Building Surveyors
建築測量
August 1998 Issue No.3

FROM THE EDITOR

By Alan Sin

Welcome to the third issue of our "Building Surveyors". In the past few months, our BS Conference Preparation Committee has been working very hard for the coming BS Conference. A number of guest speakers have also been invited to present their papers on the Safety and Health Hazards in Building. For details, please see our announcement below.

The Editorial Board is calling for editorial contribution from our members in the coming publications. If you wish to submit your article, please contact the editor directly.

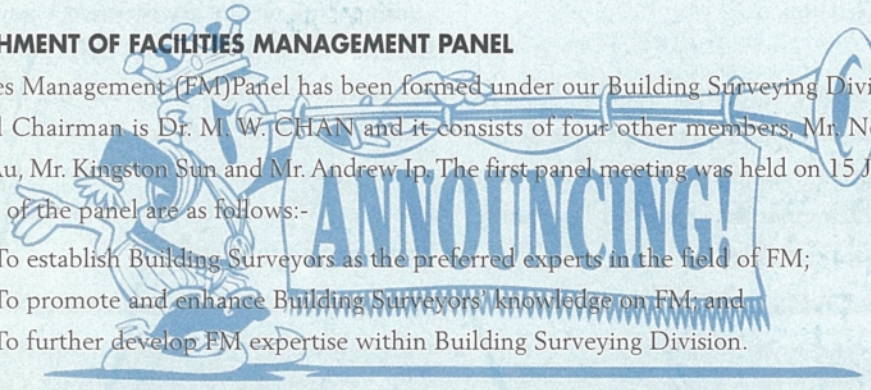
Announcement

BUILDING SURVEYORS CONFERENCE 1998

The coming B S Conference will be held on 24 October 1998 at Great Eagle Hotel, Tsim Sha Tsui. The theme of this conference is "Safety and Health Hazards in Buildings". This is our annual big event. All members are invited to attend. Please reserve your time and mark your diary now! Application form will be sent to all members shortly.

ESTABLISHMENT OF FACILITIES MANAGEMENT PANEL

A Facilities Management (FM)Panel has been formed under our Building Surveying Division Council. The Panel Chairman is Dr. M. W. CHAN and it consists of four other members, Mr. Nelson Ho, Mr. Dickson Au, Mr. Kingston Sun and Mr. Andrew Ip. The first panel meeting was held on 15 July 1998. The objectives of the panel are as follows:-



- To establish Building Surveyors as the preferred experts in the field of FM;
- To promote and enhance Building Surveyors' knowledge on FM; and
- To further develop FM expertise within Building Surveying Division.

ESTABLISHMENT OF PROFESSIONAL BUILDING SURVEYING CONSULTANTS ASSOCIATION OF HONG KONG (PBSCA)香港專業建築測量顧問公會

Congratulations! Professional Building Surveyors in private practice have come together to form an Association of firms offering professional building surveying services under the name of Professional Building Surveying Consultants Association of Hong Kong (PBSCA)香港專業建築測量顧問公會. We look forward to positive contribution by the Association in our Building Surveying practices in Hong Kong.

Communication Network and Job Movement

Recently, we have received various amendments of the Communication Network from our members by e-mail, telephone call and fax. It has been updated and a copy is enclosed for your use.

For updating the Communication Network and announcing job movements, please contact Gordon Wong (fax: 2760-4284; e-mail: gsywong@hkstar.com)

Feature

NEW LAWS ON FIRE SAFETY IMPROVEMENT

Samson Wong

It is good to see that the Government has taken a more comprehensive approach to boost fire safety standards for private buildings. In June 1998, a series of proposals have been put forward by the Secretary for Security to improve fire safety for private buildings. A booklet entitled "Consultation Paper on Proposals to Improve Fire Safety in Private Buildings" was prepared to deal with the fire problem which has been around for many years. Invitation for public consultation on this paper will last for two months until 24th August 1998.

Improvement to fire safety laws has only been instigated when there was a tragedy or a particular fire occurring during the squalid rapid growth of our society, from which emerged a need for legislation. Some of the recent examples are:

1. The Fire Safety (Commercial Premises) Ordinance 1997, which came into operation in May 1997 as a response to the fire at Shek Kip Mei branch of the Hongkong Bank on 10th Jan, 1994. 12 people died and I were injured.
2. The Fire Safety (Commercial Premises) (Amendment) Ordinance 1998, which came into operation on 1st June 1998 as a result of the fire in Garley Building in November 1996. 41 people died and some 80 were injured.
3. New Licensing System for Karaoke - Fatal blaze at Top One Karaoke in Tsim Sha Tsui on 25th January 1997. 17 people died and 13 were injured.

