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3 FIRE FIGHTING SYSTEM

3.1 GENERAL

3.1.1 Scope

- 1 This Section specifies the minimum requirements of construction, material, installation, testing and commissioning for Fire Fighting System.

3.1.2 References

- 1 All supplies and services offered in response to this specification shall conform to the latest local regulations, codes and standards subject to the approval of The General Directorate of Civil Defence (Qatar Civil Defence).

- 2 The following Qatar Civil Defence (QCD) Guidelines and Regulations (latest editions) are referred to in this Section:

Qatar Civil Defence - Fire and Life Safety Requirements (latest edition approved by QCD)

Qatar Civil Defence - General Fire Safety Requirement – Guideline Annexes (latest edition approved by QCD)

Qatar Civil Defence - Product Evaluation, Company & Engineers Registration Guidelines (latest edition approved by QCD)

Qatar Civil Defence - Currently Recognized Product Certification Bodies and Testing Laboratories (latest edition approved by QCD)

Qatar Civil Defence – Acceptance Inspection & Testing (latest edition approved by QCD)

Qatar Civil Defence – Inspection, Testing and Maintenance Guidelines M&E (latest edition approved by QCD)

- 3 Other NFPA Codes/Standards and other International Codes/Standards are subject to QCD technical review, evaluation and final approval.

NFPA Codes and Standards

NFPA 1Fire Code

NFPA 3Standard for Commissioning of Fire Protection and Life Safety Systems

NFPA 4Standard for Integrated Fire Protection and Life Safety System Testing

NFPA 10Standard for Portable Fire Extinguishers

NFPA 11Standard for Low-, Medium-, and High-Expansion Foam

NFPA 11AStandard for Medium- and High-Expansion Foam Systems

NFPA 11CStandard for Mobile Foam Apparatus

NFPA 13Standard for the Installation of Sprinkler Systems

NFPA 13DStandard for the Installation of Sprinkler Systems in One- and Two Family Dwellings and Manufactured Homes

NFPA 13ERecommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems

NFPA 13RStandard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies

NFPA 14Standard for the Installation of Standpipe and Hose Systems

NFPA 15Standard for Water Spray Fixed Systems for Fire Protection

- NFPA 16.....Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 17.....Standard for Dry Chemical Extinguishing Systems
NFPA 17AStandard for Wet Chemical Extinguishing Systems
NFPA 18.....Standard on Wetting Agents
NFPA 18AStandard on Water Additives for Fire Control and Vapor Mitigation
NFPA 20.....Standard for the Installation of Stationary Pumps for Fire Protection
NFPA 22.....Standard for Water Tanks for Private Fire Protection
NFPA 24.....Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 25.....Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
NFPA 101.....Life Safety Code
NFPA 750.....Standard on Water Mist Fire Protection Systems
NFPA 2001.....Standard on Clean Agent Fire Extinguishing Systems
NFPA 2010.....Standard for Fixed Aerosol Fire-Extinguishing Systems

Other related NFPA Codes / Standards and other equivalent International Codes / Standards

- AS 4487 Condensed aerosol fire extinguishing systems - Requirements for system design, installation and commissioning and test methods for components.
- BS 336 Specification for fire hose couplings and ancillary equipment.
BS 5041-1 Fire hydrant systems equipment - Specification for landing valves for wet risers
BS 5041-2 Fire hydrant systems equipment - Specification for landing valves for dry risers.
BS 5041-3 Fire hydrant systems equipment - Specification for inlet breechings for dry riser inlets.
- EN 3 Portable fire extinguishers.
EN 671-1 Fixed firefighting systems - Hose systems - Part 1: Hose reels with semi-rigid hose.
EN 1866-1 Mobile fire extinguishers - Part 1: Characteristics, performance and test methods.
EN 1869 Fire blankets.
EN 12094 Fixed firefighting systems - Components for gas extinguishing systems.
EN 12094-8 Fixed firefighting systems - Components for gas extinguishing systems - Part 8: Requirements and test methods for connectors
EN 12259-1 Fixed firefighting systems - Components for sprinkler and water spray systems - Part 1: Sprinklers.
EN 12845 Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance
EN 14540 Fire-fighting hoses - Non-percolating layflat hoses for fixed systems.
EN 15004 Fixed firefighting systems - Gas extinguishing systems.
EN 15004-1 Fixed firefighting systems - Gas extinguishing systems - Part 1: Design, installation and maintenance (ISO 14520-1, modified)

