

FCP Battery Calculation

PROJECT NAME: COFFEE BY DESIGN
 Required Standby Time: 24 Hours
 Required Alarm Time: 5 Minutes

Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
MS-9050UD Main Circuit Board	1	0.17000	0.17000
MS-9050UD Alarm Annunciator	1	0.00030	0.00030
MS-9050UD MMR-301 Mini Monitor Module	4	0.00040	0.00160
MS-9050UD MMR-301 Mini Monitor Module	1	0.00023	0.00023
TOTAL STANDBY LOAD			0.13713

Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
MS-9050UD Main Circuit Board	1	0.20000	0.20000
ANN-80 Remote Annunciator	1	0.04000	0.04000
Addressable Devices - Maximum Draw	1	0.00000	0.00000
MS-1	1	0.62100	0.62100
TOTAL ALARM LOAD			1.26100

Battery Requirements
 Required Standby Time in Hours: 24.00000
 Current (Amps): 0.13713 X
 Required Alarm Time in Hours: 0.08333
 Current (Amps): 1.26100 X
 Total Ampere Hours (before derating factor): 3.29112
 Derating Factor: 0.65353 =
TOTAL AMPERE HOURS REQUIRED: 5.05444

BATTERIES TO BE PROVIDED @ - 15% = 7 AH

PPSI Battery Calculation

PROJECT NAME: COFFEE BY DESIGN
 Required Standby Time: 24 Hours
 Required Alarm Time: 5 Minutes

Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FCPS-24FS8 Main Circuit Board	1	1.65900	1.65900
FPS1-1	1	1.68200	1.68200
FPS1-2	1	2.60000	2.60000
FPS1-3	1	1.25300	1.25300
FPS1-4	1	1.25300	1.25300
TOTAL ALARM LOAD			5.90700

Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FCPS-24FS8 Main Circuit Board	1	0.08500	0.08500
FCPS-24FS8 Main Circuit Board	1	0.08500	0.08500
TOTAL STANDBY LOAD			0.08500

Battery Requirements
 Required Standby Time in Hours: 24.00000
 Current (Amps): 0.08500 X
 Required Alarm Time in Hours: 0.08333
 Current (Amps): 5.90700 X
 Total Ampere Hours (before derating factor): 2.09275
 Derating Factor: 0.65353 =
TOTAL AMPERE HOURS REQUIRED: 3.17412

BATTERIES TO BE PROVIDED @ - 15% = 7 AH

NAC Circuit Voltage Drop Calculation

PROJECT NAME: COFFEE BY DESIGN
 Circuit Name: NAC-1

Nominal System Voltage: 20.4 volts
 Distance from source to 1st device: 25
 Wire Gauge for balance of circuit: 14
 Max Output Current: 1.33 amps
 Total Circuit Current: 0.627 amps

Device	Distance	Voltage at Device	Drop from Source	Percent Drop
Device 1	0.076	20.30	0.10	0%
Device 2	0.066	20.27	0.13	1%
Device 3	0.076	20.24	0.16	1%
Device 4	0.076	20.16	0.24	1%
Device 5	0.076	20.11	0.29	1%
Device 6	0.076	20.10	0.30	1%
Device 7	0.076	20.10	0.30	1%
Device 8	0.076	20.10	0.30	1%
Totals			1.54	7%

NAC Circuit Voltage Drop Calculation

PROJECT NAME: COFFEE BY DESIGN
 Circuit Name: FPS1-1

Nominal System Voltage: 20.4 volts
 Distance from source to 1st device: 40
 Wire Gauge for balance of circuit: 14
 Max Output Current: 2.0 amps
 Total Circuit Current: 1.659 amps

Device	Distance	Voltage at Device	Drop from Source	Percent Drop
Device 1	0.107	19.99	0.41	2%
Device 2	0.178	19.47	0.93	4%
Device 3	0.178	19.00	1.40	7%
Device 4	0.178	18.72	1.68	8%
Device 5	0.178	18.54	1.86	9%
Device 6	0.178	18.45	1.95	10%
Device 7	0.178	18.30	2.10	10%
Device 8	0.178	18.30	2.10	10%
Totals			3.52	17%

NAC Circuit Voltage Drop Calculation

PROJECT NAME: COFFEE BY DESIGN
 Circuit Name: FPS1-2

Nominal System Voltage: 20.4 volts
 Distance from source to 1st device: 10
 Wire Gauge for balance of circuit: 14
 Max Output Current: 2.0 amps
 Total Circuit Current: 1.682 amps

