FIRE PROTECTION PLANS

F. E. MORAN, INC. FIRE PROTECTION
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LENEXA, KS 66219
(217) 356-0700 (217) 356-0777 FAX

MISSOURI COA: E-2022012018
LS BUSINESS LICENSE #: LC23230017

SCOPE OF WORK

SCOPE OF WORK:
** FURNISH & INSTALL (11) NEW WET PIPE SPRINKLER SYSTEMS AND (1) DRY PIPE SPRINKLER SYSTEM FOR THE NEW BUILDING.
** FURNISH & INSTALL A NEW FIRE PUMP AND ACCESSORIES
** FIRE PUMP ROOM POINT OF CONNECTION (START OF CONTRACT): 10'' FLANGE, 12'' ABOVE THE FINISHED FLOOR IN THE FIRE PUMP ROOM.
**FEED RISER POINT OF CONNECTION (START OF CONTRACT): 8'' FLANGE, 12'' ABOVE THE FINISHED FLOOR IN THE FIRE PUMP ROOM. TWO LOCATED ON EACH END OF THE BUILDING AND ONE ON EACH SIDE.
** INSTALL (18) 2½'' HOSE VALVES LOCATED AT MAN DOORS AND FED FROM ADJACENT SYSTEMS

NOT INCLUDED:
** WIRING OF ELECTRICAL DEVICES
** FIRE EXTINGUISHERS
** STANDPIPES
** FIRE PUMP CONTROLLER AUTO TRANSFER SWITCH
** UNDERGROUND PIPING AND TESTING
** COLUMN SPRINKLERS
** SEISMIC BRACING
** PAINTED PIPING
** CONCRETE PADS
** COMPONENT IDENTIFICATION BEYOND NFPA 13 REQUIREMENTS
** ACCESS PANELS
** CUTTING AND PATCHING
** PIPE SLEEVES
** WALL POST INDICATOR VALVE
** PUMP CONTROLLER AUTOMATIC TRANSFER SWITCH

CODE INFORMATION

CODE INFORMATION:
**FM GLOBAL PROPERTY LOSS PREVENTION DATA SHEETS 2-0 & 9-9
**NFPA 13, 2016 EDITION: INSTALLATION OF SPRINKLER SYSTEMS
**NFPA 20, 2016 EDITION: INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION
**INTERNATIONAL BUILDING & FIRE CODE, 2018 EDITION
**LOCAL AMENDMENTS

BUILDING INFO:
IBC OCCUPANCY CLASSIFICATION: S-1
IBC CONSTRUCTION TYPE: II-B
IBC SEISMIC DESIGN CATEGORY: B
HIGHEST FLOOR ELEVATION FROM FIRE DEPARTMENT VEHICLE ACCESS: GRADE
NUMBER OF STORIES: 1
BUILDING AREA: 433,364 S.F.

GENERAL REQUIREMENTS

** SUPPLY A SPARE SPRINKLER CABINET WITH WRENCH FOR EACH SPRINKLER TYPE AS REQUIRED BY NFPA 13.
** IDENTIFY ALL HYDRAULICALLY CALCULATED SYSTEMS WITH A PERMANENTLY MARKED AND WEATHERPROOF SIGN.
** ALL NEW PIPING OR PIPING MODIFICATIONS WHICH AFFECT MORE THAN 20 SPRINKLERS SHALL BE HYDROSTATICALLY TESTED AT 200 PSI OR 50 PSI OVER THE SYSTEM WORKING PRESSURE. THE SYSTEM SHALL MAINTAIN THIS PRESSURE WITHOUT LOSS FOR 2 HOURS.
** ** ALL NEW PIPING OR PIPING MODIFICATIONS WHICH AFFECT 20 SPRINKLERS OR LESS, SHALL BE TESTED AT THE SYSTEM WORKING PRESSURE.
** ALL PIPING MODIFICATIONS WHICH CANNOT BE ISOLATED FROM THE EXISTING SYSTEM, SHALL BE TESTED AT THE SYSTEM WORKING PRESSURE.
** THE LOCAL FIRE/BUILDING INSPECTOR IS TO BE NOTIFIED 48 HOURS IN ADVANCE OF ALL TESTING.
UNDERGROUND TESTING AND FLUSHING:
** ALL UNDERGROUND PIPE SHALL BE TESTED AND FLUSHED BY THE INSTALLING CONTRACTOR AS REQUIRED BY NFPA 24 BEFORE ANY OVERHEAD SPRINKLER PIPING IS CONNECTED.

VALVES

** ALL VALVES CONTROLLING WATER FLOW TO SPRINKLERS SHALL BE INDICATING & SUPERVISED.
** ALL VALVES SHALL BE ACCESSIBLE AT ALL TIMES AND PERMANENTLY IDENTIFIED.
** THE IDENTIFICATION OF CONTROL VALVES SHALL INCLUDE A DESCRIPTION OR DIAGRAM OF WHAT THEY CONTROL.
** ALL TRAPPED PORTIONS OF SPRINKLER PIPING SHALL BE PROVIDED WITH A LOW POINT DRAIN AS REQUIRED BY NFPA 13.

PIPE HANGERS

** 2½''-6'' HANGER RINGS ARE TO BE ADJUSTABLE SWIVEL RINGS, ZINC PLATED, MANUFACTURED TO ANSI/MSS SP-69 STANDARDS.
** 2½''-6'' CLEVIS HANGERS ARE TO BE ADJUSTABLE CLEVIS RINGS, PLAIN, MANUFACTURED TO ANSI/MSS SP-69 STANDARDS.
** HANGERS AND SEISMIC BRACING ARE TO BE INSTALLED PER NFPA 13 REQUIREMENTS.
** HANGER ROD SIZES AND LOCATIONS ARE TO BE AS REQUIRED BY NFPA 13.

DESIGN CRITERIA - LIGHT HAZARD

SPRINKLER SYSTEM DESIGN CRITERIA - LIGHT HAZARD AREA/DENSITY (WET & SINGLE INTERLOCKED PREACTION SYSTEMS):
THE NEW SYSTEM HAS BEEN DESIGNED WITH A DESIGN DENSITY OF .10 GPM/S.F. OVER THE MOST REMOTE AND DEMANDING DESIGN AREA OF 1500 S.F. WITH 225 S.F. (15') MAXIMUM SPRINKLER HEAD SPACING AND 100 GPM OUTSIDE HOSE ALLOWANCE. WHERE ROOF OR CEILING SLOPES EXCEED A PITCH OF 2:12, THE DESIGN AREA HAS BEEN INCREASED IN SIZE BY 30% TO 1950 S.F. THE DESIGN AREA MAY BE REDUCED IN SIZE IN ACCORDANCE WITH NFPA 13 DUE TO THE USE OF QUICK RESPONSE SPRINKLERS BUT SHALL NEVER CONTAIN LESS THAN 5 SPRINKLERS. TOTAL SYSTEM SIZE SHALL NOT EXCEED 52,000 S.F.

WHERE EXTENDED COVERAGE SPRINKLERS ARE UTILIZED, THE MINIMUM DESIGN AREA SHALL BE 5 SPRINKLERS WITH 400 S.F. (20') MAXIMUM SPRINKLER HEAD SPACING. EXTENDED COVERAGE SPRINKLERS SHALL NOT BE USED WHERE ROOF OR CEILING SLOPES EXCEED A PITCH OF 2:12. WHERE SPECIFICALLY LISTED FOR SUCH USE, EXTENDED COVERAGE SPRINKLERS MAY BE USED FOR ROOF OR CEILING SLOPES UP TO A 4:12 PITCH.

WHEN A REDUCTION IN THE DESIGN AREA IS NOT USED, SPRINKLER DISCHARGE IN SMALL ROOMS SUCH AS CLOSETS AND WASHROOMS CONTAINING A SINGLE SPRINKLER MAY BE OMITTED FROM THE HYDRAULIC CALCULATIONS.

DRAWING SYMBOLS
PIPING CENTERLINES
★ 0'' TS ℄ TO TOP OF STEEL OR ROOF DECK
★ 0'' TS ℄ TO FLOOR
HANGER LOCATION
HYDRAULIC NODE
ELECTRIC ALARM BELL

WET/DRY SYSTEM PIPE & FITTINGS

SPRINKLER SYSTEM BLACK PIPE:
** 1'' LINE PIPING SHALL BE BLACK STEEL SCH. 40 PIPE, MANUFACTURED TO ASTM A53 OR A795 STANDARDS.
** 2½'' LINE PIPING SHALL BE BLACK STEEL SCH. 7 PIPE, MANUFACTURED TO ASTM A795 STANDARDS.

** 8'' MAIN PIPING SHALL BE BLACK STEEL SCH. 10 PIPE, MANUFACTURED TO ASTM A135 STANDARDS.
** 2''-6'' MAIN PIPING SHALL BE BLACK STEEL SCH. 7 PIPE, MANUFACTURED TO ASTM A795 STANDARDS.

WET-PIPE SPRINKLER SYSTEM BLACK FITTINGS:
** 1'' BRANCH LINE FITTINGS SHALL BE BLACK DUCTILE IRON THREADED, CLASS 150 STANDARD, MANUFACTURED PER ANSI/ASME B16.3, U.L. LISTED FOR FIRE PROTECTION USE UP TO 175 PSI WORKING PRESSURE.
** 1/2'' - 3'' BRANCH LINE PIPE OUTLETS TO BE WELDED MANUFACTURED TO ASTM A53 & ANSI B1.20.1 STANDARDS.
** 1 1/4''-3'' BRANCH LINE FITTINGS SHALL BE STANDARD GROOVED DUCTILE IRON, MANUF. TO ASTM A536 STANDARDS.

** 2½''-8'' MAIN PIPE BRANCH OUTLETS TO BE WELDED MANUFACTURED TO ASTM A53 & ANSI B1.20.1 STANDARDS.
** 2½''-8'' MAIN PIPE FITTINGS SHALL BE STANDARD GROOVED DUCTILE IRON, MANUF. TO ASTM A536 STANDARDS.
** 2½''-8'' MAIN PIPE FITTINGS SHALL BE STANDARD GROOVED STEEL, MANUF. TO ASTM A958/A53 STANDARDS.

DESIGN CRITERIA - ESFR

SPRINKLER SYSTEM DESIGN CRITERIA (ESFR)-PALLETIZED/SOLID-PILE/RACK STORAGE:

FROM NFPA 13, 2016 EDITION TABLE 16.3.3.1
COMMODITY CLASSIFICATION: CLASS I, II, III OR IV, ENCAPSULATED OR UNENCAPSULATED, NO OPEN TOP CONTAINERS
STORAGE ARRANGEMENT: PALLETIZED/SOLID-PILE/SINGLE & DOUBLE ROW RACKS WITH NO SOLID SHELVING
CONSTRUCTION TYPE: ALL TYPES
MAXIMUM STORAGE HEIGHT: 35 FEET
MAXIMUM CEILING/ROOF HEIGHT: 40 FEET
MINIMUM CLEARANCE FROM SPRINKLER DEFLECTOR TO TOP OF STORAGE: 36 INCHES
SPRINKLER TYPE: ESFR (EARLY SUPPRESSION FAST-RESPONSE)
SPRINKLER K-FACTOR: 16.8
SPRINKLER TEMPERATURE RATING: 205°F
SPRINKLER ORIENTATION: PENDENT
MAXIMUM SPRINKLER DEFLECTOR DISTANCE BELOW CEILING: 14 INCHES
MINIMUM SPRINKLER DEFLECTOR DISTANCE BELOW CEILING: 6 INCHES
MAXIMUM SPRINKLER SPACING/AREA: 10 FEET/100 S.F.
MINIMUM SPRINKLER SPACING: 8 FEET/64 S.F.
TYPE OF SYSTEM: WET
NUMBER OF DESIGN SPRINKLERS: 12
MINIMUM SPRINKLER OPERATING PRESSURE: 52 PSI
INSIDE HOSE STREAM ALLOWANCE: 0 GPM
OUTSIDE HOSE STREAM ALLOWANCE: 250 GPM
TOTAL HOSE STREAM ALLOWANCE: 250 GPM
IN-RACK SPRINKLERS: NO

SPRINKLER SYSTEM DESIGN CRITERIA (ESFR)-PALLETIZED/SOLID-PILE/RACK STORAGE:

FROM NFPA 13, 2016 EDITION TABLE 16.3.3.1
COMMODITY CLASSIFICATION: CLASS I, II, III OR IV, ENCAPSULATED OR UNENCAPSULATED, NO OPEN TOP CONTAINERS
STORAGE ARRANGEMENT: PALLETIZED/SOLID-PILE/SINGLE & DOUBLE ROW RACKS WITH NO SOLID SHELVING
CONSTRUCTION TYPE: ALL TYPES
MAXIMUM STORAGE HEIGHT: 40 FEET
MAXIMUM CEILING/ROOF HEIGHT: 45 FEET
MINIMUM CLEARANCE FROM SPRINKLER DEFLECTOR TO TOP OF STORAGE: 36 INCHES
SPRINKLER TYPE: ESFR (EARLY SUPPRESSION FAST-RESPONSE)
SPRINKLER K-FACTOR: 22.4
SPRINKLER TEMPERATURE RATING: 205°F
SPRINKLER ORIENTATION: PENDENT
MAXIMUM SPRINKLER DEFLECTOR DISTANCE BELOW CEILING: 18 INCHES
MINIMUM SPRINKLER DEFLECTOR DISTANCE BELOW CEILING: 6 INCHES
MAXIMUM SPRINKLER SPACING/AREA: 10 FEET/100 S.F.
MINIMUM SPRINKLER SPACING: 8 FEET/64 S.F.
TYPE OF SYSTEM: WET
NUMBER OF DESIGN SPRINKLERS: 12
MINIMUM SPRINKLER OPERATING PRESSURE: 40 PSI
INSIDE HOSE STREAM ALLOWANCE: 0 GPM
OUTSIDE HOSE STREAM ALLOWANCE: 250 GPM
TOTAL HOSE STREAM ALLOWANCE: 250 GPM
IN-RACK SPRINKLERS: NO

SPRINKLER SYSTEM DESIGN CRITERIA (ESFR)-PALLETIZED/SOLID-PILE/RACK STORAGE:

FROM FM GLOBAL DATA SHEET 8-9
COMMODITY CLASSIFICATION: CLASS I, II, III OR IV, ENCAPSULATED OR UNENCAPSULATED, NO OPEN TOP CONTAINERS
STORAGE ARRANGEMENT: PALLETIZED/SOLID-PILE/SINGLE & DOUBLE ROW RACKS WITH NO SOLID SHELVING
CONSTRUCTION TYPE: ALL TYPES
MAXIMUM STORAGE HEIGHT: 45 FEET
MAXIMUM CEILING/ROOF HEIGHT: 50 FEET
MINIMUM CLEARANCE FROM SPRINKLER THERMAL ELEMENT TO TOP OF STORAGE: 36 INCHES
SPRINKLER TYPE: ESFR (EARLY SUPPRESSION FAST-RESPONSE)
SPRINKLER K-FACTOR: 28.0
SPRINKLER TEMPERATURE RATING: 205°F
SPRINKLER ORIENTATION: PENDENT
MAXIMUM SPRINKLER THERMAL ELEMENT DISTANCE BELOW CEILING: 13 INCHES
MINIMUM SPRINKLER THERMAL ELEMENT DISTANCE BELOW CEILING: 6 INCHES
MAXIMUM SPRINKLER SPACING/AREA: 10 FEET/100 S.F.
MINIMUM SPRINKLER SPACING: 8 FEET/64 S.F.
TYPE OF SYSTEM: WET
NUMBER OF DESIGN SPRINKLERS: 9
MINIMUM SPRINKLER OPERATING PRESSURE: 40 PSI
INSIDE HOSE STREAM ALLOWANCE: 0 GPM
OUTSIDE HOSE STREAM ALLOWANCE: 250 GPM
TOTAL HOSE STREAM ALLOWANCE: 250 GPM
IN-RACK SPRINKLERS: NO

SYSTEMS SHALL BE WET ONLY.

ROOF OR CEILING SLOPES SHALL NOT EXCEED A PITCH OF 2:12.

TOTAL SYSTEM SIZE SHALL NOT EXCEED 40,000 S.F. COMBINED HIGH PILED/RACK STORAGE & LIGHT/ORDINARY HAZARD SYSTEMS MAY COVER UP TO 52,000 S.F.

DESIGN CRITERIA - DRY SYSTEM

A SYSTEM SIZE OF NOT MORE THAN 500 GAL SHALL BE PERMITTED WITHOUT A QUICK-OPENING DEVICE AND SHALL NOT BE REQUIRED TO MEET ANY SPECIFIC WATER DELIVERY REQUIREMENT TO THE INSPECTION TEST CONNECTION.

A SYSTEM SIZE OF NOT MORE THAN 750 GAL SHALL BE PERMITTED WITH A QUICK-OPENING DEVICE AND SHALL NOT BE REQUIRED TO MEET ANY SPECIFIC WATER DELIVERY REQUIREMENT TO THE INSPECTION TEST CONNECTION.

WHERE THE CAPACITY OF ISOLATED TRAPPED SECTIONS OF SYSTEM PIPING IS LESS THAN 5 GAL, THE AUXILIARY DRAIN SHALL CONSIST OF A VALVE NOT SMALLER THAN ½ IN. AND A PLUG OR A NIPPLE AND CAP.

WHERE THE CAPACITY OF ISOLATED TRAPPED SECTIONS OF SYSTEM PIPING IS MORE THAN 5 GAL, THE AUXILIARY DRAIN SHALL CONSIST OF TWO 1 IN. VALVES AND ONE 2 IN. X 12 IN. CONDENSATE NIPPLE.

REMOTE CALCULATION AREA TO CONSIST OF 4 SPRINKLERS UNDER TWO EVAPORATOR UNITS. PIPING SHALL BE SLOPED 1/4'' PER EVERY 10 FEET FOR MAINS AND 1/2'' PER EVERY 10 FEET FOR BRANCHLINES.

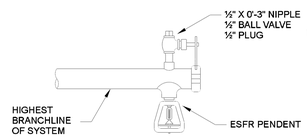
NOMINAL PIPE SIZE	SCHEDULE 40			SCHEDULE 10			EDDYFLOW		
	O.D.	I.D.	WALL THICKNESS	O.D.	I.D.	WALL THICKNESS	O.D.	I.D.	WALL THICKNESS
1	1.315	1.049	.133	1.315	1.097	.109	1.315	1.191	.062
1¼	1.660	1.380	.140	1.660	1.442	.109	1.660	1.536	.062
1½	1.900	1.610	.145	1.900	1.682	.109	1.900	1.728	.086
2	2.375	2.067	.154	2.375	2.157	.109	2.375	2.203	.086
2½	2.875	2.469	.203	2.875	2.635	.120	2.875	2.703	.086
3	3.500	3.068	.216	3.500	3.260	.120	3.500	3.314	.093
4	4.500	4.026	.237	4.500	4.260	.120	4.500	4.310	.095
5	5.563	5.047	.258	5.563	5.295	.134	----	----	----
6	6.625	6.065	.280	6.625	6.357	.134	----	----	----
8	8.625	7.981	.322	8.625	8.249	.188	----	----	----
10	10.750	10.020	.365	10.750	10.370	.188	----	----	----

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''
~~BLAZEMASTER CPVC~~	~~5' 6''~~	~~6' 0''~~	~~6' 6''~~	~~7' 0''~~	~~8' 0''~~	~~9' 0''~~	~~10' 0''~~	~~N/A~~
~~THREADABLE LIGHTWALL~~	~~N/A~~	~~12' 0''~~	~~12' 0''~~	~~12' 0''~~	~~12' 0''~~	~~12' 0''~~	~~12' 0''~~	~~N/A~~
STEEL PIPE (7/10/ 40)	N/A	12' 0''	12' 0''	15' 0''	15' 0''	15' 0''	15' 0''	15' 0''

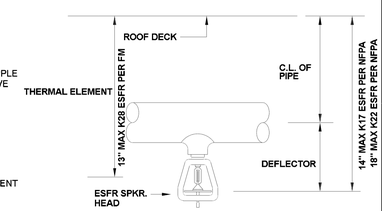
THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36'' FOR 1'' PIPE, 48'' FOR 1 1/4'' PIPE AND 60'' FOR 1 1/2'' PIPE OR LARGER

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARMOVER TO A SPRINKLER, SPRINKLER DROP, OR SPRIG-UP SHALL NOT EXCEED 24''



MANUAL AIR VENT DETAIL

N.T.S.



