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PRIZE-WINNING DRAWINGS FROM THE NATIONAL INSTITUTE FOR ARCHITECTURAL EDUCATION
BUILDING TYPES STUDY: AIRPORTS
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ARCHITECTURAL RECORD
OCTOBER 1976

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Letters to the editor

I have been ruminating off and on for several months about the June issue of ARCHITECTURAL RECORD and its treatment of the Venturi and Rauch New Haven fire station.

Venturi is really a theoretician, not an architect. His buildings and designs can barely exist as architecture without an elaborate defense and discussion of their affluations. This is not to slander understanding architectural allusions and connotations, but an accumulation of details does not constitute architecture. Venturi's buildings don't work as spaces or masses, merely as witty details that warrant the initiated with a glow of recognition. Venturi doesn't respect the other buildings in the neighborhood; he camps them—a nasty put-down that begs every question it raises. (As a contrast, the June issue provides a sensitive example of a contemporary response respecting its context in an old structure—Kajima International's Bank of Tokyo.) The New Haven Fire Station, along with many of Venturi's other works, mimics what's around it. Where is the imagination to create a building of its own time that shows sensitivity to the already built environment? The vitality that Venturi espouses (“Main Street was almost right”) would never be furthered by his own work. Such diversity and complexity are dependent on the continual and gradual evolution of more storefronts, institutions and residences that speak from their own age, not the derivative high-camp rehashing of 1930s Art Deco and 1950s blandaism. (You can't go home again, you know.)

I think Venturi often gets himself off this and other hooks in a clever but useless way. He makes use of a red herring (the same one Frank Gehry raises) by setting up a false premise—is it pretty or is it ugly? (Venturi never directly expresses this question, but he and the criticism about him certainly suggest it.) What serious architect could favor mere pretty—that's for teeny-boppers who wear Bonnie Bell complexes. Ugly, some critics suggest, is at least strong and uncompromising. This is part of the question takes our attention away from the real issues, such as: what kind of environment is Venturi creating for people to live in? And if '50s institutionalism bored, depressed, and alienated us then, how can it do anything for us now? Architectural critics seem absolutely demolished when Venturi meets their potential criticisms head-on by declaring that he meant the building to be ordinary (the Yale math-

ematically building competition, for instance). Richard L. Miller uses this non-idea when he says the fire house avoids dullness by celebrating it; but how can the scale of dullness alleviate it? Do we need more ordinary buildings? When general contractors produce buildings like Venturi's, they're rightly and roundly criticized; the fact that such work has been produced by a well-known architect and produced deliberately doesn't make it any better. The question of infill in an existing context is a difficult one, but Venturi's response can only be interpreted as a slap in the face of his neighbors. Look-

ing at his work is a lot like sitting in a '30s movie while people laugh at the wrong places because it's so quaint. A building can respect its neighbors without being ordinary or dull, and without mimicking them—if its designer has some imagination. We really can't let the argument that it's sup-

posed to be ugly, ordinary, or alienating prohibit us from criticizing it.

I was particularly bothered by the false dichotomies created by Robert L. Miller in his article on Venturi and Rauch. Much of his discussion on urban renewal's failings is sound, but to pit the exclusivists and preser-

vations against the Miesians and urban renewalists is to establish connections that were never there. Miller seems to confuse the Miesians' drive for cleanliness of line and austerity of detail within the building with the re-

development agency's satisfaction at acres of cleared rubble. Most of the re-

built ghettos is definitely not Miesian—but that style was reserved for wealthy cor-

porate headquarters and residences of the rich. The Miesians certainly have their faults, but they're not guilty of urban renewal.

Miller is at his most accurate about Venturi when he discusses the strongly graphic and Pop images of Venturi's work. Venturi can control two-dimensional graphics in a flashy, right-now way, but he can't really create spaces. And what does it say of an architect that he's strongest in two dimensions? Even his graphics have severe limitations, since they're mostly Pop and photorealism and about as rich and subtle as Andy Warhol.

We need to get past the Milton Glaser cover to Venturi and think hard about what he's really designed and the spaces he's created—there's not much there.

Toby Reed

San Francisco

A recent article on Jack London Village, Oakland, California, listed Larry Carducci as the First Phase Landscape Architect. Mr. Carducci's office prepared plans but they were not used, and he was terminated on the project. This office was retained by the developer, Specialty Restaurant Corporation, to design and provide supervision from the ground up for the Jack London Village. I sincerely hope that this office will be given credit as the Landscape Architect in the form of a correction.

Robert E. Truskowski AIA

Landscape Architects Planners

Laguna Beach, California

Calendar

OCTOBER


27-31 Conference and trade show, Energysave '76, Currian Exhibition Hall, Denver. Contact: and the University of Denver Research Institute, (DRI), cosponsors Winterpark Tradeshop, Inc. Contact: DRI, University of Denver, Denver, Colo. 80210.


NOVEMBER


9-10 Construction Management Seminar, Chicago O'Hare/Kennedy Holiday Inn, sponsored by Construction Management World. Contact: W. Marvin Ferrall, Construction Management World, P.O. Box 1, Westerville, Ohio 43081.

ARCHITECTURAL RECORD (Combination with AMERICAN ARCHITECT, ARCHITECTURAL DESIGN, and WESTERN ARCHITECT AND ENGINEER)
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Of all the Mexican Minimalists influenced by the famous master Luis Barragán, Ricardo Legorreta is the best known architect and the most prolific. The newly opened Camino Real Hotel in Cancún and the IBM plant in Guadalajara are the most recent illustrations of Legorreta’s firm’s work, described in an essay by architecture critic C. Ray Smith.

2. Koplik house
Earl Combs’s design for a vacation house on Long Island’s South Shore employs unusual forms and symmetrical planning to produce spaces that are inventive and fun.

3. Drawing from NIAE
A collection of architectural drawings by students competing in award programs sponsored by the National Institute for Architectural Education. A description of NIAE’s programs past and present by Tom Flagg accompanies the drawings.

4. A friendly neighborhood skyscraper
Something svelte of build and spiffily garbed is firming up on the corner of New York’s First Avenue and 44th Street, beckoning, “Come up and see me sometime.” Many are finding it hard to resist One United Nations Plaza by Kevin Roche John Dinkeloo and Associates.

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NEXT MONTH IN RECORD

Despite increased costs in all aspects of manufacturing, there have been billions of dollars allocated for new and expanded plant facilities. Projects in this study have been selected for their idiosyncratic architectural and engineering approaches to problems that continually plague manufacturing companies, both in the United States and abroad.
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When you get a letter from NCARB next month, please fill in the coupon and send it back ...

Late in October or early November, the National Council of Architectural Registration Boards is going to send a small booklet to "every registered architect in the nation." The booklet is intended to inform architects of NCARB's role: "It is a humbling experience," says president Charles Blondheim, "to be asked by a registered architect 'What's that?'" The booklet is also intended to build support among architects for "what NCARB stands for." Says Blondheim: "Traditionally, we have been inclined to think of NCARB's niche in architecture as being rather narrowly confined to the registration of practitioners. The fact is, however, that our responsibilities, when considered in the context of society's growing needs and expectations, are of necessity quite broad. Indeed, what makes NCARB unique today is both its mandated and strongly implied concern for the architect at every step of his/her career. We are legitimately concerned with the architect's education, training, registration and, more and more, his/her professional well-being over the long term."

What are the services of NCARB? As outlined by Blondheim:

1. Certification. "By the end of this year, the number of architects who hold the 'Blue Cover' is expected to top 15,000. . . . As a practical matter, the Blue Cover [officially, the Council Record, a detailed documentation of a person's "education, training, experience, examination, registration, and character"] facilitates an architect's request for reciprocity by a state in which he is not licensed.

2. "Development, writing and evaluation of the Professional Examination and the newly evolving Qualifying Test (for those who are not graduates of an accredited school of architecture). . . . [RECORD, August 1974] . . .


4. "Professional conduct, as it pertains to the NCARB Member Boards statutory concern for the health, safety and welfare of the public . . .

5. "International reciprocity, as a subject of study and as a long-term goal, and . . .

6. "Professional development, as a measure of enhancing competence and elevating standards"—an area where NCARB hopes to work increasingly closely not just with AIA, but with the NAAB, the ASCA, and ASC/AIA."

As an admirer of the strong and active role that NCARB is taking in the profession lately, I think it's great that this long-sort-of-silent organization is reaching out and taking some strong stands (indeed, as in the case of the new professional exam, some controversial stands) on the development as well as the certification of architects. It is also clear that this kind of activist thinking has done a great deal to build an absolutely critical consensus among the various state registration boards on the essential questions of "what makes a good architect."

And so I hope you will read the mailing from NCARB's Washington headquarters that is scheduled to reach you in the next month. And I hope (as you will be requested to do) you'll take the time to fill out the return coupon, which will ask you, in effect, where you're working, what kind of organization you're working in, and what kind of work you're doing. The goal is to establish a truly accurate national roster of registered architects. In compiling the mailing list, NCARB obtained up-to-date lists from its 55 Member Boards (the 50 states, the Canal Zone, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands) and undertook to eliminate duplications (for example, an architect registered in 10 states would appear on 10 state rosters). By this process, NCARB now figures there are close to 60,000 registered architects—a number which seems much too high to a lot of experienced hands and researchers who have been around the industry for a long time. There are lots of possible reasons for possible duplications: something data processing experts call variations in match codes, archivers registered as John C. Smith in one state and J. C. in another, complications caused by architects residing in one state but registered in another, and so on. But it would be nice to know for sure—an accurate roster (who'd have thought we didn't have one) would indeed be, as NCARB suggests, "a unique and profoundly promising resource." One way you can help is by returning your coupon promptly, filling it out with care, and letting NCARB know if you, for instance, get two mailings (or don't get any).—Walter F. Wagner Jr.
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Noel E. Kroncke, administrator, Children's Hospital National Medical Center, and Leo A. Daly III, vice president of the architectural firm of Leo A. Daly, agreed: "The Building Industry Consultant provided Children's Hospital with a preplanned telecommunications capability that is as adaptable as the building itself. The system will accommodate whatever future needs hospital management can envision."

Alfred H. Fast, project architect for Westcor, assessing Bell's contribution to the MetroCenter shopping mall: "Because of the Building Industry Consultant, we're not going to face redundant situations—pilling up concrete or knocking down walls because adequate provisions weren't made in the initial stages."

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Department store lighting: if it helps move the merchandise, it's good. If it doesn't, it isn't.

But today, it has to save energy, too.

This is how Sylvania Metalarc lamps helped give the best of both worlds to J. W. Robinson's 158,000-square-foot Westminster, California store. Robinson's didn't decide on the lighting for this store without a lot of planning and testing first.

The tests took place in a 3,000-square-foot lighting lab in the main store. They tested many kinds of lighting for color, energy use, dramatics. And, of course, customer reaction.

The winners? Sylvania 175-watt Metalarc...
45,000 a year on its light bill.

Metalarc/C lamps for primary illumination. Clear Metalarc lamps corner displays. Incandescent and fluorescent lamps for accent and supplemental lighting.

Metalarc lamps' excellent color rendering, point-source illumination and efficient energy use provide an unbeatable combination.

All told, the Westminster store requires only 2.98 watts per square foot for lighting. That's 41% less than the average 5.1 watts in the company's older stores.

70% more from every lighting watt...

$45,000 less per year to light this modern store.

To say nothing of the capital saving because of fewer fixtures.

Sylvania Metalarc lamps made a large portion of these savings possible.

How do you light a department store from scratch?

Start with Metalarc lamps...

For more details on these or any other Sylvania HID lamps, see your Independent Electrical Distributor. Or write Sylvania Lighting Center, Danvers, Massachusetts 01923.
Park Ridge Hospital prevents epidemic of slapped-up signs with integrated signage system.

The interior of Park Ridge Hospital—a warm, harmonious blend of wall colors, textures and carpeting—is therapy in itself.

Located in Greece, New York, and serving the Greater Rochester area, the hospital was dedicated in September 1975. A two-building complex, it covers approximately 300,000 sq. ft. The medical building contains 194 patients' rooms—all private—in addition to offices, conference rooms, labs, therapy departments, etc. It is connected to the adjoining Supply, Processing and Distribution building via a glass-enclosed walkway.

Signage as a subsystem
A hodge-podge of signs, slapped up as an afterthought to construction, would have seriously marred the hospital's handsome interior. But the architects and hospital administrators, aware of the need for an efficient traffic moving system, wrote a complete signage program into their initial plans.

Matthews was called in a year before the building completion date to design and fabricate a total, integrated signage system for both interior and exterior traffic control.

Over 300 individual signs—interior and exterior—were installed. Most were fabricated of damage-resistant NOMAR fiber reinforced polyester. All of the signage is tastefully understated but highly functional, with complete continuity of color and letter style.


Architect: Stevens, Bertin & O'Connell, Rochester, NY
Construction Mgmt. Firm: John W. Cowper Buffalo, NY
Signage Contractor: Empire Sign Co., Inc. Rochester, NY

MATTHEWS
Architectural Division
For more data, circle 16 on inquiry card

1. NOMAR with screened graphics embedded. 6. Cutout aluminum logo.
2. Cutout aluminum logo. 7. NOMAR post and panel assemblies with surface applied reflective pressure-sensitive legends.
3. Reverse screen process on acrylic identifies patients' rooms. Slide-in cards and strips for adaptability.
When you expose our new silicone foam to 2,000 F for 3 hours, something incredible happens. Nothing.

Only new Dow Corning® RTV silicone foam firestop can make that statement. And back it up.

**Factory Mutual Research tested it.**

In full-scale functional tests (ASTM-E119-73) conducted by Factory Mutual Research in October and December 1975, Dow Corning silicone foam withstood temperatures of over 2,000 F during a 3-hour test in both wall and floor configurations. The foam showed slight charring, but it did not melt, burn, pass fire or emit smoke.

**No toxic fumes.**

A major problem with traditional firestop sealants is that even if they don’t burn in a fire, they release quantities of toxic fumes. Stable Dow Corning RTV silicone foam greatly reduces this toxicity, and reduces the total amount of smoke combustion products released.

**Fast, easy installation.**

To seal cable gaps, simply inject the easy-to-mix liquid components into the dammed penetration. The material expands to three or four times the volume of its liquid constituents and sets up in 3 to 4 minutes. Excess can be trimmed off with a knife. That’s all there is to creating an airtight fire penetration seal.

**The safety factor.**

Many cases of fire spreading through cable penetrations have resulted in loss of life and millions of dollars of equipment, property, and revenue.

Dow Corning RTV silicone foam is an effective, economical firestop. And if you’re not sure how important that is, ask your insurance man. He’ll tell you how you can save in case of an actual fire.

Dow Corning RTV silicone foam. More than 2,000 F for over 3 hours. Incredible.

For more information and specifications, write Dow Corning Corporation, Dept. A-6403, Midland, Michigan 48640.
Soundsoak Wall Panels from Armstrong. Their quiet good looks are almost as pleasing as their acoustical efficiency.

The wall that contributes to beauty doesn't always contribute to silence. Carpeting or other fabrics, for instance, may look terrific, but their effect on interior noise leaves a lot to be desired.

Soundsoak Wall Panels are another story. Because only after we made them absorb noise did we make them radiate beauty. And we made them do both by taking perforated mineral-fiber board and covering it with a soft modacrylic fabric. What results is a 3/4-inch panel that absorbs 60% of the sound that strikes its surface—a fabric surface blending fibers of various colorations with vertical embossing in an attractive visual. Available in twelve updated natural and accent colors.

Soundsoak Wall Panels are 30 inches wide and 9 ft high. They can be easily installed on interior plaster, drywall, brick or block walls by simply attaching aluminum splines and locking the panel edges around the splines for total concealment.

And whether you’re concerned with new construction or renovation, you’ll be hard put to find anything else that provides such a striking effect on the eye and such a quieting effect on the ear.

To learn more, write Armstrong, 420 E. Rock Street, Lancaster, Pa. 17604.

For more data, circle 1 on inquiry card.
The next two years will see "continued recovery" in construction, followed by three years of "sluggish growth," according to a forecast published by the F. W. Dodge Division of the McGraw-Hill Information Systems Company. Much of this activity will occur in the area of nonbuilding construction, which is expected to increase its share of total construction from an historical 22-24 per cent to 30 per cent. Over the next two years nonresidential building is expected to follow the recovery of residential building, but Dodge predicts that the cycle will flatten out in 1978. Dodge also predicts that the South will be the nation's most active growth region, by 1981 representing as much as 33 per cent of total construction demand.

Congress has finally passed an energy bill to force energy conservation in new buildings, and to encourage retrofit in existing ones. The Department of Housing and Urban Development will develop performance standards which will be mandatory in all code jurisdictions. Details on page 34.

July contracts for new construction totaled $9,774,133,000, a nine per cent increase over the July 1975 figure, according to the F. W. Dodge Division of the McGraw-Hill Information Systems Company. Housing contracts totaled $4,148,869,000 for a 35 per cent increase over last year's figure. Reporting that starts for one-family houses have leveled off at about 1 million, Dodge's chief economist George A. Christie adds that Dodge figures indicate "the incipient recovery of apartment building," reflected in the sizable gain in apartment starts shown in July. Nonresidential building, at $3,031,362,000, was off one per cent from last year's figure, and nonbuilding construction fell eight per cent to $2,593,902,000.

Congress has sent to the President a tax revision bill eliminating real estate tax shelters and fostering the preservation of historic buildings. Details on page 35.

A World Trade Center, American style, is planned for the banks of the Moscow River. Welton Becket Associates designed the $190-million complex. Details on page 35.

Michael Tenenbaum, Elliott L. Richardson and Richard S. Cornwall will be keynote speakers at the Building & Construction Exposition & Conference, a three-day meeting sponsored by the Producers' Council to be held in Chicago next month. Details on page 35.

Richard Bender has been named dean of the College of Environmental Design at the University of California in Berkeley. Mr. Bender, who has been chairman of the school's department of architecture, succeeds William L. C. Wheaton, who continues as professor of city and regional planning.

The Museum of Modern Art has appointed J. Stewart Johnson Curator of Design. Mr. Johnson was most recently Curator of Decorative Arts at the Cooper-Hewitt Museum of Design in New York City.

Architect Joel Rudick has been designated chief of the Interior Planning and Design Branch of the GSA's Public Buildings Service. Details on page 35.

The Milwaukee Art Center has established the Prairie Archives, a center for the collection and study of Midwestern architecture of the Prairie School. The archives will not only provide materials for scholars but will also undertake the study of archival techniques for architectural collections.

The American Institute of Architects, vocal supporter of energy conservation, will put its own house in order. A special task force will analyze opportunities for saving energy in the Institute's Washington headquarters, and in the Octagon, with the stated goal of reducing energy consumption by 60 per cent. Herbert E. Duncan, Jr., FAIA, heads the task force, whose other members are Robert A. Burley, AIA, and David L. Perkins, FAIA. They will submit their report by the end of the year.

The Advisory Council on Historic Preservation has published "Adaptive Use: A Survey of Construction Costs," a comparative study of 36 completed samples of recycled buildings. The costs of each of these are compared with the others and with the average cost of new construction of similar building types. The report is available free from the Advisory Council on Historic Preservation, 1522 K Street, NW, Washington, D.C. 20005.

The AIA and Sweet's are together conducting a test for a new source of building product information for architects, engineers and contractors. A trial volume of generic product information, obtained from trade associations, will be circulated to design and contracting firms for evaluation. The test will involve information only from associations representing manufacturers of concrete, cement, stone, masonry and wood products.
Strong sanctions were favored by the AIA, but opposed by most groups representing construction, financial and real estate interests. As a result, the final language softens the impact of sanctions. The sanctions can only be activated if Congress expressly permits them with a special resolution. And a borrower in a noncomplying jurisdiction can independently seek certification that his design meets or exceeds the standards and thereby regain his borrowing rights.

HUD is already preparing to develop the standards and is asking Congress for a special appropriation to cover its costs, plus the related expenses of the Energy Research and Development Administration, National Bureau of Standards and the soon-to-be-created National Institute of Building Sciences—all of whom will assist in the work.

The standards, under the law, must be prepared within three years. Jurisdictions will have another six months to study and adopt them before sanctions could be imposed.

Other provisions in the law will have more immediate, though less significant, impact than the standards clause. These include:
- $200 million in grants to pay for the distribution and installation of insulation materials for existing dwellings occupied by low-income families;
- another $200 million for a research program designed to determine which method of financial assistance would be most effective in encouraging homeowners to retrofit their houses for greater energy efficiency—the options are loan guarantees, tax credits and grants;
- a $2 billion program of Federal loan guarantees for large energy users such as local governments, nonprofit hospitals and educational institutions for making energy efficiency improvements to existing facilities;
- a Federal Energy Administration program to demonstrate ways of improving electric utility load management and other rate-making changes to encourage efficient use of electricity in buildings;
- $37 million for FEA to use in helping to commercialize solar energy equipment and for a grant program for HUD to support the retrofit of houses with solar systems;
- $7.5 million for FEA to create an “extension service” of agents to counsel home and building owners on efficient energy consumption.

Sen. Edward M. Kennedy (D-Mass.) was the Congressional mastermind for lumping all the provisions together. He had originally proposed that the government guarantee up to $10 billion in loans for all owners willing to undertake energy conservation improvements in existing structures.

Despite its importance, the energy conservation legislation was not widely reported when it was enacted. The reason: the energy conservation efforts were tied to controversial legislation extending the life of the Federal Energy Administration for 18 months and removing price controls on petroleum from certain oil wells.

