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COVER: Bank of China Tower, Hong Kong;
I. M. Pei & Partners, Architect
Photographer: @John Nye
Their roof gives you more installers.
Ours gives you more roof.

Before you buy a roof, maybe you should see what you’re buying. Take the built-up-roof in the bottom picture, for instance. Look at all those people installing it. Are you buying a roof, or renting a small army? Now, look at the Stevens contractors in the top picture. Rather small group, wouldn’t you say? That’s because they work with the Stevens Hi-Tuff® Roofing System. Which costs a bit more to buy, but is much less expensive to put down. So more of your money gets spent on the roof. And less on their labor. Add the life cycle energy costs and the Stevens roof is actually less than the built-up-roof. Because the Hi-Tuff® roof is white, so it saves on air conditioning. Plus, it’s made from Hypalon.* Which makes it naturally fire resistant. Chemical resistant. And strong, because hot air welded seams are the most reliable in the industry. So don’t let the biggest part of your roofing investment walk off when the job’s done.

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San Diego’s “New Town”
Donald Canty’s article on San Diego’s successful Uptown District mixed-use development [RECORD, October 1990, pages 62-67] was well chosen, but Canty’s shallow research provides little understanding of the real process that gave birth to the project. The article completely omits a vital six-month process of urban design studies and citizen participation that preceded the city’s selection of the developer and subsequent work of the developer’s architects.

The city of San Diego did not simply issue a developer RFP at the outset of the project, as the article suggests. In March 1987, City Council appointed a prominent citizens’ task force and selected an urban design consultant team that worked hard to define the recommended land use mix and urban design guidelines for the site. The essential ideas behind the project—the mixed-use concept, pedestrian emphasis, Vermont Street link to the city grid, and many other design elements that were realized—came from this process. They were clearly documented, approved unanimously by the City Planning Commission and City Council in November 1987, and became a part of the developer RFP issued by the city the following month.

As principal consultant to the city, our firm led the multidisciplinary team that conducted urban design, financial, and transportation studies for the site’s redevelopment. The hard work and creative efforts of the City Planning staff led by Michael Steeper, and the citizens’ task force capably chaired by Planning Commissioner Yvonne Larsen, were instrumental in establishing a consensus on an imaginative development concept and key design elements before the developer was selected by the city. Canty did a great disservice to all of those involved in the early part of the process to completely neglect this important groundwork.

This should not detract from the fine work of the developer, team and their architect, who met the objectives of the city and worked effectively with the local neighborhood as the project design evolved.

If ARCHITECTURAL RECORD continues its coverage of complex urban design and architectural projects, and pretends to review their background, its correspondents have a professional responsibility to do a reasonable amount of homework, and not rely entirely on the public relations releases of project developers and their architects.

GERALD GAST ARCHITECT AND URBAN DESIGNER GAST & HILLMER San Francisco

U. K. practice
The subtleties that differentiate British practice from U. S. practice are such as to confound the most well intended [RECORD, October, page 20]. Quantity surveyors are “gods” unto themselves, and can be a valuable asset to any practice, since they are often retained long before the architect. Utilizing consultants the British way also has its pitfalls. For while the most part extremely competent, they are not quite as flexible as American engineers. For those prepared to make the investment, the rewards will ultimately be there; however, it is a long, sometimes frustrating road.

E. MANNY ABRABEN AIA, RIHA Boca Raton, Florida

Height limit
I am writing to take exception to the piece in Design News [RECORD, October 1990, page 19] that begins “Given Washington, D. C.’s rigid 180-foot height limit and its industry of federal bureaucracy . . . .” Washington’s architectural failures are not caused by its height limit, or even by that catch-all of blame, the federal bureaucracy, but by greedy developers and the cynical architects who cater to them. If Washington’s streets are lined with shoddy International Style and watered-down Postmodernist knock-offs, the architects who designed them and the businessmen who bought them must answer for them, not the height limit, which has saved us from taller horrors.

JONATHAN REEL Washington, D. C.
100 YEARS OF ARCHITECTURAL RECORD

A look back and a look forward

Eighteen ninety-one was ARCHITECTURAL RECORD's first year. A quarterly, it was 7 in. by 9 3/4 in. high, set in hot type and printed letterpress. The 55-pound coated paper is now brittle and yellowed at the edges. New buildings were shown mostly as linecuts done from superb ink drawings, but a few photographs did find their way in, including a heavy Richardsonian townhouse at 848 Fifth Avenue in New York, designed by Charles Haight, and the San Antonio National Bank Building done in the Byzantine manner by George Post.

There was a long essay by Montgomery Schuyler on the state of the Romanesque style in New York, and a four-page editorial by the first editor, Harry Desmond, an interesting but rambling piece which raps the sort of crass materialism of the day that elevated the railroad as the “culmination of civilization.” There is a piece by George Keister denouncing fads in architecture (how familiar!), a technical piece on terra cotta and another about plumbing, a couple of poems, the first installment of a novel, and about 25 advertisements. Subscription: one dollar.

The magazine was well-named and the name still fits. A review of its pages over those hundred years yields a fascinating grand tour of buildings, ornament, products, the evolution of building codes, the education of architects, the emergence and change of building types, details, construction forecasts, graphic design. RECORD spans unique periods in this nation's history, from the end of the Brown Decades and the Chicago Exposition, through Art Deco, four major wars, the rise, decline, and survival of the Modern Movement, the tremendous surge in building technology, the legitimization of the business of architecture, and the ongoing ebb of the drawing pencil in favor of a keyboard and a mouse.

Contributors have included giants: Schuyler, Mumford, who wrote some 20 pieces between 1930 and 1965, Wright. We kick off our centennial year with some pithy excerpts from Wright’s writings for RECORD, which began in 1908 and span 44 years [see pages 12-17].

July is the actual anniversary month. To celebrate the event, we’re preparing a spectacular souvenir issue. In addition to a series of articles by top critics covering the major architectural periods, we will bring you the RECORD Album, made up of highlights from older issues; an interview with a 100-year-old architect; and the winning buildings from a major survey of our readers whom we are asking to identify the most important buildings of the past century (be sure to send us your ballot, which faces page 52).

And we’ll look at the future—of design, of architectural education, of the architect’s own office, as seen by today’s sharpest thinkers.

But let’s not forget: a centennial is merely a marker on a road. Think of our pages as a series of brief camera takes in time, a look back and a look forward, in this constantly moving procession which those who come after us will assess when their turn comes.

Stephen A. Kliment
FRANK LLOYD WRIGHT: ON THE RECORD

Throughout his career, Wright used the pages of ARCHITECTURAL RECORD as a pulpit to preach his gospel of Organic architecture.

Editor's note: Although ARCHITECTURAL RECORD can hardly take credit for Frank Lloyd Wright, the magazine was one of the first to recognize his genius and remained a friend through thick and thin. Before Wright became known much beyond Chicago, RECORD took note of his achievements. In April 1904, the magazine looked at the new spirit of architecture in Chicago and stated, “It really derives its momentum and inspiration chiefly from the work of Mr. Louis Sullivan, and from a very able architect, who issued from Mr. Sullivan’s office, Mr. Frank Wright.” Two decades later, when Wright’s career was considered over by many observers, RECORD provided him with a powerful pulpit from which to preach his gospel of Organic architecture. Shortly thereafter, his career took off once again.

Wright was a frequent contributor to RECORD throughout his career. Never one to soft-pedal his ideas, Wright spoke out on a variety of topics—from the nature of materials to the evils of “Modern Architecture.” In March 1908 he wrote an essay for RECORD entitled “In the Cause of Architecture,” which outlined his principles of Organic architecture and included his six “propositions” of good design. Six years later, in the May 1914 issue of RECORD, Wright further elaborated on his philosophy of architecture, again under the title “In the Cause of Architecture.”

From May 1927 through December 1928, Wright penned a series of 14 essays that elaborated many of the points he had made in his previous articles. Although set below the now-familiar heading “In the Cause of Architecture,” the 1927-1928 essays carried subtitles such as “The Architect and the Machine” (May 1927), “The Logic of the Plan” (January 1928), and “What ‘Styles’ Mean to the Architect” (February 1928). Wright was paid the very generous sum of $7,500 for these articles, money he sorely needed at the time. Years later, he would remind RECORD editors that he had been hired to write 15 articles for the series, but had only produced 14. “I still owe you one article,” he would joke. Finally, in May 1952 he came through with his missing piece, a sharply worded critique entitled “Organic Architecture Looks at Modern Architecture.”

What follows is a selection of quotations from Wright’s writings for RECORD, organized by topics, and reprinted in Wright’s sometimes idiosyncratic writing style.

C. A. P.

Wright’s six “propositions” of 1908

I. Simplicity and Repose are qualities that measure the true value of any work of art.

II. Army simplicity is not in itself an end nor is it a matter of the side of a barn but rather an entity with a graceful beauty in its integrity from which discord, and all that is meaningless, has been eliminated. A wild flower is truly simple. Therefore

1. A building should contain as few rooms as will meet with conditions which give it rise and under which we live, which the architect should strive continually to simplify

2. These rooms should be carefully considered comfort and utility may go hand in hand with beauty. The entry and necessary work rooms which there need be but rooms on the ground floor of any house, living room, all, and kitchen, with the possible addition of a ‘social’ really there need be but one room, the living room with rooms otherwise quartered from it or screened within the living room. Architectural contrivances.

3. A building should contain as few rooms as will meet with conditions which give it rise and under which we live, which the architect should strive continually to simplify

4. Appliances or fixtures as undesirable. Assimilate them to with all apertures into the def the structure.

5. Pictures deface walls often and decorate them. Pictures should be decorative and incorporated in the original scheme as decoration.

6. The furniture shown in most of the furniture is built in as a part of the original scheme considering the whole as an integral uII.—There should be as many kinds of hor there are kinds (styles) of people as many and different as there are different individuals. A man who has indi

(what man lacks it?) has a right to its expression in environment.

III.—A building should appear to grow easily from

and be shaped to harmonize with its surroundings if not manifest there, and if not try to make it as quiet, sub and organic as She would have been were the opp Hers. (In this I had in mind the barren town lots devoid natural incident, town houses and board walks evince.)

We of the Middle West are living on the prairie. This has a beauty of its own and we should recognize and a this natural beauty, its quiet level. Hence, gently roofs, low proportions, quiet sky lines, suppressed ho
In the Cause of Architecture

The reader of architectural discourses encounters with increasing frequency discussions on Modern Architecture, Industrial Architecture, and the like. There is a growing tendency to shape his forms to requirements of function alone, to make his buildings consistent with the needs of those who will use them, and to design his exteriors so that they will harmonize with the rest of the environment. This is all well, and it is necessary that it be done, but it is also necessary that we should not lose sight of the fact that architecture is more than a matter of function, more than a matter of conformity to its surroundings. Architecture is, above all, a means of expression, a means of communication, a means of inspiration.

Radical though it be, the work here illustrated is dedicated to a cause conservative in the best sense of the word. At no point does it involve denial of the elemental law and order inherent in all great architecture; rather, it is a declaration of love for the spirit of that law and order, and a reverential recognition of the elements that made its ancient letter in its time vital and beautiful.

Primarily, Nature furnished the materials for architectural motifs out of which the architectural forms as we know them to-day have been developed, and, although our practice for centuries has been for the most part to turn from her, seeking inspiration in books and adhering slavishly to dead formulae, her wealth of suggestion is inexhaustible; her riches greater than any man's desire. I know with what suspicion the man is regarded who refers matters of fine art back to Nature. I know that it is usually an ill-advised return that is attempted, for Nature in external, obvious aspect is the usually accepted sense of the term and the nature that is reached. But given inherent vision there is no source so fertile, so suggestive, so helpful artistically for the architect as a comprehension of natural law. As Nature is never right for a picture so is she never right for the architect—that is, not ready-made. Nevertheless, she has a practical school beneath her more obvious forms in which a sense of proportion may be cultivated, when Vitruvius and Vignola fail as they must always fail. It is in the sense of reality that translated to his own field in terms of his own work will lift him far above the realistic in his art; there he will be inspired by sentiment that will never degenerate to sentimentality and he will learn to draw with a surer hand the every-perplexing line between the curious and the beautiful.

A sense of the organic is indispensable to an architect; where can he develop it so surely as in this school? A knowledge of the relations of form and function lies at the root of his practice; where else can he find the pertinent object lessons Nature so readily furnishes? Where can he study the differentiations of form that go to determine character as he can

The opening salvo: Wright's first article for ARCHITECTURAL RECORD in March 1908 (above right) included his “six propositions” of good design. Throughout his career, Wright applied his principles of Organic architecture to works such as Fallingwater in 1939 (top left), the interior of Taliesin in 1925 (above left), and Taliesin West in 1940 (below). The buildings carefully melded natural materials and Modern construction with their rugged sites.
Wright's Imperial Hotel in Tokyo (built in 1923) used volcanic stone and a sophisticated earthquake-resistant foundation. The Robie House (above), built in 1907, epitomizes the Prairie Style, with its strong horizontals and flowing spaces. The Johnson Wax headquarters (top right and above right) pioneered a new kind of corporate design, while the Sussman House of 1955 (below) represented Wright's Usonian ideas.
heys and sheltering overhangs, low terraces and out-reach-walls sequestering private gardens.

—Colors require the same conventionalizing process to make them fit to live with that natural forms do; so go to the use and fields for color schemes. Use the soft, warm, optic tones of earths and autumn leaves in preference to the mistic blues, purples, or cold greens and grays of the new counter; they are more wholesome and better adapted in cases to good decoration.

—Bring out the nature of the materials, let their nature naturally into your scheme. Strip the wood of varnish and let it reveal. Develop the natural texture of the plastering and stain it. Reveal the nature of the wood, plaster, brick, or stone in your designs; they are all by nature friendly andiful. No treatment can be really a matter of fine art when natural characteristics are, or their nature, is, outraged or treated.

—A house that has character stands a good chance of being more valuable as it grows older while a house in prevailing mode, whatever that mode may be, is, soon out of fashion, stale and unattractive. . . . Buildings like people must be sincere, must be true to their own nature and, when withal as gracious and enviable as may be....

...all, integrity. The masonry is the normal tool of our civilization, give it work that it can do well—nothing is of greater importance. To do this is to formulate new ideals, to formulate new ideals, sadly needed.

1908.

Nature: firmly, Nature furnished materials for architectural forms out of which the architectural forms as we know them today have been developed, although our practical centuries have been lost part to turn from seeking inspiration in books and adhering slavishly to dead men, her wealth of suggestion is inexhaustible: her riches are far richer than any man's desire. I know with what suspicion is regarded who refers matters of fine art back to Nature. There is that it is usually an ill-advised return that is attempted.... As Nature is never right for a picture, so is she never right for the architect—that is, not ready-made. Nevertheless, a practical school beneath her more obvious forms in a sense of proportion may be cultivated, when Vignola or Ruskin fail as they must always fail. March 1908.

Organic Architecture: the organic is indispensable to an architect; where develop it so surely as in this school? A knowledge of solutions of form and function lies at the root of his; where else can he find the pertinent object lessons so readily furnished? Where can he study the different forms that go to determine character as he can study the trees? Where can that sense of inevitability, organic of a work of art be quickened as it may be by force with nature in this sense? March 1908.

Organic building (an integument rather than a box) as one with its site and occupancy. Nor could these be imagined anywhere else nor for any other purpose or where and for what they were built. May 1952.

And elevation: we endeavored in this work to establish a harmonious relationship between ground plan and elevation of these buildings, considering the one as a solution to and the other an expression of the conditions of a problem of which the whole is a project. March 1908.

Moreover, these ground plans are merely the actual projection of a carefully considered whole. The 'architecture' is not 'thrown up' as an artistic exercise, a matter of elevation from a preconceived ground plan. The schemes are conceived in three dimensions as organic entities, let the picturesque perspective fall how it will. No man ever built a building worthy the name of architecture who fashioned it in perspective sketch to his taste and then judged the plan to suit. Such methods produce mere scene-painting. A perspective may be a proof but it is no nurture. March 1908.

Plan! There is something elemental in the word itself. A pregnant plan has logic—i.e. the logic of the building squarely stated.... A good plan is the beginning and the end, because every good plan is organic. That means that its development in all directions is inherent—inevitable ... Scientifically, artistically to foresee all is "to plan." . . . All there seen—purpose, materials, method, character, style. The plan? The prophetic soul of the building.... January 1928.

To judge the architect one need only look at his ground plan. He is master then and there, or never. January 1928.

On scale: In the matter of scale, the human being is the logical norm because buildings are to be humanly inhabited and should be related to human proportions not only comfortably but agreeably. Human beings should look as well in the building or of it as flowers do. January 1928.

On styles: I do not believe we will ever again have the uniformity of type which has characterized the so-called great "styles." Conditions have changed; our ideal is Democracy, the highest possible expression of the individual as a unit not inconsistent with a harmonious whole. The average of human intelligence rises steadily, and as the individual unit grows more and more to be trusted we will have an architecture with richer variety in unity than has ever arisen before; but the forms must be born out of our changed conditions, they must be true forms, otherwise the best that tradition has to offer is only an inglorious masquerade, devoid of vital significance or true spiritual value. March 1908.

"Styles" once accomplished soon become yardsticks for the blind, crutches for the lame, the recourse of the impotent. February 1928.

On ornamentation: In the main the ornamentation is wrought in the warp and woof of the structure. It is constitutional in the best sense and is felt in the conception of the ground plan. March 1908.

Our esthetics are dyspeptic from incontinent indulgence in "Frenchite" pasty. We crave ornament for the sake of ornament; cover up our faults of design with ornamental sensualities that were a long time ago senseless ornament. We will do well to distrust this unhandsome and unholy craving and look to the simple line .... March 1908.

Unfortunately, there is a conviction in certain quarters—if it amounts to a "conviction,"—chiefly European—that ornamentation is untrue to the Machine in this, the Machine Age. That
the use of ornamentation is a romanticism and therefore inap-
propriate.... The contrary is the case.... But it is true that
ornamentation in the old sense as an "applied" thing, as some-
thing added to the thing superficially, however cleverly adapt-
ed or "composed" is dead to this new world. August 1927.

On the machine:
The machine is here to stay. It is the forerunner of the democracy
that is our dearest hope. There is no more important work before
the architect now than to use this normal tool of civilization to the
best advantage instead of prostituting it as he has hitherto done
with murderous ubiquity forms born of other times and other conditions and which it can only serve to destroy.
March 1908.

The Machine is the architect's tool—whether it likes it or not.
Unless he masters it, the Machine has mastered him. May 1927.

On standardization:
An Oriental rug—gleaming with all the brilliant pattern opulent Oriental conception, has a... basis of standardization in warp and woof. In the
methodical stitches regularly taken with strands of woolen yarn, upon that regular basis of cotton strings, stretched tight, lies the primitive principle of standardization.... Standardization here serves the spirit well—its mechanics disappear in the glowing fabric of the mind.... Standardization should have the same place in the fabric we are weaving which we call civilization—as it has in that more simple fabrication of the carpet. And the creative artist must put it into the larger, more comprehensive fabric. June 1927.

On sin:
The sins of the Architect are permanent sins.
May 1914.

On criticism:
To promote good work it is necessary to characterize bad work as bad. May 1914.

So the standard of criticism is not only low—it is often dishonest or faked somewhere between the two, largely manufactured to order for profit or bias. Criticism is worked as an advertising game, traders' instincts subject to the prevailing commercial taint.
May 1914.

On discipline:
Discipline! The architect who undertakes his work seri-
ously on these lines is emancipated and imprisoned at the same time. His work may be severe; it cannot be foolish. It may lack grace; it cannot lack fitness altogether. It may seem ugly; it will not be false. No wonder, however, that the practice of architecture in this sense is the height of ambition and the depth of poverty.
May 1914.

Designing from the inside out:
The building is no longer a block of building material dealt with,
artistically, from the outside. The room within is the great fact
about the building—the room to be expressed in the exterior as
a space enclosed. This sense of the room within, held as the
great motif for enclosure, is the advanced thought of the era in
architecture, and is now searching for exterior expression.
February 1928.

On materials:
Steel is the epic of this age.... Steel has entered our lives as a
"material" to take upon itself the physical burden of our civiliza-
tion.... This is the Age of Steel. And our "culture" has received
it as ancient Roman culture received the great gift of the mason-
ry arch. For centuries the Romans pasted the trabeated Greek
forms of their "culture" on the arch in front as architecture,
while the arch did the work behind.... Finally the noble virtue of
the arch overcame the sham culture of the period and came forth
and lived as a great and beautiful contribution to mankind....
Steel is still smothered in esthetic gloom, insulted, denied and
doomed by us as was the masonry arch by the Romans. Inher-
virtue will triumph here too, in course of time. So much we
think! August 1927.

In most Architectures of the world stone has suffered immi-
grant of the stick. Even in the oldest cultures like Chinese civilization, constructions of stone imitate wood posts and beams in
... The ideas of forms that became associated with ideas the
beautiful in this use of wood took the more enduring ma
The rock-ledges of a stone-quarry are a story and a long one.
There is suggestion in the strata and character in the forma-
tions. I like to sit and feel it, as it is. Often I have thought,
great monumental buildings ever given to me, I would do
the Grand Canyon of Arizona to ponder them. April 1928.

It [wood] is the most humanly intimate of all mate-
rials. Man loves his association with it, likes to
under his hand, sympathetic to his touch and
eyes. Wood is universally beautiful to Man. May
1928.

But the essential difference between stone and con
crete is still unconsidered. And that essential dif-
ference is the plasticity of the material itself as
guished from natural stone, which has none at all.
I should say that in this plasticity of concrete is
esthetic value. As an artificial stone, concrete is
great, certainly no independent, esthetic value with
․ As a plastic material—eventually becoming
like in character—there lives in it a great esthetic
property, as yet inadequately expressed. August

On the Renaissance:
The "re-birth" of architecture. Unless a matter
wrong and died too soon there could be no occa-
son for "re-birth." But according to architects, ar-
ture has been in this matter of getting itself con-
ly re-born for several centuries until one might
it never properly born, and now thoroughly dead
repeated "re-birth." As a matter of fact, architect
never needed to be born again.... February 1928.

On Michelangelo and St. Peter's
Let the architect cling, always, to the normal figure for his scale and he cannot go so far west as Michelangelo did in St. Peter's in Rome. St. Pe-
variably disappointing as a great building, until the eye deliberately catches a human figure purposefully of comparison does one realize the
building is vast. All the details are likewise hung to have the sense of grandeur it might have if the masses were qualified by details kept to the
scale—this effect of grandeur—is lost in the de-
ton of the human figure. A strange error for an
architect to make. January 1928.

