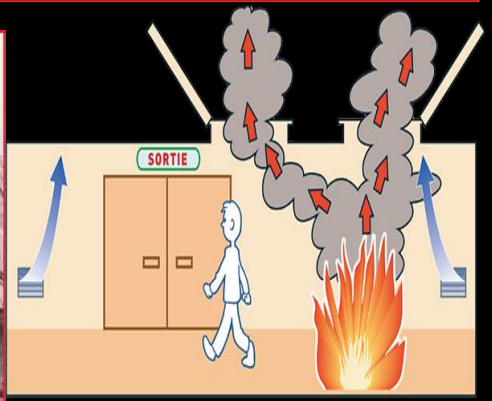
PEMASANGAN SISTEM MEKANIKAL

-PEPASANGAN KESELAMATAN KEBAKARAN AKTIF



Penguasa Kanan Bomba
Abdul Khair Bin Osman
Ketua Cawangan Pendaftaran Keselamatan Kebakaran
Bahagian Keselamatan Kebakaran
Ibu Pejabat
Jabatan Bomba Dan Penyelamat, Malaysia

PRINSIP UTAMA KESELAMATAN KEBAKARAN

Prinsip utama di sebalik kehendak keselamatan kebakaran adalah untuk mencapai 5 perkara seperti berikut:

i. Keselamatan nyawa penghuni/pengunjung (*life safety*);
ii. Keselamatan harta benda (*property protection*);
iii. Keselamatan pasukan pemadam kebakaran (*firefighters' safety*);
iv. Keselamatan bangunan bersebelahan (*safety of the adjacent building*); dan
v. Business continuity.

Untuk mencapai prinsip tersebut, setiap premis yang dibina perlulah direkabentuk dengan mempunyai ciri-ciri asas keselamatan kebakaran seperti berikut:-

i. Mempunyai kemudahan jalan keluar keselamatan *(means of escape)* yang mencukupi bagi membolehkan penghuni bangunan keluar dengan selamat sekiranya berlaku kebakaran;

ii. Struktur bangunan *(element of structure)* mempunyai ketahanan api untuk satu tempoh yang manasabah;

iii. Kemerebakan api dan asap dihadkan dengan mengawal saiz pemetakan (***compartmentation limit***);

iv. Kebakaran dapat dikesan dan dipadamkan diperingkat awal dengan mengadakan sistem pengesanan dan pemadaman kebakaran (*detection and fire fighting system*).

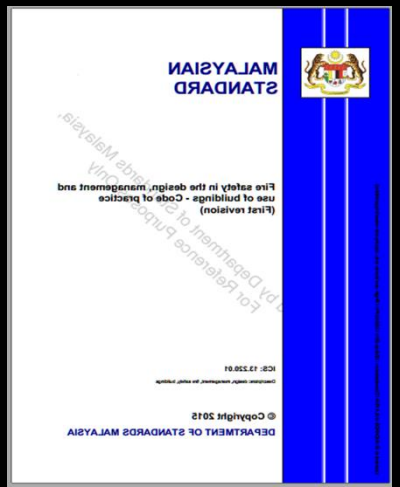
Keperluan mengadakan PKK telah dinyatakan dalam UUKBS 1984 melalui peruntukan berikut;

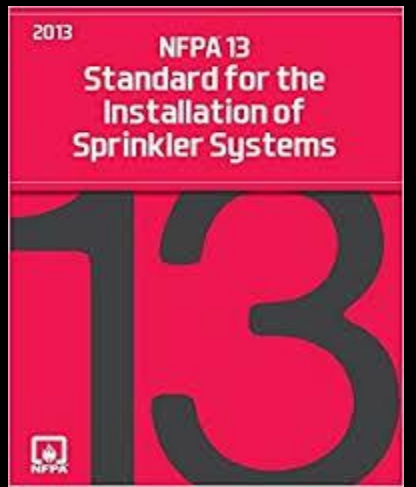
i. UUK 225(2), tiap-tiap bangunan hendaklah dilengkapi dengan kelengkapan menentang kebakaran.

i. UUK 236, Ketua Pengarah JBPM boleh menentukan kelengkapan menentang kebakaran khas bagi tempat-tempat yang mempunyai bahaya atau risiko khas.

