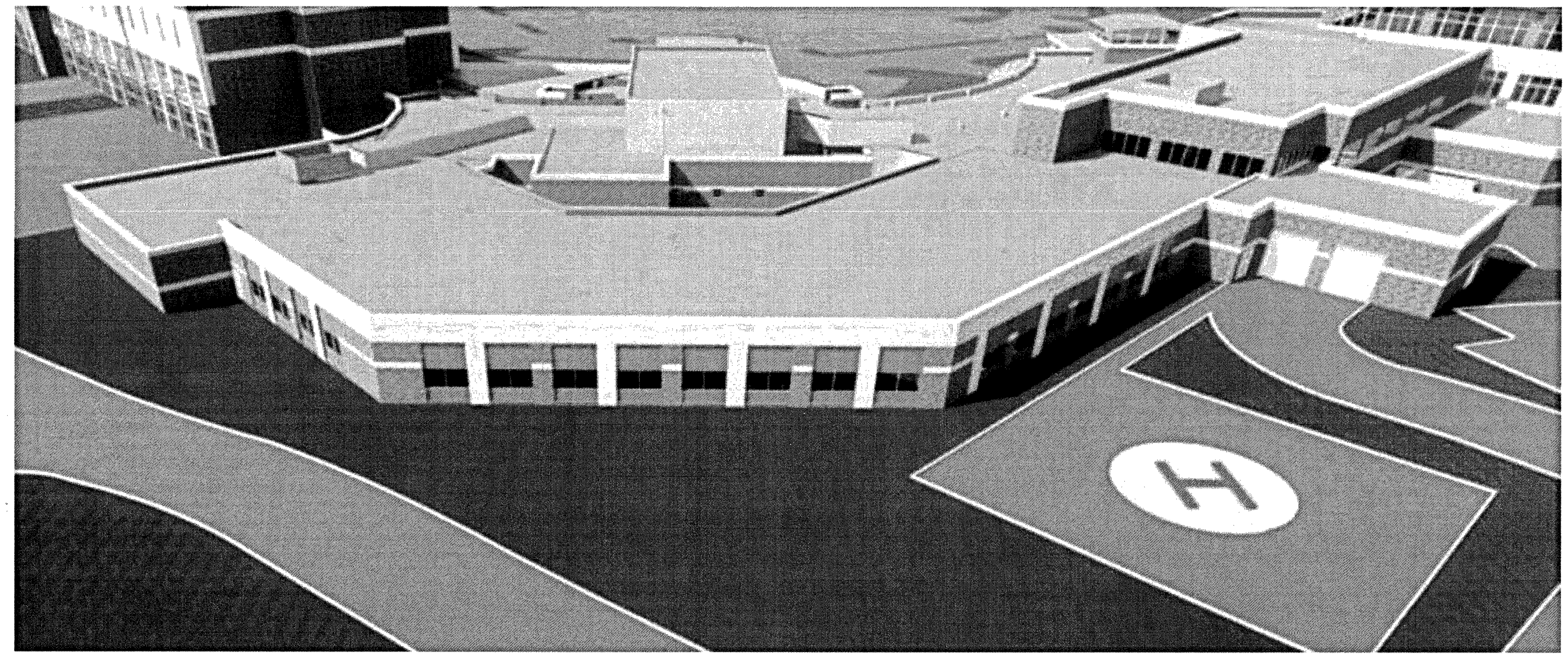
Saint Luke's East Hospital

FLEX CAPACITY EXPANSION



GENERAL NOTE

*ALL SPRINKLER SYSTEMS SHALL CONFORM WITH THE REQUIREMENTS OF NFPA - 2016 IFC - 2018
*ALL SECTIONS OF TRAPPED PIPING TO HAVE AUXILIARY DRAINS WHERE REQUIRED PER NFPA
*ALL HANGER TO BE INSTALLED PER REQUIREMENTS OF NFPA
*PENETRATIONS THROUGH FIRE RATED WALL SHALL BE FIRE CAULKED AS REQUIRED PER CONTRACT
*THE OWNER SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE HEAT TO PREVENT WATER FILLED PIPE FROM FREEZING
*AMERICAN FIRE SPRINKLER CORP. IS NOT CONTRACTED TO PROVIDE THE ALARM WIRING TO THE CENTRAL STATION ALARM SYSTEM
*THREADED PIPING 1" -2" SHALL BE SCH 40 BLACK STEEL WITH DUCTILE THREADED FITTINGS
*GROOVED PIPING 1" -2" SHALL BE SCH 40 BLACK STEEL WITH VICTAULIC GROOVED FITTINGS
*GROOVED PIPING 2 1/2" -8" SHALL BE SCH 40 BLACK STEEL WITH VICTAULIC GROOVED FITTINGS
*SYSTEM PIPE SHALL BE SIZED PER HYDRAULIC CALCULATION

BUILDING CODE ANALYSIS

*BUILDING USE: INSTITUTIONAL
*CONSTRUCTION TYPE: 1-A
*OCCUPANCY GROUP /S: I - 2 & S-2
*TOTAL FLOOR AREA PER AREA:
- IN-PATIENT (NEW ADDITION): 27,154 sf
- AMBULANCE GARAGE (NEW ADDITION): 2,250 sf
- WAITING AREA (NEW ADDITION AREA C): 2,689 sf
- PENTHOUSE: 1,683 sf

FIRE PROTECTION CODE ANALYSIS

*SYSTEM DESIGN IS BASED ON 2018 IBC AND NFPA 13 - 2016
SPRINKLER DESIGN DEMANDS SHALL BE AS FOLLOWS
*ALL SPACES ARE LIGHT HAZARD UNLESS NOTED OTHERWISE ON DRAWINGS
*LIGHT HAZARD: 0.10 GPM/SF OVER 1500 SQ. FT. + 100 GPM HOSE ALLOWANCE
*ORDINARY HAZARD GROUP 1: 0.15 GPM/SF OVER 1500 SQ. FT. + 250 GPM HOSE ALLOWANCE
*ORDINARY HAZARD GROUP 2: 0.20 GPM/SF OVER 1500 SQ. FT. + 250 GPM HOSE ALLOWANCE
*DESIGN AREAS UTILIZE QUICK RESPONSE SPRINKLER AREA REDUCTION IN ACCORDANCE WITH NFPA 13

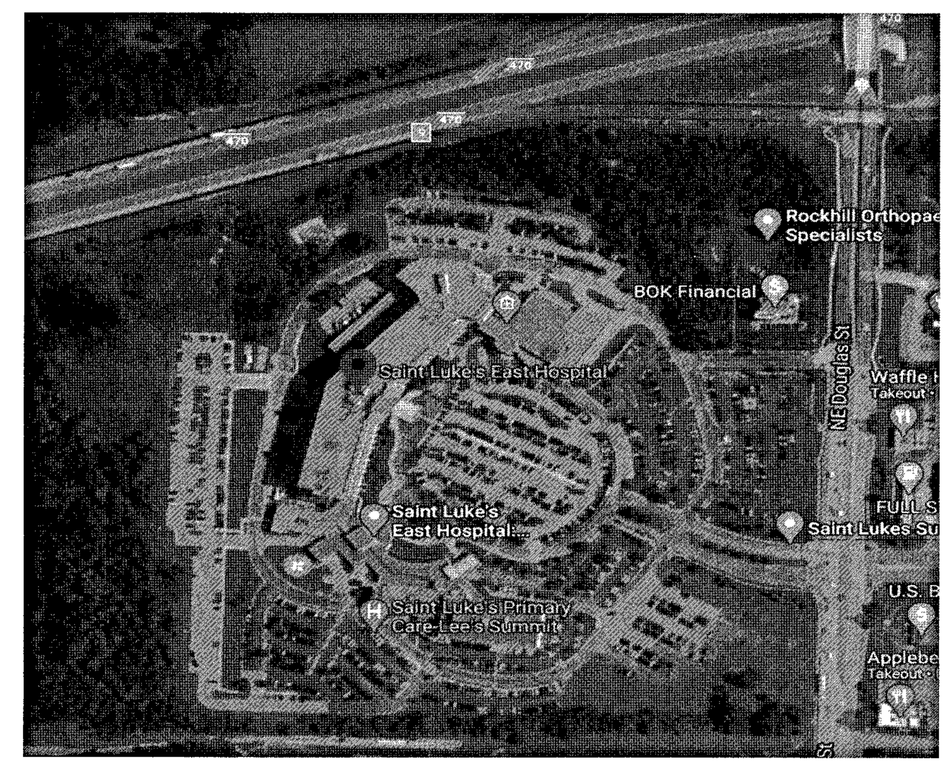
FIRE HYDRANT FLOW TEST INFORMATION

SOURCE OF INFORMATION: CITY OF LEES SUMMIT
DATE OF TEST: 06-30-2020
LOCATION OF WATER TEST: ST. LUKES EAST HYDRANT#: 016-031 FH
STATIC PRESSURE: 94 PSI
RESIDUAL PRESSURE: 70 PSI
FLOW: 1950 GPM

