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MISSOURI ARCHITECT

JULY 1962







# THE MISSOURI ARCHITECT

VOLUME 10

JULY, 1962

NUMBER 3

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ROLAND W. BOCKHORST, Editor  
WASHINGTON UNIVERSITY, ST. LOUIS 30, MO.

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### PRESIDENT'S LETTER



#### TO ALL MEMBERS:

A new administrative year for MARA got underway during Architect's Day last month in St. Louis. New officers and directors were elected as shown in the masthead of this journal.

Sincerest appreciation to outgoing officers and directors is expressed here for the time, thought and energy expended by them in behalf of the architectural profession in Missouri. We especially acknowledge here outstanding leadership of Dave Pearce, who served MARA so well as president during the past twelve months. Full cooperation is solicited here from all new officers, directors, committeemen and members during the next twelve months. It is impossible for one man or even a few willing persons to achieve much success through an organization such as MARA. We vitally need cooperation of all persons connected with our profession as we continue our place in the sun as an active, aggressive, professional group.

I herewith promise to give my very best effort and thought during the next twelve months to MARA. I would appreciate hearing from members with respect to their constructive criticisms of this group. Our goal is to make this a truly "Grass Roots" organization of registered architects in this part of the country.

Very sincerely yours,

David M. Brey, President



## ARCHITECTS' DAY IN ST. LOUIS

Although the date conflicted with the Easter Holidays, many architects from out-state attended the convention at the Statler-Hilton Hotel on the 20th and 21st of April. The program featured the internationally renown artist, Thomas Hart Benton. Benton whose works include murals in the State Capitol Building and the Truman Library, told of his early intentions to interpret the history and the peoples of Missouri. After the meeting was opened to questions from the audience, Benton gave his opinion of contemporary art. Since the turn of the century he said, too many artists have retreated from society and formed cults where the emphasis was placed on individual expression rather than on a responsibility to society. He said, too many young artists want only "to marry at 17 and paint something weird". Benton thought that this trend has created "too many pictures composed of patterns once reserved for linoleum". Abstract patterns once used on ceramic vases and the like are now elevated to a hanging on a wall. When asked what he thought of Picasso he said that it was his policy not to discuss a living contemporary but added, to hell with him. Benton stated, these pattern pictures mean one of two things: either the artist is a psychopath or there is no meaning in our society.



LEFT TO RIGHT - DAVID W. PEARCE, LT. GOV. HILARY BUSH AND  
DAVID BREY

Following the luncheon on Saturday, Hilary A. Bush, Lieutenant Governor of Missouri, spoke of the educational problems confronting the State in view of the fact that the number of students seeking a higher education will double in the next 19 years. Bush said, the cost of doubling the facilities in the colleges of the State would be fantastic. He added, one educator's estimate of the funds required for education 19 years from now would necessitate tripling the State Income Tax or increasing the General Sales Tax from two to five percent. The answer, Bush said, is to find ways to get more mileage from the dollars spent on education. He suggested that this may be achieved through junior colleges offering two year degrees and by fuller use of televised instruction.

CON'T ON PAGE 3





FROM LEFT TO RIGHT:— MR. ROBERT MARSHALL, MRS. RICHARD NICHOLS, MRS. ROBERT MARSHALL, MRS. EDWIN WATERS, MRS. HAL HAWKINS, MR. THOMAS HART BENTON, ARTIST, MR. EDWIN WATERS, SECRETARY OF THE ORGANIZATION, MR. RICHARD NICHOLS.

The professional highlight of the convention was the panel discussion on the professional status of the architect in Missouri. The panel composed of F. Neil Aschemeyer, R. Paul Buchmueller and Hari Van Hoefen was ably moderated by William H. Curran, Jr. The forty odd questions from the floor to the panel indicated a serious interest of the profession in this matter.

The initial reception at the St. Louis Press Club and the cocktail party given through the courtesy of the St. Louis Chapter of the Producer's Council was thoroughly enjoyed by all.

MARA is particularly grateful to the exhibitors for their part in making Architects' Day a successful one.



#### SENMUT SAY

Architects' Day in 1963  
will be held during the  
month of April in the  
Muehlebach Hotel in  
Kansas City Missouri  
PLAN TO BE THERE !

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In 1961 there were 16,680 students enrolled in Schools of Architecture in the United States and Canada. During that year, 1846 received a Bachelor's degree, 355 received a Master's and two received Doctoral degrees.

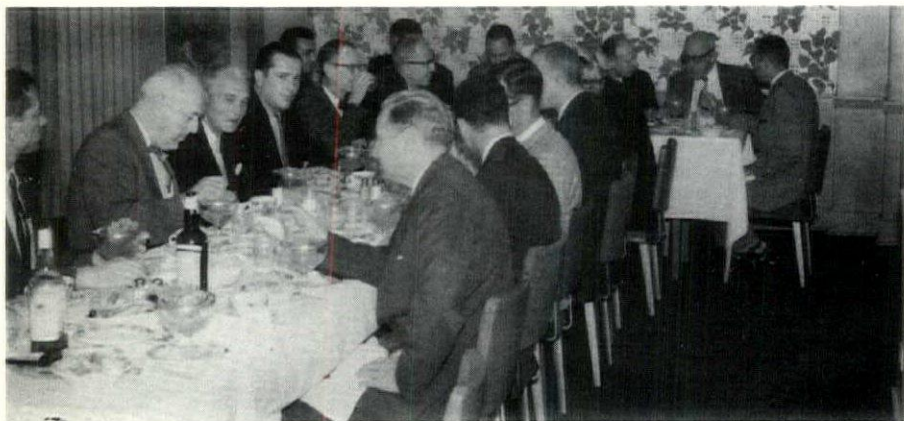
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## JOINT MEETING



Following the regular meeting on June 4th, the officers and directors of MARA met with the three members of the Architectural Division of the State Board of Registration to discuss certain problems relating to registration. Bruce Williams, John Sweeney, Rex Becker and Mrs. Clemme Wall were also in attendance. The spirited discussion related largely to a realistic and acceptable interpretation of "architectural experience" as required by law. The Board announced that soon a regulation already formulated concerning this matter would be published and enforced.



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## RECIPROCAL AGREEMENT ANNOUNCED

The University of Missouri and the Universities of Arkansas and Nebraska have announced an agreement to waive out-of-state fees for a limited number of students in certain educational programs not offered by the other University.