Regrettably, there were more to come.....such as the fires in Mei Foo Sun Chuen (April 1997) and Golden Court, Causeway Bay (January, 1997). Before commenting on the government's new proposals, familiarity with the Fire Safety (Commercial Premises) Ordinance 1997 and the (Amendment) Ordinance 1998 and the potential problems in satisfying their requirements will be useful to building surveyors who may be involved in future fire safety improvement projects.

THE FIRE SAFETY (COMMERCIAL PREMISES) ORDINANCE 1997

The Bill for this Ordinance was enacted on 5th March 1997, 38 months after the tragic fire of the Shek Kip Mei branch of The Hongkong Bank. The Ordinance came into operation from 2nd May 1997 and its purpose is to provide better protection from the risk of fire for occupants visitors and anybody using certain kinds of prescribed commercial premises (P.C.P.) which are considered to have either a special design layout or a significant customer flow. Under the Ordinance, P.C.P. are defined as buildings or part of a building being used for any of the following prescribed commercial activities:

(1) banking (other than merchant banking);
(2) off-course betting;

(3) jewellery goldsmith's business on premises that have a security area;
(4) a supermarket, hypermarket or department store;
(5) a shopping arcade; and

that the total floor area of the building or part thereof exceeds 230 square metres.

Control Mechanism

For the purpose of this Ordinance, the Director of Fire Services is the enforcement authority for the provision of fire service installation or equipment whereas the Director of Buildings is the enforcement authority for the provision of fire safety measures in the planning, design and construction of the premises.

Under this Ordinance, the Director of Fire Services is empowered to direct owners of P.C.P. to take specific fire safety measures to provide or enhance existing safety installations and equipment including automatic sprinkler system, automatic cut-off devices for air-conditioning and mechanical ventilation system, emergency lighting, manual fire alarm system, portable fire extinguishers and other requirements specified in the Code of Practice for Minimum Fire Services Installations and Equipment 1994.

In addition, the Director of Buildings is empowered to direct owners of P.C.P. to take fire protective measures to ensure that construction of these premises satisfies provisions set out in the Code of Practice for Means of Access for Firefighting & Rescue (MOA) issued in 1995, the Code of Practice for the Provision of Means of Escape in Case of Fire (MOE) and the Code of Practice for Fire Resisting Construction (FRC) issued in 1996.

Apart from the above the Ordinance also empowers the Director of Fire Services to direct occupiers of P.C.P. to provide their occupied premises with the required fire safety installations and equipment in case that it is not the owner's responsibility e.g. not covered under the lease agreement.

Basically, this legislation will apply to both new and existing premises but owners or occupiers would only need to comply with these requirements as set out in the Fire Safety Directions issued by the relevant enforcement authorities. In the case of default, the Fire Services Department or the Buildings Department may apply to the magistrate for a Fire Safety Compliance Order Order directing the owner/occupier to comply with the requirements specified in the Direction. Application may also be made to the District Court for a Use Restriction Order to prohibit from carrying on any further prescribed commercial activity on the premises, or a Prohibition Order to prohibit occupation of any unit or part of the building.

Implementation

According to the introductory pamphlet issued by the government in June 1998, the implementation of the Ordinance on P.C.P. will be in 4 phases, starting from the 2nd May, 1997.

(i) First Phase (1997-2000)

To deal with around 500 P.C.P. which were built before 1973 without the provision of sprinkler systems;

(ii) Second Phase (2001- 2004)

To deal with P.C.P. in buildings with O.P. issued before 1980;

(iii) Third Phase (2005 - 2009)

To deal with P.C.P. in buildings with O.P. issued between 1980-1990;

(iv) Final Phase (after 2009)

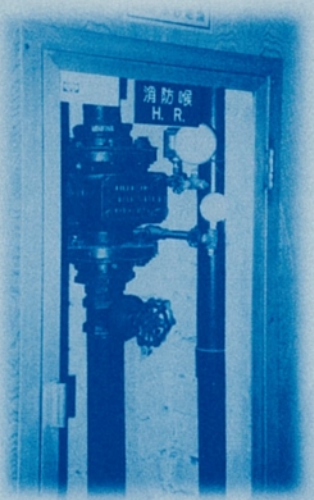
To deal with P.C.P. in buildings with O.P. issued after 1990.

