

**RURB-DCP Webinar Series No. 28/2020:**  
**THE COMPLIANCE OF FIRE SAFETY DESIGN IN BUILDINGS**  
**BASED ON UBBL 1984**

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**Date** : 30<sup>th</sup> November 2020 (Monday)  
**Time** : 10.00am – 12.00pm  
**Speaker** : YS TPjB Edwin Galan Teruki  
Director, Fire Safety Division, FRDM (BOMBA)  
**Moderator** : Tn Hj Syamsul Arman Yap  
MPC Associate  
**Platform** : Zoom & Facebook Live

Saya memperakui bahawa barang  
orang/perkhidmatan yang dipesan  
telah dilaksanakan dengan memuaskan  
dan sempurna.

Tandatangan: .....  
Nama: Mohamad Azrol Mohamad Dali  
Jawatan: Timbalan Pengarah RURB/NCS  
Tarikh: 10 Disember 2020

## OVERVIEW

This webinar session aims to enhance understanding on fire safety in building design in accordance to UBBL 1984. The session discussed in details the principles of fire safety design, plan approvals and its issues, followed by a Q&A session.

## PRESENTATION SUMMARY

Fire safety is defined as fire prevention, limiting the spread of fire and smoke, extinguishing a fire and the chance of a quick and safe exit. Prioritizing fire safety into design consideration at the early stage is important to ensure safety and helps reduce the need to drastically change function/appearance of the building later on in the project progress.

To achieve high fire safety standard and reduce rejection of building plan submissions, it is important for FRDM cooperate with professionals, especially in raising awareness and increase knowledge of fire safety design in accordance to UBBL 1984. Successful fire safety design requires understanding of fire source, smoke movement, heat transfer to the building structure, detection, human behavior and toxicity.

## **Principles of Fire Safety Design**

The presentation deliberated in detail the principles of fire safety design based on UBBL 1984:

(i) Fire Appliance Access Road:

- Minimum 6m width and 30 tons load capacity;
- Ramp gradient does not exceed 1:15;
- Located between 2 to 10m from the building;
- Overhead clearance more than 4.5m;
- Turning facility available (T-turn or cul-de-sac);
- Dead end for access road not exceeding 46m.

(ii) Means of Escape:

- Exit access: travel distance, dead end and corridor specifications to be based on 7<sup>th</sup> schedule of UBBL;
- Exit: location, fire rating and number of fire doors; protected fire staircase, firefighting staircase and access lobby, fire lift;
- Final discharge: a safe place easy to reach directly to the outside of the building i.e. shall not be complicated to navigate to exit the building.

(iii) Compartmentation:

- Construction materials compliance with fire standards including fire rating of walls and floors;
- Size of wall and floor compartmentation to be in accordance with 5<sup>th</sup> Schedule of UBBL.

(iv) External Wall & Cladding:

- Fire resistance rating in accordance to 9<sup>th</sup> Schedule;
- Limits of unprotected openings in accordance to 6<sup>th</sup> Schedule;
- Cladding of buildings higher than 18m must adhere to BS 8414 (Fire performance of external cladding systems).

(v) Fire Safety Insulation System (FSI):

- Location and distance/capacity of emergency lighting, exit sign, portable fire extinguisher & hose reel;
- Suitable CO<sub>2</sub>, smoke management, fire detection and alarm, and sprinkler system integration;
- Fire Command Centre (FCC) or fire safety control room: must be easy to navigate to, compartmentalized and able to withstand fire;
- Location and coverage distance/capacity of hydrant and pressurized hydrant system, wet and dry risers, water mist and foam system.

(vi) Fire Fighting Shaft:

- Firefighting access lobby – complete with firefighting staircase, wet and dry risers, natural or mechanical ventilation;
- Fire lift – distance between fire lift core is maximum 60m, based on space progression through the rooms.

(vii) Ventilation System:

- Has to be provided for large above ground buildings, atrium, staircase, smoke lobby, basement.

(viii) Special Requirements for Hospitals:

- Refuge area for horizontal evacuation – allow for moving of patients on bed/with medical equipment;
- Escape bed lift – adjacent to a protected exit staircase;
- Staircases and exit doors must be wide enough to allow evacuation of patients on mattresses and stretchers.

(ix) Requirements for Fire Shutter:

- Thermal insulated fire shutters are permitted to be used as compartment wall, except for FCC and means of escapes (including protected corridors, etc.)