FM 1011	Deluge and Pre-Action Sprinkler Systems.
FM 1012	Deluge and Pre-Action Sprinkler Systems.
FM 1013	Deluge and Pre-Action Sprinkler Systems.
FM 1020	Automatic water control valves.
FM 1032	Air pressure maintenance device.
FM 1041	Alarm check valves
FM 1042	Vane type waterflow alarm indicators".
FM 1043	Water flow detector testers 1 inch through 8 inches nominal size.
FM 1046	Fire pump flowmeter systems.
FM 1055	Water motor gongs.
FM 1140	Quick opening device 1/4 through 2 inch nominal size.
FM 1311	Centrifugal Fire Pumps Split-Case Type (Axial or Radial)
FM 1312	Centrifugal fire pumps (vertical shaft, turbine type)
FM 1313	Positive displacement fire pumps (rotary gear type).
FM 1319	Centrifugal fire pumps (horizontal, end suction type)
FM 1321	Controllers for electric motor and diesel engine driven fire pumps.
FM 1323	Controllers for electric motor and diesel engine driven fire pumps
FM 3132	Pressure actuated water flow switches.
FM 1333	Diesel engine fire pump drivers.
FM 3135	Sprinkler valve supervisory devices."
FM 1336	Fire pump couplings and flexible connecting shafts for fire protection service
FM 1338	Rotary angle gear drives
FM 1344	Air release valves 1/2 through 1 inch nominal size.
FM 1359	Trim water pressure relief valves 1/4 through 1-1/2 inch nominal size".
FM 1361	Water pressure relief valves.
FM 1362	Pressure reducing valves.
FM 1363	Suction pressure regulating valves.
FM 1370	Centrifugal fire pumps (vertical shaft, turbine type, barrel)
FM 1371	Centrifugal fire pumps, (in-line type)
FM 1511	Fire Hydrants (wet barrel type) for private fire service.
FM 1510	Fire Hydrants (dry barrel type) for private fire service.
FM 1521	Angle and Straightaway Hose Valves.
FM 1522	Angle and Straightaway Hose Valves.
FM 1530	Fire Department Connections
FM 1531	Wall hydrants.
FM 1610	Ductile Iron Pipe and Fittings, Flexible Fittings and Couplings.
FM 1612	Polyvinyl chloride (PVC) pipes and fittings for underground fire protection service.
FM 1613	Polyethylene (PE) pipes and fittings for underground fire protection service.
FM 1614	Fiber reinforced composite (FRC) pipe and fittings for underground fire protection service.

FM 1625	Sprinkler System Alarm Test Devices
FM 1635	Plastic pipe and fittings for automatic sprinkler systems.
FM 1637	Flexible sprinkler hose with threaded end fittings.
FM 1920	Pipe couplings and fittings for aboveground fire protection systems.
FM 2000	Automatic control mode sprinklers for fire protection
FM 2030	Residential automatic sprinklers for fire protection.
FM 2111	FIRE HOSE ASSEMBLIES AND FIRE HOSE COUPLINGS.
FM 2131	FIRE HOSE ASSEMBLIES AND FIRE HOSE COUPLINGS.
FM 2141	Hose racks and reels.
FM 2311	Vacuum and pressure gauges for fire protection systems".
FM 3510	Flow and pressure safety switches.
FM 4020	Steel Tanks for Fire Protection
FM 5511	Firefighting nozzles for use with hose. Monitor assemblies and other firefighting equipment.
FM 5320	Dry Chemical extinguishing systems.
FM 5551	Strainers for use with water based fire protection systems.
FM 5560	Water Mist Systems.
FM 5580	Hybrid (water and inert gas) fire extinguishing systems.
FM 5600	Clean agent extinguishing systems.
ISO 14520	Gaseous fire-extinguishing systems — Physical properties and system design
ISO 15779	Condensed aerosol fire extinguishing systems — Requirements and test methods for components and system design, installation and maintenance — General requirements.
LPS 1045	Requirements & Testing Methods for direct reading Flow Meters."
LPS 1223	Requirements and Testing Procedures for Approval of Fixed Fire Extinguishing Systems for Catering Equipment.
LPS 1276	Requirements for the LPCB certification and listing of above ground suction tanks for sprinkler systems.
LPS 2070	Requirements and testing methods for Vortex Inhibitors
UL 8	Water Based Agent Fire Extinguishers. UL 626. Water Fire Extinguishers.
UL 19	Standard for Lined Fire Hose and Hose Assemblies
UL 154	Carbon-Dioxide Fire Extinguishers.
UL 162	Foam Equipment and Liquid Concentrates. FM class 1421. Monitor assembly
UL 193	Standard for Alarm Valves for Fire-Protection Service.
UL 199	Standard for Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Attic Spaces.
UL 199G	Standard for Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Attic Spaces.
UL 199H	Standard for Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Horizontal Concealed Spaces.

