FACU POWER SUPPLY & BATTERY
MXL-07-26 (12 AMP)

SUPERVISORY CURRENT

DESCRIPTION	QUANTITY	MODULE CURRENT	EOL CURRENT	DEVICE CURRENT	TOTAL ROW CURRENT
MMB-2 CONTROL BOARD	1	0.175	0.024	0.132	0.331
MKB-2	1	0.005	NA	NA	0.005
TSP-40	1	0.070	NA	NA	0.070
NET-7	1	0.030	NA	NA	0.030
D2300CP	2	0.050	NA	NA	0.030
PS-5A	1	***	NA	NA	0.209
*** 25% OF 24V LOAD				TOTAL SUPERVISORY CURRENT	0.858

ALARM CURRENT

MXLR OCCUPANT NOTIFICATION APPLIANCE CIRCUITS	TOTAL CIRCUIT CURRENT LOAD
FDC BELL	0.0500 AMP
TOTAL ALARM CURRENT	0.000 AMP

SUMMARY

MINIMUM BATTERY CAPACITY =
{TOTAL STANDBY CURRENT X STANDBY TIME} + {TOTAL ALARM CURRENT X ALARM TIME} X 1.25

MINIMUM BATTERY CAPACITY = {0.858 X 24 HR} + {0.05 X 0.083 HR} X 1.25

MINIMUM BATTERY CAPACITY = {20.592 AHR + 0.004 AHR} X 1.25 = 25.74 AHR

BATTERY CALCULATIONS
FAP-001-26

ITEM	DESCRIPTION	QTY	STANDBY CURRENT PER ITEM (AMPS)	TOTAL STANDBY CURRENT PER ITEM	ALARM CURRENT PER ITEM (AMPS)	TOTAL ALARM CURRENT PER ITEM
CP-35	FACP w/2ZN'S + AUD	1	0.1750	0.1750	0.5010	0.5010
PS-35	POWER SUPPLY	2	0.0000	0.0000	0.0000	0.0000
BC-35	BATTERY CHARGER	1	0.0450	0.0450	0.0300	0.0300
PM-32	MATRIX MODULE	1	0.0000	0.0000	0.0000	0.0000
SM-30	SWITCH MODULE	1	0.0000	0.0000	0.0450	0.0450
SR-35	8 RELAY MODULE	1	0.0000	0.0000	0.0210	0.0210
TC-30U	BATTERY TRANSFER	1	0.0300	0.0300	0.0150	0.0150
ZN-34US	SUPERVISORY MODULE	3	0.0100	0.0300	0.1100	0.3300
ZU-35	ZONE MODULE	2	0.0090	0.0180	0.1100	0.2200
ZU-35DS	ZONE MODULE/SD's	2	0.0090	0.0180	0.1100	0.2200
SMOKE	SMOKE DETECTOR	5	0.0001	0.0005	0.0010	0.0010
HEAT	HEAT DETECTOR	53	0.0000	0.0000	0.0000	0.0000
PULL	PULL STATION	6	0.0000	0.0005	0.0010	0.0010
BELL	FDC BELL	6	0.0000	0.0000	0.0500	0.3000
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	1	0.0020	0.0020	0.0000	0.0000
PS-5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						0.4610
	TOTAL SYSTEM CURRENT		STANDBY	0.4765	ALARM	2.3230

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) + (TOT. ALARM CURRENT X ALARM TIME)} X 1.25

MIN. BATTERY CAPACITY = {(0.4765 A X 24 HR) + (2.323 A X 0.083 HR)} X 1.25

MIN. BATTERY CAPACITY = {11.436 AHr + 0.1928 AHr} X 1.25 = 14.536 AHr

NOTIFICATION APPLIANCE CIRCUIT
VOLTAGE DROP & POWER REQUIREMENTS

CKT AV1 – BLDG 26 DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
WHEELOCK STROBE 15 cd	–	0.5010	0.5010
WHEELOCK HORN/STROBE 15cd	–	0.0000	0.0000
WHEELOCK STROBE 30 cd	–	0.0300	0.0300
WHEELOCK HORN/STROBE 30 cd	–	0.0450	0.0450
WHEELOCK STROBE 75 cd	–	0.0210	0.0210
WHEELOCK HORN/STROBE 75 cd	–	0.1100	0.1100
WHEELOCK STROBE 110 cd	–	0.1100	0.3300
WHEELOCK HORN/STROBE 110 cd	–	0.1750	0.1750
WHEELOCK HORN	3	0.0870	0.2610
AUTOCALL BELL	4	0.0500	0.2000
TOTAL NOTIFICATION APPLIANCES CURRENT			0.4610

VOLTAGE DROP (VD) CALCULATIONS

VD = {(I) (D) (21.6)}/CM

WHERE: I = CIRCUIT CURRENT

D = CONDUCTOR LENGTH (FT) ONE WAY

21.6 = A CONSTANT

CM = CIRCULAR MILS

VD = {(0.461A) (110FT) (21.64)}/4110 = 0.267V

%VD = {0.267V / 24V} X 100 = 1.11%

REMAINING VOLTS = 23.733

WIRE SIZE	CIRCULAR MILS
12AWG	6530
14AWG	4110
16AWG	2580
18AWG	1620
20AWG	1020

FIRE ALARM SYSTEM FUNCTION CHART

SYSTEM EVENT / RESPONSE	ANNUNCIATE AT FACU	FIRE SIGNAL TO RECEIVER	TROUBLE SIGNAL TO LBNL RECEIVER	SUPERVISORY SIGNAL TO LBNL RECEIVER	OPERATE NOTIFICATION APPLIANCES
FIRE CALL BOX	●	●			●
FIRE SPRINKLER WATERFLOW SWITCH	●	●			●
FIRE SPRINKLER VALVE SUPERVISORY SWITCH	●			●	
AC POWER FAILURE	●		●		
SYSTEM FAULT	●		●		

–	LDD	LDD	MCD	09/16/13	AS BUILT	
REVISION NUMBER	DRAWN BY	CHECKED BY	APPR'D BY	DATE	REMARKS	

PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)

ISSUE (PROGRESS, ESTIMATE, BID, CONSTRUCTION, CONFORMED, REVISION, RECORD)

AS BUILT
–
–
09/16/13

BLDG 26 FIRE ALARM
FUNCTION CHART & CALCULATIONS
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UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

DRAWN BY	LDD	DATE 09/16/2013
CHECKED BY	LDD	09/16/2013
APPROVED BY	MCD	09/16/2013
SCALE	AS NOTED	
DRAWING NO.	4B26E052_	SHEET 1 OF 1
PROJECT NO.	000000	