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Christianity's Sacred Symbol—the cross—has been pictured in over 140 of its variations in a new booklet published for architects by Overly.

Entitled "The Cross," the new booklet is a product of over five years of research. It separates the cross designs according to their time of origin and includes a historical review of their religious significance and usage.

A separate section catalogs all of the basic cross forms, including crosses from the ancient civilizations, crosses from the early church and the crosses from heraldry. Additional information is offered on how Overly crafts these religious symbols and the important data the architect needs to know when ordering a cross.

These cross designs will be useful to architects in designing church interiors, in selecting the altar cross or in providing external ornamentation for contemporary religious buildings.

"The Cross" is available to all architects on letterhead request. Send for your copy today.

Another U/L Testing Breakthrough has been achieved by Overly in the recent fire test of a pair of Overly doors, 7' x 7' in size, for a U/L "A" label of 3 hours of fire resistance. These larger doors use new Von Duprin Concealed Fire Exit Hardware, giving the architect U/L labeled doors a full foot wider than heretofore available with the aesthetic advantage of concealed hardware. For more information, write to Manager of U/L Labeled Products, Overly Manufacturing Company.

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David Sweet, a 1962 graduate of Gary’s Edison High School, won out over some fifty entrants in the first annual Scholarship Program sponsored by the Indiana Society of Architects. He will use the five-year, $500.00 per year grant to study architecture at the University of Illinois.

Dave is the son of Mr. and Mrs. Calvin Sweet, 379 Durbin Street, Gary; his father is in the retail lumber business. A varsity athlete, Dave played on his school’s championship football team and also participated on the varsity golf team. He was a member of the Student Council, the Science Club, Camera Club, Dramatic Club, and Letterman’s Club.

One of four children, Dave decided to prepare for the architectural profession while a freshman in high school. He has two older sisters, one a high school teacher and one studying elementary teaching at Ball State. His younger brother is considering studying engineering at Purdue.

The first alternate selected by the judges was Kenneth Jones, of Crawfordsville, and the second alternate was James J. Walters, of Elkhart. Other finalists were Charles Brenner of Walkerton, and James Ragsdale, of Indianapolis.

Judges for the first scholarship program were Mr. George Caleb Wright, FAIA, chairman; James O. Johnson, AIA, Anderson architect; and Dr. I. Lynd Esch, president of Indiana Central College.
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Facts About Architecture

By JOHN MOSELE, Freshman, Carmel High School

"Architecture is the art and science of building." As a science, architecture must provide shelter and comfort for man's activities in the most practical and essential way. As an art, it must express the spirit, the sense of beauty and the hopes of the people who live, work, play or worship in it. Architecture determines the way of life for all people. A good commercial building improves business, a well designed church encourages worship, a well planned home provides better living for the family living in it.

Construction is the biggest single industry in the United States. Last year construction topped fifty billion dollars. Within the next ten years the people of the U. S. are to spend $600 billion for construction purposes. In the next forty years, we will have to double every building in the country to house the population which will nearly double.

THE ARCHITECT'S WORK

"The architect is the leader of America's building team." He is the "Master Builder." The work of the architect is not only to draw the plans for a building, but to do a mountain of other things. Here are only a few: He must study natural and human environment, he must be thoroughly acquainted with the function the building must serve. This requires study, research, and a close touch with the client. An architect's duties to his client are usually classified into four stages.

A FORWARD

By ALFRED I. PORTEOUS, AIA

One of the prime objectives of our profession is to better inform the public of our role in society. Another important endeavor is to attract the most capable of our young people so that they choose architecture as their life work. These are two main aims of our Scholarship program.

An example of the progress being made along each of these two lines is the following essay. It was written last May by John Mosele, a fourteen-year-old freshman at Carmel High School. It was a two-week assignment in his Orientation Class. He received a very high mark on this work.

John's very sincere interest in architecture is due, partially, to the fact that his cousin is studying architecture at the University of Miami, Coral Gables, Florida. His interest was developed further when he accompanied twenty-five other boys on a tour of the City-County Building last spring. John is the son of Arthur P. Mosele, principal of the Indiana State School for the Blind.

