

CHITECTURAL RECORD



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BUILDING TYPES STUDY: STORES

SCHOOL DORMITORIES BY EDWARD LARRABEE BARNES

ARCHITECTS AND THE SPACE PROGRAM

SEMI-ANNUAL INDEX · FULL CONTENTS ON PAGES 4 & 5



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SAARINEN'S GREATEST BUILDING?

The terminal building for Dulles International Airport, which some have called Saarinen's masterpiece, will be the subject of a major feature next month. Whether this or another is the "greatest," it seems certain that the Dulles terminal will be regarded as one of the significant architectural achievements of our time, and the interest of architects in it will be correspondingly large.

BUILDING TYPES STUDY: RELIGIOUS ARCHITECTURE

An article in which Pietro Belluschi discusses his approach to church design and the attitudes and convictions which he believes an architect should bring to the sensitive interpretation and expression of a congregation's needs will lead off the study, followed by major presentations of several new religious buildings of outstanding quality.

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Criticism of Criticism

When I returned from the recent A.I.A. convention in Miami a friend remarked, "I see there was some tilting at windmills."

Tilting at windmills. My friend is only casually interested in architecture, but he was noting that architects had had "a bad press."

Well, if they had, they asked for it. They devoted three rather spirited convention sessions to "the quest for quality in architecture." The topic sounded fine and noble, and I found no quarrel with it. Indeed no individual or group spends so much time, effort and money on the search for quality in architecture as the editor of an architectural magazine and his staff.

But what happened? There was a group of "critics," both insiders and outsiders, joining in panel sessions supposedly devoted to the quest. And with I guess one exception (Sir Basil Spence, the English architect), all the speakers paid about three paragraphs of lip service to the idea of quest, then settled down to the business of telling architects what was wrong with them and their works. In three sessions they made a good job of it. The convention took on the aspects of an orgy of "criticism," self evaluation and self flagellation.

With his ready grin Sir Basil said afterward that he guessed he had misunderstood the assigned topic. And both he and the other Englishman on the program, Nikolaus Pevsner, expressed themselves as being surprised at the extent of this sort of thing in American circles.

The "bad press" resulted, of course, from the manful efforts of the convention staff to spread the doings as widely as possible. Newspaper reporters were in the meetings, picking up juicy bits, and the press room was scurrying to mimeograph the remarks of the "critics" for dissemination to the papers. Of course architects are brought up on criticism. They dote on it, and feel it should have as wide publicity as possible. Architecture is art. Yes ... Yes ... I know ... I know.

But as one of the speakers remarked: "Who else asks outsiders to come and scold hell out of them?" Not the doctors, or the lawyers. They don't issue press releases when somebody scolds hell out of them.

It didn't seem to occur to anybody at the convention that they had spent the first day pushing the Institute program of broadening the activities and opportunities for the profession, and voting continuance of the supplemental dues to pay for it. And then they had spent two more days narrowly gazing inward. Tilting at windmills, the man said.

I must add one note to the conversation with friend. He went on to ask if I had joined in the tilting. I said that after the first two sessions I fell off my horse and splashed down in the swimming pool. I have no wish to speak for the editors of other architectural magazines, but I am able to report that on that last afternoon they also were in the pool. It was a better place for a quest: Alvar Aalto, a famous swimmer, was doing a kilometer or two around the pool.

I tried in a long chat to get Aalto to express himself on this or that, but he always replied that he never criticized the work of his colleagues. I asked him if in his 40 years of practice he had changed any convictions; he twinkled a bit and said: "I have no inner conflicts. I make it a practice not to criticize the work of my colleagues, and I include myself." Some time later he added a comment, which I am sure was *not* directed at the convention: "It is not the words that count, but [making a pencilstroke gesture] the lines."

-Emerson Goble



Alvar Aalto, the great Finnish architect, was present to accept the 1963 Gold Medal, the ninth foreigner to receive the A.I.A.'s highest honor since its establishment in 1907



Americana's patio (here scene of president's reception) and pool were THE social center



Morris Lapidus, architect of the Americana, responds to criticisms of Miami architecture

A.I.A. LOOKS FORWARD AND BACK AND HAS A GREAT TIME AT MIAMI

Architects vote funds to continue broad new programs, then return to contemplation of architecture as art

In striking contrast to last year's apparent retreat at Dallas, the 1963 convention of the American Institute of Architects May 5-9 in Miami Beach voted overwhelmingly for the new programs the Institute has been developing to support the concept of comprehensive architectural services.

Not only did delegates support every proposal offered by the Board of Directors, including an amendment to the bylaws establishing "supplemental dues" as a permanent part of A.I.A. dues structure, but they did so with a minimum of debate and a notable degree of harmony.

A Difficult Quest

Having thus in a single day's business sessions made the most significant commitments to their vastly increasing responsibilities, architects and their guests then turned to debating "The Quest for Quality in Architecture" (theme of the "professional program") almost entirely on the traditional and exclusive level of esthetics, and almost to a man (and woman) the speakers, architects and critics, took the dimmest view of the contemporary prospect. Only the visitors from England-architect Sir Basil Spence and Nikolaus Pevsner, the architectural historian and criticexhibited any real restraint in their assessment of architectural effort: this perhaps because they are accustomed to a more stately concept of professional decorum than their American cousins.

Quest for Fun: Easy!

The foregoing is not intended to suggest that this was generally a snarly convention. Inside or outside the meeting room, all the 2,034 registrants appeared to be having a marvelous time. The weather was perfect, cloudless sunshine with temperatures generally in the 80's; and people who could (a good many, it seemed) happily made their daytime headquarters out in the patio beside the pool or (just beyond) on the beach next to the ocean. At night, the Americana's "lanai" suites overlooking the patio were alive with parties and some blithe spirits were enjoying the several Miami Beach spots where dancing continues from 10 P.M. to 5 A.M.

With typical architectural zest for the grand design, members of the Florida South Chapter of the A.I.A.. under the leadership of regional Director Robert M. Little, F.A.I.A., honorary chairman of the Host Chapter Committee and H. Samuel Krusé, F.A.I.A., general chairman of the committee, rolled out the green turf and pink flamingoes of fabulous Hiahleah Park for the now traditional host chapter party— a "tropical night caper" with "wining, dining and dancing" and "Carribean music and entertainment," and it was a caper.

There were also tours of Fairchild Tropical Gardens, "the only tropical garden in the continental United States"; Palazzo Vizcaya, the great estate of the late James Deering; the International Design Center; and (for the ladies) Lincoln Road (now with mall). And members of the host chapter opened their homes for the Architects-at-Home cocktail parties, a wonderful view of domestic architecture as well as Florida hospitality.

Carroll Succeeds Wright

In the elections, the presidency went without contest to J. Roy Carroll Jr., F.A.I.A., a partner in the Philadelphia firm of Carroll, Grisdale & Van Alen and an alumnus of the University of Pennsylvania (B.A. 1926, M.A. in Architecture, 1928). His predecessor Mr. Wright was not eligible for re-election, being the first A.I.A. president affected by last year's bylaw changes limiting the terms of officers, *continued on page 13*

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Official convention sessions, all held in the Americana's International Room, looked like this from the podium where Messrs. Wright, Carroll and Odell successively presided



Thirty-five new Fellows (April, page 10) were invested at the annual dinner. Photo includes all but one-William Gray Purcell, absent for reasons of health



New President J. Roy Carroll Jr., intent on debate at business session



Retiring President Henry L. Wright, as he made valedictory



Ears of A.I.A. conventions since 1935, stenotypist Mrs. Paul Kaye



Professional Program had Dean Burnham Kelly, A.I.A. (left), Cornell University College of Architecture, as moderator for three sessions. Panel of speakers (at right above) were: Sir Basil Spence, F.R.I.B.A.; Robert Anshen, F.A.I.A.; Paul Rudolph, A.I.A.; Edward T. Hall, anthropologist; Nikolaus



(2)At Awards Luncheon, President Wright presents (1) Fine Arts Medal to Isamu Noguchi; (2) Allied Professions Medal to R. Buckminster Fuller; (3) Architectural Photography Medal to G. E. Kidder Smith; (4) Craftsmanship Medal to Paolo Soleri; (5) Edward C. Kemper Award to Samuel E.





A.I.A., assistant commissioner for design and construction,

Public Buildings Service; George McCue, art critic; Ada

Louise Huxtable, architectural critic; John M. Johansen,

Lunden, F.A.I.A.; (6) Special Citation to William Stanley Parker, F.A.I.A.; (7) Honorary Membership to Ernest P. Mickel (F. W. Dodge newspapers). (8) Hans Maurer of Munich, 1963 R. S. Reynolds Memorial Award winner, gets \$25,000 prize from Reynolds Vice President A. H. Williams Jr.





(7)







A.I.A. Meets at Miami continued from page 10

except for secretary and treasurer, to a single one-year term.

Arthur Gould Odell Jr., F.A.I.A., of Charlotte, N.C., became the Institute's first "first vice president and president-elect" without opposition. Last year's convention established the new office of president-elect in combination with the first vice presidency. Mr. Odell had been second vice president.

In the two contested offices, Wayne S. Hertzka, F.A.I.A., of the San Francisco firm of Hertzka & Knowles was elected second vice president over William J. Bachman of Bachman & Bertram & Associates, Hammond, Ind.; and Robert F. Hastings, F.A.I.A., president of the Detroit firm of Smith, Hinchman & Grylls Associates, Inc., of Detroit was elected treasurer over the incumbent since 1956, Raymond S. Kastendieck, F.A.I.A., Gary, Ind.

New regional directors (their predecessors indicated in parentheses) are: C. Day Woodford, Woodford & Bernard, Los Angeles-California (Malcolm D. Reynolds, F.A.I.A.); Angus McCallum, Kansas City-Central States (Oswald H. Thorson); Robert H. Levison, Wakeling, Levison & Williams, Clearwater, Fla.-Florida (Robert M. Little, F.A.I.A.); Albert M. Goedde, East St. Louis, Ill .-- Illinois (William J. Bachman); Willard S. Hahn, Wolf & Hahn, Allentown, Pa.-Pennsylvania (William W. Eshbach); Llewellyn W. Pitts, F.A.I.A., Pitts, Mebane & Phelps, Beaumont, Tex.—Texas (Reginald Roberts, F.A.I.A.).

Alas Poor Society!

In the opening address of the professional program, Sir Basil Spence observed that "the architect who understands quality must be very near the Renaissance ideal of the complete man, artist, philosopher and thinker." And in the closing address, architect Wallace K. Harrison asserted the architect "must find the essence" and "carry it through." But most of the speakers in between appeared to be concerned less about the possibility of the architect's failure to comprehend than about the failure of the public either to comprehend him or to give him the sort of "climate" under which he could be expected to succeed in the "quest for quality."

As architect Robert Anshen, F.A.I.A., of San Francisco put it: "It continued on page 26



Ocean, palm trees and patios (and a nearly full moon all week) made a glamorous setting for the parties—and there were many. Even in the suites, there were always the views of the ocean and the palm-fringed patios



Aalto (1) uses "the line" (see page 9) in conversation with Emerson Goble and Jeanne Davern of ARCHITECTURAL RECORD and (2) emphasizes a point as Madame Aalto, Herbert L. Smith Jr. of the RECORD and Mr. Goble listen. (3) Charles P. Colbert of New Orleans and A.I.A. past president Philip Will Jr. of Chicago



(1) Host Chapter Chairman H. Samuel Krusé, F.A.I.A., with Mrs. Krusé and Ulysses Floyd Rible, F.A.I.A., of Beverly Hills. (2) Mr. and Mrs. James Hunter of Boulder and Henry Wright. (3) New Hon. A.I.A. Dr. Kenneth John Conant and Miss Marion Manley, F.A.I.A., of Miami



(1) Wallace F. Traendly, F. W. Dodge president, Donald C. McGraw, president of Mc-Graw-Hill, Mrs. Goble and Emerson Goble of the RECORD. (2) William Lacey of Rice Institute, Dean C. E. Stousland of Miami (Ohio) and Mrs. Arthur Fehr, Austin, Tex.



Paolo Soleri's Mesa City exhibit (see page 304) was memorable lobby sight. It was installed (*above*, *center*) by Soleri himself and drew many questioners

TEN PLANTS WIN FACTORY AWARDS

Ten manufacturing plants have won awards as the best new plants in the United States in the 29th annual program of Factory magazine, a McGraw-Hill publication. Photographs of the top 10 plants, cited for over-all excellence in planning and construction as production facilities, are shown on these pages.

Winning plants were selected by Factory editors from nearly 1,500 entries. Nominations were made by architects, engineers, builders; state and regional chambers of commerce and development commissions; banks, railroads, utilities; and by the magazine's readers.

Requirements for winners were completion in 1962 and that they be "of general interest and significance to a broad range of plant operating executives in many types of manufacturing industries, in companies of all sizes."

"Pacesetting plants of 1963," say Factory editors, "are characterized by innovation in design, foresight in plan-

Hube Henry, Hedrich-Blessing



Symons Manufacturing Company, Des Plaines, Ill. Architect: Fox & Fox, Architects Consulting Engineer: Sessions Engineering Company General Contractor: R. T. Milford Company

ning and sophistication of location. They employed great skill and ingenuity to build outstanding plants in spite of the handicap of tightened cost controls." Four major trends, according to the editors, seem to be emerging: (1) more flexibility in production and services layouts-". . . plant services and utilities reached a new high in developing a flexibility that supports frequent product and process changes . . . Many plants show the influence of accelerating technology . . . The trend in combining research and development facilities with manufacturing is spreading . . ."; (2) greater emphasis on first cost-". . . Too much attention to first costs inevitably leads to higher costs of operation and maintenance later on . . ."; (3) more care in selecting sites-". . . Such lures as tax concessions seem to have been outweighed in many instances by longer-range considerations . . ."

continued on page 258



Atlantic Cement Company, Ravena, N.Y. Design and Construction: Engineering Division, St. Lawrence Cement Company Consulting Architect (office only): Hartheimer-Estey Assoc. Major Contractors: Darin & Armstrong, Inc. and The Nicholson Company, Inc.



Armstrong Rubber Company (Pacific Coast Division) Hanford, Calif. Architect-Engineer: David H. Horn & Associates

General Contractors: Baldwin-Campbell-Erickson (a joint venture) Process Services Contractor: J. H. Pomeroy & Company



Bourns, Inc. (Trimpot Division), Riverside, Calif. Architect: Cowan & Bussey General Contractor and Design Coordinator: Russell Walling

Buildings in the News



Sloan Valve Company, Melrose Park, Ill. Architect-Engineer: C. F. Murphy & Associates General Contractor: Dahl-Stedman Company

Robert Nowell Ward



The Jel Sert Company, Bellwood, Ill. Architect: Edward D. Dart Architect & Company Engineer: Samartano & Robinson Construction Supervision: A. Eiseman & Company



Dearborn Stove Company, Garland, Tex. Architect-Engineer: Benson & Norris Mechanical Engineer: William K. Hall & Company General Contractor: T. C. Crist, Inc.



Otis Engineering Corporation, Dallas, Tex. Architect: G. Mallory Collins, Horace E. Dryden and Associates Mechanical and Electrical Engineering: Gregerson and Gaynor, Inc. General Contractor: Robert E. McKee, Gen. Contractor, Inc.





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Total contracts include residential, nonresidential and non-building contracts





FIRST QUARTER ROUNDUP OFF TO A GOOD START

Business activity scored a sharp increase in the first quarter of 1963. Along with it, building activity, as measured by F. W. Dodge Construction Contracts, advanced 4 per cent over the volume of the first three months of 1962. And that quarter, on a seasonally adjusted basis, was the strongest building quarter of what turned out to be a phenomenal year.

The first quarter's package of economic indicators proved to be full of good news. Total output (Gross National Product), with a gain exceeding any of the previous four quarters, reached a rate of \$572 billion in the first three months of 1963. Consumers provided most of the lift as they stepped up their buying of homes, cars, and other goods and services well above previous peak rates. Among other highly encouraging signs in the opening months were:

- * The first significant rise in industrial production since last summer.
- * A 5 per cent rise in anticipated capital outlays by business firms for 1963, and an indication of continued high investment spending in the next two years.

In the midst of the generally buoyant state of the economy in the opening quarter of 1963, both residential and nonresidential building took steps toward another record year.

Nonresidential building contracts piled up a large lead in the first two months, but then ran against March 1962 which, on an adjusted basis, topped anything before or since by a large margin. As a result, the early gains were reduced, but nonresidential building still showed a 3 per cent improvement through the third month.

Commercial building in the 1963 quarter held just about even with peak 1962 volume, but manufacturing contracts—where the bulk of last year's unusual March surge was concentrated—lagged by 21 per cent. (Preliminary April data showed this deficiency almost entirely recovered, however.)

Educational and science building contracts were up a solid 6 per cent through the third month, and hospital building capped its record 1962 volume with a 35 per cent increase in the first quarter of the current year.

Other building types in the nonresidential category had their ups and downs. Public buildings, showing no gain last year, spurted ahead by 69 per cent; religious building dropped off slightly, while social and recreational contracts were 38 per cent behind the first quarter of 1962.

In the big residential market, the rampage of apartment building rolled on. Last year's first quarter showed a gain of nearly 70 per cent in contracts for multi-family housing, and the first three months of this year topped that by another 12 per cent.

Though somewhat overshadowed by the dramatic rise in apartment building, one- and two-family housing, which makes up the other two-thirds of the residential market, has continued to advance slowly but steadily in recent months. The first quarter totals showed a gain of 4 per cent—the same experienced for the full year 1962.

Getting by the comparison with the extraordinary first three months of 1962 was a bigger achievement than the 4 per cent increase in total building would indicate. With continued strong demand for most building types, the coming quarters should show even larger gains.

> George A. Christie, Senior Economist F. W. Dodge Corporation A McGraw-Hill Company

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Building Construction Costs

By Myron L. Matthews Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

The information presented here permits quick approximations of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). The tables and charts can be used independently, or in combination as a system of complementary cost indicators. Information is included on past and present costs, and future cost can be projected by analysis of cost trends.





2. BASE WAGE RATES \$/HR.



A. CURRENT BUILDING COST INDEXES-MAY 1963 1941 Average for each city=100.0

Metropolitan Area	Cost Differential	Curren Residential	t Dow Index Nonresidential	Per Cent Change Year ago Res. and Nonres.
U.S. AVERAGE-		100.7		
21 Cities	8.5	257.2	274.0	+1.65
Atlanta	7.1	288.9	306.4	+1.85
Baltimore	8.0	260.8	277.4	+0.44
Birmingham	7.4	237.3	255.1	+0.68
Boston	8.4	230.6	244.1	+0.62
Chicago	8.8	286.0	300.8	+2.24
Cincinnati	8.8	248.2	263.8	+1.00
Cleveland	9.3	260.3	276.7	+2.09
Dallas	7.8	246.4	254.4	+-2.94
Denver	8.3	262.0	278.5	+0.25
Detroit	8.9	257.8	270.6	+1.02
Kansas City	8.3	232.4	246.0	-1-1.50
Los Angeles	8.4	261.3	285.9	+1.89
Miami	8.4	254.8	267.4	+1.89
Minneapolis	8.9	258.8	275.1	+1.45
New Orleans	7.9	235.9	250.0	+0.73
New York	10.0	267.4	287.1	+2.70
Philadelphia	8.7	256.0	268.8	+0.07
Pittsburgh	9.1	243.2	258.6	+1.83
St. Louis	8.9	249.6	264.5	+2.63
San Francisco	8.5	327.3	358.2	+3.12
Seattle	8.5	236.1	263.8	+2.67

3. MONEY RATE & BOND YIELDS %



B.	HISTORICAL.	BUILDING	COST	INDEXES	AVERAGE	OF	AT.L.	BUILDING	TYPES	21	CITTES

1941 average for each city=100.0

Metropolitan Area	1947	1952	1957	1958	1959	1960	1961	1962 (Quarterly)			1968 (Quarterly)				
								Ist	2nd	3rd	4th	1st	2nd	3rd	4th
U.S. AVERAGE							1.1								
21 Cities	185.9	213.5	244.1	248.9	255.0	259.2	264.6	265.1	265.9	267.4	268.7	269.4			
Atlanta	190.0	223.5	269.6	277.7	283.3	289.0	294.7	296.5	297.6	298.2	800.6	302.0			
Baltimore	181.0	213.3	249.4	251.9	264.5	272.6	269.9	270.5	272.6	272.4	271.9	272.3			
Birmingham	175.0	208.1	228.6	233.2	233.2	240.2	249.9	249.9	249.9	249.9	250.6	251.3			
Boston	187.0	199.0	224.0	230.5	280.5	232.8	237.5	238.5	239.9	240.4	240.4	240.4			
Chicago	182.0	231.2	267.8	273.2	278.6	284.2	289.9	289.9	289.9	292.6	295.8	296.4			
Cincinnati	178.0	207.7	245.1	250.0	250.0	255.0	257.6	257.6	257.6	260.0	260.0	260.0			
Cleveland	173.0	220.7	258.0	257.9	260.5	263.1	265.7	265.7	268.4	268.4	271.7	272.8			
Dallas	202.0	221.9	228.4	230.5	237.5	239.9	244.7	244.7	244.7	247.7	250.8	251.5			
Denver	187.0	211.8	245.6	252.8	257.9	257.9	270.9	278.1	276.3	275.8	274.8	275.0			
Detroit	158.0	197.8	237.4	239.8	249.4	259.5	264.7	264.7	264.7	267.1	267.1	267.1			
Kansas City	172.0	213.3	230.5	235.0	239.6	287.1	237.1	238.5	239.5	240.8	241.8	242.8			
Los Angeles	180.0	210.3	248.4	253.4	268.5	263.6	274.8	274.3	274.3	278.0	278.6	279.1			
Miami	198.0	199.4	284.6	239.3	249.0	256.5	259.1	259.1	259.1	260.8	262.4	262.4			
Minneapolis	176.0	213.5	235.6	249.9	254.9	260.0	267.9	267.9	267.9	269.5	270.8	271.4			
New Orleans	180.0	207.1	282.8	235.1	237.5	242.3	244.7	244.7	244.7	245.5	245.5	246.5			
New York	181.0	207.4	240.4	247.6	260.2	265.4	270.8	278.5	273.5	276.7	280.4	280.9			
Philadelphia	209.0	222.3	255.0	257.6	262.8	262.8	265.4	265.4	265.4	265.0	265.0	265.6			
Pittsburgh	191.0	204.0	234.1	236.4	241.1	243.5	250.9	250.9	250.9	252.1	253.5	255.0			
St. Louis	191.0	213.1	287.4	239.7	246.9	251.9	256.9	254.0	254.8	256.2	257.3	260.1			
San Francisco	243.0	266.4	302.5	308.6	821.1	327.5	337.4	339.1	340.8	344.5	348.7	350.1			
Seattle	175.0	191.8	221.4	225.8	232.7	237.4	247.0	249.0	251.9	253.7	255.3	256.5			

HOW TO USE TABLES AND CHARTS: Building costs may be directly compared to costs in the 1941 base year in tables A and B; an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.563 times 1941 costs, an increase of 156.3% over 1941 costs. TABLE A. Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second: if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in first city are 25% higher than costs in second. Also, costs in second city are 80% of those in first ($8.0 \div 10.0 = 80\%$) or 20% lower in the second city TABLE B. Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than those of the other. Also, second period costs are 75% of those of the other date (150.0. \div 200.0 = 75%) or 25% lower in the second period. CHART 1. Building materials indexes reflect prices paid by builders for quantity purchases delivered at construction sites. CHART 2. The \$1.20 per hour gap between skilled and unskilled labor has remained fairly constant. CHART 3. Barometric business indicators that reflect variations in the state of the money market



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PANELS DISCUSS INSURANCE, REGISTRATION AT ANNUAL CONSULTING ENGINEERS MEETING

Two major topics aired at the Seventh Annual Meeting of the Consulting Engineers Council, held May 8-10 at New Jersey's Cherry Hill Inn, were liability insurance and professional registration. These two topics were discussed in halfday panel sessions—a departure from previous format.

Insurance Panel

The professional insurance committee of C.E.C. noted that professional liability insurance claims have grown alarmingly; and, commensurately, premiums have increased. In addition a number of insurance companies have ceased writing professional liability insurance. Purpose of the panel discussion was to acquaint the membership with the concept of self-insurance. The advantages and operation of a selfinsurance plan were discussed by F. D. Dodge, insurance consultant, and J. J. Harris, insurance agent.

Action on recommendations of C.E.C.'s professional insurance committee resulted in authorization of: (1) the executive committee to retain an insurance consultant for preparation of a report on self-insurance at such time as it may see fit, (2) the professional insurance committee to engage legal counsel, and (3) the establishment of a national engineering review board to assist consulting engineers in the defense of liability claims.

Registration Laws Panel

C.E.C. recently took strong issue with a new proposal of the model law revision committee of the National Council of State Boards of Engineering Examiners. C.E.C. reports that this proposal, made public in March, would entail the issuance of certificates of authorization to a corporation for the "practice of engineering," after it had met certain conditions regarding its proposed engineering activity.

Panel member John S. Telfair of Florida, commenting as a member of a state examining board, stated that a law which permits the control of engineering practice by nonprofessional people defeats the basic purpose of engineering registration. In his opinion, engineering "certificates" do not provide effective control over engineering practice by ordinary corporations.

While objecting to the concept of ordinary corporations under the control of non-professionals being permitted by law to perform engineering services, C.E.C. has been examining the possibilities of the "professional association." This type of organization, according to Samuel A. Bogan, chairman of the professional associations committee, would have sufficient corporate characteristics to qualify Federal tax treatment as a corporation. while retaining individual professional liability and other characteristics of professional practice.

C.E.C. officers for 1963-1964 are: president, S. K. Fosholt; first vice president, William W. Moore, Calif.; second vice president, Henry A. Naylor Jr.; secretary, S. A. Bogen; treasurer, Harry Czyzewski; immediate past president, Lester Bosch.



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(1) Adrian N. Langius, Michigan regional director, with Mrs. Robert Hastings and Mr. Hastings (new A.I.A. treasurer) of Detroit and Herbert H. Swinburne of Philadelphia. (2) A.I.A. secretary Clinton Gamble, Fort Lauderdale, with Robert F. Marshall, McGraw-Hill vice president and RECORD publisher, and Carroll Everett



(1) Hugh Stubbins of Cambridge, Mass., (retiring) Regional Director Robert M. Little of Florida and Mr. and Mrs. Harold Spitznagel of Sioux Falls, S.D. (2) Mrs. Llewellyn Pitts of Beaumont, Tex., John Stetson, Palm Beach, and (retiring) Regional Director Reginald Roberts, Tex.



