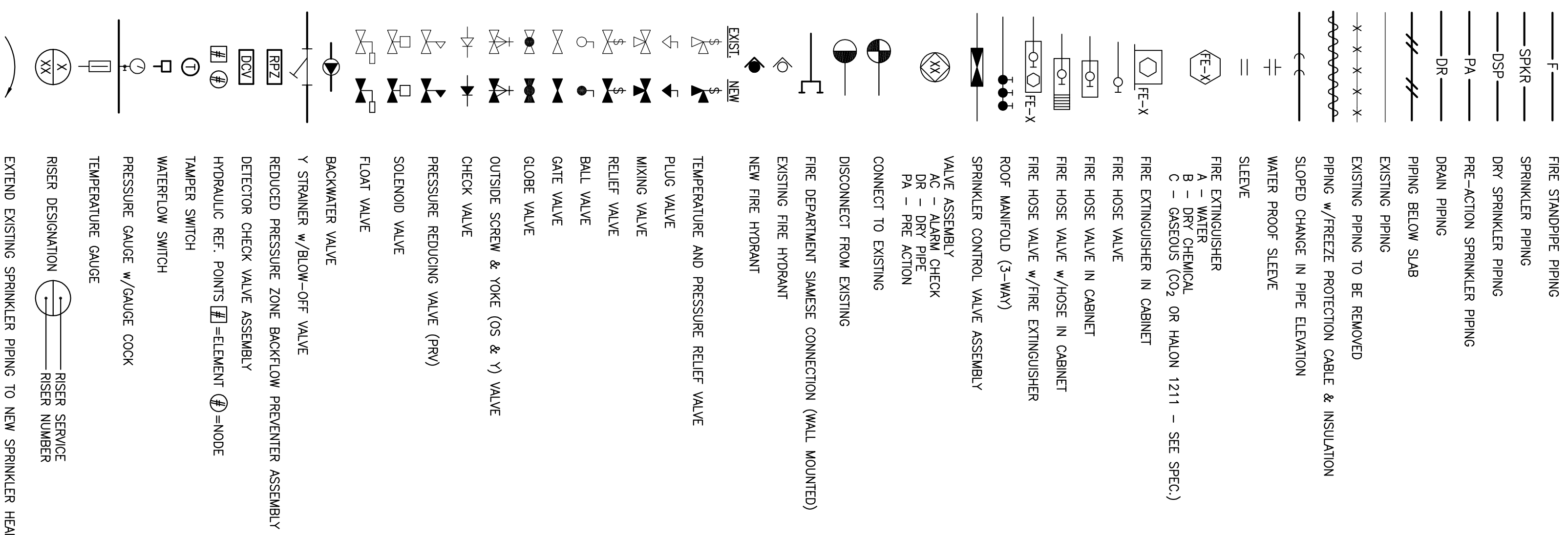


**FIRE PROTECTION SYMBOLS**

(NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT)



**FIRE PROTECTION ABBREVIATIONS**

(NOT ALL ABBREVS. ARE NECESSARILY USED ON THIS PROJECT)

ABD	AUTOMATIC BALL DRIP
AD	AREA DRAIN
AFR	AIRSIDE FINISHED FLOOR
AIS	AUTOMATIC TRANSFER SWITCH
BOP	BOTTOM OF PIPE
CBM	CUBIC FEET PER MINUTE
CV	CHECK VALVE
DA	DIAMETER
DR	DOWN (PENETRATES FLOOR SLAB)
DN	DOWN
(E)	EXISTING
(ER)	EXISTING TO BE REMOVED
(ERB)	EXISTING TO BE REMOVED & RELOCATED
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FNC	FIRE HOSE VALVE CABINET
FD	FLOOR DRAIN
FL	FLOOR
FP	FIRE PUMP
FSP	FIRE SPRINKLER
FT	FEET
FT	GENERAL CONTRACTION
CV	GATE VALVE
GAL	GALLONS
GPM	GALLONS PER MINUTE
HD	HEAT DETECTOR
ID	INSIDE DIAMETER
IN	INCH
JP	JOCKEY PUMP
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSE
NC	NOT IN THIS CONTACT
NO	NORMALLY OPEN
NS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OS&Y	OUTSIDE SCREW & Yoke GATE VALVE
PSA	POUNDS PER SQUARE INCH (ABSOLUTE)
PSI	POUNDS PER SQUARE INCH (GAGE)
PRV	PRESSURE REDUCING VALVE
(RE)	RELOCATED EXISTING
(RFD)	EXISTING TO BE REMOVED AND RETURN TO OWNER
SD	SMOKE DETECTOR
SPR	SPRINKLER
TOP	TOP OF PIPE
TS	TAMPER SWITCH
UN	UNLESS OTHERWISE NOTED
UP	UP (PENETRATES FLOOR SLAB)
WFS	WATER FLOW SWITCH
Z	ZONE