PERUNDANGAN & RUJUKAN BERKAITAN

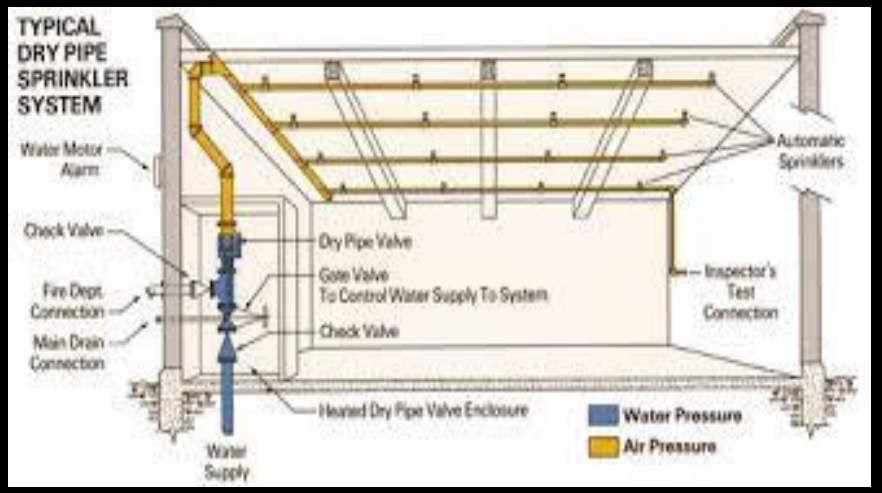
- UBBL 1984
- UBBL 1984 Pindaan 2012
- Malaysian Standard
- British Standard
- National Fire Protection Associates (NFPA)
- Australian Standard

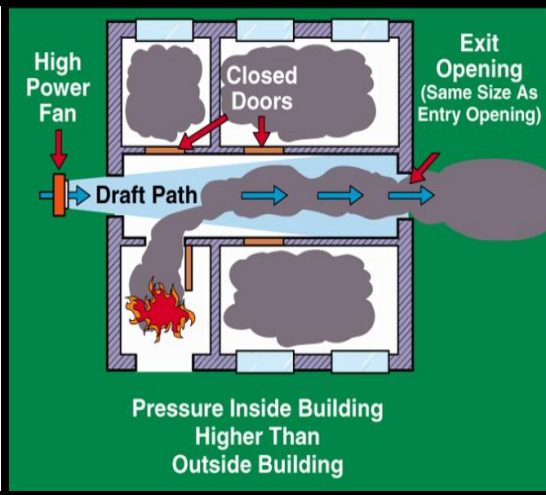




SUMBER RUJUKAN REKABENTUK PKK AKTIF

- Sprinkler - MS 1910, LPC,NFPA 13
- Sistem Pengurusan Asap – MS 1780, MS 1472, MS 1471
- Hose Reel – MS 1489
- Wet/Dry Riser – MS 1489
- Deluge System –NFPA 15
- Fire Extinguisher – MS 1539





UBBL 1984 VS UBBL 1984 PINDAAN 2012

Negeri yang telah mewartakan

Penentuan sistem – Jadual Kesepuluh

Pelan Piawai

2.	HOSPITALS AND NURSING HOMES (Total floor area)	
	(i) Clinic–day care	
	(a) 1,001 sq. m. to 2,000 sq. m	A
	(b) 1,001 sq. m. to 2,000 sq. m	A
	(c) above 2,000 sq. m	A & B
	(ii) In-patient Treatment	
	(a) Part of office or shopping complex	To be considered as part of overall risk with special requirements for emergency lighting stretcher lif

Hose Reel & Sprinkler

1 & 2

1, 3, 4 & 5

complexes and shopping complexes

risk

2. HOSPITALS AND NURSING HOMES

(i) Clinic-day care

(ii) In-patient Treatment

(a) Part of office or shopping complex

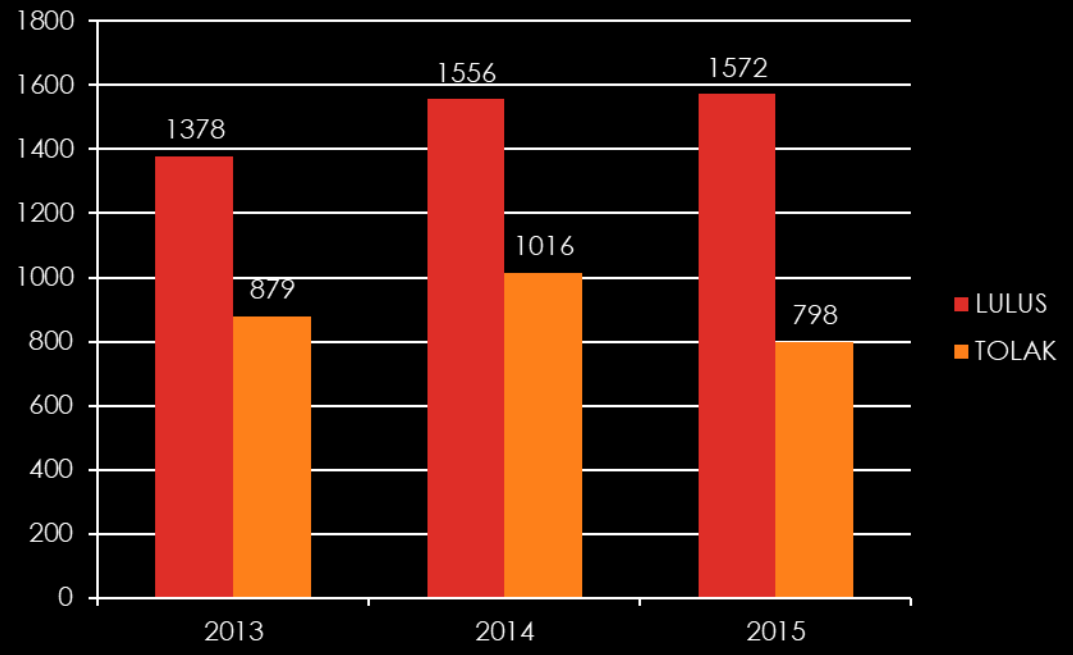
To be considered as part of overall risk with special requirements for emergency