Without Kennedy’s high-risk strategy of lumping all the energy conservation measures with the FEA proposals, it is unlikely the legislation would have won approval this year at all. standards portion of the measure, for instance, had its beginning two years ago as Title X of the Administration’s proposed Housing Act of 1974.

The proposal first passed the Senate last summer and included tough borrowing sanctions. A House version, without the sanctions clauses, was followed, but congressee were unable to come to an agreement. Moreover, the retrofit provisions had only cleared the Senate, and committees had been slow to take them up.

Success in getting the proposed through is attributed to two things. First, the Congress was in a hurry finish with the FEA extension bill could adjourn for the Republican nominating convention. And second, the last-minute compromises—such as the weakening of the sanctions clauses—allowed many one-time foes of legislation to accept the measure.

The opposition was led by U.S. Chamber of Commerce’s Construction Action Council, a group close to material suppliers and trucking Council Director Harvey G. Hallenbeck Jr., report however, that his group found itself agreement when the bill finally through Congress.

This probably means that the force of the legislation will go into effect without hindrance by foes—an important factor if the law is to have its intended purposes.

William Hickman, World News.

Georgia AIA chapter takes county to court

The Georgia chapter of the AIA recently filed for a permanent injunction against Gwinnett County in Gwinnett County Superior Court for violating state registration laws that require architects and engineers be certified is still under consideration by court.

Earlier, a temporary injunction was denied by the court. If the permanent injunction is also denied, the will appeal to the Georgia Sup Court.

The action resulted after Gwinnett County, which is north of Atlanta awarded a contract for an 11,000 fire station, but, according to a source, did not have a certified architect or engineer. Furthermore, the submitted specifications limited and incomplete.

The source said that the exceptions have been in part since Georgia since the 1930s. Explains the judge’s denial of a temporary injunction, he said, “Smaller cur others, the judge can see the viewpoint easier than I can.”—Brenda Lloyd, World A Atlanta.

New York gallery devoted to architectural drawing

New York’s Spaced gallery, the brainchild of architect Judith York Newman, is dedicated exclusively to the exhibition and sale of architectural drawings, prints, photographs and models.

Though the gallery offers samples of conventional architectural drawing, its major exhibits are more likely to revolve around the nonprofessional art of architects—though not simply the architect as weekend painter. The current Spaced show of the drawings and watercolors of Victor Lazzaro is a case in point—curious, not to say mysterious, fusions of natural and built environments that emerge from the imagination of an architect. (Mr. Lazzaro, who formerly practiced architecture in Connecticut, now teaches architectural drawing at Pratt Institute. A detail of his ink drawing Walled City is shown here.)

The exhibit remains in place through October 21 at 165 West 72nd Street, New York City (also Mrs. Newman’s architectural offices). It will be followed by an exhibition, through November, of mazes and toys designed by architect Rolf Myller.
producers' Council names inference keynoters

Michael Tenenbaum, president of Indal Steel Company, Elliot L. Richardson, Secretary of Commerce, and Richard S. Cornwall, president of the Business Credit, Inc., will open the three-day Building & Construction

The conference will be adressed by Dr. Robert C. Seams, Jr., Energy Research and Development Administrator.

Technical issues, in addition to technical material discussed at the conference, will be covered in a special program, "Energy-Rama." This program will offer a special series of half-hour papers and presentations on four sessions, extending over the 25 days of the conference.

The BCEE, held for the third year, will revolve around the theme "Promotion & Performance (our Blueprint for Profit!)

Regular conference sessions will cover such matters as the design, marketing and financing of commercial and residential buildings, as well as modernization and recycling of older buildings, energy conservation, areas and government control, and the marketing of professional services.

Exhibit and attendance information can be obtained from the Charles Lown Organization, 131 Madison Avenue, New York, New York 10017.

G. Robinson, Producers' Council, 7 Massachusetts Avenue N.W., shington, D.C., 20036 can supply information on the conference.

Keynoter Joel Rudick points to PBS post

General Services Administration named architect Joel Rudick chief Interior Planning and Design of the Public Buildings Service.

ruction, the amortization requirements will be phased in over a period of time.

Congress did, however, reinstate the special five-year depreciation rule for the construction of low-income housing. The rule, which expired last December 31, has been extended for six years, and the expenditure limit has been increased from $15,000 to $20,000.

Residents of vacation houses who both use and rent their houses will have new restrictions placed on allowable deductions for the maintenance and depreciation of these properties.

The bill encourages barrier-free building by allowing a new deduction up to $25,000 for any business incurring expenses for "the removal of architectural and transportation barriers" to the handicapped and the elderly. —Frank Swoboda, World News, Washington.

Americans will build a World Trade Center, complete with atrium, in Moscow

An American-style World Trade Center, to accommodate international businessmen, will rise on the bank of the Moscow River. Designed by Welson Becket Associates, the $1.990-million center is being developed by Occidental Petroleum Corp., under a contract from V/O Promoshnimport, a Soviet foreign trade organization representing the U.S.S.R. Chamber of Commerce and Industry. The American architects will be assisted by a Soviet architectural-engineering design team, Mosproekt-2, for local design and construction requirements.

The complex will comprise a 20-story office tower, a 600-room hotel (at night in photograph) and a 625-unit residential hotel, all having access to a three-level skylighted mall. The guest hotel will have a nine-story atrium with four glass elevators; on its lower level, a convention center will include a 2,000-seat Congress Hall. The mall will house, among other things, restaurants, a theater, a health center and, near the residential hotel, a supermarket.

The complex will also contain an underground garage for 600 cars.

The center will be built of precast concrete and bronze-colored solar glass. Completion of construction is scheduled for 1979.

Tax bill fosters historic preservation, reduces real estate tax shelters

On the eve of adjournment, Congress approved a massive omnibus tax revision bill that has been in the works for three years and that ranges over a wide variety of issues affecting corporations, investors and individuals. The President is expected to sign it.

Some of the provisions covered in the bill may have implications for the construction industry.

- In an effort to preserve historic structures, Congress has banned the use of fast tax write-offs for the construction of new buildings on sites where certified historic buildings have been demolished. The move also ends deductions for the cost of demolition. Specifically, Congress voted to end the use of accelerated depreciation benefits for new buildings constructed on historic sites. The costs of acquiring and rehabilitating historic buildings, however, will now be eligible for a faster write-off.

- Under the new legislation, real estate and other tax shelters will be limited. Real estate investors will no longer be able to take as many fast write-offs, particularly in the commercial real estate area. Beginning January 1, investors in commercial real estate projects will be allowed to deduct only half the construction-period interest and tax costs. The other half of these costs must then be capitalized and amortized over a four-year period; the amortization period will increase to 10 years by 1982. (These rules are not intended to affect institutional lenders but are, rather, aimed at the independent investors.)

Somewhat tougher changes have been approved for residential housing construction costs, where 100 per cent of construction-period interest and tax costs will have to be amortized over a 10-year period by 1984. As with the new rules for commercial construction, the amortization requirements will be phased in over a period of time.

Congress did, however, reinstate the special five-year depreciation rule for the construction of low-income housing. The rule, which expired last December 31, has been extended for six years, and the expenditure limit has been increased from $15,000 to $20,000.

- Owners of vacation houses who both use and rent their houses will have new restrictions placed on allowable deductions for the maintenance and depreciation of these properties.

- The bill encourages barrier-free building by allowing a new deduction up to $25,000 for any business incurring expenses for "the removal of architectural and transportation barriers" to the handicapped and the elderly. —Frank Swoboda, World News, Washington.

FTC issues advisory on the operation of new product warranty regulations

New product warranty regulations coming out of the Federal Trade Commission will likely apply to such building materials as roof shingles, insulation, exterior siding and underground pipe when they are purchased over the counter, or contracted for in a specific building improvement project. FTC commissioners say, however, that such products would fall outside warranty regulations when they are integrated into a structure at the time of sale. Then, they are considered real property.

These commission views were handed down in an advisory to the Johns-Manville Corp., which was concerned how the Magnuson-Moss Warranty Act might apply to various building products. Interpretations of the act are being given by the commission to assist various manufacturers in assessing its impact. While the interpretations are advisory in nature, they must be complied with, the FTC says. Thus if building supply manufacturers wish to cover their products with warranties, they must follow the various warranty regulations that are coming out of the FTC if the products are to be sold directly to consumers through such retail outlets as hardware stores, or if they are sold for a specific building improvement project.

Warranty rules being considered by the FTC under authorization of the Magnuson-Moss Act will apply to a long list of warranty procedures, including the settlement of disputes, product repairs and the replacement of warranted products. —Michael Mealey, World News, Washington.
Permalite Pk Plus roof insulation is a true sandwich in which the urethane core is protected from extreme temperature fluctuations. The perlite top and bottom layers help maintain the insulation efficiency of urethane and help protect it from degrading under excessive heat.

Perlite top and bottom layers protect the urethane core from hot asphalt, built-up heat and linear change.

Permalite Pk Plus is an extension of the proven Permalite Pk board. It adds another layer of perlite to shield the urethane layer from excessive temperature changes and thermal shock. In hot weather and long exposure to full sun, the top perlite layer also acts as a heat sink to help protect the BUR from excessive loss of natural oils and elasticity. It helps keep the urethane warp-free and stress-free. Asphalt can be applied at normal application temperature.

Permalite Pk Plus comes in four nominal thicknesses consistent with standard lumber sizes and fascia dimensions, with “C” values ranging from .10 to .06. It’s easy to cut, fit, lay and adapt to rooftop mechanical services. It contains no asbestos.

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CIC defines its ideas
Office of Construction
After two years of debate, construction's single-voice group has set on a specific recommendation for creation of a scaled-down Office of Construction in the Department of Commerce. At a recent meeting, the National Construction Industry Conference approved a report recommending creation of the office as a division of Commerce's Domestic and International Business Administration.
NCIC leaders want the proposed office to gather industry statistics and information, and 'see Commerce's construction-related activities.
Only the American Institute of Architects' representative refused to vote the recommendation, on the and that it must be approved by the tute's board. NCIC now has 30 association members, representing construction trade groups and professional entities.
Legislation would not be required create the office as proposed: the story of Commerce (currently Elma W. Richardson) could use his executive powers to do so. The NCIC proposal suggests the office be staffed by existing Federal personnel.
NCIC associations have had the concept of Construction as the focal point of their campaign since it was tested in the summer of 1974. There an early clamer to establish the agency as a cabinet-level office or a arm of the Office of Management and Budget.—William Hickman, Id News, Washington.

It-use Federal offices died by Congress
Gress is working on legislation that requires the General Services Administration to design Federal buildings to include commercial stores, and apartments along with office space so the structures will be around-the-clock utilization.
So far, the law has limited purpose Federal building by a requirement that leasing to nongovernmental users must be awarded to designated small business, minority or handicapped renters. The legislation considered encourages GSA to very solicit commercial space who might complement commercial, cultural, educational and recreational functions in the neighborhood of public buildings. The legislation also encourages GSA to preserve existing historic or architectural Lasco through their use as Federal offices. Additionally, gress might approve a provision in all government agencies to require that buildings are designed and so to as be accessible to physically handicapped.—William Hickman, World News, Washington.

In Swaziland, housing Prototypes offer an answer to squatter settlements
Eric C. Fisher, an architect who has returned to practice in Schenectady, New York, spent three years (1971-74) as chief architect to the Government of Swaziland. Under the aegis of the United Nations, he studied the problems of housing the poor and developed a group of designs for low-cost housing. Some of Mr. Fisher's observations and his description of the housing designs are published here.

The usual design for relatively cheap housing in Swaziland consists of small concrete-block houses with metal roofs in the urban areas, traditional construction such as mud-and-wattle and beehive grass houses in the rural areas, and a combination of traditional construction with metal roofs in squatter areas. For the experimental project described here, it was decided to use an innovative approach, both in planning and in construction method.

An area was selected of about six hectares in the Zakhele township of Manzini, which forms part of a site-service scheme completed several years ago. Roads, sewers and water mains had been installed which imposed limitations on the site planning.

It is an accepted fact that housing for low-income groups often becomes very densely occupied; in many instances, a whole family shares one room, whether adequate sanitary provisions have been made or not. The letting of rooms by the owner of the house is also very common. Attempts at controlling density are usually inefficient. With this in mind, most of the pilot models were designed to provide direct outside access to all rooms.

The courtyard designs (one of which is shown here) consist of two, three or four rooms, plus bathroom and kitchen, grouped around a fenced-in courtyard—an area which can be used for social purposes as well as for outdoor cooking during the dry season. These designs can be used in terraces with party walls, allowing higher land use and savings in utility and construction costs. Other designs revolve around patios, which also provide access to all rooms; the back of adjoining units forms the patio enclosure. These units can be arranged in groups of six to 10, requiring even less road frontage than the courtyard designs. In addition to these models, standard compact detached houses and a minimum-size semi-detached house were included in the pilot scheme.

To arrive at a valid alternative to the standard concrete block construction, various other methods were explored, including the use of timber prefabs, asbestos board and steel frame prefabs, soil-cement blocks, etc. It was finally decided to use a system of precast lightweight concrete panels supported on concrete ground beams. This proved to be both economical and speedy. Resulting construction costs were about 33 per cent below the equivalent standard methods.

Concrete piles were cast at 2.75-meter intervals directly into the ground; these supported the precast ground beams. Wall panels 0.9 by 2.7 by 0.1 meter were cast on concrete beds with hollow cores formed of steel pipes; these were removed before the concrete set. The panels weighed about 350 kilograms, and could be lifted by ten men (see photo at top). Panels were stacked vertically after a few days and allowed to cure. They were then set into slots in the ground beams and levelled with wooden wedges. Vertical joints between panels were reinforced and grouted. Door and window units were designed to fit into the module. Roof construction was timber framing with corrugated metal roofing and asbestos board ceilings. Panels did not require plastering but were painted directly on the exterior and interior. The resulting construction was equivalent or superior to the conventional concrete block buildings, both in life expectancy and maintenance.

At the completion of the pilot scheme it was decided to continue with a major project of 115 additional units. A small community center and market was also included. The designs provide a cost range of between 1,300 and 2,300 emalangeni ($1,500-2,650), putting these houses within the economic reach of all but the poorest. The initial 125 houses will be owned by the government and leased to tenants. In the remainder of the area, some houses may be built for sale.
53 hospitals rely on EPICORE's hanging, loading, and fire ratings.

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Visit a hospital built with the EPICORE® Composite Floor System. Look closely at the piping and ducts, the ceilings and lights, and the mechanical and medical support equipment. They're suspended with EPICORE hangers from EPICORE's dovetail ribs.

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A. Wedge Bolt Hanger
   Safe load capacity per hanger: 1000 pounds.*

B. Standard Hanger
   Safe load capacity per hanger: 200 pounds.*

*Providing the floor system is designed to support the load.

Stop at a construction site. You'll see that EPICORE Deck is engineered for heavier loading and for full AISC shear connector values and solid slab design in composite beam assemblies. And when you're examining fire ratings, consider that EPICORE has the best for any two-inch deck.

Fifty-three hospitals speak well for the EPICORE Composite Floor System. To hear what designers, users, or Epic engineers can add to the subject, contact Bob Ault, Vice President - Engineering.

Central Medical Pavilion, Pittsburgh, Pennsylvania
Architect: Rea, Hayes, Large & Suckling
Contractor: Dick Corporation

Children's Hospital of Philadelphia
Architect: Harbeson Hough Livingston & Larson
William A. Amenta
Associated Architects
Structural Engineer: A.W. Lookup Company
Contractor: Baltimore Contractors, Inc.

For more data, circle 25 on inquiry card
Pei unveils new design for Kennedy library

The housing of Presidential archives has become, at least since the establishment of Franklin Delano Roosevelt's library at Hyde Park, an increasingly formalized matter. The library for the archives and memorabilia of John F. Kennedy's administration evoked perhaps more than its share of emotional, philosophical and esthetic contention. After a prolonged effort to place a building on the campus of Harvard University (the late President's alma mater), the Kennedy family and the library corporation finally elected, late last year, to site the building at Columbia Point in Dorchester, on the campus of the University of Massachusetts. I. M. Pei & Associates, who had designed two buildings for the Harvard site, have now unveiled their third design for a Kennedy library. The precast concrete building will accommodate two orders of visitors: scholars who come to use the research facilities in the eight-story archives building, and the general public who comes to tour the museum and to attend the museum's film showings in two 300-seat theatres. Remembering President Kennedy's fondness for the sea—he was a Navy man and an enthusiastic sailor of small boats—the architects have established an intimate relation between the building and the waters of Dorchester Bay. An eight-story glass pavilion, supported by a metal space frame, commands an expansive view of sea and sky, and a broad quay extends a promenade over the water. The President's sloop Victura will be on permanent exhibit outdoors.
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We think that simple fact speaks for itself.

For more information on insulating glass units and the polysulfide base sealants that give them long life, write Marketing Communications, Thiokol/Chemical Division, P.O. Box 1296, Trenton, New Jersey 08607.

Based on calculations from the ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc.) Guide and Data Book.

For more data, circle 26 on inquiry card.

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Friction Materials • Ski Lifts • Pyrotechnics • Closures • Rubber and Rubber Chemicals • Radiation Curable Polymers and Coatings
SH&G designs Saudi Air Force HQ for Riyadh

The Royal Saudi Air Force will build a $50-million headquarters complex, designed by Smith, Hinchman & Grylls, at Riyadh. The 650-ft-long four-story office building will front on a major thoroughfare half a mile from Riyadh airport. The building, divided into two parallel sections, will be bisected by a long skylighted garden. A mosque integrated with the office structure can accommodate 1,200 people. On the ground floor, the building will provide a 500-seat auditorium, cafeteria and dining facilities for 1,200, and a special dignitaries' entrance. Guards will be housed in single-story barracks on the site, which also contains a utility building and parking for 600 cars. The contract will be administered by the Mediterranean Division of the U.S. Army Corps of Engineers.

Architects and artists share school studios

At the University of Michigan, the College of Architecture and Urban Planning and the School of Art jointly occupy a building designed by Swanson Associates. Art studios are situated at the front of the building, where monitors take advantage of the northern exposure. Architecture students occupy a virtually unobstructed studio at the top of the center building, where a long glass wall, overlooking the lower art building, also gives north light. The third building houses shops for building technology, ceramics and sculpture. The schools share a courtyard for exhibits.
IF YOU'RE LOOKING FOR AN INDUSTRIAL DOOR THAT'S SIMPLE, COMPACT, STRONG, RELIABLE, SAFE, FAST AND QUIET, HERE IT IS . . .

No counterbalancing springs. No overhead struts.

Dead air in hollow sections provides positive insulating values.

Baked enamel finish coat on curtain.

Close fit at side guides minimizes draft penetration.

Cables and control wires out of sight and protected within hollow door sections.

Sections not mechanically connected—easily removed for repair.

Special controls are included in bottom section to reverse door travel immediately on contact with any obstacle.

THE INRYCO® TELESCOPING DOOR

The Inryco Telescoping Door has no counterbalancing springs or weights and few moving parts subject to wear and tear. Thus it eliminates the major causes of operating failure—provides the reliability so critically needed at high traffic openings. Outstanding resistance to damage—easy repair. Fast, quiet operation. Simple, all-steel construction, with two coat baked enamel finish on door panels. Standard sizes available for doors 100 to 400 sq. ft. in area. Custom doors furnished in smaller sizes and larger sizes thru 30 ft. x 30 ft.

For further information, see Sweet's Arch. or Ind. Constr. Files, section 8.9/In. Or write to Special Products Group—Milcor Division; INRYCO, Inc.; Dept. K, 4033 W. Burnham St.; Box 393; Milwaukee, WI 53201.

For more data, circle 27 on inquiry card
simple truths


In many ways, Landscaping the Saudi Arabian Desert, is a simple book; devoid of jargon, it seeks for simplicity in its solutions to environmental problems. At once a handbook for developers (which, according to the authors, is the first book to present and interpret the hot desert environment as it relates to building and development there), it is also a treatise—taking issue with those who have looked to technology as the ultimate solution, in this case as the sole way to enable an arid environment to support life.

With the rapid pace of building in the Middle East, entrepreneurs and engineers and perhaps even architects are eager to use advanced technology to construct what the authors would call "over-designs." Buckminster Fuller's panacea, though, in the form of artificially-created domed cities is effectively rejected as well, as the authors turn to more systemic methods—methods that operate within the desert environment to restore an ecological balance and thus assure human survival. These methods include interspersing deep-rooted plants and plants with lateral roots (maximize moisture by tapping much of the potential), and planting trees on berms at a community's borders (to lift the wind, trap sediments, catch rain, and even eventually become a source of fodder, fruit, and medicine).

The authors maintain a high respect for Arabian culture and seek to preserve Middle East modes of life. "Large open spaces may be required for equestrian sports," they write. These activities raise a great deal of dust and require sequestering from housing and other activities where the dust would be a problem.

The screen of hardy shrubs, and trees with lacy foliage such as Albizia, or tomentose leaves such as Ficus and Fraxinus velutina, especially on the lee side of horse riding areas will filter most of this dust out."

This concern for preserving Arabian traditions, for avoiding the cultural convulsions that occur when blending Western technology into an environment for changing a familiar way of life, is evident in other ways: Abstracting from specific Middle East customs and reasons therefore, the authors draw analogies between human and environmental designs.

