Progressive Architecture

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Canada: a view from the south

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Letters from readers

Views

PRT

Articles such as Mr. Lerch's (P/A June 1972, p. 91) promoting PRT (personal rapid transit) are seriously hampering current efforts to deal with the transportation crisis in our metropolitan areas. The crisis is now. In fact, it has been with us for at least 20 years. A hypothetical future technology contributes nothing to a present solution and only deludes us into supposing that there is merit in waiting.

But waiting for what? A critical examination of the PRT concept quite apart from its technology reveals its inherent bankruptcy. For we now have a fully developed and functioning personal rapid transit system—the private motorcar. It takes us from our origin to our destination in isolated comfort, and when we wish—more or less. The routes have all, by and large, been built. Because each personal module is self-powered and has a steering wheel, the route can be infinitely varied to fit variable circumstances—if we can anticipate them in the form of traffic jams, accidents, etc. PRT is an attempt to duplicate this.

But we are painfully aware of the enormous social and economic costs of this present personal transit system—so aware that they need not be repeated here. One only of the more serious, air pollution, would be mitigated by PRT, or any other public transit system except buses. All other social and economic costs would be greater:

1 The money cost would be enormous. Remember that the PRT concept is of individual transit from origin to destination. Allowing for a necessary modification to a maximum walking distance of, say, eight blocks to the nearest station, grid intervals could not be less than the distance between the old streetcar lines, but double

the length because of the grid pattern. A city that once had 500 miles of streetcar lines would need, for the same area, 1000 miles of PRT. And then, since almost all postwar growth has been suburban and, because of the automobile, diffuse, PRT lines to serve this would have to be four to eight times the inner-city ratio of length to population. For the Twin Cities, a thousand miles for the area once served by the 500 miles of streetcar lines, plus 4000 miles for the equivalent population spread out in the suburbs, indicates a minimum feasible system of 5000 miles. And this is already not quite personal origin to personal destination but station-to-station.

Again, because of the personal emphasis, the number of modules would have to approximate that of the displaced automobiles. Prof. J. Edward Anderson, a leading PRT proponent in Minnesota, suggests that a Twin Cities system would need about 30,000 modules. These, with their computer controls and sophisticated safety devices, would be far more expensive than the equivalent auto. Ford estimates that its 8- to 12-passenger vehicle would cost \$75,000, and that any smaller capacity could not be significantly less. 2 A social and economic cost would be its unreliability, which would render a fullfledged PRT system unpopular if not unusable. Any tracked system can be blocked by a single stalled vehicle, and the more components there are the greater the chances of failure. We are all familiar with the increasing rate of telephone failures. But we simply dial the number again and. usually, get through. But locked in our PRT module we would have no choice but to proceed to our "wrong number" and from there try again. Or, if there were provision in each cab for corrections and changes, it

would become responsive to whimsical and irresponsible behavior, with even greater chaos resulting.

Also, much is made of the lightweight (for lower cost) of PRT systems compared to conventional modes. But lightweight also means flimsiness. A VW is flimsier than a Cadillac is flimsier than a bus is flimsier than a train. Excessive lightness would make the system vulnerable to wind and snow, to rapid deterioration and costly maintenance, and add to its unreliability. 3 The alleged personal security afforded by the personal vehicle would be either undesirable or illusory. One person could, and probably would, preempt a module. The resulting frustrations would probably make each station a battleground. If, on the other hand, controls were devised to admit others dialing the same destination, there would be no avoiding the occasional intimate sequestration with a drunk or a psychopath or a criminal.

4 The pre-emptive character of the "personal" concept leads also to inflexibility. Rush-hour capacity would not increase, simply because each unit would be preempted as usual.

5 The greatest cost of all, perhaps, would be in its failure to exercise any formative role in determining future growth patterns. Dedicated as the concept is to serving the present diffusion of residence and employment, it could continue only to follow in the wake of the automobile with its continuing erosion of old residential and employment areas and dispersion of new. If we wish to concentrate residential and employment development—mainline, high-volume systems are indicated.

In short, the PRT concept is an unsubstantial will-o'-the-wisp. An inherently un-[continued on page 10]



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workable technology produced at a cost exceeding the national debt is not a solution but a problem. Beneficial and realistic public transit systems are desperately needed now, if our cities are again to become attractive and healthy. *Progressive Architecture* should have been making a positive contribution. Will you try again? *Edward V. Lofstrom Minneapolis, Minn.*

The following is Mr. Lerch's reply

Mr. Lofstrom's comments on the value of Personal Rapid Transit (PRT) generally are a restatement of the severe transportation problems facing American cities today, but he fails to present any solution. It is quite possible that another solution might be more efficient than PRT, but to date no solution has been proposed which has not been tried out and found wanting.

Mr. Lofstrom seems to have missed an essential point in my article. PRT is not, and never was, intended to be a substitute for all forms of urban transit. Certainly, the elimination of the personal auto, the bus or the railroad is not foreseen. In fact, it was made quite clear in the article that PRT is a substantial part of an integrated transportation system. The significance of a planned, integrated transportation system is that the system can be applied during the urban development program for full integration, and simultaneously can be incorporated into urban areas already developed where the existing transport system has proved to be inadequate.

Probably the most serious shortcoming in Mr. Lofstrom's letter is the charge that PRT would fail "to exercise any formative role in determining future growth patterns." The idea that PRT would "continue only in the wake of the automobile with its continuing erosion of old residential and employment areas and dispersion of new" is flatly contradicted by the new urban and transportation agencies now planning in concert for new areas and better transportation with much less reliance on the automobile. Such agencies as the Regional Transportation District in Denver, Colo, are planning massive, integrated developments in terms of communities and transport, wherein a total, integrated transportation system is a primary planning factor, using many modes of transportnot just one.

Again, Mr. Lofstrom's use and choice of figures seem to me to demonstrate the

negative approach that has left us where we are with congestion, pollution, parking problems and the most devastating of all problems-the piecemeal approach to solving a total problem. The money cost is substantial, but so is the magnitude of the problem. This does not validate his claim, however, that the number of PRT modules would have to approximate that of the displaced automobiles. In just one instance, the modules are multi-passenger, not the single-driver-single-automobile circumstance which is clogging the inner-city today. Also, the repetitive runs of the same PRT module will keep many automobiles out of the city because of the service value.

To contest the PRT system because of its unreliability is to testify to a lack of knowledge of the state of the art at present. The same adverse reaction to progress based on safety and flimsiness indicates that much of the information available to the construction world in general and demonstrated in maximum detail at the Transpo Exhibit in Dulles Airport in May–June, 1972 has not been analyzed.

The keynote of this new system is Gradualism, i.e., a carefully phased plan of integrated systems over a period of time. Although PRT will inevitably bring a new dimension to existing transit systems, much can be done now to improve existing facilities. PRT is a supplement to, not a complete replacement of, our current transport systems. We are going to need all the transportation capability-new and old-we can muster to meet the challenge of growth in our metropolitan areas. For at least the near future, a combination of improved rail and bus transit together with the automobile will be a major part of a complete urban transit system. The immediate needs of urban transit must be approached gradually, while making the transition to the approaching PRT.

It is quite probable that PRT will be able to provide a balanced transportation system in the future featuring three classes of service: The privately owned automobile or equivalent for extended intercity travel, e.g., short or long duration vacations, family movements, and the like; The public mass-transit (bus and rail) system during the various stages of Gradualism; Public, personal rapid service system (PRT, Dial-a-Bus, Taxi) as it becomes the ultimate intracity system.

In summary, the reasons—as advanced by Mr. Lofstrom—why PRT should be summarily set aside do not bear up under reflection and scrutiny. Acknowledging that the objections were raised with the best of intentions, one has to admit that at least PRT is a solution. *C.W. Lerch, President Lerch, Bates & Associates Inc.*

Fire protection

Much of your July article on the Children's Hospital, Washington, D.C., "New Rules for the Game," (p. 84) was devoted to the fire safety plan for the building. I certainly appreciate this since I was the Fire Safety Consultant that developed the plan. However, there were two specific comments in the article that require some clarification.

The first is the statement that the "steel will not be fireproofed." Actually, the basic structure will classify as a "Class A" fire resistive building under the District of Columbia building code. The interstitial area is designed with the floor and ceiling assembly concept of fire resistance that does not require trusses to be directly covered with a fire proofing material. The fire rated ceiling above the use level, as a component of the total assembly, permits the trusses to be uncoated.

The other comment that requires clarification is that "wired glass will kill kids." Taken out of context this is somewhat of a distortion. Here is the story in perspective.

Corridor walls traditionally have been required to be one-hour fire rated. Large wire glass panels have traditionally been used in such corridor walls. This one-hour corridor wall is part of a concept which implies that patients can ride out a one-hour fire in the corridor by closing the doors to their rooms and remaining in their rooms. But when we look at the test procedures for wired glass we find that the tests were developed right after the turn of the century and have far more meaning from a property protection viewpoint than they do from a life safety viewpoint.

Let us look at the theory that a fire of one hour duration raging in a corridor will not destroy the patient in his room. Within two minutes the standard fire temperatures will begin to crack wire glass and permit combustion gases to pass into the room. Further, radiant energy will pass directly through the glass and ignite nearby combustibles within the room, possibly within minutes. Combustibles up to 30 in. and more distant can be readily ignited by radiant energy passing through glass. The tests confirm this.

Therefore, wired glass panels serving as a one-hour barrier between a human and a raging fire have little validity. The test procedures for wired glass, established in [continued on page 16]





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Views continued from page 10

1903, were set up for property protection, not life protection. Wired glass will stop a fire provided there is no combustible material near the wall to be ignited by the radiant energy. No test program has ever been established to relate a fire partition (containing glass) to a hospital patient room where humans would be exposed to combustion gases passing through, and where combustibles within the room will be directly exposed to the radiant energy.

Accordingly, our fire safety plan is to substitute complete sprinkler protection for the wired glass partitions. Note that if the fire suppression system promptly and automatically controls the fire, a glass partition can prevent smoke spreading into the patient room. Our concept is to prevent a 40-minute or one-hour fire from occurring, and to consider the glass partition nothing more than a smoke partition that will receive very light fire exposure, if any.

Within these new parameters we prefer tempered glass to wired glass for three reasons: it has many times the strength of either plate glass or wired glass (wired glass is basically plate glass and will produce sharp edges when broken). It will resist heat in excess of 500 F which gives the glass structural integrity until the sprinkler opens: The third reason is improved appearance. I emphasize that our concept is not to substitute tempered glass for wired glass; it is to substitute a complete sprinkler system for the non-valid one-hour corridor partition. Once this is accomplished, tempered glass makes sense within the framework of a smoke partition protected by a complete sprinkler system.

I hope this letter clarifies the comments made in your article. There is much more to the total fire safety plan and, as implied in your article, there remain some matters to be resolved with HEW. Richard M. Patton, President Patton Fire Protection & Research Inc. Tucson, Ariz.

Enough said

Bravo to you and your staff for creating a truly wonderful and informative magazine. Progressive Architecture is really a great aid to future architects. It not only informs the student but shows him current trends in the architectural world around him. I also think the News report is the best section in your magazine-it intrigues me. Rita Sisson Sarasota, Fla.

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 diference. 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.

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

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.



How does the owner benefit by renewing 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 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 guaranteetype 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.



Does your on-the-job inspection insure proper application and adherence to specifications?

While no inspection can include every minute of time for every workman and every square foot of the roof during application, the purpose of our inspections is to assist the contractor in making sure the roof is being applied as specified. An error can occur on any roof, no matter how diligent the inspector. Under our program, chances for these errors are minimized in two ways: (1) the two-party inspections, ours and the contractor's, (2) the fact that only Barrett Approved Roofing Contractors are authorized to apply our guaranteed roofs. Contractors must meet the highest industry standards to qualify for approval.



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.



(SEE PRECEDING PAGES)

The Barrett Roof Inspection & Service Program. 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.

Done

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" werw written before the new program was developed, and Barrett Approved Roofing Contractors must be kept in position to bid these jobs.

FREE

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 determing 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?

	School 2 floors 100 MSF	Hospital 6 floors 180 MSF	Factory 1 story 100 MSF	Office Building 10 floors 200 MSF
Sq. Ft. Cost of Building	\$24.	\$45.	\$14.	\$18.
Total Cost of Building	\$2.4 million	\$8.1 million	\$1.4 million	\$3.6 million

ADDED COST FOR 10-YEAR BARRETT PROGRAM*

ADDED COST	TON	State of the local division of the	Sector Designation of	
Total of \$3 per 100 Sq. Ft.	\$1,500	\$900	\$3,000	\$600
Per Sq. Ft. of Building	1½¢	½¢	3¢	3/10¢
			NUCE CONTRACT PROGRAM	

*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 Tampa, Florida 33607 Subsidiary of Jim Walter Corporation *Trademark

			RATION	

BARRETT ROOF INSPECTION AND SERVICE CONTRACT

NO. COOO

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.: _

Lineal Ft. of Flashing Under Contract:

Area of Roof 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:

- Deterioration of Barrett roofing membrane or Barrett base flashing resulting from usual and ordinary effects of wear and weather.
- Errors or mistakes in workmanship of roofing contractor in applying the Barrett roofing membrane and Barrett base flashing.
- Blisters, bare spots, buckles, wrinkles and ridges, in the roofing membrane.
- 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.
- Breaks in flashing strips over gravel stop or other metal flanges.

E. Erection or construction of any additional installa-

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 build-

will arrange for repairs to be made at no cost to owner.

If cause of leak is not covered, Celotex will not be re-

sponsible for cost of any repairs.

ing, roof insulation, roof deck or other base over which roofing membrane or base flashing is applied.

tion on or through the roofing membrane or base flashing after date of completion unless installed

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.

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

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 de-

By EAtrankler Attorney-in-fact

scribed 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.

Upon payment of a charge which shall not exceed $\frac{2}{3}$ of the then current initial service fee being charged by Celotex, the roof will be reinspected by Celotex and, if found to be acceptable, this contract will be extended for an additional ten (10) year period.

Celotex makes no guarantees of any kind, express or implied, except as herein stated.

The Celotex Corporation • 1500 North Dale Mabry • Tampa, Florida 33607 Subsidiary of Jim Walter Corporation

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the unobstructed roof hatch

One improvement led to another.

We started out to improve the thermal transmission rating on our roof hatches. Our engineers did that by changing to a different type of insulation in the cover.

That permitted using a stressed skin design for the cover, making it more rigid...stronger ...and lighter.

Reduced weight meant that the torsion spring operators that help lift the covers could be smaller...could be moved into the covers so they'd no longer obstruct the opening...making it easier for people or materials to pass through.

That's how the Milcor unobstructed roof hatch came about. It's available now in the popular 3'-0" x 2'-6" size.

Write for descriptive literature... or for catalog 34-1, describing our complete line of Milcor hatches, heat and smoke vents, floor doors and sidewalk doors... or for catalog 33-1, describing our complete line of Milcor wall and ceiling access doors.

Milcor Division, Inland-Ryerson Construction Products Co., Dept. I, 4069 W. Burnham St., Milwaukee, Wisconsin 53201.





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What happens when tenants in your building need changes in their telephone service?

Can their requirements be met easily? Or does business grind to a halt in a cloud of plaster dust?

Our free book on preplanning can make the difference.

Take the matter of cable, for instance. In some buildings, telephone installers can run new wire quickly through well-planned vertical con-

duits and underfloor ducts. But in others, the only possibility is to punch holes in floors and ceilings.

To help you minimize the costs of changes, we offer you our hardcover guide, aptly called "Communications Preplanning for the Modern Building." This book summarizes the knowledge and experience of our nationwide force of Building Industry Consultants.

It tells which types of business have special communications needs. The requirements of equipment ranging from Call Directors to complex switching systems. The new demands of computers.

Reading it can help you plan for change—and avoid expensive alterations later.

Call us collect at (212) 393-4537 and we'll put you in touch with your nearest Building Industry Consultant. He will come and confer, and deliver your copy of our book, absolutely free.

We are continually working to improve service to the building industry.

In communications preplanning, we wrote the book. AT&T and your local Bell Company.



I'm an architect

...what does cast iron soil pipe mean to me?

An excellent question, and one we are pleased to answer. From the welter of plans on your drafting table and the scores of trade magazines stacked behind your desk, it is obvious you are a man who likes to keep up with the state of the art.

It is also obvious that there would be little time left for work if you read everything that comes across your desk. Nevertheless, a few minutes is all it takes to bring yourself up to date on cast iron soil pipe.

Cast iron soil pipe, today, as the material preferred by most, if not all, forward thinking architects — has a rather interesting modern story to unfold.

Consider this: Tomorrow's hospitals, as well as other commercial and even residential multi-unit buildings, will be much more free of undesirable waste noises in the plumbing system, thanks to neoprene gaskets and plain-end cast iron soil pipe in the DWV systems of buildings now in the design process.

There has now been more than enough research and actual use to demonstrate beyond any doubt, that the **G** NO-HUB® joint with its Du Pont neoprene gasket creates a sound barrier that reduces noise and vibration transmission almost to zero.

Rest assured, DWV systems using cast iron soil pipe are the quietest systems available today.

There's more to our story.

For industrial use, cast iron in combination with neoprene gaskets is the reason why it is now practical to install low cost condensate return systems. Modular DWV systems for "drop in" plumbing units are a working reality, and are now available in either **C** NO-HUB® or compression systems.

If you design and write the engineering "specs" on every job that goes through your office, isn't it helpful to know that installation costs are definitely reduced by using **Q** NO-HUB®? The stainless steel clamp and neoprene gasket make the **Q** NO-HUB® joint installation quick and easy.

Better still, they produce a seal that will last the life of the pipe (which is virtually forever), resisting all corrosive elements that are usually associated with drain-waste-vent and sewer systems.

We must have something positive to offer, otherwise, how would we explain the fact that 31 million **C** NO-HUB® joints have been installed in a single year, and that more than one million tons of cast iron soil pipe were installed last year alone.

Nor can you easily overlook the fact that every year, more cast iron soil pipe has been installed than any other material. There simply can be no doubt, cast iron soil pipe is manifestly the product of choice for drainwaste-vent and sewer systems.

Yes, time is at a premium, so we really hate to intrude on yours. But really, those stacks of magazines on your floor give mute testimony that you are a professional who means to keep up with the facts. Let us send you some of ours.

For a starter, the study you may find most helpful today is the two-year research study that is fully and completely detailed in our important, 32 page booklet on acoustics. Let us know of your interest. A simple postcard with your name will serve quite well. Just ask for "Noise and Vibration Characteristics of Soil Pipe Systems." It's truly very sound. That's our private little joke, of course.

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Concrete fish tanks probably aren't in your line of design, but it shows exactly how positively waterproof our liquid membrane is.

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The waterproof membrane remains flexible indefinitely and self-heals if mechanically damaged. It bridges moving cracks up to 1/16 inch without reinforcement. Yet *it*'s *non-flowing* once applied, making it the ideal waterproofing for vertical applications.

Expansion joints are effectively sealed with liquid membrane and rubber reinforcing sheets.

Uniroyal liquid membrane is quickly applied in temperatures down to 0°F. It spreads and flows freely to conform to all surface irregularities.

As for actual applications, the sky's the limit. Uniroyal liquid membrane has been used to waterproof everything from underground garages to high-rise buildings.

If you've got a job coming up that requires reliable between slab waterproofing, we'll help you make your design watertight. Just fill in and mail the coupon.



As a plumbing contractor I know gaskets of DuPont Neoprene are dependable.

On-the-job experience has proven to me that cast iron soil pipe and gaskets of Du Pont Neoprene are a winning combination for reliable DWV systems.

I have found that Neoprene gaskets install quickly, seal quietly and dependably. They resist all types of sewage and are tough and tear resistant. We use them on all of our jobs.

Cast iron and Du Pont Neoprene...timeproven materials teamed up for long-lasting performance. Ask your wholesaler for more information.







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Quatramatic — an exclusive new process developed by Formica that results in a fidelity and definition in laminated plastic never before possible. It gives tone and color a new richness, grain a new depth.

You can see this in the light, bold, natural look of Allura Walnut. The vivid tones and realistic distressing of Pecky Pecan. The rich, exotic character of Mozambique.

Quatramatics are clearly a cut above other laminates.

And the beauty of it all is — when you specify one of these bold new woodgrains you're specifying the tough, durable surface that FORMICA® brand laminate is known for. A suede surface that resists scuffs, dents, scratches and chips — stays bright and new looking for years — never needs refinishing. From a selection of over 100 different colors, patterns and woodgrains.

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Leadership by design

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News report

Architect receives Canada's highest honor

John C. Parkin has been named a Companion of the Order of Canada, the highest recognition open to a Canadian citizen. He was the first practicing architect to receive the honor, which is given for "outstanding merit of the highest degree, especially service to Canada or humanity at large."

Appointments to the Order of Canada are made by the Governor-General on the advice of a committee whose chairman is the Chief Justice of the Supreme Court of Canada. Other Companions, the highest degree of membership in the Order of Canada, include living former Prime Ministers, distinguished scholars, artists and scientists. Maximum membership is 150, although only 100 or so have been appointed in recent years. Parkin served as a member of last year's P/A Design Awards jury.

Aline Saarinen, critic, commentator, dies at 58

Aline B. Saarinen, the art critic who went on to be chief of the National Broadcasting Company's Paris news bureau, died in July at the age of 58. She was the widow of Eero Saarinen, and in 1962 served on the Tenth Annual P/A Design Awards jury.

Involved with art throughout her life, she was an established art editor and critic when she met and married Saarinen. Her career began with contributions to Art News in 1944; she soon became managing editor. From Art News she moved to the New York Times, where she was associate art editor and then associate art critic. Following her husband's death in 1961, she joined NBC, appearing on the "Today" show and later as host of "For Women Only." A year and a half before her death, she was named chief of the network's Paris news bureau, television's first woman bureau chief.

Hartford space frame larger than football field

Hartford, Conn. can now boast the largest single latticetype space frame in the country. The roof for the 12,000-seat civic center coliseum now under construction in Hartford, the extraordinary space frame measures 360' x 300' x 22' deep and weighs 1400 tons.

The frame was lifted into place during July, riding upwards along four temporary steel towers. Atop each tower four 100ton jacks had been positioned, and with the use of the jacks, pumps and cables, the huge frame was lifted a total of 87 ft at [continued on page 34]



John C. Parkin



Hartford space frame



Buildings on the way up





1 Right in the middle of the world's busiest airport, O'Hare International Tower will offer 10 floors of luxury hotel services—981 guest rooms, 63 conference rooms and 18 meeting/banquet rooms. A pair of underground passageways equipped with moving sidewalks will link the hotel to the terminal in front of it and the 9250-car garage being built behind it; four others will be added later. The \$20 million hotel, designed by C.F. Murphy Associates, is a gently curved 787 ft from end to end. Glazing is gray glass in double panes separated by a layer of plastic for heat, glare and sound control.

2 Downtown Atlanta and Stone Mountain will be visible from the top of the 31-story Fairmount Colony Square Hotel designed by Jova Daniels Busby for Colony Square. Public spaces of the 500-room hotel will focus on three interacting levels surrounding a 56-ft-high central space; lounges and restaurants will overlook the lobby. A rooftop lounge, reached by a glass-enclosed outside elevator, will provide the spactacular views. The complex of office towers, apartments and townhouses, shopping mall, ice skating rink, plaza and parking is now under construction. Completion is scheduled for the end of 1973, with the hotel opening set for late spring of 1974.

3 Mirror images of each other, the two identical towers that make up Pennzoil Place, Houston, are in the shape of trapezoids juxtaposed at the sharp angles. Both towers will be 495 ft high with 34 stories each; 1.2 million sq ft of rentable office space will be available. Entrances are through two glass galleries that are eight stories high at the apex. The towers' curtain wall will be bronze colored glass in anodized bronze aluminum frames. Below the buildings will be three levels of parking. Architects are Philip Johnson and John Burgee, with Wilson, Morris, Crain & Anderson as associate architects.

4 Professional office complex in Fort Worth, Tex. will eventually include four buildings, and, besides professional offices, will house commercial offices, shops and a restaurant. First building is eight stories high, resting on a two-story parking garage; cantilevered floors will be enclosed in sculptured masonry and bronze glass. Structure is steel columns and beams and concrete slab on metal deck. Robert L. Wright is architect.

5 Data center for Equitable Life Assurance Society in Easton, Pa. will be on the crest of a 38.5-acre site. The 74,700-sq-ft building will be a single story structure, except for one two-story section. Steel structure will be clad in light colored precast concrete; glazing will be bronze glass. A landscaped interior courtyard is planned, with a large rectangular opening in the roof directly above it. Existing natural landscaping, trees and ground cover will be protected. Kahn & Jacobs are architects, with Der Scutt as project designer.

6 An existing supermarket will be replaced by a new one when a 40story office tower for downtown Philadelphia is completed. Faced with bronze anodized aluminum and bronze solar glass, the building will provide 1,250,000 sq ft of space with 840,000 sq ft of office space on 31 stories. The poured in place concrete structure will include the supermarket, five parking levels and the office floors. Main entrance is on a mezzanine served by a bank of escalators in a pedestrian arcade formed by the 16-ft setback of the supermarket. The arcade will be paved with brick. A lower level plaza will give access to the lower level of the supermarket and a new movie theater as well as local subway lines. Ewing Cole Erdman & Eubank are architects; engineers are J.L. Hoffman & Associates (s) and Paul H. Yeomans, Inc. (m,e).

7 Details from a building formerly on the site form a gateway into a 37story Federal Office Building in Seattle. Designed by John Graham & Co. and Fred Bassetti & Co., the 875,000-sq-ft building will have a steel frame structure on caisson pilings; exterior will be concrete. Multilevel landscaped terraces provide a pedestrian pass-through between streets. Cost is put at about \$40 million; a \$122,000 budget for public art allows carved bricks, sculpture, tapestry and paintings by Northwest artists.

8 Research center for Philip Morris Inc. will house over \$1 million worth of laboratory equipment for study of cigarette smoke. Exterior brick matches other buildings at Richmond, Va. research center; glazing is mirror glass in black aluminum frames. Interior is designed around loft spaces and modular labs for flexibility. Ulrich Franzen & Associates are architects.



Buildings on the way up





 10

 93

 Br

 Victor

 Victor



9 Slender 55-story tower will consolidate offices of the Government of British Columbia in Vancouver; steel framed curtain wall building will provide space for 4000 people. Existing law courts building at other end of two-block site will be extended, and low-rise office and commercial structures combined with landscaped plaza between courts and office tower. Cost of project is put at \$50 million. Architects are McCarter, Nairne & Partners and Thompson, Berwick, Pratt & Partners.

10 For \$350 million, Cleveland could have a rejuvenated downtown, according to a proposal by U.S. Realty and other Cleveland interests. The plan, developed by Dalton, Dalton, Little & Newport calls for 20,000-seat domed sports arena, a 1000-room hotel, two or three office buildings, three theaters, 300 to 1000 apartments, underground parking for 6500 cars and an underground air cargo terminal. The site is a 32-acre unused rail yard directly behind the Terminal Tower in downtown Cleveland.