Under this agreement qualified Missouri residents may be admitted to the University of Arkansas or the University of Nebraska for work in Architecture. Missouri students accepted under this plan must meet all the entrance requirements of the neighboring University. All applicants are advised to write the appropriate University for their bulletin and other particulars.

The cost, including tuition, room, board, laundry, books and incidentals, will vary from \$460 to \$612 per semester depending upon the taste and spending habits of the individual.



# MISSOURI ASSOCIATION OF REGISTERED ARCHITECTS

## FINANCIAL REPORT

June 1, 1962

Balance on Hand	1962
	\$3,336.17

### MISSOURI ARCHITECT:

1962 Budget:	900.00
1962 Expended:	93.44
1962 Balance:	806.56

### ARCHITECTS'S DAY

1962 Budget:	500.00
1962 Expended:	371.07
1962 Balance:	128.93

### INCOME

Contributions	667.50
Sale of Tickets	657.00
From Budget	371.07
Registration Fees	205.00

TOTAL	\$1,900.57
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### EXPENSES

Hotel	1,080.40
Printing	298.83
Public Relations	276.62
Speakers	127.22
Photos & Artwork	109.50

TOTAL	\$1,900.57
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## POSITION VACANT

ARCHITECT - Prefer registered, but will give definite consideration to AIT - Diversified work - some travel - locate in Jefferson City - write Chief of Planning and Construction, State Capital Building, Jefferson City, Missouri.



## BASIS FOR REGISTRATION ESTABLISHED IN BABYLON 4000 YEARS AGO

In April 1962 the Journal of the American Bar Association published an article by G. B. Witherspoon entitled, "When is an Architect Liable?" In this article mention is made of the speed and severity of Babylonian justice as outlined in the code of Hammurabi, 1955 B.C. One month later in the same Journal, M. Rubin of the New York Bar gave a literal translation of that part of the Hammurabi code which is appropos:

A. If a builder builds a house for a man and does not make its construction firm and the house which he has built collapses and causes the death of the owner of the house — then the builder shall be put to death.

B. If it causes the death of the son of the owner of the house — they shall put to death a son of that builder.

C. If it causes the death of a slave of the owner of the house — he shall give to the owner of the house a slave of equal value.

D. If it destroys property, he shall restore whatever is destroyed, and because he did not make the house firm and it collapsed, he shall rebuild the house which collapsed at his own expense.

E. If a builder builds a house for a man and does not make its construction meet the requirements and a wall falls in, the builder shall strengthen the wall at his own expense.

## ARCHITECTS ORDERED REGISTERED BY THE STATE BOARD OF REGISTRATION FOR ARCHITECTS AND PROFESSIONAL ENGINEERS

JUNE 4, 1962

NAME	FILE#	MAILING ADDRESS
Barker, Roy F.	A1748	C/o Drew & Englehart, 120 E. High, Jefferson City, Mo.
Bennett, J. Murrell	A1760R	3717 University Blvd., Dallas 5, Texas
Bond, William W., Jr.	A1756R	3742 Lamar Ave., Memphis, Tenn.
Chivetta, Anthony J.	A1749	719 Westchester Ct., Kirkwood 22, Mo.
Foltz, Robert E.	A1746R	1918 E. Edison Rd., South Bend, Ind.
Kane, Robert Leroy	A1745R	1347 West Sunset Ave., Decatur, Ill.
Keller, Richard A.	A1755R	1724 The Superior Bldg., Cleveland 14, Ohio
Koopman, Herbert J.	A1650	6304 Mardel Ave., St. Louis 9, Mo.
Kovacs, Charles Martin	A1751	330 W. Diversey, Chicago 14, Ill.
Liebenberg, Jacob J.	A1752R	5112 Ridge Rd., Minneapolis 24, Minn.
McCleary, William James	A1726R	RR No. 2, Piercetown, Indiana
Morrisett, Robert T.	A1747R	1111 N. Beverly, Arlington Hgts., Ill.
Sanner, Samuel E.	A1744R	1662a Washington Ave., Alton, Ill.
Van Praag, James N.	A1754	253 South Park St., Decatur, Ill.
White, John Jamieson Jr.	A1730R	1145 19th St., N.W., Washington 6, D.C.



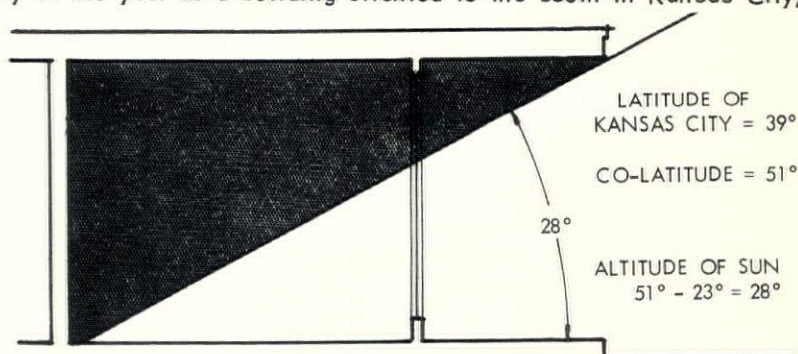
## PENETRATION OF THE SUN

A simplified method for finding the maximum penetration of the sun into a building which is oriented due south. Strange as it may seem the maximum penetration is at noon on any particular day.

For the solution of solar problems in buildings open only to the south the designer needs to know the latitude of the place where the building is intended and to remember the angle of 23 degrees. (23 represents the limits of the movement of the sun above and below the celestial equator). The following table gives the altitudes of the sun at noon on the four critical days of the year.

Date	Altitude of sun
Vernal Equinox	Co-latitude
Summer Solstice	Co-latitude minus 23
Autumnal Equinox	Co-latitude
Winter Solstice	Co-latitude plus 23

The illustration below shows the penetration of the sun at noon on the shortest day of the year in a building oriented to the south in Kansas City, Mo.



The above is based on solar time. During the year, solar time can differ from mean solar time or watch time by as much as 15 minutes. This difference is called the equation of time. This difference can be read from the analemma or more accurately from the American Nautical Almanac. Also since mean solar time for a zone is established by the time at the center of the zone (Belleville, Ill., for Central Standard Time), Kansas City, used in the illustration must take into account that its solar time differs from that in Belleville by approximately 15 minutes. This matter is of importance if the above is to be verified by local clocks. Finally, if certification is required, take into consideration the latest in time manipulation, - Daylight Saving Time.

