FIRE SUPPRESSION ABBREVIATIONS

(A)	
A	AMPERES
AC	ALTERNATING CURRENT
AF	AMPERE FRAME (BREAKER RATING)
AFC	ABOVE FINISHED COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ALT	ALTERNATE
ARCH	ARCHITECT
AT	AMPERES TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
(B)	
BLDG	BUILDING
BRKR, BKR	BREAKER
(C)	
C	CONDUIT
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
COM, COMM	COMMUNICATIONS
COTR	CONTRACTING OFFICER'S TECHNICAL REPRESENTATITIVE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
(D)	
DC	DIRECT CURRENT
DISC	DISCONNECT
DIST	DISTRIBUTION
DIV	DIVISION
DN	DOWN
DP	DISTRIBUTION PANEL
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DWG	DRAWING
(E)	
E, EX, EXIST	EXISTING
EG	EQUIPMENT GROUND
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EM, EMERG	EMERGENCY
EMT	ELECTRIC METALLIC CONDUIT
ENCL	ENCLOSURE
EQ, EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
(F)	
F	FUSE
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FDR	FEEDER
FL, FLR	FLOOR
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
FT	FOOT/FEET (')
NAC	FIRE ALARM EXTENDER PANEL
(G)	
G, GND, GRD	GROUND
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
(H)	
H	HORIZONTAL MOUNTING
HH	HAND HOLE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HT	HEIGHT
HTR	HEATER
HVAC	HEATING VENTILATION AND AIR CONDITIONING
HZ	HERTZ
(I)	
IG	ISOLATED GROUND
IN	INCH/INCHES (")
INCAND	INCANDESCENT
(J)	
JB, JBOX	JUNCTION BOX
(K)	
K	KEY INTERLOCK
Kcmil	1000 CIRCULAR mils
KV	KILOVOLTS (THOUSAND VOLTS)
KVA	KILOVOLTS-AMPERES (THOUSAND VOLT-AMPS)
kW	KILOWATTS (THOUSAND WATTS)
KWH	KILOWATT-HOURS
(L)	
L-G	LINE TO GROUND
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL
LA	LIGHTNING ARRESTOR
LAN	LOCAL AREA NETWORK
LC, LCP	LIGHTING CONTROL PANEL
LP	LIGHTING PANEL
LSI	LONG-TIME, SHORT-TIME, INSTANTANEOUS
LSIA	LONG-TIME, SHORT-TIME, INSTANTANEOUS, GROUND-FAULT ALARM ONLY
LSIG	LONG-TIME, SHORT-TIME, INSTANTANEOUS, GROUND-FAULT
LTG	LIGHTING
LV	LOW VOLTAGE (BELOW 50 VOLTS)
(M)	
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE (OVER 600V LESS THAN 39KV)
(N)	
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO., NUM, #	NUMBER
NTS	NOT TO SCALE
(O)	
OC	ON CENTER
OCPD	OVERCURRENT PROTECTION DEVICE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OH	OVERHEAD
OHE/T	OVERHEAD ELECTRIC/TELEPHONE
OPP	OPPOSITE
(P)	
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX
POP	POWER DISTRIBUTION PANEL
PE	PHOTO ELECTRIC
PF	POWER FACTOR
PH, Ø	PHASE
PNL	PANEL
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
(Q)	
QTY	QUANTITY
(R)	
R, RE	RELOCATE AS SHOWN
RCLP	REMOTE CONTROL LIGHTING PANEL
RCPT	RECEPTACLE
REF	REFRIGERATOR
RF	RADIO FREQUENCY
RLA	RATED (RUNNING) LOAD AMPS
RM	ROOM
RP	RECEPTACLE PANELBOARD
RSC	RIGID STEEL CONDUIT
(S)	
SCH, SCHED	SCHEDULE
SEC	SECONDARY
SF	SQUARE FOOT
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPEC(S)	SPECIFICATION(S)
SPKR	SPEAKER
SPST	SINGLE POLE SINGLE THROW
STD	STANDARD
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
(T)	
TB	TERMINAL BLOCK
TBB	TELEPHONE BACKBOARD
TC	TIME CLOCK
TEL, TELE	TELEPHONE
TELECOM	TELECOMMUNICATIONS
TP	TAMPERPROOF
TV	TELEVISION
TYP	TYPICAL
(U)	
UG	UNDERGROUND
UGP	UNDERGROUND PRIMARY
UGS	UNDERGROUND SECONDARY
UGT	UNDERGROUND TELEPHONE
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
(V)	
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE/ VARIABLE FREQUENCY MOTOR CONTROLLER
(W)	
W	WIRE
W/	WITH
W/O	WITHOUT
WHM	WATT HOUR METER
WP, W.P.	WEATHERPROOF
(X)	
X	REMOVE DEVICE
XFMR	TRANSFORMER
(Z)	
% Z	PERCENT IMPEDANCE

