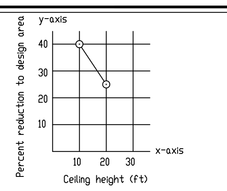
SECTION 11.2.3.2.3 Quick-Response Sprinklers

11.2.3.2.3.1 Where listed quick-response sprinklers, including extended coverage quick-response sprinklers, are used throughout a system or portion of a system having the same hydraulic design basis, the system area of operation shall be permitted to be reduced without revising the density as indicated in Figure 11.2.3.2.3.1 when all of the following conditions are satisfied:

(1) Wet pipe system
(2) Light hazard or ordinary hazard occupancy
(3) 25-ft (6.1 m) maximum ceiling height
(4) There are no unprotected ceiling pockets as allowed by 8.6.7 and 8.8.7 exceeding 32 ft² (3 m²)



Note: $y = \frac{-2x}{3} + 55$

For ceiling height ≥ 10 ft and ≤ 20 ft, $y = \frac{-2x}{3} + 55$
For ceiling height < 10 ft, y = 40
For ceiling height > 20 ft, y = 0
For SI units, 1 ft = 0.31 m.

Figure 11.2.3.2.3.1 Design Area Reduction for Quick-Response Sprinklers

AREA REDUCTION DETAIL

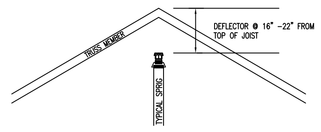
(PER NFPA 13, 2016 EDITION)

DESIGN CRITERIA:

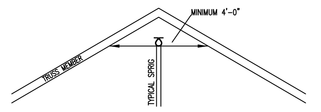
KITCHEN / STORAGE / MECH. AREAS:
PER NFPA 13, 2016 EDITION – ORD HAZARD GR I.
0.15 GPM/ SQ FT FOR 900 SQ. 130 SQ FT/ HEAD MAXIMUM SPACING.
TOTAL HOSE ALLOWANCE IS 250 GPM.

DINING / PUBLIC AREAS:
PER NFPA 13, 2016 EDITION – LIGHT HAZARD.
0.10 GPM/ SQ FT FOR 900 SQ. 225 SQ FT/ HEAD MAXIMUM SPACING.
TOTAL HOSE ALLOWANCE IS 100 GPM.

LIVING UNITS:
PER NFPA 13R, 2016
ALL HEADS IN A SINGLE COMPARTMENT OPERATING, UP TO MAX. 4 HEADS.
100 GPM FOR HOSE ALLOWANCE, QUICK RESPONSE HEADS.



TYPICAL HEAD LOCATION
"38 ATTIC SPRINKLER"

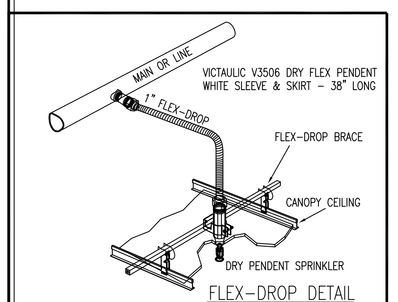


TYPICAL HEAD LOCATION
"STANDARD UPRIGHT SPRINKLER"

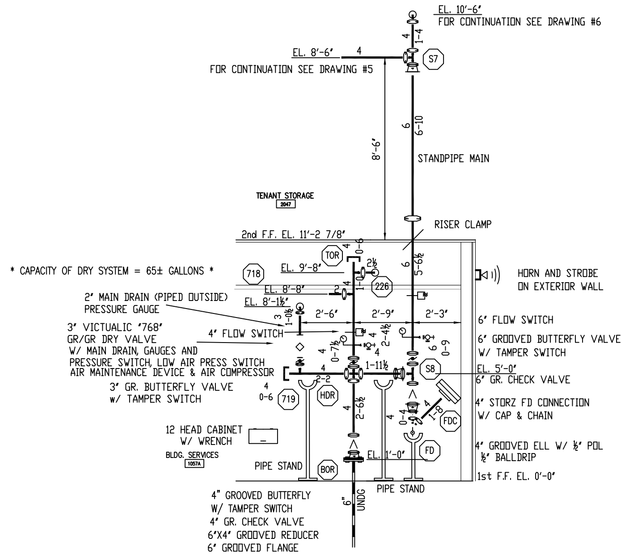
DESIGN CRITERIA: DRY PIPE SYSTEM

PER NFPA 13, ORDINARY HAZARD GR. 1 OCCUPANCY, 0.15 GPM/SQ. FT. FOR ENTIRE CEILING AREA UNDER CANOPY MAX 130 SQ. FT./HEAD SPACING & 250 GPM FOR HOSE ALLOWANCE.