11 Corporate headquarters for Heublein, Inc. will be a four-level structure set into hillside in West Hartford, Conn. Each level will be offset 30 ft and stair towers will be located at intersections of the offsets. Three of the roofs will be completely landscaped with ground cover, plants, trees and fountains. Exterior walls are precast and poured in place concrete with a rough ribbed texture. Glazing is to be bronze tinted glass. Five levels of garage space will be provided under the 75,000 sq ft of office space. Architects are Russell Gibson vonDohlen.

12 Stepping over and around existing building, new building at University of Winnipeg will provide a multi-media library and additional academic and teaching space. Exposed tubular steel trusses, each a full story high, and precast hollow core floor slabs form the structure. By keeping the fifth and seventh levels small enough to be considered mezzanines, the seven-level building is classified for fire code purposes as a five-story building. Landscaped courtyards occur at various levels. Cost is put at \$6,826,000 for 250,000 gross sq ft. Architects are Moody Moore Duncan Rattray Peters Searle Christie.

11



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News report continued from page 29

the rate of about 2 ft per working hour.

At that point in the erection sequence, four immense cylindrical concrete pylons were cast to provide permanent support for the frame and roof. When the concrete had cured, the space frame was lowered 2 ft to its final 85-ft elevation, where it rested on steel pedestals anchored to the tops of the pylons. The jacking towers were then disassembled and removed.

The Civic Center, designed by Vincent G. Kling & Partners and Harry J. Danos Associates, will cover more than two city blocks; it will include the coliseum, an exhibition hall, an assembly hall, and a shopping mall and office space. Consulting engineers for the project are Fraioli-Blum-Yesselman Associates, and Bethlehem Steel Corp. fabricated and erected the steel space frame.

Tale of two cities

Sponsored by the Pan American Federation of Architects Associations, the XIV Pan American Congress of Architects met in June in São Paulo, Brazil and Asunción, Paraguay. "Urban Deterioration" was the theme, and Rodolfo B. Garcia-Veia, a Paraguayan architect practicing in Philadelphia, filed this report:

In an opening speech to the architects, the mayor of São Paulo introduced them to the fastest growing city in the world. Indeed, there could have been no better site for a first hand study of urban problems than São Paulo, a unique conglomerate that in 1984 will become the largest city on earth. And the prophetical coincidence of the year might prove to be more than just statistical data.

Greater São Paulo is now doubling its population every 10 years; from 2.4 million in 1950 to 4.5 in 1960 and 8.4 in 1970. If this trend continues, there will be 20 million people living in greater São Paulo just 12 years from now. The main magnet is the automobile industry, which has more than doubled its production in the last decade; it will probably level off with the growth of the rest of the country.

These frightening figures give busy Paulistas a curious sense of civic pride, and they will gladly show you the works of the new subway system, or the fantastic "autopistas" that divide the center into de-facto alienated districts. Naturally, an estimated 50 percent of the population lives in marginal areas which have grown too fast for water lines, or electricity or sewage systems.

The working sessions of the Congress dealt exclusively with ills affecting the cities of the hemisphere. Four committees had been assigned to study and draft recommendations in the following areas: deteriorating modernization, deterioration by spontaneous settlements, protection and restoration of historic sites, and legal and economic means.

After four days of meetings, discussions and Brazilian cordiality, the Congress moved on to Asunción for the drafting of the final conclusions. Again the choice of site was excellent, this time for an experience in contrasts: charming Asunción still retains its colonial pride, best seen by walking the quiet, orange-scented residential streets in a strangely peaceful and unassuming scenery. If modernizing growth could be stopped now, the town and its 500,000 friendly people would become a refuge, a certain cure for the mental ills of modern man. [continued on page 42]
The subdued approach to Reflective Glass

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News report continued from page 34

The closing plenary session adopted the recommendations of the four committees, and combined them in what will be known as the "Charter of Asunción." Perhaps the most significant principle is that of declaring a freeze in population growth in Latin American cities as a main objective of architects and planners.

Other highlights of the conclusions: emphasizing necessity of channeling public investment towards balanced development of rural areas and cities; seeking more active participation of architects in joint disciplinary teams of national, regional and urban planning at governmental and private levels; speeding up the industrialization of urban housing production and finding more financial resources for low cost housing mortgages; preparing, in each country, an inventory of monuments and sites to be preserved and restored by legislation.

AIA offers conference on HUD programs

For architects interested in taking part in HUD-assisted housing programs for low and moderate income families, the AIA is sponsoring an intensive working conference on Oct. 5–6 in Washington, D.C. Hud rules, regulations, policies (and red tape?) will be explained through the preparation of a typical housing application. Charles L. Edson, a former HUD official, will chair the sessions. Other speakers will include Harold B. Finger, assistant secretary for research and technology at HUD; Louis R. Lundgren, chairman of the AIA's Commission on Environment; and David Falk and Arthur Hessell, both former HUD officials.

Registration fee for the conference is \$150, or \$90 for students; the fee includes a copy of *A Practical Guide to Low and Moderate Income Housing*, which normally sells for \$45. Attendance will be limited to 300 people, and forms and information are available from M. Carter McFarland, AIA, 1785 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Producers' Council launches energy seminars

Practical suggestions rather than ecological evangelism will be offered in a series of seminars on energy conservation sponsored by members of the Producers' Council. The halfday seminars start this month in Richmond, Va.; there will be 53 of them in as many cities during the next three months. They will stress achieving the most efficient use of energy through proper initial design and through proper use of materials, products and equipment.

In each city the format will include a keynote address on the extent of the energy crisis, followed by five 15-minute sessions outlining energy conserving ideas in the selection and use of insulation, lighting, glass, heating and air conditioning equipment and utilities. Technical staff people of key manufacturers have developed presentations, and special attention will be given to "first costs vs. life cycle costs" and the economic fallacy of the "low first cost syndrome."

The invisible conference

On view, but not really seen at the 1972 International Design Conference in Aspen was "The Invisible City," a subject about which program chairman Richard Wurman has had a lot to say in recent years. His contention: few people really [continued on page 46]

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News report continued from page 42

understand the city in which they live. "The most extensive facility imaginable for learning is our urban environment and the people in it," he said in opening the conference. "If we can make our urban environment understandable and observable, we will have created classrooms with endless windows on the world."

If anyone could have assembled a program on that subject, Wurman could have. But the subject was seen in title only: very few projects or people dealt with the environment as an educational resource (What are the various resources? How can they be used? Who benefits?). The most obvious shortcoming was the overabundance of educators who talked about educational programs. Even those like John Holt who wanted to talk about the city were confined to education by questioners.

The structure of the conference also limited the accessibility of the subject. Morning sessions were staged as talk shows, with four of five people designated as resource people being questioned by an interviewer; the audience spent 2½ hours being talked at. Afternoon sessions were given over to a variety of "conversations"—small groups of people who wanted to talk with a particular speaker—which at least provided the opportunity for more intimate contacts and exchanges.

But the real point of resources was neglected. If the city is to be made visible, the visibility of the people who make up the city is a prerequisite. To designate 50 people out of 1500 conferees as resources neglects the over 1450 who have ideas and something to contribute. A movement began to make the resources of the conference visible, to give anyone the opportunity to tell who he was, what he did and what he might contribute—all on an $8\frac{1}{2}$ " x 11" page. The result will be a book—a directory of a network of people throughout the country who can be tapped for information.

Although the book will be useful afterward, the point should have been to involve everyone in the conference, making this type of information part of registration and available for conference use. Then, at least, if the city didn't become visible, the conference might have.

Making an allé out of an alley

A service alley along one side of a 400-space parking building in East Lansing, Mich., has been turned into a landscaped pedestrian way as a test pilot project for the conversion of a four-block alley into a continuous pedestrian mall leading to a [continued on page 53]



East Lansing Allé

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shopping area. Now known as the Allé (which sounded better to the city than the landscape architect's suggestion, "The Alley"), the space is still used by service vehicles; trash is picked up at central points that serve as display kiosks covered with bold graphics.

The \$64,000 project was designed by Begrow and Brown Architects, Inc., with Johnson, Johnson & Roy/Inc. as landscape architects. A pedestrian bridge spans the Allé at one end, providing an arched entrance. John M. Patriarche, East Lansing's city manager, notes that pedestrian traffic through the former alley has increased, due to the construction of the parking building and a new department store, and that the local retailers and the Chamber of Commerce are pushing for the expansion of the Allé.

BRAB fire research gets \$600,000 boost

A fire research program that got started in 1964 has recently received another boost, in the form of a \$600,000 contract with the Public Buildings Service of the General Services Administration. The contract with the Building Research Advisory Board will include a large scale physical survey of the combustible contents of office buildings and schools to determine existing fire load values from which potential fire severity can be predicted. A secondary aim will be the collection of information on movable contents to allow updating of occupancy live loads, leading to safer and more cost effective structural design of buildings.

BRAB is in the process of appointing a special advisory committee on fire loads to monitor the survey efforts and to be responsible for identifying new applications beyond normal building-related fire technology. The program covered by the PBS contract will probably be expanded in the future to cover other types of buildings, including hospitals and multifamily housing.

The current study, according to William G. Kirkland of BRAB, is the first step, reflecting the planning and development work, of a broad program of fire load research that has been in progress since 1964.

Refrigeration system to heat meat market

Since refrigeration extracts heat from spaces, and since the space and refrigeration needed to handle some 500 million pounds of meat a year are considerable, it seemed logical to S.W. Brown & Associates that the heating requirements of the Hunts Point Cooperative Market in the Bronx, N.Y. might be met with heat reclaimed from the refrigeration process. A feasibility study showed that enough heat could be reclaimed from the condenser cooling water, normally pumped to the cooling tower, to heat the defrost brine and preheat outside air for the utility building. That logical thinking won the firm the first award of the New York Chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers.

There isn't anything uncommon about reclaiming waste heat at high or moderate temperatures. But, says Brown, the innovation at Hunts Point is "the extraction of heat from refrigerated storage space, held at temperatures as low as -10 F in such abundant quantities as to reduce by more than 20 percent the overall boiler requirements" for the project. The [continued on page 54]



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News report continued from page 53

market is a five-building complex of 12 million cu ft; Brand & Moore are the architects.

The engineering firm's study also detailed the advantages for the system: one is a yearly saving of about 220,000 gal of fuel oil; another is an annual reduction of 16 tons of pollutants of various types and a third is a \$1.25 million saving in operating costs over a 20-year period, without any increase in initial costs.

AIA sets up new department, remodels an old one

To align staff departments with the national AIA Commissions that oversee them, the AIA has set up a new Department of Environment and Design and has restructured the existing Department of Government Affairs. Michael B. Barker, who is also the staff executive to the National Policy Task Force, is the administrator of the Environment and Design Department; James C. Donald heads the Department of Government Affairs.

The new department includes the design and international relations programs that were once part of the Department of Professional Services, and housing and urban programs from the Department of Government Relations. The Government Affairs Department, in addition to legislative and federal agency liaison, will include state government affairs programs and the public campaign to make the selection of an architect a matter of competence rather than cost.

Stainless steel balloon for roof structure

Stainless steel membrane structures have been the subject of recent work by researchers at International Nickel Co. As a design study they chose a roof for a 700-ft diameter arena; the structure consisted of an upper and lower stainless steel membrane stretched inside a compression ring. Pressurized to hold the membranes in tension, the structure looked a lot like a flat stainless steel balloon.

The membrane roof did away with complicated framing details, according to Inco. All that was required was to join thin sheets of stainless steel to each other and to the framing members. Since the skin was in tension only, buckling was avoided. The prime goal however was a roof using a minimum amount of material to satisfy structural requirements.

The 700-ft roof, of course, wasn't built, but a 16-ft diameter model was. This prototype had spherical surfaces and was made from strips of stainless steel foil 0.002 in. thick. The strips were joined with epoxy and fastened to a compression ring; the stainless steel had a yield strength of 120,000 psi. To test the structure under concentrated loads, one of the research workers walked on the roof. It didn't let him down.

Houston's HUB

From site planning to renovations, from vest pocket parks to neighborhood rehabilitation plans—the Houston Urban Bunch has stayed busy. In its two-year life, the community design center has handled over 40 projects in Houston.

This summer saw the completion of a project that turned an abandoned and decaying four-room house in Acres Homes subdivision into a clubhouse for elderly residents of the neighborhood. HUB developed the renovation plans and coordinated the work. Improvements included adding water and [continued on page 59]

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sewer service, building a wide veranda along the front of the building, repairing walls and windows, painting, upgrading the electrical wiring and installing carpet.

Construction started this summer on a campus for a training center for delinquent boys. The plan was developed by HUB and the Environmental Design Department at Texas A&M University, with HUB coordinating the A&M work and overseeing the project. The site for the Gulf Coast Trades Center is a former Job Corps facility 50 miles north of Houston. The master plan calls for creating micro-communities in an attempt to provide the best of urban and wilderness (the site is in a densely wooded national forest) living. First phase construction will include faculty housing and a shop; students at the center will do the actual construction.

HUB's most recent project, perhaps, was its own offices, which have been moved into a remodeled single-story frame house. Repainting inside and out and rearranging the interior provided space for an architectural office and meeting room for the 50 HUB volunteers. Over 20 firms and organizations are represented, and the volunteers, headed by VISTA architect John DeVaney and VISTA interior designer Jan DeVaney, give close to 300 hours a month in free design services and assistance.

Redevelopment agency tries again with old buildings

The last time the San Francisco Redevelopment Agency offered preservation-worthy buildings at auction there were no bidders. That was in June, and the nine buildings offered for sale included Classic Revival and Queen Anne styles. Now the agency is trying again, this time with 41 of the best Victorian buildings in San Francisco's West Addition redevelopment area. Like the first nine, the current lot were selected by the city's Landmarks Preservation Advisory Board as having historical, architectural or visual merit.

Despite their merit, and their reflection of the city's past, the buildings do pose a few problems for prospective buyers. Most are pretty well deteriorated; they will have to be moved or restored, depending on their categories. One group of 13 buildings must be moved to predesignated lots set aside for them in part of the redevelopment area; another 19 must be moved anywhere outside the area; 9 more are to be rehabilitated in place, which has proven economically unfeasible for the present owners. The Landmarks Board and the Redevelopment Agency agree that moving and restoring will be expensive, but both feel the total investment can produce "architectural and historical gems rivaling the best of San Francisco's most heroic days."

Arizona church builds Wright design 22 years later

In 1950, Frank Lloyd Wright designed a structure for the Southwest Christian Seminary; it was never built, at least not by the seminary. It is, however, being built by the First Christian Church of Phoenix, thanks to a suggestion by the seminary president, Dr. Peyton Canary.

Following Dr. Canary's suggestion that the design might be appropriate as a new sanctuary for the church, the church building committee contacted Mrs. Frank Lloyd Wright about adapting the design for the church. In 1969 the church signed [continued on page 62]



HUB's senior citizens' clubhouse before and after





San Francisco Victorian: any bidders?

Going up after 22 years



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How a PPG Glass minimizes HVAC costs and keeps a student body comfortable.

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Seward St., Detroit, before, after





New housing for Louisville's Butchertown

a contract with Taliesin Associated Architects, and completion is scheduled for October of this year.

Plans for the \$1.2 million structure include a 1000-seat sanctuary and facilities for a bible school. Exterior and interior space is defined by a series of concrete piers forming arbors over the terraces. The broad gently pitched roof ends in a central spire that admits light through stained glass.

Eventually the church plans to have its administrative offices and bible school in a bridge linking the sanctuary with an adjoining chapel. An observation tower and a free standing bell tower are also planned.

Detroit project to build neighborhood, not just housing

Renovated housing, a landscaped mall, off-street parking and a community center are part of a Detroit project to turn a stark and impersonal block of Seward Street into a new neighborhood. The \$4.1 million project, known as the Seward Street Impact Block, is "more than the rehabilitation of buildings," says Housing Commission Director-Secretary Harold R. Varner. "It is a total environmental redesign approach to livability."

Focal point of the project, designed by Environmental Planning and Design, Inc., is the landscaped mall. The first step in its construction, the closing of Seward Street between 12th and Woodrow Wilson, will be taken this month; when it is completed in August of next year, the mall will include brick walkways, a sculpture court, kiosks, trees and a play lot. A total of 60,000 sq ft of land will be converted to recreation and park use. Alleyways along the block will be turned into landscaped parking areas; a total of 319 off-street spaces are planned.

Housing will be a combination of old and new. Eight apartment buildings, seven of them now vacant, will be rehabilitated, and unsound structures will be demolished. The rehabilitated buildings and planned new construction will provide 393 units of housing.

The project is a joint undertaking of federal, state and local agencies and companies. Advance Housing of Detroit, Inc. will rehabilitate the buildings, with mortgage insurance coming from the Department of Housing and Urban Development and the Michigan State Housing Development Authority. The cost of the mall is being underwritten by a MSHDA grant that meets the one-third local share of a HUD grant; another MSHDA grant will cover other expenses of the project. As the project was being planned, each step was approved by the local citizens council.

In-town housing project held up by law aimed at suburbs

A small in-town rowhouse project in an old section of Louisville has been temporarily snagged on a legal logjam, and the developers are ready to go to court if they have to. The project involves three 3-bedroom rowhouses; the problem is that the city's rowhouse zoning ordinance calls for a minimum of three acres of land, and Butchertown, Inc. planned its project for considerably less.

The three houses, designed by architect Roger Hughes to cost \$17,600 each, are the first new housing in Butchertown in many years. The area takes its name from meat-packing plants, some of which are still in operation; the earliest buildings in the area go back to the 1830s, and the bulk of them are small single-family houses. [continued on page 67]

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The law that has caused the trouble, says Butchertown, Inc. president Jim Segrest, is aimed at the suburbs, and the neighborhood development corporation applied for and got a zoning variance that would allow them to go ahead with the project. The city law department, however, brought it to a halt, citing the three-acre requirement. "We had done our homework," says Hughes, "and everything was procedurally correct. There is precedent for this sort of variance." At the moment, Hughes and Butchertown, Inc. are waiting to see if the building department will override the law department and issue a permit. If not, Hughes and Segrest say, they'll sue.

Urban renewal in two historic towns

A state line and some 50 miles separate them, but Salem, Mass. and Portsmouth, N.H. have a lot in common. Both have an important place in American history; between them they have some of the best 17th, 18th and 19th Century buildings in New England. Both are also in the midst of urban renewal programs, and Campbell, Aldrich & Nulty are the architects.

In Salem, plans call for a \$15 million redevelopment known as Heritage Plaza. It would include 400 units of housing (300 of them for the elderly), a parking garage, 140,000 sq ft of new and renovated commercial space and a new city hall office building. For Portsmouth, the firm developed a plan for a \$10 million development that would include 150 units of housing for the elderly, 90,000 sq ft of commercial space and an office building. The plan also calls for the renovation and relocation of 14 historic houses; in Salem, historic buildings are also part of the renewal scheme. Completion of both projects is scheduled, appropriately enough, for 1976.

Long Island Indian tribe to build own community center

A community center that looks appropriately like an Indian long house is ready for construction in eastern Long Island, but a matter of principle has held it up. It is to be built with funds from the Department of Housing and Urban Development, and HUD regulations call for equal employment in the construction work. The Poospatuck Indians, for whom the center was designed by Theodore Hammer of Bonsignore Brignati Goldstein & Mazzotta, intend to build it themselves.

The center is seen as a catalyst for community action among the Indians, who are plagued by poverty and low employment. It will provide a meeting place and space for legal and employment counseling and medical services.

Since the Poospatucks have been exposed to masonry and carpentry training programs, concrete block foundations and wood frame construction were specified. Prefabricated trusses will let the Poospatucks learn a new building method.

Solid waste to fuel city heating and cooling plant

The country music capital of the world will soon be the world's first city to use trash as fuel for community heating and cooling, according to Mayor Beverly Briley. Early in 1974, Nashville, Tenn., will throw the switch on a plant designed to burn city refuse and produce chilled water and steam for year-round air conditioning of major downtown buildings.

The water and steam will be piped underground and sold to municipal and privately owned buildings at three-fourths of [continued on page 68]



Urban renewal: Portsmouth, Salem





Community center for the Poospatucks



Nashville's heating and cooling system



From garage to The Garage



Parker City: the good old days

the cost of operating individually owned systems, says Maurice J. Wilson, systems design consultant for I.C. Thomasson & Associates, consulting engineers for the plant. Initially some 720 tons of waste per day will be consumed by the plant's incinerator boilers, themselves equipped with pollution abatement devices. In its final phase, the plant will consume 1300 tons of trash a day.

Melvin C. Holm, board chairman of the Carrier Corporation, builders of the water chillers to be used in the plant, said that similar treatment of the nation's 200 million annual tons of community solid waste could alleviate the rising demand for electricity, eliminate sanitary landfill operations and lower air pollution. He added that conversion of all community solid waste to steam could power 19.5 million tons of cooling capacity, which is almost 20 percent of the 100 million tons installed in the United States.

Stable to garage to shopping complex

Harvard Square in Cambridge, Mass. is getting another garage, but this one won't store cars. It used to, and before that the 70-year-old building was a stable and turn-around shed for horse-drawn trolleys; now the three-story brick and concrete building is becoming a shopping and office complex.

The existing brick walls and interior ramps are being kept as a framework for the shops. There will be an interior shopping mall, two stories of boutiques and restaurants and a bazaar. Another floor is being added to provide 16,000 sq ft of office space. Cost of the conversion is put at \$3 million, according to Cambridge architects ADD Inc. who are also designing a complete graphic system and a merchantizing program for the complex. Construction started in January and the project is expected to officially open this month.

Colorado new community to echo the good old days

The good old days will be easy to remember in Parker City, Colo. The new community, which is expected to eventually have a population of 30,000 people, will be built near the original site of Parker City, a bustling town in the mid-1880s. Its buildings will have Western Victorian exteriors, and the town will boast a trolley system equipped with completely restored antique trolley cars linking residential and commercial areas.

Being developed by United Housing Corp., Parker City will include 125,000 sq ft of commercial space. The first phase of multifamily housing will provide 2000 units, and a residential area of 1500 homesites is being developed. Facilities will include a shopping center, bridle paths, bicycle trails and health, educational and community services. Denver will be about 25 minutes away by car.

Monkey business

In July there was the new bird exhibit at New York's Bronx Zoo; this month there is news of a new housing project for the monkeys at the Toledo, Ohio Zoo. The new monkey island, which replaces a deteriorating 40-year-old structure, will let zoo-goers view a variety of monkeys in a natural setting.

Visitors will be able to walk into the exhibit and look down upon the monkeys from an observation platform above the island. Beneath the island will be cages for winter housing. A small concession stand, selling peanuts and other treats for the tenants, will be provided. A few mountain goats will also roam the island.

[continued on page 70]

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Public observation areas will be at least 15 ft away from the island—close enough for a person to toss a peanut but too far for a monkey to jump. Because monkeys like to swim, the walls of the moat surrounding the island will be sloped to keep them from climbing out.

The \$250,000 island is part of a master plan for zoo improvements; work will start soon and is expected to be completed by the end of the year. Architects are Richards, Bauer and Moorhead, who also have designed a new building for the zoo's waterfowl.

Erickson-Massey partnership dissolved

Erickson-Massey, which grew from a partnership formed to compete for the Simon Fraser University commission to one of Canada's best known architectural firms, is now two separate firms. The partnership was dissolved in July because of the differing professional objectives of the principals.

For a time, the two separate practices will share the firm's office in Vancouver, while Arthur Erickson & Associates have taken over the Toronto office. Geoffrey Massey's practice will operate out of Vancouver.

Awards

Two gold medals were awarded in the annual awards program of the Philadelphia Chapter AIA to Mitchell/Giurgola Associates (University of Pennsylvania Museum Academic Wing) and Venturi & Rauch (Humanities Classroom Building, State University of New York, Purchase). The chapter's silver medal went to Bower & Fradley (Milles Sculpture Group) and honor awards were given to Charles E. Broudy & Associates (Kinetics Gallery), Dagit/Saylor Architects (Charles Dagit, Jr., residence, Gladwyne) and Vollmer/Knowles Architects (Aiken residence). Fazlur Khan received an Alumni Honor Award from the College of Engineering at the University of Illinois at Urbana-Champaign for "his innovative approach in the development of original overall structural systems for steel and concrete high-rise buildings, for his research toward optimization of such systems to produce highly efficient and economical structures, for his contribution toward structurally expressive architecture and for his leadership in the profession."

Theaters, office buildings and a factory were among the award winning projects in the 1972 Royal Institute of British Architects Architecture Awards program. Recipients of awards are: Eric Watson (housing at Harraton, County Durham); Renton Howard Wood Associates (The Crucible Theater, Sheffield); Yorke Rosenberg Mardall (Magistrates' Courts, Manchester); Graham Winteringham in association with J.A. Maudsley (Birmingham Repertory Theater); Arup Associates (Horizon Factory, Nottingham); Casson Conder & Partners (Wyvern Theater and Arts Center, Swindon); Bernard V. Ward in succession to Philip J. Whittle (Pollards Hill Redevelopment, Mitcham); Foster Associates (Pilot Head Office, Portsmouth); Greater London Council Department of Architecture and Civic Design (Pimlico School); Percy Thomas Partnership (Great Hall and Bell Tower, University College of Wales, Aberystwyth); Mathews Ryan Schwerdt and Hill (offices for a manufacturing plant, Greenock, Scotland); Francis Pym and Chief Architect, Works Division, Ministry of Finance of the former Government of Northern Ireland (Ulster Museum Extension, Belfast).

Personalities

N. David O'Malley, AIA, Baltimore, Md., has been named to a Loeb Fellowship of Advanced Environmental Studies at Harvard Graduate School of Design.

Paul Sternbach, Stamford, Conn. architect, has been appointed a member of the Regional Public Advisory Panel on Architectural Services.

Carter H. Manny, Chicago architect, has been named director of the Graham Foundation for Advanced Studies in Fine Arts, Chicago.

George S. Dolim, of Hertzka & Knowles, San Francisco, has been appointed to the California State Developmental Disabilities Planning and Advisory Council.

Earl W. Smith, El Cerrito, Calif., has been appointed chairman of a study group on consumer matters of the National Association of Home Builders.

Foster Carlisle Towery and Kenneth Frampton have been appointed associate professors in the School of Architecture at Columbia University.

Walter F. Spiegel, Jenkintown, Pa., has been elected president of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

George D. Batcheler, Jr., Philadelphia architect, has been elected to the Board of Managers of Pennsylvania Hospital.

Calendar

Sept. 14–16. Annual meeting of Architects Society of Ohio, Sheraton Columbus Motor Hotel, Columbus.

Sept. 24–27. Annual apartment conference of the National Association of Home Builders, Las Vegas, Nev.

