

J:\J & D Sprinkler\2024\24-1414 Harbor Freight, Erwin, NC\ENGINEERING\IN-HOUSE (SHOP DRAWINGS)\SHOP DRAWINGS\DWG\24-1414-00-FA02.DWG

HARBOR FREIGHT SPRINKLER ALARM MONITORING

ERWIN, NORTH CAROLINA 28339 FIRE ALARM SYSTEM



HARBOR FREIGHT
SPRINKLER ALARM MONITORING
ERWIN, NORTH CAROLINA 28339
FIRE ALARM SYSTEM

J & D SPRINKLER COMPANY
315 WEST MAIN STREET
CLAYTON, NORTH CAROLINA 27520
919-553-2356



SHOP DRAWINGS
PREPARED BY:
JRH FIRE DESIGN & CONSULTING, LLC
DESIGN DRAWINGS BY NC PROFESSIONAL
ENGINEER DAVID J. WHITNEY
SEAL # 17382 & SIGNED 10/23/2024

INSTALLATION BY:
J & D SPRINKLER CO., INC.
NC SPECIAL RESTRICTED FIRE ALARM/
LOW VOLTAGE CLASSIFICATION LICENSE
RES# FA 113223 QUALIFIER
MARC LAKEY

JRH JOB #	24-1414
REVISION: 0	DATE: 11/01/2024
INITIAL RELEASE	
REVISION:	DATE:
REVISION:	DATE:
REVISION:	DATE:
REVISION:	DATE:
REVISION:	DATE:
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REVISION:	DATE:

DRAWING TITLE:
COVER SHEET, NFPA 72 & ADA DEVICE
INSTALL REQMT, SHEET/WIRE LEGEND,
FIRE ALARM SYSTEM SYMBOLS & MATRIX

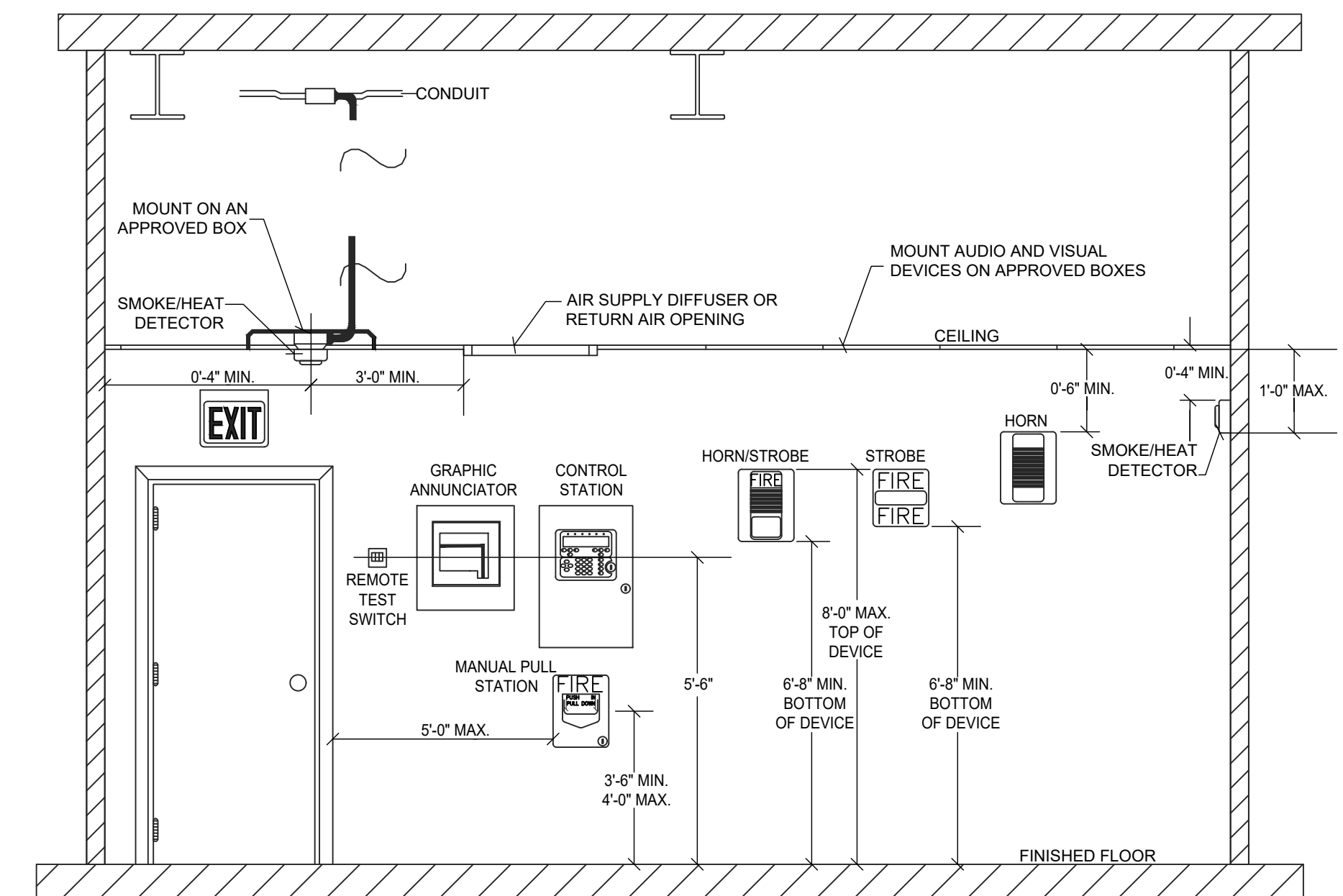
DRAWN BY:	JRH
SALESMAN:	ML
PROJECT MGR:	
DATE:	11/01/2024
SCALE:	AS SHOWN ON PLANS
SHEET NO. 1	OF 3

