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An architecture of issues
A P/A profile of Arthur Cotton Moore & Associates, whose design skills are combined with business acumen and a knowledge of the power structure

Interior design: The TV generation turns on the office
Is open office planning bogged down in static cliches? A look at design criteria and a forecast of what could happen if electronics replaces paper

Interior design: The case for the private patient room
The private hospital room, if designed so that patients can receive more in-bed care, is no longer a luxury, according to author Gordon A. Friesen

Building costs: myths and realities
Along with the first installments of the P/A Building Cost File, author Brian Bowen discusses cost data and explains how the file is put together

A learning experience
Design of Parkway North Senior High School grew out of intensive feedback from two earlier school commissions; architects: Hoffman/Saur & Associates

P/A Building Cost Analysis
Parkway North Senior High School is the subject of the first cost analysis, a series that will be published with selected projects four times a year

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Cover: The old Post Office building on Pennsylvania Ave. in Washington could have a new life as a tourist hotel. In the cover drawing, Arthur Cotton Moore (p. 68) depicts some possibilities of that transformation.
Whatever the specifications for today’s hospital environment, you have total design control when you specify the Wilson Art Look.

A one-source supplier, Ralph Wilson Plastics Company offers you perfect coordination of walls, doors, furniture and fixtures — with Wilson Art for every esthetic and functional requirement. Plus the best back-up service in the laminated plastics industry.

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So, when it comes to glass, come to The Glass Company...ASG.

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Most architects whose work has been published in P/A know, the task of supplying facts, drawings, descriptions and materia lists to the editors can be somewhat formidable. Such items have a habit of long since being filed away, and the files keeping them in inconvenient places.

For Louis R. Saur, partner in charge of Parkway North Senior High School (p. 58), the task was doubled, as his project is subject of the first P/A Building Cost Analysis. This meant bundling up all specifications, contract drawings, bid tabulation and shipping them to Chicago for analysis by Hanscomb Roy Associates. Because this was the first such exercise, it meant several phone consultations between architects and analysts. Happily, experience has been distilled into a precise list of what documents are required and those whose projects follow Saur's as analysis subjects should find the process a bit easier than he did. All in all, Saur reports, it was an "interesting and worthwhile" experience, both contributing to and receiving the analysis.

Hoffmann/Saur & Associates is a young firm, formed in 1967 and now numbering 35 persons. Principals are David L. Hoffmann and Saur, partners, and Peter Ohlhausen and Anthony M. DeMichele, associates. Saur, still in his early 30s, holds an M. Arch. from Washington University, is a member of the AIA national committee on Architecture for Education and chairman of the subcommittee on New Towns, New Schools.

He describes the firm's work as a "diversified practice of comprehensive architecture," further defining "comprehensive" as meaning that consideration be given to budget, time and politics as well as technical competence. Also, he adds, it means "be willing to confront the owner when he is unrealistic."

Two other schools by Hoffmann/Saur & Associates. McCuller North High School, built in 1972 for $260/sq ft (right) and DeMun Elementary (above), $290/sq ft. Robert Pettus photos.
If you're in an airport that has its head in the clouds and its feet on the ground, you'll know you're at Kansas City International. It's as down-to-earth as the surrounding prairie country, but as visionary as any airport in the world.

The architects of this new airport building complex had a brilliant concept, and it didn't come out of the blue. It came out of concrete.

They designed three separate terminals, each with its own 900-car parking lot so that passengers could drive up to within feet of their gates.

Concrete is ideal for an international airport because it's a worldly kind of building medium, yet it's warm and down-to-earth.

It's so versatile that it permits variety in casting, molding, and texturing with minimum expense. And the sky's the limit with its possibilities.

There's a pedestal base and sloping screen wall of precast panels in a heavy ribbed texture around the administrative complex. They were sandblasted before
Kansas City International.

sh-hammering to emphasize the buff coloring and fine detail. Naturally, POZZOLITH polymer-type admixture was specified for all the concrete these buildings because it makes concrete more workable, placeable and durable, and assures top performance. That's why they call it "The Performance Mixture."

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Views

Not complaining, but . . .

It’s never a good idea for an author to complain about a critical notice, but Professor Sam Davis’s review in your April issue, of ADHOCISM by Charles Jencks and myself is so weird that I should try to expose it, since his actual argument doesn’t seem to be merely with us. First, he asks (twice), why write this book?

Well, ADHOCISM, subtitled The Case for Improvisation, is about the powerful creative resources that can be found when you use an available system or deal in a new way with an existing situation, to solve a problem quickly and efficiently. It’s a principle at least as old as man, but it usually has been unappreciated, even scorned, in favor of purism waiting for the perfect moment of “proper” approach. In architecture particularly, we’ve had 50 years of Bauhaus and design-school influence making us think that the only way to get a perfect doorknob is to ignore all previous doorknobs and start designing from scratch. In order to deny this and similar tragic nonsense, we wrote a book full of trivial and sweeping examples, speculations, possibilities for the future and warnings. If Professor Davis believes the dust jacket, our reason was to aid the meditations of anyone who thinks that our politicians, planners and designers should concentrate less on the rulebook approach problems and get back to some basic facts about the way we actually do things.

But behind Davis’s “why write this book?” is real terror, as he makes abundantly clear. He doesn’t want to hear about the ad hoc; he’s afraid to speculate about improvisation. That jinxes the mag making it “self-conscious” instead of intuitive as it should be (presumably there ought to be no art criticism either, no books on philosophy of science or poetries). Jencks and I are “presumptuous” trying to “legitimize” improvisation at all far better if the book was an album of pictures without text. In other words, improvisation is not discussable to the extent that it is creative and expressive, we already know all we need to know, to know more would spoil our “feel” for it.

But then, why do we still have urban renewal instead of articulate renovation? Why “master plans” instead of more selective and accommodating contingency plans? Why merchandising centers instead of consumer demand centers? Why governments that concentrate power instead of representing plural interests? Adhocism has to do with all these things that we don’t know enough about, and the less we haven’t even crossed Professor Davis’s threshold. Perhaps he thinks he’s defending the artist’s or inventor’s autonomy by insisting that such things shouldn’t be discussed. His position is just that of any an intellectual who reaches for his club whenever questions of sensibility come up. Nathan Silver RIBA London, England

Follower?

“Disciple: an adherent of the doctrines of another; a follower.”

Le Corbusier is dead but his worst trait live on in Seligmann—arbitrary order and compartmentalized and monolithic spatial attitude. “European Hill Town?” Well, it’s built on a hill, all right.

John R. Duggar Berkeley, Calif.

---

Modular compatibility distinguishes Jewett’s eye-level lab refrigerators. They fit flush with existing or planned wall mounted casework to achieve a clean, uninterrupted line of design. Exteriors are of polished stainless steel or can be finished to your specifications.

The model WM-7-BC, illustrated, measures 30"H x 54"L x 13"D, has a 6.6 foot capacity and is cooled by a blower coil system. Smaller single door models, with capacities ranging 1.5 cu. ft. to 4.3 cu. ft., have cold-wall systems.

Removable front grille facilitates easy servicing. Defrost systems, featuring condensate evaporator and accumulator, eliminate need for drain. Available as either refrigerators or freezers, many have optional explosion proof construction. Under-counter models also offered with all the above features.

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Progressive Architecture 7:73

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Steel-framed office designed and built within 10 months

"Fast-track" construction and steel framing shave design/building schedule by eight months
The United Way of America National Headquarters Building, Alexandria, Va., serves as administrative center for thousands of volunteers across the country dedicated to helping people in their local communities. Occupied in late 1971, the 4-level structure stands as symbol to the “spirit of voluntarism which marks America as unique.”

Originally, the office was to be built of reinforced concrete, but poor soil conditions requiring a lighter frame and a tight construction schedule, swayed the decision to steel. Furthermore, steel’s inherent advantages were well-suited to the fast-track construction method.

“Erection of a steel frame requires much less on-site labor than a reinforced concrete frame in the early stages of construction,” commented Edward G. Grafton, A.I.A., President of Ferendino/Grafton/Spillis/Candela. “Our designers, who were literally designing the building while it was being built, were able to increase design quality and decrease costs by making adjustments through early insights into field conditions. Steel framing also allowed greater flexibility during the design/construction process.

“We also found that early installation of the roof, using steel decking, provided a great accommodation to the workmen and assisted in protecting the building materials which demanded early delivery to the site.”

In addition to office space, the 107-ft by 145-ft structure contains conference, computer, and audio visual rooms, a print shop, and a coffee shop. The central service core houses two elevators, mechanical and utility equipment, and two stairwells.

Steel framing is versatile, adaptable, economical. And it can provide long clear spans for maximum freedom of interior arrangement. Want more information on structural steel framing for buildings? Just get in touch with our sales engineer at the Bethlehem Sales office nearest you. Bethlehem Steel Corporation, Bethlehem, PA 18016.

The result: substantial savings in construction costs, rent at another location, and construction money interest.

Why they switched to structural steel

The United Way of America National Headquarters Building, Alexandria, Va., serves as administrative center for thousands of volunteers across the country dedicated to helping people in their local communities. Occupied in late 1971, the 4-level structure stands as symbol to the “spirit of voluntarism which marks America as unique.”

The 60,000 sq ft building was designed and constructed within 10 months at a cost of $24.46 per sq ft. By using the “fast-track” construction method, the contractor was able to begin and continue construction as the architect released various design phases.

The architect reported that the fast-track method saved eight months design and construction time.
Simplifies the design, installation and hookup of patient care services for the architect and contractor. The costly complexity of permanent headwall services is replaced with a prefabricated and factory-tested Core Module of mechanical and electrical services. The Core Module merely hangs on the wall, as do all its supporting furniture modules, thus externally locating all hookup points for simplified installation.

Organizes patient care services after installation for efficient day-by-day operation by the hospital staff. Random placement of fixtures and outlets on the headwall no longer create costly inefficiencies. By permanently locating the bed, all patient room systems...lighting, electrical, grounding, medical gas/vacuum, communications and storage...function together to provide increased patient care, safety and convenience.

Eliminates the fear of built-in obsolescence found in typical headwall construction. Additional patient care services can be added to the Core Module, or the Core Module can be removed and rehung without upsetting the aesthetics of the room or the efficiency of existing services. Planning can begin immediately to upgrade the patient room, but need be implemented only when economically feasible.
50 Core Module

Prefabrication of the Core Module simplifies the design and installation of a hospital's central power, communication, and gas distribution systems to the patient room. The costly complexity of a permanent headwall installation is replaced with the economical simplicity of hanging a Core module on a bracket mounted to a plain wall, and externally locating all terminal points of the prewired and preplumbed Core Module for simplified hookup and installation.
The moment you unpack The Sound Swallower screen it happens. The first thing you notice is your voice sounding a little different...muffled. Then the clicks and clacks that you always thought were a necessary office evil somehow don't seem so loud. You open another carton, and the difference is even more noticeable. Now it's really getting quiet. So you open another...and another.

That's how our PlanScape screens work, they just stand around looking beautiful, quietly swallowing sound.

There's really no magic to our screen. We've just engineered the materials of today into this most efficient sound sponge.

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The Barrett Roof Inspection & Service Program.

Questions & Answers
The Barrett Roof Inspection & Service Program.
Questions & Answers

The Celotex Corporation conducted a series of interviews with architects all across the country to determine their awareness of the advantages and benefits the Barrett Roof Inspection and Service Program offers to building owners. The questions and answers on the following pages represent a composite of these interviews. We hope they will be helpful to you.

How does the Barrett Roof Inspection and Service Program differ from the 20-year bond plan which has been so widely specified for so many years?

The most important difference is the amount of liability which Celotex assumes. The old standard 20-year bond limits the manufacturer's liability to a total of $10 per square during the entire 20-year period. Under the new program, there is no limit to the amount Celotex will pay, during the entire period of the contract, to correct leaks due to causes covered in the contract.

Let's use a practical example to illustrate the difference. You have a 20,000 square foot roof. A series of leaks develops and it is determined that the roofing manufacturer is to pay the cost of repair. Under the old bond plan, our maximum liability is $2,000. When that $2,000 has been expended, there is no further monetary liability, regardless of the bond issue date. Under the new contract, Celotex would pay for repair of all leaks covered, during the full period of the contract.

This program also differs from the old bond plan in period of coverage, in cost, and offers additional inspection service.

How does the period of coverage under this program?

The contract covers a period of 10 years. It also gives the owner an option to renew for an additional 10 years, if he makes recommended corrections and preventive repairs to the structure and to the roof, which our inspector determines are necessary to put the roof in satisfactory condition for continued good performance. This feature provides a valuable service which the bond did not offer; at no cost, at the end of 10 years, the building owner receives a roof inspection and recommendations which conceivably could help him avoid costly trouble. He can then elect to renew the contract.

What is the cost for the initial 10 years?

Cost for the initial 10 years is $3 per square. Cost to renew the contract for a second 10-year period will be two-thirds of the charge for the initial 10-year period in effect at that time.

Cost of the program, for the initial period, is the same as the current cost of the old 20-year bond—yet this plan provides additional inspection service and has no monetary limit on leak-repair costs. When compared to the cost of the bond and to the cost of independent inspection services—which do not provide monetary guarantee in case of leaks, or continuing inspection service—our program is obviously the best investment of all.

What does the building owner pay for coverage under your program?

What is the cost to renew the contract for a second 10-year period?

Why not just make recommended repairs, if any, and save the cost of renewing?

If no problems are indicated, he may be saving money by not renewing. If he renews, however, he gets all the original benefits for another 10 years: unlimited manufacturer liability in case of leaks due to covered causes; free inspections should leaks occur; and free inspection and recommendations, on request, when alterations or additions are contemplated.

What other services and inspections are included in the program?

To begin with, on request, a qualified Celotex representative will review plans and specifications, attend pre-job meetings, and make recommendations. During application and after completion, inspections will be made and notice of inspection will be sent to the architect or owner. When the roof is two years old, another inspection will be made. And we'll make the 10-year inspection and recommendations, if requested, at no charge, even if the contract is not renewed.
Does the Celotex liability apply to repair of leaks caused by faulty application, as well as to leaks due to defective roofing materials?

Yes. This contract clearly states that Celotex will pay all costs of repairs necessary to correct roof leaks resulting from errors in workmanship of roofing contractors in applying Barrett roofing membrane and flashing materials. It also covers leaks due to failure of those materials resulting from usual and ordinary wear and weather. This liability does not apply, however, to errors in building design or construction.

Does your guarantee include expansion joint covers?

Yes, it includes the Barrett Expansion Joint Shield when installed in conjunction with a roof that is covered by our contract. It does not guarantee any other expansion joint cover even though that cover is installed by a Barrett Approved Roofing Contractor on a roof where Barrett roofing membrane and flashing are bonded. To our knowledge, Celotex is the only manufacturer offering a guarantee-type plan that includes an expansion joint cover.

If I specify a reputable brand of roofing materials, and the general contractor retains a reputable roofer, isn't that sufficient assurance of good roof performance? Why should my clients spend the additional $3 per square?

It is true that under those conditions you minimize the risk of leaks due to faulty materials or application. Our roofing materials are produced totally by machine under quality control methods, and there is very little risk of their failing. On the other hand, application of these materials is largely manual and the chance for leaks due to human error is far greater.

No matter how good the roofing contractor's reputation is, or how dedicated he is to doing a first-class job, one of his workmen can make an error, or fail to follow an instruction, or neglect to follow some requirement of the specification, and a leak can result. The Barrett contract protects the owner against cost of repairing leaks resulting from this situation.

As with most types of insurance, the buyer hopes he will not have to collect, but the nominal cost makes it a wise investment in protection.

Why should the building owner buy an inspection and service contract to protect against the possibility of leaks due to faulty application? Doesn't the roofing contractor bear a responsibility for good workmanship?

In some localities the roofer has a written obligation to repair leaks due to faulty application during the first two years after completion, but no liability of any kind after the first two years. Some roofers accept responsibility for their work for two years or even longer, but do not enter into a written agreement. In short, there is no standard industry practice. During a 10-year period, a roofing firm may change management and policies.

Experience has proved that the most reliable protection for the building owner is a long-term guarantee by an established roofing manufacturer. Barrett introduced the roofing bond in 1916, and all major manufacturers adopted the same type of plan. The Barrett Roof Inspection and Service Program is an updated version of the bond plan, with additional owner benefits.

One of our large clients has thousands of squares of built-up roofs installed annually. Wouldn't it be to his advantage to set up a $3 per square reserve fund for possible repairs, rather than buy your inspection and service contract?

It could work out that way. He may never have to spend any money for repairs due to faulty application or materials, and he would have saved the contract fee. On the other hand, one serious leak problem could wipe out his entire fund. What you are suggesting amounts to an underwriting plan with very little leverage. There would be no opportunity to spread repair costs against fees from a large number of owners as is normally done under insurance-type programs. Being his own underwriter could end up being a very uneconomical choice.
Questions & Answers

What types of leak problems are not covered by your contract?

The contract plainly states that Celotex is not liable for leaks or damage caused by: natural disasters such as hurricanes, hail or windstorms; or by structural failures; or by changes in building uses unless approved in advance by Celotex; or by additional installations on or through the membrane, or repairs to roofing or flashing membrane, after completion, unless accepted by Celotex. Nor is Celotex responsible for damage to interior, building contents, roof insulation or deck over which roofing membrane is applied.

How will it be determined whether a leak is due to errors in application, faulty materials, structural movement or other causes?

When we are notified that a leak has occurred, a Celotex representative will inspect the roof. The architect and owner may be present or represented. In most cases, the cause of leaks will be readily apparent. For example, leaks through openings in the plies in an area where there is no evidence of structural movement, or leaks through blisters which may have ruptured due to drying out, would be ascribed to improper application and cost of repairs would be paid by Celotex. If the trouble is due to structural movement, evidence is usually equally apparent. If a flashing has broken away from a wall in which there are severe cracks, the cause is obviously building movement and is not covered.

Do other roofing manufacturers offer this new-type contract?

While a number of other major manufacturers offer inspection and service contracts that are close to the Barrett contract, the Celotex guarantee is the only one, to our knowledge, that includes an expansion joint cover—the Barrett Expansion Joint Shield.

