Architecture Canada

Journal RAIC/La Revue de l'IRAC: September/Septembre 1967





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This year we have added sectional tabs and telephone numbers for your convenience.

*Architectural Directory Annual 67/68

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AIA-RAIC Joint Assembly-Convention in Chicago in 1969

Plans for a joint Assembly-Convention of the American Institute of Architects and the Royal Architectural Institute of Canada in Chicago in 1969 were discussed at a meeting of AIA and RAIC officers in Toronto August 16. The event, to be held at the Palmer House Hotel June 22-26, will also mark the 100th Anniversary of the Chicago Chapter of the AIA. Except for business sessions and convocations of the Colleges of Fellows, the Convention-Assembly program - seminars, workshops and social events, will be shared in jointly by members of both Institutes. Representing the AIA at the meeting were President Robert Durham, FAIA, W. J. Bachman, FAIA, Chairman of the 1969 Convention Steering Committee; J. Winfield Rankin, Hon. AIA, of AIA Headquarters' Staff in Washington. Representing the RAIC were President James E. Searle, FRAIC; Vice President, N. H. McMurrich, FRAIC; and F. J. K. Nicol, MRAIC, of Toronto, who has accepted the position of RAIC representative on the Steering Committee. Mrs Nicol will serve on the Committee for the Ladies' Program.

World Congress of Engineers and Architects

The first World Congress of Engineers and Architects to be held in Israel, originally

scheduled for June, will now take place from December 19-23, 1967. The Congress will deal with the subject "Technological Development of Israel and Emerging Countries" in plenary sessions and in three discussion groups: Housing and Architecture: comprehensive planning and development, housing and building, architectural design; Water Development and Irrigation in Arid Countries: comprehensive development of water resources, water resources management and control of water utilization, the challenge of irrigation development under conditions of scarcity; Industrial Development: problems of Israel's industrialization, industrial exploitation of natural resources in Israel, science based industries. Professional tours and excursions to all parts of Israel will be arranged for participants. For details write the Association of Engineers and Architects in Israel, 200 Dizengoff Street, Tel Aviv, Israel.

1967 PCI Convention to be in Montreal

The first Prestressed Concrete Institute's Annual Convention to be held in Canada will be at the Queen Elizabeth Hotel in Montreal, October 8–12. Thirty-three technical papers will be presented and panel discussions will be devoted to architectural precast concrete and to architectural and engineering design of architectural precast concrete. A highlight of the convention will be the presentation of the 1967 PCI Design Awards.



Past President Gérard Venne (F) (right), presents Honorary Life Membership certificate to Albert R. Décarie in Quebec, July 12. Assisting Mr Venne in the presentation are left to right, Jean-Marie Roy, president of the Quebec Society of Architects and Henri Talbot

G. Venne (F), ancien président, à droite, présente le certificat de membre honoraire à vie à Albert R. Décarie le 12 juillet à Québec. Assistant à la cérémonie, on voit de gauche à droite, MM. Jean-Marie Roy, président de l'A.A.P.Q. et Henri Talbot

Committee Members Needed for CSA

James B. Craig, RAIC representative on the CSA, would be pleased to receive the names of any members who are willing to represent the architectural profession by assisting in the work of any of the following committees: CSA Sectional Committee on Building Materials, CSA Specification Committee on Asphalt and Tar Roofing Materials, CSA Sectional Committee on Concrete, CSA Sectional Committee on Fire Tests on Building Construction, CSA Specification Committee on Insulating Fireboard (softboard), CSA Specification Committee on Hardwood Plywood, CGSB Specification Committee on Painting Standards. Write - Mr J. B. Craig, c/o Craig and Kohler Architects, 75 Albert Street, Ottawa 4.

1967/68 Issue of ADA now out

The 1967/68 Architectural Directory Annual is now off the press and has been mailed to



AlA-RAIC meeting to plan joint Assembly-Convention in Chicago in 1969, left to right, William J. Bachman, FAIA, J. Winfield Rankin, Hon. AIA, F. J. Nicol, MRAIC, James E. Searle, FRAIC, Robert Durham, FAIA, and N. H. McMurrich, FRAIC



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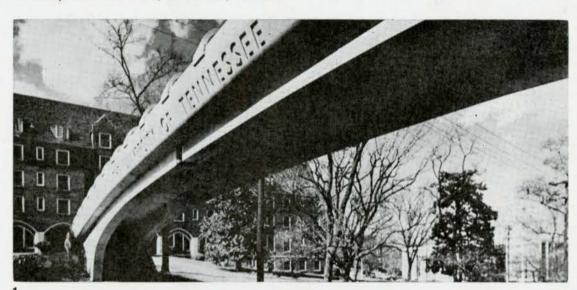


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1967 Prestressed concrete Awards

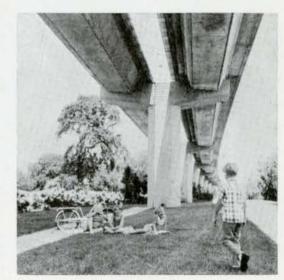
Five of 11 awards in the Fifth Annual Awards Program of the Prestressed Concrete Institute were won by Canadian structures. Among the more interesting winners were (1) pedestrian overpass at Knoxville campus of the University of Tennessee, Bruce McCarty and Associates, architects; Famco

Engineering Company, engineers (2) Central Heating and Cooling Plant of the University of Saskatchewan at Regina, Clifford Wiens, architect; Reid Crowther & Partners Limited, structural engineers (3) Combined water tower and communications center of BC Hydro and Power Authority, Burnaby Mountain, BC, Erickson/Massey, architects, Stefan Faliszewski, structural engineer (4) Elevated structure for San Francisco's Bay Area Rapid Transit, Donn Emmons, consulting architect; Tudor Engineering Company for Parsons-Brinckeroff-Tudor-Bechtel, general engineering consultants. Canadian winners in addition to (2) and (3) were Toronto City Hall, Habitat and a highway bridga near Edmonton by McBride-Ragan Consulting Engineers Ltd.

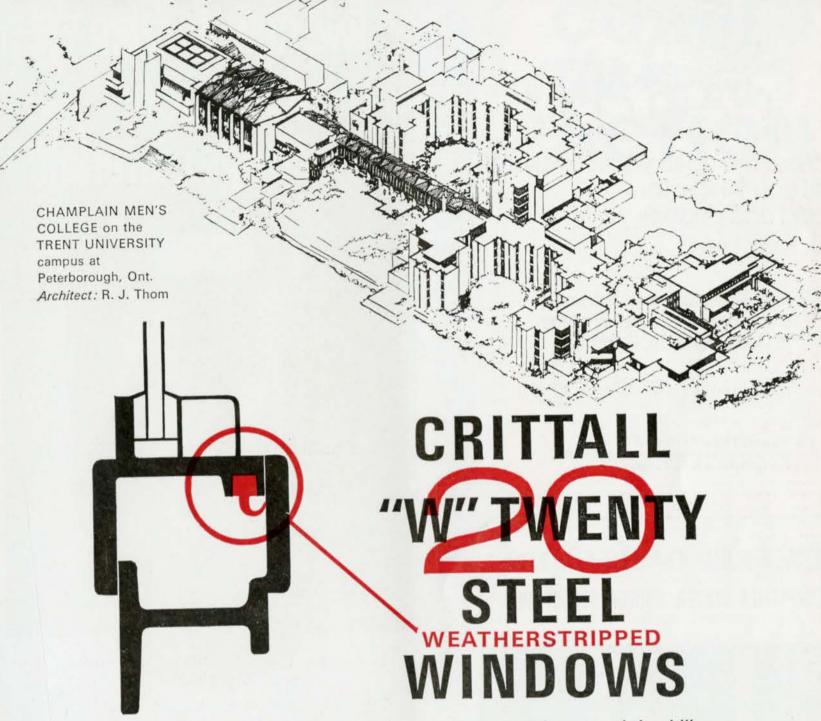








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Perth & District Collegiate Institute

Architects: Burgess, McLean and MacPhadyen

Glenview Public School-Senior-Toronto Architects. Govan, Kaminker, Langley, Keenleyside, Melick, Devonshire & Wilson

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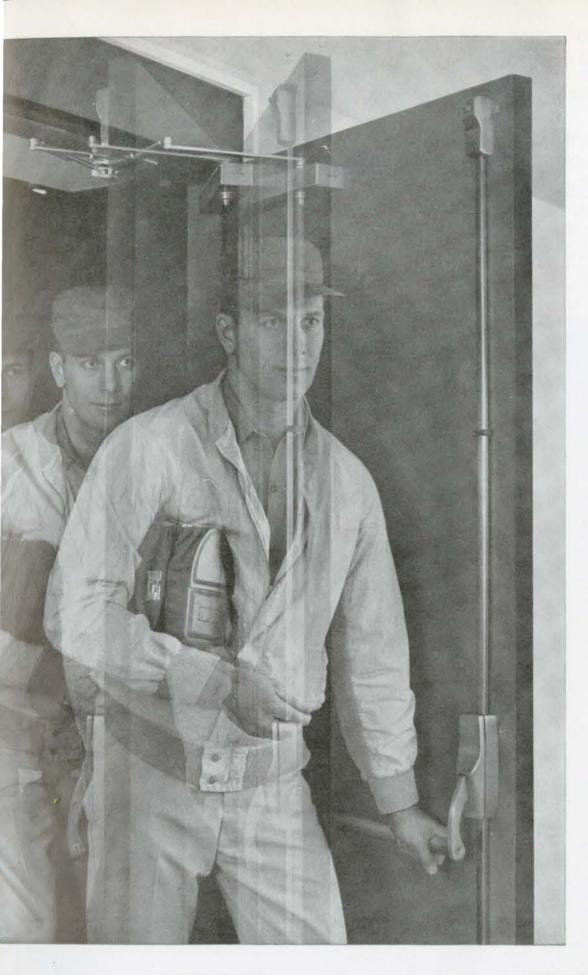


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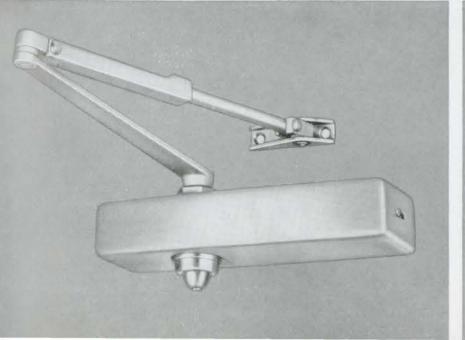


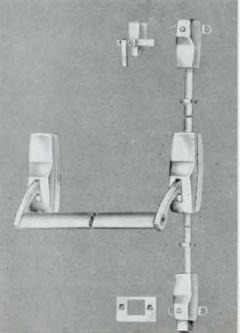
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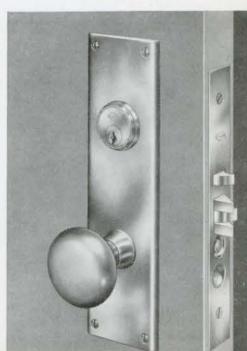
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 General Contractor: Fecteau & Trottier Inc.
- Ready-mixed concrete: Quebec Ready Mix
- Architects & Consulting Structural Engineers: Moody, Moore and Partners General Contractor: Trident Construction

Precast members: Supercrete Ltd. Ready-mixed concrete: McCurdy Supply Co. Ltd.

University of Alberta Engineering Building, Calgary, Alta.

Physics and Engineering Building at Mount Allison University, Sackville, N.B.





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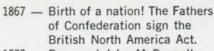
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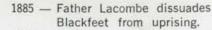


1873 — Reverend John McDougall builds his first Indian mission, highlighting 36 years of service.

1876 — Alexander Graham Bell patents the telephone.

1877 — Chief Crowfoot leads in signing a decisive peace treaty.

1885 — William Van Horne completes transcontinental railroad.



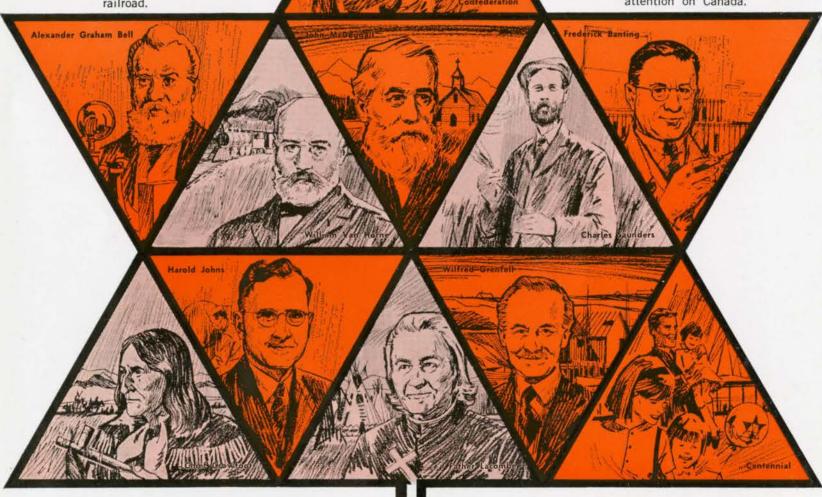
1892 — Wilfred Grenfell begins forty years of medical work in Labrador.

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What the Dickens or a Tale of Two Cities

Arts

Sculpture '67 June 1-Sept. 5 (July 17) Perspective '67 July 8-September 10

This (and preceding reviews) is "A Tale of Two Cities", Montreal and Toronto. Expo review was a tribute to Montreal and the inspiring leadership of its Mayor Drapeau. This is a memorial to the "Dorothy Cameron Show", Sculpture '67, at Nathan Phillips Square, Toronto City Hall. One of the brightest shows of sculpture ever to have graced the Canadian scene opened June 1st and was due to close September 5th; but after one of the sorriest public debacles and wrangles that one could wish to see, the show ended prematurely on July 17. This and other sad misadventures in Toronto during centennial year have revealed a state of civic depression in this city, where "sewerage before aesthetics" becomes a publicly avowed policy. Plans went down the "drain" in more ways than one.

Apportioning blame to City Hall for Toronto's general aesthetic inertia can be unfair and unjust, but in this case Mayor Dennison and his colleagues must face up squarely to the fact that they rejected correct civic responsibility in staging the sculpture show, a valuable inheritance from the Givens regime. This was a gift to the community for centennial summer by a group of enthusiastic and generous sponsors. Nathan Phillips Square has lost irrevocably fun and fancy through this entertainment for summer, and the public has been outrageously cheated.

Sculpture '67 cost Toronto nothing. The

National Gallery, Ottawa, sponsored a \$90,000 budget to launch and stage the show. Canada Council subsidized both the manufacture of several works and the travel expenses of the artists to the site. Two American Universities sponsored individual works (Archie Miller, University of Rochester; Zach, University of Oregon). Industry underwrote the material cost of many exhibits, including the fabrication of a François Dallegret (of international standing) which was programmed with four others to be shown in the latter part of the summer. These never even saw public viewing.

The organizer, Dorothy Cameron, needs no introduction, and as ever, could be expected and did respond with enthusiasm and dedication to the purpose. The young, and as they saw it, privileged artists, responded with exciting, courageous and experimental work, undertaken in a spirit of tomorrow with little regard to "sales" value. The public also responded in a like manner and took these exciting experiments in three dimensional form to its heart. People became involved touching, banging, photographing and energetically evaluating in a personal involvement from tiny child to pensioner in a way rarely witnessed in Toronto's art life.

In all, everyone involved was enthusiastic and positive except for the minority of teenage vandals (a recurring ill in urban life) who in their foolish acts revealed that this city has

unfortunately a body of civic caretakers incompetent to guide or guard the aesthetic growth of metropolitan Toronto.

Ottawa can be forgiven after its generosity for taking an "out" but seriously, Dr Boggs with comment that "a six weeks exposure is a long time anyway", is not oriented to the big city population with migratory summer visitors and three million pedestrians passing in and out of the civic square day and night in a way no archival gallery could ever experience. In contrast to Ottawa, Montreal and Toronto play while provincial towns sleep, even at outdoor exhibitions.

The whole shameful episode of a wrangle over guards for caretaking, could have been avoided if City Hall had honored its obligation of making available the total square instead of allowing the intrusion of incredible vulgarities such as a piece of landscape gardening of patriotic Victorian vintage and "mouth to mouth resuscitation" demonstrations that the mayor apparently feels are compensations for adequate sewerage over spiritual desolation. Final disillusionment and deterrent to future entrepreneurs for Toronto could have been avoided. Feelings were publicly shown by art lovers in an embarrassing incident at the opening of Perspective '67, at the Art Gallery of Ontario, when the public most obviously moved away and turned their back on the city mayor when he rose to address them.



