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EDITORIAL



David L. Williams, AIA, has been appointed to the position of Editor of the Monthly Bulletin, MSA, by the Board of Directors effective with the April 1967 issue. Williams, a 1952 graduate of the University of Michigan School of Architecture and Design, is currently with the State Building Division in Lansing and a member of the Mid-Michigan Chapter.

A native of Colorado, Williams' architectural experience has been with several offices in Denver, and was recently with the Lansing firm of Frank & Stein

before joining the State.

Long interested in architectural writing, Williams helped originate and has authored the newsletter of the Mid-Michigan Chapter, "Thumbnail" since its beginning.

In the pursuit of our professional and business lives, architects are very much in the midst of the ever increasing growth of our world. More and more of everything is constantly needed - jobs, food, services, facilities - and the scale of growth is always compound. Growing complexity results, which itself is influenced by the compound growth scale, and which is constantly shadowed by the confusion

As this growth affects architects, the harassment of doing business stands out. This is quite apart from the art and science of architecture, and frequently becomes an impediment to the creation of improvements in the human environment. But the complexities and insistencies of business procedures are a primary necessity. They just need to be put into their proper relationship to our other interests, all of which are simply bigger and more than ever before.

This is nothing new. Such challenges have existed in every era that has passed since life first began, and always there have been answers. That these things are now apt to assume alarming proportions is only a reflection of the fact that maybe we humans are not so sure we are prepared to cope with such challenges, and that maybe matters are getting close to the limits of our ability to control them.

These are sobering thoughts. They can also be exciting ones. Throughout history the consistent ability of the human being to surmount the problems of the day has been the factor that has set us above the sheep and the wolf. From the discovery of the wheel to the Man In Space, the excitement of challenge has been exceeded time and again by the excitement of discovery of development of solution.

As many times as seemingly insurmountable obstacles have been thrust on us, the human mind and spirit have been equal to the challenge, and the 20th century needs to be no different. We are not able to create a new life out of one of our own ribs, but there is nothing in the ultimate rule book to prevent us from controlling the destiny that has been given us. This is part of the charge that was built into us in the very beginning. We face enormous complexity in the 20th century, but bygone ages have faced great complexity too - and have won, and there is every likelihood that we can face the present challenge and win.

There is every likelihood too that many answers and much help might lie in the deliberations of the 53rd

Annual Convention in Lansing.

Profound interaction and intercourse between individuals has always been the basis for the solution of problems. No one person is ever responsible for any one of the significant forward strides humanity has taken in this long parade of progress. Inevitably the answers to any given challenge come from meeting and interchange from discussion. Out of the conglomeration of several men's ideas and thoughts can come at least the germ of the appropriate solution for each other man, which is the way these things must be done. The circumstances are never quite the same for any two individuals, but each can find some answers to his own particular circumstances in a compounding of thoughts of others.

Such was the theory under which this year's MSA Convention program was designed. In this instance, as in most, actual confrontation with others allows the most effective benefit to come from such opportunities as are offered in Lansing this month, but close behind this is the actual record of what is said by whom. This is particularly so when we are dealing with the specifics that influence business practice. The complete records of the proceedings of the 53rd Annual Convention will always be in hand, and will be valuable documents indeed. Those unable to join their colleagues at the convention in person can still benefit from the thought expressed there, and once again a forward step or two can be taken by all of us in pursuing one of the bothersome facets of our compounded challenge. Availing ourselves of this value will certainly help, if for no other reason than the smoothing of the path toward achievement. Let's make the most of it!

THE MONTHLY BULLETIN IS PUBLISHED FOR THE MICHIGAN SOCIETY OF ARCHITECTS TO ADVANCE THE PROFESSION OF ARCHITECTURE IN THE STATE OF MICHIGAN. MSA OFFICERS

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NEWS

Hastings Named To AISC Jury

Robert F. Hastings, FAIA; President, Smith, Hinchman & Grylls, has been named a member of the Jury of Awards for the 1967 Architectural Awards of Excellence. The nationwide competition is sponsored by the American Institute of Steel Construction, national association of the structural steel fabricating industry.

The purpose of the competition is to encourage the creative use of structural steel in building construction and to recognize the professionals who design the nation's buildings using structural steel in imaginative and esthetic

ways.

Hastings is one of five American architects, engineers, and art authorities chosen to select the winning structures from among entries submitted by designers in all parts of the country. The jury, which will meet in New York on June 15, includes: Henry J. Degenkolb, H. J. Degenkolb & Associates, Engineers, San Francisco, California. Robert L. Durham, FAIA; First Vice President, American Institute of Architects; Durham, Anderson & Freed, Architects, Seattle, Washington. Walter Sharp, Director, Tennessee Fine Arts Center, Nashville, Tennessee. David N. Yerkes, FAIA: Director, AIA, Middle Atlantic Region; Deigert and Yerkes and Associates, Architects, Washington, D. C.

Several structural steel fabricating firms in Detroit are members of the AISC and Edwin H. Webster, Executive Vice President of Whitehead & Kales, is the second vice president of AISC.

Smith, Hinchman and Grylls received one of the awards in the 1966 competition for their work on the First Federal Building.

Albert Kahn Names Project Management Head

E. E. Parks, P.E., has been named Chief of the Project Management Department of Albert Kahn Associated Architects and Engineers.

Parks graduated from the Univer-

sity of Cincinnati in 1951 with a degree in Civil Engineering. And is registered as a Professional Engineer in Michigan and Ohio.

Since joining the Kahn organization, Parks has supervised construction of major building projects from coast to coast and for the past five years has been a member of the AKA Project Management Staff as well as an Associate in the firm.

Active in professional affairs, Mr. Parks is a member of the American Society of Civil Engineers and the National Society of Professional Engineers.

Loss Opens Office

Architectural - Structural consultation services are being offered by John Loss, registered architect.



Loss, a professor of Architecture at the University of Detroit, is attempting to establish a more meaningful relationship between the aesthetic and the technical aspects of architecture by consultation in the conceptual stage of project design. His fourteen years of experience have been spent at the offices of Eero Saarinen & Associates, Bernard J. DeVries, Gould & Moss, Inc. with the City Planning Department of Muskegon and in private architectural practice.

Currently engaged in building structural analysis and design; the application of computer technology, Loss is located at 234 Robinson Building, 18450 Livernois, Detroit 48221. Telephone (313) 864-1121.

Salkowski to Head A.G.C. Chapter

Edwin L. Salkowski was elected by the Board of Directors as President of the Associated General Contractors of America, Detroit Chapter, Inc. He



succeeds William A. Maddock who passed away suddenly on March 3rd.

Salkowski, 50-year-old native Detroiter, is President of Christopher Construction, a general contracting firm. A member of the Engineering Society of Detroit; he is also a Charter Member of the National Conference of Christian Employers and a Past National Vice President of the latter organization. He was recently appointed to the National Panel of Arbitrators of the American Arbitration Association. A Purple Heart Veteran of World War II, he served with the Marine Corps in the Pacific.

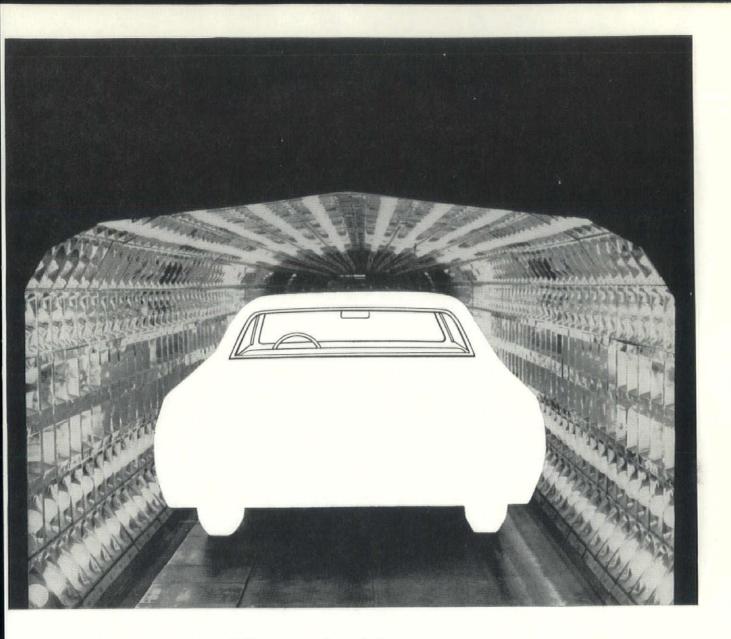
Other Officers are Thomas Dailey, R. E. Dailey & Co., 1st Vice President; Edward Chase, The Chase Co., 2nd Vice President; and R. Dort Pettis, Walter L. Couse & Co., Treasurer. Appointed to fill the vacancy on the Board of Directors is Dominic Rossi, of Darin & Armstrong, Inc.

