

FCP Battery Calculation					6/12/2013
PROJECT NAME: FITZPATRICK ROWHOUSE-106 PARK STREET					
Required Standby Time: 24 Hours					
Required Alarm Time: 5 Minutes					
Regulated Load in Standby					
Device Type	Number of Devices		Current (Amps)	Total Current (Amps)	
MS-9050UD Main Circuit Board	1	X	0.12000	= 0.12000	
ANN-80 Remote Annunciator	1	X	0.01500	= 0.01500	
S0355 Smoke Detector	4	X	0.00030	= 0.00120	
H355 Heat Detector	26	X	0.00030	= 0.00780	
MMF-300 Monitor Module	2	X	0.00040	= 0.00080	
BG-12LX Pull Station	3	X	0.00023	= 0.00069	
TOTAL STANDBY LOAD				0.14549	
Regulated Load in ALARM					
Device Type	Number of Devices		Current (Amps)	Total Current (Amps)	
MS-9050UD Main Circuit Board	1	X	0.20000	= 0.20000	
ANN-80 Remote Annunciator	1	X	0.04000	= 0.04000	
All Addressable Devices - Maximum Draw	1	X	0.40000	= 0.40000	
NAC-1	1	X	1.02400	= 1.02400	
NAC-2	1	X	0.15800	= 0.15800	
TOTAL ALARM LOAD				1.82200	
Battery Requirements					
Standby Load	Required Standby Time in Hours				
Current (Amps)	0.14549	X	24.00000	= 3.49176	
Alarm Load	Required Alarm Time in Hours				
Current (Amps)	1.82200	X	0.08333	= 0.15183	
Total Ampere Hours (before derating factor)				3.64359	
Derating Factor				1.2	
TOTAL AMPERE HOURS REQUIRED				4.37231	
BATTERIES TO BE PROVIDED (2 - 12v)				7 AH	

NAC Circuit Voltage Drop Calculation 5/27/2013

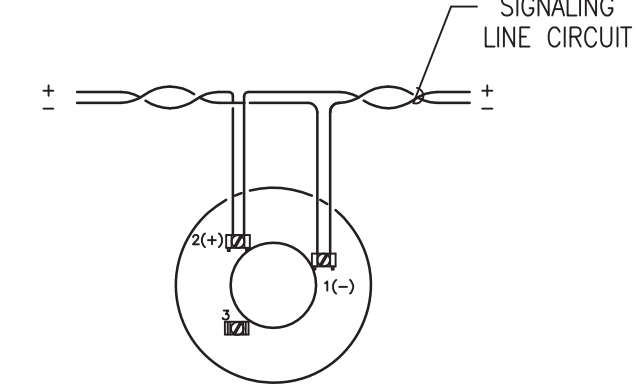
Project Name: FITZPATRICK ROWHOUSE-106 PARK STREET			
Circuit Number: NAC-1			
Nominal System Voltage	20.4 volts	Wire Gauge	Resistance Per 1000
Minimum Device Voltage	16 volts	14	6.14
Distance from source to 1st device	5	14	6.14
Wire Gauge for balance of circuit			
Max Output Current	1.7 amps		
Total Circuit Current	1.024 amps		

Circuit is within limits				
Device	Current	Distance previous device	Voltage at Device	Drop from source
Device 1	0.079		20.37	0.03
Device 2	0.079	37	20.15	0.25
Device 3	0.094	13	20.08	0.32
Device 4	0.079	6	20.06	0.34
Device 5	0.107	20	19.97	0.43
Device 6	0.066	11	19.93	0.47
Device 7	0.079	24	19.86	0.54
Device 8	0.079	18	19.81	0.59
Device 9	0.176	7	19.79	0.61
Device 10	0.079	10	19.78	0.62
Device 11	0.107	26	19.76	0.64
Totals	1.024	177		