Nathan Phillips Square, Toronto, "The Cameron Show" Place Nathan Phillips, Toronto, Coup d'oeil sur le "Cameron Show"



William McElcheran, "The Race" William McElcheran, "La course"

Arthur Handy, Aphrodite Yawns, one of the "people's choice"
Arthur Handy, Aphrodite baille, favori par choix du publique

Hugh Leroy, "Cool" Classicism in the Go-Go world Hugh Leroy, du classique "cool" dans le monde du Go-Go 6 Jim Willer, "Un, deux, trois"

Jim Willer, "Un, deux, trois"

Les Levine, transparencies and bulging planes, the other "people's choice" Les Levine, formes bombées et transparentes, autre "favori du publique"

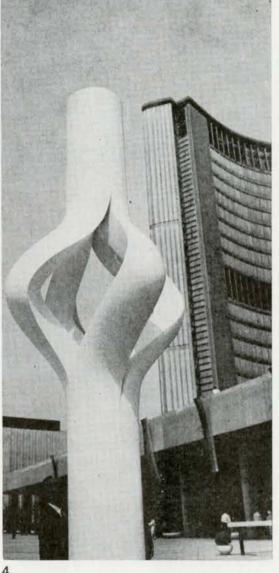


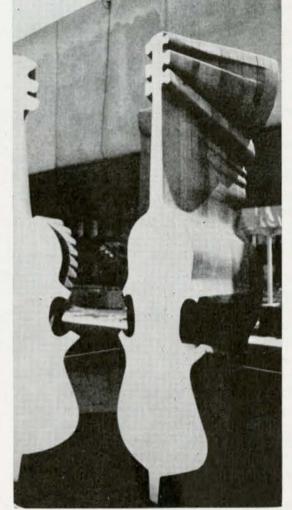
Assessment of New Talents Sculpture '67 and Perspective '67

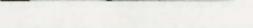
The collected talents of Sculpture '67 and Perspective '67 are the very antithesis of their conservative city fathers. They represent a cross section of the most lively young talent in Canada. The two exhibitions can be bracketed, for some talents are seen in both expositions. The result is a survey of youthfulness and competency, full of ideas which every architect in Canada ought to note well. They manifest an ability to work in a contemporary material and appear to be "at home" with an iconography most suited to contemporary architectural décor. All they, the exhibitors, lack is experience in commission for architectural scale. Indeed their wealth of ideas with material is superior to the sterility in architectural thinking which too often resorts to decorative "gimmickery" for effect. These artists may be lacking in maturity but do not fall short in vitality. Concept and functionalism might well be wedded to brighten our environment if after 1967 some architects and these artists combine talents.

On the whole, standards are fairly even but some artists stand out for special mention. . . .

Robert Murray... is now well on the way to international status. Canadian architects are too slow in providing space for his cool monuments – iconographic tributes to the very "skeletal bones" of architecture. The people enjoyed these contrapuntal planes in









intimate physical enquiry. They, the sculptures, are durable.

Les Levine . . . is fast arriving to maturity. His ability to create environmental form makes him a spearhead of talent well worth integrating with architecture. What he does with transparencies, bulging planes and modulation of forms in space is a salutory lesson to architects. The head supersedes the hand with this ingenious innovator.

Hugh Leroy . . . shows that cool classicism has a place in the go-go world of sculpture. His "Four Elements Column" is a compatible element that might well permanently grace the site of City Hall.

Arthur Handy . . . craftsman turned sculptor, shows a cunning ability to transfer his image from ceramics to industrial material. He and Levine were the "peoples choice" and equal rivals for public attention.

Michael Snow . . . exploits his own images to a degree of fascination. His peep-hole wall apparently becomes artlessly a piece of the public environment but subtly it is as conceptual as Stonehenge.

Michael Hayden . . . reveals a precocity in experimental kinetics which ought to be harnessed to some civic banalities. He could well ingeniously replace the tasteless juke box inanity with a more imaginative pastime for adult and adolescent alike. Here again the fascinated public would be still spending dimes around the clock on his "art" machine for entertainment if they had been allowed.

lain Baxter . . . his temporary confections in plastics are not easily forgotten. Temporary though they may be in a material sense they are memorable transient images. His Flower and Cloud declare the validity of Pop sculpture.

Gino Lorcini, Robert Downing, Ronald Bladen, William Featherston and Cooke's Bright Suns (another public favorite) should be perceived through the camera eye against the city skyline to truly appreciate their real compatibility with today's landscape.

As for the painters . . . architects should note these talents at Perspective '67....

Brian Fisher and his cool cool involvements would transform any two dimensional surface. Guido Molinari and his optical use of color has environmental value for architecture. Claude Tousignant has optical ideas and excitements for the less romantic more classic minded architect.

What is most welcome to see at Perspective '67 is the inclusion of "fine" (?) craft as prize winning items. This action has given the creative craftsman of Canada his rightful place in art society and elevated his serious contributions above the product of the leisure time dilettante to the attention it warrants.

Charlotte Lindgren and her hangings must surely sweep Canadian architectural décor in an act of appreciation for this artist's contribution to her country's crafts.

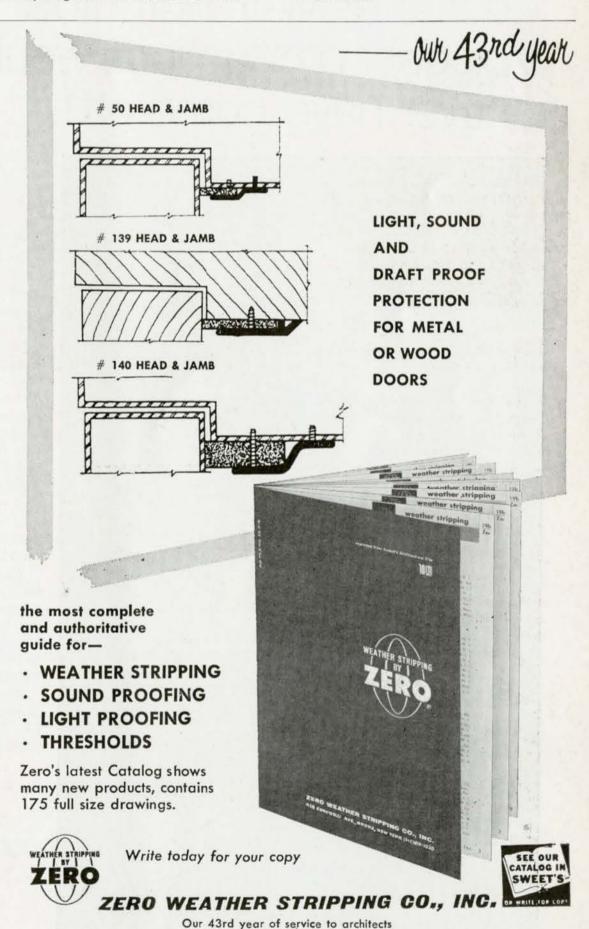
David Chavel is a young metal worker who shows surprising development and his "Box" should awaken church patrons and the like to the fact he can make artifacts worthy to grace any future museum when time lays the building to rest.

In conclusion . . . architects please note . . . these young artists abound in ideas and

should be used for architectural environment too often impoverished where vital idea is concerned.

A multitude of media is used . . . the only complaint is a lack of good representation of what is being done with creative ceramics; for some reason or other it became an oversight.

In total, young talent here, given a chance, shows that unlike their conservative forefathers they have wit, energy and forward ideas that could give more color to aesthetics in the Canada of the next 100 years. Anita Aarons



415 Concord Avenue, Bronx, New York 10455 .

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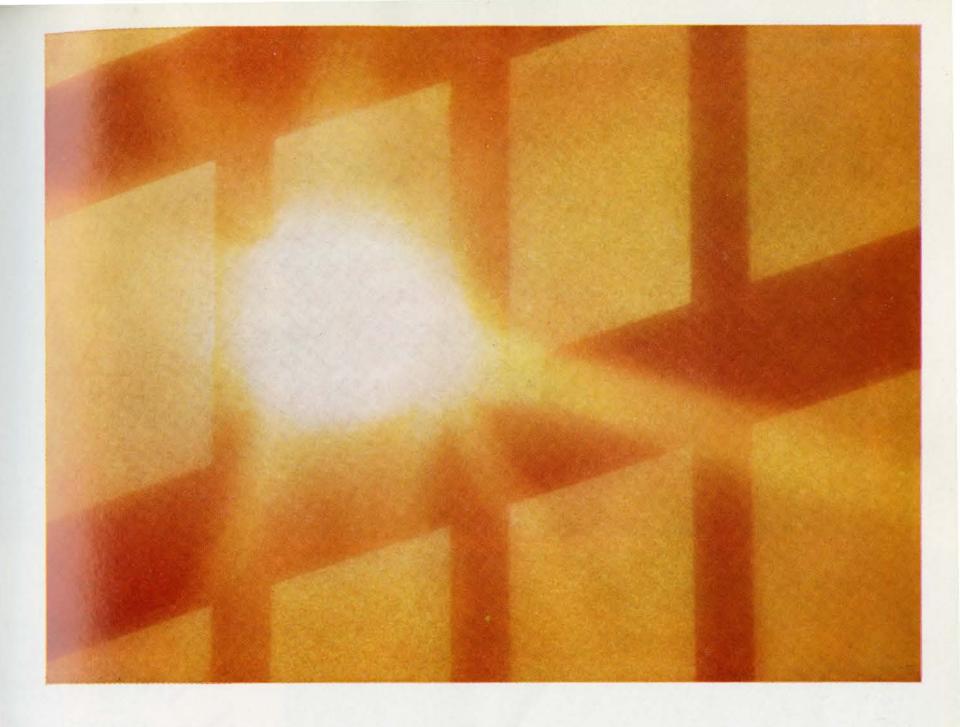
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LE CHATEAU CHAMPLAIN (Hotel), Montreal. Architects: Roger D'Astous and Jean-Paul Pothier. Consultant for Precast Panels: Norman Slater. Precast Panels: Creaghan & Archibald, Ltd., Montreal.



A WY at EXPO

ART GALLERY Architects: Gauthier, Guite & Cote, Neufchatel, Quebec. General Contractor: Beaulieu and Poulin, Quebec City. Wash Terrazzo: World Mosaic, Montreal.

ITALIAN PAVILION Architects: F. Piro, A. Antonelli, M. Greco, Mrs. Sara Rossi, Rome. General Contractor: R. E. Stewart Construction Corp., Montreal. Precast Panels: Building Materials Corp., Montreal.

PAVILION OF IRAN Architect: Abdul Aziz Farmanfarmaeian, Parviz Moayed-Ahd, Iran.
General Contractor: Argo Construction, Montreal, Wash Terrazzo: National Tile and Terrazzo, Montreal.

PAVILION OF INDIA Architect: Mansinh M. Rana, New Delhi. General Contractors: Cook & Leitch, Ltd., and E.G.M. Cape, Ltd. Wash Terrazzo: World Mosaic, Montreal.

MAN AND MUSIC PAVILION Architect: Paul-Marie Cote, Chicoutimi, Quebec. General Contractor: Jennesses Musicales, Montreal. Precast Columns: Francon Co., Montreal.



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Medusa salutes the 100th year of Canadian confederation and the 325th anniversary of the great city of Montreal.

We salute also the many creative architectural designs that have helped make Expo '67 one of the truly outstanding expositions of all time.

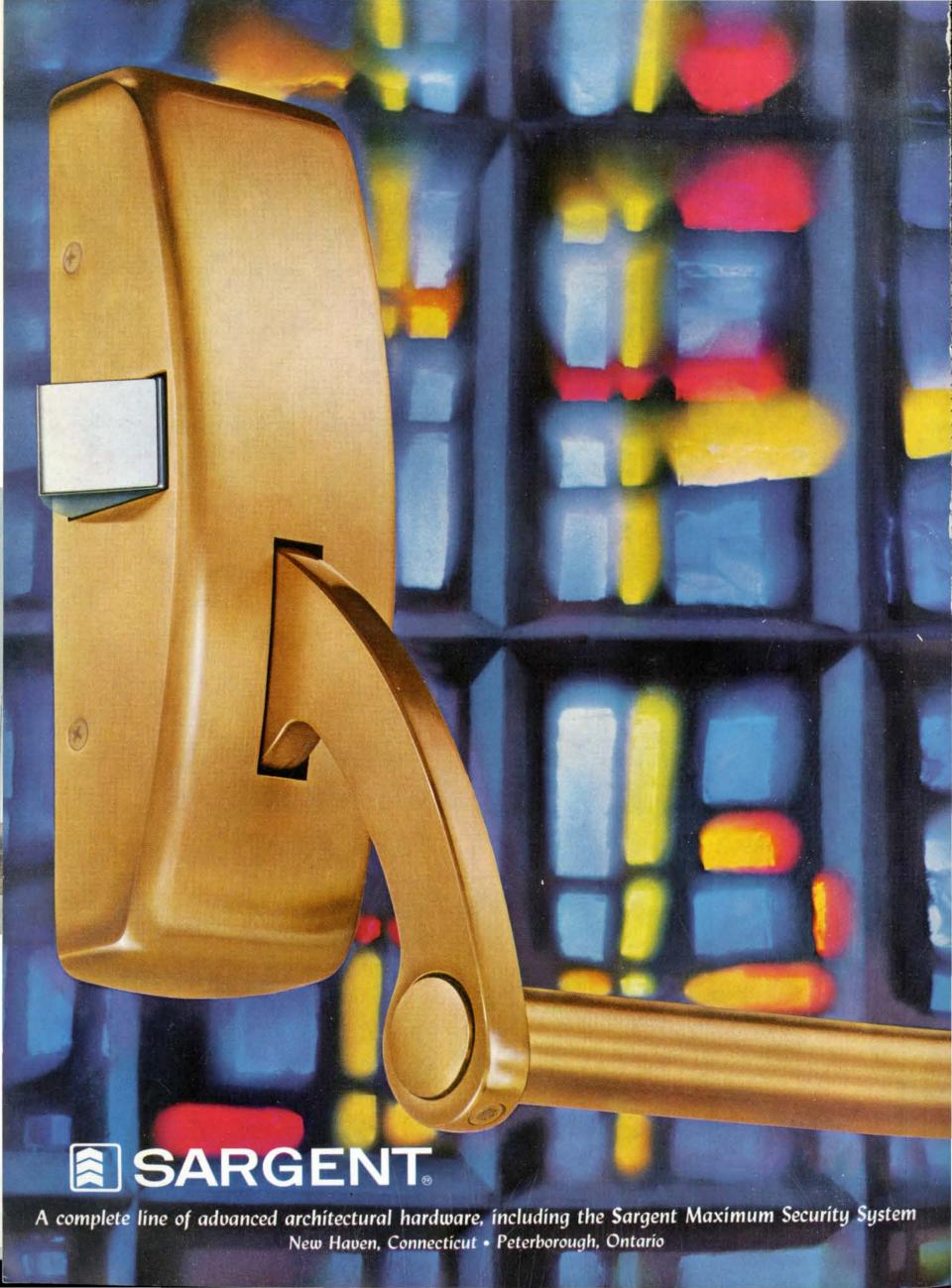
We are proud of the part Medusa White has played in helping to bring reality to these five imaginative design conceptions of the architects and building teams involved.

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Forum, July 1967, has an article on the campus. Rudolph's Art & Architecture Building at Yale figures prominently. The before and after pictures (1,2) say more about the way in which the building performs than words could.

Architectural Design, July 1967, has Montreal as its main topic. Besides covering Expo '67, it publishes the Metro System and other aspects of the city's emerging urban form, notably the underground pedestrian system. Perhaps the most interesting feature is an article by Melvin Charney on the grain elevators (3) of Montreal. He concludes his article thus "... technology is happening, and new life-styles are evolving. Even with the grain elevators we can opt for an understanding of the complexity of the organization rather than a simple appraisal of the design image. We can opt for the telescopic spouts, the mobile towers, the mobile cranes, the moving conveyor belts, the stack of parts that can be inserted into the system when needed, the concrete silos as distended tubes in the conduits of movement, rather than the static and lumpish neo-monuments of yesteryear, but we must opt for them not as formal images. It is the process of which they are an image that is important. This process we must study if we believe that architecture is an involvement with human processes rather than with designed things. In this way the grain elevators may yet again suggest to architects a way out of their self-imposed limitations."

