

FIRE PROTECTION PLANS

M

F. E. Moran, Inc. Fire Protection
3001 Research Rd
Champaign, IL 61822
(217) 356-0700
MISSOURI 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 1600 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.
** TRAPEZIE 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.

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WET SYSTEM PIPE & FITTINGS

WET-PIPE SPRINKLER SYSTEM BLACK PIPE:

**1¼, 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 A136 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.

** 1½"-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.

** 1½"- 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:

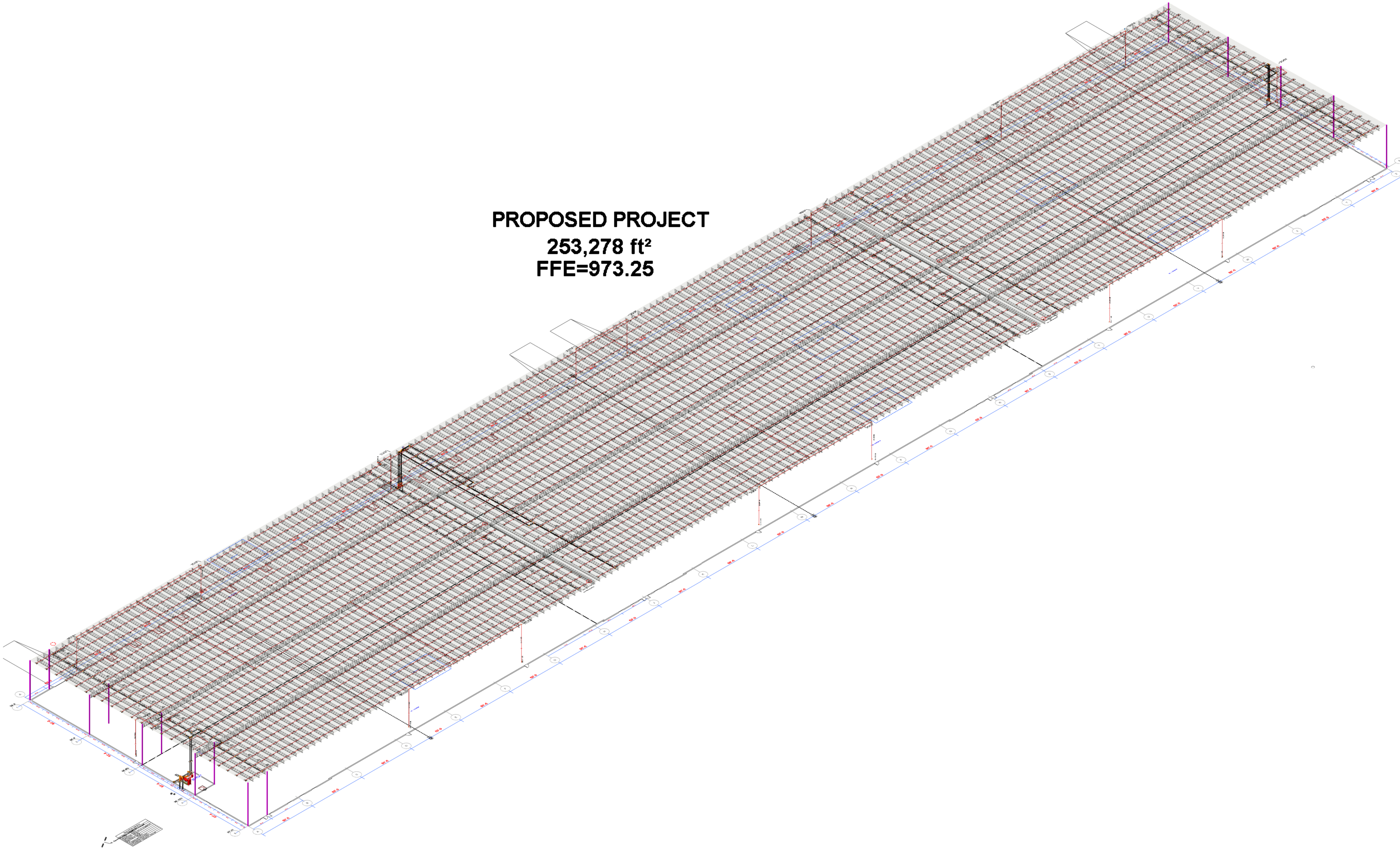
FROM NFPA 13, 2016 EDITION TABLE 16.3.3.1 & TABLE 17.3.3.1
COMMODITY CLASSIFICATION: CLASS I, II, III OR IV, ENCAPSULATED OR UNENCAPSULATED, NO OPEN TOP CONTAINERS
STORAGE ARRANGEMENT: PALLETIZED/SOLID-PILE/SINGLE, DOUBLE & MULTIPLE ROW RACKS WITH NO SOLID SHELVEING
CONSTRUCTION TYPE: ALL TYPES
MAXIMUM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

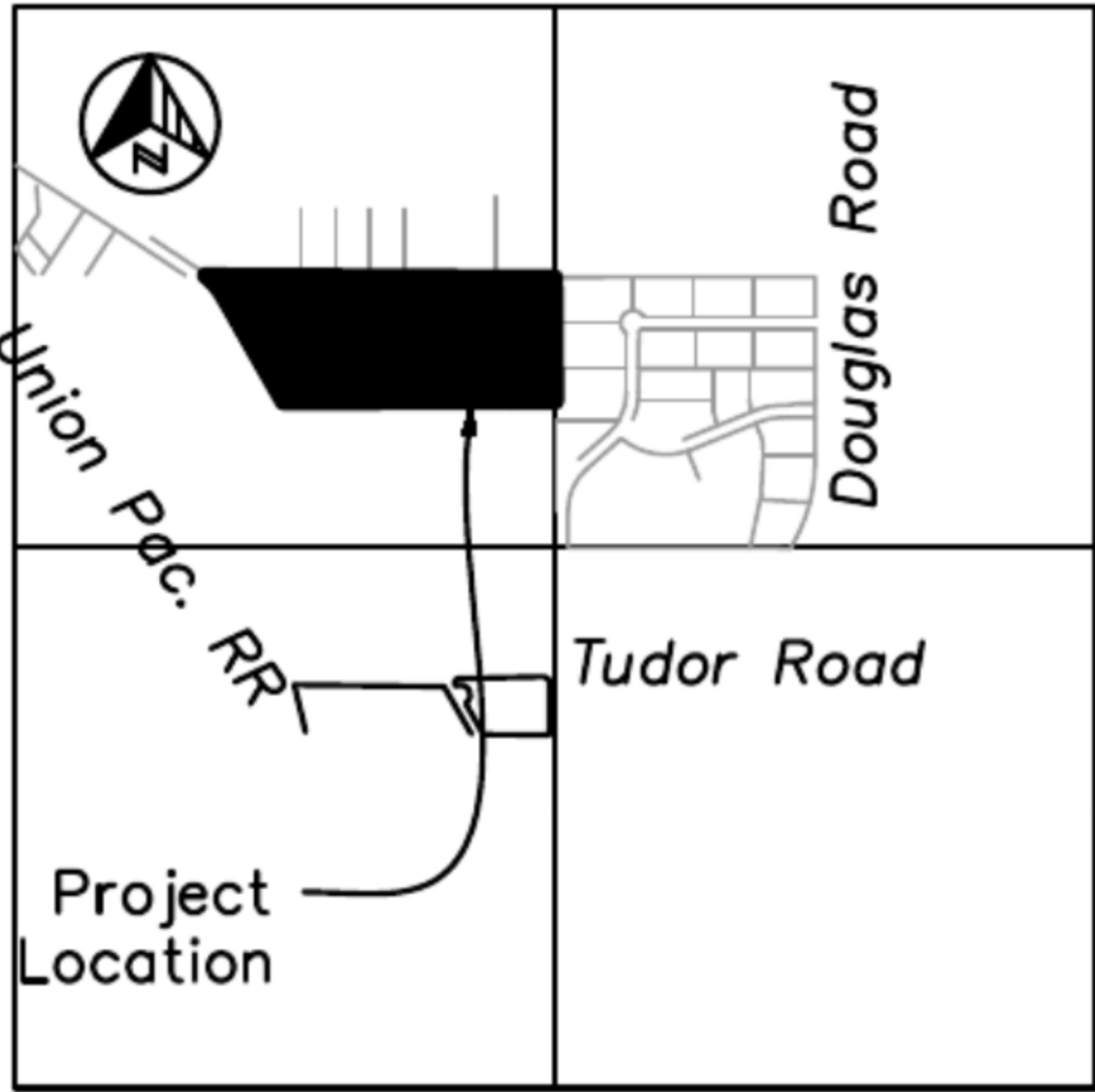
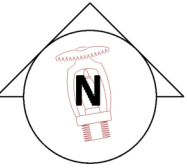
ROOF OR CEILING SLOPES SHALL NOT EXCEED A PITCH OF 2:12.

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

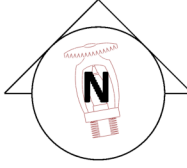
TOTAL SYSTEM SIZE SHALL NOT EXCEED 40,000 ft² COMBINED HIGH PILED/RACK STORAGE & LIGHT/ORDINARY HAZARD SYSTEMS MAY COVER UP TO 52,000 ft²



FLOW TEST LOCATION
NTS



SITE MAP
NTS



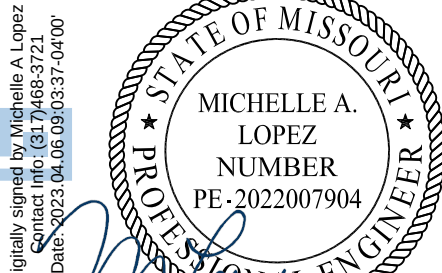
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PROJECT INFORMATION

