GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS				FF-01-2014
Note: For Strict Compliance ***Each item is checked for completeness and compliance to NFPA Standards and General Directorate of Civil Defence, General Requirements. Check the applicable/required item/s and attached this document to each plan submission / re-submissions made.***				**PS-_____-FF**
Item	DESCRIPTION	Provisions		
		Y	N	NA
1.0	**GENERAL**			
	a.) Drawings to be submitted through MOI Online Permit System Portal must be in ACAD file format, purge, bonded with corresponding model space & paper space layouts for review.			
	b.) Drawing layouts shall follow the standard format for Title Block.			
	c.) All drawings, calculations & related design reports shall be signed and endorsed by the designated Consultant Engineer, attested by the Engineering Company to where he/she is employed. The consultant shall certify on every drawing layout that the fire safety plan submission is designed with the provision of NFPA 10, 13, 14, 20, 22, 24 101, 170, 5000, other applicable NFPA standards and Qatar Civil Defence requirements. Declare that the equipment and all devices to be used for fire fire fighting shall be Listed for such purposes and approved type by QCDD.			
2.0	**PLANS AND DOCUMENTS TO BE SUBMITTED**			
	a.) Detailed Design Report – A narrative report that provides the following (where applicable): - Description of the building, uses and occupancies of each spaces, passive and active fire protection system that will work together with the smoke control system. - Design criteria and objectives. Automatic fire sprinklers, standpipes and other extinguishing systems.			
	b.) Cover/Front Page, Floor Plans, Building Elevation & Sectional Drawings, Miscellaneous Details, Riser Diagram, Calculation & Details as listed on the Approved Building Plan.			
	c.) Policy Plan (Indicating Location, PIN, & QARS (Areas/Street/Plot Numbers, application number).			
	d.) Urban Planning & Development Authority (UPDA) latest and updated registration of the Consultant & the Engineering Consulting Company.			
	e.) This document, the Guidelines for plan submission to serve as review checklist.			
	f.) Fire Safety provision shall be in accordance with the minimum requirements as prescribed by NFPA Standards and QCD General Requirements. Provisions in excess of the minimum requirements shall be confirmed by the design consultant with a letter from the owner/client.			
3.0	**STANDARD DETAILS TO BE SHOWN ON TITLE BLOCKS**			
	a.) Proper endorsement, drawing title & QCD space for stamps shall be provided.			
	b.) List applicable codes used in the design of the project shall be indicated with complete editions & date.			
	c.) Logo & stamp of the consultant/contractor firm complete with address and contact information shall be properly placed.			
	d.) Owner's name & other details such as address and contact nos. shall be indicated.			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS				FF-01-2014
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Item	DESCRIPTION	Provisions		
		Y	N	NA
	e.) Complete address of the project, Pin, area, plot & street nos. must be clearly provided.			
	f.) Indicate correct plan scale in each drawing page.			
	g.) Complete name of engineer shall be clearly shown.			
	h.) History of revisions must be provided.			
	i.) Sheet number and content title must be consistent with the drawing index.			
4.0	**COVER / FRONT PAGE** ***Declaring, enumerating or tabulation of all the fire safety provisions required for the project.***			
	a.) Drawing index with corresponding paper size and scale must be provided clearly and consistent with each page of the drawings.			
	b.) Area statement of every floor, level, room, area and/or occupancy.			
	c.) Project description shall be provided to indicate the intent and purpose of the submission, building classification, construction type, building occupancy, hazard classification and the processes or operations conducted in the building or structure. Type of commodities classifications (Class I to IV / Group A,B,C), storage arrangement/type (Palletized, Solid Piled, Bin Boxes, Shelf Storage, Rack) and Storage Height shall be included in the description. Such description shall be consistent with the design report.			
	d.) Scope of work: A summarized design intent (based from design report), proposed project details/activity must be clearly indicated.			
	e.) Design parameters / criteria with complete description of the system shall be properly declared and supported with engineering calculations. (e.g. automatic fire sprinklers, standpipes system) - For Industrial occupancies a brief description of manufacturing process involved (spraying , metal cutting, dipping, forming, extrusion, drying , or what is applicable to the project). A narrative on the process flow from raw materials to finish product shall be provided together with the equipment / machineries (if oven, boilers, radiant coils, conveyor or what is applicable to the project). - Show the design criteria for each type of occupancy but not limited to the following: a. Type of Occupancy: b. Hazard Classification: c. Commodity Classification: d. Area of Operation: d.1. For CMDA, minimum area of operation (or actual area for deluge) d.2. For CMSA, number of active sprinkler. e. Design Density: f. Area per sprinkler coverage: g. Sprinkler K-factor: h. Type of sprinkler used:			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS				FF-01-2014
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Item	DESCRIPTION	Provisions		
		Y	N	NA
	i. Maximum & minimum sprinkler spacing: j. Maximum sprinkler distance from wall and other obstruction: k. Maximum Ceiling Temperature l. Sprinkler Temperature Rating m. Inside & outside hose stream allowance: n. Minimum Duration of Operation: o. Standpipe Classification: - Consultant/Mechanical Engineer must check the appropriate declaration & the submitted Hydraulic calculation.			
	f.) Equipment Schedule must be provided. (this may be provided on a separate sheet). - Fire Pumps equipment schedule indicating the type of pump, capacity, head and power requirements - Fire Extinguisher equipment schedule indicating the class (A,B,C,D,K) capacity (lbs/ kg / gal), type (ABC, dry / wet chemical, CO, foam or others), description (wheeled, cartridge), rating in terms of A:B:C) and tagging (i.e. FE-1, FE-2). - Water Tank equipment schedule indicating the following: area, effective height, volume, capacity, duration, construction type (steel, concrete) , location, accessories .			
	g.) General notes applicable for the project shall be provided.			
	h.) Provide only the applicable legends & symbols making sure that all floor plan layouts shall be consistent with the schematic riser diagrams. - Provide unique legend and symbol for each type of sprinkler (if std. sidewall, ec sidewall type, cmsa, upright, pendent and so on) , also for fire extinguishers (type, class and capacity).			
	i.) Brief material specification related equipment/devices, etc. shall be provided.			
	j.) Specify all fire fighting pipes for fire safety application penetrating thru walls and slabs shall be sealed with fire retardant material with rating of not less than the fire rating of the wall or slab being penetrated.			
	k.) Indicate in the general notes that piping of wet/dry fire fighting system shall be protected against seismic events complying with nfpa 13. provide declaration on plan that flexible connection shall be installed on building seismic/expansion joints/gaps and shall be in compliance with chapter 9 of NFPA 13-2013 ed.			
	l.) Provide declaration that contractor / consultant shall coordinate with other trades prior to installation. Any conflict / obstructions shall be resolved or provided with additional/changes sprinklers if necessary (or other fire safety equipment where applicable).			
5.0	**SITE PLAN** ***Site Plan scaled to fit an A0 or A1 drawing sheet and shall indicate the following:***			
	a.) Means of access to the site and to the perimeter of each building for firefighting vehicle and equipment. Site plan must indicate the location of breeching inlets, fire engine access and hardstanding, fire pump room & fire tank outline, breeching inlets and other fire safety feature of the building area as per CDD standard requirement. Ensure that Breeching Inlet of a Rising Main shall be located within 18m of the adjacent fire appliance road or			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS		FF-01-2014		
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Item	DESCRIPTION	Provisions		
		Y	N	NA
	hardstanding.			
	b.) For multiple buildings being served by a single fire water source, show in the site plan the fire water pipe network including the interfacing of the buildings and location of the fire pump room. For stand alone, declaration on the location of the fire pump and fire water source.			
	c.) Grid Line References (x, y) and shall be same with other floor plan drawings.			
6.0	**FLOOR PLANS (BASEMENT/S, GROUND, MEZZANINE, TYPICAL FLOORS, ROOF/SERVICE FLOOR)** ***- The proposed, existing use of every part or modified portions of the plan clearly identified and provided with a narrative description of the scope of work/activity. (Hatch existing part of the plan for modifications / fit outs).***			
	a.) Landing Valve (Wet/Dry Riser) for fire fighting operations shall have coverage of 930M2, installed in order of priority : (1) fire fighting lobby (2) smoke stop lobby (3) inside staircase and comply with NFPA 14.			
	b.) Ensure that the fire fighting system is in compliance to QCD Requirements, NFPA 13(Sprinkler System), NFPA 14(Stand Pipe System), NFPA 20(Fire Pump Installation), NFPA 22(Fire Water Storage Tank), etc. (Latest Edition). - Provision of sprinklers on the lowest point of the elevator shaft (elevator pit). - The sprinkler location, spacing, distances from walls and obstruction, clearance from the top of storage, clearance from slab/roof & distance/height from finish floor level shall be checked by the Consultant. - Check if flushing connection is provided per level. Sprinkler systems shall have Inspector Test Connections fitted to the most remote sprinkler(s) on each floor/zone. An orifice to simulate a single sprinkler operation shall be fitted to the end of it. - Location of hose reels shall be clearly shown in the plans. The number and location of fire hose reels must be such that the most remote section of the building is able to be reached by a hose reel discharging a 6 m stream of water.			
	c.) Provision of sprinklers inside the fire pump room (if installed below ground level) and shall be rated as Extra Hazard Group 1.			
	d.) Identification of the floor/zone control valve assembly including total area and total sprinkler being supplied			
	e.) Cloud/shade those remotest/demanding sprinklers with reference nodes corresponding to the hydraulic calculation/ analysis report as required by NFPA 13 latest edition.			
	f.) Location and size of Riser Nipple and flushing provision.			
	g.) Legend and symbols used in the plan to verify the type of fire fighting equipment being installed and shall be consistent with the mounting details			
	h.) Location. listing, rating and the type of portable fire extinguishers shall be shown in compliance with NFPA 10.			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS				FF-01-2014
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Item	DESCRIPTION	Provisions		
		Y	N	NA
	i.) Floor control valves / zone valves shall be located in acceptable locations. They can be located inside staircase, valve room, above the ceiling of smoke-stop/fire-fighting lobbies, above ceiling along corridors to be protected & accessible to maintenance.			
	k.) Fire department connections (on wet systems) shall be tapped after the system check valve. Where a PRV is installed on the main fire line, FDC should be tapped downstream of the PRV but not required immediately adjacent thereto.			
7.0	**ELEVATION & SECTIONAL DRAWINGS** ***Drawings shall be scaled to fit an A0 or A1 drawing sheet and shall indicate the following:***			
	a.) Full height of each floor/storey and the depth of void spaces (raised floor or ceiling void) with respect to the Level of Exit Discharge (LED) incorporating the necessary fire safety equipment.			
	b.) Indicate the habitable height of each floor to be consistent with the building plan approval.			
	c.) For sloped/pitched roof, show the orientation in relation to the sprinkler system (as applicable). Dimension / distance of sprinklers shall be measured along the slope of the ceiling / roof.			
8.0	**SCHEMATIC DIAGRAMS**			
	a.) Riser diagram showing the location of the fire pump room, fire water storage, breaching inlet connection, standpipes supplying the landing valves, automatic fire sprinkler system and related fire fighting equipment.			
	b.) Pressure settings for each floor provided with Pressure Reducing/Restricting Valves as determined in the hydraulic calculation report/analysis.			
9.0	**FIRE PUMP ROOM, FIRE WATER STORAGE (BLOW UP PLANSS REQUIRED)**			
	a.) Sequence of operations for the fire pump and Schedule of Equipment			
	b.) Dimension of the room to verify adequate housing of the fire pump and related fittings, valves, headers and related equipment complying to NFPA 20 & 22. Fire tanks shall be provided with complete appurtenances for maintenance purposes, drains, overflow pipe, water level indicator, tank access, vents, etc. Ensure the tank has two equal compartments, all pumps are taking suction from both tank and each pump can be isolated for testing. A testing line shall be provided with flow meter and isolating valve. Provide details of each component. Fire water tanks inside the building shall be RCC or Steel construction (please indicate in the plan), means of access, proper ventilation, equalizing valves, overflow pipe, vents, water level indicator and drainage system. Please provide a pump room layout with section and elevation detail relative to the fire water tank. Pump room area is inadequate. Ensure at least 0.8 meter clearance in every side of the pumps for maintenance work space. The OS & Y valve provided with tamper switch located in the suction side of the fire pump.			
	c.) Dimension of the fire water storage with section elevation details (show effective height capacity) to verify with the discharge duration.			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS				FF-01-2014
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Item	DESCRIPTION	Provisions		
		Y	N	NA
	d.) Calculation of the water and diesel fuel (as applicable) capacities based from the selected fire pump. Effective capacity of fire water storage tank is the total volume of water that the fire pumps are able to draw from the tanks before vortices form at its suction inlet with adequate freeboard (clearance between water level and under slab of tank roof). - Show that Fuel tank for diesel fire pumps/Emergency Power Source is confined in a bund area and is linked to two batteries with automatic charger. Submit the calculation for the volumetric capacity of the diesel fuel tank and indicate the duration of use.			
	e.) Provide longitudinal and cross section drawings of pump show piping orientation, pump suction and discharge, valve and accessories as per NFPA 20.			
10	**TYPICAL INSTALLATION DETAILS / MISCELLANEOUS DETAILS**			
	a.) Details on the protection of pipes penetrating walls.			
	b.) Submit only the required fire safety equipment details (sprinklers, fire extinguisher mounting details, fire hose reel, landing valves, FDC, etc) that will be installed in the proposed building.			
	c.) Fire pump details, pipe fittings and related equipment arrangement shall comply with the requirements of NFPA 20.			
	d.) Show standard installation detail of piping seismic separation assembly.			
	e.) When 2 or more hoses are used down stream of a PRV. Provide details of PRV (where applicable) see conditions stated in 7.2.4 of NFPA 14 and refer to drawing in the appendix.			
	f.) Provide installation details for garbage / linen chutes (where applicable)			
	g.) Show details for FCV as per NFPA 13. (If it is a combined riser, a separate detail of FCV with check valve shall be provided on the details).			
11	**SUPPORTING DOCUMENTS AND OTHER FIRE SUPPRESSION SYTEMS**			
	a.) FIRE PUMP DATA (SELECTION BASIS) Fire pump equipment design curve, to verify with the hydraulic calculation report and selected fire pumps. Submit catalog / brochure with dimension as basis of pump selection to verify that dimension of pump room is sufficient (with maintenance clearance of 0.8m) and piping configuration complies with NFPA 20.			
	b.) Adequate fire extinguishing system, other than water type. For those extinguishing systems other than water extinguishing system, a separate drawing complete with details capacity calculation shall be submitted and sequence of operation.			
	c.) Check the area of fire pump room and its enclosure provided with dimension. Area must be adequate with respect to size of the pumps. Piping & valve configuration, clearances and maintenance accessibility must be considered. Declare & confirm on plan if the transformer is provided with explosion prevention system.			