(1) Wallace F. Traendly, F. W. Dodge president with Mrs. Traendly and Donald C. McGraw, McGraw-Hill president. (2) Moreland Smith, Montgomery, Ala., Mrs. Ketchie Brassail of the A.I.A. staff, Mrs. Smith and Dean Walter Taylor of Ohio University



(1) Robert Lewis of the Washington Star, Ernest P. Mickel, F. W. Dodge newspapers, and panelist George McCue, St. Louis Post-Dispatch art critic. (2) New York Regional Director Morris Ketchum with A. G. Odell Jr., new first vice president



George McCue (far right) has attentive listeners in (left to right) Mrs. Burnham Kelly, wife of the convention moderator, Mildred Schmertz of the RECORD, Ada Louise Huxtable, Herbert L. Smith Jr. of the RECORD and Sir Basil Spence

is one thing to consider quality in architecture as resulting from the skill of the architect, the good intent of the owner, and thus imply that if all architects were highly skilled and all owners esthetically responsive all would be well. This is not so. . . . Society determines what, and the quality of what, we build. . . . We know today . . . that all our buildings could be designed with beautiful quality if it were society's intent to have us do so."

Or, as Ada Louise Huxtable, New York architectural critic, said, after remarking, in effect, that architectural geniuses *can* rise above the present norm of mediocrity: "There is also the man of talent who offers a more modest combination—taste and competence, two sterling virtues that our society doesn't want. In today's atmosphere his work suffers unending compromise and defeat. A more sympathetic environment might encourage, rather than discourage, his level of production.

"It might," Mrs. Huxtable added, "if the architect had not already sacrificed his status, or if he were not too busy pandering to the debased values which have caused so many of his difficulties. It's a double dilemma: taste and competence, which should be the broad base of all architecture, are victims of the climate of the times, and the architect, in his own words, has 'moved with the times'."

George McCue had some praise for the American public as "a well-meaning and well-disposed client" but he also urged on architects the necessity of educating the public, as "the principal client, at mid-20th century, U.S.A.," to "some glimmer of awareness of architectural values."

Even the scholarly Nikolaus Pevsner reproached the client: "In this country more than Europe, clients tend to be too timid. Clients tend to take from an architect his vision with rather less intense checking of the fulfillment of the brief than they ought to do in order to get what I would call top architectural quality."

To Paul Rudolph and John Johansen, the quest for quality was intensely personal to the questing architect himself. "Quality or excellence in architecture is impossible unless the creative act is embraced," said Rudolph. And: "Expanded services finally boil down to that exhiliarating, *continued on page 304*



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FOUNDATION GRANTS M.I.T. \$5 MILLION FOR ADVANCED ENGINEERING STUDY CENTER

The Alfred P. Sloan Foundation has made a \$5 million grant to the Massachusetts Institute of Technology for the establishment of a center for Advanced Engineering Study—the first of its kind in the world. The new center will give practicing engineers in industry and professors of engineering from other schools the opportunity to attend M.I.T. for a period of formal study to master the new sciences which have emerged since their early education and to work at the frontiers of engineering.

In response to an inquiry by Foundation chairman Alfred P. Sloan Jr. as to the need and opportunity for graduate engineers to increase their competence by intensive education, a study was made under the leadership of Dr. Gordon S. Brown, dean of the M.I.T. School of Engineering. The study reiterated the widely accepted conclusion that the nation today faces a critical shortage of science-oriented engineers with advanced education. It re-emphasized the urgency of rapid and continuous up-dating of the skills of engineers and engineer-managers.

"One of the most effective ways of meeting this shortage is to afford able engineers already in practice or in teaching an opportunity to update their knowledge," said Dean Brown. "There are thousands of engineers in their late 30's or early 40's who studied what was essentially a pre-World War II curriculum. Many of them have had little or no opportunity for sustained advanced study in the scientific fundamentals of new areas of engineering. The establishment of this center reflects a growing demand on our universities to provide advanced education beyond formal degree programs . . ."

Under plans developed for the center, \$2,700,000 of the grant will be used in the construction of a new building designed for the center.

The plan is for a limited number

of engineers and teachers of engineering to be admitted to M.I.T. in the fall of 1964. In the meantime the faculty interested must be identified, new faculty found and added and the curricula developed. It is proposed to schedule one- to two-week courses in specialized fields, 10-week courses in specialized fields, 10-week courses to provide both breadth and depth, and one-year courses to embrace the full benefits from both study of new sciences and active association with the full spectrum of an academic community.

The center will serve the needs of three major groups: engineering managers, technical group leaders and professors in engineering. Students will be selected by application and by nominations from industry.

"The programs must be thoroughly planned and of the highest quality," said Dean Brown, "or they will not provide the leadership in quality that we need."



Western Pennsylvania State School & Hospital; Cannonsburg, Pa. Celli-Flynn, McKeesport, Pa.; Archt. & Engs. John McShain, Inc., Baltimore, Md.; Contr.



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Doors are to open.



CAPITAL FOR UNITED EUROPE PROPOSED



Each urban island of proposed capital would provide a total environment for living, working, playing. Traffic would be separated horizontally, vertically



Airview of Lake Europa: around lake shores would be churches, concert halls, other informal, non-government facilities. Urban islands fan out from lake

J. Marshall Miller, associate professor of planning, Columbia University School of Architecture, has written a book which proposes a new capital for what he sees as the prospective new "nation" of Europe-"Lake Europa, A New Capital for a United Europe." The author, former planning director of Pasadena, Calif., director of the First International Seminar on Urban Renewal held in the Hague in 1958, maintains evidence indicates that within the next few years most, if not all, of the countries of Western Europe will be partners in one economic community. Economic cooperation will lead to some form of political unity, possibly a new European nation. A new nation, says Prof. Miller, will demand a new capital.

He suggests the design of the capital might be the subject for an international competition.

Although the author says his purpose is not to "outline a plan for the physical development of a new city, rather to set forth an idea," he outlines a general physical plan and includes sketches by architect Robert E. Schwartz.

The city, to occupy about 77 square miles, would be located at the junction of Germany, France and Luxembourg. It would surround an artificial lake fed partially by the Mosel and Saar and by waters piped in from major European waterways.

On the lakeshores, non-government facilities—churches, concert halls, parks—would provide informal meeting places. Radiating from the lake would be wedge-shaped urban complexes separated by greenbelts.



Proposed site for Lake Europa: junction of France, Germany, Luxembourg


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EDUCATION NEWS: APPOINTMENTS AND HONORS

Gregory Ain, Los Angeles architect, has been named professor and head of the department of architecture at Pennsylvania State University, effective July 1. Since January, when the architecture department was reorganized as a department of the new College of Arts and Architecture, Philip F. Hallock, professor of architecture, has been department head. Mr. Ain has headed his own firm on the West Coast since 1935.



Miss Katherine McNamara, lecturer on city planning and librarian of the Graduate School of Design, Harvard University, will retire this summer after almost 45 years as administrator and teacher. She is the first woman member of the faculty. At a reception given in her honor. a part of the seventh annual Urban Design Conference held at Harvard in late April, she was presented a gift of money for world travel or any other desire. Along with the gift she received a portfolio with some 100 letters from alumni in various countries inviting her to visit them. Speaking on behalf of the faculty. Professor Reginald R. Isaacs said: "Thanks to Miss McNamara, the Harvard Graduate School of Design boasts the finest and largest collection of city and regional planning and landscape architecture materials in the world."

Jack Tworkov of New York City, one of the country's best known abstract-expressionist painters, has been appointed chairman of the art department of the Yale School of Art and Architecture. His appointment is effective July 1. Mr. Tworkov will hold the faculty rank of Leffingwell Professor of Painting in addition to being department chairman. He will be assuming his duties at Yale during the next academic year when the new \$4 million Art & Architecture Building, now under construction, will be completed.

Academic staff of Harvard University's new Carpenter Center for the Visual Arts for 1963-64 will include: Professor Eduard F. Sekler, historian of architecture-coordinator of studies; Mirko Basaldella, sculptor, director of Harvard's Design Workshop since 1957 -director of design workshops; Robert G. Gardner, known for his anthropological films-lecturer on visual studies and coordinator of the light and communication workshops; Len Gittleman, New York photographer and film-maker-lecturer on photography; Robert S. Neuman, painter and draughtsman now teaching at Brown University -instructor in drawing; Peter D. Shultz, former business manager of symphony orchestras in Chattanooga and Providence-executive secretary.



Tennessee Building, Houston, Texas; Architects: Skidmore, Owings & Merrill; Contractor: W. S. Bellows Construction Corp.

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and about our nationwide consultation service.

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In commercial and community buildings, stores, hospitals, schools, offices and other high traffic buildings, you rarely find DWV copper tubing used for drainage piping. Most likely, it's cast iron soil pipe—chosen for demonstrated dependability. This is a most significant fact to architects, building materials specifiers, builders as well as home buyers.

There can be no thought of compromise with drainage piping dependability where the personal health of one person or thousands are involved.

Beginning with a comparison of wall thickness...the

known performance of cast iron soil pipe under exposure to acids and chemicals in ordinary sewage...and along with other advantages shown at right...DWV copper cannot begin to substitute for modern **G** cast iron soil pipe. These facts are worth remembering when you specify for *any* structure.

To keep these facts before you, let us send you a copy of "The Case for Cast Iron Soil Pipe and Fittings." We'll enclose also, a **Q** Book of Standards (conforming to Commercial Standard CS188-59), and a handy pad of **Q** specification forms. Mail the coupon!



o rarely used "downtown"?



Cast iron soil pipe—a rugged nominal wall thickness about four times that of soft, thinwall DWV copper tubing. You can See... Feel...and Hear the Difference!



Cast iron soil pipe takes household chemicals in stride! Detergents and drain cleaners have little corrosive effect on cast iron soil pipe—even after many years of use.



Cast iron soil pipe is nailproof! Accidental puncture of drain lines or stack can't happen with cast iron soil pipe. Plumber's "snake" does no damage from inside the pipe.



No embarrassing bathroom noises! Thickwalled cast iron soil pipe muffles gurgling water sounds, quiets vibration noise—the sign of a quality plumbing installation. Thinwall DWV copper tubing amplifies sounds.



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8600 LPI troffers illuminate new United Air Lines Training Center and Executive Headquarters



When United Air Lines planned their new Executive Headquarters and Training Center near Chicago's O'Hare International Airport, they naturally wanted top quality lighting. After exhaustive studies, they selected new LPI troffers—8600 of them. The choice was not surprising—LPI engineered lighting was in keeping with the elegant design of the buildings. It provided the quality and smart appearance required. And it more than satisfied United's desire for efficient lighting that would combine high performance, good brightness control, and long life with easy, economical maintenance. During construction, LPI provided on-time deliveries carefully coordinated with the exacting requirements of the installation. What's more, LPI senior project engineers aided the electrical contractor in taking advantage of the many cost-saving features of LPI fixtures. Write for full information on LPI's complete line of fluorescent lighting troffers.



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Seating is part of the theatre. Shouldn't it also be part of the design? Ideally, yes.

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The Stellar Series by American Seating is the first and only seating in its price range to offer you this flexibility, this freedom. We can only begin to suggest the possibilities here. May we send you the details? Write Department AR-2 for our brochure on the new Stellar Series.

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The new Stellar chair has a very long back to protect the seat from feet. There are three variations of the Amerflex® plastic back (left), and two of the upholstered back (right).



Single or double armrests are available. You may choose either.



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DUBLIN DESIGN COMPETITION INVITES ARCHITECTS

The Governing Body of University College, Dublin, Ireland, invites architects to submit designs in competition for the layout of new college buildings and for the design of one block for University College, proposed to be built on a 200-acre site near Dublin. Eligible to enter this international competition are architects of a recognized architectural institute or society. Prizes will be £3,500, £2,000, £1,000 and £500.

Assessors or jury members will be M. A. Hogan, professor of civil engineering, University College, Dublin, chairman; Eoghan Buckley, architect, Dublin; Professor W. Dunkel, architect, Zurich; Professor Kay Fisher, Copenhagen; D. FitzGerald, professor of architecture, University College, Dublin; G. MacNicholl, architect, Office of Public Works, Dublin; and Professor Sir R. Matthew, president, U.I.A., Edinburgh.

The design of one block for the college entails new buildings to accommodate the Faculty of Arts, administration offices and examination halls.

Conditions of the competition, available August 1, may be obtained with a deposit of five pounds from the Competition Registrar, University College, Dublin 2. Last date for returning the registration form is Oct. 17, 1963; last date for receipt of entries, June 1, 1964.

BANNERS FLY IN ART WORLD

A new art medium is being launched officially this month at the Graham Gallery in New York in an exhibition of banners. On exhibit from June 4 through June 28 are banners designed by 10 artists: Richard Anuskiewicz, Al Held, Robert Indiana, Alfred Jensen, Nicholas Krushenick, Marisol, George Ortman, Leon Smith, Andy Warhol and Jack Youngerman.

The gallery asked each artist whose one-man show is current to design a flag which is to hang outside the building during his exhibition.

Banners in the present showing are a maximum of 5 by 7 feet, come in editions of 20, sell for between \$300 and \$400 each.



Jack Youngerman

Walter Rosenblum photos



Alfred Jensen

Construction Details

for LCN overhead concealed door closer installation shown on opposite page

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Closers concealed in head frame

Immaculate Conception Convent, Peoria, Illinois Brooks-Miller/Rubinelli, Architects LCN CLOSERS, PRINCETON, ILLINOIS Application Details on Opposite Page



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Alexander Memorial Arena Building, Georgia Tech, Architect: Aeck Associates, Atlanta, Ga, Contractor: R. F. Knox Company, Inc., Atlanta, Ga.



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• Corrulux HONEY-CORR (fiber-glass-reinforced Lucitet acrylic sirup) in cool colors is used for the sliding wall panels of the dining room above and the same Honey-Corr pattern is repeated as ceiling paneling around the perimeter of the room. In the church window, Honey-Corr in warm tones is used to create a stained glass effect.



Honey-Corr consists of a core (in honeycomb, ringlet or rosette pattern) faced on both sides with flat, translucent sheets which can be clear, or tinted for still more color variation. Colors used within the core cells can be warm or cool, plain or "jeweled." These elements can be varied in many ways to meet your decorative requirements.

• Corrulux TRANSLUCENT FIBER GLASS PANELS (fiber-glass-reinforced acrylic modified polyesters) in a corrugated configuration and a yellow color are used for the patio overhang outside the dining room and flat panes in clear Maxlite color are used in the church window. In addition to flat and corrugated, you can choose from 13 other configurations ... 30 "locked-in" colors ... smooth or Granitized finish.



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• Corrulux PVC PANELS (polyvinyl chloride) are used for the outdoor patio windscreen, with the same design and material carried indoors as part of the room partition. PVC Panels are rigid... and are available in 3 types: transparent, translucent and opaque. Translucent panels in yellow were selected for this residential design.

• **Corrulux LIGHT SHELLS** (cast acrylic) are slightly vaulted to give the room ceiling a 3-dimensional effect. These offwhite lay-in Light Shells efficiently diffuse soft light throughout the room. Still other types of translucent ceiling panels are available from Johns-Manville.

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ARCHITECTURAL AWARDS AND FELLOWSHIPS ARE ANNOUNCED Jon Adams Jerde of Los Angeles, now completing his fourth year design program in the University of Southern California's School of Architecture, has been named the Architectural Guild's 1963-64 traveling fellow. He will use his \$3,500 award to travel and study in Europe, focusing his attention on the old cities of southern France and Spain.

Mr. Jerde was one of 10 applicants in the annual competition,



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judged by a jury consisting of Robert Field. Architectural Guild vice president; architects Herman Ruhnau and Charles Luckman; and U.S.C. faculty members Crombie Taylor, associate dean, and Robert G. Anderson. Mr. Jerde's competitive displays for the fellowship ranged from architecture through ceramics and painting to sculpture.

Edward Charles Bassett of San Francisco has been named by the National Institute of Arts and Letters to receive its Arnold W. Brunner Memorial Prize in Architecture for 1963. The award, a citation and \$1,000 prize given annually to an architect who shows promise of contributing to architecture as an art. was to be conferred at the Joint Annual Ceremonial of the National Institute and American Academy of Arts and Letters. Mr. Bassett was educated at the University of Michigan and Cranbrook Academy of Art. Since 1960 he has been with Skidmore, Owings & Merrill as a partner.

Donald E. Evenson, Laguna Beach, Calif., is winner of the 40th Francis J. Plym Fellowship in Architecture; William P. Milbratz, Skokie, Ill., is winner of the 29th Francis J. Plym Fellowship in Architectural Engineering.

Plym Fellowship appointments are the result of competitions open to graduates of the University of Illinois department of architecture in the general and engineering options. They carry a cash value of \$3,000 to be used in six months of foreign travel for the study of architecture.

Architects Milo H. Thompson, Cambridge, Mass., and Richard S. Weinstein, New York City, are among 14 recipients of Rome Prize Fellowships for 1963-64. The fellowships, for one year each, beginning Oct. 1, 1963, carry \$3,000 and free residence, studio or study, library and other facilities at the American Academy in Rome.

Mr. Thompson is currently at work on his Masters in Architecture at Harvard Graduate School of Design and is working part time for Carl Koch and Associates in Cambridge. Mr. Weinstein is at present with I. M. Pei and Associates, New York.

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The ninth Annual Architecture and Gardens Tour of Japan under the directorship of Kenneth M. Nishimoto, A.I.A., will leave from Los Angeles or San Francisco on October 6, 1963.

This deluxe 25-day tour will visit all buildings of architectural significance and gardens of renown, both old and new. An attractive feature is a daylight cruise through the famed Inland Sea. Pre-arranged conferences with Japanese architects will give members an opportunity to exchange views with Japanese colleagues. A special posttour extension to Hong Kong is also planned.

Early registration is urged, as membership will be limited to 25. For descriptive brochures, write Kenneth M. Nishimoto, A.I.A., 263 South Los Robles Ave., Pasadena, Calif.

EXHIBIT ON ANNAPOLIS IS AVAILABLE

"Historic Annapolis," an exhibition tracing that city's historical and architectural development from the late 17th century to the present is now available for loan from the Smithsonian Institution's Traveling Exhibition Service. It consists of 13 double-faced, free-standing panels. each 48 inches by 42 inches. Contained are photographs of old newspaper clippings, maps and prints and up-to-date photos. The photographs of extant city residences, state buildings and churches by Mr. Marion Warren, who has an architect's understanding of the subject. highlight the fine quality of the stone masonry and wood carving.

Historic preservation groups and university and college departments of architecture and other interested parties may write for further information to Mrs. John A. Pope, Chief, Traveling Exhibition Service, Smithsonian Institution, Washington 25, D.C.

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PRATT INSTITUTE CLASS OF 1913 HOLDS REUNION

The architectural class of 1913 of Pratt Institute, Brooklyn, N.Y., held its 50th consecutive annual reunion in early May. Class members include a number of architects, many of whom remain active in the profession.

Among the 1913 graduates are: J. Gerald Phelan, president of Fletcher-Thompson, Inc., architects and engineers, Bridgeport, Conn. and Clifton, N.J.; James J. Bevan, retired supervisor of new construction for the Metropolitan Life Insurance Company, Mount Vernon, N.Y.; W. Roderick Wheeler, architect, Maplewood, N.J., formerly associated with the New York firm of Polhemus & Coffin; John F. DeNiff, architect with Voorhees, Walker, Smith, Smith & Haines, New York; Leslie M. Dennis, whose twin sons are associated with him in the practice of architecture in Elizabeth, N.J.; Vladimar H. Paulsen, Jersey City, practicing architect and former member of Zeigler, Childs & Paulsen; Garrett S. DeGrange of Dover, N.J., a retirement government architect at Picatinny Arsenal in that city; Stephen H. Hart, formerly of Irvington-on-Hudson, N.Y., now residing in Florida, who was associated with Lord & Burnham; Leon A. Chagnon, who is retired after 34 years as a Veterans Administration architect in charge of hospital design; Harold A. Hayden, practicing architect in Bristol, Conn.

Some of the members of the 1913 class chose fields related to architecture. Raymond D. Ritchie, Norwalk, Conn., a former member of the Board of Directors of Pratt Institute, is a retired general contractor. Fred Schneeweiss, Paterson, N.J., was until his retirement assistant construction manager of the George A. Fuller Company. Carlton P. Gesner formerly headed his own equipment firm in Connecticut. Max P. Bottstein, New York City, was with J. Marks & Bros., architectural metals and glass firm, until his retirement. Clarence M. Ernst conducts a real estate business in Brooklyn.

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loseph W. Molitor photos

Low walls and pitched roofs framing an old spire suggest a European country village

MODEST DORMITORIES FOR A COUNTRY PREP SCHOOL

The new buildings for St. Paul's School, designed by Edward Larrabee Barnes, have an air of quiet domesticity and a studied lack of pretention which only high architectural dexterity can achieve St. Paul's campus is informal in plan with buildings rather widely dispersed over gently sloping ground enhanced by many fine old trees. The new dormitories were added to an environment which consisted of simple frame houses of Victorian vintage or earlier, in contrast to a Gothic schoolhouse and chapels. The campus was originally built along a country road (see plot plans on page 128), but a number of the older structures which had formed the core had been torn down and later buildings were added on the periphery. Thus the campus had no heart. Barnes determined that the new dormitories should serve as a link between a Gothic schoolhouse, a Victorian rectory and an old cylindrical ice house. (See plan on opposite page.) These elements now form a chain facing the old chapels and pond across the street, providing a unity and architectural definition which the campus had lacked.

The style of life at St. Paul's is simple; its faculty is accustomed to living in the old frame houses and the boys expect Spartan quarters. Boston is miles away, and the atmosphere is country, with no overtones of expensive suburbia. The gentle scale and materials of the new buildings suit the school's concept of what it is. It would have been easy to overplay the rustic theme, but St. Paul's is no farm, and with creative restraint Barnes has given a unique architectural expression to the quiet manner of this old New England institution.

The boys at St. Paul's are carefully watched over by certain masters whose dwellings are located at strategic points in the dormitory complex. In the plan on the opposite page, the dark-toned rectangles are masters' houses. The slope makes it possible for them to contain two stories above a garage. The lighter tones indicate smaller master penthouse apartments which are one-half level above the dormitory corridors and occur at the changes of corridor level which adjust to the slope of the street. (See section on page 132) The supervisory role of the occupants of these spaces is well expressed both functionally and symbolically by the raised location.

Each vertical window marks one student room. The windows which are tilted rectangles under the eaves illuminate masters' spaces.

The buildings combine bearing wall and wood frame construction. All walls, corridor floors, terraces and walks are of red brick with dark mortar. Flat roofs are built up and covered with a red brick gravel. Sloping roofs are oiled copper. Boys' dormitories and Masters' housing for St. Paul's School, Concord, New Hampshire ARCHITECT: Edward Larrabee Barnes, A.I.A., Richard R. Moger, associate-in-charge STRUCTURAL ENGINEER: John Mascioni MECHANICAL ENGINEER: Arthur C. Trombly, Northern Heating & Plumbing Co. LANDSCAPE ARCHITECT: Stanley Underhill, A.S.L.A. CONTRACTOR: E. W. Howell Co.


Steep slope makes it possible to relate three-story masters' houses to one story dormitory



Shaded areas indicate high elements. Darker tones define masters' houses, lighter tones the common room and master penthouses



Front entrance to master's house with dormitory wing at left

Old and new site plans show how new dormitories bring cohesion to campus



 e^{2}

2. Rectory

÷

- 3. Chapels
- 4. Schoolhouse
- 5. Old buildings removed or to be removed
- 6. Gates closing old street
- 7. New dormitories



View from rear. Steps at left lead to street. Narrow vertical slot in master's house illuminates stair hall

Street facade. Circular element at right is old ice house. Pitched roof at center is over master's penthouse





Left: Because of its scale, materials and finish, the master's stair hall nicely accommodates rugs and fine antiques. Below: Boys dormitory corridor has brick floors and stairs, and has been designed to resist wear and tear. Stair to master's penthouse is at right





Some of the tilted rectangular windows are bisected by partitions within



Section showing corridor levels, and master's penthouse placed for control





Each dormitory room is planned to hold either a bed, desk, movable wardrobe and comfortable chair for one boy, or two beds and two wardrobes for two with two desks and one chair in the adjoining room. Vertical windows provide adequate light, frame view and are a reminder that the ribbon window is not necessary



Portion of black and white drawing by Helmut Jacoby made of ink line and Zip-a-Tone shown full size

ARCHITECTURAL DRAWING FOR PRINTING BY HALFTONE





Opposite page top: Black and white ink line and Zip-a-Tone rendering by Helmut Jacoby of Indianapolis Competition House which he designed. Full size portion shown on preceding page. It has been reproduced by regular halftone using a 120-line screen which is this magazine's standard. Below: A "combination cut" of a Jacoby drawing which required for maximum effect a plate which was part line cut, part halftone. The engraving was a little more than double the cost of an ordinary halftone which would have had a light gray tone in the areas which are white in the original and as reproduced here. The subject is the interior of a town house by Leonard Feldman *Above*: Diagram of copying camera showing art work, lens, halftone screen and film negative. The coarseness of the screen is greatly exaggerated. The image on the film negative is shown as it will appear after development. (Drawing and caption from "Printing and Promotion Handbook" by Daniel Melcher and Nancy Larrick, published by McGraw-Hill Book Company)



Only for certain kinds of drawing is reproduction by line the appropriate method. For all other kinds, some type of halftone is almost always required. When the architect who has a knowledge of the graphic processes makes a drawing expressly to be seen in print, he will probably use one of the media suitable for line work. When he considers it most important that a drawing be at its best in its original state, many other choices will determine his use of media, and if the drawing is ever printed, a halftone will probably be essential.

In black and white printing, the basic difference between line and halftone is in the way each reproduces shades of gray. A drawing to be printed by the line process can consist of no grays at all, merely black ink line on white paper, or in portions of the drawing the black ink is made to enter the gray scale by built up cross hatching or single strokes of varying density and thickness. Shading tints such as Zip-a-Tone which reproduce as line are another way of adding the gray scale. Other drawing methods suitable to line work were discussed in the first article of this series "Architectural Drawing for Printing Processes" (February 1963, pages 137-144).

In the halftone, tiny black dots produce the gray range in proportion to their density on white or light paper. The fewer the dots, the lighter the gray and vice versa. Available for transfer to the half-tone plate, some to remain, others to be etched away, are the 22,500 dots per square inch in a 150-line screen, or the 4,225 dots per square inch in a 65-line screen. There are 50, 85, 100, 110, 120 and 133 line screens with their proportionate number of dots. In letterpress coarser screens (50 to 100) are used to make the halftones which are to print on rough papers like newsprint; 100- and 110-screen halftones can be printed on machine finish or supercalendered paper, but finer screens than this demand coated paper. In photo-offset lithography finer screens do not require smooth, harder surfaced papers, but look well on uncoated stock. Offset is excellent for wash drawings and pencil sketches. Line work, on the other hand, reproduces well on any kind of paper suitable for printing.