ATTIC SPRINKLERS – 7 BACK TO BACK & 100 GPM FOR HOSE ALLOWANCE



FLEX-DROP DETAIL
NO SCALE



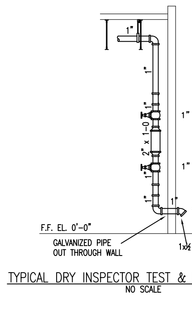
INDEPENDENT LIVING RISER DETAIL
SCALE: 1/4" = 1'-0"

DESIGN AREA No.19 – (CANOPY ATTIC) SYSTEM #3 DRY
7 BACK TO BACK HEADS OPERATING

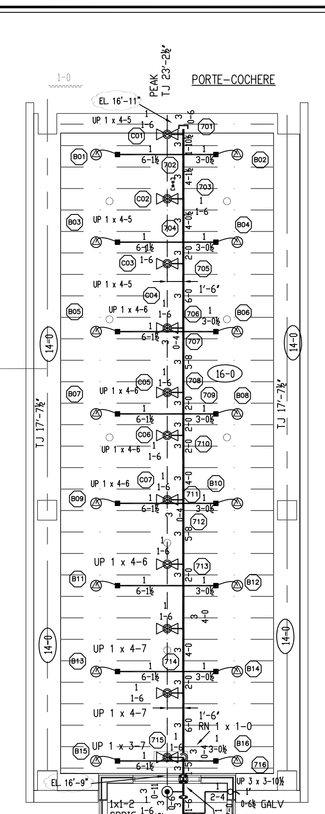
* Flow 268.52 gpm @38.325 psi @Base of Riser
Flow 268.52 gpm @42.860 psi @City Main
* Includes 100 gpm Hose Allowance.

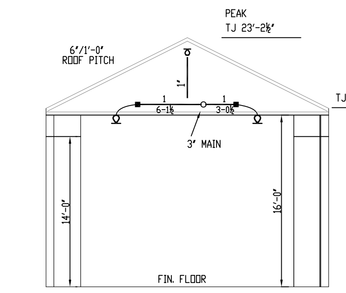
DESIGN AREA No.20 – (CANOPY CEILING) SYSTEM #3 DRY
DENSITY 0.15 FOR ENTIRE CANOPY

* Flow 597.45 gpm @50.123 psi @Base of Riser
Flow 597.45 gpm @59.258 psi @City Main
* Includes 250 gpm Hose Allowance.

