taken separately and Mr. Torroja strives to lead the reader's thoughts through the design procedure followed to bring about a satisfactory solution both structurally and economically to the problems of the project. All structural analyses and technical data are purposely omitted, leaving only the insight into the thinking and design steps followed by a great designer as he solves the problems at hand.

One of the most intriguing structures designed by Mr. Torroja in which a model was built and tested, was the Frayter Recoletos, a recreation building for playing the game of 'Pelota'. This is especially interesting because of the use of two intersecting barrel vaults giving a clear width span of 107 feet and a clear span of 180 feet in length. Each vault was punctured at the lower section by skylights running the full length of the building, while the thin concrete shells averaged only 3½ inches in thickness and increased to a maximum thickness of 6½ inches at the junction of the two vaults. Unfortunately this structure was destroyed by shelling and bombings during the Spanish Civil War.

Mr. Torroja used other materials for construction besides concrete. Several good examples are shown in which he used steel and/or masonry.

In writing about each structure, Mr. Torroja emphasizes his philosophy concerning design — a philosophy that would be of great assistance to architect, draftsman or student alike. This philosophy is based on his belief that good design is not the sole product

of good imagination. Rather, good design that produces the pleasing solution depends upon the designer first being thoroughly schooled in theory, mathematics, structures and humanities, followed by long practical experience in actually doing technical work so that the theory and technical creative work acts subconsciously to condition one's intuitive thought. When these steps are mastered, then as Mr. Torroja puts it, "a spark of imagination comes that leads to new and pleasing forms."

— AIA —

**RECORD HOUSES OF 1958** prepared by the editors of *Architectural Record*. (F. W. Dodge Corporation, \$2.95.)

"Peaceful privacy within one's own walls" is achieved in the 20 best contemporary architect-designed houses featured in *Record Houses of 1958*.

The trend-setting houses "blot out the populated world with windowless walls of house or garden walls that shield a tranquil, private sanctum of courts and pools, and spaces that can be as large or small, bright or dark as one wants."

This book presents to the "home-building, home-buying" public a comprehensive view of the best contemporary architect-designed houses, adaptable to average sites, ranging in price from \$16,000 to over \$100,000.

In the "peaceful privacy" homes two designs predominate. One features houses built around a court or several courts and is referred to as "The Court Yard Concept." The second style is the pavilion type house, often placed in a high-walled garden. Both types provide for "zoned living" — separation of living and sleeping areas — and flexibility.

*Record Houses of 1958* consists of three sections. In the first section are views on current tendencies of planning and design necessitated by the growing crowdedness of our cities and the resultant desire for privacy in houses. In the second section each of the 20 honored houses is treated individually with pictures, plans and drawings — including details of outstanding design of electrical and mechanical systems. The third section features the newest available products and booklets for planning and building a house.

— AIA —

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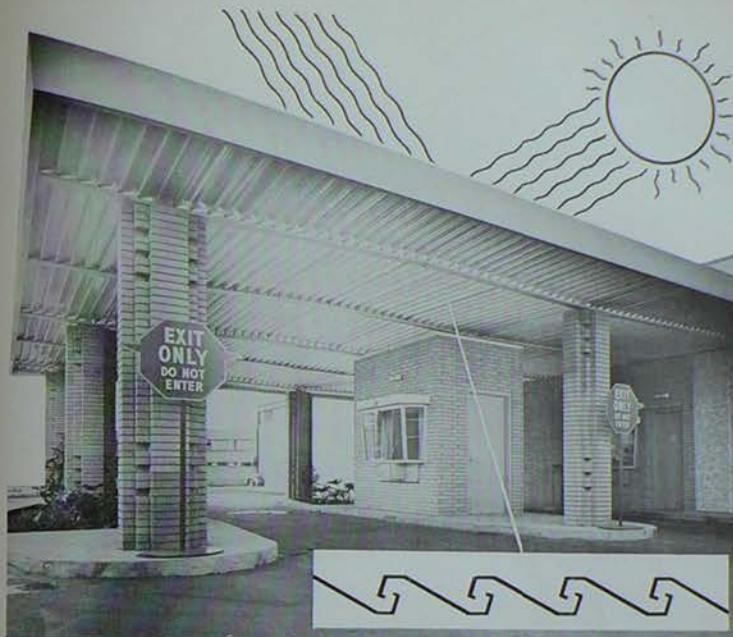
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