Architecture Canada

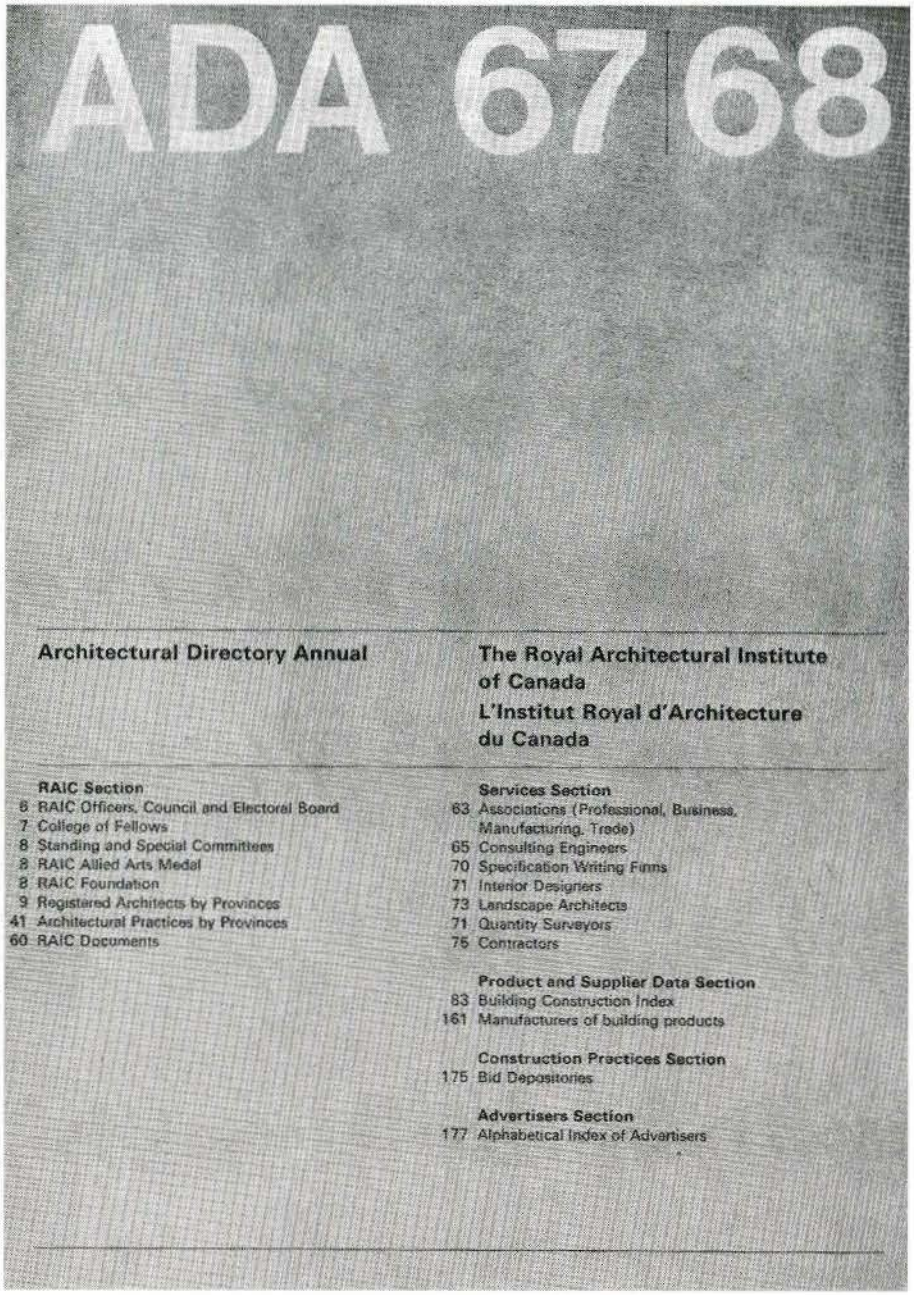
February/Fevrier 1968 Number 2 Volume 45 Journal RAIC/La Revue de l'IRAC

This month's Features Section: four Unitarian Churches; the results of the Winnipeg Art Gallery Competition; "Architecture as a Political Strategy," an article by Douglas Bailey, S. N. Benjamin and Andrew Strauss.

Two of the churches are Canadian: one by Wolfgang Gerson in Vancouver, the other, still in project stage, by Etienne Gaboury for Winnipeg. Unity Temple, by Frank Lloyd Wright and a Unitarian Church in Rochester by Louis Kahn make up the four.

The new Technical Section: part one of an article by Frank Helyar and A. J. Mott on Tendering and Contracts.

This month's Regional Unit Prices: **S**ite **Works** and Concrete.



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

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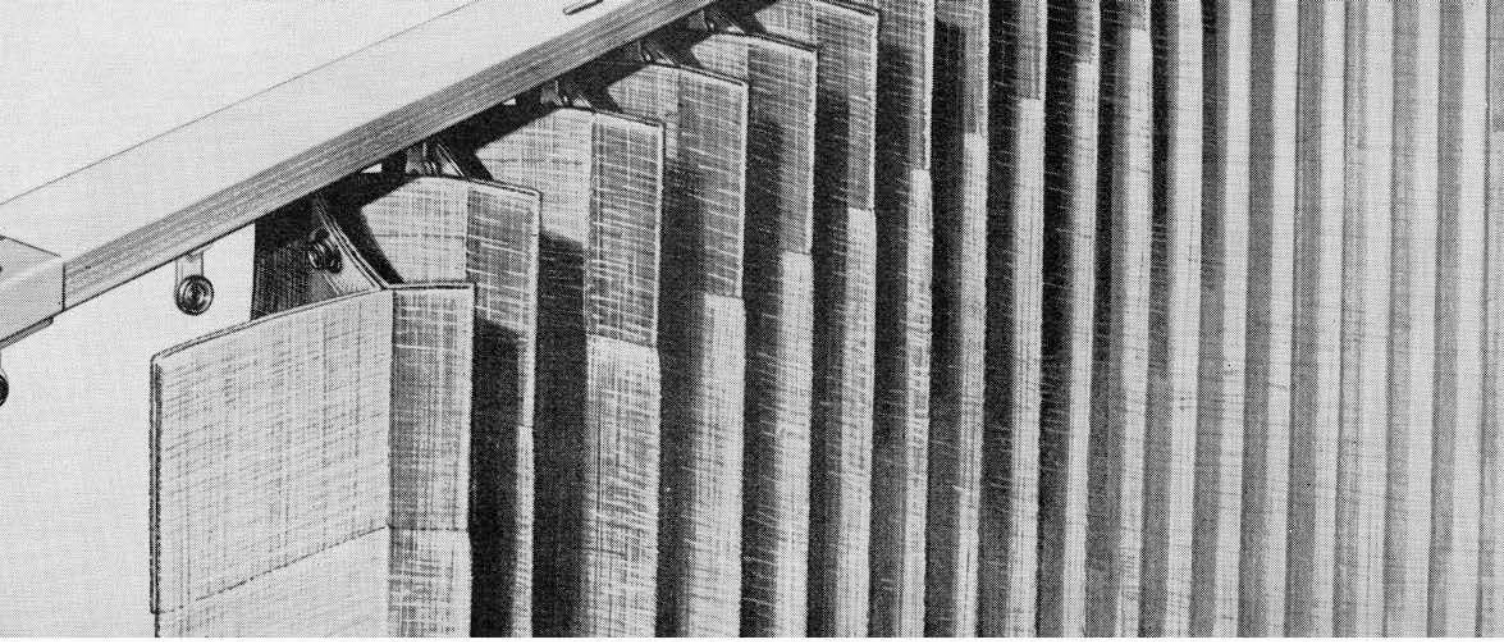

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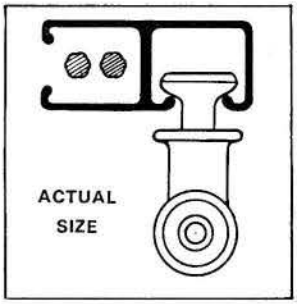

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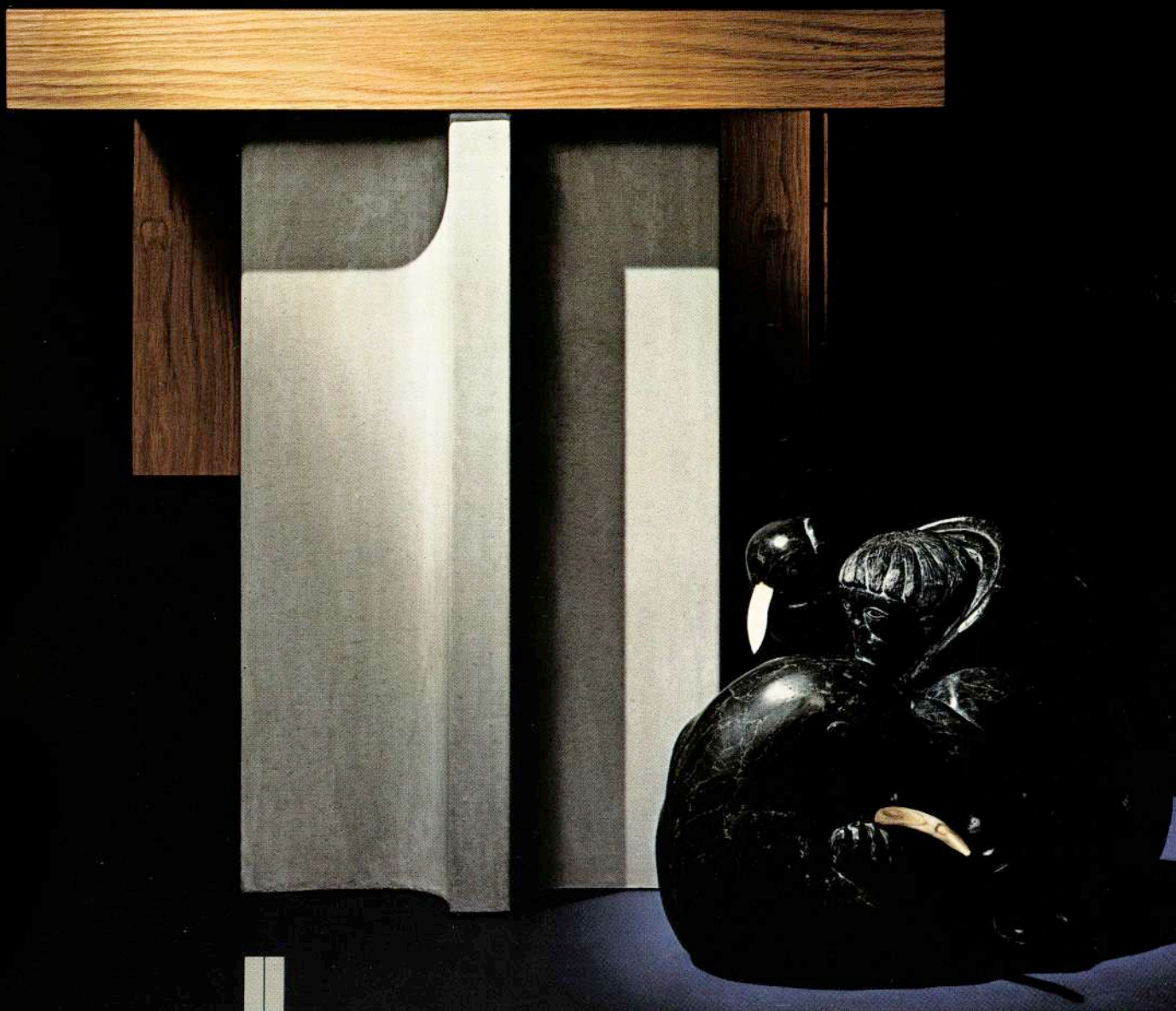

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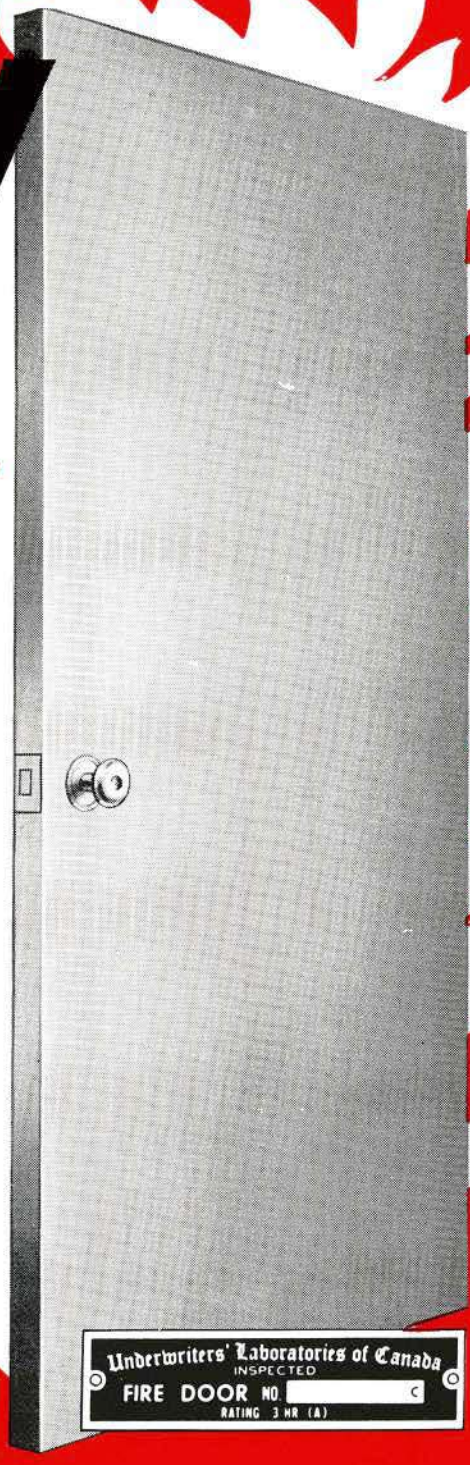

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Wolf von Eckhardt

Regina Assembly Speaker

Wolf von Eckhardt of Washington, DC, writer of a weekly column on architecture and urban affairs and architecture critic for the *Washington Post*, will be one of the featured speakers at the 1968 RAIC Assembly in Regina, Sask May 29 - June 1. He will be the luncheon speaker on Thursday, May 30, and will afterwards participate in a panel discussion on the professional writer's approach to architectural criticism. In addition to his newspaper work, Mr von Eckhardt contributes articles on architecture, city planning and design to such magazines as Holiday, Harpers, The New Republic, Saturday Review and Horizon. His latest book "A place to Live — the Crisis in Architecture", was published by Seymour Lawrence—Delacourte Press in January. Previous books include "The Challenge of Megalopolis" (Macmillan, 1964). "Life for Dead Spaces" (Harcourt, Brace and World, 1963), "Mid-Century Architecture in America" (Johns Hopkins, 1961) and "Eric Mendelsohn" in the Braziller Masters of World Architecture Series (1960). A former director of public information for the American Institute of Architects and AIA Journal art director, Mr von Eckhardt is an honorary member of the AIA, a member of the Society of Architectural Historians and a past president of the Washington Chapter of the American Institute of Graphic Arts.

Gordon Ricketts

We report with deep regret the accidental death in England on January 6 of Mr. Gordon Ricketts, the secretary of the Royal Institute of British Architects. During his ten years at the RIBA Mr Ricketts displayed a unique ability to understand and define the nature and problems of the architect and the profession in the UK, and under his skilfull and sympathetic administration the resources and energies of the institute were channelled in the most progressive and practical directions. He was one of these rare individuals, of cheerful and engaging personality, totally lacking in pomposity, who dedicate their considerable energies and talents to the welfare and advancement of a profession not their own. His many friends around the world will mourn his loss and miss him greatly.

PQAA to Resume Paying Full Per Capita Dues to RAIC in 1968

The Province of Quebec Association of Architects has advised the RAIC that it will resume paying full per capita dues in 1968. The decision was a result of a referendum conducted last November in which the PQAA members voted 412 to 105 to again pay full dues provided the RAIC took into account of changes to the By-Laws proposed by the PQAA. At its last meeting RAIC Council voted to accept the principle of amending the by-laws, using the draft proposal submitted by the PQAA as the basis of discussion.

Reprise du paiement des dettes de la PQAA envers l'IRAC

L'Association des Architectes de la Province du Québec a informé l'Institut qu'elle reprendra le paiement de la totalité de ses dettes en 1968. Cette décision fut prise à la suite d'un referendum qui a eu lieu en novembre dernier. Après un vote de 412 voix contre 105 pour le paiement pourvu que l'IRAC tienne compte des changements des lois proposés par la PQAA. A sa dernière réunion le Conseil de l'IRAC a voté l'acceptation du principe de changement des lois en se servant d'un avant projet soumis par la PQAA comme base de discussion.

AIBC Annual Meeting

John M. Dayton was re-elected president of the Architectural Institute of BC at the annual meeting held in Vancouver December 8. Other officers elected were William R. Rhone, vice president and Frank Donaldson. Hold-over Council members for one more year are Fred Hollingsworth, Ian Davidson and Donovan Marshall. Other members are Murray Polson (*F*), new executive director of the AIBC, and Prof. Henry Elder, head of the UBC School of Architecture.
Distinguished guests at the annual meeting were James E. Searle (*F*), President RAIC, and Robert L. Durham, *FAIA*, President of the American Institute of Architects. In an address "Towards a Better Architect", Mr Durham urged Canadian architects to play a larger role in solving urban problems by adopting the role of "civic activist" and devoting time and energies to things that once were thought outside their professional scope, such as helping municipalities to evolve logical, informed policies affecting the environment. Mr Durham also spoke on the progress the AIA and the RAIC are making towards planning of the joint Convention-Assembly at Chicago in 1969.

The annual meeting was preceded by a one-day seminar on computer graphics technology.

Alberta Association of Architects

The 57th Annual Meeting was held at Edmonton on January 26 and 27. With 90 members in attendance out of a total registration of 200, it was the best turn out yet for an annual meeting.
President Kenneth Bond reported on the year's activities of Council. He then expanded on the theme "The utilitarian bias of our age, exalts mediocrity", and the implications of this trend for architects.
The 1968 Council elected: President, D. L. Sinclair; 1st Vice President, E. Raines; 2nd Vice President, J. McIntosh; Honorary Secretary, B. Wood; Honorary Treasurer,

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Mrs. F. O'Connor; Council members at large: K. L. Bond, G. W. Lord, G. D. Menzies, J. H. Donahue, H. W. R. McMillan.

Incorporation of architectural practices was discussed. Prior to the meeting the Alberta study and the Ontario report on this subject were circulated and members were advised to come with the advice of their own accountant and solicitor. The meeting produced heated discussion on whether incorporation would damage the public image of the profession. The discussion was taped and will be sent to each member with a mail ballot.
The meeting agreed that the Alberta Association of Architects encourage and provide initial support towards the formation of a Society of Architectural Technologists. It is hoped that before a Society is formed in Alberta that the RAIC can assist with some standards that can be applied on a nation wide basis.
Alberta has had a recent example of a major public owner calling for design proposals directly from contractors with each contractor hiring an architect to assist in his proposal. Council felt that such proposals constitute an illegal architectural competition. The annual meeting, therefore, agreed to a change in the By-laws as follows: The word "competition" shall be defined as more than one architect knowingly working on the same project at the same time, regardless of the agent commissioning the architect to participate".

To assist in achieving the National Architectural Archives, it was agreed that the Association offer an advisory committee to the Alberta Provincial Archivist.

Professor B. C. Binning, Director, Fine Arts Department, University of British Columbia was guest speaker at the annual banquet. He traced the history of art and architecture down to the present day where everyone in our democratic society decide that they can have an opinion, or even produce their own art and architecture.
He then gave advice to architects on what they must do to survive in this kind of a democratic society.

On the second day of the meeting there was a panel discussion on the topic "The Changing Role of the Architect in Today's Society", with a developer, consulting engineer, major owner and two architects. The views of the panel were as diverse as their backgrounds and the only conclusion that was common to all speakers was that in fact the role of the architect is changing.

The value of having speakers outside the profession is that their strange views should make architects determined to change their own role before it is done for them by those outside the profession who really do not understand the functions of an architect.

Canadian Conference of the Arts

N. H. McMurrich (*F*), Toronto, vice-president RAIC, was elected third vice president of the CCA at the annual meeting held January 26 in Montreal. Harry Mayerovitch (*F*), Montreal, also represented the RAIC at the sessions. Jean-Louis Roux, Montreal, succeed Arthur Gelber, Toronto, as president.

AIA Architectural Critic Awards

The American Institute of Architects has announced the two recipients of its newly established awards for architectural critics: Louis Mumford received the gold medal, awarded on the basis of a distinguished career devoted to architectural criticism; and George McCue, art and urban critic for the St. Louis "Post Despatch" was awarded the Architectural Critics Citation for excellence of a single work in the same area.

Awards by professional institutes to professional writers for works of architectural criticism is something relatively new. So far as we can recall, it began last year with the award of the RIBA Royal Gold Medal to British author-critic Nicolaus Pevsner. RAIC interest in the field is reflected in the invitation to author-critic Wolf von Eckhardt of the Washington "Post" to address the Annual Assembly at Regina in May.

CMHC Fellowships

CMHC has announced its 1968-69 program of fellowships for full time graduate study in various fields of urban affairs. Stipends are $3,000 per student proceeding to a Master's degree and $4,000 for post Master's candidates proceeding to Ph.D. degree. Application forms and full information are available from the Administration Advisory Group, CMHC, Ottawa 7.

CAA Education Board Visit

The Commonwealth Association of Architects Board of Architectural Education will visit Canada in February and March. The Board will visit the schools of architecture at Nova Scotia Technical College, Halifax, on 27 February; McGill University and University of Montreal on 29 February and the University of Toronto 2-4 March. Receptions will be given the group by provincial Associations and at Toronto by the RAIC.

Members of the Executive Committee of the CAA who are proceeding to meetings in the West Indies will participate. The visitors will include Sir Robert Matthew, President of the CAA; Sir Hugh Wilson, President RIBA and Chairman of the Board; Mrs Elizabeth Layton, RIBA; M. O. Onafowokan (Nigeria); Zahr-uddeen (West Pakistan); Max Collard (Australia); Dr O. Koenigsberger and Professor R. Gardner-Medwin, United Kingdom; and Thomas C. Colchester, Secretary of the CAA. Canadian members will be John Davies (*F*) of Vancouver, Dr Thomas Howarth (*F*) and John C. Parkin (*F*) of Toronto. Detailed arrangements for the visit are being made by Dr Howarth.

Mandu Author

We have received several inquiries about Arvind Narale, author of the article on "Mandu", which appeared in *Architecture Canada*, December page 42. Mr Narale, born in India is a graduate in architecture from the Indian Institute of Technology in Kharagpur. He came to Canada on a Commonwealth Scholarship and graduated from the University of Toronto in 1966. He is currently employed as a designer with Cox, Moffet & Duncan, Toronto.

Coming Events

Building Science Seminar on Fire and the Design of Buildings, Ottawa, March 18-20, 20-22; Calgary, April 4, 5.

Cities in Context – International Conference to Consider the Cultural Ethical and Natural Qualities Necessary for the Advancement of Urban Society, Notre Dame, Indiana, March 31-April 3.

CIQS Convention, May 10, 11, 12, Skyline Hotel, Ottawa

4th Technical Fortnite, Paris, France, May 16-June 3

RAIC Assembly, May 27-June 1, Regina

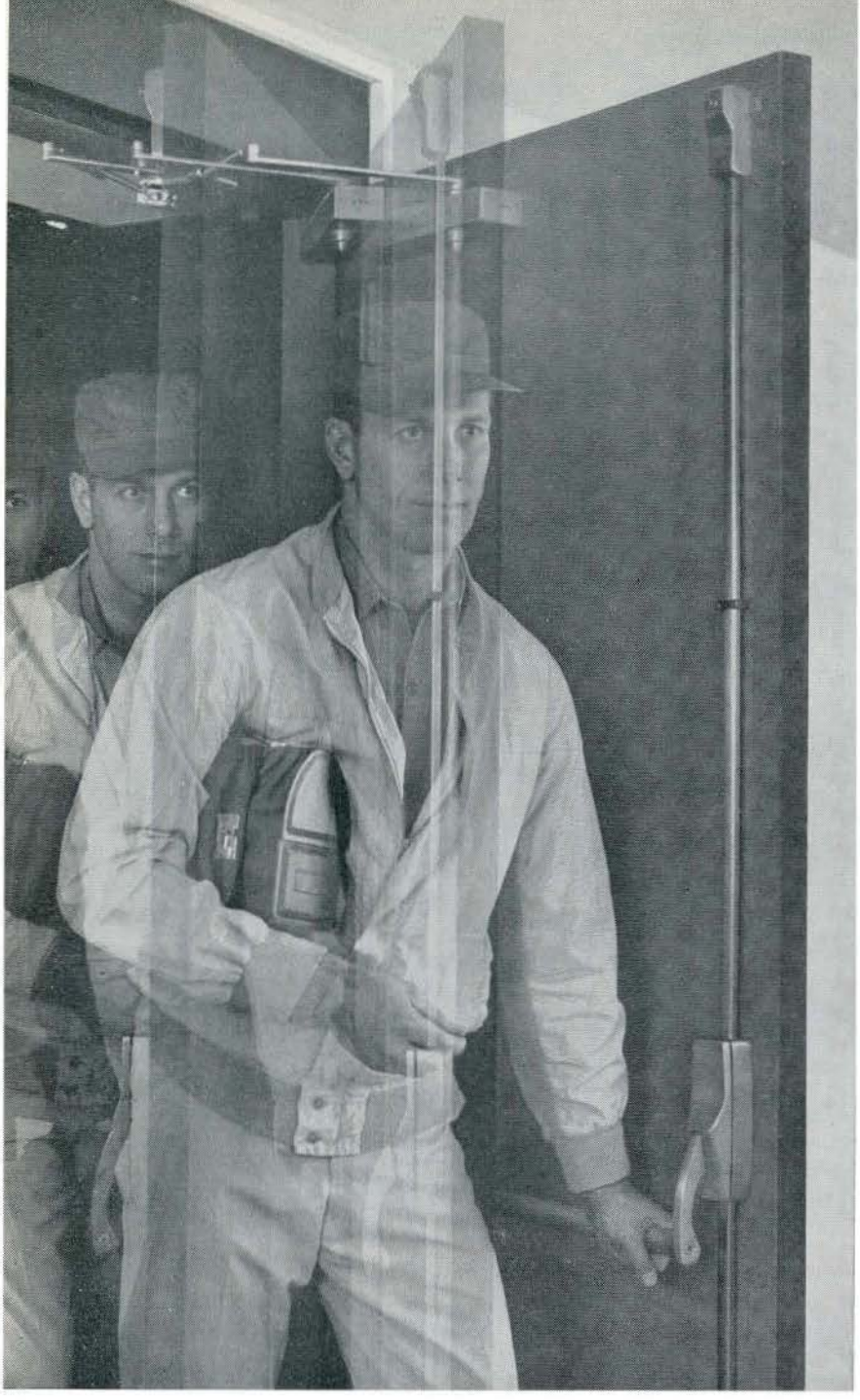
Madrid Symposium on Steel for Prestressing, June 6, 7

International Federation of Landscape Architects Congress, June 15-20, Montreal

Detail, Screen, Edmonton Inn

Credit: Owen

We regret an omission made in "Across Canada Round Up", Part 2, December, page 17. The work of Fred Owen (assisted by the provision of steel bracing by Axel Anderson) was credited alone to Anderson. The detail of the work above will identify the commission which is the design of Fred Owen 7905, 115 St. Edmonton.



