HAWAII STATE CAPITOL: NEW FORMS FOR THE NEWEST STATE

MICHIGAN STATE CAPITOL: SYMBOLIC SEPARATISM, PRACTICAL UNITY

EDMUND N. BACON ON "URBAN PROCESS: PLANNING WITH AND FOR THE COMMUNITY"

BUILDING TYPES STUDY: COLLEGE BUILDINGS

FULL CONTENTS ON PAGES 4 AND 5
The Cinderella City Shopping Center near Denver, Colo., with 154 stores and over 1,500,000 sq. ft. of shopping convenience, is actually five malls in one—each color-coded for finding one's way easily. Dominant in the blue mall is a majestic fountain that shoots 30 feet into the air. **Architect:** James H. Johnson & Associates, Denver. **General Contractor:** W. R. Grimshaw Company, Tulsa, Okla. **Developer:** Von Frelink Associates, Inc., Denver. **Owner:** Capitol Alliance Corp., New York, N.Y. **Flooring Contractor:** Denver Building Supply Co.

Yes, a floor can say "welcome". For Calandra's Card Shop, Architect/Designer Duane A. Hovorka, the chain's store planner, chose Armstrong Coronelle® Vinyl Corlon® in the Dungate Series. It has all the warmth of the inlaid brick and wood it's patterned after, adding elegance to the display of gifts. The bold pattern also serves another purpose: seams practically disappear in it.

To reflect the personality of McDonald's Fashion Center, Architect/Designer W. R. Kalsched & Associates of San Jose, Calif., created a custom floor design.

The floor plan of a shopping
of Armstrong Norager™ Vinyl Corlon. The sparkling, deep-glow red and mushroom colors bring the whole store to life. Practical, too. Norager's pebbly pattern helps hide scuff marks left by browsers and buyers.

Versatility is the reason Architect/Designer S. Corman Blumenthal, A.I.A., of Chicago used Armstrong Excelon® Vinyl-Asbestos Tile in the sales area of Stuart's, a national women's wear chain. Excelon is handsome—as seen in Mr. Blumenthal's choice of the Presidential™ styling, accented by Excelon Feature Strips—budget-priced, easy to maintain, and durable.

Flooring requirements for the Richman Brothers Company men's store were similar to those for Stuart's. Thus, Lewis Resnick, A.I.A., staff architect of Richman Brothers, also specified Armstrong Excelon Tile—only in the Imperial® Modern styling. Which floor should you choose? Sheet vinyl or vinyl-asbestos tile? It all depends on the function, style, and economics of your project. Because

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FLOORS BY Armstrong

center.

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EDITORIAL

"Are highways seven times more important than cities?"

ARCHITECTURAL BUSINESS

HEW RETHINKS HILL-BURTON

BUILDING ACTIVITY: CURRENT TRENDS IN CONSTRUCTION
School building follows enrollment trends

PRACTICE
Practice abroad: a rewarding study in comprehensive frustrations

BUILDING COSTS
Understanding cost trends, prelude to estimating

COST INDEXES AND INDICATORS

FEATURES

“CAPITOL” NEED NOT BE SYNONYMOUS WITH “DOME”
A study of the just-dedicated Hawaii State Capitol and the just-announced design for a Michigan State Capitol, which suggests that while the two buildings are appropriately very different, they have much in common as their architects search for contemporary solutions to a design problem with strong roots in tradition.

HAWAII STATE CAPITOL: BEAUTIFUL AND UNIQUE AND FITTING
Architects: Joint venture of Belt, Lemmon & Lo and John Carl Warnecke & Associates

MICHIGAN STATE CAPITOL: PRACTICAL SYMBOLISM
Architects: Smith, Hinchman & Grylls

URBAN PROCESS: PLANNING WITH AND FOR THE COMMUNITY
In the fourth article of the “Issues in Architecture” series, Edmund N. Bacon argues that the “community value review” is an essential ingredient in the hypothesis formulation” that he sees as the critical basis of the planning process.

SITE AND PROGRAM GENERATE A NEW SCHOOL SHAPE
For the John W. Chorley Elementary School in Middletown, New York, architect Paul Rudolph translated an unusual program into an unusual school that offers a continual sense of surprise, a seemingly complex but essentially simple shape, and a construction system that makes it work within a typically modest school budget.

A VERMONT SKI HOUSE UNITES LARGE SPACES IN A SIMPLE FORM
Vacation house, Stratton, Vermont
Architects: Eliot Noyes & Associates
COLLEGE BUILDINGS
The college environment shows continuing signs of change under increasing pressures for denser land use and technological advance, producing sophisticated equipment.

COMPACT PLANNING AND VARIED FORMS AND SPACES
Crown College, University of California, Santa Cruz
Architects: Ernest J. Kump Associates

SMALL SITE AND CLOSELY CLUSTERED BUILDINGS
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ACADEMIC FACILITIES AND URBAN HOUSING
Teachers College, Columbia University, New York City
Architects: Hugh Stubbins and Associates

SOPHISTICATED USE OF AUDIO-VISUAL MATERIALS
Lecture Hall Center, State University of New York, Buffalo
Architects: The Perkins & Will Partnership

INTEGRATING AIR DUCTS WITH CONCRETE FLOOR STRUCTURES
New laboratory tests and construction techniques will make both design and building easier. Research by Portland Cement Association shows that putting holes in concrete beams adds very little to the cost.

KEEPING DOWN NOISE IN COMPUTER FACILITIES
Generalized guidelines for isolating noisy machines and absorbing noise in spaces occupied by people are given by a Bolt Beranek and Newman consultant.

BUILDING COMPONENTS
New vinyl powder coatings for steel building components offer the combined advantages of protection against the weather and a wide color selection.
COMING IN THE RECORD

THE DESIGN OF INTERIORS: A 16-PAGE SPECIAL REPORT

New patterns of practice and design are emerging in the design of interior spaces and the furniture and fittings that fill them. This special report will give a picture of today’s practice, a study of the cooperation (and conflict) between architects and interior designers, a look at the changing patterns of practice, and include—in black-and-white and four-color photographs—examples of some of today’s finest interior design. This report signals the beginning of a new editorial effort to report on a continuing basis developments in the design of interiors—at a time when A.I.A. and NEOCON signal the beginning of a new relationship between architects and interior designers by holding their conventions concurrently—in Chicago in June.

BUILDING TYPES STUDY: MUSEUMS

Reverberations of the so-called “cultural explosion” are bringing to museums both a proliferation in their numbers and a rethinking of their functions. The June study will feature four museums in Mexico City’s Chapultepec Park—including the distinguished Museum of Anthropology and two smaller museums by Pedro Ramirez-Vasquez—which serve as cultural foci not only for the park but, in broader context, for the city itself. Current U.S. examples that similarly provide recreational and educational as well as cultural enrichment for the community at large will also be included.

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Are highways seven times more important than cities?

President Nixon, in a speech to HUD staffers, said firmly that "We need, of course, to rebuild America's cities. We are going to have to put billions of dollars into this rebuilding program in the years ahead, looking down to the end of the century when the cities of America will be rebuilt..."

Secretary Romney has told HUD that "the design and planning activities under the Department's programs must result in environments which have an uplifting effect on people's lives."

Secretary Volpe clearly understands, because he has said so in speeches, that "lack of proper public transportation has been a contributing factor to the dilemma of our cities today." And he has made some other encouraging opening moves:

Item: His appointment of a big-city mayor (Dorm Braman of Seattle) as an Assistant Secretary for Urban Systems and Environment.

Item: His suggestion of a mass transit "trust fund" to finance new and expanded subways, buslines, railroads, and perhaps "totally new systems of urban mass transit." He suggests, as indeed it might, that such a trust fund might "do for mass transportation what the Interstate Highway Act of 1956 did for highways." (That act earmarked huge chunks of Federal taxes on gasoline, tires, and other commodities exclusively for highway construction. What it has so far "done for highways" is build $36-billion worth.

But while all that sounds great, what actually seems to be happening doesn't sound so good:

For instance, the Nixon budget cuts what one might guess was an arbitrary 10 per cent from the budget for Model Cities, which both the President and Secretary Romney seem to feel is an important tool and which clearly involves the kind of "grass roots involvement" both seem to be relying on very heavily. This cut from an already fraction-of-minimal Johnson budget does not seem like a particularly aggressive start.

One could also hope that not too much of that limited budget goes into Secretary Romney's scheme to get "giant corporations" to solve the "low-cost housing problem." "If we bring together sufficient volume of demand" (which it appears one could readily assume), the Secretary proposes to "go to the national corporations and say: 'What can you produce for this market?'" The idea, of course, is to bring the same kind of "assembly-line efficiency" to housing that has made the American automobile industry (and Mr. Romney) famous. The Secretary allows as how the first housing might not roll off the line for two or three years—after all, "you don't design an automobile in a few months." On this score most architects might agree that he is pessimistic. But it seems optimistic to hope that "grass roots involvement" will move many local zoning boards and building-code officials to permit the assembly line to reach into their community; or to hope that the construction trade unions will, in the spirit of "voluntarism," relax their traditional reluctance to encourage such schemes. It also seems optimistic to hope that many corporations (especially those who have been involved in the building industry for long) will want to put too many of their eggs in this new technological basket. Finally, the new scheme assumes once again that "technology"—not a reduction in financing costs or an end to land speculation or the beginning of good planning, for example—will solve everything. I persist (see RECORD, April 1968, this page) in thinking that "in the face of the enormous volume of new housing and other new construction that is needed...we should face the fact that housing costs more than the people who need it can afford to pay, set up programs to fill that gap, attract the money needed to finance the construction into the capital pool, unwind the red tape, and start building the best we already know how."

What is needed now is money—budgeted and appropriated.

And one could argue that there must be enough money to bolster (instead of cut) the HUD budget when one gets to the Department of Transportation budget. It calls for $4.6 billion for highways. That's almost seven times as much as Model Cities.

$4.6 billion is also 26 times as much as the proposed budget for transit systems. Which brings us to Secretary Volpe's early "happenings." While, as noted, Mr. Volpe clearly understands the urban transit problem, he doesn't seem to be putting much effort there. His pettest project seems to be constructing a series of inner-city expressways (presumably connected to the inter-city expressways) for the reason that "you just can't dump traffic into crowded city streets." His response to protesting citizens groups, conservationists, and planners is to call for "common sense."

He has also assured the assembled members of the Associated General Contractors of America that "we can accomplish...sound, continuing programs for financing new airports to relieve air traffic congestion, and for new mass transit facilities, and do this while leaving the highway trust funds untouched." (Italics Mr. Volpe's.)

Least reassuring note of all: target date for submission of a comprehensive transit plan to Congress: "Next year."

Which seems, like Secretary Romney's housing program development, like a pretty relaxed attack on some very pressing problems.

Walter F. Wagner, Jr.
Good architects can maintain some character

In the speech to HUD staffers referred to on the previous page, President Nixon not only said that “We are going to have to put billions of dollars in the city rebuilding program....” He added, most encouragingly, that “The question is not whether we do it and not how many units we are going to build. That will be done. The question is, can we do it and maintain some character? Can we still maintain, for the individuals that will live in this housing, a sense of identity, a sense of dignity? Which does not come when they are just numbers in a huge, big block....

“...more important than what we think of as the housing, the housing and urban development...is the human factor that is involved.”

The President reminded his housing people that “Designers acting through single consulting firms or inter-disciplinary teams...are effectively discharging these responsibilities.”

But it is rather sad that the matter of providing a “sense of dignity” and a “sense of identity” for dwellers in urban housing is still a question. “That will be done” too, if HUD will make it possible for more skilled architects to operate effectively in the urban housing field—and then listen to their suggestions even if “its never been done that way before.”

A tree is saved in Brooklyn

In the kind of college protest that there should be more of, the students and administration of Brooklyn College banded together to revise the design of their new $2 million addition to the student center. Easiest solution was to build on grade—which would have sounded the knell for a handsome copper-beech tree. The solution adopted: add two floors to an existing building and save the tree. The photos accompanying this piece of news make it clear that the tree in question is not that spectacular a tree. But it’s one of the few that part of Brooklyn still has. And we salute what seems to be one of the increasingly rare triumphs of the value of beauty over the value of a buck.

A new venture in interdisciplinary intelligence

“The quality of life itself from this point forward will be governed almost entirely by how well we architects mesh their efforts, not only as specialists but also as concerned environmentalists. The fragmentation among professionals is real; but so is the will to close ranks.”

So writes Bill Houseman, long-time executive editor of House & Garden, who has just set out on his own to establish “The Environment Monthly,” a new publication intended to “close the ranks.”

Bill’s letter, which I guess he won’t mind me quoting further, says that the very serious aim of his new eight-page monthly “will be to function as a journalistic broker for those who make measurable and essential contributions to the man-made environment, but who don’t relate across professional and disciplinary barriers.”

He expects to report “on what is happening in housing and in land use and community planning, both in crumbling cities and rising new towns; to keep an eye on the important legislative fronts where conservation and open space issues are contested and also on parks and recreation, transportation and roadside esthetics; not to overlook the dawning concern over waste disposal and the fights against all pollutants.”

The first issue will be out in June, and I’m prepared to guess (knowing Houseman’s work) that it will be thoughtfully and professionally done. He is (no doubt nervous or at least anxiously) awaiting offers to subscribe (at $35 a year) at The Environment Monthly, 420 Lexington Avenue, New York, New York 10017.

Should home town boys make good by law?

Happily, there seems to be less and less sentiment for the grand old idea that local architects ought to get all the local jobs. Two more nails have been driven by:

1) The Southern California Chapter of the AIA, which endorsed a watchdog committee’s proposal to eliminate any political patronage in county architectural contracts. The Citizens Economy and Efficiency Committee has proposed establishment of an architectural evaluation board to review qualifications of architects seeking county commissions.

2) Architect David L. Williams, editor of the Monthly Bulletin of the Michigan Society of Architects, who noted in his February editorial that some thought has been given in Lansing recently to the possible enactment of a labor that would require Michigan-made products to be used on state government-sponsored projects. In the discussions of this possibility the further opinion has been advanced that such a law should also cover professional services such as those rendered by architects and engineers. Mr. Williams’ sensible and straightforward comment to that: “Although government requirements for ‘equal consideration’ are used frequently to ensure a fair shake for everyone, since there is more and more to spend our time on in our ever-broadening scene, it would seem to be yet another redundancy to add such a law to the vast catalogue of those we have now and ask people to look out for our interests. Architects and engineers are appointed for the quality of their services and the capability they can show to get the job done—not for their geographic credentials.” Amen to that.

—W.W.
Elastomers in Industry / Engineered Construction
Butyl tape seals every pane of glass in new 100-story Chicago landmark

When the John Hancock Center is completed this year, this unusual structure, combining both residential and commercial space, will be the world’s second tallest building.

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Glass and Glazing: National-Hamilton, Division of Bienvenido Glass Corp.
Tape Manufacturer: Protective Treatments, Inc.
Dayton, Ohio

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Workmen installing 20' x 90' Butyl sheets to form watertight sack before foundation was poured. Butyl sheeting material manufactured by Carlisle Corporation, Carlisle, Pennsylvania.

For more data, circle 7 on inquiry card
Butyl rubber caulk used throughout large new apartment complex

Valley View at King of Prussia, Pennsylvania—a five building, moderate rental apartment complex now building 25 minutes from downtown Philadelphia—is completely caulked with Butyl caulking. Over 320 gallons of caulk was used for glazing the windows and sealing the door perimeters as well as the brick panel perimeters. Caulk made with Enjay Butyl was used because of its excellent weatherability and permanent flexibility. It lasts up to 5 times longer than conventional oil based caulks over a wide range of temperatures. It is simple to apply with ordinary tools, and needs no special joint preparation.

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A Design Manual containing complete and comprehensive data on "sticks" is available to architects. Write Steelcraft, 9017 Blue Ash Road, Cincinnati, Ohio 45242 U.S.A.

For more data, circle 13 on inquiry card
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Ever-rising office building costs dictate early and progressive occupancy, pacing the construction. This demands that physical facilities—including heating and air conditioning—be able to meet the same pace.

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Freeway Office Park, outside Atlanta, Georgia, is an exciting example of the suburban office complex. Ten buildings and 145,000 sq. ft. are heated, cooled and ventilated by hidden Lennox rooftop equipment. Architects: Heery & Heery. Engineers: Frank M. Brewer and Associates. Developer and general contractor: Newman & Associates.
Parkade.
Washington’s prize-winning concrete design.

Parkade Parking Garage in Spokane was selected as the outstanding concrete design in the State of Washington by the Washington Aggregate and Concrete Association. The interesting structure consists of two floors of shopping and office area topped with an eight-floor parking facility. Built almost entirely of reinforced cast-in-place concrete, a variety of finishes are employed for accent: exposed rough-form texture, bushhammered surfaces and both rough-board and dimpled surfaces on the precast units. Lehigh Cements were used for the majority of the concrete supplied including precast units. Lehigh Portland Cement Company, Allentown, Pa.

The spiral exit ramp features a rough-board textured railing and inner core. Its curves provide a pleasing contrast to the rectangular lines of the main structure.

Ground level of spiral ramp section shows the blending of concrete finishes that lend interest and variety to the design.

This beautiful facility provides off-the-street parking for 936 cars in the heart of downtown Spokane. Dimpled, textured precast facia panels were used on the second floor of the structure as well as on the skywalk leading to an adjacent store.

Owner: Parkade, Inc., Spokane
Architect: Warren Cummings Heylman and Associates, Spokane
Structural Engineer: Eswelt and Saxton, Consulting Engineers, Spokane
General Contractor: Sceva Construction Co., Spokane
Ready-Mixed Concrete: Acme Concrete Co., Spokane
Precast Concrete On Parkade: Ace Concrete Company, Spokane
Precast Concrete On Skywalk: Central PreMix Concrete Co., Spokane

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...clear lights and soft sounds. Come inside to Dimensionaire*: An environmental ceiling system by Owens-Corning Fiberglas. It's a totally integrated air, light and sound system for people who want a better working environment.

Dimensionaire was recently installed in the two-story Hecht Company department store in the Tysons Corner shopping center, Tysons Corner, Virginia. The interior architect for the building, George Fry of Loewy/Snaith, New York, states: "The Dimensionaire system greatly improves the appearance of the store by giving a cleaner look and pleasing light patterns. Linear air bars eliminate the clutter of conventional diffusers. Some ceilings I've seen have so many bars, diffusers, ducts and lights they look like someone has hit the ceiling with buckshot!"

Sidney Kallet, chief engineer at Sidney Barbanel, Inc., Long Island City, is impressed with the way the 160,000 sq. ft. Dimensionaire installation gives the Hecht building the proper air distribution and achieves comfortable conditions so important in a sizable building. "The Dimensionaire system helps keep background noise levels in the shopping center at a minimum, too," Mr. Kattel adds. "And it has a better acoustical value than sheet metal systems, and eliminates the cost of insulating conventional duct work."

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Write for detailed case histories and cost analyses on the Dimensionaire Ceiling System to: Owens-Corning Fiberglas Corp., 717 Fifth Avenue, New York, N.Y. 10022.

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News in brief

"Radical re-direction" of the Hill-Burton hospital construction and modernization program was urged by HEW Secretary Robert H. Finch. To replace the categorical grants of the present program, the Administration proposes (page 81) a $500-million guaranteed loan program to modernize or replace acute-care facilities in the hospitals, and a $150-million program of block grants to the states to expand outpatient clinics, neighborhood health centers, skilled nursing homes and structures designed to share hospital manpower and equipment.

Environmental problems did not make the priority list in President Nixon's 10-point domestic program, outlined in a five-page statement to Congress last month (page 36), except for the promise of "a far-reaching new program for development of our airways and airports and our mass transit systems."

President Nixon's budget proposed reductions from the Johnson budget in construction programs ranging from military construction, public works, reclamation and power projects to Model Cities, schools and hospitals (page 36). And the construction industry awaited the outcome of the "serious study" Budget Director Mayo said the Administration was giving to a "temporary freeze" on public works projects as one more anti-inflation move.

N.C.A.R.B. in Response to a Changing Profession—Motion for Change is the theme of this year's national convention of the National Council of Architectural Registration Boards, to be held June 19-21 at the Palmer House in Chicago. The N.C.A.R.B. sessions immediately precede the annual convention of the American Institute of Architects June 22-26, also at the Palmer House, this year a joint convention with the Royal Architectural Institute of Canada.

New director of the University of Oklahoma School of Architecture will be Dr. Murlin R. Hodgell, who has been since 1964 director of the School of Architecture and consulting architect-planner of the University of Nebraska. Dr. Hodgell, who succeeds John G. York, is a registered architect, a registered engineer and a registered planner, with degrees from Kansas State (B.Sc. Arch., 1949); University of Illinois (M.Sc. Arch., 1952); and Cornell (Master of Regional Planning, 1956, and Ph.D., 1956). Dr. Hodgell taught architecture at Kansas State from 1957 to 1963, and in 1963-64 was chairman of the Department of City and Regional Planning at Rutgers University.

The First National Exposition of Contract Interior Furnishings will be held at the Merchandise Mart in Chicago June 22-27 (page 36) and special programs for architects are being developed for June 22 and June 27, just preceding and just following the A.I.A.-R.A.I.C. convention.

John Ely Burchard has received the Thomas Jefferson Memorial Foundation medal in architecture, established in 1966 by the University of Virginia to recognize "persons who have distinguished themselves in architecture." The medal, which carries a $5000 prize, was first awarded last year, to Marcel Breuer. Dean Burchard has been educator, author, critic and consultant in the fields of architecture and urban affairs. He was the first dean (1948-1964) of the School of Humanities and Social Studies at the Massachusetts Institute of Technology; and after his retirement in 1964 spent three years at the College of Environmental Design of the University of California at Berkeley, for a time as acting dean. He has been serving this term at the University of Virginia as Thomas Jefferson Memorial Foundation Professor of Architecture.

Six foreign architects have been elected Honorary Fellows of the A.I.A. and will be formally invested at the A.I.A. convention next month. They are: Sir Hugh Casson, England; William Dunkel, Switzerland; Werner Duitman, Germany; Preben Hansen, Denmark; Norman H. McMurrich, Canada; and Joachin Ordaz Alvarez, Mexico. Like their 141 predecessors, they are honored at "architects of esteemed character and distinguished achievement who are not citizens or residents of the United States and do not practice within the domain" of the A.I.A.

The Flying Architects Association will hold its spring "fly-in" and meeting in conjunction with the A.I.A.'s Chicago convention. For information write: Charles A. Pearson, Jr., 3636 King Street, Alexandria, Virginia.

Six architects are among new associate members of the National Academy of Design whose election was reported last month by the Academy president, Architect Alfred Easton Poor. The architects are: Max Abramovitz, Edward Larrabee Barnes, John M. Johansen and Albert Homer Swanke, all of New York; Richard Winston Ayers of Baltimore; and Walter A. Netsch of Chicago.
Nixon budget cuts construction funds

There was no good news for the construction industry in the Administration's proposed revisions of the Johnson budget which were disclosed last month. A net reduction of $2.9 billion in proposed non-defense expenditures for the fiscal year beginning June 30 would include a reduction of more than $1-billion in construction funds.

More than half of that figure is the proposed $639-million cut in military construction funds for the Sentinel Antiballistic-Missile System program. Another $142-million would come out of Corps of Engineers Civil Works funds, and only "emergency work" would be permitted starts before fiscal 1971.

In the programs of more direct concern to architects, Office of Education construction funds would be cut by $128-million to $100-million; Public Health Service funds by $104-million to $154-million; Model Cities by $75-million to $675-million; General Services Administration by $4-million to $54-million. GSA new projects would be reduced 60 percent to $5-million.

Also dropped from the Nixon budget were Johnson requests for $1.25-billion for Model Cities and $1.25-billion for urban renewal for fiscal 1971 expenditure. Authorization had been requested to facilitate the cities' planning, and was eliminated, HUD officials said, to "preserve flexibility" for the new Administration in next year's budgeting.

Highway construction expenditures would be reduced by $65-million, but the $4.53-billion now requested is still something more than seven times the level of proposed Model Cities expenditures (see page 9).

Other proposed reductions in construction expenditures would cut Bureau of Reclamation funds by $38-million to $160-million and the Soil Conservation Service watershed program by $9-million to $55-million.

Nixon's 10-point message: talk of cities and housing, moves on other issues

The five-page statement President Nixon sent to Congress last month to outline some of his "principal forthcoming legislative proposals" on domestic matters listed specifically 10 areas in which action would be requested; only one directly related to environment.

That one was a promised recommendation for "a far-reaching new program for development of our airways and airports and our mass-transit systems." No detail was given.

Two of the other promised recommendations would relate to an Administration approach to urban problems as suggested by the President in his campaign, though the relationship was not made explicit in last month's statement. These are: "a program of tax credits, designed to provide new incentives for the enlistment of additional private resources in meeting our urgent social needs"; and "a start on sharing the revenues of the Federal government, so that other levels of government where revenue increases lag behind will not be caught in a constant fiscal crisis."

The cities and their problems got their attention in the President's philosophical discussion of the thinking that led to the establishment of his domestic priorities: first among them to halt inflation. "Unless we save the dollar," the President said, "we'll have nothing left with which to save our cities—or anything else."

Next among the priorities: crime control, and then:

"An equally pressing priority is the entire complex of needs that we commonly group under the heading 'the problems of the cities'—but which in fact reach beyond the cities, and include the distresses of rural America as well."

"Our policy review has strengthened my conviction that in approaching these problems, America needs a new direction—not a turning away from past goals, but a clear and determined turn toward new means of achieving these goals."

No specifics were given.

Computer will aid architects selecting building materials

A computerized information system that will allow architects to retrieve data on building products and materials meeting specified performance criteria will be developed for the New York State University Construction Fund by McGraw-Hill Information Systems Company.

The new system will permit the architect to establish the performance characteristics required of the materials, and, with the aid of the computer system, quickly extract detailed information on just those products that satisfy his needs. Development of the system, expected to take about a year, is structured around several phases. The first phase deals with interior finishes, with subsequent phases including exterior finishes, structural materials and mechanicals.

Prior to the first phase of actual system development, the Construction Fund and McGraw-Hill will work closely with architects, manufacturers and contractors to determine the critical requirements of the information system users.

"The research effort," Dr. Adinolfi, Construction Fund general manager, said, "represents another significant step in the Fund's drive to enlist the private sector to collaborate with government in the development of meaningful tools and processes that will increase the productivity of the building industry."

Design a kite and enter the Great Boston Kite Festival!

There will be kite design and kite flying competitions, there will be marching bands and a grand march of kite entrants, there will be over 30 prizes, there will be hot dogs, cotton candy, balloons—all part of the Festival in Boston's Franklin Park May 17.

It has been invented "for children of all ages" by a group of young architects, designers and "just plain kite enthusiasts" organized as "The Committee for the Better Use of Air, Inc." (63 Commercial Wharf, Boston 02110). The whole world is welcome!

Obituary

William Lescaze, architect, city planner and industrial designer, died February 9 of a heart attack. His age was 72. Mr. Lescaze, head of the architectural firm of William Lescaze & Associates, designed many notable public and office buildings, residences and schools. His formula for the modern architect was to be functional and organic, using plastics, glass and other modern materials. He studied architecture at the Ecole Polytechnique Federale in Zurich, under Karl Moser. In 1920 he came to the United States, where George Howe invited him to form a partnership. The young firm of Howe & Lescaze was chosen by the Philadelphia Savings Fund Society to design its 33-story skyscraper, said to be the first such building in the United States to be fully air conditioned. In 1951 he was named a Fellow of the American Institute of Architects.
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ARCHITECTURAL RECORD May 1969 37
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Concrete industry cites ten Southern California buildings for their “creative use of concrete”

Ten Los Angeles County buildings have been selected to receive awards as part of the Building Awards Program initiated in southern California in 1965 by the Portland Cement Association and co-sponsored this year by the Southern California Ready-Mixed Concrete Association.

Four of the buildings are shown here. Other architects who received awards are as follows: Kurt Meyer & Associates; Langdon & Wilson; Albert C. Martin & Associates; The O. K. Earl Corporation; Welton Becket and Associates; and Heusel, Homolka & Associates.


Lamanda Park Library, Pasadena. Pulliam, Zimmerman & Matthews. The building “expresses simplicity and permanency through cast-in-place concrete as an architectural and structural material.”


The Del Amo Financial Center, Torrance. Victor Gruen Associates. The project “contains the first modified ductile frame, reinforced concrete high-rise building designed to meet the new seismic code requirements of the City and County of Los Angeles.”
San Juan architects find four Michigan projects worthy of an award of excellence in 1969 competition

The 1969 Honor Awards Competition of the Michigan Society of Architects was judged by three architects from San Juan, Puerto Rico, in keeping with the principle that having judges from a different part of the country "not only establishes a highly impartial climate of judgment, but also provides for a continued cross-pollination of architectural appreciation throughout."

While "the jury was highly impressed with the over-all quality of the entries... after exhaustive analysis and careful consideration, four presentations were found to fulfill the program's objectives."

The judges: Carlos R. Sanz, A.I.A., chairman; Augusto Gautier, A.I.A.; and Enrique Soler, A.I.A.