REFRENCE SYMBOLS

SECTION NUMBER
1
E0.1
DRAWING NUMBER WHERE DRAWN

4 — DEMO KEY NOTE

MXXX — KEY NOTE

FIRE SUPPRESSION LEGENDS AND SYMBOLS

- NEW FIRE PROTECTION PIPING
- EXISTING FIRE PROTECTION PIPING TO REMAIN
- NEW FIRE PROTECTION PIPING - UNDERGROUND
- RECESSED PENDENT SPRINKLER
- CONCEALED SPRINKLER
- PENDENT SPRINKLER
- SIDEWALL SPRINKLER
- UPRIGHT SPRINKLER
- ELBOW
- CAP OR PLUG
- TEE
- TEE DOWN
- ELBOW - TURNED DOWN
- PIPE CONTINUATION
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- OS&Y VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- ALARM CHECK VALVE
- DRY PIPE VALVE
- PREACTION VALVE
- DELUGE VALVE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- GATE VALVE - NON RISING STEM
- WALL MOUNTED POST INDICATOR VALVE
- BACKFLOW PREVENTER ASSEMBLY
- FIRE PUMP
- JOCKEY PUMP
- PUMP/BACKFLOW TEST CONNECTION, WALL MOUNTED
- PUMP/BACKFLOW TEST CONNECTION, FREESTANDING
- FIRE PUMP FLOW METER
- ZCA — ZONE CONTROL ASSEMBLY CONSISTING OF CHECK VALVE, BUTTERFLY VALVE, PRESSURE GAGE, WATER FLOW SWITCH, VALVE SUPERVISORY SWITCH, PRESSURE RELIEF VALVE, AND INSPECTORS TEST AND DRAIN.
- 2.5" FIRE HOSE VALVE CONNECTION
- 2.5" FIRE HOSE VALVE IN CABINET
- HOSE STATION
- FS — WATER FLOW SWITCH
- TS — VALVE SUPERVISORY SWITCH
- AP — AIR PRESSURE SWITCH
- INSPECTOR'S TEST CONNECTION
- A — AIR COMPRESSOR
- N — NITROGEN GENERATOR
- A — RISER MOUNTED AIR COMPRESSOR
- POINT OF CONNECTION
- HYDRAULIC CALCULATION AREA
- # — HYDRAULIC NODE
- FDC, WALL MOUNTED
- FDC, FREESTANDING
- PRESSURE GAUGE
- WATER MOTOR GONG