Does Celotex still offer the old-type roofing bond?

Yes. Even though we strongly feel that our new Barrett Roof Inspection and Service Program is a far better program for building owners, we will continue to offer the bond as long as necessary from a competitive standpoint. Also, many existing specifications calling for “bonded roofs” were written before the new program was developed, and Barrett Approved Roofing Contractors must be kept in position to bid these jobs.

If Roof Inspection And Service Programs Were Free... chances are that architects and building owners would insist they be included in every specification. Therefore, the added cost would seem to be the determining factor in deciding whether or not guarantee-type coverage should be specified. What is the added cost of the Barrett Roof Inspection and Service Program in relations to total building cost?

<table>
<thead>
<tr>
<th>Building</th>
<th>School 2 floors 100 MSF</th>
<th>Hospital 6 floors 180 MSF</th>
<th>Factory 1 story 100 MSF</th>
<th>Office Building 10 floors 200 MSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost of Building</td>
<td>$2.4 million</td>
<td>$8.1 million</td>
<td>$1.4 million</td>
<td>$3.6 million</td>
</tr>
</tbody>
</table>

ADDED COST FOR 10-YEAR BARRETT PROGRAM

<table>
<thead>
<tr>
<th>Total of $3 per 100 Sq. Ft.</th>
<th>$1,500</th>
<th>$900</th>
<th>$3,000</th>
<th>$600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Sq. Ft. of Building</td>
<td>1½¢</td>
<td>½¢</td>
<td>3¢</td>
<td>3/10¢</td>
</tr>
</tbody>
</table>

*10-YEAR BARRETT ROOF INSPECTION AND SERVICE CONTRACT PROGRAM

The actual added cost for the Barrett Roof Inspection and Service Program is small. It is relatively insignificant in the total sq. ft. cost of the building. When consideration is given to the period covered (10 years) and the no-monetary-limit feature, the program is indeed extremely low-cost protection.

We’ll welcome your request to have a Celotex representative tell you more about the Barrett Roof Inspection and Service Program and supply you with data on Barrett roofing products and systems... “everything from the deck up.”
THE CELOTEX CORPORATION

BARRETT

ROOF INSPECTION AND SERVICE CONTRACT

NO. C000

THE CELOTEX CORPORATION, UNDER THE PROVISIONS STATED HEREIN, WILL PROVIDE INSPECTION AND REPAIR SERVICE TO THE BARRETT ROOF DESCRIBED BELOW FOR A PERIOD OF TEN (10) YEARS FROM DATE OF COMPLETION.

Owner: ____________________________________________

Building Description: ____________________________________

Location: ____________________________________________

Roof Specification No.: ________________________________ Flashing Specification No.: ________________________________

Area of Roof Under Contract: _______________________________

Lineal Ft. of Flashing Under Contract: ____________________________

Date of Completion: ________________________________

Roofing Contractor: ____________________________________________

COVERAGE

The Celotex Corporation will pay all costs of repairs necessary to correct roof leaks resulting from the following causes:

1. Deterioration of Barrett roofing membrane or Barrett base flashing resulting from usual and ordinary effects of wear and weather.

2. Errors or mistakes in workmanship of roofing contractor in applying the Barrett roofing membrane and Barrett base flashing.

3. Blisters, bare spots, buckles, wrinkles and ridges, in the roofing membrane.

4. Splits in roofing membrane or base flashing except as excluded below.

5. Damage to roofing membrane or base flashing resulting from extreme fluctuations in temperature.

6. Breaks in flashing strips over gravel stop or other metal flanges.

7. Slippage of roofing membrane or base flashing.

EXCLUSIONS

The Celotex Corporation will not be responsible for leaks or consequential damage caused by any one or combination of:

A. Natural disasters including but not limited to floods, lightning, hurricanes, hail, windstorms, earthquakes, tornadoes.

B. Structural failures such as settling, shifting, distorting, splitting or cracking of roof decks, walls, girders, partitions, foundations, etc.

C. Improper application or failure of any component underlying the roofing membrane or base flashing such as deck, roof insulation, vapor barrier, etc.

D. Changes in the original principal usage to which building is put unless approved in advance in writing by Celotex.

E. Erection or construction of any additional installation on or through the roofing membrane or base flashing after date of completion unless installed in a manner prescribed and accepted by Celotex.

F. Application of or repairs to roofing membrane or base flashing after date of completion unless done in a manner prescribed and accepted by Celotex.

G. Under no circumstances whatsoever shall Celotex be liable for damage to interior, contents of building, roof insulation, roof deck or other base over which roofing membrane or base flashing is applied.

ACTION

In the event leaks from any cause should occur, owner shall notify Celotex promptly, confirming such notice in writing. Celotex will inspect the roof, and if cause of leak is within the coverage as stated above, Celotex will arrange for repairs to be made at no cost to owner. If cause of leak is not covered, Celotex will not be responsible for cost of any repairs.

RENEWAL OPTION

At the end of the initial ten (10) year period, the owner shall have the option to renew this contract for an additional (10) ten years under the following conditions:

During the tenth year of this contract, if the owner of the building so requests, Celotex will make an inspection of the roof and issue to the owner a report on the condition of the roof outlining any and all maintenance work that should be done. This inspection by Celotex is free of charge and without obligation.

If the owner elects to exercise his option to renew this contract, he shall have the maintenance work described in the report performed at his cost by a roofing contractor acceptable to Celotex and will notify Celotex upon the completion of this work. Maintenance work required must be completed no later than 90 days after expiration date of this contract.

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Kennedy Library finally to get under way

Stymied for years because the Metropolitan Boston Transit Authority couldn’t find a place to put its carbarns, the John F. Kennedy Memorial Library may now finally become a reality. A design was announced and a model displayed on the 56th anniversary of the late President's birth; the library complex is expected to open three years hence—to the day.

The library will be housed in a glass-enclosed pyramid 75 ft high. The low curved building that partially surrounds it will be the presidential archives and Harvard’s Institute of Politics, part of the University’s School of Government. Cost is put at $27 million.

With the carbarn question out of the way finally, the only real controversy surrounding the library project is one that has been around for awhile. Local residents, Cambridge officials and civic groups fear that the library, once completed, will draw tourists and sightseers, causing serious traffic-flow problems in the immediate vicinity. That’s a real problem, and one that the library’s backers say is being given continued thought and study.

Go-ahead on Boston’s Faneuil Hall Markets redevelopment

There’s a bit less than two years to go before Boston opens its Boston 200 Bicentennial Celebration on April 19, 1975, and that’s how long The Rouse Co. and Benjamin Thompson & Associates have for their plan to restore the Faneuil Hall Markets area (P/A, Sept. 1971, p. 157 and Jan. 1973, p. 39). The Rouse-Thompson team was selected by the Boston Redevelopment Authority in March.

Plans call for turning the three-block, six-acre area into an integrated around-the-clock market district. The market buildings, more than 500 ft long, would be restored to their historic physical condition and also returned to much the same uses for which they were built in 1825.

The market will be essentially a place for pedestrians providing an array of places to eat, drink and shop. In the more than 400,000 sq ft of space, there will be no major department stores or chain operations; instead, the plan calls for small shops owned and operated by local people. Food sales will be emphasized: over 50 concessions will offer just about everything from mussels to mangoes, to take home or devour on the spot. Night spots, book stores, flower stalls and space for

[continued on page 28]
Buildings on the way up
1 Cafeteria, library and administrative office open onto central courtyard created when South Side High School in Newark, N.J., was renovated and enlarged. Courtyard will also serve as amphitheater, lounge and community space for meetings, dances and other events. School lot is not fenced, making open areas outside building accessible to community as well as students. Brick exterior relates to existing school building and surrounding neighborhood; it is also used as facing for all corridor walls and some classroom walls. Architects are the Office of Stanley L. Horowitz, with Steven Miller in charge.

2 A giant court is at the heart of Independence Center, Independence, Mo., making any of the 140 store fronts visible from almost anywhere in the mall. The multi-level, climate-controlled mall, 1 million sq ft in area, was designed by Architectonics, Inc. Anchoring it are a 130,000-sq-ft Sears store, designed by Gordon, Sibeck & Associates; a 165,000-sq-ft Macy’s, by Marshall & Brown; and a 180,000-sq-ft Stix, Baer & Fuller, by Chiaia & Johnson. Developer Homart Development Co. plans to add a theater, office buildings, restaurant, skating rink and other facilities. The cars shown in the rendering are on display, not driving through the mall.

3 Public library and board of education offices are combined in New York State Urban Development Corp. project in Newburgh. Stepping down a sharply sloping site, the building will be an important part of the Courthouse Square Development, part of a larger urban renewal parcel. Cost of the 60,000-sq-ft (gross) building is put at $3.6 million; architects are Hugh Stubbins & Associates, Inc., with Fleming & Silverman, associated architects.

4 Number 20 for Baltimore’s Charles Center-Inner Harbor urban renewal area is a branch office building for IBM designed by Emery Roth & Sons and Pietro Belluschi, associated architects. Windows will be deeply recessed in the precast concrete building; façade will be exposed aggregate panels. Attached to the 10-story 300,000-sq-ft building will be a 4-level 700-car garage, of cast in place concrete. Building is the 20th new building in the 33-acre area since work started in 1959, and the 5th in the Inner Harbor area itself.

5 Poured in place concrete walls will support the tallest (so far) buildings designed for Washington, D.C. suburbs. The two 36-story condominium apartment towers will be part of a Hyattsville, Md. complex known as Prince George’s Center. Parking for the 580 apartments has been placed underground, and the garage roof will be landscaped with gardens, putting greens, skating rinks and swimming pools; eventually there will be a subway station linking the complex to the Washington Metro system, now under construction. Architects are Vosbeck Vosbeck Kendrick Redinger.

6 Single-story multi-purpose Church of the Resurrection in Solon, Ohio makes use of movable partitions to provide a varying array of spaces. Sanctuary can be varied from 35 to 700 seats, or when not fully in use, can be divided into classrooms, meeting rooms or social areas. Six-sided structural steel and precast concrete building is capped by sloped roof of marble chips. Set on a 5-ft-high mound, the church takes up only one-third of its 15-acre site. Richard L. Bowen & Associates are architects.

7 Modular pods, each containing about 22 beds, are the basic elements of Good Samaritan Hospital in Corvallis, Ore. The beds are in double and single rooms, grouped around a central nursing station in each pod. Structure is cast-in-place sandblasted concrete; exterior finish will be brick veneer panels. Parking for 350 cars will be provided on site. Architects are the Portland office of Skidmore, Owings & Merrill.

8 Besides 500 low- and moderate-income housing units, Bronx, N.Y. residential project for New York State Urban Development Corp. will include commercial and office space, a 24-hour day care center, a youth services center and outdoor recreation space for tenants and the public. Apartments are organized around courtyards for use of tenants; public open space will be shared with a project slated for an adjacent site. Large family apartments and units for the elderly and handicapped are in the low-rise sections of the structure, where they have easy access to courtyards and shopping. Architects are Weiner Gran Associates; Jarmul & Brizee are associated architects.
REDE's interior architecture...

makes Antioch bubble work

Cedric Price

Reception under the bubble

P/A's Jim Murphy, Dr. Frei Otto

street fairs and flea markets are planned. Total budget for the project is $18 million, including a $2.2 million grant from the U.S. Department of Housing and Urban Development for restoration work already underway on the original facades (Stahl Associates are the architects).

This is the second time around for the Thompson plan for the area. It had been selected in an earlier competition by BRA, but the developer member of that proposal later withdrew. When Thompson interested Rouse in the plan, an enlarged proposal was drawn up, submitted and approved.

Antioch's bubble stars at conference

If Antioch College was making news in May and June, the general public probably heard only the bad side. Like an almost unbearably ironic "good news-bad news" story, the school also marked a victory in late May that could yet be eclipsed. While strife continues at the Yellow Springs, Ohio home campus, the college's branch at Columbia, Md. had completed its air-supported campus.

On May 22, the bubble was the scene of a reception that began an air structures conference jointly sponsored by the Educational Facilities Laboratories and the Building Research Institute (EFL had provided the money that first started the Antioch/Columbia design process).

Charles Tilford and Rik Ekstrom spoke specifically about the Antioch bubble in detail. Tilford is credited with many of the technical and practical aspects of building the bubble, and he noted that the technology of its construction had to be made to fit the abilities of the students who were building it. Ekstrom, a Columbia architect who led students of both Antioch and the University of Maryland through the three-year ordeal of getting the structure built, stressed that the main focus of the Antioch work was not a building, but a continuing process of education. That philosophy is summed up in the name given to the building by the students, "Prototype 4," leaving no doubt that it is seen as a transitory element in an ongoing sequence. There is a problem, however. Ekstrom feels that it has not yet been possible to get newer students involved with the bubble's future potential. To the extent that they are, they lack the feeling of having participated in the program's birth. Coupled with the homefront difficulties in Ohio, low morale could threaten the effective in-depth studies that were so much a part of the Antioch philosophy from the beginning. The bubble should become the laboratory it was meant to be, to study and measure virtually all aspects of life under a bubble.

The BRI/EFL meetings included talks on those aspects as well as the technical discussions. Prof. Sean Wellesley-Miller of MIT, certain that technology will make large encapsulated spaces a reality, called for more intensive studies involving environmental physics and micrometeorology. "Let's try in advance to spot what some of the difficulties are going to be, to see what we can do about them instead of discovering them after the event," he proposed, commenting on the possible formation of clouds within structures, and on the missing parts of the spectrum in artificial light.

Dr. Otto discussed the studies of his Institute for Lightweight Structures on natural membrane configurations. In the light of those studies, he feels that a great deal more could be derived from investigating structures that occur in nature, forming cells, tissue and bodily organs. "Pneumatic forms in
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**SCULPTUREWOOD**

nature are the precedent," he said. "They are the key to understanding, because all other structures are derived from them."

Cedric Price, the keynote speaker, reinforced the conference theme of education, pointing out that it is not enough to think of air structures as a cheap alternative to static buildings. Nor should we be satisfied with the first stage usefulness of our educational institutions, he feels. "Over and above the obvious benefits of the service they provide, they should be seen as generators for a great range of vehicles and containment and systems," Price says. "It's farcical that we should have to wait for a war or a shortage of warehouses or a new method of transportation to get the air structures industry moving. It's not only farcical, it's wicked. Learning can, and should, become a generator for the technology."

The Research and Design Institute (REDE), which was responsible for the interior architecture at the Antioch bubble, has been pleading for a more sensible use of technology for some time. In their presentation, REDE's Ron Beckman and Howard Yarme showed examples of mass-produced stock items which can help define interior patterns of use. The bubble itself was obviously their most convincing display.

REDE is trying to eliminate wasteful, limited-use products, and recognize dysfunctions that occur between lifestyles and the environments that house them. Other presentations, notably those of Mark Fisher, of Air Structures Design (London), Jeffrey Shaw of Eventstructures Research Group (Amsterdam), Day Chahroudi of Zomeworks (N.Mex.), enlightened the audience with applications of air structures to uses beyond the simple encapsulation of space. The apparent hit of the conference, at least graphically, was a film about air structures by Graham Stevens of London.

About two years ago in Chicago, the BRI sponsored a meeting with similar intent, minus the educational implications. There is little comparison beyond that, however. The EFL and the BRI should be proud to have brought this conference together. It was an opportunity for a broad cross-section of people to share ideas. The communication between designers, educators, industry and students reached significant proportions this time around, making the meetings, appropriately, learning sessions.

### 4th EDRA Conference bombs in Blacksburg

The Fourth International EDRA (Environmental Design Research) Conference was held at Virginia Polytechnic Institute in Blacksburg on April 16–18. Over 200 papers largely dealing with research in progress were presented to more than 500 conferees. John Zeisel, assistant professor of the sociology of design at Harvard's Graduate School of Design, quickly estimated that the total cost of the conference, in terms of human effort and time, was probably around $500,000. Was it worth it? The only honest answer has to be no.

While there were certainly some highly intelligent presentations indicating that some researchers were surely on the path to future contributions of great value, too many of the papers dealt more with the methodological problems of research than with problems of the environment. Many of the researchers were so heavily involved in rationalistic-behav...[continued on page 34]
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University of Tennessee sets up memorial lectureship

In honor of Robert B. Church, second dean of the School of Architecture at the University of Tennessee, the University has set up the Robert B. Church Memorial Lectureship. Contributions will be permanently invested by the University to provide income to support a series of classroom lectures and seminars, to be given by invited professionals, for students, alumni and architects.

Church had joined the University in 1967, and was named dean in 1970; while in private practice, Church won a total of five P/A Design Awards. He passed away suddenly this year at the age of 42. The lectureship series begins in September, with Louis Kahn as the invited speaker. Contributions should be sent to J. Barry Brindley, University of Tennessee, 118 Henson Hall, Knoxville, Tenn. 37916.

ALSC opens awards program

Steel-framed buildings designed by registered U.S. architects are eligible for entry in the Fourteenth annual Architectural Awards of Excellence program sponsored by the American Institute of Steel Construction. Buildings must have been completed between Jan. 1, 1972 and Aug. 25, 1973.


Board fireproofing: victory for the environment

Instead of spraying on asbestos fireproofing, which is now banned in several cities, builders can now protect structural steel with fireproofing that is welded on. The new system, developed by Johns-Manville Corp. consists of mineral fiber boards, which are applied to steel beams and columns with the help of a stud welding gun.

The boards come in a variety of thicknesses to meet varying fire resistance requirements; and in lengths up to 10 ft: widths are determined by the size of the steel to be protected. Wire studs are pushed through the boards and welded to the steel with the stud welder; a friction washer is then pushed over the exposed end of the stud.

First test application for the system was in the construction of a New York building being put up by the Tishman Realty & Construction Co.; the first real use of the system is the 50-[continued on page 40]
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News report continued from page 34

story Olympic Tower on Fifth Avenue, for which Tishman is the construction manager.
Development of this substitute for sprayed asbestos took Johns-Manville and Tishman Research Corp. about two years. The results of their work were hailed by Herbert Elish, head of the New York City Environmental Protection Administration as a "victory for the total environment."