Throughout, the book constantly emphasizes the need for more research in all aspects of desert and their designs. A salient point, too, is the belaboring of the issue best exemplifies the book's major flaw: careless writing.

Also received


To celebrate its 70th anniversary, Sweet's Division of McGraw-Hill Information Systems Company is offering for sale reproductions of its first Sweet's Catalogue File, Sweet's Indexed Catalogue of Building Construction. First published in 1906 by the Architectural Record Company, the index contains 435 manufacturers' catalogues of building products, most of them illustrated with photographs. The products and photos range from architects' supplies to window guards with everything from bells to ornamental metal works in between. Descriptions of the products are often colorful and reflect the language and flavor of an earlier era.

The book contains an endorsement by leading architects of the time, and an introduction by an architectural professor of note in 1906, Thomas Nolan, FAIA, explaining the purpose, intent, and background of the catalogue. Of the original manufacturers included in the original book, many are still in existence today, and are still distributing their catalogues via Sweet's.

PRESERVATION AND BUILDING CODES: Papers from the Preservation and Building Codes Conference sponsored by the National Trust for Historic Preservation in May, 1974; The Preservation Press, Washington, D. C., 1976, 96 pages, illustration, paperback, $4.00.

This book contains 25 papers given by architects, building code officials, and preservationists at the first national conference held on the subject. Sponsor of the conference was the National Trust for Historic Preservation. Papers in the book first explore current issues and solutions, dealing with historic preservation work in New Orleans, Seattle, New York, Richmond, and Alexandria, Va., and other communities. These are followed by a section on national code organizations, and topics of discussion include the following: historic buildings and the Basic, Uniform, Standard, and National building codes; application of the Life Safety Code to historic preservation work; and Occupational Safety and Health Administration (OSHA) interests in building requirements.


This is a new publication prepared for the preservation handbook series of the Office of Archaeology and Historic Preservation of the National Park Service. This preliminary report, along with others still in preparation, is intended to be used by administrators, architects, and others involved in the preservation and the maintenance of historic properties owned by Federal Agencies and by State and local governments. Copies may be obtained by writing to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and asking for publication number 024-005-00637-1.
Alkco designs: a new group of Alkco-Lites for task lighting areas.

Designed to deliver direct task lighting & indirect general illumination. Ideal for wall or landscape partition mounting. Designs include 1 & 2 lamp units with broad selection of lengths & optional equipment. This is the most comprehensive thin-profile direct-indirect line of fixtures available today... all with superior Alkco construction. Alkco designs... with you in mind!

20 ga. CRS housing, white baked enamel or stainless steel.
Continuous row mounting.

Inquiries for illustrated catalog handled promptly.

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Bally belongs in your reference library

For engineering information about walk-in coolers, freezers or refrigerated buildings, BALLY'S WORKING DATA CATALOG contains the most comprehensive data ever prepared. Easy to read. Easy to understand. Includes more than 400 photos, drawings and charts. WRITE FOR FREE COPY.

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Interface, interface, interface, interface, interface, interface, and MORE interface.
Kalwall is a complete, translucent, insulating building panel system. We know how much energy Kalwall saves as a Window Replacement — owners have reported savings over 30% in heating and 15% in lighting. Imagine what the savings can be for a new building when Kalwall is used instead of any of the other natural light transmitting materials!

For optimizing the buildings energy efficiency, Kalwall offers a choice from these Key Factors:

- "U" Factors between .06 and .40!
- Light transmitting values between 3% and 75%
- Shading Coefficients from .85 to less than .06!

Whatever your project — Wall, Roof, Window Replacement — Kalwall has a complete System that can cut total energy consumption; and still win design awards!

Write or phone for technical and design data, plus a copy of our 1976 full color catalog.
Truth is that in 1956 when the need for raised flooring in computer rooms became apparent (with function the chief design criteria) a stringerless floor made up of pedestal mounted die-cast aluminum panels was the choice. That's how the Floating Floor System was developed. Since then, Floating Floors® have been providing trouble-free service in thousands of computer rooms.

Stringerless design makes Floating Floors the only true infinite access floor system. Male and female locking devices, at four corners of each floor panel, provide the highest lateral stability. In fact, Floating Floors meet Federal specifications for seismographic zone #3 (San Francisco).

The sad truth is that in order to compete with Floating Floors, other manufacturers have had to promote floor systems of inferior materials and design such as stringer-supported wood and steel. While costing a little less initially, these other floor systems can represent a very bad investment over the long term.

Computer downtime due to electrostatic build-up or magnetic dust may result from one of these wood or steel stringer-supported floors. Costly delays are often caused by the inconvenience of working under stringers, or disassembling and re-assembling them.

Floating Floors on the other hand have proven to be problem-free even after as many as 20 years of service. Monolithic construction with aluminum ensures dissipation of static electricity. And since aluminum is non-magnetic and does not require painting, iron rust and paint flakes are not present to enter the air and interfere with computer operation. Aluminum will not of course, rust, warp or burn.

The Floating Floor system is designed to meet future expansions and changes. Components can be easily changed around since precision die cast and milled aluminum floor panels ensure a uniformity in size (machined to +.005 — .000) not found in hand assembled products. And there is plenty of strength for the installation of new equipment.

In fact, the overall quality of Floating Floors is so good that we are able to give a FIVE YEAR UNCONDITIONAL GUARANTEE AND BUY-BACK PROGRAM with every floor installed.

For more complete information refer to Floating Floors bulletin 10.27 FL as shown in SWEETS under Specialties — Access Flooring. Call us for assistance.

FLOATING FLOORS, INC.
6955 Wales Road, Toledo, Ohio 43619
Tel: (419) 666-8750

IN CANADA: Bruce (EDP) Services Ltd.
3650 Weston Rd.
Weston, Ontario
Tel: (416) 741-0854

For more data, circle 34 on inquiry card

FLOATING FLOORS, INC
Available World-wide from Licensees and Distributors • Installations Coast to Coast
"Why do I think GAF® Mineral-Shield® Roofing is so hot? Because it's cold-applied and that makes a big difference."

Bill Steinmetz
Chairman
Midland Engineering Company, Inc.
South Bend, Indiana

"A play on words, hardly," Mr. Steinmetz continues. "We've been thinking cold around our company for over six years now. With some 400 cold process roofing jobs under our belt, we know that Mineral-Shield roofing performs. Not only can we recommend it with complete confidence to our customers, but we have also found through our extensive job experience that there are many advantages and benefits to the roofing contractor.

"Because Mineral-Shield is cold-applied, the need for heating kettles and tankers is eliminated. Also gone are hot luggers, felt layers, and gravel spreaders. In fact, a contractor's job equipment needs are reduced substantially and the cold process application equipment can easily be towed to the job site by conventional pick-up truck. The economics of this are obvious...less handling, faster job set-up, less equipment maintenance, not to mention the elimination of lost time due to accidents or burns.

"What really sold us on GAF Mineral-Shield Roofing system is that it works! And after all, that's the name of the game whether you're looking at it from the point of view of the owner, roofing contractor, or architect."

GAF Mineral-Shield is a modern cold-applied built-up roofing incorporating multi-ply of roofing membrane plus layers of roofing mastic and a surfacing of white mineral granules, usually applied by mechanized spray equipment. All components—roofing membrane, mastic and granules—are factory-finished under rigid GAF quality control. A Class "A" Underwriters' Laboratories Rating is available. Guaranteed by GAF when applied according to published specifications.

GAF Corporation
Industrial Roofing and Waterproofing,
140 West 51 Street,
New York, New York, 10020

Please send me further information on GAF Mineral Shield Cold-Applied Roofing.
Please have a representative call.

Name ________________________________
Firm ________________________________
Address ______________________________
City __________________ State ______ Zip ______

GAF® Mineral-Shield® Roofing

For more data, circle 35 on inquiry card
New Oasis "Soft Touch" cooler makes it easy for the handicapped to get a drink.

This new wall-mounted cooler is designed for people whose physical handicaps make it hard for them to get a drink from conventional water coolers. Wheelchair users, for example, will find it much handier.

Two "Soft Touch" levers—one on each side of the cooler—operate up or down at the slightest pressure. Either one of them will activate the bubbler, and there are no hard-to-use knobs or buttons. The levers can be positioned or re-positioned any place in a 360° circle, and their unique no-linkage mechanism needs no adjustment.

A metal plate on the bottom of the cabinet protects against injury or torn clothing. All the other famous OASIS water cooler features are there, too, and it serves seven gallons of cold water per hour. It also conforms to A.N.S.I. Standard A117.1 Section 5.7.2 and Public Law 90-480.

Call or write for a demonstration of our new "Soft Touch" Model ODP7WM-D. See for yourself how much better it is. And how it makes it easy to get a drink when it's hard to get a drink.

OASIS®
The word for water coolers.

OASIS® Ebco Manufacturing Co., Columbus, Ohio 43213

For more data, circle 36 on inquiry card
The beauty of Alcoa Coilzak in parabolic luminaires is the beautiful way it controls light.

Parabolic luminaires are esthetically pleasing, the design of the fixture and in the type of light they dispel. This is particularly important where people work, read or shop, where low visual brightness contributes to a comfortable atmosphere. The secret is precise light control, made possible because the reflective material quality parabolic systems is Alcoa* Coilzak lighting sheet. Note that we said lighting sheet. A properly designed luminaire, reflectivity is only part of the story. Controlled image clarity and reflective diffusion are just as important. Alcoa Coilzak sheet is an Alzak®-finished reflector material that meets precise reflectivity and gloss standards.

Operating costs of a parabolic lighting system can be low. Because of its efficient light distribution, a properly planned system may require fewer luminaires, resulting in low electrical loadings. Savings in cleaning maintenance are possible also. Parabolic luminaires do not require a lens and the unique design, plus the static-free Coilzak louvers, resists soil and dust accumulation.

For more information on the many beautiful advantages of Coilzak lighting sheet in parabolic luminaires, write Aluminum Company of America, 551-K Alcoa Building, Pittsburgh, PA 15219.

*Registered Trademarks of Aluminum Company of America

1. One-piece constructed Coilzak reflector with accurately controlled parabolic shape.
2. Extruded aluminum trim.
3. Coilzak parabolic baffle assembly.
Our patient, the hospital.

So how do you diagnose remodeling in a hospital?

Get the team together: administrators, consultants, architects and AMSCO Systems Company. AMSCO has a lot to offer you—especially in the early stages. You see, most of our patients are hospitals.

Our diagnosis capability begins with a facilities and procedure evaluation. We tailor to your needs the widest range of material handling and processing systems available.

We work within your framework of time, space and money.

We provide single-source responsibility for a thorough program of support services. AMSCO Systems Company. Experienced in hospital remodeling as well as new construction.

For more data, circle 39 on inquiry card.
Flexibility, for easy rearrangement of everything in the area (including lighting fixtures), is No. 1

Being able to periodically reorganize work areas with complete freedom, knowing that power, telephone, intercom, even lighting fixtures, can be easily repositioned to serve the new setup — that's the biggest attraction of ODS Systems.

ODS Systems distribute power and communications circuits overhead in easily accessible surface metal raceways, and provide plug-in convenience for lighting fixtures and Tele-Power Poles. That's why it's such a quick and inexpensive job to relocate poles and their services at "new" work stations, or to change the lighting pattern as required.

Yes, it's true. Cost studies do show ODS Systems to be definitely less expensive to install than static, old fashioned systems. But even more important to building owners, managers, lessors and others is ODS Systems flexibility. That's what makes the savings go on and on.

Based on an actual job cost analysis. Complete ODS System information available on request.
Insulation is... $1,849,996

Projected cost to heat and cool the 46-acre J.C. Penney warehouse for 20 years with only 15/16-inch Fiberglas roof insulation.

Owens-Corning Fiberglas roof insulation – the only glass fiber roof insulation on the market. Dimensions: stable. Retains thermal value. Easier and less expensive to apply than organic/mineral boards. For over 30 years the best base for built-up roof decks.

* T.M. Reg. O.-C.F.
Projected cost to heat and cool the 46-acre J.C. Penney warehouse for 20 years with thicker 2¼-inch Fiberglas roof insulation. (After allowing for the added cost of thicker insulation!)

Remarkable savings of $972,024!

1. It saves on energy costs. Estimated savings per year, based on heating and electric cooling in Kansas City, Kansas, with a projected increase in energy costs at 7% per year and future savings discounted at 10% per year: $64,160— or $972,024 every 20 years. (Due to present availability of natural gas, propane and fuel oil are used as additional fuels for heating, and as a result of using these higher-priced fuels, actual savings may vary.)

2. It saves on construction costs. The first cost of this energy-tight warehouse is actually lower than if a less efficient version had been built! Reason: the improved thermal performance of the roof permits use of less costly heating and cooling equipment. The savings are large enough to cover the added cost of the thicker roof insulation twice over.

Smart for re-roofing, too

Thicker Fiberglas roof insulation also makes sense when it’s time to re-roof existing buildings. It should pay for itself within a few years, then go on saving thousands in fuel bills for years to come.

Find out the recommended amount of Fiberglas roof insulation to use to save your clients money. Call your Owens-Corning representative, or write F.K. Meeks, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

For more data, circle 41 on inquiry card
Here's how you can specify an extra-tough decorative surface for both horizontal and vertical applications of high-pressure laminates.

WILSON ART BRAND

TUF-SURF™
extra-abrasion-resistant laminated plastic

New Wilson Art brand TUF-SURF has eight-to-ten times the abrasion resistance of general-purpose laminates. You get assured durability for such high-traffic, high-use surfaces as supermarket checkout stands, bank service counters, and on most surfaces found in the fast-food industry. The 35 solid colors, patterns, and woodgrains provide you exceptional design latitude. • Protect against wear on high-traffic surfaces with Wilson Art brand TUF-SURF — another unique product from Wilson Art to help you specify the right product for each application. • Write for specifications information to Wilson Art, Ralph Wilson Plastics Co., 600 General Bruce Dr., Temple TX 76501.

TUF-SURF can take it!
You can't afford to waste water. Not at these prices:

MONTHLY METERED COMMERCIAL RATES
(Per 100,000 cubic feet or 748,000 gallons)*

<table>
<thead>
<tr>
<th>City</th>
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<tr>
<td>Boston</td>
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*From January 1976 survey conducted by Business Statistics.

So you can’t afford to install anything less than Sloan Flush Valves.

That’s because a Sloan Flush Valve uses 12½% less water than a flush tank. And this difference increases with use because leaks in tanks go undetected to waste even more water. With today’s water rates, it all adds up to a healthy saving on your water bill.

You also save on the energy needed to pump water within a building to upper floors and distant branches. The more water you save, the less energy you have to pay for.

Sloan Flush Valves save water another way, too. Because you can’t hold a Sloan Flush Valve open, it meters out the same minimal amount of water needed to flush one fixture, then shuts off automatically.

Put an end to water waste that’s costing you money. Find out how Sloan Flush Valves use 12½% less water. The facts are in a recent test report prepared by an independent laboratory. For your free copy, write us.

We will send you the facts.

Sloan Flush Valves.
Anything else is a waste of money.

SLOAN VALVE COMPANY
10500 SEYMOUR • FRANKLIN PARK, ILL. 60131

For more data, circle 43 on inquiry card.
Look At Docklevelers
Two Ways

To Save Your Clients' Money

VIEW ONE. With today's high labor and material handling costs, more and more owners are realizing they can't afford inefficient plain concrete docks. Many are adding permanent docklevelers to their present docks... and insisting they be included in new docks. Why? Because a permanent dockleveler will pay for itself in less than a year. Some figures show a permanent dockleveler can save $4000.00 per truck position per year... and often give 12 to 15 years service. VIEW TWO. Take an inside look at a Kelley Permanent Dockleveler. Compare it with any other dockleveler. The patented Kelley safety and operating features — cross traffic legs, single enclosed power pack, lip hinge supports, single adjustment point, plus optional emergency "Panic Stops" — are not available on any other dockleveler. These features are what make Kelley the world's most preferred dockleveler... because they help attendants and equipment operate more efficiently... with far greater safety. So why let your clients settle for substitute docklevelers? Recommend Kelley. Then contact your Kelley Representative. He's well qualified to help you choose the best size and capacity dockleveler for your client's needs.
PPG GLASS GAVE THIS AGING HOTEL A BEAUTIFUL FACE-LIFT.

Skirvin Tower in Oklahoma City isn't a hotel anymore (it isn't even Skirvin Tower anymore), but it is, once again, a useful, profitable building.

It was completely remodeled from the ground up and from the side out.

Now, it's the 101 Park Avenue building, home of some of the poshest offices in the city, and headquarters of Continental Federal Savings & Loan.

It's a beautiful, modern office building. And PPG Solarban® 480 "Twindow" reflective insulating glass played an important part in the transformation.

First of all, it looks sensational. Seeing the blue Oklahoma sky and dazzling sunsets reflected in this building, it's hard to remember the dowdy, old bricks.

But, perhaps more important, the glass is incredibly practical. Its reflective coating reduces glare and solar heat gain. And during the burning summers on the Great Plains, this is a welcome relief to the air-conditioning system.

The glass is also double glazed for insulation. So when those bitter cold snaps blow down from the north, everybody stays warm and cozy.

Not all old buildings can or should be remodeled. They shouldn't all be destroyed either. Some, like the Skirvin Tower Hotel, present a genuine architectural opportunity. Not to mention a challenge.

We think there's no better way to meet the challenge and take advantage of the opportunity remodeling offers than with PPG reflective glass.

Write to us. We'll send you a Sweet's Catalog telling you more about it. PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

Owner: Continental Federal Savings & Loan. Architect: Nofziger, Lawrence, Lawrence and Flesher, Oklahoma City, Okla.
The concept of open offices is gaining acceptance quickly. No wonder. Both owners and architects are drawn to their airy, sweeping good looks. To the improved communications and increased efficiency they promote for workers. And to their astonishing economy of 50 cents vs. roughly 15 dollars per square foot for inevitable alterations to meet shifting work patterns.

But here's a word of caution. Plant our outlandish basketball "office" firmly in your mind. Because unless you base your design on acoustics, as well as aesthetics, you may never hear the end of it.

More than one open office has had to be modified—embarrassingly and expensively torn apart, baffled, receilinged, or refurnished—in order achieve workable sound levels.

Owens-Corning has helped pioneer the development, testing, and matching of open-office components. Look over these highlights of what experts have learned. Then call on us for all the tails and all the components of a successful office system.

The ceiling.
Handsome is as handsome does.

The ceiling is the single most important acoustic component in an open office. It should absorb, reflect, sound. A perfect ceiling would have the sat
should remember you design an open office

... attenuation as the open sky—a Noise Isolation (NIC) rating of 23.

An independent acoustical testing laboratory named eight ceilings, including costly coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas Ceiling Board, in any standard exposed grid suspension system, is best for achieving privacy at economical installed cost. In these tests, Nubby II was the only ceiling board with an NIC as high as 20 in a flat configuration.

Some architects prefer the look of ceilings with sealed grids. Caution: As yet, no such ceiling tiles the minimum NIC performance necessary to achieve satisfactory acoustical privacy in an office. In this league, handsome is as handsome does.

Acoustical screens. Don't just stand there. Do something.

sound screen, visual symbol of the open office, flexibility, economy, personal privacy, and acoustical control. It has acoustical functions:

• To block direct sound transmission from one zone to another.
• To absorb sound, thus preventing flanking reflections into adjacent zones.

Owens-Corning's sound screen is the most effective available. Its engineering features include:

• A metal septum—to block sound transmission.
• One-inch Fiberglas core on each side of septum—to absorb sound.
• Sturdy special Fiberglas sound diffuserstrate—for abuse resistance.
• Stain-resistant Dacron® Polyester fabrics. These fabrics are washable, colorfast, and fire-resistant (Class 25).

5. Extruded aluminum frame, fastened to septum—for strength and stability.
7. Top and side radii designed to minimize sound defraction over edges.

Masking sounds. The sounds of silence.

Even the finest acoustical ceilings and screens cannot do the whole job of providing speech privacy. An electronic sound masking system of speakers, installed in the plenum, is necessary.

This sound must be unobtrusive—and uniform. Even at a few decibels above the desired NC40 = 40 rating, the masking sound causes people who are working in the office to begin raising their voices, defeating the whole purpose of the masking.

Owens-Corning's experts can recommend a background masking system that meets these requirements.

Owens-Corning system gets it all together.

For the open-office concept to be successful, the ceilings and screens must be tuned carefully to work together, and with the masking system.

Owens-Corning will be happy to provide you with all necessary information on achieving acoustical control in your open office. Or to guide the development of the whole acoustical system for you.

Write D. J. Meeks, Building Products Operating Division, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

Owens-Corning is Fiberglas

For more data, circle 46 on inquiry card
"The headquarters of the New York State Bar Association," as a most distinguished critic recently wrote, "is an object lesson in how to build intelligently, sensitively and well... In a happy alliance, the lawyers and the architects, James Stewart Polshek and Associates, have preserved a row of handsome 19th-century town houses and incorporated them, not as a false front, but as a working part of a completely and strikingly handsome contemporary complex built behind them. The words that come to mind are skill, imagination and taste qualities not encountered too often on the urban scene."

We at Follansbee Steel are particularly gratified that Mr. Polshek specified TCS (Terne-Coated Stainless Steel) for all pitched-roof areas of this outstanding building in which originality of design and integrity of site are so felicitously coupled.