ESFR PENDENT DETAIL

N.T.S.

Table 8. Ceiling-Level Protection Guidelines for Class 4 and Cartoned Unexpanded Plastic Commodities in Open-Frame Rack Storage Arrangements

Max. Ceiling Height, ft (m)	Protection of Class 4 and Cartoned Unexpanded Plastic Commodities in Open-Frame Storage Racks; No. of AS @ psi (bar)																	
	Wet System, 160°F (70°C) Nominally Rated, Pendent Sprinklers						Wet System, 160°F (70°C) Nominally Rated, Upright Sprinklers						Dry System, 280°F (140°C) Nominally Rated, Upright Sprinklers					
	Quick Response						Quick Response						Standard Response					
	K11.2 (K160)	K14.0 (K200)	K16.8 (K240)	K22.4 (K320)	K25.2 (K360)	K25.2EC (K360EC)	K11.2 (K160)	K14.0 (K200)	K19.6 (K280)	K25.2 (K360)	K11.2 (K160)	K14.0 (K200)	K16.8 (K240)	K25.2EC (K360EC)	K11.2 (K160)	K16.8 (K240)	K25.2 (K360)	K11.2 (K160)	K16.8 (K240)	K25.2 (K360)
10 (3.0)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (1.4)	12 @ 30 (1.4)	12 @ 30 (1.4)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (1.1)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (1.4)	12 @ 30 (0.5)	12 @ 30 (0.5)	12 @ 30 (0.5)	16 @ 7 (0.5)	16 @ 7 (0.5)	16 @ 7 (0.5)
15 (4.5)	15 @ 16 (1.1)	12 @ 16 (1.0)	12 @ 11 (0.8)	9 @ 20 (1.4)	9 @ 20 (1.4)	9 @ 20 (1.4)	15 @ 16 (1.1)	12 @ 16 (1.0)	9 @ 16 (1.1)	12 @ 11 (0.8)	15 @ 16 (1.1)	12 @ 16 (1.0)	12 @ 11 (0.8)	9 @ 20 (1.4)	15 @ 16 (1.1)	12 @ 11 (0.8)	10 @ 7 (0.5)	20 @ 16 (1.1)	20 @ 7 (0.5)	20 @ 7 (0.5)
20 (6.0)	12 @ 30 (0.5)	12 @ 16 (1.0)	12 @ 13 (0.9)	9 @ 20 (1.4)	9 @ 20 (1.4)	6 @ 22 (1.5)	12 @ 30 (0.5)	12 @ 18 (1.2)	9 @ 16 (1.1)	12 @ 7 (0.5)	12 @ 30 (0.5)	12 @ 18 (1.2)	12 @ 13 (0.9)	6 @ 22 (1.5)	12 @ 30 (0.5)	12 @ 13 (0.9)	12 @ 7 (0.5)	20 @ 30 (2.1)	20 @ 13 (0.9)	20 @ 7 (0.5)
25 (7.5)	15 @ 65 (4.5)	9 @ 35 (2.4)	9 @ 24 (1.7)	9 @ 20 (1.4)	9 @ 20 (1.4)	6 @ 30 (1.5)	15 @ 65 (4.5)	15 @ 42 (2.9)	9 @ 16 (1.1)	12 @ 18 (0.7)	15 @ 65 (4.5)	12 @ 50 (3.5)	12 @ 35 (2.4)	6 @ 32 (1.5)	15 @ 65 (4.5)	15 @ 35 (2.0)	9 @ 20 (1.4)	20 @ 65 (4.5)	20 @ 29 (2.0)	20 @ 13 (0.9)
30 (9.0)		12 @ 50 (3.5)	12 @ 35 (2.4)	9 @ 20 (1.4)	9 @ 20 (1.4)	6 @ 30 (2.1)			9 @ 16 (1.1)	12 @ 15 (1.0)				6 @ 32 (2.1)			12 @ 20 (1.4)			30 @ 20 (1.4)
35 (10.5)		12 @ 75 (5.2)	12 @ 52 (3.6)	12 @ 29 (2.0)	12 @ 23 (1.6)	6 @ 60 (4.1)*			15 @ 25 (1.7)	9 @ 35 (2.1)				8 @ 40 (2.8)						
40 (12.0)		12 @ 75 (5.2)	12 @ 52 (3.6)	9 @ 50 (3.5)	9 @ 40 (2.8)					9 @ 35 (2.1)										

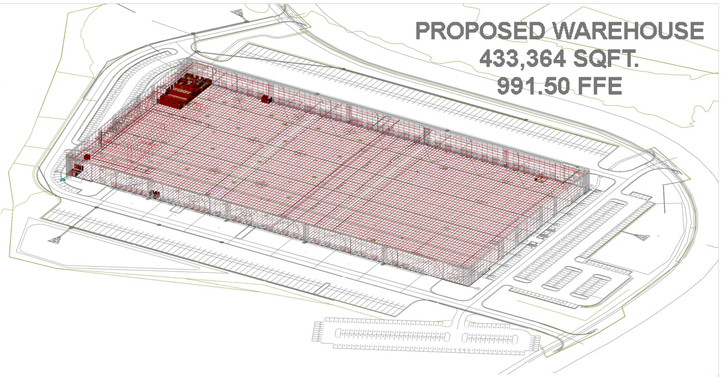
* An acceptable alternative design is 8 @ 40 (2.8) when a 12 ft (3.6 m) maximum linear spacing is used

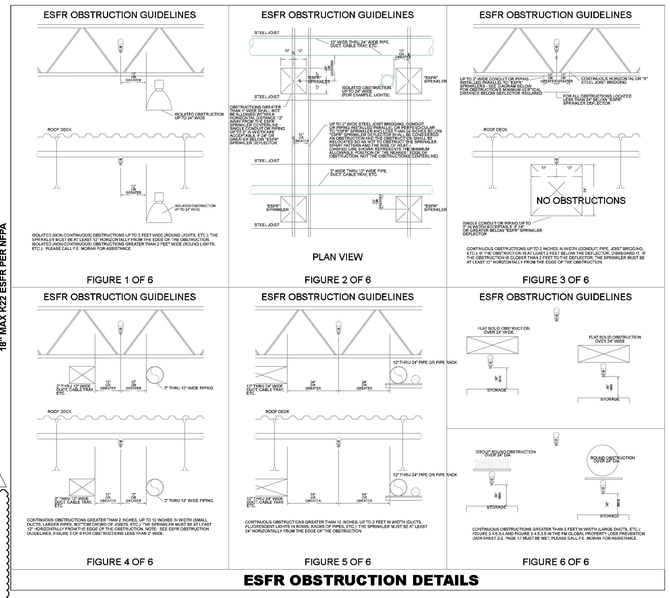
Table 17b. Quick-Response, 160°F (70°C) Nominally Rated, Standard-Coverage Pendent Storage Sprinkler Ceiling-Only Designs for Ceiling Heights Over 40 ft (12.0 m)

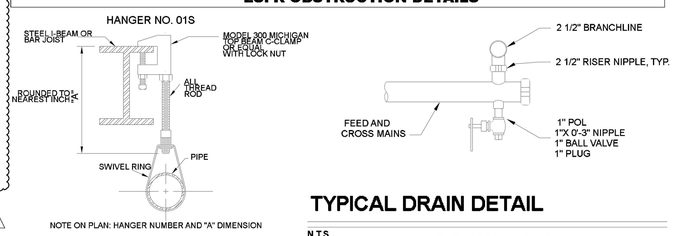
Storage Arrangement	Commodity	Max. Storage Height, ft (m)	Max. Ceiling Height, ft (m)	Ceiling Sprinkler K-Factor	Max. Vertical Distance from Ceiling to Sprinkler's Thermal Element, in. (mm)	Min. Aisle Width, ft (m)	Sprinkler System Design: Ceiling Sprinkler System, No. of AS @ psi (bar)	Sprinkler System Design: Hose Demand, gpm (L/min)	Sprinkler System Design: System Duration, min
Solid-Piled, Palletized, Bin-Box, Shelf, and Open-Frame Racks*	Class 1, 2, 3, 4 and Cartoned Unexpanded Plastics	45 (13.7)	50 (15.2)	22.4 (320)	13 (325)	6 (1.8)	10 @ 63 (4.3)	250 (950)	60
				25.2 (360)	13 (325)	6 (1.8)	10 @ 50 (3.5)		
					17 (425)	6 (1.8)	10 @ 75 (5.2)		
				28.0** (400**)	13 (325)	6 (1.8)	10 @ 40 (2.8)		
				33.6 (480)	17 (425)	6 (1.8)	9 @ 55 (3.8)		
		50 (15.2)	55 (16.8)	28.0 (400)	13 (325)	8 (2.4)	9 @ 80 (5.5)		
				33.6 (480)	17 (425)	6 (1.8)	9 @ 55 (3.8)		

* See the guidelines in Section 2.2.3.2 to confirm that any multiple-row racks being protected in accordance with this table meet the requirements to be considered open-frame.

** The design of 10 AS @ 40 psi (2.8 bar) can be reduced to 9 AS @ 40 psi (2.8 bar) when the water supply can also provide a minimum pressure of 80 psi (5.5 bar) from the most remote 4 sprinklers (2 sprinklers on 2 lines).







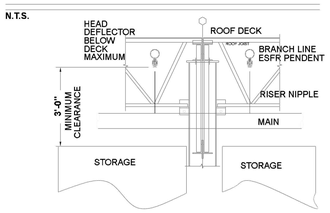
NOTE ON PLAN: HANGER NUMBER AND "A" DIMENSION

TYPICAL DRAIN DETAIL

N.T.S.

TOP BEAM C-CLAMP DETAIL

N.T.S.



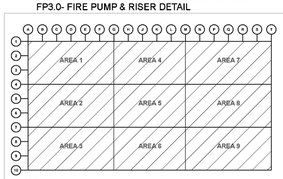
STORAGE CLEARANCE

N.T.S.

NICET #156488 CERTIFIED

JASIEL COLBERT
NICET LEVEL 1
AUTO. SPRINKLER SYS. LAYOUT
VALID THROUGH MARCH 03, 2025

DRAWING INDEX



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

Digitally signed by Michelle A Lopez
Contact info: (317) 468-3721
Date: 2023.03.15 14:07:20-04'00'

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1
1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC. FIRE PROTECTION
WWW.FEMORAN.COM

ISSUE DATES	
PERMIT SET	02.18.22
1 TENANT IMPROVEMENT	09.07.22
2 FM GLOBAL TENANT SPACE	02.22.23

210300

FP0.0

SYSTEM NOTES

2.5.4.5.1.1 Any object located entirely within the checkerboard area of Figure 2.5.4.5.1.1(a) for standard-coverage sprinklers or Figure 2.5.4.5.1.1(b) for extended-coverage sprinklers does not qualify as an obstruction to the sprinkler's discharge pattern.

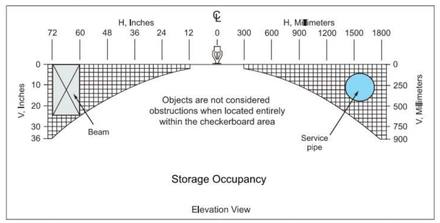


Fig. 2.5.4.5.1.1(a). Objects near ceiling level not considered obstructions to standard-coverage Storage sprinklers

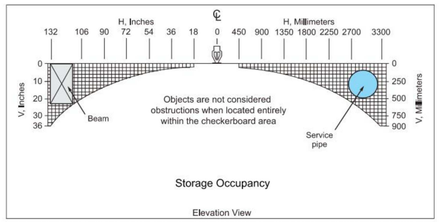


Fig. 2.5.4.5.1.1(b). Objects near ceiling level not considered obstructions to extended-coverage Storage sprinklers

2.5.4.5.1.2 If an object is not located entirely within the checkerboard, see the following sections to determine whether the object qualifies as an unacceptable obstruction to the sprinkler's discharge pattern.

2.5.4.5.2 Ceiling Structural Members and Other Similar Objects Located Near Ceiling-Level Storage Sprinklers

2.5.4.5.2.1 If ceiling structural members less than 70% open in their vertical profile extend down out of the checkerboard pattern, as demonstrated in Figure 2.5.4.5.2.1(a), position sprinklers on either side of the ceiling structural member as shown in Figure 2.5.4.5.2.1(b).

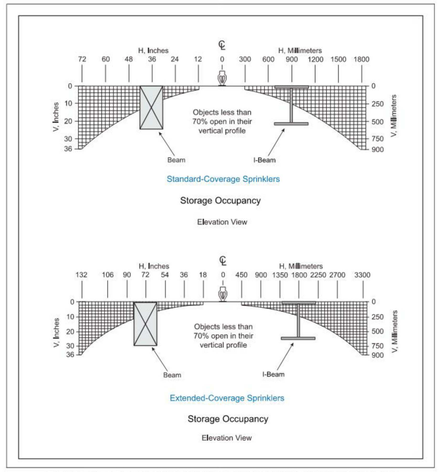


Fig. 2.5.4.5.2.1(a). Example of ceiling structural members that obstruct sprinkler discharge pattern

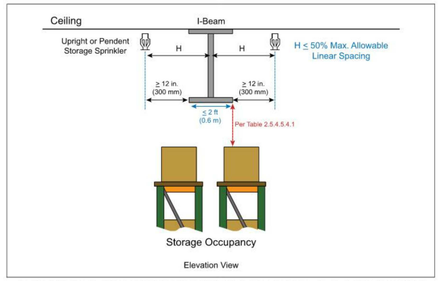


Fig. 2.5.4.5.2.1(b). Positioning ceiling-level sprinklers when ceiling structural members obstruct sprinkler discharge

2.5.4.5.2.2 Ceiling structural members 70% or more open in their vertical profile do not qualify as obstructions to the sprinkler's discharge pattern.

2.5.4.5.2.3 If ceiling structural members are a minimum of 70% open in their vertical profile, but are located less than 12 in. (300 mm) horizontally away from standard-coverage sprinklers, or less than 18 in. (450 mm) horizontally away from extended-coverage sprinklers, ensure that any cross-bracing or similar objects that make up the structural member are:

A. No wider than 3 in. (75 mm), and

B. Located a minimum horizontal distance of three times the width of the object from the sprinkler.

2.5.4.5.2.4 If the guidelines of Section 2.5.4.5.2.3 cannot be met, reposition a standard-coverage sprinkler so that it is a minimum of 12 in. (300 mm) horizontally from the nearest ceiling structural member, or 18 in. (450 mm) horizontally away from the nearest structural member if the sprinkler is extended-coverage.

2.5.4.5.3 Individual or Grouped Objects Located Below Ceiling-Level Storage Sprinklers

2.5.4.5.3.1 An object can be considered an "individual object" for the purpose of analyzing it as a potential obstruction to ceiling sprinkler discharge if it is located a minimum of 3 times its width from an adjacent object that is either the same size or larger. See Figure 2.5.4.5.3.1 for an example of applying this guidance.

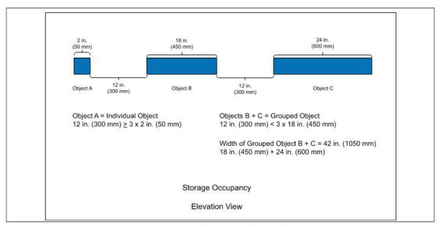


Fig. 2.5.4.5.3.1. Example of an "Individual Object" and a "Grouped Object" for analyzing obstructions

2.5.4.5.3.2 Group an object with an adjacent object of the same size or larger if the horizontal distance between the two objects is less than 3 times the width of the smaller object. See Figure 2.5.4.5.3.1 for an example of applying this guidance.

2.5.4.5.3.3 If two or more objects are considered a "grouped object", their overall width is the collective sum of each of the objects that make-up the grouped object; the open spaces between them do not need to be included in the calculation as demonstrated in Figure 2.5.4.5.3.1.

2.5.4.5.4 Objects Up to 2 ft (0.6 m) Wide Located Below Ceiling-Level Storage Sprinklers and Above Storage

2.5.4.5.4.1 Objects located in accordance with Table 2.5.4.5.4.1 are not considered unacceptable obstructions to the discharge of Storage sprinklers. Note that the width of an object is measured in the object's least dimension and in a plane that is parallel to the floor.

Table 2.5.4.5.4.1. Acceptable Location of Objects from Ceiling Sprinklers to Avoid Unacceptable Obstruction to Sprinkler Discharge

Width of Object in its Least Dimension, in. (mm)	*Horizontal Distance from Sprinkler to Nearest Edge of Object, in. (mm)*	*Minimum Vertical Distance from Sprinkler Deflector to Top of Object, in. (mm)*
≤ 0.75 (20)	≤ 6 (150)	4 (100)
	> 6 (150)	DNA
≤ 1.5 (38)	≤ 6 (150)	12 (300)
	> 6 (150)	DNA
≤ 2 (50)	≤ 6 (150)	24 (600)
	> 6 (150)	DNA
≤ 6 (150)	≥ 6 (150)	DNA
≤ 12 (300)	< 12 (300)	Object not permitted in this area
	≥ 12 (300)	DNA if object ≥ 18 in. (450 mm) above top of storage
≤ 24 (600)	< 12 (300)	Object not permitted in this area
	≥ 12 (300)	DNA if object ≥ 36 in. (900 mm) above top of storage

DNA = Does not apply.

2.5.4.5.4.2 Objects up to a maximum width of 4 in. (100 mm) are not considered unacceptable obstructions to the discharge of upright Storage sprinklers. As a result, an upright sprinkler can be used as a replacement for an obstructed pendent sprinkler if:

A. The upright sprinkler has the same attributes, other than orientation, that the pendent sprinkler has, and

B. The upright sprinkler is an acceptable sprinkler to protect the occupancy hazard, and

C. The object has a maximum width of 4 in. (100 mm).

2.5.4.5.4.3 If objects cannot be in accordance with Table 2.5.4.5.4.1 with the sprinklers installed in accordance with Table 2.5.4.3.1.1, the linear spacing of the sprinkler can be extended a maximum 1 ft (0.3 m) beyond the maximum linear spacing indicated in Table 2.5.4.3.1.1, as demonstrated in Figure 2.5.4.5.4.3, if that will allow the sprinkler to avoid unacceptable obstruction to its discharge. Note that the extended spacing is permitted multiple times, but each time must be adjacent to spacing that is in accordance with Table 2.5.4.5.4.1.

