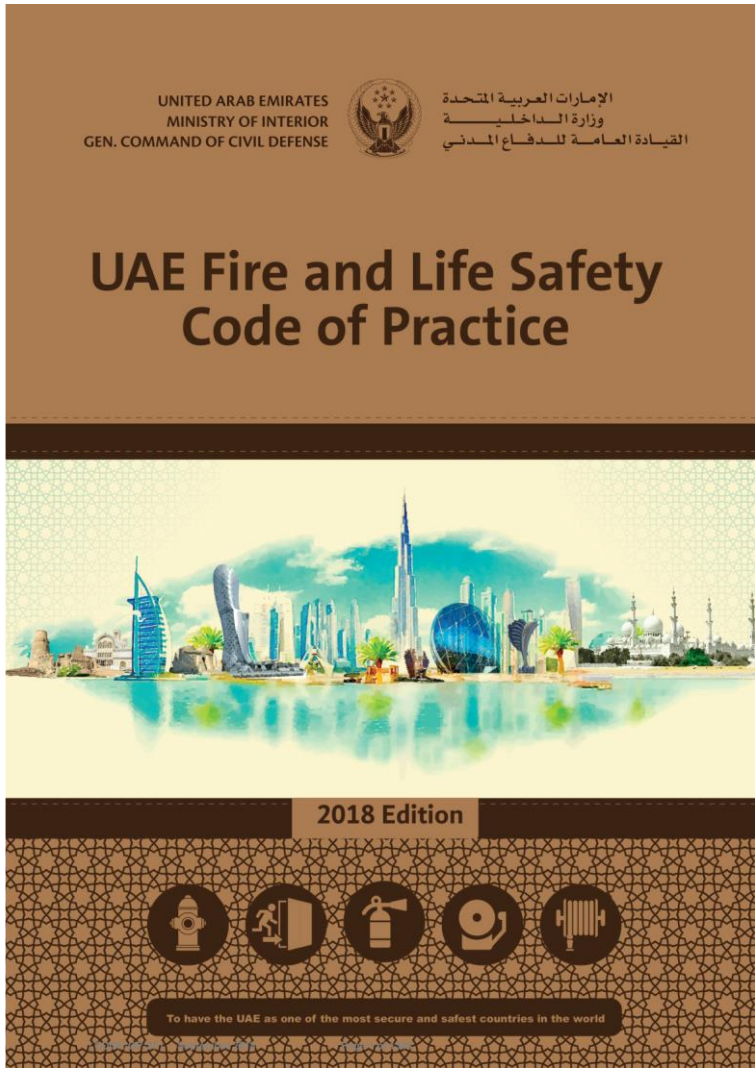
VORTEX FIRE

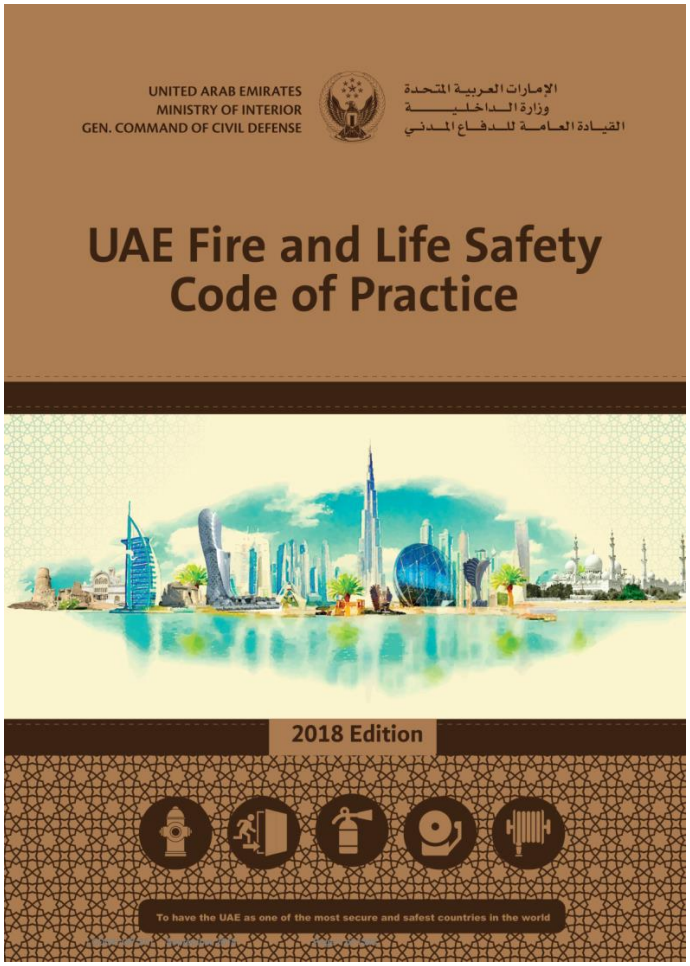
UAE Fire and Life Safety Code of Practice

