



**FIRE PREVENTION DEPARTMENT
GENERAL DIRECTORATE OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**GENERAL FIRE SAFETY REQUIREMENTS
GUIDELINES ANNEXES**

GA No.	General Fire Safety Requirements	Revisions	Date
FF	FIRE FIGHTING SYSTEM		
FA	FIRE ALARM SYSTEM		
MV	MECHANICAL VENTILATION SYSTEM		
00	BASIC FRAMEWORK FOR SUBMISSION OF PERFORMANCE –BASED SOLUTIONS		
1.1	BASIC REQUIREMENTS		
1.2	ELECTRICAL ROOMS, SUBSTATION, SWITCHGEARS AND OTHERS		
1.5	REFUGE FLOOR		
2.1	FIRE PROTECTION WATER SUPPLIES		
2.2.13	SMOKE-STOP AND FIRE FIGHTING LOBBIES		
3.1	PORTABLE CABINS		
3.15.1	INTUMESCENT PAINTS		
3.2	EXTERNAL CLADDINGS MATERIALS		
3.5.2	NON-LOAD BEARING EXTERIOR WALLS		
4.1	EXTERNAL ACCESS TO SITE AND BUILDING		
6.01	FIRE PROTECTION PIPES		
6.04	SPRINKLERS IN CONCEALED CEILING AND RAISED FLOOR SPACES		
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**FIRE PREVENTION DEPARTMENT
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6.2	RISING MAIN FOR FIRE FIGHTNG		
6.3	FIRE ALARM SYSTEMS		
6.6.3	FIRE LIFTS (FIRE SERVICE ACCESS ELEVATORS)		
6.7	FIRE PUMPS		
7.0	VENTILATION AND SMOKE CONTROL		
8.2.3	FIRE (EMERGENCY) COMMAND CENTER		
9.0	EXISTING BUILDINGS		
10.0	MASJID		



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR RESIDENTIAL APARTMENTS**

Occupancy Classification		Building Configuration			Fire Fighting System Requirements					Special Requirement
		Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification (1)	Automatic Fixed Extinguishing System (2) (NFPA 13)	Standpipe System (3) (NFPA 14)	Hose Reel System (4) (NFPA 14)	Suggested Fire Pump (5) Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank (6) Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area (7) (sq. meters)
RESIDENTIAL APARTMENTS										
LOW RISE BUILDINGS	G+3 or B+G+3 (One basement level used as parking exclusively for building occupants)	≤15m	≤500 max. (max. 4-apt. units)	NA	NR	R ^(3a)	NR	NR	NR	NA
MEDIUM RISE BUILDINGS	(two or more separate exits and one basement)	≤ 28M	> 500 to ≤1115	NA	NR	R ^(3a)	R	50 - 100 ^(5a)	1,500 - 3,000 (30 mins.)	8 ^(7a)
	(two or more separate exits and one basement)	≤ 28M	> 1115	Light & Ordinary ^(1a)	R ^(2a1)	R ^(3a)	R	300	19,500 (60 mins.)	20 ^(7b)
	(two or more separate exits w/ two or more basement)	≤ 28M	UNLIMITED	Light & Ordinary ^(1a)	R ^(2a)	R ^{(3a)(3c)}	R	300 - 1000 ^{(5b)(5c)}	19,500 - 60000 (30-60 mins.)	30 ^(7c)
HIGH-RISE BUILDINGS		> 28M	UNLIMITED	Light / Ordinary ^(1a)	R ^(2b)	R ^(3c)	R	750-1000 ^{(5b)(5c)}	22,500 - 60,000 (30-60 mins.)	30 ^(7c)

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

1 - Classification is used for the purpose of sprinkler design only.

1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

NA - NOT APPLICABLE

NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



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GENERAL ADMINISTRATION OF CIVIL DEFENCE
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**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR BUSINESS OCCUPANCY**

Occupancy Classification		Building Configuration			Fire Fighting System Requirements					Special Requirement
		Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
BUSINESS OCCUPANCY - OFFICES										
LOW RISE BUILDINGS	G+3 or B+G+3	≤15m or up to 4-storeys measured from fire engine access level.	≤500 max.	NA	NR	R ^(3a)	NR	NR	NR	NA
MEDIUM RISE BUILDINGS		≤28m	>500 to ≤1115	NA	NR	R ^(3b)	R	50 - 100 ^(5a)	1,500 - 3,000 (30 mins.)	8 ^(7a)
		≤28m	>1115	Light & Ordinary ^(1a)	R ^(2a or 2a1)	R ^(3b)	R	300 - 1000 ^{(5b)(5c)}	19,500 - 60,000 (30-60 mins.)	30 ^(7c)
HIGH-RISE BUILDINGS		>28M	UNLIMITED	Light / Ordinary ^(1a)	R	R ^(3c)	R	750 - 1000 ^{(5b)(5c)}	22,500 - 60,000 (30-60 mins.)	30 ^(7c)

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2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dept Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

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Comply with NFPA 20 for all other requirements not specified in this guidelines.

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5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

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**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR EDUCATIONAL OCCUPANCY**

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
EDUCATIONAL OCCUPANCY - SCHOOLS									
KINDERGARTEN	Ground Level (G)	Unlimited	Light	R ^(2b.1)	NR	R	200-250 ^(5a)	6,000 - 7,500 (30 mins.)	20 ^(7b)
PREPARATORY	G + 1	Unlimited	Light	R ^(2b.1)	NR	R	200-250 ^(5a)	6,000 - 7,500 (30 mins.)	20 ^(7b)
PRIMARY	G + 1	Unlimited	Light	R ^(2b.1)	NR	R	200-250 ^(5a)	6,000 - 7,500 (30 mins.)	20 ^(7b)
SECONDARY	G + 2	Unlimited	Light	R ^(2b.1)	R ^(3a)	R	200-250 ^(5a)	6,000 - 7,500 (30 mins.)	20 ^(7b)
BASEMENT (Every portion below Level of Exit Discharge)	NA	Unlimited	Ordinary	R	R ^(3a.1 or 3c)	R	300-1000 ^(5c)	19,500 - 60,000 (60 mins.)	30 ^(7c)

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2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breaching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

NA - NOT APPLICABLE

NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

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**FIRE PREVENTION DEPARTMENT
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**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR HEALTH CARE OCCUPANCY**

Occupancy Classification		Building Configuration			Fire Fighting System Requirements					Special Requirement
		Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
HEALTH CARE OCCUPANCY - HOSPITALS										
TYPE A	HIGH-RISE	≥ 28m	UNLIMITED	Light & Ordinary ^(1a)	R	R ^(3c)	R	750-1000 ^{(5b)(5c)}	22,500 - 60,000 (30-60 mins.)	30 ^(7c)
TYPE B	OTHER THAN HIGH-RISE	< 28m	UNLIMITED	Light & Ordinary ^(1a)	R	R ^{(3a)(3c)}	R	300	9,750-19,500 (30-60 mins.)	20 ^(7b)
RESERVE OF AMBULATORY FACILITIES	CLINICS	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

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1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

- 2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.
2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.
2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.
2a.3 - Sprinklers required if 3 or more storeys in height
2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.
2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.
2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.
2b - Sprinkler protection all throughout the building.
2b.1 - Sprinklers required if the area exceeds 1120sq.m.
2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.
2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

- 3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.
3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.
3b - Dry Standpipe shall be required as minimum.
3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.
3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.
3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.
3f - minimum flow at outlet : 250 gpm @ 100psi
3g - Breeching inlet or Fire Dept Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

- 4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.
4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED NA - NOT APPLICABLE NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

- Comply with NFPA 20 for all other requirements not specified in this guidelines.
5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.
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110% (total demand - brak tank capacity) / duration.

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**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR **MERCANTILE OCCUPANCY-SHOPS****

Occupancy Classification	Building Configuration			<i>Fire Fighting System Requirements</i>					Special Requirement
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
MERCANTILE OCCUPANCY - SHOPS									
TYPE C	1 STOREY	≤ 280 (GROSS AREA)	NA	NR	NR	NR	NA	NA	NA
TYPE B	≤3 STOREY	>280 to ≤ 2800 (GROSS AREA)	Light/Ordinary	R ^(2a.2)	R ^(3a)	R	250-400	7,500 - 24,000 (30-60 mins.)	20 ^(7b)
TYPE A	>3 STOREY	>2800 (GROSS AREA)	Light/Ordinary	R	R ^{(3a) or (3c)}	R	400-1000 ^(5c)	24,000 - 60,000 (60 mins.)	30 ^(7c)
BASEMENT	UL	>232	Ordinary	R	R ^{(3a) or (3c)}	R	400	24,000 (60 mins.)	20 ^(7b)
MIXED OCCUPANCY			Light/Ordinary	R	R ^(3c)	R	400-1000 ^(5c)	24,000-60,000 (30-60 mins.)	30 ^(7c)

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

1 - Classification is used for the purpose of sprinkler design only.

1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

NA - NOT APPLICABLE

NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR INDUSTRIAL OCCUPANCY**

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement
	Max. Area (sq. m.) per Level	Habitable Height (m)	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
INDUSTRIAL OCCUPANCY - FACTORY AND WORKSHOPS									
INDUSTRIAL OCCUPANCY (ALL TYPE)	NA	NA	LOW	NR	R ^(3a,3a.1)	R	50 - 100 ^(5a)	1,500 - 3,000 (30 mins)	8 ^(7a)
			ORDINARY	R ^(2a.2,2a.3,2a.4)	R ^(3a,3a.1)	R	300 - 400 ^(5a)	19,500 - 24,000 (60 mins)	20 ^(7b)
			Extra Hazard	R ^(2a.2,2a.3,2a.4)	R ^(3a,3a.1,3c)	R	1000 ^(5b) OR HIGHER	90,000(90 mins) OR HIGHER	30 ^(7c)
WOODWORKING OPERATIONS (EXCEEDING 232m ²) AND POWER GENERATING BUILDING	NA	NA	LOW	R ^(2a.6)	R ^(3a,3a.1)	R	300 - 400	19,500 - 24,000 (60 mins)	20 ^(7b)
			ORDINARY	R ^(2a.6)	R ^(3a,3a.1,3c)	R	400 - 500	24,000 - 30,000 (60 mins)	20 ^(7b)
			Extra Hazard	R ^(2a.6)	R ^(3a,3a.1,3c)	R	1000 ^(5b) OR HIGHER	90,000 (90 mins) OR HIGHER	30 ^(7c)

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

1 - Classification is used for the purpose of sprinkler design only.

1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e- Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

NA - NOT APPLICABLE

NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR STORAGE OCCUPANCY**

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement
	Max. Area (sq. m.) per Level	Habitable Height (m)	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
STORAGE OCCUPANCY - STORE AND WAREHOUSES									
STORAGE OCCUPANCY (ALL TYPE)	NA	NA	LOW	NR	R ^(3a,3a.1)	R	50 - 100 ^(5a)	1,500 - 3,000 (30 mins)	8 ^(7a)
			ORDINARY	R ^(2a.2,2a.3,2a.4)	R ^(3a,3a.1)	R	400 OR HIGHER	24,000 (60 mins) OR HIGHER	20 ^(7b) - 30 ^(7c)
			Extra Hazard	R ^(2a.2,2a.3,2a.4)	R ^(3a,3a.1,3c)	R	1000 ^(5b) OR HIGHER	90,000 (90 mins) OR HIGHER	30 ^(7c)
BULK STORAGE (EXCEEDING 566m³) AND MINI-STORAGE BUILDING (EXCEEDING 232m²)	NA	NA	LOW	R ^(2a.5,2a.6)	R ^(3a,3a.1)	R	400 OR HIGHER	24,000 (60 mins) OR HIGHER	20 ^(7b) - 30 ^(7c)
			ORDINARY	R ^(2a.5,2a.6)	R ^(3a,3a.1)	R	400 OR HIGHER	24,000 (60 mins) OR HIGHER	20 ^(7b) - 30 ^(7c)
			Extra Hazard	R ^(2a.5,2a.6)	R ^(3a,3a.1,3c)	R	1000 ^(5b) OR HIGHER	90,000 (90 mins) OR HIGHER	30 ^(7c)

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

1 - Classification is used for the purpose of sprinkler design only.

1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED

NA - NOT APPLICABLE

NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR HOTELS**

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement	
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)	
HOTELS (including Residential Hotel & Hotel Apartments)										
LOW RISE BUILDINGS	(with two(2) exits)	≤15m	≤500 max. (max. 4-units)	Light	NR	R ^(3a)	R	50 - 100	1,500-3,000 (30 mins.)	8 ^(7a)
	(with single exit)	≤15m	≤500 max. (max. 4-units)	Light	R	R ^(3a)	R	200 - 250 ^(5a)	6,000 - 7,500 (30 mins.)	18 ^(7b)
MEDIUM RISE BUILDINGS		>15 TO ≤ 28m	> 500	Light	R	R ^(3b)	R	300 - 400	19,500 - 24,000 (60 mins.)	20 ^(7b)
HIGH-RISE BUILDINGS		>28m	UNLIMITED	Light	R	R ^(3c)	R	750 -1000 ^{(5b)(5c)}	22,500 - 60,000 (30-60 mins.)	30 ^(7c)
BASEMENTS	(one basement level used as carpark only w/ floor area exceeding 1115m ²)	UNLIMITED	>1115	Ordinary	R	R ^(3a.1 or 3c)	R	300 - 1000 ^(5c)	19,500 - 60,000 (60 mins.)	20 ^(7b) - 30 ^(7c)
	(one basement level used as a mixed occupancy)	UNLIMITED	UNLIMITED	Ordinary	R	R ^(3a.1 or 3c)	R	300 - 1000 ^(5c)	19,500 - 60,000 (60 mins.)	20 ^(7b) - 30 ^(7c)
	(more than one basement level)	UNLIMITED	UNLIMITED	Ordinary	R	R ^(3a.1 or 3c)	R	300 - 1000 ^(5c)	19,500 - 60,000 (60 mins.)	20 ^(7b) - 30 ^(7c)

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

1 - Classification is used for the purpose of sprinkler design only.

1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breaching inlet or Fire Dept Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED NA - NOT APPLICABLE NR - NO REQUIREMENT

5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.

Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)

7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR **DORMITORIES AND ACCOMMODATIONS****

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement	
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)	
DORMITORIES AND ACCOMMODATIONS (COLLEGE DORMS / STUDENT HOUSEING / MILITARY BARRACKS / LABOR/WORKERS & STAFF HOUSING)										
LOW RISE BUILDINGS		≤15m	≤500	Light	NR	R ^(3a)	R	50-100 ^(5a)	1,500 - 3,000 (30 mins.)	8 ^(7a)
MEDIUM RISE BUILDINGS	labor accomodation	>15m to ≤ 28m	>500 to 1000m ²	Light	NR	R ^(3b)	R	50-100 ^(5a)	1,500 - 3,000 (30 mins.)	8 ^(7a)
	other than labor accomodation	>15m to ≤ 28m	>500 to 1000m ²	Light	R	R ^(3b)	R	200 - 250 ^(5a)	6,000 - 7,500 (30 mins.)	18 ^(7b)
	labor/workers accomodation only (with single exit)	>15m to ≤ 28m	>500 to 1000m ²	Light	R	R ^(3b)	R	200 - 250 ^(5a)	6,000 - 7,500 (30 mins.)	18 ^(7b)
HIGH-RISE BUILDINGS		>28m	Unlimited	Light ^(1a)	R	R ^(3c)	R	750-1000 ^{(5b)(5c)}	22,500 - 60,000 (30 - 60mins.)	30 ^(7c)
BASEMENT	(if provided, regardless of height and use)	NA	Unlimited	Ordinary	R	R ^(3a.1 or 3c)	R	300-1000 ^(5c)	19,500 - 60,000 (60 mins.)	20 ^(7b) - 30 ^(7c)

Note:
Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

- 1 - Classification is used for the purpose of sprinkler design only.
1a - Light hazard for residential units & ordinary for basement parking areas
- 2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guidelines.
2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.
2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.
2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.
2a.3 - Sprinklers required if 3 or more storeys in height
2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.
2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.
2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.
2b - Sprinkler protection all throughout the building.
2b.1 - Sprinklers required if the area exceeds 1120sq.m.
2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.
2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.
- 3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.
3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.
3a.1 - Dry standpipe shall be required in **one (1) up to four (4) basement levels below engine access.**
3b - Dry Standpipe shall be required as minimum.
3c - Mandatory wet pipe system. **Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.**
3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.
3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.
3f - minimum flow at outlet : 250 gpm @ 100psi
3g - Breeching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)
- 4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, **minimum @ 65psi**
4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.
4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

R - REQUIRED NA - NOT APPLICABLE NR - NO REQUIREMENT

- 5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.
Comply with NFPA 20 for all other requirements not specified in this guidelines.
5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.
5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.
5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.
- 6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.
Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.
6a - Automatic infill : shall be sized to fill the tank in 6-hrs.
6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.
6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;
110% (total demand - brak tank capacity) / duration.
- 7 - Coordinate with architectural design for proper space allocation.
7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)
7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)
7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE FIGHTING SYSTEM
FIRE SAFETY GUIDELINES FOR PORTA CABINS & TEMPORARY BUILDINGS**

Occupancy Classification	Building Configuration				Fire Fighting System Requirements					Special Requirement
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)	
PORTA CABINS & TEMPORARY BUILDINGS										
CLASS A - PORTA CABINS	2 Storeys	≤7.5	35/unit	NA	NR	NR	NR	NR	NR	NA
CLASS B - TEMPORARY BUILDINGS	(G+1) with internal corridors	≤7.5	20m length of each compartment	NA	NR	NR	R	50	750 (15 mins.)	8 ^(7a)
	(G+2) with open-sided corridors	≤10	≤500	NA	NR	NR	R	50-100	750-1500 (15 mins.)	8 ^(7a)
CLASS C - RESERVED	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>	<i>RESERVED</i>

Note:

Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

Superscript Description:

- 1 - Classification is used for the purpose of sprinkler design only.
1a - Light hazard for residential units & ordinary for basement parking areas

- 2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guide
2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.
2a.1 - Sprinklers required if Basement exceeds 1,115 sq.m. No sprinkler required for upper floors.
2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.
2a.3 - Sprinklers required if 3 or more storeys in height
2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.
2a.5 - Sprinklers required if the Bulk Storage exceeds 566 cubic meters.
2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.
2b - Sprinkler protection all throughout the building.
2b.1 - Sprinklers required if the area exceeds 1120sq.m.
2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.
2c.1 - Sprinkler protection to be provided inside concealed spaces with a depth of more than 800mm with or without combustible material inside.

- 3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.
3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.
3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.
3b - Dry Standpipe shall be required as minimum.
3c - Mandatory wet pipe system. Building having a habitable height exceeding of 28 M above the level of fire engine or more than 4 basement.
3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.
3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.
3f - minimum flow at outlet : 250 gpm @ 100psi
3g - Breaching inlet or Fire Dep't Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

- 4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi
4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.
4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

- R - REQUIRED NA - NOT APPLICABLE NR - NO REQUIREMENT

- 5 - Fire pump to be used only for hose reel system with ≤100 gpm capacity shall be permitted to be non-listed.
Comply with NFPA 20 for all other requirements not specified in this guidelines.
5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.
5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.
5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.
6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.
Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.
6a - Automatic infill : shall be sized to fill the tank in 6-hrs.
6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.
6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;
110% (total demand - brak tank capacity) / duration.

- 7 - Coordinate with architectural design for proper space allocation.
7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)
7b - Fire pump room area with minimum working width of 0.8 meters and no side is less than 3 meters. Vertical clearance shall be 2.60 meters (min.)
7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

FIRE FIGHTING SYSTEM

FIRE SAFETY GUIDELINES FOR BUILDING REHABILITATIONS-CHANGE OF USE OR CHANGE OF OCCUPANCY

Occupancy Classification	Building Configuration			Fire Fighting System Requirements					Special Requirement
	Habitable Height (m)	Max. Area (sq. m.) per Level	Hazard Classification ⁽¹⁾	Automatic Fixed Extinguishing System ⁽²⁾ (NFPA 13)	Standpipe System ⁽³⁾ (NFPA 14)	Hose Reel System ⁽⁴⁾ (NFPA 14)	Suggested Fire Pump ⁽⁵⁾ Min. Capacity (gpm) (NFPA 20)	Min. Fire Water Tank ⁽⁶⁾ Capacity (gallons) (NFPA 22)	Min. Fire Pump Room Area ⁽⁷⁾ (sq. meters)
BUILDING REHABILITATIONS-CHANGE OF USE OR CHANGE OF OCCUPANCY									
VILLAS TO PRE-SCHOOL	Ground Level (G)	Max. 50 preschool complying with student to staff ratio	Light	NR	NR	NR	NA	NA	NA
VILLAS TO SCHOOL	Ground Level (G) - 1st thru 3rd Grade	Max. 100 occupants per floor level max. 4 classrooms per floor level	Light	NR	NR	NR	NA	NA	NA
	Max. 2 Floor Levels (G+1) - 4th Grade onwards	Max. 100 occupants per floor level max. 4 classrooms per floor level	Light	NR	NR	NR	NA	NA	NA
VILLAS TO OFFICES	Max. 3 Floor Levels (G+2)	Max. 30 occupants per floor level	Light	NR	NR	NR	NA	NA	NA

Note:

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1a - Light hazard for residential units & ordinary for basement parking areas

2 - Refers to sprinkler protection only (other system can be used as alternative). Comply with NFPA 13 for all other requirements not specified in this guideline.

2a - Sprinkler protection shall be required in two or more level of basement. No sprinkler requirement for upper floors.

2a.1 - Sprinklers required if Basement is 1115 sq.m. No sprinkler required for upper floors.

2a.2 - Sprinklers required if gross area exceeding 1,115 sq.m.

2a.3 - Sprinklers required if 3 or more storeys in height

2a.4 - Sprinklers required if the total area of all floors exceeds 2230sq.m.

2a.5 - Sprinklers required if the Bulk Storage exceeds 566sq.m.

2a.6 - Sprinklers required if the Mini Storage (Storage Occupancy) or Woodworking Operation (Industrial Occupancy) exceeds 232sq.m.

2b - Sprinkler protection all throughout the building.

2b.1 - Sprinklers required if the area exceeds 1120sq.m.

2c - Sprinkler protection to be provided inside concealed spaces with a depth of more than 400mm containing combustible material.

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3 - Refers to standpipe system to be used by fire department. Comply with NFPA 14 for all other requirements not specified in this guidelines.

3a - Dry standpipe shall be required if the maximum level of habitable floor exceeds 9 meters. No requirement if less than 9 meters.

3a.1 - Dry standpipe shall be required in one (1) up to four (4) basement levels below engine access.

3b - Dry Standpipe shall be required as minimum.

3c - Mandatory wet pipe system. Building having a habitable height of 28 M above the level of fire engine or more than 4 basement.

3d - Minimum size of riser : 100Ømm dia. For buildings up to 42meters habitable height; 150Ømm dia. For buildings above 42meters of habitable height.

3e - Maximum number of landing valves or outlet per floor : 100Ømm dia. Riser - two(2) 65Ømm outlets; 150Ømm dia. riser - four (4) 65Ømm outlets.

