

**GENERAL NOTES**

- SYSTEM DESIGN AND INSTALLATION SHALL COMPLY WITH NFPA 13D AND LOCAL APPLICABLE CODES.
- SYSTEM DESIGN BASIS:  
HYDRAULICALLY MOST DEMANDING 2 SPRINKLERS.
- WATER SUPPLY:  
58 PSI STATIC  
45 PSI RESIDUAL  
787 GPM FLOW
- ALL PIPE SHALL BE U.O.N. :  
UNDERGROUND - COPPER  
RISER - COPPER  
OVERHEAD - CPVC
- MANUFACTURERS OF RESIDENTIAL SPRINKLERS PUBLISH INFORMATION REGARDING THE SPACING OF THEIR SPRINKLERS WITH RESPECT TO HEAT PRODUCING DEVICES (FIREPLACES, RANGES, OVENS, HEATING VENTS, WATER HEATERS, FURNACES, ETC.) WHETHER OR NOT ALL HEAT PRODUCING DEVICES ARE SHOWN ON THE PLAN PROPER MINIMUM DISTANCES MUST BE MAINTAINED. SEE HEAT SOURCE CHART.
- THE MINIMUM DISTANCE BETWEEN ANY 2 RESIDENTIAL SPRINKLERS SHALL NOT BE LESS THAN 8 FEET.
- THE MAXIMUM DISTANCE BETWEEN ANY 2 RESIDENTIAL SPRINKLERS ON THIS PROJECT IS HYDRAULICALLY LIMITED TO 16 FEET. SPRINKLERS SHALL NOT EXCEED 8 FEET FROM ANY WALL. THE MAXIMUM DISTANCE BETWEEN 2 SPRINKLERS ON A SLOPED CEILING IS LIMITED TO 16 FEET. SPRINKLERS SHALL NOT EXCEED 8 FEET FROM ANY WALL.
- THE MINIMUM DISTANCE A SPRINKLER CAN BE LOCATED FROM A WALL IS 4 INCHES.
- INSTALLATION OF ALL RESIDENTIAL SPRINKLERS SHALL BE IN STRICT COMPLIANCE WITH THE MANUFACTURERS INSTALLATION GUIDE.
- PRIOR TO DRILLING JOISTS CONTACT STRUCTURAL ENGINEER FOR RECOMMENDED DRILLING GUIDELINES.

**SPRINKLER HEAT ZONES** ( NFPA 13D TABLE 3-5.2.3)

HEAT SOURCE	MINIMUM DISTANCE FROM EDGE OF SOURCE TO	
	ORDINARY TEMPERATURE SPRINKLER	INTERMEDIATE TEMPERATURE SPRINKLER
SIDE OF OPEN OR RECESSED FIREPLACE	3'-0"	1'-0"
FRONT OF RECESSED FIREPLACE	5'-0"	3'-0"
COAL- OR WOOD-BURNING STOVE	3'-6"	1'-0"
KITCHEN RANGE	1'-6"	0'-9"
WALL OVEN	1'-6"	0'-9"
HOT AIR FLUES	1'-6"	0'-9"
UNINSULATED HEAT DUCTS	1'-6"	0'-9"
UNINSULATED HOT WATER PIPES	1'-0"	0'-6"
SIDE OF CEILING- OR WALL-MOUNTED HOT AIR DIFFUSERS	2'-0"	1'-0"
FRONT OF WALL-MOUNTED HOT AIR DIFFUSERS	3'-0"	1'-6"
HOT WATER HEATER OR FURNACE	0'-6"	0'-3"
LIGHT FIXTURE 0W - 250W	0'-6"	0'-3"
LIGHT FIXTURE 250W - 499W	1'-0"	0'-6"

**ANTIFREEZE NOTES**

- THE USE OF ANTIFREEZE SOLUTIONS SHALL BE IN CONFORMITY WITH ANY STATE OR LOCAL HEALTH REGULATIONS.
- WHERE SPRINKLER SYSTEMS ARE SUPPLIED BY PUBLIC WATER CONNECTIONS, THE USE OF ANTIFREEZE SOLUTIONS OTHER THAN WATER SOLUTIONS OF PURE GLYCERINE (CHEMICALLY PURE OF UNITED STATES PHARMACOPOEIA %5.5 PERCENT GRADE) OR PROPYLENE GLYCOL SHALL NOT BE PERMITTED.
- AN ANTIFREEZE SOLUTION WITH A FREEZING POINT BELOW THE EXPECTED MINIMUM TEMPERATURE FOR THE LOCALITY SHALL BE PREPARED. THE SPECIFIC GRAVITY OF THE PREPARED SOLUTION SHALL BE CHECKED BY A HYDROMETER WITH A SUITABLE SCALE.