NAC Circuit Voltage Drop Calculation 6/12/2013

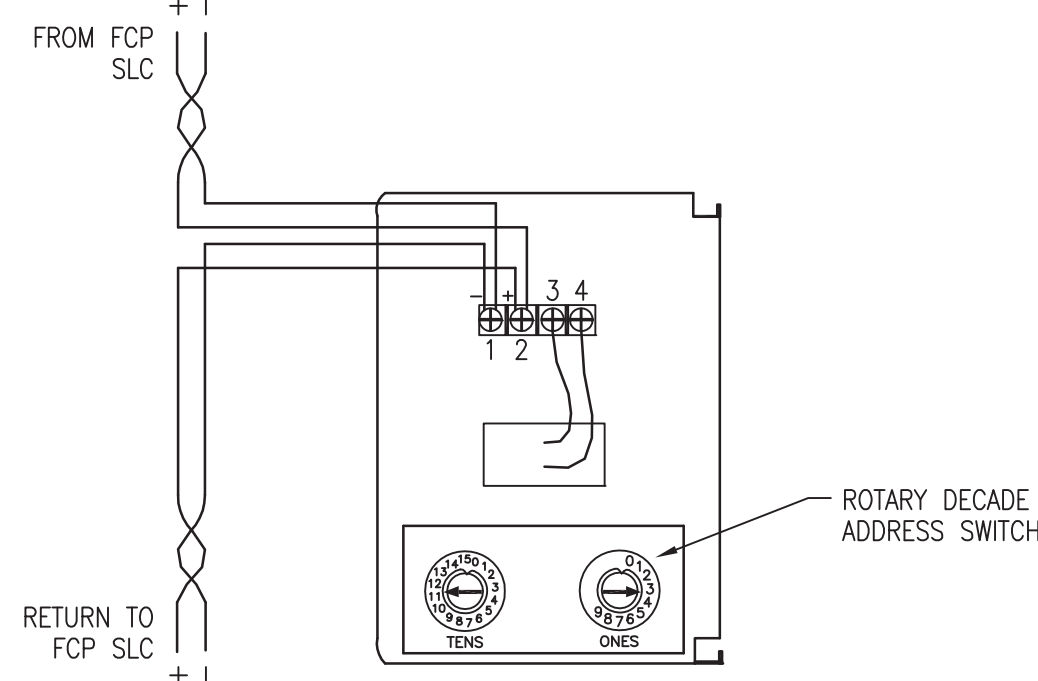
Project Name: FITZPATRICK ROWHOUSE-106 PARK STREET			
Circuit Number: NAC-2			
Nominal System Voltage	20.4 volts	Wire Gauge	Resistance Per 1000
Minimum Device Voltage	16 volts	14	6.14
Distance from source to 1st device	45	14	6.14
Wire Gauge for balance of circuit			
Max Output Current	0.8 amps		
Total Circuit Current	0.158 amps		

Circuit is within limits				
Device	Current	Distance previous device	Voltage at Device	Drop from source
Device 1	0.079		20.36	0.04
Device 2	0.079	23	20.35	0.05
Totals	0.158	68		