3f - minimum flow at outlet : 250 gpm @ 100psi

3g - Breeching inlet or Fire Dept Connection : 150Ømm - 4 way type (150Ø x 4-65Ø inlets); 100Ømm - 2 way type (100Ømm x 2-65Ømm inlets) (siamese type)

4 - Refers to 25mmØ hose reel to be used by building occupants. Comply with NFPA 14 for all other requirements not specified in this guidelines, minimum @ 65psi

4a - Hose reel system only : 65Ømm (min.) riser to serve up to max. 4-hose reels per floor.

4b - Permitted to be connected in crossmains in sprinklered building.

ABBREVIATIONS:

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NA - NOT APPLICABLE

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Comply with NFPA 20 for all other requirements not specified in this guidelines.

5a - 50 gpm if one FHR per floor level is provided; 100 gpm if two or more FHR is provided per floor level.

5b - 500 gpm for one standpipe (65mmØ landing valve) and additional 250 gpm per addition of standpipe up to max. 1250 gpm.

5c-1000 gpm (maximum) is acceptable for combine (sprinkler/wet standpipe) system.

6 - Fire water tank shall be of non-combustible material with two compartment & complete accessories. If other type is to be used, it shall be enclosed and protected.

Type of material shall be subjected to QCDD approval. Comply with NFPA 22 for all other requirements not specified in this guidelines.

6a - Automatic infill : shall be sized to fill the tank in 6-hrs.

6b - Break Tank - where provided, shall be sized to flow not less than the equivalent volume for 1/2 of the duration required.

6b.1 - Automatic infill mechanism : shall be sized ≥ 110% of the rate required to provide the total fire protection system demand;

110% (total demand - brak tank capacity) / duration.

7 - Coordinate with architectural design for proper space allocation.

7a - Fire pump room area with minimum working width of 0.8 meters and no side is less than 2 meters. Vertical clearance shall be 2.60 meters (min.)

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7c - Fire pump room area with minimum working width of 0.8 meters and no side is less than 4 meters. Vertical clearance shall be 2.60 meters (min.)



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE ALARM SYSTEM
FIRE SAFETY GUIDELINES**

ABBREVIATIONS :

- NA - NOT APPLICABLE
- NL - NO LIMIT
- NR - NO REQUIREMENT
- R - REQUIRED
- P - PERMITTED

SUPERSCRIPTS DESCRIPTION:

- 1 - Definition-a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.
- 2 - Main Graphic Annunciator or Main Mimic Panel required, shall be building as-built drawing plan, used red coloured LED's to indicate graphically the building, the floor, location of initiating device that is in alarm. This shall be located in Fire Command Center or where the the Main Fire Alarm Control Panel is located.
- 3 - Zone Chart or Fire Evacuation Plan required, shall be as-built drawing plan of the building and required in each of every floor of the common area's (e.g. lift lobby, corridor, etc.) whereas noticeable to the occupant / tenant / public. The plan shall indicate all manual initiating device, exit sign, and other applicable fire measure.
- 4 - Stand alone smoke alarms battery operated.
- 5 - Automatic-Manual System shall be Addressable or Conventional Type as prescriptive.
- 6 - CO detectors are required in guest rooms/suites with communicating attached garage (except for open garage) or rooms/suites permanently containing installed fuel-burning appliance.
- 7 - The CO sensitivity shall meet the requirements of UL std. 2043 (or other applicable / accepted certifying bodies).
- 8 - Carbon Monoxide (CO) alarm and detectors required in accordance with NFPA 101 and 72.

NOTATION:

1. The Mechanical Ventilation System, Fire Suppression System, Graphic Annunciator, Smoke Control, EPSS and other related Fire Detector Devices shall be Integrated/Interfaced to Main Fire Alarm Control Panel (MFACP) for monitoring and control.
2. For Mercantile and Business
 - 2.1 Fit-outs are permitted to use the Existing Fire Alarm Sysytem provision of the building with the following:
 - a. Previously approved plan for FAS shall be submitted .
 - b. Interfaced Module that covers all fire alarm devices for the fit-out shall be provided for monitoring of alarms in MFACP.
3. Graphic Annunciator or Mimic Panel required in Industrials Complex and Unlimited Areas Factories (3 zones or greater).

OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
			AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
	FLOOR AREA M ²	HABITABLE HEIGHT (METER)								
ASSEMBLY										
MASJID (with or without Imam House) <300 Occupants	NA	NA	NR	R	NR	R ⁽⁴⁾	R	R	NR	NR
MASJID (with or without Imam House) >300 Occupants	NA	NA	R	R	NR	R	R	R	NR	NR
ASSEMBLY WITH LESS THAN 300 OCCUPANTS (AUDITORIUMS, THEATER AS PER NFPA 101)	NA	NA	R	R	P	R	R	R	NR	NR
ASSEMBLY WITH MORE THAN 300 OCCUPANTS (AUDITORIUMS, THEATER AS PER NFPA 101)	NA	NA	R	R	P	R	R	R	R	R



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**FIRE ALARM SYSTEM
FIRE SAFETY GUIDELINES**

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SUPERSCRIPTS DESCRIPTION:

- 1 - Definition-a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.
- 2 - Main Graphic Annunciator or Main Mimic Panel required, shall be building as-built drawing plan, used red coloured LED's to indicate graphically the building, the floor, location of initiating device that is in alarm. This shall be located in Fire Command Center or where the Main Fire Alarm Control Panel is located.
- 3 - Zone Chart or Fire Evacuation Plan required, shall be as-built drawing plan of the building and required in each of every floor of the common area's (e.g. lift lobby, corridor, etc.) whereas noticeable to the occupant / tenant / public. The plan shall indicate all manual initiating device, exit sign, and other applicable fire measure.
- 4 - Stand alone smoke alarms battery operated.
- 5 - Automatic-Manual System shall be Addressable or Conventional Type as prescriptive.
- 6 - CO detectors are required in guest rooms/suites with communicating attached garage (except for open garage) or rooms/suites permanently containing installed fuel-burning appliance.
- 7 - The CO sensitivity shall meet the requirements of UL std. 2043 (or other applicable / accepted certifying bodies).
- 8 - Carbon Monoxide (CO) alarm and detectors required in accordance with NFPA 101 and 72.

NOTATION:

1. The Mechanical Ventilation System, Fire Suppression System, Graphic Annunciator, Smoke Control, EPSS and other related Fire Detector Devices shall be Integrated/Interfaced to Main Fire Alarm Control Panel (MFACP) for monitoring and control.
2. For Mercantile and Business
 - 2.1 Fit-outs are permitted to use the Existing Fire Alarm System provision of the building with the following:
 - a. Previously approved plan for FAS shall be submitted .
 - b. Interfaced Module that covers all fire alarm devices for the fit-out shall be provided for monitoring of alarms in MFACP.
3. Graphic Annunciator or Mimic Panel required in Industrials Complex and Unlimited Areas Factories (3 zones or greater).

OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
	FLOOR AREA M ²	HABITABLE HEIGHT (METER)	AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
RESIDENTIAL										
RESIDENTIAL DWELLINGS & VILLAS	NA	NA	NR	NR	NR	R ⁽⁴⁾	P	P	NR	NR
CLASS A - LOW RISE APARTMENT BUILDINGS (UP TO 4 FLATS ONLY)	≤500	≤12M	R	R	NR	R ⁽⁸⁾	R	R	NR	NR
CLASS B - MEDIUM RISE APARTMENT BUILDINGS, TYPE A	>500 - ≤1000	>12M - ≤18M	R	R	P	R ⁽⁸⁾	R	R	NR	NR
CLASS B - MEDIUM RISE APARTMENT BUILDINGS, TYPE B	>1000-UL	>18M - ≤28M	R	R	P	R ⁽⁸⁾	R	R	P	P
CLASS C - HIGH RISE APARTMENT BUILDINGS	UL	>28M / UL	R	R	R	R ⁽⁸⁾	R	R	R	R



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SUPERSCRIPTS DESCRIPTION:

- 1 - Definition-a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.
- 2 - Main Graphic Annunciator or Main Mimic Panel required, shall be building as-built drawing plan, used red coloured LED's to indicate graphically the building, the floor, location of initiating device that is in alarm. This shall be located in Fire Command Center or where the the Main Fire Alarm Control Panel is located.
- 3 - Zone Chart or Fire Evacuation Plan required, shall be as-built drawing plan of the building and required in each of every floor of the common area's (e.g. lift lobby, corridor, etc.) whereas noticeable to the occupant / tenant / public. The plan shall indicate all manual initiating device, exit sign, and other applicable fire measure.
- 4 - Stand alone smoke alarms battery operated.
- 5 - Automatic-Manual System shall be Addressable or Conventional Type as prescriptive.
- 6 - CO detectors are required in guest rooms/suites with communicating attached garage (except for open garage) or rooms/suites permanently containing installed fuel-burning appliance.
- 7 - The CO sensitivity shall meet the requirements of UL std. 2043 (or other applicable / accepted certifying bodies).
- 8 - Carbon Monoxide (CO) alarm and detectors required in accordance with NFPA 101 and 72.

NOTATION:

1. The Mechanical Ventilation System, Fire Suppression System, Graphic Annunciator, Smoke Control, EPSS and other related Fire Detector Devices shall be Integrated/Interfaced to Main Fire Alarm Control Panel (MFACP) for monitoring and control.
2. For Mercantile and Business
 - 2.1 Fit-outs are permitted to use the Existing Fire Alarm Sysytem provision of the building with the following:
 - a. Previously approved plan for FAS shall be submitted .
 - b. Interfaced Module that covers all fire alarm devices for the fit-out shall be provided for monitoring of alarms in MFACP.
3. Graphic Annunciator or Mimic Panel required in Industrials Complex and Unlimited Areas Factories (3 zones or greater).

OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
	FLOOR AREA M ²	HABITABLE HEIGHT (METER)	AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
BUSINESS										
CLASS A - LOW RISE BUILDING	≤500m ²	≤15m	R	R	NR	R	R	R	NR	NR
CLASS B - MEDIUM RISE BUILDING, TYPE A	>500m ² - ≤1000m ²	>15m-≤18m	R	R	P	R	R	R	P	P
CLASS B - MEDIUM RISE BUILDING, TYPE B	>1000m ²	>18m - ≤28m	R	R	R	R	R	R	P	P
CLASS C - HIGH RISE BUILDING	UL	>28	R	R	R	R	R	R	R	R



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- 3 - Zone Chart or Fire Evacuation Plan required, shall be as-built drawing plan of the building and required in each of every floor of the common area's (e.g. lift lobby, corridor, etc.) whereas noticeable to the occupant / tenant / public. The plan shall indicate all manual initiating device, exit sign, and other applicable fire measure.
- 4 - Stand alone smoke alarms battery operated.
- 5 - Automatic-Manual System shall be Addressable or Conventional Type as prescriptive.
- 6 - CO detectors are required in guest rooms/suites with communicating attached garage (except for open garage) or rooms/suites permanently containing installed fuel-burning appliance.
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- 8 - Carbon Monoxide (CO) alarm and detectors required in accordance with NFPA 101 and 72.

NOTATION:

1. The Mechanical Ventilation System, Fire Suppression System, Graphic Annunciator, Smoke Control, EPSS and other related Fire Detector Devices shall be Integrated/Interfaced to Main Fire Alarm Control Panel (MFACP) for monitoring and control.
2. For Mercantile and Business
 - 2.1 Fit-outs are permitted to use the Existing Fire Alarm Sysytem provision of the building with the following:
 - a. Previously approved plan for FAS shall be submitted .
 - b. Interfaced Module that covers all fire alarm devices for the fit-out shall be provided for monitoring of alarms in MFACP.
3. Graphic Annunciator or Mimic Panel required in Industrials Complex and Unlimited Areas Factories (3 zones or greater).

OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
	FLOOR AREA M ²	HABITABLE HEIGHT (METER)	AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
HOTEL										
CLASS A - LOW RISE BUILDING	≤500	≤15	R	R	NR	R ^(6 & 7)	R	R	NR	NR
CLASS B - MEDIUM RISE BUILDING	>500 - UL	>15 - <28	R	R	R	R ^(6 & 7)	R	R	R	R
CLASS C - HIGH RISE BUILDING	UL	>28 - UL	R	R	R	R ^(6 & 7)	R	R	R	R



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**FIRE ALARM SYSTEM
FIRE SAFETY GUIDELINES**

ABBREVIATIONS :

NA - NOT APPLICABLE
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SUPERSCRIPTS DESCRIPTION:

- 1 - Definition-a system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.
- 2 - Main Graphic Annunciator or Main Mimic Panel required, shall be building as-built drawing plan, used red coloured LED's to indicate graphically the building, the floor, location of initiating device that is in alarm. This shall be located in Fire Command Center or where the the Main Fire Alarm Control Panel is located.
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- 4 - Stand alone smoke alarms battery operated.
- 5 - Automatic-Manual System shall be Addressable or Conventional Type as prescriptive.
- 6 - CO detectors are required in guest rooms/suites with communicating attached garage (except for open garage) or rooms/suites permanently containing installed fuel-burning appliance.
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MERCANTILE										
CLASS A	>2800	>3 STOREY	R	R	R	R	R	R	R	R
CLASS B	>280 - <2800	≤3 STOREY	R	R	R	R	R	R	R	R
CLASS C	<280	1 STOREY	R	R	NR	R	R	R	NR	NR



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	FLOOR AREA M ²	HABITABLE HEIGHT (METER)	AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
DORMITORY AND ACCOMMODATION										
LOW RISE	≤500	≤15	R	R	NR	R	R	R	NR	NR
MEDIUM RISE	>500 - UL	>15 - <28	R	R	R	R	R	R	P	R
HIGH RISE	UL	>28 - UL	R	R	R	R	R	R	R	R



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EDUCATIONAL										
KINDERGARTEN	UL	G	R	R	NR	R	R	R	NR	NR
PREPARATORY	UL	G + 1	R	R	NR	R	R	R	P	NR
PRIMARY	UL	G + 1	R	R	NR	R	R	R	P	NR
SECONDARY	UL	G + 2	R	R	NR	R	R	R	R	R-HIGH RISE & COMPLEX
TERTIARY	UL	G + 2	R	R	R	R	R	R	R	R



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OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
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	FLOOR AREA M ²	HABITABLE HEIGHT (METER)								
HEALTHCARE										
TYPE A - HIGH RISE	UL	>28M	R	R	R	R	R	R	R	R
TYPE B - OTHER THAN HIGH RISE	UL	<28M	R	R	R	R	R	R	R	R
TYPE C - CLINIC & OTHER OUTPATIENT	NL	NL	R	R	NR	R	R	R	NR	NR



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OCCUPANCY CLASSIFICATION	BUILDING CONFIGURATION		<i>Fire Alarm System¹ Requirements</i>							
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TEMPORARY BUILDINGS										
CLASS A - PORTA CABINS	NL	NL	P	R	NR	R ⁽⁴⁾	R	R	NR	NR
CLASS B - TEMPORARY BUILDINGS	NL	NL	P	R	NR	R ⁽⁴⁾	R	R	NR	NR
CLASS C - RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED



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INDUSTRIAL OCCUPANCY										
CLASS A - SPECIAL-PURPOSE INDUSTRIAL OCCUPANCY - LOW HAZARD	UL	NL	R	R	NR	R	R	R	P	NR
CLASS A - SPECIAL-PURPOSE INDUSTRIAL OCCUPANCY - ORDINARY (OTHER THAN LOW) HAZARD	UL	NL	R	R	NR	R	R	R	P	NR
CLASS B - GENERAL INDUSTRIAL OCCUPANCY - LOW HAZARD	UL	NL	R	R	NR	R	R	R	P	NR
CLASS B - GENERAL INDUSTRIAL OCCUPANCY - ORDINARY (OTHER THAN LOW) HAZARD	UL	NL	R	R	NR	R	R	R	P	NR
CLASS C - HIGH HAZARD INDUSTRIAL OCCUPANCY	UL	NL	R	R	R	R	R	R	R	R



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	FLOOR AREA M ²	HABITABLE HEIGHT (METER)	AUTOMATIC-MANUAL CONTROL PANEL	ZONE CHART / FIRE EVACUATION PLAN	GRAPHIC ANNUNCIATOR / MIMIC PANEL	DETECTORS (SMOKE/HEAT)	MANUAL CALL POINT / INTERFACE MODULE	AUDIBLE (SOUNDER/BELL) / VISIBLE (STROBE/FLASHER)	MASS NOTIFICATION SYSTEM	FIRE TELEPHONE (TWO-WAY COMMUNICATION) SYSTEM
STORAGE										
CLASS A - LOW HAZARD (≤9,300m ² and with an approved AFSS)	NA	NL	NR	R	NR	R	R	R	P	NR
CLASS B - ORDINARY HAZARD (OTHER THAN LOW HAZARD-NFPA 5000) (≤9,300m ² and with an approved AFSS)	NA	NL	NR	R	NR	R	R	R	P	NR
CLASS C - HIGH HAZARD (exceeding 9,300m ² and with an approved AFSS)	NA	NL	R	R	R	R	R	R	R	NR



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**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR RESIDENTIAL APARTMENTS**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements								
			Ventilation System in Smoke Proof Enclosure			Mechanical Ventilation, Extract / Smoke Ventilation Exhaust System					
	Max. Area (sq. m.)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
LOW RISE BUILDINGS	≤500 (max 4-apartment units)	≤15	R(1) ^{***}	R(2) ^{***}	R(2) ^{***}	R(4)	R(6) ^{***}	R(7) ^{***}	R(8) ^{***}	R(5)	R(3)
TYPE A MEDIUM RISE BUILDINGS	>500 - ≤1000	>15 TO ≤18	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
TYPE B MEDIUM RISE BUILDINGS	>1000 - UNLIMITED	>18 TO ≤28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
HIGH-RISE BUILDINGS	UNLIMITED	≥28 / UNLIMITED	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)

Note:

* Other requirement not covered nor specified in this standard / guideline must be referred to relevant NFPA Code & Standards or consult with CDD engineers for compliance.

** For superscript descriptions, refer to Addendum.

*** Provide Ventilation if the Smoke/Fire Enclosure or MEP Room/s were provided.

**** Smoke control system shall be supplied with 2 power sources.

Provides control capability over equipment of the smoke control system

Abbreviations:

ACH - Air Change per hour

R - Required

NR - Not required

N/A - Not applicable

R(Letter / Number) - Addendum subscript descriptions

*** - Refer to note/s

sq. m - Square meter/s

m - meter/s

Max. - maximum

MEP - Mechanical, Electrical, Plumbing



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**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR **DORMITORIES AND ACCOMODATIONS****

Occupancy Classification		Building Configuration		Ventilation & Smoke Control Requirements								
				Ventilation System in Smoke Proof Enclosure			Mechanical Ventilation, Extract / Smoke Ventilation Exhaust System					
		Max. Area (sq. m.)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
LOW RISE BUILDINGS		< 500	≤ 15	R(1) ^{***}	R(2) ^{***}	R(2) ^{***}	R(4)	R(6) ^{***}	R(7) ^{***}	R(8) ^{***}	R(5)	R(3)
MEDIUM RISE BUILDINGS	LABOR ACCOMODATION	>500 - 1000	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
	OTHER LABOR ACCOMADATION	500 - 1000	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
	LABOR /WORKERS ACCOMODATION ONLY (WITH SINGLE EXIT)	500 - 1000	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
HIGH-RISE BUILDINGS		UNLIMITED	> 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)

Note:

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- ** For superscript descriptions, refer to Addendum.
- *** Provide Ventilation if the Smoke/Fire Enclosure or MEP Room/s were provided.
- **** Smoke control system shall be supplied with 2 power sources.
Provides control capability over equipment of the smoke control system

Abbreviations:

- ACH - Air Change per hour
- R - Required
- NR - Not required
- N/A - Not applicable
- R(Letter / Number) - Addendum subscript descriptions
- *** - Refer to note/s
- sq. m - Square meter/s
- m - meter/s
- Max. - maximum
- MEP - Mechanical, Electrical, Plumbing



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR HOTELS**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements								
			Ventilation System in Smoke Proof Enclosure			Mechanical Ventilation, Extract / Smoke Ventilation Exhaust System					
	Max. Area (sq. m.)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
HOTELS (including Residential Hotel & Hotel Apartments)											
LOW RISE BUILDINGS	≤ 500 (max. 4-guest suites/floor)	≤ 15	R(1) ^{***}	R(2) ^{***}	R(2) ^{***}	R(4)	R(6) ^{***}	R(7) ^{***}	R(8) ^{***}	R(5)	R(3)
MEDIUM RISE BUILDINGS (single exit & one basement only)	UNLIMITED	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
MEDIUM RISE BUILDINGS (two or more separate exits and one basement)	UNLIMITED	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
MEDIUM RISE BUILDINGS (two or more separate exits w/ two or more basement)	UNLIMITED	>15 TO ≤ 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
HIGH-RISE BUILDINGS	UNLIMITED	> 28	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)

Note:

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*** Provide Ventilation if the Smoke/Fire Enclosure or MEP Room/s were provided.

**** Smoke control system shall be supplied with 2 power sources.

Provides control capability over equipment of the smoke control system

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*** - Refer to note/s

sq. m - Square meter/s

m - meter/s

Max. - maximum

MEP - Mechanical, Electrical, Plumbing



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR BUSINESS OCCUPANCY**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements								
			Ventilation System in Smoke Proof Enclosure			Mechanical Ventilation, Smoke- Heat Ventilation Exhaust System					
	Max. Area (sq. m.)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
LOW RISE BUILDINGS	≤500	≤ 15 m	R(1) ^{***}	R(2) ^{***}	R(2) ^{***}	R(4)	R(6) ^{***}	R(7) ^{***}	R(8) ^{***}	R(5)	R(3)
MEDIUM RISE BUILDINGS - TYPE A	> 500 to ≤ 1000	> 15 M TO ≤ 18 M	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
MEDIUM RISE BUILDINGS - TYPE B	> 1000	> 18 M TO ≤ 28 M	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)
HIGH-RISE BUILDINGS	UL -UNLIMITED AREA	> 28 M	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(8)	R(5)	R(3)

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- ** For superscript descriptions, refer to Addendum.
- *** Provide Ventilation if the Smoke/Fire Enclosure or MEP Room/s were provided.
- **** Smoke control system shall be supplied with 2 power sources.
Provides control capability over equipment of the smoke control system

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- sq. m - Square meter/s
- m - meter/s
- Max. - maximum
- MEP - Mechanical, Electrical, Plumbing



**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
MINISTRY OF INTERIOR, STATE OF QATAR**

**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR HEALTH CARE OCCUPANCY**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements								
			Ventilation System in Smoke Proof Enclosure			Mechanical Ventilation, Smoke- Heat Ventilation Exhaust System					
	Max. Area (sq. m.)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
TYPE A OR HIGH RISE BUILDING	UNLIMITED AREA	≥ 28 M	R(1)	R(2)	R(2)	R(4)	R(6)	R(7)	R(7)	R(5)	R(3)
TYPE B OR OTHER THAN HIGH RISE	UNLIMITED AREA	< 28 M	R(1)	R(2)	R(2)	R(4)	R(6) ^{***}	R(7) ^{***}	R(7) ^{***}	R(5)	R(3)

Note:

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** For superscript descriptions, refer to Addendum.