**HANGER SPACING**

PIPING MATERIAL	PIPE SIZE	PIPE SIZE						
		3/4"	1"	1 1/4"	2"	2 1/2"	3"	
COPPER	73°	5.5	6	6.5	7	8	9	10
	100°	5	5.5	6.5	7	7.5	8.5	9.5
	120°	4.5	5	5.5	6	7	7.5	8.5
SCHEDULE 40 # 10 STEEL	*	12	12	15	15	15	15	15
THREADABLE THINWALL	*	12	12	12	12	12	12	12

**NOTES**

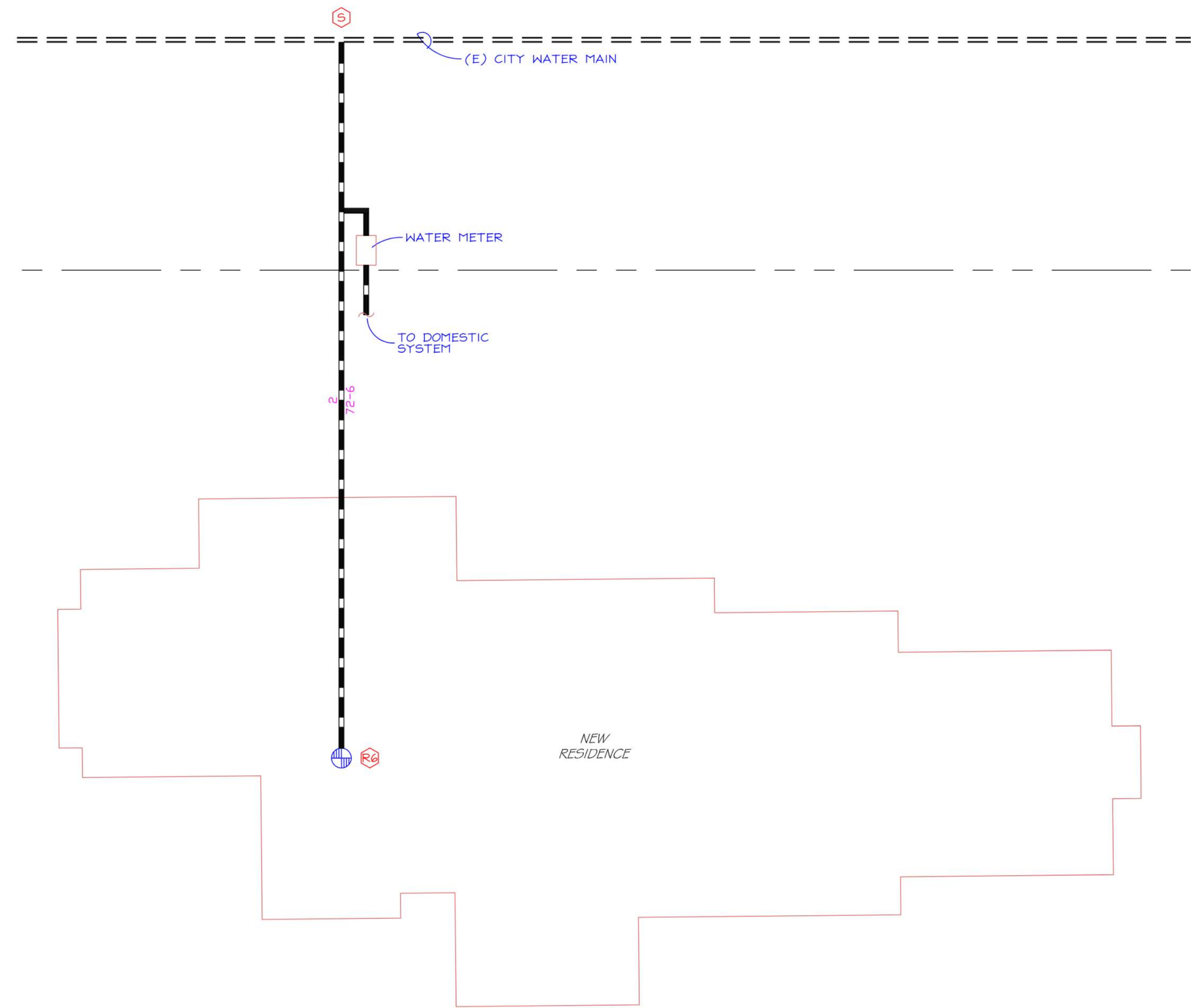
- All lengths shown are the maximum recommended distance between hangers expressed in feet.
- Provide a hanger within 6 inches of all drops to sprinkler heads when using CPVC pipe.
- \* Steel pipe is not allowed in sizes less than 1 inch.
- \*\* Indicate information that is not available.
- CTS = Copper Tube Size.
- IPS = Iron Pipe Size.