UL 199J	Standard for Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use on Windows.
UL 213.	Standard for Rubber Gasketed Fittings for Fire-Protection Service.
UL 213C	Standard for grooved and plain end fittings.
UL 218	Standard for Fire Pump Controllers.
UL 246	Hydrants for Fire-Protection Service.
UL 246A	Outline of Investigation for Non-Threaded Connections for Fire Hydrants and Fire Department Connections.
UL 246B	Outline of Investigation for Tamper Resistant Features of Hydrants for Fire-Protection Service.
UL 258	Standard for Trim and Drain Valve
UL 260	Standard for Dry Pipe and Deluge Valves for Fire-Protection Service
UL 260A	Outline of investigation for air pressure maintenance devices.
UL 299	Dry Chemical Fire Extinguishers.
UL 300	Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment.
UL 321	Outline of Investigation for Pipeline Strainers.
UL 327	Standard for Outline of Investigation for Turbine Type Flow Meters
UL 346	Standard for Waterflow Indicators for Fire Protective Signaling Systems.
UL 393.	Standard for Indicating Pressure Gauges for Fire Protection Service.
UL 401	Standard for Portable Spray Hose Nozzles for Fire-Protection Service.
UL 405	UL Standard for Safety Fire Department Connection Devices
UL 448	Standard for Safety Centrifugal Stationary Pumps for Fire- Protection Service
UL 508A	Standard for Industrial Control Panels.
UL 668	Hose Valves for Fire-Protection Service
UL 711	Rating and Fire Testing of Fire Extinguishers.
UL 753	Standard for Alarm Accessories for Automatic Water-Supply Control Valves for Fire Protection Service.
UL 852	Standard for Standard for Steel Sprinkler Pipe for Fire Protection Service.
UL 864	Control Units and Accessories for Fire Alarm Systems.
UL 1004-5	Standard for Safety Fire Pump Motors
UL 1004-8	Standard for Safety Inverter Duty Motors
UL 1247	Standard for Diesel Engines for Driving Stationary Fire Pumps.
UL 1247A	Standard for Outline of Investigation for Variable Speed Limiting Controls Installed with Diesel Engines for Driving Stationary Fire Pumps.
UL 1254	Pre-Engineered Dry Chemical Extinguishing System Units.
UL 1384	Water-Based Automatic Extinguisher Units.
UL 1468	Standard for Direct Acting Pressure Reducing and Pressure Restricting Valves.
UL 1478A	Standard for Pressure Relief Valves for Sprinkler Systems.
UL 1739	Standard for Pilot-Operated Pressure-Control Valves for Fire Protection Service.
UL 2129	Halocarbon Clean Agent Fire Extinguishers.
UL 2166	Halocarbon Clean Agent Extinguishing System Units.

UL 2443	Flexible Sprinkler Hose with Fittings for Fire Protection Service.
UL 2573	Standard for Outline of Investigation for Automatic Air Release and Air/Vacuum Valves for Fire Protection Service
UL 2775	Fixed Condensed Aerosol Extinguishing System Units.
ULC-S548	Devices and Accessories for Water Type Extinguishing Systems.
VDS 3188	Guidelines for Water Mist Sprinkler Systems and Water Mist Extinguishing Systems (High Pressure Systems), Planning and Installation