SPRINKLER HAZARD CLASSIFICATION CRITERIA

NFPA 13 HAZARD CLASSIFICATION

OCCUPANCY CLASSIFICATION.....LIGHT HAZARD
DESIGN DENSITY.....0.10 GPM/SF
REMOTE HYDRAULIC AREA 1500SF

OCCUPANCY CLASSIFICATION.....ORDINARY HAZARD 1
DESIGN DENSITY.....0.15GPM/SF
REMOTE HYDRAULIC AREA 1500SF

OCCUPANCY CLASSIFICATION.....ORDINARY HAZARD 2
DESIGN DENSITY.....0.20 GPM/SF
REMOTE HYDRAULIC AREA 1500SF

OCCUPANCY CLASSIFICATION.....EXTRA HAZARD 1
DESIGN DENSITY.....0.3GPM/SF
REMOTE HYDRAULIC AREA 2500SF

OCCUPANCY CLASSIFICATION.....EXTRA HAZARD 2
DESIGN DENSITY.....0.40 GPM/SF
REMOTE HYDRAULIC AREA 2500SF

FIRE FLOW CALCULATIONS

FIRE FLOW DEMAND:
THE CONSTRUCTION TYPE OF THE BUILDING PER NFPA 220 IS TYPE II (222). THEREFORE, THE FIRE FLOW CALCULATION AREA SHALL BE THE TOTAL AREA OF THE THREE LARGEST SUCCESSIVE FLOORS. A 75% REDUCTION IN FIRE FLOW IS PERMITTED PER NFPA 1 18.4.4.3.2 SINCE THE BUILDING IS PROTECTED THROUGHOUT BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM.

AREA OF THREE LARGEST LEVELS INCLUDING BUILDING OVERHANGS: 346,375 SF
LEVEL 1: 111,173 SF
LEVEL 2: 143,935 SF
LEVEL 3: 91,267 SF

MINIMUM FIRE FLOW RATE AND DURATION PER NFPA 1 TABLE 18.4.4.2.1: 6000 GPM FOR 4 HOURS
MINIMUM FIRE FLOW RATE AND DURATION UTILIZING THE 75% REDUCTION: **1500 GPM FOR 2 HOURS**

FIRE HYDRANT REQUIRMENTS (NFPA 1 18.5):
MINIMUM NUMBER OF HYDRANTS PER NFPA 1 TABLE 18.5.4.3: 1 HYDRANT
NUMBER OF HYDRANTS PROVIDED FOR THE SITE: 9 HYDRANTS
MAXIMUM DISTANCE BETWEEN FIRE HYDRANTS: 500 FT
MAXIMUM DISTANCE FROM CLOSEST POINT ON THE BUILDING: 400 FT