Timber Shores Travel Trailer Resort, Northport. Meathe, Kessler and Associates, Inc. (now William Kessler and Associates, Inc.). Shown is one of 50 sprockets "cut into the near-virgin timberland," the centers of which contain cooking facilities and play equipment. The activities building (left) has 30 identical hexagonal units that include lounge, nursery, grocery, snack bar and kitchen facilities.

Schmiedeke Residence, Ypsilanti. Denis Charles Schmiedeke. A lower level is set into the hill, while the upper level, sheathed in floor-to-ceiling glass, relates interior spaces to landscape.

Mackinac Hall and Manitou Hall, Grand Valley State College, Allendale. Tarapata-MacMahon-Paulsen Associates, Inc. Two liberal arts buildings, with facilities for 1500 students, are grouped around a landscaped court.
Housing for the elderly in St. Petersburg, Florida, makes use of large precast components that will reduce costs. Government-sponsored Heatherwood, designed by C. Randolph Wedding, will include 100 units based on clusters of eight units around a patio and garden. Each unit will have two 30-foot by 10-foot wall sections.

A glass prism, which will reflect the light, color and activity of the street by day and will be a giant showcase by night, will be the new headquarters for Design Research, Inc. of Cambridge, Massachusetts. The internationally known store for contemporary furnishings, accessories and fashions was founded by Benjamin Thompson of Benjamin Thompson and Associates, architects of the $790,000 structure. The building shown in the rear is headquarters for The Architects Collaborative.

West Side Montessori School, New York City, will have a translucent patterned clock tower, mounted with a large skylight; and windows of mirrored glass with base ports for random views of the street. Designed by Hardy Holzman Pfeiffer Associates to accommodate a progressive educational philosophy, the school will have no confining interior walls, so that teacher and students can shape areas.

The Hall of Justice for the Marin County Civic Center, San Rafael, California (RECORD, November 1962, page 12), has been completed ten years after the death of its architect, Frank Lloyd Wright. This second phase of the architect’s last major work joins the previously completed rotunda and Administration Building. Working drawings were completed by Taliesin Associated Architects under the direction of William Wesley Peters, with Aaron Green Architect Associated.
Dallas' new city hall, The Dallas Municipal Administration Center, will be a monumental concrete structure with a tilted facade that relates to the large park fronting it. The 560-foot-long building will have more than 900,000 square feet of floor area, with an additional 1.1 million square feet of parking under a seven-acre plaza. Three massive "cores"—the building's only vertical lines—will house stairs, elevators and service facilities. Associated architects: I. M. Pei & Partners and Harper & Kemp.

Scheme II for Grand Central site, by Marcel Breuer and Herbert Beckhard, includes demolishing the terminal (except for the main concourse and galleries) and erecting a 59-story office building. The first plan (RECORD, July 1968, page 36), which was rejected by the Landmarks Preservation Commission, cantilevered a 55-story structure (right) above the roof of Grand Central Station. This scheme was re-submitted to the Commission with the above proposal on April 10, 1969, and awaits decision.

The unusual shape of the headquarters for Public Service Alliance of Canada, Ottawa, fulfills the requirement for "something unusual at average commercial building cost," while providing exactly the total space allowed by zoning laws and occupying less than 1/3 of the site. Architects: Schoeler, Heaton, Harvor and Menendez.
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Right now our Architectural Airtred is in offices, hospitals (where cleanliness is a must), department stores, churches, libraries, and many other heavy-traffic areas.

Our national organization of architectural representatives and authorized contractors will get you samples, answer questions and contribute their own knowledge to the solution of your floor problems.

For more information, contact your GAF representative or write to GAF Corporation, Floor Products Division, Dept. AR-59, 140 West 51st Street, New York, New York 10020.

© GAF Corporation

GAF Floor Products

For more data, circle 32 on Inquiry card
THE KAWNEER CONCEPT:
Attention to detail
These new automatic doors owe their clean, dramatic now look to the details we hide.

The surprising sliders bring new beauty to automatic doors. The details are the reason. Pneumatic operating systems are concealed. That leaves clean lines uncluttered. Compressors are remote. Doors are welded, unitized construction. Cable drives avoid operating mechanism wear. Full controls for closing speeds, security, traffic direction and flow. You don’t need guard rails. Breakaway panels meet code requirements for emergencies. Deep Permanodic bronzes and black, or clear anodized finishes. Kawneer/Slidematic doors—the automatics with the clean now look that gives entrances a lift.

The elegant swingers Kawneer/Swingmatic doors, also keep vital details out of sight. Simple lines for architectural harmony. Electro-hydraulic operating components are completely self-contained. Safeguards against pinch injuries at pivot and swinging sides. Permanodic bronze or black finishes deep in the metal. Clear anodized, too. Want information? Write Kawneer Product Information, 1105 N. Front Street, Niles, Michigan 49120.

For more data, circle 34 on inquiry card.
The facts speak for themselves! In the single year of 1968, total national sales of cast iron soil pipe and fittings set an all-time record... 1,018,665 tons.* How does this industry continue to set new production and sales records? By consistently improving its product, by introducing new methods of installation such as neoprene compression gasket joints and No-Hub® joints, and by protecting the quality that gives cast iron its 150-year record of dependability. That's why today there is still more cast iron soil pipe and fittings installed for drainage, waste and vent piping than any other material.

*Statistics compiled by the Bureau of Census, U.S. Department of Commerce.

C. CAST IRON SOIL PIPE INSTITUTE
2029 K STREET N.W. WASHINGTON D.C. 20006

For more data, circle 35 on inquiry card
The Designing Ones... by Glaverbel

Mod Patterns, Glaverbel's exciting new line of figured rolled glass that says NOW in every elegant line. TWIST (upper right) ... a weave as fresh as today's fabrics. BOTTLE (lower left) ... fluid full relief for complete privacy. MANHATTAN (upper left) ... light and rhythmic sophistication. Like all Glaverbel glass, Mod Patterns come in a wide range of decorative colors, and ... an exclusive with Glaverbel ... in widths up to 57 inches.

Mod Patterns by Glaverbel combine practicality and beauty to give any room—in home or office—the look of TODAY. Create a new dimension in all surroundings ... with glass by Glaverbel. Ask your distributor for TWIST, BOTTLE, or MANHATTAN ... or any of the other sixty distinctive patterns ... by Glaverbel.

Glaverbel

For further information, contact:
GLAVERBEL (USA) INC., EMPIRE STATE BUILDING
350 FIFTH AVENUE, NEW YORK, N.Y. 10001
DRAWN SWEET GLASS / TINTED GLASS / FIGURED ROLLED GLASS
STOPRAY SOLAR GLASS / FLOATED PLATE GLASS / CHAMELEON GLASS
DIFFUSE GLASS / DIFFUSE NON-REFLECTION GLASS

See Sweet's Architectural File 4a/GL
Have a wild idea in canvas! Design with canvas and your imagination takes wing, while the cost stays happily down to earth.

That's because standard hardware or welded pipe framing supplies all the structural support needed. The fabric is a sturdy weave of 100% cotton (8 to 15 ounces per yd. of 31" width) treated for mildew and water resistance to weather any outdoor job. No wonder there's so much happening in canvas. Canvas solves so many problems. Ask your local canvas products manufacturer.

CANVAS AWNING INSTITUTE
(in cooperation with National Cotton Council and Cotton Producers Institute)
P.O. Box 12287-d Memphis, Tennessee 38112

For more data, circle 37 on inquiry card.
Have you ever wondered why, in this day and age, so many sound systems sound so distorted? The reason is that every sound system should be engineered specifically for the job you want it to do. If it isn’t (and most aren’t) you probably won’t like the sounds that come out of it.

This is why Executone engineers are so concerned about the environment in which an Executone Sound System operates. They apply principles of “sound contouring” to bring sound to each listener at the right level and clarity.

Executone engineers are specialists in sound reinforcement as well as sound distribution. And they are experts in designing a single sound system for paging, music, security and alarm signals— at far less cost than separate systems. If your clients are looking for smooth sound throughout a school, auditorium, stadium, office or plant, call your Executone representative. He has the answer to every kind of communications problem— whether sound or two-way intercom.

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<td>Austell Place, Long Island City, N.Y. 11101</td>
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☐ Have your representative phone for an appointment.
☐ Please send me free portfolio, "Executone's Approach to Sound and Intercom Systems."

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Executone Sound Systems

For more data, circle 38 on inquiry card
THE UNITED NATIONS

...where ZERO weather stripping has earned international acceptance.

Weather stripping, sound proofing, light proofing, thresholds...
ZERO's line is complete.
And everything is top-quality.
That's why it was specified for the U.N.
Deliveries?
ZERO's reputation for dependability is the envy of the industry.
Capping all is this fact:
ZERO backs its products with 45 years of solving customers' problems.
ZERO products are used in schools, hospitals, airline terminals, apartment houses, shopping centers—practically everywhere.
Write for the 1969 ZERO Catalog, with its 177 full-size drawings; you'll quickly see why ZERO has earned international acceptance.

Our 45th year of service to architects.
Zero Weather Stripping Co., Inc. 415 CONCORD AVE., BRONX, NEW YORK 10455 (212) LUDLOW 5-3230
Prefab

Put a Bally Walk-In Cooler/Freezer on location at busy vending operations. Extra storage space improves service and profit. Assures variety and volume of food for peak business around the clock...eliminates expense of frequent or late deliveries. Learn about important Bally features from our 32-page book and urethane wall sample.

There's an evolution in the kitchen

Bally

Bally Case & Cooler, Inc.
Dept. AK-5, Bally, Pa. 19503
THE PROBLEM SOLVER...

...IN THE LIBRARY
WHERE THE NEWEST WORD IN THE DICTIONARY
IS "HEUGATILE"!
HEUGATILE LOOSE-LAID CARPET SQUARES...
TOTALLY NEW CONCEPT IN CONTRACT CARPETING!

Revolutionary new Heugatile carpet squares are loose-laid...remain securely in place without adhesive, tack-strip, or underpad. Thus, long-wearing Heugatile carpet squares can be rotated—as required—to equalize wear, retard the development of wear patterns, and keep the entire carpet young-looking longer. Heugatile...the world’s only totally-interchangeable, “rotatable” carpet squares.

At Fairfax Elementary School in Cincinnati...

Heugatile loose-laid carpet squares replaced vinyl asbestos tile. Vinyl tile was cold, noisy, dangerously slippery, and costly to maintain (required sweeping, mopping, waxing, and buffing!). But Heugatile solves these problems. And more...

- Long-wearing Heugatile carpet squares can be rotated to extend the life of the carpet.
- Most stains are easily washed off with warm water and mild detergent.
- And, Heugatile drives maintenance costs down! A recent test installation of 108 square yards in a busy school hallway reduced maintenance time from 12 hours per week (vinyl tile) to 2 hours per week (Heugatile carpet squares)—a saving of $29.75 per week in the test area alone!
- Heugafelt—one of four Heugatile carpet-square products—shugs off cigarette burns.

Mr. Harold Theiss, Principal of Fairfax Elementary School, now agrees that Heugatile is “The Problem Solver.” Even the name is tough. Heugatile. (“You-Ga-Tile”).


Tell the Problem Solver your floor-covering problem!

In 100 words or less, describe a floor-covering problem that could not be solved by ordinary carpeting. If selected to be featured in future advertising, the area described will be carpeted with Heugatile free of charge. Address: The Problem Solver, Van Heugten U.S.A. Inc., 185 Sumner Ave., Kenilworth, N.J. 07033.

Heugatile carpet squares are unconditionally guaranteed to remain in place. Will not shift under foot, wheel, vacuum or cleaning machinery when installed according to manufacturer’s recommendations.
Think what architects like Iktinius and Kallicrates would have accomplished with Sonotube® Fibre Forms.

For one thing, the Parthenon would have gone up a lot faster.
Look at your own design.
You know the columns should be round.
Look at the budget and you know the columns shouldn't be expensive.
And you specify Sonotube Fibre Forms.
Sonotube forms are easier to place, brace, pour and strip than conventional forms.
Sonotube seamless forms produce columns with smooth surfaces;
little or no finishig is required.
Sonotube forms give you freedom. Freedom to make things beautiful.
Freedom from excessive column-forming costs.
You'll want more information. And if you write to us at Hartsville,
South Carolina 29550, you'll have it.

Sonoco Products Company.
They do incredible things with paper.

For more data, circle 42 on inquiry card
For security's sake, plan ahead with Russwin Ten Strike Mortise Locksets

Help stamp out dull door decor!
Design the bold beauty of Russwin's new Berlin design into all your buildings.
It's decidedly different...
an exciting excursion from the everyday.
And there's more to it than meets the eye.
When you turn it, you'll know you've come to grips with truly great knob design!
Created to cradle the hand comfortably, yet firmly, it gives you action you'd expect only with a lever.

What's more, Universal mounting puts the "concave cradle" in any desired position.
Another top-scoring "Ten Strike" Lockset.
Available in a wide choice of metals, color tones and all desired functions.
Contact your Russwin distributor or write for latest brochure. Russwin, Division of Emhart Corporation, New Britain, Conn. 06050.
In Canada — Russwin Division of International Hardware.

*For more data, circle 43 on inquiry card*
We pledged ten fraternities to on-campus residences - with functional furniture by Royalmetal.

—Harold J. Hess, Business Manager

Handsome new residences at Washington & Jefferson College are designed for fraternity life. The comfortable atmosphere starts with Royalmetal desks, matching storage units, and Royalmetal chairs. All Royalmetal pieces have durable Fiber-x® paneling. Royalmetal makes seating, tables, desks and case goods for dormitories, lounges, offices and specialty classrooms. See them at your nearest Royalmetal showroom. Or write Royalmetal Corporation, Education Division, One Park Avenue, New York 10016.

For more data, circle 44 on inquiry card
Westinghouse has improved the 40 watt T-12 fluorescent lamp again. We did it with a new glass additive called titanium which cuts down "solarization" or blackening of the glass tube by ultraviolet rays. Thus, titanium enables our fluorescent lamps to maintain higher light output throughout life than any other 40 watt fluorescent. And you'll find this Westinghouse exclusive in all our fluorescent lamps. You buy more usable light for your money, yet you don't pay any more for our lamp than for ordinary fluorescents. We're pleased that this achievement has been recognized with an award from Industrial Research magazine. It's constant research that has made us the leader in fluorescent lamps.

Specify the Westinghouse 40 watt T-12 fluorescent—the lamp designed to give you the most light for your dollar. For information or the name of the nearest Westinghouse agent-distributor, contact Westinghouse Lamp Division, Bloomfield, New Jersey 07003. You can be sure... if it's Westinghouse.

For more data, circle 45 on inquiry card

To help you build it better... superior fluorescent lighting.
We make a strong case for calling a Formica man.

Your Formica man has a case with a variety of complete pre-packed systems such as bath and wall paneling, doors and toilet compartments... yours at a single source of supply.

Specify FORMICA® laminate for any scheme your imagination creates... in any interior that calls for design to defy wear.

Time saving Spec-Data® forms give accurate fingertip information for many FORMICA® brand products and applications, technical back-up and qualified sources of supply for all types of product uses.

More patterns and woodgrains give you virtually unlimited design versatility. Sixty-eight solid colors are new, coordinated to mix, match or blend.

Want to discuss surfacing? See the man with this case. Your Formica man.

He can give you fast, accurate information about FORMICA® brand product uses and reliable sources of supply. Call him soon. He'll be there promptly with a case full of answers and idea-starters.

Leadership by design

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For more data, circle 46 on inquiry card
Add sprinklers, and add extra stories.

Most building codes permit the addition of extra stories (or heights) if “Automatic” sprinklers are installed. This alternative may be the answer when you are confronted with a limitation of land area, and when you want to reduce “per square foot” construction cost.

And there's more. By designing-in an “Automatic” Sprinkler system, you can get:

1. Increased building area.
2. Increased exit distance.
3. Wider range of interior finishing materials.
4. Savings with light roof framing.
5. Savings with metal roof decking.
6. Savings with fewer fire walls.
7. Increased fire wall openings.
8. Decreased exit widths.
Check your local building codes for the many specific advantages you can gain for various types of structures when you design-in an "Automatic" Sprinkler system. To help, we have compiled some of the permissive clauses from the four major building codes, and put them into a booklet called, "The Code Book."

For a copy, simply mail your request to Mr. R. L. Pardee, Manager of Marketing Services, "Automatic" Sprinkler Division, Dept. E-569, Box 180, Cleveland, Ohio 44141.

Here are quotations from the four major building codes regarding "increased building height":

The Uniform Building Code: (SEC. 507) "The limits set forth in Table No. 5-D may be increased by one story if the building is provided with an automatic fire extinguishing system throughout..."

The National Building Code: (SEC. 812.2) "Approved automatic sprinkler systems shall be installed in buildings that are: (1) Occupied as bowling lanes, restaurants, or for the manufacture, sale or storage of combustible goods or merchandise, and exceeding the areas (and heights) in Table 812.2."

The Southern Standard Building Code: (SEC. 402.6) "The maximum allowable number of stories may be increased by one story if the building is provided with automatic sprinklers throughout."

The Basic Building Code: (SEC. 310.2) "Except in buildings where automatic sprinkler equipment is a requirement of article 4 or article 12 for special uses or occupancies, all structures of fireproof, non-combustible, and exterior masonry wall construction, designed for business, industrial, mercantile, low or moderate hazard storage uses may be erected one (1) story or twenty (20) feet higher than specified in table 8 when equipped with an approved one-source automatic sprinkler system."
Expansion bearings of TEFLON: here are three types used to solve varied architectural problems.

Case 1: Horizontal sliding bearing pads are the most common construction used in architectural applications. Shown above is a typical construction of sheet TEFLON fluoro-carbon resin bonded to steel plates by an experienced bearing-pad fabricator. Forty of these pads were used in the Meadowbrook Hospital, Long Island, New York (illustrated at right). This 18-story building has an extremely broad base, requiring expansion joints designed into the basic structural framework. Where the expansion joints cross a load-bearing beam, bearing pads of TEFLON, of various sizes, were installed. In addition, bearing pads of TEFLON utilizing an extra layer of neoprene to allow for deflection were used in an entry bridge for this hospital building.

Case 2: Curtain walls in Canada's twin-tower Toronto-Dominion Center use vertical expansion bearing pads made with TEFLON to compensate for temperature changes. Room for 1/8" vertical expansion in each section is provided by expansion joints in the mullions at alternate floor levels. A total of 38,000 bearing pads of TEFLON, each only 2 1/4" in diameter, assures easy, smooth—and, above all, quiet—movement of the curtain walls. And TEFLON, being resistant to weathering and corrosion, will retain its slippery qualities indefinitely.

Case 3: Sleeve bearings of filled TEFLON are used in the arena of the Oakland-Alameda (Calif.) Coliseum Complex. The bearings played an important part in the construction of one of the world's largest cable-supported roofs. Cables were stretched between an inner and outer ring and 12- to 14-ton concrete I-beams were then hoisted into place. Each beam has steel cable shoes imbedded on 9' centers along a longitudinal slot in the bottom flange. The cable shoes ride on 6' lengths of filled tubing of TEFLON. (See illustration above.) The low-friction bearing of TEFLON permits smooth placement of I-beams on cables before the final tightening in place.

These are just three examples of the ways that many different types of bearing pads made with TEFLON are now being used to cope with problems of expansion and contraction in architectural applications. The design of these pads, tailored to the individual needs of the application, is best accomplished with the help of experienced bearing-pad manufacturers. For further information, write to Du Pont Company, Room 7614, Wilmington, Delaware 19898.

See Research Recommendation No. 2136 of the International Conference of Building Officials.

For more data, circle 46 on inquiry card
Air conditioning that lets you do your own thing.

Example: Coatesville, Pa., High School

Carrier's Moduline® variable volume air terminals are designed to enhance rather than hinder your design freedom—your personal hallmark. The Moduline comes close to invisibility.

The ceilings at the new Coatesville, Pa., High School make the point. Design did not have to be modified or compromised because of air conditioning requirements.

Yet the Carrier Moduline system is superbly functional; it provides air flow control as individual as the students and their classrooms. And its unique flexibility makes it ideal for future expansion plans.

A showcase of what architects have accomplished in ceiling design with the Carrier Moduline is now available in a new portfolio entitled "Great Ceilings."

This handsomely bound reference book includes a variety of installations such as a school, hospital, industrial data center, municipal and office buildings.

A new 7-minute companion film on the Carrier Moduline system is also available for private showings. It clearly describes the unique features of this new unit and illustrates a variety of design-provoking ceilings. The name is the same, "Great Ceilings."

Registered architects in the U.S. and Canada who write in on their letterheads will receive a copy of the "Great Ceilings" portfolio. A viewing of the film may be scheduled through your local Carrier office.

Write to William Heck, Product Manager, Carrier Air Conditioning Company, Carrier Parkway, Syracuse, N.Y. 13201.

For more data, circle 49 on inquiry card
Concrete is good for you

Cars up. Costs down.

The logic of this simple concept is overpowering.
Less land is needed. Therefore land costs are cut.
The need to build large parking areas is eliminated.
Therefore total construction costs are cut.
There is less improved land. Therefore taxes are cut.
There are other advantages as well.
Greater employee and customer convenience.
Lower fire insurance rates. A stronger, sturdier building in which concrete is the basic material.
You see, concrete is good for you.
For complete information on the roof parking concept, write us. Portland Cement Association, Dept. A5-8
Old Orchard Road, Skokie, Ill. 60076.

PORTLAND CEMENT ASSOCIATION

PCA—IMPROVING AND EXTENDING THE USES OF CONCRETE

For more data, circle 50 on inquiry card
the SEVERN difference is QUALITY

When you specify or buy an access floor from Severn Products you get quality—First, Last and Foremost. Here are some of the Severn QUALITY features:

**Panels—**
Squareness assured through die shearing to a diagonal tolerance of .015 in. Dimensional accuracy maintained to -0 +.005 inches. Transverse full beam design for maximum structural integrity.

**Stringers—**
Stringers are “pre-stressed” for maximum rigidity, roll-formed and die-cut for finite tolerance control.

**Pedestal—**
Pedestal cap and underside of panel mate at any given point to provide design flexibility.

The plated, threaded rod and positive locking/leveling assembly assures fine adjustment—and prevents vibration-oriented re-alignment problems.

Dimensional accuracy maintained in all components to assure perfect fit.

Nest and lock true rigid-grid system provides maximum lateral stability.

All Severn panels mate with all Severn understructures—cut costs, confusion and installation headaches.

Write for free specification folder and new technical information to: Severn Products, Inc., P.O. Box 912, Severna Park, Md. 21146 or phone (301) 647-7300.

**SEVERN PRODUCTS INCORPORATED**

REPRESENTED IN CANADA BY CONTEMPORARY WALLS LIMITED

SCARBOROUGH, ONTARIO ........................... MONTREAL, QUEBEC

For more data, circle 51 on inquiry card

**LETTERS**

Pyramids are out
My partners and I were delighted by the coverage given the work of our firm in the March issue. However, I am distressed by the misrepresentation of the title page which implies that I am the sole author of all the designs which follow. In fact, with the exception of the Darrow School auditorium and the Festival Unit Stage for McCarter Theater, all of the projects illustrated were developed jointly among Malcolm Holzman, Norman Pfeiffer and me.

This is especially true of the Playhouse in the Park, the best possible representation of the collaborative spirit in our firm.

My remarks were written in an attempt to clarify and summarize our work from my point of view—everyone here is entitled to his own opinion—but it is erroneous to assume that I sit on top of some organizational pyramid supported by subordinates. That sort of structure is as obsolete as the architecture it produces.

Hugh Hardy
Hardy Holzman Pfeiffer Associates
New York City

Art in architecture
It has recently come to my attention that one of my paintings has been reproduced on the cover of your March issue. It also appears (along with other paintings of mine) in the body of the article “Cincinnati’s Playhouse in the Park.” The paintings do add a certain interest to the article; however, I find that my name is nowhere mentioned. I should be most appreciative of having that oversight corrected.

Richard J. Boyle
Curator of Painting
Cincinnati Art Museum

Strivers Row
Reference is made to your Urban Housing Study as contained in the January issue. Please be advised that the Landmarks area that is situated within the St. Nicholas Parks area should at all times be known as “Strivers Row.” “Strummers Row” is totally incorrect and in fact does not exist anywhere within the St. Nicholas Park Urban Renewal area.

Jason R. Nathan, Administrator
Housing and Development Administration
The City of New York

It is indeed “Strivers Row,” a fine example of 19th-century urban design, influenced by English antecedents.

The Princeton Report
I find it necessary to enter the discussion of the Princeton Report and to register agreement generally with the sentiments of Mr. Izumi (February, page 46). Out of all the implications inherent in the Geddes document, and from long practice with the architectural profession, it is clear to me that the handwriting is on the wall. The age

more letters on page 102

For more data, circle 52 on inquiry card
You just can't floor indoor/outdoor carpet made with Marvess CG, The Big Fiber.

We guarantee it.

The No-Strings 2 Year Guarantee

Phillips Fibers guarantees this carpet made with Marvess Olefin CG against rotting, wearing out or the effects of weather. For commercial and institutional use indoors or outdoors. Or we will replace this carpet. Free. Exclusive of installation. Consult your carpet resource for details.

Because Marvess CG, The Big Fiber, is the toughest, thickest olefin fiber made.

That's why you get this exclusive pledge of performance with every approved carpet made with The Big Fiber. And with no others.

No other needlepunched olefin carpeting can stand up so well to traffic. It withstands wear. Resists staining, soiling and pilling. Offers easier maintenance.

Carpet that are made with face of Marvess olefin CG, a Phillips 66 fiber, are weather-resistant. Put them anywhere. Inside. Outside. They resist rot, mildew and insects.

Carpets made with The Big Fiber are safer, as well. They help avoid nasty slips. And carpeting made with The Big Fiber has beauty to match its ruggedness. It comes in an array of warm, rich colors that always keep their vitality.

Specify indoor/outdoor carpet made with Marvess CG, The Big Fiber. You'll find it's really built to stand up. We guarantee it. For further information, write: Phillips Fibers Corporation, Home Furnishings Product Marketing Department, 1120 Ave. of Americas, N.Y. 10036.

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The New
BARRETT®
Expansion Joint Shield.

It doesn't leave you any choice.

Not if you choose to specify a roof deck expansion joint system that combines all these advantages:

1. Maximum protection and durability — because the bellows is manufactured of tough, flexible, Barrett Chem-Ply* Sheet (Chlorinated polyethylene, reinforced with glass fiber), laminated to insulating neoprene foam.
2. Positive weather seal — because the bellows is double-locked to 4-inch-wide metal flanges by patented process.
3. Choice of copper, galvanized, or stainless steel flanges.
4. Site joint work reduced to a minimum — because the shield comes in continuous 50-foot lengths. Factory-fabricated crossovers, tees, and corners assure weather-tight joints at these critical points.
5. Low profile (2-inch) enhances roof design.

Write for installation drawings that show roof-to-roof and roof-to-wall applications. Better still, ask our representative to bring a sample section and demonstrate why the new Barrett Expansion Joint Shield system is your first choice for quality roof construction.

*Trademark

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BUILDING PRODUCTS

THE CELOTEX CORPORATION
Tampa, Florida 33607
Subsidiary of Jim Walter Corporation

For more data, circle 53 on inquiry card
Dear Findley,
Cadwell and Belton, A.I.A.*

You certainly do know women. You even know that a lot of us use tampons rather than sanitary napkins. So those nice built-in machines that have both are appreciated by one and all. Thanks for thinking of us.

Sincerely,
Us lucky girls on the 13th floor.

Mary, Tina, Jenny, Jackie

Almost half the women today use tampons. That’s why we suggest you specify built-in, dual vend machines. Bobrick Dispensers, Inc. makes some beauties that dispense both Kotex® napkins and Kotex tampons. Send for free catalogue or see Sweet’s File No. 329 or Bobrick’s File 292.

True, you may not end up with a letter from the girls, but you’ll know you did right by them.

Kimberly-Clark Corporation
Commercial Department, Neenah, Wisconsin

*The names are fictitious, but the gratitude isn’t.

That’s the beauty of a Rada Thermostatic Mixing Valve. Our dual controls for flow and temperature stay independent of each other. Always. Whether you’re showering, bathing, shampooing or just rinsing off. So one can be adjusted without upsetting the other. Even the slightest.

And this unique thermostatic valve maintains precisely the temperature selected. Just set once—and the temperature never varies.

In addition, one little cartridge contains the entire works. It can easily be removed for cleaning or servicing.

Next time you specify thermostatic mixing valves for shower or in matching tub-and-shower combinations, think quality. Think Rada. Made by Richard Fife, Inc. The company that’s made a big business out of controlling water beautifully.

A complete line of controls:

UNATAP
- Spray
- Mixing
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MIRA
- Shower
- Mixing
- Valves

KELTA
- Shower
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Richard Fife, Inc.
1140 Broadway, New York, N.Y. 10001
Phone: (212) 683-0745

For more data, circle 54 on inquiry card
That's what we say about the idea that injection molding is the only way to produce good prismatic lighting panels.

The photos prove that KSH-12 panels are just as good as injection molded. In fact, at these angles they're better . . . with lower brightness and less glare.

We produce lighting panels by the new continuous "ROTMOLD" process . . . developed by and exclusive to K-S-H. But why quibble over details. Performance is what counts.