Saints preserved
It’s often referred to as America’s first department store, particularly in Salt Lake City, but Zion’s Co-operative Mercantile Institution started out as just what the name implies—a group of merchants pulled together in a co-operative venture under a directive from the Church of Jesus Christ of Latter Day Saints. The establishment opened for business in 1876; by 1976 the old store will have been replaced by a thoroughly modern retail and office complex known as ZCMI Center.

The complex, designed by Gruen Associates, will include a 27-story office tower, a two-level shopping mall with 300,000 sq ft of shops and six levels of parking. Existing buildings occupy the corners of the block, and the building is set back from them at the corners.

Serving as the main entrance will be the 97-year-old cast iron façade that has been a Salt Lake City landmark for years (it is officially a landmark, as well: both the Historic American Buildings Survey and the National Register and Historic Places list it). Inspired, no doubt, by the work of James Bogardus, the façade is made of prefabricated cast iron elements, stacked and fitted together to create a three-story store front, first erected in 1876 and then enlarged in 1880. In 1902 another three-story addition was put up, this one with a sheet metal replica of the original façade; show windows and a canopy were put across the entire lower level of the front.

It is the 1880 double façade that is being preserved under the direction of architect Stephen T. Baird, a Salt Lake City preservation expert. While the task is simply one of dismantling the façade and re-erecting it as part of the façade of the new building (it will be set off in a lighted niche), it is not the easy task it might seem. The sheet metal section can’t be saved, and the original cast iron elements of the lower level are gone. Missing elements must be replaced, damaged ones repaired, to match the existing parts; topping the whole thing will be the graceful Palladian pediment that has been there since 1880.

Besides Gruen Associates and Baird, other firms involved with the project are Chaix & Johnson, who are doing the interiors for the ZCMI Department Store, and Store, Matakovich & Wolfberg, mechanical engineers. The two-level shopping mall will be sandwiched between levels of parking, ruling out much use of natural light; instead, light will be provided by lighted glass ceilings, railings and soffits.
[continued on page 44]
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Solar climate control—new industry?

The best way to get people to stop talking about solar energy and do something about it is to make it a successful business venture. That, at least, is the reasoning behind a program recently announced by technical and management consultants Arthur D. Little, Inc. Their aim is to find ways to create a market for solar climate control, eventually leading to large-scale use of solar energy for space heating and cooling and water heating for buildings.

ADL sees itself as the catalyst in the process, coordinating the development of technical and economic information and marketing approaches. Support for the project comes from some 20 major companies, each kicking in $15,000. For them, ADL foresees a sizeable industry: new markets for solar climate control systems might well approach $1 billion worth of equipment over the next 10 years, according to ADL. The equipment list would include solar collectors, heat storage systems, sources of auxiliary equipment.

Discussing the program at a recent conference in New York, Dr. Peter E. Glaser, a vice president and head of engineering sciences for ADL, emphasized that the program was not one of pure research, but one to “develop practical applications in heating and cooling... solar climate control promises to be technically and economically feasible.”

During his presentation, Dr. Glaser outlined the present development of solar climate control and noted that for a number of reasons the time probably had come when there could be action as well as talk. Among the factors he cited: the fact that up to now “we just haven’t believed that we are at an end of an era of energy abundance and low power costs”; the rising awareness of life cycle costs, rising fuel costs, public pressure for environmental conservation; and increased government interest in solar energy programs.

That there have been some constraints to the development of solar climate controls and that some clever thinking may yet be needed to overcome them was pointed out by D. Elliot Wilbur, head of ADL’s building and construction group. Wilbur noted that one reason solar climate control has gotten no further has been its marginal economy—so far. Now that cooling can be part of the system, he said, the collector is more quickly amortized and the economics get more favorable. A second point, he said, is that so far solar energy has been looked at as a technical problem: “I think we have to make a business, not an R&D exercise.” A third point dealt with “the reality of housing and construction,” which is money. By depreciating fixed costs of solar heating and cooling equipment over longer periods of time, the fixed costs “per year, per month or for BTU go down very significantly.” Wilbur also noted that despite rumors to the contrary the construction industry is maturing, and a more sophisticated industry could be induced to look favorably on solar climate control. His final point was that the solar climate system could not be allowed to override the design of structures: “This product must be designed to fit into the present consumer acceptance pattern.”

A final speaker at the New York seminar was Alan Morgan from the Massachusetts Audubon Society, who came to talk not about birds, but about the solar heating and cooling system that is to be part of an addition to their Lincoln, Mass. headquarters. The collector (at 3500 sq ft, it’s reasonably large) will face south at an angle of 45 degrees as the shed roof of the addition. Somewhere between 65 and 75 percent of the total seasonal heating load of the building should be provided by solar heat; and a 15-ton lithium bromide water-cooled adsorption machine driven by the solar collector should supply a substantial part of the air-conditioning needs. Cambridge Seven Associates, along with Arthur D. Little have done the initial planning studies.

Washington report

Meanwhile, business as usual

Though obscured by official Washington’s preoccupation with political charges and numerous investigations of them, there were important professional developments to be reported from the capital.

One was the endorsement by some 15 major engineering and scientific societies of “Guidelines to Professional Employment,” including recommended employment practices in recruitment, terms of employment, professional development, termination and transfer. The product of several years of consultation between the professional societies, the “Guidelines” are unusual in that they spell out employee responsibilities to their employers, as well as employer obligations. They attempt to treat the problem of possible conflict between professional ethics and job requirements in handling of details and information; go into such problems as economic advancement, inclusion in pension programs “providing early vesting rights,” and make it clear that the professional employee “shall not be required to accept responsibility for work not done under his supervision.” One other emphasis: “It is inappropriate for a professional employee to use a time clock.”

The societies hope that their “guidelines,” which will be revised from time to time, will be adopted nationwide, to provide generally uniform conditions for their members, regardless of their geographical location. Details of the guidelines can be obtained from any of the societies’ headquarters (ASCE, AIChE, ASME, EJC, etc.). Notably, neither Consulting Engineers Council nor AIA are included in the groups that worked out the guidelines. At a press conference to announce them, spokesmen said that “employer groups in general (and they included AIA because they said that more of its members are self employed or members of partnerships than any other of the societies) have been advised but have not been included in the formulation” of the guidelines.

On the same professional level, CEC and the Professional Engineers in Private Practice furiously protested the announced intention of Environmental Protection Agency to permit “turnkey” (EPA likes to call it “design/construct”) construction of wastewater treatment plants and facilities. CEC, in fact, threatened to file court action against EPA, if it proceeded to include such permission in its regulations—on grounds that such action ignores the capability of consultants, does not assure the best design or construction, sets up a dangerous precedent that can be extended to procurement of professional services on all types of government-financed construction. [Ed. note: The CEC convention in New Orleans voted unanimously to proceed with legal action.] In fact, CEC [continued on page 48]
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Rock Face panels are one of the interesting recent ceiling developments from Conwed. These panels are handsome enough for an executive suite, yet tough enough to go into a school and take the impact of a thrown basketball or improperly handled projection screen. Against the hazards that typically confront ceilings — rough handling in installation, frequent and sometimes careless maintenance, heavy traffic — Rock Face panels are practically indestructible.

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mysterious about it, clearly. Now you have a choice of 22 standard Milcor access doors, roof hatches, skylights, & smoke vents, floor doors and sidewalk doors—up from our last report.

We made improvements,

Added automatic closers to our fire rated access doors. Increased the light penetration of our skylights. Moved springs on our popular 3' x 2'6" roof hatch so the opening is completely clear. And according to intelligence dispatches, other new developments are in the works.

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For a dossier on Milcor access doors, see Sweet’s 8.12/InL or write for Catalog 33-1. Milcor roof hatches and floor doors are in Sweet’s 7.7/In, or Catalog 34-1. Your contact is: Milcor Division, Inland-Ryerson, Construction Products Co., 64069 West Burnham St., Milwaukee, Wis. 53201.
News report continued from page 44

openly accused EPA of "perpetrating a sham" in conducting public hearings on the turnkey proposal two years ago, requesting further written comments—and then paying no attention to the comments made.

Incidentally, there was also the announcement that CEC and the American Institute of Consulting Engineers (AICE) had agreed to the details of a formal merger of the two organizations (to form a new "American Consulting Engineers Council") as of July 1. CEC's current president becomes president of the new group, AICE's president goes on the board of the merged organization. There was some grumbling in CEC; AICE members become "fellows" of the new organization, thus gaining, in the opinion of some in CEC, an "edge" in prestige.

On the ever-controversial question about what to do about the West Front of the U.S. Capitol, there was more argument, this time from a Task Force named by the National Society of Professional Engineers.

The NSPE group discounted the idea that the existing wall could be repaired for the $15 million that Congress had set as limit, on grounds that (1) even if restored, the wall could be expected to continue to settle and crack and would require constant maintenance; (2) they thought it doubtful that any construction firms would bid under the stated conditions; (3) repair wouldn't answer congressional needs for more space. On the other hand, the Task Force didn't think too much of an AIA proposal that added space be provided underground, without disturbing the present building. They argued that no cost, soil or other studies had been made (P/A May 1973, p. 26), and thus there was no real evidence that this would be a proper or cheaper answer.

At an industry level, there were also some activities of major interest to architects. One was a simultaneous (but apparently not coordinated) move by two key contractor organizations to halt the rising trend of labor violence and vandalism on construction jobs—factors that have contributed heavily to rising costs. The Associated Builders and Contractors (an open-shop group) filed suit before the National Labor Relations Board in seven eastern cities, against AFL-CIO Building Trades department union, and the department itself, seeking "cease and desist" orders against coercive, violent actions. And the powerful Associated General Contractors approved a donation of $50,000 toward a fund (added money will come from state and local chapters) from which to pay rewards for information concerning perpetrators or instigators of such actions, and might even fund employment of private investigators to obtain evidence for court actions.

Both organizations cited numerous instances where labor violence, often triggered by inter-union disputes not involving the employer, has resulted in beatings and personal injuries along with vast damage to machinery, equipment and materials on the construction site. Both pointed out that apprehension, prosecution and conviction of perpetrators is extremely rare, despite the losses and delays that are a consequence.

Finally, as June began, there was a threat to a very large part of the plastics industry, particularly as it affects construction: cellular or foamed polyurethane and polystyrene used in the construction and furnishing of buildings. The Federal Trade Commission said it would charge 26 major petrochemical firms and two respected standards-setting groups (the Society of the Plastics Industry and the American Society for Testing and Materials) with failing to disclose serious fire hazards involved in use of such materials, using invalid tests, and failing to take proper precautionary measures. [E.E. Halmos]

Calendar


July 8-12. Annual meeting of the American Society of Landscape Architects and the National Council of Instructors in Landscape Architecture, Grand Hotel, Mackinac Island, Mich.


July 29-Aug. 2. Fourth annual seminar on noise control engineering at Colby College, Waterville, Me.


Aug. 12-Sept. 23. Exhibition of drawings and prints by Etienne Sottsass, Jr. and Superstudio, Walker Art Center, Minneapolis.


Aug. 31. Deadline for entries to P/A Design Award Program.

Aug. 31. Deadline for entries to Energy Conservation Awards Program sponsored by Owens-Corning Fiberglas Corporation, Toledo, Ohio.

Sept. 1. Deadline for abstracts of papers for the third international symposium on lower-cost housing problems, Montreal.

Sept. 4-14. Ninth triennial meeting of the International Organization for Standardization, Sheraton-Park Hotel, Washington, D.C.


Sept. 9-12. Conference on legal aspects of zoning sponsored by the Pennsylvania State University College of Arts and Architecture, University Park.


RUMORS THAT THERE ARE BUILDING SYSTEMS MORE VERSATILE THAN MASONRY ARE TOTALLY WITHOUT FOUNDATION.

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Now, the Avco Financial Tower has won the 1972 Utilization of Energy Award in Southern California, a tribute to sound design and selection of materials that is made more meaningful by the energy crisis that afflicts many parts of the country.

An LOF architectural representative can't guarantee that yours will be an award winning building, but he can show you how building owners can conserve on operating costs. For the entire story, send for our brochure, "Reach for a Rainbow." Libbey-Owens-Ford Company, Dept. P-773, Toledo, Ohio 43695.
San Diego’s downtown core had only a faint pulse in 1949. Decentralization, parking difficulties, poor transportation and increased building costs had debilitated it, and the end of the single tax method of assessing downtown property precluded a transfusion from speculative building. The most recent skyscraper at the time was the 14-story San Diego Trust and Savings building on Broadway, built in 1928. There was surplus office space in 1949, so no radical treatment was prescribed. The buildings along Broadway, the spine of the commercial core, were refurbished, but beyond this the patient got only bed rest.

"Historically," says Robert Moser of Moser Drew Watson Associates, "we have always been a Garden of Eden that no one came to. We didn't do much so we didn't make many mistakes. But the need was there."

During the 1950s the city core grew horizontally rather than vertically, but by the end of the decade there were three tall buildings on the boards. The land being acquired for new towers was pushing the center to the north of Broadway and to the south into residential districts, dooming the Gothic and Italianate wood mansions. But the first of the tall buildings, the 20-story Home Savings Tower at 7th and Broadway, was still on the right side of the tracks in 1962. The architect was Frank L. Hope & Associates.

Between 1962 and 1972 the core exploded. From Coronado across the bay you have a view of nine towers concentrated in a six by seven block area. Still the best of the buildings is the 1966 First National Bank designed by Tucker, Sadler & Bennett, a 25-story slender tower with a precast concrete exterior wall system. The latest building to appear in what has now become the new financial district is the work of the same firm, the 18-story Security Pacific National Bank. Triangular columns faced with panels of brown aggregate project beyond bronze solar glass.

The structure completes the final quarter of the Community Concourse two-square superblock. Arranged artlessly around the concourse are the Civic Theater, convention center, City Administration Building and a fine 11-level parking structure, also by Tucker, Sadler & Bennett. The closing of a street and the addition of a raised plaza around the new bank define the space and make it work. But the concourse isn’t much fun: a fountain but no place to sit except on the steps; foundation planting but no trees. A disappointment to Hal Sadler who says, "One of the prides of being an architect is to walk through one of the spaces you have created and see people enjoying it."

A block away is the old center of the city, Horton's Plaza, which swarms with life day and evening. The lack of seats along the concourse is generally attributed to the fear of attracting litterers from the plaza, which has about it the sense of the zocalo of a Mexican city. Irving Gill, in a rare classical mood, designed a fountain for the plaza based on the Choragic Monument to Lysicrates, very pretty among the palm trees.

Now San Diego has a secondary chance. The redevelopment of a 13-block area including Horton’s Plaza is in the planning stage. The architects who are critical of the concourse had been reminded that when the “train left the station they weren’t on it,” so for the replanning of the old plaza they are waiting at the depot.

A design board was set up and consultants sought—San Franciscans Gerald McCue, Charles Bassett, Peter Walker and Rai Okamoto. James Amos of the planning firm of ROMA is heading the team doing the master plan of the 13-block area.

The anchor at the south edge is the new federal courthouse, by Frank L. Hope and Richard E. Wheeler, now under construction. The north anchor will be Moser Drew Watson Associates’ 18-story Central Federal Building.

Moser says that, in following the criteria set up by the design board, only 49 percent of the land will be covered. The ground level is available to pedestrians, and under and around the structure will be tables, vending machines, benches and alcove seating which are bound to attract the Horton’s Plaza regulars. Moses hopes they’ll like it.

San Diego is lucky in having what Hal Sadler calls “a gutsy new mayor,” Peter Wilson, whose strong stand for controlled growth sprang from San Diego’s bitter experience in housing projects unrelated to schools and parks. “What he's doing will begin to show very soon in the quality of the environment,” Sadler says.

Little history remains in the downtown core. The existing adobes are all in Old Town, the first city center. There is a Gill church and his plaza fountain; a Spanish Colonial revival Santa Fe Railway station is on the list to be preserved. The most haunting building is the 1913 U.S. Custom and Court House which has a classical revival colonnade flanked by Spanish Colonial towers. Recently it was documented for the General Services Administration Public Buildings Service with a thought of transferring it to a local public body. Although the plan has been butchered, the Spanish Colonial volumes are a splendid foil for the new towers. [Esther McCoy]
Stark High Brick is a dramatic solution to problems of structural economy, beauty and design versatility... giant unit is equivalent to six brick... imagine the savings... most often goes in place for under $2 per sq. ft.

High Brick is available in 4" bed depth and face sizes of 8" x 16", 8" x 16" scored and 8" x 8" — to offer square, running on Flemish bonding patterns. The random textured surface provides interest and "depth"... in earth tones; Butte Brown, Mica Black and Natural Tan.

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Progressive Architecture announces its Twenty-first Annual Awards Program. Awards will be made to U.S. and Canadian architects, designers, urban planners, other professionals and their clients for projects now in the design stage and scheduled to be under construction in 1974. Any building, group of buildings or urban planning project illustrating definite building proposals will be eligible. In addition entries in applied research for a client will be accepted from architects or others if they are applicable to the design or realization of specific facilities or programs and are scheduled to be acted upon within the calendar year 1974. Qualification of entries in any category depends on the fact that the work is commissioned by a specific client.

Purpose of the Awards Program is to recognize, at the critical early stages, outstanding examples of work being done in the fields that most directly affect the built environment. Recognition will be given to both the entrants and their clients.

First award, award and citation designations may be given by the jury in any or all of the three broad categories: research; urban design and planning; architectural design. Entries will be reviewed for such factors as response to a client's program, site use and development, design excellence, conceptual advances, materials selection and methods of implementation.

The jury: for the Twenty-first Awards Program, P/A has invited the following respected jury members: Denise Scott Brown, Partner, Venturi & Rauch, Philadelphia; John P. Eberhard, AIA, President, AIA Research Corporation, Washington, D.C.; Joseph Esherick, FAIA, President, Esherick Homay Dodge & Davis, San Francisco; Herb Greene, Architect, Professor, College of Architecture, University of Kentucky, Lexington; Paul Kennon, AIA, Director of Design and Senior Vice President, Caudill Rowlett Scott, Los Angeles; Barton Myers, MRAIC, Partner, Diamond & Myers Architects and Planners, Toronto; Jaquelin T. Robertson, AIA, Commissioner, New York City Planning Commission, New York; John Zeisel, Assistant Professor in the Sociology of Design, Department of Architecture, Harvard University, Cambridge, Mass.