Sept. 24–27. National Environmental Information Symposium, National Environmental Research Center, Cincinnati, Ohio. Sept. 25–30. Eleventh World Congress of the International Union of Architects, Varna, Bulgaria.

Sept. 27–29. Annual fall meeting of the Electrical Generating Systems Marketing Association, Hotel Bonaventure, Montreal. Sept. 27–30. North Carolina Chapter, AIA, South Atlantic regional convention, Carolina Hotel, Pinehurst, N.C.

Sept. 28–30. New Jersey Society of Architects annual convention, the Playboy Club, Great Gorge, N.J.

Oct. 1–4. Thirty-sixth annual convention and trade show of the National Builders' Hardware Association and the American Society of Architectural Hardware Consultants, Marriott Motor Hotel, Atlanta, Ga.

Oct. 8–12. Prestressed Concrete Institute convention, Marriott Motor Hotel, Atlanta, Ga.

Oct. 11–13. Iowa Chapter, AIA, Central States regional conference, Hotel Fort Des Moines.

Oct. 14–17. Annual convention and exhibit of National Office Products Association, Chicago.

Oct. 15–18. Fifty-fourth annual convention of the American Gas Association, Cincinnati, Ohio.

Oct. 16–20. Business Equipment Show, McCormick Place, Chicago.

Oct. 18–21. Western Mountain Region, AIA, twenty-first convention, the Four Seasons Hotel, Albuquerque, N.M.

Oct. 19–22. New York State Association of Architects/AIA annual conference and convention, Flagship Hotel, Rochester, N.Y. Oct. 25–27. Annual convention of Architectural Woodwork Institute, Regency-Hyatt House, Atlanta, Ga.

Oct. 29–31. NYSAA/AIA School Building Exhibit for the con-[continued on page 72]



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vention of the New York State School Boards Association, Inc., Syracuse, N.Y.

Oct. 30–31. Consulting Engineers Council U.S. fall meeting, Salt Palace and Hotel Utah, Salt Lake City, Utah.

Oct. 30–Nov. 2. Third annual Industrialized Building Exposition and Congress, Kentucky Exposition Center, Louisville.

Nov. 9–12. Board of Governors meeting and Mid-Atlantic regional conference, American Institute of Interior Designers, Washington, D.C.

Nov. 15–16. National conference on solid-waste management in buildings, sponsored by the Building Research Institute of the Building Research Advisory Board, National Academy of Sciences-National Research Council, at Stouffer's Riverfront Inn, St. Louis, Mo.

Nov. 15–17. Seventh annual meeting of Automated Procedures for Engineering Consultants, Inc., Hilton Palacio Del Rio, San Antonio, Tex.

Washington report

A-E firms not part of construction industry, says CLC

A-E consulting firms aren't part of the construction industry, according to the Cost of Living Council—hence they may qualify for "small business" exceptions from regulations of the economic stabilization program. That's an important ruling by CLC: If such firms were "construction" firms, they would then remain under tight controls as to wages and prices, regardless of size.

The action was one of a whole series of events at administrative, rather than legislative levels, that went on in Washington as summer began to wane and political fevers rose to the point of blanking out anything but the most important (or noncontroversial) legislation.

The case of the consulting firms arose when an engineering firm with an average of 60 or less employees insisted it was entitled to "small business" exemptions. The firm in question is engaged in design and preparation of plans and specifications for installations such as buildings; it also provides inspection. Question: Is the firm's close connection with the construction industry a bar to the exemption?

No, said CLC (printed in the "Federal Register" for July, p. 14417). "Small business exemption does not apply to firms engaged in construction ... [which is] defined as the physical acts involved in the building, repairing or remodeling of a facility.

"A consulting ... firm provides professional services incident to—but distinct from—the physical construction. Construction ... does not include the design and preparation of plans and specifications, or on-site inspections to insure that plans and specifications are being followed. Therefore [the firm] is not engaged in construction (and is eligible for small business exemption from wage and price controls if the requirements of other provisions are met...."

There were other administrative actions as well, most notably the re-imposition of controls on some 62,000 lumber firms (of which more than half are distributors), to scale down price rises that have averaged more than 14 percent in the past year.

The Administrative actions, (including the relaxing of some requirements of Occupational Safety rules) most of them responses to the loud complaints of the construction industry, were about all that could really be expected this year, despite more than 80 bills now before Congress calling for revisions and corrections in both safety-health and economic controls. The reason was obvious enough: Congress didn't want to tackle anything controversial, if it could help it, with the November elections looming larger on the Washington horizon. Not only the Presidency, but possibly control of the legislative machinery is at stake-hence most moves were aimed at garnering votes (such as the frontal assaults on the Highway Trust Fund to benefit urban area residents), or embarrassing the incumbent Administration (such as insistence on greater spending programs which might not only create some jobs, but also be hard to explain in terms of enormous deficits).

Still, there was some action on Capitol Hill, and some of it was unexpected.

It was no great surprise, of course, when the House took up and passed in one day Rep. Jack Brooks' (D. Tex.) bill (HR 12807) which would nail into law the traditional method of hiring A-E's by negotiation, not bidding, and by qualifications. After all, the House enthusiastically passed a similar bill near the end of the last Congress, and then saw it die in the Senate's last-minute rush. As approved this time the bill would largely nullify the effects of recent Justice Department actions against professional societies (most of which have agreed to remove ethical restrictions against price-bidding from their codes). But nobody (as of mid-August, anyway) was prepared to say that the Senate would go along.

A real surprise was the fast footwork in the House that saw engineering professionals lose out completely in their efforts to obtain some of the work (and recognition of their competence) in a nationwide inspection of dams and water control structures. A Senate bill (S.3449) went into the hoppers shortly after a slag-pile dam in West Virginia collapsed and caused loss of life and extensive property damage, then languished until recent Eastern floods revived interest. The Senate began leisurely hearings on the matter, consultants testified that the bill as drawn would not call on private professionals at all. Over in the House, meanwhile, Public Works Committee Chairman John Blatnik (D. Minn.) got impatient, threw in his own bill (HR 15951), bypassed his own committee, brought it to the floor within three days and got it passed in less than 10 minutes. The bill came over to the Senate, which hastily dropped S.3449, and accepted the House bill in about 5 minutes.

The significance is that the Blatnik measure is very drastic: it simply directs the Chief of Engineers to "forthwith" proceed with investigations of all water control structures, whether public or private (except its own and those of the Bureau of Reclamation) and recommend remedies to local or federal officials. There's no mention of use of private consultants at all (and no money provided to hire them).

An no one really was very sorry to see the House kill a \$5 billion public works bill, hastily rushed into the machinery to provide funds for a super effort on water and sewer construction over the next 18 months. Reason: The bill was too obviously intended to build an even bigger budget deficit; besides, it duplicated programs already under way or authorized, and probably would provide more projects than could possibly be handled anyway. [E.E. Halmos]



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Architecture west

The four Frank Lloyd Wright textured concrete block houses built in Los Angeles and Pasadena in 1923 and 1924 were not generally considered his best houses. Criticism, in general, followed Walter Curt Behrendt's comment that the degree to which Wright sought artistic effects for their own sake removed the work from the principles on which it was based.

But then 1923 was the year Le Corbusier published "Vers une architecture," and the thinking that went into the Bauhaus was already awakened. It was a bad time for artistic effects for anything's sake.

The concrete block houses have ridden out almost half a century and have survived to see the tenets of the Bauhaus questioned. Two are in splendid shape—the Millard house in Pasadena, the most poetic, and the Freeman house in the Hollywood Hills. R.M. Schinkler kept the latter in repair until his death, and now John Lautner is the consultant.

The Ennis house, the most monumental and least interesting of the four, has not fared well. A second floor patio, sloppily roofed over, threw the plan off, and an owner who ran a gun shop cut down all the trees on the slope. New trees have been planted but the house still stands out like a fortress. At the moment it is for sale for \$225,000, 10 times the original cost.

Now the Storer house is being restored to its original condition by its new owner, Dr. Jerome Jacobi, and has been declared a monument by the Cultural Heritage Board. Along with the other block houses, it has been documented by Historic American Buildings Survey.

Restoration demands dedication and bravery, especially when the original architect was trying out a new system of construction. Wright put his finger on the source of most of the trouble when he wrote of the Millard house in his autobiography: "The sun bakes the roof for eleven months, two weeks and five days, shrinking it to a shrivel. Giving no warning whatever to get back to normal the clouds burst. Deluge [sic] the unsuspecting roof surfaces with a downpour."

Lloyd Wright, who detailed three of the houses and was in charge of construction, directed sandblasting inside and out to remove dozens of layers of paint from the block, the renewing of the floor tiles, and reroofing with materials which were unavailable in the 1920s. Certain details in the plans, which were omitted when constructed (you might call them artistic effects), will be executed after all these years.





Storer house, 1923. Marvin Rand photo

The dissimilarity of the block houses is remarkable since the same structural scheme is used for all. Wright proved that the system of double walls, with hollow space between, forming thin but solid reinforced slabs, "would yield to any desire for form imaginable." He called it a genuine expression of California in terms of modern industry. So great was his enthusiasm that he believed "mechanical means to infinite variety was no longer an impractical dream."

In the Imperial Hotel he took material from underfoot and raised it to distinction, and in 1923 he was still in a mood to lift another lowly material. To make block acceptable he imprinted a pattern, sometimes incised the pattern for light to pass through.

Unique to the Storer house are the thin columnlike walls between narrow high glass on two façades of the main block. The one-story section which wraps around the house gives the appearance of a small temple nestling against a large one.

The knit-block system was not original, but the variety achieved with it was pure Wright. [Esther McCoy]
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• When "stretch" installation with separate cushion is specified for certain executive areas — in addition to glue-down for general spaces in the same site — two carpets aren't needed. Jute works well with both methods.

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Products and literature



Possibilities



Steamroller chair

Pattern package

Light up



Possibilities. Two units—an armless lounge chair and matching ottoman of identical square measurements—offer a variety of interesting seating possibilities. Unwelted seams give a round-edge look; short wings on the straight back hold a back pillow and permit lining up units to create loveseat and sofa sections. The oversize ottoman also has a loose seat cushion. Eppinger Furniture. *Circle 101 on reader service card*

Sueded vinyl. What looks like suede wallcovering—it even fooled this expert—is heavy twice-buffed vinyl. Comes 54 in. wide in 16 interesting colors. Gilford Inc. *Circle 102 on reader service card*

Chair components. Dubbed the "Customaker System," this seating plan offers offices, hotels, restaurants, hospitals, schools and other institutions the opportunity to custom design their own chairs, upholstered lounge units or reinforced fiberglass seating. One chair, for example, offers 38 basic components; frames, bases, seats, backs and armrests from which hundreds of models can be made. The Sturgis Co. *Circle 103 on reader service card*

Steamroller chair. The inspiration is obvious, the chair surprisingly comfortable. Using bar stock aluminum and a unique connecting mechanism, infinite multiple seating links are available. Bolsters are made of high density polyurethane with leather or suede upholstery in a wide color choice. Settee and sofa also available. Raspberry Fence. *Circle 104 on reader service card*

Pattern package. Print designs for furnishings are described as a modular graphic system—a coordinated pattern package. Six of the seven designs are intermixed; there are 20 colorways. Animals, plants and fruit inspire the designs which range from small to enormous. The 58 in. wide fabrics are of Swedish cotton, dyed natural ecru. Jack Lenor Larsen, Inc. *Circle 105 on reader service card*

Tone-on-tone floor tile. An embossed vinyl asbestos floor tile called "Mayfair" has a soft tone-on-tone effect. The geometric pattern embossed on a background of translucent vinyl chips contains fine particles of marble, comes in beige, green, white and yellow in $\frac{1}{16}$ " gauge, 12"x12" tiles. Suitable for residential and light traffic commerical areas. Azrock Floor Products.

Circle 106 on reader service card

Teaching walls. A movable metal school wall can be used as a chalkboard, tackboard and bulletin board; also doubles as a projection screen. Described as costing less than conventional school wall construction, it is also maintenancefree, and fire resistant. Virginia Metal Products. *Circle 107 on reader service card*

Light up. Designer Ed Whiting has created a sofa/chair-side light that can be adjusted for reading, art work and other lighting needs. The desk/table lamp is equally flexible. Raymor/Richards, Morgenthau, Inc. *Circle 108 on reader service card* [continued on page 82]

Efficient building idea: A new built-up roofing system with a completely inorganic reinforcement.



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Products continued from page 80





The art of rug making



Clay



Luminous ceiling



Levers on the latches

The art of rug making. A handcraft approach to rug making continues in this group of notable rugs, many of them collector's items to be found in the Museum of Modern Art, The Art Institute of Chicago and other museums. Tufted in wool and also in silk in yarns spun to the designer's specifications, the wools are washed only in their own plant and dyed in their own dye plant. Carpet and rugs are specially designed for executive offices and public buildings. Custom-made rugs are available in any size, shape and color from a choice of 100,000 color formulas. V'Soske. *Circle 109 on reader service card*

Clay. Sculptured by this company's designers into contemporary, traditional or antique patterns, this is high-fired earthenware, hand worked and glazed and formed into sculpture, murals and tiles for indoor and outdoor applications. Photographs of varied applications in booklet. Hans Sumpf Co. *Circle 110 on reader service card*

Open equipment. Office furniture to meet the needs of openplans has been designed for specific work task needs. Desks, work tables, open file systems, bookcase units, conference tables and planters are available in both walnut and oak in a large selection of laminates. One model with a table top that tilts to a 45 degree angle, has polished chrome tubing and black vinyl edge molding. The Collaborative. *Circle 111 on reader service card*

Benched in concrete. Cast in one piece, three-legged bench has full back rest and reinforced welded steel frame. The seat is contoured for comfort, sloped for drainage and seats three comfortably. A brochure on concrete play equipment is also available. Form Inc.

Circle 112 on reader service card

Luminous ceiling. Three-dimensional suspended ceiling has been designed specifically for shopping malls, store interiors and large public areas. A lightweight material called "Plasticore" is used to form the 3'x3' Sculptura coffers, giving a depth dimension to ceilings. Described as low cost, it offers maintenance ease, fast installation and complies with most restrictive building codes. The coffers can be adapted for downlights, spotlights, sprinklers, decorative incandescent light and luminous skylight areas. Integrated Ceilings Inc. *Circle 113 on reader service card*

Software for security. A computer program for incorporating security systems into layout and design of buildings is offered by this service. The total security requirements of a facility is evaluated and custom-designed to incorporate policy and procedure needs, layout and hardware. Oak Security Inc. *Circle 114 on reader service card*

Levers on the latches. A tubular latch strong enough to spring back the levers to their horizontal position is the news in these designer latch sets. Made of a zinc base, die-casting alloy, those parts subject to friction are covered with hardened steel for extra strength. Available in 18 modern and traditional styles and in polished brass, shaded bronze, polished and dull chrome. S. Parker Hardware Mfg. Corp. *Circle 115 on reader service card* [continued on page 84]



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UNITED STATES GYPSUM

Products continued from page 82

Compact kitchen with self-cleaning oven. A continuous selfcleaning oven which cleans as it cooks is featured in this unit which includes a range, sink and refrigerator. Prewired into a terminal box and requiring a single electrical connection, water lines reportedly can be installed in two hours; all mechanical parts are accessible from the front. Acme-National Refrigeration Co.

Circle 116 on reader service card

Movable walls. Interchangeable panels and a technique for completely hiding wiring is featured in this movable office wall system. Six work surfaces and wallmounted storage units are offered, with a special hinge which permits the panels to be placed at any angle. Company's wiring method allows complete concealment of permanent or casual electrical wiring and telephone cords, with horizontal wires going from panel to panel internally through knockout holes at the base. A 40 to 90 degree adjustable corner cover hides wiring when panel walls are placed at an angle. Vertically, wiring runs in a raceway concealed by vinyl trim strip. Panel surfaces offered with fabrics or vinyl. Steelcase.

Circle 117 on reader service card

Literature

Stressed skin panel design. A simplified procedure for design of fir plywood stressed skin panels is detailed in this brochure. Developed in cooperation with the Western Forest Products Laboratory of the Department of the Environment of the Canadian Forestry Service, the booklet includes tabulated load-span data together with standard panel design information. Council of Forest Industries of British Columbia. *Circle 118 on reader service card*

Plastics pipe directory. The 1972 PPI Member Company Product Directory contains information on a number of applications for plastics pipe, including drain, waste and vent; sewer pipe; gas pipe; water service, irrigation; and chemical waste. Manufacturers who service each of these markets are also given. The Plastics Pipe Institute. *Circle 119 on reader service card*

Roof insulation. Three types of rigid roof insulation board are described in a 12-page bulletin. Details and physical properties of Permalite, a composite insulation board, Permalite Sealskin and urethane insulation are given. Installation, application and specification data as well as tables for "U" and "R" values are included. Grefco Inc. *Circle 120 on reader service card*

Mercury security lighting. Contemporary design with no exposed hardware or accessories is suggested for security lighting for commercial and industrial applications such as parking lots, loading docks, garages and other outdoor areas. Horizontally mounted mogul socket accommodates 100, 175 or 250 watt mercury vapor lamps, Standard voltage is 120V. Art Metal Lighting.

Circle 121 on reader service card



Compact kitchen



Movable walls

Safety flooring. Data sheets describe Altro as an abrasivefilled vinyl flooring prefabricated in 72"x60" sheets but seam welded and crevice free when installed. Used in many other countries for over 15 years in industrial plants, post offices, printing plants, textile mills and hospitals, it is now being distributed in the U.S. It is said to resist chemicals, be extremely durable and to offer excellent underfoot safety. Thruway Building Service, Inc.

Circle 122 on reader service card

Preventing roof leaks. Booklet gives technical details, charts and diagrams on what is called an upside-down concept in roof deck design. A waterproof membrane is installed directly on the structural deck, covered over by a layer of insulating material called All-Weather Crete. This insulation, composed of sealed-cell, expanded volcanic rock mixed with a thermoplastic binder, reportedly protects the membrane from photooxidation and accidental puncture, and eliminates the thermal movements and shrinkages associated with temperature variations. The insulating material is mixed on the site. Silbrico Corp.

Circle 123 on reader service card

Waste treatment and disposal. System provides engineering, technology, equipment, design, construction and operating services. Basically a chemical-physical approach to waste treatment, it produces a clear, effluent water. The solids handling portion of the system is based upon dewatering and incineration of solids in a fluid bed reactor called Fluid-hearth, which leaves a small amount of clean ash, no noxious emissions. System may be tied into an existing treatment facility; modular pilot installations make it possible to run treatability studies and trials which closely simulate operating conditions. AWT Systems, Inc.

Circle 124 on reader service card

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Editorial

Progressive Architecture

September 1972

Suddenly in the 1960s Canadian architecture began to be felt as an important influence on the U.S. and the world. There is virtually no building in Canada dating from the 1940s or 1950s that had any influence beyond the national borders. (For evidence, see J.M. Richards' *New Buildings—the Commonwealth*, 1961. Today, this would be almost inconceivable.

Initially the Canadians impressed us for encouraging architectural and planning innovation by foreigners: Toronto gave Viljo Revell of Finland the chance to build his extraordinary competition scheme for the City Hall there; Montreal adopted the underground concourse pattern proposed by I.M. Pei of New York for Place Ville Marie.

Then, in the mid-1960s, worldwide attention was drawn to three works by young architects practicing in Canada: Moshe Safdie's Habitat at Expo '67 in Montreal, Erickson/Massey's Simon Fraser University near Vancouver, and John Andrews' Scarborough College near Toronto; Andrews came from Australia and Safdie from Israel, but Canada was where they worked. The superbly planned Expo '67 gave other outsiders opportunities to demonstrate their potential; Buckminster Fuller's U.S. Pavilion and Frei Otto's German Pavilion helped to make Montreal a pilgrimage point for architects. The fair also allowed many Canadian firms to make a strong impression on architect-visitors.

About the same time, some of the larger Canadian firms were turning out less flamboyant, but nevertheless precedentsetting structures. There was, for instance, the Toronto Airport terminal by John B. Parkin Associates, the first to take cars inside and store them in a rooftop garage; and there was Place Bonaventure in Montreal, a prototype mixed-use urban structure, by Affleck, Desbarats, Dimakopoulos, Lebensold & Sise. (Both of these firms, incidentally, have since divided and regrouped, as the equally important firm of Erickson/Massey is now doing; see News Report, this issue.)

Of all these structures that marked Canada's emergence as an architectural power, only Revell's City Hall is a self-contained monument. The rest show a characteristically Canadian involvement with the context; each was conceived as part of a continuous urban fabric, as a link in a transportation network, or as a nucleus for expansion.

Traveling across Canada in 1972, our editors found Canadian architects to be more than ever concerned with the place of their work in the larger community. Thus, our coverage of Canada is largely concerned with issues and strategies.

There are, of course, fine individual works of architecture going up all over Canada. Many of those we have chosen to show in this issue are from the Prairie Provinces, where the vigor of current work was something of a revelation to us. This is not to say that we did not find significant planning efforts there too; we did, and we will be reporting on them soon. We are also planning several articles for the coming months, focusing on individual firms and projects in many parts of Canada. Current architecture and planning in Canada offer lessons for us all, on both sides of the border.

John Maris Difa

Canada

A message from the Prime Minister

I am pleased that one of the world's leading architectural publications decided to take a serious look at Canadian architecture and to devote space in more than one issue to the subject.

I believe you will find that Canadian architecture often has an unpretentious quality and reflects the diversity of its people and its climate. As our cities grow, we shall demand of our architects a sensitive interpretation of society's needs as well as the eloquent architectural statement. The day of the individual building in isolation is over; our concerns are in building communities that offer enrichment and increased choice to their citizens.

More and more our friends in the United States of America are discovering that although we share a continent we differ in many ways. I trust that Progressive Architecture's interest in Canadian architecture will be a worthwhile contribution to our joint efforts in achieving a better understanding of each other's countries.

Am

Pierre Elliott Trudeau



Houses of Parliament, Ottawa, 1867; architects: Thomas Fuller and Chilion Jones (page 100)





School at Frobisher Bay (page 121)



Construction fence, Scarborough College, Ontario Eimakopoulos, Lebensold & Sise (page 100)





Alexis Nihon Plaza, Montreal, 1969; architect: Harold Ship



Former U.S. Pavilion, Expo 67 site, Montreal



Wall painting by Gordon Rayner, Toronto (page 94)



Bathtub, British Columbia (page 136)

House in Winnepeg (page 128)





West End district, Vancouver (page 116)

National Arts Center, Ottawa, 1969; architects: Affleck, Desbarats,



Canada

An inside view

John C. Parkin heads the firm John C. Parkin, Architects, Engineers, Planners in Toronto. He is now a Companion of the Order of Canada, the nation's highest ranking honor

A genuinely meaningful review of contemporary Canadian architecture cannot be particularly easy for an American magazine. Friendliness and surface similarities in our two countries have often enough seduced you Americans into judging us by your own standards, as though Canada and Canadians necessarily and inherently shared your ideals, exigencies, tastes and idiosyncrasies by virtue of sharing the same continent. In the case of contemporary architecture, the temptation must be especially acute for, in the absence of any indigenous architectural tradition, our borrowings from you have been lamentably many. The skylines of most of our major cities are dominated by American silhouettes.

Yet to appraise what is going on in Canadian architecture by a USonian rating-system may be to miss a significant point. Most of us find the notion of architectural continentalism no more congenial than that of political continentalism.

But the Canadian situation is *not* the American situation, and that is no mere matter of harsher climate and thinner purses—though both these have obvious implications for the native architecture. (At the least, any Canadian building ought to meet standards of thrift, winter-worthiness and aptness to long seasons of dull skies and thin sunlight; and should be so judged.)

But there are cultural differences as well. We are the northern race in North America, not the southern. Possibly we are dour. Certainly we are mistrustful of genius. Hero worship and the star system have not taken root here, and so contemporary Canadian architects are by and large wary of the cult of architectural self-expression, of heroic architecture, of socalled virtuoso architecture—and of the ethos they represent.

Instead I think we share a peculiarly Canadian tradition of collective effort and collective concern—a tradition reinforced constantly by those economic and cultural arrangements that alone have allowed us to survive as a country. From the building of the CPR to Expo '67, and from the establishment of the

Canadian Broadcasting Corporation to the pioneering of Medicare, "heroic" accomplishments in Canada have of hard necessity been group accomplishments.

They have, moreover, been achieved by means of a peculiarly Canadian evolution of public-private participation that in other countries would be called socialist. (Our concept of the "ownership" of land and other property, and the inalienable right to defend them, differ markedly from yours.) Publicly owned airlines, railways, utilities, communications and even trucking—and extraordinary government support for culture—are an accepted and vital part of our life. It is a commonplace by now that the Canada Council has provided more state aid to the arts than any other patron on the continent. To Canadians, a merging of public and private endeavour is eminently sensible.

Only in our habitat has this principle gone largely unobserved so far. (Expo '67 was an isolated and anniversary event. The National Capital Commission must perforce limit its effort to the Ottawa environs, and the Central Mortgage and Housing Corporation to housing.) Consequently, a significant number of my colleagues are becoming advocates. They are not only undertaking public education in planning concepts and the urban crisis; they are increasingly active and visible in pressure groups, anti-pollution groups, stop-expressway groups, save-historic buildings groups and so on. Indeed many of them feel it as a special Canadian responsibility because the country is lucky enough still to have clean air, open space and elbow-room: a novelist once called Canada "a something possible, a chance." Some Canadian architects, more impatient or more realistic, are even going on to active politics. I know architects in Canada who have been aldermen, mayors, members of parliament, a provincial cabinet minister, and even one who is a leading separatiste. I think this social conscience is a significant and-if I am rightinevitable development in Canadian architecture.

To me, therefore, the most interesting and most *Canadian* architectural achievements are those that show themselves most aware of their human and community context, those that show what you might call architectural conscience. You will know what I mean. I hope you will judge us by that standard.

A view from the south

Canada's emergence in the 1960s as a major architectural power reflected internal developments and paralleled important changes in national self-image vis-a-vis the U.S.

Let's admit it. We Americans find it hard to think of Canada as another country. It's easy with Mexico, the only other country with which we share a land border. The Mexicans speak another language—all of them—and their national centers are separated from ours by hundreds of miles of thin settlement.

But the U.S.-Canada border cuts right through several well-defined regions—the Great Lakes Megalopolis, the grain belt of the Plains, the tourist's Rockies, the Puget Sound urban strip. Flights between our two largest cities, New York and Chicago, cut across Ontario, as crack trains used to do.

Most Canadians speak our language, and with that particular accent that we consider no accent at all. Their cars and gas stations look like ours, right down to the trademarks; their motels look like ours, and so do the shows on the inevitable bedside TV. For the most part, their buildings too look like ours—whether tract houses or urban office towers. This is not the result of cultural imperialism; there is simply very little reason—economically, technologically or socially—why they should look different.