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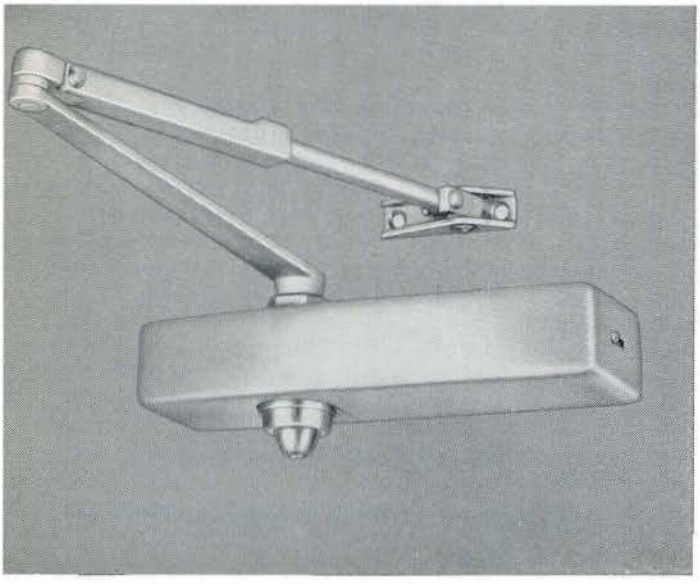

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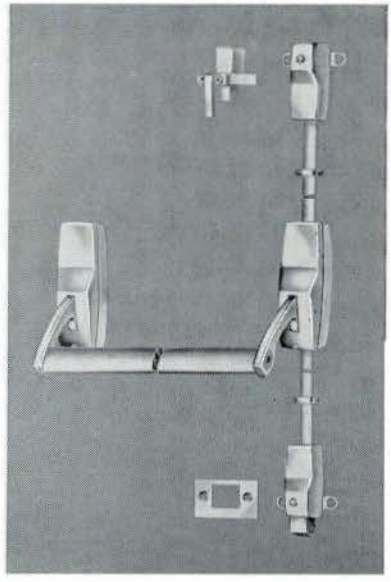

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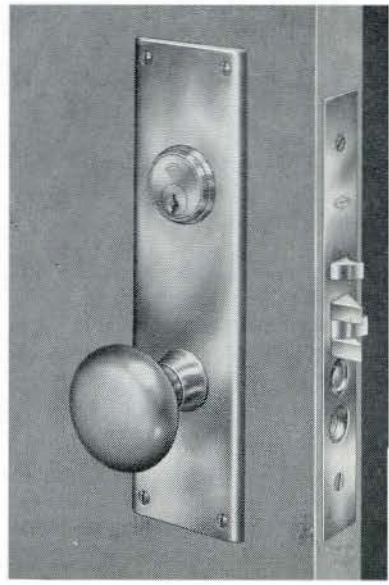

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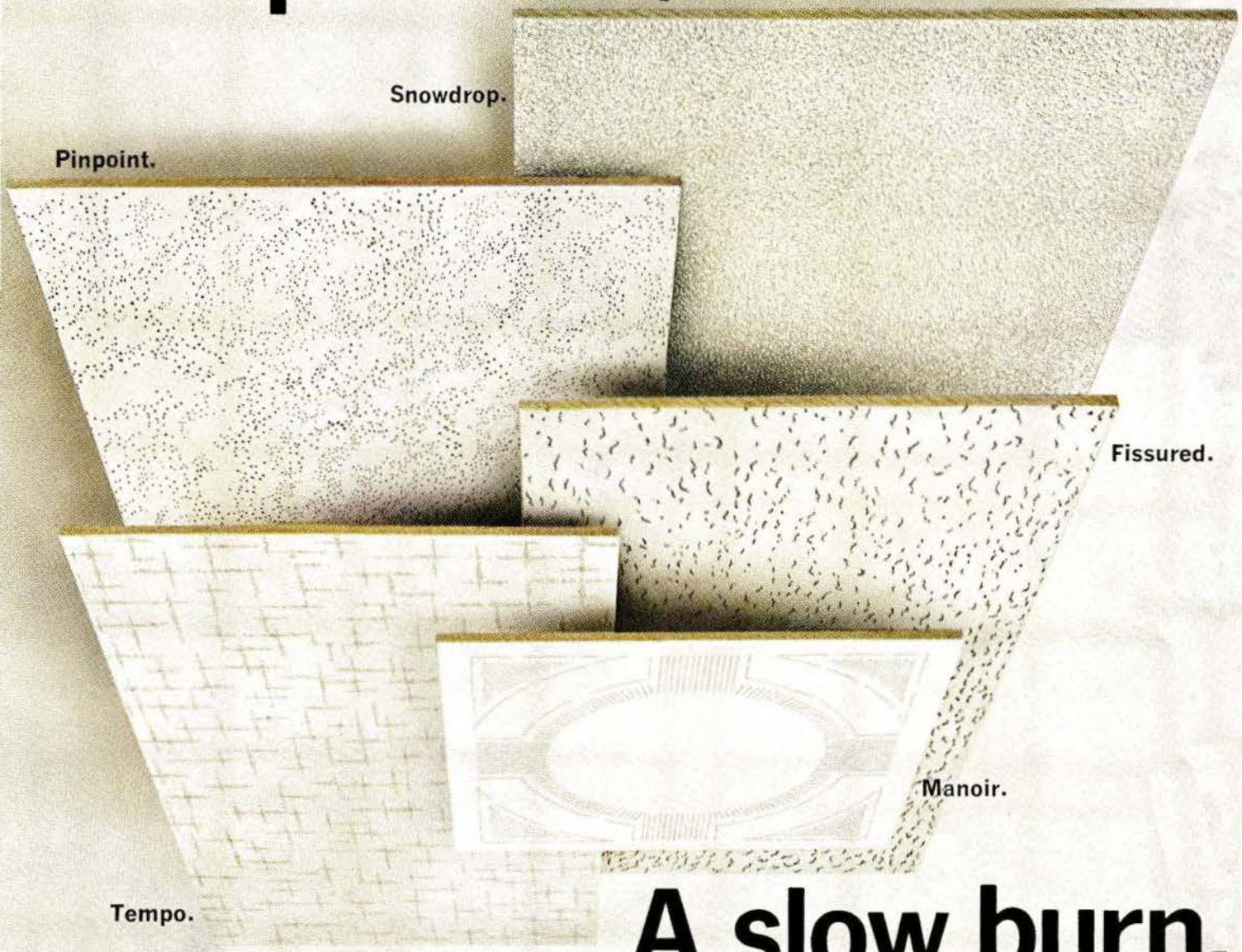

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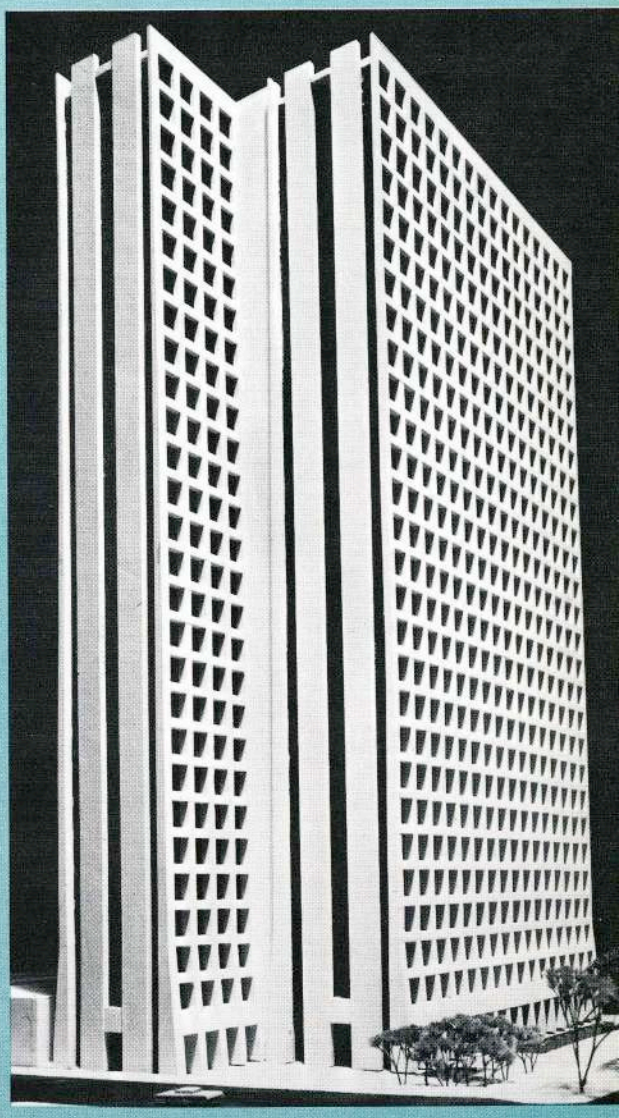
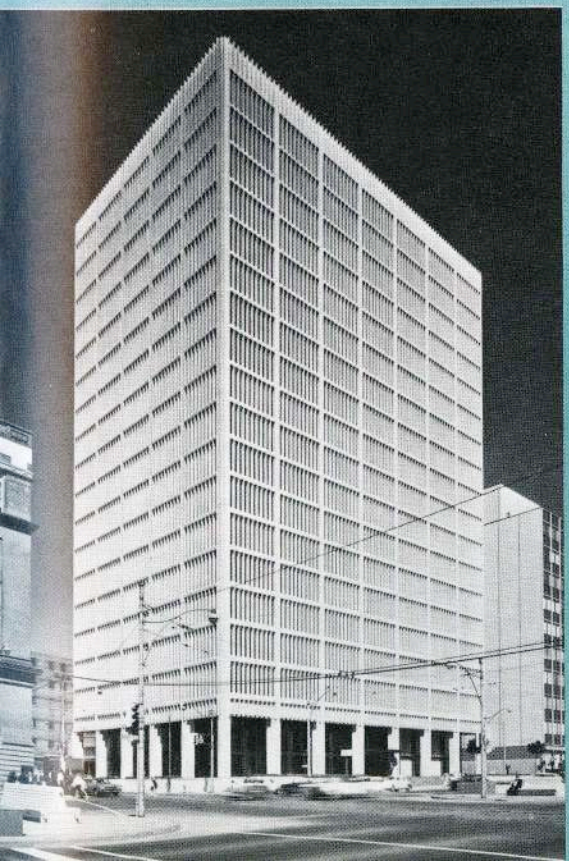


MacMILLAN BLOEDEL BUILDING. The tallest building in Vancouver, it has custom windows in concrete. The vertical feature strips are curtain wall with insulated Colorclad spandrel panels. The glass is bronze-tinted. Pilkington worked with the architect to supply and install all glass, curtain walling, metal frames and entrances. *Architectural concept:* Erickson, Massey. *Architects:* Francis Donaldson. *Developers:* Grosvenor-Laing. *General Contractors:* Laing Construction and Equipment Limited.



480 UNIVERSITY AVENUE. This new Toronto building is glazed with bronze-tinted glass in custom aluminum frames set in precast window openings. Materials for the ground floor—frames and Float glass—were all supplied and installed by Pilkington. *Contractors:* Olympia and York Industrial Development Associates. *Architects:* Webb, Zerafa, Menkes.

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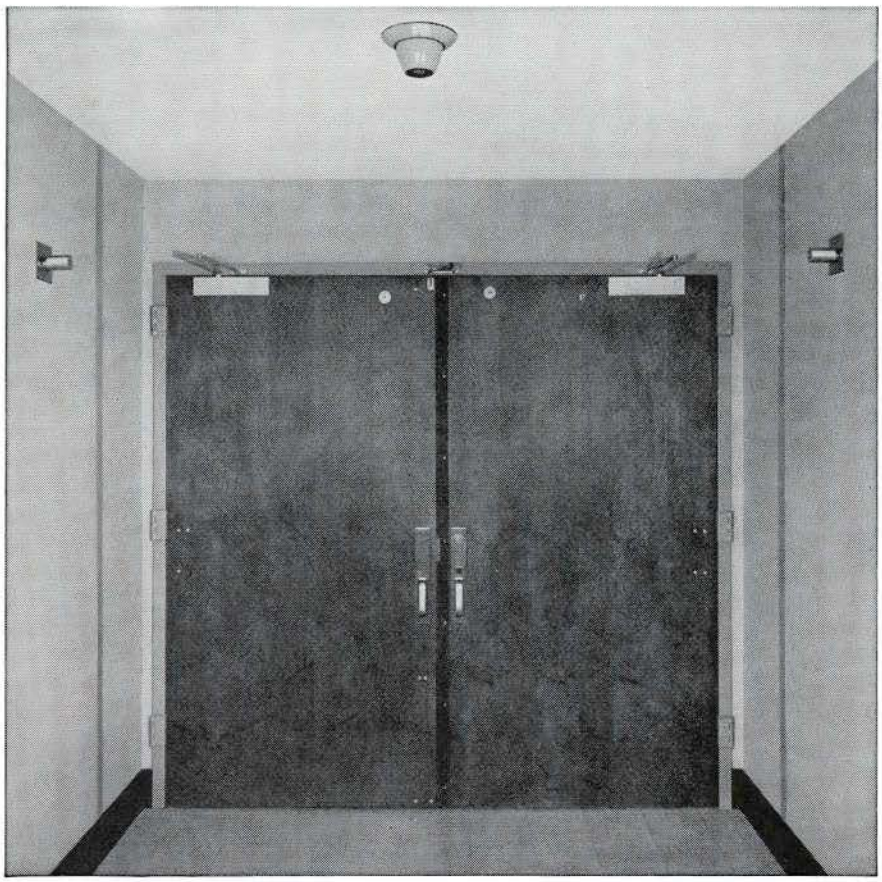

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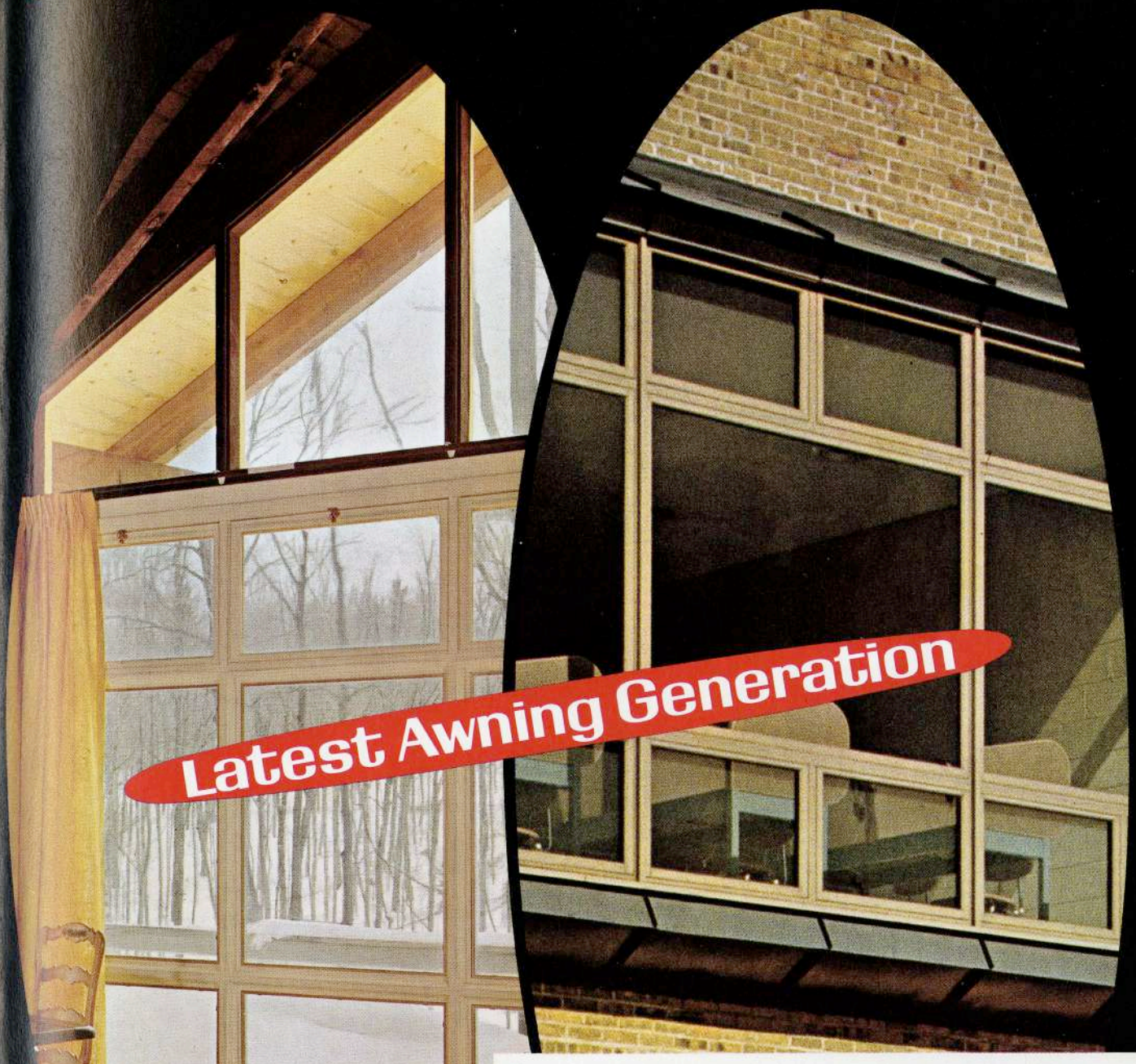

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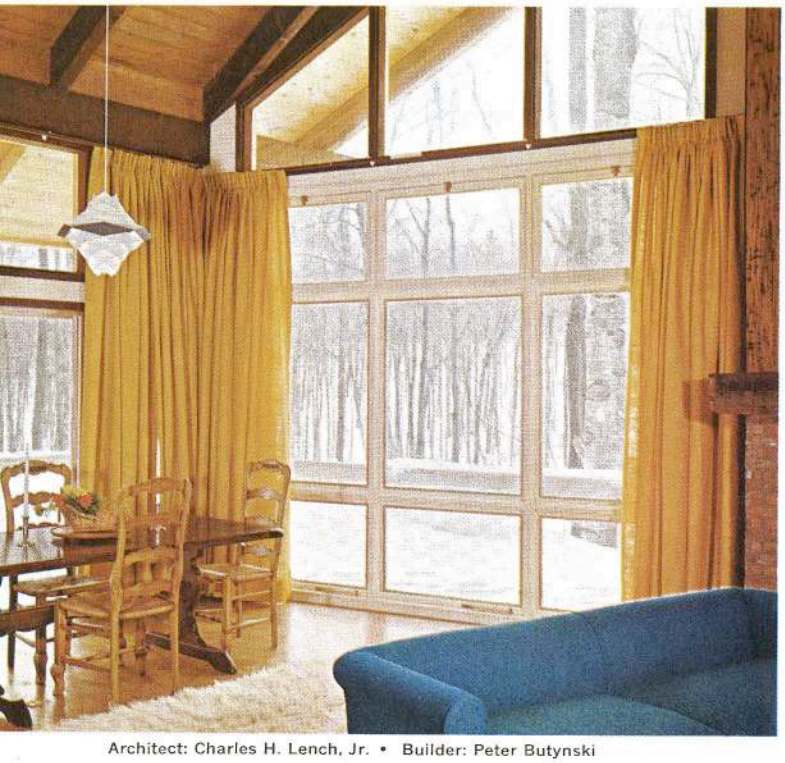
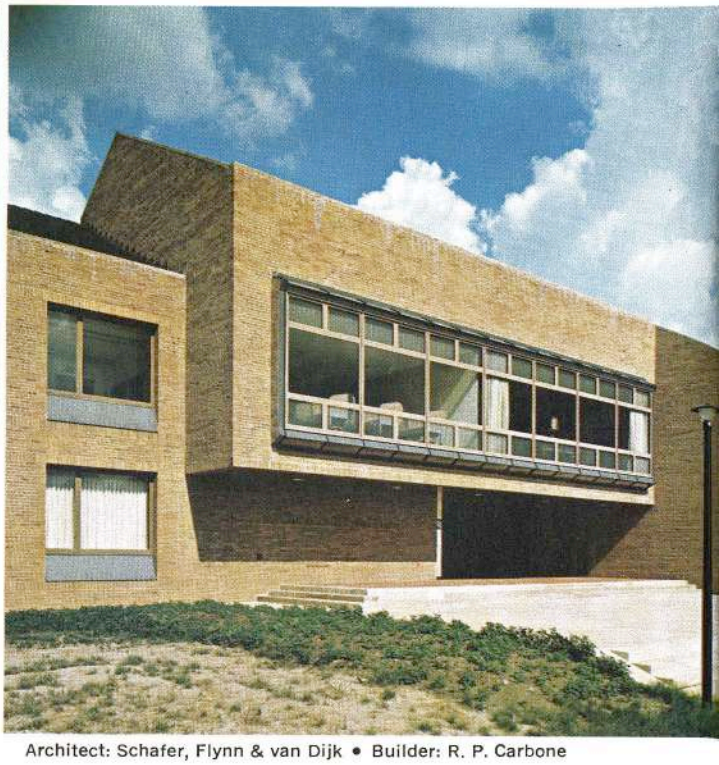


Architect: Charles H. Lench, Jr. • Builder: Peter Butynski



Architect: Schafer, Flynn & van Dijk • Builder: R. P. Carbone

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Plastic Paradise?
1968 - 2068

Industry, Art, Artist and Architect: . . .
The Plastic World

Part I, Industry, Aesthetics and Plastics

One hundred years ago the spore of cellulose nitrate plastic was cultivated in the laboratory of man's inventive genius. It has since become an artificial "mushroom" growth, spreading in ever increasing magic circles which insidiously invade every field of man's contemporary environment.

Undeniably the use of plastics has grown so, that, unalterably a balance of conjunctive relationships between plastics and other elements has become the ecology guiding economic industrial expansion, furnishing man's requirements in a synthetic urban society. Slow to develop for 50 years until the problems of inflammability were solved, a new impetus began in post war industrial development. Unfortunately for plastics, it could be said, the courageous entrepreneurs of industry then developing the material, were artistic illiterates. Quite sensible of the advantages of these synthetic processes in an industrial society battling with natural production rate and swift population growth, plastic categories were developed to 20 or 21 basic families. Over 130 resins are in common use which are merely variants of these. 800 resins, already synthesized with different properties, are ready for development when new demands arise. It is "the" material of today.

Courageous and adventurous in the commercial development of plastic, aesthetic blind spots made our entrepreneur nervous and unfit to face the new aesthetic implications of the product.

In the early years, two lonely pioneers in the art world, constructivist sculptors Gabo and Pevsner, foresaw that man-made art and materials could come together in an aesthetic statement of enormous significance.

However, at that time, industry, completely alienated from the arts, ignored the findings. Afraid of public prejudice, to which the artist-innovator is hardened, the producer surreptitiously replaced natural materials in a masquerade of deception. The true nature of the material was hidden under a pseudo guise of something else. Horrors of "marbellized" formica, unbreakable "china" cups, plastic "lace" and even

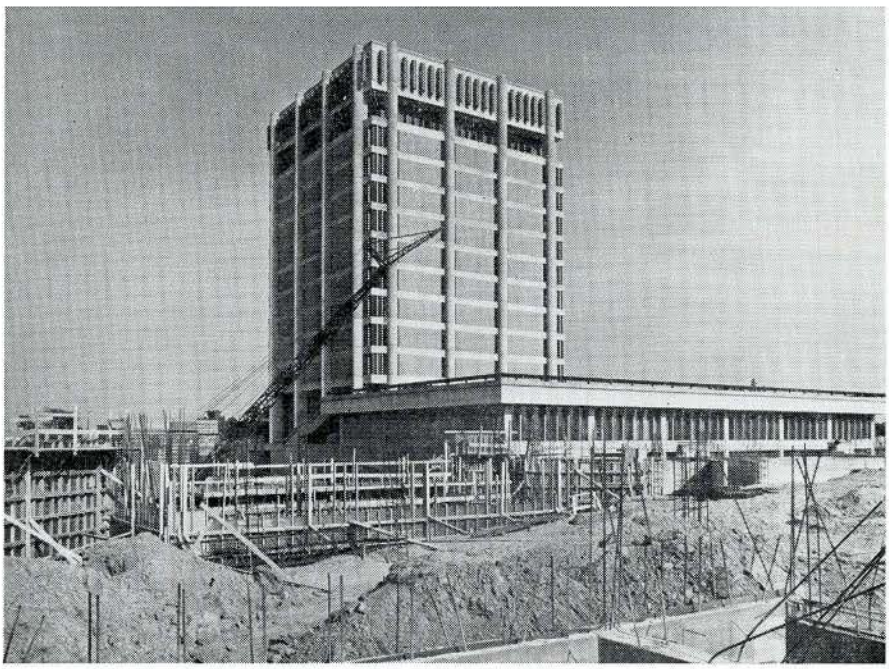
1
Les Levine's modulated plastic wall made from vacuum formed Uuvex, scale work 82 inches high called "Plug Assist #2". Artist's address, c/o Isaacs Gallery, 832 Yonge St., Toronto.

Mur en plastique modulé, fabriqué en Uuvex, formé sous vide, de Les Levine, oeuvre d'une hauteur de 82 pouces, intitulée "Plug Artist #2". L'adresse de l'artiste, c/o Isaacs Gallery, 832 Yonge St., Toronto.

Two universities demonstrate the versatility of Electric Heating

Two new universities being built in Ontario have chosen all-electric heating. They are Brock University at St. Catharines, and Trent University at Peterborough.

Any university is a complex heating project. The environment to be controlled extends from small residential units to auditoriums and sports arenas. The scale of these two undertakings is impressive; between them, Brock and Trent Universities will accommodate nearly 12,000 students when they are completed. Since each has been planned with the aim of providing the best possible working and living conditions at the lowest possible cost, it is especially interesting to see how the designers have used electricity to meet the heating demands of two very different structures.



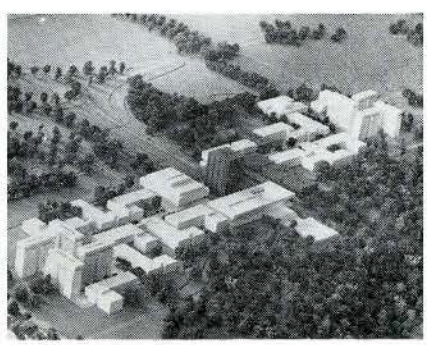
Brock Tower. The heart of a new University. Gordon S. Adamson & Associates, John B. Parkin Associates, Shore & Moffat and Partners; Architects and Engineers. *A joint venture to carry out architectural and engineering commissions on projects managed by U.P.A.C.E. Limited.* Consultants (site services) H. G. Acres & Co., Ltd.

At Brock University

the 14-storey Brock Tower is complete, and a cluster of buildings at its foot is under construction. The campus is expected to be completed by 1980. Both central and localized conditioning systems are being combined for maximum efficiency.

Chilled water for cooling every building is produced in the Central Utilities Building, located off-campus in a disused quarry. Electric power at 13.8 KV is also distributed from there; but each building has its own transformer room, heating plant, and ventilation system. Brock Tower, the only building presently in use, has a hydronic system fed by two 750 KW boilers in the basement. Hot water from this plant—or chilled water from the Central plant—is piped to sill units, where ventilating air is blown over the coil to maintain comfortable room temperatures. Heating or cooling is therefore available in all parts of the building, at all times. Larger rooms receive additional heat from resistance coils in the air ducts.

All buildings on the Brock campus will not necessarily use the same heating techniques. The designers will select whichever electric system is best suited to the needs of each separate building—taking full advantage of the versatility of electric heat. There are other good reasons why electricity was chosen in the early planning stages. One was electricity's cleanliness, which will help reduce the cost of internal and external maintenance on the campus, and avoid air pollution. Others were aspects of electric heating's simplicity. Competitive systems would have required a central boiler house, an extensive steam supply and condensate return system, together with a specialist staff to maintain them. Electricity needs none of these, and is therefore simpler, and cheaper both to install and to maintain. The ease with which electric heating can be added, phase by phase as the campus grows, was another sound reason for its choice.



Brock University; model of the projected campus.

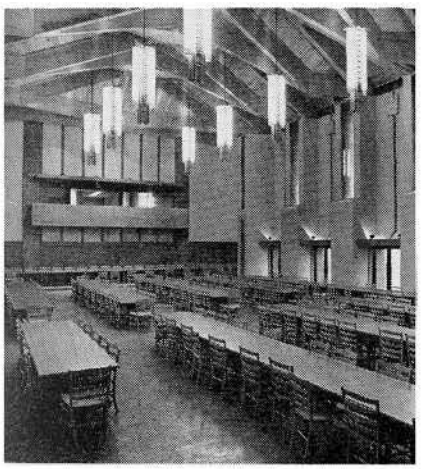
I-7-3037 REV.

Trent University

is very different in concept from Brock. At Trent, the University Planning Committee chose the residential college system, in which the student body is divided for social and study purposes into groups of about 300. Eventually the campus is expected to contain fourteen colleges; the first, Champlain College, is complete and occupied.

Champlain College at Trent University is a structure so complex that six different electric heating methods are used within its walls. The complexity arises from the way so many student activities are accommodated in a small area. The college has study bedrooms for about 200 undergraduates, apartments and housing for graduate teachers, a separate house for the Master; library, cafeteria, squash court, lecture rooms, social and meeting rooms for staff and students, changing rooms, kitchens, and the Great Hall.