FOLLANSBEE STEEL CORPORATION
Follansbee, West Virginia

For more data, circle 47 on inquiry card
You Can't Write A Dirty Word With AllianceWall Rite-On, Wipe-Off Panels. They're Absolutely Dustless.

Specially treated porcelain-on-steel panels and dry marker pens are combined to create a completely dustless writing system. Writing dries instantly and can be erased with a dry cloth or felt eraser. Laminated to low-cost gypsum board, the Rite-On, Wipe-Off panels are fire-proof, inexpensive to install and maintenance free. Floor-to-ceiling length or framed panels come in 50 decorator colors. Lighter shades make excellent projection screens. Panels also double as bulletin boards when used with miniature magnets. Boards can be used with any partition system. No special lighting system is required. Writing surface is guaranteed for 50 years.

For complete information write:

AllianceWall Corporation
Box 247, Alliance, Ohio 44601

Plants in Alliance, Ohio; Okmulgee, Oklahoma; Genk, Belgium; Odense, Denmark
These skycap's shoes have lumbered across The New Orleans International Airport for over a year.

Good thing the floors are carpeted with Anso® nylon. It's guaranteed for 5 years.

Thousands of people — with thousands of valises — keep this large airport pretty jammed, and the skycaps pretty busy.

That's why the New Orleans International Airport and their architects specified this tightly woven level-loop of Anso nylon. It can take the abuse that trampling feet — and laden luggage carts — can give.

Anso nylon is the second-generation, anti-soil nylon that comes with the toughest fiber wear guarantee in the industry. The Guaranteeth®: the guarantee with teeth. It promises that if any portion of the carpet wears more than 10% over five years, Allied Chemical will replace it free.

Anso nylon was the right choice for the New Orleans International Airport and it could be the right choice for you. Discover why it's the fastest growing contract carpet nylon in America. For information phone or write: Allied Chemical Corporation, Fibers Division, Contract Department, 1411 Broadway, New York, New York 10018. (212) 391-5089.

For more data, circle 49 on inquiry card
New A21 Maytag Washer uses less hot water, less total water than other leading brands of top-loading commercial washers.

It can save you 25 to 53% on gas used to heat water.

Look what the dependability people have just come up with, to help you cut costs in the laundry room. The energy-saving new A21 Maytag Dial-A-Fabric™ Washer can save you from 25 to 53% on gas for heating water over other leading brands of comparably sized top-loading commercial washers, because it uses less hot water.

It can also save you 2 to 15% on total water usage which, of course, could mean a saving on sewer tax (if applicable in your area) due to smaller discharge.

Naturally, your actual savings will depend upon present equipment and cycle usage. The figures above are based on cycle usage of approximately 3/4 hot, 5 warm, and 1/2 cold water washes out of every ten washloads.

Many Other New Features
You and your tenants will also like the additional features we've built into the A21 Maytag, including: Liquid bleach dispenser for extra convenience and better fabric care, plus handsomely styled new control panel with easier-to-read markings.

Easy Care for All Washables
Your tenants will love the convenience of the new A21 Maytag Dial-A-Fabric™ Washer. It lets them dial a scientifically programmed cycle for any washable fabric—even knits and wool. One dial setting does it!

Money-Saving Maytag Dependability
Of course you'll appreciate the dependability built into every rugged inch, plus easy maintenance made possible by complete up-front service access. Get the free facts on how the new A21 Maytag Washer can help you cut costs and increase profits. Mail the coupon now.

Breakthrough! Maytag-equipped HOME STYLE LAUNDRY can give you more profit per square foot.

This revolutionary concept can cut your costs, while giving you a unique kind of laundry that lets tenants enjoy homelike atmosphere and convenience. Everything's grouped in a functional cluster, like in a home laundry room. It's all made possible by the new A21 Maytag Washer and the exclusive D21 Maytag Dryer, two separate dryers in half the space of one large dryer. Look at the many potential advantages compared to the usual self-service laundry: Smaller space needed, smaller initial cost, lower operating cost, better return on your investment.

Get the full story of the Maytag-equipped Home Style Laundry now!

For more data, circle 51 on inquiry card
TURN A SHOPPING MALL INTO A CATHEDRAL.

Moduspan® space-frame system lets your buildings soar almost as far as your imagination. Because Moduspan eliminates the need for welded steel trusses that restrict building design. Instead, Moduspan employs lightweight, standardized modules. A simple nut and bolt construction. And random supports and overhangs in two directions.

As a result, there's almost no limit to the variety of modular configurations you can use on roofs, walls and specialty designs.

But Moduspan isn't just beautiful. It's also practical. Moduspan virtually eliminates on-the-job delays caused by waiting for custom designed fabrications. It also makes the attachment of such auxiliary items as light fixtures, sprinklers and glass simple because the entire structure is made up of Unistrut channels.

And Moduspan components are available in both 4' and 5' systems and six durable colors. Moduspan. The space-frame system that can make some of your wildest dreams come true.

For more information write to Unistrut Corporation, Wayne, Michigan 48184.


General Contractors: The Whiting-Turner Contracting Co., Towson, Baltimore, Maryland.
suggested method for documenting value management

Value management as it applies to architectural projects is an approach to obtaining optimum value for every dollar spent on a construction project. It takes into account construction materials, construction systems, and architectural designs as well as functional analysis, worth, life cycle costs and other constraints. The concept is neither new nor unique; however, a formalized system to approach and document the analysis so that its credibility can be transmitted and understood by others not involved directly is relatively new.

H. Maynard Blumer, AIA-FCSI

sented here is a method utilizing 12 workshops for making a value management analysis of a proposed building when the construction documents are complete. By understanding this analysis system with its built-in documentation and presentation methods, the owner may devise ways of adapting this tool to proposed construction projects at an earlier stage of development.

To the owner of the proposed project, the tool offers an opportunity to review the effects of material selection on operating costs, maintenance costs, and replacement costs, and how this decision affects the cash flow and feasibility of the project through life cycle cost analysis, which is an integral part of value management analysis.

The analysis system presented here is currently being promoted by the Public Buildings Service of the General Services Administration, and the system is being taught to architects and engineers in workshops sponsored by the American Consulting Engineers Council and The American Institute of Architects. Upon completion those who are prequalified to take these 40-hour seminars are certified by the GSA as Value Management analysts and are qualified to enter into Value Management Service contracts with government agencies such as the Corps of Engineers, Environmental Protection Agency, General Services Administration, and other Federal agencies.

The following discussion and instruction under the headings of Worksheet Numbers 1 through 12 assumes a value management team of three or more per team. Following is a representative example, a VM team of three architects and four structural engineers assigned to make a value analysis of the structural system for a military headquarters building, using a completed set of construction drawings.

Note: The terms value analysis, value management, and value engineering as currently used are interchangeable.

Worksheet 1: Cost model

The cost model helps locate the costs, defines at the VM team thinks those costs ought to and determines where to target cost efforts maximum effect. "Basic" figures are what VM team believes from experience the figures should be, while "Actual" figures are at costs have been found to be in terms of present status of the project (from estimates aids).

The cost model is formed by breaking the project into major systems and cost elements, breaking them into their subsystems and elements. The suggested breakdown for a cal building has been written in as a guide. After "Basic" and "Actual" per square foot costs have been computed or estimated each element of the model, an analysis of figures can be made. One possible comparison converts the major systems (sitework, in the top horizontal line) to percentages the total for the project. Another suggested approach is to compute the percentages of structure between the Basic and Actual figures for each set of figures.

Whatever method of analysis of Work 1 is used, the VM team's objective is to study those subelements that offer the test potential savings; those areas where greatest gap exists between what something should cost and what it actually will cost.

COST MODEL

(LESS/S.F.)

LEGEND: BASIC ACTUAL

QUALITY SCALE

HIGH MED. LOW

15 10 5

ARCHITECTURAL BUSINESS
Work sheet 3: functional analysis

The functional analysis work sheet is a quantitative analysis that introduces worth into the VM team's line of thought. The following steps are used to complete the form:

1) Select an item (in this case, the structural system) from the cost model Work Sheet 1 to analyze.

2) Describe the selected item's function and enter it in the blank for “Basic Function.” Note all functions to be listed on this form are to be stated with a simple verb and noun, such as the function of a pencil is “to make marks” while an eraser’s function is “to remove marks.”

3) Break the item into its major components, giving the quantity, the unit of measure, and the component name.

4) Describe the function of the component by the “verb-noun” method described in step 2; more than one function may be assigned to the component. If this is the case list each function on a separate line, then note whether basic or secondary. (Worth is an arbitrary figure, based on the considered opinion of the VM team.)

7) By totaling the original cost column in the worth column, then expressing their relation in percentage, a comparative figure can be developed to assist the VM team in directing their efforts. In this case, the original cost of the structural system is nearly twice its worth.

8) Further examination of structure is in order.
Work sheet 5: creative idea listing

5 is the fun work sheet; on this sheet anything goes.

Considering each component and its interaction, the team enters all suggestions for accomplishing any portion or all of the function. These must be totally uninhibited creative thoughts with no consideration of evaluation. A linking principle is that a ridiculous thought or a joke may trigger a creative thought.

The ideas of Work Sheet 5 are evaluated this: A quick pass at the ideas will create the or possibly only two categories. Place an beside what looks like a good idea. Place the through the number of the ideas which are obviously hearted, or deserve no fur consideration. Take a second look at the marked ideas to see if they should be left unmarked for consideration at some future time or acted upon.

Work sheet 6: evaluation chart

Going to Work Sheet 6, column 1, enter as selected from Work Sheet 5. In columns 2 and 3, enter the advantages and disadvantages using the “verb-noun” method used in section description where possible. In columns 4, 5 and 6, discuss the among the team members, arrive at generalized ratings.

Work sheet 7: weighted constraints chart

This is where considerations other than initial costs (such as aesthetics, maintenance, ease of use, construction ease, construction time, life flexibility, convertibility, reliability, operation costs, ecology, noise, odor, etc.) are systematically applied as constraints on the initial cost and total design team feelings of the ideas from Work Sheet 6:

1) Enter ideas to be considered from Work Sheet 6 in column 1. Also enter the original project systems as designed (bottom of the chart).

2) By brainstorming and discussion enter the most valid constraints across the horizontal headings of the chart.

3) By discussion establish weighted values for the constraints. Normally numbers between 0 and 10 will be adequate. Some numbers may be the same and some values may not occur.

4) In the upper left hand of the chart squares write in a value for the degree to which the constraint is satisfied by the idea, again, on a scale of 0 to 10. For example, if the constraint is fully satisfied, assign 10; if the constraint is partially satisfied, a lesser number should be entered.

5) In the lower right hand half of the chart squares write the contributing value of the constraint satisfaction which is the product of the weighted value of the constraint from the top of the chart times the proportionate degree of constraint satisfied entered in step 4. It is suggested that both step 4 and step 5 be entered by working a single constraint from each idea down the chart before proceeding to the next constraint.

6) Add the totals of step 5 for each idea and enter in column headed “Total.” Rank the totals, the largest being “1,” the second largest “2,” etc., keeping like systems together (footings; exterior walls; structure).

7) In the right hand column note those ideas which by virtue of their rank are worthy of cost review.

Work sheet 8: cost work sheet

On this work sheet, quantity-take-off of each material or unit of work within a particular subsystem from Work Sheet 7 is computed and extended to a unit cost basis to arrive at a total cost. If quantities cannot be determined, the most accurate estimate possible may be used. If the estimator has reservations on the reliability of this estimate or other remarks that might influence future judgment, they should be noted.

The product of this work sheet should be valid, substitute subsystem costs. If combinations of certain subsystems are necessary to equate with other systems or subsystem combinations they should be compiled for ease of evaluation.

Work sheet 9: life cycle cost analysis

This work sheet explores decisions which architects normally make intuitively or by experience. Formalizing this process in financial terms with projectable dollar values of present worth reflecting life-cycle expenditures and costs of finance, lends credibly to the task and reduces risk of judgment. This form, al
though it may be considered very brief, contributes greatly to the credibility of the value analysis when transmitted to a reviewing party. Therefore, the attention given to the input in this work sheet should not be minimized.

In completing the form, note that a column is developed for the original project data and for each of the alternates under consideration. Work sheet headings, alternates and their base costs are taken from Work Sheet 8:

1) Initial Costs (lines 1, 2, 3, and 4). Enter the base cost from Work Sheet 8. By team discussion evolve other costs noted as “Interface Costs,” that is, costs to other work that would not be incurred if this alternate were not used and "Other Initial Costs" such as redesign cost, increased construction time costs, etc. These adjustments in costs will then yield a total initial cost which may be compared.

2) Life-cycle Expenditures (lines 5, 6, 7, and 8). In this area of the form develop the replacement costs and the year that cost will be incurred. For example, the replacement cost of a $10,000-product in ten years (assuming a 10 per cent interest rate) can be computed by multiplying the replacement price by 0.3855, the factor found on a “10 per cent compound interest table.” These tables are maintained by accountants. The replacement cost is $10,000 x 0.3855 or $3,855 more in terms of present worth. On the form for line 5 the entries would be year 10 @ 10 per cent Amount $10,000. Present worth of replacement cost $3,855.” The amount required to be reserved today for future replacement costs is $13,855.

3) Annual Owning and Operating Costs (lines 9, 10, 11 and 12). After all impact-type costs have been reconciled to present worth values, they can be converted to a constant annual cost, or the amount that would be required to be reserved each year for future replacement costs when they occur (line 10). The total initial cost can also be amortized over the total life (line 9). Other estimated annual costs such as maintenance, operations, etc., should also be listed (line 11). The sum of the annual costs can be entered in line 12 as Total Annual Owning and Operating Costs.

The entries for lines 9 and 10 are computed by multiplying the respective values for lines 4 through 8 by their “Capital Recovery Factor” found in the “Capital Recovery Factor Uniform Series” column of the “10 per cent Compound Interest Table,” which is 0.11746. The factor may also be found in an accountant’s table for “Annual payment necessary for amortizing a loan.”

4) “Present Worth of Annual Differences” is the sum that is saved during the life cycle of the project if the particular alternate is used and if the total costs (initial, replacement, and annual operating) are amortized equally on an annual basis for the life of the project. It is computed by multiplying the differences of the alternate cost and the original proposed project cost by the present worth factor. In our example of 10 per cent compound interest for 10 years, it may be found on the 10 per cent compound interest table. It may also be found on a “Present Value of Future Return” table.

WORK SHEET 10: weighted constraints chart
The various alternates analyzed may be evaluated with constraints developed and weighted similar to the methods described under Work Sheet 7 and then ranked. Types of constraints may be the same as were used in Work Sheet 7; however, they most certainly should contain life-cycle costs, cash flow considerations, and other factors that have been developed or may now be suggested to be developed as constraints. Various combinations should be analyzed at this stage as a constraining factor if applicable.

WORK SHEET 11: value engineering proposal
This work sheet is basically for presentation and summary purposes. Those alternates to be given consideration for improvement of the value of the project are individually scored, with a cost summary.

WORK SHEET 12: idea listing
On this work sheet list and describe any ideas that should be saved for future analysis should the review of the presentation indicate such is needed.
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If aesthetic freedom and energy conservation are important to you and your client, then we suggest you contact us for your nearest Alcoa Alply panel regional distributor, who offers you single-source responsibility — everything from engineering to the completed wall system, in place, with integral fenestration, interior and exterior finish and thermal insulation.

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- Panel cores: polystyrene, polyurethane, isocyanurate or other materials, depending upon project requirements.

- Wide range of panel sizes: up to 5 feet wide, 18 feet long.

- Variety of shapes: panels can be shop-formed to almost any three-dimensional shape desired.

- Choice of joining systems: Alcoa's patented Snug Seam® caulking, splines, battens or frames.

- Variety of cutouts possible: to accommodate windows, doors, sloping grade lines, walkways, difficult contours, parapets.

- Whatever you're designing, let our regional Alcoa Alply panel distributors help. They know a great deal about wall systems, finishes, industrial roofing and siding and other low- and middle-rise construction problems. For further information, write: The Stolle Corporation, Aluminum Company of America, 1025-K Alcoa Building, Pittsburgh, PA 15219.

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For more data, circle 54 on inquiry card
The 259-page cost data book is arranged so that users can immediately establish a budget from tables of average building costs for major types of structures, given in dollars per sq ft for low, average, and high quality. A space-saving guide helps determine the space needed in different building types.

A new section on average system costs enables users to identify at a glance the relative costs among different types of assemblies for interior wall, roofing, partition, interior wall finish, floor finish and ceiling systems. In-place costs for more than 500 assemblies, making up the major portion of the book, permit the selection of a combination of elements that creates a building system costs in a project budget. A locality adjustment table is available for 105 U.S. and Canadian cities providing cost variations based on local rates for labor and materials. All data reflect computerized composite costs of actual buildings and cost projections for 1977.


Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York.

INDEXES: October 1976

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<th>masonry</th>
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Cost differentials compare current local costs, not indexes, on a scale of 10 based on New York.
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"Plastics...that's what!"

A whopping 28.6 billion lbs. of plastics will be consumed annually by the construction industry by the end of the century...five times 1975 use. A growing plastics technology will insure this. You can stay on top of the dramatically advancing world of plastics at NPE/76, December 6-10, McCormick Place, Chicago.

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In the three years since the last Plastics Show, a lot has happened. The plastics industry moves fast. So catch up at NPE/76. Save time and money by registering in advance. Write The Society of the Plastics Industry, Inc., 355 Lexington Avenue, New York, N.Y. 10017, or...CIRCLE READER SERVICE NO. 55.
Making plans for '77?

Autumn is a time of year when architects, like other businessmen, stoke themselves up for another go at the annual ritual of making plans—and watching them either succeed or down the tube. So as we bravely face the prospect of yet another round of plan-making, is only fair to ask: What kind of environment these plans being hatched into? Can we have the confidence that they stand a decent chance of survival this time?

Compared with the past two years, the odds have improved greatly, but three considerations stand out in front of all others:

1) What is the state of the general business cycle? Has the much-lauded recovery fizzled already?
2) What about the election? How much difference would a change of administration make... and when?
3) How are these economic and political events likely to bear on the construction industry during the next 12 or 18 months?

The business cycle

The recent flurry of concern about the mid-year “pause” in the recovery’s progress deserves a rejoinder in the style of Mark Twain’s famous cable to the Associated Press (“The reports of my death are greatly exaggerated”). It’s true, of course, that the quarter-by-quarter movement in GNP slowed markedly—from 2.2 per cent in the first quarter to 4.3 per cent in the second. And as that happened, the unemployment rate, which had been slowly but steadily retreating, turned up again and just about eliminated the likelihood that it would be brought below 7 per cent by the end of the year.

The hitch that set in during 1976’s second quarter was not entirely unexpected, nor all that unusual. All during 1975 business had been liquidating inventories to bring stocks to line with soft demand. Then, as recovery took hold, business began rebuilding inventories. The switch from liquidation to accumulation happened in the opening quarter of 1976, leading to a surge of production. But because business simply continued to add to inventories at roughly the same rate in the second quarter as in the first, there was no additional surge in production from this source.

That’s a rather technical (and oversimplified) explanation of a phenomenon—the inventory cycle—that takes place each and every time around, greatly intensifying recessions and their subsequent recoveries. But as long as final demand continues to hold up, as it has so far, occasional inventory fluctuations are inconvenient but rarely fatal.

Capital spending revival

What is going to sustain final demand—which means the combined purchases of consumers, government, and business—in the quarters ahead? The recent rise in unemployment is bound to sap some of the strength of consumer buying for a while. But wait. There’s another category of spending that has scarcely been tapped yet: business outlays for capital spending. Most of whatever optimism is going around these days rests on the belief that the business community is finally ready for a modest wave of capital expansion.

Industry’s plans and appropriations for future capital spending now indicate that 1977 will bring some hoped-for support from this critical area, giving the recovery a new lease on life.

The election

If we can count on the underlying economic forces of the business cycle to support continuing—albeit lackluster—recovery through 1977, then what about the election? Is the prospect of a change in administration likely to strengthen or weaken the outlook?

The Ford position is well enough known from actual experience. Inflation is the number one problem, and its remedy is austerity—tight money and tighter budgets (the veto score now being above fifty). The implications of this approach to economic policy are obvious: halting, stretched-out recovery, high unemployment with excess industrial capacity, and a freeze on most social programs (like housing subsidies and urban redevelopment) for as long as inflation remains a problem.

The Carter position seems to be more flexible. Back in June, when he was still seeking his party’s nomination, Mr. Carter was making noises like an old-fashioned, New Deal Democrat. Jobs, not inflation were his number one concern, and his goal was full speed toward full employment. If inflation remained a problem, there was even the hint that some form of price-wage restraint could be brought to bear. He urged housing subsidies to build two-and-a-half million units annually, as well as a strong commitment to mass transit, energy, and environmental problems.

Now that he’s running against Republicans, Mr. Carter sounds like a born-again politician. By early September his economics had taken a decidedly conservative tilt as inflation displaced jobs on his priority list, and he stressed that to curb inflation might mean the delay of new programs.

Meanwhile, the rising unemployment rate has Mr. Ford backing off his earlier “tough-it-out” posture and it begins to look as though both candidates are ready to promise the impossible: a simultaneous assault on unemployment and inflation (without price controls, of course). This is nothing more than election talk, and should be paid scant attention.

But there is a basic difference in the economic philosophies of Ford and Carter, and it is a difference that ultimately comes down to policies of containment as opposed to policies of growth. But even if Mr. Carter wins in November, chances are he will not have much influence over our economic affairs until quite late in 1977. It takes almost a year for a new administration’s policies (and personnel) to have their impact. The real difference is more likely to be felt in 1978 and 1979.