In the first or "Schematic Design," the architect discusses with the client to determine the scope of the project: discuss the purpose, the general plan and design, location, construction, mechanical equipment, discusses the time needed to build such a structure, the approximate cost and means of financing. He also does such things as visit the site and study project placement, recommends methods of operating the project for its purpose, studies laws, ordinances, codes, standards, rules, and requirements of insurers carriers. The architect prepares schematic design studies of the building in relationship to the site.

The following services of the second stage (Design Development) are usually rendered by the architect upon the client's approval of the schematic design data: First the architect restudies the design and prepares illustrations showing the plan and site development and makes recommendations as to type of construction materials and mechanical equipment. Next he prepares an outline of specifications and revises the statement of probable cost, if necessary.

The following phase — the construction document — is rendered when the client has approved of the design. The architect develops preliminary drawings into working drawings. He includes with these drawings all essential improvements whether it be architectural, structural, plumbing, heating, electrical, other mechanical, or site. He also prepares the general conditions of the contract. The architect must specify the type and quality of material. He must also prepare bidding forms and furnish the agreed number of drawings.

During the last stage the "Construction Phase," the architect does such things as advise his client on the qualifications of perspective bidders, advise the client regarding the cost of a full-time project inspector, makes inspections of the construction at different times. He must also see that the guarantees are delivered to the client and the contracts have been fulfilled. This ends the service that the architect renders for pay; there are many more which he does not include in his fees.

SPECIAL ABILITIES

To become an architect a young man should have these abilities:
1) He must be able to draw. An architect doesn't need to be a Rembrandt but he must be able to sketch neatly and accurately.
2) He must be able to visualize. He should be able to describe in words and (to page 17)
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SITE PLANNING

For no other type of building is site planning more essential. Generally some use, either present or future, or both, should be assigned to every part of the site.

First consider the approach to the building or group of buildings. Who will see the plant from this point of view? Will it inspire enthusiasm and improve morale in employees? Will visitors be favorably impressed? Will it serve as effective advertising as viewed by passers-by? It need not be a large area, but if skillfully planned, a forecourt may be a relatively inexpensive means of giving distinction to the over-all design.

Unenclosed work areas must be planned in relation to the building plan. This is also true for interior courts, and possibly for recreation areas and provision for expansion.

Parking areas should be as close to building entrances as possible and directly accessible to the highway. They should be concealed as much as possible. It is preferable to separate access roads to trucking areas from those to parking areas.

FACTORY DESIGN

It is recognized that neither the architect nor his client may be a single individual, but it is assumed that one person will represent and serve as coordinator for the architectural firm and that one person (the one addressed in the following statements) will act for the manufacturing corporation.

Before your architect can plan your building, you must give him as much information about your present plant and your needs as possible. Perhaps the architect should talk directly with managers and foremen. If you have an industrial engineer, he and your architect should cooperate from the beginning. Planning might start with an ideal routing diagram, drawn to scale. Various modifications may be considered which can be accommodated to building forms. Designs should be compared for efficiency and cost of construction. A pleasant orientation and outlook should be secured for cafeterial and recreation areas. Spaces for needed air-conditioning and other mechanical equipment should be included.

When a schematic design has been approved, the plan of each floor should be studied by your architect at larger scale, and sections and elevations should be drawn. At this stage the structure must be determined and each system of plumbing, heating, airconditioning and electric wiring worked out. If the design is based upon a planning module, it will be advantageous to all concerned. Outline specifications should accompany the design. If there is doubt at this stage about relation of the construction cost to the budget it would be wise to order a detailed estimate.

Even though one person may be designated to act for the client, he may well be the spokesman for a group. The regular position held by this person and the positions held by other members of the group will vary for different projects. In many cases, the Plant Engineer will be the logical choice for spokesman. The group should generally include one or more representatives of top management, perhaps one or more representatives of the corporation’s headquarters engineering office (if any), and heads of important departments concerned with operations and maintenance. The architect may benefit by direct contact with foremen and other workmen, but his instructions should be given by the designated spokesman representing the client.

WORKING DRAWINGS AND SPECIFICATIONS

With assurance concerning cost, you may want your architect to proceed with all possible speed to get the building under way. Normally, from several months to a year should be allowed for the preparation of the construction documents, but if desired the construction could be started before working drawings and specifications have been completed. A separate lump sum contract possibly could be let for excavation and foundations, or this part of the project could be let on a cost-plus-fee basis.