The South Block, Champlain College, Trent University. Architect: Ronald J. Thom of Thompson, Berwick, Pratt & Partners. Engineers: R. E. Crossey and Associates, Ltd.



The Great Hall, Champlain College.

As at Brock, the basic heating system is hydronic, with seven immersion-type electric boilers totalling 750 KW. Most rooms throughout the college have *finned-tube convectors* in floor or sill units to provide basic warmth. Larger rooms have additional heating from *warm air ducts.* Air supply for these is warmed at the intake point by a hot water coil. The lecture room, the Great Hall and the squash court are among the larger rooms heated this way. These ducts will eventually accommodate a cooling system. Utility rooms and passages use *fan-forced unit* heaters suspended at strategic points. Since the kitchen has its own ventilation system, its air supply can vary between 100% recirculated and, with the aid of an in-duct *resistance coil,* 100% outdoor air. *Electric cable* is embedded in concrete landings where the staircases lead outdoors. Finally, *resistance convectors,* mainly of the baseboard type, are installed throughout the Master's house, further demonstrating the versatility of electric heating.

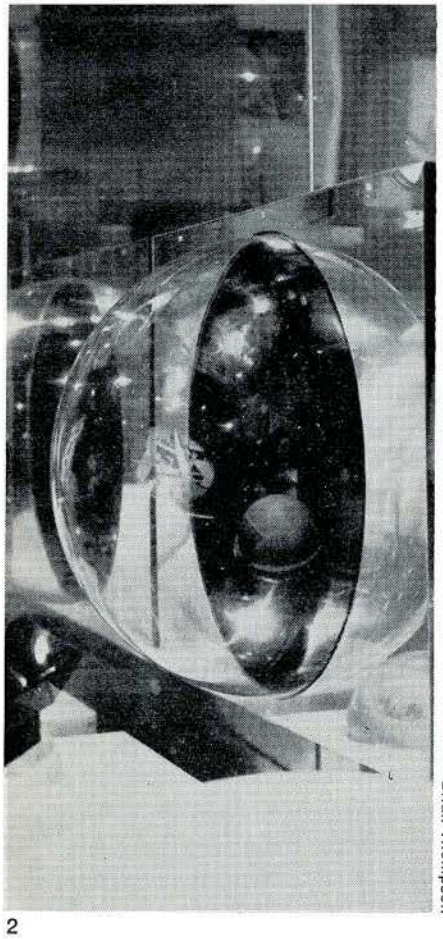
Despite the differences in appearance, layout, and style between these two new universities, Trent's reasons for choosing electricity for heating are very similar to Brock's. A painstaking analysis of five possible systems at Trent proved that electricity would be most *economical in terms of owning and operating costs.* Operating the system is simple, since minimum maintenance staff is required, and a high degree of both central and localized automatic control is possible. Finally, alternative systems required a central boiler plant, which would have interfered with the appearance and organization of the campus.

Electric heating provides both these universities with *the kind of heat they need, where it is needed, economically.* Designers and owners of many other buildings in Ontario find electricity the most practical answer to their widely differing heating problems. Write to Ontario Hydro for copies of Electric Heating Reports, which describe recently completed installations. Advertising Dept., 620 University Avenue, Toronto 2.

2
"Head Machine", an environmental sculpture by Intersystems (sculptor, Michael Hayden, composer, John Mills-Cockell and poet, Blake Parker). Aluminum box, acrylic insides. Sound system loaned by Philips Ltd. Intersystems is located at 252 Adelaide St. E., Toronto.
"Head Machine", une sculpture environnante par Intersystems (sculpteur, Michael Hayden, compositeur, John Mills-Cockell, paroles de Blake Parker.) Boite en aluminium, l'intérieur en acrylique. Système sonore prêté par Philips Ltd. Intersystems se trouve à 252 Adelaide St. E., Toronto.

3
"Neoplexalu", bottles of spun aluminum mirror finished, fluorescent tubes, twisted sheets of plexiglass. François Dallegret, address, 4825 St. Catherine St. W., Montreal.
"Neoplexalu", bouteilles en aluminium étiré et poli, tubes fluorescents, feuilles vrillées en plexiglass de François Dallegret; son adresse, 4825 rue St Catherine ouest, Montréal.

4
"Synthèse des Arts" at Expo '67. Artist Richard Lacroix of the group "Fusion des Arts Inc"; electronics, Jean-Pierre Le Gresley; sound, R. Bédard. Artist's address, 4677 rue Saint Denis, Montreal.
"Synthèse des Arts", Expo '67. Artiste, Richard Lacroix du groupe "Fusion des Arts Inc." Electroniques, Jean-Pierre Le Gresley; son, R. Bédard. L'adresses de l'artiste, 4677 rue Saint Denis, Montréal.


Brian Thompson
2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inevitably the "plastic flower" have become items of high camp for future museum collection. The mushroom growth became, for the aesthetic consumer, a poisonous toadstool collection of meaningless impediments dragging public aesthetics to an all time low. It says much for the practical application of plastics that the material was able to survive the abominable thinking of these early commercially minded "designers(?)"

Where do enlightened perceptive people stand in this situation? In spite of frequent vocal protests that he, the enlightened, loathes and detests plastics, the clamour is uttered from within a plastic "baggy" of his own purchasing. Every reader of this column, unless he sits naked on a grassy sward, (Journal in hand) will not escape the invisible influence of plastic productivity. Transport, furniture, clothing, food, (even the electronic equipment to print this journal) are companionate elements with natural materials forming our new urban environment. We are encased in polythene and adhesively achieve form through a million glues of plastic origin. It will seem amazing in retrospect that man severed from the rural life and natural aesthetics failed to capitalize on the phenomena lying within reach, the beauty of synthetic material and light. The plastic flower, a result of abominable thinking, never-the-less shows the desire to recreate sensual pleasures felt in response to nature's dynamics. Which brings me to the purpose of this series of articles on plastics.

They are meant to highlight the changing scene and the performances of a new breed of creative artists, born and bred in the urban plastic environment. Throwing off renaissance thinking and technical inhibitions of the past, they have deserted the "art college" as such and almost demanded literate education in new materials from their new academy, the industrial plant. The cross exchange of thinking is paying off. Not at all reluctant or lacking in generosity to the artists' problems, industrial plants are enlarging their own plastic vocabulary hand in hand with the artist. The results are exciting and aesthetically stimulating to the point where with the help of architects (who are the true dispensors of space to "perform" in this contemporary scene) we can harvest the "flowers", or create settings for "jewels" within the phenomena of light kinetics of "new plastics".

Plastics, like the fruits and the flowers of nature have properties adjunctive to and beyond the pure functional purpose of their being. They can provide for the "fanciful" needs of man. Neglected for years, the materials of the laboratory are a palette in the hands of energetic creative artists born into the "unnatural" industrial urban world of today.

Next month, *Artists' Ideas and Plastics . . . the architect and his role.*

Anita Aarons

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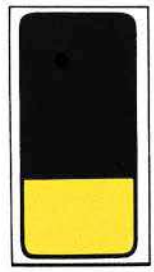

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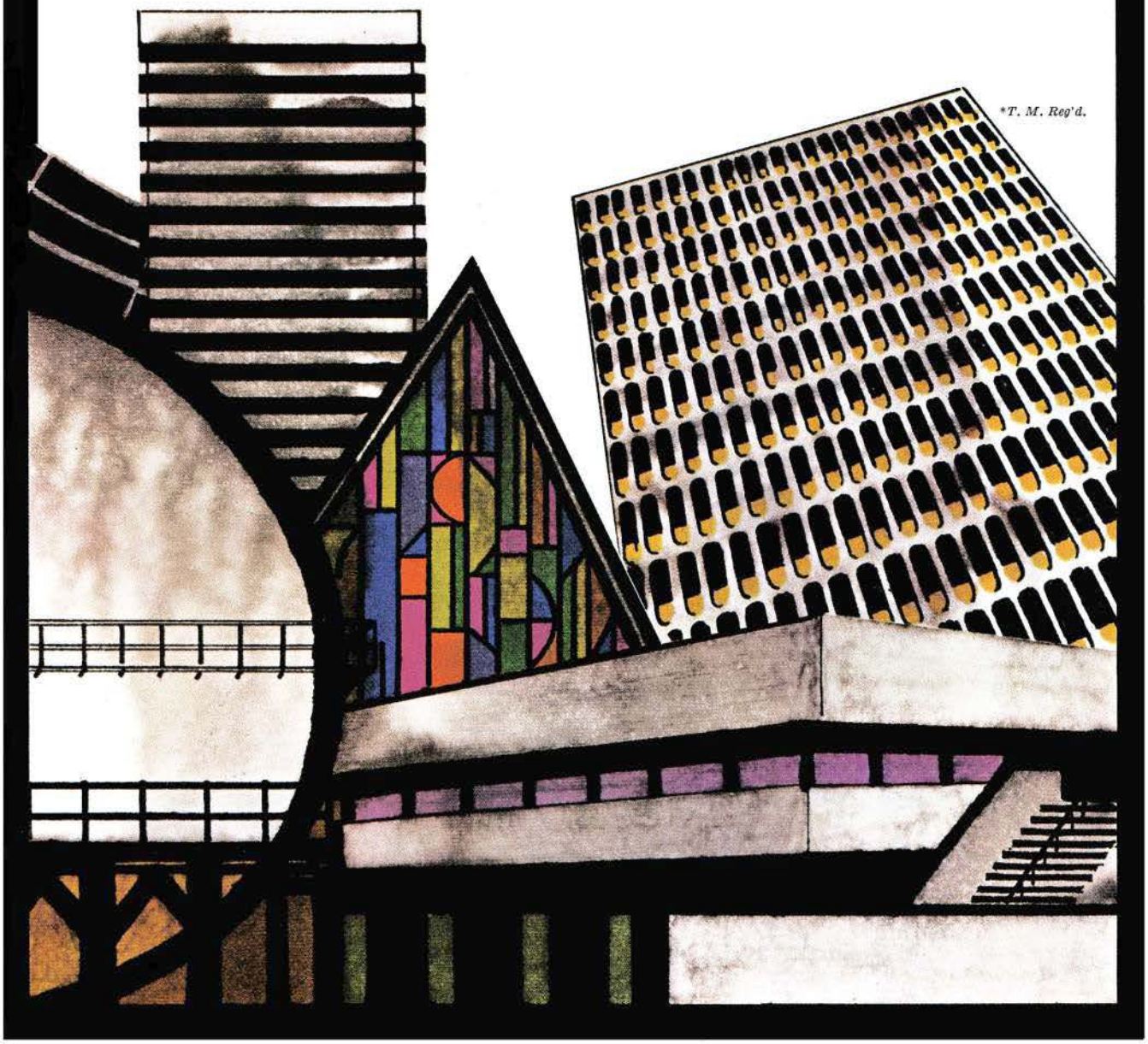

6714

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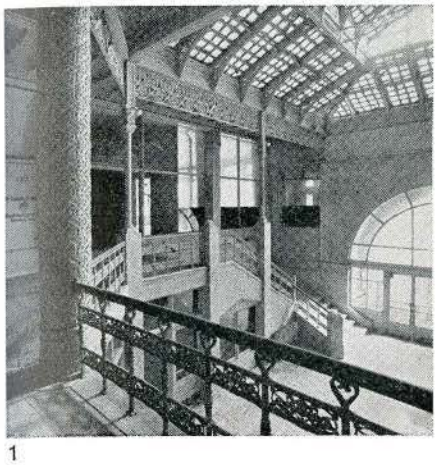

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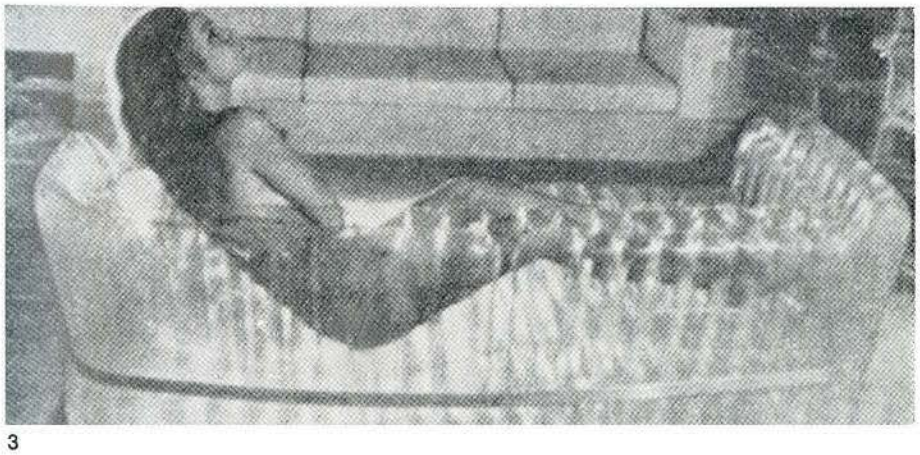
The Jury Report on the Osaka Competition, which you have all seen, is out. The presentation is interesting: a little unfairly the finalists are shown alongside those that did not have the opportunity to complete the second stage. Also, the beaux-arts competition conditions were revealed by the mandatory requirements of a perspective – the drawings show how restricting that requirement is for competitor and juror alike. The chi chi booklet also has another give-away – the pages showing the jurors. One wonders who was being judged.

Architectural Design too, perhaps the best of the glossies, is concerned with handsome artifacts as acts of design heroism. In fact they have an issue (Dec '67) devoted to "Heroic Relics". This reflects an attitude still held by schools of architecture in general – that they are there to train Michelangelos. This explains the trauma of the graduate when faced with un-heroic problems of building and planning as a service to the public. It is interesting in this regard to compare *P/A* Design Awards issue, (Jan '68) with '67 Design Steel, the design in steel award program. The former is concerned with form, the latter with function. The renovation of *Architectural Forum*, completed not very long ago, promised something new in U.S. architectural publication. It seemed as if at last there would be a publication not given solely to surface, but content, and to a content aptly concerned with the city. The December issue **(1, 2)** reveals the bias of the editors. The architectural tour de force is really what gets them.

In *Domus*, December 1967, a range of inflatable furniture is exhibited under the generic title "pneu" **(3, 4)**. Aside from the stunning presentation that *Domus* is always able to make, the furniture conveys the excitement of discovery and innovation currently experienced in furniture design. The innovation is not design for designers – but has been picked up by manufacturers and the public. It is demonstrably more comfortable and cheaper. It is this kind of progress that is missing in architecture. What can the architect offer that is *demonstrably* better than the builder or developer, other than an ability to make handsome artifacts? While this sort of question is often indulgently asked in the form of a mild, and satisfying form of mental flagellation, it is symptomatic of a real inadequacy in the profession. Instead of providing delights for other architects, can we in truth improve, via the expertise only the profession has, the performance characteristics of buildings, physical and behavioral?
A.J.D.



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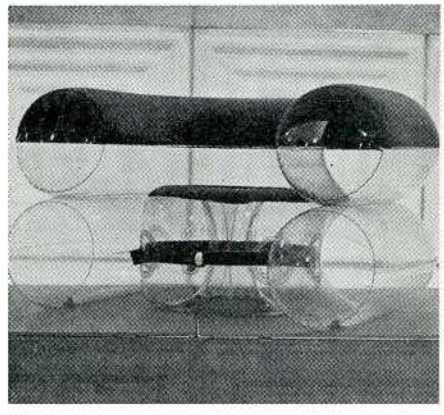

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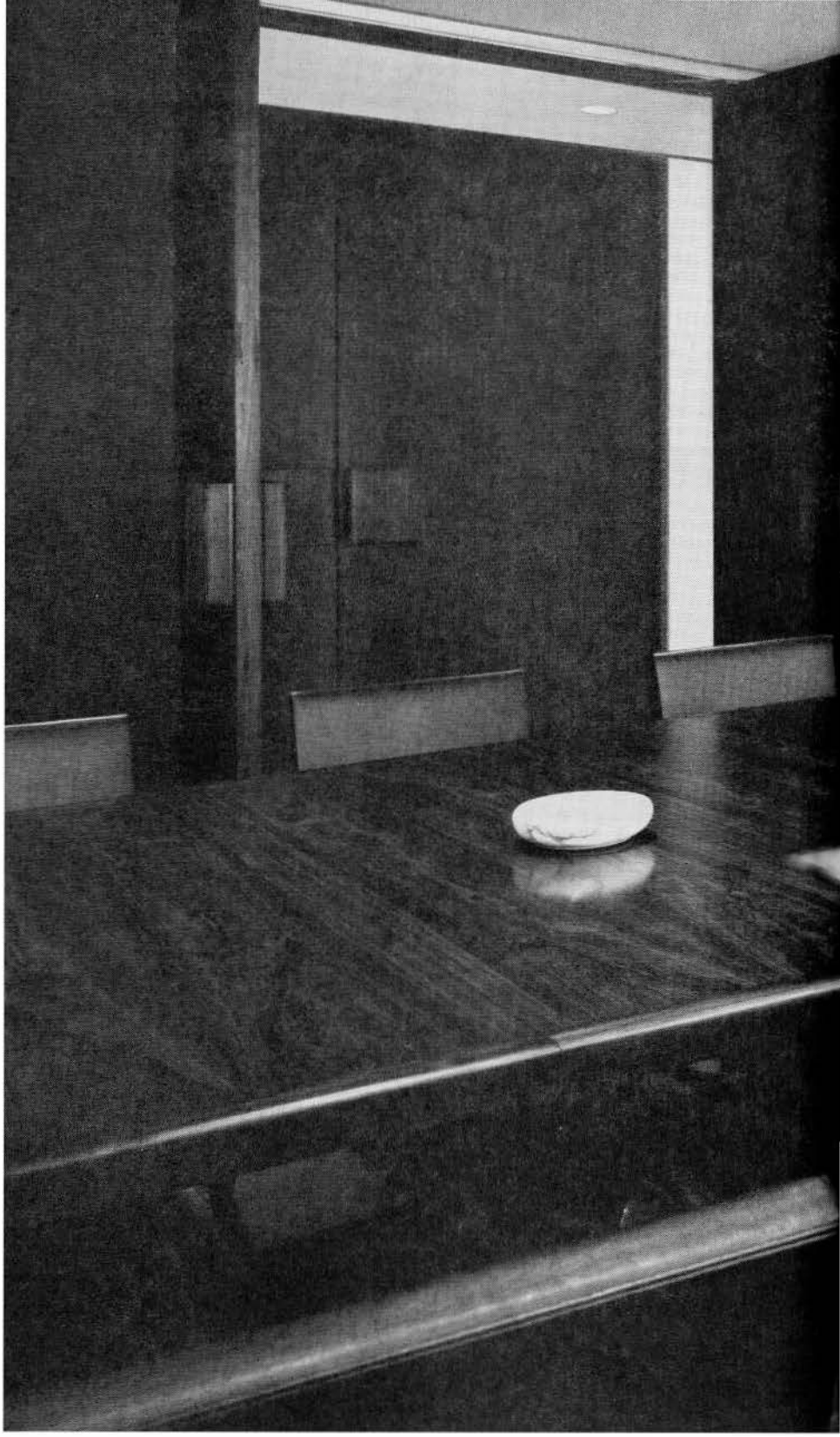

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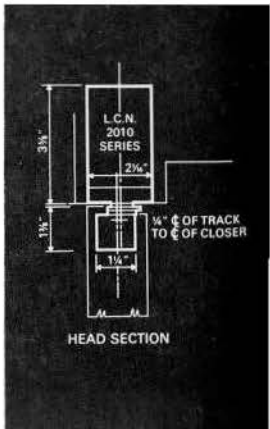

HEAD SECTION

This is the impressive boardroom of the Toronto-based mining corporation, Rio Algom Mines Limited, located on the top floor of the new twenty-six story Richmond-Adelaide Centre. Architects: Webb, Zerafa, Menkes of Toronto. For trouble-free door control, standard LCN closers were specified for the entire building.

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LCN door closers

67-6

Book Review

Campus Planning

Richard P. Dober
Reinhold Publishing Corporation, New York; 1964, 314 pages, $25.00

In his bibliographic notes for the book under review, *Campus Planning*, the author, Richard P. Dober, notes that " . . . most hard cover sources which one would expect to use as major reference works were . . . hopelessly dated." Our first criticism of Mr Dober's work, received for review by the RAIC publications board in July 1967, is that, alas, it contributes only partly towards correcting this deficiency.

First published in 1963, there has been no attempt by the publishers to update the case samples employed – somewhat fatal for a work which relies rather heavily on being extremely definitive, if not too selective, in the citations included. Hence, any assessments of newer thinking in planning of universities, reflected by such obvious examples as Andrew's Scarborough College, Erickson and Massey's Simon Fraser University, Wood's Berlin University, and the more recent work in Britain and Europe, are noticeably absent.
One would then assume that this needn't preclude the book's usefulness as an instructive treatise, if it dealt comprehensively with the more significant approaches to campus planning and university building as they may have prevailed up to the early sixties – for surely there are universal lessons to be learned from Aalto's work at Otaniemi, for instance. Here again, one is destined to find the book disappointing. This is not to suggest that the book does not have its particular rewards. I found Mr Dober's reflections on the historical origins and influences of the great American universities thoughtful and absorbing. Clearly also, he is an experienced planner, sensitive to the architectural problems and with a first-hand knowledge of the profound impact that rapid growth and massive technological changes are having on the development of our universities. Mr Dober is also firmly in his element, where he goes about setting out some of the basic techniques and detailed procedures that are involved in planning the university campus. These would be unquestionably helpful to the college administrator, or aspiring campus planner.

It is regrettable that Reinhold Publications did not see fit to have Mr Dober re-edit and update the work, as he is certainly capable, before re-issuing.

I find it difficult to shake an uncomfortable suspicion that the publishers were cynically exploiting the existing version as a timely and salable manual – a sort of high class "how-to" reference, without regard to its long-term potential.
I. I. Coop, FRAIC, Winnipeg

Résumés

Page 49
L'Architecture-Stratégie Politique
Douglas Bailey, S. N. Benjamin, Andrew Strauss

L'architecte de l'avenir devra être bien plus précis quant à son rôle dans le développement de l'environnement social aussi bien que physique s'il doit communiquer effectivement avec les urbanistes, les ingénieurs, les avocats et les autres agents de changement environnemental. Il nous faut réfléchir plus profondément quant aux moyens par lesquels l'architecte peut exercer et agir effectivement en tant qu'un des agents générant l'accroissement social et physique. A cette fin nous allons élucider quelques concepts définitifs du rôle de l'architecture comme stratégie politique. D'autres disciplines ont employé des modèles pour suivre le progrès de l'accroissement et du développement. Un modèle est une série d'éléments abstraits formant une structure de rapports. Pour l'architecte, un modèle conceptuel du développement identifiant le rôle de l'architecte et son architecture devrait indiquer une façon de procéder à l'intégration effective de l'architecte aux autres qui sont impliqués dans la génération de l'environnement, voire la société toute entière. Un simple modèle peut être construit traçant l'écoulement des intérêts de petits groupes d'intérêt social en passant par des groupes politiques généraux jusqu'aux décisions publiques ou constituées.

La Généralisation est un nom pratique pour l'écoulement dans l'espace et le temps socio-physique des besoins de petits groupes aux décisions de politique publique. Puisque l'expérience individuelle doit être généralisé pour la communication effective, le passage de besoins sociaux des petits groupes aux grands groupes doit être aussi un procédé de généralisation. Une fois qu'une ligne de conduite a été établie cette décision doit être implémentée à l'échelle d'un petit groupe ce qui constitue un procédé de *spécification.*

Le but de cette communication est donc d'examiner les caractéristiques de ces deux procédés dans l'environnement et d'identifier l'architecture dans ce contexte.

Vers le pouvoir politique: Généralisation

L'interaction socio-physique et le temps font partie de cette généralisation. La loi, l'économie, même l'éthique agissent comme filtres à l'acquisition du soutien populaire. Lorsqu'un intérêt est assez appuyé il pourrait devenir un composé de questions en concurrence aux autres intérêts. Pris dans la structure générale de l'environnement, les intérêts individuels et en concurrence sont généralement de courte durée.

Les trois phases fondamentales de généralisation en termes d'interactions socio-physiques pourront être identifiées comme (1) l'échelle de l'intérêt individuel et du groupe intéressé – petite échelle et emplacement géographique; (2) l'échelle de la question et de ses intérêts essentiels concurrent pour le pouvoir – l'espace géographique intermédiaire et régional; et (3) l'échelle et l'espace géographique.

L'Architecture en voie de généralisation

Il est évident que l'architecture est en soi un intérêt appuyé par des groupes intéressés. Les lois concernant la pratique de l'architecture ont été votées parce que ce groupe a acquis suffisamment de pouvoir populaire pour faire concurrence aux autres intérêts pour exiger des décisions politiques. L'architecture doit également générer des intérêts donc, des problèmes, par exemple, les lois réglant le zoning. On peut dire que l'architecte peut agir effectivement dans la généralisation des intérêts et de l'acquisition de pouvoirs populaires, comme par exemple, l'évolution de l'urbanisme en Amérique des années '30 jusqu' à présent.

La voie revenant au groupe d'intérêt: Spécification

Un intérêt devient une politique et un programme une fois que des décisions constituées, législatives, exécutives ou administratives ont été prises concernant l'attribution de pouvoir à un intérêt particulier. Cette spécification traduit ces décisions encore aux domaines des groupes d'intérêt individuels. La stratégie politique souvent dirige la spécification des décisions publiques vers des formes qui pourront être réalisées, telles que développement sociaux, économiques etc. La spécification dans ce sens comprend tous les genres possibles d'action publique. Le rapport entre l'homme politique et le groupe intéressé est une situation d'offre et de demande. Le temps nécessaire de réaliser les demandes du de nécessaire réaliser les demandes du groupe dépend des agents de spécification et du degré de pression exercée. Le résultat est un changement évident dans l'environnement du groupe intéressé.

Traitement de Forces Sociales Dynamiques dans le Modèle:

Jusqu'ici ce modèle a identifié les éléments dans l'écoulement des intérêts. Mais au delà des éléments, ce modèle reconnaît certaines forces sociales dynamiques qu'il faut reconnaître puisqu'elles sont fondamentales aux rapports entre l'architecture et les autres développements environnementaux.
Tout d'abord, l'énergie humaine, physique et psychologique, qui est gaspillée lorsqu'elle ne réussit pas à atteindre les pouvoirs populaires et politiques. Le pouvoir politique et privé est encore une force significative. Défini comme l'organisation, la ressource et l'opportunité d'effectuer les changements, le pouvoir manque aussi dans les problèmes de courte durée.

Le Rôle de l'architecte et de l'architecture dans le Modèle:

Le rôle de l'architecte dans ce modèle de l'environnement est plus près des groupes intéressés individuels. Son rôle politique est de fournir les changements dans l'expérience de l'environnement et de satisfaire les besoins des groupes individuels. Dans la spécification, l'architecte agit à resoudre des problèmes et à satisfaire les groupes intéressés. Ses moyens: le dessin de bâtiments, la disposition des espaces physiques, des investissements et des matériaux. Le produit de ce procédé implique la résolution de problèmes sociaux. Sa place est donc unique. Il est l'instrument d'autres pouvoirs dans le sens qu'ils lui accordent le pouvoir et les intérêts spécifiques. Mais ce sont les décisions de l'architecte qui font la différence entre l'impuissance ou la satisfaction des intérêts concernant l'environnement physique.

L'Architecture, Stratégie Politique:

L'architecture est liée étroitement au groupe intéressé spécifiquement et généralement et a toujours été une stratégie politique. Pourtant, on peut développer quelques lignes de conduite spécifiques pour lier stratégiquement l'architecte aux autres agents de changement et en le faisant, l'architecture pourrait devenir une stratégie politique plus effective, l'architecte pourrait déterminer des bases sociales plus solides pour effectuer les plans et les décisions qui à leur tour pourront aider à remplir le vide entre l'architecte et les autres agents. D'abord, lorsqu'il s'agit d'un projet d'architecture particulier l'architecte pourrait rencontrer les groupes intéressés, incluant leurs critères dans sa programmation et aidant à resoudre leurs problèmes sociaux par son dessin. Il pourrait fournir une définition claire des problèmes en

soumettant des alternatives pour résoudre un conflit d'intérêts sociaux. Il pourrait également agir comme représentant des intérêts sociaux et physiques (et économiques) auprès des agents de changement environnemental agissant sur d'autres échelles socio-physiques. Il pourrait aussi interpréter des décisions politiques de grande envergure dans le contexte particulier d'un groupe. Et enfin, il pourrait générer des intérêts fournissant des réalisations plus effectives de questions politiques majeures.