We just want you to remember that when somebody says an injection molded panel is better than anything else . . . that's BALONEY!

Don't take our word for it. See the panels side by side. Examine our quality. Compare our photometric data, brightness, and efficiency.

K-Lite prismatic lenses produced by the exclusive "ROTMOLD" process are as good as the best injection molded. But they cost less. Maybe that makes them better!

Consider K-Lite for your next job.
SPECIFY
safety, durability...and beauty

FLAMESHIELD
CERAMIC-LIKE WALL COATING

- Incombustible glazed wall coating with the beauty of ceramic tile...at a fraction of its cost.
- U.L. rated. Smoke developed: Zero. Won't contribute smoke...the number one cause of death in fires.
- Meets Class "A" flame-spread requirements established by many code authorities.
- Tough, seamless surface resists abrasion, scuffing and staining...provides virtually maintenance-free service.
- Available in a wide range of decorative colors.

For information on FLAME SHIELD ceramic-like wall coating and FLAME SHIELD fire-retardant intumescent coatings, technical assistance and names of authorized distributors, write to our Architectural Division.

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52nd & Grays Avenue
Philadelphia, Pa. 19143

For more data, circle 137 on inquiry card

Astro Vo-Tech. School, Aston, Pa./H. A. Kuljian & Company, Engineers and Architects
Finch urges new modes of hospital financing

The Nixon administration has urged a "radical redirection" of the Hill-Burton hospital construction and modernization program which may mean more work—and certainly more homework—for architects. At House Commerce Subcommittee hearings on extending and amending the present program, H E W Secretary Robert H. Finch urged, in prepared testimony read by Under Secretary John G. Venman:

■ A $500-million guaranteed-loan program to modernize or replace existing and obsolete acute-care facilities (an attempt to stimulate private capital investment in lieu of the one-third matching grant program now in effect).

■ A $150-million program of block grants to the states to expand out-patient clinics, neighborhood health centers, skilled nursing homes and structures designed to share hospital manpower and equipment.

Mr. Finch objects to the two bills currently before the house—H.R. 6797 and H.R. 7059—because they would continue the categorical grant support under the existing Hill-Burton act another three years. "We have serious doubt that such a continuation would assure the construction, replacement or modernization of other health facilities which are more urgently needed than general hospital beds," he said in his statement.

The guaranteed-loan program would stimulate private capital to modernize the nation's estimated $11-billion backlog of acute-care facilities, Mr. Finch said.

Within each state, the annual total of guaranteed loans would be determined in the same manner as the allotment of grant funds. All privately-owned, non-profit health-facility modernization or construction projects would be eligible for loans up to 90 per cent of total cost.

Implications for architects: more variety; perhaps more money

Spokesmen for those in the Hill-Burton program who have concerned themselves for many years with design and construction criteria see no alarming impairment of the basic intent of the original legislation—the provision of needed health care facilities. On the contrary, they point out, the very success of the program has brought it to an evolutionary phase which may indeed call for new and more diffuse modes of support.

Block grants to states, for example, may involve architects in a wider variety of facilities with new sets of criteria, since those funds will respond directly to local and regional requirements with all the new surveillance those conditions imply.

Further, the guaranteed loan program will extend FHA-type financing support with substantial influx of private capital (so it is hoped) into a variety of hospital facilities over which PHS will retain some control as to economic feasibility.

With hospital needs thus met with private capital, block grants could be given to states to expand other facilities. The $150 million recommended would be allotted 80 per cent to the states on the basis of population, per-capita income and need; and 20 per cent reserved for "direct project grants . . . for projects reflecting critical needs of national significance."

Although the current Hill-Burton authorization does not expire until June 30, 1970, Finch said, the critical shortage of health facilities is "too compelling—especially in urban areas—to warrant delay in obtaining a better health return on the dollars we are spending." He also pointed out that new funds for medical care (insurance, Medicare, Medicaid) now help make profitable capital investment possible.

A look at pending legislation

The A.I.A.-C.E.C. Public Affairs Conference reported last month (RECORD, page 36) underscored the growing importance of Federal action in matters bearing upon the operating climate of all branches of the construction industries—professional and otherwise. The following is a sampling of the current status of pending legislation.

■ Situs picketing (H.R. 100: Rep. Thompson, D-N.J.): This bill, which would permit unions to picket construction sites in such a way as to block the work of several contractors regardless of the scope of the particular problem of the protesting union, has been opposed by all the design and construction professional societies. Although it still the subject of various hearings, likelihood of its passage this year is small.

■ Union control (S 1532: Sen. Gurney, R-Fla.): This bill would prohibit labor unions from boycotting prefabricated building components. A direct attempt to curb abuses arising from the 1967 Philadelphia Door Decision of the Supreme Court which makes it lawful for unions to restrict the use of prefabricated products, this bill simply intends to clarify the intent of Congress as opposing restrictive practices against new products and innovations. The bill has been referred to the Senate Labor and Public Welfare Committee, but is meeting opposition from labor organizations.

■ Architectural excellence (S 1457: Sen. Muskie, D-Me.): This is a bill to foster high standards in the design of public buildings including post offices, and to provide for the acquisition of works of art for such buildings. It is known as the Federal Fine Arts and Architecture Act, and establishes a public advisory panel on architectural services to which the GSA administrator shall appoint "12 distinguished architects from among persons in private life." The bill has been referred to the Committee on Public Works.

■ Planning consultation (H.R. 399: Rep. Bennett, D-Fla.): This bill requires consultation with local planning agencies for all proposed Federal construction projects other than military. It has been referred to the Committee on Public Works.

■ Airport development (S. 1637): Sen. Magnuson, D-Wash.): This bill creates an airport trust fund operating similar to the Highway Trust Fund, to be financed by aviation user taxes. Parallel bills in the House are H.R. 1064: Dingell, D-Mich.; H.R. 1362: Slach, D-W.Va.; H.R. 3668: Friedel, D-Md. All of these bills, under the heading Airport and Airways Development Act, provide for Federal assistance in the construction and improvement of airports. The Secretary of Transportation would be authorized to guarantee development loans with the guidance of allocation methods to be studied by the Secretary of the Treasury.

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School building follows enrollment trends

1969 marks a turning point in the American educational scene. Following almost three decades of rapidly increasing enrollments, spurred by the post-war baby boom, the number of students in elementary schools will reach its peak this year. The slowdown in the birth rate during the 1960's will be reflected in a steady decline during the next decade that will reduce elementary school enrollments more than ten per cent by 1979. Unless there is a dramatic shift in family planning patterns, the current level won't be achieved again until the late 1980's.

Meanwhile, high schools are feeling the effects of the second wave of the baby boom in which births increased by almost a half million a year in the mid-fifties. Secondary school enrollments are growing each year by just about that number, and they won't begin to slow down until the early seventies, with the peak at about 1977.

Finally, college enrollments are picking up—from an annual average gain of about 250,000 in the early sixties to increases in the 400,000 to 500,000 range now and for the next several years.

All of these trends are being reflected in the pattern of new educational construction. During the five-year period between 1963 and 1968, outlays for elementary schools rose less than 20 per cent—with most of the gain coming in the first two years. The square footage of elementary school construction has actually declined since 1965 while contracts for new secondary schools have jumped more than 50 per cent during the same period.

The real growth, as enrollment trends would indicate, has been at the college level and in vocational schools. The value of contracts for college and university construction—exclusive of dormitories—has tripled since 1963, and will probably pass the billion dollar mark in 1969, equaling the volume of elementary school building. Furthermore, the trend in college construction has shifted in favor of classrooms, libraries and laboratories rather than dormitories.

The champion in terms of growth—though still relatively small in dollar volume—has been vocational school building. Outlays rose from only $30 million in 1963 to almost a quarter of a billion dollars in 1968. This gain was largely motivated by the growing emphasis on vocational training.

Enrollment trends aren't the only causes of the shifts taking place in the construction of education facilities. The high cost money market that has emerged since 1966 has impaired the ability of many state and local governments to borrow for school building, and rapidly increasing construction costs have caused the postponement of other projects. On the other hand, stabilized enrollments in some parts of the country have enabled school systems to concentrate available funds on the replacement of outmoded or dilapidated facilities. The Higher Education Facilities Act of 1963 provided a shot in the arm to college and university classroom construction, and Federal programs have assisted dormitory construction for a number of years and provided the spark to vocational school building.

Regional building activity highlights a number of these factors. For example, elementary school construction in New England has outpaced that in the rest of the nation as stabilized enrollments and high per capita incomes have permitted the area to concentrate on replacing old buildings. The South, which has lagged the rest of the nation in higher education facilities, has benefitted most from Federal support. Outlays for college and university construction in that region have increased almost six times in the past five years. In the West, a sharp drop in migration and strained financial resources of many communities have resulted in a steadily declining trend in both elementary and secondary school construction since 1963—a situation that is expected to be reversed in the near future.

Most of the national trends are expected to continue. Dollar volume of elementary school construction will probably fall below current levels, while college level building should take the top spot by the mid-1970's.

Building activity: monthly contract tabulations
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Of course, it could happen that the school you're building has a band that people want to hear more of. In which case you simply alternate Sound Asorb Type B with regular Type B (non-acoustical) deck.

And only cut out half of everything they play.

Wheeling Sound-Asorb Roof Deck.


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in the world can't purify
polluted air. Purafil® can!

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contaminated with pollutants. No matter how fine your
air-handling system performs, polluted air ultimately gets
inside buildings and plants.

Sometimes you can see the polluted air as smog. Worse,
sometimes you can't see it, just smell it. Nearly every
situation presents a different problem: the odors and the
contaminants are different; and the air moving methods
differ as well.

ventilation

Ventilation used to be the most efficient way to control
odors in a building and it would still be if it were not for
outside air pollution. Good ventilation air can dilute odors
but it cannot remove gaseous pollutants from the air.

In order for the system to operate with any effective-
ness at all, it must constantly maintain a continuous flow
of good clean air, and this is getting harder and harder
to find.

The result, ventilation only serves to move polluted
outside air inside. Today this does not answer the prob-
lem in most areas. Today's air problem requires a better
solution.

The better solution is an air purification system capable
of cleaning contaminated air while reducing equipment
and operating costs. By recirculating the inside air, an air
purification system reduces the amount of outside air
needed to maintain a comfortable level. Most important,
it offers economical, clean air, free of uncomfortable
odors and irritants.

conditioned
outside air

Conditioning air means bringing in outside air and
heating or cooling it. But does not mean removing gaseous
and odorous pollutants from the air.

The addition of an air purification system can signifi-
cantly reduce the outside air requirements for the a/c
system. With the addition of an air purification system,
you use a higher percentage of recirculated air, so smaller
heating and cooling units can be utilized to condition the
same amount of air. Experience has shown that a reduc-
tion of up to 20% in equipment costs can be realized.

You spend less money on equipment, reduce operating
cost by utilizing air recirculation, and achieve odor and
contaminant-free air in the bargain.

common methods
of air filtration

There are several different air purification methods
used to remove odors and gaseous pollutants in conjunc-
tion with air handling systems.

activated charcoal

Charcoal is expensive. True, it can reduce capital equip-
ment cost by allowing maximum air recirculation. But any
savings incurred are soon offset by the high cost of maintenance. It is short-lived, and it has poor effectiveness at normal odor levels. Upon saturation it desorbs, dumping the contaminants back into the air. It requires expensive removal, regeneration and reinstallation.

In order to regenerate charcoal after it becomes saturated, it is necessary to have a spare supply on hand, or shut down the system while the material is being returned to the factory for regeneration. Besides, charcoal cannot remove certain pollutants from the air.

**scrubbers and washers**

This method of air purification is very expensive and is only practical where extremely high corrosive concentrations are prevalent, much higher than normal odor loads.

**electrostatic precipitators**

Electrostatic precipitators are designed to remove only particulate pollutants from the air, and they will not remove gaseous or corrosive pollutant odors after one or two days operation. They are expensive and must be cleaned often.

**masking agents**

Masking agents are not a method of air purification, but they are employed frequently.

They merely compound the problem by perfuming an offensive atmosphere instead of eliminating the source of the trouble.

**purafil environmental control systems**

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Practice abroad: a rewarding study in comprehensive frustrations

There is excellent opportunity for architects with American know-how and technique in the field of international practice, especially as it pertains to the emerging nations of Africa and the Middle East. Despite the abundance of work, however—and fewer building restraints—the American architect practicing abroad can expect to meet with a battery of peculiar and often amusing problems arising out of differences in custom, religion, climate and geography. The new nations are expanding rapidly, and nationalistic pride demands that conditions be improved and facilities created to enhance each country’s “new image.” They want change and want it fast. There is money to be spent, but there are few local planners, architects and builders.

I became involved with the special problems of international practice in 1957 when, as a partner in The Architects Collaborative, I went to Baghdad with Walter Gropius to negotiate a contract to design a new university. In 1960, I moved to Rome to conduct other TAC projects in the Middle East. But it was in 1963, when I set up my own Rome-based practice and tackled projects in Africa and Europe as well, that the full scope of diversification, excitement—and often enough frustration—became a way of life. I found myself filling the role of diplomat, public relations expert, artist and politician. I sat out revolutions in both Iraq and Nigeria, and had to begin the same negotiations many times over, since the people I had been negotiating with had suddenly been jailed (or worse). Often, I had to establish a completely new set of contacts with new ideas—not necessarily better, but necessarily different.

I located my office in Rome where, aside from the obvious advantages of physical beauty and ease of life, there are many Italian architectural assistants who have had years of experience with successive waves of Rome-based American architectural firms. Rome’s airport is almost completely “weather-free” and offers a multiplicity of flights to all points from Aden to Zanzibar. This is an important consideration since travel is a necessity. Foreign dignitaries consider the ability to travel a status symbol, and promoting a project often involves a great deal of travel and entertaining. For weeks on end I would only touch base in Rome between trips to Lagos, Nigeria (five hours by jet), where we had an office and were building the University of Lagos as well as three military installations for the Government of Nigeria; to Nairobi (eight hours by jet), where we were constructing an office building for the East African Moslem Welfare Society (the Aga Khan’s group); to Iran (five hours by jet), where we were designing Pahlavi University in Shiraz; and to Libya (only two hours by jet)—when the planes were flying, where we had been commissioned to build two hospitals, two office buildings and 18 clinics. I encountered different languages, different religions and customs, and different monetary systems. My passport became a dog-eared tome of visas—so full and fat that occasionally I had trouble finding the pertinent visa for inspection at customs.

Negotiations call for endless patience

Appointments hardly exist except on the highest level. One just drops by the Ministry in the morning, and waits with all the others, drinking endless cups of tea. This may well occur in the Minister’s own office, where everyone’s problems are given public hearing. Secretaries are almost nonexistent, and if you want your “hard-bargained-for” agreement typed up and trans-

Photo left is Industrial Promotion Service Building, Nairobi, Kenya designed for Aga Khan’s group; right is a sketch for Pahlavi University, Shiraz, Iran.
lated into Arabic, you had better do it yourself. Government offices, in general, only work until lunch time, and one has to be aware of the different national and religious holidays in setting up a schedule.

Negotiations that are started at a lower level and apparently successfully concluded are often just the beginning. Usually, you have to start all over again higher up. In one memorable deal with an "emerging nation," I spent weeks negotiating with a special committee set up specifically for dealing with my particular problem, only to repeat my efforts when the prime minister decided he wished to conduct the negotiations personally for political effect. He then called his whole cabinet together with a dozen assorted generals and bodyguards, and we negotiated for two hours in front of television cameras with many official references to the love of our two great countries for each other declared against an obbligato of constant clicking of the guards' nervous Sten guns in the background. Having reached a well-publicized agreement, another three to five months went by while the agreement was moved through ministry offices. This is not just bureaucratic slowness. Often there are pro-American and anti-American factions in the government, and one has to be very nimble to keep the agreement from being "lost" in some "anti's" office.

Money and politics color exotic practice conditions
The major sources of work in Africa and the Middle East are governments, oil companies, U.S. Government agencies such as AID and the Corps of Engineers, and occasionally a private client. Generally, U.S. agencies will be smaller in the countries where the governments and/or the oil companies have the money to give out work.

Competitors run the gamut from the British (who have been working overseas for generations and have the full backing of their commercial attaches), to other nationalities whose concepts of architectural practice may be considerably different from ours. One well-known practitioner in the Middle East was rumored to have accepted his fees in camels when hard currency was scarce. Often governments reflect their "middle line" foreign policy by trying to select a mixture of architects—one from one of the Iron Curtain countries, one from Scandinavia, and one from the U.S., for instance. This is to "bring more ideas to a project."

The American practice of complete working drawings and specifications as a basis for contract documents is seldom adhered to abroad. The form of contract documents perfected by the British, with the addition of a quantity surveyor and bills of quantity, is the more normal method used for tendering. Drawings may be dimensioned in feet or meters, and serve mainly as a guide to the building process. The bids are usually based on the bills of quantity, which accurately describe the amounts of all the diverse pieces which go into making up the building. Architectural details follow normally during the construction phase.

Construction techniques may be ancient and immutable
Generally, one or more resident engineers hired and supervised by the architect will be stationed on the site throughout the job to handle the daily problems that come up for their distant offices. Construction problems can keep one's sense of humor alive in the 104 degree tropical heat. Most countries use massive untrained labor forces and relatively few mechanical devices. Concrete is placed by laborers carrying about three shovelfuls of concrete in headpans.

At one point, we suggested to our contractor that he would have a better chance of meeting his daily pouring schedule if he used wheelbarrows or dollies instead of headpans. He agreed, and the next week there were eight or ten wheelbarrows at the site. But by the next day, all the wheels were missing. The fellows had substituted the barrow for the headpans, and the work progressed apace. Clearing a site for one of the jobs also turned up some unexpected difficulties when we learned that there was a religious shrine in the area. The native priests kept darting in and out of the bush to put a hex on the machine.

Programming abroad can be a most demanding art
The client usually does not have the experience to develop a program and expects the architect to be the expert. This means that the architect must correctly judge the client's wishes and present these completely and expertly or not get another chance. While working on Pahlavi University in Shiraz, Iran, the effective client was the Chancellor of the University and former Prime Minister. Since the Shah was the sponsor of the University, however, it was to him that the project had to be presented for approval. This took place in the garden of the Shah's palace. Both he and the Shahrouka (who had studied architecture at the Beaux Arts in Paris) reviewed the project, quietly asking questions for about an hour and a half and only relieved the suspense at the end by saying how pleased they were. During our long wait to see the Shah, the Chancellor had seemed especially nervous. It was only after the presentation that I realized his concern had been because he had recommended us, and he was anxious for approval of his choice.

All-in-all, practice abroad can be rewarding and—to say the least—interesting. Diversity, however, can be wearing over the long pull, and one may yearn (as this practitioner has done) for the regenerating challenges of more purely architectural pursuits in the U.S.A.

Three buildings for the University of Lagos, Lagos, Nigeria are the engineering school (left), classrooms (top right), and dining hall (bottom right).
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For more data, circle 60 on inquiry card
Understanding cost trends, prelude to estimating

This is the first article in a continuing series that will provide timely information on building costs and the reasons why costs are changing. William H. Edgerton, who has for many years provided the Indexes and Indicators (next page) as one of the resources in background of the Dodge Building Cost and Specification Digest and a series of Pricing and Scheduling Manuals, will comment, interpret and predict in this field on which he keeps a professional eye.

The last time the cost-to-build ever went down was in 1949; then an upward trend began that has continued to the present. From 1951 to 1967 average increases were limited to approximately two per cent annually, and many architects accepted this seemingly inevitable and steady increase in costs as a daily problem. That predictable period is over, and there appears to be no end in sight for the recent erratic surges of four to eight per cent annual increase in construction labor costs.

In some areas, framing lumber and plywood costs have increased over 40 per cent during the past several months. In fact, our sources indicate that increases during only three months ending last November equal or exceed the increases in the preceding 12 months. In addition, construction labor is in short supply, and premiums and traveltime are the rule rather than the exception. One Cleveland contractor estimates his costs are increasing at a rate of one per cent per month, and he bids accordingly.

There seems to be plenty of work around, and contractors are not bidding as competitively as in prior years, thus in-the-bid allowances for profit and overhead are higher. This is reflected in Dun and Bradstreet's analysis of contractor failures. Their comments about 1968 indicated that the number of contractor failures was markedly lower than in preceding years.

National survey shows costs up four per cent in a year

A recent survey of costs in 188 U.S. metropolitan areas indicates that the national average cost to build increased four per cent in the past 12 months, with larger metropolitan areas reporting generally bigger increases. Some cities reported increases significantly above the national average: Providence, Akron, Cincinnati, Cleveland, and Detroit reported six per cent, and Dayton, Toledo, and Burlington, N.C., reported eight per cent. The obvious conclusion for the architect is that not only must he be more concerned with costs on a day-to-day basis than in the recent past, but that any major delay in preparation of plans and specifications will significantly affect bids. This is apt to cause a spread between preliminary estimates and the low bid, leading to a potential deterioration of the architect-client relationship.

Wage rates increase faster than productivity

Historically, increases in labor rates have given the cost-to-build its major upward push, and 1969 will be no exception to this rule. Union negotiators in the construction industry will push for increases that equal or exceed the gains won by industrial unions. Seasonality will continue to be a major point of argument when the union insists on increases in excess of those in industry. Productivity, however, remains an enigmatic factor: although labor rate increases will be in the four-to-eight per cent range, the most optimistic prediction of productivity increases is about two per cent. And it is a measurable fact that productivity of construction labor can actually decrease as wages increase.

Housing recession set stage for lumber cost increase

In 1967, when the high cost and general unavailability of mortgage money forced the home building industry into a recession, domestic demand for plywood and other lumber products decreased markedly. As demand decreased, lumber and forest product producers and manufacturers were left with excess capacity. As sensible businessmen, they turned to other markets to sell their products, and to export to Japan and other Eastern countries was a natural choice. When domestic demand recovered last summer, there wasn't enough plywood and lumber to go around, and the inevitable increase in prices occurred. Log exports to Japan alone have risen from 100 million board feet in 1960 to two billion board feet estimated for 1968; an increase is expected this year. With government intervention more than likely, lumber prices eased in March and April, but prices will remain erratic well into 1970.

Price increases for materials other than lumber are modest by comparison, but summer wage negotiations in industry could force price increases for building materials up three or four per cent.

For the next few years: four to 12 per cent increases

We project that the average total increase in the cost-to-build will be in the four-to-five per cent range for 1969, with individual cities experiencing increases from a low of two per cent to a high of 12 per cent.

Unless the country experiences a major recession, it would appear that cost increases in the four per cent range will represent the lowest we can expect during the next few years, and if the Vietnam situation should ease materially, the lowest increase could go to eight per cent annually.

The obvious conclusion to all this is that the architect must establish a system in his office for close observation and control of costs. It could be fatal to his practice not to do so.
BUILDING COST INDEXES

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends. The indexes are computed on a basis of 40 per cent labor rate and 60 per cent materials price. Wage rates for nine skilled trades, together with common labor, are used. Prices of four common building materials are included for each listed city.

<table>
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<tr>
<th>MAY 1969</th>
<th>Metropolitan area</th>
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<th>year ago</th>
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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 (1.0) divided by that of a second (1.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (0.8 = 100:00/125%), or they are 20% lower in the second city.

ECONOMIC INDICATORS

Indicators are intended to show only general direction of changes.

BUILDING MATERIALS—The U.S. average price of a "package" of common materials.

WAGE RATES—The U.S. average wages of nine skilled trades and common labor. Fringe benefits are included.

MONEY RATES AND BOND YIELDS—An arithmetic average of the latest prime rate, short term prime commercial paper rates, and state and local government AAA bond rates.

HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

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<td>275.5</td>
<td>283.5</td>
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Whatever you design for this shopping center, General Electric can air condition with a unitary system.

Your General Electric central air-conditioning contractor is a visionary. Tell him your vision and he'll find a way to air condition it, no matter how high or wide you build it.

Depending on what you have in mind, GE's Weathertron® Heat Pump may be best. It heats as well as cools.

Or a GE gas/electric combination. Or maybe rooftop cooling units with built-in electric heaters.

Or for perimeter-type area-by-area cooling and heating, there's always the GE Zoneline system.

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Your GE central air-conditioning contractor will be glad to work with you and your engineer on system selection—he also can install the system right for good performance.

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GENERAL & ELECTRIC

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Truss or Ladur Type masonry wall reinforcement—We make both so which will it be?

We recommend Dur-O-wal® Truss... Here are ten good reasons why

You’re looking at the most efficient masonry wall reinforcement ever devised, Dur-O-wal. Truss Design.

1. You can’t beat the truss for performance, adding both flexural strength and stability to masonry walls.
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3. Dur-O-wal, Truss carries material approvals from three important building codes: BOCA, ICBO, SBCC and many state and local codes.
4. Dur-O-wal, Truss is available in a wide selection of shapes, sizes and finishes. You can reinforce almost any masonry wall—single wythe, cavity or composite.
5. Dur-O-wal, research is the most extensive in the business. We back up every claim for our product with independent research.
6. When you need Dur-O-wal Truss you can get it. Over eight thousand dealers stock and sell our product.
7. Dur-O-wal. Truss is nationally distributed.
8. Dur-O-wal has trained factory representatives who can help you with reinforcing problems.
9. A constant supply of technical literature based on current research is available to you.
10. Dur-O-wal offers additional products exclusively for masonry construction, all backed by the same reputation for quality.

Questions on masonry wall reinforcing applications? Just write to Dur-O-wal, P. O. Box 368, Cedar Rapids, Iowa 52406.

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It lets you out, not down.

The Yale* 30 series Mortise Panic Exit Device won't let you down because it's been proved in schools, hospitals, commercial and industrial buildings to be a maximum security device that never panics. And since it never panics, it's listed by Underwriters' Laboratories and serialized as "Fire Exit Hardware."

So when you need a panic exit device, contact your Yale Representative; he won't let you down.

YALE
THE FINEST NAME IN LOCKS AND HARDWARE
YALE LOCK & HARDWARE DIVISION, RYE, N.Y. 10571
AN AUTOMATED DRIVE-IN RESTAURANT
by W.C. Muchow Associates, Architects

One of a series of design innovations commissioned by Weyerhaeuser Company
"We propose a structure that attracts customers by its appearance and by the unique nature of the services it offers."

Most drive-ins, unfortunately, resemble the wreckage of a conventional restaurant. The dining room is either altogether lost, or at least foreshortened, and what remains is a stubby kitchen adrift in a sea of asphalt.

Or, if it's a newer establishment, the design resembles a shake-shingled parody of a suburban cottage, hidden by its assertive partner, the great and gaudy sign.

We believe it most curious that drive-in restaurant design so seldom uses structure visually and operationally to attract and entertain customers.

And we propose a drive-in design in a contemporary idiom, based on a universal "building block" fabricated with an aluminum-faced plywood.

The restaurant would attract customers through unique services, including:

1. Choice and convenience. The customer could remain at his car and be served instantly by large-capacity, automatic, coin-operated vending machines housed in the structure.

2. Entertainment. While eating, the customer could watch any of several film shorts projected on a private screen directly in front of his car. The film would be selected and activated from the vending machine panel, in a manner similar to the operation of a "juke-box."

W.C. Muchow

GEORGE HOOVER: PROJECT ARCHITECT
"First we designed a basic building block. Then, the restaurant."

The single building block can be used with other such units in unlimited combinations to construct walls, roof, tower, kiosk and display systems. Thus, one business could use the system for structures with almost no resemblance to those of his competitors — even though the competitors were using the same building block. It's like a brick — except that brick cannot be used to span horizontal space. The material is Weyerhaeuser® Prefinished Siding/Panel 15, in 5' x 10' size. Thickness, 5/16".

At Weyerhaeuser, we do everything possible to make this kind of inventive application of our products possible. For example, we can provide Panel 15 in the size required here — and in virtually any color required, including a full range of colors to match anodized aluminum.

To make our products more useful to you, we maintain a nationwide network of specialists who offer the most comprehensive body of technical data available from a single source in the wood products industry.

For more information, call on your Weyerhaeuser Architectural Representative. Or write to Box B-6755, Tacoma, Wash., 98401.

(For more data, Circle 5 on Inquiry Card.)
Powerbond Pile Vinyl floor covering.
Office proof, school proof, hospital proof, store proof, etc. proof.

If it weren't for Powerbond™ Pile Vinyl's outstanding durability, low maintenance, excellent sound deadening properties, sure footedness, beauty and general superiority for use in any high traffic area, we could stop right here about what has helped push Powerbond Pile Vinyl into such wide acceptance.

But, there is more.

Behind its beauty (24 matchless colors and 3 textures) there's extraordinary ruggedness, abrasion resistance and resilience. And it's made of Allied Chemical's specially engineered commercial nylon. No scuffs, traffic patterns to show. And spike heels can't spike it. No buckling. No rippling. The pile is so dense, spills, dust and dirt stay on the surface. It can take just about anything anyone can dish out.

And in back of that is our famous 5-year wear guarantee.

You see, it's the only floor covering that combines the luxury of a super-dense pile with all the inherent practicality of vinyl. (We fuse the two together using several layers of vinyl. Because there's nothing better than vinyl for ultimate stability.)

There are a few "almost-likes" but nothing exactly like Powerbond Pile Vinyl. Which is what you'd expect from something that has set the standard for floor covering.