It is possible by halftone to achieve a far more subtle gradation of grays,

ARCHITECTURAL RECORD June 1963 135



especially with finer screens on expensive coated paper, than is possible by the line process. Tone blends into tone, it is continuous, and there are no hard edges except where wanted. The line method, however, produces a true black or a true white and if the original is a vignette, so is the printed version.

A drawing made in any of the techniques suitable for line reproduction can be duplicated exactly. The ordinary halftone, however, is a rectangular block defined by the screen. The white surface of the paper which is part of the drawing becomes a light gray in the halftone. A vignetted (or silhouetted) halftone in which white areas have the same relations to grays and blacks as they do in the original requires special procedures on the part of the engraver. So does the production of a true black.

What is required is that the platemaker alter either the film negative or the plate or both to achieve the true black or white. After the drawing has been transferred to the film negative in the form of a pattern of dots produced by an intervening screen, the negative is affixed to a metal plate treated with chemicals which respond to light. In the letterpress process, where light passes through the negative an acid resisting surface is created. This is the raised surface which prints black. The surface eaten by the acid does not touch the paper. In photo-offset lithography light passing through the negative to the plate creates a

surface which will receive ink; that part of the plate unreached by light accepts only water, rejects ink and does not print.

For a true white the engraver must fill in or "opaque" on the negative the dots through which light would otherwise pass to create a printing surface on the plate. He may also "rout out" or "deep etch" unwished for dots on the plate itself. For a true black he must, on the plate before it is etched, alter the areas which are to print darkest with an acid resisting coating to cover the acid receptive dots transferred by the screen.

These procedures double or triple the cost of the plate, depending on how many tricks are involved. Such operations are never used to improve a newspaper halftone, and except in special cases they are not requested by the art directors of the architectural magazines.

A halftone is not necessarily any better for vignetting or reproducing the solid blacks or whites of an original, but where such improvement is possible, only the producers of expensive books, or brochures or advertisements demand it. What does this mean to the architect who is making a drawing to be printed? Simply that he should consider where and how it will be reproduced. If engraving, paper and printing cost is no problem, he should know the full range of possibility which the halftone offers, and take advantage of it. If cost is a problem he should make sure that the quality and punch of his drawing does not depend on effects that will not be captured in the regular halftone. If he knows, for example, that the drawing he is making will appear principally in the coarse screen halftones of the newspaper, he should realize that subtle gradations of tone will be lost and simplify his gray scale tonal transitions and detail.

All the drawings shown as examples are by Helmut Jacoby, the brilliant German born artist whose work is known to everyone in the architectural field. Except for his work for advertising agencies which is done with color process in mind, he is most frequently asked to make a fine drawing as a thing in itself. His work has been selected to demonstrate how his manipulation of a delicate range of tonal values from black to white makes beautiful use of the resources of the halftone. Jacoby uses color sparingly. He often begins by doing a complete line drawing in black ink on white cardboard. When this is completed it is photographed and from this copy a line cut can be made to fill some future need. Then translucent gray tones are applied to the drawing by airbrush as are translucent colors. The basic ink line remains visible. Like the great draftsmen of any age Jacoby often fully develops in shade, shadow, highlight and color only a part of the drawing, in his case always the building, while trees, people, cars, roads and grass are defined only by the original ink line and the lightest continued on page 140

Architectural Drawing for Printing by Halftone

Drawings by Jacoby in pencil on tracing paper of Lincoln Center Plaza preliminary design done by Philip Johnson in 1958 and rejected. Although in many cases the best reproduction of pencil drawings requires a "highlight" or "dropout" halftone in which white areas in the original are white in reproduction, these drawings were made with an over-all pencil tone within a rectangle, and lend themselves admirably to printing by regular halftone in the letterpress process. Pencil drawings in which backgrounds must remain white are best reproduced by photo-offset lithography









Drawing by Jacoby in ink line and airbrush on white cardboard of house designed by Charles Goodmann & Associates, shown as it would appear in a 60-65 coarse screen of the type used for news print, (opposite page top); as a line cut where preferred (opposite page bottom); as a regular 120-screen halftone as used in this magazine (left); and as a "highlight" or "dropout" halftone (below). The latter costs exactly three times as much as a regular halftone of the same size, and was made to reproduce Jacoby's use of pure white to express the concrete cornices





ink line and airbrush on white cardboard, of the new addition to the Museum of Modern Art, designed by Philip Johnson and now under construction. Each sculpture in the museum's garden was photographed from the viewing point at which the drawing was made, printed at the proper scale and pasted in position. The drawing is reproduced here as a regular halftone

continued from page 136 of gray tones.

Jacoby draws in pencil also, and will use black ink and Zip-a-Tone, but he prefers translucent to opaque paints, and avoids tempera which he feels to be too clumsy a medium to express the precisions of contemporary architecture.

It is possible that the more flamboyant uses of tempera by some commercial renderers causes Jacoby and his architect clients to recoil from a medium which when used with skill and restraint, has long provided a fine way to render buildings. Other halftone media not shown are ink line in combination with wash and pastel.

-Mildred F. Schmertz



Louis Reens photos

UNIFIED DIVERSITY IN A WHOLE-FAMILY COMMUNITY CENTER

Hartford Jewish Community Center West Hartford, Connecticut OWNER: Hartford Jewish Community Center Murray Shapiro, executive director Irving Stich, chairman, building committee ARCHITECTS: The Architects Collaborative Norman Fletcher, partner in charge Alan Chapman and Leonard Notkin, job captains ELECTRICAL-MECHANICAL ENGINEERS: Fred S. Dubin Associates THEATER LIGHTING AND EQUIPMENT: George C. Izenour CONTRACTOR: Associated Construction Co., Inc. SCULPTURE: Harris and Ros Barron Dr. Walter Gropius made the following statement about the general concept of this building at the outset of design: "The well-organized community center becomes a social nucleus and a place of cultural growth giving direction and stimulus to group effort. At the same time it enables each individual in the various age groups to attain, through active participation, his full stature within the community. Community centers have proved to be of vital importance to the human development of members and to their active participation in the administrative and cultural tasks of a modern democracy. The basic thought, then, should give direction to the design conception of a contemporary community center. Utility and beauty are constitutional qualities and are mutually interdependent. If the human element is the dominant factor for the design of a building, then the building will function two ways, physically as well as psychologically. We can then create the necessary flexibility of the building, adaptable to the everchanging life-activities of all its users."

This sense of unified human diversity and strength pervades the whole Hartford complex. It is strongly stated in its rugged materials, contrasting enclosures, massive detail. It is perhaps subtly echoed in the theme of sculptured fascias: Genesis I.



Necessary integration of new buildings with an existing, rather undistinguished brick colonial structure, together with traffic and parking problems on a long rectangular site, led to a T-shaped circulation in the new building, encompassing four basic areas of activity: social, theater, athletic and administrative. Stem of the T is the social wing in which a second-floor teenage lounge forms a generous portecochere over the nursery entrance at one side of the drive and the main entrance at the other. A suite of small club rooms over the nursery is joined by an enclosed ramp at second floor level to meeting rooms in the old building. At the other end of the youth lounge are larger club rooms directly over and serving interests of the adult lounge, which is on the first floor off the main lobby. The lobby and administration offices separate the theater wing, at street front, from the gymnasium wing at the rear. Art exhibit alcoves are provided along outside walls facing the drive







Hartford Jewish Community Center

Athletic facilities consist of a gymnasium, exercise room, swimming pool, squash and handball courts. For adults there is a health club with steam and dry heat rooms, massage and lounges. Access to health club facilities on the second floor is by way of a ramp and walkway that doubles as balcony for the gymnasium.

The theater wing provides for activities in drama, music, arts and crafts. The theater itself is arranged so that a movable forestage can be pulled out to convert from proscenium to Shakespearean or arena productions. Spotlights can be operated through clefts in hung acoustical ceiling. Block walls have a pattern of recessed blocks for further acoustical treatment









To withstand heavy usage of an ambitious program, exposed concrete and rugged materials were used. Water-struck red brick in exterior walls blends with the old building and is a color and texture foil to the white concrete of strongly expressed framing. Heavy pan-slab overhangs jut out between paired columns. Ribbed slabs give texture and character to soffits and ceilings. Occasional heavier slabs over major entrances have monolithic scuppers cantilevered off the ends. Deep 5-foot concrete beams form the upper terminations of theater, gym and pool blocks, providing depth for relief concrete sculpture which appears as a recurrent theme (the Seven Days of Creation) cast in varied combinations into these giant fascias. Interior walls are basically lightweight concrete blocks left exposed and unpainted. Alternating 8- and 4-inch coursing gives character to the walls, and a glazed tile base reduces maintenance.

Functions of theater and gym, demanding little sun and much wall, are expressed as solid containers with narrow windows in contrast to the open and well-illuminated interiors of the social wing. Activity blocks are essentially complete and independent organisms brought together like city blocks by common roof lines and details





A HOUSE THAT EASILY CONVERTS INTO A DUPLEX

Adding a short wall adapts Frank Luwis' home into two units





Robert Lautman photos



ARCHITECT AND OWNER: Frank Luwis LOCATION: Falls Church, Virginia CONTRACTOR: Lake Construction Co.

This trim little house neatly solves one of the recurrent problems of planning—that of devising a scheme that is suitable for the variations in family arrangements as the years go on. When children are young and growing up, sufficient bedrooms, and a family room and spacious kitchen are necessities; but as children marry and leave home more compact quarters are usually more appropriate for the parents.

The plan here includes four bedrooms and two living areas, in a symmetrical arrangement permitting division of the house down the center by the addition of a short partitioning wall in the middle of the kitchen. The entrance hall then serves as a foyer to the two units.

The symmetrical scheme, together with a modular wood frame, also lent itself to faster erection and economical construction. During construction, the house was "closed in" in $21/_2$ days, with four men on the job. The total cost (without lot, landscape and furniture) was \$22,500 for the house with 1,912 square feet, and a garage of 560 square feet.

The site is a bit over an acre and heavily wooded. The garage was placed at the front of the house to create a more intimate entrance court, and the main rooms oriented to the woods at the rear via glass walls and a central, roofed terrace or patio. Walls at the sides are largely blank for privacy. Daylighting for the kitchen and baths is supplied by plastic skylights. The service and utility rooms are arranged to form a central spine.







ELEVATION B

The structure of the Luwis house is a Douglas fir frame on a reinforced concrete slab and foundation. The exterior is sheathed in panels of grooved plywood, as can be seen in the north and east elevations shown here (see plan on the preceding page for reference letters). The flat roof is built-up 5-ply. Wood casements and sliding doors are used throughout most of the house.

The interiors are finished with walls of painted gypsum board and mahogany paneling, floors of vinyl asbestos, aluminum hardware. The heating-cooling system uses a gas counterflow furnace and air conditioner, with floor registers. Kitchen and baths also have exhaust fans for ventilation



ELEVATION A



SPACE PROGRAM HAS INFINITE VARIETY

The \$800 million budget for design and construction of ground facilities for the National Aeronautics and Space Administration in fiscal 1964 (beginning July 1, 1963) is for warehouses, cafeterias, laboratories, engineering and administration buildings, a satellite attitude control systems test facility (\$1.23 million), a space environment research facility (\$3.60 million), alteration of "space power chambers" (\$5.66 million), Advanced Saturn static test facilities (for the moon rocket engine, \$55.13 million), and for Advanced Saturn Launch Complex No. 39 (\$217.22 million), one building in which will contain the largest enclosed cubage in the world. There will be something for everyone. It will be spread throughout the 20-odd NASA centers across the nation. Almost all of it will be designed by private architectural and engineering firms.

And there is more. As NASA director James E. Webb pointed out to the Senate Space Committee in his defense of a \$5.7 *billion* over-all space budget for fiscal 1964, more than 90 per cent of the agency's work will be performed by private industry and universities. Industry has already responded with many new space-related engineering and laboratory complexes. And there are several new university buildings under design financed directly by research grants issued through NASA's university support program.

Design work for NASA, except for master planning of new centers, is contracted directly by each center as program and funding are approved. Many centers have developed staffs who select and deal with architects and engineers. At other centers, the District Engineer of the Army Corps of Engineers acts as NASA's construction management and contracting agent. Procedures are described in ARCHI-TECTURAL RECORD, January 1963, and in a booklet, "Selling to NASA," available from the agency. Design work for support industries and universities is, of course, handled through conventional channels.

Government-architect relationships, although somewhat formalized by statute, are basically similar to relationships between architects and private clients. There are, however, many NASA installations which require extreme technological and management capability in both design and construction. Hence, the roster of firms participating in design includes almost every size and kind of both design and design-constructor organization.



S-II Test Stand designed by Aetron for Marshall Space Flight Center's Mississippi Test Operations will hold thrust of moon rocket firmly on the ground



Also for the Marshall Space Flight Center is this laboratory and headquarters office facility now under design by Wyatt C. Hedrick



Central flight control and range operations buildings at Goddard Spaceflight Center designed by Voorhees Walker Smith & Haines



Where NASA installations are





Under design for Houston's MSC are: a Flight Acceleration Facility (*above*, *left*) by Ford, Bacon & Davis, with Mc-Kiernan-Terry and Raytheon consulting, which houses giant centrifuge (*left*) duplicating G's of moon-shot takeoff for 3man crew; also (*above*) an Integrated Mission Control Center by Kaiser Engineers with innards by Philco and I.B.M.

But no firm accepting an architect-engineer contract for design is eligible even to bid on construction of the same project.

This policy has resulted in some interesting professional alignments of every degree of complexity. For example, design credits for the Manned Spacecraft Center in Houston appeared as a 5-inch column of names in the January RECORD article. Here, the prime A-E design contract was with Brown and Root, engineers and constructors, but with a proviso for architectural capability to be furnished, in this case, by Charles Luckman Associates and a limited partnership of four Texas architectural firms, MSC Architects, with Mace Tungate Jr., as administrative architect. (Since that time, the design roster at this one center has grown considerably. A sampling of current work is illustrated above.)

Somewhat the obverse of the Brown and Root-Luckman-MSC Architects alignment, but a similarly massive aggregation of design capability, is the group of firms headed by architect Max O. Urbahn which is currently designing the world's largest enclosed cubage known as the Saturn V Vertical Assembly Building shown opposite.



Advanced Saturn C-5 Launch Complex 39 at Merritt Island near Cape Canaveral will include vertical assembly building by URSAM (above and on opposite page) out of



which a 2,500-ton crawler will carry checked-out C-5 and tower over steel road across sand to launch pads. Pad A and crawlerway (*above*) by Giffels and Rossetti



Saturn V Vertical Assembly Building Merritt Island, Florida

OWNER: National Aeronautics and Space Administration

OWNER'S AGENT FOR DESIGN SUPERVISION: Col. J. V. Solohub, district engineer, Jacksonville District, Corps of Engineers

ARCHITECTS-ENGINEER: Urbahn-Roberts-Seelye-Moran a four-firm venture operated by a board consisting of one principal from each firm:

Max O. Urbahn, managing partner for the group, from The Office of Max O. Urbahn, Architects; Anton Tedesko, from Roberts and Schaefer Co., Inc. (structural);

A Wilson Knecht, from Seelye Stevenson Value & Knecht, Inc. (civil, mechanical and electrical);

Philip C. Rutledge, from Moran, Proctor, Mueser & Rutledge (foundations)

Col. William D. Alexander (Ret.), Group project manager

STRESS ANALYSIS: Simpson Gumpertz & Heger Inc.

CONSULTANT ENGINEER: Harvey F. Pierce

SATURN V VERTICAL ASSEMBLY BUILDING

• VAB will enclose 125.5 million cubic feet, largest man-made cubage in the world. (Great Pyramid of Cheops, incumbent champion, is 91.6 million cubic feet; the Pentagon, 77.)

• Height over high bay area is 524 feet. Area of high bays is 513 by 418 feet, sufficient to contain four erection bays for vertical assembly of Saturn C-5 and umbilical tower standing 360 feet high over a launch platform under which a crawler lift must be inserted to transport whole assembly to a launch pad three miles away.

• Low bay area is 256 by 437 feet for subassembly of upper stages of C-5. Total area, with laboratories, workshops and cafeteria for 2,500 employes, will be 9.6 acres.

• Doors on high bays will be 456 feet high; 152 feet wide at bottom, 76 feet wide at top. They will be built in telescoping sections to enable opening in winds up to 63 miles per hour. Four bottom sections, weighing 125,000 pounds each, will pull back into walls. Seven upper sections, weighing over 50,000 pounds each, will lift into alcoves near the roof. Only one door may be opened at a time, a precaution against wind damage in the building.

• Some 45,000 tons of steel will go into framing. Concrete-filled steel pipe piling will drive 150 feet below grade to bedrock. Columns for the high bay area will contain one of the largest steel beam sections ever fabricated in America, weighing 426 pounds per linear foot.

• Building is designed to withstand winds up to 125 miles per hour.

• Height of bays creates a climatic problem, because it is possible that clouds may form within the building and rain begin to fall. To prevent this, insulated roof is used, and all inside air will be replaced by ventilation at least once every hour. Over 10,000 tons of air conditioning will be used in work areas.



One kind of university participation in the space program is this research building by Skidmore, Owings & Merrill for the campus of Rensselaer Polytechnic Institute. It is one of at least five such research facilities that will be built on various U. S. campuses under NASA's university support program



Another university activity is this design study of lunar shelters completed by architectural and industrial design students at the University of Cincinnati for the Aeronautical Systems Division of the Air Force Systems Command at Wright-Patterson Air Force Base. Shelters are inflatable foamed segments

Experiences of firms in qualifying for and then dealing with assignments for NASA echo, sometimes with amplification, the familiar frustrations and rewards of conventional practice. The Urbahn-Roberts-Seelye-Moran venture is an example—although it should be noted that no experience in the space program can be called typical.

Having worked together in conventional consultation on various projects, the URSAM firms decided, in the summer and fall of 1961, to register their combined design capability with NASA by submitting the necessary forms. The following winter, they put together specific proposals aimed at NASA projects. In the spring, six principals from URSAM firms made tours of all NASA centers. They then submitted a brochure exhibiting past work and present potential. They continued their visits to NASA centers to review feasibility reports and criteria for specific programed facilities. One of these was the Saturn V Vertical Assembly Building.

Recital of these adventures implies no criticism of the system. It merely outlines the dimensions of the qualifying process and underscores the need for some familiarity with the more fruitful channels of procedure.

A similarly large-scale reminder of familiar exigencies *after* the design contract is let is implicit in the not-exceptional history of the Integrated Mission Control Center at the Manned Spacecraft Center in Houston.

Primary function of this building is to direct, manage, calculate and record all aspects of all space flights from pre-launch ground support through flight operations to recovery and de-briefing. First concept of the building was presented to NASA by Philco's Western Development Laboratory. Kaiser Engineers was then retained to complete the conceptual design and proceed with plans and specifications. It is to be a three-story structure divided into an operations wing (illustrated at top of page 152), an administration wing and interconnecting lobby.

Owing to limited availability of design funds(!) and shortage of time, A-E work was to proceed on an incremental basis. First increment was the conceptual design plus working drawings and specifications on foundations and structural steel, awarded to Kaiser on July 21, 1962.

Second increment brought the design to 30 per cent completion. Phase three was to complete final review drawings. Review comments by NASA and COE were handed to Kaiser for inclusion in drawings and specifications on January 15, 1963. Meanwhile site work and foundation construction were proceeding.

At the 70 per cent stage, Kaiser had estimated the over-all cost of the project at \$10,700,000. NASA indicated this to be about \$550,000 over current budget and suggested listing some less critical items as additive alternates.

There is no need to fill in or color this sketchy outline of the work. The implication is clear. Work for the space program is vast and varied and has all the rewards of demanding work anywhere. The headaches, too, can be vast. But there is comfort in the fact that some of them derive from the same budgetary cares that confront every architectural practice. The giant dollar figures do not mean undisciplined, free flowing largesse for anyone.

Combinations of talent derived from many firms acting on a single contract such as those described in connection with some of the facilities at Houston and Canaveral, are not by any means the only workable method of coping with the demands of space age architecture. Those particular combinations developed out of unusual sets of technological requirements and business circumstance. There are many instances where a single firm is more than adequate for NASA requirements. Certain buildings at all centers are done by smaller architectural offices. And one large firm, Voorhees Walker Smith Smith and Haines, took in stride most of the A-E design work at Goddard Space Flight Center. There are other instances where firms have brought their design forces up to meet requirements as opportunities presented themselves. The experience of DMJM illustrates this. See opposite page.



Full spectrum of the possible effects of the missile and space programs on architecturalengineering practices is represented in this sampling of space-oriented jobs done by a single firm, Daniel, Mann, Johnson, & Mendenhall. These examples underscore the design opportunities both in private space industries and in the austere enclosures of launch facilities that nonetheless may push forward the present state of the construction art. They mark, also, the paces of the firm toward what Philip J. Daniel has described as an expanded architectural practice.

Beginning in 1946 with the addition of engineer Mendenhall to the firm, DMJM undertook designs for the military, some of which required opening of offices abroad. Scope of assignments engendered a management capacity out of which feasibility studies, site analyses and operational programing developed as natural services.

With entry into space program consultation, design capabilities were added in cryogenics, biophysics, mathematics and biochemistry comprising a whole systems division. Mr. Daniel says: "The architect and engineer faced with design requirements of the space age needs a whole new set of background technologies. In fact they may have to learn technologies as they develop, and they may have their work further complicated by the potential nightmares of concurrency."

DMJM PROJECTS shown are:

1. Titan missile emplacement "hardened" to withstand nuclear blast

2. Science center for Nortronics Division (with John Rex, consulting architect)

3. Aeronutronic Division of Ford Motor Co.

4. Sonic fatigue test lab, Wright-Patterson Air Force Base

5. Blockhouse, Atlas ICBM complex, Cape Canaveral, houses computers

6. Douglas Missile & Space Systems Division space science center









Brigadier General T. J. Hayes III, assistant to the Chief of Engineers for NASA Support, points out that, while much of the construction for the space program is utilitarian in treatment, and esthetics frequently are secondary, even such structures as test stands and launch towers tend to have a rugged beauty of their own. Moreover, in the programs at many NASA stations, there is not quite the stark simplicity that might be inferred from the utilitarian objective. "Although there is a basic requirement that NASA should get the most possible for its construction dollar, some centers are, in fact, show places and are viewed by many visitors. Hence, architects and engineers may not overlook human values of scale and appearance. The Manned Space Craft Center, for example, has somewhat the appearance of a college campus."

General Hayes emphasizes that, although the primary concern of District Engineers or NASA center directors in selection of an architect-engineer firm is its technical capability, every firm that participates is intrigued by the program and puts forth its very best design effort. Results of this effort show in the end product whether it be a test stand or demonstration building.

It has been found that many projects must be designed according to data which are, in fact, an advancement of the state of the art. Participating firms, therefore, are learning many kinds of advanced technologies. While there is an initial requirement for evidence as to the ability of a firm to initiate a design, and there is little opportunity for either the corps or NASA to perform a teaching function, the technical resources of both are well organized and available to competent firms. Many problems are resolved through conference between the architect-engineer and government specialists.

For example, the doors on the Vertical Assembly Building now being planned for Complex 39 at Cape Canaveral were to be 456 feet high. They were to resist winds of hurricane force and be capable of operation under all weather conditions. It was the task of the architect-engineers to develop alternate solutions which were reviewed with Corps of Engineers and NASA specialists for selection of the finally approved design.

Technical feasibility, says General Hayes, is only one of the criteria brought to bear. A complex facility involves many problems which might be solved by engineering methods, but the requirement that a solution be the most economical and least time-consuming imposes a duty of closest examination and cooperation.

"Chief character of the space program is its challenge to the ultimate capabilities of the design and construction industry," says General Hayes. "Each hurdle is overcome as it occurs, and the industry responds with good performance. We have not yet found an insurmountable obstacle in this program."



A SPACE RESEARCH CENTER

Nortronics Palos Verdes Research and Development Cent. Palos Verdes Peninsula, Los Angeles County, California

OWNER: Nortronics Division of Northrop Corporation

ARCHITECTS—ENGINEERS: Charles Luckman Associates H. B. Wilson Jr., partner-in-charge Peter Munselle, project designer M. C. Lewis, project architect





One of a new kind of research and development facility is this combination of scientific retreat and space technology laboratory. Like most such, it has a large, landscaped site near centers of education and divides its architectural attention between spaces designed to encourage study and spaces to house experimental equipment.

Principal design feature is complete built-in flexibility and expansibility to respond to the everchanging criteria of space program research. The design concept was formed around the research and development team idea. Teams are assembled in buildings, and buildings in turn are grouped around a central mall on terraced levels. Parking is terraced conveniently and unobtrusively into the hillsides near each group of buildings. On the highest knoll is a celestial observatory; trademark, perhaps, of the center's concern with astroinertial guidance and space systems.

Present development phase includes four officelaboratory buildings, one floor each, with folded plate roofs, variously grouped around a two-story administration building of steel frame with glass wall enclosure. Total present floor area is 120,000 square feet. Ultimate development will be 350,000 square feet distributed among nine structures on the 50-acre site. Irregular site and ultimate arrangement of buildings are shown opposite.



The Architect IN PRACTICE: Space Program







ENGINEERING BUILDING

Essential flexibility for space research is apparent in open, often interchangeable lab and office areas. Certain fixed facilities, however, must be integrated into plans. The isolated block, for example, for optical-mechanical testing is adjoined by air-locked machine rooms and sterile areas. The environmental test area, another fixture, is adjoined by shaker rooms with inertia blocks. These immovable enclaves are arranged for minimum restraint upon flexibility and expansibility of buildings. Basic pattern of lab-office buildings is shown in longitudinal elevation and cross section (right) with 30foot office areas along outside walls surrounding higher, 40-foot lab area in center. Folded roof over labs permits over-ceiling housing of an "air tunnel" for multiple utilities serving labs at any point



ENVIRONMENTAL TEST LAB



BUILDING TYPES STUDY 321

STORES

NEWEST THINKING ON STORE DESIGN

Store design today is based upon a totally different set of ideas than those prevailing only a few years ago. According to current thinking, the best way to stimulate sales is to display merchandise in an enriched setting or background that will lend glamour or apparent value to the stock. The concept of letting the merchandise speak for itself in a plain setting has been replaced by the more realistic view that merchandise itself is difficult to evaluate; even professional buyers will often have difficulty in separating \$9.95 and \$12.95 items when the tags are removed. But to display merchandise in a stylish salon or against a tastefully decorated background is to say something positive about it, enhance it, and interpret the taste level of the store to the customer. And customers-often unsure of their own judgment—like to be reassured that the store can be depended upon to have good taste, and that fashion, price and quality are right. Shoppers have demonstrated that they will prefer the store with an air of fashion rightness and authority; and fashion is the most potent incentive to buy. The owners of promotional stores-where fashion is not as strongly in control-have also adopted the idea of providing an attractive, light, gay atmosphere in which to display and sell, and have thereby increased sales volume.

