

Sprinkler Design Data

Project Name: Lillington Storage	System: Wet & Dry
Project Street Address: 1781 N Main St, Lillington, NC 27546	Sys. Sq. Ft.: 50,000
State: NC	Floor#: 1 Floor
Designed By: Impact Fire Services	Phone: 919-469-8099
Occupancy: Storage	Hazard: OH-II
	Ceiling Hgt.: Varies
	Total Bldg. Hgt.: Varies

Design Summary					
	System #1	System #2	System #3	System #4	System #5
Design Method	Calculated	Calculated			
Design Area #	1	2			
Location	NE	NW			
Type of System	Wet	Dry			
Hazard Class	OH-II	OH-II			
Criteria From	NFPA 13	NFPA 13			
Design Area	996 Sq. Ft.	2016 Sq. Ft.			
Sprinkler Spacing	Varies	Varies			
Density	20	20			
K-factor	5.6	5.6			
Hose Allowance	250 GPM	250 GPM			
# Design Sprinklers	12	21			
Special Application Spk	N/A	N/A			
Requirement @ BOR					
G.P.M. Req'd	295.73	452.49			
P.S.I. Req'd	39.046	32.409			
Requirement @ TEST					
GPM Required	545.726	702.493			
PSI Required	52.459	46.968			
Safety factor @ Test	7.59 psi (12.6%)	10.61 PSI (18.4%)			
Dry Sys. Volume (gal)	N/A	272.43			

WATER SUPPLY INFORMATION					
Tested by	Hydrant Flow Test	Date/Time	10/24/2023	Pressure Hydrant	--
Hydrant Elevation	1 ft	Flow Hydrant # 1	--	Flow Hydrant #2	N/A
Static (PSI)	64.2 psi	Residual (PSI)	51.3	Flow (gpm)	1007 gpm

Copy of Water Test Data Included with Calculation

FIRE PROTECTION GENERAL NOTES

- THE FIRE PROTECTION SYSTEM SHALL COMPLY WITH NFPA 13 (2013 EDITION) AND ALL APPLICABLE STATE AND LOCAL CODES.
- FINAL INSPECTION AND APPROVAL OF THE FIRE PROTECTION SYSTEM SHALL BE BY THE LOCAL FIRE DEPARTMENT, AND/OR ARCHITECT/ENGINEER WHERE APPLICABLE.
- PIPE ROUTING SHOWN INDICATES OUR INITIAL DESIGN AND LAYOUT. FINAL ROUTING AND ELEVATIONS SHALL BE BASED ON A FIELD CONDUCTED COORDINATION WITH ALL TRADES.
- FIRESTOP ALL PENETRATIONS OF SMOKE/FIRE WALLS, CEILING, FLOORS, ROOFS, ETC. USING UL LISTED FIRESTOP SEALANT.
- PROVIDE ACCESS PANELS TO ALL VALVES ABOVE NON-ACCESSIBLE CEILING AND CHASES.
- A CABINET WITH STOCK OF EXTRA SPRINKLERS SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13.
- METHODS OF HANGING PIPES, HEADERS, AND BRANCHES SHALL BE IN ACCORDANCE WITH NFPA 13.
- ALL VALVES FOR FIRE SERVICE SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES, INC.
- ALL POWER WIRING SHALL BE ACCOMPLISHED BY THE FIRE ALARMELECTRICAL CONTRACTOR. ALL CONTROL AND INTERLOCK WIRING SHALL BE ACCOMPLISHED UNDER THE ELECTRICAL DIVISION. COORDINATE ALL ELECTRICAL ITEMS WITH THE ELECTRICAL CONTRACTOR AND INSURE PROPER COORDINATION.
- A HYDRAULIC DATA PLATE SHALL BE PLACED ON THE SYSTEM RISER STATING THE REQUIRED DESIGN CRITERIA FOR EACH HYDRAULICALLY DESIGNED SYSTEM.
- ALL SPRINKLER HEADS MOUNTED IN THE CEILING SHALL BE A MINIMUM OF 4" AWAY FROM WALLS, CEILING HEIGHT CHANGES, OR ANY OTHER VERTICAL INTERSECTING SURFACE.
- A MINIMUM OF 18" INCHES FROM THE SPRINKLER DEFLECTOR TO THE TOP OF STORAGE/FILE CABINETS SHALL BE MAINTAINED FOR STANDARD SPRAY SPRINKLERS. A MIN. OF 36" INCHES IS REQUIRED FOR ESFR.
- PROVIDE SPRINKLERS ABOVE AND BELOW ANY EXPOSED DUCTWORK 48" OR WIDER.
- ALL PORTIONS OF THE BUILDING WHERE WET SYSTEM PIPING IS ROUTED SHALL BE MAINTAINED TO A MINIMUM OF 40 DEG. FAHRENHEIT. THIS TEMPERATURE SHALL BE MAINTAINED BY THE OWNER AT ALL TIMES.
- PIPING SCHEDULE:
 - MAINS: SCH 10
 - BRANCH LINES: 1 1/2" AND UP: SCH 10
 - ALL 1" AND 1 1/2" PIPE: SCH 40