Judging will take place in Stamford, Conn., during September 1973. Winners of awards and citations will be notified immediately (confidentially) after the judgment.

Public announcement of the winning projects will be made at a presentation in January 1974 at a location to be selected. Winning projects will be featured in the January P/A. As in the past, P/A will arrange coverage of winning entries in news media, particularly in those localities of the award and citation winners. Winners must agree to provide illustrations reproducible in the press.

Submission requirements
1. All submissions must be firmly bound. Original drawings, actual models, or mounted
### Entry form

**Progressive Architecture**

**21st Annual Awards Program**

(Typewriter only, please)

Please fill out all parts of this form and submit with your entry. A copy of this complete form may be used when submitting multiple entries.

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**Awards Editor**

**Progressive Architecture**

600 Summer Street, Stamford, Conn. 06904

Your submission has been received and assigned number:

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**Awards Editor**

**Progressive Architecture**

600 Summer Street, Stamford, Conn. 06904

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exhibit panels will not be accepted, and material is to exceed 11"x17" in size. If project is to be submitted under separate cover, 8"x10" binders are preferred.

2. Submissions must be accompanied by an entry form, to be found on the back side of this page. Each entry must have a separate entry form; reproductions of the form will be accepted. Please fill in (typewriter only, please) all appropriate spaces on the form noting that four parts are required for each entry.

3. No identification of the entrant may be placed on any part of the submission, except concealed in an envelope attached inside the back cover of the binder. Entries will be kept anonymous until judging is completed.

4. In addition to the form, please include the following: a brief statement of your solution, description of and reason for your selection of materials and construction methods, site considerations or other influences on the final proposal (for planning and research submissions, it is important to summarize, in one page, the intent and the results of the work); a statement that the project is not yet completed, and that construction is scheduled to begin before the end of 1973; a statement that the proposals or studies are to be conducted upon; a statement that submission of a proposal gives P/A first rights to publish both the design and the finished project; an award or citation (in the case of research studies, first rights to publication of the results) in the architectural press.

5. Graphic submissions should also include pertinent drawings such as site plans, representative floor plans, sections, details, perspectives and/or model photos.

6. For purposes of jury procedure only, projects are to be classified by the entrant in the appropriate space on the entry form. Awards and citations will not be given by categories, but submissions must be divided into comparable groups for judging. For this reason, you are asked to list your submission as one of the following: Education (High), Education (Secondary), Education (Primary or Early Childhood), Housing (Single Family), Housing (Multiple Unit), Commercial (Large Scale), Commercial (Small Scale), Institutional, Religious, Recreation, Health Care, Plan and/or Urban Design, Applied Research. If no category is listed for your submission, please write in MISC., and it will be placed with comparable entries. Mixed-use entries (part commercial and part housing, for instance) should be classified according to the larger function.

7. Any entry not conforming to the above requirements may be returned to the entrant without being judged.

P/A will guard and return all submitted material. Deadline for mailing is August 1973. Address entries to Awards Editor, Progressive Architecture, 600 Summer Street, Stamford, Conn. 06904.
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Model HWC-6GF
- Same as above, except glassfiller faucet in place of bubbler.

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Model 1118
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Circle No. 329, on Reader Service Card
Every program worth its salt must be re-evaluated from time to time, and maybe changed to better suit its stated purposes. The history of the P/A Design Awards program contains a number of changes, as last month's issue pointed out, because definitions of "architecture," "planning" and even "design" have broadened. Some have called into question the very use of such terms, given the ambiguity of their meaning in new contexts. Recognition of constructive change is fundamental to the design professions and that recognition has often come from P/A juries over the past 20 years.

It is not surprising, then, to see yet another change in our program—the inclusion of applied research in the competition. It is important to realize, as the juries have in the past, that buildings and physical objects are not always the answer to a programatic need. There has been an increasing emphasis on problem definition in the past few years, as it has become evident that so-called "intuitive" design sometimes falls short in understanding just what is required. This year, therefore, P/A is inviting research projects that establish design programs, procedures, criteria or prototypes for other professionals to follow—"applied" research projects in that they must, like all P/A submissions, have been commissioned by actual clients in connection with specific building efforts.

Research, like "systems," has entered the scene as a tool unfamiliar to many of our professionals. As such, it may provoke defensive put-downs in the name of professional pride. The fact is that properly conceived research can be an invaluable aid to responsible and responsive solutions. It is time to recognize that atelier methods will work only after we have every shred of understanding available to us for solving a given problem. Welcome the researchers, in whatever state of infancy. At the very least they can give us more intensive knowledge in areas of concern that have been glossed over for too long. Their maximum impact can't even be guessed at, and won't be felt until the early efforts mature.

It is exactly that aspect—early recognition of creative effort—that P/A has been supporting through our awards program. In order to better reflect the expanding scope of work of the professions involved, structural changes in juries have been needed. When planning and urban design entries got too heavy for traditional jury processes in 1970, another specialized jury was empaneled. That step set the pattern for similar juries in 1971 and 1972. Another restructuring comes with the addition of research this year. But instead of merely working in three parallel teams, this year's jury will regroup to work as one unit in selecting the winners. After initial screening by those best qualified to consider the three types of submissions, entries chosen as candidates for awards or citations will be brought before the entire jury for final deliberation and selection. To review the research submissions, we have invited John Eberhard and John Zeisel; for planning and urban design, Denise Scott Brown and Jaquelin Robertson. Architectural design entries—by far the greatest in number—will be evaluated in the first round by four architects: Joseph Esherick, Paul Kennon, Herb Greene and Barton Myers. All of these people were chosen with confidence that each one will bring valuable insights to the consideration of all types of entries. (For fuller identification of jurors, see announcement on page 59.)

Once P/A has assembled jurors with credentials equal to their task, they are on their own. Aside from handling the mechanics of submissions and judging, P/A's job is to stay out of the jury's way until decisions have been reached. Up to now, those selections have been a barometer of professional concerns to a degree that is nothing short of startling.

Only through constant awareness can any program, or indeed, any profession, grow. The main purpose of the P/A awards program is the encouragement of ideas at the critical early stages—ideas that can teach and generate thought. One side effect of teaching may be copying, and evidence of that can always be seen to follow awarded projects. If that is an evil, as some suggest, it's a pretty benign one. Even if imitation reduces a smashing concept to a less stirring level, the second generation stands a chance of being better than it might otherwise have been.

These are some of the reasons we believe in our program and thank you warmly for its support. It will continue to change as the need arises. It will, no doubt, continue to include both controversial departures and "acceptable" design standards. Our professions, like all of society, are changing through exposure to new solutions. Our experiences should tell us that, historically, that's the way it's always been. [JM]
Proposal to phase out Washington's National Airport by providing ground transportation terminal in Rosslyn, Va., with bus routes direct to flights Dulles Airport. Although the scheme was enough to stop a major job of modeling scheduled for National, the middle-of-town airport is still using noise, pollution and safety hazards to the area. Major pressures for the retention of National include those from Congressmen and Senators who would balk at losing in-town airport convenience for their trips home.

Profile: Arthur Cotton Moore & Associates

An architecture of issues

By learning what forces control the destiny of their projects, this Washington firm has gained a very useful tool as well as an improved chance at artistic freedom.

Despite a growing reputation as savior and defender of nearly lost opportunities and enlightened causes, Arthur Cotton Moore & Associates' front door doesn't really lead to an ivory tower. Moore, instead, is a realist. Especially in Washington, he feels, "you've got to know the territory." The territory is, in effect, administered by a maze of governing bodies ranging from Congress, the General Services Administration, the Department of the Interior and HUD down through local fine arts commissions, resident groups and business coalitions.

All or some of the above would be enough to make most people consider a practice in Iowa or Montana. Even though Moore grew up in the Washington area, he feels that "growing up here is to ignore the power that exists around you. You get the feeling that it's over there somewhere, and you're separate from it." That part of Moore's education began in 1965, when he opened his office in Georgetown. It has been "tremendously" costly in terms of time, but he has learned his way around. By no means is he just a Washington architect, though, having done work across the country and in the Bahamas. His work at Georgetown's Canal Square (P/A, April 1971), however, is a good example of how he has put his design skills together with business and development acumen.

One dimension of his practice—the pro bono publico work—is allied with his abilities in searching out how to make things happen. "Other architects could do this as well," Moore says: "see a potential problem or a fundamental issue or malaise in a city. Whether it's a transportation problem or another kind of need, an area which is in dire straits and going downhill, an architect can do more than identify a problem. A lot of people can do that. They scream and holler and carry placards. But the government is used to that—the negative is easy to come by. What the architect can do is to prepare the positive alternatives to the problem first. Government isn't used to seeing something that may, in fact, be a decent solution, resolving a difficulty in a way that doesn't sabotage people who live in the area." Washington at least has been aroused by, if it has not yet benefited from, a number of Moore's proposals. Writing articles for The Washingtonian...
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Magazine, he has identified and proposed solutions for some ills which official Washington was either prepared to live with or to ignore.

National Airport

For years, Washington's National Airport and Dulles Airport have suffered different crises. Dulles is "inconvenient" to reach and underused, while National, though handy, is overcrowded, undersized, antiquated and dangerous from safety, noise and pollution standards. In the fall of 1966, Moore heard a rumor that the FAA was going to spend $200 million (more than it cost to build Dulles) to modernize National. After investigations proved the rumor true, a counterproposal was made, along with his December blast in The Washingtonian.

Borrowing from Saarinen's mobile lounge concept for Dulles, Moore suggested an in-town terminal, served by buslike vehicles which would connect directly with flights, not terminals, at Dulles. Other faster alternatives such as fast rail transportation were also proposed. The expensive boondoggle was stopped, but National still lives as a monument to status quo blindness and Dulles starves. That is not a victory, Moore feels; a continuing wrong is not a viable alternative. Some flights have been shifted to Dulles, but airlines are not anxious to get into the point-to-point transportation business, and congressmen and senators won't hear of alterations to flight schedules on their routes home. That's Washington.

Downtown revival and permissive discontinuity

Yet another D.C. malaise: downtown Washington is dying. Three proposals, two physical and one a broader-based concept, have come from Arthur Cotton Moore & Associates. Recognizing that the middle class flight to the suburbs has afflicted Washington in unique ways, Moore also notes another paradox. There is The Mall, with its millions of visitors, and downtown, separated from the tourists by the government "wall," the bleak, cheerless blob of official buildings that line the blocks north of The Mall. At 5 p.m., when official Washington goes home to Maryland or Virginia, the wall loses all life and downtown is left knocking at the back door.

In the middle of the wall is the old Post Office, once doomed by the GSA to the wrecker's ball. That was pre-Moore. The old building is considered aggressively ugly by some, as opposed to the "beauty" of the heavy federal archi-
Two schemes to strengthen downtown Washington:
the old Post Office, scheduled for demolition by the General Services Administration, has been proven to have all of the right qualities for a tourist hotel. Its height, exceeded only by the Washington monument, makes it a landmark; its location, like that of Metro Center, could be a key element in renewing areas that now lack life after dark. David C. Cox is associate in charge of the Metro Center proposal, which includes two city blocks and blends old and new buildings.
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architecture accepted as government issue elsewhere. GSA had painted the skylight glazing over its full-height central space black and the square doughnut building was declared unusable. In Europe, Moore noted, tourists are not chased from empty city streets to suburban motels. If the Post Office were retained by giving it a new private economic use as an inexpensive tourist hotel, maybe not everyone would leave Washington at night.

Rather than rely on architects' standard words about great spaces or important old buildings, Moore catered to his audience. Senators and administration officials could only be expected to respond to a developer approach, so in addition to preliminary architectural sketches the architects did a room count, cash flow studies and cost estimates. Then they got expressions of interest from two respected developers. With that package, the presentation made sense and the destruction was stayed; the job of getting positive action going on the reuse of the Post Office is still under way.

Although not connected in fact, another of Moore's proposals in behalf of small, established downtown businessmen is related in intent. Threatened by bulldozer urban renewal, some thriving businesses were going to have to relocate. "Thriving" in a small business still leaves little financial room for losses by relocation. Ironically, the new Washington subway system had just spent a substantial sum to underpin these buildings, wiping out front accesses during construction. Moore advanced the idea that, through block infill and air rights construction, economic demands of the properties could be met without ousting the businesses. By building over and behind the old stores, new facilities could be constructed with far less disruption than the subway caused.

The third suggestion is a concept, applicable to other cities as well as Washington, Moore feels. Some of the inherent attractions of nightlife in a city like New York stem from the choice to do what one wants. Moore's admittedly liberal proposal is for a planned reduction in the established taboos that have grown into the city's fabric. If a wide enough choice of activity exists, he reasons, people will again find downtown attractive. His concept of "permissive discontinuity" is the heart of a city's uniqueness and, while expecting to raise a few eyebrows with proposals for things like gambling establishments, Moore has not let that stop him. He sees the potential benefits of legalizing some activities that have been considered slightly illegal, immoral and vaguely sinful, as something cities should recognize. Social needs, above and beyond providing people with a place to go, could be financed through licensing or taxing newly permitted uses.

Bedford-Stuyvesant

Like many depressed areas, the Bedford-Stuyvesant section of Brooklyn has no real center of activity. It offers little that would encourage an inflow of business, with its resulting financial support. Sponsored by the mostly black Bedford-Stuyvesant Restoration Corporation and the white Bedford-Stuyvesant Development & Services Corporation, a new Moore project that may change the situation is under construction. It is a logical sequel to the firm's Canal Square project in its use of middle-of-the-block spaces and its reuse of existing elements. Before Moore was commissioned to do the project, one building was already being renovated on the block. A selective process of evaluation was carried out to determine which buildings on the remainder of the block should be saved. Due to the sensitivity of dealing with the black community, political and social factors entered into the building evaluations as well as economics, structural soundness and feasibility for reuse. (It was also deemed reasonable that the
Bedford-Stuyvesant Commercial Center  Paul Childs, associate in charge  David C. Cox, job captain

Fulton Street facade

Two connected shop levels

Area bordering skating rink

Sidewalk cafe and theaters
An architecture of issues

two boards govern the work; the black board to oversee project expenditures from funds arranged for by the white board.

Some buildings were saved because of an existing community use, while others will be replaced. The entrance to the project from Fulton Street will be through a "gate" formed by saving the front wall of an existing building. The façade has been steadied by poured pilasters behind the wall, and wall openings have been left to form a perforated screen without removing a familiar sight. Commercial spaces inside the block will adjoin an outdoor skating rink. At the opposite end of the series of central spaces, an ice cream plant was discovered to have a good open central space of its own. In this third segment, Moore hopes to see the inclusion of some "permissive discontinuity" uses—maybe a mix of a good bar, a theater and arty shops. The vitality and money that might otherwise

The Georgetown Waterfront project for Inland Steel Development Corporation is linked by a pedestrian circulation system from site A, near the C&O canal (above), to site D (below) on the Potomac. In incorporating schemes to bury the elevated expressway that currently afflicts K Street, the concept would bring commercial activity and life to the river's banks again.
go elsewhere for swinging entertainment are important, in the broadest sense, to the Bed-Stuy community.

**Not formalistic**

What seems to be emerging from projects like these is an expertise at reusing old buildings with sound commercial reasoning. "It's important for us to think of old buildings as resources," says Moore, "and to develop a new economic use for something that would otherwise expire." But there is more to Moore than that. Lessons learned from the political gauntlets run, and from dealing with existing building configurations and constraints, have applications to all-new work as well. After working with irregularities built into the Canal Square, Bedford-Stuyvesant and downtown Washington projects, it has become apparent to Moore that the odd, unexpected spaces often add a character that most new projects lack. Not that oddity has become the design standard for new projects in the office, but neither has formalism. "I doubt if anyone comes to our office knowing what they're going to get," Moore muses, "we're not formalistic." While the image of imaginative reuse is a strong feature of the practice, the other facets are not slighted.

**Georgetown waterfront**

If there is one project that embodies, in degrees, most aspects of the firm's approach, it might well be the Georgetown waterfront redevelopment. There are two Georgetowns: the well-known residential area above "M" Street and a once commercially active waterfront, more recently a declining mixed bag. If the thought indicated by planners of the elevated expressway along "K" Street is any precedent, lower Georgetown will stay on "the other side." That is another battle fought by Moore, along with other local architects.

When ISDC, a development subsidiary of Inland Steel, virtually bought the Georgetown waterfront, Moore was naturally part of their plan. A mutual consortium was formed, Arthur Cotton Moore & Associates in association with architects Elbasani/Logan/Severin and Sasaki, Dawson, DeMay Associates with the Moore group assuming the executive architect title. In its present form, lower Georgetown almost rates its under-the-bridge status. Moore and others had developed alternatives which would submerge the freeway, provide a local street at grade and reconnect the two sides of "K" Street. Citizens' feelings on the proposal were positive. But highway interests, Moore points out, didn't want to set any precedents of having to give in to local situations. Still, the logic was with the architects' scheme, and it will probably win out, after all.

On the development of the Inland property, though, there were opposing views. Given that infamous pair of neighbors, the Watergate complex and the JFK Center, some citizen groups opposed building anything on the adjoining Inland plot. However, as Moore noted from his earlier study of waterfronts in six cities, Washington had never promoted the use of the Potomac by people. Reverting to grass and trees in Georgetown would be a cop-out, he felt. "The District has something like 44 miles of river frontage which has all been taken to what I consider to be the lowest common denominator; that is, the only thing we can agree on is grass and trees. I'm certainly not against grass and trees," he observes, "but we already have so much of them that the entire city of Washington could eat outside at once." There were also those who suggested covering the site with housing, which Moore...
Gwynbrook Mall in suburban Maryland is designed to disturb as little of its steep, wooded site as possible. Parking has been designed for rooftop and lower levels, avoiding the typical asphalt sea. Instead of creating gardens inside, the architects have made natural features of the setting the focus. David C. Cox is the associate in charge of the mall project.

