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City of Lee's Summit  
 Designer: NICET Level III  
 TROY KOEHN  
 Scale: N/A  
 Job Number: 35650913  
 Date: 07/25/2024  
 Description: FIRE ALARM  
 System Type: NOTIFIER / NFW-50XGV

Revisions

AHJ STAMP

Design Professional of Record  
 07/26/2024  
 Troy V. Hahn  
 NICET III #111458

**Alliance FIRE PROTECTION**  
 130 W 9th Ave. Suite 101  
 North Kansas City, MO 64116  
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STREETS OF WEST PRYOR  
 FIRE ALARM - TI 30HOP  
 1020 NORTHWEST PRYOR ROAD  
 LEE'S SUMMIT, MO 64081  
 COVER PAGE

Sheet Number  
 FA.0.01

# ALLIANCE FIRE PROTECTION FIRE ALARM SYSTEM

# STREETS OF WEST PRYOR 30HOP - TI LEE'S SUMMIT, MO

## FIRE ALARM PLAN NOTES

120VAC (BY OTHERS)

## DRAWING INDEX

- FA.0.01 COVER SHEET
- FA.1.01 FIRE ALARM FLOOR PLAN
- FA.5.01 RCP - FOR REFERENCE ONLY
- FA.6.01 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: II-B. OCCUPANCY: A-2. OCCUPANT LOAD: 290 INTERIOR.

## SCOPE OF WORK:

AFP TO INSTALL NEW POWER SUPPLY AND NOTIFICATION FOR TENANT IMPROVEMENT. AFP TO ADD TWO NEW PULL STATIONS, AND MONITOR TWO KITCHEN HOOD SYSTEMS. REMAINDER OF SYSTEM IS EXISTING TO REMAIN.  
 SYSTEM MONITORED BY A REMOTE SUPERVISING STATION PER NFPA 72 26.5 (2016) BY OTHERS.

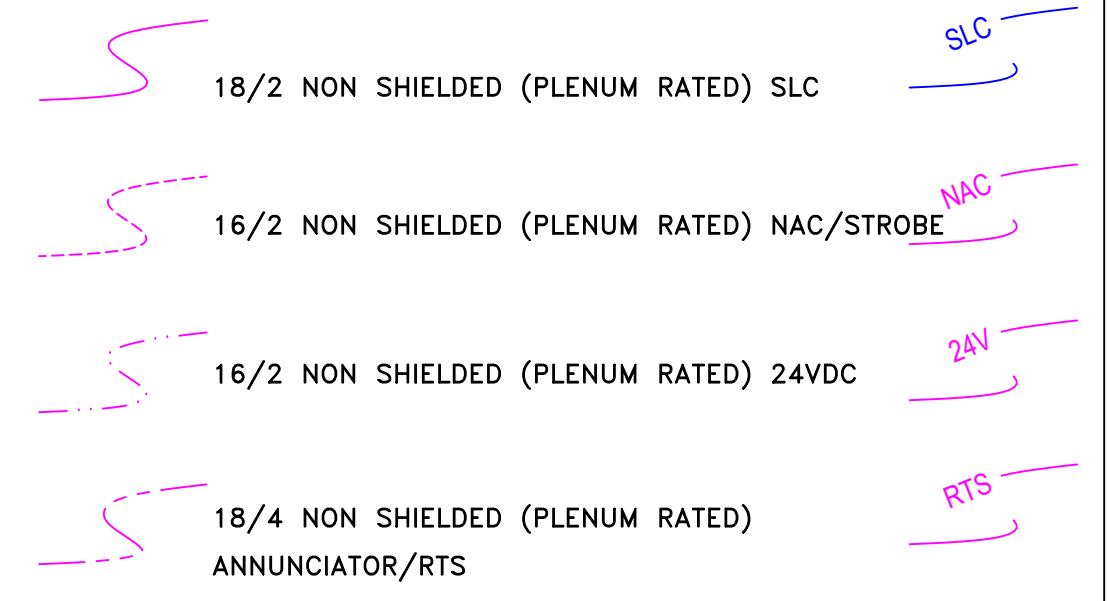
## ABBREVIATIONS:

- 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.