HANGER INSTALLATION REQUIREMENTS

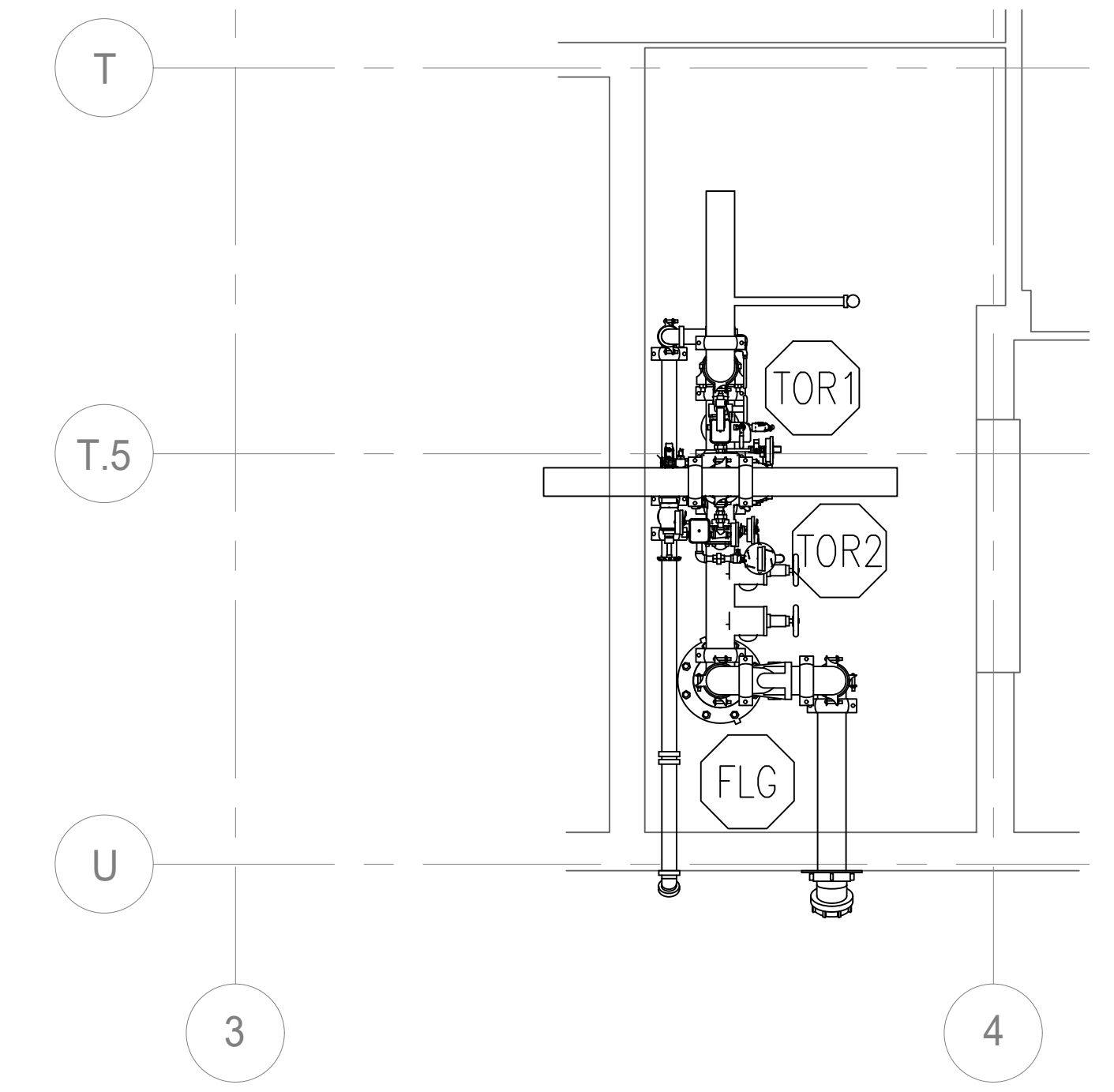
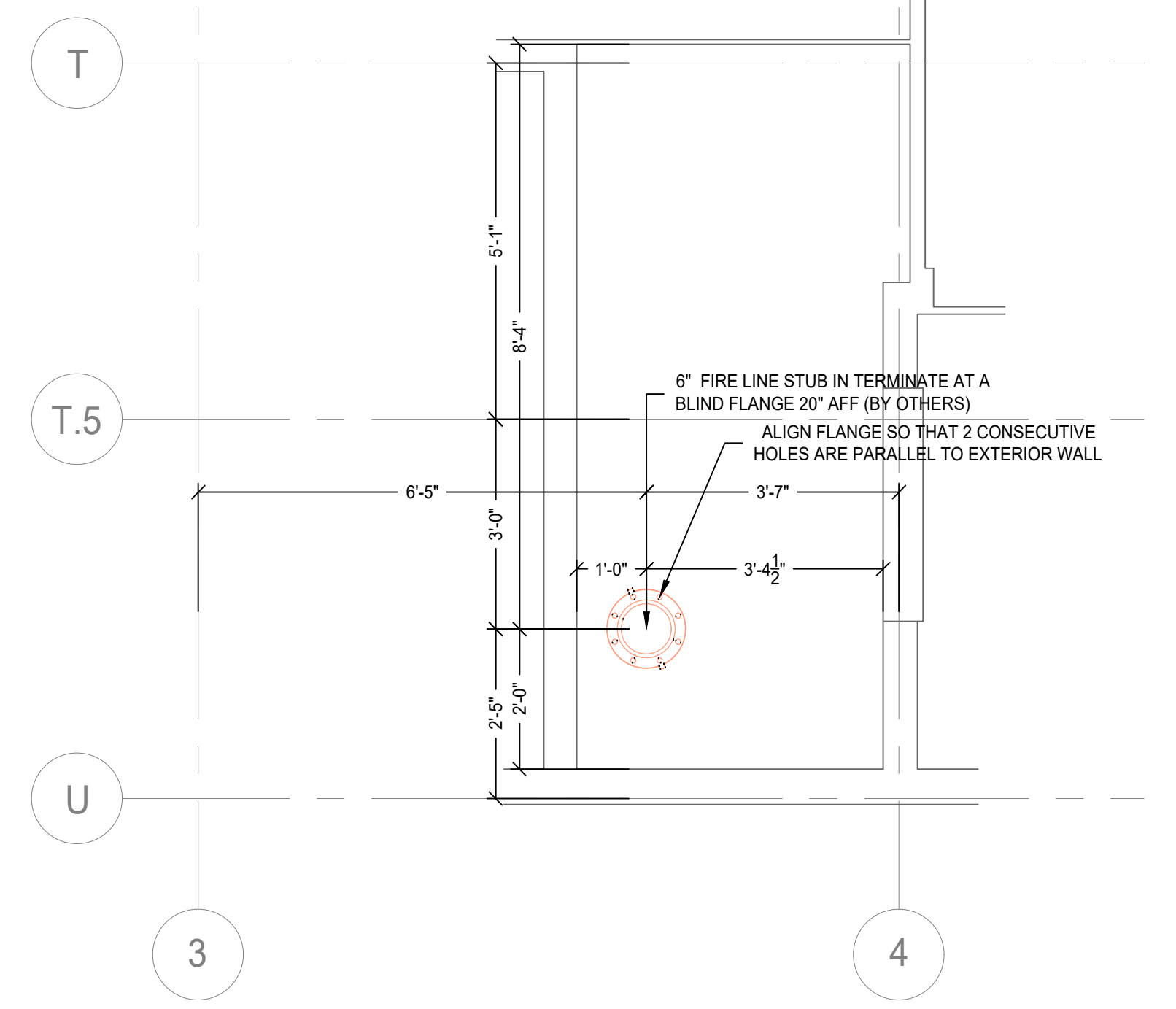
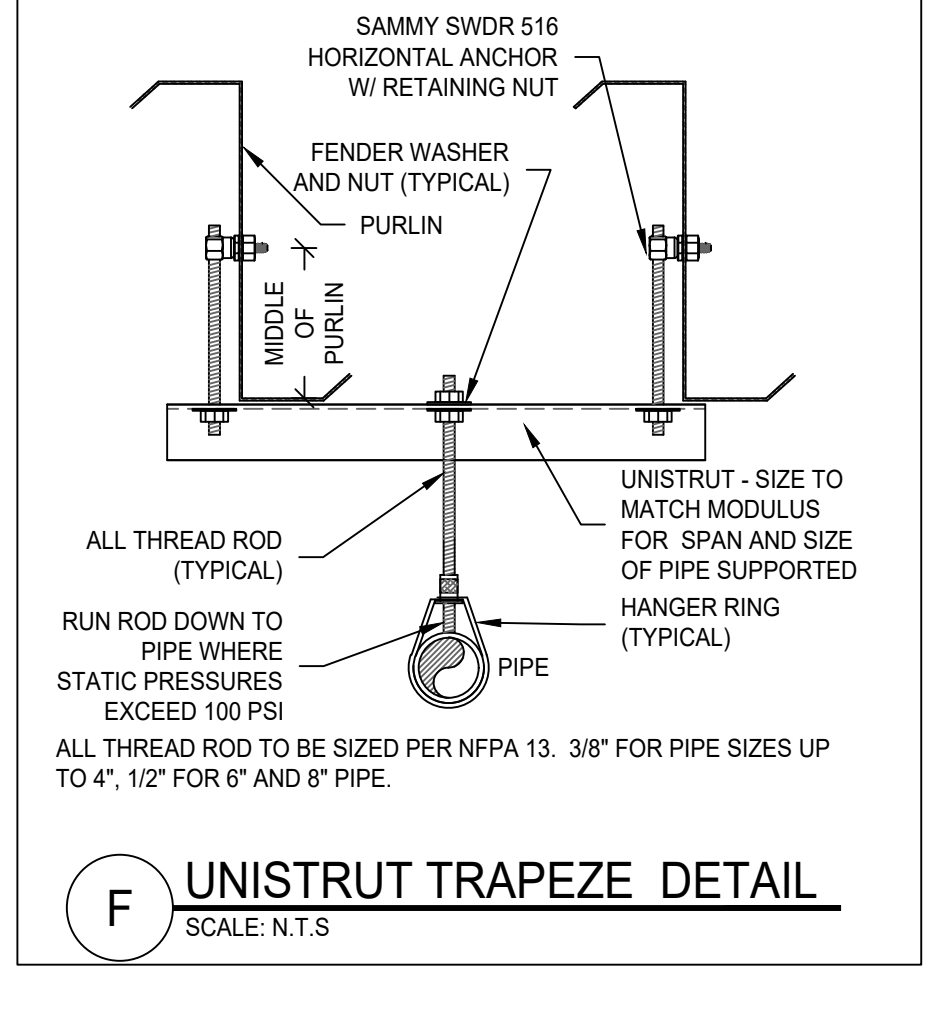
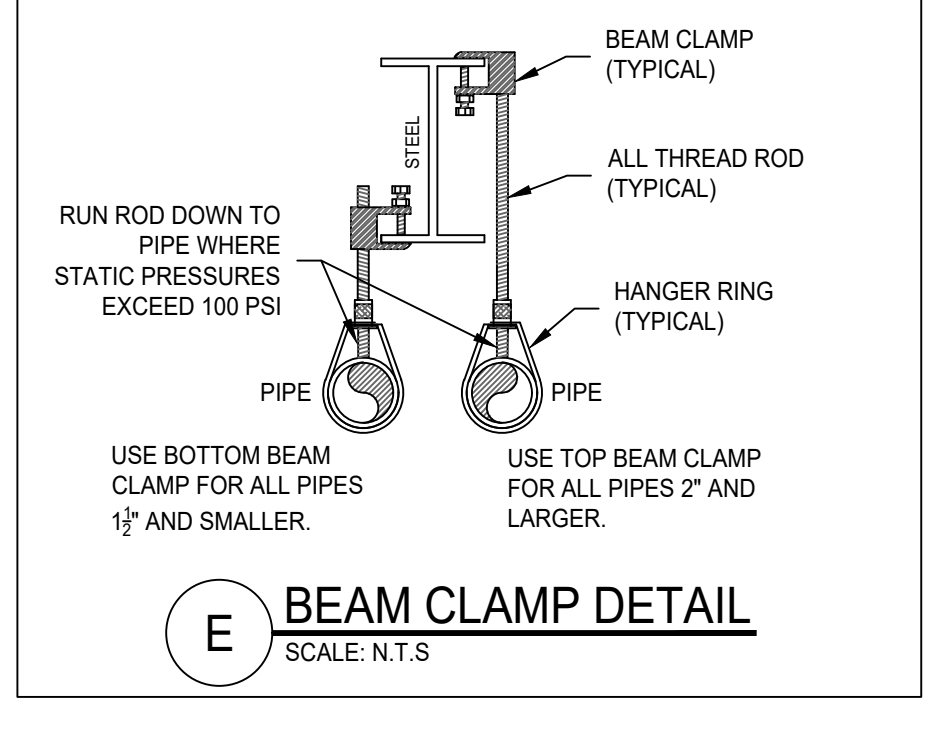
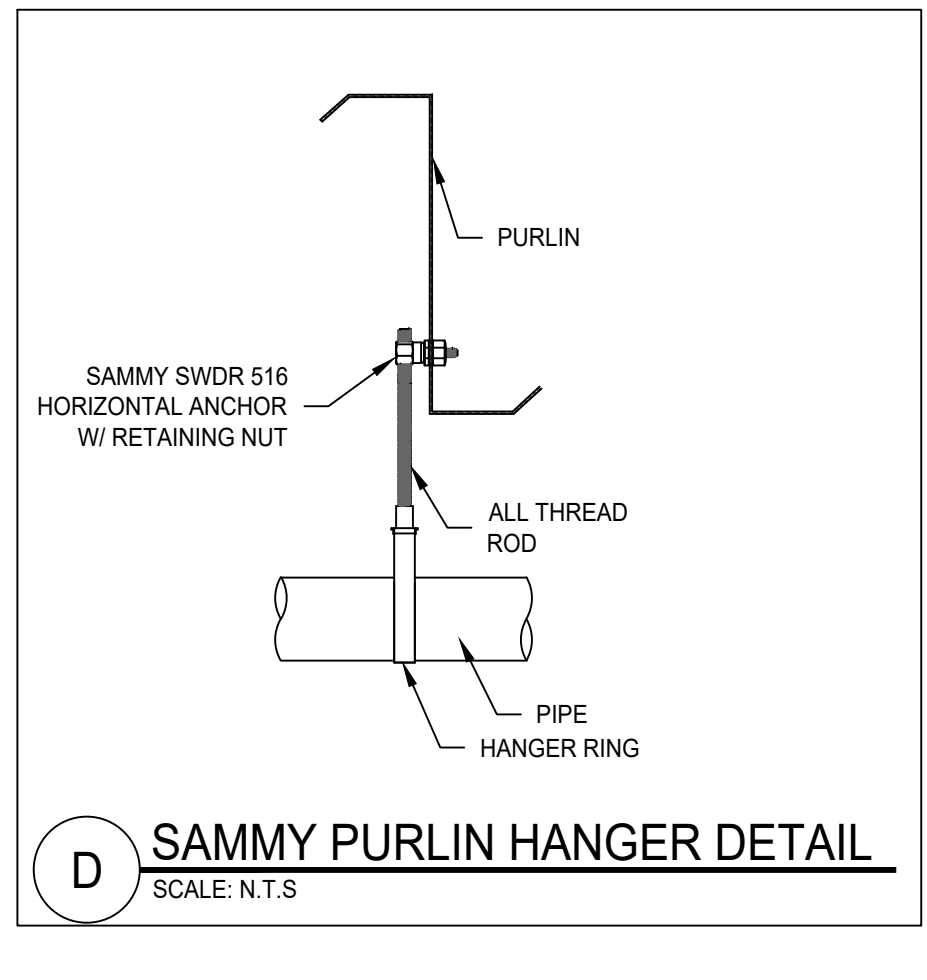