LEE'S SUMMIT LOGISTICS
BUILDING C LOT 2

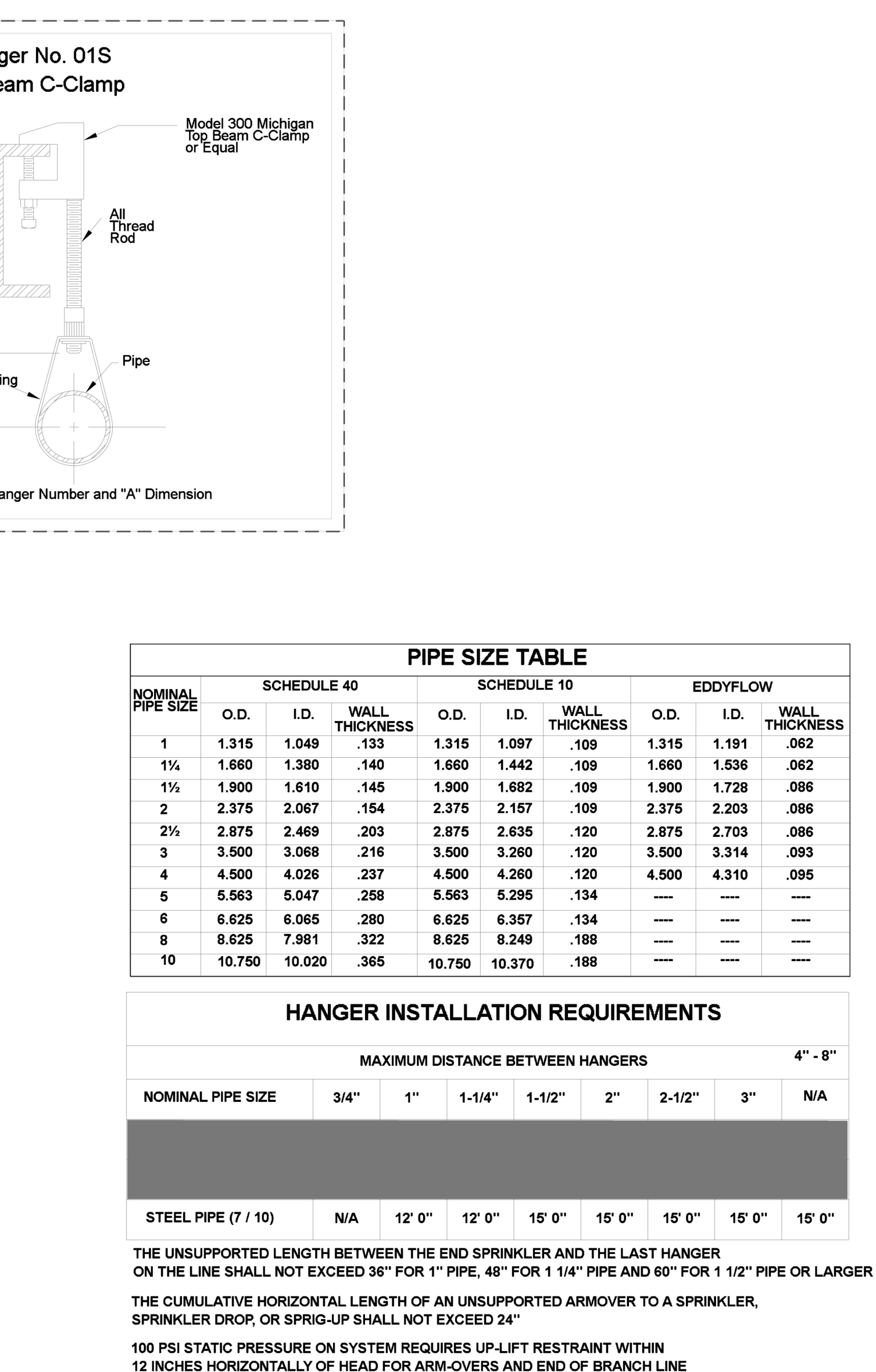
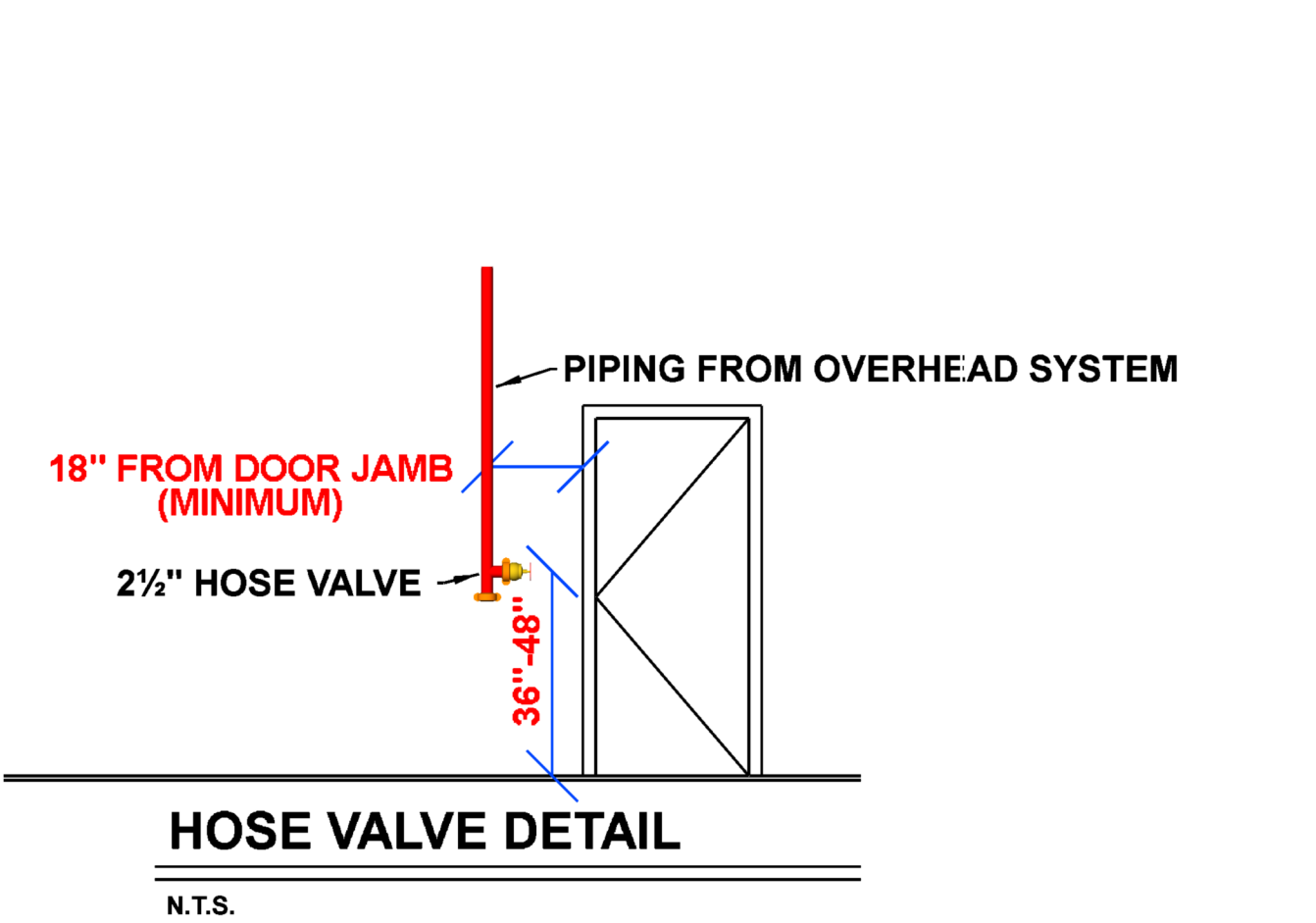
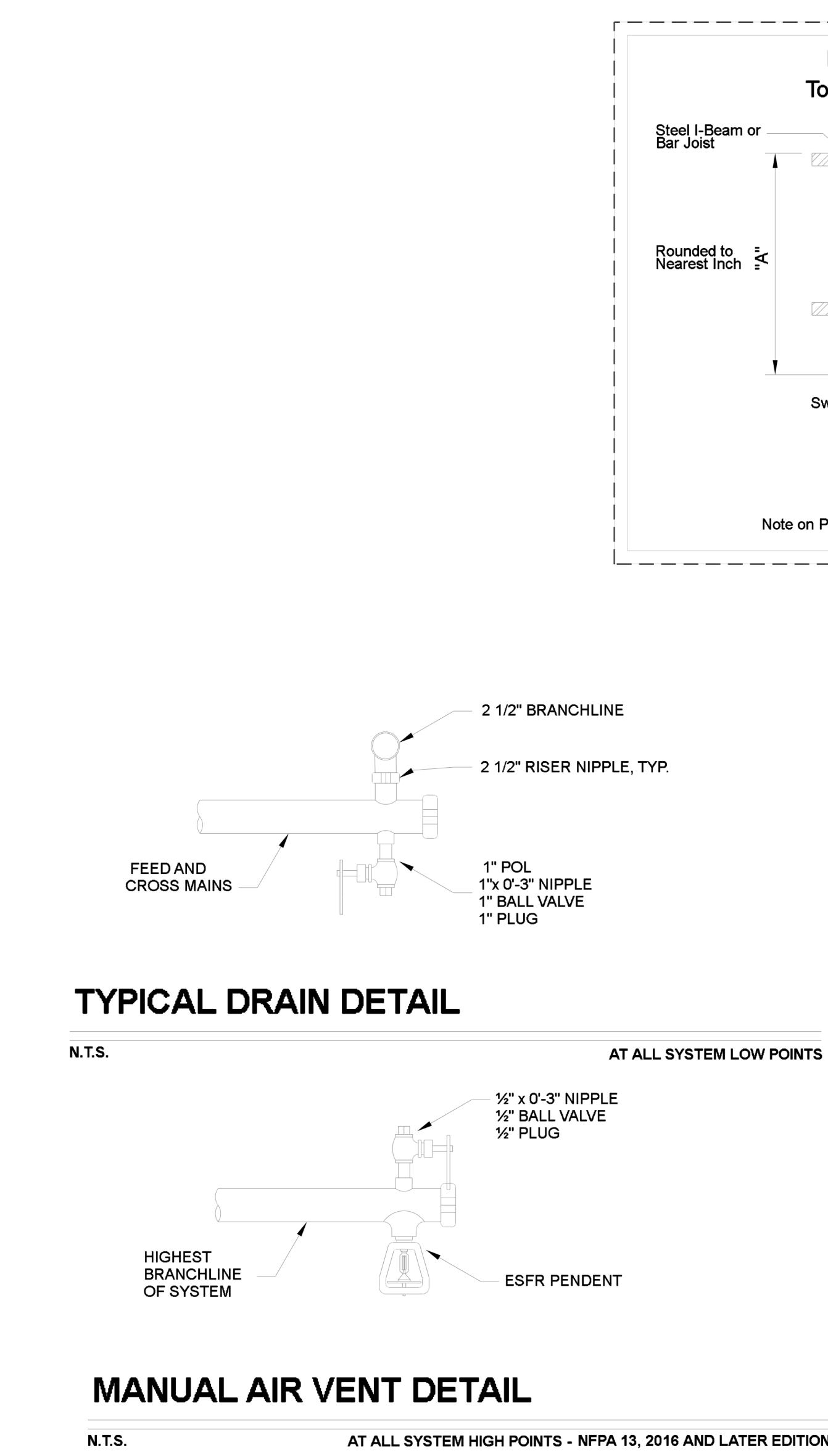
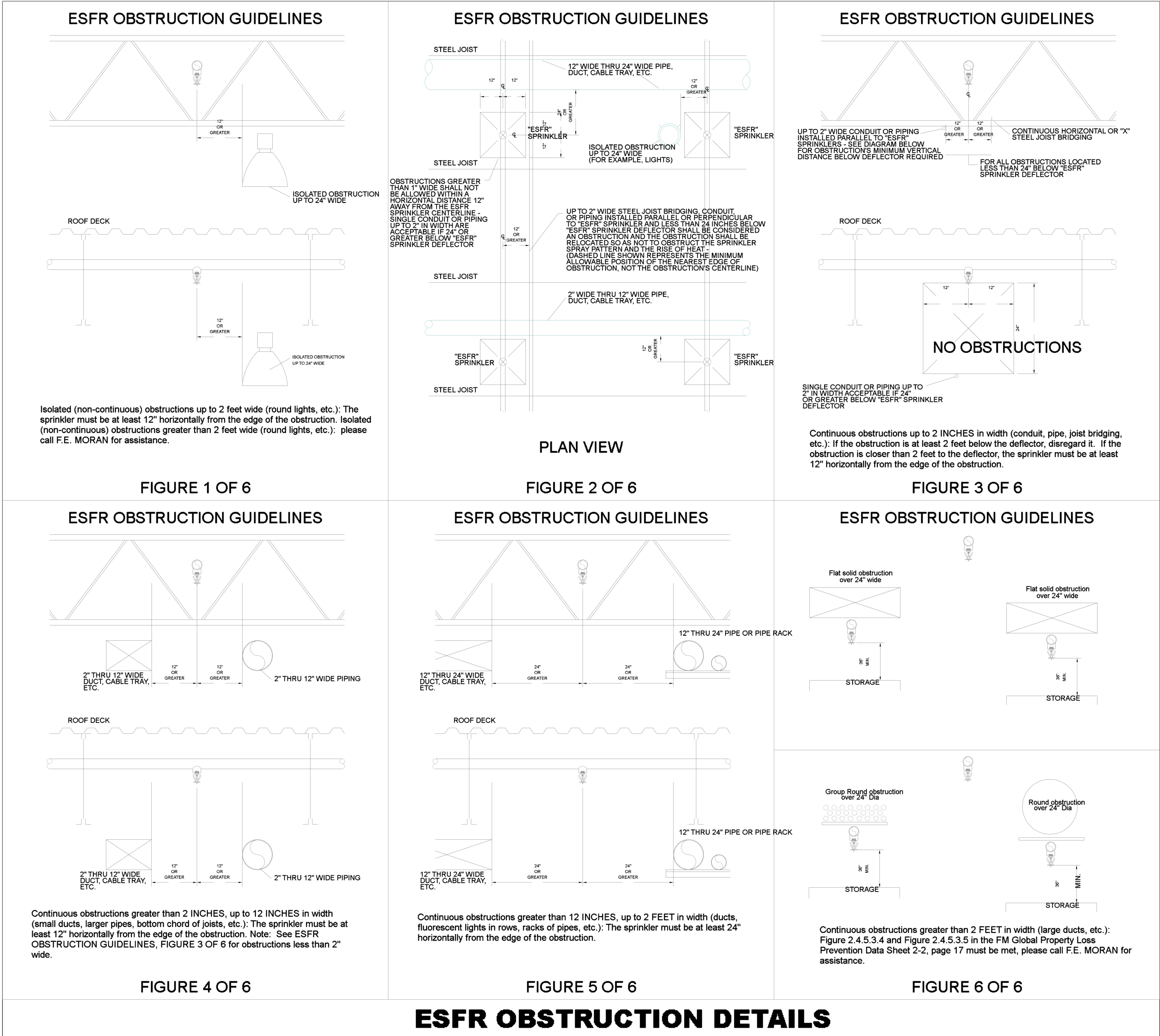
NW CORNER OF
NE TUDOR RD & MAIN ST
LEE'S SUMMIT, MO 64086

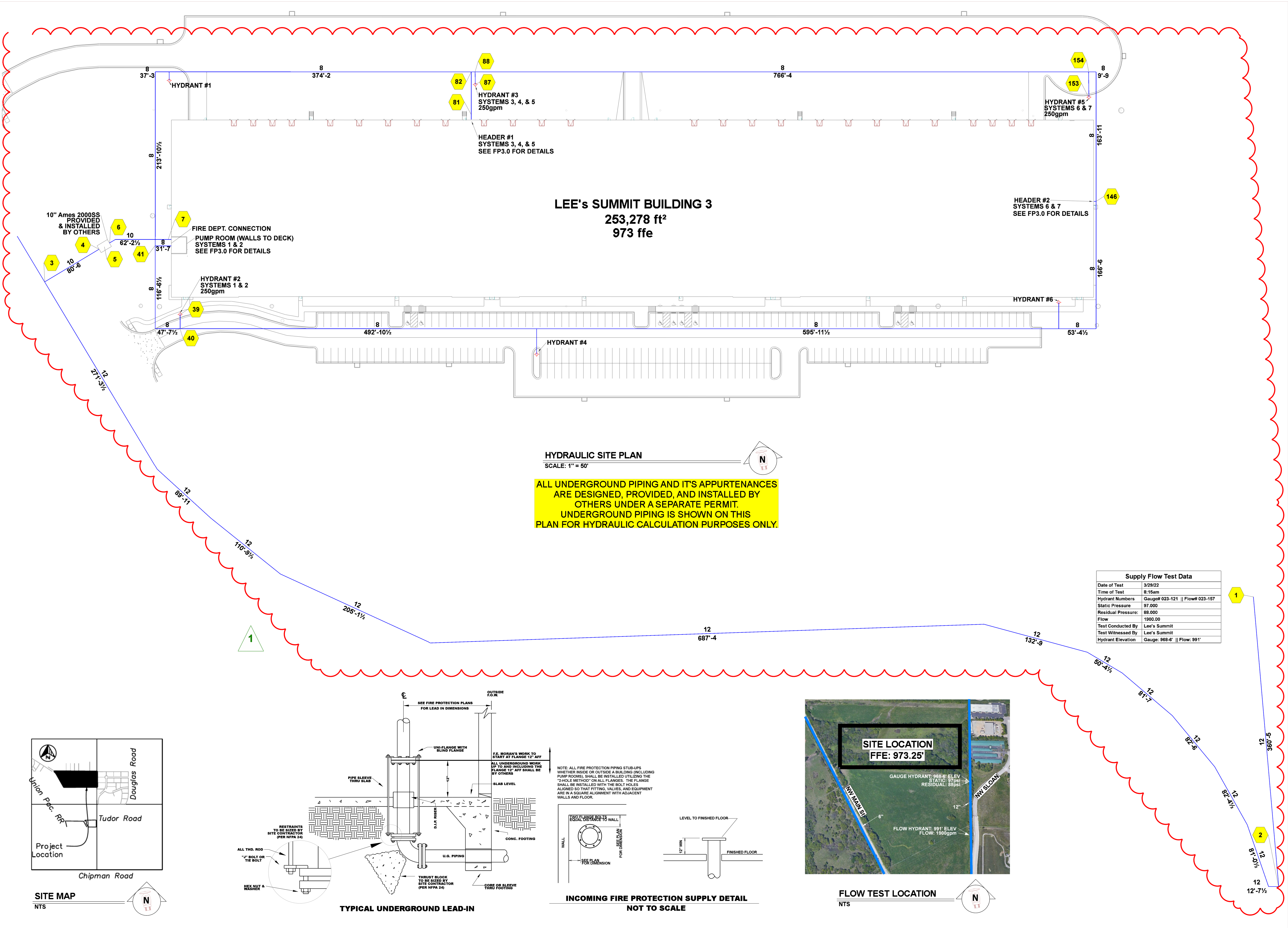
ISSUE DATES

PERMIT SET 8-11-22
REVISION #1 - UNDERGROUND CHANGE 3-10-23

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FP 0.0





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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