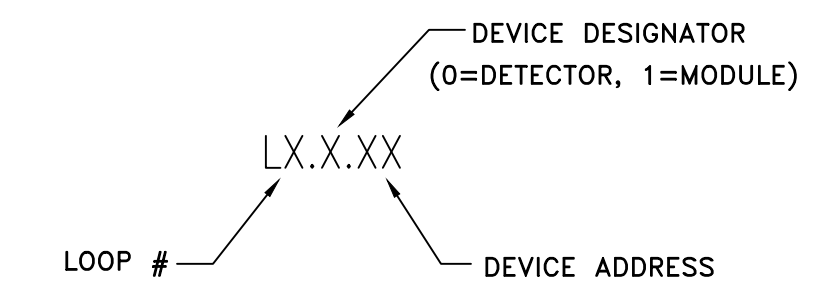
## FIRE ALARM GENERAL NOTES

- 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.  
 -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)

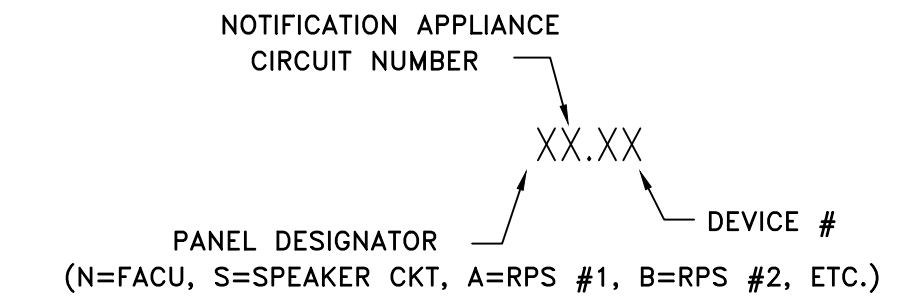
## WIRING LEGEND



## SIGNAL LINE CIRCUIT DEVICE ADDRESS KEY



## NOTIFICATION DEVICE ADDRESS KEY



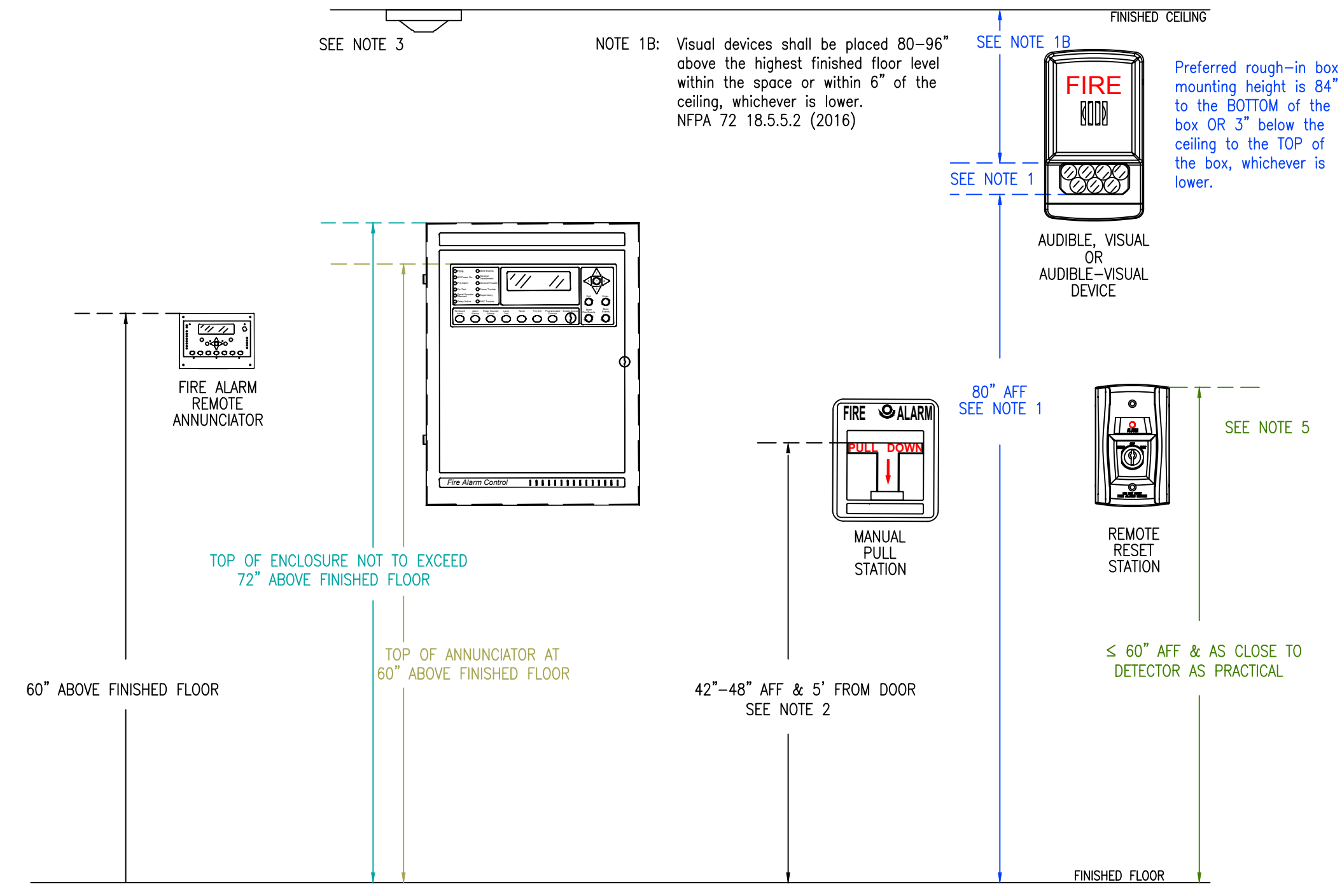
ICON	DESCRIPTION	MOUNTING REQUIREMENTS
<b>FACU</b>	FIRE ALARM CONTROL PANEL	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO CEILING
<b>ANN</b>	FIRE ALARM REMOTE ANNUNCIATOR	4" SQUARE, 1-1/2" STANDARD BOX, W/ SINGLE MUD RING; 60" AFF, CONDUIT TO CEILING
<b>CELL</b>	CELLULAR COMMUNICATOR	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO FACU
<b>RPS</b>	XX AMP POWER SUPPLY PANEL	SURFACE MOUNTED ENCLOSURE PROVIDED, TOP 72" AFF; CONDUIT TO CEILING
<b>PSD</b>	PHOTO SMOKE DETECTOR	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; NO HIGHER THAN 30" AFF
<b>TRD</b>	THERMAL DETECTOR	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; NO HIGHER THAN 30" AFF
<b>PSD</b>	PHOTO SMOKE DUCT DETECTOR	INSTALL PER MANUFACTURER SPECIFICATIONS
<b>P</b>	MANUAL PULL STATION	4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING; 48" AFF & 5" FROM DOOR; CONDUIT TO CEILING