Key changes between August 2017 and September 2018 Editions



UAE Fire and Life Safety Code of Practice

- Issued: September 2018
- Changes from August 2017 code
- Enforcement:
  - Dubai/Abu Dhabi: Immediately (all new submissions)
- Prerequisite knowledge of the below codes:
  - UAE Fire and Life Safety Code of Practice (August 2017 Edition)
  - NFPA 101 Life Safety Code (2018 Edition)
  - NFPA 5000 Building Construction and Safety Code (2018 Edition)



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Agenda

1. **Construction**
2. **Fire service vehicle & personnel accessibility**
3. **Means of egress**
4. Fire extinguishers
5. Exit signs
6. Emergency lighting
7. Emergency voice evacuation systems
8. **Fire detection & alarm system**
9. **Fire protection systems**
10. **Smoke control & management systems**
11. LPG code of practice
12. Fire & life safety during construction & maintenance
13. ~~Flammable liquid usage~~
14. Utility occupancies
15. ~~Accessibility~~
16. Direct alarm system
17. Risk assessment methodology
18. Responsibility of stakeholders
19. Emergency action plan & evacuation procedures
20. Marina
21. Annexure 1 – Common questions
22. **Annexure 2 Drawing submission requirements**

Chapter 1

Construction

Construction requirements

- Table 1.9 (1): Emergency command centre permitted to be in the same room as building security, BMS, FM office or building control room.
- Table 1.9 (2): Fire pump room must be located anywhere from lowest basement to ground floor within 6 m from nearest exit.
- Table 1.9 (4): Basement kitchen permitted but LPG cylinders & storage tanks not allowed.
- Table 1.9 (15): Generators not permitted on the roof. Permitted on intermediate service floor or on podium deck.

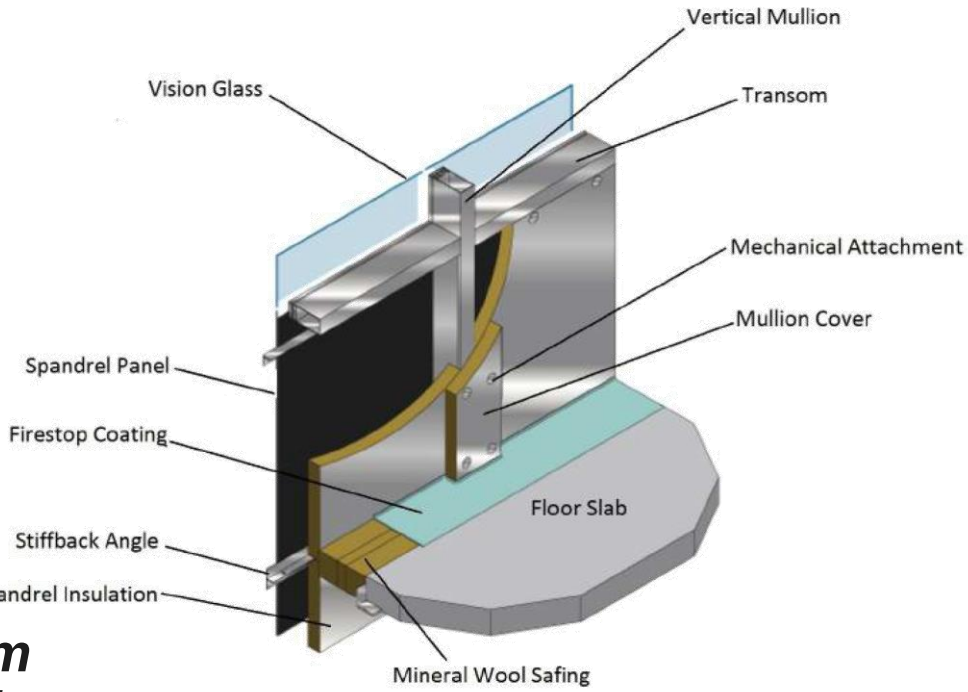
Construction requirements (cont'd)

