

THE CORPORATION OF THE DISTRICT OF BURNABY

May 20, 1970

Mr. H. W. Balfour,
Municipal Manager.

Re: Report on Canadian Building Officials' Conference -
Ottawa - April 28th-30th, 1970.

The 1970 Conference of Canadian Building Officials must be regarded as very successful from the display of interest shown by a major turnout of about 175 delegates.

Representation at the Conference came from all ten provinces - from Burnaby, Surrey and Vancouver on the West Coast to Cornerbrook and Halifax on the East Coast; and from Yellowknife, North West Territories on the northern extremity of our country to Chicago and New York, of our neighbouring country to the south.

Besides a majority of building officials, among the delegates there were two aldermen from Scarborough, about twenty representatives of trade associations of building materials, and two or three representatives of national companies affected by building code applications.

The Conference, however, was marked by one major disappointment. The 1970 National Building Code, eagerly anticipated by many building officials and by numerous other persons connected with the building industry, was not available for the use of those attending the Conference. At the opening ceremonies on the first day, Dr. R. F. Legget, Chairman of the Associate Committee on the National Building Code, apologized for this unfortunate circumstance and gave a brief explanation. At the sessions on the second day at the National Research Council Headquarters, Dr. Legget was able to give a full explanation for the delay, as follows:

The recent rapid increase in the construction of tall buildings (40-50 storey high-rise) in major cities across the country, and some recent emergency incidents in this sort of building, caused the Associate Committee to agree unanimously to delay publication of the Code (originally scheduled for January 1970) until a minimum of regulation could be developed to take care of life safety in tall buildings and be included in the first edition of the 1970 Code.

Two incidents in tall Canadian buildings, neither of which resulted in fatalities, did reveal very serious dangers to occupants of such buildings in the event of fire or necessary rapid evacuation. These dangers had not been provided for adequately in the previous Codes or in the drafts of the '70 Code, due mainly to quickly changing construction technologies and materials for buildings.

From Dr. Legget's explanation and later from a full paper by H. Brian Dickens, Vice Chairman of the Associate Committee on the National Building Code, on "Safety in High-Rise Buildings" it was abundantly evident to all delegates that the Committee could not have done other than delay the Code until a degree of regulation, based on studies, was produced.

FIRST DAY:

The first day of the Conference was "easy" on the delegates. Following opening ceremonies and reports from Provincial Associations, Mr. Fred Lebensold, Architect, spoke of his experiences in the design of the "National Arts Centre". Later that day, to conclude the afternoon, Mr. Lebensold conducted a full tour of the Centre.

The speaker at luncheon on the first day was to have been the Honorable Darcy McKeough, Minister of Municipal Affairs, Province of Ontario, but at the last

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moment he was detained in Toronto and his place was taken by Graham Adams, Head of Extension and Field Services, Ontario Provincial Planning Department. Mr. Adams gave a complete account of the move in the Province of Ontario toward a Provincial Building Code. He outlined the method of committee study of numerous aspects to be considered before such a Code can be brought down and of the plans for its implementation once the legislation is enacted. Ontario has probably more Provincial and Municipal legislation bearing upon building construction, and more application of that legislation than any other Province in Canada. Consequently, much care has, of necessity, been taken in the move toward a Provincial Code in order to avoid a conflict of interest and jurisdiction or administration. A copy of this lengthy committee report by the Ontario authorities will be obtained for our future reference use.

The afternoon of the first day was a workshop session on Building Department Administration. The delegates were gathered into small groups of six or eight and each group discussed one question led by a group leader. By some misadventure, the session was delayed in starting and discussions tended to run longer than planned with the result that the group reports were not forthcoming at the session. The group reports have been promised for later this summer when full proceedings of the Conference are published by the Division of Building Research. A copy of the various questions or subjects discussed by the different groups is attached for your information. The remainder of the afternoon was the tour of the Art Centre as earlier noted.

SECOND DAY:

Whereas the first day's meetings had taken place in the Chateau Laurier Hotel, the delegates were bussed out to the N. R. C. grounds at 9 o'clock on the second day to hear a number of talks by members of the Division of Building Research Staff who have been engaged in production of the various parts of the 1970 National Building Code.

Mr. Jack Robertson, Secretary of the Associate Committee on the National Building Code, opened the meeting and introduced Dr. Legget again who gave his report of reasons for the delay of the Code.

