

### FACP Battery Calculation

10/12/2015

PROJECT NAME:	FIFTH AVENUE REGIMENT BUILDING		
Required Standby Time:	24 Hours		
Required Alarm Time:	30 Minutes		
<b>Regulated Load in Standby</b>			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FACP - MSS950UD MAIN CIRCUIT BOARD	1	0.12000	0.12000
REMOTE ANNUNCIATOR - ANN-80	1	0.03500	0.03500
HEAT DETECTOR - H355	25	0.00030	0.00750
HEAT DETECTOR - H355	8	0.00023	0.00184
<b>TOTAL STANDBY LOAD</b>			
0.14464			

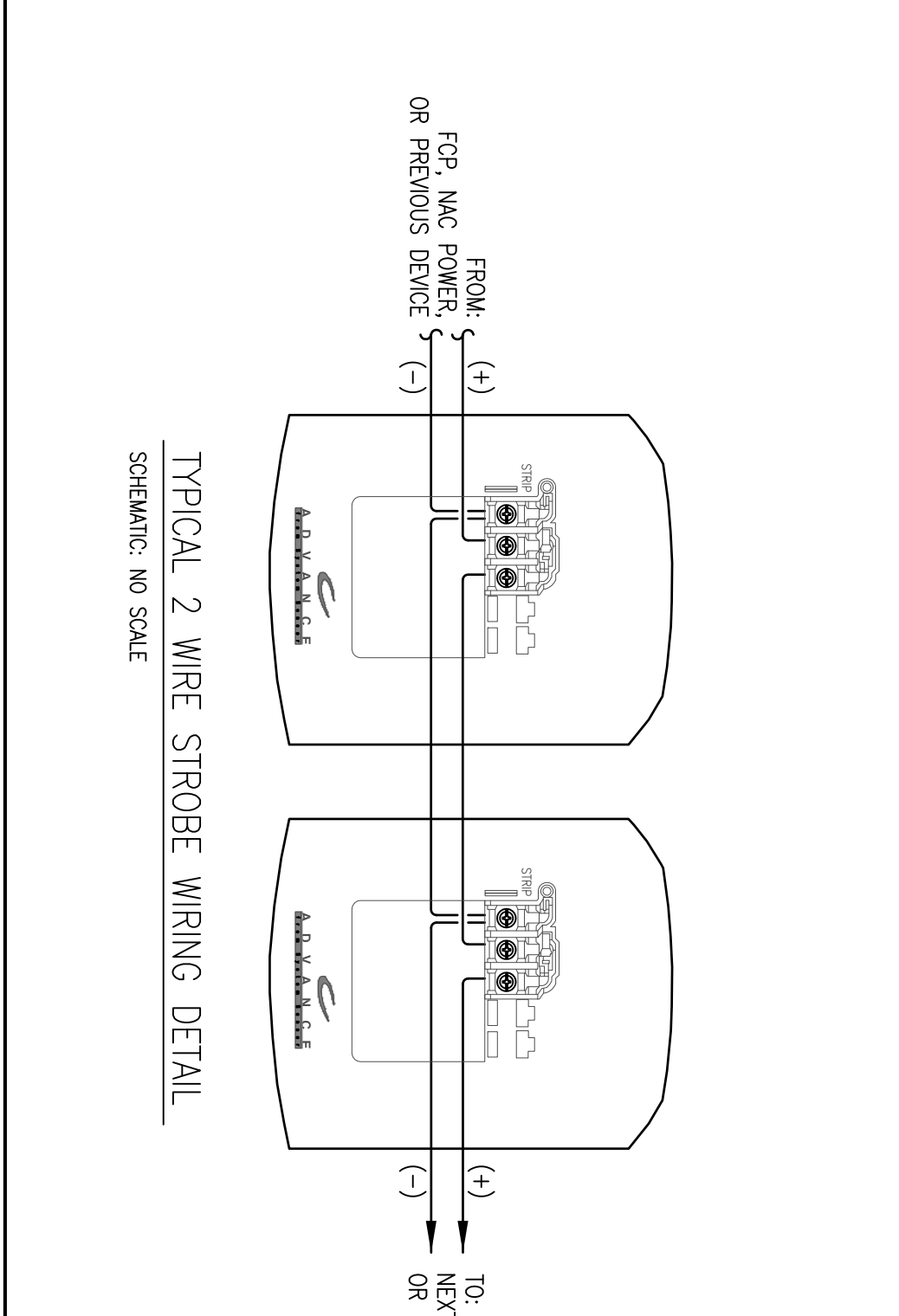
<b>Regulated Load in ALARM</b>			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FACP - MSS950UD MAIN CIRCUIT BOARD	1	0.20000	0.20000
REMOTE ANNUNCIATOR - ANN-80	1	0.04000	0.04000
SMOKE DETECTOR - S0355	1	0.00000	0.00000
HEAT DETECTOR - H355	25	0.00000	0.00000
PULL STATION - BG-121X	8	0.00000	0.00000
MAX ALARM DRAW - ALL ADDRESSABLE DEV.	1	0.40000	0.40000
MAC-1 (See Voltage Drop Calculations)	1	0.24200	0.24200
MAC-2 (See Voltage Drop Calculations)	1	0.60900	0.60900
<b>TOTAL ALARM LOAD</b>			
1.49100			