- Table 1.9 (38): Fireman's lift shaft must be in RCC construction. Service rooms not permitted to open into fireman's lift lobby.
- Table 1.9 (42): Exit stairs in high-depth & high-rise buildings must be in RCC construction.
- Table 1.9 (48): Kiosks > 1.5m from adjacent occupancies, distance between kiosks > 6m (previously 3m) and kiosk size (including group of kiosk) < 18 sqm.
- Table 1.9 (63): Roof structure < 8.535m (Type I & II) in height and < 33% of the roof area (requirements extracted from NFPA 5000).
- Table 1.9 (64): Roofs > 6.1m above floor of occupancies other than mercantile, mall and industrial/storage (ordinary/high hazard) does not need to be fire rated.

Spandrel requirements

- 2.8.10: Vertical spandrel concession for sprinkler protected building has been omitted. Any building 15 or higher (except open parking) shall have 915 mm vertical spandrel (or 760 mm horizontal spandrel) and 1 hour fire rated.

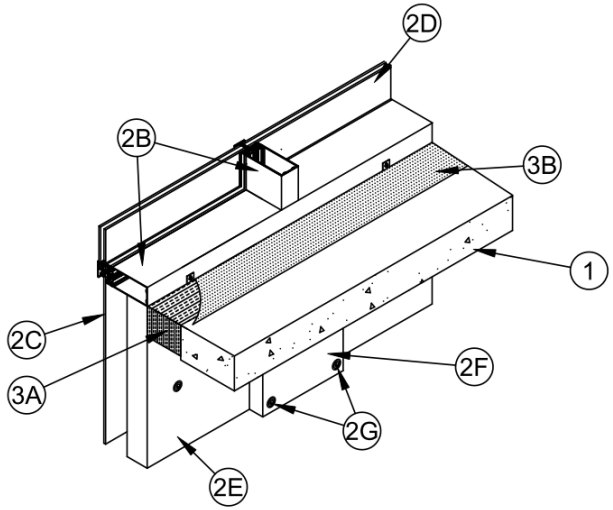
- 3.2.4d: ***Reduced spandrel is acceptable where the perimeter fire stopping system has been tested, certified and listed with intended spandrel specifications.***



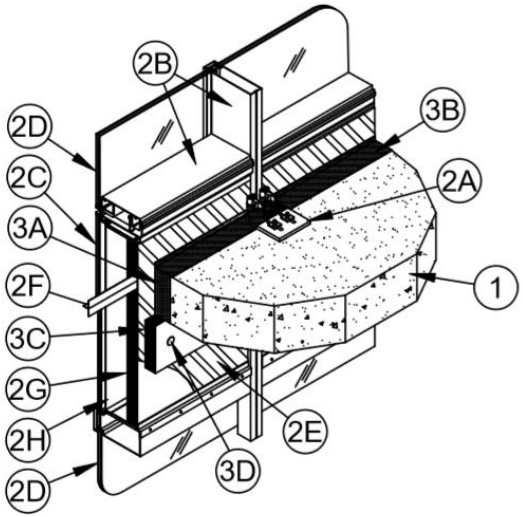
Fire testing of curtain wall systems

1. ASTM E2307: “Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus”
2. EN 1364 –Part 3: “Fire resistance of curtain walling systems –full Configuration”–Fire Resistant Glazing
3. EN 1364 –Part 4: “Fire resistance of parts of curtain walling”–Non-Fire Resistant Glazing