FIRE SUPPRESSION GENERAL NOTES

1. SCOPE OF WORK: PROVIDE A COMPLETE HYDRAULICALLY- CALCULATED AUTOMATIC SPRINKLER SYSTEM THROUGHOUT THE AREA OF WORK, INCLUDING BUT NOT LIMITED TO FIRE PUMP, BACKFLOW PREVENTER ASSEMBLY, ZONE CONTROL ASSEMBLIES, WATER FLOW ALARM SWITCHES, VALVE SUPERVISORY SWITCHES, CHECK VALVES, CONTROL VALVES, PIPING, HANGERS, SPRINKLERS, ALL ASSOCIATED EQUIPMENT, WIRING AND APPURTENANCES, NORMALLY AND CUSTOMARILY REQUIRED, WHETHER INDICATED OR INHERENTLY NECESSARY DUE TO THE NATURE OF THE WORK, FOR A COMPLETE AND OPERATIONAL SYSTEM.
2. ALL WORK SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE APPLICABLE BUILDING AND FIRE CODES AND THE REFERENCED EDITIONS OF NFPA 13, 14, 20, 22, 70 AND 72.
3. WHERE ANY CONFLICT AND/OR DISCREPANCY BETWEEN THESE GENERAL NOTES AND ANY OTHER INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS EXISTS, THE MORE STRINGENT REQUIREMENT SHALL PREVAIL AND BE A REQUIREMENT OF THE WORK. THAT NOTWITHSTANDING, ANY SUCH CONFLICT AND/OR DISCREPANCY SHALL PROMPTLY BE BROUGHT TO THE ATTENTION OF THE OWNER, ARCHITECT AND ENGINEER.
4. A WET PIPE SPRINKLER SYSTEM SHALL BE INSTALLED IN ALL HEATED SPACES. DRY PIPE SYSTEM AND HEAT TRACE PIPING WILL BE INSTALLED IN ALL SPACES REQUIRING A SPRINKLER(S) WHERE EXPOSED TO FREEZING TEMPERATURES.
5. THE TERM "PROVIDE" SHALL MEAN FURNISH, INSTALL AND CONNECT EQUIPMENT/DEVICE FOR A COMPLETE AND OPERATIONAL SYSTEM. THE TERM "REMOVE" SHALL MEAN DISCONNECT AND CLEAR EQUIPMENT/DEVICE FROM SITE, AS WELL AS MAINTAINING UPSTREAM AND DOWNSTREAM EQUIPMENT/DEVICES AS REQUIRED.
6. THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC AND INTENDED TO SHOW DESIGN INTENT ONLY. RUN ALL PIPING STRAIGHT AND TIGHT TO THE FACE OF STRUCTURAL MEMBERS AND WALLS, PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL STEEL OR CONCRETE ELEMENTS.
7. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS ON DRAWINGS PRIOR TO EXECUTION OF THIS CONTRACT. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO VERIFY JOB CONDITIONS AND COORDINATE ALL SYSTEM COMPONENTS. CONTRACTOR SHALL REPORT ANY DISCREPANCIES WITH THESE DRAWINGS TO THE ENGINEER IMMEDIATELY.
8. COORDINATE ALL WORK AND AVOID ALL CONFLICTS WITH LIGHTING FIXTURES, DIFFUSERS, GRILLS, DUCTS, STRUCTURAL MEMBERS, PIPES AND OTHER OBSTRUCTIONS.
9. NO STRUCTURAL MEMBERS SHALL BE CUT, DRILLED OR BURNED UNLESS PREVIOUSLY APPROVED BY THE STRUCTURAL ENGINEER. FURTHER, ANY APPROVED CUTTING OR PATCHING OF ANY STRUCTURAL WORK SHALL NOT RESULT IN A REDUCTION OF LOAD-CARRYING AND/OR LOAD-DEFLECTION RATIO. PRIOR TO SUCH WORK, OBTAIN APPROVAL FROM THE ENGINEER OF RECORD. INSTALLATION OF PIPING SHALL FOLLOW REQUIRMENTS OF NFPA 13 18.4.9.
10. ALL WALL AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED. PROVIDE PIPE SLEEVES FOR WALL AND FLOOR PENETRATIONS AS INDICATED IN THE SPECIFICATIONS. ALL PENETRATIONS IN WALLS, CEILINGS AND FLOORS SHALL BE PROVIDED WITH A UL-LISTED PENETRATION SEAL ASSEMBLY, WITH A FIRE RATING EQUIVALENT TO OR GREATER THAN THE FIRE RATING OF THE BARRIER PENETRATED STAIRWAY, SHAFT ENCLOSURES, AND FLOOR SLABS SHALL BE CONSIDERED 2-HOUR FIRE RESISTIVE RATED CONSTRUCTION UNLESS OTHERWISE NOTED.
11. PRIOR TO CORE DRILLING, CONTRACTOR SHALL VERIFY EXISTING CONDITION NOT TO DAMAGE ANY STRUCTURAL ELEMENT, CONDUIT, REBAR, AND ETC. ANY DAMAGE RESULTING FROM THE WORK, WHETHER INTENTIONAL OR NOT, SHALL BE REPAIRED AT NO ADDITIONAL COST TO, AND TO THE SATISFACTION OF THE OWNER.
12. ALL DAMAGE TO WALLS, CEILINGS, FLOORS, AND STRUCTURAL MEMBERS FROM THE WORK SHALL BE PATCHED, REPAIRED AND PAINTED WITH NEW MATERIALS TO MATCH ADJACENT WORK, WHETHER SPECIFICALLY NOTED OR NOT.
13. WHERE POSSIBLE, SPRINKLERS SHALL BE ALIGNED WITH OTHER SPRINKLERS INSTALLED IN THE SAME ROOM OR AREA.
