

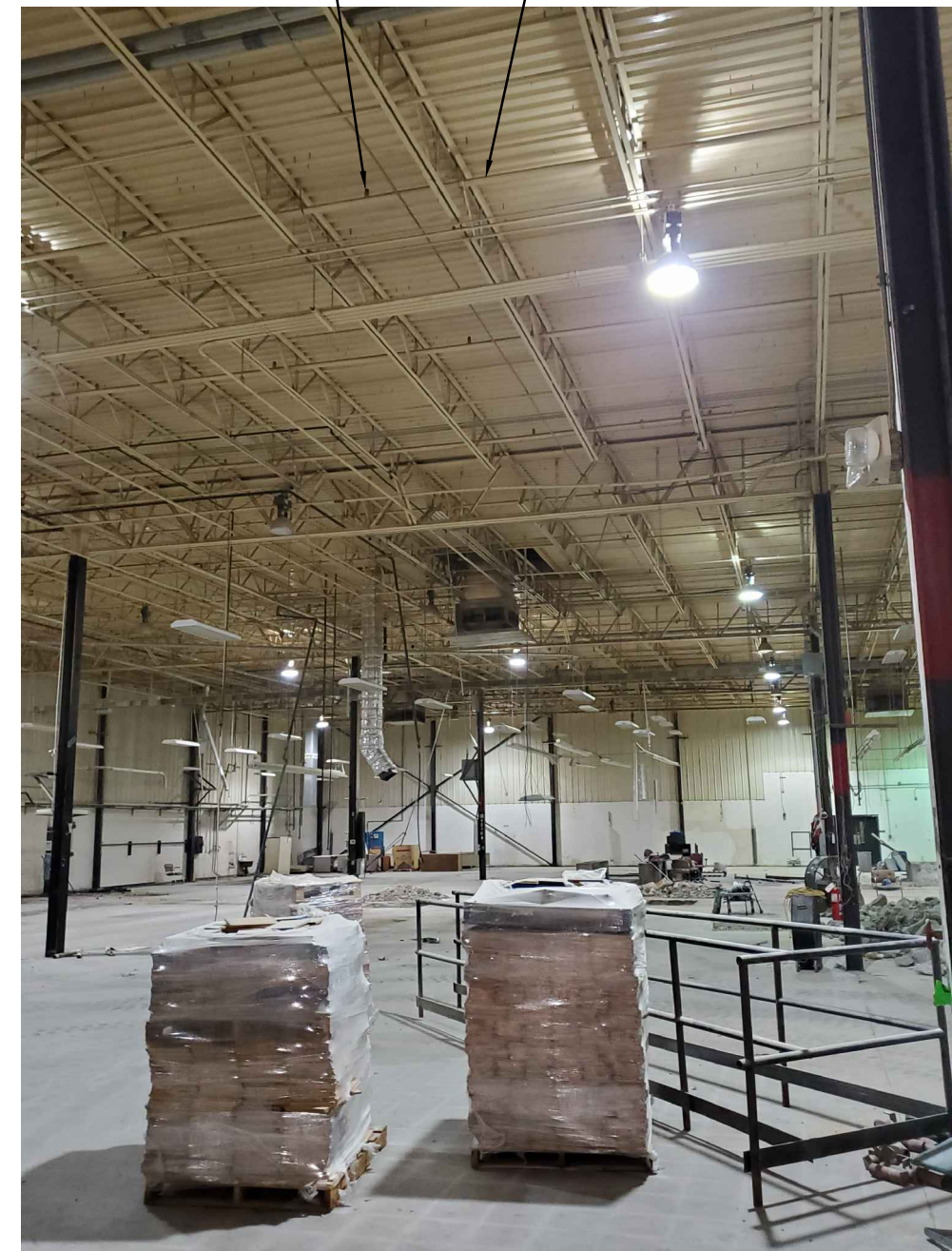
EXISTING WET RISER DETAILS



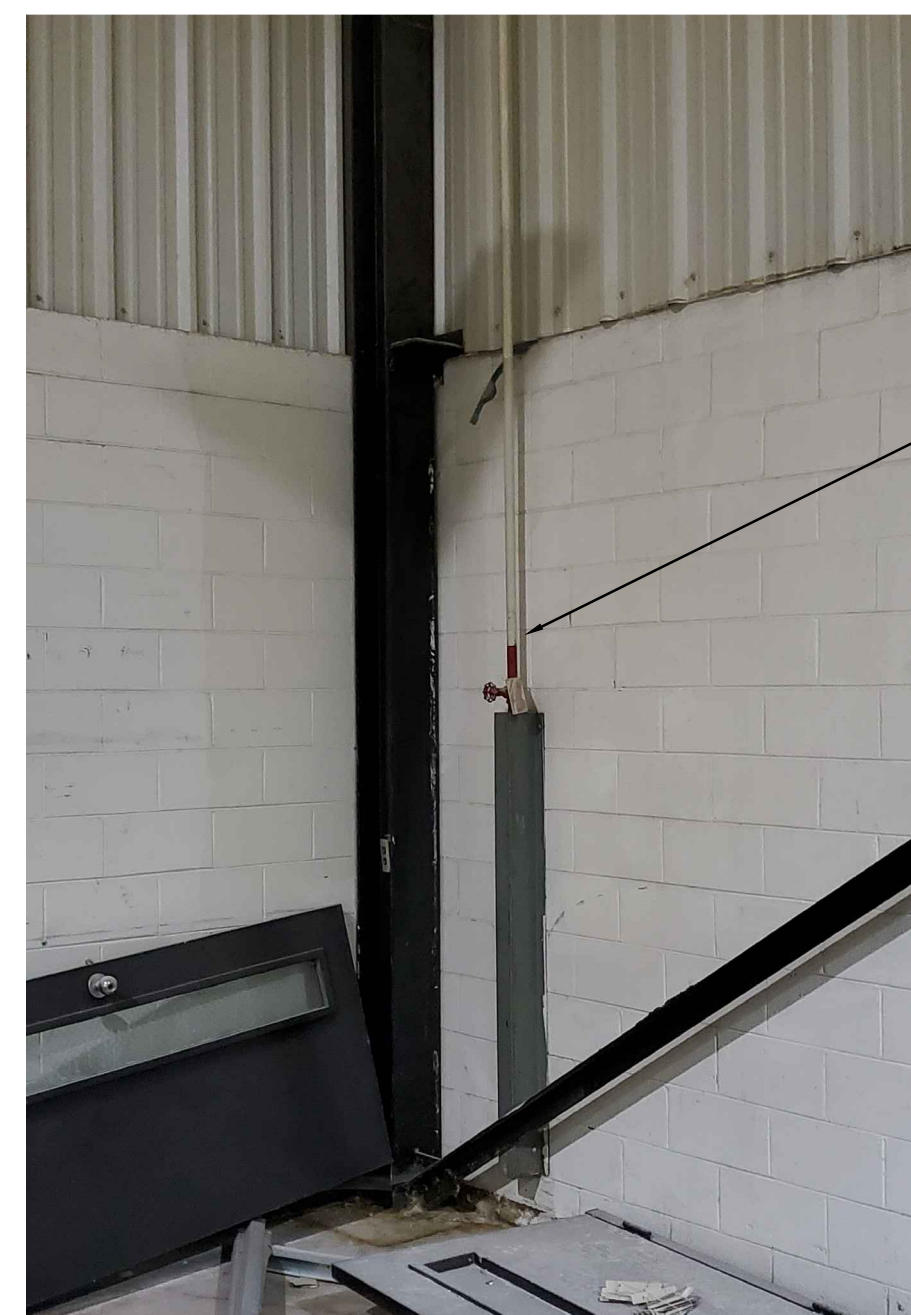
EXISTING DRY RISER DETAILS



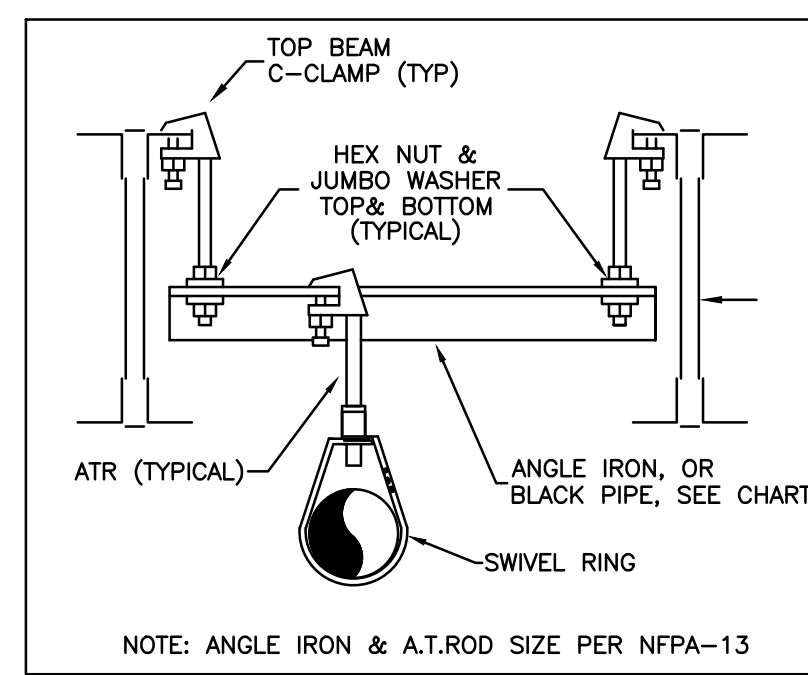
EXISTING REMOTE FDC & BACKFLOW



EXISTING SHELL BUILDING



EXISTING ITC & DRAIN



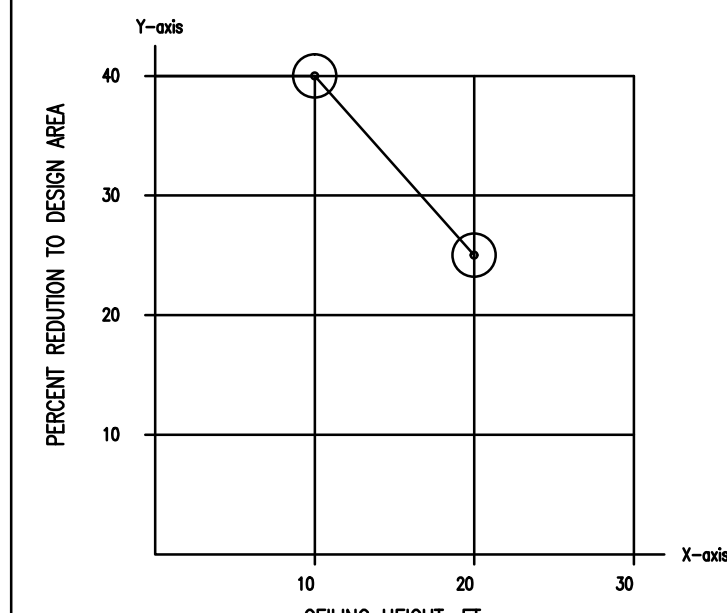
TRAPEZE DETAIL
SCALE: NTS

SPAN OF TRAPEZE (Schedule 10 OR 40)	NOMINAL PIPE SIZE SUPPORTED								
	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
1 FT. 6 IN.	1"	1"	1"	1"	1"	1-1/4"	1-1/4"	1-1/2"	
2 FT. 0 IN.	1"	1"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"	2"	
2 FT. 6 IN.	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"	2"	
3 FT. 0 IN.	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/2"	1-1/2"	1-1/2"	2"	2-1/2"
4 FT. 0 IN.	1-1/2"	1-1/2"	1-1/2"	1-1/2"	2"	2"	2"	2-1/2"	2-1/2"
5 FT. 0 IN.	2"	2"	2"	2"	2"	2"	2-1/2"	2-1/2"	3"
