PROJECT DESCRIPTION/ SCOPE OF WORK

IF PROPOSED, INDICATE THE FOLLOWING:

- NATURE OF THE PROJECT
- SPECIFY THE SCOPE OF WORK
- NECESSARY INFORMATION RELATIVE TO THE DESIGN OF FIRE FIGHTING SYSTEM

IF MODIFICATION :

- NATURE OF THE PROJECT
- SPECIFY THE SCOPE OF WORK
- LIST OF NARRATIVE MODIFICATION (NOTE: PROVIDE IN EACH FLOOR LEVEL THE SPECIFIC CHANGES/AMENDMENT OF FIRE FIGHTING SYSTEM)

ITEM NO.	FLOOR / LEVEL	MODIFICATION
1.	GROUND FLOOR	CHANGED OF AREA
2.	MEZZANINE	CHANGED OF AREA
3.	1ST FLOOR	CHANGED OF AREA

- NECESSARY INFORMATION RELATIVE TO THE DESIGN OF FIRE FIGHTING SYSTEM (NOTE: ENUMERATE IN THE GIVEN TABLE ALL THE APPLICATION REFERENCE OR PLAN SUBMISSION NUMBER FROM THE FIRST APPROVAL TO THE LATEST APPROVED MODIFICATION OF THE PROJECT.

MODIFICATION REFERENCES / PREVIOUS APPROVALS

TYPE	APPLICATION REF. NO.	DATE OF APPROVAL	DESCRIPTION
HARD COPY			
QCD OLD PERMIT SYSTEM			
MME PERMIT SYSTEM			

(Note :Constructed building without approval shall be treated as new)

LIST OF FIREFIGHTING DRAWINGS

SHEET	DWG NO:	TITLE	SCALE/ SIZE
01	F-000	COVER /FRONT PAGE	1:100, A1
02	F-100	SITE PLAN	1:100, A1
03	F-200	BASEMENT FIREFIGHTING LAYOUT	1:100, A1
04	F-201	GROUND FLOOR FIREFIGHTING LAYOUT	1:100, A1
05	F-202	FIRST FLOOR FIREFIGHTING LAYOUT	1:100, A1
06	F-203	SECOND FLOOR FIREFIGHTING LAYOUT	1:100, A1
07	F-204	THIRD FLOOR FIREFIGHTING LAYOUT	1:100, A1
08	F-205	ROOF PLAN FIREFIGHTING LAYOUT	1:100, A1
09	F-300	FIRE EXTINGUISHING / SUPPRESSION LAYOUT	1:100, A1
10	F-400	SCHEMATICS DIAGRAM	1:100, A1
11	F-500	EQUIPMENT DETAILS	1:100, A1
12	F-600	SECTION ELEVATION DETAILS	1:100, A1
12	F-700	MISCELLANEOUS DETAILS	1:100, A1

(Use separate drawing for large, development projects)

AREA STATEMENT

FLOOR/ LEVEL DESIGNATION	FLOOR AREA (M^2)
SECOND BASEMENT	9,000
FIRST BASEMENT	9,000
GROUND FLOOR	2,000
MEZZANINE	2,000
1ST FLOOR	2,000
TOTAL BUILT UP AREA =	24,000

FIREFIGHTING SYSTEM DESIGN

» AUTOMATIC FIRE SUPRESSION SYSTEM — AREA PROTECTED

- SPRINKLER SYSTEM ☐
- PRE-ACTION SYSTEM ☐
- DELUGE SYSTEM ☐
- WATER SPRAY FIXED SYSTEM ☐
- FOAM SYSTEM ☐
- CLEAN AGENT SUPRESSION SYSTEM ☐
- FIXED AEROSOL FIRE EXTINGUISHING SYSTEM ☐
- KITCHEN HOOD SUPRESSION SYSTEM ☐

  (WHERE REQUIRED IN NFPA 101, COMMERCIAL COOKING OPERATION SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 96)

- OTHERS, SPECIFY _____

- CONCEALED SPACE / BLIND SPACE ☐

DIMENSION	AREAS	MATERIALS (COMBUSTIBLE OR NON-COMBUSTIBLE)	ENTRY (ACCESSIBLE OR NOT ACCESSIBLE)	SPRINKLER (YES OR NO)
<400 MM HEIGHT	CORRIDOR	NON-COMBUSTIBLE	ACCESSIBLE	NO
	APARTMENT	NON-COMBUSTIBLE	ACCESSIBLE	NO
>400 - <800 MM HEIGHT				
>800 MM HEIGHT				