3.1.3 Fire Fighting System

1 Fire Fighting System

- (a) Flammable Liquid Tanks / Fire Water Tanks / Break Tanks etc.
- (b) Fire Pumps / Jockey Pumps / Foam Concentrate Pumps etc.
- (c) Motors / Engines etc. - Fire Pump Drivers
- (d) Controllers / Monitoring Alarm Panels - Fire Pumps
- (e) Components & Accessories - Fire Pumps
- (f) Valves (OS&Y, Butterfly, Globe, Check, Gate relief Valves etc.)
- (g) Test Drains
- (h) Flow Switches, Supervisory, Tamper & Pressure Switches / Flow Detectors, Gauges, Testers
- (i) Water Control Valves (Gongs & Bells) / Pre-action System / Deluge System
- (j) Pipes & Fittings
- (k) Pipe Hangers & Accessories
- (l) Fire Sprinklers and Accessories
- (m) Fire Department Connections and Standpipe System / Hoses, Couplings and Nozzles / Cabinets
- (n) Fire Hydrants / Monitors
- (o) Fire Hoses (Reels, Cabinets & Nozzles)
- (p) Portable Fire Extinguishers
- (q) Fire Blankets
- (r) Foam System
- (s) Water Mist System
- (t) Kitchen / Range Hood Extinguishing System
- (u) Clean Agent Suppression System (FM200, CO₂, NOVEC System etc.)
- (v) Dry Chemical System
- (w) Wet Chemical System
- (x) Aerosol Fire Extinguishing System
- (y) Other Automatic Suppression System Units, Components & Equipment

2 Other products related Fire Fighting System not included in this list shall be referred to QCD Safety Systems Division for review and evaluation.

3.1.4 Authority Having Jurisdiction

- 1 All works, regulatory requirements and approvals related to Fire Fighting System in Qatar shall be under the jurisdiction of The General Directorate of Civil Defence (Qatar Civil Defence).

3.1.5 Company Registration

- 1 The Company responsible for the supplies & trading, installation & maintenance of Fire Fighting System shall be registered and on the approved list of Qatar Civil Defence and Ministry of Commerce and Industry. For details on the updates of the latest licensing and registration requirements, consult Qatar Civil Defence.

3.1.6 Engineer Registration

- 1 The Engineer in charge for the Design, Supervision of Installation, Testing, Commissioning and Maintenance of the Fire Fighting System shall be registered and licensed based on the latest regulatory requirements of Qatar Civil Defence. For details on the updates of the latest licensing and registration requirements, consult Qatar Civil Defence.

3.1.7 Contractor's Responsibility

- 1 A QCD Registered Specialty Contractor shall supply, install, test, commission and maintain the Fire Fighting System based on approved plan, products and installation subject to the approval of Qatar Civil Defence.

3.1.8 Quality Assurance

Products, equipment and materials in this part shall obtain QCD Product Approval thru the Safety Systems Division of Qatar Civil Defence. An approved and registered Fire Fighting System Contractor that employs QCD Registered Engineers shall be in charge for the installation, testing and commissioning of the project.

3.1.9 Plan Review

- 1 The Engineering Design for Fire Fighting System shall be submitted to Qatar Civil Defence for evaluation, technical review and approval. Refer to the latest guidelines of Plan Review Section for further details.

3.2 PRODUCTS

3.2.1 Product Approval

- 1 Products for Fire Fighting Systems shall be QCD Approved. It shall meet listing requirements, appropriate standards, technical specifications, certified and tested by a QCD Recognized Product Certification Body or Testing Laboratory as per Qatar Civil Defence Regulations.
- 2 The following Fire Fighting System products, equipment and materials shall be required to obtain QCD Approval.
- (a) Flammable Liquid Tanks / Fire Water Tanks / Break Tanks etc.
 - (b) Fire Pumps / Jockey Pumps / Foam Concentrate Pumps etc.
 - (c) Motors / Engines etc. - Fire Pump Drivers
 - (d) Controllers / Monitoring Alarm Panels - Fire Pumps
 - (e) Components & Accessories - Fire Pumps
 - (f) Valves (OS&Y, Butterfly, Globe, Check, Gate relief Valves etc.)
 - (g) Test Drains
 - (h) Flow Switches, Supervisory, Tamper & Pressure Switches / Flow Detectors, Gauges, Testers
 - (i) Water Control Valves (Gongs & Bells) / Pre-action System / Deluge System