**ANTIFREEZE SOLUTIONS** ( NFPA 13D TABLE 4-3.3.3.1)

MATERIAL	SOLUTION (BY VOLUME)	SPECIFIC GRAVITY AT 60°F (15.6°C)	FREEZING POINT	
			°F	°C
GLYCERINE	50% WATER	1.133	-15	-26.1
	40% WATER	1.151	-22	-30.0
	30% WATER	1.165	-40	-40.0
HYDROMETER SCALE 1,000 TO 1,200				
PROPYLENE GLYCOL	70% WATER	1.133	+9	-12.8
	60% WATER	1.133	-6	-21.1
	50% WATER	1.133	-26	-32.2
	40% WATER	1.133	-60	-51.1
HYDROMETER SCALE 1,000 TO 1,200 (SUBDIVISIONS, 0.002)				
* C.P. - CHEMICALLY PURE, U.S.P. - UNITED STATES PHARMACOPOEIA %5.5 PERCENT.				

**SPRINKLER TOTALS**

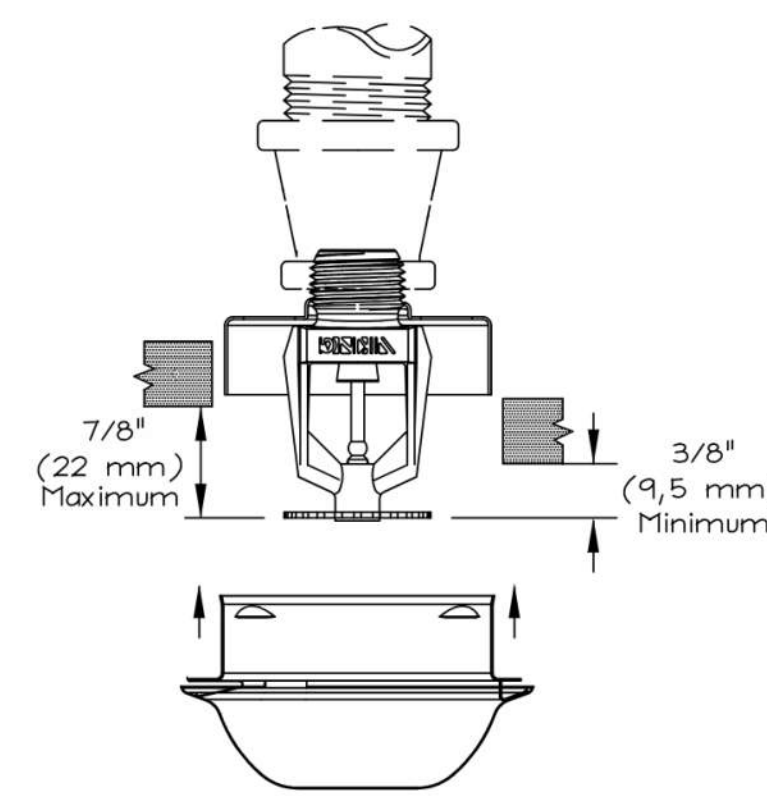
64 VIKING RESIDENTIAL CONCEALED PENDENT (SIN VK436)  
155' 1/2" ORIFICE 1/2" NPT K=5.20



**SITE PLAN**



1/8" = 1'-0"