Please send me more information and swatches.

Name________
Firm________
Street________
City________
State_________Zip________

For more data, circle 64 on inquiry card
NEW!

SYMONS DEEP GROOVE STRIATED FORM LINER

Symons Deep Groove Striated Form Liner leaves a soft, handsome effect to exposed concrete surfaces. Of prime benefit to the architect is the manner and ease of finishing the deep groove striations, reducing the exposure of any imperfections that may be present due to rock pockets, honeycombs and bug holes.

Normal size of the liner is 4' x 8', but can be ordered in any size up to 4' x 18'. It is made entirely of a wood composite, which can be easily attached to the forming surface.

Striated form liner may be used in conjunction with Symons Rustication Strip, illustrated below. Ties are inserted through the Rustication Strip, leaving the tie hole in the impression, and not in the face of the concrete. Complete details about the striated form liner and rustication strip are available upon request.

Any apartment mailbox this handsome couldn't be very tough

How wrong can a headline be? The government approved Bommer 580 is unmatched for ruggedness. The front, for instance, is made of tough steel then sprayed with brass for lasting beauty. Boxes are compact, too. The whole unit recesses into the wall just 4½" for sleek, modern construction. Installs quickly and easily. Or can be surface mounted to brick outside wall with our inexpensive frames. Large compartments hold king size mail. Generous magazine rack is built right in. Speaker and director panels available too. Model 581 is exactly like the one above but has push buttons.

Bommer mailboxes are designed to make a stylish complement to the contemporary apartment lobby. This year. And for years to come. We make them tough. Write or phone for the big booklet on the Bommer family of mailboxes in striking finishes.

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For more data, circle 65 on inquiry card

Robert G. Reimann
Associate Professor of Landscape Architecture
State University College of Forestry
Syracuse, New York

For more data, circle 67 on inquiry card
You don’t have to specify JAMISON

but if you value VALUE, you will.

A Jamison cold storage door gives you the obvious values of the finest materials, excellent construction and proper functional design. It’s what you’d expect from the oldest and most experienced maker of cold storage doors.

In addition to these obvious values, Jamison gives you hidden values. Architects find especially valuable the architect data sheets which describe in detail each door that we make. They also give complete specifications which may be used with possibly only slight modifications.

Another value we would like to offer you. Send for a free copy of our book “How to Select and Specify Doors for Cold Storage Warehouses and Food Processing Plants.” This in no way obligates you to specify JAMISON. But if you value VALUE, you will.

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Whatever type of metal building you're planning—warehouse, plant or store—PPG Color Coatings can beautify it and keep it looking new longer. Choose from a wide range of colors—harmonious architectural, bright commercials, even sparkling new metallics. These PPG coatings are available on factory-finished panels, siding and roofing, with matching or harmonizing colors for extruded components. PPG coatings are tough, too. The finish won't chip, crack, peel or blister. They stay bright and care-free, resisting years of weather and industrial atmosphere. The highly flexible finish takes severe forming and fabrication, comes through shipping and installation in great shape.

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An adjacent five-floor Medical Office Building contains two Montgomery duplex passenger elevators. Franklin Hospital Phase II—Long Term Care Building—is now under construction. This five-floor unit will be attached to the main building and will be served by two Montgomery elevators when it opens this year.

Montgomery design, construction, and maintenance services are available to you through a nearby Montgomery Elevator Company office...one of more than 120 locations throughout the United States, Canada, Mexico, and the Caribbean. Call on Montgomery to move people and things for you!

montgomery

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POWER WALKS & RAMPS

Montgomery Elevator Company, Moline, Illinois 61265
Montgomery Elevator, Ltd., Toronto, Canada
Offices in principal cities of North America

For more data, circle 70 on inquiry card
Anchor® Fence: positive protection plus style.

Anchor Permafused® Chain Link Fence is a green stop sign. It protects your property all day, every day, year after year. Nights, too. In two shades of green, Permafused vinyl coating is fused to tough steel wire... gives you color plus strength. Anchor's rugged, clean-cut framework eliminates wrap-around bands... and with no top rail, there's no place for trespassers to get a climbing hold for hands or feet. High in protective qualities and low in maintenance, Anchor Permafused fabric is impervious to acid and alkali atmospheres. It's only one of the many Anchor products that provide stylish protection. Our new booklet tells you much more; send for it now.

110' Vertical Lift gate. Another example of Anchor ingenuity and engineering.

Anchor-weave aluminum strips fit into a chain link fence to add concealment. Available with barbed wire arms.

FREE BOOKLET
Anchor Fence, Dept. C-05, 6500 Eastern Ave., Baltimore, Md. 21224
Please send your "New Dimensions" color booklet.

Name_________________________________________Title________________________

Firm___________________________________________

Street__________________________________________

City_________________________State_________Zip________

For more data, circle 71 on inquiry card
PRESTRESSED CONCRETE helps keep costs down as your structures go up!

Labor costs at the construction site continue to rise, and shortages of skilled manpower grow more acute. Yet the overriding need for economy while maintaining high-quality standards is universally recognized.

As a happy way out of this present-day dilemma, architects and engineers in ever increasing numbers are specifying prestressed concrete.

You can learn all the reasons why by getting in touch with your nearest PCI producer member. Best time to do that is in the earliest stage of your next project.

Professional membership in PCI can be of value to you in many ways. Send for details.

A handsome new book on parking structures is now available from your nearest PCI member.

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Double Jute-backed carpets glued directly to floors keep wheels, casters rolling easily.

No cushions or pads to bog down wheels and casters. Double Jute-backed carpet glues directly to the floor. Any floor, new or old. Wood. Concrete. Even glues down securely over previously installed resilient flooring.

Once down, it stays down. Resists shifting and delamination. But comes up so cleanly that it can be reinstalled elsewhere.

Safer, too. Unlike practically all foam and vinyl backings, Jute backing helps carpets meet the flame-spread resistance requirements of the Hill-Burton Act.

Best of all, Jute-backed carpet glued directly to the floor costs substantially less. Less than cushion-backed carpet with equal pile. Less than equivalent carpet with separate underlayment.


JUTE-ON-JUTE
Jute Carpet Backing Council, Inc., 25 Broadway, N.Y. 10004

Write for Sample Glue-Down Specifications plus other pertinent material including successful case history at Ford Motor Co., Dearborn, Mich.

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A DEGREE (+ or −)
ON MONROE COMMUNITY COLLEGE

That's a year 'round comfort degree for students and faculty. Such environmental control is surer, safer with Aerofin Coils.

Advanced, smooth-fin design delivers maximum performance heat transfer capability and capacity in compact duct space—allows the use of high air velocities without excessive turbulence.

AEROFIN
Heat Transfer Coils
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Specify dependable, true-rated Aerofin Coils for your next heat transfer project.

AEROFIN CORPORATION
Lynchburg, Virginia 24505

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safety to traffic with
complete door control.
door is cushioned during opening.
door is stopped at full open.
door can be held open.
door is closed. door closing
and latch speed is regulated.
all by a single attractive
door controller.

in all standard finishes
to match styling and decor
of modern doors and frames.

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Available in Canada—Norton Door Closer Division

For more data, circle 75 on inquiry card
Introducing the selling ceiling.

You get a feeling you're under the open sky.
The rows and rows of fluorescents are gone.
And with them the bargain-basement look.
The merchandise stands out in its own natural,
glowing color.
The store is lit up far brighter than with fluorescents. It feels like broad daylight inside.
When you look down the aisles, you hardly see the lights. They're recessed. The illumination is very even: glare and shadows are practically eliminated.
Even near the floor there's a flood of light. The lower shelves are lit up almost as brightly as the upper ones.
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"Capitol" need not be synonymous with "dome"

A study of the just-dedicated Hawaii State Capitol and the just-announced design for a Michigan State Capitol—two totally different and innovative approaches to a design problem with strong roots in tradition.

New State Capitol buildings are rare—only three have been built in this country in the last fifty years. But there is perhaps no public building quite so public as a State Capitol, and design solutions for both Hawaii and Michigan explore common problems of monumentality, function, programing, urban planning, cost, and political process in public architecture.

In cultural background and history, Hawaii and Michigan are far apart, and appropriately the designs of their new Capitols are very different—as the following pages will show. But in the break that both designs make with traditional forms, they are on common ground. The new forms that they suggest, and the new approaches to the design of government buildings that they explore, are likely to encourage more exploration in the design of institutional buildings—governmental or not.

Dignity and symbolism, size and monumentality are attributes of major government buildings—and in traditional examples, these attributes have been achieved in traditional ways. But traditional ways no longer express the community and no longer express the relationship of the people to government.

In these two new buildings, dignity derives from qualities other than monumentality. Both buildings are big because they have to be—but their size sacrifices no human relationships. Symbolism is apt and designed in, not appliqued. Both buildings respect where they are, what they are, and the people for whom they are designed. Both have been shaped in part by the people, through the intricate politics of design for government buildings. And both are thoughtful and innovative attempts to solve a problem that is becoming increasingly common and more important—fitting the ever more complex requirements of modern government into a framework that respects the traditional role of the government building as a public symbol and a source of public pride.
Hawaii State Capitol: beautiful and unique and fitting

Hawaii’s new Capitol—its first: the seat of government since 1895 has been a royal palace—is an exceptionally handsome building and a most unusual capitol. And since Hawaii is both the newest and the only island state among the United States, a unique design seems right and fitting for so unique a place. Designed in 1960, presented to the Legislature and enthusiastically approved in 1961, the building’s construction did not begin until November 1965. A few weeks ago, in celebration of Hawaii’s tenth anniversary of statehood, the new Capitol was dedicated. Not all of its offices were furnished, and none of its almost half-million-dollars of art works was in place, but the legislative chambers were in use and the building was, to all intents and purposes, completed.

The most unusual feature of the building is its openness, a quality it derives as much or more from the open character of Hawaiian society as from the tropical climate and the particular conditions of the building’s site. At the heart of the building is a great central court five stories high and open on two sides to the park that surrounds the building. Winds blow through the court, sun floods it, rain falls into it, but it was not for these purposes that the court is open both at its crown and at ground level. In a rare way (even in Hawaii) the Capitol recognizes the Hawaiian cultural and historic traditions and the people’s easy relationship with their legislators.

The Capitol stands in the civic center in what will some day be a great park (if the master plan is fully implemented) where it shares the focal point with nearby Iolani Palace, the only royal palace in the United States, built in 1882 by Kalakaua, last of the Hawaiian kings. The palace is but one of a number of historic buildings (Kawaiahao Church, built in 1842; the Mission buildings dating from 1821; Washington Place, once the home of Queen Liliuokalani of Aloha Oe fame and now the governor’s mansion; Iolani Barracks; the Judiciary and City Hall are others) which make

A master plan for the civic center was an obvious necessity to give the Capitol the setting it deserved, but it came late, after the site had been determined and the building designed. Conceived as a great park in which are located city, state and Federal office buildings, and where historic buildings (2, 5, 6, 7, 8) can be preserved and displayed, the plan is actually a series of open spaces connected by tree-lined streets and terraced at both ends by pedestrian malls. The civic center runs from the mountains to the sea—an ancient Hawaiian tradition for land division. The Capitol and Iolani Palace form the focus for the plan. The plan, prepared by John Carl Warnecke & Associates, was evolved by a remarkable combination of architects, official policy committee and a citizens’ committee made up of delegates from a broad spectrum of organizations, and including leading design professionals, who studied architectural, historical and traffic problems and recommended criteria for their harmonious resolution.

Morley Baer photos
Behind the Capitol rises the always green and frequently cloud-obscured Koolau Range, with Punchbowl crater, an extinct volcano, nearest to the civic center. In the foreground are the tropical trees and shrubs—among them an enormous banyan tree—of Iolani Park. But the site of the Capitol building itself is less open than the greenery suggests: all around are evidences of Honolulu's current building boom in high-rise office and apartment buildings. Brilliantly lighted, the Capitol is a focus of interest in Honolulu's night skyline. Original design of building showed the executive floor (penthouse) as low element on roof, but the governor's order raised it five feet, with some alteration in appearance.
this an unusually rich and varied civic center. The new Capitol relates to these old buildings more by subtle handling of scale than by style or detail. By being individual and contemporary, the new Capitol gives Hawaii something that its old buildings in their borrowed styles did not offer: a building inspired by and in response to the Islands themselves.

The great banyan tree near Iolani Palace fixed the axis for the Capitol building, and it also suggested the form of the columns that surround the building and support the actual roof—the fourth floor—which cantilevers out from the flat vaults at the tops of the columns. Other design elements also derive from nature: the columns rising from the two large pools on either side of the building suggest the island state; the truncated cones at each end suggest the mountains that rise from the sea; and the fluted crown of the open court echoes the undulating sides of a crater, recalling the volcanic origin of the Hawaiian Islands.

From the great court, the public has easy access to the legislative chambers, entering the spectator galleries for both houses at court level. By stair and elevator (located in corners of the court) it also has access to the upper floors, where offices for legislators and departments directly related to the chief executives are located. Public circulation on these upper floors is through lanais (corridors or porches open at one side) that overlook the court and receive from it both light and air. The chambers and all offices are air conditioned, but public spaces are open to the tradewinds. The executive offices are on the top level, in what is actually a penthouse.

Building a capitol is, or should be, a democratic enterprise, and in Hawaii democracy is taken with considerable literalness. Consequently the processes through which the Capitol passed in becoming an actuality are of more than usual interest. Citizen representation was a part of the architect selection and of the design study. The governor appointed a Capitol Architect Selection Committee in 1959 when statehood became a fact, requesting it to interview and recommend architects for the Capitol. The committee selected the Honolulu firm of Belt, Lemmon & Lo and the San Francisco firm of John Carl Warnecke & Associates (all but one of the joint venture groups were combinations of local and mainland
The governor then named an Architects Advisory Committee, made up of members from the earlier committee, to act as liaison to the architects for the state. Although not broadly representative, the committee had a special virtue: it knew its deficiencies, and to make up for them appointed an architectural advisory committee—Pietro Belluschi of Boston, Leonard Hunter of the General Services Administration, and Honolulu architect George J. Wimberly. The advisors' unanimous endorsement of the design (presented in February 1961, five months after selection of the architects) spearheaded the enthusiastic approval of the governor and legislators. Funds for construction were not appropriated until 1964, however, and in the intervening period there was time to determine that a master plan for the civic center was vitally needed.

It was increasingly clear that the site chosen in 1959 for the Capitol building (at the insistence of downtown business interests who could see the advantage of having the Capitol nearby) was too small for so important a building, and that a master plan, although late and coming in reverse order from the usual, was essential to assure harmony among the many elements of the center and unity in its over-all development. Because the site selection had been controversial and because the Capitol committee had not been broadly representative, the governor this time appointed a Citizens Advisory Committee on the Civic Center, with members representing over 40 organizations, and paralleled it with a Policy Committee made up of Federal, state and city officials, since all three levels of government would be included in the center. Thanks to the master plan, and to those who made it and approved it, the Capitol and Iolani Palace will eventually have the setting they deserve.

**Architects**: Joint venture of Belt, Lemmon & Lo and John Carl Warnecke & Associates—John Carl Warnecke, architect in charge of design; Cyril W. Lemmon, architect in charge of project development; Donald Fairweather, project manager (John Carl Warnecke & Associates); structural engineer: Donald T. Lo; mechanical engineers: Soderholm, Sorensen & Associates; electrical engineers: Nakamura, Kawahata & Associates; civil engineers: Belt, Collins & Associates; landscape architect: Richard Tonga; general contractor: Reed & Martin, Inc.
Although the floor level of the two chambers is below ground, most of the volume of these great rooms is not. The curved outer walls rise from the pools in conical form (above) which is truncated by the two legislative floors suspended from the fourth (departmental) floor. Tapestries are to be hung on the curved wall of each chamber, and chandeliers are being commissioned as works of art. Colors in the Senate are blues and greens; in the House, earth tones are used. Panelling is Hawaiian koa wood. Columns are spaced 45 feet o.c. and are 6½ feet in diameter at base, 4½ feet at top. The building cost $21,103,724, including underground garages and landscaping.
Michigan State Capitol: symbolic separatism, practical unity

"I believe the Capitol, the area and other facilities required for the operation of the principal functions of the three constituted branches of Michigan's government—legislative, executive and judicial—have had more constructive attention over a longer period of time by state officers, legislators, state committees and commissions and by citizens, both as individuals and groups, than any other state project."

A. N. Langius, Director, Building Division, State of Michigan

There is perhaps no public building quite so public as a State Capitol, which, like Michigan's, must at the same time meet the direct requirements of 3,000 immediate users, serve as capstone and focal point for a government office complex master-planned to house a projected 15,000 state employees—and nourish the public pride of some 8.63 million private citizens.

Nor, as State Architect Langius indicates, is such a building easy aborning. Appropriation by the State Legislature of the $5 million requested by Governor William G. Milliken to move the proposed $50-million scheme through detailed planning to construction start would mark the end of the beginning of a process of study and planning, review and revision, which has spanned—albeit with lengthy intermissions—almost half a century.

The earliest scheme for the so-called Capitol Development Area, recently unearthed and strikingly similar to the present one, reaches back to 1922, when urban planner Harland Bartholomew prepared for the city of Lansing an over-all master plan, including the capitol vicinity. Predicting the eventual need for a new State Capitol, Bartholomew recommended that, when the time came, it be located—as the proposed Capitol is—several blocks west of the old Capitol, with "the intervening blocks . . . developed as a mall, with subsidiary state buildings ranged on either side"—as called for in the current master plan by Smith, Hinchman & Grylls.
At a time when the Legislature was able to conduct its business in leisurely 60-day sessions every other year, and the burdens of other branches of government weighed accordingly, the suggestion that the affairs of state might require physical expansion on so grand a scale perhaps seemed less farsighted than far-fetched. But by 1937, the state government's growing pains were severe enough to prompt the establishment of a special State Capitol Building and Grounds Commission to study impending expansion needs. Working closely with Harland Bartholomew, who had concurrently been summoned to update the city's master plan, the Commission recommended the development of a state office complex immediately adjacent to the Capitol building, on the east-west axis originally envisioned by Bartholomew, but no action was taken to implement the Commission report.

Meanwhile, the state grew and prospered; the demand for state services proliferated; and the corollary need for increased governmental space became acute. Thus, in 1943, the state called on the Detroit firm of Smith, Hinchman & Grylls to carry out the first of a series of studies that evolved over the next 25 years into the current master plan calling for a greatly enlarged Capitol Development Area and construction of a new Capitol building. The initial commission entailed an inventory of the state government's existing facilities and a projection of future needs, plus the devising of a scheme that would consolidate all state functions in the Capitol complex. SHG's proposal for concentrating necessary expansion in a four-square-block area directly behind the existing Capitol was accepted. Land acquisition was begun, and elaboration of the basic scheme moved forward until 1952 when, with one of four buildings in the proposed complex completed and three others ready for bid, the project ran aground on financial shoals.

In 1963 it was refloated. But by then almost ten years had elapsed and prudence suggested a rechecking if not a recharting of the project's course. So at the request of then-Governor George Romney and the Legislature's Joint Capital Outlay Subcommittee, chaired by State Senator Garland Lane, Smith, Hinchman & Grylls undertook the re-evaluation of the earlier Capitol Area master plan and, later, the development of a new and more comprehen-
In essence, the over-all Capitol scheme (model photo, left) consists of three separate structures—a legislative building with House and Senate chambers flanking a central lobby, and smaller buildings for the judiciary and executive—superimposed on a four-block-square edifice roofed by a granite-paved plaza (drawing right). As the sections below show, the complexities of a program calling for offices and related facilities, plus off-street parking, in an almost three-to-one ratio to ceremonial and public spaces, were resolved largely by concentrating the working areas of the building in the four levels below the plaza—a solution that also allows convenient functional relationships between governmental branches at the same time it preserves their autonomy.

sive one, from the standpoint of two fundamental concepts. First, to prevent the Capitol area’s becoming an automobile dumping ground, parking was to be provided within the complex, even though this entailed the scrapping of completed drawings for several buildings already planned for the area and their replacement by a similar grouping underpinned by below-ground parking. Second, to realize the goal of concentrating the primary functions of state government in a central area in the central city, the previously-allotted 10½-acre site was to be expanded to some 75 acres, even though this entailed a long, and still incomplete process of assembling the required land.

Then as the new master plan and first-stage construction got underway, the long-simmering question of What To Do About The Capitol was brought to a boil by the long-suffering occupants of an 1878 building, which by 1966 was not only dowdy but dangerous, and SHG was asked to investigate possible alternatives. Initially, it was assumed that if other occupants vacated, the building could be rehabilitated to accommodate the Legislature and the Governor. Preliminary estimates of space requirements, however, soon proved this optimistic: to meet projected uses adequately, the Capitol would have to be extended or added to, as well as renovated. According to the architects’ studies, renovation and remodeling alone would cost up to $10 or $12 million; additional space requirements would swell the total bill to some $35 million. Further, it would obviously be necessary for the Legislature and Governor to shift operations to temporary quarters for the three years or more required to complete work on the Capitol, at substantial cost in cash as well as inconvenience.

In view of these considerations, Smith, Hinchman & Grylls were asked to shift their investigations to the cost and feasibility of housing the Governor and Legislature in a new Capitol on a new site, instead of tinkering with the old one or replacing it with a new building on the same site, and they duly proceeded to produce what designer Sigmund Blum wryly refers to as “endless” schemes in differing degrees of refinement. Of these, five principal schemes were developed in sufficient detail (and with variant treatments) for careful scrutiny by the Governor and the Legislature’s Capital Outlay Subcommittee.
None won unanimous acceptance. Discussion of the schemes—and particularly of one in which House, Senate, and Governor were each to be housed in separate inverted pyramidal structures on a common plaza—did, however, spark the evolution of a quite different functional concept. And the architects found themselves, almost two years after beginning studies for the new Capitol, with a quite different program.

The new concept, on which the current scheme is based, retains the basic principle underlying the earlier "inverted pyramid" scheme: the direct physical expression through three separate structures of the differing primary and ceremonial functions of the governmental bodies housed within. But instead of the two chambers of the Legislature plus the Executive, the new tripartite scheme reflects the more fundamental division of government into its three constituted branches—legislative, executive, and judicial—a change which required, among other complications, the accommodation of over 100,000 square feet of additional building space on the same four-square-block site.

The architects' response to the new brief is a seven-layered structure that consists essentially of three buildings—a doubled cube for the legislature and two single cubes for the Supreme Court and the Governor's executive offices—rising above a plaza which roofs a fourth. The base of the edifice is two subsurface layers providing parking for 1275 cars, mechanical and electrical space, and, on the upper of the two, public hearing rooms, the state law library, a cafeteria, and other auxiliary and service facilities. Above this, two additional levels contain legislative offices ringing a perimeter court, meeting rooms and allied working areas, and the House and Senate chambers.

The plaza level, reached from the street by sweeping stairs on all four sides of the complex, provides formal access to each of the three buildings superimposed on it, the upper portions of the buildings themselves being cantilevered from semi-cylindrical support towers which double as vertical circulation space. In the case of the legislative superstructure, the only "working" elements are the central legislative lobby and the public galleries circling the two chambers: the bulk of the enclosed space simply soars upward from each chamber's sub-plaza floor to a skylight four
stories overhead. In the other two buildings, however, ceremonial space is limited to the skylit main lobbies, and the Governor’s office and reception room and the Supreme Court courtroom respectively, with the rest of the superstructures devoted to offices and related facilities.

Apart from the guiding theme of making visually explicit the functional elements composing the Capitol building, the architect’s principal design concern was to reveal to the public not only the ceremonial, but so far as practicable, the everyday aspects of the democratic process. The former goal is clearly stated by the individual structures housing governmental branches; the latter is expressed more subtly in the public facilities provided, in the attention given to patterns of public access and circulation, in the arrangement of the legislative chambers to make activities within readily visible (without allowing public entry to the floor), and in the opening of legislative offices to an interior court.

Thus there is a certain irony in the public and press reaction which politely dubs the building “monumental,” and, more pungently, “fortress-like.” And the irony is increased by the fact that while the building is indeed monumental, it is by no means as overpoweringly massive as its vital statistics would suggest. Any building containing 1,374,000 square feet of space (including 550,000 square feet of parking) is big. Yet by tucking away much of its bulk below the plaza level and spreading it out over the whole of the four-block site, and by carefully grading the transitions from street to plaza, the architects have managed to keep its superimposed portions to a scale that is both humanly comprehensible and in keeping with the over-all scale of the area.

In the long run, the significance of the concept may prove to lie in its thoughtful and conscientious attempt to solve a problem becoming increasingly common as governmental functions burgeon on all levels: that is, the reconciliation of the ever more complex practical requirements of modern government with the equally valid requirement of preserving the traditional role of the seat of government as a public symbol—but one looking to the future rather than appealing to a nostalgic past.

MICHIGAN STATE CAPITOL, Lansing. Architects and engineers: Smith, Hinchman & Grylls Associates, Inc.—director of design: Sigmund F. Blum
An architect who has spent all his professional life in city planning argues for "the community value review" as an essential ingredient in the process of effective planning.

The failure of cities is an intellectual one. It is brought about by the failure of the intellectuals to generate a viable concept of a modern city and a modern region. Attempts are made to deflect attention from this bald fact by laying the blame on politics, on lack of money, on any cause but the root one. Of course, all these things play their role in the total process, but until there is generated a vivid and impelling concept of what we are fundamentally driving at, the other factors cannot play their role in the total process.

In the present atmosphere, not only is the root issue—basic concepts and ways of thinking—not discussed, but it is considered slightly disreputable even to bring up the subject. The happy assumption is made that we already know how to think, and that all would be solved if only someone would listen to us. I maintain that the great majority of our discussions of the urban problem deal with secondary manifestations rather than root causes. Current teaching in the universities has much to do with this. Until we get over our insistence that everything be reduced to the comforting specificity of manageable numbers before we even consider it, until we stop using the term "intuitive" as a means to kill in the bud any creative thinking, we will not get very far along the road to dealing with the basic issues implicit in the urban crisis.

The basic structure of assumption used by the liberal intellectual today as the springboard for his actions is largely dominated by concepts inherited from the revolutionary days of the New Deal (the middle 1930's). Circumstances have changed so much since then that these concepts are not only no longer relevant, but inhibitory to clear thinking.

It was natural and inevitable that at the very spear point of the effort to overthrow the accumulation of deeply embedded and widely held reactionary concepts, the basic issues would be reduced to crude slogans capable of seizing the rather torpid public mind, and so generate action. Unfortunately, many of these slogans have hardened into concepts that have become working tools of minds trying to deal with the highly involved processes of contemporary life.
Key among these slogans was the categorization of vast numbers of human beings into one clearly identified class, marked with a pungent label for easy handling.

“One third of a nation, ill housed, ill clothed, ill fed,” was the kind of shocking revelation that was needed by the American people in the thirties, but the by-product has been the establishment of an intellectual model in which people disappear as individuals and become members of a vast, statistically quantifiable, but faceless uniform group. This model is all too prevalent in the background of the discussion of social problems today, even on the part of intellectuals. The restructuring of thought and the restructuring of social programs so that each person and each family group are seen and treated as individual identities with their own special characteristics and needs are painful and revolutionary, but must be accomplished if we are to get on with solutions to the problems of cities.

One concrete expression of the categorization of the “ill-housed, low-income group,” both as an intellectual model and a legal entity, has been the construction of vast, institutionalized public housing projects to replace the “slums.” Individual families are uprooted from the individual and unique positions that they occupy in the complex of their social community, however undesirable some of these positions may be. They become one of a series of families on an essentially uniform basis. It is very much easier intellectually to categorize areas as “unsafe and unsanitary,” to recommend their destruction and replacement by “safe and sanitary dwelling units,” than it is to deal with the reality of the problem on an individual basis for each individual family where it exists. It requires a far more rigorous intellectual discipline to think of solutions on the latter basis and a much more vast and skilled administrative arrangement to bring them about. Yet, curiously, that approach, if it could be clarified, would probably elicit a more sympathetic political reception than does the present one. The elected representative, the politician, the community leader, indeed the Black Power advocate, is denied the opportunity to champion such an approach to the problem of cities because the intellectual has failed both to structure it into a viable and communicable conceptual model and to suggest possible action programs geared to its basic tenets.

Another manifestation of the New Deal is the “demonstration project”—witness the Greenbelt towns, the slum clearance projects, the rural resettlements. This was not only a pardonable, but a relevant and desirable concept in the 1930’s. To accept this as the basis for vast public programs in the 1960’s is officially to acknowledge that we still are incapable intellectually of coming to grips with the totality of the problem, an admission that is not appropriate for the present day. Virtually the entire legal, intellectual, and administrative base of the redevelopment and urban renewal programs throughout the United States is based on the intensive treatment of a fragment of the problem. Any attempt to recast thinking about the program so that it deals with the universe of the problem runs counter to the interests of both the administrative and intellectual adherents of the program and meets massive resistance. Again, the intellectual strain required to conceive, define, and plan the “completely renewed” community is far less than that incurred in the line of thinking contends that fragmented demonstration projects simply prove we are spending more and more money in less and less area, and that from such an approach we will never get on to dealing with the total environmental problems of those who live in deteriorated areas. Thus, we should undergo the intellectual wrench of abandoning old, comforting, but outworn models of the familiar “good neighborhood” and create entirely new ones of environment and process in which every individual benefits from our efforts to do something about blight. Here, again, such basic intellectual restructuring and re-statement of the nature of the problem and its possible solutions are the necessary precursors to effective political action.

