

FIRE ALARM PLAN NOTES

120VAC (BY OTHERS)

DRAWING INDEX

FA.100 COVER SHEET
FA.101 FIRE ALARM FLOOR PLAN
FA.600 PROJECT CALCULATIONS & LINE DIAGRAM

APPLICABLE CODES

NFPA 70 – NATIONAL ELECTRIC CODE (2017)
NFPA 72 – NATIONAL FIRE ALARM & SIGNALING CODE (2016)
NFPA 101 – LIFE SAFETY CODE (2018)
INTERNATIONAL FIRE CODE – 2018
INTERNATIONAL BUILDING CODE – 2018
CONSTRUCTION: VB. OCCUPANCY: B. OCCUPANT LOAD: 43

SCOPE OF WORK:

AFP TO INSTALL A FIRE SPRINKLER MONITORING SYSTEM.
DUCT DETECTORS INSTALLED BY OTHERS WILL BE MONITORED BY FIRE ALARM SYSTEM.
SYSTEM MONITORED BY A REMOTE SUPERVISING STATION
PER NFPA 72 26.5 (2016)

R1 – AHJ COMMENTS. ADD NOTIFICATION.

ABBREVIATIONS:

WP = WEATHER RESISTANT. ETR = EXISTING TO REMAIN.
ROR = RATE OF RISE. RCP = REFLECTED CEILING PLAN.
ER = EXISTING TO BE RELOCATED. SHOWN IN NEW LOCATION.
NIC = NOT IN CONSTRUCTION. TI = TENANT IMPROVEMENT.

FIRE ALARM SYMBOLS		
ICON	DESCRIPTION	MOUNTING REQUIREMENTS
	FIRE ALARM CONTROL UNIT	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO CEILING
	FIRE ALARM REMOTE ANNUNCIATOR	4" SQUARE, 1-1/2" STANDARD BOX, W/ SINGLE MUD RING; 60" AFF; CONDUIT TO CEILING
	CELLULAR COMMUNICATOR	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO FACU
	REMOTE POWER SUPPLY PANEL	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO CEILING
	PHOTO SMOKE DETECTOR	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; NO HIGHER THAN 30" AFF
	THERMAL DETECTOR	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; NO HIGHER THAN 30" AFF
	PHOTO SMOKE DUCT DETECTOR	INSTALL PER MANUFACTURER SPECIFICATIONS
	MANUAL PULL STATION	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; 48" AFF & 5" FROM DOOR; CONDUIT TO CEILING
	SINGLE MONITOR MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
	DUAL MONITOR MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
	DUAL RELAY MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
	ALARM STROBE, CANDELA SHOWN	WALL MOUNTED, 80"-96" AFF OR (C) = CEILING MOUNTED; 4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING
	ALARM H/S, CANDELA SHOWN	WALL MOUNTED, 80"-96" AFF OR (C) = CEILING MOUNTED; 4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING
	END OF LINE RESISTOR PROVIDED BY CONTROL/DEVICE	INSTALL AT THE LAST DEVICE OF THAT CIRCUIT
	SPRINKLER FLOW SWITCH BY OTHERS	HANDY BOX INSTALLED ON SWITCH; THEN INSTALL 1/2" FLEX CONDUIT TO 4" SQUARE, 2-1/8" DEEP BOX ON WALL
	SPRINKLER TAMPER SWITCH BY OTHERS	HANDY BOX INSTALLED ON SWITCH; THEN INSTALL 1/2" FLEX CONDUIT TO 4" SQUARE, 2-1/8" DEEP BOX ON WALL
	POST INDICATOR VALVE BY OTHERS	1/2" WATER-TIGHT FLEX CONDUIT FROM SWITCH TO WEATHER-PROOF SINGLE GANG BOX ON U.G. CONDUIT
	KITCHEN HOOD SUPPRESSION SYSTEM - BY OTHERS	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
	EXISTING ZAVOC MAGNETIC LOCK WITH SPST POWERED RELAY	DOOR FRAME MOUNTED, OPPOSITE OF DOOR SWING
	JUNCTION OF FIRE ALARM CABLES	4" SQUARE, 2-1/8" DEEP BOX, BLANK COVER; CONDUIT TO CEILING

NOTE: NOT ALL SYMBOLS APPLY TO CURRENT PROJECT

SEQUENCE OF OPERATION MATRIX									
	ALARM AT FACU	TROUBLE AT FACU	SUPERVISORY AT FACU	WALL MOUNTED ANNUNCIATOR	MANUAL / RPS SHUTDOWN	STATUS SENT TO OFF-SITE MONITORING	ELEVATOR PHASE 1 RECALL	ELEVATOR EQUIPMENT SHUNT TRIP	
FIRE ALARM INPUTS									
1	MANUAL PULL STATION	X		X	X	X			
2	WATER FLOW	X		X	X	X			
3	SMOKE DETECTOR	X		X	X	X			
4	HEAT DETECTOR	X		X	X	X			
5	ELEVATOR LOBBY SMOKE(S)	X		X	X	X	X		
6	ELEVATOR EQUIPMENT ROOM SMOKE	X		X	X	X	X		
7	ELEVATOR EQUIPMENT ROOM HEAT	X		X	X	X	X	X	
8	ELEVATOR SHAFT HEAT	X		X	X	X	X	X	
9	ELEVATOR SHAFT SMOKE	X		X	X	X	X	X	
10	KITCHEN HOOD / ANSUL	X		X	X	X			
SUPERVISORY ALARM INPUTS									
1	DUCT DETECTOR			X		X	X		
2	TAMPER SWITCH			X		X			
3	CARBON MONOXIDE DETECTOR			X		X			
TROUBLE CONDITIONS									
1	OPEN CIRCUIT		X				X		
2	SHORT CIRCUIT		X				X		
3	GROUND FAULT		X				X		
4	BAD DEVICE, DIRTY DEVICE, NO ANSWER		X				X		
5	LOW BATTERY		X				X		
6	MAIN POWER FAIL		X				X		

NOTE: NOT ALL CONDITIONS APPLY TO CURRENT PROJECT.

FUNCTIONAL MATRIX

ALLIANCE FIRE PROTECTION
FIRE ALARM SYSTEM

DISCOVERY ANIMAL HOSPITAL

LEE'S SUMMIT, MO

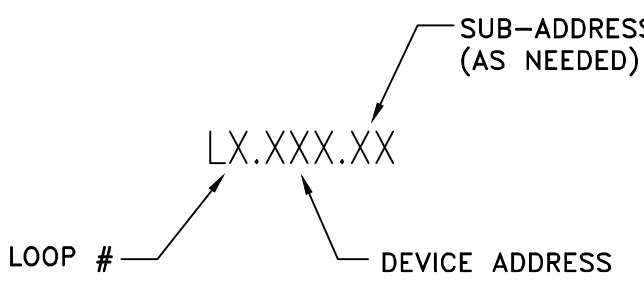
FIRE ALARM GENERAL NOTES

- WALL MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS 80" AND NOT GREATER THAN 96" ABOVE THE FINISHED FLOOR.
NFPA 72 18.5.5.1 (2016)
- MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 5' OF EXIT DOORWAY.
NFPA 72 17.14.8.4 (2016)
–THE OPERABLE PART OF A MANUALLY ACTUATED ALARM INITIATING DEVICE SHALL BE NOT LESS THAN 42" AND NOT MORE THAN 48" FROM THE FINISHED FLOOR.
NFPA 72 17.14.5 (2016)
- IF THE INTENT IS TO INITIATE ACTION WHEN SMOKE/FIRE THREATENS A SPECIFIC OBJECT, THE DETECTOR SHALL BE PERMITTED TO BE INSTALLED IN CLOSE PROXIMITY TO THAT OBJECT.
NFPA 72 17.4.8 (2016)
A: IN HIGH–CEILING AREAS, DETECTION SHOULD BE PLACED ON THE WALL ABOVE AND WITHIN 60" OF THE PROTECTED ITEM.
NFPA 72 A17.4.8 (2016)
- ALL WIRING IN OPEN CEILING TO BE RUN PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE.
WIRING SHOULD BE CONCEALED FROM VIEW AS BEST POSSIBLE.
- WHERE DUCT SMOKE DETECTORS ARE NOT RESETTABLE FROM THE PROTECTED PREMISES FIRE ALARM SYSTEM, A LISTED ALARM/ SUPERVISORY INDICATOR WITH INTEGRAL RESET SWITCH SHALL BE PROVIDED IN AN ACCESSIBLE LOCATION.
NFPA 72 23.8.5.4.6.4 (2016)

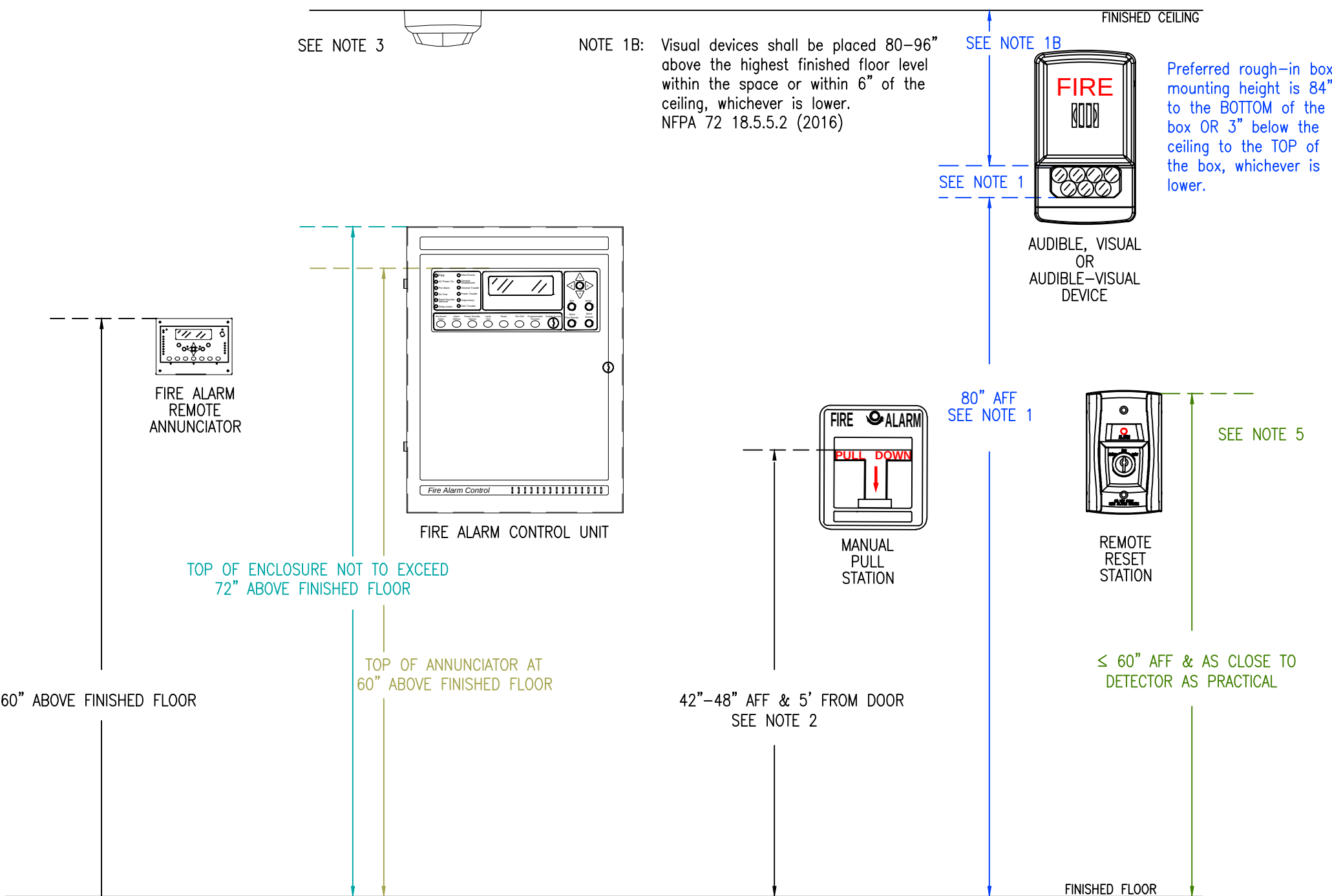
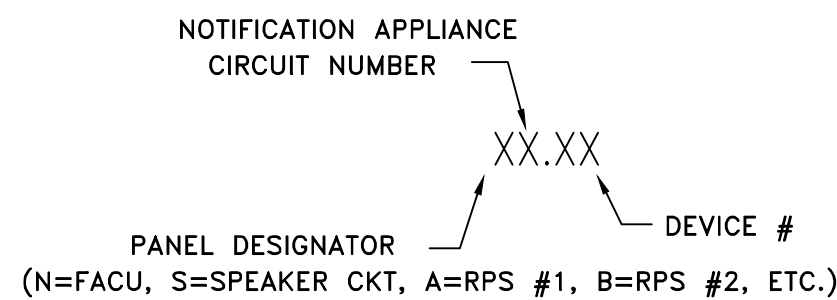
WIRING LEGEND

- 18/2 NON SHIELDED (PLENUM RATED) SLC
- 16/2 NON SHIELDED (PLENUM RATED) NAC
- 16/2 NON SHIELDED (PLENUM RATED) 24V
- 18/4 NON SHIELDED (PLENUM RATED) ANN

SIGNAL LINE CIRCUIT
DEVICE ADDRESS KEY



NOTIFICATION DEVICE ADDRESS KEY



RECOMMENDED MOUNTING DETAIL
NOT TO SCALE

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AHJ
LEE'S SUMMIT
Designer NICET Level III
TROY KOEHN
Scale
AS INDICATED
Job Number
41859788
Date
07/07/2025
Description
FIRE ALARM
System Type
VES / ELITE RS
Revisions
AHJ COMMENTS 08/25
AHJ COMMENTS 09/25

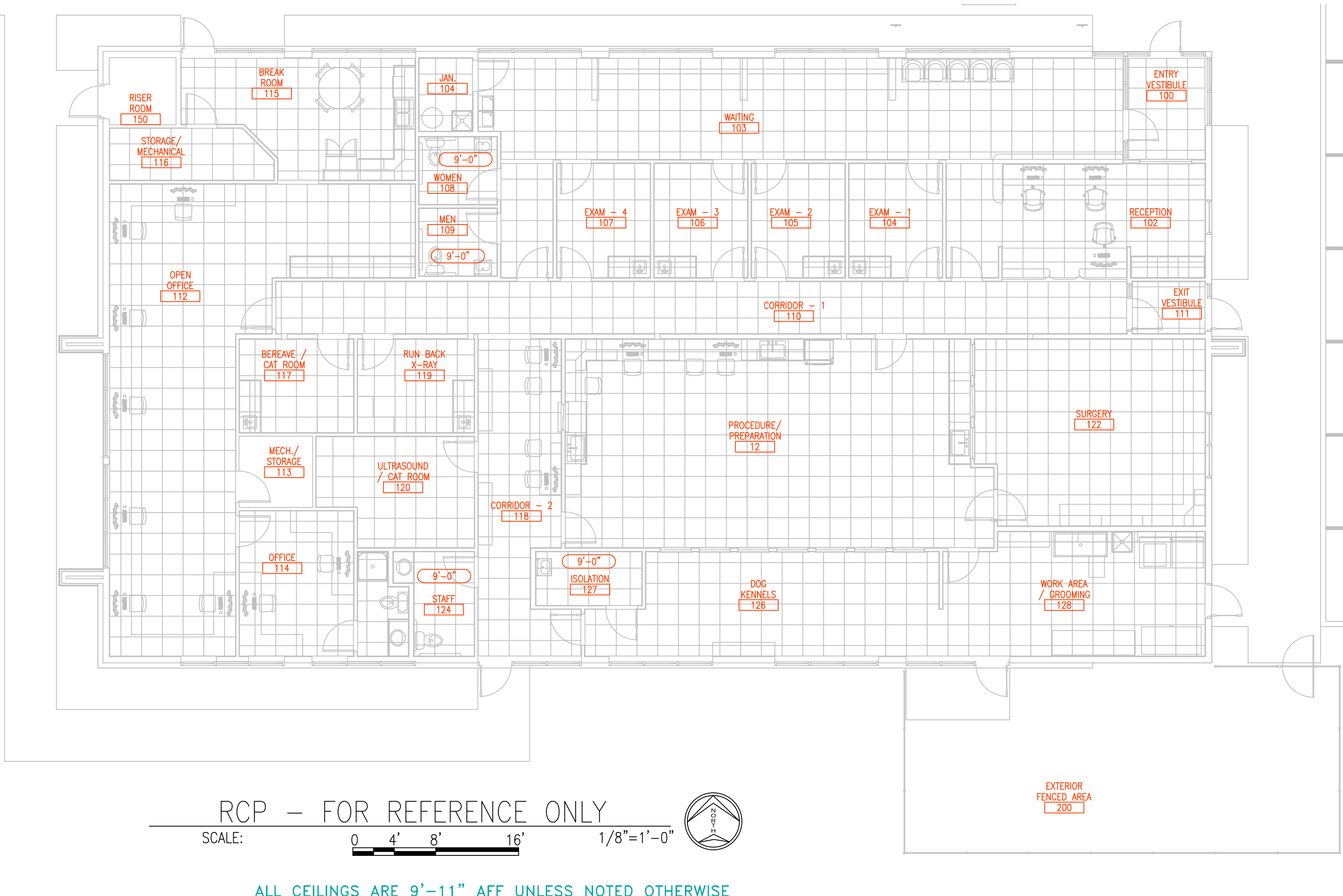
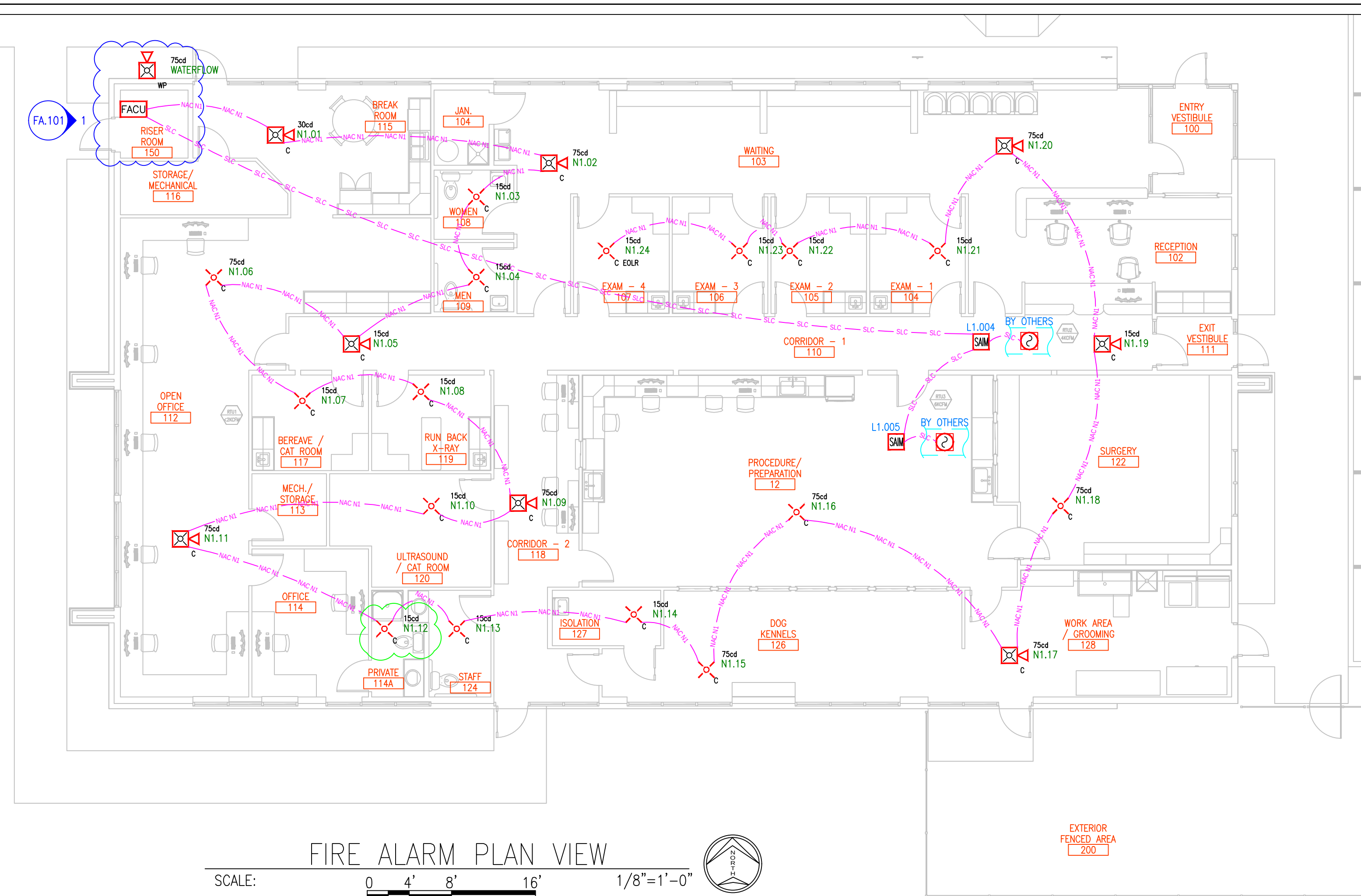
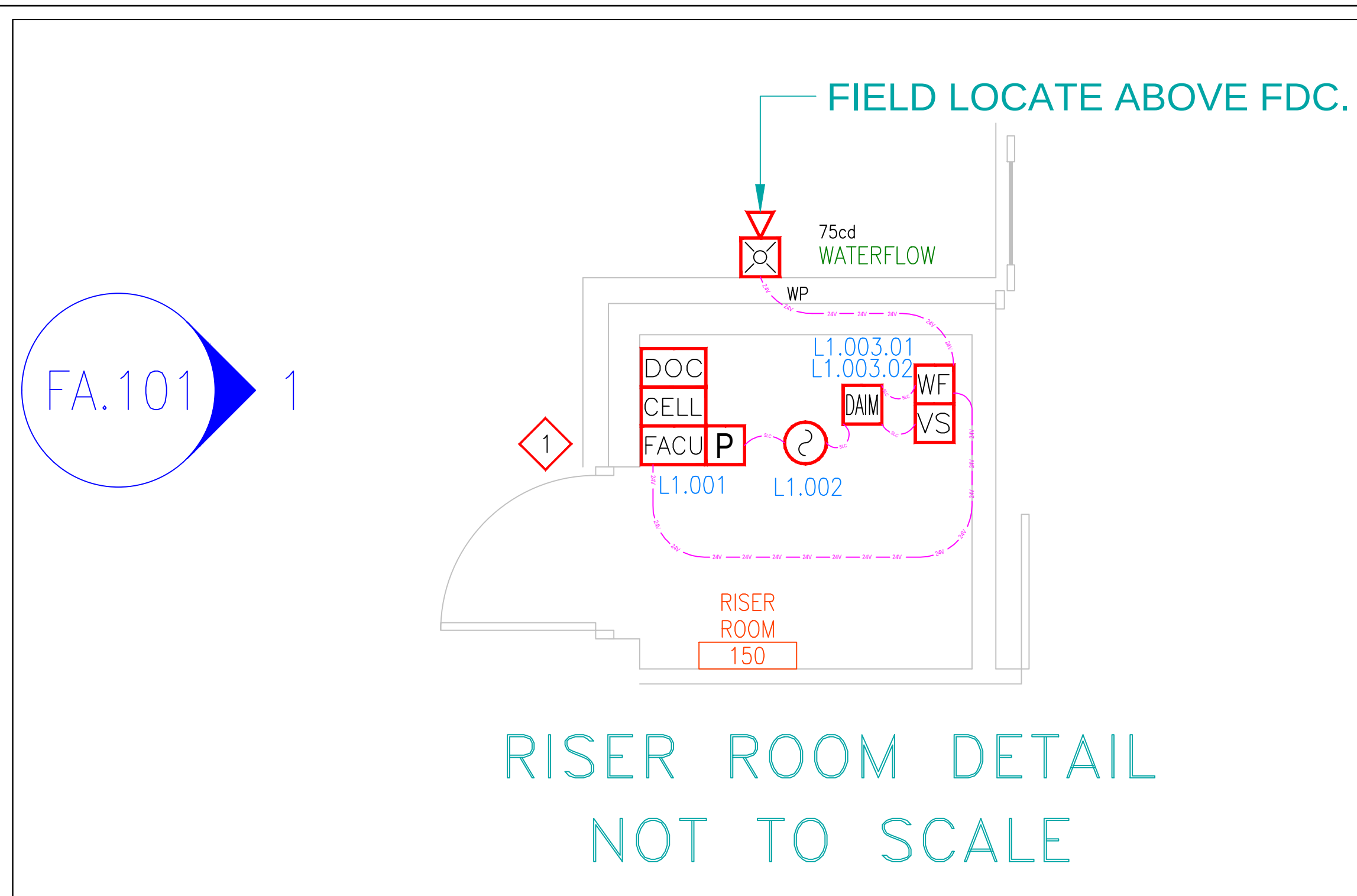
AHJ STAMP

Design Professional of Record
09/29/2025

Alliance
FIRE PROTECTION
130 W 9th Ave. Suite 101
North Kansas City, MO 64116
PH: 913-888-0647 FAX: 913-888-0618

DISCOVERY ANIMAL HOSPITAL	FIRE ALARM	1901 NE TRAILS EDGE BOULEVARD	LEE'S SUMMIT, MO 64086	COVER PAGE
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Sheet Number
FA.100.R1



ALL CEILINGS ARE 9'-11" AFF UNLESS NOTED OTHERWISE

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LEE'S SUMMIT
Designer NICET Level III
TROY KOEHN
Scale
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System Type
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AHJ COMMENTS 09/25

AHJ STAMP

Design Professional of Record
09/29/2025

STATE OF MISSOURI
MATTHEW JAMES CRUSE
N/MISER
PE-0008030093
PROFESSIONAL ENGINEER

Alliance
FIRE PROTECTION
130 W 9th Ave. Suite 101
North Kansas City, MO 64116
PH: 913-888-0647 FAX: 913-888-0618

DISCOVERY ANIMAL HOSPITAL
FIRE ALARM
1901 NE TRAILS EDGE BOULEVARD
LEE'S SUMMIT, MO 64086
FLOOR PLAN / RCP / DETAILS

Sheet Number
FA.101.R1

FIRE ALARM BATTERY BACK-UP CALCULATION WORK SHEET FOR FIRE ALARM CONTROL UNIT

FACU MODEL: Elite-RS

DATE: 29-Sep-2025

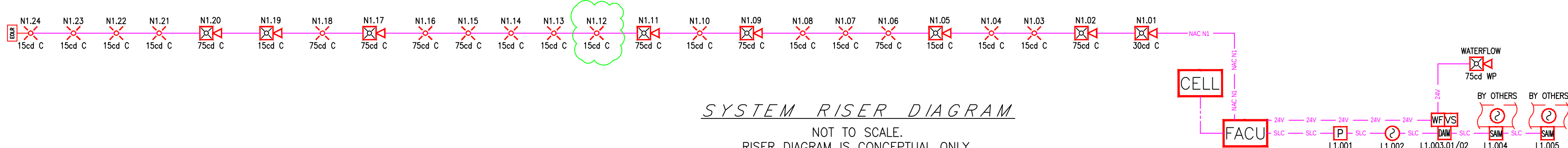
ITEM	DESCRIPTION	STANDBY CURRENT PER UNIT (AMPS)		QTY		TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER UNIT (AMPS)		QTY		TOTAL ALARM CURRENT PER ITEM			
FACU	FACU - 1 SLC Loop	0.2000	X	1	=	0.2000	0.2200	X	1	=	0.2200			
SLC	SECOND SLC OPTION	0.0700	X	0	=	0.0000	0.0700	X	0	=	0.0000			
MPS	MANUAL PULL STATION	0.0006	X	1	=	0.0006	0.0007	X	1	=	0.0007			
SMOKE	PHOTO SMOKE	0.0005	X	1	=	0.0005	0.0005	X	1	=	0.0005			
MCS	MULTI CRITERIA SENSOR	0.0006	X	0	=	0.0000	0.0300	X	0	=	0.0000			
DIM	DUAL INPUT MODULE	0.0006	X	1	=	0.0006	0.0300	X	1	=	0.0300			
DRM	DUAL RELAY MODULE	0.0004	X	0	=	0.0000	0.0004	X	0	=	0.0000			
SRM	SUPERVISED RELAY MOD	0.0002	X	0	=	0.0000	0.0060	X	0	=	0.0000			
DD	DUCT DETECTOR	0.0100	X	0	=	0.0000	0.0550	X	0	=	0.0000			
ANN	REMOTE ANNUNCIATOR	0.0300	X	0	=	0.0000	0.1100	X	0	=	0.0000			
CELL	CELL UNIT-RS	0.0420	X	1	=	0.0420	0.1100	X	1	=	0.1100			
SIM	SINGLE INPUT MODULE	0.0006	X	1	=	0.0006	0.0300	X	1	=	0.0300			
NAC1	CKT N1 OR AUX	0.0000	X	1	=	0.0000	1.0760	X	1	=	1.0760			
NAC2	CKT N2 OR AUX	0.0000	X	0	=	0.0000	0.0000	X	0	=	0.0000			
AUX	EXTERIOR HORN/STROBE	0.0000	X	1	=	0.0000	1.4000	X	1	=	1.4000			
		0.0000	X	0	=	0.0000	0.0000	X	0	=	0.0000	MAX AMP		
TOTAL SYSTEM STANDBY CURRENT (AMPS)						0.2442	TOTAL SYSTEM ALARM CURRENT (AMPS)						2.8672	PASS
SITE: WOOF'S PLAY & STAY, 1921 NE TRAILS EDGE BLVD, LEE'S SUMMIT, MO 64086	REQUIRED STANDBY TIME (HRS)			TOTAL SYSTEM STANDBY CURRENT (AMPS)		REQUIRED STANDBY CAPACITY (AMP-HOURS)	REQUIRED ALARM TIME (HOURS)		TOTAL SYSTEM ALARM CURRENT (AMPS)		REQUIRED ALARM CAPACITY (AMP-HOURS)			
	24	X	0.2442	=	5.8596	0.084	5 MIN=0.084 15 MIN=0.25		2.8672	=	0.2408			
Prepared by: Troy Koehn, NICET# 111458, Level III Fire Alarm Systems, Alliance Fire Protection, LLC, 130 West 9th Ave, Suite 101, North Kansas City, MO 64116	REQUIRED STANDBY CAPACITY (AMP-HOURS)			REQUIRED ALARM CAPACITY (AMP- HOURS)		TOTAL CAPACITY (AMP-HOURS)	TOTAL CAPACITY (AMP-HOURS)		SAFETY FACTOR		ADJUSTED BATTERY CAPACITY (AMP-HOURS)	BATTERY AMP- HOURS SUPPLIED.		
	5.8596	+	0.2408	=	6.1004	6.1004	X	120%	=	7.32	12			

BATTERY QTY: 2

BATTERY QTY: 2

NAC Voltage Drop Calculator
for Audio / Visual devices

Point to Point Method										CIRCUIT MAX CURRENT					
CIRCUIT IS WITHIN LIMITS										CIRCUIT IS WITHIN LIMITS					
Project Name		WOOF'S		Totals						Voltage		Circuit limit (AMPS):		2.300	
Date		29-Sep-2025		Current						Distance		Drop		Current: 1.400	
Circuit Number		N1		1.400						448		2.66		Derating: 1.200	
Area Covered		BUILDING		End of Line Voltage						17.74		Total		1.680	
Nominal System Voltage		20.4		Percent Drop						13.03%					
Minimum Device Voltage		16													
Total Circuit Current		1.400		Wire Gauge											
Distance from source to 1st device		25		16		4.016									
Wire Gauge for balance of circuit		16		4.016											
Enter current in amps		0.150 = 150 ma		Standard Wire Resistance in Ohms per 1000 feet.											
Device Number		Current		Distance from previous device		At Device		Voltage Drop from source		Percent Drop					
N1.01		0.109		25		20.12		0.281		1.38%					
N1.02		0.109		28		18.83		0.571		2.80%					
N1.03		0.109		37		19.48		0.923		4.52%					
N1.04		0.300		28		18.25		1.147		5.62%					
N1.05		0.046		17		19.11		1.289		6.37%					
N1.06		0.208		41		18.78		1.618		7.93%					
N1.07		0.060		44		18.50		1.896		9.30%		WALL			
N1.08		0.030		26		18.35		2.049		10.04%		15		0.037	
N1.09		0.037		19		18.24		2.155		10.57%		30		0.046	
N1.10		0.060		14		18.17		2.230		10.93%		ELHSR/ELHSW		0.077	
N1.11		0.077		19		18.08		2.322		11.13%		110		0.109	
N1.12		0.022		10		18.04		2.364		11.59%		ELHSR/ELHSW		135	
N1.13		0.022		15		17.98		2.424		11.88%		ELHSR/ELHSW		185	
N1.14		0.022		14		17.92		2.478		12.15%					
N1.15		0.060		11		17.88		2.519		12.35%		CEILING			
N1.16		0.060		6		17.86		2.538		12.44%		ELHSR/ELHSWC		15	
N1.17		0.077		9		17.84		2.563		12.56%		ELHSRC/ELHSWC		30	
N1.18		0.060		13		17.81		2.590		12.70%		ELHSRC/ELHSWC		75	
N1.19		0.037		14		17.79		2.613		12.81%		ELHSRC/ELHSWC		110	
N1.20		0.077		20		17.76		2.839		12.94%		ELHSRC/ELHSWC		150	
N1.21		0.022		10		17.75		2.846		12.97%		ELHSRC/ELHSWC		177	
N1.22		0.022		13		17.75		2.853		13.01%		WEATHER PROOF			
N1.23		0.022		5		17.74		2.855		13.01%		EL4XHS		15	
N1.24		0.022		12		17.74		2.857		13.03%		EL4XHS		30	
END						17.74		2.857		13.03%		EL4XHS		75	
END						17.74		2.857		13.03%		EL4XHS		150	
END						17.74		2.857		13.03%		EL4XHS		185	
Totals		1.400		448		End of Line Voltage <td colspan="2">17.74</td> <td colspan="2">EL4XHS</td> <td colspan="2">185</td> <td colspan="2">0.230</td>		17.74		EL4XHS		185		0.230	



SYSTEM RISER DIAGRAM

NOT TO SCALE.
RISER DIAGRAM IS CONCEPTUAL ONLY.
EXACT WIRING ORDER TO BE FIELD
VERIFIED, AND REFLECTED ON AS-BUILT.

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