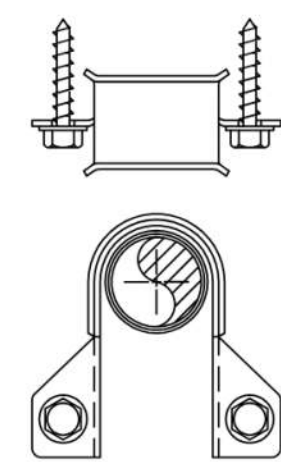


**SPRINKLER DETAIL**

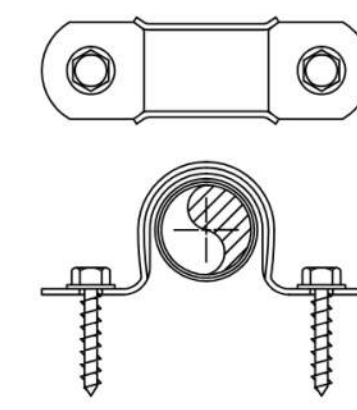
**SYMBOL LEGEND**

○ UPRIGHT SPRINKLER ON LINE	○ CHANGE IN PIPE ELEVATION
○ PENDENT SPRINKLER ON LINE	○ CHANGE IN PIPE ELEVATION (UP)
● PENDENT SPRINKLER ON DROP	○ CHANGE IN PIPE ELEVATION (DOWN)
○ UPRIGHT AND PENDENT SPRINKLER	⊕ SYSTEM RISER
○ UPRIGHT SPRINKLER ON SPRIG	— HANGER LOCATION
— HORIZONTAL SIDENALL SPRINKLER	□ LIGHT (RECESSED)
— SPRINKLER BRANCHLINE	⊗ LIGHT (PENDENT)
⊕ HYDRAULIC REFERENCE POINT	▭ LIGHT (SURFACE MOUNTED)

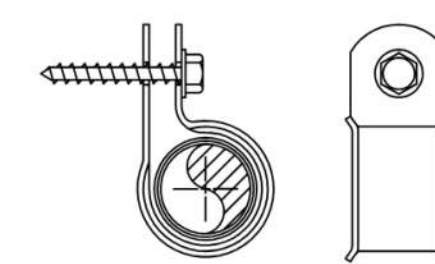
HARDENED HEX HEAD SELF THREADING SCREW IS FURNISHED WITH THE HANGER AND IS THE MINIMUM FASTENER SIZE ACCEPTABLE TYP. USE "TEK" TYPE SCREWS TO STEEL JOISTS



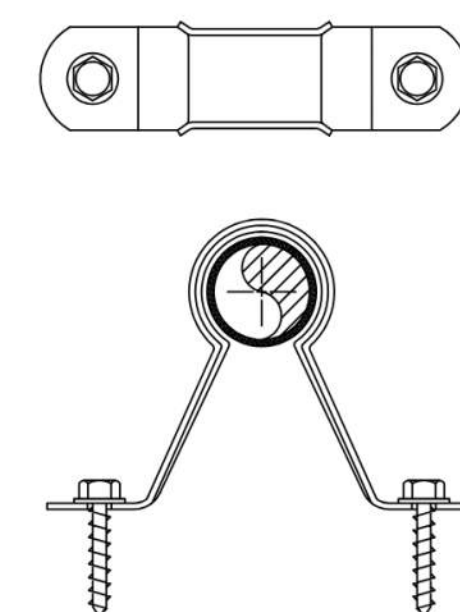
CPVC DOUBLE FASTENER STRAP TYPE HANGER



CPVC DOUBLE FASTENER STRAP TYPE HANGER



CPVC SINGLE FASTENER STRAP TYPE HANGER



NO BLOCK - HANGER

FIGURE 24 - CPVC HANGER

FIGURE 23 - CPVC HANGER

FIGURE 22 - CPVC HANGER

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**ENGINEERED FIRE SYSTEMS, INC.**  
AUTOMATIC SPRINKLER "SPECIALISTS"  
13457 COLEMAN HWY. GRASS VALLEY, CA 95945 (530) 274-9400