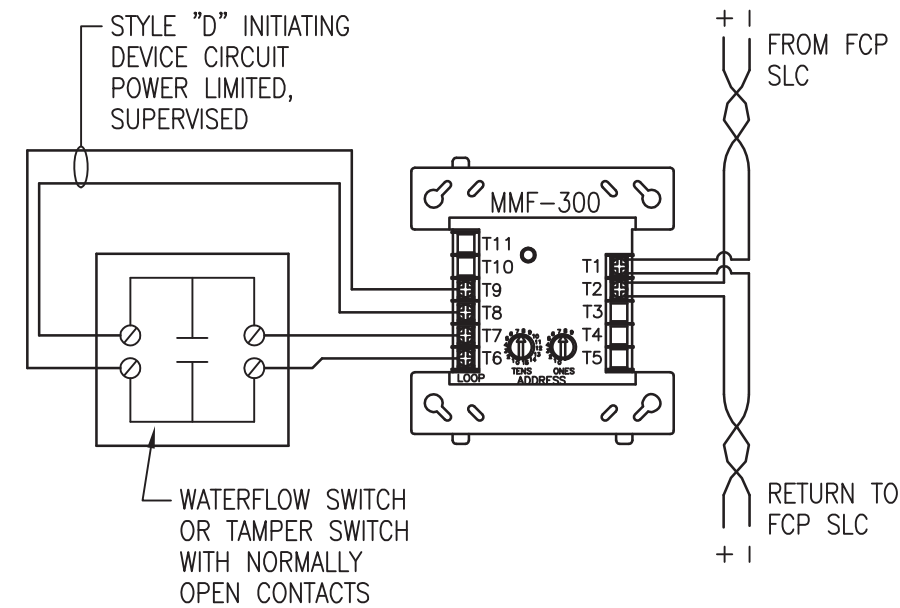
ADDRESSABLE SMOKE DETECTOR WIRING DETAIL

SCHEMATIC: NO SCALE



MANUAL PULL STATION WIRING DETAIL

SCHEMATIC: NO SCALE

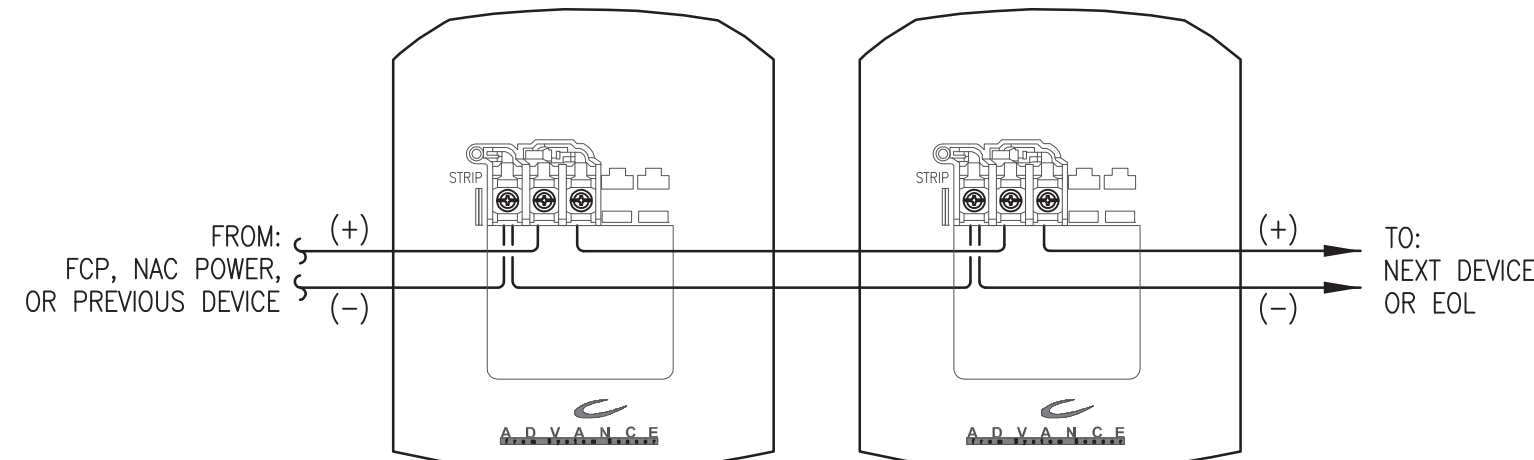


WATERFLOW / TAMPER WIRING DETAIL

SCHEMATIC: NO SCALE

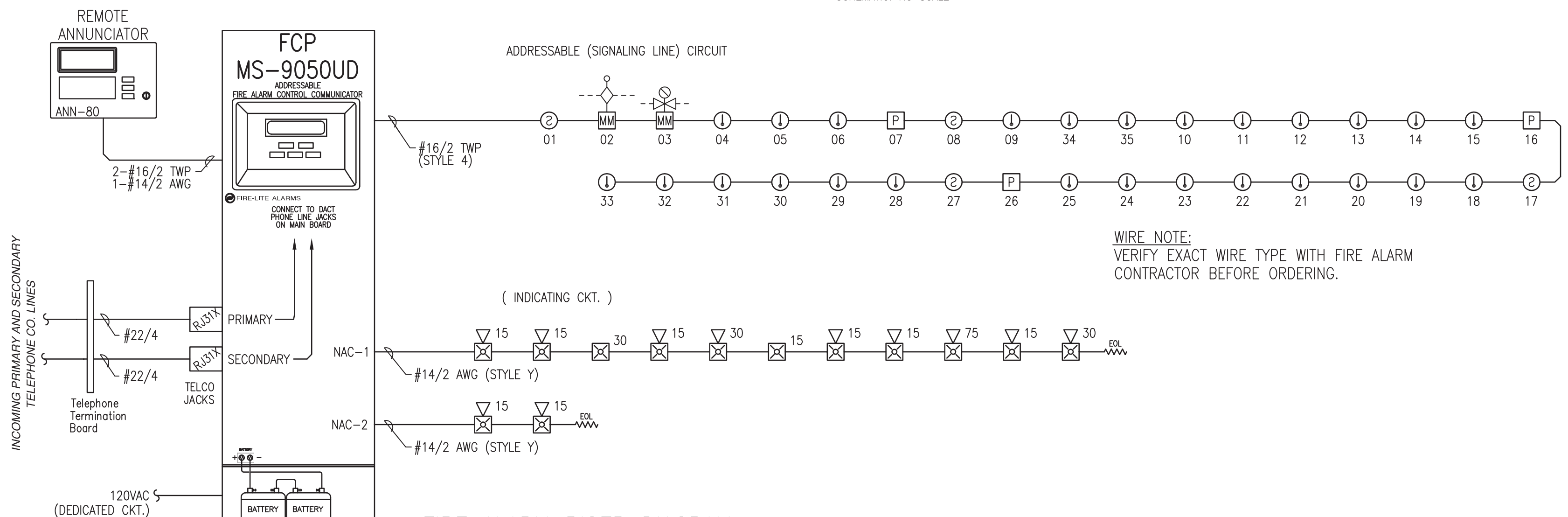
GENERAL NOTES:

- 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 TIE 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 CEILINGS 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.



TYPICAL 2 WIRE STROBE WIRING DETAIL

SCHEMATIC: NO SCALE



FIRE ALARM RISER DIAGRAM

SCHEMATIC: NO SCALE

FIRE ALARM SYMBOL LEGEND		
SYMBOL	DESCRIPTION	MOUNTING
[FCP]	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
[FPS]	FIRE ALARM POWER SUPPLY	FIELD VERIFY
[FSA]	FIRE SYSTEM ANNUCIATOR	WALL-TOP @ 66"
[FSD]	FIRE/SMOKE DAMPER	BY OTHERS
(S)	SMOKE DETECTOR	CEILING
(S)R	120V SMOKE DETECTOR	CEILING
(S)D	DUCT SMOKE DETECTOR	BY OTHERS
(H)	HEAT DETECTOR	CEILING
[SIM]	SERIAL INTERFACE MODULE	FIELD VERIFY
[CM]	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