This character should extend to the total visuality of the store in its setting, and be expressed by the exterior as well as interior. The well-designed store compliments the customer by its convenience, amenity and good architecture; evidence that the store owner is interested in the shopper and is doing his utmost to enhance the shopping experience. Customers will tend to favor the store that satisfies a natural liking for interesting form and color, enriched surfaces, and an air of luxury.

Several years ago, when this merchandising philosophy was first recognized, it was reflected in more elaborated interiors set within quiet, unimaginative exteriors. The growth of the regional center influenced this trend; stores often chose to subjugate their exteriors to the total picture. But more recently, a reaction has set in, and store exteriors are attempting to express store "character" by plastic form, structural visuality, decorative grills, multi-colored tile walls, etc. In handling such elements, it is enough to say that architects will be well advised to err on the side of restraint and simplicity. Design for the successful store will skillfully combine interest and restraint, gaiety and repose, style and conservatism.

Editors note: This text was prepared with the collaboration of architect Daniel Schwartzman, and the ideas were set forth by him during several conversations

NEW BRANCH FOR BALTIMORE DEPARTMENT STORE

Located several miles north and west of downtown Baltimore, this attractive department store suburban branch is designed to express the ideas of architect Schwartzman as set forth on the preceding page. Specifically, the aim here was to give the shopper an impression of dignity and substance, yet to avoid any air of stuffy conservatism. To this end, the exterior of the building is carried out in offwhite, with walls of split-face brick relieved at the entrances by panels of quartz-aggregate cast stone in a ribbed pattern. The two-story portico entrance (right) faces on the mall; the picture (above)shows the sides of the building facing the 4,000-car



Blakeslee-Lane photos

The Hecht Company, Reistertown Road Plaza Baltimore, Maryland ARCHITECTS AND ENGINEERS: Abbott, Merkt and Company ASSOCIATE ARCHITECT: Daniel Schwartzman LANDSCAPE ARCHITECT: W. Lee Moore parking area. Note how the simple form of the building is skillfully enriched by textured surfaces; a process too easily overdone, but handled here with the proper degree of restraint.

The two-level building comprises a complete department store and restaurant with a total area of 160,000 square feet, and is one of the two anchors at the ends of an interior mall, 50-acre shopping center containing 650,000 square feet of retailing area. The upper level of the Hecht store is devoted to fashion wearing apparel, miscellaneous departments and restaurant; the ground level to home furnishings, budget apparel and auto accessories—the latter with adjoining outdoor sales area.





Ben Schnall photos



In conformity with today's thinking on retailing, the interiors are designed to provide attractive—and in some cases luxurious—decorative settings for the merchandise. Fullest use is made of a high-level over-all lighting, with accents for special areas and departments. Note how sales areas have been broken up into shops, with resulting better scale and a more intimate atmosphere. The general tone of the interiors is light in key; effective use is made of natural wood, light bronze, crystal and gay colors. Graphics combined with decorative motifs play a very important role in setting the stage for sales. Note also the variety in floor coverings and ceiling treatments as one moves from department to department


WEST COAST DOWNTOWN STORE ON ONE LEVEL

This unit—newest in the Joseph Magnin chain—is designed as an integral part of the Kaiser Center's large complex of stores and offices in Oakland, California. This latest store makes a decided contrast with the old multi-level operation in Oakland, as it consists of a large selling area—22,000 square feet —all on one level. Although bigger than the old store, the new one deliberately accentuates the single level idea. Entrances located on opposite sides of the selling space accommodate shoppers arriving from the street or from the multi-level parking building at the rear of the store. These points of access were purposely offset in plan to avoid creating a corridor of pedestrian traffic across the central



Morley Baer photos

Joseph Magnin Store, Kaiser Center Oakland, California ARCHITECTS AND ENGINEERS: Victor Gruen Associates R. L. Baumfeld, partner in charge GENERAL CONTRACTOR: McDonald, Young & Nelson



part of the sales area. A positive effort was made to eliminate all solid partitions of ceiling height, exclusive of those around the perimeter of the store, in order to further the "one space" idea. An exception had to be made in the case of a central duct shaft, which became a pivotal mass consisting of a cluster of key merchandising departments. A necessary change in floor elevation also occurs at this point, although the level of the ceiling is continuous throughout.

The interiors of this store (right) hold special interest for the fact that they are decorative and at the same time architectural in character. The predominant color is a neutral beige tone; natural wood is widely used; accents of bright color enliven the interiors at strategic points.







NEW BUILDINGS AT NORTHLAND IN DETROIT

These two new buildings—one occupied by Best & Co. and the other accommodating 13 stores and service outlets—have recently been opened, and constitute the first major expansion of the well known Northland Center since it was opened nine years ago. The total number of tenants at Northland now stands at 124. Both new buildings have been designed in conformity with the original expansion plans for the center and represent one-half of ultimate expansion.

Best & Co. is the second store at Northland to occupy a separate building designed specifically for its own use; the original one being the J. L. Hudson Co. department store. The new store contains 18,000 square feet on one level, plus a service basement of



Lens-Art photos

Best and Co., Northland Shopping Center Southfield, Michigan ARCHITECT: Frederick Stickel Associates MECHANICAL AND ELECTRICAL ENGINEERS: Hyde and Bobbio STRUCTURAL ENGINEERS: Clifford Holforty Associates LANDSCAPE ARCHITECTS: Eichstedt-Grissim Associates GENERAL CONTRACTOR: A. J. Etkin Construction Company approximately one-half that area. The building which was constructed over the existing truck tunnel—is designed to express its free location and separate identity but at the same time conform to the general character of the other stores. The exterior is of matching face brick with precast concrete canopies and facing at the roof line. There are three entrances to the Best & Co. store; one on the mall and two from the adjacent parking area.

The other new tenant building (*bottom*, *right*) contains 31,000 square feet at ground level, plus a basement of 28,000 square feet, and was designed to follow closely the original buildings. The two new buildings serve to create a new mall space, with the Best & Co. main entrance at its termination.



SACRAMENTO DEPARTMENT STORE LOOKS INWARD

This store is notable for the fact that its merchandising—at least in the visual sense—is confined to the interior; while the exterior of its enclosure makes a simple, yet pleasing statement. The operation of the store was planned as a first step; two levels of merchandising arranged against a blankwalled periphery—with circulation central and the chance to use outer walls to the full extent for storage and to back up displays. The exterior walls were made less severe by facing them with a light colored, rock-faced concrete block for texture, and by vertical recessed panels at main entry points. There are but a few feature display windows, carefully locat-



Julius Shulman photos

Hale's Arden Fair Sacramento, California ARCHITECTS: Charles Luckman Associates STRUCTURAL ENGINEERS: Brandow & Johnson ELECTRICAL ENGINEER: Chauncey E. Mauk MECHANICAL ENGINEER: J. L. Hengstler LANDSCAPE ARCHITECTS: Cornell, Bridgers & Troller GENERAL CONTRACTOR: Heller-Nielsen Construction Company ed. Exterior walks and planting enclosures are a combination of white terrazzo and colored concrete.

The interiors—which use graphics and decorative accents effectively—were the responsibility of the architect, who designed fixtures, murals, etc., in collaboration with the store planning division of the owner. Note how the exterior wall texture has been echoed inside (right); interior floors are variously of oxychloride terrazzo, vinyl or carpeting; the general tonality of interior spaces is high-keyed, with natural wood extensively used, set off by spots of vivid color. The store is air-conditioned by a group of packaged units, four to a floor, each handling a quadrant of space. Three square feet of parking are provided for each foot of sales area.



PARKING DECKS COMBINED WITH FLORIDA STORE

This new six-story building in the Jacksonville Downtown Center—built by Purcell's specialty shop —devotes the ground floor and mezzanine areas to retailing, and the five levels above to parking. Those who park in the building can take elevators that give them direct access to either the store or the street. The 400-car parking decks are partially enclosed by cast stone grills which serve to hide the automobiles from view and at the same time provide ventilation. Vertical panels of polished granite extend the height of the building to tie the elements together and act also as identifying signs that mark the entrances. It is interesting to note that the hand-



ire Georges photos

Purcells (and Park Central Garage) Jacksonville, Florida ARCHITECTS, BUILDING: Ketchum and Sharp ARCHITECTS, INTERIORS: Morris Ketchum Jr., and Associates ENGINEERS: Smith, Hardaker & Huddleston MECHANICAL ENGINEERS: Frank B. Wilder & Associates CONTRACTOR AND DEVELOPER: S. S. Jacobs Company PARKING: National Garages, Inc. some facade (*top*, *right*) has none of the stark or forbidding qualities one tends to associate with parking structures.

The sidewalk display windows are set back 11 feet from the building line, in order to create a shaded arcade for window shoppers. The interior of the shop is arranged as a series of informal sales areas of open character, which flow into each other yet give the entire store a more intimate scale. Interior colors are soft, and in the cool range of the spectrum due to the Florida climate. Ceiling heights are changed slightly from area to area; while the teenage department has a lowered floor and mezzanine overhead. A shopper's lounge, beauty salon, and executive offices are located on the mezzanine.



TWO UNUSUAL CALIFORNIA SUPERMARKETS

The new supermarket at Millbrae (two photos at right) was designed by the architects as a complete "package" that included space planning, circulation patterns, graphics, and area identification—as well as the shell of the building. Architect Donn Emmons explains: "The first problem was to minimize the vast, 32,500-square-feet area, and the design we worked out goes back to the 'farmers' market' type of operation; a series of small shops housed under one roof, with each shop having its own identity. Shops were marked visually by the use of special forms, variations in ceiling heights and treatment, and a variety of materials such as glazed brick, mosaic tile, natural wood, etc. The special areas given visual emphasis were: delicatessen and meat; liq-



Karl H. Reik

Safeway Stores Montclair (Oakland) and Millbrae, California ARCHITECTS: Wurster, Bernardi and Emmons STRUCTURAL ENGINEERS: Gilbert, Forsberg, Diekmann & Schmidt MECHANICAL ENGINEERS: G. L. Gendler and Associates ELECTRICAL ENGINEERS: Le Leeuw, Gather & Co. GENERAL CONTRACTORS: MacDonald, Young & Nelson (Millbrae) Williams & Burrows (Montclair) uor; bakery and snack bar; and frozen food. "The snack bar and bakery (bottom, right) were placed near the entrance to attract drop-in trade. A curved canopy of vertical redwood strips was dropped from the ceiling; the curved counter repeats the free-flowing curve of the canopy; special lettering helps to mark the area. To minimize congestion, aisle widths were increased 30 per cent over previous stores, and space was left around special shops."

The supermarket in Montclair (*above*), designed by the same architects, posed the problem of a steeply sloping, limited site. The solution was to build the new structure against property lines on three sides, supported by tilt-up retaining walls. Roof deck parking augments that possible at ground level; an elevator connects the roof and the market below.





WOOD AND STONE LEND WARMTH TO PITTSBURGH STORE

This branch store for Kaufmann's of Pittsburgh is located 12 miles north and east of that city on a site formerly occupied by an outdoor movie and lying adjacent to an existing strip center. The exterior achieves a notably successful "suburban" look by good scale and the use of Pennsylvania fieldstone, natural wood and copper. The pictures (right) show the principal entrance facade and a detail of the lath treatment as it envelopes the restaurant area. The main entrance facade has a fieldstone wall topped by a simulated mansard roof of patinated copper with standing seams. The lath treatment is



Photos courtesy of John Graham & Co.

Kaufmann's Monroeville, Pennsylvania owner: The May Department Stores Company ARCHITECTS, BUILDING: John Graham & Co. ARCHITECTS, INTERIORS: Welton Becket and Associates CONSULTING MECHANICAL ENGINEER: Robert E. Hattis (for the May Co.) TESTS AND RECORDS: Pittsburgh Testing Laboratories of stained oak vertical strips, spaced to admit sufficient sunlight for plants. The use of familiar materials which are frequently associated with residential architecture gives the store a friendly, sympathetic quality particularly appropriate to its suburban site.

The picture (*above*) shows the store from the opposite side, which features a garden store. Note how wood is used to enclose the garden store, and how this element is tied to the lath treatment by means of an open wood parapet railing. Such a device provides the necessary continuity between elements without adding extra visual "weight" to this wing.



SOUTHWEST CENTER REMINISCENT OF OLD MEXICO

This medium-sized center, located near the Mexican border, consists of three large tenant buildings flanking a mall that leads to the department store and restaurant; includes also a separated unit for supermarket, service stores and bank. The threestory department store contains 189,000 square feet of sales area; the restaurant includes a coffee shop and dining room, seats 177 persons.

Of particular interest is the influence of the region upon the design vocabulary, which includes many materials and motifs of Mexican origin, especially apparent in plaza and mall (*right*). All colors for



Sheedy & Long photos

Vista Plaza Shopping Center Chula Vista, California OWNER: Broadway Hale Stores, Inc. ARCHITECTS: Charles Luckman Associates STRUCTURAL ENGINEERS: Brandow & Johnston MECHANICAL ENGINEER: J. L. Hengstler ELECTRICAL ENGINEER: F. E. Van Sickle CIVIL ENGINEERS: Lawrence, Fogg, Florer & Smith LANDSCAPE ARCHITECTS: Cornell, Bridgers & Troller GENERAL CONTRACTOR: Del E. Webb these areas are in tans, browns, terracotta and offwhite. A typical tenant building (top, right) has continuous 10-foot cantilevered canopies, tan broken-face brick parapet walls, and white concrete fascia and columns. The main mall (bottom, right) features an outdoor eating area about 20 by 60 feet. This area—to be serviced by the adjacent cafe—includes a Mexico City lampost, olive trees, 12- by 12inch concrete floor tile in traditional tan and terracotta pattern, and a decorative enclosure wall of tile and brick. Overhead, an intermittent pattern of steel and redwood trellis provides both sun control and a welcome feeling of shelter.



ATTRACTIVE UNIVERSITY BOOKSTORE

One would expect a campus bookstore to have a character in keeping with other campus buildings, avoiding a strictly commercial look. To this end, the architects for this building have enclosed it in a symmetrical form for repose, and have sheathed it in the same Yankee textured brick used for nearby structures. The brick is laid in pattern for visual interest, and carried through to the interior in certain areas. Since the principal campus area overlooks the bookstore, its roof was kept as clear as possible to enhance its appearance from above. The site, restricted in size and sloping in contour, made a split-level arrangement of spaces suitable. A cafeteria lunchroom is located at the level of entrance.



William Beal photos

Book Store, University of Utah Salt Lake City, Utah ARCHITECTS: Woolley and Mohr STRUCTURAL ENGINEERS: Coon and King MECHANICAL ENGINEERS: Hardy and Naylor ELECTRICAL ENGINEERS: Blomquist and Brown LANDSCAPE ARCHITECT: Karsten Hansen GENERAL CONTRACTOR: Maurice B. McCullogh Company a general sales area 4 feet above, and book sales 4 feet below. The third, or lower level, is devoted to storage and mechanical equipment. The preferred location above grade was given over to the general sales area because such merchandise makes for browsing and impulse buying. Alcoves around the perimeter of this area create spots of interest for shoppers (right). The book sales area—below grade —has a luminous ceiling, since daylight enters this space only near the entrance.

This air-conditioned store is supported by a structural steel frame; has terrazzo floors in heavy traffic areas, vinyl asbestos elsewhere. The architects designed all the store fixtures and movable furnishings used for the display of merchandise.



ORIENTAL THEME FOR WEST COAST JAPANESE STORE

The oriental look of this store on Los Angeles' Wilshire Boulevard is designed to serve as an advertisement for the high quality Japanese merchandise for sale within, according to architect Welton Becket. The blend of oriental forms and modern American store design is skillfully handled; the exterior features white tapered precast columns that rise 60 feet to form a series of arches. The wall, set back from the columns, is of floor-to-ceiling glass panels at ground level, of vermilion-colored Japanese glass mosaic tile at second floor level, and of architect designed shoji screen-like windows across the third floor. Long cylindrical lanterns of frosted glass are suspended in each bay to form a dotted line of



Marvin Rand photos

Seibu Department Store Los Angeles, California OWNER: Seibu Corporation, Tokyo, Japan ARCHITECTS AND ENGINEERS: Welton Becket and Associates STRUCTURAL ENGINEER: Donald Douglas ELECTRICAL ENGINEERS: Michael Garris and Associates GENERAL CONTRACTOR: C. L. Peck light along the Boulevard facade. The principal entrance is protected by a vaulted canopy, as is the side elevation. White ceramic textured tile is used for the side walls (*left*), while the panel over the canopy repeats the use of vermilion tile and the shoji windows. The entrance from the parking area (used for access to the restaurant at night) is reached by a walk through a Japanese garden. This entrance—considered important due to the large percentage of customers arriving by car—has a canopy, turnaround driveway and spacious lobby. Store interiors are purposely understated, in order to focus attention on the high quality and elegance of the merchandise. All lighting, interior and exterior, was designed by the architects.





An unusual feature of the four-story structure is the restaurant, located on the roof, and surrounded by a landscaped reflecting pool. The restaurant is reached by a bridge which links it to a penthouse containing a cocktail lounge, foyer and elevator lobby. Diners are offered a dramatic view of the Hollywood hills from the glass-enclosed dining room, which is designed as a teahouse, and surrounded by a terrace sheltered by the overhanging roof. The interior will accommodate a total of 106 persons in both Japanese and American style seating, and features a soft, quiet atmosphere spiced by touches of olive green and vermilion.

The quality of the store's design was recognized on opening day by the presentation of an award from Los Angeles Beautiful, a civic group

Architectural Engineering

Psychology in Building

A series of articles to help the architect understand the mental reactions of building users through the experience of psychologists, market researchers and social investigators was initiated by the Architects' Journal (London) in the March 6 issue. Their objective is to provide the architect with an analysis of the factors governing human reactions to the environment, other than those resulting from measurable physical effects. The author of the article on social psychology, John Noble, who is an architect with the Ministry of Housing Research and Development Group, points out that normal consciousness, perception and thought can be maintained only in a constantly changing environment; when there is no change, a state of "sensory deprivation" occurs. This, he says, is the psychological basis for deliberately creating varying conditions in buildings.

Educational Program for Creative Engineers

Rensselaer Polytechnic Institute has announced a major revision in its engineering program to establish a Professional School of Engineering, distinct from existing graduate school facilities. During two years of graduate study, students will concentrate in a single area of engineering, but it is intended that the traditional fields will be replaced by a functional curriculum including such fields of specialization as materials, engineering management, transportation and systems design. One of the major aims of the revised program, according to Rensselaer's Dr. A. H. Nissan, is to produce "creative engineers."

Abracadabra Each day's newspaper seems to have a new abbreviation for a scientific or engineering method; a new technical, trade, professional or government organization. To help its friends keep abreast of space-age abbreviations, the Raytheon Company has now published the second edition of ABRACADABRA, a space-age glossary. ABRACADABRA, which has about 1,300 terms, stands for *AB*reviations and *R*elated *AC*ronyms *Associated* with *D*efense, *Astronautics*, *Business* and *RA*dio electronics.

Eddy Currents Can Make Structures Vibrate Physicist Dr. Theodore von Kármán, internationally recognized aeronautical expert who died last month at the age of 81, developed a theory in 1911 which is used today as part of the wind analysis of unusual bridge and building structures. This theory, known as the Kármán Vortex, was applied to the investigation of the Tacoma Bridge failure. Dr. von Kármán pointed out that the designer had not planned for the turbulent eddies produced by high winds hitting the bridge, which caused it to whip and jump, and finally collapse. The Kármán Vortex principle is applied to the wind analysis of tall flagpoles, and, quite recently, was used in the wind investigation of Saarinen's Gateway Arch now being built in St. Louis.

Joint Sealant Behavior

There may be several ways of improving joint-sealing materials and techniques, according to a technical paper, "Geometry of Simple Joint Seals under Strain," presented in the Building Research Institute's Publication No. 1006, "New Joint Sealants: Criteria, Design and Materials," \$12. According to the author, Egons Tons of M.I.T., thin membrane or tape sealants may be beneficial in eliminating or diminishing the "necking down" of the sealant in a joint. Also, he states, a sealant which follows the volume changes of the joint without "necking down" would be valuable. His evidence indicates that a joint seal would have added reliability if, instead of being tensioned through most of its life, it could serve under compression, without stress reversals.

This Month's AE Section BOOTSTRAP HEATING WORKS IN CHILLY TORONTO, page 184. LIGHT IN THE RIGHT PLACE FOR STORES, page 187. WHAT BELONGS IN A FOUNDA-TION INVESTIGATION, page 190. BUILDING COMPONENTS: Foamed Plastics for Flat Roof Insulation, page 197. Products, page 199, Literature, page 200.

BOOTSTRAP HEATING WORKS IN CHILLY TORONTO

Heat pump salvages Btu's from lights, equipment, people in 15-story professional building

By R. T. Tamblyn, R. T. Tamblyn and Partners, Ltd., Consulting Mechanical Engineers

There is no conventional boiler in the Toronto Professional Building, now under construction in Canada, because more than enough heat is available from lights, equipment and people to provide heating—even down to -5 F. The salvaging of heat from internal zones for use at zones needing heat, usually at the perimeter, has come to be known as "bootstrap heating."

The reason this technique is possible in the Toronto building is that the building has only one-third as much heat loss as that of a conventional building of the same size, due to insulated walls, double glazing and lower ventilation rate (see box on opposite page).

The only time auxiliary heating is needed is during unoccupied periods, and this is furnished by a direct-resistance electric water boiler.

In bootstrap heating the refrigeration system acts as a heat pump. Office building air-conditioning systems often have separate piping circuits for the core of the building and the perimeter zones. Useful heat may be gathered by the heat pump system in cooling the interior zone of the building and picking up heat from fans and pumps, lavatory exhaust, elevator and transformer



rooms and the compressor motor of the heat pump system, itself.

Designed as a medical-dental center, the building will have professional suites for doctors and dentists, laboratories and operating rooms for minor surgery. A 5-ft module was chosen for flexibility in locating partitions.

The north and south longitudinal facades of the building from the second to the 15th floor consist of undulating curtain walls with dark gray heat-absorbing glass windows and gray glazed spandrels separated by black-quartz-faced concrete channel sections. The east and west end walls are insulated precast concrete panels. Windows occupy 38 per cent of the perimeter wall. A typical floor is 55 by 190 ft with 50 per cent of the net rentable area in the 12-ftdeep perimeter office band.

Conditioned air for the perimeter zone is supplied by induction units, one unit located in each 10-ft bay. The interior zone of the building is air-conditioned by a low pressure system using a ventilating ceiling.

As has been mentioned, the principal source of heat in a bootstrap system is waste heat from lights and equipment. But two questions must be answered when bootstrap heating is being considered:

1. How is the building to be heated during unoccupied periods when there is little or no waste heat?

2. How is surplus heat rejected during occupied periods when outdoor temperatures are not severe?

These questions can be answered by examination of two alternate systems for office buildings. System 1 is the one used for the Toronto Professional Building.

System 1. Heating for unoccupied periods is provided by a 1,000-kw electric boiler. The water is brought up to 200 F at night so that reserve heating capacity is available for "false loading" of the water chiller in the morning. This compensates for the lag in heating effect of the lighting system.



BOOTSTRAP SYSTEM 1. During occupied periods, the water chiller of the heat pump system picks up energy from the center core of the building and from equipment rooms for reuse at the perimeter. Electric boiler provides heat for nights and weekends



BOOTSTRAP SYSTEM 2. Difference between this system and the one above is that it has a hot water tank with sufficient capacity for storing surplus building heat to take care of unoccupied periods. Electric heater makes up the balance if needed



	Conventional Bldg.			Insulated Bldg.				
tem	Factor	Mbh	Btu/ sq ft	Factor	Mbh	Btu/ sq ft		
Glass	1.13	2645	14.70	0.65	1520	8.43		
Wall	0.25	1120	6.22	0.10	448	2.49		
loof	0.18	144	.80	0.10	80	.44		

.07

31.95

53.74

12

1150

3210

.08 cfm/sq ft

.07

6.38

17.81

12

5750

9671

.4 cfm/sq ft

HEAT	GAIN	TABLE	
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ltem	Value	мьн	Btu/ sq ft
People	900	180	1.0
Fans, Pumps, Misc.	154 kw	526	2.92
Lavatory Exhaust	5000 Cfm	108	0.60
Elevator Room, Trans. Room		238	1.33
Heat Pump	100 kw	341	1.89
Lights	85 per cent of 783 kw	2260	12.55
Total		3653	20.29

How Toronto Building is Insulated

Other

Inflt.

Total

1. All windows above the ground floor are double-glazed, with gray heat-absorbing glass on the exterior and clear sheet glass on the interior.

2. Spandrel panels are enameled tempered glass having a $\frac{1}{2}$ -in. air space behind the glass, followed by $2\frac{1}{2}$ in. of rigid glass-fiber insulation fastened to a 16-gage galvanized steel back-up.

3. The 6-in.-thick precast concrete panels on east and west facades are insulated with $2\frac{1}{2}$ -in. rigid glass-fiber insulation, and are set between steel studs which are backed by $\frac{1}{2}$ -in. foil-backed gypsum board.

4. Precast concrete mullions for the glass curtain wall are insulated with $1\frac{1}{2}$ -in. cellular glass insulation backed by $\frac{1}{2}$ -in. gypsum board.

5. Roof and balcony areas are insulated with 2-in. expanded polystyrene foam board.



Cost of Bootstrap Heating Compared with Other Fuels

Location	Fuel	Dollars per Million Btu
Toronto	Electricity	3.95
	Natural gas	1.28
	No. 2 Oil	1.25
	No. 5 Oil	0.93
	No. 6 Oil	0.86
	Bituminous coal	0.86
	Bootstrap No. 1	0.86
	Bootstrap No. 2	0.47
Chicogo	No. 5 Oil	0.94
	No. 6 Oil	0.85
	Bootstrap No. 1	1.44
	Bootstrap No. 2	0.69
New York	No. 5 Oil	0.86
	No. 6 Oil	0.66
	Bootstrap No. 1	2.14
	Bootstrop No. 2	1,04

Cost of power for bootstrap heating in various areas. Assumes office building requiring 300-400 tons of summer cooling, using ½ of capacity to distribute heat in winter. Also assumed are 500 kw of lighting and 100 kw of mechanical load

Surplus heat may be rejected by: (1) discontinuing pick-up of salvage heat; (2) increasing the ventilation rate; (3) using the cooling tower to remove heat from the refrigeration condenser.