However, a remark has been made in the pamphlet that if a particular premises is found to be of a high fire hazard, enforcement action would be taken immediately without reference to the date of the occupation permit of the building.

Building Surveyor's Job Opportunity

Although the implementation of the Ordinance is being phased over a period of over 10 years, prudent

building surveyors should advise their clients to make an early assessment of their premises and prepare an action plan for implementation in a reasonable time frame. For clients who are major landlords of shopping centres, it will be sensible for them to appoint a consultant to carry out a detailed study as early as possible and work out a forward strategy which can be incorporated into their business plan. In doing so, this would not only minimise the client's administrative difficulties in dealing with any disruption caused to existing tenants' business, but also enable their consultant to have sufficient time to identify any existing constraints and hence develop a practical solution. To arrive at the most cost-effective proposition, considerations must be given to the tenant mix avoiding extensive remodelling or making substantial structural alterations with technically complicated solutions. Different premises have different characteristics in their construction, installations and spatial arrangement. They must be treated or individual merit. The task demands input form experienced professionals from different disciplines. A professional building surveyor with 'authorised person' (A.P.) qualification is the ideal leader of the consultancy team. It is also desirable if circumstances permit to have a building service engineer, a registered structural engineer, and a quantity surveyor as team members. Occasionally, the input from a fire engineering expert is valuable to conduct fire engineering studies and develop alternative proposals and remedial options for the consideration of the Buildings Department (BD) and the Fire Services Department (FSD).



Outline of Common Deficiencies

The following are a summary of the major deficiencies in fire safety aspects, which are commonly found in commercial premises built before 1987.

Fire-fighting Installation & Equipment

- Premises not provided with sprinklers.
- Shops, restaurants and supermarkets not provided with automatic cut-off MVAC systems.
- Premises not provided with manual fire alarm systems.
- Emergency lightings are either not provided for in the common areas of shopping arcades or improperty installed therefore unable to achieve the 2-hour requirement.

Means of Escape

- No separate protected lobby for each individual staircase,
- Improper and/or insufficient number of exit,
- Reduction of width of exit routes due to door swing,
- Excessive travel distance due to unauthorised alterations.

Mean of Access for Firefighting and Rescue

No provision of fireman's lifts and/or fireman's lobbies for buildings over 2-storey high and exceeding 15m in height.

Fire Resisting Construction (FRC)

- Inadequate FRC to separate different uses,
- Inadequate FRC to special hazard room,
- Lack of protected lobby for kitchen exits of restaurant,
- Unprotected openings at external wall close to adjoining building,
- Fire resistant doors are not tested to BS476: part. 22

Possible Constraints & Difficulties

As mentioned earlier, anticipated major constraints and difficulties in implementation of fire safety upgrading works would be:-

- the requirement to alter building structure;
- the requirement to modify existing layout;
- the requirement to vacate some part of the premises; and
- the requirement to interrupt existing tenants business.

Should alteration and improvement activities be carried out without vacating tenants, special attention to the tenant's safety and health hazards must be emphasised. Stringent controls should be exercised during the period of upgrading work to minimize nuisance. Improper design may attract interruption which will significantly hinder the overall progress. A well thought out methodology and sequential approach will minimize the concern over safety and complaints. Significant cost savings will always be achieved because of less abortive work.

Negotiation with Enforcement Authorities

During preparation of the legislation, the enforcement authorities agreed to apply fire safety provisions in a flexible manner where there are genuine and practical difficulties in complying with the fire safety measures. They are prepared to assess the fire safety measures provided in a premises according to the overall provision of facilities, including fire service installations and equipment, means of escape, means of access and fire resisting construction. When there are practical difficulties in complying with the requirements in one aspect, it may be acceptable to remedy the deficiencies by compensatory measures in another aspect. In addition, a reasonable period will be given in each direction for the commercial premises to comply with the required safety standard. Clearly, this is a very fluid approach, capable of considerable variations in interpretation. Therefore, close liaison with officers of BD and FSD is considered necessary.

Negotiation with BD/FSD is a must if the current standard cannot be acheived due to practical difficulties. The consultant will be expected to propose alternative or complementary measures, such as fire engineering proposal for their acceptance.

Please see next issue on the Fire Safety (Commercial Premises) (Attendment) Ordinance 1998.

TRAVEL DISTANCE AND EXIT WIDTH OF A ROOM - A SIMPLE EXAMPLE

S.M.LO City University of HK

Abstract: Remoteness of egress is fundamental to life safety. The Code of Practice on Means of Escape, 1996 prescribes the travel and direct distances that limit the distance of travel by the occupants in case of emergency. A simple example is used to illustrate the effect of the distance of travel and width of exit(s).