6 FT. 0 IN.	2"	2"	2"	2"	2"	2"	2-1/2"	2-1/2"	3"
7 FT. 0 IN.	2"	2"	2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	3-1/2"
8 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	3-1/2"
9 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	4"	4"
10 FT. 0 IN.	2-1/2"	2-1/2"	2-1/2"	2-1/2"	2-1/2"	3"	3"	4"	4"

TRAPEZE INSTALLATION REQUIREMENTS

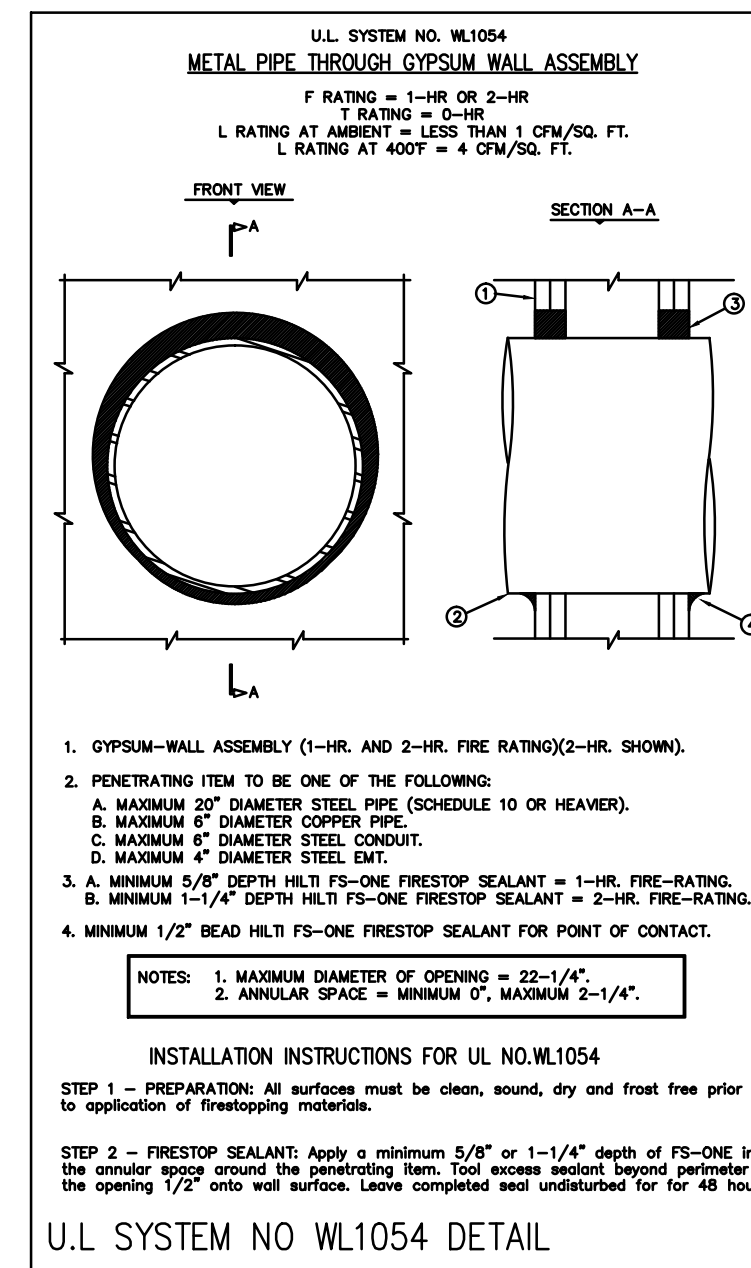
11.2.3.2.3.1 / NFPA 13
WHERE LISTED QUICK-RESPONSE SPRINKLERS, INCLUDING EXTENDED COVERAGE QUICK-RESPONSE SPRINKLERS, ARE USED THROUGHOUT A SYSTEM OR PORTION OF A SYSTEM HAVING THE SAME HYDRAULIC DESIGN BASIS, THE SYSTEM AREA OF OPERATION SHALL BE PERMITTED TO BE REDUCED WITHOUT REVISING THE DENSITY 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) 20-FOOT (6.1-m) MAXIMUM CEILING HEIGHT
- (4) THERE ARE NO UNPROTECTED CEILING PROCKETS AS ALLOWED BY 8.6.7 AND 8.8.7 EXCEEDING 32 FT²