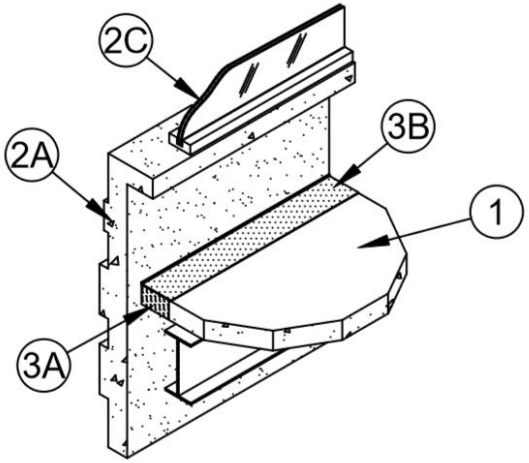
Samples of reduced spandrel arrangement



Aluminum panels



Glazing



Concrete panels

Façade & cladding

- 4.4.3.4: Where there is no clear distinction between roof & façade (due to building shape), the façade must meet both façade and roof covering requirements.
- Façade components:
  - 4.5.6.1: Flammable silicone fillers – must be tested as part of the full wall assembly fire test.
  - 4.5.6.2: Vapour barrier system (VBS) – must be approved by Civil Defence & meet Class A EN 13501-1 requirements.
  - 4.5.6.3: EPDM – not to be used as full liner but can be used in discrete locations. Must achieve minimum c,s2,d0 as per EN 13501-1.
- 4.5.7: Opening flashing: must have cavity barriers.

Façade & cladding

- 4.5.9: Fire safing must be same rating as the perimeter fire barrier. Aluminium back pans are not permitted.
- Table 1.18a: GRC/GFRC & GRP/GRFP – must be tested as a product (small-scale testing) and assembly (full-scale testing).
- *3.6: 3rd party inspections of firestop systems are mandatory by consultant (must have required qualifications/experience and approved by Civil Defence) or House of Expertise. This includes façade, perimeter fire barrier, cavity barrier, penetrations and fire-resistive joints.*

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3rd Party Inspections – House of Expertise

	When	Frequency	Mandatory
Façade Fire Assessment	Prior to façade installation	Not applicable	Yes
Façade Fire Inspections	During construction	20%, 40%, 60%, 80% & 100%	Yes
Fire-Resistive Joints & Perimeter Fire Barriers	During construction	1 destructive test every 150 m per each system	Yes
Through- & Membrane-Penetrations	During construction	2% destructive test every 945 sqm per each system	Yes
Fire doors & windows	Prior to handover	100%	Not enforced by DCD
Structural fire proofing (SFRM & Intumescent Paint)	During construction	1 destructive test (thickness & adhesion) for each structural element type every 930 sqm. Density test by 3rd party laboratory.	Yes
Active fire protection systems	Throughout construction	As per NFPA standards	Not enforced by DCD

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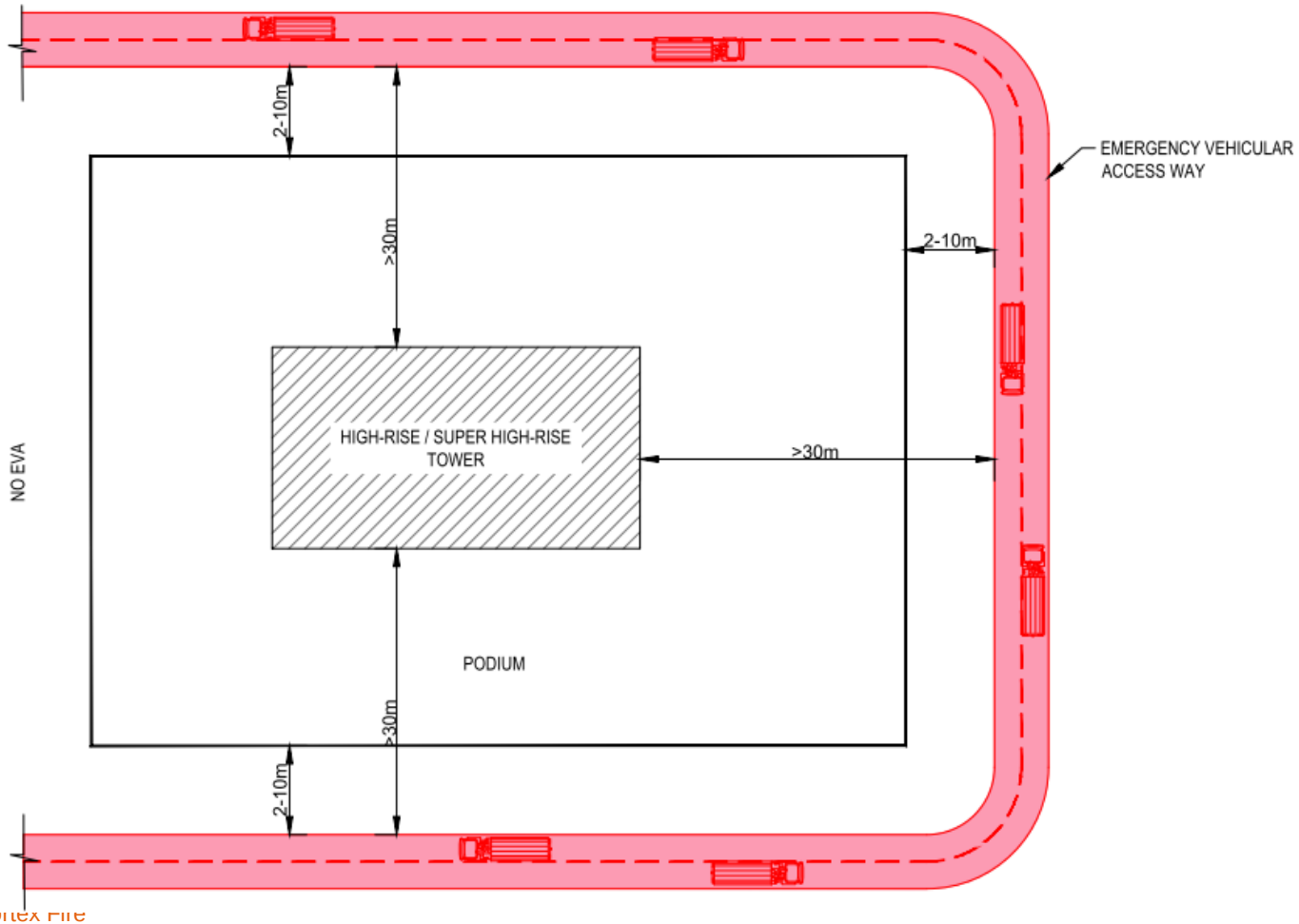
Chapter 2