John D. Sweeney, past President of MARA (1959-1960), was re-elected President of the St. Louis Chapter of the American Institute of Architects. The complete list of new officers for 1962-1963 is as follows:

John D. Sweeney, President  
 Lester Roth, Vice-President  
 Nolan L. Stinson, Jr., Secretary  
 Angelo G. Corrubia, Treasurer  
 Charles E. King, Director  
 Raymond R. Burns, Director



## DIRECTORY OF ARTISTS AND CRAFTSMEN

Just published is the "Directory of Artists and Craftsmen" by the Women's Architectural League of St. Louis, the auxiliary to the St. Louis Chapter of the American Institute of Architects.

After a year of research and investigation, the W.A.L. presents a list of over 50 local artists and craftsmen, whose talent and scope can be used to further the integration of art and architecture. For each artist there is included an example of work, list of commissions, references and artist's address and telephone number. The directory will be added to or revised as local names come to the attention of the W.A.L.

Copies of the W.A.L. "Directory of Artists and Craftsmen" (size 6" x 9", 48 pp) \$2.00 each, available as long as supply lasts, through the Executive Offices of the St. Louis Chapter, A.I.A. Room H-18, 611 Olive Street, St. Louis 1, Mo. (new address after July 1, 1962 - 1126 Locust Street, St. Louis 1, Mo.

The Women's Architectural League of St. Louis, founded November 18, 1960, for the purpose of functioning as an auxiliary to the St. Louis Chapter, A.I.A. as well as promoting unification and advancement of the profession, and stimulating greater public interest in and understanding of the Architectural profession and its capacity to be of service to the community. At the second annual meeting, held May 21, 1962 the following were elected officers to serve to May 1963: President, Mrs. Rex L. Becker (9 Wakefield Dr., St. Louis 24, Mo.) President-elect, Mrs. Donald L. Freeman; Vice-president, Mrs. F. C. Sternberg; Recording Secretary, Mrs. William W. Rupe; Corresponding Secretary, Mrs. David W. Pearce; Treasure, Mrs. Lester O. Roth. Mrs. Gustel R. Kiewitt is retiring President.

Note: For further detailed information about the "Directory of Artists and Craftsmen", for possible feature article - contact: Mrs. Gustel R. Kiewitt, 4 Lindworth Drive, St. Louis 24, Mo.

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### THE EDITOR SAYS

This little magazine can be used by the architects of Missouri to inspire, inform or entertain their confreres. Surely everyone has something which they would like to pass along. Please write.





# MISSOURI ASSOCIATION OF REGISTERED ARCHITECTS

## CODE OF ETHICS

Adopted October 8, 1960 by the Board of Directors

The profession of architecture calls for men of the highest integrity, judgment, business capacity, and artistic and technical ability. An Architect's honesty of purpose must be above suspicion; he acts as professional adviser to his client and his advice must be unprejudiced; he is charged with the exercise of judicial functions as between client and contractors and must act with entire impartiality; he has moral responsibilities to his professional associates and subordinates; he is engaged in a profession which carries with it grave responsibility to the public.

In order to promote the highest standards of conduct in the practice of architecture in Missouri, The Missouri Association of Registered Architects adopted the following basic principles for the guidance of the profession:

**A.** An Architect's relation to his client depends upon good faith. Before undertaking any commission he should explain the exact nature and extent of his services, and of his compensation therefor. Where a fixed limit of cost is established in advance of design, the Architect must be given freedom in determining the character of design and construction needed to meet as nearly as feasible the cost limit established but should not be understood to guarantee the final cost which will be determined not only by the Architect's solution of the owner's fixed requirements but by the fluctuating conditions of the competitive construction market.

**B.** An Architect should consider the needs and stipulations of his client and the effect of his work upon the life and well being of the public.

**C.** An Architect may offer his services to anyone on the generally accepted basis of commission, fee, salary or royalty, as Architect, consultant, adviser, or assistant, provided that he rigidly maintains his professional integrity.

**D.** An Architect should not make use of services offered by manufacturers, suppliers of building materials, appliances and equipment, or contractors, which may be accompanied by an obligation detrimental to the best interest of the client.

**E.** An Architect's drawings, specifications and other documents should be complete, definite and clear concerning his intentions, the scope of the contractor's work, the materials and methods of construction to be used therefor, and the conditions under which the construction work is to be completed and paid for.

**F.** An Architect should guard equally the interests of the contractor as well as those of the client. The Architect will condemn workmanship and materials which are not in conformity with the contract documents, but it is also his duty to give every reasonable aid toward a complete understanding of those documents so that mistakes may be avoided. He will not call upon a contractor to make good omissions and errors in the contract documents.

**G.** An Architect in his investments and in his business relations outside of his profession must be free from financial or personal interests which tend to weaken or discredit his standing as an unprejudiced and honest adviser, free to act in his client's best interests.

**H.** An Architect should promote the interests of his professional organizations and do his full part of the work of these organizations. He should share in the interchange of technical information and experience with the design professions and the building industry.

**I.** An Architect should inspire the loyal interest of his employees, providing suitable working conditions for them, requiring them to render competent and efficient services, and paying them adequate and just compensation therefor.

**J.** An Architect should endeavor to provide opportunity for the professional development of those who enter the profession, by assisting them to acquire a full understanding of the functions, duties and responsibilities of Architects.

**K.** An Architect should seek opportunities to be of constructive service in civic affairs, and to the best of his ability advance the safety, health and well-being of the community in which he resides.

**L.** Every Architect should do his part to forward justice, courtesy and sincerity in his profession. It is incumbent on him in the conduct of his practice to maintain a wholly professional attitude toward those he serves, toward those who assist him in his practice, toward his fellow Architects, and toward the members of other professions, and the practitioners of other arts. He should respect the distinction between professional practice and non-professional enterprise.

**Note:** The Board of Directors herewith acknowledges use of source material supplied by the American Institute of Architects in its official document entitled "Obligations of Good Practice".



# Interprofessional Principles of Practice for Architects and Engineers

## 1. Preamble:

Architecture and engineering are learned professions legally recognized in each state to promote the public welfare and safeguard life, health, and property.

It is a matter of public interest that these professions discharge their professional responsibilities with such fidelity to their clients and the public as to warrant the utmost confidence.

Furthermore, it is incumbent upon these professions to prevent confusion in the layman's mind in these similar or overlapping fields of professional practice.

## 2. The Practice of Architecture and Engineering:

An architect or engineer may ethically accept commissions for projects embracing both architectural and engineering work, provided he is competent to do the type of work involved, or provided he will employ other registered architects or engineers who are competent in those phases of the projects in which he lacks proficiency.