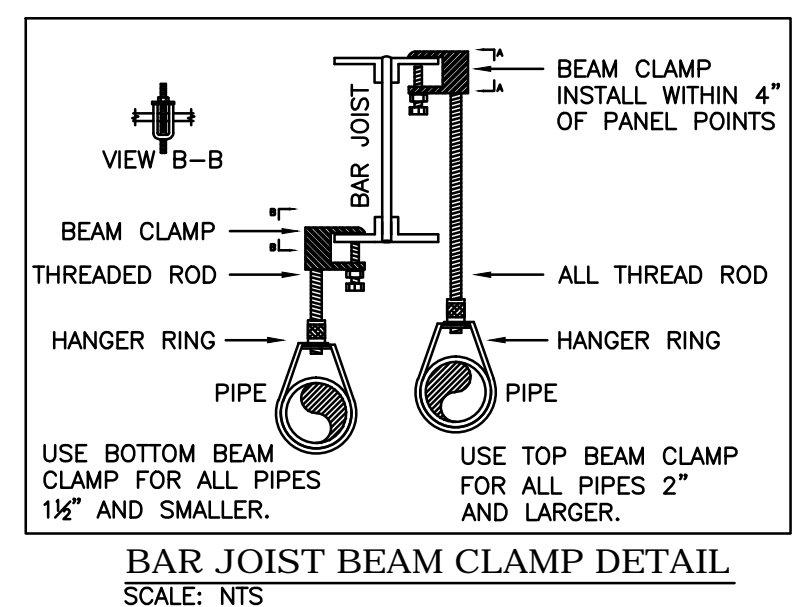


NOTE: $y = \frac{1}{2}x + 55$
FOR CEILING HEIGHT $> 10ft$ and $\leq 20ft$, $y = \frac{1}{2}x + 55$
FOR CEILING HEIGHT $< 10ft$, $y = 0$
FOR CEILING HEIGHT $> 20ft$, $y = 0$
FOR SI UNITS: $1ft = 0.31m$
FIGURE 11.2.3.2.3.1