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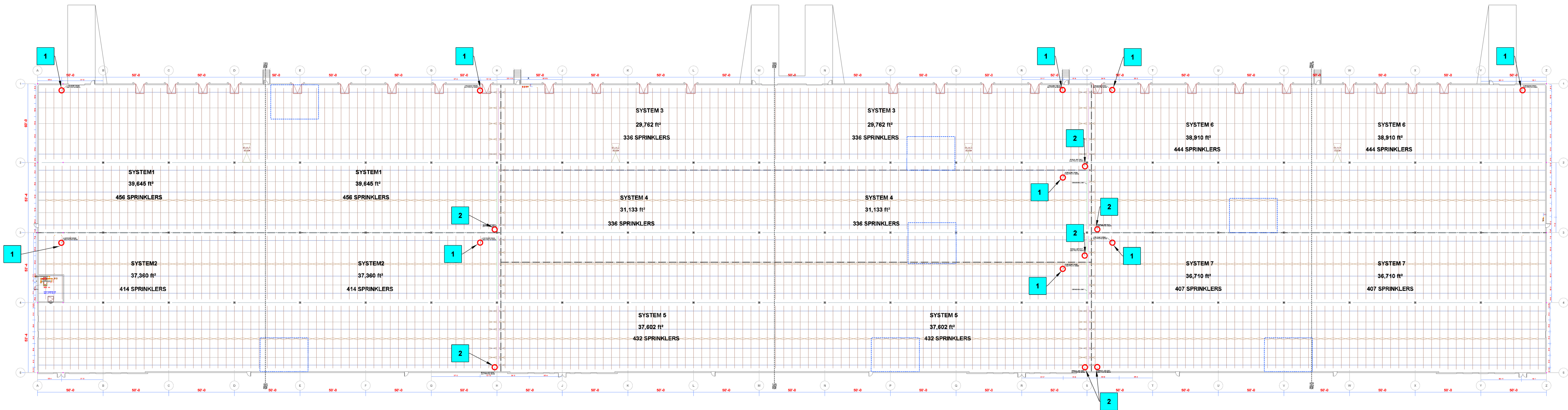
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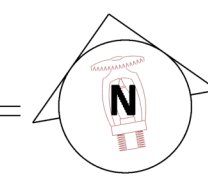
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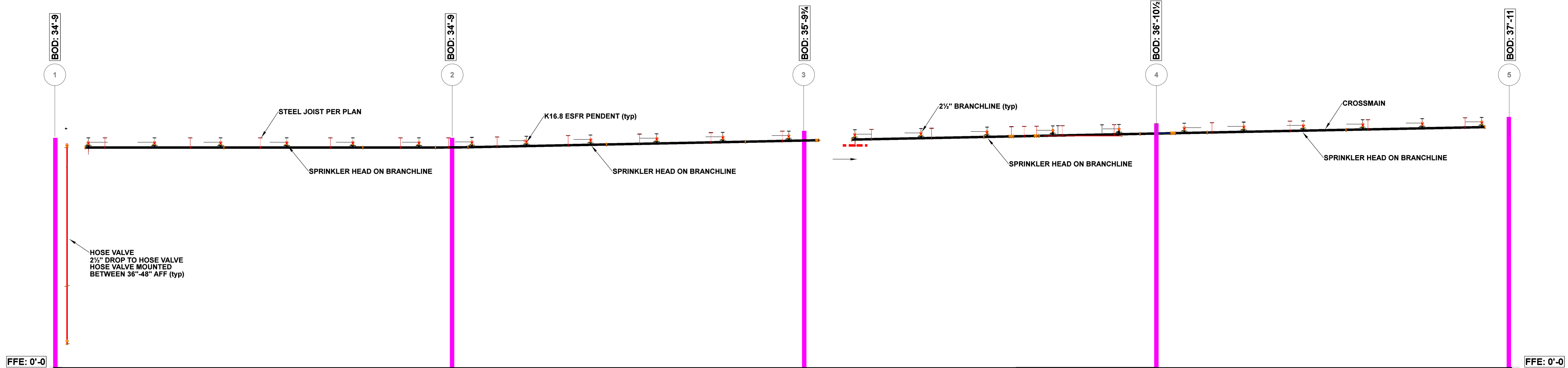
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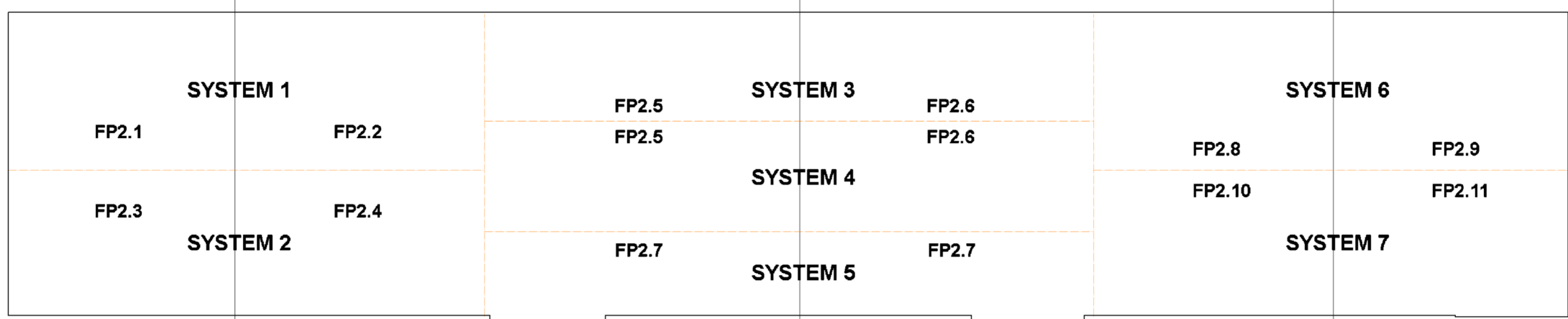
OVERALL BUILDING PLAN
SCALE: 1" = 40'



- 1 LOCATION OF 1" AUX DRAIN
2 LOCATION OF 1/2" MANUAL AIR VENT



SECTION VIEW - LOOKING EAST
SCALE: 1/8" = 1'-0"



KEY PLAN
NTS



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STATE OF MISSOURI
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NUMBER
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04/06/2023

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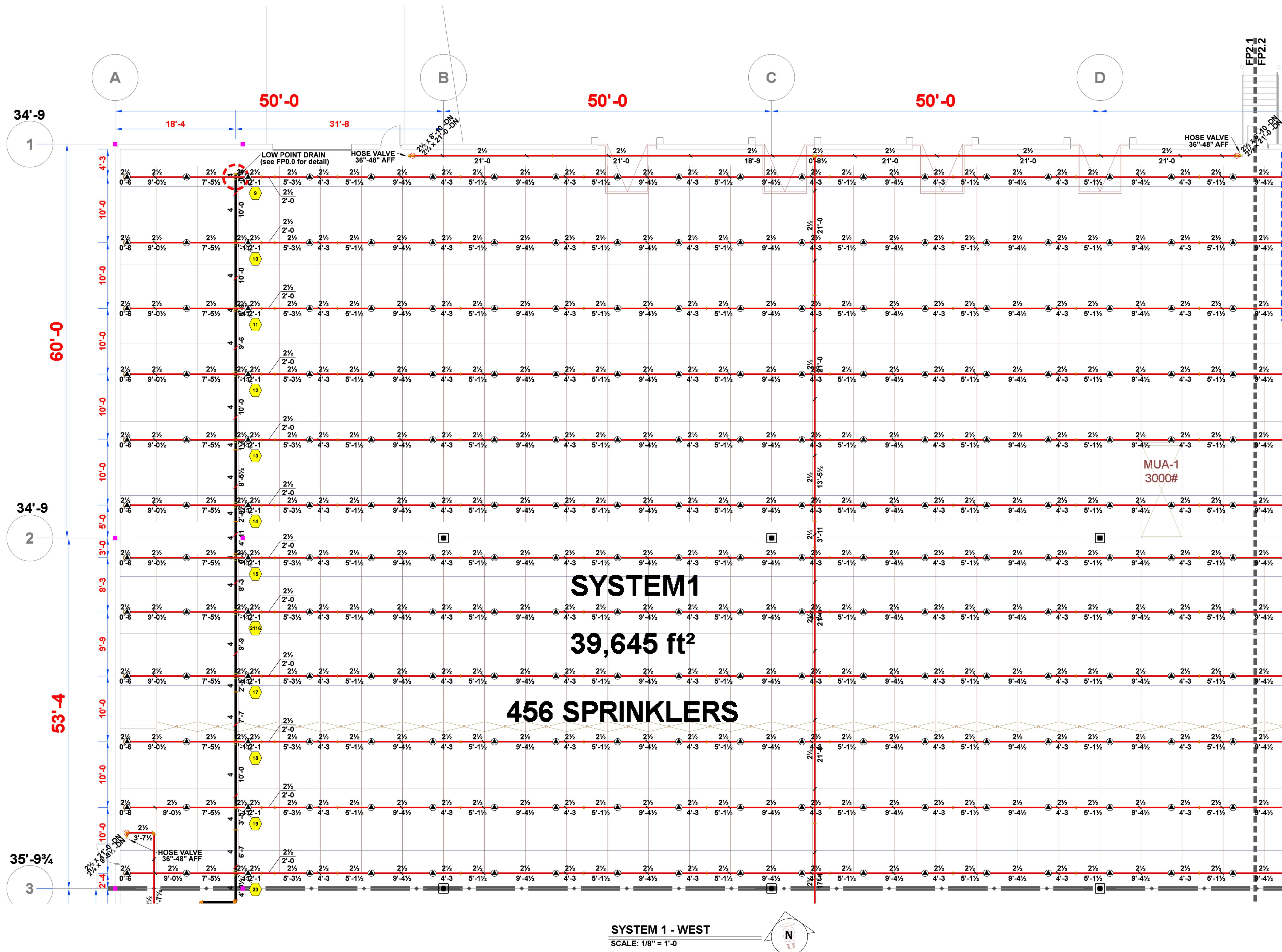
LEE'S SUMMIT LOGISTICS
BUILDING C LOT 2

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PERMIT SET	8-11-22
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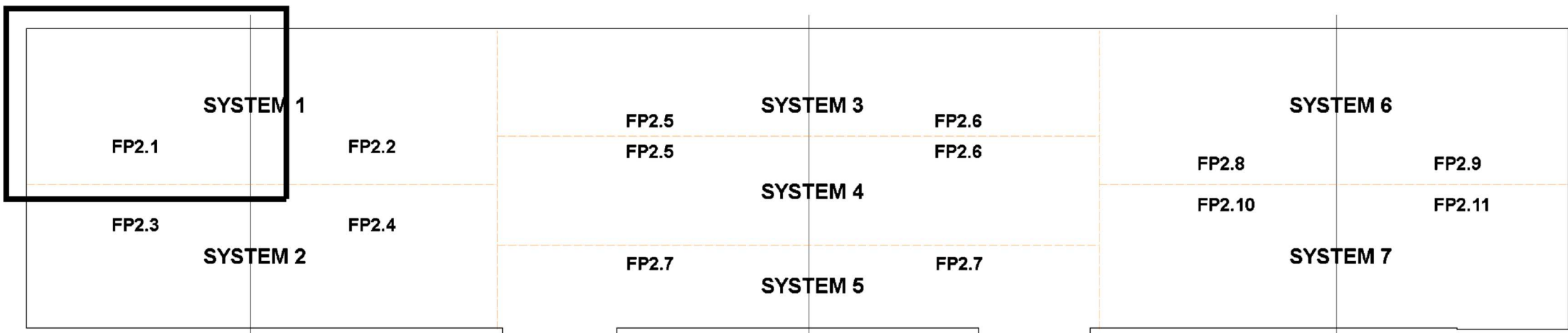
FP 2.1



SYSTEM1
39,645 ft²
456 SPRINKLERS

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

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										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Note
	Viking	VK503	ESFR	2825	16.80	Pendent	1/2"	Fast	Brass	205 °F
	Viking	VK3501	Microfast	4	8.00	Upright	1/2"	Quick	Brass	200 °F
				Total = 2829						