Fire service vehicle & personnel accessibility

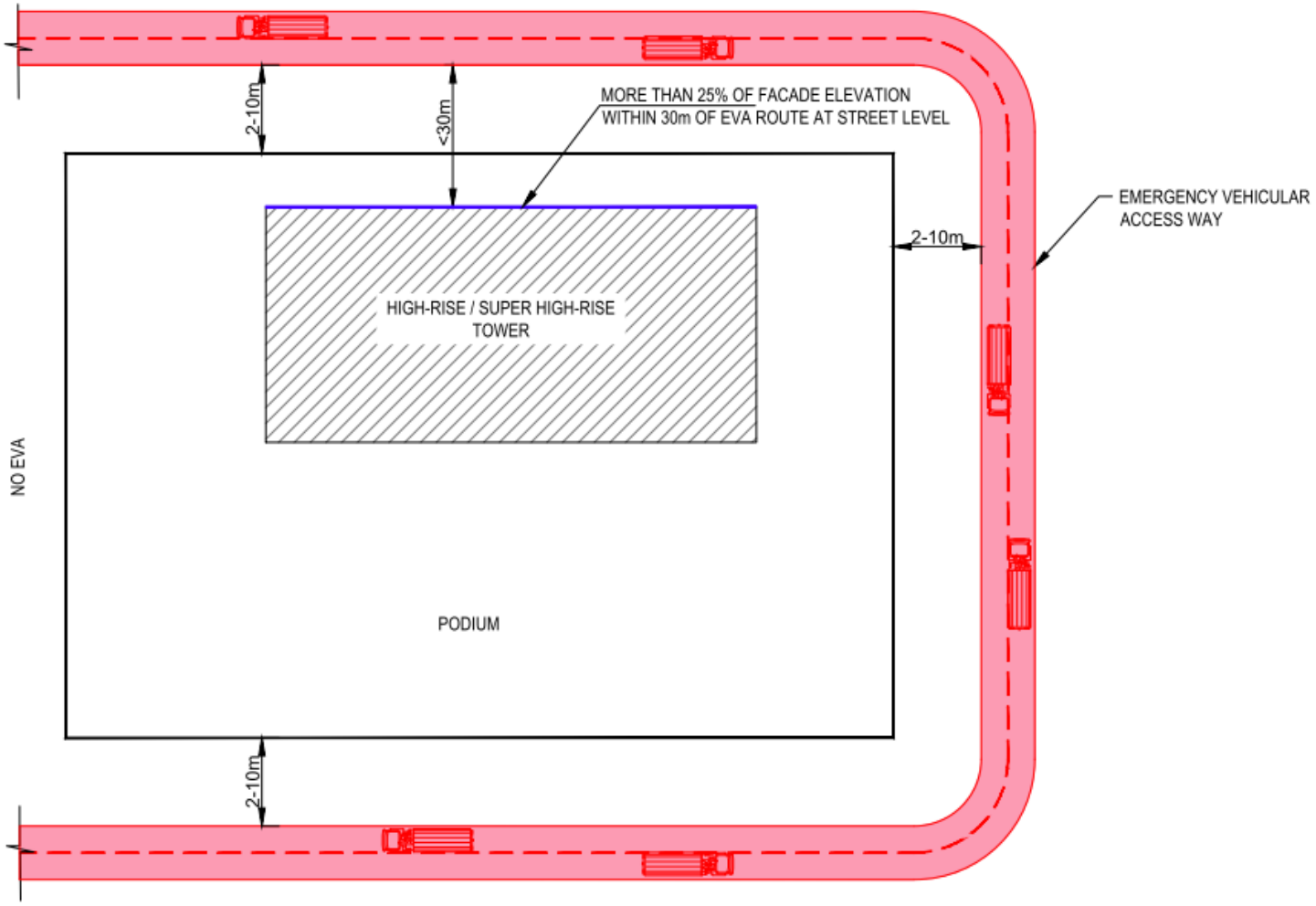
Emergency vehicular access (EVA)