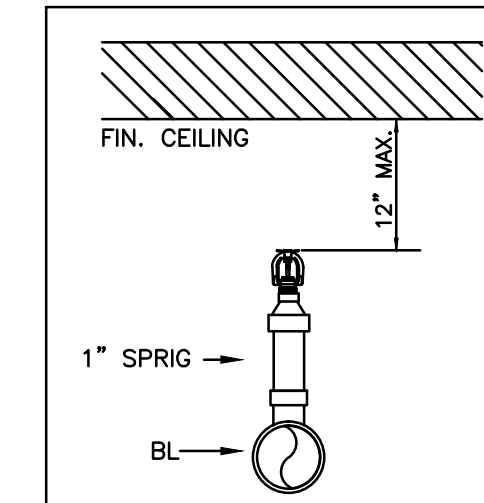
REVISED AREA REDUCTION CHART
NFPA-13



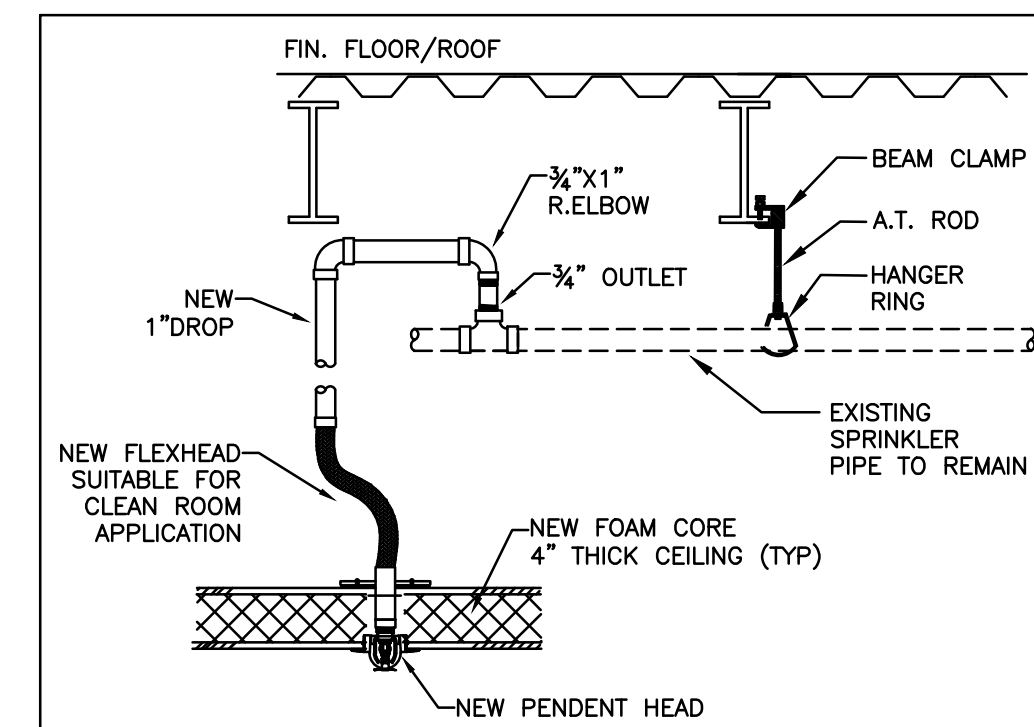
U.L. SYSTEM NO. WL1054 DETAIL



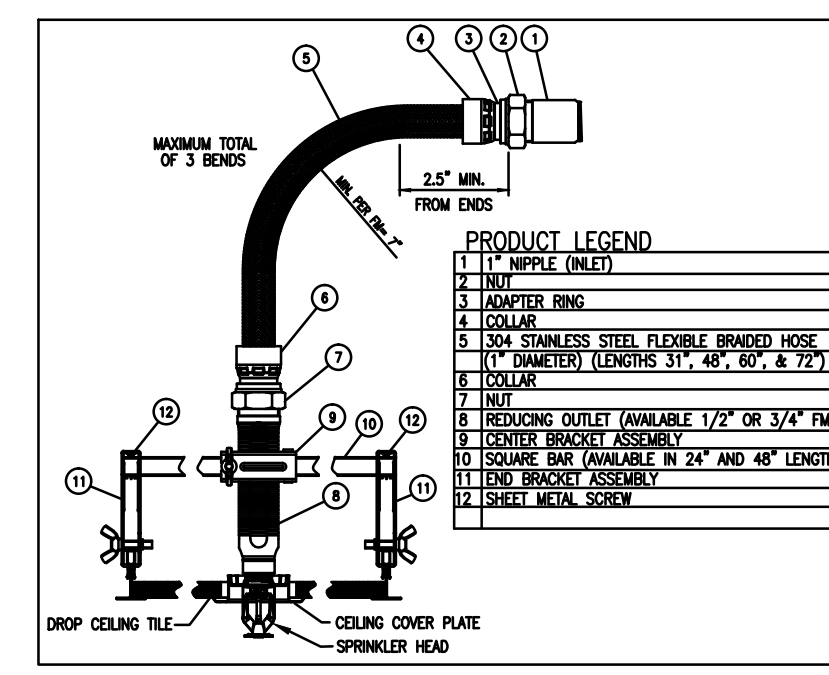
BAR JOIST BEAM CLAMP DETAIL
SCALE: NTS



STANDARD UPRIGHT
SCALE: NTS



UPPIT PENDENT HEAD DETAIL (FOAM CORE CEILING AREAS)
SCALE: NTS



FLEXIBLE HOSE ASSEMBLY DETAIL (DROP CEILING AREAS)
SCALE: NTS

GENERAL NOTES

1. SCOPE OF WORK - TO MODIFY THE EXISTING SPRINKLER SYSTEM TO ACCOMMODATE FOR THE NEW TENANT UP-FIT AS SHOWN IN DRAWING IN COMPLIANCE WITH LOCAL AUTHORITY, AND NFPA - 13.
2. ALL UNDERGROUND PIPING, SYSTEM RISER, ZONE CONTROL, BACKFLOW, CONTROL VALVES, AND FLOW SWITCHES TO REMAIN UNDISTURBED.
3. ALL PIPING 1" PIPE TO BE SCH40 BLACK STEEL WITH CAST IRON SCREWED FITTINGS.
4. ALL PIPING 1 1/2" AND ABOVE TO BE SCH10 BLACK STEEL WITH GROOVED FITTINGS.
5. ALL MAIN AND BRANCH LINE PIPES WILL REMAIN UNDISTURBED.
6. ALL HANGER ASSEMBLIES SHALL UTILIZE UL/FM LISTED COMPONENTS AND COMPLY WITH NFPA-13
7. EXISTING CONTROL VALVES SHALL BE ELECTRICALLY SUPERVISED. ALL ELECTRICAL CONNECTIONS TO BE MADE BY AN ELECTRICIAN.
8. ALL INTERIOR PIPING SHALL BE HYDRAULICALLY TESTED AT 200 PSI FOR 2 HOURS.
9. IT IS THE RESPONSIBILITY OF THE OWNER TO PROVIDE ADEQUATE HEAT TO PREVENT THE FIRE PROTECTION SYSTEM FROM FREEZING.
10. CONTACT PERSON: DREW PATEL, PROJECT MANAGER, KRIGEN PHARMACEUTICALS TEL: 919-961-3751

SPRINKLER DESIGN DATA

Project Name:	KRIGEN PHARMACEUTICALS	System:	WET
Project Street Address:	800 EDWARDS BROTHERS DRIVE, LILLINGTON, NC 27546	Sys. Sq. Ft.:	33,000
Site:	N/A	Floor#:	1
Designed By:	REGIONAL FIRE SERVICES OF NC	Phone:	919-212-2722
Occupancy:	FACTORY, PACKAGING	Hazard:	ORDINARY, LIGHT
		Total Bldg. Hgt.:	27'-0"

DESIGN SUMMARY

Design Method	System #1		System #2		System #3	
	CALCS. DENSITY/AREA	WATER GENERATION AREA 110	CALCS. DENSITY/AREA	PASSAGE AREA 58	CALCS. DENSITY/AREA	PACKAGING MATERIAL AREA 21
Design Area #	1		2		3	
Location	WATER GENERATION AREA 110		PASSAGE AREA 58		PACKAGING MATERIAL AREA 21	
Type of System	WET		WET		WET	
Hazard Class	ORD. GR-2		LIGHT		ORD. GR-1	
Criteria From	NFPA-13		NFPA-13		NFPA-13	
Design Area (sq.ft.)	1500		900		1500	
Sprinkler Spacing(sq.ft.)	256		256 MAX.		256	
Density	.2		.1		.15	
K-factor	11.2		11.2		11.2	
Hose Allowance	250		100		250	
# Design Sprinklers	10		11		10	
Special Application Spk.	N/A		N/A		N/A	
Requirement @ BOR						
G.P.M. Req'd	516.98		278.29		395.73	
P.S.I. Req'd	60.03		36.75		46.48	
Requirement @ TEST						
GPM Required	766.98		378.29		645.73	
PSI Required	66.43		41.99		52.21	
Safety factor @ Test	8.18		42.39		26.04	
Dry Sys. Vol. (gal)	N/A		N/A		N/A	