On the impact of European Modernism in America:
Well, this import was not an affair of construction at all
mere "esthetic," a painter's, not an architect's. Soon a chic fruitiful [contributions] made by Organic architecture in its dimensions now reappeared as a two-dimensional affair. Arrangement was scrapped off. A high box would be contrasted
long low box, or square boxes were placed together alo
dy tall boxes. Or on came the cube box cut open, or se
the air on posts without pants. But always, nonetheless
withstanding—the BOX. Thus surfaced, the box was
ably painted white to emphasize the fact that it did not
being a becoming feature of the ground upon which
put.... The imported cliché was not only easy to teach, "more" unless less, already little, becomes less than nothing and "much ado about nothing." Thus Modern-architect Organic-architecture deprived of a soul.... Any "inter-
style" would probably be a cultural calamity fit for Future
intolerable to democracy. May 1952.
Rejecting the nave and transept plan derived from cathedral architecture, Wright designed Unity Temple in Oak Park, Illinois (1906), as a less hierarchical place of worship with congregants seated around a pulpit. The building is a poured-in-place concrete structure with concrete-slab roofs. The simple cubical masses of the project "are in themselves great concrete blocks," said Wright.
Backed by Japan's Shimizu development corporation, an American developer based in Hawaii is going forward with plans for a 600-acre "golf park" on Maui. The centerpiece of the project will be a 70,000-square-foot clubhouse, synthesized by John Rattenbury of Taliesin Associated Architects from unbuilt Frank Lloyd Wright designs. The designs, spanning 1949 to 1957, were intended for homes for Robert Windfohr, Raphael Balleres, and Marilyn Monroe and Arthur Miller, in Texas, Acapulco, and Connecticut, respectively. A second phase of the development will include up to 30 houses, also drawn from unbuilt Wright designs. Construction will begin soon and take about 18 months.

The clubhouse’s main dining room is also the building’s focal point, a 100-foot-wide, 22-foot-high central dome topped with an inverted skylight. Projecting to left and right are a series of smaller restaurants and terraced lounges, an equipment shop, and administrative offices. In order to preserve the integrity of Wright’s designs, says Rattenbury, almost two-thirds of the structure will be below grade, where locker rooms and mechanical services will be located. The steel-framed structure will be covered with reinforced concrete and faced with synthetic stucco.

**Briefs**

- **For a second time**, Murphy/Jahn’s Cityspire in New York City is in Trouble with the law. First it topped off 11 feet higher than its allotted 805-foot height. Now it’s being fined for whistling. Neighborhood residents and workers complain that the building’s lowered dome emits a loud whistle under certain wind conditions, and the city’s Department of Environmental Protection issued an $880 fine for noise pollution. Solution? If that dome is 11 feet too high.

- **Barton Myers** has been tapped to design a $70-million, 2,700-seat performing arts center for Newark, New Jersey. The center will fit into James Polshek’s master plan for the area, and is the first part of a $149-million redevelopment effort.

- **In association** with architects Renzo Piano/Building Workshop, Cambridge Seven is developing content and design for the $60-million Genoa Aquarium, planned as part of the Expo ’92 celebration in Christopher Columbus’s birthplace. Cambridge Seven has formed IDeA, Inc., a management arm, which will oversee the interior exhibits when the aquarium opens.
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Circle 8 on inquiry card
Museum-Mad Frankfurt

Known as its nickname "Bankfurt" due to Germany's financial clout, Frankfurt, is fast developing into a museum metropolis. Over the past 10 years Frankfurt has attracted architectural talent from America and Europe to create, extend, and/or build museums around the River Main's "Museum Bank."

Two spectacular museums on the way: Hans Hollein's Kunsthalle house, Art Museum, wedged into a site in the historical city center; and Richard Meier's Ethnological Museum, set near his Rhinehalle for Applied Arts.

Frankfurt has made a serious effort to incorporate its new institutions into the historical fabric of the city. Some are housed in their original villas, such as the Liebig collection of antique sculpture, and the paintings of collector Friederich Stadel. The Stadel extension (left), completed in 1990, a monumental white marble building by Viennese architect Gustav Peichl, is a strong addition to the cityscape. Next door, work is in progress on Peichl's design for the highly respected Stadel art school. Two Rothschild mansions on the north bank were renovated by Ante Josip von Kostelac to form the Judisches Museum. A Carmelite convent served as the basis of Josef Paul Kleihues's Museum for Pre- and Early History.

For the Deutsche Post museum (right), Gunter Behnisch & Partners joined an airy, almost aeronautical modern building in glass and metal to a 19th-century stone villa, now converted into the museum's library and offices. In order to obtain the required volume of exhibit space and to save trees on site, Behnisch went underground. Inside, bulges in the below-grade exhibition hall indicate tree roots. A huge conical glass walls soars up and over the round opening in the ground floor that provides entry to the main exhibit hall.

Frankfurt's building craze is not confined to the arts. Helmut Jahn and Kohn Pedersen Fox are at work on major commercial projects. After all, Frankfurt wouldn't be Bankfurt if the boom had passed the business world by.

Design for Schmoozing

William H. Whyte, author of the schmoozing," the happy event of people-watching, is the essence of the urban experience. But schmoozing spaces are dissipating by suburban sprawl and destroyed by the invasion of malls and parking lots. Whyte spoke last October at the Second International Symposium on Architecture and Culture, held by Texas A&M and the University of Pennsylvania at architecture schools in the area.

Eisenman lectured that passive media has forced us in the concept of the "inside" to a celebration of the site, of reality: "The obvious content of the new age; every object is a new sign. Every sign is a question of interpretation." Thus, architecture becomes merely episodic. Modern urban city planning extracted from historical models too often ignores social theory, warned Kaisa Broner-Bauer, professor of architecture at Finland's Oulu University. She urged a search for a "new spiritual basis" for city planning.

Peter Calathropes presented his "remedial urbanism" approach, the insertion of pedestrian pockets into existing urban/suburban environments. New York landscape architect Anthony Walsley, who sees landscape as essential to a balanced urban environment, warned that "our future is linked to protection of nature and natural processes."

"People will go to Disneyland and pay good money to walk through a simulation of an old-fashioned street," said Whyte. "Why can't we build a real urban experience?"

Gerald Moorhead

Gehry Art School in Toledo

One of Frank O. Gehry's most overtly sculptural buildings to date is the recently announced University of Toledo's art school, a $10-million, 51,000-square-foot new building that will rise adjacent to the Neoclassical Toledo Museum of Art. Phase I of a long-range two-part project, the L-shaped, three-story structure forms a courtyard with the museum's leafy East Lawn. A glass-walled corridor surrounds the courtyard. The school's pewter-toned, lead-coated copper and glass facing contrasts with the museum's white marble exterior, but it is a contrast that serves to unify the grouping. Studios and classrooms requiring natural light are on the top two floors, and skylights atop the two main structures are aligned to catch northern light. Groundbreaking is set for June.
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Charles W. Moore Wins Gold Medal

Charles W. Moore has been awarded the American Institute of Architects' highest tribute, the Gold Medal, in recognition of decades of achievement as architect and educator. Moore, who is known for his highly personal design style, becomes the 49th recipient of the Gold Medal since the award was established in 1907. The medal joins the architect's four previous national AIA Honor Awards for best design of the year, spanning 1967 to 1988.

F. D. S.

The competition's joint sponsors, the Names Foundation and Trinity United Methodist Church, liked the serenity and regularity of the design by the 32-year-old, U. S.-educated Japanese architect, intended to create a sense of welcome to visitors and provide a contrast to the commotion of Market Street.

Searching for “an image that would represent the AIDS crisis,” the architect placed a tree in front of the building. “I wanted to show a positive force—the tree as a metaphor for the cycles of life.” That metaphor is echoed in the large timbers—a grove of trees—that support the roof and form the clerestory.

Hakomori is returning this month to San Francisco from Tokyo to oversee work on the project as design architect; the architect of record on the project will be the San Francisco firm of Robinson Mills & Williams. Life Center officials hope to start construction later this year on the $4-million building, which probably won’t be completed before early 1993.

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Circle 10 on inquiry card
Angeles: Recent Urban Design

Los Angeles has finally come to grips with its dual heritage: the open spaces of its boulevards and the themed communities bred by the film industry and adopted by shopping developers. The contrast is yielding a new wave of strips and enclosed environments that ignore the regional wisdom of grid planning and characterized most cities in the U.S.

Hollywood Boulevard was a major urban design plan, put forward by the Community Redevelopment Agency of Los Angeles, an attempt to revive the former strip of all, by making it into a "main street" the district after the golden days of Hollywood.

redevelopment scheme taking advantage of its Chinese Theater and the original Star of the new hilltop company town for Universal's parent, MCA Corporation. The site will contain facilities for the UCLA Extension Program and an MTV-run series of clubs and record stores, designed by Morphosis.

For Jerde, the challenge was to "create a real part of Los Angeles." He designed a street of buildings for signs, and convinced the client to eliminate all restrictions on tenant improvements. The result is an area organized around focal points, such as major billboards, which give a giant scale to this purposefully "unknown" linear experience.

Yet even the vitality of this new kind of outdoor shopping mall with rules remains bounded. When asked about the absence of those who cannot afford to shop at City Walk, an MCA official responds that "if we need bums to make it more like a real city, we can just call Central Station.

"What's left out in all of this," notes Bill Pain, partner in the firm of Johnson & Pereira, "is open, public space." Pain recently did a comparative study of New York, San Francisco, Boston, and Los Angeles. He found that while New York devotes some 17 percent of its land area to open space, and Boston and San Francisco each about 8 percent, only 4 percent of Los Angeles is to be found in parks and other public outdoor spaces.

In their designs for the 5-million-square-foot Los Angeles Center [Record, November 1990, page 15], Johnson Pain and Pereira proposed a system of linear parks with small, vest-pocket open spaces radiating out through the blighted areas around it, and connecting to existing public spaces like MacArthur Park. At the University of California at Irvine, designed by the founder of the firm, William Pereira, Pain has proposed inserting a spine of retail and housing, connecting the circular campus layout to a shopping mall across the street.

It is the issues of closed-off artificiality, single-use zoning, and the dominance of the strip that the Playa Vista Design Team seeks to address in the largest urban design project currently underway in Los Angeles, a long-term, $30-billion effort to develop a community of residences, offices, and retail. The site stretches for two miles from the ocean to a major freeway between the airport and some of L.A.'s fanciest residential communities.

Recent development efforts ran into massive community resistance, until developer Maguire/Thoma, known for its sponsorship of high-quality architecture and for its responsiveness to community pressures, acquired the property.

The developer engaged a team made up of Elizabeth Plater-Zyberk, Andres Duany, Stefanos Polyzoides, Peter de Bretteville, Ricardo Legorreta, Buzz Yudell, and landscape designer Laurie Olin. They devised a scheme that gives nearly 40 percent of the land over to public wetlands, concentrating all buildings in dense configurations. Combining local traditions with the small-scale blocks, public focal points, and the deference to the vernacular that Duany and Plater-Zyberk had pioneered in Seaside, Florida, the team created a grid of multi-unit buildings based on the hybrids between courthouse housing and apartment blocks that make up much of Los Angeles.

of these blocks—12,000 units of housing in all—are grouped around multi-use neighborhood functions, while major avenues also contain ground-level retail. Only one "office campus" remains relatively isolated, its 5 million square feet of speculative construction tucked away at the back of the site. An elaborate landscape plan creates recognizable plantings for each neighborhood, while tying the development together with Royal Palm trees.

Playa Vista promises to be one of the most intelligently designed new neighborhoods in Los Angeles. Yet its success is due not only to the complete suppression of the automobile, but also to the economic pressures on this area.

The whole development is to be raised on parking plinth, so that cars will be present, but hidden. The inclusion of a large percentage of low-income units, spread throughout the project rather than concentrated in future ghettos, is also an important factor in keeping Playa Vista from becoming a totally exclusionary community.

The same team of designers has been hired by the city to produce a Downtown Specific Plan. It must now convince thousands of property owners banking land for future office buildings to agree to zoning changes and new neighborhood guidelines, plans that could cost landowners.

Will these urban design approaches lead to a more comprehensible city? Developments like Playa Vista or City Walk will either produce a more integrated urban texture, made up of a patchwork of carefully themed, well-defined environments, or leave a set of barricaded, "secure" neighborhoods turning their backs on the communal needs of Los Angeles.

AARON BETSKY

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PRACTICE NEWS

Viewing the Copycatters

A wave of copycat buildings is currently the subject of a law suit by the President of the AIA against an architect for copyright infringement. (The old law protected only drawings.) Copycatters have caused several reported legal wrangles. (Record, May 1989, pages 33-35.) Architects may seek an injunction to stop construction if they can establish that the buildings infringe on the copyrights held by the architects. The non-controversial "Architectural Works Copyright Protection Act," sponsored by Representative Robert Kastenmeier, passed the House with virtually no debate in late November just before adjournment. (It was an amendment to H. R. 596, the Judicial Improvements Act of 1990.) It had already passed the Senate. Testifying for the law were the AIA, The Frank Lloyd Wright Foundation, and architect Michael Graves.

"The law fills a treaty obligation under the Berne Copyright Convention," says AIA federal liaison director Albert Eisenberg. The U.S. recently joined international convention, which has tougher requirements than U.S. law. The copyright legislation was initiated by U.S. Copyright Office study last year, which found that existing copyright laws were insufficient to protect architects' output and that they lagged substantially behind the protection afforded architects in other countries. Says Eisenberg: "In some countries you can't even photograph buildings without permission of the architects, but in the U.S. you can as long as it is publicly visible." He says the bill's sponsors sought a provision to ban photography if the purpose is infringement, but this section was dropped. He adds that, in some countries, owners are not allowed to make alterations to buildings without the architects' permission, "but we didn't think that was a good idea."  

Peter Hoffman  
Washington, D.C.

Marketing in a Ski Suit: a Boston Report

"Showmanship, if tied to substance, can distinguish a firm from its competition—and wake up a selection committee," said Adel Foz, director of strategic planning at Massport. One architect, showing how he would go after a commission for a mountain resort, showed up in a ski suit. Such was the substance of the workshop Winning Presentations at this year's annual trade show and conference Build Boston held in that city on November 14-16. Originally the Boston Society of Architects annual convention (and still organized by that group), the event has grown over the years by including related cosponsors such as the ACEC, the American Society of Interior Designers, and the Associated General Contractors. Not surprisingly, considering the Northeast's depressed economic condition (Record, December 1990, page 22), show attendance (8,500) and exhibitors (some 250) held nearly steady with last year, but, for the first time, failed to rise. And a good number of the workshops dealt with the business of getting business. In Winning Presentations, three Boston architects competed for the same hypothetical project. A group of public and private developers played the selection committee and the audience, too, pitched in. Discussion centered on the mix of substance and spirit that produces successful proposals. Everyone agreed that good presentations are detailed and structured, and go beyond generic discussions of credentials. "It's important to connect with the client's needs and to address the specifics of the site and the project," said Carol Gladstone, a vice president of The Beacon Companies, who clearly argued for substance. But, said Gregor Smith, a corporate architect at General Cinema Corporation: "Personal rapport is enormously influential in determining who gets the job."

Management consultant Mark Zweig led a session, Motivating, Appraising, and Developing Design Professionals. His observations: "Human resources aren't as precise as the design of a sewer line, but not as intuitive as you'd think. Design firms will be happier and more
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Greener Pastures?

Thinking of pulling up stakes and striking out for greener professional pastures? With work soft in many locations, you may be considering just that. What are your chances of success? Richard Fitzgerald, executive director of the Boston Society of Architects, decided to find out. He prepared four basic questions: What is the current market status in your area (five choices, from boom to bust)? Is that status improving, worsen-
ing, or stable? Where do you think the hot markets are? And should architects move to your region, stay put, or call? Fitzgerald mailed about 60 of his one-page questionnaires to AIA chapters nationwide and, within a week, had received 39 back.

Boom: Idaho, Wisconsin, Hawai.
i. Bust: Arizona, Washing-
ton, D. C., and New Mexico. Eleven chapters reported steady growth, but four of those—Detroit, Seattle, Pittsburgh, and Iowa—predicted that conditions might worsen.

There was no consensus on where hot markets are, though suggestions ranged from Mars to Minneapolis. Several respondents suggested the Pacific Northwest. Portland and Seattle did report "purring" markets, but neither was convinced of market strength or depth.

Thirteen chapters are declin- ing markets, nine in flat. Most of both types were in the East, Midwest, and Southwest, although Houston reported improving conditions (as did central Oklahoma and Oakland, California).

A whopping 28 chapters urged everyone to stay put. Eight chapters—up, down, and flat—suggested calling for in-
formation: Oakland, Michigan/Detroit, Portland, Oregon, Utah/Salt Lake, Baltimore, Houston, Louisiana, and Eastern Oklahoma.

Surf's up. The only state suggest-
ging architects should move there—after securing a job—is Hawaii.

PETER D. SLATIN

Report from Eastern Europe

Gunnar Birkerts is one of an increasing number of U.S. architects practicing in foreign countries. And he relishes the prospect of his firm, located in a Detroit suburb, taking on more projects abroad.

In the last two years, more and more U.S. architects realized the potential for practicing abroad [see roundtable report, page 37]. In fact, U.S. design firms topped the design billings in Asia, Australia, and Europe, as well as in America, according to a survey conducted by ENR and reported in its August 2, 1990, issue. Overall, the top 200 international design firms worldwide posted $7.4 billion in foreign billings for design services in 1989, the survey shows. Responses came from a variety of architecture, engineering, and construction firms.

Opening relations with Eastern Europe contributed to Birkerts's recent commission to design the Latvian National Library in his birthplace, Riga. (see RECORD, December 1990, Design News, page 20). His firm also works in Italy and South America.

Birkerts

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OVERSEAS WORK: WHERE IT IS AND HOW TO WIN IT

A RECORD roundtable calls on the experts to impart their experience.
Part one of this report tells where the work is and how to find it.

some time, the large U.S. architectural firms have de-.
ded work abroad in the
eral course of expanding
markets. Smaller firms
have been doing work
ad—usually because the
ipals had the right con-
rather than aggressive
eting strategies. The big
saw an opportunity to
out the perennial up-
town swings in the vol-
of buildings they design.
them, it has become the
ate step in geographic
ication.

ow that many firms, large and
, are having serious trouble find-
work, interest in foreign markets has
been keener. This matches the gen-
atude of our times in the U.S.—
eople in all fields have come to
that the country is not alone, but
of a global economy.

what have the adventurous firms
d when they went abroad? Did their
iences match their expectations?
did they avoid the pitfalls and what
learn if they fell in? Where and
and did they know to find work?
ese were just some of the questions
ed to answer when it invited
incips of large and small firms
asoned in overseas work from
nd the country (plus one expert on
practice) to come to New York
all. They were:

Fred Koetter
Partner; Koetter, Kim & Associates

L. Bradford Perkins
Principal; Perkins Geddis Eastman

Robert Sobel
President; Emery Roth & Sons

Charles Thom森
President; 3D/International

“We see Eastern Europe
as a huge market—
especially for modern
ices, hotels, and
ustrial facilities.”

Fred Koetter: Making sure it is worth it. Sobel: Finding the
correct. Thom森: Looking beyond technology.

Record editor Stephen Kliment moder-
ated with the help of senior editor
Charles Hoyt. Here are the panelists’
swers:

Knowing where the work is may mean
dging deeper than the obvious locales
“A country’s dollar volume of construction,
taken by itself, is not the only major
criterion for deciding whether or not there
opportunities there,” said Perkins.
“One of the major criteria is strong need
American services even though there
may be a relatively small dollar
volume. Strong need may cre-
create much better opportunities
han in, for instance, some of
the countries of Western Eu-
ope that may have high vol-
ume, but also lots of very good
architects.” His experience
 abroad includes managing two
foreign offices for Llewelyn
Davies International and pro-
ject teams in 15 countries, and
his observation seems particu-
arily apt, considering recent
downs in, e.g. the U.K.
He was once a partner in that
British firm and now does work
in Spain and South America.

“The World Bank is one good barome-
ter,” said the NCAE’s Balen. “Its work is
arily with Third World countries and
it’s looking at Poland, Pakistan, and Chi-
a.” He is currently assembling and com-
paring foreign standards for U.S. archi-
tects who want to work abroad.

“We see Eastern Europe as a huge mar-
ket,” said Epstein’s Fallon. “Epstein has
0 to 40 people in its Warsaw office. The
only reason it hasn’t more is that there’s
not enough office space. There’s a tremen-
dous need for modern office space, hotels,
and industrial facilities. It is promising be-
cause we see very little U.S. competition
there—especially in the industrial sector.”
The most competitive countries? “West
Germany, Sweden next.” Epstein is also
being approached to work in Hungary.

Who are the clients? “You’re no longer
looking to governments or to fund projects,”
answered Fallon. “Often, you’re looking
to Western money.” This may mean going
in with outside developers and it may
mean taking an equity interest in outside
businesses opening up there (which
requires the same sort of economic-feasibil-
ity research as for a U.S. project).

Cooke concurred in the importance of
taking on such risks.

Epstein has equity arrangements with
a U.S. manufacturer and a U.S. meat
cessor; both ventures have Polish part-
ers. Some advantages of Poland? “Essen-
tially there are no restrictions about
taking money out and the exchange rate is
fairly stable,” explained Fallon.
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Will the State of Our Profession Help Us Abroad?

We live and practice in a world of contrasts,” said RECORD editor Stephen Hillman in opening the meeting. “It’s a world of specialization [by some firms] and of other firms that feel they can handle all tasks with the help of the new practice aids.

“There’s change in other ways. Overhead expenses are up enormously and operating income tends to be leveling off and sliding downward. The workplace is ranging for architects and for junior drafting people. There is a trend to downsizing toward leaner firms—to trim more out of less.”

“New management tools are very sophisticated. New software comes on the market almost daily. It is supposed to make managing offices easier—and better branch offices, running them, and possibly closing them.

“But, how do you train those who are to make use of these new kinds of tools? We are told that computerization, especially the use of CAD, is supposed to make offices more productive.

“In practice, it’s not really happening. You still have to have somebody run the CAD system and you must depreciate capital cost of the equipment. So, when you add these two together, you may not have greater productivity as much as a valuable by-product: probability of controlling quality, greater accuracy, and greater inter-office sharing of data bases.

“Architects are in a tough environment. Their jurisdiction is being nibbled away by specialists — construction managers, facilities managers, specialists in all the little pieces that you can slice practice into. It’s almost to a point where design itself is looked at by clients as a commodity much like soybeans or pork bellies, bought at the lowest price.

“On the marketing side, the process seems to have come full circle to having the person who will be doing the work doing the marketing. There was a period through the mid-1980s when much of the marketing was given over to people with titles such as marketing coordinator. There’s also a curious dichotomy between sophisticated promotion tools such as CAD-generated videos and the enormous power of individual personalities to make the actual ‘sale.’

“Some things haven’t changed, and won’t. Networking as a source of leads will continue to be a major source of work. Track records will continue to be major client turn-ons. And last but certainly not least, the rewards will continue to be commensurate with the risk that you take.

“So what does all this have to do with work abroad? What I have just described in capsule form is the environment in which U.S. firms practice. It is the professional baggage that we bring to getting work overseas and to overseas practice. And the questions we hope to address are how much of this works, how much has to change, what net benefit do we bring overseas, and what are the challenges and opportunities facing us.”

PRACTICE

Routing what you are wanted for—in fulfilling a craving for technology

cross World countries, in their drive for

fication, will adopt all kinds of

tern technology,” said Chan. “And

tern technology often brings with it

tern architects. They understand it

r than the locals—even the simplest

es like air conditioning.” His firm’s

pearhead into China was the Na-
d Crop Germplasm Center in Beijing.

hen we started working overseas, we

told that we were going to be experts

the transfer of technology,” said Sobel.