» MANUAL FIRE SUPRESSION

- PORTABLE FIRE EXTINGUISHER ☐
- FIRE BLANKET ☐
- STANDPIPE AND HOSE SYSTEM
  - CLASS I - 2 1/2 (65MM) HOSE STATION
    - WET STANDPIPE ☐
    - DRY STAND PIPE ☐
  - CLASS II
    - 1 INCH (25MM) HOSE STATION ☐
- BREECHING INLET / FIRE DEPARTMENT CONNECTION
  - 2 WAY TYPE (100MM DIA, x 2-65MM DIA. INLETS) ☐
    - NO. OF 2-WAY TYPE : _____
  - 4 WAY TYPE (150MM DIA. x 4-65MM DIA, INLETS) ☐
    - NO. OF 4-WAY TYPE : _____

FIREFIGHTING / LEGEND INFORMATION

(Basic Firefighting Symbols -indicate only those applicable)

- UPRIGHT FIRE SPRINKLER HEAD
- PENDENT FIRE SPRINKLER HEAD
- BREECHING INLET CONNECTION
- SIDEWALL FIRE SPRINKLER HEAD
- ALARM CHECK VALVE
- FIRE SYSTEM RISER
- PFE (REFER TO EQUIPMENT SCHEDULE)
- WATER SPRAY NOZZLE
- FIRE HOSE REEL
- LANDING VALVE

(Refer to latest edition of NFPA-170 for other applicable fire symbols not being shown)

ABBREVIATION

PFE - PORTABLE FIRE EXTINGUISHER
FC - FLUSHING CONNECTION
ITC - INSPECTOR TEST CONNECTION
FHR - FIRE HOSE REEL
LV - LANDING VALVE
RN - RISER NIPPLE
C02 - CARBON DIOXIDE
FP - FIRE PUMP
JP - JOCKEY PUMP
T/A - TO ABOVE
T/B - TO BELOW
F/A - FROM ABOVE
F/B - FROM BELOW
ZCVA / FCVA - ZONE / FLOOR CONTROL VALVE ASSEMBLY
LH - LIGHT HAZZARD
OH - ORDINARY HAZZARD

GENERAL NOTES

- ALL DESIGN AND INSTALLATION OF FIREFIGHTING EQUIPMENTS/ SYSTEM SHALL BE IN ACCORDANCE TO THE RELATED NFPA STANDARD REFERENCES (E.,G NFPA 10, 13, 14, 20, 22, 2001,2010 ETC.)
- FLOOR/ ZONE CONTROL VALVES SHALL BE MONITORED / CONNECTED TO THE FIRE ALARM CONTROL PANEL.
- ANY PENETRATION OF PIPING NETWORK THROUGH WALL OR CONCRETE SLAB SHALL BE PROVIDED WITH SLEEVE AND INTUMESCENT MATERIAL TO PREVENT TRANSFER OF SMOKE /FIRE.
- THE FLEXIBLE CONNECTION SHALL BE INSTALLED ON THE BUILDING SEISMIC/ EXPANSION JOINTS/ GAPS AND SHALL COMPLY WITH CHAPTER 9 OF NFPA 13 LATEST EDITION.
- CONSULTANT SHALL COORDINATE WITH OTHER TRADES PRIOR TO INSTALLATION. ANY CONFLICT / OBSTRUCTION SHALL BE RESOLVED AS NECESSARY.
- FIRE FIGHTING EQUIPMENT AND RELATED SYSTEM COMPONENTS SHALL BE QCD APPROVED TYPE.
- FIRE FIGHTING EQUIPMENTS / SYSTEM AND COMPONENTS SHALL COMPLY WITH RELATED STANDARDS AND SPECIFICATIONS AS PER MANUFACTURERS RECOMMENDATION.

(Additional notes can be added as applicable to the project being submitted)

FIRE SPRINKLER DESIGN CRITERIA'S

•Refer to Fire Fighting cover page Annex for the detailed design parameters/ criteria for fire suppression system.
•Provide tabulated summary of hydraulic calculation report.
•Provide sequence of operation for Deluge &Pre-Action System ,Clean Agent System , Foam-Water System ,Water Spray Fixed System ,Aerosol System and other as related in accordance with NFPA codes as applicable .
Note :Provide in separate drawing sheet If needed .