<b>SM</b>	SINGLE MONITOR MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
<b>DM</b>	DUAL MONITOR MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
<b>DM</b>	DUAL RELAY MODULE	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
<b>AS</b>	ALARM STROBE, CANDELA SHOWN	WALL MOUNTED, 80"-96" AFF OR (C) = CEILING MOUNTED; 4" SQUARE, 1-1/2" STANDARD BOX W/ SINGLE MUD RING
<b>AL</b>	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
<b>ELR</b>	END OF LINE RESISTOR PROVIDED BY CONTROL/DEVICE	INSTALL AT THE LAST DEVICE OF THAT CIRCUIT
<b>WFS</b>	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
<b>WTS</b>	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
<b>PV</b>	POST INDICATOR VALVE BY OTHERS	1/2" WATER TIGHT FLEX CONDUIT FROM SWITCH TO WEATHERPROOF SINGLE GANG BOX ON U.G. CONDUIT
<b>KHS</b>	KITCHEN HOOD SUPPRESSION SYSTEM - BY OTHERS	4" SQUARE, 2-1/8" DEEP BOX; CONDUIT TO CEILING
<b>MAL</b>	EXISTING 24VDC MAGNETIC LOCK WITH SPST POWERED RELAY	DOOR FRAME MOUNTED, OPPOSITE OF DOOR SWING
<b>JCT</b>	JUNCTION OF FIRE ALARM CABLES CONDUIT TO CEILING	4" SQUARE, 2-1/8" DEEP BOX, BLANK COVER; CONDUIT TO CEILING