The Cairo Hotel was built in 1894, and so outraged Washingtonians by its height that an act of Congress followed, giving the District its renowned building height limitations. Its less-than-successful application of freely interpreted Egyptian detailing masks the fact that it was a very advanced steel structure for its day. It will be converted to moderate income housing. Associate in charge is Paul Childs and the job captain is Kent R. Abraham.
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agrees that Washington needs. Economic reality, however, would have covered the waterfront with very expensive condominiums, Moore says, not housing for those who need it most. Besides that, housing is not a legal use for that site at present. In very oversimplified terms, these were the major considerations leading to the last Inland proposal which was finally approved by the Fine Arts Commission. "Now that we've gotten over the Marlon Brando notion of the waterfront, the whole idea of bringing people back down to the water seems very appealing," he says. "Washington presently has an almost non-use of the river."

The mixed-use development for Georgetown could alter that, at least to some degree. By locating the combined commercial-office-hotel project on the banks of the Potomac, Moore hopes to restore the use of that portion of waterfront to the people. Granted, benefit would also accrue to private interests as well, but the land is already privately owned. The Georgetown project would make use of the same type of logic that shaped the Post Office presentation: everyone can gain if the economics are right. Instead of another temple on the Potomac, maybe some people for a change.

Other fronts

Planning studies make up another large portion of the firm's activities. An expansive study of waterfronts in six cities, Bright Breathing Edges of City Life, was conducted for the U.S. Department of the Interior. In it, proposals were made for returning people to the waterfronts in Washington, Boston, Buffalo, Oakland, New Orleans and Louisville. Another study in Annapolis was to establish guideline regulations that that Maryland port could follow to preserve its good qualities through periods of development. Moore also did a comprehensive study for the Bahama Islands to determine power needs there, and how to cope with complexities of supply for the 700 out-islands. Still other planning studies have been carried out for several towns in Arkansas. Because of the nature of planning studies, none of these efforts can be shown here in depth. They are, nonetheless, impressive.

Woodlawn Shopping Center in Virginia will be enlarged by the addition of a large shed form. Counteracting the existing strip character of the center, the wedge shape is topped by a trellis of steel holding a huge billboard. Associate in charge is Paul Childs and the job captain is Sheldon Joe Bell.

As an outgrowth of these planning efforts, again working with other procedural lessons learned in other projects, Moore is looking ahead. "We'd like to get a better perspective on the whole notion of urban economics and accounting," he says, "the whole planned unit development thing. Lawyers and courts design far too many developments today. In the Georgetown project, for instance, there was the anti-growth, environmentalist faction versus the corporation. We'd like to work out a formula for measuring development. It would be a matrix through which others could measure the hard facts of a situation and approximate the intangibles. That way, we'd be able to avoid a lot of 'legal' design caused by knee-jerk response to a problem. We'd have some indisputable guidelines that each faction could depend on, and respect."

If "architecture," in the traditional sense, seems less important to Moore and his associates than issues, it's probably due to the fact that Moore doesn't separate the two. The skill with which the issues are confronted can be shown graphically. The process cannot. The designs shown for two shopping centers, the proposed underground home for a burned-out church and a scheme for Washington's Cairo Hotel are results of similar processes, responding to different problems. Moore wants his firm, now at 11 architects and supporting staff, to grow in as many directions as possible. He doesn't want to be categorized. It seems unlikely, given the diversity of the firm's practice, that any label would stick for long. [JM]
Interior design

The TV generation turns on the office

Open office planning, a concept begun in the early 60s, has fostered many preconceptions in the products it has generated. An analysis of its present status suggests other ways to define the process of work and the structure of the office, and what this might mean for present hardware. A second part, a transformation of work through the use of highly automated electronic devices, shows the effect that new media may have in physically changing the workplace and the office.

Open office planning proclaimed the liberation of the file clerk, the socialized, revolutionized, non-hierarchy, windows-for-everyone environment. No longer did the corner office necessarily belong to the Chairman of the Board; no longer were the clerks lined up at neat rows of desks recalling the fantasies of Fascist Germany. The concept of open planning was first implemented with individual pieces of traditionally defined equipment, freely arranged in space, separated by
screens and plants. Since the open office was a new concept, there were no ready-made, freeze-dried, just-add-water-and-use items to rubber-stamp on a floor plan. While well-intentioned space planners hailed the open plan as a major advancement toward a better environment, the first open office furniture system on the market, Action Office I, failed. It was priced out of reach of everyone except the executives and they had not been convinced of the advantages of the proletarian paradise.

It didn’t take long, however, for the manufacturer to grasp where the market was. AOII soon replaced AOI, and other manufacturers’ systems have, in their cost and materials, tried to corner their own segments of the office population. The range is from the low-cost, informal-image systems like Haller or Christian, to the high-powered, walnut and teak executive-image systems, like Task Response Modules or the Stevens System. But what, in the meantime, has become of the social scientists’ proclamation that the environment affects behavior? Just what does affect people positively or adversely? Does it lie in the physical surroundings or in the attitudes of the corporation? Where is the evidence that productivity is, or can be, increased through design? With no measurable data and no methodology for finding it, speculation becomes myth and social purpose becomes obscured in the stampede to the marketplace.

One of the conceptual aspects of AOII was to increase productivity of the individual by providing a series of choices concerning the workplace—many types of modules, in different relationships, at varying heights. This was the first, and perhaps the last, gesture in recognizing the individuality of work attitudes, habits and needs: the individual reigned in his domain and the ghost of the corporate dictum was, for the moment, muffled in the closet. The choices provided, however, were token; the manipulable objects were still traditionally defined “work” furniture. The individual could have what he needed so long as it was part of the system and wherever he wanted it so long as it was where the planner had said it should be. The emphasis on individual choice produced options no larger in scale or scope than that.

The underlying concept of all systems was flexibility in re-
existing systems must be analyzed in their own terms

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There was some thread of logic in that development, for after maximizing the rental space, refining the high art of façade, and developing a catch-all formula for mechanical services distribution, what could be more necessary than to reduce the interior to the same level of standardized thinking? Based on the newly acquired knowledge that offices change and grow, the systems provided investment in equipment rather than space and an inexpensive method of reorganization. Why then, if the systems were based on a concept of flexibility for change, has the office not evolved further in its structure? It is perhaps because the systems are still based on the traditional definitions of "work" as measurable tasks and their supposed flexibility is within this context only. Change, in terms of these systems, is moving walls or adding storage. New ideas are not needed—only a hex wrench.

What began as a concept of spatial and managerial organization soon became an end rather than a means. The system became simply the hardware; with the handy little pocket grid provided by the manufacturer, any maintenance department felt it could lay out the system. The criteria for design, based on work-flow, adjacency studies and flexibility for change could be adequately satisfied by the available systems; they were designed at the scale of the individual, on the basis of
tasks to be performed, with the greatest flexibility at the scale of the workplace or smaller. The conceptual development of the office had begun and ended here.

What happens, however, if the definition of work as tasks is changed? Work is a role, a process of thought, of decision-making, of accessibility to information, of processing and dissemination of data and of feedback. Does the necessity of a desk as work surface remain? If the office is viewed as a totality, comprising sub-sets made up of individuals, an office existing at all scales simultaneously, then a system should allow, even encourage, open-end growth not just at the individual level but at the scope of the entire office. What type of system can function at these several different scales, clarifying the relationship of people to information, and reducing redundancy? What happens to the traditional concept of office when electronic media for information storage and communication no longer demand that an office exists at one address from nine to five, five days a week? What becomes of the building as universal envelope if hardware and flexibility for change no longer demand that we make hard choices?

What becomes of the structuring of our daily lives when "going to the office" is no longer necessary? What becomes of the role of the designer/planner when the choices of use are made by the occupants? If we accept as new criteria the
idea of disposability when information or artifact is obsolete, if we demand workplaces free of built-in preconception of use that can allow a restructuring to occur in a continuum, if we demand a system as software rather than hardware, if we plug people into electronic circuitry instead of cubicles, what are the consequences?

The automated age: A transformation in one act
Through the days of future past, the panoramic, living color transistorized sunset, the 4” façade of Hollywood illusion and the Sesame Street TV educator-babysitter, the curtain rises on the workaday world of Mr. Planner and Mrs. Wife:

Mrs. Wife arrives in the kitchen to find the children already scrubbed, dressed and eating their breakfast. She punches the appropriate buttons for two orange juices, two black coffees and one rye toast with marmalade. Mr. Planner, freshly shaved and dressed in the clothes he had requested the previous night, arrives to find his breakfast ready. The children, already finished, grab their mini-computers and portable video screens, jump into their miniature capsules and are whisked off through pneumatic tubes to the local resource center. Their father, taking his breakfast to the table, turns on the video screen to see instant replays of the news. Before the news is finished, his transit car arrives, attaches itself to the house and signals that it is time to depart. Mr. Planner punches a button, grabs his print-out of the news and his coat, kisses his wife good-bye and jumps from his Megacity Co-op into his waiting vehicle. “Have a nice day at the office,” murmurs the wife.

Once inside the vehicle, Mr. Planner inserts his business card into the starting slot and the vehicle is in motion toward the park in Megacity office park. Simultaneously, he is con-
connected by videoscreen to his office and is given a complete briefing of the day’s schedule. As the vehicle moves to its pre-programmed slot in the Megacity garage, he instructs the office about the information he will need, the associates he will want to confer with, and the presentation media he will use in conferring with clients.

The office computer, keeping a record of the day’s schedule from all associates as it is transmitted, schedules his day by coordinating conference time with others involved.

The elevator doors open and Mr. Planner enters into the vast expanse of undifferentiated space known as his office. Walking to the computer terminal and inserting his business card into the slot, he views his agenda on the videoscreen and quickly programs the types of spaces he will need. Panels come out of floors and ceilings, surfaces rise and fall. The environmental control system is activated and monitors adjust the temperature and humidity. As he walks toward his newly programmed space, photoelectric cells turn on and adjust light levels, acoustic sensors adjust louvered absorption surfaces. As more associates appear, the office begins to take form for the day’s activities.

The video phone is now flashing; punching another button, Mr. Planner is connected to an associate at a jobsite who is having an argument with the contractor over a detail. After viewing the detail in question, Mr. Planner reaches for his punch card files and, selecting the appropriate one, inserts it into the video phone. The drawing appears on both his screen and the portable unit on the jobsite. A print-out is now in the hands of the contractor, whose self-righteous determination fades as he confronts the facts, and he agrees to make the necessary changes. Punching a new card, the contractor alters the factory production process and begins pro-
Mr. Planner greets Mr. Stockbroker in the waiting area. They walk over to the computer terminal where Mr. Planner punches a series of buttons. The waiting area disappears, the secretary disappears, the simulation area and presentation media are ready.

Turning on three monitor screens, Mr. Planner begins the presentation by outlining the process of information gathering. On the three screens are replays of Mr. Stockbroker's office. He briefly explains the general assumptions made after many days of viewing, collecting and tabulating the roles and interactions that were taking place. Based on this, Mr. Planner continues, the office needs so much of one type of communications system, so much of another type, so much programmed space and so much unprogrammed space. What this means in terms of floor space, he continues, is this, pointing to a large projection screen.

Mr. Stockbroker, heretofore calm and unruffled, suddenly becomes visibly agitated. "But," he exclaims, "that's not as much space as we have now and at the rate of growth we an-
Mr. Planner smiles knowingly and prepares to explain, again, this new idea of non-redundancy planning. "You see," he begins, "when you came in we had a waiting area, but when we don't need it, it isn't there. Because we are now working here, my former work space has been altered and is in use by someone else. Since we no longer maintain a nine to five day, we overlap hours. In order to use all the space efficiently all of the time, we have installed a universal, automated, computer-controlled grid system which allows instantaneous transformation of use, eliminates redundancy and waste."

"The grid system is completely controlled by our main computer which sorts the various demands for different communications setups, programs use, allocates space and time, and coordinates meetings with other individual's schedules."

"Of course, I realize in your business," continues Mr. Planner, "that some of your clients demand certain other settings where they can act out more traditional roles with you. These options are also available in the office I've created for you. By a simple method of projection, you can change your space to Louis XIV, or simulate the action office so popular in the 60s and 70s. With our new universal system, nothing is exclusive and change is as easy as pushing a button; aesthetic as close as the tip of your finger. My role as space planner is not to design your space but to program our system to include all the diversity you desire."

By way of making the point visibly clear, Mr. Planner pushes several buttons and transforms the presentation space into three separate communications areas. Mr. Stockbroker, annoyed at being thrust out of his comfortable surroundings and rather perplexed, wanders away in search of the waiting room he so vividly remembers. Finding no such space, only an open elevator door, he steps in and disappears.

Mr. Planner, distressed at having blown another job, pushes a button, cancels the office for the day and catches the first elevator to his waiting transit vehicle. [SLR]
The case for the private patient room

Gordon A. Friesen

The private hospital room is no longer a luxury; if designed so that patients receive more in-bed care, their efficiency can help reduce institutional costs.

The basic function of the patient room has changed little since the first hospital was built. But its design is evolving to meet a broader role as the center for various activities directly related to the treatment and well-being of the patient.

For the hospitalized person, the room is the environment in which he eats, sleeps, receives visitors, is nursed and undergoes some medical treatment. For this reason, each room should contain at least the basic necessities to meet medical needs and also provide a pleasant, morale-building setting (communications equipment, medical gas and suction apparatus, examination light, reading light, window curtains, etc.). Every room also should have a shower and toilet—two necessities provided each occupant of even a fourth-class motel.

Beyond these minimum needs, several design concepts can add to the well-being of the patient. One of these is the stress upon private rooms—each of which, in effect, becomes a living and treatment unit at a cost comparable to that of
semi-private (two or more bed) rooms. In the past, hospital rooms have held as many as 50 patients. Despite a gradual evolution toward fewer and fewer patients per room, the semi-private room—with two, three or four beds—remains the norm.

There is little argument that private rooms benefit the patients. They provide better control of infections, greater opportunity for rest, privacy between patients and visitors, doctors and nurses; they reduce the number of times a patient must be moved to meet medical and nursing needs.

In the words of one hospital administrator: "Because of the intimate nature of many procedures performed on patients, and because sickness is a time of great stress, privacy should be considered a factor to which all patients have a right without consideration of their financial ability to pay." Furthermore, adds Dr. Raymond Alexander, chairman of the board of Southern Illinois Medical Center in Mt. Vernon, "We have proved that patients get well faster in private rooms."

The higher per-bed construction cost for private rooms can be largely offset by increased occupancy. Because patients are separated by sex, age, type of treatment, the danger of cross-infection and other factors, an 85 percent occupancy is high for semi-private rooms. The hospital with all private rooms, by contrast, can maintain the highest level of care while operating at an occupancy rate of 95 percent or more. Another economy follows a reduction of the number of times patients in private rooms must be moved. One study shows each move to cost $18, largely because of the additional paperwork involved.

The use of single rooms also adds flexibility, as two or more rooms may be quickly and easily converted into a special care unit by means of an operable wall system which allows walls between rooms to be partially or completely folded back. With outlets for electricity, vacuum and medical gases suspended from the ceiling, beds in combined rooms—or in rooms being used for some special purpose—may be placed to meet the demands of medical treatment or preferences of patients.

This flexibility may be extended to patients who, for various social or psychological reasons, may not wish to be alone, or those whose medical needs require constant monitoring. Two patients may share common quarters, a relative or nurse can sleep in the combined room with a patient, or special equipment requiring added space may be installed temporarily.

Also adding to the patient room as the focus of health care is what we call the Nurse server, double-door, pass-through supply cabinet built into the wall between the nurses’ alcove in each room and the adjoining corridor. This cabinet, vertically divided into "clean" and "soiled" compartments, in effect serves as a miniature supply room containing charts, medications (stored in a locked drawer) and replacement stocks of linens and other items. These are immediately available to the nurse without her leaving the patient's bedside.

The Nurse server is part of the nursing alcove designed into each patient room. Here are located facilities—communications console, vanity shelf, ideally a pneumatic tube outlet—to support functions traditionally carried out at other locations, including medical charting by the doctor and nurse. This arrangement, plus an end to the traditional nurses’ station in hospital corridors, enables nurses to spend up to twice as much time with patients as in traditional hospitals, where they carry out administrative duties in hallways.

In an effort to further improve patient care and reduce costs, these concepts continue to be revised. For example, space requirements may be further reduced with a combined hygiene unit in each room that has a fold-down seat over the toilet. After showering, a patient merely turns on an infra-red light which completely dries the unit in minutes.

Another way of providing all-private rooms without inordinately increasing costs is to prefabricate standard elements, such as the hygiene unit and nursing alcove. This also increases flexibility by permitting, for example, the hygiene unit to be removed from a patient room or, if desired, relocated as an exterior hall bathroom.

These concepts are intended to provide patient-centered care that too often is lacking in the design of hospital rooms. They can transform the patient room from little more than a bedroom into the focus of health care, fully integrated into the planning and operation of a hospital.

Author: Gordon A. Friesen
Building costs: myths and realities
Brian Bowen

With this issue, P/A publishes the first installment of the Building Cost File, a series that will provide readers with a basic framework for acquiring and using their own data. The introduction discusses the myths and realities of cost data and cost analysis (there is no magic formula, says the author); the second article describes how the P/A File is put together; a third section presents a high school by architects Hoffmann-Saur, together with P/A’s first cost analysis. Future articles will show how this data can be retrieved and recycled from one project to another, regardless of building type, geography or time.

Contributing editors for the Building Cost File are Hanscomb Roy Associates, Inc., whose Chicago office will prepare analyses of several projects each year, adding data to the File. Author of the first two articles is Brian Bowen, vice president of Hanscomb Roy Associates, Inc., Chicago, and a partner of Hanscomb Roy Associates of Canada. A quantity surveyor and construction economist, Bowen is an associate of the Royal Institution of Chartered Surveyors and a member of the American Association of Cost Engineers. In addition to the U.S. and Canada, his firm also operates in Nigeria and maintains affiliations with offices in the United Kingdom, Italy, Greece, Jamaica and Australia.