## **Plan Approval by Fire and Rescue Department Malaysia (FRDM)**

As per By-Law 245 (1) and (2) of UBBL, plans shall be submitted to FRDM prior to commencement of work. FRDM's client charter is to issue approval within 14 days of submission provided that all required information is sufficient. The common reasons why plans are rejected are also elaborated:

- (i) Means of escape: travel distance not complying to 7<sup>th</sup> schedule, inappropriate exit location and insufficient number of exits;
- (ii) Compartmentation: does not comply to 5<sup>th</sup> schedule, use of unprotected openings and unpermitted materials;
- (iii) Fire appliance access not clearly shown on plan or inadequate width and length along the perimeter of the building;
- (iv) FSI: not clearly shown on plan, does not comply to 10<sup>th</sup> schedule, inappropriate location

As for CCC, FRDM encourages self-regulation of the professionals i.e. PSP to check fire safety compliance on site prior to FRDM inspection. Engagement with professionals are one way to elevate the fire safety standard in the future. Other future solutions include: regulating Fire Safety Contractors, Facilities and Inspectors; introducing Fire Safety Code under Fire Services Act 1988; and conducting courses and seminars among Fire Officers and PSPs.

## **Q&A SESSION**

Questions related to these topics were raised by the moderator and participants:

- (i) Plan Approvals
  - It is important for architects to be permitted to submit KM, rather than putting the role aside exclusive for planners as architects are more well-versed with fire safety requirements. Further discussion with PLANMalaysia and KPKT are due to address solutions to this matter.
- (ii) Technical Concerns:
  - An audience questioned the need for a smoke control system for a building above 1,000 m<sup>2</sup> (based on MS 1780), if 5% opening is already provided for natural ventilation (based on By-Law 39 UBBL). The speaker confirmed

that if the opening is already in compliance, natural ventilation is sufficient instead of incorporating smoke control system. He also mentioned that the requirements for smoke control system will be revised in an amendment to UBBL.

- In accordance to MS 1489, the wet riser system shall be at 45m from valve to valve, not radius distance. This is so that it can be reached/accessed at all locations in the event of a fire.
- Since there were many case-by-case technical questions posed during the session, it is suggested for consultants to have a one-to-one consultation with FRDM to further discuss and resolve the issues.

(iii) UBBL standardization:

- The streamlining interpretation of UBBL is underway including conducting training courses for Fire Officers to standardize interpretation. To minimize misinterpretations, reviews of the submission plan are conducted under a fire safety committee. FRDM is also in the process of making standardizing the differing requirements between UBBL 1984 and 2012. Meanwhile, to synchronize understanding on UBBL among PSP, workshops are conducted as well as the creation of Red Book for guide and reference.
- FRDM is also currently looking at amending the UBBL to incorporate guideline reservations for heritage buildings refurbishment/renovations. At the moment, FRDM permits adoption of MS 1183 (Fire Safety Management) in cases where UBBL could not be complied to, except for means of escape.
- The upcoming UBBL amendments will also revise the needs for smoke control system and elaborate more details on fire safety system including description of specific pressurized system, smoke movement. The new amendment shall apply nationwide including East Malaysia.

(iv) Fire Safety Contractor (FSC):

- The registration of FSC is also elaborated. FSC does not have the authority to assume the roles of PSP, rather only to install fire safety equipment e.g.

fire extinguishers. The purpose of the registration is to regulate the contractors; ensuring FSC are competent and responsible for the work/installation they have carried out.

(v) **CCC Pre-Inspection:**

- It is explained that the implementation of pre-inspection of Fire Compliance as per CCC requirement applies all over Malaysia. FRDM has issued instruction which includes East Malaysia to adopt. The checklist for CCC pre-inspection by PSP will be made available via FRDM e-Premise in the midst of development in the future.

## **CONCLUSION**

The webinar ended at 12.00 pm. A lively response from the audience during the Q&A session suggests that knowledge on fire safety requirements needs to be immensely enriched.

Recording of the session can be viewed at:

<https://fb.watch/2cn8FFF6O0/>

A copy of the presentation slides is available at:

<https://drive.google.com/file/d/1sCBDe54RKZLwbe7NezmifuD0Xz8cU5Pe/view?fbclid=IwAR0V3BQLyoZgsLAIAUSeOBAmrjnk-ljdHA9JLf-JH8uAbxWfWIRRI1zTSEA>

## **Prepared by:**

RURB-DCP Secretariat

6<sup>th</sup> December 2020