As for stylistic influences, they vary more from office to office in either country than they do from one side of the border to the other. The Miesian idiom, for instance, has been condemned by some as alien to French Canada (representing English-speaking interests) and by others as alien to all of Canada (representing American dominance); but it has been just as earnestly denounced, of course, as alien to the U.S.

English-speaking Canadians do cling to a few cultural ties with other Commonwealth nations. They like to spell "centre" the English way, and many retain their "honour." Architects send working drawings "out to tender," and "rate payers" revolt against expressways. "Process," the very essence of architecture in Canada too, generally has a long "o" there.

Then there is that great bloc of French-speaking Canadians, a nation of 6.6 million within a nation of 22 million—80 percent of them concentrated in Quebec province. We do tend to regard them as foreign, because their language and customs—and to an extent their buildings and towns—differ so obviously from ours. The problem is that most other Canadians also think of them as foreign. Little wonder that the *sep-aratiste* movement—so disastrous for the economy of Quebec—is so persistent.

In recent decades the traditional Anglo-Saxon and French groups have been supplemented by immigrants from other parts of Europe—particularly Germany, Italy, Poland and the Ukraine. After World War II, many displaced Europeans who were discouraged by immigration restrictions from entering the U.S. settled in Canada, the great majority in Ontario. Today, roughly one out of seven Canadians is foreign-born. Virtually all of these immigrants learn English, which is more practical than French for making a living—or for moving on. And to the extent that they have preserved their diverse customs, they have made Toronto much more like New York or Chicago than it used to be.

Many miles between cabins

Canada is not only a *separate* nation; it is the second largest nation in land area in the world—surpassed only by the U.S.S.R. It stretches across seven time zones and faces three oceans—the Atlantic, the Pacific and the Arctic, which is rapidly growing in economic importance. Of Canada's 3,852,000 sq miles, only seven percent can be farmed, and its overall population density is only 5.6 persons per sq mile, compared to 57.4 for the U.S.

Climate, of course, is the limit on Canada's agricultural and settlement patterns. Except for the mild West Coast, all of Canada is subject to severe cold and erratic variations in weather. The Great Lakes have a moderating effect on the climate of southern Ontario, and the Gulf Stream on the Maritime Provinces, giving them winters milder than those of Montreal or Minneapolis, but still cold by most standards. This climate is a challenge to Canadian architects who design structures for subarctic communities (page 120) or plan allweather campuses (page 112). It has also stimulated Montreal and Toronto to build ambitious subway systems and expanding networks of underground pedestrian concourses.

Canada's 10 provinces are more autonomous than the states of the U.S. While Washington can deal directly with localities on housing and urban renewal, for instance, Ottawa cannot bypass the provincial government. Each province is distinguished from its neighbors by customs and economic bases, forming a self-contained system around its major city.



This provincial autonomy is quite evident in the field of architecture, where remarkably few commissions go to out-ofprovince firms. Except for firms that specialize-in office buildings or apartments, for instance-Canadian architects are about as likely to find commissions in the U.S. as in another province. Nor is exchange of architects across the U.S.-Canada border as active as one might expect, considering the similarity of standards on both sides and the relatively free exchange in other arts and professions. Canadian provinces offer no reciprocity of registration to architects from the U.S. or any other country. Prestigious U.S. firms have designed-as consultants-some of Canada's most prominent office towers; and a few Canadian architects of international reputation-Moshe Safdie, for instance and John Andrews' firm-are now working in the U.S. Many Canadian architects feel that without artificial restrictions, U.S. architects would quickly dominate the scene there.

Province to province variations in growth have had very direct effects on building and architectural activity. In the past decade, population has been shifting into three provinces: Ontario, the most prosperous province and the most productive in both manufacturing and agriculture, which now has about one-third of the national population; British Columbia, a mecca for both young and elderly from the Plains provinces, which has grown 35 percent in the past decade to more than two million; Alberta, the oil and ranching province that has also attracted people from prairie towns and farms to its expanding cities of Calgary and Edmonton.

Over 50 percent of Canada's people live in cities of over 100,000. The three metropolises of Montreal, Toronto and Vancouver account for 28 percent of the national population. Canadian newspaper headlines read much like those of the U.S.—"The Madness of Urban Growth." "The Quality of Urban Life. . . ," etc.

The cultivation of cities

The growing need for urban housing and the rising cost of urban land have—as in the U.S.—demanded government intervention. Canada's first National Housing Act was passed in 1938, and more than one-third of new housing is now financed through the Central Mortgage and Housing Corporation. A recently established Ministry of State for Urban Affairs is charged with coordinating all policies affecting cities. The strong powers of the provinces over municipal affairs have been used in recent years to establish many metropolitan governments.

Currently, residential construction is setting new records in Canada; housing starts, which totaled 233,653 in 1971, are expected to increase by at least three percent this year. School and university construction, which was booming in the 1960s, has leveled off, but increases in commercial, residential and health care construction will compensate.

The Canadian economy is, of course, entangled with that of the U.S. If American investors are cautious, if the U.S. money market is tight, if U.S. consumer spending is down, Canada, too, suffers a recession, as it has for the past couple of years. And, ironically, U.S. efforts to regain its economic balance by reducing imports hurt Canada, our biggest trading partner, even further.

In recent years, Canadian attitudes toward the U.S. have changed in measurable ways. For decades, Canada was depleted by the departure of bright young men for bigger opportunities in the States; as recently as 1963, Canadian emigrants to the U.S. totaled 35,000, maintaining the number of Canadian-born U.S. residents at over one million. Today the U.S. no longer offers the promise of a better life; the Vietnam agony and internal problems of race conflict and crime have reversed the tide of migration. In the past three years, 70,000 Americans—by a recent estimate—have crossed into Canada, many to avoid the military draft.

And Canada itself is no longer the cold, gray fringe of North America, loved only by confirmed outdoorsmen. Her major cities have been growing rapidly more urbane, offering increasing diversity in shopping, accommodations and cultural events; her universities—even the new ones—have been drawing talent from all over the world. Architecture has played a major role in this change of atmosphere—shaping sleek office towers, pedestrian concourses, balconied apartment slabs, and avant-garde campus buildings as settings for this new vitality.

As Canada's self-image has changed, the Canadians have concentrated their attention as never before on their own politics, literature, arts and architecture. There remains the bitter issue of French Canada's role within the nation. But there is also widespread recognition that Canada could evolve a different and better kind of American society. [JR/JD]



Toronto

City with a chance

Four Toronto architects and planners discuss their city, Canada's second largest metropolitan area: what makes it work, who makes the decisions and what is its future

Toronto is Canada's second largest city and a rapidly growing center of financial and corporate institutions. It is also, according to Jane Jacobs, the only city in the Northern Hemisphere that can and should be saved. One might therefore expect to see obvious differences in the quality of the physical environment. The physical attributes of the city, however, differ little from other urban centers and to a large extent Toronto lacks some very urban features such as squares which could form focal points. Consequently, it does not have a discernible scale beyond that of street and house. Except for the deliberate clustering of high-rise development around transit stations, Toronto is a low-rise, sprawled city.

Why, then, should Toronto be saved? What makes the city livable? Four people who live, work and know Toronto were asked what they thought about the city. In addition to what each individual may explicitly feel is important, good, bad or mediocre about the city, there is, in each of their remarks, an implicit involvement and awareness of the process of growth, an awareness which ultimately challenges the basis on which planning decisions have traditionally been made. It is an ethical attitude—a responsibility for the city—rather than a difference in attitude toward building or urban planning that makes the city livable. It is this concern that not only makes the city worth saving, but also gives it the basic tools for survival. [SLR]



2 Trinity So

3 Parliament Buildings

St. James Town development (left) which disrupted a small scale residential neighborhood, is typical of the many juxtapositions in scale in Toronto. Photos: Sharon Lee Ryder

City with a chance

Matthew B.M. Lawson

Former Commissioner of Planning, City of Toronto Private practice as planning consultant, Toronto

During the period from the mid-50's on, the city itself, the central business area, was still a rather mundane, dull area. There were jokes circulating about competitions where the first prize was a weekend in Toronto, the second prize was a week in Toronto, the third prize was a month in Toronto.

The general expectation was that a good many of the older areas were simply on the way out. Over a period of time they would be torn down and replaced. In fact, it was a general feeling that this was desirable.

When it came to facing up to this situation and to the future, starting in 1954, one of our first objectives was to make people much more realistic about what the city was like, what the prospects and potentials were for growth and development. First of all, we tried to make it very clear that there really was no prospect at all of these older areas being completely cleared out; we had to convince people that these areas were good and offered the prospect of very good housing for many years to come. Toronto was not and is not now a city with extensive areas in such bad condition that they really have to be abandoned and cleaned out.

The next objective was to establish the idea that the task was to accommodate growth and change while maintaining the city in as good condition as possible. It was a process of taking what you have, which essentially was good, varying in character, varying in quality from place to place, and to add to and adapt as time went by so that you would accommodate those changes that were necessary.

New skyline with prominent towers by I.M. Pei and Mies van der Rohe.



The general policy adopted to do this was to see that the major changes—fairly intensive new development of both commercial and residential areas—were focused in certain defined areas, to pick out the areas of change as against other areas which were defined as stable, and to try to achieve conditions that would let them both live satisfactorily with one another for a long period of time.

There was also a strong feeling that it was important to establish the identity of different areas clearly. For variety it was important to pick out areas of different character and quality, identify these and try to achieve physical identity as well as simply a stated identity. The most obvious examples were the financial core, the shopping center, the downtown business area, the government center, art centers and then secondary centers. The object was to try to foster these as places that people would identify. This was difficult in Toronto because it was, basically, a grid city; there really aren't focal points of any significance, and there aren't many squares and spaces. The city fathers 100 years ago had been particularly successful in disposing of whatever public land there was at the center of the city. There were a minimum number of opportunities left and to a very large extent this identification had to be achieved through the creation of new projects.

In some instances, such as the Yorkville village, this was done by converting existing houses and buildings in a rather colorful manner. In other areas, like the financial district, it was a matter of persuading the main banking institutions to develop projects which created a clear identity.

As the center of the city was becoming the center of a much bigger thing, we wanted to make sure that it was effectively tied in, not only operating as the center of this much bigger region, but built up in a way that people could see and identify it as a center. Very fortunately it was possible to introduce good subway service in Toronto in the early 50's. The public transit system has now been very substantially extended and improved. During this period the provincial government was also persuaded to introduce a commuter train system, which further extended the public transit system throughout the region.

Again it appeared from looking at possibilities that a new transportation terminal would be an opportunity to create a transportation and development focus—a way of integrating long and short distance transit, a way of creating a link to the waterfront which had been separated from the central city railroad tracks and the filling of land beyond that. This is now beginning to develop into the Metro Centre project.

There was also a process of publicizing ideas. Going to the people was taken as part of the method of achieving these results. The city was divided into various districts and, for each, plans were produced and widely publicized. Copies were sent to everybody in the area. It did have a very considerable influence on the general thinking of the city.

Planning for growth is not a matter of simply arranging a plan. It is something that goes on continuously as a process, an aggregation of decisions by a variety of people. Different things are added all the time and bit by bit this changes, modifies and builds up the city. The planner, at best, is only an advisor who must formulate policy, take advantage of opportunities and possibilities, disseminate information and discuss the situation with the public at large and with people who can do things—owners, developers, etc.—and in this way influence the shape of the city.

David Molesworth

Architect: Armstrong and Molesworth

Until the new City Hall was built, there was just no feeling of "center" at all in Toronto. Now when I go down I feel there *is* a center. I know the land to the east of it is going to be developed. I'm patiently waiting for what will be the connections, through spots, the bit of green and the very interesting church that is going to be resurrected. People wander around City Hall, and there have been sculpture shows and art shows on the plaza. It's just done wonders, but we need more.

We should work from major center to minor center to quiet area to grass area, to paved area, to water. We have the very large O'Keefe Centre and next to it our centennial project, the St. Lawrence Centre of Performing Arts, which has two theaters, one used frequently for public meetings. But it isn't enough to stimulate or be a catalyst for really tons of people being downtown, where crowds are downtown at night and you can see people going out of the restaurants and you can hear the reactions to theater and music halls. It's too isolated, separated from us. There's a framework, a safe framework for moving into, but we just haven't yet.

The Metro Centre development will have offices and more high-rise apartments, but at least it is people downtown, people who need to be served so more and more things may develop there. There is no transportation study in Toronto, for mass transit or for automobiles. Metro Centre is about to start without a real decision about a bus terminal or whether the subway will go into it—this huge significant thing is being built without a proper transportation study.

Our roads and traffic commissioners tend to be hired on their ability to be exactly that and they tend to dominate. They say you have to get the traffic moving and the Council says "Yes, I guess you do." You find our very talented Commissioner of Public Works making traffic move by widening corners. You can just watch his pattern go through the town. All we do is watch sneaky little throat widenings. Throat widenings sounds so innocent. They had a highway coming through our office, which on the books was called the Du-Pont/Bay jog elimination. Now everybody's for eliminating jogs, which sounded like taking out a curve. In reality, it would have destroyed one of our nicest parks and ripped through a cohesive development. Then the Spadina Expressway issue was defeated. It showed that there was a possibility of changing, after all, an inevitable thing. But the alternatives for public transport aren't being solved as quickly as they should be. If we got downtown and found we have to pay \$9 a day to store a car or \$27 a day, commensurate with the land value, then we might think about using alternative types of transportation.

We've some big parks now and are getting a wonderful waterfront development, but we need more little parks; they're in short supply all over Toronto. Because of the original waterfront access, there wasn't much development of parks downtown. Then the railways came in and took the waterfront, cut-



New City Hall and plaza which gave badly needed focal point to downtown.

ting the city off from its own lake. Now it's going to come back, partly through Metro Centres which are going to be built on top of the huge marshaling yards. Harbor facilities will be moved and a park structure will be developed along the waterfront. There will be boating and marinas. Ontario Place and the Canadian Exhibition have always been on the waterfront. The whole waterfront will be very much transformed soon. The big worry is that it's done right because once you get it, if it's lousy there is nothing you can do about it for 80 years until it comes down again. City with a chance

Gerald Robinson

Architect: Robinson and Hendricks

I find Toronto a very interesting city, particularly right now. It's going through a change, not in development but a political change. In the last 10 years we've seen citizens gain enormous power from the city and they are now flexing the muscles that are starting to shape the city in more appropriate directions. This started with poor people who were revolting against the do-good programs that were being imposed on them from on high, particularly urban renewal. They said, "We don't like the way you're coming down here and renewing all our slums. Maybe you think they are all smelly and uncouth but we don't have your middle class hangups. What we want is some sort of a grease pit where we can take the transmissions out of our cars rather than have flower beds in the front of the house."

Ten years ago a group of people in Trefaan court met and resisted another renewal scheme. Its residents had already been bulldozed out of another area with promises of how great it was going to be, but they found it was something totally unsuited to their lifestyle. They then went around and told everybody that this thing was no good. An interesting thing was that the city engaged a community organizer to go into the area to pour a little oil on the water by telling everybody how great the sparkling new redevelopment would be. Gradually, she got converted by the people in the area who had real affection for the oddities down there. Finally she told them to resist the redevelopment. She resigned her city appointment and switched over to their side. They went to City Hall, occupied the council chamber and sat in the mayor's chair. It amazed everyone that this was effective.

We've seen motions like this springing up all over the city. We've seen ratepayer's associations from very respectable middle class areas also going down to City Hall in masses. I'd say its now an equal contest between the developer and the citizen. The citizens have acquired great skill. They employ their own counsel, their own architects, their own consultants. As a result, architects have become very active in citizen organizations. The president and chairman of two or

Proposal for Trinity Square in conjunction with the new Fairview Mall.



three local community associations are architects. There are two architects on the planning board. There's at least one architect running for council in the forthcoming elections. We're getting the possibility now of a form of development in the city that can respond to the wishes of people. I think it's going to become the norm and I think it's going to mean we can avoid many of the troubles that plague other urban areas.

There's a real resentment about what happened on Bloor St.—a very pleasant street about five years ago but now becoming overdeveloped. All the little odd buildings are going to be cleaned out and we're going to get these boxes about 14-stories high, solidly ranked all the way down the street. Every open space on the north side of the street has a redevelopment proposal for it. The best merchant has moved off the street already. I think that comes from a fundamental misunderstanding of what people like in a city. As a result, people will like the city less and those 14-story buildings will become less economically viable.

There's a group in City Hall proposing redevelopment and growth for this city as if there was no end, as if you could go on growing forever. If we keep growing in an increasing rate then there must be some point at which the total resources of Canada or even the North American hemisphere have to be pumped into Toronto to maintain this growth. That's not going to happen. We may as well decide where the cut-off point is, as a matter of planning policy, then plan growth up to that point so that a 10-story building won't happen in an otherwise residential street. This is the point at which we should deal with the problem rather than wait till it is a crisis, at which point the problem might deal with us.

One reason I think we could stand a bit more growth in the immediate future is that there would be some impetus—some sort of spin-off value—that could then finance such things as improvements in the public transit system and could also produce access to the waterfront, which is cut off with a couple of expressways and railroad tracks the same way it is in many or most cities. The motto of Toronto is integrity, intelligence and industry; there's nothing about fun. Nobody ever thought that the waterfront was a thing to be enjoyed at all. We have to permit growth at the waterfront in order to finance good connections between the waterfront and the rest of the city.

In the early stages, citizen groups regarded zoning by-laws as somehow holy writ. They saw any change as being a threat to stability. So citizens who had most to benefit by some form of variety in development of the city were also, of course, against it. This developer is permitted to do this, that and the other thing in the zoning by-laws and that's all we want them to do. This building that we're in now-with apartments, offices and shops-was actually pushed through an enormous loophole in the zoning by-laws that nobody could understand. Going counter to regulations designed to protect the quality of life in the city, we produced something which really enhances it much more than what the zoning by-laws would promote, which is the building next door-a big black box with 10 floors of office space. The ratepayer groups have loosened up the strict definition of by-laws. In fact, the Annex district is producing their own official plan. They are having their own block-by-block meetings and are producing a plan of what should be growth and change in the area, then presenting this to city council. They are looking for a loosening up of the bureaucratic structure of the city which seems to be put there only so that it's easy to administer.

Colin Vaughan

Architect: Robbie, Vaughan and Williams. Candidate for alderman

At one time I could approach a city simply as a physical entity. I can't any more, because I learned it is more important to understand what is making people operate in a city before you can think about physical things. The thing I've learned, being active in the communities, is that Toronto has one great asset which most cities, particularly U.S. cities, don't have: a large, diverse committed population. The inner city has a population of about 680,000 people who are ethnically diverse, economically diverse, culturally and socially diverse. They live in physically attractive, physically safe, clean neighborhoods within the center of the city itself. There are probably about 400,000 people who live within easy walking distance of City Hall. So we have a city which is both habitable and inhabited. It's occupied by people who enjoy the city and use the city.

Late in the 1950s the trend was quite different. There was a fairly steady migration out of the center of the city, particularly by middle income people who were responding to the lure of four-color advertising about suburbs. I was looking for a house at that time in a physically beautiful area of Toronto around Woodlawn Park. At that time the streets were gradually turning into transient areas with a lot of rooming houses. The houses were becoming physically deteriorated and remarkably cheap because of the nature of the community. A lot of people who had moved out to the suburbs found out that the glossy advertising didn't meet the promises. They came back to the city and started to buy and renovate houses. People become committed to their neighborhoods, to a style of life in the city, to involvement in the community.

I began to understand the conflict in goals between these people and the politicians and planners. People moved into the neighborhood and started to renovate houses but in the process hadn't checked out what was planned for that particular neighborhood. When I bought my house, I didn't look at the plans for the city. I didn't realize that I was going to live on the interchange of two major expressways. It wasn't part of my consciousness. It wasn't only my neighborhood, it was neighborhoods all around me that were threatened by all sorts of plans and speculations of one thing or another that have taken place over the previous 20 years.

Community consciousness starts with identity then becomes a realization about community problems and ultimately leads to a very active participation in the affairs of the city. They want levels of self-government, they want control of their neighborhoods, they want virtually a planning veto of what's happening within the boundaries of their neighborhood. Recently the Metro Chairman, who is the head of government for Metro level said, "Citizen groups are getting in the way of growth and progress. They are out stopping expressways, stopping development and stopping their neighborhoods from being knocked down; they're getting in the way and they're a damn nuisance. We've got to do something about it if we're going to grow, grow, grow, grow, etc." And



One of the many small scale ethnic neighborhoods in the center of the city.

this is the conflict, a very simple, very basic conflict. Communities are saying, is growth progress? What is progress? How do we evaluate progress now? How do we evaluate development? They're saying, "Okay, what benefit does it bring? If you want to bring in 40-story apartment buildings and dump them in the corner of my neighborhood, what good does it do? At a meeting here in the city two weeks ago a lady said, "You talked all night about all the nice things that are going to have to happen because of this increased density. Now, I am a homeowner living on this street, at that position; tell me what it does for me? And don't talk generalities, just tell me the benefits it brings me." There was no answer. A blank stare. So you've got these conflicting goals with various powers that are being exerted toward these goals. Toronto is in the incredible position of having self-awareness, being able to identify itself; people are able to determine what is good and bad about it, and are in a position to decide how it should go.

There are four forces, altogether, which produce conflicts. The first is corporations that see the city as a marketplace, as a place to be exploited. The second group are the bureaucrats—they're on a power trip. Their concern is continuity and continuity of their jobs, and the basis of their control is secrecy. They are being challenged by the third group, the communities saying to them, "give us the information and we will help you make the decisions." They're looking for levels of satisfaction which run in complete conflict with the other two groups. The fourth group, which links the other three, is local politicians.

What's happening in the city now, though, is an interesting phenomenon—there is a new breed of politician emerging. The City Council has three or four of them. These men are generally younger; they don't necessarily have a strong ideological base; they're not ideologically motivated; they can't be called Socialists or Liberals. They have an understanding of the fact that the people of the city are important. That's their ideology. They believe that the city has a choice and that that choice can be exercised. They also don't believe in the inevitability of growth and progress. They've formed a very interesting coalition in the City Council and are trying, with the pressure of the communities behind them, to come to some understanding about the choices and to get this choice made.

Toronto is a city that does have a choice. Jane Jacobs has said that Toronto is a city on a knife end; it can fall one way or the other. She's right. This choice has to be made now and it has to be dealt with within the next five years. We can make the decisions which will keep this a habitable city. Ottawa

The making of a capital

When the industrial settlement of Bytown became Ottawa, the National Capital, projects were begun to change it to a city appropriate to its national role. While these efforts continue, the objective of urbanism seems to be lost in the mire of isolated buildings and misguided planning attempts

The naming of Ottawa as the capital of Canada in 1858 was viewed as a mixed blessing by residents of that small industrial settlement and with suspicion and jealousy by those who wanted the capital elsewhere. Even after the completion of the Parliament buildings in 1867, it was still the object of many jokes, one of which suggested that the capital be abandoned altogether and the buildings sold to some religious order. Despite the rumblings and dissatisfactions, Ottawa remained the seat of government and when it became apparent that this would not change, interest was aroused in making it a capital "which all Canadians could be proud of."

Since the choice of Ottawa as the capital was made partly on the basis of its beautiful siting, early efforts were directed towards developing this asset. The work began in 1899 with the formation of the Ottawa Improvement Committee. Succeeded by the Federal District Commission in 1927, the committee was changed in name only. This, too, was finally replaced by the National Capital Commission (NCC). Throughout this 50-year period, various consultants had made many planning recommendations and other voices were heard espousing a separate Federal District to sort out the overlapping jurisdictional problems. It was not until the formation of the NCC, which had to face the enormous growth of government during and after World War I, that any of these previous planning ideas were implemented.

The objectives of the NCC are to "assist in the development, conservation and improvement of the National Capital Region in order that the nature and character of the seat of the Government of Canada may be in accordance with its national significance" and further, to make the region an "efficient and aesthetically satisfying place in which to carry on the nation's business and a model of urban planning that will benefit other parts of the country." Its only source of power is land acquisition. If negotiations with individual owners fail, the Commission can use powers of federal expropriation to gain the land. It is by this means, too, that the Commission can stop development by buying the property it feels will not be developed to its satisfaction—as happened in one instance with a parcel of land facing the Parliament building.

The first planner whose ideas were considered and implemented was Jacques Greber. He was brought to Ottawa as a consultant in the late 30's when, under the Federal District Commission, a project was undertaken to build a ceremonial square as an entrance to Parliament. While the idea of a square was sound, in execution it doesn't work. Since the land cleared for the square adjoins other parkland on two of its three sides, the sense of Square, as enclosed and as a special place, is lost through lack of contrast. In the subsequent siting of the National Center for the Arts, this enclosure might have been made, but this alternative either was not seen or not desired. So the square remains a non-place surrounded by traffic, with a war memorial at its center. Nonetheless, the fact remains that once it was decided to insert a square into the existing fabric of a city, it was done and not just thought about-an attitude that allowed much of the subsequent major planning changes to be implemented.

Following the completion of that square, Greber was asked to study the city and provide a master plan, which he did as a consultant to the Commission in the late 40's. The main remedy expressed in his plan—that had been expressed as early as 1913—was the removal of all on-grade railroad trackage from the city, which would open up a great deal of in-city land for development and allow for a reorganization of traffic patterns. Other major recommendations of the plan included the acquisition of a greenbelt and the decentralization of government building on scattered sites throughout the region.

Beginning in the early 50's the railroad trackage was gradually removed and relocated. The final phase was accomplished with the building of a new train station in the early 60's and with the removal of the trackage to the old station. The land reclaimed along the banks of the Rideau Canal was used for a vehicular parkway, pedestrian and bicycling paths along the canal.

The greenbelt, acquired under protest of several surrounding municipalities which felt that the land values would rise significantly in future years, had a two-fold purpose; first in determining the limits of growth and, secondly, in stimulating development of the core by checking the sprawl that might otherwise develop. The decentralization of government to three scattered sites was an effort to integrate work and living. This decentralization and the effort to intensify core use worked at cross purposes, and in the last few years, all new buildings of the government have been within the core.

Across the river

Consistent with this attempt, the Commission now proposes to build up and tie the core of Ottawa to Hull, its Quebec neighbor. Hull had remained an industrial town, while its haughty neighbor peered down from the bluff at the paper mills on the river banks. In a French urban manner, Hull had narrow streets, with two-story wood frame houses clustered around its commercial center where all of Ottawa came in search of night life.



The first of the Place du Portage towers (above) intrudes on the three-story wood frame residential neighborhoods in downtown Hull. Ottawa's new downtown image (below) reflects the typical American Style of Building.



The making of a capital

The first step toward a "revitalization" of Hull was the acquisition of 18 acres of land—that amount being most of the vital parts of the city—and the development of an entire complex of government offices, housing, recreational and commercial facilities with two major automobile rinks to the government complexes in Ottawa. The first of four 20-story Place du Portage towers is nearly completed and a six-lane expressway has been cut through two rows of houses. On paper it's a very admirable planning proposal with just the right amount of mix, but in reality its the total destruction of a tightknit social/urban structure which Ottawa, for all its pomp, will never achieve.