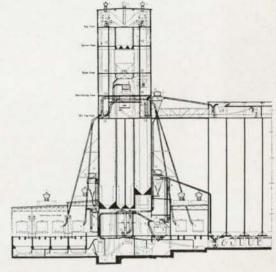


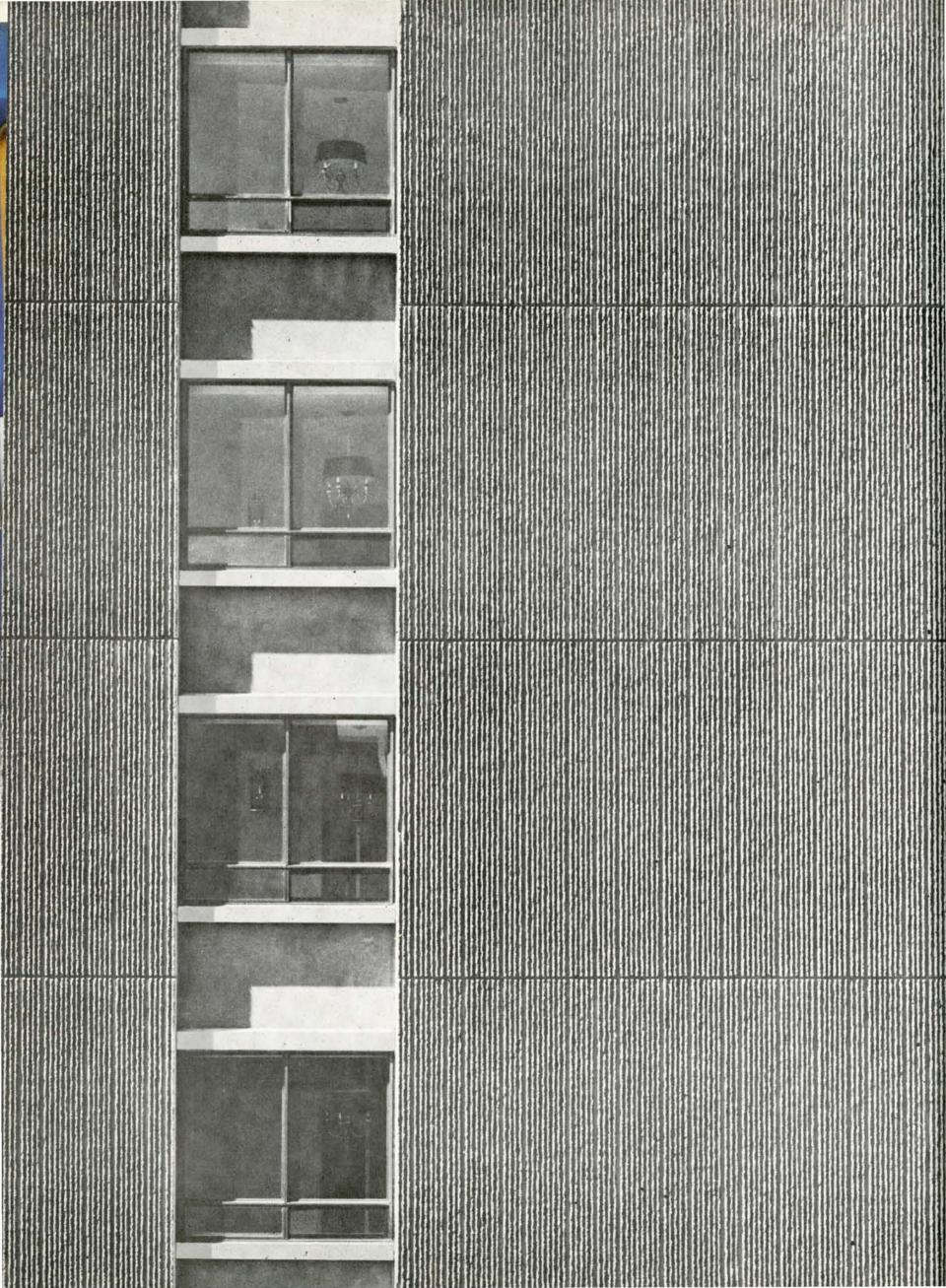
These grain elevators are very much part of the Canadian scene - the only constructions with a consistent form vocabulary that can be found across the country, and part of the main stream of contemporary architecture - anticedents of phenomena for-now Archigram spirit. The C. D. Howe Company have built many elevators in Canada and are still building them. Their Carghill Elevator in Baie Comeau is a concrete building that works.

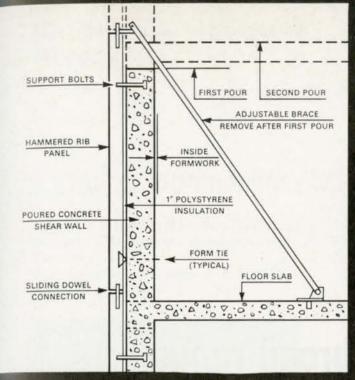
The August issue of P/A is the result of many months work by that magazine's editorial staff. The editors write, "A new profession has grown up in the last 30 years whose members, variously titled 'systems analysts,' 'systems engineers,' and 'operations researchers,' claim to have developed a unique methodology for problem solving far superior to older methods used in other professions. To describe the implications of this methodology and ways of thinking about problems where architecture is concerned, P/A coined the term 'Performance Design' - or design based on a scientific method of analyzing functional requirements, including the psychological and aesthetic needs of people. This issue follows the thread of Performance Design in its many guises through government, politics, building, military, the sciences, technology, industry, transportation, planning, and architecture."

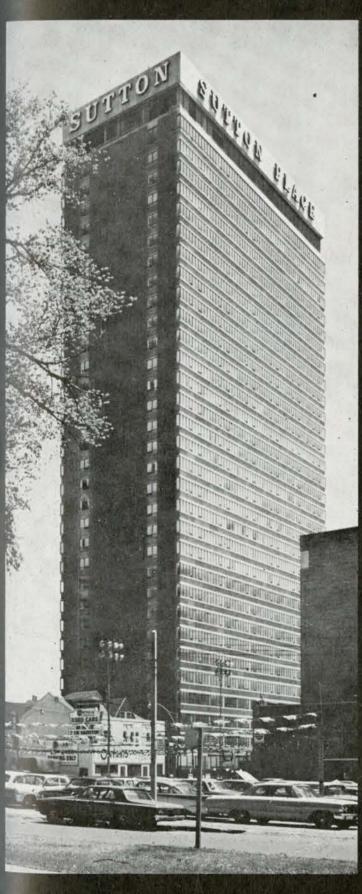
In a very pithy piece on Habitat at Expo, Architectural Design quotes Reyner Banham, that acerbic critic, "While we can all join in congratulating Moshe Safdie on actually getting a fifth year student thesis built, and solving all the technical problems involved, the fact remains that like three thesis designs out of five it is a craggy ziggurat of projecting apartment units; like three out of six it has an exposed megastructure of horizontal and vertical circulation; and like three out of four it is put together out of pre-cast room-units hoisted into place by crane. Viewed as an inhabited sculpture it is handsome, but the concept of urban living it offers is about as new as the oldest penthouse overlooking the East River in New York. The view from Habitat is marginally better, looking across at the new towers of downtown Montreal against the sunset; but the standards of visual privacy are so poor that they are the talk of Montreal."

A. J. D.









Luxury hotel features precast walls

The impressive hammered-rib precast concrete panels used on the new Sutton Place Hotel meet all conditions for economy, insulation and ease of construction.

Used as formwork in the construction of the poured concrete shear walls the floor to floor panels are placed by tower crane in the same manner as normal formwork. They are braced to the floor slab, one inch insulation applied to back, reinforcing steel placed and formwork bolts attached before concrete is poured.

ADVANTAGES:

Placino	cost	same	as	normal	formwork.
 I Idonic	LOSE	Saille	as	Homman	IUIIIIVVUIK.

- ☐ Finished wall no formwork stripping required.
- ☐ Economical \$2.50 per sq. ft.
- Complete insulation of building's structural frame improves stability eliminates need for flexible partitions.
- ☐ Improves building technique no lintel angles required, meets all by-law requirements.

Spandrel panels are in plain form finished precast concrete complementing the texture of the end wall panels.

The Sutton Place Hotel, 955 Bay Street, Toronto Architects: Webb, Zerafa, Menkes

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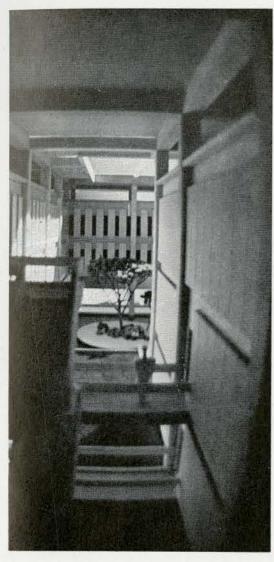
100 Jutland Rd., Toronto 18, Ont./CL. 5-3407

Canadian Architecture Abroad

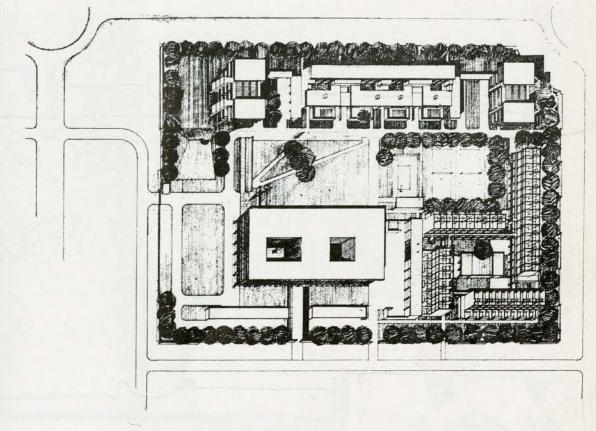
Canadian High Commission Buildings, New Delhi, India

Gardiner Thornton Davidson Garrett Masson & Associates, Architects and Planners

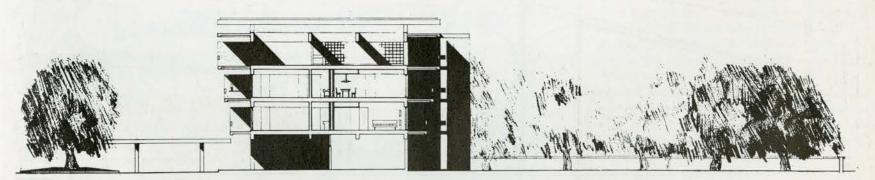
J. A. Langford (F), Assistant Deputy Minister (Design) Reed Jones Christoffersen Ltd, Structural Consultants Keen Engineering Ltd, Mechanical Consultants Rich Webster & Co. Ltd, Electrical Consultants



1 Interior, Chancery Building L'intérieur de la Chancellerie



3 Isometric view of completed site development Vue isométrique montrant l'aménagement du terrain



2 Section, Apartment Block B Coupe, Appartement bloc B

Canadian Embassy, Brasilia

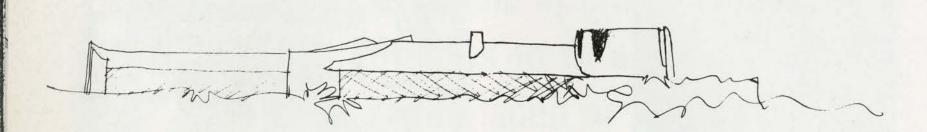
Thompson, Berwick, Pratt & Partners, Architects, Engineers, Planners J. A. Langford (F), Assistant Deputy Minister (Design) O. Safir, Structural Engineer Sketch, garden elevation of Official Residence Croquis, élévation du jardin de la Résidence officielle

2

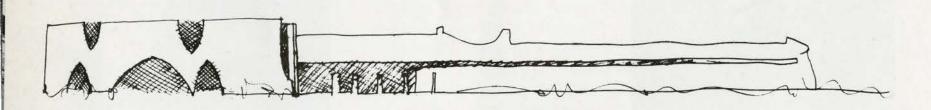
Sketch, entry elevation of Official Residence Croquis, élévation de l'entrée de la Résidence officielle

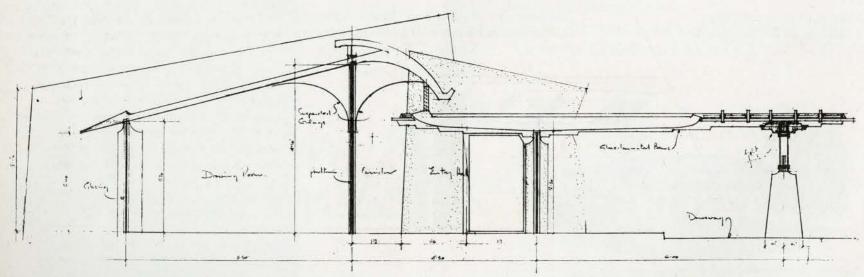
3

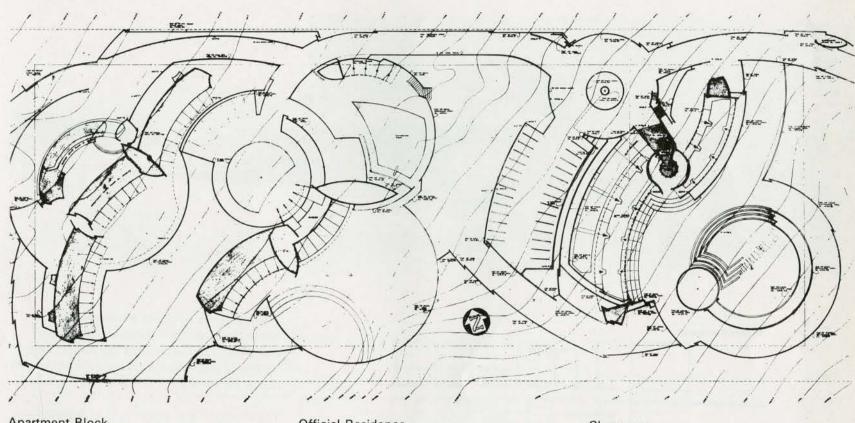
Sketch, cross-section of Official Residence Croquis, coupe de la Résidence officielle



1







Apartment Block

Official Residence

Chancery



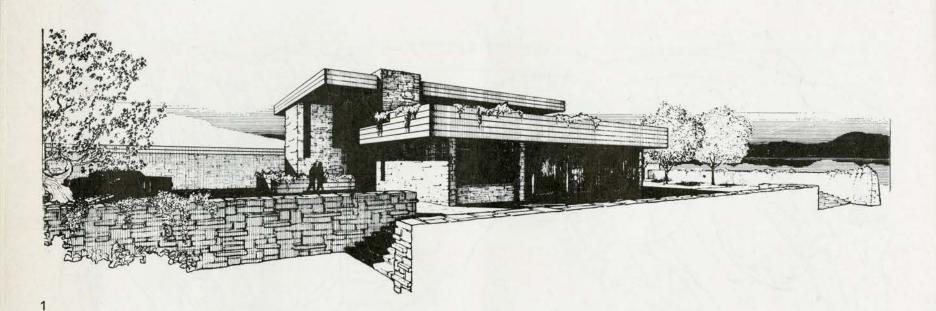
The architects designed the three separate buildings, the Chancery, Official Residence, and Staff Apartments with two overriding ideas in mind. First, that landscape walls and terraces dominate the total architecture in an effort to contribute a romantic human scale to the otherwise scaleless environment; second, that all buildings be oriented, elevated and shaped to protect their occupants from sun, yet allow constant cross-ventilation.

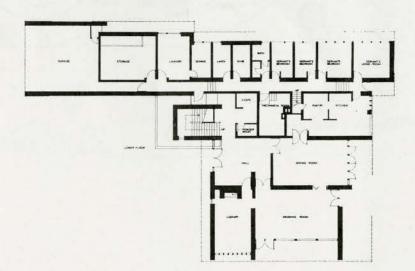
Building material is "in-situ" concrete; the foundation is piled. Floor areas are: Chancery - 11,000 square feet; Official Residence - 6,500 square feet; Staff Apartments – 6,500 square feet, plus garage and servants' quarters.

Official Canadian Residence, Ankara, Turkey (1963)

Fairfield and Dubois, Architects
J. A. Langford (F), Assistant Deputy
Minister (Design)
Ewbank, Pillar & Associates, Consulting
Engineers
H. Oswald Konway & Associates,
Landscape Architects

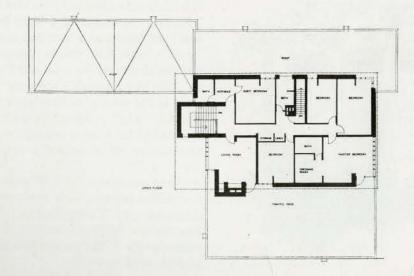
Perspective
Perspective
2
Lower Floor Plan
Plan du rez-de-chaussée
3
Upper Floor Plan
Plan de l'étage supérieur





The residence occupies a hillside site overlooking the city of Ankara and was designed to accommodate the Ambassador, his family and servants' quarters, together with rooms for receptions and entertaining.

The materials and techniques of building peculiar to the region were used in construction, with stone and reinforced concrete being the principle building elements. The exterior is cut stone walls and wide exposed concrete fascia, terrazzo paving. Interior, exposed stone walls, plaster painted walls and ceilings, terrazzo tile floors and some marble. Landscaping included stone retaining wall and dry walls of stone, terrace (terrazzo paved) opening to lawn, asphalt paved parking and driveway.



