FIRE PROTECTION PLANS



F. E. Moran, Inc. Fire Protection 3001 Research Rd Champaign, IL 61822 (217) 356-0700

MISŚOURI COA: E-2022012018

SCOPE OF WORK

SCOPE OF WORK:

** FURNISH & INSTALL 7 NEW WET PIPE ESFR SPRINKLER SYSTEMS FOR THE NEW BUILDING.

** FURNISH & INSTALL A NEW 1500 GPM FIRE PUMP WITH ACCESSORIES ** POINT OF CONNECTION (START OF CONTRACT) IS AT AN 10" FLANGE, 12" ABOVE THE FINISHED FLOOR IN THE FIRE PUMP ROOM. ** TRAPEZE HANGERS FOR ALL 8" AND LARGER PIPES HANGING PARALLEL WITH THE BAR JOIST. ** INSTALL CLASS I. MAN-DOOR ADJACENT, HOSE CONNECTIONS

- NOT INCLUDED:
- ** WIRING OF ELECTRICAL DEVICES ** ELECTRICAL WIRING BETWEEN FIRE PUMP AND CONTROLLER
- ** FIRE EXTINGUISHERS
- ** STANDPIPES ** FIRE PUMP CONTROLLER AUTO TRANSFER SWITCH
- ** ALL UNDERGROUND PIPING AND TESTING
- ** BACKFLOW PREVENTER (IN PIT BY OTHERS) ** COLUMN SPRINKLERS
- ** SEISMIC BRACING
- ** PAINTED PIPING
- ** CONCRETE PADS
- ** COMPONENT IDENTIFICATION BEYOND NFPA 13 REQUIREMENTS ** ACCESS PANELS
- ** CUTTING AND PATCHING ** PIPE SLEEVES & BOLLARDS

CODE INFORMATION

CODE INFORMATION:

**NFPA 13, 2016 EDITION: INSTALLATION OF SPRINKLER SYSTEMS **NFPA 20, 2016 EDITION: INSTALLATION OF CENTRIFUGAL FIRE PUMPS **INTERNATIONAL BUILDING & FIRE CODE, 2018 EDITION

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: 253,278 ft²

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

** 1"-8" HANGER RINGS ARE TO BE ADJUSTABLE SWIVEL RINGS, ZINC PLATED, MANUFACTURED TO ANSI/MSS SP-69 STANDARDS. ** HANGER ROD SIZES AND LOCATIONS ARE TO BE AS REQUIRED BY NFPA 13.

DRAWING INDEX

FP 0.0-GENERAL INFORMATION FP 0.1-DETAILS FP 1.0-HYDRAULIC SITE PLAN FP 2.0-OVERHEAD PIPING PLAN & SECTION VIEW FP 2.1-SYSTEM 1 WEST FP 2.2-SYSTEM 1 EAST FP 2.3-SYSTEM 2 WEST FP 2.4-SYSTEM 2 EAST FP 2.5-SYSTEMS 3-4 WEST FP 2.6-SYSTEMS 3-4 EAST FP 2.7-SYSTEM 5 FP 2.9-SYSTEM 6 WEST FP 2.10-SYSTEM 6 EAST FP 2.11-SYSTEM 7 WEST FP2.12-SYSTEM 7 EAST FP 3.0-FIRE PUMP DETAILS

WET SYSTEM PIPE & FITTINGS

WET-PIPE SPRINKLER SYSTEM BLACK PIPE:

**11/4 4" & SMALLER PIPING SHALL BE BLACK STEEL SCH. 7 PIPE, MANUFACTURED TO ASTM A795 STANDARDS.

** 6" & GREATER PIPING SHALL BE BLACK STEEL SCH. 10 PIPE, MANUFACTURED TO ASTM A135 STANDARDS.

**1" LINE PIPING SHALL BE BLACK STEEL SCH. 40

WET-PIPE SPRINKLER SYSTEM BLACK OUTLETS & FITTINGS:

** 1" BRANCH LINE FITTINGS SHALL BE BLACK DUCTILE IRON THREADED, CLASS 125 STANDARD, MANUFACTURED PER ANSI/ASME B16.4, U.L. LISTED FOR FIRE PROTECTION USE UP TO 175 PSI WORKING PRESSURE.

** 11/4"-3" BRANCH LINE FITTINGS SHALL BE BLACK DUCTILE IRON GROOVED, CLASS 150 STANDARD, MANUFACTURED PER ANSI/ASME B16.3, U.L. LISTED FOR FIRE PROTECTION USE UP TO 175 PSI WORKING PRESSURE.

** 11/4" - 3" BRANCH LINE PIPE OUTLETS TO BE WELDED MANUFACTURED TO ASTM A53 & ANSI B1.20.1 STANDARDS.

** 4"-8" MAIN PIPE BRANCH OUTLETS TO BE WELDED MANUFACTURED TO ASTM A53 & ANSI B1.20.1 STANDARDS. ** 4"-8" MAIN PIPE BRANCH OUTLETS TO BE DUCTILE IRON MECHANICAL MANUFACTURED

DESIGN CRITERIA - ESFR (16.8 k)

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

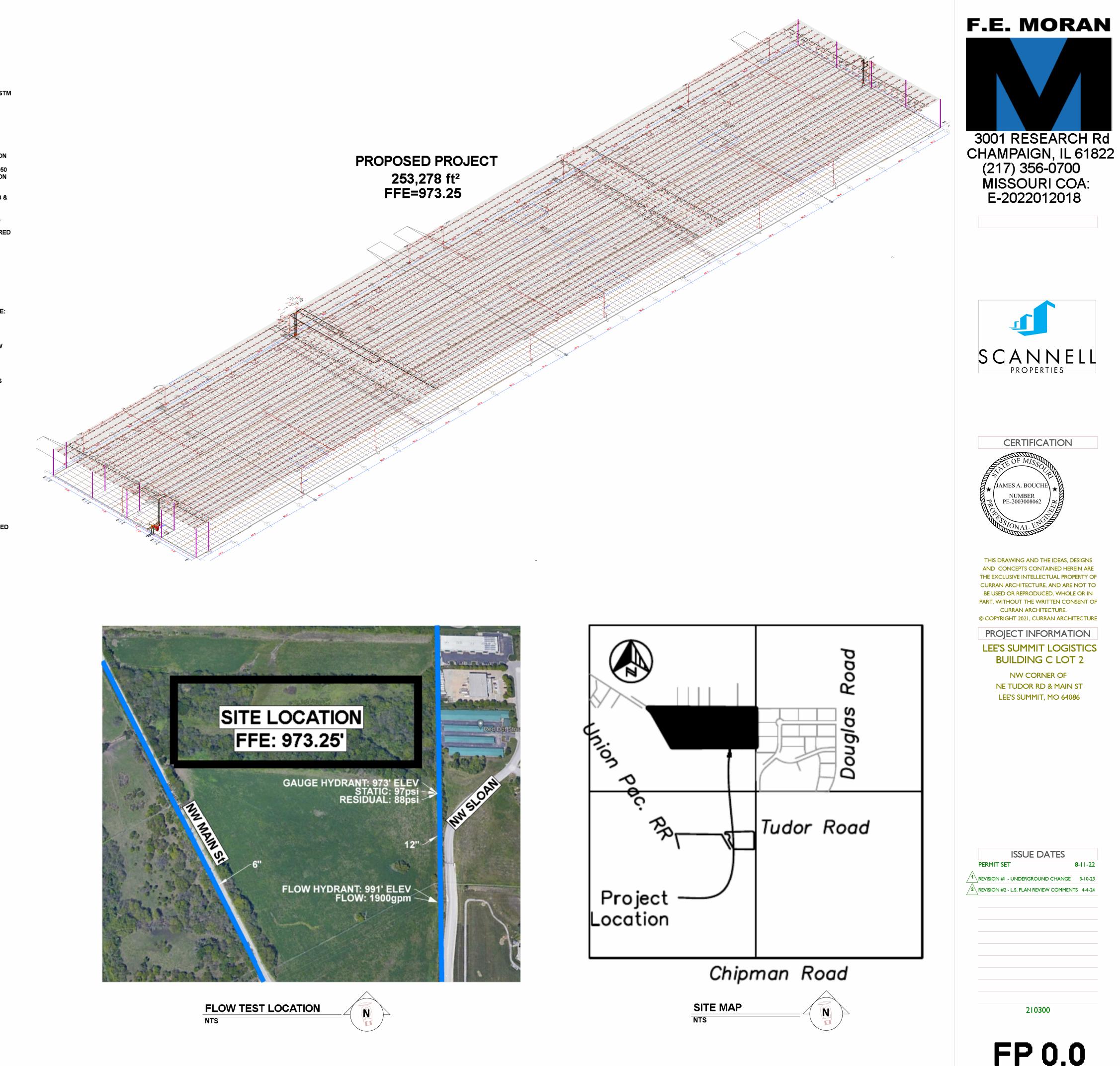
FROM NFPA 13, 2016 EDITION TABLE 16.3.3.1 & TABLE 17.3.3.1 COMMODITY CLASSIFICATION: CLASS I, II, III OR IV, ENCAPSULATED OR UNENCAPSULATED, NO OPEN TOP CONTAINERS STORAGE ARRANGEMENT: PALLETIZED/SOLID-PILE/SINGLE, DOUBLE & MULTIPLE ROW RACKS WITH NO SOLID SHELVING CONSTRUCTION TYPE: ALL TYPES MAXIMUM 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 ft² MINIMUM SPRINKLER SPACING: 8 FEET/64 ft² 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

SYSTEMS SHALL BE WET ONLY.

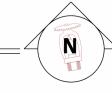
ROOF OR CEILING SLOPES SHALL NOT EXCEED A PITCH OF 2:12.

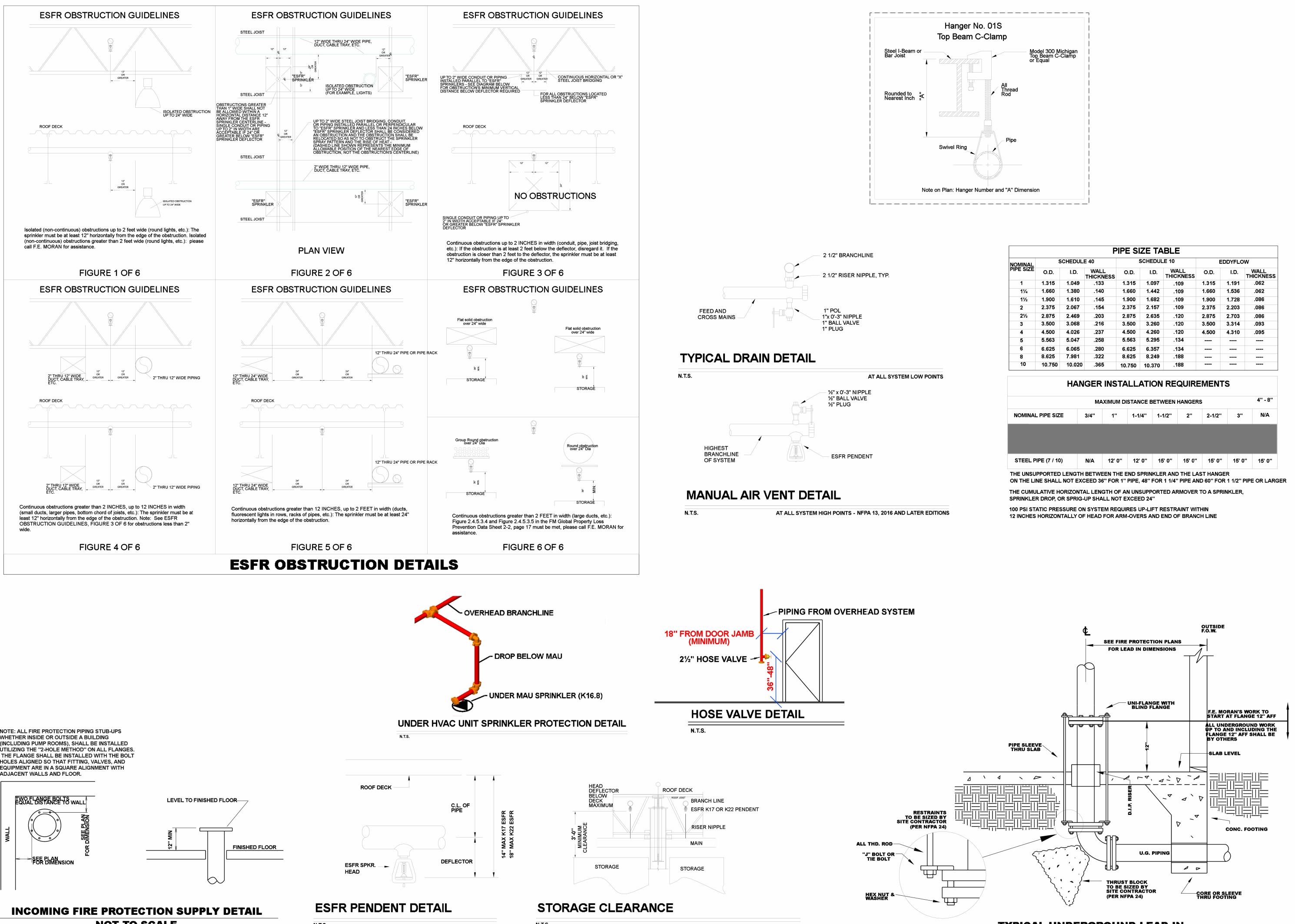
WHERE ROOF OR CEILING HEIGHTS ARE 30' OR LESS, ESFR SPRINKLERS MAY BE SPACED UP TO 12'.

