FIRE FIGHTING SYSTEM GUIDELINES

FFS_G1	FIRE FIGHTING SYSTEM	
	Annex_FFS Guidelines	Revisions_2021
Item	**Provisions**	**Notes**
1.0	**FIRE PROTECTION WATER SUPPLIES**	
1.1	Water Supplies quantities shall be determined with the use of the fire code including the QCD Particular Requirements and the NFPA Water supplies shall be secure and dedicated for fire protection use only	Applicable Codes
1.2	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%. Water tank has to be approved from QCD Product and Equipment Safety Divisions.	Tank Construction.
1.3	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. 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. The effective capacity shall also be clearly indicated on the tank in lettering of a minimum height of 100 mm.	Tank Capacity
1.4	Each water tank shall have the following minimum attachments:	Tank Attachments
1.4.1	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.	
1.4.2	Visual water level indicator of non-combustible construction.	
1.4.3	Balance valve.	
1.4.4	Drain valve having a minimum size shall be 80mm nominal diameter.	
1.4.5	Suction connections.	
1.4.6	Test return pipe(s).	
1.4.7	Overflow pipe of minimum size, one diameter larger than the inlet pipe.	
1.4.8	All pipe and other openings into the tank shall be fitted with devices to prevent the ingress of insects.	

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1.5	1.5 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.	Fire Pumps
1.6	1.6 Fire pumps shall be sized and selected in accordance with the NFPA 20 to meet the single largest system demand	Pump Size
2.0	**RISING MAIN FOR FIRE FIGHTING**	
2.1	The type of rising main system shall be provided appropriate to the building as follow:	Type
2.1.1	Dry Rising Mains	
2.1..1.a	Any floor at habitable height beyond 9M and not exceeding 28M above ground level.	
2.1.1.b	One basement exceeding 1115 square meters in gross floor area.	
2.1.1.c	One basement less than 1115 square meters in gross floor area and ≥ 6.1 m below grade.	
2.1.1.d	One up to four basement levels below Level of Exit Discharge (LED).	
2.1.2	Wet Rising Mains	
2.1.2.a	For building having a habitable height exceeding 28M above the ground level.	
2.1.2.b	More than Four basement levels below LED	
2.1.3	Separate dry and wet rising main systems in a building may be permitted by QCD	
2.2	Number and distribution of rising main shall be as follow:	Number
2.2.1	Provide in every required exit staircase as per NFPA 14-2019 Edition Section 7.4.	
2.2.2	Additional hose connection shall be provided in excess of 150 ft. (45.7 m), non-sprinklered and 200 ft. (61 m), sprinklered, travel distance from a hose connection to the most remote portion of the floor level as applicable and as per NFPA 14 (2019) SEC. 7.3.2	
2.2.3	Subject to FF Operation Department requirements, as applicable	
2.2.4	Number (rising mains): One rising mains serving not more than 930 m^2 (of any floor).	
2.3	Position of rising mains and associated landing valves shall be located and installed in each required Exit Staircase and the Landing valve of the rising main shall be installed between 1M and 1.4M relative to the finish floor level.	Location and Installation Height