The client's interests normally are served best when the principal retained is proficient in the predominant work involved in the project. Recognition for their responsibility shall be granted to the architects or engineers executing separate phases of the project as associates of the principal.

## 3. Mutual Relations:

Architects and engineers shall undertake to design only those phases of a project in which they are proficient and shall retain professional associates for those parts in which they lack proficiency.

The professions shall maintain effective and dignified cooperation in their public statements, exchange

of information, and assistance to students of the professions.

Joint Committees of Architects and Engineers shall be encouraged at state and local levels to promote greater understanding and cooperation on the many common problems for the mutual benefit of both professions and in the welfare of the public.

## 4. Public Responsibility:

Both professions shall interest themselves in public improvements and shall utilize their special talents (in bringing them about). They shall, however, require that professional services for public improvements be obtained at equitable fees.

## 5. Relations With Manufacturers:

The professions may freely use the specialized services of manufacturers for integration into their designs, but shall oppose general architectural or engineering design by manufacturers or their sales representatives as being inherently biased and, therefore, not in the best interest of the client.

## 6. Individual Obligations of the Architect and Engineer:

Professional service, performed singly or in collaboration, entails exhaustive study and research in preparation for the solution of the problem, the careful application of talent to sound planning and design and the highest integrity in guarding the client's interest. By its very nature the rendering of professional services by the Design Professions must be on a highly ethical and professional basis. It is presupposed that the collaborators will perform their services in a cooperative manner with competence and efficiency and in full compliance with the "Code of Ethics" of the various professions.

*For consideration by officers and directors of:*

*Missouri Association of Registered Architects  
Missouri Society of Professional Engineers*

1962



### MARA SCHOLARSHIP AWARD

Terry Turner of the Washington University School of Architecture was awarded \$200.00 by the Missouri Association of Registered Architects to assist him in the completion of his senior year.

During the past school year, Turner was President of the Architectural School Council, an organization which provides leadership in student affairs and serves as the liaison between the Dean and the student body. Last Fall Turner was the W.U. representative to the Association of Student Chapters of the A.I.A. held in Washington, D.C.



## MISSOURI INTER-PROFESSIONAL COUNCIL

John D. Sweeney was elected Chairman of M.I.C. at the May meeting held in Jefferson City.

Inter-professional Principles of Practice between Architects and Engineers was approved by unanimous action of those present. It was agreed that all legislative items to be considered during the meeting should be identified in one of three groupings, ei., (1) For consideration by the 1963 General Assembly, (2) For long-range legislative consideration and (3) Discarded from consideration at this time. Among those items listed for consideration by the 1963 General Assembly were: Graduation from an accredited school of Architecture as a qualification for architectural registration, legislation relating to limiting exemptions in the registration law and legislation providing for renewal fees paid on a two year basis.

Those items listed for long range consideration included: graduation from an accredited Engineering School as a qualification for registration in Engineering, legislation relating to corporate authority in the professions and legislation requiring supervision as well as plans and specifications for all projects.

Considerable discussion was given to lien laws for architecture, engineering and land surveying. It was agreed that this matter should be discussed locally and by the professional groups individually prior to placing it on the calendar for the 1963 General Assembly.

It was agreed that all legislative proposals be in the hands of the three professions well in advance of the convening date of the General Assembly, January 2nd, 1963. Hendren and Andrae, council for the three professions, will advise promptly the M.I.C. office with respect to all legislation affecting any of the professions.

## NOTICE TO MISSOURI ARCHITECTS

### REGARDS MISSOURI EXHIBIT BUILDING NEW YORK WORLD'S FAIR 1964-5

Any Missouri's Architect interested in being consider for the design of this building should submit for evaluation a resume of qualifications, availability, staff and experience to:

DAVID M. BREY, PRESIDENT  
MISSOURI ASSOCIATION OF REGISTERED  
REGISTERED ARCHITECTS  
210 MONROE STREET  
JEFFERSON CITY, MISSOURI

Deadline: August 1, 1962



MISSOURI ASSOCIATION OF REGISTERED ARCHITECT

1962-1963 COMMITTEES

APPOINTED BY DAVID M. BREY

to serve

MAY 1, 1962 - MAY 1, 1963

**ARCHITECTS' DAY**

Louis H. Geis, Chairman  
William M. Conrad  
Richard L. Nichols  
Maxwell Sandford  
Edward J. Thias

**AUDIT**

Linnel B. Elam, Chairman  
Kenneth O. Brown  
Fred E. Dormeyer

**BUDGET**

Gene Englehart, Chairman  
David Pearce  
Louis H. Geis  
Maxwell T. Sandford

**CONSTITUTION**

Edwin C. Waters, III, Chairman  
David W. Pearce  
Maxwell T. Sandford

**EDUCATION AND AWARDS**

Richard P. Stahl, Chairman  
Roland W. Bockhorst  
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**ETHICS AND PRACTICE**

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Roland W. Bockhorst  
David P. Clark  
Angus McCallum  
Richard L. Nichols  
Maxwell T. Sandford  
Richard P. Stahl

**INTERPROFESSIONAL**

John D. Sweeney, Chairman  
David P. Clark  
Louis H. Geis  
Richard P. Stahl

**LEGISLATIVE**

Edward J. Thias, Chairman  
David P. Clark  
John C. Monroe  
Richard P. Stahl

**NOMINATING**

Fred Dormeyer, Chairman  
Maxwell T. Sandford  
Edward J. Thias  
Louis H. Geis



**A DEAN SAYS**

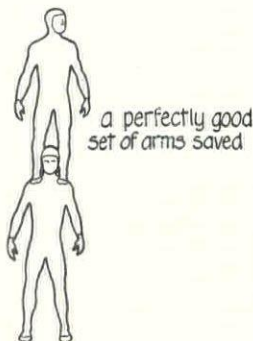
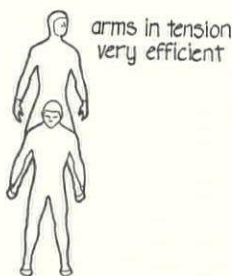
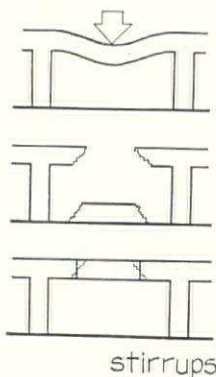
We live in a world of garbage because of the position architects have taken in this century.



# STRUCTURES— THE FEEL OF THINGS

FRED N. SEVERUD

Mr. Severud is a structural engineer,  
and partner in the firm  
Severud-Elstad-Krueger Associates,  
Consulting Engineers, New York.