SEISMIC

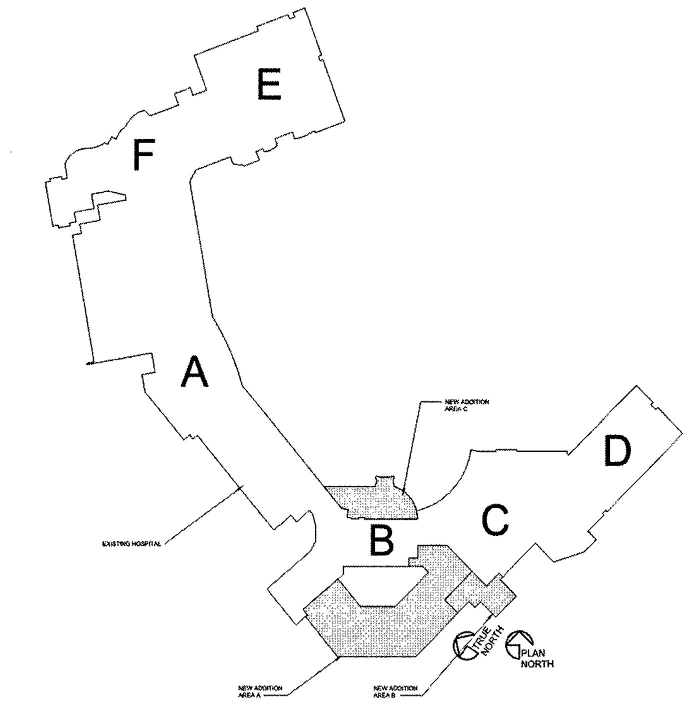
*SEISMIC CLASS: C
*SEISMIC RISK CATEGORY: IV

DRAWING INDEX:

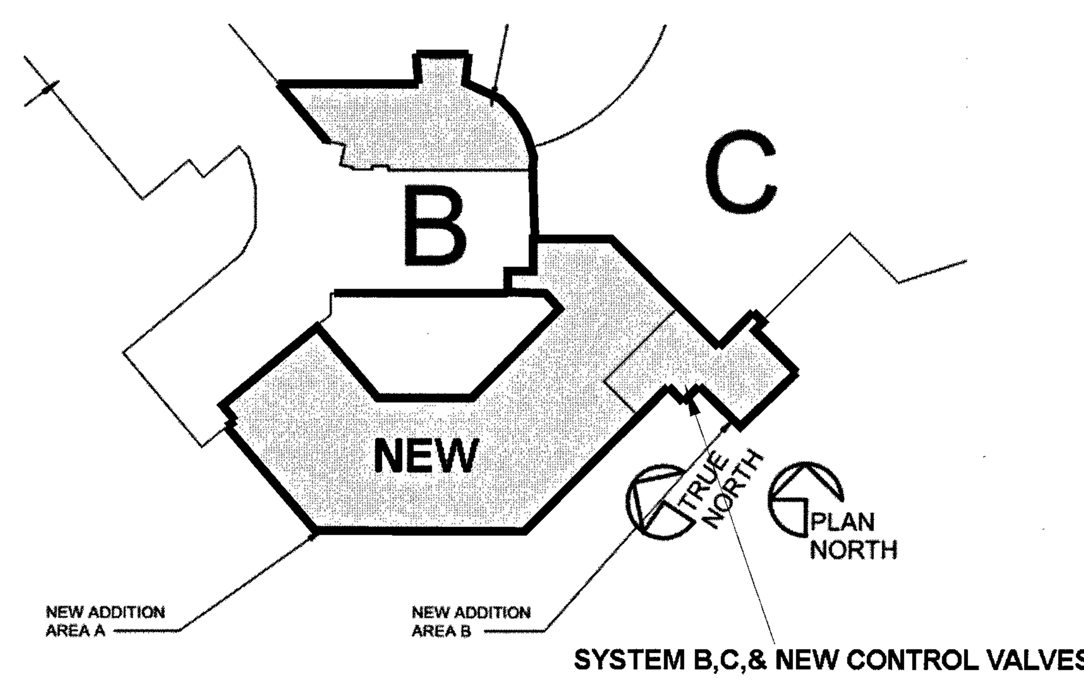


SITE PLAN

LOCATION PLAN



AREAS OF WORK



SYSTEMS MAP

SEISMIC BRACING

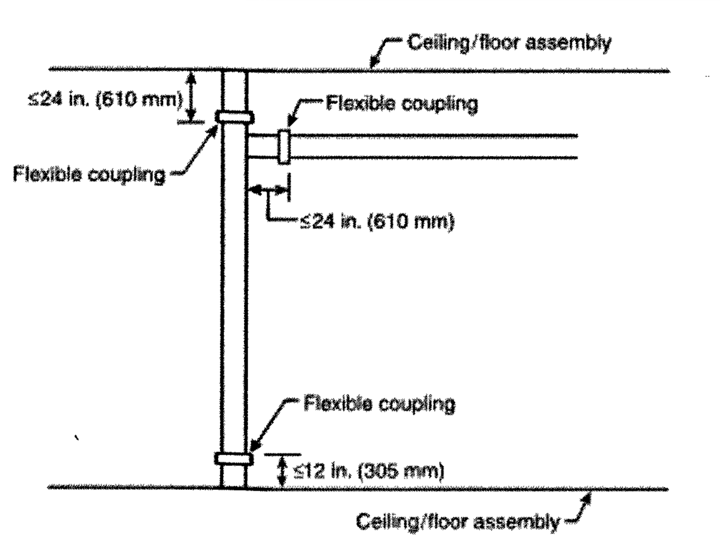


FIGURE A.9.3.2.3.2(1) Flexible Coupling on Horizontal Portion of Tie-In.