<b>Battery Requirements</b>					
Standby Load Current (Amps)	0.14464	X	24.00000	=	3.47136
Alarm Load Current (Amps)	1.49100	X	0.08333	=	0.12425
Total Ampere Hours (before derating factor)					3.59561
Derating Factor					X
<b>TOTAL AMPERE HOURS REQUIRED</b>				4.31473	
<b>BATTERIES TO BE PROVIDED (2 - 12V)</b>				7 AH	

<b>Point to Point NAC Voltage Drop Calculation</b>			
Project Name	FIFTH AVENUE REGIMENT BUILDING		
Circuit Number	MAC-1		
Nominal System Voltage	20.4 volts	Wire Gauge	14
Minimum Device Voltage	16.0 volts	Resistance Per 1000 Feet	3.07
Distance from source to 1st device	30 feet		
Wire Gauge for balance of circuit	14		
<b>Max Output Current</b>			
Total Circuit Current	1.231 amps		
End of Line Voltage	20.33 volts		

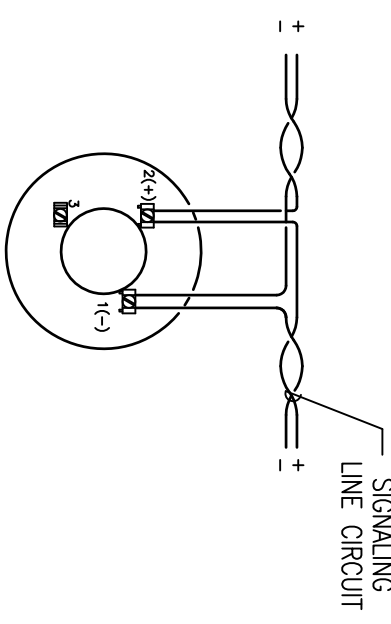
<b>Point to Point NAC Voltage Drop Calculation</b>			
Project Name	FIFTH AVENUE REGIMENT BUILDING		
Circuit Number	MAC-2		
Nominal System Voltage	20.4 volts	Wire Gauge	14
Minimum Device Voltage	16.0 volts	Resistance Per 1000 Feet	3.07
Distance from source to 1st device	100 feet		
Wire Gauge for balance of circuit	14		
<b>Max Output Current</b>			
Total Circuit Current	0.242 amps		
End of Line Voltage	20.32 volts		

<b>Point to Point NAC Voltage Drop Calculation</b>			
Project Name	FIFTH AVENUE REGIMENT BUILDING		
Circuit Number	MAC-2		
Nominal System Voltage	20.4 volts	Wire Gauge	14
Minimum Device Voltage	16.0 volts	Resistance Per 1000 Feet	3.07
Distance from source to 1st device	100 feet		
Wire Gauge for balance of circuit	14		
<b>Max Output Current</b>			
Total Circuit Current	0.609 amps		
End of Line Voltage	19.73 volts		