- (j) Pipes & Fittings
- (k) Pipe Hangers & Accessories
- (l) Fire Sprinklers and Accessories
- (m) Fire Department Connections and Standpipe System / Hoses, Couplings and Nozzles / Cabinets
- (n) Fire Hydrants / Monitors
- (o) Fire Hoses (Reels, Cabinets & Nozzles)
- (p) Portable Fire Extinguishers
- (q) Fire Blankets
- (r) Foam System
- (s) Water Mist System
- (t) Kitchen / Range Hood Extinguishing System
- (u) Clean Agent Suppression System (FM200, CO₂, NOVEC System etc.)
- (v) Dry Chemical System
- (w) Wet Chemical System
- (x) Aerosol Fire Extinguishing System
- (y) Other Automatic Suppression System Units, Components & Equipment

- 3 Other related Fire Fighting System / Products / Materials and new innovations not included in this list shall be referred to QCD Safety Systems Division for review and evaluation.
- 4 A guide (sample standards) regarding acceptable product standards for Fire Fighting System are indicated from 3.2.2 to 3.2.16 of this Section.
- 5 Products that complies to equivalent EN standards or other international standards are subject to QCD Engineers technical review and for the final approval of QCD Officers / Head of Section.

3.2.2 Flammable Liquid Tanks, Fire Water Tanks & Components

Product	Standard
Fire water tank	FM class 4020. Steel tanks for fire protection LPS 1276. Requirements for suction tanks for automatic pumps for sprinkler system.
Anti-vortex plate	LPS 2070. Vortex inhibitor

3.2.3 Fire Pump Equipment & all its components

Product	Standard
Fire pump	UL 448. Centrifugal Stationary Pumps for Fire-Protection Service. FM class 1311. Centrifugal fire pumps split-case type (axial or radial) FM class 1371. Centrifugal fire pumps, (in-line type) FM class 1319. Centrifugal fire pumps (horizontal, end suction type) FM class 1370. Centrifugal fire pumps (vertical shaft, turbine type, barrel) FM class 1312. Centrifugal fire pumps (vertical shaft, turbine type) FM CLASS 1313. Positive displacement fire pumps (rotary gear type).

Product	Standard
Gear drive	FM CLASS 1338. Rotary angle gear drives "UL 393. Indicating Pressure Gauges for Fire Protection Service."
Pressure gauge	FM class 2311. Vacuum and pressure gauges for fire protection systems". "FM class 1361. Water pressure relief valves.UL 1468. Direct Acting Pressure Reducing and Pressure Restricting Valves.
Pressure relief valve	UL 1478A. Pressure Relief Valves for Sprinkler Systems. FM class 1359. Trim water pressure relief valves 1/4 through 1-1/2 inch nominal size".
Flexible coupling	"UL 213. Rubber Gasketed Fittings for Fire-Protection Service. UL 213C. Grooved and Plain End Fittings. FM class 1610. Ductile iron pipe and fittings, flexible and couplings. FM class 1336. Fire pump couplings and flexible connecting shafts for fire protection service".
Water flowmeter	"UL SUBJECT 327. Outline of Investigation for Turbine Type Flow Meters FM CLASS 1046. Fire pump flowmeter systems. LPS 1045. Requirements & Testing Methods for direct reading Flow Meters."

3.2.4 Fire Pump Drivers

Product	Standard
Motor – fire pump driver	"UL 1004-5. Fire Pump Motors. UL 840. Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment. UL 1004-8. Inverter Duty Motors". "UL 1247. Diesel Engines for Driving Stationary Fire Pumps. UL SUBJECT 1247A. Outline of Investigation for Variable Speed Limiting Controls Installed with Diesel Engines for Driving Stationary Fire Pumps. FM class 1333. Diesel engine fire pump drivers. "
Engine – fire pump driver	UL 1247. Diesel Engines for Driving Stationary Fire Pumps. UL SUBJECT 1247A. Outline of Investigation for Variable Speed Limiting Controls Installed with Diesel Engines for Driving Stationary Fire Pumps. FM class 1333. Diesel engine fire pump drivers.

3.2.5 Fire Pump Controllers

Product	Standard
Fire pump controller	UL 218. Fire Pump Controllers. FM class 1321. Controllers for electric motor and diesel engine driven fire pumps. FM class 1323. Controllers for electric motor and diesel engine driven fire pumps

Product	Standard
Jockey pump controller	"UL 508A. Industrial Control Panels. FM class 1321. Controllers for electric motor and diesel engine driven fire pumps. FM class 1323. Controllers for electric motor and diesel engine driven fire pumps.