Executive Staff Members of the A.G.C., Detroit Chapter are William E. Stewart, Secretary; and Stanley E. Veighey, Manager of Labor Relations

U of M Sesquicentennial Alumni Luncheon

The University of Michigan Alumn Luncheon on Tuesday, May 16, at the New York AIA Convention will be a part of the University's year long Sesquicentennial celebration.

Featured speaker will be Harvard Dean Emeritus Joseph Hudnut, note educator and U of M alumnus. Als on the program will be Robert Dunham, FAIA, First Vice President of the Institute plus a top Universit official. Non-alumni are invited an are requested to notify Linn Smitl FAIA, 894 South Adams, Birming ham of their intention to attend.



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Local Steel Fabricators and Erectors Score a First in Industry Training

The Great Lakes Fabricators & Erectors Association have scored a first in the country in the training of technicians under the Federal Manpower Development and Training Act of 1962. In the first of two classes, 25 young people were prepared for a productive career in industry as detailers of structural steel and metal products for construction.



J. Gardner Martin, Executive Director of the Association and Frederick W. Muller, instructor are shown presenting a certificate denoting completion of the prescribed course to Lloyd Voorhorst, a student from Holland, Michigan,

Martin explained that the Manpower Development and Training Act of 1962 provides a means for co-operation between vocational educators. the Michigan Employment Security Commission, the Bureau of Apprentice Training-an agency of the Federal Department of Labor, and employers in establishing needed skills for industry.

This is the first "coupled program" in this area Martin said, and to our best knowledge the first in the country. The coupled program combines institutional and on-the-job training all of which is provided for from funds made available by the Bureau of Apprenticeship and Training under terms of the 1962 statute. "We are of the definite opinion that this program offers the best means of training young people who, while being high school graduates, may be defficient in certain areas of academic development," Martin said.

The first group of 25 selected through examination and interviews exhibited remarkable adaptability and give promise of becoming excellent structural detailers, a field sorely in need of additional trained personnel.



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"We are pleased and very optimistic over the results of this program to date." Martin said.

Active in the development of this program were N. O. Saulter, President of Acorn Iron Works who served as chairman of the Education and Training Committee of the Greater Detroit Board of Commerce; James T. Bernardi, Vice-President of Chapper Iron Works, Inc. and chairman of the Association's On-the-Job Training Committee; John F. Burke, Treasurer of Aluminum & Architectural Metals Company; and Vincent Spica of Whitehead & Kales Company who served with Mr. Bernardi. Thomas F. Flynn, Apprenticeship Representative acted for the Department of Labor.

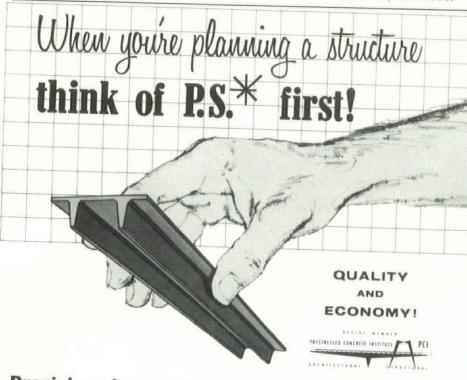
DAGL outing Set For May 16

The first outing for the Detroit Architectural Golf League has been announced by Joe Panella for the 16th of May at Edgewood Golf and Country Club.

The outing includes breakfast, lunch, dinner, drinks, green fees and the use of the club facilities, for \$26.00 per person.

Reservations for starting times can be made by calling Bessie at the F. W. Dodge Company, 961-2745.

There are memberships available in the Detroit Architectural Golf League for the season, details can be obtained from Joe Panella, (313) 444-1000.



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ANNOUNCEMENTS

The firm name of The Architects Collective Inc., has been changed to Lightbourn-Coquillard and Associates. Offices located at 23363 West Seven Mile Road, remain unchanged.

T. J. Sedgewick Re-appointment Announced

The re-appointment of Thomas J. Sedgewick to the State Board of Registration for Architects, Professional Engineers and Land Surveyors was announced on April 10 by Governor George Romney.

This is the second term on the Board for Sedgewick, a member of the Flint Area Chapter and a partner in the firm of Sedgewick and Sellers.

Warren Roofing Contractor Named NRCA Director

George F. Steyer, Jr. was recently elevated to a directorship in the National Roofing Contractors Association at its annual convention in Houston, Texas. Steyer, a partner in Steyer Roofing Co., Warren, Michigan is also Chairman of the Board of Trustees of The Roofing Industry Promotion Fund and Treasurer of the Michigan Roofing Contractors Association and a Director of the Sheet Metal Security Benefit Trust Fund.

Carl Palonen Named Plants Manager—Detroit for Peerless Division, America Cement Corp.

Detroit — Carl Palonen has been named manager of both the Jefferson Avenue and Brennan Avenue Detroit plants of the Peerless Division, American Cement Corporation, in an announcement by Fay G. Knapp, Operations Manager.

Palonen, former production superintendent of Peerless' Detroit plants, joined the Division in 1947 as a chemical engineer and subsequently served as chief chemist.

As 1941 graduate of Michigan State University, Palonen served as a captain in the United States Air Force from 1941 to 1946. He is a member of the Engineering Society of Detroit, American Institute of Chemical Engineers, and the Detroit Chapter of the American Concrete Institute.

Copies of the "Guide to the Successful Planning of Religious Buildings" are available from MSA headquarters upon request. Cost is \$1.25 per copy, plus tax and postage.



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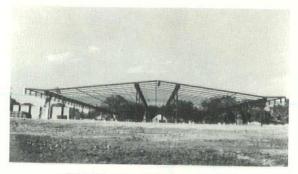
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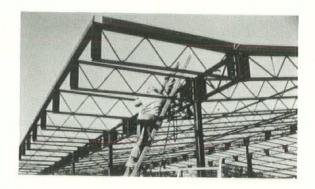


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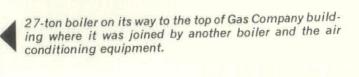
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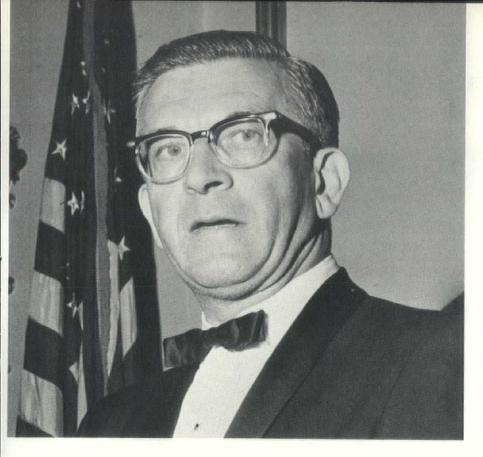
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MSA Awards 1967 Gold Medal to Sol King

Sol King, FAIA, president of Albert Kahn Associated Architects and Engineers has been honored by the Michigan Society of Architects with its Gold Medal Award for 1967. The award was presented at the closing session of the Society's recent convention in Lansing, Michigan.

The citation reads in part: "In consideration and recognition of his outstanding accomplishments and influence in practice (of architecture), his continuing involvement in architecture, education, and his long and constructive participation in professional and civic affairs, the Board of Directors of the Michigan Society of Architects unanimously selects as the recipient of the Society's 1967 Gold Medal. Mr. Sol King, FAIA."

This is the second honor conferred upon King in recent weeks. On March 3 he received the University of Michigan's Sesquicentennial Distinguished Alumni Award for "Knowledge, Wisdom, and the Courage to Serve," which is the theme of the University's current sesquicentennial celebration.

In 1966 King was elected to the College of Fellows of the American Institute of Architects. Active in professional and civic affairs, he is currently a member of the Government Liaison Committee of the American

Institute of Architects and was recently appointed to a two-year term on the Public Advisory Panel on Architectural Services of the General Services Administration of the Federal Government. The Advisory Panel was established in accordance with the President's desire "to achieve high standards of architectural excellence" in public buildings in Washington, D.C., and throughout the country.

King has been President of the Kahn organization since 1958. He joined the firm in 1935, shortly after he was graduated from the University of Michigan. Under his leadership, AKA has been restored to the eminence of its early years in the design of institutional buildings, while retaining its prominent position in the field of industrial architecture. Among the many Kahn-designed buildings which have been honored for their architectural excellence in recent years are the National Bank of Detroit Headquarters Building, the Henry Ford Hospital Parking Structure, the Physics and Astronomy Building for the University of Michigan, the Wayne State University Life Sciences Building, the new Detroit Air Terminal at City Airport, and the Laboratory and Office complex in Ohio for Avon Products, Inc. of New York.



53rd Annual Convention April 12, 13 and 14th, 1967 Civic Center, Lansing

William Milliken Honored by MSA

Lieutenant Governor William Milliken was made an Honorary Member of the Michigan Society of Architects during the 53rd Annual Convention of the Society.