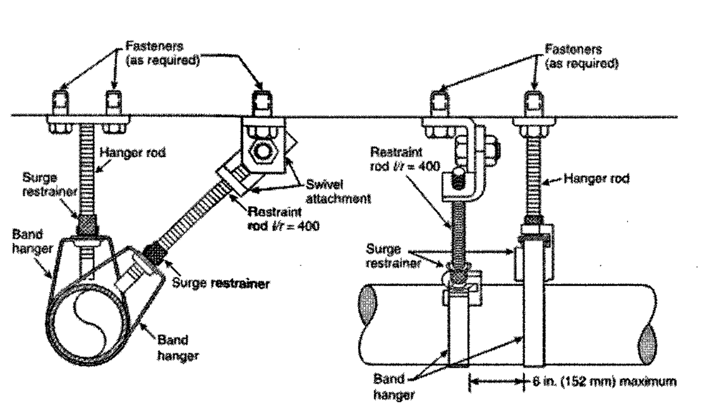
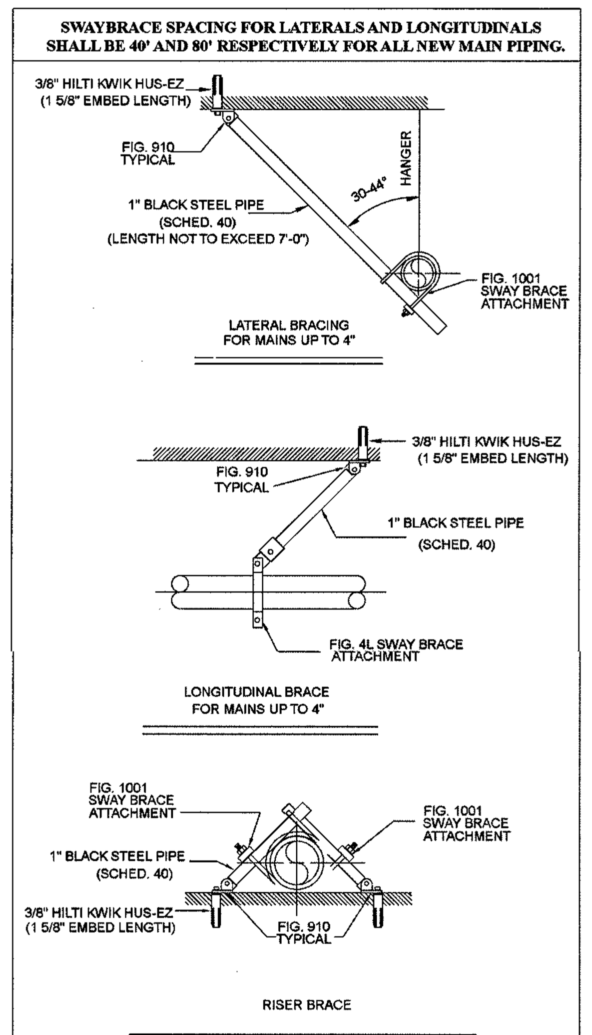


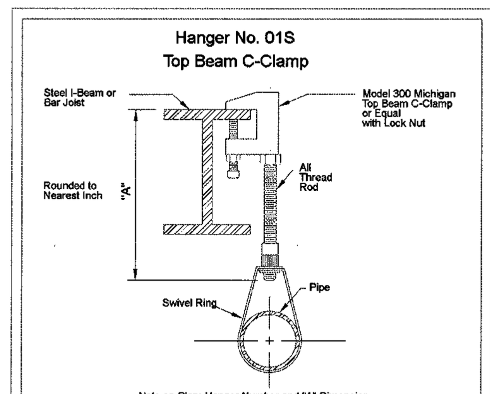
FIGURE A.9.3.6.1(5)(a) Hangers, with Surge Clips, Used in Combination for Restraint of Branch Lines.

SWAYBRACE SPACING FOR LATERALS AND LONGITUDINALS SHALL BE 40' AND 80' RESPECTIVELY FOR ALL NEW MAIN PIPING.



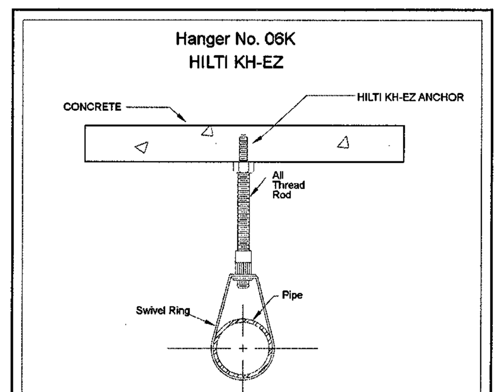
EARTHQUAKE SWAYBRACE DETAILS AND COMPONENTS

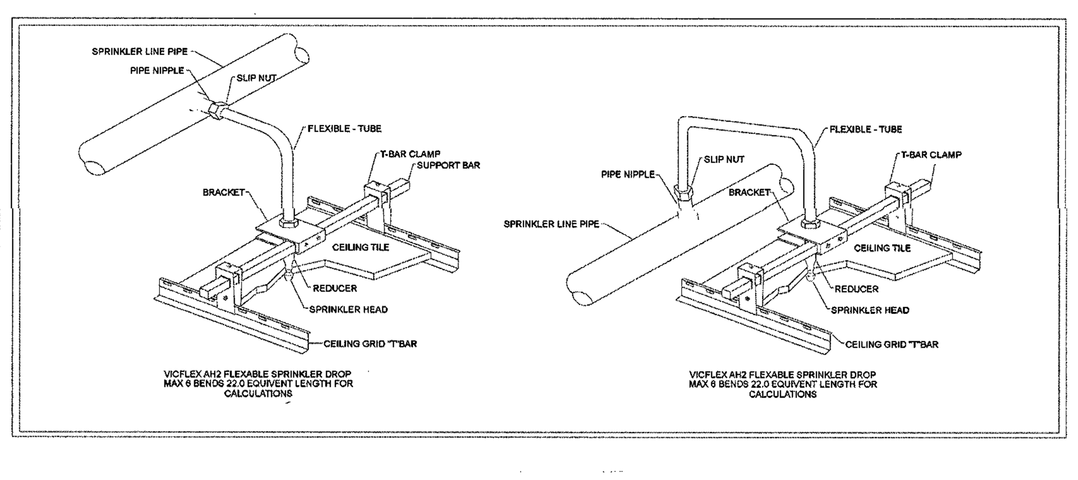
Hanger No. 01S
Top Beam C-Clamp



Note on Plan: Hanger Number and "A" Dimension

Hanger No. 05K
HILTI KH-EZ





VICFLEX AH2 FLEXABLE SPRINKLER DROP MAX 6 BENDS 22.0 EQUIVENT LENGTH FOR CALCULATIONS

VICFLEX AH2 FLEXABLE SPRINKLER DROP MAX 6 BENDS 22.0 EQUIVENT LENGTH FOR CALCULATIONS

MAXIMUM DISTANCE BETWEEN HANGERS

NOMINAL PIPE SIZE (in.)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"	6"	8"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0

DATE:

REVISIONS:

Symbols

Symbol	Description
⬡	Hydraulic Reference Points
★ 0"	Elev. Below Top of Steel
★ 0"	Elev. Above Finished Floor
(0-0)	Elev. of Top of Steel
0-0	Ceiling Height
	Denotes Hanger Location
o	Rise up or down
	FLEXIBLE COUPLING
OH1	HAZARD CLASSIFICATION

SAINT LUKE'S EAST HOSPITAL
FLEX CAPACITY EXPANSION

100 NE SAINT LUKE'S BLVD
LEE'S SUMMIT, MO 64086

PE STAMP:

STATE OF MISSOURI
TOM R. HAMPTON
PE-10846
REGISTERED PROFESSIONAL ENGINEER
7/27/20

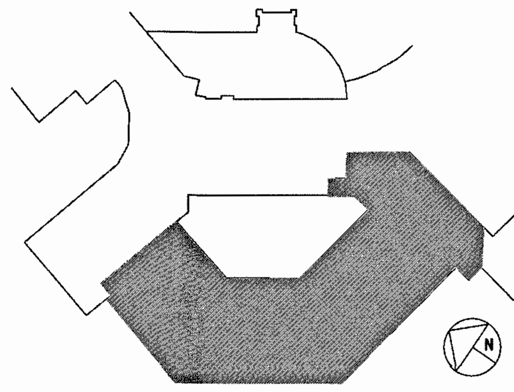
AMERICAN
FIRE SPRINKLER

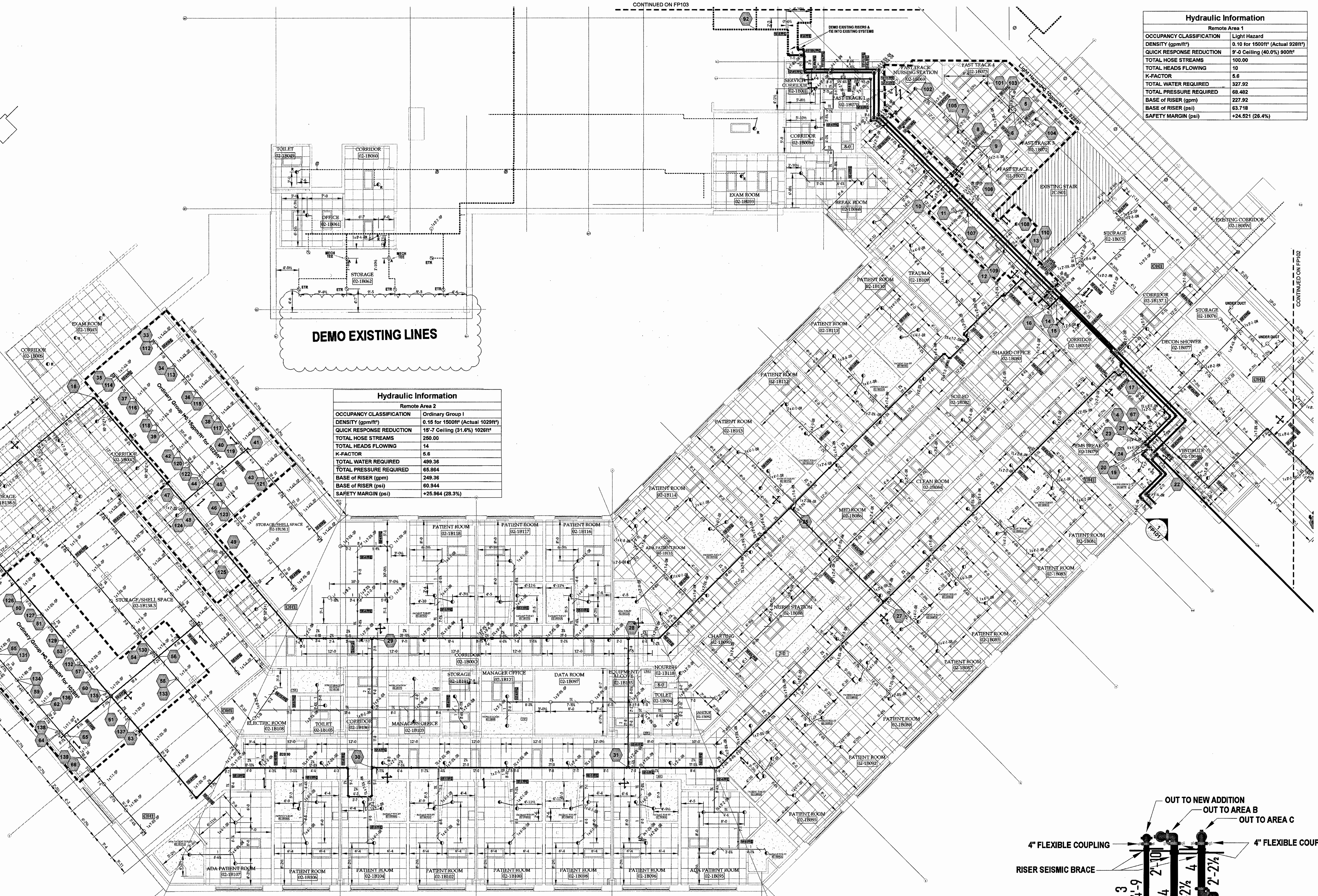
OFFICE: 6750 W. 47TH TERR. MISSION, KS. 66203
MAIL: P.O. BOX 958 MISSION, KS 66201-0958
913-722-6900

FIRE PROTECTION SYSTEMS - CONSULTANTS - DESIGN
FABRICATION - SALES - SERVICE

COVER SHEET / GENERAL NOTES

PAY ITEM:	SPR
REVIEWING AUTHORITY :	OWNER / LEE'S SUMMIT, MO
ALL HEADS THIS SHEET:	0
TOTAL HEADS THIS JOB:	386
DRAWN BY:	JONATHAN THOMPSON
DATE :	07/27/2020
REVISION DATE :	
SCALE:	AS SHOWN
CONTRACT #	SK0716
DWG #:	FP100
SHEET:	1 OF 4





Hydraulic Information

Remote Area 1	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft²)	0.10 for 1500ft² (Actual 928ft²)
QUICK RESPONSE REDUCTION	9'-0 Ceiling (40.0%) 900ft²
TOTAL HOSE STREAMS	100.00
TOTAL HEADS FLOWING	10
K-FACTOR	5.6
TOTAL WATER REQUIRED	327.92
TOTAL PRESSURE REQUIRED	68.482
BASE of RISER (gpm)	227.92
BASE of RISER (psi)	63.718
SAFETY MARGIN (psi)	+24.521 (26.4%)

Hydraulic Information

Remote Area 2	
OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY (gpm/ft²)	0.15 for 1500ft² (Actual 1029ft²)
QUICK RESPONSE REDUCTION	15'-7 Ceiling (31.6%) 1026ft²
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	14
K-FACTOR	5.6
TOTAL WATER REQUIRED	499.36
TOTAL PRESSURE REQUIRED	65.864
BASE of RISER (gpm)	249.36
BASE of RISER (psi)	60.944
SAFETY MARGIN (psi)	+25.964 (28.3%)

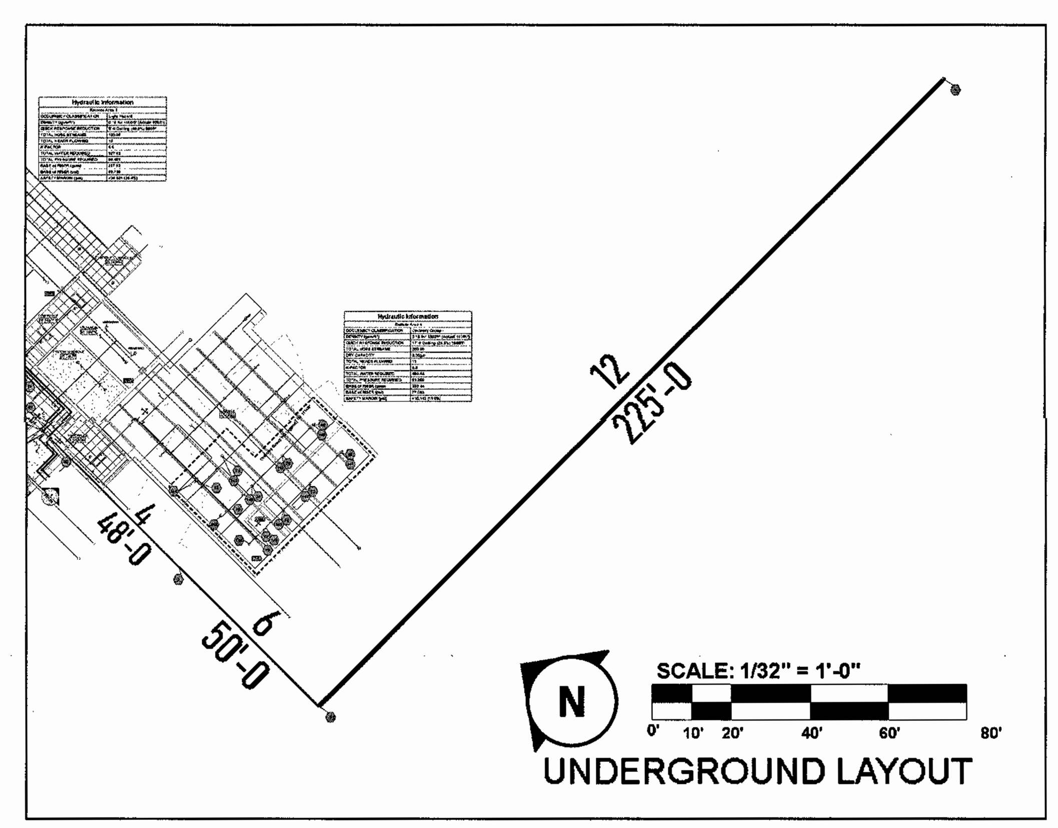
Hydraulic Information

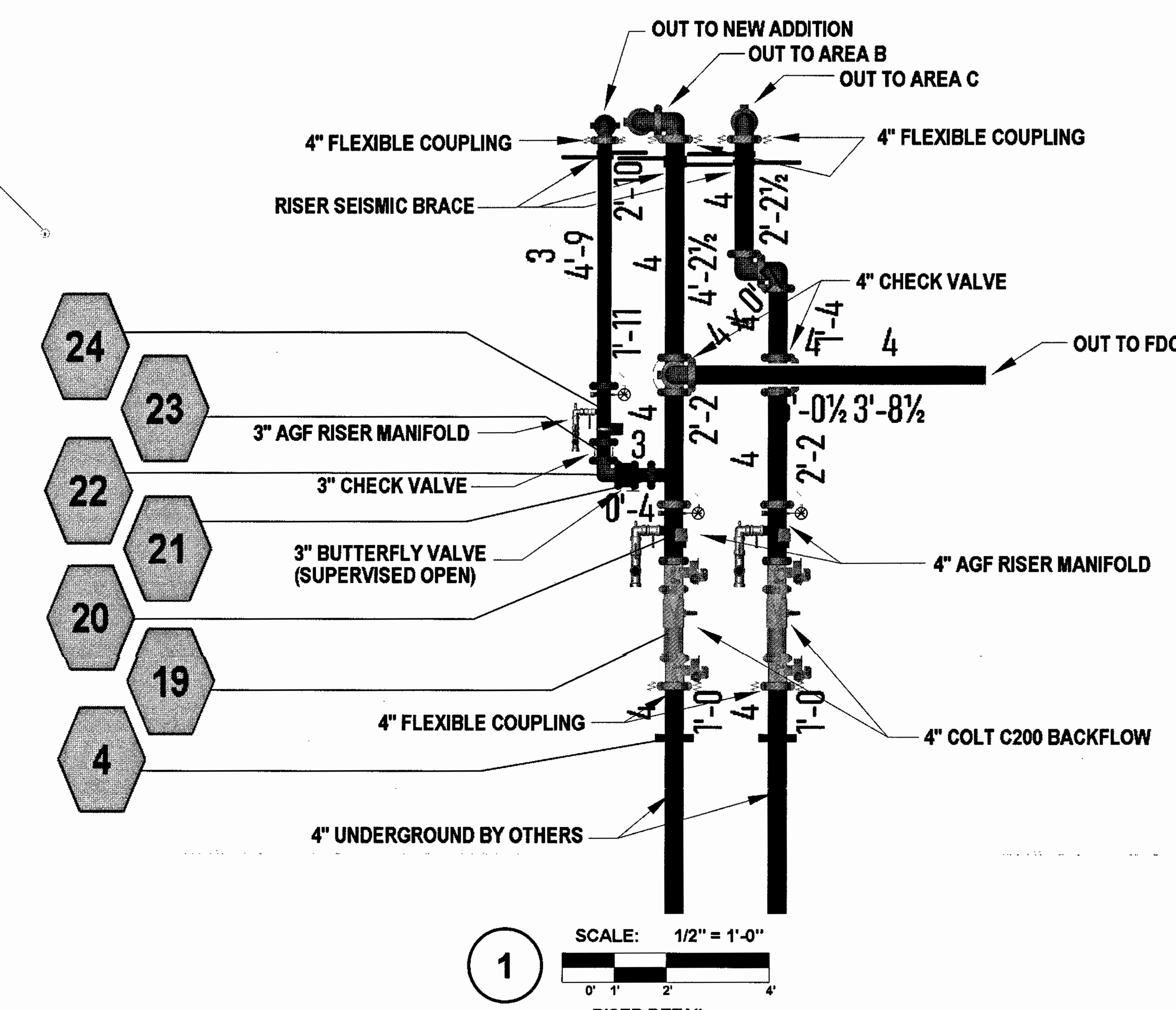
Remote Area 3	
OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY (gpm/ft²)	0.15 for 1500ft² (Actual 1028ft²)
QUICK RESPONSE REDUCTION	15'-7 Ceiling (31.6%) 1026ft²
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	14
K-FACTOR	5.6
TOTAL WATER REQUIRED	501.61
TOTAL PRESSURE REQUIRED	61.037
BASE of RISER (gpm)	251.61
BASE of RISER (psi)	56.100
SAFETY MARGIN (psi)	+30.773 (33.5%)

Sprinkler Legend

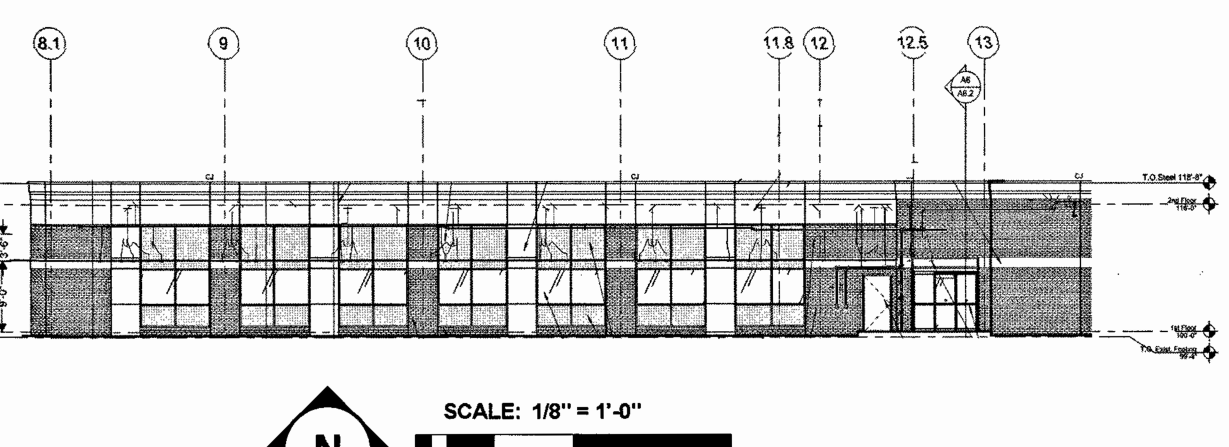
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
	Viking	VK462	MIRAGE	186	5.6	Pendent	½	Quick	White	200°F	
	Viking	VK3001	Microfast	79	5.6	Upright	½	Quick	Brass	200°F	
	Viking			6	5.6	Upright	½	Quick	Brass	200°F	EXISTING F1FR-QR BR UPR
	Generic		RELIABLE	9	5.6	Pendent	½	Quick	Chrome	155°F	EXISTING F1FR QR REC PEN
				Total = 280							

SCALE: 1/8" = 1'-0"





1 RISER DETAIL



SOUTH ELEVATION DETAIL

FIRST FLOOR IN-PATIENT ADDITION FIRE PROTECTION

ST. LUKE'S EAST HOSPITAL FLEX CAPACITY EXPANSION

100 NE SAINT LUKE'S BLVD
LEE'S SUMMIT, MO 64086

DATE:

REVISIONS:

Symbols

Symbol	Description
⬡	Hydraulic Reference Points
★ 0"	Elev. Below Top of Steel
★ 0"	Elev. Above Finished Floor
(0-0)	Elev. of Top of Steel
0-0	Ceiling Height
	Denotes Hanger Location
○	Rise up or down
	FLEXIBLE COUPLING
OH1	HAZARD CLASSIFICATION

PE STAMP:

STATE OF MISSOURI
TOM R. HAMPTON
PE-10846
REGISTERED PROFESSIONAL ENGINEER
7/27/20

AMERICAN FIRE SPRINKLER
OFFICE: 6750 W. 47TH TERR. MISSION, KS. 66203
MAIL: P.O. BOX 958 MISSION, KS 66201-0958
913-722-6900
FIRE PROTECTION SYSTEMS - CONSULTANTS - DESIGN
FABRICATION - SALES - SERVICE