A third, unfortunate, surviving result of the 1930’s “liberalism” is the stereotype of private enterprise as the enemy. This has so soaked into the thinking of many who are working on the urban problem that it acts as an insulator, inhibiting a valid interlock between the intellectual and technological insights that private industry and its research arms could bring to understanding the problem of slums and the energy and action that the great corporations are capable of in the solution of these problems. Again, we face an inadequate, but prevalent stereotype that the technicians and the public administrators should write the specifications for what should be done in an atmosphere untainted by any vestige of vested interests, and that these should then be put out for competitive bids by private enterprise. This approach has already been proved to be unworkable in the development of space programs. In the case of cities, it must be replaced by a process in which government officials and private enterprise explore the nature of the problems together. Out of the combined structuring of the problems can come tremendous new energies, financing, research, construction, and deepened insights into new ways in which elements of the private enterprise sector can interrelate with one another and connect with the real problems in the field in their total extent, as revealed by a working association with the people.
who have them.

The problem of the American ghetto can be solved only when the resources of the private enterprise system are redirected back into these areas. The time is ripe for a massive outpouring of government to the private enterprise system for help in the problem of cities. The corporations are now receptive to such an outpour and are prepared to respond. But the value will lie in a new kind of association, and this also, at its root, must grow out of a new intellectual concept.

It is usual to stop at this point, and it is much more pleasant to do so because so far there is little that can be attacked. I shall go on, however, to state three basic principles that I think to be important, thereby providing ample material for others to tear apart. By this very act, the process of assertion, controversy, and feedback may be helped to move a little closer to the core issues.

Despite protestation to the contrary, most planning and urban development thinking is based on the linear notion of a sequential progression from goal formation to getting the facts, to analyzing the facts, to the formation of alternative plans, to the selection of a plan, to implementation. This has as much connection with the total process of city dwellings as did the geographical comprehension of the persons in the fifteenth century, whose limited experience led them to the conclusion that the world was flat, to the real circular world.

Until there is general understanding of the process of hypothesis formation, its injection into the tumult of democratic dispute, the generation of feedback, and the restructuring of the hypothesis in the light of that feedback, in an ever recurring cyclical interaction, little progress will be made in achieving a viable relationship between the intellectual and actual decision-making, and indeed, in the very formation of viable concepts.

Under this system the planner himself as the source of idea formation. The ideas are then injected into the field of action where they are acted upon by the people affected through democratic institutions. Parts of the original concept are rejected by the people, parts are accepted. The product of this process is a series of fragmented elements to which new elements must be added and the whole restructured into a new hypothesis for a next go-round of democratic feedback. After the fourth or fifth trip around the cycle the elements that pass through the screen of democratic approval accord more and more closely with the value system of the people in the community. In the process, the idea-formulator himself has been tempered by the heat of his confrontation with his peers, and he himself, perhaps unwittingly, has become a more sensitive instrument more closely attuned to community values.

This process, indicated in the chart, can be further refined by distinguishing, both in idea formation and in the field of action, the general and the specific. In idea formation there are the basic principles or root ideas and its expression in specific proposals or projects. The development of the expression and its testing in the field of action expose the strengths and weaknesses of the broad principle, which must then be reconsidered in the light of the experience gained with the specific application. So in the field of action there is the identifiable leadership group, an ever-changing but nevertheless finite collection of people who make key decisions. In addition, there is the great mass of the people of the city, each an individual, yet each contributing to a collective state of mind, a general attitude, a prevailing community sentiment. Here again, each of these influences the other. Neither is captive of the other, and the viewing of these two in constant cyclical interaction is helpful in overcoming many of the rigid sequential concepts we have inherited in this area.

When viewed in this light, the process is not that of preparing a series of different alternatives, which relieve the planner of the necessity of thinking through the harsh issues and making firm decisions, thereby escaping the most essential and disciplinary stress of the planning act. Rather, the process is seen in the binary system of the computer. The exposure of the ordered hypothesis to public attack paves the way for the division of it by the public into a series of aspects, according to the public value system. The public systematically accepts or rejects each of these separate aspects as it sees fit. It is then the task of the planner to pick up those aspects that survive the community value review, to restructure a hypothesis using these aspects and adding such additional elements as are necessary to create a new and enlarged system of order. So the process is repeated on and on. If done with technical competence each time, a larger proportion of the facets of the hypothesis go through the feedback filter, until finally a system of order is developed not by the planner nor by the community, but as a product of the interaction between each that is sufficiently attuned to prevailing community values (as affected by the confrontation with the planner) that it becomes the basic directive for action on a large scale.

Under this approach sequence is irrelevant, just as irrelevant as the sequence in which the light beams pass through the various points on a television screen. Everything is seen as virtually simultaneous cyclical interaction, the process of idea formation with community feedback. So also, the idea formulator sees himself and his role very differently than he does under the linear approach. First, he recognizes that a tremendous deepening and enlarging of the original hypothesis will

“Until there is general understanding of the process of hypothesis formation, its injection into the tumult of democratic dispute, the generation of feedback, and the restructuring of hypothesis in the light of that feedback, little progress will be made…”

“…a system of order is developed not by the planner or the community, but as a product of the interaction between each that is sufficiently attuned to prevailing community values… that it becomes the basic directive for action on a large scale…”

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occur as a result of the feedback. Therefore, he recognizes at the outset that his hypothesis will be incomplete. Rather than spending huge sums of money and time on feeding every possible factor into the hypothesis before it is tested, he tries to make a powerful structure of the most essential ideas with the full confidence that enrichment and extension will occur in the restructuring process as a product of feedback.

Also, instead of attempting to determine before hypothesis formation the full range of community values by such artificial techniques as opinion polls, he respects the capacity of the community to accept and reject those parts of his hypothesis that do or do not correspond with their value system. Thus, he sees his role as that of presenting the community with the finest and most complete hypothesis he can create for a better environment. Under this approach, many of the questions that plague academic discussions of planning issues disappear, and the issue of viable hypothesis formation emerges as the dominant one for the intellectual.

Unfortunately, the university, where most planners are trained, is the institution that has most systematically rejected the feedback principle and is most likely to continue to do so. The teaching profession in general has become removed from the field of action and, indeed, has tended to distrust it. This is not a question of "being practical"; it invokes the most essential part of idea formation. One consequence is a tremendous stress in education on the act of quantifying everything in a sterile pursuit of absolutes.

An illustration of this was the work on a new city in a foreign country supervised by one of our most distinguished educational institutions. In this case the economists projected the population of the city at half a million, and the computers determined the amount of land needed for shopping, housing, industry, schools, and so forth. The plan was drawn in precise accord with the quantities derived. When the economists changed their estimate of the future population, the plan had to be done over. Any kindergarten child could have told the planners that any city with a population of five hundred thousand started out much smaller and, having arrived at that point, would continue to grow to be somewhat larger.

The key issue is to see cities and regions in terms of growth process, including expansion and decay down to the individual units, and to see the planner as one participant in a total cyclical process of democratic interaction rather than as the manipulator of absolutes. If this can be accomplished, it will represent a great revolution in educational thinking.

The time has come for universities to re-examine their relationships with the students. Key to the whole is the development within the faculty of a respect for and confidence in the political process.

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action with which the students can identify.

The students recently graduated and those now in the universities have, in my opinion, a much higher motivation for social involvement and a much clearer picture of their purpose in the pursuit of their professional career than did their predecessors. It is critically important that the university and the operating planning agencies re-think and re-structure their programs and especially their interrelationships so that this new thrust on the part of the students is not frustrated, but provided with channels for its exercise. Insofar as possible, it should be directed toward the central points of decision-making and not dissipated in peripheral byways.

Another inhibition to clear thinking about the plight of cities is the habit of thinking of "housing" in discrete quantitative terms as though "dwelling units" have their existence as manipulatable numbers rather than simply as fragments of an environment. This has led to many studies of numbers, based on "housing starts," "units to be demolished," and so forth, as though the individual structure could be shifted about as easily as the numbers used to represent it.

This type of thinking has led to the absurd situation where we think of family problems in terms of buildings, and we demolish the building and move the families to suit the convenience of the social and financial programs, rather than moving the abstract financial and social programs to accord with logical treatment of buildings and a rational and humane treatment of the individual families. Thus, instead of bringing the rent subsidy available under existing housing legislation to the people who need it where they already are (as integral parts of a complex community), we rip them out of their present environment and herd them all together in one great institution, the "public housing project." Then we throw them out bodily, children and all, if they succeed in bettering themselves and becoming a part of the American enterprise system. This is in contrast to the simple idea of adjusting aid programs to the needs of the people where they are, rather than moving people to the convenience of bureaucratic programs. Indeed, much of the basis of the entire national urban renewal and housing program is based on the convenience of the Washington file clerk.

By the same token, our thinking of structures purely in terms of numbers, as abstract, placeless entities, has led to an absurd situation in many cities. Thousands of vacant lots and derelict abandoned houses spread through hundreds of blocks of residential areas, crying out for new structures that would eliminate ghastly neighborhood hazards, that would infuse new life into neighborhood after neighborhood. Yet the public housing authority, following traditional molds of thinking, ignores these immediately available open sites whose use would avoid relocation, and looks for project sites that mean political upheavals, physical demolition, and social and economic disruption because of the forcible uprooting of families involved.

The claim that negative "environmental factors" prevent our building new houses in these areas is totally untenable. In democratic America we cannot afford to delimit areas occupied by thousands of families as areas to stay out of. We must see the public housing program not narrowly from the viewpoint of the minority of the ill housed, who are its tenants, but rather as an instrument for getting at the root of the housing problem of everyone. This purpose can be furthered and strengthened by a shift from thinking based on housing units as abstract, placeless, mathemetic entities to that concerned about the real and total environment of every underprivileged citizen in the entire city. This change of thinking perforce acts as a great catalyst, involving vast areas of social and economic programs in a systematic interrelation with the purely housing aspect of the problem. Given an underbase of a deep concern and understanding of the human need of the family not as a unit of an abstract category, but as a very real and individual entity, great energy will be released, and we will get on with the job in terms not of demonstration projects, but of an attack on the total situation.

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housing for the Housing Authority. A number of local groups were formed by people in the areas, often centering in churches, to act as developers of rehabilitated housing under a variety of programs. The Smith, Kline & French Foundation provided the seed money and drive for the rehabilitation of some seventy derelict dwellings in the vicinity of their building, thereby supplying homes for two hundred low-income families.

Already several hundred vacant structures have been rehabilitated throughout a large area, giving positive demonstration to the possibility of achieving Mayor Tate's vision of the complete elimination of the cancerous sores that derelict structures represent. Within the framework of this new trust can be developed a wide range of different programs skillfully intermixed to get away from the institutionalism previously associated with public housing, to provide a variety of income groups and family structure in the same neighborhood, and to give a vehicle for rich participation to the people who live in the neighborhoods.

A mother with, say, three children under four, living in a blighted area and receiving welfare assistance in the form of aid to dependent children, may function in her own world with almost no ordering of time or space in the customary sense. Much of the family life will take place in a single room. There is no requirement to get up or go to bed at any particular time. It is likely that meals, in the sense of systematic punctuation of a time sequence, do not exist.

Along comes the Head Start Program. The mother must rise at a definite time, get the child dressed, feed him, and take him on a definite route through space to the focal point of the activity, the school or another institution. The mother identifies with this point in space outside her own home—as a meeting ground with others in the community.

The mothers learn that Head Start funds are exhausted and the program is about to be terminated. Together with mothers from other areas, they go to city hall to protest, thus identifying with another point in space, relating to another hierarchical level of community involvement. They learn in city hall that the trouble is in Washington; so the system of order with which they now identify is raised one notch in the systems level. When they learn that the cause of the curtailment of funds is the Vietnam war, they become, indeed, members of the world community.

This elementary review of the process of relating to an ever-enlarging system of order provides a microcosmic model for one of the most fundamental principles that should guide the planning of the physical environment. It is a primary responsibility of the planner of the environment to provide focal points of identification, placed in significant relationship to valid principles of social groupings and articulated architecturally so that they draw people to them, speak to the people in terms of their pre-conditioned sensory emotional and cultural responses, and engender a sense of pride in the community, a loyalty to the social entity which is the community, a feeling of identification with its purposes, a basic involvement.

The process of articulation of the environment proceeds with the interconnection of these firmly established focal points in space by structured lines of movement—garden footpaths, greenways, parkways, malls, boulevards, or expressways. It includes the establishment of new points in space based on networks of enlarged systems of order: perhaps the district center that binds together a series of neighborhood centers, the city center, the metropolitan center, regional centers, national centers, and so forth. The function of design is to touch these articulated points in space with the quality of life, thereby engaging the emotions and loyalties of the people and setting into motion the process of identification with an ever enlarging system of order. In order for a planner or designer of the environment to do this, he must be engaged in his work and in his own life in a process of enlarging his own vision and the range of his capacities.

Only at this point, after all these processes have been set into motion, is it possible to talk about elegance and beauty in the environment. Only as the designer himself—the architect, the landscape architect, the sculptor, the industrial designer, the graphic artist—is involved in these processes with his whole being will he be able to reflect and express the feelings and aspirations of the people whose environment he is building; with equal force let it be said that it is only as the designer, the artist, is involved in environment-building in a valid way will the environment he builds be a proper expression of the hopes of the people, be they of the very poorest.

And the final and most important element of all is the simple requirement that the people who live there must, themselves, have a hand in shaping their own environment. So foreign is this to our traditional ways of thinking that its carrying out will, indeed, require drastic changes in our customary way of doing things.

So, in my view, it is possible to create a noble and beautiful environment in cities that extends to all its parts, that engages the loyalty and pride of its citizens, that leads toward a greater sense of involvement than we have ever known. But in order to accomplish this, we must abandon many traditional ways of thinking. We must establish and nurture new kinds of concepts, and we must set in motion processes and systems of interaction out of which such an environment may, quite naturally, grow.
Site and program generate a new school shape

The program given architect Paul Rudolph for the John W. Chorley Elementary School required spaces adaptable not just to team teaching, but to a "continuous progress plan" that abolishes grade levels and separates children only by age. Within these groups, each child moves almost independently towards standards in each subject established by his own potential.

Rudolph's design reflects this program precisely. Three wings or houses (for age groups paralleling grades K-2, 3 and 4, and 5 and 6) step up or down the sloping site from a strong central spine. Other main blocks, shown in the perspective, are the gymnasium complex (foreground) and a fourth wing (right rear) for educable and trainable children. The stepped design relates not just to the program and the site, but to the teaching methods used (page 138) and the simple and low-cost construction system (next page).

Inside and out, the school demonstrates the sense of surprise, the seeming complexity but essential simplicity, and the three-dimensionality that mark so much of Rudolph's work.
A simple construction system suits the building's shape and the sloping site

The building moves up the gently sloping site in steps of paired classrooms with a broad traffic area between. The bearing walls at each step (like the side walls) are concrete block, fluted to eliminate the block "feel" as the grooves darken and establish a strong striated pattern. Spanning the rooms are standard bar joists 8 feet o.c., with cement-wood fiber panels and a standard built-up roof above. The rooms are heated by unit ventilators under the windows, supplemented by ceiling-hung units in the multi-purpose cafeteria and other large spaces.

The monitors opening in the downhill direction house supervisory and teachers' preparation areas overlooking the open classroom spaces. They are sided with unpainted cement-asbestos panels. The only outside maintenance required is the painting of steel.

Except for a brief glimpse from the approach road, this rather large school (900 students, 95,000 square feet) is never seen as a unit. Its basic shape, its division into houses off the spine, and its stepped design all contrive to give the building a scale comfortable to the children.
Section and plan show how the basic scheme fits the sloping site, and how the three major houses work off the central circulation spine. At left in plan are the two gymnasiums. Other special spaces include a music room, music practice rooms, learning adjustment rooms, audio-visual rooms, administrative offices, medical-dental, guidance and speech correction rooms, and the multi-purpose cafeteria. The house for educable and trainable children is equipped with a complete housekeeping unit. A covered walkway (right in photo above) separates bus traffic from auto traffic and parking areas.

The building is on a 27-acre site. Its construction cost—including site work, general construction, mechanicals, carpeting, and all furnishings and equipment—was about $1.9 million.
In classroom areas, spaces flow freely and flexibly—with spirited color everywhere

Inside each of the three houses the space can be opened wide, or subdivided as needed, by accordion partitions. Even the broad traffic areas between pairs of rooms are used during classroom periods as spaces where children can retreat from the general classroom activity. With the partitions thrown back, the stepped-down spaces offer excellent sight-lines, functioning much as a conventional auditorium does for group instruction. The carpeting, the porous ceiling material, and the “steps” of both floor and ceiling keep noise and clatter to a level acceptable within this teaching framework. In the left rear of the photo above (see also plan) is a “mud alcove,” which provides coat-hanging space and “a place to push things out of the way.”

The clerestories at each step in the building (i.e., at each classroom) deliver natural light throughout the space.

Color, in felt pennants, kites and mobiles hung from the ceiling, in children's art on windows (see right), in plants and in other kinds of small spots everywhere, gives "a sense of joyfulness" to what is essentially very plainly finished space. The steelwork, the roof deck, the service lines, and the block walls are frankly exposed and handled in neutral greys and white. The photo above shows the main open space—used not just as cafeteria, but as auditorium, music and lecture room, and for PTA meetings. The trafficway is typical of the "step-up" arrangement throughout the building. Photo at right shows the wall at the lowest level of the big space, complete with one of the school's continuously changing and colorful art exhibits.
The library is centrally located just off the main circulation spine and convenient to all three houses. It is partitioned from the corridor by a low wall with glass above, so that light from beyond the corridor can flood in. The space is readily changed into classroom space should program requirements change. The photos below show one of the several supervisory alcoves perched above the classroom spaces and reached by a stair off the traffic area. Each teacher within the house has a work space for lesson preparation. These monitor spaces are lighted by large glass areas that spill light onto the traffic areas below.

JOHN W. CHORLEY ELEMENTARY SCHOOL
Located on a hillside in the snow country of Vermont, this large vacation house was designed to accommodate with equal ease both large-scale parties and quiet family living—and to function as well as a summer retreat as for ski weekends. The solution could have been a rambling, overwhelming affair; instead, the seemingly conflicting requirements have been unified under an elegantly simple and beautifully crafted shed roof form. The house seems relatively small, until one enters to see the great spaciousness which makes it work—and which compounds the pleasure of the hillside site.

The architect's solution for the large house divides space while interlocking it, and the structure is rugged and secure against the elements but lets summer breezes penetrate throughout. Four levels are staggered off a central stair, and open into each other at the two-story entry hall to provide efficient zoning—and a dramatic spatial interest.

The skillfully executed scheme unifies interiors and structure in the over-all, plastic flow of space: warm textures and colors enhance the natural wood structural members; sleek built-ins and relaxed furniture groupings define uncluttered space usage within the open living scheme. Deeply recessed floor-to-ceiling glass lets most areas share light from different sources, and visually extends rooms onto the slopes.
A third-level living-dining space includes the fireplace grouping at one end (photo above left) and the kitchen (photo above) in a clearly defined but open plan. Comfortable furnishings include black leather upholstery, a Moroccan rug and natural woods. Kitchen activities are only partially screened, in keeping with an all-pervading air of informality. The stair landing opening onto the second-level entry can be seen in the photo at left, with the fourth level visible beyond. Living areas open onto a full-width deck for southern exposure and a hillside view.
All levels of the house open into the entry hall, shown in the photo, left. Living areas are on levels to the left, with bedrooms to the right. A small study can be glimpsed behind the stairs. In the master bedroom, lower left, white curtains, a dark brown spread and orange and yellow pillows complement the natural wood and complete the uncluttered scheme. The glass wall incorporates sliding doors, and is neatly framed between the joists for a dramatic indoor-outdoor sense of space. The structure of the house is wood frame with rough-sawn cedar siding and built-up roof. Floors are yellow pine except for vinyl asbestos in the game room and the flagstone entry hall. Deep overhangs provide weather protection. Sliding glass doors are recessed 7 feet 8 inches on the south to give a deck on the third level for added summer living space.
When even the most spacious of college campuses finds that it must increase the density of its land use, and when the urban university must expand but can do so only on city blocks already filled with buildings, it is obvious that new thinking on campus planning is necessary.

A first step will certainly be the discarding of the word campus (literally field) to describe the academic complex. Campus less and less describes the physical plant of the American college or university in this last part of the 20th century. There is good evidence that the college will increasingly have its location in the city—whether by moving into the city or by causing urban growth around the “Learning Complex”—and that to meet the increasing demand for college-level education, expansion of existing facilities will have to take place, even where the circumstances are difficult.

What form these future places of higher learning will take is not easy to foresee. Perhaps the unusual proposal of a “Linear College” for the Bedford-Stuyvesant area of Brooklyn, to operate in renovated buildings scattered throughout the city and retaining the human scale and essential character of the area, will be one of the prototypes. Perhaps the city itself will become the campus, its cultural and scientific institutions replacing the conventional classrooms of classic colleges, as is suggested in a remarkably revealing series of essays by educators, edited by Alvin C. Eurich, Campus 1980, The Shape of the Future in American Higher Education (Delacorte Press, 1968). The undercurrent through all predictions indicates, however, that the impact of land-use pressure and the availability of new and advanced forms of technological equipment for communication of knowledge are inescapable in the college of the future. The examples shown on the following pages explore these impacts of land-use pressure and new equipment:

The two newly-completed colleges at the University of California at Santa Cruz—Crown College (page 146) and Merrill College (page 151)—are both more densely planned than the first college completed just a few years ago; and the fifth and sixth colleges will be denser still.

Teachers College at Columbia (page 156 and drawing left) is taking a high-rise form under the pressures on one side for needed expansion and the pressures on the other of limited space and community resistance to any land use outside the present campus.

And the new center at the State University of New York at Buffalo (page 158) is an example of the new design concepts generated by the use of advanced communications technology. —Elisabeth K. Thompson
Crown College's compact planning and its varied forms and spaces give it the charm and scale of a Mediterranean hill village.

By the time that planning of Crown College, third in the University of California's Santa Cruz Colleges, got under way, it was clear that a greater economy in use of the campus land—so apparently spacious at first glance—would have to be instituted. Not only was some of the land not usable for building because of steep grades, but a precious ecology would be lost forever unless careful husbanding of available building sites was built into future planning. This restraint on land use was, however, anything but limiting, actually aiding in the evolution of special qualities of scale and character particularly suited to the college. As campus consulting architect Ernest J. Kump (also architect for Crown College) says, "Architecture is a problem of social organization: size of site and number of students have nothing to do with the pleasantness of university environment. You could have 100,000 students and the environment would be pleasant—if it's planned right." In the case of Crown and Merrill Colleges (pages 151-156), the first two colleges to be completed after instituting the new approach, the environment is distinctive as well as pleasant, its compactness contributing to the much-sought interaction basic to the curricula of these colleges. Crown's 535 resident students and its 35 Faculty Fellows work primarily in the natural sciences but have access to the disciplines of the other colleges and to all campus resources (library, labs, etc.). Each college thus remains within the advantageous context of a large university.

CROWN COLLEGE, University of California, Santa Cruz, California. Architects: Ernest J. Kump Associates; structural engineer: Clarence E. Rinne; mechanical and electrical engineers: Yanow and Bauer; landscape architects: Lawrence Halprin & Associates; interiors: Maurice Sands; general contractor: Williams & Burrows, Inc.

Crown College’s design and planning are based on a philosophy of social organization brought into human proportions. It is, as the Chancellor of the Santa Cruz Campus of the University of California says, “more than a collection of dormitories attached to dining halls and libraries and classrooms.” In effect, the college is a community, with students’ loyalty going first to the college, second to the University. The compactness of plan generated by the ecological needs of the beautiful and, in some areas, unique environment is important for what it does for intimacy and human scale. All the buildings are of wood frame, stuccoed; roofs are red tile. Although economics determined that inexpensive materials must be used, the familiar materials and forms provide, says the architect, “roots, a sense of security.”

Across page is the academic court with the dining hall at left, classroom building at center; above, dining room. Below left, entrance to college; right, dining hall entrance. At left, entrance to one of the residence units.

Key to site plan opposite page
1 COWELL COLLEGE
2 STEVENSON COLLEGE
3 CROWN COLLEGE
4 MERRILL COLLEGE
5 COLLEGE #6
6 COLLEGE #7
7 FUTURE COLLEGES
8 UNIVERSITY (ALL CAMPUS) BUILDINGS
9 NATURAL PRESERVE
The college is organized around a number of courts, some formal, some casual, but all with a quality of intimacy that immediately relates them to human dimensions. Meandering paths connect the courts and the buildings, producing the effect of an idyllic village on a Mediterranean hillside. Although the buildings are four—sometimes five—stories high, the human scale is retained throughout and is enhanced through the variety of the spatial experiences created by the building forms and the different levels of the site.
The exterior appearance of the residence halls shows great variety within simple order: staggered floor plans give outside identity to each unit, and produce different types of interior spaces. Only three types of modules—groups of rooms—are used to obtain this variety. (Shaded modules on plans at left show how variations are achieved.) By varying the combinations of these modules, the location of exterior projections is varied, and so are the interior spaces with their nooks and crannies, which, the architect says, are part of the individuality students seek. Since a goal of the design was a casual environment—monumentality has no part in the college concept of small units where the individual is the primary unit of measurement—the architectural character of the buildings, inside and out, assumed special importance. Originally designed as separate groups of men's and women's dormitories, the residence halls can be organized to fit any college program and need: each building could house men and women on separate floors, or each could be used separately by men or women. The aim was to avoid fragmentation and separation of the various activities that are part of college life.
Each college has its own library. Crown's has its main entrance off the academic court which its belltower, integral with the facade, dominates. Wood balconies connect second level with classroom and office buildings.
Merrill College’s small site and its closely clustered buildings preserve natural qualities by increasing land-use density

Merrill College is the fourth college on the University of California’s campus at Santa Cruz, and the most recently completed and occupied. Even more than Crown, and considerably more than the first two colleges, Merrill has a tight site on which to provide an inclusive college community for 550 students (350 resident) and 35 Faculty Fellows (some resident). The environment created is distinctive, as is its curriculum emphasis: poverty, its history and causes in developing and “third world” counties.

Unlike the curricula of earlier colleges, Merrill’s curriculum is changed from the original, and came after the college had been designed around the first emphasis, language study. The unique “language lounges” evolved for the first curriculum have become an integral part of the second curriculum, with strong practical reasons for their use by students. Architecturally they are a focal point in the campus, not only by their location at the very center of the campus, but by their use of color, unusual on the Santa Cruz campus, which has an “earth-tone” palette for its buildings. The architects say that they felt “compelled” to use color on the exteriors as accents and also to “relate to the excitement of this generation.” These accents are, they say, “as natural as the wildflowers in the area.”

The elegantly simple interiors lend themselves to easy re-orientation to other cultures, since furnishings are basic and only cultural objects need be changed to identify the lounges with different non-western societies. Because the site is thickly covered with redwoods, shed roofs were used on many of the buildings to permit taller windows and to admit more daylight. The trees filter light onto the open areas—a variety of these are designed into the plan—to make them pleasant places on warm days.

MERRILL COLLEGE, University of California, Santa Cruz, California. Architects: Campbell & Wong & Associates—Warley K. Wong, architect and John Carden Campbell; structural engineers: Eric Elessar; electrical and mechanical engineers: Ralston & Dwyer; landscape architects: Royston, Hanamoto, Beck & Abey; general contractor: Williams & Burrows, Inc.
"A place of many places," in many sizes, varieties and locations, inside and out, could well describe Merrill College. Purposely designed to both promote interchange and to give variety to college life, these places provide for group or individual activities, and include the main plaza (above, right with dining commons and terrace at right of bell tower), small casual open courts (right), two viewpoints to Monterey Bay, sun decks, student lounge, sitting rooms in the residence halls, balconies and the "language lounges" (right). College buildings had to be carefully sited to preserve as many trees as possible and retain the view.