GUIDELINES FOR FIRE FIGHTING PLAN SUBMISSIONS		FF-01-2014		
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Item	DESCRIPTION	Provisions		
		Y	N	NA
12	**CALCULATION REPORTS**			
	a.) Provide hydraulic calculation reports/analysis for the building being protected by fire sprinkler system in relation to the hazards being declared (ordinary for parking, light for offices or residential for top most floor and those considered as incidental storage , calculation of landing valve requirements on wet system where applicable) complying to NFPA 13 and NFPA 14. - Hydraulic Analysis / Report shall be submitted in the following format: - Cover sheet - Table of contents - Project Description - Design criteria - Introduction of the hydraulic software used to simulate the requirement of the fire protection system of the building. - Summary of hydraulic outputs using demand mode: file name, location, area, flow & pressure heads (for multiple simulations). - Summary of hydraulic outputs using supply mode: file name, location, area & actual flow in the system for selected pump head (for multiple simulations). - Summary, Conclusion & Recommendations. - Final Pump Selection & Pump curves - Software simulation inputs and outputs - Most remote area analysis / report (demand & supply) - Most demanding area analysis / report (demand & supply) - Hydraulic reference points, plan layout & isometric presentation with complete node numbers and identifications. - Characteristic curves - Hydraulic calculation must be check and signed by the engineer For Hydraulic Calculation comply with NFPA 14-7.10.1.2.1.1 Standpipe System & A.7.10.1.2.1.1 see FIGURE A.7.10.1.2.1.1 Standpipe System with Risers Terminating at Different Floor Levels for further explanation.			
	b.) Provide manual calculation / estimates or computer generated reports to justify capacity for clean agents.			
	c.) Provide calculation on water – foam system based on NFPA 16 requirements.			
	Name, Signature & Stamp of Consultant Engineer	**Date**		

Managing Director
Civil Defence Department
Ministry of Interior
State of Qatar
PO Box 6959

APPLICATION FOR APPROVAL OF FIRE SAFETY PLANS

(Form CDD-PA)

Notes:

a. All forms are to be fully and correctly completed upon submission, failing which the submission shall be rejected.
b. 2 sets of plans are required to be submitted.
c. Check the appropriate box (☒)

*Delete where applicable

SECTION 1 *(To be completed by applicant)*

1. I/We wish to apply for the approval of plans for : (check one box only, use separate form for each type of submission)

- [X] Building works containing fire safety measures (BP submission)
- [ ] Fire protection works (FP plans submission)
- [ ] Air-conditioning & Mechanical ventilation systems (MV plans submission)

for the proposed (project title) :

SPRINKLER FACTORY

Name of Building(s)	**Q-TECH GROUP LTD.**		
Plot No., if any	**PIN NO: 8103005, 81030051, 81030052**		
Address / Road	**AT IND.AREA**	P.O.Box	**8630**

2. **Nature of Works**

The plans involves :
- [X] New fire safety works for erection of new building
- [ ] Amendment to plans of fire safety works previously submitted to the CDD
- [ ] *Change of Use, Alterations & Additions to existing fire safety works

3. **History of Submission**

Enquiry No. / Planning Dept Reference No., if any	
Previous Plan CDD Reference No(s), if any, for same project	
Previous Consultation Reference No(s), if any, for same project	
Previous Waiver Case Reference No(s), if any, for same project	

4. **Attachments**

I confirm that the following documents are attached :
- [X] 2 sets of plans
- [ ] *Calculations/Reports
- [ ] Others. Please specify :

5.	Appointment of Consultant I have appointed *Mr/Ms/Mdm/Dr **JOSEVTO MASCARINAS** Identification No./Passport No **27160804158** as the Consultant and authorised *him/her to act on my behalf.	
6.	**Details of Owner/Occupier/Management Corporation**	
	Company Name: **Q-TECH GROUP LTD.**	Name & Signature
	Address: P.O. Box **8630**	
	Tel No.: **4817149**	
	Fax No.: -------	Date :

SECTION II - CONFIRMATION BY CONSULTANT

I certify that:

a. the particulars given in Section I & II are correct and complete.

b. for alterations/additions to the existing *fire protection/air-conditioning & mechanical ventilation systems, I have taken into consideration the additional loads imposed by the proposed works on the existing building and will consult a Professional Civil or Structural Engineer if necessary. (applicable for FP/MV submission only)

Name of Consultant			Stamp & Signature of Consultant
Discipline	☒Architecture ☐ Civil ☐ Mechanical ☐ Fire Safety Eng ☐ Structural ☐ Electrical		
Name of Company	**ALSHAHEEN ENGINEERING**		
Company Address			
P.O. Box	**8630**		
Office Tel No.	**4817145**	Mobile No.	
Fax No.	**4817149**		Date :

For Official Use

Building Category	C	D	R	I		
No. of sheets						Name & Signature of CSC Officer
Name of PO						Date :
Name of AO						
Plan Reference No:						

بسم الله الرحمن الرحيم

نموذج رقم (٨ - ب)

وزارة الداخلية
الإدارة العامة للدفاع المدني
إدارة الوقاية

التاريخ : .....
الموافق : .....
رقم الطلب : .....

استمارة اعتماد مهندس أو فني

(١) : البيانات الشخصية :

الاسم (رباعي)	:	
الرقم الشخصي	:	
الجنسية	:	
المؤهل العملي	:	
التخصص	:	
عدد سنوات الخبرة	:	
هاتف المنزل	:	
الهاتف الجوال	:	
البريد الالكتروني	:	

(٢) : بيانات المنشأة التجارية :

اسم الشركة	:	
اسم المرخص له	:	
رقم ترخيص الدفاع المدني	:	
انتهاء ترخيص الدفاع المدني	:	
هاتف المكتب	:	
الهاتف الجوال	:	
الفاكس	:	
البريد الالكتروني	:	

التاريخ : ..... التوقيع : .....

General Administration of Civil Defence
Ministry of Interior

FIRE SAFETY SEMINAR ON " REGULATORY REFORMS II : ENHANCING SAFETY & EFFICIENCY"

PROGRAM

0730 : Registration of participants

0755 : Guests to be seated

0800 : Arrival of Staff Col Abdulla Bin Mohd Al-Sowaidi (Managing Director, Civil Defence Department)

0805 : Welcome speech by Col Abdullah Jassim Fakhroo, Director of Fire Safety, CDD

0815 : Presentation on "Building Permit Procedure" by Mr Ali Abdul Razzaq Hashim (Head of Building Permit Complex and Vice-Chairman of Engineers and Consulting Offices Accrediting Committee)

0845 : Presentation on "Plans Administration – Plans Preparation and Submission Procedures" by Mr Heng Chai Liang (Senior Consultant, CDD)

0930 : Break

1000 : Presentation on "Common Non-Compliance of Fire Safety Requirements in Buildings" by Mr Paul Khoo (Senior Fire Safety Engineer, CDD)

1045 : Presentation on "Fire Safety Provisions for Buildings to Facilitate Fire-Fighting Operation" by Mr Yeo Swee Khiank (Senior Fire Safety Engineer, CDD)

1145 : Panel Discussion (Chairman : Col Abdullah Jassim Fakhroo, Director of Fire Safety, CDD)

1215 : End

New Building Permits Procedures

By
Ali Abdul Razzaq Hashim

Head of Building Permits Complex

Feb 2007

الهيئة العامة للتخطيط والتطوير العمراني
Urban Planning & Development Authority

Introduction

Under the directives of higher authorities, a new procedure of granting building permits was discussed and approved by the senior representatives of the authorities involved in the process of building permits.

Now the UPDA is launching the new building permits procedure to achieve, a quality, time and cost effective process of granting building permit.

Building Permits Process Chart

Stage 1 Enquiry

- On the request of the Consultant, Urban Development Department **(UDD)** and Services Departments **(SD)** provide the **particular requirements** (for the plot).

Stage 2 Sketches

- Consultant prepares **Drawings** for the review and approval of UDD and SD
- Municipality opens file.

Stage 3 Preliminary Permit

- Consultants prepares detailed **Architectural** Drawings for the review and approval of UDD.
- Municipality issues **preliminary permit,** (if owner requests).

Stage 4 Final Approval

- S D review and approve Services Drawings
- UDD reviews and grants **final approval** to the drawings.

Stage 5 Building Permit

- Municipality collects fee and issues **Building Permit**

- **Stage one**
- **Enquiry**

- **To submit an enquiry**
- **Particular requirements &**
- **Information from UDD and SD**

- **Stage two**
- **Sketches**

- **To submit drawings for proposals**

- **UDD and SD review**

- **Stage three**

  Preliminary Permit

- **To submit detailed architectural drawings.**
- **Municipality to open file.**
- **Temporary permit, if requested, issued**

- **Stage four**
- **Final drawings:**

- **Consultant to submit:**

1. **Final services drawings,**
2. **Final Architectural drawings**

- **Stage five**
- **Building permit:**

- **To pay fees.**

- **To grant permit.**

Present Status

- Building regulations
- Guide to the new procedure
- Introduction of new software.
- To have integration with other agencies.

Thank You

تخطيط
PLANNING

الهيئة العامة للتخطيط والتطوير العمراني
Urban Planning & Development Authority

Fire Safety Seminar
FEB 2007

COMMON NON-COMPLIANCES

By PAUL KHOO
QCDD Fire Safety Engineer

COMMON NON-COMPLIANCE

- **ARCHITECTURAL SAFETY FEATURES**
  - **Exit Separations**
  - **Continuation of Exit Stairs from lower to upper floors**
  - **Discharge from Exits**
- FIRE PROTECTION FEATURES
  - Fire Command Centre
  - FB Breeching Inlets
- ACMV

EXIT SEPARATION

Exit separation is the distance measured between any 2 fire exits providing safe egress for escape by the building occupants in the event of a fire.

EXIT SEPARATION

NFPA101 says:

Exits shall be remotely located from each other and shall be arranged and constructed to minimize the possibility that more than one has the potential to be blocked by any one fire or other emergency condition.

EXIT SEPARATION

- It also says:
  - 7.5.1.1 Exits shall be located and exit access shall be arranged so that exits are readily accessible at all times.
  - 7.5.1.3.2* Where two exits or exit access doors are required, they shall be located at a distance from one another not less than one-half the length of the maximum overall diagonal dimension of the building or area to be served, measured in a straight line between the nearest edge of the exit doors or exit access doors, unless otherwise provided in 7.5.1.3.3 through 7.5.1.3.5.