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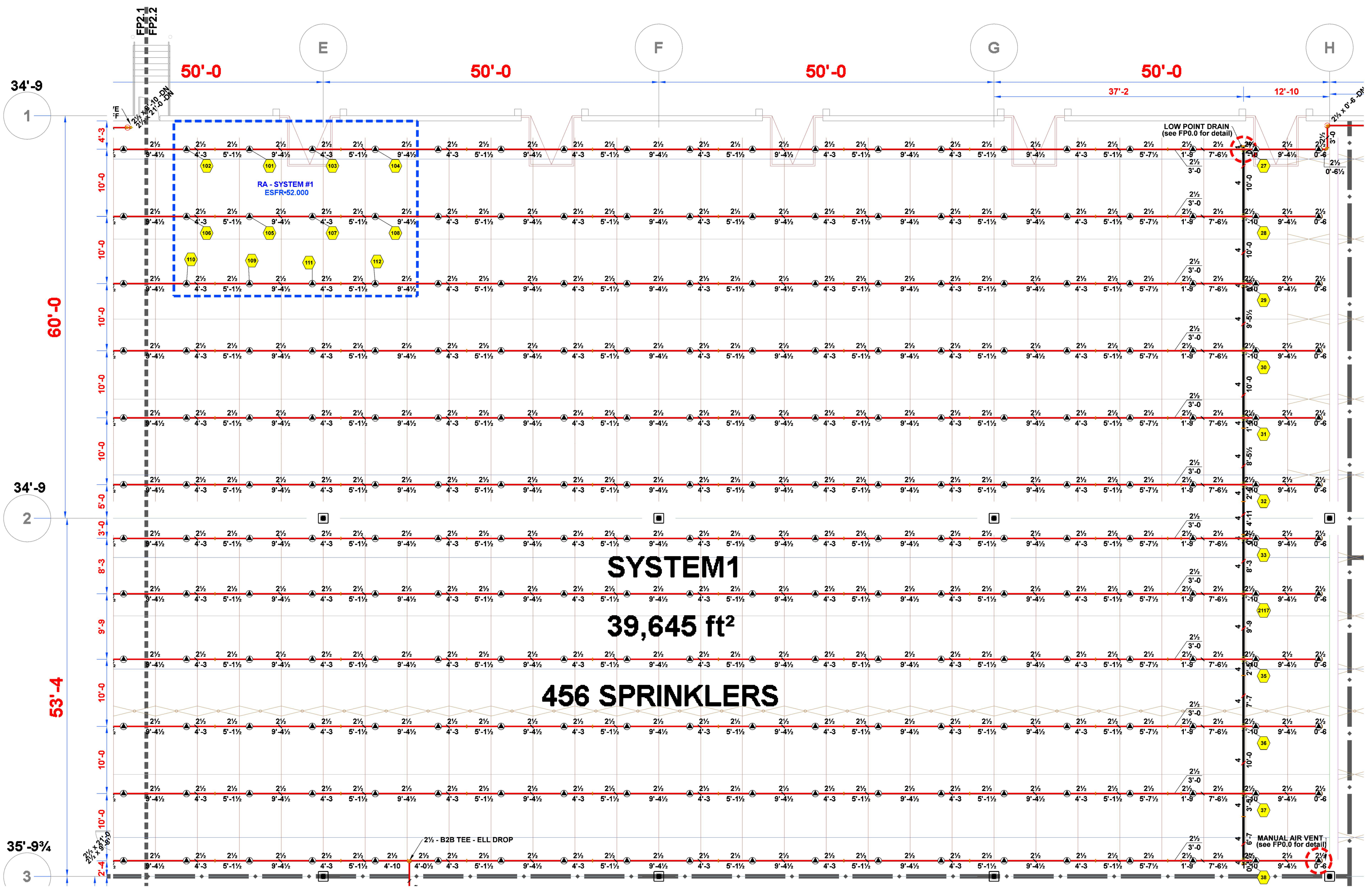
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BUILDING C LOT 2
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PERMIT SET	8-11-22
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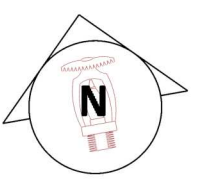
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FP 2.2



SYSTEM1
39,645 ft²
456 SPRINKLERS

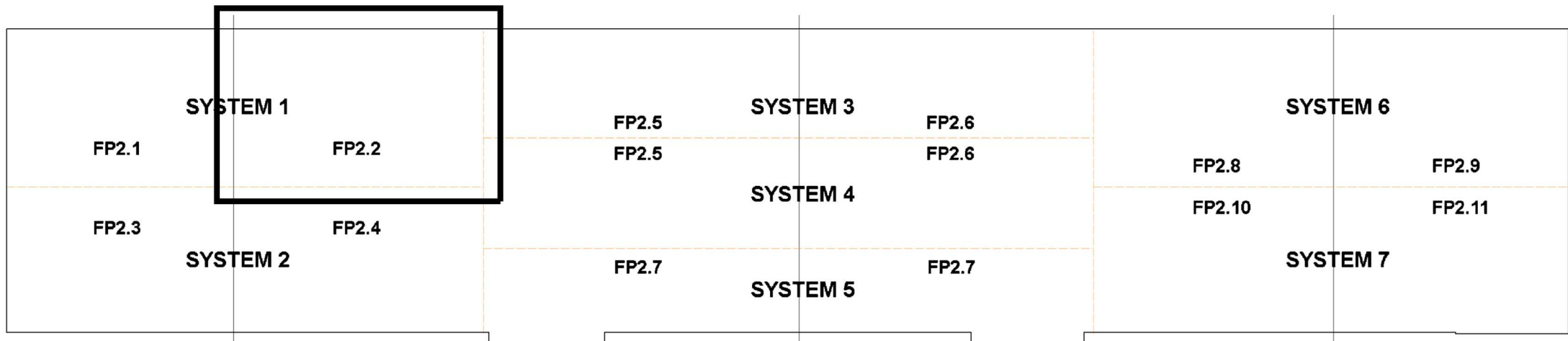
SYSTEM 1 - EAST
SCALE: 1/8" = 1'-0"

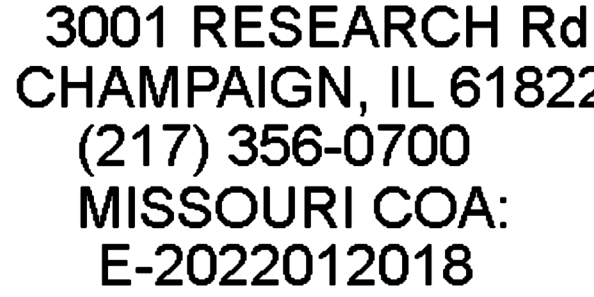


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4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

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										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Note
	Viking	VK503	ESFR	2825	16.80	Pendent	3/4"	Fast	Brass	205 °F
	Viking	VK3501	Microfast	4	8.00	Upright	3/4"	Quick	Brass	200 °F
				Total = 2829						



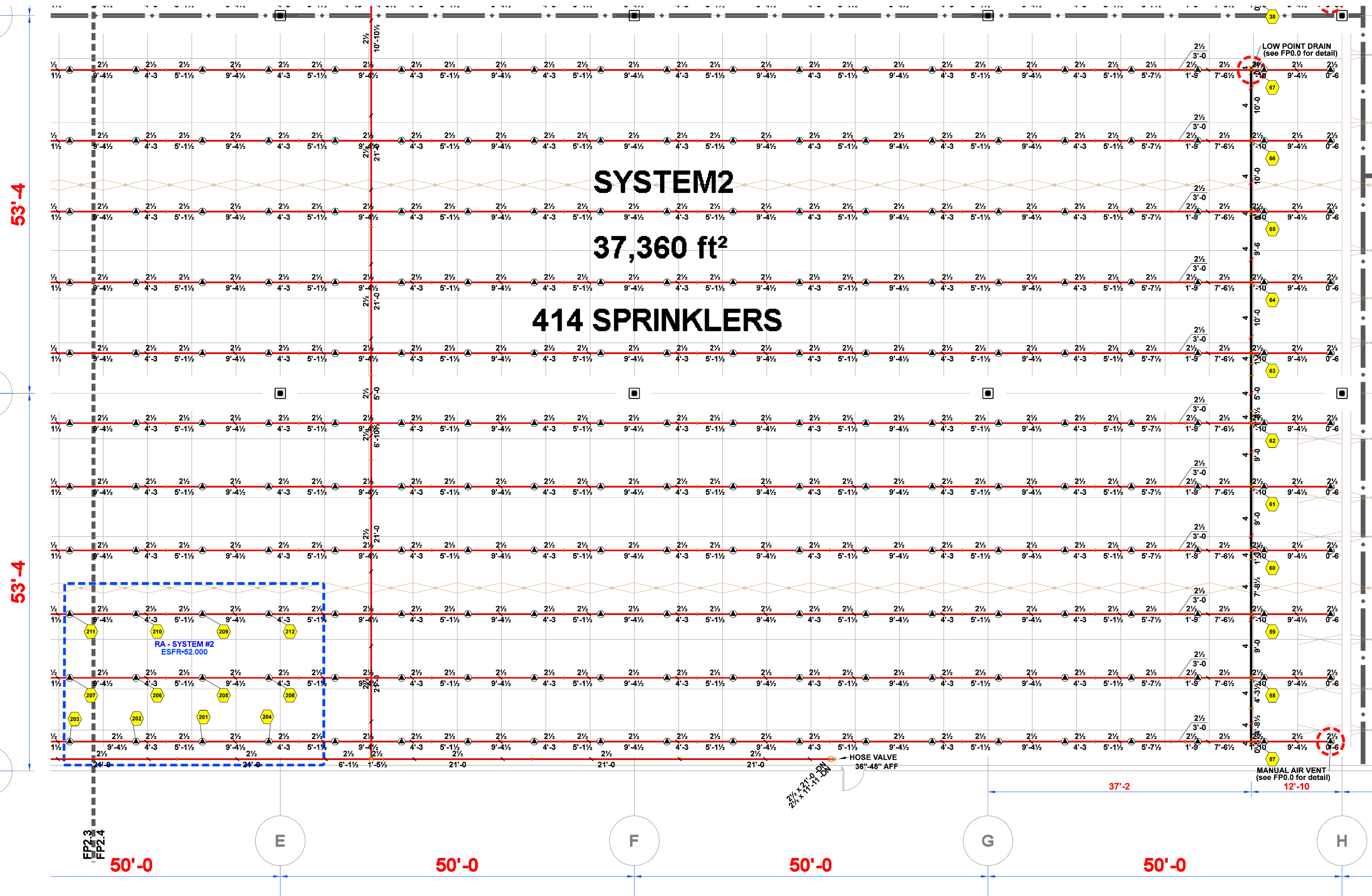


PROJECT INFORMATION
LEE'S SUMMIT LOGISTICS
BUILDING C LOT 2
 NW CORNER OF
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ISSUE DATES	
PERMIT SET	8-11-22
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FP 2.4

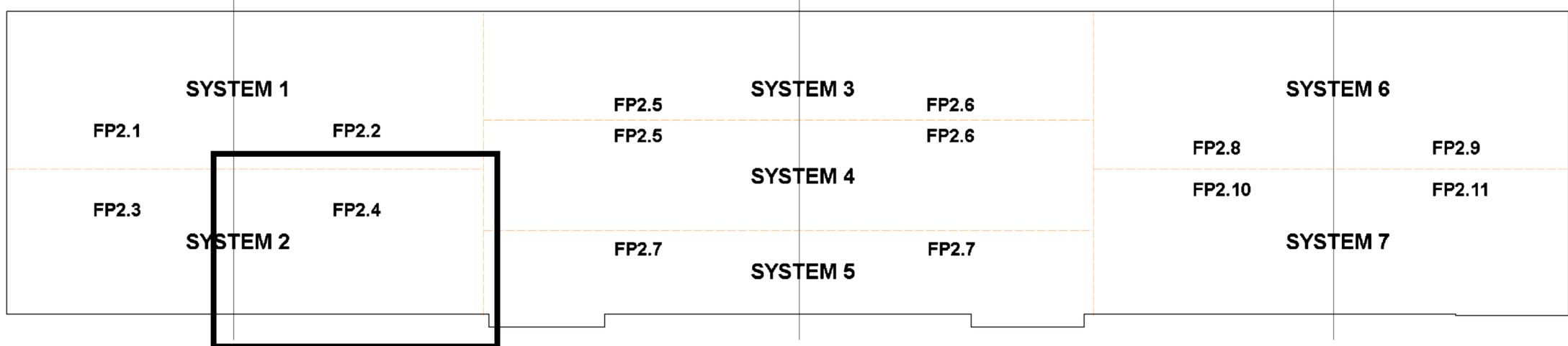


SYSTEM 2 - EAST
SCALE: 1/8" = 1'-0"

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

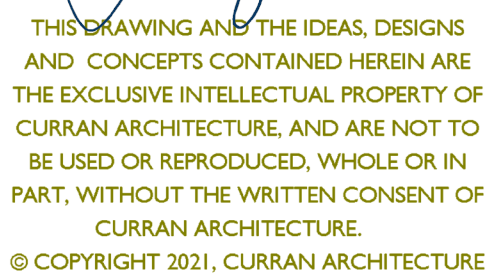
Hydraulic Information	
Remote Area #2 - System 2	
OCCUPANCY CLASSIFICATION	ESFR
MIN. END HEAD PRESSURE	52,000 (ESFR)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	12
K-FACTOR	16.80
TOTAL WATER REQUIRED	1709.09
TOTAL PRESSURE REQUIRED	68.093
BASE OF RISER (gpm)	1709.09
BASE OF RISER (psi)	49.041
SAFETY MARGIN (psi)	+21.508 (24.0%)

Sprinkler Legend											
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
	Viking	VK503	ESFR	2825	16.80	Pendent	¾"	Fast	Brass	205 °F	
	Viking	VK3501	Microfast	4	8.00	Upright	¾"	Quick	Brass	200 °F	BRASS
				Total = 2829							





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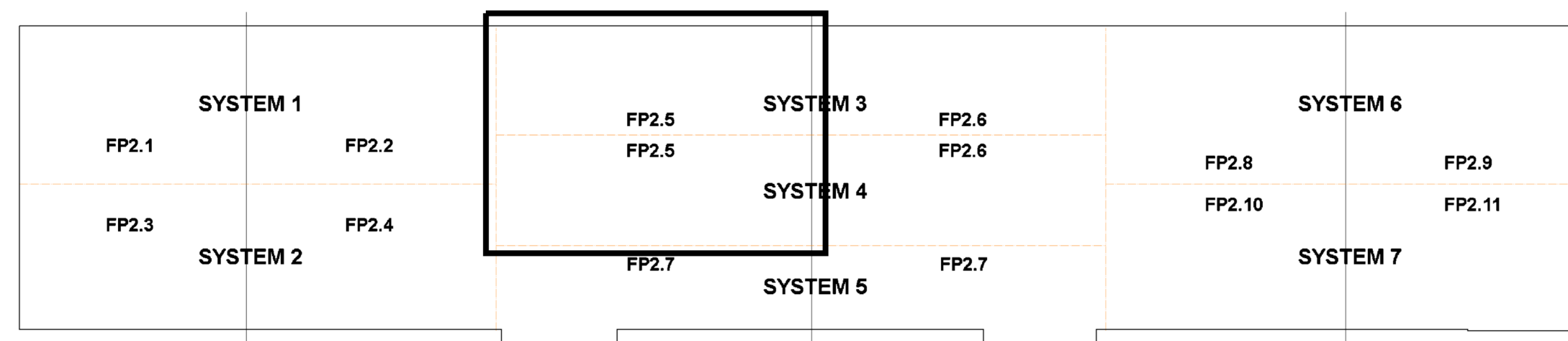
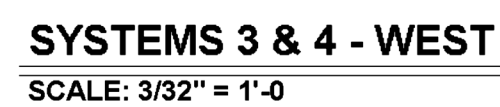
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FP 2.5