14. AS A MINIMUM, MAINTAIN 6-FT 8-INCH HEAD ROOM CLEARANCE BETWEEN BOTTOM OF SPRINKLER PIPE AND FINISHED FLOOR, INCLUDING STAIRWELLS.
15. CONTRACTOR SHALL PAY ALL REQUIRED FEES AND OBTAIN ALL NECESSARY PERMITS AND LICENSES FOR INSTALLATION OF THE WORK.
16. COORDINATE AND SEQUENCE THE WORK PRIOR TO FABRICATION AND INSTALLATION OF EQUIPMENT. MAKE NECESSARY ACCOMMODATIONS TO MEET THE INTENT OF THE DRAWINGS AND ENSURE A COORDINATED INSTALLATION.
17. RUN ALL EXPOSED ELEMENTS NEATLY, TIGHT TO THE STRUCTURE (EXCEPT WHERE NOTED), PARALLEL TO WALLS, AND AS INCONSPICUOUSLY AS POSSIBLE.
18. INSTALL ALL CEILING SPRINKLERS IN 2 FT X 2 FT ACOUSTICAL PANEL CEILINGS IN THE CENTER OF THE PANELS, AND IN 2 FT X 4 FT PANELS, INSTALL DEVICE IN THE CENTER OF THE 2 FT X 4 FT OR 2 FT X 2 FT SQUARE AREAS.
19. PROVIDE SPRINKLER(S) UNDER ALL OBSTRUCTIONS GREATER THAN 48 INCHES IN WIDTH AND AS NEEDED TO PROVIDE PROPER COVERAGE AS REQUIRED BY NFPA 13.
20. PROVIDE LISTED GUARDS FOR SPRINKLER PROTECTION WHEN INSTALLED BELOW 7 FT AFF.
21. CONTRACTOR SHALL PROVIDE AN AUTOMATIC AIR VENTING DEVICE NEAR THE HIGHEST POINT WET PIPE SPRINKLER SYSTEM(S) PER NFPA 13.
22. CONTRACTOR SHALL PROVIDE AUXILIARY LOW POINT DRAINS WHERE REQUIRED PER NFPA 13. WHERE AUXILIARY DRAINS ARE INSTALLED BEHIND HARD CEILINGS, PROVIDE AN ACCESSIBLE PANEL DIRECTLY BENEATH THE DRAIN.
23. CONTRACTOR SHALL OBTAIN DATA FROM A WATER FLOW TEST CONDUCTED NO MORE THAN 12 MONTHS PRIOR TO SHOP DRAWING PLAN SUBMITTAL TO AUTHORITY HAVING JURISDICTION (AHJ). WATER FLOW TEST SHALL BE PERFORMED IN ACCORANCE WITH NFPA 291.
24. ALL EQUIPMENT SHALL BEAR UL LISTING LABEL AT MINIMUM, OR IF UL LABEL IS NOT AVAILABLE, THE ITEM SHALL BE TESTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING AGENCY THAT MEETS UL AND AHJ REQUIREMENTS FOR TESTING FACILITIES. ALL EQUIPMENT SHALL BE INSTALLED PER THE LISTING AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
25. SPRINKLER SYSTEM WATERFLOW AND CONTROL VALVE SUPERVISORY SWITCHES SHALL BE MONITORED BY BUILDING FIRE ALARM SYSTEM. COORDINATE WITH FIRE ALARM CONTRACTOR SO THAT ELECTRICAL CONNECTION CAN BE MADE BETWEEN THESE DEVICES AND BUILDING FIRE ALARM SYSTEM.
26. CONTRACTOR SHALL TAKE NECESSARY MEASURES TO KEEP THE PREMISES DRY AT ALL TIMES AND PREVENT WATER DAMAGE TO SURFACES. REPAIR WATER DAMAGE RESULTING FROM THE WORK, WHETHER INTENTIONAL OR NOT, AT NO ADDITIONAL COST TO, AND TO THE SATISFACTION OF THE OWNER.
27. CONTRACTOR SHALL COORDINATE WITH OWNER TO AVOID FREEZING CONDITIONS DURING CONSTRUCTION ONCE WATER IS FILLED IN THE SPRINKLER SYSTEM.
28. HYDROSTATIC TESTING OF FIRE SUPPRESSION SYSTEMS SHALL BE WITNESSED BY ENGINEER AND/OR AHJ, BEFORE CEILING CLOSE IN. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND/OR AHJ PRIOR TO TESTING.
29. CONTRACTOR SHALL CONDUCT FORWARD FLOW TESTING AND THE TESTING SHALL BE WITNESSED BY ENGINEER AND/OR AUTHORITY HAVING JURISDICTION.
30. PROVIDE DRAINS REQUIRED BY APPLICABLE CODES, WHETHER INDICATED IN THESE PLANS OR NOT. DISCHARGE ALL DRAINS TO THE EXTERIOR, UNLESS NOTED OTHERWISE.
    A. DISCHARGE DRAINS AT SIX INCHES ABOVE FINISHED GRADE. PROVIDE A CONCRETE SPLASH-BLOCK, WITH MINIMUM DIMENSIONS OF TWO FEET BY TWO FEET, AT EACH DRAIN.
31. PROVIDE PRINTED METAL OR ENGRAVED PLASTIC NAMEPLATES TO IDENTIFY FUNCTION OF ALL ISOLATION VALVES, DRAIN VALVES, AND OTHER FIRE PROTECTION SYSTEM EQUIPMENT. PERMANENTLY AFFIX TO VALVE BODY OR HANG WITH CHAIN. CONCEALED COMPONENTS SHALL ADDITIONALLY HAVE PRINTED METAL OR ENGRAVED PLASTIC NAMEPLATES IDENTIFYING THE COMPONENT LOCATION AND FUNCTION PERMANENTLY AFFIXED TO ACCESS PANEL DOORS OR THE CEILING GRID WHERE THE COMPONENT IS ACCESSED.
32. REFER TO CIVIL DRAWINGS REGARDING FIRE PROTECTION WATER TANK STORAGE DESIGN. REFER TO CIVIL PLANS FOR WATER TANK, HYDRANT AND WATER MAIN LOCATIONS.