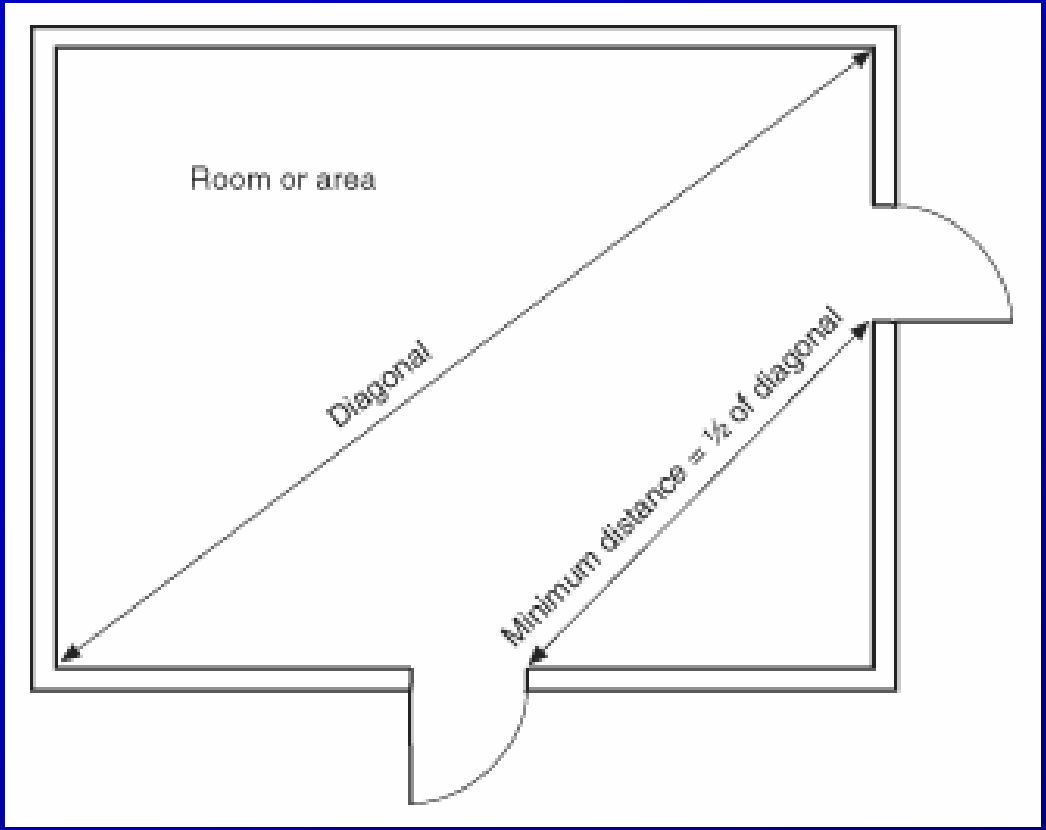


FIGURE A.7.5.1.3.2(a) Diagonal Rule for Exit Remoteness

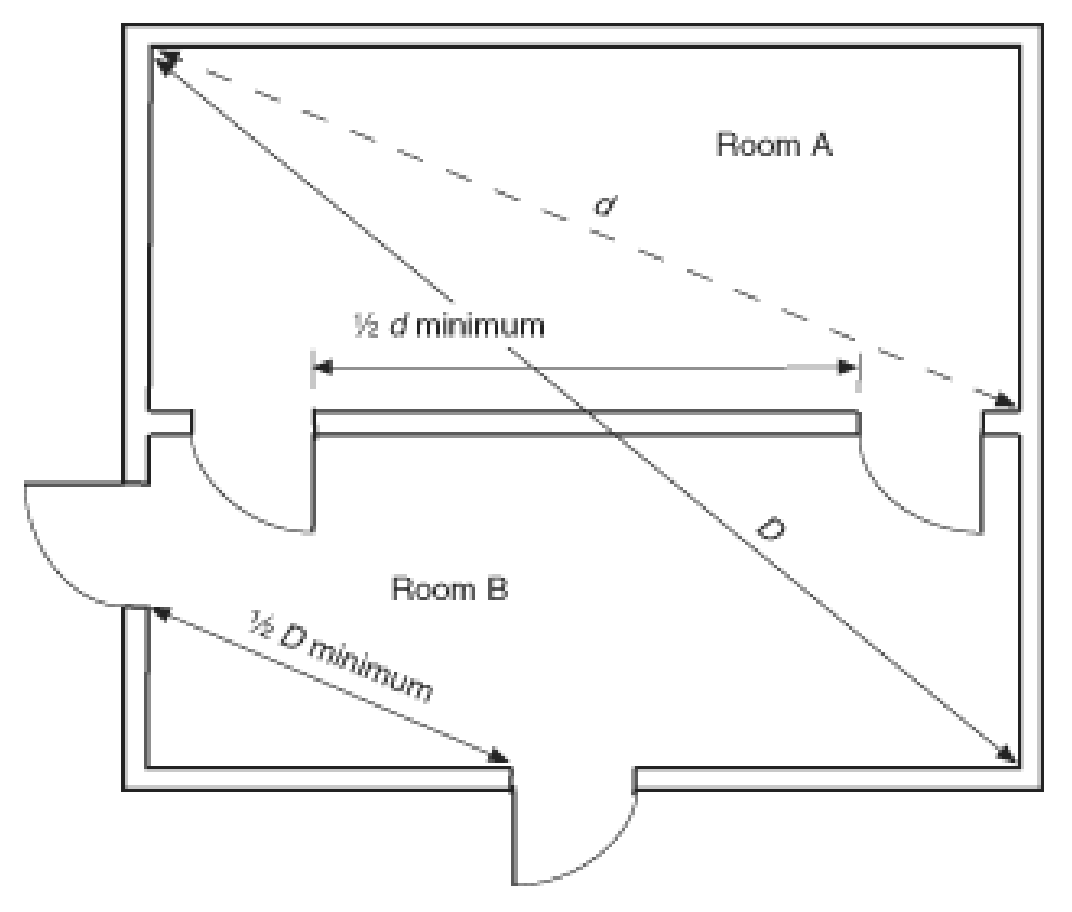


FIGURE A.7.5.1.3.2(b) Diagonal Rule for Exit and Exit Access remoteness

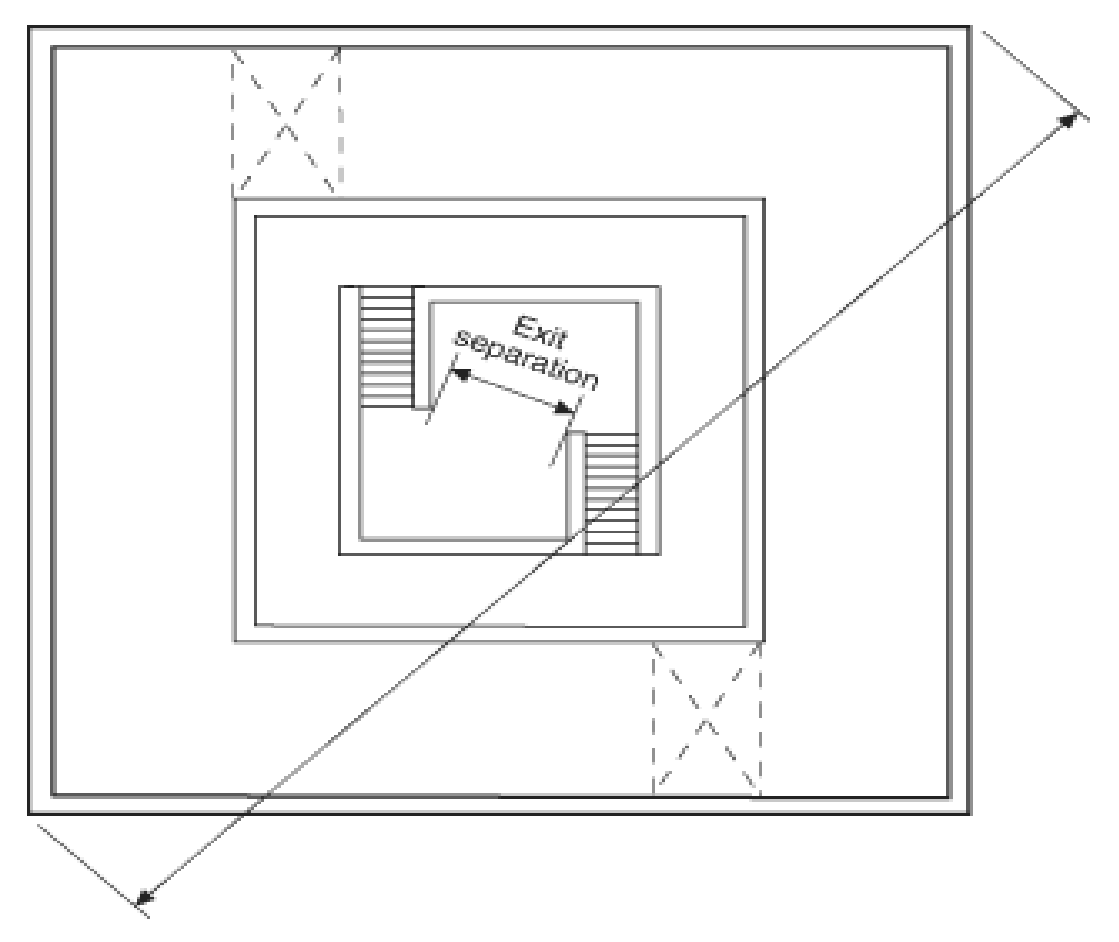


FIGURE A.7.5.1.3.2(c) Exit Separation and Diagonal Measurement of Area Served

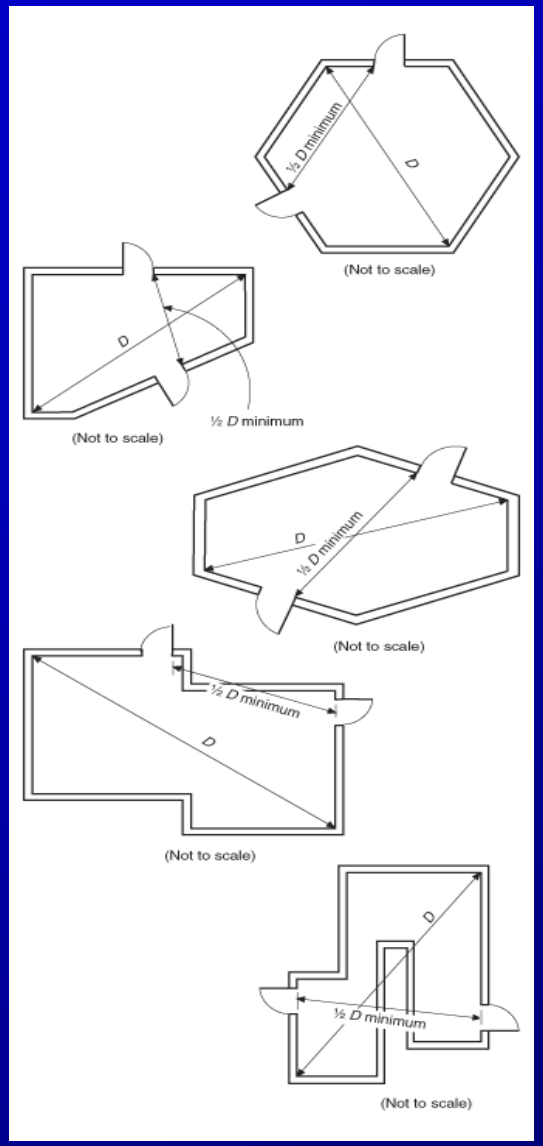


FIGURE A.7.5.1.3.2(e) Diagonal Measurement for Unusually Shaped Areas

Conditions that allow reduction in separation distances

- 7.5.1.3.3 allows reduction for
  - Sprinkler protection in accordance with 9.7
    - This means a sprinkler system in full compliance with NFPA13
    - The distance may be reduced to ⅓ of the diagonal distance

Conditions that allow reduction in separation distances

- 7.5.1.3.4 allows reduction when
  - In addition to the protection afforded by the sprinkler system in 7.5.1.3.3, when the exits are interconnected by a 1-hour fire resistance–rated corridor, the separation distance between the exits may be permitted to be measured along the line of travel within the corridor

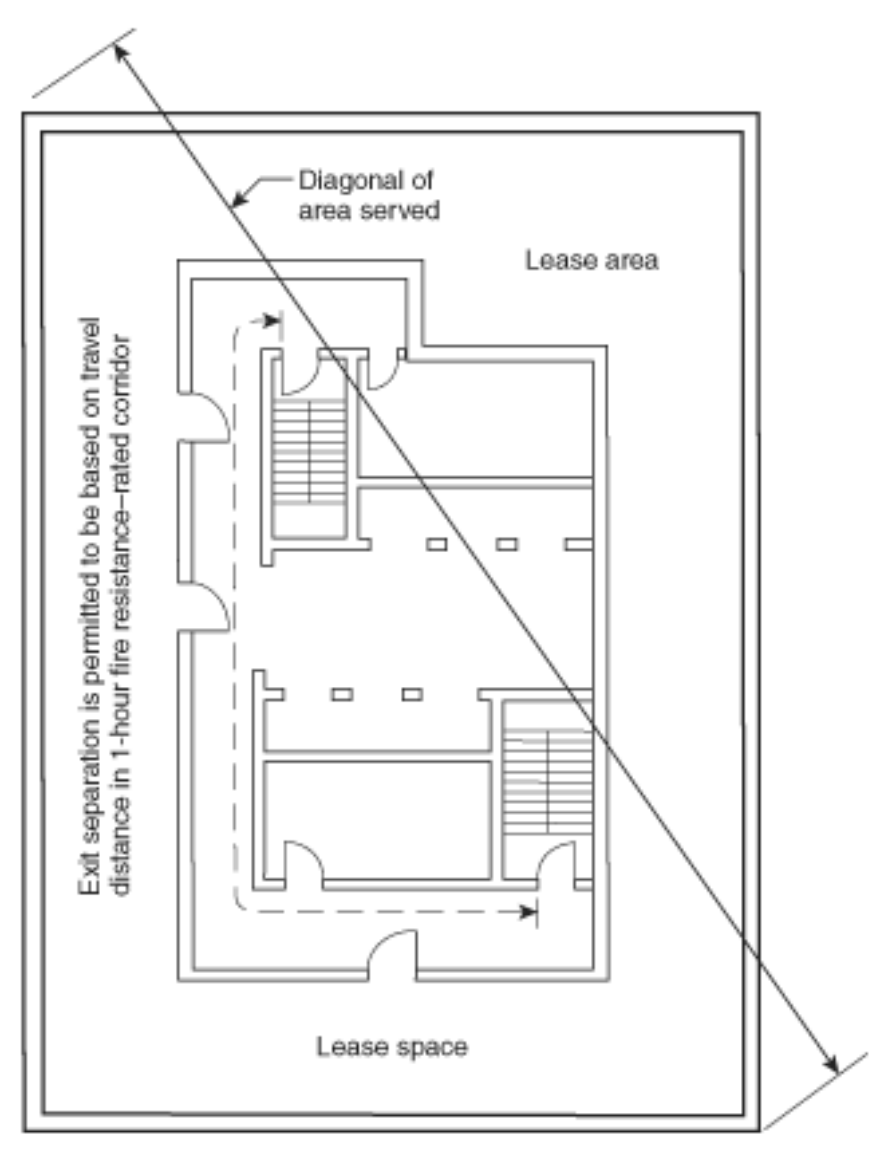
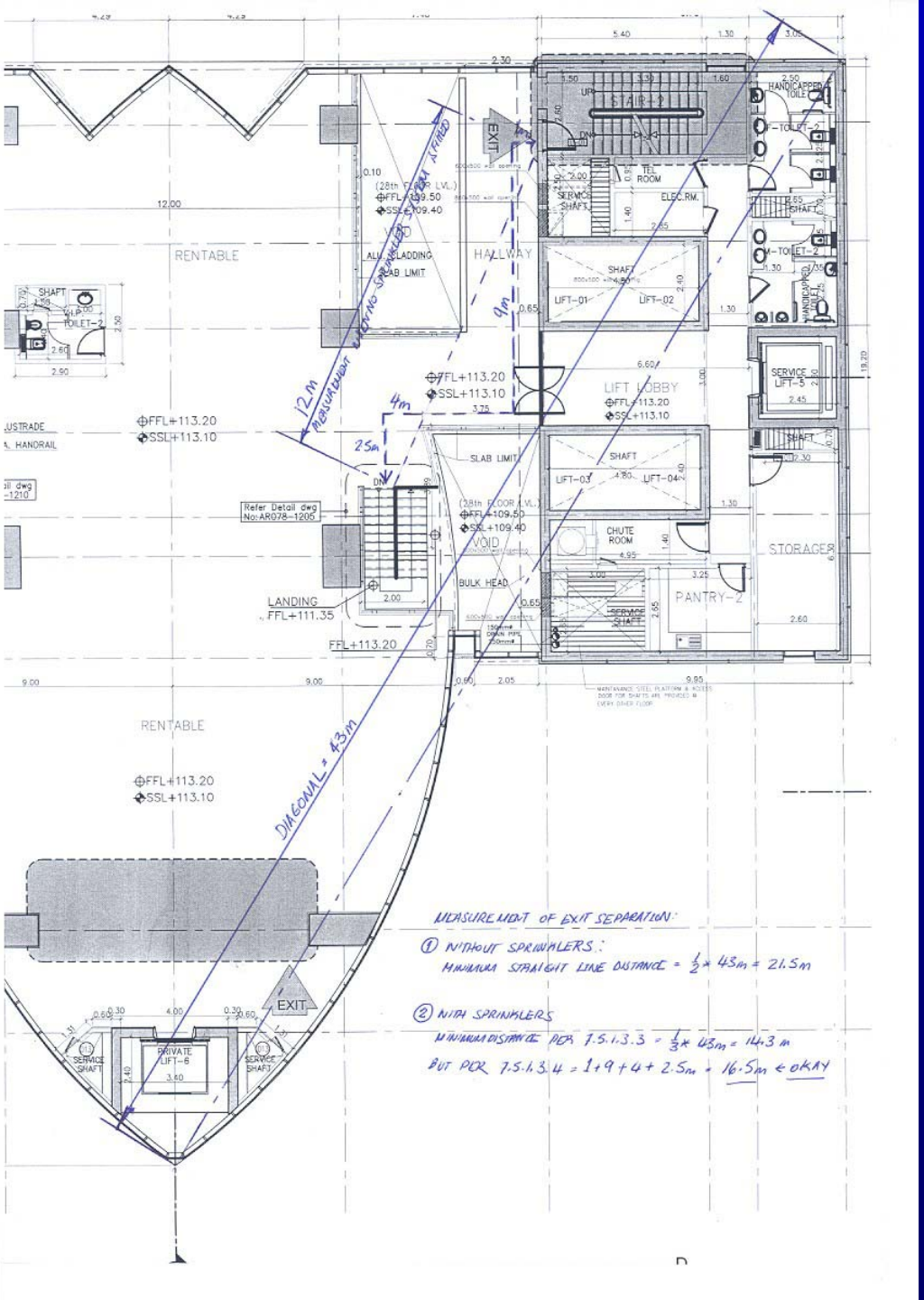
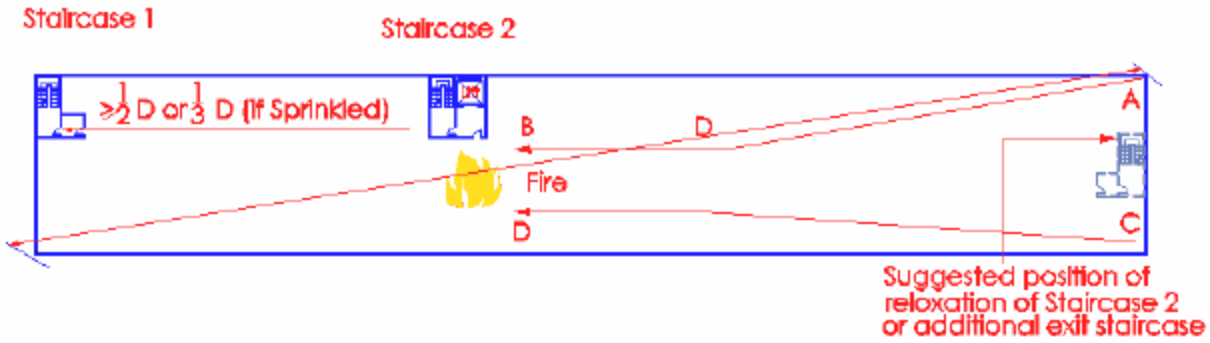
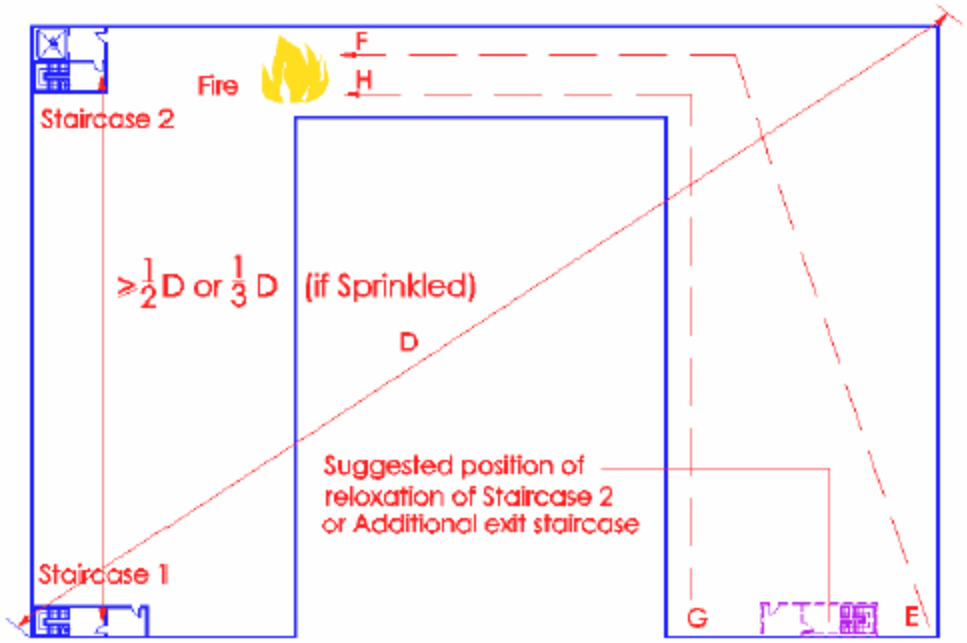