Honored for his many public expressions of concern for the problems surrounding man's environment and his grasp of the enormity of these problems as well as his continued effort toward their solution, Milliken was welcomed to the Society by MSA President, Jay S. Pettitt.









The Happening— Lansing, '67

Wednesday, April 12th

Luncheon for MSA Directors, Chapter President and Convention Committee was well attended.



Chuck Burrows explaining to Clarence Rosa that "We are sorry that the Convention is not being held in Jackson, because that is where our display is!"





Wednesday, April 12th

Ladies luncheon activities under the direction of Mrs. Winifred Olds were held at the Jack Tar Hotel.

Winner of the Award of Merit for Exhibitors at the 53rd Annual MSA Convention was presented to the Stow/Davis Company of Grand Rapids.

Honorable Mention for Exhibitors was presented to Dick Grinnell of the U. S. Plywood Corporation.

























Top left: Honorary Member, Frank North and his wife Helen.

Top right: Host Chapter Chairman, Dick Frank and Mrs. Frank,

Second Row, left to right: Convention Vice-Chairman Mel Reiter and Director Meathe.

President of Ohio Society of Architects Richard Tully and Mrs. Tully.

President Pettitt with Mr. and Mrs. Thomas Battles of the Chicago Chapter, AIA.

Right, center: Convention Chairman Bill Black and friends.

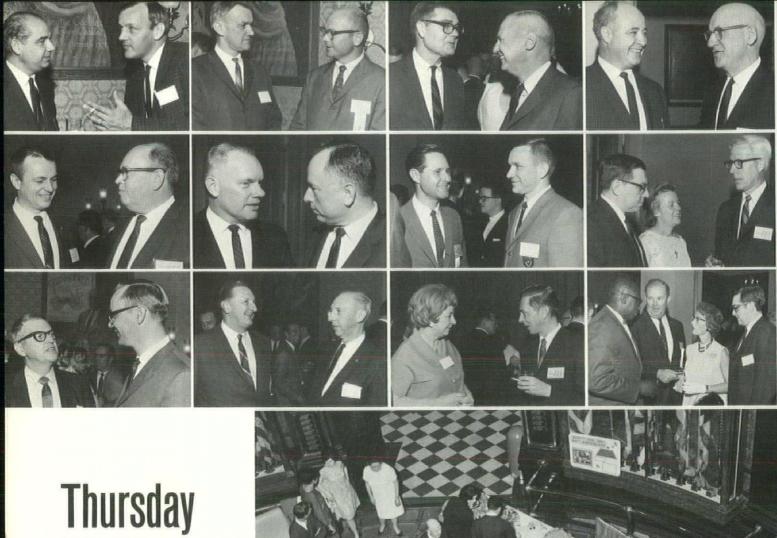












Thursday Night's Capital Capers

















Speakers Table at Friday Night Awards Banquet.

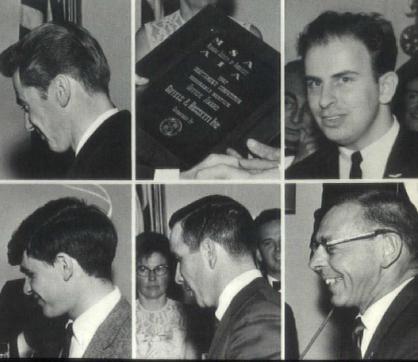


John Crouse presenting the awards to the winners of the SMEAD Draftsmens Competitition at the Friday Banquet.



16 Awards were presented Friday Night, April 14th

A record crowd of more than 400 architects and their guests attended the grand finale of the 53rd Annual Convention, the Honor Awards Banquet. Awards were presented to the winners of the SMEAD Draftsmens Competition, and the Honor Awards Program, of the MSA, along with the bestowal of the Honorary Membership and the Gold Medal to top off a most successful meeting.



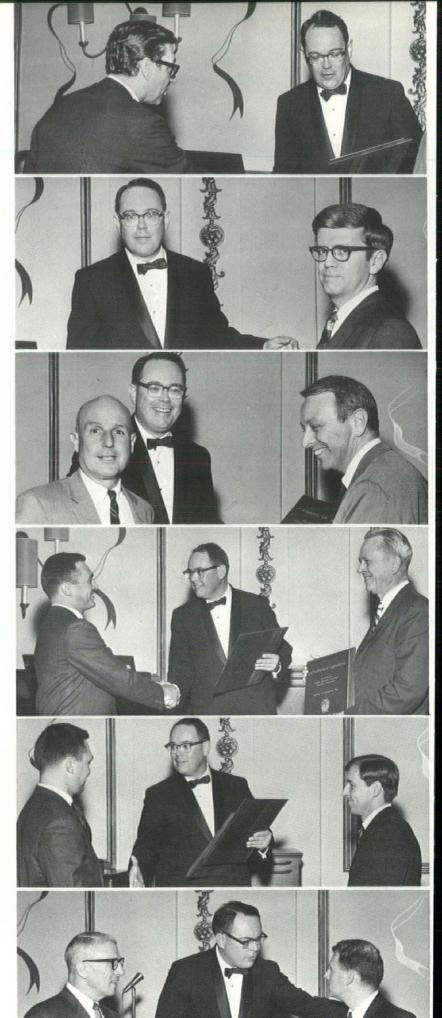


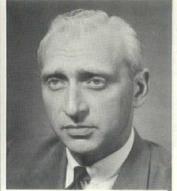
James Hunter, FAIA the principal speaker at the Awards Dinner.

Pettitt presented plaques to the winners of the MSA Honor Awards Program judged in Toronto.









Irving J. Rubin TALUS Director

REPORT ON TALUS

The Detroit area Transportation and Land Use Study (TALUS), described in this issue by its Director, Irving J. Rubin, has more than usual significance in many respects. Conducted under the jurisdiction of the Detroit Metropolitan Area Regional Planning Commission, the program provides for a Citizens Assembly which will make it possible for representatives of citizen, business and professional organizations to review and comment on the plan as it is developed; comparatively extensive use is being made of public attitude surveys; and staff and funds are committed to the consideration of visual design elements in the planning process.

The development of substantial public concern for the quality of our physical environment is indeed a vital challenge to our profession.

The opportunity to work with the TALUS staff makes it possible for us to take a first step in responding to this challenge.

Paul B. Brown, FAIA Chairman, Metropolitan Environment Committee Detroit Chapter, AIA

TALUS (The Detroit Regional Transportation and Land Use Study) is a special project of the Detroit Metropolitan Area Regional Planning Commission.

The project began on July 1, 1965, after a period of more than a year of discussion, meetings and negotiations in which the Regional Planning Commission, the Supervisors Inter-county Committee, several agencies and departments of City of Detroit, the Michigan Department of State Highways and the Metropolitan Fund, Inc. participated.

A Design for the TALUS Study was developed by Allan M. Voorhees and Associates, Transportation and Planning Consultants of Washington, D. C. The preparation of the Design was financed by the agencies listed above who provided funds to match a "701 Planning Assistance grant" from the Department of Housing and Urban Development.

The project is scheduled for completion early in 1969 at a total cost of approximately \$4 million. About half of the cost of the project will be provided by the Michigan Department of State Highways. Approximately 75% of this amount will come from funds which the MDSH receives from the Bureau of Public Roads of the U.S. Department of Commerce.

Two-thirds of the balance of the project cost will be provided under the "701 Planning Assistance Program" of the U. S. Department of Housing and Urban Development. These funds are matched by "local" funds on a one-third local, two-thirds HUB basis. The "local" funds are provided by the Board of Supervisors (60%) and the Road Commission (40%) in Oakland, Macomb, Monroe, Washtenaw, St. Clair and Livingston Counties. In Wayne County, the Road Commission provides 40% and the Board of Supervisors and City of Detroit 30% each of the County share. The funds are allocated among the Counties on the basis of population. In addition, the

Metropolitan Fund, Inc. provided a portion of the "local" funding for the first phase of the TALUS project.

The seven counties included in the TALUS region encompass 4500 square miles and have a 1965 population of nearly four and one half million.

The Detroit Regional Transportation and Land Use Study (TALUS) is a three-and-a-half year, \$4 million project whose purpose is to develop a comprehensive plan for the 7-county Southeastern Michigan Region for 1990; and to establish a continuing planning process to evaluate, refine and adjust the plan as the region grows.

The need for such a comprehensive approach to planning the future of the region is obvious. The total population of the Nation, of the State, and of the Region is increasing rapidly, and at the same time, that population is imploding, rather than exploding. The focus of growth is the urbanized area. Technological development results in increased productivity producing higher incomes and providing more disposable time to the individual.

These forces combine to produce demands for urban facilities and services which strain the capacity of sewer, water, transportation, communication housing and recreation systems.

Our lakes and rivers are polluted; our air is almost as bad. Our highway system is badly strained during peak hours and on many week-ends our public transportation system, which must "pay for itself" is inadequate in many areas and non-existent in most.

