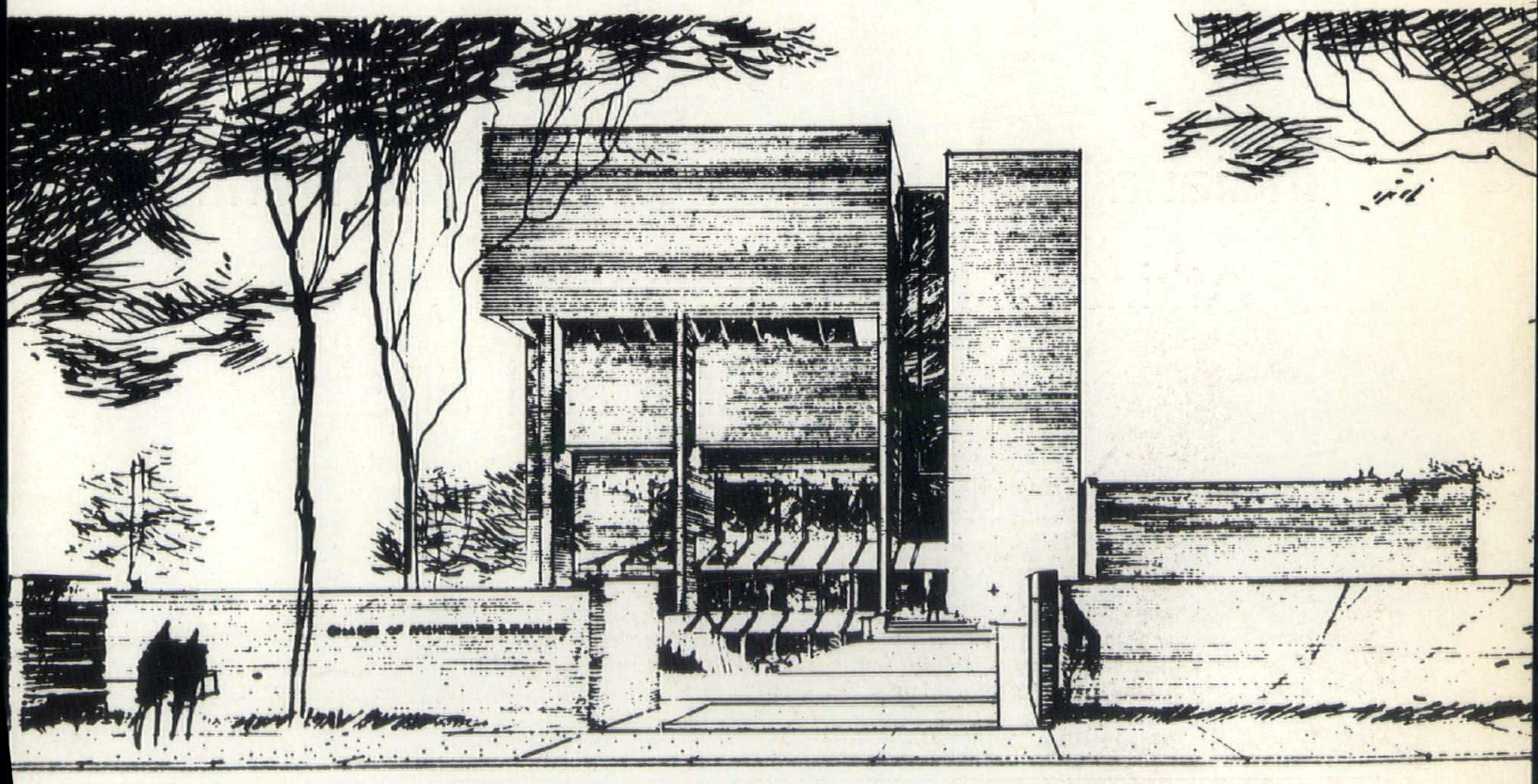
indiana architect

AUGUST – SEPTEMBER 1970



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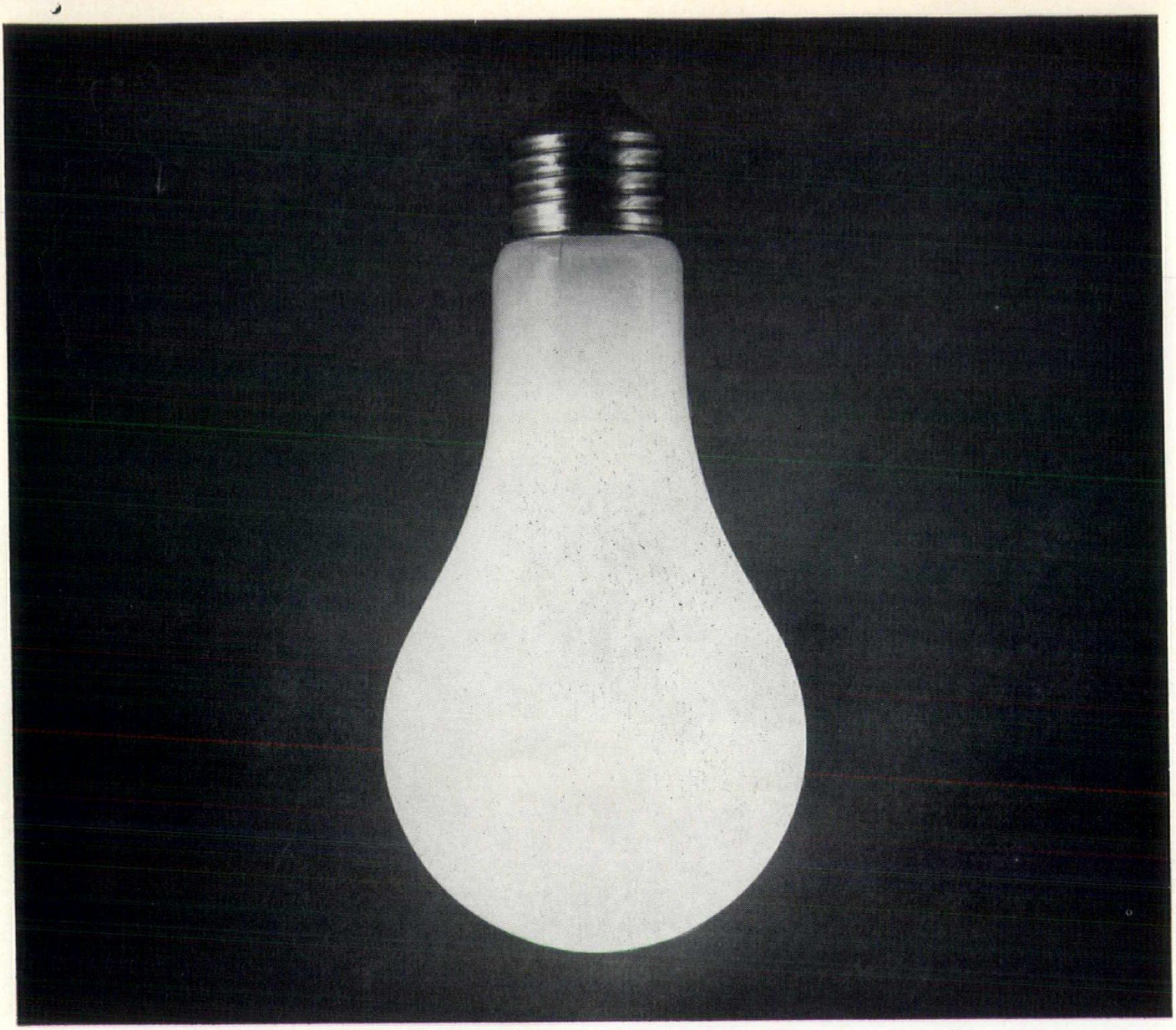

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indiana architect

Official Journal, The Indiana Society of Architects, The Northern Indiana Chapter, The Central-Southern Indiana Chapter, and the Indianapolis Chapter of the American Institute of Architects.

August-September, 1970 Vol. XIV, No. 2

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The INDIANA ARCHITECT is the sole property of the Indiana Society of Architects, a state association of The American Institute of Architects, and is edited and published every other month in Indianapolis, Indiana (editorial-advertising office address 300 East Fall Creek Parkway, N. Drive, Indianapolis, Indiana 46205; phone 925-4484). Current average circulation per issue, 3,200, including all resident registered Indiana architects, school officials, churches and hospitals, libraries, public officials, and members of the construction industry. Detailed information available on request.