FIRE SUPPRESSION DESIGN PARAMETERS

1. FIRE HYDRANT FLOW TEST DATA
   a. DATE TEST WAS PERFORMED: APRIL 22, 2024 AT 9:35AM
   b. PERFORMED BY: FLOYD VAUGHAN – AZ. FLOW TESTING, LLC
   c. PRESSURE HYDRANT:
      i. LOCATION: SOUTH-SOUTHEAST CORNER OF PROJECT SITE TO THE NORTH OF APACHE CIRCLE.
      ii. OUTLET ELEVATION(FT): 5449
      iii. STATIC PRESSURE (PSI): 74
      iv. RESIDUAL PRESSURE (PSI): 39
   d. FLOW HYDRANT:
      i. LOCATION: SOUTHWEST CORNER OF PROJECT SITE TO THE NORTH OF APACHE CIRCLE.
      ii. FLOW (GPM): 1407
   e. FLOW (GPM) AT 20 PSI: 1778
   f. HIGH HGL ELEVATION (FT): 5449 (PRESSURE HYDRANT)
   g. LOW HGL ELEVATION (FT): 5447 (FLOW HYDRANT)

2. NEW FIRE WATER STORAGE TANKS ARE BEING ADDED. WATER STORAGE TANK WATER SUPPLY DATA WILL BE USED FOR THE FIRE PROTECTION DESIGN. EXPECTED MEASURMENTS FOR NEW TANKS PROVIDED BY DIBBLE CORP 2025-08-12:
   a. STATIC PRESSURE INTO FIRE PUMP ROOM FROM TANKS (PSI): 108
   b. PRESSURE INTO FIRE PUMP ROOM WHILE TANKS ARE FLOWING 1500 GPM (PSI): 86
   c. TANK CAPACITY: TWO 325,000 GAL TANKS FOR A TOTAL CAPACITY OF 650,000 GAL.
   d. ELEVATIONS:
      - HOSPITAL LEVEL 1 FF (FT): 5430.00
      - BOTTOM OF TANK (FT): 5650.00
      - TANK OUTLET ELEVATION (FT): 5650.66
      - TOP OF TANK (FT): 5681.50

   *PRESSURE REGULATION FOR BUILDING WATER SUPPLY WILL BE DONE THROUGH A MASTER PRESSURE REDUCING ASSEMBLY LOCATED IN THE FIRE PUMP ROOM.