*** Provide Ventilation if the Smoke/Fire Enclosure or MEP Room/s were provided.

**** Smoke control system shall be supplied with 2 power sources.

Provides control capability over equipment of the smoke control system

Abbreviations:

ACH - Air Change per hour

R - Required

NR - Not required

N/A - Not applicable

R(Letter / Number) - Addendum subscript descriptions

*** - Refer to note/s

sq. m - Square meter/s

m - meter/s

Max. - maximum

MEP - Mechanical, Electrical, Plumbing



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**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR **MERCANTILE OCCUPANCY****

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements								
			Smoke Proof Enclosure			Mechanical Ventilation, Smoke- Heat Ventilation Exhaust System					
	Max. Area (sq. m/floor)	Habitable Height (m)	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
TYPE C (SHOPS)	≤ 280 with each shop separated by 2 hrs fire rated walls	1 storey	NR	NR	NR	NR	R ⁶	R ⁷	NR	NA	NA
TYPE B	> 280 TO ≤ 2800	≤ 3-STOREYS	NR	NR	NR	*** ³	R ⁶	R ⁷	R ⁸	*** ⁵	R ³
TYPE A	> 2800	ABOVE 3-STOREYS	*** ¹	*** ²	*** ²	*** ³	R ⁶	R ⁷	R ⁸	R ⁵	R ³

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For superscript descriptions, refer to addendum

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**FIRE PREVENTION DEPARTMENT
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**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR INDUSTRIAL OCCUPANCY**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements									
			Smoke Proof Enclosure			Mechanical Ventilation, Smoke- Heat Ventilation Exhaust System						
	Max. Area m/floor	(sq. Habitable Height (m))	Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Operation/ Process Space	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
SPECIAL PURPOSE INDUSTRIAL OCCUPANCY	5 or more storeys in height > 1115	≥ 15m NA	R ¹ NR	R ² NR	R ² NR	R ¹³ R ¹³	R ⁴ R ⁴	R ⁶ R ⁶	R ⁷ R ⁷	R ⁸ R ⁸	R ⁵ R ⁵	R ³ R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Wood working operation with floor area exceeding 232 m ²	VARIES	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
GENERAL INDUSTRIAL OCCUPANCY	5 or more storeys in height > 1115	≥ 15m NA	R ¹ NR	R ² NR	R ² NR	R ¹³ R ¹³	R ⁴ R ⁴	R ⁶ R ⁶	R ⁷ R ⁷	R ⁸ R ⁸	R ⁵ R ⁵	R ³ R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Wood working operation with floor area exceeding 232 m ²	VARIES	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
HIGH HAZARD INDUSTRIAL OCCUPANCY	5 or more storeys in height > 1115	≥ 15m NA	R ¹ NR	R ² NR	R ² NR	R ¹³ R ¹³	R ⁴ R ⁴	R ⁶ R ⁶	R ⁷ R ⁷	R ⁸ R ⁸	R ⁵ R ⁵	R ³ R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Wood working operation with floor area exceeding 232 m ²	VARIES	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³

Note:

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**FIRE PREVENTION DEPARTMENT
GENERAL ADMINISTRATION OF CIVIL DEFENCE
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**MECHANICAL VENTILATION SYSTEM
FIRE SAFETY GUIDELINES FOR STORAGE OCCUPANCY**

Occupancy Classification	Building Configuration		Ventilation & Smoke Control Requirements									
			Smoke Proof Enclosure			Mechanical Ventilation, Smoke- Heat Ventilation Exhaust System						
			Exit Staircase	Smoke-Stop Lobby	Fire Fighting Lobby	Operation/ Process Space	Basement	Fire Pump Room	Generator Room	Fire Command Center	Atrium, Communicating Space	Zoned Smoke Controlled Spaces
LOW HAZARD STORAGE	Exit staircases connecting 5 storeys including basements	≥ 15m	R ¹	R ²	R ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	> 1115 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Mini-storage bldg. > 232 m ² Bulk storage of tires exceeds 566 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
ORDINARY HAZARD STORAGE	Exit staircases connecting 5 storeys including basements	≥ 15m	R ¹	R ²	R ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	> 1115 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Mini-storage bldg. > 232 m ² Bulk storage of tires exceeds 566 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
HIGH HAZARD STORAGE	Exit staircases connecting 5 storeys including basements	≥ 15m	R ¹	R ²	R ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	> 1115 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Gross or total area of all floors exceeds 2230 m ²	VARIES	*** ¹	*** ²	*** ²	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³
	Mini-storage bldg. > 232 m ² Bulk storage of tires exceeds 566 m ²	NA	NR	NR	NR	R ¹³	R ⁴	R ⁶	R ⁷	R ⁸	R ⁵	R ³

Note:
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Addendum

Superscript Description:

1. Staircase Area

a. Mechanical Pressurization Method

Stairwell / Shaft:

- a.1 Minimum Design pressure difference (ΔP) across smoke barrier: AS = 0.05 inch. w.g. (12.5 Pascal), NS = 0.1 inch. w.g. (25 Pascal)
- a.2 Minimum 1 m/s airflow velocity across open doors and ΔP of not lower than 12.5 Pa (0.05 inch w.g.) across other closed doors and smoke zone:
 - * Required minimum three (3) doors-open for High-Rise Building
 - * Required minimum two (2) doors-open for Non-High-Rise Building
- a.3 Single Injection Stairwell Pressurization System - Single Injection Stairwell Pressurization System - Permitted for stairwell traverses up to five (5) floor levels or 30.5 meters (100 feet) in height, whichever is the least, otherwise provide multiple injection system with injection points distributed no farther than an interval of three (3) floor levels.
- a.4 Pressurization air supply intakes located preferably 5 meters (16.4 feet) away from building exhausts; minimum 1 meter (3.28 feet) below building exhaust where oriented vertically.
- a.5 Maximum the door opening force which shall not exceed 110 newton (24.73 lb.).
- a.6 Acceptable means for controlling the pressure for Staircase Pressurization Fan.
- b. Natural Ventilation Method: (Note: For No Basement, ≤ 5 Floor Level)
Stairwell / Shaft:
 - b.1 For building staircases traversing 5-storays with maximum two (2) basements of not more than 6 meters below grade level and with less than 18 meter of habitable ht. : Acceptable configurations : 2B+G+2, B+G+3, G+4 or less
 - b.1.1. Exit staircases with fixed or automatic opening having a minimum clear area of 1.5 sq.m. at the top of the stairwell shaft or ;
 - b.1.2. In accordance with item b.2.1 to b.2.3
 - b.2 For building staircases traversing 6 storays with maximum two (2) basements of not more than 6 meters below grade level and with less than 18 meter habitable height : Acceptable configurations : 2B+G+3, B+G+4, G+5 or less
 - b.2.1. Exit staircases accessed via vestibule/lobby having a minimum net area of 1.5 square meters (m²) opening in a wall facing an outer court yard or public way that is at least 6.1 meters wide. Single basement not more than 3 meters below grade level may be permitted without the opening.
 - b.2.2 Exit staircases with fixed or automatic ventilation opening of not less than 50% of the total wall area at each floor / story level in exit staircases located along perimeter walls of the building facing the outer courtyard or public way that is at least 6.1 meters wide. Single basement not more than 3 meters below grade level may be permitted without opening.
 - b.2.3 Exit staircases with fixed or automatic ventilation opening of not less than 50% of the total wall area at each floor / story level next to an airlight well that is open to the sky having a minimum area of 10 sq.m. with no side less than 3 meters. Single basement not more than 3 meters below grade level may be permitted without the opening.
 - b.3 For High-rise buildings and/or buildings having three (3) or more basements :
 - b.3.1. Mechanical Pressurization method as stipulated in item 1.1 shall be highly recommended in all internal and external staircases for this type of buildings.
 - b.3.2. Natural ventilation shall only be allowed in external exit staircases that can provide a minimum of 50% opening on the side of its superficial wall in every floor level
 - b.3.3. A combination of mechanical pressurization and natural ventilation method stipulated in a & b may be permitted in a case to case basis.

2. Smoke-stop Lobby and Fire-fighting Lift Lobby:

a. Mechanical Ventilation Alternative

a.1 Positive ventilation (supply mode only) at the rate of 10 ACH

b. Natural Ventilation Alternative (Note: for the Lobbies were at external side of the building)

- b.1 Lobbies having openings on external wall meeting the following conditions :
 - b.1.1 Minimum net area of 1.5 square meters (m²) (16 square feet (ft.²)) or 25% of the floor area of the lobby, whichever is greater
 - b.1.2 Openings are located as near as practicable to the ceiling and the top of the opening is not more than 300 millimeters (1 foot) from the ceiling line.
 - b.1.3 Openings are facing an outer courtyard or public way that is at least 6.1 meters wide when facing an airlight well, the well is totally open to the sky and have an area of not less than 1 square meter per meter (m²/m) height of enclosing wall
*Note. Permitted in non-high rise building (≤ 5 floor level), and the airlight well starts from ground level only.
- b.2 Lobbies below ground level may be ventilated through unobstructed openings having a minimum net cross section of 15% of the floor area of the lobby provided at the ceiling of the lobby and discharging directly to the external of the building.
*Note. Permitted up to 3 floor levels or 9 meters (m) below ground level, whichever is the least and exit staircase being served not connecting upper floor levels and is open to external

3. Smoke Controlled Zones (spaces protected under zoned smoke control principles)

- a. Minimum Design pressure difference (ΔP) across smoke barrier: AS = 0.05 inch. w.g. (12.5 Pascal)
- b. In non-sprinklered and other than fully sprinklered building, pressure difference equivalent to two (2) times the calculated maximum pressure difference that can be produced by the fire
- c. Maximum pressure difference across a smoke barrier shall be determined by the required door opening force which shall not exceed 110 newtons (N).

4. Basements/Car parks Ventilation:

(Note: The following conditions does not apply for Open-Parking Structure, R($\geq 2B$) - Required where there are two (2) or more basements)

a. Mechanical Ventilation Alternative (Arrangement: Mechanical Supply and Mechanical Exhaust)

- a.1 Provide a minimum of 6 ACH for normal ventilation mode and 10 ACH for fire mode condition.
- a.2 Make-up air flow rate preferably 85% of exhaust rate
- a.3 Minimum temperature/fire rating of fans : 250 °C/2 hours
- a.4 Ducts of 1.2 millimeters (mm) thickness and 2 hours fire rating
- a.5 Extraction points for ducted system shall be arranged such that 50% at high level and the other 50% at low level with no part of the floor farther than 12 meters (m) from an extraction point. Exhaust air shall be taken at a point within 0.48m (1.5ft.) of the floor (LL) and ceiling (HL).
(Exemption : Residential apartment buildings shall be permitted without Low Level (LL) extraction points)
- a.6 Car park ventilation system employing jet fans confirmed through performance based analysis and use of CFD fire modeling report.
 - a.6.1 Acceptance criteria for ventilation system employing jet fans
 - a.6.1.1 at 1.8 meters (m) above floor level and within 10m radius location of the design fire, attains the following :
 - a.6.1.1.1 Minimum 10 meters (m) visibility upstream of the fire
 - a.6.1.1.2 Temperature of the smoke layer not exceeding 60°C
 - a.6.1.2 Minimum design fire size of 4MW (2m X 5m) for car parks protected with automatic sprinklers system; 8 MW (5m X 5m) for non-sprinklered car parks.
 - a.6.1.3 Acceptance criteria shall be achieved within 20 mins upon heat/smoke detection.

b. Combination Natural & Mechanical Ventilation Alternative (Arrangement: Natural Supply and Mechanical Exhaust)

- b.1 Fixed supply openings of at least 2.5 % of the floor area along exterior wall facing a clear unobstructed space outside the building of at least 3 meters (m) minimum.
 - b.2 Extraction points for ducted system shall be arranged such that 50% is at high level and the other 50% of low level with no part of the floor farther than 12 meters (m) from an extraction point. Exhaust air shall be taken at a point within 0.48m (1.5ft.) of the floor (LL) and ceiling (HL).
 - b.3 The velocity of air within escape routes & ramps should not exceed 5 meters per seconds (m/s) in order to avoid impeding the escape of occupants of the building.
 - b.4 Maximum distance from the fixed opening to the farthest point in the area shall be limited to 45 meters.

c. Natural Ventilation Alternative (Note: For aboveground car parks only)

- c.1 Opening of not less than 0.45 square meters (m²) (1.42 square feet (ft²)) for each linear meter of its exterior perimeter distributed over 40% of the building perimeter or uniformly distributed over two (2) opposing sides.

d. Use of Smoke Vents (Note: For 2-connecting basement level from Ground level.)

- d.1 Permitted in below ground enclosed car parks whose acreage floor area does not exceed 1000 square meters (m²) and connects 2 basement level only
- d.2 Aggregate number and sizes of vents is equivalent to not less than 2.5% of the floor being served, with no vent smaller than 0.6 meter diameter or width
- d.3 Vents distributed along perimeter, on side or ceilings of the car park, with no portion on the floor farther than 12 meters (m) to a vent.
- d.4 Separate vent provided for each basement level
- d.5 Smoke vents which are kept closed during normal or non-fire condition designed to operate automatically
- d.6 In car park provided with automatic sprinklers, provision of smoke vents designed such that it does not affect sprinkler activation.
- d.7. Vent to be located away from exits.

5. Atrium and other large spaces

- a. Designed in accordance with NFPA 90A, 90B, 92, and other QCDD recognized standards provided for atrium or similar communicating spaces that connects more than 3 floor levels.
- b. Designed in accordance with NFPA 90A, 90B, 92, and other QCDD recognized standards provided to any compartment in the building with floor area of more than 1000 square meters (m²)

6. Fire pump room

- a. Positive ventilation with fresh air and exhausts directly obtained from external
- b. Minimum 6 ACH for normal condition and 10 ACH during fire condition
- c. Means for controlling temperature of the room provided.

7. Generator room

- a. Positive ventilation with fresh air and exhausts directly obtained from external
- b. Minimum 6 ACH for normal condition and 10 ACH during fire condition
- c. Means for controlling temperature of the room provided.

8. Firefighter's smoke control station (FSCS)

- a. Located in the fire command center / control room or other location acceptable to QCDD
- b. Positive Ventilation
- c. Means for controlling temperature of the room / equipment provided

9. Smoke control fan panels

Provides control capability over equipment of the smoke control system

- a. On-Auto-Off control over individual equipment of the smoke control system that is permitted to or can also be controlled from other sources in the building
- b. Open-air/close control over individual dampers relating to smoke control system that is permitted to or can also be controlled from other sources in the building
- c. On-off or open-close or start-stop control over smoke control system and other critical equipment associated with fire or smoke emergency and that can only be controlled from the FSCS/panel
- d. Switch for manual activation/deactivation or override control of the smoke control system of rotary selector type.

10. Equipment

Equipment such as but not limited to fans, fire dampers, fire-smoke dampers, ducts shall be suitable for its intended use and approved by QCDD.

11. Detection, Control and Activation

- a. Fire detection systems required to provide control signals to mechanical smoke control systems or elements thereof shall comply with NFPA 72. Such detection systems together with its control units shall be listed for smoke control applications
- b. Automatic activation of the smoke control system using either of the following :
 - b.1 Fire alarm system
 - b.2 Waterflow switch in automatic sprinkler system

12. Power Supply system

a. Smoke control system shall be supplied with 2 power sources

- a.1 Primary source - from normal building power supply system having separate or independent connection from building's non-fire safety related installations
- a.2 Secondary power source - from an approved standby power supply system complying to NFPA 101.
- b. Wiring for operation and control of smoke control systems connected ahead of the main disconnect and protected against exposure to fire
- c. Automatic transfer from normal to full standby power within 60 seconds of failure of the primary power
- d. Mechanical smoke control system permitted and designed as combined system or which are used to serve both back-up power supply and equipment (standby fan)
 - d.1 One additional fan required as standby/back-up fan for each system feed by a single fan
 - d.2 Where a particular control zone is being protected by a system having 2 or more fans of equal capacity, the system could be backed-up by an additional fan having the same capacity of the other fans.
 - d.3 Where a particular control zone is being protected by a system having more than one fan of different capacities, the system could be backed-up by an additional fan having the same capacity as the largest fan

13. Industrial - Ventilation of workshop and other similar operation / process areas

Storagee - ventilation of storagee area

a. Reference Codes & Standards : NFPA 92, 101 and 204

b. Where required : low and ordinary hazard operation/process area > 450 square meter (m²) and situated below ground

c. System arrangements :

Natural ventilation

Mechanical ventilation

Combined Natural-Mechanical - natural supply and mechanical exhaust arrangement

(Note: mechanical supply and natural exhaust arrangement not permitted)

Smoke Vent

- c.1 Negative Pressure in the fire/smoke area; positive pressure in non-fire/smoke adjacent areas
- c.2 Separate fan and duct for each fire/smoke area
- c.3 Make-up air :
 - c.3.1 supply points located beneath the smoke layer
 - c.3.2 flow rate less than the smoke exhaust rate
 - c.3.3 ≤ 1.02 meter per second (m/s) velocity where it could come in contact with the plume
- d. Separate manual controls readily accessible for fire department use
- e. Direct discharge of contaminated air to external
- f. Natural Ventilation Alternative
 - f.1 Cross ventilation. Openings on opposite sides (note of wind direction)
 - f.2 Slack ventilation. A.) Openings on perimeter walls; B.) Openings at roof top
***Note. Size, quantity and location of openings shall be such that it meets airflow requirements for occupants, contaminants, smoke and heat dissipation

g. Smoke Vents

- g.1 permitted for below ground low and ordinary operation/process areas whose floor area >450 square meters (m²), up to 2 basement level only
- g.2 Aggregate number and sizes of vents is equivalent to not less than 2.5% of the floor being served, with no vent smaller than 0.6 meter diameter or width
- g.3 Vents distributed along perimeter, on side or ceiling of the operation/process area, with no portion on the floor farther than 12 meters to a vent.
- g.4 Separate vent provided for each basement level
- g.5 Smoke vents which are kept closed during normal or non-fire condition designed to operate automatically
- g.6 Smoke vent design shall not affect sprinkler activation.

14. Limitations :

Natural or fixed opening shall not be applicable in areas protected with automatic suppression system (ASS). In order not to impede the operation of the ASS, a mechanically or electrically actuated smoke vents or system shall bde used.



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GA 00	BASIC FRAMEWORK FOR SUBMISSION OF PERFORMANCE BASED SOLUTIONS	
GA_00 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	<p>Prescriptive requirements are developed for general use but not for specific purposes. Under certain circumstances, engineering methods can be used to justify certain alternative approaches to resolved fire safety problems. This will motivate designers of building such as architects and engineers to be creative and innovative.</p> <p>This basic framework is developed in order to guide and assist the stakeholders of the building if they intend to adopt performance based approaches.</p>	
2.0	<p>The International Fire Engineering Guidelines (IFEG) shall be used to facilitate the development of performance-based solutions for the building. IFEG have been developed to meet the joint needs in U.S.A, Canada, New Zealand and Australia.</p> <p>This guidebook references internationally available standards, guides and associated documents, and use both imperial and SI units throughout. In particular, the guidelines provide guidance for the design and evaluation of alternative solutions (equivalencies) and general performance design.</p>	
3.0	The International Fire Engineering Guidelines (IFEG) have been developed:	
3.1	To be used in fire engineering design and evaluations of buildings. However the concepts and principles may also be of assistance in a fire engineering evaluation of other structures such as ships, tunnels that are comprised of enclosed spaces.	
3.2	To provide guidance for fire engineers to design and evaluate fire safety systems to achieved acceptable levels of safety	
3.3	To assume the fire engineer has a level of competence and experience that would enable licensing by the respective nation.	
4.0	The submission of alternative solution to prescriptive requirement shall be at least in two (2) stages:	
4.1	Fire Engineering Brief, and	
4.2	Fire Engineering Final Report	
4.3	The International Fire Engineering Guidelines (IFEG) provides details of each submission	
5.0	The submission shall be prepared and submitted by a fire engineer. The fire engineer must be a professional/registered fire engineer qualified to use engineering approaches for fire safety solutions. The fire engineer must submit his qualification and practicing certificate for CDD review and approval before any commencement of formal submissions.	



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6.0	The Register Architect and Engineer shall incorporate the required elements generated by the Fire Engineer in their respective plans after the Fire Engineering Final Report is approved.	
7.0	All aforementioned professionals shall be responsible for supervision of the site works to ensure that all design intents are executed.	
8.0	Building owner shall also acknowledge at the completion of the development that they are responsible for all the required maintenance works including hose arising from the performance-based approaches. In the event the building is sold, it is the owner's responsibility to hand over all relevant information and documents to the buyer.	



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GA 1.1	BASIC REQUIREMENTS	
1.1	GA_1.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
0.0	Compliance and Approval	
0.1	All development and structures in Qatar must have fire safety plans prepared to protect the public from the effects of fire. All fire safety plans must be submitted to the Qatar Civil Defence (QCD) for approval.	<i>What must be approved</i> <i>How to submit</i>
0.2	Submission of fire safety plans must be made online via the Ministry of Interior (MOI) online permit application system (PS). The plans must be uploaded onto the PS where they will be retained as a legal document for future reference.	
0.3	Only architects, specialist consultants and professional engineers who are suitably qualified (refer to Annex A of QCD Fire Safety Handbook No. 1 and are accredited by the Urban Planning Development Authority (UPDA) may make submissions.	<i>Who may submit</i>
0.4	For QCD approval, the plans must be prepared in accordance with the QCD Fire Safety Handbook and Guidelines for Plan Submissions and Approval. Plans must show compliance with the NFPA codes and the QCD Particular Requirements.	<i>Information and format required</i> <i>Information and format required</i>
0.5	Proposed fire safety plans that do not meet the prescriptive requirements of the codes may be approved as an Alternative Solution.	<i>Alternative Solutions</i>
0.6	Alternative Solutions are performance based in that they analyses the performance of a particular proposal and demonstrate the same or a better level of fire safety is achieved.	<i>Performance Based Submissions</i>
0.7	<p>The following protocol must be followed when deviating from the prescriptive requirements.</p> <ol style="list-style-type: none"> (1) Identify the relevant prescriptive requirement(s) of each section or part of <i>the codes</i> that is to be the subject of the Alternative Solution. (2) Identify the performance requirements from the same section or part of <i>the codes</i> that are relevant to the identified prescriptive requirements (3) Identify the performance requirements form other sections or parts that are relevant to any aspect of the Alternative Solution proposed or that are affected by the application of the prescriptive requirements which are the subject of the Alternative Solution (4) Only Alternative Solutions that show either of the following will be considered for approval. <ol style="list-style-type: none"> (a) Compliance with the Performance Requirements. (b) Is at least equivalent to the prescriptive requirements. (c) A combination of (a) and (b) above. 	