SUMMARY OF HYDRAULIC CALCULATION

FILE NAME REFERENCE	LOCATION OF AREA SIMULATED (FLOOR LEVEL & AREA NAME)	TYPE OF SYSTEM SIMULATED	CALCULATION FLOW (GPM)	CALCULATION PRESSURE (PSI)
HYDRAULIC CALCULATION 1	2ND BASEMENT (PARKING AREA)	SPRINKLERS		
HYDRAULIC CALCULATION 2	ROOF & 23RD FLOOR STANDPIPE	LANDING VALVE		
HYDRAULIC CALCULATION 3	MEZZANINE (CORRIDOR 1-A)	FIRE HOSE REEL		
HYDRAULIC CALCULATION 4	GROUND (RAW MATERIAL STORE-1)	CEILING SPRINKLERS		
HYDRAULIC CALCULATION 5	GROUND (RAW MATERIAL STORE-1)	IN RACK SPRINKLERS		

SPRINKLER ZONING TABULATION

FLOOR/ LEVEL DESIGNATION	FLOOR AREA (M^2)	TYPE OF OCCUPANCY	HAZZARD CLASSIFICATION	ZCVA / FCVA TAGGING/NUMBERING	ZCVA / FCVA COVERAGE (M^2)	NO. OF SPRINKLERS CONNECTED TO ZCV
2ND BASEMENT	9,000	STORAGE	OH	ZCVA/FCVA - 1	4,500	
		STORAGE	OH	ZCVA/FCVA - 2	4,500	
1ST BASEMENT	9,000	STORAGE	OH	ZCVA/FCVA - 3	4,500	
		STORAGE	OH	ZCVA/FCVA - 4	4,500	
GROUND FLOOR	2,000	MIXED	LH	ZCVA/FCVA - 5	2,000	
MEZZANINE	2,000	BUISNESS	LH	ZCVA/FCVA - 6	2,000	
1ST FLOOR	2,000	APARTMENT	LH	ZCVA/FCVA - 7	2,000	

(Additional parameters can be added as applicable to the project application)

FIRE PUMPS AND SCHEDULE

- INDICATE ONLY RELEVANT INFORMATION AS PER NFPA 20' STATIONARY FIRE PUMP STANDARDS AND NFPA 22 FIRE WATER STORAGE STANDARDS/ QCD REQUIREMENTS FOR TWO EQUAL COMPARTMENTS.

FIRE PUMP AND WATER SUPPLY

☐ DEDICATED TO PROJECT
☐ FIRE NETWORK SUPPLY — SPECIFY THE APPROVED APPLICATION NUMBER
SPECIFY THE AVAILABLE FLOW AND PRESSURE HEAD

FIRE PUMP SCHEDULE

UNIT TAG	EQUIPMENT	MOTOR				CAPACITY (GPM)	TOTAL HEAD (PSI)	LOCATION	DESCRIPTION /TYPE
		HP	VOLTS	PHASE	HZ				

NOTE:
1. THE QCD APPROVED PUMP SPECIFICATION IS INDICATIVE (DESIGN PROPOSAL) ONLY, AND THE SELECTED PUMP ON SITE WILL BE CHECKED AT THE TIME OF INSPECTION AND SHOULD MATCH THE REQUIREMENTS OF THE MAXIMUM CALCULATED FLOW AND PRESSURE (REFER TO SUMMARY OF HYDRAULIC CALCULATION REPORT).

FIRE WATER TANK SCHEDULES

LOCATION	TYPE OF CONSTRUCTION	NO: OF COMPARTMENTS	EFFECTIVE DURATION (MINUTES)	EFFECTIVE CAPACITY M^3

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

_____
(QCD Officer's Signature)

Baladiya NO. | (Reviewing fire safety engineer's signature/date)

ENDORSEMENT

I NAMECP ENGINEER, A DISCIPLINE WITH UPDA REGISTRATION NO ___,AS GRADE ___, BEING THE CONSULTANT HEREBY CERTIFY THAT THE FIRE SAFETY WORKS SHOWN ON THESE PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF NFPA 10/13/14/20/22/101/170/5000 AND OTHER RELEVANT /APPLICABLE NFPA CODES & STANDARD AND LOCAL FIRE SAFETY CODES OR STANDARDS BEING IMPOSED BY QCD.

FURTHER, I CERTIFY THAT I AM FULLY AWARE AND COMMIT MYSELF RESPONSIBLE TO THIS PROJECT AND ALL THE CONDITIONS PRESCRIBED UNDER THE EXISTING LAW No.19 OF 2005, THE LAW REGULATING THE PRACTICE OF ENGINEERING PROFESSION IN THE STATE OF QATAR.

AFFIXED IS MY SIGNATURE BELOW TO ATTEST TO THE ABOVE UNDERTAKING.