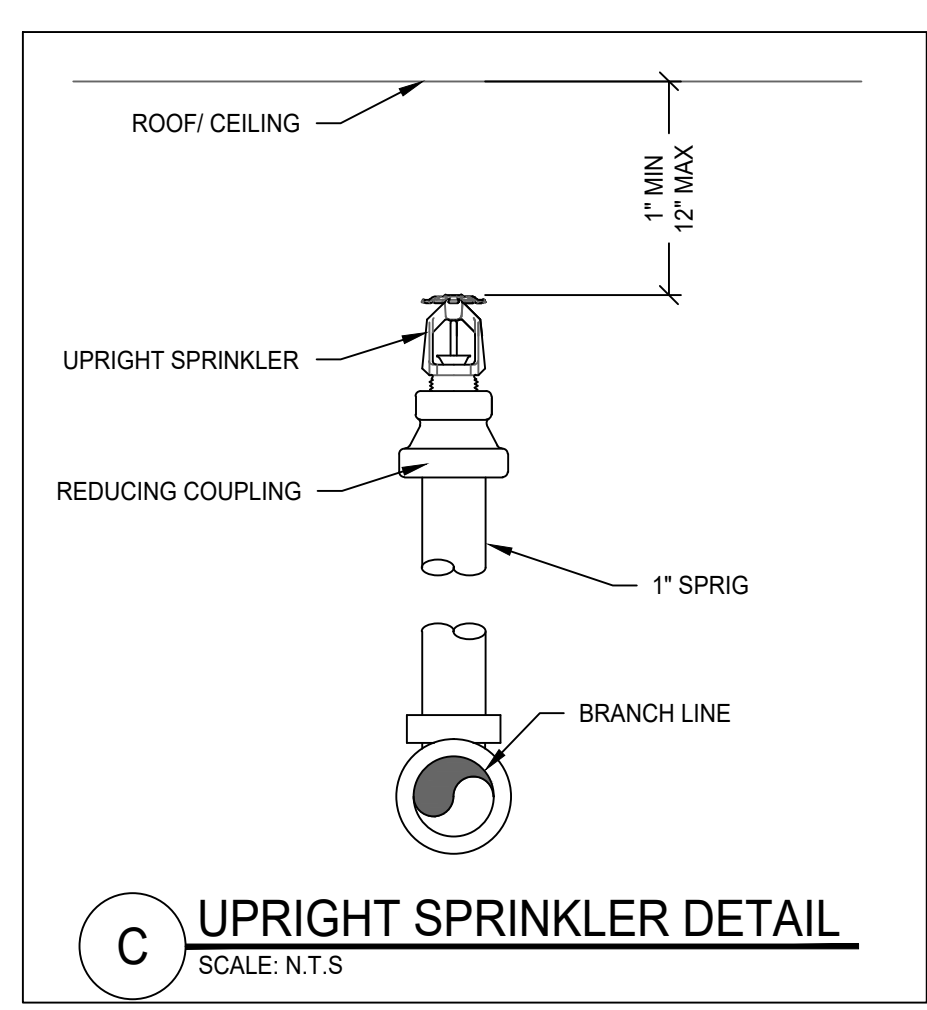
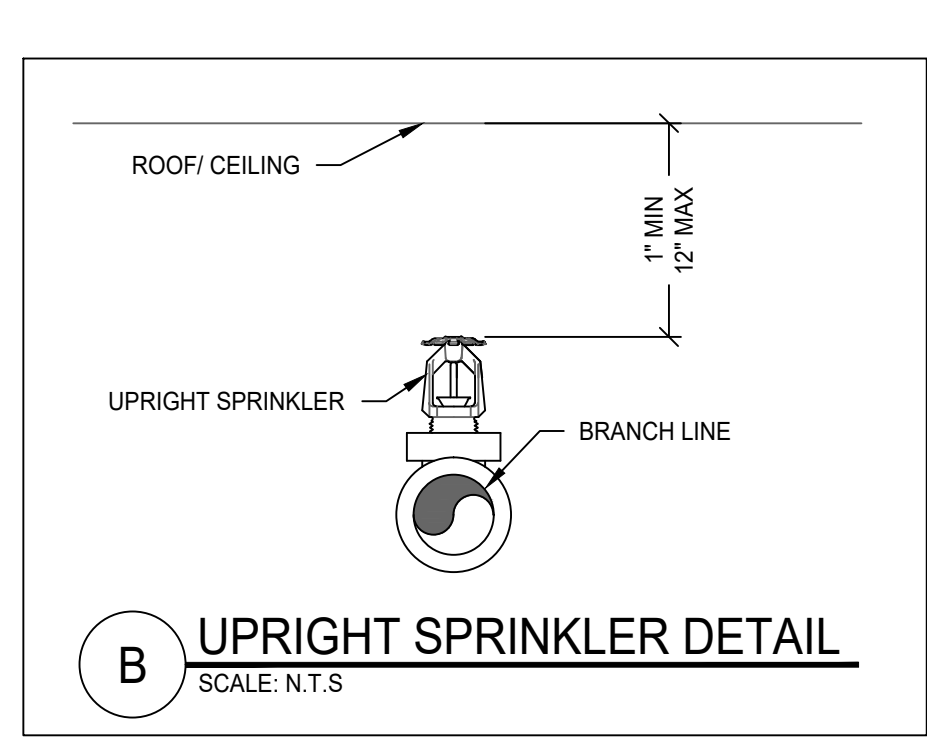
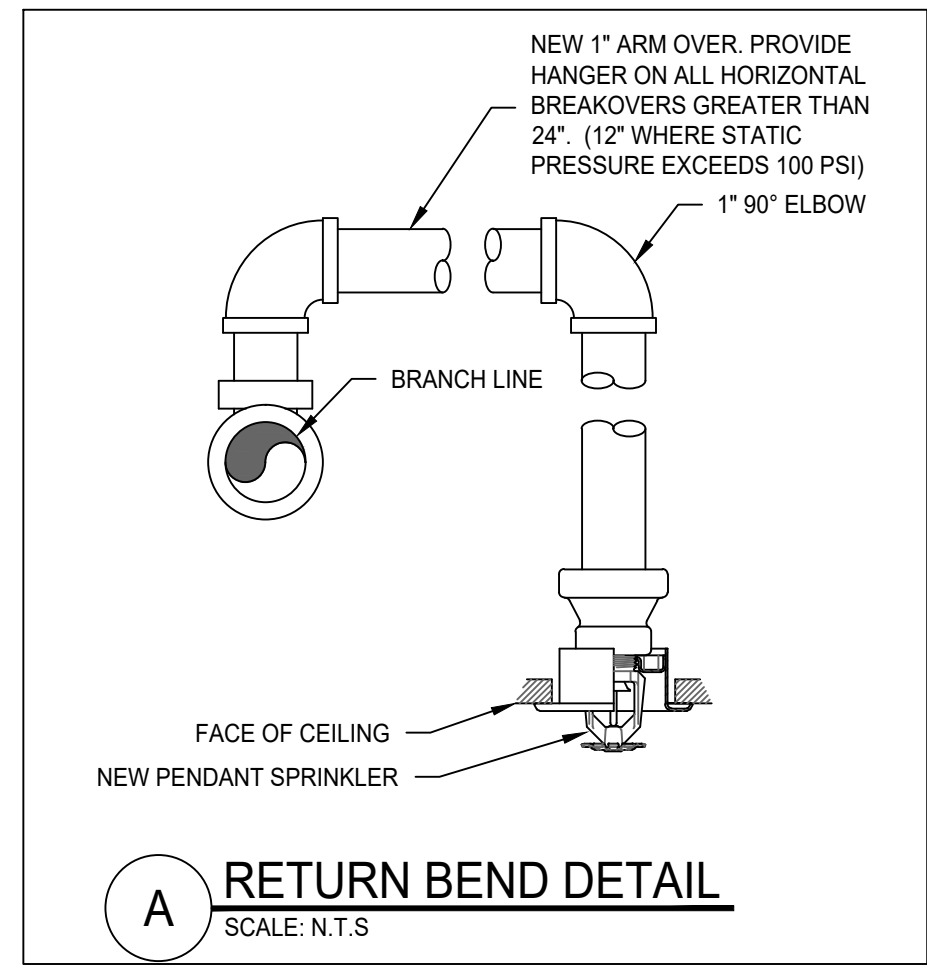
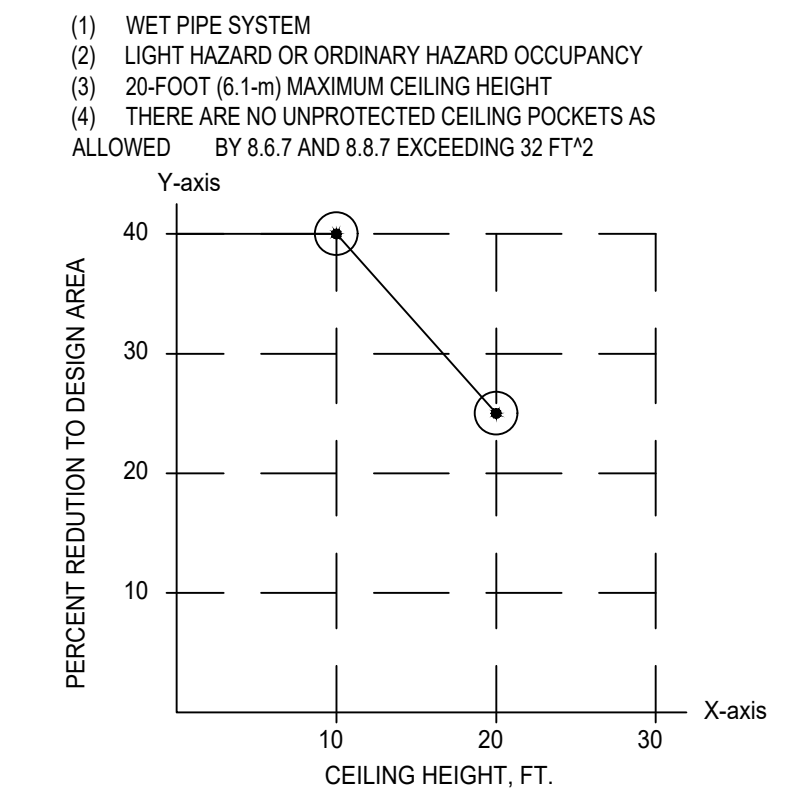
NOMINAL PIPE SIZE	MAXIMUM DISTANCE BETWEEN HANGERS								
	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
BLAZEMASTER CPVC	5'-6"	6'-0"	6'-6"	7'-0"	8'-0"	9'-0"	10'-0"	n/a	n/a
THREADED LIGHTWALL	n/a	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	n/a	n/a
STEEL PIPE (SCH 10/SCH 40)	n/a	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"