- 2.8.6b & 2.8.7b: Towers (mid-rise, high-rise & super-high-rise) located on podium and > 30 m from EVA, at least 25% of the tower perimeter must meet the EVA requirements.

EVA required on top of podium

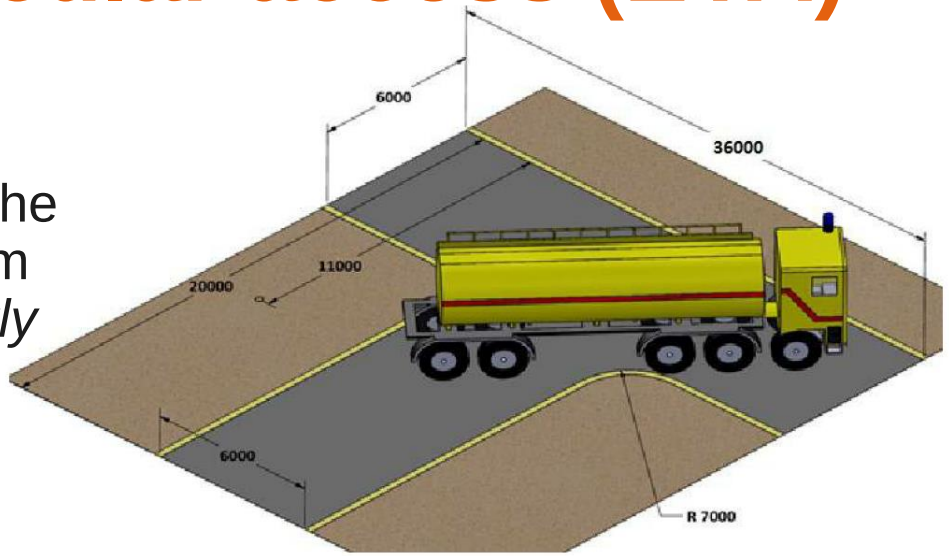


EVA not required on top of podium



Emergency vehicular access (EVA)

- 2.7.3: T-turn specification – The length of T-head shall be 36 m *(previously this was incorrectly specified as19 m)*



- 2.8.10: Waterfront low-rise & commercial villas – must be < 60 m from EVA.
- 2.8.10: Waterfront high-rise & super-high-rise – if not able to comply with EVA then façade must be non-combustible cladding & insulation.
- 2.9l: Fireman's lift must be provided with water management i.e. protection of electrical equipment against water as per BS EN 81-72.

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Chapter 3

Means of egress

Means of egress

- 3.3: Maximum handrail projection of 114 mm permitted (as per NFPA 101).
- Table 3.21 (2): Classrooms corridors > 1,830 mm (classrooms on one side) & > 3,000 mm (classrooms on both sides).
- Table 3.24 (6/7): Apartments and hotels:
  - Bedrooms > 810 mm clear width
  - Main entrance door > 915 mm clear width
  - Bathrooms > 810 mm (710 mm if not serving mobility impaired)
  - Balcony doors must be > 810 mm clear width
- Mall pedestrian way: Minimum 6,100 mm clear width in front of retail units on both sides.