3

Canadian Embassy, Bonn, Germany

Bolton, Ellwood and Aimers, Architects J. A. Langford (F), Chief Architect for DPW

Canadian Chancery Building Warsaw, Poland

Smith Carter Searle Associates, **Architects and Consulting Engineers** J. A. Langford (F), Assistant Deputy Minister (Design)

Section, Canadian Embassy, Bonn Coupe, l'Ambassade du Canada, à Bonn

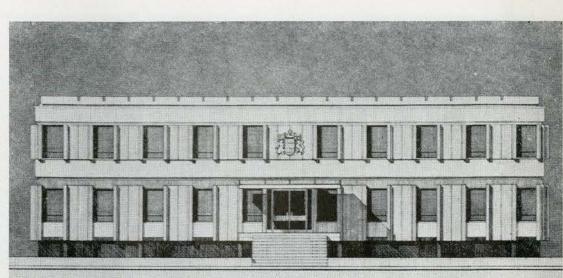
Plan, Canadian Embassy, Bonn Plan, l'Ambassade du Canada à Bonn 3

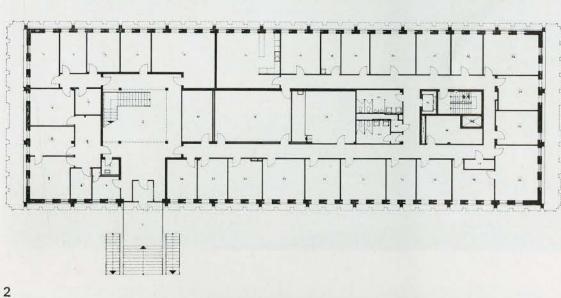
Model, Canadian Embassy, Bonn Modèle, l'Ambassade du Canada à Bonn Perspective, Canadian Chancery Building, Plan, Canadian Chancery Building, Warsaw

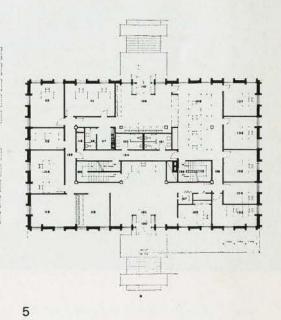
Section, Canadian Chancery Building, Warsaw

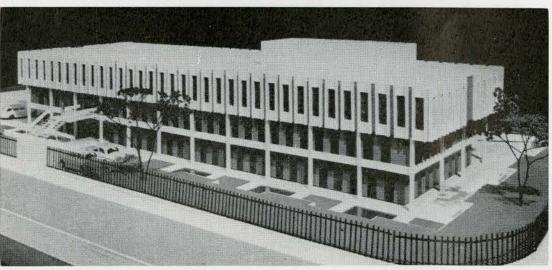
Coupe, Canadian Chancery Building, Warsaw

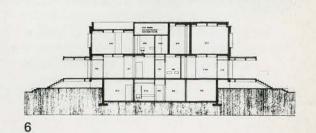






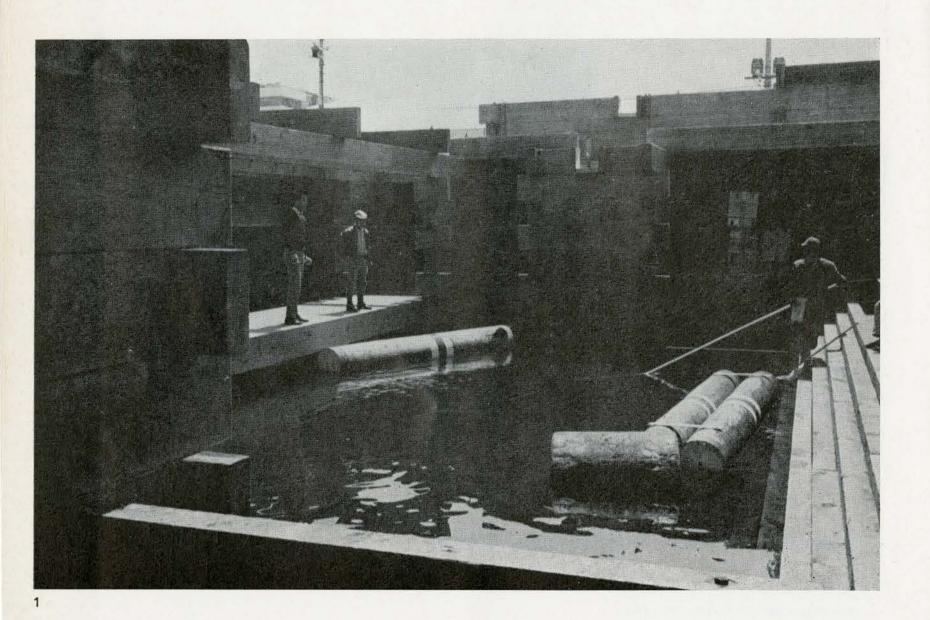


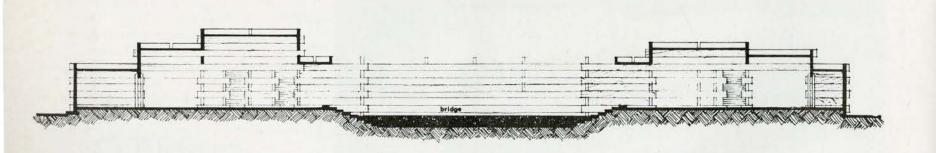


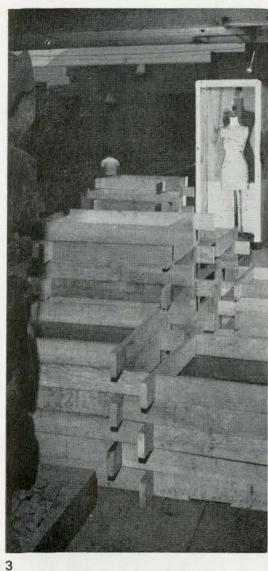


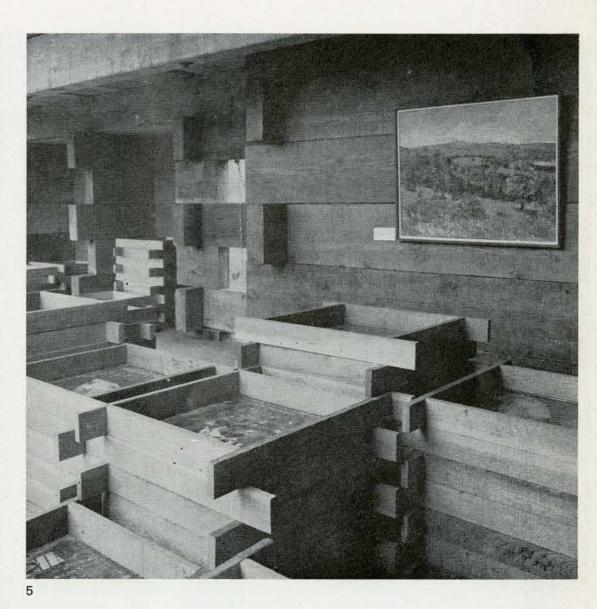
Canadian Pavilion for the International Trade Fair, Tokyo, Japan

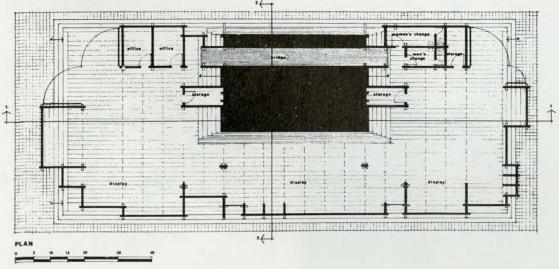
Erickson/Massey, Architects Bogue Babicki, Engineer 1 Pool area Surface d'une piscine 2 Section Coupe









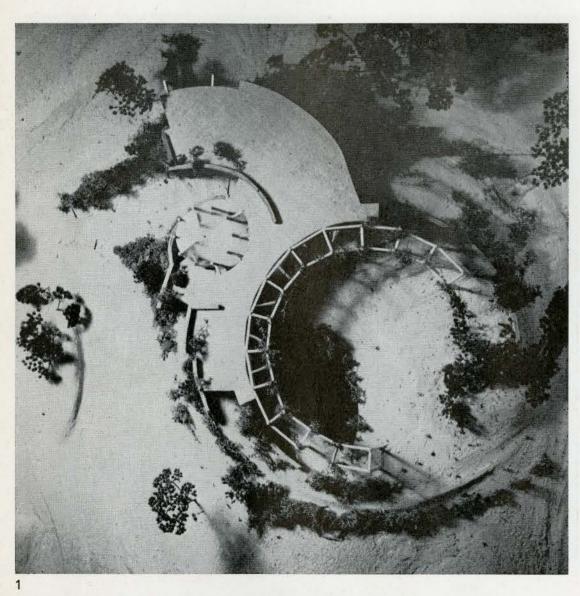


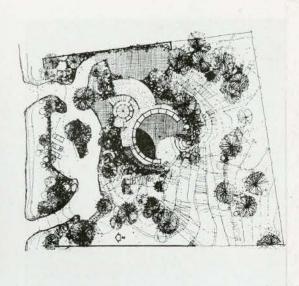
As the Canadian Pavilion for the Tokyo International Trade Fair, completed in April 1965, was seen as a Canadian export and because Canada could not present sophistication in wood construction to equal that of Japan, the architects wanted to suggest the crudeness, strength and scale of construction materials in Canada. Thus the Pavilion was conceived as a wood pile of raw 6" by 16" timbers, piled up as one might find in a lumber yard. The interior spaces followed the requirement of the Pavilion a pond for log rolling, a bridge for fashion shows (polished and glue laminated, and thus more sophisticated in technique). The exhibitors took the theme of stacking wood for the exhibits themselves.

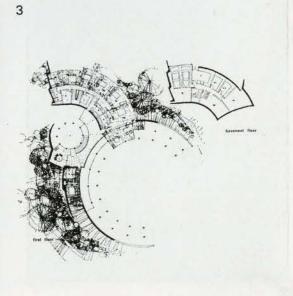
Official Residence of the Canadian High Commissioner Canberra, Australia

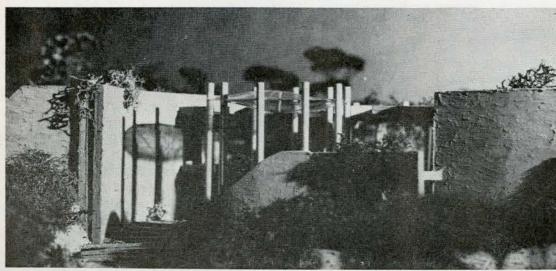
Erickson/Massey, Architects
J. A. Langford (F), Assistant Deputy
Minister (Design)

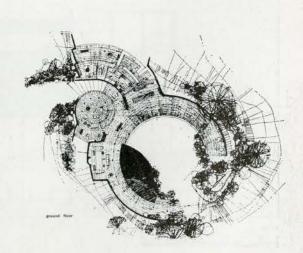
1, 2
Models
Modèles
3
Site Plan
Plan d'emplacement
4
Basement and First Floor plan
Plan du sous-sol et du premier étage
5
Ground Floor plan
Plan du rez-de-chaussée











2

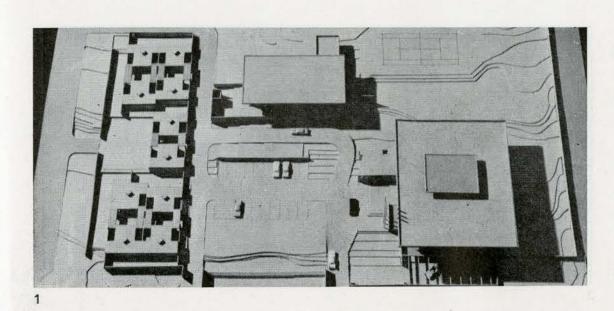
Government of Canada Construction Program, Islamabad, Pakistan

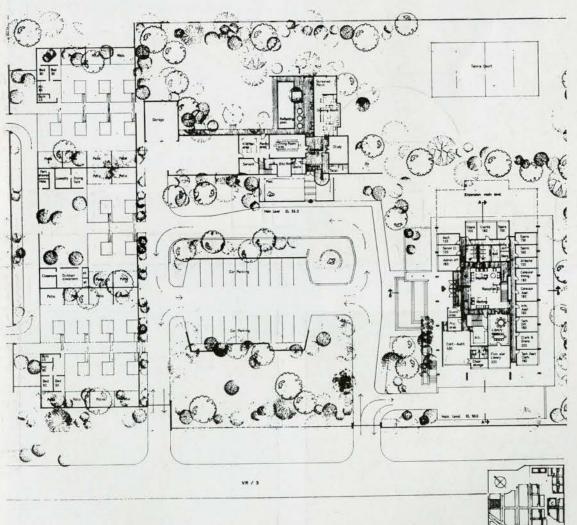
(Chancery, High Commissioner's Residence, Foreign Service Officers' Housing, Canadian Staff Housing)

No. 10 Architectural Group, Waisman Ross Blankstein Coop Gillmor Hanna, Architects Jonas Lehrman, Housing J. A. Langford (F), Assistant Deputy Minister (Design)

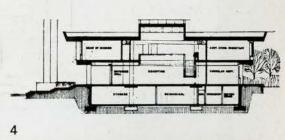
Crosier Greenberg & Partners, **Structural Consultants** Scouten Mitchell Sigurdson Associates, **Mechanical Consultants** K. A. Hand Associates, Electrical Consultants

Model Modèle Plan, Chancery and Official Residence Plan, Chancellerie et Résidence officielle Chancery and Official Residence Chancellerie et Résidence officielle Section Coupe 5 Site C Emplacement C











Nuclear Power Plant, Karachi, Pakistan

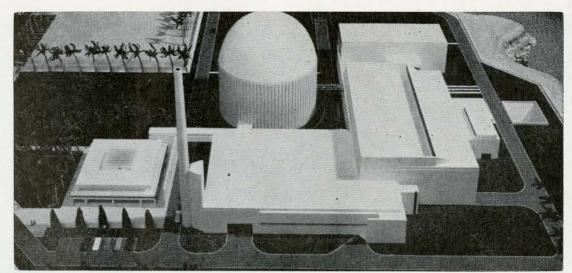
Canadian General Electric Company Ltd Designer and Prime Contractor Gordon S. Adamson, Architectural Consultants

Houses in The Barbados

K. H. Gardner, Architect

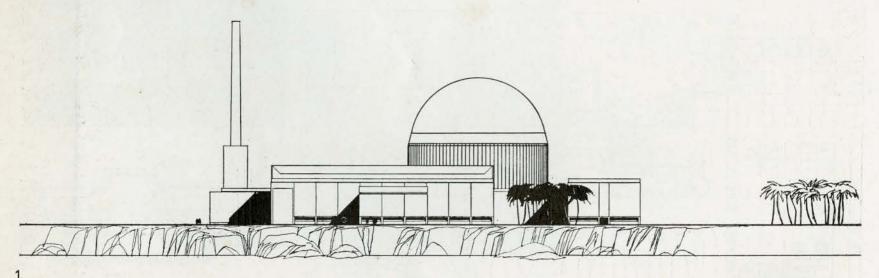
South elevation Elevation sud 2 Model Modèle 3, 4
Gale House at Prospect, St James Coast,
Barbados
Maison Gale à Prospect, Côte St James,
Barbados
5
Redmond House at Paynes Bay, St James,
Barbados
Maison Redmond à Paynes Bay, St James,

This 137,000 kilowatt nuclear generating station is on the Indian Ocean shore. The major components of the project are all interconnected with a rigid processing and traffic zoning control. The reactor building contains the nuclear reactor, fueled with natural uranium, generating steam for propulsion of turbines. The turbine building contains conventional steam turbines and accessories for generation of high voltage power, and a completely automated control station for the operation of the entire plant. The service building includes the facilities for handling fuel, storage bay for spent fuel and facilities for maintenance and overhauling of the extremely complex plant equipment. The administration building accommodates, around an interior open court, administrative and supervisory personnel.



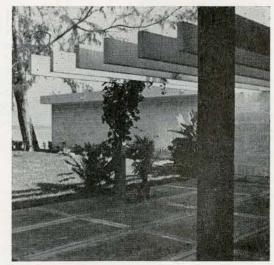
Barbados

2









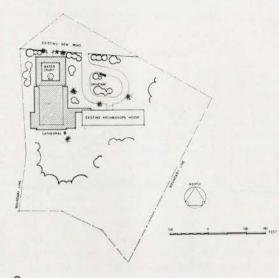
3

5

Cathedral of the Immaculate Conception of the Blessed Virgin Mary, Dacca, East Pakistan

Gardiner Thornton Davidson Garrett Masson & Associates, Architects and Planners 1
East elevation
Elévation est
2
Interior view
Vue intérieure
3
Site plan
Plan d'emplacement





Requirements were to seat 430 plus standing room for an additional 1,000 on overflow occasions. A chapel was provided for private devotions. Due to the shyness of the local people the choir (schola) had to be screened from the main body of the Church. To strictly follow traditional liturgical precepts in this missionary environment the atrium or water court contains the Baptistry. The local conditions of temperature, humidity, 120 MPH typhoons, earthquakes and monsoon rainfall were significant factors in establishing the form e.g. provision of maximum cross ventilation, reinforced concrete structure, wide roof overhangs and gathering of all roof water towards the water court and a surface water channel around the building.