_____
NAME & SIGNATURE OF CONSULTANT

_____
CONSULTING OFFICE / COMPANY DETAILS

UPDA REG. NO/GRADE :	QATAR ID NO. :
VALIDITY :	VALIDITY :

(ENGINEERING OFFICE LOGO)

UPDA REG. NO/GRADE :	QATAR ID NO. :
VALIDITY :	VALIDITY :

NO.	DATE	DESCRIPTION
0	JAN.2019	ISSUED FOR QCD

(CLIENT OWNER)

(PROJECT TITLE)

LOCATION : DOHA, QATAR		PIN : 123456789
AREA : 123456 SQ.M	STREET : ABCD ST.	PLOT :1235467

(DRAWING TITLE/ SHEET CONTENT)

SCALE SIZE : 1:100	DWG NO :	SHEET NO :
DATE : 2019	FF-000	01/09

FIRE FIGHTING DESIGN CRITERIA

ANNEX A.1 - FF DESIGN CRITERIA FOR STORAGE - CONTROL MODE DENSITY / AREA (CMDA)			
ROOM NAME:		SHEET REFERENCE / DRAWING NUMBER :	
FLOOR LEVEL:		SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)	
ZONE CONTROL VALVE TAGGING:		☐ MOST REMOTE	
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):		☐ MOST DEMAND	
TYPE OF SPRINKLER SYSTEM: ☐ WET ☐ DELUGE ☐ SINGLE INTERLOCK PRE-ACTION ☐ DOUBLE INTERLOCK PRE-ACTION			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	STORAGE		
HAZARD CLASSIFICATION:	MISC.(OH-1,OH-2,EH-1,EH-2) OR HIGH PILED		
STORAGE CONFIGURATION:	SOLID PILED, SHELF, BIN BOX OR RACK		
LIST OF MATERIALS STORED:			
COMMODITY CLASS:	CLASS I-IV,GROUP A,B,C PLASTIC,RUBBER TIRE OR ROLL PAPER		
PALLET TYPE (FOR PALLET STORAGE):	WOOD, UNREINFORCED OR REINFORCED PLASTIC		
PACKAGING TYPE:	ENCAPSULATED,NONENCAPSULATED,CARTON		
MAX. STORAGE HEIGHT:		M	
MAX. CEILING / ROOF HEIGHT:		M	
ROOF SLOPE (RISE OVER RUN):		%	
DESIGN AREA:		FT^2	
DESIGN DENSITY:		GPM/FT^2	
DESIGN MODIFIERS:			
NO. OF SPRINKLERS IN DESIGN AREA:			
SPRINKLER RESIDUAL PRESSURE:		PSI	
SPRINKLER K-FACTOR:		$([GPM/(PSI)^{1/2}])$	
TYPE OF SPRINKLER:	STD. SPRAY, EXTENDED COVERAGE		
SPRINKLER ORIENTATION:	UPRIGHT, PENDENT		
MAX. CEILING TEMPERATURE:		°C	
SPRINKLER TEMPERATURE RATING:	ORDINARY , INTERMEDIATE , HIGH		
RESPONSE TYPE:	QUICK RESPONSE , STANDARD RESPONSE		
HOSE ALLOWANCE:		GPM	
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR PREACTION SYSTEM (IF APPLICABLE)			
NUMBER OF SPRINKLERS CONTROLLED BY PREACTION VALVE:			
SYSTEM SIZE (TOTAL PIPE VOLUME AFTER PREACTION VALVE):		GALLONS	
MAXIMUM WATER DELIVERY TIME:		SECONDS	
ADDITIONAL INFORMATION FOR IN-RACK SPRINKLER (IF APPLICABLE)			
RACK TYPE:	SOLID SHELVES, OPEN, SLATTED, ETC.		
RACK ARRANGEMENT:	SINGLE, DOUBLE, MULTIPLE ROW, ETC.		
LEVEL OF IN-RACK SPRINKLERS:			
NUMBER OF IN-RACK DESIGN SPRINKLERS:			
SPRINKLER K-FACTOR:		$([GPM/(PSI)^{1/2}])$	
MAX. SPACING (VERTICAL/HORIZONTAL):		M	
MIN. FLOW PER IN-RACK SPRINKLER:		GPM	
SPRINKLER RESIDUAL PRESSURE:		PSI	
TOTAL IN-RACK SPRINKLER DEMAND:		GPM	
SUMMARY OF CALCULATION		INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)	
CALCULATED TOTAL DEMAND FLOW (GPM) :		AVAILABLE FLOW AT TAPPING POINT (GPM) :	
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :		AVAILABLE PRESSURE AT TAPPING POINT (PSI) :	