The site plan (above) evolved from this requirement and from the fact that the college was to use the food preparation facilities of Crown College, immediately adjacent. At the crest of the knoll are the commons buildings: student commons, the dining hall, the language lounges, and the main plaza, which acts as a college crossroads. On the slopes from the crest are classroom, office and administration buildings. The steepest slopes of the site, to the north, are used for the residence halls that define two sides of the site. All buildings except the dormitories are of wood frame and stucco; roofs are aluminum. Cost was $3,100,000.
At the center of the site are the "language lounges" (right and near left), each dedicated to a non-western region (currently Africa, Islam, India, the Orient, Latin America). These lounges are one of the special features of Merrill College, designed to attract students from their dormitory rooms for foreign language conversations. The change in college curriculum emphasis did not change the use of the lounges; they became, in fact, an even more important part of the study of "Poverty—Its History and Causes." Bright colors are used as accents in the campus: lounge roofs are "blueprint blue"; buildings are white, beige-gold or orange-red.
The five-story residence halls reflect the denser use of land that was necessary to satisfy the requirements of the program and the limitations of the site. The program had stipulated—in addition to preservation of trees and open space—that there be a maximum height limit of four stories. On the architect's recommendation, the height was increased to five stories, and this not only satisfied the program but gave the college a distinctive feature: the bridge that connects the main plaza and the halls. By bringing the bridge into the middle floor of the halls, no one walks up or down more than two floors. The halls are designed for complete flexibility of use. Currently they are being used coeducationally, with men and women separated by floors. Each living group consists of 14 students: 12 in double rooms, two in singles. Balconies, each shared by two rooms, and sitting rooms, one for each living group, are pleasant amenities. Redwood grilles are used for balcony rails, the only use of wood trim in the college. The residence halls are of concrete, used elsewhere only for shear walls in the dining commons. Windows and daylight, of special importance in wooded areas, were located for best views and maximum openness.
Teachers College, Columbia, will expand academic facilities on tight urban site and will include housing for neighbors as well as faculty and students

Expanding an urban campus such as that of Columbia University is difficult in more ways than land acquisition and cost, as Columbia has recently learned. Teachers College—largest of all graduate schools of education, an affiliate of Columbia but separately chartered and financed—needs expanded facilities for its academic program, and over the past three years has planned an unusual approach to getting them. The land it will use adjoins existing college buildings and is presently occupied by low-income housing of uncertain age. Discussion of the expansion program with residents of the neighborhood has been an integral part of planning, and construction has been phased to permit rehousing of the community in new high-rise residential towers. This approach to expansion of an urban college's physical plant, apparently the first aimed at providing public housing on a privately-owned campus, recognizes in surprisingly clear and strong proposals the responsibility of an urban institution to its environment. No residents will be displaced by First Phase construction, which will replace an existing two-story classroom building with a nine-story academic and research building. Phase II will temporarily rehouse neighborhood residents in nearby buildings until they can move into the first completed residential tower. Phase III will complete academic expansion and provide the second residential tower. The intense use of the 3.5-acre site is an example of future urban campus expansion, but the architectural considerations designed into this project suggest the means to the quality which must be provided along with density. This “micro-city” uses architecture in an exhilarating way to accomplish some important aims: it unifies architecturally the old and new buildings; it separates vehicular and pedestrian traffic by levels of academic and residential use; and, most important, it is designed to provide an environment that will “increase the individual's potential for learning, living, interchange and recreation.”

TEACHERS COLLEGE, COLUMBIA UNIVERSITY, New York City. Architects: Hugh Stubbins and Associates—Merle Westlake, project director; Hugh Stubbins and Peter Woytak, project designers; structural engineers: LeMessurier Associates, Inc.; mechanical engineers: Jarey, Baum and Bolles; parking and traffic consultants: Wilbur Smith and Associates.
Linking the existing campus with the new, Millbank Memorial Library—world's largest collection of materials on education—will bridge 121st Street and open onto a landscaped plaza. Rising above the library will be one of two residential towers containing apartments for faculty, students and persons from the immediate area. Residential towers will have retail shops at their base, as in European cities. A two-block-long four-level mall or "inner street," where activity is to be concentrated, is a special feature of the plan. Community facilities will be provided at fifth, fifteenth and forty-fifth levels. Roof areas will be landscaped gardens or outdoor play courts. Phase I construction includes the West Tower and shops. Phase II will not begin until all tenants of the block are relocated in West Tower.
Communications center supplies facilities for sophisticated use of audio-visual materials

The new Communications Center at the State University of New York at Buffalo is a highly sophisticated instrument for the preparation, distribution and use of multi-media instructional materials. Within its curving walls are concentrated communications facilities that serve all departments of the campus. For development of courses to be given effectively to groups of students ranging in number from 50 to 400, there are facilities for programing extensive use of films, slides, tapes and other audio-visual materials, and consultants with whom to discuss such programing. For televising (live or taped) programs to lecture halls in the building or to classrooms elsewhere on campus, there are three professionally-equipped television studios. For instruction, there are 11 lecture halls of various sizes and types, some tiered, some level-floored, currently serving some 1300 students per day. Although the plans suggest a building of high specificity, the spaces originally intended for one use have been adapted to other uses without disruption either to themselves or to the rest of the building. The flexibility of the lobby and of the student lounge areas also make the building usable for an even broader program of communications. Because the multi-media approach to instruction is a relatively new field, and because the need for effective means of handling large numbers of students is increasingly important, one of the 185-seat halls has been equipped as an experiment in student response to presentations. Among questions to which answers are sought are these: how many visuals can be assimilated at one time? How long should each visual be displayed for maximum retention of information? How large should a visual be for effective impact? Does placement on the screen affect the learning process? The Communications Center was built at a cost of $2,157,000, or $27.09 per square foot.


The second floor—actually fourth level above grade—groups instructional areas of various types around the central student lounge (see page 160). Two of the three tiered halls seat 50, one seats 185 students. The fourth space has a level floor and is divided into four 50-seat rooms now being used as a media-methods-materials complex. Preparation rooms have been converted to self-instruction labs in audio-visual equipment use, a change from the original intent.

Both mezzanine floors are restricted areas for use by staff and technicians who load rear-screen projectors for presentation in lecture halls below. Plan at right shows how mezzanine works with circulation system to handle student traffic circulation expeditiously: lecture hall entrance is at lower level of tiered hall, exit is at upper level. Stairs are at side of each hall, connecting directly with entrances to building at grade level. Preparation rooms next to each hall were originally intended for use by faculty in setting up demonstrations and exhibits, but sophistication of building and equipment requires earlier and more intricate planning, now done in “nerve center” in basement. Prep rooms are used now on assignment for design and planning of courses.

Oval shape of building is broken at four points for entrances and stair towers (which serve as bearing walls). Below grade is “nerve center” for campus communication by television and audio signal. Here also are library, resource center, workshops and consultation rooms. Entrance level has four of building’s 11 lecture halls.
Dramatic two-story entrance lobby serves also as down-lighted exhibit area or, partitioned, can become from one to four seminar rooms. Concrete bridges at mezzanine connect rear-projection equipment rooms. Clinker brick, used for exterior, is carried inside to lobby.
Large lecture halls seat up to 400; are equipped for rear and overhead projection with all controls at instructor's lectern in front. Screens are 30-feet wide, 10-feet high. Ceiling spots highlight special exhibits. Student lounge (right) is raised platform in center of top floor. Platform has also been successfully used as arena theater.
Integrating ducts with concrete floor structures

As mechanical services continue to grow more complex and extensive, the problem of finding space for them in the floor-ceiling sandwich becomes more acute. Thus, there are many instances where the architect finds it desirable to penetrate the spanning structural elements in order to minimize the floor-ceiling depth.

The question, however, is how to do it without adding undue cost to the structure itself. For this reason it is significant that recent tests by the Portland Cement Association show numerous penetrations can be provided in the webs of one-way joist floor systems and the joists of waffle slab structures, with only nominal additional reinforcement required. The results of these tests were used for design guidance in two recent projects: 1) the $18.6-million worth of dormitories in the University Residential Building System project set to be built by the University of California, and 2) a new headquarters building for the East Kentucky Rural Electric Cooperative Corporation now under construction in Winchester, Kentucky.

In the URBS project, legs of inverted tees will have 8 in. by 10 in. elliptical holes for the passage of supply air ducts and to provide openings for free air return. In the RECC project, waffle slab joists have oval holes so that the joists, when closed at the bottom, can serve as supply or return ducts.

This integration of the mechanical system into the structure resulted in a reduction in depth of the floor-ceiling sandwich to 18 in. in the URBS project and to 21 in. in the RECC building. When the ducting system is integrated in the structure, as in these two examples, the need for a separate hung ceiling is eliminated. With URBS, the double tee itself forms the finished ceiling, and with RECC the waffle openings are closed with lighting fixtures, air diffusers or acoustical panels.

Further, when there are numerous openings through the load-carrying floor members, there is a significant saving in dead weight.

Providing openings in concrete floor beams and girders is, of course, not a new idea. Much of the time, however, these openings are restricted either in size or number. On the other hand, some of the industrialized building systems in Europe have used such pierced beams for the passage of ducts for a number of years. But for systems such as these, load tests would normally be conducted to refine the design of a series of modular elements,
since it is intended that these would be repeated over and over again in building after building. Thus, design know-how regarding the effect of such openings would be limited to the elements used.

PCA's tests of pierced beams to provide guidance for design

To investigate the effect of piercing holes in concrete joists, PCA's structural research section has tested over 60 specimens, including beams both with and without stirrup reinforcement. What they wanted to find out was the influence of the holes' size, shape and horizontal and vertical location on strength. Tests of circular, rectangular, oval, elliptical, and diamond shaped openings have been made. Test specimens with multiple openings included oval and circular shapes, with spacing as the variable.

Results indicate that openings large enough to be useful can be accommodated with no reduction in strength if small amounts of stirrup reinforcement are placed at the sides of the holes. When investigations are completed, it is anticipated that complete design recommendations can be made. In making these tests, PCA hopes to provide information that will let architects and engineers know what the effect is of varying hole shape, size, placement and number. Purpose is to permit practically complete design freedom in the penetration of concrete beams for the passage of air ducts and pipes.

In general, the holes have little or no effect on flexural capacity. Since pan joist structures are usually designed without stirrup reinforcement, holes in the webs will reduce shear strength. Although some small holes can be accommodated without a significant effect on shear strength, holes of the size necessary to accommodate mechanical and electrical systems may significantly reduce the capacity of a member. However, properly designed stirrup reinforcement has been found to be effective in bringing the strength back up to that of a member without a hole.

The shape of the opening has an important influence on shear strength of a beam. Hole shapes that provide additional section at points of high secondary moment have a smaller effect than holes that provide prismatic sections above and below the opening. For example, as would be expected, a circular hole will have much smaller effect than a similar square hole.

PCA's tests show that pan joist floors can accommodate holes up to twice as long as they are deep. Depth of the hole is limited primarily by geometry of the web. With properly designed stirrup reinforcement these holes can be placed anywhere along the span of a beam. When multiple openings are required, posts between the holes with a width one-half the effective depth of the beam have been successfully used. In the test specimens, oval holes 10-in. deep and 20-in. long have been placed through joists with a web depth of 16 in. PCA reports that strength of these specimens was at least equal to that of the specimen containing no holes and no web reinforcement.

It should be emphasized that whenever a hole must be placed through the web of a member, its effect should be con-
RECC building's second-floor air distribution system is supplied from ducts on the roof (above). Coffers in the waffle slab are closed by air diffusers, acoustic panels, or lighting fixtures. Return air is exhausted through the slots at the perimeter of the lighting panels. Raceways are embedded in the floor for electrical and telephone wires. An inverted insert technique was developed in which ellipsoid ducts are inserted at intervals of 12 ft in the run and turned upside down within 1/4 in. of the pan. After the pans are stripped, the cap is removed and fish tapes fed into the raceway for pulling the wires.

How channels are formed for air supply and return distribution is shown in the sketch below. It represents the shaded portion from the second-floor plan above. Rectangles containing an X designate supply ducts, and those with diagonal lines, return ducts. The black rectangles are electric reheat coils.

Holes in RECC's waffle slab create channels for air flow
Perforation of the webs of the waffle slab in the RECC building came about because of architect John S. Morgan's interest in keeping the depth of the floor-ceiling sandwich to a minimum, as well as minimizing noise that might be induced from the vibration of metal ducting. Unsatisfied with existing hardware and systems, he consulted various manufacturers to seek new solutions for his design problems. One of the manufacturers, Construction
Systems, Inc., introduced the idea of creating voids in the webs of waffle slab joists by means of horizontal plastic foam wedges to displace concrete in the mid-depth of the joist that did little work.

Construction Systems, Inc. tested both polystyrene and polyurethane wedges for compressibility, adhesion with concrete, release characteristics, dimensional stability, ease of removal and other properties. During construction, normal vibration would help the flow of the concrete under wedges to avoid honeycombing.

After the concrete had set, the wedges could be knocked out, leaving holes in the webs. By arranging the holes in prescribed patterns and closing the bottom of the waffles with closure panels, channels could be formed that would serve as ducts. Although engineers were uncertain at first about effect of the openings upon air flow, tests conducted by Professor Orville W. Stewart of the University of Kentucky revealed that while the concrete channels were somewhat less efficient than metal ducts, this reduction was found to be fairly nominal. Smoke tests showed, for example, that passage of supply air flowed evenly through the holes without any turbulence to speak of.

In order to test the wedges, the effectiveness of the holes as ducts, and the placement of raceways in the waffle slab, a construction simulator was built. PCA, Square D Company and Ceco Steel Corporation sponsored this simulator—a full scale “mock-up” which was used as a design model. Thus, all of the components were tried out in full scale application, which gave an opportunity to test and evaluate them before they were applied in actual building.

Interchangeable closure panels were designed to receive lighting fixtures, speakers, air diffusers, or acoustic tile. The lighting fixtures were designed to serve also as air handling devices to exhaust heat from lights. A U-shaped 4 ft-fluorescent tube was used, which fit well into the 24-in. service module.

The bottoms of the webs were capped with a metal channel. Reason was to avoid having to grind down the small fins that occur normally with waffle pan type of forming. Without a fill-in piece, the metal channel could be used as a receptor for office partitions.

Because air flow tests were initiated some time after the building was under design, the architect and his engineers were not able to apply the results to the first floor. Result was that air was supplied conventionally to baseboard diffusers, and the waffle slab was used to provide return air channels leading to a dropped ceiling in the corridor that served as a return air duct. On the second floor, however, the only ducts were those formed by channels in the waffle slab. Air movement is from the hot and cold concrete-enclosed roof ducts through openings in the roof to channels formed in the waffle structure.
How to keep down noise levels in computer facilities

by L. L. Boyer, Jr., P.E., consultant in architectural technology, Bolt Beranek and Newman, Inc.

At present, computer facilities are designed primarily to accommodate equipment, and little attention is given to the sonic environment provided for the occupants. Consequently, normal speech communication is often impossible in adjoining office spaces. Moreover, machine vibrations are sometimes transmitted to other parts of the building. Considerable air-conditioning capacity is required to cool the high-speed electronic equipment, and the custom-designed blower systems often compound existing computer noise control problems.

Air-borne noise levels of card punches and high-speed printing devices in computer rooms typically reach 75 to 80 dB in the speech frequency range at 3 ft from the source. Typical noise levels of various devices are shown in Figure 1. In addition to speech interference and annoyance, these relatively high levels fall just short of the hearing-damage risk levels for prolonged exposure. Acceptable room levels for continuous exposure vary from 15 to 30 dB below typical levels experienced close to the source, depending on the frequency. (Recommended levels are shown in Figure 1.) Because of these high noise levels common to high-speed computer systems, considerable effort must be made to contain or diffuse and dissipate this acoustical energy. Many of the required provisions must be incorporated into the architectural design of the facility.

Some information on computer room design is presently available and special associated problems have been studied. Also, most computer manufacturers have developed physical planning manuals for the use of the prospective customer. However, no specific acoustical guidelines have been publicly established, although several noise control techniques that have been used successfully in factories may be adapted to computer facilities. The purpose of this article is to present some tentative guidelines prepared specifically for computer facilities.

Best computer locations

The physical location of the computer room within the building depends upon a number of factors, including noise control. For air-conditioning purposes, interior core areas of the building, where the cooling requirements are relatively constant, are often selected for the computer room. When this is done, establishment of a corridor system around the computer room will provide an excellent buffer zone to acoustically separate peripheral office and equipment spaces from the central computer space. Additional office space that requires a more critical acoustical environment could be located on separate floors. A typical recommended layout of the computer room floor is shown in Figure 2. The air-conditioning system often serves both the computer room and the adjacent office areas. Therefore, these two areas cannot be completely isolated from each other, sometimes creating noise control problems which require further analysis and treatment (i.e., duct lining and/or mufflers).

The ground floor level is generally favored for computer expansion possibilities and for accommodation of the various service functions required. The ground floor usually provides a vibration-free floor system, a condition that is often difficult to achieve on upper floors. If the computer room is located on an upper floor, positioning of machines over beams or near columns is preferred rather than positions near the center of a structural floor panel.

Spatial separation helps

The principal noise sources in the computer room are the electro-mechanical devices such as printing machines, card readers and punches, tape drives, and cooling blowers for the various units. Although these devices must usually be located in the computer room proper, they can be separated and positioned to advantage.

The operator work area, where two to five operators must function and communicate with each other, should receive the most attention, because this is where prolonged exposure to the noise environment will occur. Electro-mechanical units should be placed outside of this immediate area where possible. If this is not feasible, any openings in the machine cabinets should be directed away from the operator area. Where the operator area is located near the corner of the computer room, printers or other necessary but noisy machines should not be placed at the junction of the wall boundaries because a corner will re-radiate noise produced in that area, unless the walls have highly efficient absorbent material.

Placement of work tables in the operator area can be used as spatial separators, requiring a larger operator area in which no machines are located. Enlargement of this area increases the average distance from operator to machines and also makes possible increased sound absorption by ceiling and floor.
Major air-conditioning equipment for cooling the computer equipment should of course be located in another room separated by heavy sound-isolating walls from floor slab to structural ceiling. Fan vibration isolation and duct lining may be necessary at that point, but only blower noise at individual computer machines will have to be controlled within the computer room proper. Often additional air-conditioning equipment must be installed when the initial computer system is expanded. Also, an auxiliary power system (i.e. stand-by generators) is often justified. Therefore, an ample reserve of future mechanical equipment space should be provided in peripheral spaces separated by solid walls, so that these usual future additions do not create new noise problems.

**Effect of sound absorbing materials**

A noise level in an enclosed acoustically untreated space can be reduced by placing sound absorbing material on the room boundaries. Even with large amounts of absorptive material added to the room, the noise level theoretically could be reduced only to the level that would exist outdoors in a “free field.”

Figure 3 shows that for each successive doubling of the available absorption in a computer room, the noise reduction is increased by about three dB; three dB is a perceptible reduction. Practically speaking, one may not attempt to reduce the noise level by absorption by more than 10 to 12 dB, which represents an increase in absorption of greater than 10 times the initial “untreated” value.

The ceiling is the most common location for placement of high-efficiency absorptive material, generally a suspended acoustical ceiling. For this absorption to be most effective, and to facilitate diffusion and dispersion of noise from a machine, the recommended floor-to-ceiling height should be at least 10 feet. An underfloor plenum height and a ceiling plenum height of at least 16 in. or more, each, are usually required for cable access, air distribution, etc. Therefore, a total height between floor slabs of 13 to 14 ft is typically recommended where feasible.

The application of suspended ventilating ceilings has come into wide use in computer facilities because of the ability to handle large quantities of air with equal distribution throughout the room, but without high draft-producing velocities and low air temperatures. The acoustical absorption value of these ceilings is usually not affected when this additional air-distribution function is incorporated, so that these ceiling panels could qualify as high-efficiency sound absorptive panels. If the room size is less than about 1600 sq ft, or less than 40 ft wide, the wall areas become very effective if surfaced with absorptive material. Figure 4 shows the relative effectiveness of the wall and ceiling surfaces, assuming that perfectly absorptive material is attached. In the operator area a further absorptive treatment can be employed through the use of suspended unit absorbers at suitable positions below the suspended ceiling. One suitable area would be the ceiling tons, where an integrated unit of dropped lighting and unit absorbers could be suspended. Further absorptive material could be added underneath the table tops. Carpentry should be considered for the operator area and also in nearby areas where cooling air intakes or discharges may be located near the floor. Where carpet is used, anti-electrostatic protection is required to prevent electrical disturbances in computer equipment.

The absorption characteristics of the acoustical materials should be equally effective throughout the speech frequencies, especially above 250 Hz, since the over-all computer room noise has a broadband character.

**Isolating noisy machines**

Some noisy machines, such as printers and card equipment, cannot be remotely located from the operator area. These input-output units could be completely isolated in a separate absorbive room adjacent to the operator area. A plate glass panel can establish visual contact, and a side door opening can provide access.

An alternative technique would be to use a series of partial enclosures for the input-output equipment. The machines could be enclosed in absorptive, three-sided, roofed housings. If these enclosures are favorably oriented and used in conjunction with absorptive partial-height partitions as shown in Figure 5, this technique can be quite effective for reducing noise in the high end of the speech frequencies. Visual contact could be provided through a series of intermittent plate glass panels or a horizontal strip of glass at eye level.

Elevated floor systems can be used advantageously as barriers to attenuate blower noise. Fan inlets and discharges in machine cabinets should be deliberately located in the base with direct connection into an air-handling floor plenum where a large portion of the fan noise can be dissipated, while the elevated floor prevents transmission of that noise back into the room. An airtight seal should be provided between the floor panels and the panel support framework.

**References**

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Vinyl powder coatings protect and color steel paneling for walls and roofs

The Midwest steel building components manufacturer that pioneered in the design of long-span steel roof structures and load-bearing stressed-skin panels in the 1950's now has another first to its credit. Behlen Manufacturing Company of Columbus, Nebraska is reported to be the first building component producer to have an in-house production line for electrostatically spraying vinyl powder coatings on steel panels, windows, and accessories. Practice of many manufacturers has been to purchase coil stock already precoated, which requires them to uncoil, flatten, form, punch and assemble coated steel. But Behlen, by coating as the logical last step prior to shipment, is reported to have simplified inventories, speeded up production and deliveries, and lowered costs.

The new coating line is believed to be the largest plastic coating operation in the world. Galvanized or aluminized steel sections as large as 50 ft by 8 ft are coated at speeds up to 20 ft per minute as they move along the huge conveyerized line. In addition to wall and roof panels, trim, downspouts and gutters have been coated with the melt-mixed, freeze-ground vinyl powder especially developed for Behlen by The Polymer Corporation of Reading, Pennsylvania.

The plastic coating concept
Powdered plastic coatings on steel substrates first gained substantial commercial recognition through the fluidized bed technology, introduced by Polymer in 1957. Today suppliers to the electric utility, telephone, chemical, electrical manufacturing and furniture industries, among others, use this coating system for well-identified endpurposes. Specific thermoplastic polymers are selected as coatings to provide corrosion resistance, improved weathering qualities, impact or chip resistance, or for the esthetic reasons of attractive color and warmth to the touch. Thermoset polymers or the new co-polymers provide essential insulation for electric motors and telephone circuit boards, to mention a few.

In recent years, other coating technologies have been introduced to use the same families of plastic powders as coatings. The

Vinyl-coated steel panels are inspected above on Behlen Manufacturing Company's production line. Panels have deep corrugations so that they work both as load-carrying and closure elements. Corrugations range from 3-in to 7½-in deep (as in the Kiwanis-Feit Boys' Club in Salt Lake City, right). When used for a roof, single panels span up to 30 ft. When combined with lightweight struts to form trusses, roof systems span up to 300 ft.

In compounding the vinyl coating powders, the ingredients are melt-mixed and freeze-ground to assure thorough dispersion. Melt-mixed vinyls are used for long-term, high-performance end-use requirements. Because of the superior dispersion of ingredients, these vinyls are said to have a higher opacity than other types, thus screening out more of the ultraviolet rays that have a degrading effect on plastics.
fastest growing system by far is the electrostatic spray method, now widely used in coating transformer covers, steel pipelines for gas utilities, and many other products.

After Behlen had decided upon an in-plant coating system, Polymer developed a new vinyl formulation that was tested over a two-year period. The application method selected by Behlen was the electrostatic spray technology, with inherently better process control than solution coating.

Behlen expanded its 14-acre plant at Columbus, Nebraska to house the new $200,000 electrostatic spray coating operation. The line was designed to provide for application of solution coatings as well, in case this is the customer's preference.

Advantages of the new coatings
The 10-mil-thick vinyl coatings are expected to offer a new standard for the building industry. Similar coatings applied by electrostatic spray have documented service records of superior resistance to corrosion; to impact, scratches or other abrasion; to dirt accumulation and staining; and to other hazards. After more than 14,000 hours exposure on Weather-Ometer, the coatings maintain their excellent weathering resistance. There is no evidence of rusting or underfilm corrosion, no reduction in adhesion and only a slight reduction in toughness and flexibility. Vinyl coated steel transformer covers have withstood more than 10 years of exposure in seacoast and industrially contaminated atmospheres—a record never equalled by other coatings. A significant advantage is that the electrostatic spray process insures edge coverage of about 50 per cent of that on flat surfaces.

The integrity of the coating is enhanced because the vinyl powder is melt-mixed and freeze-ground to assure uniform dispersion of all the ingredients throughout the formulation. This characteristic is essential because the electrostatic spray method will separate out ingredients of vinyl powders prepared by dry blending technique.

Color choice of the new vinyl powder is extensive. Behlen offers 13: aqua, olive, brown, green, bronze, ebony, tan, yellow, black, dark blue, light blue, red and white. With the electrostatic spray system, the line can change over immediately from one color to another.

The coating system
The installation of its own coating line has enabled Behlen engineering to redesign its production operations to provide a steady flow of steel into the coating line. The highly sophisticated line moves varying size parts by conveyors at speeds from 10 to 20 ft per minute, enabling 4-ft wide sections to be coated at the rate of 40 to 80 sq ft of surface area per minute. The uniform thickness applied of 10 mils is a new standard for the building industry, as compared to other coatings.

Pre-coating operations are designed to insure a permanent bond of the coating to the corrugated substrates. The five-stage cleaning line includes: 1) cleaning in an alkaline spray to remove dirt and dust; 2) rinsing in fast-flowing water to assure cleanliness of all surfaces; 3) application of zinc phosphate to etch the surfaces and to assure greater adhesion of the coating; 4) water spray rinse; and 5) chromic rinsing to “set” the zinc phosphate for steel panels.

Coating is accomplished by the following carefully controlled steps: 1) drying in a 50-ft oven; 2) application of a liquid primer; 3) heating of parts in ovens to a temperature of 260 F; 4) automatic coating as parts pass through an in-line, electrostatic spray system. Vertically reciprocating powder guns assure that all surfaces, including edges and joints, are coated to the desired thickness. 5) Heating in a huge tunnel oven to a temperature of 460 F to cause the vinyl powder to melt and flow, permanently fusing the coating to the substrate.

Galvanized steel panels pass through a multi-stage cleaning system and are primed before coating (top, left). Vertically reciprocating powder guns coat the panels and assure that all surfaces, including edges and joints, receive a uniform thickness (bottom, left). Coated panels are heated to 460 F in a tunnel oven so that vinyl powder melts and is fused to the substrate (top, right). Finally, panels are allowed to air cool (bottom, right).
Lightweight roof design: new approach to structural efficiency

Tubular structural support and lightweight standing-seam steel, aluminum or copper roofs offer a system of total roof construction that is flexible, durable and economical.

The key to the system is a self-propelled, roll-forming machine (photo top left) that joins the edges of roof panels under pressure into a water-tight double seam. With the panel edge serving as the track along which the electrically-powered unit operates, the sealing operation of turning the seam through two 180-degree folds (drawing top right) is accomplished at a speed of 15 feet per minute. The result is the MR-24 roof, which functions like a continuous metal membrane (photo bottom right). It is said to be maintenance-free, to weigh only ½ as much as conventional built-up roofs and to have a unique system of compensation for expansion and contraction.

The structural system, Landmark, is made possible because of the lightweight roof. It consists of tubular steel formed by welding continuous tube to T-sections at top and bottom (photo bottom left). The tubes are said to match the efficiency of bar joists while weighing only ½ as much. Every part is engineered for the system and all parts function as a unit, resulting in a precise, factory-formed structural system with flexibility in dimensions, in cantilevered overhangs, fascia treatment, and interior and exterior materials.

The roof is fastened to the supporting structure by a special clip assembly. One end of each clip fits into a slot in the supporting structure, while the other end is rolled into the seam during sealing. To help provide thermal expansion and contraction, each clip is free to move slightly along the seam line. Movement at right angles to the seam is handled by a bellows-like action of each of the standing "shoulders." There are no fastener holes in the roof membrane or openings of any kind in interior spaces.

Because of the reduced weight of the entire system, there is no need for masonry walls or other heavy structural members or for heavier structurally-reinforced foundation work. As a result, widths of open space spanning up to 80 ft, with no structural framing visible in the completed interior, are possible.

The company has summarized the major advantages of the system as follows: in-place economy, reduced engineering and planning time, faster erection. ▪ Butler Manufacturing Company, Kansas City, Mo. Circle 300 on inquiry card

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Quick Change partitions save trouble with easy installations.
A movable partition isn’t much good if it’s not easy to install.
Masonite Quick Change partitions aren’t troublesome for two reasons.

First, our partitions are designed specifically for quick, economical installation with a unique friction fit that minimizes labor and parts.
For example, a straight ceiling-high partition wall can be run almost any length without the use of mechanical fasteners.
Second, we have professional Partition Representatives located around the country. They’re the experts with the training, equipment, and experience to do a fast, clean installation job.

Quick Change partitions eliminate problems with quick changes.
The whole idea of movable partitions is that they be movable. If they’re not; if moving them creates more trouble than they’re worth, what’s the use?
As the name implies, Quick Change changes quickly. A few screws here, a nut or bolt there, and the whole partition system can be easily disassembled. Then it can be moved to another place and reassembled just as easily. And as sturdily as ever.
If you’d like to know all the details of how to eliminate a lot of trouble, ask a Masonite Partition Representative about our Quick Change partitions.
Or just send the coupon to us.