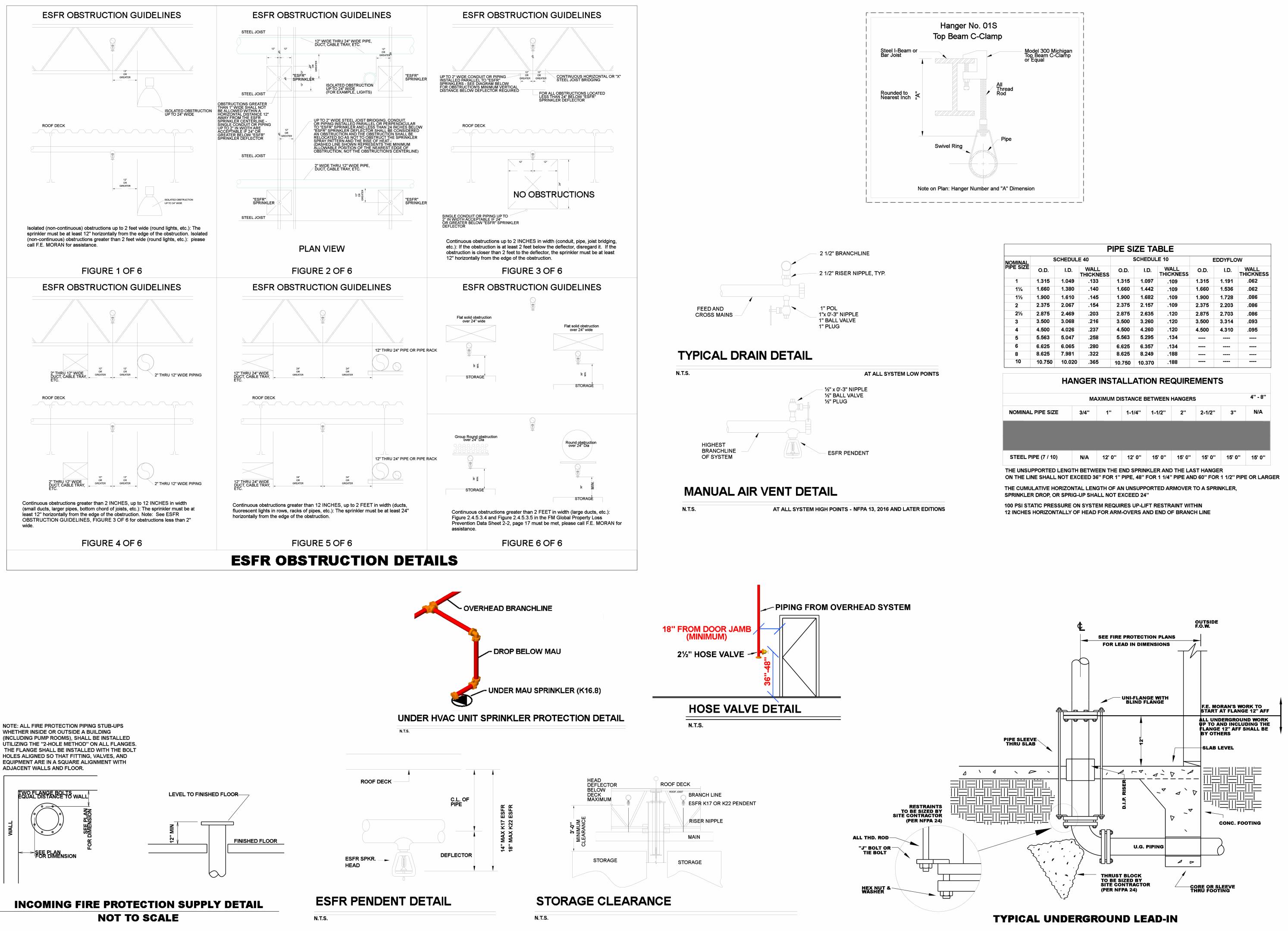
TOTAL SYSTEM SIZE SHALL NOT EXCEED 40,000 ft² COMBINED HIGH PILED/RACK STORAGE & LIGHT/ORDINARY HAZARD SYSTEMS MAY COVER UP TO 52,000 ft











PIPE SIZE TABLE										
NOMINAL	S	CHEDUL	E 40	SCHEDULE 10			EDDYFLOW			
PIPE SIZE	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	
11⁄2	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				

MAXIMUM DISTANCE BETWEEN HANGERS									
NOMINAL PIPE SIZE	3/4''	1''	1-1/4''	1-1/2''	2''	2-1/2''	3"	N/A	

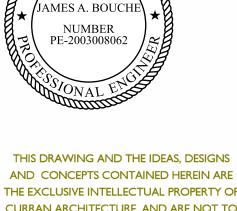


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PROJECT INFORMATION LEE'S SUMMIT LOGISTICS

BUILDING C LOT 2

NW CORNER OF

NE TUDOR RD & MAIN ST LEE'S SUMMIT, MO 64086

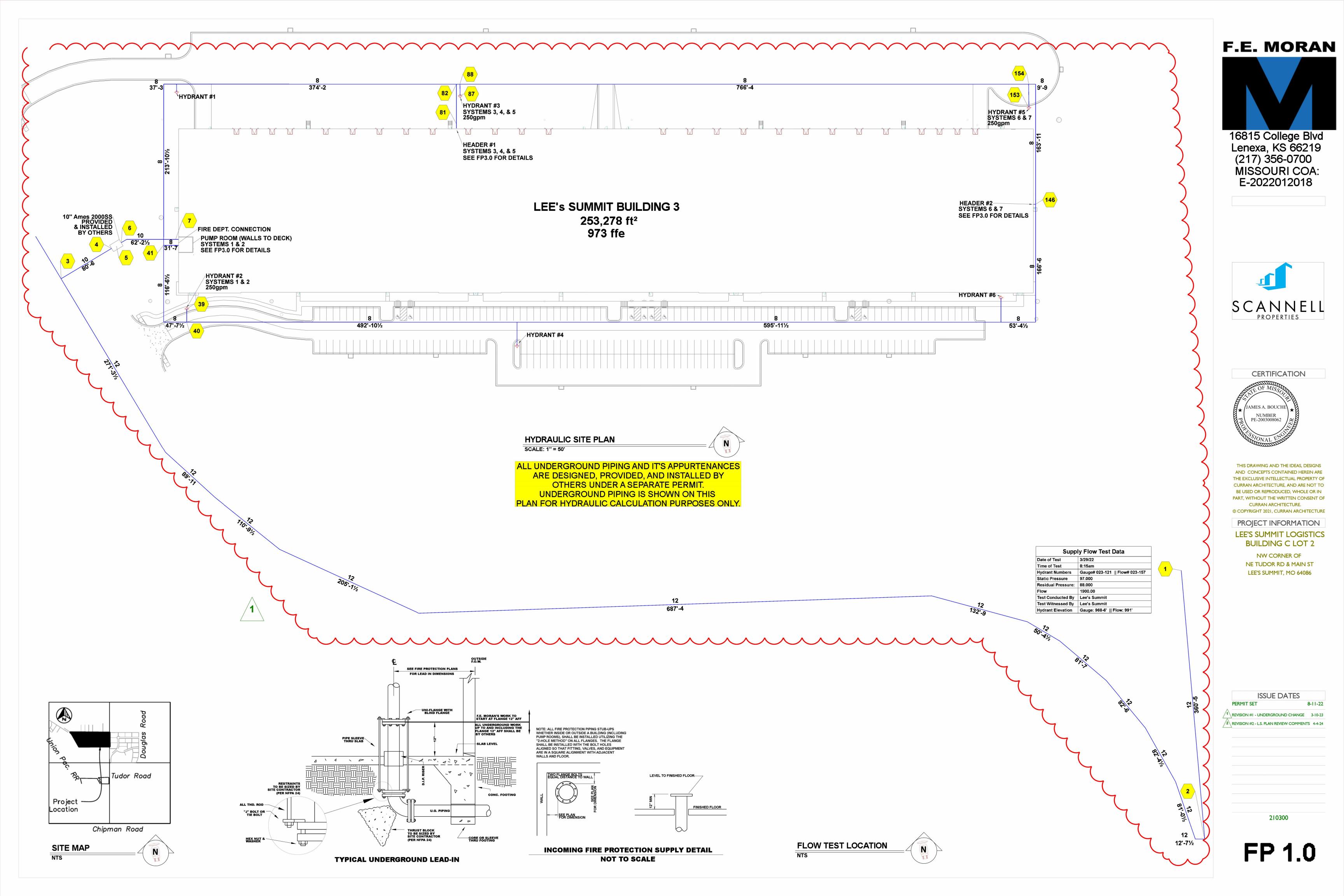
ISSUE DATES

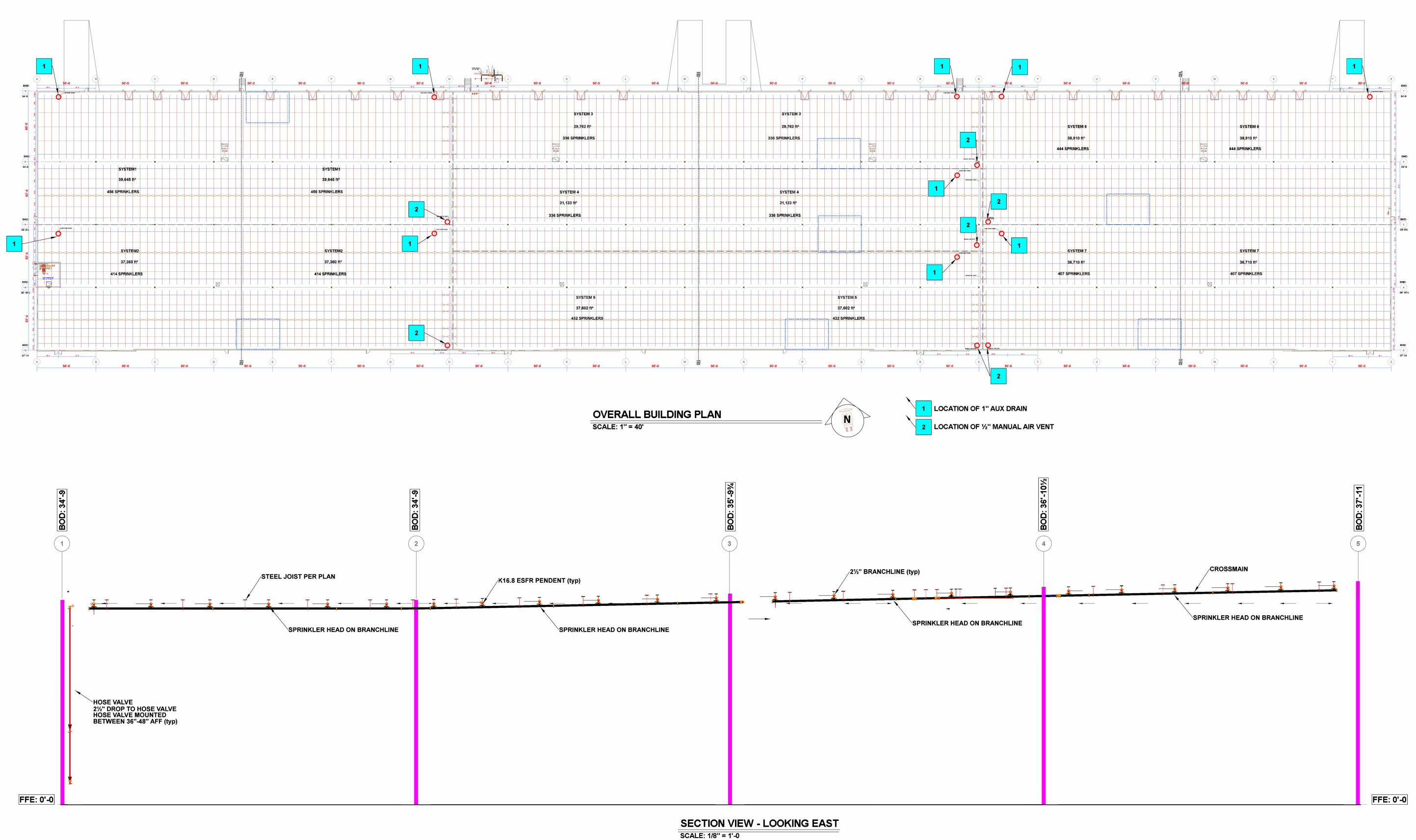
REVISION #1 - UNDERGROUND CHANGE 3-10-23

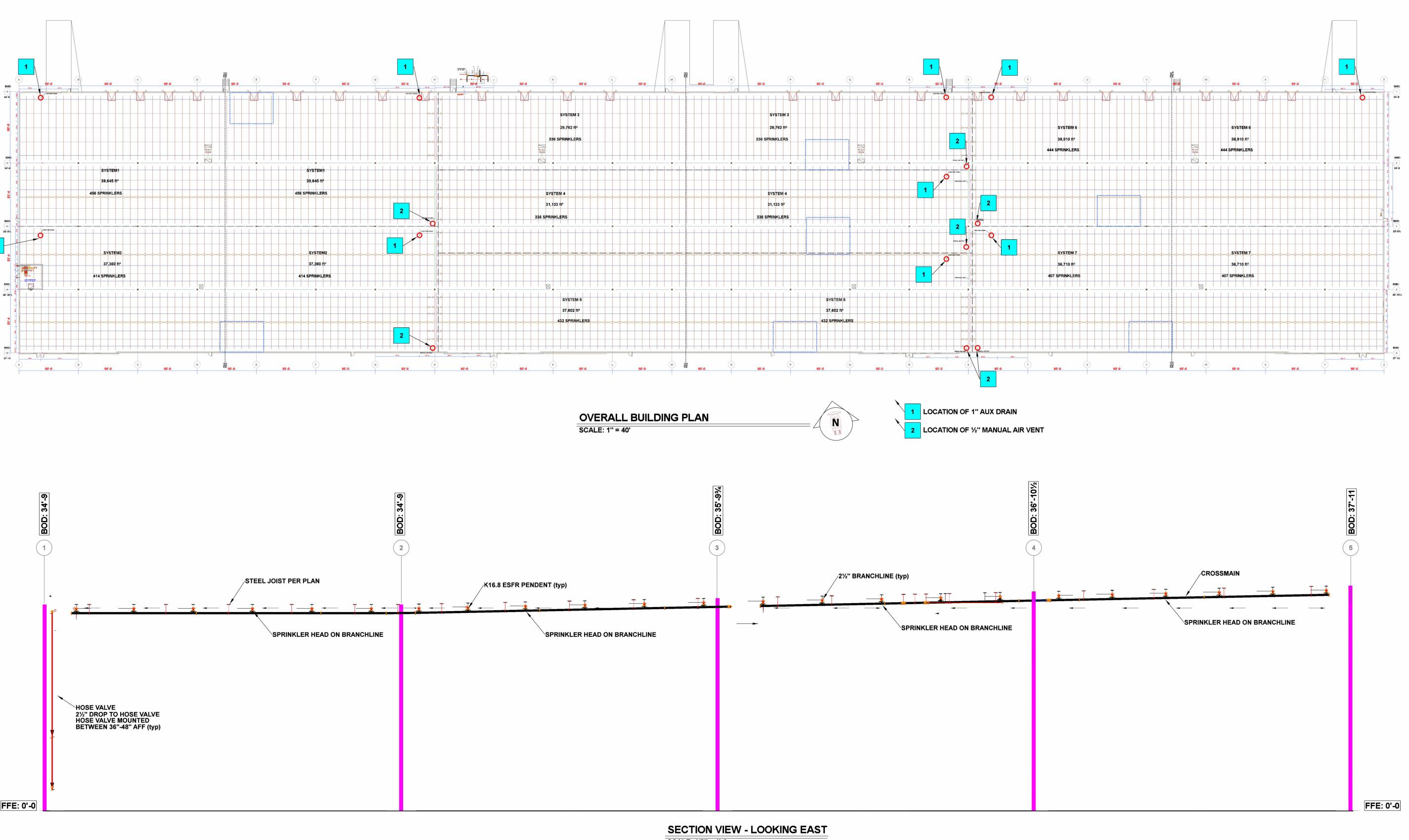
REVISION #2 - L.S. PLAN REVIEW COMMENTS 4-4-24