Page 53
Soumissions et marchés – 1ère partie
F. W. Helyar et A. J. Mott

Les jours d'affluence des années '60 sont partis. L'architecte et le client réexaminent les pratiques traditionelles de soumissions et de marchés pour voir s'il n'existe pas un meilleur moyen de choisir un entrepreneur. Nous avons l'intention de passer en revue les méthodes actuelles et leur développement historique et d'essayer d'évaluer quelques unes des nouvelles techniques.
Ce n'est pas qu'au Canada que les procédures d'adjudication de marchés sont critiquées. En Grande-Bretagne dans un rapport du Comité Banwell, le paragraphe suivant pourrait nous servir de modèle: "Il faut reconnaître que de s'en tenir aux procédures sanctifiées par tradition n'est pas forcément le meilleur moyen de profiter des techniques modernes, d'industrialisation et de modernisation, et dans l'avenir, il va falloir une souplesse et une liberté de choix vis à vis des clients privés et publics; la question à poser n'est pas "est – ce que cela se fait ?" mais, "est-ce la meilleure solution ?".
C'était Inigo Jones, dès son retour d'Italique qui est devenu le premier architecte anglais à dessiner et surveiller la construction d'un édifice des débuts jusqu'à la fin, et qui a introduit la tradition italienne de la délégation de responsabilité à un entrepreneur général qui recevait les soumissions des ouvriers des métiers particuliers. Cette méthode acceptée, on payait l'entrepreneur en avance pour une partie de l'oeuvre avec paiements reguliers pendant les travaux. En dehors de Londres, on employait toujours des ouvriers individuels et ils étaient payés aux prix unitaires basés sur les travaux finis, une pratique qui a continué jusqu'au 19ème siècle. Et puis, pendant les guerres napoléoniennes "dans l'intérêt d'économie", tout projet devait être la responsabilité d'un seul entrepreneur, évènément appuyé par la parution de l'industrialiste pendant la révolution industrielle. L'idée de recevoir des soumissions par concurrence, la soumission la plus raisonnable étant responsable de tout un projet continue toujours et reste la forme de soumission la plus populaire. Récemment pourtant, on se demande si c'est vraiement la meilleur méthode et des expériences ayant des degrès de succès variables ont été tentées. Une question fondamentale est celle des risques et responsabilités. Nous pouvons donc considérer deux types de marché en usage général, le marché à forfait et le marché en régie.

Les Marchés à forfait

L'entrepreneur est adjugé d'après un bordereau estimatif mis en concurrence avec d'autres, le prix le moins élevé étant le facteur déterminant. C'est la méthode qui embête le moins l'architecte et l'entrepreneur. Le client sait d'avance le coût de son immeuble et qu'il paye le moins possible. Les désavantages inclus le temps nécessaire de l'architecte et de ses conseils de préparer les dessins et devis avant de pouvoir choisir un entrepreneur et commencer les travaux. Le savoir pratique de l'entrepreneur n'est pas à sa disposition avant que le dessin soit achèvé – peut-être le plus grand désavantage du système. Puis, les dépenses en temps, argent et efforts en préparant les soumissions sont très élevées. Lorsqu'il s'agit de soumissions ouvertes, l'avantage de prix est souvent le seul facteur déterminant et on risque d'employer un entrepreneur moins compétent, de finances peu sûres, ce qui mène à des difficultés sans fin. Souvent l'entrepreneur n'a pas le temps d'étudier une programmation détaillée ni d'organiser efficacement son matériel et sa main d'oeuvre. Mais normalement, les avantages gagnent sur les désavantages. L'entrepreneur est encouragé à tenir ses prix afin de faire un bon profit. Avec cela, il doit être compensé des risques de plus en plus élevés avec l'industrialisation de la construction.

Marchés en Régie

L'entrepreneur peut être nommé ou choisi selon une soumission basée sur un pourcentage ou honoraires fixes. Les travaux sont remboursés au prix de revient avec honoraires en plus. Cette méthode est généralement employée pour des rénovations impossibles à estimer ou losqu'il faut avoir l'entrepreneur sur le chantier avant que tous les détails soient décidés. Les risques de l'entrepreneur sont minimes ainsi que sa motivation. En fait, lorsque le remboursement est calculé comme pourcentage du coût, il existe une motivation à ne pas travailler efficacement parce qu'au fur et à mésure que les coûts s'élèvent, le remboursement s'élève aussi. Les propriètaires n'aiment pas tellement les marchés en régie puisqu'il n'y a pas garantie du coût définitif et il y a l'impression que l'entrepreneur se joue du client. Pour l'architecte, c'est du travail supplémentaire vérifiant les factures de matériaux et de main d'oeuvre. Par contre, c'est une bonne formation pour les employés de l'entrepreneur sur le chantier.

Marchés par participation

Ces marchés ont été développés pour encourager l'entrepreneur à reduire ses prix. Un estimatif est préparé basé sur les devis et plans préliminaires et la différence entre le coût définitif plus un profit agréé et l'estimatif sont divisés en proportions préalablement convenues entre l'entrepreneur et son client. L'entrepreneur est encourager à améliorer son rendement, à suggérer des moyens de faire des économies parce que ces économies n'affectent pas l'estimatif et la différence entre le coût définitif et l'estimatif sera donc plus grand. Les problèmes inhérents sont la difficulté d'arriver à un estimatif qui n'est pas injuste au client et les disputes qui pourront survenir quant aux économies suggérées.

Marchés tout compris

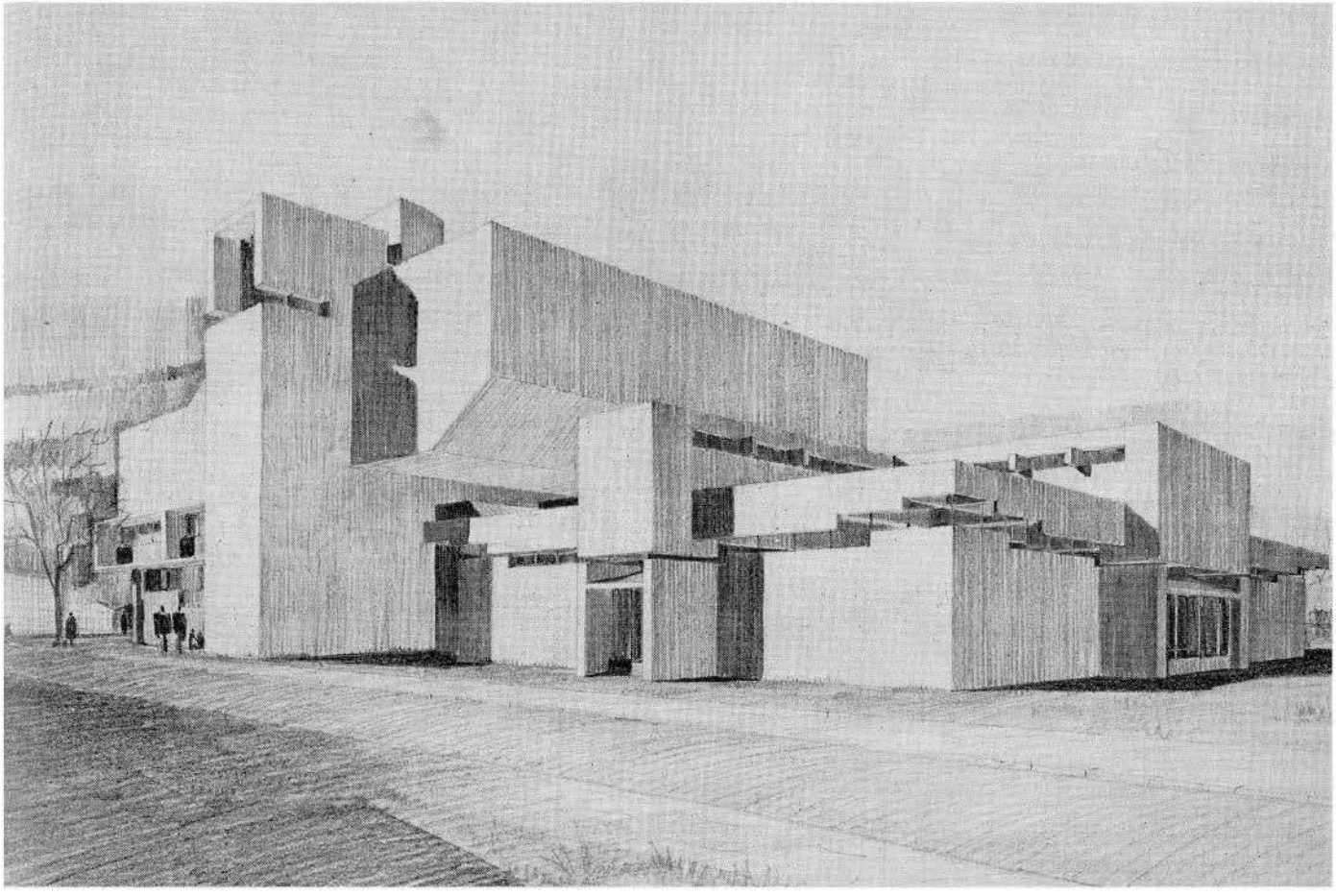
Peu d'architectes savent exactement la signification de ce terme mais étant donné que bon nombre de projets sont construits en "package deal", il vaut mieux en parler. In y en a deux systèmes fondamentaux. La première suppose un client ayant un terrain qu'il veut développer. Souvent, au lieu d'employer un architecte, il embauche un entrepreneur ou développeur qui dessine et construit l'immeuble suivant ses exigences. En principe il finira avec un immeuble conçu selon ses besoins, dont il connait le prix dès le début et qui lui coûte moins cher. Des fois, l'entrepreneur financera l'immeuble et fournira le terrain. Mais l'expérience a montré que ce n'est pas toujours que le client fini avec l'immeuble désiré, qu'il peut être moins satisfaisant du point de vue apparence, qualité et coût. Sans architecte, le client se trouve en difficulté de savoir s'il reçoit la meilleure solution et des fois, un architecte est appelé à remplacer le développeur.
Le deuxième système est connu comme un "leaseback", ce qui veut dire une transaction où le propriétaire d'un terrain ou immeuble le vend à quelqu'un d'autre et en devient le locataire. Ou encore, un client demande à un développeur de lui dessiner et construire un immeuble suivant ses exigences, le terrain, la construction et le financement étant fournis par le développeur qui loue au client.
Dans notre prochain article, nous allons considérer les facteurs relatifs aux procédures de marchés et de soumissions et les nouvelles méthodes essayées.

Devis

Cette année, au lieu de fournir les prix unitaires des devis préliminaires, nous allons présenter un groupe de prix unitaires chaque mois venant d'une région du Canada pour quelques uns des articles trouvés dans un devis d'entrepreneur.
De temps à autre, ces groupes vont être réunis et publiés séparément pour les membres. Mais attention – les circonstances peuvent varier sensiblement d'une région à une autre, donc devenir inutilisables en certains cas. Notre intention est de fournir un guide seulement.

Four Unitarian Churches

Unitarian Church of Vancouver
Unitarian Church of Winnipeg
First Unitarian Church, Rochester, N.Y.
Unity Temple, Oak Park, Illinois



1
First Scheme, Unitarian Church of Winnipeg
Gaboury, Lussier, Sigurdson, Venables,
Architects
Etienne Gaboury,
Partner in charge

2
Ground Floor Plan
Plan du rez-de-chaussée
3
First Floor Plan
Plan du premier étage

Unitarian Church of Winnipeg

Gaboury Lussier Sigurdson Venables, Architects
Etienne J. Gaboury, Partner in charge

Notes on Philosophy of Unitarianism

Great emphasis on education – the way to religious belief is Search – Faith through Knowledge.

Scientific knowledge and artistic development strengthen faith.

Man's faith in Man – as a superior being capable of improving himself and life and world.

Respect for man – respect for the individual.

Architectural Implications

Primarily a socio-educational complex. The school should be an introduction to the church and the church the culmination of the school.

The school should be conceived as a self-learning, self-teaching institution where each man must find his place. The church should express the right of each man to his place and mind.

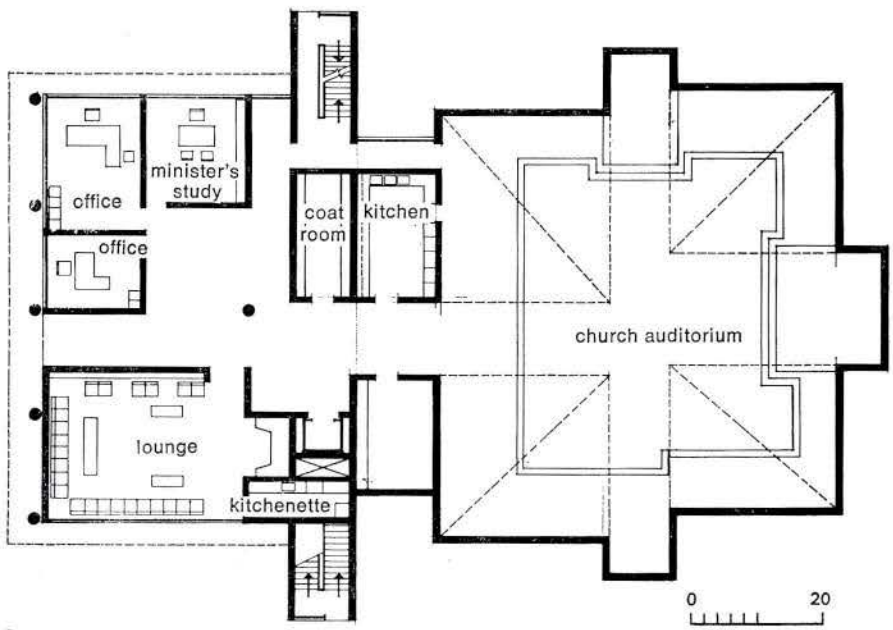
Liturgy – a social and intellectual exchange through a variety of media.

A multi-directional movement changing according to the liturgical action, but where the action is a medium, always secondary to the persons taking part. A liturgy of introspection with the action culminating with the congregation, with the individual.

Therefore, the church is not uni-directional with one central dogma and one principal liturgical action – but multi-directional with many liturgies.

Not a space for meditation as much as intellectual stimulation.

Church spacial (and structural) concept should not be one of placid space but a tense enigmatic space. A synergetic space.



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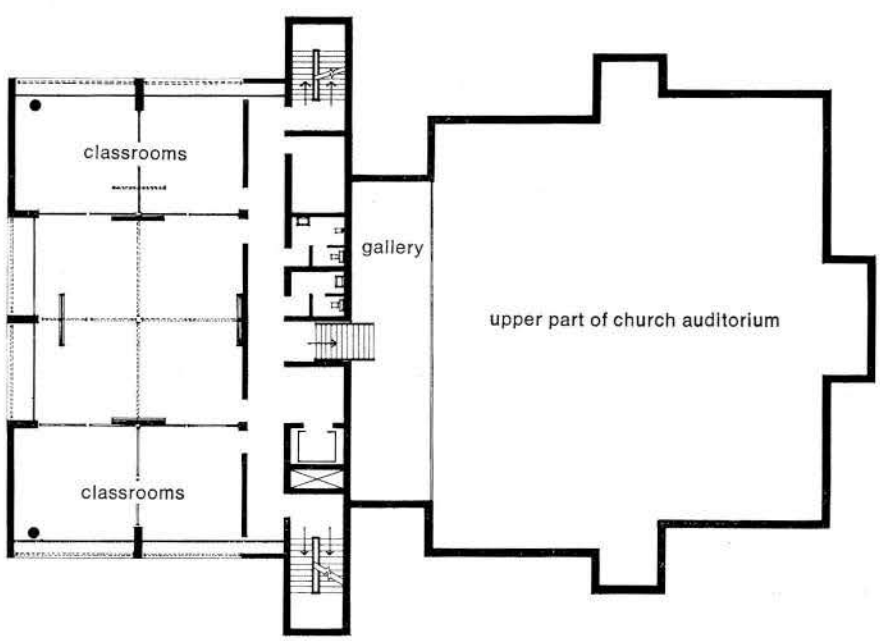


3

4
Exterior
L'extérieur
5
Section
Coupe

Notes on Solution

Site and staging are extremely restricting – have forced a vertical solution – have separated school facilities and church hall more than desirable.

Concept of vertical school. Allows for maximum change in use – and maximum use of property.

Established a definite tension between school facilities and church, but school still introduces church.

All classrooms and offices are opening to the south – east or west with sun control.

Church space should be multi-directional and multi-axial – preferably composed of many component spaces.

The traditional 'sanctuary space' is replaced by several 'focal stations' that will change according to the activity.

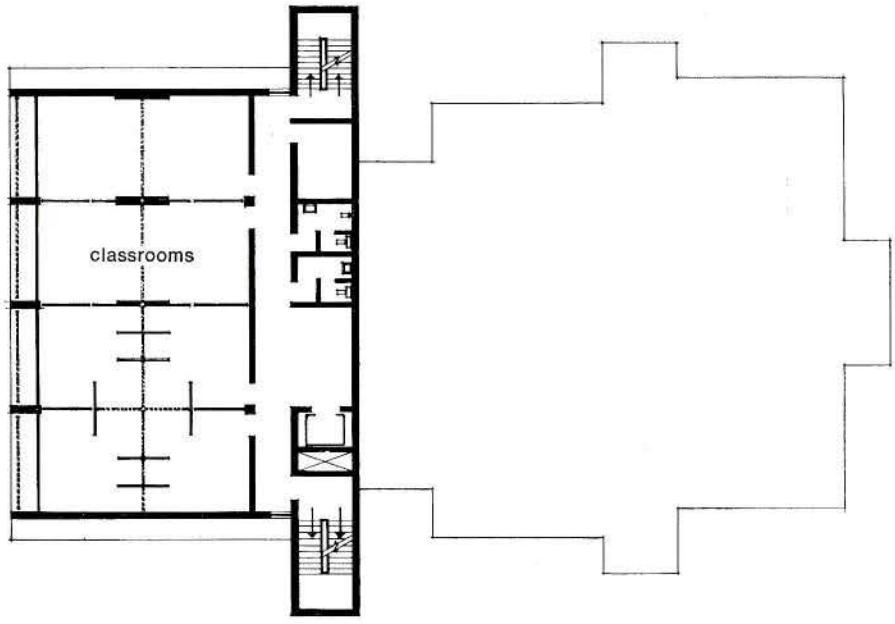
The main activity is lecturing, discussing and singing, but provision is made for small theatrical performances, concerts, exhibitions and receptions. The space must allow these functions to happen and should be appropriate for all.
There is a maximum variety of spaces especially in dimension – from the intimate to the total community space. This is achieved by the change of ceiling heights and change of floor levels.

The first solution shows the subtle variety of spaces with a static and dominant cruciform structure. There has been an attempt in the final studies to create a greater tension in the structure and still retain the variety of spaces.

The structure is, as it should be, because of its scale, the space defining and light producing element.

Our present solution is designed in concrete with sun grilles in exposed cor-ten steel.

Etienne J. Gaboury



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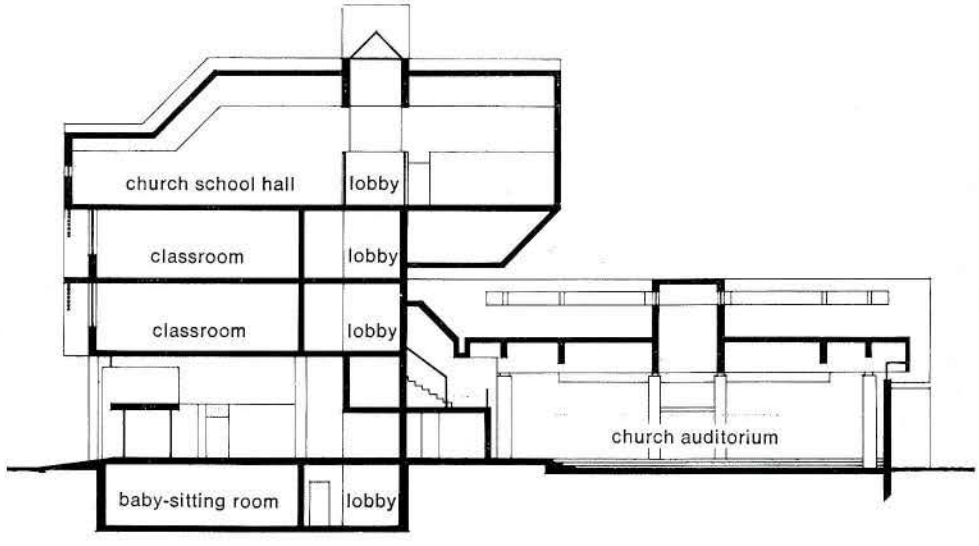
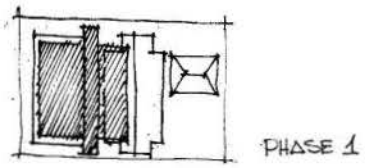
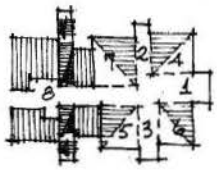


5

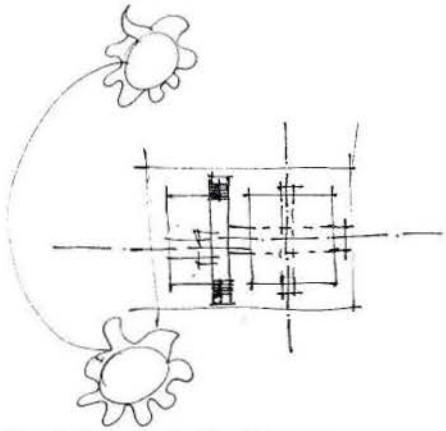
6
Schematic Drawings
Dessins schématiques
7
Elevation, Final Scheme
Elevation, arrangement définitif



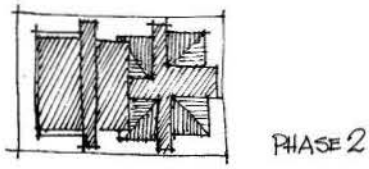
Construction Phasing, Phase I



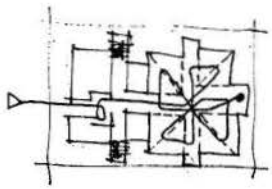
Spacial Analysis



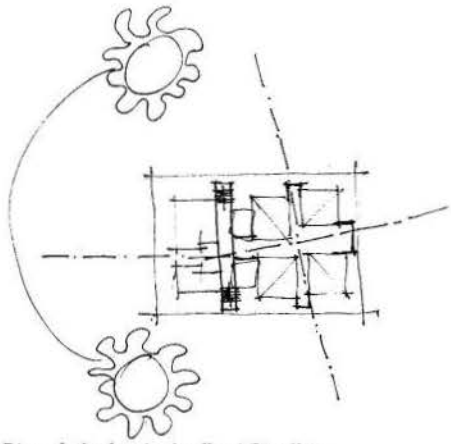
Plan-Axis Analysis, First Scheme



Construction Phasing, Phase 2

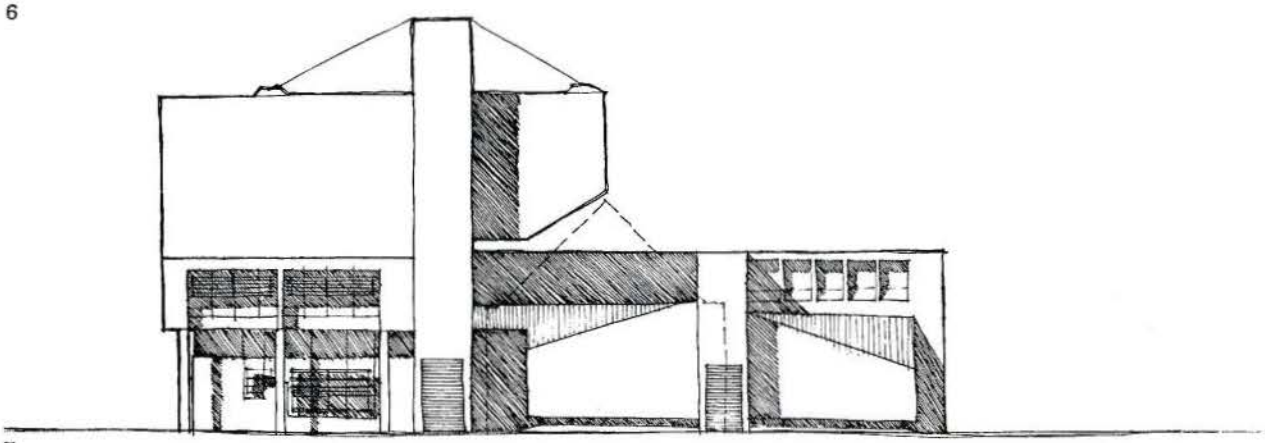


Space Movement Analysis



Plan-Axis Analysis, final Studies

6



7

1
Diagrams showing thinking which brought form
Schémas montrant l'idée d'un réalisation qui prend forme

Unitarian Church of Vancouver

Wolfgang Gerson, Architect
R. Hale, Associate Architect

Statement

When submitting the instructions to the architect the minister stated:
What I think we need to express is something of the gathered around spirit. But this in itself is not enough; it is too ingrown, too introspective; it needs to look outward upon the world as well as inward upon itself. Because of the Unitarian emphasis upon the questioning mind and upon the unrestricted use of reason, our church should not give an enclosed and darkened impression but should rather convey an impression of light, air and space.

Thinking back to 1962, when we began to work on this project, some further influences on form come to mind as we think on the role of church today:

– The non-church church as a free school of analytic and creative thought, and as an unstructured civic meeting place for presentation and discussion of ideas and issues.

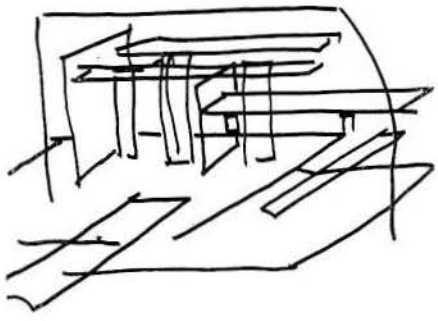
– Church as a place of ties desired by the participants.

– Church as a place of activities of spirit accepted and desired by the participants.

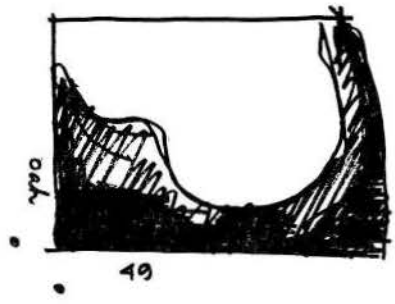
– Church as a place of non-specific civic function rather than sectional function.

The site also had a great influence on our thinking. It was extraordinarily featureless for a city in a dramatic setting of ocean, mountains and lush growth. It related to none of these, but was situated at the edge of a flat suburban sub-division on a major thoroughfare typical of any city in North America. This major thoroughfare must be described as "Church Row" as along it are linked churches of many denominations.

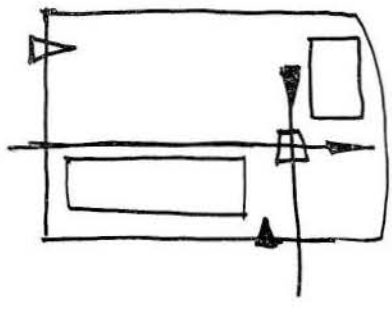
We felt that controlled open space with building forms around some of its edges expressed both the nature of the participants' activities and the demands of the site. The diagrams shown here are part of the layers of thinking which eventually brought form.