Introduction

One of the basic principles of life safety from fire in buildings is that the distance of travel by the occupants towards an exit should be kept as short as possible. The Code of Practice on Means of Escape, 1996 (MoE Code) paragraph 14 prescribes the requirements for travel and direct distance. Such distances will obviously affect the time required for the occupants to reach the protected staircase. However, the distance of travel is not the only factor that will affect the flow time of the evacuees. The population density and the width of exit(s) of the room are other factors that should be considered.

An Example

In accordance with Table 2 of the MoE Code, the maximum capacity of a room having one exit is 30 and the corresponding minimum width of exit door is 750mm. The critical situation of a rectangular room (figure 1) is that the direct distance in the room is about 15m (paragraph 14.1 of MoE Code refers), the capacity is 30 and the width of the exit door is 750mm. The critical dimensions (x, y) of the room are approximately (14.85m, 2.02m).

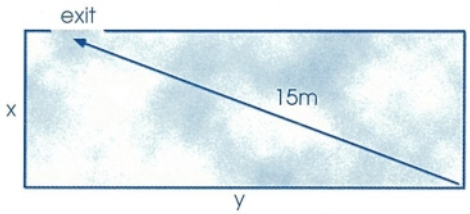


Figure 1: Single Exit rectangular Room

The calculation of the flow time (T) of the occupants leaving the room is somewhat more complex than simply considering the travel time. One should select between the longer of the two alternatives, time through door(s), TD, and maximum travel time, TT (Yoshida, 1995). That is:

$$T = \text{Max}\,[TD, TT] \qquad (1)$$

The maximum travel time (TT) in a room can be expressed as:

$$TT - Lx+y / v \quad (2)$$

Where, Lx+y = the travel distance in metres along the x and y axes from the most distant corner of the room (Lx+y is based on the assumption that direct escape is impossible due to furniture and other obstructions in the room); v - the walking speed in m/s = 1.3 m/s.

The time for the evacuees to flow through the door can be given by;

$$TD = P/f.w \quad (3)$$

Where P = the number of people in the room
f = the flow factor in persons per m.s
w= the total available door width in metre

The denominator in (3) is the capacity, in persons per second, of the door. The value depends on several parameters such as density of the crowd, the behavioral reactions of the evacuees, the physical ability of the evacuees, etc. In the MoE Code, a value of 80 persons per min. per metre (i.e. 1.33 p/m.s.)is used for downward movement of people in a stair. In the Guide for Building Fire Safety Planning, Japan, a value of 1.5 p/m.s is adopted for evacuees passing a door.

For the rectangular room in Figure 1:

TT = (2.02+14.85)/1.3 = 13 seconds (approx.)
TD = 30/(1.5*0.75) = 27 seconds (approx.)
T = 27 seconds

In indicates that in cases where human flow exceeds door capacity, the flow is limited by the door width (i.e. evacuees will stack at the exit). When capacity of the room is reduced to 14, then TT = 12.5 seconds (approx.) Travel distance will dominate the flow time of the evacuees.

Remarks

According to the simple calculation in the above example, it implies that the width of exit door(s) may dominate the flow time if the density of the room is high (e.g. in cinemas, restaurants, etc.). Travel distance may be an important factor that should be considered for low-density rooms (e.g. warehouses, carparks).

Reference

Yoshida, Y., "Evaluating building fire safety through egress prediction: a standard application in Japan", Fire Technology, pp158-174, 1995.

Update

A BRIEF SUMMARY TO PRACTICE NOTES ISSUED FROM 21 APRIL 1998 TO 31 JULY 1998

13 Calculation of Gross Floor Area and Non-accountable Gross Floor Area- Building (Planning) Regulation 23(3)(a) and (b)

First issue: May 1998

Where a curtain wall system and cladding forms the external face of a building, BA is prepared to accept the outer face of the structural elements as external wall for the purpose of measurement of GFA where:

- the system itself does not form part of the structural system of the parent building; and
- the system does not result in any additional floor area at a floor level; and
- the projection of the system from the outer face of structural elements does not exceed 300mm.

99 Checking New Building Plans

This revision April 1998

Fundamental aspects which BA will be concentrating on for demolition plans are listed:

- precautionary measures;

- codes and standards proposed to be adopted;
- appraisal of building to be demolished, method statement, sequence of demolition and the safe use of any powered mechanical plant;
- stability of the framing system during demolition & remaining structure after demolition;
- effects on all affected buildings, slopes structures, lands and services and the provision of supports and protection, if necessary.