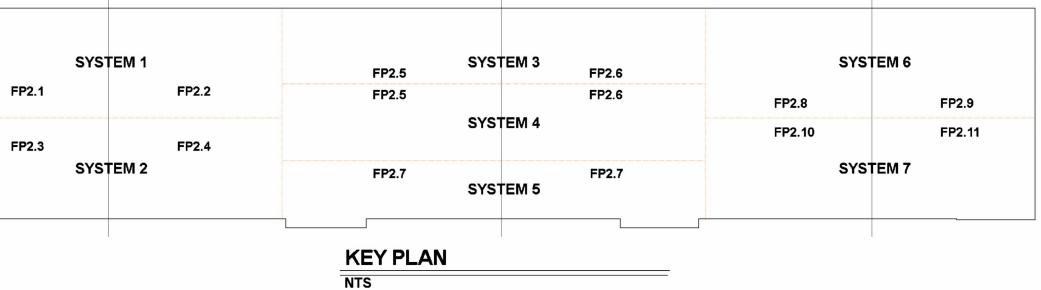
8-11-22

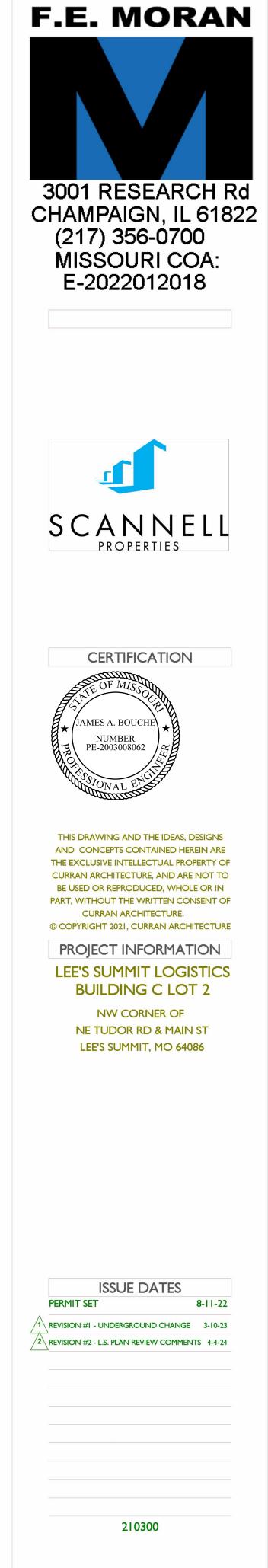
PERMIT SET



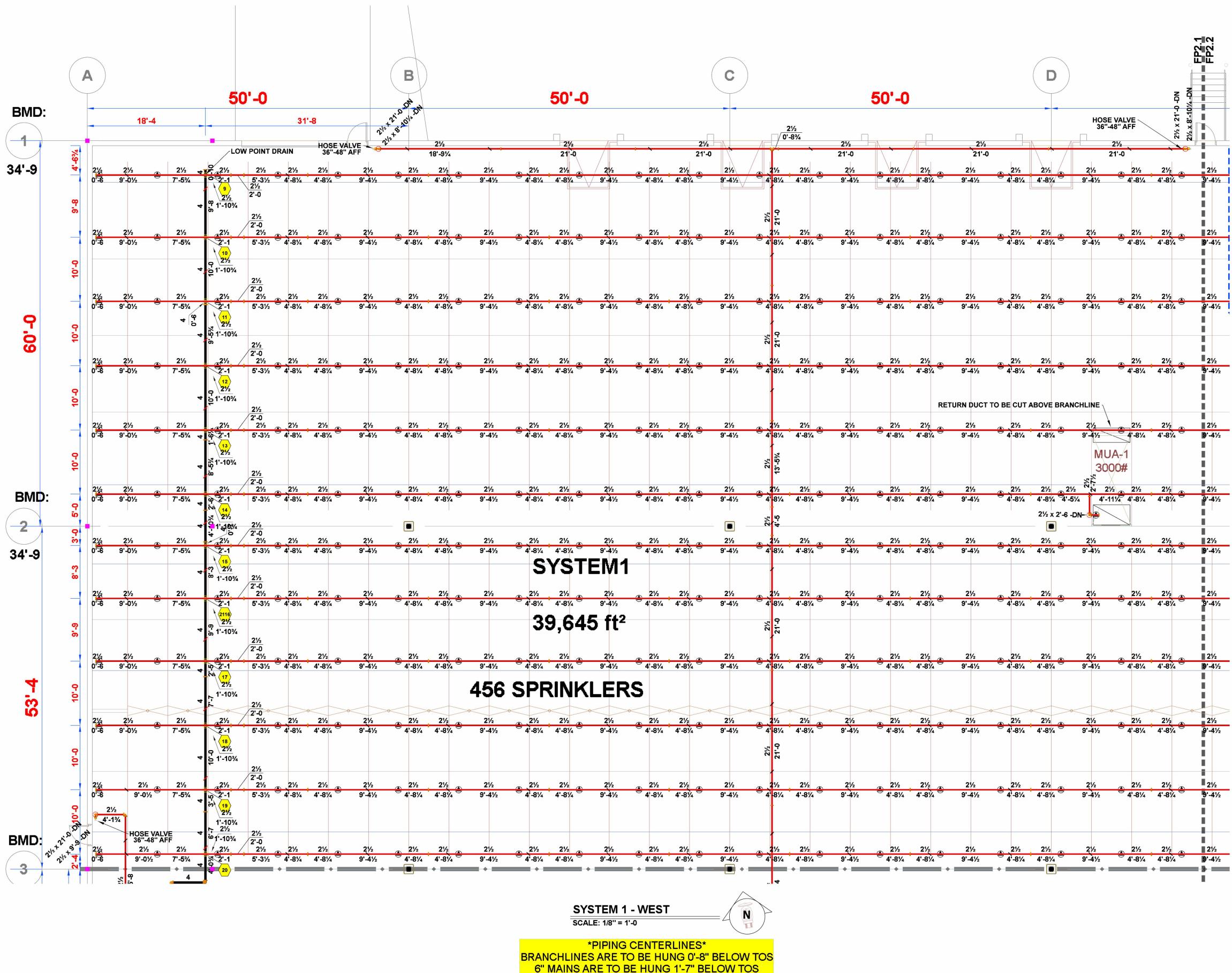






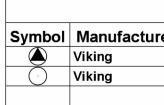




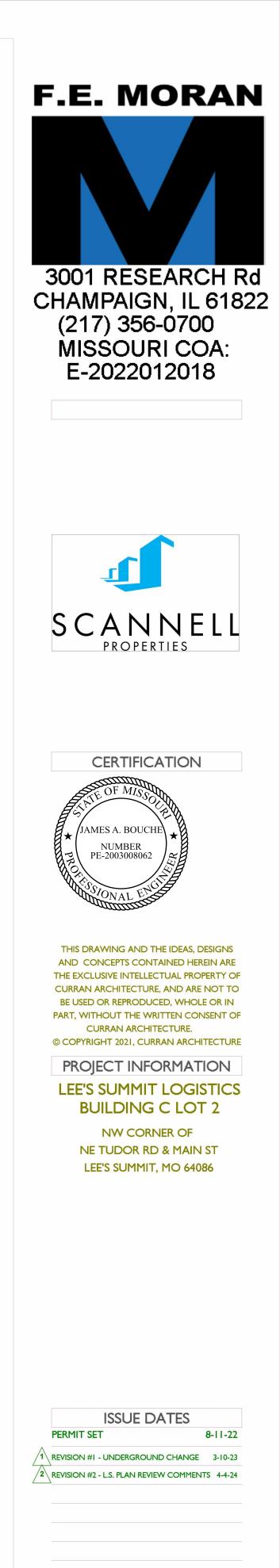


SYSTEM 1	SYSTEM 3 FP2.5 FP2.6	SYSTEM 6
FP2.1 FP2.2	FP2.5 FP2.6	FP2.8 FP2.9
FP2.3 FP2.4	SYSTEM 4	FP2.10 FP2.11
SYSTEM 2	FP2.7 FP2.7 SYSTEM 5	SYSTEM 7

4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

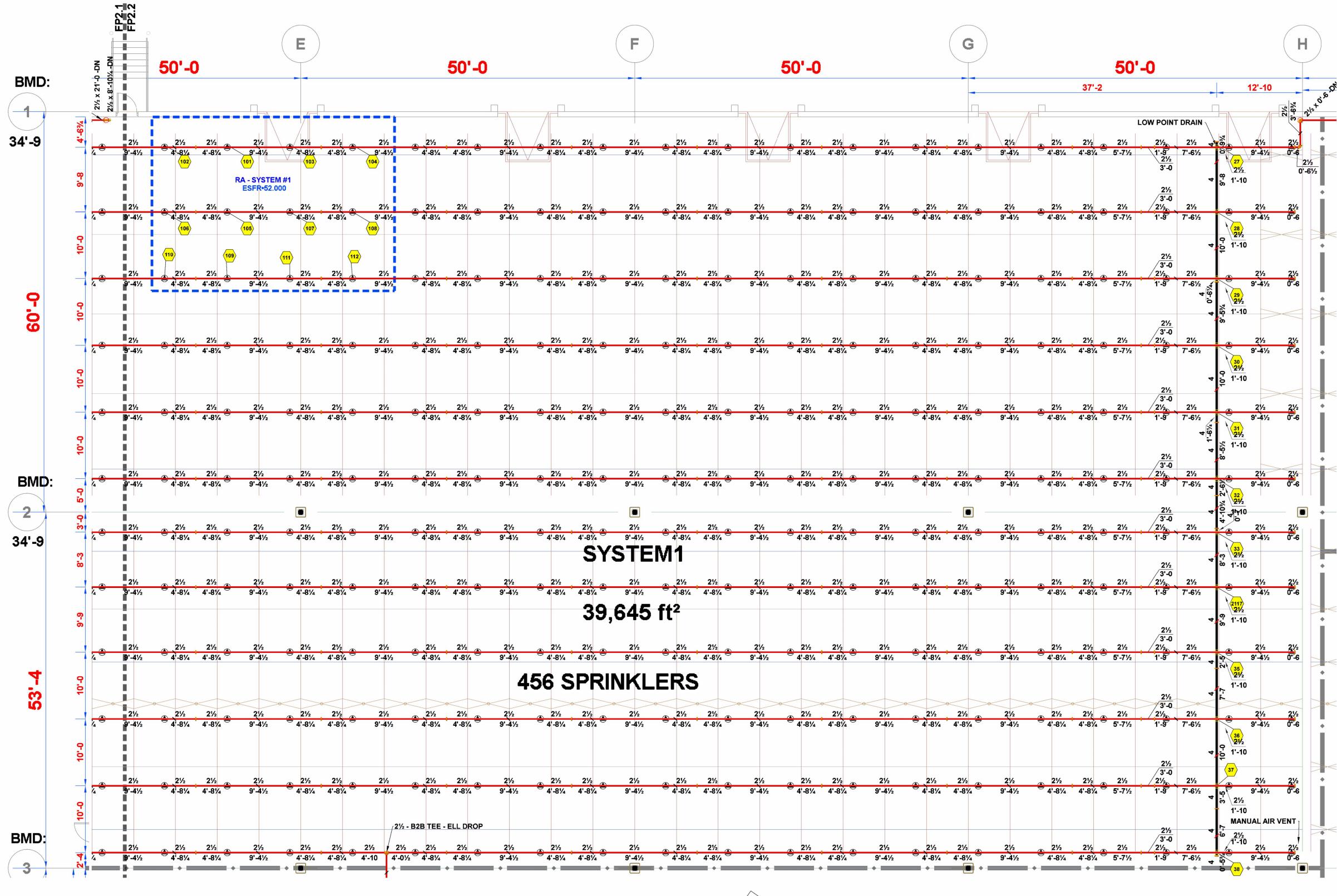


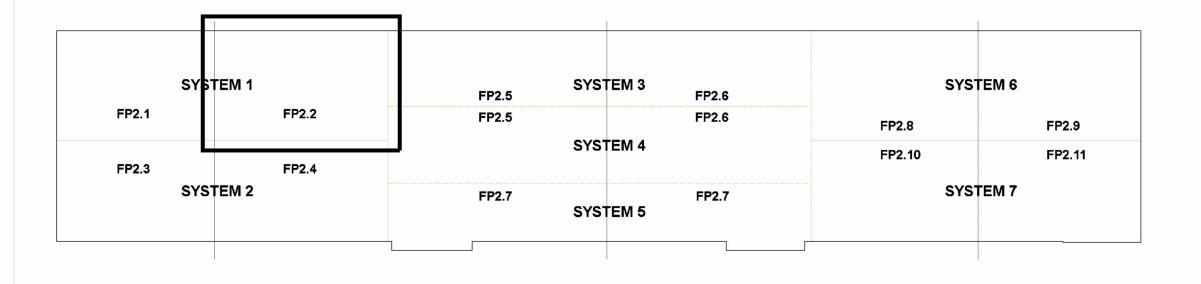
	Sprinkler Legend									
rer	SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note
	VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F	
	VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS
			Total = 2833							