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GA	BASIC REQUIREMENTS	
1.1	GA_1.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
	The International Fire Engineering Guidelines (IFEG), 2005 must be used to formulate Alternative Solution submissions.	
0.8	The Fire Engineering Brief must be approved by the QCD prior to proceeding with any analysis.	
0.9	Subject to the complexity and methods of analysis proposed in the submission, the QCD may require a peer review of the proposal.	
0.10	The peer review must be selected from a number of recognized practicing fire safety engineers acceptable to the QCD.	
1.0	Portable Fire Extinguishers	
1.1	Portable fire extinguishers must be QCD approved and be either LPC or Kitemark (BSI) certified, UL listed or VdS or FM approved.	
2.0	Hose Reels	
2.1	Hose reels must be QCD approved and either LPC or Kitemark (BSI) certified, UL listed or VdS or FM approved.	
2.2	Unless specifically exempted by the codes, hose reels are required and must be provided for all buildings.	
2.3	Where required, buildings must be provided with 25mm (1”) nominal diameter hose reels 30m long such that all parts of the building can be reached by 2 hoses each with a throw of a maximum of 6m. Where a throw of greater than 6m is relied upon, hydraulic analysis must be provided in justification.	
2.4	Water supplies for hose reels must be sufficient for 15 minutes operation for at least 2 hoses.	
3.0	Fire Pumps	
3.1	Entire fire pump assemblies including controllers must be QCD approved and be LPC certified, UL listed or VdS or FM approved.	
3.2	Selection must be in accordance with NFPA 20.	
3.3	A minimum of one duty and one standby pump must be provided. Fire pumps must be installed in accordance with QCDFSS 6.7	



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GA	BASIC REQUIREMENTS	
1.1	GA_1.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
4.0	Sprinkler Valves	
4.1	Sprinkler alarm check valves must be QCD approved and be LPC certified, UL listed or VdS or FM approved.	
5.0	Valves	
5.1	All valves must be QCD approved and be LPC certified, UL listed or VdS or FM approved.	
6.0	Sprinklers	
6.1	All sprinklers must be QCD approved and be LPC certified, UL listed or VdS or FM approved.	
6.2	Valves must be selected in accordance with the NFPA13.	
7.0	<i>Reserve.</i>	
8.0	Pipes and tubes	
8.1	Pipes and fittings that meet the specifications in the codes do not require QCD certification. The pipe and fittings mill certificates must be retained on site for presentation on request by the QCD Inspector at the time of application for final inspection for the issue of the Fire Safety Certificate.	
8.2	Pipes must be sized by hydraulic calculations in accordance with the NFPA13 chapter 22. Information to be submitted with plans for approval must be that detailed in section 22.1, 22.2 and 22.3.	
8.3	All pipe and fittings must have a minimum service pressure of 175psig and at 60°C.	
8.4	Ferrous piping must be corrosion resistant.	
8.5	Minimum test pressure must be 250 psig or 50 psi above the service pressure at 60°C.	



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8.6	Pressure testing and flushing of piping must be conducted in accordance with NFPA13 and must be witnessed by the responsible engineer.	
8.7	Flushing connections must be provided at the end of each cross-main section. Their minimum size must be at least 40mm nominal diameter) of each zone. Inspector Test Connections (ITC) are not acceptable as flushing connections and must not be used for this purpose.	
8.8	All piping must be flushed to clear any possible blockages. Method Statement of the flushing procedure and original inspection reports witnessed and signed by the responsible engineer must be submitted as evidence of compliance on completion of the installation.	
8.9	Pipe supports and hangars must be standard types and listed for purpose.	
8.10	Where non-listed pipe hangars and supports are used, they must be designed to take five (5) times the weight of the pipe and fitting (tees, elbows, valves, etc.) including the volume of water it carries plus 114kg. Calculations must be provided to verify their adequacy and such calculation must be signed by a professional engineer.	
8.11	Piping must be painted red on completion to clearly identify its purpose.	
8.12	<i>Reserve.</i>	
9.0	Fittings	
9.1	Fittings must be from material compatible with the pipe chosen.	
9.2	Jointing methods must be threaded, grooved, flanged or other suitable method able to withstand the test pressures.	
9.3	Grooved joints must be LPC certified, UL Listed or FM approved.	
9.4	Welded joints must be qualified.	
10.0	Fire Brigade Breaching Inlets	
10.1	Fire brigade breaching inlets must be mounted such that the centerline of the device is 750mm above the surrounding level.	



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GA 1.1	BASIC REQUIREMENTS	
GA 1.1	GA_1.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
11.0	<i>Reserve.</i>	
12.0	Fire Alarm	
12.1	Fire alarm systems must be UL Listed, FM approved or LPC certified Approved.	
12.2	Mimic Panels must be provided in accordance with QCD FSS 6.3 Fire Alarm Systems.	
13.0	<i>Reserve.</i>	
14.0	Smoke Control	
14.1	Smoke Control Systems must be stand-alone systems.	
14.2	Smoke Control System Fan controls must be located adjacent to the Main Fire Alarm Panel. The smoke control fan must be provided with a rotary selector switch and indicating light for each fan that indicates the following. <div style="display: flex; justify-content: space-around; margin-left: 40px;"> <div style="text-align: center;">Manual</div> <div style="text-align: center;">Yellow</div> </div> <div style="display: flex; justify-content: space-around; margin-left: 40px;"> <div style="text-align: center;">Off</div> <div style="text-align: center;">Red</div> </div> <div style="display: flex; justify-content: space-around; margin-left: 40px;"> <div style="text-align: center;">Automatic</div> <div style="text-align: center;">Green</div> </div>	
15.0	<i>Reserve.</i>	
16.0	Fire Damper	
16.1	Must be UL Listed, FM approved or LPC certified Approved. The fire resistance rating must be at least equal to that of the elements of the structure and wall.	
17.0	Motorized smoke control Damper	



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1.1	GA_1.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
17.1	Must be UL Listed, FM approved or LPC certified Approved. The damper must be capable of operating at minimum 250°C for 2 hours	
18.0	Fire-rated duct	
18.1	Fire rated ducting must be QCD approved and be either LPC or Kitemark (BSI) certified, UL Listed or VdS or FM approved.	
18.2	The fire resistance rating must be at least equal to that of the elements of the structure and wall through which it passes.	
18.3	Duct manufactured from 1.2mm thick galvanized sheet steel is deemed to have an inherent fire resistance of up to 1 hour.	
18.4	Intumescent coatings applied to a steel duct are not an acceptable method of enhancing the materials fire resistance properties unless a test report issued by a test laboratory acceptable to the QCD is provided. The test must set out the results any other relevant information that demonstrates its suitability for use in the application intended.	
19.0	Temperature rating of fans for Smoke Control Systems	
19.1	Smoke control fans must be UL Listed, FM approved, CE mark or LPC certified.	
19.2	Fans must be capable of operating at minimum 250°C for 2 hours.	
20.0	Maintenance	
20.1	All fire and life safety systems must be properly maintained under a documented preventative maintenance inspection and test plan.	
20.2	Documentary evidence of compliance with this requirement must be maintained on the building premises in a suitable location at all times. They must be readily available for presentation to QCD inspectors on request.	
20.3	These documents must be kept in a secure and safe location at the fire command center or where no fire command center is provided, in the security office or the administration office and where central	



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GA 1.2	ELECTRICAL ROOMS, SUBSTATION, SWITCHGEARS AND OTHERS	
Item No.	Provisions	Notes
1.0	<p>The minimum requirements shall apply to the following:</p> <ul style="list-style-type: none"> ✓ Electrical Rooms and other space/enclosures (utilities / toilets) ✓ Substation with minimum 3 meter separation from occupied buildings ✓ Substation within the occupied buildings 	Type
2.0	<p>Electrical Rooms and other utility space/enclosure:</p> <p>2.1 Electrical Rooms as defined by NFPA 70 or enclosure of any electrical component and other utility space whose area is less than or equal to 5.1 square meters and with enclosure fire rating of 2-hour shall not be required with any automatic fire extinguishing system (wet or other type).</p> <p>2.2 Electrical Rooms as defined by NFPA 70 or enclosure of any electrical component and other utility space whose area is exceeds 5.1 square meters shall be provided with appropriate automatic fire extinguishing system (wet or other type).</p>	Electrical Rooms / Spaces
3.0	<p>Substation with 3 meter separation from occupied buildings (STAND ALONE):</p> <p>3.1 Cable Basements – Below Ground Level</p> <p>3.1.1 Where these are single storey below ground and escape distances comply with the code, fixed fire extinguishing system will not be required.</p> <p>3.1.2 Where escape distances exceed the requirements for non-sprinklered occupancies, sprinklers shall be provided.</p> <p>3.1.3 Where water would be ineffective or the possibility that water could exacerbate the situation or water damage could be significant, alternative protection using clean agents will be acceptable. Carbon Dioxide (CO₂) total flooding systems will not be accepted in cable basements under any circumstances.</p> <p>3.2 Construction shall comply with NFPA 101 and 5000 requirements.</p> <p>3.3 Clean Agent systems shall be permitted to be installed where required by NFPA 101.</p> <p>3.4 Notwithstanding, the entire construction shall be installed with fire alarm system (smoke/heat detector or multi-criteria type, call points and audible notification-outside) in compliance to the latest edition of NFPA 72.</p> <p>3.5 For Oil-filled type transformer, an explosion prevention system shall be provided.</p>	Stand Alone Substation
4.0	<p>Substation within occupied buildings:</p> <p>4.1 The fire extinguishing requirements of NFPA 101 that apply for the building shall also apply to these substations and related rooms.</p>	Substation in building



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GA 1.2	ELECTRICAL ROOMS, SUBSTATION, SWITCHGEARS AND OTHERS	
GA_1.2 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
	<p>4.2 Where the introduction of water would present additional hazards such as electrocution, clean agent systems shall be permitted in substitute for automatic fire sprinkler system.</p> <p>4.3 For Oil-filled type transformer, an explosion prevention system shall be provided.</p> <p>4.4 The removal of automatic fixed fire extinguishing systems shall be permitted if all the following conditions are met.</p> <ul style="list-style-type: none">✓ The room is dedicated to electrical equipment only✓ Dry type electrical equipment is utilized✓ Enclosure shall be within a 3-hour minimum fire rating including penetrations✓ No combustible storage is permitted in the room✓ Appropriate fire alarm system(smoke/heat detector or multi-criteria type, call points and audible notification-outside) is provided and monitored by the main fire alarm panel	



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GA 1.5	REFUGE FLOORS	
GA 1.5	GA_1.5 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	High-rise Buildings.	
1.1	High-rise building (more than 30 stories) shall be provided with at least one refuge floor at an interval of not more than 20 stories.	
2.0	Refuge Floors. The refuge floor shall comply with the following requirements:	
2.1	It shall be of masonry construction having fire resistance rating not less than 2 hours.	
2.2	At least 50% of the gross floor area of the refuge floor shall be designated as holding area.	
2.3	There shall be no commercial activities in the holding area.	
2.4	The size of the holding area shall be adequate to accommodate at least half the total occupant load of all stories above and below the refuge floor, basing on 0.3m ² per person.	
2.5	The holding area shall be separated from other areas of the refuge floor by compartment wall having fire resistance rating not less than 2 hours. Link of the holding area with other occupied rooms/areas shall be via an external corridor, or a smoke-stop lobby.	
2.6	The holding area shall be naturally ventilated with permanent openings on at least 2 sides of external walls. Height of opening shall not be less than 1200mm high and the total area of ventilation openings shall not be less than 25% of the floor area of the holding area. All parts of the holding area shall be within 9m of any ventilation opening. Ventilation opening shall be located at least 1.5m horizontally and 3m vertically above adjoining unprotected opening.	
2.7	The holding area can also be mechanically ventilated or air-conditioned in the event of emergency	
2.8	The ventilation equipment shall be connected to secondary power supply via 2 hour fire resistance cable. The ventilation system shall be indicated and shall not share with other areas.	
2.9	Sprinkler system shall be provided for the refuge floor.	
2.10	Escape routes leading to the holding area shall be thru smoke-stop/fire lobby or external corridor.	



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GA 1.5	REFUGE FLOORS	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
2.11	A sign depicting “ REFUGE FLOOR ” shall be displayed inside the staircase and on wall immediately outside the staircase at the refuge floor. The sign of lettering size not less 50mm shall be displayed at a height of 1500mm above the landing/finished floor level.	
2.12	Emergency lighting shall be provided to cover all areas of the holding area. Such lighting shall be connected to secondary power supply, i.e. generator, battery, etc.	
2.13	Two-way voice communication system shall be provided at the firefighting lift lobby serving the refuge floor.	



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GA 2.1	FIRE PROTECTION WATER SUPPLIES	
Item No.	Provisions	Notes
1.0	Applicable Codes	
1.1	Water Supplies quantities shall be determined with the use of the fire code including the QCD Particular Requirements and the NFPA	
2.0	Water supplies shall be secure and dedicated for fire protection use only	
3.0	Tank Construction.	
3.1	Fire Protection water storage tanks shall be constructed of non-combustible materials. They shall be constructed with compartments that allow maintenance without impairment to the system. Each compartment shall be not more than 50%.	
4.0	Tank Capacity.	
4.1	The net effective capacity of the tanks(s) shall be sized to meet the minimum duration of flow for the fire protection systems determined in accordance with the applicable fire codes.	
4.2	The net effective capacity of the water tank shall be verified on the fire protection plans of the fire safety submission. These drawings shall clearly indicate size and allowances for fittings, freeboard, inlet pipe arrangement, overflow pipe, suction pipe and fittings, any allowances and the clear volume of water available for use by the fire protection systems.	
4.3	The effective capacity shall also be clearly indicated on the tank in lettering of a minimum height of 100 mm.	
5.0	Tank Attachments.	
5.1	Each water tank shall have the following minimum attachments:	
5.1.1	Automatic infill such that the tank may be refilled from empty within a time period of 6 hours. In any case it shall not be less than the size of the KHARAMAA supply pipe.	
5.1.2	Visual water level indicator of non-combustible construction.	
5.1.3	Balance valve.	



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GA 2.1	FIRE PROTECTION WATER SUPPLIES	
	GA_2.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
5.1.4	Drain valve having a minimum size shall be 80mm nominal diameter.	
5.1.5	Suction connections.	
5.1.6	Test return pipe(s).	
5.1.7	Overflow pipe of minimum size, one diameter larger than the inlet pipe.	
5.2	All pipe and other openings into the tank shall be fitted with devices to prevent the ingress of insects.	
6.0	Fire Pumps	
6.1	Fire pumps shall be listed for service or approved by an authority acceptable to the Qatar Civil Defence. Performance curves on which the system curve and duty point shall be submitted together with hydraulic calculations with the fire protection plans fire safety submission.	
7.0	Pump Size	
7.1	Fire pumps shall be sized and selected in accordance with the NFPA 20 to meet the single largest system demand.	



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GA 2.2.13	SMOKE-STOP AND FIREFIGHTING LOBBIES	
Item No.	Provisions	Notes
1.0	Smoke-stop Lobby	
1.1	Entry at every floor level to a smoke proof enclosures (exit staircase) of any building or part of a building with any of the following conditions:	
1.1.1	The building has a habitable height of 28m or higher, above ground level (High-rise).	
1.1.2	The building basement/s is more than nine (9) meters below the average ground level (grade plane).	
1.1.3	Where the smoke proof enclosures (exit staircase) traverses more than five (5) floor levels including basements and belongs to a place of public resort (Assembly & Healthcare Occupancy) regardless of the habitable height or basement depth.	
2.0	Fire Fighting Lobby	
2.1	All Fire Lifts shall be provided with a Fire Fighting Lobby. It shall be adjacent and accessible to an exit staircase and provided with a firefighting lobby at each floor level. The floor shall be graded away from the lift door towards the lobby entrance door with a minimum slope of 1 in 200.	
3.0	Purpose	
3.1	Smoke Stop lobbies, including Fire Fighting Lobbies act as buffer spaces for entry into the protected staircases to ensure smoke and toxic gasses do not enter the staircase shaft (smoke proof enclosure) and spread vertically, are used by fire fighters during emergencies and shall be maintained as common property.	
4.0	Enclosures and Openings Protective	
4.1	Access to the smoke proof enclosures must be through a lobby that is separated from the adjoining areas of the building by barriers having a 2-hours fire resistance rating. Door/s opening into the lobby shall be protected with an approved fire door assembly having a minimum of 1-½ fire protection rating and the fire door assembly from the required lobby to the smoke proof enclosure shall have a minimum of 20-minute fire protection rating. Door leaves shall be designed to minimize air leakage and shall be self-closing devices or shall be automatic-closing by actuation of a smoke detector within 3050mm of the required lobby door opening.	



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GA		SMOKE-STOP AND FIREFIGHTING LOBBIES	
2.2.13		GA_2.2.13 – Revisions_2015	
Item No.	Provisions	Notes	
5.0	Lobby Dimensions		
5.1	Smoke-stop lobbies shall have no dimensions smaller than 1.8 meter in clear width.		
5.2	Firefighting Lobby floor area shall not be smaller than 6.0m ² and its least side dimension of not less than 2.0 meter clear width.		



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GA 3.1	PORTABLE CABINS	
	GA_3.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
	Portable cabins are commonly used to construct modular buildings with the consideration of its mobility and readiness. They are often seen, alone or in groups, as temporary site offices on construction site (where they are often stacked two high with metal stairs to reach the upper level).	
1.0	Particular Requirements. The following requirements shall be noted when portable cabin is proposed:	
1.1	The codes that govern the construction of portable cabin are the exact same codes that govern the construction of any permanent building. In Qatar, all portable cabins shall be constructed in accordance with NFPA 5000.	
1.2	Non-combustible materials shall be used for all external cladding and wall internal linings to minimize potential fire load.	
2.0	External Walls. External wall shall have minimum Class A surfaces in accordance with NFPA 285 if that wall is:	
2.1	Situated 3m or more from the relevant boundary; and	
2.2	Not exceeding 8m in height; and	
2.3	Non-load bearing wall.	
3.0	Plastisol coated galvanized steel cladding is allowed for external wall.	
4.0	Roof. Minimum roof covering classification shall be in accordance with Table 38.2.2 of NFPA 5000.	
5.0	Under floor thermal insulation slabs. It shall have a Class B surface spread of flame rating.	
1.6	Internal wall and combined ceiling and floor assembly (from underside). It shall have one-hour fire resistance.	



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GA	INTUMESCENT PAINTS	
3.15.1	GUIDELINES ANNEX - GA_3.15.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Intumescent paints are permitted for use on structural steel members of buildings of all types of occupancy with the exception of Factory and Storage Occupancies to achieved the required fire resistance.	
2.0	For buildings with a habitable height of not more than 28m, intumescent paints are allowed to be used to protect steel columns and beams.	
3.0	For building with a habitable height of more than 28m, intumescent paints are permitted for use only on structural steel beams, excluding load transfer beams.	
4.0	Intumescent paints shall be subjected to and pass fire resistance testing as detailed in BS 476: Part 20/21 or its equivalent.	
5.0	Intumescent paints shall also be subjected to weathering tests as detailed in BS 8202: Part 2: 1992. Fire test for fire resistance performance shall be conducted on specimens after the weather tests. The fire resistance rating of the tested specimen shall not be less than 75% of the original prototype.	
6.0	Intumescent paints shall be listed by a QCD approved testing authority.	
7.0	In addition to the performance requirements such as but not limited to, fire resistance and flame spread indices, the use of intumescent paints shall comply with the conditions stated hereunder.	
8.0	The project QP shall submit a separate set of plans indicating the locations of the structural steel members that are proposed to be coated with intumescent paints.	
9.0	If he building's habitable height exceeds 28m., a fire safety report shall be submitted together with the building plans.	
10.0	A sign depicting the following minimum information shall be fixed at a conspicuous location.	
10.1	Name of the supplier	
10.2	Fire resistance rating	
10.3	Date of painting	
10.4	Next date of re-painting	



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GA	INTUMESCENT PAINTS	
3.15.1	GUIDELINES ANNEX - GA_3.15.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
10.5	Caution note “Caution: No other paints/coating shall be applied to the surfaces steel members protected by intumescent paint system.”	
11.0	The Fire Safety Manager, if any, shall carry out regular inspection checks to ensure that the intumescent coatings are not damage or tampered with. Records of Inspection shall be properly kept. In the situation where the appointment of a FSM is not required, the building management shall undertake the responsibility.	
12.0	For addition and alteration works in a building where structural steel members are protected by intumescent paints, the following shall be complied with.	
12.1	The owner or tenant, assisted by the FSM, shall engage a QP who shall submit building plans to the QCD. The building plans shall be accompanied by the QP’s declaration as to whether the existing columns and beams coated with intumescent paints are or will be affected.	
12.2	Written certifications from the QP stating that he has supervised the application of the coating system(s) shall be provided.	
12.3	The fire safety report shall be updated accordingly.	
13.0	There shall be no flammable or combustible material stored within the vicinity of any structural steel members protected by intumescent paints.	



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GA 3.2	EXTERNAL CLADDING MATERIALS	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
0.1	External Cladding Material (ECM) must be tested by an approved 3rd party test laboratory. The manufacturer shall have certified an ISO 9000 compliant QMS.	<i>Certifications and QCD Approvals</i>
0.2	ECM that are combustible must be submitted to the QCD for review and approval. Submissions shall include copies of relevant test reports and details on the proposed fixings used to secure the material to the building.	
1.0	ECM fixed to buildings shall be non-combustible and shall be composed of environmentally friendly materials and substances. An example of non-combustible cladding material compliant with this standard is corrugated aluminum core panels.	<i>Application</i>
2.0	ECM not complying with 1.0 above must have the following fire propagation and flame spread properties.	<i>Compliance</i>
2.1	When tested in accordance with BS 476 Part 6: (i) Fire Propagation index, I no greater than 4.0 (ii) any sub index must not be greater than 2.0, and	
2.2	When tested in accordance with BS 476 Part 7: (i) flame spread after 10 minutes must be less than 25 mm	
3.0	Alternative test methods and Standards such as AS, BSI and ISO may be used to verify compliance in test reports provided the method of testing is demonstrated to be equivalent and verifies an equal or better fire performance result to those nominated in 2.0 above.	<i>Alternative Test Methods</i>
4.0	Details of the ECM's approval and listings, its method of fixing and the extent of usage shall be included in the proposed Building Plans fire safety submission for compliance verification.	<i>Details to be included in BP submission</i>



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GA 3.5.2	NON-LOAD BEARING EXTERIOR WALLS	
GUIDELINES ANNEX - GA_3.5.2 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	General. Requirements of the Exterior Walls shall be as follows:	
1.1	Any exterior wall of a building or a separated part of a building shall be:	
1.1.1	Constructed wholly of non-combustible materials apart from any external finishes which complies with Chapter 37 of the latest edition of NFPA 5000 or any internal lining/finishes which complies with chapter 10 of NFPA 5000, and	
1.1.2	So constructed as to attain the fire resistance based on Table 7.2.1.1 and Table 7.3.2.1 of the latest edition of NFPA 5000 whichever is greater.	
1.2	Any beam or column forming part of an exterior wall and any structure carrying an exterior wall which is required to be constructed of non-combustible material, shall comply with the provisions of the above-mentioned sub-clause (1.1).	
2.0	Exceptions.	
2.1	The above-mentioned requirements for non-combustibility of exterior walls shall not apply to the external walls of a building or separated part of a building containing one-and-two family dwelling if that wall is:	
2.1.1	Situated 3m or more from the relevant boundary, and	
2.1.2	Not exceeding 8m in height, and	
2.1.3	Non-load bearing wall.	
2.2	The proposed exterior wall shall be tested in accordance with the latest edition of NFPA 285.	
2.3	The flame spread and smoke development of these exterior walls shall also have Class A rating in accordance with the latest edition of NFPA 255 based on the maximum intended use.	
2.4	Fire retardant-treated wood shall be permitted in exterior non-load bearing wall when such walls are not required to have fire resistance rating.	
2.5	Use of plastics, inclusive of foam plastic insulation, shall be in accordance with Chapter 48 of the latest edition of NFPA 5000.	