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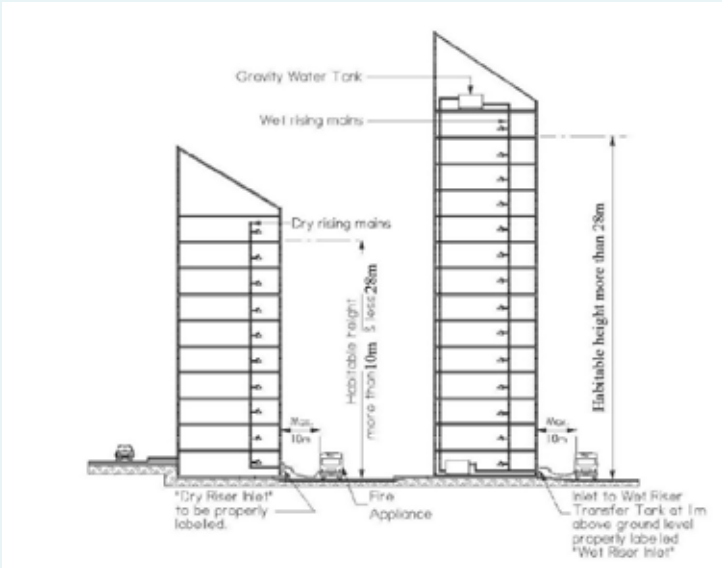
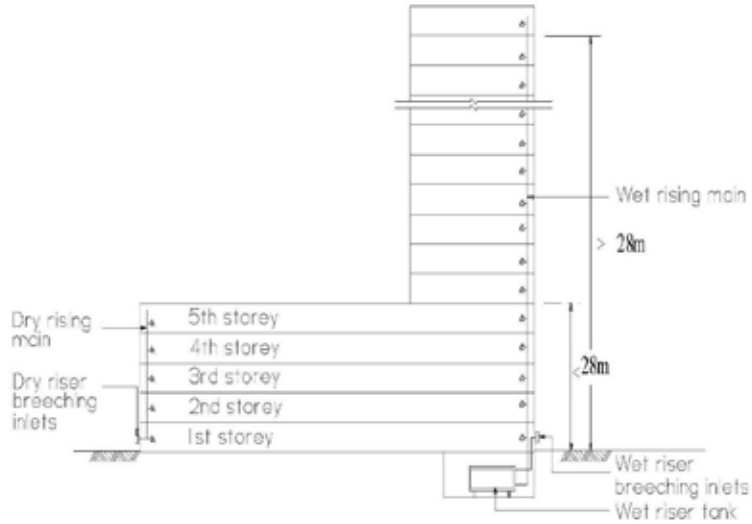
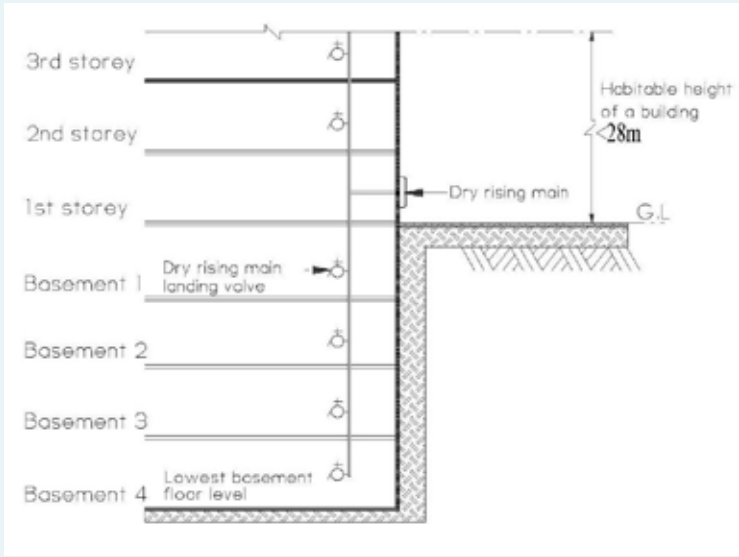
2.4	Minimum nominal bore of rising main shall be:	Size
2.4.1	100mm diameter where the rising main does not exceed 28M in habitable height and serving only one landing valve per floor.	
2.4.2	150mm diameter or higher where the rising main is in combination with the fire sprinkler system serving two or more landing valve per floor.	
2.5	The inlet to the rising main shall be located:	Breeching Inlet Connection
2.5.1	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.	
2.5.2	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.	
2.5.3	In a conspicuous position readily visible and accessible to the firefighters.	
2.6		Figure A