210300

FP 2.1





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

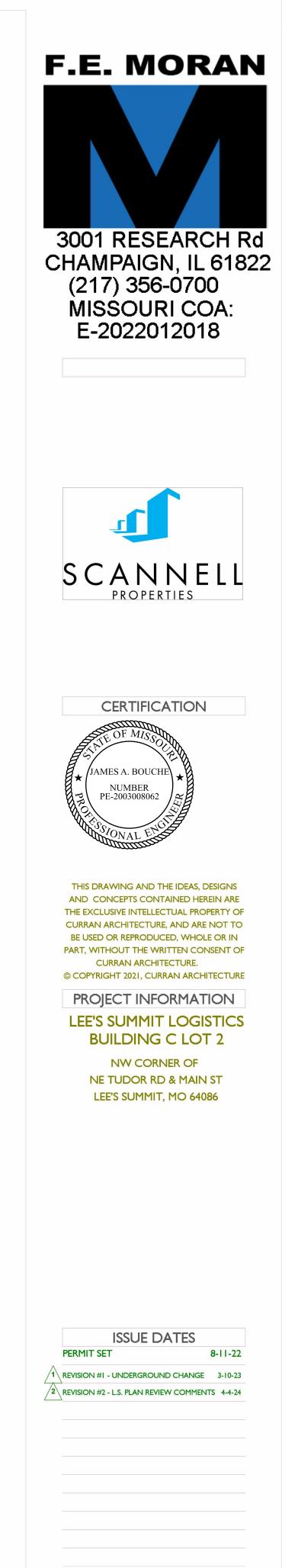
N

PIPING CENTERLINES BRANCHLINES ARE TO BE HUNG 0'-8" BELOW TOS 6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS 4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

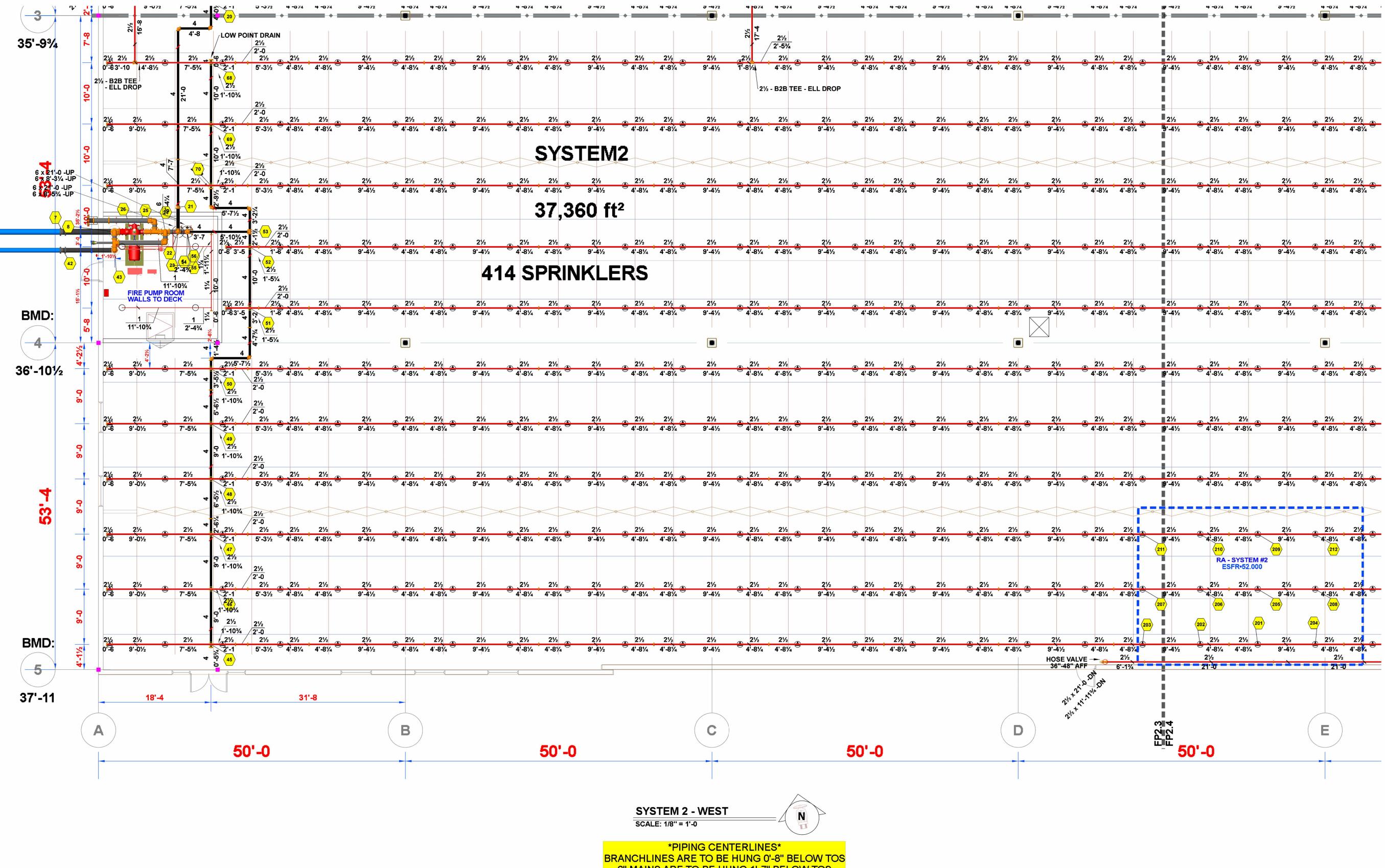
Symbol	Manufacturer	S
	Viking	Vł
	Viking	VK:

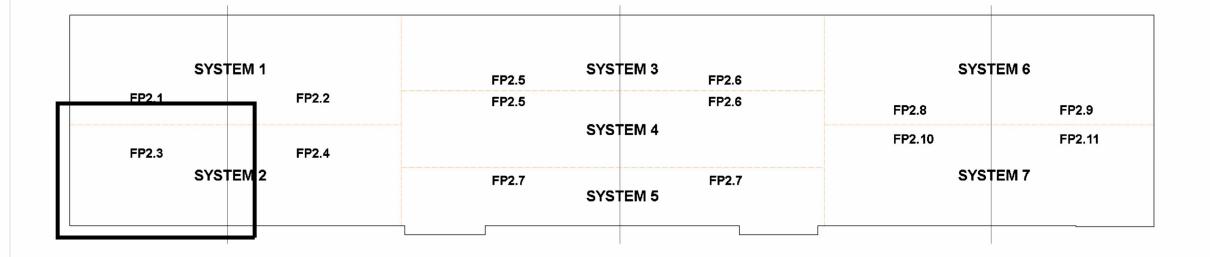
Hydraulic Information						
Remote Area #1 - System 1						
OCCUPANCY CLASSIFICATION	ESFR					
MIN. END HEAD PRESSURE	52.000 (ESFR)					
TOTAL HOSE STREAMS	250.00					
TOTAL HEADS FLOWING	12					
K-FACTOR	16.80					
TOTAL WATER REQUIRED	1708.60					
TOTAL PRESSURE REQUIRED	82.824					
BASE of RISER (gpm)	1708.60					
BASE of RISER (psi)	63.780					
SAFETY MARGIN (psi)	+6.781 (7.6%)					

	Sprinkler Legend										
SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note		
VK503	ESFR	2829	16.80	Pendent	3/4	Fast	Brass	205°F			
K3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS		
		Total = 2833									

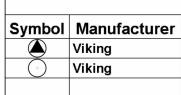








6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS 4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

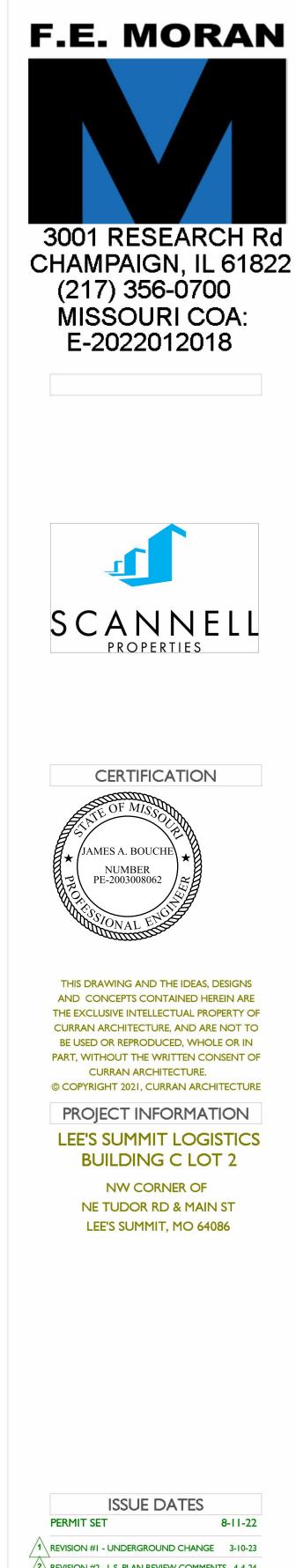


Hydraulic Information						
Remote Area #2 - System 2						
CUPANCY CLASSIFICATION	ESFR					
S. S. Sandara and R. S. Sandara and S. S. Sandara and S. Sandara an Sandara and Sandara and Sandar Sandara and Sandara and	Constant for the set of the second					

OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.80
TOTAL WATER REQUIRED	1709.09
TOTAL PRESSURE REQUIRED	68.093
BASE of RISER (gpm)	1709.09
BASE of RISER (psi)	49.041
SAFETY MARGIN (psi)	+21.508 (24.0%)

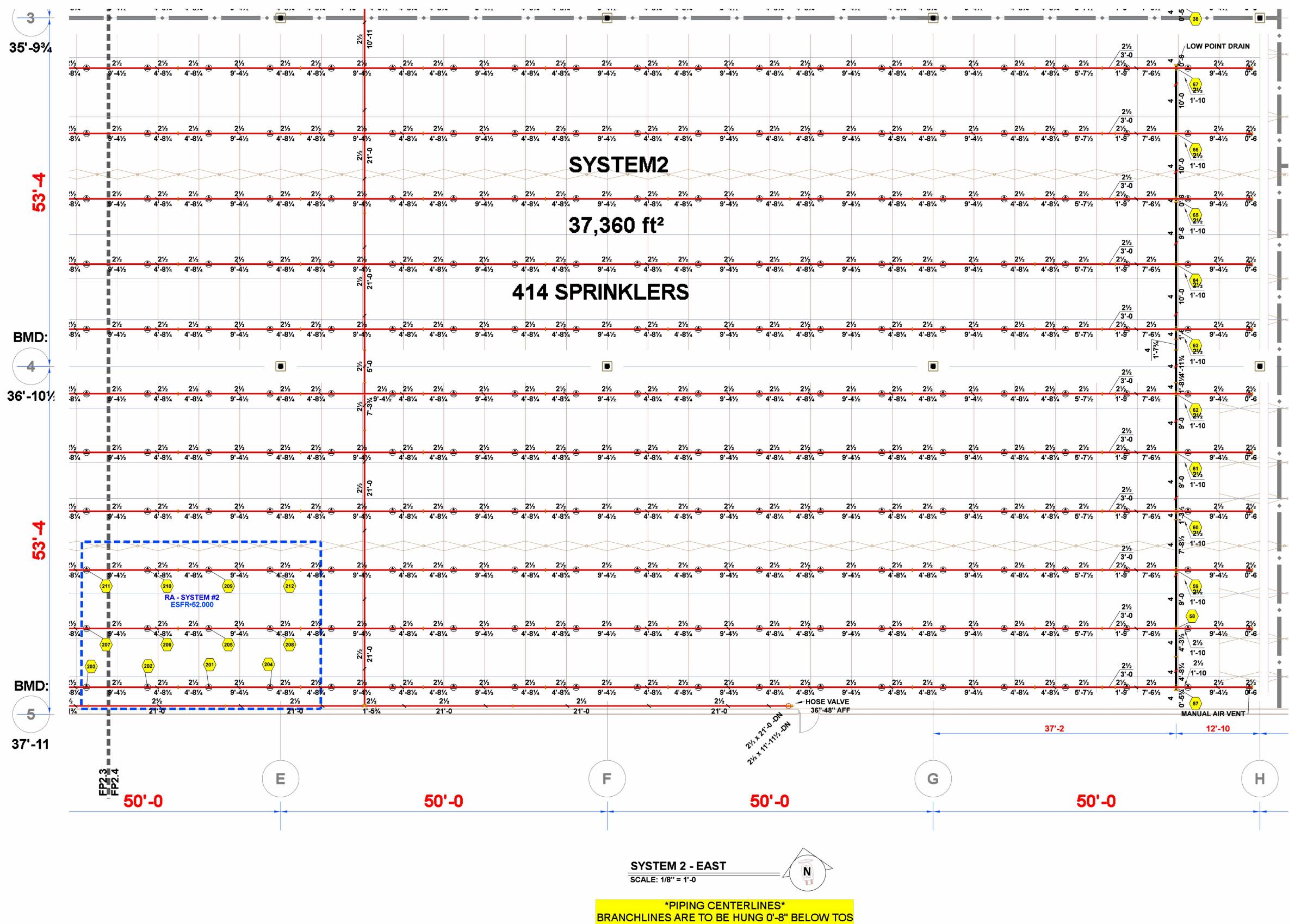
Sprinkler Legend

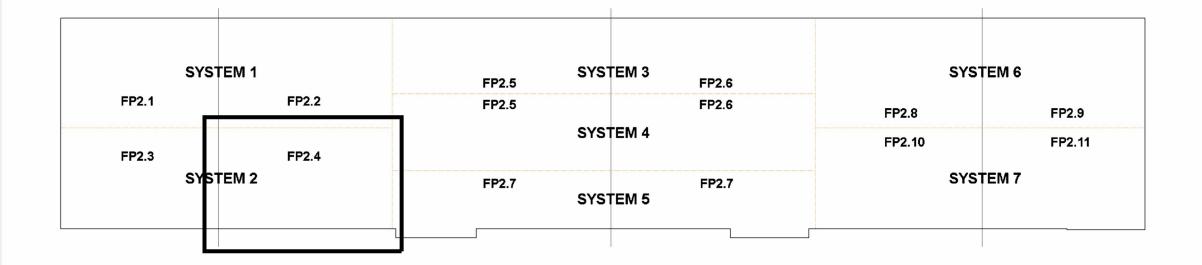
Oprinkier Legend										
SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note	
VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F		
VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS	
		Total = 2833								