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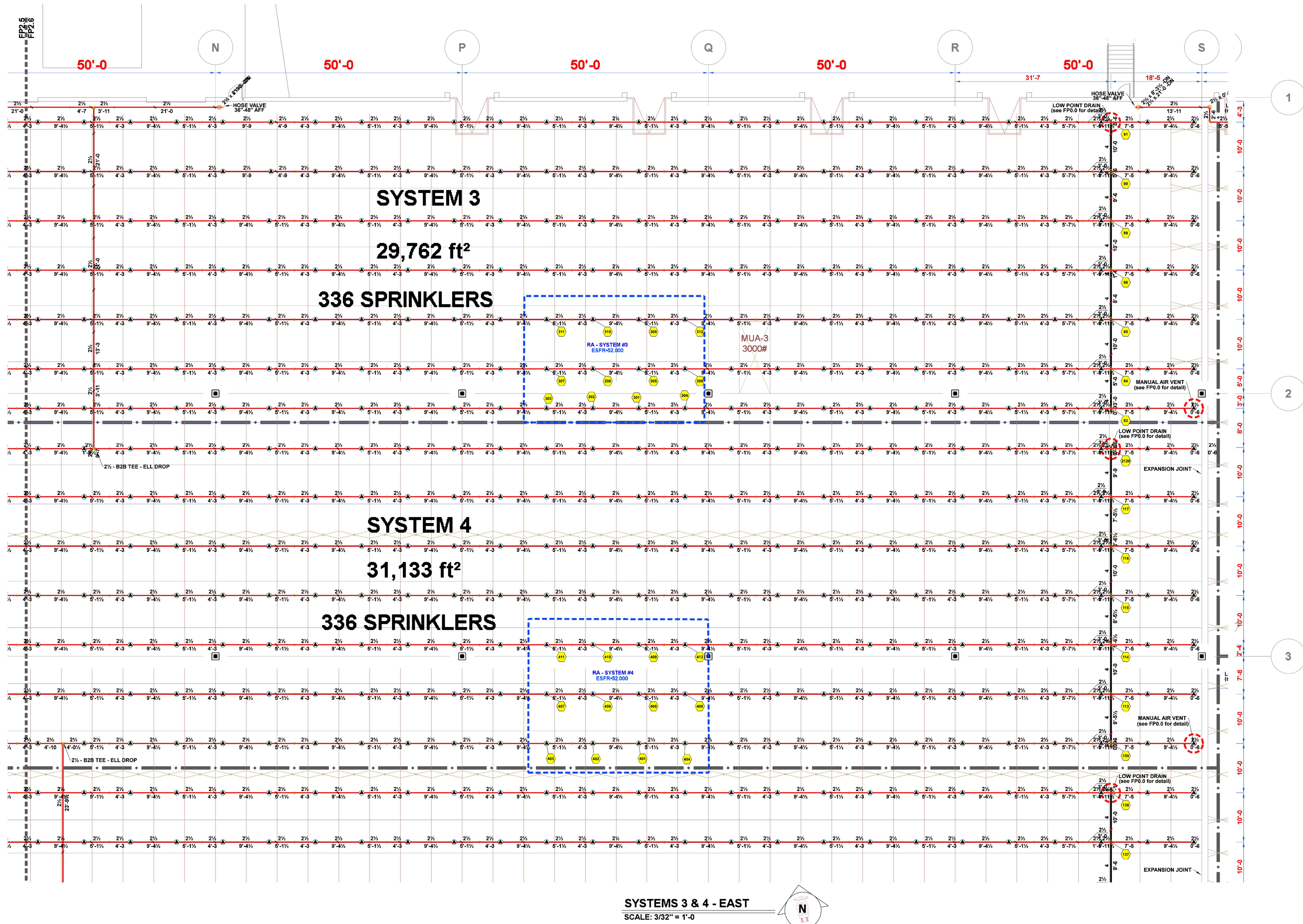
ISSUE DATES

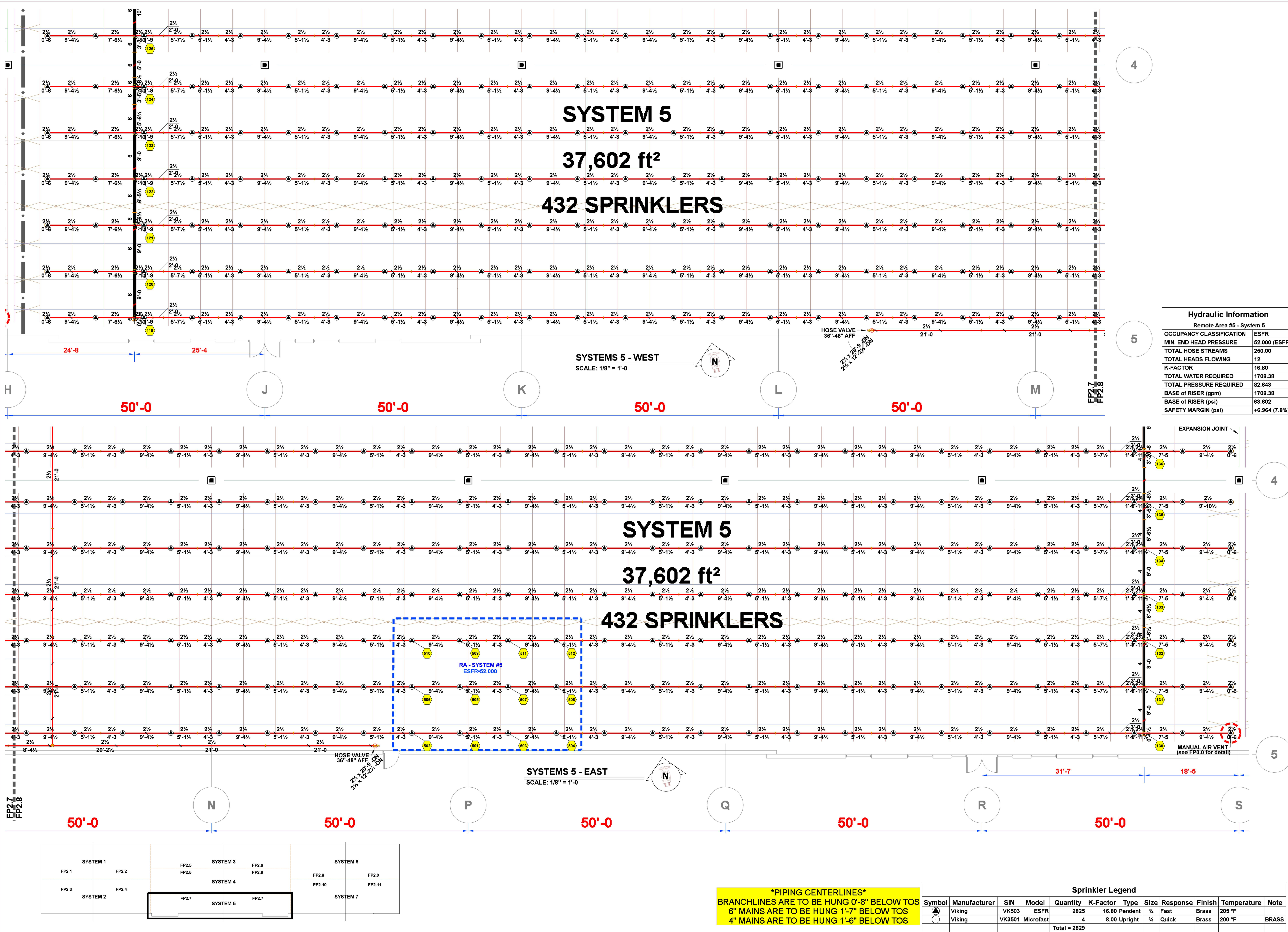
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FP 2.6





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FP 2.7



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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

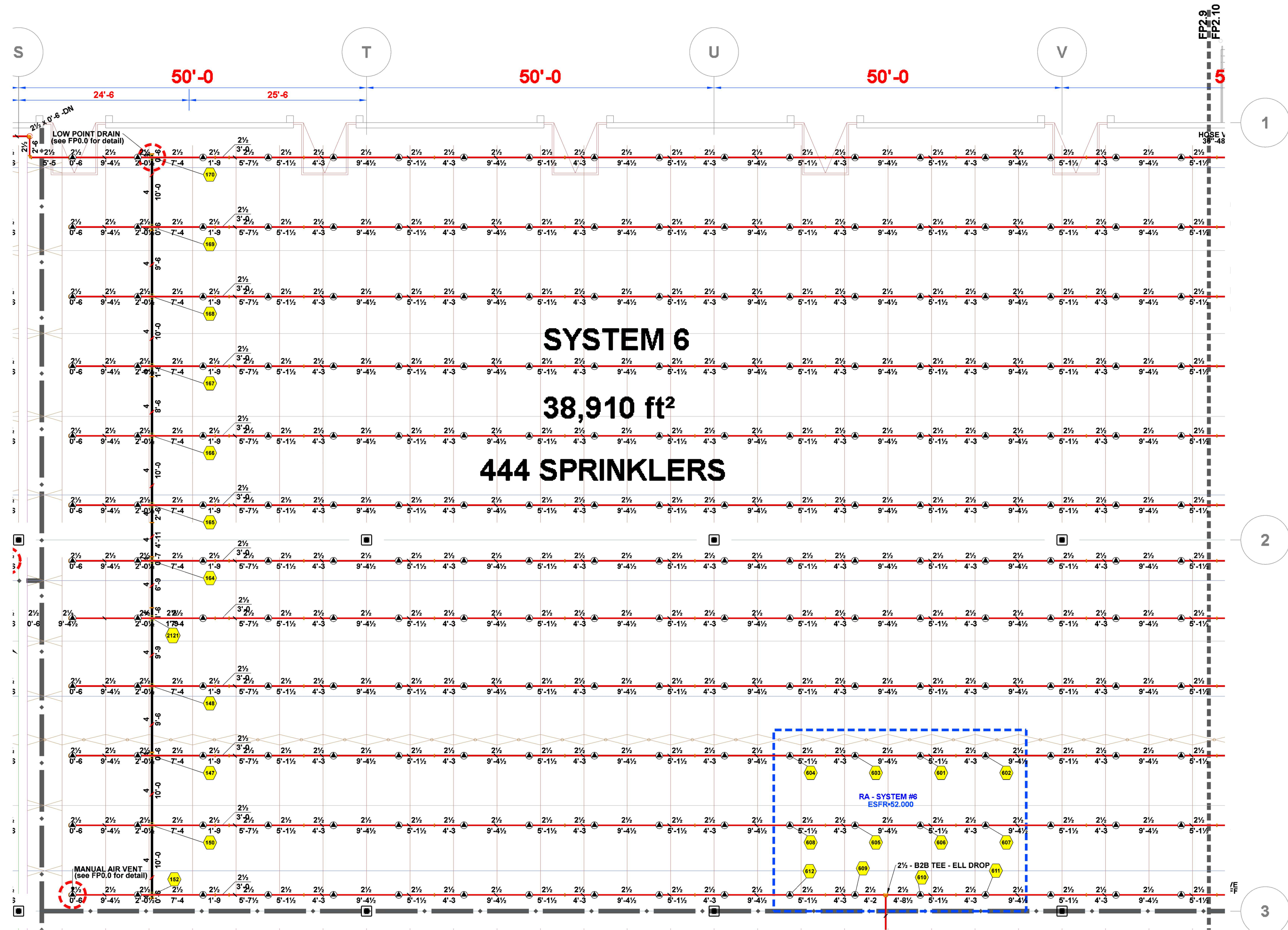
ISSUE DATES

PERMIT SET 8-11-22

REVISION #1 - UNDERGROUND CHANGE 3-10-23

210300

FP 2.8



SYSTEMS 6 - WEST

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

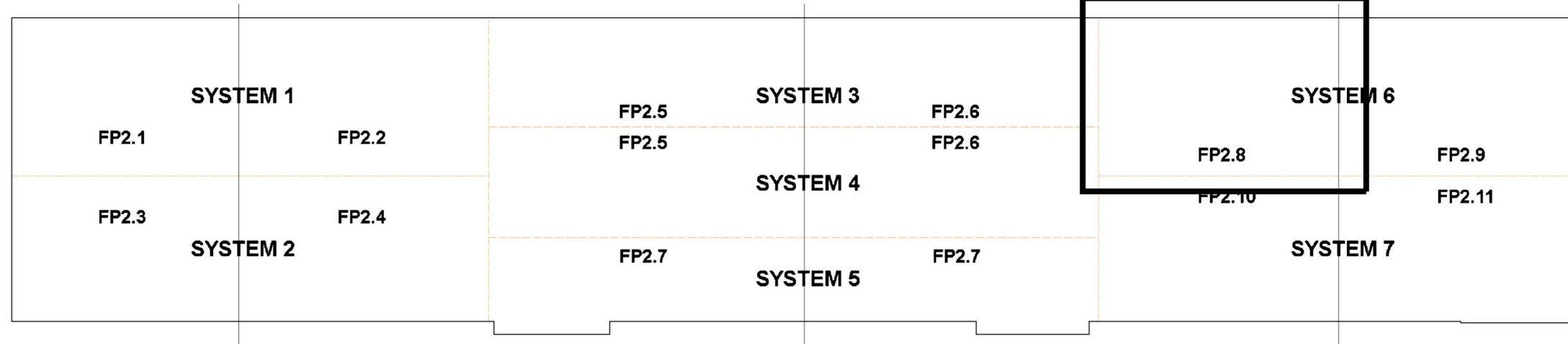
PIPING CENTERLINES
BRANCHLINES ARE TO BE HUNG 0'-8" BELOW TOS
6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS
4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