ANNEX A.2 – FF DESIGN CRITERIA FOR STORAGE - CONTROL MODE SPECIFIC APPLICATION (CMSA)			
ROOM NAME:	SHEET REFERENCE / DRAWING NUMBER :		
FLOOR LEVEL:	SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)		
ZONE CONTROL VALVE TAGGING:	☐ MOST REMOTE		
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):	☐ MOST DEMAND		
TYPE OF SPRINKLER SYSTEM: ☐ WET ☐ DELUGE ☐ SINGLE INTERLOCK PRE-ACTION ☐ DOUBLE INTERLOCK PRE-ACTION			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	STORAGE		
HAZARD CLASSIFICATION:	HIGH PILED STORAGE		
STORAGE CONFIGURATION:	SOLID PILED, SHELF, BIN BOX, RACK, ETC.		
EXAMPLE LIST OF MATERIALS STORED:			
COMMODITY CLASS:	CLASS I-IV,GROUP A,B,C PLASTIC,RUBBER TIRE OR ROLL PAPER		
PALLET TYPE (FOR PALLET STORAGE):	WOOD, UNREINFORCED OR REINFORCED PLASTIC		
PACKAGING TYPE:	ENCAPSULATED, NONENCAPSULATED, CARTON		
MAX. STORAGE HEIGHT:		M	
MAX. CEILING / ROOF HEIGHT:		M	
ROOF SLOPE (RISE OVER RUN)		%	
SPRINKLER K-FACTOR:		([GPM/(PSI)$^{1/2}$])	
NO. OF SPRINKLERS:			
SPRINKLER RESIDUAL PRESSURE:		PSI	
TYPE OF SPRINKLER:	STD. SPRAY, EXTENDED COVERAGE		
SPRINKLER ORIENTATION:	UPRIGHT, PENDENT		
MAX. CEILING TEMPERATURE:		°C	
SPRINKLER TEMPERATURE RATING:	ORDINARY , INTERMEDIATE , HIGH		
RESPONSE TYPE:	QUICK RESPONSE , STANDARD RESPONSE		
HOSE ALLOWANCE:		GPM	
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR PREACTION SYSTEM (IF APPLICABLE)			
NUMBER OF SPRINKLERS CONTROLLED BY PREACTION VALVE:			
SYSTEM SIZE (TOTAL PIPE VOLUME AFTER PREACTION VALVE):		GALLONS	
MAXIMUM WATER DELIVERY TIME:		SECONDS	
ADDITIONAL INFORMATION FOR IN-RACK SPRINKLER (IF APPLICABLE)			
RACK TYPE:	SOLID SHELVES, OPEN, SLATTED, ETC.		
RACK ARRANGEMENT:	SINGLE, DOUBLE, MULTIPLE ROW, ETC.		
LEVEL OF IN RACK SPRINKLERS:			
NUMBER OF IN-RACK DESIGN SPRINKLERS:			
SPRINKLER K-FACTOR:		([GPM/(PSI)$^{1/2}$])	
MAX. SPACING (VERTICAL/HORIZONTAL):		M	
MIN. FLOW PER IN RACK SPRINKLER:		GPM	
SPRINKLER RESIDUAL PRESSURE:		PSI	
TOTAL IN-RACK SPRINKLER DEMAND:		GPM	
SUMMARY OF CALCULATION	INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)		
CALCULATED TOTAL DEMAND FLOW (GPM) :	AVAILABLE FLOW AT TAPPING POINT (GPM) :		
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :	AVAILABLE PRESSURE AT TAPPING POINT (PSI) :		