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GA 4.1	EXTERNAL ACCESS TO SITE AND BUILDING	
4.1	GA_4.1 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Access Road/Fire Engine Hardstanding	
1.1	4m-width firefighting appliance access/access road to the building shall be provided and the gradient shall not exceed 1: 8.3. The angle of approach and departure for any means of access road shall not exceed 1m drop in 20m. The access road shall able to sustain the stationary load of a 24-ton fire appliance.	
1.2	In addition to access road, fire engine hardstanding of 6m x 15m (minimum), with longer side parallel to the façade of the building shall be provided. The hardstanding shall withstand the stationary load of a 45-ton fire appliance. Access opening shall be provided along the external wall of building fronting the fire engine hardstanding to provide access to the building for firefighting and rescue operations.	
1.3	Hardstanding is not required for residential building such as bungalow. Semi-detach and terrace houses regardless of building height.	
1.4	For landed residential development with shared communal facilities, there is need of firefighting appliance access road. The maximum travel distance from the fire engine pump appliance to every point on the project plan area of any building shall be 60m.☐	
1.5	For residential building exceed the habitable height of 10m, fire engine hardstanding shall be within 18m of the breeching inlet. The breeching inlets shall be located on the external wall above ground level nearest to the vertical run of the riser stack.	
1.6	For building for institution, office, shop and places of public resort with habitable height not exceeding 10m, fire engine access road shall be provide within a travel distance of 45m from every point on projected plan area of any building.	
1.7	Length of fire engine hardstanding shall be provided based on the gross floor area (including toilets, stores, circulation areas, etc.) of the largest floor in the building for institution, office, shop and places of public resort with habitable height exceeding 10m. Please refer to Table A, for required length which is in term of the building perimeter length. Different building types have different requirements.	
1.8	Factory (industrial) and storage (warehouse) shall be provided with hardstanding regardless of habitable height. Length of fire engine hardstanding shall be provided based on the gross cubic volume (including toilets, stores, circulation areas, etc.) of the largest floor in the building	
1.9	Every part of the fire engine hardstanding and/or access road shall be within an unobstructed distance of 50m away from a fire hydrant	



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GA 4.1	GA_4.1 – Revisions_2015	
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1.10	Fire engine hardstanding shall be positioned so that the nearer edge shall not less than 2m or not more than 10m from the centre position of the access opening, measured horizontally.	
1.11	Fire engine hardstanding shall be laid on the level platform or if on an incline, the gradient shall not exceed 1:15.	
1.12	Fire engine hardstanding and access roads shall have an unobstructed vertical clearance of not less than 4.5 m.	
1.13	Public road can serve as fire engine hardstanding provided the location of such public roads is in compliance with the requirements of distance from access opening.	
1.14	Fire engine hardstanding and access road shall be kept clear of obstructions and other parts of the building, plants, trees or other fixtures shall not obstruct the path between the fire engine hardstanding and access opening.	
1.15	The inner radius of turning facility for the fire engine hardstanding and access road shall be minimum 3.50m and 7.0m respectively.	
1.16	Dead-end fire department access roads in excess of 46 m in length shall be provided with approved provisions for the fire apparatus to turn around.	
1.17	All corners of fire engine hardstanding shall be marked.	
1.18	Marking of corners shall be in contrasting colour to the ground surfaces or finishes.	
1.19	Fire engine hardstanding provided on turfed area must be marked with contrasting object (preferably reflective) that is visible at night. The markings are to be at an interval not more than 2m apart and shall be provided on both sides of the fire engine hardstanding	
1.20	Side post displaying the wordings 'Fire Engine Access – Keep Clear' shall be provided at the entrance of the fire engine hardstanding. Size of wordings shall not be less than 50mm.	
2.0	Access Opening	
2.1	Access opening shall be spaced not more than 20m apart measured along the external wall from centre to centre of all access openings.	
2.2	Access shall include unobstructed external wall openings, windows, balcony doors, glazed wall panels or access panels. Windows, doors, wall panels or access panels must be readily operable from the inside and outside, unless fitted with breakable glazing. Inside and outside of access openings shall be	



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	unobstructed at all times during the occupancy of the building.	
2.3	An external wall which face the fire engine hardstanding and is windowless or a blank wall shall be provided with access opening at each storey.	
2.4	Access opening shall be not less than 850mm wide by 1000mm high with sill height of not more than 1100mm and height not less than 1800mm above the inside floor level.	
2.5	Panels to access openings shall be posted with either a red or orange triangle of equal sides (minimum 150mm on each side), which can be upright or inverted, on the external side of the wall and with wordings "Fire Fighting Access – Do Not Obstruct" of at least 25mm height on the internal side.	
2.6	Buildings and construction regardless of occupancy except factory and storage, having a habitable height of 10m or less, shall be exempted from the requirement to provide access opening.	



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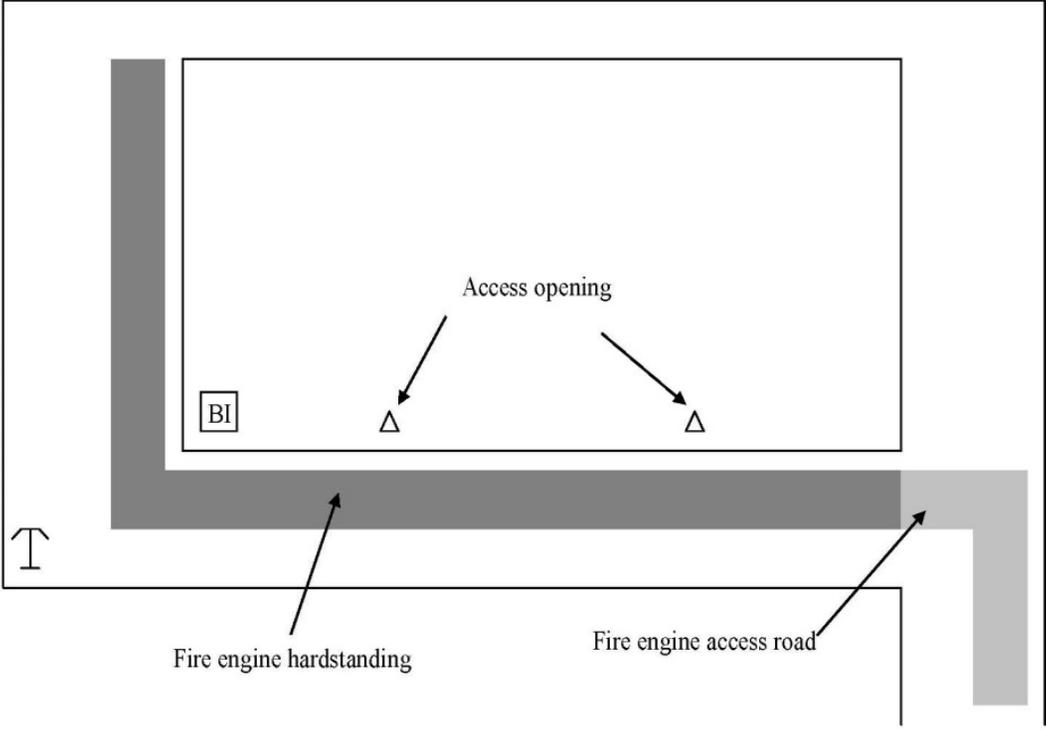
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GA 4.1	EXTERNAL ACCESS TO SITE AND BUILDING																																										
Item No.	Provisions		Notes																																								
	GA_4.1 – Revisions_2015																																										
	<p style="text-align: center;">Building Type – Institutional, Office, Shop and Place of Public Resort</p> <p style="text-align: center;"><u>Gross floor area of largest floor</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Minimum</td> <td style="width: 50%;">1/6 perimeter (min 15m)</td> </tr> <tr> <td>2000m² to 4000m²</td> <td>¼ perimeter</td> </tr> <tr> <td>>4000m² to 8000m²</td> <td>½ perimeter</td> </tr> <tr> <td>>8000m² to 16000m²</td> <td>¾ perimeter</td> </tr> <tr> <td>>16000m²</td> <td>Island site access</td> </tr> </table> <p style="text-align: center;"><u>Building protected throughout by automatic sprinkler system</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Minimum</td> <td style="width: 50%;">1/6 perimeter (min 15m)</td> </tr> <tr> <td>4000m² to 8000m²</td> <td>¼ perimeter</td> </tr> <tr> <td>>8000m² to 16000m²</td> <td>½ perimeter</td> </tr> <tr> <td>>16000m² to 32000m²</td> <td>¾ perimeter</td> </tr> <tr> <td>>32000m²</td> <td>Island site access</td> </tr> </table>	Minimum	1/6 perimeter (min 15m)	2000m ² to 4000m ²	¼ perimeter	>4000m ² to 8000m ²	½ perimeter	>8000m ² to 16000m ²	¾ perimeter	>16000m ²	Island site access	Minimum	1/6 perimeter (min 15m)	4000m ² to 8000m ²	¼ perimeter	>8000m ² to 16000m ²	½ perimeter	>16000m ² to 32000m ²	¾ perimeter	>32000m ²	Island site access	<p style="text-align: center;">Building Type – Factory and Storage</p> <p style="text-align: center;"><u>Gross cubicle extend of the building</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Minimum</td> <td style="width: 50%;">1/6 perimeter (min 15m)</td> </tr> <tr> <td>>28400m³</td> <td>¼ perimeter</td> </tr> <tr> <td>>56800m³</td> <td>½ perimeter</td> </tr> <tr> <td>>85200m³</td> <td>¾ perimeter</td> </tr> <tr> <td>>113600m³</td> <td>Island site access</td> </tr> </table> <p style="text-align: center;"><u>Building protected throughout by automatic sprinkler system</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Minimum</td> <td style="width: 50%;">1/6 perimeter (min 15m)</td> </tr> <tr> <td>>56800m³</td> <td>¼ perimeter</td> </tr> <tr> <td>>113600m³</td> <td>½ perimeter</td> </tr> <tr> <td>>170400m³</td> <td>¾ perimeter</td> </tr> <tr> <td>>227200m³</td> <td>Island site access</td> </tr> </table>	Minimum	1/6 perimeter (min 15m)	>28400m ³	¼ perimeter	>56800m ³	½ perimeter	>85200m ³	¾ perimeter	>113600m ³	Island site access	Minimum	1/6 perimeter (min 15m)	>56800m ³	¼ perimeter	>113600m ³	½ perimeter	>170400m ³	¾ perimeter	>227200m ³	Island site access	Table A
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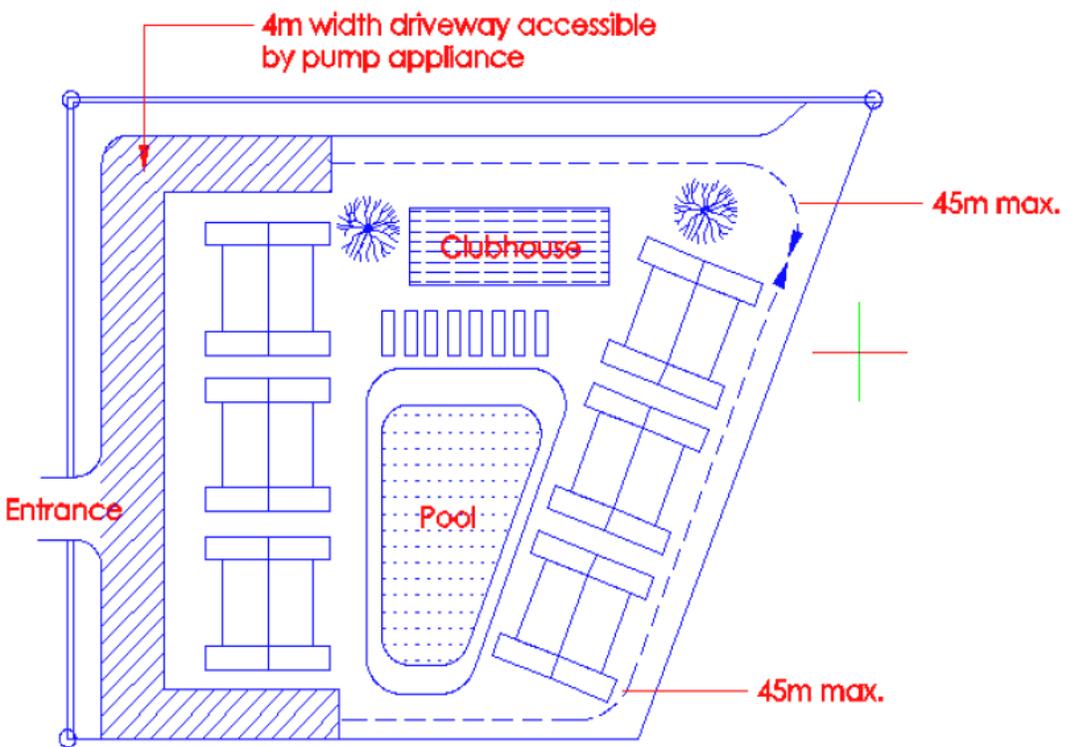
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	<p data-bbox="961 418 1291 451">GA_4.1 – Revisions_2015</p> 	<p data-bbox="1843 954 1932 979">Figure B</p>



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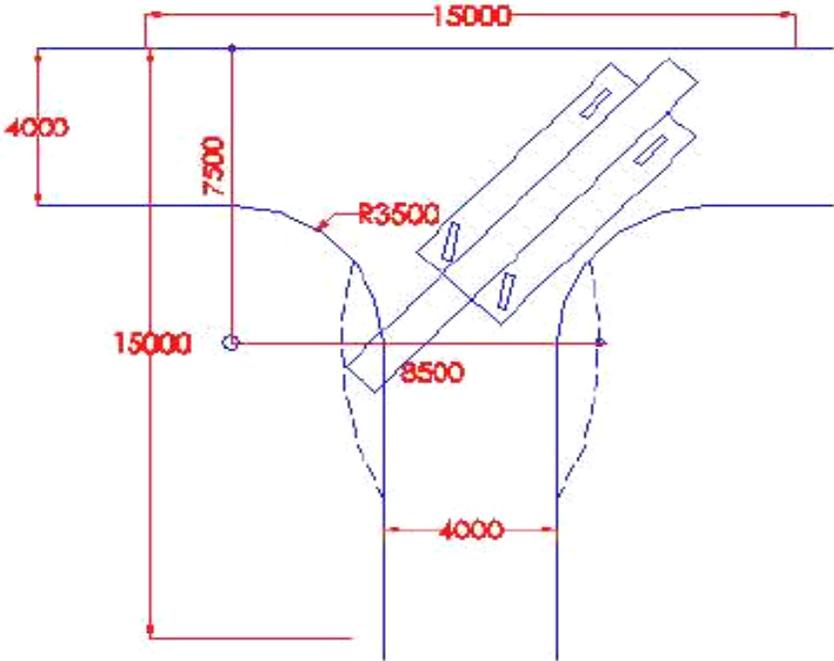
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	<p data-bbox="961 418 1291 451">GA_4.1 – Revisions_2015</p>  <p data-bbox="441 568 1512 1315">The diagram illustrates a site plan for a building complex. It includes a Clubhouse, a Pool, and an Entrance. A 4m width driveway is shown as accessible by pump appliance. Maximum dimensions of 45m are indicated for the building footprint.</p>	<p data-bbox="1843 933 1932 966">Figure C</p>



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	<p data-bbox="961 418 1291 451">GA_4.1 – Revisions_2015</p> 	<p data-bbox="1843 906 1934 938">Figure D</p>



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	<p style="text-align: center;"> CLEARANCE RADIUS (R3) OUTER RADIUS (R2) R8500 R7500 R3500 INNER RADIUS (R1) R1 = 3500mm R2 = 7500mm R3 = 8500mm 4000 </p>	Figure E



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	<p style="text-align: center;">One sixth perimeter appliance access</p> <p style="text-align: center;">$X \geq 1/6 (A + B + C + D)$ or min. 15m</p>	Figure F



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	<p>One fourth perimeter appliance access</p>	Figure G



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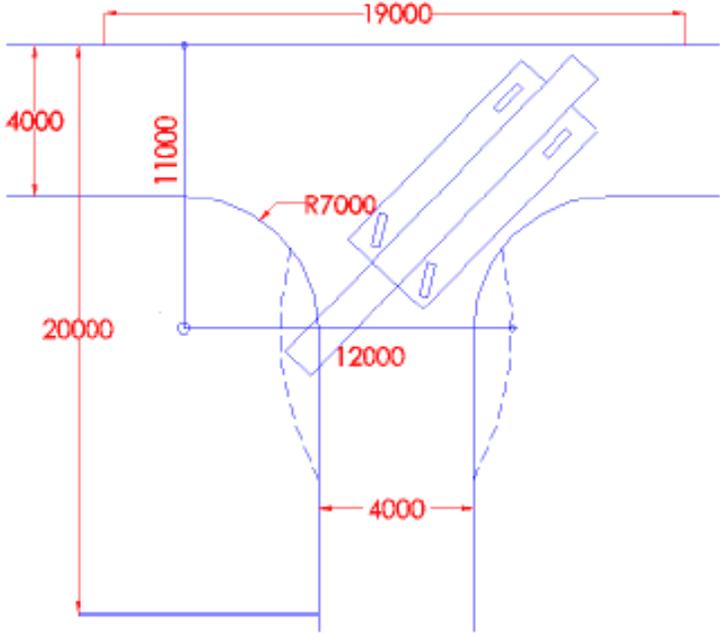
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	<p style="text-align: center;">GA_4.1 – Revisions_2015</p> <p style="text-align: center;">$A + C \geq \frac{1}{4} (A + B + C + D)$</p> <p style="text-align: center;">One half perimeter appliance access</p> <div style="text-align: center;"> </div> <p style="text-align: center;">Fire appliance accessway</p> <p style="text-align: center;">$B + C \geq \frac{1}{2} (A + B + C + D)$</p>	Figure H



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	<p data-bbox="459 548 1470 584"><u>Applicable to buildings exceeding the habitable height of 10m</u></p> 	<p data-bbox="1850 906 1927 933">Figure 1</p>



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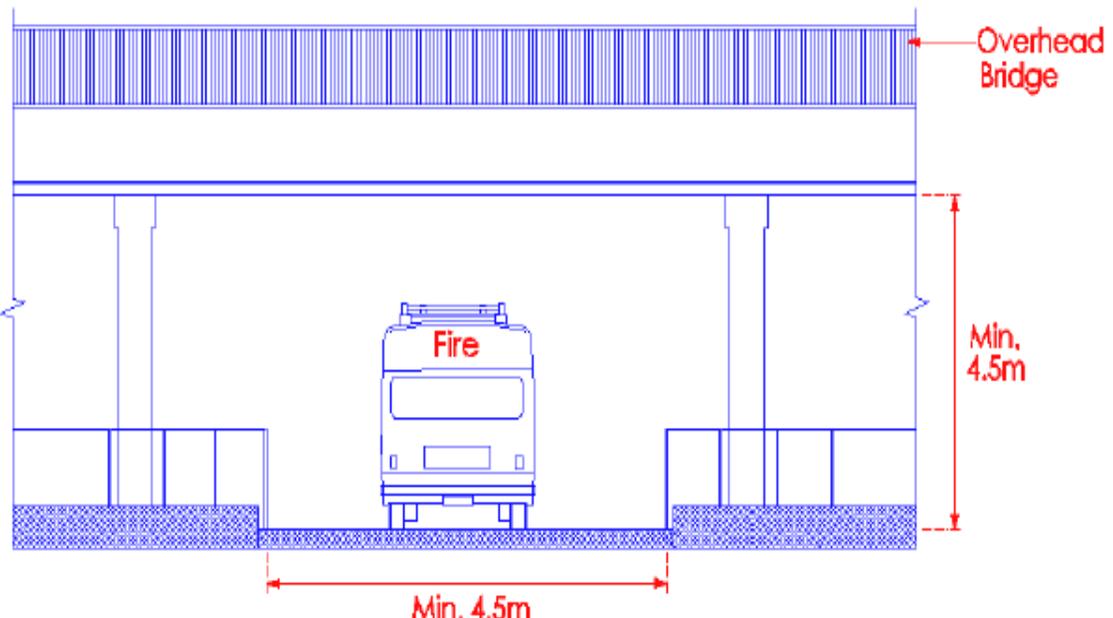
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	<p>GA_4.1 – Revisions_2015</p> <p style="text-align: center;"><u>Applicable to buildings exceeding the habitable height of 10m</u></p> <p style="text-align: center;"> R1 = 7000mm R2 = 11000mm R3 = 12000mm </p>	<p>Figure J</p>



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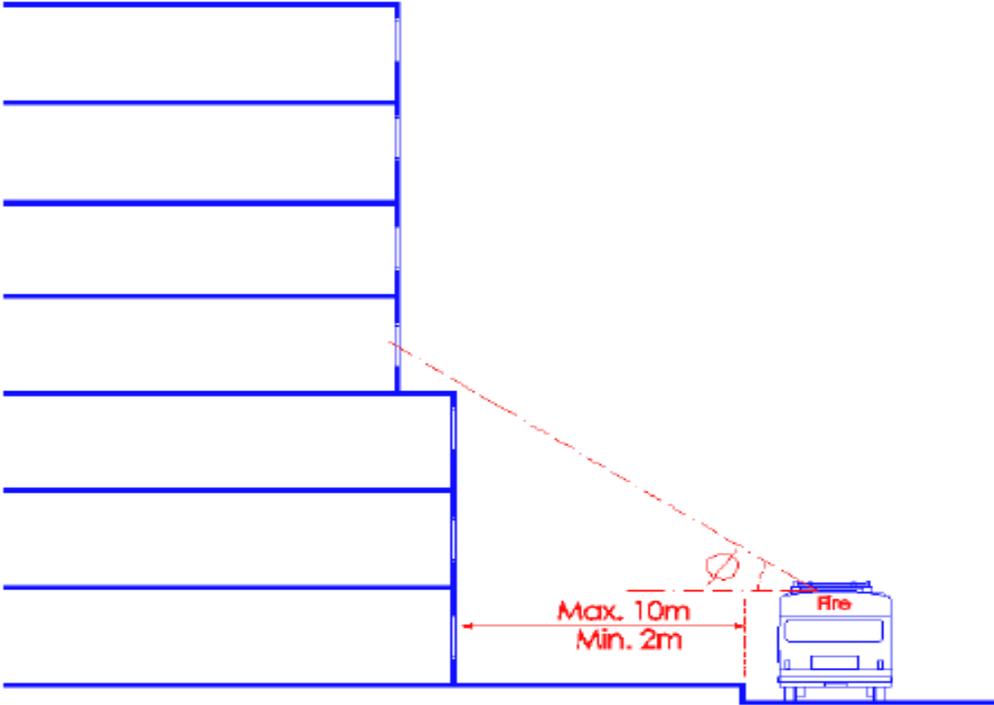
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	<p data-bbox="961 418 1291 451">GA_4.1 – Revisions_2015</p>  <p data-bbox="1386 617 1533 698">Overhead Bridge</p> <p data-bbox="1365 909 1449 990">Min. 4.5m</p> <p data-bbox="819 1185 945 1226">Min. 4.5m</p>	<p data-bbox="1827 893 1932 933">Figure K</p>



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	<p data-bbox="961 418 1291 451">GA_4.1 – Revisions_2015</p>  <p data-bbox="1031 1170 1171 1224">Max. 10m Min. 2m</p>	<p data-bbox="1850 906 1934 932">Figure L</p>



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GA 4.1	EXTERNAL ACCESS TO SITE AND BUILDING	
Item No.	Provisions	Notes
	<p style="text-align: center;">GA_4.1 – Revisions_2015</p> <div style="text-align: center;"> <p style="text-align: center;">4 storey shopping centre GFA: 20 000sq m</p> <p style="text-align: center;">FAP -- Fire Fighting Access Panel</p> </div>	<p>Figure M</p>



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GA 4.1	EXTERNAL ACCESS TO SITE AND BUILDING	
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	GA_4.1 – Revisions_2015	
	<p style="text-align: center;"><u>Compartments not accessible from one another</u></p> <p style="text-align: center;">AO – Access opening eg: window</p>	Figure N



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GA 6.01	FIRE PROTECTION PIPES	
6.01	GUIDELINES ANNEX - GA_6.01 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Only cast iron, malleable iron, ferrous piping or copper tubing with suitable approved fittings and jointing shall be used for fire protection systems.	<i>Materials</i>
2.0	Other types of materials that are listed for fire protection service may be permitted subject to QCD approval.	
3.0	Aboveground piping shall meet the minimum standards listed in NFPA 13, Table 6.3.1.1 Pipe or Tube Materials and Dimensions.	<i>Quality</i>
4.0	Below ground piping shall meet the minimum standards listed in NFPA 24, Table 10.1.1 manufacturing standards for Underground Piping.	