3.2.6 Valves for Fire Protection

Product	Standard
Alarm check valve	"UL 193. Alarm Valves for Fire-Protection Service. UL 753. Alarm Accessories for Automatic Water-Supply Control Valves for Fire Protection Service. FM class 1055. Water motor gongs. FM class 1041. Alarm check valves."
Pressure reducing/restricting valve	"UL 1468. Direct Acting Pressure Reducing and Pressure Restricting Valves. UL 1739. Pilot-Operated Pressure-Control Valves for Fire Protection Service. FM class 1362. Pressure reducing valves. FM class 1363. Suction pressure regulating valves. FM class 1521. Angle and straightway hose valves".
Air release valve	"UL SUBJECT 2573. Outline of Investigation for Automatic Air Release and Air/Vacuum Valves for Fire Protection Service. UL 2573. Outline of Investigation for Automatic Air Release and Air/Vacuum Valves for Fire Protection Service. FM class 1344. Air release valves 1/2 through 1 inch nominal size".
Water control valve	"UL 260. Dry Pipe and Deluge Valves for Fire-Protection Service FM class 1020. Automatic water control valves. FM class 1140. Quick opening device 1/4 through 2 inch nominal size. VDS 2344. Procedure for testing, approval and certification of products and systems for fire protection and security technologies."

3.2.7 Test Drains

Product	Standard
Test Drain	UL Subject 258 "Trim and Drain Valve" FM 1625

3.2.8 Measuring Devices and Input Devices

Product	Standard
Waterflow switch/detector	"UL 346. Waterflow Indicators for Fire Protective Signaling Systems. ULC-S548. Devices and Accessories for Water Type Extinguishing Systems. FM class 1043. Water flow detector testers 1 inch through 8 inches nominal size.
Pressure switch	FM class 3132. Pressure actuated water flow switches. FM class 1042. Vane type waterflow alarm indicators". "UL 753. Alarm Accessories for Automatic Water-Supply Control Valves for Fire Protection Service. FM class 3510. Flow and pressure safety switches. FM class 3132. Pressure actuated waterflow switches".
Supervisory switch	"UL 346. Waterflow Indicators for Fire Protective Signaling Systems FM class 3135. Sprinkler valve supervisory devices."

3.2.9 Pipes and Fittings

Product	Standard
Non-metallic pipes & fittings	"FM class 1613. Polyethylene (PE) pipes and fittings for underground fire protection service. FM class 1612. Polyvinyl chloride (PVC) pipes and fittings for underground fire protection service. FM class 1635. Plastic pipe and fittings for automatic sprinkler systems. FM class 1614. Fiber reinforced composite (FRC) pipe and fittings for underground fire protection service."
Metallic pipes & fittings	UL 213C. Standard for grooved and plain end fittings. UL 852. Steel Sprinkler Pipe for Fire Protection Service. UL 213. Rubber Gasketed Fittings for Fire-Protection Service. FM class 1920. Pipe couplings and fittings for aboveground fire protection systems. FM class 1610. Ductile iron pipe and fittings, Flexible fittings and couplings.

3.2.10 Fire Sprinklers and Accessories

Product	Standard
Sprinkler	UL 199. Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Attic Spaces. UL 199G. Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Attic Spaces. UL 199H. Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use in Horizontal Concealed Spaces. UL 199J. Outline of Investigation for Fire Testing of Specific Application Sprinklers for Use on Windows. FM class 2000. Automatic control mode sprinklers for fire protection FM class 2030. Residential automatic sprinklers for fire protection. EN 12259-1 Fixed Firefighting Systems. Components for Sprinkler and Water Spray Systems. Sprinklers.
Flexible sprinkler hose	UL 2443. Flexible Sprinkler Hose with Fittings for Fire Protection Service. FM CLASS 1637. Flexible sprinkler hose with threaded endfittings.
Sprinkler guard	UL subject 321. Outline of Investigation for Pipeline Strainers. FM class 5551. Strainers for use with water based fire protection systems.

3.2.11 Fire Department Connection / Fire Hose System

Product	Standard
Breeching inlet	UL 405. Fire department connections UL 246A. Outline of Investigation for Non-Threaded Connections for Fire Hydrants and Fire Department Connections. FM class 1530. Fire Department Connections. BS 5041-3, Fire hydrant system equipment, Specification for inlet breechings for dry riser inlets. BS 5041-1. Fire hydrant system equipment, Specification for landing vale for wet risers. BS 5041-2. Fire hydrant system equipment, Specification for landing vale for dry risers. BS 336. Specifications for fire hose and ancillary equipment.
Landing valve	UL 668. Hose Valves for Fire-Protection Service FM class 1521. Angle and straightway hose valves. FM class 1522. Angle and straightway hose valves. UL 1468. Direct Acting Pressure Reducing and Pressure Restricting Valves. FM class 1530. Fire department connections. BS 336. Specifications for fire hose and ancillary equipment.