NOTE: NOT ALL SYMBOLS APPLY TO CURRENT PROJECT

SEQUENCE OF OPERATION MATRIX						
	MANUAL AT FACU	TROUBLE AT FACU	SUPERVISORY AT FACU	WATER TIGHT FLEX CONDUIT TO 4" SQUARE, 2-1/8" DEEP BOX ON WALL	WATER TIGHT FLEX CONDUIT TO 4" SQUARE, 2-1/8" DEEP BOX ON WALL	WATER TIGHT FLEX CONDUIT TO 4" SQUARE, 2-1/8" DEEP BOX ON WALL
FIRE ALARM INPUTS						
1	MANUAL PULL STATION	X		X	X	
2	WATER FLOW	X		X	X	
3	SMOKE DETECTOR	X		X	X	
4	HEAT DETECTOR	X		X	X	
5	ELEVATOR LOBBY SMOKE(S)	X		X	X	X
6	ELEVATOR EQUIPMENT ROOM SMOKE	X		X	X	X
7	ELEVATOR EQUIPMENT ROOM HEAT	X		X	X	X
8	ELEVATOR SHAFT HEAT	X		X	X	X
9	ELEVATOR SHAFT SMOKE	X		X	X	X
10	KITCHEN HOOD / ANSUL	X		X	X	
SUPERVISORY ALARM INPUTS						
1	DUST DETECTOR			X	X	X
2	TAMPER SWITCH			X	X	X
3	CARBON MONOXIDE DETECTOR			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

NOTE: NOT ALL CONDITIONS APPLY TO CURRENT PROJECT.

FUNCTIONAL MATRIX



RECOMMENDED MOUNTING DETAIL  
 NOT TO SCALE

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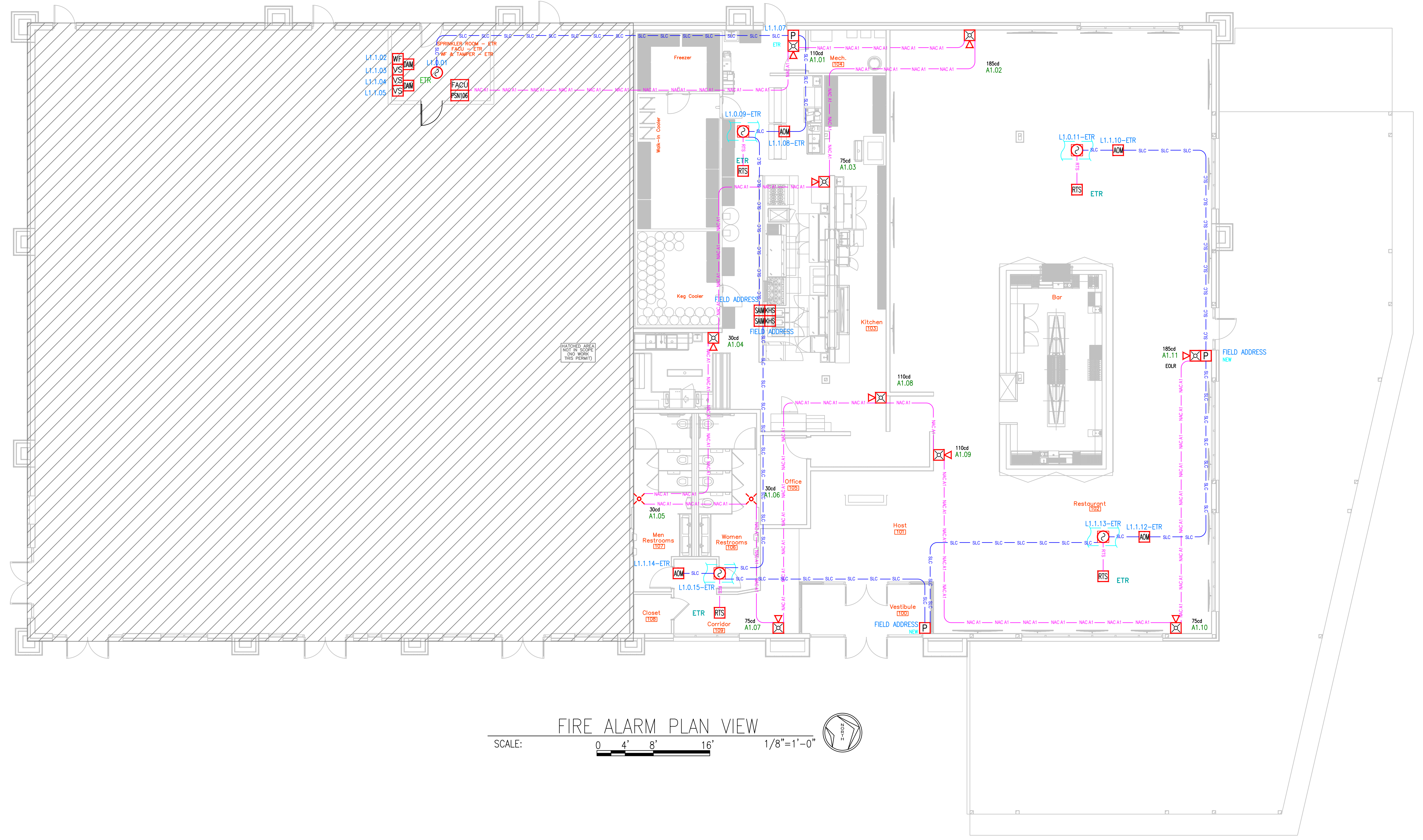
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 NICET III #11458