Following this, Mr. Robertson ran through the format of the '70 Code, noting briefly where variation will occur between the '65 and '70 Codes. Most of the changes noted were of the technical refinement or house-keeping type, but one change is worthy of further explanation. In our present '65 Code the technical requirements for house construction and multiple family dwellings not more than three storeys high or 6,000 square feet gross area are called up in Part 9 and amplified in Supplement 5, Residential Standards. In the '70 Code this practice will continue but it will be extended to include all buildings not exceeding three storeys or 6,000 square feet in building area, and the regulations now found in Supplement 5 will be embodied in the text of the new Part 9. In our own review of the '65 Code prior to its adoption in By-law No. 5557 we found and corrected certain inconsistencies between Part 9, or Residential Standards, and the main body of the Code. In the new Part 9 of the '70 Code, I suspect that inconsistencies will occur which will have to be carefully considered and evaluated before an adopting recommendation can be put before Council. One of the differences which will necessitate evaluation will be the requirement for earthquake design of buildings falling under terms of the full Code, yet freedom from that requirement for those buildings under regulation of Part 9. In our location on the North American continent, and on the rim of the circum-Pacific earthquake belt, where the probability of major structural damage is greatest, it would be difficult indeed to exempt one building because it is only a few square feet smaller than another building. Another factor for our local consideration is the prevalence in our area of buildings of load-bearing masonry construction without any other form of structural frame and the vulnerability of such buildings to earthquake damage.

Mr. Robertson was followed by a series of speakers from D. B. R. who amplified on the changes between the '65 and '70 Codes in the various technical Parts 3 through 9. Shopping centres of the covered Mall type and multi-shopping levels

Continued --

(such as our own Loughheed Mall) have been given special building recognition in the '70 Code. This will be of assistance to both building officials and developers of shopping centres and their consultants, because precise regulation for this recent form of building structure with open shops joined to large pedestrian arcades had not been present in older editions of the Code, and the application of the old separation rules between tenant, public, and other areas had led to ambiguity and construction differences.

Structural integrity is a new concept brought into the '70 Code and is intended to counteract the chance of progressive collapse of larger buildings. The collapse of a building in London, England, two years ago prompted this change.

Still on changes in the structural sections of the '70 Code in the field of earthquake design the Code will include a most advanced seismic regionalization map which has been a basis for re-evaluation of the earthquake probability factor over all parts of the Country. In our case, our factor has remained at 4, a factor of maximum probability, but in other parts of the country there has been some change, either up or down.

Part 6, Building Services, has been overhauled and refined for the '70 Code and certain awkward regulations in this part in the '65 Code have been changed or deleted. However, without the opportunity of studying the part in detail, I will not comment further here other than to say that the idea of including small buildings in Part 9 will demand that we look very carefully at Part 6 to ensure complete alignment of service requirements where buildings vary from control by one part to another part of the Code.

A visit to the various buildings and labs of the D.B.R. closed the session on the second day of the Conference and the delegates returned by bus to the City of Ottawa.

THIRD DAY:

The third day was opened by a business meeting of the C.B.O.A. which was broken at 10:30 a.m. to hear a paper by Dr. Peter Barnard, Consulting Engineer, speaking on "Systems Buildings". Dr. Barnard outlined the difference between conventional building and the systems building in the design, construction and management from inception to completion. He pointed out the effect of Codes on systems buildings and the changing role of the building inspector with this type of building concept. Where a conventional building might be regarded as "unique" or "one-off" in design without repetition of major components, and employing a high use of on-site skilled labour, the systems building has a standardization of design of major components, including structural components, with consequent standardization of dimensional requirements and total fabrication of components in factory conditions. The purpose of systems buildings is to effect savings in costs over similar buildings of conventional construction. To attain any success in the field of economy, systems buildings will demand that there be a uniformity of Building Code content and application in the country from one area of jurisdiction to another. Such uniformity in the interpretation of Building Codes in turn will bring about the need for constant upgrading of building officials or a constant program for the education of persons engaged in Building Code administration. For the greatest benefit the systems building concept will also require the presence of an Advisory Council capable of assessing and expressing judgments on various materials and systems.

The morning session of the third day concluded with a paper on Life Safety in High-Rise Buildings given by H. Brian Dickens of the Division of Building Research. Mr. Dickens was careful to point out the relative newness of regulation in this field and the fact that statistics are not available on which to make any evaluation for regulatory purposes. As a consequence, the Division of Building Research has found it necessary to use a subjective approach to any regulations prepared to date.

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The two areas in which study has been concentrated are in the evacuation of persons in high-rise buildings and in the propagation of smoke throughout the building by the "chimney effect" or "stack effect" present in tall slender buildings. In both of these areas it has been necessary to think in new terms entirely. Studies have shown that it takes from 30 to 70 minutes to evacuate persons in orderly emergency fashion from buildings of 30 to 50 storeys height. Hence emptying tall buildings, as has been the longstanding concept, has been abandoned. Safety areas on different floors within these tall buildings must be made available through design and construction.