The education in structures that I would create if I were in charge of it would aim to instill in the architect those basic concepts that are all that are necessary to make him able to grasp these different forms. It is not that difficult.

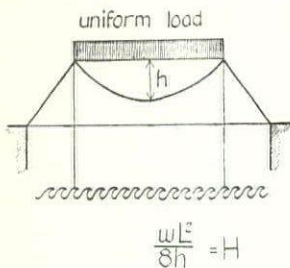
Now, how much should be done is debatable. Obviously, the most direct approach is to build a structure and destroy it and then see what happens. This is by far the best means of recognizing what goes on. That can be done with actual models, tested and sound filmed to get the groaning of the structure as it fails so you could see it, you could hear it, you could practically feel it. You would then have an opportunity of testing to destruction some of the principal forms and the architect in a very short period of time would recognize where the strain is and where the structure starts to displace, and thereby would be able to feel his way toward structures that are harmonious. What we want ultimately is a one horse shay, where everything falls apart at once so nothing is asleep. It can be examined by a study of the photo-elastic tests. It can be done by going to libraries to study test results that have been made. Thereby you can get an accurate feel of what's happening in the structure without relying on facts and figures, because figures will never correspond to actuality. We can never in any structure fully capture what goes on inside it, so let's just take an example—that of your teaching your student where stirrups are necessary. Stirrups—it means nothing to them. Some kind of foolish thing that you put in and nobody knows why. Let's take a reinforced concrete continuous beam and load it to destruction. It starts failing and before long it finds itself on the ground. How are you going to put it back again? You have to grab the beam somehow and lift it up and sew it together, and that way everybody would see why you need stirrups. You don't have to have formulas or anything else—it's just obvious. Really it's simple, if you just use your powers of observation and get it in simple terms so that you see the actuality and not the figures. Then if you go through the whole routine of destruction and then rebuilding, your students can begin to understand what really happens within the structure.

So, normally, there would be the means available to do all these things, to take many forms and destroy them, and then you can work out cartoons to show how they are rebuilt again—because within a very short period of time the students get enthusiasm because they know the structure. They feel it. They can recognize what goes on within the structure and they can sympathize with it. It doesn't just become a matter of complicated form; how do you figure it and how do you calculate it. You know the reasons why it fails. You know how you can use it and how you must not use it. Now, just to go a little further with a very simple illustration to show what happens. I was called down to a certain University (maybe I'd better not mention the name) where a professor came up to me and said, "I think you have to go down and see if you can straighten my students out. They have a new religion of Non-Continuous Compression. I don't know, there's something wrong about it." It was true. After I got there, all sorts of fancy bridges—everything was built of non-continuous compression. In order to explain what happens, we will say that you try to carry a friend and maybe you let him stand on your arms. The arm is a wonderful tension member, very efficient. That's an efficient structure, isn't it? You use the most efficient member there is which is a tension member.

Well, supposing you just let him sit on your shoulders. What happens? Well, you have saved yourself a perfectly good set of arms. All the work they have gone through in building all these models, thinking they have something new and mysterious, is exploded because they didn't have that penetrating simplicity of analyzing structures and that is what we must develop, that feel of things. Without having to go through all these mystifications, you can feel what happens within a structure.

In a group somewhat similar to this, a little smaller, where there were also architects' wives, I asked the question, "What is the most efficient way to carry change?" Think of change and how it weighs. "Do you carry it in your jacket or in your pants pocket?" A simple question. Some said jacket, some said pants pocket, but one of the wives said, "I carry it in the sole of my feet, in my shoes." And she was right. Why? Because that is the shortest way to satisfy gravity. If you carry it in your jacket it has to go all the way up to your shoulder, down the torso and then down. If you carry it in your pants pocket, you go up to your belt and you've saved all the torso. So there are also the things that architects should sense.





Recognize that there are certain basic fundamentals—if you get them and get them straight and hold on to them without being confused, then you have the basis for thinking and you can forget about the figures. Let the engineers handle them. You should not burden yourself with figures except once in a while. It is fun to be able to figure maybe a beam, or figure a catenary, because that is very simple to do. Take a simple exercise, for instance, this structure uniformly loaded. To get an idea of what happens here I think it is very appropriate to be able to figure—not only to get the feel of the forces, but also to put it into mathematical form so that the tremendous forces that are generated are fully recognized. Fortunately this is a very simple formula. You just take  $\frac{wL^2}{8}$  and that's the moment in the center. You divide it by the height and you get the horizontal force. It's good to show off a little bit to show the engineer that you're no fool. But also, it makes you recognize that you generate tremendous forces and that the dead men here cost more than the rest of the structure because you're doing the whole thing way up in the air and regardless of how you are handling it, you are creating a tremendous moment that must be resisted somehow. So I am not saying that you shouldn't be able to calculate some of these things of your own. It's good practice and good mental training. But to try to get involved in a very complex structure, I think, would be entirely unreasonable. Just how far you should go depends on what you want to achieve. But if I were an architect I certainly would not get bogged down with too many formulas that would be meaningless. I would much rather just soak myself with what I mentioned before—test results, and try to get the feel of things, and in that way be able to carry in my professional bag all the instruments needed to put the building together. I think the study of each form and its ramifications should be a very important occupation.

As the various forms are being developed there should be a special study of where you use them. Under what circumstances are they appropriate and where are they strained? You might take the M.I.T. dome, recognize that it is a structure that has part of itself cut off, and see what handicaps are involved in doing this and what should be done to restore the weakness that has been instilled. I think a general discussion on these forms would be very, very beneficial. And also, to bring it down to earth, I don't know if you noticed that recently a hyperbolic parabola failed, and also a folded plate structure failed and that should be analyzed.

One of the greatest aggravations in our professions is when something goes wrong. It may kill you. I have seen two cases where people were killed by something that went wrong. One was an architect, one was an engineer—because people who take their professions seriously may actually kill themselves when they feel responsible for a defect that was severe enough to create a situation that would ruin their reputations. I remember the architect—it was a very pitiful case. He was a wonderful gentleman with a good record behind him, and he came to the situation where, well, I say he killed himself. It was really the engineer who killed him because of the mistake that was made. But if the architect had been aware of it, as he should have, he would have been able to recognize the seriousness of the situation. Now, it may sound very simple, but all I can tell you is that this is the truth. I was called in on the job where there had been all kinds of discussion for about three years as to who was at fault. The job was cracking up very badly. It was a school, a beautiful job otherwise, and with a very friendly atmosphere. But all these ugly cracks came and they tried to fix them and nothing happened—they appeared again. So they asked me to get into the situation. Obviously, since there were so many reports that had been made back and forth, I was a little hesitant to take the job, so I said, "Well, you send me the drawings and if I can mark up on the drawings where the cracks are and it checks, then I'll take it." So they sent me a set of drawings and I marked it up and I got a telegram: "Yes, you have the job."