While there are no such major blunders on the other side of the river, Ottawa's urbanism is challenged by vast stretches of parkland in the core of the city. The first precedent for this was set in the buildings of Parliament Hill; the three original buildings were sited around a green, so vast and with no trees to break up the scale, that people are insignificant. Adjacent to Parliament Hill is the Rideau Canal with parkland to either side, and Confederation Square. The two halves of the city are strung out to either side of the canal and in the Central Business District, where buildings are now going up 400 ft along narrow streets, there isn't one small park. While all the elements for the making of an urban setting exist, the proper mix hasn't been achieved. Where the center of action should be, there's just a park.

There are also a lot of bad new buildings; some for the federal government which, for all their ordinariness, are still less monstrous than our own; others are by private or corporate development with Bell Telephone being the biggest plague on the downtown skyline. Of the two new federal buildings, the National Defense Headquarters raised the most objections as



Map (above) shows existing conditions in the cities of Ottawa and Hull. The schematic (opposite) shows the intent of building up their centers and connecting them with upgraded automobile routes and a new bridge.

it violated the all-sacred view of the Chateau Laurier Hotel and Parliament Hill from the drive along the canal.

While it might be pointless to argue the aesthetics of new buildings in Ottawa, there is one fault they all have in common: they are all isolated buildings which have very little to do with their surroundings in their form, their siting or their materials. They could be anywhere and Ottawa, as well as Hull, could eventually look like just anywhere. [SLR]



Composite view around Confederation Square in the center of Ottawa.









Quebec

Toward a definition of Quebec architecture

Melvin Charney

In tracing the development of architecture in Quebec, Melvin Charney believes the changing cultural climate must be related to transformations in the identity of the people as reflected in the built environment, and also to the evolution of architecture as a system of ideas

In Quebec, it is important to draw a distinction between architecture as an institutionalized cultural system, and architecture as found in the man-made environment. The sources of comtemporary architecture are to be found in buildings which emanate directly from the people themselves, from the techniques of construction readily available to them, and from the social conditions that affect their lives, rather than from the stylistic evolution of buildings as interpreted by architectural institutions. Such acclaimed "Modern" buildings as those of Marcel Parizeau and Ernest Cormier in the 1930s, the later Quebec Pavilion at Expo '67, or the Grand Théâtre de Québec completed in 1970, are simply the most recent in a succession of authoritarian styles imposed on the conception and form of building.

Authentic sources of contemporary work are to be found in vernacular Quebec buildings; in the street patterns of towns, in the brick-veneered worker tenements located east of the "Main" in Montreal, and in the industrial and commercial buildings of the late 19th Century, all as yet unrecognized in the history of Quebec architecture.

The transformation of architecture in Quebec passed from the original vernacular of an integrated building tradition, with its melange of pre-feudal, Romanesque stone and Breton wood idioms to the first steps, in the 18th Century, of the formation of a professional elite. The subsequent shaping of an architectural experience independent of the experience of building, as exemplified in the styling of Jesuit Baroque churches, was followed by the dominance of various stylistic

Author: Melvin Charney is a practicing architect and associate professor of architecture at the University of Montreal. In his monograph "Pour une définition de l'architecture au Québec,"¹ here translated by D. Agrest, the author distinguishes four underlying themes, three of which have been excerpted, while the last is printed in full.

fetishes, culminating in a mimetism of anything that looked Modern—with buildings outside the stylistic consensus relegated to a category of "popular" architecture.

With the emergence in the 1960s of the "Quiet Revolution" and its assertion of a French-Canadian national identity, Quebec architects turned to national aspirations and to their historical and North American origins. This marked a revived interest in vernacular architecture and in the preservation of Old Montreal and Old Quebec. There was new interest in the works of Frank Lloyd Wright, and in expressionistic buildings such as those of Paul-Marie Coté or Roger d'Astous, which appear as if sculpted out of raw material by some folk architect, and which so offended the English sensibility.

But even if the work of Quebec architects attempted to externalize the expression of a national conscience, it has largely remained, as architecture elsewhere, divorced from realities which affect the lives of most people. Architecture is still trapped in its early origins, and has little meaning for anyone except a small part of the population. The "Quiet Revolution," as André Langevin and others have shown, was "that of the Quebec bourgeoisie," born as a class of executives, government officials and technicians, of which architects are a part, cut off from the life of the people.

The recent emergence in Quebec of a collective identity tends to expose the ambiguous nature of architecture itself. On one hand the architect sees that his work should be addressed to the people in whose name it is created, while on the other hand he sees that it is not possible to free architecture, as it is presently conceived, from its elitist and repressive origins.

This transformation can be seen in the development of housing. Even though the early housing of Quebec suggests the image of an isolated farmhouse, the form of these early houses reveals a previous relationship to the configuration of streets and the patterns of a town; the physical configuration of the individual house speaks of its historical origins derived from a medieval tradition of town architecture. The laws of the civil code, for example, clearly defined the party wall, the links between individual houses.

Housing in Quebec

The collective form of early Quebec housing continued to be developed with the growth of 19th Century towns and







Le Grand Théâtre de Québec (above left), an example of authoritarian style imposed on the conception and form of building. Roger D'Astous' Église Notre-Dame-des-Champs (left), which so offended the Canadian-English sensibility. Authentic sources of contemporary work are to be found in vernacular Quebec buildings: a 17th Century house (below left) speaks of its historical origins derived from a medieval tradition of town architecture; the organization of 18th Century housing (below right) and 19th Century housing (above) also derives from previous forms of land use.





Toward a definition of Quebec architecture

cities, particularly in Montreal. The organization of dense flats, of interior courtyards and of an orthogonal street grid derives from previous forms of land use. The mass of population was thus accommodated in a communal structure that was born apart from establishment architecture and was created by ordinary people making ordinary things. Evidence of this collective sense can be seen in blocks of workers' flats in the east end of Montreal, whose form recalls that of Fourier's Phalanstère. It is also attested to by the persistent phenomenon of the tenant. Even though 65 percent of the present population of North America own their own homes, the opposite is true for most of Quebec's centers. In Montreal the percentage of tenants is more than 80 percent. The phenomenon of the tenant exists for many reasons; socioeconomic ones are not the least. Insofar as the people tend to identify with housing as a community object, these conditions are part of the structure of relationships between them and their patterns of living. The physical structure of housing should, at best, support these patterns.

During the 1950s, mass housing in Quebec became a real problem for establishment architecture. The National Housing Act gave the government the means to subsidize the construction of low-income housing, as if such a distinct type exists other than that which is cheaply constructed or second class. An example of this is the Habitations Jeanne-Mance. located in the heart of Montreal. Several tall towers stand as isolated islands on a bulldozed lawn; they float in a demolished area of the city as some displaced apparition from the London County Council, as inadequate as most foreign aid to underdeveloped countries. Not only do these buildings ignore the local ecology, but they are imperialist in their very conception. They are socially and culturally imperialist to the extent that the architecture imposed upon the housing signifies a diminuation of the sovereignty of a lesser group: the people who inhabit them.

The existing ecology of the neighborhood was, simply, destroyed. People were crowded together in towers completely controlled by the State. Housing of this type—and it is familiar to everyone—responds only partially to people's needs. Even 15 years later, many housing projects in Montreal exploit the ecology of the community in the same way in the name of "private enterprise," while Habitat '67 does it in the name of a personal vision of things to come.

Housing, as architecture, still tends to be the expression of a limited idea of housing and of a special object, rather than a concern with the physical organization of facts related to the viability of the milieu—facts as simple, for example, as the need of a block or neighborhood restaurant.

One must make a parallel between this problematic institutionalization of housing in architecture and the equally problematic institutionalization of housing politics. For example, the government policies in Quebec encourage home ownership and the construction of single family housing in the suburbs, instead of promoting community housing, rehabilitation, co-ownership and rent control. These priorities are part of a policy of social and economic acculturation which, although not explicitly formulated as such, nevertheless achieve the same results.

The Îlots Saint-Martin Housing by Jean Ouellet, sponsored

by the Municipal Housing Bureau of the City of Montreal in 1968, represents a remarkable evolution of sensibility in relation to the projects mentioned above. Even if it fails from some points of view, its failures are inherent in our times. The indigenous architecture of the quarter was implicitly accepted as relevant, and an attempt was made to respect and integrate existing housing. The existing shells of some of the old houses were used; some motifs, such as roof profiles, were repeated in the new construction; and the general sense of scale was maintained. However, in order to create the plan of a housing "project," the grid of existing streets was suppressed, and consequently so were all aspects of community coherence. As an architectural product, the housing was transformed into an object having the form of a housing "project." Before, it constituted the background of people's lives. Now it has passed to the foreground, denying the very same life those people led, as can be witnessed in the rapid deterioration of the buildings.

Architecture as intervention

Just as it is everywhere else, architecture in Quebec is in a position where it must encompass a diversified field of activities which intervene in the relationship between people and their environment. These activities intervene in the development and distribution of resources in society, and are necessarily political.

In Quebec a growing number of concerned architects are engaging themselves in a democratization and diversification of their activities. One finds them involved with various government agencies, with community organizations, with citizen's groups and with industry. However, between the recognition of the social dimension of architecture and its actual practice there is a large gap, although it is not always obvious. In fact, even with the best intentions to socialize architecture, to create places in the name of the people, or to defend their interests—given present limitations in the conception of planning and design—these activities still tend to deny the needs and experiences of people.

Underlying the need for a change in the conception of architecture, one must recognize the shift that has recently emerged in man's understanding of man-made systems. This shift is found in the differentiation between processes of information and processes of energy. One can see, for example, that the organizational system of the physical environment constitutes a language of interaction between people and things. In Quebec, we are conscious of the central role of the signification of streets and squares in the organization of settlement patterns. The problem resides now in the development of a valid comprehension and in the ability to translate this comprehension into a coherent physical form; to translate the language of the street or square into a new context as seen, for example, in the pedestrian systems of the "underground" portion of central Montreal, in the interior of a new university campus, or in a new neighborhood.

An understanding of architecture based only on the expression of buildings traps it in a limited vision. In the center of Montreal, an element as large as Place Bonaventure is found to be caught in the ambiguity of rhetoric which, resolutely, tries to make out of its bulk a "building" in the traditional sense of the word, that is to say, a special and singular object, rather than, in its true sense, an extension of the city itself, linked to the other urban poles.

The use of a thing precedes its meaning. In the case of Place Bonaventure, as in that of other buildings in the core of Montreal, such as Place Ville Marie, its use as a multifunctional and pluralistic extension of the city is denied by an obsolete formalism. Its meaning resides in the interior of this "public building" that has become the exterior of a public architecture. The conception of this "building" itself as a singular element is simply a legal definition of real estate boundaries as interpreted by a developer, and not necessarily a unit of formal expression.

The organization of the physical environment is in effect a



Îlots Saint-Martin Housing represents a remarkable evolution of sensibility in relation to the usual government-sponsored housing.

system of control. The elaboration of the physical environment is therefore related to the control of control. Consequently, if the tendency in architecture is to consider it as the elaboration of a physical environment responsive to the needs and expression of people, then it can only be responsive insofar as it is part of their means of understanding and controlling their own destiny.

This means that there are at least two general levels of action that can be distinguished in the diverse activities of architecture. The first is at the level of the creation of physical resources (energy) with which the various spaces required by society may be realized. The second is at the level of the expression (information) of individuals or groups of individuals using those resources. At present, architecture is not only limited to the second level, but it is also manifest by a false representation in which an individual of a privileged class creates a thing resembling a cultural object, in the form of a building, presenting it as the expression of the whole society. The Grand Théâtre de Québec is produced and erected in the form of a cultural palace while there is a need for a network of cultural facilities accessible to everybody. A Palace of Justice is built in Montreal as a political affirmation of authority, instead of building a judicial system that is equitable for all, using existing facilities, and investing the resources instead in constructive social activities. Low-income ghettos are still built for people, isolated from the rest of society as if afflicted with a sickness and kept in quarantine without a means of escape. In 1972 a freeway is being built virtually on top of the Îlots Saint-Martin houses, and the people have no means of stopping it.

The future of architecture in Quebec, or anywhere, for that matter, resides in the resolution of these questions. Technically, it is possible to build many things. Solutions lie in a social and cultural evolution where architecture becomes part



In the heart of Montreal, Place Bonaventure's use as a multifunctional and pluralistic extension of the city is denied by its exterior formalism.

of the struggle of people to control their own lives. Even the problems of the building industry are not fundamentally due to lack of a technical knowledge, but are caused by a lack of responsiveness in the industry to the needs of society.

Meaningful architecture questions the state of architecture itself. However, possible answers no longer fall within familiar terrain. Inevitably, the social condition of an individual, as an architect, in relation to other people is also evident. That is to say that the redefinition of the architect depends on the social liberation of both the individual and the community. And, in Quebec, this means that it depends equally on the affirmation of a Quebecois identity, renewed and original. Unfortunately, however, the cultural hegemony of traditional architecture still persists. But, now, at least, it is more of an anachronism than a viable reality.

¹Architecture et urbanisme au Québec by Melvin Charney and Marcel Bélanger, Les Presses de l'Universitié de Montreal, 1971. An expanded English version will be published by I Press, Boston, in 1973, to be distributed by George Braziller, Inc. city hall complex

Urban growth for a non-urban area

Canada's Atlantic Provinces for generations have been apart from the mainstream of the nation and passed over by the Industrial revolution. There are Maritimers and others who say that isn't altogether bad, and that talk of the industrial and urban growth of the region isn't altogether good

From Citadel Hill, you can see almost all of Nova Scotia's capital. High-rise towers sprout from the historic buildings and delapidated blocks of the central business district. Bridges and ferries cross the harbor to Dartmouth, roads lead to Bedford at its upper end. In the other direction is the Northwest Arm, its banks dotted with houses, its surface with pleasure boats. It's a typical small city, and it has changed a lot in the past five years.

It has been during that time that most of the development in the central business district has taken place-Scotia Square

major retail-entertain

social activity at

king square

pedestrian entry level to retail concourse



to be rehabilitated as pedestrian entry to Civic Centre development with its two towers and fortresslike base of shops and parking, The Royal Bank and Bank of Montreal towers, the new Law Courts building—and it is still going on. And while this growth brings problems and challenges, it also brings the seeds of maturity. "The city is now providing services that 20 years ago had to be brought in," says Maurice Lloyd, a planner and the executive secretary of the Metropolitan Area Planning Committee. "There's a wider variety of consulting services available locally; the banks have greater local authority." And there is a growing interest in the city's future.

Professional, commercial and municipal interests, banded together as the Downtown Committee of Halifax have been asking Haligonians a basic question: "What kind of a downtown do we want?" The question is also a title—the cover of the committee's report in May of this year. The Downtown Committee's effort focuses on the 80-acre central business district, and the report includes a list of objectives drawn up and ratified by the city council in the fall of 1971; during the past year, a longer and more specific list of recommendations was approved. They include the usual litany of suggestions for a vital downtown—round-the-clock activities, shops and attractions of all kinds to attract all kinds of people, preservation of historic buildings and scenic vistas, more parks, better street furniture.

The importance of this effort, however, lies in its low key approach, says Edward Babb, an American planner in the city's planning office. Babb points to two statements on the first page of the report: one says "it's a waste of time to draw *the* plan for downtown Halifax before we know what kind of a downtown we want," and the other notes that "the best planning consultants are the people of Halifax."

Certainly Haligonians are being forced to look at their city, sometimes in a new way. A couple of years back the Metropolitan Area Planning Committee (MAPC) assembled a panel



Study for St. John, N.B. (left) focuses on 7 acres that are the downtown commercial center. ARCOP Associates combine cultural and private commercial facilities linked by a system of indoor concourses and outdoor green space to give city an identifiable Civic Center, In Charlottetown, PEI, ARCOP has been doing studies of development opportunities (right). "Design probes" explored 1) the old part of town as a center for street market activities and historic preservation; 2) university area as a pop-boutique retail and entertainment center: 3) waterfront for tourist and convention facilities and 4) an auto-oriented retail, office and institutional street. Not shown is a system of peripheral parking lots and mini-bus loops.

Cyclical rather than linear, ARCOP'S design probes bring the traditional advantages of the design process to programming, according to partner Ray Affleck. The approach is "suppose we put a hotel here, a pedestrian link there ... then check it out for bugs and run through another version." He is skeptical of the linear model: "It's not a way of making contact with people."

"Probes," says William Lydon, also of ARCOP, "are sketch ideas, sketch designs. Their main value is to communicate concepts and suggest new avenues of thought and investigation."



Urban growth for a non-urban area

of 10 outside experts, who came to Halifax for a week of study, public seminars and public reaction. They spent the week getting an overview of the metropolitan area, its problems and its potentials, meeting with local interest groups and getting feedback from the public at large. Called Encounter, the program is generally considered to have been a stimulating experience. "It was sort of a shock treatment," remembers George Rogers, president of the Nova Scotia Society of Architects, "but it was a good program. It forced public acknowledgement of a lot of problems—that we're running out of land, that there *is* a black community in Halifax, and that the multiple governments here really complicate planning."

The biggest problem in the Halifax area, he says, is to break the political in-fighting among the three levels of government—the two cities (Halifax and Dartmouth) and the county. Ending the in-fighting, through the sensible step of setting up a regional metropolitan government, is one of the major goals of MAPC, the group that put together the Encounter program.

MAPC started out as a steering committee on regional development. That was in 1969 and the committee had been set up when the province began negotiations with the Division of Regional Economic Expansion in Ottawa; DREE itself had been organized that year, with a view toward helping end economic disparities among the provinces of Canada. "As a steering committee," says executive secretary Maurice Lloyd, "we did a crash program for a shopping list of projects."

After being reorganized as MAPC, the group moved into long range studies of economic development opportunities and land use implications. The general approach was to set up task groups for investigative studies, bringing in background data in specific fields from a variety of special interest groups. Separate task groups were set up for housing, recreation and social problems.

By this summer, MAPC had produced a development plana "control document," Lloyd says, and a strategy for organizing government effort and spending. The general plan for the development of the Halifax metropolitan area calls for concentrating employment in the central business district and two outlying areas; major population growth would be directed toward the east side of the harbor (Dartmouth) and a satellite city at the end of the harbor (Bedford). Transit facilities and water and sewer systems would be used as a framework to guide the distribution of population and employment.

"We've been examining options as a metropolitan area, as part of the province and as part of the Atlantic region," says architect Julio Mafini, who headed one of the task groups. "It's fortunate that the industrial revolution passed Halifax by. We see the city as a service center for the Atlantic region, building up 'soft' service industries, very urban in nature. What we're preparing is a development plan for the metro area, rather than the traditional land use plan."

While that plan was being prepared, other groups in Halifax have been making their own efforts to see that growth doesn't mean the end of the city they know and love. One large-scale study of views from Citadel Hill could end up, if necessary, recommending a standard regulation of by-laws, limiting building heights and locations in order to preserve certain historic and scenic vistas. Other studies have earmarked historic buildings for preservation and are identifying desirable streetscapes. Yet in spite of the low rate of in-migration, in spite of the slow growth rate, "Halifax may be nearing a turning point," says Allen Duffus, another Halifax architect. "We have our last chance to say what we want to happen."

A wave of growth

It's not exactly fair to view the four Atlantic Provinces (Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland) through what's been happening in Halifax, but Duffus' remark will be apropos to some parts of all of them soon enough. For what hit Halifax five years ago was the leading edge of a wave of industrial and urban growth that is now being felt clear across Atlantic Canada.

From the air, you get only slight indications that the wave is being felt—a housing development here, a factory there. For the most part, the trees and farmlands seem to be limited only by the water; there are only slightly more than 2 million people scattered across Atlantic Canada's 200,000 sq miles. Large stretches of countryside still look as they must have when Lucy Maud Montgomery immortalized Prince Edward Island in *Anne of Green Gables*—the same small farms, small towns and fishing villages.

The statistics make this storybook land sound a lot like this country's Appalachia—low incomes, high unemployment and Canada's highest percentage of rural nonfarm population. Per capita personal income runs well below the national average: Newfoundland's is the lowest in the country. (In 1969, the national average was \$2913; in Newfoundland, it was \$1613; Prince Edward Island, with \$1818, was second lowest. Even Nova Scotia averaged only 80.3 percent of the national figure.) Unemployment in 1970 was 128.8 percent of the national average.

It is this economic disparity that prompted the current talk of industrial and urban development. It is all pulled together in a report by the Atlantic Development Council, an independent citizen's organization supported by the Division of Regional Economic Expansion. The Council was given the task of looking into the Atlantic region as a whole and suggesting ways that DREE could tackle regional disparities. The report says that during the '70's some 50,000 new jobs must be created in manufacturing in the Atlantic Provinces; this rapid growth of manufacturing must lead to a more urbanized region. "The success of the development program proposed by the Atlantic Development Council should lead to over 70 percent of the population living in urban centers by 1981." What they are proposing represents a 20 percent increase over the region's urban population in 1961.

Doing something about these suggestions is DREE's job. Set up in 1969, the Department made the entire Atlantic region (except Labrador) eligible for aid in a program of regional development incentives. Special areas within the region are entitled to additional help for developing utilities and services to make them more attractive to industrial growth.

This sort of federal aid helped establish the two Michelin Tire plants that opened in Nova Scotia last year; they will eventually employ 2000 people. A multiple industry complex along the lines outlined in the Atlantic Development Council's report is being studied for the St. John, New Brunswick area; it would include 12 to 14 factories producing a range of consumer goods based on small motors. A similar approach to the tourist business is being discussed for Nova Scotia's Cape Breton highlands to provide a setting for conventions and conferences and perhaps to open up the area for winter sports. DREE is building schools and hospitals and sewer systems to provide the services that make an area attractive to industry; the federal government is also involved in home ownership programs in a number of areas. Perhaps the most radical program is in Newfoundland, where residents of isolated fighting villages are being resettled, with government assistance, in larger towns.

Industrial growth and the urban growth that follows are, in many ways, welcome in the Atlantic Provinces, but the acceptance is certainly not unanimous. "There's more planning done in the Maritimes than anywhere else in Canada," says a development official, "and a lot of it's bad. There are too many people who believe that the answer is industrialization. I don't think it will happen; it will be unacceptable to the people. Those who are planning industrialization aren't considering the nature and aspirations of the people."

One recurring theme in the Maritimes is that the statistics that point out the region's economic disparity with the national averages don't necessarily tell the whole story. Maritimers are used to taking a living from the sea or the earth and accustomed to life without great sums of cash. Asked if Prince Edward Island is poor, Bill McFarland, a DREE officer in Charlottetown says, "If you apply the current Canadian standard of urban poverty, there are a lot of poor people in Prince Edward Island. But you can't apply that standard."

"Myth" is a word that crops up now and then in conversations about the poverty of the Atlantic Provinces. "There is an enormous myth about the Maritimes," says Montreal architect Ray Affleck, whose firm, Arcop, is involved in downtown plans for Charlottetown and Summerside, PEI and St. John, New Brunswick. "Federal statistics show low cash income, but that doesn't necessarily mean poverty. The middle class is quite adept at promoting this myth and getting hand-outs. Given the federal system, it's an effective way to capitalize."

Len Poetzche, a federal development and planning official who has been involved in a number of joint federal-provincial programs in the Maritimes, also talks about myths. "We're geared up federally around myths of national averages, national standards. That was all right years ago when we were building the national railroads. But when you get to development—one of the richnesses of this country is its diversity."

What is not reconciled by the planners is that the Atlantic Provinces are rural or coastal. Halifax, says Doug Miller at the Nova Scotia Housing Commission, is "an imposition on most people's minds—it drains every Friday at 5:00 p.m." And Charlottetown, says Ray Affleck, is the "rainy day capital of Prince Edward Island—when it rains people come to town farmers because they can't work, tourists because they can't play."

Maritimers are conservative, says Bill McFarland at the DREE office in Charlottetown. A native Maritimer who spent some 20 years in central Canada and the U.S., McFarland says that in that time the tempo of life has picked up, although it is still quite relaxed compared to the major metropolitan areas of either country. "If you put the question to people, they would probably say 'We don't want to change, but we'd like to have a lot of the nice things we've heard about.' Improved communications, particularly television, have changed people's view of life.''

There is also reason to feel that Maritimers are reaching the point at which they want to do their own planning. Richard Wilbur, a free-lance writer from New Brunswick, recently noted in *MacLean's* that "rightly or wrongly, we Maritimers are a little touchy these days about Upper Canada's actions and attitudes toward us. We aren't complaining we've been *neglected*. We're more concerned that all the major decisions for developing the stagnant economy of the Maritimes during the past decade have beem *imposed* on us from Ottawa (admittedly with a bit of help from our politicians)."

And just as recent growth has brought the beginnings of local maturity to Halifax, it is developing more local influence on the future of the entire Atlantic region. "The issue in longterm development planning," says Harold Verge, a planner from Nova Scotia who developed a long-term plan for Prince Edward Island, "centers around technical competence, which has been lacking in the Maritimes for some time." There are universities in the Atlantic Provinces, but the really bright students seem to leave, either before or after graduation, to seek opportunities elsewhere. Low salaries don't attract or hold really competent people. Yet this is beginning to change, on Prince Edward Island and in other parts of the Maritimes. "Bringing in outside technical people and their recommendations has caused an upheaval on Prince Edward Island," says Verge, "and we've introduced enough weight of competence into PEI that many of these competent people are staying on."

There has been, says Verge, an "unbelievable change from preplanning days." The results, however, since the 1968 signing of the PEI development plan are not all physical. There have been great changes socially and institutionally; there has been a "revolution" in salary scales to attract competent people. The trick now, in Prince Edward Island and the rest of the Atlantic Provinces, is to maintain and build this technical competence and, as Verge says, "bring an insular community into the 20th Century."

As the Atlantic Provinces get further and further into the 20th Century, the big challenge will be to retain the best things of pre-urban life. Even that report of the Atlantic Development Council recognizes that "most present and future citizens of the Atlantic Provinces will want no part of living in these great megalopolises (one of the great conurbations predicted for North America by the year 2000 would stretch from Montreal past Toronto). They will continue to prefer to live in relatively small cities, where a half-hour drive will take one to the forests or the seashore. They will prefer to live closer to nature, in areas free from congestion and water and air pollution." The problem is to make it work out that way.