DRAWING NO.
FA-01

FIRE ALARM SYSTEM SYMBOL GUIDANCE (ADAPTED FROM NFPA 170 2018)

1. THE INTENTION OF THIS GUIDANCE IS TO PROVIDE GREATER CLARITY TO FIRE ALARM SYSTEM DESIGN AND SHOP DRAWINGS.
2. IT IS REQUESTED THAT FIRE ALARM DESIGN BE SHOWN ON THEIR OWN SHEETS AND OPPOSED TO BEING PRESENTED ON SHEETS WITH OTHER ELECTRICAL SYSTEMS.
3. PLEASE USE THE SYMBOLS SHOWN IN THE CHART IN LIEU OF THE CORRESPONDING SYMBOL AS SHOWN IN NFPA 170.
4. FOR SYMBOLS NOT SHOWN IN CHART BELOW, PLEASE USE THE SYMBOLS SHOWN IN NFPA 170.
5. LETTERING HEIGHT SHALL BE AT LEAST 1/8" ON PLANS (SYMBOLS BELOW ARE TO THIS SCALE).
6. NEW EQUIPMENT SHALL BE SHOWN USING A SOLID LINE. EXISTING EQUIPMENT SHALL BE SHOWN USING A DASHED LINE. EQUIPMENT TO BE DEMOLISHED SHALL BE NOTED ACCORDINGLY AND SPECIFICALLY.