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GA 6.04	SPRINKLERS IN CONCEALED CEILING AND RAISED FLOOR SPACES	
GUIDELINES ANNEX - GA_6.04 – Revisions_2015		
Item No.	Provisions	Notes
1.0	Definitions	
1.1	Ceiling and floor spaces shall mean all concealed spaces between floors (or concrete slab roofs and floor) measured between the soffit to the top of the lined ceiling or between the top of the floor to the underside of the raised floor	
2.0	<400mm height	
2.1	Concealed ceiling and floor spaces not exceeding 400mm in depth need not be protected by sprinkler	
3.0	>400mmheight - <800mm and NO Combustible Material	
3.1	<p>Concealed ceiling and floor spaces exceeding 400mm but not exceeding 800mm in depth and do not contain combustible material need not be protected by sprinklers <i>subject to submission of an <u>Material Audit of the contents of the space</u> undertaken and endorsed by the responsible engineer.</i></p> <p><i>The responsible engineer shall also confirm and verify that measures are implemented to ensure that the space remains as originally intended and there will be no fire load accumulation.</i></p> <p><i>The Material Audit shall be subject to review and approval by the QCD and shall include a coordinated services drawing(s) of the space in question with a section drawing, a table listing all materials with their flame spread index (not to exceed 25) determined through testing in accordance with NFPA 255 (test reports to be included), the individual materials' heat content.</i></p> <p><i>The total heat content within the concealed space which shall not exceed 11,356 kJ/m² (1,000 Btu/ft²).</i></p>	
4.0	>400mmheight - <800mm and has Combustible Material	
4.1	Concealed ceiling and floor spaces exceeding 400mm but not exceeding 800mm in depth and containing combustible material shall be protected by sprinklers installed on the extended basis. Sprinkler protection may be omitted where the space is subdivided by fire and draught stops at intervals not exceeding 15m in any direction.	
5.0	>800mm and NO Combustible Material	
5.1	Concealed ceiling and floor spaces exceeding 800mm in depth not containing combustible materials shall be protected by sprinkler installed on the extended basis.	



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GA 6.04		
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GUIDELINES ANNEX - GA_6.04 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
6.0	>800mm and has combustible material	
6.1	Concealed ceiling and floor spaces exceeding 800mm in depth containing combustible material shall be fully protected by sprinklers in accordance with the requirement for the particular hazard.	



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GA 6.08	CLEAN AGENT SYSTEM	
Item No.	Provisions	Notes
1.0	The design, installation and testing of Clean Agent Systems shall be in accordance with these regulations and the latest edition of NFPA 2001.	<i>Applicable Codes</i>
2.0	Only clean agents specifically approved by the Qatar Civil Defence (QCD) shall be used.	
3.0	The use of Carbon Dioxide (CO ₂) is prohibited without specific approval from the QCD. Such approval will only be granted on the basis of a formal engineering analysis that concludes to the satisfaction of the QCD, that alternative clean agents are not able to satisfactorily extinguish the fire.	
4.0	Clean Agent storage containers (cylinders) shall be installed outside the protected area/enclosure and easily accessible within 2.0M from the main entrance.	<i>Location of cylinders</i>
5.0	A Manual Override (mechanical / electrical) means of discharging the required agent shall be provided on the storage container.	<i>Manual Actuation</i>
6.0	Clean agent systems shall be operated automatically by a QCD approved automatic fire detection system.	<i>Automatic Operation</i>
7.0	The control panel shall comply with the following: <ul style="list-style-type: none"> 2 Located external to the protected areas 3 Installed near the main entrance of the protected enclosure 4 Connected to the Main Fire Alarm Panel with indication of Alarm, Gas Discharged and Fault indications. 	<i>Control Panel</i>
8.0	Clean Agent shall comply with the following: <ul style="list-style-type: none"> ✓ Gas discharge shall only occur after predetermined time delay subject to approval by QCD. ✓ The time delay shall be interrupted by the operation of the Abort Switch and shall re-commence on release of such abort switch. ✓ Minimum time delay to discharge shall be twenty (20) seconds. 	<i>Gas Discharge</i>
9.0	Manual Release Push Button shall comply with the following: <ul style="list-style-type: none"> ✓ Located external to the protected enclosure within 1.5M of the main entrance. ✓ More than one manual release push button may be required subject to the size and configuration of the protected enclosure. ✓ Operation of such shall cause instant release of the clean agent. 	<i>Manual Release</i>



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10.0	<p>Abort Switch shall comply with the following:</p> <ul style="list-style-type: none"> ✓ Located within the protected enclosure and mounted within 1.5M from the main entrance. ✓ More than one abort switch may be required subject to the size and configuration of the protected enclosure. ✓ Upon continuous operation, shall interrupt the countdown timer. ✓ Upon release of abort switch, reset of countdown timer to discharge clean agent gas. 	<i>Abort Switch</i>
11.0	Audible / Visible Notification devices shall be installed both inside and outside of the protected enclosure	<i>Notification</i>
12.0	<p>“DO NOT ENTER – GAS DISCHARGED” illuminated signs shall be external to the protected enclosure and mounted above all entrances so as to be visible to any person entering. The lettering shall be a minimum of 50mm high. It shall be visible at all times of the day. The illumination shall be activated by a pressure switch fitted to the discharge piping.</p> <p>“EVACUATE NOW – GAS DISCHARGE” illuminated signs shall be provided above the exits of the protected enclosure. The lettering shall be a minimum of 50mm high. It shall be visible at all times of the day. Illumination shall be activated on commencement of the discharge time delay.</p>	<i>Gas Discharge Signage</i>
13.0	<p>Enclosure shall comply with the following:</p> <ul style="list-style-type: none"> ✓ All enclosures protected by clean agent systems that are required by code to be provided with an extinguishing system, in the absence of sprinkler protection, must be constructed from 2-hour fire resistant elements. ✓ Subject to the location of the enclosure, its integrity (to be verified through testing) and the type and nature of the clean agent used, ventilation system to purge the gas after discharge may be required by QCD. Due consideration shall be given to this aspect of the system. ✓ All enclosures protected by clean agent systems must be subjected to an enclosure integrity test. The test must be conducted by a qualified tester acceptable to QCD. The test shall verify the ability of the protected enclosure to maintain the minimum design concentration for ten (10) minutes. The enclosure test must be witnessed by QCD. This is a pre-condition for issue of the building’s fire safety certificate. 	<i>Enclosure consideration</i>



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GA 6.2	RISING MAIN FOR FIRE FIGHTING	
GA_6.2 – Revisions_2015		
Item No.	Provisions	Notes
1.0	<p>The type of rising main system shall be provided appropriate to the building as follow:</p> <p>1.1 Dry Rising Mains</p> <ul style="list-style-type: none"> ✓ Any floor at habitable height beyond 9M and not exceeding 28M above ground level. ✓ One basement exceeding 500 square meters in gross floor area. ✓ One up to Four basement levels below Level of Exit Discharge (LED) <p>1.2 Wet Rising Mains</p> <ul style="list-style-type: none"> ✓ For building having a habitable height exceeding 28M above the ground level ✓ More than Four basement levels below LED <p>Separate dry and wet rising main systems in a building may be permitted by QCD.</p>	Type
2.0	<p>Number and distribution of rising main shall be as follow:</p> <p>2.1 All parts of any floor not more than 28M above the ground level is within 38M from a landing valve, the distance to be measured along a route suitable for hose lines, including any distance up or down a stairway.</p> <p>2.2 One rising main is provided for one or a series of floors higher than 28M above ground, with each rising main serving not more than 930 square meters of any floor and subject to all parts of the floor to be within 38M from a landing valve.</p>	Number
3.0	<p>Position of rising mains and associated landing valves shall be located in the following order or priority:</p> <p>3.1 Within a firefighting lobby</p> <p>3.2 In a smoke-stop lobby or common lobby in close proximity to the exit staircase.</p> <p>3.3 Where firefighting lobby, smoke-stop lobby are not provided, each required exit stairway with landing valve.</p> <p>3.4 Landing valve of the rising main shall be installed between 1M and 1.4M relative to the finish floor level.</p>	Location
4.0	<p>Minimum nominal bore of rising main shall be:</p> <p>4.1 100mm diameter where the rising main does not exceed 28M in habitable height and serving only one landing valve per floor.</p> <p>4.2 150mm diameter or higher where the rising main is in combination with the fire sprinkler system serving two or more landing valve per floor.</p>	Size



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5.0	<p>The inlet to the rising main shall be located:</p> <p>5.1 On an external wall or a boundary of a building and to be within 18M of the adjacent fire appliance access road. Each rising main shall be fitted within a breaching inlet with non-return valve directly at the foot of the same riser stack.</p> <p>5.2 As close as possible to the rising main they serve with any connecting pipe between the inlet and the vertical run of the rising main kept to a minimum and given a fall towards the drain valve. The total pressure loss of the dry rising main shall not exceed 6bars based on the design of water flow rate. This is correspond with maximum habitable height of 60M</p> <p>5.3 In a conspicuous position readily visible and accessible to the firefighters.</p>	<i>Breaching Inlet Location</i>



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6.2	GA_6.2 – Revisions_2015	
		.Figure A



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	<p>GA_6.2 – Revisions_2015</p>	<p>Figure B</p>



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	<p>GA_6.2 – Revisions_2015</p>	<p>Figure C</p>



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GA 6.2	RISING MAIN FOR FIRE FIGHTING	
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	<p>GA_6.2 – Revisions_2015</p>	<p>Figure D</p>



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GA 6.3	FIRE ALARM SYSTEM	
6.3	GA_6.3 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Fire alarm systems shall be provided for all buildings and structure that provide public access. See Guidelines for Fire Alarm System for reference.	<i>Where and what required</i>
2.0	Fire alarm systems shall be of the conventional type or addressable type or combination of both. This shall be QCD approved for use in the State of Qatar.	<i>Types</i>
3.0	Fire Alarm Systems shall be designed and installed in accordance with the latest edition of NFPA 72 except as clearly modified by these requirements. Where ambiguities in either these requirements of the NFPA 72 exist, it shall be the responsibility of the engineering endorsing the fire safety plans to obtain clarification from the Qatar Civil Defence Department.	<i>NFPA 72</i>
4.0	All fire alarm system shall have the following:	<i>System Architecture</i>
	4.1 Main fire alarm control unit/panel (addressable / conventional type)	
	4.2 Main Indicating Mimic Panel shall use red coloured Light Emitting Diode (LED) to indicate graphically the building, the floor, location and the initiating device that is in alarm; or if provided with PC based workstation, an information stating that graphic user interface (GUI) is integrated in the software/application in lieu of the Main Indicating Mimic Panel.	
5.0	Fire alarm control unit/panel shall be provided inside each building and located in any of the following:	<i>Fire Alarm Control Panel</i>
	5.1 Within a designated Fire Command Center	
	5.2 In the ground floor level at main entrance/reception lobby 5.3 In a continuous attended location where above mentioned are not available.	
6.0	Zone Chart shall clearly depict the location of all fire zones, the type and location of all initiating devices with labels on that floor with a “YOU ARE HERE” indication and shall be provided on each floor of every building located within the firefighting lobby and smoke-stop lobby or common lobby in close proximity to the exit staircase.	<i>Zone Chart</i>
7.0	Detector Coverage shall comply with latest edition of NFPA 72. Exemption: Void space less than or equal to 400mm in depth/height shall not require detection.	<i>Detectors</i>
8.0	Manual call points shall be located within 1.5M of each fire exit. The initiating device shall be located such that no part of any floor is further than 30M	<i>Manual Call Point</i>



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GA 6.3	FIRE ALARM SYSTEM	
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	from the nearest manual call point	
9.0	Fire alarm wiring shall be in accordance with the latest edition of NFPA 70 & 72. Where fire alarm wires are exposed and subject to possible damage from normal use of the occupancy, they shall be provided with mechanical protection	<i>Fire Alarm Cables</i>
10.0	Power Supplies	
	<p>10.1 Primary Power Supply shall be an alternating current (AC) supply from an authorized electricity provided and shall be exclusive to the alarm system.</p> <ul style="list-style-type: none"> ✓ The primary power supply should be from the building emergency mains supply if such supply is available. ✓ The primary power supply shall be direct from the electrical distribution board and the circuit shall not be used for any other purpose. ✓ The protective isolating device controlling this circuit shall be clearly labeled to indicate that it controls the fire alarm system. ✓ It shall terminate inside the fire alarm panel or its integral power supply unit. No external intermediary switch shall be provided between the protective isolation device at the electrical distribution board and the fire alarm panel/integral power supply unit. 	<i>Primary Power Supply</i>
	<p>10.2 Secondary Power supply shall be in the form of the following:</p> <ul style="list-style-type: none"> ✓ Storage batteries, with an automatic charge. It shall be capable of operating the alarm system in the event of failure of the primary power supply and vice versa. ✓ Emergency Power Supply System (EPSS), if provided, shall be compliant to the latest edition of NFPA 70, 72 and 110 complete with power line diagram to show the automatic transfer switch. 	<i>Secondary Power Supply</i>
	10.3 A fault warning shall be given in the event of failure of either primary or secondary power supply	<i>Fault Indication</i>
	<p>10.4 A battery charger of appropriate type and rating shall be provided to keep the storage batteries under constant voltage charge.</p> <ul style="list-style-type: none"> ✓ The charger shall incorporate automatic control features with output designed to charge and maintain the batteries within the limits specified by the battery manufacturer, taking into account any quiescent load imposed by the associated system. ✓ The charger shall be designed and rated to so that a battery discharged to its final voltage can be recharged to at least 80% of its rated capacity within 24 hours and its rated capacity within another 48 hours. 	<i>Battery Charger</i>



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10.5 Battery Capacity	<ul style="list-style-type: none"> ✓ The storage battery used to power the alarm system shall be such that in the event of primary power supply failure, the battery is capable of maintaining the system in normal working condition for at least 24 hours. ✓ Thereafter it shall be capable of supplying the additional load resulting from an alarm originating in two separate zones for a period of half an hour and if utilized, to supply emergency evacuation alarms, it shall also be capable of supplying the full emergency evacuation alarm load for a period of at least 10minutes. ✓ Battery capacity sizing shall include the load controlling the operation of ancillary equipment for example, but not limited to that equipment required for control of air handling equipment, lift homing, pressurization fans and fire suppression equipment. 	<i>Battery Capacity</i>



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GA 6.6.3	FIRE LIFT / FIRE SERVICE ACCESS ELEVATORS AND AMBULANCE STRETCHER ACCOMMODATION ELEVATORS	
GA_6.6.3 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	General.	
1.1	Every floor of any building shall be served by the required minimum number of fire lifts/fire service access elevators:	
1.1.1	In any building, in which the habitable height exceeds 28 meters (high-rise), or	
1.1.2	The building basement/s is more than nine (9) meters below the average ground level (grade plane).	
1.2	Fire lifts/fire service access elevators shall be contained within a separate protected shaft.	
1.3	A lift/elevator mainly intended for the transport of goods shall not be designated as a fire lifts/fire service access elevators.	
2.0	Minimum Required Number.	
2.1	A minimum of two lifts/elevators each having a minimum 3500 lb. (1588 kg) capacity serving every story within the subject building shall be provided to serve as fire lifts/fire service access elevators.	
2.2	A minimum of one fire lifts/fire service access elevator shall be sized in accordance with the requirements of this GA 6.6.3 item 8.0 Ambulance Stretcher Accommodation Elevator.	
2.3	When required, a minimum of one fire lifts/fire service access elevator shall be provided for every 900 sq. m. floor area.	
3.0	Firefighting Lobby.	
3.1	Each fire lifts/fire service access elevators shall open into or served at each story by a firefighting lobby.	
3.2	Where a fire lift/fire service access elevator has two entrances onto a floor, the second entrance shall not be required to open into a firefighting lobby. As a compensatory measure, pressurization shall be provided to the lift/elevator shaft.	
3.3	The firefighting lobby, considered as part of the smoke proof enclosure (exit stair), shall be enclosed by barrier having 2-hours fire resistance rating with door assemblies of not less than a 1.5 hour fire protection rating and shall be self-closing or automatic closing.	



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3.4	The firefighting lobby shall be pressurized to minimum 10 air changes per hour.	
3.5	Enclosed firefighting lobby shall not be required at the street floor or level of exit discharge.	
3.6	Firefighting Lobby floor area shall not be smaller than 6.0m ² and its least side dimension of not less than 2.0 meter clear width.	
4.0	Access.	
4.1	Fire lifts/fire service access elevators shall have access to every habitable floor above or below the designated floor.	
4.2	Fire lifts/fire service access elevators shall be adjacent and have direct access to an exit stair enclosure and be approached by a firefighting lobby at each story.	
5.0	Operational Features.	
5.1	Fire lifts/fire service access elevators shall be provided with an operational feature that would enable firemen to cancel first or earlier call which has been inadvertently made to the fire lift during an emergency. For instance, in a fire emergency when any one of the fire detection devices or fire alarm systems is activated, all the passenger lifts shall be brought to the designated floor (usually ground story) and park there with the lift landing doors remaining opened.	
5.2	Fire lifts/fire service access elevators shall also be provided with an operational feature at the ground story to recall the lift back to the ground floor after fire fighter uses it.	
6.0	Power Supply.	
6.1	The power supply to the lift shall be connected to a sub-main circuit exclusive to the lift and independent of any other main or sub-main circuit. The power cables serving the lift installation shall be routed through an area of negligible fire risk.	
6.2	The following buildings require the provision of standby generating plant for special emergency operations of fire lift/fire service elevators:	
6.2.1	Assembly, business, day-care educational, health care, hotel industrial, mercantile and industrial buildings; Residential buildings;	



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GA_6.6.3 – Revisions_2015		
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
6.2.2	Mixed developments where the passenger lifts serve both the residential and non-residential floors.	
7.0	Fire Lift/Fire Service Access Elevators Symbols.	
7.1	A pictorial symbol of the standardized design designating which lift/elevator are fire lifts/fire service access elevators shall be installed on each side of the hoist way door frame on the portion of the frame at right angles to the fire fighting lobby.	
7.2	The fire lifts/fire service access elevators shall comply with the following:	
7.2.1	The symbol shall be minimum of 3in. (76 mm) in height.	
7.2.2	The vertical centerline of the symbol shall be centered on the hoistway door frame. Each symbol shall be not less than 78 in. (1981 mm) and not more than 84 in. (2134 mm) above the finish floor at the threshold	
8.0	Ambulance Stretcher Accommodation	
8.1	In buildings with a habitable height of 18m and above, a minimum of one lift/elevator shall be provided for fire fighter emergency operation to all floors.	
8.2	When fire lifts/fire service access elevators are required, one shall be designated as an Ambulance Stretcher Accommodation.	
8.2	The lift/elevator car shall be sized and arranged to accommodate a 2 ft. × 6 ft. 4 in. (610 mm × 1930 mm) ambulance stretcher in the horizontal, open position.	
8.3	The lift/elevator car shall be identified by the international symbol for emergency medical services (star of life). The symbol shall be minimum 3 in. (75 mm) in height and shall be located inside the car on both sides of the door frame.	

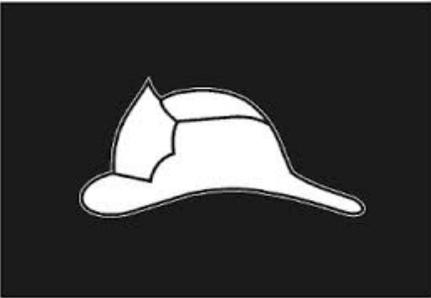


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			<i>Pictorial Symbols</i>

Fire Lift/Fire Service Access Elevator Symbol

Ambulance Stretcher Accommodation Lift/Elevator Symbol



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GA 6.7	FIRE PUMPS	
Item No.	Provisions	Notes
0.0	Certifications and QCD Approvals	
0.1	Fire pump equipment must be listed and certified by a 3rd party. The certification must be based on a scheme which includes continual surveillance of the manufacturing plant where the fire pumps are manufactured and assembled. Where fire pumps are assembled at a different plant to where they are manufactured then the assembly plant must also be included within the certification and surveillance scheme.	
0.2	Fire pump equipment relied upon for satisfaction of fire safety requirements and regulations must be submitted to the QCD for review and approval. On approval a QCD certificate for the fire pump will be issued to the submitting party.	
1.0	Applications	
1.1	Fire pumps must be provided for all buildings and structures where firefighting systems are required and installed to ensure adequate flows of water at the minimum required pressures are maintained for the duration of the firefighting operations.	
2.0	Installations	
2.1	All fire pumps installations must be designed to operate under the conditions of loss of primary power source and mechanical failure.	
2.2	A fire pump installation comprising a duty electric motor driven pump with a standby diesel engine driven pump is deemed to satisfy this requirement.	
2.3	All fire pump configurations are subject to review and specific approval from the QCD is required.	
3.0	All equipment comprising the fire pump set including but not limited to pump, motor, engine, controller, pressure relief valves, suction valves, discharge valves, check valves, pipe supports and hangar, etc., must be listed for their intended use by a 3rd party certification body acceptable to the QCD.	
3.1	All equipment associated with pump installations must be submitted for QCD approval.	
3.2	Current acceptable 3rd party certifiers are: Underwriters Laboratories, (UL); FM Global; LPCB; VdS.	
3.3	Other 3rd party certifiers not listed above may be submitted for consideration. Complete credentials and accreditation in English must be included in any submission for review by the QCD.	