Device	Distance	Voltage at Device	Drop from Source	Percent Drop
Device 1	0.066	20.30	0.10	1%
Device 2	0.212	19.84	0.56	3%
Device 3	0.079	19.81	0.59	3%
Device 4	0.066	19.72	0.68	3%
Device 5	0.066	19.67	0.73	4%
Device 6	0.066	19.52	0.88	4%
Device 7	0.066	19.30	1.10	5%
Device 8	0.079	19.21	1.19	6%
Device 9	0.079	19.06	1.34	7%
Device 10	0.079	18.91	1.49	7%
Device 11	0.079	18.81	1.59	8%
Device 12	0.079	18.66	1.74	8%
Device 13	0.079	18.51	1.89	9%
Device 14	0.079	18.31	2.09	10%
Device 15	0.079	18.16	2.24	11%
Device 16	0.079	18.01	2.39	12%
Totals			1.882	9%

GENERAL NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- INSTALLATION SHALL COMPLY WITH NEC, NEPA 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 CONDITIONS PERMIT AND TO MINIMIZE PENETRATIONS THROUGH AREA SUBJECT TO APPROVAL BY THE LOCAL AUTHORITY HAVING JURISDICTION. WIRING SHALL BE 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 ALL POWER-LIMITED CIRCUIT WIRING. ALL POWER-LIMITED CIRCUIT WIRING SHALL BE THROUGH DIFFERENT KNOCK OUTS AND/OR SEPARATE CONDUITS.
- WHEN UTILIZING CLASS "A" CIRCUITS, SEPARATE OUTGOING AND RETURN CONDUCTORS WHERE POSSIBLE 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 CABLES 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 SWAVE 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 STAIN-UP AND TESTING.

APPLICABLE CODES:

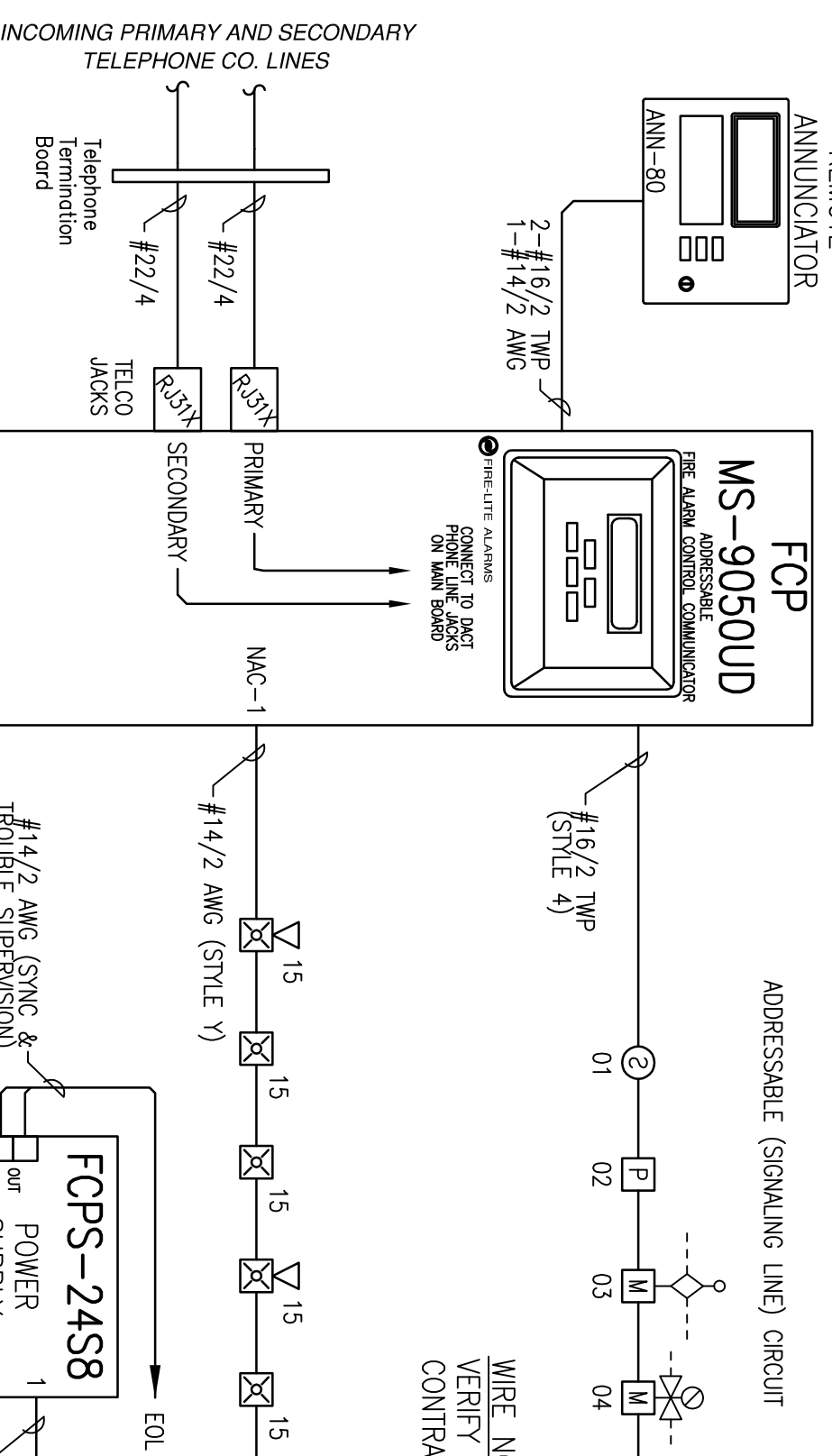
MAINE UNIFORM ENERGY & BUILDING CODE
 PLUMBING AND MECHANICAL CODES FOR FIRE PREVENTION & PROTECTION
 NFPA 1, FIRE CODE & NFPA 70, LIFE SAFETY CODE