Not require any system

STATISTIK KELULUSAN PELAN OLEH JBPM DARI TAHUN 2014 SEHINGGA 2017

M&E Plan

TAHUN	JUMLAH	DIPERAKU	TOLAK
2014	2,257	1,378	879
2015	2,572	1,556	1,016
2017	2,370	1,572	798



PERINCIAN PENOLAKAN PELAN MEKANIKAL DAN PEMERIKSAAN

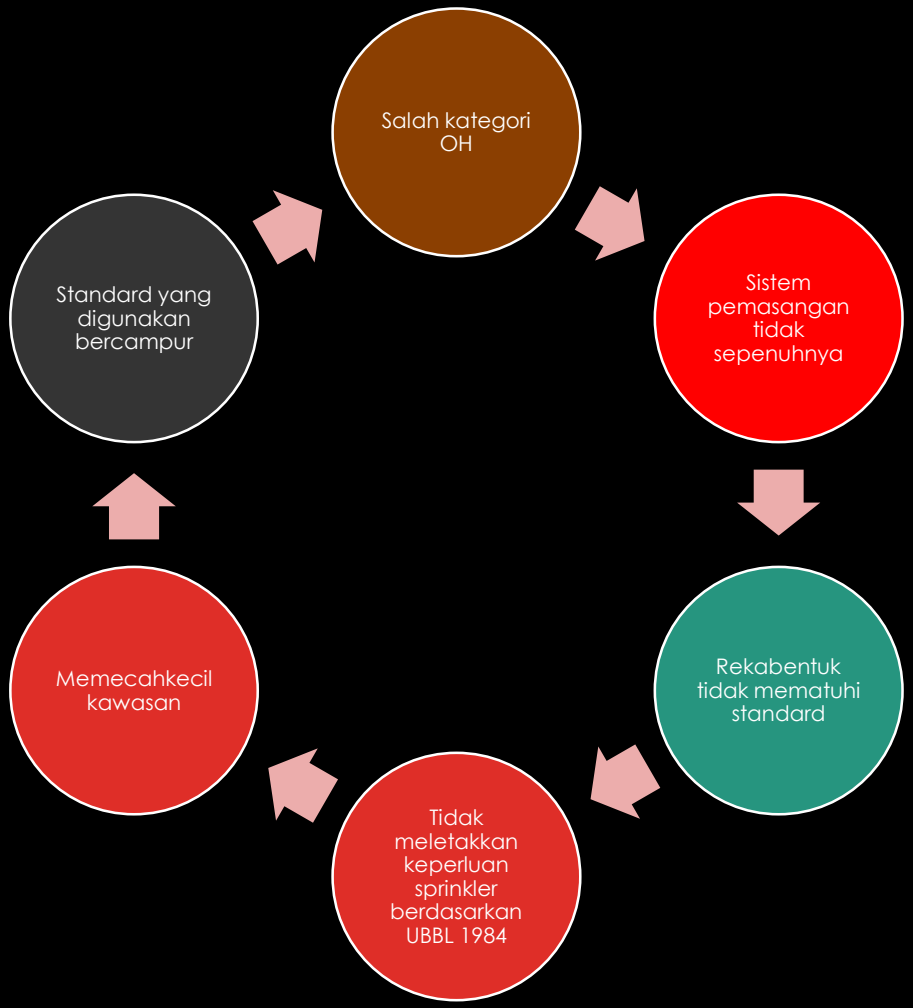
- Sistem Semburan Air Otomatik
- Sistem pengurusan Asap
- Perakuan Bahan
- Pelan Arkitektural berbeza pelan mekanikal
- Rujukan Standard tidak diiktiraf

SPRINKLER SYSTEM

- Kepentingan Sprinkler System
- Mengesan
- Mengawal
- Memadam Kebakaran

Jadual 10

SPRINKLER SYSTEM



SPACING ARRANGEMENTS (Standard Spacing)

S = Design spacing of sprinkler on
Max . 4.6 m EXTRA LIGHT Hazard.

range pipes.
Max . 4.0 m ORDINARY Hazard.