NEW RESIDENCE  
ANTI-FREEZE SYSTEM

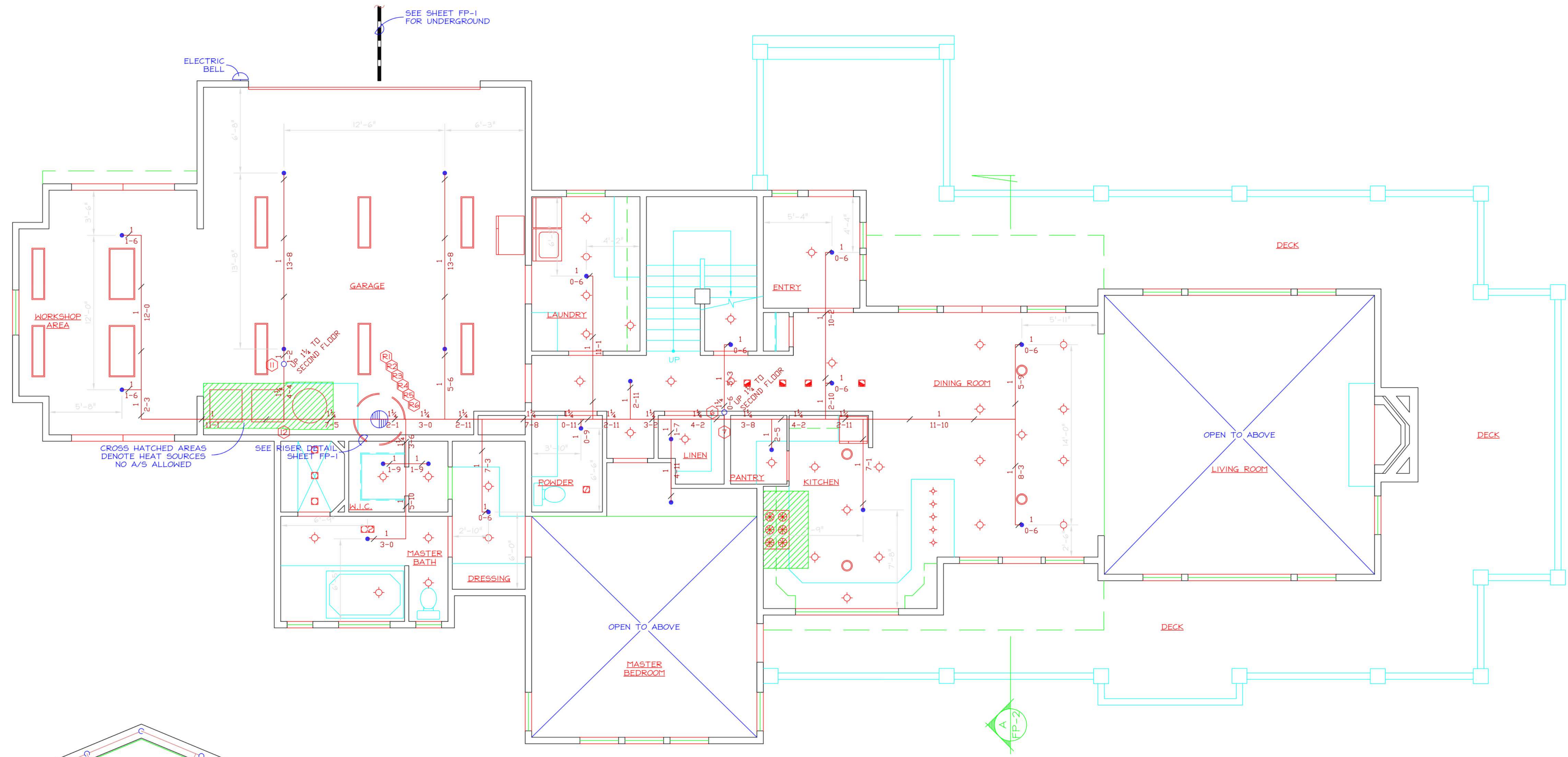
DRAWN  
T. RAY  
DATE  
05-03-26  
SCALE  
1/4" = 1'-0"  
FILE NUMBER  
10112  
SHEET  
FP-1  
1 OF 3 SHEETS