Product	Standard
Hose reel	FM class 2141. Hose racks and reels. BS EN 671-1. Hose reels with semi-rigid hose.
Hose nozzle	UL 401. Portable Spray Hose Nozzles for Fire-Protection Service. FM CLASS 2111. Hose assemblies and fire hose couplings. FM CLASS 5511. Firefighting nozzles for use with hose. Monitor assemblies and other firefighting equipment.
Fire hose	UL 19. Lined Fire Hose and Hose Assemblies FM class 2111. Hose assemblies and fire hose couplings. FM class 2131, Hose assemblies and fire hose couplings. EN 14540. Fire-fighting hoses - Non-percolating layflat hoses for fixed systems.
Flexible sprinkler hose	UL 2443. Flexible Sprinkler Hose with Fittings for Fire Protection Service. FM CLASS 1637. Flexible sprinkler hose with threaded endfittings.
Pipeline strainer	UL subject 321. Outline of Investigation for Pipeline Strainers. FM class 5551. Strainers for use with water based fire protection systems.
Water/foam monitor	UL 162. Foam Equipment and Liquid Concentrates. FM class 1421. Monitor assembly FM class 5511. Firefighting nozzles for use with hose. Monitor assemblies and other firefighting equipment.
Fire hydrant	UL 246. Hydrants for Fire-Protection Service. UL 246A. Outline of Investigation for Non-Threaded Connections for Fire Hydrants and Fire Department Connections. UL 246B. Outline of Investigation for Tamper Resistant Features of Hydrants for Fire-Protection Service. FM class 1511. Fire Hydrants (wet barrel type) for private fire service. FM class 1510. Fire Hydrants (dry barrel type) for private fire service. FM class 1531. Wall hydrants.

3.2.12 Secondary Fire Extinguishing Equipment & Accessories

Product	Standard
Fire extinguisher	UL 711. Rating and Fire Testing of Fire Extinguishers. UL 2129. Halocarbon Clean Agent Fire Extinguishers. UL 154. Carbon-Dioxide Fire Extinguishers. UL 8. Water Based Agent Fire Extinguishers. UL 626. Water Fire Extinguishers. UL 299. Dry Chemical Fire Extinguishers. EN 3. Portable fire extinguishers. EN 1866-1. Mobile fire extinguishers.
Fire blanket	EN 1869. Fire Blankets.

3.2.13 Deluge System, Foam System, Water Mist System, Wet Chemical System & Pre action System

Product	Standard
Wet-chemical extinguishing system	UL 1254. Pre-Engineered Dry Chemical Extinguishing System Units. UL 300. Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment. LPS 1223. Requirements and Testing Procedures for Approval of Fixed Fire Extinguishing Systems for Catering Equipment.
Deluge System/ Pre-Action System	UL 260. Dry Pipe and Deluge Valves for Fire-Protection Service. FM class 1011. Deluge and Pre-Action Systems. FM class 1012. Deluge and Pre-Action Systems. FM class 1013. Deluge and Pre-Action Systems.
Water mist fire protection system	FM class 5560. Water mist systems. LPS 1223. Requirements and Testing Procedures for Approval of Fixed Fire Extinguishing Systems for Catering Equipment. VDS 3188. Guidelines for water mist sprinkler systems and water mist extinguishing system. (High pressure system)

3.2.14 Clean Agent Suppression System, Kitchen Suppression System Dry Chemical System

Product	Standard
Clean agent extinguishing system	UL 2166. Halocarbon Clean Agent Extinguishing System Units. UL 864. Control Units and Accessories for Fire Alarm Systems. UL 1254. Pre-Engineered Dry Chemical Extinguishing System Units. UL 1384. Water-Based Automatic Extinguisher Units. FM class 5580. Hybrid (water and inert gas) fire extinguishing systems. FM class 5600. Clean agent extinguishing systems. EN 12094. Fixed firefighting system. Components for gas extinguishing systems. Requirements and test methods for connectors. EN 15004. Fixed firefighting systems. Gas extinguishing systems. Design, installation and maintenance. ISO 14520. Gaseous fire-fighting systems. Physical properties and system design.
Dry chemical extinguishing system	UL 1254. Pre-Engineered Dry Chemical Extinguishing System Units FM class 5320. Dry Chemical extinguishing systems.