While the population of the region has increased by 60% in the last 25 years, the amount of land devoted to urban use has more than tripled. And much of the land which has been "urbanized" has been cannabalized in the process. The large scale builder of moderate-priced housing regards topsoil as an asset to be "mined" and trees and slopes as obstacles which must be leveled.

But most of the people of the region are better off today than twenty years ago. Incomes are higher, more time is available for leisure and recreation, more people own more automobiles and are more mobile, and though congestion obviously exists, average speeds in most corridors are as high or higher than years ago.

Television has brought entertainment, news, and occasional culture into most of the homes in the region; more people are attending plays, movies and concerts than ever before; book sales have increased dramatically; voung people, on the average, are staying in school longer.

The region might grow in a number of different ways in the next 25 years. There is a degree to which this future growth can be influenced. Much of what happens in the next ten years will be influenced facilities which exist, by investments which have been made, and by the "stickiness" of bureaucratic institutions; both public and private. Much of the highway, sewer and water development between now and 1975 will be in accordance with decisions and commitments that have been made and design and construction that has, in many instances begun.

On the other hand, much of the residential, commercial and industrial development in the next ten years will be made on the basis of decisions not yet made; as will much of the investment in recreation facilities. Public transportation decisions and investments over the next few years have yet to be made.

And as we begin planning for the period beyond 1975, the range within which the future development of the region can be influenced in alternative directions increases rapidly.

TALUS will determine the alternative ways in which the region might grow between now and 1990. From these generalized alternatives, on the basis of the degree to which the alternatives meet goals for the region and are feasible of implementation, a generalized plan for the region will be selected. We will then proceed to develop alternative detailed plans within the frame work of the selected "generalized" plan.

We will be aware of the way that the region will grow if the degree of "intervention" is at the same rate as has been the case in the past. This "trend" plan will then be the foil against which the alternatives will be measured. "How much better, and in what ways and for whom, will each alternative be; as compared to the trend plan"? will be the major question posed during the selection

TALUS thus has as its major purpose the development of a plan for the region which will improve the quality of the urban environment and enable more of the people of the region to do more of the things they want to do with less difficulty.

The forces at work in our society have created many problems in the past years; but they have made the interrelationship of these problems more apparent.

It has become increasingly obvious that decisions about the location and design of highway facilities must take into consideration the róle of public transportation if we are to provide a system which is adequate for the movement of people; that the location, capacity and intensity of activity of airport, harbor and railroad facilities is an additional factor relating to the function of the highway as a facility for the movement of goods, as well as people.

The transportation system of the region does not exist as an entity unto itself. It is a complex of physical facilities; some fixed, others movable; which exist in order to serve the needs of man which require the movement of people and goods from place to place. To intelligently plan a transportation system, we must know how people and their activities are, and will in the future be, distributed spatially throughout the region, so that we can predict future demands for transportation capacity.

We must thus know how the location and capacity of sewer and water facilities, and the restraints and incentives of the characteristics of the land have influenced the spatial distribution of people and their activities.

And we must know how many people, of what description, will be living in the region in the future, so that we can allocate these people spatially by place of residence.

We must know the nature and intensity of future economic activity so that we can predict the future location of workers and the future location of "goods-movement" generators.

If we are to serve the "non-work" needs of people, we must be able to predict the demand for recreational land offering various types of activity.

Fortunately, people, households and institutions respond to alternatives in reasonably predictable patterns. And equally fortunately, electronic data processing equipment makes possible the manipulation and analysis of mountains of data.

The balance of this series of articles will discuss TALUS in less general terms in an effort to describe the pocess. The next in this series in entitled "The Systems Approach to Planning a Region." It will describe the five separate phases into which the project has been divided the relationship of these phases to each other, and the sub-elements within each of these phases.

Three subsequent articles will discuss the interrelation ship of Transportation elements; of Planning elements and of Design elements.

The final article will summarize the process and discuss the payoff-implementation of the plan. In this article the role of the architect in the implementation process will be considered.

Irving J. Rubin has been TALUS Director since the beginning of the project in July of 1965.

He is a naturalized American citizen, born in Hamilton, Ontario in 1926. Rubin attended public schools in Toledo, Ohio, Pontiac, Michigan and Detroit, Michigan, graduating from Detroit's Central High School in June of 1944. He served in the Transportation Corps of the U. S. Army for two years from 1944 to 1946.

Rubin attended the Detroit College of Law and Wayne State University. He holds a Bachelor's Degree in Political Science from Wayne State University and is candidate for a Master's Degree in Public Administration.

He was in the retailing field in Detroit and Flint Michigan until 1957.

From July, 1957 to July, 1965, he was employed by the Michigan Department of State Highways. For mos of this eight year period he served as Executive Assistan to State Highway Commissioner, Jack C. Mackie. Hi assignment was in the Detroit Metropolitan Area where he served as liaison between various divisions and sec tions of the Department as representative of the Highway Commissioner. His major responsibility was to represen the Department in securing aproval of local governmenta agencies for highway projects in the Detroit area.

BUILDING TECHNOLOGY

The Electrical Contractor's Function in Modern Architecture

"The Architects Come Into Their Own," headlines an article in the March 20, 1967, issue of Newsweek. Not too many years ago many of todays well known architects were having difficulty making ends meet primarily because of their unconventional designs, states the magazine. Within the last ten years, however, the public has come to accept new design ideas with relish.

While a number of forces have caused the architectural boom, it is the demand for quality in construction that is beginning to create real excitement, points out the article. Successful architects admit that they too have changed along with buyers' desires today.

The public's willingness to accept new ideas and concepts is reflected

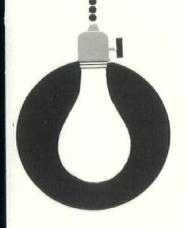
in the words of Edward Durrell Stone who is quoted as saying "This is probably the most inspiring moment for an architect in the history of this country."

Something New Under the Sun ... electrically

Perhaps no other single element has done more to alter architectural ideas over the past five years than has the Electrical Space Conditioning concept. Although originally the heating and lighting functions were all that were encompassed, today's concepts include lighting, heating, cooling, ventilating, filtration, sound control and humidity control. It is truly a Space Conditioning concept.

As electricity has captured the pub-





BUILDING TECHNOLOGY

lic interest, the electrical contractor has enjoyed, in some measure, an increasing recognition, along with the architect. The public's thirst for the newest and latest innovations in laborsaving devices, conveniences and luxuries is undoubtedly responsible.

The role of the electrical contractor is and has been for quite some time established in the construction theme as the purchaser, installer and servicing agent for all electrical components.

Yesterday and Today . . . electrically

One important reason for the success of the electrical contractor, as he is known today, is due to an active role played by national and local associations.

The antecedent organization to the National Electrical Contractors Association was formed in 1901 and served the industry by exchanging fundamental information on costing. Later the areas of electrical estimating and business management were included in early educational programs.

Today the National Association, known as NECA, has a membership of over 5,000 contractors in the United States and Canada and is among the largest and strongest of construction industry groups. NECA's contribution to the electrical industry growth has been in the form of increasing and broadening the management capabilities of the electrical contractor so that he can keep pace with the expanding electrical use in this country.

For the first 40 years of the Association's existence the greatest challenge was maintaining its identity during the ups - and - downs of the economy. Just prior to World War II the NECA determined that there was a need for it to become a strong service-type Association devoted to providing the full range of management assistance to the electrical contractor.

Up until 1940 the electrical industry was primarily oriented to new construction. The electrical contracttor looked upon himself basically as a technician. Competitive bidding was his primary method of obtaining business. With little sales interest, his biggest problem lay in the field of labor relations since labor accounted for the bulk of his prime cost and it was, in those days, often an unknown quantity.

As the construction industry stabilized itself, so too did the role of the National Association. Today there are hundreds of services designed specifically for electrical contractors that are available to NECA members simply for the asking.

We'd Rather Do It Ourselves . . . electrically

In Detroit an Electragist group was organized about the turn of the Century, and operated on this basis for many years. On April 8, 1929, the first National Charter was given to the Detroit Chapter, NECA.

Composed mainly of large industrial and commercial contractors the Chapter operated as the Detroit Electrical Contractors Association, Inc. Throughout the years, members have been added and some changes have been made. In 1963 a new Section was added to the Chapter and its present structure evolved. Today the Charter is held by the Southeastern Michigan Chapter, NECA and includes 75 firms employing about 2500 electricians.

The area covered by the Chapter has increased from the original Wayne, Oakland and Macomb Counties and now also includes the Michigan Thumb area of St. Clair, Sanilac and Huron Counties. As the electrical industry has grown, so has the NECA Chapter in Detroit.

Importance of Standards . . . electrically

The services of the local Association include the areas of public & government relations, marketing, technical & training and labor relations.