100 PSI STATIC PRESSURE ON SYSTEM REQUIRES UP-LIFT RESTRAINT WITHIN 12 INCHES HORIZONTALLY OF HEAD FOR ARM-OVERS AND END OF BRANCHLINE.

THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36" FOR 1" PIPE, 48" FOR 1-1/4" PIPE, AND 60" FOR 1-1/2" PIPE OR LARGER.

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARM-OVER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24" OR 12" WHERE STATIC PRESSURE EXCEEDS 100 PSI.

11.2.3.2.3.1 NFPA 13 - 2013
WHERE LISTED QUICK-RESPONSE SPRINKLERS, INCLUDING BLAZEMASTER CPVC, 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:

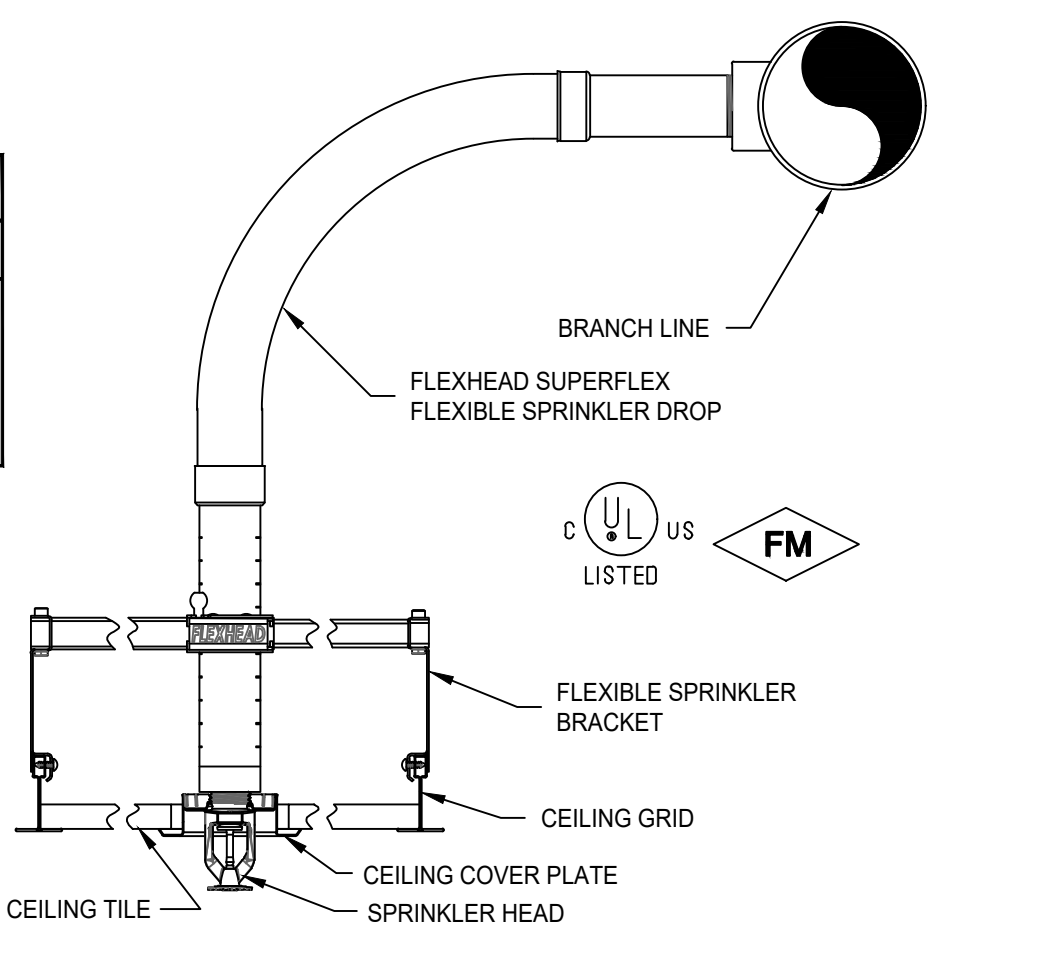


1 FIRE LINE RUN-IN DETAIL
SCALE: 1/2" = 1'-0"

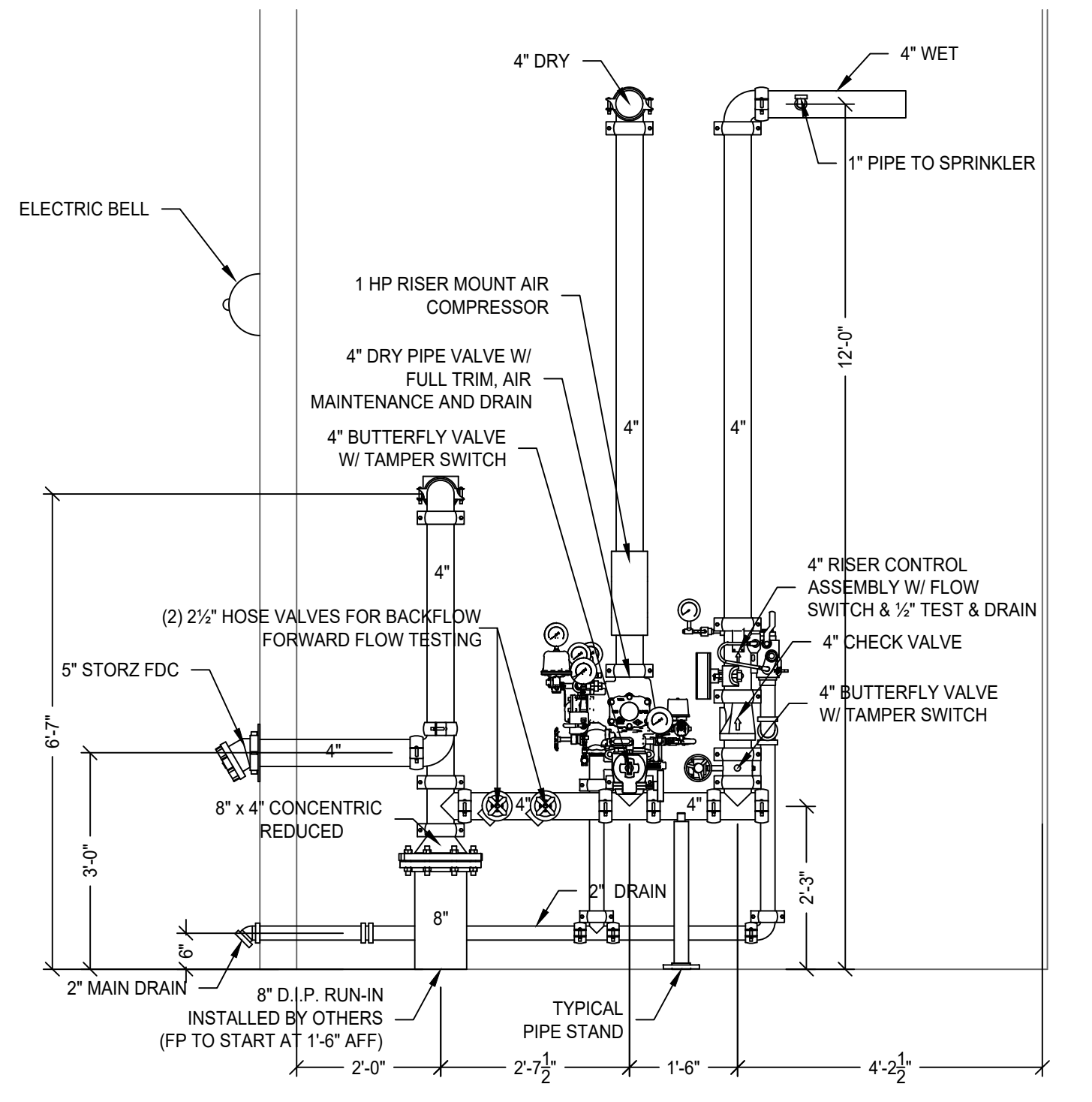
2 RISER DETAIL TOP VIEW
SCALE: 1/2" = 1'-0"

FLEXIBLE SPRINKLER CONNECTION	
TOTAL EQUIVALENT LENGTH ALLOWED (PER HYD. CALC.)	70 FEET
SUMMARY OF ITEMS TO DETERMINE EQUIVALENT LENGTH OF 1" PIPE	
60" FLEXIBLE CONNECTION	47 FEET
STANDARD 1" 90 DEG. ELBOW	2 FEET
STANDARD 1" STRAIGHT TEE	5 FEET
14'-0" OF 1" SCH. 40 PIPE	14 FEET