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Registration Boards Notes

The Indiana State Board of Registration for Architects has announced the names of 23 applicants for registration who successfully completed the four-day written examination this year and are now eligible for architectural licensing. They are:

James L. Daring, Fort Wayne
R. O. Wickham, Indianapolis
Larry C. Porter, South Bend
Larry R. Burke, Bloomington
Charles M. Oldham, Indianapolis
Dennis L. Reinke, Michigan City
David R. Snapp, Jr., Indianapolis
Eugene A. Redding, Fort Wayne
David W. Correll, Indianapolis
James H. Miller, Fort Wayne
Roger A. Helser, Indianapolis
Francis Dai Kam Ching, Mishawaka
Joseph S. Brown, Indianapolis
Harold T. Gulliksen, Elkhort
Michael J. DeBartolo, Fort Wayne
Francis O. Murray, Racine, Wisconsin
Nikolaus H. Reitzug, Fort Wayne
Jerald Ludlow, Indianapolis
Richard T. Hill, South Bend
E. Lynn App, Loveland, Ohio
Thomas E. Furgeson, Indianapolis
Maynard P. Cox, Indianapolis
Robert K. Duffy, Jr., Mishawaka

Mr. Henry L. Best, Indianapolis, has been "reprimanded and censured" by the Indiana State Board of Registration for Professional Engineeers and Land Surveyors, and his certificate to practice engineering in Indiana suspended for one year.

The action came at a hearing on August 28th and based on an affidavit filed with the Engineers' Board by State Building Commissioner Charles Betts FAIA, alleging that Mr. Best had affixed his professional seal to plans which had not been prepared by him or under his direct supervision, in violation of Indiana law.

At the hearing, all parties stipulated to the fact that Mr. Best had applied his seal to certain plans submitted in evidence which were not prepared by him or prepared by anyone under his direct supervision.

The suspension was effective as of the date of the hearing.

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ISA CONVENTION

and

AWARDS IN INDIANA ARCHITECTURE

Participants in the 1970 Indiana Society of Architects' annual convention will include:

MR. WILLIAM L. SLAYTON, Executive Vice-President, The American Institute of Architects

PROFESSOR C. HERB WHEELER, AIA, Professor of Architectural Engineering, Penn State University, and author of "Emerging Techniques"

MR. RICHARD BABCOX, Chicago attorney and author of "The Zoning Game"

DR. LYNTON CALDWELL, noted Indiana University ecologist

MR. WILLIAM VASQUEZ, founder of "The Real Great Society, Inc.", New York

MR. ROBERT GREEN, legal advisor to "The Real Great Society, Inc."

MR. JACK TRAIN, AIA, Chicago architect and chairman of the AIA Committee on Professional Ethics

MR. ROBERT CAHN, Pullitzer Prize winner and member of President Nixon's three-man Council on Environmental Quality

DR. FAZLUR KAHN, philosopher and engineer with Skidmore, Owings & Merrill's Chicago office

MR. BEN GRAVES, a member of Educational Facilities Laboratories' Chicago office

MR. ALFRED A. PERRY, director of Operation Breakthrough for the Department of Housing and Urban Development, Washington, D.C.

The three-day convention (October 15-17) will be an unique opportunity for Indiana architects and guest business, media and government leaders to examine and establish a collective opinion and agreement upon three areas of concern: First, a description and discussion of the proposed Professional Services Center for Indiana architects; second, a free-ranging examination of the developing forces to which the architectural profession must respond; and third, an inspection of the Indianapolis Operation Breakthrough project, to be considered as a real and recent response by practitioners to the contemporary scene.

The convention keynote address by Mr. Slayton and the discussion of the proposed architectural services center, led by Professor Wheeler, will take place Thursday afternoon. The all-day Friday seminars will be so arranged and organized as to encourage interchange between the participants instead of establishing a speaker/listener format.

The Operation Breakthrough presentation will be made Saturday morning, followed by the Society's annual business meeting Saturday afternoon. All convention sessions and exhibits will be at the Atkinson Hotel in Indianapolis.

An evening at the Black Curtain Dinner Theater, annual dinner-dance and a ladies' program will round out the social portion of the convention.

Jurors have been announced for the 1970 Awards in Indiana Architecture program sponsored by the Indiana Society of Architects. They are:

Mr. Edward D. Dart FAIA, partner, Loebl, Scholssman, Bennett & Dart, Chicago,

Mr. George E. Danforth FAIA, director, School of Architecture and Planning, Illinois Institute of Technology, Chicago; and

Mr. Walter F. Wagner, Jr., AIA, editor, ARCHITECTURAL RECORD magazine, New York.

The awards program recognizes architects, owners and contractors who have made significant contributions to architecture in Indiana and is currently held every two years. The competition includes structures of any type, urban design projects, historical restorations, etc., regardless of physical location and designed by a member of the Society. It is administered by the ISA's Public Relations Committee.