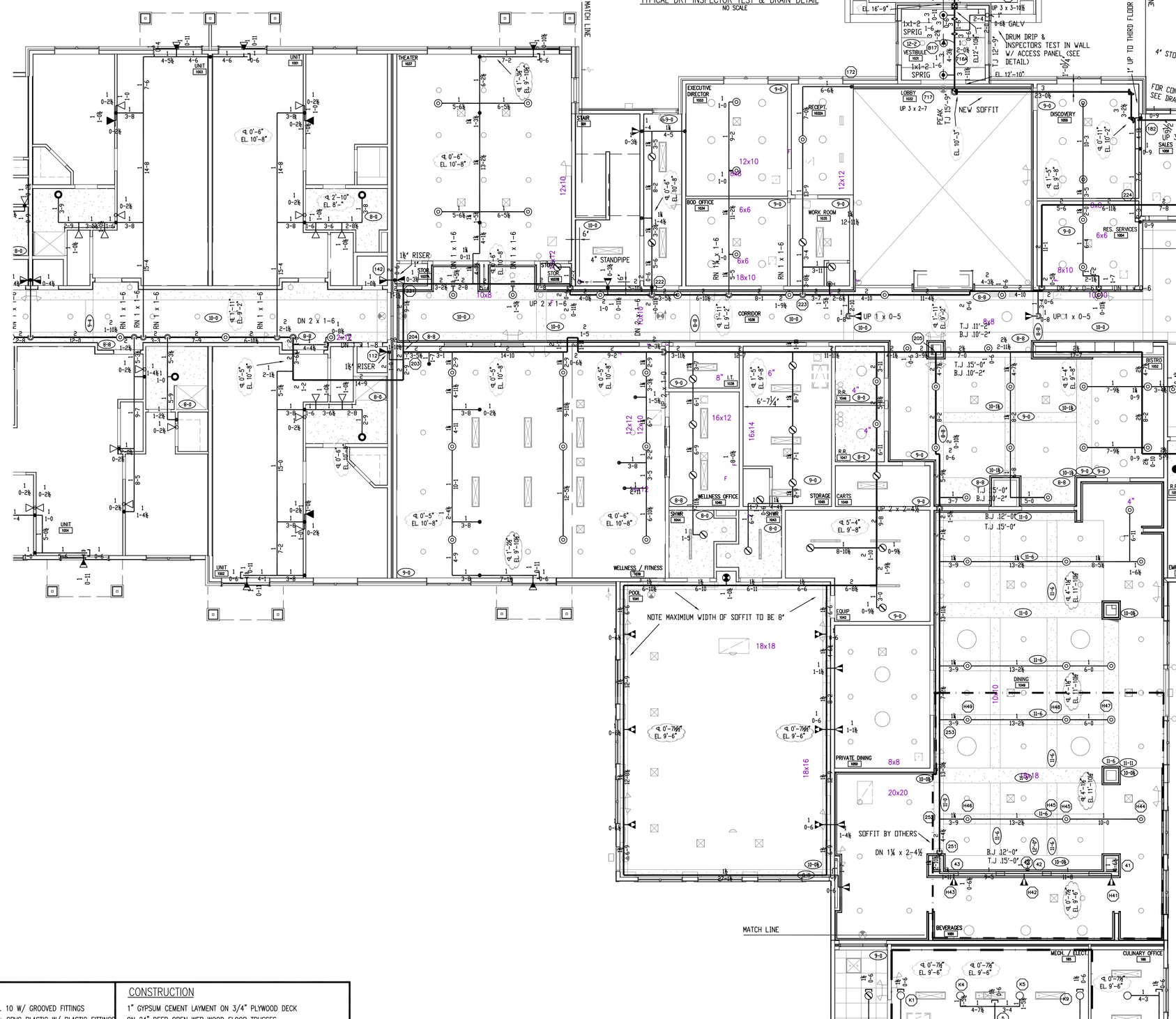


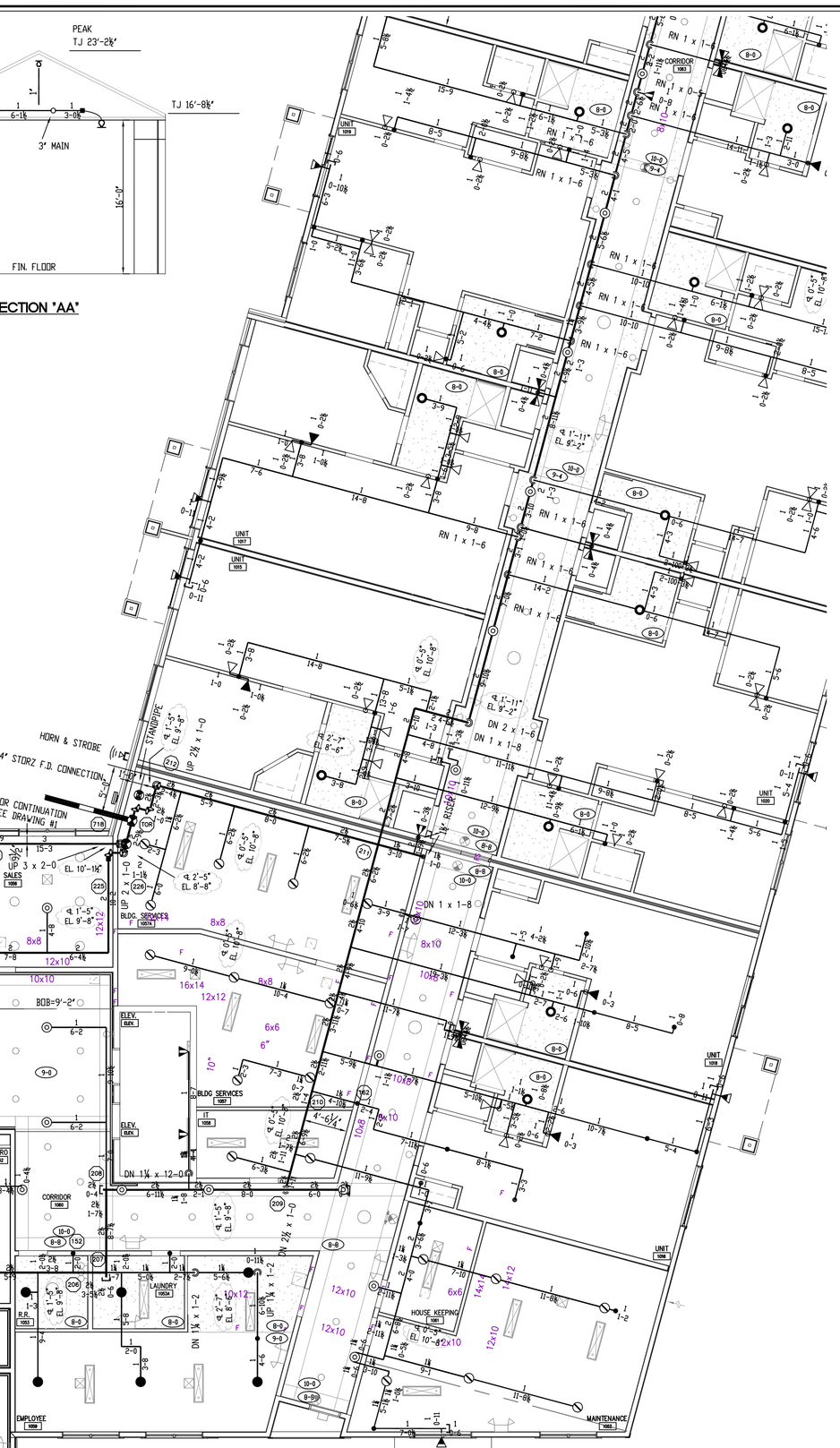
TYPICAL DRY INSPECTOR TEST & DRAIN DETAIL
NO SCALE





SECTION "AA"





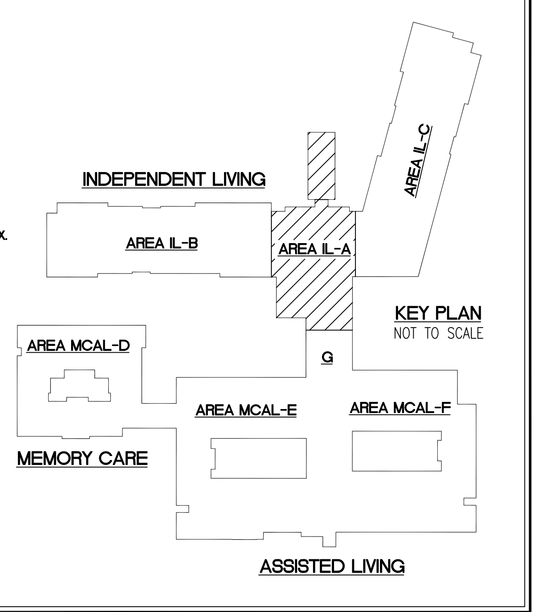
INDEPENDENT LIVING – 1st FLOOR

F.F.=0'-0"
TOP OF SECOND FLOOR EL.=11'-2 7/8" A.F.F.
TOP OF TRUSS EL.=11'-1 1/8" A.F.F.
24" DEEP WOOD TRUSSES @ 24" O.C.
BOTTOM OF 24" WOOD TRUSSES=9'-1 1/8"
UNIT CEILING HEIGHTS TO BE 9'-0" A.F.F. U.N.O.
BOTTOM OF 2X12 TRUSSES IN CORRIDOR = 10'-1 1/8" U.N.O.
ALL RESIDENTIAL SIDEWALL HEADS TO BE MAXIMUM 8'-0" FROM WALL
ALL SOFFIT TO BE MAXIMUM 8" WIDE SEE DETAIL
HANGERS TO BE SPACED PER NFPA-13
HANGERS TO BE COJ
ALL DROPS TO BE 1 x COJ
ALL HEADS WITHIN 24" FROM HVAC GRILL TO BE INTERMEDIATE TEMP.
● TYPICAL 1" VERTICAL RISER TO THIRD FLOOR
■ PLASTIC STEEL ADAPTER