Here is what happened: say this is the end of a long wing with an exposed concrete spandrel with an overhang. This is ordinary brick. The detail on top of the wall is something like this. There, in recognition of the fact that the roof would move more than the building, a tarpaper joint was created at this point.

CON'T ON PAGE 15



It seems to be all right, looking at it. What's wrong with it? Why did it fail? How did it fail? The roof could move because of the joint. What happens when you turn the corner? Then the roof pulls and it bears against the wall. There's the thing that killed the man—because he wasn't conscious of what you might say is very simple. Now who should be the one to think about these matters? Shouldn't it be the architect? Shouldn't he recognize that the movement back and forth of the roof is not only movement along this line, but it also locks against the end of the wall and pries it open?

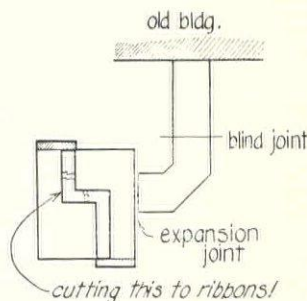
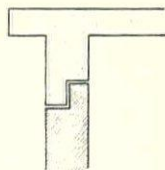
Another example: I was called in on a controversy so severe that it was a grand jury case. They asked me whom to put in jail, the architect, the engineer or the contractor. So, again, when I came down for an inspection of the building everything was arranged. I told them, "I'm going to stay as far away from it as I can. You send me the drawings. If I went out there and gave you a report, of course it would have to fit the cracks. So if I could tell you where the cracks are without going, then you will realize that I'm not trying to fit my report to the cracks, but that the cracks are inherent in the design." And of course I had in mind that, by doing that, I would get the engineer off the hook because I had my suspicions that he might be the one principally at fault. When it comes to a grand jury case, the situation has to be pretty serious.

My partner, by the way, is the world's greatest pessimist so when he heard what it was about, he said, "You must call them right back and say that you have changed your mind. You can't take a chance like that. Supposing it doesn't fit—you'll look like a fool." So I said, "Well, it's the only thing I can see." I finally got him pacified and we proceeded along this line. This is the old building with a long corridor and expansion joint. Next is a new hospital. On top of it is a concrete canopy. These are very heavy blank walls. The rest of the building is highly fenestrated. Well, I don't expect you to be able to analyze that right away. It's not too easy, but as you can see, that expansion joint is obviously no good because the main direction of this corridor was 200 feet, so when I went down there it was certain that there would be plenty of cracks around this general area. No—not a crack in sight. I asked myself, "What am I going to say when I get home?" I simply couldn't believe it!

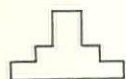
I called the superintendent and told him that for the first time in my life I had seen a violation of the laws of nature. He said, "Oh, that thing cracked so badly when it was built that we had to tear it down and build it over again." And then they'd built a line joint that I didn't see where it should have been, so that was all right. Then I'd marked up the plans to show terrific cracks in the corners because, as you can see, this concrete canopy, acting against these very heavy walls, is twisting the building back and forth, back and forth, day and night. I had never seen cracks like that. The building was just twisted at the corners and was in terrible shape. So then the grand jury said, "We'll put the engineer in jail." I said, "No you don't because you, yourself, have taken him off the hook."

Nowadays, with all the law suits coming, you really have to carry \$500,000 insurance against them. So we'll have to be very conscious of the fact the education in our professions is not only what to do, but what *not* to do. Unfortunately, it seems that it is very difficult to be able to organize a program where the failures can be thoroughly documented, because if you publicize it, then you're liable to law suit. If you give your opinion as to what the reason for failure was, then you are pinning the guilt on someone and then he brings a suit against you. So you have a tricky problem and I think it's one where the Universities could carry the ball because they are in a position of being more-or-less on neutral grounds where they could collect examples, particularly where law suits involved, as often is the case, have been thoroughly settled, so we can publicize and we can accumulate factual data on just how materials used in juxtaposition have failed. And don't forget that when you have a drastic failure, it is because there are at least two tremendous forces opposing each other. You can never create a crack without this. For instance, just think of the force required to crack this hospital—to twist one floor against another. These are tremendous forces. Where do these originate? That's the first thing that should be taught, and when you look at your drawings before they go out, be sure that you analyze it from this standpoint—are there opposing forces that could create trouble? And if there are, see to it that you divorce them before they start fighting.

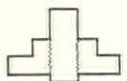
So if a course should be arranged for that purpose only, you would be surprised how far-reaching it would be. It could go, for instance, into the



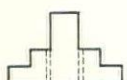




expansion joint  
no roots



without joint  
settling



construction gap

extent of when to use expansion joints, when to use construction gaps. Now, a construction gap is not an expansion joint. You make a construction gap when you have a long concrete building and leave a four-foot gap, letting the reinforcing bars overlap. You don't fill that gap until the building is finished and the shrinkage has taken place. Then you can go a long, long way without expansion joints and you're much better off. Expansion joints are nuisances, they are hard to maintain, they are hard to live with, and if they are not properly done they don't work. Then you could, with construction gaps, also cope with other situations. A job we're working on now is a sixty story tower with small buildings around. Well, are you going to create an expansion joint in that situation? Because, if you do, you will lose the support. You lose the roots of the tree. You want that support. But how about when that building settles and the lower building doesn't? There again you can leave a gap until you have most of the load on the tall building, and then fill in the gap later on.

Then you can discuss the terrible negligence that there is in the concrete field, in the curing of concrete, where people think that all you have to do is finish your concrete one night and come back and cure it next morning. Then the damage is done. Because that is the vulnerable period—just as the concrete is beginning to set up, microscopic cracks appear and then the concrete dries out, temperature gets working on it, and these cracks become greater and greater. All these things should be handled in a course of "Construction Defects" which could aim, like the rest of our education, at producing honesty and integrity, enthusiasm and respect.