3. SPRINKLER SYSTEM DESIGN CRITERIA:
   a. LIGHT HAZARD OCCUPANCY -
      ALL AREAS ARE LIGHT HAZARD UNLESS OTHERWISE NOTED.
   b. ORDINARY HAZARD OCCUPANCY -
      LOADING DOCK, STORAGE AREAS, MECHANICAL AND ELECTRIC ROOMS AND SIMILAR AREAS WHERE STOCKPILES OF COMBUSTIBLE MATERIALS DO NOT EXCEED 8'-0".
   c. EXTRA HAZARD OCCUPANCY -
      STORAGE AREAS INCLUDING WHERE DESIGN CRITERIA REQUIRES ENHANCED PROTECTION, AND AREAS STORING PLASTICS EXCEEDING 5FT.

   *ALL AREAS SHALL BE CLASSIFIED IN ACCORDANCE WITH NFPA 13.4.3

4. SYSTEM PROTECTION AREA LIMITATIONS:
   a. THE MAXIMUM FLOOR AREA ON ANY ONE FLOOR TO BE PROTECTED BY SPRINKLERS SUPPLIED BY ANY ONE SPRINKLER RISER OR COMBINED SYSTEM SHALL BE 52,000 SQ FT FOR LIGHT AND ORDINARY HAZARD, AND 40,000 SQ FT FOR EXTRA HAZARD.
   b. THERE IS NO LIMIT TO THE NUMBER OF FLOORS THAT CAN BE PROTECTED BY A SINGLE RISER, BECAUSE EACH FLOOR IS CONSIDERED A SEPARATE FIRE AREA.
   c. SPRINKLER SYSTEM ZONES SHALL ALIGN WITH SMOKE COMPARTMENTS AS REQUIRED BY 2024 NFPA 99 16.9.1.3 AND 2012 NFPA 99 15.8.1.2.

5. SPRINKLER DESIGN DENSITIES/DEMAND CRITERIA/HOSE REQUIRMENTS/SUPPLY DURATION:
   a. LIGHT HAZARD - 0.10 GPM PER SQ FT OVER THE HYDRAULICALLY MOST REMOTE 1500 SQ FT. TOTAL COMBINED INSIDE AND OUTSIDE HOSE ALLOWANCE 100 GPM OVER 30 MINUTES.
   b. ORDINARY HAZARD 1 - 0.15 GPM PER SQ FT OVER THE HYDRAULICALLY MOST REMOTE 1500 SQ FT. TOTAL COMBINED INSIDE AND OUTSIDE HOSE ALLOWANCE 250 GPM OVER 60 MINUTES.
   c. ORDINARY HAZARD 2 - 0.20 GPM PER SQ FT OVER THE HYDRAULICALLY MOST REMOTE 1500 SQ FT. TOTAL COMBINED INSIDE AND OUTSIDE HOSE ALLOWANCE 250 GPM OVER 60 MINUTES.
   d. EXTRA HAZARD 1 - 0.30 GPM PER SQ FT OVER THE HYDRAULICALLY MOST REMOTE 2500 SQ FT. TOTAL COMBINED INSIDE AND OUTSIDE HOSE ALLOWANCE 500 GPM OVER 90 MINUTES.
   e. EXTRA HAZARD 2 - 0.40 GPM PER SQ FT OVER THE HYDRAULICALLY MOST REMOTE 2500 SQ FT. TOTAL COMBINED INSIDE AND OUTSIDE HOSE ALLOWANCE 500 GPM OVER 90 MINUTES.

   *DRY PIPE SYSTEMS AREA OF SPRINKLER OPERATION SHALL BE INCREASED BY 30% AS ALLOWED BY NFPA 13 19.2.3.2.5.