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

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
▲	Viking	VK503	ESFR	2825	16.80	Pendent	3/4"	Fast	Brass	205 °F	
○	Viking	VK3501	Microfast	4	8.00	Upright	3/4"	Quick	Brass	200 °F	BRASS
				Total = 2829							





3001 RESEARCH Rd
CHAMPAIGN, IL 61822
(217) 356-0700
MISSOURI COA:
E-2022012018



CERTIFICATION
F.E. MORAN, INC. FIRE PROTECTION
COA # E2022012018



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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

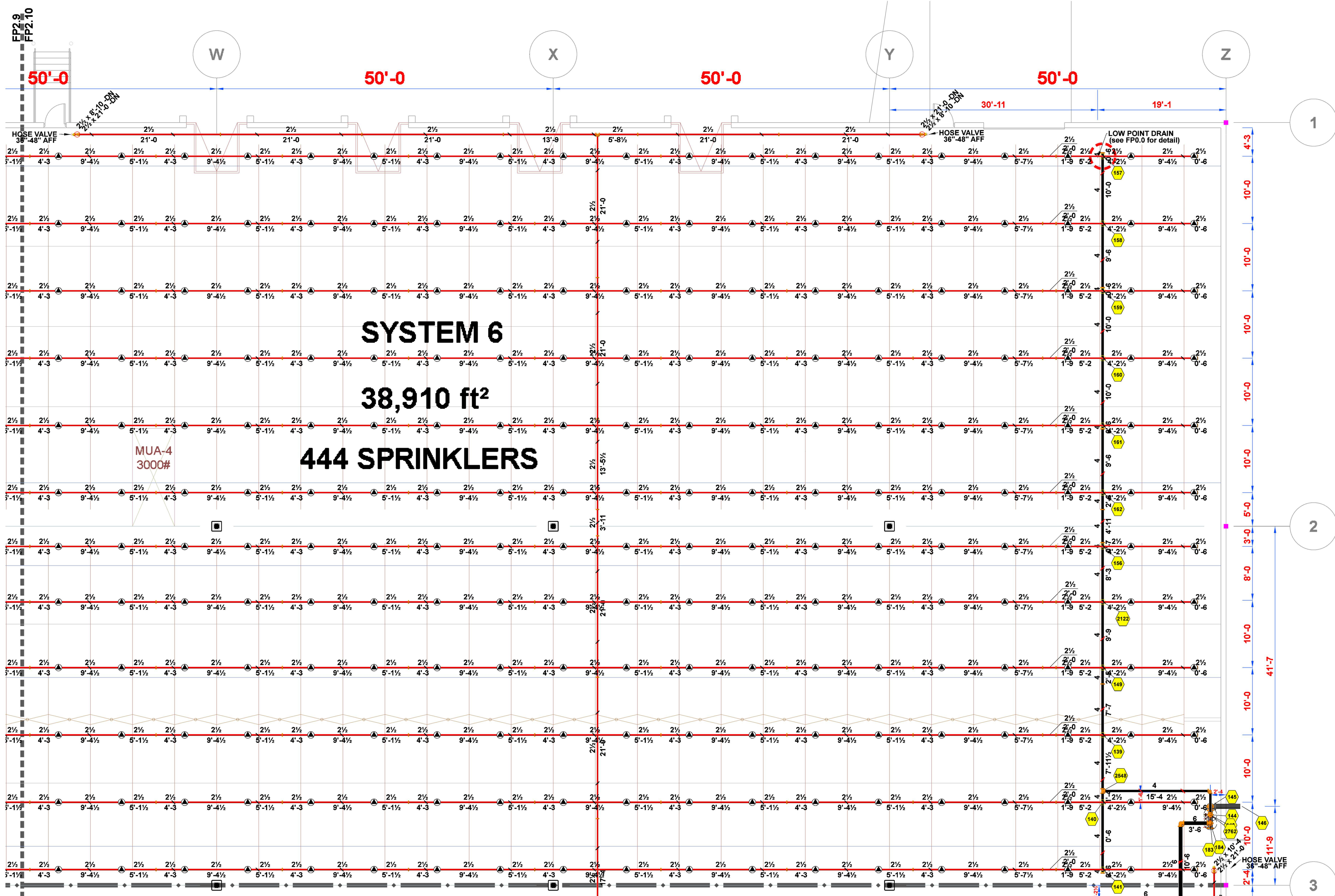
ISSUE DATES

PERMIT SET 8-11-22

REVISION #1 - UNDERGROUND CHANGE 3-10-23

210300

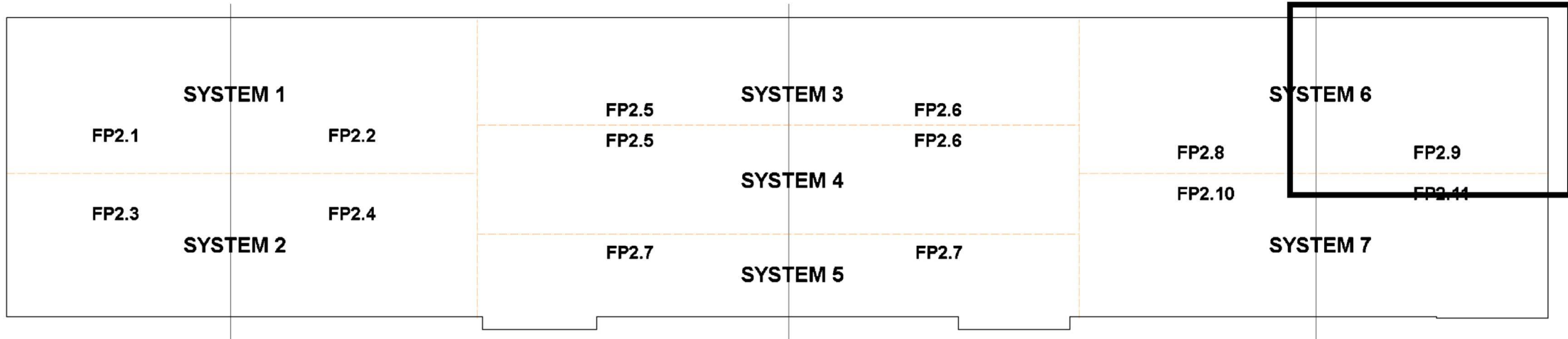
FP 2.9



SYSTEMS 6 - EAST

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

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										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
	Viking	VK503	ESFR	2825	16.80	Pendent	3/4"	Fast	Brass	205 °F
	Viking	VK3501	Microfast	4	8.00	Upright	3/4"	Quick	Brass	200 °F
				Total = 2829						