D = Distance between adjacent
Max . 3.7 m EXTRA HIGH Hazard.

rows of sprinklers.

21

m2 or less EXTRA LIGHT Hazard.

S X D = 12 m2 or less ORDINARY Hazard

9 m2 or less EXTRA HIGH Hazard

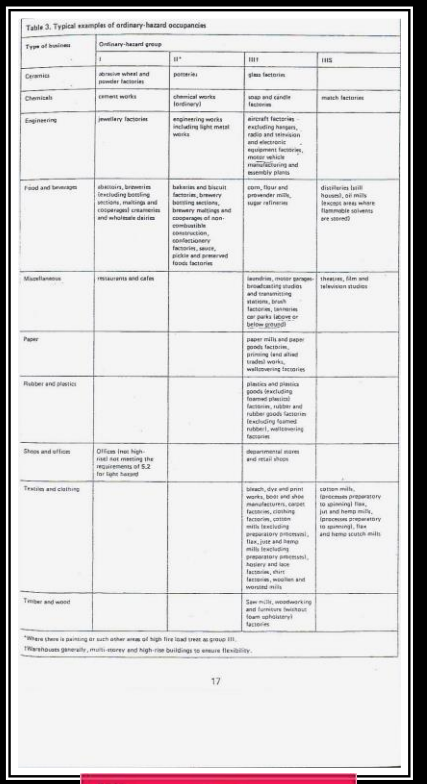
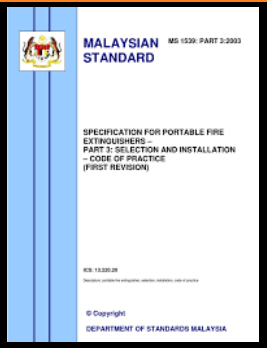


Table 3. Typical examples of ordinary-hazard occupancies

Type of business	Ordinary-hazard group			
	I	II*	III*	IIIS
Ceramics	abrasive wheel and powder factories	potteries	glass factories	
Chemicals	cement works	chemical works (ordinary)	soap and candle factories	match factories
Engineering	jewellery factories	engineering works including light metal works	aircraft factories - excluding hangars, radio and television and electronic equipment factories, motor vehicle manufacturing and assembly plants	
Food and beverages	abattoirs, breweries (excluding bottling sections, maltings and cooperaged creameries and wholesale dairies	bakeries and biscuit factories, brewery bottling sections, brewery maltings and cooperages of non-combustible construction, confectionery factories, sauce, pickle and preserved foods factories	corn, flour and provender mills, sugar refineries	distilleries (still houses), oil mills (except areas where flammable solvents are stored)
Miscellaneous	restaurants and cafes		laundries, motor garages, broadcasting studios and transmitting stations, brush factories, tanneries car parks (above or below ground)	theatres, film and television studios
Paper			paper mills and paper goods factories, printing (and allied trades) works, wallcovering factories	
Rubber and plastics			plastics and plastics goods (excluding foamed plastics) factories, rubber and rubber-goods factories (excluding foamed rubber), wallcovering factories	
Shops and offices	Offices (not high-rise) not meeting the requirements of 5.2 for light hazard		departmental stores and retail shops	
Textiles and clothing			bleach, dye and print works, boot and shoe manufacturers, carpet factories, clothing factories, cotton mills (excluding preparatory processes), flax, jute and hemp mills (excluding preparatory processes), hosiery and lace factories, shirt factories, woollen and worsted mills	cotton mills, (processes preparatory to spinning) flax, jut and hemp mills, (processes preparatory to spinning), flax and hemp scutch mills
Timber and wood			Saw mills, woodworking and furniture (without foam upholstery) factories	

*Where there is painting or such other areas of high fire load treat as group III.
†Warehouses generally, multi-storey and high-rise buildings to ensure flexibility.

17



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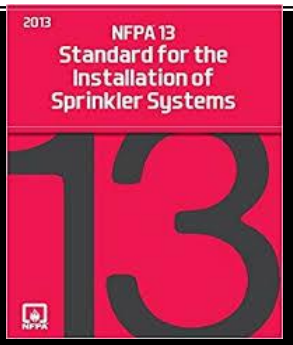
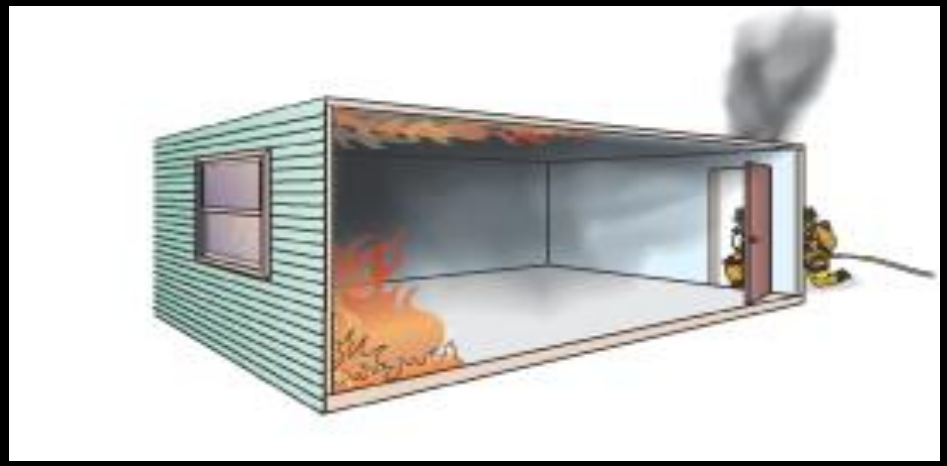