FIRE ALARM SYMBOL LEGEND

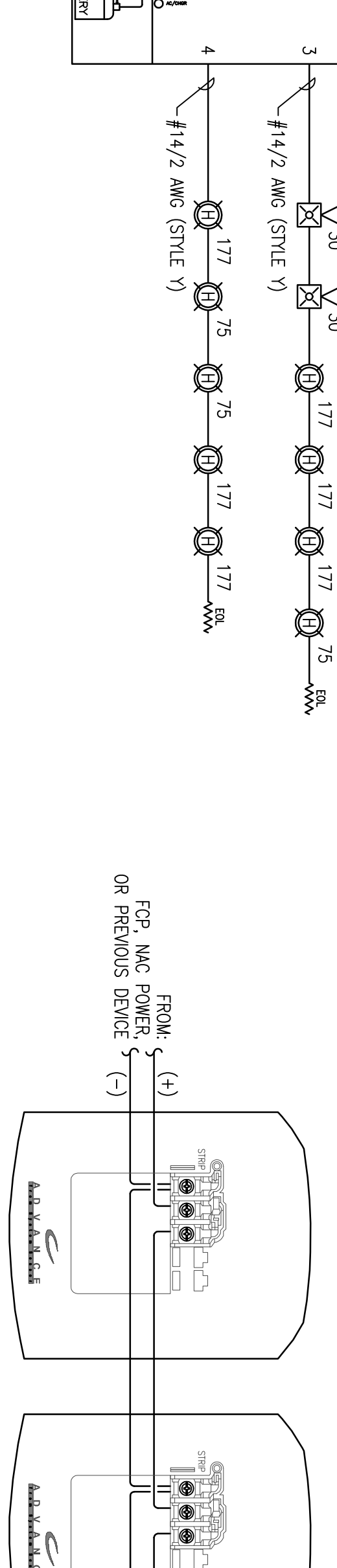
SYMBOL	DESCRIPTION	MOUNTING
[E1]	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
[E2]	FIRE ALARM POWER SUPPLY	FIELD VERIFY
[E3]	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
[E4]	FIRE SMOKE DAMPER	BY OTHERS
[E5]	SMOKE DETECTOR	CEILING
[E6]	DUAL SMOKE DETECTOR	BY OTHERS
[E7]	HEAT DETECTOR	CEILING
[E8]	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
[E9]	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
[E10]	ADDRESSABLE MINI MONITOR MODULE	FIELD VERIFY
[E11]	MANUAL PULL STATION	WALL @ 48"
[E12]	CONTROL RELAY (MULTI-CONTACT)	FIELD VERIFY
[E13]	ADDRESSABLE RELAY MODULE	FIELD VERIFY
[E14]	MAGNETIC DOOR HOLDER	FIELD VERIFY
[E15]	WATER FLOW SWITCH	BY OTHERS
[E16]	WATER TAMPER SWITCH	BY OTHERS
[E17]	LOW AIR	BY OTHERS
[E18]	LOW TEMPERATURE	BY OTHERS
[E19]	BELL	FIELD VERIFY
[E20]	CEILING MOUNT SMOKE	FIELD VERIFY
[E21]	CEILING MOUNT HORN / STROBE	FIELD VERIFY
[E22]	CEILING MOUNT SPEAKER / STROBE	FIELD VERIFY
[E23]	HORN	WALL @ 10'-0"
[E24]	HORN / STROBE	WALL @ 36"-96"
[E25]	SPEAKER / STROBE	WALL @ 36"-96"
[E26]	STROBE	WALL @ 90"
[E27]	KNOX BOX	WALL @ 36"-96"
[E28]	FIELD VERIFY	FIELD VERIFY