A review of a technical service area such as code, shows the responsibility the electrical industry shoulders for the public. Full-time staff members, both locally and nationally concern themselves with the development, administration and observance of installa-

tion codes and regulations, simplification and standardization of product and method in the public interest This includes maintaining relations with industry groups which are concerned with licensing, inspection and installation of standards, the technica features of specifications, drawing and symbol standards as well as safety regulations and accident prevention standards. This responsibility is bu one of the areas carefully watched by staff personnel.

Manpower, the Vital Margin . . . electrically

A hard core of the NECA organi zation is the Chapter. The prime role of the Southeastern Michigan Chapter NECA, is to handle labor negotiation and administer the agreement for it members. It is a recognized fact in the electrical industry that to make labor-management relations harmon ious there must be a continuous and intensive effort applied to adjust questions and grievances promptly.

The technical skill of the electricia is the cornerstone of the specialt business of electrical contracting. Th safe application of electricity to us demands skill. The efficient and profit producing labor in making the ir stallation demands skill. The preserva tion of skill in a growing and rapidl changing technology requires contin uous and expanding training of eve those skilled craftsmen already in th industry. This requires continuous a tention by the local electrical cor tractors applying imaginative plannin and devotion to a mass of detail carry on an adequate apprenticeshi program. The apprenticeship an training programs that are truly e fective and which approach a measur of adequacy exist only in communitie such as Detroit where both Manag ment and the Local Union are stron and have competent leadership each side.

Continuing Education . . . electrically

16 Educational courses in the pa three years have been conducted l the Southeastern Michigan Chapte NECA, for its members. Local ele trical contractors have not only i creased their business efficiency, sured faster and better planned fie installations, but also it has macertain that members are using t



ECA Management Consultant presentig the Accounting Manual that has been eveloped for Electrical Contractors.



Southeastern Michigan Chapter, NECA, members attending one of the 10 weekly sessions on the 1965 National Electrical Code instructed by H. B. Love, Chief, Bureau of Electrical Inspection, City of Detroit.

nost up-to-date techniques, materials nd equipment.

Subjects studied by contractors inlude electrical estimating, summarizng the estimate, hourly labor cost tudies, accounting practices, business tructure, business appraisal, organizng for electrical contracting managenent, operation overhead, secondary ower distribution and two National electrical Code Courses.

overnment by the people . . . lectrically

Both locally and nationally conderable effort and attention is given o legislative activity on all levels of overnment. The electrical contracors legislative interest includes, but not limited to, bidding practices, onstruction services procurement and ontracting policies, labor law, power evelopment and taxes.

Further, as the federal government the largest single customer for conruction services, liaison with governent agencies is also an important inction. Close contact with the fedral construction procurement agenes is vital for three purposes: one obtain information from them and o transmit it to members, second to resent to the agencies the views of the industry, and third to provide for informal adjustment of conflicts.

ell the Sizzle . . . lectrically

Sales training and market developent activities of the NECA form the undation for a planned and sysmatic effort to develop the present markets of electrical contractors to their greatest potential and to identify and develop new markets. Three separate programs have been created thus far:

The National Sales Training Institute provides basic creative sales training for electrical contractors and their key personnel. Among the markets discussed are lighting — heating — maintenance — modernization — electronics and the residential markets.

NECA's Certified, Guaranteed, Insured electric comfort program is a two-day training course which combines instruction in design, heat loss calculation and installation with the all-important sales training necessary for the full development of this vast and constantly growing electric heat market. Participating contractors are certified by NECA through an examination at the end of the course.

The NECA guaranteed lighting program is the latest adlition to the marketing courses available. This is a local sales promotion program aimed at the lighting and relighting market. This program concentrates on commercial, industrial and outdoor lighting applications with emphasis on the sales aspects of the lighting market.

What in the World's Going On . . . electrically

As the design professional who initiates and oversees construction, the architect wants to keep abreast of developments in the construction field. One link with the increasingly complex world of electrical construction is the *Qualified Contractor*, the official

magazine of the National Electrical Contractors Association.

With some 3,000 architects and consulting engineers on its circulation list, QC is conscious of its reponsibility to improve communications between electrical contractors and the design professions. It frequently carries articles about subjects of mutual interest to both groups, such as bidding procedures, specifications and the allelectric design concept. Every month it carries 50 or more pages of editorial material, including several pages of the latest electrical products which may give architects ideas for the "better way to build it."

Shortly after the first of the year one of the monthly issues of Qualified Contractor contains a complete roster of NECA contractors around the United States. This issue is indexed geographically as well as alphabetically. The local Chapter is certain that this can be very helpful to architects in finding qualified electrical contractors, both locally and in distant locations

Architects or associates who want Qualified Contractor can obtain it without cost merely by notifying the local NECA Chapter Manager.

Information Please . . . electrically

Realizing an information gap has been hampering progress toward a more rapid acceptance of the all-electric concept in buildings, electrical contractors through the NECA have moved to fill this gap in with information. A need for accurate and objective information on the pros and

cons of the all-electric building has been evident.

Technological progress in electrical design has been so fast moving that people most vitally concerned have been faced with the impossible task of keeping up with it. New materials, equipment and installation practices come on the market weekly. These all involve safety, cost, space utilization and control problems that present a whole new set of economic consideration.

Keeping up with the Joneses is nothing compared to keeping up with electricity. Such is the problem of the designer, the architect and the engineer, concerned not only with the rapid changes in electrical application but revolutionary changes in other fields as well. Prior to NECA's program they have had to depend mostly on manufacturer's product literature and the claims and counter claims of the fuel competitors—gas and electric utilities.

To provide a more objective and less commercial guide to effective electrical use for the benefit of the customer, the NECA marketing department has developed an Electrical Design Library to provide good technical information about electrical construction, particularly about all electric installations.

Architects and electrical engineers will be informed in the near future on the basis this service will be available from your Local NECA Chapter.

Detroit NECA members attending the Electrical Contractor workshop on "Business Appraisal."

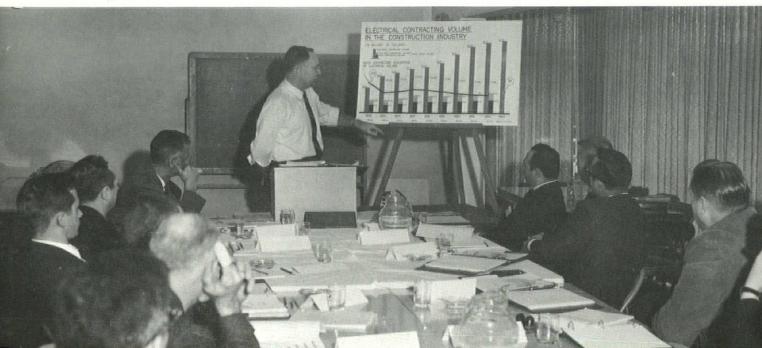
Everything is Not Necessarily "Coming up Roses"

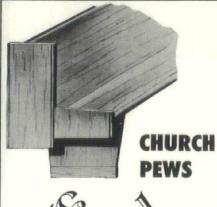
Electrical contractors have been able and willing to help themselves through their Association in recording some real progress with industry problems. However, it is in the best interest of our mutual customers—the public—that groups such as the Joint Construction Industry Committee continue to meet, define our problems, agree on solutions and take positive action.

There are still several areas of concern by electrical contractors such as: excessive retention, stricter than necessary indemnification requirements, unnecessary cleanup charges, bid shopping practices and slow payments. NECA believes that these burdensome practices can be eliminated through greater cooperative effort with the AIA and other segments of the industry. We will do our part. Will you?

This Article has been provided by the Southeastern Michigan Chapter, NECA, whose Chapter Manager is Perry T. Shilts. Offices are located at 11000 W. McNichols Road, Detroit, Michigan 48221.

The Michigan Chapter, National Electrical Contractors Association, is managed by George Hands, with offices at 1026 N. Washington Avenue, Lansing, Michigan 48906.







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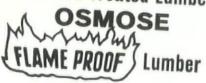
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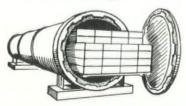
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May 31 - June 3

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June 28 - July 7

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August 3, 4, 5

MSA Mid-Summer Conference, Grand Hotel, Mackinac Island.

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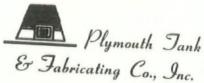
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1967 Saginaw Valley Awards Program

The Jury was composed of the following:

Chairman, Linn Smith, FAIA from Linn Smith, Demiene, Kasprzak, Adams, Inc., Birmingham, Michigan

Professor Edward V. Olencki, AIA, Department of Architecture, College of Architecture and Design, University of Michigan, Ann Arbor, Michigan

Robert G. Bell, AIA, from Fiell, Graheck, Bell and Kline, Traverse City, Michigan.