SYMBOLS	QTY.	MANUFACTURE	MODULE NUMBER	DEVICE
	-	FIRE LITE	ES50x	FIRE S CONTROL PANEL
	1	SYSTEM SENSOR	P2WLED-P	WALL MOUNTED HORN/STROBE - WHITE PLAIN MARKINGS
	1	FIRE LITE		SMOKE DETECTOR
	1	FIRE LITE		DUAL-ACTION PULL STATION
	1	-	FMM 101	SPRINKLER WATER FLOW PROVIDED BY OTHERS
	2	-	-	SPRINKLER TAMPER SWITCH PROVIDED BY OTHERS
EOL	-	-	-	END OF LINE RESISTOR



SHEET LEGEND

SHEET NO.	DESCRIPTION
FA-0.1	COVER SHEET, NFPA 72 & ADA DEVICE INSTALLATION REQMTS, SHEET/WIRE LEGEND, FIRE ALARM SYSTEM SYMBOLS AND MATRIX
FA-1.1	SYSTEM NOTES AND SPRINKLER MONITORING SYSTEM - FIRE ALARM
FA-2.1	FIRE ALARM RISER DETAILS AND FIRE ALARM CALCULATIONS

WIRE LEGEND

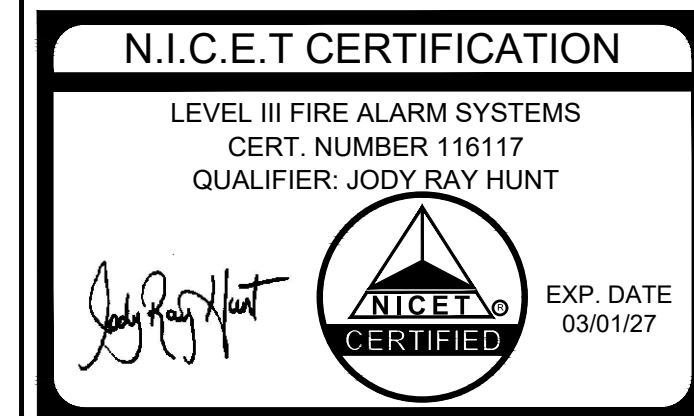
SHEET NO.	DESCRIPTION
NAC	(CONDUIT) (2) #18 AWG SOLID THHN/THWN, BLUE (+), BLACK (-). FREE AIR 18-2 AWG CABLE FPLP.
IDC	(CONDUIT) (2) #18 AWG SOLID THHN/THWN, RED (+), BLACK (-). FREE AIR 18-2 AWG CABLE FPLP.
SLC	(CONDUIT) (2) #18 AWG SOLID THHN/THWN, RED (+), BLACK (-). FREE AIR 18-2 AWG CABLE FPLP.

FIRE ALARM SYSTEM INPUT/OUTPUT MATRIX

SYSTEM INPUTS	SYSTEM OUTPUTS																									
	FACP ANNUNCIATION					NOTIFICATION					REQUIRED FIRE SAFETY CONTROL															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	
1 FIRE ALARM SYSTEM AC POWER FAILURE																										
2 FIRE ALARM SYSTEM LOW BATTERY																										
3 OPEN CIRCUIT																										
4 GROUND FAULT																										
5 NOTIFICATION APPLIANCE CIRCUIT SHORT																										
6 BUILDING MANUAL PULL STATIONS																										
7 AREA SMOKE DETECTORS																										
8 SPRINKLER TAMPER SWITCH																										
9 SPRINKLER WATER FLOW IN BUILDING																										
10 HOT BOX LOW TEMPERATURE																										

