NOTIFICATION APPLIANCE CIRCUIT VOLTAGE DROP & POWER REQUIREMENTS

CKT AV2: 62 2ND FLR DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
WHEELOCK STROBE 15 cd	–	0.5010	0.0000
WHEELOCK HORN/STROBE 15cd	–	0.0000	0.0000
WHEELOCK STROBE 30 cd	–	0.0300	0.0000
WHEELOCK HORN/STROBE 30 cd	–	0.0450	0.0000
WHEELOCK STROBE 75 cd	–	0.165	0.0000
WHEELOCK HORN/STROBE 75 cd	–	0.1100	0.0000
WHEELOCK STROBE 110 cd	1	0.1100	0.1100
WHEELOCK HORN/STROBE 110 cd	–	0.1750	0.0000
WHEELOCK HORN	–	0.0000	0.0000
AUTOCALL BELL	1	0.0500	0.0500
AUTOCALL BELL/STROBE 75 cd	–	0.2150	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT			0.2700

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 = {(0.27) (090FT) (21.64)}/4110 = 0.27V
%VD = {0.27V / 24V} X 100 = 1.123%
REMAINING VOLTS = 23.73

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

BATTERY CALCULATIONS FAP-001, 001A-62

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
AA-30U	CLASS B BELL MODULE	2	0.0065	0.0325	0.0400	0.0800
AE-30U	CLASS B BELL MODULE	1	0.0065	0.0065	0.0400	0.0400
PM-32	MATRIX MODULE	1	0.0000	0.0000	0.0000	0.0000
SM-30	SWITCH MODULE	2	0.0000	0.0000	0.0450	0.0900
SR-32	6 RELAY MODULE	–	0.0000	0.0000	0.0450	0.0000
SR-35	8 RELAY MODULE	2	0.0000	0.0000	0.0210	0.0420
TC-30U	BATTERY TRANSFER	1	0.0000	0.0000	0.0500	0.0500
TL-30U	TIME LIMIT	–	0.0300	0.0000	0.0150	0.0000
ZN-34US	SUPERVISORY MODULE	3	0.0100	0.0300	0.1100	0.3300
ZU-35	ZONE MODULE	9	0.0090	0.0810	0.1100	0.9900
ZU-35DS	ZONE MODULE/SD's	–	0.0090	0.0000	0.1100	0.0000
SMOKE	SMOKE DETECTOR	122	0.0001	0.0122	0.0010	0.1220
MOI	TRANSMITTER	1	0.1200	0.1200	0.1750	0.1750
MID	INPUT BOARD	3	0.0020	0.0060	0.0000	0.0000
PS-5A	POWER SUPPLY	1	0.0380	0.0380	0.0000	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT						5.6200
	TOTAL SYSTEM CURRENT		STANDBY	0.5567	ALARM	8.0350

MIN. BATTERY CAPACITY = {(TOT. STANDBY CURRENT X STANDBY TIME) + (TOT. ALARM CURRENT X ALARM TIME)} X 1.25
MIN. BATTERY CAPACITY = {(0.5567 A X 24 HR) + (8.035 A X 0.083 HR)} X 1.25
MIN. BATTERY CAPACITY = {13.3608 AHr + 0.6669 AHr} X 1.25 = 17.5346 AHr

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 62 NOTIFICATION DEVICES	ELEVATOR RECALL TO 2ND FLR	ELEVATOER RECALL TO 1ST FLR	62A NOTIFICATION DEVICES
62 FIRE CALL BOXES	●	●			●			
62 HEAT DETECTORS	●	●			●			
62 SMOKE DETECTOR	●	●			●			
62 FIRE SPRINKLER WATERFLOW SWITCHES	●	●			●			
62 FIRE SPRINKLER VALVE SUPERVISORY SWITCHES	●			●				
62 ELEVATOR 1ST & 3RD FLR LOBBY, MACH. RM SD	●	●				●		
62 ELEVATOR 2ND FLR LOBBY SD	●	●					●	
62 LOW WATER PRESSURE	●		●					
62 HIGH WATER PRESSURE	●		●					
62C, 62D DRY CHEMICAL DUMP	●	●						
62A FIRE CALL BOXES	●	●						●
62A HEAT DETECTORS	●	●						●
62A FIRE SPRINKLER WATERFLOW SWITCH	●	●						●
62A FIRE SPRINKLER VALVE SUPERVISORY SWITCH	●			●				
AC POWER FAILURE	●		●					
SYSTEM FAULT	●		●					