In the other study area - smoke propagation - "stack effect" is the condition whereby smoke is transferred rapidly upward in the building to appear at long distances from a fire source. Occupants of a building remote from a fire source are thereby endangered and to overcome or reduce the probability of this condition there has been introduced a variety of mechanical safety requirements to be incorporated into the design and construction of such buildings. The regulations proposed will vary with type of occupancy and with height of building, but will begin to have effect on buildings over six storeys in height with sleeping occupancies therein.

In our case a redeeming feature in the application of proposed new regulations is that "stack effect" varies directly with temperature differential between interior of building and exterior. While the interior temperatures of buildings across the country will be similar, the outside temperatures will vary and we are fortunate in having moderate outside temperatures. The lower temperature differential of our climate will result in lower pressure differential and lesser stack effect.

Nevertheless, we will come in for some regulation in this field in the '70 Code and unfortunately, on one hand it will add to building cost, on the other hand, without it the probability of fatality in tall buildings would be distinctly greater. This is a subject on which detailed study of the regulations when published, will be necessary before further reporting is possible.

Although I was personally disappointed to learn of the delay with publication of the '70 Code, I nevertheless found the Conference to be stimulating and the opportunity of renewing past acquaintances and making new acquaintances with other building officials was most enjoyable. May I express my sincere thanks to yourself and Council for having been able to attend this Conference.

Yours truly,

M. J. Jones
CHIEF BUILDING INSPECTOR

Attachment

1. Technical Control Bureau

Would you favour the establishment of a Technical Control Bureau in Canada similar to those which have operated successfully in Europe for over 30 years?

These private organizations consisting of experienced engineering staff would review and approve structural design, choice of materials, field practices, soil testing and other key phases of construction practices. The owner or builder would pay a fee from 1.0 to 1.5% of the structural costs for this service which would facilitate obtaining low cost construction liability and damage insurance. Complete coverage would protect not only the owner but the contractor, architect, and all agents, sub-contractors and vendors. The reduction in insurance rates would result from the virtual guarantee of design sufficiency and performance. On the other hand, the incidence of recurring defects and collapse have shown that purely voluntary methods are sometimes not successful.

2. Inspectors

- a) Would you favour the licensing of building inspectors?
- b) Should they be required to take examinations from time to time?
- c) Does your municipality promote in-service training?

3. National Research Council

- a) Would you favour regular visits from NRC representatives to discuss code interpretation and if necessary report back later?
- b) Should NRC establish discussion seminars on the Code in the large urban areas from time to time?

4. Existing Buildings

- a) What percentage of your inspector's time is involved with regular inspections of existing buildings?
- b) Do you enforce the requirements of the NBC for existing buildings in respect to exits, furnace rooms, etc.?
- c) Do you have a follow-up program for recently completed buildings?

5. Compliance and Occupancy Certificates

In what circumstances, if any, would you consider the following to be necessary?

- a) Partial Compliance Certificate (prior to full completion of building).
- b) Full Compliance Certificates.
- c) Occupancy Certificates.

6. Conditions of issuance of building permits

Does your municipality issue permits subject to compliance with:-

- a) by-laws of other municipal departments - ramp approvals, street widenings, etc.
- b) other Provincial & Federal requirements (Fire Marshal's approval, health requirements) etc.
- c) general requirements such as servicing agreements, development plans, etc.

• Staff Surveys

Do you feel that the CBOA should take the initiative in making comprehensive surveys among building inspectors on such matters as education, range of salaries, duties, etc. which could be circulated to the full membership for information?

• Cranes and Derricks

With respect to power operated cranes and derricks used on building construction, do you favour:-

- a) detailed supervision of design, testing, installation, inspection, maintenance and operation as now practiced by the City of New York.
- b) insuring that the manufacturers' specifications are adhered to and that operators are competent.
- c) leaving full responsibility with the manufacturers and users with no supervision by the municipal authority.

9. Computer Programmes

If in the future it is found that designers are using a multiplicity of complex electronic computer programmes to carry out extensive portions of their analysis and design would you conclude that the responsibility for such use:-

- a) will rest with the user although it is unlikely that he is able to 'check' the computer programme.
- b) will be shared jointly by the user and the author of the computer programme.
- c) will rest with the user but the computer programme will have to be approved by the appropriate professional licensing body.

10. Partial Building Permits

A frequent complaint is that valuable construction time is lost by delaying the start of construction until complete plans are prepared and examined by the municipality prior to the issuance of a permit. Do you think the applicant would be likely to co-operate if the municipality should:

- a) issue a partial permit.
- b) require the applicant to post a bond guaranteeing that he will comply with the municipal by-laws.
- c) require the owner to obtain a certificate of compliance on completion but prior to occupation of the building.