The construction outlook

The short-range prospect for construction will be the subject of next month’s column when we issue the Dodge/Sweet’s Construction Outlook for 1977. In the meantime, consider this a kind of preview.

In its own way, the construction market in the autumn of 1976 fits the general pattern of a temporarily stalled recovery as shown by so many other key economic indicators. The construction industry’s recovery is presently hung up because one-family housing, which provided so much of the early thrust, has begun to level off while nonresidential building, which is still in the early stage of its recovery, hasn’t yet developed enough momentum to sustain the advance.

That’s just another way of saying that the best—at least as far as the design professions are concerned—is yet to come. As the economy’s recovery regains its lost momentum by means of a belated rise in business capital spending next year, the construction industry’s recovery will mutate from what has been essentially a housing upswing to a balanced expansion of residential and nonresidential building. This sounds like an environment in which to make plans with some confidence.

George A. Christie, vice president and chief economist McGraw-Hill Information Systems Company
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The depth of the mountainside excavation, which greatly influenced the cost of the project, dictated the need for a long (240 ft), narrow (63 ft) structure.
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The road-widening project through Grundy, Va., eliminated many of the town's Main Street parking spaces. And because of the area's steep terrain, temporary off-street parking sites were available.

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**Engineering service valuable.** "Bethlehem Sales Engineering personnel were very helpful in furnishing us with technical publications and advice," says Mr. Gerry E. Higgs, president, Higgs & Higgs, Inc., designers of the structure. "Two slide presentations, featuring steel-framed parking structures, were given to our engineering staff. It was on the advice of Bethlehem's Sales Engineer that we decided to use Weathering Steel for the interior, as well as the exterior framing structure."

**Weathering Steel?** The designers decided on ASTM A588 Weathering Steel for both the exterior and interior framing for two reasons: (1) it provides a rustic appearance which, when fully matured, will blend well with the surroundings of this rural coal mining community; and (2) its low maintenance will minimize future financial burdens on the town.

**Structural considerations.** A low-profile parking structure was desired in order to avoid overpowering the neighboring one- and two-story buildings. The design features an open structure with exposed steel framing, partially clad with sand-blasted precast panels.

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THE MEXICAN MINIMALISM OF RICARDO LEGORRETA

by C. Ray Smith

Of all the Mexican Minimalists influenced by Luis Barragán, Ricardo Legorreta is the best known architect and the most prolific. His firm Legorreta Arquitectos became internationally known with the design of Mexico City's Camino Real Hotel, which was finished at the end of 1968. In the ensuing years, the firm has completed two more hotels, several office buildings, a number of houses, and the planning and supervision of a large low-income government-sponsored subdivision outside Mexico City.

The newly opened Hotel Camino Real at Cancún, which is...
Rust-orange paint—like Mexican clay—colors Legorreta’s IBM plant exterior elevation. The gatehouse (right) epitomizes the Mexican Minimalist approach to massing, proportions, openings, color, and detailing.

Inside, the interior (right) is basically white. In the manufacturing area (right, center) each mini-assembly line, of which there are eleven in the first phase, is an S-shaped track with sides covered in carpet, colored carpeting and white-poured vinyl runway (non-slip) along which the tram writers are pushed on cast fiber glass trays. Each man forms one operation, then slides the tray along. White plastic surfaced work positions involve with pedal releases undercounter tool space.
on the sand bar off the Yucatán peninsula north of the island of Cuzumel, and the IBM plant in Guadalajara are the most recent demonstrations of Legorreta Arquitectos' completed works, and they maintain a Mexican Minimalist essence.

IBM, Guadalajara
Outside Guadalajara, a high-altitude city northwest of Mexico City, a bold rust-colored stripe of a building stands out against the distant mountains amid corn and alfalfa fields. Designed by Legorreta Arquitectos, it is the first of a five-phase IBM factory where electric typewriters are built and reconditioned. The assembly area is innovative for Mexico and for IBM, in being their first open plan arrangement of "mini-assembly lines." That is, each assembly consists of an 11-person team that reconditions a machine from start to finish, rather than being a single longer assembly line that includes many and more fragmented operations. It is "factory landscape"—minimizing hierarchy in the manufacturing area and integrating workers with office personnel as much as possible.

On the exterior, the building strongly proclaims the elemental motifs of Mexican Minimalism. It has broad expanses of plain surfaces, deep parapets (which provide both sheltered walkways and solar protection) and precise proportioning. Crisp openings—flush, frameless, and trimless—are punched austerely through the planes in contrast with the vibrant, flying colors on the exterior.

As an example of the Minimal detailing, windows are typical: aluminum frames are set into the infill wall, and the exterior plaster covers the frame with only a small reveal for maintenance. The Minimal technique conceals the function and design effort for the sake of the clean line, the pure plane, and the hard edge. Simplification of the visual effect is the goal. But in terms of design effort, patient detailing goes into achieving such bold strokes.

The master plan proposes modular expansion. Each phase consists of 107,600 square feet, and is designed so that every nonbearing perimeter wall can be moved to expand the open-ended project. The structure is a reinforced concrete frame (12- by 12-inch columns on 36-foot centers) with brick infill walls and a plaster surface finish. The floor slab is poured on grade and reinforced to support heavy machinery; the waffle roof slab has a fiber glass insulated finish. The parapet is of removable concrete panels that can be reused as new phases of the building are added.

Inside are reception, office, and cafeteria spaces. Because most of the industrial products used in the building are based on machinery built to the English system of measurement, the column grid is laid out in feet also. The offices are open planned, except for 60- to 80-inch high partitions with carpet finish. The ceiling system in the manufacturing area incorporates sprinklers, loudspeakers, and fluorescent light troffers with alternate strips for air conditioning supply and return. Open space for return to the plenum is left around each column. Lines for
electricity and compressed air are brought down from the ceiling along the columns, around which each of the mini-assembly lines is placed. Services are collected into what the architects call a nucleus—including toilets, showers, and dressing rooms, with air-conditioning equipment on the roof.

The Camino Real Hotel at Cancún

Categorically, the Camino Real Hotel at Cancún is as perfect as a hotel need be. It joins the half dozen other great modern hotels—Arne Jacobsen’s SAS Hotel in Copenhagen (reportedly no longer kept up), SOM’s Mona Kuai in Hawaii, Philip Johnson’s Marquette Inn in Minneapolis, Harry Weese’s Crown Center in Kansas City, ARCOP and Tabler’s Hotel Bonaventure in Montreal, and your choice of Portman’s atria—the Embarcadero in San Francisco, the Hyatt Regency Atlanta or at O’Hare, or the Peachtree Center Plaza—and, of course, Legorreta’s Camino Real in Mexico City. The Camino Real in Cancún now takes its place among these few.

It is a visual synthesis of Mexican architectural imagery, omitting only the baroque: Mayan pyramids are recalled in the diagonal, pyramidal massing of its guest room wing; the adobe-like finish on the walls recalls anonymous Mexican village architecture; and traditional Mexican materials such as raffia, hemp, rattan, natural woods, textiles, and ceramics are used.

Located at the northern tip of the rapidly developing resort island on a ten-acre site, the 256-room Western International hotel preserves, in its own enclave, the elements of the sand bar terrain that are being swept away by other hotels along the beach. The siting is the most imaginative and innovative stroke of all. Guest rooms are located in a wing on the rocks at the edge of the ocean; public areas—with block-like masses and heavy overhangs sited around patios, gardens, and pools integrating the outdoors and indoors—surround a turquoise-blue salt-water lagoon that brings the Caribbean itself within the compound of the hotel. Divided into a naturalized lagoon, an adults’ swimming pool, and a children’s pool, the one-acre lagoon is enclosed from the sea by only a narrow white sand beach and palm trees. It looks as if it might always have been there as part of the natural terrain.

Shrewdness in planning was required to make this body of water happen, however, since Mexico has a federal regulation that no building may be within 20 meters of mean high water; otherwise it becomes government property. As architect Legorreta explains, “The moment we opened that lagoon to the sea, we would create a federal zone and would have to keep setting the building back 20 meters. And soon we would not have any property at all.” So the architects left the small sand bar between the sea and the lagoon as an official separation. Legorreta sees only the El Conquistador in Puerto Rico as a predecessor in bringing the sea so close to a resort hotel. No other has an inhouse ocean.

The second most significant achievement of the Cancún Camino Real is the planning of the guest room wing. Composed in plan of a
Color in the turquoise lag (above) and in purple-le gardens is symbolized in "Azulejos" restaurant by multicolor wrapped henequen fiber rope hanging (bottom right) by Sheila Hicks. It is suspended in a magenta skylight.

In one area of the restaurant, a magenta-painted flanks a wall of skylighted low tiles, against which orange-and-magenta plaid bolstered banquette provides vibrant-looking seating.

Just outside the restaurant covered walkways, shelter to a bridge over the gagoon that leads to the bedecked wing (far right). The guest room wing is in two blocks (see section) with an open-ended recessed atrium (right, middle) in between. The four-story ocean side block is built on rock; the five-story lagoon-side block built half on rock and half in pilings in the lagoon. The structural system consists of concrete columns, beams, and slabs with brick and plaster in walls. Open corridors (far right) overlook the planted atrium. Air conditioning is through grills over the closet-vesti areas and over the bathrooms (tone on section). Air conditioning supply is through the air troffer grilles.
pair of rectangular blocks set parallel, the wing has an atrium running the length of the middle. All guest rooms open off this planted atrium, which is open to the sky and at each end (photos below). The rooms run through the floors so that each has a view of either the ocean or the lagoon from a terrace.

The five-story, 144-room western block presents a sloping, pyramid-like facade to the lagoon and to the public areas of the hotel. On the atrium side it is staggered with open corridors overhanging each other (see section below). A diagonal bent braces the western wing against the four-story, 112-room ocean-side wing, which has perpendicular facades but similar open corridors and terraces on the perimeters.

Circulation from the public areas to the guest rooms gradually reveals the web of compositional elements that the architects have spun throughout. A formal motif of squares and circles is interwoven and extended into rectangular slabs, into cubes, and into cylinders of different sizes and materials. The motif is developed through the interior furnishings as well as on the exterior.

The cubes and slabs are prominent in the massing, in the proportions of archway like openings, the covered walkways, and the fenestration of the guestroom wing. A row of concrete cylinders screens the children's pool from the main patio and the lobby bar. Cylindrical columns support the walkway shelters, which have smaller rods of nacash wood as soffits. Adjacent to the children's pool, the adult pool has a bar with cylindrical barstools' underwater. On arrival, the entry is modest, simple, and non axial. Vehicles swing around a large circular planted area in which a fountain is planned, and arrive in front of a rough-plastered, adobe-like, sand-colored, flat wall with a massive overhang. To enter, one turns left along the blank, windowless facade and through an open, rectangular archway.

Like the over-all hotel, the guest rooms are composed of traditional Mexican materials that give them a simple, unpretentious, and relaxed air. Here again, the cylindrical motif is seen on the door finish of elm dowels, in the headboards which have elm posts and raffia infill, in the bedside tables, and in the handles to the closet doors. The cube motif is used for bureau handles, main door handles, and in the table lamps. Yet the simplicity and the execution make the hotel elegant far beyond the "architecture for the poor" that is one of the inspirations of the Mexican Minimalists. That is the persistent paradox—that such simplicity can create such opulence in the hands of deft and visually sensitive architects. And that is what the Minimalism of Mexican art is all about.

**Legorreta and the Mexican Minimalists**

Ricardo Legorreta is usually considered to be in the "second generation" of Mexican Minimalists—those sculptors, painters, and architects whose approach and work have affinities with the Minimalism of Luis Barragn. Barragan, however, always emphasizes the continuity and continuum of Mexican architecture, pointing out that he himself was in turn in-
fluenced by an older generation—the sculptor and painter Jesus “Chucho” Reyes, now 92—and that his work has in turn also been influenced by younger Minimalists. “We are all close friends and discuss these things back and forth,” he pointed out in an interview this past winter. Architect Legorreta agrees with this sense of continuity and stresses Mexico’s uninterrupted dedication to the aims of the Modern Movement since the mid-twenties, when the teaching of Jose Villagran began to make its mark.

In the history of Mexico’s Minimalist movement—which is what Ricardo Legorreta calls it—the first generation was Jesus Reyes; the second generation is composed of, among others, Luis Barragan and sculptor Mathias Goritz, who collaborated with Barragan on the Satellite Towers outside Mexico City; and Ricardo Legorreta is in the third, not the second, generation. Now, an even younger group in their late 20’s and 30’s is working along the same lines. So there are, in fact, four generations of Minimalists in Mexico.

Each of these generations has shown a progressive development or shifting of goals in relation to Mexican architecture. The work of “Chucho” Reyes as sculptor, collector, arranger, and assemblagist has been in the realm of fine art—that is, generally without functional application except when it has been in the areas of interior design or the decoration of shrines and altars. The work of Luis Barragan has been more in the realm of architecture, although at times he has considered his work to be primarily landscape architecture.

As architect Legorreta says, “Chucho developed a complete world around him in his way of living and of arranging things and in his colors. He lived with beauty in an authentic, natural, and naive way. Then Luis went further in getting that into order so as to be able to build certain things. But Luis remained out of the reality of life. First he built practically only for himself. He built for specific problems that are not the problems of life but are basically esthetic problems—like the Towers, the fountains, and that sort of thing.”

As for the third generation, architect Legorreta feels that he and his colleagues have confronted the realities of architecture. “Then we came,” he explains, “a number of people who were working on really getting into the live, tough problems of architecture—getting involved with business and costs, in hotels and subdivisions—but keeping in mind that we should maintain a Mexican architecture.” The IBM plant and the Cancun Hotel tackle these architectural realities and strongly maintain a Mexican essence.

IBM FACTORY, Guadalajara, Mexico. Architects: Legorreta Arquitectos—project architects: Ricardo Legorreta, Noe Castro, Carlos Vargas, Pedro Sanchez de Movellan. Engineers: DIRAC (structural); BIPSA (mechanical/electrical); DPSA (Hvac design). General contractor: CYP, S.A.


Each of the 256 guest rooms has a relaxingly elegant ambiance with a natural henequin wall hanging by Sheila Hicks and a terrace overlooking the water. Floors are of white marble terrazzo tiles; walls and ceilings are white plaster.
KOPLIK HOUSE: FORMAL IN PLAN BUT SOFTENED BY SENSITIVE SITING

Architect Earl Combs has designed an unusual vacation house for a young family in a resort community on Long Island's South Shore. The program is hardly extraordinary but Combs has used rounded forms and symmetrical planning in ways that generate exciting spaces without producing either the inflexibility or the tormented functions that special shapes often produce.
The strong circular forms of the Koplik house anchor it firmly to its site, a flat, sandy 100- by 164-foot property on Long Island's south shore. Directly across the approach road stands a tall water tower. Combs sited the house on the diagonal to avoid opening its views squarely on the tower and, in laying out the plan, the architect also strove to preserve the mask of trees that gives the house a sense of seclusion.

The paired, elongated drums (photo above), clad in vertical cedar siding, are the most conspicuous element in its massing, but the heart of the house is the double-height volume in between (see plan). Here, under a central skylight, is the space to which all the others are keyed, a living room with a built-in, circular seating element facing the deck and a view through a glass wall. Flanking this space on the lower level are kitchen, dining room, maid's room, den and stair. On the level above, overlooking the living room, are three bedrooms and two baths. A bridge links the two halves of the upper level.

The curved ends of the structure have 6 ft-4 in. radii and are built using sill plates cut from 2 x 12s and fitted together to form the arc. Plywood sheathing was then nailed to wood studs and finished in cedar.

Cedar siding is also the primary finish material for walls and partitions. Floors are oak strip with polyurethane applied. The ceiling structure is exposed. Lighting is either flush-mounted or recessed incandescent throughout the house. The glazing is accomplished with stock window and door assemblies and, while these occur in rounded planes, the varied depth of the reveals seems to emphasize roundness of the forms.

The house has some 1900 square feet enclosed space and extends outward decks and walks in three directions. The treatment of these outside spaces, though strictly geometric, seems enforced and graciously happy transition between the naturalness of the site and the vigorously ordered forms of the house itself.

**KOPLIK RESIDENCE, Long Island, New York**
**Owner:** Mr. and Mrs. Michael Koplik. **Architect:** Burns Combs. **Contractor:** Steven Molzon.
The solid-void-solid scheme Combs has selected for his design, the reader might anticipate an entrance across the park and into the central void along the axis of symmetry. Instead, Combs has created a more direct and interesting side view (see plan above) that guides the visitor past the staircase into the central space from back.
The den (above) and the entryway and stair (below) are both spaces developed in the building's circular ends. The kitchen is located along an outside wall, notched for side light at the end of the counter. Bar seating provides an alternative to a more formal dining space beyond.
Of the competitions that the National Institute of Architectural Education (NIAE) sponsors each year, the Paris Prize (Lloyd Warren Fellowship) is the best known and the one that has long drawn the widest response from students around the country. But it is only one of a number of competitions NIAE administers and part of a much broader program in architectural education that extends to faculty grants and joint projects with AIA, ACSA and similar professional groups. NIAE has fought along many an educational skirmish during its sixty-year history and in the text piece that follows, Tom Flagg, architect and NIAE board member, details the Institute's programs past and present, and hints at its hopes for the future. The drawings that accompany Flagg's article offer an infrequent but welcome opportunity to show excellent student work and at the same time, give readers a chance to see the kinds of drawings that, quite simply, we'll love to look at.

CREATIONAL RESORT 1968 HIRONS COMPETITION
When describing the NIAE to those unfamiliar with its work, the best place to start is not at its Beaux Arts origins—but at the present, for its current, hard-working programs influence architectural education in the United States and abroad in a variety of ways. The most conspicuous of these ways is through the number and variety of design competitions it administers every year. This 180-member, New York-based organization of architectural educators, practicing architects, students and others interested in architectural education, sponsors not less than five annual competitions, each shaped to a particular program objective or level of architectural training. These vary slightly from year to year but now include the following:

- **Lloyd Warren Fellowship-Paris Prize ($7,500 in prizes).** Open to graduates not more than 30 years of age in United States architectural schools and those in their final year of study at these institutions.
- **William Van Alen Memorial Award ($7,500 in prizes).** Open to any student under 35 years of age and attending a recognized architectural or engineering school.
- **Emerson Memorial Award ($1,000 in prizes).** Open to all architectural or engineering students under 30 years of age except those in their final year of study.
- **Kenneth M. Murchison Prize ($1,900 in prizes).** Eligibility the same as for Emerson Award above.
- **National Building Granite Quarries Association ($2,700 in prizes).** Open to any architectural student under 30 years of age and/or any graduate not yet licensed in architecture.
- **Hirons Prize ($2,000).** Open to persons in the architectural disciplines who are under 35 years of age but not enrolled in a full-time academic program.

Programs for these competitions are prepared by NIAE and are usually judged at the organization's headquarters by a jury drawn on a rotating basis from its membership and often augmented by distinguished visiting critics. In drafting these programs, every effort is made to cover a wide range of building types, settings, emphases and presentation requirements. Subjects run the gamut from regional planning problems, through building complexes all the way to studies for the re-use of existing structures. Some recent programs are fairly typical: A Diplomatic Enclave in Peking, Structures for Music Festivals, A Riverfront Park and Housing Complex in a Large City, A Permanent Complex for Olympic Games and a Hotel and Study Center at the archaeological site at Machu Picchu, Peru. This last program, drafted for the 1975 Van Alen Competition, elicited 240 submissions from around the world and, over two long evenings, threatened to exhaust the stamina of a jury that included Paul Rudolph, James M. Fitch, and 19 others.

Not all programs are quite this demanding and, in several recent instances, experiments with programs that were not much more than carefully worded statements of intent have produced encouraging results. Occasional fissions of fun and fantasy are encouraged through short-term sketch problems such as the 1976 Emerson Award program that required competitors to design a stage set for an opera based on the Last Whole Earth Catalog.

The Lloyd Warren Fellowship (Paris Prize) and the William Van Alen Competition carry the stipulation that winners must use the money for study abroad, and impressions from this travel often show up in sketches such as those shown here in the first column at right. In addition to the continuing program awards, NIAE also co-sponsors competitions with associated groups—most recently a joint project with ASC/AIA that emphasized barrier-free design. The program was developed, administered and judged by the students themselves.

This year's Van Alen Competition program will call for both invention and restraint of an unusual order. Competitors will be asked to replan and augment the support facilities of the pyramid site at Gizeh in ways that enrich the tourist experience without encroaching on the ancient monuments or disturbing their innate dignity.

The concern with design competition goes back to NIAE's roots. Chartered in 19...
the name Beaux-Arts Institute of Design, a group was the progeny of a handful of New York architects who had studied in Paris at the école des Beaux-Arts. These men, impressed by the system of which they were products, sought to encourage the same educational values here, and to an important extent succeeded in this aim. The gradual eclipse of these values after World War II and the experiment with new teaching methods was foreshadowed in changes at the Institute itself. Sensing these trends and desiring to express an organization's diversified educational interests, the name National Institute for Architectural Education was selected and adopted in 1956.

It was more than a symbolic effort at outreach. NIAE began to broaden its programs to include a variety of interdisciplinary activities. It has also endowed a faculty research grant, last year between Haresh Lalvani of Pratt Institute and Carmi Bee of CCNY. Each is pursuing independent architectural research. Future plans call for more attention to pre-architectural awareness training programs at the secondary school level and programs aimed at pre-professionals.