Both System 1 and System 2 use an oversized condenser with separate circuits for summer cooling and winter heating in order to make operation of each of the cycles as efficient as possible, and to prevent cooling tower water from entering the closed piping loops.

Hot water for the primary airheating coils and the induction unit soils is obtained from a water loop run through the refrigeration system condenser. Cold water is obtained from the water chiller.

System 2. This system is similar to System 1, except that a large hot water storage tank has been added. Such a storage tank would be sized to contain sufficient heat between temperature limits of 50 and 100 F, to satisfy demand for a period of from 12 to 24 hr.

During occupied periods, the storage tank stores surplus waste heat. During unoccupied periods, the tank may furnish heat directly if the water temperature is high enough, or through operation of the heat pump if the water temperature must be elevated.

An electric water heater is still used for emergency heating and to supplement the system when the storage tank runs out of heat on long weekends and during severe weather.

Conventional vs. Bootstrap Costs

The study of initial costs indicated that savings in boilers, chimney and floor space equalled the cost of extra insulation, double condenser for the refrigeration system and the special electronic air cleaning.

The operating cost study indicated that the unit cost of 86 cents per million Btu based on the use of No. 6 oil could be equalled by the bootstrap system.

Heating costs were calculated to be \$6,200 per year for the bootstrap system and \$13,480 per year for the conventional system

Power Costs for Various Areas

The map shows power costs for bootstrap heating in various parts of the United States and Canada.

Bootstrap heating can be considered for office buildings when power costs are less than 1.5 cents per kw hr and where the cost of fossil fuels is not extremely low.

Buildings should be fairly large to use this system for several reasons. First, in small buildings the infiltration loss represents as much as 10 per cent of total heat losses; whereas, in large buildings it may be as low as 1 per cent. It might be expensive to make up infiltration losses in small buildings with a bootstrap system. Second, with small buildings it may not be possible to justify the cost of designing a bootstrap system.

It is tremendously important that a minimum fresh air ratio be employed in a bootstrap job. The recommended ratio of 0.4 cfm per sq ft would require in northern climates an additional 7.5 watts per sq ft of energy over a building in which only a requisite 0.08 cfm per sq. ft is provided. Approximately 0.03 cfm per sq ft is required for washroom exhaust. An additional 0.05 cfm per sq ft is required in a sealed building to maintain pressurization. Since 0.08 cfm per sq ft is not sufficient for odor control, it is necessary to use some system such as electronic particle and odor filtration in the air supply system to maintain cleanliness and to keep the air free of smoke.

A detailed account of the various cost factors involved in bootstrap heating for office buildings was presented by R. T. Tamblyn in the ASHRAE Journal, April 1963.

Toronto Professional Building. ARCHI-TECTS: Gilleland & Janiss; B. J. Arnold planning consultant; Dr. Eugene Janiss, partner in charge of design. STRUCTURAL ENGINEERS: M. S. Yolles Associates, Ltd. MECHANICAL ENGINEERS: R. T. Tamblyn and Partners, Ltd. ELECTRICAL ENGI-NEERS: G. E. Mulvey & Co., Ltd. GEN-ERAL CONTRACTOR: Doyle-Hinton, Ltd. and Perini, Ltd.

LIGHT IN THE RIGHT PLACE FOR STORES

Good store lighting puts the accent on the merchandise; avoids distracting elements

By Alfred Makulec, Store Lighting Specialist, Large Lamp Department, General Electric Company

The real principles of lighting for selling have changed very little in the past three decades. What *is* new is the greatly increasing awareness and understanding of these principles. This has been abetted by the development of new light sources and lighting equipment. The basic objective of store lighting must be to improve the merchandising program, rather than simply to illuminate the interior of the building.

Four Factors in Store Lighting

There are four factors involved, and it's important to note that no one of these is isolated from the others. For example, more illumination is *not* necessarily better unless it's applied in the right place and with reasonable visual comfort.

First of the functions of lighting is to render things visible. In the store, the visibility of merchandise should reach a level that permits fast, accurate buying decisions. Visibility is influenced by the amount of light and its directional distribution. More light, in general, renders details more visible. In addition, a concentrating light distribution (incandescent downlighting, for example) tends to reveal the form, texture and polish of surfaces more effectively than diffuse lighting (of which the extreme is the luminous ceiling). But to provide the amounts of light that make difficult details easy to see everywhere in the store is expensive, as is the use everywhere of incandescent lighting, which is low in efficiency and high in heat content. The obvious answer is to provide for visibility where it's needed, thus varying brightness patterns.

The second important factor in store lighting involves choosing light sources that render colors favorably. This means, in most cases, using incandescent lamps or two specific fluorescent lamp colors, deluxe cool white or deluxe warm white. Fluorescent lamps have many attributes that suit them to store lighting, not the least of which is the



Merchandise displays are the brightest objects in this clothing area. Fluorescent troffers with wedge-shaped louvers are almost as dark as the ceiling



Brightest areas in this jewelry store are the showcases. Chandeliers add a bit of sparkle; provide general lighting. Downlights follow pattern of counter units



While luminous areas are still being used in store ceilings, generally they are smaller in size than past years. Display cases and racks are brightly lighted

lower cost of light. But prejudices against fluorescent run strong. My guess is that fully 90 per cent of the objections to the color qualities of fluorescent lamps are made because the objector has never seen the deluxe cool white or deluxe warm white colors applied in a decently-designed installation. These two colors come pretty close to the color rendering properties of natural daylight and incandescent, respectively. Together with incandescent, they meet most of the needs for lighting merchandise so that it can be appraised by the shopper in conditions recognized as realistic. Much variation from this in the direction of tinted or colored light brings to mind the old saw,

"She wants a pink suit, turn on the pink light." In spite of this defense of the good fluorescent colors, however, one can't say that a bare-tube deluxe warm white installation compares favorably with a good incandescent downlighting job. The basic reason, though, is glare, not color.

The third factor in store lighting is the importance of variations in brightness patterns. These variations are too often overlooked in store lighting, with the result that many stores tend to develop a monotonous sameness. Perhaps the selfservice merchants illustrate this situation most obviously because of the size of their stores, but the curse of uniformity also shows up regularly



Low-budget stores need not have glaring light sources. Direct-indirect fluorescent fixtures give lots of light in this card shop; still are low in brightness

in the smaller shops of otherwise elegant shopping centers. Varying the brightness pattern focuses attention, heightens the sense of the dramatic. Within the merchandise area, certain items are more important than others because of their gross margins, their seasonal nature, or some other reasons. These things should be made to stand out, and it's the function of the display lighting to do this:

1. Attract attention to the item; make it hard for the shopper *not* to see it.

2. Render its details more visible, leaving a subconscious impression of merchandise *whether or not* the customer decides to buy.

3. Emphasize the best features of the item: color, form, texture, etc.

4. Bring into the general store environment a sense of stimulation by deliberately interrupting monotonous patterns.

The fourth factor is the importance of minimizing distractions from the merchandise. A glaring lighting system can be as distracting as a leaky roof, and it's high time more lighting designers realized this. In my opinion, most of the objections to the appearance of fluorescent systems in stores stem from a slavishness to costs. The bright streaks of light on the ceiling are the most visible thing in the store-and about the only thing not for sale. Note that we are not discussing illumination levels here, but rather the physical brightness of lighting equipment. It is possible today to produce both fluorescent and incandescent lighting systems in which merchandise is actually brighter



Economical folded plate roofs are ideal for shielding light sources. Head-on, only three rows of fixtures can be seen



This example demonstrates that a low-margin merchandiser can combine low cost with a pleasant luminous environment

than the lighting equipment itself.

The New Light Sources

What are the major new light sources that have contributed to the trend to better lighting? In fluorescent lamps, the development of phosphors for the deluxe colors in the early '50's was the key factor, followed by major improvements in these phosphors in the past few years. Newer lamp lengths and lamps of higher output have simplified designs and helped to hold down initial costs of higher illumination.

In incandescent lamps, the range of wattages in internally reflectorized spots and floods now extends from 30 to 500 watts, making it rela-



Lighting techniques for glass display



Several light sources for wall racks

tively simple to accent details from 18 in. or 18 ft away. Quartz iodine lamps, tremendously compact sources of light output, are ideally suited to lighting many window and wall displays, and for some general lighting too. The new *Cool-Beam* spots and floods have infrared-transmitting reflectors, making it possible to knock two-thirds of the radiant heat out of the beam; these will improve comfort in downlighting and reduce deterioration of perishable displays.

Trends in Fixtures

How have lighting fixtures been improved? It would be hard to cover all the devolpments; here are a few: 1. Ballasts for fluorescent lamps are smaller, quieter, lighter, more efficient, less costly and more reliable. 2. There has been a healthy development of larger-area fluorescent equipment of simple, clean design, both in recessed and suspended forms.

3. Fluorescent fixture designers are gradually escaping from producing only harsh mechanical-looking contrivances that don't fit well in many interiors. Incandescent units with less conspicuous trim or greater decorative appeal are available.

4. The newer forms of shielding media, while costlier than others, can make lighting equipment much less conspicuous. The "wedge louver" is an example of this.



Many different techniques can be used to light a wide variety of merchandise in racks and shelves along a wall. This is a demonstration store area at Nela Park





Above: Translucency of glass is emphasized by back-light. Sparkle comes from fluorescent lamp in front (see detail, above left)

Left: Hardware display is lighted on top row by valance, on bottom row by lamp at front of rack (see detail, *below left*)

WHAT BELONGS IN A FOUNDATION INVESTIGATION

Careful study of soils in relation to buildings they must support insures structural integrity

By David M. Greer, Woodward-Clyde-Sherard & Associates, Soil and Foundation Engineering Consultants

Nowadays it is routine for either architect or owner to require test borings before a building is designed; but the most effective use of the data thus obtainable is probably the exception rather than the rule.

The following discussion shows what modern soil and foundation technology can do for the practicing architect, and how it can lead to substantial economies in design and the safest possible structures.

Why Make Foundation Investigations?

Safety is the most obvious objective in making a foundation investigation, but the provision of data for economical design may in the long run be more important. When an architect or structural engineer has no data, or meager data, concerning the foundation conditions, he can usually achieve safety by over-design. As a consequence, most foundations designed without adequate subsurface data are over-conservative and unnecessarily expensive. Some of these foundations, coinciding by chance with the worst conditions assumed by the designer, will in fact be economically suited to the surface and sub-surface conditions. But an occasional building supported on this basis will have an inadequate foundation and structural damage will follow.

The advances in sampling techniques, in understanding of the structural properties of soils, and in construction techniques during the last 30 years have made it possible to design building foundations more economically than was formerly possible, and at the same time provide for safety.

Who Arranges for

Foundation Investigations?

It has become a common practice of many companies and public bodies to require their architects to obtain competent foundation investigations and reports before designing a building. In some instances, firms have found it desirable to secure the subsurface information even before purchase options are taken, thus providing the architect with a report before his design work has begun.

In one notable instance in the metropolitan area in New Jersey, an industrial concern signed a 25-year lease for a 20,000 sq ft warehouse and service building which had been constructed to their specifications from the foundations up, but in which the floors and interior partitions were supported in a manner not at all suited to the soil conditions. Partitions began to crack a month after the building was occupied; floors settled irregularly, floor level varying by as much as 4 in. in a horizontal distance of 20 ft; utility lines broke; and now, five years after construction, the building stands vacant.

Who Pays and How Much?

A foundation investigation, although it is part of the architect's responsibility in many cases, is actually a separate function and should not, we feel, be taken out of his fee, but rather be a separate fee paid by the owner to the soil consultant.

Because of the infinite variety of foundation conditions, complicated by the infinite variety of buildings, the cost of a foundation investigation cannot be negotiated as a percentage of construction costs. In general, it may range between 0.1 and 1.0 per cent of actual construction cost, but when conditions are either extremely simple, or exceedingly complex, it may fall outside these limits.

What is Included?

Site Review. A foundation investigation begins with a review of the available information about the site. Someone must inspect the site, review the conditions of neighboring structures, if any, obtain and study any existing boring data, review geologic information and then plan the additional work needed to give an adequate picture of sub-surface conditions as they relate to the proposed structure. In the instance cited earlier, a site review would have shown that the building next door had experienced floor settlements of several inches, indicating the need of a design in which floors were framed in instead of being supported on the fill.

Exploration. Usually the site review is followed by test borings. Occasionally, soil conditions are such that test pits are more satisfactory or more economical than borings. Moreover, for large sites, resistivity (measurements of electrical resistance of soil at various locations and depths) or seismic surveys or air-photo analysis, are often used to advantage.

In a shopping center site near Philadelphia, the site was separated into an area of good foundation conditions, suitable for the buildings, and an area underlaid by active and potential sink-holes, which was used only for parking. The study used a limited number of borings, a somewhat larger number of test pits, and both seismic and resistivity surveys, and cost about half of that required to put down a grid of borings on 100ft centers—besides yielding a more complete and reliable picture of foundation conditions.

Laboratory Soil Testing. The wide range of soil characteristics has led to the development of a complex variety of laboratory tests for determining the strength and compressibility characteristics of soils, and for classifying them as to types. While some soils have obvious and well-known characteristics such as dense sand or gravel, requiring no testing, other soils are so complex, (e.g. deep soft clays) that extremely careful testing of undisturbed samples must be carried out.

A good example lies in the laboratory study which is made when an industrial building is to be located over the deep, soft soils of the New Jersey Meadows, or in the "Bay Mud" area of San Francisco. Shearing strength tests on undisturbed samples determine the height to which fill can be placed, the rate at which it can be placed, and the safe



Gothic symbol of faith—A modern representation of an ancient design, this Overly lead-coated copper spire towers 97 ft. over the Second Presbyterian Church in Indianapolis, Indiana. Erection was simplified by factory assembly of intricate tracery, flying buttresses and ornamentation. Architects: McGuire and Shook; Compton, Richey and Associates; Indianapolis, Indiana.

This is an Overly spire. Over 600 of them point heavenward across the face of America. They have been installed on churches of all faiths. Some have been donated as memorials. Congregations have added them to adorn their places of worship. They have been fabricated and installed for as low as \$800 and as high as \$80,000.

- SPIRES AND CROSSES FROM OVERLY

No company in America has built more spires than Overly. We take complete responsibility for design, fabrication and installation, even including the structural steel framework. Specify Overly for Spires. See our catalog, Sweet's A.I.A. File No. 30-C-41. Additional literature: The Spire (44 pages), The Cross (36 pages), available on letterbead request.



Greensburg, Pennsylvania

For more data, circle 84 on Inquiry Card

Product Reports

continued from page 204

HEAT-REFLECTING ROOFS

Plasticool acrylic resin coating for roofs is said to reduce substantially air-conditioning loads through its reflectivity of .90 to .93. It can be applied to most roofing surfaces and is available in white and several tints. Coating Laboratories, Inc., Box 3774, Tulsa 14, Okla.

CIRCLE 306 ON INQUIRY CARD

BUILDING BOARD MADE OF SUGAR CANE AND PLASTIC

Fibron panelboard, made from sugar cane fibers and plastic binders, is lightweight with a smooth surface that will take a variety of finishes. There are four weights available, as well as pre-finished acoustical panels. The material may be worked with standard wood-working tools. National Bagasse Products Corp., 2 W. 45th St., New York 36, N.Y.

CIRCLE 307 ON INQUIRY CARD



For more data, circle 85 on Inquiry Card

ANCHOR BOLT

Deco anchor bolt fittings with adjustable studs remain flush with floor until installation of equipment,



eliminating traffic hazards of protruding anchor bolts. The highstrength iron fittings are available in several sizes. *Decatur Engineering Co., 519 E. William St., Decatur, Ill.* CIRCLE 308 ON INQUIRY CARD

PIVOTED WINDOWS WITH INSIDE VENETIAN BLINDS

Two aluminum pivoted windows with integral Venetian blinds have blind tracks which serve as glass stops. All operating mechanism is concealed. Flour City Architectural Metals Div., Hupp Corp., Minneapolis 6, Minn.

CIRCLE 309 ON INQUIRY CARD

DRAFTING UNIT

Techno-Graph drafting machine has an inclined surface of *Plexiglas* 14 by 20 in. Enough light passes through the top so auxiliary illumination is not needed for most work.



Two springs balance the machine for any inclination of the stand up to 45 degrees. Two sets of scales can be used with ink and pencil. Techno-Graph Div., Alexander Drafting Equipment Co., Box 4441, Pasadena, Calif.

> CIRCLE 310 ON INQUIRY CARD more products on page 220



Why the Squire's face is Red

The designers chose Hanley Bradford Red Face Brick to accent the Hanley Duramic[®] White Speckled Brick of the new City Squire Motor Inn in New York. The choice was easy because there are 30 Hanley Glazed Brick colors and 16 Hanley Face Brick colors.

If you want to add color, not costs, to your next project take a look at Hanley's more than 50 shades of brick and tile.

HANLEY COMPANY One Gateway Center, Pittsburgh 22, Pa.

Sales Offices: New York • Buffalo • Pittsburgh

For more data, circle 86 on Inquiry Card

Location: 51st-52nd Street and Broadway. New York Owner: Loew's Hotels Architect: Kahn & Jacobs Contractor: Diesel Construction Company Mason Contractor:

Mason Contractor: Waldom Construction Company



Nature's Freshness





Lennox COMFORT CURTAIN® breathes it deeply wall-to-wall-gentlymoving freshness head-to-toe, child-to-child-no drafts, no hot spots. Clean freshness to ventilate, dry freshness to cool; freshness woven into warmth. Only Lennox makes freshness so comfortable-comfort so fresh. Only Lennox weaves this curtain of freshness. COMFORT CURTAIN: heatingcooling, wet or dry, for new or existing classrooms. Nature's Freshness Documented: Increased learning ability verified by controlled experiment in Lennox "Living Laboratory" classrooms. Write for information on "The Freshest Story Ever Told", an authentic research report. Address: LENNOX, 44 S. 12th Ave., Marshalltown, Iowa. LENNOX, Comfort Curtain, •

For more data, circle 87 on Inquiry Card



OZALID NEWSLETTER

NEW IDEAS TO HELP YOU WITH ENGINEERING REPRODUCTION AND DRAWING



New ITX line of intermediates by Ozalid offers finest-line pick-up and fastest printing speed of any intermediates!

Three new diazo intermediates which fit their performance directly to your reproduction requirements are now available from Ozalid! They require no special equipment or processing and can be exposed on any Ozalid whiteprinter or similar machines.

Unmatched pencil-line pick-up power

The standard (402 ITX) and faster (404 ITX) intermediates reproduce faintest details faithfully. Their "pencil-line pick-up power"- the true measure of a good intermediate - is rated excellent by research and development technicians and by industry experts.

Improved 402 ITX—the standard intermediate in the new line, has greatest density and assures maximum readability in the final print.

All-new 404 ITX is a distinct im-

provement over other sepias and combines fast printing speed with high quality reprints. Its broad covering power results in sharpest images. The new 100% rag, transparentized and blue-tinted base gives faster printback speeds. 404 ITX narrows the gap between printing and reprint speeds; in many cases both speeds are identical.

Fastest intermediate you can get!

406 ITX—another new Ozalid intermediate, is twice as fast as 402 ITX. Density is a trifle less, but the remarkable increases in production, over 100%, offset its slight decrease in covering power.

New, easy-on-the-eyes, readability

The rich mahogany image color of the new ITX series contrasts sharply with the blue-tinted background, providing excellent visual acuity and exceptional readability.

For more data, circle 88 on Inquiry Card

Which to use? 402? 404? or 406?

402 ITX—because of its superior covering power—is of great value to architects, engineers and draftsmen who demand exceptional repro fidelity as well as good printback speed.

404 ITX (Fast Speed) and 406 ITX (Extra Fast Speed) increase productivity of slow speed machines. In production shops where the number of intermediates needed is consistently high, copies may be run off on both these new materials at far faster speeds.

The ITX intermediates, either separately or as a product family, offer important advantages to every diazo user.

Corrections are simple

Dye line eradications can be made quickly and easily with Ozalid[®] Intermediate Corrector. Special base stock readily accepts pencil and ink additions.

Repeated erasures don't ghost or lose "tooth"

The ITX product line has a 100% rag-tracing vellum stock as a base with a new plastic transparentizer. Even repeated erasures made on the same spot do not destroy the "tooth" or ghost in printbacks.

Get all the facts now!

For complete information about this new family of intermediates, write General Aniline and Film Corp., Ozalid Sales Dept., Binghamton, New York.



In Canada: Hughes-Owens Co., Ltd., Montreal.

Look! 7 is vapor barrier can't be set on fire!

Pyro-Kure consists of laminations of kraft paper, aluminum foil or plastic film in any combination, made resistant to tear or puncture by use of reinforcing fibers between the plies. In addition to its use as pipe jacketing for low temperature lines (to sub-zero applications) and on duct-work, Pyro-Kure is recommended on commercial insulation, and as fire resistant drop cloths or barriers around such fire hazards as welding and paint spraying areas.

A New Standard of Protection On Pipe and Duct-Work

Pyro-Kure vapor barriers cannot contribute to fire because it extinguishes itself if it is ignited. Thus, vapor barriers which once were a potential fire hazard are now adding to total fire safety.

This new product line is U/L listed with flame spread ratings of "25 and below." The flame resistant property is permanent! MVT ratings go down to 0.02 perms. Attractive embossed grades are available for exposed applications such as in commercial metal buildings. Make sure your jobs have Pyro-Kure vapor barrier protection. Leading insulation manufacturers offer Pyro-Kure facing and jacketing on their insulation materials . . . or Pyro-Kure may be applied by the insulation contractor right on the job. A data kit is available without cost or obligation. This kit includes samples of various grades, perm ratings, etc. Write American Sisalkraft Company, 73 Starkey Avenue, Attleboro, Mass., Division of St. Regis Paper Company.

PYRO-KURE NON-COMBUSTIBLE VAPOR BARRIERS FOR INSULATION FACING AND JACKETING

This 46-story hotel opening June 26, 1963 is owned by Rock-Hil-Uris, Inc., a joint investment of Rockefeller Center, Inc., Hilton Hotels Corporation, and the Uris Building Corporation. Architect: William B. Tabler, N.Y. Consulting Architects: Harrison & Abramovitz, N.Y. Details on this LUPTON job are in the 1963 Michael Flynn Manufacturing Co. Curtain Wall catalog.



NEW HOTEL PAR EXCELLENCE GLEAMS ALOFT WITH LUPTON CURTAIN WALL

The New York Hilton at Rockefeller Center is a self-sufficient oasis, housing a full array of shops, services, and vast hotel facilities that are among the most advanced in the world.

Its ultra-modernity is reflected in the specification of LUPTON curtain wall ... 335,000 square feet of it. Light gray anodized aluminum frames soaring panels of blue-tinted glass. The desired effect is achieved ... a gleaming structure with towering vertical lines.

The choice of LUPTON also assured efficient, cost-cutting fabrication and installation. Builders could bank on speed, accurate fit, and economy. Plus "total responsibility" that sees every LUPTON job through all the way.

This thorough-going workmanship goes hand-in-hand with skill in curtain wall design. LUPTON can interpret and fulfill the most exacting creative demands . . . bring your architectural concepts to fullest realization. As for reliability, that's attested to by a solidly established reputation going back 25 years.

For further LUPTON advantages, see Sweet's Architectural File (sections 3 & 17) for the Michael Flynn Curtain Wall and Window catalogs. Talk to your local LUPTON man, as well . . . or write us direct.



Main Office and Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa. West Coast Office and Plant: City of Industry (Los Angeles County), California. SALES OFFICES: San Leandro, California; Chicago, Illinois; New York, New York; Cleveland, Ohio; Dallas, Texas. Representatives in other principal cities.

Michael Flynn Manufacturing Company

For more data, circle 90 on Inquiry Card




Why the "Speaker" of the House in the N.C. Legislature always repeats what everyone says

This "speaker" is made by Altec. And, it not only repeats what everyone says, but repeats it **exactly**, right down to the softest Southern syllable, so that the voice of one legislator is clearly recognizable by another anywhere in the chamber. The gentlemen from North Carolina have a State Legislature they can be proud of. Naturally, they selected the one sound system that does it justice—an Altec system that permits each member to "have the floor" without leaving his seat.



A MIKE FOR EVERY MEMBER

Each member has an Altec 686A microphone built into a walnut panel on his desk. Whenever he wishes to be heard, he merely flicks a switch and **quietly** says, "Mr. Speaker, Sir." Stated the **Twin City Sentinel:** "The days of

Stated the Twin City Sentinel: "The days of shouting and arm-waving are over, at least figuratively speaking. It doesn't matter whether a Representative's voice is weak or strong, not even whether he has a case of laryngitis. The electronic brain will automatically build-up or cut-down the volume." The "brain" in this case is an Altec compressor

The "brain" in this case is an Altec compressor amplifier that automatically regulates output level in response to either strong or weak input signal.

WHY ONLY ALTEC MIKES ARE USED

172 Altec 686A dynamic microphones are used. These diminutive microphones are modest in price yet provide professional qualities in every





ALTEC LANSING CORPORATION

P1963 ALTEC LANSING CORPORATION ANAHEIM, CALIFORNIA

For more data, circle 91 on Inquiry Card

sense: a practically indestructible polyester diaphragm, exceptionally smooth response from 70 to 20,000 cycles, and complete resistance to blast or shock. And, because of Altec's exclusive sintered bronze filter, dust or moisture can never reach and impair their acoustical elements.

FACILITIES FOR GENTLEMEN OF THE PRESS

Reporters may pick-up debates from either the House or Senate through a special Altec system installed in the press room. And, thanks to the high overall quality of the Altec system that meets FCC standards, radio or TV engineers need only plug into existing audio outlets for direct transmission of the activities.

ALTEC SOUND CONTRACTORS ARE ALWAYS THE BEST!

If you, too, wish to offer your clients a truly professional sound system, merely call your nearest Altec Sound Contractor (see Yellow Pages) or write for complete information to Dept. AR6.

See Sweet's: Architectural File 33a/AL. Industrial File 17f/AL.

Product Reports

continued from page 212

JOINING SYSTEM

A simplified joining system for square welded steel tubing does not require skilled labor. The basic unit



is a five-sided cube with an open face. Units interlock to serve as modular connecting devices to join tubing in any of six directions. Artman Metal Products, 5207 Grant Ave., Cleveland, Ohio

CIRCLE 311 ON INQUIRY CARD

FIRE-RETARDANT WOOD

Flamort WC is a colorless fire retardant surface impregnation used on unpainted wood and plywood, acoustical board and insulation board. Flamort Chemical Co., 746 Natoma St., San Francisco 3, Calif.