"Our strongest feelings about work in the Maritimes," says Ray Affleck, "are related to work in overdeveloped areas. It's sort of 'Oh my God, not that trip for them.' There is an enormous threat to the last green space along the eastern seaboard, which the Maritimes pretty much are. The best expression of the dilemma is the tourist business: it's an ideal industry for the Maritimes, but where do you put the limit?" [CP] Edmonton

The campus as a lesson in urban form



Long-range development plan for the University of Alberta by architects Diamond & Myers replaces campus streets with linear structures that combine enclosed pedestrian concourses, covered service drives, shops and other amenities with housing or academic spaces. Several buildings completed or in progress begin to show the potentials of the scheme

Edmonton, capital of Alberta and seat of its university, is in many ways typical of North American cities its size—400,000 to 500,000, depending on what you include. There is a clump of towers at the center, a spreading ring of tract houses and shopping centers, and beyond that the prairies. But Edmonton has one big distinction: at latitude 53° 35' north, it is nearer the Arctic Circle than any other American city even a fraction of its size. (Anchorage, Alaska, at 61° 10', has less than 50,000 people.)

When Toronto architects A.J. Diamond and Barton Myers began to study Edmonton's university campus, they found an all-too-familiar development pattern, its common drawbacks severely aggravated by the city's harsh winters. An accumulation of buildings, more or less related by function, was dispersed over a haphazardly modified grid of streets. Ground coverage of only 15 percent produced extended walking distances; consequent reliance on cars—even for on-campus trips—sacrificed much open space for parking (right in among the buildings to shorten the dash for cover).

University enrollment, about 18,000, was expected to reach 27,500 in the next decade. The past process of expansion by adding land was being thwarted by surrounding development; besides, further extension of campus communication lines was obviously undesirable. So Diamond & Myers proposed to contain all expansion within present campus boundaries and use this in-fill construction to make the campus both convenient and socially active.

Their plan is not intended to be executed literally, but to guide development, setting tentative locations and functions that may be modified as specific buildings are programmed and designed. The principal measures in their plan: 1 A series of parking garages will go up at the periphery of the campus core, as streets and parking lots inside it are phased out; since cars need some kind of protection from Edmonton winters (such as special electric heaters when left in the open) the garages will pay for themselves with parking fees.

2 New linear buildings linking existing structures will have climate-controlled pedestrian concourses, with covered service drives beneath them, following the lines of some existing streets and walks.

3 Housing will be added to the core of the campus, in these new linking structures, and will include a variety of unit types and operating methods to suit varied student needs.

4 Commercial facilities will be admitted to the campus, in the form of shops and dining facilities along the pedestrian concourses.

5 Where pedestrian concourses occur in academic buildings, heavily used areas such as lecture halls and libraries will open from the concourses; individual offices and labs will be above.

6 Student activity and lounge spaces will not be centralized, but dispersed along the concourses.



Central Academic Building (above) by architects Richards & Berretti is one of the first campus buildings to reflect long-range plans. Lower three floors and basement of the seven-story structure have circulation, lounge and dining space around a central well. Typical pedestrian concourse schemes (below) are being adapted for other new buildings.



The campus as a lesson in urban form

7. Appropriate parts of the university will be designed to encourage public access and use to "eliminate hard and fast boundaries" between university and community.
8. To encourage use of public transit, bus stops with climate-controlled access to the concourse system will be established; when a projected transit system is constructed, all buses will be routed through the on-campus station.

As new buildings are added following this pattern, more and more campus destinations will be accessible from garage or bus stop without a walk out in the cold. More and more students will be able to give up the traditional daily trip to work implicit in earlier campus housing—and live close to classrooms, shops and social areas.

The pedestrian concourses would be much more than just indoor corridors. They would be naturally lighted and varied in height, expanding at intervals to include lounge and eating areas. The architects see in the concourse system a way to provide the "nonacademic space" that is not covered in the typical square-foot formulas for academic or residential buildings. Especially in a climate where outdoor spaces are seldom comfortable, this unassigned space is, they contend, "as essential to the success of the university as computer hardware or laboratory space."

To convince university committees of the value of indoor concourses, Diamond & Myers presented analyses and illustrations of existing European and American arcades. They cited in particular the example of Bologna, whose 20-mile network of covered passages originated in Middle Ages, when a 10,000-student university was dispersed throughout the city.

Carried to completion, the Diamond & Myers plan would increase ground coverage on the main campus from 15 to 34 percent. But usable outdoor space would actually increase as surface parking and unnecessary thoroughfares were eliminated. Roofs of parking structures would be reclaimed as tennis courts, ice rinks, etc. And since much of the new construction would be on area now given over to vehicles, hardly any existing buildings would have to be demolished.

The architects have continued to serve as planning consultants to the university since presenting their development plan in 1969. The committees and boards they have dealt with have been unusual in make-up; at Alberta, students are (and have been) fully privileged members of all decision-making bodies, including the University's Board of Governors, before which the architects have argued some particularly stubborn issues. And the Students' Union, a far stronger organization than anything of that name in the U.S. (largely because membership and dues are compulsory) handles construction and management of their own buildings: the completed Students' Union Building and the housing now under construction with a combined cost of \$12 million.

Diamond & Myers stress that their role as planners does not extend to aesthetic control over buildings by other architects. (All buildings under the plan were to be by other architects, but Students' Union prevailed on the planners to design their housing; see below.) The planners have reviewed building designs in terms of long-range policies, encouraged architects to develop the concourses as real "places" and urged them to involve user groups in the process, but they have avoided aesthetic judgments.

They contend that architects engaged in planning other campuses are too often preoccupied with design control, and they ask whether the university needs to conceal its inner diversity with "apparent sameness." And they feel strongly that no plan should depend on "superstars" for its execution. Observing that most design commissions for U.S. and Canadian universities are given out for essentially political reasons, they maintain that a plan must be able to accept buildings designed by "the other 95 percent of the profession."

A critical part of their role, as they see it, is urging the university to establish and update its own planning objectives, based on a well organized institutional research, and to coordinate more closely with city and province authorities on traffic planning. They have tried to make their own plan as adaptable as possible to changes in administrative policy, educational methods, technology and the money market. But they also recognize that their scheme may not be *the* solution to university planning, even for this campus; sooner or later, changing circumstances will call for a new long-range plan.





Library addition by architects Minsos Vaitkunas Jamieson under construction. Photo: Rudolf.
Students' Union Housing

A 950-ft skylighted concourse, possibly the longest interior arcade in the world, will run down the center of the Students' Union Housing, now nearing completion. The only structure designed for the campus by Diamond & Myers, it represents their interpretation of planning objectives, heavily influenced by the economics of housing that has to pay its own way.

The program drawn up by the Students' Union called for apartment units comparable in space and appointments with those on the off-campus market, which could—because the university land was leased at \$1 per year—be offered at below-market rentals. Considering this saving on land, it was determined that certain advantages over off-campus apartments could be offered: a wide range of sizes; single bedrooms for all residents; and improved sound attenuation between units.

The mix of unit types—including 1-, 2- and 4-bedroom units—was established by balancing social objectives against the estimated revenue per square foot of various apartment types. The overall organization of the buildings was determined in large part by the economic need to use standard apartment construction methods. The units themselves are in six- to seven-story flat-plate-and-column structures along either side of a service road. Joining them are the only untypical structural elements, the precast T-beam floor of the concourse and its light steel and Plexiglas roof, both spanning 28 ft. The cost of building this naturally lighted interior concourse over the roadway is offset in part by the lower cost of apartment walls facing the gallery, which need no weather resistance or thermal insulation.

The Students' Union sought to include commercial space in the building primarily as a convenience and a social asset for residents. The university Board of Governors had to set aside a rule against commercial rental on campus, thus opening the way for further integration of university and city. In the long process of arranging financing for the building, which encountered many costly setbacks, revenue from commercial space became critical to its economic feasibility.

The Students' Union Housing promises to be an important step in bringing student housing closer to real life, and P/A plans to cover the building more fully when it is completed and in use. [JMD]

Data:

Project: Students' Union Housing, University of Alberta, Edmonton, Alberta.

Program: apartments of single, 2 and 4 bedrooms all for a total of 940 occupants; commercial rental space along 2nd level pedestrian concourse.

Architects: A. J. Diamond & Barton Myers; associated architect: R. L. Wilkin.

Structural system: reinforced concrete, cast-in-place flat plate and column system in apartment portions, precast T concourse floor; light steel skylight framing.

Major materials: exposed concrete frame; precast concrete exterior walls; drywall interior.

Costs: final costs not yet available.

Client: Students' Union, University of Alberta.



Construction view reveals section of Students' Union Housing; apartments will be maximum of 2½ flights above or below concourse, which will have clusters of shops and lounges. Massing model shows links to other new structures; see campus map, page 112. Photos: Rudolf.





British Columbia

Downtown Vancouver: it's not yet too late

Alan Fotheringham

West End apartment towers compete for view of Grouse Mountain across the harbor



Occupying one of the most beautiful urban sites in the world, the tight little core of this metropolis of a million plus is bristling with new towers and flooded with automobiles. Wide recognition of the need to curb development and introduce transit may yet lead to reform of planning policies

The best thing about downtown Vancouver is that you can catch a glimpse of freedom at the end of the street. Pedestrians at the main intersections need only glance north and there, at the end of the concrete canyons, is a slice of blue water and green mountain.

It's the visual escape hatch that more sophisticated cities would trade a pack of skyscrapers for. a touch of soothing sanity for asphalt-bound office workers. It's evidence that out there somewhere, beyond the IBM machines and interoffice memos and diesel buses, there is a better piece of living.

Even San Franciscans have come to realize too late that they have shut off too many of their sea views with a picket fence of towers along the waterfront. It's a prime lesson now because Vancouver, which retreated from the water when ugly rail lines first captured waterfront rights, is finally moving its focus back along the harbor. The battle in the city at the moment is to make sure those visual escape hatches are kept open.

In a way, it's strange that it has taken developers so long to realize that the bank of Burrard Inlet, looking across to the ski slopes on the Coast Mountains, offers the most stunning office setting in the city. The People Who Count have long realized it: the best viewing spots in town are still the bars in the Vancouver Club and the Terminal City Club, both of which perch on the bluff that drops down to the Canadian Pacific tracks.

It is significant that the people who have rushed to build offices on the waterfront are from out of town, perhaps with that perception that strangers bring. The three-stage Baxter complex is Winnipeg money. The 27-story Guinness Tower next to it owes its allegiance, of course, to Dublin. And Project 200, the complex that could remake Vancouver by erecting a condominium mini-city over CPR trackage, was brought together by Grosvenor-Laing with English financing. Why couldn't local people see the potential? The town has turned its back on the sea for so long that it has taken outsiders to point out its best profile.

Vancouver has been described as a setting in search of a city. I recall years ago when the elevator leading to the Top of the Mark in San Francisco carried an ad detailing the six most spectacular cities in the world. San Francisco, Hong Kong, Capetown, Rio de Janiero, Sydney and Vancouver. This reporter's eyes have yet to view Rio, but Vancouver can hold its own with the most eye-catching of all—Hong Kong and Capetown. Vancouver's weakness is that its vulnerable commercial heart is the smallest of the six gifted cities; its strength is that it is the youngest of the six—not yet 90 years old.

The commercial core of the city is restricted to a peninsula that is barely a mile wide and just less than two miles in length. Few people who live in Vancouver realize how unique is its geography. That funny little peninsula in fact is almost

Author: Alan Fotheringham is a columist for The Sun, Vancouver.

an island. Four of the five openings to it are bridges, artificial links between residential sections and the business area. It's for this reason that Vancouver has such unique traffic problems, squeezing all those cars and all those people through a restricted set of funnels to reach those office towers.

San Francisco, to which Vancouver is often compared, has nowhere near such restricted access. It lives on its bulky peninsula. Downtown Vancouver has only one constricted residential enclave, the West End. Tucked in between business core and Stanley Park, the West End is the most densely packed square mile in all of Canada. It has a population of 35,000, and 50 percent of all the apartments built in Vancouver since the war are clustered here. The West End was once the site of Vancouver's gracious old mansions; now the faded mansions, isolated between apartment towers full of stockbrokers and stewardesses, are rooming-house refuges for old-age pensioners. Twelve thousand of the West End residents earn less than \$5000 a year; one-half of all the residents don't own a car, and don't need one, with Stanley Park so near in one direction and the business core in the other.

Vancouver's core, is at the moment, undergoing one of those architectural leap-frog sessions. The basic tower level had settled at 25-30 stories until a year ago. The major architectural controversy centered around the 400-foot Toronto-Dominion Bank Tower with its sheathing of bronze solar glass that earned it the derisive title of Tower of Darkness.

Now there are nine buildings, planned or under construction, that will take the skyline even higher. The storm of public protest is now shifting to the project that would top them all, the 55-story B.C. Government Building. Since it is the senior government, the provincial government has announced it does not feel bound by any civic ordinances on zoning, building height or density in its determination to erect the tower. It is all a matter of scale, of course, and the question is whether the little peninsula with its unique view of mountain and sea can withstand having the general construction level jumped to the 50- to 60-story range.

People power within the past year has forced compliant civic politicians and greedy developers to scrap projects that a decade ago would have been approved. A major campaign by newspapers and citizens groups killed an apartment-hotel complex that would have erected a 16-story concrete curtain smack against the entrance of priceless Stanley Park-1000 acres of primeval forest on the tip of the peninsula. Outraged screams from critics and citizens killed off a ludicrous plan to erect an 80-story space needle, the architectural cliché of our time. And finally, a concerted and lengthy protest movement has forced federal, provincial and civic authorities to shelve their plans for a \$200-million tunnel to provide a third link between the downtown peninsula and the suburban communities on the north shore of Burrard Inlet. Most critically, a tunnel designed solely for cars-with no provision for future rapid transit-would have irrevocably committed the city to a major freeway system.

For other, more developed cities, the freeway decision was made long ago. Vancouver has still to make it—or avoid it. It still has time to chart long-range development of rapid transit before it is carved up by a freeway system that has ruined, for one example, Seattle. It is still young enough that the major mistakes have yet to be made. It is still young enough that, if someone pays attention, those visual escape hatches that have been shut off in other cities can be retained here. Division of Building Research / National Research Council of Canada

Research: foundation for the construction industry

Research into building materials and methods not only has great impact on Canada's largest industry, but the flow of knowledge gained doesn't stop at the border

In Canada buildings are going up with the insulation on the outside; dual glazing is the norm; and roofs, including builtup ones, are designed with "drained lower membranes." Most towns and cities use the single National Building Code. Sealants perform through temperature variations of 150 degrees. While these and other developments might have occurred anyway, behind their existence is DBR.

Formally known as the Division of Building Research, National Research Council of Canada, DBR was set up in 1947 to provide a research service to the burgeoning post-war construction industry. Although its activities are far flung, it produces a single product: information.

Although testing equipment takes up more room than do the people in the Division's four buildings on the NRC campus in Ottawa, and although testing is a major source of data, DBR is not just an official test lab. The ultimate goal, instead, is to eliminate the need for testing by acquiring the basic knowledge of materials that is the real key to their performance characteristics. Like all utopian goals, this is an article of faith rather than established fact; yet studies that culminate in such papers as "Optimum polynomials for representing temperature" or "Morphology and microstructure of hydrating portland cement and its constituents" add their bit to a body of knowledge that sooner or later is translated into onsite procedures.

In acquiring information, the Division compiles statistical data, makes use of research done elsewhere, and supports (through NRC grants and fellowships) work at universities, reserving its own projects for work that can't be done elsewhere or is peculiarly in the Canadian national interest. In dispensing information, DBR conducts an extensive publications program, gives seminars, workshops and teacher-training courses, answers individual queries and works person-to-person via committee work. Its 80-some professional staff members serve on about 430 committees—international, national and industrial. A major contribution is to ASHRAE, because of the interest and expertise in energy requirements of buildings, and much DBR work in this area has been incorporated into the association's handbook. DBR has also contributed heavily to ASTM. Officially the Division serves as the technical research service to the Central Mortgage and Housing Corporation (a Crown Corporation version of FHA) and provides the secretariat as well as technical support to the National Building Code Committees.

To pay for all this, the DBR budget (currently \$3.5 million) comes directly from Parliament to NRC, with no detailed breakdown required in advance. The total 1971 NRC budget for research equalled \$132 million; \$60 million of this was for funding of research at universities, scholarships and fellowships; some \$56 million was allocated to NRC laboratories, and another \$8 million to industrial research assistance programs that are basically concerned with developing research programs, not products.

Impact on the industry

Over the years, DBR's greatest impact on the building industry has been in exterior enclosure. Involvement was gradual, beginning with a concern for rain penetration and expanding through studies of problems posed by the Canadian climate—low temperatures, extreme fluctuations, wind, etc. Document CBD 48, requirements for exterior walls, has been especially influential in the prairie provinces, and its principles have been followed by manufacturers in developing dual glazed window units. CBD 99 was the first explicit application of these enclosure principles to roof design, setting forth the drained lower membrane for built-up roofs as well as terraces.

One of the current areas of concern is fire in high-rise buildings, and studies are being carried out on a wide range of topics from the physical characteristics of fire and smoke to behavior patterns of people evacuating a building. One report is now being circulated to committees, but each study seems to raise another unknown: smoke density in relation to escape, leakage characteristics of buildings, techniques of smoke control that do not interfere with evacuation.

With the wide variety of climate and geographical conditions and seemingly endless problems caused by man wanting to settle where perhaps he shouldn't, many DBR studies will have enormous impact on the country's future development—public works, roads, pipelines, etc. as well as buildings. But what affects most citizens now is the building code.

The goal: a single code

The National Building Code grew out of efforts in the 1930s to promote uniform regulations throughout all municipalities. The fact that each town at that time had individual jurisdiction almost negated the first National Housing Act. A model code was prepared by the National Research Council in 1941, and responsibility for updating it was turned over to DBR as soon as the Division was established in 1947. The actual Code is published by the Associate Committee on the National Building Code, a separate 21-member group. Revisions of the Code are published annually, with a new edition prepared every five years. In addition to supplying technical expertise, the Division manages the preparation, production, distribution and servicing of the Code, its supporting documents and revisions. It also provides the same services for the Associate Committee on National Fire Codes.

Very basic to the codes, of course, are the standards behind them, and DBR staff members currently serve on 75 committees and sub-committees of the Canadian Standards Association, as well as various committees of the Canadian Government Specifications Board. In turn, standardization depends on tests. In a recent paper, "Codes, Standards and Building Research," DBR Director N.B. Hutcheon explains that the Division "has resisted pressures to become a routine testing agency, but has not hesitated to provide essential calibration services to assist in measurements of all kinds and to make its test and experimental facilities available on a commercial basis when they are not available elsewhere in Canada." Demand is heavy, he continues, for use of the Division's large-scale test equipment for fire, acoustics and heat, air and rain leakage to determine product compliance with standards or promotional claims.

Organization

The 25-year-old Division has had only two directors; the first, Robert F. Legget, retired a couple of years ago and was succeeded by N.B. Hutcheon. Under him are 10 Sections and four Regional Offices:

The Materials Section aims to solve problems in use of materials due to lack of stability and durability, develop test methods for prediction of performance, and assist in preparing standards for building materials. Recent studies have dealt with silicone sealants, semi-rigid PVC sheeting, rigid foamed plastics and hydrated portland cement. A more thorough knowledge of basic properties of such materials as these, it is felt, will lead to better performance predictions.

Building Physics Section work ranges from measurement of airborne sound and its control in buildings to structural dynamics and earthquake engineering. Its work in acoustics is especially important to the Central Mortgage and Housing Corporation and is being expanded from physical rating-bynumbers to subjective ratings with a view towards improving acoustics of landscaped offices.

Building Services Section deals with almost anything that affects the interior environment: enclosure, plumbing, heating, ventilating and air conditioning. For the past year or so, about one-third of the Section's manpower has been deployed in outfitting the new Environmental Laboratory and the computer data acquisition and control system.

The Building Structures Section deals mainly with safety factors and studies of loads acting on structures. Alerted by the Ronan Point disaster, it is delving into the question of progressive collapse due to unusual forces (explosion, impact, etc.) not covered in building codes. It continuously studies wind effects and snow loads.

Fire Research is looking into the problems of fire in highrise buildings, toxicity of combustion products and alternatives to present methods of fire resistance ratings. It is also currently providing new data on ratings for steel columns and for solid wood door assemblies.

Work of the *Geotechnical Section* is concentrated on foundation engineering problems associated with soil stability, frost heaving and construction techniques in permafrost areas. Extensive field investigations are coupled with more fundamental studies in the lab. Activities of this Section are growing in importance because of the increasing interest in Canada's northland.

Building Practice Group has the job of applying science and research to the practice of building. It is responsible for the flow of information between the Division and construction industry in both directions. It operates the Building Research Library, the Publications Section and conducts seminars and workshops throughout the country. A new project is to put seminars on slides and tape so that one seminar can be repeated to many different groups. The Publications Section distributes more than 600,000 pieces of printed matter a year. It submits staff papers to scientific journals, then purchases reprints for distribution. It publishes the popular Canadian Building Digests, Canadian Building Abstracts, Building Research News and several series of papers and bulletins.

Other Sections are somewhat smaller in terms of personnel, if not in scope. *The Construction Section* is working to compile a book on enclosure design based on the *Canadian Building Digest* articles published over the last 12 years. Publication is expected later this year. *Design* at DBR is considered to be the identification of the purpose or service that a building space or component must fulfill, and the choice and assembly of materials to perform that service. *The Building Use Section* is investigating human requirements, especially those that relate to safety. Its evacuation studies, for instance, are an important part of the work on fire in tall buildings.

Regional Stations are maintained in Halifax, Saskatoon and Vancouver, while an information office is in Toronto. Activities at these stations are oriented towards applying the Division's knowledge by on-the-spot contact with various segments of the construction industry. Most tests conducted are the outdoor type such as for weathering of paints, plastics and metals, or compilation of data gained by direct observation.

Meeting the user's needs

Users of technical information developed by DBR fall into two categories: specialists who are accustomed to using library facilities and reading detailed technical and scientific articles, and general practitioners who are inclined to demand quick answers to immediate problems. While the first group is served almost routinely by the library and publications programs, the second group seems to require, in addition to the technical information, help in finding it, according to G.O. Handegord, head of the Building Practice Group.

Instead of jumping headlong into the computer era, Handegord explains, DBR will concentrate first on extending present methods of communication to user groups with emphasis on producing more summary, review and state-of-the-art publications, manuals, texts and construction detail sheets. [RR] Materials and methods

Far north design solutions



Design and construction of buildings in the vicinities of Frobisher and Ungava bays require special considerations due to climatic and soil conditions

Eighteen hundred miles above Montreal in the Northwest Territories, above the 60th parallel and just below the Arctic Circle, lies Frobisher Bay. This location is subjected to an extremely cold and long sub-zero season. Prevailing winds up to 100 mph produce enormous snowdrifts while long daylight hours in summer are followed by very short daylight hours in winter. These conditions impose a short construction schedule and since outside work is not feasible from mid-October to mid-June, quick erection and closing-in time become a necessity. Without previous experience in this kind of construction, Montreal architects Papineau/Gérin-Lajoie/Le Blanc/ Edwards actively sought, designed and erected two schools in the Frobisher Bay area and a small airline terminal at Fort Chimo on Ungava Bay a few hundred miles to the south.

Their first project for this climate was the Frobisher Bay Academic and Occupational School. Knowledge gained through research and actual building experience on this has been useful for subsequent designs. The architects early observed that simple shapes of minimum surface areas must be considered for climatic conditions found in the far north. Overhangs should be eliminated or of minimal size; details and textures designed to catch rain or snow must be avoided; glazed areas should be small; and several entrances and exits must be provided to allow for unpredicted snow and drift problems.

Early in the design process the decision was made to develop a building that would be enclosed in a smooth, light



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Far north design solutions

weatherproof skin. It was believed that the basic design criteria could be satisfied with plastic materials. It was also considered that a completely weatherproof, fiberglass panel could be developed, that its insulation value could be adjusted to whatever "U" value necessary, and that the total weight per sq ft of cladding would be lower than other known materials. Therefore, a design was based on a repetitive use of modular panels of a size determined by handling weight, manufacturing process and minimum use of joints.

A structural building system compatible with the design of these panels was developed based on a 6-ft modular grid, lightweight steel stud design supporting the roof and wall panels with a standard open-web floor system. Based on this criteria, performance specifications were prepared and the design sent out for tests.

Reinforced-fiberglass sandwich panels

Samples were made to the following specifications: ¼ in. outer skin, 2 in. insulation and ½ in. inner facing; panels, 6' x 14', should not weigh more than 120 lbs (final panels as used weighed approximately 160 lbs); design temperature differential between -50 F and 70 F; wind velocity up to 100 mph; urethane insulation was recommended (and finally accepted). Tests were made for material expansion, structural strength, impact resistance, insulation to fiberglass bond, cyclic fatigue loading, joint waterproofness, joint performance with wind velocity of 50 mph with water spray at the rate of 5 gph, joint leakage with 100 mph velocity.

The linear coefficient of thermal expansion of the panel material was obtained under conditions of specified temperature differential, and it was determined that an increase in temperature range would not materially affect the value of this constant. For comparison purposes, the thermal expansion of the material was found to be half the coefficient for mild steel. Tensile strength was found to be over 1300 psi. The deflection was measured on a half-scale panel at five points along its vertical center line. Maximum deflection at 100 mph was 0.211 in. Recovery of deformation was complete at the end of the test.

In addition, strength gauges were mounted at the center of the sample and monitored through an oscilloscope in order to determine if any flutter of the panel was evident during the







DETAIL AT ROOF FLASHING





Fort Chimo Air Terminal arrived in pieces by air and was erected in 23 days for use by two airlines.



Far north design solutions

loading process; no such conditions were evident. This seems to indicate that a maximum deflection of about 1.5 in. may be expected from the full scale panel under 100 mph wind. The deflection test demonstrated that the half-size panel deflected to the same extent under air pressure of 25 psf, which is equivalent to a simulated 100 mph wind as under a concentrated load of 395 lb. Final performance specifications were then prepared.

Fabrication

Prior to the actual manufacturing process, the contractor submitted samples that were tested until the results were satisfactory to the architects. It was discovered that the structural shapes of the panels serve not only to enhance their appearance, but also to significantly strengthen them. Flat panels require heavier laminates to match the strength of curved shapes. To achieve curved shapes, however, models must be constructed to the size of the exposed surface with an allowance for both mold and product shrinkage. Some wall trusses from the building were brought to the factory to permit check assembly and erection of the panels. Finally, a selected crew, which included Eskimos from Frobisher Bay, went through the erection procedure at the factory site as a training exercise. Panels were made without the use of expensive equipment and with mostly unskilled labor. Minimal retooling costs made it unnecessary to produce a quantity of any particular shape for economic reasons.

Three hundred eighty-four panels in some 60 crates were arranged for lift-fork loading to gantry cranes with slings for the academic school. Panels were bolted to crate members made only of skeleton 2x4 and 2x6 wood members that were in turn greatly strengthened by co-action with the stiff panels themselves. Total weight of the crates was minimal, as only framing components were required. When shipped by water, the crates were not excessively overweight due to small water penetration of the framing members. Whereas panels for the schools were transported by ship, air terminal panels were brought in by plane.