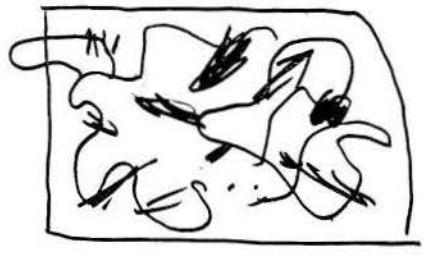
Multi dimensional opener and closure



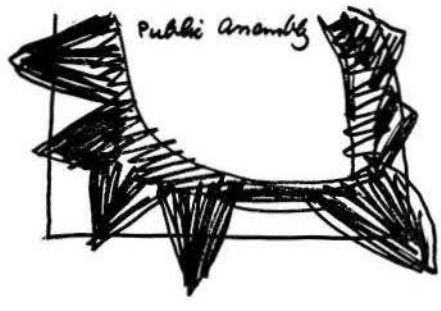
Noise intrusion



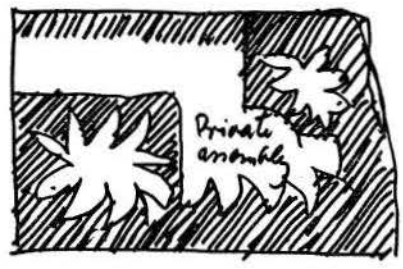
Civic formality (group endeavor)



Multiplicity of individual endeavor



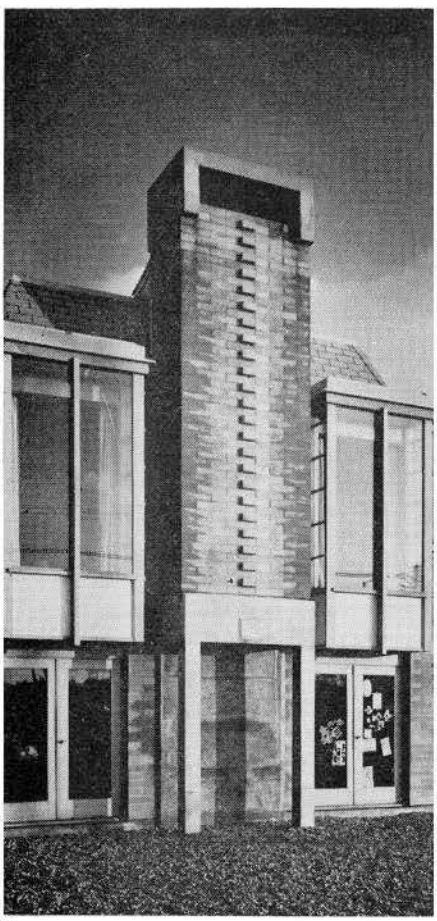
Extroversion, publicity, contact



Group togetherness, privacy, separation of conflicting uses

1

2
Fireside Room from Oak Street
Salle avec cheminée donnant sur Oak Street
3
Court looking south
Cour faisant face au sud
4
Interior from balcony
L'intérieur vu du balcon



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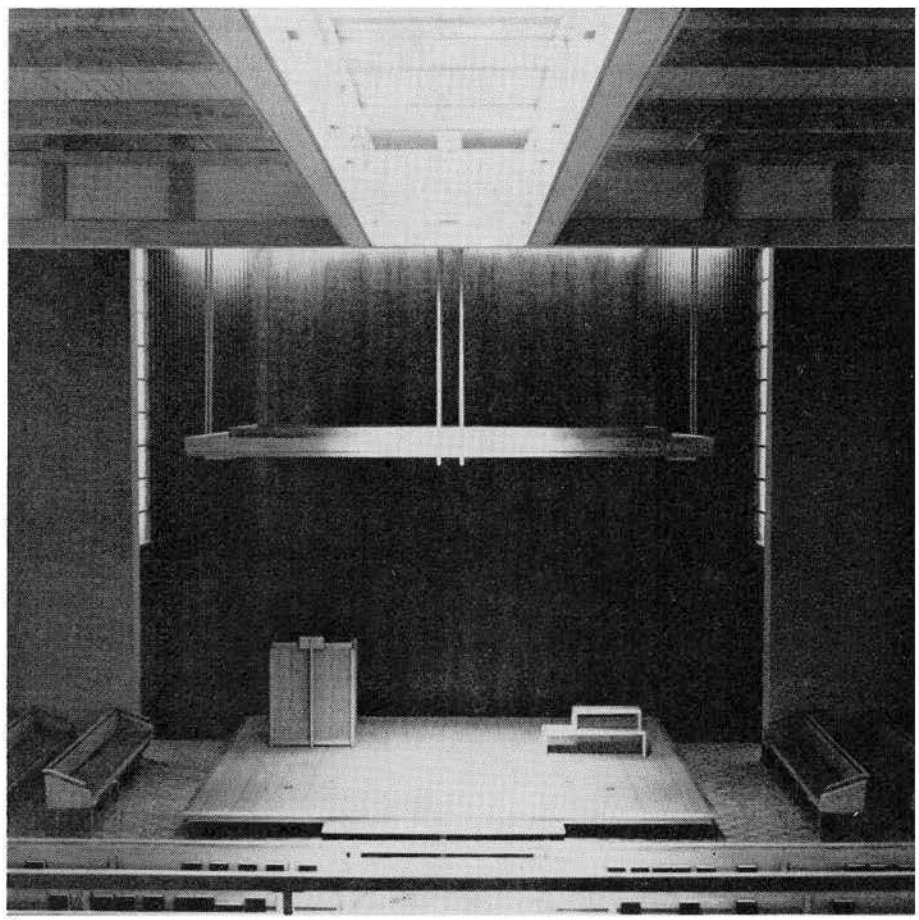

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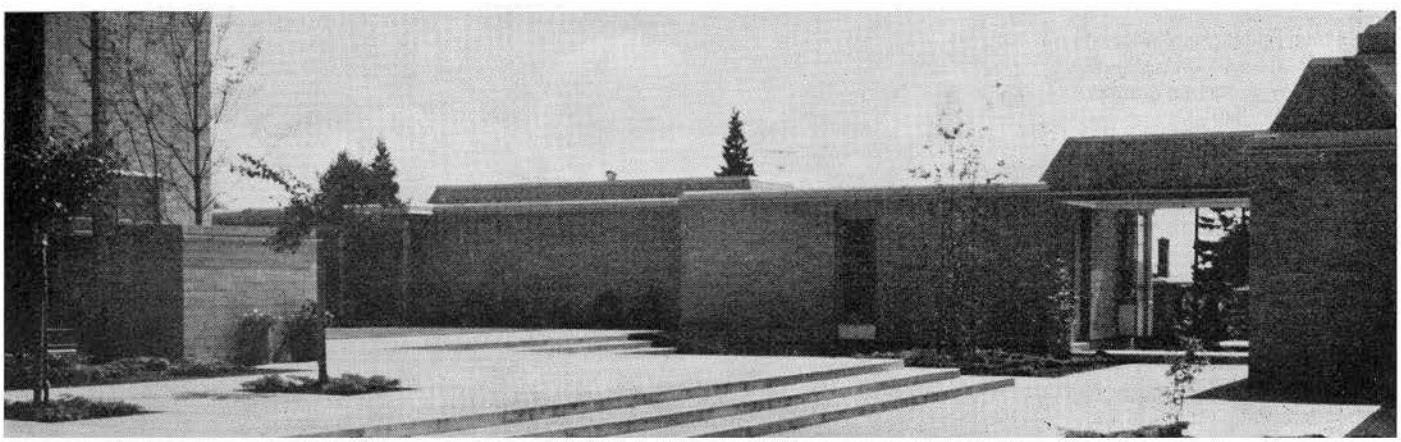
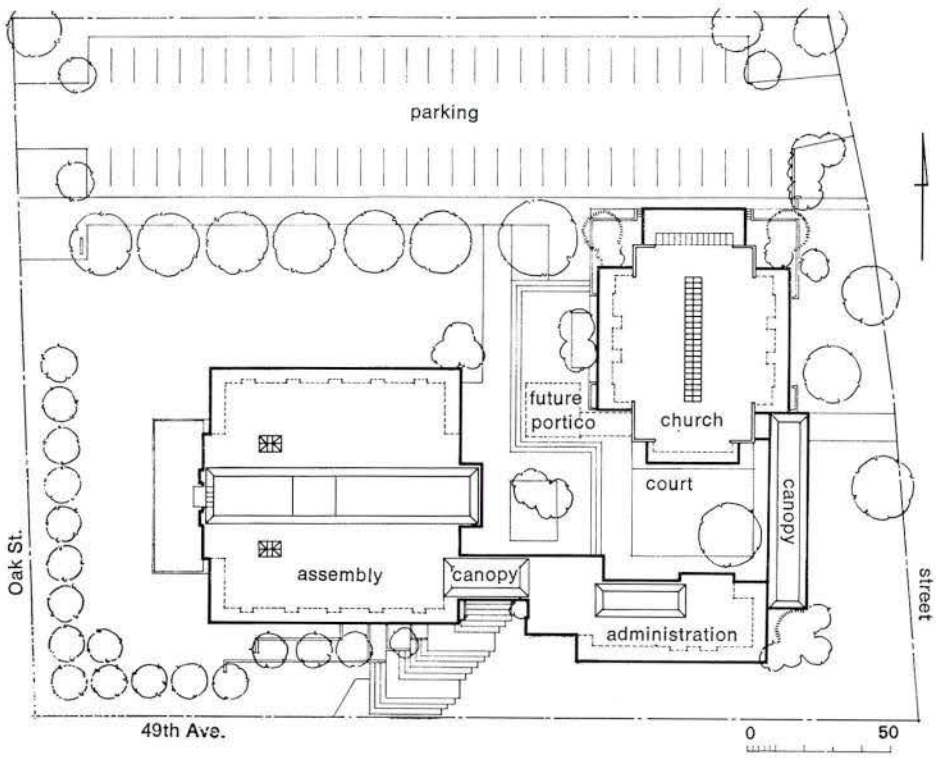


3

5
Site Plan
Plan d'emplacement
6
Church from the east
L'église vue de l'est



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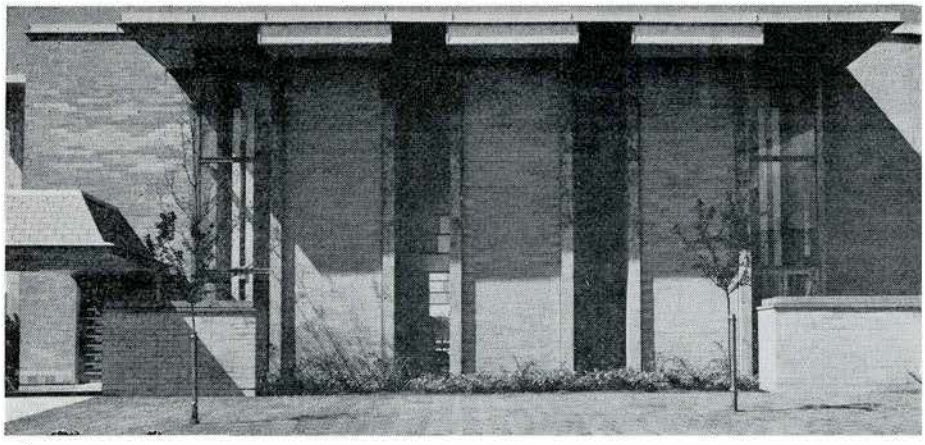

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Description

The three buildings grouped around the court accommodate the varied program of meetings, educational, social and civic activities of the adults and children. The semi-private outdoor area can be used for before and after church gatherings, summer parties and bazaars.

The church itself seats 350. Space is provided at the front or on the balcony for the choir and other musicians. The balcony also can accommodate an organ and additional seats.

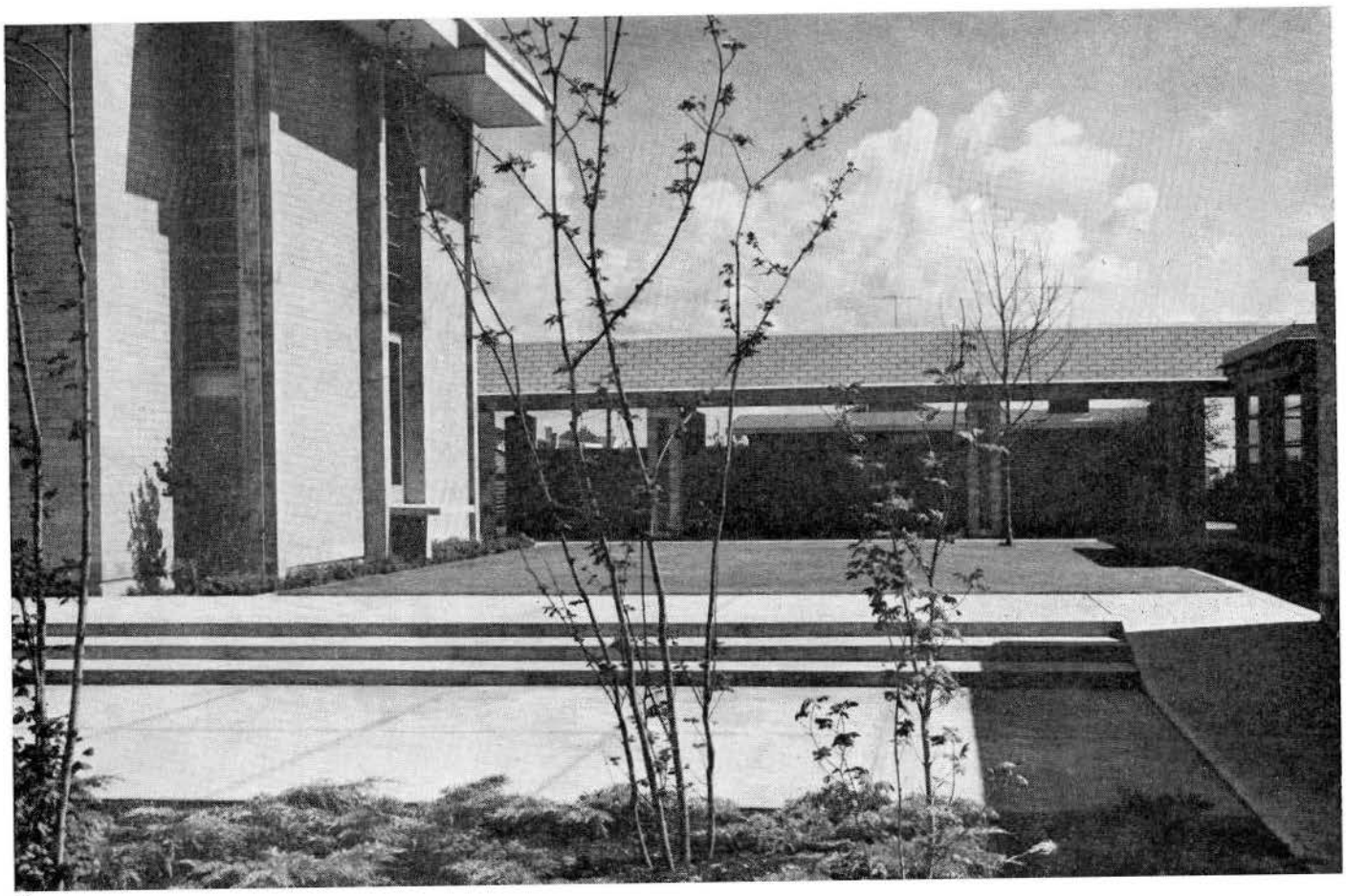
The weekday and evening program is housed in the second large building. The fireside room is used for small weddings, children's services and social activities. The Sunday School meets in the fellowship hall, also the center of after-service coffee hours. Further classrooms for children are provided on the lower level.

A separate gatehouse-like administration unit houses the offices of the minister, the secretary, the director of education and the custodian.

The church is situated as far from the noisy corner (49th Avenue and Oak Street) as possible. The site is accessible from the parking lot, a large gate opening from 49th Avenue and from the quiet residential street to the east.

The interior of the church consists of a laminated timber structure with rough purlins and walls finished in stained woods and rough cast plaster. Concrete piers are expressed inside and out. The side recesses and entrance hall are sometimes used for exhibition of paintings and are lit for this purpose. Other sources of light are hidden in the skylights. Frame chandeliers provide decorative lighting. Colored glass is used in the upper parts of the tall side windows and in parts of the skylight. The corner windows are clear glass for view into the small corner gardens.

7
Court looking east
Cour faisant face à l'est
8
Plan



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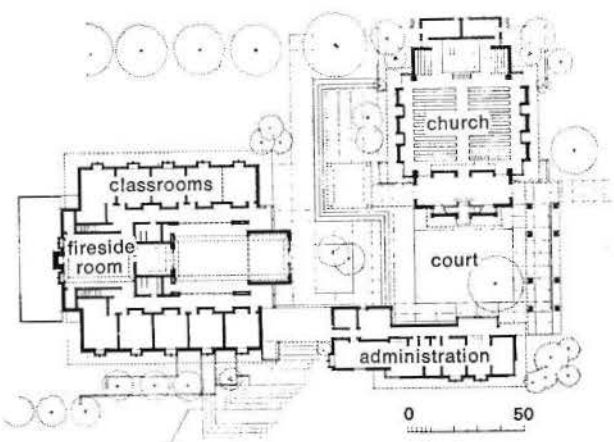

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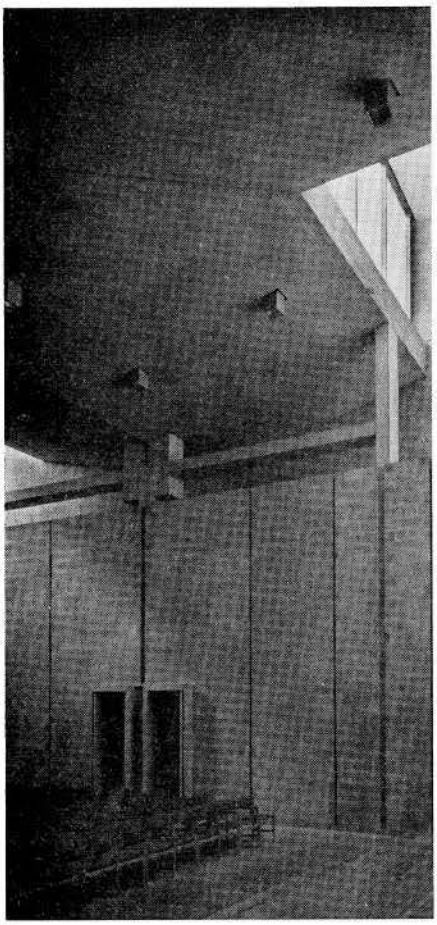
1
Interior
L'Intérieur
2
Exterior
L'extérieur

3
Plan
Plan

Rochester Unitarian Church

Louis Kahn, Architect



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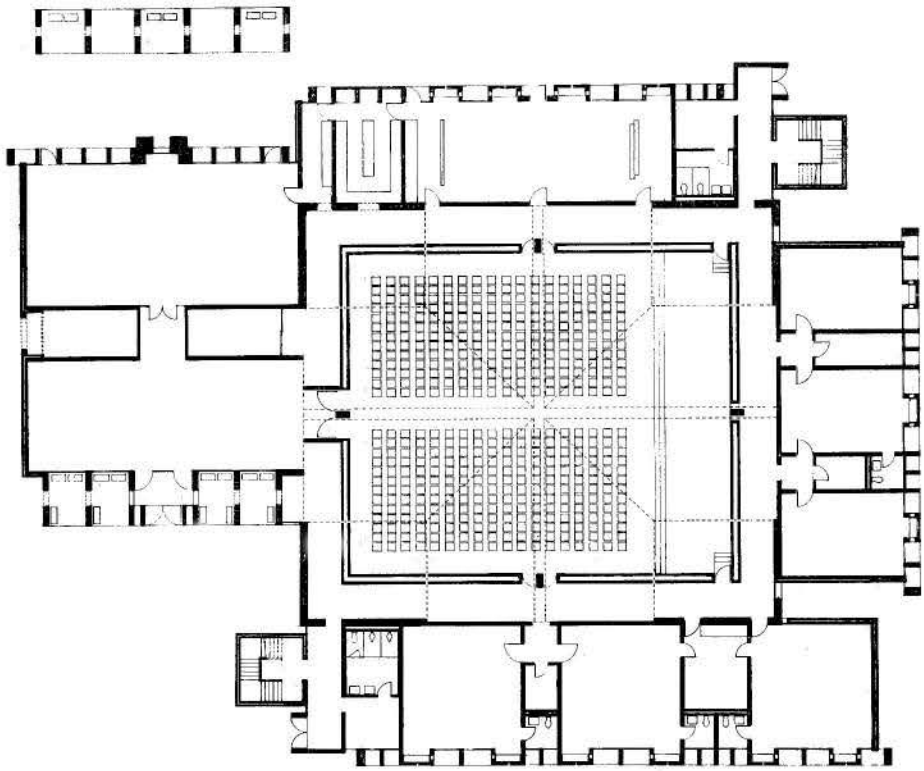

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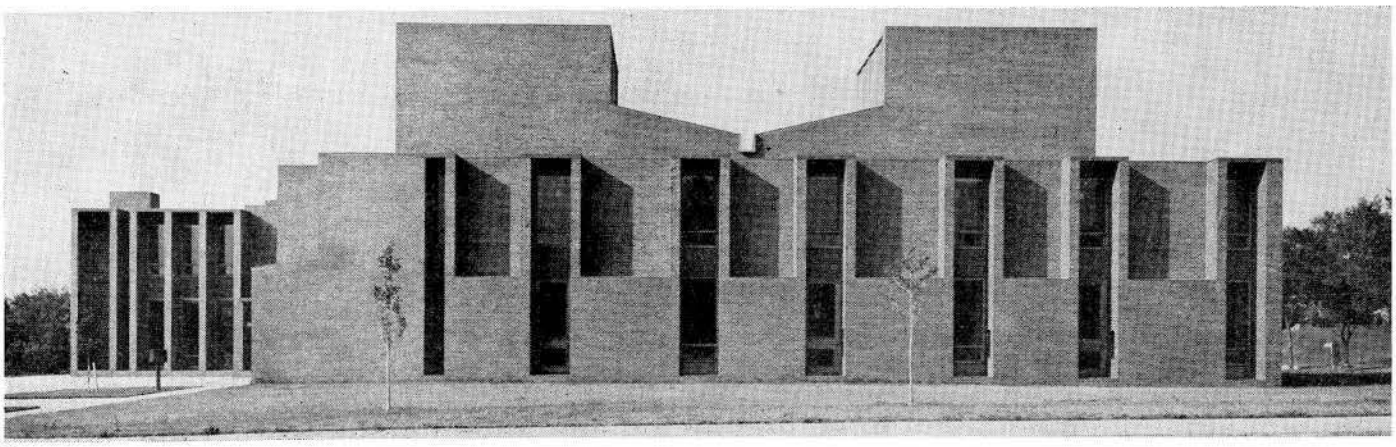

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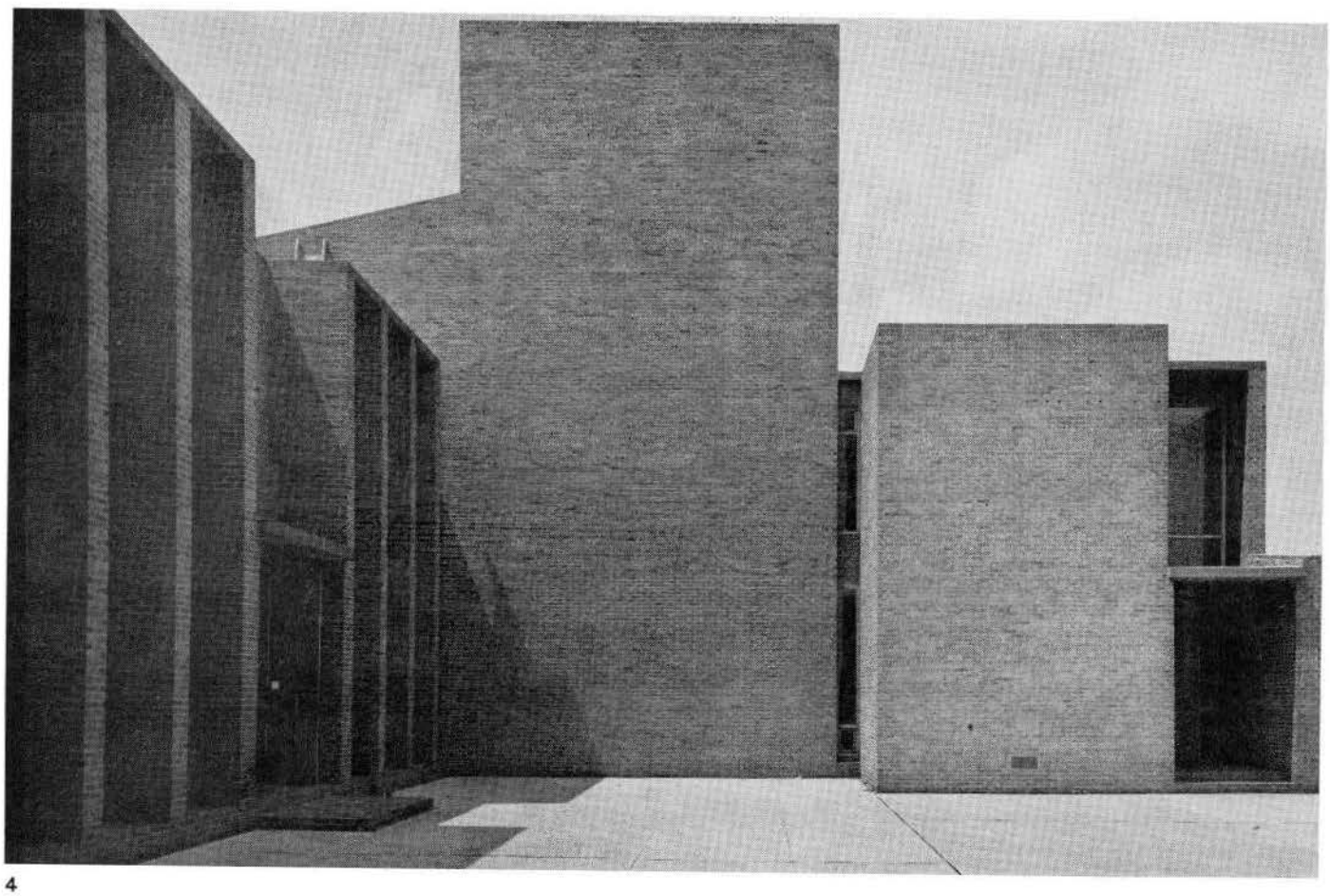
4
Exterior
L'extérieur
5
Section
Coupe



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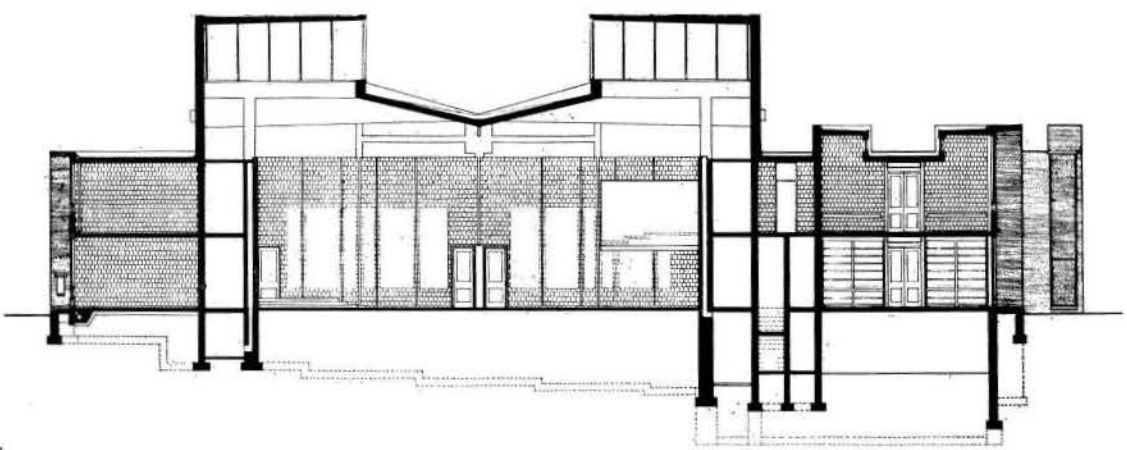
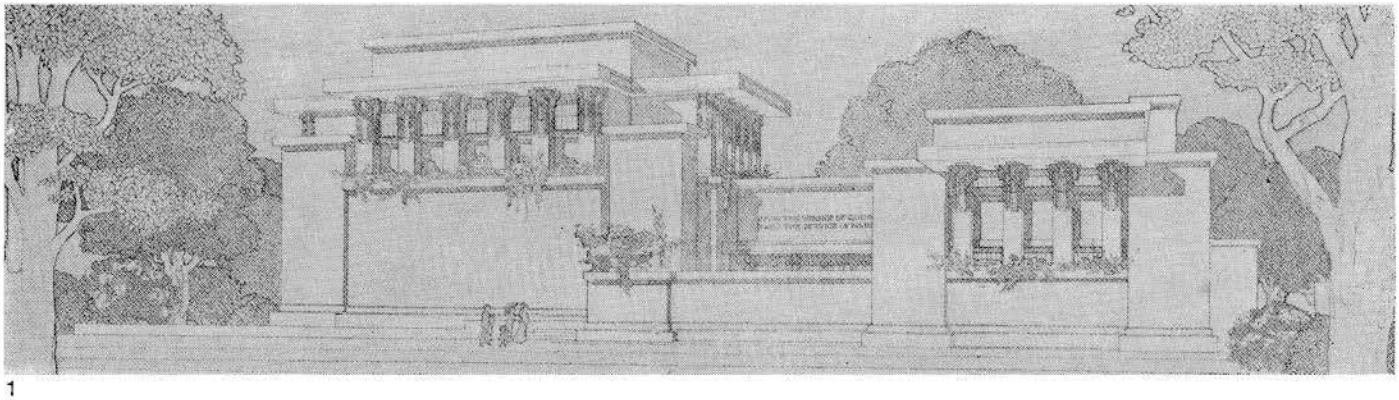