1st FLOOR DINING AREA
OPERATING AREA = 5
0.10 GPM/SQ FT OVER 945 SQ FT
(NUMBER OF HEADS OPERATING 10)
DEMAND @ BASE OF RISER:
188.04 GPM @ 62.664 PSI
DEMAND @ CITY MAIN:
288.04 GPM @ 66.157 PSI

INDEPENDENT LIVING
DESIGNED PER NFPA-13R (2016 EDITION)
TOTAL AREA PROTECTED BY THIS SYSTEM IS APPROX.
107,400 SQ. FT. (39,750 SQ. FT. FIRST LEVEL, 37490
SECOND LEVEL AND 34,160 THIRD LEVEL)

1 STORY ASSISTED LIVING/MEMORY CARE (MCAL)
DESIGNED PER NFPA-13 (2016 EDITION)
TOTAL AREA PROTECTED BY THIS SYSTEM IS APPROX. 50,600 SQ. FT.



NOTES & LEGEND

THESE SHOP DRAWINGS ARE BASED ON THE OWNER'S ACCEPTANCE OF NFPA 25 AS THE OWNER'S STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS

OWNER TO PROVIDE ADEQUATE HEAT THROUGHOUT THE ENTIRE BUILDING TO PREVENT ALL SPRINKLER PIPING FROM FREEZING

ALL DESIGN, MATERIAL & INSTALLATION TO COMPLY WITH ALL LOCAL REQUIREMENTS AND APPLICABLE NFPA STANDARDS.

FIRE SPRINKLERS ARE PROVIDED THROUGHOUT THE ENTIRE BUILDING EXCEPT WHERE OMISSION IS PERMITTED BY NFPA 13R, 2016 EDITION, SECTION 6.6.2 THROUGH 6.6.7 IN PARTICULAR,

– SPRINKLERS ARE NOT REQUIRED IN BATHROOMS WHERE THE BATHROOM AREA DOES NOT EXCEED 55 SQ. FT.

– SPRINKLERS ARE NOT REQUIRED IN CLOTHES CLOSETS, LINEN CLOSETS, AND PANTRIES WITHIN DWELLING UNITS WHERE THE AREA DOES NOT EXCEED 24 SQ.FT. AND CEILING ARE SURFACED WITH NONCOMBUSTIBLE MATERIALS.

– SPRINKLERS ARE NOT REQUIRED IN ATTICS, FLOOR/CEILING SPACES, OR OTHER CONCEALED SPACES THAT ARE NOT INTENDED FOR LIVING PURPOSES OR STORAGE.

CENTRAL MONITORING OF SPRINKLER SYSTEM TO BE BY OTHERS

TJ – TOP OF WOOD OR STEEL JOISTS ELEVATION ABOVE FIN. FLR.
℄ DIM. – CENTER LINE OF PIPE FROM TOP OF WOOD JOIST
EL. DIM. – CENTER LINE OF PIPE ELEVATION ABOVE FIN. FLR.
◯ DIM. – FINISHED CEILING HEIGHT ABOVE FIN. FLR.