[MM]	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
[P]	MANUAL PULL STATION	WALL @ 48"
[R]	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
[RM]	ADDRESSABLE RELAY MODULE	FIELD VERIFY
[M]	MAGNETIC DOOR HOLDER	FIELD VERIFY
[WFS]	WATER FLOW SWITCH	BY OTHERS
[VTS]	VALVE TAMPER SWITCH	BY OTHERS
[B]	BELL	BY OTHERS
(S)	CEILING MOUNT STROBE	FIELD VERIFY
(S)C	CEILING MOUNT HORN / STROBE	FIELD VERIFY
(S)S	CEILING MOUNT SPEAKER / STROBE	FIELD VERIFY
[MH]	MINI HORN	WALL @ 10'-0"
[H/S]	HORN / STROBE	WALL 80"-96"
[S/S]	SPEAKER / STROBE	WALL 80"-96"
[SP]	SPEAKER	WALL @ 90"
[S]	STROBE	WALL 80"-96"

ABBREVIATION	DESCRIPTION
E	EXISTING
G	WITH GUARD
P	PENDENT MOUNT
R	RESIDENTIAL (110V)
S	SOUNDER BASE
WP	WEATHER PROOF
EOL	END OF LINE RESISTOR
EOLR	END OF LINE RELAY
AWG	AMERICAN WIRE GAUGE
TWP	TWISTED PAIR
TSWP	TWISTED SHIELDED PAIR
FPLP	FIRE POWER LIMITED PLENUM
FPLR	FIRE POWER LIMITED RISER

SYMBOL	DESCRIPTION
(S) (W)	SPEAKER WATTAGE (W)
(S) (C)	STROBE CANDELA (C)
(S) (A)	DEVICE ADDRESS (A)
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