These newer undertakings, while increasingly in importance, do not diminish the interest NIAE feels in its competition programs. Byron II, NIAE board chairman, says simply: "Competition seems the most effective way to reach a maximum number of students within our limitations of our finances... But we are always interested in new ways to put our resources—time and funds—to use for the benefit of architectural education."

Deans, faculty members and students have always been welcome at NIAE's New York headquarters for the exchange of ideas their visits encourage. At their new midtown offices at 139 East 52nd Street, (a brownstone

queathed to the Institute by Chrysler Building designer William Van Alen) to be occupied next month, NIAE anticipates even more interchange for, more and more, the future of architectural education seems to depend on it. That shape that future will take, no one can say with certainty. What is clear, however, is that NIAE wants to be a part of that future and will continue to strive and to adjust its programs as needs change and new urgencies beckon.

Inquiries about NIAE's programs should be addressed to: National Institute for Architectural Education, 139 East 52nd Street, New York City 10020.
HALL OF JUSTICE
1927 PARIS PRIZE
D.F. NELSON, MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BALLROOM FOR A BEAUX ARTS BALL
1939 PARIS PRIZE
GEORGE A. DOWNS, PRINCETON UNIVERSITY
During what is being called the "post-modernist" phase of 20th-century architecture, it may strike some as unseemly to extol another tall building, especially when so many of them, even the "best" ones, are being eulogized as icons of a defunct form-worshipping phase. Yet if the Skyscraper Age is over, and one suspects that those who say so for philosophical rather than economic reasons are being precipitate, there are some lyrical, resonant swan songs being composed. One such is One United Nations Plaza (above, overleaf). Not only does it add oomph to the œuvre of Kevin Roche John Dinkeloo and Associates, but it also assumes a key spot in the tradition of the tall building, which, in New York, takes in "icons" like Lever House, the Seagram Building, Rockefeller Center's stony, crowded crags, old softies like the spired Chrysler, rambunctious codgers like Cass Gilbert's Woolworth, Daniel Burnham's Flatiron, and Louis Sullivan's Bayard. While it may well be (one would even hope) that the profession has moved beyond its fascination for solitary, stunning shapes that are all wrapped up in themselves but little else, One United Nations Plaza, being wrapped up in a lot else, is a needed reminder that tall buildings, designed to come down off of it and take cues from their environment, can still help architecture to turn its corners nicely—and will probably be doing so long after post-mortems on the "post-modernist" phase are complete.

—William Marlin

ARCHITECTURAL RECORD October 1976 117
Cliff dwelling, as big city life is called, has been given a big boost on the corner of First Avenue and 44th Street. Svelte of build and spiffily draped in a toga of reflective blue-green glass, the 39-story One United Nations Plaza, located across from the Secretariat and General Assembly, and next door to the U.S. Mission, is a friendly neighborhood skyscraper which, leaving a lot to the imagination, has a lot going on inside its 586,000-square-foot bulk. At 505 feet in height, the building is three feet shorter than the Secretariat, in line with zoning restrictions for the district, and is the first in New York to dovetail office and hotel functions.

Just in from each of the two bounding sidewalks is a lobby. The one off First Avenue (opposite, lower right) leads to the elevators for the office floors—which add up to 360,000 square feet, taking up the first 26 floors of the building. The one off 44th Street, around the corner, leads to the reception desk and elevators for the United Nations Plaza Hotel, run by Hyatt International, which adds up to 288 rooms and suites, occupying floors 28 through 38. The Turtle Bay Tennis and Swim Club, named after the old surrounding neighborhood, is on 27, and way up on 39, are the 24-hour tennis facilities. Retail space, on ground level, is occupied by a branch of the Chemical Bank and Niemie’s International News Corporation. The rest of the ground floor is given over to the hotel-managed Ambassador Grill and Lounge, accessible through both lobbies, and, on the second floor, there is a European style eating spot called the Coffee Mill, plus three divisible meeting rooms that are named, aptly, for Trygve Lie, Dag Hammarskjold, and U Thant.

Everything is very handsome, even elegant, and very safe. One of the first new buildings to comply with New York’s strict fire-safety standards, an elaborate detection and alarm system has been incorporated and a separate smoke-exhaust shaft to assure that the stairwells are never or less clear in the event of a fire. Everything is also very secure, with so many dignitaries, diplomats, and heads of state expected. The
Zip into a special enclosed drive-in area, its heavy doors slam, and, without seeing so much as a soul, they can rush into a re-educed elevator.

All of which is a lot to have going on inside a skyscraper, but, restingly enough, one has to sidle up close to find out. The signage inmal and, where there are words to make out, it takes a knowing nter to appreciate the subtlety. But one's interest is impelled in other s. The building's material mass, ashimmer with reflections of the sky the neighborhood, meets the street in a pleasant way, hovering over ers-by by way of a wrap-around shed-style canopy of glass that ts out as a continuation of the curtain-wall above.

What Roche Dinkeloo and Associates has done here, having had if any axioms to grind over the years, is to dispense with one of the hackneyed—that a building, like a news report, should just "tell e is," coolly delineating floor levels, the relationship of structure in, or contrasts of internal function. Instead of another front-page facade screaming "read all about it," they have gotten up a build-with a certain quizzical quality about its sheer surfaces, implying the
information and mix of activity inside, but leaving the question open as to its exact nature. In a genre where the “form-follows-function” thesis most cogently pioneered, this skyscraper negotiates a new variation *detente* between the two. It reads “true,” all right, but because its main character was as consciously conceived to evoke, or to point up, many dimensions of its external environment as it was to house an amalgam of internal needs. It is an especial obligation of the tall building to take such pluralistic, contextual factors into account, and this one *intely* does.

Take, for example, its atypical shed-style setbacks or, put more accurately, slant-backs. These 45-degree planes occur twice on the north-facing facade, angling up from the 12th floor and, again, from the 28th. Regulations specified that the north-facing one, were it to be all windows as initially planned, had to be 30 feet from the U.S. Mission to the height of its facade. As it turned out, only 50 per cent had to be windows, so the required setback was proportionally reduced to 15 feet. While one suspects that crucial design decisions are *ver* completely “logical,” it is a worthy enough rationalization that the architects decided to denote this midstream change by placing the lower slant-back at that point where the 15-foot rule no longer obtained, pitching the resultant plane up to that point where the 30-foot rule would have. As for the 28th-floor slant-back, it is pitched to a point that denotes the overall width of two typical hotel rooms and a corridor, or roughly 60 feet. On the southeast corner of the building, there is a slant-out, angling up to the 12th floor, below which the corner has been sliced off, almost as if—“logic”?—to deflect one’s attention across 44th Street to the Church Center for the United Nations, which is the same height as this slice, or across First Avenue to the visual panoply of the UN. Down at street level, this rift with the right angle provides a neat notch for the main banking entrance and opens up a little more elbow-room on what is, really, a pretty tight corner. This treatment works well, giving a light look, because the “toga” of glass is stretched over the surfaces with a taut, repetitive grid of aluminum framing that, in the curtain-wall fabric, reads like a delicate silver tracery. This tracery is also engineered for energy savings. The office walls are composed of four bands of glass per floor, two of which are clear, the others being...
insulated. The hotel walls are composed of three bands per floor, one of which is clear. The reduced heating and cooling loads are significant.

While all of the hotel, its related facilities, and both lobbies were seen to by the Roche Dinkeloo team, the office floors, most of which are leased by the UN, are being seen to by its in-house staff with fairly uneventful results. Not so the Roche Dinkeloo digs. The club on 27 (photos above) with its own carpeted lobby and built-in seating, has a glassed-in esplanade, opposite which is a parallel interior wall of mirrors, leading to an airy glassed-in pool room that is covered with a billowy Kubla Khan-style tent. The hotel is similarly sensate, starting downstairs with the lobby which, though comparatively small, is this century's answer to the last one's Age of Elegance. Its floors of black and white marble, turned up onto the walls to wainscoat height, are carried on through to the reception area and to the restaurant beyond. A continuous chrome band, concealing indirect lighting, gives way to wall surfaces covered with a green felt that is so lush that people have been caught rubbing their cheeks against it. The green theme (Roche is Irish after all) is picked up again in the corridors upstairs, which are embellished with a curator's fantasy of framed antique fabrics, tapestries, ceremonial garments from faraway places with strange-sounding names.

With the exception of several duplex suites with spiral stairs immaculate contemporary fittings, the most expensive going for $1,000 a day, the typical rooms are no bigger than what one would norm check into at any chain hotel. There is a pervasive, soothing war about them, the colors are subdued and solid, the furnishings—again Roche Dinkeloo—are comfortable and practical, and the cost starts $37 a day for a studio. The architects are said to be designing even soap dishes which, wags suggest, should be supplied with "Ex-Ambassador Daniel Patrick Moynihan Commemorative Soap"—good washing out one's mouth.

Given the stringent budget for these rooms, however, one can be heartened that such absorbing amenity was brought in at a price compares favorably with that of the hoked-up charm and corny cutes of class that routinely pass for accommodation elsewhere. With a handful of exceptions—for example, the Marquette Inn at the IDS...
in Minneapolis by Philip Johnson/John Burgee—these are the only contemporary hotel guest room interiors to have been designed by the noted architect. Which should give management in this field serious use to reconsider its ill-advised assumptions about what “quality” is, what quality “costs,” and about what travelers would prefer to settle into.

Many of them here are very definitely preferring to settle into the ambassador Grill and Lounge, along with a lot of locals, and in a city own for smashing restaurants, this one really takes the Sacher Torte. Transparent glass trellis threads through the spaces overhead and, love it, is a barely perceptible tunnel of pentagonal mirrored surfaces. With the columns and some of the walls also mirrored, the over-all result is such a frenzy of reflections that one waiter has confided that couples of soused socialites have bumped into what they thought was an air. Despite such occasional travail, only Philip Johnson’s Four Seasons over at the Seagram Building provides a comparably voluptuous volume of dining space in modern-day Gotham. All of the tableware, as well as the uniforms of the waiters, were designed to the Roche Dinkeloo specification—right down to the chef’s floppy hat.

Perhaps it takes a client like the United Nations Development Corporation, or an executive like Thomas Appleby, its president until recently taking over as head of New York City’s Housing and Development Administration, to drive through such a thorough job of design. But what it also took, besides funding with an unusually dependable “moral obligation” bond program, was the drama and diversity that cliff dwellers crave. Housing such qualities behind this deceptively demure exterior, One United Nations Plaza is a chip off the old block of New York. To be able to say so, to be able to say that it “stands in” as much as it stands out, is a measure of modernism’s adjustment to an era of contextual emphasis. Let’s hear it for the “form-givers.”

One United Nations Plaza, at 39 stories, is conceived as a chip off the old block of its Manhattan environment, and, from every vantage point, it is either enhanced by the setting, as seen from the UN grounds for example (right), or enhances it, as when the grounds across First Avenue are glimpsed from the 44th Street sidewalk for example (above). The shimmering material mass of the building, picking up reflections from all around the sky and the environment, meets the street gently, nudging right out to it (left), and hovering over passers-by with a wrap-around glass canopy that is a continuation of the curtain-wall above. It steps up in sections to keep in alignment with the gradual slope of 44th Street, off which the hotel entrance and lobby are placed, pointed out by signage that is notable for its subtlety.
AIRPORTS

ting scale, small scale, here or abroad—there is going to be a lot more work on the design of airports in the next ten years than there was in the last. First, the “underdeveloped” countries are just getting started. (Above an ultimate in their expectations, a terminal for 35 million passengers per year.) And at home, almost $6 million will be spent in the next five years by the Federal government alone, under the terms of a recently passed amendment to the Aviation Act of 1970. There are going to be opportunities for the big established firms and for the fledglings as well, because the increased volume of the new domestic projects is going to split into many more usually-smaller units. From renovation to major expansion, a lot of this work will on the older airports that are now “coming of age.” And a lot of this work will be on new airports for the burgeoning smaller communities. The following is first an explanation of the reasons for the new directions (overleaf), and second, descriptions of successful domestic projects that will become prototypical.—C.K.H.

A study model for the current construction of the new Tehran Airport by associated architects Tippetts-Abbett-McCarthy-Stratton and Abdol Aziz Farmanfarmaian.

A model for the completed Sullivan County Airport by architects Parsons, Brinckerhoff, Quale & Douglas.
At least through the early 1980s, there will be a vast amount of airport construction—much of it still to be initiated and designed. And the size and scope of these projects may well depend on whether they are domestic or foreign. Firms of varying capacities will want to consider this increasingly important division in their pursuit of the upcoming commissions. Contrary to tradition, it may well be that the smaller (even relatively inexperienced) firms will have greater opportunities at home, while larger firms established in the field, will gain work in foreign parts. Here is why:

The vast all-new terminal complexes will mostly be built abroad—and will probably be designed by the big firms. According to Ronald Pulling, of Tippotts-Abbett-McCarthy-Stratton, there will be few or no new airports built in the near future in the United States that approach the scale of the monumental Dallas-Fort Worth complex, which his firm engineered. (One of the possible exceptions is St. Louis, which is proposing a major new airport farther from the center of town.) But, this does not signify the end of large new airports. At the present time, TAMS has in design or construction major airports in Tehran (see page 125) Caracas, Seoul, Turin and Amman. A complex for Riyadh, which is larger than London’s Heathrow, is in design for Bechtel Construction by architects Hellmuth, Obata & Kassabaum. (For a brief guide to business in the Middle East, see RECORD, June 1976, pages 101-108.) Foreign airport construction is a vast, hardly-tapped field. Accordingly, Pulling sees a larger scale establishment of supersonic flight as inevitable: “The future for the United States lies in the exporting of talent to all of the far-flung places, and professionals will want to get there and back in the shortest possible time.” But the foreign governments will generally demand high levels of proven expertise in airport design, and their commissions will normally go to large established firms in the field. Where does this leave the other professionals?

For the United States, there will be a plethora of smaller projects—and now, surprisingly, money to build them. Despite the well-known troubles that have beset all of the U.S. airlines today (including passenger resistance in the face of rising costs), a number of factors indicate an even higher volume of on-going domestic airport construction, although most projects will be on a smaller scale than much of the recent work—and on a scale that smaller firms are able to handle. Many of these projects will be renovations and additions. Airports, like organisms, continue to have changing demands made on them, and must adapt or be replaced. Even when the issue is not increased traffic volume, adaptation will be required for ever-changing sizes of planes, operations, types of services and—not unimportantly—the constant upgrading of both municipal and commercial images. In one city (the national capital) alterations are underway for the extremes of these reasons on both the “mature” National and relatively-new Dulles airports. The importance of additive construction is emphasized by the fact that large all-new facilities, which are supported by major cities, are probably not too practical in the foreseeable future, because of the rising costs of construction and land (and much more land is now necessary to overcome the objections of nuisance to adjacent communities). These projects are coupled with municipalities’ increasing difficulty in financing major projects, with a host of new complicated governmental requirements and with fortuitously higher civic expectations. However, the burgeoning smaller communities—especially in the country’s South and Southwest—have revenues from new industry and large amounts of land, and they are all ready on line for new facilities scaled to their smaller size (see pages 141-144 for similar completed airports in Toledo, Ohio; Lubbock, Texas and Lincoln, Nebraska). The above are good reasons that major new airports will probably not be built, and that extensive alterations and expansions of existing facilities coupled with new smaller airports certainly will be built.

And possibly the biggest reason that smaller-scale domestic airport construction will be in a healthy state is the recent passage of Federal Law 94-353, which allows previously undistributed funds (accumulated from the sales tax on air line tickets) to be spent on up to 50 per cent of the cost of terminal construction. The total annual amounts with which such buildings can be built (part of the money also goes to all other types of airport construction) are staggering: $50 million for fiscal 1976, increasing each year to over $600 million in 1980. On top of these amounts, $15 million per year is allowed for planning. The total bill includes provision for a $5.6 billion expenditure over the next five years (vs. $1.3 billion over the life of the last five-year bill, which excluded terminal construction). But large as the total dollar amount may be, it is almost certain that no single grant will be large enough to appreciably help in financing another Dallas-Fort Worth. Over 200 applications have already been received for 1976 alone, and—if most are granted—the total amount to each airport will average around $2.5 million. (And most of these amounts for 1976 will undoubtedly go to non-terminal construction.)

What will the new domestic facilities be like—and who will want to work on their design? Perhaps the most important influence affecting an architect’s work on airports will remain the multiple-layered system of approvals and requirements of the many interested parties who constitute the “client.” These parties will continue to range, I surmise, from local government to the airlines that pay the rents—and to the passengers, who can only be last considered by those who are the most important users. The consequences of the confusion are often: “bleak and confusing terminals; exhausting hikes with heavy luggage and a general subservience to the economics of machines. Here and there has been a victory by architects on behalf of people.”

While these statements were made as recently as November 1976 (RECORD, page 135), a number of factors may be working in favor better airports and more architectural victories. First, if airport work is now to be on a smaller scale, the chances for clean-cut solutions will be fewer layers of approvals would seem much better. Second—if much of the future work is to be in the form of altering existing facilities, the previous faults of these facilities will have become obvious with time and will be easier to remedy. Especially on alteration work, the services of professionals experienced in graphics, interiors and small-sca construction—who might otherwise play a minor role in a project design—will become much more important.

On the following pages are two categories of projects that illustrate new directions of work to come. The first includes solutions to the problems of ongoing work on older airports (pages 127-140). Most dominant in this sampling are such modifications that improve¢ and commercial images and those that accommodate new or expanded international facilities. And the latter may become even more important in the future, if a recent recommendation by the Civil Aeronautics Board is accepted. The recommendation would allow direct flights between European cities and Atlanta, Tampa, New C. Orleans, Cleveland, Pittsburg, St. Louis, Denver, Kansas City, Minneapolis, Houston, and Dallas-Fort Worth—all facilities with few or current physical means for executing the extremely complicated an exacting requirements of the Federal government for internation travel. The second category of projects (pages 142-144) includes the which are all-new sources of pride to smaller but growing municipalities. (A cross between the two categories is shown on page 14. Here are outlined common aspects of planning the financial coms necessary for such efforts—and the reasonable provision for expansion that must follow such commitments to make the efforts work while to begin with.

—Charles King
RENOVATION: NEW GRAPHICS FOR MIAMI

Recent projects at the Miami International Airport utilize the spectrum of techniques available to the process of renewing an older facility. While a major construction effort at Miami is shown on the next four pages, a more modest program that has begun to revolutionize the hospitable appearance of the existing buildings is shown here: the reorganization of graphics, signage and interior design by Architectural Graphics Associates. As succinctly stated by A.G.A. designer and principal Jane Suggett, "the visually cluttered original terminal had the charm and confusion of a 1950s station." To date, only the northern section of the interior (see site plan, overleaf) has been modeled to A.G.A.'s plans (photo, bottom). Here are lowered general light levels, and—most importantly—new signage.

But it is the exterior graphics that have won the most far-reaching current success. The program was the first such to receive FAA signage; the award was made because of the signs' ability to effectively direct passengers and—as designers successfully argued—in a form that would create a unique image for Miami. This is giving now-clear information, the bright purple and orange signs provide a unity design that has overlaid the disparate existing buildings with a visual organization. The standards (photo, top), designed by associate Deborah de Moulpied, also carry light, recessed into curving forms to emphasize their importance for both aesthetic effect and tourists' safety. Color coding is used to separate traffic from arriving and departing gates, though the designers emphasize that it cannot be relied on alone, because many people are color-blind. They also emphasize the reduction in the number of possible signs.
CLEAR-SIGHTED ADDITION: MIAMI'S NEW SATELLITE

Architects Harry, Oppenheimer, Ross and Associates have designed this handsome building to eliminate congestion for international flights, and have—at the same time—eliminated some of the biggest problems of additive construction at airports: disrupted operations at existing gates, and lack of future-expansion potential. Commissioned to study the whole international operation in 1969 when the 12-gate central concourse was woefully inadequate (Miami is the second in international passenger volume in the United States), HOR recommended and won approval for a remote facility for 12 additional gates for the new larger planes. The separation, of course, was to allow existing operations while the new construction proceeded, and to provide room for future expansion. The not incidental result has been striking architecture that is a high point for the Miami terminal (see page 127).

The architecture is striking not only for its appearance and the efficiency of construction phasing, but for the clear-sighted ways in which it copes with an ever-increasing factor in airport construction: the particular requirements of international travel facilities (in this case further complicated by a vehicular connection to the main building). As strict separation of the arrival and departure of passengers almost always requires dual circulation systems, HOR has placed these on separate levels, both in the building shown here and in a planned extension of the main terminal that will house all customs and immigration facilities (right in site plan). The only place where these levels are planned to come together is at the connection between the buildings, an elevated guide-way system. Here, cars developed from those similar to Seattle’s (RECORD, November 1973, page 149), will operate in tandem, with departing passengers entering and leaving one car from one side, while the arriving passengers use the opposite side of the other car. The main levels of the satellite are divided into those for departing passengers at the top and arriving passengers below. The latter proceed in “sterile” concourses, leading toward their own shuttle platform. Large ground level areas within the building are provided for the parking of service vehicles that normally clutter aprons.