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FIRE ALARM PLAN VIEW  
 SCALE: 0 4' 8' 16' 1/8"=1'-0"

STREETS OF WEST PRYOR  
 FIRE ALARM - TI 30HOP  
 1020 NORTHWEST PRYOR ROAD  
 LEE'S SUMMIT, MO 64081  
 FLOOR PLAN

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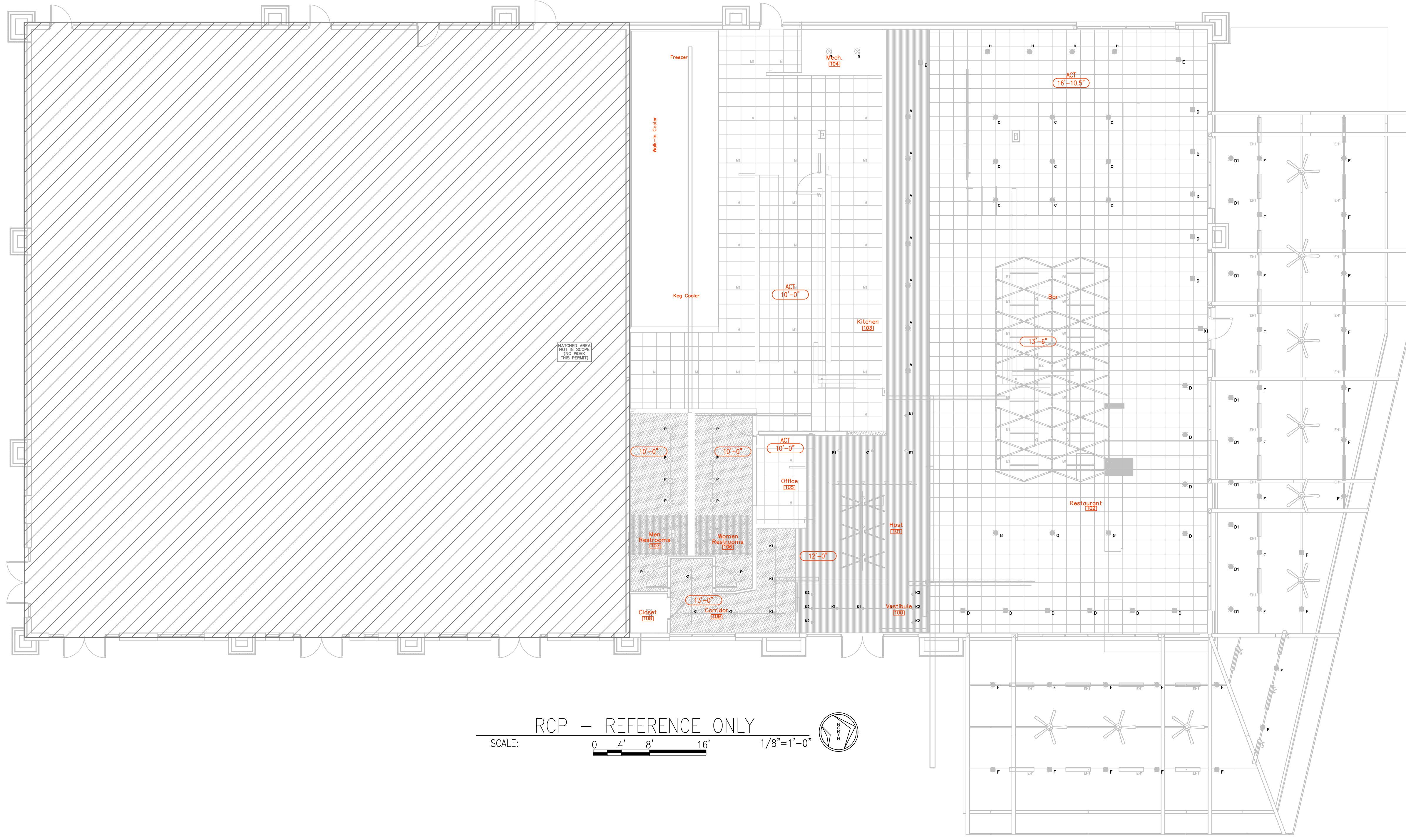
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RCP — REFERENCE ONLY  
 SCALE: 0 4' 8' 16' 1/8" = 1'-0"