, after becoming experts, we found

was no such thing as the transfer of

tology. There is only the practice of

ecture and the selection of systems.”

has worked on projects in Bangkok

Kuala Lumpur, a gigantic condomini-
in Singapore, and the massive China

Trade Center in Beijing. He has cre-

the China/U.S. Architectural Alli-
to pursue projects there, here, and

here. “If you are in an environ-

e it’s appropriate to select sophisticat-

systems, or if you’re dealing with build-

es unfamiliar to the locals,” adds

“then probably you have a contribu-
to make in that market.” Other

words, not all is technology;

is basic planning. Sobel told of being

viewed by a newspaper in Singapore

2 years ago. The reporter asked:

that do we need you for? Our guys went

ward; you went to Harvard, so you

the same education. Our guys

ed for big American firms; you work

for a big American firm, so we have the

same experience.” Replied Sobel: “If you

our experience with a particular build-
type exhibits the synergies, relation-

ships, and organization for which you have

models, then I think we can help.” He

adds: “It was the architects who were ask-

ing why they needed us. The clients didn’t

have a problem figuring it out.”

“Obviously, we have some technology

that somebody wants,” observed Thom-

sen. “They come to us for that technology.

But, look at the technology of Western Eu-

ope and Japan. Where do we lead?”

Sobel: “We have a tremendous oppor-

unity to lead.”

Chan: “We certainly have a lead in such

areas as security.” He talked about his

current project for a museum in China:

“Chinese architects seldom, if ever, design

museums. We can offer that technology.”

Thomsen allowed that we could export

some kinds of technology—for instance,

the ways certain types of buildings work

or advanced mechanical, electrical, and

plumbing systems. The design of especial-

ly high-rise buildings involves both tech-

nologies together, responded Chan.

Knowing if there is a market

“Do you think there is a market for office

buildings in Surabaya?” a group of archi-

tects in this large industrial city in Indone-

 sia once asked a panel of Americans that

included Sobel. “Don’t you have office

buildings?” asked the Americans. “Not

really,” responded the Indonesians. “We

have shop houses like all of Asia.” The ex-

change was repeated for apartment houses.

“But where do you live?” asked the

Americans. “In bungalows,” respond-

ed the Tunisians. It was the same for shop-

ping centers. “So there are building types

in America, which we take for granted,

that are not in demand all over the world,”

concluded Sobel.

But, what if clients do want American

building types? “Because of the size of the

U.S. market, we’ve had a lot of volume,”
Cooke: "In the U.K., they do have a published rate structure for fees, but that's changing. U.S. and EEC architects have made things more competitive. Still, we are profitable, which implies greater efficiency in delivering our product."

Hinkel: "It's built into us to be quicker, more efficient, and use systems."

What about Eastern Europe? "We're not looking at fees," said Fallon in reminding the panel how her firm now works. "Our industrial projects in the 1970s were turnkey, lump sum. We designed it, built it, and we know a lot about what clients expect from us because we have been working with them for years," added Solbel.

The level of sophistication in modern multi-tenant office buildings, even in very sophisticated countries with many architects, is very limited," observed Perkins. He also added that designers are in higher demand than ever before in the industry. "The typical architect has developed a knowledge of building much earlier than his foreign counterpart."

American architects bring their responses to problems more flexibly in international situations," added Solbel. He spoke from the experience of his firm's fast-growing two-year-old branch in London, which set up to do large-scale projects [Record 1990, pages 23-25].

Source: EUROCONSTRUCT

Western Europe has a current total of $330 billion in construction (compared to $264 in the U.S.), but demand for our services may be limited. Source: EUROCONSTRUCT.

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The chance for small firms abroad

Innsen: “The specialized knowledge we exporting can come in small as well as packages. There’s no place for a big abroad that doesn’t have that knowl- edge. It’s not production capability.”

It has to be much more of a rifle-shot coach,” advised Perkins. “Targeted dependent much more upon personal- ity. I have a lot of very close nds in other countries, and I’m their resource for doing things when they want to bring in American expertise.”

What brought us overseas were con- tions in the States,” said Chan, “people were interested in giving something in one instance. Ibel saw similar promise for work in Eastern Europe—“Europeans who made it in America and would like to give something back. Take a $10-million project. Million comes from the States. With that as an American architect. That’s a ticket for the small firm.”

You get some of that in Israel,” said Chan. “Americans wanting to contribute or other special facility.”

You get one or two such opportuni- ty cautioned Chan. “You can’t build a dice on them.”

Broke talked about the traditional path large and small firms finding clients overseas—U.S. companies investing in foreign countries will take with them when they invest there. Show them know some of the pitfalls, how you help them mitigate some of the prob- lem, that to them, seem like a mine field.”

Small firms have focused decision mak- ing, said Koetter. “Working abroad is a situation for clients and architects, there are many adjustments taking on an almost daily basis. If one per- son in a firm makes decisions as well as others, there’s a great advantage.”

The small firm has to look very long and at what it pursues work abroad,” said Innsen. “The glamour of international travel wears off the third or fourth time a suitecase arrives in Istanbul when one is in Madrid. Small firms are built on a few key people. If you’re drain- ing their energy, it can be devastating to practice back home.”

The impact of 1992—sweeping yes, but probably not soon

Cook: “One of the problems I’m not sure being solved is the wide variety of codes, building requirements, and good government-approval processes in Western Europe.”

“Currently within Western Europe, peo- ple have national practices,” said Fallon.

Cooke and Fallon

There’s very little crossing national bound- aries. That, I think, will change. Issues of reciprocity and licensing will be resolved. We will see more competition, say, from the Germans for work in England or Britain for work in Spain.”

“Some of the people making that happen are U.S. developers,” asserted Koetter. “Disney in Paris awarded construction management to an Italian firm.”

“Most countries will allow architects not locally registered to practice in joint venture with a local one—or hire one.”

“Every country surveyed by the NCARB about registration requirements,” said Ba- len, “indicated a free flow of people from one country to another, but more limitations on U.S. architects.”

“We shouldn’t underestimate residual national barriers,” said Perkins. It’s not just codes, but cultural differences. There is a free-trade agreement between the U.S. and Canada, but, having had an of- fice there, I can tell you it’s hard to cross that open boundary. Many of the pressures that make practices local in the U.S. will exist in every sophisticated society.”

Koetter observed that, despite the internationalization of economies and construction, local traditions run counter to the trend. “The confrontation is going to be interesting and exciting to see.”

“The Treaty of Rome states that compa- nies already established in the European community, regardless of ownership, will be treated the same,” revealed Fallon. “Hence the flurry to get a subsidiary estab- lished before 1992 to maintain rights.”

Leaping the registration barrier

Sobel spoke of being met at the airport in Kuala Lumpur by a group of architects saying that his group was illegally representa- ting itself as architects because it lacked registration in Malaysia. “You in- troduce me to your wives in the U.S.,” he had responded. “You weren’t married in my country but I still deem you married.”

“Registration or lack of it is used for business bargaining purposes,” observed Chan. “Local architects know you must as- sociate with them. Hong Kong architects negotiating for work in the Peoples Republic have long complained of the high percentages local associates demanded.”

Balen reported on the results of ques- tionnaires sent by the NCARB to over 50 countries around the world; 75 percent re- sponded that local registration was re- quired to practice. But most of the countries will allow unregistered architects to practice in joint venture with a local archi- tect—or by hiring one. The panelists all favored a local partner in any case.

Any surprises in the NCARB survey? “The Soviet Union does not require registra- tion and Austria won’t let a non-native practice even if he could get it.” All of the countries registered individuals, not firms. In Ontario, you must carry the Ontario As- sociation Insurance as well as your own because the Ontario Association sells in- surance. What about registration recipro- city with Canada? “We expect to implement new reciprocity in September 1991.” Why did England drop reciprocity with the U.S.? “We changed our standards.”

Balen talked about the importance of recognizing local sensibilities. One point: Appearing to take the money and run breeds local resentment—especially in Af- rican countries where outside architects are expected to not only provide architec- tural expertise, but fulfill a teaching role. “There can be great expectations for our small fees abroad,” observed Cooke. “Quite often we don’t have enough dialogue with each other to know exactly what is that each one of us wants to get out of a particular opportunity. That’s what misunderstandings are about any- where.”

Charles K. Hoyt

Next month in RECORD, the panelists will talk about getting the work done after you get the commission.
A STITCH IN TIME

What to do when your financial statements look like these.

By Peter Piven

The common belief is that the profession is in a tailspin and everyone is losing. Not so! Some firms continue on successfully. What can be learned from others that have not fared well? This is a composite of recent situations.

The ball starts rolling...

In 1987, Smith & Jones' revenues substantially and its profit (before income distributions, and taxes) was 12 percent of net revenues. Its overhead was 1.6 percent of net revenues divided by direct salaries. Paid bills for general, administrative, and clerical personnel. One consequence was that payroll utilization fell. Current ratio was 1.7 and its expense incurred on one-time fees was 3 percent of its revenue. Current ratio was 1.7 and it was strong. Its clients included some of the company's largest developers and it began to take corporate and institutional work.

Rolls...

Into 1988, Smith & Jones looked for continued growth. Backlog was 30 and, in response, the firm did what was appropriate—reorganized to create a value-management level of department directors and added CAD hardware, a CAD manager, architects, administrative, marketing, and clerical personnel. One consequence was that payroll utilization fell. While work and revenues increased 20 percent, expenses—including interest on substantial new borrowing—increased almost 30 percent, eroding profit.

...and rolls too far

At the beginning of 1989, the picture changed dramatically. The firm's developer clients stopped building. Revenues fell 50 percent. Although direct expenses had remained reasonably constant, indirect expenses had climbed to 73 percent of revenues. Operations had produced a 24-percent loss.

How it got that far

The fundamental problems:

- Firm-wide and project structures inappropriate to a needed downsizing.
- A focus on long-range marketing vs. short-range selling.
- Inattention to financial obligations.
- Inability to make timely decisions.

In this situation, a basic choice has to be made: to continue being motivated by goals that may not be achievable or become survival-driven.

The lessons to be learned:

1. Understand the pros and cons of specialization vs. diversification. Focusing the firm's efforts on a limited market yields beneficial results when that market sector is very active, but is disastrous when that market turns abruptly and/or severely.
2. Know what it costs to produce projects and run a firm. For any but the smallest, this means having a good management system and knowing what to look for yourself or finding someone who does.
3. Firms change for various reasons, including expansion and contraction. The organization, structure, process, roles, and responsibilities that are appropriate at one size may be inappropriate to another.
4. Act promptly to meet changing needs, if not in anticipation, then as soon as an emerging situation becomes clear. Economic cycles may be inevitable. So too will be your need to react to them.
CONSTRUCTION COSTS UNDER PRESSURE

The construction downturn has its silver lining as new construction becomes more affordable.

As usual lately, labor costs continued to cause the rise in costs that is occurring. All materials held steady or declined. The biggest loser was structural steel, which dropped a percent and concrete was up some 3/4 percent.

What of the future? How volume (which consti-
tuted more than half of all construction con-
tinued to be down) and the third quarter is expected to stabilize in but nonresidential construc-
tion is expected to decline anoth-
er.

[Record October 1990, page 38], reversed itself in the second quarter as the Eastern U.S. resumed its traditional role of leader in cost increases, despite the depressed volume of construction in the Northeast (down 24 percent), disappointing returns in the Southeast (down 15 percent), and the relative health of construction in the West, which held steady.

Data supplied by Dodge Cost Sys Marshall + Swift.

The costs of building in a given period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) equals 100% the costs in the one period are 50% higher than the costs in the other. Also, second period costs are 75% of those in the first period divided by 200 (0.75) or they are 25% lower in the second period.

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HITTING THE CEILING:
HEIGHT WITHOUT ROMANCE

Critic Robert Campbell reconsiders the tall building and its place in American life and lore.

Height caps for buildings are all the rage today. Yet I'm old enough to remember a time when tall buildings were a major thrill. A coming-of-age ritual, and my siblings was a trip to New York and its never forgotten going to the top of the RCA Building at night to see if you had awed, like a flabbergasted explorer, Mars, over the unbelievable millions of the great city.

Buildings were as wonderful then, to a kid like me, as Disneyland is today. It's impossible to imagine any red-blooded American city back in, say, the 1920s legislating a height cap (always excepting the unique case of Washington), and buildings scraped God's own sky. They were expressions of everythingodynamic, ebullient, Utopian, everything can, for heaven's sake. Tower after tower like so many Jack Dempseys or Joe Louis, sought and won the title of the city's tallest building.
BUILDING ON A GRAND TRADITION

HEATING, COOLING, LIGHTING: Design Methods for Architects
Norbert Lechner
This unique book collects in one source all the information designers need when creating the schematic design for a building's environmental systems. Providing a qualitative outlook, general theory, concepts and rules of thumb, the book shows architects how to have a major effect on the energy efficiency of buildings. Numerous graphs, photographs and sketches enhance the text.
644 pp. (1990) 1-62887-5 S$95.95

HUMAN RESOURCE MANAGEMENT: A Guidebook for Design Firms
Mark C. Zweig
This practical, how-to book describes the fundamental aspects of human resource management for architects, landscape architects, interior designers and other design professionals. Contains a logical sequence of chapters ranging from the hiring process, orientation and career development to performance appraisals, compensation and law.
330 pp. (March 1991) 1-633740-7 S$49.95

FURNITURE: MODERN AND POSTMODERN, 2nd Edition
John Pile
Reflecting the recent resurgence in popularity of modern and postmodern furniture design, this book presents an integrated, up-to-date overview of the history, aesthetics, and techniques involved in the design and production of contemporary furniture. This revised edition focuses on new furniture products, the rise of new architecture and design firms and the future of the industry. Extensively illustrated.
312 pp. (1990) 1-85438-7 S$49.95

UNDERSTANDING INFRASTRUCTURE: A Guide for Architects and Planners
George Rainer
This unique work introduces architects and planners to the essential principles and concerns in every infrastructure area, including sewers, storm drainage, solid and hazardous waste disposal, bridges, streets, rail and waterfront. Each chapter is broken down into seven sub-areas: system description, components and current status, unique problems, solution including retrofit and innovation, applicable government regulations, legal aspects and costs.
278 pp. (1990) 1-50546-3 S$39.95

NEW CONSTRUCTION FOR OLDER BUILDINGS: A Design Sourcebook for Architects and Preservationists
Peter H. Smeallie & Peter H. Smith
Offering practical solutions to real-world situations, this timely, fully illustrated work focuses on the frequently faced challenge of contextual architectural design: the combination of new, old, and recent architecture. Projects of varying sizes and success—most from the 1980s—are employed to illustrate innovative and imaginative approaches and solutions to a host of contextual situations.
211 pp. (1990) 1-8313-4-4 S$49.95

EARTHQUAKES: An Architect's Guide to Nonstructural Seismic Hazards
Henry Lagorio
Authored by a member of the Loma Prieta Earthquake field inspection team, this new text presents a comprehensive discussion of the causes and prevention of earthquake damage to the architectural aspects of a building's design. Includes over 100 illustrations and a special chapter devoted to the 1989 Loma Prieta earthquake.
375 pp. (1990) 1-63302-X S$54.95

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Right to the base of the statue of William Penn atop City Hall. But even as it went the Penn standard, the city also, in a urban design plan by Robert Geddes,休闲ized the zone of tall buildings to a single west spine along a transit corridor. I suspect is guess is that we're seeing only the running of the anti-tall-building movement. During the 1960s, it will join with a growing environmentalist consciousness to become a commonplace concern of urban planning. There are many reasons why the skyscraper is no longer the emblem of the American dream, and not of them are obvious. I'd like to suggest: the rocket, the bomb, and the chip.

The rocket. It's hard to get excited about the difference in height between the Empire State Building (1454 feet, as it happens) in an era when rockets climb millions of miles into space. Compared to the rocket of today, standing at the space place, it's our equivalent of a pointed tower of the past. It too is solitary, aspiring. Romance gathers around it. Compared to it, the static tallness of buildings seems trivial.

The bomb. The arrival of the nuclear bomb, with its promise of annihilation, changed everything in ways we're only beginning to understand. Before the bomb, it was possible to believe in the future and in the will of Progress in which everything would be forever newer, bigger, faster, taller. No one believed that today. So the skyscraper, architectural symbol of growth and progress, feels suddenly hollow.

In place of a belief in progress, we situate a history in historic preservation—an unconscious response, perhaps, to the nuclear threat of the ultimate demon of all history. In the great era of the skyscraper, the Golden Age was in the future, something to aspire toward; now the Golden Age is in the past, something we hang on to.

The chip. Every era has its essential tool. Ours is a mysterious black box containing an array of miniaturized silicon chips. We are perhaps the first period in history to possess for our symbol something so close to invisibility: a black hole, a head of a bright star.

For all these reasons the tall building, as architectural program, has become something less than a thrill. As the local paper critic in Boston, I found I didn't get up the energy to review the latest towers here by architects John F. Fox. Both are excellent by the standards of the recent past. They support active pedestrian street life, they possess visible entrances and handsome lobbies, and they look interesting enough to afford at least momentary attention. But they are qualities we should take for granted, as basics of urban design. Beyond the buildings offer little except two ways to sculpture and ornament an office tower. One is roundish, the other squarish. One is finished in an Otto-Wagnerish pseudo-industrial manner with what look like exposed bolts, and the other is a frosted, wedding-cake, Beaux Arts kind of conception. Yawn. The last tall building to excite me as architectural sculpture was the First Interstate Bank (formerly Allied Bank) in Dallas by Henry Cobb of Pei Cobb Freed and Partners, and I suspect that Cobb's masterpiece may prove to be the end of the road. How many new shapes and surfaces, after all, can there be? Why even bother to seek individual expression in a building type that, in principle, is nothing but a repetitive vertical filing cabinet for paper and people? Shouldn't that kind of expression be devoted to buildings of greater civic significance?

Architects who design skyscrapers are nervous. They sense the loss of public interest in the type. They've been responding— in at least three ways.

One way, the Way of Kitsch, is to copy the beloved skyscrapers of old in the hope of trading on fond memories. Good examples are prominent new towers in Atlanta by Philip Johnson and John Burgee (IBM), in Minneapolis by Cesar Pelli (Norwest Center), and in New York by David Childs of SOM (WorldWide Plaza). All imitate the towers of the '20s with understanding and success. But all have the inevitable shallowness of knock-offs.

A second approach is the Way of Now, the attempt to make the skyscraper seem fresh. You can take your tower, for example, to the haberdashery shop to try on a new suit of Deconstructionist clothes, as Burgee and Johnson did in their revised proposals for Times Square.

Still a third approach is the Way of the Wink, the sly mockery of the whole concept of the contemporary skyscraper. The versatile Burgee and Johnson once again head the class here, with buildings in Denver and Boston that appear to be surfaced with patterned wallpaper that has been cut out with scissors and wrapped tightly around a steel frame. Since wrapping a frame with a skin is, in fact, the way we do build today—let's face it, our skyscrapers are tall tents—these examples have the virtue of some ironic bite. But jokiness is seldom a lasting virtue in architecture.

The Way of Kitsch, the Way of Now, the Way of the Wink: none of them is going to restore the old thrill. Perhaps we should admit that the tall building, at least as a myth, is hopelessly time-bound. It is a relic of the American frontier.

American literature and art, especially in the 19th century, repeat constantly a single image, one of people looking across great empty spaces, often westward, at a tall object on the horizon—a mesa, a ship, a mountain. That image is an icon of our culture, and the skyscraper is a late version of it. Crossing the desert or the plain today by car, and seeing for the first time the towers of Dallas or Denver rising in the distance, we gain a pale taste of what it must have been like to be a pioneer and suddenly view, after weeks of travel, the great range of the Rockies. David Dillon, the architecture critic of the Dallas Morning News, is a native Easterner who has come to love the office parks of suburban Dallas by learning to see them in this way: as surrogates for landscape forms, as man-made mesas, as something essentially of the frontier.

But skylines of the great frontier cities are more than metaphors for landscape. They are also metaphors for civilization. Seen from afar, those Dallas or Denver or Houston towers stand upright in a cluster, like a sociable group of human figures around a campfire, or perhaps like a circle of wagons drawn tight against the danger and emptiness of the surrounding land. The towers are surrogates for ourselves, writ large enough to matter in a North American landscape. And in an example like Houston, the towers all make a point of looking as different from one another as possible. This is an American society, after all, a place of free individuals standing tall, jostling one another—not a European place of settled rules and institutions.

Continued on page 57

Drawn for Architectural Record by Sidney Harris.

"What I was hoping for was a 27-story glass slab office tower that would say more than just 27-story glass slab office tower."
It is important for architects to understand the history and culture of the country they want to work in, Birkerts says. "You have to have a certain compassion for the country you build in." He sums up his experience working abroad: "The design process is the same wherever you build except the ingredients change. So you have to be very aware of the ingredients from the other side." 

Susan R. Bleznick

Max Bond Joins Davis Brody

After 21 years as head of his own firm, Bond Ryder Wilson, J. Max Bond Jr. becomes a partner at Davis Brody & Associates of New York. Eight other architects from Bond Ryder have joined Davis Brody; the merger took place at the invitation of Lewis Davis following the retirement of Donald Ryder earlier this year. Bond remains dean of architecture at City University of New York.

The Domestic Architecture of Sir Edwin Lutyens, by A. S. G. Butler. Suffolk, England: Antique Collectors' Club, 1987, 299 pages, $75. This impressive large-format book is a reprint of a three-volume set published in Country Life in 1950 (six years after Lutyens's death). The other two volumes covered the British architect's corporate and public buildings and have also been printed recently by the Antique Collectors' Club. All three volumes feature plans, sections, and detail drawings to convey Lutyens's great eye for composition and detail. Nearly 300 black-and-white photographs and five chapters of text help complete the story of Lutyens's domestic architecture.

Palladio Drawings, by Lionello Venturi. New York: Rizzoli, 1990, 108 pages, $95. Another large-format book, this publication displays 50 recently restored drawings and studies by Palladio that now reside in the City Museum of Vicenza. The drawings are mostly idealized reconstructions of ancient buildings and a few of Palladio's own projects. Historical notes on each drawing will please scholars, while the drawings themselves speak directly to architects.

Michael Graves: Buildings and Projects, 1982-1989, edited by Karen Vogel. New York: Harry N. Abrams, 1989, 392 pages, $75. This is the first monograph on one of America's most important architects and includes more than 350 color photographs and drawings of Graves's work. The book is admirably produced, and the essays by the architects themselves are both informative and inspiring.
HITTING THE CEILING...  
Continued from page 55

Such symbolism is powerful. But it matters less with the passage of time, as the Western cities grow more Eastern, adding trees and suburbs and losing the raw sense of encampments on the frontier.

Houston reminds us of another characteristic of tall buildings. They are graphic representations of the power structure. Male culture is dominated by the concept of hierarchy, as anyone who has ever sat through a weekend of football on television can attest. Throughout European and American history, whoever has been on top of the hierarchy has signified the fact by building the tallest building. Succeeding one another as boss have been the Church (Chartres Cathedral), the king (Edinburgh Castle), the oligarchy (San Gimignano), the Republic (the U.S. Capitol), and the Corporation (Sears Tower). The skyline of an American city today is virtually a bar graph of power and money in the business community at a given moment.

Is it possible, then, that the current disarray of tall buildings is a revolt against the whole value system of hierarchy itself? I recently read a wonderful new book, You Just Don't Understand: Women and Men in Conversation (by Deborah Tannen, William Morrow & Co.). It argues that men and women communicate badly because men view the world as a competitive hierarchy, while women see it as a community of mutual support. If that's true—and I think it is—the concept of the hierarchical city may be about to change.