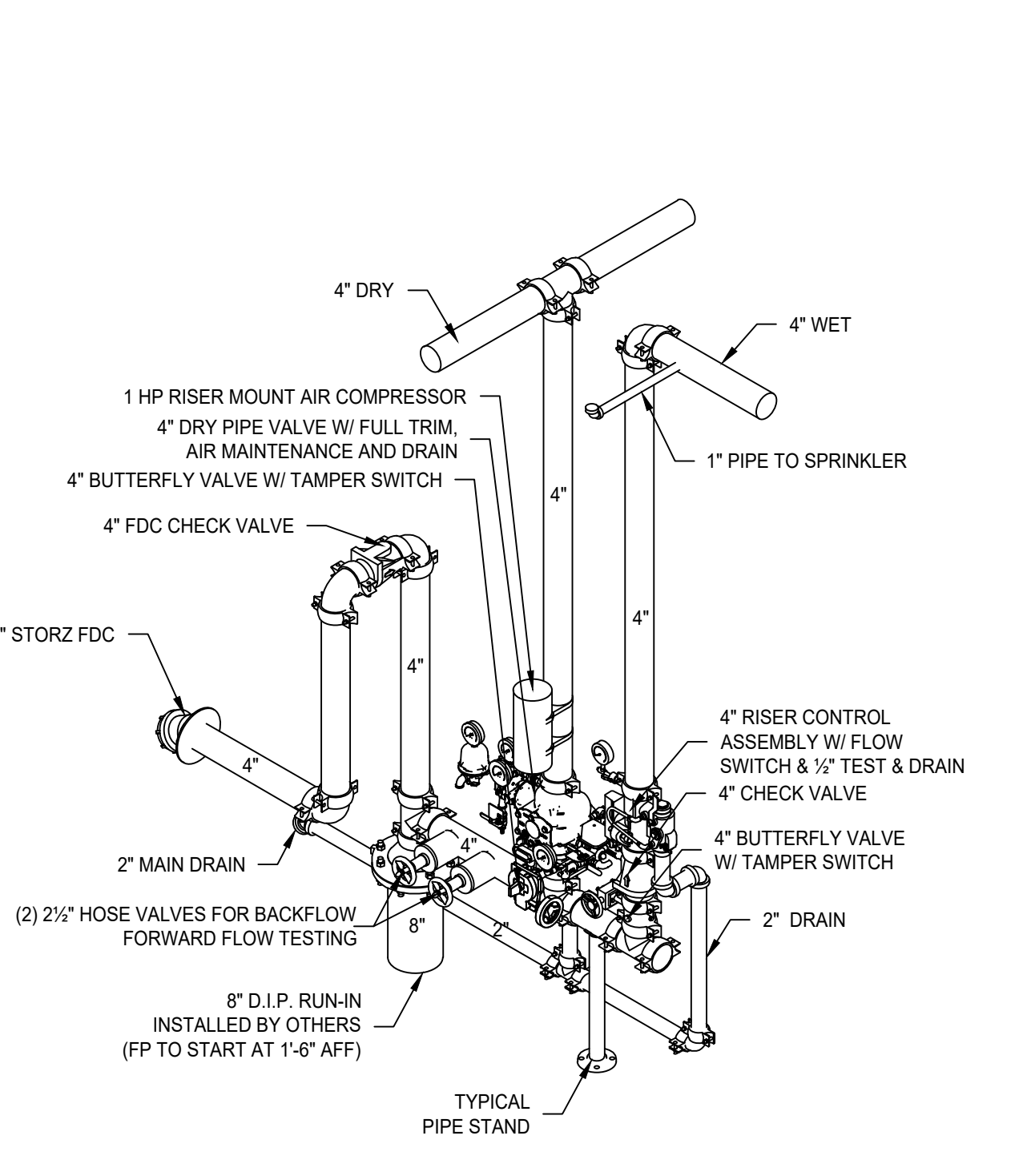
SUPERFLEX BRAIDED HOSE FRICTION LOSS DATA				
LENGTH	OUTLET CONNECTIONS	MAX # OF 90° BENDS 3" MIN RADIUS (UL)	EQUIV. LENGTH OF 1" SCHED 40 PIPE, FT (UL)	
25'	1	2	20	
30'	1	3	25	
35'	1	4	30	
40'	1	5	35	
45'	1	6	40	
50'	1	7	45	
55'	1	8	50	
60'	1	9	55	
65'	1	10	60	
70'	1	11	65	
75'	1	12	70	



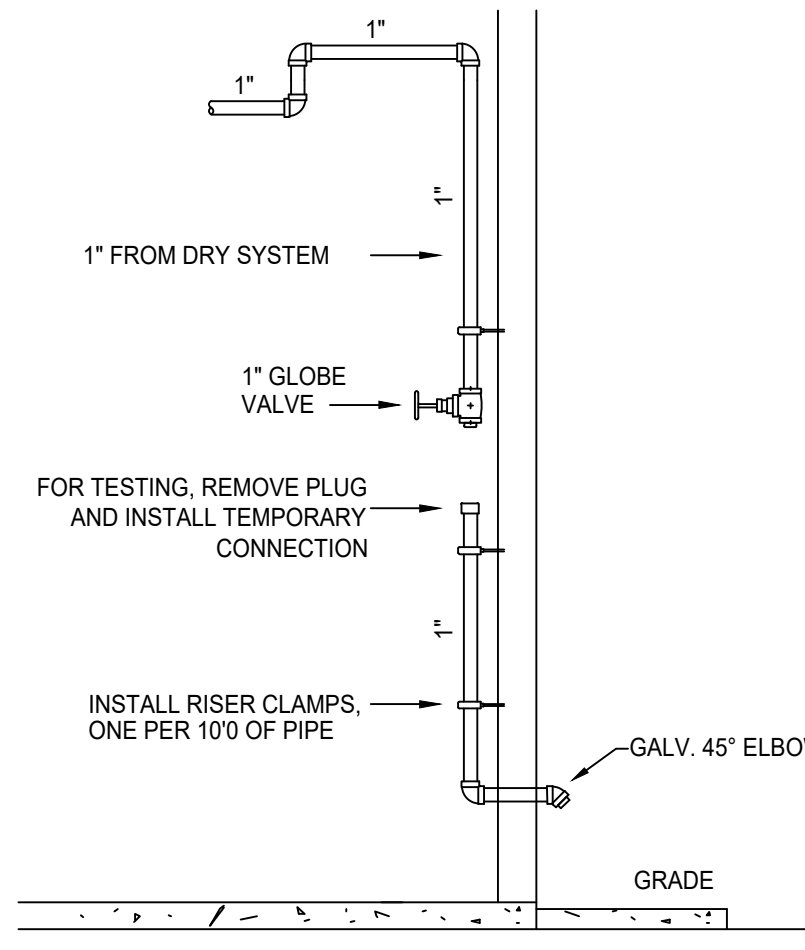
7 SUPERFLEX FLEXIBLE SPRINKLER DROP DETAIL
SCALE: 1/2" = 1'-0"