A great deal of nonsense is written and spoken these days about building costs and estimating. Most of it seems to be designed to tell architects what they want to hear—that the unpleasant problems of estimating and cost control will disappear if they use this computerized estimating system or that costing formula or price book.

I once taught a class of fourth-year architectural students on construction economics. We discussed all kinds of basic fundamentals affecting and influencing building costs, cost control and estimating methods, techniques and so on. As the sessions wore on, it became evident that while they were taking notes and listening politely, they were all waiting patiently for the final revelation, in which the secrets of the cult would be revealed to them. No amount of argument and dis-suasion would shake their faith that such secrets existed. I suppose they just thought I was protecting a vested interest.

In fact, there is a great deal of mysticism about construction costs and estimating, largely fostered by the erratic incon-


stancy of actual costs vs estimates and the legendary ability of some estimators to hit it on the nose, seemingly through intu-itive sixth sense.

How often, too, are the vocabulary and rites of gambling evoked (the office sweepstake on bid results). Others contend that any form of deliberate estimating is useless, citing the wide swings and variances between the bids of those in the industry who are supposed to know better—the contractors and subcontractors. Things are not as arbitrary as they sometimes seem, but then neither is there anything finite or absolute about building costs. As with all successful methods of prediction or forecasting, a great deal depends on reliable methods of experience feedback and recycling.

It is easy to agree with the concept of feedback. The form that the feedback will take is not quite so simple to define, although it must provide the kind of information at the right level and in the right form to enable rational re-use.

Building cost information required by the architect during the design stage will help define the recycled information on costs needed:

a. Proposal stage. Single unit costs based on broad accommodation parameters (cost per apartment, per hospital bed, etc.), and cost/sq ft of gross floor area or cu ft of volume. Conversion factors for transforming net to gross areas would also be useful, together with cost/sq ft of net usable area.

b. Programming stage. In addition to the above, cost/sq ft of functional floor area, i.e., costs related to the functional activities programmed for each space. There is a very clear identification between these functions and costs as the former dictate, in large measure, the basic criteria and parameters which will be followed in the ensuing building design.

c. Conceptual design stage. Broad elemental unit costs for each building subsystem to permit outline cost comparisons between different conceptual solutions and for preparing approximate cost estimates and cost plans.

d. Preliminary design stage. More detailed elemental subsystem costs to permit selection of component and system specifications and for preparing more detailed estimates.

e. Working drawing stage. Composite unit rates for a wide range of construction components, assemblies and systems, for finalization of material and specification selections and for preparation of more defined estimates. Detailed unit rates are often required at this stage, for pre-bid estimates, final cost checks and contract administration during construction.

The demand for this data is met in a variety of ways. Published material concentrates almost exclusively at the detailed unit price level, represented by the plethora of unit price books from the ubiquitous R.S. Means to local publications. A further intrusive sort of pseudo-building cost information is represented by the appraisal manuals, marketed primarily to the appraisal profession but having a steady sale in the construction industry. These profess to provide a solution to the problem of building cost estimating through the use of a kind of "tax form" approach to building up an estimate, which can be very appealing. I am always amused by the way these publications use the ugliest architecture in the country to decorate their manuals. Notwithstanding this, it is quite possible to see in architects’ and engineers’ offices a selection of these books and manuals, which often represents $200 or more in annual subscriptions. Many feel security in numbers or perhaps they figure that surely one of them must be right.

There are, however, serious gaps in the coverage by the
commercial press of the cost information needs of the architectural-engineering professions, principally the form of cost information required at early project stages (a., b., c. and d. above). The reasons mainly involve economics, unavailability of cost data and a lack of imagination. As estimating, cost planning and cost budgeting become more sophisticated during these early stages, a greater demand will be established for the information. (It is of course debatable which comes first, the information or the techniques for using it.) Perhaps, the main deterrent to making this information readily available is the cost of doing so. Any feedback or recycling of actual building costs into forms suitable for reuse during early project stages is bound to be expensive, although one suspects that the cost-benefit ratio is definitely on the positive side.

Translating the data

Data on actual building costs obtained from the bidding and contracting process is in the wrong form and despite the natural reluctance to expend time or energy on feedback of anything, must be translated into the language of design to be of any use. Cost data available from the prime contractor and the subcontractors is in a trade format, the industry is organized along these lines, the specifications are written in this way, construction is handled in these administrative units. Many of the trades are anachronisms, but we still cling to them because we are forced to, or because the prospects of changing them are too formidable. In any case, the trade divisions, which seem so logical for writing specifications, do not provide a sensible or logical framework for cost planning or accumulating cost data for use during the design stage. The cost analysis format recommended by the Uniform Construction Index (which supersedes the old CSI format) may be good as a cross-reference to the specifications and to the construction trades, but it is a forced and unwieldy categorization for costing purposes, especially at early design stages. It is heavily material-oriented, rather than component- or system-oriented, with the possible exception of divisions 15 and 16 (mechanical and electrical). For efficient and effective cost control procedures, a far better framework is required, tailored to fit the language of design. It should be
### 3 Description of elemental categories and units of measurement

<table>
<thead>
<tr>
<th>Element content</th>
<th>Exclusions</th>
<th>Unit of measurement for cost analysis</th>
<th>Element content</th>
<th>Exclusions</th>
<th>Unit of measurement for cost analysis</th>
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<td><strong>100 Foundations</strong></td>
<td></td>
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<td><strong>Element content</strong></td>
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<td><strong>110 Normal foundations</strong></td>
<td>Slab on grade (211)</td>
<td>Sq ft—gross area on plan measured to outside face of perimeter walls or to outer extent of foundations</td>
<td>Construction and expansion joints</td>
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<td></td>
<td>Excavation for basements (120)</td>
<td></td>
<td>Curtain walls and window wall systems</td>
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<td></td>
<td>Basement walls (231)</td>
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<td>Balcony railings and upstands</td>
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<td></td>
<td>Caissons and piles (130)</td>
<td></td>
<td>Exterior finishes to overhangs and projections</td>
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<td></td>
<td>Excavation and backfill for mechanical and electrical services (511 and 521)</td>
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<td>Exterior sunshades</td>
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<tr>
<td><strong>120 Basement excavation</strong></td>
<td>Basement walls (231)</td>
<td>Cu ft—Volume of basement below grade measured to outside face of perimeter walls and underside of grade slab</td>
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<tr>
<td><strong>130 Special foundations</strong></td>
<td>Pile caps (110)</td>
<td>According to special conditions (e.g. piles in Lin. ft)</td>
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<td><strong>200 Building shell</strong></td>
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<td><strong>210 Structure</strong></td>
<td>Final finish to slab (321)</td>
<td>Sq ft—Gross area of slab measured to outside face of perimeter walls</td>
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<td><strong>211 Lowest floor construction</strong></td>
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<td></td>
<td>Slab on grade</td>
<td>Accordingly to special conditions (e.g. piles in Lin. ft)</td>
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<td>Suspended slabs over crawl space</td>
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<td>Fill below slabs</td>
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<td></td>
<td>Waterproofing, skim coat, vapor barriers</td>
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<td>Small sump pits and trenches, sump pump and equipment</td>
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<td><strong>233 Windows</strong></td>
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<td>Window frames including mullions and transoms</td>
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<td>Window working equipment (322)</td>
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<td>Hardware</td>
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<td>Lintels, sills, stools and special surrounds</td>
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<td>Fly screens, storm windows</td>
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<td>Louvers</td>
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<td>Damp-proof courses and caulking</td>
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<td>Painting and finishing</td>
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<tr>
<td><strong>234 Entrances and storefronts</strong></td>
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<td></td>
<td>Exterior doors and entrances</td>
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<td>Glazing</td>
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<td>Overhead doors and shutters</td>
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<td>Storefronts and entrance screens</td>
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<td>Revolving doors</td>
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<td>Hardware and operating devices</td>
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<td>Lintels, sills and special surrounds</td>
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<td>Damp-proof courses and caulking</td>
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</tbody>
</table>

**Note:** Units of measurement vary depending on the specific category and element within the description.
<table>
<thead>
<tr>
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<th>220 Roof finishes</th>
<th>300 Interiors</th>
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<td>230 Exterior cladding</td>
<td>320 Interior finishes</td>
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<td>231 Basement walls</td>
<td>232 Exterior walls above grade</td>
<td>321 Floor finishes</td>
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<td>241 Balcony floor construction</td>
<td>250 Canopies</td>
<td>322 Ceiling finishes</td>
</tr>
<tr>
<td>323 Wall finishes</td>
<td>330 Specialties and equipment</td>
<td>331 Special illumination</td>
</tr>
</tbody>
</table>

### 213 Roof construction
- Columns and interior load-bearing walls
- Beams, joists, rafters, purlins, trusses
- Slabs, decks, boarding
- Canopy construction
- Beams and joists
- Sub-floors, slabs and decks
- Fireproofing
- Base plates and anchor bolts
- Balcony floor construction

### 220 Roof finishes
- Roof finish, insulation, vapor barrier
- Cant strips, flashings, curbs
- Fascias, eaves, barge boards
- Roof-and sky-lights
- Waterproof membranes, patio and terrace paving, traffic toppings
- Roof finish to canopies and overhangs

### 300 Interiors
- 310 Partitions and doors
- 311 Ceiling finishes
- 320 Interior finishes
- 321 Floor finishes
- 330 Specialties and equipment

### 231 Basement walls
- Enclosing walls below grade level to basements
- Water- and damp-proofing, insulation

### 232 Exterior walls above grade
- Exterior wall construction
- Facing materials
- Exterior applied finishes
- Back-up construction and framing
- Insulation and vapor barrier
- Parapet walls and copings
- Damp-proof courses

### Table Columns
- **Column 1**: Description of construction or finishing materials
- **Column 2**: Description of construction or finishing materials
- **Column 3**: Description of construction or finishing materials
- **Column 4**: Description of construction or finishing materials

### Table Rows
- **Row 1**: Applied and suspended ceiling finishes
- **Row 2**: Roof construction
- **Row 3**: Exterior load-bearing walls
- **Row 4**: Ramps
- **Row 5**: Roof finish
- **Row 6**: Insulation, cant, flashings
- **Row 7**: Roof drains, eaves troughs, rain leader
- **Row 8**: Exterior load-bearing walls
- **Row 9**: Parapet walls and copings
- **Row 10**: Roof finish to overhangs
- **Row 11**: Load-bearing walls
- **Row 12**: Interior partitions and non-load-bearing walls
- **Row 13**: Interior glazed partitions and borrowed lights
- **Row 14**: Movable partitions
- **Row 15**: Folding and demountable partitions
- **Row 16**: Toilet and shower partitions
- **Row 17**: Interior doors and frames, including glazing, hardware, painting and finishing
- **Row 18**: Access flooring
- **Row 19**: Toppings
- **Row 20**: Floor finishes (applied and integral)
- **Row 21**: Bases
- **Row 22**: Mat sinkages, frames and mats, floor grilles
- **Row 23**: Expansion joint cover plates
- **Row 24**: Special illuminated ceilings
- **Row 25**: Exterior wall finishes
- **Row 26**: Self-finished partitions

### Key
- **Sf ft-Gross area of**
- **Finished ceilings**
- **Finished walls and partitions**
- **Partitions and walls**
- **Roof**
- **Roof construction**
- **Roof finish**
- **Roofing**
- **Section**
- **Specialties and equipment**
<table>
<thead>
<tr>
<th>Element content</th>
<th>Exclusions</th>
<th>Unit of measurement for cost analysis</th>
<th>Element content</th>
<th>Exclusions</th>
<th>Unit of measurement for cost analysis</th>
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<tbody>
<tr>
<td>331 Specialties and fittings</td>
<td>Items of equipment (332)</td>
<td>Controls and instrumentation</td>
<td>400 Conveying systems</td>
<td>Record costs only on a gross building floor area basis</td>
<td>700 and 800 — Vacant</td>
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<td>Toilet and bath accessories</td>
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<td>Insulation</td>
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<td>Use these open categories to record special items, such as demolition, alterations, renovations</td>
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<td>Access flooring</td>
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<tr>
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<td>Auditorium seating and bleachers</td>
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<tr>
<td>Telephone enclosures</td>
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<td>Report costs only on a gross building area basis and percentage of total cost</td>
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<td>Blinds</td>
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<tr>
<td>332 Equipment</td>
<td>Electronic security equipment (523)</td>
<td>Controls and instrumentation</td>
<td>410 Elevators</td>
<td>Record costs only on a gross building floor area basis</td>
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</tr>
<tr>
<td>All items of equipment not included in 331, such as: kitchen, laundry, library, stage, parking, laboratory, athletic, checkroom, darkroom, vault, window washing, security (non-electronic), etc.</td>
<td></td>
<td>Insulation</td>
<td></td>
<td>Record costs only on a gross building floor area basis</td>
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<tr>
<td>400 Conveying systems</td>
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<tr>
<td>410 Elevators</td>
<td>Hoisting enclosure (212, 213 and 310)</td>
<td>Power transmission</td>
<td>510 Mechanical</td>
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<tr>
<td>Passenger and freight elevators</td>
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<td>Service and distribution</td>
<td>Mechanical and electrical</td>
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<tr>
<td>Dumbwaiters</td>
<td>Power supply (521)</td>
<td>Emergency power generation</td>
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<tr>
<td>420 Moving stairs and walks</td>
<td>Power supply (521)</td>
<td>Controls</td>
<td>520 Electrical</td>
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<td>Escalators</td>
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<td>Service connections (900)</td>
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<td>Moving walks</td>
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<td>Record costs only on a gross building floor area basis</td>
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</table>
based on functional or elemental parts of a building which always substantially perform the same functions, irrespective of the building’s construction. As an example, providing for pedestrian nonmechanical access between different levels in a building is performed by steps and staircases; this is irrespective of whether the construction is metal, concrete or wood. Items forming parts of steps or stairs will always be analyzed under the element “Stairs.”

These items are often called by different names: subsystems, functional components, elements, features, assemblies, etc. It is not important how they are named, but the concept behind them is. Such subsystem categories as are in use tend to vary considerably and examples of just two are given in Table 1—one at a high level of aggregation (State University Construction Fund of New York) and one in more depth (Canadian Institute of Quantity Surveyors). It is hoped that a standard form or list of elements will some day be adopted. The ideal form would be a list based on a hierarchic structure which permits cost aggregations at different levels of detail, according to the information available or to the requirements of the moment. It would also allow for some form of individuality at the detail level, no mean advantage if you have ever tried to achieve a consensus among more than two of the cognoscenti on acceptable elemental categories.

The lists in Table 1 show why conversion of construction trade costs into this form becomes somewhat expensive. The possibilities always exist for asking bids in such a way that cost breakdowns are provided by contractors in a form which permits rapid reshuffling into elemental groups. This is not very popular with contractors, but perhaps once the usefulness of such cost data is proved, bidders may provide better, more open and more frank cost data to architects and owners. Failing all else, with a little time and effort, it is possible to recast traditional contractors’ trade breakdowns into an elemental form, if one is prepared to accept modest error deviations between the parts, if not the whole.

Once costs are recast in this way, the immediate relationship to the design process should be evident. Each building cost analysis should properly provide the cost information required for stages a through d noted above. For comparative purposes, it is necessary and convenient to use a simple yardstick of cost which can be applied to a wide range of building types in various designs and forms of construction. Costs expressed per unit of floor area are satisfactory in practice. In addition, elemental unit costs are important in supplementing the cost/sq ft of floor area. Each element should carry a specific elemental quantity related to that element, i.e., window costs would be expressed as “sq ft of window area” to provide an average unit cost for that particular element. The power provided by extensive numbers of such cost analyses for cost planning and estimating buildings at early design stages should now be clear. The system of analysis implies that cost data accumulated from one building, or building type, may be readily transposed to a different building or type, if the design and performance criteria for each are similar. Thus, a structural system of a given span, for given live loads and height, may be transposed from an office building to a university building.

Of course, any building cost analysis is practically useless unless the specification data and performance criteria which the building and its various systems meet is coupled with cost data. The more statistically oriented this data can be, the bet-
P/A Building Cost File

ter chance there will be of providing correlations between elemental costs obtained from different buildings. Thus, any detailed cost analysis for partition systems should indicate the height, density in relation to floor area, frequency of doors per hundred lineal feet, the db rating, and so on. There is an increasing trend for building components (and complete buildings) to be specified on a performance basis and it is obvious that, while a wide range of actual solutions may exist, the range of economic costs for each solution is relatively narrow. This leads one to the hypothesis that it is not necessary to specify or design a building in detail to be able to establish realistic cost estimates, providing coherent bodies of cost and performance feedback and rationalized cost data are available to the designer and estimator.

What is needed now is a greater interchange and dissemination of building cost information, not do-it-yourself estimating kits; estimating and cost control success comes from a skilled appraisal of many factors unique to the particular project under consideration.

Analyzing building costs

The P/A Building Cost File is the basic framework within which architectural/engineering firms may accumulate and structure their own cost data. It will be supplemented by cost analyses, which will appear from time to time. The first of these analyses appears in this issue and will be used to explain the various features of the building cost information file.

The file is composed of: elemental categories for cost analysis (Table 2); description of elemental categories and units of measurement (Table 3); floor areas and volumes of buildings—rules of measurement (Table 4); building classification code (to be published in October).

There is no commonly accepted elemental or subsystem categorization in use in this country. Therefore, we have developed one of our own, which we believe adequately suits the principles and requirements of a sound building cost information file. The list is built up on a hierarchic basis, providing summaries of costs at different levels of aggregation, depending on the information available for cost analysis, or on the requirements for its use during planning and design.

Shown as Table 2, the list is used in the first building cost analysis (p. 102). Costs are divided into two major groups: building costs (100 to 600) and site development costs (900). The building costs are subdivided into six major cost centers:

- **Foundations** (100), which broadly includes the cost of supporting the building. These costs are separated from the total structural costs, as they vary substantially according to the site conditions, height of building, number of basements, etc.
- **Building shell** (200), the basic superstructure of the building, including the exterior envelope and roofing.
- **Interiors** (300), all architectural interior finishes, partitions, built-ins, specialties and equipment. The costs tend to be influenced primarily by the functional requirements for building space use.
- **Conveying systems** (400), (400), escalators and the like, with costs being primarily dependent on building height.
- **Mechanical and electrical** (500), all mechanical and electrical system installations, except exterior services (900).