CIRCLE 312 ON INQUIRY CARD

TEMPERATURE CONTROL FOR GLASS-WALLED BUILDINGS

A solar-compensated thermostat mounted on the exterior wall of a heating or cooling zone takes into account the sun's effect so that heating



and air conditioning can be adjusted zone by zone as needed. Minneapolis-Honeywell, Commercial Div., 2727 Fourth Ave. South, Minneapolis 8, Minn.

> CIRCLE 313 ON INQUIRY CARD more products on page 224

> > For more data, circle 92 on Inquiry (

EW IN FOL_ING I DRS! LOOK HAT



remarkable beauty, new economy of installation! ... a major breakthrough in closet door design.

NEW HOMEShield PRE-HUNG FOLDING DOOR

Ideal for Apartments, Homes, Motels, Offices

Unlike any other folding doors . . . new Homeshield pre-hung folding doors achieve a striking focal point of interest in any decor . . . providing broader scope, greater latitude for developing interiors of higher interest and utility.

Four distinctive patterns available: Created from rigid, durable polymers artfully formed into four stunning designs.

Homeshield pre-hung folding doors can be in-stalled in less than 10 minutes! They are prehung in a pre-finished aluminum frame, complete with all hardware in place. Delivered as one integral unit ready for immediate installation.

Quiet, positive operation: Specially designed, and patented spring hardware assures quiet operation, prevents sagging, holds doors in positive closed or



open position. Enables doors to fold flat against wall for full access to closet opening.

Doors have been fully tested and proved to withstand abuse, humidity and temperature extremes.*

No painting necessary: Oyster White matte finish can be left as is, or painted to match or contrast with walls.

Investigate the many advantages of these new prehung folding doors by HOMESHIELD today. Write for full specifications and details on four designed panels and sizes.

*(Actual test report sent on request.)

AMERICAN SCREEN PRODUCTS COMPANY Chatsworth, Illinois • Dept. AR-6

DESIGN: CARROUSEL



St. Joseph's Hospital addition Architects: Prack & Prack, Hamilton Consulting Engineers: Rybka, Smith, and Ginsler, Ltd., Toronto Mechanical Contractor: Goodram Bros. Ltd., Hamilton

Air conditioning

Barber-Colman "environmental management system" in new 8-story hospital addition assures efficient, economical year-round air conditioning The luxury of year-round air conditioning, once restricted to operating theaters, is now provided in all rooms and wards at St. Joseph's Hospital, Hamilton, Ontario. The cost? Well within the budget for a conventional heating and ventilating system!

Secret of this improved service-plus-economy is a Barber-Colman high-velocity air distribution system with electronic temperature sensing—the first such system ever installed in a Canadian hospital.

Thirteen double-duct mains supply high-velocity air to the building. Each room or ward has a constantvolume, under-the-window double-duct box, an electronic temperature sensing element, and a transistorized motor operator to control room temperature.

Barber-Colman air diffusers are used exclusively: perforated face diffusers in all under-the-window boxes; Control-Line diffusers in the operating rooms; and louver-faced ceiling diffusers throughout the remainder of the building.





... on a tight budget

The electronic sensing element, because of its low mass and rapid response to temperature changes, eliminates lag in cooling or heating. Result: only custom-controlled air reaches the occupants of the room. Since room temperatures are set with individual electronic room thermostats, each patient's comfort requirements can be easily satisfied. The need for staff members to continuously check thermostats is eliminated.

Lionel Ginsler—of Rybka, Smith, and Ginsler, consulting engineers on the project—calls this Barber-Colman equipped air conditioning system the most unobtrusive and draft-free of any they have ever designed.

For your modernization or new construction projects, specify Barber-Colman—the ultimate in fully integrated automatic controls and engineered air distribution systems. Call the Barber-Colman field office nearest you for specific information.



Barber-Colman high-velocity double-duct window units provide automatic draft-free air conditioning in all rooms and wards throughout the new hospital addition.



Compact electronic control centers like the one above assure fast, accurate remote control for the St. Joseph's Hospital air conditioning systems.

BARBER - COLMAN COMPANY Rockford, Illinois

Toronto, Ontario

... where originality works for you



DIEBOLD VUE-MATIC PROVIDES NEW DRIVE-IN BANKING DESIGN FLEXIBILITY Diebold Vue-Matic banking brings you a versatile new tool to use in planning drive-in banking service. Vue-Matic banking combines closed circuit television with pneumatic conveyors . . . is the most advanced television banking system available today. The story of Diebold Vue-Matic banking's many advantages is a big, significant one. Use coupon for details.



Product Reports

continued from page 220

STAINLESS STEEL WINDOW

A low-cost window for use in houses, apartments and commercial build-



ings has main frame and vent members fabricated from cold-rolled Type 301 stainless steel. Locked seams increase strength. *Republic Steel Corp.*, 1315 Albert St., Youngstown 5, Ohio

CIRCLE 314 ON INQUIRY CARD

BRONZE-TINTED GLASS

Two new bronze-tinted plate glasses combine glare and brightness reduction with heat absorbency. One is twin-ground for visual clarity; the other is rough surfaced for privacy. *Libbey-Owens-Ford Glass Co.*, 811 Madison Ave., Toledo 2, Ohio

CIRCLE 315 ON INQUIRY CARD

UNDERFLOOR TRENCH DUCT

An adjustable height trench duct is used primarily to feed cells in cellular steel flooring, but can also be used with standard underfloor duct



in slab construction. Adjustment can be made after slab is poured without removing the cover plate. T. J. Cope, Div. of Rome Cable Corp., Collegeville, Pa.

CIRCLE 316 ON INQUIRY CARD

VINYL-CLAD STEEL DOORS WITH HONEYCOMB CORES

Steel doors with honeycomb cores are available with woodgrain vinyl laminates. Epoxy-base enamel colors and stainless steel faces are also offered. *Ceco Steel Products Corp.*, 5601 W. 26th St., Chicago 50, Ill.

CIRCLE 317 ON INQUIRY CARD

more products on page 239

For more data, circle 95 on Inquiry Car

AREA SERVED BY SITE LOCATION This is the Open World of L.O.F glass...

A Suburban Hospital designed to grow with the community

Architect: T. Marshall Rainey, A.I.A. Richard Hawley Cutting & Assoc., Inc., Cleveland, O.

The suburban hospital, today, must be designed for flexible expansion. At first, its function is to supplement, not duplicate, the metropolitan medical center. But as modern highway systems develop, the territory it serves grows larger. The hospital must grow too, and expand its services, to keep pace with the ever-increasing needs of the community.

We asked Architect Rainey how such a hospital could be designed. He shows us on the following pages. Glass plays a big role in his plans. And Libbey Owens Ford makes it thoroughly practical. Because Libbey Owens Ford makes a particular kind of glass for almost every design situation.

Libbey · Owens · Ford

TOLEDO 2, OHIO

METROPOLITAN THOROFARE PLAN

This is the OpenWorld of LOF glass





The success of any building, particularly a hospital, depends on the establishment of clear traffic patterns. In this case: for the staff, patients, visitors and service. From the lobby, outpatients and visitors take different corridors. Interior courts define and separate varied functions. Each bed floor has a central work core which reduces staff labor and steps.



Patients' rooms have large, wall-to-wall windows so they can enjoy the Open World around them. These are glazed with *Thermopane*[®] insulating glass for heating and air-conditioning economy. And *Parallel-O-Grey*[®] in the outer pane reduces sun heat and glare. Rough Plate glass in bedroom doors provides privacy, and transmits daylight to the corridors.



L·O·F makes a particular kind of glass for every purpose in Open World design. Thermopane insulating glass for heating and air-conditioning economy. Parallel-O-Plate[®], twin ground for clearest visibility. Parallel-O-Grey plate glass, Parallel-O-Bronze and blue-green Heat Absorbing plate glass for windows with a sun or glare problem. Rough Plate glass for translucent partitions. Tuf-flex[®] tempered plate glass or laminated safety glass for areas where extra impact resistance is needed.

For information on these and other L·O·F products, refer to Sweet's Architectural File, or call your L·O·F glass distributor or dealer, listed under "Glass" in the Yellow Pages. Or write to Libbey Owens Ford Glass Company, 811 Madison Avenue, Toledo 2, Ohio.



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TOLEDO 2, OHIO



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Exterior design: Welton Becket & Associates, Los Angeles, Architects Interior design: Welton Becket and Associates; Rodgers Associates, New York A. Pomerantz & Company, Philadelphia Radiant-acoustic ceiling installation: Jacobson and Company, Inc., New York and Philadelphia



THIS ACOUSTICAL CEILING HEATS AND COOLS

Burgess-Manning Inland radiant-acoustic ceilings help to control comfort three ways in Scott Paper Company's new Executive Offices and Research and Engineering Center, a multi-million dollar complex located adjacent to Philadelphia International Airport. Ceiling panels provide trouble-free radiant heating, radiant cooling and sound control.
The architects specified radiant panel heating and cooling for offices and laboratories because of: (1) its high level of year 'round comfort, (2) its room-wide uniformity of temperature and freedom from drafts, and (3) its flexibility in layout and adaptation to lighting. For a description of radiant heating and cooling principles, along with performance curves, design procedure and other data, see Sweet's, Architectural File, section 11a/In, or write for Catalog 250.



Inland Steel Products Company Engineered Products Division 4111 W. BURNHAM STREET, MILWAUKEE 1, WISCONSIN

ALBANY, ATLANTA, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CINCINNATI, CLEVELAND, COLUMBUS, DALLAS, DENVER, DETROIT, FREMONT, CALIF., HOUSTON, INDIANAPOLIS, KANSAS CITY, MO., LOS ANGELES, NEW ORLEANS, NEW YORK, OMAHA, PHILADELPHIA, PITTSBURGH, SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS, ST. PAUL, TULSA

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... offer your client power savings through control of room circuits at registration desk.

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... use automatic time-switch or photoelectric control of public area lighting for greater economy.

AN OFFICE BUILDING

... have partition wiring to switches independent of lighting fixtures, to prevent work stoppage while moving partitions.

A SCHOOL

... provide several patterns of lighting for any multi-purpose area, each controlled by a single switch button, for simplicity of operation.

These are just a few of the ways that General Electric Remote-Control Switching provides greater flexibility of lighting control together with substantial savings in installation costs, maintenance costs, and alteration costs.

To help you create new ideas in lighting control offering the conveniences that only full flexibility can provide, while lowering installation, maintenance, and alteration costs — send for the new General Electric Manual of Lighting Control Concepts. It's free for the asking.

Write to General Electric Company, Wiring Device Department, Providence 7, Rhode Island.

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For more data, circle 97 on Inquiry Card

For more data, circle 98 on Inquiry Card →



They turned to Norelco...

and here's why:

Take the case of (A) Independence Hall, Philadelphia. To tell the "cradle of liberty" story to thousands of visitors, Norelco developed an outdoor sound-and-light spectacle utilizing Norelco equipment... Or look at (B) Parleys Stake House, Salt Lake City, where, for precision of speech reproduction, the answer was a Norelco sound system of microphones, amplifiers and sound columns... (C) The State Department, Washington, wanted the same simultaneous interpreting equipment that Philips installed in NATO Headquarters in Paris. They got it with the Norelco multi-channel system... In (D) Sts. Peter and Paul Cathedral, Philadelphia, the problem of difficult acoustics in a high-vaulted area was solved with a columnar speaker arrangement.... And for the (E) House of Representatives, State Capitol, Denver, the answer again was Norelco microphones, amplifiers and speakers.... These, just a handful of the Norelco sound systems in operation, indicate the wide range of equipment and experience available from Norelco—and from no other manufacturer. For full details, check Sweet's File—or write to Dept. AR-6, North American Philips Company, Inc., Commercial Sound Department, High Fidelity Products Division, 100 East 42nd Street, New York 17, New York.



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REPUBLIC STEEL BUILDING PRODUCTS?

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ALSO...IF YOU'D LIKE SEPARATE, A.I.A.-NUMBERED REFERENCE, THESE ARE AVAILABLE. JUST USE THE COUPON.

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Aluminum Classroom Windows, A. I. A. No. 16-E

Aluminum Double and Single-Hung Windows, A. I. A. No. 16-E

CURTAIN WALL

METAL LATH

Aluminum Top-Hung Windows, A. I. A. No. 16-E

Aluminum Vertical Pivoted Windows, A. I. A. No. 16-E

Aluminum Curtain Wall, A. I. A. No. 16-E

Standard Metal Doors, A. I. A. No. 16-E

Steel Joists, A. I. A. No. 13-G

Steel Roofdeck, A. I. A. No. 12-A-3

Metal Lath, A. I. A. No. 20-B-1

Lockers, A. I. A. No. 35-H-42

Hollow Partition Studs, A. I. A. No. 20-B-11

Insulated Standard Sidewall Panels, A. I. A. No. 12-C

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METAL DOORS and FRAMES

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REPUBLIC STEEL CORPORATION Manufacturing division - Dept. AR-5965 Youngstown 5, Ohio

Send separate, filable reference on the following Republic Building Products:

(please list)____

Name____ Company_

Address____

Zone____State

Title



Wheaton College, Norton, Mass.; Architect: Rich & Tucker, Boston, Mass.; General Contractor: J. Slotnick Co., Boston, Mass.; Painting Contractor: Johnson-Foster Co., Somerville, Mass.

Alma Mater goes colorful ...yet stays dignified



Herbert E. Farrier, the "Man from Devoe" in Boston, serving architects throughout New England.

tory, dining hall, Fine Arts building and library addition. Teamwork between architect and the "Man from Devoe" helped achieve this result with careful color coordination and paint selection. Paints used for interiors included Vinyl Wonder-Tones, Velour Semi-Gloss and Mirrolac Enamels, Wonder Woodseal and Wonder

Student comfort

combined with

scholarly pro-

priety was the

aim of this new

construction at

Wheaton College

in Norton, Mass.

-new dormi-

Woodvarnish. On the outside, Super All-Weather House Paint was used.

It's no surprise that the "Man from Devoe" can be useful to architects: after all, he is a paint technician and color specialist. Questions about paint maintenance, formulation, weather resistance and other factors are easy for



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him. And when it comes to color he has a wealth of material for the architect, including the Devoe Library of Colors® system—over 1,000 shades, all tightly controlled by formula and mixing procedures to assure a precise match of the colors the architect requires.

Find out for yourself how any problem with interior or exterior paints—even special finishes for manufacturing plants —can be solved by the "Man from Devoe." What's more, he'll help you with services right at the building site, from supervising deliveries to other follow-up jobs. There's no charge for any of his assistance, naturally. Just write or phone the nearest Devoe office to reach him.

Product Reports

continued from page 224

HOSPITAL DIVIDERS

Patient privacy and isolation during treatment are provided by Thin-Line area dividers in a 1-in. panel/post system that is easily set up. There is



a choice of surface materials which resist rust, odors, bacteria and stains. The panels have a honeycomb core. The Sanymetal Products Co., 1701 Urbana Rd., Cleveland 12, Ohio CIRCLE 318 ON INQUIRY CARD

EPOXY COATINGS

An air-drying epoxy modified acrylic based coating is said to retain its high gloss and resist chalking for at least five years. Plas-Chem Corp., 6177 Maple Ave., St. Louis 30, Mo. CIRCLE 319 ON INQUIRY CARD

QUARTZLIGHTING

New wiring troughs and pole-top splice boxes are designed to increase quartzlighting efficiency in outdoor areas while cutting down costs of initial equipment, installation and



maintenance. Stonco Electric Products Co., 333 Monroe Ave., Kenilworth. N.J.

CIRCLE 320 ON INQUIRY CARD

FOUNDATION VENTILATOR

A block-size foundation ventilator is designed to keep crawl spaces dry in basementless houses and for both roof and wall ventilation in industrial buildings. Leslie Welding Co., Inc., 11241 West Melrose St., Franklin Park. Ill.

CIRCLE 321 ON INQUIRY CARD

more products on page 242



116 THIRD STREET . AURORA, ILLINOIS

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new construction method utilizes simple system of metal studs, KEYMESH® Paperbacked Lath and spray-on exterior wall; gets 2-hour fire rating.*

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Eureka Hospital addition, Eureka, Illinois

Architect: Evan A. Thompson, A.I.A., of Foley / Hackler / Thompson / Lee, Peoria, III.

Plaster Development: L. H. Hobson, Plaster Development Center, Chicago, III.

Mechanical Engineer: S. Alan Baird, Peoria, Ill.

Structural Engineer: Edwin A. Lampitt, Peoria, III.

General Contractor:

O. Frank Heinz Construction Co., Inc., Peoria, Illinois Plastering Contractor:

J. J. Kinsella & Son, Peoria, III.

(Note: Construction costs in Eureka, III., are approximately the same as those in Chicago, a high-cost construction area.)

Looking For Extra Floor Space?



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The KINNEAR Mfg. Co. FACTORIES: 1860-80 Fields Ave., Columbus 16, Ohio 1742 Yosemite Ave., San Francisco 24, Calif. Offices and Representatives in All Principal Cities



... efficient space saving Kinnear Rolling Doors. Kinnear Doors open straight up clearing the entire doorway. Floor, wall and overhead space is always completely useable. They also offer greater durability, maximum protection and lower maintenance costs ... all the things that win real "owner satisfaction".

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For more data, circle 105 on Inquiry Card

Product Reports

continued from page 239

PRODUCT BRIEFS

Modular scientific and industrial furniture in 29- and 34-in. heights gives planning flexibility and allows expansion at any time with matching units. Sturdilite Products, Inc., 3001 Palmolive Bldg., Chicago 11, Ill.

CIRCLE 322 ON INQUIRY CARD

Concealed panic exit device can be used with single, double, multiple aluminum, hollow metal and trimstile doors with plates as narrow as 13⁴/₄ in. in width. *Builders Brass Works*, 3474 Union Pacific Ave., Los Angeles 23, Calif.

CIRCLE 323 ON INQUIRY CARD

Vinyl stair nosing, available in seven colors, is durable, scuff-proof and washable. Mercer Plastics Co., Inc., 1 Jabez St., Newark 5, N.J.

CIRCLE 324 ON INQUIRY CARD

Cabinet unit heaters are offered in eight model sizes with a wide range of capacities, using either hot water or steam. Schemenauer Mfg. Co., Holland, Ohio

CIRCLE 325 ON INQUIRY CARD

Rooftop equipment screens are made of molded glass fiber in modules 8 ft wide by 4 ft high. *Williams-Bermuda Corp.*, P.O. Box 2053, Pasadena, Calif.

CIRCLE 326 ON INQUIRY CARD

Dock Dor-Seal is made of three resilient pads placed around top and sides of a loading dock door which compress to prevent loss of heated or cooled inside air. Barcol Overdoor Co., Sheffield, Ill.

CIRCLE 327 ON INQUIRY CARD

Traffic-bearing roof decking in heatreflecting pastel color is a monolithic, durable surface that is trowel-applied. Selby, Battersby Co., Inc., 5220 Whitby Ave., Philadelphia 43, Pa. CIRCLE 328 ON INQUIRY CARD

CIRCLE 328 ON INQUIRY CARD

A tankless water pressure boosting and control system called SyncroFlo is designed for apartment buildings. Fred H. Schaub Engineering Co., Downers Grove, Ill.

CIRCLE 329 ON INQUIRY CARD



"800" Floor Boxes accept all receptacles

National Electric 800 series floor boxes, standard or cast iron, handle all 14 types of floor receptacles, including microphone adapters, and three sizes of conduit. Result: complete flexibility for any type of power or communications placement.

Besides this complete flexibility, new, larger handholes (25%'') opening) make these boxes easier to fish and pull. Four leveling screws provide maximum stability and easiest leveling. Cast iron boxes provide positive waterproof protection. Both cast iron and standard carry full UL approvals. Two types of service fittings handle a full range of receptacles (to 50 amps), and telephone and other communications equipment.

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Floor Boxes Handle All Types of Receptacles



Looking in on a classroom reveals the natural continuity of wood in supporting beams, paneled walls, and tongue-and-groove ceiling. It also illustrates how the Corte Madera School in Portola Valley, California, openly takes advantage of the sunlight. Architect: Callister & Rosse.



The pavilion-like Corte Madera kindergarten, although placed away from other classroom units, maintains its close school ties with wood.



The board-on-board siding of the Corte Madera kindergarten and t buildings atop the knoll show off some of wood's wonderful econom

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By its very nature, a school of wood suits a city or suburb or country site beautifully. Its exterior of wood siding, roofing, and exposed framing is both attractively warm and enduringly strong. Its classroom interiors of wood floors, doors, ceilings, walls, and furniture are equally friendly and functional for learning and teaching alike. Its quiet throughout is encouraged by wood's acoustical qualities, its temperatures within benefit from wood's insulating advantages. Wood's workability permits you to make the most of your materials to fit a community's purpose and budget. But just as important, wood's many unique characteristics allow desirable economies in maintenance, repairs . . . and flexibility for easy expansion to accommodate growing enrollments. For additional information on designing schools with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION Wood Information Center, 1619 Massachusetts Ave., N.W., Washington 6, D.C.





sposed framing and rustic columns of wood stand out to help blend in a teachers' wing with this bucolic setting. Note the wood affle grills that partition the areas outside each of the Corte Madera classrooms; also, how comfortably wood frames all the glass.

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To use—grasp knob and pull out cord—then hook knob in retainer plate on opposite wall.



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UP TO 10-FT. WHITE NYLON CORD GIVES EXTRA DRYING SPACE

This new Hall-Mack clothes line provides added convenience for all bathrooms, service porches and kitchens – for apartments, motels and hotels. Attractive and small, the chrome-plated case is easily mounted on any wall surface. A strong nylon cord is fed out or retrieved by a spring concealed inside. Simple installation over the tub furnishes ample space for overnight drying of nylons, lingerie and other items.

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INSTALL GRAB BARS

Hall-Mack grab bars add safety and convenience are easily installed in many practical positions to protect grown-ups and children from nasty falls in tub or shower. There are no limits to the combinations possible with Hall-Mack grab bars.





Hall-Mack's colorful new brochure, "Accent on Accessories" is full of original bathroom ideas designed and produced by Hall-Mack. Write for your free copy today.

246

	janitor. The 5" wide stainless steel shelf is permanently attached to mirror back.	
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For more data, circle 108 on Inquiry Card

Office Literature continued from page 200

ROOF TRUSS DESIGNS

Two new roof truss designs for use in apartment construction are shown on data sheets. Both designs use the ring connector system and specify a $3'_{12}$ roof slope with spacing 2 ft on center. Timber Engineering Co., 1619 Massachusetts Ave., N.W., Washington 6, D.C.*

CIRCLE 416 ON INQUIRY CARD

SECTIONAL FOOD COUNTERS



(A.I.A. 35-C-3) Sectional cafeteria counters in 24- and 30in. widths are described in 40-page catalog which includes specifications and suggested floor

plan combinations. Southern Equipment Co., 4550 Gustine Ave., St. Louis 16, Mo.

CIRCLE 417 ON INQUIRY CARD

DEHUMIDIFIERS

Sprayed coil dehumidifiers for cooling and dehumidifying, humidifying, air cleaning and odor control are described in 32-page bulletin, No. 4223. American Standard Industrial Div., Detroit 32, Mich.

CIRCLE 418 ON INQUIRY CARD

INSULATING PANELS

Thermo-Bord structural insulating panels, made of two $\frac{1}{8}$ -in.-thick cement-asbestos surfaces with an asphalt-treated rigid insulation core, are described in folder. The Philip Carey Mfg. Co., 320 S. Wayne Ave., Cincinnati 15, Ohio*

CIRCLE 419 ON INQUIRY CARD

STAINLESS STEEL DOORS

Stainless steel doors with polyurethane foam insulation as the core provide lightweight doors for coolers and freezers. Butcher Boy, 1000 Butcher Boy Dr., Harvard, Ill.*

CIRCLE 420 ON INQUIRY CARD

GLASS-FIBER FUME HOODS

Two new glass-fiber fume hoods are described in 32-page booklet, which also includes details on lab carts of various kinds. Labconco, 8811 S. Prospect, Kansas City, Mo.

CIRCLE 421 ON INQUIRY CARD

* Additional product information in Sweet's Architectural File more literature on page 250

ARCHITECTURAL RECORD June 1963



hese versatile and flexible large capacity, belt driven Seasonmakers let you handle exactly any air conditioning problem of up to 10 tons from a single unit. Look what you get when you specify McQuay.

Five unit sizes with nominal capacities from two to ten tons. Choice of four or six-row chilled water coils and one or tworow steam or hot water coils or direct expansion cooling coils. All units feature famous McQuay Hi-F rippled fin coil construction and standard size cleanable or throwaway type filters.

SIZE

2 то 10 TONS 500 то 3200 CFM Choice of outlets including duct flange, stamped grille, and single or double deflection adjustable grilles. Belt drive units with variable pitched drive permits you to obtain your exact air volume against various static pressures.

And you also get whisper-quiet operation, appearance that is second to none with decorator styled cabinets, and prompt shipment. Above all, you get McQuay's unexcelled quality. See your McQuay representative, or write McQuay, Inc., 1605 Broadway N.E., Minneapolis 13, Minnesota.

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CORRUFORM®

Corruform is ideally suited for economical, short-span roof construction. The highstrength tough-temper steel sheets serve as the structural deck and base for cast-inplace insulating concrete fill. Lightweight sheets are easily handled and weld quickly in place. Large areas are covered fast. The insulating concrete placing can follow immediately after Corruform sheets have been installed. A heavy galvanized coating insures permanence for the life of the building. The system satisfies all present-day roof deck requirements; at the same time, it keeps costs to a minimum. Used on purlins spaced up to and including 4' 0".

TUFCOR®

Tufcor plus insulating lightweight concrete provides all the qualities in good roof design ... from high-strength structural deck and good insulation to fast, low-cost construction. In place, the Tufcor steel deck is first a firm base for the insulating concrete fill and then functions as an effective vapor barrier which assures consistent insulating properties. Also, the combination of steel and concrete makes this roof assembly fire resistant. Tufcor's heavy galvanized coating insures permanence and maintenance-free construction. The completed deck system can function as a diaphragm. Available in 26, 24, 22 and 20 gage steel for purlin spacing 4' 6" to 10' 6".



ROOF DECK

Steel roof deck with rigid insulation offers fast, economical, year-round construction ... it is the most widely used roof system of our time. Granco Roof Deck provides the extra benefit of a flint-hard enamel finish that resists scratches, prevents corrosion and requires little or no maintenance. Wide rib openings mean faster, easier plug welding. Granco Roof Deck is available painted or galvanized in 18, 20 and 22 gage for purlin spacing up to 10' 0".

A new two-hour fire rating also permits reduced insurance premiums.

A quality roof system begins with a Granco steel deck

Selection of a roof deck assembly is obviously a major decision. It affects heating and airconditioning equipment, fuel costs, insurance rates and building maintenance.