3.2.15 Aerosol Extinguishing System

Product	Standard
Fixed-aerosol extinguishing system	UL 2775. Fixed Condensed Aerosol Extinguishing System Units. BRL-K23001/04. Fixed dry aerosol fire extinguishing system components. AS 4487. Condensed aerosol fire extinguishing systems. Requirements for system design, installation and commissioning and test methods for components. ISO 15779. Condensed aerosol fire extinguishing systems. Requirements and test methods for components and system design, installation and maintenance.

3.2.16 Other Automatic Suppression System Units, Components & Equipment

Product	Standard
Air pressure maintenance device	UL 260A. Outline of investigation for air pressure maintenance devices. FM class 1032. Air pressure maintenance device.
Multi Jet Controls	EN 12845

Standards used to evaluate other products/components for Fire Fighting System shall be reviewed and subject to the final approval of Qatar Civil Defence.

3.3 INSPECTION, TESTING, COMMISSIONING & MAINTENANCE

- 1 The UPDA Certified Supervising Consultant that oversees the Registered Contractor shall arrange inspection, testing and commissioning of the Fire Fighting System of the new buildings / premises / structures with Qatar Civil Defence during the building completion stage of the project as a prerequisite for the issuance of an Occupancy Permit.
- 2 The Owner or Owner's Representative shall arrange inspection, testing, commissioning and maintenance of the Fire Fighting System of the existing buildings / premises / structures with Qatar Civil Defence done by a Registered Contractor during the building maintenance stage as a requirement for the issuance of a Building Commercial Permit or License Renewal.
- 3 Inspection, Testing, Commissioning and Maintenance of Fire Fighting System shall be based on:
 - Qatar Civil Defence – Acceptance Inspection & Testing Guidelines (latest edition approved by QCD)
 - Qatar Civil Defence – Inspection, Testing and Maintenance Guidelines M&E (latest edition approved by QCD)
 - Qatar Civil Defence Guidelines (latest edition approved by QCD)
- 4 Reference to NFPA Codes/Standards and other International Codes/Standards are subject to QCD technical review, evaluation and final approval.
 - NFPA 1Fire Code

- NFPA 3.....Standard for Commissioning of Fire Protection and Life Safety Systems
NFPA 4.....Standard for Integrated Fire Protection and Life Safety System Testing
Manufacturer's Recommendation / Published Instructions
NFPA 10.....Standard for Portable Fire Extinguishers
NFPA 101.....Life Safety Code
NFPA 11.....Standard for Low-, Medium-, and High-Expansion Foam
NFPA 11AStandard for Medium- and High-Expansion Foam Systems
NFPA 11CStandard for Mobile Foam Apparatus
NFPA 13.....Standard for the Installation of Sprinkler Systems
NFPA 13DStandard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes
NFPA 13ERecommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems
NFPA 13RStandard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
NFPA 14.....Standard for the Installation of Standpipe and Hose Systems
NFPA 15.....Standard for Water Spray Fixed Systems for Fire Protection
NFPA 16.....Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 17.....Standard for Dry Chemical Extinguishing Systems
NFPA 17AStandard for Wet Chemical Extinguishing Systems
NFPA 18.....Standard on Wetting Agents
NFPA 18AStandard on Water Additives for Fire Control and Vapor Mitigation
NFPA 20.....Standard for the Installation of Stationary Pumps for Fire Protection
NFPA 2001.....Standard on Clean Agent Fire Extinguishing Systems
NFPA 2010.....Standard for Fixed Aerosol Fire-Extinguishing Systems
NFPA 22.....Standard for Water Tanks for Private Fire Protection
NFPA 24.....Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 25.....Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
NFPA 750.....Standard on Water Mist Fire Protection Systems
Manufacturer's Listing Instructions
Manufacturer's Recommendation / Published Instructions

- 5 The final approval for works related to Fire Fighting System shall be as per the acceptance of the Authority Having Jurisdiction known as Qatar Civil Defence.

END OF PART