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4.0	All fire pumps must be capable of providing at least 150% of the required minimum firefighting water flow at not less than 65% of the minimum pressure required.	
5.0	Flow meter	
5.1	A listed approved flow meter must be provided for each fire pump installation. The flow meter must be installed in accordance with the manufacturer's recommendations and within the listing limitations.	
5.2	The measurable flow range of the meter must be at least 200% of the minimum required flow.	
5.3	The flow meter must be installed such that its indicator/dial/gauge can be easily seen and read without the aid of step ladders, scaffolding or other lifting equipment.	
5.4	The flow meter must be a permanent installation and must not be removed after initial testing and setting into operation of the system.	
6.0	Pump Performance Curves	
6.1	A performance curve showing the pumps delivery flows and pressure together with the system demand curve must be provided for each installation. The intersection must be the design delivery of the pump system.	
7.0	Fire Pump Room	
7.1	Fire pumps must be enclosed in their own dedicated pump room. The fire pumps' room enclosure must have a 2 hour fire resistance rating.	
8.0	Ventilation	
8.1	Where located within a building, a separate and dedicated ventilation system must be provided for the fire pump room.	
8.2	The ventilation system must draw fresh air directly from outside the building.	
8.3	Exhaust fans must be rated for hot gasses at 250°C for 2 hours.	



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8.4	Power supplies for the exhaust fans must be from the Class 1 central emergency generator through fire rated cables having a minimum 2 hour fire resistance rating.	
9.0	Access and Location.	
9.1	Safe direct access from outside the building must be provided for the fire pump room. The location of the fire pump room must be agreed with the QCD at DC1 stage.	
9.2	Fire pump room shall be located where safe and direct access from the building external can be achieved; when in basements, the fire pump room shall be located not lower than one (1) basement depth.	



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1	Scope and Purpose	
	This fire safety standard applies to natural and mechanical methods of smoke control where required by other fire safety standards of the Qatar Civil Defence Department. The purpose of this standard is to establish the minimum requirements in the design of smoke control system that are required to provide a tenable environment for escape, evacuation or relocation of occupants and compliment firefighting operations.	
2	General Design Requirements	
	Buildings or structures or parts thereof that are required to have smoke control system shall be designed according to the latest edition of applicable NFPA codes/standard and this general fire safety requirements guidelines annex GA_03. The requirements of this guidelines annex shall be upheld in case of conflict with NFPA 92.	
3	Applications	
	Smoke Control Systems are classified into two general categories as smoke containment and smoke management. <ul style="list-style-type: none"> ▪ Smoke Containment – smoke control method that employs mechanical equipment to produce pressure difference across smoke barriers ▪ Smoke management – A smoke control method that utilizes natural or mechanical systems to maintain a tenable environment in the means of egress from a large volume space or to control and reduce the migration of smoke between the fire area and communicating spaces 	
4	Methods of Smoke Control	
4.1	Pressurization Method	
	Controlling smoke by pressure differences across smoke barriers though the aid of mechanical means is one of the acceptable procedures in smoke control. This procedure does not require the maintenance of a tenable environment in the zone of fire origin. Design of pressurization system shall be in accordance with NFPA 92 and this standard.	
4.2	Airflow Method	
	Design and application shall be in accordance with NFPA 92. Engineering analysis which shall be performed to establish that usage of this procedure will not cause adverse effect to other portions of the smoke	



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	control system, further intensify the fire, disrupt flume dynamics and interfere with exiting.	
4.3	Exhaust Method	
	Smoke control systems employing the exhaust method shall be designed in accordance with NFPA 92 and this standard. The minimum height to which the smoke layer interface shall be designed shall be 1.83 m (6 ft) above any walking surface that forms part of the required egress system within the smoke zone.	
4.4	Smoke Containment (Pressurization) Systems	
4.4.1	<i>Zoned Control System</i>	
4.4.1-1	The minimum pressure difference across a smoke barrier shall be 12.5 Pa (0.05 in.w.g.) in fully sprinklered building	
4.4.1-2	In non-sprinklered and other than fully sprinklered buildings , the minimum pressure difference shall be equivalent to two times the calculated maximum pressure difference that can be produced by the fire	
4.4.1-3	The maximum pressure difference across a smoke barrier shall be determined by required door opening forces which shall not exceed 110 N.	
4.5	Smoke-proof Enclosure (Exit Staircases)	
4.5.1	<i>Mechanical Pressurization Alternative</i>	
4.5.1-1	Stairwell pressurization system shall be designed so that a minimum 12.5 Pa pressure difference between the stairwell and the occupant area or smoke zone is maintained for buildings that are fully sprinklered.	
4.5.1-2	Stairwell pressurization system shall be designed so that a minimum 25 Pa pressure difference between the stairwell and the occupant area or smoke zone is maintained for buildings that are non-sprinklered or other than fully sprinklered.	
4.5.1-3	Pressurization air supply shall account allowance for open doors. A minimum 1 m/s airflow velocity shall be maintained across open doors with the pressure difference across the other closed doors and the smoke zone not be lower than 12.5 Pa.	
4.5.1-4	Minimum allowance of two (2) doors open shall be permitted for residential apartments and business occupancies that are not classified as high rise.	



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4.5.1-5	Minimum allowance for three (3) doors open shall be accounted to all exit stairwells in occupancies which are of public resort and are required to be pressurized. Where the stairwell connects three storeys, allowance for two (doors) open, the doors in fire floor and the final exit discharge, shall be permitted. Where the number of stories does not have the equivalency or less than the number of doors required for the stairwell to be opened; in this case the design shall consider the velocity criterion having either the door in the fire floor or final exit discharge open.	
4.5.1-6	Minimum allowance of three (3) doors open shall be accounted to all exit stairwells in high rise buildings	
4.5.1-7	The maximum pressure differential between the stairwell and the fire zone shall be determined by the required door opening force which shall not exceed 110 N.	
4.5.1-8	Pressurization air shall be supplied such that uniform pressure inside the stairwell is attained.	
4.5.1-9	Single injection system shall be permitted where the exit stairwell connects not more than five (5) floor levels or height of not more than 18 m to include basements.	
4.5.1-10	Single injection system shall be permitted for exit stairwells connecting more than five (5) floor levels or height of 18 m where engineering analysis confirms its applicability.	
4.5.1-11	Pressurization air injection points in a multiple injection system shall be distributed not more than three (3) floor levels apart, but in no case shall exceed 11 m.	
4.5.1-12	Pressurization air supply intake shall be located away from building exhausts which can cause smoke from the building being injected to the exit stairwell. A minimum separation distance of five (5) meters, measured horizontally, shall be maintained between air intakes and exhausts. Pressurization air supply intakes shall be oriented vertically by at least 1 m below building exhausts.	
4.5.1-13	Means of controlling the required pressure inside the stairwell shall be provided.	
4.5.2	<i>Natural Ventilation Alternative</i>	
4.5.2-1	Exit staircases accessed through open and externally located vestibules are deemed to satisfy natural ventilation alternative.	



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4.5.2-2	Exit staircases accessed through vestibule having a minimum net area of 1.5 sq. m (16 sq. ft.) opening in a wall facing an outer yard, court or public way that is at least 6.1 m (20 ft) wide are deemed to satisfy natural ventilation alternative. Side hung windows opening outward a minimum of 30° capable of being opened automatically through remote control switch linked to the building fire alarm system is an acceptable arrangement.	
	Exit staircase with fixed or automatic ventilation opening of not less than 50% of the total wall area at each floor/storey level in exit staircases located along perimeter walls of the building facing the outer courtyard or public way that is at least 6.1 m (20 ft) wide	
	Exit staircase with fixed or automatic ventilation opening of not less than 50% of the total wall area at each floor/storey level facing an air/light well that is open to the sky having a minimum clear width of 10 meters	<i>*** Note: Permitted for staircases in non-high-rise building that does not connect below ground or basement levels</i>
	Exit staircases with fixed or automatic opening having a minimum net area of 1.5 square meter at the top of the stairwell shaft	<i>***Note: Permitted for staircases in medium rise buildings that connects one floor level below ground or basement only.</i>
4.6	Smoke-stop and Fire Fighting Lobbies	
4.6.1	<i>Mechanical Pressurization Alternative</i>	
4.6.1-1	Fresh air supply at the rate equivalent to 10 ACH or that is capable of maintaining 12.5 Pa (0.05 in. w.g.) pressure difference between the smoke-stop or firefighting lobby and the smoke zone shall be designed for the smoke-stop or lobby pressurization system.	
4.6.1-2	The pressure in the lobby shall in no case be higher than the pressure in the stairwell.	
4.6.1-3	Means of controlling the required pressure in the lobby shall be provided.	



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4.6.2	Natural Ventilation Alternative	
4.6.2-1	Open and externally located lobbies are deemed naturally ventilated lobbies satisfying natural ventilation alternative.	
4.6.2-2	<p>Lobbies having openings on external wall meeting all of the following conditions are deemed naturally ventilated lobbies satisfying natural ventilation alternative:</p> <ul style="list-style-type: none"> a. a minimum net area of 1.5 sq. m (16 sq. ft.) or 25% of the floor area of the lobby, whichever is greater b. openings are located as near as practicable to the ceiling with the top of the opening at least 0.3 m (1 ft) below the ceiling of the lobby c. openings are facing an outer court, yard or public way that is at least 6.1 m (20 ft) width; or <p>c.1 when facing an air/light well, the well should be totally open to the sky and have an area of not less than 10 m² with no sides less than 3 m</p> <p>Note (c.1) : Permitted in non-high rise building having no floor levels below ground. Air/light well starts from ground level only.</p>	<p><i>Note (c.1) : Permitted in non-high rise building having no floor levels below ground. Air/light well starts from ground level only.</i></p>
	Lobbies located one floor level or 3.5 m below ground, may be ventilated through unobstructed openings having a minimum cross-sectional area of 1 m ² provided at the ceiling of the lobby and discharging directly to external of the building. Duct and/or shafts required to ventilate the lobby to external shall be constructed of materials having minimum 1 hr fire protection rating or equivalent rating of the lobby enclosure, whichever or greater.	
4.6.2-3	Smoke-stop or firefighting lobbies approached via cross ventilated corridors having fixed ventilation openings of not less than 50% of the corridor walls located in at least two of its externally opposing walls and with no part on the floor space of the corridor is farther than 12 m from the ventilation openings are deemed to satisfy natural ventilation alternative.	
4.7	Car Parks	
4.7.1	<i>Mechanical Ventilation/Smoke Control</i>	
4.7.1-1	Car park mechanical ventilation and smoke control systems employing duct works shall be designed in accordance with NFPA 88A and ASHRAE Handbook.	
4.7.1-2	Ventilation exhausts providing minimum 10 ACH shall deemed to satisfy smoke control requirements. Duct works shall be designed with high level and low level exhaust inlets. Low level exhaust inlets shall constitute at least 50% of the required smoke extraction area.	
4.7.1-3	Car park ventilation systems employing thrust fans shall be confirmed through performance based analysis. The use of CFD fire modeling and the	



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	following input parameters shall be considered in the design.	
4.7.1-4	Minimum design fire size for enclosed parking structures that permits only passenger cars shall be according to anticipated fuel load of one car but in no case be less than <ul style="list-style-type: none"> a) 4 MW (2 m x 5 m) for car parks protected by supervised automatic sprinkler system b) 8 MW (5 m x 5 m) for car parks not protected with supervised automatic sprinkler system 	
4.7.1-5	Minimum design fire size for enclosed car parking structures that permits goods carrying vehicles shall consider the combined fuel load of the car and the goods.	
4.7.1-6	Assumed design fire for a car shall be flaming polyurethane.	
4.7.1-7	The design fire must be considered to be in the most onerous location, preferably the most remote location from the exhaust points and at a point in-between two zones for zoned systems.	
4.7.1-8	The following acceptance criteria at 1.8 m above the floor level shall be attained within a 10 m radius location of the design fire during the first twenty (20) minutes of the fire <ul style="list-style-type: none"> a) Minimum 10 m visibility upstream of the fire b) Temperature of the smoke layer does not exceed 60°C 	
4.7.1-9	Duration of CFD simulation must be a minimum of 30 minutes. Grid size must be a maximum of 0.2 m x 0.2 m x 0.2 m within 10 m of the design fire and maximum 0.4 m x 0.4 m x 0.4 m for other areas.	
4.7.1-10	Design shall include a margin of safety considering possible loss of thrust fans. The analysis shall include a sensitivity study that shows that even with the loss of a thrust fan nearest the fire, the acceptance criteria are still met.	
4.7.1-11	Exhaust fans must be configured such that failure of any single fan will not result in more than 50% reduction of air flow.	
4.7.1-12	Exhaust fans shall have alternate source of power in accordance with Section 10 hereof.	



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4.7.1-13	Where multiple levels of enclosed car parks are protected by the same ventilation system, the size of the equipment as well as the inlets and outlets for the make-up and exhaust air must be adequately designed to allow for simultaneous CO dilution of adjacent zones and other levels at the minimum rate of 6 ACH.	
4.7.2	<i>Natural Ventilation</i>	
4.7.2-1	Car parks with openings that is 40% of its total enclosure area in at least two of its opposing walls is deemed satisfying natural ventilation alternative	
4.7.3	<i>Use of Smoke Vents</i>	
4.7.3-1	Provisions of smoke vents shall be permitted in enclosed car parks of residential apartments and business occupancies whose aggregate floor area does not exceed 1000 sq. m.	
4.7.3-2	Provisions of smoke vents shall be permitted for car parks of residential apartments and business occupancies 1000 sq m or less that is located not more than two (2) levels and 6 m below ground level.	
4.7.3-3	Number and sizes of vents shall be such that aggregate vent opening is equivalent to not less than 2.5% of the floor being served. No smoke vent shall be smaller than 0.6 m diameter or width.	
4.7.3-4	Vents shall be distributed along the perimeter, on the sides or ceiling level of the car park with the vents spaced no farther than 30 m from each other.	
4.7.3-5	Separate vent outlets shall be provided for each floor level.	
4.7.3-6	Where ducts are required to connect the vents to its outlets outside, the duct shall be constructed to provide 1 hour fire resistance.	
4.7.3-7	Smoke vents which are kept closed during normal or non-fire condition shall be designed to operate automatically.	
4.7.3-8	In car parks provided with automatic sprinklers, the provision of smoke vents shall be designed such that it does not affect the sprinkler activation.	
4.8	Atrium and other Large Spaces	
4.8.1	Smoke control system designed in accordance with NFPA 90 shall be provided for atriums or similar communicating spaces in buildings that connects	



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	more than 3-storeys.	
4.8.2	Smoke control system designed in accordance with NFPA 92 shall be provided to any compartment or part in a building which has a total floor area of more than 5000 sq. m	
5	Fire Command Center	
5.1	<p>Fire command center for fire department operations shall be provided and comply with the following requirements:</p> <ul style="list-style-type: none"> - Located along external wall of the building with safe and direct access from external, or as recommended and approved by QCDD - Separated from the remainder of the building by not less than 2-hrs enclosure - Room shall have a free working space of at least 9m² minimum area (any side least dimension of 2.5m) with at least 1m unobstructed clearance from all equipment. - Contain the smoke control panels and other control equipment relative to the building's fire alarm - Can serve the function of fire fighter's smoke control station - With provisions for ventilation and smoke control - Comply with NFPA 72 requirements 	
6	Smoke Control Panel	
6.1	<p>The fire fighter's control panel shall provide control capability over the equipment of the smoke control system in the building by:</p> <ol style="list-style-type: none"> a. ON-AUTO-OFF control over individual equipment of the smoke control system that can also be controlled from other sources in the building b. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control system that can also be controlled from other sources in the building c. ON-OFF or OPEN-CLOSE or START-STOP control over smoke control system and other critical equipment associated with fire or smoke emergency and that can only be controlled from the fire fighter's control panel 	<p><i>Manual activation/de-activation Switch</i></p> <p><i>Override Switch</i></p>
6.2	Switch for manual control of the system shall be of rotary selector type	<i>Use of push button type switch is discouraged</i>



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7	Equipment	
7.1	Equipment such as, but not limited to, fans, ducts, fire dampers, smoke dampers and combination fire-smoke dampers shall be suitable for its intended use and approved by QCDD.	
8	Detection and Control Systems	
8.1	Fire detection systems required to provided control signals to mechanical smoke control systems or elements thereof shall comply with NFPA 72. Such detection systems together with its control unit shall be listed for smoke control applications.	
9	Smoke Control System Activation	
	<p>Activation of smoke control systems must be automatic using either of the following initiating methods:</p> <ul style="list-style-type: none"> a) Sprinkler flow switch b) Smoke detection system c) Heat detection system <p>Analysis on the possible effect of the smoke control (ventilation) system on the sprinkler system response shall be considered in the design.</p>	
10	Power Supply Systems	
10.1	Smoke control systems shall be supplied with two (2) power sources. Primary power shall be from the normal building power supply system but shall have separate or independent connection from the building non-fire safety related installations. Secondary power supply shall be from an approved standby power supply system complying to NFPA 101.	
10.2	Transfer from the normal to full standby power shall be automatic and within 60 seconds of failure of the primary power supply.	
10.3	Wiring for operation and control of smoke control systems shall be connected ahead of the main disconnect and protected against possible exposure to fire.	
10.4	Mechanical smoke control systems that are designed as a combined system or which are used to serve multiple control zones (e.g. stairwell and its	



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	<p>associated smoke-stop lobby) shall have both a backed up power supply and equipment, such as standby fan.</p> <p>One additional fan is required as standby fan for each system feed by a single fan.</p> <p>Where a particular control zone is being protected by a mechanical smoke control system having two or more fans of equal capacity, the system could be backed up by an additional fan having the same capacity of the other fans.</p> <p>Where a particular control zone is being protected by a mechanical smoke control system having more than one fan of different capacities, the system could be backed up by an additional fan having the same capacity of the largest fan.</p>	
11	Commissioning and Acceptance Testing	
	The commissioning and acceptance testing of smoke control systems must be carried out in the presence of a QCDD inspector. The procedure must consist of a hot smoke test prepared and carried out in accordance with AS 4391. For jet fans, BS 7346, Part 7 may be used as a guide.	



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GA 8.2.3	FIRE (EMERGENCY) COMMAND CENTER	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Application	
1.1	A Fire Command Center shall be provided in any High-rise Buildings or buildings that requires any of the following installations:	
1.1.1	Emergency Voice Communication System; and	
1.1.2	Smoke Control System.	
1.2	In other than high-rise Residential Buildings, instead of a dedicated fire rated fire (emergency) command center; lobbies or other spaces adjacent to the main entrance/s may be permitted.	
2.0	Location	
2.1	Fire Command Center shall be located:	
2.1.1	Adjacent to the fire lift lobby at the designated storey of the building (i.e. the lobby of the building on the ground floor or immediately adjacent thereto) and	
2.1.2	With safe access from outside and provided with prominently marked exterior entrances.	
2.1.3	Alternatively at the logical main entrance where the fire response team will report if there is no fire lift in the building.	
3.0	Equipment	
3.1	Fire command centre shall contain control and supervisory equipment/panel in accordance with NFPA 101 and he following:	
3.1.1	Main Fire Alarm Panel (MFAP)	
3.1.2	Emergency voice communication control panel	
3.1.3	Firefighters' smoke-control station (NFPA 92A)	



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4.0	Size	
4.1	Fire Command Center shall be adequately size to house all above-mentioned equipment and a free working space of at least 9m ² minimum area (least dimension 2.5m) with at least with 1m unobstructed clearance from all equipment.	
5.0	Compartment	
	Fire Command Center shall have not less than 2 hours fire resistance separation from other parts of the building	
6.0	Emergency Lighting and Power	
6.1	Fire Command Centre shall be provided with emergency lighting in accordance with NFPA 101 and 70. All lighting and equipment essential for emergency operation in the centre shall also be connected to secondary power supply by fire resistant cables complying with NFPA 70.	
7.0	Ventilation Systems	
7.1	Air-conditioning or Mechanical Ventilation (ACMV) where required for the Fire Command Centre shall be provided with secondary power supply and shall have ductwork independent of any other ductwork serving other parts of the building. Any part of the supply duct running outside the Fire Command Centre which it serves shall either be enclosed or constructed to give a fire resistance rating of at least 2-hours. The minimum outdoor air supply in non-air-conditioned Fire Command Centre shall be 6 air-changes per hour.	
8.0	Services	
	Services and equipment not serving the Fire Command Centre shall not pass through the center.	



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GA 9.0	EXISTING BUILDINGS	
	GA_9.0 – Revisions_2015	
<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	Legal Mandate:	
1.1	<i>Law No.9 of 2012 Revisions 2012 (13) Law Regulating the Practice of Engineering Profession in the State of Qatar.</i>	
2.0	Application:	
2.1	This Guideline apply only to the following:	
2.1.1	Building constructed prior to the official adoption of NFPA Codes & Qatar Civil Defense Fire Safety Standards (QCD-FSS) and Procedures.	
2.1.2	Building Rehabilitation (Renovation, Addition, Repair, Modification, Reconstruction, Change of Use and/or Occupancy)	
2.1.3	This guideline will not apply to Buildings covered by item 2.1.1 and 2.1.2 that has an area of less than 500 square meters and having habitable height not exceeding 15.0 meters.	
3.0	Objectives	
3.1	The objective of this Guideline is to:	
3.1.1	Reduce the loss of lives and damage to property by quantifying the risk and hazards of the existing building;	
3.1.2	Provide solution of preventive or protective measures to the identified risk and hazards and non-compliances to the prescriptive requirements.	
3.1.3	Maintain or improved the health, safety, and welfare of occupants in existing buildings.	
4.0	Fire Safety Provisions	
4.1	Fire Safety Assessment Report. A Fire and Life Safety Assessment Report must be provided identifying the following:	
4.1.1	The risk and hazards of the existing building	
4.1.2	All the present, existing and/or installed fire safety system & provisions;	
4.1.3	The non-compliances with the latest prescriptive fire safety requirements in QCD-FSS and the NFPA Codes.	



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GA 9.0	EXISTING BUILDINGS	
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4.2	Equivalent Alternatives. For non-compliance to the prescriptive due to the nature of the existing or rehabilitated building/s an equivalent alternatives will be permitted:	
4.2.1	Performance-Based Option	
4.2.2	Waiver of the prescriptive requirements with provisions for equivalent alternative solutions.	
4.3	Approval of Alternatives	
4.3.1	The Director of the Qatar Civil Defense Fire Prevention Department (QCD-FPD) shall determine whether the proposed alternative methods or solutions are at least equivalent to the prescribe requirements.	
4.3.2	Approved equivalent alternatives will be recognized as being compliance with the prescriptive code requirements.	
4.4	Plan Submissions Plan submissions and preparation procedures:	
4.4.1	QCD standard format for each type of submissions must be followed: <ol style="list-style-type: none"> 1. BP-Building Plan / Life Safety Plan; 2. FP/FF-Fire Protection - Fire Fighting Plans; 3. FP/FA-Fire Protection Plans - Fire Alarm Plans; and when applicable, <ol style="list-style-type: none"> 4. ACMV-Air-conditioning and Mechanical Ventilations Plans; 5. Gas Plans. 	
4.4.2	Plans must be updated showing all required fire safety provisions discussed in the Fire Assessment Report.	
4.5	Plan Approvals	
4.5.1	Final Plan approval will be given once all issues including any proposed equivalent alternative has been granted approval by the QCD-FPD Director.	