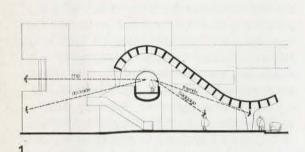


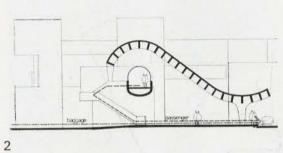
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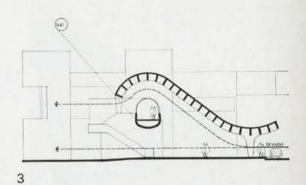
Miami Passenger Terminal Miami, Florida

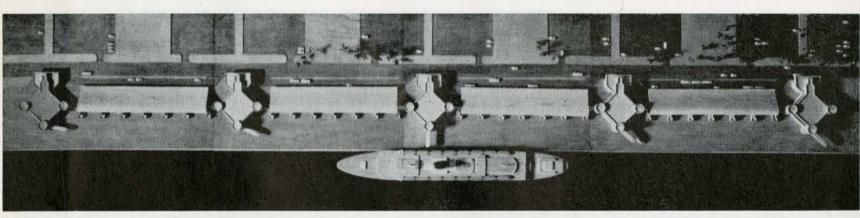
John Andrews, Consulting Architects with David Volkert Associates

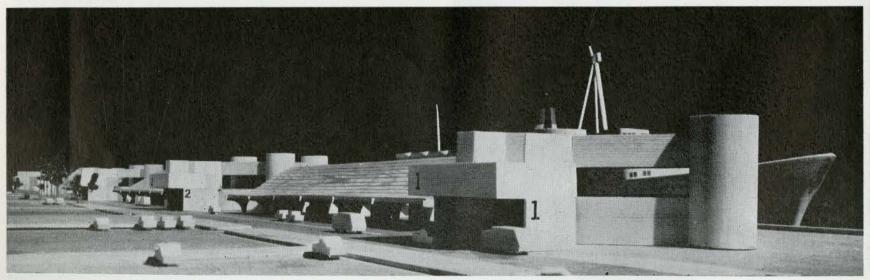
Diagram showing views Schéma montrant perspective Diagram of debarkation Schéma d'un débarquement Diagram of climate control Schéma d'un système de climatisation 4, 5 Model Modèle











5

SSO

BUILDING DIGEST

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CANADA

PRECAST CONCRETE WALLS – PROBLEMS WITH CONVENTIONAL DESIGN

by J. K. Latta

UDC 69.022.3:691.327

Concrete is an excellent building material and precast concrete is a quality, factory-produced product that gives great scope to the designer of a wall with respect to form, texture and colour. The total wall system consists, however, of more than precast concrete, and difficulties will arise, as with an assembly of any building materials, if the total wall design is not based on sound scientific principles.

The philosophy underlying the present method of assembling precast concrete walls is that the concrete panels, together with the joints between them, form the real wall, which can be made both rain- and air-tight. Insulation and an internal finish are then added, very often without proper analysis of their effect on the other components of the wall. It is the purpose of this Digest to describe some of the problems that this type of construction has produced and to show that, unless the underlying faulty concept of wall design is corrected, it is not reasonable to expect that present practice will be able to prevent them.

Some Problems

Of all problems, the presence of water inside a building is reported most frequently. Water dripping from ceilings or running down walls is not tolerated for long without protest, and in some cases it will cause a disruption of activities. Water on the inside surface of a wall does not cause so great a disruption but in both cases there can be a severe deterioration of the appearance of walls, ceilings, and floor coverings, or the contents of the room. Condensation on windows and window frames is a similar problem but, because the immediate cause is more obvious, it does not provoke the same protest as does water that emerges mysteriously from wall panels or through ceilings. Some designs accept it as inevitable, and drainage gutters are provided. Unfortunately, however, these do not always work satisfactorily as the drain hole often becomes plugged with frost or dirt, or an inward air pressure prevents the water from draining away.

A less obvious, but more serious, form of deterioration is the corrosion of the metal connections that hold the precast panels onto the structure of a building. Should one panel break loose, all other panels would be suspect and the remedial work required would be very costly. Only one connection failure has been reported to the Division, but other connections have been seen to be wet or very rusty after comparatively short periods of service. It should be pointed out that a failure can result not only from the removal of metal by corrosion, but also from expansive forces set up by the products of corrosion, which have a much greater volume than the parent metal. These forces can pull inserts out of a panel, as occurred in the one example reported to DBR.

Glass breakage is reported quite frequently as a mysterious problem that appears to have no connection with the use of precast panels. In fact, the problem is one that is accentuated by the basic layout of the total wall system.

NRC DBR OTTAWA SEPTEMBER 1967 CBD 93

Loads can be transferred onto wall panels that were not designed to be load-bearing if inadequate clearance is allowed to accommodate not only the movements that take place but also the variations in the size of the panels within the manufacturing tolerance. In particular, allowance must be made for the shortening of a concrete structural frame and the deflection of horizontal spanning members (CBD 54) under the action of elastic stress, drying shrinkage, and creep under sustained load. Transfer of load in this manner can lead to displacement of the panel or to cracking and spalling.

Sandwich-type panels, with the insulation located between two leaves of concrete, have many advantages but they present special difficulties. The two leaves of concrete will be subjected to different conditions and so will have different expansions and contractions. Should they be rigidly connected there is a possibility that the connectors will be sheared off or that the panel will crack or become bowed. Cold winter temperatures would make the exterior leaf contract in relation to the interior one, thus making the panel concave on the outside. From examination of panels in service this does not appear to be the critical factor, since all that had bowed were concave on the inside and there were more cracks in the inner leaf than in the outer. It would seem, therefore, that drying shrinkage of the inner leaf is of greater importance in causing this problem than temperature difference.

Deterioration of appearance is often associated with many of the foregoing problems but this is not the principal cause for concern. Some problems are mainly concerned, however, with aesthetics, and since precast concrete panels are often used to create a beautiful building it is important to avoid situations that will mar this beauty.

Rain water and condensate within the wall are inherently "soft" and thus are able to dissolve lime from cement. Following further reactions involving carbon dioxide, a deposit of insoluble calcium carbonate is left as the water evaporates. The water also tends to become alkaline as it runs over the surface of the concrete, and should it flow over a window there is a danger that the glass will be etched.

The Causes

Such a recital of problems with walls incorporating precast concrete panels might appear to suggest that this material is not considered suitable for use in buildings. On the contrary, it must be emphasized that precast concrete is an extremely versatile material that can be used to great effect on a wide variety of buildings. Nevertheless, it is pertinent to examine problems that have arisen in order to determine their causes. If the factors involved could be controlled by changes in the methods of design and construction, then the material could be used more satisfactorily and fewer problems would be encountered.

Two factors lie at the root of most of the problems: water in its various forms, and temperature differences. Either singly or in conjunction these agents of destruction conspire to undo the efforts of the design and construction team. It is necessary, therefore, to ascertain why walls, as made at present, fail to control or allow for them satisfactorily.

Considering the control of water first there are two possible sources of moisture — rain and vapour in the air. Water introduced during construction by wet operations on site or retained in components fabricated off the site is usually converted into water vapour as the materials dry. It can, therefore, be treated as a special temporary problem of high humidity within the building.

Rain Penetration. The problem of rain penetration and the methods whereby it can be controlled have been described in CBD 40. It was pointed out that for rain to penetrate the wall there must be water on the wall, a hole through which it can pass, and a force to move it inward. It was concluded that the greatest success in combatting rain penetration was achieved by controlling all of the four forces that cause it — momentum of the raindrop, capillarity, gravity, and air pressure. With a dense, uncracked, precast concrete panel on the outside, all four forces can be controlled. The panel itself will not permit the passage of rain and the problem is largely confined to the joints between panels and between the panels and other wall components, such as windows.

It is possible to devise suitable joints for these locations, although there are special difficulties mainly related to the thermal conditions to which the panel is subjected. As it is insulated on the inside, a panel will be colder in winter and warmer in summer than would be the case if it were not insulated. As this leads to increased expansion and contraction, the sealant materials or gaskets are subjected to

greater strains. Alternatively, the joint width must be increased to allow for the deformation while keeping the strain constant. With a wider joint more sealant is required, there is a greater risk of the sealant's sagging, and, in some cases, it is not acceptable aesthetically. Furthermore, the final portion of the extension takes place when the temperatures are lowest and the sealant or gasket is coldest, and so, stiffest. Thus it can be seen that although joints can be devised to meet the principles set out in CBD 40, there may be some question as to whether, as the sealant materials deteriorate with the passage of time, they will retain their ability to control both rain and air leakage.

The foregoing discussion presupposes that the panel is not cracked. If it is cracked, the situation can be changed considerably. Some hairline cracking of concrete panels is not uncommon and such cracks are usually accepted provided they do not exceed 0.005 in. in width on the exterior face or 0.01 in. on the interior face. The large movement of panels under temperature variations must be allowed for by the way in which they are fastened to the structural frame. If this is not done satisfactorily then the cracks could open further or additional ones be induced. Once there is a crack through a panel, capillarity, gravity, or air pressure can move water into the wall and the principal defence against rain penetration has been breached.

Vapour Movement. Water vapour in the air within a building can move outwards through the wall by two methods — transportation by air currents, or diffusion through the wall material. Of the two, the former is by far the more important, as has already been stressed in CBD 72. The mechanisms causing the pressure differential through the wall have been discussed in CBD 23. If air that contains water vapour moves from a warm to a cold location, there is a danger that it will be cooled to below its dew-point and deposit water vapour by condensation (CBD 1). For this to occur, the air need not pass right through the wall. It can enter it, be cooled by contact with the colder parts of the wall, and return by convection to the inside of the building. In order to stop this convective air flow, either an air barrier is required on the warm side of the insulation or there must be no air spaces in which it can occur. The precast panel is on the cold side of the insulation and thus can control through-wall leakage only. The interior finish of a wall is seldom applied in the form of a continuous air-tight shield, and would be difficult to make air-tight because of the various pipes, ducts and electrical conduits that pass through it and the inspection panels that may be required in it. Thus, there is no effective air barrier to control convective air flow unless the insulation itself can form one or be applied so as to eliminate all air spaces.

The inside face of a precast panel is not usually finished to a high degree of smoothness and it is not uncommon for air spaces to be formed between the insulation and the back of the panel. Many of these spaces will be connected one with the other and with the inside of the building. Because of difficulty in applying insulation to the panel where it is opposite the structure, it is sometimes specified that the structure be insulated before the panel is erected, and that for the remainder of the area the insulation be applied to the panel after erection. Not only is it difficult to make a good air seal at the point of changeover, but relative movements between the two will open a crack at this point. This crack leads directly to the air space between the back of the cold concrete panel and the insulation that has been applied to the structure.

Thus in many instances there are a number of air passages either leading right through the wall or connecting with spaces on the cold side of the insulation. Airflow outward from the building into the wall in winter may deposit considerable quantities of water in the wall. This water runs down the back of the panel to emerge at the outside face of the wall or runs through various passages through the insulation and emerges at the inside face of the wall. On the inside, it runs down the wall or collects above suspended ceilings to cause the problems so often reported. On the outside, it forms icicles, leaves calcium carbonate stains, or etches the window glass.

Water vapour that moves by diffusion through the wall material is not normally a serious problem, since the rate of water movement by this mechanism is slow. Considerable time would be required to move a significant amount of water and few buildings are located where adverse weather conditions on the outside persist long enough for troubles to develop Nevertheless it is desirable to analyse the vapour diffusion characteristics of a wall and assess the need for a vapour barrier in relation to the amount of water which may collect and

also in relation to its potential to harm the wall (CBD 57). Dense concrete in the thicknesses normally used for precast panels, i.e., 3 in. or more, has a high resistance to vapour diffusion. In conformity with the principles set out in CBD 57, it should be used on the high vapour pressure side of the insulation.

Thermal Conditions. Items connected to a cold panel will have the same temperature as the panel at their point of contact, modified only insofar as the item concerned can feed heat into the panel and so raise its temperature locally. In view of the massive proportions of the panel and the high conductivity of dense concrete, it is easy for heat fed into the panel to flow away. As the panel is the structural element of the wall, items mounted on it do not have a compensatory easy path for heat to flow into them and so they tend to be cold.

Window frames are such items. They are cooled by contact with the cold concrete panel and in turn cool the edge of the window glass. The centre of the pane of glass may be warmer for various reasons. The higher thermal resistance of a multiple glazed window will keep the inner pane warm; heat supplied by the building heating system can have a similar effect, even with single glazing; and heat-absorbing glass will be warmed by the sun. Thus, a situation is produced in which the edge of the glass is colder than the centre and so is in tension. If the temperature difference is great enough, the glass will break. The cold frame and edge of the glass will, in any case, suffer from condensation.

The connections that hold the panel onto the structure will also be cooled at their outer end by contact with the panel. They, however, must be connected at their inner end to substantial elements of the building structure that provide a means to supply them with heat. Even so, they will be colder than the air inside the building. As there are often passages through which this air can enter the wall, condensation may take place on the connection. Rain leakage through defects in the panel or its joints can also wet the connections. Since the basic layout of the wall is predicated on the idea that the panel system forms a continuous air barrier, it is not possible to introduce outside air to the inside face of the panel to dry the connection. Thus, there is a general increase in the time of wetness, leading to more rapid corrosion.

Conclusion

Precast concrete panels have great potential for walls of modern buildings. The designer must appreciate, however, that the total wall assembly must be designed as a unit to separate the internal and external conditions. In particular, the present practice of using a precast panel as both the structural unit of the wall and the external facade, with insulation on its inside face, increases the temperature range to which the panel and those items connected to it are subjected. This makes the task of achieving effective and continuing control of both air leakage and rain penetration more difficult and aggravates problems associated with thermal conditions.

A subsequent Digest will discuss a philosophy of wall design that overcomes these difficulties.

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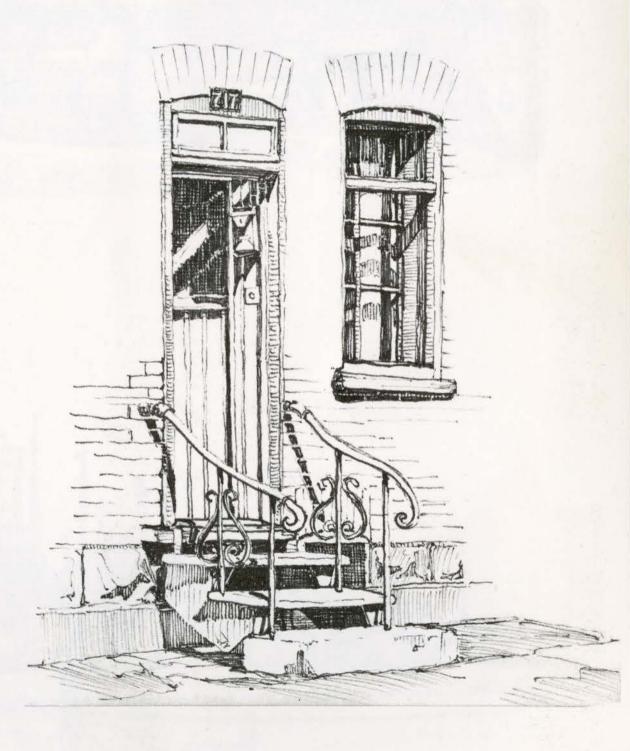
The Sketches of Peter Dobush

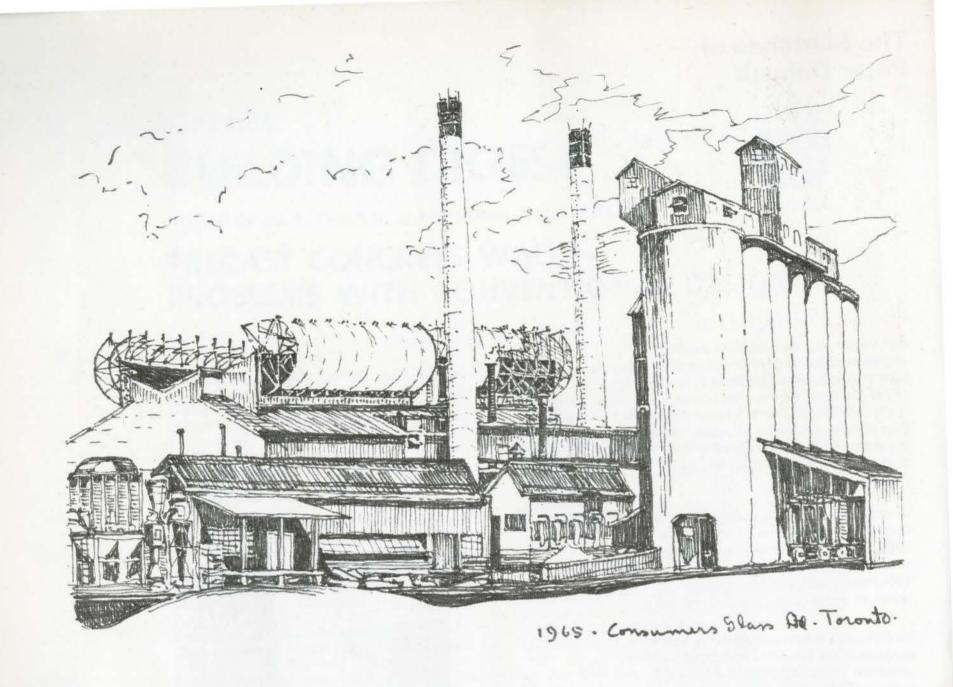
We present here six beautifully detailed architectural drawings of Quebec and Ontario scenes from the sketchbooks of Peter Dobush (F) of Montreal. He has done similar renderings of scenes from all over Canada. One of these, mountains at Jasper, sketched at the time of the RAIC Assembly, appeared in the July 1966 issue of Architecture Canada.