Many points must be considered in the deck design: structural framing, insulation requirements, vapor barrier, fire resistance, dead load, wind-up-lift, seismic design or framing stiffness, roof slope, type of built-up roof, maintenance, time and money. The Granco family of steel decks, with a wide range of gages and patterns, can give you a roof system to meet all your design considerations at the lowest possible cost.

Granco has pioneered the development of high-strength steels for roof construction. One of the Granco Deck systems will best fulfill your needs and help you make the ideal selection.

For more information, write: GRANCO STEEL PRODUCTS CO., 6506 N. Broadway, St. Louis 15, Mo. A subsidiary of Granite City Steel Company. Our catalogs are filed in Sweet's, 2i/Gr.



DISTRICT OFFICES: Atlanta • Chicago • Cincinnati • Dallas Detroit • Houston • Kansas City • Los Angeles • Minneapolis New York • St. Louis • San Francisco • Tampa DISTRICT REPRESENTATIVES: Greenville, S. C. • Little Rock Washington, D. C.



For more data, circle 110 on Inquiry Card



Specially designed with close-clinching threads, special tapered point and standard ³/₈" hex head, this new fastener is used for: 1. Fastening sheet side laps. 2. Attaching sheets to light gage structural framing. 3. Fastening flashing to sheets. 4. As plugs, where smaller diameter fasteners have failed.

Performance Features ...

- Tighter Laps—Prevents Leakage
- Stronger—Less Stripping-Out
- Lowers Overall Erection Costs

Write for complete data, samples and prices.

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Plants in West Newton, Pa. and Santa Ana, California

For more data, circle 111 on Inquiry Card

Office Literature continued from page 246

continuea from page 246

CONCRETE ROOF DECK

(A.I.A. 37-B-2) Properties, insulating values and application data for lightweight vermiculite concrete for roof deck and roof insulation are given in eight-page booklet. *Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.** CIRCLE 422 ON INQUIRY CARD

VINYL RAILINGS



(A.I.A. 14-D-4) Solid vinyl *Rucorail* railing is made in six sizes, in 100-ft coils. Seven colors are available. Folder and data sheets give details and

specifications. Rubber Corp. of America, New South Rd., Hicksville, N.Y.*

CIRCLE 423 ON INQUIRY CARD

SEAMLESS METAL DOORS

Two lines of seamless metal doors are described in folder. One line is 1% in. thick, the other 1% in. thick. Mesker Bros., 6002 N. Lindbergh Blvd., Hazelwood, Mo.*

CIRCLE 424 ON INQUIRY CARD

CHALKBOARDS

(A.I.A. 35-B-I) Porcelate porcelain on steel chalkboards are available in seven colors, with a variety of backings and cores. Davidson Enamel Products, 1130 E. Kibby St., Lima, Ohio*

CIRCLE 425 ON INQUIRY CARD

ALUMINUM WINDOWS

Aluminum prime windows for use in commercial and institutional buildings are detailed in 12-page booklet. Features include indirect ventilation and interchangeable sash. Fleet of America, 2015 Walden Ave., Buffalo 25, N.Y.*

CIRCLE 426 ON INQUIRY CARD

MOVABLE STEEL PARTITIONS

(A.I.A. 35-H-6) Movable flush steel partitions in thicknesses of 23% and 3 in. are described in eight-page catalog. Several heights are available, and glass may be inserted. Rockaway Metal Products Corp., 175 Roger Ave., Inwood 96, N.Y.

CIRCLE 427 ON INQUIRY CARD * Additional product information in Sweet's Architectural File





How to keep a RIOT, QUIET!

Ceramic Acoustical Tile offers advantages found in no other "noise control" product ... structural strength, fire resistance, permanent easy-to-clean glazed finish and a wide choice of colors.

These qualities are important in gymnasiums, auditoriums, indoor swimming pools or wherever heat, humidity, sanitation, steam or regular cleaning prohibits use of porous absorptive materials.

Starkustic structural ceramic tile is a truly practical and economical material for high sound absorption and low sound transmission wherever you want to keep a friendly riot quiet.

Write for the complete story . . . Stark Ceramics, Inc., Canton 1, Ohio.

STAR KUSTIC ACOUSTICAL CERAMIC TILE



The versatile glazed structural line: Glazed Facing Tile, Sculptured Glazed Tile, Starkustic (acoustical ceramic tile), Glazed Brick.

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round columns of concrete, and specify forming with lowcost SONOTUBE Fibre Forms. They place, brace, pour, and strip quicker to save contractors time, labor, and materials. For lower overall job costs, call for SONOTUBE Fibre Forms whenever round concrete columns are designed into the structure. Five types, sizes 6" to 48" I. D., in standard 18' lengths or as ordered.



Economical SONOTUBE Fibre Forms permit new design features such as this spiral step emplacement in column.



Columns formed with SONOTUBE Fibre Forms may be finished in many ways to blend into any type of architecture.

See our catalog in Sweet's For full information and prices, write





SONOTUBE Fibre Forms, readily available from distributors coast to coast, provide today's fastest, most economical method of forming round concrete columns.

SONOCO PRODUCTS COMPANY, HARTSVILLE, S. C. • Akron, Indiana • Atlanta, Georgia • Fremont, California • City of Industry, La Puente, California • Longview, Texas • Montclair, N. J. • Mystic, Conn. • Ravenna, Ohio • Tacoma, Washington • Janesville, Wis. • CANADA: Brantford and Toronto, Ontario • Montreal, Que. • MEXICO: Mexico City.



Th f-ctory-rimed M **CONITE DORLUX..**



...the core will not mirror through

When properly constructed...fewer callbacks for warpage, checking or swelling. Glass-smooth, cockle-free Dorlux will not split, splinter, or check...and with Masonite's factory-applied Primecote, Dorlux may be finished with less paint. Unlike foreign hardboards (and many domestic panels), Dorlux skins meet Commercial Standards (a major point with your builder friend when he goes to arrange financing!).



Masonite, Dorlux and Primecote are registered trademarks of Masonite Corporation, Box 777, Chicago 90, III. Dept. AR-6 For more data, circle 100 on Inquiry Card

Four companies to install EFL Energy ystems driven by new Solar gas turbine

Four companies will install a new 300 hp Solar EFL Energy System this year. Power source for the installations will be a new T-350 gas turbine developed by Solar in a cooperative program with the American Gas Association specifically for this type of application.

EFL Energy Systems represent an exciting new concept where both the shaft horsepower and exhaust heat of Solar industrial gas turbines are used to provide either part or all of the energy needs of a building or process. The EFL Systems reach thermal efficiencies of over 70 per cent in a variety of commercial, industrial and marine applications.

Standard Pipeprotection

Among the four companies to install the new T-350 packages is Standard Pipeprotection, Inc., which is using two Solar EFL systems in its new pipe coating factory in related equipment have been eliminated at considerable savings.

Washington Natural Gas Company

Washington Natural Gas Company has ordered a standard T-350 EFL Energy System package for installation in its new three-story office building in Seattle. The turbine will drive a centrifugal vapor cycle refrigeration compressor, while exhaust heat is recovered to run an absorption-type air conditioner. All the building's air conditioning load will be handled by the unit. This dual, or "piggyback" refrigeration capability results in an unusually efficient system.

Lone Star Gas Company

Two standard T-350 EFL units are currently planned for a new service center of Lone Star Gas Company in Fort Worth. Each unit will supply 200 kw of 60 cycle electricity.



Standard Solar T-350 EFL Energy System package containing turbine and driven equipment.

Houston, Texas. The turbines will drive 60 cycle, 200 kw generators. Turbine exhaust which reaches 1000F at full load will be used directly without processing in the plant's pipe drying operation.

Solar turbines are ideally suited for applications using exhaust heat directly because their exhaust gases are clean, dry and have velocity. In the installation at Standard Pipeprotection, blowers, burners and Exhaust heat will be recovered in an exhaust heat boiler for heating and air conditioning needs.

Northern Natural Gas Company

At its Hobbs, N.M. natural gasoline refinery, Northern Natural Gas Company will use one standard T-350 EFL Energy System. The unit will produce 200 kw of electricity and 3500 lb of steam per hour at 15 psig for plant processes.

For more data, circle 114 on Inquiry Card

Heart of Solar's standard 300 hp EFL Energy System package is the T-350 gas turbine engine, which has been designed specifically for heavyduty industrial service. The turbine is mounted in a standardized enclosure. Single or multiple units can meet virtually any load, resulting in savings over competitive power almost anywhere in the United States.



One type of Solar EFL Energy System has (1) Solar T-350 gas turbine driving (2) 200 kw generator in (3) enclosure while exhaust heat is ducted to (4) exhaust heat boiler to operate (5) absorption air conditioner.

Solar already has several EFL Energy Systems installed in the 1100 hp, 750 kw range, using the Solar Saturn turbine. The 2400 pupil McAllen, Texas high school will use two Saturn engine-powered generator sets with exhaust heat recovery to provide all electrical, heating and air conditioning needs. Three Saturn turbine EFL units driving centrifugal refrigeration compressors were selected for a new \$22 million bakery near Chicago.

More Information Available: For more information on how Solar EFL packages can be tailored to your requirements to save you money over competitive power, write Solar, L-113, San Diego 12, California.



801 SOUTH SKINKER APARTMENT Architects: Architectural Design Associates, St. Louis General Contractor: Millstone Construction, Inc., St. Louis

the outlook is bright, the living luxurious



... and the structure sound, with Laclede reinforceme

Residents of the new 801 South Skinker Apartment in St. Louis live the good urban life with an exurban sylvan view.

This tall, glass-faced, reinforced concrete tower rises over wooded, 1400-acre Forest Park on the city's fashionable west side.

The cooperative apartment is air conditioned throughout, and includes a two-level underground parking garage.

Laclede A 432 reinforcing bars and high tensile mesh were used to add strength and durability to the ultra-modern structure. In fact, High Strength Laclede steels in increasing tonnages are being specified for the mushrooming building projects throughout the Midwest.





6320

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ratories 71.

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- No maintenance, no painting, no glazing, just hose off dust and dirt
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- Torsion springs, easily adjusted for perfect balance
- Weighs one-third as much as wood doors.
- Sizes to 24' wide by 16' high
- Quality hardware features

Filuma gives you all of the advantages of overhead door operation — manual or motor powered—plus the undeniable advantage of extra daylighting.

You get more light on every job because Filuma admits 60 to 70 percent of the daylight. Yet the sturdy reinforced fiberglass panels pressure-sealed in extruded aluminum frames provide great strength and wind load capacity. And Filuma is maintenance-free.

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Plants are demonstrating better site planning . . ."; gradual improvements in "styling"—"The styling of only a few of this year's plants could be called outstanding . . . the few breakthroughs accompanied developments in engineering solutions to manufacturing needs . . . One recent trend that persists . . . is the campus-type layout . . . An unusual problem that needs solution is the unattractiveness of most factory roofs . . ."

Architect's Role in Plant Design

Henry L. Wright, F.A.I.A., immediate past president of the American Institute of Architects, has written an article for the May issue of Factory magazine describing the role of the architect in the design of industrial plants. Called "Bread-and-Butter Architects Get Job Done," the article shows the architect, not as a specialist "whose main function is to design a pretty facade for your plant," but as a professional whose special training and experience in planning and relation of spaces allows him to answer the imperative-that the plant building increase the efficiency of operations rather than just house them. In addition to finding ways to support production layout with an efficient building, handling immediate and long-range design, coordinating construction with equipment installation and supervising building phases, Mr. Wright points out, the architect may handle site development, financing, leasehold acquisition, budget studies, site lavout.

Mr. Wright quotes Albert C. Martin of Albert C. Martin and Associates, Los Angeles architectural firm, on "what your architect should be." Mr. Martin recommends: "(1) seek local talent. You are asking for ineptness if you engage someone who hasn't had experience in and with the area and its daily problems; (2) make sure he has waded knee-deep in community activities. This participation gives him the firm, solid, factual reasons for opinions essential for a feasibility survey; (3) study his background. Your man should have heavy experience in dealing with industrial realtors and their clients. His list of recent projects should include one sizable, successful industrial development based on his own findings."

258 ARCHITECTURAL RECORD June 1963

confine the killer

release doors restrict smoke area





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MO₀ 99 electro • holder • release CONCEALED

for use with offset floor closers on hollow metal doors Application made for U.L. listing

Door release can be actuated by any REMOTE ...

smoke sensing device

2 heat rise indicator

3 fire or sprinkler alarm

4 electrical switch

FAIL SAFE (If power fails, door releases automatically)

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ONLY ALLSPANS

combine the strength of cold rolled steel with unparalleled design freedom

ALLSPAN[®] joists are without equal where long, strong open-web steel framing members are a must. You can span areas to 152 feet in width—column-free. ALLSPANS utilize nailable V-Section chords (patented) and tube webs cold rollformed from custom steels.

ALLSPAN open-web design provides a freeway for conduits, ductwork and wiring. Metal roof deck may be attached by welding or nailing. Production is quality-controlled under the resident inspection of the Pittsburgh Testing Laboratory. Write for our complete design manual.

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ARCHITECTS CAN NOW <u>DESIGN</u> TO THE SPECIFIC NEED WITH EITHER TYPE COOKSON DOOR

Standard design practice has been to provide for multiple openings for buildings of this type, with permanent post supports or mullions. \Box Today, thanks to an important design innovation by Cookson, you can decide whether several steel rolling doors are the best answer to the ultimate use plan, or a single, side coiling steel rolling door serves the user to greater advantage. Both Cookson Doors have their places. \Box If the unimpaired single opening (doors up to 125 ft. wide and 40 ft. high—twice this width for bi-parting doors) best fits the requirements, you will find the Cookson Side Coiling design and construction of special importance. It avoids the need for excessive space normally associated with sliding doors. It does not require the cost of heavy trusses for support. Curtain is coiled out of the way to one side in a relatively small box housing. Engineering problems are greatly simplified. Efficient operation either electrically or by hand crank. \Box Write for full information, or see Sweet's.



ROLLING DOORS . FIRE DOORS . GRILLES . COUNTER DOORS . COILING PARTITIONS

For more data, circle 121 on Inquiry Card

YALE PUBLISHES \$200 BOOK BY ARTIST ALBERS

The Yale University Press will publish on June 12 a book hailed as one of the most unusual ever to be published by a university press in America. "Interaction of Color" by worldfamous artist Josef Albers, professor emeritus of art at Yale University, will sell for \$200 a copy, and only 2,000 copies are being printed.

Prof. Albers, who celebrated his 75th birthday in March, says the book "is a result of working with youngsters, as well as with my own tools in my studio. I've tried here to bring together a method of using and teaching color—a method I've developed altogether during my days in America." Here he taught first at Black Mountain College in North Carolina and since 1950 at Yale.

The book, which has been 10 years in the making, will have a lengthy text by the author, covering an 80-page introduction. It includes 81 large folders showing 200 color studies with accompanying text.

HIGH RECRUITING OF ENGINEERS AT IOWA STATE

Recruitment of Iowa State University engineering and technical students is at an all-time high, says Lawrence R. Hillyard, placement director for the College of Engineering and the College of Sciences and Humanities. He reports that 600 company visits were scheduled during the current school year and that between 9,000 and 10,000 student interviews were to be conducted.

Mr. Hillyard says: "The typical company this year is seeking to hire more graduates than it did last year. Average starting salary for a person with a bachelor's degree is about \$590 a month. A year ago the average was \$567. A master's degree is worth about \$100 more per month. The person with a Ph.D. degree in a technical field can attract a starting salary of from \$10,500 to \$14,000 a year."

Great new things are shaping up in concrete screen block



INDOORS AND OUT, screen or grille units form walls that are more than decorative. They bound interior areas without halting the flow of air or vision. Outside, they control wind and sun to reduce cooling and heating costs, while inviting free play of light and shadow. Many designs are available.

To lay up screen block or any masonry unit, waterproofed ATLAS MASONRY CEMENT

it, waterproofed ATLAS MASONRY CEMENT provides the right mortar. It gives weather-tight joints that are uniform in color. Complies with ASTM and Federal Specifications. For information on screen block, ask your local block manufacturer. For information on masonry cement, write Universal Atlas, 100 Park Avenue, New York 17, N.Y.

Universal Atlas Cement Division of United States Steel

(M-92)



Some things are timeless

One of them is FOAMGLAS[®] Roof Insulation. We can prove it. We guarantee it in writing. Our guarantee: FOAMGLAS will stay dry, will maintain original insulating efficiency, remain incombustible, keep its original compressive strength—all for 20 years. No other roof insulation manufacturer offers a written guarantee. We'd like to send you a copy of our guarantee so you can see for yourself. Write Pittsburgh Corning Corporation, Dept. B-63, One Gateway Center, Pittsburgh 22, Pa.



The efficiency of FOAMGLAS Roof Insulation can't change - We guarantee it in writing



NEW PRODUCT CARNES, CORPORATION BUILLETTING BUILLETTING CARNES, CORPORATION CORPORATION CARNES, CORPORATION CORPOR

HIGH AND LOW VELOCITY DUAL-DUCT ATC UNITS

Carnes recognizes the significant advantages of dual-duct air conditioning. That's why Carnes offers you the most complete line of proportioning, mixing, attentuating and delivery equipment in the industry ... equipment to do the job right, with the kind of constant volume control and quick response you want.

Each model has been engineered, tested and then proved for actual use in important building projects to insure promised on-the-job performance.

Enjoy the quality and dependability of Carnes Dual-Duct Acoustical Terminal Control Units on your next high or low velocity application. New Mechanitrol High Velocity ATC Units; High Capacity High Velocity ATC Units; All-Pneumatic Constant Volume High Velocity ATC Units; Low Velocity ATC Units; Air Valves and Blenders for Low or High Velocity Systems. All units come in a complete range of models and sizes.



For more data, circle 124 on Inquiry Card



EPOXY GROUT and SETTING COMPOUND

When the delicatessen kitchens of the Vons Grocery Company were built — U-POXY Grout and Setting Compound was chosen for optimum performance. Revolutionary U-POXY forms a bond as impervious to many chemicals and acids as the quarry tile or brick pavers it joins. It creates dense, tight, bacteria-inhibiting joints of great strength, resistant to most food acids, greases and chemicals. U-POXY is used in new installations and to regrout existing floors, eliminating high maintenance costs and expensive shut-downs. Wherever maximum corrosion resistance and sanitary conditions are important, specify and install U-POXY — the miracle epoxy grout and setting compound. Write for complete descriptive brochure.



For more data, circle 125 on Inquiry Card

John H. Stufflebean, chief engineer and principal of Blanton and Cole, architectural and engineering firm of Tucson, Ariz., has been elected president of the National Society of Professional Engineers. Also elected were six regional vice presidents: Pierce G. Ellis, vice president, division operations, Wisconsin Public Service Corp., Oshkosh; Allen S. Janssen, dean, College of Engineering, University of Idaho, Moscow, Idaho: L. M. Van Doren, partner in the consulting firm of Servis, Van Doren and Hazard, Engineers-Architects, Topeka, Kans.; Harry C. Simrall, dean, School of Engineering, Mississippi State University, State College, Miss.; J. Neils Thompson, professor, civil engineering, University of Texas, Austin; and Thomas M. Linville, manager, research operations department, General Electric, Schenectady, N.Y. Russell B. Allen, assistant dean of engineering, University of Maryland, Silver Spring was re-elected treasurer.

Stewart H. Beall, consulting engineer and partner in Beall and Le-May, Washington, D.C., has been installed as 1963-64 president of the Consulting Engineers Council of Metropolitan Washington, a member organization of the national Consulting Engineers Council.

John W. Severinghaus, partner in Skidmore, Owings & Merrill, New York City, has been named a "Distinguished Alumnus" of the College of Engineering at Ohio State University. He was one of five graduates of the College of Engineering so honored at the 10th annual Conference for Engineers and Architects held on May 10 on the University campus. The four other "Distinguished Alumni" are: Jack Cashell, president and general manager, Preston Oil Company, Columbus; A. Elliot Kimberly, chief engineer for vehicle reliability, Chrysler Corporation, Detroit, Mich.; Robert F. Shurtz, vice president for subsidiaries, Basic Incorporated, Cleveland; and Raymond P. Greene, president, Ray Greene Boat Company, Toledo.

Will the hardware stand \mathbf{H} THE TEST OF TIME?



1963

The pencil lines on your drawing board today are the landmarks of tomorrow. Blueprints will become buildings still standing 100 or even 200 years from now. BUT will the hardware stand up with the mortar, steel and glass? Lockwood has engineered a lockset that will. The internal parts are made of wear-resisting DuPont Zytel Nylon. Contact points which wear in normal locksets are virtually friction-free. 1,500,000 test cycles or 100 years of normal use failed to wear out these sets.

Zytel, long used in the automotive, aviation and home appliance fields is also corrosion proof and it never needs lubrication. Locksets with Zytel are available in heavy duty, standard duty and residential grades.



2063

Zonolite prototype building #1: A Motor Hotel



Architect Stanley Tigerman creates a motor hotel of concrete block: Zonolite Masonry Fill Insulation makes it practical (see table) Zonolite commissioned architect Stanley Tigerman of Tigerman and Koglin, Chicago architectural firm, and engineer Norman Migdal of Chicago to do this motor hotel of insulated concrete block.

-

It brings some interesting ideas to light.

First, note that the interior walls are exposed block; the same block that is exposed on the exterior. Zonolite Masonry Fill Insulation in block cells cuts the heat transmission through walls from 35% to 50% or more, keeping interior surfaces comfortable. The water repellent nature of the material keeps moisture from collecting inside the wall, so that interior paint doesn't blister and peel.

The insulation-filled cores in the cored concrete floor and roof slabs keep floors comfortable and minimize heat loss through the roof.

A benefit unexpected by most is the sound dampening capability of Zonolite Masonry Fill...a 20% loudness reduction in this case.

You have probably noticed from the table that the size and cost of the necessary heating and air conditioning units are considerably reduced by using Zonolite Masonry Fill Insulation.

Contrast this (and the reduced operating costs) with the approximate installed costs of Zonolite Masonry Fill Insulation.





approx, installed costs	6" block	8" block	12" block	
per sq. ft. of wall	10¢	13¢	21¢	

The installed costs are low for two reasons. First, the initial cost of Zonolite Masonry Fill Insulation is low. Second, to install it, you just pour it out of the bag into the block cells until the wall is full.

For more information about this remarkable insulation, write Department AR-63 for Bulletin MF-68.

ZONOLITE

Zonolite Company, 135 South LaSalle St. Chicago 3, III.

THE ECONOMICS OF HEATING AND AIR CONDITIONING THE PROTOTYPE MOTOR HOTEL WITH AND WITHOUT WATER REPELLENT ZONOLITE MASONRY FILL INSULATION

	DESIGN CONDITIONS		WINTER HEAT LOSS IN BTU/HR Assuming: 70° F Indoor -10° F Outdoor		SUMMER HEAT GAIN IN BTU/HR Assuming: 80° F 50% RH Indoor 95° FDB 75° FWB Outdoor	
1	without Masonry Fill	with Masonry Fill	without Masonry Fill	with Masonry Fill	without Masonry Fill	with Masonry Fill
ROOF	8" Concrete	8" Concrete with 4" Dia. cores filled with Masonry Fill	514,000	442,000	294,000	252,000
FLOOR	8* Concrete	8" Concrete with 4" Dia. cores filled with Masonry Fill	568,000	476,000	85,000	71,500
GLASS	Double Plate	Double Plate	576,000	576,000	253,000	253,000
WALL	8"x8"x16" Sand & Gravel Hollow Core Block	8"x8"x16" Sand & Gravel Hollow Core Block with Masonry Fill	734,000	463,500	70,800	44,730
INFILTRATION	-	~	249,000	249,000	4,000	4,000
LIGHTS		- e		· · · · ·	34,000	34,000
PEOPLE					10,000	10,000
TOTALS			2,641,000 BTU/HR	2,206,500 BTU/HR	750,800 BTU/HR or 63 tons Refrig- eration Req.	669,230 BTU/HR or 56 tons Refrig- eration Reg.
			2,641,000 - 2,20	6,500		63 - 56

 SAVINGS WITH MASONRY FILL % Savings
 2,641,000
 = 16.4%
 % Savings
 63
 = 11.0%

 NOTE—Sound transmission between adjoining suites is reduced by 2.9 db. using blocks filled with Zonolite Masonry Fill Insulation as compared to hollow blocks, or equivalent to 20% loudness reduction.
 80

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What more could anyone ask for in a fountain?



design for tomorrow 🔶 in glamorous stainless steel

Take the natural advantages of stainless steel . . . glistening beauty, ease of maintenance, lifetime service . . . and combine them with the distinctive features of Halsey Taylor design . . . health-safety, dependability and economy, modern styling to fit any decor. What more could anyone ask for in a fountain?

The Halsey W. Taylor Co., Warren, Ohio

Ask for latest catalog, or see Sweet's or the Yellow Pages



Face-mount

Quality Drinking Fixtures—Styling plus Service

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At top, recess type. Above, Counter class-room type.

Face-mounted type

On the Calendar

June-

3-14 Institute of Church Design, sponsored by Carnegie Institute of Technology Department of Architecture and the Pittsburgh Theological Seminary—Pittsburgh, Pa. 9-13 56th annual meeting, Air Pollution Control Association; theme, "Cleaner Air through Understanding and Cooperation"—Sheraton-Cadillac Hotel, Detroit

9-19 Eighth annual A.I.A.-Association of Collegiate Schools of Architecture Teachers Seminar—Cranbrook Academy of Art, Bloomfield Hills, Mich.

13-15 1963 convention, New Jersey Chapter, American Institute of Architects; theme, "Office Practice for the Architect"—Essex and Sussex Hotel, Spring Lake, N.J.

17-19 University of Michigan 16th Annual Conference on Aging-Michigan Union, University of Michigan, Ann Arbor, Mich.

23-26 64th annual meeting, American Society of Landscape Architects; theme, "The Landscape Architect and Public Parks"—Penn-Sheraton Hotel, Pittsburgh, Pa.

23-28 66th annual meeting, American Society for Testing Materials— Chalfonte-Haddon Hall, Atlantic City

24-26 70th annual meeting, American Society of Heating, Refrigerating and Air-Conditioning Engineers —Hotel Schroeder, Milwaukee

24-30 International Design Conference; theme, "Design & The American Image Abroad"—Aspen, Colo. 26-29 Annual meeting, National Society of Professional Engineers— Sheraton-Cleveland Hotel, Cleveland

Office Notes

Offices Opened-

Italo J. Milani, architect, has opened an office at 403 Cleaveland Bldg., Rock Island, Ill.

Robert A. Krider, formerly associated with Meyers, Krider, Werle & Ellenberger, has opened an office for the practice of architecture at 2598 West Eighth St., Erie, Pa.