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 FIRE ALARM — TI 30HOP  
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 RCP — REFERENCE ONLY

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

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	0.1410	1	0.1410	0.2570	1	0.2570
MPS	MANUAL PULL STATION	0.0004	6	0.0023	0.0015	6	0.0090
SMOKE	PHOTO SMOKE	0.0002	1	0.0002	0.0045	1	0.0045
MCS	MULTI CRITERIA SENSOR	0.0006	0	0.0000	0.0300	0	0.0000
DIM	DUAL INPUT MODULE	0.0008	2	0.0015	0.0064	2	0.0128
ACM	RELAY MODULE	0.0003	10	0.0025	0.0065	10	0.0650
SAM	SINGLE INPUT MODULE	0.0004	2	0.0008	0.0050	2	0.0100
DD	DUCT DETECTOR	0.0002	10	0.0020	0.0045	10	0.0450
ANN	REMOTE ANNUNCIATOR	0.2000	0	0.0000	0.0250	0	0.0000
CELL	CELL COMMUNICATOR	0.0500	0	0.0000	0.2000	0	0.0000
NAC1	CKT N1 OR AUX	0.0000	1	0.0000	0.3760	1	0.3760
NAC2	CKT N2 OR AUX	0.0000	1	0.0000	0.2120	1	0.2120
		0.0000	0	0.0000	0.0000	0	0.0000
		0.0000	0	0.0000	0.0000	0	0.0000
TOTAL SYSTEM				0.1502			0.9913
TOTAL SYSTEM STANDBY CURRENT (AMPS)				0.1502			0.9913
TOTAL SYSTEM ALARM CURRENT (AMPS)							0.9913
REQUIRED STANDBY TIME (HRS)		24	X	0.1502			3.6048
TOTAL SYSTEM STANDBY CAPACITY (AMP-HOURS)							3.6048
REQUIRED ALARM TIME (HOURS)		5 MIN=0.084	X		0.084		0.084
TOTAL SYSTEM ALARM CAPACITY (AMP-HOURS)							0.084
SAFETY FACTOR						120%	4.43
ADJUSTED BATTERY CAPACITY (AMP-HOURS)							4.43
BATTERY QTY:							2