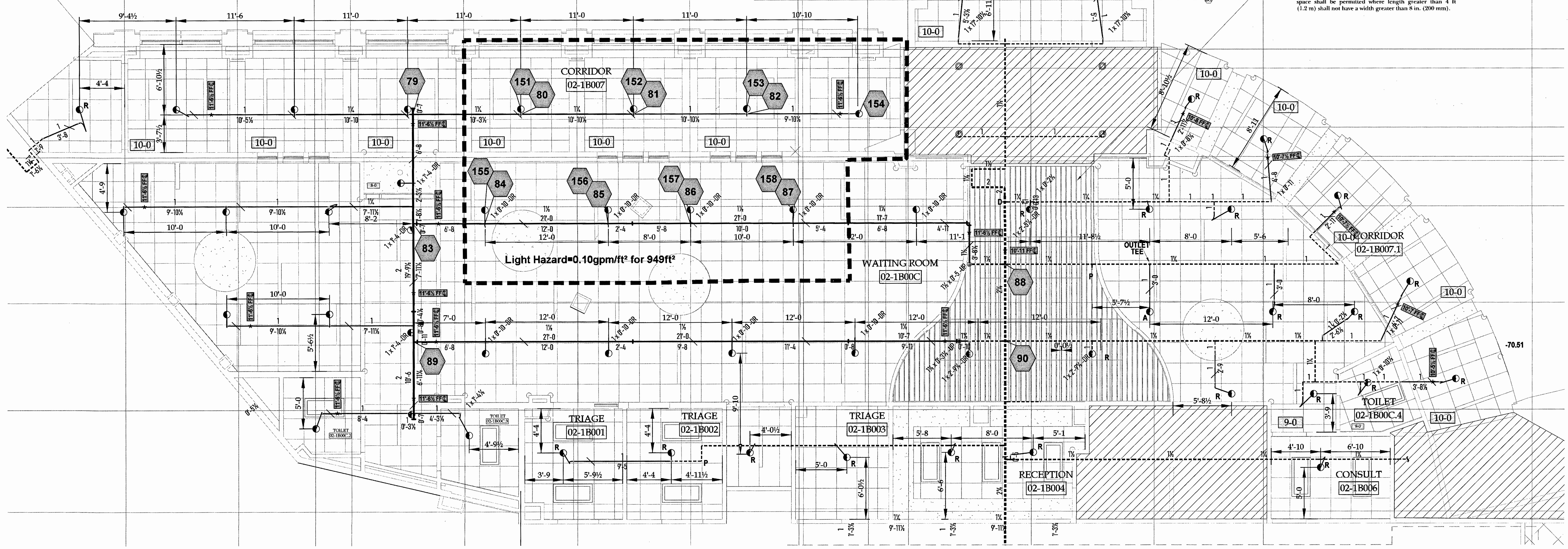
PAY ITEM:	SPR
REVIEWING AUTHORITY : OWNER / LEE'S SUMMIT, MO	
ALL HEADS THIS SHEET:	280
TOTAL HEADS THIS JOB:	386
DRAWN BY:	JONATHAN THOMPSON
DATE :	07/27/2020
REVISION DATE :	
SCALE:	AS SHOWN
CONTRACT #	SK0716
DWG #:	FP101
SHEET:	2 OF 4

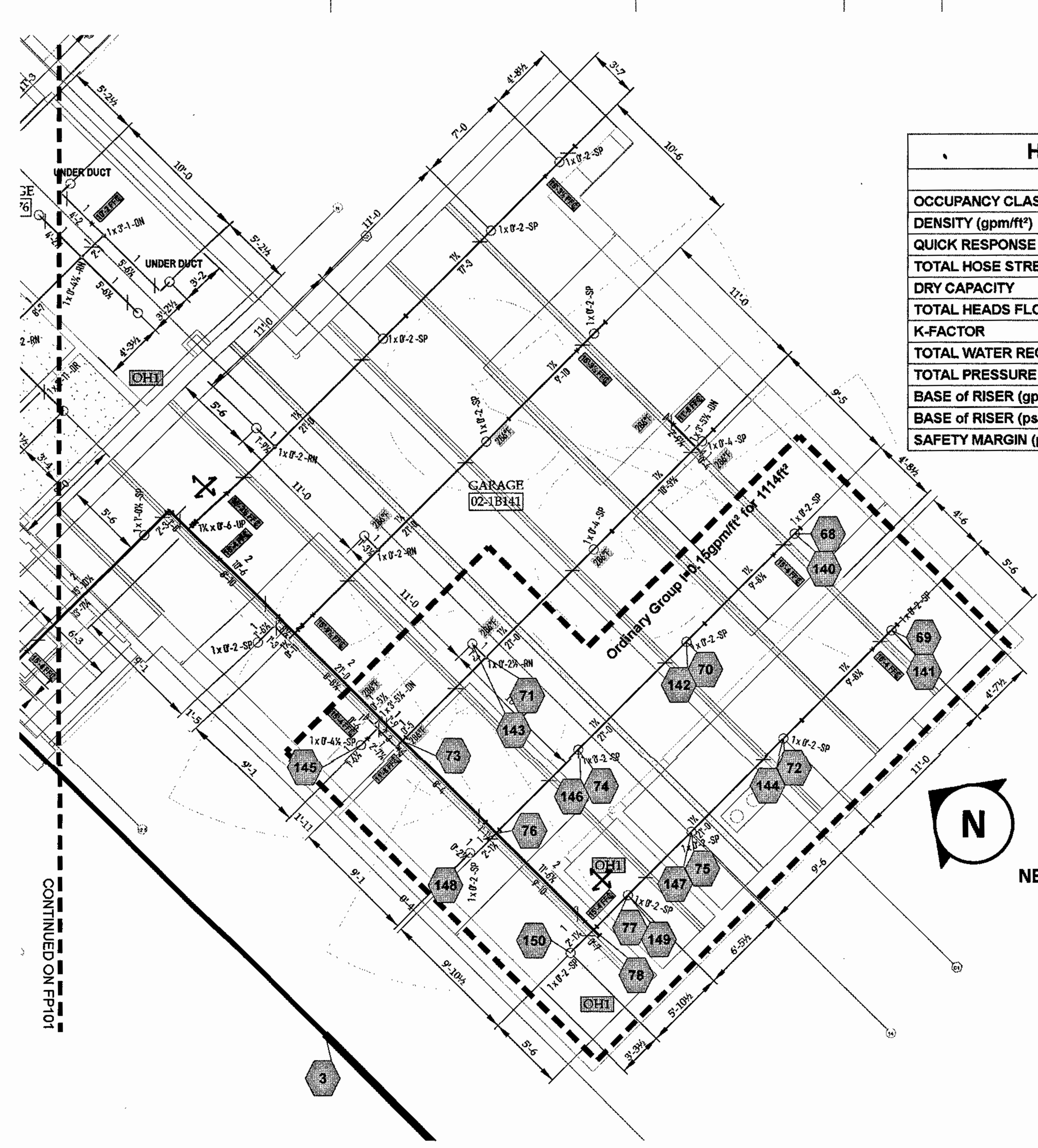
Hydraulic Information

Remote Area 5	
OCCUPANCY CLASSIFICATION	Light Hazard
DENSITY (gpm/ft²)	0.10 for 1500ft² (Actual 949ft²)
QUICK RESPONSE REDUCTION	10'-0 Ceiling (40.0%) 900ft²
TOTAL HOSE STREAMS	100.00
TOTAL HEADS FLOWING	8
K-FACTOR	5.6
TOTAL WATER REQUIRED	276.23
TOTAL PRESSURE REQUIRED	71.508
BASE of RISER (gpm)	176.23
BASE of RISER (psi)	67.071
SAFETY MARGIN (psi)	+21.765 (23.3%)

SPRINKLER PROTECTION ABOVE FEATURE NOT REQUIRED PER NFPA 13

8.15.1.2.1.2 Small openings with a combined total area of not more than 20 percent of the ceiling, construction feature, or plane used to determine the boundaries of the concealed space shall be permitted where length greater than 4 ft (1.2 m) shall not have a width greater than 8 in. (200 mm).