ANNEX A.3 – FF DESIGN CRITERIA FOR STORAGE – EARLY SUPPRESSION FAST RESPONSE (ESFR)			
ROOM NAME:		SHEET REFERENCE / DRAWING NUMBER :	
FLOOR LEVEL:		SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)	
ZONE CONTROL VALVE TAGGING:		☐ MOST REMOTE	
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):		☐ MOST DEMAND	
TYPE OF SPRINKLER SYSTEM: ☐ WET			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	STORAGE		
HAZARD CLASSIFICATION:	HIGH PILED STORAGE		
STORAGE CONFIGURATION:	SOLID PILED, SHELF, BIN BOX, RACK, ETC.		
EXAMPLE LIST OF MATERIALS STORED:			
COMMODITY CLASS:	CLASS I-IV,GROUP A,B,C PLASTIC,RUBBER TIRE OR ROLL PAPER		
PALLET TYPE (FOR PALLET STORAGE):	WOOD, UNREINFORCED OR REINFORCED PLASTIC		
PACKAGING TYPE:	ENCAPSULATED, NONENCAPSULATED, CARTON		
MAX. STORAGE HEIGHT:		M	
MAX. CEILING / ROOF HEIGHT:		M	
ROOF SLOPE (RISE OVER RUN)		%	
SPRINKLER K-FACTOR:		([GPM/(PSI)$^{1/2}$])	
NO. OF SPRINKLERS:			
SPRINKLER RESIDUAL PRESSURE:		PSI	
TYPE OF SPRINKLER:	STD. SPRAY, EXTENDED COVERAGE		
SPRINKLER ORIENTATION:	UPRIGHT, PENDENT		
MAX. CEILING TEMPERATURE:		°C	
SPRINKLER TEMPERATURE RATING:	ORDINARY , INTERMEDIATE , HIGH		
HOSE ALLOWANCE:		GPM	
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR IN-RACK SPRINKLER (IF APPLICABLE)			
RACK TYPE:	SOLID SHELVES, OPEN, SLATTED, ETC.		
RACK ARRANGEMENT:	SINGLE, DOUBLE, MULTIPLE ROW, ETC.		
LEVEL OF IN RACK SPRINKLERS:			
NUMBER OF IN-RACK DESIGN SPRINKLERS:			
SPRINKLER K-FACTOR:		([GPM/(PSI)$^{1/2}$])	
MAX. SPACING (VERTICAL/HORIZONTAL):		M	
MIN. FLOW PER IN RACK SPRINKLER:		GPM	
SPRINKLER RESIDUAL PRESSURE:		PSI	
TOTAL IN-RACK SPRINKLER DEMAND:		GPM	
SUMMARY OF CALCULATION		INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)	
CALCULATED TOTAL DEMAND FLOW (GPM) :		AVAILABLE FLOW AT TAPPING POINT (GPM) :	
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :		AVAILABLE PRESSURE AT TAPPING POINT (PSI) :	

ANNEX A.4 - FF DESIGN CRITERIA FOR SPRINKLER IN OTHER OCCUPANCIES (EXCEPT FOR STORAGE)			
ROOM NAME:	SHEET REFERENCE / DRAWING NUMBER :		
FLOOR LEVEL:	SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)		
ZONE CONTROL VALVE TAGGING:		☐ MOST REMOTE	
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):		☐ MOST DEMAND	
TYPE OF SPRINKLER SYSTEM: ☐ WET ☐ DELUGE ☐ SINGLE INTERLOCK PRE-ACTION ☐ DOUBLE INTERLOCK PRE-ACTION			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	RESIDETIAL APARMENT, INDUSTRIAL, ETC.		
HAZARD CLASSIFICATION:	LIGHT HAZARD, ORDINARY HAZARD (OH-1, OH-2), EXTRA HAZARD (EH-1,EH-2)		
MAX. CEILING / ROOF HEIGHT:		M	
ROOF SLOPE (RISE OVER RUN)		%	
DESIGN AREA:		FT^2	
DESIGN DENSITY:		GPM/FT^2	
DESIGN MODIFIERS:			
NO. OF SPRINKLERS IN DESIGN AREA:			
SPRINKLER RESIDUAL PRESSURE:		PSI	
SPRINKLER K-FACTOR:		$([GPM/(PSI)^{1/2}])$	
TYPE OF SPRINKLER:	STD. SPRAY, EXTENDED COVERAGE,		
SPRINKLER ORIENTATION:	UPRIGHT, PENDENT ,SIDEWALL		
MAX. CEILING TEMPERATURE:		°C	
SPRINKLER TEMPERATURE RATING:	ORDINARY , INTERMEDIATE , HIGH		
RESPONSE TYPE:	QUICK RESPONSE , STANDARD RESPONSE		
HOSE ALLOWANCE:		GPM	
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR PREACTION SYSTEM (IF APPLICABLE)			
NUMBER OF SPRINKLERS CONTROLLED BY PREACTION VALVE:			
SYSTEM SIZE (TOTAL PIPE VOLUME AFTER PREACTION VALVE):		GALLONS	
MAXIMUM WATER DELIVERY TIME:		SECONDS	
SUMMARY OF CALCULATION	INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)		
CALCULATED TOTAL DEMAND FLOW (GPM) :	AVAILABLE FLOW AT TAPPING POINT (GPM) :		
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :	AVAILABLE PRESSURE AT TAPPING POINT (PSI) :		