Tall buildings undeniably have their virtues. They can be an expression of fantasy, like the glittering glass city that is downtown Houston seen from afar, which Houstonians aptly call "the Oz View" and which recalls the magical "Invisible Cities" of author Italo Calvino. They can assert the presence of human civilization on a barren land. They can express the physical order of a city and even its history and geography, as does Boston's satisfying High Spire above a historic transit corridor that was also once the narrow neck of the original Shawmut Peninsula.

My own view is that most American cities would be better off, for a host of reasons, with a six- or eight-story height limit. I'd quickly trade the aloof Emerald City of Houston for a real downtown, jammed with pedestrians enjoying access to every conceivable human activity. I'd also trade an office on the 80th floor of a silent tower and its Berenstain power vista for an office that opened onto a private garden with a few dozen restaurants in easy walking distance.
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In This Issue

RECORD's editors and correspondents traveled across the country—and in one case halfway around the world—to assemble the diverse group of projects featured on the following pages. For his review of I. M. Pei's Bank of China Tower (pages 76-83), Peter Blake journeyed to Hong Kong, where he found a building of truly international significance, blending extraordinary high-rise building technology with traditional Chinese bamboo symbolism.

A successful marriage of art and technology also characterizes featured buildings in this country. In Philadelphia, notes editor Margaret Gaskie, Geddes Brecher Qualls Cunningham's sleek expansion of the Franklin Institute both complements and completes its venerable predecessor (pages 62-67 and drawing below); in downtown Chicago, Perkins & Will has produced a state-of-the-art medical-research tower for Northwestern University that merges seamlessly with its Collegiate Gothic academic setting (pages 68-71); and in central Alabama, Valerio Associates' health and recreation center for Kimberly-Clark reconciles the opposing natures of a pine forest and a paper-manufacturing plant (pages 84-87). In our Building Types Study on schools (pages 91-105), editor Cliff Pearson reminds us that although new technology and the need for computer-equipped media centers are making public schools more complex, the time-honored lessons of community involvement and functional flexibility—along with old-fashioned concern for a child's small size—are still worth remembering. Three case studies that address these considerations are located in Florida and Indiana.

Not all of this month's featured projects were so far afield. To reach Philippe Starck's suave renovation of the Century Paramount Hotel (pages 72-75), editor Karen Stein simply had to leave RECORD's Rockefeller Center offices and walk five blocks south. The most original architecture, it seems, is sometimes right in our own backyard.
he Benjamin Franklin whose four-times-lifesize seated figure gazes benignly on the rotunda of the Philadelphia science institute that bears his name (and usually on a swarm of children clambering around his white-marble feet) would delight in the building his image now introduces. Centered on a big lively atrium bright with light and crayon colors, the appropriately named Futures Center updates for a new century the hands-on science exhibits the Franklin Institute has pioneered. By expanding both space and content, it strengthens the original museum. And in resolving the sensitive issue of adding to a landmark, it also shows courtesy to the neighborhood around it.

Designed in the late 1920s, the institute was conceived by architect John T. Windrim as a symmetrical full-block composition of galleries arranged in a hollow square around a grand exhibition hall. On the north its Beaux Arts facade edged a major thoroughfare, while the east-facing front, its colonnaded portal set atop a monumental flight of stairs, joined with the city’s main library and art museum to frame the formal civic space of Logan Square. As the Depression took hold in the early ‘30s, however, and funding dried up, construction halted with the south and west wings and the great hall at the core of the Neoclassical scheme still unbuilt, reducing the museum to an L-shape rife with dead-end galleries—and reducing Franklin’s rotunda, the imposing Memorial Hall, to a cul-de-sac.

The hiatus in development was shared by the area to the south and west, an enclave of small shops and houses on quiet narrow streets, where long years of benign neglect were broken only recently by a burst of spontaneous regeneration. The neighborhood’s revival made local residents a force that the institute and architects Geddes Brecher Qualls Cunningham had to reckon with as they planned the museum’s “completion.”

The expansion had three goals. The first was to incorporate a number of complex (and unwieldy) new program elements—an Imax theater with a domed wraparound screen and steeply raked seating for 340 viewers, a smaller (150-seat) video-equipped lecture hall, and two galleries housing new futures-oriented permanent exhibits—as well as parking for 350 cars. The second was to integrate the new spaces with the old building. And a third rapidly emerged: to accomplish these aims with minimal impingement on the adjoining area.

The urban issues raised by the community—concerns about both the sheer size of its neighbor-to-be (90,000 square feet plus parking) and the added volume of traffic it would attract—spurred the architects toward the taut and inventive scheme finally developed. Certainly these issues prompted the crucial decision not to pursue the original plan with its long institutional wings. Parking was not only placed underground but positioned to route museum visitors along the parkway and other well-traveled streets at the edge of the adjoining community. Over the garage, the addition’s new spaces were stacked vertically and pulled away from the perimeter of the site, leaving space for a 38,000-square-foot science garden to act as a buffer landscape on south and west. Finally the building’s major elements, augmented by bold exterior stair towers, were expressed as distinct volumes that break the larger mass into an assemblage of familiar forms—cube, cylinder, pyramid.

The exterior materials too are dominated by familiar limestone and gray brick that blends with both the older building and its immediate neighbors. (A subtle gray-on-gray grid plays on the 14-foot module of nearby house-lots.) Although the large window openings and thrusting components of brightly painted steel animate the sober backdrop, the addition’s most striking accent

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Art for Science

Though wholly different in style, the Franklin Institute’s crisp new Futures Center both complements and completes its venerable predecessor.
1. Memorial Hall
2. Atrium
3. Parking garage
4. Projection room
5. Omniverse theater
6. Omniverse exit balcony
7. Omniverse entrance
8. Omni Café
9. Ticketing
10. Bookstore
11. Futures Center exhibits
12. Science Park overlook
13. Ramp to exhibits
14. Exhibit hall ramp
15. Future Choices Forum
16. Omniverse Theater
17. Omniverse exit balcony
Playfulness that makes The Future Center's shell of geometric forms nesting in the pyramid-shaped cylinder of the Universe Theater is also evident in the atrium, where form yields to such edgy materials as frosted glass and brightly colored metal. The pivot of space is a 50-foot-high red column crowned by a light above a perforated-steel sculpture known as "Bucket." Around it is a sweeping red ramp (and opposite left), the center's key circulation element, which connects all the building spaces save the level exhibit galleries, which are linked by an independent internal ramp.
is the academic witticism of a transparent full-story corner "showcase" and garden overlook that follows the true compass, canting 9 1/2 degrees off the putative north-south orientation of the city's street grid.

Despite the marked differences in style, however, the Futures Center honors the concept of its Beaux Arts predecessor by supplying the grand exhibit hall at its heart. Set into the angle formed by the original wings, the atrium serves as a circulation hub for the existing Science Museum as well as the addition's special attractions. To one side of the open space, the crossing of the building's original axes is commemorated with a vivid yellow steel column that flares to a stop just short of an overhead skylight. Around it winds a fire-engine-red spiral ramp (set at the correct pitch for wheelchair access) that lends cohesion to the huge space and imparts a sense of energy through the flow of visitors along its slope.

Although the atrium can be reached directly from the underground garage, the ceremonial passage is through Franklin's rotunda. To one side lie the stacked permanent-exhibit galleries, which are linked by an internal ramp; on the other an open café (photo opposite) shelters beneath the second-level interactive lecture hall housing the Futures Forum. The Omniverse Theater on the opposite side of the atrium is reached by steps that form a miniature amphitheater (photo above) and a lobby where the glass-encased projection booth for the 70-mm reels itself becomes an exhibit. To smooth audience movement between film showings, viewers enter the theater from the ground floor but leave by way of an upper balcony that joins the ramp. Finally, the atrium is a destination in its own right, a celebratory bridging past and future. Its public role is reinforced by admission that includes access to such special atrium-co events as mime performances and science demonstration well as the museum shop and café—and to matchless oppor tunities for people-watching.

MARGARET G

Futures Center
The Franklin Institute
Philadelphia, Pennsylvania
OWNER: The Franklin Institute
ARCHITECT: Geddes Brecher Qualls Cunningham—Warren Cunningham, principal-in-charge; Michael Kihl, Robert Geddes, design principals; Charles Capaldi, James Row project architects; Thomas Buck, Adrienne Carruth, Maitland Jones, Daniel Russoniello, Kevin Scholl, Eric Sternfels, Brian Wait, Charles Berman, Nadia Breed, A Clark, Cecilia Denegre, Alejandro Firpi, Margaret Kampine, Charles Kelley, Gina Weckel, project team
ENGINEERS: Geddes Brecher Qualls Cunningham—E. F. Brecher, principal; Thomas Normile, Arun Parikh, project engineers (structural); Jaros, Baum & Bolles (mechanical)
CONSULTANTS: Hammel Green & Abrahamson, Architect (Omniverse Theater); W. Michael Sullivan (theater); Pu + Noppe + Associates (theater acoustics); Jerry Kugle Associates (lighting); Romano/Gatland (food service); S Milsom & Wilke (audio-visual and acoustics)
CONSTRUCTION MANAGEMENT: Barclay White, Inc.
A Cathedral of Learning
A successful marriage of art and technology, Northwestern University's new medical-research tower merges seamlessly with its Collegiate Gothic academic setting.

Whether it is viewed as completing the last empty corner of a dense urban block near Chicago's Lake Drive or as adding the final building to the academic quadrangle, the George W. T. Warren Research and Education Building is deeply engaged in a dialogue with its surroundings. Architects Skidmore, Owings & Merrill chose to clad the 15-story, steel-plate concrete facility in a cloak of glass that harmonizes with existing Gothic buildings, erected mainly in the 19th century, that make up Northwestern University's downtown medical-school campus. On being merely a handsome exercise in urban contextualism, however, the building also addresses a difficult agenda: to provide 250,000 square feet of flexible laboratory and teaching space, state-of-the-art mechanical systems, and convenient connections to existing academic departments in older buildings.

Per Skidmore, Owings & Merrill has responded with a clear design that wears its garb with assurance. Laboratories designed after Louis Kahn's Richards Medical Research Building at the University of Pennsylvania have measure up to the clarity that Kahn brought to his design. On the other hand, Kahn has been faulted for subdividing the served lab space into tiny units, an arrangement that makes it difficult to expand an experiment and discourages informal faculty interaction. Recognizing these problems at the Salk Institute, Kahn used gigantic trussed floor slabs on isolation floors to carry the mechanical systems and eliminate all subdivisions.

The older Northwestern buildings encourage the connecting departments to find an interstitial scheme impossible. The solution: put each new lab floor with the exception of the floor-to-floor construction into a box with the room and force the introduction of several vertical chases at the floor's core. Modular laboratories are layered around these mechanical shafts. Upper floors house teaching labs provided for classes of up to 180 students; lower stories accommodate research labs. Although individual labs are as small as 200 square feet, they are easily expandable to the requirements of research. Corrupted limestone piers, tall windows, and faculty offices ringing the labs, expressed elevator core that steps back the street all accentuate the building's verticality. Likewise the spire...

Situated at the southwest corner of the Northwestern Medical School campus (site plan), the Tarry Building catches the sun and shadows with detailing reminiscent of adjoining neo-Gothic academic buildings (top left and opposite). Filtered exhaust ducts rising from limestone piers create spires on the Chicago skyline (above).
The Harold Method Atrium (below) serves as an entrance pavilion to Tarry and several older buildings. Its stone detailing echoes ornament found on existing campus buildings (bottom).
exhaust stacks, which echo similar forms on the adjacent Ward Building.

The Tarry Building's ground-floor lobby connects the various neighboring buildings and gives the entire quadrangle a much-needed front door. Atop the lobby, a large half-vault presents a rakish profile to the street. Inside, finely chiseled stone detailing and wood paneling create an intriguing neo-Gothic contrast with the roofs, which reach up toward clerestory windows. Although a similar half-vault at the building's crown at present houses giant exhaust fans, a faculty club is planned for part of this loftlike space.

A two-story-high belt of clean-air supply fans is hidden midway up the building and limestone and aluminum curtainwall detailing. Breaking the building into vertical zones fed from the middle, the supply chases smaller, and almost entirely open educational laboratories in the basement.

The limestone blocks and painted aluminum extrusions of the building's skin are hung by stainless-steel clips from a floating grid of galvanized-steel angles—a system that has become the standard for today's tall buildings. The ordinary number of ledges and cornices entertained in the neo-Gothic design, however, will surely test the high-stress sealants and weep channels that bridge the interval between windy-city weather outside and the carefully controlled environment within.

ANDERS NEREIM

A W. and Edwina S. Tarry Management and Education Building Northwestern University Evanston, Illinois

ARCHITECT AND ENGINEER: Perkins & Will—Ralph E. Johnson, design principal; John E. Nunemaker, project manager; Elizabeth Fukatselis, project designer; Robert Goldstein, or technical coordinator; John Katsanos, structural engineer; and R. Kanazawa, mechanical/ electrical engineer

INTERIOR DESIGNER: Frankel, design principal; Mark Munt, project designer; Anita Ambroz, textile designer

CONSTRUCTION MANAGER: Schal Associates

Soft daylighting through clerestory windows emphasizes the scale of trusses inside the Harold "Atrium" Method Atrium (above). Indirect fixtures provide nighttime illumination (left). Finely chiseled limestone detail and rich wood paneling and furniture give the room a grandeur that befits its function as a new front door to the Northwestern Medical School quadrangle.
er long-running hit? He is leaving nothing to chance: with planning his next venture on New York's Upper East Side, Schrager has temporarily moved into Paramount to make sure his carefully tuned extravaganza stays sharp. KAREN D. STERN

Paramount Hotel
New York City
OWNERS: Ian Schrager, Philip Plievsky, Arthur Cohen
MANAGEMENT GROUP: Morgans Hotel Group—Michael
Overington, project director; Anda Andre, project manager
INTERIOR DESIGNER: Philippe Starck
ARCHITECTS: Haigh Space Architects (facade, lobby,
mezzanine)—Paul Haigh, principal; Babbara Haigh, associate
Scott Winkle, project architect; Nicolai Macri, Justin
Bologna, team; Leitner/Bronefman Associates (guest
rooms)—Gustavo Leitnerberger, principal
ENGINEERS: Ambrosino DePinto & Schmieder—Dominick
DePinto, principal (mechanical); Stanley H. Goldstein PC—
Michael Guglielmi, associate (structural)
CONSULTANTS: Jules Fisher & Paul Marantz, Inc. (lighting)
Paul Marantz, partner; Donald Kaufman (color); Tracey
Turner (graphics); Pamela Durante, Helga Puc (F. F. & E)
CONSTRUCTION MANAGERS: Clark Construction Corp. (facade,
lobby, mezzanine)—John Adir, Richard Daniels, project
managers; Robert Werthamer, field supervisor; Morgans Ho
Group (guest rooms)—Nat Cusumano, project manager;
Mark Robinson, assistant

In the lobby, a stucco and stone staircase is split in
two by glass panels that act as a banister (above). On
one side, the staircase is framed by a wall with hand-
applied white-gold-leaf. The wall, which leans 17
degrees, is the dramatic

focus of Paul Marantz's
lighting (previous page).
Upstairs, Starck-designed chairs and tables fill a
cozier mezzanine dining
room (top). A typical guest
room is shown opposite.
Scaling New Heights

I. M. Pei & Partners’ graceful triangulated tower for the Bank of China now dominates the skyline of the British Crown Colony. By Peter Blake
Bank of China Tower
Hong Kong
I. M. Pei & Partners, Architects
he new Bank of China Tower, designed by I. M. Pei & Partners and located in the center of Hong Kong, is a building of superlatives: at 70 stories, it is the tallest building in Asia and, as of this writing, the fifth loftiest in the world; it is probably the most innovative skyscraper structure built anywhere to date; and it is, in the view of many who have seen it (this writer included), the finest Modern skyscraper since Mies van der Rohe’s Seagram Building was completed over 30 years ago.

Before discussing the Bank of China as a work of architecture and engineering, let me list some of its vital statistics. At 1,209 feet to the top of its aerial, it is the tallest skyscraper outside North America. It contains just over 1.4 million square feet of space, everything included, which makes it more than twice the size of the Seagram Building. At the ground floor, the enclosed area measures 29,000 square feet; on the 70th floor, the enclosed area (a “sky lounge”) is only one quarter the street-level footprint, or 7,265 square feet. The Bank of China’s public spaces are contained within the tower’s three-story base, which is treated almost like a separate building that has been seemingly carved out of the site’s bedrock. The skyscraper’s four powerful legs rest on this rocky base. The building’s cost: $150 million.

Above the base, the bank’s offices occupy about a dozen floors, which are topped by an elegant space that serves as a staff lounge and cafeteria. (The bank’s offices are grouped around a 12-story atrium that runs all the way up from the ground-floor banking hall to the staff cafeteria.) The 50 floors above the Bank of China’s offices contain speculatively leased office space, while the sky lounge, on the top floor, is for the use of the bank and its guests.

Because the two-acre site slopes quite steeply, there are two principal entrances to the tower: one, at the lower level and facing Queensway on the north, leads to elevator banks that serve the office tenants; the second entrance, on the south or uphill side of the tower, leads into the tall banking hall and serves customers as well as bank employees. Forty-six elevators and two pairs of escalators transport passengers and freight to the tower’s various levels. Several underground levels contain, among other things, parking spaces for 370 cars.

Setting a new structural standard
So much for the facts and figures. In the hands of a conventional architect and builder, the Bank of China perhaps would have been translated into a 50-story box, with a standard-issue rectangular cage of steel or concrete forming the structure.

I. M. Pei realized from the start that the conventional way of building a skyscraper is, in fact, quite inefficient. As everyone knows, the forces that shape a skyscraper’s structure are not primarily the vertical loads transmitted to the foundations but the lateral loads generated by winds and other natural forces. In Hong Kong, these can be fierce: winds there blow twice as hard as they do in Chicago or New York, and earthquakes can be four times as severe as they are in San Francisco. The conventional way of resisting these forces is, of course, to add diagonal bracing to the rectangular structural frame, and this is the way it has been done, routinely, ever since skeleton-framed skyscrapers came into being.

But Pei and others before him have long realized that this practice meant, in effect, making two structures to hold up one building. The wastefulness of such a configuration has been obvious to early pioneers like the Russian Constructivists and to more recent practitioners like Louis Kahn. But nobody had ever succeeded in translating his insight into built reality—a giant step, as it turned out. Now that Pei has done so, all skyscrapers built henceforth will be measured against this spare and splendid structure.

The geometry that Pei developed for the Bank of China Tower is quite simple: the building starts up from the ground
as a shaft about 165 feet square in plan. Pei divided this shaft into four triangular quadrants by crossing it with diagonals.

As the tower rises, the first quadrant falls away, about half the way up. The next quadrant disappears halfway up the building, and the third quadrant drops about three-fourths of the way up. The top floors of the tower are thus only one quadrant in area—a slender stalk that terminates in a triangular tip containing the sky lounge. The form of the tower is thus defined by the verticals, horizontals, and diagonals of the structural frame, and by huge triangles of reflective glass that make up the building’s skin. This facade is clad in bright, anodized aluminum. The tapering silhouette of the building is not unlike that of a tall stalk of bamboo, though its reflective facets of glass and metal pick up light and shade the way a crystal might. Five principal columns hold this 70-story stalk—one on each of the four corners and a central column that extends from the top of the tower down to the 25th floor, where its loads are transmitted diagonally to the corners.

**Bamboo symbolism as architectural inspiration**

At the time the Bank of China commissioned Pei to design the tower, the architect saw that there were two principal problems: the first was the site, a steep slope surrounded by streets and fly-over highways that would require some realignment, and the second was the fact that the building parcel was almost invisible on the Hong Kong skyline when seen from Kowloon, on the other side of Victoria Harbor. So the new tower had to be very tall indeed if it were not to be swallowed up by the surrounding skyscrapers.

Pei recalls the early stages of the building’s design. “I sat with my son, Sandi, to cut out four triangular wooden sticks of different lengths, and we started to play with them, realizing that the building should taper as it went up.” Pei selected the dimensions of the triangular sticks, and assembled them in towers. He recalls a Chinese proverb that uses the tapered bamboo stalk as a symbol: its sectional trunk, propelled higher and higher by each growth, is a metaphor for taking measured steps in a quest for strength and excellence.

So this was how the formal architectural concept was developed. But it was New York City structural engineer L. Robertson who translated the concept into reality. “L. Robertson is a theoretician and a very practical engineer,” Pei says, “and I know how to make advanced theories work for him.” Pei and Robertson a good deal of the credit for coming up with the concept to the building’s realization: a critical joint at which the vertical, horizontal, and diagonal members of the steel frame come together. This joint is not a welded connection, not all-steel; it is, in effect, a block of reinforced concrete that envelopes all the columns, stiffening trusses, beams, and braces.

“I saw the tower as a series of triangles,” Pei recalls. L. Robertson saw the triangles as a structure, as a superframe, which was his conception.” The superframe—a kind of three-dimensional space truss—was surprisingly economical: Pei and Robertson estimate that the Bank of China tower used on percent as much steel as a conventional skyscraper of this size would normally have used—and this despite the fact that Hong Kong is located in a typhoon zone that calls for exceptional wind bracing.

Given that Pei’s tower is located just two blocks east of Norman Foster’s highly publicized Hong Kong and Shanghai Bank Headquarters, comparisons between the two structures are inevitable. The Foster building—a super-high-tech extravaganza—is, in reality, a fairly conventional structure with a central atrium and a brilliant display of structural mechanical innards on its north and south facades. For Pei’s building seems to use its dramatic structure as a fo
Sections of the tower at four different levels show typical layouts for the Bank of China’s use (low-rise) for tenants (low mid-rise, high mid-rise, and high-rise). A square atrium spans 17 stories through the center of the lowest floors, bringing natural light into the tower’s banking hall. A lounge situated on the 70th floor is for Bank of China VIPs and guests. Upper floors also contain executive dining suites and apartments for visiting dignitaries.
A skylit atrium (top) extends from the banking hall to a staff cafeteria and executive lounge on the 17th floor. The barrel vault of the north lobby (above) is sheathed in gray and white granite; floors are marble. A reception and banquet hall, located in the 70th-floor sky lounge (opposite) enjoys 360-degree views across Hong Kong. A tubular steel superstructure supports and braces communications towers that rise above the building’s apex.

decoration, whereas Pei’s tower is a flawless integration of pure structure, function, form, and urban symbolism. Nothing could be added to it and nothing could be subtracted with doing damage to the whole. (What is more, the per-square-foot cost of Pei’s building is only one-sixth the cost of the HSBC and Shanghai Bank.)

The office building as art
Will Pei’s and Robertson’s elegantly triangulated structure, widely copied in North American cities? Probably not. As good as it is, the Bank of China is less efficient in terms of rental space than most builders of commercial office structures would wish—although Pei points out that the great variety of rentable office spaces in the Bank of China, and the availability of spectacular views in all directions, serve the Hong Kong market exceptionally well. Even so, there may be problems with triangular-shaped corner offices, and occasional cross-braces slicing across the interiors—or so some critics will think.

Clearly, the Bank of China tower sacrifices a fair amount of rentable square footage to—well, art. And until the commercial market recognizes the dollar value of art, buildings will shy away from structures such as this one.