If all questions have been settled during the design stages, the preparation of construction documents will be facilitated by a policy of non-interference by the owner or his representatives. On the other hand, if questions arise, they should be answered promptly. Frequently reports to the owner should be made by the architect.

The “architectural set” of working drawings should indicate the materials and structural elements needed to produce the building illustrated by the design drawings. If available, materials and building components should be chosen which fit a modular grid (a multiple of four inches), and dimensions should be related to this simple modular pattern.

(Excerpts from the AIA Building Type Reference Guide (BTRG), by Clinton H. Cowgill, FAIA, Head of the Department Office Practice, The American Institute of Architects, with the collaboration of H. E. B. Anderson, Construction Editor of PLANT ENGINEERING).
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Industrial Architecture
(from page 13)

The "structural set" of working drawings is coordinated with the "architectural set," and the "mechanical sets," (heating, air-conditioning, electrical and plumbing) are coordinated with each other and with both the "architectural sets" and the "structural set." Specifications are furnished for all branches of the work. The working drawings and specifications are used by bidders for estimating, by the architect and engineers as a guide for the administration of construction, and by contractors as detailed instructions to their suppliers, sub contractors and workmen.

SITE ENGINEERING

When an industrial plant occupies a large site, engineering problems may present themselves both in the early stages of design and later. Consideration must be given to the topography of land adjacent to the site, to access from highway, railway or other means of transportation, and to the availability and adequacy of water, gas, steam, and sewer lines. If a sprinkler system will be required, the placing of an elevated tank should be considered at the outset; and if power is to be generated, the placing and design of the power plant must have early consideration. In determining final grades, original grades should be disturbed as little as possible. Grades should be steep enough for drainage.

Many plant engineers have reported difficulties with drainage. The architect should ask for and receive complete information concerning the site. The natural surface drainage should be maintained if possible. Buildings on swampy ground may require waterproofing of floor on ground and underfloor ducts.

For heavy machines, special foundations may be indicated. Rock sounding or borings and soil analysis may prevent future trouble.

ADMINISTRATION OF CONSTRUCTION

When the working drawings and specifications are complete (or before), it may be necessary to carry on some of the manufacturing operations while parts of the building are being constructed. By doing so inevitably results in increased costs for both production and construction. However, when there is no alternative it may be best to let a construction contract on the cost-plus-fee basis or do the work with company employees. In the latter case, a capable construction superintendent should be secured to work under the direction of the architect.

When the occupation and use of the various parts of the plant can await completion of the construction, it is advantageous to let the construction contract to the low bidder among carefully selected contractors. With complete construction documents prepared by the architect (who must be unbiased) the client is assured of the greatest value for the lowest cost, and he knows how much he is paying for the construction and for professional service. When the functions of the architect are combined with those of the builder, it may be difficult to learn how much is paid for professional service.

One of the first duties of the architect, after construction contracts have been let, is to establish standards for the contractor. Even with exact specifications, the contractor may be uncertain as to the acceptability of questionable materials and workmanship. For the contractor to set up his own standards obviously results in conflicts of interest causing embarrassment to the contractor and possible loss to the owner. Once the architect has established standards, they are usually enforced by a project inspector under the direction of the architect.

The producers of many building materials and appliances and some subcontractors make drawings for use in their own shops. These shop drawings are required for most non-standard building components. While these should be checked first by the contractors involved, they should also be checked by the architect to make sure that his drawings have been correctly understood and followed.

Another duty of the architect soon after work has started is the consideration of the contractor's proposed schedule of progress, indicating when the various parts of the work will be started and completed and when certain materials and appliances are to be delivered. At the same time, the architect should consider the contractor's schedule of values, which indicates the value of materials plus overhead plus profit) of each of the various parts of the work. He must see that the allowance for overhead and profit, etc., is not significantly greater for those parts of the work which are done in the early stages than for those which come later. The schedule of values is commonly the basis for progress payments made to the contractor. These payments conform to the amounts certified by the architect as due and payable.
PERSONNEL NOTICES

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Facts About Architecture
(from page 9)
1) He must be persevering. It takes a great amount of detail work to develop the plans for a building.
2) He must be able to work under pressure. The work of an architect comes in spurts and it is not uncommon for an architect to work 16 to 18 hours a day.
3) He must be a diplomat. He must be able to sell himself before he can sell his plans.