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Chapter 8

Fire detection & alarm system

Fire detection & alarm system

- Table 8.13 (26): Private villas – must be provided with smoke detection and alarm system. Wireless systems are permitted. FACP and external audio visual notification are required.

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Chapter 9

Fire protection systems

Fire protection systems

- Table 9.3 (5): Pump room and corridors (all corridors including typical level corridors) shall have adequate drainage facilities.
- Table 9.3 (6/7): Water based fire protection piping joints shall be welded. Grooved couplings are not permitted except for low-rise buildings.
- Table 9.6 (15): Standpipe system test connections are not required on every floor, it can be provided on alternate floors.
- Table 9.13 (9): Fire hydrants shall be located between 2 to 12 m from the building. Previously this was 6 to 30 m.
- 4.1.1.8: As part of infrastructure, it is recommended to provide a central water tank (min. 500,000 USG) such that each individual plot does not require additional fire water tanks.

Fire protection systems (cont'd)

- Table 9.18/9.19/9.20: Mid-, high- and super-high-rise buildings on a plot (> 20,000 sqm) must have hydrants but could be omitted if public hydrants are < 60m from any portion of the building perimeter.
- Table 9.18/9.19/9.20: Mid-, high- and super-high-rise buildings with combined fire hydrant and building fire protection fire pumpsets can be 1,000 USGPM (reduced from 1,500 USGPM). Similarly, fire water tank capacity reduced from 90 minutes to 60 minutes. *Intermediate fire water tank capacity is also reduced from 60 minutes to 30 minutes.* DCD are not accepting higher than required water tank capacities.
- Table 9.20b: Mid-rise buildings (residential, healthcare, mercantile, business & animal housing) – fire water tank capacity requirement reduced from 60 minutes to 45 minutes.

Fire protection systems (cont'd)

- Table 9.21a: Low-rise buildings
  - Floor area limits for application of fire protection systems are more stringent
  - Dry & wet riser requirements have been removed on meeting certain conditions
  - Fire pump capacities have been reduced
- Table 9.22: Mall buildings – Combined fire water tank capacity has been reduced from 90 minutes to 60 minutes. Hydrants could be omitted if public hydrants are < 120m from any portion of the building perimeter.
- Table 9.23 (A): Private villas require fire sprinklers > 1,500 sqm (previously 2,000 sqm) floor area and for basements > 1,500 sqm (previously 300 sqm) floor area.

Fire protection systems (cont'd)

- Table 9.23 (B): Commercial villas require hydrants > 20,000 sqm (previously 10,000 sqm) plot area. Combined fire water tank capacity has been reduced from 90 minutes to 60 minutes.
- Table 9.23 (B): Commercial villas require fire sprinklers > 1,500 sqm floor area and for basements > 1,500 sqm (previously 300 sqm) floor area.
- Table 9.24: Parking structures – fire water tank can be 30 minutes (low rise) otherwise 60 minutes. Where a combined fire water tank is required, the capacity has been reduced from 90 minutes to 60 minutes. Hydrants could be omitted if public hydrants are < 60m from the building.

Fire protection systems (cont'd)

- Table 9.29 (B): Balcony fire sprinklers are mandatory. Coverage shall be based on 12 sqm and operating temperature of 79^{o}C.
- Table 9.29 (F): Above false ceiling protection criterion of 800 mm has been omitted. It is now similar to NFPA 13.
- Table 9.29 (G): Residential bathrooms > 5.1 sqm does not require sprinkler protection, contrary to NFPA 13. Recommend sprinkler protection as per NFPA 13.

Fire protection systems (cont'd)

- Table 9.30: Electrical/telephone rooms <10 sqm (previously 5 sqm) OR rooms located on typical floors do not need fire protection. UPS/battery rooms do not need fire protection. 2 hour fire separation is mandatory.
- Table 9.30 (V): Cold/freezer rooms do not need fire protection < 20 sqm.
- Table 9.31 (A): Commercial kitchen hood must be provided with grease filters.