OPERATIONS MATRIX

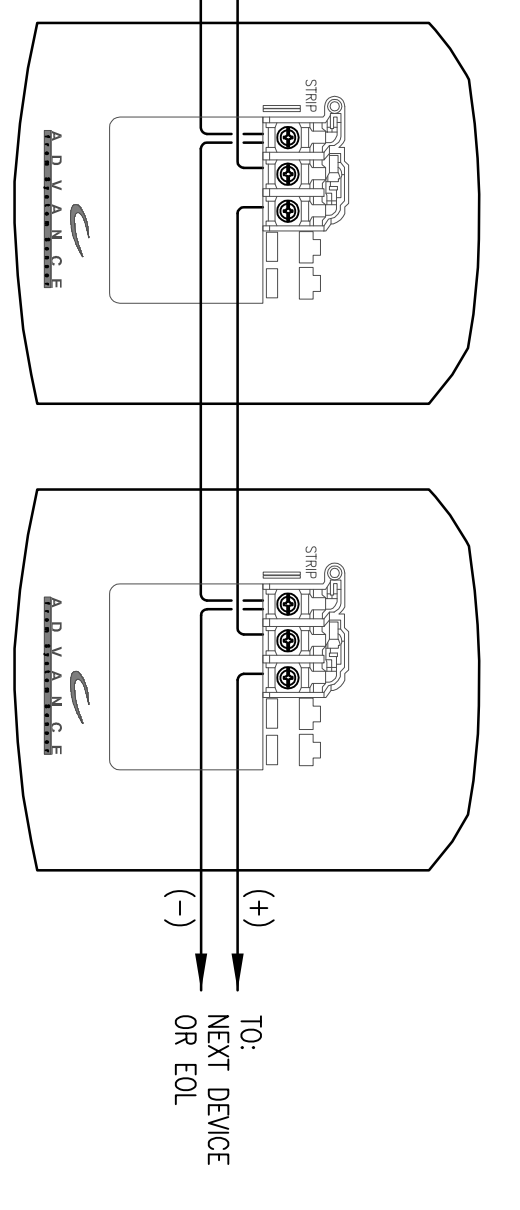
FIRE ALARM INPUT	FIRE ALARM OUTPUT
SMOKE DETECTORS	ACTIVATE ALARM INDICATOR
FIRE ALARM ANNUNCIATOR	ACTIVATE AUDIBLE ALARM
ADDRESSABLE MONITOR MODULE	ACTIVATE SUPERVISORY INDICATOR
ADDRESSABLE MINI MONITOR MODULE	ACTIVATE SUPERVISORY SIGNAL
CONTROL RELAY (MULTI-CONTACT)	ACTIVATE TROUBLE INDICATOR
ADDRESSABLE RELAY MODULE	ACTIVATE AUDIBLE TROUBLE INDICATOR
MAGNETIC DOOR HOLDER	TRANSMIT ALARM SIGNAL
WATER TAMPER SWITCH	TRANSMIT SUPERVISORY SIGNAL
WATER FLOW SWITCH	TRANSMIT TROUBLE SIGNAL
LOW AIR SWITCHES	
LOW TEMPERATURE SWITCHES	
FIRE ALARM AC POWER FAIL	
FIRE ALARM LOW BATTERY	
OPEN CIRCUIT	
GROUND FAULT	
NAC SHUNT CIRCUIT	
LOSS OF AC TO BUILDING	



FIRE ALARM RISER DIAGRAM



TYPICAL 2 WIRE STROBE WIRING DETAIL



MANUAL PULL STATION WIRING DETAIL