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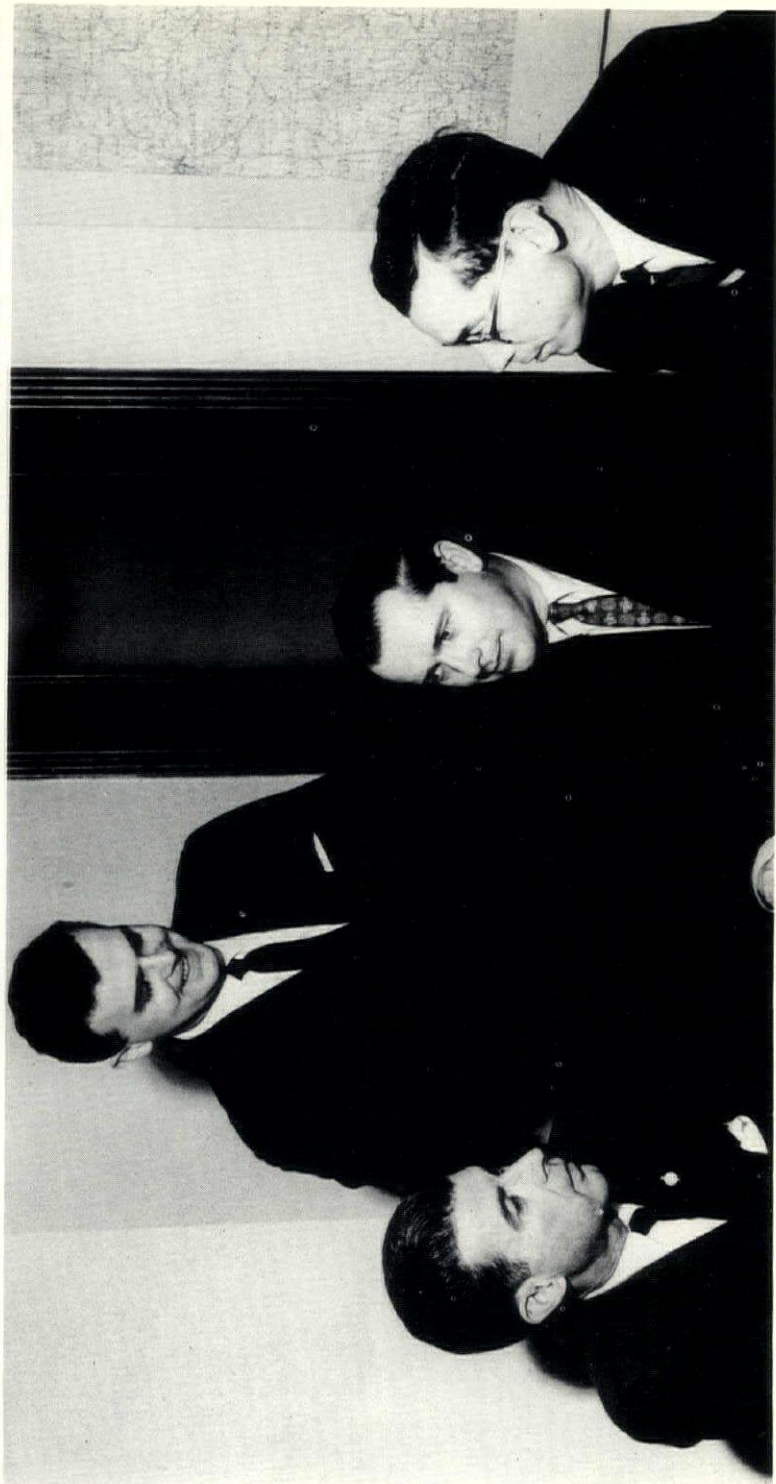
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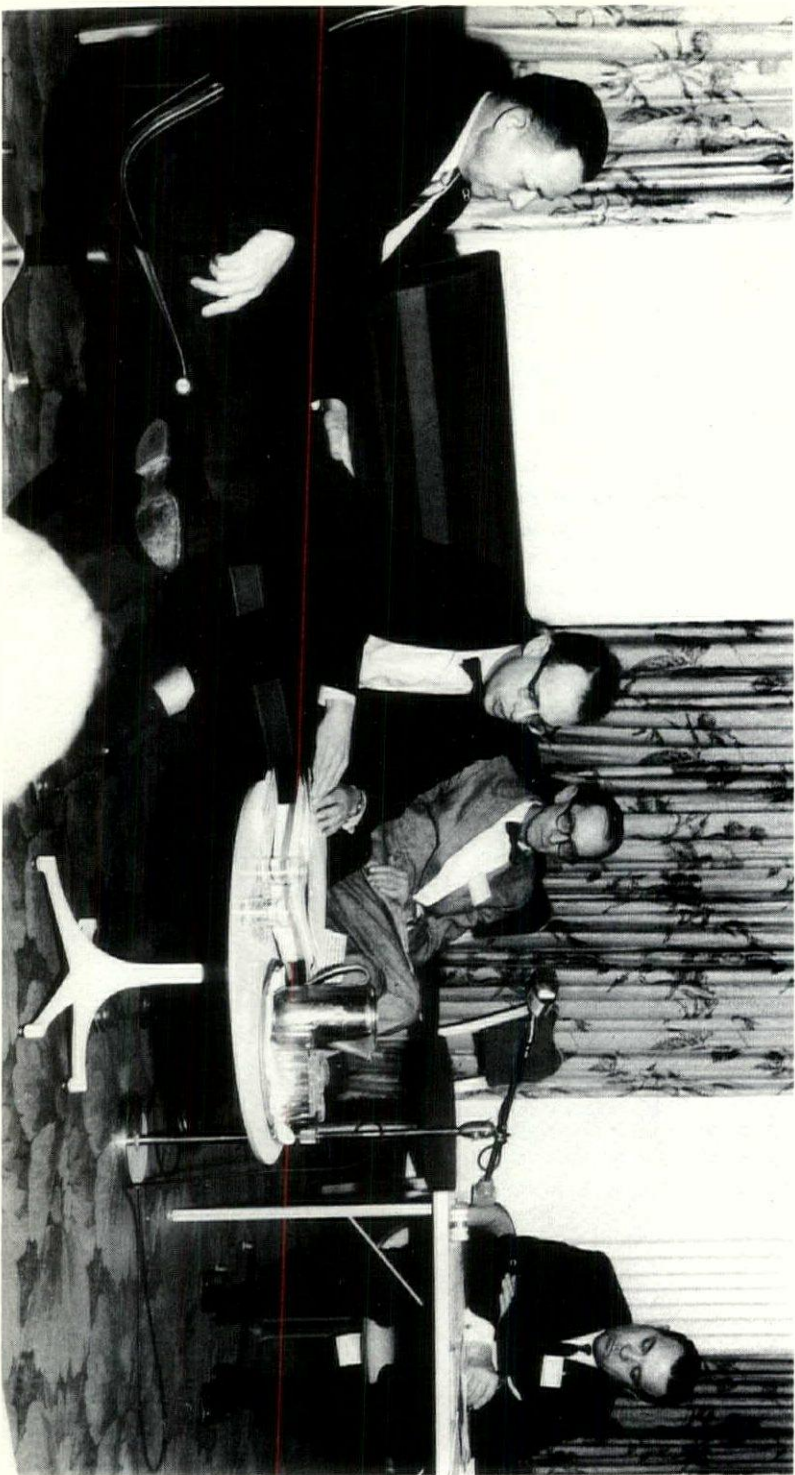
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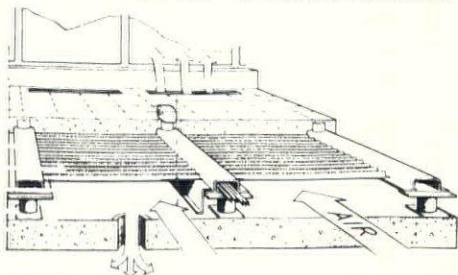
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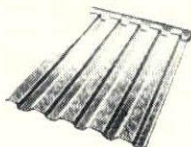
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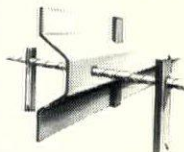
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REGISTRATION FOR ARCHITECTS AND PROFESSIONAL  
ENGINEERS AUGUST 1959, EFFECTIVE OCTOBER 10, 1959**