First Honor Awards

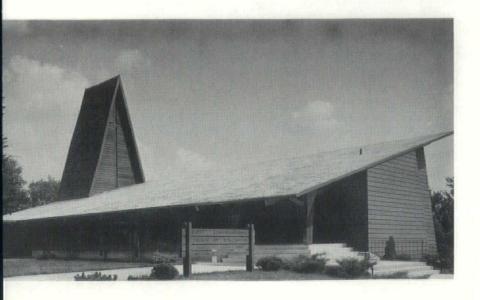
First Honor Award

A Vacation House for Dr. and Mrs. S. N. Smock

Jackson B. Hallet

Materials: Exterior: Onaway Stone, Cedar Siding, Vertical Grain Fir Custom Built Windows. Interior: Onaway Stone, Cedar Siding, Vertical Grain Fir Floors, Ceilings, and Cabinet Work.

A major requirement was the utilization of a small cleared area at the waterfront for beach and to take full advantage of a magnificent view to the West of the Sleeping Bear Sand Dune. Except for an old roadway leading to the waterfront, the remainder of the site was left in its heavily wooded natural state.



First Honor Award

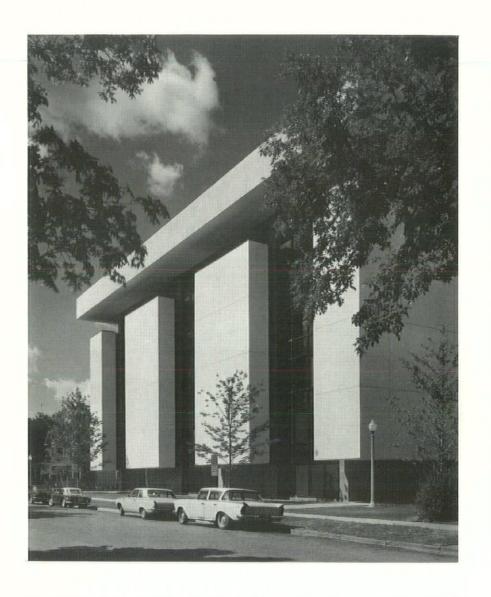
First Congregational Church of Roscommon

Alden B. Dow Associates, Inc.

Materials: Exterior Walls. Wood sheathing. Floors: Carpet and composition tile. Ceiling: Exposed wood deck.

Laminated beams and redwood siding make up the form of this building built on the side of a hill so that there is a grade exposure on both levels of the church.

The bell tower hanging on the six inch pipe has metal louvers individually hung on chains, enabling them to move with the wind.



Awards of Merit

Award of Merit

Institute of Social Research University of Michigan

Alden B. Dow Associates, Inc.

Materials: Exterior Walls: Cement stucco and masonry. Interior Walls: Plaster and masonry. Floors: Carpet and composition tile. Ceiling: Ventilating acoustical tile.

Fundamentally, the building is planned with secretarial and work space running through the building opening on either side to large fullheight windows and lined with enclosed offices or work spaces.



Award of Merit

Dearborn Presbyterian Church

Alden B. Dow Associates, Inc.

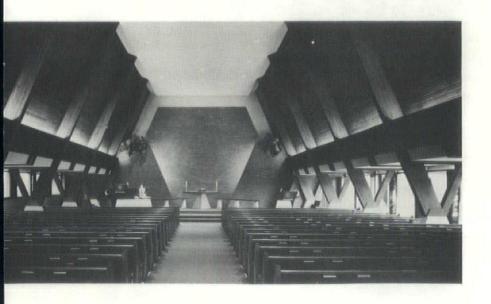
Materials: Exterior Walls: Masonry and precase concrete block. Interior Walls: Masonry and plaster. Floors: Carpet and composition tile. Ceiling: Plaster and acoustical tile.

This building was designed around an equilateral triangular module; the columns are special designed blocks whose joints add a pattern that is carried throughout the church. In the chapel a similar form block pierced and glazed with colored glass creates a wall rich in pattern and color.





Award of Merit Webber Elementary School Prine-Toshach-Spears



Award of Merit Trinity Lutheran Church Prine-Toshach-Spears

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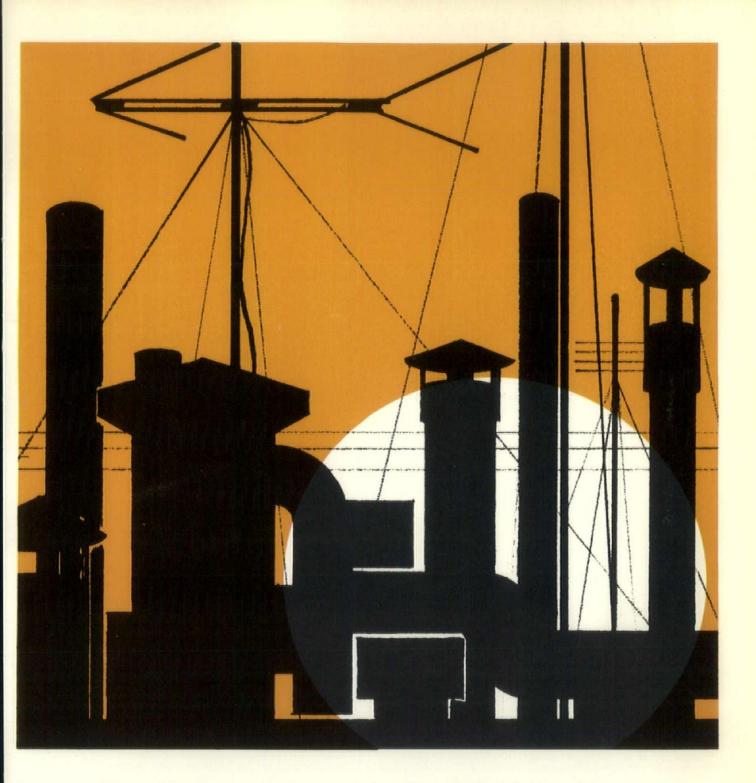
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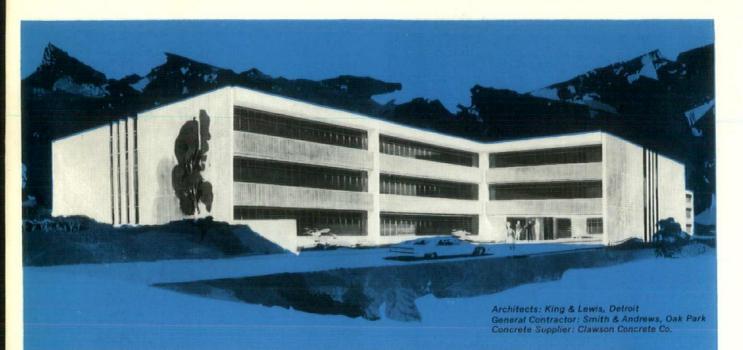
Not a guess, but a fact verified by roofing contractors in Metropolitan Detroit who analyzed their call-backs on so called "leaks". The great majority of "leaks" occurred around vents, pipes, drains and A/C units and other projections which were installed AFTER the roofers had left the job.

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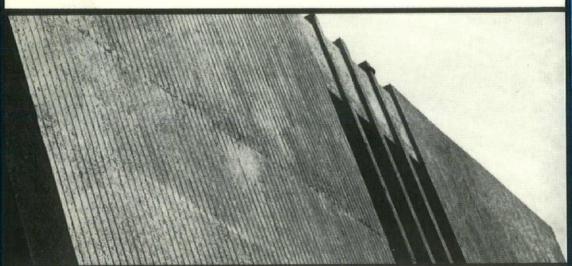
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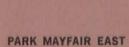
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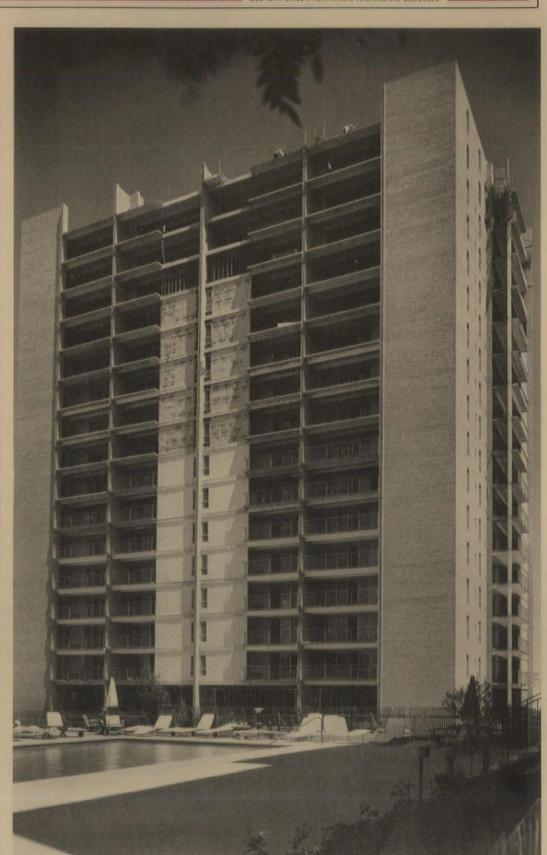
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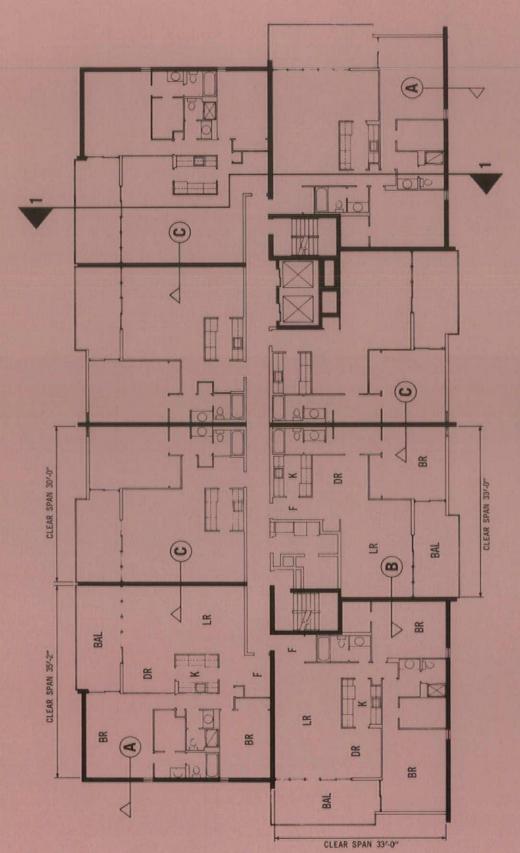
ENGINEER George C. Hanson, PE Sallada & Hanson