WATER SUPPLY INFORMATION

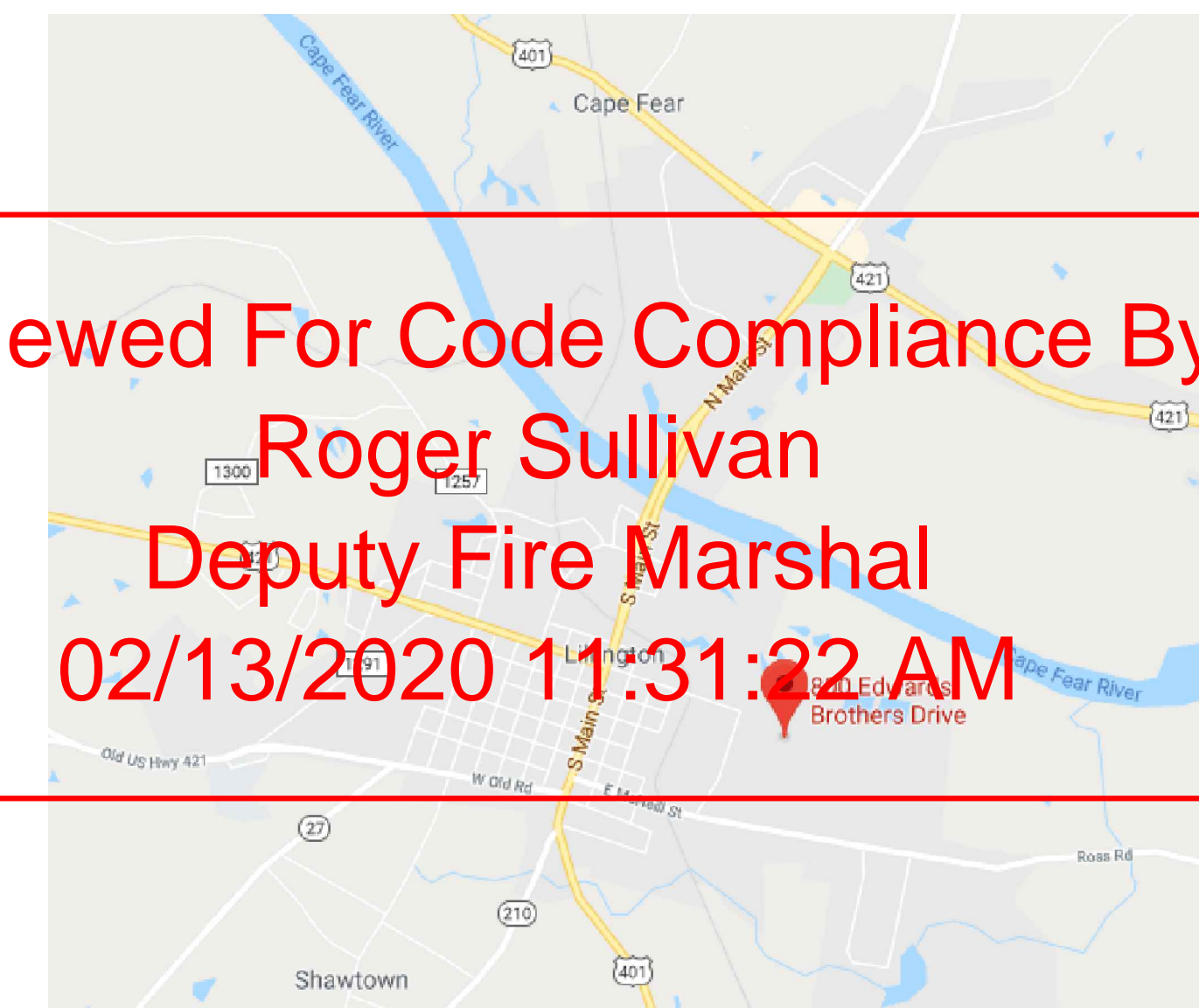
Tested by:	LILLINGTON FIRE DEPARTMENT	Date/Time:	9/10/2019	Pressure Hydrant:	-
Hydrant Elevation:	-	Flow Hydrant #:	1	Flow Hydrant #2:	-
Static (PSI):	88	Residual (PSI):	58	Flow (gpm):	1186

Copy of Water Test Data Included with Calculation

Fire Pump Data			
Rated G.P.M.	-	Rated Pressure	-
Rated Pressure	-	Horsepower	-
Discharge	-	Churn Pressure	-
Combined Discharge	-	150% Flow (section)	-
		150% Flow (gpm)	-

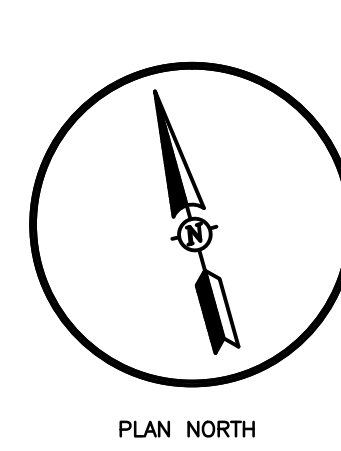
If Storage is Greater than 12 Feet Complete Commodity Storage Design Information									
Commodity Description	??	Storage Height	??	Storage Type (Rock, Bin, Pile)	??	Clearance	??	Wet/Dry	??
Stable/Unstable	??	Open/Closed	??	Array	??	Design	??	Minimum Design	??
Figure #	??	Density	??	Clear Factor	??	Design	??	Minimum Design	??
Curve #	??	Area	??	Array Factor	??	Final Design	??	Final Design	??
		Initial	??	Clear Factor	??	Final Design	??	Final Design	??
		Sec'd	??	Clear Factor	??	Final Design	??	Final Design	??
		-dry	??	Clear Factor	??	Final Design	??	Final Design	??
		-dry	??	Clear Factor	??	Final Design	??	Final Design	??
Is system compliant with Chapter 23 (FPC)	??	Is storage area layout, rack, and pile plan included?	??						

Reviewed For Code Compliance By:
Roger Sullivan
Deputy Fire Marshal
02/13/2020 11:31:22 AM



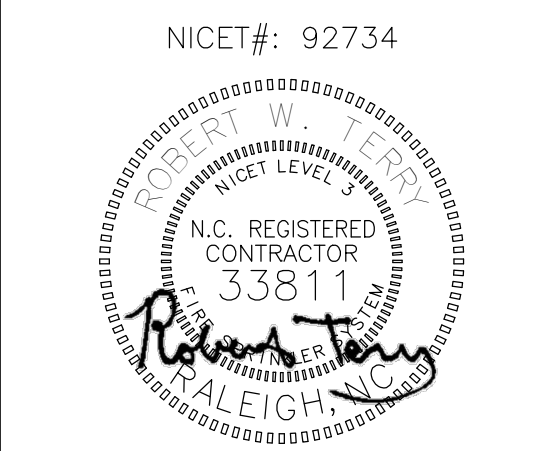
VICINITY MAP

N.T.S.



HANGER INSTALLATION REQUIREMENTS									
MAXIMUM DISTANCE BETWEEN HANGERS									
NOMINAL PIPE SIZE	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
SCH. 10 & 40 STEEL PIPE	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADABLE LIGHTWALL	12-0	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A
CPVC	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A	N/A

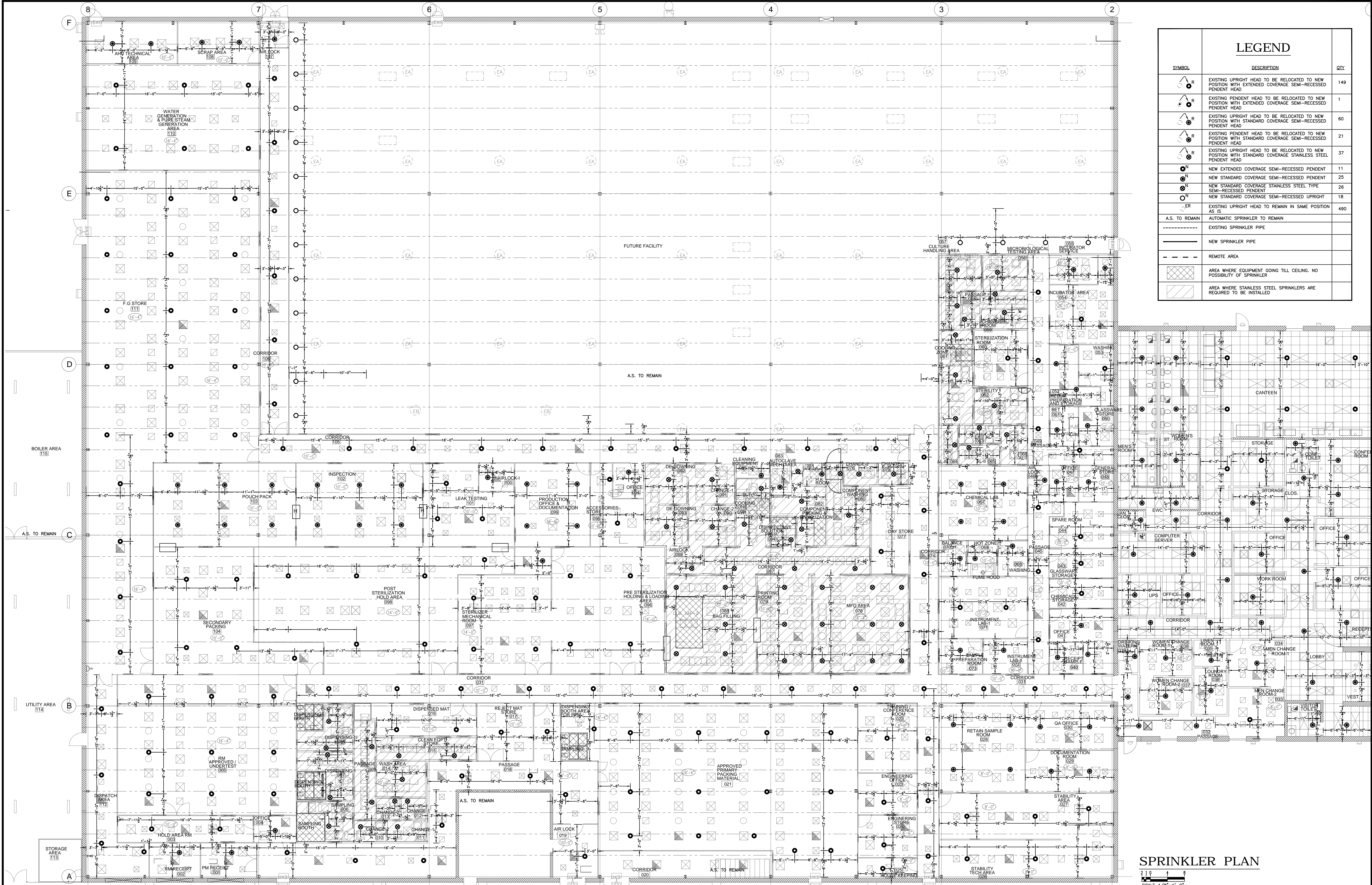
APPLICABLE CODES	
NCSBC 2018, NFPA 13-2013	
TYPE OF OCCUPANCY	FACTORY, PACKAGING
CONSTRUCTION TYPE	II-B
FIRE PROTECTION	PER NFPA 13
PROJECT GSF	30,000 S.F.
BUILDING GSF	54,000 S.F.