Most of all a young boy must have imagination, enthusiasm and common sense. They must be in equal parts for it he would have too much imagination and not enough common sense, he wouldn't get anywhere.

THE ARCHITECT'S TRAINING
To become an architect a boy must, after graduation from high school, study at an architectural school or college for a minimum of five years, taking such courses as architectural design, material, design theory, working drawings and business practice. After graduation from an accredited school, he must spend at least three years as an apprentice to a licensed architect to broaden his technical knowledge while providing practical experience. At the end of these years, he must take a four day examination given him by the state or states in which he intends to practice. A boy can also become an architect without formal training by practicing under a licensed architect for twelve years, but it is advisable to go to college.

There are many accredited schools from which to choose. Here are only a few: Georgia Institute of Technology, Harvard, Illinois Institute of Technology, Massachusetts Institute of Technology, University of Michigan, and the University of Pennsylvania. The tuition at these schools runs from $600 at Georgia Tech to $1500 at M.I.T. To this a boy must add an additional 600 to 1000 dollars for room and board.

THE WORKING CONDITIONS
Although the working hours are basically from eight o'clock until noon and from one until four o'clock, an architect must be willing to work from sixteen to eighteen hours a day. This increase in working hours is due to the fact that the architect must get plans out for buildings before a certain deadline. These busy seasons usually come in the spring and summer since more structures are being built.

There are certain mental strains which come with an architect's work. Some of them are: figuring out a plan for a hospital so that the quickest service can be given or planning a house so it will be suitable for disabled occupants.

The compensation which an architect receives for his services varies according to type and size of the building, the architect's standing in the field, the location in which he practices and time required to draw up the plans. The fee is settled at an early conference with the final agreement stated in a formal contract, countersigned by the owner and the architect.

There are four methods for paying an architect, they are:
1) A percentage of the construction cost of the project.
2) A professional fee plus reimbursement of expenses.
3) A multiple or direct personal expense.
4) A salary, per diem, or hourly compensation.

The architect usually starts out as a junior draftsman in a large firm. After about three years, he may become a senior draftsman assigned to working drawings. Some may even become job leaders or a partner in a firm. Most architects dream of going into practice for themselves but only about one-half do.

A friend once asked a noted architect if he ever got bored with his work.

The architect replied "How could I? One month I may be doing a new bank and have to design a vault that no bandit can get in. The next month I may be doing a shopping center and developing ways to make marketing more pleasant for women. Each assignment represents an exciting challenge. Even if it's merely a small house it's an adventure to discover the kind of shelter that will best fit that particular family."

EMPLOYMENT OUTLOOK
The need for architects has been growing ever since 1945 and is expected to keep climbing.

Since most architects work on non-residential projects—office buildings, stores, hospitals, schools, and government buildings—the demand for architects depends primarily on the volume of this construction. This type of construction which reached a record high in the 1950's is expected to increase considerably in the near future. By 1965 the volume of non-residential construction may be about 30 per cent greater than that of 1957 and about 70 per cent greater by 1975.

Residential construction is expected to more than double by the year 1975. On top of this large increase of construction, each year there will be approximately 600 job openings because of retirements and deaths.

The architect is needed anywhere that construction is a growing industry such as young towns and cities beginning to expand or older towns which are rebuilding.

THE INCOME
If you want to become a millionaire, then architecture is not for you, but the field of architecture does give a young man a good starting pay and an excellent chance for advancement. The average pay for an architect, after graduation, is about $100. If he would work in a firm he would probably not make more than 10 to 12 thousand dollars a year but if he would go out on his own he might make $25,000 or more a year.
Facts About Architecture

(from page 17) his own he would earn 25 to 50 thousand a year, some make even more, but only a very small percentage do.

Many think that money is the only way by which an architect gets his compensation but he also gets the pleasure of knowing that he is helping people to live, work, play and worship together in a better way.