FIGURE A.7.5.1.3.2(d) Exit Separation Measured Along Corridor Path


RENTABLE
HALLWAY
LIFT LOBBY
STAIR-2
SHAFT
LIFT-01
LIFT-02
LIFT-03
LIFT-04
SERVICE LIFT-5
TOILET-2
HANDICAPPED TOILET
ELEC.RM.
TEL ROOM
SERVICE SHAFT
CHUTE ROOM
STORAGER
PANTRY-2
VOID
SLAB LIMIT
BULK HEAD
LANDING
FFL+111.35
FFL+113.20
SSL+113.10
FFL+109.50
SSL+109.40
Refer Detail dwg No:AR078-1205
EXIT
PRIVATE LIFT-6
SERVICE SHAFT
12m MEASUREMENT
4m
25m
DIAGONAL = 43m
MEASUREMENT OF EXIT SEPARATION:
① WITHOUT SPRINKLERS:
MINIMUM STRAIGHT LINE DISTANCE = ½ * 43m = 21.5m
② WITH SPRINKLERS
MINIMUM DISTANCE PER 7.5.1.3.3 = ⅓ * 43m = 14.3m
BUT PER 7.5.1.3.4 = 1+9+4+2.5m = 16.5m ← OKAY

Not acceptable





Conditions that allow reduction in separation distances

- 7.5.1.3.5 condition
- In existing buildings, where more than one exit or exit access door is required, such exits or exit access doors shall be permitted to be remotely located in accordance with 7.5.1.3.1.
  - This means that they shall be located “remotely located from each other and arranged and constructed to minimize the possibility that more than one has the potential to be blocked by any one fire or other emergency condition”

SEPARATION OF EXIT STAIRCASES

QATAR CIVIL DEFENCE DEPARTMENT

SEPARATION OF EXIT STAIRCASES

- **What the NFPA says:**

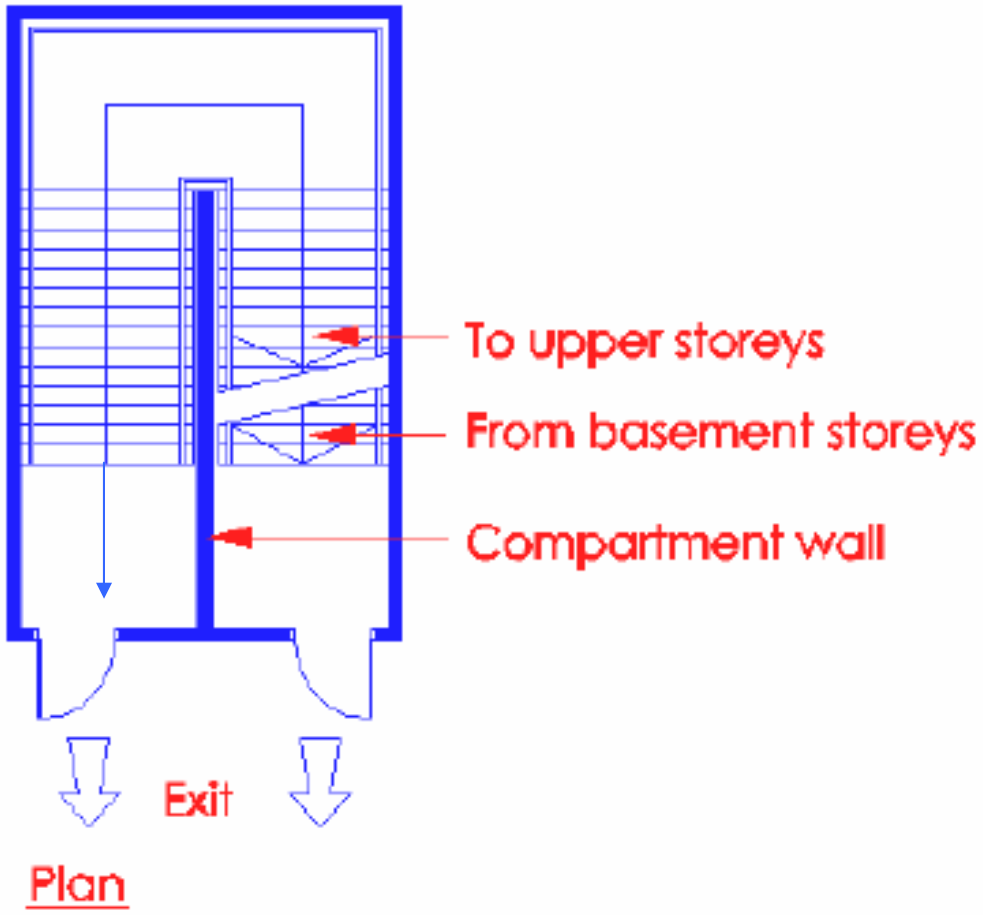
  7.7.3 Arrangement and Marking of Exit Discharge. The exit discharge shall be arranged and marked to make clear the direction of egress to a public way. Stairs shall be arranged so as to make clear the direction of egress to a public way. **Stairs that continue more than one-half story beyond the level of exit discharge shall be interrupted at the level of exit discharge by partitions, doors, or other effective means**

SEPARATION OF EXIT STAIRCASES SERVING BASEMENT FLOORS

- Basement exit staircases shall not be made continuous with any other exit staircase which serve non-basement floor(s) of the building

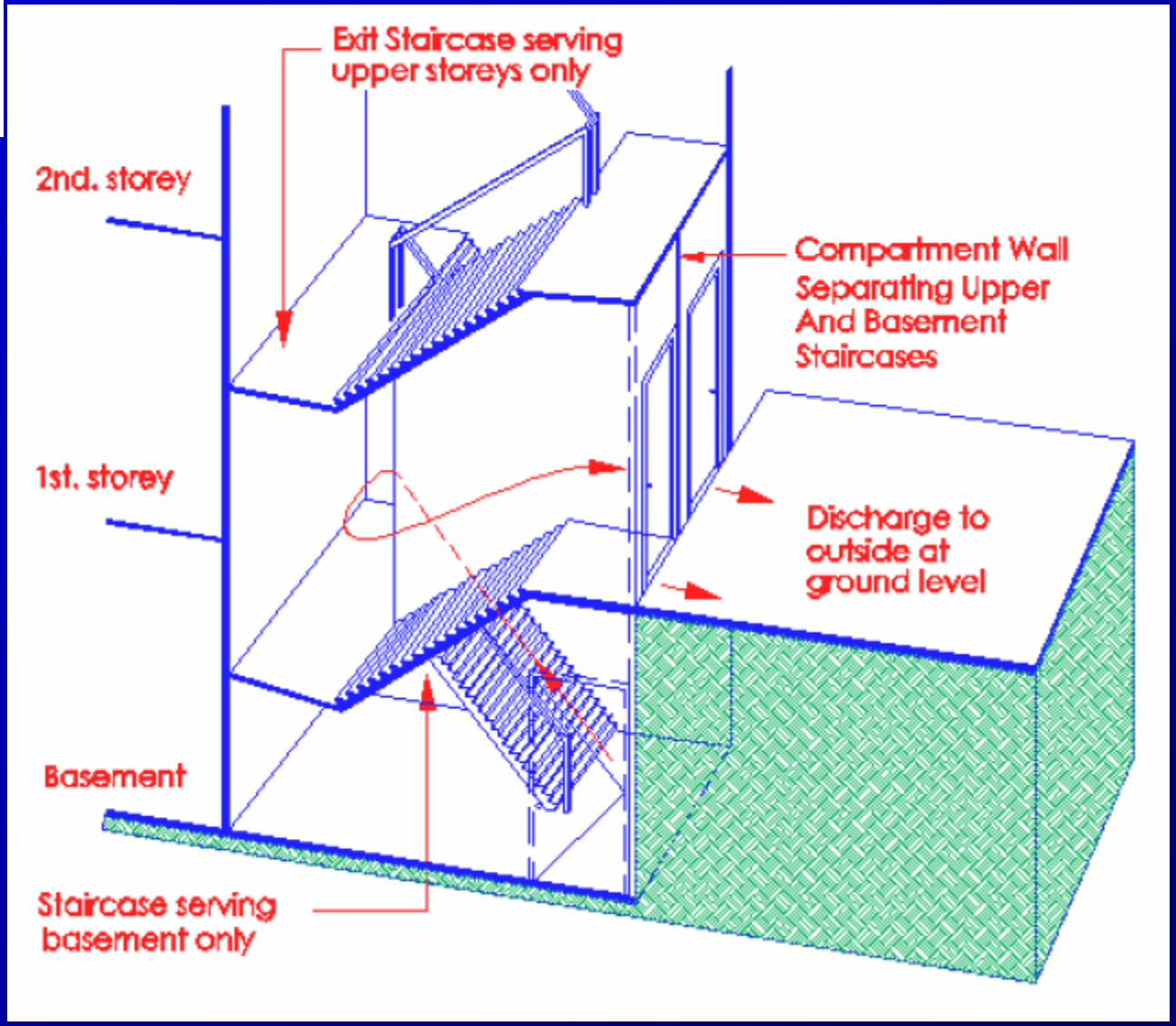
SEPARATION OF EXIT STAIRCASES SERVING BASEMENTS & UPPER FLOORS

- Staircases serving basements shall not be continuous with staircases serving upper floors
- Vertical exits provided from any storey above ground level may serve simultaneously all floors above the ground level and ..
- vertical exits provided from any storey below ground level may serve all floors below ground level
- Basement staircases are prohibited from being continuous with exit staircases serving upper floors


To upper storeys
From basement storeys
Compartment wall
Exit
Plan

SEPARATION OF EXIT STAIRCASES SERVING BASEMENT FLOORS

- Basement exit staircases, which are vertically aligned with the exit staircases of non-basement storeys, shall be separated from such other exit staircases by construction having fire resistance for a minimum period equal to that required for the enclosure



QATAR CIVIL DEFENCE DEPARTMENT

DISCHARGE FROM EXITS

QATAR CIVIL DEFENCE DEPARTMENT

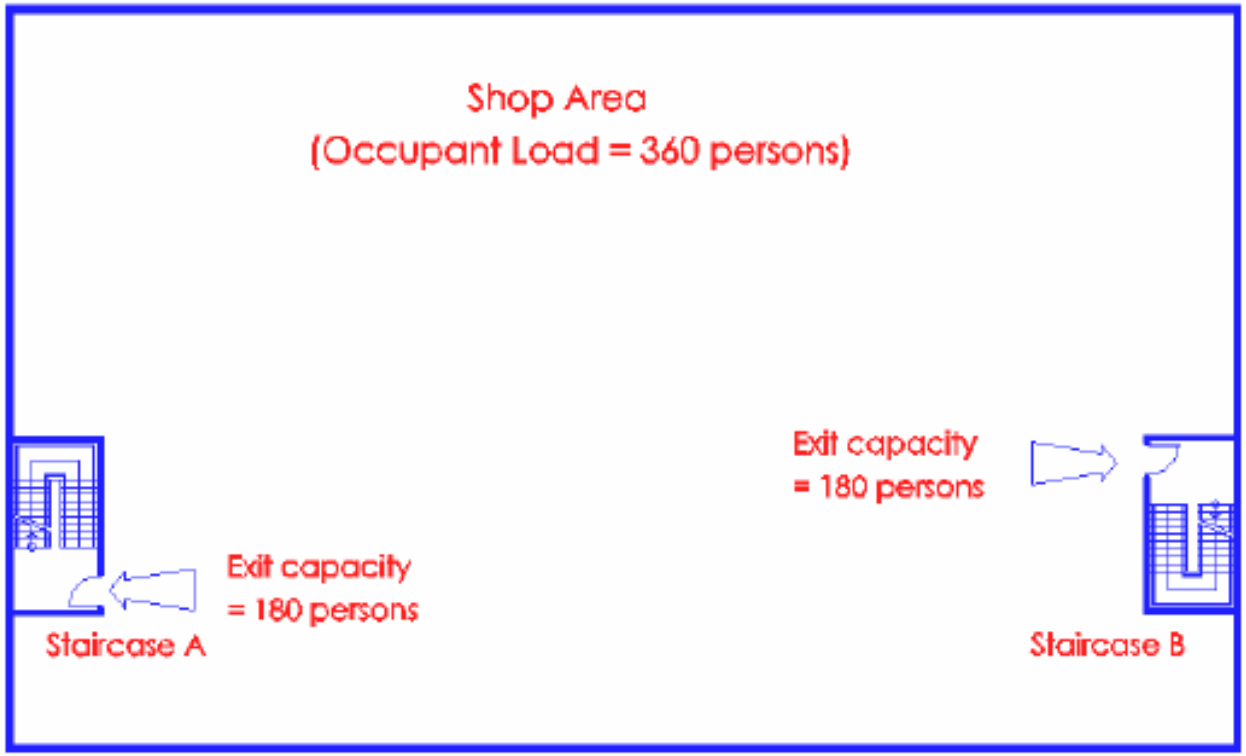
DISCHARGE FROM EXITS

- The NFPA101 says:
  - **7.7.1* Exit Termination. Exits shall terminate directly, at a public way or at an exterior exit discharge, unless otherwise provided in 7.7.1.2 through 7.7.1.4**
    - Fire escape exits shall terminate to the exterior of the building where there is sufficient / ample roadway, lawn, yard or other safe area such as open air car park, where congestion from crowding will not occur.

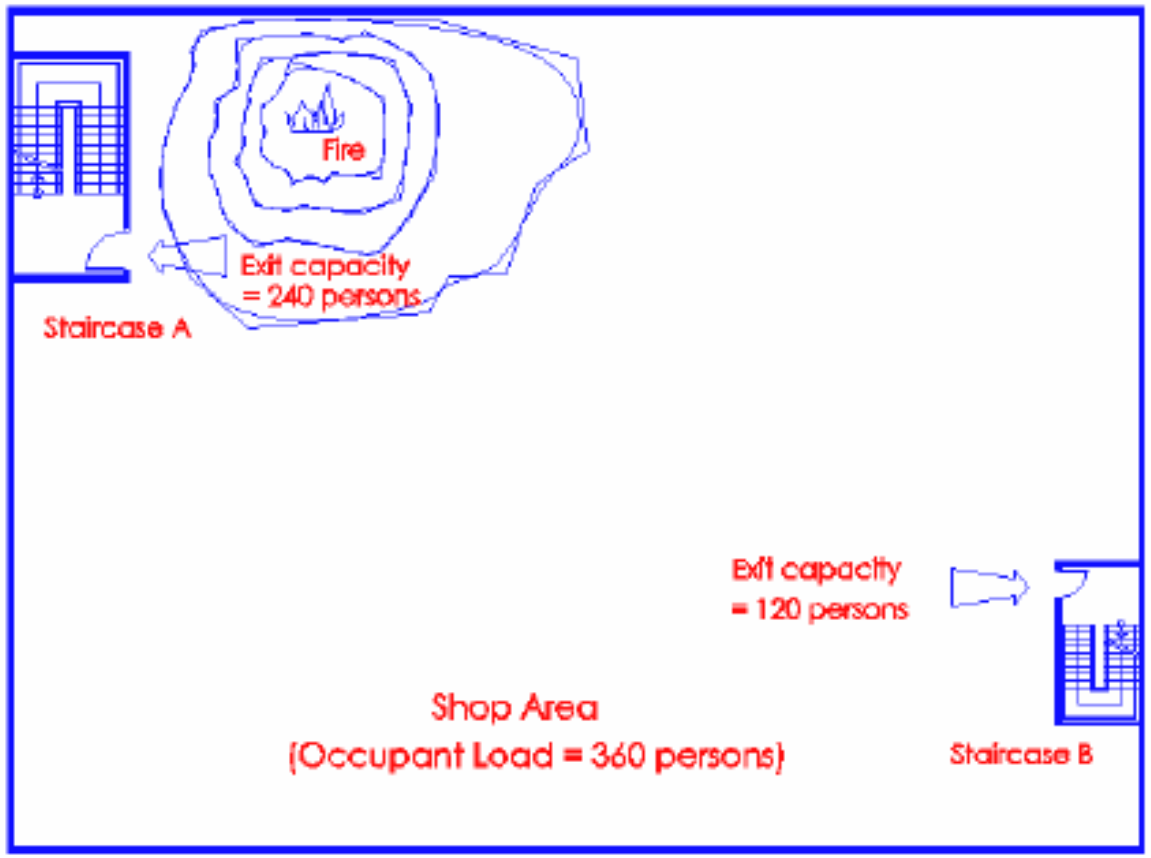
Otherwise Provisions for Exits

- 7.7.1.2 says that where there are more than 1 exits.
  - In such cases, only 50% of exits and only 50% of the egress capacity is permitted to discharge through an area on the level of discharge when:
    - The area on the level of discharge is free and unobstructed leading to the exterior of the building which shall be readily visible from the point of exit
    - The area is protected by an automatic sprinkler system or is a foyer no more that 3m deep from the exterior of the building and not more than 9m long
    - The entire area shall be separated from areas below by fire rated construction
    - Levels below may discharge into atriums that comply with Section 8.6.7 Atriums