**General conditions and profit** (600), includes the general contractor's provisions for general conditions, site overheads and his profit. These costs are often buried in the foundation and structural trades in all or part and should properly be separated for cost analysis purposes.

Each of these main categories is then subdivided into one or two further levels of detail. Items which are included and excluded in each and the units of measurement for elemental quantities, are shown in Table 3. This detailed listing will permit an orderly transfer of trade costs to the elemental format in a consistent fashion and ensure comparability between analyses.

In devising the list, several options were examined. Probably the most fundamental was the wisdom of separating items of special cost, such as special foundations, special equipment, special finishes and extraordinary costs arising due to client requirements or market conditions. After some thought, however, it was decided that these special factors should not be separated, but included in the general costs and noted in the outline building specification. While certain special costs are easy to identify and separate, it has been found that the majority tend to become matters of value judgment by the individual preparing the cost analysis. Every building has its special characteristics, and the ability to compare different buildings through a rational method of cost analysis would be inhibited, it was felt, if too much emphasis was placed on the separation of special costs. These costs are therefore included in the appropriate category and identified if necessary in the building description.

A further level of analysis can readily be added, provided the resources and information are available to permit the necessary cost allocations. It was felt, however, that the depth of analysis in Table 2 represented the most suitable in terms of utility, economy and ease of preparation. The objective has been to create a list of elements that could remain reasonably standard for a wide variety of building types and fulfill all the principles discussed elsewhere.

**Floor areas and volumes**

It is the convention in most countries of the world to use the building floor area and/or volume as a convenient cost yardstick which can be applied to a wide range of building types in various designs and forms of construction. We tend to be familiar and at ease with the resulting unit rates, even if at times they seem to acquire an importance greater than the simplicity of calculation justifies. A comprehensive, standard set of rules for measuring floor areas and volumes is necessary, however, to ensure that the derived unit rates are consistent from project to project. In some countries, for instance, gross floor areas are measured to the inside faces of perimeter walls, rather than to the outside faces as is common here. This could well result in an understatement of floor area of between 5 to 10 percent, with a corresponding effect on any derived unit rate. The AIA has had a simple set of rules for many years, the general intent of which is commonly accepted throughout the industry. The rules are, however, too simple for consistent detailed use. The Canadian Institute of Quantity Surveyors has developed a detailed standard method of measurement of floor areas and volumes, which was drawn upon in formulating the rules in Table 4. These rules follow the intent of the AIA form, but are amplified to
clarify a number of ambiguous issues. With the diversity of building design, it is difficult to establish firm sets of rules; indeed, it would perhaps be unwise to do so. Generally, these should be treated as guidelines and the intent followed as far as possible. Any unusual characteristics relating to a specific building design should be identified and recorded separately; for example, the volume or area of a glassed-in interior courtyard. The net floor areas of buildings provide the opportunity of testing the space use efficiency of different designs and of converting cost to a unit of net usable area. This data becomes particularly useful at very early project stages.

The building volume measurement also provides the opportunity to translate costs into dollars per cu ft, another commonly used rule of thumb. The ratio of gross floor area to volume gives the average floor-to-floor heights, useful in interpreting unit cost data. The gross floor areas, net floor areas and cubic volumes used in the building cost analyses will be calculated according to the rules stated in Table 4.

Building classification code

Again, no satisfactory and commonly accepted system of building classification appears to exist in this country. We have therefore created our own, which will be published in the October issue. This is correlated with the international SFB classification system, modified for North American terminology and building types; the basic category divisions, however, remain the same. Each analysis should be identified according to this coding system for ease of retrieval and filing.

The cost analysis

The building cost analysis of Parkway North Senior High School, p. 96, has been prepared under the rules already described. The analysis features the following columns:

1. Elemental categories and subcategories
2. Quantities of each element
3. Elemental unit rate arrived at by dividing element cost (column 4) by quantity (column 2)
4. Subelement cost
5. Main element total cost
6. and 7. Element cost in $ per sq ft of gross floor area
8. Element cost as percentage of total cost.

The performance data listed is self-explanatory and attempts to give a broad statistical picture of the building. A number of ratios are listed, such as exterior wall area/gross floor area, which will assist in making comparisons between buildings, rationalizing cost differentials and measuring design efficiency. The specification notes are in outline form only, and are limited by the space available, but give a broad idea of the type and quality of construction. The photographs, text and sketch plans should fill out any missing details. Naturally, where analyses are being added to the file separately, then similar detail or additional descriptive material should be added wherever possible. As has been stated before, no building cost analysis is of any value without this additional interpretive data.

Generally, the analyses will be based on bid prices adjusted for changes during construction, regional or time variations, unless otherwise stated. The reader may note that a box in the top right-hand corner of the cost analyses, titled ‘cost index,’ has been left blank. This has been done to allow the user to select, from the many available, the cost index he has found to be the most reliable.

An article in the October issue will explain how the cost information contained within these analyses may be used for cost planning and conceptual cost estimating purposes, including methods for updating and transposing cost data.

These rules are available from the Canadian Institute of Quantity Surveyors, 8 Colborne Street, Toronto 215, Ontario, Canada. Price 50¢.
Drawing on lessons gained from past school commissions and clients, a young firm demonstrates a thorough knowledge of how to use feedback to improve their work.

Along with all the data that tells part of any building story, there is also the other part—the how-it-happened side. Depending on the architect and the client, that aspect might be dull routine or lively and vital. Parkway North Senior High School in St. Louis County, Mo., reflects the vitality of a young architectural firm and outstanding clients. Less than five years ago, Hoffmann/Saur & Associates began a practice with a school job and more than average amounts of talent, enthusiasm and determination. In that short time, encompassing some of the worst years in the profession's history, they have continued to grow. Growth meant more to them than numbers; an important part of their plan was to learn as much as possible from each job, in order to apply improved processes to their next commission.

Among the emphases which have been evolved through this period, several strengths were important to the Parkway North process. From the time of their first school, the architects saw the need to develop an acute awareness of the controlling issues—the user's view of his needs, the political and financial limitations and, most important, the people who would be the school. Since that time, early architect involvement has been stressed, so that the owner and the school staffs would have ample opportunity to be heard, to hear, and to join a team effort. Extensive discussions, enthusiasm and a progressive administration philosophy led to what architect Louis Saur calls "the humanization of the institutional environment—a people plan." Having learned those segments of the process early, the architects could begin from an advanced position in subsequent projects. "Plateaus are reached after successfully completing a certain phase to the point that it can be understood, examined and built on," Saur notes.

The evolution continued, through refinements and a growing feeling for the interaction of people and their interior environment. The firm has now found the time (and has actively sought) to restudy the earlier jobs, and to bring new clients to higher program and thought levels before "actual" design begins. This feedback pattern has, in turn, led to an intensive follow-through program. With adequate precedent, Hoffmann/Saur have been able to show clients tangible results of their methods, while substantiating the value of additional fees for higher benefits.

That, in oversimplified terms, is the story that led to Parkway North. Without the early efforts of both staff and the architects, the educational philosophy, the use range of spaces and the students' feelings might have remained in the all-too-familiar vague form often passed off as "the building program." Because of the feedback on DeMun Elementary and McCluer North High School—both impressive in their own ways—Parkway is a vital thing; it is not just a place where kids are required to put in their time.

Parkway uses a systems approach, in that its components are repetitive and expansion is easily accomplished. Framing for the second floor rests on columns at 30-ft intervals, while trussed arches span 60 ft for lighter roof loading. Upper spaces are high and, in a number of departments, faculty work areas are located on mezzanine platforms within the spaces. Bold color and graphics were used throughout the
building, adding a spirited quality and visual orientation.

In planning terms, the school was designed for full interaction between Parkway’s departments. The main resource area, centrally located on the upper level, is supplemented by department mini-resource centers with teacher work stations, materials and displays. On the lower level, the student commons occupies the central space, openly connected with the guidance area. Students are free to browse in the guidance section, and it is common to see teachers and students in open discussion over a snack in the commons. There are virtually no corridors in the school, and circulation through the spaces helps to break down departmental barriers. Because of fire exit distance requirements, some stairs occur in courtyards which are open on one side at grade level. Main entrances also open onto these courts. Most academic areas are free and flexible, easing change and adaptation to new activity patterns. As in all schools, some spaces have more permanent equipment installations, however, and some are located to isolate noise.

Another important process devised for Parkway was Hoffman/Saur’s furniture and equipment bidding technique. All equipment in the building was bid as a package, partially on performance specifications, making the successful manufacturer a prime contractor. Responsible for all items, the bidders assembled prices for units made by others, as well as for those they proposed. The winning bidder installed the furniture and spent two days showing the school staff how to get the most use of various items. His contract also requires that he return to the school in 12 months to evaluate how well the installation is working, discuss problems and replace any faulty units. The process has given Parkway an extremely

Clear-cut expression of the repetitive concrete building system is visible on the exterior of the building. Infill panels are exposed aggregate cement on metal lath and steel studs. Semi-enclosed courtyards (above) provide visual relief, trees, light and fire egress points for interior spaces.
Project: Parkway North Senior High School, St. Louis County, Mo.
Architect: Hoffmann/Saur & Associates; Louis R. Saur, partner in charge of design; Anthony DeMichele, project manager; Pat Spector, interiors.
Program: school for 2200 students, including a gymnasium and a natatorium.
Site: 38 acres of rolling land located in a middle income residential area. Several sinkholes existed on the site, and the building location was chosen to avoid the extra costs of construction over the sinkholes. Fairly extensive earthwork was done to provide large flat play fields, and to create berms and terraces around parking and athletic fields.
Structural system: poured-in-place reinforced concrete columns rest on drilled piers to bed rock, and foundations are reinforced concrete grade beams. Bay sizes are 20' x 30' on the lower level, 20' x 60' on the upper level. Lower level floors are slabs on grade, upper level floors are poured concrete on dome pans, and concrete bents and gutter beams span the roof bays. Steel joists span between the main bents, supporting metal roof deck and suspended acoustic plaster ceiling. In the gymnasium and swimming pool spaces, steel trusses carry metal acoustic deck.
Mechanical system: high velocity terminal reheat system, and water-cooled condensing system for air-conditioning chillers.
Major materials: exterior, exposed concrete columns, second floor edge beams and bents, with infill panels of exposed aggregate cement plaster on metal lath and steel studs; interior, acoustic plaster ceilings, vinyl wall covering on most walls, with wood paneling in some locations, carpet, vinyl asbestos tile and ceramic tile on the floors.
Costs: includes all site work, equipment and interiors, excludes land costs and fees.
(See cost analysis.)
Photography: Robert Pettus.

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**ORGANIZATION SUCCESS IS DEPENDANT ON 2 IDEAS.**

1. **Psychologically and physically locating people where they are most effective.**
   - School Manager
   - Central Plant
   - Instructional staff
   - Student Manager
   - Guidance staff

2. **Administrative team planning and use of a continuous feedback.**

**THE TEAM APPROACH**

- Teachers
- Special consultants
- Architect
- Engineers
- Student Manager
- Guidance staff
- Central Plant
- School Board
- Community

---

**AN ATTITUDE TOWARD STAFFING**

Different people, trained differently, with different talents, are paid differently to do different tasks.
high level of quality for very reasonable prices.

Sticking to their process, the architects themselves are evaluating the school now that it is in operation. Parkway is not just a building. It is an experience that feels like Hoffmann/Saur is doing things the right way. One of the best measures is the students’ recognition of the architects when they pay one of their visits. One girl, hearing that the firm had been commissioned to do another school in town, asked Lou Saur not to do such a good job the next time. "I don’t want anybody to have as great a school as we have," she pleaded. She will probably be disappointed. [JM]

Because of Parkway’s rich finishes and colors, there is no institutional feeling. Student activity is natural and spaces flow together in all areas except special ones, like the theater and offices (opposite page, bottom).
P/A Building Cost File

P/A building cost analysis

Building type: School – High School

Project: Parkway North Senior High School (p. 69)

Architect: Hoffman/Saur & Associates
Owner: Parkway School District
General contractor: Gamble Construction Co., Inc.

Classification No: 713
Location: St. Louis County, Mo.

Market conditions: fairly depressed
Cost index:

Performance & Specification Data

Areas and Volumes

Gross floor area (GFA): 234,100 sq ft
Net floor area: 175,819 sq ft
Volume: 3,167,883 cu ft
Exterior wall area: 111,949 sq ft
Roof area: 124,984 sq ft

No. of stories above grade: 2
No. of basement levels: 1

Accommodation units: 2200 students

Net/GFA – 0.75:1
Volume/GFA – 13.53:1
Ext. wall/GFA – 0.48:1
Roof/GFA – 0.53:1
Lin ft partitions/GFA – 0.044:1

Ratios

Cost and performance analysis prepared by Hanscomb Roy Associates Inc.

Cost per: cu ft sq ft

Outline Specifications

130 3750 psi conc. 24", 30", 36" casseilles drias a 300' depth
211 3750 psi conc. slab on grade.
212 5000 psi conc. dome pans, slabs, bms, cols and wls. Bay sizes: 20' x 30'.
213 5000 psi conc. cols & bents, brss, cols and metal decking. Bay sizes: 20' x 60'.
220 3-ply built up felt rfg with 1" rigid ins and met. flashings.
231 Conc. wals with cold appl dampproofing.
232 Sandblasted exposed bms, cols and slab edges. Ir. panels of aggregate cement plus on metal lath & st. stud ins, batt ins and ½" insulated drywall.
233 Fixed alum wds mostly with solar glass, tempersolar glass and insulated glass.
234 As 233 but doors.
240 Conc. stairs w/ terrazzo.
310 Steel stud and drywall, wd, drs and h. m. frames.
322 Mostly acoustical, drywall and conc. plt. pls.
323 Mostly drywall painted or with vinyl wall covering, cer tiles, plaster.
331 Mirrors, lockers and locker rm benches, bleachers, toilet acc., millwork, wall shelves, int. signs, dvt. stg, transformer screen, stage drapes, vert blinds & wdl shades.
332 Industrial Arts dust collection system and exhaust food service equip. whirlpool bath, Gym dividers, scoreboards, swim pool equip, basketball backstops.
511 C.I. and copper piping, standard for this building by contract.
531 HVAC system and exhaust food service equip. whirlpool bath, Gym dividers, scoreboards, swim pool equip, basketball backstops.
512 Fire extinguishers & sprinklers.
521-3 Includes p.a., fire alarm, telephone, master antenna ext. light, program clock and fire det. syst.
522 Lighting.
523 Special systems.

Cost and performance analysis prepared by Hanscomb Roy Associates Inc.

Analysis No. 1

Cost per:

* Assumed corridors deducted from open spaces.
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handsome
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McDonald's Plaza, Oak Brook, Illinois

Powers Northtown, Minneapolis
Architect: Ralph B. Shimer, AIA Architect

Greenacre Park, New York City
Architect: Sasaki, Dawson, DeMay
Consulting Architect: Goldstone, Dearborn & Hinz
Planetarium, Houston Museum of Natural Science
Architect: Pierce, Goodwin & Flanagan

CNA Building, Los Angeles
Architect: Langdon & Wilson
Landscape Architect: Emmet L. Wemple, ASLA

Bank of America Domestic Branch, San Francisco
Architects: Wurster, Bernardi & Emmons, Inc., Skidmore, Owings & Merrill
Environmental engineering

Energy crisis

Clarence Tsung

Forms and availability of conventional energy sources are being considered here as well as conversion methods for these and others still in the experimental stage.

For the first time in history, the United States faces an energy crisis. The use of energy is outstripping production, and as a result, we have gone from an era of abundant, cheap energy to a period of serious shortages and rising costs. This article examines the availability and forms of energy sources and conversion methods for the near future. In a field so open to major technological development, forecasts are particularly difficult. However, we can set down trends that seem obvious and point to a number of broad possibilities.

Conventional energy sources are coal, petroleum, natural gas, water power, and those forms of nuclear energy release already so well developed that they can no longer be considered unconventional.

Coal. Of all the fossil fuels, coal is by far the most abundant but it offers special problems. It is the worst offender for producing sulphur compounds, thus increasing environmental pollution. Strip-mining regulations, transportation facilities, manpower availability and economic justification are other considerations.

Petroleum. The supply of this fuel, on which the United States' 110 million motor vehicles depend almost totally, is much less abundant. Forecasts of supply and demand indicate that present world oil reserves will last to maybe the middle of the next century, and domestic reserves will be exhausted much sooner than that.

Natural gas. It is the most convenient and cleanest fossil fuel, provides a third of the nation's total energy and a quarter of its electricity, and has the least detrimental effect on our present environment. An increasing percentage of U.S. natural gas requirements are being met by the importation of liquefied natural gas (LNG) which occupies less than 0.2 percent of its gaseous volume. Recently, however, public concern about the safety of LNG storage tanks will certainly delay such installations. And, since most natural gas discoveries are associated with oil fields, the likelihood of enormous findings is small.

Water power. The best hydroelectric sites have already been developed, and future development will not match rising energy demand. The proportion of energy supplied by hydroelectric installations will slowly decrease.

Nuclear energy. The problems associated with nuclear plants are the production of large amounts of waste heat, the difficulty in safeguarding against leakage of radiation from the reactors, and disposing of the radioactive waste the process produces. Furthermore, there is also a shortage of uranium. This low-cost nuclear fuel will probably be exhausted by the end of the century if we continue to build the type of conventional (water-cooled) nuclear plants operating today. One pound of uranium, about the size of a golf ball, stores as much energy as 15 carloads of coal. But in the water-cooled reactor, barely one percent of that energy can be tapped.

Breeder reactor. Development of "liquid-metal fast-breeder reactors" offers our best hope for power in the future. Briefly, this type of reactor "creates" more fuel than it burns via its chemical process of converting uranium to plutonium. If breeder reactors become popular, our uranium supply will be increased a hundredfold! Breeders produce less heat loss and less radioactive waste than conventional nuclear reactors, and since they operate at a much lower pressure, the chance of leakage of radioactive gas is less.