That, of course, is too bad. Mies van der Rohe once said we would not be building any cathedrals in our time, and was probably right. In some respects, the skyscraper may be the closest thing to the cathedral in this century and the next, especially if it takes its place on the skyline as gracefully and as visibly as the Bank of China does. It is ironic that Hong Kong’s new cathedral has been built by the present ruler of Beijing; and it is doubly ironic that the architect was the son of a former president of the Bank of China, who was driven out of his native land by the present rulers of China.

Still, perhaps this handsome new building will teach us a lesson or two about grace, civility, and integrity. It was not the first time that architecture had played such a role in the Bank of China. (Bank of China Tower, Hong Kong)

OWNER: Bank of China/Hong Kong
ARCHITECT: I. M. Pei & Partners—J. M. Pei, partner/designer; Eason Leonard, partner/administration; Michael Flynn, partner/curtain wall; Kellogg Wong, associate partner/administration; Abe Sheiden, associate partner/products; Bernard Rice, senior associate/designer; Robert Heintges, curtain wall; L. C. Pei, stonework and public spaces; Calvi Tsao, water gardens; Senen Vina-de-Leon, cores; William Cunningham, job captain; Tom Woo, resident job captain; Gianni Neri, construction administration; Richard Gorman, specifications; David Litz, senior resident architect; Pat O’Malley, resident architect
ASSOCIATE ARCHITECT: Wong/Kung & Lee—Sherman Ku, principal-in-charge
ENGINEERS: Leslie E. Robertson Associates and Vallentin Laurie, and Davies (structural); Jaros Baum and Bolles Associated Consulting Engineers (mechanical/electrical); Consultants: Fisher-Marantz (lighting); Rolf Jensen & Associates (fire protection); Cerami and Associates (acoustical); Peter McLaughlin Associates (security); Tra Associates (traffic); R. J. Van Seters Co. (fountains); Vine Ponte (planning); Levet and Bailey (quantity surveyors); Verta Corp. (exterior maintenance); Peter Xi (signage); George C. T. Woo & Associates (interiors)
GENERAL CONTRACTOR: Kumagai Gumi

Peter Blake is professor of architecture at Catholic University. He is a practicing architect and critic, and the former editor of Architectural Forum and Architecture Plus.
Exercising Options

Valerio Associates’ health and recreation facility for Kimberly-Clark combines the opposing natures of an Alabama forest and a paper-manufacturing plant.

Kimberly-Clark’s Coosa Pines pulp and paper mill sits amid the vast pine forest that stretches southeast of Birmingham, Alabama. The huge mill has provided jobs in the area for generations, along with generous benefits that include voluntary employee counseling on fitness, diet, and exercise. The company’s far-sighted policies are intended to keep employees healthy and happy, and at the same time reduce the costs of illness, injury, and insurance.

In designing Kimberly-Clark’s new Coosa Pines Health Center, Valerio Associates was challenged to produce a 32,000-square-foot building whose program has two major components: health screening, which includes a diagnostic clinic and an occupational-health suite for industrial accidents, and recreation, which incorporates a gymnasium, lounges, and meeting rooms. The architects also had to contend with the jumbled industrial environment that characterizes any large paper mill. The mill’s overwhelming size, together with its unavoidable noise and pollution, could easily have handicapped efforts at “place-making.” By turning the building inward, and pushing the entrance to the meeting room, exercise facility, and diagnostic clinic in a courtyard behind a skeletal colonnade, papal Joseph Valerio buffered the health center from the industrial environment and gave the building a more human scale.

Although the mill’s existing buildings display no particular stylistic consistency, their vernacular form and scale dictated a straightforward approach to construction: a succession of hipped-roof pavilions with clerestories and repetitive structural bays. Anything fussy or pristine here would have seemed out of place. For formal precedents, Valerio looked to such unpretentious sources as an Early Christian entrance atrium and a multi-staged wood belfry. The architect rationalizes his borrowing of seemingly alien historic form by observing that a culture’s “total absence of history and tradition affords [architect] perfect freedom.” If the result seems an odd contradiction—what does an Early Christian atrium have to do with a health center in an Alabama pine forest?—it is a contradiction.
cabulary of sloping elements appears just inside the center's entrance colonnade (above and below).
The exercise and health screening facilities (below left) are both entered through doors whose muntins have been cut to resemble pine trees. A corridor in the diagnosis clinic opens onto the entrance courtyard (below right), re-orienting first-time visitors. An elevated walkway from the women’s locker room leads into the gymnasium (opposite). Women’s aerobics class is held behind the wall to the right, discreetly concealed from the weight room below.

that deliberately “embraces the ambiguities of modern times,” according to the architect.

Upon entering this carefully thought-out building complex, one encounters the strangely sloping porticoes that surround the entrance courtyard. At first glance these look amusingly like the kind of angled shoring that holds up old porches while their classical columns are being replaced. Though it isn’t hard to find man-made industrial precedents for these canted elements throughout the mill, the real source of their inspiration is the natural environment of the nearby pine forest. It is only when one reaches the gymnasium that the metaphor becomes clear. There the tall spaced columns and randomly sloping wind bracing seem like old-growth forest surrounding a clearing—a forest that has undergone an industrial transformation while losing none of its mystery and quiet light. (Another, perhaps more subtle reference to the nearby woods appears in the mullions of the center’s entrance doors, which are cut in profile to resemble pine trees.)

The delicacy of the gymnasium’s wooden roof structure is made possible in part by hidden tension rings at the eaves of each hip. The wood portion of the structure is then concealed over a concrete peristyle that separates the roof from the weight room. Poured resin floors, simple finishes, and inexpensive aluminum lighting fixtures help keep the building within its modest budget. A N D E R S N

Coosa Pines Health Center
Coosa Pines, Alabama

O W N E R : Kimberly-Clark Corporation
A R C H I T E C T : Valerio Associates—Joseph M. Valerio, Ramon Mattheis, David Jennerjahn, project designers; Brad P. Gregory Randall, Daniel Ikeda, project team
E N G I N E E R S : A. Epstein and Sons, Inc. (structural, mechanical, electrical); EWI Engineering Associates (civil)
C O N S U L T A N T : Nancy Willert (interiors)
G E N E R A L C O N T R A C T O R : Universal Construction Company
Making the Grade

While new technology makes schools more complex, a few old lessons—such as getting communities involved and keeping a child's size in mind—are worth remembering.

Fifty years ago a small elementary school in Winnetka, Illinois, set off a quiet revolution. School design has never been the same. The two-story Victorian box housing rigid classroom cells and scaled to impress parents (and intimidate children) was swept away. Buildings imprinted with an institutional stamp gave way to ones with a more residential feeling.

It all began with the Crow Island School, a one-story brick building that embodied the progressive educational program of the local superintendent, Carleton W. Washburne. Designed by the fledgling firm of Perkins Wheeler and Will with help from Eliel Saarinen, the school organized classrooms into three wings so each could have its own identity. Instead of shutting students off from the outside world, Crow Island provided classrooms with direct access to outdoor yards. It brought ceilings down to nine feet (from the more typical 12 feet) to establish a less formal environment, and lowered windows to a child's height.

While educational philosophies have gone through several cycles in the last half-century, the lessons of Crow Island are as valuable today as they were in 1941. The latest generation of schools maximizes contact between classrooms and outdoor spaces, placing important design elements at children's height, and creating relaxed settings for education—just as Crow Island did.

Although clearly a Modern building with flat roofs and rectangular blocks sliding past one another, Crow Island fits comfortably into its local context. Its residential scale helps it harmonize with nearby houses, while its sensitive use of natural materials such as brick and wood allows it to rest easily on its wooded site. Such contextualism is also at work at the three projects profiled on the following pages. The Jane S. Roberts Elementary School in Dade County, Florida (pages 98-101), for example, responds to its tropical climate especially well by establishing a system of covered (but not enclosed) walkways and palm-studded courtyards.

Involving users in the design

Before designing Crow Island, Lawrence Perkins spent many hours listening to teachers, administrators, students, even janitors. Bringing these user groups into the design process is now standard operating procedure. For example, William Brubaker, a principal at Perkins & Will—the successor firm to Perkins Wheeler and Will—met personally with members of every department at Warsaw Community High School (pages 94-97) at least twice to discuss their suggestions. At each meeting Brubaker would translate their ideas into sketches and then listen to their reactions. “Is this what you had in mind?” Brubaker asked over and over again.

For a small town like Hope, Indiana, the design of a new school became a community event. Taft Architects carefully listened to what adults and children had to say. As a result, Hope Elementary School (pages 102-105) is as much a community resource as it is a school. Its main design feature, an indoor street, works equally well for parents heading for PTA meetings and for students on their way to class.

The Crow Island School helped change the course of school design.
While the glut of office space now on the market will probably depress commercial building for the next couple of years, the need for new and renovated schools continues to grow rapidly. According to a study by the Education Writers Association, $84 billion in new construction and retrofitting is needed to overhaul the nation's education infrastructure. Paul Abramson, president of Stanton Leggett & Associates, an education consulting firm in Westchester County, New York, projects that $35 billion will be spent over the next three years on school construction. "The one cloud on the horizon," notes Abramson, "is whether the public will be willing to fund all this."

Tight budgets may slow construction
With exactly that cloud in mind, F.W. Dodge expects just a 2 percent increase in square-footage built in 1990 for the entire education sector, which includes college and university projects in addition to primary, junior high, and high schools. According to Dodge, tight state and local budgets will force new education construction actually to decline by 2 percent in 1991, from 141 million to 139 million square feet. Growth, however, should revive in 1992 and continue through at least 1995.

Some of the difference between Abramson's optimism and Dodge's caution reflects Dodge's inclusion of college and university construction. Because many Baby Boomers in their 30s and 40s just recently began to have children, most growth in the school-age population is now occurring at the elementary-school level rather than the college level.

No one, though, can deny the remarkable growth in education construction during the past several years. From 1982 to 1989 new building soared 87 percent to reach 139 million square feet per year.

Some of the nation's largest states and local districts have begun ambitious school-building programs. California, for example, has projected it will need 800 new schools by 1993, while Florida estimates it will need 816 new facilities within the next 10 years. Dade County (Greater Miami) alone has launched a $1.5-billion school development program that will include about 50 new facilities and more than 300 renovated schools.

A growing percentage of education construction now involves renovating and expanding existing schools. In 1970, 73 percent of the money spent on education building was for new facilities, with 21 percent going for additions and 6 percent for alterations. By 1989 new construction accounted for just 52 percent of the total money spent, while additions had jumped to 36 percent and alterations had grown to 18 percent.

Part of the reason for this change was increased activity in the Northeast and Midwest, where older stock of schools existed.

The rapid growth of the school-age population over the last decade has put great pressures on cities such as New York to expand facilities quickly as possible. Until recently, New York's standard response was to erect pre-engineered metal annexes in school yards. When the city was finally forced by a watchdog agency to develop a less dreary solution, it turned to architects Weintrau & di Domenico.

Silk purses out of sows' ears
Employing the same Type V construction as corrugated metal as had been used in the projects, Weintrau & di Domenico designed a series of four "minischools" whose colorful and bright forms "won immediate praise (three of them shown on this page). "We have a knack for making silk purses out of sows' ears," says John di Domenico.

Instead of trying to disguise the humble construction technology, the architects worked with it to create a variety of whimsical pediments, portals, and columns that give each building its own identity. "We didn't want to fudge it," explains di Domenico. "We didn't want to just put a brick veneer on a metal shed. So we took a palette of materials that's typical of this building type and shook it up."

The minischools are 60 feet wide with 20-foot classrooms loaded on either side of aridor. Each one cost about $2 million and about six months to build.

While the so-called Baby Boomlet and the migration of Americans to the Sunbelt have spurred much recent school construction, another major factor has been the expanding role

Using the same kind of pre-engineered construction that had previously resulted in undorned metal sheds, architects Weintrau & di Domenico designed a series of lively school annexes for New York City (above and right). The rigid-frame, metal-skin structures provide fanciful elevations for classes to pose in front of and windows set at a child's height.
Seizing the complex function of schools. Simply, schools are bigger today because more resources are needed. More classes, community meetings, senior citizens groups, and year-round athletic events. At the same time, parents expect more sophisticated and spacious facilities. Special education programs, computer labs, and art centers are not enough. Not long ago, an elementary school library was a room with books; today it is a media center with computers and video equipment.

According to Perkins & Will's Brubaker, a children's center, a dining hall, and a courtyard that offer living space for students and teachers and help establish a strong identity for schools.

Schools are getting bigger, according to a study by American School and University magazine. At the typical elementary school today is 7 gross square feet and has 665 students. In other words, the average elementary school is 96 square feet per pupil. According to a study done 20 years ago, the figure was 62 square feet per pupil.

The survey also showed that the typical high school has 450,000 square feet for 967 students, or 56 square feet per pupil. Twenty years ago, the figure was 120 square feet per student. While increasing numbers of students are forcing schools to grow, the need for square footage, health decisions, and safety mandates in many states are requiring fewer students per classroom.

One study also showed that the typical high school has 150,000 square feet for 967 students. The figure was 62 square feet per pupil. Twenty years ago, the figure was 120 square feet per student. While increasing numbers of students are forcing schools to grow, the need for square footage, health decisions, and safety mandates in many states are requiring fewer students per classroom. In Texas, for example, the state legislature now limits all schools to no more than 22 students.

Many educators also advocate fewer students in school, especially in urban areas with social problems. "There's a lot of evidence to show children do better in smaller schools," says Abramson. Last year the Architectural League of New York and the Public Education Association, a private advocacy group, organized an exhibition of designs for smaller schools.

For a proposed site in the Washington Heights section of Manhattan, HMFH Architects designed a five-story structure with a rooftop playground (below and right). Shoeboxed onto a site the size of two town-house lots, the school includes a ground-floor daycare center and second-floor community services office that work independently of the three floors of classrooms and school facilities above. An atrium rising the full height of the building brings natural light into the entire facility.

"The overriding concern," explains Stephen Friedlaender, president of HMFH Architects, "was to show it's feasible to build small schools that have all the amenities often lacking in New York City buildings—lots of light, outdoor recreation, and community services."

Although few educators want to repeat experiments with open classrooms, "teachers really do want flexibility," says Abramson. "They want to be able to plug in a computer or a television anywhere in the room." They also want classrooms that can accommodate different kinds of activities—from lectures to individual learning. Some teachers even want various activities to be able to take place at the same time—computer training at one table, reading at another, and storytelling across the room.

Because education is more diversified than ever before, classrooms must handle gatherings of varying size—from a special-education class of seven students to a traditional course of 27, says Ben E. Graves, head of Educational Planning Consultants of Austin, Texas.

Computers and video may be the hottest topics among educators, but Graves warns that technology shouldn't be the tail wagging the proverbial dog. "We don't want to repeat the mistake we made with language labs," says Graves, "creating large spaces that aren't really needed." Rather than setting up computer labs, Graves recommends integrating the new technology within traditional classrooms.

With members of the Baby Boom generation now focusing on their roles as parents, schools have become a top national priority. Finally in the limelight, schools are assuming more assertive roles in many communities, while responding to new technologies and expanding educational programs. Clifford A. Pearson
PRAIRIE TECH

Warsaw Community High School
Warsaw, Indiana
Perkins & Will, Architect

The references to Midwestern farm buildings—such as the grain-elevator roofs and silolike staircases—clearly tie Warsaw High School to its rural landscape. But Perkins & Will's design for this 256,000-square-foot project is more than a simple essay in regional forms. While farm clusters tend to be ad hoc groups of individual structures, Warsaw High School is a deliberately symmetrical campus that somehow marries a formal plan with unpretentious agrarian imagery.

The latest in a 50-year tradition of innovative school designs, Warsaw High School represents a remarkable degree of continuity at Perkins & Will. Ever since it collaborated with Elie Saarinen in designing the Crow Island School in Winnetka, Illinois, in 1940, the firm has retained its position as one of the most important forces in school architecture. In the past several years partners William Brubaker and Ralph Johnson have infused a new sensitivity to regional architecture into Perkins & Will's work, picking up on the New Mexican Territorial Style at Capital High School in Santa Fe [Record, September 1988, page 101] and other Southwestern themes at Desert View Elementary School in Sunland Park, New Mexico [Record, September 1988, pages 106-108].

With abandoning the firm's roots in Modernism, Brubaker and Johnson have adapted their designs to fit into local contexts.

Set on the windswept Indiana prairie, Warsaw High School turns its tallest flatterest elevations to its surroundings, thought of these surfaces as walls projecting the school," says Johnson. Within these "walls" lies a series of more than 70 dimensionally defined structures—buildings that extend out to form covered walkways and step down to meet protected courtyards. A great circle of trees eventually will further enclose the site, bringing to mind the native-rock wall that encircles the Desert View school.

Entry to the building is through a peaked-metal arch that clearly separates the school from its surroundings. Beyond lies the project's main courtyard, a landscaped space that serves as the most
A key gathering place for students during warm months. The two halves of the school fall on either side of the court-rooms and media center to the south gymnasium and cafeteria to the north. An enclosed ground-floor gallery connects two wings and divides the court in two.

Where there be light
The teaching staff made it clear they wanted "natural light in all classrooms," recalls Larry Crabb, the superintendent of the Warsaw Community schools. To bring the light into such a large facility, Perkins & Will supplemented the two halves of the courtyard with a series of rectangular light courts inserted in both wings. The architects also used clerestory windows on the second floor to add light to double-loaded classroom corridors. The most impor-tant source of natural light, however, is the curving media center, whose three sets of windows flood the center of the room with sunshine.

Adjacent to the high school and connected to it by two enclosed walkways is a 60,000-square-foot building that once was the town’s freshman high school. At the architects’ suggestion, the school district agreed to recycle the building as a vocational center equipped with industrial technology labs (formerly known as "shops") and rooms for teaching business skills such as word processing.

Because the Warsaw authorities wanted the school to accommodate new technologies as they develop, each classroom is wired for computers and video. An electronic resources room in the media center supplies video programs to classrooms at the touch of a button, eliminating portable VCRs individually operated by teachers.

Here in basketball-crazy Indiana, a 5,000-seat gymnasium was considered a necessity. The gym, which can be separated into seven practice courts, serves as an important community facility and therefore has its own entrance off the main court and separate access stairs in silo-like structures along its perimeter.

To keep costs down and maintain a certain rural simplicity, the architects em-
ployed a straightforward structural system: steel frame infilled with masonry on the lower portion of the building and metal panels above. A variable-volume hvac system with fan rooms tucked under standing-seam metal roofs cools the building.

Classrooms are arranged by department (English, math, sciences, and so on) with department offices located nearby. Instead of isolating special-education rooms in their own area (and stamping them with a certain stigma), administrators required that they be integrated with regular classrooms. The client also asked that administrative offices such as those for the principal and assistant principals be located throughout the school, decentralizing the traditional administration block.

While the architects thought of the school as “a walled city” with classrooms around the perimeter and a courtyard in the center, the one element that asserts its presence on the exterior of the complex is the library/media center. “We wanted the library to be the most important feature in the most important building in town,” explains Brubaker.

C. A. P.

Warsaw Community High School
Warsaw, Indiana
OWNER: Warsaw Community School District
ARCHITECT: The Odle, McGuire & Shook Corporation—R. Duane Odle, president; Larry W. Phelps, design principal; Luky N. Hioaia, project architect
DESIGN ARCHITECT: Perkins & Will—Ralph E. Johnson, design principal; C. William Brubaker, managing principal; James A. Toya, project manager; August Battaglia, project designer
ENGINEERS: Lynch, Harrison and Brumleve (structural); Fulk and Gardner (mechanical/electrical)
CONSULTANTS: C. William Day (education)
GENERAL CONTRACTOR: Construction Control, Incorporated

Placement of the main staircase (1 and 3, opposite) just north of the media center reinforces the library’s central role in the school. The library itself (4, opposite) is a three-story space with media and resource rooms to the east and west. Specifically asked not to design a typical cafeteria, the architects created a two-story dining area with oak trim and a mezzanine (2, opposite).
TROPICAL PROTOTYPE

Jane S. Roberts Elementary School
Dade County, Florida
Hervin Romney, Architect

With its pink and turquoise roofs, its striking elevator tower, and its occasionally shifted grid, the Jane S. Roberts Elementary School seems to be one of a kind. But if the Dade County, Florida, school system follows through with its original plans, the building will be a prototype for schools in the area, a playful kit-of-parts spawning variations on a tropical theme.

Designed by Hervin Romney, a co-founder of the firm Arquitectonica who set out on his own in 1985, the school combines inexpensive materials and simple construction with a refreshing sense of whimsy. Just as importantly, Romney kept the local climate in mind throughout the design process. As a result, most corridors and stairways are covered but not enclosed, and all classrooms look onto outdoor courtyards.

The plan of the 79,000-square-foot school is composed of four major elements— an administration block, a classroom quadangle, a service wing, and an outdoor recreation area that fan out around an off-grid media center. (“Three solids and a void,” says Romney.) Each element serves as a standard building block that can be adjusted to a particular site, Romney explains.

Instead of looking onto parking lots and streets, as many schools do, this school turns inward with grassy courtyards as its focus and a blue and yellow elevator to its visual anchor. This sense of enclosure is heightened by a curving corner block wall to the right of the school’s entryways. The one-story administrative building, which represents the most permanent element of the project, is the only block outside the enclosure of the school proper. The building houses the principal’s office, support-staff offices, and a teachers’ lounge.

The service wing—which includes a cafeteria/auditorium, kitchen, music and art rooms, and mechanical spaces—has vehicular access at its east end and pedestrian access on the west, where it approaches the media center. Just south of the cafeteria, Romney carved out a small courtyard that can be used by students after lunch by parents after PTA meetings.

The media center, which features a...
story space traversed by an upper-level bridge, includes a traditional library, a resource room, and a storytelling pit. Its skewed orientation, in relation to the rest of the project’s grid, highlights its special role as both the symbolic and circulatory hub of the school.

While the classroom quadrangle can be thought of as one element, in fact it acts as two—a pair of two-story buildings wrapping around separate courtyards. The smaller of the two buildings houses the kindergarten, while the other serves the upper grades. According to Romney, the courtyards are key elements in his design, bringing light and air to all classrooms and breaking down the 870-pupil school into smaller units with which students can more comfortably identify.

To provide flexibility Romney paired classrooms so they can work as either two spaces or one. A movable blackboard wall hung from a dropped soffit (1 foot 8 inches lower than the 9-foot ceilings) slides on tracks to turn two 34-foot-square classrooms into one large room. The dropped soffit also provides space for hvac units.

Instead of squeezing work areas into each classroom, the architect grouped six to eight of them in faculty rooms scattered throughout the quadrangle. Such an arrangement encourages teachers to work together, says Romney, and provides them with much-needed retreats.

On the money
To keep the project within its $7.25-million budget, Romney used inexpensive materials such as corrugated metal, stucco, and concrete block, and simple structural techniques (concrete-block piers for vertical loads and tubular steel beams and precast concrete joists for spanning).

Although limited to rather simple materials, Romney infused them with energy. Angled and chevron roofs of corrugated metal, for example, enliven covered walkways, while curving outdoor stairs add a touch of dynamism to vertical circulation.

Working with these energetic forms is Romney’s unusual palette of colors: pink and turquoise for roofs, and primary colors for accent surfaces. The combination of soft pastels with solid primaries shows how works to hold the building’s composition together. At the same time it helps the school assert a distinctive identity, one that students can easily understand and appreciate.