Acceptable – Even distribution of exit capacity



Unacceptable – Uneven distribution of exit capacity



FIRE PROTECTION FEATURES

QATAR CIVIL DEFENCE DEPARTMENT

FIRE COMMAND CENTRES

QATAR CIVIL DEFENCE DEPARTMENT

FIRE PROTECTION

- **FIRE COMMAND CENTRES**
  - What the NFPA says:
    - 9.6.6 Location of Controls. Operator controls, alarm indicators, and manual communications capability shall be installed at a convenient location acceptable to the authority having jurisdiction.
  - For High Rise Buildings, it also says:
    - 11.8.5* Emergency Command Center. An emergency command center shall be provided in a location approved by the fire department

Emergency Controls

- NFPA 101 requires the following controls in the FCC:
  - (1) Voice fire alarm system panels and controls
  - (2) Fire department two-way telephone communication service panels and controls where required by another section of this Code
  - (3) Fire detection and fire alarm system annunciation panels
  - (4) Elevator floor location and operation annunciators
  - (5) Sprinkler valve and waterflow annunciators
  - (6) Emergency generator status indicators
  - (7) Controls for any automatic stairway door unlocking system
  - (8) Fire pump status indicators
  - (9) Telephone for fire department use with controlled access to the public telephone system

Emergency Controls

- NFPA92A Requires:
  - 6.4.3.7.1 A fire fighters' smoke-control station (FSCS) shall be provided for all smoke-control systems.
  - 6.4.3.7.2 The FSCS shall be installed at a location acceptable to the authority having jurisdiction.
  - 6.4.3.7.3* The FSCS shall provide status indication, fault condition indication, and manual control of all smoke-control system components

Protection of Fire Command Centre

- The location that is acceptable to Fire Department is preferably at the main entrance to the building. We acknowledge however, that certain buildings may for aesthetic reasons not wish the FCC to be a featured at the main entrance to the building. Normally it can be located together with the Security Access Control System
- The enclosure of the FCC is now quite important and therefore warrant some consideration for its integrity and stability in the event of an emergency. **Fire rating of the enclosure and some form of protection will be required**

FIRE BRIGADE BREECHING INLETS

QATAR CIVIL DEFENCE DEPARTMENT

FIRE BRIGADE BREECHING INLETS

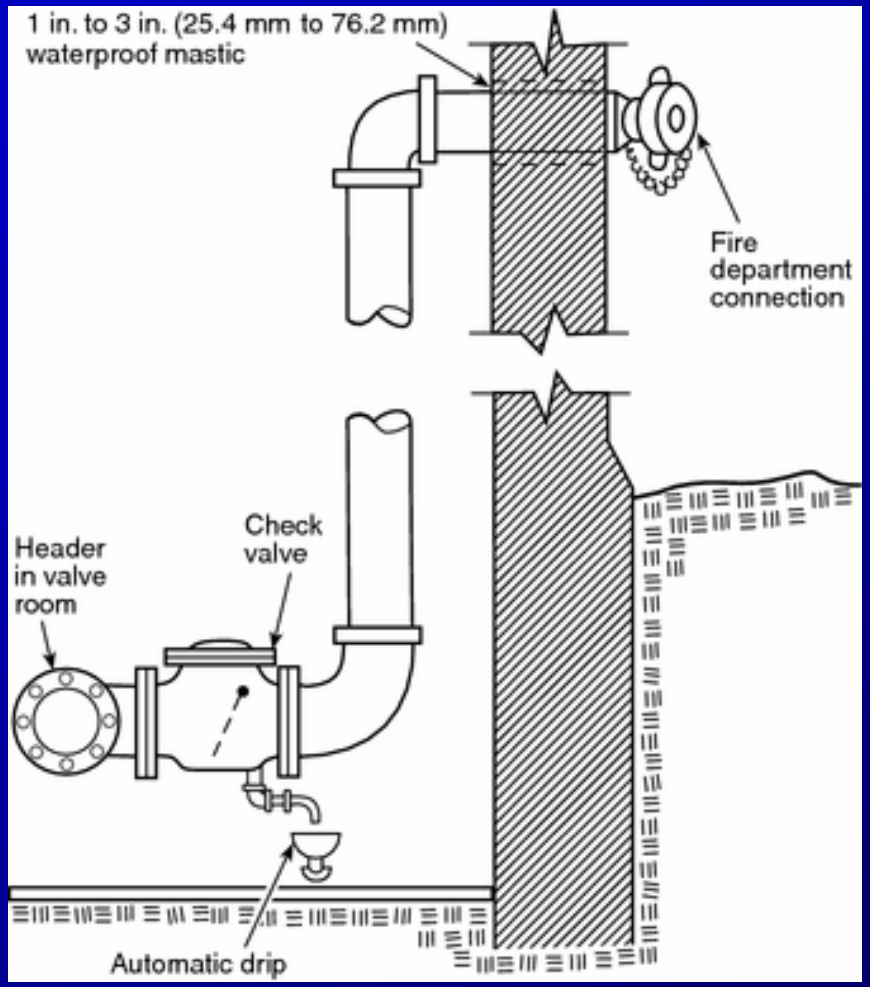
- What the NFPA says:
  - 8.17.2.1* Unless the requirements of 8.17.2.2 are met, a fire department connection shall be provided as described in 8.17.2 in accordance with Figure 8.17.2.1.

FIRE BRIGADE BREECHING INLETS

- 8.17.2.2 The following systems shall not require a fire department connection:
  - (1) Buildings located in remote areas that are inaccessible for fire department support
  - (2) Large-capacity deluge systems exceeding the pumping capacity of the fire department
  - (3) Single-story buildings not exceeding 2000 ft2 (186 m2) in area

FIRE BRIGADE BREECHING INLETS

Figure 8.17.2.1



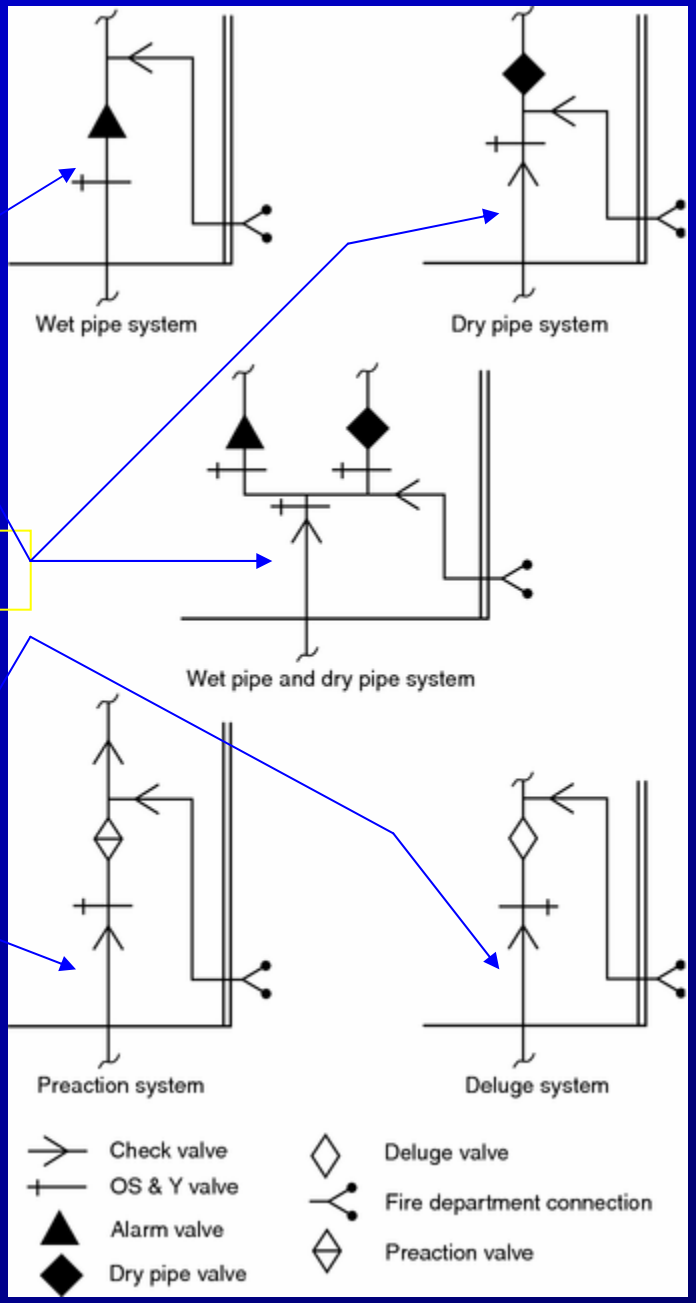
FIRE BRIGADE BREECHING INLETS

- 8.17.2.4.1* The fire department connection shall be on the system side of the water supply check valve.
- 8.17.2.4.1.1 The fire department connection shall not be attached to branch line piping.
- 8.17.2.4.1.2 The fire department connection shall be permitted to be connected to main piping on the system it serves.
- 8.17.2.4.2 For single systems, the fire department connection shall be installed as follows:
- (1) Wet system — on the system side of system control, check, and alarm valves (see Figure A.8.16.1.1)
- (2) Dry system — between the system control valve and the dry pipe valve
- (3) Preaction system — between the preaction valve and the check valve on the system side of the preaction valve
- (4) Deluge system — on the system side of the deluge valve

FIRE BRIGADE BREECHING INLETS

- 8.17.2.4.3 For multiple systems, the fire department connection shall be connected between the supply control valves and the system control valves.
- 8.17.2.4.4 The requirements of 8.17.2.4.2 and 8.17.2.4.3 shall not apply where the fire department connection is connected to the underground piping.
- 8.17.2.4.5 Where a fire department connection services only a portion of a building, a sign shall be attached indicating the portions of the building served.
- 8.17.2.4.6 Unless otherwise directed by the authority having jurisdiction, fire department connections shall be on the street side of buildings and shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets without interference from any nearby objects, including buildings, fences, posts, or other fire department connections. The location shall be based on the requirements of the fire department.

Note the check valves



Fire Safety Seminar
FEB 2007

FIRE SAFETY PROVISIONS FOR BUILDINGS TO FACILITATE FIRE-FIGHTING OPERATION

By Yeo Swee Khiank (Senior Fire Safety Engineer)

PURPOSE

- Supplement Clauses in NFPA being AHJ
- Enhance Effectiveness of Fire Fighting and Rescue Operation
- Provide Safer Building for Occupants and Fire Fighters

SCOPE

- External Access to Site and Building
- Private Fire Hydrant
- Rising Main
- Smoke Free Approach to Exit Staircase
- Sprinkler in Concealed Ceiling & Floor Spaces

EXTERNAL ACCESS

Successful fire fighting operation

- **Internal approach**

- **External approach**

EXTERNAL ACCESS

- Fire Engine Access Road
- Fire Engine Hardstanding
- Fire Access Opening

FIRE ENGINE ACCESS ROAD

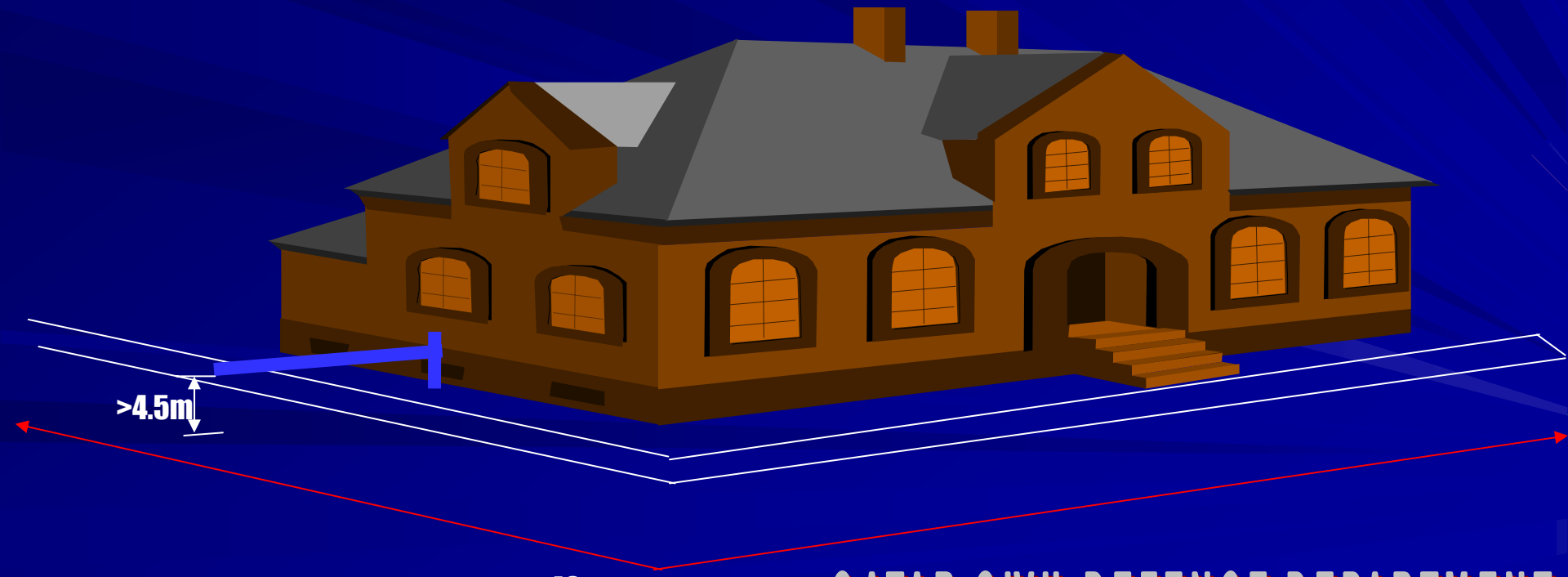
Road for fire appliances to move from one location to another within a development