5

1
Perspective
2
Ground Floor Plan
Plan du rez-de-chaussée
3
First Floor Plan
Plan du premier étage

Unity Temple
Oak Park, Illinois

Frank Lloyd Wright, Architect



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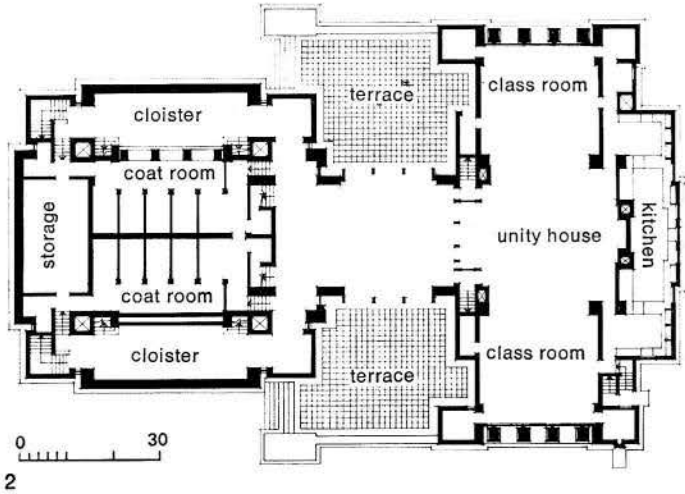

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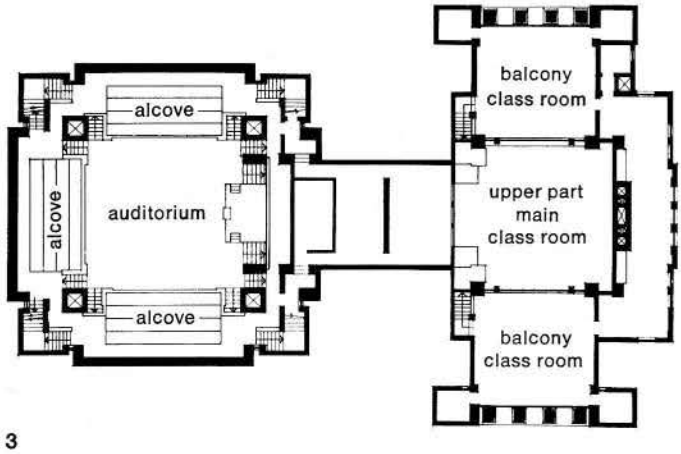

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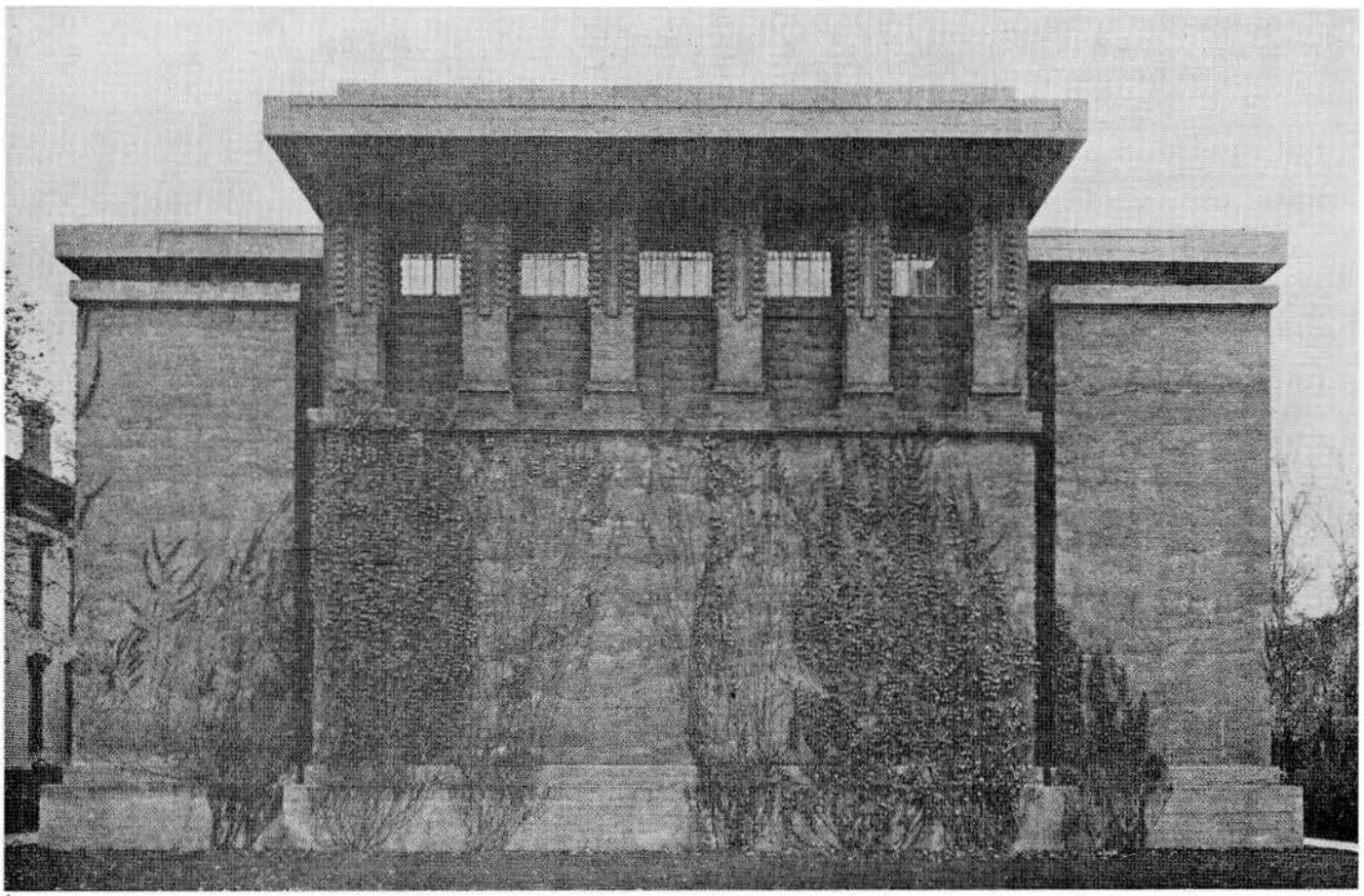
4
Exterior
L'extérieur
5
Section
Coupe



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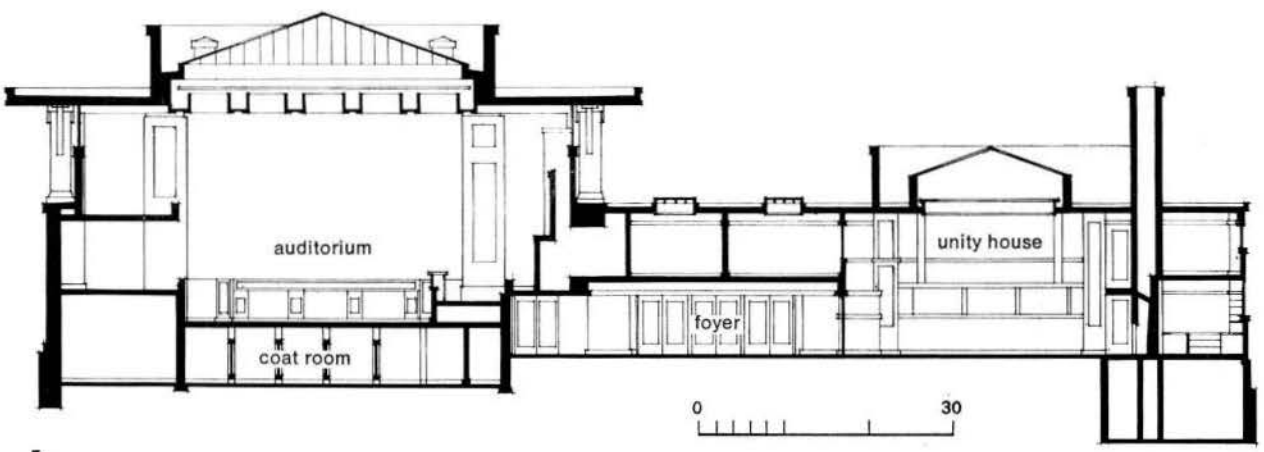

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Winnipeg Art Gallery Competition

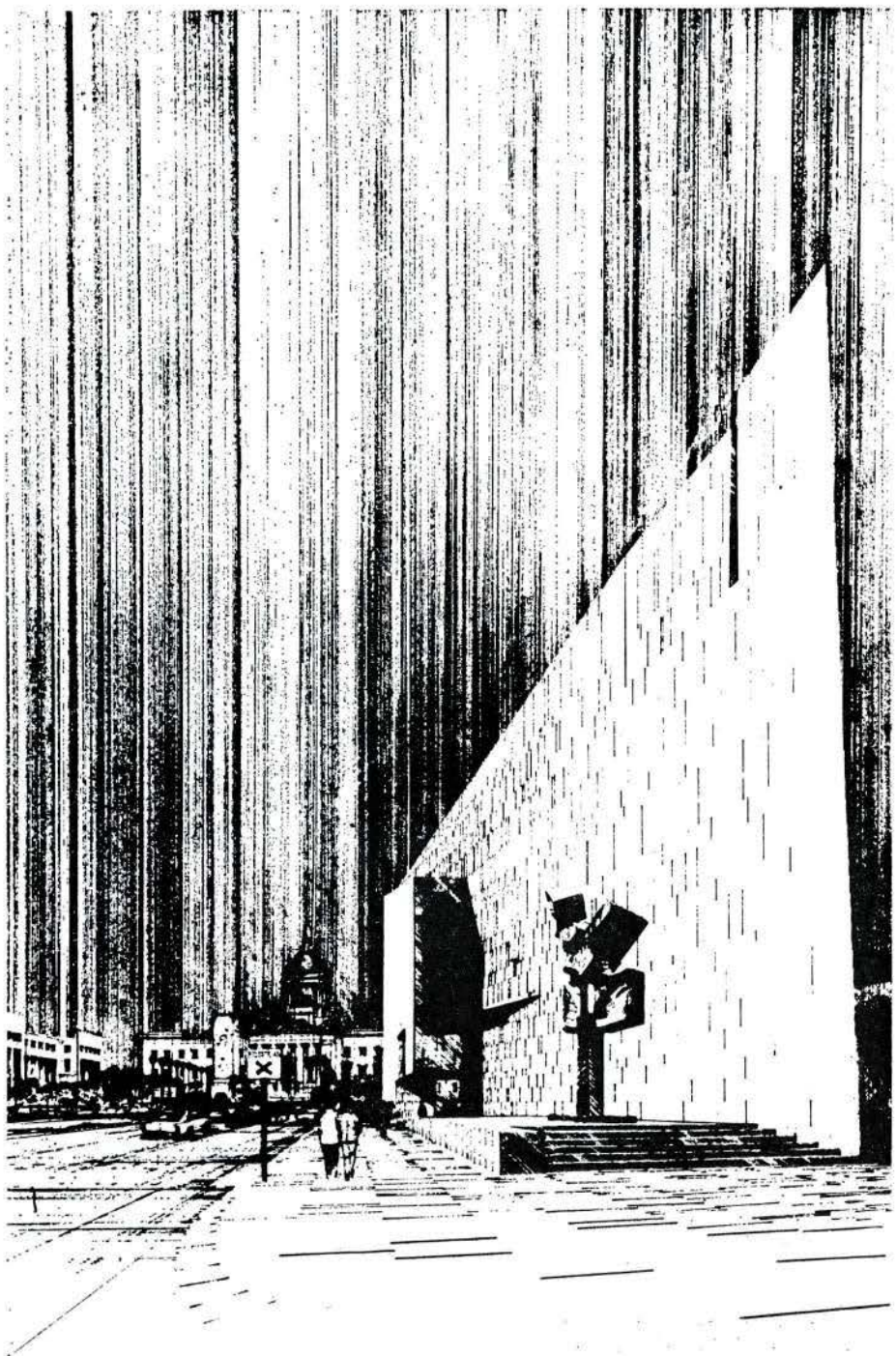
Report of the Jury

In its deliberations after fully discussing the program conditions and the mandatory requirements, the jury agreed that it was searching for a bold and dynamic symbol, a three-dimensional physical statement specifically of the aims and aspirations of the Winnipeg Art Gallery and the generally cultural environment of the City of Winnipeg. At the same time the jury recognized the building must become an integral part of the total urban fabric, enhancing and strengthening the concept of the entire area. Beyond these more "expressive" aspects, the jury devoted extensive time to detailed analysis of planning relationships, material and structural factors, lighting and acoustical details, character and quality of interior space, all of which must contribute to significant environment.

The jury feels that the winning entry brilliantly and sensitively satisfies these requirements, expressing with dignity and monumentality, the objectives of the Gallery. It exemplifies excellent town planning in its relations to the site and it demonstrates sensitive character and scale within the framework of a highly functional and dynamic plan. It is the jurors' unanimous conviction that this building will stand as a brilliant symbolization of a progressive Winnipeg.

The jury feels that it is now of the utmost importance that interested public and private bodies must exercise as much influence as possible to achieve sensitive control and development of the area immediately surrounding the site to the North, West, and South. The jury emphasized this fact that while the Winning Design is "well done" it must be augmented and supported by other quality proposals in the surrounding area if the goals and objectives of the Competition are to be achieved.

The jury congratulates the winning architect for his dynamic solution and commends the other prize winners and honorable mentioned entries for the extremely high quality of their achievements. There were many entries who demonstrated both



1
First prize, Winnipeg Art Gallery competition, Gustavo da Roza, Architect

Premier prix, concours pour la Galérie d'art à Winnipeg, Gustavo da Roza, architecte

2
Plan
3
Longitudinal section
Coupe longitudinale

First Prize
Architect, Gustavo da Roza, Winnipeg

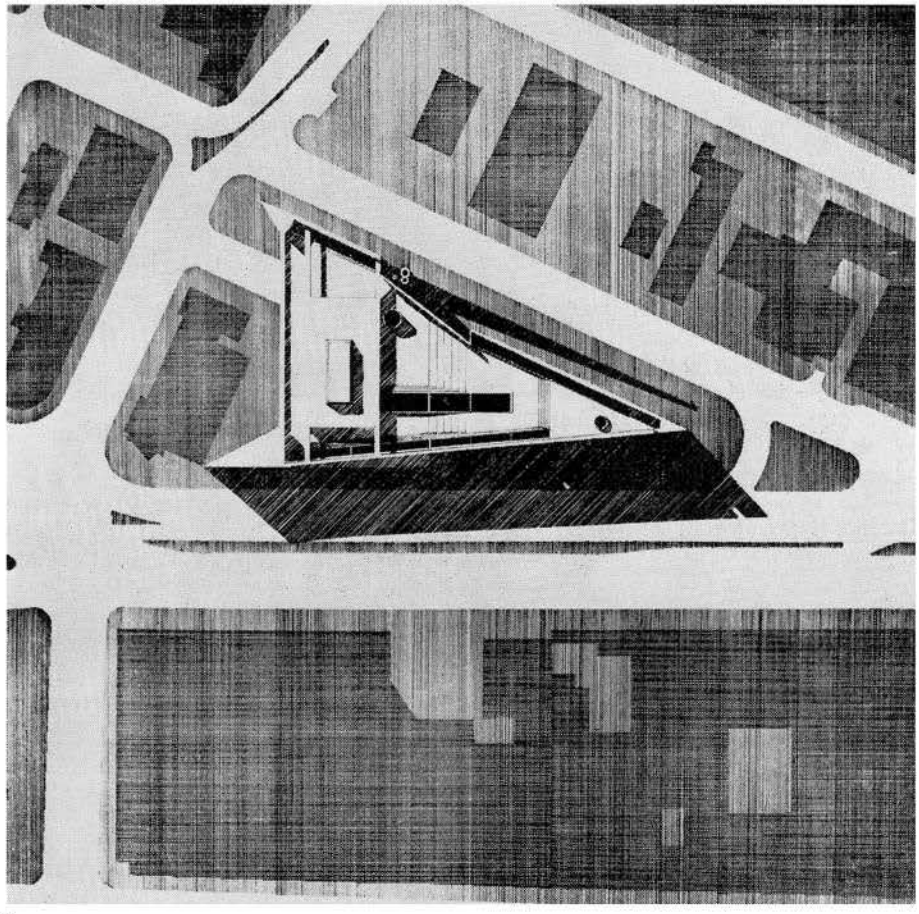
competence and distinction; it is lamentable, of course, that these many fine efforts cannot be recognized for their significant contributions.
The jury wishes to commend to Winnipeg Art Gallery for its wisdom in conducting a competition for the selection of a design and an architect for its building and to congratulate the Gallery on the significant accomplishment. The jury wishes to thank the many people who gave assistance and time to the competition and in particular the jury wishes to thank Dr F. E. Eckhardt, Director of the Gallery for his advice and counsel and Professor James Lewis for his tireless assistance to the Professional Adviser who worked so long and so hard in making this a most successful venture.

First Prize

The jury was unanimous in their choice of Entry #45 as the design which most completely satisfies the basic requirements of the Competition Conditions and holds the highest promise of fulfilling the criteria for judgement.

A museum should be a medium of communication between artifact and individual. Without complication the winning design admirably performs this task without complication; it is a bold, dynamic statement with indigenous qualities suitable to the city of Winnipeg. It is clearly a monumental solution, classic in every sense and a memorable unique form. In terms of site and urban context it is an excellent town planning concept since by form and spacial continuity it respects and strengthens the concept of Memorial Blvd. and the Legislative Building.
The design responds to the site. The absolute clarity of plan and building forms pays loyality to the unique geometry of the triangulated site. The jury is firmly convinced this design is one of the finest if not the greatest triangular building designs yet achieved.

Recognizing the progressive and aggressive rule of the gallery, there is ingenuity of planning with direct and proper relationship of the various public, administrative, and



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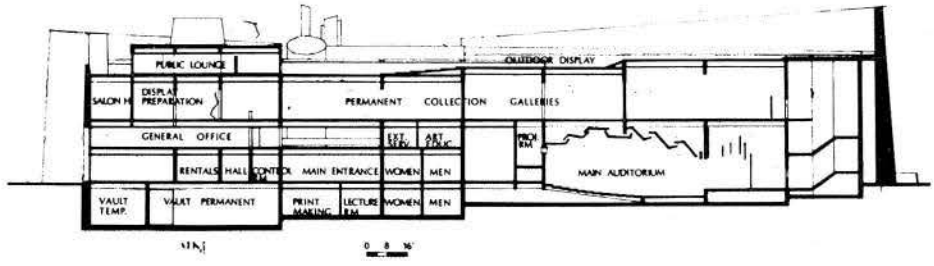
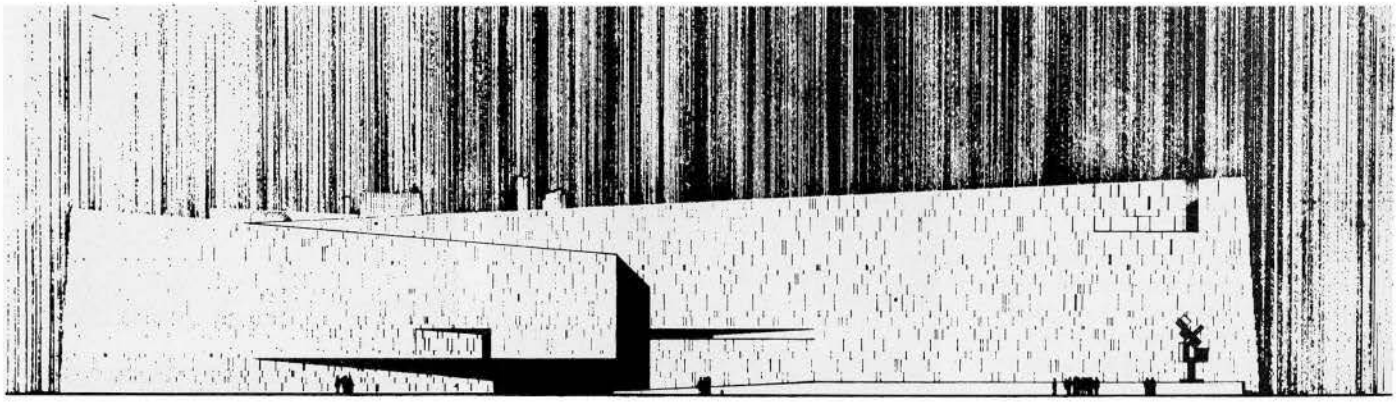


3

4
East Elevation
Elévation est

5
Ground Floor Plan
Plan du rez-de-chaussée
6
Gallery Floor Plan
Plan d'étage de la Galérie



4

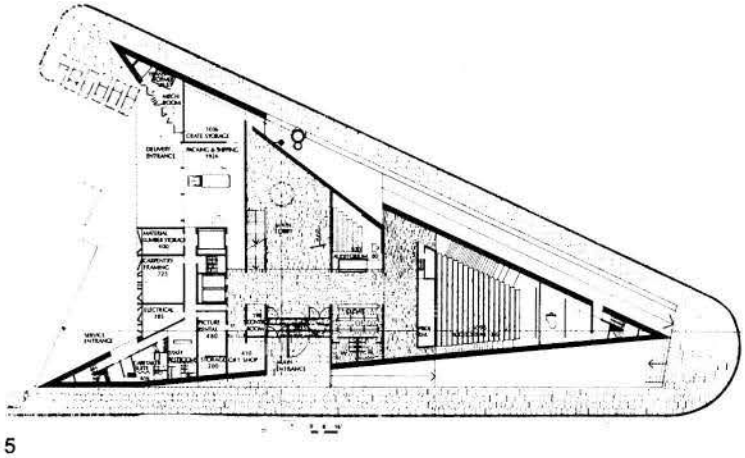
secure functions. The galleries are easily accessible to the public and provide rich, exciting and distinctive exhibition space.

A higher degree of flexibility is possible while the use of natural light and artificial light is thoughtfully solved.

Through its bold yet elegant form, its sensitive scale and detail the building has unique and strong symbolism and will clearly offer the image of a progressive and dynamic Gallery.

Second Prize

The entry awarded second prize was held in high regard by the jury because of its bold, simple and uncomplicated statement. The design, basically an introverted scheme, achieves a strong sense of unity and symbolication by means of one large internal space enclosed by a great sloping glass roof. The jury admired the quality of this multi-storied central display court around which all other functions related and felt this feature the strong point of the design. While the galleries are visable from the court and spacially are an extension of the court and five spaces, they were criticized as lacking sufficient variety. Receiving facilities were considered somewhat inadequate as was the vertical circulation to the galleries. Exception was also taken to the placement of the educational facilities on the top floor with the attendant problems of circulation and



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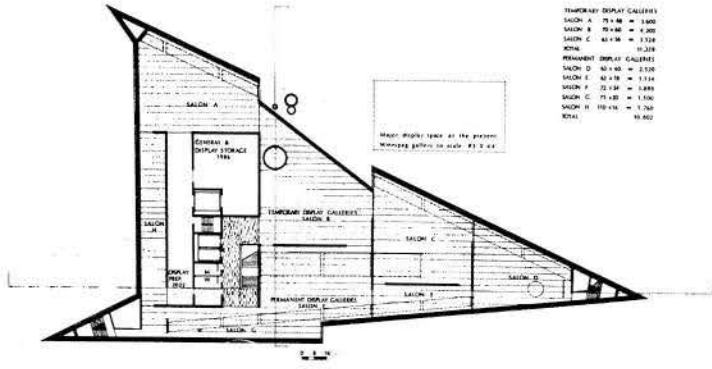


6

1
Site Plan
Plan d'emplacement
2
Section
Coupe
3
Model
Maquette
4
First Floor Plan
Plan du premier étage

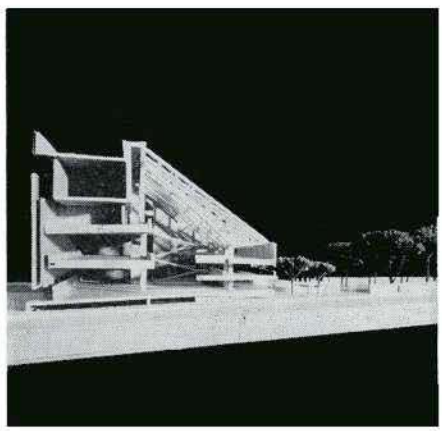
5
Model
Maquette

Second Prize
Gordon S. Adamson and Associates, Toronto

control. Additionally the design suffers from a certain lack of overall refinement and development.

From the urban siting aspect the plan is somewhat less of consequence of the site and does not materially strengthen the concept of Memorial Blvd.

None-the-less the bold, massive, evocative form has dramatic architectural expression; the sloping north light symbolic of "gallery", the magnificent central space with its dramatic lighting and the buildings strong sense of unity would generate unique and powerful image for the Gallery.