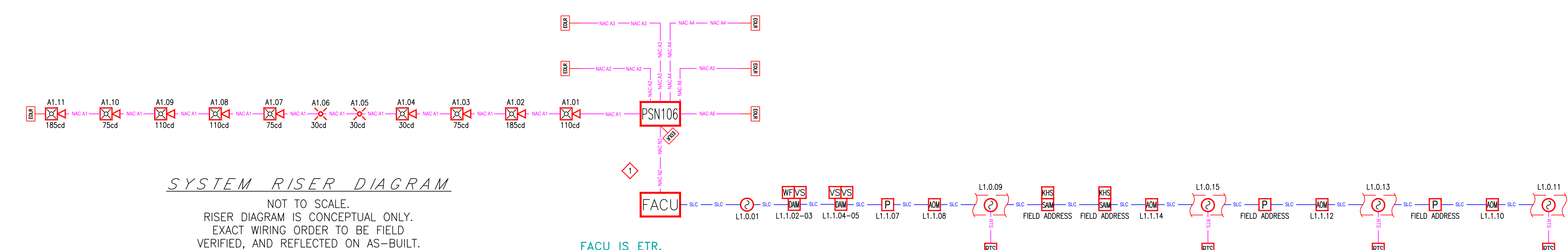
FIRE ALARM BATTERY BACK-UP CALCULATION WORK SHEET FOR REMOTE POWER SUPPLY

ITEM	DESCRIPTION	STANDBY CURRENT PER UNIT (AMPS)	QTY	TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER UNIT (AMPS)	QTY	TOTAL ALARM CURRENT PER ITEM
RPS	MAIN BOARD	0.0750	1	0.0750	0.0750	1	0.0750
CKT #1	CIRCUIT #A1	0.0000	1	0.0000	1.0050	1	1.0050
CKT #2	CIRCUIT #A2	0.0000	1	0.0000	0.0000	1	0.0000
CKT #3	CIRCUIT #A3	0.0000	1	0.0000	0.0000	1	0.0000
CKT #4	CIRCUIT #A4	0.0000	1	0.0000	0.0000	1	0.0000
CKT #5	CIRCUIT #A5	0.0000	1	0.0000	0.0000	1	0.0000
CKT #6	CIRCUIT #A6	0.0000	1	0.0000	0.0000	1	0.0000
CKT #7	CIRCUIT #A7	0.0000	1	0.0000	0.0000	1	0.0000
AUX	AUX POWER	0.0000	1	0.0000	0.0000	1	0.0000
TOTAL SYSTEM STANDBY CURRENT (AMPS)				0.0750			0.0750
TOTAL SYSTEM ALARM CURRENT (AMPS)							1.0800
REQUIRED STANDBY TIME (HRS)		24	X	0.0750			1.8000
TOTAL SYSTEM STANDBY CAPACITY (AMP-HOURS)							1.8000
REQUIRED ALARM TIME (HOURS)		5 MIN=0.084	X		0.084		0.084
TOTAL SYSTEM ALARM CAPACITY (AMP-HOURS)							0.084
SAFETY FACTOR						120%	2.27
ADJUSTED BATTERY CAPACITY (AMP-HOURS)							2.27
BATTERY QTY:							2

NAC Voltage Drop Calculator for Audio / Visual devices

Project Name		Point to Point Method		CIRCUIT MAX CURRENT	
STREETS OF WEST PRYOR		CIRCUIT IS WITHIN LIMITS		CIRCUIT IS WITHIN LIMITS	
Date	26-Jul-2024	Totals	Voltage Drop	Circuit limit (AMPS)	3.000
Circuit Number	A1	Current	Distance	Current	1.005
Area Covered	30HOP	End of Line Voltage	Derating	Total	1.200
Nominal System Voltage	20.4	Percent Drop			9.58%
Minimum Device Voltage	16				
Total Circuit Current	1.005				
Distance from source to 1st device	50	Standard Wire Resistance in Ohms per 1000 feet.			
Wire Gauge for balance of circuit	16	18-6.385 16=4.016 14=2.525 12=1.588 10=0.9989			
Enter current in amps	0.150 = 150 ma	18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors			
Device Number	Device Current	Distance from previous device	At Device	Drop from source	Percent Drop
A1.01	0.094	50	20.00	0.404	1.98%
A1.02	0.190	65	19.52	0.879	4.31%
A1.03	0.087	39	19.29	1.105	5.42%
A1.04	0.038	34	19.12	1.278	6.27%
A1.05	0.022	30	18.98	1.422	6.97%
A1.06	0.022	14	18.91	1.486	7.29%
A1.07	0.087	19	18.83	1.571	7.70%
A1.08	0.094	44	18.67	1.735	8.50%
A1.09	0.094	13	18.63	1.774	8.69%
A1.10	0.087	55	18.50	1.896	9.23%
A1.11	0.190	38	18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
END			18.45	1.954	9.58%
Totals	1.005	401	End of Line Voltage	18.45	X= R FOR RED OR W FOR WHITE

PSN106 & NAC A1 ARE NEW.



SYSTEM RISER DIAGRAM

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

FACU IS ETR.

SLC IS ETR. ONLY THE FIELD ADDRESS DEVICES ARE NEW.

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