Symbols		Number of Sprinklers	
Symbol	Description	Total This Uplift Area 348	Total This Building -
(Symbol)	HYDRAULIC REFERENCE POINTS		
(Symbol)	ELEV. BELOW TOP OF STEEL	106	
(Symbol)	ELEV. ABOVE FINISHED FLOOR	161	
(Symbol)	ELEV. OF TOP OF STEEL	63	
(Symbol)	CEILING HEIGHT		
(Symbol)	DENOTES HANGER LOCATION		
(Symbol)	DENOTES BRANCH LINE RESTRAINT		
(Symbol)	RISE UP OR DOWN		
(Symbol)	NEW SPRINKLER PIPE		
(Symbol)	EXISTING SPRINKLER PIPE		

Drawing		Job:	
Title	Date	Project No.	Plot Date:
SITE PLAN, DESIGN DATA, NOTES & FP DETAILS	1/20/2020	19043	1/20/2020
Revisions:		Drawn By:	A.Z.
ARCHITECTURAL CHANGES	1/20/2020	Scale:	AS NOTED
		Date:	10/29/2019

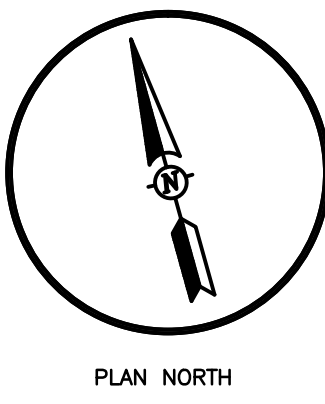
Owner:	
KRIGEN PHARMACEUTICALS	
800 EDWARDS BROTHERS DRIVE	
LILLINGTON, NC 27546	



LEGEND		
SYMBOL	DESCRIPTION	QTY
	EXISTING UPRIGHT HEAD TO BE RELOCATED TO NEW POSITION WITH EXTENDED COVERAGE SEMI-RECESSED PENDENT HEAD	149
	EXISTING PENDENT HEAD TO BE RELOCATED TO NEW POSITION WITH EXTENDED COVERAGE SEMI-RECESSED PENDENT HEAD	1
	EXISTING UPRIGHT HEAD TO BE RELOCATED TO NEW POSITION WITH STANDARD COVERAGE SEMI-RECESSED PENDENT HEAD	60
	EXISTING PENDENT HEAD TO BE RELOCATED TO NEW POSITION WITH STANDARD COVERAGE SEMI-RECESSED PENDENT HEAD	21
	EXISTING UPRIGHT HEAD TO BE RELOCATED TO NEW POSITION WITH STANDARD COVERAGE STAINLESS STEEL PENDENT HEAD	37
	NEW EXTENDED COVERAGE SEMI-RECESSED PENDENT	11
	NEW STANDARD COVERAGE SEMI-RECESSED PENDENT	25
	NEW STANDARD COVERAGE STAINLESS STEEL TYPE SEMI-RECESSED PENDENT	26
	NEW STANDARD COVERAGE SEMI-RECESSED UPRIGHT	18
	EXISTING UPRIGHT HEAD TO REMAIN IN SAME POSITION AS IS	490
	AUTOMATIC SPRINKLER TO REMAIN	
	EXISTING SPRINKLER PIPE	
	NEW SPRINKLER PIPE	
	REMOTE AREA	
	AREA WHERE EQUIPMENT GOING TILL CEILING, NO POSSIBILITY OF SPRINKLER	
	AREA WHERE STAINLESS STEEL SPRINKLERS ARE REQUIRED TO BE INSTALLED	

SPRINKLER PLAN

SCALE 1/8"=1'-0"



HANGER INSTALLATION REQUIREMENTS									
MAXIMUM DISTANCE BETWEEN HANGERS									
NOMINAL PIPE SIZE	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"
SCH. 10 & 40 STEEL PIPE	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADABLE LIGHTWALL	12-0	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A
CVC	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A	N/A

APPLICABLE CODES	
NCSBC 2018, NFPA 13-2013	
TYPE OF OCCUPANCY	FACTORY, PACKAGING
CONSTRUCTION TYPE	II-B
FIRE PROTECTION	PER NFPA 13
PROJECT GSF	30,000 S.F.
BUILDING GSF	54,000 S.F.



NICET#: 92734

Symbol	Description	Total This Uplift Area	348	Total This Building	-
	HYDRAULIC REFERENCE POINTS				
	1/2" K=5.6 Q.R. PENDENT, RECESSED ESCUT., CHROME, 155, TYCO, TY3231	106			
	3/4" K=11.2 E.C.Q.R. PENDENT SEMI-REC. CHROME, 155, TYCO, TY5237 (16'X16)	161			
	1/2" K=5.6 Q.R. STAINLESS STEEL PENDENT, VC-250 FINISH, REC. ESCUT. 155, VICTALIC 92769	63			
	CEILING HEIGHT				
	DENOTES HANGER LOCATION				
	DENOTES BRANCH LINE RESTRAINT				
	RISE UP OR DOWN				
	NEW SPRINKLER PIPE	18			
	EXISTING SPRINKLER PIPE				

Drawing		Title	
Project No. 19043	Plot Date: 1/20/2020	SPRINKLER PLAN	
Drawn by: A.Z.	Revisions: ARCHITECTURAL CHANGES 1/20/2020		
Scale: AS NOTED	Date: 10/29/2019		

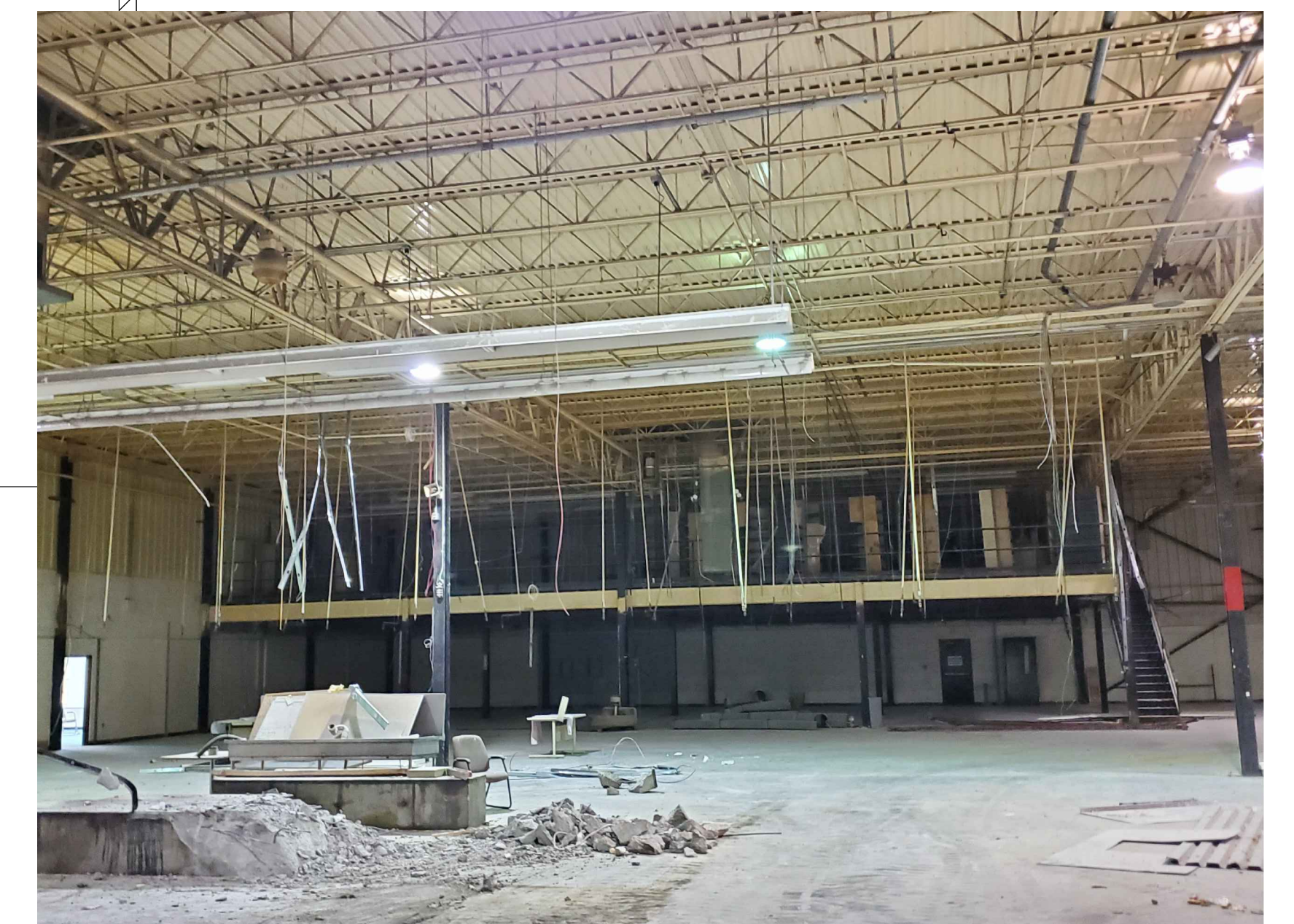
Job: KRIGEN PHARMACEUTICALS
800 EDWARDS BROTHERS DRIVE
LILLINGTON, NC 27546

Owner: KRIGEN PHARMACEUTICALS
800 EDWARDS BROTHERS DRIVE
LILLINGTON, NC 27546

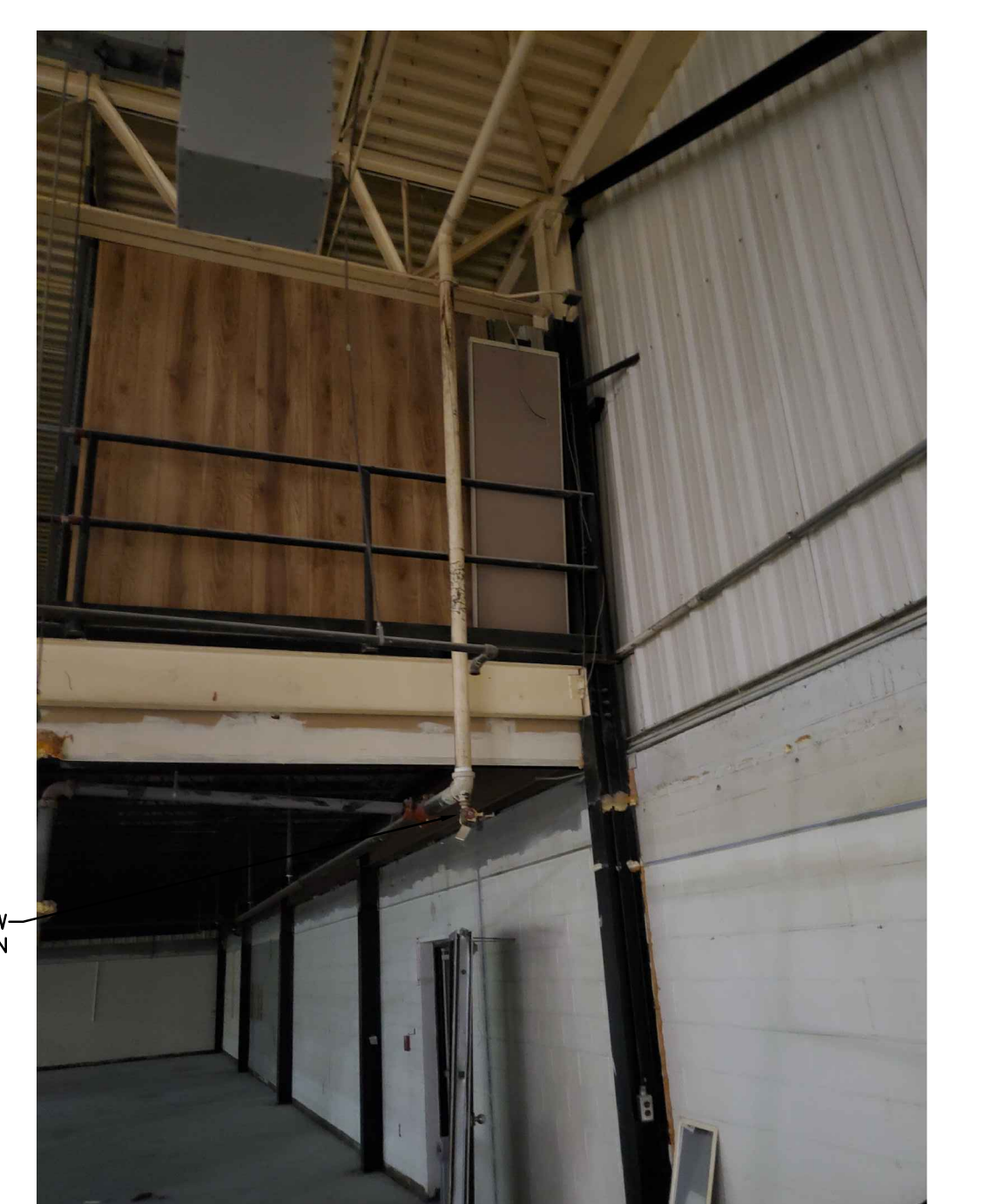
SHEET CP3 OF 4

LEGEND

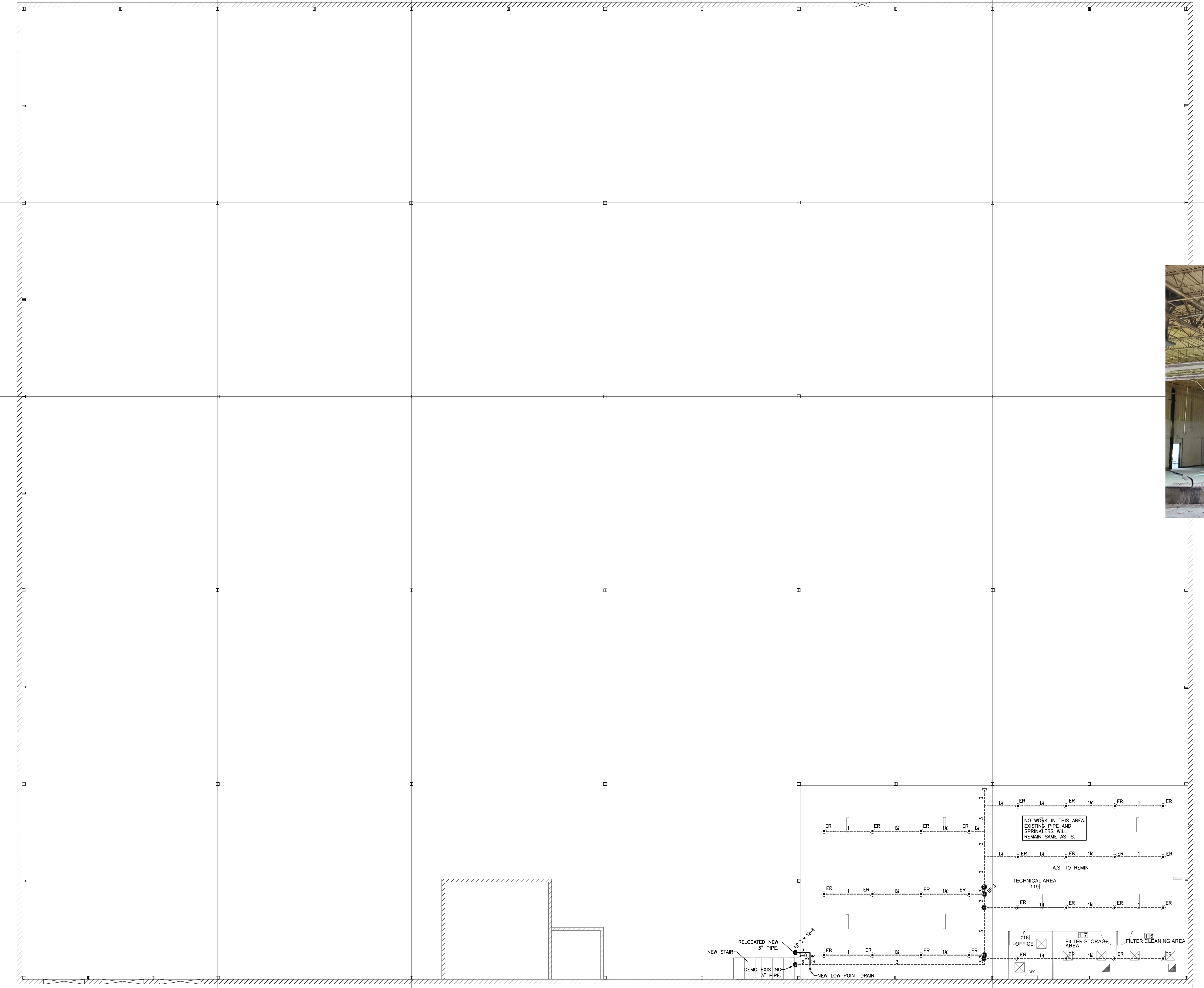
SYMBOL	DESCRIPTION	QTY
	EXISTING PENDENT HEAD TO REMAIN IN SAME POSITION AS IS	28
A.S. TO REMAIN	AUTOMATIC SPRINKLER TO REMAIN	
	EXISTING SPRINKLER PIPE	
	NEW SPRINKLER PIPE	



EXISTING MEZZANINE

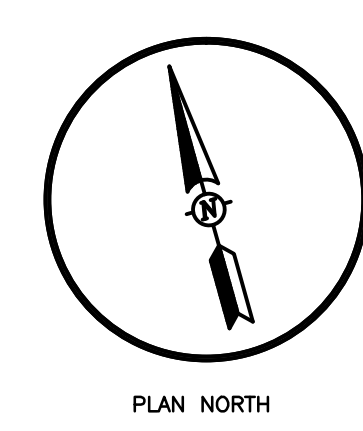


EXISTING MEZZANINE



PIPING PLAN - MEZZANINE UNDER

SCALE 1/8"=1'-0"



HANGER INSTALLATION REQUIREMENTS										
MAXIMUM DISTANCE BETWEEN HANGERS										
NOMINAL PIPE SIZE	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	
SCH. 10 & 40 STEEL PIPE	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	
THREADABLE LIGHTWALL	12-0	12-0	12-0	12-0	12-0	12-0	N/A	N/A	N/A	
CVC	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A	N/A	

APPLICABLE CODES
 NCSBC 2018, NFPA 13-2013
 TYPE OF OCCUPANCY: FACTORY, PACKAGING
 CONSTRUCTION TYPE: II-B
 FIRE PROTECTION: PER NFPA 13
 PROJECT GSF: 30,000 S.F.
 BUILDING GSF: 54,000 S.F.



Symbols		Number of Sprinklers	
Symbol	Description	Total This Uplift Area	Total This Building
	HYDRAULIC REFERENCE POINTS		348
	ELEV. BELOW TOP OF STEEL	106	
	ELEV. ABOVE FINISHED FLOOR	161	
	CEILING HEIGHT	63	
	DENOTES HANGER LOCATION	18	
	DENOTES BRANCH LINE RESTRAINT		
	RISE UP OR DOWN		
	NEW SPRINKLER PIPE		
	EXISTING SPRINKLER PIPE		

Drawing		Title	
Project No.	19043	Plot Date:	1/20/2020
Drawn By:	A.Z.	Revisions:	ARCHITECTURAL CHANGES 1/20/2020
Scale:	AS NOTED	Date:	10/29/2019

Job: KRIGEN PHARMACEUTICALS
 800 EDWARDS BROTHERS DRIVE
 LILLINGTON, NC 27546
 Owner: KRIGEN PHARMACEUTICALS
 800 EDWARDS BROTHERS DRIVE
 LILLINGTON, NC 27546