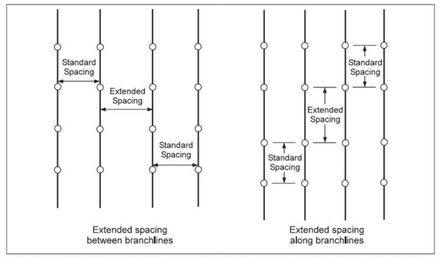


Fig. 2.5.4.5.4.3. Allowable extension of maximum ceiling sprinkler spacing to avoid obstruction to sprinkler discharge

2.5.4.5.5 Objects Over 2 ft (0.6 m) Wide Located Below Ceiling-Level Storage Sprinklers and Above Storage

2.5.4.5.5.1 For flat, solid, individual objects over 2 ft (0.6 m) wide, install supplemental sprinklers under the object in accordance with Figure 2.5.4.5.5.1.

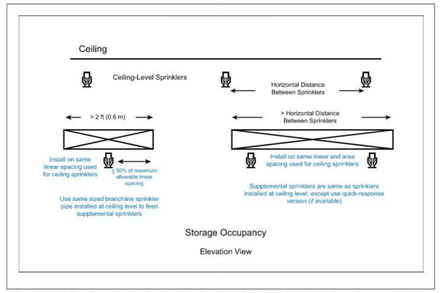
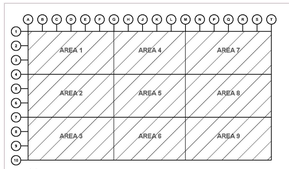


Fig. 2.5.4.5.5.1. Supplemental ceiling-level sprinklers installed below flat, solid, individual obstructions over 2 ft (0.6 m) wide

2.5.4.5.5.2 For flat, solid, grouped objects over 2 ft (0.6 m) wide, install supplemental sprinklers under the objects in accordance with Figure 2.5.4.5.5.2. Note that in Option 1, both objects are over 1 ft (0.3 m) wide. In Option 2, however, at least one object is less than or equal to 1 ft (0.3 m) wide.



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER
PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANINC.COM

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP0.1

FM GLOBAL OBSTRUCTION GUIDELINES

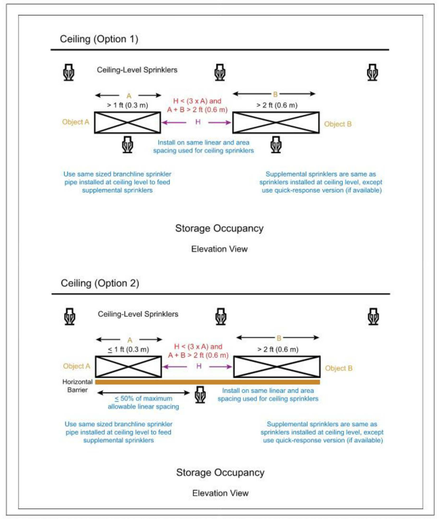


Fig. 2.5.4.5.5.2. Supplemental ceiling-level sprinklers installed below flat, solid, grouped obstructions over 2 ft (0.6 m) wide

2.5.4.5.5.3 For non-flat or non-solid, individual objects over 2 ft (0.6 m) wide, install supplemental sprinklers under the object in accordance with Figure 2.5.4.5.5.3.

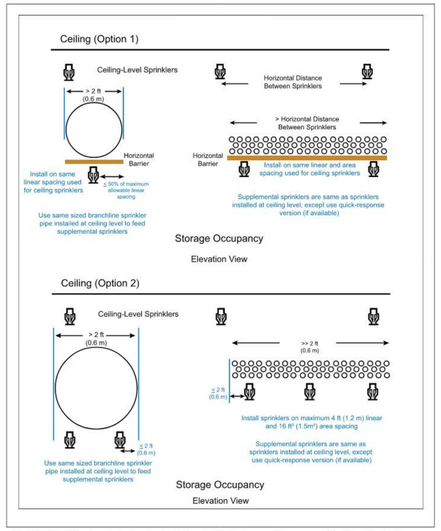


Fig. 2.5.4.5.5.3. Supplemental ceiling-level sprinklers installed below non-flat or non-solid, individual obstructions over 2 ft (0.6 m) wide

2.5.4.5.5.4 For non-flat or non-solid, grouped objects over 2 ft (0.6 m) wide, install supplemental sprinklers under the grouped objects in accordance with Figure 2.5.4.5.5.4.

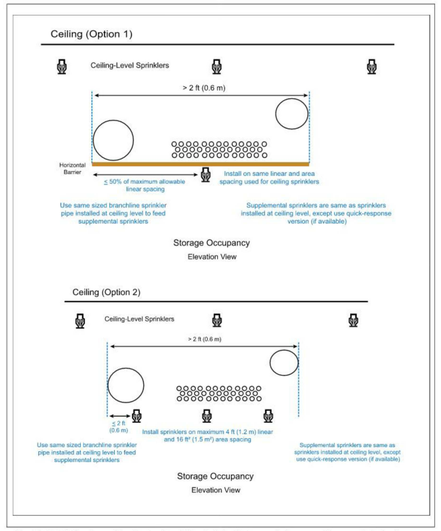
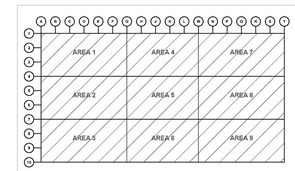


Fig. 2.5.4.5.5.4. Supplemental ceiling-level sprinklers installed below non-flat or non-solid, grouped obstructions over 2 ft (0.6 m) wide

2.5.4.5.5.5 If protecting rack storage, an acceptable option would include installing ceiling-level sprinklers as in-rack sprinklers at the top of the rack structure at all flue space intersections (face and longitudinal) that are affected in a plan view by the obstructing object as demonstrated in Figure 2.5.4.5.5.5.



KEY PLAN

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SCANNELL PROPERTIES

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MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

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LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANINC.COM

ISSUE DATES

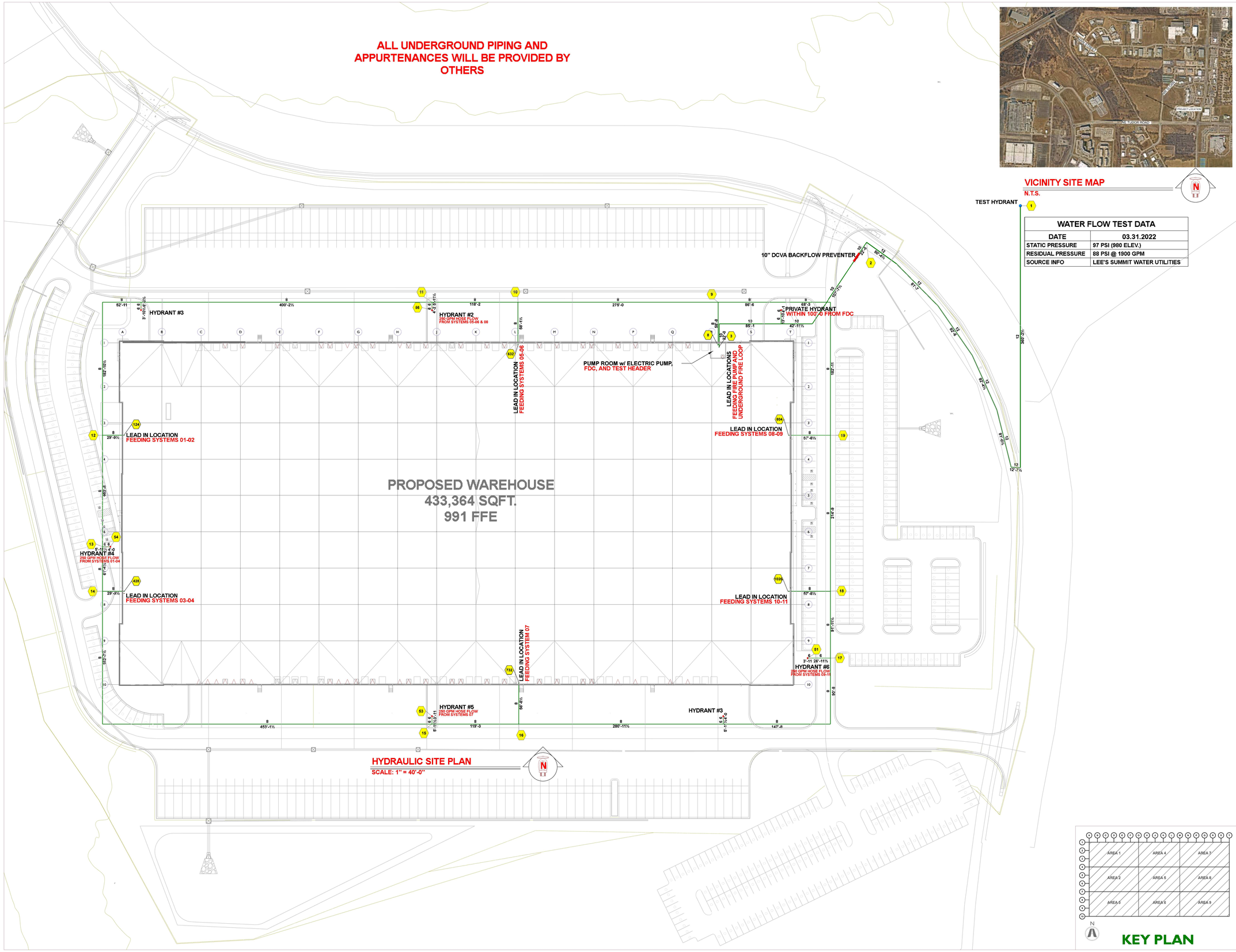
	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP0.2

FM GLOBAL OBSTRUCTION GUIDELINES

ALL UNDERGROUND PIPING AND APPURTENANCES WILL BE PROVIDED BY OTHERS



HYDRAULIC SITE PLAN

SCALE: 1" = 40'-0"

VICINITY SITE MAP

N.T.S.

WATER FLOW TEST DATA	
DATE	03.31.2022
STATIC PRESSURE	97 PSI (980 ELEV.)
RESIDUAL PRESSURE	88 PSI @ 1900 GPM
SOURCE INFO	LEE'S SUMMIT WATER UTILITIES

KEY PLAN

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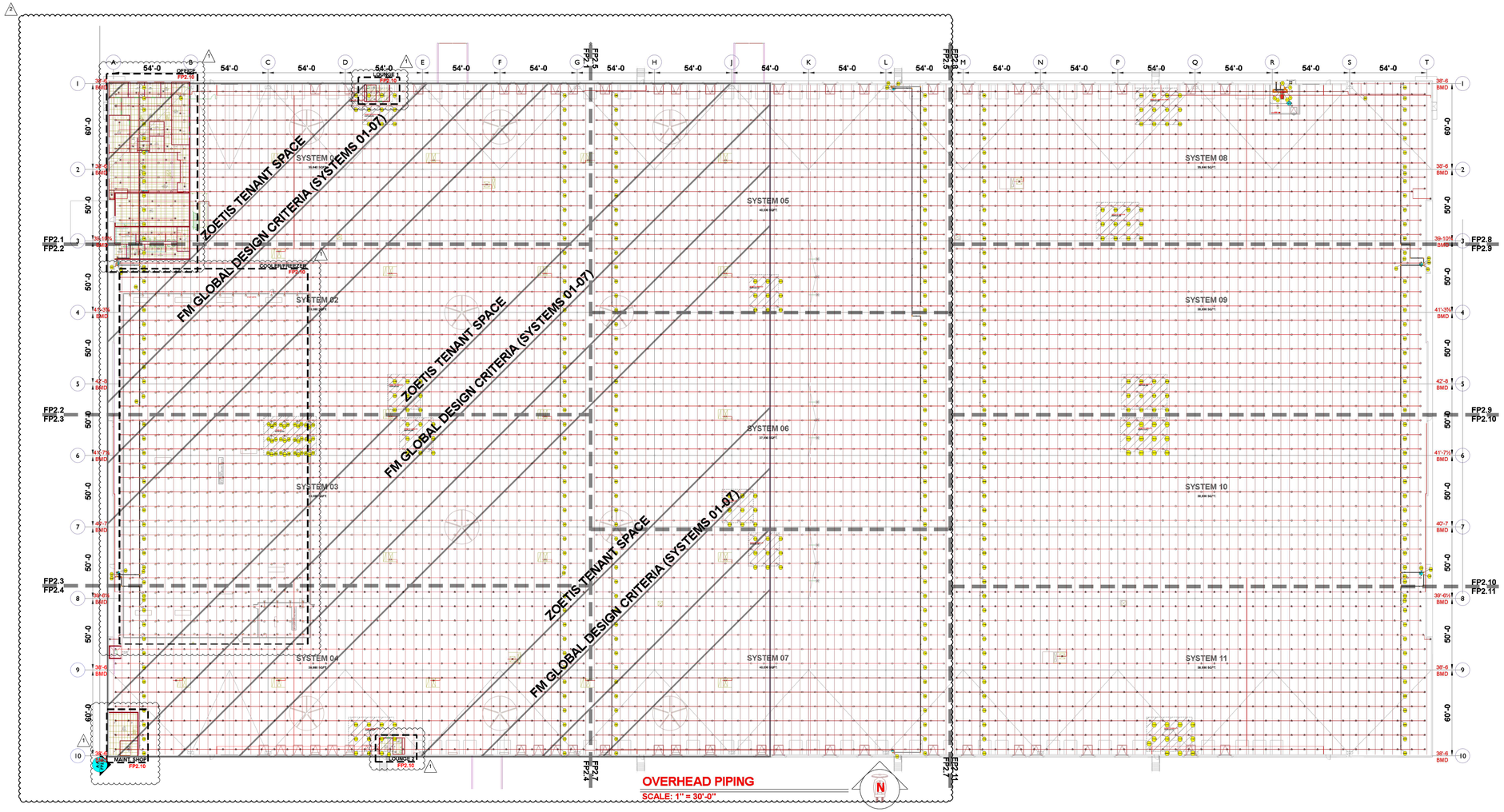
210300

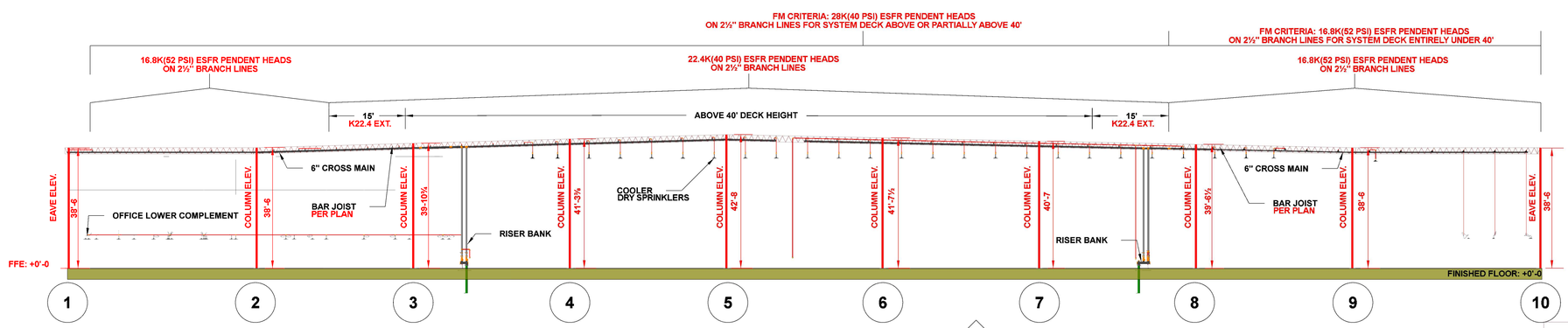
FP1.0

HYDRAULIC SITE PLAN



OVERHEAD PIPING

SCALE: 1" = 30'-0"



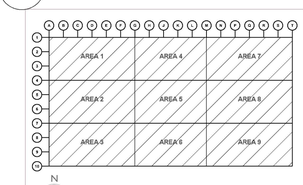
WALL VIEW (SECTION A-A)

SCALE: 1/16" = 1'-0"

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

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ARCHITECTURE
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ISSUE DATES

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1	TENANT IMPROVEMENT	09.07.22
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210300

FP2.0

OVERHEAD PIPING LAYOUT

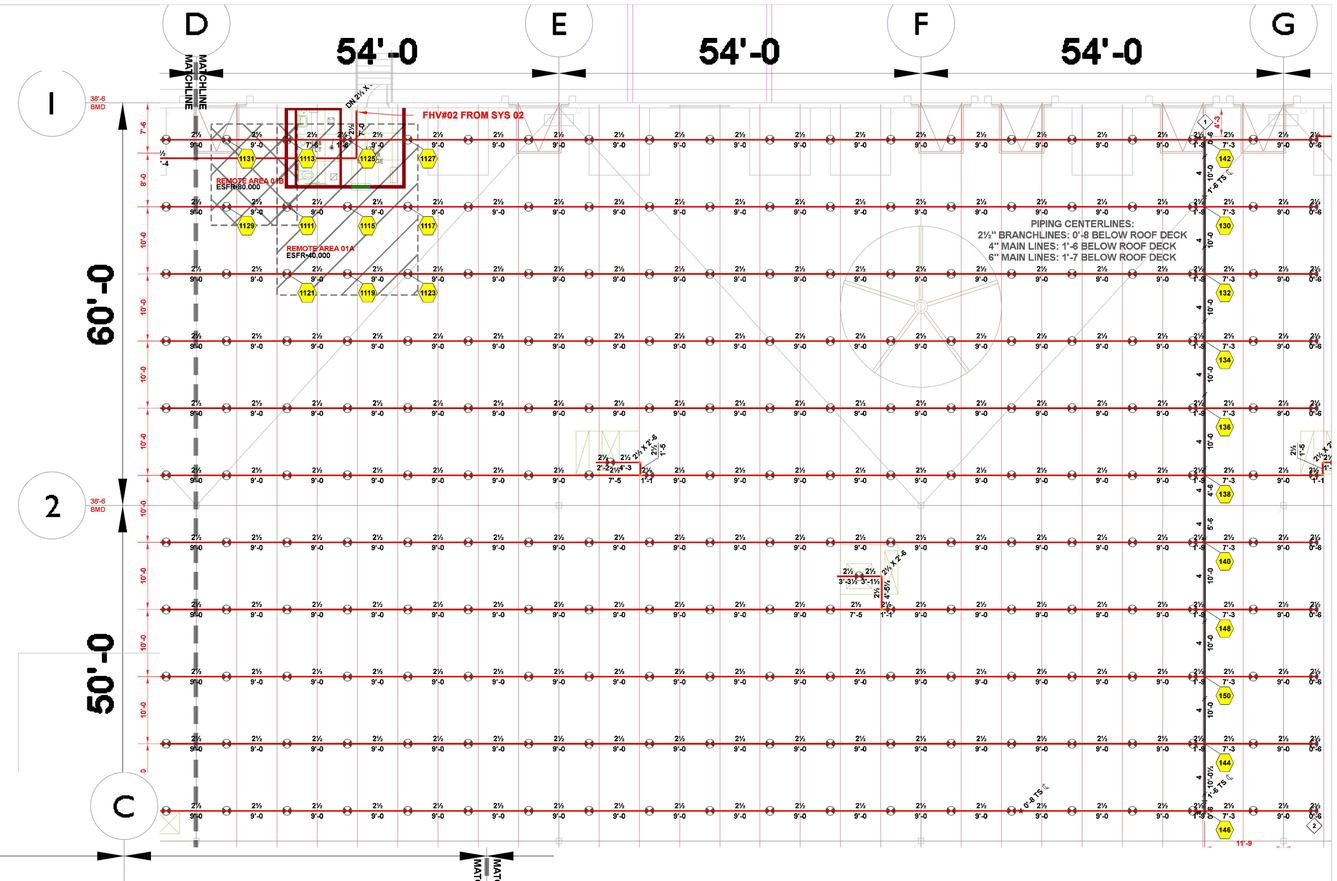
**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