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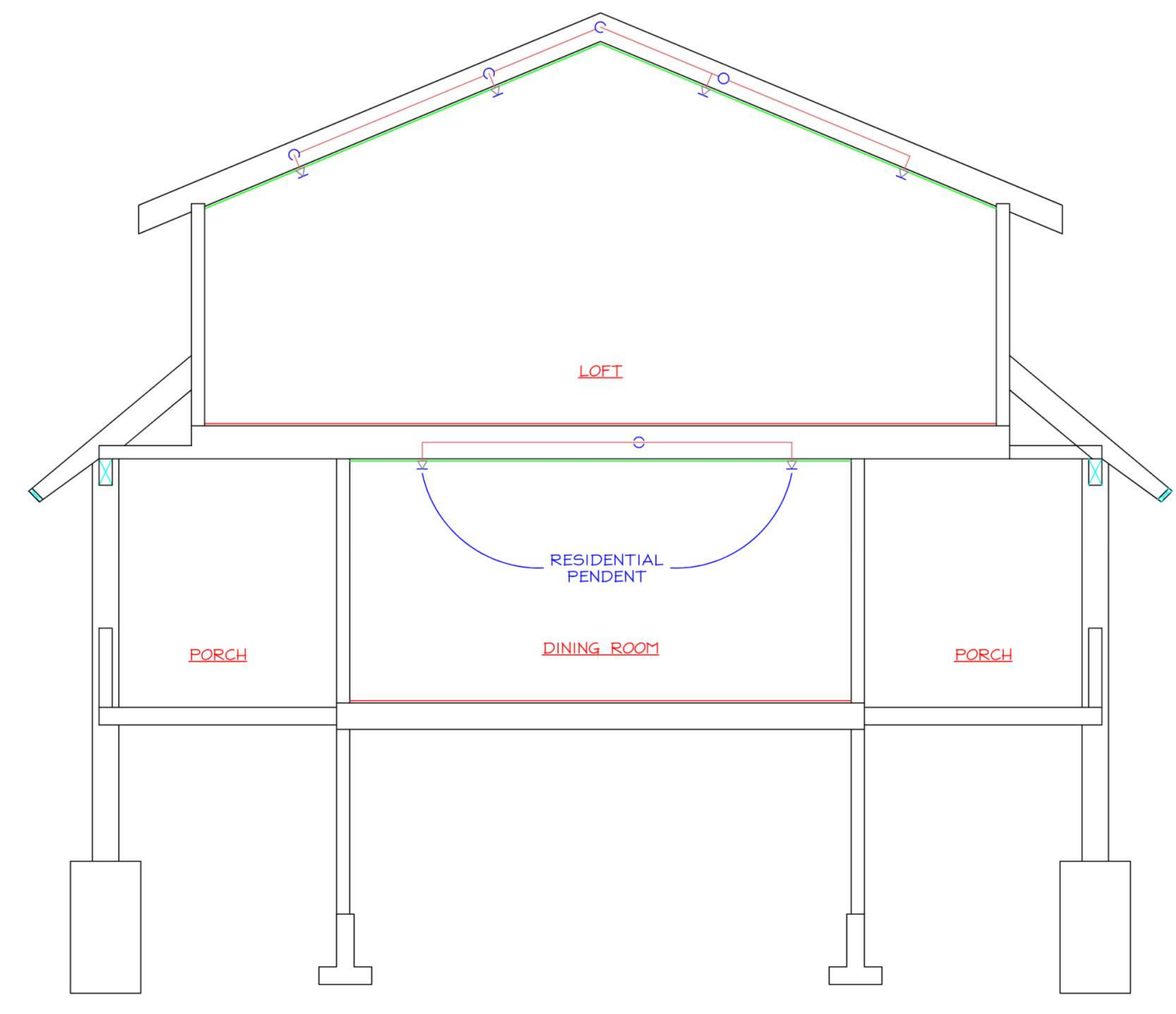
ENGINEERED FIRE SYSTEMS, INC.  
 AUTOMATIC SPRINKLER "SPECIALISTS"  
 13457 COLEMAN HWY. GRASS VALLEY, CA 95945, (530) 274-9400