SISTEM PENGURUSAN ASAP

- Pengurusan Asap

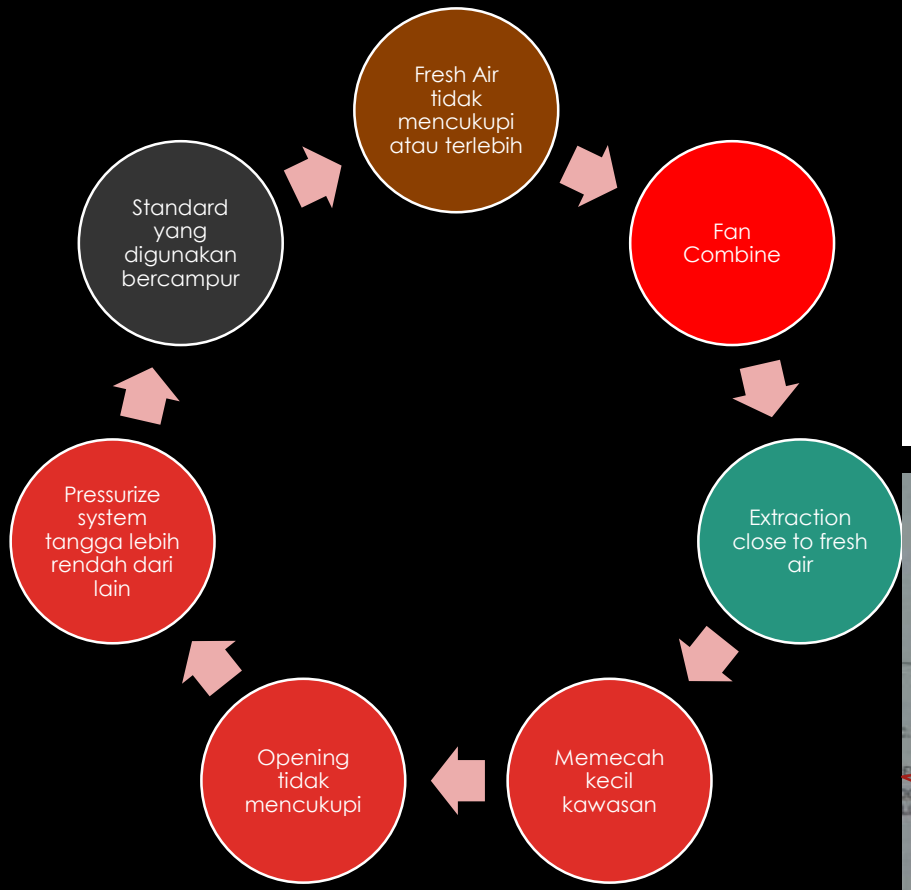
  Kaedah kawalan asap yang menggunakan sistem natural atau mekanikal untuk mengekalkan persekitaran selamat dalam kemudahan jalan keluar dari suatu ruang besar atau untuk mengawal dan mengurangkan kemerebakan asap di antara kawasan kebakaran dengan ruang berhubungan - NFPA 92 Standard for Smoke Control Systems Edisi 2012



Struktur tanpa pengudaraan

Struktur berpengudaraan

SISTEM PENGURUSAN ASAP



NOTE:

Open Structure

(1) Total surface area of openings is to be no less than 40% of the total perimeter wall area enclosing the floor or compartment.