Contrasted to the building's white stucco walls, large sloping dark-glass areas bring light and views to departing passengers. Arriving passengers, as required by Federal processing procedures, are contained on the floor below, with the limited fenestration. The plan of the projected processing building (overleaf, bottom) shows the new customs facilities on the ground floor. These are to be reached from the immigration hall above by direct escalator access, through a level containing the departure lobby and offices. At the top floor will be the "guide-way" car station. The architects describe the resulting space distribution of functions as a pyramid, which is to be roughly the shape of the building. The scheme greatly reduces walking.
Despite the restrictions imposed by the necessity of providing separate facilities for incoming and outgoing passengers, a great deal of interior openness has been achieved—largely through the sharing of lounge areas by all of the airlines. For outgoing passengers, the lounges are divided into two main areas (photo and plan, top), with numerous smaller areas where those with the time can escape the mass movements of those enplaning. A restaurant is planned on the top floor.
BIG EXPANSION FOR A LITTLE SITE: PAN AMERICAN AT KENNEDY

With the addition of some 750,000 square feet of new terminal space to the 100,000-square-foot original terminal (oval area at left of plan), architects Tippetts-Abbett-McCarthy-Stratton have created an ingenious solution to a number of seemingly contradictory requirements. Perhaps most difficult were the requirements to add the mammoth new international facilities in the only available location, a constricted site on the apron directly behind the original terminal, without disturbing the latter's operations and character. Opened in 1960, the original building had centralized boarding gates under an enormous cantilevered roof. And because the majority of the 12 gates to be added were to serve the new larger planes, many more people had to be accommodated than those that might be indicated by the number of extra gates (an estimated 6,600,000 passengers for 1980 vs. 1,250,000 in 1966). It was clear that a centralized system, which was innovative in the 1950s, would not work, and that—in a linear scheme—the resulting walking distances from the older entrance (left in plan) would defeat the original terminal's amenity. Accordingly, ground vehicles both for construction and eventually for passengers would have to be introduced into the area of the new construction. There was no way of appreciably expanding the existing terminal laterally along its frontage on the access road, because of the presence of other immediately adjacent terminals. On top of these problems, sight lines from the airport's control tower (fortunately close to the original building) had to be maintained, and parking had to be provided. (The once-convenient parking location had been on the other side of the main road.)

The fan-shaped new building solves all of these problems, and provides up to 20 plane-boarding positions (including two remote ones reached by mobile lounges) in a modified-linear, drive-to-the-gate-scheme (see caption for description). The gates surround a central open area, under which the lower levels are assigned to baggage handling and claims plus the all-important immigration and customs functions. Pan American was the first to use a drive-to-the-gate system at Kennedy, and its success has overcome initial objections about the possible back-up of traffic.

To expedite the flow of construction equipment and, eventually, passenger vehicles to the new building, extended bridges to the planes (photo, below) were placed over access roads adjacent to the original terminal (left in plan). Today, the roads split to provide access to the new arrivals level under the gates (photo, bottom) or to an upper-level, roof-top "court" where departing passengers can proceed directly to their gates (plan and photos, left). (From here, automobiles may proceed to park on the upper roof via a ramp between the two large circular fresh air intakes for the terminal levels below.) In order to keep traffic moving by being directed to the right gate (and hence, to make the system work), Architectural Graphics Associates has designed directions whereby flight numbers are pre-matched to one of four differently-colored geometric shapes flashed on screens suspended from the projecting roofs over the respective gates.
Unlike the last three projects, present construction at the Baltimore Washington (formerly Friendship) International Airport involves both expansion and total renovation on an existing 25-year-old building. Consequently the need to perform work without disruption to ongoing flights has been critical, and has caused the almost-new $64.5-million facilities to be built in stages (roughly beginning at the ends of the building and finishing at the middle). As a consequence, construction that began almost two years ago, will not be complete until 1978. Designed by a consortium of architects and engineers, Friendship Associates, the project is to accommodate an expected 11 million passengers per year by the 1980s. A similar consortium provides management for some 50 separate construction contracts. As a result, Baltimore's experience has become archetypical of the difficulties that older terminals' administrators may now go through to alter buildings in present locations (as explained on page 126). Here, the reasons were reinforced by the existence of one of the country's first double-level terminals with radiating piers, occupying the only buildable location on the landing field.

Design was focused on two purposes: an increased terminal capacity (at current standards of efficient operations) and a coherent visual image, that would indicate the new larger scale. The former changes include the creation of a raised access drive with multiple entrances directly related to piers (reducing walking distances up to 60 per cent), and the widening of those piers to reflect the greatly increased volumes of passengers, created by the new larger planes. Accomplished in a checkerboard fashion to keep gates open, the widening also accommodates the new, security related lounges. A new lateral ticket concourse was created in front of the old building to separate basic functions from the commercial ones behind. But the most dramatic change is the result of architects Peterson & Brickbauer's design for the large-scale roof (see caption), which covers the new drive and ticketing area. It provides a grand "gateway," which expresses the large-scale civic commitment in the entire project.
A 1,200-foot-long roofed space frame covers the new entry drive and ticket sales concourse. It is supported on bright-red round piers containing elevators. Here repeated airline symbols are both instructions and a bright, ever-changing mural designed by Architectural Graphics Associates. P&B’s proposal for a subway stop, (photo, top), awaits extension of the system.
SUPEFRIMPOSED
FUNCTIONS:
AMERICAN AT KENNEDY

Involving not so much the expansion of capacity as adding international service, the new arrivals’ facility for American Airlines’ existing domestic terminal at J.F. Kennedy International Airport is being built as a separate, but coordinated unit, rather than integrating it into what was already there. As such, it appears as a literal diagram of what happens when international passengers arrive and must enter processing without contact with the outside world: exit doors ingate lounges of older parts of the building are closed and traffic is diverted to escalators leading up to the new duct-like “sterile” passage at the third level—leading in turn to the new customs and immigration building (left in model photos). While the government requires that such passages are always fully enclosed with no windows, architects Heery & Heery have planned a lively graphics program in order to brighten the space and to give information on the right direction of travel along the 700-foot length. Added because of American’s expansion of international service (especially in the Caribbean), this first phase addition was programmed and initially planned by the airline’s planning department, directed by architect Walter Hart (with senior planner Benito Lao) and vice-president O.W. Hulet. It is designed to accommodate 600 passengers per hour, with future expansion capability to 1000 passengers. For similar psychological reasons as the graphics program, the concourse (and trusses) are curved near the terminal to avoid a right angle turn.


To minimally disrupt ongoing flights, the new international arrivals concourse is being built with box-like sections, formed by prefabricated steel trusses, which span over gate positions (photo, left). These are hoisted into place by cranes, onto irregularly-spaced concrete piers, placed to avoid ongoing ground operations (photo, above). The trusses have up to 120-foot-clear spans, and the curved section was fabricated in one piece.
Conceptually a combination of the design concepts used in Baltimore (page 134) and at American's terminal at Kennedy, recent construction at the relatively small Toledo airport—as at Baltimore—completely reorganized and expanded a relatively obsolete facility built in the 1950s. And in the process, it has avoided an image and an efficiency that are competitive with the nearby large Detroit airport. The modest original building was a single level structure where passengers used apron-level access to and from planes. Greatly underprovided for current operations, it had no separation of circulation for arriving and departing passengers, who had to cross and re-cross each other's paths. Security checks had to be made at either of only two gates, and meant long delays for crowds of anxious travelers.

Designed to meet projected needs into the 1980s, the expanded facility of 100,000 square feet organized circulation and operations in the manner of much larger airports. Accordingly, a central hold room was provided in the center of the new second level, so that passengers could clear security well ahead of flights. And the baggage claim and ticketing areas—although still on one level—were separated in a greatly enlarged concourse to be on opposite sides of the escalators to the gates; coming and out-going passengers no longer cross, having their own routes of travel.

New facilities help to form an expansive terminal that belies its more humble origins (the plan below fits directly under the control tower in the isometric). Both the additions and the original building are sheathed in gleaming white metal panels contrasted to dark gray glass, which bring the original "dated" appearance into the present—and even future. Similarly, the replanned functions allow for optimistically projected service. Financed by the local Port Authority, the $5-million program included additions that were constructed of poured concrete decking on metal joists.

NEW AIRPORT WITH A BIG COMMITMENT: LUBBOCK

Exemplifying the manner in which (and the reasons why) many smaller all-new U.S. airports will be built in the near future, the just-completed Lubbock Regional Airport—having 144,000 square feet of area for six gates—allows for a future four-fold increase in facilities that would completely surround the existing parking field. And although the building just provides those facilities needed for the present, the future expansion is sure to come. Over the past 25 years, the number of yearly passengers has increased over five times to approximately a current 250,000, and the city fathers see the presence of the new airport as an incentive for more new large businesses to locate in Lubbock. A request to the CAB for additional non-stop service to major cities across the country could bring an immediate incentive for expansion.

To compare the amount of monetary commitment for an all-new airport with that of a remodeled existing one, the remodeling at Toledo (page 137) cost a relatively small $1 million less (or about one year's operating costs) than this all-new $6 million building, and had the disadvantage of disruption to ongoing operations in the process. However, the total costs of all-new airports cannot be judged so easily. Lubbock's total investment to date has been over $26 million (including almost $6 million from the FAA in such ancillary facilities as runways, highways, utilities, a rescue station, control tower and hangars), and another $10 for such construction is still pending. Only great civic optimism and the reassurance that the facility can greatly expand for the future (on a 2,500-acre site) would make such expenditure seem reasonable. Cities with slower growth and limited available land would find such an investment more difficult to justify.

Designed by joint venture architects Hel- muth, Obata & Kassabaum/Whittaker & Hall, Lubbock shares a number of apparent similarities to HOK's work at Dallas-Fort Worth, including the warm-colored precast concrete construction and the design of the vertical precast apron lights. It also exemplifies the new-possible prominence of areas for passengers cleared by security checks, as the major portion of what would have been—before such times—public areas is devoted to what is now a large, two-story hold room (compare to Toledo, page 137).

The first increment of the new building on three levels, with all passenger activity on the second—reached by lowered ramps from the entry drive. A relatively-narrow public concourse, where ticketing and baggage claims occupy opposite ends, is separated from a large two-story-high concourse "secured" passengers (photo, opposite page) where banners provide assignment and gate information. Two-story-high glazed walls provide a view of the field for passengers and from offices and meeting rooms on the mezzanine above. The arrangement of piers allows passengers to pass directly to and from planes with minimum confusion and level changes. Flight operations are contained on the ground level.
NEW AIRPORT:
LINCOLN, NEBRASKA

Two-thirds of the size and capacity of Lubbock (preceding two pages), Lincoln's new terminal designed by architects Davis, Clark and Associates provides four gates and 100,000 square feet of facilities. Like the previous project, it is planned for growth: estimates indicate that up to one million passengers per year by 1980 may pass into and out of Lincoln. When demand indicates, a duplicate of the existing facility, with a mirror-image plan, will be built on the opposite side of an intermediate parking field. The two buildings will be connected by elevated glazed bridges, and the determination in these proposals is indicated by the current presence of the projecting, funnel-like bridge supports (photo, top).

As is typical in the smaller airports shown here, Lincoln has a second-level concourse, which provides direct building-plane access, and the remainder of passenger-related functions such as ticketing and baggage claims are in a ground-level lobby. Here, walking distances for ticketed passengers, or those without luggage, is reduced between concourse and automobile entrances by bringing the central escalator forward toward the drive to bypass the lower level altogether. A direct expression of this function is the sloping roof over the lobby which rises with the path of travel. The $3.8 million terminal is constructed of a steel frame spanned by precast concrete T sections, and is clad in weathering steel and brick. The sloping roof rises above the second-level to provide clear story lighting for the lobby.

LINCOLN MUNICIPAL AIRPORT TERMINAL
Owner: Lincoln Airport Authority. Architects: Davis, Clark and Associates. General contractor: Cook Construction Co. of Lincoln, Nebraska.
load-bearing brick walls offer economic and esthetic benefits

most as a matter of course, the architect and structural engineer for Halbouty Center—a story suburban office building in Houston—presumed that the structure would be steel columns with rolled beams spanning between columns, and open-web bar joists spanning between beams. But when the architect decided to consider brick finishes for both the interior and the outside faces of the exterior walls, a different, cost-saving approach was possible. Two wythes of brick would, the designers believed, provide sufficient resistance to carry gravity loads and wind loads without the need for columns and spandrel beams in exterior walls. So a preliminary design of the structure was prepared using load-bearing brick masonry exterior walls and core walls supporting steel bar joists directly. Pricing by the contractor—who was a member of the design team from the start—showed that this design could be achieved for approximately $23 per sq ft. This was well below the owner’s initial budget of $27 which he felt would allow somewhat nicer finishes and features than are found in the typical suburban office building. Even at the low $23 figure, the architect was even able to provide such amenities as two atria—one on either side of the core.

The load-bearing walls consist of two wythes of modular brick plus a grout core with a nominal amount of horizontal and vertical reinforcing. Wind forces on the building are carried to the foundation through the brick walls acting as shear walls. The south wall of the building is somewhat thicker than the others in order to provide for recessing of the windows as a protection against direct sunlight.

The masonry walls were designed to span as reinforced brick beams across window openings. Openings in the core walls and in the walls around the two atria were also designed to be spanned by reinforced brick beams. Interior columns around the atria and two interior columns in line with the core walls at the west end of the building were designed as reinforced brick columns, constructed with one wythe of brick around the column exte-
rior, and with a core of concrete and reinforcing steel.

In order to provide maximum resistance to lateral wind forces and to provide maximum rigidity in the whole building, which rests on a layer of clay soil with some potential for expansion, the architect and engineer decided not to provide any expansion joints in the load-bearing masonry walls. Short, vertical expansion joints were used, however, in the perimeter of the building in every floor at the heads and sills of the windows. This horizontal reinforcement is, in fact, the top and bottom reinforcement of the reinforced brick spandrel beams, which were simply made continuous around the entire building. In addition to this horizontal reinforcement, special vertical reinforcement was provided at the jambs of the windows, and diagonal reinforcement at the corners of the windows. This solution has apparently been successful because no cracking has been observed in the walls over the three years since the building has been completed.

Quality control of the structure during construction was ensured by providing for full-time inspection of workmanship, and by laboratory tests on all the materials used in construction. The individual bricks were required to have a compressive strength of 8,000 lbs per sq in., which was not restrictive from the standpoint of colors and textures. Mortar was type PL and grout and concrete had a specified compressive strength of 3,000 lbs per sq ft. The brick laid in mortar was assumed to have an ultimate compressive strength of 2,400 lbs per sq in., and this was verified by having workmen on the job build 8- by 8- by 16-in. prisms of brick that were tested in compression.

Because this was the first experience the design team had with exposed brick on the soffits of reinforced brick beams, they decided to test the bond strength of the soffit brick. Two specimen beams were prepared in the same fashion as the beams in the building, and were supported at the two ends. A hole was then drilled in one of the soffit bricks of each beam and a steel reinforcing rod inserted in the hole and cemented with epoxy cement. After the beam had cured, a tensile force was applied to the rod in an effort to pull the soffit brick from the main body of the beam. In one of the two beams, the steel rod pulled out of the epoxy cement without damaging the brick. In the other beam, the bottom half of the soffit brick fractured when the tensile force was increased to 3,400 lbs, leaving half of the brick bonded to the upper portion of the beam.

HALBOUTY CENTER, Houston, Texas. Owners: Gerald D. Hines Interests; Architects: Neuhaus Taylor; Engineers: Krail & Gaddy (structural); Choate, Hall & Brady (mechanical). General contractor: Houston Construction Company.

Exterior walls comprise two wythes of modular brick, plus a reinforced grout core, except for the south wall, which has more deeply recessed windows for sun shading. On the other facades the load-bearing walls are 9½-in. thick for the top two stories, and 11-in. thick for the bottom three stories. Joist bearing was designed to bring gravity loads as close as possible to the center of the walls to avoid eccentricity. Windows are 5-ft wide on the north and south exposures, but only 3-ft wide on the west (see plan, previous page).

In the atrium (photos right, and above), left reinforced brick beams span between reinforced brick columns (a wythe of brick around a core of reinforced concrete).
The ASHRAE Energy Standard for New Buildings: A Digest

Lighting Power Budget Determination Procedure—Power budget procedure is not a design procedure. Its purpose is solely for determining the maximum power limit for the lighting system. The designer should strive to develop the actual lighting system in a way that provide an effective and pleasing visual environment and is encouraged to use less power than the limit allows.

The 5th Edition of Illuminating Engineering Society Lighting Handbook (IES/HB) is used as the source for technical information and calculation procedures.

Budget for Building Interiors—shall be calculated from the criteria given in Table 1.

<table>
<thead>
<tr>
<th>TABLE I. INTERIOR POWER CALCULATION CRITERIA</th>
<th>ILLUMINATION (EI)</th>
<th>FOR Task AREA (ETT A)</th>
<th>From IES/HB Fig. 50.20</th>
<th>FOR GENERAL AREA (EGA)</th>
<th>1/3 ETT A, &lt; 20 FC</th>
<th>FOR NON-.CRITICAL AREA (ENCA)</th>
<th>1/9 ETT A, &lt; 10 FC</th>
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<td>Determination of Areas</td>
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<td>Actual or 50 SF/ma</td>
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<td>Minimum Lamp Efficiencies</td>
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<td>Where the use of HID Lamps &lt; 250W or Fluorescent Lamps &lt; 40W is appropriate.</td>
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<td>Minimum Reflectances &amp; Light Loss Factor</td>
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<td>Light Loss Factor (LLF)</td>
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Dirty Atmosphere—Expected values of reflectances and light loss factors shall be used in power budget calculations for spaces where they are impractical to control.

Building Areas Exempted—The following building areas are exempted from the power determination procedures:

- a) Residences and apartments other than kitchens, bathrooms, laundry areas, and public spaces.
- b) Residential type spaces in institutions (hospitals, hotels, churches, museums, etc.).
- c) Theater auditoriums, entertainment, audio-visual presentation spaces.

Lamps and Luminaires Exempted
- a) For medical and dental purposes
- b) For highlighting applications, exhibits, displays
- c) Special applications—color matching, electrical interference, etc.

Budget For Building Exteriors—shall be based on the following:
- a) Overhead lighting—use same procedure as interior lighting
- b) Floodlighting—use beam lumen method and 0.75 as coefficient of beam utilization (CBU)
- c) Facade lighting not to exceed 2 per cent of interior power budget.

Lighting Design and Controls
- a) Design—consider non-uniform lighting pattern related to task locations, select luminaires with proper distribution pattern, better light-loss factor based on carefully evaluated cleaning and relamping schedule.
- b) Controls—capable to reduce illumination by at least one-half when task is not being performed in any task areas greater than 100 sq ft; light in any space must be turned off when not in use or when daylight is adequate.

Guidelines and Forms—are provided to assist the designers to reduce the effort for determining the power budget of a building.
- a) Part 1 Building interiors or exteriors—lumen method procedure
- b) Part 2 Special task lighting—point calculation procedure
- c) Part 3 Building floodlighting—beam-lumen method procedure
- d) Part 4 Summary.

Simplified Procedures
- a) Spaces with similar size and requirement—only need to be calculated once.
- b) Spaces smaller than 150 sq ft may be consolidated into one equivalent large space having equal illumination requirements (using room cavity ratio (RCR) of a square space equivalent to the average space size).
- c) Spaces without specific visual tasks—may be consolidated into one.
large space using RCR = 1, 55Lm/W and 10 FC (or use 0.5W/ft² as power density)
d) Spaces with more than two tasks—may be combined into two
equivalent tasks weighted average illumination.

Power Calculations—for the spaces shall be calculated from the following formula:

\[
W = A \times FC \\
CU \times LE \times LLF
\]

where \( W \) = Lighting power for the space, watts
\( A \) = Size of task area, general area, etc., sq ft
\( FC \) = Illumination level (E), footcandles
\( CU \) = Coefficient of utilization
\( LE \) = Lamp efficacy, lumens/watt
\( LLF \) = Light loss factor; use 0.70 unless otherwise justified

10. ENERGY REQUIREMENTS FOR BUILDING DESIGN

ON SYSTEMS ANALYSIS

Scope—This section is included to provide an opportunity to deviate from the specific standard design criteria of Sections 4 through 9 by demonstrating that such deviations will result in annual energy consumption equal to or less than that resulting from compliance with these criteria. If any proposed alternate design deviates from the specified criteria of Sections 4 through 9, the annual energy consumption of the proposed design shall be compared with the “standard design” using the same heating and cooling energy sources.

Energy Analysis—Annual energy consumed by standard and alternate systems shall be based on same building area and environmental requirements, and shall be of sufficient detail to permit the evaluation of the effect of system design, climate factors, operational characteristics, and mechanical equipment. The calculation shall be based on ASHRAE recommended techniques and procedures for 8,760 hours of operation of the building and its service systems. Detached residential buildings and light commercial structures having the indoor temperature controlled from a single point may use simplified energy analysis procedure, such as bin or degree-day methods.

Documentation—Analysis and report shall be made by a registered professional engineer and shall provide sufficient technical detail to verify that the alternate system will result in equal or less annual energy consumption.

11. REQUIREMENTS FOR BUILDINGS UTILIZING SOLAR,
GEOTHERMAL, WIND OR OTHER NON-DEPLETING
ENERGY SOURCES

General—Non-depleting energy (including nocturnal cooling) supplied to the building shall be excluded from the total energy chargeable to the proposed alternative design.