Judging for the competition will take place between the deadline for submissions (September 14th) and the ISA convention (October 15-17). Winners will be announced at an evening banquet during the convention, and awards made later in the locale of the projects. The judging is based on contributions to the advancement of architecture, originality of design, construction techniques, effective and suitable use of materials, esthetic appearance, excellence within limited budgets or restricted projects, or appropriateness within an urban or historical context.

More than 100 entries have been pre-registered for this year's competition, a new record for the program. All entries will be exhibited at the convention, and award winners will be featured in a future issue of this magazine.

NEWS

Construction of Ball State University's new College of Architecture Building has started, with site preparation beginning September 8th. The competition winning design by South Bend Architect Melvin D. Birkey AIA is a six-story contemporary design red brick structure providing 47,000 square feet of space for studies, offices, 400-seat auditorium, library and specialized shops and laboratories.

Hagerman Construction Corp. of Fort Wayne was the lowest of 8 bidders on the unified contract; bids were received on August 13th. The contract amount is $2,230,153.00 with an anticipated construction schedule of 75 weeks.

Funding for the building includes $1,171,518.00 appropriated by the 1967 Indiana General Assembly, $116,750.00 additionally appropriated by the 1969 General Assembly, $622,993.00 as a grant under Title I of the Higher Education Facilities Act, and $318,892.00 from the university's plant reserve fund. Use of the reserve fund was approved by the State Budget Committee and Indiana Governor Edgar D. Whitcomb.

Forty Indiana architects participated in the 1968 AIA-approved two-stage competition for the design of the facility, which is being constructed directly across the street from the present location of the school.

The first thirty-four students to complete the five-year program in architecture will graduate next Spring. The College this year will have an enrollment of approximately 300, with 110 in the freshman class this year.

—AIA—

The Second Annual Indiana Conference on Historic Preservation will be held October 8-10 in the Indiana University Memorial Union Building at Bloomington. The program will include case studies of architectural preservation, preservation of the natural environment, evaluation of historic resources, case studies of community actions, and a field trip to Columbus, Indiana.

Co-sponsored by the Indiana Historic Landmarks Foundation, the Indiana University Sesquicentennial Committee and the Indiana University Committee on Historic Preservation, the conference will feature presentations by H. Roll McLaughlin FAIA, Indianapolis architect; Carl Feiss FAIA, Washington, D.C., architect; Dr. Herman B Wells, Indiana University Chancellor; James C. Massey, chief of the Historic American Buildings Survey, National Park Service; Professor David R. Hermansen, Ball State University architectural professor; Dr. George M. Waller, chairman of the history department, Butler University; Dr. James H. Kellar, Indiana University associate professor of anthropology; and other local preservation authorities.

Complete information and reservation forms can be secured from the Conference Bureau 197-70, Indiana Memorial Union Building, Indiana University, Bloomington, Indiana 47401.

—AIA—

State Building Commissioner Charles Betts FAIA has announced two new appointments to the staff of the Indiana State Administrative Building Council. Mr. John Carmack, registered architect and professional associate member of the ISA, is the new director of the Division of Plan Review. Mr. Carmack lives in Carmel, and for several years was associated with the office of Merritt Harrison FAIA, Indianapolis.

The new director of the Division of Code Research is Mr. Dale R. Gatlin, formerly of California. A civil engineer, Mr. Gatlin previously headed the Criteria and Design Group for Aerospace Rocket Research and Development Corporation at Sunneyvale, California, and is a former building code consultant.

—AIA—

Nathaniel A. Owings FAIA, a founder of Skidmore, Owings and Merrill, received an honorary doctor of laws (LL.D.) degree from Ball State University at the University's summer commencement exercises, just 50 years after he had graduated from Arsenal Technical High School in Indianapolis.

Mr. Owings has served three presidents, John F. Kennedy, Lyndon B. Johnson and Richard M. Nixon, as chairman of a national commission to direct the redesign and redevelopment of the central core of Washington, D.C. He also serves as chairman of the national advisory board to the Secretary of the Interior on National Parks, Historic Sites, Buildings and Monuments.

—AIA—

Two major Indianapolis architectural firms have merged under the new name of Fleck, Burkart, Shropshire, Boots, Reid & Associates. The merger was announced last month by John C. Fleck AIA, president of the new firm and Robert T. Reid, board chairman.

Joined in the transaction were Fleck, Burkart, Shropshire & Associates, 2506 Willowbrook Parkway, Indianapolis, and Reid, Thompson, Boots & Associates, Inc., 3901 Industrial Boulevard, Indianapolis.