Minimum width of 6 metres

Sustain stationary 24 tonnes

FIRE ENGINE ACCESS ROAD

- **Overhead clearance** more than 4.5m
- **Dead-end** not more than 46m



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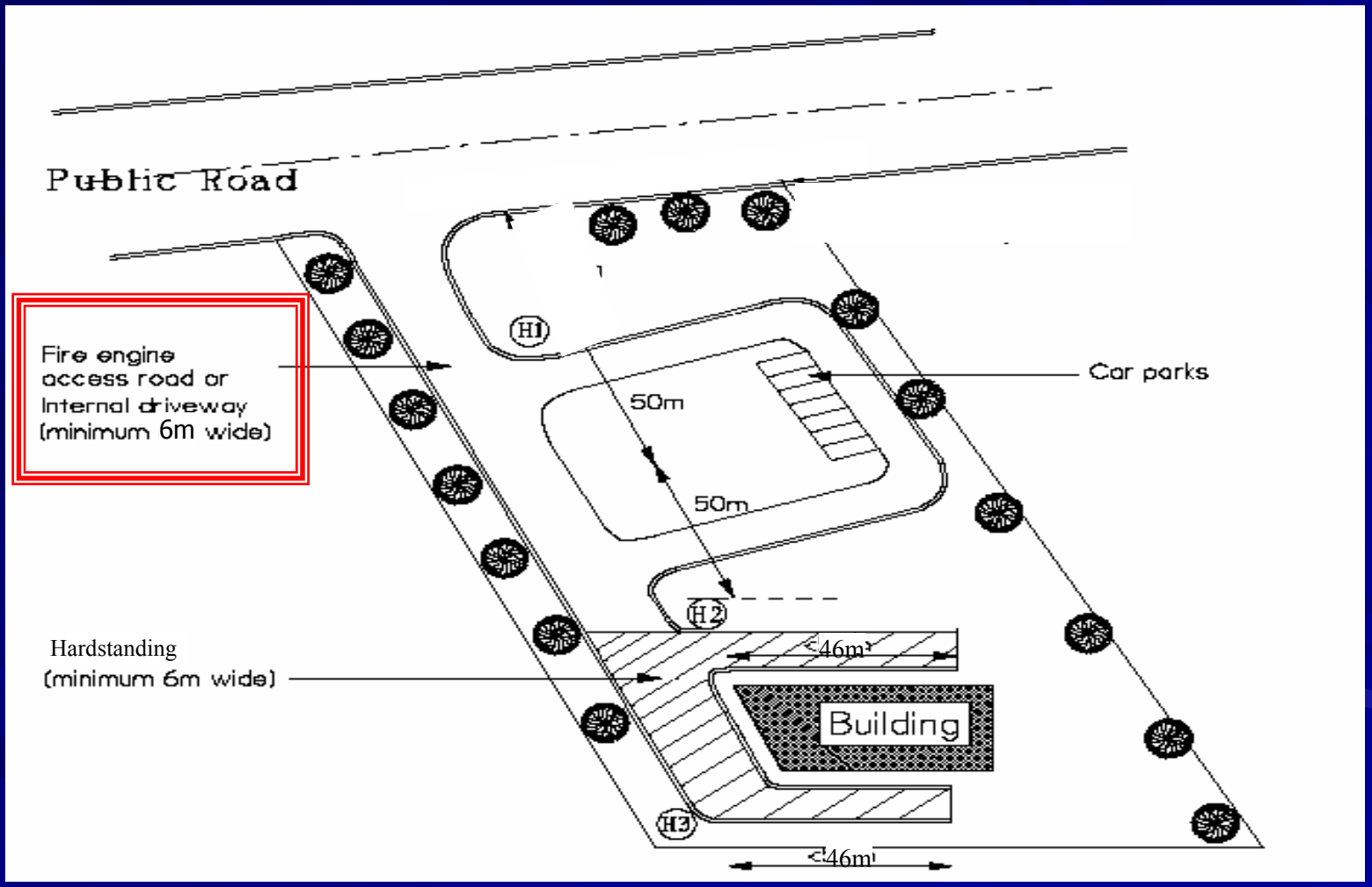
FIRE ENGINE ACCESS ROAD



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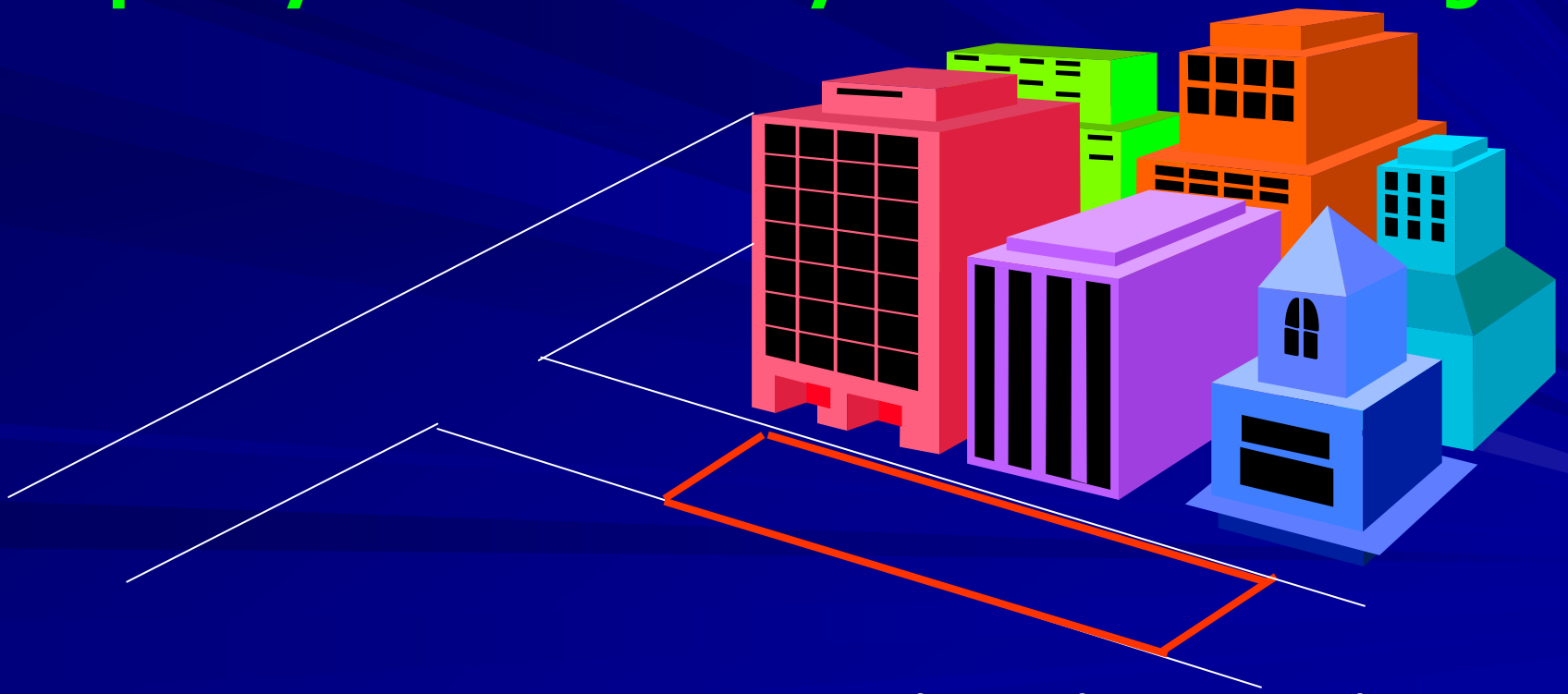
FIRE ENGINE HARDSTANDING

A Fire Engine Hardstanding is a metalled or paved road that has to withstand a loading capacity of a stationary 45-tonne Fire Engine



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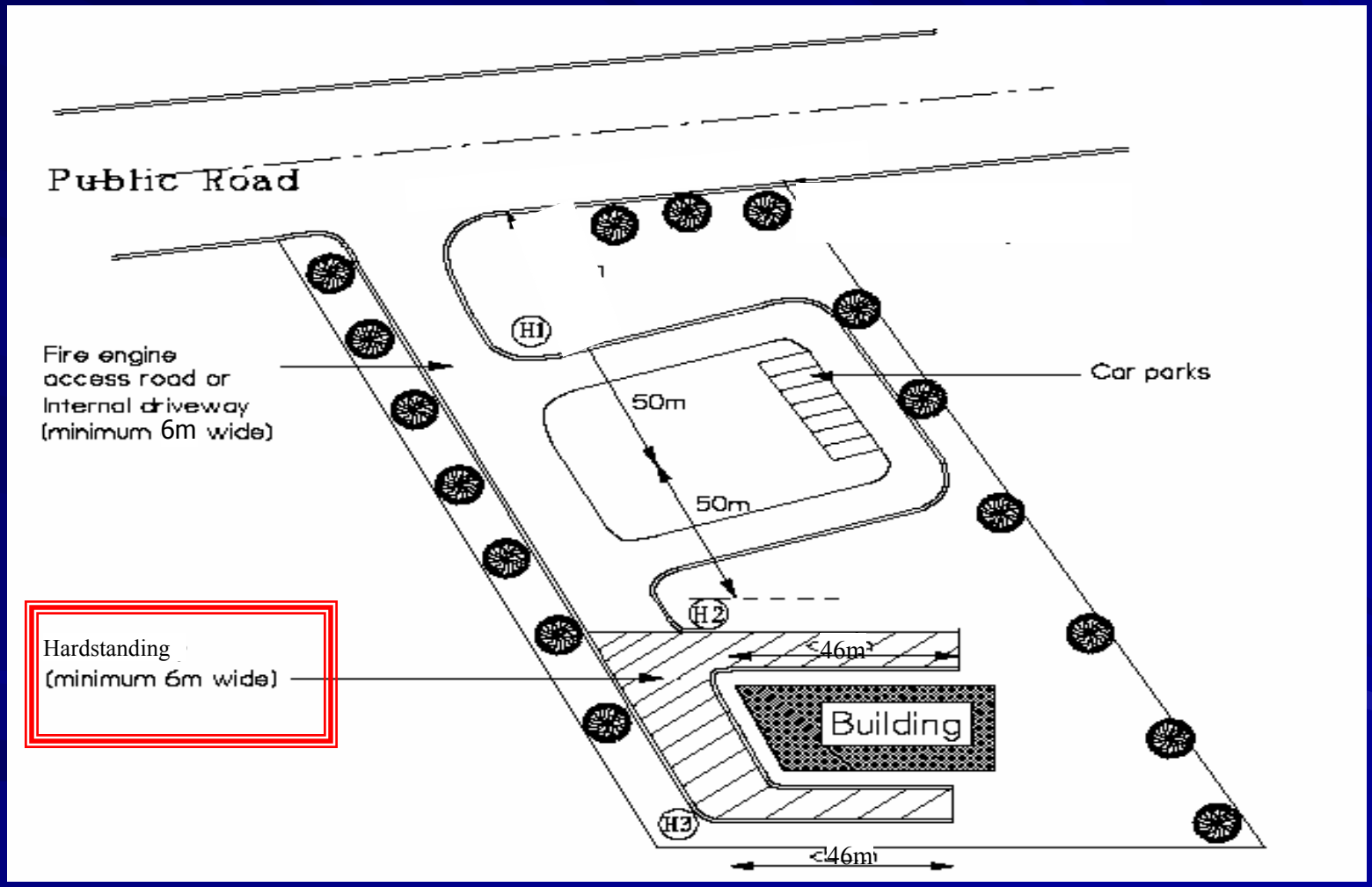
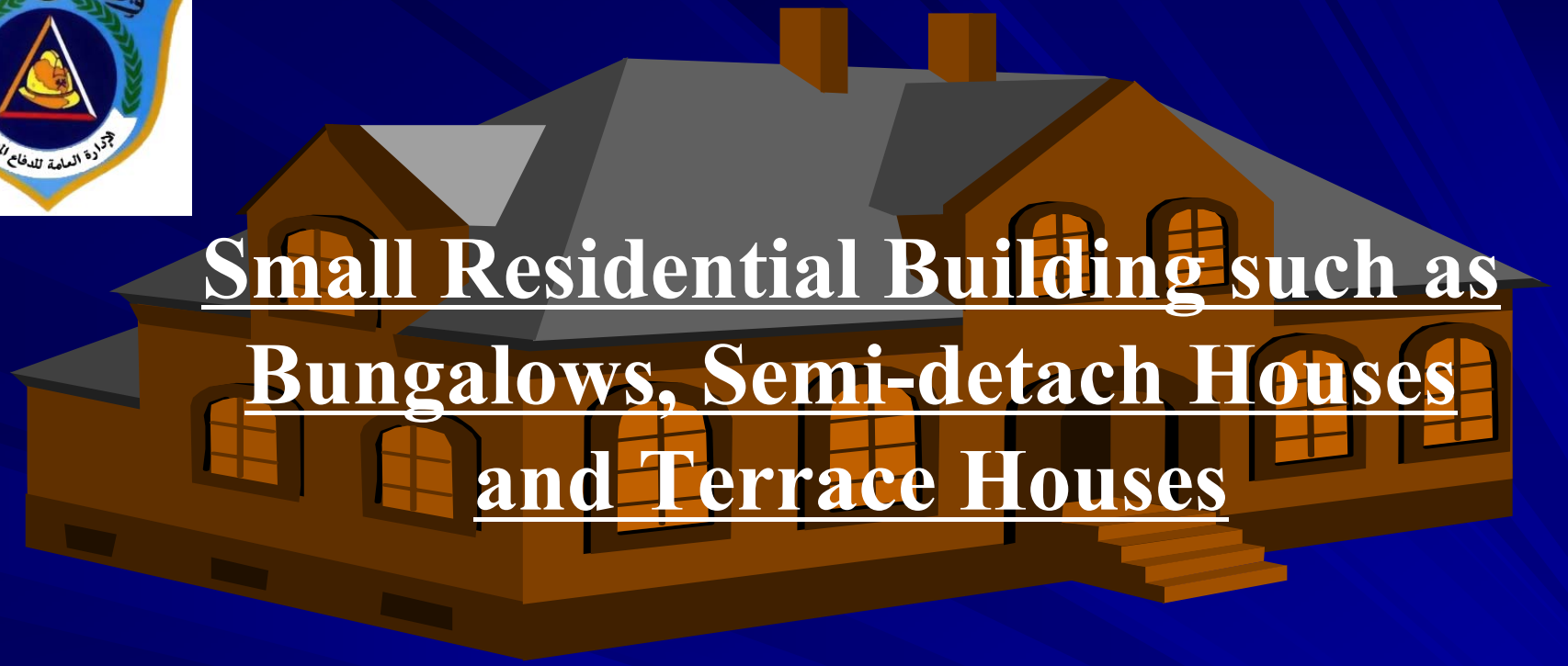
FIRE ENGINE HARDSTANDING





Small Residential Building such as Bungalows, Semi-detach Houses and Terrace Houses