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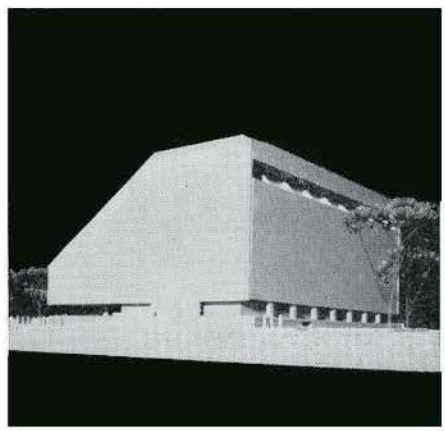

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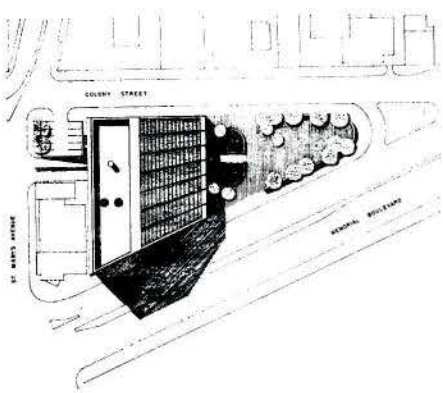

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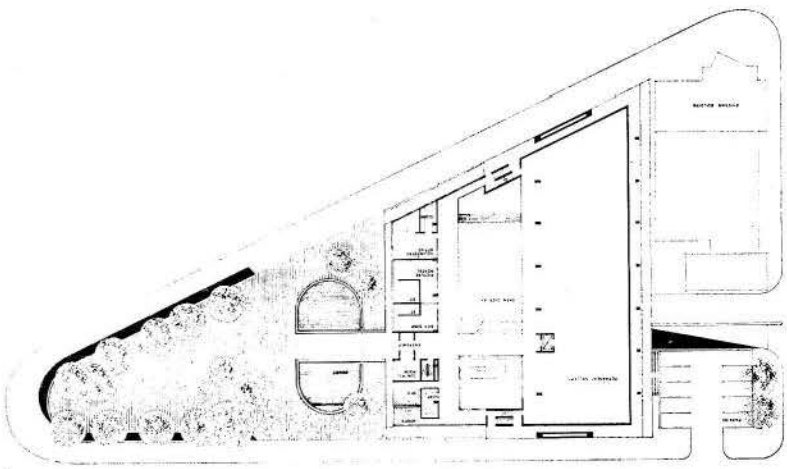

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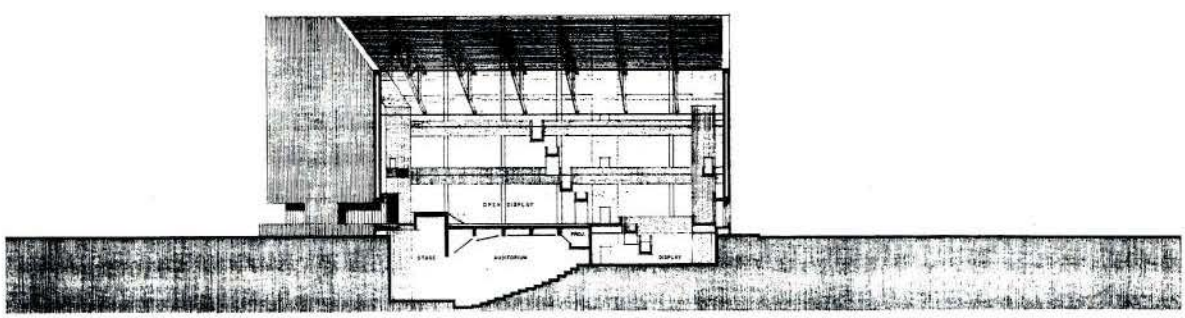
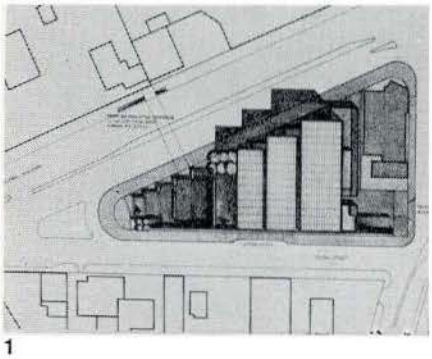


2

1
Site plan
Plan d'emplacement
2
Section
Coupe
3
Perspective
4
Ground Floor Plan
Plan du rez-de-chaussée

Third Prize
Libling Michener and Associates
and Joseph Brunon, Winnipeg



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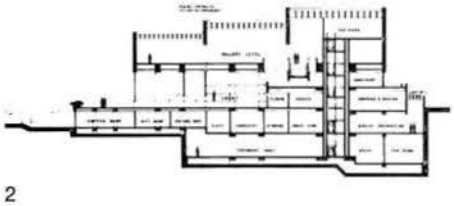

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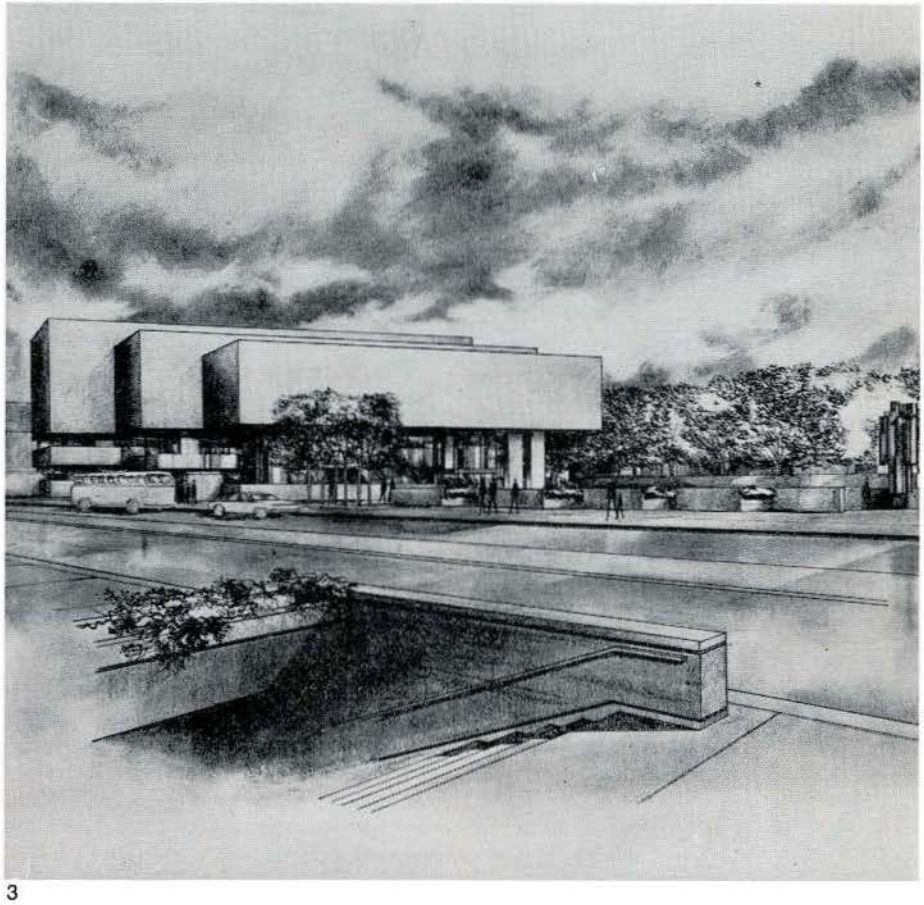

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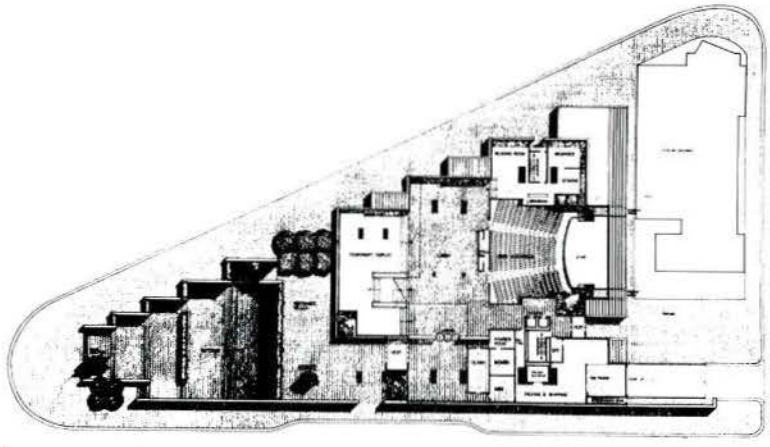

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Third Prize

The jury particularly admired the entry for its excellent internal planning, demonstrating thoughtful and thorough understanding of museum functioning. Public circulation to and thru the galleries, the functional planning and servicing of these spaces, and the spacial quality achieved is outstanding.

Thru the skillful treatment of the exterior entry court, the openness of the lower circulation and viewing spaces and the hovering enclosed volume of the upper gallery floor, the design is a strong response to the site conditions and the surrounding urban context.

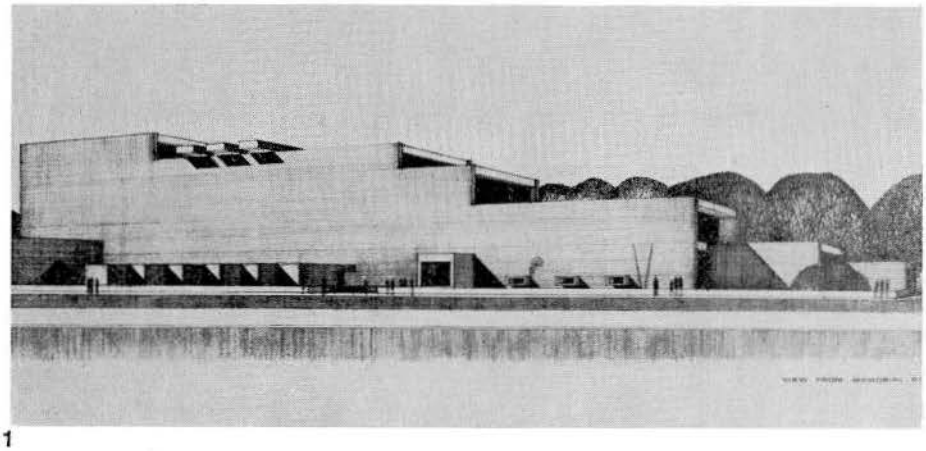
The geometry of the building, a series of three proportional rectangles lends itself to future expansion by the remarkably simple procedure of an additional fourth repetitive rectangle.

The jury felt the architect did not fully exploit the design potential inherent in the scheme and lamented the general lack of design development.

1
Perspective
Architects, Osaka Yamashita Keenberg, Winnipeg

2
Perspective
No 10 Architectural Group, Waisman Ross Blankstein Coop Gillmor Hanna and Carl Nelson, Jr. and Jonas Lehrman, Winnipeg

Honorable Mentions



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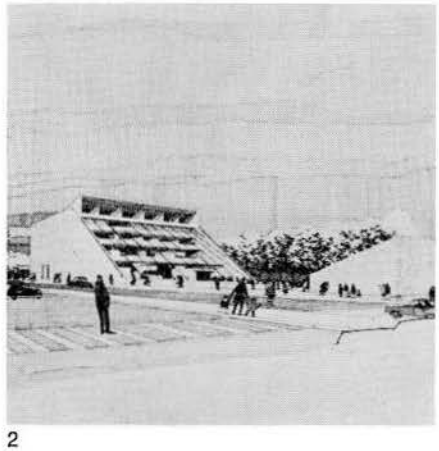

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Honorable Mentions

Conceived as an integrated series of multi-leveled galleries around a large central space, the design *by Townley Matheson & Partners and D. R. Erb* was admired for its overall unity and skillful treatment of space. While overly complex and intricate the design does have great consistency. In addition to the flexible and varied galleries, the functional plan has well located educational elements and a fine auditorium. One of the better graphic presentations in the competition, the brilliant overall design fails to recognize its greater obligations to total civic design.

A highly animated piece of urban sculpture, the entry by *James Colin Strasman* features a great sunken covered court which becomes the main entry and the focus of the gallery as an inviting setting for exterior display and use. While the jury admired the character and quality of this court, they did feel the proposal did little to strengthen the overall urban context. Basically, an extremely orderly, functional plan, with well located and flexible galleries, the entry to the building suffers in being somewhat devious. Additionally, the jury felt that the location of the public lounge and coffee room, particularly the latter, somewhat inappropriate and negating the quality of the entry.

Design by *Donald H. Gorman*. A stimulating design, which proposed a diversity of building forms, rather than a single envelope as an answer to the unique building program and the irregular site configuration. Generally thoughtfully conceived, the plan features an inviting and well developed entry and sculpture court, flexible and well controlled galleries. Access to and control of the upper level studios is somewhat difficult. The animated, somewhat ponderous building forms, while promising, suffer from insufficient development.

Design by *#10 Architectural Group*. Certainly one of the outstanding entries in the competition, this design is a brilliant and sensitive solution to the unique site and demanding program. In its highly imaginative use of the site, its integration of internal and external space and its strong visual form, the design demonstrates high competence and quality. The jury admired the quality of the internal spaces and the ease with which the building functions. The great central interior space with its north wall of glass serves to integrate the various internal functions, as well as providing an inviting visual symbol. The totality of the design, the admirable graphics make this entry worth careful study.

Design by *Henry Fliess*. The unique sculptural forms of the building and the internal spacial qualities of this entry, an outgrowth of the central theme of tiered north and northeast orientated skylights over a series of stepped galleries and studios, was admired by the jury. Internally, provides interesting and fairly flexible galleries, clearly visible and discernable from the lobby and exterior, however, their shapes and sizes mitigated against this solution. Although somewhat divided on the contribution of this design to the amenities of Memorial Blvd, the jury did feel that the tiered mass of the galleries and studios along with the hollowed out entry – sculpture court and the auditorium stage mass at the pivoted point of the site does provide a bold solution to the triangular site. Generally, the design is characterized by careful consideration to functional planning and thoughtful attention to detail.

Design by *S. W. Osaka, J. S. Yamashita, R. Keenberg*. This entry was admired for its straightforward and economic organization of the various museum functions and its quiet unassuming yet dignified expression. Within the relatively rigid geometry of the overall design, the system of clear plan structure and demountable panel system, the entry achieves a high degree of planning flexibility and interesting space. The separation of the more unique auditorium form from the main structure, the entry bridge over the sunken sculpture court and the spatial continuity of lobby-gallery all contribute to the overall design consistency.

Architecture as a Political Strategy

Douglas G. Bailey
with S. N. Benjamin and Andrew R. Strauss

Messrs. Bailey, Benjamin and Strauss are principals in the Intendes Group of Toronto, consultants in integrated environmental design.

The architect of the future must be much more accurate about his role in developing the social as well as the physical environment if he is going to communicate effectively with town planners, engineers, lawyers and other agents of environmental change. Already there are significant gaps in communication among these disciplines about their relationship in planning and implementing comprehensive development.

What is needed is a careful examination of the role of the architect and his practice in the development of the social environment. Professor S. N. Benjamin in this issue has already pointed out a gaming situation to teach the architect to communicate. *(Schools Section, page 57.)* However, more fundamental and conceptual thinking is required about the ways in which the architect may practice and operate effectively as one of the agents generating social and physical growth.

To do this, we need a systematic review of the social process of development, and within that context, we must form some clearcut concepts about the role of architecture as political strategy. Other disciplines have used models to chart growth and development. A model is a set of abstract elements forming a structure of relationships. Economists, for example, have been particularly successful in putting together systems of economic elements and their relationships. In the case of the architect, a conceptual model of development which identifies the role of the architect and his architecture should indicate an approach to the effective integration of the architect with others involved in the generation of the environment, and society as a whole.

The model desired here, however, must consider the entire process of development. To do this, we may select social interests, components of public issue and the fundamental building blocks of political decision, as the basic units forcing decisions about change. A simple model may be constructed which traces the flow of interests from small social interest groups through very general political groups to public or corporate decision. *Generalization* is a convenient label for the flow through social-physical space and time of small group wants to public policy decisions. Once a social want has acquired sufficient popular interest it enters the popular political process to compete with other wants for scarce resources. This is the content of social, public and private issue.

Since individual experience must be generalized for effective communication, the passage of social wants from small groups of people to large groups must also be a process of generalization. The wider the popular support for a particular interest, the more generalized it must become.

On the other hand, once a policy decision has been made, awarding public or corporate power to a want, this decision must be implemented back into the scale of the small group. This passage of political decisions back to the small group scale is a process of *specification.* The purpose of this paper is to examine the character of these two processes in the environment, and to identify the relative location of architecture and the architect within them.

The Path Upwards to Political Power: Generalization

Time and social-physical interactions are factors in the flow of interests from the small group through to public or corporate decision along the path of generalization. It may take a great deal of time for particular interests to acquire enough popular support to compete successfully against other interests demanding decisions on the public or corporate level. The law, the economy, even ethics and morals act as filters to the acquisition of popular support for interests. Once a particular interest gathers enough support, it may become a component of issues, competing with other interests for scarce resources of economic and social power. Considering the processes of generalization and specification in the

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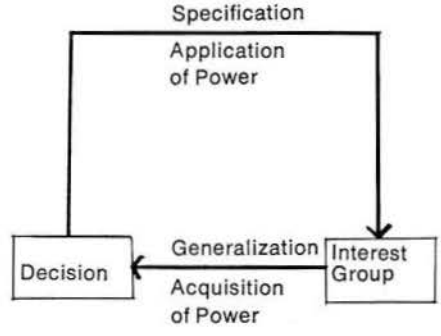
The process of generalization and specification
Le procédé de généralisation et de spécification
2
The model of generalization and specification in the environment
Le modèle de généralisation et de spécification dans l'entourage



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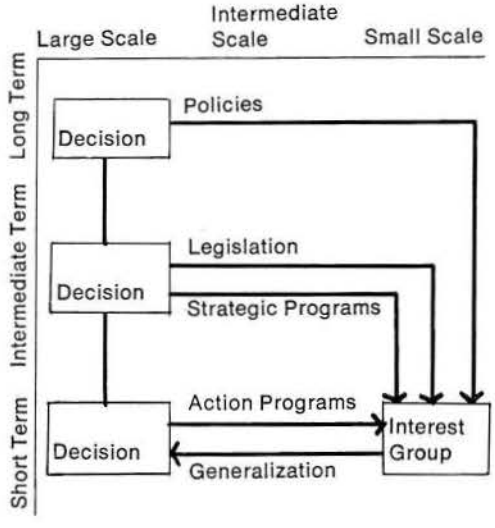

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over-all structure of the environment, individual interests and competing interests in issues are usually short-term.

The three basic phases of generalization in terms of the social physical interactions may be identified as (1) the scale of the individual interest and interest group, i.e. small scale and geographical location; (2) the scale of the issue and its component interests competing for power, i.e. the intermediate and regionalized geographical space; and (3) the large scale and geographical space.

Notes on architecture in the process of generalization

It is obvious that architecture and the architectural profession is, in itself, an interest supported by interest groups. Legislation concerning the practice of architecture has occurred because the architectural interest group has been able to acquire sufficient popular power to compete with other interests to require resolution in the process of political decision. Architecture, or at times the lack of it and the corresponding need for it, must also generate interests and thereby issues. The fact that zoning regulations and other public legislation regarding architecture may be challenged from time to time is to some extent indicative of issues generated by architecture or architectural interests.

Thirdly, we might notice a similarity between the process of architectural design itself and the generalization process. Just as generalization is the compromise of individual interests for the attainment of public or corporate powers, design is the creative compromise of a great body of constraints, interests, and considerations.

Finally, we may note that the architect in his practice may act effectively to assist in the generalization of interests and thereby the acquisition of popular powers for interests. Experience plays a major role in generating social interests. It serves as the basis for common social interests which may be communicated and thus generating.

It is possible to relate the individual experience of architecture as it is communicated into more powerful public interests. One example is the history of American urban renewal from the 1930's to the present. Another is the popular surge of cultural centres in North America in the last ten years.

The Path Back to the Interest Group: Specification

Once corporate, legislative, executive, or administrative decision has been made concerning the allocation of power to an interest, the interest has become a policy and a program. The path of specification is in effect one which interprets such decisions back into the social, physical or economic environment of individual interest groups. Of particular concern here is public specification, since the development of the social environment is by and large a public responsibility.

The specification of public decision into forms which may be implemented, e.g. social, economic or physical developments, may be and often is directed by political strategy. This political strategy may allocate the program to particular interest group areas, and/or it may dictate the means of its implementation and administration.

Specification, in the sense we are using here, includes every conceivable kind of public action: from pricing regulations to housing projects, from administrative policies to tax legislation, from social welfare to long range planning. Let us consider for a moment the relationships of the politician and the interest group. This we may call a supply and demand situation. The interest group demands implementation of its interests by pressure upon the elected official. The elected official, in terms of his own personal political interest must supply the implementation of this interest in a form which is acceptable not only to the initiating interest group, but also to the constituents of his popular support. In undertaking this enormous task, he has the assistance of administrators and other officials from institutions created to implement executive and political decisions.

The period of the process of specification may extend from the short term, through the intermediate, into the long term. The time span of a particular decision depends upon both the agents of specification and the degree to which interest groups consistently apply pressure for effectuation.

The result of specification is some recognizable change in the environment of the interest group. To the degree that the interest has been effected in the environment, the initiating interest group experiences satisfaction.

Treatment of Dynamic Social Forces in the Model

This model thus far has identified elements in the flows of interest. But beyond elements this model recognizes certain dynamic social forces which must be recognized prior to a discussion of the architect and architecture. These forces are the basis of all relationships between architecture and other environmental developments.

The first of these forces is the human energy which is expended in the process of generalization. This energy, both physical and psychological, is scarce. The generalization of interest requires consistent efforts at communication by the group promoting it. Each individual has a limited capacity to understand, and more importantly, to identify with and support various interests in society.

When the human, psychological and social effort of interest groups is blocked by unsuccessful attempts to acquire popular or public powers, the result is frustration: wasted energy. A multiplicity of disciplines may be identified in the generalization process due to the frustration of interest groups to a large extent. To name a few, lawyers represent interests in legal issues, politicians represent interests in government and legislative assemblies, and welfare institutions and agencies represent interests in established institutions.

Power, both public and private, is yet another force of considerable significance in the model. Power is defined here as the organization, resource, and opportunity for change. Power is always scarce in the short-term, requiring such institutions as make up the components of the paths of generalization and specification.

The Place of the Architect and Architecture in the Model

In this model of the environment, the location of the architect and of architecture is closer to the individual interest group than to executive and political decision. From the short to intermediate time range the political role of the architect is to provide change in the experience of the environment, and to satisfy individual interest groups.

The architect acts, in the specification process, to resolve issues and to satisfy interest groups by implementing decisions into specific arrangements of resources and power which result in positive changes in the environment. He does this in the design of buildings: the arrangement of resources of physical space, investment, and materials within the context of the physical and organizational environment. Just as the process of architecture involves the resolution of architectural issues, the product of this process resolves social issues.

The architect is unique in his position in resolving issues at a small scale and affecting interest groups. He is the tool of other decision-makers, in the sense that they award both power and specific interests to him. However, it is the architect's decisions in architectural process which

can cause the difference between frustration and satisfaction of interests concerning the physical environment.

The Example of Urban Renewal

Urban renewal presents an excellent example illustrating some of the concepts discussed above. Interest groups in almost every large city in North America have acquired sufficient popular power to make urban physical and social problems a major issue. At first this issue was resolved by recognizing some form of physical change in cities, as required. The American history of urban renewal (first redevelopment, then renewal, and now the addition of conservation) represents a range of political strategies. This range was required since the initial strategy of redevelopment did not satisfy interest groups or resolve issues about urban problems.

An important point to note, is that urban renewal has succeeded or failed only in particular cases. Evaluation of the strategy always depends upon the interests pertinent to particular localities. It is in the interpretation of urban renewal strategy into fact that the architect has played an important role.

The town or city planner and the urban designer have both had a great deal to do with the implementation of the urban renewal strategy. However, the scale of the physical environment upon which the planner and urban designer work is distinct from the scale of the architect as is the social scale at which each of these work. The planner and urban designer work over the longer range time period and in the scale of the issue; whereas, the architect works for effect over a shorter time range, and in the social scale of the interest group.

Architecture as Political Strategy

As we have mentioned, architecture is closely related to the interest group in both the specification and generalization processes. Both the interest group and architecture are of the shorter term in effect upon the social and physical environment. Since the elected political official or representative is voted into office in the short term and must demonstrate effective reaction to constituent interests if he is to be elected again, he therefore is closely tied to the very visible effects of architecture. In the specification of his decision, architecture may act to satisfy interest groups, to resolve popular issue, and to demonstrate on a local scale the effectiveness of the decision. In this very real sense, architecture has always been political strategy. However, through the use of this model for the identification of the architect's role in social-physical development, it is possible to develop some clear guidelines for a more strategic link between the architect and other agents of environmental change. To this end architecture may become a more effective political strategy, and the architect may determine stronger social bases for design and decision. In turn, this orientation in process and product to social as well as physical resolution may bridge those gaps between the architect and other agents of change in the environment.

First, in a particular architectural project the architect may meet with groups having interests in a particular project. He may include these interests as criteria for his programming and design, and may resolve them socially with his decision in design.

He may include in his design features and spaces which express resolutions to issues and which represent interests in physical form.

The architect may express conflicting social interests in terms of alternative design concepts, thereby providing interest groups with a clear definition of the issue.

The architect may act as a representative of both social and physical (and economic) interests to agents of environmental change working on other social-physical scales and designing or programming for other time ranges of effectiveness.

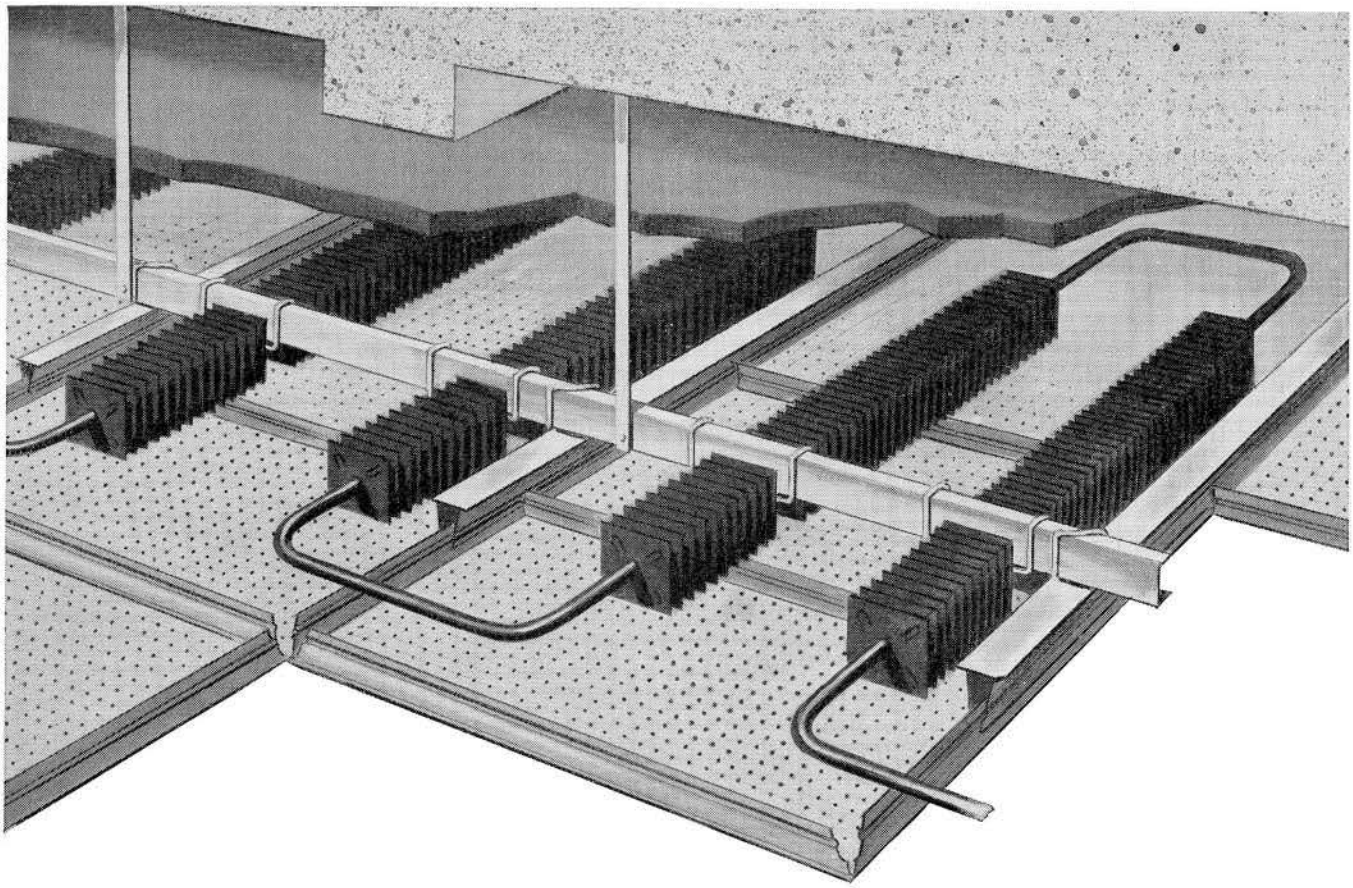
The architect may act to interpret large scale political decision into the context of the small scale. In this way he may make practical judicial decisions about the applicability of executive decision to the particular character of the particular physical and social place.

Finally, the architect may generate interests which provide more effective resolutions to major public issues, or which qualify exceptionally harsh or exceptionally weak resolutions already determined.

Further Research

Beyond these few observations, further work is required to clearly establish criteria and methods to more effectively tie the architect and architecture into the whole of the social-physical environment, and into the process of its development. Since architecture is a very particular change in the environment, there can be no established rules for relationships with the social environment.

What is required is a system for systems; the specification of how social and economic criteria and parameters may be determined. This approach will specify the ways in which these factors may be developed into systems making them an integral part of architectural design and architecture. □



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Tendering and Contracts Part 1

Technical Technique 6

F. W. Helyar and A. J. Mott

This is the first article to appear in the new technical section under the editorship of Frank Helyar, MCIQS, and is first in a series of articles intended to promote discussion on a number of topics including the new role of the architect, the contractor, varied specialists and the client in the building industry. A. J. Mott, a quantity surveyor with Interurban Properties Ltd., Toronto, is collaborating with Mr Helyar on this and the next three articles on "Tendering and Contracts".