P.O.L. – PIPE-O-LET
D.N. – DOWN OR DROP NIPPLE
H.I.F. – TO BE HUNG IN FIELD
U.N.O. – UNLESS NOTED OTHERWISE
S.N. – SHAPED NIPPLE
R.N. – RISER NIPPLE
C.O.J. – CUT ON JOB
N.T.S. – NOT TO SCALE

■ – PLASTIC STEEL PIPE ADAPTER
○ – RISE OR RISER NIPPLE TO DIFFERENT EL. ON SAME LEVEL
● – VERTICAL RISER FROM FLOOR TO FLOOR
---/--- – APPROVED TYPE HANGER ON A PIPE
---|--- – GROOVED COUPLING ---[]--- – GROOVED RED. COUP.
Ⓧ – HYDRAULIC REFERENCE POINT OR LINE NUMBER

ALL PENETRATIONS THROUGH FIRE-RATED PARTITIONS AND FLOORS ARE TO BE FIRESTOPPED WITH U.L. LISTED FIRESTOP SYSTEMS WITH A RATING EQUIVALENT TO THE RATING OF THE PARTITION OR FLOOR

ALL ELECTRICAL WIRING TO BE BY OTHERS

ALL UNDERGROUND WORK TO BE BY OTHERS

FOREMAN TO MAKE SURE THAT ALL WET SYSTEM PIPING IS INSTALLED IN HEATED AREAS ONLY TO PREVENT SPRINKLER PIPING FROM FREEZING

PIPE TYPE
2 1/2" AND LARGER: TO BE SCHED. 10 W/ GROOVED FITTINGS
2" AND SMALLER CONCEALED PIPING: CPVC PLASTIC W/ PLASTIC FITTINGS
ALL EXPOSED PIPING TO BE STEEL SCH. 40 W/ THREADED FITTINGS
ALL GR. FITTINGS TO BE FIRELOCK U.N.O.

CONSTRUCTION
1" GYPSUM CEMENT LAYMENT ON 3/4" PLYWOOD DECK
ON 24" DEEP OPEN WEB WOOD FLOOR TRUSSES
ABOVE ROOMS AND 2X12 OPEN WEB WOOD JOISTS IN CORRIDOR
W/ GYPSUM BOARD TO BOTTOM OF JOISTS

HANGER SPACING TABLE

HANGER SPACING FOR PLASTIC PIPE

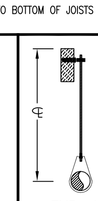
PIPE SIZE	HANGER SPACING
1"	6'
1¼"	6½'
1½"	7'
2"	8'

HANGER SPACING FOR STEEL PIPE (SCH. 40)

PIPE SIZE	HANGER SPACING
1", 1¼"	12'
1½" & LARGER	15'

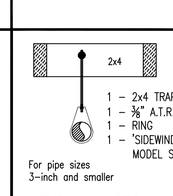
HANGER SPACING FOR STEEL PIPE (THINWALL)

PIPE SIZE	HANGER SPACING
1" – 3"	12'
4" & LARGER	15'



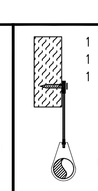
1 – ⅜" A.T.R.
1 – RING
1 – "SIDEWINDER" MODEL SWG 20
For pipe sizes 3-inch and smaller

TYP. HANGER #15
NO SCALE



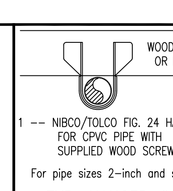
1 – 2x4 TRAPEZE
1 – ⅜" A.T.R.
1 – RING
1 – "SIDEWINDER" MODEL SWG 20
For pipe sizes 3-inch and smaller

TYP. HANGER #15A
NO SCALE



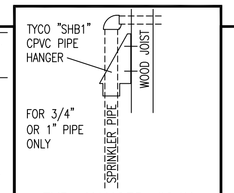
1 – A.T.R.
1 – RING
1 – "SIDEWINDER" SWG 25 380
For pipe size 4-inch

TYP. HANGER #05
NO SCALE

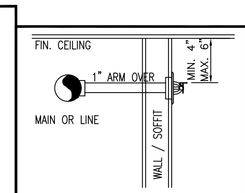


1 -- NIBCO/TOLCO FIG. 24 HANGER FOR CPVC PIPE WITH SUPPLIED WOOD SCREWS
For pipe sizes 2-inch and smaller