Item	Provisions	Notes
2.7		Figure B
2.8		Figure C

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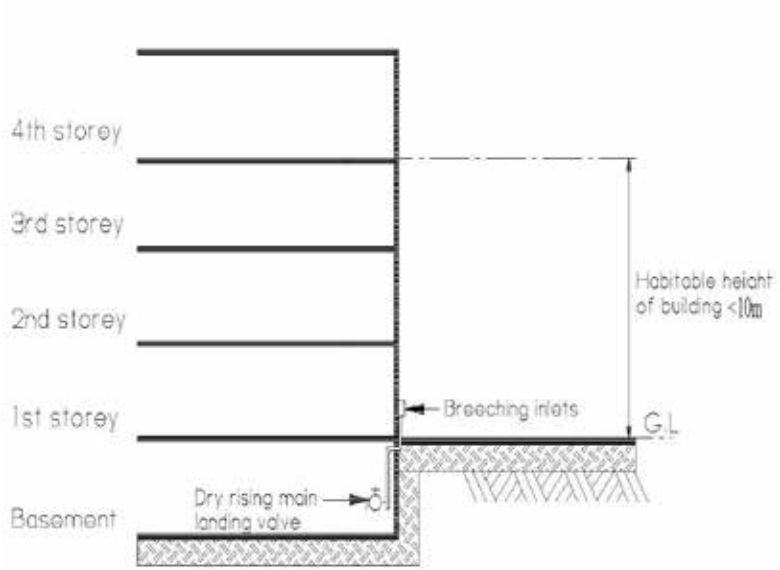
2.9		Figure D
3.0	**CLEAN AGENT SYSTEM**	**Applicable Codes**
3.1	The design, installation and testing of Clean Agent Systems shall be in accordance with these regulations and the latest edition of NFPA 2001.	
3.2	Only clean agents specifically approved by the Qatar Civil Defence (QCD) shall be used.	
3.3	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.	
3.1	Containers/Cylinders storage location:	Location of Cylinders
3.4.1	Stored outside of the protected area or enclosure; accessible within 2m from the entrance of the protected area.	
3.4.2	Permitted to be located within or outside the hazard or hazards they protect.	
3.5	A Manual Override (mechanical / electrical) means of discharging the required agent shall be provided on the storage container.	Manual Actuation

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3.6	Clean agent systems shall be operated automatically by a QCD approved automatic fire detection system.	Automatic Operation
3.7	The control panel shall comply with the following:	Control Panel
3.7.1	Located external to the protected areas	
3.7.2	Installed near the main entrance of the protected enclosure	
3.7.3	Connected to the Main Fire Alarm Panel with indication of Alarm, Gas Discharged and Fault indications.	
3.8	Clean Agent shall comply with the following:	Gas Discharge
3.8.1	Gas discharge shall only occur after predetermined time delay subject to approval by QCD.	
3.8.2	The time delay shall be interrupted by the operation of the Abort Switch and shall re-commence on release of such abort switch.	
3.8.3	Minimum time delay to discharge shall be twenty (20) seconds.	
3.9	Manual Release Push Button shall comply with the following:	Manual Release
3.9.1	Located external to the protected enclosure within 1.5M of the main entrance.	
3.9.2	More than one manual release push button may be required subject to the size and configuration of the protected enclosure.	
3.9.3	Operation of such shall cause instant release of the clean agent.	
3.10	Abort Switch shall comply with the following:	Abort Switch
3.10.1	Located within the protected enclosure and mounted within 1.5M from the main entrance.	
3.10.2	More than one abort switch may be required subject to the size and configuration of the protected enclosure.	
3.10.3	Upon continuous operation, shall interrupt the countdown timer.	
3.10.4	Upon release of abort switch, reset of countdown timer to discharge clean agent gas.	
3.11	Audible / Visible Notification devices shall be installed both inside and outside of the protected enclosure	Notification

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3.12	"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. "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.	Gas Discharge Signage
3.13	Enclosure shall comply with the following:	Enclosure Consideration
3.13.1	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.	
3.13.2	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.	
3.13.3	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.	