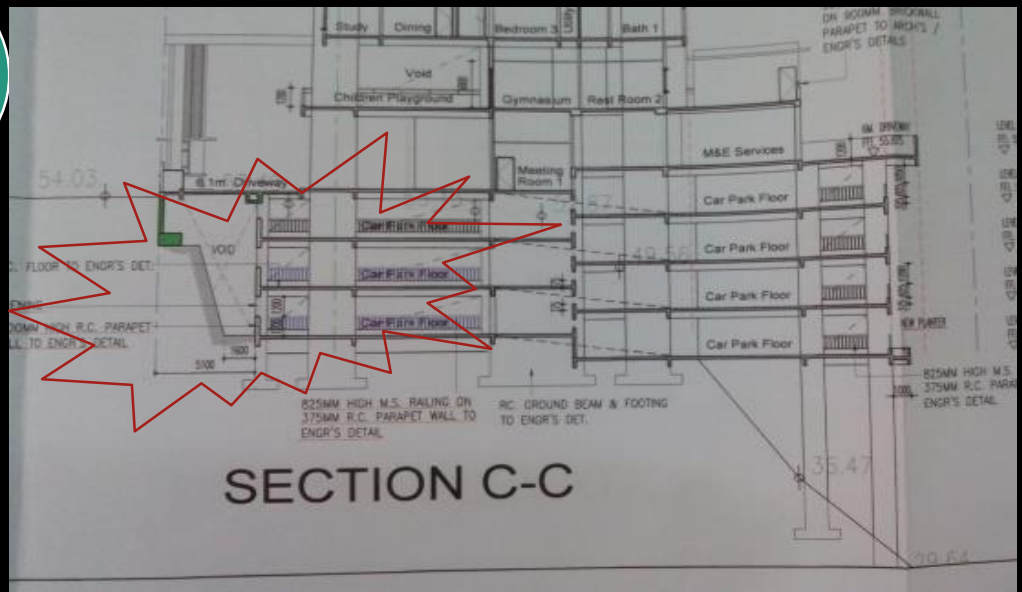
(2) The opening(s) is too be shaped and located in such a way that total length in plan of the opening(s) is to be no less than 50% of the perimeter of the floor or compartment.

Open Corridor

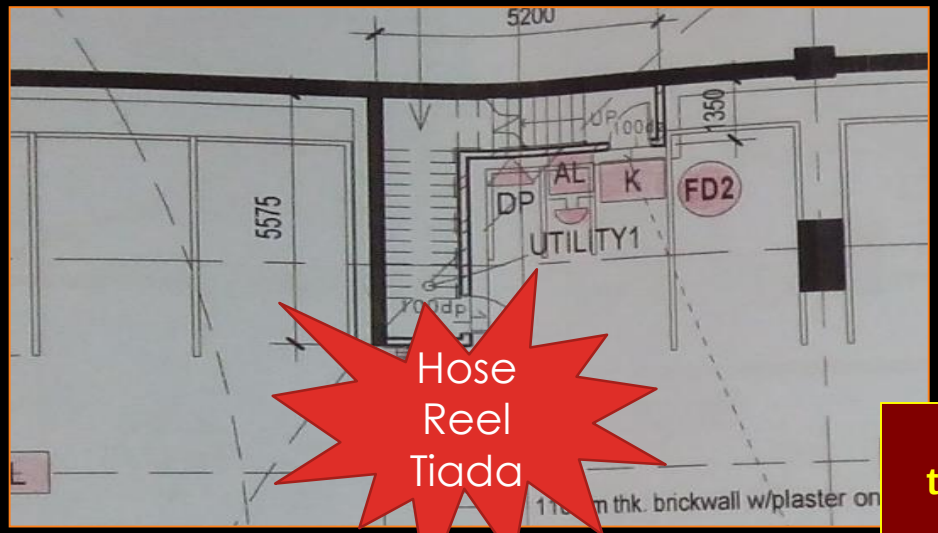
(1) Total surface area of openings is to be no less than 25% of the total perimeter wall area enclosing the balcony.

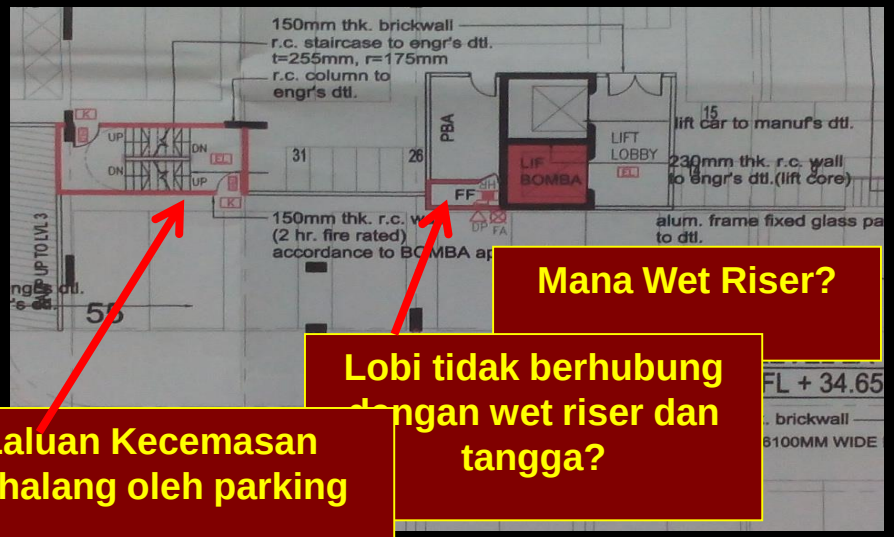
(2) The opening(s) is too be shaped and located in such a way that total length in plan of the opening(s) is to be no less than 50% of the perimeter of the balcony.