**FIRE PROTECTION GENERAL NOTES:**

- PROVIDE WET-PIPE SPRINKLERS IN ALL AREAS.
- REFER WATER FLOW TEST DATA TAKEN FROM THE HYDRANTS NEAREST SITE. IF NECESSARY TESTS AS REQUIRED BY NFPA STANDARDS TO DETERMINE CHARACTER OF WATER SUPPLY. MINIMUM OF 20 PSI DROP IN PRESSURE BETWEEN STATIC AND FLOW PRESSURE SHALL BE MAINTAINED IN ORDER TO OBTAIN ACCURATE DATA.
- SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED FOR LIGHT HAZARD OCCUPANCY EXCEPT AS NOTED.
- SPRINKLERS FOR GENERAL AREAS SHALL BE TYPE AS SCHEDULED. 165 DEG F RATED HYDRAULICALLY DESIGNED TO PROVIDE 0.10 GPM/5.0 FT OVER MOST FROM AREA. PER SPRINKLER SHALL BE 2.5 SQ FT PER SQUARE FOOT OF PROTECTIBLE AREA.
- SPRINKLERS IN STORAGE SPACES, LABORATORIES, RESEARCH, SPACES AND OTHER OCCUPANCY HAZARD SPACES SHALL BE HYDRAULICALLY DESIGNED TO PROVIDE 0.15 GPM/5.0 FT OVER MOST REMOTE 2000 SQ FT PLUS 250 GPM FOR HOSE STREAM. MAXIMUM PROTECTION AREA PER SPRINKLER SHALL BE 150 SQ FT.
- ADD 10% CONTINGENCY FACTOR TO HYDRAULIC CALCULATIONS.
- EXACT LOCATION OF SPRINKLER HEADS IN FINISHED AREAS WITH SUSPENDED CEILING SHALL BE AS INDICATED ON REFLECTED CEILING PLANS.
- MINIMUM PRESSURE AT END SPRINKLER HEAD 7 PSI.
- EQUIVALENT FITTING LENGTHS USED IN HYDRAULIC CALCULATIONS SHALL BE IN ACCORDANCE WITH NFPA STANDARD NO. 13 AND FACTORY LISTING. 0.5 2-IN. EQUIVALENT FITTING LENGTHS INDICATED IN NFPA-13 SHALL BE INCREASED BY 33%.
- WARGER FITTINGS ARE USED IN CONJUNCTION WITH UPRIGHT PIPE INCREASED BY 33%.
- MAXIMUM FLOW VELOCITY SHALL NOT EXCEED 20 FPS.
- WATER SUPPLY INFORMATION TO BE VERIFIED BY FLOW TEST.
  - A. STATIC PRESSURE - 92 PSI
  - B. FLOW PRESSURE - 750 GPM
  - ELEVATION:

- ALL AUTOMATIC SPRINKLER HEADS, PIPE FITTINGS, PIPE HANGERS, AUTOMATIC DETECTOR HEADS, AND TAMPER SWITCHES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION, APPROVAL AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. STAINLESS STEEL SHALL BE PAINTED.
- ALL EXPOSED PIPE, FITTINGS, HANGERS AND SUPPLEMENTARY STEEL IN CONNECTION NO MORE THAN 2 INCHES IN DIAMETER.
- PROVIDE AUXILIARY DRAINS FOR ALL BELOW DUCT SPRINKLERS AND OTHER TRAPPED SECTIONS. PIPING TO ONE SINGLE SPRINKLER IS EXCLUDED.
- PROVIDE FLUSHING CONNECTIONS WHERE REQUIRED BY NFPA AND F.M.A.
- COORDINATE WITH OWNER FOR ALL SHUTDOWNS.
- PROVIDE TEST CONNECTIONS AT HIGHEST POINT OF MAIN PORTION OF EACH CONNECTION TO SPRINKLER PIPE AT LEAST 1/2" IN SIZE AND SHALL DISCHARGE OUTSIDE BUILDING OR THROUGH 1/2" SMOOTH BORE BRASS OUTLET, WHERE IT CAN BE EASILY SEEN.
- PROVIDE ADDITIONAL HEADS UNDER DUCTWORK LARGER THAN 48" WIDE.

**HYDRAULIC DESIGN TABLE**

AREA CALCULATED	HAZARD CLASS	SYSTEM DESIGN DENSITY	DESIGNED AREA OF PROTECTION	SYSTEM DEMAND	HOSE STREAM	PRESSURE AVAILABLE	PRESSURE REQUIRED	REMARKS
FOURTH FLOOR	LIGHT	0.10 gpm/s.f.	1500 S.F.	216.2 GPM	100 GPM	88.9 PSI	80.7 PSI	

**SPRINKLER HEAD SCHEDULE**

TYPE	DESIGNATION	UPRIGHT	PENDENT	FLUSH PLATE SPKR.	SEMI RECESSED	SIDEWALL (CHROME FINISH)	SIDEWALL (NATURAL BRONZE FINISH)	FLUSH PENDENT	DRY	QUICK RESPONSE	EXTENDED COVERAGE	EXIST SPR HD TO BE REMOVED/RELOCATED	EXIST SPRINKLER HD	MANUFACTURER				REMARKS
														CENTRAL	RELIABLE	GRINNELL	STAR	
														GA4				K-5.6, 7/2" ORIFICE 165°F RATING
														FTFR				K-5.6, 7/2" ORIFICE 165°F RATING
														FSGR				K-5.6, 7/2" ORIFICE 165°F RATING

- NOTES:**
- EXPOSED UPRIGHT HEADS IN OCCUPIED SPACES SHALL BE CHROME FINISH.
  - PROVIDE ESUTOCHONS WHEN PENETRATING EXPOSED WALL.
  - PROVIDE SPRINKLER GUARDS AT ALL HEADS 7'-0" AND LOWER.
  - COLOR SELECTION BY ARCHITECT.