KEVISION #2 - L.S. 1	PLAN REVIEW COMMENTS	4.
	210200	
	210300	







> Symbol Manufacturer Viking Viking

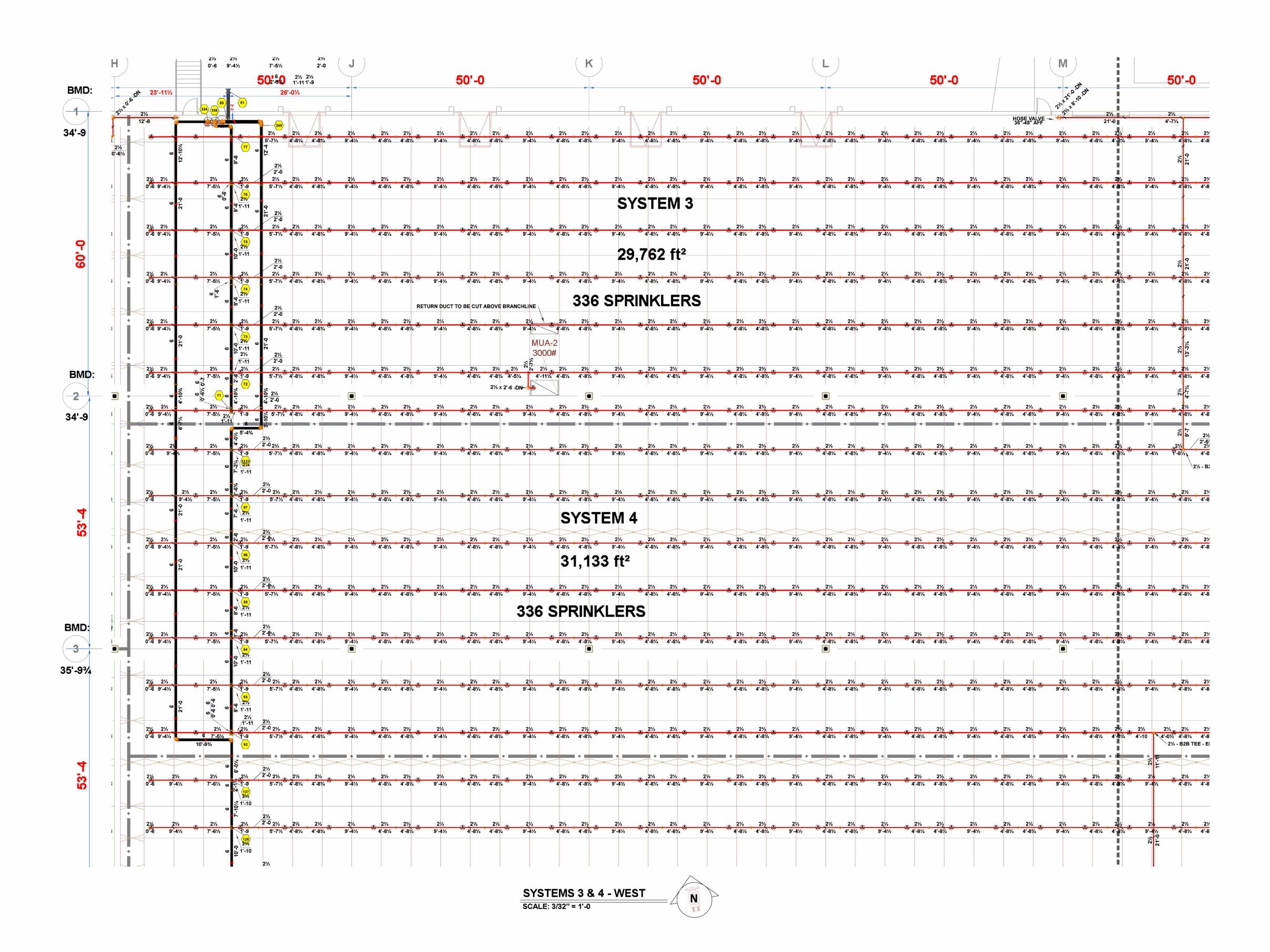
Hydraulic Information						
Remote Area #2 - System 2						
OCCUPANCY CLASSIFICATION	ESFR					
MIN. END HEAD PRESSURE	52.000 (ESFR)					
TOTAL HOSE STREAMS	250.00					
TOTAL HEADS FLOWING	12					
K-FACTOR	16.80					
TOTAL WATER REQUIRED	1709.09					
TOTAL PRESSURE REQUIRED	68.093					
BASE of RISER (gpm)	1709.09					
BASE of RISER (psi)	49.041					
SAFETY MARGIN (psi)	+21.508 (24.0%)					

Sprinkler Legend

SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note				
VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F					
VK3501	Microfast	4	8.00	Upright	3/4	Quick	Brass	200°F	BRASS				
		Total = 2833											

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ISSUE DATES PERMIT SET 8-11-22 1 REVISION #1 - UNDERGROUND CHANGE 3-10-23 2 REVISION #2 - L.S. PLAN REVIEW COMMENTS 4-4-24



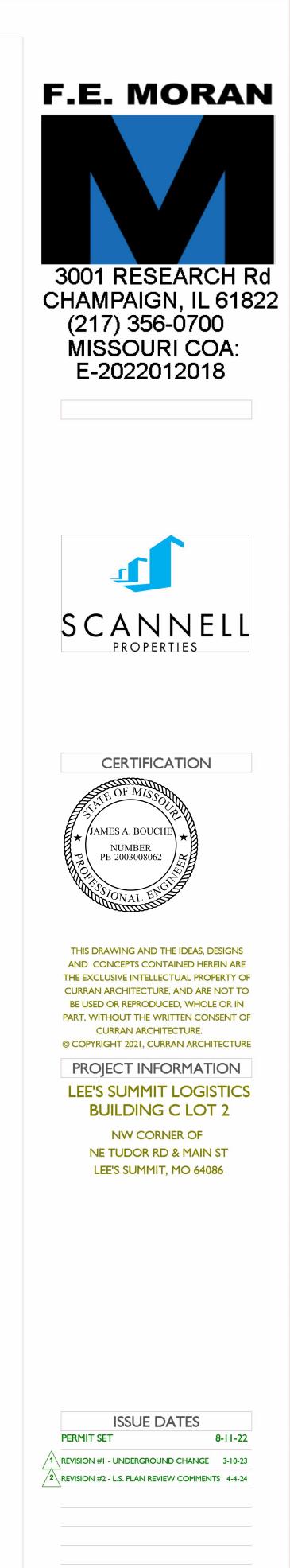


SYST	'EM 1	FP2.5	STEM 3 FP2.6	SYSTEM 6		
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2.9	
FP2.3 SYSTE	FP2.4 TEM 2	SY	ΊSTEM 4	FP2.10	FP2.11	
		FP2.7 SY	FP2.7 /STEM 5	SYST	'EM 7	

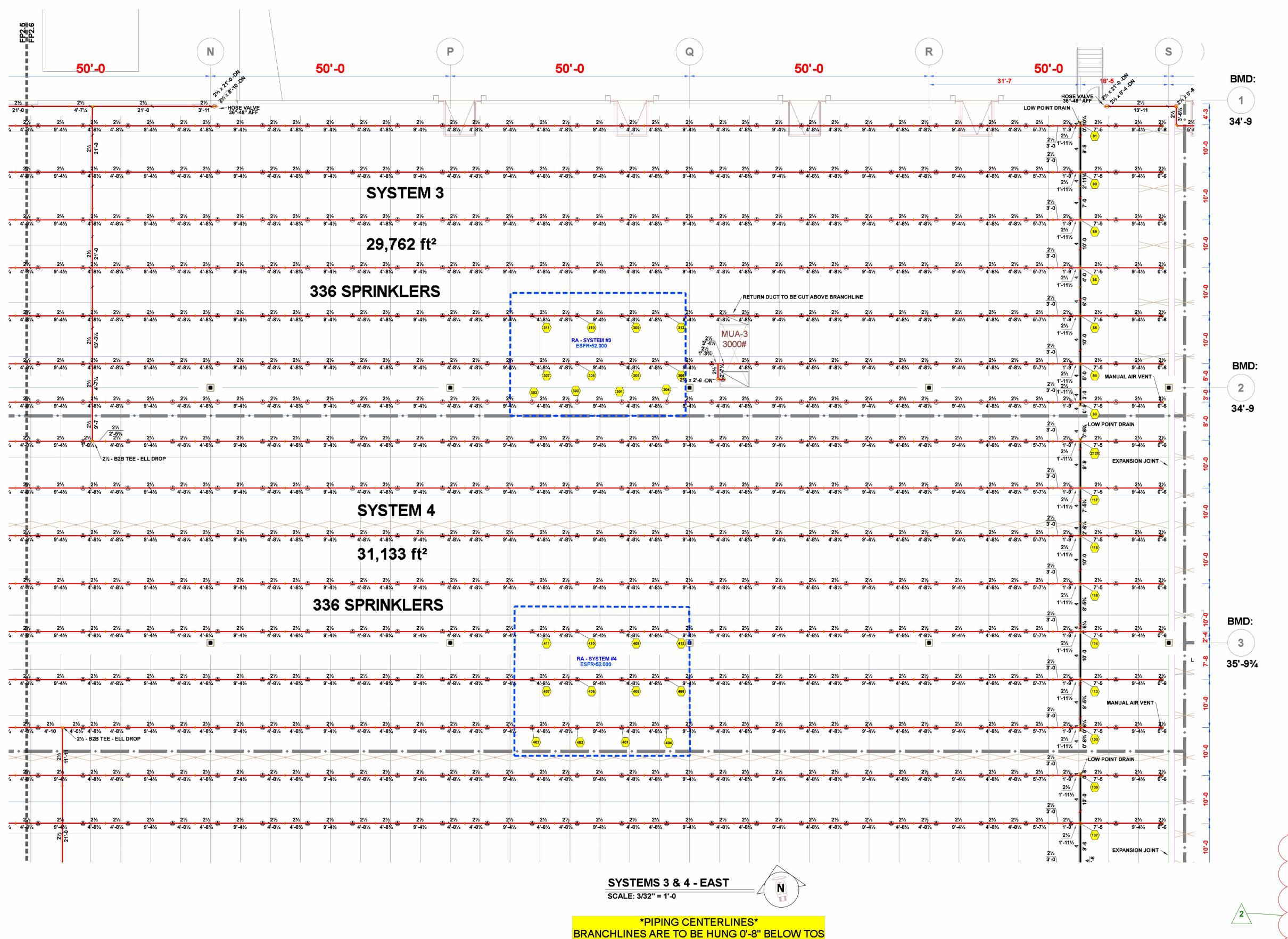
Symbol	Manufacturer
	Viking
	Viking

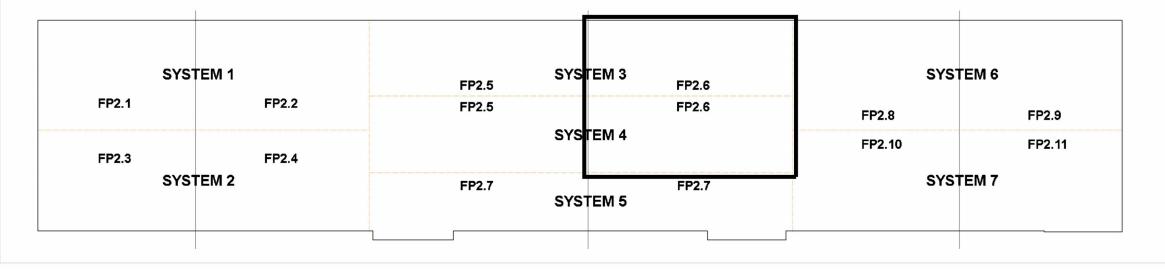
PIPING CENTERLINES
BRANCHLINES ARE TO BE HUNG 0'-8" BELOW TOS
6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS
4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

Sprinkler Legend												
SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note			
VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F				
VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS			
		Total = 2833										









6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS 4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

						Z	\checkmark	\frown	\wedge	\searrow	\frown
Sprinkler Legend											
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note
	Viking	VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F	
\odot	Viking	VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS
				Total = 2833							