BALL STATE LECTURE SERIES

The College of Architecture and Planning, Ball State University, Muncie, has announced its 1970-71 Guest Lecture Series. All lectures (except those marked by an asterisk) are at 8:00 P.M. on the date indicated at the College of Architecture Building on the Ball State campus. The schedule is:

September	21	**HUGH NEWELL JACOBSEN AIA**	Architect for Housing, Washington, D.C.
	28	**C. M. DEASY FAIA**	Los Angeles, California, architect
October	5	**PAUL SPREIREGEN AIA**	Vice-President, Doxiadis Associates, Washington, D.C.
	8-9*	**JAMES M. SATTERFIELD**	Chief, Systems Engineering Branch, Manned Space Center, NASA, Houston, Texas
	12	**VINCENT KLING FAIA**	Philadelphia, Pennsylvania, architect
	19	**MALCOLM HOLZMAN AIA**	New York, New York, architect
	22*	**HENRY WRIGHT AIA**	College of Architecture, Kansas State University
	26	**HARRY WEESE FAIA**	Chicago, Illinois, architect
November	2	**GARRETT ECKBO FASLA**	San Francisco, California
	9	**PAOLO SOLERI**	Director, Cosanti Foundation, Tempe, Arizona
January	4	**ROBERT NEWMAN**	Bolt, Beranek & Newman, Inc., Cambridge, Massachusetts
	11	**GEORGE NELSON FAIA**	New York, New York
	18	**H. F. KOEPER**	Professor of Architectural History, University of Illinois, Chicago
	25	**JOHN KURTICH**	Department of Environmental Design, Chicago Art Institute, Chicago
February	1	**ROBERT TRENT JONES**	Golf course designer, Montclair, New Jersey
	8	**GEORGE R. COLLINS**	Professor of Art History, Columbia University, New York, New York
	15	**LEV ZETLIN, FASOE**	Professor of Engineering and Architecture, University of Virginia
April	14	**LOUIS I. KAHN FAIA**	Professor of Architecture, University of Pennsylvania, Philadelphia, Pennsylvania

In addition, the following exhibitions have been announced:

September 14-October 2	New faculty work; student work in offices
October 19-November 6	Urban Planning Project: Neon City
January 4-January 22	Courthouses of Indiana
May 1-May 21	1970 Awards, American Society of Landscape Architecture
June 1-September 31	Student work, 1970-71

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EDUCATIONAL FACILITIES IN INDIANA

by Richard M. Morrison

The material presented in this article is gleaned from information secured by the author in writing a doctoral dissertation at Ball State University. The study included 106 totally new public schools in Indiana for which construction contracts were let between January 1, 1966, and December 31, 1968.

The questionaires used in the survey were developed and disseminated by the author with the co-operation of the office of the Indiana State Superintendent of Public Instruction. These questionaires were sent to and completed by the local school superintendents. The 106 projects included in the survey represent 93.8% of all totally new public school structures built during the period.

Six classifications of facilities were established on the basis of grades housed. The data were analyzed in three categories: Selected physical components used in the construction of the facilities, the total cost of construction of the facilities, and the method of financing the major portion of the new construction. In the analysis of the physical components, the most often used component in the selected category was determined.

From this information, a composite facility was drawn. No attempt was made to make a judgment as to the worth of the facility or to indicate that the composite facility was the ideal school plant.

Data relative to the physical characteristics of the new structure included: (1) type of structural system, (2) outside wall material, (3) type of heating, ventilating, and/or cooling system, (4) type of heat energy source, (5) extent of carpeting, (6) type of interior space dividers, (7) number of stories, (8) gross square footage, and (9) number of teaching stations.

Mr. Morrison formerly served as Director of the Division of School House Planning in the office of the Superintendent of Public Instruction, State of Indiana. He resigned in 1969 to return to Ball State University to complete work for his Doctor of Education degree, which was conferred this year.

He has since established his own professional practice as an educational facilities consultant, with offices at 2810 Ethel Avenue, Muncie.

The material in this article is based upon his doctoral thesis on school construction costs.

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PUBLIC SERVICE INDIANA

The cost data was presented as a percentage range of individual contract costs and the total cost was included. The percentages and totals were based on the **total cost** to the school corporation, except for interest during construction, including: (1) general contract, (2) site development, if separate, (3) mechanical contract, (4) air conditioning, if separate, (5) electrical contract, (6) special fixed equipment, (7) architect's commission, (8) fees for legal services, (9) insurance premiums during construction, (10) educational consulting fees, (11) financial consultant fees, and (12) loose furniture and equipment. The method of financing the major portion of the cost of the new facilities included all of the methods available to Indiana school corporations.