The lush days of the middle sixties are over. In most areas of Canada architects are no longer having difficulty finding sufficient tenderers. Building owners, caught in the squeeze between higher construction costs and a general shortage of money are not rushing to start new projects. At the same time many architects and their clients are taking a hard look at time-honored tendering and contract practices to see whether there aren't better ways of appointing a contractor to carry out a construction project.

Canada is not the only country where current contract procedures are being critically appraised. In the United States the new role of the architect is bringing about changes, and in Britain as long ago as 1944 the Report of the Simon Committee on the Placing and Management of Building Contracts was severely critical of open lump sum tendering. More recently in Britain the Banwell Committee issued a report containing a paragraph which, while referring specifically to contract procedures, could very well be used as a model for anyone concerned with the future of the construction industry.
It stated: "It must be recognized that rigid adherence to procedures sanctified by long tradition is not necessarily the best way to take advantage of modern techniques, industrialization and modernization and it will be necessary in the future for there to be flexibility and freedom of choice to both private and public clients alike; the question to be asked is not 'is it orthodox' but 'is it the best solution'."
Before we go on to discuss present tendering and contract procedures in more detail, it might be as well to look briefly at how they were evolved. James Nisbet in his book *Estimating and Cost Control*[1] gives an account of the introduction of lump sum tendering in the nineteenth century and, while this applies particularly to Britain, there is no doubt that the process as it developed there was the foundation for the present system on this side of the Atlantic.
Prior to the 17th Century the design of buildings was confined to the preparation of a ground plan or "platte" which was made by a land surveyor who sometimes, for an additional fee, would prepare an elevation or "upright". An "upright" was usually only asked for if the contemplated building were one of some importance.

As an interesting sidelight on the value which was placed on the preparation of the drawings in those days, two adjoining entries in the Black Books of Lincoln's Inn for 1561 help to put the importance of the embryonic architect in its proper perspective:
1. Paid Potter the Bricklayer for drawing the plans for building The Inne 4s.
2. Received a fine from Fleming for having his beard too long 3s 4d.
The "platte" was given to the craftsmen, each of whom worked in his own trade either as an individual or as a small group, calculating their own costs and sending their bills to the building owner. If the job were large enough the work would be under the general supervision of a surveyor who was usually the master mason or carpenter. He would set out the job and work on the more intricate details, while his apprentices and those who would complete the work looked on and worked under his guidance.
It was Inigo Jones on his return from Italy who became the first English architect to design and superintend the erection of a large building from beginning to end, bringing with him the Italian custom of giving the responsibility for the construction to one general contractor who received tenders from the craftsmen in the individual trades. Inigo Jones' Lincoln's Inn Chapel, designed in 1620, was built by a single contractor as was the Goldsmith's Hall ten years later and the practice became quite common, at least for the larger and more important buildings. However, it still remained customary to pay the contractor in advance for a proportion of the work and records exist showing examples of materials being bought by the owner to supply to the contractor, of payments being made on a weekly basis, and of an agreed first payment with the remainder being paid in equal instalments during the progress of the work.

Although the idea of employing a single contractor for large projects in London became quite commonplace, it still remained the practice outside London and for all smaller projects to employ individual craftsmen and pay them at agreed unit rates based on measurement of their work after they had finished. This continued into the 19th Century when two events occurred which brought about the general contractor and the stipulated sum contract as we know them today.

The first event was the decision by the government during the Napoleonic wars of 1792-1815 that "on the score of economy and for the sake of despatch" each building project should be under the responsibility of one general contractor. Thus, instead of only major projects in London being built under this system, all projects both large and small throughout the country were required to employ a general contractor.

The second event was the emergence of the shrewd and hard-headed industrialist during the industrial revolution. Whereas in the past the client had taken a somewhat philosophic attitude towards costs, the new client of the 19th Century wanted to know in advance how much his building would cost him. The general contractor therefore found himself being responsible not only for the construction of the building, with all the risks that might entail, but also for providing in competition an estimate before work started, and guaranteeing it to the building owner.

This idea of receiving competitive tenders from a group of general contractors and the one submitting the lowest bid being responsible for carrying out the construction of the project has continued until the present day, and is still the most popular form of tendering. Recently, however, doubts have been expressed by many architects as to whether this is really the most effective and economical way of selecting a contractor and having a building erected.
A fundamental question in any consideration of tendering and contract procedures is that of risk and responsibility.

[1]James Nisbet, Estimating and Cost Control, B. T. Batsford Publishers Ltd., London, 1961.

Before the general contractor came on the scene most of the risks were assumed by the building owner. The workmen were paid for the work they performed. They didn't guarantee the costs in advance, and if the building materials did not arrive on time they had no financial responsibility in the matter. Today the general contractor makes himself responsible for these things together with many others when he enters into a stipulated sum contract and this is one of the reasons why he is employed. There are, however, occasions when a proportion of the risk is taken away from the contractor, and we can therefore look at two basic types of contract in general use today, the incentive and risk-bearing contract as opposed to the cost reimbursement contract.

Incentive and Risk-bearing Contracts

In this type of contract the contractor obtains the work in competition with others, the price he quotes usually being the determining factor. The advantages of this method are well known. It is a well recognized method having been used for many years and should cause a minimum of trouble to both the architect and the contractor. The client is aware of how much his building will cost before construction starts, and he knows that he is paying the lowest possible price for the particular building his architect has designed for him at the particular time tenders are received.

Against these advantages must be set the many disadvantages. The architect and his consultants must have adequate time to prepare the drawings and specifications in order that tenders can be called, and all these details must be attended to before a contractor can be selected and work started on the site. The contractor is not available, at least in a formal capacity, to offer the benefit of his considerable practical skill and knowledge until after the design has been completed and this might be considered to be the biggest single drawback to this system. The percentage of projects a contractor can hope to obtain is not high, but the cost of submitting a tender is. The contractor usually tries just as hard on the jobs that go to someone else as he does on those on which he is successful so that the total expenditure of time, money and effort in tendering is very wasteful. When open tendering is used, very often a marginal financial advantage is the only factor considered when accepting a particular tender, and there is the possibility of employing a contractor whose competence is suspect, whose performance is negligible, and whose finances are shaky, all of which can lead to endless difficulties for the architect and his client.

The Simon committee previously referred to makes this point and then goes on to say: *"There is only one definite guarantee of a good job — a competent and honest builder who has obtained a fair price and is just as determined as the architect to maintain a good standard of work. It is therefore a fundamental condition of good building that every contract shall be placed at a fair price with a responsible builder."*

More marginal perhaps but very important is the fact that when submitting his tender the contractor does not have the time or the incentive to give proper consideration to the detailed planning of his organization and this leads to the submission of contract times for completion without preparing a detailed operational program. Too often insufficient time is given to the contractor after signing the contract to allow him to organize his plant and labor effectively.

Despite these disadvantages this method is likely to be the most acceptable for some time to come. Indeed, under normal circumstances its advantages still outweigh its many disadvantages. The contractor has a high incentive to keep his costs low in order to make his profits as high as he can. However, coupled with this is a degree of risk for which he must be compensated and which is likelier to become higher with the industrialization of building. If he has to increase his expenditure on plant and equipment because of increased industrialization this will only become economical if it is spread over a large number of jobs, and he will only be able to see the results of his decision to make this expenditure when it is too late to go back and his risk is therefore greater.

Cost Reimbursement Contracts

In this type of contract the contractor may be appointed, or he may be selected on the basis of a quotation on a percentage or fixed fee. The contractor does the work at cost to which is added his fee. The decision to use this type of contract may be based on the fact that the work is mostly or wholly alteration work which is impossible to estimate accurately in advance, or there is an urgent need to get the contractor onto the site before all the details of the project have been worked out. The contractor's risk is very low and it would take a very inefficient contractor to lose money on a cost plus contract. His incentive is also very low and, even though much of the work may be done by sub-contractors who can be selected by competitive tendering thus giving a fairly high element of competition, there is not the same sense of getting on with the job that there is with a stipulated sum contract. In fact, where the fee is calculated as a percentage of the cost there is a built-in incentive to be inefficient because as costs rise so does the fee. Building owners are not usually very receptive to the idea of cost plus contracts. There is no advanced guarantee of what the building will finally cost and there is always the feeling that the client is being taken advantage of by the contractor. Cost plus contracts also mean additional work for the architect checking labor and material invoices.

There is certainly a place for cost plus contracts and occasions when their use is appropriate. And they do provide a good training ground for the contractor's site staff.

Target Cost Contracts

Target cost or participation contracts were developed in an attempt to give the contractor an incentive to make cost reductions. A target estimate is prepared from the preliminary drawings and specifications, and the difference between the final cost plus an agreed mark-up and the target estimate is divided in previously agreed proportions between the contractor and the client. Besides giving the contractor an incentive to improve his efficiency, he also has an incentive to suggest ways to make savings because any savings he suggests do not affect the target estimate, and the difference between the final cost and the target estimate will therefore be greater. The problems inherent in this type of contract are the difficulty of arriving at a target estimate which is not unfair to the client, and the disputes which can arise over suggested savings.

Package Deals

Although not directly related to tendering and contract procedures, certainly as far as the architect is concerned, there are enough projects being carried out as package deals today, and so few architects seem to know exactly what the term means, that we feel a few words on the subject might not be out of place.
There are really two basic types of package deals with endless variations on each. The first can best be explained by assuming a client who has a piece of land which he would like to develop. He could engage an architect for full services at the appropriate association fee who would prepare drawings and specifications, call tenders, and have a building erected on the land in the usual way. Instead he goes to a contractor or developer who will design and build the building to his requirements. He does this because he will, hopefully, receive a building which has been designed to suit his needs, on which he knows his financial commitment right from the very start, and which is less expensive than if he had employed an architect. The package dealer may or may not provide the financing for the building, and in many instances he may provide the land.
Experience has shown that the package deal does not always provide the client

CANADIAN
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CANADA

COATINGS FOR EXTERIOR METAL

by H. E. Ashton

UDC 667.637.2:624.014

This Digest is a continuation of CBD's 90 and 91 that have described coatings for interior walls and exterior wooden parts of buildings. As the composition of underlying surfaces plays a larger part in the selection of exterior coatings than it does for interior finishes, the Digests have been segregated according to substrate.

Metals that may have to be coated for exterior service are commonly used in buildings as structural shapes such as beams and columns, as sheets for cladding, and as railings, pipes and gutters. The ferrous metals, iron and steel, are the most common, followed by galvanized steel and aluminum. Other metals such as copper and its alloys are used in relatively minor proportions.

Design Considerations

Traditionally most structural elements were enclosed within the building so that the metal only required protection while it was exposed before and during construction. More recently, beams and columns have deliberately been placed on the outside. Hence, coating systems that previously were adequate may not be satisfactory for long exposure to the elements.

Design is an important factor in preventing metallic corrosion. It should, therefore, be ensured at an early stage that the design of a building will reduce rather than increase the likelihood of corrosion. Such arrangements as dissimilar metals in contact with each other and horizontal surfaces that retain water should be avoided. In addition, metal parts must be so arranged that if failure does occur they can be repainted properly. Inverted channels are an example of surfaces that are not accessible for future maintenance.

Exposure Conditions

The type of coating system required for use on new metal depends upon two factors: the exposure conditions and the kind of metal. The metal influences the choice of primer; exposure will probably dictate the kind of topcoat needed to resist a particular environment. Naturally, primer and topcoat must be compatible.

In rural areas of Canada where there are no corrosive fumes or in the north most coatings will easily last 10 years. Low temperature is not an important element in degradation of coatings unless they must resist mechanical forces such as impact while very cold. Of all the DBR/NRC exposure sites spaced across Canada, there is the least effect on coatings and uncoated architectural metals at Norman Wells, N.W.T. Marine exposure is a severe one for organic coatings, but this zone occurs only within 500 yards of the beach at sea level, unless there are special local wind or wave conditions. Sites further from salt water or at raised elevations are usually more like rural exposures.

The most corrosive general exposure areas result from a combination of marine or near-marine atmosphere with industrial air pollution. Heavily industrialized cities frequently rank between the above areas and marine sites for rate of attack, especially on certain metals. Chemical plants have very severe localized exposures, and such locations demand coating material with the required chemical resistance, regardless of whether it retains its appearance properties upon weathering.

In recoat work the determining factor is how well the surface can be cleaned and pre-

pared. As discussed in CBD 76, coatings made from the more resistant binders generally require better surface preparation because they contain fewer reactive chemical groups, which contribute most to adhesion. In this Digest the severity of exposure and the ease of preparation will be considered together in making recommendations.

Metals, as with many other materials, are most satisfactorily painted in a plant. This does not imply that cheap primers carelessly applied to unclean metal will automatically result in good durability if the application is made in a factory. It does mean that surface preparation can be more thorough and coatings applied under controlled temperatures to the correct film thickness much more readily in a plant than in the field. If all stages are properly carried out, it is possible with factory application to achieve extremely long durability, even under adverse exposure conditions, with the more resistant materials. If any of the important factors are stinted, however, there will be a disproportionate reduction in the life of the system, with the consequent necessity and expense of more frequent repainting in the field. As the cost of coatings is so small compared with the costs of the application and substrate, it is false economy to reduce what is already the smallest expense and risk a much larger increase in over-all cost.

Ferrous Metals. Because iron oxide (or rust) is chemically more stable than iron, the common structural grades of iron and steel corrode readily in most localities unless adequately protected. Steel from the rolling mill is usually covered with an oxide scale called mill scale. In the past this was left on the surface because it was thought to be an extra layer of protection and was difficult to remove by conventional means. Large areas of scale, however, accelerate corrosion of adjacent uncovered areas, and as it is impossible to ensure complete coverage by sound scale the only safe procedure is to remove it all. Another method no longer recommended for preparing steel was to expose bare steel until it was well rusted and then wire brush it to remove loosened mill scale. Numerous studies have shown that this is a very poor method of preparing iron and steel for painting.

The most effective method of preparation, and one that is absolutely essential for the more resistant coating systems, is grit or sand blasting. There are various grades of blasting ranging from light to white metal blasting. When properly carried out the process removes all contaminants and roughens the surface to improve mechanical adhesion. It is necessary, however, to control the profile or degree of roughness. If there are relatively large peaks and valleys, the peaks will only be covered by a thin coating and corrosion will commence here. Blasting must be followed by priming within a few hours or much of the advantage will be lost because the active surface produced is prone to flash rusting. Blasting is not suitable for thin sheets, which are easily warped by pressure. For recoat work blasting naturally has to be carried out in the field.

Pickling in acid and phosphating are other preparatory methods that should be restricted to in-plant use. They are not generally so effective as blasting, but are suitable for less demanding primers. Flame cleaning, i.e. passing a band of oxyacetylene flame over the surface to drive off moisture, dehydrate rust, and pop off mill scale, has been recommended, especially for field use, although it does not do as thorough a job as blasting. Power driven wire brushes, scrapers and chipping hammers should only be used on site when more effective methods cannot or, for mild exposures, need not be used. Because the work is very arduous it must be closely supervised. When steel is thoroughly cleaned in the plant, the primer to be used can be selected according to the severity of exposure or, where this is not an important factor, for quick-drying properties that ease handling problems in the plant.

Coatings. For severe exposure conditions steel can be coated, after blasting, with a vinyl system comprised of a vinyl wash or etch primer, a vinyl anti-corrosive primer, and a vinyl finish. A total dry-film thickness of 7 mils is required. Airless spray can reduce the number of coats necessary when applied by conventional spraying, thus reducing application time and costs. The vinyl system is very suitable for marine and underwater exposures. Up to 13 years' durability for vinyls have been recorded on hydro-electric installations where there was no damage from ice impact.

Primers containing a high proportion of zinc dust pigment (up to 95 per cent by weight of the dry film) and referred to as "zinc rich" primers have been used increasingly under adverse conditions. In North America the inorganic type in which zinc reacts with an alkali silicate has been most popular, while in Europe organic binders are common. Primers based on binders that dry by solvent evaporation alone have performed well without topcoats in rural areas on structures such as transmission towers. In urban areas, on the other hand, they have tended to fail rapidly, and reactive organic types, such as two-component epoxy or inorganic zinc rich, are re-

quired. Because zinc is not resistant to strong acids or alkalies all zinc rich primers need to be topcoated in industrial areas. The protective power of some primers is reduced when topcoated, so that it is necessary to ensure that the type used is recoatable. For severest conditions vinyl finishes with the wash primer as a "tie" coat are usually recommended.

In some cases the longevity of the vinyl system alone is so great that the additional high cost of the zinc rich primer is not justified. Other coatings for special use in chemical plants where resistance to particular materials is required are high-build chlorinated-rubber finishes and cold-curing epoxies and urethanes. Except for the latter, application is somewhat difficult and is best carried out in a factory.

For normal architectural uses, alkyd systems offer good protection and appearance, are easy to apply, and dry fairly quickly. Where the steel has been prepared by the more thorough methods the primers can be alkyd red lead or alkyd zinc chromate. Steel thus primed can withstand considerable exposure without showing corrosion. After erection all that is required is to wash off any dirt, touch up damaged areas, and apply a full coat of the same type of primer. Steel exposed to the weather or to view will then be topcoated with alkyd enamel. If gloss retention upon weathering is particularly important, silicone modified alkyds are reported to be an improvement.

As surface preparation becomes less adequate, it is necessary to specify slower drying primers that can penetrate more readily the small particles of rust or scale left on the surface. With thorough power wire brushing it is still possible for the primer to contain chiefly zinc chromate as anti-corrosive pigment and half alkyd in the binder. These primers can be handled or topcoated with alkyd enamels after overnight drying. If the poorest preparatory methods such as hand wire brushing are used, only a red lead in oil primer will give protection. This material is very slow drying and thus unsuitable for shop application. It must be thoroughly dried — three to four days under good conditions — before alkyd enamels can be applied over it. Otherwise oil paints with their reduced durability must be used as topcoats.

Cheap, quick-drying shop coat primers pigmented with iron oxide are frequently applied to structural steel intended for interior use. Unfortunately the steel is sometimes left lying around mill yards or construction sites for a considerable time. During this period rust spreads under the primer so that after erection the surface must be prepared as for new work to prevent any subsequent coating from flaking off. If the steel is erected before rusting commences, a full coat of field primer will be required in all except the mildest climates. It is obviously less costly in the long run to use a better primer in the first place.

Over the years there have been claims that certain primers could be applied to rusty surfaces with little or no preparation and still provide good protection. In general, these claims have not been borne out in practice. More recently materials have been marketed that are said to convert hydrated ferric oxide (rust) to ferrosoferric oxide (magnetite). As most primers are a careful balance of pigment and vehicle, it is difficult to visualize how the right amount of rust could always be present on all surfaces. Unless claims for such products are well substantiated it is preferable to prepare rusty surfaces as thoroughly as possible and use the primer suitable for the cleanliness obtained.

One ferrous surface that is difficult to paint satisfactorily is stainless steel. There should be no need to protect the metal, but for aesthetic purposes some architects have specified alternate areas of uncoated and coated stainless steel. In several cases the coated areas have failed extensively after a few years' exposure. There is, as yet, no foolproof way of preparing stainless for subsequent painting, especially in the field, although light sand blasting is considered to be the process most likely to give sufficient adhesion.

Zinc. This category includes zinc used as the base metal and as the protective coat applied to steel by dipping (galvanizing) or spraying. Zinc is a durable metal except in aggressive atmospheres such as heavy industrial or marine industrial. In these locations the zinc corrosion products that protect the underlying metal in other atmospheres are dissolved, allowing corrosion to proceed. Several long-term studies have shown that a combination of zinc and an organic coating system protects steel better and is more economical than either material alone. Under mild conditions it may take fifteen years for the superiority of the combination to become evident.

The chief problem in painting zinc, especially highly spangled galvanize, is to prevent subsequent peeling of the coating. Weathering of galvanized steel for at least six months has long been recommended as one way of stopping this failure. To avoid the waiting period, numerous remedies have been proposed, but most are detrimental or, at best, ineffectual. While solutions containing copper sulphate (blue stone) have a visible effect by

depositing copper, they do not improve adhesion. The most successful treatments are conversion coatings applied by dip or spray in a factory. Further complications are introduced by other treatments often employed at the mill to eliminate storage stains ("white rust"). Some of these interfere with subsequent treatments, including the conversion processes. Where long durability is of prime importance, the galvanize supplier should be consulted for the best treatment and coating procedure for his product.

Many tests have been conducted to try to determine how best to paint galvanize in the field. Those carried out at DBR/NRC indicate that the choice of primer is greatly influenced by the type of topcoat. Wash primer was satisfactory with all topcoats tested and much superior to other primers under alkyd enamels. Zinc dust-zinc oxide primer also performs well on new untreated galvanize. This material is not the same as zinc rich primer. The latter is also suitable, but because it serves the same function as the galvanize, its additional use is uneconomical. Primers pigmented with calcium plumbate are used extensively in the United Kingdom on zinc but have not been very popular in North America. Topcoats to be applied over calcium plumbate must be carefully selected for compatibility or peeling from the primer may occur.

Because sprayed zinc is slightly porous, it tends to corrode faster than other forms. Protective coatings are, therefore, mandatory. Wash primers, as on galvanize or zinc-rich, are suitable for priming sprayed zinc.

Aluminum. Aluminum is usually in the form of base metal, although occasionally it is, like zinc, applied to steel. Aluminum-coated steel is called aluminized steel. Metal alloy constituents can affect the durability of aluminum, but generally it does not need painting for corrosion prevention except in marine atmospheres. Even here, some alloys are very durable. In most cases aluminum is coated for preservation of appearance. Sprayed aluminum, however, requires a protective coating if immersed in water, and aluminum in contact with concrete should have an alkali-resistant coating system applied.

The chief problem with aluminum is in achieving good adhesion of the coating. Anodizing or chemical conversion carried out in factories are very satisfactory treatments. Anodizing does not require further protection but can serve as a good base for coatings. If the facilities are not available in the plant or field application is necessary, wash primer is preferred, although phosphoric acid treatments improve adhesion somewhat. Zinc chromate primer is applied after the acid wash or, in all except mild conditions, the wash primer. Alkyd, silicone-alkyd, or acrylic topcoats can then be applied. Clear acetate-butyrate lacquers have been widely used on aluminum window frames to maintain their initial appearance.

Red lead primers must not be used on aluminum because they accelerate corrosion of the metal. Copper-containing anti-fouling paints have the same effect. Priming coats on aluminum structures subjected to sea immersion must, therefore, be carefully applied to ensure that there are no pinholes.

Other Metals. Copper and its alloys do not need coating for protection. If they are painted to match their surroundings or to prevent development of green patina, wash primer can be used for the first coat. Clear acrylic lacquers have been shown to preserve the bright appearance of the new metal. There are no satisfactory methods of accelerating patina development so that new panels will resemble weathered ones.

Cadmium, which is similar chemically to zinc, can be treated like it. Other metals such as lead and tin are not generally used on buildings in Canada.

Summary

This Digest considers the generic types of coatings to be used on exterior metals and discussed the other elements that play an important role in the durability of coated metal. These influential factors are the design of the structure, the conditions of exposure, the degree of surface preparation and the site of painting. Film thickness is not discussed in detail. Generally, it should be recognized that thicker coating systems will have greater durability, provided the individual coats have not been applied in more than their design thickness.

with the building he wants, and it can also be criticized on the grounds of appearance, quality and cost. Without the professional advice of an architect it must be difficult for the client to know whether he is getting the best design solution.

The second type of package deal is known as a leaseback. Originally this term was used to describe a transaction in which the owner of a piece of land or a building sold his interest in it to someone else who then leased it back to him. This arrangement has certain advantages to both parties. The new owner of the property would probably be a real estate investor who now has an additional piece of real estate to add to his portfolio. The old owner would probably be in the manufacturing business, not interested in owning real estate, and needing some additional capital to put into his business. Under the new arrangement the old owner continues to occupy the premises, paying rent for the privilege. Besides having capital available, he has the additional advantage of making a tax saving because rent is a wholly tax deductible item whereas only the depreciation on real estate is deductible.

An extension of this leaseback method is for the client to approach a package dealer and ask him to design and build a building to suit his requirements. The package dealer may provide the land, he will erect the building, finance it, and then lease it back to his client at an agreed rental. Like the original leaseback concept this is a way for an individual or a company to have a building which has been designed specifically for them without having to tie up their money in real estate. Many major companies in Canada now occupy their premises on this type of leaseback arrangement, and the package dealer or financier is more concerned with the quality of his tenant as a security than he is in the value of the real estate.

A further extension of the leaseback method involves an individual or company which wants to invest in real estate without incurring major capital costs. Let us assume a construction company which has bought a piece of land and wants to put up a revenue producing building on it. Having found suitable tenants and arranged a mortgage the building is constructed. The company can then find an investor who is prepared to buy the building and lease it back at an agreed rental for a period of years. If the company has developed wisely this can be quite a profitable arrangement. It pays a fixed rent to the investor and in return receives rents from the tenants it has found for the building. It has taken its capital out of the development and if rents go up it reaps the benefit without having its lease increased in turn. In this instance the investor is more concerned with the value of the real estate as security than he is in the quality of his tenant, the construction company.

Estimating

This year, instead of providing unit costs for preliminary estimates we shall be giving a group of unit prices each month for some of the more common items to be found in a contractor's estimate. This month we show unit prices for Toronto, Ottawa and Montreal. Eventually we hope to cover other major cities such as Vancouver, Edmonton, Calgary, Regina, Winnipeg and Halifax

A word of caution. The publication of unit prices is fraught with many dangers. *Circumstances can vary to such a degree that in some instances the unit prices we give may be quite useless. They are intended only as a guide and the preamble which will be published every month should be read before applying them.*

Unit Prices

The unit prices given below are average rates for reasonable quantities of work carried out in the locations shown. They are net rates including waste where applicable but without any allowance for a general contractor's overhead and profit. It must be remembered that unit prices are affected by the location of the project, market conditions including the availability of materials and the availability and productivity of labor, the size of the project and the quantities of materials required, the circumstances under which the work is being performed, the type of construction etc. and these factors must be taken into account when using them. In particular they should not be used for alteration work or for changes in the work during construction.

5.2 Site Works	Unit		Toronto	Montreal	Ottawa
1 Excavate over site to reduce levels	CY	Low $	0.50	0.45	0.50
		High $	0.60	0.55	0.60
2 Bulk excavation for basement	CY	Low $	0.65	0.50	0.65
		High $	0.75	0.60	0.75
3 Trench excavation by machine	CY	Low $	0.90	0.90	0.90
		High $	1.00	1.00	1.00
4 Trench excavation by hand, not exceeding 5′ 0″ deep	CY	Low $	7.00	6.00	6.00
		High $	9.00	8.00	8.00
5 Trench excavation by hand, 5′ 0″ to 8′ 0″ deep	CY	Low $	10.00	8.00	12.00
		High $	15.00	12.00	16.00
6 Haul away excavated material a distance not exceeding one mile	CY	Low $	0.40	0.40	0.40
		High $	0.60	0.60	0.60
7 Granular backfill	CY	Low $	4.00	3.40	3.50
		High $	4.75	3.60	4.00

5.3 Concrete	Unit		Toronto	Montreal	Ottawa
Concrete					
1 Ready-mixed concrete, material only, with no allowance for winter heating, delivered to site:					
2,500# ¾″ aggregate	CY	$	16.10	12.25	13.85
3,000# ¾″ aggregate	CY	$	16.70	12.65	14.50
3,500# ¾″ aggregate	CY	$	17.25	13.05	15.50
4,000# ¾″ aggregate	CY	$	18.05	13.45	15.80
2 2,500# concrete in wall footings	CY	Low $	18.00	13.50	15.35
		High $	18.30	13.75	15.85
3 3,000# concrete in column footings	CY	Low $	18.60	14.00	17.00
		High $	18.90	14.50	18.00
4 3,000# concrete in foundation walls	CY	Low $	18.70	14.25	17.25
		High $	19.20	14.75	17.50
5 4,000# concrete in columns	CY	Low $	20.55	16.25	19.75
		High $	21.05	16.75	20.25
6 2,500# concrete in slabs on grade	CY	Low $	18.60	13.25	15.85
		High $	19.10	13.75	17.35
7 3,000# concrete in suspended floor and roof slabs	CY	Low $	19.45	15.25	17.50
		High $	20.00	15.75	18.50
Reinforcing Steel					
8 Reinforcing steel in place	tons	Low $	250.00	210.00	230.00
		High $	300.00	260.00	280.00
9 6′x6′ 6/6 Wire mesh reinforcing to slab on grade, in place	100 SF	Low $	7.00	6.00	8.00
		High $	8.00	7.00	9.00