At the academic school, erection proceeded as soon as the light steel frame was checked. All panels were hung in 35



days by a crew of four men and one supervisor. Bolts and weatherproof fastenings were driven with electrically operated tools. Joint-sealing sponge gaskets were affixed to the panels before erection.

The academic school was built on solid rock, while the elementary school, nearby at lower elevation, has footings that extend to passive permafrost—which is practically as bearing resistant as rock. The air terminal rests on a base of discontinuous permafrost.

Northern Canada Power Commission has a steam plant in Frobisher that provides energy for the two schools via a utilador. Steam is converted to hot water at the schools and brought to unit heaters spaced at critical locations. Outside air is blended with inside air as necessary to cool the structure when classes are in session. Both schools are remarkably airtight. In a heat loss test, it was found that after being closed for 48 hours with heat turned off, the temperature of one of the schools dropped only 10 F. There is no observable air infiltration. The Fort Chimo terminal has its own hot-air system. In each structure, all windows are triple glazed. [BHH]





Elementary School at Frobisher Bay has small, triple-glazed round openings instead of windows.



COPING DETAIL AT .A.

Manitoba and Saskatchewan

Out on the plains

Some representative work from the prairie provinces shows a broad range of design expression by three architects: Gaboury Lussier Sigurdson, Clifford Wiens and Gustavo da Roza. They speak well for the plains

Character, one of those elusive qualities that many architects strive to give their work, sometimes defies not only accomplishment, but also definition. Etienne Gaboury, in describing the character he wanted for his own house, said it should be "... one of warmth and protection with the suggestion of inner serenity; like the heavy crusted and rough oyster shell reveals, in opening, the pearl interior." While not referring to the church also shown here, that aspiration has been carried out in both the church and the house.

The architectural firm of Gaboury Lussier Sigurdson practices in St. Boniface, Manitoba, a predominantly Frenchspeaking town (in the recently amalgamated Winnipeg area) where the Precious Blood Church is located. Expressing their design goals, the architects say, "The church was to house worship in the newly evolved liturgy of the Roman Catholic Church. We wanted a plan that resolved and expressed clearly the dynamic movement of the congregation around the altar while still acknowledging the symbolic and functional requirements of the sacramental spaces, particularly the baptistry. The space was to be structured to express the hier-









Rugged exterior forms (left, top and bottom) give way to smoother textures and contours inside (right, top and bottom, and opposite). Angled glazing between living and family areas (top right) shares light and continuity of feeling between the spaces. Living area (right) is composed of three areas, for formal entertainment (background), conversation (projecting bay, left) and fireplace. As "conscious events," windows occur as the need dictates.





archy of movement and function. The structure was to be so integral to the plan, to the space and to itself that no element could be removed or even changed." A series of nearly rectilinear spaces, including the sacristies and other functions, form the transition from the existing rectory, leading into the spiral. Picking up the plan spiral, the wood roof structure progresses upward from brick piers in the same direction, to form the continuity of movement.

Movement, or activity, also directed the arrangement of Gaboury's own house, conceived to correlate the activity, location and time of day. Giving the dining and living spaces, the studio and master bedroom views to the Red River, the plan places the bedrooms on the east, the dining space on the west and family living spaces in the center. Family activity patterns thus coincide with sun location.

The concept of the house, however, did not begin with azimuth figures. Gaboury sees a house as "the most important and encompassing architecture in our society," since it is charged with being an experience, not just a physical container, possibly for a family's lifetime. As such, he feels that the house should reflect the full range of man's emotions and complexities. "A house is not a simple thing; on the contrary, it is extremely complex and to express it otherwise is to falsify, to corrupt, the true meaning. . . . I have searched for the unity in the diversity of its requirements." Starting with these points, the spatial expressions, orientation and character developed to reinforce family activities, sun and views, and images of and for the Manitoba environment. Undulating ceiling surfaces provide a visual link between the living room and family room, an extension of the kitchen. Light enters the high living space through a stained glass window and is shared by the family room through an interior sloped glass window between the two spaces. The interior wall surfaces are all textured plaster and all ceilings are cedar laths. Exterior forms, Gaboury says, recall the traditional leanto, express verticality and hint at the dramatic forms of grain elevators so important on the plains.

Data

Projects: Paroisse du Précieux Sang (Precious Blood Church) and the E.J. Gaboury residence.

Architects: Gaboury Lussier Sigurdson.

Sites: church, mixed residential city lot in St. Boniface, Man.; house, more than one acre of relatively flat, sparsely wooded land on the Red River in St. Vital, Man.

Structural systems: church, laminated wood beams on brick walls; house, standard wood framing.

Mechanical systems: church, gas-fired forced air with future air conditioning provisions; house, all electric.

Major materials: church, dark brick exterior/interior walls and floors, rough hewn cedar shakes on cedar decking and glued, laminated fir beams, oak pews and brick and limestone liturgical furniture; house, roughhewn cedar shakes on roof and exterior walls, textured plaster interior walls and cedar board ceilings.

Consultants: structural (both buildings), Prof. Ronald Lazar; mechanical (church, includes electrical), Scouten Mitchel Sigurdson; mechanical (house), Paul Mart; electrical (house), Harold Goodmanson. **Photography:** Henry Kalen.



Out on the plains







Regina, Saskatchewan is not Vancouver or Toronto. An architectural practice in Regina, if it is not to succumb to pressures of short money and few jobs, takes guts, determination and a versatile design talent. Clifford Wiens practices there, and the strong assertive forms of Wiens' buildings grow from specific programs, with a diversity shown in two examples.

Built in two stages by the owner, St. Mark's shop is a place to house all of his varied activities, including candlemaking, bronze casting, metalsmithing, sculpture and some printing. Wiens assisted in the construction as well as provided supervision. Phase two, the candle shop, was not originally included in the design, but a fire in previous quarters presented the opportunity to consolidate the work space. The bronze casting studio takes its shape from the central location of the open hearth furnace, with the attendant need for combustion gas exhaust. Mobility of the crucible filled with molten metal was also a factor, and a rotating boom allows a chain hoist to reach any spot in the studio. Due to the need for fire resistance, concrete was chosen to form a thin shell conoid roof, supported on double concrete rings. The two rings are separated by a truss of 1/2 in. diameter steel to allow light to enter around the entire perimeter. The sloped walls below the rings have a protective coat of fieldstone, placed without mortar.

Concrete pipe windows (above) of the candle shop peer out across a valley. The casting studio roof, built by the owner and the architect, seems to float above the ground which otherwise conceals much of the building.



Construction of the open-throated roof centered around a wheel from a model A Ford, temporarily supported by a central column and hydraulic jack. Reinforcing was gathered from the base to the apex and welded to the wheel, then the whole assembly was raised with the jack. After metal plaster lath was attached to the prestressed steel, a dry concrete mix was hand applied, using no additional formwork. Below the finished roof, the rotating boom is center-supported, and is balanced and easily moved when not loaded. As a load is applied, the beam tips slightly to rest on the edge ring. The candle shop was designed to complement the studio and almost disappears into the site. Concrete sewer pipes have been used for window openings, and double as storage alcoves for sculpture.

In sharp contrast to the shop, the central heating and cooling plant at the Regina campus of the University of Saskatchewan is a precise, machinelike building. Precast A-frame members spanning the building are expressed both inside and out, and the concrete plank deck is roofed with insulation and rusting steel. Cooling towers on top of the building are articulated by concrete fins and rusting steel louvers and water trays. Building end walls are all glass, supported by structural steel mullions which can be removed to permit the movement of machinery in and out as needed. Glass is just stacked vertically between mullions, with no horizontal framing inside, the equipment has been painted in bright colors.

The form of the plant, like the form of the shop, is an expression of how the building works. Both are very powerful forms, but in very different ways. Both testify to the fact that Wiens' determination has paid off.





Rusting steel also forms water drip pans below the fins (above) and roof cladding (left, top). The end walls have stacked, removable glass panels.



Data

Project: St. Mark's Shop, Lumsden, Sask., and the central heating and cooling plant for The University of Saskatchewan, Regina, Sask. **Architect:** Clifford Wiens.

Sites: shop, several acres of grassland on a hilltop, overlooking a valley; plant, flat area on the periphery of the university campus, near Regina. Structural systems: shop, thin shell reinforced concrete conoid roof resting on concrete grade ring through trusswork of ½ in. dia. steel rods; plant, precast post-tensioned reinforced concrete A frame and concrete plank deck.

Mechanical systems: shop, oil-fired steam heat; plant, gas-fired steam. **Major materials:** shop, reinforced concrete, concrete sewer pipe, field stone, earth floor in casting studio; plant, precast reinforced concrete beams and concrete roof deck, rusting steel and cast glass end walls in removable steel mullions.

Costs: shop, \$3/sq ft; plant, about \$1.5 million or \$1/cu ft of volume. Consultants: shop, none; plant: structural, Reid, Crowther & Partners; mechanical, H.H. Angus & Associates. Photography: Henry Kalen.



Art in the prairies

Winnipeg is a city with ambition. As *the* city in Manitoba grew, and with it the University of Manitoba, its cultural programs picked up momentum. However, the Winnipeg Art Gallery, though founded in 1912, has never had its own quarters. Moved to a portion of the Civic Auditorium in 1932, the gallery administrators still hoped to build as quickly as possible. That next step took 39 years and a national competition but the city now has a gallery, chosen from among 109 entries.

The design by Gustavo da Roza was said by professional advisor Ralph Rapson of Minneapolis to have "brilliantly and sensitively satisfied the requirements of the purpose and the conditions of the competition." Jurors for which Rapson spoke were John C. Parkin (Toronto), Clarke E. Pratt (Vancouver), Harry Weese (Chicago) and E. Harvard Arnason, vice president of the Guggenheim Museum; Dr. F.E. Eckhardt, the gallery director, was an advisory member. After the award was announced, da Roza collaborated with The Number Ten Architectural Group in producing the job. Declining an earlier invitation by the province's Centennial Corporation to become part of a proposed arts center, the gallery board had chosen to locate the new building in a spot more accessible for the public. The triangular property had an obvious ef-









Triangular site (left) is surrounded by busy streets, but was chosen for its proximity to more people. Down the ramp to the right in both pictures is the entrance for busloads of children arriving at gallery functions or art education classes, with public main entrance on the left. Landscaping is still incomplete.

Out on the plains

fect on the configuration of the building.

Another very important consideration was the effect of a Winnipeg winter on the very precise mechanical demands of art gallery design. Fine art leads a pampered life to avoid deterioration, and requirements for a constant 70 F temperature (with allowance for a 2 degree variation) and 50 percent humidity (plus or minus 5 percent) dictated some of the design decisions. An average January low can be -10 to -15 F, and extremes can reach -48 F. Glazed areas had to be kept to a minimum, therefore, as each opening was a potential problem. All skylights and exterior openings in critical areas reguired hermetically sealed triple glazing with double glazing in all other locations. Wall surface and room temperatures, if not the same, could cause warping in the paintings, with consequent flaking. Thus, exterior walls were designed as a sandwich of reinforced, poured-in-place concrete, 2 in. rigid insulation and the outer skin of 4 in. Manitoba limestone. With furred-out conditions on the gallery side of the structural wall, inside surfaces are at room temperature. Central monitor panels advise the gallery staff of any irregularity in either temperature or humidity, at a glance, in any space.

Rapid temperature change for arriving art shipments can be avoided at the gallery by backing trucks inside the loading area and, if necessary, allowing the shipment to remain inside overnight before unpacking. From there, works are taken to the preparation area via a huge freight elevator 14' x 26' x 12' high, with a capacity of 20,000 lb. Sharing the lower level with preparation are most of the education functions—spaces for art classes and studios—and vault facilities.

On the ground floor are most of the nondisplay areas for the public and a large auditorium. The mezzanine contains administrative and art education areas, and above that level is the gallery floor. From a skylighted lounge, the gallery floor is divided into nine gallery spaces of varying proportions by semipermanent walls. Besides the permanent and semipermanent walls, two movable wall systems are used. One, L-shaped in plan and 10'-4" high, can be arranged in any number of combinations. The other consists of panels 2 ft wide, attached to the lighting track grid at the ceiling and selfleveling adjusters at the floor. The ceiling grid and light tracks provide an infinitely flexible lighting and partitioning system.

On the roof of the gallery are a sculpture garden and a restaurant-coffee shop. The roof garden uses a decking technique known as the Rainscreen method, developed by the National Research Council. On top of the reinforced concrete roof slab is a sloped waterproofing membrane, then 5 to 10 in. of scaled gravel, 2 in. rigid insulation and 2 in. precast paving slabs of varying lengths, 24 in. wide. Weeping tiles within the gravel layer speed drainage, as do catch basins for abnormal downpours.

From roof to basement, the gallery makes the most of durable, but now showy, materials. Despite a few problems with such things as wall covering materials, the interiors have achieved the goal of being a pleasant backdrop for art works without undue ostentation. It was da Roza's intention that the building be a place to display, collect and inform, without stealing the show. Exterior fenestration, in addition to posing a mechanical problem, would prove a distraction. Angularity, from site constraints and thus not affectation, has proved no problem internally. The crowning accomplishment by the architects is that the gallery, complete with movable wall allowances, furniture, draperies, special gallery fittings and landscaping, was built for \$2.50 per sq ft under budget, at \$27.50. It is an ambitious building that the city can be proud of and, as da Roza says, "affords the individual an opportunity to associate with and participate in the aspirations of our cultural development in Winnipeg, Canada." [JM]





4" LIMESTONE FACING, SAWN-CUT FINISH

EXTERIOR FACE TILTED-IN @ 1:48 SAND-BLASTED FINISH POURED IN PLACE REINFORCED CONCRETE WALLS

PRE-CAST CONCRETE CANT, COTTON FABRIC MEMBRANE TO REGLET 90 LB. SLATE FLASHING OVER WATERPROOFING RAIN-SCREEN PRINCIPAL ROOFING 2" PRE-CAST CONCRETE PAVING SLABS

4" TO 8" DEPTH PEA GRAVEL FILL %" TO #4 GRANULES, SUPPLEMENTED WITH DRAIN WEEP TILES WATERPROOFING MEMBRANE ON REINFORCED CONCRETE POURED IN PLACE ROOF SLAB

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24 INCHES SCALE





Wall section (left, above) graphically describes the measures taken to protect art work from the Manitoba weather. Overlooking the rooftop sculpture terrace (top) is a steel-clad penthouse, with restaurant, kitchen and lounge. Main lobby space (above) provides a dramatic introduction.



me e O 00000000000000 MAINT EQUIP ROOF LEVEL PLAN

Data

Project: The Winnipeg Art Gallery. Architects: Gustavo da Roza, architect, The Number Ten Architectural Group, associates. Program: gallery to house art display, collection,

preparation, sales and storage functions, civic use areas and art education spaces.

Site: limited, triangular, downtown block, approximately 35,000 sq ft, surrounded by auto traffic.

Structural system: poured-in-place reinforced concrete walls on concrete caissons and precast piles, concrete beams, columns and floor slabs, except structural steel in penthouse only.

Mechanical system: gas-fired steam boilers, centrifugal water chillers, sprayed coil dehumidifiers; ducted air from centrifugal fans is controlled to within close tolerances of the design temperature and humidity of 72 F and 50 percent.

Major materials: exterior walls and some interior walls and floors, Manitoba "tyndall" limestone; metal wall panels; interior walls, gypsum plaster, vinyl fabric and carpet; floors, limestone, carpet, and vinyl asbestos tile; ceilings, textured and metal acoustic tile. Costs: \$3 million (\$27.50/sq ft including furnishings). Consultants: structural, Read Jones Christoffersen, Ltd.; mechanical, Mechanical Consultants Western, Ltd.; electrical, K.A. Hand & Associates Ltd.; lighting, Edison Price, Inc.

Photography: Ernest Mayer.

British Columbia

The site comes first

Dramatic views from virtually every site in the Vancouver area demand definite responses from the architect. Understandably, stairways offering a view at the end of each segment. And if local architects tend to reject the idea of universal solutions and mold their buildings to specific situations. In the best of their works, regardless of scale, the structure becomes essential to a full appreciation of the terrain

Adding to Olympus

The word "incomparable" is just not strong enough to describe the setting of Simon Fraser University. Locating it on Burnaby Mountain, eight miles east of Vancouver, was a wildly romantic, autocratic act for the year 1963, when universities were supposed to be moving closer to real life. Critics of the complex call it an "acropolis," with "sacrificial stairs".

The competition-winning master plan by Erickson/Massey, which has been guiding construction over the past nine years, does everything to point up the drama of the situation. The main spine of the complex rides the crest of the mountain to get the most of views to the north, south and west. The sequence of spaces and vistas along this spine are frankly monumental and-like Louis Kahn's equally monumental Salk Labs at San Diego, for instance-the campus is exhilarating to visit; it must affect those who study there.

The malls and quadrangles along the top of the spine are only the most visible, inspirational parts of a very hard-headed plan. Beneath them is another whole layer of enclosed circulation, plus parking garages and bus platforms. And extending outward from the multilevel spine are the working departments of the university. One of the great virtues of Erickson/Massey's plug-in scheme-which made it possible to build the \$13 million first phase within two years after the planning competition-was that some of Vancouver's other firms could design these wings in their own way.

A recently completed classroom wing by Erickson/Massey themselves demonstrates the capacity of the scheme for graceful expansion; and it deals effectively with one of the nagging problems of the scheme, the fact that the view outward from the central spaces takes in acres of rooftop. This wing happens to be at a particularly sensitive spot, directly on the line of sight to Indian Arm, a glacier-fed fjord splitting the mountains to the north. The architects have, if anything, enhanced the view by keeping the roof profiles low, spacing and shaping the decentralized mechanical towers as positive visual elements, and by the simple device of flooding the rooftops with a few inches of water. Rooftop boardwalks and wood decks provide for open-air circulation and sightseeing, as well as outdoor teaching-separated from office and classroom windows by bands of water.

The new wing steps down the slope in tiers, following the architects' overall concept for the university. The departments house the social sciences, but the types of spaces they require could be adapted to almost any discipline. Interior, windowless areas are used for laboratories (behavioral, language, etc.) plus a large communications theater. Faculty offices face out on the terraces, and administrative offices are in the cantilevered blocks at the west end of the wing.

Tying the wing together is a grid of corridors. One set runs along each tier, linking single departments together; the other corridors descend from tier to tier, with sloping glass over the the interior corridors seem confining, there is always the option of going out onto the rooftop boardwalks, which trace the same routes. There you can see the whole wing as it is meant to be seen-from the top.



Classroom block extends out from central Academic Quadrangle, down slope to north (left in aerial above). Boardwalks across flooded roofs (facing page) trace routes of corridors below. Rooftop stairs and skylights over stairwells share gaps between paired mechanical towers.







Data

Project: classroom block, Simon Fraser University, Burnaby, British Columbia.

Architects: Erickson/Massey.

Site: on north slope of Burnaby Mountain, adjoining existing academic quadrangle.

Structural system: reinforced concrete.

Major materials: exposed concrete, sandblasted; infill walls of striated pumice block, exposed on the interior; built-up roofing; steel-framed windows; rubber flooring; wood baffles over corridors shielding exposed pipes, ducts and fluorescent tubes.

Consultants: J.D. Kern & Co., mechanical engineers; Bogue Babicki & Associates, structural engineers; Swan Wooster Engineering Co., electrical engineers; Barron & Strachan, acoustics; Gordon Smith, color. **Cost:** \$3,314,000.

Photography: Simon Scott.



Living on the edge

The forested cliffs that stretch north up the coast from Vancouver are home to many of the area's residents. The houses clinging to these cliffs are not just holiday retreats, but yearround houses, less than an hour from the city and minutes from suburban amenities, schools and stores. Dense evergreens screen out nearby roads and next-door neighbors; views of water and distant mountains create an illusion of remoteness. The mild climate requires little insulation.

Among the houses that respond to this unique opportunity (that are not just displaced ranch houses with picture windows), some place only a restrained framework of columns and beams between the observer and the terrain. Others frame views within their own assertive shapes. This second approach has been pursued with uncommon freedom in the Simons House by architect Bruno Freschi.

At first sight, on the way down an inclined elevator from the road above, the overall composition of the Simons House is evident: two funnel-shaped enclosures, clad in cedar boards, stand side by side at the edge of a precipice. On the uphill side, buttressed by the house itself, is a welcome patch of level ground, with stone paving that extends through the glass walls of the house. Inside, the house is a kaleidoscopic composition of angular walls, sloping skylights, circular openings, stairs and bridges. The place may seem too theatrical for a couple with three young sons, but it suits the Simons well. She is a playwright and he is a lawyer active in civil rights causes; the multilevel living spaces function equally well for small-scaled performances or for large-scale entertaining.

Circles cut through cedar-clad walls frame fireplace alcove between two main volumes. View from skylighted seating corner (right) shows how living room floor steps down in bay at edge of cliff. The kids have a yard large enough for lawn games, when they are not climbing up to lofts under the roof or scrambling down cliffs to the beach.

Freschi considers the house a genuine collaboration with the clients and recalls with great enthusiasm the process of translating their ideas into space and form. The Simons did not talk about rooms and finishes, but rather about the rhythms, harmonies, ambiguities and contradictions of life. Contradictory feelings of security and danger are expressed, for instance, in the main enclosing forms; they flair outward as they project over the cliff, emphasizing the perilous drop, yet they wrap continuously around the interior spaces to give a sense of shelter. These two enclosures are obviously meant to be seen as a pair, yet there has been no effort to enforce symmetry. Ambiguities are generated inside by multiple reflection in glass planes, by indoor greenery, and by circular openings which bisect angles in plan so that they look strangely like mirrors.

A consistent use of exposed wood framing and cedar cladding, inside and out, unifies the house, but the architect has departed freely from the local wood idiom. Pipe railing with steel mesh infill is used as commonsense protection around children's lofts and decks; travertine paving—a surprisingly sleek, urbane material for this setting—was used simply because a misdimensioned load of it was available at low cost.

Freschi, a native of British Columbia, has grown up in the timber-inspired architectural tradition of the area, and has worked with Erickson/Massey on some of their major commissions. But his extended visits to Italy and his absorption of worldwide influences as an instructor at the University of B.C. architecture school also show in this unorthodox house. Not all of his work is so exuberant. But then, few of his clients are ready for such a collaboration. [JMD]









Funnel-shaped enclosures give owners privacy on a narrow site; sloping skylight over central stairwell feeds rain into terrace pool. Travertine terrace paving continues inside through roll-away kitchen walls.

Data

Project: house for Mr. and Mrs. Sidney Simons. Architect: Bruno Freschi, associated with Erickson/Massey.

Site: narrow site in West Vancouver, British Columbia, slopes steeply down to an inlet of Georgia Strait on the west.

Structural system: conventional wood frame. Mechanical system: forced warm air heating. Major materials: cedar board walls and ceilings; natural on the interior, treated with boliden salts on the exterior; travertine paving and countertops; oak floors.

Consultants: Bogue Babicki & Associates, structural engineers.

Builder: Torstein Kravik.

Photography: Selwyn Pullan, courtesy Council of Forest Industries.









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Environmental engineering

Handling of hazardous wastes in hospitals

William E. Herdman

Despite the lack of uniformity in codes for handling hazardous wastes in hospitals, there are procedures that can be followed that take cost, contamination and safety into consideration

Words such as biological, infectious, isolation, contaminated and pathological are often used interchangeably in connection with hazardous wastes with little understanding of the distinctions between them. As a corollary, no pattern exists for handling various types of hazardous hospital wastes and laws, codes and procedures are inconsistent. This lack of specific direction is not due to an uncaring or uncomprehending attitude by authorities, but rather results from lack of agreement about what is hazardous and what is not.

We classify general hazardous waste as follows: laboratory; human pathological; animal; syringes, needles and sharps; chemical; radioactive.

Laboratory wastes can be the most hazardous of all. Some of the test products from experimental programs can be extremely dangerous if released into land fill without destruction. Although laboratory directors are known for their care in handling their programs, they may be forced to compromise if the hospital fails to provide for proper disposal. There are few codes to help them.

Human pathological wastes are the most difficult to define. Human specimens are, for the most part, obvious but wastes involved with human medical and surgical treatment are not. Specimens from pathology, anatomy and autopsy, for example, are specific—these are tissues from the human body. However, bandages, transfusion materials, isolation care materials and any material in contact with a wound are subject to interpretation as to hazard.

Most states require incineration of human tissues in pathological destructors. Some states require that all material in contact with a wound or all isolation-care material be burned in a general waste incinerator, and some states have no regulations at all. Animal wastes are treated in much the same manner. There is no state or local pattern. In general, animal waste disposal is not well controlled.

Needle, syringe and sharps destruction is a problem in every hospital, even in those that have carefully controlled procedures. The dangers—punctures in handling and illegal usage—are well known. The safe disposal of needles and syringes, so they cannot find their way into the narcotics market, is the responsibility of the hospital administration.

Chemical waste disposal is usually controlled by local and states codes, although most of these controls seem to be based on hazards to plumbing rather than to people. The end result is the same, however, in that hazards are virtually eliminated by either sewage disposal to an approved sewage treatment plant or by private haulage.

Radioactive wastes have been clearly defined by the Atomic Energy Commission for many years. The methods of disposal are established and no reason for variance exists.

Procedures for handling hazardous hospital waste must deal not only with its disposal but also with all phases of its handling from the time it is generated. Procedures must be practical with respect to personnel problems, health, safety and economics within the hospital as well as within the community the hospital serves.

We suggest the following procedures as reasonable and practical:

1 Radioactive and chemical wastes must be handled as the codes direct.

2 Human and animal pathological wastes, as well as animal bedding, should be packaged in double strength, bright red plastic bags. They should be picked up on special schedules, transported in closed carts, which can be washed and sanitized, and burned in a pathological destructor.

3 All other hospital wastes including laboratory, general and needles and syringes, should be considered potentially hazardous and should be incinerated in a general incinerator. Since more than 80 percent of the total hospital waste can be considered at least contaminated, it does not seem practical to sort contaminated from noncontaminated waste.

Incineration, which is totally possible within air pollution control standards, is initially expensive. However, it is the only method known to be practical at this time for completely destroying general hospital wastes. Compacted waste used for land fill is less expensive to handle but the long term impact of this disposal method on health is unclear. Lack of decomposition of wastes in land fill is sometimes startling; newspapers have been found readable after 20 years in land fill. It is important to keep in mind that the hospital is totally responsible for the safe handling of its waste even though it pays a private hauler to take it away to a remote area for land fill. In addition, land fill costs may well exceed the costs of incineration in the long run.

Variables exist for each hospital: structural limitations; personnel efficiencies; health, fire and plumbing codes and installations; local, state and federal codes; quantities of waste and degrees of hazard. Administrative judgments must be made within these limitations. This comprehensive engineering evaluation is desirable in establishing a practical system for hazardous waste handling in each hospital.