Of the 106 buildings included in the study, 44 were classified as K-6 grade facilities, 4 were classified as 7-8, 8 were classified as 7-9, 14 were identified as 7-12, 28 were classified as 9-12, and 8 were classified as 10-12 grade buildings.

Of the 106 buildings included in the study, 69 or 65.09% were of one story construction. Of the 44 buildings in the K-6 grade classification, 33 or 75% were one story structures. For the total study it was found that 35 or 33.01% of the buildings were two story structures. Only two facilities of the 106 structures included in the study were three story.

A total of 74 facilities utilized a steel framing system. This number is 69.81% of the schools included in the study. Of the 106 buildings included in the study, 23 or 21.7% used a bearing wall system of construction, and only nine structures used a concrete framing system.

Brick was the predominate outside wall material used in the construction of school facilities in Indiana during the period of the study. Brick was used as an exterior wall material for 100 or 94.33% of the buildings included in the study. Pre-cast concrete panels were used as an exterior wall material in the construction of four school facilities, or 3.77% of the total. Limestone was used as the exterior wall material for one school facility in this study.

A unit ventilator, heating and cooling system was used in 38 or 35.84% of the facilities included in the study. A unit ventilator system for heating only was used in 32 facilities, or 30.19% of the total. Of the facilities included in the study 66.03% or 70 facilities used the unit ventilator system for heating. A cooling system was incorporated to some extent in 67 or 63.2% of the 106 facilities in the study. Ninety per cent, or 40, of the facilities housing high school students incorporated a cooling system to some extent.

The source of energy used for heating was discovered to be natural gas in 58, or 54.71% of the buildings included in the study. Electricity was the source of heat energy for 34, or 32.08% of the buildings. In the K-6 grade classification, electricity served as the source of heat energy for 17, or 38.3% of the buildings. Total energy was the heat energy source for five buildings or 4.71% of the facilities.

Of the 106 buildings included in the study, 61.32% or 65 facilities used carpet on less than 50% of the floor surface. Of the 30 facilities not using any carpet as a floor covering, 26 were in the K-6 grade classification! Two facilities housing high school students did not use carpet as a floor covering. Nine structures used carpet on over half of the floor surface and two buildings were reported to be totally carpeted.

The non-load bearing wall was the type of interior partition found in 49.05%, or 52, of the facilities. The bearing wall was used in 33 buildings, or 31.12%. Operable and demountable walls were reported in 20 buildings while one facility was reported to be devoid of any partitions. The combined group represented 19.81% of the 106 structures.

The composite facility for each of the grade classifications was determined to be as follows:

The composite K-6 building in the study would have been a one story, brick, and steel framed facility. The type of heating system used would have been unit ventilators served by natural gas. The interior partitions would have been non-load

bearing walls and no carpeting would have been used.

The composite 7-8 facility in the study would have been a two story, brick, and steel framed building. The building would have been heated with unit ventilators supplied by natural gas. The extent of carpeting would have been either less than 50% or no carpet at all. The interior partitions would have been either bearing or non-load bearing walls.

The 7-9 composite facility in the study would have been either a one or two story, brick facility. A steel frame would have been used as the structural support system. The facility would have contained a forced air heating and cooling system which would have been supplied by natural gas. The floor surfaces would have been less than 50% carpeted. The interior partitions would have been non-load bearing.

The 7-12 composite facility would have been a one story, brick building. It would have used a steel frame for the structural support system and unit ventilators for both heating and cooling. The source of heating energy would have been natural gas. The facility would have been less than 50% carpeted and would have used non-load bearing walls as interior partitions.

The composite 9-12 facility would have been a one story, steel framed, brick building. The facility would have contained unit ventilators for both heating and cooling which would have been supplied by natural gas. The floor surface would have been less than 50% carpeted. The facility would have used non-load bearing walls as interior partitions.

The 10-12 composite facility in the study would have been a one story, steel framed, brick building. Natural gas would have supplied a forced

TABLE 1

AVERAGE SIZE AND COST OF SCHOOLS BY GRADE CLASSIFICATION

(For 106 buildings for which construction contracts were let between January 1, 1966 and December 31, 1968)

Grade Classification	Number of Projects	Average Square Footage	Average Number of Teaching Stations	Average Total Cost	Average Square Foot Cost
K-6	44	45,430	23.54	$ 985,044	$23.54
7-8	4	93,235	41.5	1,915,015	20.54
7-9	8	159,497	57.55	3,713,440	23.28
7-12	14	114,526	42.35	2,442,169	21.35
9-12	28	171,223	51.75	4,068,549	23.76
10-12	8	260,041	77	6,951,467	26.73
Average		114,375	40.77	$2,683,316	$23.46

air heating and cooling system. The facility would have used non-load bearing walls as interior partitions. The extent of carpeting would have been less than 50% of the floor surface.