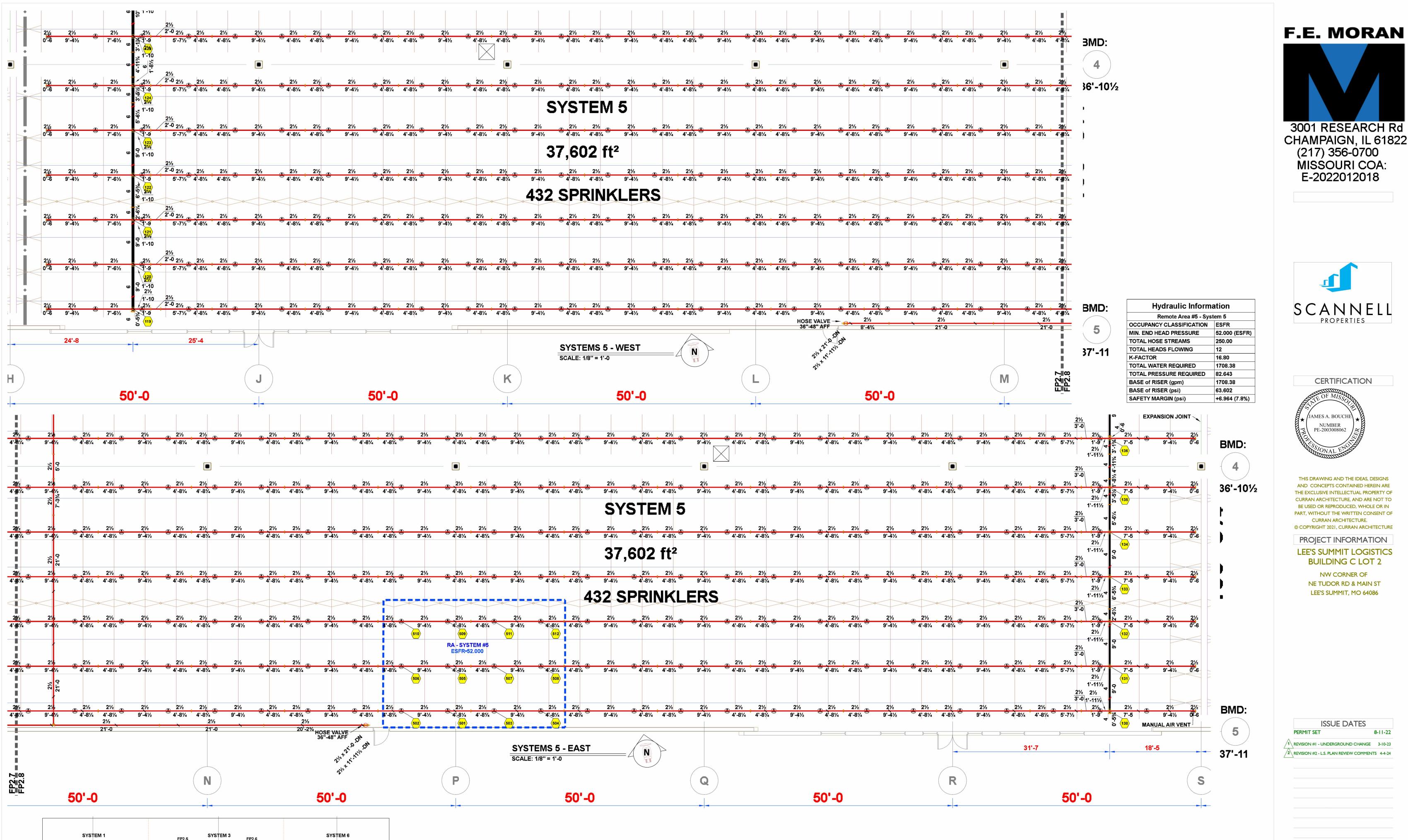
Hydraulic Information									
Remote Area #3 - Syst	iem 3								
OCCUPANCY CLASSIFICATION	ESFR								
MIN. END HEAD PRESSURE	52.000 (ESFR)								
TOTAL HOSE STREAMS	250.00								
TOTAL HEADS FLOWING	12								
K-FACTOR	16.80								
TOTAL WATER REQUIRED	1708.00								
TOTAL PRESSURE REQUIRED	80.862								
BASE of RISER (gpm)	1708.00								
BASE of RISER (psi)	61.827								
SAFETY MARGIN (psi)	+8.748 (9.8%)								

Hydraulic Information								
Remote Area #4 - System 4								
OCCUPANCY CLASSIFICATION	ESFR							
MIN. END HEAD PRESSURE	52.000 (ESFR)							
TOTAL HOSE STREAMS	250.00							
TOTAL HEADS FLOWING	12							
K-FACTOR	16.80							
TOTAL WATER REQUIRED	1709.87							
TOTAL PRESSURE REQUIRED	84.046							
BASE of RISER (gpm)	1709.87							
BASE of RISER (psi)	64.983							
SAFETY MARGIN (psi)	+5.549 (6.2%)							

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ISSUE DATES PERMIT SET 8-11-22
1 REVISION #I - UNDERGROUND CHANGE 3-10-23 2 REVISION #2 - L.S. PLAN REVIEW COMMENTS 4-4-24





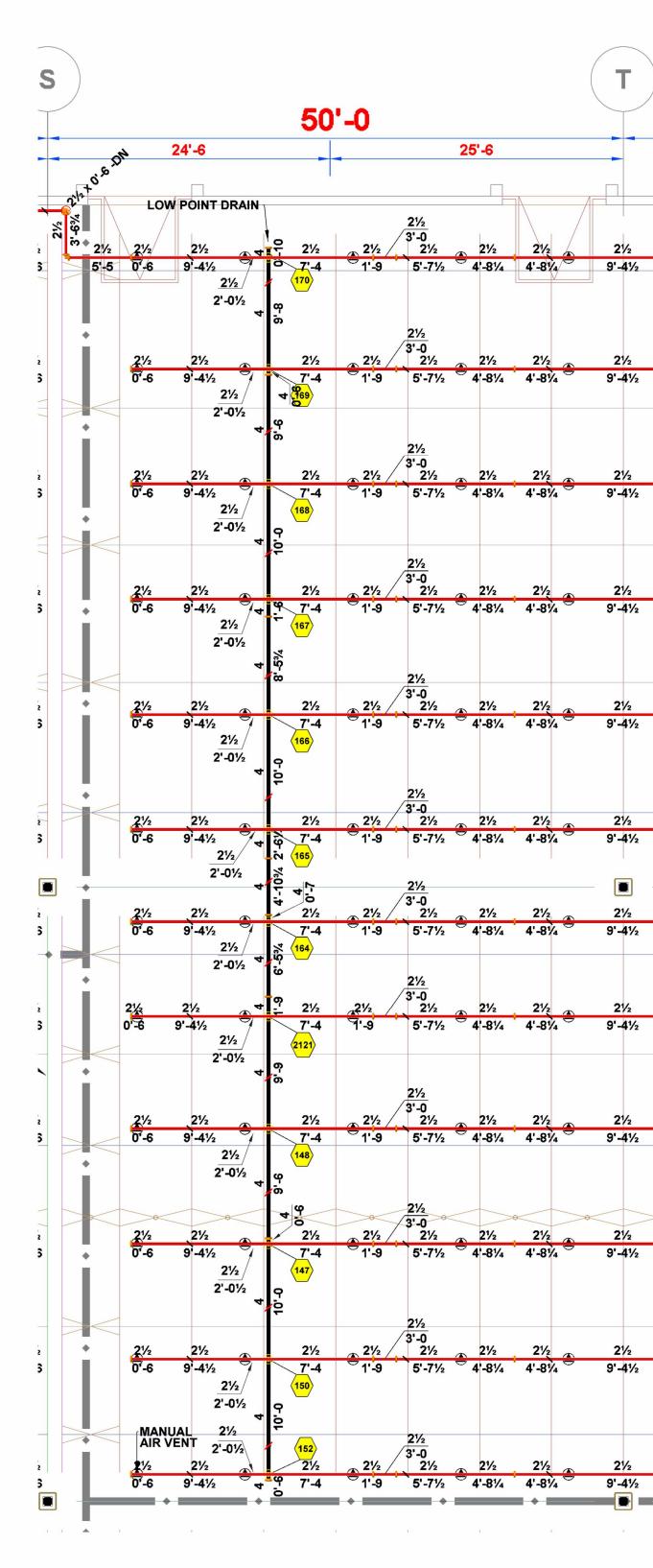
SYS"	'EM 1	FP2.5 SYST	FEM 3 FP2.6	SYS	ГЕМ 6
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2.9
FP2.3	FP2.4	SYST	ГЕМ 4	FP2.10	FP2.11
SYS	TEM 2	FP2.7 SYST	FP2.7 TEM 5	SYS ⁻	FEM 7

Ĩ		Sprinkler Legend										
5	Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note
		Viking	VK503	ESFR	2829	16.80	Pendent	3/4	Fast	Brass	205°F	
		Viking	VK3501	Microfast	4	8.00	Upright	3/4	Quick	Brass	200°F	BRASS
					Total = 2833							

FP 2.7

210300

8-11-22

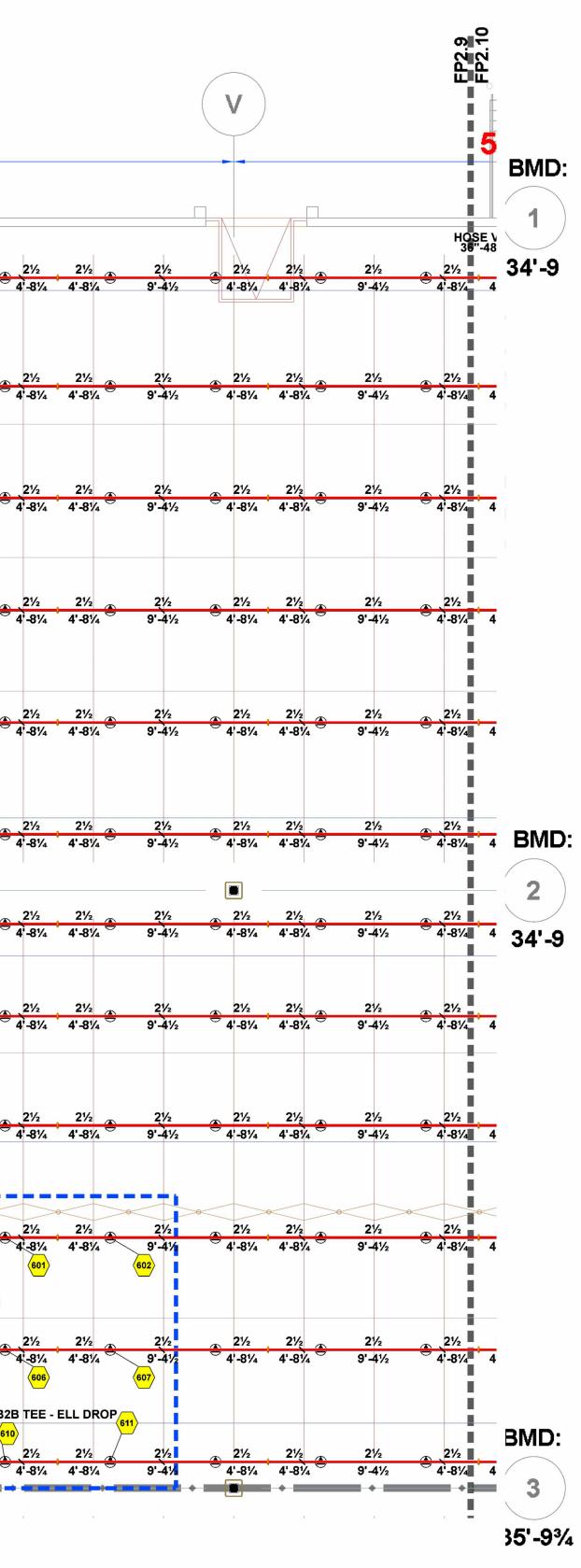


SYST	EM 1	SYST FP2.5	FEM 3 FP2.6	SYST	ЕИ 6
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2.9
FP2.3	FP2.4	SYST		FP2.10	FP2.11
SYST	SYSTEM 2	FP2.7 SYS1	FP2.7 FEM 5	SYST	EM 7

50'-0 50'-0 9'-41/2 ⁷ 4¹-8¼ 4'-8¼ 4'-81/4 4'-81/4 9'-41/2 ⁷ 4'-8¼ 4'-8¼ [~] 9'-41/2 4'-81/4 4'-81/4 9'-41/2 4'-81/4 9'-41/2 4'-81/4 **4'-8**¹/₄ **4'-8**¹/₄ **9'-4**¹/₂ **~ 4'-8¼ 4'-8¼ ~ 9'-4½ ~ 4'-8¼ 4'-8¼ ~ 9'-4½** 9'-41/2 ິ 4'-8¼ ໍ 4'-8¼ ິ 9'**-4**½ ⁷ 4¹-8¼ 4'-81⁄4 ′4'-8¼ ′4'-8¼ [°] **9'-4**½ [~] 4[']-8¼ ['] 4'-8¼ [~] 9'-41/2 ⁷ 4'-8¼ 4'-8¼ [~] 9'-41⁄2 [~] 4[']-8¼ ['] 4'-8¼ [~] 4-81/ 4'-8¼ ` 9'-41/2 SYSTEM 6 $2\frac{1}{2}$ $2\frac{1}{2}$ 21/2 21/2 **4'-8¼ 4'-8¼ 9'-4½** 9'-41/2 [∼] 4'-8¼ ′ 4'-8¼ [∼] 9'-41/2 9'-41/2 ⁷ 4'-8¼ 4'-8¼ ⁵ ′4'-8¼ 4'-8¼ ` 9'-4½ 38,910 ft² ▲ 2¹/₂ 2¹/₂ 21/2 21/2 21/2 $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ **21/2** 21/2 21/2 21/2 21/2 21/2 **21**/2 **4**-8¼ 4'-8¼ 9'-4½ **4'-8**¹/₄ **4'-8**¹/₄ **9'-4**¹/₂ 9**'-4**½ [~] 4[`]-8¼ [`] 4'-8¼ [`] 9'-41/2 4'-81/4 4'-81/4 9'-41/2 4'-81/4 4'-81/4 444 SPRINKLERS 21/2 $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ **2½** 21/2 **21/2** 9'**-4**½ **4 -81/4** 4'-81/4 9'-41/2 **4'-8**¹/₄ **4'-8**¹/₄ **9'-4**½ **~ 4'-8¼** 4'-8¼ ~ 9'-41/2 9'**-4**½ ⁷ 4'-8¼ 4'-8¼ [→] **4'-8¼** 4'-8¼ 21/2 21/2 21/2 21/2 21/2 a 2¹/₂ 2¹/₂ 2¹/₂ 21/2 21/2 21/2 21/2 21/2 21/2 9'-41/2 **9'-4**½ 9'-41/2 [⊂] 4'-8¼ ′ 4'-8¼ [⊂] **້ 4'-8¼ ໍ 4'-8¼** ັ [∽] 4'-8¼ ′ 4'-8¼ [∽] 9'-41/2 ´4'-8¼ 4'-8¼ [⊂] **9'-4**½ ⁷ 4¹-8¼ 4'-8¼ [°] $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2^{1/2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ 21/2 **4'-8**¹/₄ 4'-8¹/₄ **9'-4**¹/₂ **~ 4'-8¼** 4'-8¼ ~ 9'-4½ ~ 4'-8¼ 4'-8¼ ~ 9'-4½ [™] 4'-8¼ [™] 9'-4½ [─] 4'-8¼ [·] 4'-8¼ [·] 21/2 21/2 21/2 $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ 2¹/₂ 2¹/₂ 21/2 21/2 21/2 21/2 7'-4 1'-9 5'-7½ 4'-8¼ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ ______ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ 21/2 A 21/2 21/2 21/2 21/2 21/2 21/2 21/2 21/2 7'-4 1'-9 5'-7½ 4'-8¼ 4'-8¼ 9'-4½ 4'-8½ 4'-8½ 9'-4½ [™] 4'-8¼ 4'-8¼ [™] 9'-4½ **4'-81/4 4'-81/4** 9'-41/2 4'-81/4 4'-81/4 9'-41/2 4'-81/4 4'-81/4 RA - SYSTEM #6 ESFR•52.000 21/2 21/2 A 21/2 21/2 A 7'-4 1'-9 5'-7½ 4'-8¼ 4'-8¼ 9'-4½ 4'-8¼ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-8¼ 9'-4½ 4'-81/4 4'-81/4 121/2 - B2B TEE - ELL DROP $\frac{2}{2} \frac{2}{2} \frac{2}$