Jane S. Roberts Elementary School
Dade County, Florida
ARCHITECT: Hervin Romney, Architect
ARCHITECT: Hervin Romney, designer; Ani Zabla, Nick Ranieri, Jeff Warming, Marty Chael, design team; Louis Pedraza, O’Leary Neville, production; Silvia Lopez, project manager
ENGINEERS: Riva Klein Partners (structural); Lagomasono Vital (mechanical/electrical); G. Van Meter (civil)
CONSULTANTS: Michael G. Amsar (lighting)
LANDSCAPE ARCHITECT: O’Leary, Shon Costa
CONTRACTOR: TGSV Construction
The media center includes a two-story library (above), as well as a resource room and a storytelling pit. The center, which serves as a fulcrum between the school's four quadrants, is placed at an angle to the rest of the project's grid. Romney emphasized the special role of the media center and its off-grid orientation by angling a second-story bridge through the space. In the service wing, Romney designed a cafeteria that doubles as an auditorium (left). Just south of this facility, he carved out a small courtyard that can be used by students after lunch or by parents after PTA meetings.
HEARING THE COMMUNITY

Hope Elementary School
Hope, Indiana
Taft Architects

In a small town like Hope (population: 2,200), a new school brings out the concerned citizen in everyone. So when Taft Architects began designing Hope Elementary School, they spent a lot of time listening—to school administrators, teachers, parents, and students.

Administrators wanted a one-story structure that would be economical but at the same time eye-catching, says Glen Keller, the area’s superintendent of schools. “Teachers wanted classrooms with lots of windows, lots of chalkboard space, and lots of storage,” he adds. And everyone wanted a facility that would serve the community as a whole, a building in which they could all take pride. Finally, no one wanted a flat roof. (The last elementary school had a flat roof and it leaked.)

While most rural towns would probably have turned to a local architect to design a new school, Hope was able to take advantage of the Cummins Engine Foundation’s standing offer to pay the architectural fees for public projects in Bartholomew County that use an architect from a list of outstanding firms. After interviewing nationally prominent firms, the school board selected Houston-based Taft, in part for the firm’s willingness to involve the community in the design process.

“The idea was to create an educational park, linking the elementary school to the adjacent high school and playing field,” explains John Casbarian, one of the Taft partners involved in the project. “We made an effort to make the fields and continued lines in the plan of their school. One new trees fill out, they also will help create a courtyard between the two schools.”

The key element in Taft’s design is an indoor “main street” that serves as a 60,000-square-foot school’s major public space. Modeled after English arcades, the corridor features bay windows that don’t look like storefronts but actually accommodate administrative offices, the art room, music room, a math/reading room, a lounge. Two wings—one for classi
Restricted to a $4.5-million construction budget ($83/sq ft), Taft Architects used a 60-foot-wide repetitive steel frame and inexpensive materials such as brick and concrete block. The architects tied the new elementary school to an existing high school and playing fields by superimposing a grid of pathways and trees on the property (site plan below). A major design feature is the school's indoor "main street," which is lined with brick-and-concrete arches and pyramid-topped pavilions.
The school's east-west indoor street intersects two north-south wings—one for classrooms and the other for gymnasium and cafeteria. The octagonal library (below left) sits halfway between the two wings. With bookshelves around the perimeter and most tables half-a-level below, the library makes effective use of its space. The multipaneled walls of facilities such as the art room (below right) and the music room (opposite) were modeled after arcaded English storefronts to provide maximum visibility.

and the other for shared facilities such as cafeteria, kitchen, and gymnasium—cross the corridor. To break the long indoor street into smaller sections, Taft designed the intersections as pavilions with pyramidal skylights and thick masonry piers.

Reflecting its role as the hub of the 400-student school, the library sits exactly halfway down the main corridor. The octagonal facility works on two levels—bookshelves around the perimeter and reading tables six steps down in the middle.

To stay within a $4.5-million construction budget, Taft built the school with a simple steel frame and masonry walls, and set a fixed width of 60 feet. "We used durable, inexpensive materials and made them look rich," says Danny Samuels.

For the main entrance, the architects designed a grand portico with the project's emblematic brick-and-concrete courses. Aligned with the school's major axis, the entrance introduces the project's most important architectural features—the indoor street, the arches framing this street, and the pavilion form. Stretching from the entrance is a pair of metal-roofed canopies that provide a sheltered area for children waiting for their buses.

Throughout the design process, Taft kept a child's perspective in mind. The distinctive banding of brick and concrete, for example, was designed with one eye at a kid's level. Windows in classrooms also start low (2 feet 4 inches above the floor) and reach to 8 feet.

"But we weren't restricted to a child's scale," says Robert Timme. "We didn't want all of the spaces to feel small." Instead, Taft alternated large with small spaces, the ceremonial and institutional with the more intimate and residential.

In the classroom wing, the architects broke down the long corridor into clusters of four rooms (two rooms on either side of the hallway), enabling teachers to work together, if they so desire.

"We saw the school as a microcosm of the town as a whole," says Casbarian. As a result, the architects kept in mind that adults, as well as children, would be using the building, and that community, as well as educational, activities would take place there. Like a good children's book, Hope Elementary School engages parents while at the same time educating children.

Hope Elementary School
Hope, Indiana

OWNER: Flat Rock-Hawcreek School Corporation
ARCHITECT: Taft Architects—John J Casbarian, Danny Samuels, Robert Timme, partners; Larry A. Dailey, senior associate; Robert Bruckner, Hecht, Eric Morris, Mark Volpends support team
ASSOCIATE ARCHITECT: James Architecture & Engineers
ENGINEERS: James Architects & Engineers (structural, mechanical, electrical)
CONSULTANTS: Michael J. Underhill (programming)
LANDSCAPE ARCHITECT: SWA, Inc. (concept); Dan Cook (associate)
GENERAL CONTRACTOR: Repp & Mus
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Radiant Heat Tests for EIFS

Manufacturers hope that testing will confirm combustibility of cladding that incorporates foam plastics.

...with fire-retardant chemicals, some analysts claim it will ignite under radiant heat generated from a fire in an adjacent building or other outside source [RECORD, July 1989, pages 124-127].

Overnight changes in the building codes are unlikely. Two of the major code-writing bodies rejected proposed changes, put forward last fall at their annual code development conferences, that would either have restricted use of the material to combustible construction classes or imposed testing requirements. But last June, Building Officials and Code Administrators International (BOCA) approved code changes that categorized EIFS materials as combustible unless testing shows otherwise. Limitations on EIFS use, including height restrictions, were also being considered by the two other code-writing bodies, the ICBO and the SBCCI. The industry’s trade association, EIMA, claims the changes are promoted by masonry and concrete interests and could destroy its members.

The key to ending the controversy and to surmounting the new BOCA restrictions lies in definitive testing. “The industry was challenged to produce information,” says Frederick Fisher, a fire-protection engineer with the Fire Research Laboratory at the University of California, Berkeley, who was hired by EIMA to develop the tests. “There is no nationally recognized test method that has been designed to evaluate the flammability of these materials exposed to radiant heat.”

Fisher hopes his tests will mollify code officials and that a standard certifying the systems’ combustibility will be adopted as a standard certifying the systems’ combustibility. The procedure uses radiant testing of full-scale mockups with laboratory verification. He anticipates that lab scale methods will prove sufficient to certify performance. His tests of 28 different systems should be concluded this month; the results will be submitted to model-code bodies, ASTM, and NFPA by year-end.

Peter D. Slatin

Book Briefs


Standard: TD-6, Standard Reference Symbols for Construction Documents, offered by the Construction Specifications Institute, is intended to reduce the proliferation of graphic symbols to as few as 248, organized by the CSI numbering system. For information: 703/684-0900.
Designing a roof calls for a complex arrangement of several elements. What do you do when standard details don’t apply? To tap into the expertise available at roofing companies, RECORD asked 20 manufacturers to come up with solutions for some atypical conditions. We designed a small but complicated structure, and asked each respondent to propose an appropriate product, draw details, and describe the selected system’s advantages and disadvantages. In the following pages, we show parts of the eight replies we received.

We turned to two experienced hands to advise us on the design of the roof and look at the submissions. David Zaiser has considerable roofing and reroofing experience. He is an architect at Kehrt, Shatken, Sharon Architects, of Princeton, New Jersey. Carl G. Cash is a principal of Simpson Gumpertz & Heger, in Arlington, Massachusetts, a consulting engineering firm with wide experience in inspecting, testing, and specifying remedial work for roofs.

We had some preconceived notions about our roof. The structure has both a low-sloped barrel vault and a “flat” (1/4-in-per-ft slope) area (details below). To be able to use the same product and installation on both would be an advantage. Color was also important, since the barrel roof could be seen from a distance.

Runoff from the sloping roof is conveyed to a scuppered gutter, which presented hard-to-detail links from roof to gutter, and gutter to parapet. The roof was described as capable of deflecting 1/2 in. under load. The point at which this surface meets a through-wall scupper required detailing a joint that can move when water accumulates.

Prior to submitting, one manufacturer, Stevens, asked us for more information (we had left some areas vague for the sake of simplicity); the UL Class of the roof, application of Factory Mutual data 1-28 (steel deck) or 1-29 (single-ply roof), the ANSI Ground Roughness Exposure, pressure and humidity considerations within the building, the nature of any chemicals vented onto the roof, the warranty period. Zaiser called this “an excellent check of design considerations.”

How they responded
Most of the manufacturers tried to adapt the designs to their own typical details, which, in some cases, called for reroofing the roof-gutter condition. Most respondents submitted CAD-generated drawings. These are reproduced (rather than as drawn as is our usual practice) so the reader can evaluate their completeness and clarity. Some manufacturers gave us a combination of computer drawings and drafted or sketched drawings (the latter have been redrawn). We have noted the availability of computer details and applications with which they are comparable in the chart opposite.

Sarnafil. The company proposes a film adhered, 72-mil polyester-reinforced bitumen membrane for the flat roof. On the barrel roof, a similar membrane, mechanically attached, is recommended for ease of installation. The system is said to be puncture resistant and tolerant of ponding water. Seams are hot-air welded. Metal accessories are PVC-coated for compatibility. Stevens. Stevens offers two syst
for both roof conditions. The company sees the system as the most suitable for a small roof (arguing that 10,000 sq ft is generally the economic minimum for mechanically fastened methods). Zaiser agreed with this assessment. The membrane’s 300-percent elongation is seen as useful at points of movement and where vibration may be a factor, such as at mechanical units.

Tamko. A three-ply SBS modified-bitumen system was chosen. It comprises two plies of fiberglass-reinforced felts installed in hot asphalt covered by a layer of polyethylene combinations that would comply is limited. Vapor barrier. Insulation types and configurations are affected by provision of a vapor barrier. Several manufacturers noted that the National Roofing Contractors Association recommends that a vapor retarder be considered when the outside average January temperature is below 40°F and the expected interior winter relative humidity is 45 percent or more.

Cost. We didn’t ask for costs, since there were too many variables to be useful. For example, the relatively small sheets of

<table>
<thead>
<tr>
<th>Roofing Manufacturer</th>
<th>Features</th>
<th>brand name</th>
<th>color</th>
<th>base layer</th>
<th>installation method</th>
<th>recommended insulation</th>
<th>CAD details</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAMKO</td>
<td>flat and barrel roof</td>
<td>SBS modified bitumen</td>
<td>Asphalt Premium</td>
<td>2 ply asphalt sheet</td>
<td>hot asphalt</td>
<td>1°/n-paraffin 2°/n-paraffin</td>
<td>AutoCAD</td>
</tr>
<tr>
<td>SIPLAST</td>
<td>flat roof</td>
<td>SBS modified bitumen</td>
<td>Paradane 2025 FR</td>
<td>1-ply Paradane 20</td>
<td>hot asphalt</td>
<td>2°/n-paraffin</td>
<td>AutoCAD</td>
</tr>
<tr>
<td>BARONVILLE</td>
<td>barrel roof</td>
<td>SBS modified bitumen</td>
<td>Spec #100</td>
<td>2 ply</td>
<td>hot asphalt</td>
<td>1.5°/n-paraffin</td>
<td>no</td>
</tr>
<tr>
<td>BRACROP</td>
<td>barrel roof</td>
<td>EPDM 60 mil sheet</td>
<td>black</td>
<td>fully adhered</td>
<td>2°/n-paraffin</td>
<td>AutoCAD</td>
<td></td>
</tr>
<tr>
<td>CARLISLE</td>
<td>flat roof</td>
<td>EPDM</td>
<td>brown</td>
<td>mechanically attached</td>
<td>2°/n-paraffin</td>
<td>AutoCAD</td>
<td></td>
</tr>
<tr>
<td>STEVENS</td>
<td>flat roof</td>
<td>CPE/PVC/</td>
<td>white</td>
<td>mechanically attached</td>
<td>2°/n-paraffin</td>
<td>AutoCAD</td>
<td></td>
</tr>
<tr>
<td>COOLEY</td>
<td>flat roof</td>
<td>CPE/PVC/E</td>
<td>C3</td>
<td>3 colors</td>
<td>mechanically attached</td>
<td>AutoCAD</td>
<td></td>
</tr>
</tbody>
</table>

The chart summarizes the characteristics of the roofs proposed by manufacturers for this project.

Modified-bitumen systems have an advantage for the small, complex roof of our structure. On a large, unencumbered roof, elastomeric sheets that come in long, wide rolls may be less expensive.

Maintenance: Most systems offer a walk-up product to reduce damage from maintenance activities.

Insulation: Because insulation is now commonly placed on top of the roof deck, it can be critical to long-term membrane performance. Insulation must be properly supported by the deck and fastened to avoid blow-off, and it can’t chemically react with any of the components of the membrane. Thus, specifying (or accepting) insulation not specifically approved by the membrane manufacturer is risky.

A final caution: Zaiser noted that manufacturers sometimes indicated insufficient edge-accosory fasteners in detail frequently overlooked by designers as well. Gravel stops and fascias must be attached, usually with wood nails, “to structural elements—masonry, walls, metal roof deck.” Sometimes the roof-deck edge is inadvertently left loose because the corrugation doesn’t fall on its support.

James S. Russell
SECTION 1/Detail A

Detail for a flat roof where it meets a parapet

1. Sarnafil

- Continuous metal hook strip, fastened 12 in. O.C.
- Metal coping cap
- Treated wood blocking
- Grommeted fastener 12 in. O.C.
- Sarnafil flashing, adhered to acceptable surface
- Sarnastop fastened 12 in. O.C.
- Hot-air weld
- Sarnafil membrane adhered

2. Stevens

- HI-TUFF FASCIA SYSTEM
- HI-TUFF ALL PURPOSE SEALANT
- TREATED WOOD NAILER
- HI-TUFF MEMBRANE
- BONDING ADHESIVE
- HOT AIR WELD
- SEAM CAULK
- INSULATION
- HI-TUFF PLATE & SCREW INTO DECK OR APPROVED NAILER (SEE CHART 1 FOR APPROPRIATE SPACING)

NOTES:
- Fascia fasteners-stainless steel screws provided with fascia system.
- If 6" or 8" fascia is used and bottom row of fasteners align with other than nails, a suitable and approved fastener must be used.
- Nailer size-2x minimum.
- Not a suitable detail when top of wall drains to exterior of building or new metal will cause ponding.

5. Siplast

- Counter flashing
- Metal flange (prime, set in mastic & fasten 3" o.c. staggered; fasten & tape vertical laps in metal)
- VERAL (torch, roll over metal 1")
- PARADIENE 30 (prepare granular surface)
- PARADIENE 20 or IREX
- PARADIENE 20

6. Eracorp

- Metal coping by others
- Fasten 12" O.C.
- SBA
- EF or EM
- Pressure treated wood nailer

Carl Cash considered Sarnafil’s demand on the membrane’s flexibility to set up roof-to-wall movement (similar to Celotex and Cooley) to be “unrealistic.”

2. Stevens. The company supplied detail with and without an expansion joint (latter is shown). The exposed outer corner of the membrane in this detail is subject to puncture.
Hanville

The detail is the same as the proposed for the gutter at the barrel. Zaiser comments: "The only proposal showed that the blocking at the many wall must be of the countersunk and-bolt variety."

Carlisle

The roof-to-wall joint shown could depend on the membrane's high gation, but the company also supplies expansion-joint details. A variety of termination details (not shown) could be used at the coping.

5. Siplast. A flashing strip is wrapped around a metal flange, which can move independently of the wall under a metal coping. The Veral sheet is shown here without a cant strip, normally used.

6. Eracorp. The detail shows EPDM flashing wrapped completely over the parapet under a coping.

7. Tamko. The company drew a full expansion joint with a metal counterflashing over the turned-up roof edge.

8. Cooley. Cash comments: "Neither the type and thickness of insulation nor the distance between fasteners is specified, which is critical for wind resistance."

---

4. Carlisle

**NOTES:**

1. FOR CORNER APPLICATION, SEE DETAIL U-15-D

2. 6 INCH WIDE UNCURLED ELASTOFORM FLASHING MUST BE CENTERED OVER FIELD SPlice

8. Cooley

---

**NOTES:**

1. face fastening requires nominal 2 by nailer thickness

2. nails must embed in nailers 1 1/2 in. min.

REDRAWN FOR ARCHITECTURAL RECORD
SECTION 2

Detail of a gutter at the base of a sloping roof.

1. Sarnafil

An internal gutter doesn’t leave much room for flashing and requires maintenance. Some of the manufacturers suggested changes they felt were necessary to make our detail work.

1. Sarnafil. The flashing can be hot-air welded to the PVC-coated metal scupper. Zaiser would prefer coping fasteners that “don’t make water-entry holes.”

2. Stevens. The company proposed that the gutter be widened to at least 3 ft (echo by Carlisle, Eracorp, and Tamko) and that the scupper replaced with a drain (not shown). The termination bar (a detail used by several manufacturers) shows “a misplaced reliance on a horizontal sealant bead for water tightness,” says Cash.

3. Manville. Interior drains are rec}

2. Stevens

3. Manville

4. Siplast

5. Eracorp

New details for architectural record

5. Siplast

6. Eracorp

Redrawn for Architectural Record

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7. Tamko. To separate the gutter from the roof, the company shows an insulated, metal-counterflashed expansion joint. The scupper was deleted in favor of a drain.

8. Cooley. A membrane flashing sheet is extended up the parapet, where deflection is accommodated by a counterflashing. A seam at the bottom of the valley "is asking for trouble," warns Zaiser.
SECTION 1/Detail B

A roof-to-wall detail is fairly straightforward except near penetrations. We asked how close to the wall a drain could be located, and how low a penetration (such as a window) could be placed.

1. Sarnafil. The company used exposed fasteners to attach fully adhered flashing to the wall through a counterflashing. Sarnafil says there is no minimum horizontal distance from a wall to a drain.

2. Stevens. The membrane flashing welded to the roof sheet and adheres to the wall. Flashing height is indicated minimum 6 in., and drains should be placed at least 1.5 ft from the wall.

3. Manville. Through-wall flashing up a counterflashing is recommended at window openings. To fasten the roof...
Wood nailing is either mounted as a sill to the wall or recessed into the wall. Carlisle. The detail shown indicates fastening insulation at intersections. The company provided a roof-wall detail in which a strip of flashing is fastened under the membrane, which is itself carried up the wall as the flashing. Giplast. The Veral cap sheet is fastened to the wall under two-piece counter-flashing. 6. Eracorp. The roof membrane is attached to the wall through an anchor bar or blocking. Flashing must be carried vertically at least 8 in. and "monitored" drains can be placed as close as 12 in. from the wall. 7. Tamko. The company shows the roof turned up at the wall and covered with two-ply flashing. Two-part metal counter-flashing, fixed under the window, offers additional protection. 8. Cooley. The metal sandwich panel was interpreted as corrugated siding in the detail, which is used as counter-flashing over the adhered membrane. The siding would have to be removed for reroofing.
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Participate in 8 prestigious industry-related events taking place in conjunction with LIGHTFAIR.

1. Product Showcase, Wednesday, March 6, 1991, 8:30-10 am This is the ONE session that everyone demands — a look at outstanding products that have been introduced in the last year. Attending this overview, helps you better plan your time on the exhibit floor so you don’t miss those products that could make a difference to you and your clients. A distinguished review committee has evaluated the submittals and new products will be announced in the following categories:
   - Outdoor
   - Commercial/Fluorescent
   - Recessed Downlights
   - Decorative Fixtures
   - Industrial/Commercial
   - Lamps/Ballasts
   - Controls
   - Custom Applications
   - Lighting Design Software
   - Other

Arrive early for this “standing room only” session. Cost: $25. At the Expocenter Exhibit Hall. See registration form on page 15 for details.

2. National Association of Electrical Distributors Commercial/Industrial Lighting Conference, March 2 - 5, 1991 NAED holds its conference immediately preceding LIGHTFAIR. The event takes place in the Holiday Inn Mart Plaza. More than 250 electrical distributors, lighting manufacturers and their representatives attend this important technical event. For more information, call NAED direct at (203) 894-1908.

3. Prestigious Keynote Address, Tuesday, March 5, 1991, 8:30 - 10 am The Environmental Protection Agency’s Robert Kwatin and Jerry Lawson will present the EPA’s newest program, which directly will benefit your bottom line, “Green Lights: Environmental Protection at a Profit.” Free to all registrants. See page 4 for details.

4. Free Opening Night Reception, Tuesday, March 5, 1991, 5-7 pm The Chicago Merchandise Mart and Architectural Record/RECORD LIGHTING magazine are co-sponsoring a complimentary opening reception in the Expocenter Exhibit Hall. Network with peers and enjoy cocktails while previewing innovative new products displayed by leading lighting manufacturers.

5. The Remodeling & Redecorating Professionals’ Conference, March 5-6, 1991 This exciting FREE conference zeros in on the hottest area of interior design today: residential remodeling and decorating. See page 10 for complete details.

6. CEU Course: “Lighting for Residential Environments,” Wednesday, March 6, 1991, 10 am - 6 pm This core level course will help you develop an understanding of the impact lighting can have on residential environments. The course is accredited by ASID for .6 CEU credits. Cost: $100. See page 8 for details.

7. Annual IALD Awards Dinner, Wednesday, March 6, 1991, 7:30 - 9:30 pm The International Association of Lighting Designers (IALD) will present its annual lighting design awards at a gala celebration in the Art Institute of Chicago’s Stock Exchange Trading Room. The special evening includes a cocktail reception, awards banquet and a spectacular laser light show. The event is being co-sponsored by Architectural Lighting magazine. Tickets are $85/person and may be purchased today by marking the appropriate box on the registration form on page 15. The banquet is expected to be a sellout and seating is limited.

8. Chicago Illumination Design Awards Luncheon, Thursday, March 7, 1991, 11:30 am - 1:30 pm The Chicago Section of the IES presents its annual awards luncheon to publicly recognize professionalism and originality in the lighting design field. See the Gallery exhibition of award winners’ projects on display in The Chicago Merchandise Mart. Cost: $25. For more information or to purchase tickets, call 1-800-677-MART.
Choose from Six Lightfair Seminar Tracks

Select the programs of interest to you. Mark your choices on the registration form.

All seminar sessions are held on the 14th floor of the Holiday Inn Mart Plaza. The Keynote Address, all exhibits and the Product Showcase are on the 2nd Floor in the ExpoCenter exhibit area.

Energy and Economics Track

Tuesday, March 5, 1991 8:30-10 AM

Keynote Address: “Green Lights - Environmental Protection at a Profit”

During this opening address, you will learn how Environmental Protection Agency's (EPA) “Green Lights” program can significantly:

- Decrease your company’s energy costs
- Maintain high aesthetic quality of lighting
- Reduce further pollution to the environment

“Green Lights” is a pledge by major corporations to install improved energy-efficient lighting in all facilities in the next three years.