No fire engine hardstanding is required, irrespective of building height

Fire fighting can be conducted from public road

QATAR CIVIL DEFENCE DEPARTMENT

Residential Buildings

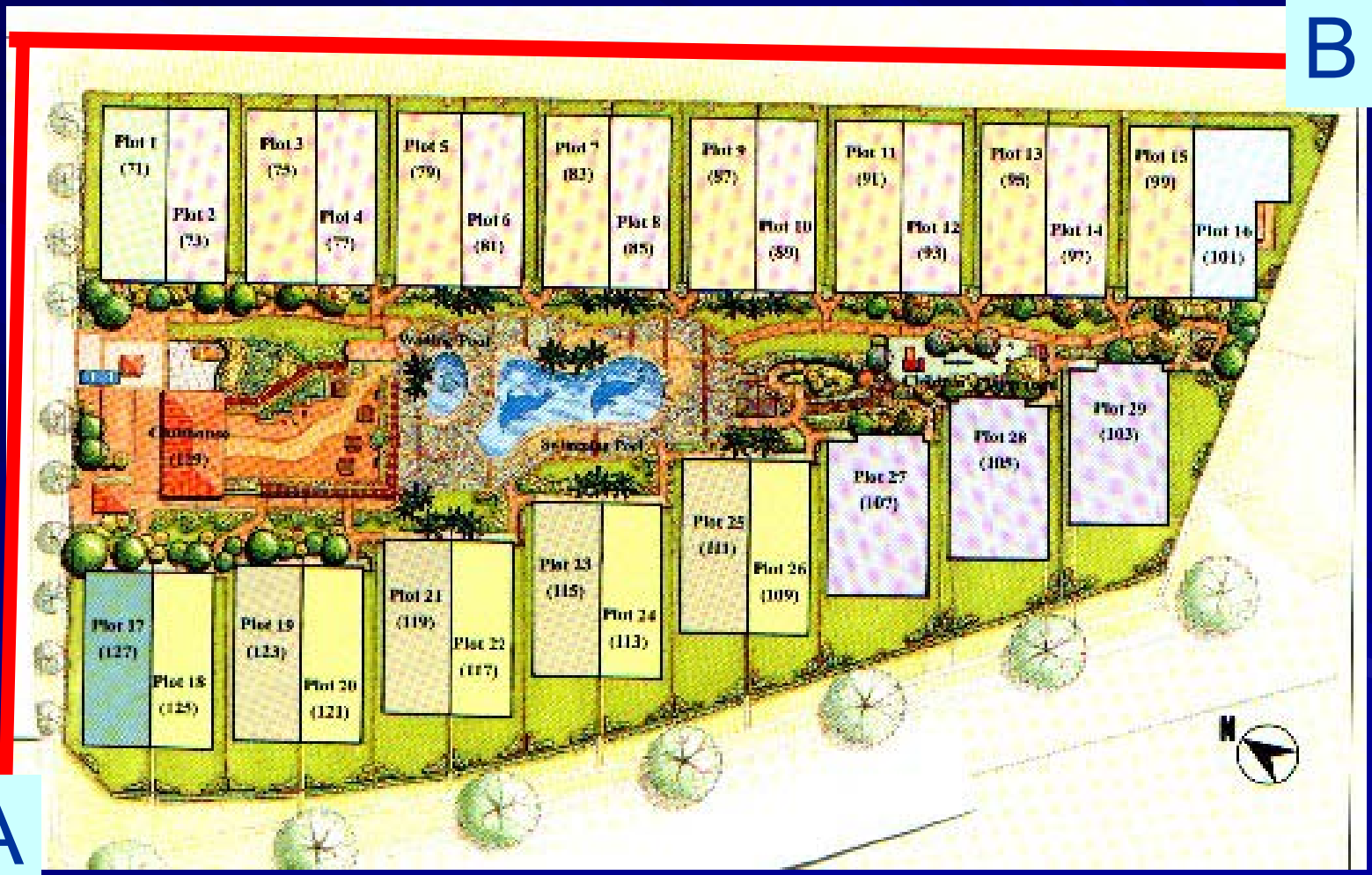
Cluster Housing or Villas

Landed housing with shared communal facilities

Provision of a minimum 6 metres width Fire Engine Access Road

Maximum travel distance from the fire engine pump appliance to every point on the project plan area of any building shall be 60 metres

Maximum 60 m Travel Distance for Fire Fighters from Fire Engine Access Road



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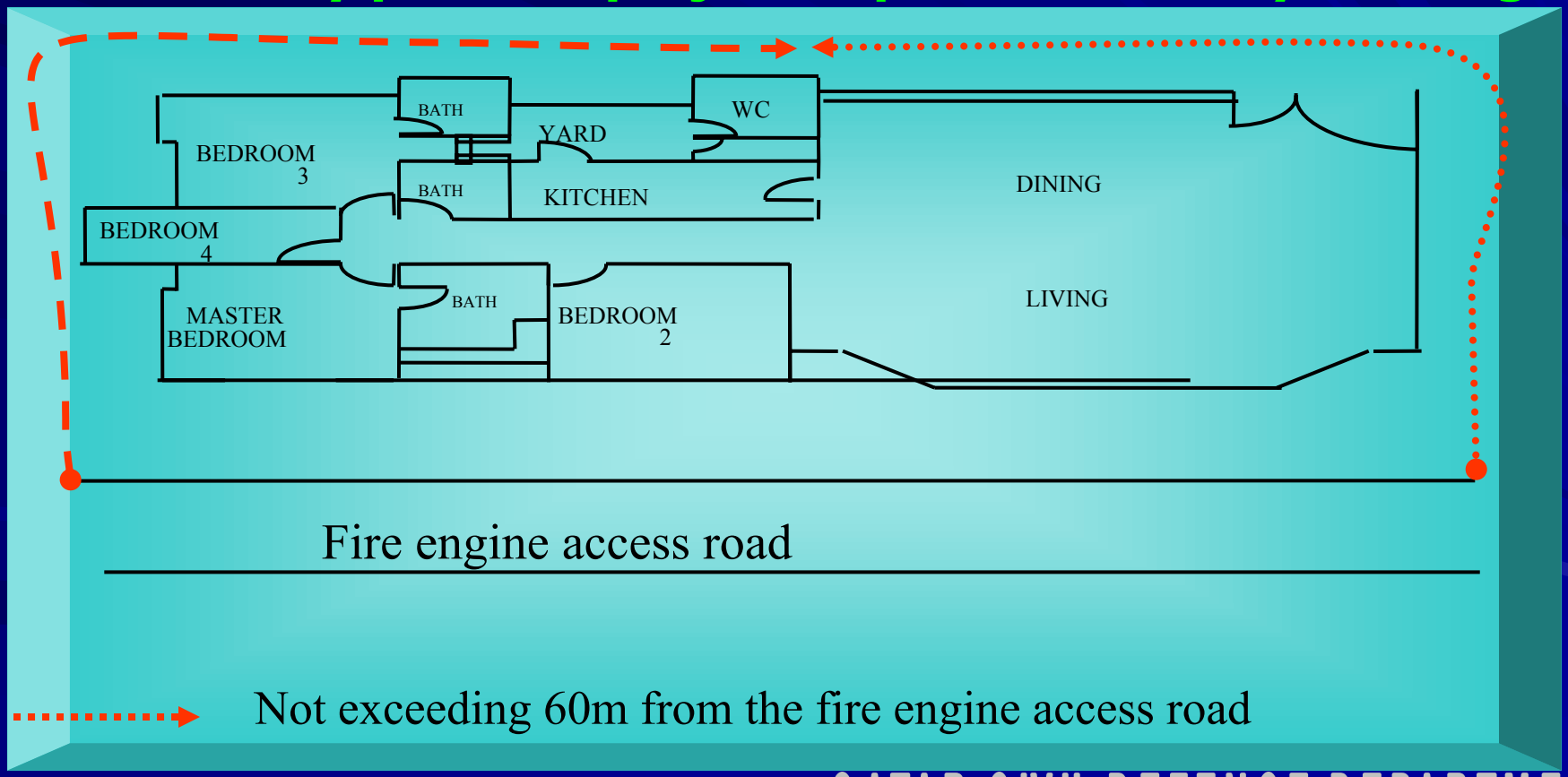
Residential Buildings such as flats, maisonettes, apartment and NOT exceeding 10m in habitable height

- **Clear width of fire engine access road (6m)**
- **Maximum travel distance from the fire engine pump appliance to every point on the project plan area of the building is 60m**

Residential Buildings such as flats, maisonettes, apartment and NOT exceeding 10m in habitable height

Fire engine access road (min 6m) to within a travel distance of 60m from every point on projected plan area of any building



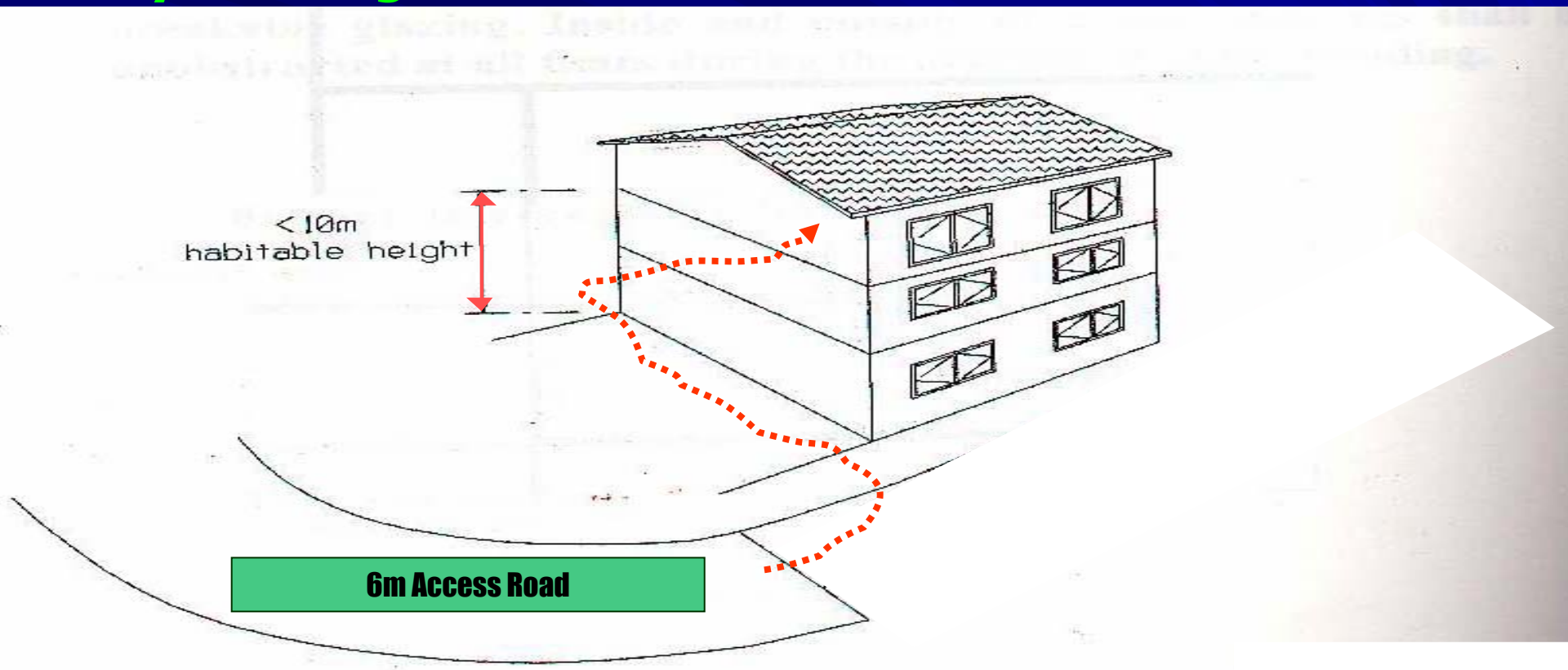
Residential Buildings exceeding 10m in habitable height such as flats, maisonettes and apartment

- fire engine access road (min 6m)
- within 18m from breeching inlet
- breeching inlet to be located on external wall above ground level nearest to the vertical run of the riser stack

Institution, Office, Shop, Places of Public Resort

Habitable Height not exceeding 10m

Fire engine access road (min 6m) to within a travel distance of 45m from every point on projected plan area of any building



Institution, Office, Shop, Places of Public Resort

Habitable Height exceeding 10m

- Hardstanding shall be located directly below fire access opening

- Hardstanding to base on gross floor area of the largest floor in the building:

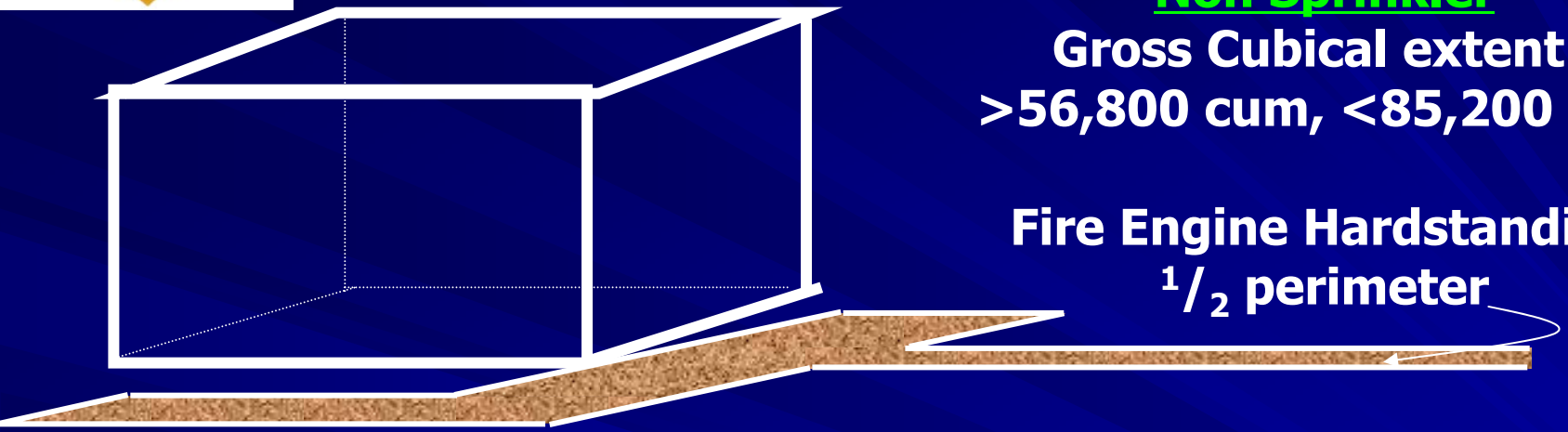
Non-sprinkler buildings	Sprinkler buildings
Min 1/6 perimeter (min 15m)	Min 1/6 perimeter (min 15m)
2000m^2 to 4000m^2: 1/4 perimeter	4000m^2 to 8000m^2: 1/4 perimeter
>4000m^2 to 8000m^2: 1/2 perimeter	>8000m^2 to 16,000m^2: 1/2 perimeter
>8000 m^2 to 16,000m^2: 3/4 perimeter	>16,000 m^2 to 32,000m^2: ¾ perimeter
>16,000m^2: island site access	>32,000m^2: island site access

Factory (Industrial) and Storage (Warehouse)

- Hardstanding to be provided
- Regardless of the habitable height

Non-sprinkler buildings	Sprinkler buildings
Min 1/6 perimeter (min 15m)	Min 1/6 perimeter (min 15m)
>28,400m^3: 1/4 perimeter	>56,800m^3: 1/4 perimeter
>56,800m^3: 1/2 perimeter	>113,600m^3: 1/2 perimeter
>85,200 m^3 : 3/4 perimeter	>170,400 m^3:3/4 perimeter
>113,600m^3: island site access	>227,200 m^3: island site access

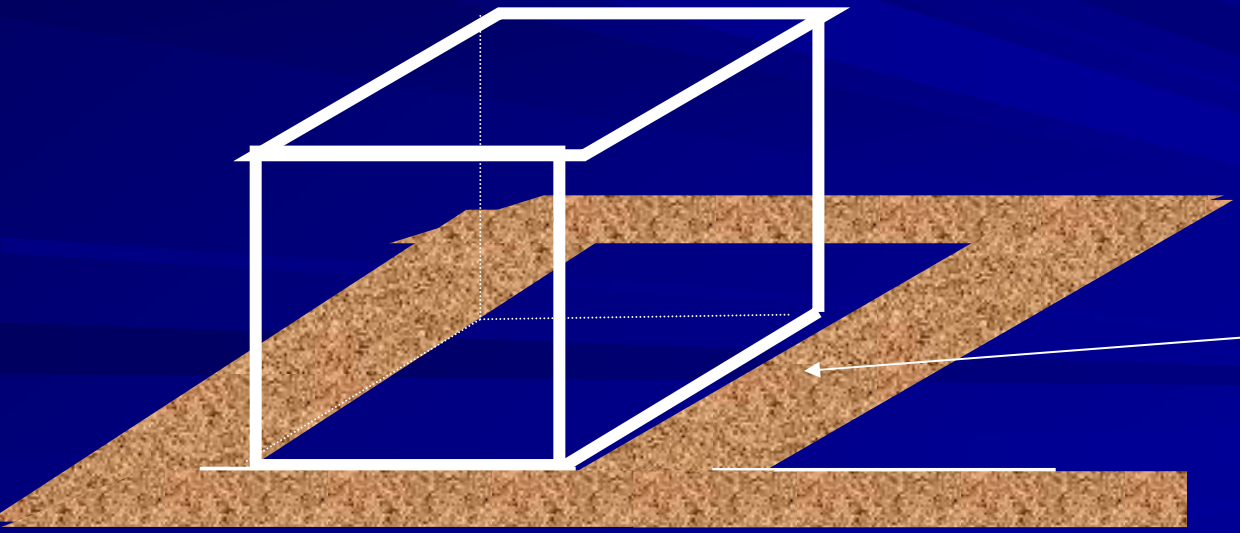
Factory (Industrial) and Storage (Warehouse)