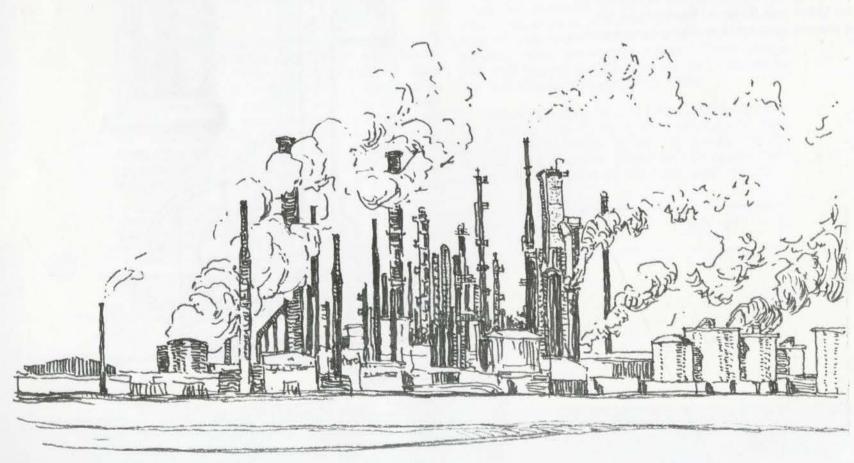
In addition to being a perceptive artist Mr Dobush is a well known art collector. In 1965 he invited the Winnipeg Art Gallery to select 125 works from his collection of 700 contemporary and 19th century paintings, water colors, graphics and prints.

Mr Dobush is a native of Winnipeg and a graduate of the School of Architecture, University of Manitoba. He was chairman of the RAIC Committee of Inquiry into the Design of Residential Environment in 1960, founding chairman of the Canadian Council for Urban and Regional Research, and is a member of the IUA Housing Commission.

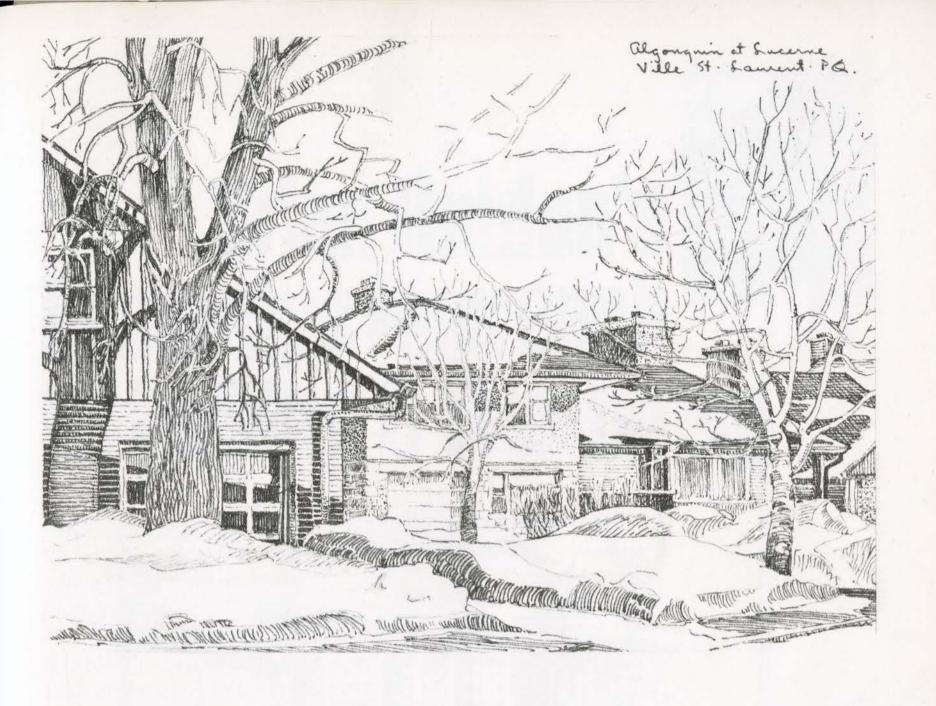
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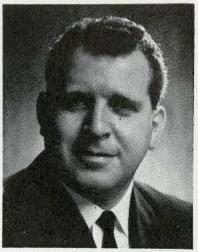
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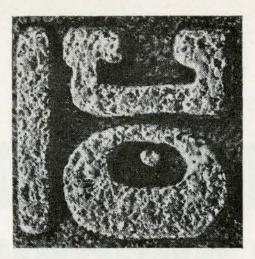




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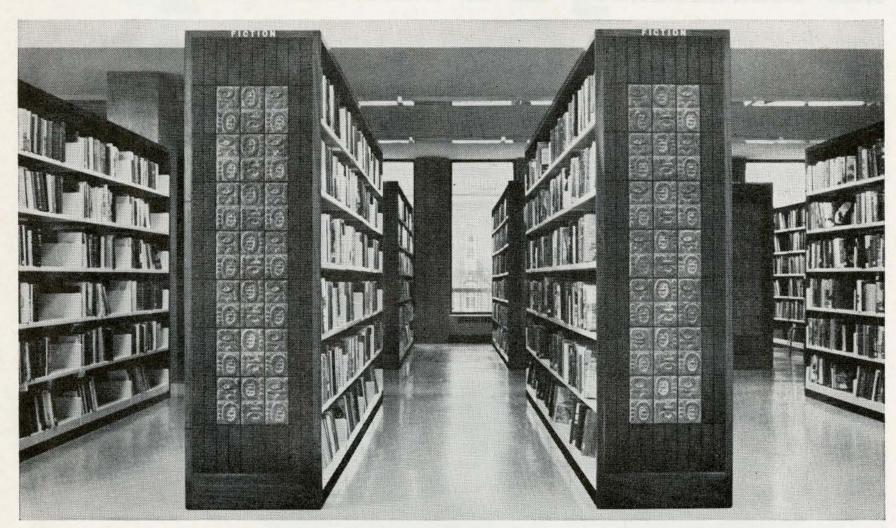
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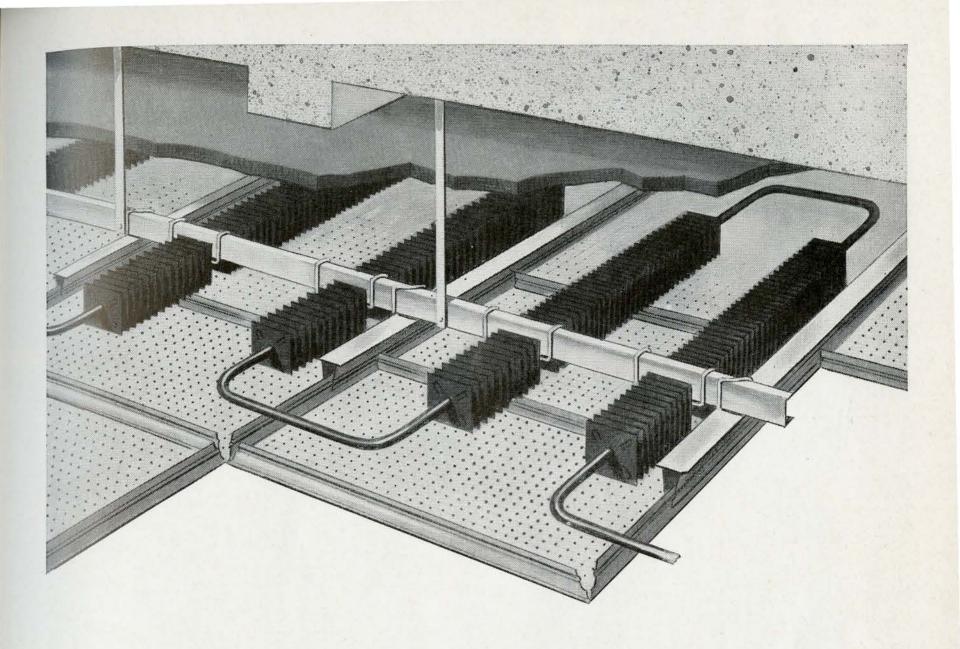
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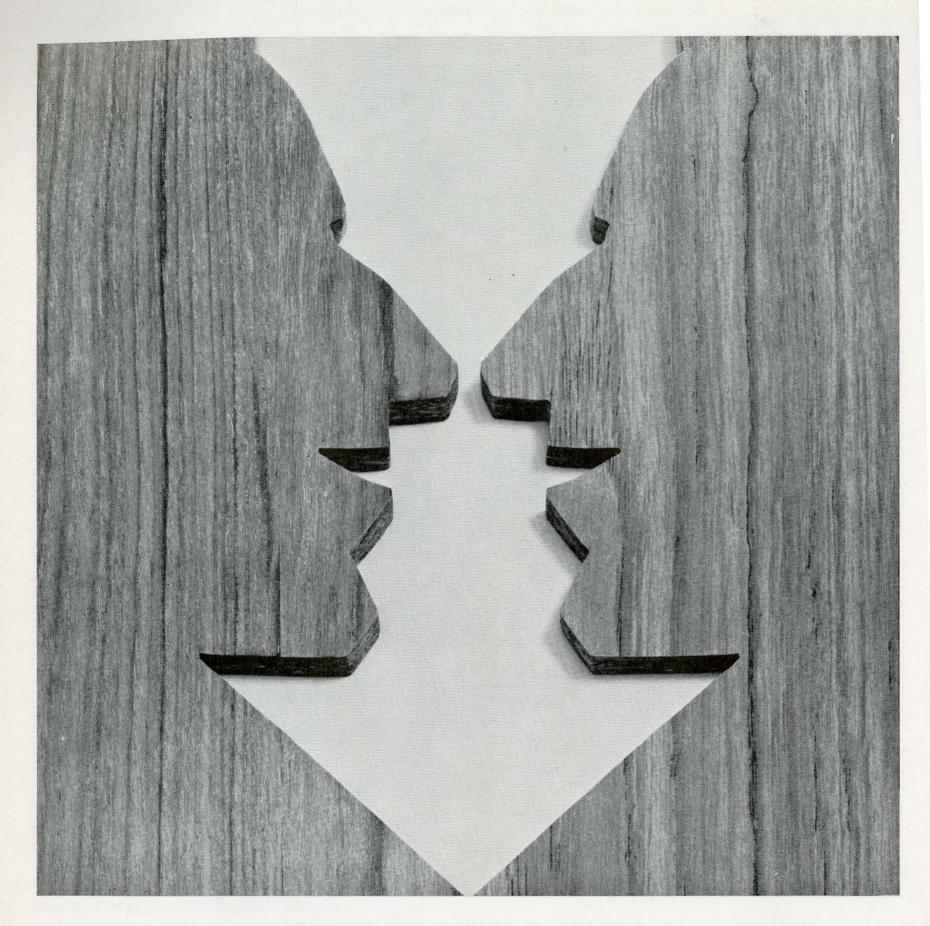
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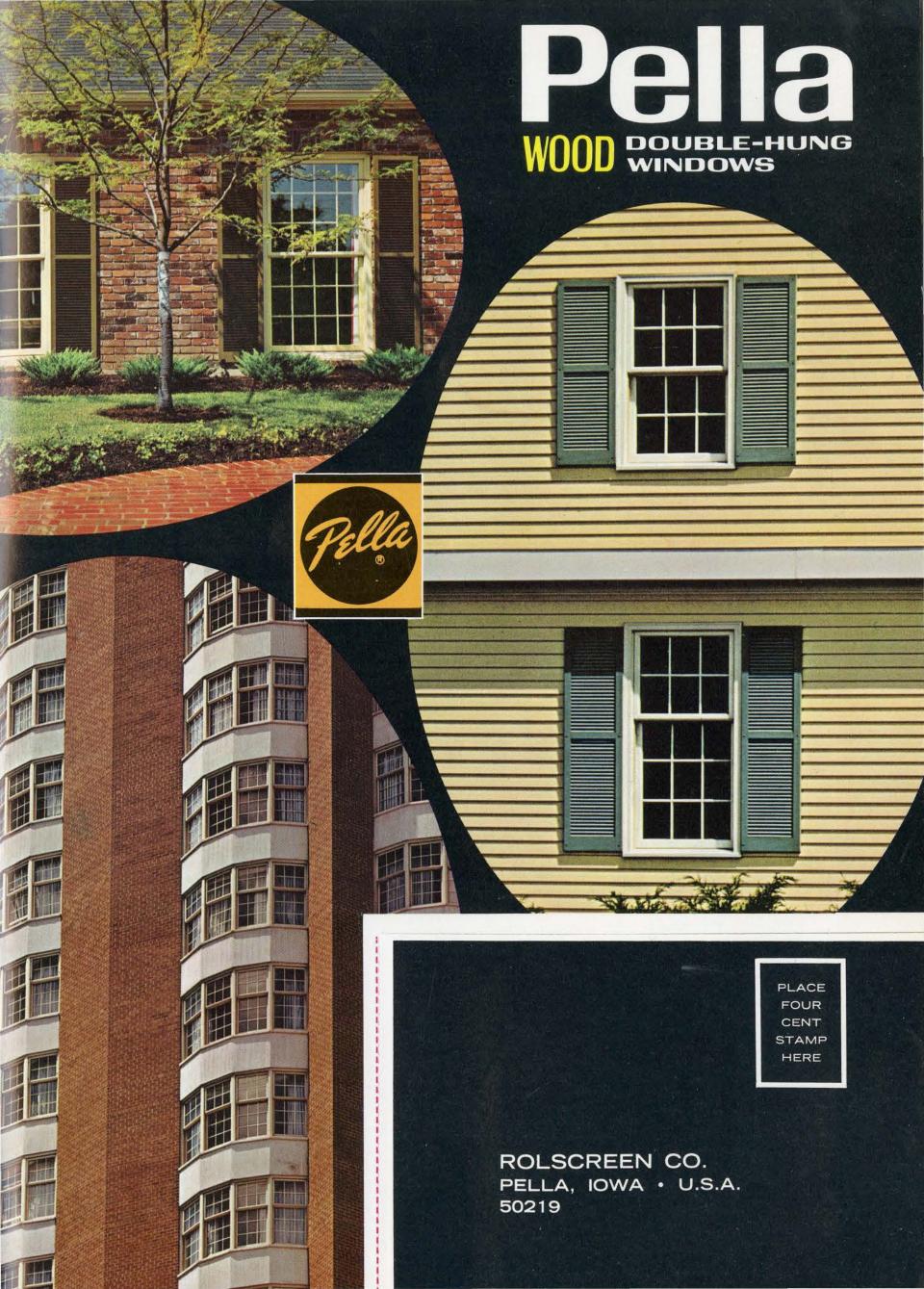
(The k3 Woodgrain teak is on the right. It looks just like the real teak veneer on the left, right?)

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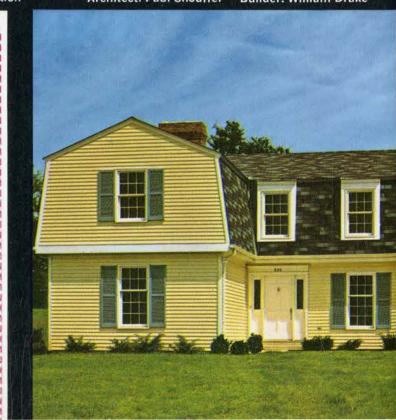
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Lighting Language for the Architect

Technical **Technique**



A. W. Henschel, B.A.Sc., P.Eng, MEIC

Mr. Henschel is a partner in the firm of Shore & Moffat & Partners, and Past Chairman of the Illuminating Engineering Society.

A year ago, in an article entitled "Light and Architecture", an endeavor was made to stimulate the architects' interest in utilizing lighting as a design element which would not only augment or replace daylight to functionally illuminate the many seeing tasks but would create a visual environment which was comfortable and aesthetically satisfying.

The lighting objectives were summarized as follows:

- Provide illumination levels which are required to perform the specific tasks which will be carried out in the space.
- 2 The type, distribution and location of the lighting should express the intended use.
- 3 The lighting should complement the structure.
- 4 The intended mood or atmosphere should be expressed.
- The psychological implications of the space, as modified by the lighting, must be considered.