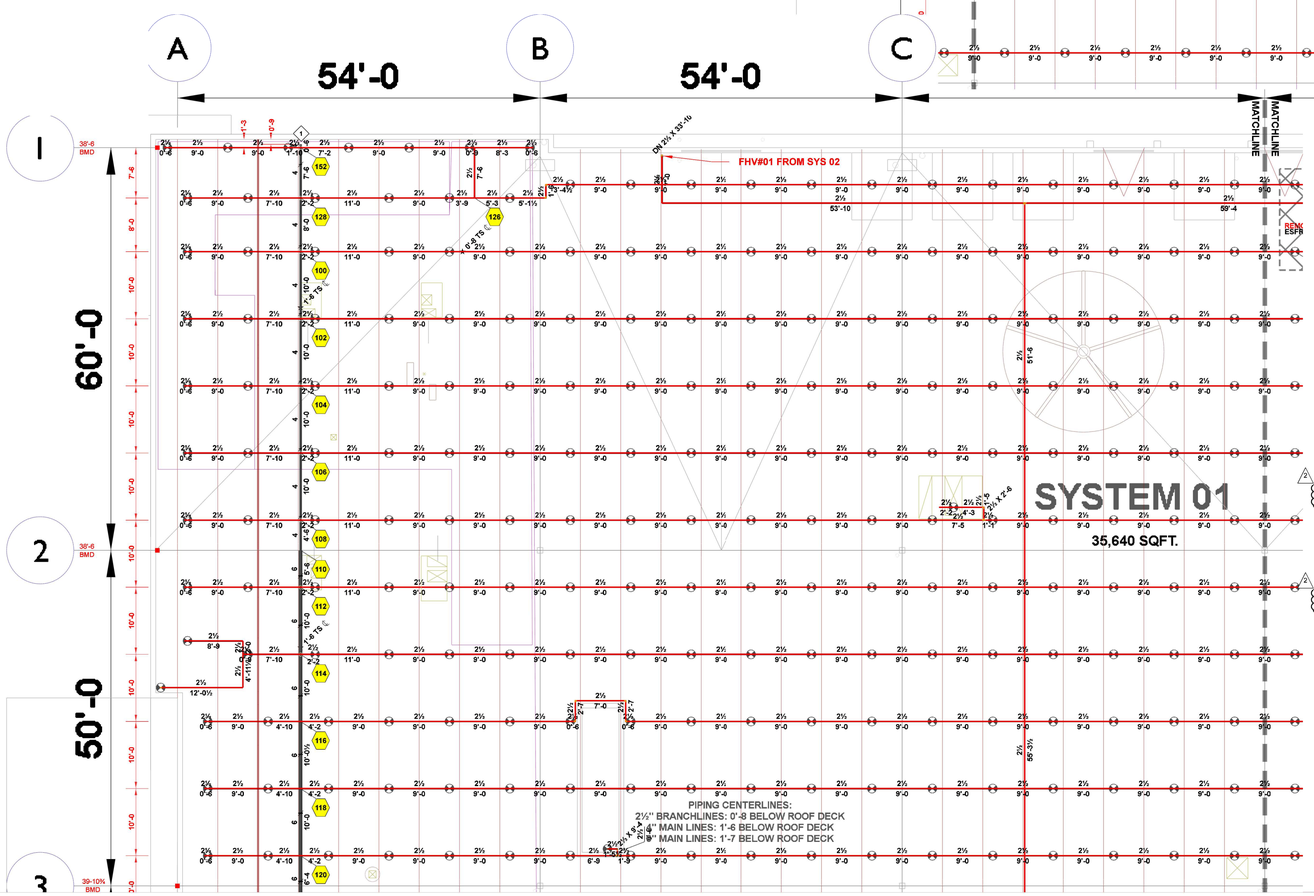
1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

2 - AIR VENT SEE FP0.0 FOR DETAIL

HYDRAULIC INFORMATION	
REMOTE AREA 01A	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1855.95
TOTAL PRESSURE REQUIRED	80.705
BASE OF RISER (GPM)	1855.95
BASE OF RISER (PSI)	80.705
SAFETY MARGIN (PSI)	+7.678 (8.7%)

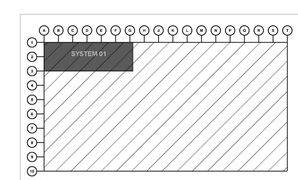
HYDRAULIC INFORMATION	
REMOTE AREA 01B	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	80.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	4
K-FACTOR	28
TOTAL WATER REQUIRED	1255.99
TOTAL PRESSURE REQUIRED	81.329
BASE OF RISER (GPM)	1255.99
BASE OF RISER (PSI)	81.329
SAFETY MARGIN (PSI)	+11.486 (12.4%)





SYSTEM 01 FP LAYOUT
SCALE: 3/32" = 1'-0"

SPRINKLER LEGEND											
SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

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ISSUE DATES	
PERMIT SET	02.18.22
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2 FM GLOBAL TENANT SPACE	02.22.23

210300

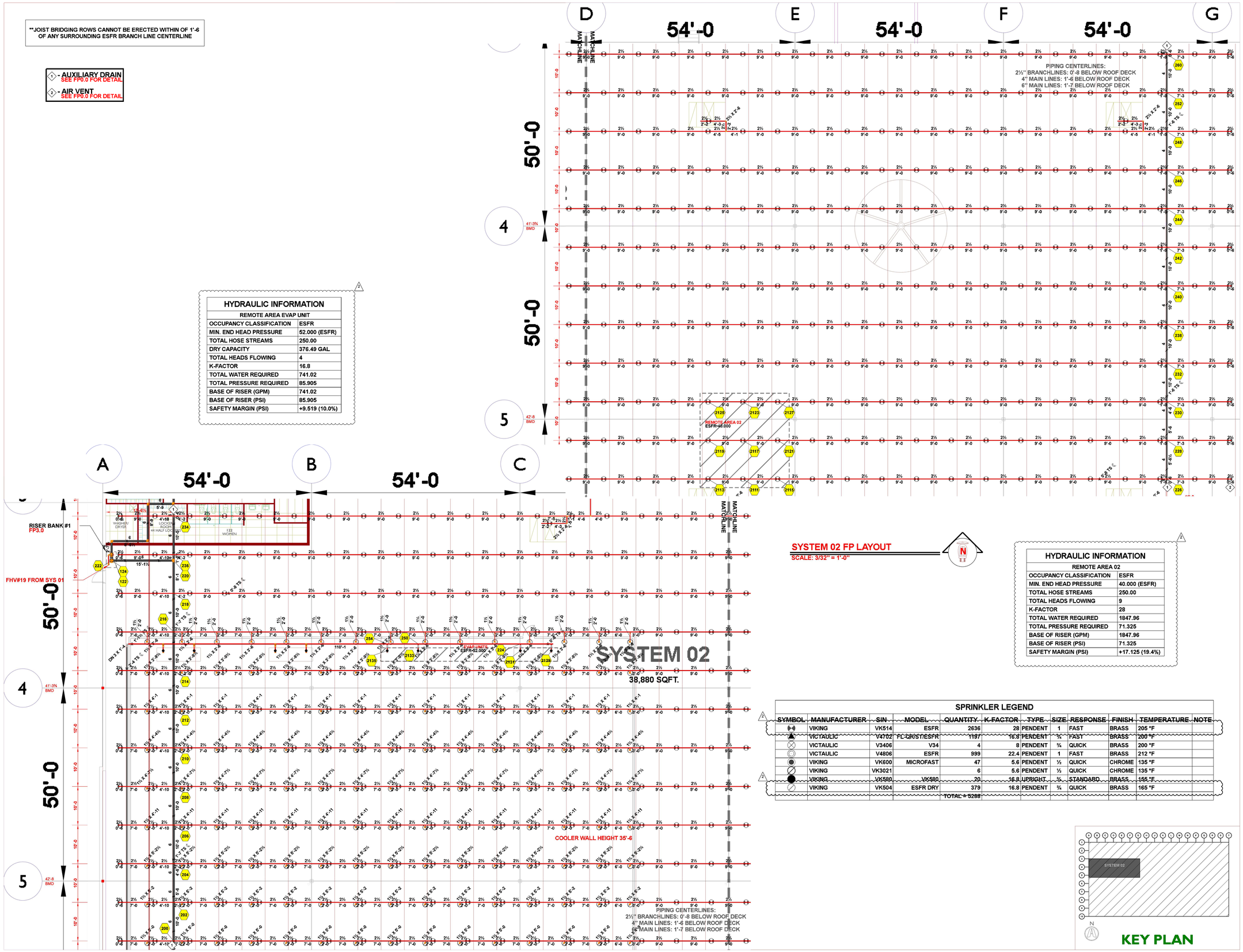
FP2.1

SYSTEM 01 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN
SEE FP0.0 FOR DETAIL

2 - AIR VENT
SEE FP0.0 FOR DETAIL



SYSTEM 02 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION

REMOTE AREA EVAP UNIT	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
DRY CAPACITY	376.49 GAL
TOTAL HEADS FLOWING	4
K-FACTOR	16.8
TOTAL WATER REQUIRED	741.02
TOTAL PRESSURE REQUIRED	85.905
BASE OF RISER (GPM)	741.02
BASE OF RISER (PSI)	85.905
SAFETY MARGIN (PSI)	+9.519 (10.0%)

HYDRAULIC INFORMATION

REMOTE AREA 02	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1847.96
TOTAL PRESSURE REQUIRED	71.325
BASE OF RISER (GPM)	1847.96
BASE OF RISER (PSI)	71.325
SAFETY MARGIN (PSI)	+17.125 (19.4%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER
PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORAINC.COM

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

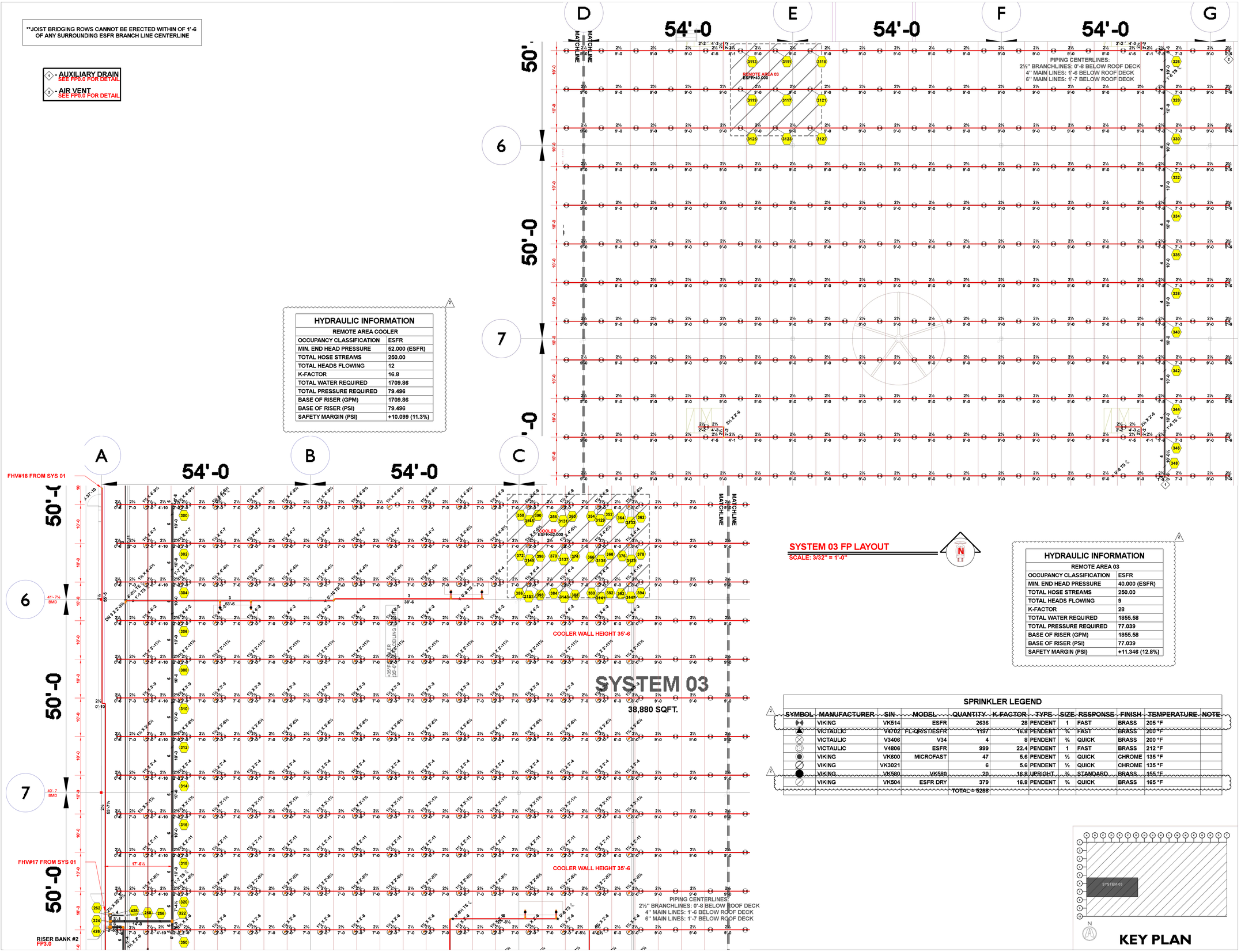
FP2.2

SYSTEM 02 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

◇ - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

◇ - AIR VENT SEE FP0.0 FOR DETAIL



HYDRAULIC INFORMATION

REMOTE AREA COOLER	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.8
TOTAL WATER REQUIRED	1709.86
TOTAL PRESSURE REQUIRED	79.496
BASE OF RISER (GPM)	1709.86
BASE OF RISER (PSI)	79.496
SAFETY MARGIN (PSI)	+10.099 (11.3%)

SYSTEM 03 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION

REMOTE AREA 03	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1855.58
TOTAL PRESSURE REQUIRED	77.039
BASE OF RISER (GPM)	1855.58
BASE OF RISER (PSI)	77.039
SAFETY MARGIN (PSI)	+11.346 (12.8%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FC-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

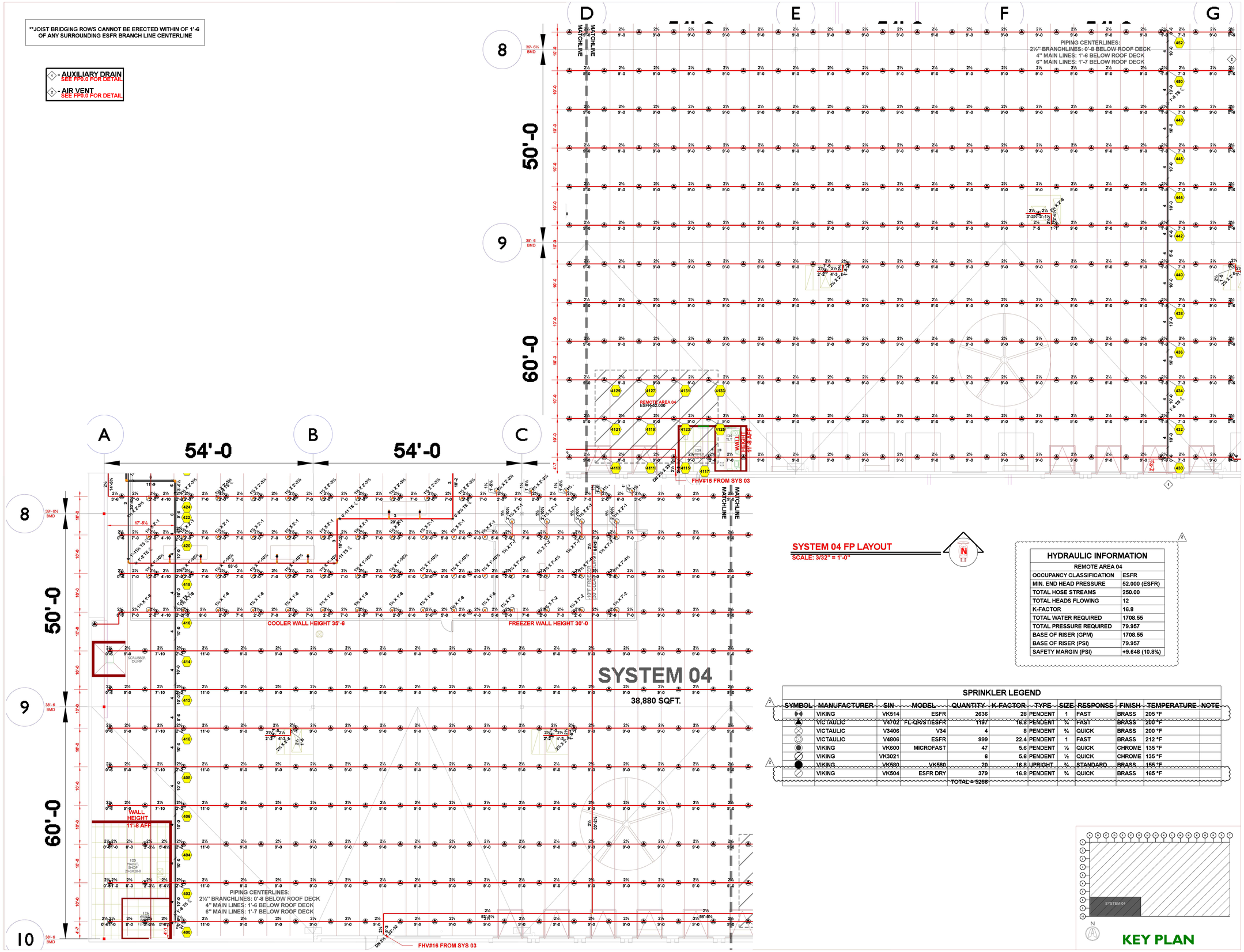
FP2.3

SYSTEM 03 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN
SEE FP0.0 FOR DETAIL

2 - AIR VENT
SEE FP0.0 FOR DETAIL



SYSTEM 04 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION	
REMOTE AREA 04	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.8
TOTAL WATER REQUIRED	1708.55
TOTAL PRESSURE REQUIRED	79.957
BASE OF RISER (GPM)	1708.55
BASE OF RISER (PSI)	79.957
SAFETY MARGIN (PSI)	+9.648 (10.8%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

KEY PLAN

CURRAN
ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANFP.COM

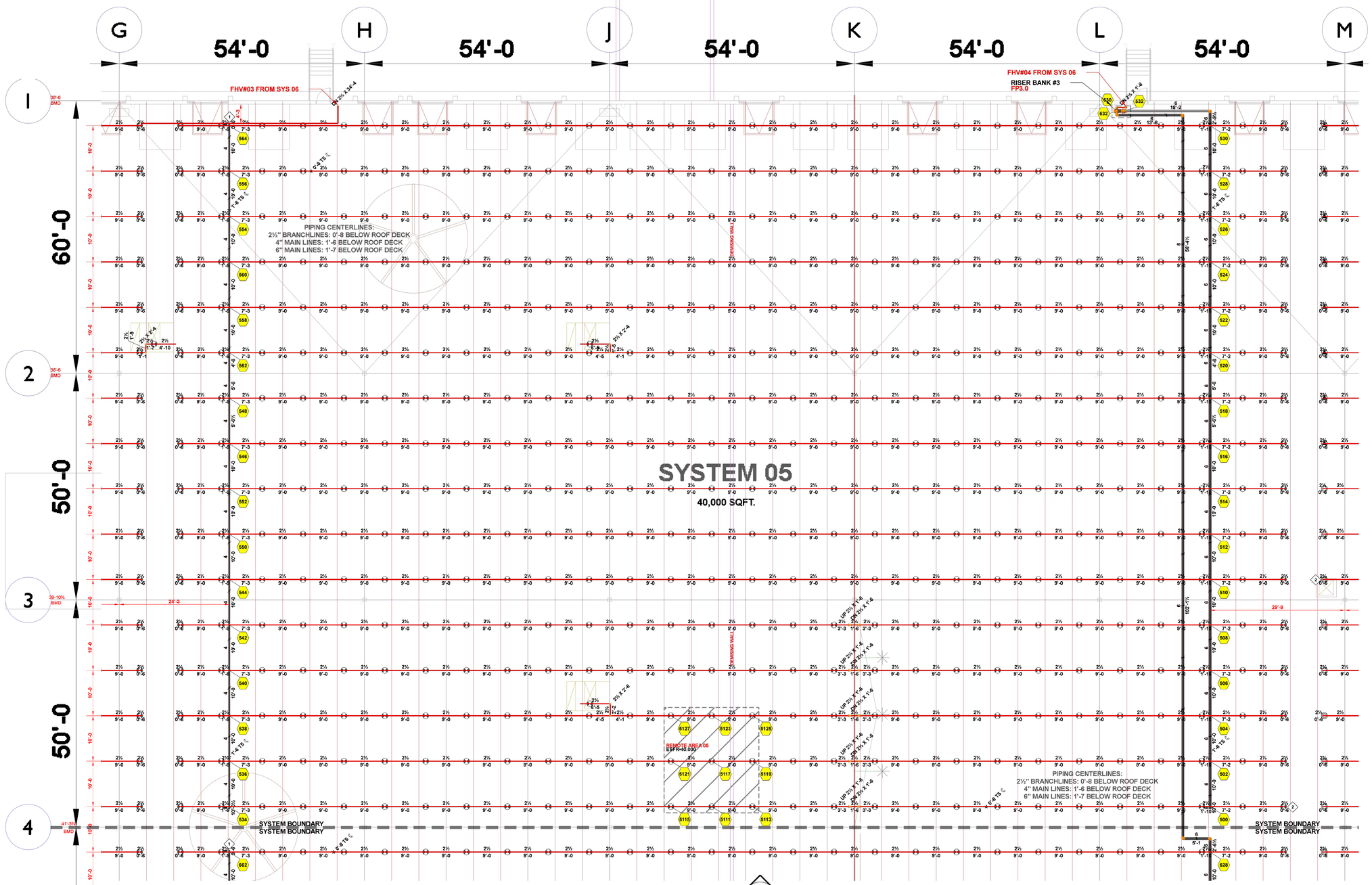
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.4

SYSTEM 04 FP LAYOUT



SYSTEM 05 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION

REMOTE AREA 05	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1848.57
TOTAL PRESSURE REQUIRED	65.893
BASE OF RISER (GPM)	1848.57
BASE OF RISER (PSI)	65.893
SAFETY MARGIN (PSI)	+22.553 (25.5%)

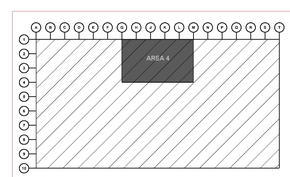
SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QRST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

2 - AIR VENT SEE FP0.0 FOR DETAIL



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANFP.COM

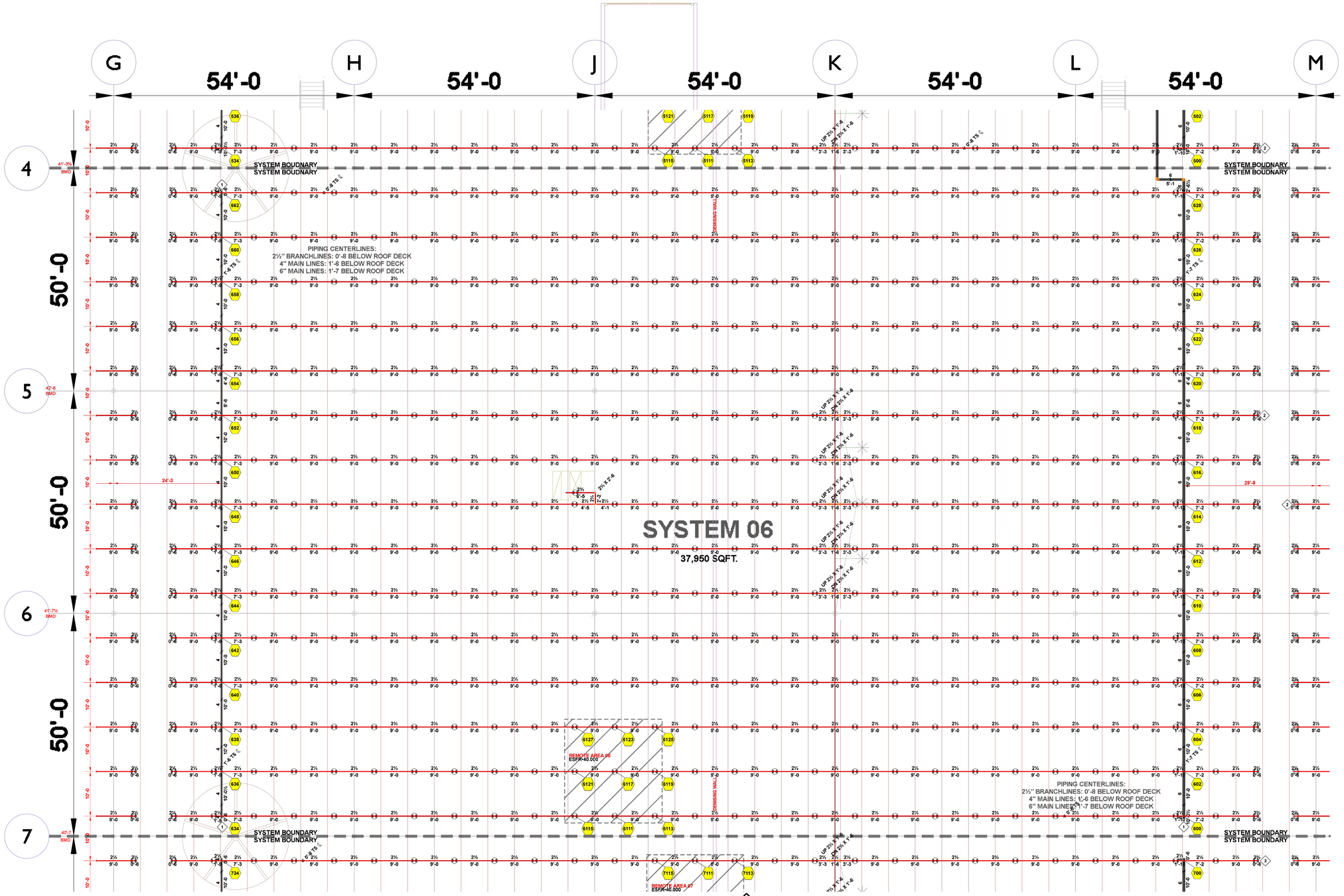
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.5

SYSTEM 05 FP LAYOUT



SYSTEM 06 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION	
REMOTE AREA 06	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1847.53
TOTAL PRESSURE REQUIRED	72.951
BASE OF RISER (GPM)	1847.53
BASE OF RISER (PSI)	72.951
SAFETY MARGIN (PSI)	+15.504 (17.5%)

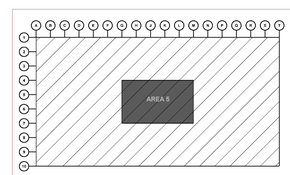
SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

2 - AIR VENT SEE FP0.0 FOR DETAIL



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
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SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION

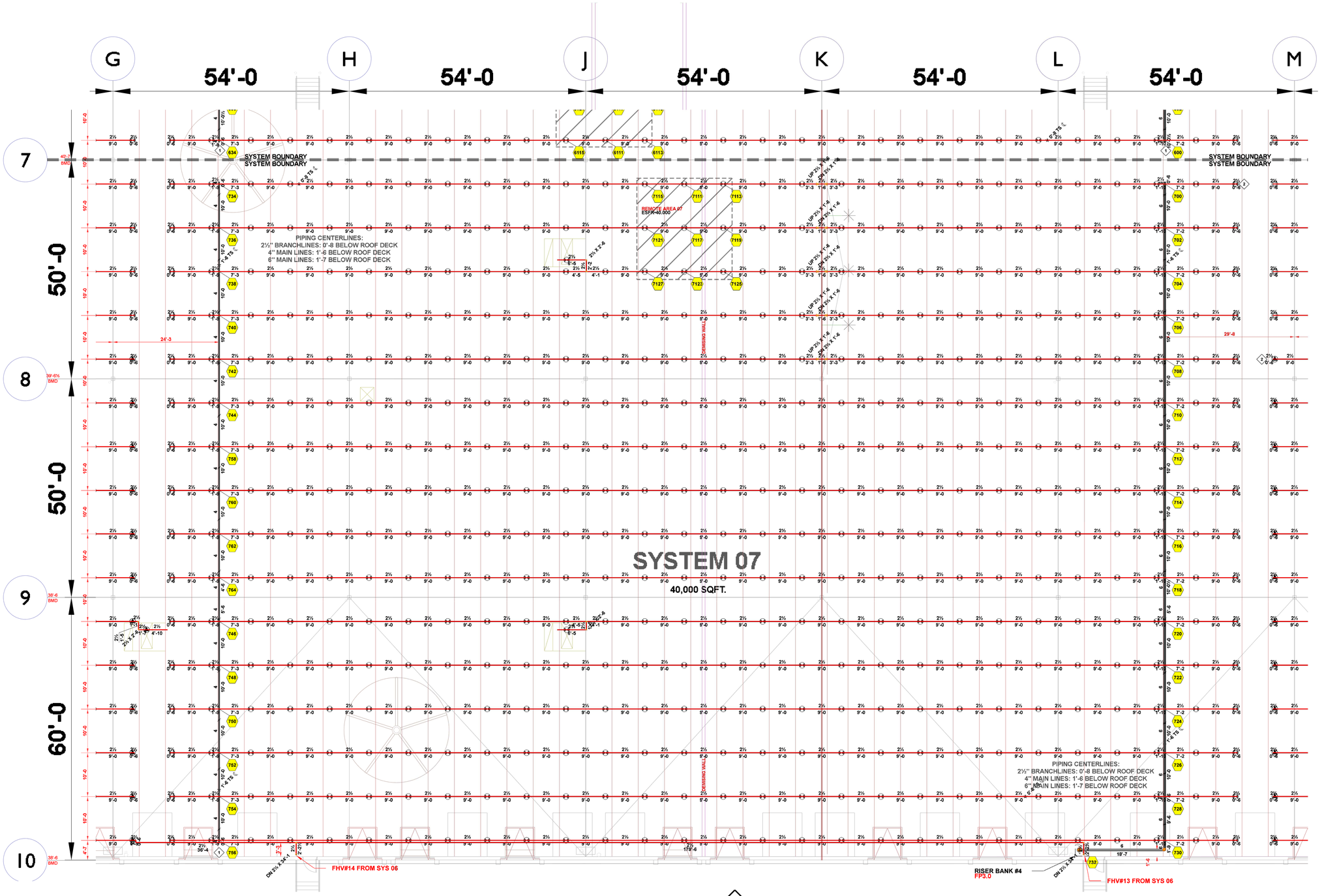
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.6

SYSTEM 06 FP LAYOUT



SYSTEM 07 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION	
REMOTE AREA 07	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	9
K-FACTOR	28
TOTAL WATER REQUIRED	1848.18
TOTAL PRESSURE REQUIRED	67.792
BASE OF RISER (GPM)	1848.18
BASE OF RISER (PSI)	67.792
SAFETY MARGIN (PSI)	+20.656 (23.4%)

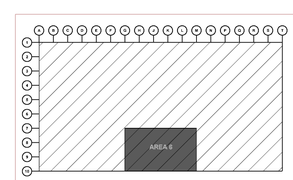
SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FC-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

2 - AIR VENT SEE FP0.0 FOR DETAIL



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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SCANNELL PROPERTIES

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANFP.COM

ISSUE DATES	
PERMIT SET	02.18.22
1 TENANT IMPROVEMENT	09.07.22
2 FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.7

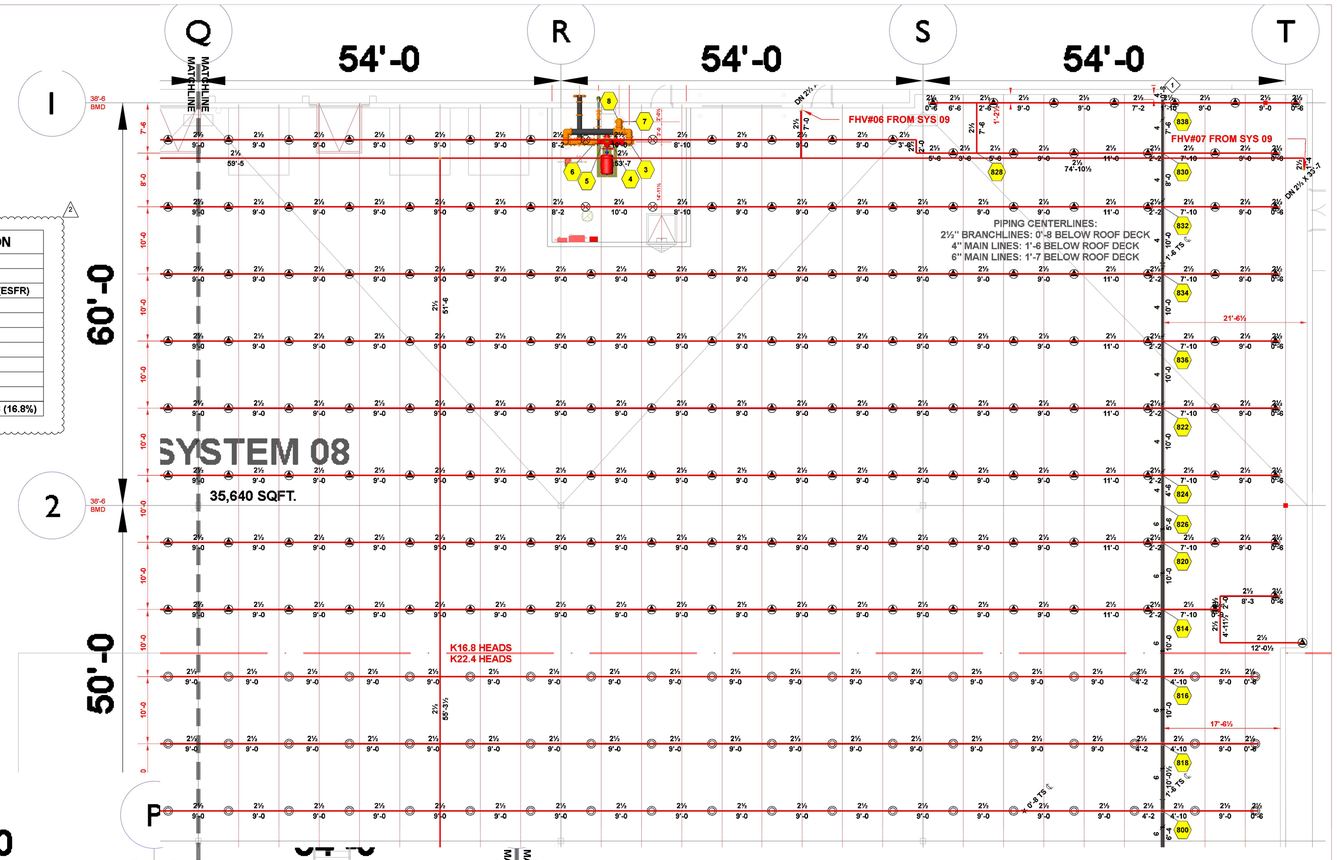
SYSTEM 07 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

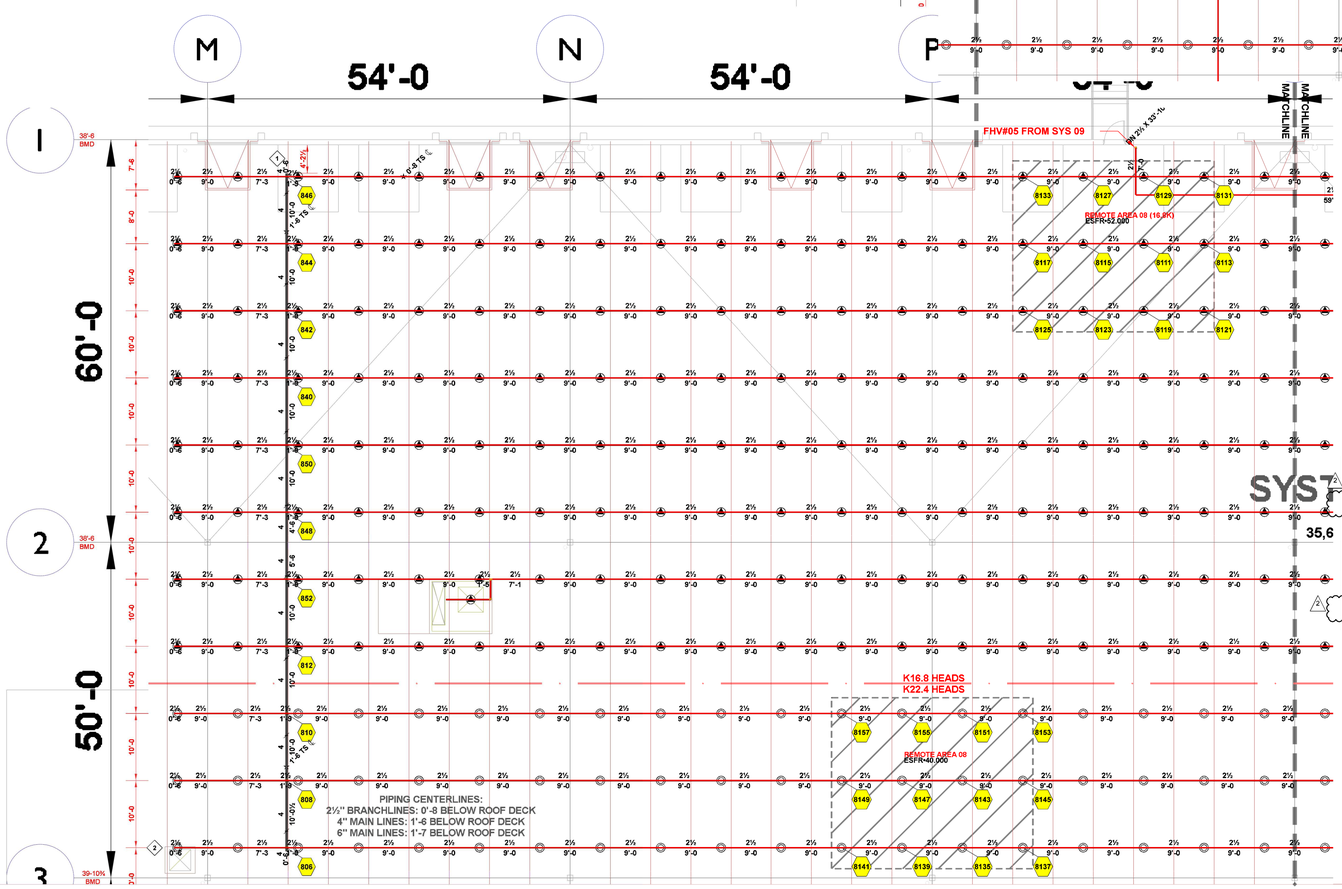
2 - AIR VENT SEE FP0.0 FOR DETAIL

HYDRAULIC INFORMATION	
REMOTE AREA 08 (K16.8)	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.8
TOTAL WATER REQUIRED	1711.62
TOTAL PRESSURE REQUIRED	74.515
BASE OF RISER (GPM)	1711.62
BASE OF RISER (PSI)	74.515
SAFETY MARGIN (PSI)	+15.066 (16.8%)