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Chapter 10

Smoke control & smoke management systems

Smoke control

- Table 10.1 (3iii): Complete duct system must be tested as an assembly.
- Table 10.1 (8): Fire dampers shall be with fusible links for HVAC system and motorised (MSFD) for any smoke control system.
- Table 10.6 (5): Corridor smoke purging systems – exhaust shall be to open air away from any occupied spaces. In high- & super-high-rise buildings this must at roof level. Make-up air can be drawn from intermediate levels.
- Table 10.9 (4): Smoke venting using natural vents. Areas more than 4,000 sqm (previously 2,000 sqm) must be provided with smoke curtains for separation.
- Table 10.9a: Smoke vent open area and distribution – requirements relaxed.

Smoke control (cont'd)

- Table 10.15 (2): Fire pump, generator room & ECC – minimum required extract rate is 3 ACH
- Table 10.20 (1): Stair pressurisation multiple injection system required > 30.5 m in height *(correction)*
- Table 10.21 (1): Stair pressurisation is required for all hospital, malls, educational and assembly occupancies regardless of building height.
- Table 10.22 (4): Underground & basement – enclosed rooms > 280 sqm (previously 250 sqm) must be provided with dedicated smoke exhaust or purging system.
- Table 10.23 (2): Open parking area < 4,000 sqm (previously 3,600 sqm) does not need smoke control system.
- Table 10.27 (4): In low-rise and mid-rise buildings, internal corridor > 60 m must be provided with natural venting & corridors fire separated.

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Annexure 2

Drawing submission requirements

Civil Defence submissions

- A2.8: Event proposals – new section.
- A2.9: Façade & roof approvals – new section
  - Undertaking letters required
  - Format of submission included
  - Supplier must be registered with Civil Defence
  - System must be approved by Civil Defence

Façade submissions

FULL BUILDING IMAGE IN COLOUR

BUILDING NAME:	XXXX
PLOT NUMBER:	XXXX
CLIENT NAME:	XXXX
FIRE CONSULTANT/FAÇADE CONSULTANT NAME:	XXXX
CONSULTANT NAME:	XXXX
MAIN CONTRACTOR NAME:	XXXX
FAÇADE SUB CONTRACTOR NAME:	XXXX
FABRICATOR/ INSTALLER NAME:	XXXX

BUILDING AUTHORITY:	MUNCIPALITY/ DCCA/ FREE ZONE
FAÇADE APPROVAL AUTHORITY:	CIVIL DEFENCE

REPORT REFFERENCE NUMBER:	XXXX
DATE:	XXXX
PREPARED BY:	NAME+STAMP+SIGNATURE

SYSTEMS EVALUATED: ☑ Facade ☑ Curtainwall ☑ Cladding ☐ Roofing ☑ Architectural feature ☑ Glazing ☐ Others_____

CIVIL DEFENCE COMMENTS AND STAMP: ☐ pproved with comments ☐ Not Acceptable

HOUSE OF EXPERTISE /FAÇADE CONSULTANT/ MAIN CONSULTANT LETTERHEAD

Date:

Report Reference number:

Ministry of Interior
General Directorate of Civil Defence
Department of Preventive Safety

Kind Attn: Director – Preventive Safety Dept.

Subject: Undertaking | Exterior Façade/Curtainwall/Cladding/Roofing System
Project:
Plot No.:
Project Consultant:

Based on submitted design, material listing and installation method statement documents, following systems have been evaluated.

☑ Facade	☑ ACP	☐ Natural Stone	☐ Glazing
☐ Curtainwall	☐ GRC	☐ Concrete Panel	☑ MgO Board
☐ Cladding	☐ Polycarbonate	☐ Solid Metal	☐ Sandwich Panel
☐ Roofing	☐ EIFS	☐ ETICS	☐ other (Specify):

In addition, Consultant's undertaking and the approved material submittal(s) has/have also been reviewed by us.

1. We undertake that the above mentioned systems are compliant to latest UAE Fire and Life Safety Practice, 2017. Please see attached report. (Report Reference Number: xxxx)
2. We undertake that the installed work shall be inspected to ensure that the provisions of Civil Defense approval are adhered to. Inspection reports shall be prepared for each stage at 20%, 40%, 60%, 80% & 100% and shall be submitted to Civil Defense inspection team.
3. We will ensure that all stakeholders - main consultant, the manufacturer, the installer and house of expertise jointly sign off the installation and provide final inspection report for Civil Defense acceptance as evidence of compliance.

Hence, we request Civil Defense to approve the proposed façade system(s) for this project.

Thanks & Regards,

Name:
Designation:
For & on behalf of (the HoE/ Facade /Main consultant) Organization Stamp

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Recap

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Questions