The criteria, selection and control of each of these points were given in broad terms and left with the architect and his lighting consultant to analyze and adopt. Before the first two items are possible the architect must take the responsibility for interpreting and expressing the last three items in understandable terms to his lighting consultant for proper execution.

To what extent is this analysis and communication practiced today?

Potluck with Potlights

Considering that there are literally multitudes of light sources and thousands of luminaries available today, it is theoretically possible to obtain an infinite number of lighting schemes. Proportionately the ability to create notable architecture is therefore limitless if these lighting tools are properly utilized.

Other than the occasional example where the structure or particular room details dictated an outstanding combination of light and architecture, the lighting is all too often minimum, modular and mundane. It would seem that we have barely scratched the surface of this vast field.

There is no future in combining light and

architecture if decisions are not made on the desired patterns of light, the function of the space, location of the task and a complete description of the space itself. If we start with electrical layouts and selection of lighting equipment first, there is no design at all and the results are purely accidental.

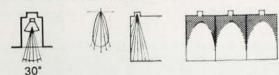
Seeing this weakness, it seems that the architects' solution to every situation has been to render the space as a dimly lighted bar, washroom or a highly spotlighted Expo display by the use of "potlights". Likewise their success will be one of "potluck" rather than by design.

It seems that the greatest drawback to calculated and design success is poor communication or insufficient consideration of this very important factor in the architecture of the building.

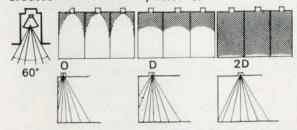
An architect's training and strength should lie in his ability to portray his design and solution in picture form. Why then should he not make use of this talent in communicating with his lighting consultant to convey his thoughts.

The following graphic tools can be used by the architect for lighting analysis, design and communication.

1 The effects of recessed incandescent "potlights" reveal varied distribution forms resulting in different lighting patterns. It is therefore essential to decide which specific effect the architect expects.



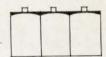
2 Utilizing the same "potlights" with different spacing from the wall likewise creates different wall patterns.



3 Wall washers are capable of providing an almost even wash of light on the wall from top to bottom.





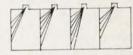


4 Spotlighting of building elements, paintings, sculpture, etc., can add interest and make the money spent on artwork worthwhile.

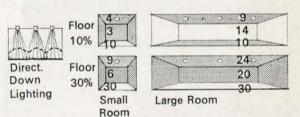




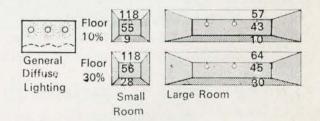




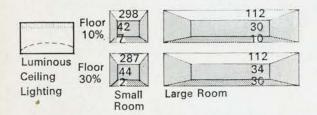
- 5 Three typical lighting systems and the resulting brightness ratios are illustrated below. All rooms are compared at 100 FC on the working surface, 80% ceiling, 50% walls with 10% and 30% floors.
- (i) Ceilings receive no direct lighting from downlights resulting in a ceiling darker than the floor. Lighter floors (main secondary source) increase illumination levels and level out illumination gradient on horizontal work plane.



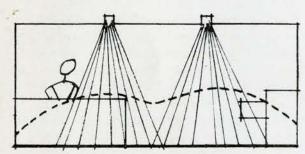
(ii) General diffuse equipment throws direct light on all surfaces; therefore they all act as secondary sources as well as levelling out the footcandle intensity on the working surface.



(iii) Luminous ceilings (by direct or indirect means) become the brightest element in the field of view and become dominant. Again all surfaces become secondary sources and the resulting illumination is virtually uniform throughout.

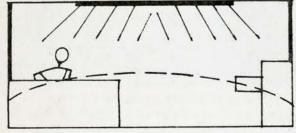


- 6 Room layout and furniture placement in relation to luminaire types and distribution have a great bearing on the lighting results.
- (i) Direct lighting may be too concentrating or positioned incorrectly in the room thereby leaving the working surface and task in relative darkness.



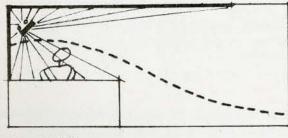
Direct Down Lighting

(ii) A fluorescent source not close enough to the wall or not over the task can have the same effect as above and "short change" the office worker.



Fluorescent Lighting

(iii) Wall lighting luminaries along with the secondary ceiling and wall sources illuminate the task quite well in the private office.



Local Lighting

Room Dimension Effect

Today's illumination levels are calculated by

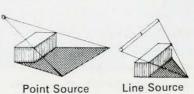
the Zonal-Cavity Method (see I.E.S. Handbook, 4th Edition, 1966) which incorporates more accurately the effects of room proportions, and luminaire positions upon the coefficient of utilization (i.e. the overall efficiency of the lighting system with respect to the room). The architect should be aware of the results since it is important to know that room size and proportion, as well as type of luminaires, materially affect the system efficiency.

8 Color

The combined impact of room proportions and color influence the lighting efficiency and room appearance more than most people are aware and this accounts for such varying results in the field. A thorough study and early-in-design color statement to the lighting consultant is essential in choosing the type or amount of illumination for each space in the building.

Shadow Effects

The effect of shades and shadows on all architectural and structural elements should be studied thoroughly since their shape and texture vary greatly with different sources and different techniques.



Panel Source

Conclusion

In order to use the Language of Lighting the architect should:

- Examine the architectural objectives to establish the relative importance of function, aesthetics and economy and to analyze the general nature and scope of the problem.
- 2 Explore the opportunities the building presents for lighting schemes which will enhance the architectural design and meet the specific lighting objectives for each area. Tie all parts of the building together with similar lighting solutions.
- 3 Outline the psychological and physio-

logical effects that are to be emphasized or minimized.

- 4 Develop for each area a combination of light sources and reflectances which will render the space and structure as desired. Study alternative solutions with the aid of diagrams, sketches and renderings combined with cross sections which indicate the relative positions, size and directional characteristics of all light sources.
- 5 If the study is sufficiently important, a color rendering in perspective form will show the full effect of the lighted space.

Estimating

Last year in this section I outlined the elements that go to make up an electrical system. From the section on lighting I established that a high percentage of the total electrical contract price is in the lighting installation and I discussed some of the factors which contribute to higher costs.

From the preceding article it becomes evident that desirable illumination can be obtained within the limitations of standard fixtures. Thus, well thought out design does not contribute greatly to the overall cost of the installation.

The cost of lighting a structure is obviously affected by certain early basic decisions, some of which are listed below.

- Lighting Level
- Type of Luminaire
- Type of Lens 3
- Type of ceiling
- 5 Height of ceiling
- Method of wiring
- **Custom Fixtures**

Let us take a look at the items listed above.

Lighting Level

There has been, in recent years, an increasing awareness of the necessity for adequate lighting levels for specific tasks. In commercial buildings today, 100 FC is an essential requirement of potential lessees. Obviously, the higher the footcandle level the greater the number of fixtures required, and the higher the price.

2 Type of Luminaire

The number of types of luminaires available is almost limitless but can be broken down into three basic types.

- Incandescent
- 2 Fluorescent
- 3 Mercury Vapor

Incandescent is the most flexible of these types and is used for almost all atmosphere or mood lighting.

Fluorescent lighting has superseded incandescent as the basic lighting source in commercial buildings. It has high efficiency, long life, and low power consumption for a given light output, permitting high intensity lighting at reasonable cost.

Mercury vapor is used primarily for industrial, street and floodlighting applications.

3 Type of Lens

There is a tremendous variety of diffusers available today, many of which are not only functional but decorative also.

The cheapest diffuser available for a 1' x 4' fluorescent fixture is of rolled styrene. It has inherently poor qualities, the most important of which are its inconsistent photometric properties and its tendency to discolor.

Rolled acrylic diffusers, though more expensive, are more widely used since they do not discolor.

Glass is not used extensively in fluorescent fixture diffusers. Although it does not discolor it is difficult to manufacture and always presents a breakage hazard. Injection molded virgin acrylic is the ideal material at the present time. It does not discolor and the process permits the prisms to be photometrically perfect. However, this type of diffuser will add at least ten percent to the cost of a fixture and is considered prohibitively expensive on many large commercial projects.

4 Type of Ceiling

The ceiling has a very great influence on both the style of fixture used and also the installation time.

For estimating purposes, installation costs for a 1' x 4' fluorescent fixture in various ceilings are as follows:

Troffer - plaster ceilings \$15.00-\$21.00 Troffer - inverted T Bar \$12.50-\$18.00 Surface mounted \$7.50-\$15.00 Pendant mounted \$10.00-\$15.00

Height of Ceiling

This affects the number of fixtures required and also the installation. In high ceiling areas a moveable scaffold is required resulting in additional material and labor costs.

6 Method of Wiring

The method of wiring fixtures in common use today is armored cable. This is cheap, fast and affords a certain degree of mechanical protection.

Custom Fixtures

It is in this area that the architect is free to be at his creative best. If he is able to communicate his concept to the lighting consultant, the results can be visually outstanding. So too can the cost. No figures can be applied for estimating purposes to this section since there are so many variables. A recent installation of a crystal chandelier took sixteen men five days to install. The cost of the fixture was not published.

It becomes evident from the foregoing that estimating figures for lighting costs must cover a wide range of prices in order to cover every design combination, and this in turn will create a broad range of figures for the total electrical cost.

Overall unit prices which might be applied for the total electrical costs on a preliminary estimate are as follows:

Office Buildings \$1.85-\$3.75 per SF gross floor area

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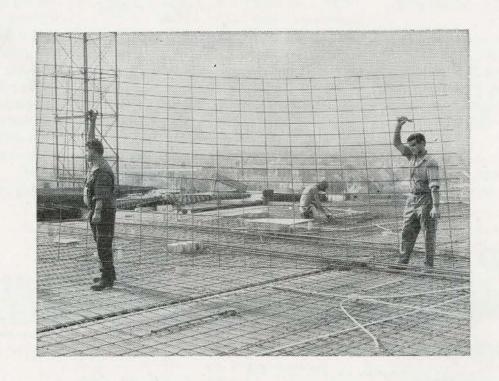
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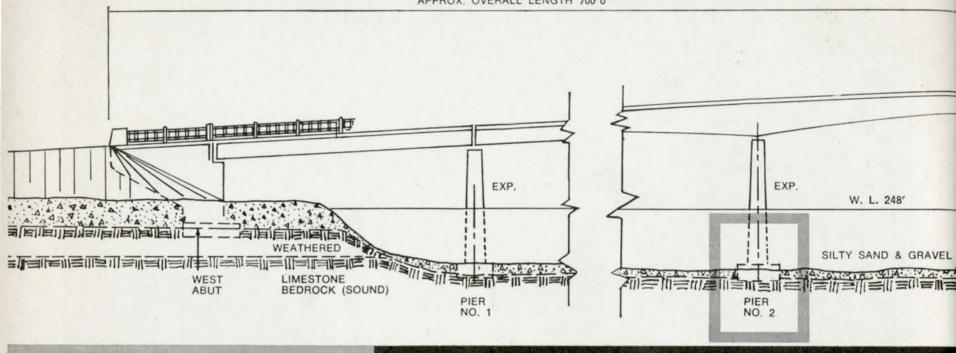
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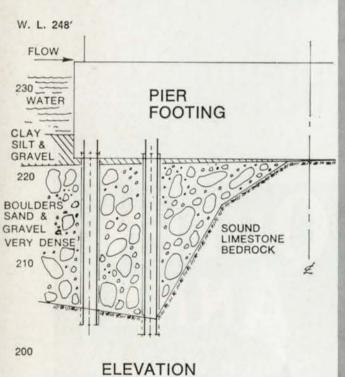
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APPROX. OVERALL LENGTH 700'0"





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Department of Highways, Ontario

NORTH END PIER NO. 2

LOCATION:

Trenton, Ont.

CONSULTING ENGINEER:

H. G. Acres & Co. Ltd., Niagara Falls, Ont.

GENERAL CONTRACTORS:

John Gaffney Construction Co. Ltd., Stratford, Ont.

TYPE OF UNITS:

24" diameter Reinforced Drilled Caissons

NO OF UNITS:

WORKING LOADS: 60 tons

AVERAGE LENGTH OF UNITS:

"Franki Churn-drilled Caissons overcome unexpected subsoil conditions

Problem:

The new highway bridge crossing over the Trent River is a modern steel structure about 700 feet long supported on 4 piers in the 25-foot deep river. Borings carried out at each pier location showed th river bottom to consist of a few feet of gravelly, clayey sand, overlying sound limestone bedroc The piers, therefore, were designed to have their footings resting on the bedrock and to be con structed within a sheet pile cofferdam.

Three of the piers were successfully installed in this matter, but during the dewatering of the cofferda for Pier No. 2 in the center, the bottom blew at the upstream side. Additional borings at this location revealed a 20-foot deep fault, filled with boulders, sand and gravel. Examination of the drill core indicated that the boulders were mainly of very hard granitic origin and up to 4 feet in diameter.

Although the material was in a very dense state, it could not be used as a foundation stratum.

Solution:

In conjunction with the Department of Highways, the Consulting Engineers considered several way of dealing with the problem, including the following:

- (1) Excavation of the material and placing of a tremie mat foundation.
- (2) Extension of the downstream end of the pier and the use of rock anchors to cantilever the
- (3) Installation of end-bearing drilled caissons through the boulders.

After considering these possibilities in the light of practicability, minimum construction delay an economy, FRANKI was awarded the contract to install three 24-inch drilled caissons to support the north end of the pier.

Using a churn drill machine operating from a sectional barge, a 24-inch diameter pipe was drive as a star bit advanced the hole through the boulders until it was two feet into the sound bedroc After dewatering, reinforcing steel was placed and the caissons concreted to cut-off level.

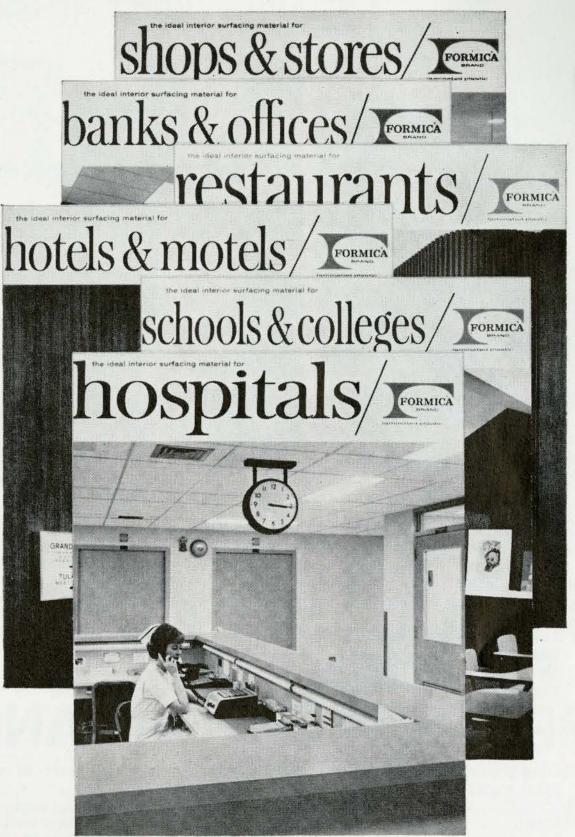
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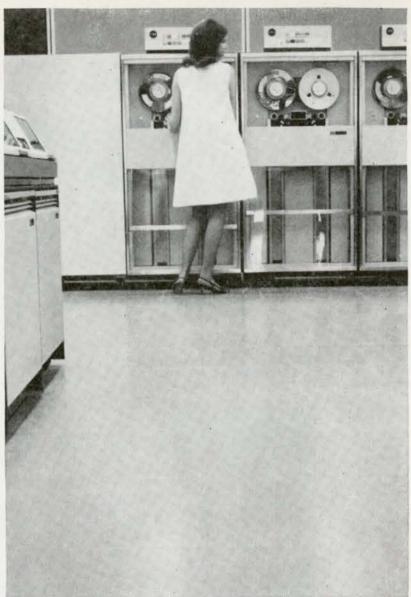


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The Editors:

In Curriculum (Architecture Canada, July '67)
Professor Jackson has made two assumptions:

- 1 that present curricula do not work because the "components" or "specialties" are not dealt with thoroughly or are not dealt with at all
- 2 that in the "component" or "specialties" lies the answer to current difficulties in architecture.

Each of the sections in his 5-point basis for a curriculum is a statement about "specialties" of one sort or another.

Nobody would disagree that an architect should know as much as possible about as much as possible. Yet surely an architect has some specialty of his own, a specialty distinct from those of disciplines?

We believe an architect has a specialty and that it is a unique one.

An architect's specialty is the ability to conceive a whole. It is also the ability to continue perceiving the whole when the complex processes of realization of the conceived whole are in action.

This specialty is only acquired after many years. Those years begin in the School of Architecture. Its acquisition is, by the nature of the specialty, a laborious process involving growth both in skills and in intellect and in powers of empathy. It bears no relation to alchemy and is the reason why a student "is tied to his studio not only during class hours but evenings and weekends, day after day, year after year". Exactly, in fact, as Wright, Mies and Le Corbusier were tied to their studios all their lives.