SYSTEMS 6 - WEST SCALE: 1/8" = 1'-0

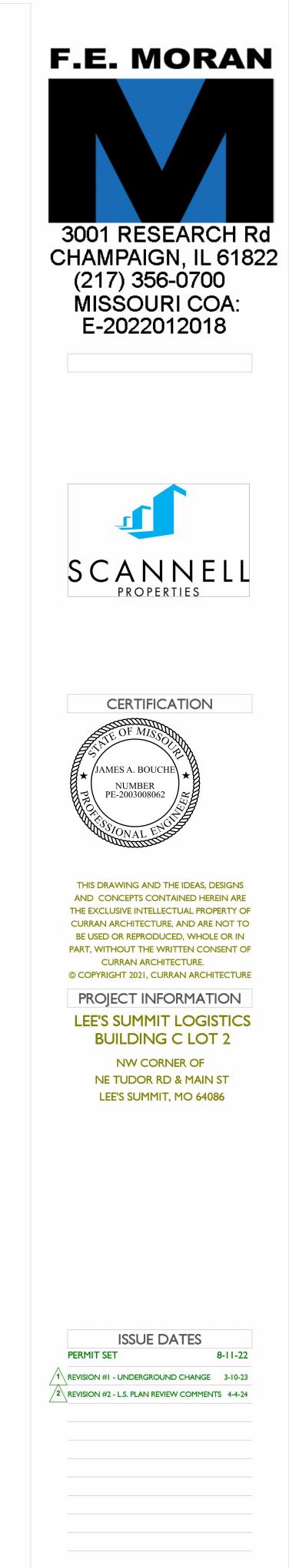
Symbol Manufacturer Viking Viking



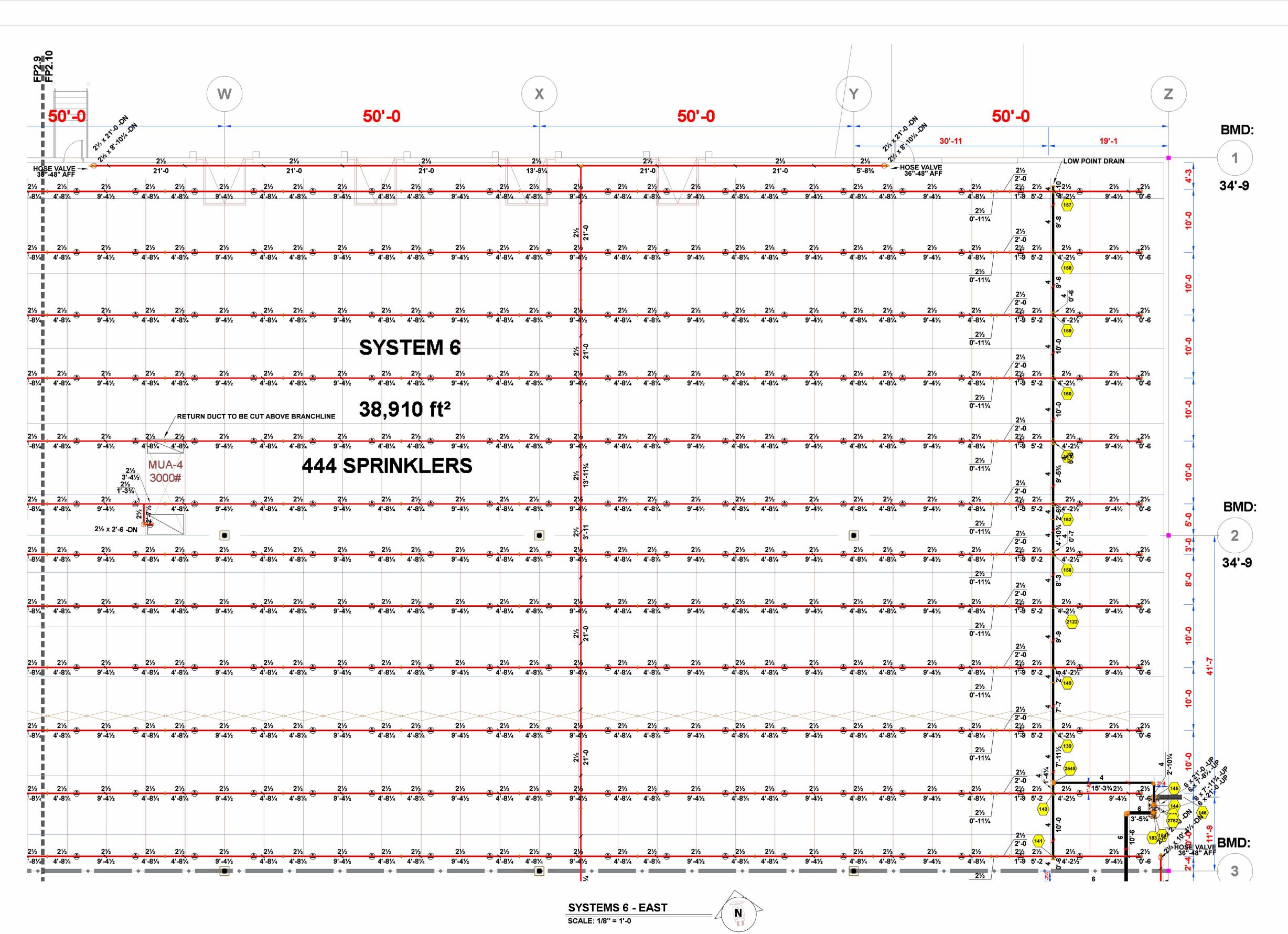
Hydraulic Information							
Remote Area #6 - System 6							
OCCUPANCY CLASSIFICATION	ESFR						
MIN. END HEAD PRESSURE	52.000 (ESFR)						
TOTAL HOSE STREAMS	250.00						
TOTAL HEADS FLOWING	12						
K-FACTOR	16.80						
TOTAL WATER REQUIRED	1710.77						
TOTAL PRESSURE REQUIRED	80.322						
BASE of RISER (gpm)	1710.77						
BASE of RISER (psi)	61.245						
SAFETY MARGIN (psi)	+9.266 (10.3%)						

Sprinkler Legend

SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note		
VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F			
VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS		
		Total = 2833									

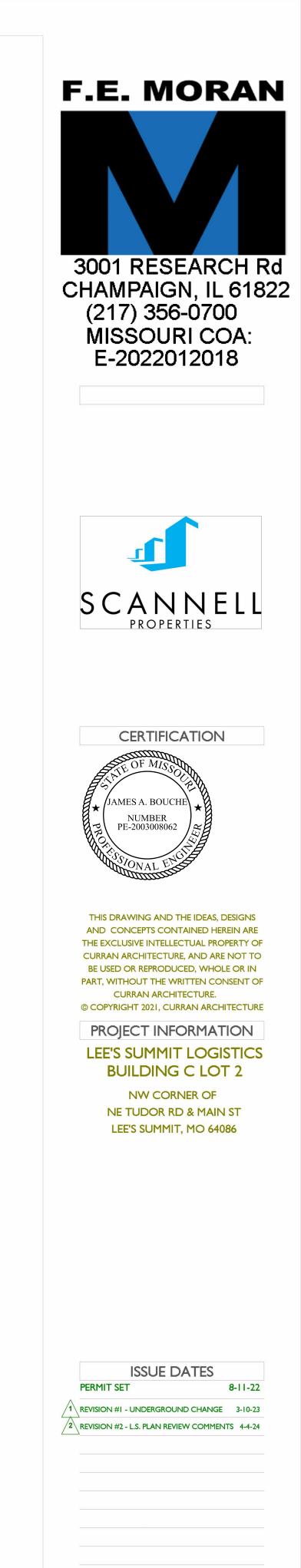




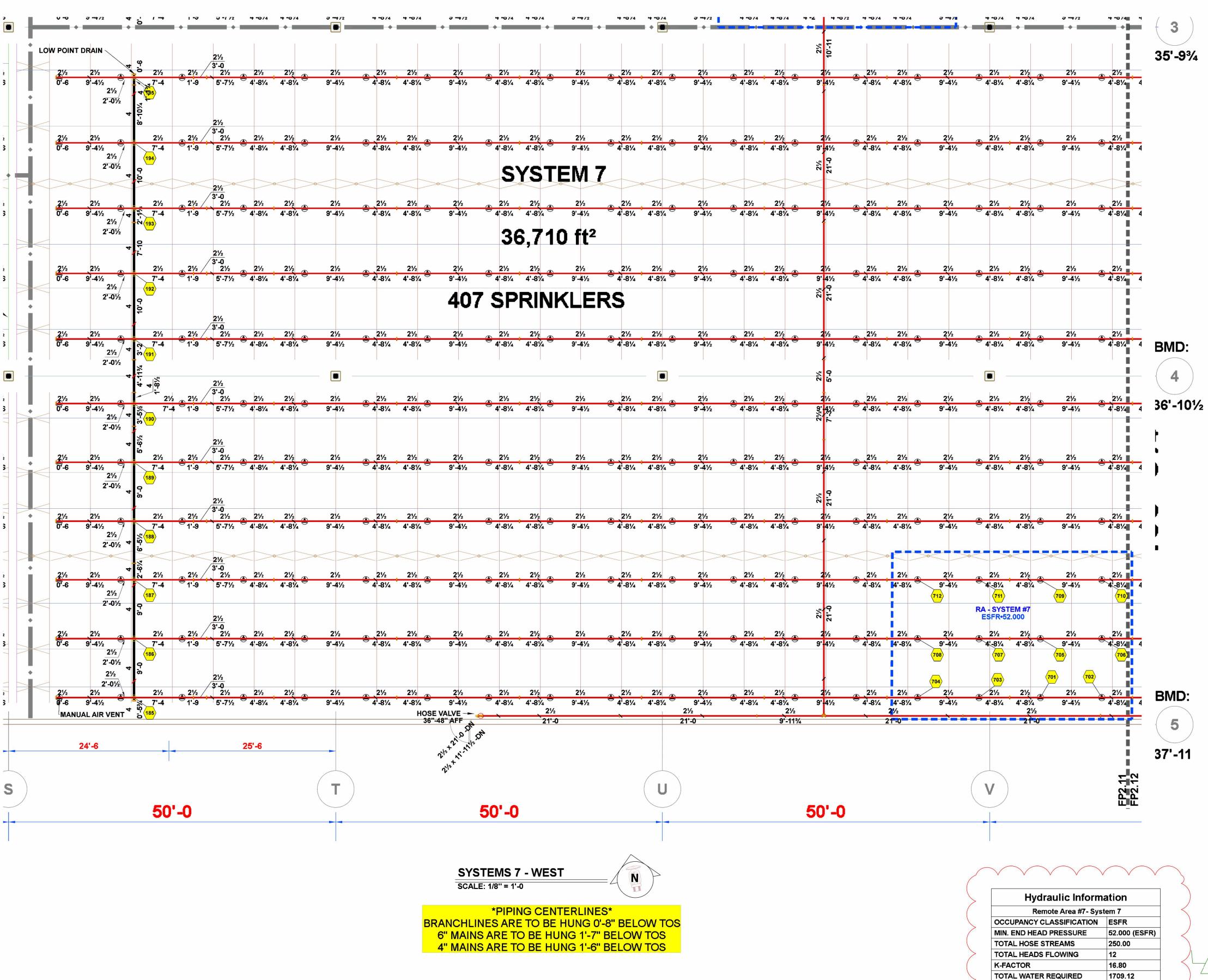


SYST	「EM 1	FP2.5	FEM 3 FP2.6	S	STEM 6
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2.9
FP2.3	FP2.4	515	FEM 4	FP2.10	FP2.44
SYST	FEM 2	FP2.7 SYST	FP2.7 FEM 5	SY	ŚTEM 7

	Sprinkler Legend										
Symbol Manufacturer SIN Model Quantity K-Factor Type Size Response Finish Temperat									Temperature	Note	
	Viking	VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F	
\odot	Viking	VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS
				Total = 2833							