"Openings" is to be opened to outside, unenclosed space or permitted airwells. Any individual opening having surface area less than 600 mm² or area width of opening is less than 25 mm is not to be regarded as an opening for the purpose.



KESALAHAN –KESALAHAN SEMASA





HOSPITAL SULTANAH AMINAH (HSA) OCT 2016

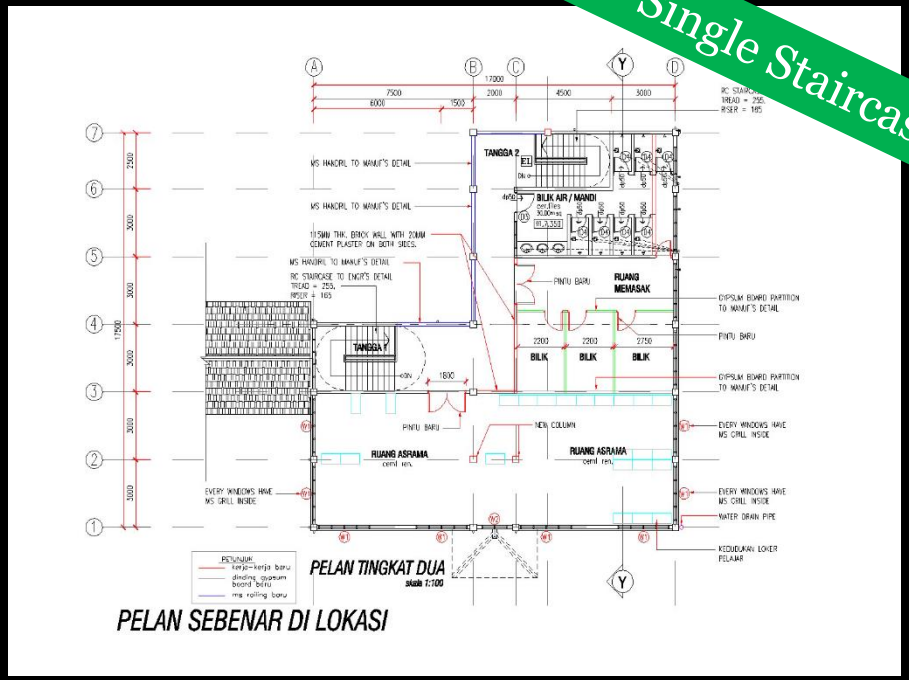
Renungan

Pusat Tahfiz Darul Quran Ittifaqiyah
14 September 2017

Renungan

Fire Fighthing System?????