Non Sprinkler

Gross Cubical extent:
>56,800 cum, <85,200 cum

Fire Engine Hardstanding
$^1/_2$ perimeter



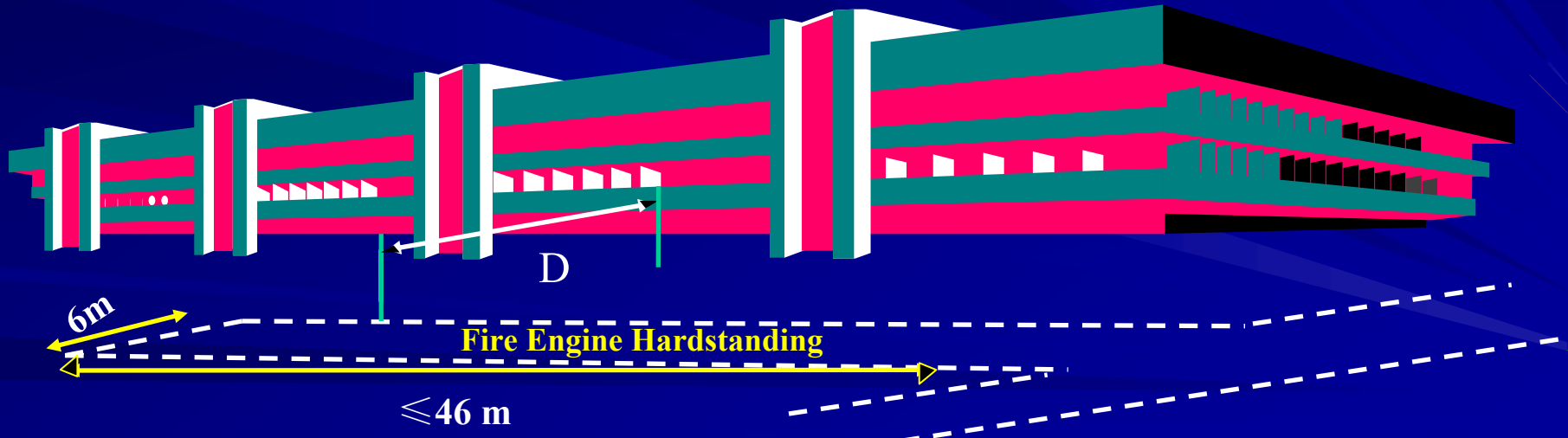
Sprinkler

Gross cubical extent:
>227,200cum

island wide access

General Requirements for Fire Engine Hardstanding

- to withstand stationary 45 tonnes fire engine
- minimum width of 6m throughout
- gradient not exceeding 1:15

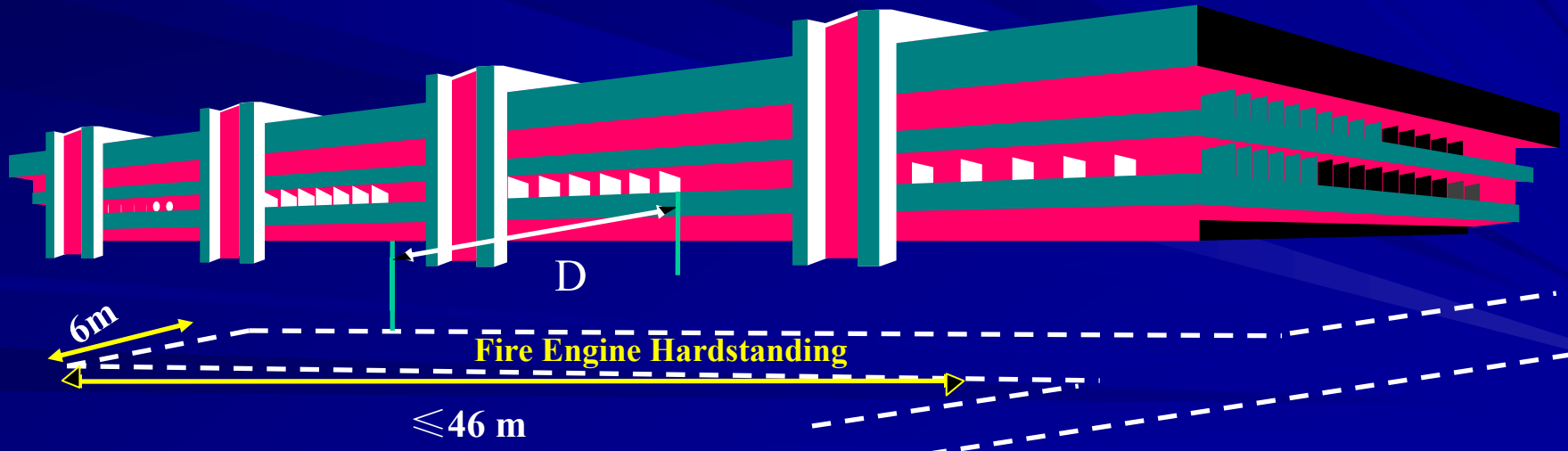


D : not more than 10m &
not less than 2m

QATAR CIVIL DEFENCE DEPARTMENT

General Requirements for Fire Engine Hardstanding

- dead-end not to exceed 46m
- min. Inner Radius of Turning Facility – 7m
- public road can be used as hardstanding (provided edge of public road to façade of building)
- between 2m and 10m from FAP



D : not more than 10m & not less than 2m

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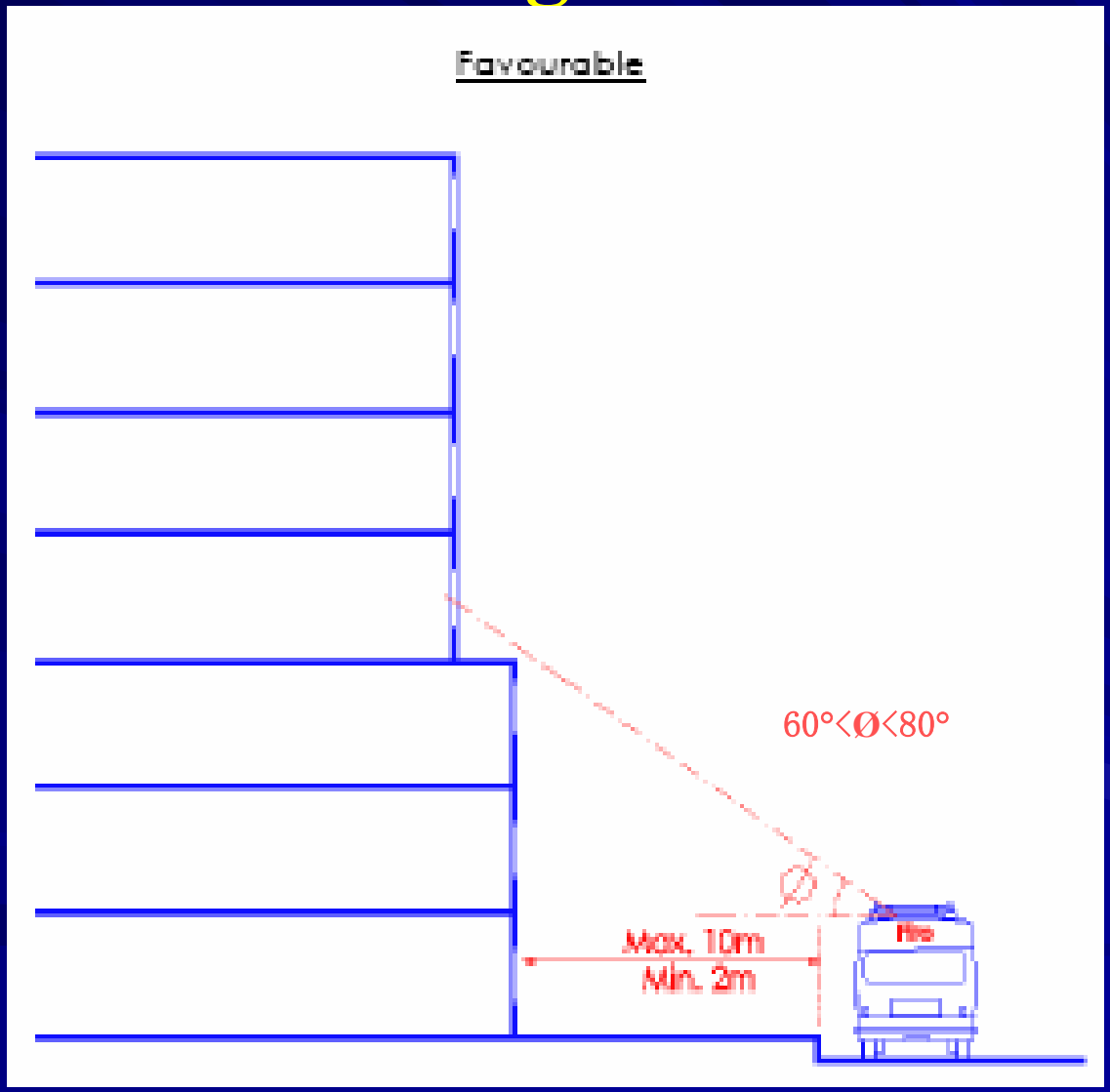
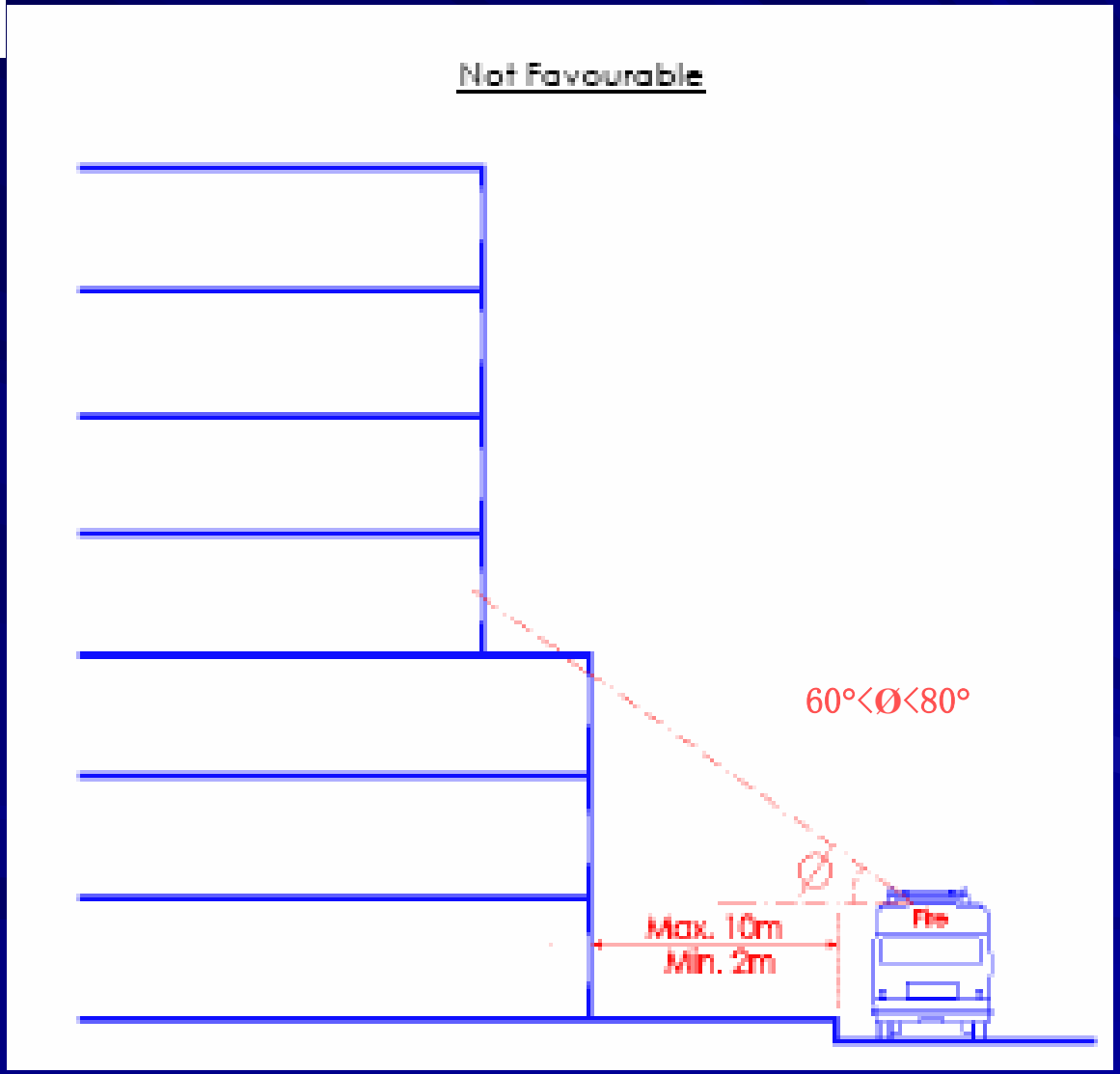
General Requirements for Fire Engine Hardstanding



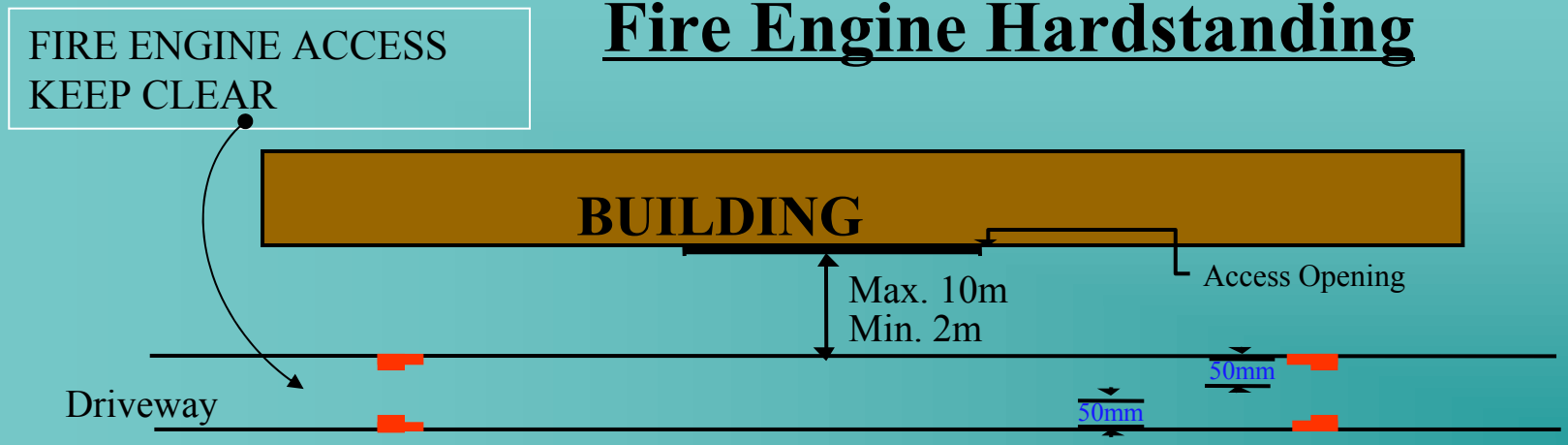
General Requirements for Fire Engine Hardstanding



General Requirements for Fire Engine Hardstanding

- All corners shall be marked
- marking of corners in contrasting colour to ground surfaces or finishes
- Sign post “Fire Engine Access -Keep Clear” at the entrance of Hardstanding (50mm)

Fire Engine Hardstanding



General Requirements for Fire Engine Hardstanding

- hardstanding on turfed area
- marking to use contrasting object that is visible at night.
- interval of 3m