ANNEX A.5 - FF DESIGN CRITERIA FOR FOAM WATER SPRINKLER AND SPRAY SYSTEM (NFPA 16)			
ROOM NAME:	SHEET REFERENCE / DRAWING NUMBER :		
FLOOR LEVEL:	SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)		
ZONE CONTROL VALVE TAGGING:		☐ MOST REMOTE	
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):		☐ MOST DEMAND	
TYPE OF SPRINKLER SYSTEM: ☐ WET ☐ DELUGE ☐ SINGLE INTERLOCK PRE-ACTION ☐ DOUBLE INTERLOCK PRE-ACTION			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	INDUSTRIAL, STORAGE ETC.		
HAZARD CLASSIFICATION:	ORDINARY HAZARD (OH-1, OH-2), EXTRA HAZARD (EH-1,EH-2)		
SYSTEM ACTUATION VALVE:	DELUGE VALVE		
EQUIPMENT/HAZARD TO BE PROTECTED:	AIRCRAFT HANGARS, FLAMMABLE AND COMBUSTIBLE LIQUIDS		
MAX. STORAGE HEIGHT:		M	
MAX. CEILING / ROOF HEIGHT:		M	
DESIGN AREA:		FT^2	
DESIGN DENSITY:		GPM/FT^2	
NO. OF SPRINKLERS IN DESIGN AREA:			
SPRINKLER RESIDUAL PRESSURE:		PSI	
SPRINKLER K-FACTOR:		$([GPM/(PSI)^{1/2}])$	
SPRINKLER MIN. FLOW:		GPM	
TYPE OF SPRINKLER:	FOAM WATER SPRINKLER, SPRAY NOZZLE(OPEN), STANDARD SPRINKLER		
SPRINKLER ORIENTATION:	UPRIGHT, PENDENT		
MAX. CEILING TEMPERATURE:		˚C	
SPRINKLER TEMPERATURE RATING:	ORDINARY , INTERMEDIATE , HIGH		
RESPONSE TYPE:	QUICK RESPONSE , STANDARD RESPONSE		
SIZE OF DELUGE VALVE:		MM	
FOAM CONCENTRATE:	AFFF, FFFP,FP, MEDIUM/HIGH EXPANSION ETC.		
FOAM DISCHARGE DURATION:		MINUTES	
% FOAM SOLUTION:		%	
HOSE ALLOWANCE:		GPM	
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR PREACTION SYSTEM (IF APPLICABLE)			
NUMBER OF SPRINKLERS CONTROLLED BY PREACTION VALVE:			
SYSTEM SIZE (TOTAL PIPE VOLUME AFTER PREACTION VALVE):		GALLONS	
MAXIMUM WATER DELIVERY TIME:		SECONDS	
SUMMARY OF CALCULATION	INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)		
CALCULATED TOTAL DEMAND FLOW (GPM) :	AVAILABLE FLOW AT TAPPING POINT (GPM) :		
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :	AVAILABLE PRESSURE AT TAPPING POINT (PSI) :		

ANNEX A.6 - FF DESIGN CRITERIA FOR WATER SPRAY SYSTEM (NFPA 15)			
ROOM NAME:	SHEET REFERENCE / DRAWING NUMBER :		
FLOOR LEVEL:	SPECIFIED AREA OF OPERATION: (REFER TO CLOUDED AREA)		
ZONE CONTROL VALVE TAGGING:		☐ MOST REMOTE	
REMOTEST SPRINKLER ELEVATION DIFFERENCE FROM PUMP SUCTION(M):		☐ MOST DEMAND	
TYPE OF SPRINKLER SYSTEM: WATER SPRAY SYSTEM , ULTRA HIGH SPEED WATER SPRAY SYSTEM			
NOTE: FILL UP THE FOLLOWING CRITERIA AS APPLICABLE. ADDITIONAL INFORMATION MAYBE ADDED.			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
OCCUPANCY:	INDUSTRIAL, STORAGE ETC.		
HAZARD CLASSIFICATION:	ORDINARY HAZARD (OH-1, OH-2), EXTRA HAZARD (EH-1,EH-2)		
SYSTEM ACTUATION VALVE:	DELUGE VALVE		
EQUIPMENT/HAZARD TO BE PROTECTED:	ELECTRIC HAZARDS, GASEOUS AND FLAMMABLE MATERIALSM COMBUSTIBLE SOLIDS, ETC.		
DESIGN AREA / NET SURFACE AREA:		FT^2	
DESIGN DENSITY:		GPM/FT^2	
TYPE OF WATER SPRAY NOZZLE:	OPEN SPRAY NOZZLE		
TEMPERATURE RATING:		°C	
NUMBER OF DESIGN NOZZLES:			
NOZZLE K-FACTOR:		$([GPM/(PSI)^{1/2}])$	
MIN. PRESSURE PER NOZZLE:		PSI	
MIN. FLOW PER NOZZLE		GPM	
SIZE OF DELUGE VALVE:		MM	
HOSE ALLOWANCE:		GPM	
DETECTION EQUIPMENT:	PILOT SPRINKLER, AUTOMATIC DETECTOR		
WATER DURATION:		MINUTES	
ADDITIONAL INFORMATION FOR PREACTION SYSTEM (IF APPLICABLE)			
NUMBER OF SPRINKLERS CONTROLLED BY PREACTION VALVE:			
SYSTEM SIZE (TOTAL PIPE VOLUME AFTER PREACTION VALVE):		GALLONS	
MAXIMUM WATER DELIVERY TIME:		SECONDS	
SUMMARY OF CALCULATION	INFO: FOR CENTRALIZED FIRE PUMP(IF APPLICABLE)		
CALCULATED TOTAL DEMAND FLOW (GPM) :	AVAILABLE FLOW AT TAPPING POINT (GPM) :		
CALCULATED MIN. RESIDUAL PRESSURE (PSI) :	AVAILABLE PRESSURE AT TAPPING POINT (PSI) :		

