

BATTERY CALCULATIONS
FAP-001-73

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	1	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	-	0.0065	0.0000	0.0400	0.0000
PM-32	MATRIX MODULE	-	0.0000	0.0000	0.0000	0.0000
RM-30U	RELEASE MODULE	-	0.0050	0.0000	1.5000	0.0000
SM-30	SWITCH MODULE	1	0.0000	0.0000	0.0450	0.0450
SR-32	6 RELAY MODULE	-	0.0000	0.0000	0.0450	0.0000
SR-35	8 RELAY MODULE	3	0.0000	0.0000	0.0210	0.0630
TC-30U	BATTERY TRANSFER	-	0.0000	0.0000	0.0500	0.0000
TL-30U	TIME LIMIT	-	0.0300	0.0000	0.0150	0.0000
ZN-34US	SUPERVISORY MODULE	1	0.0100	0.0100	0.1100	0.1100
ZU-35	ZONE MODULE	3	0.0090	0.0270	0.1100	0.3300
ZU-35DS	ZONE MODULE/SD's	1	0.0090	0.0090	0.1100	0.1100
SMOKE	SMOKE DETECTOR	1	0.0001	0.0001	0.0010	0.0010
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						0.2500
TOTAL SYSTEM CURRENT			STANDBY	0.4261	ALARM	1.6150

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) + (TOT. ALARM CURRENT X ALARM TIME)} X 1.25
 MIN. BATTERY CAPACITY = {(0.4261 A X 24 HR) + (1.615 A X 0.083 HR)} X 1.25
 MIN. BATTERY CAPACITY = {10.2264 Ahr + 0.1340 Ahr} X 1.25 = 12.9506 Ahr

NOTIFICATION APPLIANCE CIRCUIT
VOLTAGE DROP & POWER REQUIREMENTS

DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
CKT AV1: 73,73A			
WHEELLOCK STROBE 15 cd	-	0.5010	0.0000
WHEELLOCK HORN/STROBE 15cd	-	0.0000	0.0000
WHEELLOCK STROBE 30 cd	-	0.0300	0.0000
WHEELLOCK HORN/STROBE 30 cd	-	0.0450	0.0000
WHEELLOCK STROBE 75 cd	-	0.165	0.0000
WHEELLOCK HORN/STROBE 75 cd	-	0.1100	0.0000
WHEELLOCK STROBE 110 cd	-	0.1100	0.0000
WHEELLOCK HORN/STROBE 110 cd	-	0.1750	0.0000
WHEELLOCK HORN	-	0.0000	0.0000
AUTOCALL BELL	5	0.0500	0.2500
AUTOCALL BELL/STROBE 75 cd	-	0.2150	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT			0.2500

VOLTAGE DROP (VD) CALCULATIONS
 $VD = \{(I) (D) (21.6)\} / CM$
 WHERE: I = CIRCUIT CURRENT
 D = CONDUCTOR LENGTH (FT) ONE WAY
 21.6 = CONSTANT
 CM = WIRE CROSS-SECTIONAL AREA (CIRCULAR MILS)
 $VD = \{(0.25A) (210FT) (21.64)\} / 4110 = 0.276V$
 $\%VD = \{0.276V / 24V\} X 100 = 1.15\%$
 REMAINING VOLTS = 23.724

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

FIRE ALARM SYSTEM
FUNCTION CHART

SYSTEM EVENT

SYSTEM EVENT	ANNUNCIATE AT FACU	FIRE SIGNAL TO RECEIVER	TROUBLE SIGNAL TO LBNL RECEIVER	SUPERVISORY SIGNAL TO LBNL RECEIVER	OPERATE NOTIFICATION APPLIANCES
73,73A FIRE CALL BOXES	●	●			●
73,73A HEAT DETECTORS	●	●			●
72,72A,72B SMOKE DETECTORS	●	●			●
73,73A FIRE SPRINKLER WATERFLOW SWITCHES	●	●			●
73,73A FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●	
AC POWER FAILURE	●		●		
SYSTEM FAULT	●	●			

PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)	AS BUILT - - 10/08/13	LDD LDD MCD 10/08/13 AS BUILT	73, 73A FIRE ALARM SYSTEM FUNCTION CHART & CALCULATIONS -	DRAWN BY LDD DATE 10/08/2013 CHECKED BY LDD DATE 10/08/2013 APPROVED BY MCD DATE 10/08/2013
	UNIVERSITY OF CALIFORNIA LAWRENCE BERKELEY NATIONAL LABORATORY FACILITIES DIVISION			SCALE AS NOTED DRAWING NO. 4B73E024_ PROJECT NO. 000000 SHEET 1 OF 1
	ISSUE (PROGRESS, ESTIMATE, BID, CONSTRUCTION, CONFORMED, REVISION, RECORD)			
	REVISION NUMBER DRAWN BY CHECKED BY APPR'D BY DATE REMARKS			