GENERAL CONTRACTOR Harold A. Simpson Development Company

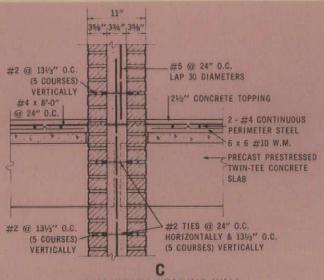
MASON CONTRACTOR Dan Berich

OWNER Park Mayfair East Associates

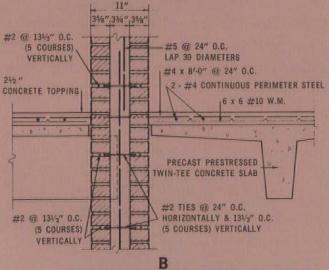




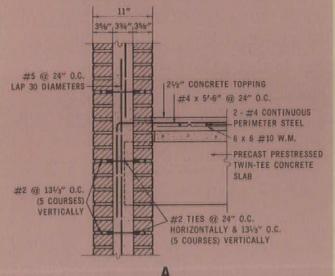
TYPICAL FLOOR PLAN



11-IN. BRICK BEARING WALL SLABS BOTH SIDES



11-IN. BRICK BEARING WALL SLABS BEARING ONE SIDE SLABS PARALLEL OPPOSITE SIDE



11-IN. BRICK BEARING WALL SLAB ONE SIDE

BUILDING DESCRIPTION

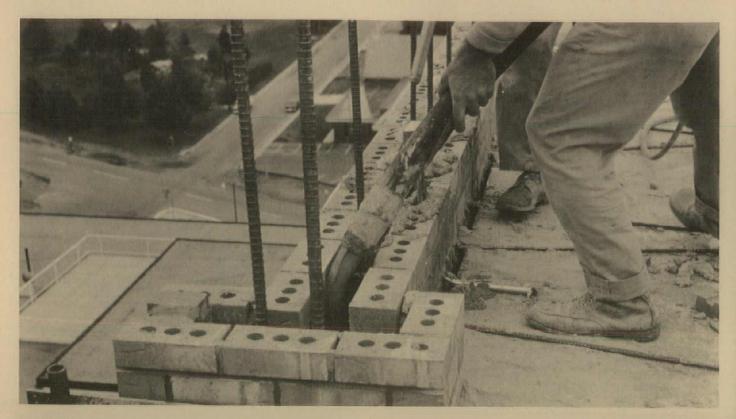
Park Mayfair East is a 17-story apartment building, whose brick bearing walls, 11 in. thickness, rise 165 ft into the Denver skyline. The building contains a total of 128 units with a parking garage for 110 automobiles. On floors 1 through 15 there are 120 apartments, ranging from 1000 to 1350 sq ft each, and floors 16 and 17 contain 18 luxury units with 2360 sq ft each. In the living room and bedroom of some of the apartments, an exposed brick wall creates a warm residential interior which has been enthusiastically received by tenants. In addition, each of the 8 luxury units contains a handsome fireplace.

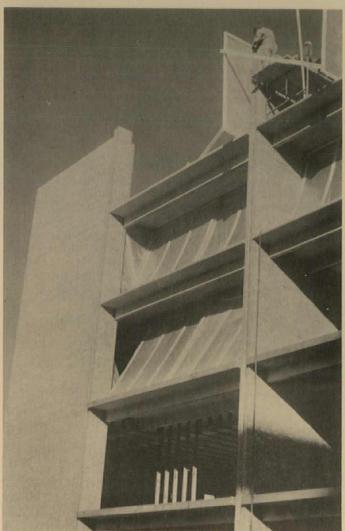
Originally this 128-unit apartment building was designed as a 14-story structure with a steel frame. Bids received in 1963 on the steel frame with the necessary additional fireproofing proved it would be more costly than a brick bearing wall structural system. In addition, the owners' previous experience with bearing wall buildings proved to them the significant advantages of masonry bearing walls acting as sound barriers between apartments. Other advantages which the brick bearing wall design offered were speed of construction and low maintenance. Consequently, Park Mayfair East was redesigned utilizing the brick bearing wall structural concept and three more stories were added to the design.

METHOD OF CONSTRUCTION

The construction of Park Mayfair East utilizes 11-in. reinforced brick bearing walls for the full height of 165 ft. The 14-in., pre-cast concrete, twin-tee floor system is used for spans that vary from 32 ft to 37 ft. BRICK WALLS: The 11-in. brick bearing walls began at the ground level on 12-in, thick reinforced concrete grade beams supported by concrete caissons. The walls consist of two wythes of 4-in. brick with a 3-in. reinforced grout core. The walls were laid as "cavity" walls with the wythes held together by 1/4-in. steel ties spaced 24 in. horizontally and 131/3 in. vertically (every 5th course). The bricklayers worked from each floor after it was placed so that only one level of scaffolding was required for each story. The exterior walls were laid overhand from the inside, eliminating the need for exterior scaffolding. As the brickwork was started at each floor level, cleanout holes were left at the bottom. A strip of polyethylene plastic was placed at the bottom of the cavity to catch any mortar droppings. With no steel in the cavity and the concern of mortar dropping eliminated, the bricklayers were able to lay brick much faster.

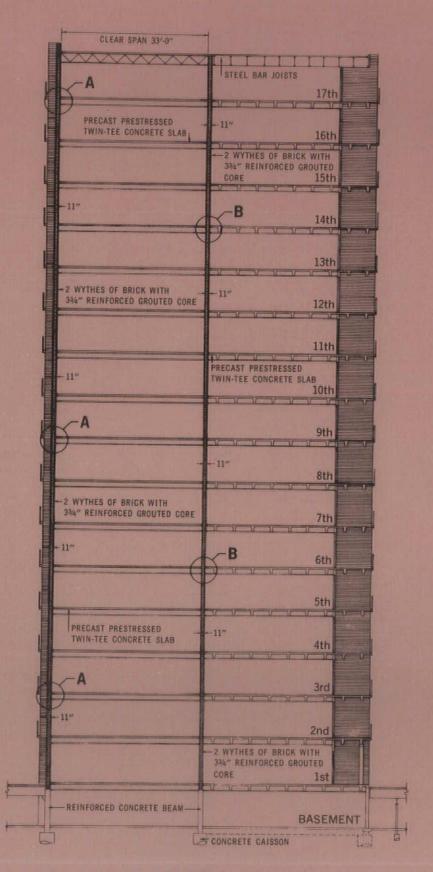
FLOOR SLABS: When the height of the walls reached the bearing level of the floor system, a mobile crane placed the 8-ft wide, precast, twin-tee slabs on the top of the empty cavity walls. This occurred at times when the brickwork was less than one day old. Only the stems of the slabs bear on the walls. A 1/8-in.thick neoprene pad was placed under each stem to provide uniform bearing. The 21/2-in. concrete topping was placed on the slab a floor or two below the level where the bricklayers were working. This simplified coordination of trades and permitted easy protection of the topping.