**10-8-59-a. Proof of experience of architectural graduates.** Every graduate from a fully accredited five-year course in architecture in a school or college of architecture approved by the Architectural Division as of satisfactory standing who shall apply for architectural registration on or after October 1, 1962, shall submit with and as a part of his application a weekly record or log of his architectural experience covering a period of not less than 156 weeks within a period of not more than five consecutive years next following date of his graduation. Every such record or log shall be witnessed by the signature of the applicant's employer or authorized representative, or by the signature of a registered architect having personal knowledge of such experience.

**11-8-59-a. Proof of experience on non-graduates.** Every non-graduate applying for architectural registration on or after the first day of October, 1963, shall submit with and as a part of his application a weekly record or log of his architectural experience covering a period of not less than 208 weeks within a period of not more than eight years prior to date of filing of such application. Every such record or log shall be witnessed by the signature of the applicant's employer or authorized representative, or by the signature of a registered architect having personal knowledge of such experience.

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(Effective April 10, 1961)

1-2-61-a. Proof that any registered architect has engaged, or is engaged, in the practice of engineering without registration as a professional engineer shall be deemed such a violation of the registration law as to authorize revocation of his registration as an architect; proof that any registered architect has engaged, or is engaged, in the practice of land surveying without registration as a land surveyor shall be deemed such a violation of the registration law as to authorize revocation of his registration as an architect.

1-2-61-pe. Proof that any registered professional engineer has engaged, or is engaged, in the practice of architecture without registration as an architect shall be deemed such a violation of the registration law as to authorize revocation of his registration as a professional engineer; proof that any registered professional engineer has engaged, or is engaged, in the practice of land surveying without registration as a land surveyor shall be deemed such a violation of the registration law as to authorize revocation of his registration as a professional engineer.

1-2-61-LS. Proof that any registered land surveyor has engaged, or is engaged, in the practice of professional engineering without registration as a professional engineer shall be deemed such a violation of the registration law as to authorize revocation of his registration as a land surveyor; proof that any registered land surveyor has engaged, or is engaged, in the practice of architecture without registration as an architect shall be deemed such a violation of the registration law as to authorize revocation of his registration as a land surveyor.

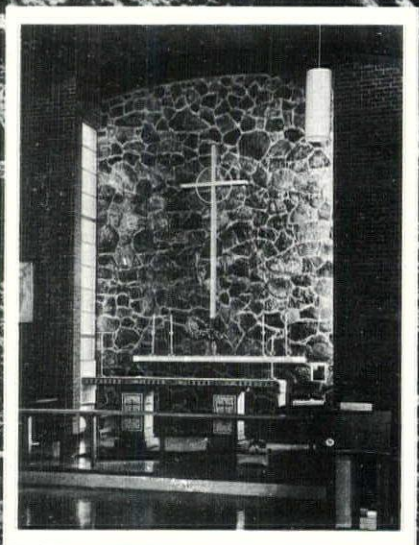
2-2-61-LS. The words "civil engineering" as used in Section 344.040 of the land surveyors' registration law shall be construed to apply to any person holding a degree in a fully accredited course of engineering in any school or college of engineering approved by the Board as of satisfactory standing.

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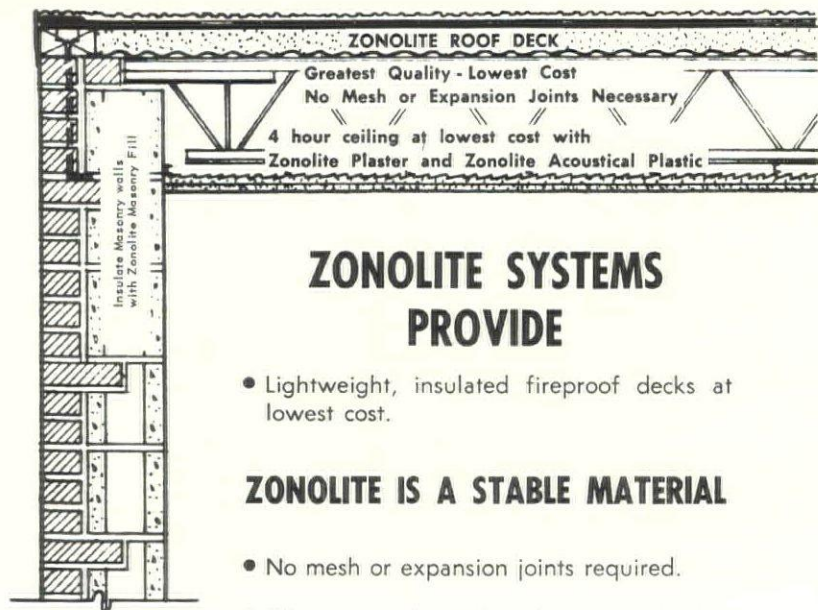
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