MASONITE CORPORATION
Dept. AR-5
Box 777, Chicago, Illinois 60690
☐ Please send me your literature on Masonite Quick Change movable partition systems.
☐ Please have your representative call.

Name ___________________________ Title ___________________________
Company __________________________
Street __________________________
City __________________________ State __________ ZIP __________

Masonite and Royalcoat are reg. trademarks of Masonite Corporation.
Quick Change is a reg. trademark of Quick-Change Movable Partition Co.

For more data, circle 82 on inquiry card

ARCHITECTURAL RECORD May 1969 175
Light is to be impressive by.
Light is to be friendly by.
Light is your personality after dark.
What you see and think of a building at night comes down to one thing. The light. It speaks for the architect. It speaks for the owner. We think light can speak eloquently.

You see a sample here. How our light fixtures coordinate to enhance the architecture. Post tops. Wall mounts. Up downs. Pencil beams. You name it, whether to spot a spire or flood an acre.

We can start with where you want to light. Or you can start with our new Idea Book that covers the full spectrum. Check the reader service card. Call us. Or call your nearby Crouse-Hinds agent or distributor. We’re ready to do the analyzing, costing and comparing, with an assist from our home office computer.

We’d like to hear from you. In the meantime, you can find us in Sweet’s Section 31-b.

Outdoor Lighting Dept.,
Crouse-Hinds Company,
Syracuse, N.Y. 13201

CROUSE-HINDS

For more data, circle 33 on inquiry card
say goodbye to the bland exterior wall.

say hello to the blend exterior wall.
Inland-Ryerson introduces six new wall panels with a common lock arrangement that permits you to blend them in a wide variety of textures, colors and shadow patterns.

The day of the bland exterior wall is over. Inland-Ryerson has added six new profiles of the IW series which can be easily intermixed to form a seemingly endless variety of visual effects, giving you new design freedom to spark your creativity. The secret: individual panels are just 12" wide, and a common lock system provides fully concealed fastening of any arrangement. The side seams are hard to find too.

The lock system also offers unmatched weather protection at the joint. The U-shaped design provides positive metal-to-metal contact at two points. Yet it completely covers the fasteners used, and the panels interlock quickly.

The IW series panels are available with Inland-Ryerson's famous double-coat weather protection. Duofinish™ offers the security of baked-on finish in a wide variety of colors. For extra-long life, specify polyvinylidene base Duofinish 500™

Ask your Inland-Ryerson sales engineer to show you these new steel wall panels. Or write for Wall Systems Catalog 242. Inland-Ryerson Construction Products Company, Dept E, 4033 W. Burnham Street, Milwaukee, Wisconsin 53201.

For more data, circle 83 on inquiry card.
Pomeroy's Department Store moves people to buy.

Customer-pleasing in every detail. That's Pomeroy's spacious new branch store in Camp Hill, Pa., where quality merchandise is offered at attractive prices. And made readily accessible by Haughton escalators to make between-floor travel fast and pleasant.

Of course, the handsome styling of Haughton Escalators enhances store decor... while the panoramic view of varied merchandise displays enjoyed by shoppers as they travel from floor to floor further stimulates the buying mood.

Users know that: Haughton escalators match every demand for economy, easy maintenance and long life. We offer them in a wide range of models to move up to 8,000 people hourly, safely and quietly, indoors or outdoors, Wherever you need space saving, continuous transportation.

Your Haughton representative will gladly give you complete specification data on new, advanced design Haughton Escalators to fit your new building or modernization plans. Call him soon. Or, please write us.

HAUGHTON ELEVATOR COMPANY
DIVISION OF RELIANCE ELECTRIC COMPANY
TOLEDO, OHIO 43605

On Haughton Escalators.

For more data, circle 84 on inquiry card.
Is resistance still a virtue?

Atlantic says yes, with Vectra fiber.

New Atlantic "Spartan" tufted contract carpet made with Vectra® fiber resists stains, fading and wear…but can't resist being beautiful.

Don't let the name Spartan fool you. This new fine gauge tufted contract carpet from Atlantic is luxurious enough for your most lavish installations. It's Vectra olefin fiber that puts the rugged Spartan spirit into it. With resolute resistance to stains, fading and wear...even in the most murderous traffic and stain-prone areas. Which means fewer commercial cleanings...lower maintenance costs. Is resistance still a virtue? It is in new Spartan tufted contract carpet made with Vectra fiber!

SPECIFICATIONS

Pile: 100% Solution dyed
Vectra olefin fiber
Gauge: 5/64" 
Pile wt.: 25 oz. per yd.
Pile ht.: 5/32" 
Stitches per inch: 9½ 
Yarn count: 2.85 cc (2 ply)
Primary backing: 100% polypropylene
Secondary Backings: 6 oz. jute
24 oz. high density rubber
38 oz. high density rubber
Available in 8 colors

Atlantic Rugs, Inc./Box 29/Galhoun, Georgia 30701
Please send me samples and information on Atlantic"Spartan" carpet.
NAME ____________________________
COMPANY__________________________
ADDRESS_________________________
CITY______________________________
STATE___________________________ ZIP________

Vectra® olefin fiber is manufactured by Enjay Fibers and Laminates Company, Odenton, Maryland, a division of Enjay Chemical Company, Odenton: (301) WD 9-5000. New York: 350 Fifth Avenue (212) LD 3-0735. Charlotte: One Charlottetown Center (704) 333-0761. Enjay makes fiber, not carpets. Vectra...the fiber that believes resistance is still a virtue.

For more data, circle 87 on inquiry card
Simple way to get positive roof drainage: The Tapered FOAMGLAS® System.

Tapered FOAMGLAS roof insulation automatically slopes a flat deck for positive drainage. The system is simple; the roofer places factory-tapered blocks in sequence and roofs over immediately. No delay or waiting for roof fills to dry. Single-contractor responsibility.

FOAMGLAS is 100% closed-cell glass, so it's completely waterproof and can't absorb vapor from inside the building. Dimensional stability and high compressive strength make it an excellent base for built-up roofing. And it's the only roof insulation guaranteed for 20 years. Write for more information and a free sample. Pittsburgh Corning Corporation, Dept. AR-59, One Gateway Center, Pittsburgh, Pa. 15222. In Western Europe, contact Pittsburgh Corning de Belgique, S.A., Brussels, Belgium.

For more data, circle 88 on inquiry card.

PRODUCT REPORTS

ELEVATOR CONTROL / A computer-controlled supervisory system, which coordinates two to six elevators, continuously analyzes changing traffic demands and assigns the distribution of elevators accordingly. Otis Elevator Company, New York City.

Circle 301 on inquiry card

COMPUTER PACKAGE / A standard computer software package called QTO/COST is an automated "quantity take-off" and cost estimating system designed primarily for architects and construction companies. The program, developed by Design Systems Incorporated of Cambridge, Massachusetts, requires either an IBM 1130 with 8K, one disk, card reader and printer, or an IBM 360 configuration which supports DOS or OS and FORTRAN. Price for the system is $25,000, including a library of routines, installation, modification when necessary, maintenance, training in generation and use of the system and complete user and operating documentation. Culline Corporation, Boston.

Circle 302 on inquiry card

TILE FOR COMPUTER FLOORS / A line of special grade laminated plastic floor tile is made expressly for raised floor systems. Features include: extra-wear surface; outstanding warp resistance; extremely low static generation; and high compressive strength. Enjay Fibers and Laminates Company, Odenton, Md.

Circle 303 on inquiry card

more products on page 196

For more data, circle 88 on inquiry card.
Wash fixtures that serve many and save money! Bradley Washfountains save an average of 25% on floor and wall space. You can choose from 54" and 36" diameter circular and semi-circular models, plus two-person Duos. So you can specify Washfountains that get maximum use out of every square inch of available space.

What's more, Washfountains serve up to 8 people with one set of plumbing connections, cutting installation costs as much as 80%. They require practically no maintenance. And they reduce water consumption from 45% to a whopping 80%. Specify Washfountains for plants, commercial buildings, schools, institutions—wherever you want to handle large groups of people economically. The more Washfountains serve, the more they save. See your Bradley representative. And write for literature. Bradley Washfountain Co., 9109 Fountain Boulevard, Menomonee Falls, Wisconsin 53051.

from Bradley!
USS Cor-Ten Steel...naturally
T. W. MILLER SCHOOL, WILTON, CONNECTICUT
ARCHITECT, THE PERKINS & WILL PARTNERSHIP;
WHITE PLAINS, N.Y., CHICAGO, ILL., WASHINGTON, D.C.

For information on bare USS COR-TEN Steel, the original weathering steel, contact a USS Construction Marketing Representative through the nearest USS sales office, check your Sweet's Architectural File, or write to United States Steel, Box 86, Pittsburgh, Pa. 15230. USS and COR-TEN are registered trademarks.
Therm-O-Proof insulating glass goes modern in colonial windows.

Arches are coming back—a colonial feature caught up in a modern design trend. Proof is in these arched colonial windows framed by a modern Spanish colonnade. This combination creates a unique facade for the Blackstone Valley Electric Company designed by Charles A. Maguire & Associates, architects, Providence, R.I.

The arched windows themselves have been modernized, too—glazed with up-to-date Therm-O-Proof insulating glass, providing excellent insulation for the building's advanced electric heating system. These units were fabricated with an outside light of ¾" bronze plate for thermal comfort, and an inside light of ¼" plate, separated by a ½" air space.

Therm-O-Proof insulating glass is made more ways to fit more modern ideas.

For more data, circle 15 on inquiry card

Be sure your clients can service all trucks above dock below dock

Specify Kelley permanent dockboards

Kelley Permanent Adjustable Dockboards easily accommodate trucks with bed heights from 36" to 60" above ground. Effectively link trucks and docks to provide smooth, efficient, safe loading and unloading under all conditions.

Kelley Dockboards give you access to the full width of trucks; have sufficient length for proper incline; won't slip or slide; handle even the heaviest load; are always in place, ready to use.

Write or phone today for complete information. Ask for your copy of Modern Dock Design. It's the most authoritative source available on dock design. KELLEY COMPANY, INC., 6748 North Teutonia Avenue, Milwaukee, Wisconsin 53209, Phone: 414-352-1000.

For more data, circle 90 on inquiry card
The SECRET of the MASTERS is in EVERY CAN of PRATT & LAMBERT PAINT

For more data, circle 91 on inquiry card
Rigid-Tex Metals preserve the integrity of metal... and that's important to architects. As for appearance, this unique process embodies distinctive aesthetic effects right in the material itself... not just superficial embellishment. Rigid-Tex spans a broad range of over 65 textures (or your own exclusive design) in all metals, solids, perforated, almost any finish... even laminated. Attractive appearance, however, belies the underlying reason leading architects have been specifying RTM since its original introduction three decades ago...function. Its many inherent characteristics, i.e. - mar resistance - greater strength - less weight - controlled light diffusion - improved acoustical qualities - non skid - to mention a few, have earned its use in applications from curtain wall panels to soffits - from acoustical panels to kick plates. Rigid-Tex may solve some vexing problems on your current project. Send right now for Architect's Applications Portfolio with Texture Chart. Rigidized Metals Corporation, 3853 Ohio Street, Buffalo, New York 14203.

Beauty and durability combine in these Rigid-Tex stainless steel panels - Pattern 1-UN. Merritt Industrial Park, Fishkill, New York.

P. S. In New York City? See Rigid-Tex Metals Display at Architects Center, 101 Park Avenue.

THE ORIGINATOR

RIGID-TEX® METALS

For more data, circle 93 on inquiry card

SYSTEMIZED HARDWARE / A modular system of building hardware products, which have no visible screw or fasteners, is designed, cataloged and packaged as a kit of parts from which the designer or architect can create his own design. The system includes everything from door handles and locks to mechanical, electrical and architectural cover plates. All components, which are packaged separately according to shape, size, material and finish, are interchangeable. Canware Limited, Toronto, Ontario.

Circle 304 on inquiry card

DUAL FOUNTAIN / The Dual Semi-Recessed Drinking Fountain combines the SR-12CA refrigerated fountain with the S5F-13 non-refrigerated fountain to serve refrigerated water to both children and adults. Sunroc Corporation, Glen Riddle, Pa.

Circle 305 on inquiry card

more products on page 207
We just complicated your life a little...
(OR MAYBE WE JUST MADE IT EASIER!)

Introducing new VINCOR™
the first commercial grade
vinyl polymer floor tile

Specifying flooring isn’t so simple any more. Now instead of choosing between luxurious looking, expensive homogeneous vinyl or practical, versatile vinyl asbestos tile, there’s a third choice which combines the best features of both...and at a price that will be a happy surprise.

With new, totally new VINCOR, subtle elegance is now practical and economical. VINCOR gives you the deep-down translucent beauty of real marble while improving on the rugged, durability of vinyl asbestos tile. The pattern goes clear through the tile, won’t wear off. And you can install it on, above or below ground level. It is a new quality standard in floor tile.

Note the magnified photograph above. A piece of VINCOR tile has been enlarged several times to give you proof of its exceptional smooth, tight surface. VINCOR is easier to keep clean and is ideal for use with a no-wax maintenance program.

Size 12” x 12” in ⅛” or ¼” thicknesses.

FLOORING PRODUCTS DIVISION
480 Central Avenue, East Rutherford, N.J. 07073

For more data, circle 94 on inquiry card
CEL-WAY® The in-floor electrical distribution system for every need!
Cel-Way in-floor electrification adapts itself to the whole spectrum of architectural ideas and construction techniques: high rise, low rise, concrete frame, steel frame, interior landscaping.

Here is system in the pure sense of the word. All electrical services—telephone, power, signal—are neatly sandwiched into a single slender floor slab. This floor fitting and in-floor electric cell system accommodates itself to any building module. It meets all electrical requirements for the present, and anticipates changed or expanded needs for the future. It's the perfect antidote for building obsolescence.

Here is economy, with labor savings as much as 50% in some cases. Single, dual or triple electrical cells can be supplied in long lengths—up to 30'; new trench header design saves field labor over other types of feeding systems; electric, signal and telephone services can be supplied through a single-easy-to-install floor fitting.

Here is versatility which opens the way to innovations never before possible, like supplying partitions with all three electrical services through a single entrance.

For the complete Cel-Way story, including construction and installation details, specifications and other data, check Sweet's 1e/Gr, or write for Cel-Way product manual. Granco Steel Products Company, 6508 North Broadway, St. Louis, Mo. 63147. A subsidiary of Granite City Steel Co.

IMAGINATION IN STEEL

For more data, circle 95 on inquiry card
When clients count...

You better specify TelKee Key Control systems.

If you're not preparing his premises for functional efficiency, you're not doing your job. If he's not ready for an emergency, he's asking for one.

So specify TelKee Key Control. Insist on it.

TelKee systems mean complete convenience and security—because he always knows where every key is. Anytime.

TelKee means you thought for him as you think for yourself.

There's a TelKee system to control 20 keys or 2600, guaranteeing peace-of-mind and safety when minutes count.

Write today for complete "Key Control TelKee catalog, Dept. AR-59

TelKee INCORPORATED
A subsidiary of Sunroc Corporation
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For more data, circle 96 on inquiry card

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Wide selection of contract seating with complementary tables. See your dealer or write for our distributor's name.

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SHOWROOMS: Atlanta • Chicago • Dallas • Los Angeles • Miami • New York • San Francisco • Sheboygan

For more data, circle 74 on inquiry card

Here's a free-bee on The Stripper.

You don't have to pay a cent to get a spec sheet on The Stripper—Mystik 6461 Copolymer film tape.

It's an indispensable tape in the architectural field because it protects any surface from steel to polyglass. Grips tightly. Strips off quickly and without residue. And it's unaffected by ultra-violet rays and weathering.

For detailed facts and figures on The Stripper, send for free spec sheet. From Mystik Tape Division, Borden Chemical, Division of Borden Inc.

For more data, circle 148 on inquiry card
SUBMITTAL INFORMATION KIT
Information on the Halsey Taylor RC 8A fully recessed electric water cooler is not contained in Sweet's or the Halsey Taylor product information catalog. If you need specification sheets, roughing-in drawings, full product description, and photographs for a current job, please fill in this coupon and mail.

I am submitting a proposal on ____________________________________________________________ (please describe)

When would you require delivery? □ 1-3 months □ 3-6 months □ over six months

What quantity do you anticipate using? __________________________________________________

Comments __________________________________________________________

NAME ___________________________ TITLE ___________________________

COMPANY or INSTITUTION _____________________________________________

ADDRESS __________________________________________________________

CITY _____________________________ STATE ______ ZIP ________________

For more data, circle 97 on inquiry card

THE CRISP, CLEAN, CONTOURED LOOK IS

Halsey Taylor®

There is a touch of elegance in this new sculptured design from Halsey Taylor. The RC 8A fully recessed electric water cooler features a one-piece contour-formed receptor and basin. Corners are gracefully rounded instead of square-welded—for easy cleaning. Receptor and louvered access panel are of type 304 stainless steel, polished to a subdued satin finish. Push button control and exclusive 2-stream projector are matching satin finish.

The fountain and cooling unit can be flush mounted in any type wall—requires only 12" back recess.

Recommended for hospitals, schools and other public lobby or applications where uninterrupted corridor space is required.

THE HALSEY W. TAYLOR CO., 1560 THOMAS RD. • WARREN, O.

NEW FULLY-RECESSSED ELECTRIC WATER COOLER COMPLETE PACKAGED UNIT IS EASY TO INSTALL

Receptor—Stainless steel—can be installed flush against wall with no exposed screw heads.

Removable Access Panel—provides easy access to cooling package and inner components. Louvers are at bottom and slanted downward.

Mounting Box—Steady steel box can be quickly secured in any type wall. Permits roughing-in of electric and plumbing connections prior to mounting of receptor fountain and cooling unit.

Cooling Unit Package—has capacity of 8 GPH of 60° F. water.
You can specify draperies of Owens-Corning Fiberglas for their good looks.

Or for their inherent fire safety.

If a mind-boggling choice of handsome colors, textures and prints is what you want, you can get it in draperies of Owens-Corning Fiberglas glass yarn.

But we figure that's not enough.

That's why draperies of Fiberglas® do things like help make your building safer from fires. Fiberglas yarn is inorganic, so it can't burn.

Properly finished, it will meet even the strictest code requirements for fire safety.

It may actually cut your insurance costs. Even controls glare and absorbs sound.

So if you're interested in draperies that'll do more than just beautify your building, write:

Owens-Corning Fiberglas, Architectural Fabrics
717 Fifth Ave., N.Y., N.Y. 10022.

*Trademark Owens-Corning Fiberglas Corporation
A ceiling for a school can’t get by on looks alone.

It has to provide the flexibility to meet requirements that may change. And it has to function. Which is why C-60 Luminaire is chosen for so many schools. C-60 can handle air, for example, any one of seven different ways and not show it. It can provide from 30 to well over 300 fc of glare-free light. (And do it with fewer fixtures and less wattage than conventional light sources.) Additionally, C-60 offers superior acoustical control and rated fire protection. And design flexibility, too. Vaulted modules and flat areas are interchangeable. Our folio on C-60 Luminaire and other ceiling innovations goes into more detail. Please write for a copy. Armstrong, 4205 Rock Street, Lancaster, Pa. 17604.

Armstrong

Ceiling Systems that work

Or for more data, circle 1 on inquiry card.
New designs keep coming from BOBRICK

Commercial building washroom design objective: Install modern, high quality stainless steel equipment...positioned for efficient traffic flow, maximum utilization of space and easy servicing. You can accomplish this from one source—Bobrick.

Bobrick Representatives in the United States, Canada and overseas are ready to help you finalize your washroom design objectives.

For Catalog and Free Tracing Sheet write: Architectural Service Dept., 868 East 42nd St., Brooklyn, New York 11210 or 11611 Hart St., Los Angeles, California 90039.

<table>
<thead>
<tr>
<th>Typical Design Objective</th>
<th>Suggested Bobrick Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make paper towels and liquid soap conveniently available; also provide shelf for personal belongings.</td>
<td>B-317 Recessed Multi-Purpose Unit above lavatories combines paper towel dispenser, shell and soap dispenser.</td>
</tr>
<tr>
<td>Provide for convenient towel disposal at lavatories.</td>
<td>B-269 Waste Receptacle installs under countertop.</td>
</tr>
<tr>
<td>Isolate mirror so lavatories won't get clogged with hair and bobby pins.</td>
<td>B-290 Stainless Steel Framed Mirror is integral part of planter, separated from lavatories.</td>
</tr>
<tr>
<td>Provide for a choice between feminine napkins and tampons in one vendor.</td>
<td>B-352 Recessed Combination Feminine Napkin and Tampon Vendor has separate dispensing mechanisms in a single cabinet.</td>
</tr>
<tr>
<td>Keep cigarettes and ashes off floor.</td>
<td>B-376 Recessed Wall Urn Ash Tray.</td>
</tr>
<tr>
<td>Provide necessary accessories in toilet compartments without multiple installation, equipment and maintenance costs.</td>
<td>B-357 Partition Mounted Units combine Toilet Seat Cover Dispenser, Feminine Napkin Dispenser and Toilet Tissue Dispenser in one unit serving two adjacent toilet compartments.</td>
</tr>
</tbody>
</table>

Since 1906 Designers and Manufacturers of Washroom Equipment

For more data, circle 100 on inquiry card
SPRINGLESS SMOKE VENT / Designed for rooftops where heavy snow conditions can hold down spring-operated hatchways, this automatic vent, actuated by a small nitrogen cartridge, can lift over 1000 lbs. Power-hatch can be set off by the melting of a fusible link, by a smoke detector or manually. * Bohem Manufacturing Co., Inc., Conshohocken, Pa.

Circle 306 on inquiry card

SOFFIT PANELS / Gold Bond perforated soffit panels are said to ventilate properly without added cost of louvers or wire screening. The panels are made of asbestos cement and will not burn, rot or corrode. In addition, they will not buckle, warp, expand or contract. * National Gypsum Company, Buffalo.

Circle 307 on inquiry card

ROOF PROTECTION / Buildings with oddly-shaped roofs provide an ideal surface for Neolon, an elastomorphic, thermoplastic coating, available in an unlimited range of colors. The coating, which will adhere to many materials, has waterproofing features, and resists chipping, chemicals and fumes, has both exterior and interior uses. Desco International Association, Buffalo.

Circle 308 on inquiry card

more products on page 216

---

Built-In Beauty. New from Haws

Keep hallways high, wide and handsome by blending a Haws fully-recessed water cooler with your wall decor. Or choose from many other smartly designed coolers and drinking fountains. Consult Sweet's or write for catalog today. Haws Drinking Faucet Co., 1441 Fourth Street, Berkeley, California 94710.

Model 84-RC: Receptor of gleaming stainless steel matches louvered grille below, which conceals remote water chiller. Serves six to 12 gallons per hour. Easy to install and service.

Haws makes a better-looking drink of water.

For more data, circle 101 on inquiry card
when quality counts...

ACME compacts are specified again and again

ACME America's most complete line of compact kitchens. Made by the oldest and largest manufacturer of compact kitchens to the exacting standards required for rugged use. Write for catalog.

ACME
NATIONAL REFRIGERATION CO., INC.
19-26 Hazen Street
Astoria, N.Y. 11005

For more data, circle 149 on inquiry card

Moto Flow CONVEYOR
Freight elevator performance at a fraction of the cost!

- Approved for installation in new buildings or old; classified as freight conveyor.
- Moves bulky and palletized loads to and from mezzanines as well as between floors.
- Four models with capacities from 2000 lbs. to 6000 lbs.
- Operates at any angle between 30 and 70 degrees, indoors or outside.
- Does the work of a freight elevator at a small fraction of the cost.
- Optional automatic loading and unloading accessories for incorporation with present materials handling system.

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For more data, circle 102 on inquiry card
McCarran International Airport knew that even 3,400,000 people a year wouldn’t faze Antron.¹

When a carpet has to look good despite both wear and dirt, it should be made of “Antron” nylon by Du Pont.

When McCarran International Airport in Las Vegas became the world’s first carpeted airport, they wanted more than just prestige and luxury. They needed carpeting that would improve the acoustics, morale and safety, muffle the jet turbine whine and solve the complex and hazardous maintenance problems they had faced with hard-surface flooring.

The solution simply had to start with “Antron” — the dirt-defying nylon from Du Pont. Lees “Design III” was the choice, loomed of continuous filament “Antron”. Lees describes “Antron” as “the fiber combining the longevity and toughness of nylon with the resistance to soil appearance, low static generation, and some of the other aesthetic characteristics formerly only associated with natural fibers.”

“Design III” is the carpet that proved itself more than equal to millions and millions of visitors at the New York World’s Fair “without apparent wear.” Its performance there convinced the officials of the McCarran International Airport that it could do the job for the 17,000,000 travelers they expect in the next five years.

So far the decision to put “Antron” to work has paid off in reduced injury claims, improved acoustics and easier, more hazard-free maintenance.

Why don’t you look into “Antron” for your next job? For the complete “Antron” story and information on other Du Pont fibers, write: Contract Carpet Specialist, Du Pont Carpet Fibers, Rm. 16D5, 308 E. Lancaster Ave., Wynnewood, Penna. 19096.

¹Du Pont registered trademark.
Du Pont makes fibers, not carpets.

Visit Du Pont at Room 1097.

Better things for better living . . . through chemistry

For more data, circle 104 on inquiry card
Who's responsible for all this?

Northwestern University Biological Center, Illinois:
Concrete reinforcing steel for slabs and walls.

Westinghouse Nuclear Components Plant, Florida:
Steel wall panels with Duofinish 500™ polyvinylidene fluoride coating.

First National Bank of Chicago Office Building, Illinois:
Hi-Bond™ cellular steel floor deck (installed).
Post tensioned tie beams.
Fabricated structural steel.
Milor™ steel access doors.
Stainless steel rail for window washing apparatus.
Concrete reinforcing steel.

Aircraft Taxi Strip, O'Hare International Airport, Illinois:
Fabricated structural steel.
Point Beach Nuclear Power Plant, Wisconsin:

Salt Lake County Civic Auditorium, Utah:


Inland-Ryerson. These two leading construction industry suppliers are now combined to help you design and build tomorrow's projects. Inland-Ryerson can offer you a unique combination of products and skills never before available from a single company. We'd like to give you some specifics about who we are and what we can mean to you. Write for a colorful booklet.
Inland-Ryerson Construction Products Company Dept. E, 4033 W. Burnham Street, Milwaukee, Wisconsin 53201.
Insulation against potential sound transmission between offices on the forty-fourth and forty-fifth floor of New York’s most spectacular new office building was provided by 10,300 square feet of one-pound sheet lead as plenum barriers.

The J. B. Williams Company, Inc., internationally-known manufacturers of toiletries and pharmaceuticals are the occupants of these two floors of the fifty-story General Motors Building, the latest addition to New York’s Fifth Avenue. Architects and sub-contractors for the Williams’ space in the building selected thin gage sheet lead as the most effective means of assuring quiet office efficiency.

One-pound per square foot sheet lead (1/64 inch in thickness) was hung vertically above Vaughn walls between all offices on the two floors. Material selection was based on the knowledge that dense, naturally limp lead is an ideal sound insulator. Also thin sheet lead cuts easily, and forms with ease, simplifying installation around pipes, ducts and conduits. And lead is economical and salvageable. Solve your noise problems with lead; metallic sheet, leaded plastics, bulk damping compounds and other lead products.

For additional information on the use of lead for the attenuation of airborne noise and your copy of “Acoustical Plenum Barriers and How to Install Them,” write Lead Industries Association, Inc., Department L-5, 292 Madison Avenue, New York, New York 10017.
Doors in this outstanding Athletic Convocation Center, University of Notre Dame, South Bend, Indiana, are equipped with GJ devices. GJ is always the safe specification...the hardware that can be depended upon to function through the years.
PERFORMANCE CERTIFIED

We certify that when properly installed and operated, this Onan electric plant, under the conditions set forth in voltage, frequency, and published specifications and tested under realistic load conditions, will deliver the full power and efficiency promised by its nameplate. This plant has undergone several years of running-in and testing under procedures certified by an independent testing laboratory.

ONAN
Here's Onan's promise.
No double talk.
No fine print.

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2:00 p.m. - 4:30 p.m., "From the Inside Out" Symposium moderated by Wolf Von Eckardt and featuring Gio Ponti, architect and Director of "Domus" Magazine, Italy; Jørn Utzon, architect, Denmark; Dr. Ernest Richter, President, Institute for Motivation Research; C. Theodore Larson, Professor, School of Architecture and Coordinator, Architectural Research Laboratory, University of Michigan; Dr. Robert Finley, Superintendent of Schools, Glen Cove, N. Y., with other speakers of similar distinction.

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Continued from page 228

PANEL DOORS / A booklet pictures over 140 types and styles of wood panel doors. A two-page section suggests how doors may be used decoratively in the home as panels, screens, room dividers, wainscotting and bed headboards. • St. Regis' Forest Products Division, Tacoma, Wash.*

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LANTEENS / A 14-page booklet presents cast aluminum lanterns scaled for large residences, apartments and commercial buildings. Over 90 lanterns are shown. • Sternberg Manufacturing Co., Chicago.