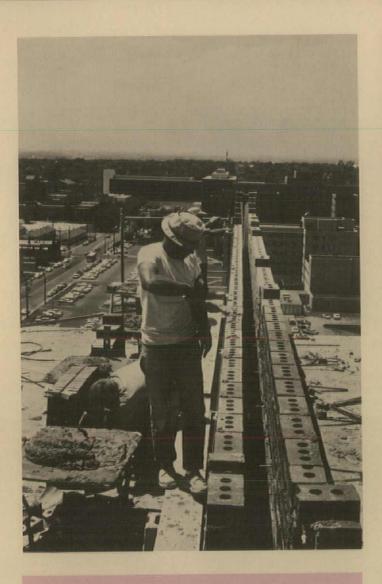


PREPARATION FOR GROUTING: After the floor slabs were placed, bricklayers filled in between the stems of the twin tees to bring the wall level even with the top of the slabs. The mortar droppings were removed with the plastic sheets through the cleanout holes. Dust left in the cavity was blown out with compressed air. This "dry-cleaning" method avoided the staining of walls below the cleanout holes, as might have happened with water cleaning. The required "minimum" horizontal steel of 1/4-in. pencil rods 131/3 in. o.c. had been placed in the mortar joints of every 5th course as the walls were built. The vertical steel of #5 bars 24 in. o.c. was placed in the cavity and tied to the steel from the story below. Following the placing of steel and prior to grouting the cleanout holes were bricked in.

GROUTING: The walls were grouted as each story was completed. The fact that the twin-tee concrete slabs were in place and could be used as a working surface from which to grout the walls proved to be a distinct advantage. It is estimated that working off the deck of the slabs reduced the cost of the grout placement by 50 per cent. The grout, composed of portland cement. sand, and pea gravel, was delivered to the job in ready-mix trucks. The 9-in. slump allowed the grout to be pumped through a 21/2-in. metal pipe for the full height of the building. The grout was pumped from the metal pipe, through a flexible hose across the floor and down into the cavity. The cavity was filled in two lifts, one 4 ft and the other 41/2 ft. After each lift, the grout was vibrated with a 34-in. diameter vibrator, and after 30 to 45 min it was reconsolidated by additional vibration. As soon as the grouting was completed the masons were back at work, building walls for the next story.



SECTION 1-1



EASE OF CONSTRUCTION

FEWER TRADES: Harold Simpson, general contractor and part owner, commented: "Fewer trades on each project help keep the job running more smoothly. In our case, the bricklayers laid the brick, placed the reinforcing rods, grouted the walls, and then later cleaned them. This drastically reduced the numbers of carpenters and iron workers needed. . . . With each floor laid out virtually the same, it's like building seventeen one-story buildings, one on top of each other, with the inherent savings you receive with repetition and simplicity."

HIGH MASON PRODUCTIVITY: According to the masonry contractor, Dan Berich, the simplicity and coordination of construction made it possible for bricklayers to average 1000 brick in place per day. Placing the vertical reinforcing steel after the brick were laid, and using the high-lift method, which permitted full story grouting after the brick were in place, contributed to high bricklayer productivity. WINTER CONSTRUCTION: Construction of Park Mayfair East started December 1, 1965 and topped out July 15, 1966. Therefore, most of the brick bearing walls were built during the winter. However, this presented no serious problems. Mr. Simpson reports: "An

important part of the brick bearing wall system is that, after the bricklayers have finished the walls for one story and the slabs have been placed, it is a simple thing to close in the windows with plastic and heat the entire floor. Then the brick walls may be grouted and the slab topping poured during subfreezing weather with little or no delay. We were able to continue construction through a rather severe winter and this provided us with a considerable savings in interim financing."

BETTER BUILDINGS, FASTER AT LOWER COST OWNER: As part owner of Park Mayfair, Mr. Simpson gave these reasons for using the brick bearing wall structural system: ". . . As an owner, the number one consideration is lower initial and future costs, which means we can charge lower rents and have lower vacancy rates. The next important single criterion of a good apartment is sound control. For this, the 11-in. wall of brick and grout gave us a sound resistance of 58 decibels which is excellent. Another important aspect is the shorter construction time which allows earlier occupancy. This means lower interest payments on construction loans and earlier rent payments. In fact as the building was being topped out, some of the lower floor apartments were complete with carpets and draperies, and future tenants were visiting the fully furnished display apartments."

CONTRACTOR: ". . . As a contractor, I look at this brick bearing wall structural system much the same as an owner, but with some differences. The faster erection time is very important because time is money. Brick bearing walls give me lower costs and faster erection by being the structural system as well as the enclosure walls. When the bearing walls are complete and the floor slabs have been placed, we have only to insert the windows and (1) the floor is closed in, (2) the exterior walls are complete, (3) the structure is fireproof. In addition, we have fire walls between apartments and many of the interior walls are also complete. This is not true with a steel or concrete structure. This finished building, including appliances, draperies, carpeting and landscaping, cost \$12.25 per sq ft of floor area. This total includes some costs that would not have to be duplicated if we constructed the buildings again, but, with labor and material cost increases expected in the future, a new building similar to this one would probably cost about the same."

STRUCTURAL ENGINEER: George C. Hanson, the structural engineer for Park Mayfair East, summarized the use of the contemporary brick bearing wall aptly: "... The masonry bearing wall has many advantages. In addition to being a very good structural system, three of its most important features are sound control, speed of construction, and economy of construction. Sound control is important in order to isolate living quarters and office areas, and to insure privacy. Privacy leads to continued occupancy and continued rental. Speed of construction is quite fast and reduces total construction time, which in turn allows for earlier rental of the building. Economically, the structure will be equivalent to, or less costly than, most other types of construction by the very nature of using the walls as a structural material rather than only as a closure material."

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Floor area of living, excluding basement and garage Number of units Parking garage
                                                                                   176,300 sq ft
128 apartments
110 autos
  STRUCTURAL DESIGN REQUIREMENTS
Live Loads
Apartments
Balconies
1st floor corridors
Upper floor corridors
Partitions
Roof
Wind Loads
Less than 30 ft
30 to 49 ft
50 to 99 ft
Over 100 ft
Earthquake
Seismic Zone No. 1
Masonry
 Masonry
Maximum f'm = 3500 psi
Allowable fm = 900 psi (fiexural compression)
Allowable fm = 675 psi (axial compression)
 Brick loadbearing
Loadbearing walls, exterior and interior:
11-in, reinforced grouted brick.
 Floors
14-in, precast, prestressed, twin-tee concrete slabs
 CONSTRUCTION SCHEDULE
                                                                Number of days required per story
Winter: Dec.-Mar. Spring-Summer: Apr.-July
 Material
Brick & reinforcing
Grout
Setting slabs & filling in
between stems of concrete
twin-tees
                                                                                                                              1/2-1
                                                                                                                                7-8
                                                                              10-11
 COST DATA
 Total cost including basement, garage, appliances, drapes, furniture in public areas and landscaping
                                                                                                               $2,160,000
Cost per square foot of living area excluding basement and garage

Cost per square foot of floor area for brick bearing wall structural system

Reinforced brick walls

Twin-Tee concrete slabs

Concrete topping
                                                                                                              $12.25 per sq ft
                                                                                                              $ 1.15 per sq ft
0.85
0.30
                                                                                                               $ 2.30 per sq ft
Cost per square foot of 11-in, unexposed building brick bearing wall Two wythes @ $0.92 Grouting cavity Reinforcing bars
                                                                                                              $ 1.84 per sq ft
0.41
0.07
                                                                                                               $ 2.32 per sq ft
Cost per square foot of 11-in. exposed facing brick bearing wall
Two wythes @ $1.17
Grouting cavity
Reinforcing bars
                                                                                                              $ 2.34 per sq ft
0.41
0.07
                                                                                                              $ 2.82 per sq ft
Cost comparison of steel frame versus brick
bearing wall structural system when bid
received in 1963
Steel frame, 128 units, 173,000 sq ft,
14 stories
Brick bearing wall, 128 units, 173,000 sq ft,
17 stories
                                                                                                              $2,210,000
                                                                                                                2,100,000
                                    Additional cost for steel frame
                                                                                                                  110,000 or 5.25%
 TYPE OF BRICK
Facing brick, brown blend, sand faced: 214 by 3% by 7% in.
Building brick: 214 by 3% by 7% in.
and 214 by 3% by 11½ in.
Utility brick for stairwell and elevator shaft: 35% by 55% by 11% in.
GROUT
Mix: 1:3:2 (Portland cement - sand - gravel) Slump: 9 in.
MORTAR
Type: S
Mix: 1:1/2:41/2 (Portland cement - hydrated lime - sand)
QUANTITY OF BRICK
Facing brick
Building brick
Utility brick
                                                                                    416,000
653,000
58,600 (211,000 equivalent)
4,300
38,500
 Facing brick for fences, planters
                                                                                1,322,800 Brick Equivalent
FIRE RATING OF WALLS
4 hr
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DESIGN DATA

SOUND RESISTANCE 58 decibels



CONTEMPORARY BRICK BEARING WALL

case study



In the interest of hetter brick and tile construction, the following companies have contributed to the preparation of this publication.

THE AVA BRICK CORP., Ava, Ohio 43711
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