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GA 9.0	EXISTING BUILDINGS	
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<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
5.0	Submission And Approvals	
5.1	Procedures in the submission and approvals of Existing Buildings: Plans are required to be submitted through QCD Online Permit System portal with all the related documents as required for a normal Plan Approval application.	
5.2	Any identified non-compliances must be complied according to the prescribe code requirements.	
	In cases of non-compliances to the prescribe requirements and where equivalent alternatives are proposed, the following are the required submissions: <ol style="list-style-type: none"> 1. Application Letter (in Arabic & English Text) addressed to QCD-FPD Director and submitted through the Head, of QCD-FPD Engineering Plans Section 2. Reports, calculations, analysis and other related documents of the proposed equivalent alternatives. 3. Related Plans (A3 sizes) and drawings. 4. And other essential information. 	
5.3	After the initial submissions through the Permit System portal and if there were identified non-compliances that can be complied according to the prescribe requirements, simultaneously, the Plans can be re-issued for review and any Alternative Solution submitted for evaluation by the Committee on Alternative Solutions and waiver Applications.	
5.4	Upon compliance to all the prescribe code requirements and any proposed equivalent alternative approved by QCD-FPD Director, all Plans, the approved alternative solutions and other related documents shall then be re-issued through the Permit System for final approval.	



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<i>Item No.</i>	<i>Provisions</i>	<i>Notes</i>
1.0	General Requirements.	
1.1	Applications. New buildings or portion thereof used as Masjid with an occupant load exceeding fifty (50) person.	
1.1.1	Administration. The General Directorate of Civil Defence general fire safety requirements shall apply.	
1.1.2	General. The General Directorate of Civil Defence general fire safety requirements shall apply.	
1.2	Classification Of Occupancy. Classification of occupancies shall be Assembly Occupancy.	
1.3	Multiple Occupancies.	
1.3.1	General. Multiple occupancies shall comply with either of item 1.3.2 or 1.3.3.	
1.3.2	Mixed occupancies	
1.3.2.1	Each portion of the building shall be classified as to its use.	
1.3.2.2	The means of egress facilities, construction type, protection, and other safeguards in the building shall comply with the most restrictive fire and life safety requirements of the occupancies involved.	
1.3.3	Separated Occupancies	
1.3.3.1	Where separated occupancies are provided, each part of the building comprising a distinct occupancy, shall be completely separated from other occupancies by fire-resistive assemblies.	
1.3.3.2	Occupancy separations shall be vertical, horizontal, or both or, when necessary, of such other form as required to provide complete separation between occupancy divisions in the building.	
1.3.4	Assembly and Residential Occupancies in Masjid.	
1.3.4.1	The provisions of this requirements shall apply to the assembly occupancy Prayer Halls.	



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1.3.4.2	The General Directorate of Civil Defence general fire safety requirements on Dwellings (<i>refer to Annex A, attached to this requirements</i>) shall apply to residential occupancies Imam/Muezzin House.	
1.4	Definitions.	
1.4.1	Special Definitions.	
1.4.1.1	Ablution Facilities. Ablution fountains or other facilities for washing and cleansing of body before prayer.	
1.4.1.2	Sahan. A courtyard that serves as an entryway and prayer hall extension.	
1.4.1.3	Imam/Muezzin House. Islamic worship leaders and mosque administrators house or sleeping room/s.	
1.4.1.4	Masjid. An Arabic word for Mosque use for Islamic praise and worship during prayer times.	
1.4.1.5	Mosque. An Islamic building assembly oriented to Makah, use for praise and worship during prayer times for five times a day.	
1.4.1.5.1	The mosque are compose of Prayer Hall use for prayer assembly, Ablution for washing and cleansing of body before prayer, Minaret tower use for calling for prayers and Muezzin and Imam house/ Room use as dormitory for Muezzin and facilitator of the mosque.	
1.4.1.6	Mihrab. A semicircular niche in the wall of a mosque that indicates the Qibla; that is, the direction of the Kaaba in Mecca and hence the direction that Muslims should face when praying.	
1.4.1.7	Minaret. A high tower attached to mosque, use by Muezzin to call and summons the people to prayer.	
1.4.1.8	Prayer Hall. Also known as the Musallah is an assembly hall and the main part of mosque which is oriented to Makah.	
1.4.1.9	Riwaq. An arcade or portico that serves as the transition space between the interior main prayer halls and outdoor spaces, sahan or courtyard.	
1.5	Classification Of Hazard Of Contents.	
1.5.1	Contents of assembly occupancy Masjid shall be classified as Ordinary Hazards.	



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1.6	Minimum Construction Requirements.	
1.6.1	Masjid shall be limited to the building construction Type I, Type II and Type III in accordance with NFPA 5000 Section 7.2	
1.7	Occupant Load.	
1.7.1	Musallah/Prayer Halls occupant load shall not exceed one person in 7 ft ² (0. 65 m ²).	
1.7.2	Sahan/Courtyard occupant load shall not exceed one person in in 15 ft ² (1.4 m ²) .	
1.7.3	Life Safety Evaluation. Where the occupant load exceeds 6000, a life safety evaluation shall be performed in accordance with item 4.1 of this requirement.	
2.0	Means Of Egress Requirements.	
2.1	General.	
2.1.1	All means of egress shall be in accordance with NFPA 101 Chapter 7 (<i>refer to Annex A, attached to this requirements</i>) and as specified in this requirement.	
2.2	Means Of Egress Components.	
2.2.1	Doors.	
2.2.1.1	Door openings in the means of egress shall not be less than 32 in. (810 mm) in clear width, except under any of the following conditions: <ol style="list-style-type: none"> 1. Where a pair of door leaves is provided, one door leaf shall provide not less than a 32 in. (810 mm) clear width opening. 2. Door openings serving a building or portion thereof not required to be accessible to persons with severe mobility impairments shall be permitted to be 28 in. (710 mm) in door leaf width. 	
2.2.1.2	Door leaves required to be of the side-hinged or pivoted-swinging type shall swing in the direction of egress travel under any of the following conditions: <ol style="list-style-type: none"> 1. Where serving a room or area with an occupant load of 50 or more. 2. Where the door assembly is used in an exit enclosure. 	



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2.2.2	Stairs.	
2.2.2.1	Where the total occupant load of all stories served by the stair is fewer than 50, the minimum width clear of all obstructions, except projections not more than 41/2 in. (114 mm) at or below handrail height on each side, shall be 36 in. (915 mm).	
2.2.2.2	Where stairs serve occupant loads exceeding 50, the minimum width clear of all obstructions, except projections not more than 41/2 in. (114 mm) at or below handrail height on each side, shall be in accordance with Table 7.2.2.2.1.2(B).	
2.2.3	Ramps. Every ramp used as a component in a means of egress shall be in accordance with Table 7.2.5.2 (a).	
2.2.3.2	Ramped aisles not part of an accessible means of egress shall be permitted to have a slope not steeper than 1 in 8.	
2.3	Capacity Of Means Of Egress.	
2.3.1	Exits from the masjid shall be sized appropriately.	
2.3.2	The capacity of means of egress shall be in accordance with the following: <ol style="list-style-type: none"> 1. Stairways - 7.6 mm/person 2. Level Components and Ramps – 5.0 mm/person 	
2.3.3	Main Entrance/Exit. The main entrance/exit shall be of a width that accommodates two-thirds of the total occupant load.	
2.3.4	Other Exits. Each level of the Masjid shall have access to the main entrance/exit and shall be provided with additional exits of a width to accommodate not less than one-half of the total occupant load served by that level.	
2.3.5	Minimum Corridor Width. The width of any exit access corridor serving 50 or more persons shall be not less than 44 in. (1120 mm).	
2.4	Number Of The Means Of Egress.	
2.4.1	The number of means of egress from any story, or portion thereof shall be not less than two (2).	



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2.4.2	The number of means of egress from any story or portion thereof, shall be as follows: <ol style="list-style-type: none"> 1. Occupant load more than 500 but not more than 1000 — not less than 3 2. Occupant load more than 1000 — not less than 4 	
2.5	Arrangement Of The Means Of Egress	
2.5.1	Exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable.	
2.5.2	Exits, exit accesses, or exit discharges 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 exits, exit accesses, or exit discharges.	
2.5.3	Exits through an enclosed or protected stair serving the Imam & Muezzin House from the upper stories shall not pass through areas of the Masjid at the level of exit discharge.	
2.5.4	A common path of travel shall be permitted for the first 20 ft. (6100 mm) from any point where the common path serves any number of occupants.	
2.5.5	A common path of travel shall be permitted for the first 75 ft. (23 m) from any point where the common path serves not more than 50 occupants	
2.5.6	Dead-end corridors shall not exceed 20 ft. (6100 mm).	
2.5.7	A fire assembly point for the total worshipper population of the masjid shall be provided.	
2.5.8	If the fire assembly point is not within the masjid plot, it should be directly accessible and clearly signposted from it.	
2.6	Travel Distance To Exits.	
2.6.1	Exits shall be arranged so that the total length of travel from any point to reach an exit shall not exceed 200 ft. (61 m) in the Masjid.	
2.7	Exit Discharge.	
2.7.1	Exit Termination. Exits shall terminate directly, at a public way or at an exterior exit discharge.	



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2.7.2	Means of egress shall be permitted to terminate in the Sahn or Courtyard provided that it is open to the sky and have the required number of exit that can accommodate 100 percent of the required egress capacity from both the courtyard and the main areas of the Masjid.	
2.7.3	Exit discharges shall be arranged to meet the remoteness criteria of item 2.5.2 of this requirement.	
2.8	Illumination Of Means Of Egress.	
2.8.1	Means of egress shall be illuminated.	
2.8.2	Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use.	
2.9	Emergency Lighting.	
2.9.1	Emergency lighting facilities for means of egress shall be provided.	
2.9.2	Emergency lighting in the courtyard should provide illumination to a public way.	
2.10	Marking of Means of Egress.	
2.10.1	Exits, other than main exterior exit doors that obviously and clearly are identifiable as exits, shall be marked by an approved sign that is readily visible from any direction of exit access.	
2.10.2	Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach the exit is not readily apparent to the occupants.	
2.10.3	Evacuation diagrams in accordance shall be provided.	
2.10.3.1	Where a posted floor evacuation diagram is required, floor evacuation diagrams reflecting the actual floor arrangement and exit locations shall be posted and oriented in a location and manner acceptable to the authority having jurisdiction.	
3.0	Protection	



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3.1	Protection Of Vertical Openings. Any vertical opening shall be enclosed or protected unless otherwise permitted in item 3.1.1.	
3.1.1	Stairs or ramps shall be permitted to be unenclosed between balconies or mezzanines and main assembly areas located below, provided that the balcony or mezzanine is open to the main assembly area.	
3.2	Protection From Hazards.	
3.2.1	Only the following types of cooking equipment shall be permitted. <ol style="list-style-type: none"> 1. Outdoor equipment 2. Portable equipment not flue-connected 3. Equipment used only for food warming 	
3.3	Interior Finish.	
3.3.1	Corridors, Lobbies, and Enclosed Stairways.	
3.3.1.1	Interior wall and ceiling finish materials shall be Class A or Class B in all corridors and lobbies and shall be Class A in enclosed stairways.	
3.3.2	Assembly Areas.	
3.3.2.1	Interior wall and ceiling finish materials shall be Class A or Class B in the Masjid Areas.	
3.3.3	Interior Floor Finish.	
3.3.3.1	Interior floor finish in exit enclosures and exit access corridors and in spaces not separated from them by fire rated corridor walls shall be not less than Class II.	
3.3.3.2	Carpet and carpet like interior floor finish shall comply with ASTM D2859 <i>Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.</i>	
3.4	Detection, Alarm, And Communications Systems.	



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3.4.1	Fire Alarm System.		
3.4.1.1	Fire Alarm System shall be provided in all Masjid.		
3.4.1.2	Initiation of the required fire alarm system shall be by manual means.		
3.4.1.3	Masjid with occupant load of more than 300, automatic detection shall be provided in all hazardous areas that are not normally occupied, unless such areas are protected throughout by an approved supervised automatic sprinkler system.		
3.4.1.4	The required fire alarm system shall activate an audible and visible alarm inside the building to initiate emergency action.		
3.4.2	Manual Pull Stations.		
3.4.2.1	Provide manual pull stations at the following locations: <ol style="list-style-type: none"> 1. Install manual pull stations at locations max. 1.5 meters distance from exit doors and 1.2 to 1.5 meters above finish floor level. 2. Equipment rooms. 3. At doors leading to stairways on floors above and below the main floor. 4. In normal paths of exits highly visible locations so the travel distance from any point in the building to a manual pull stations does not exceed 30 meters. 		
3.4.3	Notification Appliances		
3.4.3.1	Horns or bells.		
3.4.3.1.1	Provide audible notification appliances throughout the building as required to achieve the decibel levels required by NFPA 72, Section 18.4.3. Do not install audible notification appliances in stairways or near exit discharges. The average and minimum decibel levels required for the various occupancies at SNL are listed below: [72:Table A.18.4.3]		
3.4.3.1.2	Occupancy Dwelling Areas	Avg. Ambient dBA 55	Minimum dBA Required 70



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	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Assembly Areas</td> <td style="width: 10%; text-align: center;">55</td> <td style="width: 10%; text-align: center;">70</td> </tr> <tr> <td>Storage Areas</td> <td style="text-align: center;">55</td> <td style="text-align: center;">70</td> </tr> <tr> <td>Mechanical Rooms</td> <td style="text-align: center;">90</td> <td style="text-align: center;">105</td> </tr> </table>	Assembly Areas	55	70	Storage Areas	55	70	Mechanical Rooms	90	105	
Assembly Areas	55	70									
Storage Areas	55	70									
Mechanical Rooms	90	105									
3.4.3.2	Strobes.										
3.4.3.2.1	Provide visual notification appliances in all common areas (e.g., restrooms, conference rooms, break areas, corridors, hallways, stairways, lobbies), open areas with calculated occupant loads of 10 or more occupants, and in locations with a high ambient sound level (e.g., mechanical rooms).										
3.4.3.3	Emergency Responder Appliance:										
3.4.3.3.1	At the main entrance(s) to the building, provide a weatherproof outdoor-listed strobe on the exterior wall of the building that is readily visible to emergency responders for indicating when the building fire alarm system is in an ALARM condition.										
3.5	Extinguishment Requirements.										
3.5.1	Portable fire extinguisher.										
3.5.1.1	Portable fire extinguisher shall be provided throughout the building in accordance with NFPA 10 or the following:										
3.5.1.2	Provide fire extinguishers of type, size, and capacity mounted in brackets or inside a cabinet. <ul style="list-style-type: none"> 1. A minimum of 10-lb (5-kg), multi-purpose, UL listed, dry chemical fire extinguisher with a minimum rating of 4-A:40-B:C. 										
3.5.1.3	Mounting Brackets: Manufacturer’s standard steel bracket, designed to secure extinguisher, of sizes required for types and capacities of fire extinguisher indicated, with plated or baked-enamel finish.										
3.5.1.4	Fire extinguishers installed outside shall be located in approved weather-tight fire extinguisher cabinets										
3.5.2	Fire Extinguishers Cabinet										
3.5.2.1	Unless specified otherwise on construction drawings, provide fire extinguisher cabinet of type, size, and rating as indicated below, or equivalent.										



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Trim Style & Projection	Inside Box Dimensions (inches) (H x W x D)									
Recessed	24 x 9½ x 6									
Semi-recessed	24 x 9½ x 6									
Surface Mounted (outdoor use only)	27¼ x 11½ x 8½									
3.5.2.2	Cabinet Size: The minimum inside box dimensions shall be 24”H x 9½”W x 6”D									
3.5.2.3	Cabinet Construction: Provide manufacturer’s standard box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.									
3.5.2.4	<p>Fire-Rated Cabinets: Listed and labeled to meet requirements of ASTM E814 for fire-resistance rating of wall where it is installed. Construct fire-rated cabinets with double walls fabricated from 0.0478-inch (1.2-mm) thick, cold-rolled steel sheet lined with minimum 5/8-inch (16-mm) thick, fire-barrier material. Provide factory drilled mounting holes.</p> <ol style="list-style-type: none"> 1. Cabinet Metal: Enameled-steel sheet. 2. Shelf: Same metal and finish as cabinet. 									
3.5.2.5	<p>Cabinet Mounting. Suitable for the following:</p> <ol style="list-style-type: none"> 1. Recessed: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated. 2. Semi-recessed: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated. 3. Surface Mounted: Cabinet box fully exposed and mounted directly on wall. 									
3.5.2.6	Cabinet Trim Style. Fabricate cabinet trim in one piece with corners mitered, welded and ground smooth.									
3.5.2.7	Cabinet Trim Material. Steel sheet.									



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3.5.2.8	Door Material. Steel sheet.	
3.5.2.9	Door Glazing: Clear Float Glass, ASTM C1036, Type 1, Class 1.	
3.5.2.10	Door Style: Vertical duo panel with frame.	
	Door Construction: Provide a minimum ½-inch (13 mm) thick door frames	
3.5.2.11	Door Hardware: Provide manufacturer’s standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide recessed door pull and friction latch. Provide continuous-type hinge permitting door to open 180 degrees.	
3.5.2.12	Cabinet and Door Finishes: Provide manufacturer’s standard baked-enamel paint for the exterior and interior of the cabinet and doors.	
3.6	Air-Conditioning And Mechanical Ventilation System	
3.6.1	General Design Requirements.	
3.6.1.1	Where provided for the Masjid, air-conditioning and ventilation system shall be designed according to applicable NFPA and QCDD standards and other internationally recognized engineering standards.	
3.6.2	HVAC System.	
3.6.2.1	Ventilation rates. Minimum requirements for ventilation rates shall be in accordance with Qatar _____/local requirements.	
3.6.2.2	HVAC system. HVAC system employing air handling units designed to supply conditioned and filtered air for occupant comfort shall conform to internationally recognized engineering standards.	
3.6.2.3	Positive pressure ventilation. Positive pressure ventilation should be maintained to prevent the ingress of heat, humidity, dust and other unwanted particles in air into the masjid.	
3.6.2.4	Ventilation system air Intakes.	



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3.6.2.4.1	All air intakes including doors and operable windows, shall be designed with minimum separation distance from possible sources of fire.	
3.6.2.4.2	Outside air intakes shall be located to avoid possibility of drawing in combustible materials or flammable vapors into the building.	
3.6.2.4.3	Outside air intakes shall be located to minimize the introduction of smoke into the building.	
3.6.2.4.4	Air intakes shall be located with reference to combustible buildings and hazardous facilities to minimize possible introduction of fires from these buildings/facilities.	
3.6.2.4.5	Outside air intakes shall be protected by screens or louvers made from corrosion resistant materials.	
3.6.2.5	Ventilation system exhaust air discharges.	
3.6.2.5.1	All exhaust air discharges shall be located away from public areas.	
3.6.2.5.2	All exhaust air discharges shall be located away from air intakes so as to avoid recirculation of contaminated air, smoke or other harmful gases into the building.	
3.6.2.6	Ventilation air ducts.	
3.6.2.6.1	Duct materials and joints shall be capable of withstanding probable temperatures and pressures to which they could be exposed.	
3.6.2.6.2	Ducts shall be constructed and installed with due consideration for structural strength and durability in accordance with recognized good engineering practices.	
3.6.2.6.3	Ducts designed to convey smoke or designed as part of smoke extraction system shall have minimum protection rating of 250°C for 2 hours.	
3.6.2.7	Automatic dampers. Automatic dampers, regardless of the purpose for which the same will be installed, shall be approved and listed, conforming to requirements of recognized standards.	
3.6.2.8	Fans and AHUs.	



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3.6.2.8.1	Fans, AHUs and its associated components or accessories shall be suitable for its intended use.	
3.6.2.8.2	Fans, AHUs and its associated components or accessories shall be capable of withstanding probable temperatures for which they could be exposed.	
3.6.2.8.3	Fans and AHUs shall be located, arranged and installed to afford access for inspection and maintenance.	
3.6.2.8.4	Fans and AHUs shall shut down automatically upon receipt of a fire alarm from installed fire protection systems in the building.	
3.6.3	Smoke Exhaust/Extraction System	
3.6.3.1	Where provided in the building, smoke exhaust/extraction system shall be designed in accordance with applicable standards.	
3.6.3.2	Smoke layer. The height of the lowest horizontal surface of the smoke layer interface shall be maintained at least 1830 mm (6 ft) above any walking surface within the fire zone that forms part of the required egress system.	
3.6.3.3	Design fire. Engineering analysis shall be performed in determining the design fire. Such analysis shall consider among others the type of fuels available in the area, fuel characteristics, fuel load, heat release rates, characteristics of the fire likely to be produced and interaction with automatic sprinkler system, where provided in the building.	
3.6.3.4	Exhaust fans and associated components designed for smoke exhaust/extraction shall be rated and certified according to the probable temperature to which they can be exposed.	
3.6.3.5	Fans shall be approved for specific installation.	
3.6.3.6	Fans shall be rated at minimum 250°C for 2 hours.	
3.6.3.7	Fans shall be located, arranged and installed to afford access for inspection and maintenance.	
3.6.3.8	Exhaust from toilets and ablution areas shall not be recirculated.	
3.6.3.9	Separate or independent air exhaust/extraction system discharging directly to external shall be provided for areas or rooms containing hazardous chemicals.	



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3.6.3.10	Smoke exhaust/extraction system shall be capable of being operated automatically and manually.	
4.0	Special Provisions	
4.1	Life Safety Evaluation.	
4.1.1	Where a life safety evaluation is required it shall comply with the following: <ol style="list-style-type: none"> 1. The life safety evaluation shall be performed by persons acceptable to the authority having jurisdiction. 2. The life safety evaluation shall include a written assessment of safety measures for conditions listed in item 4.1.2. 3. The life safety evaluation shall be approved annually by the authority having jurisdiction and shall be updated for special or unusual conditions. 	
4.1.2	Life safety evaluations shall include an assessment of the following conditions and related appropriate safety measures: <ol style="list-style-type: none"> 1. Nature of the events and the participants and attendees 2. Access and egress movement, including crowd density problems 3. Medical emergencies 4. Fire hazards 5. Permanent and temporary structural systems 6. Severe weather conditions 7. Earthquakes 8. Civil or other disturbances 9. Hazardous materials incidents within and near the facility 10. Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility 	
4.1.3	Life safety evaluations shall include assessments of both building systems and management features upon which reliance is placed for the safety of facility occupants, and such assessments shall consider scenarios appropriate to the facility.	



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4.1.2	<p>Life safety evaluations shall include an assessment of the following conditions and related appropriate safety measures:</p> <ol style="list-style-type: none"> 11. Nature of the events and the participants and attendees 12. Access and egress movement, including crowd density problems 13. Medical emergencies 14. Fire hazards 15. Permanent and temporary structural systems 16. Severe weather conditions 17. Earthquakes 18. Civil or other disturbances 19. Hazardous materials incidents within and near the facility 20. Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility 	
4.1.3	<p>Life safety evaluations shall include assessments of both building systems and management features upon which reliance is placed for the safety of facility occupants, and such assessments shall consider scenarios appropriate to the facility.</p>	