The data in Table 1 reflects average cost and average cost per square foot for facilities included in the study by grade classification and total study. The average square foot cost is indicated based on the cost information collected in the study. The average gross square footage and the average number of teaching stations are included.

The average cost of construction per teaching station as computed on the basis of costs collected for each grade classification was as follows: K-6 classified structures cost $41,043.50 per teaching station; 7-8 buildings cost $45,595.47 per teaching station; 7-9 facilities cost $64,024.82 per teaching station; 7-12 structures cost $58,146.67 per teaching station; 9-12 buildings cost $78,241.32 per teaching station; and 10-12 buildings cost $90,-278.79 per teaching station.

The percentage range of general contract costs to total cost of individual facilities for each grade classification was: K-6 classified buildings, from 44.63 to 70.97%; 7-8 structures, from 51.48 to 67.05%; 7-9 buildings, from 48.59 to 55.98%; 7-12 facilities, from 40.92 to 65.36%; and 10-12 structures, from 48.49 to 56.21%.

The percentage range of mechanical contract costs to total cost of individual facilities for each grade classification was: K-6 classified buildings, from 7.27 to 25.61%; 7-8 facilities, from 14.96 to 22.52%; 7-9 structures, from 16.07 to 25.62%; 7-12 buildings, from 7.25 to 23.52%; 9-12 buildings, from 14.04 to 25.33%; and 10-12 facilities, from 15.8 to 24.57%.

The percentage range of electrical costs to the total cost of individual facilities was: K-6 classified structures, from 5.1 to 20.69%; 7-8 buildings, from 6.71 to 9.22%; 7-9 facilities, from 7.91 to 11.14%; 7-12 buildings, from 6.79 to 14.04%; 9-12 structures, from 7.64 to 16.16%; and 10-12 buildings, from 7.63 to 11.80%.

The percentage range of special fixed equipment costs to total cost of individual facilities for each grade classification was: K-6 classified structures, from 1.71 to 13.07%; for 7-8 buildings, from 3.08 to 7.28%; 7-9 facilities, from 3.87 to 8.54%; 7-12 buildings, from 1.21 to 8.3%; 9-12 facilities, from 1.27 to 9.77%; and 10-12 structures, from 3 to 8.46%.

The percentage range of architect's commission costs to the total cost of individual facilities for each grade classification (including all construction, fees, equipment, etc.) was: K-6 classified facilities, from 2.11 to 6.92%; 7-8 buildings, from 3.47 to 5.07%; 7-9 buildings, from 2.9 to 6.78%; 7-12 facilities, from 3.82 to 5.71%; 9-12 structures, from 3.04 to 5.59%; and 10-12 facilities, from 2.68 to 5.39%.

The percentage range of legal fees to the total cost of individual facilities for each grade classification (again including all construction, fees, equipment, etc.) was: K-6 classified facilities, 0.1% to 2.38%; 7-8 buildings, 0-.18% to 0.98%; 7-9 buildings, 0.28% to 1.28%; 7-12 buildings, 0.56% to 1.9%; 7-12 buildings, 0.37% to 2.04%; and 10-12 buildings, 0.02% to 0.87%.

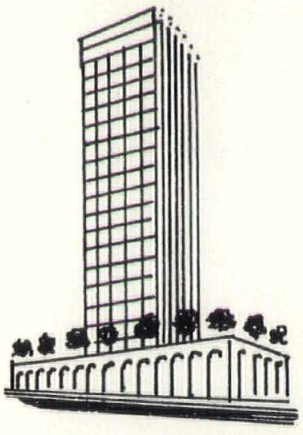
The percentage range of loose furniture and equipment costs to the total of individual facilities for each grade classification was: K-6 buildings, from 1.44 to 11.82%; 7-8 facilities, from 6.67 to 9.07%; 7-9 structures, from 2-1 to 7.8%; 7-12 facilities, from 1.55 to 15.65%; 9-12 buildings, from 2.54 to 11.13%; and 10-12 buildings, from 1.68 to 13.11%.