NEW RESIDENCE  
 ANTI-FREEZE SYSTEM

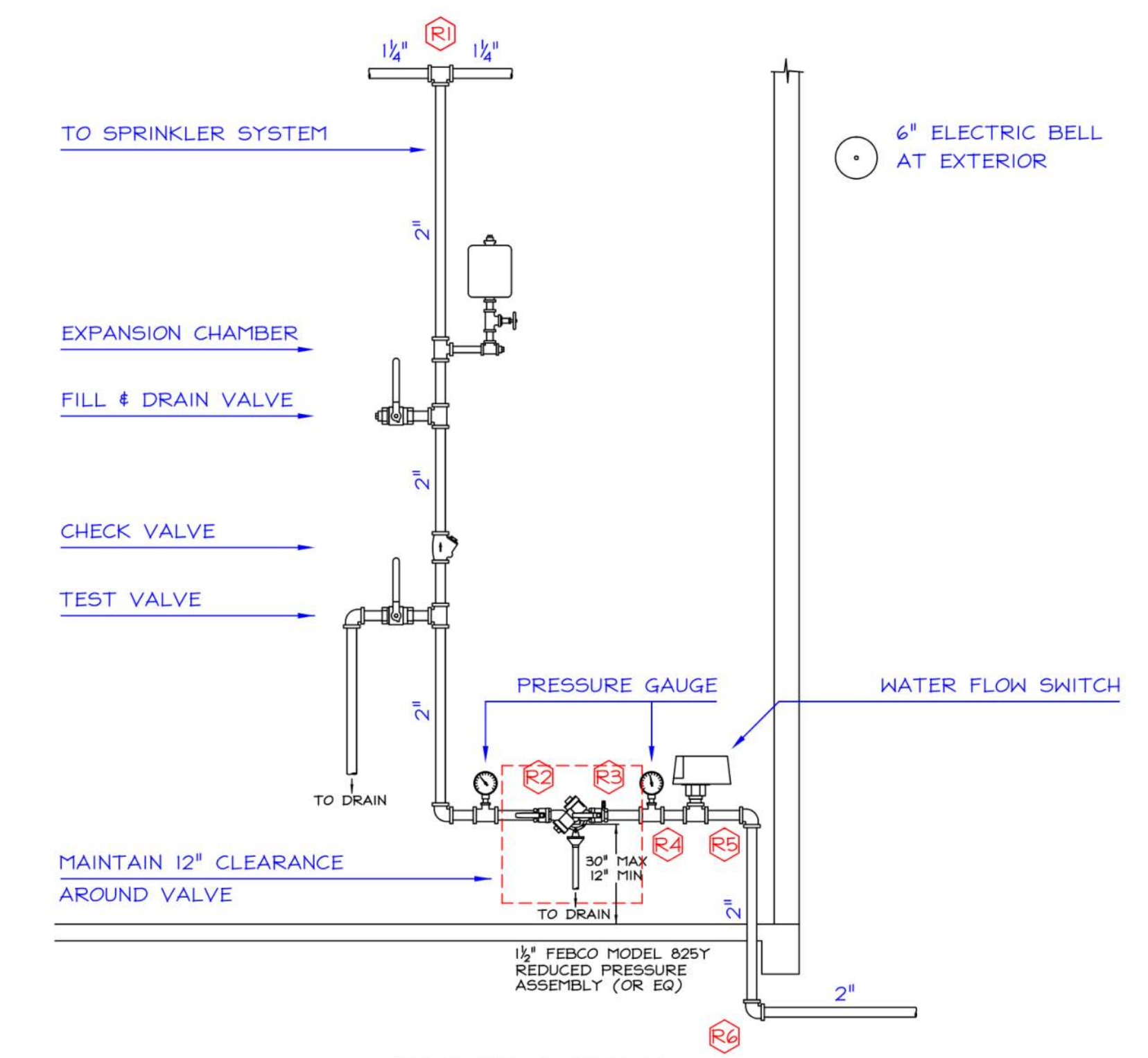
DRAWN	T. RAY
DATE	05-03-26
SCALE	1/4" = 1'-0"
FILE NUMBER	10112
SHEET	FP-2
2 OF 3 SHEETS	