Wright, Mies, and Le Corbusier, are masters of the whole. Although men of extraordinary talents, nevertheless their achievements did not result from alchemical processes but

from lifetimes of continuing experience and learning. Current jargon would perhaps term them as specialists in the field of the conception-of-wholes.

Whatever else a School of Architecture has or has not in its curriculum, if it excludes this sense of the conception-as-a-whole, it stultifies the student's development, and conceals from him the true nature of the architect's function.

Professor Jackson's proposed curriculum would give the student everybody's specialty except the architect's own.

The architect's specialty, that is, to be the conceiver and perceiver of wholes, is an ability of immense complexity and subtlety. It is acquired neither quickly, nor easily, nor within academic time limits. The attempt to teach it is a process of inculcation, of example, and above all involves a personal and mutual understanding between teacher and taught, and a mutual involvement in the problem at hand.

A curriculum can do no more than provide situations in which, hopefully, the process of conceiving-the-whole can be set in motion.

On the other hand, a curriculum can do very much less. It can actively prevent or inhibit such situations. Professor Jackson's curriculum would seem to be such a one. Of the 5 points in his basic proposal not one deals with the essential core of an architect's principal function.

It is a fallacy to imagine that a curriculum based on "specialties" could ever, in fact, be operated. For its basic assumption is a false one.

The assumption is popular in architectural circles today, and it is the notion that "they" — the other disciplines or "specialties", are going to save architects and architecture from disaster.

The people working in the "specialties" would never claim for themselves what many

architects are currently claiming for them. Indeed, even such a complicated family of "specialties" as that which goes into outer-space vehicles and rockets have the modest label of 'space-probes' attached to them. Science itself is concerned with the unknown rather than the known.

As John Galbraith points out in "The New Industrial State", industrial technology subdivides a task into packages for which know-how is available. The essential problem of architecture, however, is not subdivision but integration — and only the architect has, or should have, the imagination and creative abilities to integrate, or to conceive wholes.

Quite contrary to the facts, the assumption is made that the "specialties" related to architecture (everything from planning legislation to sociology, from economics to business administration, from engineering to building contracting and so on ad infinitum) are all well-organized, clear-headed, correctly orientated, scientifically advanced, and way ahead of anything in the architectural field.

This is not true. All of these "specialties" are currently in as much turmoil as architecture. And it is right that they should be for the second half of the 20th century is a period of turmoil. Even Communism and the Roman Catholic Church are in turmoil now that their immoveable dogmas have met irresistible forces of change.

Every architect know the building industry is inefficient and that in spite of being a "multi-billion dollar" affair it cannot even cope with the world's housing shortage. Every architect knows that consultant engineers must be fed and led with ideas – "To some extent, the architect may expect too much of modern-day technologies. . . ." said a writer on air-conditioning in *Progressive Architecture* (July '67). Sociologists cannot agree on method, economists squabble over political economy, and planning legislation is a mystery to everybody, including planners.

All of these, and a dozen other "specialties", from stained-glass designers to computer-



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programmers, are subject to the same frailties and failures as the architectural profession.

They are not neat, king-size packages of instant specialized knowledge sitting on a supermarket shelf waiting to be popped into the architectural shopping bag. A curriculum could *not* be based upon the "specialties", for the "specialties" could not take the strain. Furthermore the "specialties" cannot become active with respect to architecture until they have something to be relevant to — that is to a conceived whole.

It is well-known that architects who collaborate with other disciplines assemble the working-group in a different manner for each project. Thus a hospital project requires a different set of advisory disciplines from say a university project. Thus even the function of "specialties" changes from task to task.

Students should undoubtedly become familiar with the capabilities as well as the limitations of disciplines related to architecture. But they can never hope to be economist-engineer-contractor-sociologist-mathematician-graphic designer-sculptor-architects.

At Halifax the student's short years in the School are viewed only as the beginning of a lifetime's involvement.

The teaching of skills or "specialties" is only a means employed to achieve the desired end — of an attitude in which the student sees the whole as greater than the sum of parts — an attitude which will enable him, whatever the task confronting him, to make assessments on a broad base for independent decision-making — as an architect. This is seen as a continuing process of education in which the years spent in the School are only the beginning.

With this end, or rather, this beginning, in view, the forthcoming session will see the introduction of an experimental course. The experiment has already been tried in pilot schemes, and their success has led to the wider experiment we launch in September 1967.

A basic objective is to set up situations in which the student can feel his way towards conceiving and perceiving concepts of the whole.

With the notion of the whole well to the fore, as distinct from an assemblage of "specialties", a program has been devised in which all design projects will be related to a regional development project.

The regional project is one now being studied by a task force of planners and economists and social workers. These people will work with the School of Architecture both in an advisory capacity and as active participants.

All design projects this Session will have access to a full fund of information. This will allow the development of meaningful programming for projects. A total context will consequently develop, against which students can gauge their own proposals. While providing the student with a factual, rather than fictional, background of real problems in a real location with real people, this experimental program also allows him freedom to develop as he feels he must develop.

The permanent staff of the School will be reinforced by a variety of practicing architects from Montreal, Toronto and Boston, by two consultant planners, by a structural engineering consultant and by a mechanical services consultant.

This is not so much a curriculum as a way of life. It is not so much a theory of education as it is a group of experienced people of divergent interests acting together. It is not so much a group of staff teaching a group of students as a collection of individuals participating in a common problem.

And this kind of task-force approach would seem to be one of great potential, and certainly an approach far richer than any curriculum could ever be.

In a sense, a curriculum cannot cope with the complexities impinging on architecture. But collaboration on a common task, between various kinds of professional people and the students, can do so.

Doctrinaire stances are impressive on paper. In real life, they no longer work.

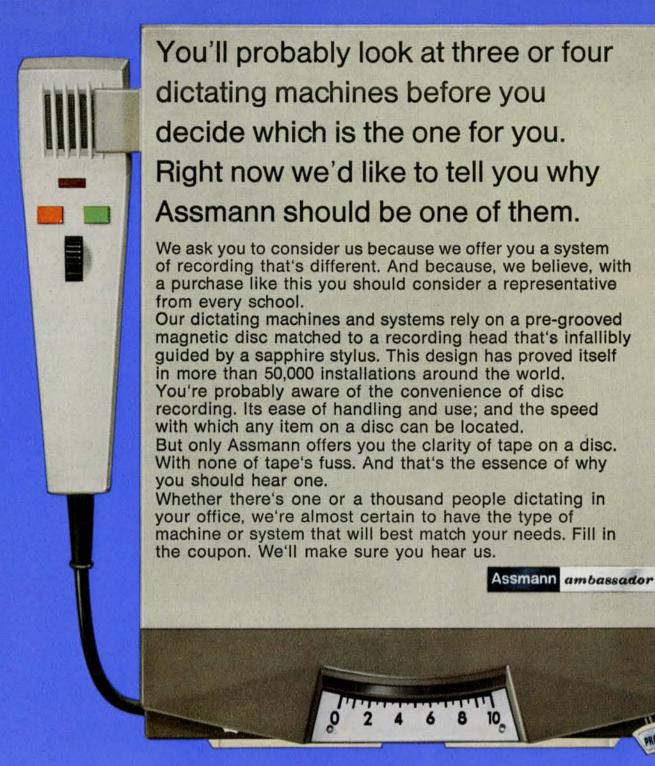
Students know this. They want action, not words. At Halifax, we are taking action.

A. J. Donahue, MRAIC, School of Architecture, Nova Scotia Technical College George Balcombe, School of Architecture, Nova Scotia Technical College

Professor Jackson replies:

Professors Balcombe and Donahue claim that the whole is not an organized sum of potentially comprehensible parts but a metaphysical something intuited through empathy. That is, of course, exactly the problem. Wright et al are masters of the whole image not the whole building — quite a different matter. If it takes them a lifetime, pity those (may we include Professors Balcombe and Donahue?) who are not geniuses yet have to design buildings.

Anthony Jackson, ARIBA, School of Architecture, Nova Scotia Technical College



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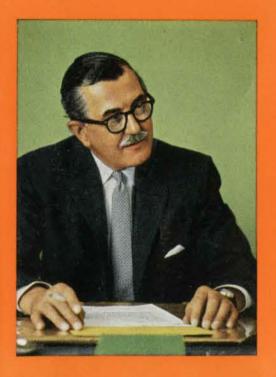
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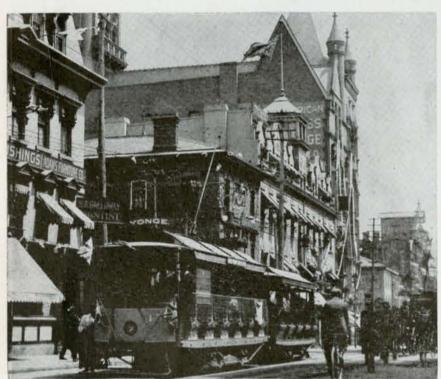
English architectural student, 20, emigrating to Canada in October, seeks temporary junior position in architect's office to gain experience before recommencing studies, autumn 1968. Two years School of Architecture, Hammersmith, but no previous office experience. Montreal or Toronto preferred. Write: Richard Price, 32 Vancouver Rd, Edgware, Middx, England.

B.Arch Graduate (1966) National University of Ireland (RIBA Recognized) 3 years office experience, best references, will be in Canada available for interview mid-September, work anywhere, own expenses paid to all interviews. Replies before Sept. 7 to F. D. W. Kane Carntreena, Baily, Dublin, Ireland.

Architect, Designer, registered in Bombay, India, member of Indian Institute of Architects has worked on Master Plan and Development schemes and various types of buildings, desires responsible position in progressive firm. 22, single, B.Arch., 11/2 years experience. Prefer Eastern Canada. Write D. A. Nanavati, A/7 Western Railway, Officers Flats, Churchgate, B Road, Bombay-1.

Young qualified architect (Govt. Diploma in Architecture 1966 and Associate Member of Indian Institute of Architects), seven years experience as Architectural Assistant, worked on several residential group housing and commercial buildings seeks position. Sudershan Dhalla, 2/24, Rajender Nagar, New Delhi, India.

Architect, B.Arch., McGill (1949), Associate RIBA, returning to Canada in January after 10 years in England, seeks post, preferably southern Ontario. Experienced in housing of all densities, offices, shops of all kinds. Own practice for past 3 years. L. Loshak, 50 Melford Road, Sudbury, Suffolk, England.



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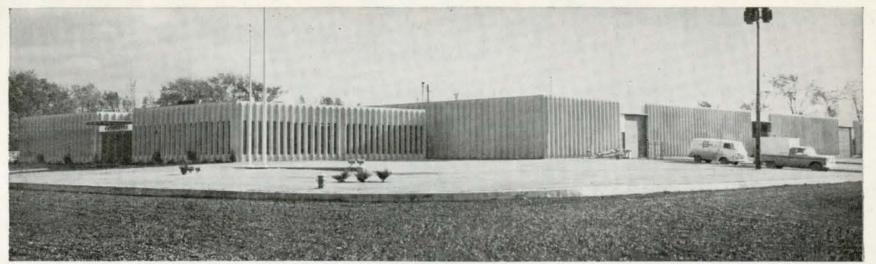
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Usine C. A. Cayouette Ltée, Boucherville, P. Q. Architectes: Cayouette & Tanguay, St-Hyacinthe. Ingénieurs en structure: Claude Lanthier & Associés, Montréal. Entrepreneur en fondations: Lamothe Construction Ltée.



Willow Tree Project parking garage, Halifax. Architect: Gregory A. Lambros, Halifax. Structural Engineers: Blauer Horvath Associates, Montreal. General Contractors: MacDonald Construction.



Guildford: Town Centre, Surrey, B. C. Architect: Francis Donaldson. Consulting Engineer: Phillips, Barratt & Partners. Developer: Grosvenor-Laing. Contractor: Laing Construction.



Imperial Oil, Ltd., Toronto. Architect: John B. Parkin Associates, Toronto. General Contractor: Eastern Construction Co., Toronto.

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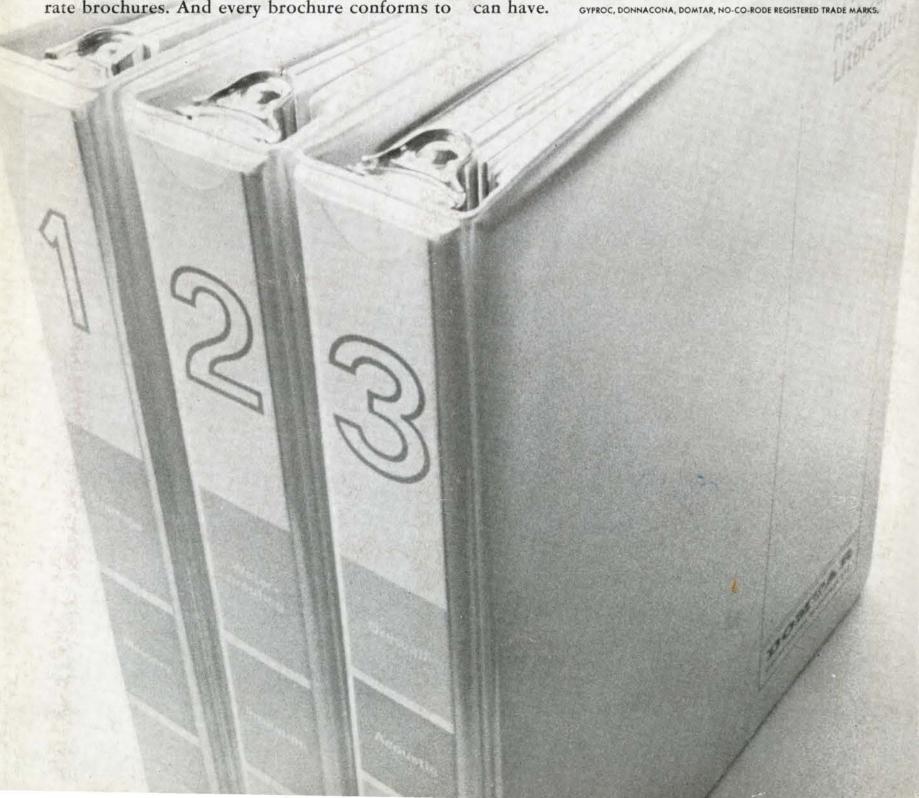
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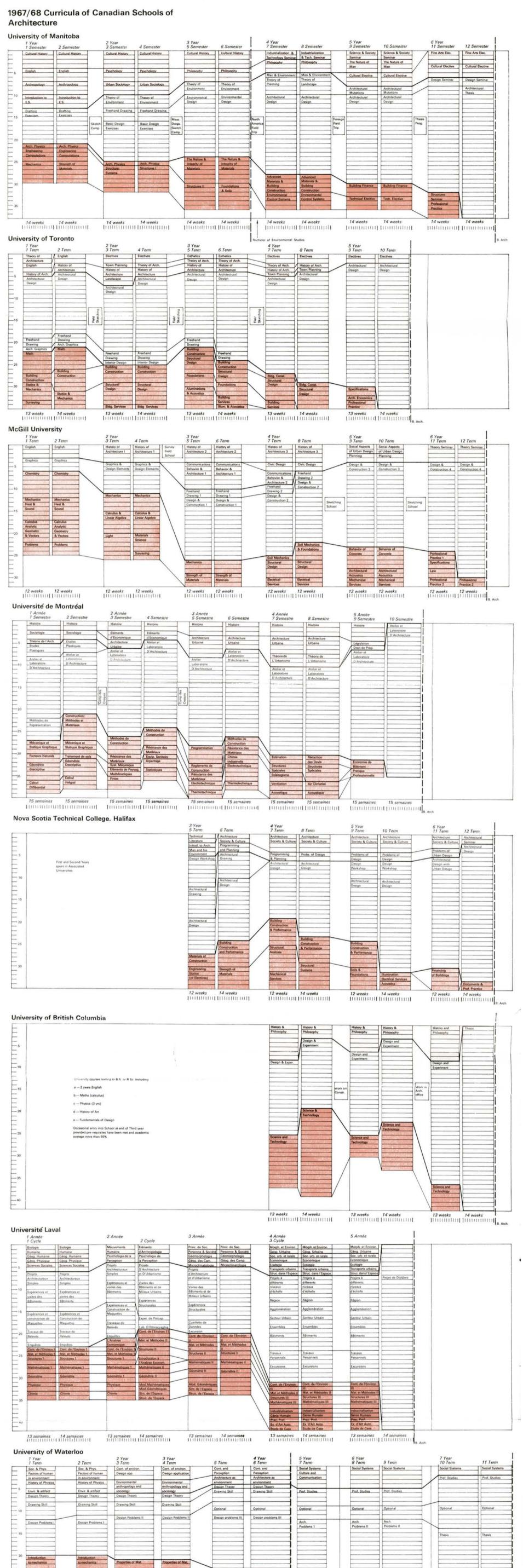
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