128 Standardization of Floor Numbering

This revision July 1998

The practice note gives guidance on standardization of floor numbering system. In case where certain floor number(s) is/are omitted, the information on the numbering and description of floors be displayed in Chinese & English in a conspicuous position at the main entrance lobby in a building. Appropriate indication of floors served by firemanís lifts should be shown next to the switches to these lifts.

221 Fixing of Reinforcement for Concrete Works

First issue: March 1998

The practice note gives guidance on good practice in fixing reinforcement to achieve safe and durable reinforced concrete structures.

223 Podium Height Restriction under Building (Planning) Regulation 20(3)

First issue: April 1998

In considering applications for relaxation of the height restriction on podiums under Building (Planning) Regulation 20(3), BA will take into account the functional requirements, site constraints, the impact on the environment, public interest and the likelihood of abuse.

224 Superstructure Works Measures for Public Safety

First issue: May 1998

Precautionary measures listed for superstructure works, alteration & addition works and concrete repair works at external walls of existing building:

- a steel covered walkway and a steel catch platform required during erection of the structural frame of the building;
- protective screen should be provided on the facade of building under construction.

Except the building under construction is

- under 30 m in height;
- set back from the site boundary

225 Ground Investigation Works in Scheduled Area - Approval and Consent

First issue: July 1998

It stipulates that ground investigation in the Scheduled Areas is building works and requires approval and consent under the Buildings Ordinance and the procedures in Buildings Department for concurrent processing of applications for approval and consent in repect of new ground investigation works in the Scheduled Areas.

226 Street Name and Building Number

First issue: July 1998

This practice note sets out the minimum standards and the recommended manner for displaying of street name and building number on buildings. A recommended standard design is also shown in the practice note.

Environmental Protection Department Practice notes

ProPECC PN 1/98

Control of Air Pollution in Semi-confined Public Transport Interchanges

- set out air quality guidelines, outline major design considerations and operating procedures for public transport interchanges (PTI) at semi-confined locations

RECENT PUBLICATION

By Edgar Li

Professional Charges for Building Surveying Services (May 1998)

This publication sets out the recommended scales of professional charges as determined by the Building Surveying Division of the Hong Kong Institute of Surveyors. The scales cover a large variety of building surveying functions including:

(1) alteration, renovation, refurbishment, fire safety improvements
(2) repairs and maintenance
(3) monitoring of development scheme
(4) project management
(5) certain works such as fire insurance valuations, schedule of condition, expert witness, etc. (to be reimbursed by hourly rates)
(6) building surveys and determination and measurement of floor areas
(7) building and fire safety inspections

Available at HKIS Secretariat Office.

Author: HKIS

Technical Memorandum for Supervision Plan (Apr 1998)

Specific requirements on the supervision of building works and street works under the Buildings Ordinance came into operation on 22 Dec 1997 and by phasing according to the type of works (e.g. demolition, slope repair, addition and alteration, etc.). This Memorandum addresses the principles, requirements and operation of supervision plans.

Available for sale at Government Publication Office.

Author, Buildings Department

Draft Code of Practice for Demolition of Buildings, Buildings Dept (Apr 1998)

This draft Code provides a guidance on safe and good practices for demolition works and for compliance with the relevant Building Regulations. It addresses five main aspects of demolition works: planning; precautionary measures; methods of demolition; special structure; and site supervision and inspection.

Available for sale at Government Publication Office.

Author, Buildings Department

Building Construction in Hong Kong (Apr 1998)

This publication is a symposium to explore ways to improve the current system of building construction. This is a reasonably comprehensive account of current practice in the execution, supervision and management of different types of building construction in Hong Kong.

Available for sale at Government Publication Office.

Author, Buildings Department

An English-Chinese Glossary of Terms Commonly Used in Government Department Vol. 19 Town Planning (Apr 1998)

This glossary contains the terms that have been used in documents issued by the Planning Department. It provides a handy translation aid and standardizes the Chinese translation of these terms.

Available for sale at Government Publication Office.

Author, Buildings Department

Editorial Contributions

"Building Surveyors" encourages article queries and submission. Article submissions should include both hard (printed) copy and a diskette in Word format. Contributors should contact the editor, Mr. Alan Sin at Tel. 2773-2501 or Fax. 2765-8423.

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