It was indicated by the data included in the study that the public holding corporation was the most often used method of financing construction costs of the facilities included in the study. The number of facilities for which the public holding corporation method of financing the cost of construction was noted to be 59. The cumulative building fund was used as the major method of financing construction costs for only one facility housing high school students. In contrast, the cumulative building fund was used as the major method of financing construction costs of 25 elementary facilities. The private holding corporation was reported as the major method of financing construction costs for 12 facilities included in the study. General obligation bonds provided the major method of financing construction costs for 5 facilities included in the study.

PROBLEM SOLVERS

CUT CONSTRUCTION COSTS... THROUGH YOUR AIR HANDLING CONTRACTOR

Years ago the use of ventilation in buildings was minimal, and air conditioning, as it is currently known and used, was almost non-existent. It is understandable, then, that the portion of the mechanical work performed by the air handling contractor was relatively insignificant. However, **the significance of the air handling contractor's role has steadily increased over the years,** and today the air handling installation on buildings equals, and, in many instances, exceeds the work performed by the mechanical contractor. Nonetheless, **the preparation of specifications in large part has remained unchanged during the same course of years.** The air handling contractor is still expected to place his bid through the mechanical contractor based upon specifications which do not separate the air handling installation from the mechanical portion of the specifications.

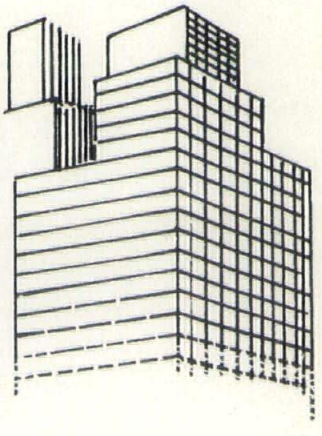


Reason and economy dictate that the separation of the air handling specifications is the better practice. For instance, the mechanical contractor, like the electrical contractor, bids directly to the owner, architect or prime contractor; and since his bid includes the air handling portion of the work, **three to fifteen percent is added to that portion to compensate the mechanical contractor for assuming the responsibility of overseeing the air handling installation.** The success of an air handling installation, however, depends largely on the degree of co-ordination between the air handling contractor and the architectural trades; and **these trades are supervised not by the mechanical contractor but by the general contractor.**

Furthermore, because of the mechanical "middle man," bid auctioning (composed of equal parts of bid shopping and bid peddling) often results. This practice has been a constant plague in the construction industry and ultimately leads to a reduction in the quality of the work performed.

With separate and distinct specifications, **the architect and/or engineer can readily check the thoroughness of the specifications** and also be assured that each contractor's bid will include all of those items specified. The use of separate specifications will minimize the possibility of misunderstandings, duplications and overlapping.

In view of the foregoing, it is the hope of the Indiana Sheet Metal Council that air handling contractors will ultimately achieve a position comparable to the mechanical and electrical contractors; and to this end, the Council is pledged to the active promotion of separate specifications and separate bids. **The benefits derived by the entire construction industry from separate specifications and separate bids are becoming increasingly obvious,** and it is our conviction that they will more than compensate for the time involved in changing outmoded policies and ideas.



John Murphy (Fort Wayne) 219-432-0080
Ralph Potesta (Hammond) 219-845-5033
Bill Finney (Indianapolis) 317-546-4055
Don Golichowski (South Bend) 219-289-7380

Indiana Sheet Metal Council
Box 55533, Indianapolis, Indiana 46205

indiana architect
P.O. Box 55594 Indianapolis, Indiana 46205

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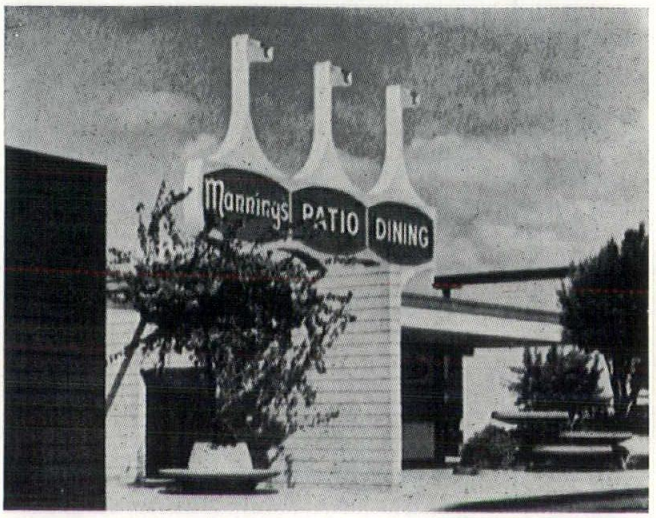

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