3001 RESEARCH Rd
CHAMPAIGN, IL 61822
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MISSOURI COA:
E-2022012018



CERTIFICATION

F.E. MORAN, INC. FIRE PROTECTION
COA # E2022012018

STATE OF MISSOURI
MICHELLE A. LOPEZ
NUMBER
PE-2022007904
04/06/2023

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PROJECT INFORMATION

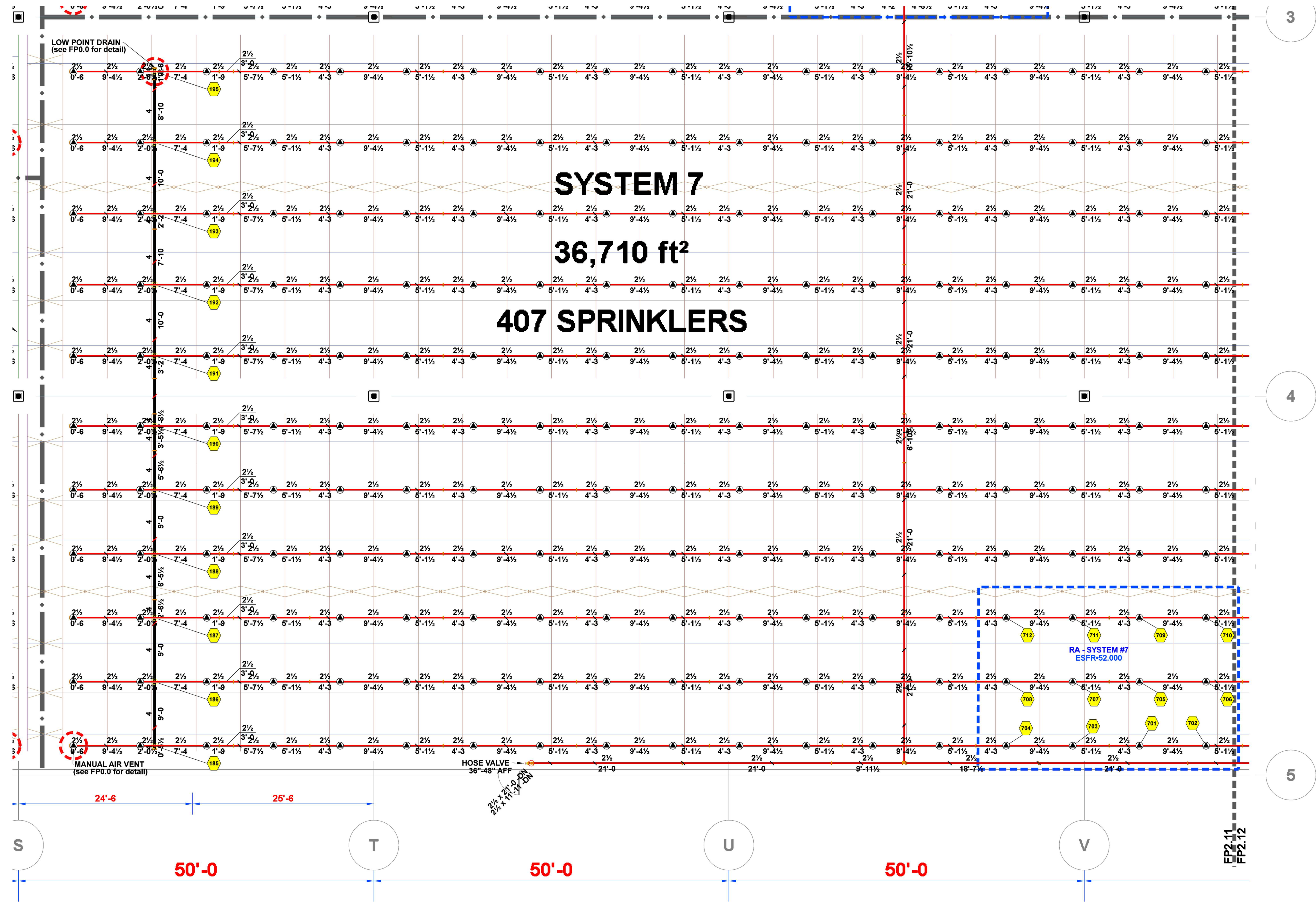
LEE'S SUMMIT LOGISTICS
BUILDING C LOT 2

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

ISSUE DATES		
PERMIT SET	8-11-22	
REVISION #1 - UNDERGROUND CHANGE	3-10-23	

210300

FP 2.10

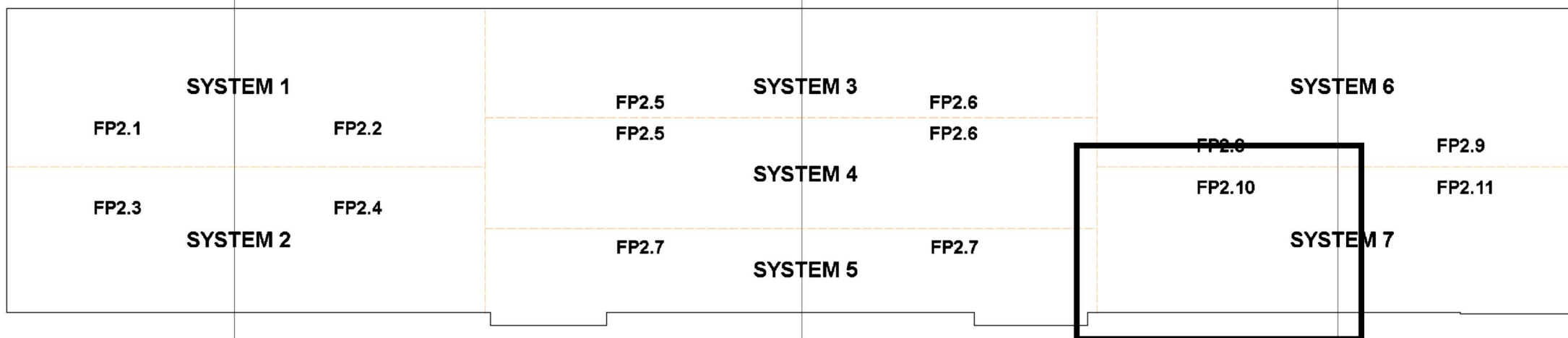


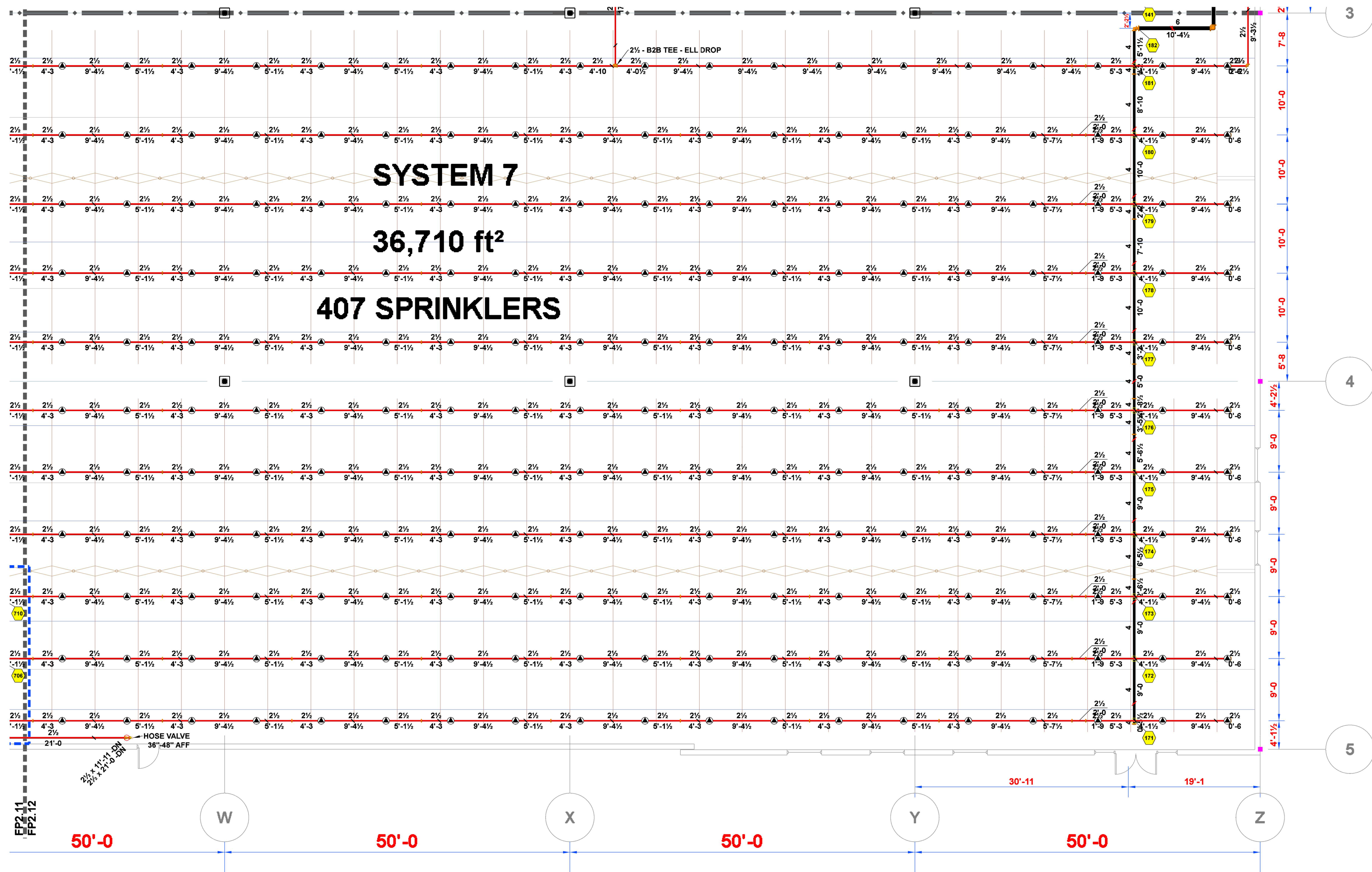
SYSTEMS 7 - WEST
SCALE: 1/8" = 1'-0"

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

Hydraulic Information	
Remote Area #7 - System 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	84.711
BASE OF RISER (gpm)	1709.12
BASE OF RISER (psi)	65.659
SAFETY MARGIN (psi)	+4.890 (5.5%)

Sprinkler Legend										
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature
▲	Viking	VK503	ESFR	2825	16.80	Pendent	3/4"	Fast	Brass	205 °F
○	Viking	VK3501	Microfast	4	8.00	Upright	3/4"	Quick	Brass	200 °F
Total = 2829										BRASS



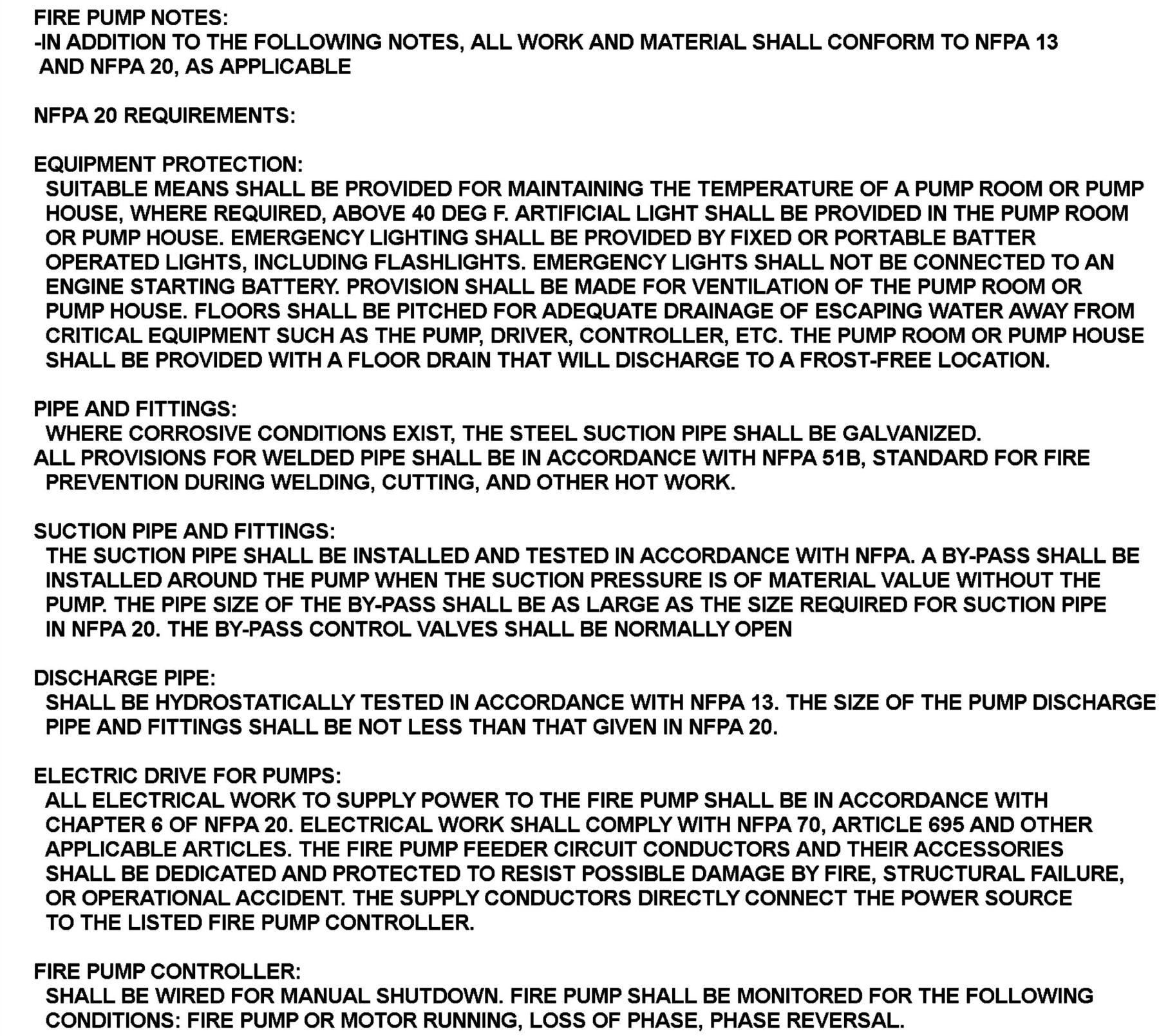


SYSTEMS 7 - EAST
SCALE: 1/8" = 1'-0"

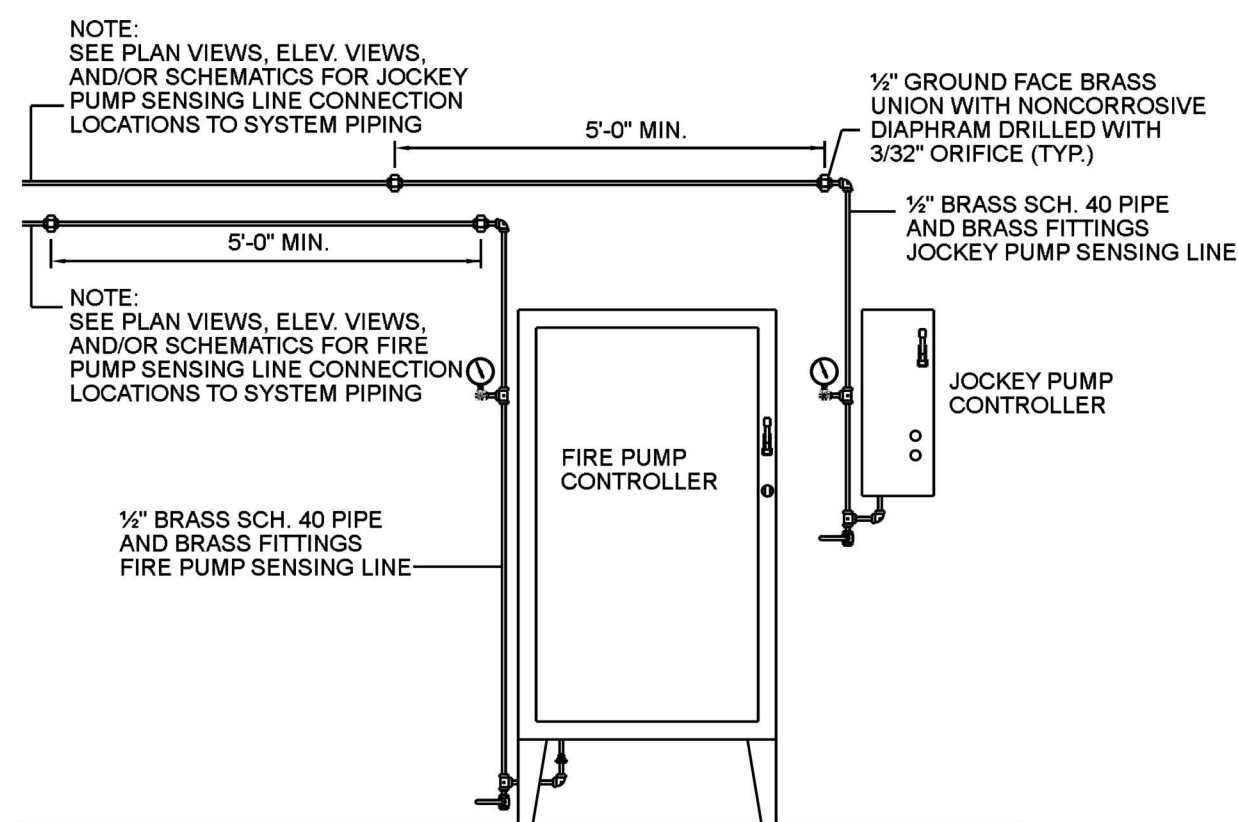
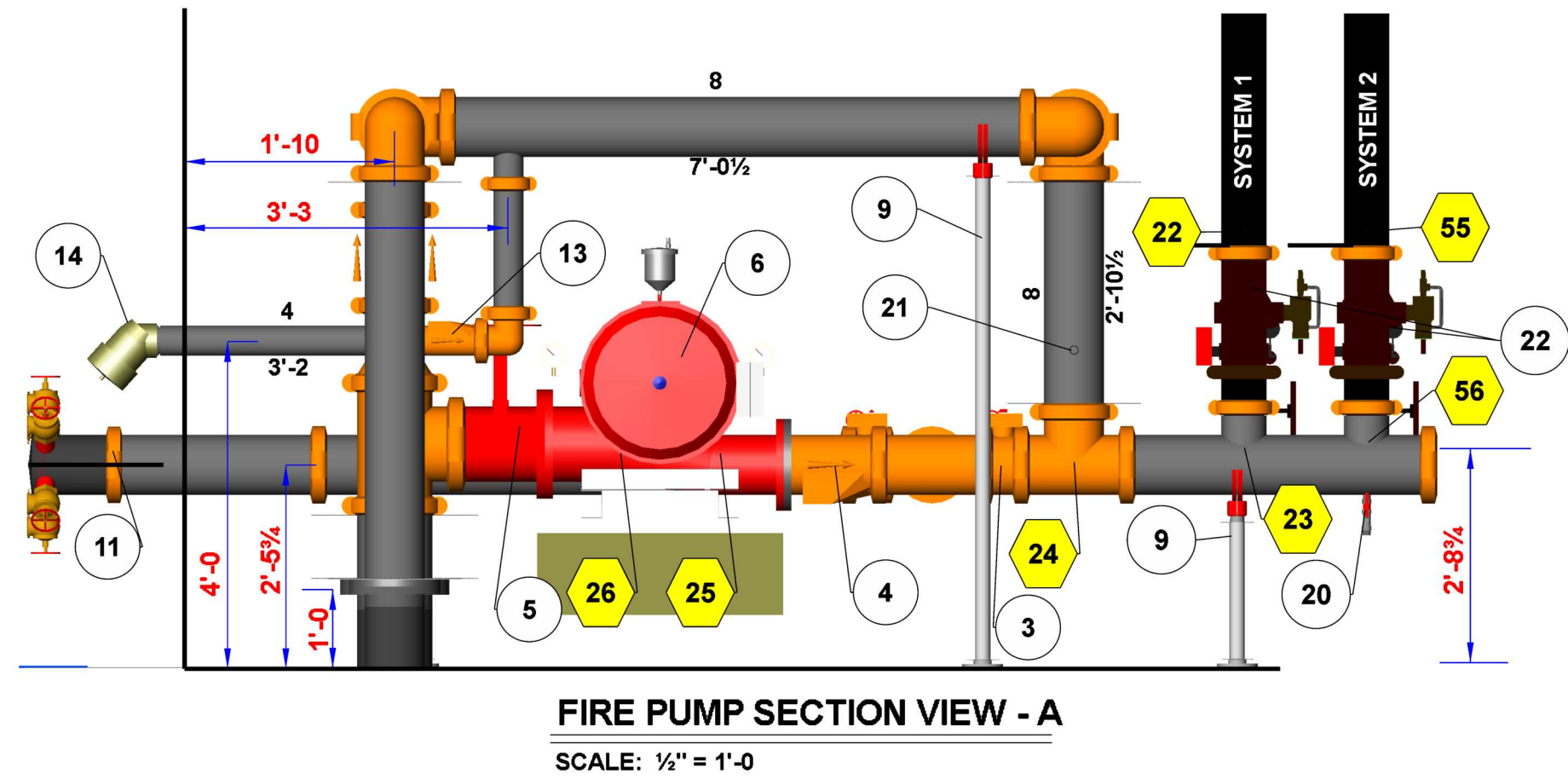
PIPING CENTERLINES
BRANCHLINES ARE TO BE HUNG 0'-8" BELOW TOS
6" MAINS ARE TO BE HUNG 1'-7" BELOW TOS
4" MAINS ARE TO BE HUNG 1'-6" BELOW TOS