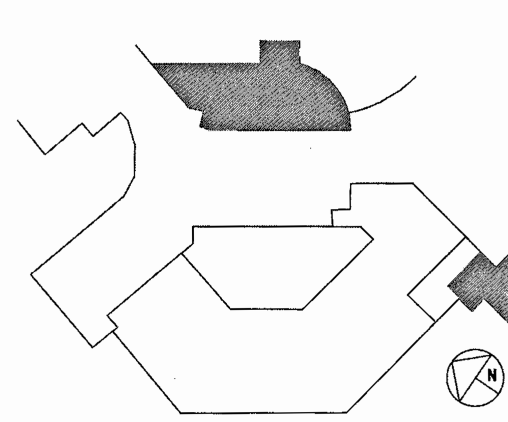


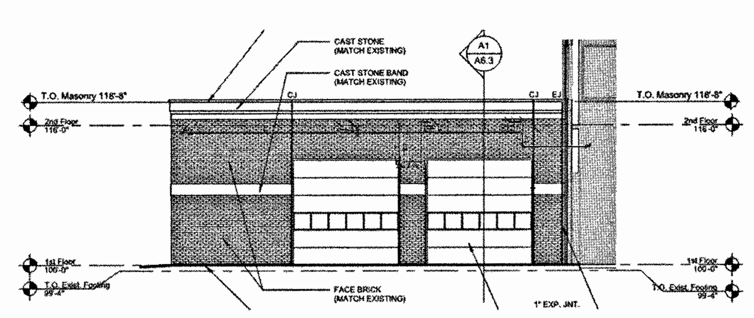
SCALE: 1/8" = 1'-0"

NEW ADDITION AMBULANCE GARAGE

Hydraulic Information

Remote Area 4	
OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY (gpm/ft²)	0.15 for 1500ft² (Actual 1114ft²)
QUICK RESPONSE REDUCTION	17'-0 Ceiling (29.5%) 1058ft²
TOTAL HOSE STREAMS	250.00
DRY CAPACITY	0.00gal
TOTAL HEADS FLOWING	11
K-FACTOR	5.6
TOTAL WATER REQUIRED	480.44
TOTAL PRESSURE REQUIRED	81.865
BASE of RISER (gpm)	230.44
BASE of RISER (psi)	77.083
SAFETY MARGIN (psi)	+10.113 (11.0%)





SCALE: 1/16" = 1'-0" EAST GARAGE EXTERIOR ELEVATION

Sprinkler Legend

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
◐	Viking	VK462	MIRAGE	1	5.6	Pendent	½	Quick	White	200°F	
○	Viking	VK3001	Microfast	22	5.6	Upright	½	Quick	Brass	200°F	
▷	Viking	VK305	Microfast	4	5.6	Sidewall	½	Quick	Brass	286°F	
○	Viking	VK3001	Microfast	4	5.6	Upright	½	Quick	Brass	286°F	
				Total = 31							

NOT IN CONTRACT / NO WORK TO BE DONE

EXISTING PIPE

NEW PIPE

A ADD

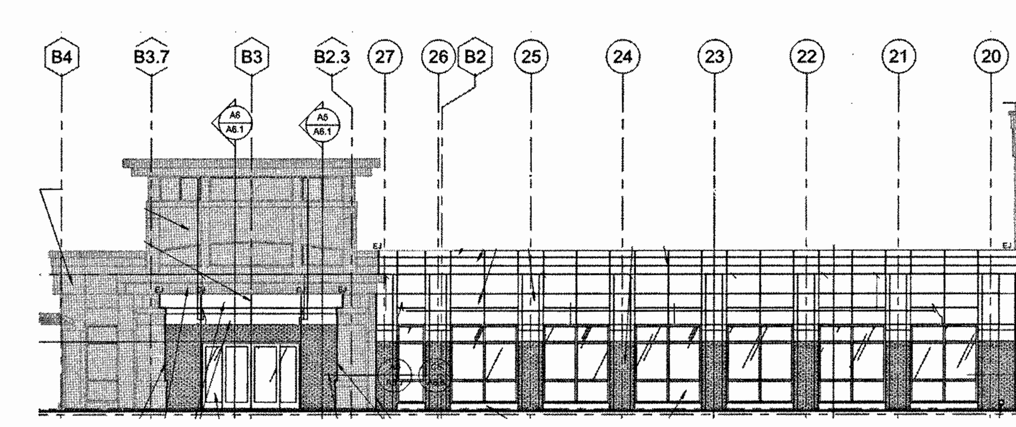
R RELOCATE

Sprinkler Legend

Symbol	Manufacturer	SIN	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
◐	Viking	VK462	53	5.6	Pendent	½	Quick	White	200°F	
⊘	Generic		4	5.6	Pendent	½	Quick	Chrome	155°F	EXISTING F1FR QR REC PEN
			Total = 57							

SCALE: 1/8" = 1'-0"

MAIN ENTRANCE RENOVATION



SCALE: 1/16" = 1'-0" MAIN ENTRANCE NE EXTERIOR ELEVATION

FIRST FLOOR MAIN ENTRY AND AMBULANCE FIRE PROTECTION SUBMITTAL

ST. LUKE'S EAST HOSPITAL
FLEX CAPACITY EXPANSION

100 NE SAINT LUKE'S BLVD
LEE'S SUMMIT, MO 64086

DATE:

REVISIONS:

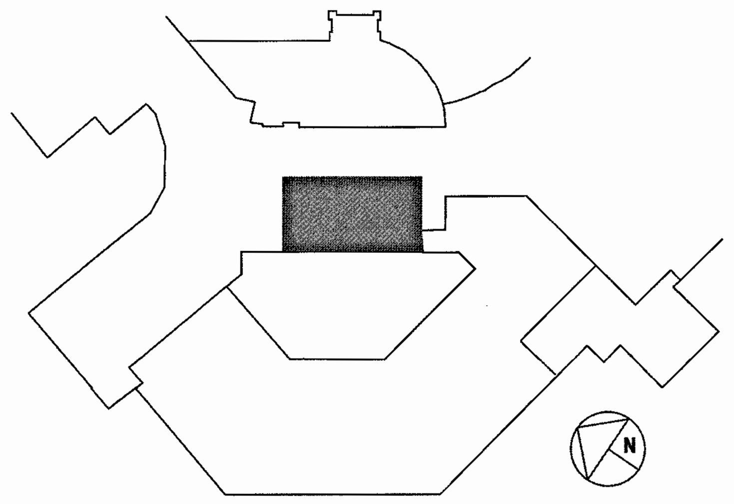
PE STAMP:

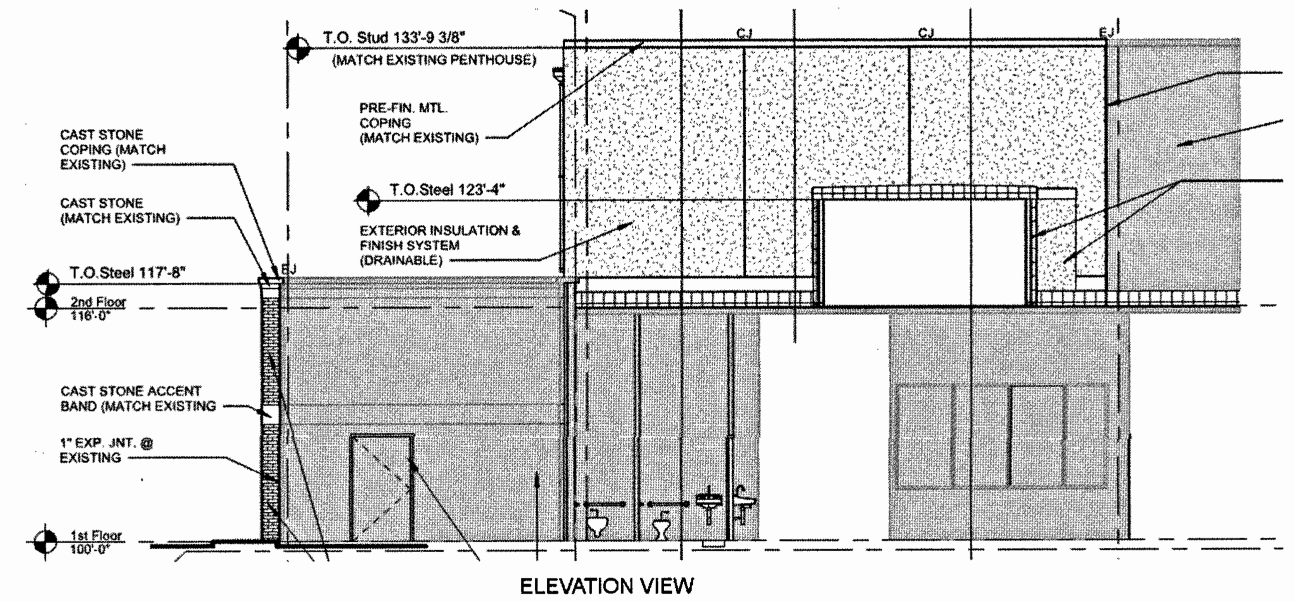
7/27/20

AMERICAN FIRE SPRINKLER

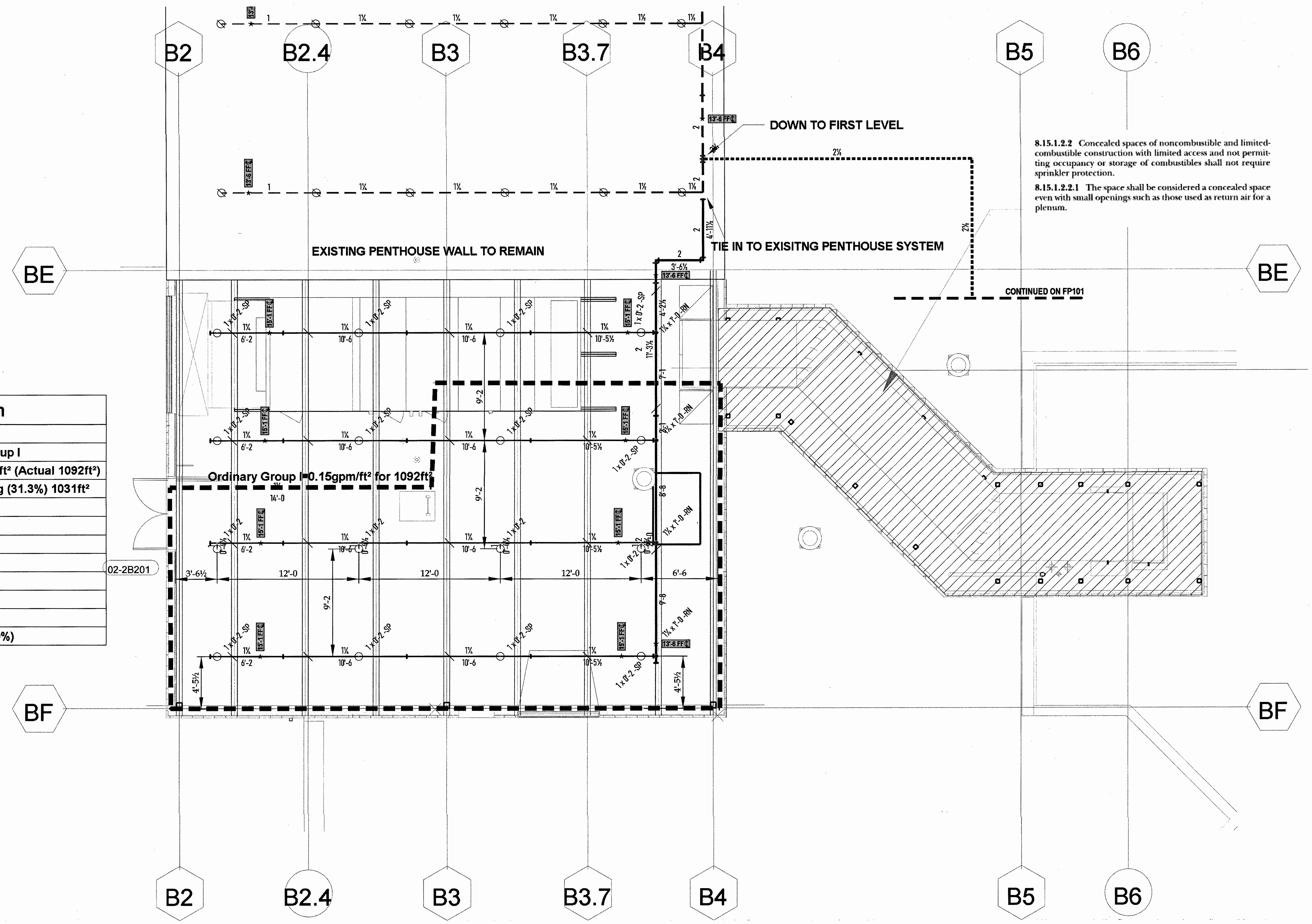
OFFICE: 6750 W. 47TH TERR. MISSION, KS. 66203
MAIL: P.O. BOX 958 MISSION, KS 66201-0958
913-722-6900
FIRE PROTECTION SYSTEMS - CONSULTANTS - DESIGN
FABRICATION - SALES - SERVICE

PAY ITEM:	SPR
REVIEWING AUTHORITY : OWNER / LEES SUMMIT, MO	
ALL HEADS THIS SHEET:	88
TOTAL HEADS THIS JOB:	386
DRAWN BY:	JONATHAN THOMPSON
DATE :	07/27/2020
REVISION DATE :	
SCALE:	AS SHOWN
CONTRACT #	SK0716
DWG #:	FP102
SHEET:	2 OF 4





Sprinkler Legend												
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Orifice	Finish	Temperature	Note
⊘	Generic			12	5.6	Upright	½	Quick	½"	Chrome	155°F	EXISTING SPRINKLERS
○	Viking	VK3001	Microfast	16	5.6	Upright	½	Quick	0"	Brass	200°F	
				Total = 28								



8.15.1.2.2 Concealed spaces of noncombustible and limited-combustible construction with limited access and not permitting occupancy or storage of combustibles shall not require sprinkler protection.

8.15.1.2.1 The space shall be considered a concealed space even with small openings such as those used as return air for a plenum.

Hydraulic Information	
Remote Area 6	
OCCUPANCY CLASSIFICATION	Ordinary Group I
DENSITY (gpm/ft²)	0.15 for 1500ft² (Actual 1092ft²)
QUICK RESPONSE REDUCTION	15'-10 Ceiling (31.3%) 1031ft²
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	10
K-FACTOR	5.6
TOTAL WATER REQUIRED	436.22
TOTAL PRESSURE REQUIRED	66.506
BASE of RISER (gpm)	186.22
BASE of RISER (psi)	62.011
SAFETY MARGIN (psi)	+25.802 (28.0%)

SCALE: 1/4" = 1'-0"

FINISH FLOOR ELEVATION 16'-0"

DATE:

REVISIONS:

Symbols

ST. LUKE'S EAST HOSPITAL FLEX CAPACITY EXPANSION

100 NE SAINT LUKE'S BLVD
LEE'S SUMMIT, MO 64086

PE STAMP:

ROOFTOP PENTHOUSE ADDITION FIRE PROTECTION SUBMITTAL

AMERICAN FIRE SPRINKLER

PAY ITEM: SPR

REVIEWING AUTHORITY : OWNER / LEES SUMMIT, MO

ALL HEADS THIS SHEET: 28

TOTAL HEADS THIS JOB: 386

DRAWN BY: JONATHAN THOMPSON

DATE : 07/27/2020

REVISION DATE :

SCALE: AS SHOWN

CONTRACT # SK0716

DWG #: FP103

SHEET: 4 OF 4