SYSTEM 08 FP LAYOUT

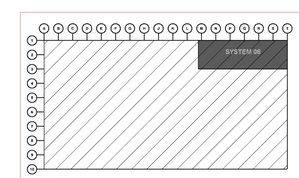
SCALE: 3/32" = 1'-0"



HYDRAULIC INFORMATION	
REMOTE AREA 08	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	22.4
TOTAL WATER REQUIRED	1956.80
TOTAL PRESSURE REQUIRED	82.791
BASE OF RISER (GPM)	1956.80
BASE OF RISER (PSI)	82.791
SAFETY MARGIN (PSI)	+4.705 (5.4%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FC-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANINC.COM

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

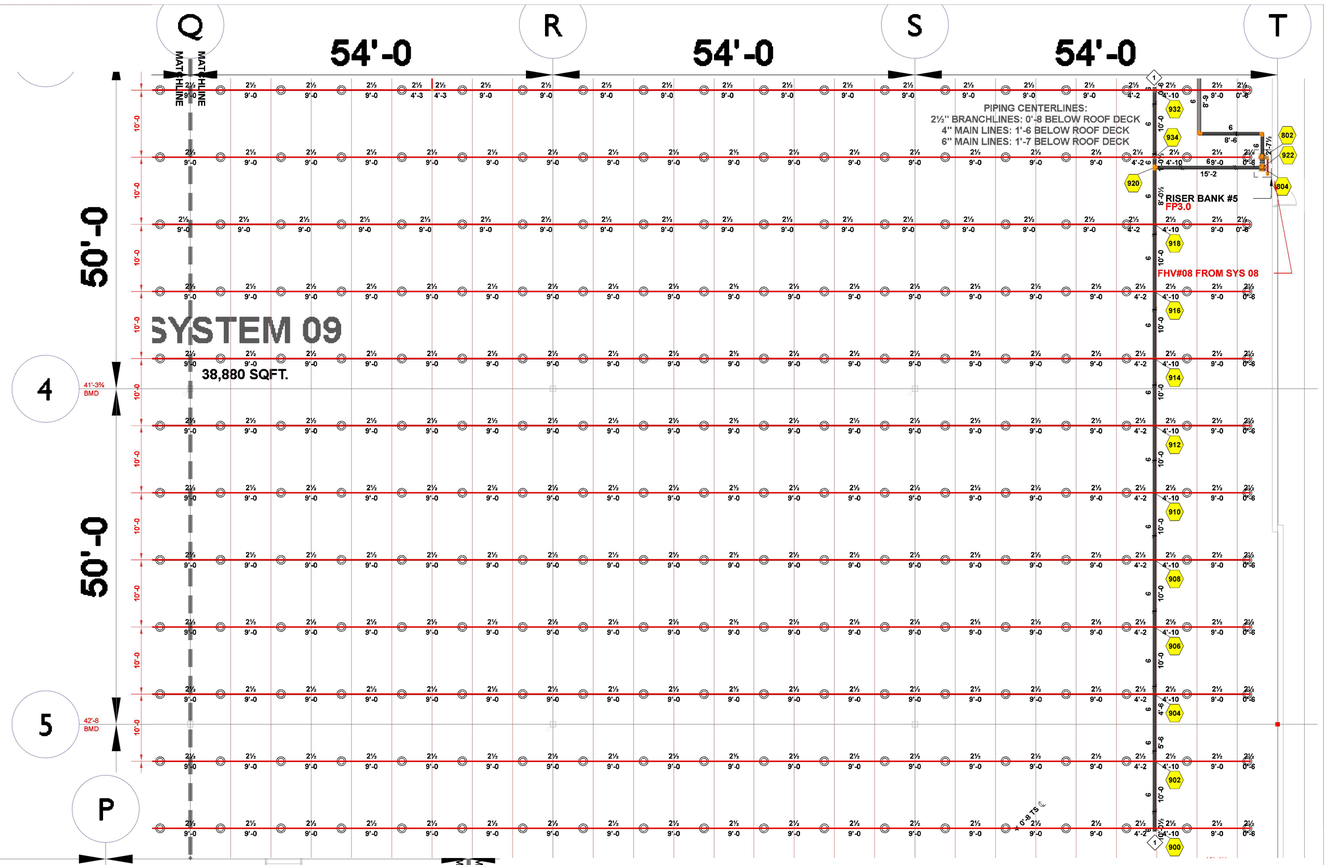
FP2.8

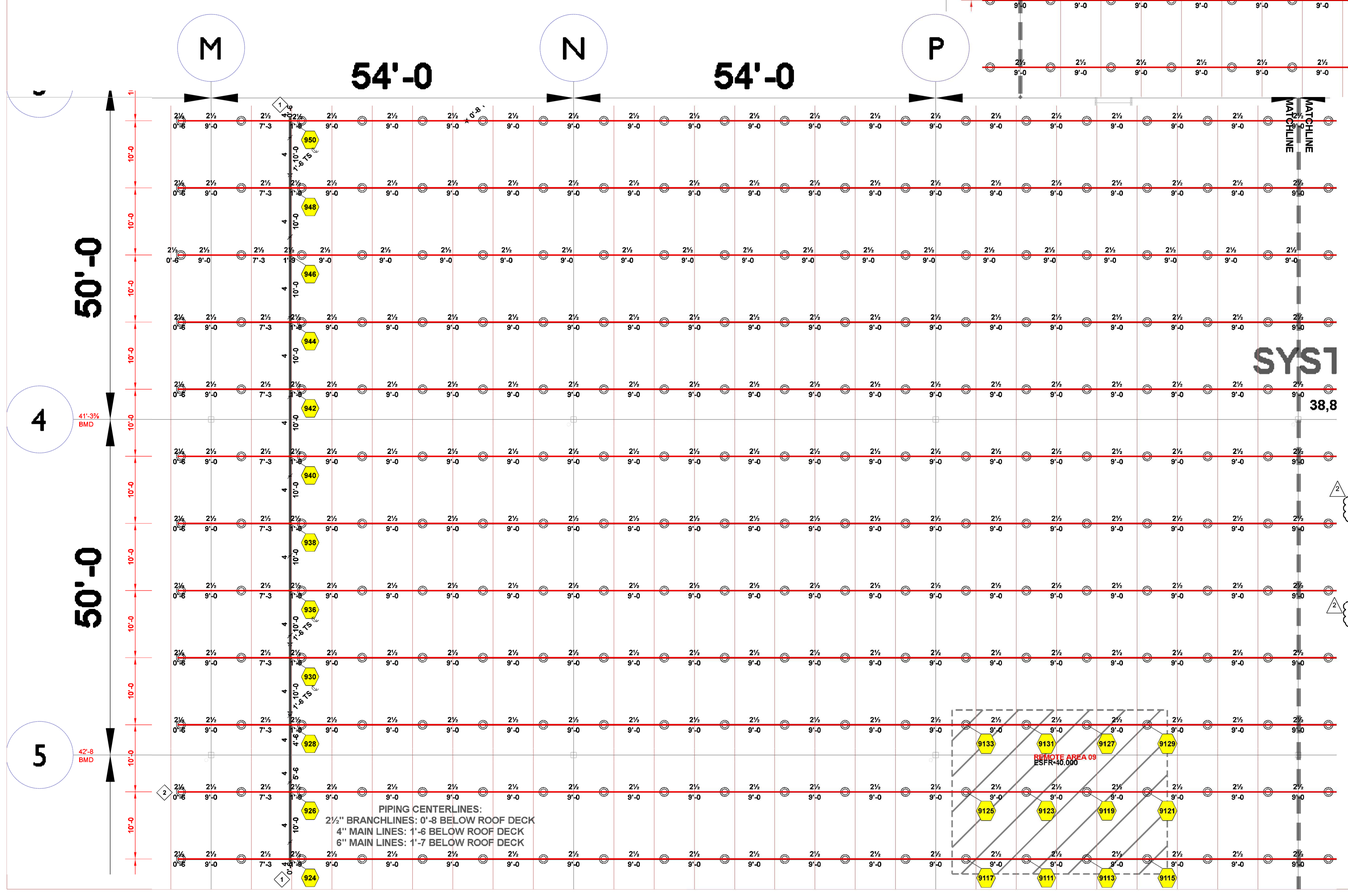
SYSTEM 08 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

1 - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

2 - AIR VENT SEE FP0.0 FOR DETAIL





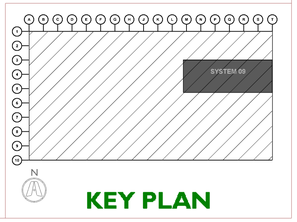
SYSTEM 09 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION	
REMOTE AREA 09	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	22.4
TOTAL WATER REQUIRED	1956.70
TOTAL PRESSURE REQUIRED	76.903
BASE OF RISER (GPM)	1956.70
BASE OF RISER (PSI)	76.903
SAFETY MARGIN (PSI)	+10.594 (12.1%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

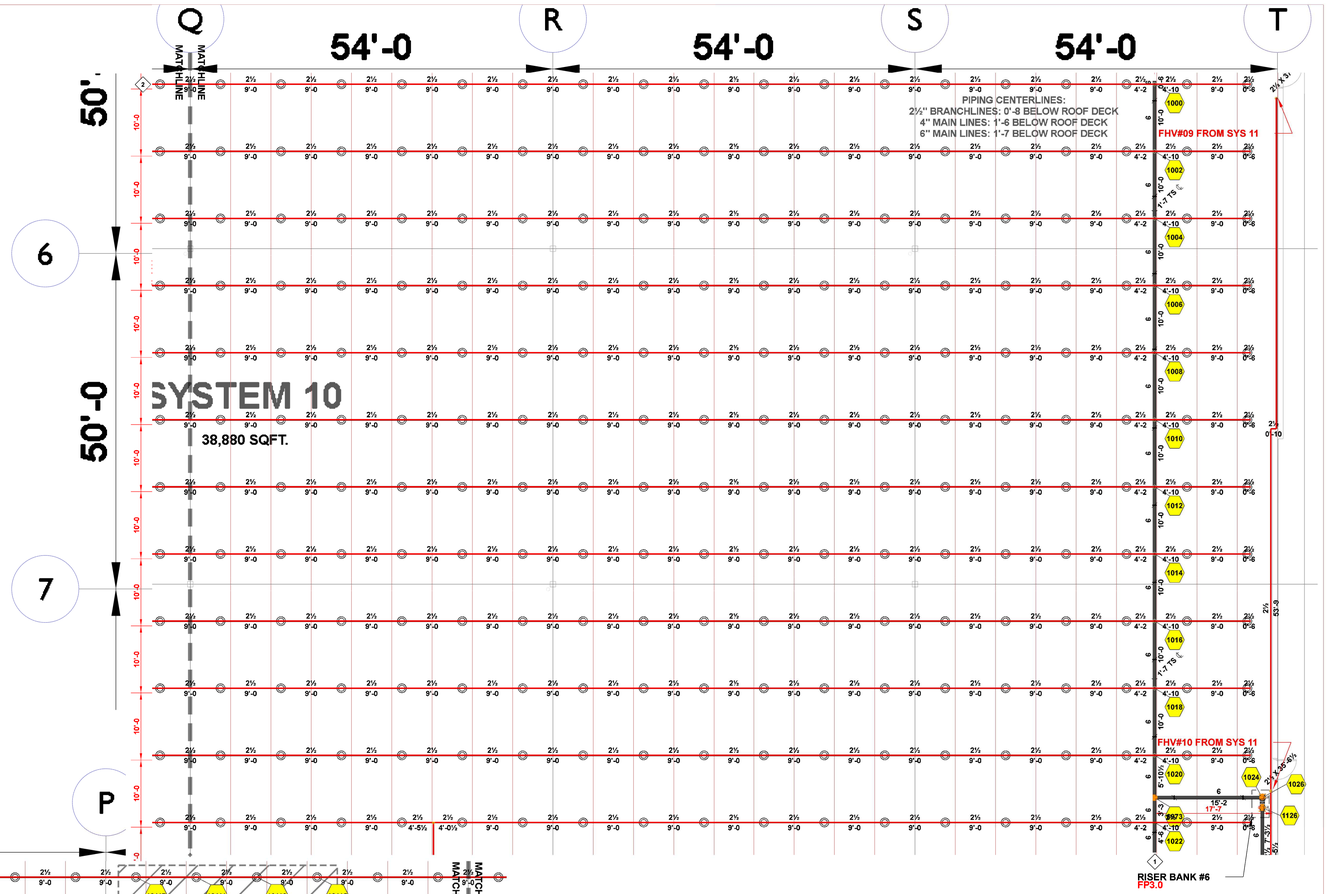
FP2.9

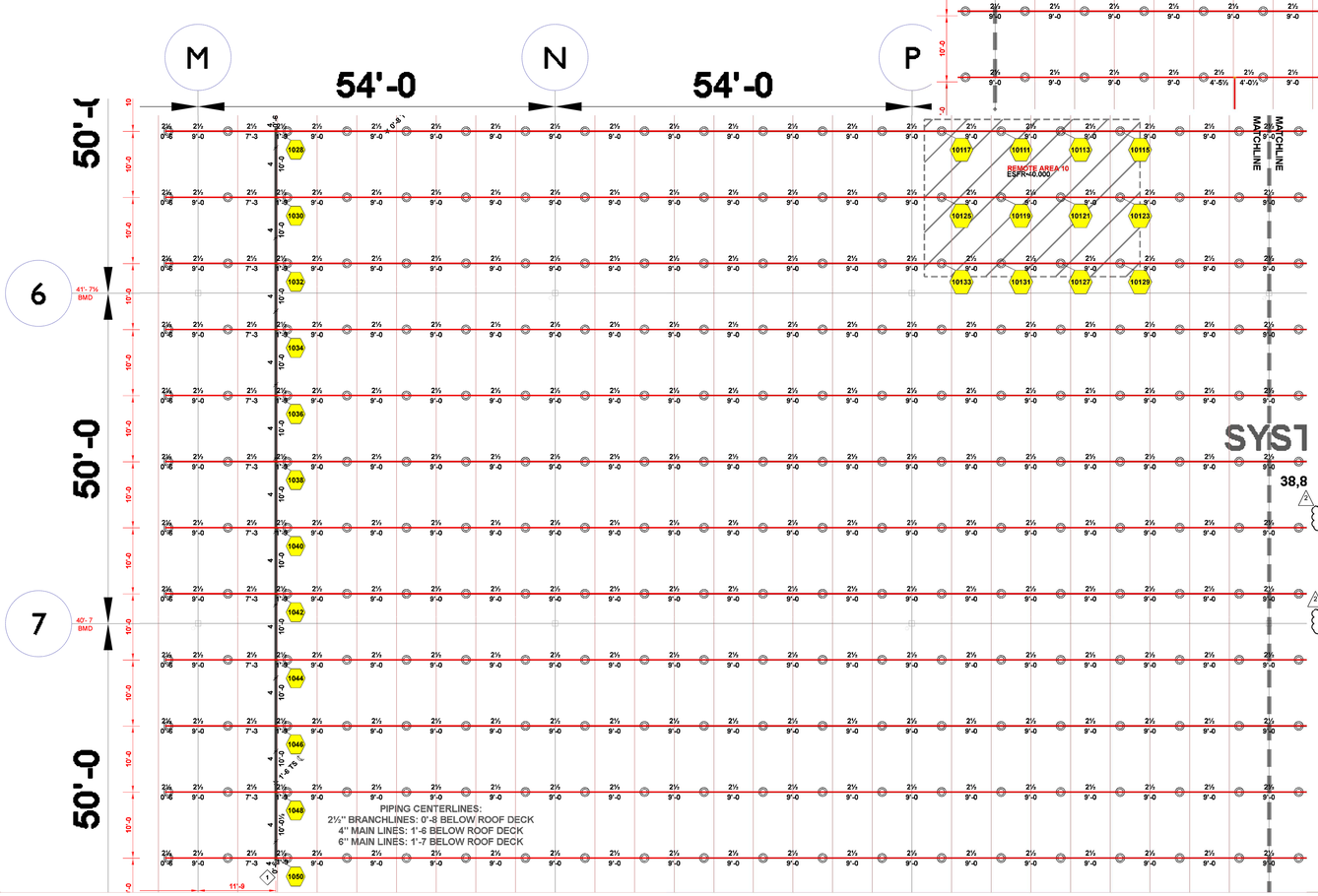
SYSTEM 09 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

◇ - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

◇ - AIR VENT SEE FP0.0 FOR DETAIL





SYSTEM 10 FP LAYOUT

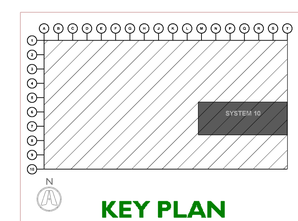
SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION

REMOTE AREA 10	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	40.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	22.4
TOTAL WATER REQUIRED	1958.59
TOTAL PRESSURE REQUIRED	79.736
BASE OF RISER (GPM)	1958.59
BASE OF RISER (PSI)	79.736
SAFETY MARGIN (PSI)	+7.744 (8.9%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI — MICHELLE A. LOPEZ — NUMBER PE-2022007904 — PROFESSIONAL ENGINEER — 03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANFP.COM