Sprinkler Legend											
Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
	Viking	VK503	ESFR	2825	16.80	Pendent	%	Fast	Brass	205 °F	
	Viking	VK3501	Microfast	4	8.00	Upright	%	Quick	Brass	200 °F	BRASS
				Total = 2829							

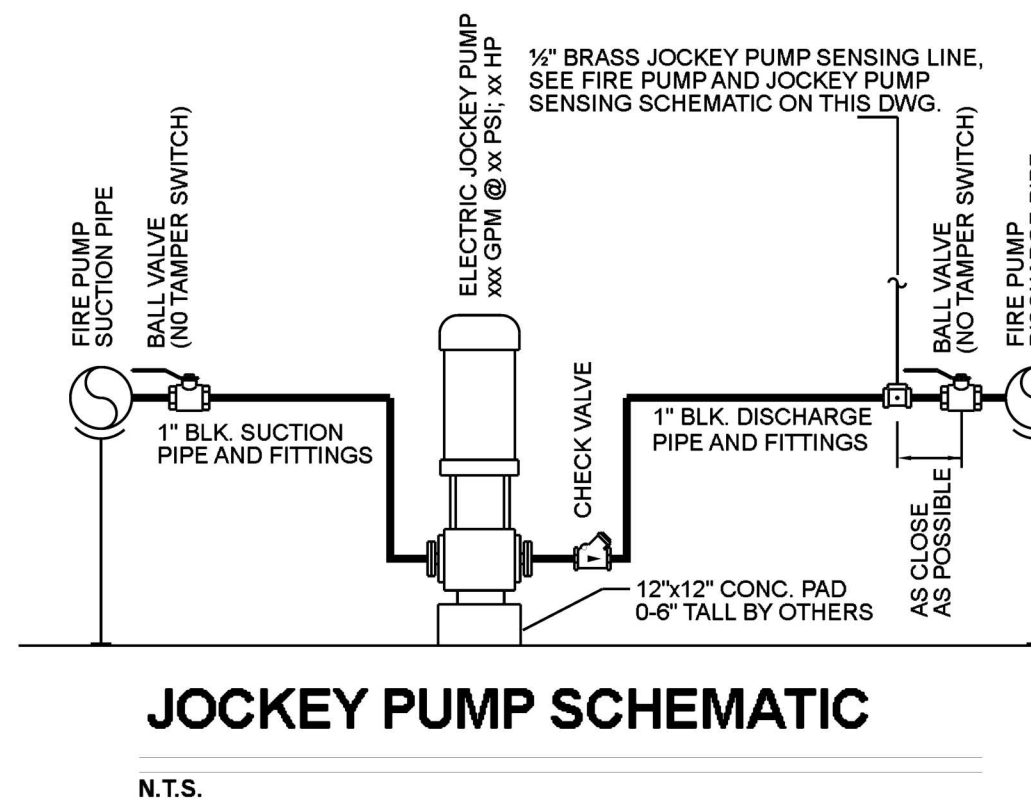
SYSTEM 1		SYSTEM 3		SYSTEM 6	
FP2.1	FP2.2	FP2.5	FP2.6	FP2.8	FP2.9
		FP2.5	FP2.6		
SYSTEM 2		SYSTEM 4		SYSTEM 7	
FP2.3	FP2.4			FP2.10	FP2.11
		FP2.7	FP2.7		
		SYSTEM 5			



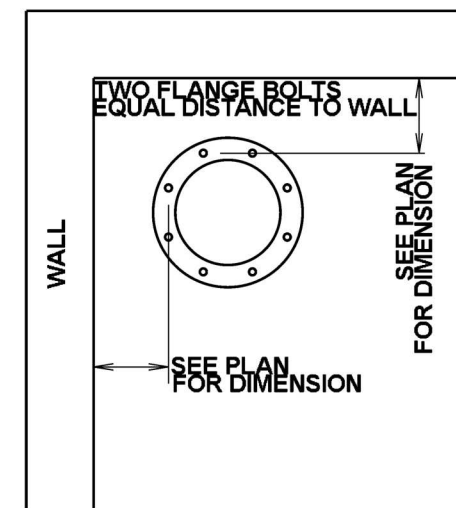
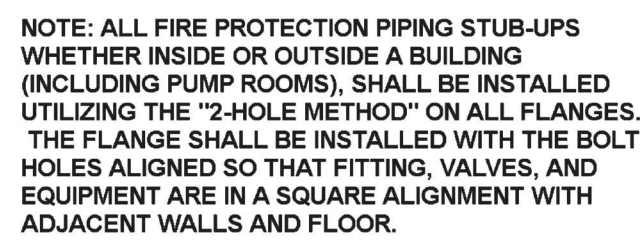
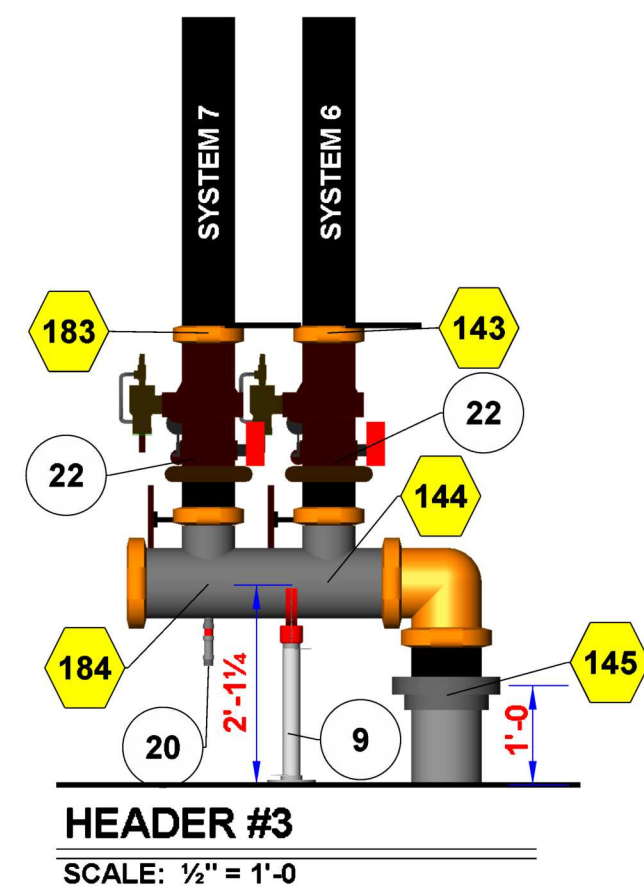
FIRE PUMP ROOM MATERIAL LIST	
TAG No.	COMPONENT
(1)	10" FLANGE (SUPPLY FROM CITY)
(2)	10" TEE
(3)	8" BUTTERFLY VALVE - SUPERVISED NORMALLY OPEN
(4)	8" CHECK VALVE
(5)	10" GRV-GRV OS&Y GATE VALVE (w/ TAMPER)
(6)	10x8 FIRE PUMP - 1500gpm @ 75psi
(7)	125hp ELECTRIC MOTOR
(8)	10x8 GRV-GRV CONCENTRIC REDUCER
(9)	8" PIPE STAND
(10)	8" BUTTERFLY VALVE - SUPERVISED NORMALLY CLOSED
(11)	8 x 2½ 6 WAY TEST HEADER
(12)	8x8 CONCENTRIC REDUCER
(13)	4" CHECK VALVE
(14)	5x4x30" STORZ FDC
(15)	1.5hp JOCKEY PUMP ASSEMBLY (15gpm @ 85psi)
(16)	FIRE PUMP CONTROLLER
(17)	JOCKEY PUMP CONTROLLER
(18)	SPARE HEAD BOX
(19)	HORN & STROBE LIGHT
(20)	AUXILIARY DRAIN
(21)	1" JOCKEY PUMP PIPE OUTLET
(22)	6" UMC w/ FLOW SWITCH, PRESSURE GAUGE, 2" MAIN DRAIN, PRESSURE RELIEF VALVE CHECK VALVE, AND BUTTERFLY VALVE
(23)	8" UMC w/ FLOW SWITCH, PRESSURE GAUGE, 2" MAIN DRAIN, PRESSURE RELIEF VALVE CHECK VALVE, AND BUTTERFLY VALVE



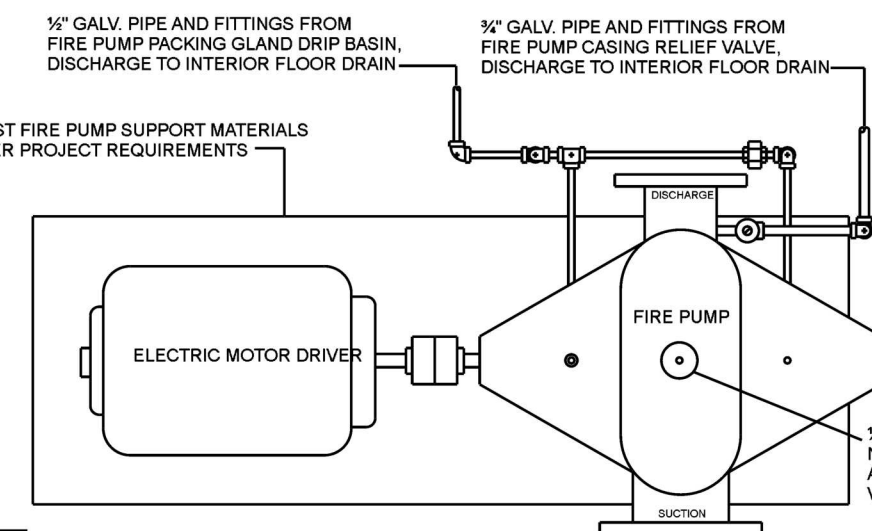
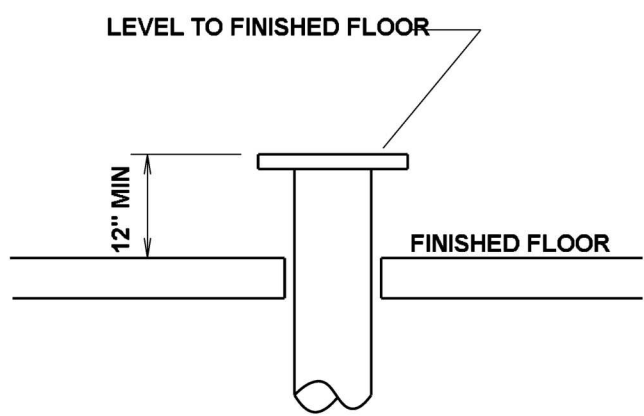
FIRE PUMP AND JOCKEY PUMP SENSING LINE SCHEMATIC



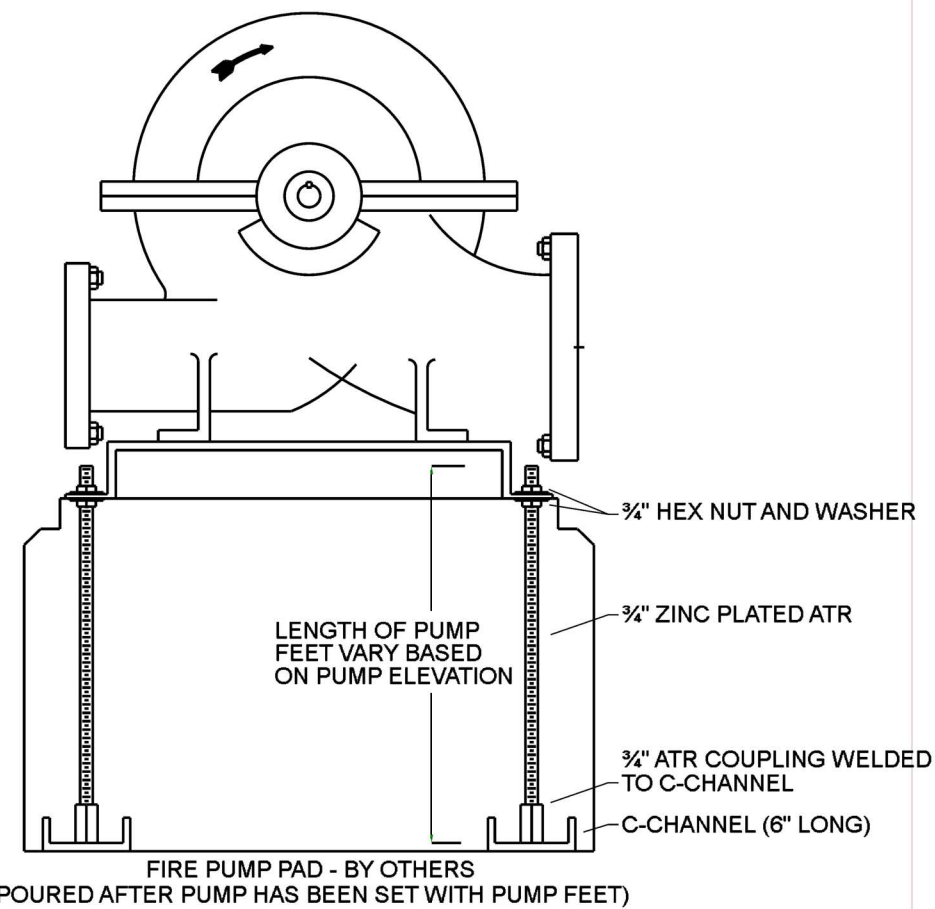
JOCKEY PUMP SCHEMATIC



INCOMING FIRE PROTECTION SUPPLY DETAIL
NOT TO SCALE



ELECTRIC FIRE PUMP SCHEMATIC



PUMP FEET DETAIL

ISSUE DATES	
PERMIT SET	8-11-22
1 REVISION #1 - UNDERGROUND CHANGE	3-10-23