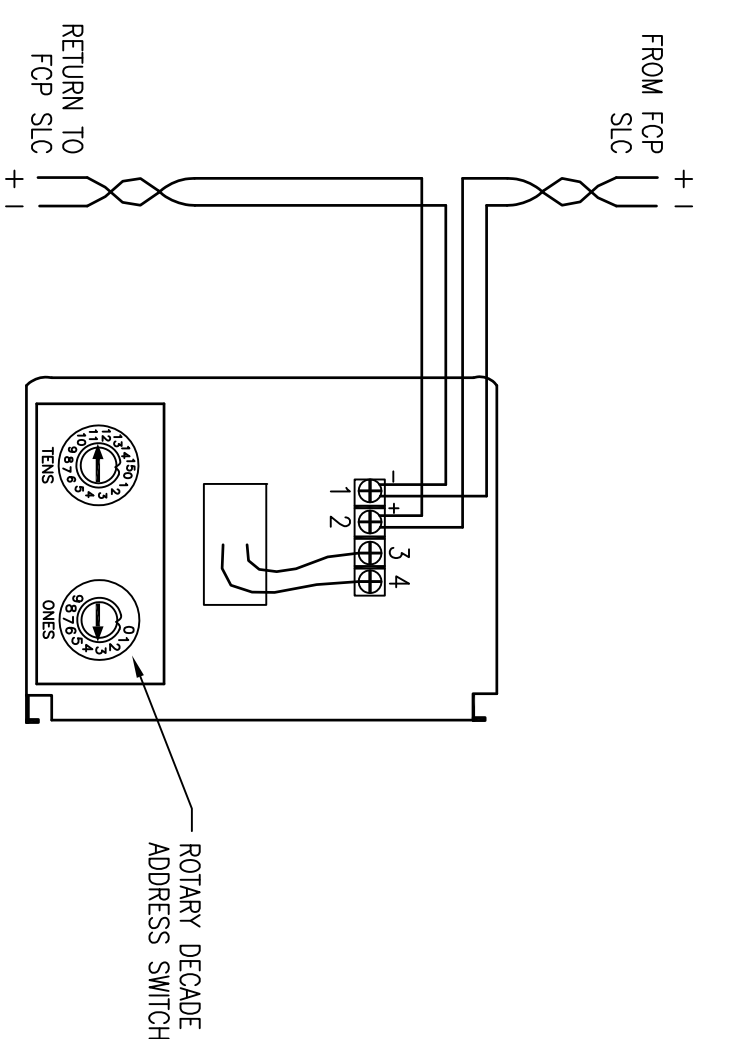
### GENERAL NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- INSTALLATION SHALL COMPLY WITH NEC, NFPA 72 AND ALL OTHER APPLICABLE CODES AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- WIRING DEPICTED ON THESE PLANS IS SCHEMATIC - ACTUAL WIRE LOCATIONS MAY DIFFER FROM THESE PLANS. WIRING SHALL BE PERFORMED AS ACTUAL BUILDING CONSTRUCTION CONDITIONS ALLOW AND TO MINIMIZE PENETRATIONS THROUGH AREA SEPARATION WALLS AND FIRE WALLS. THE USE OF A RACEWAY IS PERMITTED AS LONG AS NO 110V OR HIGHER VOLTAGE CABLES ARE IN THE SAME RACEWAY.
- FIRE RATINGS SHALL BE MAINTAINED FOR ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION.
- POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT.
- POWER-LIMITED AND NONPOWER-LIMITED CIRCUIT WIRING MUST REMAIN SEPARATED IN CABINET. ALL POWER-LIMITED CIRCUIT WIRING MUST REMAIN AT LEAST 0.25" AWAY FROM ANY NONPOWER-LIMITED CIRCUIT WIRING. FURTHERMORE, ALL POWER-LIMITED AND NONPOWER-LIMITED CIRCUIT WIRING MUST ENTER AND EXIT THE CABINET THROUGH DIFFERENT KNOCK OUTS AND/OR SEPARATE CONDUITS.
- WHEN UTILIZING CLASS "A" CIRCUITS, SEPARATE OUTGOING AND RETURN CONDUCTORS OF CLASS "A" CIRCUITS BY A MINIMUM OF 12" WHERE RUN VERTICALLY AND 48" WHERE RUN HORIZONTALLY.
- WHEN UTILIZING SHIELDED CABLE THE SHIELDS THROUGH AND INSULATE AT EACH JUNCTION BOX. INSULATE AND TAPE BACK AT END.
- ALL FIRE ALARM CABLING SHALL BE ACCEPTABLE TO THE FIRE ALARM EQUIPMENT MANUFACTURER FOR THE INTENDED PURPOSE.
- SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN-UP IS COMPLETED AND FINAL.
- LOCATE SMOKE DETECTORS A MINIMUM OF THREE (3) FEET FROM MECHANICAL DIFFUSERS, WALL-MOUNTED SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 4" AND A MAXIMUM OF 12" FROM CEILING. CEILING-MOUNTED SMOKE DETECTORS SHALL BE MOUNTED ON GELINS AND NOT ON THE BOTTOMS OF BEAMS OR JOISTS.
- PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI-SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
- VERIFY ALL FIELD SELECTABLE AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES WITH FIRE ALARM CONTRACTOR.
- UPON COMPLETION OF THE FIRE ALARM SYSTEM INSTALLATION AND PROGRAMMING, THE INSTALLING CONTRACTOR SHALL PERFORM FINAL TESTING OF THE ENTIRE SYSTEM, PER ALL APPLICABLE CODES, AND SHALL COORDINATE AND PERFORM A FINAL FIRE ALARM SYSTEM INSPECTION.
- PROVIDE OFF-SITE MONITORING AS REQUIRED BY THE INTERNATIONAL FIRE CODE, SECTION 907.15 AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- INSTALLING CONTRACTOR SHALL PHYSICALLY LABEL ALL INITIATING DEVICES AND NOTIFICATION APPLIANCE CIRCUIT END OF LINE (WHEN WIRING CLASS B). THESE LABELS SHALL BE IN PLACE PRIOR TO START-UP AND TESTING.