Author: William E. Herdman is a member of the Elevator and Materials Handling Department, Syska & Hennessy, Inc., Consulting Engineers, New York City. **Specifications clinic**

CSI standards for performance specifying—Part II

Harold J. Rosen, PE, FCSI

The writing of performance specifications as they relate to systems building must be a team effort at the present time since no one individual is specially trained in this area. New educational methods are needed

The CSI documents governing performance specifications (P/A Aug. 1972, p. 90) specifically as they relate to systems building present a whole new problem: the qualifications and capabilities of those who will be in charge of developing performance specifications.

In reviewing CSI document MP–ZD, and the Attributes to be used in defining performance, the reader may well ask which design team member truly has the qualifications to write performance specifications. An analysis of some of the Attributes and the sample specification presented in the CSI document illustrate the problem.

The sample specification is for a ceiling subsystem and some of the Attributes are concerned with Durability. Listed under Durability are: impact resistance, moisture resistance, thermal resistance, corrosion resistance, chemical resistance, weather resistance, surface stability, stain resistance, absorbency, cleanability, friability, abrasion resistance, dimensional stability, cohesiveness and adhesiveness.

Assuming that the ceiling system will be used in such diverse places in a school as shower rooms, gymnasium, chemical laboratory, kitchen and classroom, then a number of Durability items must be evaluated. Some, such as weather resistance, obviously will not apply. However, other problems to be considered are: Is the checklist for Durability complete? Are there factors that the designer and specifier are overlooking that may be pertinent to the subsystem in this environment? How does one establish the criteria associated with each Durability criterion? Since moisture resistance is important when the ceiling is used in a shower room, what criteria is established for acceptable moisture resistance and what test method is applied to determine its acceptance? The statement used in the sample specification follows: "Moisture Resistance: Suitable for use in the high humidity environment of commercial kitchen and dishwashing areas without detrimental effects." How does one measure the degree of detrimental effect? What is considered detrimental by the designer or specifier, or from the viewpoint of the fabricator of the product who will furnish the item? If the specification is indeterminate,

4

how would you improve upon it? Are there any test methods that could be referenced to this statement that would establish the criterion for acceptance? How many specifiers can formulate an appropriate specification for this criterion?

Another Attribute listed is odor, specified as follows: "Odor: Neither emits nor retains odors." Again, by what criteria is it measured? By the specifier who has a highly developed sense of smell or by the producer whose smell sensitivity threshold is very high and, therefore, the odor must be overpowering before he can sense it?

A similar indeterminate performance specification exists in the New York City Building Code on the subject of toxicity which states that "no material shall be used in any interior location that upon exposure to fire will produce products of decomposition or combustion that are more toxic in point of concentration than those given off by wood or paper when decomposing under comparable conditions." Unfortunately, no test method is prescribed that permits an evaluation of the products of combustion to determine whether the fumes from wood being consumed by fire are more or less toxic than those of the material under consideration.

Other portions of the same CSI sample specification lend themselves much more readily to proper performance specifying. On flammability the specification reads: "Flammability: Provide certified materials having a flame spread rating of Class I (0–25): ASTM E84 or Class 25 FS SS–S–118A." No problem here. The reference standards are appropriate and the test method for evaluation and acceptance are implicit in the reference standard. Most specifiers should be familiar with this.

The major problem with performance specifications as they relate to systems building is that there is no one individual who has the capacity by virtue of educational training or experience to write performance specifications for an assembly or a component. At the present moment it requires a team effort with the input of designers as well as specifiers and, perhaps for some elements, including the structural and mechanical/electrical members of the team.

In addition, although there are many reference test standards, they are primarily written around individual materials and there are few test standards for composites or assemblies. In the absence of test standards for composites, the team responsible for writing performance specifications will be hard put to create the requirements for both establishing the criteria for the composite and testing it to determine whether it meets the criteria.

The design and the construction industries are in the early stages of a quiet revolution that is presently going on in the approach to systems building. The CSI documents on performance specifying in the field of systems building are very useful tools at this early stage. The one disconcerting fact is that specifiers today are not trained specifically for this role which may devolve to another member of the design team.

Both CSI and AIA must recognize that the new design techniques impose an obligation upon them to encourage the development of individuals specifically trained at the college level to undertake this new role of performance specifier.

Author: Harold J. Rosen is Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

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Community control of land use

Bernard Tomson and Norman Coplan

Continuing its analysis of the case affecting zoning in Ramapo, New York, this article reports on the New York State Court of Appeals recent decision which should strongly affect zoning approaches

Many communities, fearful of being engulfed by the problems of a rapid expansion in residential population, have sought to control or limit land use for residential development. Many of these efforts have run afoul of legislation or constitutional restrictions. The community's desire to protect itself from urban sprawl and overcrowding, often comes into direct conflict with the right of the property owner to resist confiscation of his property. The Pennsylvania Supreme Court has observed that "zoning is a means by which a governmental body can plan for the future." The same court, in another decision, commented that "communities must deal with the problems of population growth but they may not refuse to confront the future by adopting zoning regulations that effectively restrict population to near present levels." A zoning ordinance which will effectively control undesirable land development and at the same time fall within the philosophical limitations set forth by the Pennsylvania Supreme Court, as quoted above, is difficult to formulate.

One dramatic effort to achieve this objective is reflected in the zoning ordinance adopted by the town of Ramapo in New York State. The ordinance in question requires any residential developer, prior to obtaining approval of a subdivision plat, to obtain a special permit. This permit will only be issued if the land to be developed has available to it a certain minimal amount of public facilities, such as sanitary sewers, drainage, recreational facilities, public school sites, roads and firehouses. The town has adopted a capital budget and capital improvement plan which commits it to the development of these facilities over an 18-year period and if a particular tract of land does not have a certain proportion of the requisite facilities, the developer is required to wait for the special permit until the facilities called for are constructed.

The validity of this ordinance was challenged, and it was declared invalid by the Appellate Division of the Supreme Court of the State of New York (an intermediate appeals court) on the ground that the municipality did not have authority under the town law of the state to adopt such a procedure, and on the further ground that the concept of phasing residential development through time controls of land use involved an unacceptable discrimination (It's the law, P/A, Nov. and Dec. 1971). The case was appealed to the Court of Appeals, New York's highest court, and in a divided opinion, the court reversed this and upheld the validity of the ordinance (Golden vs. Planning Board of Town of Ramapo.) This decision, rendered in May of 1972, will undoubtedly have great influence in zoning approaches throughout the United States.

The authority of a local government to control land use is dependent upon the power delegated to it by the state. In determining the validity of the Ramapo ordinance, the New York court considered that question. It first pointed to the hazards of undirected growth, stating:

"There is . . . something inherently suspect in a scheme which, apart from its professed purposes, effects a restriction upon the free mobility of a people until sometime in the future when projected facilities are available to meet increased demands. Although zoning must include schemes designed to allow municipalities to more effectively contend with the increased demands of evolving and growing communities, under its guise, townships have been wont to try their hand at an array of exclusionary devices in the hope of avoiding the very burden which growth must inevitably bring. . . . Though the conflict engendered by such tactics is certainly real and its implication vast, accumulated evidence, scientific and social, points circumspectly at the hazards of undirected growth and the naive, somewhat nostalgic imperative that egalitarianism is a function of growth. . . . "

The court then concluded that the intermediate appeals court was in error in concluding that the primary purpose of the amending ordinance was to control or regulate growth within the town and as such, was not within the authorized objectives of the zoning enabling legislation. The court said:

"... there is no specific authorization for the 'sequential' and 'timing' controls adopted here. Our concern is, as it should be, with the effects of the statutory scheme taken as a whole and its role in the propagation of a viable policy of land use and planning....

... unless we are to ignore the plain meaning of the statutory delegation, this much is clear: phased growth is well within the ambit of existing enabling legislation. And, of course, it is no answer to point to emergent problems to buttress the conclusion that such innovative schemes are beyond the perimeters of statutory authorization. These considerations, admittedly real, to the extent which they are relevant, bear solely upon the continued viability of 'localism' in land use regulation; obviously, they can neither add or detract from the initial grant of authority, obsolescent though it may be. The answer which Ramapo has posed can by no means be termed definitive; it is, however, a first practical step toward growth achieved without foresaking broader social purposes."

In next month's column, we will continue our discussion of this significant case.

Authors: Bernard Tomson is a County Court Judge, Nassau County, N.Y., Hon. AIA. Norman Coplan, Attorney, is Counsel to the New York State Association of Architects Inc./AIA. Nearly 15,000 people in Toronto's new Commerce Court will depend on Armstrong Pumps and Pressure Booster Systems for virtually all their water needs...systems as reliable on the 57th floor of the soaring Commerce Court Tower as in the restaurants and shops of the Concourse, a small city located beneath the fountain-centred, tree-lined Courtyard.

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Books

Symbols and signs





Symbol Sourcebook: An authoritative Guide to International Graphic Symbols by Henry Dreyfuss. New York: McGraw-Hill, 1972. 320 pp, \$28.50. Sign, Symbol & Form by Louise Bowen & Raymond A. Ballinger. New York: Van Nostrand Reinhold, 1972. 192 pp. \$18.50.

Reviewed by William Wilson Atkin, former associate editor of Progressive Architecture who heads his own book publishing firm, Silvermine Publishers in Norwalk, Conn. His own books include Pencil Techniques in Modern Design and Interiors Book of Restaurants.

Rarely is a book so highly and enthusiastically recommended in advance of publication as Henry Dreyfuss' Symbol Sourcebook. R. Buckminster Fuller in his brief foreword has nothing but priase "Dreyfuss' contribution to a new world technique of communication will catalyze a world preoccupation with its progressive evolution into a worldian language so powerfully generalized as to swiftly throw into obsolescence the almost fatally lethal trends of humanity's age-long entrapment in specializations" we can be "liberated to use ... cosmically powerful faculties to communicate what needs to be done in local Universe. ... " And on the back flap of the jacket Margaret Mead, the anthropologist, Olle Sturen, Secretary-General, International Organization for Standardization, A.V. Astin, Director of the U.S. National Bureau of Standards, and Alvin C. Eurich, Chairman of the U.S. National Commission for UNESCO almost outdo each other in endorsing the work. And, well they might.

The Symbol Sourcebook represents magnificent research and the resulting accumulation of symbols are presented logically and beautifully. It is not a dictionary, says the author, for that would imply completeness. Alphabets and numbers, trademarks, and emblems are not included. The symbols in this book are currently in use to give instructions, directions, and warning. The author attempts to show what *is* which is a first step toward what *should be* standardized, universally understandable graphic symbols.

The Table of Contents contains translations of each of the book's 26 discipline areas into 18 languages including English. Following the introduction are short articles on the pioneers in the field: C.K. Bliss who developed Semantography and Marie Neurath who with her husband, the late Otto Neurath, developed Isotype. Henry Dreyfuss bows to both of them. Basic symbols are examined, the author illustrating 30 of them including male-female, updown, empty-full, on-off, almost all of which would be universally recognized. These are then developed into more complex patterns.

From this point on symbols for various disciplines including architecture of course, graphic form and color are presented. Acknowledgments, a complete bibliography, and an index complete the book.

The new book by Louise B. and Raymond A. Ballinger, *Sign, Symbol & Form* will take its place beside Raymond's three previous books, *Layout, Advertising Design,* and *Lettering Art in Modern Use.* Like these it is beautifully conceived, colorful and expensive. The word "symbol" in its title is used in a different context than in the Dreyfuss book. For the Ballingers, a symbol can be a porcelain or a printer's mark, a religious symbol, a family or royal crest, a national flag, an antique or modern [continued on page 154]

Some materials stand up to fire better than they stand up to water.

In a fire, flame isn't always your worst enemy. Often the water used to put out the blaze damages the building worse than the fire itself.

Many builders overlook this. They choose their materials only on the basis of fire codes. But fire codes have no requirements for water damage. So there's no guarantee that the building will still be usable after being ravaged by fire and then flooded with water.

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First, it has the greatest dollar for dollar resistance to fire. No matter how hot it gets, concrete or clay masonry won't melt or burn. (That means it's safer for stairwells and elevator shafts.)

And in the case of a real blaze, fire doesn't spread as easily with masonry. It can be contained in a small area.



But masonry is also resistant to water. A popular building material like gypsum dry wall can warp when exposed to water. Masonry will not. Dry wall can disintegrate when exposed to water. Masonry will not. Dry wall can peel from water. Masonry will not.

There's no simpler way to put it. If you want to pass fire codes, use what you want. But if you want to protect your investment, use concrete or clay masonry. It protects your building from going up in flames. Or down the drain.

The International Masonry Institute Suite 1001, 823 15th Street, N.W. Washington, D.C. 20005. 202-783-3908



Architects: James Stewart Polshek and Associates, New York, N.Y. Headquarters, New York State Bar Association, Albany, N.Y

TCS... and a "lesson in civilized architecture"

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

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BOBRICK

Since 1906 Designers and Manufacturers of Washroom Equipment Books continued from page 148

trademark, or even a sign.

Like Raymond Ballinger's earlier books this one is essentially an artist's scrapbook but one replete with charming and attractive signs. By far the majority of examples included are antiques but there are a few examples of modern signs and symbols. Among the latter is an informative sign used during the renovation of a building in New York. All work-in-progress at the site is covered by a drapery but the name of the property owner, "Georg Jensen" in 3-dimensional letters behind the drapery were outlined by pulling the cloth tightly around the letters. A limited number of plastic and neon signs prove that this medium can be imaginatively employed. Although the authors say they are not including any total corporate design programs, they could not resist the famous Hans Knoll "K" which is probably as recognizable as that of many multimillion dollar corporations. The 20 pages of architectural signs are disappointing. Included among a group of antique signs are two famous New York bot-



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tom-to-top vertical signs—the one on Bonniers store and the one on The Museum of Modern Art, both modern. For good measure a third such sign is included, that used on the Venezuela building at Expo '67.

Aside from two biological symbols those for annual and biennial—and the sign for male animal, only the last section contains examples also included under Henry Dreyfuss' definition of the word "symbol." These are in the last section of the Ballingers' book *Travel and Direction*. Here the traffic symbols cataloged by Dreyfuss are shown in actual use—directional arrows, road hazards, parking symbols, and the like. *Sign, Symbol & Form* carries a very brief bibliography but, unfortunately, no index.

Architects may find both of these volumes useful—the Dreyfuss' book as a catalog of recognizable symbols—the Ballingers' book as an inspirational volume. This reviewer recommends both.

Early Illustrations and Views of American Architecture by Edmund V. Gillon, Jr. New York: Dover Publications, Inc. 1971. 295 pp. Paperback, \$6.95.

Brick Architecture of the Colonial Period in Maryland and Virginia by Lewis A. Coffin, Jr. and Arthur C. Holden, New York: Dover Publications, Inc. 1970. Paperback, \$3.50.

These two books carry on Dover's worthy contribution to architectural publishing: reprinting-it-as-it-was. *Early Illustrations and Views*, however, is a completely new book, a compilation of 19th Century engravings of houses, stores, churches, street scenes and monuments. It comes off like architecture's family album, with the contents chosen not as stylistic, historical or monumental landmarks, but rather just because the engravings exist.

It's good that they do exist, because relatively few of the buildings, and none of the street scenes, exist today. Despite the fact that the 742 illustrations have been drawn from so many sources (neatly listed in a bibliography), they form a remarkably cohesive collection. This is perhaps due as much to the fashion for owners to commission straight-forward "portraits" of their properties during that pre-photo age as it is to the stylistic limitations of the engraver's art. Each drawing is labeled with the name, date of construction, architect where known, location and date of the picture. The drawings are grouped by build-[continued on page 166]

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Books continued from page 154

ing type, but the geographical index could serve as a treasure hunt guide anywhere.

Brick Architecture is a reprint of a 1919 edition. In contrast to Early Illustrations, its visual impact is dull, being scholarly measured drawings and rather fuzzy old photos. Historically they are valuable, however. Many of the buildings are now gone and others have been restored as tourist attractions. The text is a period piece in itself, addressed to architects and builders who were to regard the buildings as "the aristocrats of our early architecture, the forefathers of the modern brick Colonial style." The authors' original premise: "Rightness in this American style can best be helped and arrived at by the close friendship with these grand old prototypes, by the ready absorption of their essentials and a close study of their details. Unfortunately, it is too often a fact that any red brick house with white woodwork is termed Colonial, an unflattering commentary upon the knowledge and the taste of the public and the architect alike." [RR]

Canadian Architecture 1960/70. Photogra-



phy and text by Carol Moore Ede. Toronto: Burns and MacEachern Limited, 1971. 262 pp. \$25.

This photographic essay on a decade of Canadian architecture is the first study of Canadian architecture ever published. Compiled by Carol Moore Ede with an introduction by Arthur Erickson, the book is a collection of "the last few years of accomplishment of architecture in Canada."

As the book and as this issue of P/A point out, the Canadian architect "has become more aware of long-range problems—the growth of population, transportation systems, urbanization and the increasing need for flexibility." Each of the buildings in this volume reflects a new architectural approach based on presentday needs.

The book is organized into categories including educational, public, commercial, industrial, religious and residential with the buildings shown not necessarily chosen because they are faultless but are representative of a step forward in interpreting new needs. Each section deals with specific problems and is designed to demonstrate the manner in which each architect arrived at his own solution.

New Furniture 10. Edited by Gerd Hatje and Elke Kaspar. New York: Praeger Publishers, 1972. 162 pp. \$17.50.

The furniture collected in this fine book, Volume 10 in a series, has been chosen to illustrate the editors' philosophy that "the real purpose of a dwelling is that a human being feels at home in it." With this in mind they believe that "in the area of furniture and industrial design, which ought to be governed by aesthetics as much as the liberal arts, there appears to exist a sales strategy, comparable to the advertising of detergents, that does very little for human well-being."

Using such firms as Knoll, Herman Miller, Braun, Olivetti, Bofinger and Artifort as examples of manufacturers who "have taken considerable risks because they were convinced that mankind should not satisfy its emotional desires in an environment full of kitsch, they proceed, pictorially, to make their point.

The designs by such makers make up the content of this book, chosen not only because the products represent quality, but also because as much care is devoted to their factories, advertising and exhibition stands as to the designs themselves. The things produced are designed to be "modest and silent servants ... the simpler [continued on page 178]

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Books continued from page 166

and more self evident the appearance of a product, the more intensive must have been its creation, and the more effect, fashion and theatricality had to be consciously avoided."

The makers of this furniture are indeed successful, but have not sought to create newsworthy novelties. Instead they have found that simplicity, honesty and harmony of form and function in articles of daily use can fulfill their special tasks. Essentially there are no really important new trends in the book—what is shown is furniture that harmonizes with the architectural shape and color of the interior design, intended to organize the room and considered within the frame work of the environment.

The book includes sections on chairs stacking, school, lounge, dining and others—seating arrangements of sofas and beds, tables, office furniture, cabinets and shelves and nursery furniture. An index gives manufacturers, designers and photographers. In all, a comprehensive collection that should be invaluable to designers working with almost any interior.

Studies in The Structure of the Urban

Economy by Edwin S. Mills. Baltimore: Johns Hopkins University Press, 1972. 168 pp. \$7.

The thesis of this publication put out by Resources for the Future, is that many dif-

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ficulties that beset urban areas result from suburbanization. An understanding of that process is basic to policies and programs for alleviating such social and economic problems.

This book presents an empirical study of the patterns and causes of suburbanization of population and employment from the 1880s to the 1960s and then constructs theoretical models to analyze both the relation between the locations of employment and residence in urban areas and the reasons for the increasing move to the suburbs. Special attention is given congestion as a cause and effect of the trend towards suburbanization. After considering an idealized model with an economically efficient transportation system, the author concludes that a policy of efficient investment and pricing in urban transportation might have a significant effect on the pattern of urban residential density. The study ends with a discussion of the ways in which the models could be modified and extended for use in public policy analysis.

The book should be of special value to city planners and urban geographers as well as to professional economists interested in urban problems. The author is Professor of Economics and Public Affairs at Princeton University.

Documents

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

American National Standard Safety Color Code for Marking Physical Hazards (ANSI 253.1-1971). American National Standards Institute, Inc., 1430 Broadway, New York, N. Y. 10018. \$3.

This is the third revision of this code, first developed during World War II. It defines application of colors to specific purposes in connection with accident prevention and recommends the colors to be used for such purposes as marking physical hazards, location of safety equipment and identification of fire and other protective equipment.

Profile and Material Specifications. Construction Library Service, A. T. Kearney & Co., Inc., 100 South Wacker Drive, Chicago, III. 60606. 254 pp. \$40.

Report on 40 U.S. modular housing producers includes names of key personnel, marketing channels, descriptions of hous-[continued on page 190]

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"Big Stan" going up 80 stories with new idea in elevator shafts USG® CAVITY SHAFT the new Standard Oil C

Based on the tube concept with perforated steel shell walls, "Big Stan" will rise 1,136 feet above ground level. Architects: Edward Durell Stone & Associates, New York; Perkins & Will, Chicago. General Contractor: Turner Construction Company of New York and Chicago. Shaft Wall Contractor: McNulty Bros. Company, Chicago. USG® CAVITY SHAFTWALL SYSTEMS are going up fast at the new Standard Oil Company (Indiana) headquarters building on Chicago's lakefront. This original concept was developed by United States Gypsum working with architects and general contractors. It combines the speed of gypsum panel installation with easy erection from the corridor side. And in-place costs are so convincingly low, these systems are also being installed at Sears Tower, Chicago, One Shell Square, New Orleans, and other megastructures nationwide. For good reasons:

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For information write P & F Corbin, Division of Emhart Corporation, Berlin, Conn. 06037. In Canada, Corbin Lock Division.

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How the staggered truss works.

As the model shows, the staggered truss consists of story-high trusses that span transversely between exterior columns, and occur in a staggered pattern from floor to floor. The floor system acts as a diaphragm and transfers lateral loads in the short direction to the trusses. Lateral loads are thereby resisted by the truss diagonals and are transferred to direct loads in the columns. So the columns receive no significant bending moment in the transverse direction.

Design Flexibility

The staggered truss results in column-free interiors, providing almost unrestricted space utilization. Truss spacing can be varied to accommodate a number of unit sizes between them. The system can be used efficiently with a curvilinear plan, or in combination of offset rectangles—and it accommodates a wide variety of vertical stacking possibilities.

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Books continued from page 178

ing units manufactured, types of nonresidential buildings produced and general material specifications of products used.

Probabilistic Design of Reinforced Concrete Buildings: ACI Committee 348.

American Concrete Institute, P. O. Box 4754 Redford Station, Detroit, Mich. 48219. 260 pp. ACI members, \$9.50: Nonmembers, \$12.50.

Designed to make probabilistic design methods more understandable and useful to the practicing engineer, this volume contains seven papers and one committee report on applications of probabilistic principles to design of reinforced concrete structures. The first five papers were presented in a Symposium on Probabilistic Design as part of the annual spring convention of the ACI.

The sixth paper proposes a coefficient of variation as a simple yet efficient measure of safety. It correlates standard deviations of possible design errors with factors of safety and allows for a rational approach to the determination of load factors.

Design Considerations for Fire Safety.

ASHRAE Publication Sales Department, 345 East 47 St., New York, N. Y. 10017. \$6 for members; \$12 for nonmembers, plus 25¢ postage.

This bulletin, compiled from papers delivered at the Society's semi-annual meeting in Philadelphia, contains: "Current Status of Fire Testing Floor/Ceiling Assemblies with Duct Systems and Outlets" by R. G. Sandvik; "Smokeproof Enclosures" by J. G. Degenkolb; "Pamphlet 90A—Controls Section" by A. P. Robinson; "Smoke Control in High-Rise Buildings" by J. B. Semple; "Can Sprinkler Systems Solve Building Code Problems?" by E. J. Reilly.

Also currently available are such publications as Fire Hazards in Buildings; Fire Hazards in Buildings and Air Handling Systems and New Developments in High-Rise Fire Protection.

Notes on AC1318-71 with Design Examples. Portland Cement Association, Old Orchard Road, Skokie, III. 60076. 600 pp. \$8.25.

Applications and design examples of the AC1318-71 Building Code are presented in this publication, with working examples given. It is designed to serve as a day-today guide to working with the Code.

Plywood Folded Plates, Laboratory Report 121. American Plywood Association, 1119 A St., Tacoma, Wash. 98401. 100 pp. 25¢.

New folded plate design data are available in a booklet that includes information needed for the design of rectangular plywood folded plates.

One and Two Family Dwelling Code. International Conference of Building Officials, 50 S. Los Robles, Pasadena, Calif. 91101. Uniform Fire Code—1971 Edition. \$6 ea. members; \$7 nonmembers.

The code for the construction of oneand two-family dwellings which incorporates mechanical and plumbing requirements was developed through a cooperative effort of the International Conference of Building Officials, Building Officials and Code Administrators International, Southern Building Code Congress and the American Insurance Association.

The Uniform Fire Code offers a comprehensive fire prevention code which adopts national standards while achieving compatibility with a model building code.

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Progressive Architecture

Notices

Appointments

Eugene N. Heap, AIA, has been appointed vice president of William L. Pereira Associates, Los Angeles.

C.A. Carlson has joined Gruen Associates, Los Angeles, as vice president with responsibility for project administration.

Don H. Olson and Morgan D. Wheelock. Jr. have been made principals of Sasaki, Dawson, DeMay Associates, Watertown, Mass

Michael H. Trower, AIA, has been named executive vice president and general manager of Caudill Rowlett Scott, Houston, Tex.

John A. Rudberg has been promoted to manager of the mechanical engineering department for Ellerbe, Minneapolis and St. Paul, Minn.

Thomas R. Shine has been named vice president for marketing of UNIMOD, Inc., a subsidiary of Ballinger Co., Philadelphia.

Martin Rubin has been named a partner of Parsons, Brinckerhoff, Quade & Douglas, New York City.

V.P. Lamb and L.A. Dondanville have been appointed directors of the company for De Leuw, Cather & Company, Chicago.

David Arnson and Robert Barney have been elected associates of Mosher, Drew, Watson & Associates, La Jolla, Calif.

C.W. Tarman has been promoted to vice president of the Envirosystems Group for Daniel, Mann, Johnson & Mendenhall, Los Angeles, Calif.

Bernard Kessler, AIA, has been named head of the detailing department of Emery Roth & Sons, New York City,

New firms

Searle, Wilbee, Rowland of Toronto and Smith, Hinchman & Grylls Associates, Inc., Detroit, Mich., have formed SWR/SH&G Ltd., engineers and planners.

Thomas Holtzman and Edward Vero have formed Holtzman/Vero Associates, 405 McNeilly Rd., Pittsburgh, Pa. 15226.

Sir Robert Matthew, Metcalf & Partners is a new British-American partnership with offices in Washington, D.C., New York City and Edinburgh, Scotland.

Robert Wayne Hawley, AIA, and Richard Stowers, AIA, have formed Hawley, Stowers & Associates, AIA, 1830 The Alameda, San Jose, and 583 Market St., San Francisco.

Robert W. Hayes, AIA, Planning Consultant, 426 Pacific Ave., San Francisco, Calif.

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