ANNEX B – FF DESIGN CRITERIA FOR CLEAN AGENT FIRE EXTINGUISHING SYSTEMS			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
EXTINGUISHING AGENT:			
DISCHARGE TIME:		Seconds	
DESIGN CONCENTRATION:		%	
SPECIFIC VAPOR VOLUME:		(s) $(m^3/kg)^d$	
DESIGN TEMPERATURE:		°C	
SUMMARY OF AREAS SERVED BY CLEAN AGENT			
ROOM INFORMATION	ROOM NAMES (SEE EXAMPLE BELOW)		
	MV ROOM	TELECOM ROOM	IT ROOM
FLOOR LEVEL			
GRID LINE REFERENCE			
SHEET REFERENCE			
ROOM AREA (M^2)			
ROOM HEIGHT (M)			
ROOM VOLUME (M^3)			
ESTIMATED CAPACITY(KG)			
NO. OF CYLDINERS & CAPACITY PER CYLINDER(KG)			

Note:

1) The values in the table above are for estimation purposes only.
2) Room volume shall include the ceiling void, raised floor, trench (as applicable).
3) Specialist contractor shall verify minimum required capacity considering other design factors. (Such as enclosure leakages/openings, room pressure, etc.)
4) Clean agents shall be compliant to QCD- General Requirements 6.08 and NFPA 2001.
5) Final Design & Installation of Clean Agent fire extinguishing shall be as per manufacturer recommendation.

ANNEX C – FF DESIGN CRITERIA FOR FIXED AEROSOL FIRE EXTINGUISHING SYSTEMS			
AEROSOL SYSTEM: ☐ CONDNESED AEROSOL ☐ FIXED AEROSOL			
CRITERIA	VALUE	UNIT	REFERENCE: STD. / CODE / CHAPTER / SECTION / TABLE / FIGURE)
AEROSOL AGENT:			
DISCHARGE TIME:		Seconds	
DESIGN CONCENTRATION:		%	
SPECIFIC VAPOR VOLUME:		(s) $(m^3/kg)^d$	
DESIGN TEMPERATURE:		°C	

SUMMARY OF AREAS SERVED BY CLEAN AGENT			
ROOM INFORMATION	ROOM NAMES (SEE EXAMPLE BELOW)		
	MV ROOM	TELECOM ROOM	IT ROOM
FLOOR LEVEL			
GRID LINE REFERENCE			
SHEET REFERENCE			
ROOM AREA (M^2)			
ROOM HEIGHT (M)			
ROOM VOLUME (M^3)			
ESTIMATED CAPACITY(KG)			
NO. OF CYLDINERS OR CYLDINERS & CAPACITY PER GENERATOR / CYLINDER(KG)			

Note:

1) The values in the table above are for estimation purposes only.
2) Room volume shall include the ceiling void, raised floor, trench (as applicable).
3) Specialist contractor shall verify minimum required capacity considering other design factors. (Such as enclosure leakages/openings, room pressure, etc.)
4) Minimum discharge time for condensed aerosol and dispersed aerosol using inert gas agent is <60sec. and <10s for dispersed aerosol systems using halocarbon agents as the dispersing means. Fixed aerosol fire extinguishing systems shall comply with NFPA 2010.
5) Final Design & Installation of Fixed aerosol fire extinguishing systems shall be as per manufacturer recommendation.
6) Condensed Aerosol and Fixed Aerosol systems shall be separate into different table / design criteria. Condensed Aerosol = Aerosol generators , Dispersed Aerosol = (Cylinder + piping + nozzles)