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

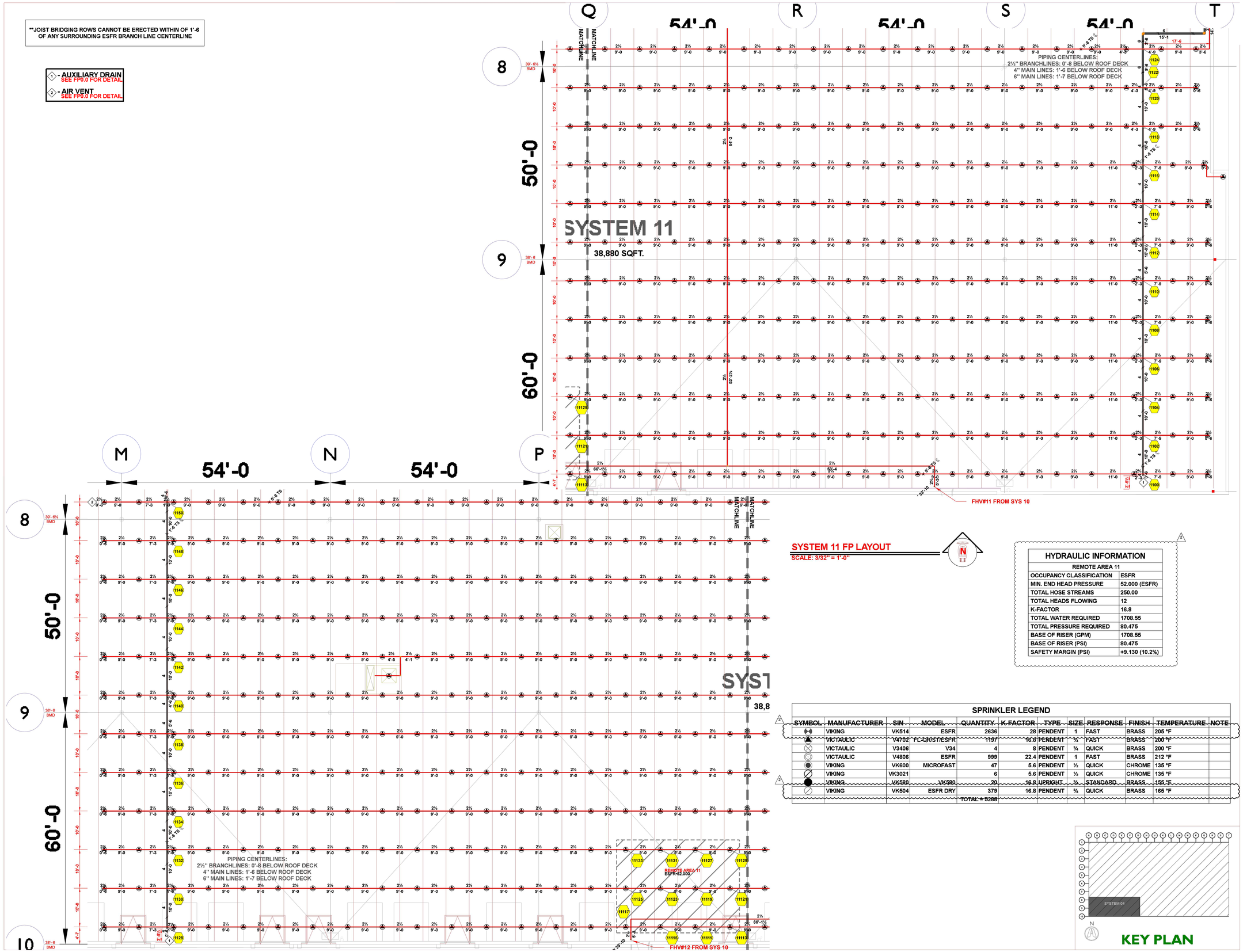
FP2.10

SYSTEM 10 FP LAYOUT

**JOIST BRIDGING ROWS CANNOT BE ERECTED WITHIN OF 1'-6 OF ANY SURROUNDING ESFR BRANCH LINE CENTERLINE

◇ - AUXILIARY DRAIN SEE FP0.0 FOR DETAIL

◇ - AIR VENT SEE FP0.0 FOR DETAIL



SYSTEM 11 FP LAYOUT

SCALE: 3/32" = 1'-0"

HYDRAULIC INFORMATION

REMOTE AREA 11	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.8
TOTAL WATER REQUIRED	1708.55
TOTAL PRESSURE REQUIRED	80.475
BASE OF RISER (GPM)	1708.55
BASE OF RISER (PSI)	80.475
SAFETY MARGIN (PSI)	+9.130 (10.2%)

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3408	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORANINC.COM

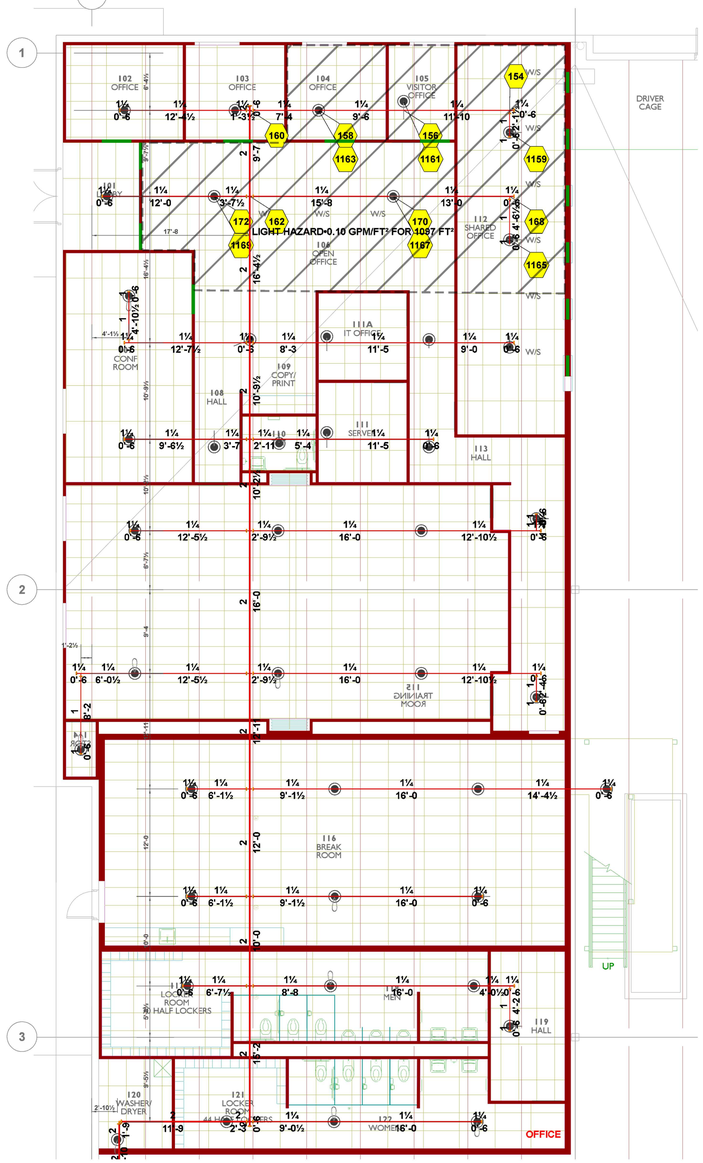
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.11

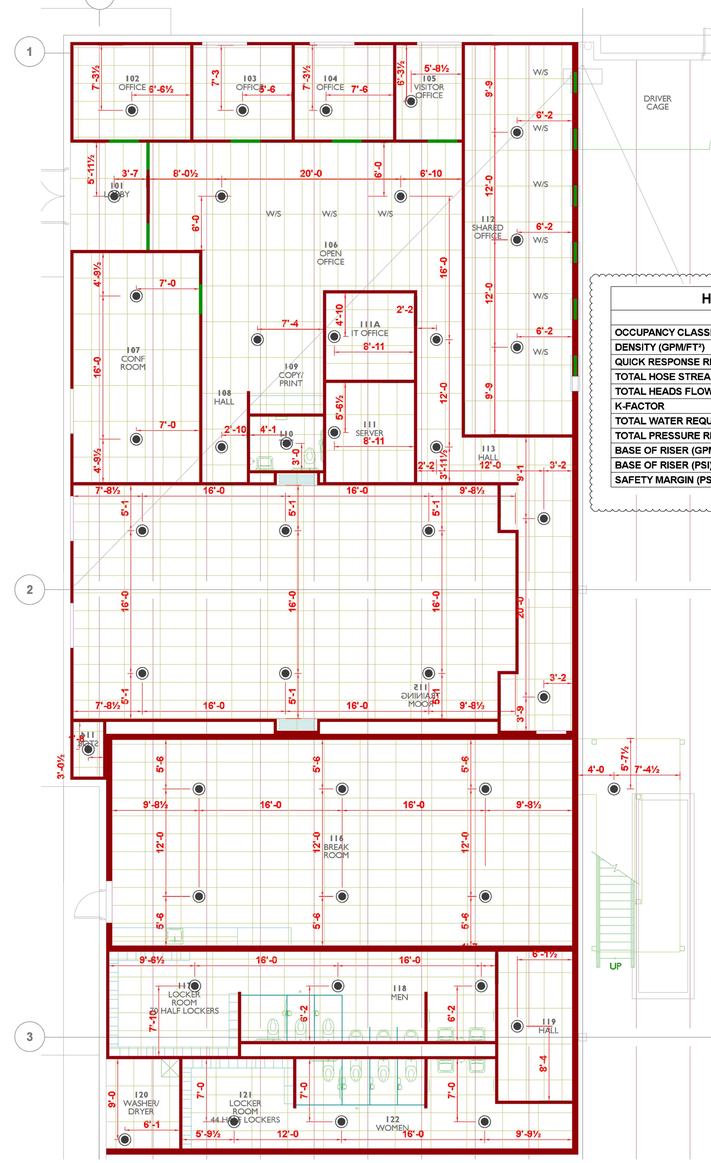
SYSTEM 11 FP LAYOUT



OFFICE PIPING LAYOUT

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

**ACT ELEVATIONS: 9'-8 AFF
**PIPING CENTERLINES: 10'-8 AFF

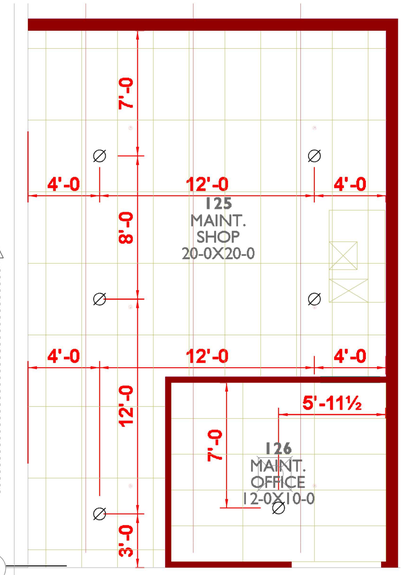


OFFICE SPRINKLER REFLECTED CEILING PLAN

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

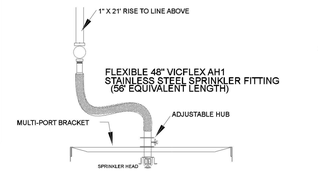
HYDRAULIC INFORMATION

REMOTE AREA OFFICE	
OCCUPANCY CLASSIFICATION	LIGHT HAZARD
DENSITY (GPM/FT²)	0.10 FOR 1500 FT² (ACTUAL 1097 FT²)
QUICK RESPONSE REDUCTION	9'-8 CEILING (40.0%) 900 FT²
TOTAL HOSE STREAMS	100.00
TOTAL HEADS FLOWING	6
K-FACTOR	5.6
TOTAL WATER REQUIRED	347.11
TOTAL PRESSURE REQUIRED	84.542
BASE OF RISER (GPM)	347.11
BASE OF RISER (PSI)	84.542
SAFETY MARGIN (PSI)	+12.070 (12.5%)



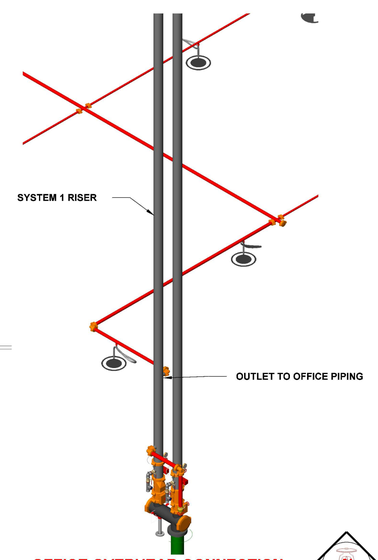
MAINT. SHOP SPRINKLER LAYOUT

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



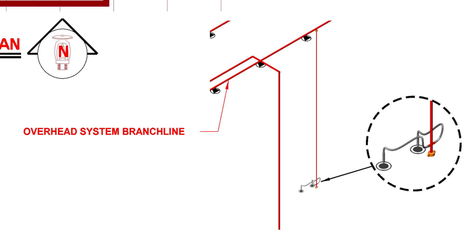
FLEXIBLE SPRINKLER DROP DETAIL

N.T.S.



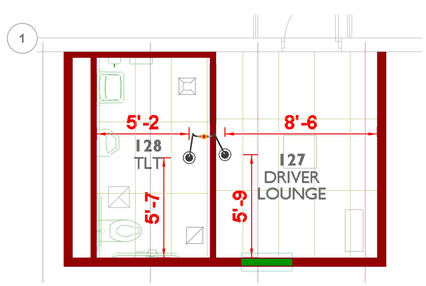
OFFICE OVERHEAD CONNECTION

N.T.S.



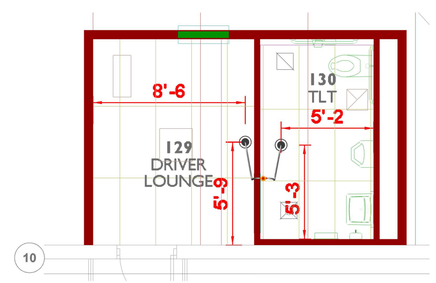
LOUNGE 1&2 OVERHEAD CONNECTION

N.T.S.



DRIVERS LOUNGE 1 REFLECTED CEILING PLAN

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

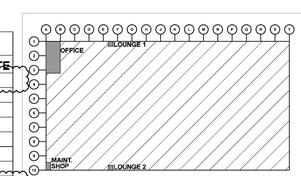


DRIVERS LOUNGE 2 REFLECTED CEILING PLAN

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

SPRINKLER LEGEND

SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI — MICHELLE A. LOPEZ — NUMBER PE-2022007904 — PROFESSIONAL ENGINEER — 03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION

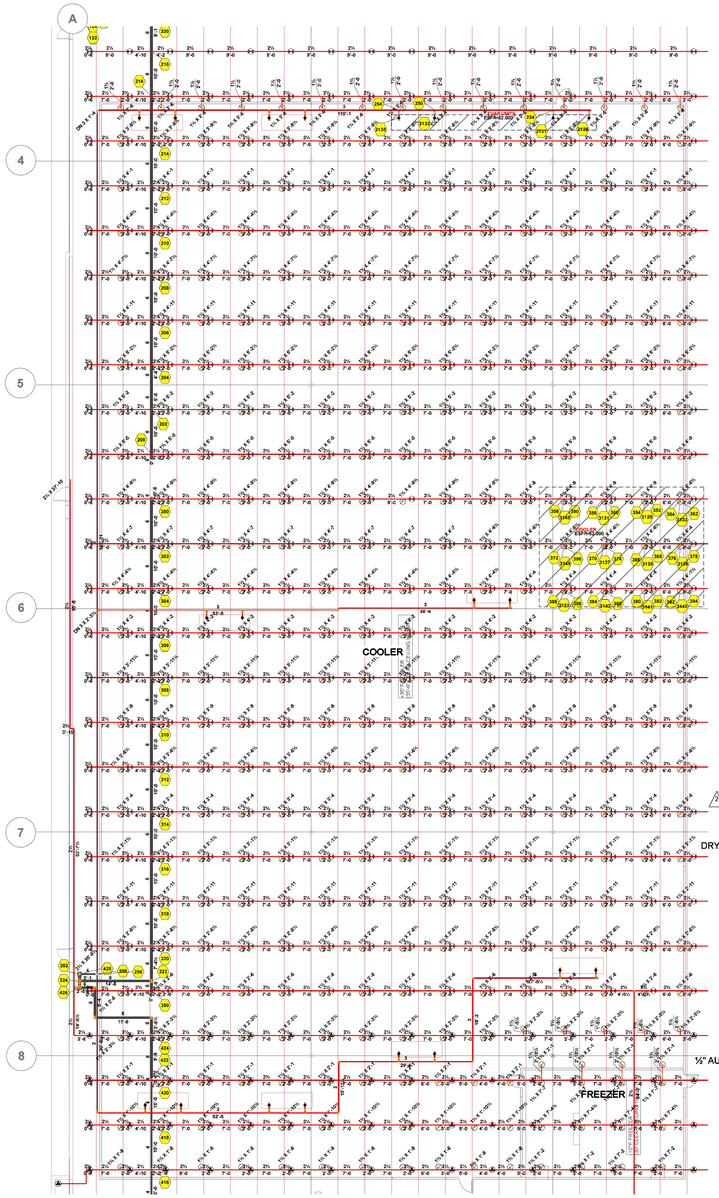
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.12

TENANT IMPROVEMENT OFFICE PLAN

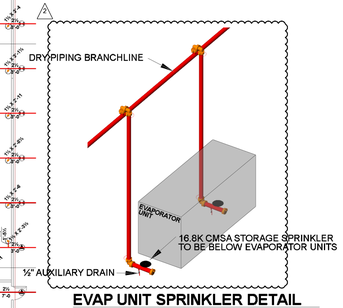


COOLER/FREEZER OVERHAD LAYOUT

SCALE: 1/16" = 1'-0"

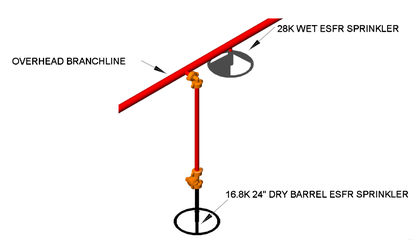
HYDRAULIC INFORMATION	
REMOTE AREA COOLER	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.8
TOTAL WATER REQUIRED	1709.86
TOTAL PRESSURE REQUIRED	79.496
BASE OF RISER (GPM)	1709.86
BASE OF RISER (PSI)	79.496
SAFETY MARGIN (PSI)	+10.099 (11.3%)

HYDRAULIC INFORMATION	
REMOTE AREA EVAP UNIT	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
DRY CAPACITY	376.49 GAL
TOTAL HEADS FLOWING	4
K-FACTOR	16.8
TOTAL WATER REQUIRED	741.02
TOTAL PRESSURE REQUIRED	85.905
BASE OF RISER (GPM)	741.02
BASE OF RISER (PSI)	85.905
SAFETY MARGIN (PSI)	+9.519 (10.0%)



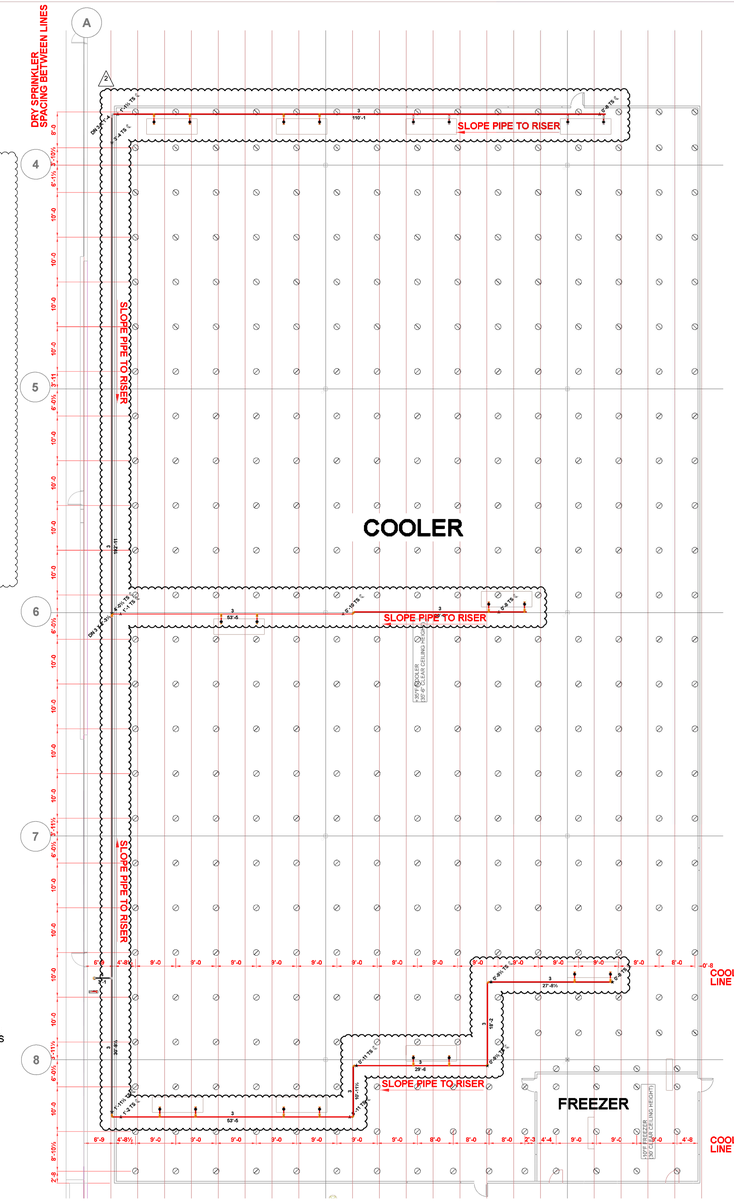
EVAP UNIT SPRINKLER DETAIL

N.T.S.



