FACU POWER SUPPLY & BATTERY
MXL–04–02 (12 AMP)

SUPERVISORY CURRENT

DESCRIPTION	QUANTITY	MODULE CURRENT	EOL CURRENT	DEVICE CURRENT	TOTAL ROW CURRENT
MMB–1/2	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
NIM–1W	1	0.150	NA	NA	0.204
D2300CP	2	0.050	NA	NA	0.100
PSA–5	1	***	NA	NA	0.264
*** 25% OF 24V LOAD				TOTAL SUPERVISORY CURRENT	0.858

ALARM CURRENT

	TOTAL CIRCUIT CURRENT LOAD
MXLR OCCUPANT NOTIFICATION APPLIANCE CIRCUITS	
HORNS	0.000
STROBE 75cd	0.000
TOTAL ALARM CURRENT	0.000

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} + {0.000 X 0.083 HR} X 1.25 =

MINIMUM BATTERY CAPACITY = {20.592 AHR + 0.000 AHR} X 1.25 = 25.740 AHR

BATTERY CALCULATIONS
FAP–01, –01A, –01B–02

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	3	0.0000	0.0000	0.0000	0.0000
BC–35	BATTERY CHARGER	1	0.0450	0.0450	0.0300	0.0300
AA–30U	CLASS B BELL MODULE	2	0.0065	0.0130	0.0400	0.0800
AE–30U	CLASS B BELL MODULE	–	0.0065	0.0000	0.0400	0.0000
PM–32	MATRIX MODULE	4	0.0000	0.0000	0.0000	0.0000
SM–30	SWITCH MODULE	21	0.0000	0.0000	0.0450	0.9450
SR–30	2 RELAY MODULE	–	0.0000	0.0000	0.0450	0.0000
SR–32	6 RELAY MODULE	7	0.0000	0.0000	0.0450	0.3150
TC–30U	BATTERY TROUBLE	–	0.0300	0.0000	0.0500	0.0000
ZN–34US	SUPERVISORY MODULE	6	0.0100	0.0600	0.1100	0.6600
ZU–35	ZONE MODULE	9	0.0090	0.0810	0.1100	0.9900
ZU–35DS	ZONE MODULE/SD's	19	0.0090	0.1710	0.1100	0.3300
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	5	0.0020	0.0100	0.0000	0.0000
PS–5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						SEE NOTE
TOTAL SYSTEM CURRENT			STANDBY	0.7130	ALARM	5.7860

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

MIN. BATTERY CAPACITY = {(0.713 A X 24 HR) + (5.7860 A X 0.083 HR)} X 1.25

MIN. BATTERY CAPACITY = {17.112 AHr + 0.4802 AHr} X 1.25 = 21.9903 AHr

NOTE: HORN/STROBES POWER BY SEPARATE POWER SUPPLIES, SEE 4B02E247.

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 2NOTIFICATION DEVICES	VAV & FUME HOOD DAMPERS CLOSE	VENTILATION SHUTDOWN	ELEVATOR RECALL	OPERATE 2A NOTIFICATION DEVICES	OPERATE 58 SUBSTA NOTIFICATION DEVICES
2 FIRE CALL BOXES	●	●			●					
2 SMOKE DETECTORS	●	●			●	●	●			
2 DUCT SMOKE DETECTORS	●				●	●	●	●		
2 FIRE SPRINKLER WATERFLOW SWITCHES	●	●			●	●	●			
2 FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●						
2 ELEVATOR LOBBY SMOKE DETECTORS	●	●			●	●	●	●		
2A FIRE CALL BOX	●	●							●	
2A HEAT DETECTOR	●	●							●	
2A FIRE SPRINKLER WATERFLOW SWITCH	●	●							●	
2A FIRE SPRINKLER VALVE SUPERVISORY SWITCH	●			●						
58 SUBSTA FIRE CALL BOXES	●	●								●
58 SUBSTA SMOKE DETECTORS	●	●								●
AC POWER FAILURE	●		●							
SYSTEM FAULT	●		●							

ALSO SEE:

4B02E038 RM 206A H2 DETECTOR FUNCTION CHART

4B02E057 SMOKE CONRTOL MATRIX

4B02E246 NEW SIGNAL & NOTIFICATION CIRCUITS MATRIX

NOTIFICATION APPLIANCE CIRCUIT VOLTAGE DROP & POWER REQUIREMENTS

SEE DWG. 4B02E247

NOTIFICATION APPLIANCE CIRCUIT CURRENTS

CKT AV1	1ST FLOOR NORTH	1.409
CKT AV2	1ST FLOOR EAST & SE	1.321
CKT AV3	1ST FLOOR WEST & SW	1.168
CKT AV4	2ND FLOOR SOUTH	1.297
CKT AV5	2ND FLOOR EAST & WEST	1.176
CKT AV6	2ND FLOOR NORTHEAST	0.913
CKT AV7	2ND FLOOR NORTHWEST	0.834
CKT AV8	3RD FLOOR EAST & SOUTH	1.161
CKT AV9	3RD FLOOR WEST & NORTHWEST	0.997
CKT AV10	3RD FLOOR NORTHEAST	1.001
CKT AV11	4TH FLOOR SOUTH	1.151
CKT AV12	4TH FLOOR EAST, NORTHEAST & ROOF	1.062
CKT AV13	4TH FLOOR WEST & NORTHWEST	1.013
	TOTAL NOTIFICATION APPLIANCES CURRENT	14.503

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

ISSUE (PROGRESS, ESTIMATE, BID, CONSTRUCTION, CONFORMED, REVISION, RECORD): AS BUILT — 09/05/2013

REVISION NUMBER	DRAWN BY	CHECKED BY	APPR'D BY	DATE	REMARKS
_	LDD	LDD	MCD	09/05/13	AS BUILT

BLDG 2 FIRE ALARM
2A, 58 SUBSTATION
FUNCTION CHART & CALCULATIONS

UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

DRAWN BY	LDD	DATE 09/05/2013
CHECKED BY	LDD	09/05/2013
APPROVED BY	MCD	09/05/2013
SCALE	AS NOTED	
DRAWING NO.	4B02E269_	SHEET 1 OF 1
PROJECT NO.	000000	