SUMMARY

Architecture is growing more and more. A young man or woman would be well off in this profession. They would get the prestige of knowing they help the well-being of human nature. Architects usually make between 10 and 12 thousand dollars a year. The architect works about 8 hours a day, but he may work up to 18 a day. He must be many things in one, he must be an engineer, artist, technician, designer, mathematician and a diplomat. An architect works with a small group of people usually and he hardly ever has two assignments alike.

All in all, I believe architecture would make a fine profession for any capable person.

Industrial Architecture

(from page 15)

It is the ideal of every architect to design a building and present such complete working drawings and specifications for it that no changes need be made during construction. This may not be possible because:

- Precise requirements of building may change
- Relative costs of certain materials may change
- Unforeseen conditions may come to light
- Client's budget may be altered

For whatever reason a change is desired, it is the duty of the architect to describe the proposed change adequately and to secure from the contractor his estimate of the difference in the construction cost resulting from the change, supported by a detailed breakdown of costs. With the owner's approval, the architect issues the change order.

When the building is substantially completed, the architect and project inspector examine it thoroughly in the presence of the contractor and his superintendent, and make a list of needed corrections. When all corrections have been made, this same group (possible with the addition of the owner) re-examines the building and if all known defects have been corrected, the architect issues the Final Certificate. A similar inspection may be made at the expiration of one year.

It is obvious that to perform many of these duties, an architect must be free from bias and pressure. This is impossible unless he is engaged directly by the owner, his client. He must also possess skill in design and knowledge of construction which can come only from years of education and experience. To carry the responsibilities, which accompany his duties, an architect must have judgment based upon knowledge and spirit of fairness.

Everyone knows that an architect cannot himself perform all of the tasks which go with the design and administration of the construction of building projects, and that for each of many projects many professional collaborators are needed. It is essential for efficient building, however, that one individual be designated as the coordinator of all professional services. Since most projects must start with a program and design, and since the architect is trained to serve in those capacities, he is the logical choice.

Fran Schroeder
To Head CSI

Architect Fran E. Schroeder, AIA, has been elected President of the Indianapolis Chapter of the Construction Specification Institute. The C.S.I. is a guiding contingent in the construction industry, directly concerned with construction specification standards.

The Chapter is cooperating with the State Legislative Study Commission toward establishing new procedures on State construction. Other C.S.I. Technical Committees are working with the Associated General Contractors Association and the Indiana Society of Architects to develop standard specifications for the industry.

Other officers elected are Walter Scholer, Jr., AIA, First Vice-President; John B. Price, Second Vice-President; Joe C. Ripberger, Treasurer; Charles A. Weaver, Secretary; and Dave L. Richardson, Director. John C. Fleck, AIA, is immediate Past President.
12-room concrete school in 3 months
with unique "lift-slab" method!

St. Therese Catholic School, Fort Wayne, Indiana, shows how concrete and new techniques meet the need for accelerated school construction.

Bids were received June 23rd. Construction was under way by July 17th. The ground floor slab was cast in place first. On top of this was cast the second floor slab—and on top of this the roof slab. Lifting of the slabs into position started August 25th.

Hydraulic jacks attached to columns were used to hoist the roof and second floor slabs. Each slab weighed approximately 370 tons and was 150 feet long and 88 feet wide. Lifting rate was two feet an hour. Total school area is 21,560 square feet—12 classrooms, six on each floor.

School opened October 1st. But time was not the only saving. Concrete "lift-slab" technique also meant lower construction costs. Long life and low upkeep will assure minimum annual cost. If your community is considering a new school, write for complete information.
MASONRY SCREENS

COLOR

FORM

TEXTURE

PATTERN

FUNCTION

It is estimated that for every 100 square feet of unshaded window area receiving an average amount of sunlight, an additional ton of air conditioning must be provided at a cost of about $1,000. Over a 20-year period, this might figure out to as much as $15 per square foot of glass. To this also must be added the initial cost of the glass and a capital recovery factor. Where the architect chooses glass as the solution to a particular design problem, its high cost can be substantially reduced through the use of masonry screens, which can reduce instantaneous heat gain through glass surfaces by as much as 85 per cent. Economies can also be effected in walls and columns concealed by screens, and by reducing the need for interior blinds or drapes.