Solar Energy—To qualify for energy exclusion, solar energy must be derived from a specific collection, storage, and distribution system, passing through windows when the windows are: 1) provided with operable insulating shutters or other devices to limit the maximum values of gross wall (see Table A), and 2) shaded or otherwise protected from direct solar radiation during cooling periods.

Documentation—The energy savings derived from non-depleting solar and nocturnal cooling, supported by documentation prepared by a registered professional engineer, shall be separately identified from the over-all building energy consumption.

Exceptions—Proposed alternative design for residential and light commercial structures (less than 20,000 sq ft) that derive a significant portion (greater than 30 per cent) of their total annual energy consumption from non-depleting sources shall be exempt from the requirements of a full-year energy system analysis. For other structures that derive over 50 per cent of their “annual thermal” requirements (heating, cooling, service water heating) or over 30 per cent of their “annual total” energy requirement from non-depleting sources shall be exempt from comparing the proposed alternative design to a standard design.

---

### MAXIMUM U₁₀ AND OTTV FOR MAJOR U.S. AND CANADIAN CITIES

<table>
<thead>
<tr>
<th>CITY &amp; STATE</th>
<th>CLIMATIC DATA</th>
<th>MAXIMUM U₁₀ (Btu/h·ft²·F)</th>
<th>OTTV (Btu/h·ft²·F)</th>
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</table>

\[ \text{U₁₀} = \text{U₁₀ landfill} + \text{U₁₀ window} + \text{U₁₀ air} + \text{U₁₀} \]

where \( \text{U₁₀} \) = the average thermal transmittance of the gross wall area, Btu/h · ft² · F
(\( \text{A₁₀} \)) = the gross area of exterior walls, ft²

OTTV = over-all thermal transfer value

\[ \text{OTTV} = (U₁₀ \times A₁₀ + T₁₀) + (A₁₀ \times S₁₀ \times C₁₀) + (U₁₀ \times A₁₀ \times T₁₀) \]

where \( A₁₀ \) = fenestration area, ft²

\[ T₁₀ \text{ = a temperature varying from 23 to 44 depending upon the mass of the construction.} \]

\( \text{SC} \) = shading coefficient of the fenestration

\( \text{T} \) = temperature difference between exterior and interior design conditions

\( \text{SF} \) = solar factor value given in Btu/h · ft²

\( \text{A₁₀} \) = gross area of exterior walls, ft²

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144 ARCHITECTURAL RECORD October 1976
Prewired panels carry power, communications

"ERA-1" is a panel system prewired for power to supply individual work stations with electricity. Raceways built into the base of the panels are connected with each other by power connectors that snap into place. Each panel offers four outlets. The system connects to existing fixed wiring via telescoping aluminum raceways to the plenum, or simple base feed connections to wiring in any lay-in floor grid system, peripheral walls or building columns. These wired steel panels integrate with the company's 'UniGroup' office interiors system. ERA-1 panels come straight or curved, in 1-, 2-, 3-, 4- and 5-ft widths, in heights from 42 to 80 in. Various finishes are offered. • Havorth, Inc., Holland, Mich.

Circle 300 on inquiry card

Pushbutton lockset operates like car door

The "Webster" lockset action is similar to that of a car door, and the push-button is said to be easily operated. The latch and handle are die-cast zinc alloy; the latchbolt is high tensile brass; and the spring is stainless steel, with phosphor bronze bearing surfaces for the internal moving parts. The satin chrome-plated finish on a plated base is said to withstand extreme atmospheres. Providing bolt-through assembly, the lockset is suitable for doors from 1¼ to 1¾ in. thick. • The Ironmonger, Chicago.

Circle 301 on inquiry card
Now, Computerized Building Automation at an Affordable Price.

In the past, when you suggested computerized automation for a client's building, you may have gotten responses like these: "Sounds great, but I can't afford all that. What do you think I am, a finance company? Tell it to the Pentagon." Today your answer can be forthright and simple:

Tell him Johnson Controls computerization, in new and existing buildings from 15,000 to 300,000 square feet, averaged only 51¢ a square foot last year.

Fifty-one cents! It comes to a lower total cost than he usually pays for exterior lighting, or landscaping, or carpeting the corridors.

Fifty-one cents - for the computer, the control center, and the building-wide multiplex wiring - out of an average building cost of $20 to $60 a square foot!

How the JC/80 Computer System Cuts First Costs

The JC/80 is the computer built for buildings only. It's not designed to reserve flights, or mail bills, or figure compound interest. Its sole purpose is to monitor and control building automation systems. The JC/80 system cuts first costs because the same computer, the same control center, the same multiplex wiring are used to monitor and control HVAC, humidification, firesafety, security, communications, lighting and clock systems.

What's more, with or without input/output devices, it can monitor and control three, four, five or more buildings all from a single location.

Even more impressive are the ongoing savings the JC/80 delivers year-in and year-out. In the average installation, the JC/80 pays for itself in less than three years!

How JC/80 Cuts Operating Costs

In heating and cooling costs alone, the JC/80 system can save 8¢ to 12¢ a square foot out of the estimated yearly heating/cooling cost of 36¢ a square foot.

By activating totally automated programs for enthalpy switchover, nite set-back, start/stop, supply air reset, chiller plant control and load shedding, in a 200,000 square foot building the JC/80 can save $16,000 to $24,000 a year!

What does JC/80 hold for you?

The Johnson Controls JC/80 lets you provide the ultimate in esoteric building control at the lowest available cost. Alternatively, it lets you start with the basic necessities and then "add on" automation systems in the next few years. Either way the JC/80 gives you a cost-saleable design. And Johnson Controls backs you up with one-source supply, one-source responsibility, and the expertise that has commissioned more than half the computerized automation systems in U.S. buildings.

Owners want what computerized building automation can do, and they're prepared to pay for it.

Especially when you give them the punch line: 51¢ a square foot. For more information call your local Johnson Controls office. And send for Johnson Controls 12-page booklet, "JC/80 Computerized Building Automation." Write R.J. Caffrey, Vice President-Marketing, Systems & Services Division, Johnson Controls, Inc., Reference M-2, P.O. Box 423, Milwaukee, Wisconsin 53201.

JOHNSON CONTROLS
Prime source of problem-solving systems.

For more data, circle 73 on inquiry card
**SPACESAVER INCREASES YOUR STORAGE & FILING CAPACITY BY 50% OR MORE!**

- Spacesaver turns wasted aisles into usable space.
- Manual and electric systems. Adapts to any shelving or files, whether existing or new.

Typical Applications:
- Accounting Records
- Computer Tapes
- Medical Records
- X-Ray Files
- Parts Storage
- Engineering Drawings
- Vault Storage
- Museums
- Libraries

FREE Illustrated Brochure

See Spacesaver's catalog in Sweet's General Building File. Reference No. 10.20/SP

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Company ____________________________
Street ________________________________
City ________________________________
State __________________ Zip ________

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1450 JANESVILLE AVE
FORT ATKINSON, WIS 53538
414-593-6965 OR 608-968-7590

For more data, circle 74 on inquiry card
IRRIGATION SPRINKLER CONTROLLER / The solid-state SSM controller for landscape irrigation installations comes with 10, 20, or 30 stations; 10-station modules can be added at will. Features include variable timing; alternate-day, repeat cycle and calendar programming; dry indexing mode; and automatic, semi-automatic or manual operations. Power requirements are 155 VAC at 60 Hz; other power inputs are available as options. • Weather-matic Div., Telco Industries, Dallas, Tex. Circle 303 on inquiry card

PLANTERS / "Drum" planters have recessed casters for easier maintenance and mobility in turning and re-arranging plants. The one-piece tubs are molded of high impact ABS plastic; they come in 15¼-in. and 23½-in. diameters, 14-in.-high, and are available in a choice of red, black, white or brown. • Architectural Supplements Inc., New York City. Circle 304 on inquiry card

PENDANT LIGHTING / Heavy-gauge spun aluminum forms a 14-in.-dia cylinder 13¾-in.-deep for this "Habitat" #37131 pendant lighting fixture. The matte white inner surface provides good reflectance for a 300-watt lamp. Outer finishes include polished chrome or brass; satin bronze; and white, black, or "wet" red. • Habitat Inc., New York City. Circle 305 on inquiry card

COFFER CEILING / These molded mineral-fiber ceiling modules offer design flexibility for both interior and exterior commercial building applications. Versa-Tile ceilings are strong enough to support lighting fixtures, and readily incorporate air-handling and sprinkler systems. The lightweight units are available in standard or custom configurations of many different shapes, textures and colors; all are said to be flame- and moisture-resistant. • Holo-phane Div., Johns-Manville Sales Corp., Denver, Colo. Circle 306 on inquiry card

more products on page 155
The Receptionist requires just enough work surface and storage space to do an efficient day's job. And Ad-Infinitum offers it. Handsomely.

The Secretary needs more work space, and plenty of storage space for files. So she gets a pleasant work station designed specifically for the job.

The Accounting Clerk, working with computer printouts and reams of materials, needs additional storage room. And panels to keep machine noise level down.

The Sales Manager requires extra storage space for department records, so a panel-mounted cabinet is added. And a visitor's chair.

The Executive Vice President, with lots of paperwork to do, needs an office with more work surface to do it on, and more room and more privacy to do it in.

The President deserves an office befitting his position. An Ad-Infinitum gives him one that underlines his image as the one at the top of the corporate ladder.

Now, after years of research into the strengths and weaknesses of pioneer open office systems and the requirements of modern business, Alma presents Ad-Infinitum. An illuminated open plan office system that lets you start with any budget, any space, and create an office that meets today's needs and tomorrow's requirements; an office that provides customized work space for every level of the corporate ladder.

Designed by ISD, engineered by Alma Desk, and shown for the first time at NEOCON '76, Ad-Infinitum may be seen at our showrooms in Chicago, New York, and High Point. See it there. Or write for more information to Alma Desk Company, P.O. Box 2250, Dept. 41, High Point, N.C. 27261.

Then create the ultimate office with Ad-Infinitum.
Vicrtex vinyl wallcoverings vs. Time

Only Vicrtex is guaranteed for a full 5 Years — that's 5 times longer than any other maker's guarantee!

The ravages of time show all too quickly on many competitor vinyl wallcoverings — stains, scuffs, mildew discoloration all limit the life of an installation.

One vinyl wallcovering is built to battle time—VICRTEX!

We Guarantee...

All Vicrtex materials, when adhered to a sound surface with the manufacturer's recommended procedures and adhesive, are guaranteed for a period of five years from the date of sale against manufacturing defects only.

Said materials are further guaranteed against permanent surface staining attributable to mildew and/or bleach-through of foreign impurities embedded in the backing as well as separation of the vinyl from its backing.

If defects are claimed during this period, and proper documentation is presented to the manufacturer with regard to date of sale plus adhesive used and surface applied to, the manufacturer will replace the vinyl and assume installation costs.

The foregoing Guarantee is in lieu of all other Guarantees or Warranties, express or implied, written or oral.

COMPARE GUARANTEES: We'll replace our product and reinstall it (replacement labor is generally twice material cost) if Vicrtex should ever prove defective. We're that sure—it never will!!

And: 70 original patterns, deep textures, thousands of colors provide a boundless design palette for any interior scheme.

Specify today for lasting beauty tomorrow. Get all the facts in the Vicrtex guide, "Vinyl Wallcoverings — Questions & Answers." Write or phone for your copy, today!

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Save time and money with this J-M exclusive...
a lightweight, durable, long-span masonry wall system that's easy to install.

J-M is in the masonry wall business. In a very beautiful and practical way.

With J-M Corspan®...an exclusive thru-wall system that combines design freedom and long life with ease of installation.

That gives the desirable and massive look of masonry without the massive weight.

J-M Corspan is an extruded masonry panel manufactured in a wide variety of configurations, textures and colors.

It can be used as a complete wall for an entire structure of any size or height.

It offers great strength without great weight. Ease of handling. Carefree beauty. Versatility of shape and texture.

Corspan can be installed quickly and easily to steel or concrete framing using positive mechanical attachments. It can be used for unsupported vertical spans up to 20'. It can be installed from the floor of the structure without the need and expense of scaffolding.

And Corspan's unique features have inspired its use in many ways impossible with conventional masonry materials

Find out more about Corspan. Write for brochures BSD-2A, BSD-5A and BSD-6A giving descriptive information, test data, and installation details, to Johns-Manville, Greenwood Plaza, Denver, Colorado 80217.

Or call Dave Lucy, 303/770-1000.

We've got better building systems

Johns-Manville

For more data, circle 77 on inquiry card
Why steel is the material others are compared to!

When toilet partition materials are talked about, comparisons are inevitably made to steel... comparisons in performance, availability, design, colors and price.

Why? Because steel partitions have proven their value over decades of use... in all types of structures with a wide range of problems. Problems that include design criteria for traffic, resistance to vandals, fire, humidity, stains, scratches and effects of intensive rest room cleaning procedures. Bridgecore insulation in panels, pilasters and doors provide low sound transmission.

STEEL IS STRONG! Steel pilasters, panels and doors provide support strength and rigidity unmatched by other materials. Steel will not warp or burn... steel “Stands Up”.

STEEL IS VERSATILE... in design and colors, and it's available in finishes to meet your specific needs; baked acrylic finish that resists cigarette burns, stains, common acids and caustics, while meeting rigid budget requirements. Porcelain on steel for ultimate corrosion resistance... glass hard surface fused to steel and stainless steel trim, add up to ultimate resistance to acids, scratches, stains and effects of heavy use. 302 Stainless Steel... jewel-like in appearance with lifetimes of strength and beauty. And for the “luxury look”, vinyl bonded to steel to provide texture and color.

STYLES? Only steel can offer all styles: Wall supported partitions to provide easy cleaning and greater design flexibility. Head-rail and floor supported “Academy” for new or old buildings, ceiling-hung “Century” for clear floor areas and “Normandie” floor supported units.

VERY IMPORTANT! Consider the construction and hardware. Sanymetal hinges are smooth, flush, integral to the pilasters and doors... no exposed bolts or screws — easy cleaning, strong and proven through millions of swings. Concealed latches are recessed, pilaster bases are extra strong with one piece stainless steel shoes, corners are welded for strength and smoothness.

These are just some of the reasons steel is a “standard” for comparison... it’s the “standard” too, for value... in-place cost versus in-place performance.

For functional and design disciplines that do not require all the attributes of steel... consider Sanyplastic (high-pressure laminate) or Sanymetal Melamate — the new, fast-cycle melamine surface in wood grains and contemporary colors.
Announcing Grinnell's new Quick Response Actuator.

It speeds sprinkler reaction time up to 75%.

Our new Quick Response Actuator, in combination with our Duraspeed Sprinkler, controls and puts out fires faster.

There's less chance of fatalities, less chance of injuries, less property loss.

The Quick Response Actuator offers excellent life-safety benefits in nursing homes, hospitals, hotels, condominiums, apartments and similar buildings where it may be difficult to evacuate occupants.

It also offers superior protection for high-value equipment and inventories wherever flammable materials present the potential for flash fires.

Under typical approval test conditions, a sprinkler with the new Quick Response Actuator activated in just 30 seconds compared to 115 seconds for a standard sprinkler without it.

The UL-listed actuator installs easily onto our new Horizontal Sidewall Extended Coverage Sprinkler (which gives you twice as much coverage as a standard sprinkler) and our Pendent and Sidewall Sprinklers.

You can order the unit as original equipment or it can be retrofitted into existing Duraspeed installations.

For information contact your nearest Grinnell representative listed in the Yellow Pages. Or write: Grinnell Fire Protection Systems Company, Inc., 10 Dorrance Street, Providence, Rhode Island 02903.

New Quick Response Actuator installs on these Grinnell Duraspeed models:

Pendent Sprinkler
Sidewall Extended Coverage Sprinkler
Standard Horizontal Sidewall Sprinkler

For more data, circle 79 on inquiry card
OUR NEW D-1000 PHONE SYSTEM IS BIG IN CALL-HANDLING CAPACITY, YET REMARKABLY SMALL IN SIZE.

Now there's an electronic PABX that puts the emphasis where your clients need it: on delivering the highest possible level of usable telephone capability.

It's Executone's new D-1000. The Big Switch.

TRAFFIC-ABILITY: THE BIG DIFFERENCE

The D-1000 is actually a whole family of TDM (Time Division Multiplex) switches that handle anywhere from 40 to over 800 lines. By providing 140 time slots, The Big Switch delivers exceptional traffic capability. In many cases, the highest in the industry.

Yet for all this "traffic-ability," The Big Switch is remarkably small. The 500-line switch, for example, occupies a mere 4-1/2 square feet of floor space.

SIMPLICITY: THAT'S A SWITCH

The D-1000 is exceptionally easy to use. Its outstanding array of features are accessed by pushing a single button or dialing a single digit. No complex operations, no codes to remember. Because all the time-saving convenience features in the world won't help if people steer clear of them after cut-over day.

You get the D-1000's unmatched ease of operation and efficiency with any standard two-wire phone. And Executone has designed a special D-1000 phone to help users take even greater advantage of the system's unique capabilities.

Likewise, the D-1000 offers the most compact and easy-to-use attendant console ever offered in a PABX. Easy-to-read LED displays give the attendant optimum information to handle a high volume of calls quickly and accurately.

FEATURES: THE BIG BENEFITS

The D-1000 offers all the features you'd expect in a stored program electronic switch. For example: Call Forwarding; Flexible Conferencing for up to 10 parties both inside and outside; Call Pick-Up; and probably the most appreciated anti-frustration feature of all, Automatic Call Back.

Plus additional features you might not expect. Such as fast, convenient Hands-Free Operation. And Locate/Meet-Me, a feature that solves the number one communications problem: "You can't talk with them until you find them."

THE BIG QUESTION

What about service? Ask any of the more than 200 users who have already switched to The Big Switch. They know they can count on Executone's nationwide network of local service organizations to provide prompt, efficient maintenance whenever it's needed.

Executone has been installing and servicing communications systems for more than 40 years — many of them in hospitals, where dependability can be a matter of life and death.

So don't make your big switch until you've checked into Executone's Big Switch. For more details—or a demonstration of the D-1000 System in action—just mail the attached reply card.
Create seemingly seamless buildings. That's the beauty of designing with Dow Corning 790 building sealant.

Now you can design the buildings of your dreams, with fewer, narrower joints — for endless expanses of wall.

While most sealants are designed to accommodate joint movement of ±12 1/2% to ±25%, Dow Corning 790 sealant allows design freedom because of its ±50% movement capability without affecting adhesion or cohesion. Use 790 on ±25% joint designs, and rest easy. Its increased capabilities give you an extra margin of safety.

Buildings sealed with 790 remain weatherproof, watertight and maintenance free. For twenty years or more.

Application? Fast and easy. 790 is ready to use. Less material required, less time, labor and expense. No primer needed on most substrates, no job delays or costly callbacks. For design freedom, beauty and practicality, Dow Corning 790 sealant is a dream come true.

Start your dream today; write for more information to: Dow Corning, Dept. 6400A, Midland, Michigan 48640.

For more data, circle 81 on inquiry card
Add a little ACoustilead® here

And subtract a lot of noise there.

Acoustilead—1/64" thin sheet lead—is a proven material for subduing noise in offices, schools, hospitals and other buildings. Installed in the area between a hung ceiling and the slab above, Acoustilead stops noise from leaping over walls separating one room from another.

Acoustilead is effective because it is limp and dense and prevents noise from penetrating, which can happen with porous materials. And Acoustilead is easy to install in new buildings and when renovating older ones. No special skills or tools needed.

For a free booklet on Acoustilead for Plenum Barriers, or the name of an Acoustilead distributor near you, write: Sound Attenuation Department, Federated Metals Corporation, P.O. Box 2600, Somerville, N.J. 08876.

FEDERATED METALS
A subsidiary of ASARCO

For more data, circle 82 on inquiry card

To us, this building is light construction.

Light is an architectural element. Just like stone, steel, concrete.

And like these elements, light can be subdued, controlled and designed to achieve fantastic lighting effects.

Our Environ® modular systems for custom lighting control are the brains behind some of the world's most beautiful architectural lighting. Silent, automatic, trouble-free. Environ® systems can save energy and add a whole new dimension to your building, inside and out.

Get all the details. Write or call our Architectural Sales Manager.
Strand Century Inc., 20 Bushes Lane, Elmwood Park, New Jersey 07407. Telephone (201) 791-7000.

STRAND CENTURY INC
A COMPANY WITHIN THE TANK ORGANISATION

For more data, circle 83 on inquiry card
AUTOMATIC WINDOW BLINDS / The aluminum slats of this electrically-operated window blind are 1-in. wide for minimal maintenance. The "mini-blinds" are said to conserve heating and cooling energy, and to produce a glare-free environment while preserving the view through the window. The blinds come in over 100 colors. • Acme-Artforge, Inc., Chicago, III.

Circle 315 on inquiry card

CONTRACT SEATING / New "Plus" chairs and sofas, designed by Friedrich Hill, feature upholstered curves and permanently sewn-on cushions. Prices are available in a choice of leather or velour. • Brayton International Inc., High Point, N.C.

Circle 316 on inquiry card

ELECTRIC DOOR CLOSER/HOLDER / Lectro-Close units combine an electro-mechanical door closer and an electro-magnetic door holder in one compact housing. Door opening and speed is fully adjustable; four possible mounting installations will adapt to individual door locations. • Special Products-Hardware Div., Emhart Industries, Inc., Berlin, Conn.

Circle 317 on inquiry card

more products on page 167

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186 ARCHITECTURAL RECORD October 1976
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