6. STANDPIPE DESIGN CRITERIA:
   a. DESIGN IN ACCORDANCE WITH NFPA 14 FOR CLASS I SYSTEMS, THE MINIMUM FLOW RATE FOR HYDRAULICALLY MOST REMOTE STANDPIPE SHALL BE 500 GPM. THE MINIMUM FLOW RATE FOR ADDITIONAL STANDPIPES SHALL BE 500 GPM PER STANDPIPE, WITH THE TOTAL NOT TO EXCEED 1000 GPM.
   b. FOR COMBINED SYSTEMS WITH AN APPROVED AUTOMATIC SPRINKLER SYSTEM, A SEPARATE SPRINKLER DEMAND IS NOT REQUIRED, AND THE SYSTEM SHALL NOT BE REQUIRED TO EXCEED 1000 GPM.

7. FIRE PUMP DESIGN CRITERIA:
   a. DESIGN IN ACCORDANCE WITH NFPA 20
   b. THE FIRE PUMP MUST MEET THE FOLLOWING REQUIREMENTS:
      i. EACH PUMP MUST BE CAPABLE OF WITHSTANDING A HYDROSTATIC PRESSURE OF TWICE THE MAXIMUM PRESSURE.
      ii. PUMPS MUST FURNISH NOT LESS THEN 150% OF THE RATED HEAD AT 65% OF THE RATED PRESSURE (SHUT-OFF NOT TO EXCEED 120% OF THE RATED PRESSURE)
      iii. THE MAXIMUM PUMP BRAKE HORSEPOWER MUST NOT EXCEED THE RATING OF THE PARTICULAR DRIVER.
      iv. POWER MUST BE UNINTERRUPTIBLE WITH THE PROPER PROTECTION CABLING AND EMERGENCY POWER. ALARMS SHOULD SOUND IF NORMAL IS INTERRUPTED.
      v. A JOCKEY PUMP WITH IT'S OWN CONTROL PANEL IS REQUIRED.
   c. FIRE PUMP PERFORMANCE REQUIRMENTS:
      i. PRESSURE: 115 PSI
      ii. FLOW: 1000 GPM
      iii. HORSEPOWER: 150 HP
   d. JOCKEY PUMP PERFORMANCE REQUIRMENTS:
      i. PRESSURE: 125 PSI
      ii. FLOW: 10 GPM
      iii. HORSEPOWER: 1.5

8. HELIPORT SUPPRESSION (NFPA 418, CAP 1264)
   a. HELIDECK DIAMETER: 49 FT
   b. TOTAL PROTECTED AREA: 2401 FT
   c. APPLICATION RATE: 0.1 GPM/FT
   d. MINIMUM APPLICATION RATE ON HELIDECK: 0.1*2401 = 240.1 GPM
   e. DURATION OF PROTECTION: 10 MIN
   f. NOZZLE COVERAGE: 26.25 FT
   g. NOZZLE "K" FACTOR: 4.55
   h. HOSE REEL FLOW RATE: 100 GPM
   i. HOSE REEL PRESSURE: 100 PSI

C

INDIAN HEALTH SERVICE · IHS · 1955 · DEPARTMENT OF HEALTH & HUMAN SERVICES, USA

IHS Whiteriver Hospital

200 W Hospital Drive
Whiteriver, Arizona, 85941

IHS Project #: 131445
IHS Contract #: 75H70123R00008
IHS Award Date: 02/02/2024

BASED ON PROGRAM OF REQUIREMENTS DATED [**03/26/22**], POR AMENDMENT DATED [**02/03/25**], AND ON SCHEMATIC DRAWINGS APPROVED [**11/19/24**].

SMITHGROUP

455 NORTH THIRD STREET
SUITE 250
PHOENIX, AZ 85004
602.265.2200
smithgroup.com

ISSUED FOR	DATE
BID ADDENDUM-C	14MAY26
FINAL CONSTRUCTION DOCUMENTS	23JAN26

SEALS AND SIGNATURES

Registered Professional Engineer (Fire Protection) CERTIFICATE NO. 74163 ANDREW J. OCHSANKEHL Expires May 14, 2026 ARIZONA U.S.A.

FIRE SUPPRESSION ABBREVIATIONS AND SYMBOLS

Drawn By: MURRAY Checked By: OCHSANKEHL

14094

PROJECT NUMBER

CD

FP0.1

SHEET NUMBER

MURRAY

5/12/2026 2:32:18 PM

Plot Date: