

10/06/2025

ALLIANCE FIRE PROTECTION FIRE ALARM SYSTEM

DISCOVERY ANIMAL HOSPITAL

LEE'S SUMMIT, MO

1 120VAC (BY OTHERS)

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

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

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.

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.

1. - 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)
2. - 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)
3. - 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-CLEARING AREAS, DETECTION SHOULD BE PLACED ON THE WALL ABOVE AND WITHIN 60" OF THE PROTECTED ITEM.
NFPA 72 A17.4.8 (2016)
4. - ALL WIRING IN OPEN CEILING TO BE RUN PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE.
WIRING SHOULD BE CONCEALED FROM VIEW AS BEST POSSIBLE.
5. - 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)

	18/2 NON SHIELDED (PLENUM RATED)	
	16/2 NON SHIELDED (PLENUM RATED)	
	16/2 NON SHIELDED (PLENUM RATED)	
	18/4 NON SHIELDED (PLENUM RATED)	

Diagram illustrating the LX instruction format:

- LOOP #** points to the **LX** part of the instruction.
- SUB-ADDRESS (AS NEEDED)** points to the **XXX** part of the instruction.
- DEVICE ADDRESS** points to the **XX** part of the instruction.

NOTIFICATION APPLIANCE
CIRCUIT NUMBER

XX.XX

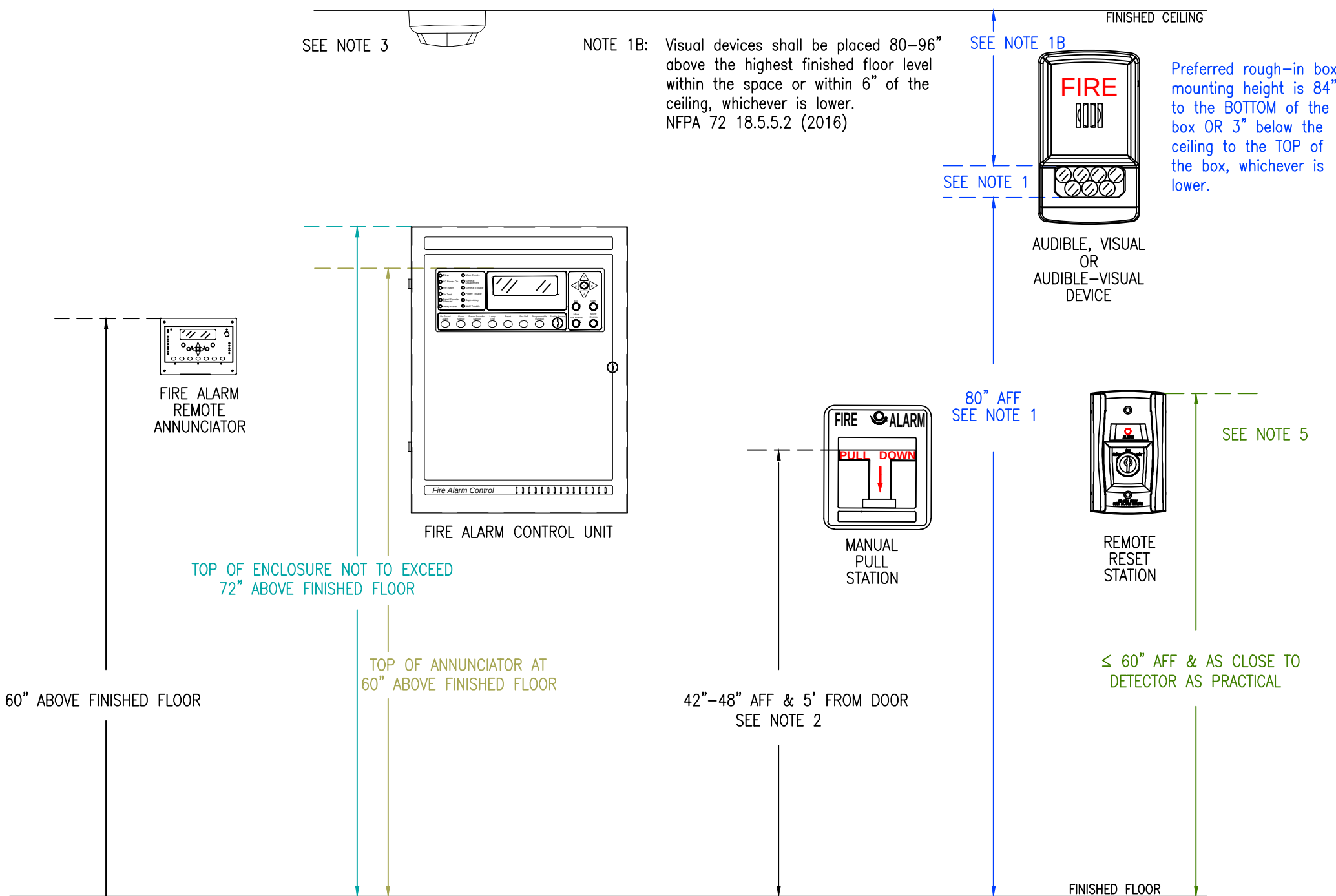
PANEL DESIGNATOR

DEVICE #

(N=FACU, S=SPEAKER CKT, A=RPS #1, B=RPS #2, ETC.)

SEQUENCE OF OPERATION MATRIX									
		ALARM AT FAU	TROUBLE AT FAU	SUPERVISORY AT FAU	INTRUDE GENERAL BUILDING	ALARM/VISUAL DENIES	HWAC / RFD SHUTDOWN	SIGNAL SENT TO ELEVATOR	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 SHUNT HEAT	X		X	X	X	X		X
9	ELEVATOR SHUNT SMOKE	X		X	X	X	X		X
10	KITCHEN HOOD / ANGUL	X		X	X	X			
SUPERVISORY ALARM INPUTS									
1	DUCT DETECTOR			X	X	X	X		
2	TAMPER SWITCH			X	X	X	X		
3	CARBON MONOXIDE DETECTOR			X	X	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		

FUNCTIONAL MATRIX



RECOMMENDED MOUNTING DETAIL

This information is the property of
ALLIANCE FIRE PROTECTION.
It is submitted in confidence and is
not to be disclosed or used without
written permission.

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

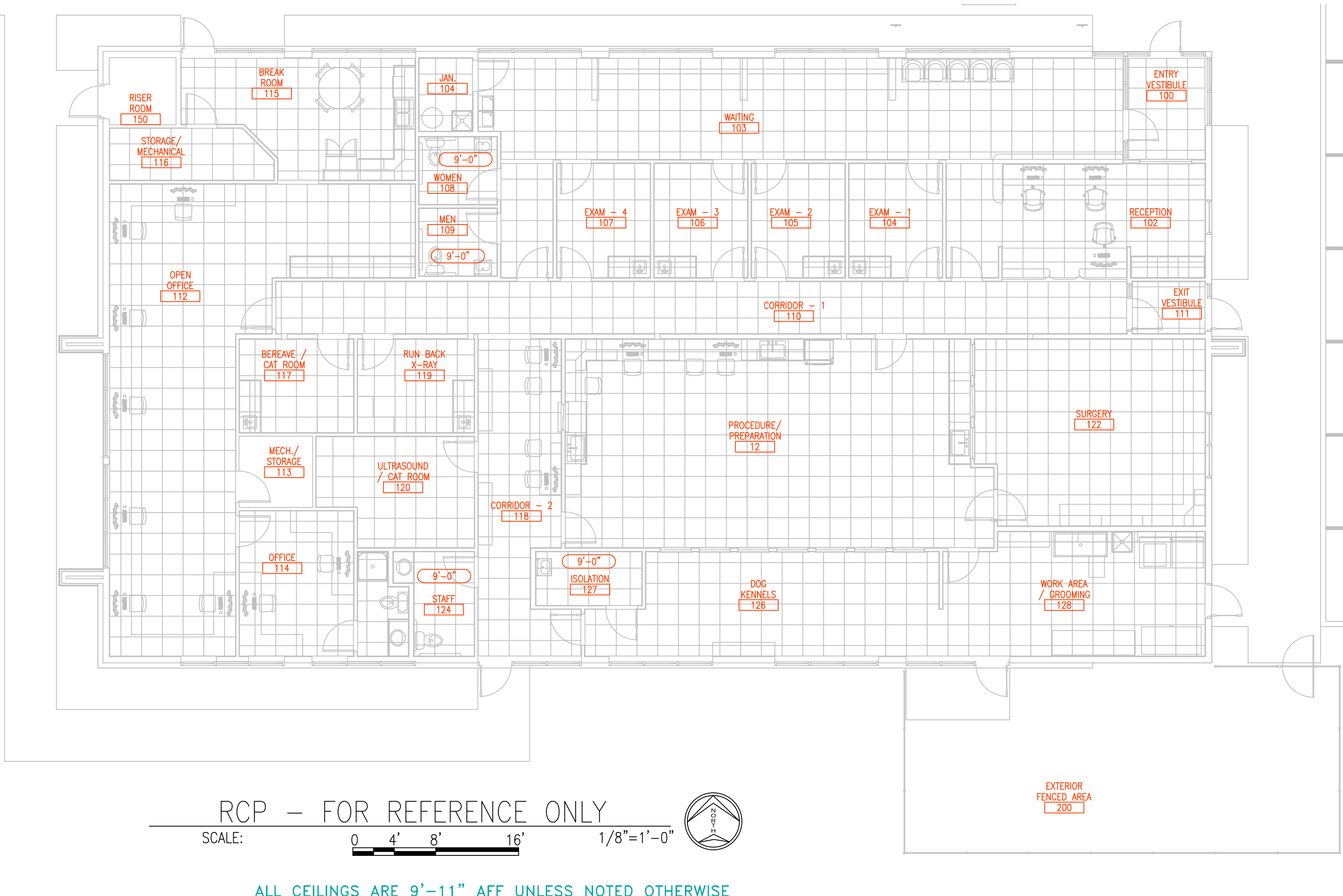
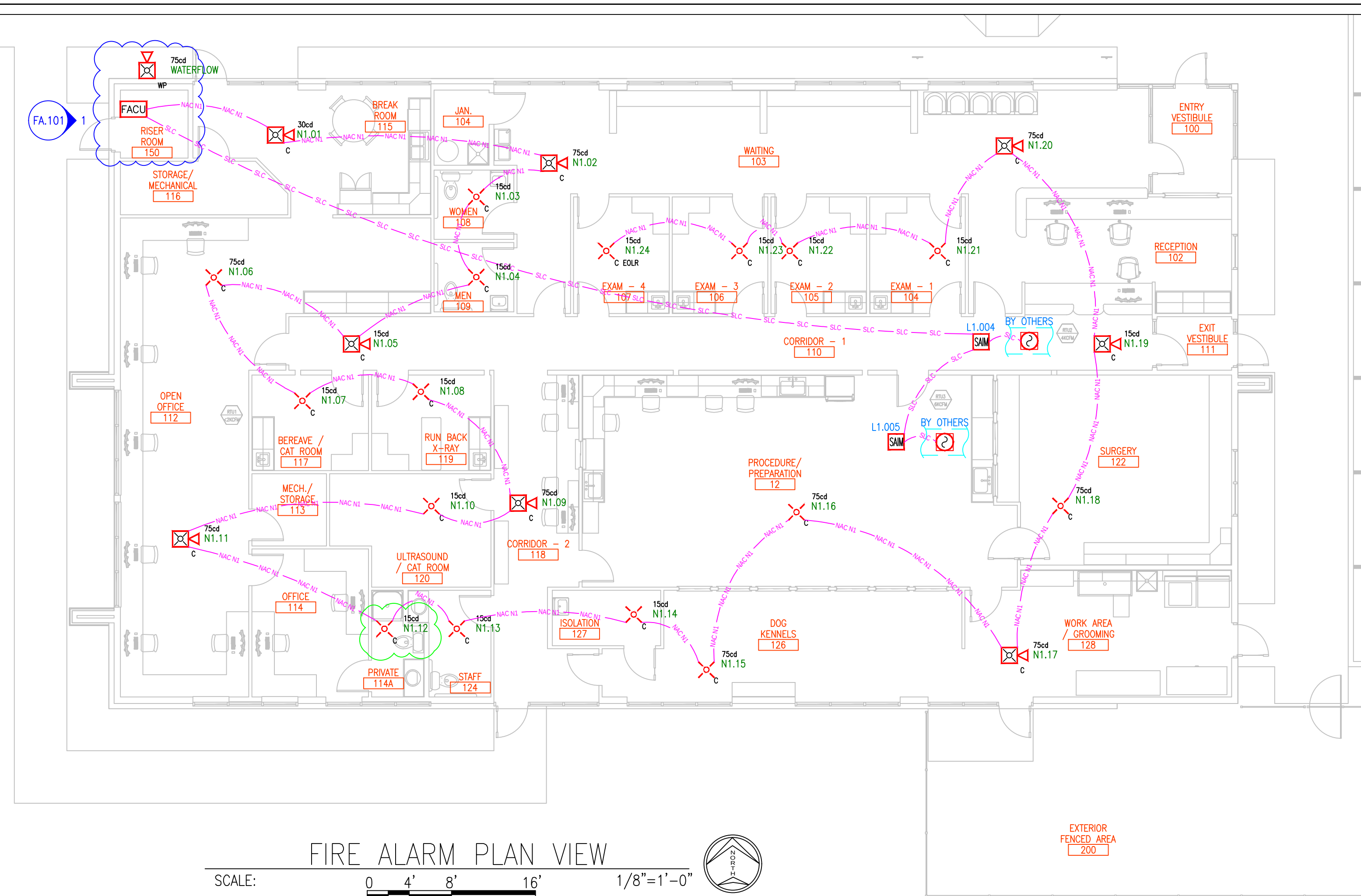
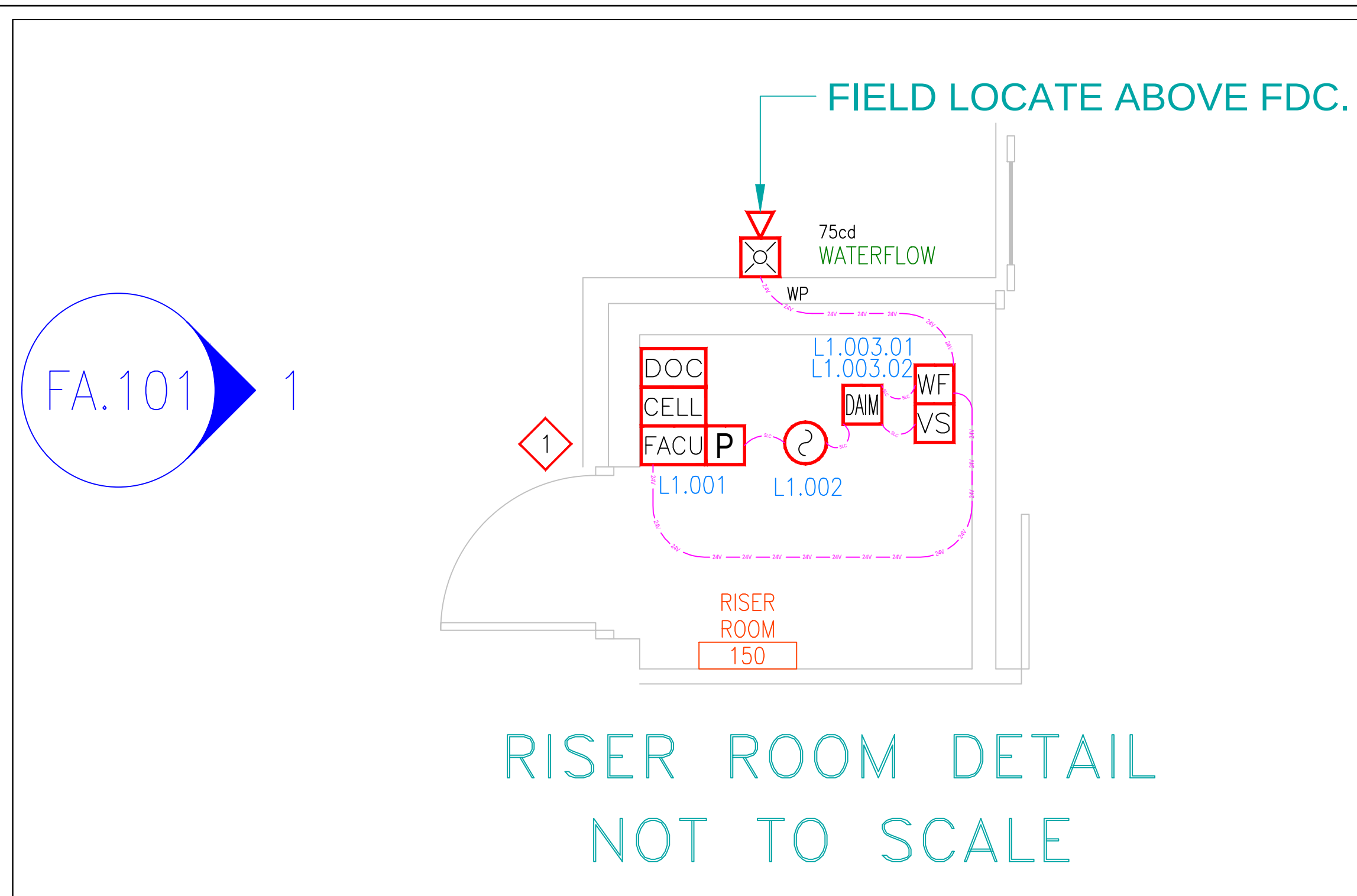
STATE OF MISSOURI
MATTHEW JAMES ROISE
NUMBER
PE-2008030039
PROFESSIONAL ENGINEER

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
COVER PAGE

Sheet Number

FA.100.R1



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

This information is the property of ALLIANCE FIRE PROTECTION. It is submitted in confidence and is not to be disclosed or used without written permission.

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

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 Drop		Circuit limit (AMPS):		2.300	
Date		29-Sep-2025		Current				Distance		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											
Device Number		Device 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		19.83		0.571		2.80%			
N1.03		0.109		37		19.48		0.923		4.52%			
N1.04		0.030		26		19.25		1.147		5.62%			
N1.05		0.046		17		19.11		1.289		6.32%			
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%		ELHSR/ELHSW 15 0.037	
N1.09		0.037		19		18.24		2.155		10.57%		ELHSR/ELHSW 30 0.046	
N1.10		0.060		14		18.17		2.230		10.93%		ELHSR/ELHSW 75 0.077	
N1.11		0.077		19		18.08		2.322		11.38%		ELHSR/ELHSW 110 0.109	
N1.12		0.022		10		18.04		2.364		11.59%		ELHSR/ELHSW 135 0.146	
N1.13		0.022		15		17.98		2.424		11.88%		ELHSR/ELHSW 185 0.208	
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 0.037	
N1.17		0.077		9		17.84		2.563		12.56%		ELHSR/ELHSWC 30 0.046	
N1.18		0.060		13		17.81		2.590		12.70%		ELHSR/ELHSWC 75 0.077	
N1.19		0.037		14		17.79		2.613		12.81%		ELHSR/ELHSWC 110 0.109	
N1.20		0.077		20		17.76		2.639		12.94%		ELHSR/ELHSWC 150 0.146	
N1.21		0.022		10		17.75		2.648		12.97%		ELHSR/ELHSWC 177 0.208	
N1.22		0.022		13		17.75		2.653		13.01%		WEATHER PROOF	
N1.23		0.022		5		17.74		2.655		13.01%		EL4XHS 15 0.063	
N1.24		0.022		12		17.74		2.657		13.03%		EL4XHS 30 0.083	
END						17.74		2.657		13.03%		EL4XHS 75 0.105	
END						17.74		2.657		13.03%		EL4XHS 150 0.127	
END						17.74		2.657		13.03%		EL4XHS 150 0.153	
Totals		1.400		448		End of Line Voltage		17.74		EL4XHS		185 0.230	
												EL4XST 185 0.208	

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative).
The voltage calculated to the last device must not be lower than the manufactures listed operating voltage (IE: rated operating voltage 16-33VDC).

Device Manufacturer Cooper Wheelock

Horn Strobes

Model # Candela

Current @Rated Voltage

WALL

ELSTR/ELSTW 15 0.022

ELSTR/ELSTW 30 0.030

ELSTR/ELSTW 75 0.060

ELSTR/ELSTW 110 0.086

ELSTR/ELSTW 135 0.125

ELSTR/ELSTW 185 0.185

CEILING

ELSTR/ELSTWC 15 0.022

ELSTR/ELSTWC 30 0.030

ELSTR/ELSTWC 75 0.060

ELSTR/ELSTWC 110 0.086

ELSTR/ELSTWC 150 0.125

ELSTR/ELSTWC 177 0.185

WEATHER PROOF

EL4XST 15 0.026

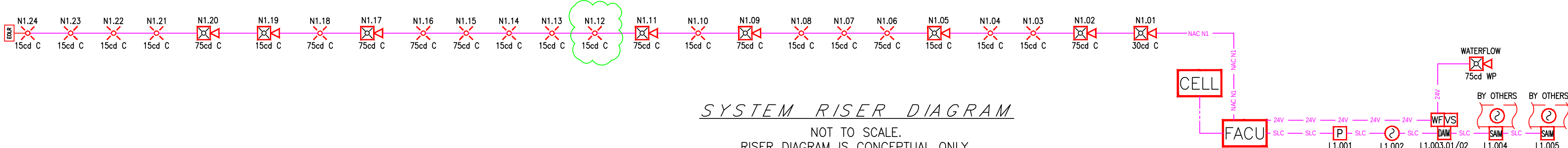
EL4XST 30 0.038

EL4XST 75 0.070

EL4XST 110 0.097

EL4XST 150 0.179

EL4XST 185 0.206



SYSTEM RISER DIAGRAM

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

This information is the property of
ALLIANCE FIRE PROTECTION.
It is submitted in confidence and is
not to be disclosed or used without
written permission.

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



DISCOVERY ANIMAL HOSPITAL

FIRE ALARM

1901 NE TRAILS EDGE BOULEVARD

LEE'S SUMMIT, MO 64086

CALCULATIONS & RISER DIAGRAM

Sheet Number

FA.600.R1