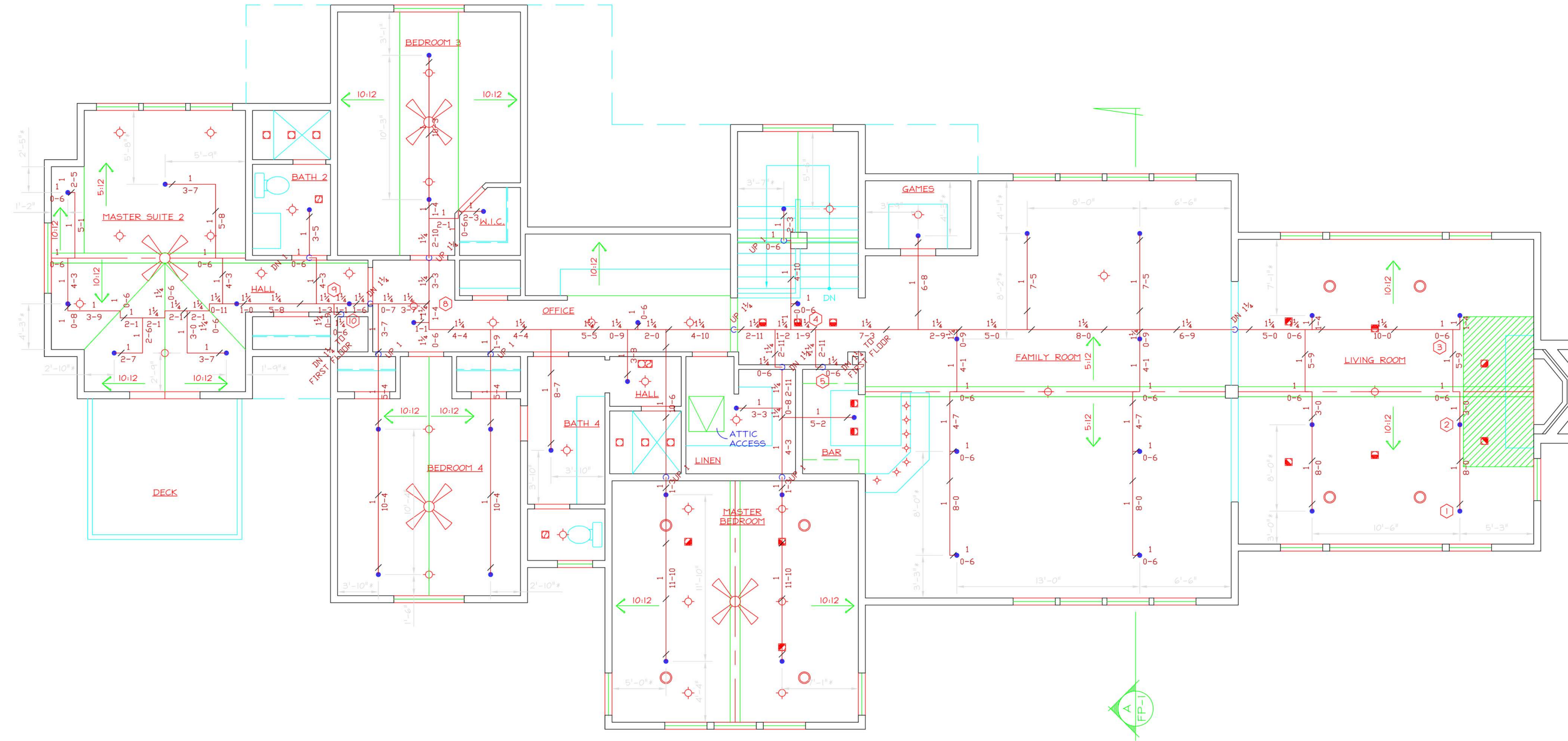
FIRST FLOOR PIPING PLAN  
 1/4" = 1'-0"



SECTION  
 1/4" = 1'-0"



RISER DETAIL

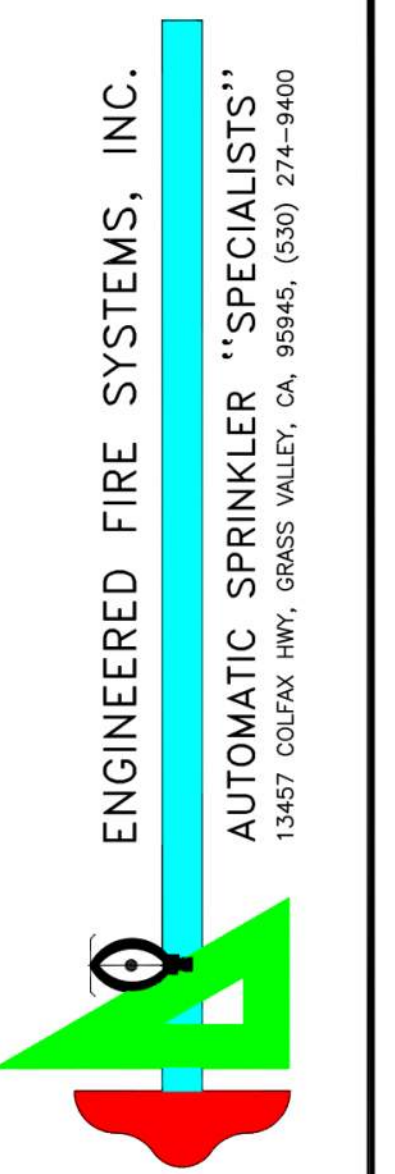


**SECOND FLOOR PIPING PLAN**

\* - DIMENSIONS ALONG SLOPE

1/4" = 1'-0"

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NEW RESIDENCE  
 ANTI-FREEZE SYSTEM

DRAWN
T. RAY
DATE
05-03-26
SCALE
1/4" = 1'-0"
FILE NUMBER
10112
SHEET
<b>FP-3</b>
3 OF 3 SHEETS