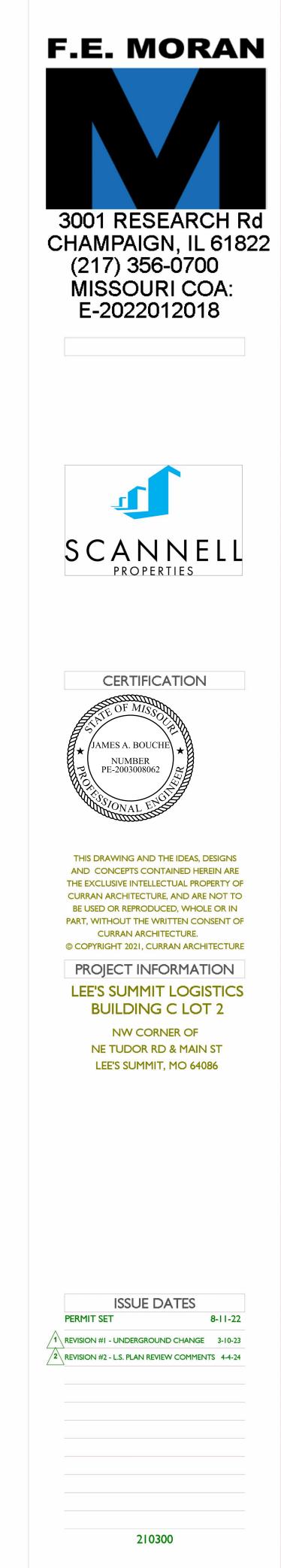
SYS	TEM 1	FP2.5	YSTEM 3 FP2.6	SYSTE	EM 6
FP2.1	FP2.2	FP2.5	FP2.6	FP2.0	FP2.9
FP2.3	FP2.4	SI	YSTEM 4	FP2.10	FP2.11
SYSTEM 2	TEM 2	FP2.7 S)	FP2.7 YSTEM 5	SYSTE	М 7
	L				

Symbol	Manufacturer
	Viking
\odot	Viking

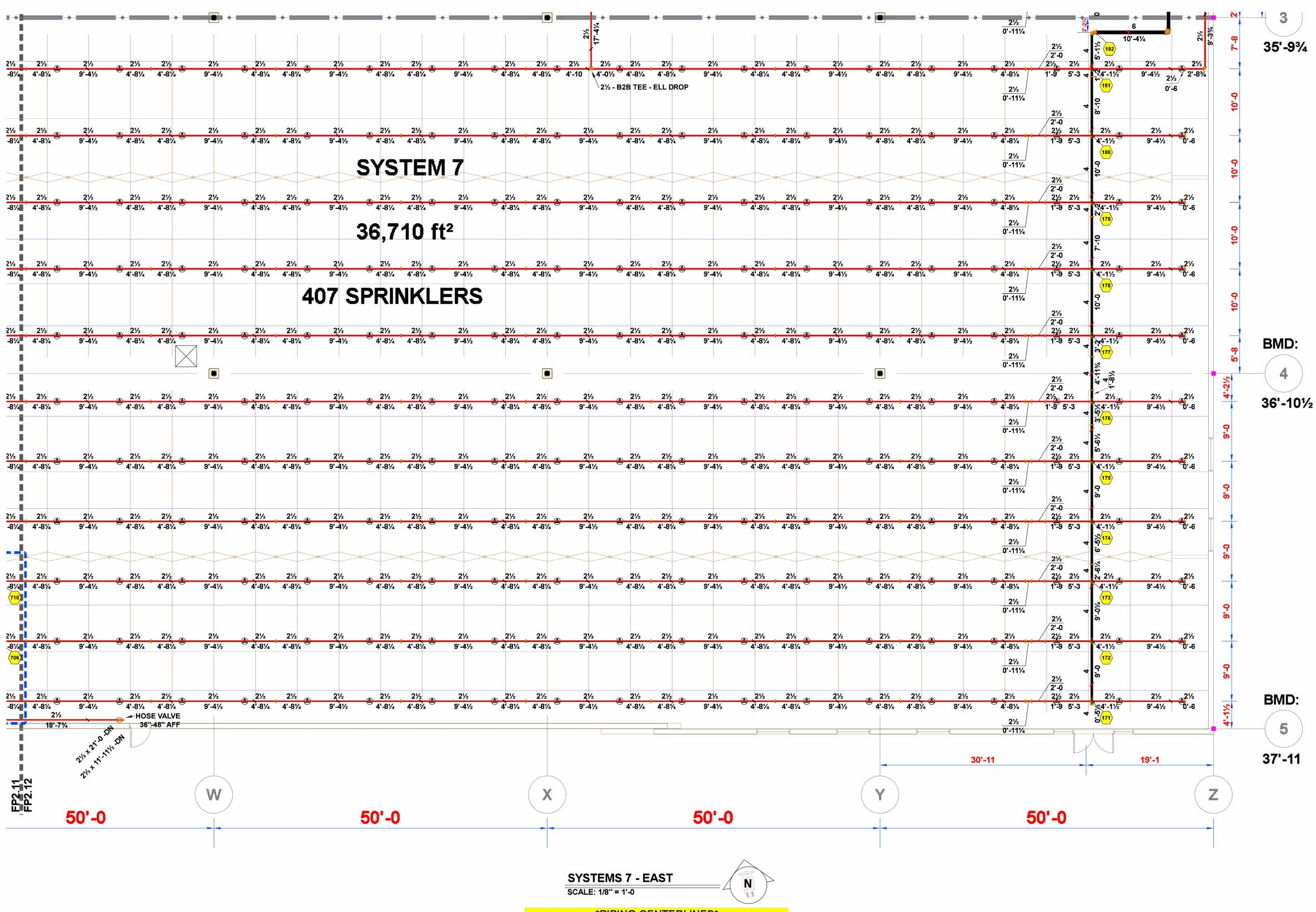
Hydraulic Inform	ation
Remote Area #7- Syst	tem 7
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52.000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.80
TOTAL WATER REQUIRED	1709.12
TOTAL PRESSURE REQUIRED	84.236
BASE of RISER (gpm)	1709.12
BASE of RISER (psi)	65.184
SAFETY MARGIN (psi)	+5.365 (6.0%)

\land Sprinkler Logond

	Sprinkler Legend											
SIN	Model	Quantity	K-Factor	Туре	Size	Response	Finish	Temperature	Note			
VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F				
VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS			
		Total = 2833										



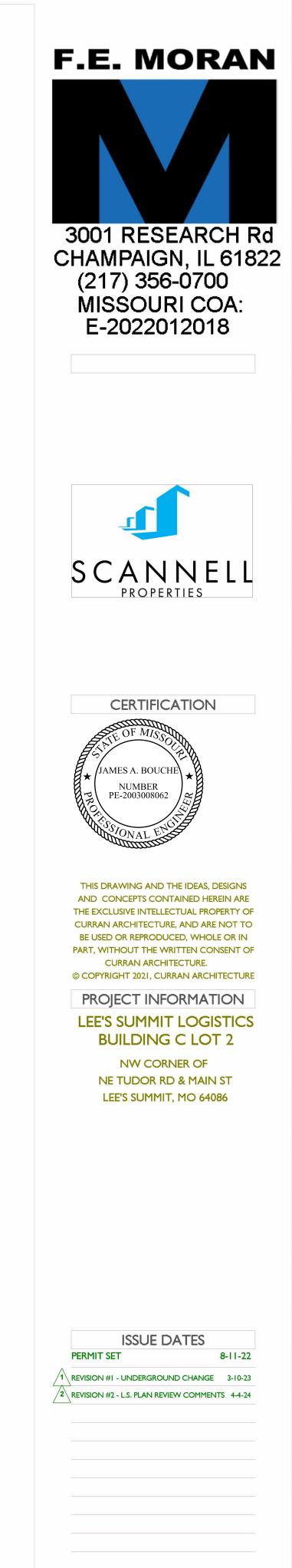




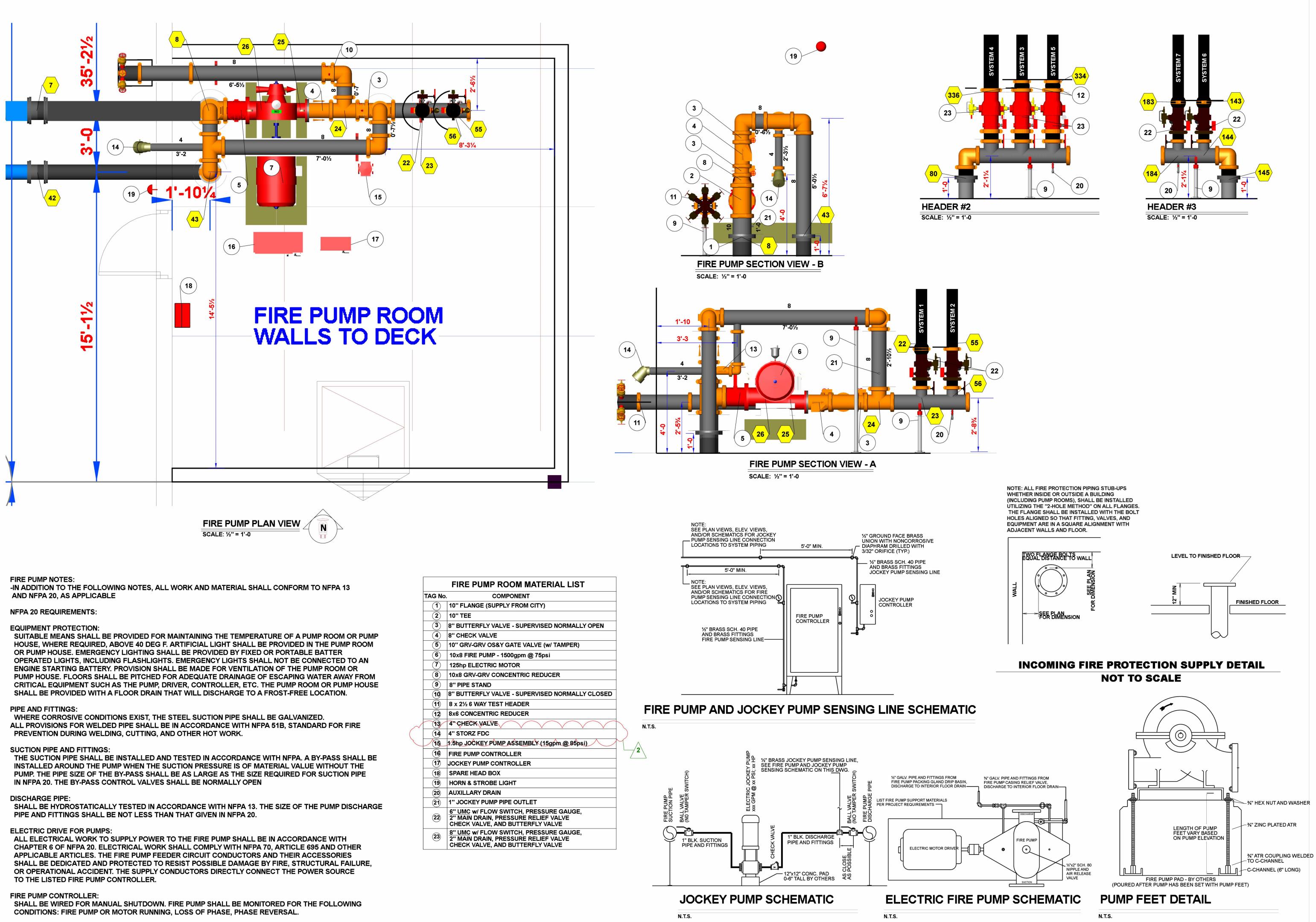
	ГЕМ 1	FP2.5	ГЕМ 3 FP2.6	SYST	ГЕМ 6
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2 9
FP2.3	FP2.4	SYS [.]	TEM 4	FP2.10	FP2.11
SYST	TEM 2	FP2.7 SYS	FP2.7 TEM 5	SYST	FEM 7

> Symbol Manufacturer Viking Viking

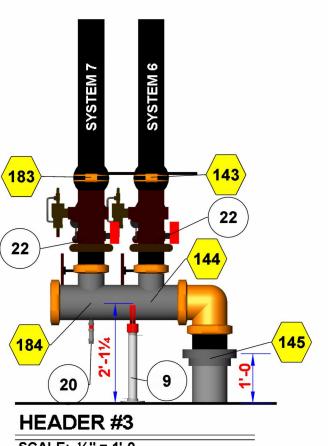
	Sprinkler Legend												
r	SIN Model Quantity K-Factor Type Size Response Finish Temperature No.												
	VK503	ESFR	2829	16.80	Pendent	3⁄4	Fast	Brass	205°F				
	VK3501	Microfast	4	8.00	Upright	3⁄4	Quick	Brass	200°F	BRASS			
			Total = 2833										



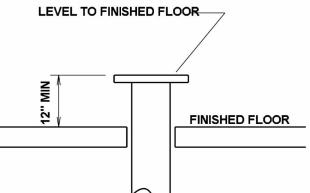




	FIRE PUMI		
	TAG No.		
	(1)	10" FLANGE (S	
	(2)	10" TEE	
	(3)	8" BUTTERFLY	
	(4)	8" CHECK VAL	
	(5)	10" GRV-GRV O	
	(6)	10x8 FIRE PUM	
	(7)	125hp ELECTR	
	(8)	10x8 GRV-GRV	
	(9)	8" PIPE STAND	
	(10)	8" BUTTERFLY	
	(11)	8 x 2½ 6 WAY T	
	(12)	8x6 CONCENTR	
~	(13)	4" CHECK VAL	
*	(14)	4" STORZ FDC	
	(15)	1.5hp JOCKEY F	
	(16)	FIRE PUMP COI	
	17	JOCKEY PUMP	
	(18)	SPARE HEAD B	
	(19)	HORN & STROP	
	(20)	AUXILLARY DR	
	(21)	1" JOCKEY PUN	
	22	<u>6" UMC</u> w/ FLO 2" MAIN DRAIN CHECK VALVE	
	23	<u>8'' UMC</u> w/ FLC 2'' MAIN DRAIN CHECK VALVE	









ISSUE DATES

1 REVISION #1 - UNDERGROUND CHANGE 3-10-23

REVISION #2 - L.S. PLAN REVIEW COMMENTS 4-4-24

8-11-22

PERMIT SET