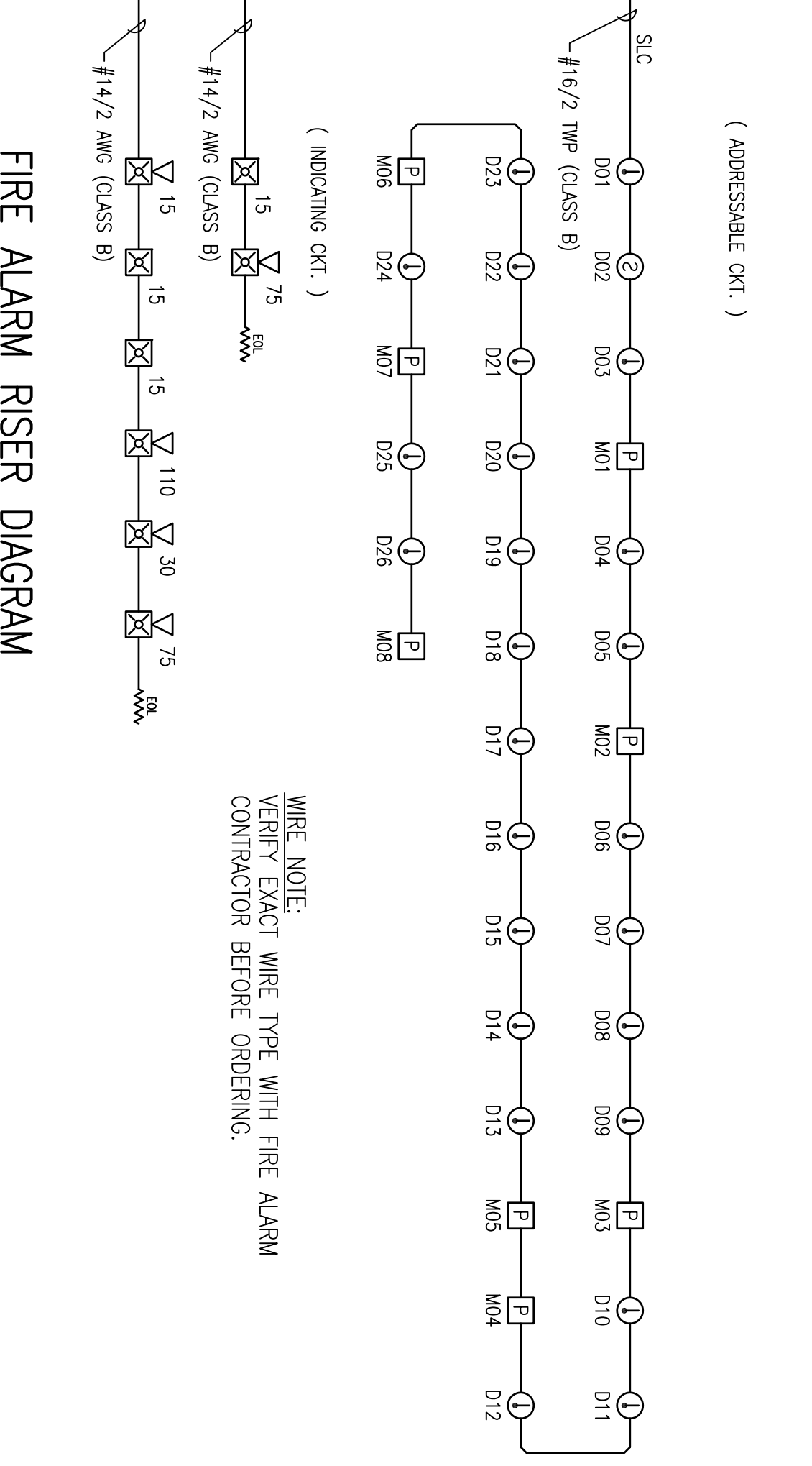
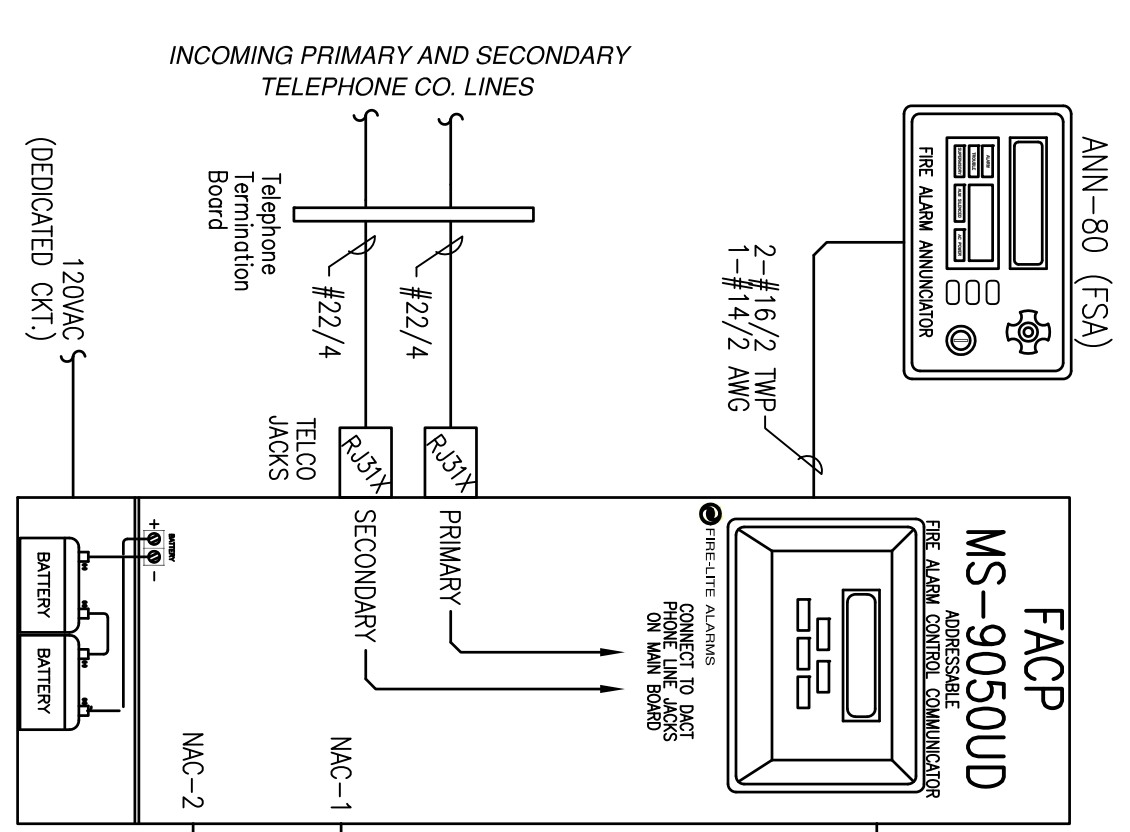
### ADDRESSABLE DETECTOR WIRING DETAIL