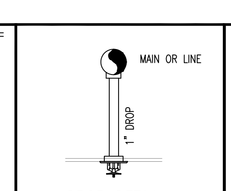
TYP. HANGER #24
NO SCALE



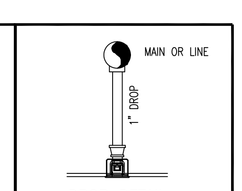
TYP. HANGER #24X
NO SCALE



SIDEWALL DETAIL
NO SCALE



DROP DETAIL
NO SCALE



DROP DETAIL
NO SCALE

STATE OF MISSOURI
MAHENDRA K. SHAH
NUMBER E-16446
REGISTERED PROFESSIONAL ENGINEER

AEGIS FIRE PROTECTION

FLOW TEST INFORMATION

LOCATION:	1716 SE 11TH STREET
DATE/TIME:	2/22/2019 12:00PM
BY:	DOLAN, EVAN
SIZE OF CITY MAIN:	12"
STATIC PRESSURE:	76
RESIDUAL PRESSURE:	47
FLOW @ RESIDUAL:	1600

FIRE SPRINKLER HEADS/NOZZLES

MANUF.	MODEL	STYLE	NPT	K	ORIFICE	TEMP.°F	RESPONSE	FINISH	ESCUTCHEON	S.IN.	NOTES	SYM.	QTY.
VIKING	MIRAGE	PENDENT	1/2"	5.6	1/2"	155°	QUICK	WHITE	CONCEALED	VK462			45
VIKING	MICROFAST	PENDENT	1/2"	5.6	1/2"	155°	QUICK	WHITE	SURFACE MOUNTED	VK302	DEEP 401		7
VIKING	MICROFAST	HORI SW	1/2"	5.6	1/2"	155°	QUICK	WHITE	RECESSED	VK305			10
VIKING	Q EC	HORI SW	3/4"	8.0	3/4"	155°	QUICK	WHITE	RECESSED	VK630			1
VIKING	MICROFAST	HORI SW	1/2"	5.6	1/2"	155°	QUICK	WHITE	RECESSED	VK305	CORR. RESISTANT HO & ESCH		6
VIKING	Q EC	HORI SW	3/4"	8.0	3/4"	155°	QUICK	WHITE	RECESSED	VK630	CORR. RESISTANT HO & ESCH		1
VICTAULIC	VIC-FLEX	V51 DRY	1/2"	5.6	1/2"	200°	QUICK	WHITE	CONCEALED	V3506	38" LONG FLEX DROP		16
VIKING	V-4B	ATTIC	1/2"	5.6	1/2"	200°	QUICK	BRASS	WHITE SLEEVE & SKIRT	VK684	BACK TO BACK		11
VIKING	UPRIGHT	UPRIGHT	1/2"	5.6	1/2"	200°	QUICK	BRASS		VK696	ON SPRIG		2
VICTAULIC	VIC-FLEX	V51 DRY	1/2"	5.6	1/2"	155°	QUICK	WHITE	WHITE SLEEVE & SKIRT	V3506	38" LONG FLEX DROP		1
												TOTAL THIS SHEET:	110

APPROVALS
DWN: DATE: CHK'D: DATE: DWN: DATE: DWN: DATE:

REVISIONS

NO.	DATE	BY	REVISION DESCRIPTION
1	6-4-21	JK	ADDED SPRINKLERS TO OUTSIDE CANOPY PER AHJ

AEGIS FIRE PROTECTION
"Shielding Lives and Property"

AEGIS FIRE PROTECTION, LLC
1711 EAST 123rd TERRACE
OLATHE, KS 66061
P: 913.825.8343 F: 913.322.4475

FIRE SPRINKLER SYSTEMS CONSULTING, SALES, DESIGN, INSTALLATION & SERVICE

FIRE ALARM & DETECTION CONSULTING, SALES, DESIGN, INSTALLATION, & SERVICE

FIRE EXTINGUISHERS, INTEGRATED SECURITY APPLICATIONS & NURSE CALL SYSTEMS

JOB NAME:
THE PRINCETON
1701 SE OLDHAM PARKWAY
LEE'S SUMMIT, MO

CONTRACT NO:	13553
TOTAL HEADS:	2323
HEADS THIS SHEET:	110
SCALE:	1/8"=1'-0"
DESIGNED BY:	B.K.P.
CHECKED BY:	
DRAWING DATE:	1-28-2020
PLOT DATE:	
DRAWING NO:	2

INDEPENDENT LIVING – 1st FLOOR AREA-A