Associate architects Denis Beatty and Griswold Raetze have opened offices for professional practice at 233 Post St., San Francisco, Calif. *continued on page 278*



Architect-Victor Gruen Associates, Beverly Hills, California. General Contractor-Mellon-Stuart Company, Pittsburgh, Pennsylvania

Natco Ceramic Glazed Brick beautifies Northway Mall store

Exterior walls of the new Joseph Horne Company Northway Mall store are constructed of Natco Norman Size Ceramic Glazed Face Brick. Its gleaming white ceramic finish creates a unique and colorful atmosphere that virtually dominates the suburban Pittsburgh shopping center, first of its kind in Pennsylvania. However, beauty is only one advantage . . . Natco Glazed Norman Brick was also instrumental in the functional design. Its larger 2¼" x 11%" face size accentuates the sweeping horizontal design of the bi-level structure. The durable, hard-burned

ceramic finish practically eliminates maintenance worries. ■ Why not include Natco glazed brick in your next construction project? You'll find a wide variety of attractive colors to choose from, in smooth, velour and speckled finishes . . . Standard, Norman and Jumbo sizes. Write for catalog CGB-50.



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"...complements the design, safeguards the tenants..."

says E. Wolman of the Jerry Wolman Construction Company, Silver Spring, Maryland.



"Anchor's All-Aluminum Picket Railing protects nine levels of balconies around Summit Hill Apartments in Silver Spring. We chose it for its elegance and attractive appearance, the way it complements the design and safeguards the tenants."

Consider new Anchor All-Aluminum Picket Railing for *your* choice, too . . . whenever its lasting beauty and positive protection are compatible with your building design. Pickets, posts, and handrail are all bright, rust-proof Reynolds Aluminum. And Anchor's national network of skilled erectors provides quick and efficient installation.

For detailed information, call your local Anchor office or write: ANCHOR POST PRODUCTS, INC., 6685 Eastern Avenue, Baltimore 24, Maryland.



Plants in Baltimore, Houston, Los Angeles.





New booklet for the Architect

This is a 20-page engineering report on the most effective structural gasket ever developed for curtainwall construction. For your copy, simply send letter or post card to The Standard Products Company at the address shown above. For more data, circle 131 on Inquiry Card

When your client specifies pneumatic tubes...



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NEW CATALOG Contains pattern

descriptions, light distribution charts and transmission data. Send for your free copy today.

See our catalog in Sweet's **G**

been artfully combined in new Mississippi "Burlap" and "Herringbone". Here are patterns offering another dimension and broader scope for creating interiors high in interest and utility. Both are recommended for use in partitions for the division of living and working areas in residential and commercial installations and wherever else transmitted light should become a vibrant, interesting part of the decorating scheme. Specify Mississippi glass. Available in a wide variety of patterns—wired and unwired—at most leading distributors of quality glass.



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ONLY WIRE GLASS GIVES YOU BOTH... Decoration and Visible Protection

Now, thanks to FHA approved 1/2" Spraylite Misco, bathrooms are transformed into sheer elegance and luxury with assurance of proven impact resistance. Fortified with Misco, diamond-shaped, welded wire netting, the bright wire mesh in Spraylite glass is clearly visible as a sturdy web of steel . . . serving as a constant reminder of its safety features. For safer, more glamorous bathrooms specify 1/2" Spraylite Misco. Send for literature.



New 1/2" Spraylite Misco meets FHA safety glazing requirements and does it so effectively and beautifully.



Fixtures, metal and glazing by St. Louis Shower Door Co., St. Louis 32, Missouri.

H #1-63



88 Angelica Street • St. Louis 7, Missouri NEW YORK • CHICAGO • FULLERTON, CALIF.

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

Shelter for A House of Worship

As stone and brick was used for permanence in the construction of Temple Emanuel, so Ludowici-Celadon roofing tiles were chosen for their everlasting beauty and strength. Easily adapted to any design, these tiles soundly reject any and all elements. Available in a variety of shapes, styles and colors to complement any design for the life of the building.

Whether planning a new structure or replacing your present roof, be sure to consider the architectural advantages of a Ludowici-Celadon tile roof.

A special brochure is available upon request.



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Please-by return mail-send me your special architectural brochure illustrating Ludowici roofing tiles in full color.

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ADDRESS	÷	
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TEMPLE EMANUEL, Chicago, Illinois

ARCHITECT: Loebl, Schlossman and Bennett

ROOFING CONTRACTOR: Hans Rosenow

Roofing Company

ROOFING TILE By Ludowici

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For more data, circle 134 on Inquiry Card

BARCOL **performance-rated** OVERdoors take the gamble out of door specifications!

Why "trust to luck" with door specs based on lowest price . . . when BARCOL justifies your decision with documented door performance. Surveys of industrial and commercial installations from coast to coast prove BARCOL OVERdoors are superior in quality and operating efficiency. When compared in terms of continuous service . . .

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For more data, circle 135 on Inquiry Card

The Building: Ezra Stiles and Morse Colleges Yale University

Architect: Eero Saarinen and Associates Hamden, Conn.

Mechanical Engineers: van Zelm, Haywood & Shadford West Hartford, Conn.

Mechanical Contractors: Buckingham-Routh, New Haven, Conn.



The snow melting system is circulated with an anti-freeze solution by a B&G Series 60 In-line Pump.



The circulators for heating and cooling systems are B&G Universal Pumps.



Heating...cooling...snow melting with B&G Hydro-Flo PUMPS

To the completely distinctive architecture of these new Yale residences is added mechanical equipment which assures all-year comfort and labor-saving convenience. Heating, cooling and snow melting are provided by water systems circulated by B&G *Hydro-Flo* Pumps.

B&G Hydro-Flo circulated water systems provide a solution to practically every comfort problem...at minimum material and operating cost! Water systems can be easily zoned for better heat control and reduction of power requirements.

The characteristics which make water the ideal heating medium are equally valuable when water is used as the coolant in air conditioning and refrigeration systems. In such systems, B&G *Hydro-Flo* Pumps are a preferred selection, either as components or as part of completely factory-assembled "pack-age" liquid coolers.



PUMPS...HEAT EXCHANGERS...AIR CONDITIONING AND PROCESS COOLING EQUIPMENT















Booster Pumps

Package Liquid Coolers Ref

Refrigeration Compressors Centr

Centrifugal Pumps Heat Exchangers

s Air

Oil-less Air Compressors

For more data, circle 136 on Inquiry Card

ARCHITECTURAL RECORD June 1963 277



Foldoor's superior track, trolley and hinge system . . . backed by the strongest warranty in the folding partition industry . . . provides year after year of easy operation ... dependable service.

In the normal operation of a folding partition, the track, trolley and hinge system absorbs the most strain and stress. The proof of Foldoor's superior design is evidenced by its dealer warranty. Hinges, trolleys and trolley pins are warranted for nine years over and above the usual one year warranty on the entire door and all accessories. The track is warranted for the lifetime of its original installation.

For sound control and fabric information. see your Foldoor representative. Ask him about his "Warranty Plus" program. See the complete Foldoor line in SWEET'S ARCHITECTURAL FILE 16f/Ho.



Zone State

For more data, circle 137 on Inquiry Card

Office Notes continued from page 270

David B. Yarbrough, architect, has opened an office for the practice of architecture at 1316 Hartford Bldg., Dallas, Tex.

New Firms, Firm Changes.

Carlton S. Proctor of Moran, Proctor, Mueser & Rutledge, 415 Madison Ave., New York City, has retired. General practice of consulting engineering continues under the same firm name.

Rosario D'Agrosa and Herbert W. Riemer have been made partners in the New York architectural firm of Morris Ketchum Jr. and Associates.

Sargent, Webster, Crenshaw & Folley, architects, engineers, planners, Syracuse, N.Y., announce the appointment of John V. Vatet as director of regional planning division.

Charles A. Schaefer, formerly senior engineer, water supply program, division of sanitary engineering, State Department of Health, Austin, Tex., has joined the staff of Bovay Engineers. Inc., Houston, as senior project engineer.

Kent Attridge has formed his own architectural firm in Los Angeles. Formerly the associate architect of Claud Beelman, until Mr. Beelman's death last January, Mr. Attridge retains the Beelman staff in the new company, Kent Attridge and Associates at 7421 Beverly Blvd.

James J. Souder has joined the staff of Bolt, Beranek and Newman, Inc. in an expansion of the firm's research and consulting activities. Mr. Souder will direct, together with Mr. Welden E. Clark, research and consulting programs in planning for urbanization, population growth, health care, information processing and the comparative evaluation of planning results. Work will be centered in the firm's office at 8221 Melrose Ave., Los Angeles, Calif.

David W. Mueller, immediate past president of the Construction Specifications Institute, is now chief specifications writer in the firm of Harley, Ellington, Cowin and Stirton, Inc., Detroit architects and engineers.

New members of the firm, Davis & Wilson, 226 Stuart Bldg., Lincoln, Neb., are William M. Fenton and James H. Stange.

continued on page 286

TRACKS—Foldoor tracks are engineered and contoured for strength and durability without ex-cess weight. Convex treadways cut rolling friction to an absolute minimum... side wall contouring guides trolleys in a straight, smooth-flowing line without scraping or side play.



2. TROLLEYS—Foldoors feature a heavy duty trol-ley at every second hinge pair. This gives balanced weight distribution, adds to ease of operation and prevents sagging. Foldoor trolley pins are case prevents sagging. Foldoor trolley pins a hardened 1/4-inch steel for extra strength. are case



3. HINGES—Foldoor hinges are 16 gauge embossed steel, $3\frac{1}{2}$ inches wide, with double-thick un-pierced metal at mid-section and a total of $4\frac{1}{2}$ inches at the pivot point. Foldoor's superior hinge strength eliminates the need for **double** top hinge rows except on partitions 15 feet high or over.

.. AND ON THE INSIDE,

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Pittsburgh IBM Building
Owner : Equitable Life Assurance Society—Architect : Curtis & Davis—Mechanical & electrical engineers : Cary B. Gamble & Associates General contractors : George A. Fuller & Company—Mechanical contractors : Limbach Company

ife



Barrett urethane roof insulation provides maximum thermal efficiency while reducing air conditioning equipment space and costs.

BARRETT URETHANE ROOF INSULATION CUTS APPLIC

Save duct and enclosure space, reduce air conditioning equipment size, and provide a more efficient heat and cooling system for your client. You can do this with Barrett urethane roof insulation, a new foamed plastic insulation panel containing billions of tiny, closed cells sandwiched between two layers of a tough roofing membrane. This assembly provides a unique combination of properties which make it a superior roof insulation—particularly for air conditioned or electrically heated buildings, and other structures designed for optimum comfort. Barrett urethane roof insulation has a K factor of 0.13 as compared to a range of 0.27 to 0.40 for commonly used roof insulations. This means you can design a roof that is half as thick, and still maintain maximum thermal efficiency.

Barrett urethane roof insulation is specifically designed to insulate built-up roofs. It will not bend, buckle or melt when mopped with hot pitch or asphalt. It has a rugged, work-on,



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walk-on surface that stands up under normal roof construction. Urethane will not rot or absorb water. For less critical insulation requirements, Barrett offers and recommends surfacesized fiberboard insulation.

Free offer: Send today for a free copy of Barrett's heat transfer calculator, the fast, easy way to determine the thickness of Barrett urethane roof insulation for any insulation value.

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F. W. Dodge spotlights a spectacular new parking garage



New Haven's huge new parking garage is in fact the vanguard of the city's effort to lure shoppers off the Connecticut Turnpike and back to downtown shopping facilities. The new garage had to be big, convenient, and impressive.

Architect Paul Rudolph's solution is this poured concrete colossus, 118' wide, 726' long, with room for 1,500 cars. Located in the heart of New Haven's commercial district the new garage is directly accessible from the Turnpike, and two major department stores will "plug in" directly to the building. As a dramatic visual symbol of civic and commercial rejuvenation, the Temple Street Garage has already earned its laurels from the profession.

"On this job," says Architect Rudolph, "as on many other specialized projects, the Dodge Reporter helped by bringing our needs to the attention of a great many contractors and suppliers. As a result, the suppliers and trades who were interested in the project already knew something about what we required."

In addition, by reviewing the workloads of contractors who were available for bidding, it was possible to schedule bid dates so as to create as little conflict as possible. Temple Street Parking Garage, New Haven, Connecticut Architect: Paul Rudolph Contractor: Fusco-Amatruda Company

Characterized as an "uncompromising work of art," this garage is ingeniously designed so that motorists can exit directly from the Connecticut Turnpike, park, and proceed directly to either of two department stores. Poured concrete construction throughout, including handrails and lamp posts. Electronic sound-sensitive equipment controls traffic flow within the building, counts the number of cars on each level and records the length of time each car is parked.



the latest in store *design* needs the latest in store *lighting*...



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One of the first 300 Footcandle installations in the country of American's recently-introduced 55° Louvers was in MADIGAN'S smart, new suburban store in Melrose Park, Ill. Maximum store illumination—softly diffused to flatter merchandise, customers, and store decor—was the aim of Madigan's management. The result was *perfect store lighting*.

Only American's exclusive 55° deep-cell styrene louvers could achieve such glare-free brightness while utilizing the full advantage of high-level, 300 candlepower illumination. They may be cut, grooved or sized to meet any requirement and ... the cost is low. Specify modern, sturdy 55° Louvers by American.

Available in translucent white and a variety of colors, for use in individual fixtures, modular units and large areas. Cell size: ${}^{25}\!\!/_{4}'' \times {}^{25}\!'_{4}'' \times {}^{1}\!'_{2}''$ high.

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This parasol-like plywood folded plate roof, suspended beneath slender reinforced concrete beams, is another prime example of how modern materials and engineering systems can be combined to create a new architecture, free of traditional restraints. The plywood canopy is so nearly self-sustaining that each folded plate needs only two beam connections. The result is a large clear-span structure of remarkable harmony and simplicity. ■ Construction was efficient and economical. Components were sitefabricated with plywood and light lumber framing, and crane-lifted into place. in so many of today's new architectural forms, only plywood had the requisite design flexibility coupled with adequate structural and appearance values. For more information, write (USA only) Douglas Fir Plywood Association, Tacoma 2, Wash.





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Office Notes

continued from page 278

John E. Stratton, treasurer of Bolt, Beranek and Newman, Inc., Cambridge, Mass., has been elected a director.

New partners in the firm of Ketchum and Konkel, Denver, Colo. and Old Saybrook, Conn., are Rudolph F. Besier, Michael H. Barrett, David E. Austin and Donavon D. Nickel. Advanced to associate from project engineers are Nicholas V. Tsiouvaras, Don T. Pyle and Albert E. Anderson.

William E. Buchanan has been appointed comptroller with architects Sherwood, Mills and Smith, 777 Summer St., Stamford, Conn.

A new partner in Victor Gruen Associates, Beverly Hills, Calif., is Beda Zwicker. He continues as director of the firm's New York office.

Paul T. Blanton and Jim W. Machlan have formed a partnership for the practice of architecture under the firm name of Blanton and Machlan, A.I.A., Architects. Offices are at 501 Dickens, Corpus Christi, Tex.

James E. Gibson has been appointed director of architecture in the architectural and engineering firm of Harley, Ellington, Cowin and Stirton, Inc., Detroit, Mich.

Jose R. Fernandez, structural engineer and project coordinator with Samborn, Steketee, Otis and Evans, Toledo architects and engineers, has been named an associate of that firm.

Gordon B. Weld has been made a partner in the firm of Webber, Harrington and Weld, Architects and Engineers, Suite 210, 7071 Bayers Rd., Halifax, Nova Scotia.

Araldo Cossutta has been admitted to partnership in the firm of I. M. Pei & Associates, New York. New associates are Pershing Wong, Donald H. Gorman and James Ingo Freed.

Addendum

Credit for West Bloomfield Township Public Library (April, page 168) and for the Florists' Telegraph Delivery Association International Headquarters Building (April, pages 198-199) should have read: Stickel, Jaroszewicz & Moody, Architects; now Frederick Stickel Associates.



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This new Johns-Manville all-fiber-glass ceiling panel offers a combination of practicality and style . . . at moderate



cost. Square lay-in panels are moulded in inverted coffer shape, projecting 2" downward into the room. As shown above, the visible surface has an attractive, low-relief, rippled texture. Panels are factory-painted white, but can, of course, be repainted to suit any decorative scheme. Measuring 24" x 24" x 2" deep and acoustically effective (NRC of .75) ... Inverted Coffer Panels suggest interesting applications in supermarkets and other broad-expanse areas.

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Lay-in Inverted Coffer Panels are quickly installed in an exposed grid-type suspension system.

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are moulded entirely of fiber glass with an NRC of .75. They are 24" x 24", rising gently to create a 2" vault. As you see above, the surface is made more visually interesting by a low-relief, rippled texture. White-painted at the factory for easy repainting if desired, Textured Vault Panels offer an opportunity to create a sense of height and elegance, as in the gallery above, and in larger institutional or commercial building areas.

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■ For more information, see your American-Standard representative, or write American-Standard, Plumbing and Heating Division, 40 West 40th Street, New York 18, New York.





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Long spans in prestressed concrete increase the value of a building many times at surprisingly small increase in total building cost.

Planning for flexibility is one of the best investments that can be made in any type of building. Prestressing allows the design of wellproportioned building members of limited depth for long spans—eliminating columns and load bearing walls, providing more *usable* floor space.

The trend toward use of longer spans—to reduce operating costs and prevent obsolescence when occupancy plans change—has been a major factor in the growing popularity of prestressed concrete.

Prestressed concrete gives you the longer spans you need with only moderate increase in per square foot cost. For example, with a double tee 14 inches deep and 4 feet wide, the only real difference in per square foot cost between a 30-foot-span member and a 50-footspan member is the cost of additional prestressing strand. The same is true for a single tee on a 60-foot-span versus 110-foot-span. The extra cost is partially offset by savings in column, footing and erection costs.

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GRANT IS AWARDED PRATT INSTITUTE

The Rockefeller Brothers Fund has made a \$94,000 grant to the Department of Planning, School of Architecture at Pratt Institute, Brooklyn, N.Y., to be used over a two-year period for the establishment of an experimental Adult Planning and Urban Renewal Education Center.

The proposed center, which is expected to begin operations in September 1963, is intended to make available factual information of urban renewal and housing theory and practice to grassroots citizens' organizations. The program will offer extension courses in urban renewal and planning to concerned community groups. Development of such an effort is considered essential in view of the difficulty of achieving meaningful citizen participation in city planning, despite increasing commitment of city governments to undertake planning and renewal projects with such participation.

PRINTS, DRAWINGS BY MENDELSOHN OFFERED FOR LOAN

Approximately 20 new exhibitions of 100 original prints and drawings by the visionary architect Eric Mendelsohn are available from the Smithsonian Traveling Exhibition Service at a rental fee for a three- or fourweek booking period. The 2,000 sketches have just completed a successful two-year tour of major European cities following display at the 30th Biennale in Venice, 1960. They represent Mendelsohn's life work from 1914 to 1953.

"In all his work," says critic Wolf Von Eckardt, "Mendelsohn was inspired not by architectural dogma but by his own inner vision which, almost as in a trance, he would rapidly commit to paper—his famous sketches. These tiny sparks helped to ignite entirely new architectural concepts . . ."

For further information, write Mrs. John A. Pope, Chief, Traveling Exhibition Service, Smithsonian Institution, Washington 25, D.C.



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120 LINEAL FEET BY GANGING SYMONS FORMS WITH HAUNCH FORMS



Faced with the construction of a 6" haunch along 540' of foundation wall on the Coon Rapids High School job, Gunnar Johnson & Son of Minneapolis added Symons steel haunch brackets and plywood to ganged sections of Symons Steel-Ply Forms, accomplishing a pour of 120 lineal feet of wall in one day.

To form the gang haunches, $\frac{3}{4''}$ plywood was tacked to the haunch brackets, which lock with standard Steel-Ply Forms. 2'x 6' panels formed the base; the 3' haunch form was attached with one-piece wedge-bolt connecting hardware, completing the required 9' height. Three 20' x 9' sections were stripped, oiled, and erected in 45 minutes.

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Write for the *complete illustrated* story. Symons Steel-Ply Forms can be rented with purchase option.



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296 ARCHITECTURAL RECORD June 1963



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ARDMORE, PENNSYLVANIA

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RCA Astro-Electronics Division, Hightstown, N. J. . Architect: Malcolm B. Wells



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A.I.A. Meets at Miami continued from page 26

awesome moment when the architect takes pencil in hand . . . and holds it poised above a white sheet of paper. He has suspended there all that has gone before and all that will ever be. The creative act cannot be delegated." And Johansen, noting that for the creative architect "there is no overwhelming concern for client satisfaction," explained that such an architect works for himself and "a few select fellow professionals."

Exhibits within Exhibits

Although Miami Beach architecture, with its insistent flamboyance, may sometimes have seemed like the main exhibit, there were plenty of architectural exhibits around, and one could always withdraw from the special world of Miami Beach to contemplate (for example) the special world of Paolo Soleri. He came to the convention from his Arizona desert studio to receive the A.I.A. Craftsmanship Medal for his pottery and metalwork but brought with him one of the most spectacular exhibits ever seen at an A.I.A. convention-the color renderings, in great strips up to 60 feet long, of his vision of "Mesa City," a concept of concentrated clusters of dwelling units, industrial and commercial areas and civic areas which would be forever contained and separated by the limits of their individual mesa sites.

Or, a step away from Mesa City in the Americana's capacious south lobby, there was the world of R. Buckminster Fuller, engineer, inventor and philosopher who was honored by the A.I.A. at this convention with the Allied Professions Medal.

There were also, of course, the usual exhibits of work of the Gold Medal winner and the other medalists, the Honor Awards for 1963, the newly elected Fellows for Design, the R. S. Reynolds Memorial Award and Student Competition and an exhibit of the work of the host chapter.

Toward a New Headquarters

The Board's proposal for mortgaging a portion of the present national headquarters site in Washington, D.C. (not including the Octagon *continued on page 308*

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A.I.A. Meets at Miami continued from page 304

building and its garden) was among those approved at this convention. It failed last year at the final session because an overwhelmingly favorable vote still was short of the two-thirds majority required by the A.I.A. bylaws.

While the voice vote on the headquarters proposal, when it came, did not appear to be anything like close, there was more debate on it than on any other. Concern was expressed that the plan to build on the existing site was impracticable from the point of view of future space needs and from the point of view of properly relating a new building to the Octagon and its garden. Several speakers appeared dubious that an appropriate A.I.A. headquarters building could be built for the proposal's assumed cost of \$24 per square foot. There were indications that these doubts were shared by more delegates than voted them, but the urgency of the need and the evidence of the most careful and detailed investigation of the possibilities carried the day, and handsomely.

Other Board proposals for bylaw changes approved by the convention authorize a chapter president or in his absence another chapter member he has named to cast an absent delegate's vote; provide for "termination without prejudice" of corporate membership when a member enters an occupation which would disqualify him for membership if he were applying for it; and amend certain judiciary procedures of the Institute.

The only resolution (except for appreciations) to reach the convention floor was one offered by the East Bay

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Chapter to amend the bylaws to eliminate the U.S. citizenship requirement for A.I.A. membership. Resolutions Committee Chairman Clinton E. Brush of Nashville, for the Resolutions Committee, reported it to the convention without recommendation and it was moved for adoption and seconded before a ruling from the A.I.A.'s legal counsel advised a bylaw change could not be offered without 30 days' notice to the membership. It was thereupon tabled; but there followed a motion, which was approved, that the same resolution be put on next year's agenda.

Products and Hospitality

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Ninety-five exhibitors had 118 displays in the 13th Annual Product Exhibition jointly presented by the A.I.A. and the Producers' Council, Inc. This year's exhibition, in the Grand Ballroom of the Americana, had the registration area in one corner and the host chapter hospitality area in another.

Eight exhibits were cited as outstanding by a jury of architects consisting of Morris Ketchum Jr., F.A.I.A., New York regional director, Milton Milstein of Buffalo and P. Compton Miller of Bronxville, N.Y. Citations were:

For outstanding attractiveness of their displays-Mills Company, Armstrong Cork Company, Knoll Associates and Libbey-Owens Ford Glass Company.

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Architects: Charles Luckman Associates, Welton Becket & Associates and Paul R. Williams, Los Angeles Electrical Contractors. Fischbach & Moore Electrical & Illuminating Engineer: J. S. Hamel Photos: L. A. Airport Photography



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Only steel columns could bear the load. The 30-story Michigan **Consolidated Gas Company** Building in Detroit is the world's tallest all-welded building for a reason: integrated architectural design prohibited use of columns larger than 2 ft., 4 inches square. Reinforced concrete columns that size couldn't carry the required 61/2 million pounds. Connections were welded to eliminate bulkiness and achieve smooth right angles between beams and columns. Heavy columns for lower stories are four plates welded into a rectangular box section. Where extra strength was needed a fifth interior plate was added. Lighter upper columns are regular rolled sections. The field-welded windresisting system contains the equivalent of 40 miles of 5/16-inch fillet welds. American Bridge Division fabricated and erected 5,700 tons of steel, inspected welds by radiographic and dry powder magnetic particle techniques. Architects: Minoru Yamasaki-Smith, Hinchman & Grvlls. Associated Architects & Engineers. Contractor: Bryant & Detwiler Co.

Steel dome saves Syracuse University \$193,500. Fabricated and erected by American Bridge, the low-profile dome of the Syracuse University field house has a rise of only 32 ft. and a diameter of 300 ft. Because there are no interior supports, all of the 80.000-sq.-ft. floor is usable. Seating capacity is over 4,000 with room enough for basketball, track and field meets, or a 70-yd. football practice field. There are over 700 tons of structural steel in the dome and canopy. In a competitive bid with the alternate concrete design, steel saved \$193,-500. Architect: King and King. Engineer: Eckerlin and Kleper. Contractor: R. A. Culotti Construction Company.

High-rise truss walls-now possible with unique design and the "combination of steels." Through a new building design concept using four different steels of varying strengths, designers trimmed 200 tons of steel (and saved \$300,000) from the skeleton of Pittsburgh's IBM Building, first high-rise building with truss walls. External framework is a diagonal, criss-crossing truss system. Only interior vertical supports are the six columns of the central service core. Outer truss walls direct all wind, wall and most floor loads down to two ground contacts on each side of the building. Using different strength steels (from 33,000 to 100,000 psi) engineers accommodated stress levels much as bridge designers have done in the past. This principle also kept truss members a near-uniform size from top to bottom regardless of stresses, and permitted American Bridge use of time-saving modular fabrication and erection.

Truss walls form the facade, eliminating spandrels and independent curtain wall system. Diagonals were fireproofed with asbestos plaster and sheathed in 22-gauge stainless steel. Architect: Curtis and Davis Associates. Engineer: Worthington, Skilling, Helle & Jackson. Contractor: George A. Fuller Company.

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ARCHITECTURAL RECORD

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ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards; BC—Building Components

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