SCHEMATIC: NO SCALE



### MANUAL PULL STATION WIRING DETAIL

SCHEMATIC: NO SCALE



### FIRE ALARM RISER DIAGRAM

SCHEMATIC: NO SCALE

### FIRE ALARM SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
	FIRE ALARM CONTROL PANEL	WALL-TOP @ 56"
	FIRE ALARM POWER SUPPLY	FIELD VERIFY
	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 56"
	FIRE/SMOKE DAMPER	BY OTHERS
	SMOKE DETECTOR	CEILING
	DUCT SMOKE DETECTOR	BY OTHERS
	HEAT DETECTOR	CEILING
	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
	MANUAL PULL STATION	WALL @ 48"
	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
	ADDRESSABLE RELAY MODULE	FIELD VERIFY
	KNOX BOX	FIELD VERIFY
	WATER FLOW SWITCH	BY OTHERS
	VALVE TAMPER SWITCH	BY OTHERS
	BELL	BY OTHERS
	CEILING MOUNT STROBE	FIELD VERIFY
	CEILING MOUNT HORN / STROBE	FIELD VERIFY
	CEILING MOUNT SPEAKER / STROBE	FIELD VERIFY
	MINI HORN	WALL @ 10'-0"
	HORN / STROBE	WALL 80'-96"
	SPEAKER / STROBE	WALL 80'-96"
	SPEAKER	WALL @ 90"
	STROBE	WALL 80'-96"
<b>ABBREVIATION</b>	<b>DESCRIPTION</b>	
E	EXISTING	
G	WITH GUARD	
P	PENDING MOUNT	
R	RESIDENTIAL (110V)	
S	SOUDER BASE	
WP	WEATHER PROOF	
EDL	END OF LINE RELAY	
EDR	END OF LINE RELAY	
AWG	AMERICAN WIRE GAUGE	
AWG	AMERICAN WIRE GAUGE	
AWG	AMERICAN WIRE GAUGE	
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AWG	AMERICAN WIRE GAUGE	
AWG	AMERICAN WIRE GAUGE	
AWG	AMERICAN WIRE GAUGE	

### APPLICABLE CODES:

MAINE UNIFORM ENERGY & BUILDING CODE  
 PORTLAND CITY CODE, CHAPTER 10, FIRE PREVENTION & PROTECTION  
 NFPA 1, FIRE CODE, & NFPA 101, LIFE SAFETY CODE

### OPERATIONS MATRIX

	FIRE ALARM INPUT	FIRE ALARM OUTPUT
SMOKE DETECTORS	●	●
HEAT DETECTORS	●	●
PULL STATIONS	●	●
FIRE ALARM AC POWER FAIL	●	●
FIRE ALARM LOW BATTERY	●	●
OPEN CIRCUIT	●	●
GROUND FAULT	●	●
NAC SHORT CIRCUIT	●	●
LOSS OF AC TO BUILDING	●	●
ACTIVATE ALARM INDICATOR	●	●
ACTIVATE AUDIBLE ALARM	●	●
ACTIVATE TROUBLE INDICATOR	●	●
ACTIVATE AUDIBLE TROUBLE INDICATOR	●	●
TRANSMIT ALARM SIGNAL	●	●
TRANSMIT TROUBLE SIGNAL	●	●

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	10/12/2015

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**FIFTH MAINE**  
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**CALCS, DETAILS, LEGEND, MATRIX, NOTES, RISER**

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