Dozens of corporations have made commitments in principle to join this program. If you are involved in the selection, purchase or use of lamps, lighting fixtures, ballasts and controls, you MUST attend this important opening address.

Speakers: Robert Kwartin, director, Energy Efficient Lighting Program and Jerry Lawson, chief, Energy Productivity & Pollution Prevention, Environmental Protection Agency (EPA), Washington, D.C.

10:30 AM - NOON

“Effective Packaging of Lighting Products: Learn How To Get What You Really Want”

Learn how “packaging” has dramatically affected the lighting industry from the points of view of a designer, an electrical contractor, a manufacturer’s rep and an electrical distributor. Hear how the “packaging” process is influencing the way projects are designed, specified, purchased, and constructed in this new business climate.

- How do you work within this system?
- How do you improve communications with the important players to avoid pitfalls?

Panelists: Randy Burkett, IES, IALD, president and design principal, Randy Burkett Lighting Design, St. Louis, Mo.; Larry Plunkett, NECA, AGC, P.E., president, Sachs Electric Company, St. Louis, Mo.; Richard Dunlop, IES, president, Chesapeake Lighting Associates Inc., Laurel, Md.; and Cal Bertram, marketing manager/lighting, Esco-United, Minneapolis, MN.

Session leader: Mark Roush, IES, Lighting Center Manager, Philips Lighting, Somerset, N.J.

3:30-5 PM


Attend this session and learn how the ’90s economy will affect the construction industry. Learn how today’s economic/energy trends are affecting:

- the make-up of design teams
- design-build projects
- design-build firms
- quality and its survival
- changes in design priorities. Specifically learn:
- how to capitalize on the architect/engineer/designer’s roles as energy managers
- how to anticipate changes in these roles in the ’90s
- how to reduce costs.


Session leader: Charles Linn, AIA, former editor of Architectural Lighting magazine.

Energy in Design Track

Tuesday, March 5, 1991 10:30 AM - NOON

“The Design of Energy Efficient Lighting: Lamps, Ballasts, Fixtures & Controls”

Lighting energy issues are hot topics. Demand side management (DSM) and an emerging energy crisis make energy-efficient lighting necessary for new construction and remodeling.

Hear about California’s Advanced Lighting Guidelines, the first independent technical and design guide concerning the latest in energy-efficient, high quality lighting products and design techniques. The Guidelines also include applications and specifications information for every day use by architects, designers, engineers and lighting specialists, regardless of the project’s location.

Learn how to use the Guidelines to achieve high quality, low energy lighting systems. The presentation will cover the Advanced Lighting Guidelines, including:

- Compact fluorescent lamps
- Full-size and U-bent fluorescent lamps
- Compact metal halide and white sodium lamps
- Conventional-shaped tungsten halogen lamps
- Energy-saving and electronic ballasts
- Energy-efficient luminaires
- Computer-aided lighting design
- Lighting design practice

Speaker: James R. Benya, PE, IALD, IES senior principal and chief executive officer, Luminaire Souter Lighting Design, San Francisco

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2-3:30 PM

How to Remain Competitive in the Face of New and Pending Energy Legislation

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- California Title 24: Performance/application-based compliance
- Massachusetts: Component (lamps, ballasts, luminaire) regulation
- New York State Energy Code: Prescriptive Regulations and equipment efficiencies.
- Federal government/Department of Energy Standards
- Industry and professional society response to energy legislation

Learn how new/pending legislation will affect your business and limit your design options. If you are involved in lighting at all, you must attend this seminar to learn exactly how you and your clients are going to be affected by new legislation.

SPEAKER: Helen Diemer, IALD, S, is an associate of the lighting design firm David A. Mintz, Inc., New York and the current president of the International Association of Lighting Designers (IALD). Diemer is well-versed on the subject of codes and standards, having served for three years as chairman of the IALD Energy Committee and as a member of IES Energy Management Committee. She was active in the development of ANSI/ASHRAE/IES standard 90 and has appeared several times before the Department of Energy and the New York State Energy Office to deliver petitions on federal and state regulations.

OUTDOOR TRACK

WED., MARCH 6, 1991
10:30 AM - NOON

“City Lights: A Better Approach to Our Urban Environment Featuring a Case Study of Battery Park”

Learn the role of electric lights in the nighttime environments of North American cities. Better understand how to:
- learn important distinctions between highway lighting and street lighting; and avoid the confusion between these two applications. Learn how they have caused our cities to suffer;
- maximize the inter-relationship of lighting poles and fixtures in the daytime and the quality of light at night.

Leave this session with a better approach to urban environments. Learn how to use fixtures appropriate to urban settings.

SPEAKER: Janet Lennox Moyer, ASID, Jan Moyer Design, Berkeley, Calif. Ms. Moyer has more than 14 years in lighting design. Her prestigious projects include the lighting of Levi Plaza, The Detroit Civic Center, Greenville Commons and Skywalker Ranch.

6 - 7 PM

“How to Create Drama in Light: Light Sculptures for Public Spaces and Visual Effects”

Learn how you can use lighting to bring life to “Town Square America.” Lighting for...
- plazas/piazzas
- fountains and monuments

If you are involved with public space design, you won’t want to miss this session.

SPEAKER: John David Mooney, Chicago artist and sculptor. Mooney is known for his large-scale light sculptures built in the United States, Europe and Australia. Mooney’s work includes “American’s Sky Sculpture,” a sculpture barge and programmed searchlight piece on the Chicago River in May 1990, incorporating multiple lighting forms and lasers; “Lightscape ’89,” the transformation of Chicago’s IBM Building into a 52-story high light sculpture in August 1989; and “Starscapes,” a rooftop sculpture at the corner of the Hollywood Freeway and Sunset Boulevard, now a landmark piece in Los Angeles.

3:30 - 5 PM

“Practical Residential Landscape Lighting Can Be Alluring”

Safety, security and enjoyment of the landscape are three important reasons to provide landscape lighting. Attend this session and hear about key issues such as:
- how to select the right lamp
- what techniques to use to create specific effects
- how to identify the important issues in developing a design approach based on geographic location and the impact of weather
- decide the appropriateness of the 120-volt vs. 12-volt systems in the project
RETAIL LIGHTING TRACK

WED., MARCH 6, 1991
10:30 AM - NOON

"World View: A Comparison of Applications In Retail Lighting From the U.S. and Abroad"

Hear what three world-famous experts have to say as they review trends in retail lighting over the last five years. Then look ahead at the new light sources that are affecting current and future retail designs. Learn how European and U.S. retail designers address...

- aesthetics
- glare control
- maintenance
- accent lighting
- color rendition
- budgeting
- life cycle vs. first costs

PANELISTS: Derek Phillips, FRIBA, FCIBSE, IALD, M. arch. MIT, B. arch., MCD L'pool, owner, Derek Phillips Associates Lighting Consultants, United Kingdom, and Roberto Pamio, Architect, Venice, Italy. Session Leader: David A. Mintz, IALD, IES, principal, David A. Mintz, Inc., New York. Phillips was the first architect to become president of the Illuminating Engineering Society of Great Britain, now the Chartered Institute of Building Services Engineering (CIBSE). Pamio studied under Carlo Scarpa and other famous Italian architects, after receiving his architecture degree from the University of Venice. David A. Mintz, Inc., has lighted more than 40 million square feet of retail space. He is a founder of the IALD and has served on the board of directors of the U.S. Institute of Theater Technology.

3:30 - 5 PM

"Fundamental Value-Added Lighting Techniques For Retailers"

Good lighting offers a value-added benefit to help improve visibility, create atmosphere, reduce energy costs and increase sales. You will receive information on the "how tos" of retail lighting. You will learn how to use visibility, how to achieve a desired effect, and how to use new technology in construction and renovation projects. This is a non-technical presentation with useful information for retail designers and owners.

SPEAKER: Stephan Graf, IES, IALD, owner and founder of Fantasee Lighting, a design firm specializing in the lighting needs of video, theater and stage shows, and IlluminArt, a firm specializing in architectural lighting design services, both in Ypsilanti, MI.

OFFICE TRACK

THURSDAY, MARCH 7, 1991
8:30 - 10 AM

"America's Office Lighting Future Can Be Found In Europe Today"

Hear the latest in European office lighting standards and the product technologies that have been developed to meet those standards. Learn how these standards compare to new U.S. office lighting standards and product developments. Learn how these European trends will directly impact the future of office design and the corporate bottom-line.


10:30 AM - NOON

"Office Lighting: Fundamentally Speaking"

Lighting is a critical part of office productivity. Learn how to establish the criteria and identify the major concerns in office lighting design...

- How to determine how much light is enough?
- When to use direct vs. indirect lighting?
- How to save energy without sacrificing performance?

Examine systems and trends in sources and fixtures for both new and retrofit installations. In addition, learn how energy legislation is affecting design and user performance.

Sponsored by: Facilities Design & Management Magazine

SPEAKER: Sandra M. Stashlik, IES, PE, IALD, principal-in-charge of the Philadelphia office of Grenald Associates

124 - ARCHITECTURAL RECORD JANUARY 1991
- 3:30 PM

New Guidelines for Lighting Offices Containing VDTs: Practical Information and Solutions that Work
This practical/hands-on seminar will teach you in understandable language how to light an office containing VDTs. Review the new SNIA recommended practice guidelines and discuss their applications, looking at how off-the-shelf equipment/luminaires meet or don’t meet these guidelines. Learn to evaluate available options, including both direct and indirect solutions.

SPEAKER: Mitchell B. Kohn, IES, ID, Mitchell B. Kohn Architectural Lighting Consultant, has offices in Highland Park, Ill. Specializing in interior illumination design for commercial, institutional, and industrial environments, he is on the board of directors for ASID. He is a member of the National Committee of the Commission Internationale de l’Eclairage (CIE) and a member of IES, for which he serves as chairman of its office lighting committee and is past president of the Chicago section.

RESIDENTIAL TRACK

THURSDAY, MARCH 7, 1991
8:30 - 10 AM

"Fundamentals of Residential Interior Lighting Design"
Attend this session and learn how to combine lamps, luminaires and fixture location to a) reinforce the architecture, b) enhance the finished interiors and, most importantly, c) address the needs of the end-user.
Receive practical advice on how to handle specific lighting problems, including:
- 2 and 3 dimensional artwork
- interior plantings
- task areas
- spaces with high or sloped ceilings

SPEAKER: Connie Jensen, IALD, IES, founder, Lighting Professionals, Inc., Montvale, N.J. Ms. Jensen’s dynamic yet practical approach makes this complex subject easy to absorb. Architects, interior designers, showroom personnel — in fact, anyone who works with light, will find this an especially rewarding presentation.

10:30 AM - NOON

"Practical Applications of Colors: Real and Imaginary"
At this seminar see demonstrations on: a) the important factors that relate the color properties of light sources to the colors of objects seen in the surrounding environment; b) critical parameters for choosing light source colors; and c) the color rendering index. Discover the limitations of the common color criteria.

SPEAKER: Dr. Robert E. Levin, IES, senior scientist, GTE Sylvania’s general engineering research and development group, Salem, MA. Dr. Levin was an associate professor at California State University at San Jose prior to joining GTE Sylvania. He has 60 publications and 36 patents in the lighting field.

2 - 3:30 PM

"How To Choose A Dimming System That Is Right For The Home"
Learn how to choose a dimming system that is right for your project and your client. Hear about the newest technological options available for residential dimming in the '90s including:
- wall box dimmers
- wall box presets
- integrated network systems
- small stand-alone systems

In addition, learn how to design and specify a complete dimming system, including:
- circuits, zones, channels, presets, scenes and cues
- system configuration
- control station selection
- what to look for, and look out for, in vendors

SPEAKER: Craig A. Roeder, IALD, IES, Craig A. Roeder Associates, Inc., Dallas. Prior to starting his own firm in 1979, Roeder worked as an assistant to Jim Nuckolls and Jeffrey Milham at Design Decisions in New York. His designs have been published in more than 50 different national publications.
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MARCH 5 - MARCH 6, 1991

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"Beyond INTERIOR VISIONS: Show House Influences on Real-World Rooms." Chris Madden, author of the best selling book Interior Visions, looks at what show house rooms are really telling America about our living spaces, metaphoric and actual. Plus, a special preview of her upcoming new book on the special challenges of showhouse kitchens and baths.

"Is Your Net Working?" With design business so dependent on word-of-mouth referrals, it pays, literally, to make the most of all your contacts, both business and social. Ann Boe, award-winning presenter and widely published expert on networking, offers helpful guidance on how you can build your business with the help of colleagues, clients, subcontractors, everyone!

"Breakthrough Solutions for Kitchens & Baths." Nationally published designer Florence Perchuk, Chicago's own sought-after Michael deGulio, Kitchen & Bath Design News columnist and designer Mort Block, and product designer/consultant Don Arnold share their ideas for barrier-free, multi-generational, and other special kitchen and bath design challenges.

"Barrier Free Design for the Kitchen and Bath." Cynthia Liebrock, ASID, founder/principal of Easy Access Barrier Free Design Consultants, explores sensitive design solutions for people with different abilities. A special emphasis on the electrical, mechanical and acoustical needs for the kitchen and bath will be addressed.

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TUESDAY, MARCH 5, 1991

12:30-1:30 PM

“How To Achieve Maximum Results From Emergency Lighting in the Office Environment”

Emergency lighting is a concern that most corporate and institutional end-users think about only in times of crisis or natural disaster.

Learn the latest developments in quality emergency lighting fixtures and how it integrates with both good design practice and engineering.

**PANELISTS:** Representatives from Beghelli, Bodine, Lightalarms and Yorklite Electronics Inc.

**Session Leader:** Charles Linn, AIA, former editor, Architectural Lighting magazine

12:30-1:30 PM

“Lighting and the New Energy Consciousness”

Energy codes in New York and Massachusetts differ from those in California and the Pacific Northwest. Learn how to cope with the rapidly changing codes and their effect on lighting energy in the U.S.

**SPEAKERS:** James Benya, senior principal and chief executive officer, Luminae Souter Lighting Design, San Francisco; Emma Price, president and chief financial officer, Edison Price Lighting, New York; and Peter Bleasby, manager, technical relations, Osram, Montgomery, N.Y.

THURSDAY, MARCH 7, 1991

12:30-1:30 PM

“Landscape Lighting: How to Effectively Light Outdoor Water Features”

Lighting water presents challenges and opportunities. See successful applications and learn techniques, for the lighting of pools, hot tubs, waterfalls, fountains and streams.

**SPEAKER:** Janet Lennox Moyer, ASID, Jan Moyer Design, Berkeley, CA

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8:30 - 10 am
10:30 am - noon
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8:30 - 10 am
10:30 am - noon
3:30 - 5 pm
6 - 7 pm
10:30 am - noon
3:30 - 5 pm
6 - 7 pm
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### Walkover/Driveover
**Buried Surface Luminaires**
New from BEGA are these ground illuminators. Efficient low voltage tungsten halogen light sources. Internal optical system spreads light across a ground surface in one or four directions. Integral or remote transformers. High tensile strength die cast aluminum. Also available in this group of luminaires are indicator luminaires and floodlights/uplights.

*4-color brochure available. 805/684-0533.*

Bega/FS  
Circle 30 on the Reader Service card.

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### Electronic Light Capsules
These electronic light capsules offer 9,000 hours average rated life. They consume up to 75% less energy than conventional incandescent bulbs. No special ballasts are required... simply screw-in-and-turn on. They start instantly and are ideal for overhead recessed cans, table lamps and wall fixtures. For uses such as: corridors, downlighting, floodlighting, indoor walkways, staircases and more. In hospitals, hotels, stores, offices and restaurants.

*Panasonic*  
Circle 31 on the Reader Service card.

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### Wall-Mount DecorA® Occupancy Sensor
Offers a 180-degree field of view that covers up to 2,700 sq. ft. Can be used with 120V or 277V lighting applications (incandescent or fluorescent) with no wiring modifications. Its elegant styling coordinates with Leviton's popular DecorA line of wiring devices to complement any interior. The occupancy sensor is UL Listed, CSA certified and meets California Title 24 Energy Code requirements.

*Leviton Mfg. Co.*  
Circle 32 on the Reader Service card.

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### The Aero
Winona Lighting announces an addition to its standard product line... the Aero line series of six wall sconces. The brackets are available in polished brass, bronze and stainless steel. The Aero is 8.5" wide with a 3 3/4" projection. Lamps in the series are quartz halogen and 120 volt.

*Winona Lighting*  
Circle 33 on the Reader Service card.

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### Four Attractive Shapes Added to PrismGlo Line
Suited to a wide variety of commercial and retail applications, PrismGlo lighting systems feature state-of-the-art prismatic light control to create a highly efficient, quality-oriented environment. The luminaires are available with three lighting distributions: 60 evening, 40% downlighting, 60% downlighting, and 50% up/50% down. The fixtures may be used with 150 to 400W MH or HPS. UL Listed 1572 "Damp Location".

*Holophane Co., Inc.*  
Circle 34 on the Reader Service card.

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### Perimeter-45
For the effect of a lighted cove without the expense of building a cove, Perimeter-45 is the answer. Perimeter-45 is a sleek 4" x 6" architectural shape. Its unique reflector system distributes light evenly on the walls, eliminating socket shadows, and concentrates output for maximum efficiency. Plus, the cornersystem is designed to function aesthetically, while eliminating the need for field-measured corners.

*Litecontrol Corporation*  
Circle 35 on the Reader Service card.

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### Spotlighting Grid
Structurell lighting system consists of miniature extruded aluminum three-dimensional frames. Elegant Italian design combined with quality introduce a new dimension in low voltage lighting for window displays, boutiques, showroom, galleries, restaurants, etc. UL Listed as a complete system at 32A-12A. The maximum run from each electrical feed is approximately 20 ft. in each direction.

*Targetti Inc.*  
Circle 36 on the Reader Service card.

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### The Most Efficient Fan of Halogen Bulbs
The MASTERline collection from Philips Lighting Company features low and line voltage halogen lamps. The MASteline square and round models and the PAR30 line PAR30 and PAR38 line (above) offer added value energy savings and increased light output than existing halogen products.

*Philips Lighting Company*  
Circle 37 on the Reader Service card.

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134 - ARCHITECTURAL RECORD JANUARY 1991
CADVANCE 4.0: A GATEWAY TO DATABASE CAD

Here's a clever way to extend the life of 286 machines by buying a 386 server and Novell Netware/386. By Steven S. Ross

The standard Cadvance menu system is only two levels deep—easy to use with a mouse.

high-end, full-featured 3-D CAD package with built-in database. The work version (Cadvance for Workgroups), especially when used with Novell Netware/386, is fast and function-packed. advances has always been one of the best CAD packages, especially for often redrawing. It now can use network services to speed up renderings as well, to control printing, plotting, and file security. This package is for systems on MS-DOS or PC-DOS.

VIEW basics: All the standard tools are present: Support for expanded memory, symbol libraries, parallel lines (and offsets for width and arcs) for walls, automatic build grids, 3-D editing (in perspective, axonometric, oblique as well as isometric or orthographic), walk-throughs, rendering, applied fonts, wide range of dimen options, 255 layers, macro-programming language, and so forth.

Cadvance can read or write DXF files (using AutoCAD 10 "3-D" DXF) automatically, and output images in the standard PCX format used by advanced word processors and almost all desktop publishing packages.

Cadvance is, at the moment, the high-end CAD software package that makes best use of the new network tools built on it. Novell NetWare/386. It is also a powerful drawing and database tool in its own right.

Networks that work with MS-DOS or PC-DOS (such as Novell NetWare) do not allow more than one person to access a file at the same time. But Cadvance at least allows you to send a message to whomever is controlling the file—perhaps asking for release, or for an estimate of when the file will be ready. In fact, its electronic mail system can be invoked for any purpose, even during a drawing session.

Cadvance also makes good use of what Novell calls "NetWare Loadable Modules." Version 4.0 of Cadvance comes with two NLMs. One allows the file server to handle hidden-line removal. This can save quite a bit of money; the alternative is to use more powerful computers at each seat, or to sit and wait (sometimes a half hour for really huge drawings) for hidden lines to be identified and removed.

Underlying databases—for bills of materials, for example—can be queried from any terminal running Cadvance, even if the central file server holds the data, without moving the entire database to the terminal. The NLM that does this also provides the ability to use structured query language (SQL) for database searches. The SQL module is not full-featured, but more complex queries can be done outside Cadvance using the SQL built into dBase IV and other software that reads dBase files.

NLMS only work with NetWare/386, however. They will not work on older versions of Novell NetWare, or on other network software.

Likewise, Cadvance 4.0 supports new NetWare features such as naming a queue for printing. Earlier NetWare versions did not allow one user to print from another's printer unless that other user was at the file server itself. Now users can specify a printer or plotter anywhere on the network.

If a file is in use when a new user wants it, the new user can "wait" for the file — the new user's terminal simply keeps asking for it, and the network won't let anyone else ask for it. The user who is waiting will, however, lose control of any file he or she might have been editing; if another person is waiting for it, liscad says this is to prevent a daisy-chain of lockouts based on one user waiting for a file, another user waiting for the waiting user's file, etc.

Reference files—files a user can view, but not change during a session—are handled seamlessly. If the user has the right to see them, they are displayed. If one user is editing a file that another is using as a reference file, the new changes will not be displayed on the reference file until the person using the file as a reference requests an update (a screen regeneration). If the regimen is called for as the newly up-
Since 1910, Julius Blum & Co. has provided ornamental metal components of high quality to the architectural trades. Today, Julius Blum & Co. is the industry’s most complete source for architectural metals. Our latest publication, Catalog 15, describes our full line of architectural metal components:

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Catalog 15 also includes a complete Engineering Data section to assist in the proper structural design of various handrail systems.

Contact Julius Blum & Co. for your copy of Catalog 15.
Set up a print queue so that information is sent easily to a printer or plotter from within Cadvance.

The gateway to database access, for bills of materials, facilities management, and similar tasks.

Cadmance 4.0

Equipment required: While the stand-alone version will run on machines as old as the IBM XT and compatibles, the software’s power is wast ed on anything less than an IBM or compatible computer with 80386 or 80486 microprocessor as a server, and (at a minimum) an 80286 microprocessor for individual terminals. Supports most graphics accelerator boards, mice, digitizers, and plotters.

A coprocessor chip (an Intel 8087, 80287, 80387 or look-alike products from other vendors) is strongly recommended. Expanded memory (or at least the extra 64K available with Microsoft’s HIMEM driver) is strongly recommended—and is usually mandatory when running on a network. Cadvance has been certified to run with Novell NetWare; the vendor says it runs on other networks as well.

Vendor: ISCAD, Inc., 1920 West Corporate Way, P.O. Box 61022, Anaheim, CA 92821-6122. 714-533-8910. Fax 714-533-8642. $3,295 for single-user license in stand-alone system; $3,495 for single user in a network. Each includes 90 days free telephone help line. Some representative network volume pricing: $12,000 for five users, $20,000 for 10, $40,000 for 25. Network licenses allow any number of stations to be equipped with Cadvance, but only the specified number can be run concurrently.

Manuals: Good. There’s a detailed installation and tutorial, along with a comprehensive reference. Much of what you will need for network installation is included, but Novell NetWare is complex. Hands-on dealer help is strongly recommended to get things installed the first time.