100 % burn



Single Staircase

Fail to Escape

Unsafe-smoke 2.1 m
Temp 200 °C

PENYELENGGARAAN

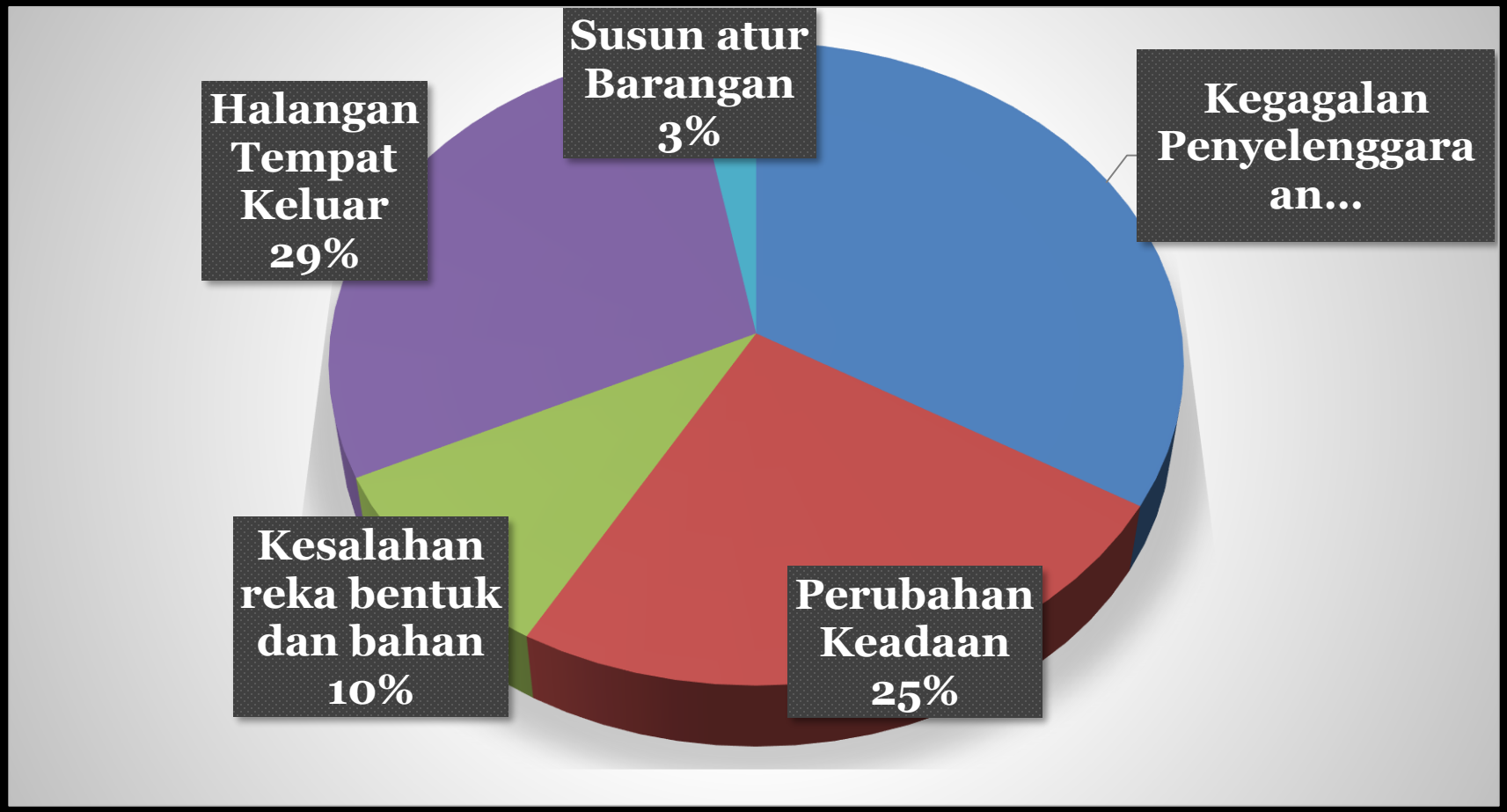
Rutin pemeriksaan dan penyelenggaraan

- Harian
- Mingguan
- Bulanan

MALAYSIAN STANDARD 1183

Keperluan/Kepentingan Pemeriksaan, Ujian dan Penyelenggaraan yang Kerap ke atas Pepasangan Keselamatan Kebakaran di Premis-Premis

ANALISA NOTIS KEPADA PREMIS



KUNCI PADA PETI ALAT PEMADAM API HILANG

INJAP PANCUR KERING DITANAM DENGAN ‘CONCRETE’

Bell system ditutup

KEROSAKAN ‘EMERGENCY LIGHT’

PANEL PENGGERA KEBAKARAN TIDAK DAPAT BERFUNGSI

PINTU API DITANGGALKAN

TIADA HAND WHEEL PADA ‘LANDING VALVE’ SISTEM ‘WET RISER’

HOS TIDAK DISEDIAKAN UNTUK SISTEM ‘WET RISER’

HOS TIDAK DISEDIAKAN UNTUK SISTEM ‘WET RISER’

SISTEM AHU TIDAK DAPAT DIMATIKAN SECARA AUTOMATIK APABILA PENGGERA

KEROSAKAN LAMPU KECEMASAN

TIDAK MENYEDIAKAN ‘BUND WALL’ PADA TANGKI SIMPANAN DIESEL

PAGAR PENGHALANG YANG DI PASANG DI HADAPAN ‘INLET VALVE’ SISTEM SPRINKLER

‘FIRE CURTAIN’ DITANGGALKAN PADA BUKAAN DI BILIK GENSET

PINTU API DITANGGALKAN

Hand Wheel pili bomba telah ditanggalkan

Halangan pada tangga keselamatan

Pembinaan stor pada tempat letak kereta tanpa mendapat kelulusan dari pihak berkuasa

Tempat letak kereta telah dijadikan kawasan simpanan

RENUNGAN SEJENAK

- Penyelenggaraan alat pemadam api (APA)
  - 05.30pm 20 Februari 2008. Wakaf Mek Zainab, Kota Bharu – 3 orang pekerja cedera parah.
  - 05.45 pm 08 Oktober 2008 . Johor Bharu – seorang terkorban dan dua cedera parah.
  - Kerosakan pada pressure gauge menyebabkan masalah lampau tekanan berlaku semasa pengisian gas Nitrogen.
  - Kepentingan mengadakan dan menyelenggara peralatan yang digunakan sebelum terlewat.

Punca-tidak menggunakan first stage reducer

Serpihan yang mengorbankan seorang pelajar

KEBAKARAN BANGUNAN KWSP JALAN GASING 13 FEBRUARI 2018

Renungan

Pengawasan kerja

Peranan ERT????

Penyelenggaraan

Cladding????

Fire Alarm

THANK YOU