3 RISER DETAIL SIDE VIEW
SCALE: 1/2" = 1'-0"

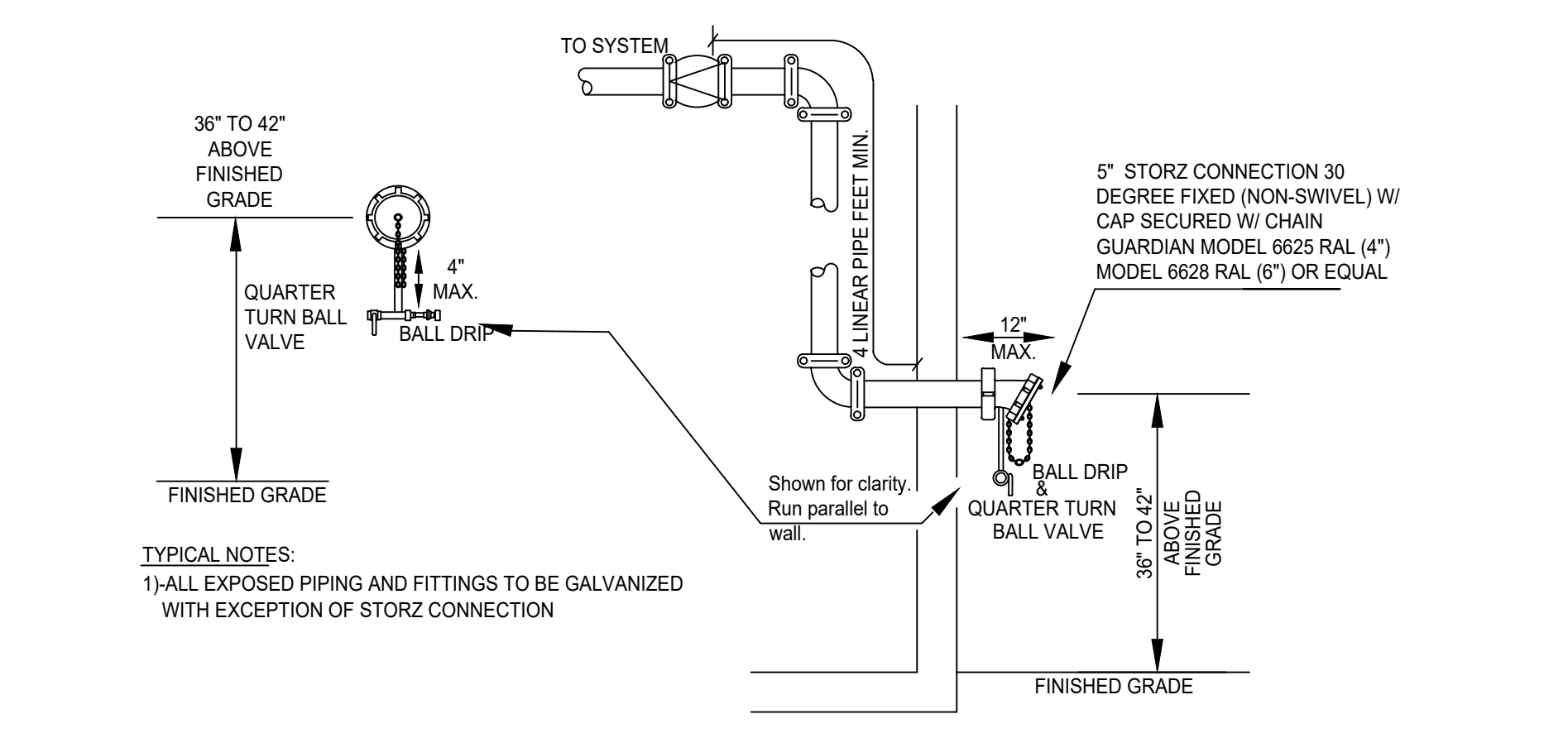


4 RISER DETAIL ISOMETRIC VIEW
SCALE: 1/2" = 1'-0"



5 DRY INSPECTOR TEST DETAIL
SCALE: 1/2" = 1'-0"

6 REMOTE AREA REDUCTION
SCALE: 1/2" = 1'-0"



8 STORZ FDC DETAIL
SCALE: 1/2" = 1'-0"

REVISIONS				
#	DATE	DESCRIPTION	BY	
1				
2				
3				
4				
5				
6				
7				
8				

IMPACT FIRE

131 INTERNATIONAL DR
MORRISVILLE, NC 27560
P: (919) 469-1672 F: (866) 275-4157
NC STATE LIC. #31635

SPRINKLER LEGEND										
SYM	MAKE	SIN	TYPE	THRD	K-FAC	RESP	TEMP	FINISH	NOTES	QTY
○	VIC	12708	RP	1/2"	5.6	QR	155°F	CHROME	--	10
○	VIC	12704	U	1/2"	5.6	QR	200°F	BRASS	--	581
○	VIC	12704	U	1/2"	5.6	QR	200°F	BRASS	SPRIG-UP	51
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TOTAL SPRINKLERS THIS PROJECT								642	TOTAL SPRINKLERS THIS SHEET	--

LILLINGTON STORAGE
1781 N MAIN ST
LILLINGTON, NC 27546

SEAL:

DRAWN BY: IVB
DATE: 11/28/2023
SCALE: AS NOTED

CONTRACT NUMBER: 2C-29389308
SHEET TITLE: FIRE SPRINKLER DETAILS
SHEET NUMBER: FP1

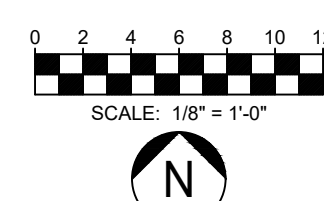
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AREA OF WORK
 STORAGE BUILDING 1
 ±50,000 SF
 REF. F.F. ELEVATION 204'-0"

1 SITE HYDRAULIC REFERENCE PLAN
 SCALE: 1" = 30'-0"
 NOTE: FOR HYDRAULIC REFERENCE ONLY. REFER TO CIVIL PLANS FOR CONSTRUCTION

HYDRANT FLOW TEST
 STATIC PRESSURE - 64.2 PSI
 RESIDUAL PRESSURE - 51.3 PSI
 RESIDUAL FLOW - 1007 GPM
 HYDRANT ELEVATION - 206 FT

PROPOSED 6" FIRE SERVICE W/ 6" RPDA & FDC ON THE RPDA (BY OTHERS)



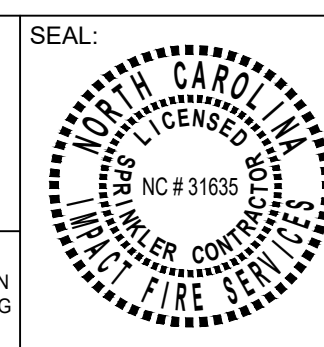
REVISIONS			
#	DATE	DESCRIPTION	BY

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 MORRISVILLE, NC 27560
 P: (919) 469-1672 F: (866) 275-4157
 NC STATE LIC. #31635

SPRINKLER LEGEND										
SYM	MAKE	SIN	TYPE	THRD	K-FAC	RESP	TEMP	FINISH	NOTES	QTY
●	VIC	V2708	RP	1/2"	5.6	QR	155°F	CHROME		10
○	VIC	V2704	U	1/2"	5.6	QR	200°F	BRASS		581
⊙	VIC	V2704	U	1/2"	5.6	QR	200°F	BRASS	SPRIG-UP	51
TOTAL SPRINKLERS THIS PROJECT				642		TOTAL SPRINKLERS THIS SHEET				

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 LILLINGTON, NC 27546

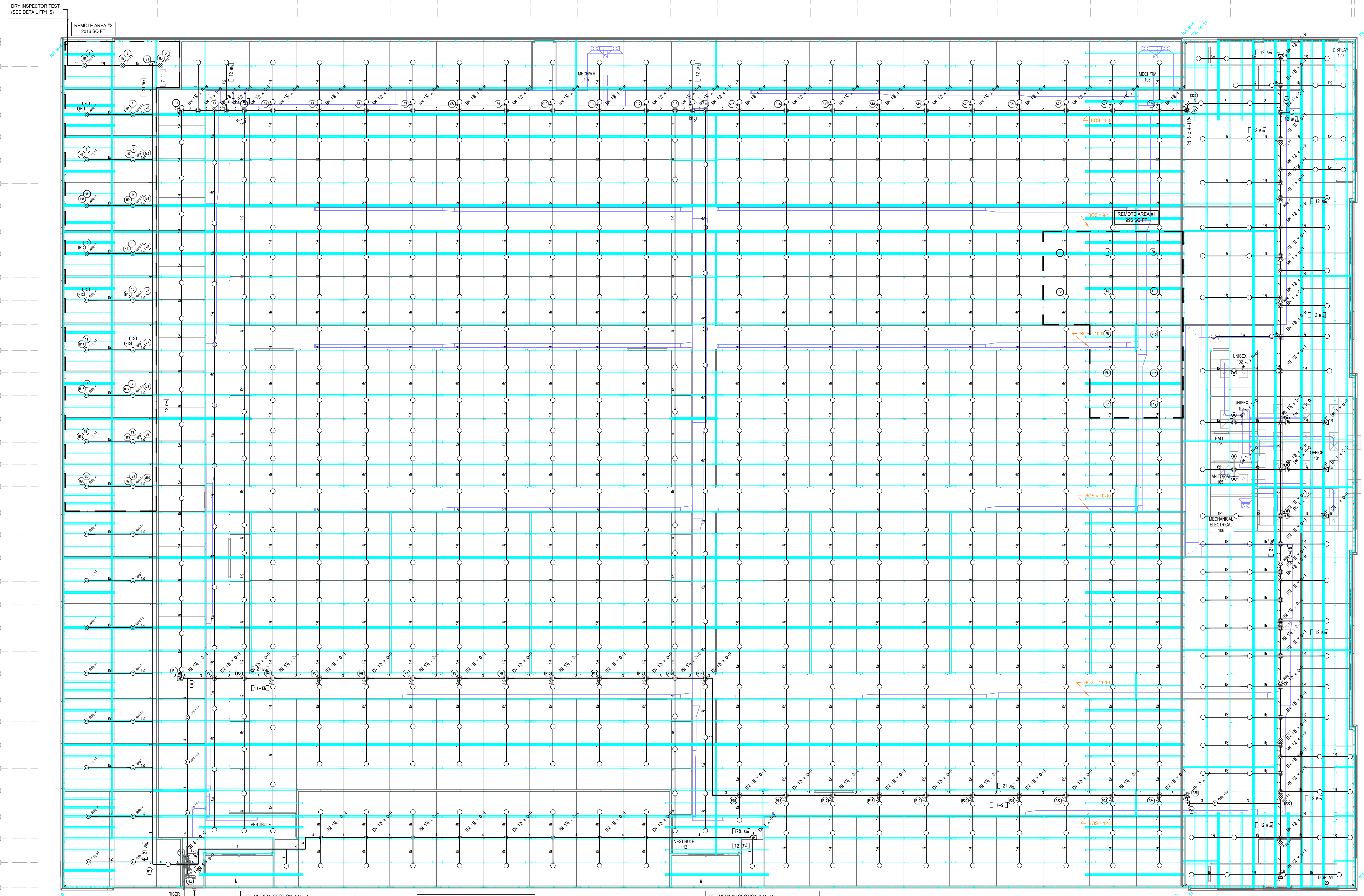
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 SCALE: AS NOTED