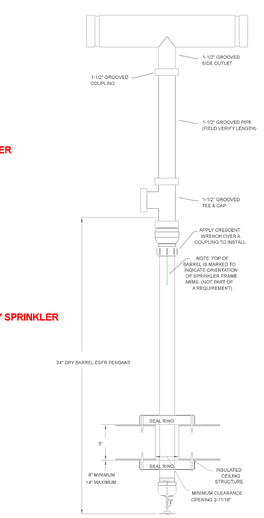
DRY BARREL OVERHEAD CONNECTION

N.T.S.



COOLER/FREEZER LAYOUT

SCALE: 1/16" = 1'-0"

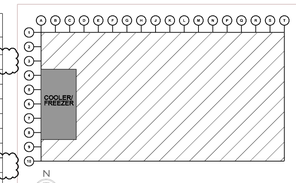


DRY BARREL SPRINKLER DETAIL

N.T.S.

SPRINKLER LEGEND											
SYMBOL	MANUFACTURER	SIN	MODEL	QUANTITY	K-FACTOR	TYPE	SIZE	RESPONSE	FINISH	TEMPERATURE	NOTE
	VIKING	VK514	ESFR	2636	28	PENDENT	1	FAST	BRASS	205 °F	
	VICTAULIC	V4702	FL-QR/ST/ESFR	1197	16.8	PENDENT	¾	FAST	BRASS	200 °F	
	VICTAULIC	V3406	V34	4	8	PENDENT	¾	QUICK	BRASS	200 °F	
	VICTAULIC	V4806	ESFR	999	22.4	PENDENT	1	FAST	BRASS	212 °F	
	VIKING	VK600	MICROFAST	47	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK3021		6	5.6	PENDENT	½	QUICK	CHROME	135 °F	
	VIKING	VK580	VK580	20	16.8	UPRIGHT	¾	STANDARD	BRASS	155 °F	
	VIKING	VK504	ESFR DRY	379	16.8	PENDENT	¾	QUICK	BRASS	165 °F	
				TOTAL = 5288							

**COOLER CEILING ELEVATION: 36'-6 AFF
**COOLER CEILING THICKNESS: 0'-5
**BRANCHLINE CENTERLINES: 0'-8 BELOW DECK



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
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SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER
PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1

1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORAN-INC.COM

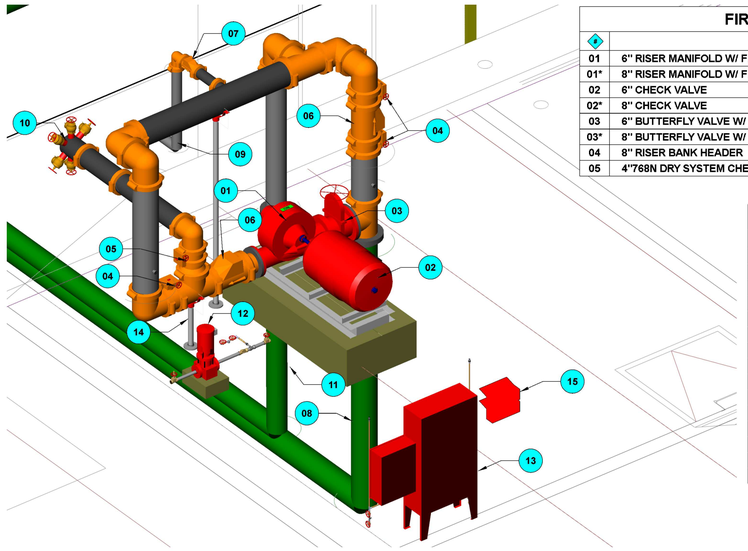
ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP2.13

TENANT IMPROVEMENT COOLER PLAN



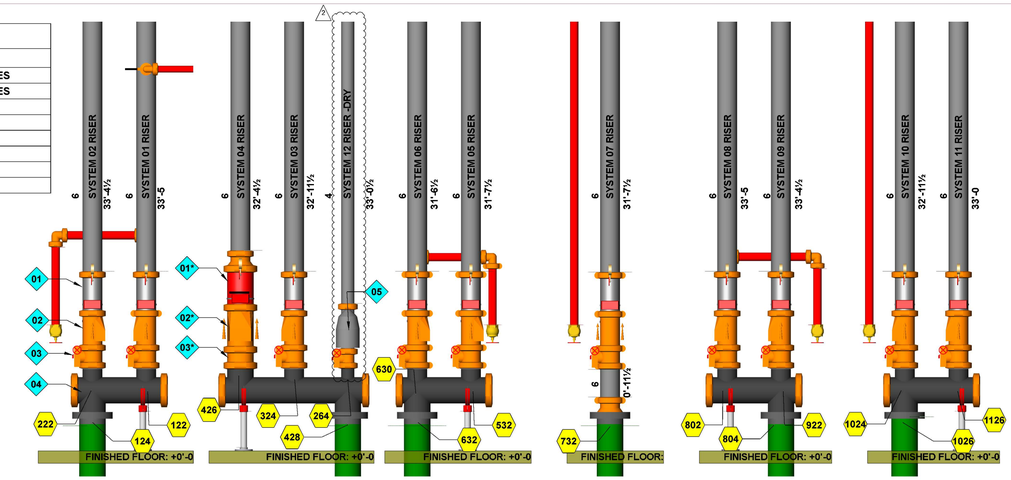
PUMP ROOM (3D VIEW)
SCALE: 3/32" = 1'-0"

FIRE PUMP RISER BANK MATERIAL LIST

#	MATERIAL CALL OUT
01	6" RISER MANIFOLD W/ FLOW SWITCH, INSP. TEST AND 2" MAIN DRAIN, & PRESSURE RELIEF VALVES
01*	8" RISER MANIFOLD W/ FLOW SWITCH, INSP. TEST AND 2" MAIN DRAIN, & PRESSURE RELIEF VALVES
02	6" CHECK VALVE
02*	8" CHECK VALVE
03	6" BUTTERFLY VALVE W/ TAMPER (NORMALLY OPEN)
03*	8" BUTTERFLY VALVE W/ TAMPER (NORMALLY OPEN)
04	8" RISER BANK HEADER
05	4"768N DRY SYSTEM CHECK VALVE W/ AIR MAINTENANCE DEVICE

FIRE PUMP ROOM MATERIAL LIST

#	MATERIAL CALL OUT
01	2000 GPM @ 60 PSI 10X8 FIRE PUMP
02	SPP 100 HP ELECTRIC MOTOR
03	10" FLG OS&Y GATE VALVE W/ TAMPER (NORMALLY OPEN)
04	10" BUTTERFLY VALVE W/ TAMPER (NORMALLY OPEN)
05	8" BUTTERFLY VALVE W/ TAMPER (NORMALLY CLOSED)
06	10" CHECK VALVE
07	4" CHECK VALVE
08	10" UNDERGROUND SUPPLY PIPING
09	4" FDC PIPING W/ STORZ TYPE CONNECTION
10	8X2½(6) TEST HEADER
11	10" WATER DISCHARGE PIPING TO FIRE LOOP
12	2 HP JOCKEY PUMP ASSEMBLY (15 GPM @ 104 PSI)
13	ELECTRIC & JOCKEY PUMP CONTROLLERS
14	10" PIPE STAND
15	SPARE HEAD BOXES



RISER BANK 1
SCALE: 1/2" = 1'-0"

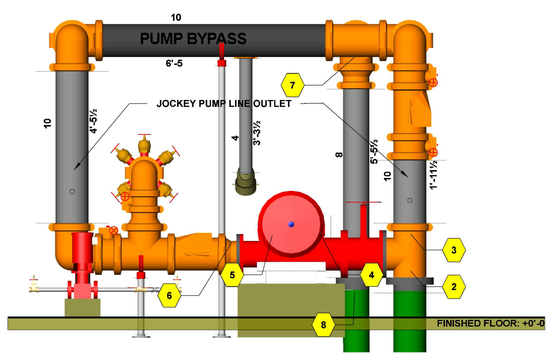
RISER BANK 2
SCALE: 1/2" = 1'-0"

RISER BANK 3
SCALE: 1/2" = 1'-0"

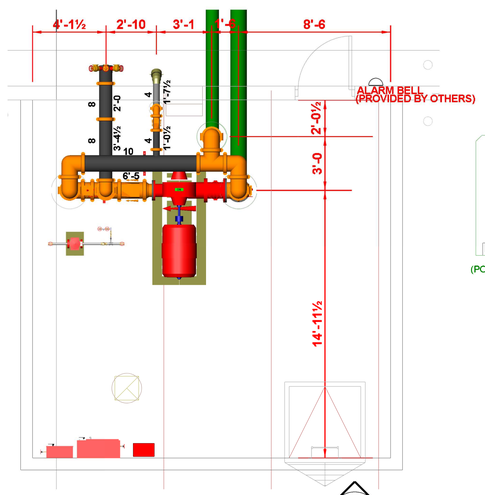
RISER BANK 4
SCALE: 1/2" = 1'-0"

RISER BANK 5
SCALE: 1/2" = 1'-0"

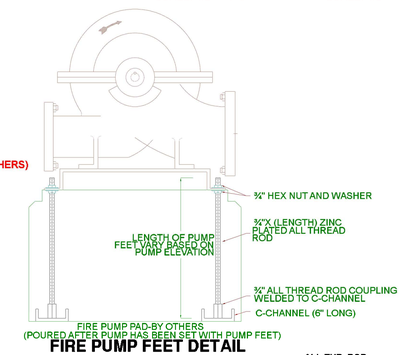
RISER BANK 6
SCALE: 1/2" = 1'-0"



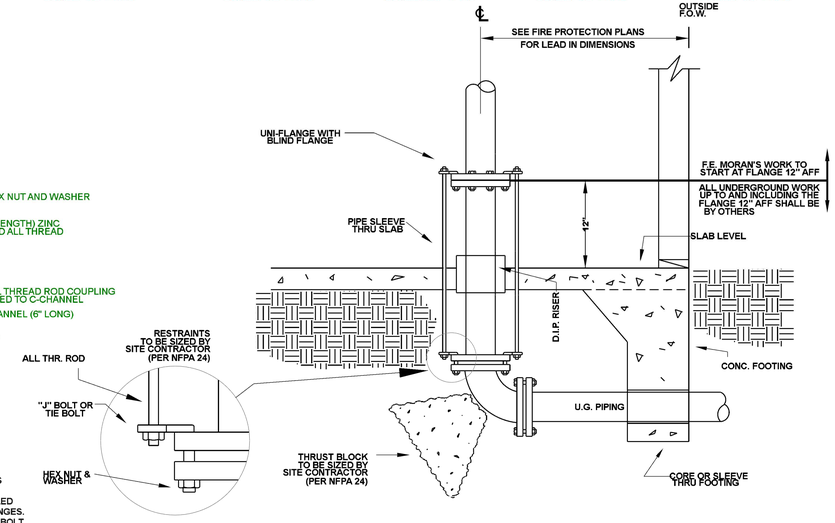
FIRE PUMP (SECTION B-B)
SCALE: 1/2" = 1'-0"



PUMP ROOM (PLAN VIEW)
SCALE: 1/4" = 1'-0"

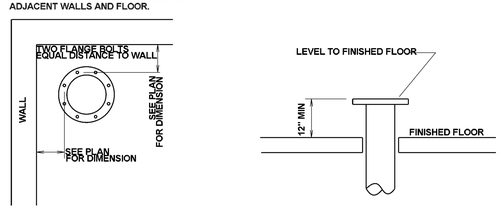


FIRE PUMP FEET DETAIL

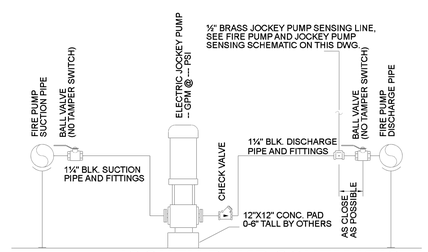


TYPICAL UNDERGROUND LEAD-IN

NOTE: ALL FIRE PROTECTION PIPING STUB-UPS WHETHER INSIDE OR OUTSIDE A BUILDING (INCLUDING PUMP ROOMS), SHALL BE INSTALLED UTILIZING THE "2-HOLE METHOD" ON ALL FLANGES. THE FLANGE SHALL BE INSTALLED WITH THE BOLT HOLES ALIGNED SO THAT FITTING, VALVES, AND EQUIPMENT ARE IN A SQUARE ALIGNMENT WITH ADJACENT WALLS AND FLOOR.



INCOMING FIRE PROTECTION SUPPLY DETAIL
NOT TO SCALE



JOCKEY PUMP SCHEMATIC
NO SCALE

FIRE PUMP NOTES:
-IN ADDITION TO THE FOLLOWING NOTES, ALL WORK AND MATERIAL SHALL CONFORM TO NFPA 13 AND NFPA 20, AS APPLICABLE

NFPA 20 REQUIREMENTS:

EQUIPMENT PROTECTION:
SUITABLE MEANS SHALL BE PROVIDED FOR MAINTAINING THE TEMPERATURE OF A PUMP ROOM OR PUMP HOUSE, WHERE REQUIRED, ABOVE 40 DEG F. ARTIFICIAL LIGHT SHALL BE PROVIDED IN THE PUMP ROOM OR PUMP HOUSE. EMERGENCY LIGHTING SHALL BE PROVIDED BY FIXED OR PORTABLE BATTERY OPERATED LIGHTS, INCLUDING FLASHLIGHTS. EMERGENCY LIGHTS SHALL NOT BE CONNECTED TO AN ENGINE STARTING BATTERY. PROVISION SHALL BE MADE FOR VENTILATION OF THE PUMP ROOM OR PUMP HOUSE. FLOORS SHALL BE PITCHED FOR ADEQUATE DRAINAGE OF ESCAPING WATER AWAY FROM CRITICAL EQUIPMENT SUCH AS THE PUMP, DRIVER, CONTROLLER, ECT. THE PUMP ROOM OR PUMP HOUSE SHALL BE PROVIDED WITH A FLOOR DRAIN THAT WILL DISCHARGE TO A FROST-FREE LOCATION.

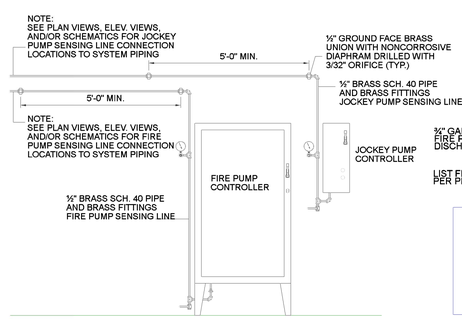
PIPE AND FITTINGS:
WHERE CORROSIVE CONDITIONS EXIST, THE STEEL SUCTION PIPE SHALL BE GALVANIZED. ALL PROVISIONS FOR WELDED PIPE SHALL BE IN ACCORDANCE WITH NFPA 51B, STANDARD FOR FIRE PREVENTION DURING WELDING, CUTTING, AND OTHER HOT WORK.

SUCTION PIPE AND FITTINGS:
THE SUCTION PIPE SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH NFPA. A BY-PASS SHALL BE INSTALLED AROUND THE PUMP WHEN THE SUCTION PRESSURE IS OF MATERIAL VALUE WITHOUT THE PUMP. THE PIPE SIZE OF THE BY-PASS SHALL BE AS LARGE AS THE SIZE REQUIRED FOR SUCTION PIPE IN NFPA 20. THE BY-PASS CONTROL VALVES SHALL BE NORMALLY OPEN

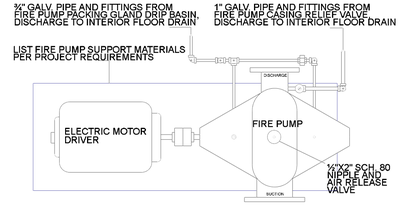
DISCHARGE PIPE:
SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH NFPA 13. THE SIZE OF THE PUMP DISCHARGE PIPE AND FITTINGS SHALL BE NOT LESS THAN THAT GIVEN IN NFPA 20.

ELECTRIC DRIVE FOR PUMPS:
ALL ELECTRICAL WORK TO SUPPLY POWER TO THE FIRE PUMP SHALL BE IN ACCORDANCE WITH CHAPTER 6 OF NFPA 20. ELECTRICAL WORK SHALL COMPLY WITH NFPA 70, ARTICLE 695 AND OTHER APPLICABLE ARTICLES. THE FIRE PUMP FEEDER CIRCUIT CONDUCTORS AND THEIR ACCESSORIES SHALL BE DEDICATED AND PROTECTED TO RESIST POSSIBLE DAMAGE BY FIRE, STRUCTURAL FAILURE, OR OPERATIONAL ACCIDENT. THE SUPPLY CONDUCTORS DIRECTLY CONNECT THE POWER SOURCE TO THE LISTED FIRE PUMP CONTROLLER.

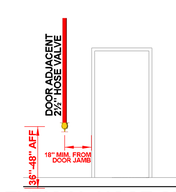
FIRE PUMP CONTROLLER:
SHALL BE WIRED FOR MANUAL SHUTDOWN. FIRE PUMP SHALL BE MONITORED FOR THE FOLLOWING CONDITIONS: FIRE PUMP OR MOTOR RUNNING, LOSS OF PHASE, PHASE REVERSAL.



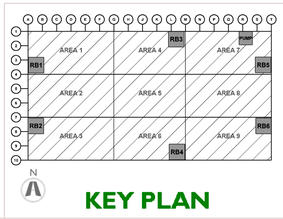
FIRE PUMP AND JOCKEY PUMP SENSING SCHEMATIC
NO SCALE



ELECTRIC FIRE PUMP SCHEMATIC
NO SCALE



TYPICAL HOSE STATION
N.T.S.



KEY PLAN

CURRAN ARCHITECTURE
5719 LAWTON LOOP E. DR. #212
INDIANAPOLIS, IN 46216
O :: 317 . 288 . 0681
F :: 317 . 288 . 0753

SCANNELL PROPERTIES

CERTIFICATION

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER PE-2022007904
PROFESSIONAL ENGINEER
03/15/2023

PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS BUILDING A LOT 1
1100 NW MAIN ST.
LEE'S SUMMIT, MO 64086

F.E. MORAN, INC.
FIRE PROTECTION
WWW.FEMORAN.COM

ISSUE DATES

	PERMIT SET	02.18.22
1	TENANT IMPROVEMENT	09.07.22
2	FM GLOBAL TENANT SPACE	02.22.23

210300

FP3.0

FIRE PUMP & RISER DETAIL