Ease of use: Cadvance has long been one of the easier full-featured CAD packages to use. Version 4.0 is no exception. You can work well with a mouse, although some vendors of add-on products suggest a digitizing tablet for command input and you can configure a tablet for standard commands. Cadvance automatically writes a dBase III+ (or dBase IV) file; there’s no extra conversion step needed at the database end. Error messages are cryptic and general—common with network-capable software that must run on many different network packages and configurations.

Error-trapping: This is particularly important on network software. A key issue is file-locking. That is, when one file is in use, you do not want someone else accessing it at the same time on a DOS-based network such as that provided by Novell. That’s because each user of the file would make changes independent of the others. Only the last file saved would actually survive; other changes would be overwritten.

Cadmance handles these chores well. It locks drawing files, as all Novell-based software does. It also locks database files (as most do) and auxiliary files such as macros and add-on software (often left unprotected).

It is possible to install the security device backwards, on a serial port instead of a parallel port. If you do, Cadvance will not start up.

Cadmance 4.0 is rather stable on NetWare/386. If a user turns off his or her station before releasing a file, Cadvance senses this and frees up the file anyway. Even a simulated power failure (we pulled the plug) did not disturb things.

It is possible to load a DEX file while another drawing is already being edited. If you do, the two files will be (perhaps unintentionally) merged or overwritten.
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Circle 40 on inquiry card
GLAZED FIRE WALL

L
ife safety under active fire conditions depends on keeping people physically separate from flames, smoke, and extreme temperatures until all occupants can evacuate the building, or the fire is suppressed. Fire-rated walls, doors, and windows are designed to do this, with their ratings—from 20 minutes to several hours—indicating how long this process of flee or fight may be expected to take.

Fire-rated glass was what you used in a fire-rated assembly, and for years it was a simple spec; wire glass, in a size permitted under the applicable code.

Architects and end-users have objected to the severe esthetic of wire glass, which is not even, properly speaking, fire resistant. During fire conditions, the glass itself quickly cracks. The wire serves only to hold the pieces in position in the frame, holding back the flames for its rated time. Nor is it a safety glass. In fact, not only will the broken glass present a danger, but the wire itself can act as a sharp fishnet.

These concerns have encouraged the development of substitutes for wire glass in some fire-rated applications. Windows and door-light can use Fire-Lite, a clear glass ceramic from Japan, which can be exposed safely to very high temperatures [RECORD December 1989, page 89].

Another condition—the fire wall—can be met by the Eich Fire Protection Glass System, which has been accepted under the more stringent criteria of UL 263. This test limits the temperature rise on the unexposed surface of the assembly to 250 degrees above ambient, and governs the designation of fire separation walls between use groups. It just so happens you can see—clearly—through it.

The German-made system incorporates Contraflam glass, which has a configuration that resembles an IG unit, with two panes of clear tempered safety glass on either side of a space filled with a colorless polymer gel. Heat generated by a fire will cause the gel to form a layer of highly heat-resistant crust, which consumes and dissipates a large amount of the fire's heat energy. This sacrificial process continues for the full extent of the rating, providing effective heat insulation from the fire while maintaining an intact barrier to the spread of smoke and flame.

The fire-rated framing systems, made of metal or solid hardwood, maintain a relatively slim profile, given (in the 90-minute configuration) a glass thickness of 2 13/16 inches. While the installation may be very large (the new German Parliament building in Bonn will have a Chamber of Deputies surrounded with Eich fire-resistant glass walls up to 36 ft high), structural considerations normally impose a total nominal height limit of 12 ft. The modular framing is adjustable on 12-in. centers up to a maximum glass area of 4 by 7 ft. These individual lights can be erected in line to form a wall of any width. Eich Corporation, Los Angeles. Circle 301

Light and view in an adaptive reuse
The sensitive renovation of McKeen Memorial Hall at Phillips Academy in Andover, Massachusetts, by architect Anthony Schoenegge AIA incorporates several large areas of Eich/Contraflam glass.

The design firm submitted just-completed test data on the system to state Building Code examiners, who approved it for use in applications calling for a 90-min fire barrier.

The long-vacant 35,000-sq-ft classroom building, originally designed by Hartwell and Richardson in 1903, is one of three historic buildings on the campus of the former Abbot Academy. Its major space, Davis Hall, a grand coffered-ceiling...
An innovative glass design permits the use of large clear-vision panels in fire separation walls between use groups.

Plan views show the proportions of frame surround to glass of the Eich wall in the office mezzanine space. Total width of the glazed area is 29 ft 6 in.

Renovation of McKeen Hall, Andover, Massachusetts
OWNER: Phillips Academy
Elaine B. Finbury, project manager.
ARCHITECT: Alan Schoenegge AIA—
Alan Schoenegge, Thomas MacLeod,
Jonathan Krueger, Franklin Liu,
project team.

Cross-section of wood frame.
Long after everything else has gone to ruins, it's worth noting that the entrance still makes a monumental impression.

Kawneer has a complete line of aluminum entrance systems, each a timeless classic in its own right.

Kawneer
The designer's element.
The Eclat CD ROM catalog offers quick access to voluminous amounts of manufacturers’ literature, and a gateway to automated specifications.

Select the “Define Generic Product” option if you want to search the entire CD ROM disk for products that meet your criteria. If a product is made by a manufacturer that does not participate in Eclat, you may get the manufacturer’s name, but no product description. You only have to define criteria that are specific to a given product—number of drawers in a filing cabinet, for instance. Typically, you use CSI-based specs.

On-screen graphics can include color and black-and-white photos, line art, and even dynamic graphics (for lighting patterns, for instance). In the photo top left, a designer navigates through the Moen catalog, selecting products and attributes by clicking on the screen with a mouse. Screen top right displays windowed specification, product data, and installation instructions from Owens-Corning Fiberglas. Unlike print catalogs, the computer provides interactive engineering information.

Using zonal cavity calculations from Genlyte, for example, lower right, the system will instantly draw a photometric curve for a specified mounting angle, or calculate the required number of fixtures for particular room geometry and reflectances. Images can be printed out, and text can be saved to a file for pickup by your own word processor. Some graphic images can also be saved using the Windows clipboard, and pasted into other documents—bidding documents, for instance.

The process is fairly easy and intuitive, but not too neat. That’s because the manufacturers have supplied data in formats that vary somewhat. Some are crude color images, and some are high-quality line art.

Windows 3.0 itself is intolerant of many of the expanded memory drivers that modern CAD packages depend upon. But the most advanced CAD packages, using the Pharlap DOS extender or extended memory rather than expanded memory, will have no trouble coexisting with Windows.

Finally, there’s an electronic gateway to the SuperSpec automated specification-writing system. Disks, updated quarterly, will be available to qualifying design offices without charge. Eclat, Pleasanton, Calif. Circle 302

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graffiti can be easily removed with no damage to the factory applied
glaze. Choose from a rainbow of 80+ colors and countless custom mixes.

For more details about this finishing solution for your next building project, call Burns & Russell toll free 1-800-638-3188 (in Maryland 301-835-7555). See Spectra-Glaz Custom Pre-Glazed Concrete Masonry at the Burns & Russell Co., Box 6063, Baltimore, MD 21203. FAX: 301-835-9498. TELEX

Here are some building products' catalogs, brochures and technical literature available in the architectural market today.

To receive your copy of any of them, just fill out and return one of the special Reader Service Cards bound into this Product Literature Showcase.

**Acrovyn Interiors**
The new line of high impact wall coverings and wall panels are both beautiful and durable. The entire system can be used in both renovation and new construction. Precast panels, wall coverings, column caps, door and frame protection and feature moldings are available in an exceptional range of textures and colors.
The C/S Group 800-233-8493, Fax 717-542-5169.

**The C/S Group**
Circle 500 on the PRODUCT LITERATURE SHOWCASE Inquiry card.

**Insulated Porcelain on Aluminum Window Panels**
Mapsorceloined aluminium panels are ideal for window retrofit, curtainwall and fascia applications. Porcelain on aluminum is warranted for 25 years against crazing, cracking or fading. Panels are available in 1/4" and insulated 3 to 4'. For more information and a free sample, please contact Maps Industries, P.O. Box 80069, Lincoln, Nebraska 68501 - Phone - (800)-228-2391.

**Maps Industries**
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**Chadsworth Incorporated**

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**Decorative Grilles**
Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Ave., Brooklyn, NY 11222. 800-521-4895 fax 718-349-2611.

**Register & Grille Mfg., Co.**
Circle 503 on the PRODUCT LITERATURE SHOWCASE Inquiry card.

**FREE X-Ray Room Planning Guide**
New guide illustrates user-designed installations of CLEAR-Pb. Lead-Plastic Modular Barriers and Windows in hospitals, radiation therapy centers. CLEAR-Pb is a transparent, lead-impregnated plastic sheet in lead equivalencies from 0.3 to 2.0 mm, over 200 stock sizes up to 8 x 8 ft. (larger on special order) Nuclear Associates.

**Nuclear Associates**
Circle 504 on the PRODUCT LITERATURE SHOWCASE Inquiry card.

**Weatherstripping / Thresholds**
Pemko's all new full-line catalog exhibits our complete line of residential and commercial products, including thresholds, gasketing, astragals, automatic door bottoms. Pemko's many new products and finishes are shown, including white and brite-dip gold. On product line, adjustable thresholds and spring-bolt astragals. Pemko (605) 642-2000, fax (805) 642-4109.

**Pemko**
Circle 505 on the PRODUCT LITERATURE SHOWCASE Inquiry card.
AEasy
A-Easy: Management software for the busy design professional, reduces clerical time, virtually eliminates billing errors, helps you spot budget overruns early and dramatically improves your staff utilization. All using less of your valuable time. A- Easy interfaces with Timberline’s Medalion Payroll, Accounts Payable, General Ledger and custom report programs.

Timberline Software Corp.
Circle 506 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Natural Stone Fireplaces
Bring the romance of a fire and the breathtaking character of stone into your customers homes with unique fireplaces. An internal contraflow design from Finland, combined with nature’s finest material for retaining heat - soapstone - provides a highly efficient, emissions-free fireplace. Call our new US sales office at 1-800-THE-FIRE (800-843-3473) to receive a free color brochure on TULIKIVI Fireplaces, Bakeovens, Cookstoves, Countertops, and the Dealer nearest you.

Tulikivi Group
Circle 507 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Ways To Retrofit Shown In Brochure
Effective metal roof solutions to roof problems are featured in “RETROFIT—the permanent solution for roofs, walls and facades.” Designed for the fast-growing building retrofit market, brochure shows how to eliminate leaky roofs, improve building energy efficiency, and enhance exterior appearance. Charts document cost-effectiveness of metal roof systems.

Ceco Buildings Division
Circle 508 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Supra-Slate II
State-of-the-Art
Supradur is pleased to announce Supra-Slate II, an asbestos-free replica of Supra-Slate an established slate substitute for roof applications for shopping centers, hotels, historic restorations and luxury housing. It provides “Class A” security & freeze-thaw protection. Manufactured with beveled edges. Available in Bangor Black, Pennsylvania Gray, Vermont Green, Rutland Red. It offers “storm-anchor-free” installation.

Supradur Mfg. Corp.
Circle 510 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Customizing Plans Made Easy
Free reprint describes a quick, easy way to customize construction plans using simple cut and tape techniques and an engineering copier. Beneficial reading for the custom builder. Xerox Corporation, 300 Main Street, Suite 4-102, East Rochester, NY 14445. Call 1-800-445-3400, Ext. 558 or circle reader service number.

Xerox Corporation
Circle 511 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Steel Doors and Frames Standard and Custom
For commercial and industrial use. 6 and 8 panel embossed doors, full glass entrance doors, UL-FM label. Security and bullet resistant doors. Sound doors with STC rating of 42 or 45. Polystyrene core. Custom doors and frames to meet your needs.

Amweld
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EverGreen™ Float Glass
Libbey-Owens-Ford EverGreen™ Float Glass provides a soothing green that blocks 78% of the light, transmits 66% of visible light, yet offers nearly 20% less solar heat gain than conventional green tint glasses.

Libbey-Owens-Ford
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Artistic Sound Panels

Treiffus Business Environments offers a free catalog with over 450 standard designs in soft dimensional fabric wall panels. These hand-upholstered fiberglass panels are available in 50 colors. Other custom applications include wall art and corporate identity. Luxurious fabric panels are now within most budgets.

Outwater Plastics

Circle 515 on the PRODUCT LITERATURE SHOWCASE inquiry card.

New Vinyl Cove Base System

Protect against costly impact and abrasion damage at floor level. New vinyl cove base designed to complement Pawling's Pro-TekWl® wall and corner guards, handrails and wall coverings to form a coordinated impact protection system. Rigid vinyl is flame resistant and low maintenance. Send for our new full color 32 page Pro-Tek Wall & Corner Guard catalog or call toll free 1-800-431-3456; NYS 1-800-942-2224.

Kemlite Corporation

Circle 517 on the PRODUCT LITERATURE SHOWCASE inquiry card.

Kemlite Introduces Colorful "Envision" Wall Panel

New type of smooth, matte finish fiberglass wall panel that has patterns imbedded into it. Available initially in a vertical ribbed look, square tile pattern and stone look. All come in a variety of colors and can be customized with your logo, pattern or design. Suitable for commercial offices, health care, schools and hotels. Moisture resistant, easy to clean, won't peel or chip. Class A fire rating. Contact Chris Farrell 800-435-0380.

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Kemlite Corporation

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Ancor Granite Tile

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CFMS (Computer-based Financial Management System)

Harper and Shuman develop, sells and supports financial management software specifically for architects. The only system of its kind sponsored by the AIA, MICRO/CFMS runs on PCs and CFMS runs on the DEC VAX. A modular approach lets you buy only what you need. Call today (617)-492-4410 or (415)-543-5886. Harper and Shuman, Inc.

Harper & Shuman, Inc.

Circle 520 on the PRODUCT LITERATURE SHOWCASE inquiry card.
Standing-seam roofing
Architectural applications of the SRS mechanically seamed roof are featured in a four-page design catalog. The system resists long-term weathering, extreme wind uplift forces, and thermally induced movement. Steelite, Inc., Pittsburgh. Circle 400

Commercial roofing products
A 48-page specification manual contains general design recommendations for all Tamko built-up and SBS-modified products, including new fire-retardant systems. Flashing and construction details are shown for all roof systems. Tamko Asphalt Products, Inc., Joplin, Mo. Circle 401

Architectural metal systems
Roof, ceiling, and wall components made of aluminum, copper, or steel shown in both stock and custom profiles. A 20-page catalog features a structural Arc-Metafor panel custom-curved to either concave or convex shapes. ATAS Aluminum Corp., Allentown, Pa. Circle 402

Vapor barriers
Reinforced with nylon cord to resist tears, Griffolly polyethylene vapor barriers come in sizes up to 40 by 100 ft; custom sizes of up to 200 sq ft are available. Suggested for use under slabs and as a vapor retarder in roof-deck assemblies. Reef Industries, Houston. Circle 403

Extruded-foam insulations
The features and benefits of Amofoam, Amocor-PB6, and Amocor Plygood roof recovery boards are discussed. The rigid boards offer a number of installation and facing options, including an easy-to-handle fanfold. Amoco Foam Products Co., Atlanta. Circle 404

Shake-look roof panels
Lightweight, fire-resistant roofing made of steel formed in a mission tile or wood shake pattern is surfaced with a finish of colored stone granules. Panels interlock, and are installed with matching roof accessories. Gerard Roofing Technologies, Inc., Brea, Calif. Circle 405

Glazed roof tiles
Natural-clay tiles come in two barrel shapes, an interlocking Oriental style, and a shinglelook. Natural, flashed, and ceramic-glaze colors range from white through reds to silver and two shades of black. Maruhachi Ceramics of America, Inc., Corona, Calif. Circle 406

Tapered insulation
Brochure illustrates large roof projects, and explains how ENRGY 1 foam panels are compatible with virtually every type of roofing material and attachment method. High insulation value per inch. Facilitates slope-to-drain. NRG Barriers, Inc., Saco, Maine. Circle 407

Self-adhesive membrane
Flyer gives details on the Gray-sam roof, a fully adhered CPE-based membrane that is applied by removing the release paper and pressing the sheet onto the substrate. It remains flexible to -40°F and has 15 percent elongation. Hyload, Inc., Pittsburgh. Circle 408

Coat tar pitch
A 12-page guide explains how the tight molecular structure of Black Armor coke-oven tar provides natural resistance to the effects of temperature, moisture, and corrosive elements. OSHA exposure standards included. Allied Signal, Inc., Morristown, N. J. Circle 409

Sprayed-on roofing system
A 32-page guide explains the installation and specification of a Dow Corning seamless roof for various site conditions. The system consists of sprayed-on polyurethane foam insulation covered with two coats of silicone rubber. Polycoat Systems, Inc., Hudson Falls, N. Y. Circle 410

Roofing and siding accessories
Architectural catalog includes photos, performance data, details, and specifications for aluminum and vinyl siding, fascia, and soffits; rain-carrying systems; louver and raised-panel shutters; load-bearing columns; and trim. Alcoa Building Products, Sidney, Ohio. Circle 411
Architectural sheet metal
Innovative metal techniques include on-site roll-forming of continuous-length straight and curved standing-seam panels. A 40-page guide illustrates colors and applications ranging from sports stadiums to Victorian-era homes. Berridge Manufacturing Co., Houston. Circle 412

Single-ply membrane systems
Catalog explains design and installation requirements of all Rubbergard EPDM and CPE membranes. Charts list accepted insulations and attachments for each roof type, including the new Saturn System. 16 pages. Firestone Building Products Co., Carmel, Ind. Circle 413

Roof edge
Brochure explains how Anchor-Tite roof edging meets various single-ply conditions. Design has a corrosion-resistant aluminum anchor bar concealed by a continuous, snap-on cover. Guaranteed for winds of up to 95 mph. Metal-Era Roof Edge Systems, Waukesha, Wis. Circle 414

Sheet roofing systems
A 28-page catalog highlights VersiGard EPDM and Hysunite, a polyester-reinforced white Hypalon membrane. Test results are listed; diagrams demonstrate correct edge and flashing details. The Goodyear Tire & Rubber Co., Roofing Systems, Akron, Ohio. Circle 415

Metal components
Brochure introduces a line of metal panel systems for architectural, commercial, and industrial projects. Greater spans are possible with the heavier gauge metal used. Field-assembled insulated walls are featured. ECI Building Components, Inc., Stafford, Tex. Circle 416

Built-up roofing systems
Technical guide discusses design considerations for both coal tar and asphaltic materials. The water-resistant properties of coal tar bitumen permit its use on dead-level roofs; new formulations reduce fume evolution. 28 pages. Koppers Industries, Pittsburgh. Circle 417

Roofing asphalt
Technical brochure highlights the performance characteristics of asphalts specifically formulated for dead level, flat, steep and special steep roof applications. Test data are listed. Trumbull Division of Owens-Corning Fiberglas, Toledo, Ohio. Circle 418

Commercial board insulation
Catalog discusses rigid polycyanurate panels, made of different facings to meet the attachment, layout, and installation requirements of specific roof systems. Stressskin panels and nail-base insulations are included. Homasote Co., Tinton, N. J. Circle 419

Modified bitumen membranes
Capabilities brochure outlines a range of asphaltic roof edge waterproofing products incorporating either APP or SBS modifiers. Research and manufacturing facilities are described. U. S. Intec, Inc., Arthur, Tex. Circle 420

Hot-air-welded
Installation and long-term performance benefits of modified bitumen-based roofing membranes are covered. The material remains thermoplastic when installed and is said to be easy to handle even at cold temperatures. Bond Cote Roofing Systems, West Point, Ga. Circle 421

Structural metal roof systems
Architectural brochure highlights the long-span potential of snap-together Ultra-deck field-seamed Double-Lok metal roofing systems. Diagrams show how the systems' attaching clip responds to thermal movement. MBCI, Houma, La. Circle 422

Weathering metal
An architectural sheet metal made of a zinc/copper/titanium alloy. Microzine will weather to a response to local conditions, uniform gray color that will blend. Catalog describes standing-seam roofing and roof accessories. W. P. Hickman, Asheville, N. C. Circle 423
MANUFACTURER SOURCES

For your convenience in locating building materials and other products shown in this month’s feature articles, \( \text{Architect} \) has asked the architects to identify the products specified.

Pages 62-67
Franklin Institute
+ Franklin Institute
+ Brecher Qualls Cunningham, Architect


Pages 68-71
Research and Education Building
+ JWA Architects

Pages 72-75
Mount Holyoke College
+ Space Associates Architects
+ Tom and woodwork: Progressive Millwork. Paneling and cabinetry: Maville. Laminate facades: Formica Corp. Perimeter lighting: Lightwize, Inc. Furnishings in lobby: Artflex (Marco Zanuso Antropous chairs); Ecru (Jean Michele Frank); Maville (Philippe Starck tables and chairs on IBM); side chair and ottoman; Idee (Mark Todd Lockhead aluminum lounge); Disenos por diarios (Antoni Gaudí carved settee); Muebles de Carlos Ràfols). Custom-color paint: Munsede.

Pages 76-83
The Park Apartments
+ Pei & Partners

Pages 84-87
Finn Health Center
+ Cio Associates, Architects

Pages 94-97
Warsaw Community High School
+ The Odle McGuire & Shook Corp. and Perkins & Will, Associated Architects

Pages 97-100
Jane S. Roberts Elementary School
+ Horvitz Romney Architects, Inc.

Pages 101-104
Hope Elementary School
+ Taft Architects

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January 24
Michael Rudolph, in the “Shape of the City” discussion series at the 92nd Street Y/WH, 1395 Lexington Ave., New York, at 8 p.m.; Charles Moore, on February 26; Allan Greenberg, on March 5; Paul Oud, on February 26; Allan Greenberg, on March 5; Paul Oud, on February 26. For information: 925-9800.

February 9
Josef Hoffmann: Drawings and Objects from Conception to Design,” 281 sketches and objects, Goldie Paley Gallery, Moore College of Art & Design, 20th St. and the Parkway, Philadelphia; participants in the symposium on Josef Hoffmann’s work will include David Gebhard, Oo Graf, Michael Graves, others. For information: 215/568-4515.

February 28-March 8
“Men: A Culture of Builders,” an exhibit of photographs by Peggy Crawford of men’s building forms; sponsored by the American Architectural Foundation; at the Cunney of Architecture, University of Arizona, Tucson. For information: R. Brooks, 601/621-6751.

February 21
“Skin of the Earth,” a symposium cosponsored by London-based architect Nigel Watson; other evenings include Neal Portier, February 7, and Patricia Phillips, February 14; sponsored by the Architectural Dialogue Committee of the New York chapter of the AIA; New York City; for Ethical Culture, 2 West 64th St., 8:30 p.m.

February 6-May 21

March 10-April 14
Frank Lloyd Wright: Preserving Architectural Heritage,” an exhibit of 70 creative pieces by Wright, including furniture, art-glass windows, textiles, and paintings; at the museum of the Pennsylvania Academy of the Fine Arts, Broad and Cherry Streets, Philadelphia. For information: 215/972-7642.

March 11-15
“Successful Construction Management: Techniques and Procedures,” a five-day course conducted by the College of Engineering, Department of Engineering Program Development, the University of Wisconsin-Madison. For information: 608/262-676.

March 26-April 27
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