CONTRACT NUMBER: 2C-29389308
 SHEET TITLE: UTILITY PLAN
 SHEET NUMBER: FP2

NICET LEVEL IV, #108071



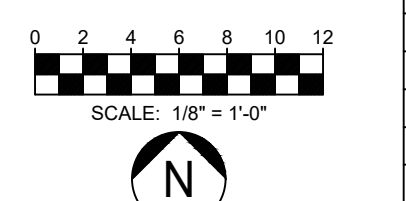
1 1ST FLOOR PIPING PLAN
SCALE: 1/8" = 1'-0"

HANGER INSTALLATION REQUIREMENTS									
MAXIMUM DISTANCE BETWEEN HANGERS									
NOMINAL PIPE SIZE	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
BLAZEMASTER CPVC	5'-4"	6'-0"	6'-4"	7'-0"	8'-0"	9'-0"	10'-0"	n/a	n/a
THREADED LIGHTWALL	n/a	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	n/a	n/a
STEEL PIPE (SCH 10SCH 40)	n/a	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"

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THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARM-OVER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24" OR 12" WHERE STATIC PRESSURE EXCEEDS 100 PSI.

ALL DRY PIPE SHALL BE SLOPED 1/4" PER 10 FT FOR MAINS AND 1/2" PER 10 FT FOR BRANCH LINES

PER NFPA 13 SECTION 8.15.7.2. NO FIRE SPRINKLER PROTECTION IS REQUIRED FOR THE EXTERIOR ENTRY CANOPY IF THE AREA IS NON-COMBUSTIBLE CONSTRUCTION AND NO STORAGE OF COMBUSTIBLE IS ALLOWED

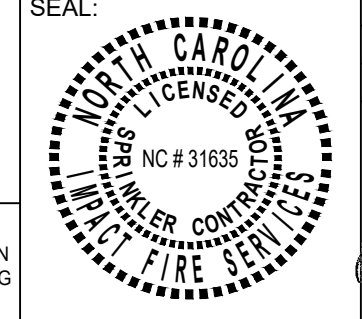


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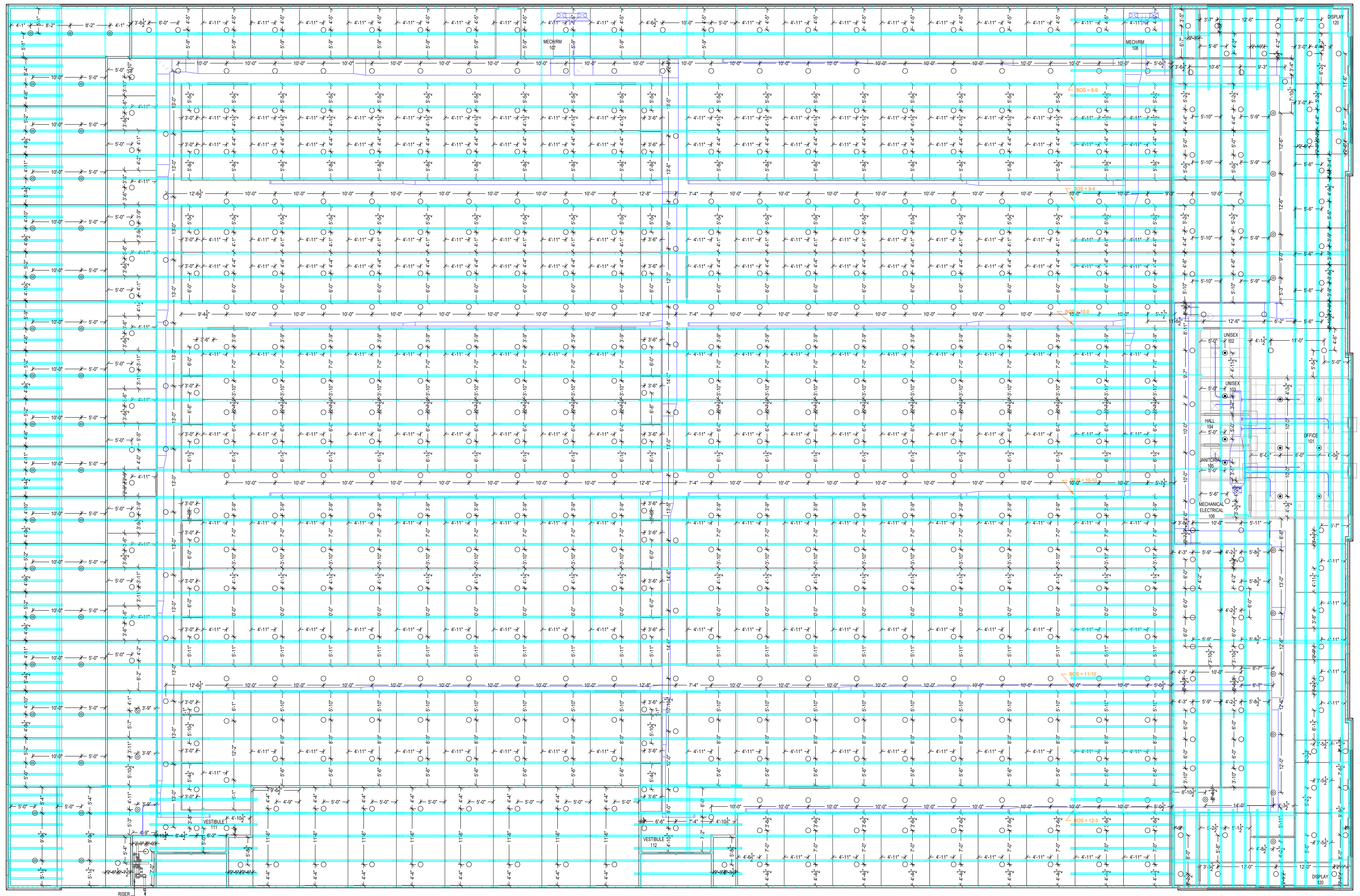
IMPACT FIRE
131 INTERNATIONAL DR
MORRISVILLE, NC 27560
P: (919) 469-1672 F: (866) 275-4157
NC STATE LIC. #31635

SPRINKLER LEGEND										
SYM	MAKE	SIN	TYPE	THRD	K-FAC	RESP	TEMP	FINISH	NOTES	QTY
○	VIC	V2708	RP	1/2"	5.6	QR	155°F	CHROME		10
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○	VIC	V2704	U	1/2"	5.6	QR	200°F	BRASS	SPRIG-UP	51
TOTAL SPRINKLERS THIS PROJECT										642
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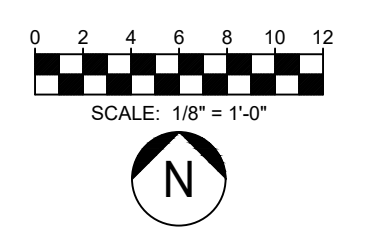
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SHEET TITLE: PIPING PLAN
SHEET NUMBER: FP3
NICET LEVEL IV, #108071



1 1ST FLOOR SPRINKLER PLAN
SCALE: 1/8" = 1'-0"

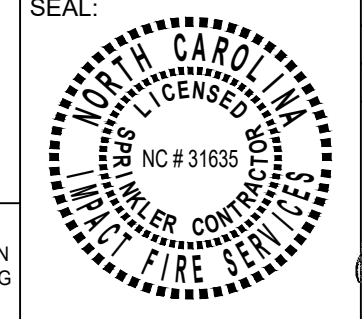


#	DATE	DESCRIPTION	BY
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SPRINKLER LEGEND										
SYM	MAKE	SIN	TYPE	THRD	K-FAC	RESP	TEMP	FINISH	NOTES	QTY
○	VIC	V2708	RP	1/2"	5.6	QR	155°F	CHROME		10
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△	VIC	V2704	U	1/2"	5.6	QR	200°F	BRASS	SPRIG-UP	51
TOTAL SPRINKLERS THIS PROJECT										
TOTAL SPRINKLERS THIS SHEET										



LILLINGTON STORAGE
1781 N MAIN ST
LILLINGTON, NC 27546



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SHEET TITLE: SPRINKLER PLAN
SHEET NUMBER: FP4

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