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AIR POLLUTION CONTROL / A 12-page bulletin discusses a complete line of equipment for the control of industrial air pollution and in-process operations. • Arco Industries Corporation, Detroit.

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HOSPITAL ENVIRONMENTS / A bulletin describes the problems associated with the proper filtration of a hospital complex, from the surgical suites to the laundry room. • American Air Filter Co., Inc., Louisville, Ky.

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NOISE REDUCTION / A 12-page booklet on sound reduction doors discusses characteristics and control of noise, with special sections on the effect of noise on hearing loss and speech communication. Construction and suggested specifications for doors and wall panels are described. • Jamison Door Company, Hagerstown, Md.*

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PLASTIC-FINISHED HARDBOARD / Loose-leaf binder contains reference material and installation information on a line of plastic-finished hardboard. There is also a selection of color prints of typical residential and commercial installations. • Marlite Paneling, Dover, Ohio.*

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REINFORCEMENT FABRICS / "Let's Look at Membranes," is a brochure featuring technical information and uses for cotton, jute and glass reinforcement fabrics for bituminous roofing and waterproofing systems. • Koppers Company, Inc., Pittsburgh.*

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* Additional product information in Sweet's Architectural File

more literature on page 242

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USS ULTIMET is in a class by itself. For appearance, performance, cost, quality and ease of erection there’s no other curtain wall system like it.

For your next curtain wall, window wall, entrance or lobby design, consider one of the following three types of ULTIMET:

USS ULTIMET in Stainless Steel. For the first time, you can provide clients with the life-time beauty and durability of quality stainless steel curtain walls, including windows and doors. The cost? You’ll find ULTIMET is competitive with systems utilizing materials of less strength and durability.
USS ULTIMET in COR-TEN High Strength Steel. Here is a new dimension in curtain wall design which combines the simplicity of ULTIMET and the natural beauty of bare USS COR-TEN Steel — the renowned weathering steel that protects itself with its own handsome oxide patina.

USS ULTIMET in Color-Coated Galvanized Steel. Bronze, black, white, blue—or just about any other color you want. A combination of heavy zinc coating and an applied coating of a high quality, pigmented fluorocarbon resin based material, assures long life, excellent part-to-part color match and outstanding resistance to fading. For a copy of our new catalog on USS ULTIMET, contact a USS Architectural Products Representative through the nearest USS Construction Marketing Office, check your Sweet’s, or write to U. S. Steel, Box 86, Pittsburgh, Pennsylvania 15230.

USS, COR-TEN and ULTIMET are registered trademarks.

Ultimet Wall Framing Systems
Stainless Steel • Cor-Ten Steel • Color-Coated Galvanized Steel
This lamp takes pride in being the most underpaid worker in your factory.

The General Electric Lucalox® lamp is the most efficient general light source known to man—or factories.

No other lamp will receive such a blessing from everyone concerned—management, plant engineers and factory workers. The very fact that the General Electric Lucalox lamp creates a more ideal working environment is worth the price alone. But also consider that nothing can outlight it—or undercost it. That makes strong business sense. Proof? Bring on the strongest fluorescent—and our 400-watt GE Lucalox lamp will give 2½ times more light. Bring on the finest mercury lamp—and it will give twice the light. More evidence? Recently, several industrial operations wanted to double their light levels. The choice: fluorescent, mercury or 400-watt Lucalox lamps. It was hardly a contest. Their installation estimates showed Lucalox lamps and fixtures could be installed for 25% less. Now that you're armed with these facts and figures, isn't it time you saw your GE Large Lamp Agent about your factory lighting? Or write: General Electric Co., Large Lamp Dept., C-806, Nela Park, Cleveland, Ohio 44112. Look at your ceilings. The savings could floor you.

GENERAL ELECTRIC

For more data, circle 132 on inquiry card
Tomorrow’s plaza system is in use today! There are seven other systems to complement number one—all developed for different purposes—all designed with All-weather Crete insulation. “System One” has wearing slabs sloped to drain.

These systems are being used today by leading architects throughout the nation. Why? Because no other type of insulation offers so many advantages in plaza construction. Heavy density All-weather Crete acts as an insulating cushion to protect the waterproof membrane, thus solving a failure problem often encountered in other systems. The K Factor is .46; it has excellent load bearing capabilities and can be sloped or applied level. There’s other advantages too.

Check out “Plaza One”—Two—Three—all Eight! Write for a full color brochure complete with diagrams and specifications. (You may want to design “AWC Plaza Nine” yourself.)

SILBRICO CORPORATION
6300 RIVER ROAD • HODGKINS, ILLINOIS 60525
CHICAGO PHONE (312) 735-3322

For more data, circle 133 on inquiry card.
ILLUMINATED CEILINGS / "Dimension '70" is an eight-page publication showing a series to be used with standard suspended ceiling components. Ceilings may be used in commercial, institutional and residential interiors. • Wilson Research Corporation, Erie, Pa.
Circle 423 on inquiry card

ARCHITECTURAL GLASSES / Three technical catalogs include selection tables, suggested glazing methods and specifications, strength data and transmittance values on various flat glasses. • Libbey-Owens-Ford Company, Toledo, Ohio.* Circle 424 on inquiry card

ELECTRIC HEATING / A 16-page booklet contains information on baseboard, wall, and bath heaters, and on related thermostats and controls. New company items include a draft barrier wall heater, thin-space heaters, floor drop-in heaters, a mini-space heater and utility and unit heaters. • Emerson Electric Co., St. Louis.
Circle 425 on inquiry card

FIBER GLASS AIR DUCT SYSTEM / A booklet explains a "high performance air delivery system with integral thermal-acoustical insulation and vapor barrier." • CertainTeed/Saint Gobain, Bala-Cynwyd, Pa.
Circle 426 on inquiry card

LUMINAIRES / An eight-page brochure describes three totally enclosed and gasketed fluorescent industrial luminaires for indoor and outdoor hazardous or non-hazardous areas with dusty, moist, corrosive or smoky atmosphere. Another eight-page booklet presents an extensive line of industrial and commercial luminaires and a computer service to determine optimum lighting systems using the new equipment. • Crouse-Hinds Company, Syracuse, N.Y.
Circle 427 on inquiry card

PLUG-IN BUSWAY / A 32-page bulletin covers ARMOR-CLAD plug-in busway, a totally enclosed, one-bolt joint design that is rated 600 volts a-c maximum. • General Electric Co., Plainville, Conn.* Circle 428 on inquiry card

SEAMLESS FLOORING / A 24-page technical bulletin entitled "Floors From Cans" describes 13 urethane resins for seamless flooring. The bulletin includes moisture or catalyst cure and two-package polyol cure resins, and contains data relative to physical tests, chemical and stain resistance, color retention, low-odor solvents and catalysts. • Spencer Kellogg Division of Textron Inc., Buffalo.
Circle 429 on inquiry card

* Additional product information in Sweet's Architectural File

There's just one thing worse than finding out about cancer.

Not finding out.

Sure, finding out is a shock. But finding out gives you a fighting chance. And the earlier cancer is found, the better the chances of beating it. There's one certain way to lose to cancer. And that's not to find out. Until it's too late.
The thing to do is to have your physician give you a good going over now, when you feel great. And then when your doctor tells you that you are great, you'll feel even better.

For more data, circle 134 on inquiry card

Paragon: the architect's friend.

Paragon Swimming Pool Co., Inc.
12 Paulding St., Pleasantville, N.Y. 10570
(914) 762-6221

For more data, circle 133 on inquiry card
Visual Drama with PPG Glass
PPG Glass helps open up Miami

Mutual of Omaha asked for a dramatic glass wall design for its new building to take full advantage of its view of Biscayne Bay. The architect faced a very difficult design problem: keeping a glass wall building cool in spite of the intense Florida sunshine. He found PPG's Solarban® Bronze (3) Twindow® Insulating Glass an excellent solution to both esthetic and engineering requirements. The warm bronze tone of Solarban Bronze was selected as a handsome color complement for the building's white concrete columns, and as an extension of the bronze tones of the exterior metals and interior color scheme.

The reflecting qualities of Solarban add design interest, help keep the building comfortably cool, and significantly reduce the size and cost of the building's cooling system. The functional and design advantages of PPG Performance Glass have made a larger, better view of Miami both possible and practical.

The custom Twindow units were fabricated to match exactly the poured-in-place arches. The curves of the window openings correspond with the arches extending from the tops of the building's exterior columns.
With Solarban Bronze (3), sunlight seems only one-eighth as bright to the indoor viewer, an important consideration with light-colored concrete construction in the brilliant Florida sunshine. The bronze hue of these units harmonizes with the warm earth tones selected for the interior decor.

Solarban's reflecting qualities provide a new visual dimension to the building while turning back much of the sun’s radiant energy.

Architects for the Mutual of Omaha Regional Home Office found that PPG's Performance Glass solved both their design challenges: it added to the building's beauty while helping to keep it cool efficiently and economically.

Mutual of Omaha Regional Home Office, Miami
Architect: Houstoun, Albury, Baldwin & H. Maxwell Parish, Miami
Interior Design: Houstoun & Parish, Miami
Consulting Design Architect: Leo A. Daly Co., Omaha
Consulting Engineer: Breiterman, Jurado & Associates, Miami
There's a PPG Performance Glass for every design problem

Mutual of Omaha's consulting engineer states, "This glass, Solarban Bronze (3), permitted us to use the air conditioning system we did. If you want to have an open-building design like this in Florida, you would have to figure it with glass like this."

Solarban Twindow units offer a reflective film coating which keeps much of the solar radiant energy outdoors rather than permitting it to become a load on the cooling system. This same low-emissivity reflective film enables Solarban Twindow, a normal insulating unit with 1/2" air space, to perform like triple glazing in reducing the conducted heat loss during Florida's winter months. Coupled with PPG's Solarbronze Plate Glass in this Solarban Twindow unit, the reflective coating reduces the overall light transmission to 12%, thus shading much of the outdoor brightness without obstructing the occupant's view.

Write: PPG Industries, Inc., One Gateway Center, Pittsburgh, Pennsylvania 15222.

PPG is Chemicals, Minerals, Fiber Glass, Paints and Glass. So far.
Houston’s Greenway Plaza;
the $150 million city within a city.

Zonolite Mono-Kote is making every fireproofing dollar count.

Here at Houston’s gigantic new Greenway Plaza, all the buildings have their frames, concrete or steel, sprayed with Zonolite Mono-Kote. Why? Architects Lloyd, Morgan & Jones insisted on it.

Zonolite Mono-Kote® is the cheapest, lightest, fastest-to-apply fireproofing you can get.

Why spend millions of dollars more for traditional fireproofing methods that could double the building weight just to get the same fire rating you get from Zonolite Mono-Kote? You save on materials, materials handling and time.

Do some smart saving on your next project. Learn more about Mono-Kote and its use with tested, fire-rated constructions appropriate to your building design. Just check the handy coupon and mail it in.

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Gentlemen:
Please send me information on your lightweight, fire-rated construction for:

- [ ] Beams
- [ ] Girders
- [ ] Trusses
- [ ] Walls
- [ ] Columns
- [ ] Roof Decks
- [ ] Floors
- [ ] Partitions

ZONOLITE Construction Products Division
W. R. Grace & Co., Dept. AR-05
Cambridge, Mass. 02140

NAME

TITLE

FIRM

ADDRESS

CITY

STATE

ZIP

For more data, circle 152 on inquiry card
See the nice man.

He is asleep beneath the tree.
The sun is shining, shining, shining.
The birds are singing, singing, singing.
Everything is nice and peaceful and serene.

Do you know why everything is always nice and peaceful here?
Because this is not a real world.

It is make believe. It never rains. There is no bad.
And nobody ever gets sick. Ever.

Real worlds are different. We know. We work against real cancer in this real world. Every year more and more people are helped to live longer because they go for checkups when they think everything is nice and rosy.

It is the only way they can be helped. If they go.
Too many people live in a make-believe world. They put it off and put it off and put it off.
Tsk. Tsk. This is naughty, naughty, naughty.

Do you know why we talk to you like this?
Simple. When we talk to you like adults, you don’t listen, listen, listen.

200,000 were saved last year.
Annual checkups can help save thousands more.
What are you waiting for?

Help yourself with a checkup. And others with a check. American Cancer Society
Award-winning Architects Choose

Ludowici Clay Roofing Tile...

As up-to-date as today's teaching methods, this school auditorium owes much of its modern charm to the architects' choice of Ludowici Roofing Tile.

Versatile beauty is but one of the pluses. Award-winning architects also select Ludowici Roofing Tile because of its practical durability and non-fading colors—with minimum maintenance.

A wide variety of patterns, colors and surfaces are available to provide an unlimited choice of roof styling in hard-burned clay—all architecturally sound . . . all with the potential for award-winning designs.

WIDE SELECTION OF OTHER PATTERNS, TEXTURES AND COLORS

For additional information write or phone:

LUDOWICI-CELADON COMPANY
75 East Wacker Drive * Chicago, Illinois 60601
Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick.

For more data, circle 155 on inquiry card
Three outstanding books on modern design problems from Van Nostrand Reinhold Co.

PLANNING DESIGN CRITERIA
By Joseph DeChiara and Lee Koppelman
This comprehensive volume does not delve into philosophy, nor overwhelm you with countless technical details. It does provide, in a single source, the basic reference material you need for effective urban planning. . . .

The book's first section gives you the methodology and scope for the preparation of the various major planning studies such as land-use study, population study, etc. Subsequent sections examine the major phases of planning and design with particular emphasis on such subjects as: new zoning concepts, shopping centers, cluster housing, industrial parks, transportation, air pollution, recreational areas, and government programs. Many original drawings and illustrations supplement and clarify the text material.

HOSPITAL ARCHITECTURE AND BEYOND
By Isadore Rosenfeld, in collaboration with Zachary Rosenfield
This book shows how a hospital should function in society and details how it should be put together. It examines the shaping of today's hospitals through a variety of motivations such as conceptions of disease, ideas on what constitutes health, technologies of medicine and building, social forces, and aesthetic attitudes. Most important, the book confronts you with the basic problem of meeting the complex needs of a modern community. It cuts through any preconceptions you may have about hospitals and shows you how to solve problems on their merits by such forms and configurations as you find necessary. This dynamic approach presages the evolution of new types of hospitals, bearing little resemblance to the tradition-bound, unimaginative conglomerates of departments which we too often call hospitals today.

ENVIRONMENTAL DESIGN
By Richard P. Dober
This exceptional work affirms that environmental design is an art larger than architecture; more comprehensive than urban planning; more sensitive than civil engineering.

Concisely informative, the book lays the groundwork for an interdisciplinary approach to creating a viable and rewarding new human environment—an approach emphasizing existing methodology and opportunities. To lend support to its timely premise, vivid illustrations serve to point out the influence of historic designs . . . promising current trends . . . and the present frontiers of design.

For more data, circle 143 on inquiry card

MAKE INDUSTRIAL FLOORS TOUGHER THAN CONCRETE

Save your clients money by including a Permaflex floor surfacing system in your original design. Costs far less than resurfacing later. Vital for many industries. Reduces in-plant dust. Improves impact resistance. Withstands loads up to 20,000 lb./sq. ft. without rutting or denting. Resists corrosive chemicals such as acid, caustic, salt and sugar. Reduces maintenance expense and hazard of damaged floors. Choose from the complete line of Permaflex industrial flooring systems—including epoxy and latex.

Free consultation. Write for information and literature on the best and most economical floor surfacing system for any application. Permaflex is 47 years in the floor surfacing business.

THE PEOPLE WHO KNOW MOST ABOUT FLOORS

Permaflex Products Company, Inc.
1844 N. Front St., Philadelphia, Pa. 19122
Sales offices in major cities

For more data, circle 136 on inquiry card
How to keep World War II out of a quiet love scene

Take one large motion picture theater and convert it into two, one up and one down. Exhibit different films in each and improve the overall profitability of the building. Loew's Theaters did just that with the famous old Loew's State at Broadway and 45th Street in New York City. Keeping the sound within each theater is essential; the thunder of bombers in one doesn't add to a love scene in the other. Loew's did the soundproofing by making the floor of the upper theater plenty thick and then covering it with a lead shield. The density and limpness of lead makes an effective barrier against noise. It is being used, in a variety of forms, in offices, schools, theaters, hotels, building foundations, boats, planes, and industrial applications. Today's architects and designers are using lead to stop noise from invading our privacy, lowering human efficiency and injuring our health. You can make life more liveable by designing for quiet... with lead. St. Joe supplies quality lead—American industry puts it to work.

ST. JOE

Producers and Marketers of Lead, Zinc, Zinc Oxide, Iron Ore Pellets, Iron Oxide, Agricultural Limestone, Cadmium, Copper Concentrates, Silver and Sulphuric Acid.

ST. JOSEPH LEAD CO., 250 Park Avenue, New York, New York 10017
We work closely with architects and engineers on cable applications like these

Bethlehem has furnished the steel strand, wire rope, and end-fittings for many of the nation's cable roofs. It all began with Raleigh Arena, the country's first major cable-roof structure, built in 1953. Since then, we've been involved in a wide variety of cable roofs and related cable applications.

Some of the structures we've been associated with in recent years are shown on these pages. Each combines the bold approach of cable construction with a low-cost column-free interior.

Over the years, we've gained much experience in this field. And we've assembled a considerable amount of data. Because of this, we've been able to cooperate with designers in furnishing information on cables, end-fittings, and complete assemblies. We've also worked closely with them in detailing the cables and supplying them to precise specifications.

Our library of technical and design data on this subject is one of the most complete in the industry. If you'd like to receive any of these materials, just write to: Room 1049A, Bethlehem Steel Corporation, Bethlehem, PA 18016.

BETHELHEM STEEL

Steel for Strength

Madison Square Garden Center, New York City
Architect: Charles Luckman Associates
Engineer: Severud, Perrone, Sturim, Conlin, Bandel. Steelwork: Bethlehem Steel
General Contractor: Turner Construction Co.—Del Webb Corporation, a joint venture

Travelers Insurance Pavilion (World's Fair—dismantled), Flushing, New York
Structural Engineer: Lev Zetlin & Associates. Steelwork: Bethlehem Steel
General Contractor: George A. Fuller Corporation
Our new 4' x 8' roof insulation means 75% fewer pieces than 2' x 4's.

Only a one-piece roof could be installed faster.

The bigger the roof insulation, the fewer boards there are to handle, and the faster the installation. Your building is put in the dry sooner. Ease and speed of installation are just two of many benefits Owens-Corning Fiberglas® Roof Insulation, the biggest anywhere, has to offer. Others are inherent and exclusive in the glass fiber material itself. It has a low "k," is rated incombustible (cap excluded), and conforms to minor deck irregularities: you get a smooth, trouble-free base. And if the job calls for taping, our Fiberglas taped-joint system with 4' x 8' can provide the fewest joints in the business.

Fiberglas Roof Insulation is the best base for every built-up roof. And our new 4' x 8's are the next best thing to a one-piece roof.
Owens-Corning Fiberglas Corporation,
717 Fifth Avenue, New York, New York 10022.

@Trademark Registered Owens-Corning Fiberglas Corporation

For more data, circle T38 on inquiry card
Keene imagination

SIMON FRASER UNIVERSITY POOL
VANCOUVER, B.C.

ARCHITECT: DUNCAN S. McNAB AND ASSOCIATES
VANCOUVER, B.C.
If you've ever tried to make yourself heard around a huge indoor swimming pool, you'll appreciate Keene's solution to a tough acoustical problem at Simon Fraser University, Vancouver. The highly reflective surfaces make speech and hearing practically impossible. That's why those Keene Sonosorbors are hanging from the ceiling. More than 100% sound absorption is obtained from each square foot of their surface area.

Whatever acoustical problem comes up, chances are Keene has come up with the product to solve it. Sonosorbors are just part of the biggest specialty line in the business.

The most versatile structural framing line in the business is Keene Speed-Steel,™ chosen for the Atomic Energy Commission's Brookhaven Laboratory shown here. The only flat surface in the building is the floor, since all of the walls are sloping. In combination with precast concrete, Speed-Steel helped an imaginative concept take shape.

If you open doors, chances are you've handled some of Keene's door products. Keene metal doors, both fire-rated and non-rated, are in thousands of America's schools and colleges, offices and factories.

Keene imagination works for you in products like our movable partitions and architectural mesh, too. Six movable wall systems give you complete freedom of choice in paneling materials, flexibility and sound control. Keene architectural mesh is a decorative product every bit as practical as it is attractive. It diffuses light and increases airflow, decreasing air conditioning costs.

If you've gotten the impression that Keene makes a diversified line of quality building products that may help on your next job, you're right.

For complete information on Keene acoustical products and a general catalog of Keene building products, write to Dept. A-5, Keene B-E-H, 500 Breunig Avenue, Trenton, New Jersey 08602.

KEENE CORPORATION

We've just begun to grow.

For more data, circle 139 on inquiry card
If you've seen one, you've seen 'em all.
It’s fine for things to look alike. Just fine.

If they happen to be eggs. But if they happen to be buildings, it’s not so fine. Buildings that look alike make cities that look monotonous. Unimaginative. Sort of—well, ticky-tacky. And if you don’t quite see what we mean, go downtown on the next clear day, and look up. You’ll see what we mean.

But take heart. There’s something new afoot in the cities of America. The boxy, boring buildings are on their way out. They’re being replaced by a new kind of building with a new kind of flair. A new kind of freedom. A new kind of excitement.

It’s happening everywhere, but nowhere is it happening better than in the heart of Chicago’s famed Loop. It’s there that the new First National Bank Building is nearing completion. A magnificent sight! Soaring 60 stories into the air with a majesty and grace that’s nothing short of incredible for such a massive structure.

Constructing something as grand as this involves some pretty complex problems. Take steel floor beams, for example. When the First National’s plans were drawn, rolled beams 21 inches deep were planned. But then, the structural engineers in concert with the architects decided that a “stiffer” floor would be more desirable, in order to minimize even the slightest chance of noticeable floor vibration. To get the degree of “stiffness” they wanted, 30-inch rolled beams were selected. And there was the rub—30-inch beams would weigh almost twice as much as 21-inch beams.

Solving one problem had created another. But with help from Inland Steel, that problem, too, was solved. Inland’s recommendation? 30-inch welded beams. It was the way to get a whopping 50% more strength than the 21-inch rolled beams, at just over half the weight of the 30-inch rolled beams. All at an impressive savings running into many thousands of dollars.

At Inland Steel we produce all sorts of welded shapes; beams with webs thinner than rolled shapes, beams with off-center webs, tapered beams, asymmetrical beams, hybrid beams. With or without camber. We also produce practical solutions to sticky problems.

How about you—got a problem? Give us a call. We may come up with something that’ll give you the same kind of pleasant surprise you get when you open an egg and find two yolks inside.

Inland Steel Company, 30 West Monroe Street, Chicago, Illinois 60603. AC 312 Financial 6-0300.

Inland Welded Structural Shapes

For more data, circle 140 on inquiry card
IN 1828
ARCHITECTS
HAD NO REASON TO
CONSIDER HELIPORTS

Because, in 1828, Vittorio Sarti's helicopter was strictly a flying machine. There were no urban traffic snarls or airports far from city business districts. Today, the business use of helicopters is a growing reality. New twin-engine helicopters will eliminate flight restrictions over cities. If you are designing city centers, industrial plants, major building complexes and hospitals, now is the time to plan for heliports and helistops. It costs substantially less to include a heliport in your original plans than to add one later.

Free Heliport Design Kit
Send for Bell's free heliport brochure, plus an official FAA Heliport Design Guide. Simply fill out the information below and mail to:
Dept. 391E, Bell Helicopter Company, Fort Worth, Texas 76101.

Name ________________________________ Title ________________________________
Firm ________________________________
Address ________________________________
City __________________ State ______ Zip ______
Remarks: ________________________________

For more data, circle 141 on inquiry card

ASBESTOS—ASPHALT TILE / The 1969 Color Comparison Chart for vinyl asbestos and asphalt tile contains up-dated charts that list patterns, styles and colors of tile made by Amtico, Armstrong, Azrock, Congoleum, Flintkote, GAF, Johns-Manville and Kentile. The charts show the commercial equivalents of the various color lines and patterns. ▲ Asphalt and Vinyl Asbestos Tile Institute, New York City. Circle 416 on inquiry card

POLYMERS AND RESINS / An eight-page bulletin describes liquid polysulfides, epoxy resin systems and liquid urethanes. ▲ Thiokol Chemical Corporation, Trenton.* Circle 417 on inquiry card

FLOODLIGHTING / "Floodlighting to Create a Desired Visual Impression," is number seven in the Electrical Design Library series. Photographs of 17 floodlighted structures, some with diagrams to show fixture placement and aiming, illustrate the effects of different lighting methods. ▲ National Electrical Contractors Association, Washington, D.C. Circle 418 on inquiry card

COLLEGE HOUSING / A case study describes the 12-building complex at Montana State University, the "first use of . . . modern thin-walled load-bearing construction" in an unstable Seismic Zone 3 area. Cost is reported $17.27 per sq ft, including appliances, carpets, draperies and landscaping. ▲ Structural Clay Products Institute, McLean, Va. Circle 419 on inquiry card

RIGID ROOF INSULATION / The 1969 Permalite Sealskin catalog describes the shortline method of laying insulation to minimize problems associated with long joints. Proper specification of Permalite non-combustible vapor barrier and cold adhesive is also covered. ▲ Grefco Inc., Chicago.* Circle 420 on inquiry card

PLASTIC BUILDING PANELS / A six-page brochure presents Avr-Duraform, "a new development in flat, corrugated and heat-formable panels, produced by a special process that insures uniform and oriented dispersion of the asbestos fibers throughout the entire PVC mass." A sample is included. ▲ Kakor Products Corporation, Yardville, N.J. Circle 421 on inquiry card

WARDROBE SYSTEMS / A catalog on commercial and institutional systems includes semi-concealed classroom wardrobes with a cantilever design. ▲ Equipment Manufacturing Co., Inc., Kansas City, Mo.* Circle 422 on inquiry card

* Additional product information in Sweet's Architectural File
Just six of many ways Weyerhaeuser helps to make your deck designs a little more exciting.

Weyerhaeuser has broadened the design choice in laminated decking with more options than ever in surface textures, thicknesses and appearance grades.

And we've added Ponderosa pine to our cedar and hemlock lines. Now you can specify Ponderosa in 8, 10 or 12-inch widths that go down quickly and look stunning.

In addition, we're introducing a prestaining service. We're offering six standard Olympic® stain tones for hemlock and pine, with a custom-matching staining service available, too. With this service you can enjoy the efficiencies of factory finishing, and at the same time get an exact match on site-finished trim.

Your local Weyerhaeuser Architectural Specialty Dealer can give you the full story on our laminated products and the services that go with them. In the meantime, send us the coupon for complete technical data.

For more data, circle 142 on inquiry card

To: Weyerhaeuser Company, Box B-5737
Tacoma, Wash. 98401

Please send me complete details on your complete line of laminated wood products.

Name___________________________
Firm___________________________
Address________________________
City___________________________Zip________
NEW
Tiffany
SERIES
by Chicago Faucets

A beautiful, stunning combination of sparkling acrylic and brushed gold or gleaming chrome fittings...crafted and finished to match the loveliest baths and powder rooms...for those who want and deserve the ultimate in rich and elegant fittings.

And there's matchless quality inside too...Chicago Faucet's famous trouble-free and drip-free operating mechanism provides long-lasting service that is...unsurpassed...and truly outstanding.

THE CHICAGO FAUCET COMPANY
2100 S. Nuclear Drive, Des Plaines, Illinois 60018

no hang ups in concept when you design with light the mcPhilben way...

Our 15-Line pole luminaire is an exciting example of mcPhilben's concept of lighting continuity. The 15 Line is a Mercury-Vapor luminaire of unitized cast aluminum construction, anodized for lasting beauty...great for walkways, campuses, parking areas and landscaping. So escape hang ups in concept...design with light the mcPhilben way.

Let us send you complete specification data.

I WANT YOU TO USE ZIP CODE

So that you can have faster, more efficient mail service.

For more data, circle 154 on inquiry card

For more data, circle 153 on inquiry card
The unique features of Mills Compartments are: Mills exclusive galvanized bonderized steel, Mills patented interlock construction, Mills foolproof emergency lift release latch, Mills quality design hardware, Mills patented true gravity hinges, Mills durable baked acrylic finish. The unique features of Mills Compartments are: Mills exclusive galvanized bonderized steel, Mills patented interlock construction, Mills foolproof emergency lift release latch, Mills quality design hardware, Mills patented true gravity hinges, Mills durable baked acrylic finish. The unique features of Mills Compartments are: Mills exclusive galvanized bonderized steel, Mills patented interlock construction, Mills foolproof emergency lift release latch, Mills quality design hardware, Mills patented true gravity hinges, Mills durable baked acrylic finish. The unique features of Mills Compartments are: Mills exclusive galvanized bonderized steel, Mills patented interlock construction, Mills foolproof emergency lift release latch, Mills quality design hardware, Mills patented true gravity hinges, Mills durable baked acrylic finish.
### ADVERTISING INDEX

Pre-filed catalogs of the manufacturers listed below are available in the 1969 Sweet's Catalog File as follows:

**A**
- Architectural File (green)
- Industrial Construction File (blue)
- Light Construction File (yellow)
- Interior Design File (black)

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