Many new experimental technologies offer the potential for better use of existing energy resources in the distant future, although it is unlikely that any of these processes will be developed sufficiently to alleviate the energy shortage in this century. These new technologies are:

Fuel cells. These cells, used in the Apollo spacecraft, generate power from fossil fuels at higher efficiency than with conventional methods. Disadvantages are that since each single fuel-cell element generates about 1 v., cells have to be "stacked" to produce the voltage ratings and power levels required. Also, associated inverters are required to convert dc to ac for commercial use.

Solar energy. Solar engines that operate on steam produced from solar energy are most useful in areas such as Arizona and Nevada, which have little annual precipitation and an abundance of sunlight. Using solid-state technology it should be possible to design solar engines without much energy loss, and electric energy could be produced with reasonably high efficiency. The solar energy is, of course, pollution free.

Geothermal energy. Hot, dry rock from geothermal sources below the surface of the earth can possibly heat water from underground aquifers. The energy could be used to drive turbines, after which the water would go back into the earth to be reheated.

Solid waste. The solid residue from our affluent society is not solid waste; it is a wasted solid. Although there are technical and economic difficulties, and despite the fact that this material cannot furnish a major portion of our energy needs, it definitely represents a small, low-sulfur portion of our energy resources.

Magnetohydrodynamics (MHD). This potential source uses the principle of ionization of superheated (6500 F) gasses. It is claimed that the efficiency of MHD is 1½ times that of a conventional fossil-fuel power plant.

Author: Clarence Tsung is an Associate with Syska & Hennessy, engineers, New York and Washington, D.C.
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CSI—25 years of evolution

Harold J. Rosen, PE, FCSI

Many changes in the field of specifications writing have been wrought through the Construction Specifications Institute. Its formation and evolution as well as its accomplishments are discussed.

In 1948, a group of federal government specifications writers together with some far-sighted trade association members initiated the Construction Specifications Institute. Its goals were to establish a clearinghouse so that similarly engaged individuals could have a forum to express themselves and an opportunity to exchange information.

Until the formation of CSI, individual articles on specifications writing and materials appeared sporadically in some periodicals but with no regularity, no plan of action and no concerted effort. Even within major cities, specifiers never knew their peers, or exchanged information with them. The experience, knowledge and expertise that an individual gleaned from daily involvement in materials failures or successes remained largely unshared.

The emergence of CSI with its early limited goals provided a forum that has led to the development of internationally used standards. One of the early by-products of CSI was the publication, Construction Specifier. This periodical permitted some of the major spokesmen for specifications an opportunity to set forth their philosophies and views so that others could benefit from their experience. As the organization grew, its goals expanded. Major technical committees were formed, staffed with some of the most prominent names in the field of specifications writing.

The first major breakthrough came in 1964 when CSI promulgated the CSI Format. This standard was three to four years in the making and was forged by Rolf Retz with input from CSI members and chapters. The CSI Format is a standard that establishes the organization of specifications into 16 major divisions with corresponding technical sections assigned to specific divisions. This standard has achieved universal acceptance by private and public agencies as well as foreign design professionals.

In 1965, Spec-Data was conceived. This document, produced in cooperation with the Producers Council, provides for the standardization of manufacturers' literature. It establishes a format for the presentation of information in a coherent, organized manner so that specifiers can easily assess and evaluate manufacturers' products.

In 1966, CSI in cooperation with AIA, AGC and others evolved the Uniform System (updated in 1972 as the Uniform Construction Index, see P/A, Apr., 1973, p. 122) which correlates specifications, manufacturers' literature and contractors' estimates by means of a common matrix identified by the technical section as the common denominator. In 1969, CSI produced still another major document, the three-part technical section. This is a standard method for presenting information within the technical section.

In the early 1960s, CSI established a technical review board at the Institute level, now known as the technical documents committee, to encourage and foster the development of technical documents at chapter level. Initially this device enabled neophyte specifiers to get together with industry representatives to develop technical documents on specific subjects. It has been refined over the years so that the process is developing more creditable documents that can be used as reference source material.

In 1970, through Stanford Research Institute, CSI developed a software computer program, COMSPEC, designed to handle automated or computerized specifications. Now in 1973, the AIA's PSAE master specifications are being made available to the COMSPEC program so that specifiers without master specifications of their own will have access to a fully integrated computerized master specification program. While other programs have been developed, those enumerated have been milestones which were not envisioned by the early founders of CSI.

The world of building technology grows apace. New materials, new construction techniques and systems building place an even larger responsibility and burden on the specifier. To forecast what the role of CSI will be 25 years hence would be as difficult for us today as it would have been for the founders 25 years ago to state with any degree of certainty what the current role of CSI would be.

However certain things do come to mind for the foreseeable future: Master Specifications will be developed much more fully than they are today as an increasing number of firms begin to use computerized specifications. Performance specifications as applied to systems building will need much more study and evaluation. A system for the evaluation of new building products will be required so that the architect who elects to use them will be less exposed to liability. More emphasis on the education of individuals versed in materials engineering and the science of materials is essential to develop a cadre of personnel who will spend more time in materials research than in actual specification writing.

Author: Harold J. Rosen is Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.
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[continued on page 118]
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Summer/Fall 1973
Progressive Architecture
buildings, lighting, parks, interior

August
Outstanding examples of architect-client collaboration. Richland Jr. College, Dallas, shows great finesse in sitting, planning and structure. Designed by The Oglesby Group and Perkins & Will. Olivetti, the corporate patron: how and why one of the world's staunchest patrons of design maintains its standards. Unity House: main building for a labor union resort, by Prentice & Chan. Ohlhausen shows imaginative form as a setting for recreation and ritual.

Interior design: The diverse work of Charles and Ray Eames, discussed by their long-time friend, Esther McCoy.

September
Lighting: a broad survey of all considerations that go into lighting design today - covering interior and exterior situations, natural and artificial sources, potentials of the latest hardware - this issue will be one to keep as a reference for years to come.

The focus will be on the lighting designers - their ideas, their experiences, their practices - with a portfolio of projects that show how theory is put to practice. The state of the art: P/A surveyed more than 500 architects to learn how they feel about lighting design, electrical engineering, footcandles, the IES and the lighting designers. Some answers were predictable, some surprising.

Sources: A review of all available lamps, with their technical qualities translated into actual performance characteristics. Just for fun. What's happened to the plebeian "eats" sign of yesterday? If it's neon, it's sculpture.

October
Parkitecture: An exploration of the architect's increasing involvement with parks at all scales - in programming, locating and planning them as well as designing structures for them.

The architect in the park: where the architect fits into park programs, as seen by some who do. National Park Service: profile of one of the nation's biggest design and planning clients, how it operates and what new tasks it is taking on. The park in the city: a look at patterns of use and maintenance in some of Frederick Law Olmsted's great parks in Louisville. Parks portfolio: nationwide survey of innovative and instructive efforts by architects and landscape architects.

Building Cost Information: second in the series initiated in July, this analysis will complement a full architectural coverage of the P/A-award-winning JFK Recreation Center in Cleveland, by architects Whitley-Whitley Inc.

November
Interiors: The issue will be built on the premise that interior design is (or should be) architecture - not just the after-the-fact treatment of predetermined spaces.
Editorial plans include discussions of the professional roles, education of interior designers, and a historical comparison of space concepts. A portfolio of current work will illustrate new attitudes towards space-shaping and exposure of mechanical elements. P/A profile will explore the broad-spectrum activities of Los Angeles designer Deborah Susman. A trip through a remarkable owner-designed hotel will challenge professional preconceptions.

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Circle 109 on reader service card

Emergency door alarm lock. Features include: releases with less than 15 lbs pressure on crossbar; has a combination of a deadlocking latchbolt to re-latch door on each closing for fire safety, plus a 1 in. throw, saw-resistant 2 in. deadbolt for maximum after-hours security; has a built-in battery-powered twin horn alarm that sounds off whenever the lock's panic bar is pushed and the device is armed to deter unwanted use of the exit. It is offered in anodized aluminum, duronatic medium bronze and dull stainless steel. Suitable for hospitals, schools, libraries. Alarm Lock Corporation.

Circle 110 on reader service card

Lexan 303. A polycarbonate resin for high-intensity-discharge lighting applications, it was designed as a diffuser and shield material. It is said to be vandal- and heat-resistant, have great impact strength, excellent transparency, be self-extinguishing when tested in accordance with UL subject 94, and have a HID service life eight times greater than that of previous UV stabilized grades. General Electric Company.

Circle 111 on reader service card

Noise control. Combining Soundblox units with a facing of two-in.-thick glass fiber and a perforated metal covering is designed to provide a durable and incombustible wall treatment with high sound absorption. Said to have a noise reduction coefficient of .90, it uses just 2 in. of space beyond the structural wall itself. The Proudfoot Company, Inc.

Circle 112 on reader service card

High intensity lighting system for patient examination are gimble ring mounted with dual axis directional control, are safe and easy to adjust. They are designed for use in pairs with patient room fluorescent over-bed lights to provide a range of 100-900 fc. Uses 12 v. 50 w. PAR 36 spot lamps. The Miller Company.

Circle 113 on reader service card

Nevamar. A collection of high-pressure plastic laminates has added two additional patterns. One, Designer's Teak, is a woodgrain design; the other, Natural Cork, has a surface veneer of real cork. Both are suitable for use on cabinets, furniture, wall panels, fixtures, casegoods. Offered in 4'x8' and 4'x10' sheet sizes. Exxon Chemical Company, U.S.A.

Circle 114 on reader service card

Multiple dwelling TV. One indoor push-pull amplifier provides 10 to 1000 units with cable television signals and is suited for motel/hotel, apartment, hospital or department store use. It operates on 117 Vac or cable power and offers a bandpass of 50 to 270 MHz with a 300 MHz top bandpass option. According to maker, this equals 33 to 37 TV channels plus FM signals to the radio. C-COR Electronics.

Circle 115 on reader service card

[continued on page 122]
Visitors mean a lot to Las Vegas. So the McCarran Airport people decided to roll out the welcome mat—“Jupiter Flamegard” carpeting by Commercial Carpet Corporation.

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There are 32 comparative new town plans so you can see first-hand how new towns evolved—plans of Philadelphia in 1865 and New Orleans in 1722 to Welfare Island and Soul City, North Carolina in 1972.

And the AIA included their National Policy Task Force Report so you can find out verbatim how lethal they feel America's architectural environment is, and what they propose to do about it.

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Products continued from page 118

**Literature**

**Surgical lighting systems.** Centra 360 light system, rotating track system, dual track system, single-source surgical lights, dual surgical lights with X-ray equipment, the modular general lighting system and optional accessories are shown in color catalog. American Sterilizer Company. _Circle 116 on reader service card_

**Hospital systems.** Intensive care and general patient-room lighting systems catalog illustrates systems for new hospital construction as well as remodeling projects. One brochure contains details and general specifications on modular nurse monitoring station for use in the ICU and CCU areas of the hospital. Brochure and specification sheets with roughing-in drawings and wiring schematics detail closed-circuit audio/visual alarms designed to monitor hospital medical gas and vacuum pipeline systems. Ohio Medical Products. _Circle 117 on reader service card_

**Hospital cart conveyor** brochure outlines principles of automated supply distribution and has detailed description of equipment and procedures of specific installation. System is designed expressly for hospitals, meeting requirements of cleanliness and low noise levels. Rapistan Incorporated. _Circle 118 on reader service card_

**Health care equipment** systems planning and interior design services in connection with patient rooms, ICUs, CCUs, emergency rooms, surgical suites and patient and materials handling systems are explained in 20-page booklet. Company provides counseling on details involved in planning, evaluating, specifying, ordering, delivering and installing. American Health Facilities, Inc. _Circle 119 on reader service card_

**Cubicle hardware** and intravenous feeding systems are described in illustrated brochure which contains information and specification data on in-ceiling, to-ceiling and dropped-from-ceiling cubicle track mountings. Tracks and fittings are shown in full detail, including typical bills of materials for a variety of two-bed applications. Grant Hardware Company. _Circle 120 on reader service card_

**Flood proofing.** Booklet describes measures to be taken in designing new buildings as well as structural changes which are possible to protect existing facilities against flood damage. It discusses how to determine flood potential of a construction site, new building site selection criteria within a flood plain, site engineering considerations and various structural design features needed to protect a building. Of interest to architects, contractors, city managers. The Hartford. _Circle 121 on reader service card_

**Office furniture.** A 24-page color brochure illustrates the Tempo 8 line of wood office furniture. Coordinated series includes executive and secretarial desks, credenzas, occasional tables, chairs, sofas, settees, casual seating and club chairs. Stow/Davis. _Circle 122 on reader service card_
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Circle No. 322, on Reader Service Card
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**Design Awareness**

*Design Awareness* by Robert Sommer. 
San Francisco; Rinehart Press, 1972, 160 pp., 23 illus., $5.95.

Reviewed by William C. Miller, assistant professor of architecture at the University of Arizona, Tucson.

Today there is a growing interest in using building evaluation research as an aid to understanding the effects of built form upon its inhabitants, in using behavioral data as input into the design process, and in having users participate in design decision-making. This concern for introducing behavioral and user input into the design process has created a group of disciplines, deeply involved in the study of man-environment relationships. In *Personal Space*, Robert Sommer was among the first to attempt to make designers aware of the necessity for a behavioral basis and approach in design. Now, in *Design Awareness*, he deals with the more specific problem of "the relationship between the people who design and manage spaces and those who use them."

This increasing interest in behavioral research has brought a flood of new literature into the stream of architectural consciousness. Much of it, however well intended, is of marginal use to the designer actively engaged in the design task. The general objectives and intentions of the researcher are different from those of the designer; the type and scope of much current research suffers from concerns and findings that are too specific to be of general use to the designer. This situation has created a gulf between researcher and designer, which is further accentuated by the researcher's insistence that the designer take on the responsibility for assimilating and then applying research findings to specific design tasks, and by the inability and refusal of the researcher to predict behavioral responses in proposed projects.

Too few designers and researchers are actively engaged in developing usable mechanisms that would insure the implementation of behavioral input into the design process. Sommer, as a result of his consulting activities on architectural projects, realizes this situation and attempts to overcome some of the existing problems. He consciously avoids the designer versus researcher polemic by focusing on the more important problem, the user. He states, "People want a voice in the design and use of their buildings, streets, parks and cities. They want to be more than spectators and consumers in a world designed and managed by remote design professionals."

The first part of *Design Awareness*, "Social Design," is concerned with environmental consumers and their role as decision-makers in the design and management of their environments. The need for an individual to participate in the creation of his environment, to exert influence over it, and to manifest "self" within it, is essential and necessary at all scales of the environment. Sommer feels that occurrences such as the People's Park movement in Berkeley, various forms of people's art, environmental responses made by people living in large housing projects, personalization of the single-family dwelling in suburbia, and other such manifestations represent an ad hoc form of user response to his environment. Some paradigms, however, for user participation and decision-making in the design process are starting to appear. The advocate architect and planner working in Community Design Centers on projects for minority or low-income groups, the formation of environmental workshops to attack a specific design task or environmental problem, and the upsurge of environmental awareness programs all represent instances where users participate in the design process. These are small but essential steps in developing the necessary institutions and processes for insuring user participation in the design process.

Sommer realizes, however, that mere making the decision-making process accessible to the user is not sufficient: "You must know how to use them and also the consequences of exercising them. The point is in making people aware of the environment if they have no way of influencing it. Participation without awareness produces ignorance and ugliness; awareness without participation lends to frustration and alienation."

The second part of *Design Awareness*, "Evaluation," deals with methods for evaluating buildings and ways of using this information to design and build better environments. The purpose of building evaluation is to produce a better built product—functionally, technically and esthetically. As Sommer states, "An occasional mismatch between building and occupant is tolerable; the present situation of successive replications of bad situations certainly is not." A comprehensive building evaluation would include evaluations of the social and behavioral consequences of the built form, building construction systems and material selections, economic considerations, space allocations and aesthetic qualities.

Sommer cites the example of the "Volkswagen Model": as both a reason for and an approach to building evaluation; it represents, he notes, a product that was developed through an evolutionary process consisting of an evaluation, feedback and redesign cycle. Each new VW is a refinement and further development of the previous model; or as the VW ad states: "We don't have to start from scratch each year." Re-inventing the wheel on each building project will further neither the state-of-the-art nor the overall quality of the built environment. This is especially important when considering today's large number of institutionally generated building types: housing projects, schools, offices, mental and physical health care facilities, correctional facilities and so on. It becomes increasingly important that every new project develops from the knowledge (continued on page 136)
the new hospital room:

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The Tremco Manufacturing Company, Cleveland, Ohio 44104. Toronto, Ontario.
and lessons gained from preceding projects. As Sommer so aptly states, "The feedback process from existing structures must be developed and institutionalized; no design should exist without evaluation, no evaluation without redesign."

The chapter entitled "The New Evaluator Cookbook" is one of the most important in the book; it tells how to go about a building evaluation. As Sommer states, "This is a cookbook rather than a theory of food preference—designers are often advised to go back and evaluate their work, but no one tells them how it is done." Sommer is one of the first to provide a selection of mechanisms and methods for building evaluations. He includes sample question types to ask, evaluation forms that can be used and helpful hints and warnings concerning pitfalls that can occur during evaluation. All in all, it is a rather honest, matter-of-fact and pragmatic approach to the evaluation process. He has eliminated the mystique.

Sommer has made important contributions in Design Awareness. He accurately sensed the immediate need for a volume of this type and provided it: a cookbook outlining ways and means instead of another compendium of research findings. Provided with the necessary mechanisms for conducting building evaluations and encouraging user participation in the design process, more people can now be actively engaged in these areas. One hopes this will create transformations within the design and environmental research fields: transformations leading to the ultimate goal of providing better habitations for people.

Documents
[The documents listed below are available from the associations and agencies cited. Requests for such documents should be directed accordingly.]


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Architect: NCARB, 14 years diverse experience all phases of architectural practice. Strong design background. Extensive project architect, project manager, programming, client relations experience with industrial, government, housing, educational and corporate clients. Seeking challenging opportunity to fully utilize abilities. Resume upon request. Reply to Box #1361-552, Progressive Architecture.

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