FIRE ALARM SYSTEM MATRIX

NOT TO SCALE



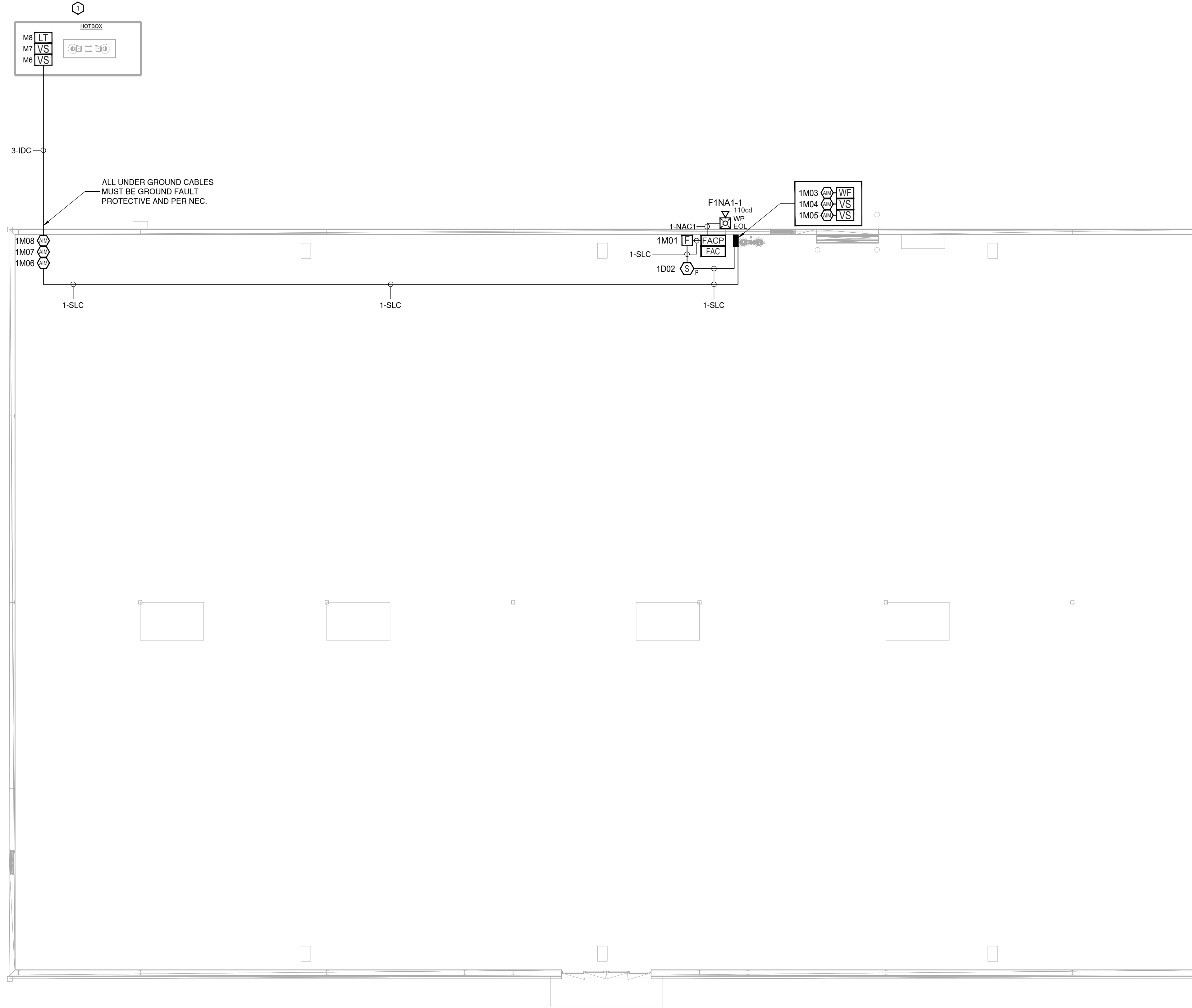
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KEY NOTES

① HOT BOX ON SITE FOR BACKFLOW PREVENTION. COORDINATE EXACT LOCATION WITH ARCHITECTURAL SITE PLAN.

FIRE ALARM - SPRINKLER NOTES

- SEE PLANS FOR QUANTITY AND LOCATION OF ALL EQUIPMENT.
- CONTRACTOR SHALL PROVIDE COMPLETE DOCUMENT PER 2018 FIRE CODE SECTION 907.1.1 AND 907.1.2 TO TO ENGINEER FOR APPROVAL PRIOR TO SUBMIT TO AND TESTING BY LOCAL FIRE MARSHAL'S OFFICE.
- PLACARD THE ENTIRE FIRE ALARM SYSTEM. PROVIDE PANEL AND CIRCUIT NUMBERS ON A NAME PLATE AFFIXED TO THE FACE OF THE FIRE ALARM CONTROL PANEL.
- CONTRACTOR SHALL PROVIDE ZONE MAPS COMPLETE WITH ADDRESSES FOR EACH FIRE ALARM DEVICE IN WOODEN FRAME ADJACENT TO THE NEW FIRE ALARM CONTROL PANEL.
- ELECTRICAL CONTRACTOR SHALL PROVIDE BATTERY CALCULATIONS AND CUT SHEETS FOR FIRE ALARM SYSTEM TO ENGINEER FOR APPROVAL.
- ALL WIRING SHALL BE SUPERVISED.
- ALL WIRING SHALL BE PER MANUFACTURER'S SPECIFICATIONS.
- ALL WIRING IN WALLS OR FURRED SPACES SHALL BE IN CONDUIT.
- WHERE PERMITTED BY CODE, WIRING ABOVE ACCESSIBLE CEILINGS MAY BE RUN EXPOSED AND THE FOLLOWING REQUIREMENTS SHALL BE MET:
 - WIRING SHALL BE PLENUM RATED WHERE APPLICABLE.
 - PROVIDE BRIDLE RINGS FOR INDEPENDENT FIRE ALARM CABLE SUPPORT UNLESS SPECIFICALLY NOTED OTHERWISE. ANALOG LOOP WIRING INCOMING AND OUTGOING SHALL NOT BE SUPPORTED IN THE SAME BRIDLE RING.
- ADDRESSABLE SLC CIRCUIT REQUIREMENTS:
 - WIRING SHALL BE 'CLASS B'.
 - MINIMUM CAPACITY OF ANALOG SENSORS PER LOOP SHALL BE 48.
 - MINIMUM CAPACITY OF ADDRESSABLE MONITORING DEVICES PER LOOP SHALL BE 48.
 - MINIMUM CAPACITY OF ADDRESSABLE CONTROL RELAY MODULES PER LOOP SHALL BE 48.
- NOTIFICATION CIRCUIT REQUIREMENTS:
 - WIRING SHALL BE 'CLASS B'.
 - PROVIDE WITH 'SYNC MODULE' AS REQUIRED PER NFPA 72.
 - FURNISH NOTIFICATION CIRCUITS AS REQUIRED TO ACCOMMODATE CIRCUIT LOADING. NO NOTIFICATION CIRCUIT SHALL BE LOADED TO MORE THAN 80% CAPACITY.
- DIGITAL ALARM COMMUNICATOR:
 - WHERE SINGLE COMMUNICATION PATH WITH INTERNET NETWORK IS ACCEPTABLE BY THE LOCAL FIRE MARSHAL, PROVIDE WITH THE COMMUNICATOR IN LIEU OF 2 LINE TELEPHONE IN COMPLIANCE WITH NFPA 72 26.6.3.1.5.
 - WHERE DUAL COMMUNICATION PATHS OF CELLULAR NETWORK AND INTERNET NETWORK ARE REQUIRED BY THE LOCAL FIRE MARSHAL, PROVIDE WITH COMMUNICATOR IN LIEU OF 2 LINE TELEPHONE.
 - FIELD COORDINATE TYPE MATCH MONITORING COMPANY.
- FOR SPRINKLER SYSTEM:
 - FIELD COORDINATE QUANTITY AND LOCATION OF FLOW AND TAMPER SWITCHES WITH SPRINKLER'S FINAL DRAWINGS AND/OR CIVIL FINAL DRAWING FOR TAMPER SWITCH FOR PIV VALVE.
 - PROVIDE MONITORING MODULES AS REQUIRED FOR SPRINKLER SYSTEM.



 **SPRINKLER MONITORING SYSTEM - FIRE ALARM**
SCALE: 1/8" = 1'-0"

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RES/FA/LV 32523 QUALIFIER
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DRAWING TITLE:
SYSTEM NOTES & SPRINKLER MONITORING SYSTEM - FIRE ALARM

DRAWN BY:	JRH
SALESMAN:	ML
PROJECT MGR:	
DATE:	11/01/2024
SCALE:	AS SHOWN ON PLANS
SHEET NO. 2	OF 3

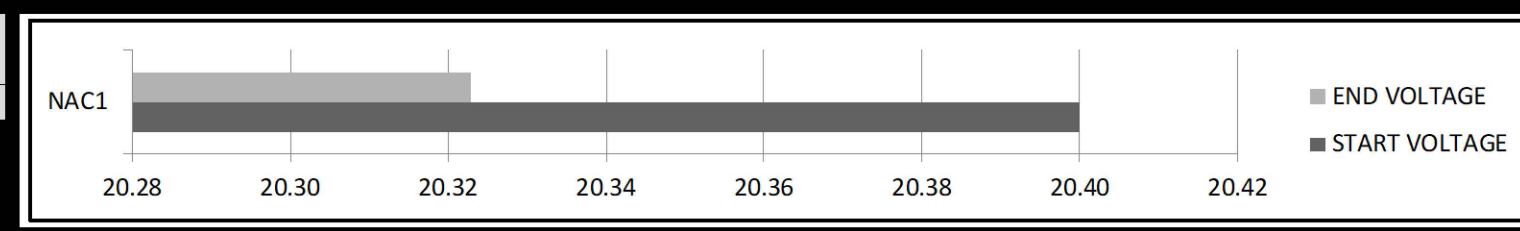
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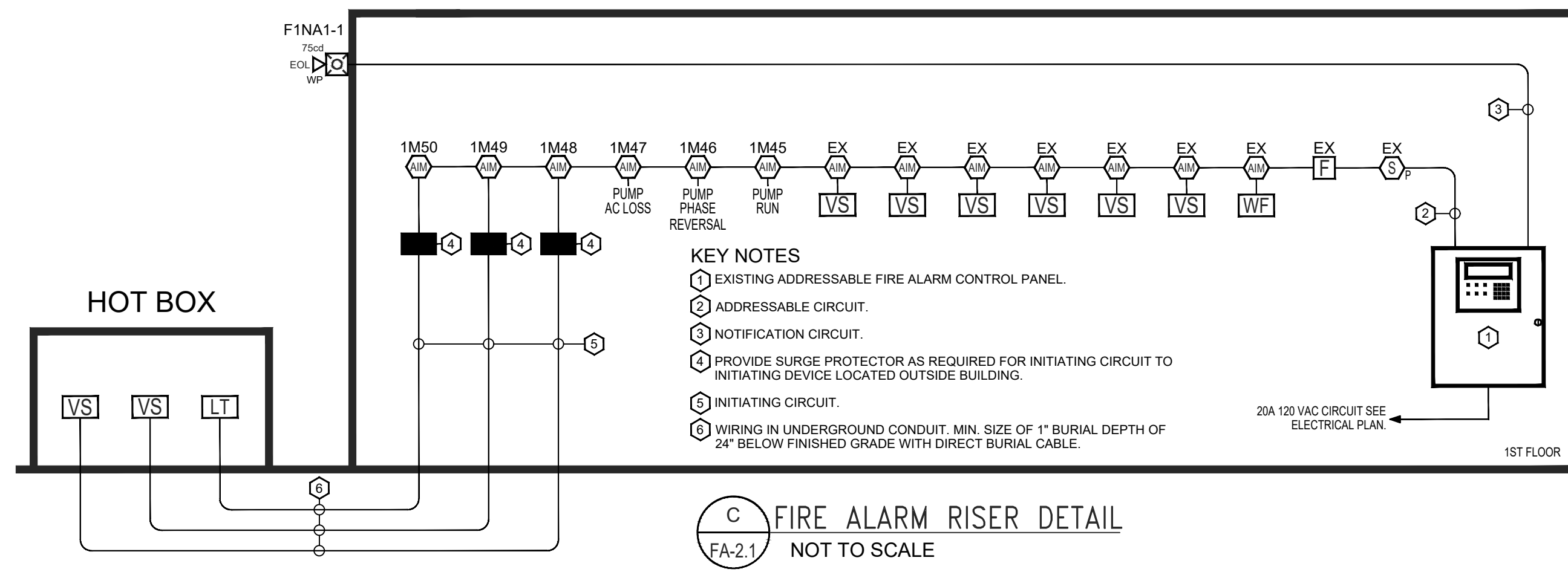
FIRE-LITE ES-50X ADDRESSABLE FIRE ALARM CONTROL PANEL										
SECONDARY POWER SOURCE REQUIREMENTS										
SECONDARY NON-ALARM CURRENT (AMPS)					SECONDARY ALARM CURRENT (AMPS)					
DEVICE TYPE	Qty	CURRENT DRAW	TOTAL	QTY	CURRENT DRAW	TOTAL				
SYSTEM										
Main Circuit Board	1	X	0.141000	=	0.141	1	X	0.257000	=	0.257
IPOTS-COM Communicator	1	X	0.041000	=	0.041	1	X	0.040000	=	0.04
ADDRESSABLE DEVICES										
MMF-300 MONITOR MOD	6	X	0.0004	=	0.0024					
BG-12LX MANUAL PULL STATION	1	X	0.0003	=	0.0003					
SD365 PHOTO SMK DET	1	X	0.0003	=	0.0003					
SLE-MAXAI-CFB (STARLINK)	1	X	0.085	=	0.085	1	X	0.325	=	0.325
NOTIFICATION APPLIANCES										
NAC 1					1	X	0.248	=	0.248	
NAC 2					0	X	0.000	=	0.000	
TOTAL STANDBY LOAD					0.2700	TOTAL ALARM LOAD				
1.0700					1.0700					
CALCULATION IN TOTALS										
					REQUIRED STANDBY TIME IN HOURS					
					24					
STANDBY LOAD CURRENT					0.27	X 24 = 6.48				
					REQUIRED ALARM TIME IN MINUTES					
					5					
ALARM LOAD CURRENT					1.07	X 0.084 = 0.090				
					TOTAL CURRENT LOAD					
					6.570					
MULTIPLY BY THE DERATING FACTOR					1.2	= 7.88				
					TOTAL AMPERE HOURS REQUIRED					
					7.88					
RECOMMENDED BATTERIES:					12AH BATT NEEDED					

A FACP BATTERY CALCULATIONS
FA-C.1 NOT TO SCALE

NAC CIRCUIT VOLTAGE DROP CALCULATIONS												
FACP N1					NAC1							
Device Num.	Device Number	Device Current	Distance from previous device	At Device	Drop from source	Percent Drop						
1	P2W110 WP Horn/Strobe Red Wall	0.248	20	20.32	0.077	0.38%						
Totals		0.248	20	End of Line Voltage	20.32	0.38%						
METHOD Point to Point							METHOD End of Line	Current	Distance	Voltage Drop	End of Line Voltage	Percentage of Drop
NAC1							NAC1	0.248	20	0.08	20.32	0.38%
METHOD Load Centering							METHOD End of Line	Current	Distance	Voltage Drop	End of Line Voltage	Percentage of Drop
NAC1							NAC1	0.248	20	0.04	20.32	0.19%



B FACP NAC VOLTAGE DROP CALCULATIONS
FA2.1 NOT TO SCALE



C FIRE ALARM RISER DETAIL
FA-2.1 NOT TO SCALE



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DRAWING TITLE:
FIRE ALARM RISER DETAIL AND
FIRE ALARM CALCULATIONS

DRAWN BY:	JRH
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PROJECT MGR:	
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SHEET NO.	3 OF 3

DRAWING NO.
FA-3.1