NOTIFICATION APPLIANCE CIRCUIT VOLTAGE DROP & POWER REQUIREMENTS

CKT AV3: 62 3RD FLR & ROOF DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
WHEELOCK STROBE 15 cd	–	0.5010	0.0000
WHEELOCK HORN/STROBE 15cd	–	0.0000	0.0000
WHEELOCK STROBE 30 cd	–	0.0300	0.0000
WHEELOCK HORN/STROBE 30 cd	–	0.0450	0.0000
WHEELOCK STROBE 75 cd	–	0.165	0.0000
WHEELOCK HORN/STROBE 75 cd	–	0.1100	0.0000
WHEELOCK STROBE 110 cd	–	0.1100	0.0000
WHEELOCK HORN/STROBE 110 cd	–	0.1750	0.0000
WHEELOCK HORN	–	0.0000	0.0000
AUTOCALL BELL	11	0.0500	0.5500
AUTOCALL BELL/STROBE 75 cd	–	0.2150	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT			0.5500

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 = {(0.55) (275FT) (21.64)}/4110 = 0.795V
%VD = {0.795V / 24V} X 100 = 3.312%
REMAINING VOLTS = 23.205

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

NOTIFICATION APPLIANCE CIRCUIT VOLTAGE DROP & POWER REQUIREMENTS

CKT AV1: 62 BSMNT & 1ST FLR DESCRIPTION	QTY	CURRENT PER ITEM (AMPS)	TOTAL CURRENT PER ITEM
WHEELOCK STROBE 15 cd	–	0.5010	0.0000
WHEELOCK HORN/STROBE 15cd	–	0.0000	0.0000
WHEELOCK STROBE 30 cd	–	0.0300	0.0000
WHEELOCK HORN/STROBE 30 cd	–	0.0450	0.0000
WHEELOCK STROBE 75 cd	–	0.165	0.0000
WHEELOCK HORN/STROBE 75 cd	–	0.1100	0.0000
WHEELOCK STROBE 110 cd	1	0.1100	0.1100
WHEELOCK HORN/STROBE 110 cd	–	0.1750	0.0000
WHEELOCK HORN	–	0.0000	0.0000
AUTOCALL BELL	7	0.0500	0.3500
AUTOCALL BELL/STROBE 75 cd	–	0.2150	0.0000
TOTAL NOTIFICATION APPLIANCES CURRENT			0.5700

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 = {(0.57) (300FT) (21.64)}/4110 = 0.899V
%VD = {0.899V / 24V} X 100 = 3.745%
REMAINING VOLTS = 23.101

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

NOTIFICATION APPLIANCE CIRCUIT CURRENTS

CKT AV1	62 BSMNT & 1ST FLR	0.570
CKT AV2	62 2ND FLR	0.270
CKT AV3	62 3RD FLR & ROOF	0.550
CKT AV4	62 3RD FLR NORTH	1.760
CKT AV5	62 3RD FLR SOUTH	2.420
CKT AV6	62A	0.050
CKT AV7	–	–
CKT AV8	–	–
	TOTAL NOTIFICATION APPLIANCES CURRENT	5.620

AS BUILT
–
–
09/25/13

REVISION NUMBER	DRAWN BY	CHECKED BY	APPR'D BY	DATE	REMARKS
–	LDD	LDD	MCD	09/25/13	AS BUILT

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

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

62 FIRE ALARM SYSTEM
62A TRAILER
FUNCTION CHART & CALCULATIONS

UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

DRAWN BY	LDD	DATE 9/25/2013
CHECKED BY	LDD	9/25/2013
APPROVED BY	MCD	9/25/2013
SCALE	AS NOTED	
DRAWING NO.	4B62E175_	SHEET 1 OF 2
PROJECT NO.	000000	